

N1MM Logger+ Full Docs

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Getting Started

Introduction

Introduction

Getting Started



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N1MM Logger logo artist: Julio, LU5MT

Testing and proposals: N1MMLoggerPlus.Groups.IO group members - Thanks!!!

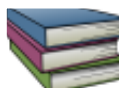


Getting Started is intended to guide the new user of N1MM Logger+, or a user making the transition from N1MM Logger classic, in chronological order to the point where he/she has a correctly installed version of N1MM Logger+ with basic logging functionality.



N1MM Manual

The Manual section will provide in-depth information for configuring and operating N1MM Logger+, beyond what is covered in Getting Started. The information in the Manual is arranged by topic areas.



Appendices

The purpose of the Appendices section is to provide a location for information not directly related to supporting the N1MM Logger+ software – but still information that users will find useful.

PC Requirements

Minimum Hardware Requirements

N1MM Logger+ incorporates the latest multi-threading technology, and will take full advantage of multi-core CPUs. It's difficult to set an absolute minimum configuration that will work under all circumstances. A single-core 1.6 GHz processor is probably the minimum required, but the CPU requirements depend quite heavily on which program options, modes, etc. are selected, so this may not be adequate depending on how you use the program. The program itself does not require a large amount of memory, but the more memory you have, the more smoothly Windows multitasking works. Memory is especially important when the CPU is a single core.

The recommended minimum graphical resolution is 1024 by 768 (SVGA), or 1366 x 768 (720P) for wide-screen monitors, with many hams running higher resolutions and dual screens. At vertical resolutions of less than 768 pixels, like many netbooks, several of the larger windows will not fit entirely on the screen.

Radio control can be done through serial ports or through a USB-to-serial adapter. CW keying, FSK RTTY and PTT can be done through serial or parallel ports, through a USB-to-serial adapter, or through K1EL's Winkeyer (an excellent solution which offloads CW processing entirely). For FSK RTTY, an extra serial port is needed. For AFSK, PSK31 and other modes requiring audio interfacing, the same methods described for phone interfacing can be applied.

SO2R “boxes” may be controlled through a hardware LPT port under 32-bit operating systems or 64-bit operating systems. Alternatively, the MicroHam USB SO2R Control Protocol and the K1XM Open Two Radio Support Protocol are both supported, for use with devices that accommodate them.

USB-to-serial converters and USB interface devices are supported through virtual serial ports provided by their associated driver software. USB-to-LPT converters cannot be used for either SO2R control or CW/PTT functions, except for the PIEXX SO2RXLAT (which is specifically designed for this purpose).

For more information see the Interfacing section.

Supported Operating Systems

- Windows 10 32/64 – preferred
- Windows 8 32/64
- Windows 7 32/64 – Microsoft support ends 2020-01-14
- Windows Vista 32/64 – not recommended
- Windows XP SP3 – not recommended

Linux and other Operating Systems will not be supported.

Windows XP and Vista startup errors

If you are still using Windows XP or Vista, you may see error messages (“404 error” or “unable to connect to server”) every time you start up the program. These error messages appear because you are using an operating system that does not support current web site security. Microsoft does not provide SSL encryption support for modern websites for XP & Vista, so the https connection to the N1MM+ web site to check for updates does not work. If your browser has been updated to allow you to connect to modern web sites, you will be able to download the latest update through your browser and update the program manually, but the automatic version check performed by the program at startup will still fail.

Unsupported operating systems are more vulnerable to attack by malware, because malware authors who find vulnerabilities know that those vulnerabilities are not going to be fixed. That leaves your system potentially open to being co-opted by malware to act as a bot and attack other systems. Do yourself and everyone else a favor and upgrade to a supported operating system.



Downloading the Software

Downloading the Software

Download site

Download links:

- Full Install: [>Downloads >Program Files >Full Install](#)
- Latest Update: [>Downloads >Program Files >N1MMplus Latest Updates](#)

To download a brief video tutorial on downloading and installing the N1MM Logger+. Note that the website Downloads menu option has changed since this video was recorded, but the installation instructions are still accurate



Download video

Full Installer

Installing N1MM Logger+ for the first time requires that you download two files – the Full Installer and the Latest Update. The Full Installer file will change infrequently, whereas the Latest Update file changes often, generally once per week.

Locate the Full Installer file on the download site under the menu selection >Downloads >Program Files >Full Install Info >Full Install File. Save the file, named **N1MM Logger+ FullInstaller [version number].exe**, to your download directory or the desktop of your PC.

You only need to do one Full Install!

Full Installers are not posted very often. If the first part of the current version number (the part before the second .) is the same on the latest Full Installer as it is on your already-installed copy of the program, you do NOT need to run a new Full Installer. To update the program, just download and install the Latest Update.

Latest Update

Locate the Latest Update file on the download site under the menu selection



>Downloads >Program Files >Latest Update Info >Latest Update Files. Look for the most recent file (the one with the highest version number – you can click on the heading of the Name column to reverse the sort order, or click on the heading of the Modified column to organize the list in date order, if necessary clicking twice to put the most recent file at the top). Save the file to the same location where you saved the Full Install file. (Exception: if the version number on the Full Install file is the same as the version number on the Latest Update, there is no need to install the Latest Update over the Full Install.)

You only need one Latest Update file!

Each Latest Update file includes the improvements and fixes from all of the preceding files. It is only necessary to download and install one Latest Update file — usually the most recent — to create a completely up-to-date version of N1MM Logger.

Filename Convention for Latest Updates

The syntax for naming Latest Update files is N1MM Logger+ Update [version number].exe. The version number is in the format x.yy.zzzz, where x is a major revision number (likely to change only rarely), yy is the major version number (which also changes only rarely), and zzzz is the minor version number (which changes with every version). Changes to the major version number yy indicate that there has been a change in the system files needed to support the program. Update installers whose yy is different from the installed version's yy will not install over the existing version. Therefore any time yy changes, users will have to download a new Full Installer program with the new yy number and go through the Full Install process before updating. On the other hand, if the yy number on the current Full Installer is the same as the yy number on your already-installed copy of the program, you do *not* need to do a new Full Install; just download and run the latest update installer. The minor version number zzzz changes every time a member of the development team makes changes to the program. New update installers are not created every time this happens; therefore, there may be gaps in the zzzz numbers. This is not a problem; unless there is a specific reason to revert to an older version, just install the latest update (the one with the highest zzzz number).



Downloading Digital Software

Downloading and Configuring Digital Software

Need-to-Know about Setting Up for Digital Modes

In order to communicate in digital modes (RTTY, PSK, or other sound card digital modes), N1MM Logger+ can either use a computer sound card or an external device called a “terminal unit” or a multi-mode TNC. Terminal units and TNCs are relatively rare nowadays, and most digital communications now use a computer sound card.

The Logger uses the sound card for digital modes via a separate process called the “digital engine”. One digital engine, MMVARI, is pre-loaded when N1MM Logger+ is first installed. MMVARI can do RTTY, PSK31, PSK63, and a few other digital modes that are not often used in contests. The Logger also supports several other digital engines, including MMTTY, 2Tone, Fldigi, WSJT-X or JTDX, but these engines are not pre-installed; they must be downloaded and installed separately. MMTTY and 2Tone can only be used for RTTY, whereas Fldigi supports a wide range of digital modes, most of which are not used for contesting. N1MM Logger+ can also use either of the WSJT-X and JTDX programs to make and log contacts in FT8 and other modes supported by these programs.

Configuring a digital engine is done within N1MM Logger+ in a few places, including the Configurer (**Config > Configure Mode Control, Audio, Other**) as well as in the Digital Interface window. The digital engines (MMVARI, MMTTY, 2Tone, Fldigi, WSJT-X and JTDX) also have their own configuration menus that need to be set up. If you are familiar with digital modes and are moving to the Logger from some other program, you might want to proceed directly to the setup instructions in the sub-sections below. If you are new to digital modes, you can find more information on RTTY and PSK in the [General RTTY and PSK Information page](#) in the manual. RTTY is particularly complex for someone coming to it for the first time; there is an excellent introduction to RTTY on [AA5AU's web pages](#) that is recommended reading for anyone starting out in RTTY.

A few notes about hardware connections for sound card digital modes (using MMTTY, 2Tone, MMVARI, Fldigi or WSJT-X/JTDX) follow. These depend on the radio, the sound card and the interface (if any) in use, and it is impossible to cover all of the possibilities in detail, but the following general comments apply:

First, you must have some means of connecting the radio's audio output to the sound card's input. The ideal connection would be from a fixed-level (“line out”) output on the radio to a “line in” input on the sound card. If your radio has one receiver, this will probably use the left channel of the sound card; with dual receivers, the second receiver may use the right channel. If your sound card does



not have a line level input, you may need to use a microphone input, and in this case you may need an attenuator to reduce the line level output from the radio to the lower level needed for the microphone level input on the sound card.

To transmit, there must be some means to convey modulation from the computer to the radio. For FSK RTTY, this is an on-off keying signal, which is normally generated by a serial port connected to the radio's FSK keying input through a simple keying circuit. This serial port cannot be the same port that is used for radio control or for a Winkeyer or other serial device. If it is a standard USB-to-serial adapter, FSK from MMTTY will require the EXTFSK or EXTFSK64 plugin. If you are using MMVARI for RTTY using FSK keying, select the appropriate plugin (FSK8250 for true serial ports, EXTFSK or EXTFSK64 for USB-to-serial adapters) in the Configurer under the Digital Modes tab). Fldigi can only do FSK keying with the help of an external circuit that converts the audio signals from these programs into an on-off keying signal.

For AFSK RTTY and for all other sound card digital modes (e.g. PSK31), there must be a connection from the sound card's output ("line out", or speaker or headphone output) to the radio's audio input. If the only audio input on the radio is a microphone input, you may need attenuation to reduce the level to avoid overdriving the transmitter.

You also need some means to control TX/RX switching (PTT). The most common method is to use hardware PTT control from a serial or parallel port via a simple keying circuit. Hardware PTT can be controlled either from the digital "engine" (MMTTY, MMVARI, Fldigi, WSJT-X or JTDX), or from N1MM Logger+ itself (this method can be used with any digital engine, including WSJT-X and JTDX). To use serial port PTT from the digital engine, you must use a different port from the one that is used by the Logger for radio control. If you have a serial port set up for FSK keying, you can use a control line (RTS or DTR) on this same port for PTT control from the digital engine.

If, as is often the case, you do not have a separate serial or parallel port available for PTT in digital modes, you can control PTT directly from the Logger. For example, if your radio control interface supports PTT using RTS or DTR on the radio control serial port, you can configure the Logger to use this method. If no method of hardware PTT control is available and if your radio supports PTT via radio command, you can use software PTT control from the Logger. Warning: Using both software and hardware PTT control at the same time can cause problems; it is recommended that you do not use both methods in parallel.

As an alternative to hardware and software PTT control, you may be able to use VOX. This does not work with all radios, it cannot be used for FSK RTTY, and setting of audio levels and VOX triggering levels can be tricky, but some users have found this to be the simplest method of PTT control, since it does not require any additional hardware connections. Some external interfaces (e.g. Signalink) perform a VOX function external to the radio, i.e. they generate a hardware PTT signal based



on the presence of an audio signal without any connection to a serial port on the computer. If you are using such an interface, or VOX within the radio, you do not configure any PTT in the Logger or in the digital engine, as PTT control in these cases is external to the software.

Setting up N1MM Logger+ for Digital Modes

First, make sure you are familiar with basic operation of N1MM Logger+ in CW and SSB. It's not a good idea to try to use the program in digital modes if you aren't familiar with at least the basic operation of the program. For FT8 and similar modes, it is recommended that you become familiar with operating these modes running the WSJT-X or JTDX program on its own before attempting interoperation with N1MM+, as the operation in these modes is done from within the JT-mode program rather than directly within N1MM+ as for the older digital modes.

Once you are ready to begin, decide which digital engine(s) you want to use – an external TU/TNC, MMTTY, 2Tone, MMVARI, Fldigi, WSJT-X or JTDX. One of these (MMVARI) is built in to the Logger, but the others all will need to be downloaded. For the keyboard-to-keyboard modes (RTTY, PSK31, etc.), each digital engine used by the Logger stores its configuration information in the directory the engine is run from (this does not apply to WSJT-X and JTDX). For that reason, you should create a separate directory for each copy, separate from the directory you use when you run it stand-alone or from some other logging program. If you use more than one copy of a digital engine (for example, for SO2V or SO2R, or for additional RX-only windows), you need a separate directory for each copy. For more detailed information, check out the sections on [Downloading and Installing MMTTY](#), [2Tone](#) and [fldigi](#) in the manual

After these preliminaries, start N1MM Logger+ and open the Configurer (**Config > Configure Ports, Audio, Mode Control, Other**). Make sure the **Hardware** tab is selected (this is the tab the Configurer starts up in by default).

The following paragraphs deal with setup for digital modes like RTTY and PSK modes. For the setup for operating with WSJT-X or JTDX, see the manual documentation for the [WSJT Decode List](#) window.

In what follows, it is assumed that you already have radio control, CW keying and PTT control configured and working, and what you are trying to do is add in the capability for digital modes.

In many cases, especially if you are planning to use AFSK, you will already have PTT control configured from the Logger. If the same method you use in other modes is acceptable for digital modes, you don't need to do anything special about PTT for digital modes. If you are planning to use FSK for RTTY, you will be setting up a serial port for FSK keying from within the digital engine, and you can use that same serial port for PTT control in RTTY. If you are using VOX (or an external VOX such as a



Signalink), you do not need to configure PTT control in the Configurer.

All that being said, there are two cases where you need to do something about PTT control for digital modes in the Configurer. The first is if you plan to use MMVARI as your digital engine, and you want to use a control line from a serial port for PTT control. In that case, you must designate that serial port in the Configurer, check the **Digital** check box for that port, set the appropriate control line (DTR or RTS) for PTT, and set the **DigWndNr** to 1 (or 2, for the second DI window in SO2R/SO2V). The second case occurs if you are using a single serial port interface for both CW/PTT keying in CW/SSB, and also for FSK keying in RTTY. In that case you must check both the **Digital** and **CW/Other** check boxes for that port, configure DTR and RTS for CW/SSB, and set the **DigWndNr** to 1 (2 for the second DI window in SO2R and SO2V).

Next, you need to select the **Digital Modes** tab in the Configurer. First, set the **TU Type** to Soundcard (unless you happen to be using a hardware TU/TNC). If your main digital engine is MMTTY or 2Tone, then under **DI-1 MMTTY Setup**, select AFSK or FSK as appropriate for your setup and set the MMTTY Path to point to the copy of MMTTY.exe or 2Tone.exe you will be using with the Logger. If you will be doing SO2V or SO2R, repeat for a separate copy of the digital engine under **DI-2 MMTTY Setup**. If you will be using Fldigi, there are separate places to enter the paths to Fldigi.exe. For all of these, it is recommended that you do not try typing in the path directly. Instead, click on the **Select** button, which opens a standard Windows file Open dialog window, and then navigate till you find the desired .exe file and select it.

Once the paths to the digital engines are set up, select the **Mode Control** tab in the Configurer. On the right side, beside RTTY, set the **Mode sent to radio** – this should be RTTY if you are using FSK, but if you are using AFSK, it should be either AFSK (if your radio offers a separate mode for AFSK RTTY), LSB (for most radios with MMTTY or 2Tone), or USB (for Fldigi).

This completes the basic steps in the N1MM Logger+ Configurer. For more detailed explanation of the various options available, see the **Configurer** section of the manual.

Back in the main Entry window, if you have not already done so, choose a contest type that allows digital modes (i.e. not a CW- or SSB-only contest), and set the **Mode Category** in the **Contest Setup** window to one that includes RTTY or Digital (don't choose SSB+CW – that's for CW+SSB only; choose SSB+CW+DIG instead). Type RTTY into the call sign box and press Enter. This should open the Digital Interface window. If it does not, use the Window > Digital Interface menu item to open the Digital Interface window (in SO2R/SO2V, each Entry window has its own Digital Interface window that opens from that Entry window's menu). If your preferred digital engine does not open (e.g. if you see the MMVARI window when you wanted MMTTY), then in the Digital Interface window use the **Interface** menu



item to switch to the digital engine you want to use (use the MMTTY menu setting for both MMTTY and 2Tone).

Select the **Setup > Settings** menu item in the Digital Interface window. Under Preferred RTTY Interface, select your preferred digital engine. Under Alignment Frequency, enter your preferred Mark audio frequency (e.g. 2125 Hz). If you are using MMTTY, then under **MMTTY Window Settings**, select either Normal or Control Menus, in order to have easy access to the MMTTY setup window. When you have completed the setup in the Digital Setup window, click on **Save Configuration**.

There are a host of other options in the Digital Interface and Digital Setup windows. A complete reference manual for the menu options in the DI window, the Digital Setup window and the main DI window is [here](#).

You're not done yet. Now you have to complete the configuration inside the digital engine itself. This is especially important for FSK, since the configuration of the FSK port is carried out inside the digital engine, not in the N1MM Logger+ program. There are separate chapters in the manual for [MMTTY](#), [MMVARI](#), [Fldigi](#), and [TNCs/TUs](#). There are too many possibilities to cover here, so consult the chapter(s) appropriate to your situation and complete the setup as described there. For instructions on configuring WSJT-X for interoperation with N1MM+, see the [WSJT Decode List](#) window section of the manual.



Installing and Upgrading N1MM Logger+

Installing and Upgrading N1MM Logger+

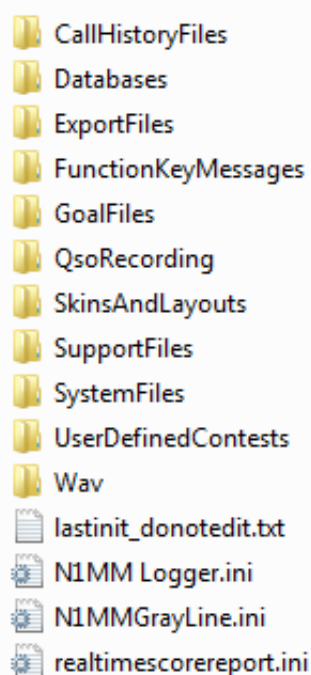
First-Time Installation Instructions

Please Note – These instructions apply both for first-time users and for experienced users of N1MM Logger Classic starting out with N1MM Logger+. Note that you can leave N1MM Logger Classic on your PC, and even continue to run it **alternatively** with N1MM Logger+. **Just don't try to run the two simultaneously.**

Installing

N1MM Logger+ has adopted the Windows convention for file locations, so you should be able to install **program files** in the default locations provided by the Installer: **C:\Program Files** for 32-bit systems, and **C:\Program Files (X86)** for 64-bit systems. Program files will be installed in one or the other as appropriate, and all user data files will be installed elsewhere. By default the user files location will be in your **Documents** folder, in a sub-folder titled **N1MM Logger+**. **We strongly recommend accepting the default locations, and installing for a single Windows logon. If you have to have more than one, your options are [here](#).**

Here are the contents of the user data/user files folder:





This folder is important, because the program looks in these sub-folders for support files that it needs – things like your stored message files, call history files, and so on. When created or modified by N1MM Logger+, files are placed in their correct folders, but if you want to move files from your N1MM Classic installation, you need to move them to the appropriate Document folder. Any .wav files used for SSB contests should be stored in the Wav folder; if you use the {OPERATOR} macro for wave files in individual operators' voices, those wave files should be stored under sub-folders within the Wav folder titled with the operator's callsign.

Be sure not to delete the four files below the folders.

During a Full Install, the installer downloads so-called “prerequisite” files from the Internet. For this reason, please be sure you are connected to the Internet when doing a Full Install. Also, make sure that other programs that might be using system components that are part of the install (such as digital mode programs) are not running when you do the Full Install.

Avoiding Security Problems During Installation

N1MM Logger+ uses a number of .dll and .ocx files – for example, inport32.dll is used as its interface to LPT ports, and n1mmv5wav.ocx powers the audio recording and playback functions. Various security provisions in Windows, as well as various after-market security software, can prevent the installation or registration of these files.

A few simple steps can work around these problems. First, download the Full Installer and Latest Update installers to a regular (non-temporary) directory on your hard drive. Then when you run the Full Install, right-click on the filename and select “Run as Administrator”. This may be necessary even if your User account has Administrator privileges.

Once you run the Full and Latest Update installers as an Administrator, the needed .dll and .ocx files should all be properly registered. If you are using the parallel (LPT) port for CW, PTT or antenna selection, you will also need to run the program itself for the first time by right-clicking and selecting “Run as Administrator”, so that some internal file-shuffling can take place. This should not be necessary thereafter – just run as usual from a desktop icon or shortcut.

Windows Settings that may affect program operation

There are some default settings in Windows that can affect the way the program operates. To avoid problems, it is suggested that you change these settings. Note that these changes are in Windows, not in N1MM Logger+.

The first has to do with USB hubs (ports). The Windows default behavior for USB

hubs is to shut them down to save power after a period of inactivity. Unfortunately, the only activity Windows appears to be aware of is keyboard or mouse activity. A USB port that is being used for something else, such as a USB-to-serial adapter, looks to Windows as if it is inactive, and Windows shuts that USB hub down after a few minutes. This will cause the port to stop working, and if you go into the Configurer to make changes, the program will be unable to open the port when you exit the Configurer.

The solution to this comes in two steps, but first, **be sure that the USB device you're having trouble with is connected to its port.** Now open Device Manager, expand the section on Universal Serial Bus controllers, and then open each entry labelled either "Generic USB Hub", "USB Root Hub" or "USB 3.0 eXtensible Host Controller" (or something similar), open its Properties dialog, select the Power Management tab, and uncheck the check box called "Allow the computer to turn off this device to save power".

The second involves Power Options on the Control Panel. You will not necessarily find all of these settings on every system, but every system running N1MM Logger+ or any other logging software should be set to minimize Windows "power saving".

Open the Control Panel and select Power Options. One of the "Plans" will be "High Performance" – select it. Then click "Change plan settings" and set "put the computer to sleep" to "never". If found, also select "Change advanced power settings" and set "Sleep | "Hibernate after" to "Never" and "Allow hybrid sleep" to "Off". In "USB Settings" set "USB selective suspend setting" to "Disabled" and under "PCI Express" set "Link State Power Management" to "Off". Also set "Wireless adapter Settings" to "Maximum Performance".

These settings should prevent the computer from going to sleep, shutting down USB ports and disabling the network interface when it is plugged in – when you want to keep background tasks running.

There is a third setting that may require attention in Windows 10. In the Windows Settings app, select Privacy, and then among the functions on the left side of the window, select Microphone. An option should appear called "Let apps use my microphone". Set this option to On. Starting with the Spring 2018 update of Windows 10, Windows interprets this option to apply to all sound card inputs, not just to the microphone input on the default sound card. If this option is set to Off, neither N1MM Logger+ nor any of the other programs it uses to decode digital modes, etc. will be allowed access to any sound card inputs.

Here is another tip that has nothing to do with power management or sound cards, and does not actually affect program operation, but may have an impact on your ability to find some of the N1MM Logger+ files. In Windows Explorer, under the Tools option, select Folder Options. Click on the View tab, and look down the list for a check box called "Hide extensions for known file types". The default for this



option is checked, requiring you to identify file types by their icons alone. If you leave it at the default, you may have trouble finding files referred to either in the documentation or by people giving help instructions on the user group. If there are files with similar file names except for different extensions, you may have trouble telling which is which. Unchecking this option will make the full file names visible in Windows Explorer.

Regarding Windows time settings, you do not have to set your computer to UTC in order to get UTC times in your log, though you can of course do so. If you set your computer to your correct time zone including the correct DST setting, set the computer's time to match your local time, Windows and N1MM Logger+ between them will take care of the rest.

You can even operate straight through the daylight savings time switch in March or November (e.g. during Sweepstakes CW) and while you will see your computer's time display change by an hour at 2 am if you look closely, N1MM Logger+ will not skip a beat; it will log all of your contacts with the correct UTC time.

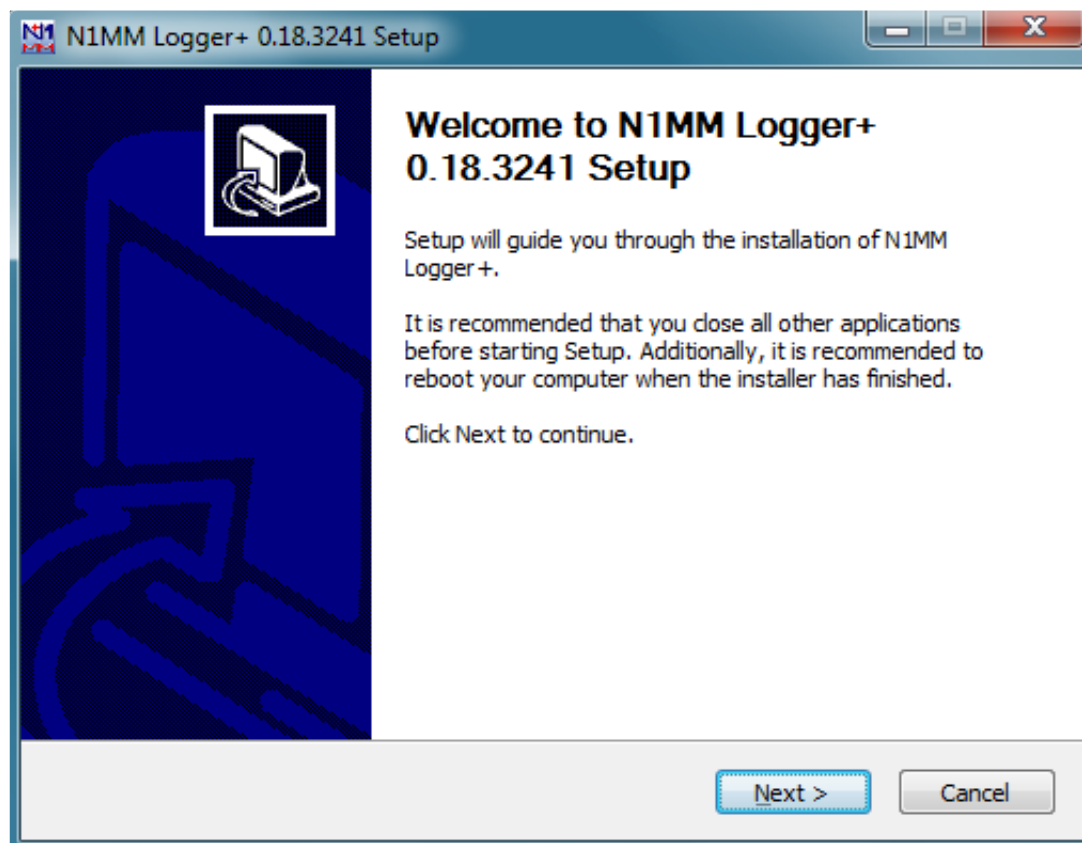
Beginning the Installation

These instructions are specifically for the first installation on a computer. See the section below on Installing the Latest Update for instructions on subsequent updates.

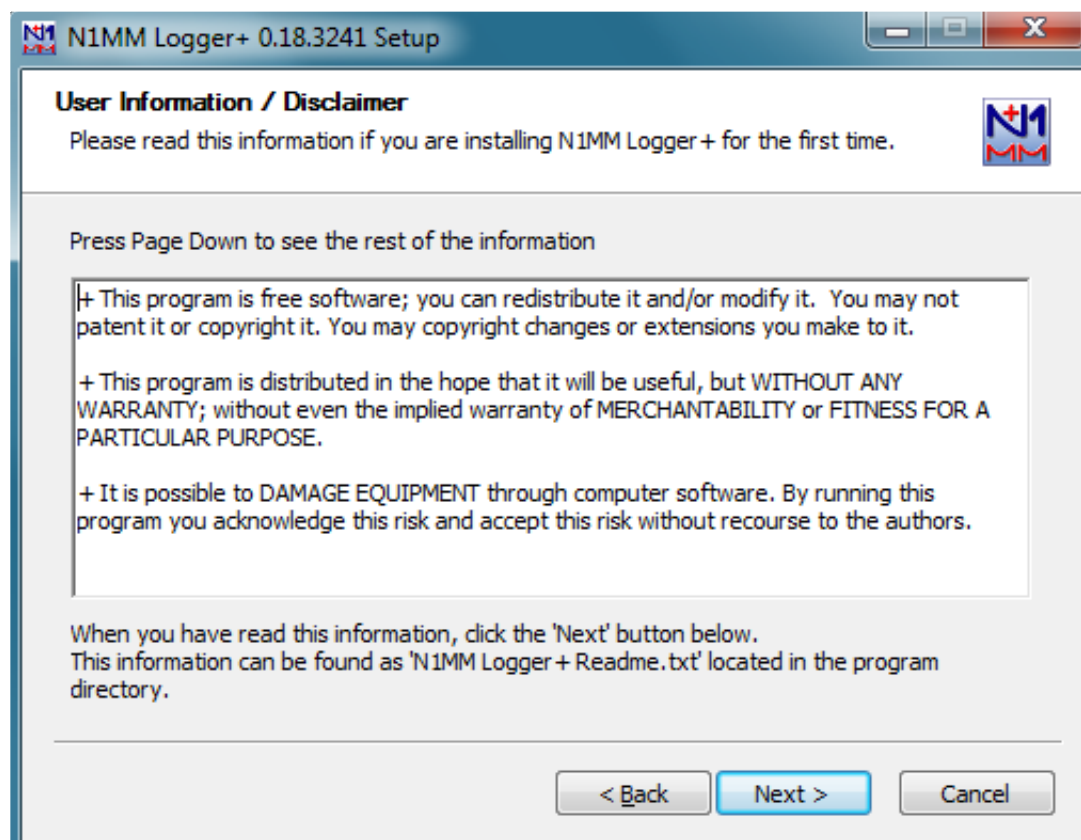
Download the Full Install from the Files area on the n1mmplus website [here](#).

The full installer will be a file with a name in the form N1MM Logger+ FullInstaller x.yy.zzzz.exe . While you are in the Downloads area of the web site, also take a look at the Latest Updates [here](#). If there is an update file with a zzzz version number that is higher than the zzzz number on the full installer file, download that file as well. As soon as the full installer has completed, you will want to run the update installer to bring the installed program up to the currently supported version.

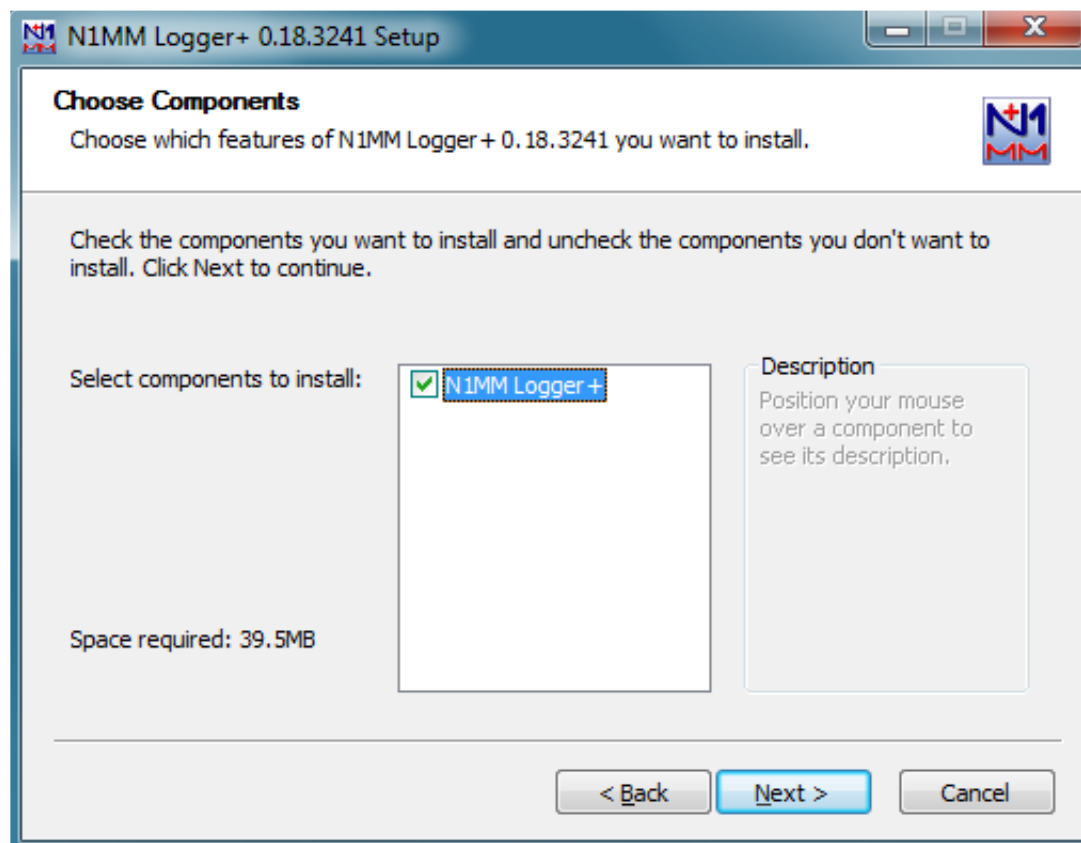
Before starting the install process, if you are running other programs that use the same system components (including digital-mode programs like 2Tone and WinWarbler), shut those programs down. Now run the full installer program. Windows will give you the standard installation prompt asking whether you want to allow the program to make changes – answer “Yes”. You should then see the following welcome dialog:



Click on Next. You will be asked to agree to a straightforward freeware license:

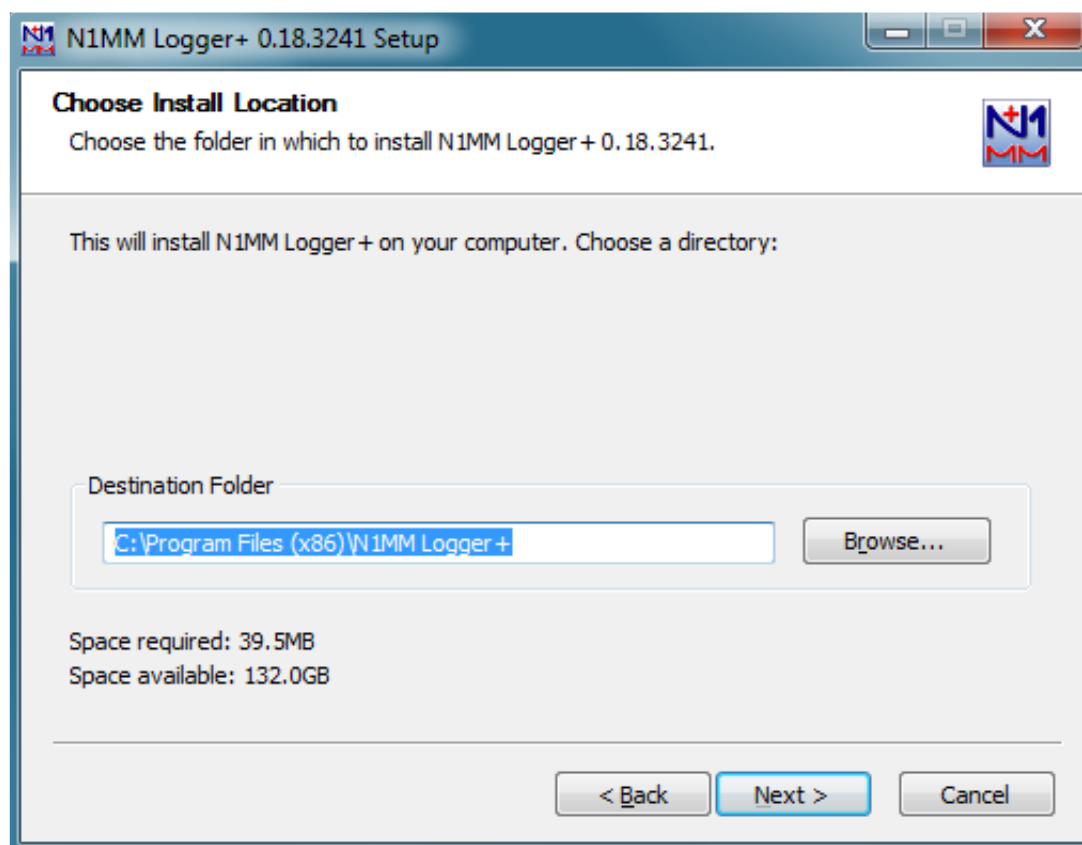


Click on Next. You will be given a choice of files to install. At the time of initial release, there is only one option, but at some future date other optional components may be added, and this dialog will be where you choose the options to be installed:



N1MM Logger+ requires two separate installation locations. One is for the program itself, plus support files that are never changed except by the update installer. The other location is for all files that may be written to either by the program during operation or by the user, to store user-defined preferences and support information; these include the databases, ini files, error logs, function key message files, call history files, country files, super check partial files, wav files, qso recordings, user-defined contest (UDC) files, and so on and so on.

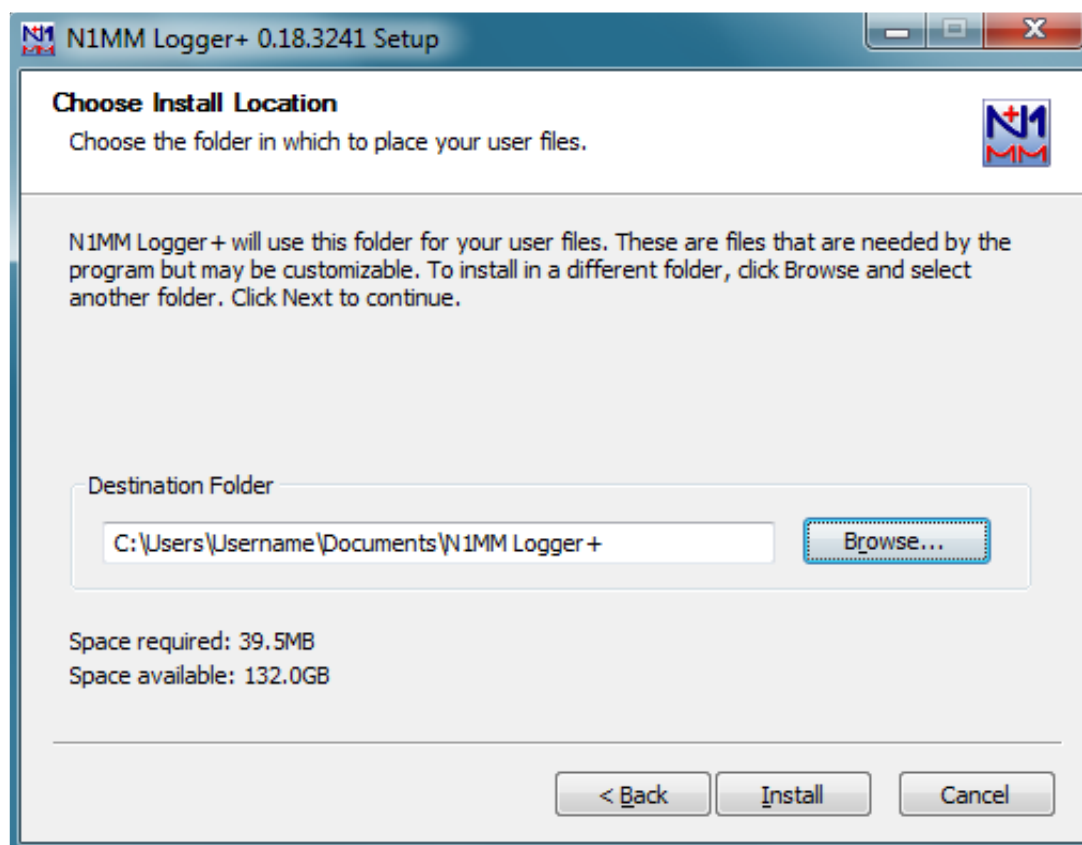
The first location, for the program itself, defaults to **C:\Program Files\N1MM Logger+** on 32-bit systems, or **C:\Program Files(x86)\N1MM Logger+** on 64-bit systems. For almost all users, this default location is suitable and should not be changed. The dialog window in which this location is specified looks like this:



The second location, for user-modifiable or program-modifiable files, defaults to a location inside your **Documents** folder. In Windows Vista, Windows 7 and newer systems, this is at **C:\Users\[Your Windows Username]\Documents\N1MM Logger+** (in Windows XP SP3, this would be **C:\Documents and Settings\[Your Windows Username]\Documents\N1MM Logger+**). For a typical single-user system, this default is appropriate, and even on multiple-user systems it is suggested that you accept the default for the initial install.

Do Not Install to a Cloud Server or Cloud Backup!

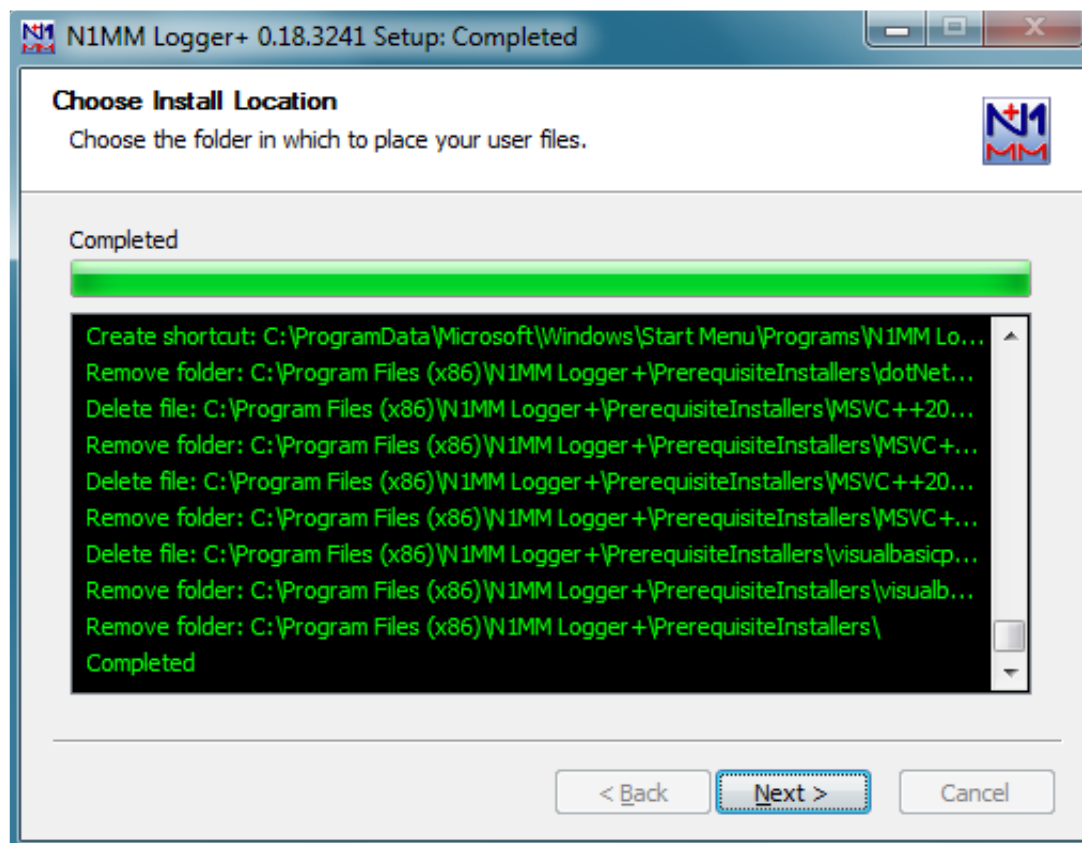
If you are using some kind of cloud backup, such as DropBox, Google Drive or OneDrive in Windows 10, you should not install the user files area in the cloud, nor even in a location that is synced to the cloud, because the syncing operation has been observed to corrupt the program's database files. Make sure that the location where the installer places the user files area is on your local drive (there should not be a OneDrive, GoogleDrive or Dropbox anywhere in the path name), but do not use a location inside the Program Files or Program Files (x86) path. If necessary, you can create a new folder at the top level of the directory tree (e.g. C:\HamRadio) into which you can direct the installer to place the user files area.



When you click Install, the Full Installer will

- Install all needed files on your computer to run N1MM Logger+
- Update your system files where needed

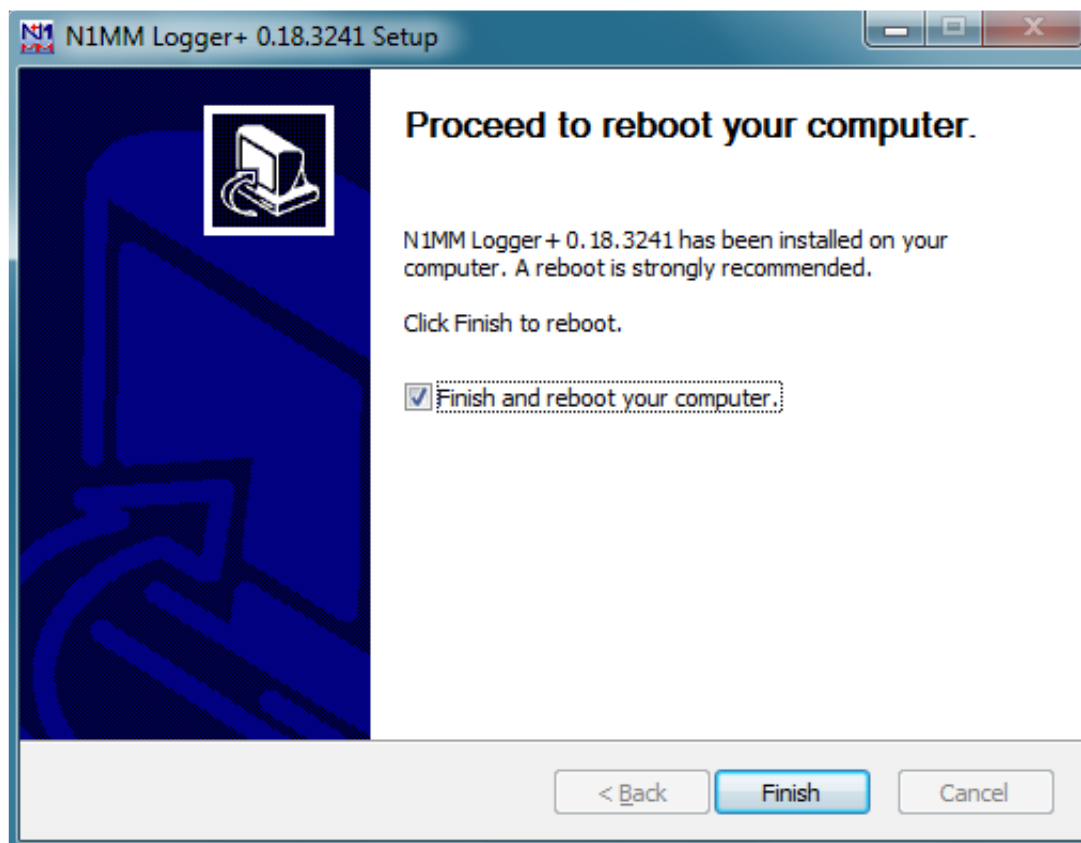
You will find that certain parts of the Full Installer installation routine take quite a long time. The installation program has **not** failed, so just let it run to completion. Subsequent updates are much faster. Once the installation has completed, you should see the following window:



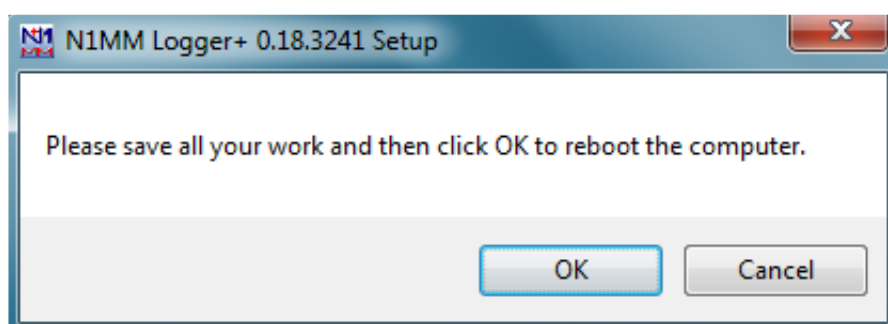
Do Not Overwrite Newer System Files

When running the Full Installer your computer may report that certain system files are already installed on your system and are newer than the ones you are trying to install. If it asks if you want to replace a newer, existing file with an older file in the Full Install, select 'No'. You do not want to overwrite newer system files.

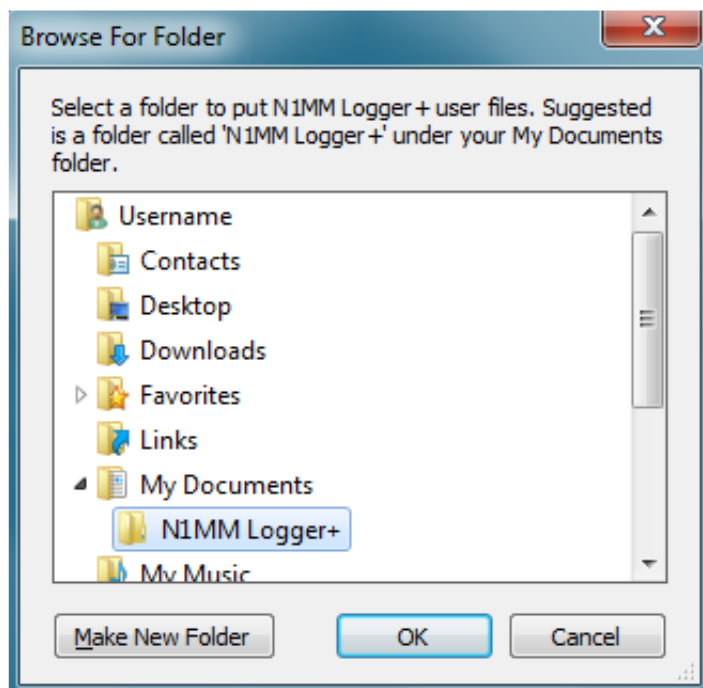
After you click on the Next button, you will see the following window:



The installation process requires that the computer be rebooted in order to finalize the installation of some system files (you should be familiar with this from Windows Update and from other program installation processes). This only happens with the Full Installer, not on incremental updates. Leave the “Finish and reboot the computer” check box checked and click on Finish. You will be prompted one more time to confirm:

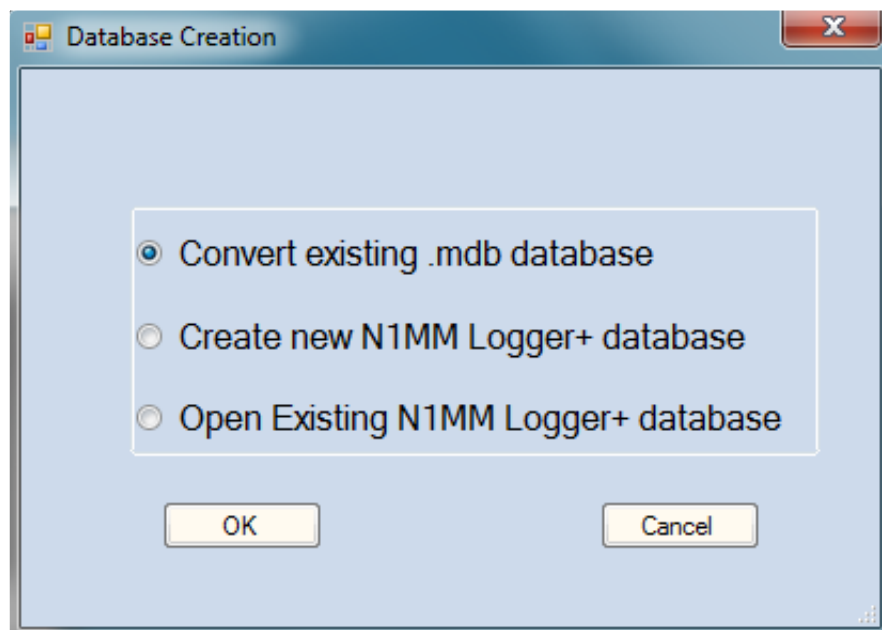


After the computer reboots, if this is the first time N1MM Logger+ has been installed on your computer, the installer will ask you to set up an initial empty database and enter your station information into that database. If the installer asks you to browse for the folder in which user files will be placed, make sure that this is the same folder that was specified as the User Files folder earlier in the installation process:

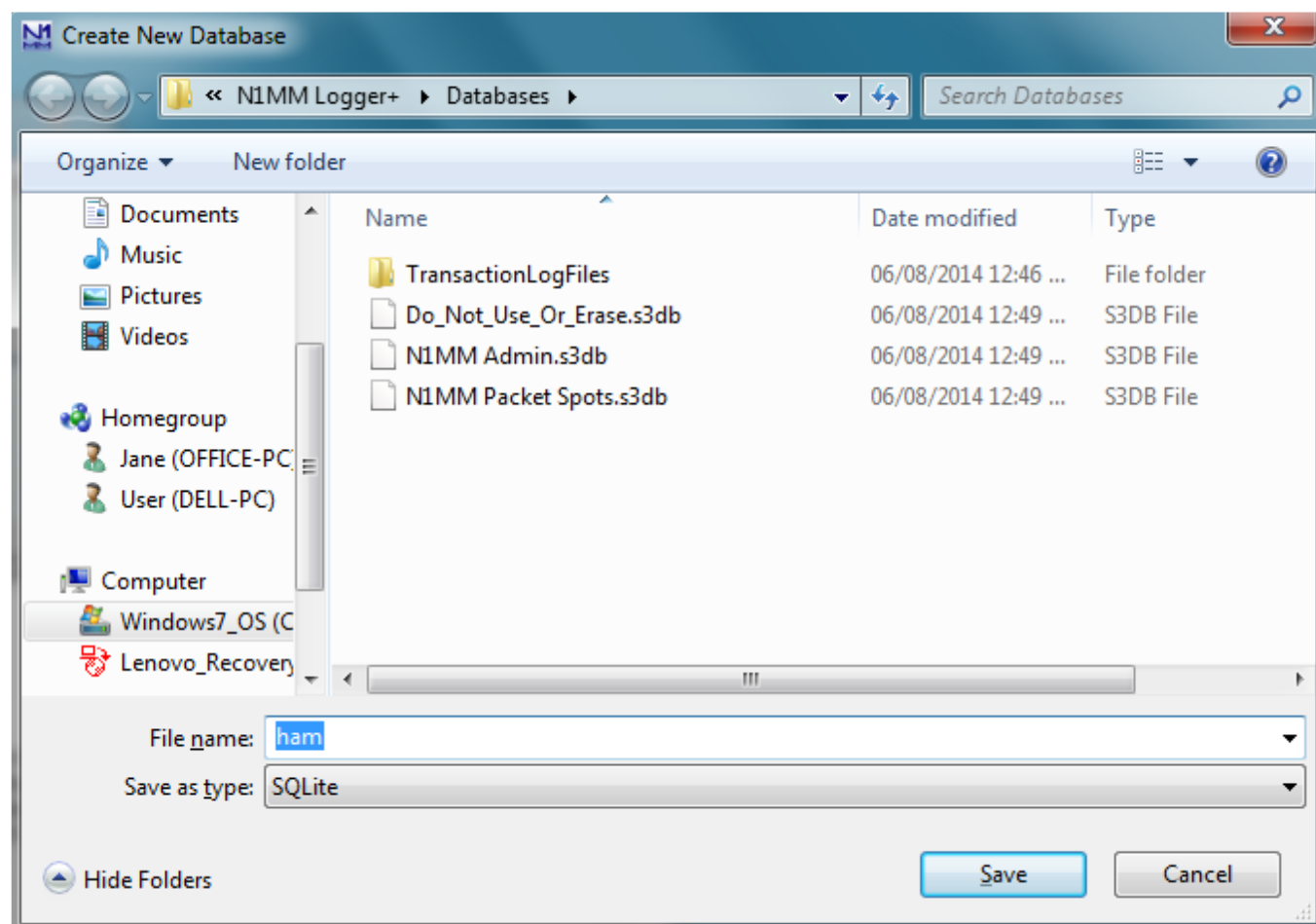


The next dialog will ask you to create a new database. You will notice that this dialog also offers the option of converting an existing N1MM Logger Classic mdb database. Because there is a possibility that an existing database may have minor problems that don't stop it from working in Classic but may cause the conversion routines to stumble, it is strongly suggested that at this point you create a new database. There is a menu option in Logger+ to convert Classic databases to Plus which you can use later, but on the initial install it is safest to ensure that you have a known-good new empty database to work from.

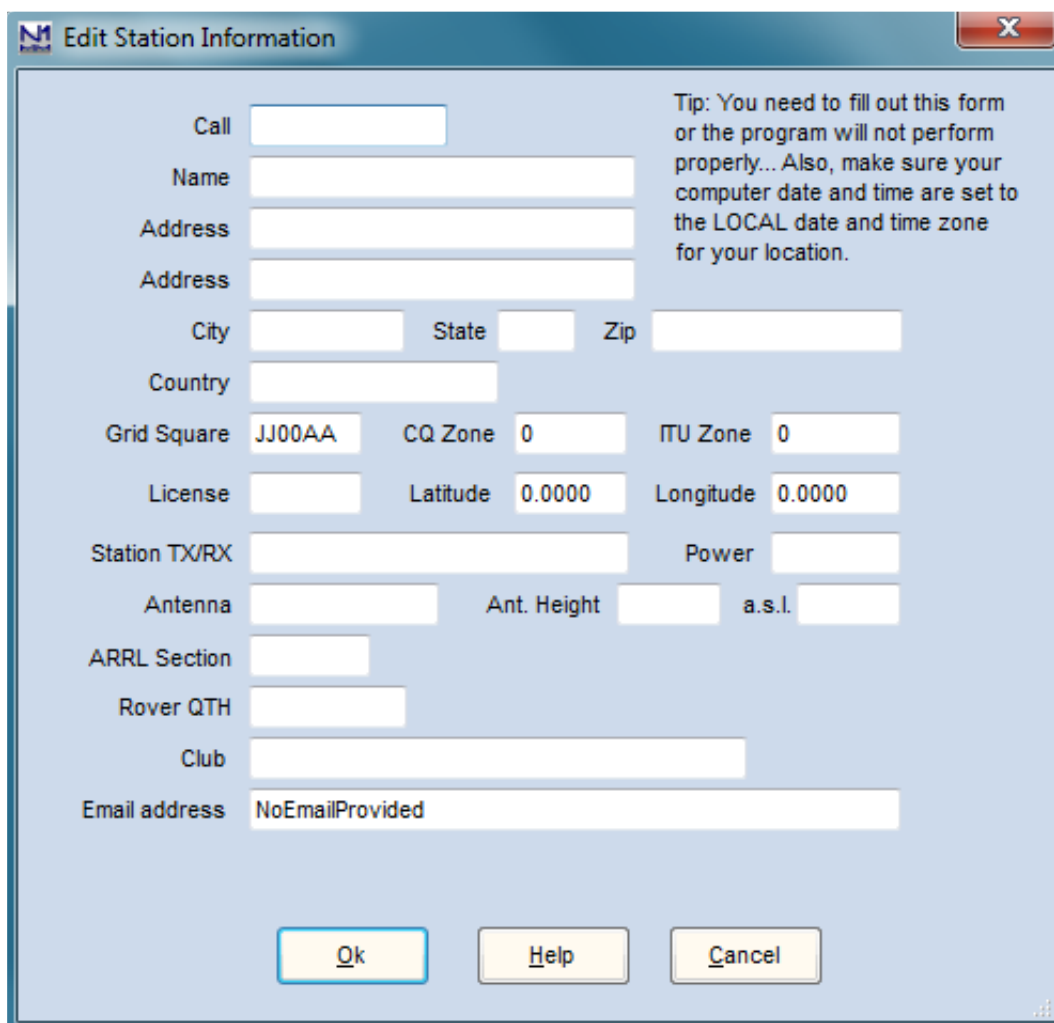
If this is a new install, you should not see a warning message that suggests that your ini file may be corrupted and you should copy from a .bak file, but if you do see such a message on a new full install, just ignore it and select the option to create a new database.



Choose the “Create new N1MM Logger+ database” option and click on OK. You will be presented with a new file dialog in which you can specify the name of the new database; the default file name is ham.s3db . You can change the “ham” to something else, but do not change the filename extension. Do not delete any of the three files that were placed there by the Installer; the program needs these files in addition to the new database you are creating.



Finally, the program will present you with the Edit Station Information dialog:



The dialog box is titled "Edit Station Information" and contains a tip: "Tip: You need to fill out this form or the program will not perform properly... Also, make sure your computer date and time are set to the LOCAL date and time zone for your location." The form includes the following fields:

Call			
Name			
Address			
Address			
City	State	Zip	
Country			
Grid Square	JJ00AA	CQ Zone	0
		ITU Zone	0
License		Latitude	0.0000
		Longitude	0.0000
Station TX/RX			Power
Antenna		Ant. Height	a.s.l.
ARRL Section			
Rover QTH			
Club			
Email address	NoEmailProvided		

Buttons: Ok, Help, Cancel

Fill in the information in this dialog. At an absolute minimum, you will need to fill in the Call box and the ARRL Section box.

The Call box contains the station callsign that will be used for all contest logs in this database; this is the callsign that is output in every QSO line in exported Cabrillo files. It is also the callsign that is inserted into function key messages using the {MYCALL} and * macros.

The ARRL Section box contains the ARRL/RAC section for stations in the US, US possessions and Canada; all other stations must fill in this box with the letters DX . This box is used in many contests, not just ARRL contests, so even if you don't plan to enter any ARRL contests you should fill it in.

If you want the program to display correct beam headings to stations you work, you should also fill in the Grid Square box with the correct grid square for the location



you are operating from. Doing so will automatically fill in your Latitude and Longitude; alternatively you can fill in the Lat and Long and the program will compute your Grid Square.

The name and address boxes are output in the header of Cabrillo files, so it is recommended that these be filled in as well. Note that this is your mailing address, not necessarily the address from which you operate.

The Club box denotes the club towards which your scores will be counted in club competitions in those contests that support this.

Once your station information has been entered and stored in the database, the initial installation process is complete.

Installing the Latest Update

After you have completed the initial install, you should go back to the n1mmplus web site and find the update file for the latest version you find there. The updated version installer will have a file name in the form N1MM Logger+ Update x.yy.zzzz.exe . If the version number zzzz is different from (higher than) the version number of the full (or your most recent) install, you should download this file, start it, and follow its simple steps (essentially the same as the first few steps of the full install process) to get fully up to date. The update will take a much shorter time to install than the full install did.

Note that updates are cumulative; you do not need to install all of the updates you find on the web site, just the latest one. During the initial beta testing phase, new update installers will be uploaded frequently (probably daily, at least initially). Always make sure you have the latest update installed before reporting bugs or problems.

There may also be new full installer versions uploaded frequently during beta testing. If there is a new full installer with a newer version number than the one you originally installed, but the first part of the version number (the x.yy part) is the same as before, you do NOT need to download or run this newer full installer. Just download the update with the new version number and run it. The only time you need to run a new full installer after the first time is when the first part of the version number (x.yy) changes.

A Note on N1MM Logger+ Version Numbers

The version number for N1MM Logger+ releases contains three components x.yy.zzzz (as in 0.18.3241). The first component, x, denotes major program revisions or status changes (e.g. “production” vs. “beta”) and is not expected to change often. The second component, yy, denotes a major update level. When you are doing updates, the “yy” in the update installer must agree with the “yy” in the already-installed version. If yy has been changed, you will have to go through the



Full Installation process again with a new Full Installer before you can install updates with the new yy version number. The third number, zzzz, is the minor update number. This number may change as often as several times in a single day as members of the development team make changes. There will not be a new update installer created every time this number changes, so don't be surprised if the numbers on consecutive updates differ by more than 1. Changes at this level are always cumulative, i.e. you don't need to worry about intermediate updates, just download and install the latest update (highest minor update number) over the existing program, as long as the major update level is the same.

Using the Program the First Time

Edit Station Information

The first thing to do after starting the program is to enter your station information if you have not already done so. This dialog will open automatically with your first launch of N1MM Logger+. For subsequent changes, select Change Your Station Data from the Config menu in the Entry window.

Your Station Data dialog will be similar to this one. **Note: a “dialog” is simply a window in which you can enter information. The term is often used interchangeably with “window”.**



 Edit Station Information

Call

Name

Address

Address

City State Zip

Country

Grid Square CQ Zone ITU Zone

License Latitude Longitude

Station TX/RX Power

Antenna Ant. Height a.s.l.

ARRL Section Packet Node

Rover QTH

Club

email address

Tip: You need to fill out this form or the program will not perform properly... Also, make sure your computer date and time are set to the LOCAL date and time zone for your

Ok

Help

Cancel



The information in this dialog is self-explanatory, but it is very important that it be accurate. The ARRL Section is used to distinguish between in-state and out-of-state status for QSO parties, and between W/VE and DX in a number of ARRL contests. CQ and ITU zones are essential for some contests. Your full mailing address is inserted in the Cabrillo file header, and tells contest organizers where to send your certificate. In order for the program to calculate accurate beam headings, you will need to put your longitude and latitude into the appropriate textboxes; you can do this simply by entering your grid square into the grid square box.

Also make sure that you enter your call as the station call sign, as this will be the call sign that appears in every QSO line in your Cabrillo files. **Don't leave any example entries that may be in these fields at start-up.**

Many of the textboxes in this dialog are used when creating contests or during contests.

- **ARRL Section** and State textboxes are used in some contests and QSO parties to determine if you are in or outside a state or province. **Non-US/VE stations should enter "DX" here.**
- **Latitude** and **Longitude** are used to calculate the distance and bearing to another station/country (for HF contests)
- For **VHF contests** (those with VHF in the contest name) the **Grid Square** textbox (4 or 6 digit) in the Station dialog is used to determine bearings, rather than latitude and longitude.
- Contents of the Latitude and Longitude textboxes update when the Grid Square textbox is changed and vice versa.
- **Club** normally has to be spelled out completely in order for it to be accepted by contest organizers in contests with a club competition, so for example enter Yankee Clipper Contest Club rather than YCCC.

Adding N1MM Users

This seemingly innocuous title actually addresses an area in which there are fairly significant changes from N1MM Logger Classic, in particular because of the adoption of Windows user file storage standards, described above. Because user files are linked to the log-on username currently in use, User A's files – not just databases, but all the types of files stored in the My Documents folder – will not be seen when User B logs onto the computer under a different Windows user name, or by using the Windows "Switch User" command. There are a number of ways of dealing with this:

1. **RECOMMENDED METHOD:** Use one Windows logon identity for all operators, and use the [OPON](#) (Ctrl+O) function to identify the operator for any given operation. This way all of the user files will be shared, except for the .wav



files used for stored phone messages, which will follow the operator's callsign. Operators can set up individual Window layouts with the Tools > Save Window Positions and Restore Window Positions functions. If desired, operators can also set up their own databases and switch manually from the File menu. This is the method that will be most familiar to users of N1MM Logger Classic.

2. Use individual Windows logon identities for each operator. When the new operator runs N1MM Logger+ for the first time, it will create a new user files area for the Logger in that user's My Documents folder. During the process, it will ask the user to create a new database and enter the station data. Once this has been done, each operator is free to edit anything in their personal user files area to suit. This "individual login" method will result in different station callsigns, different databases, different contests, different Function Keys, different ...everything - except for the N1MM+ program itself. The individual operator will not have access to any of the databases created by other operators under separate logons. In effect, each user will have their own independent copy of the Logger, except that all of them will always have the same version of the program.
3. Use a shared document folder for user files for all logon identities. This method can be combined with the previous one. You can do this by creating a copy of the initial user file area in the first user's Documents folder in a publicly-accessible location. In Windows 7, 8 and 8.1, the logical location to do this would be C:\Users\Public\Documents\N1MMLogger+. In Windows XP, it would be C:\Documents and Settings\All Users\N1MMLogger+. Once this user file area has been created, all users on that computer will have access to it. Each user can then set up a second desktop icon for the program that uses a command-line option to allow the program to use a user file area that is different from the initial user-specific area. With a setup like this, users can choose either to use their own individual file areas or to use the shared user file area simply by choosing which desktop icon to run the program from. This is described in more detail in [this part](#) of the manual.

Subsequent Installation of the Latest Update of the Software

Update philosophy

Many of us are used to always being "one version behind" in the software we use, in order to avoid bugs that may have been introduced in the latest version. But because N1MM Logger+ is updated frequently, the opposite is true. You are always encouraged to use the latest version — in general, bug reports and feature requests should only be made after checking to make sure the latest version does not already include the bug fix or feature that you want, and also after checking the user group to see whether the request has already been made by someone else (please refrain from "me too" posts and requests).

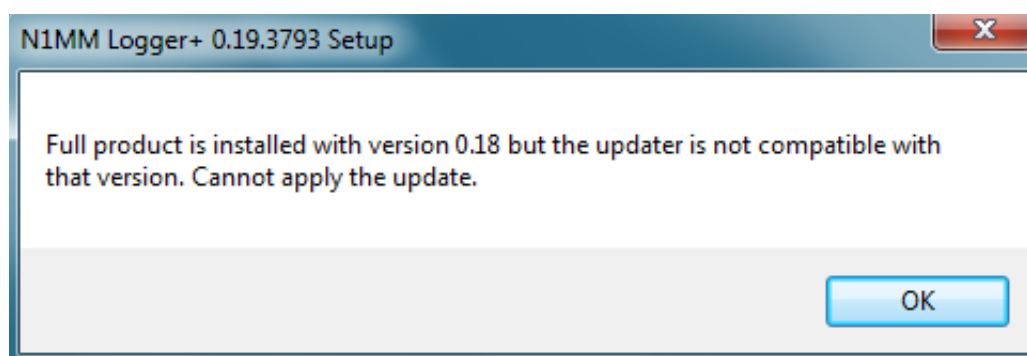
When it is started, the Logger checks the web site for new versions. If a new version has been released since the last time the program was run, the program will offer to download and install the newer version. It is not necessary to accept the offer, although it is recommended that you do so. This check will only be done once per new version, i.e. if you do not accept the offer to download and install a new version, you will not be informed again about that version. The next offer to update will be displayed only after an even newer version has been made available.

An e-mail will also be sent out periodically to announce new versions (updates) of the program to the groups.io reflector members. If you wish to do an update manually, download **only** the Latest Update installer. Use the link contained in the announcement e-mail to the group, or open [this web page](#) and select the update you want. If you have not updated for a while, you do not need to install any of the intermediate versions – just go right to the latest. The only exception might be updates that are marked as “Experimental” or otherwise explicitly marked as not for general use. These are very rare.

The Latest Update installer contains the latest .exes and other necessary files. Run this installer and it will quickly overwrite any old versions in the program directory.

Note that it is usually not necessary to run a new Full Installer. The only time this is necessary is when the major version number (the x.yy part of the x.yy.zzzz version number) changes. If the only change in version numbers is in the minor version number (the zzzz part), simply running the latest Update installer is all you need to do to upgrade to the latest version.

If you attempt to run an update installer whose major revision number is different from the previously-installed version on your computer (e.g. if the installed version number on your computer is 0.18.zzzz and the version number of the new update installer is 0.19.zzzz), you will see a message similar to the following:



If you see this message, download the latest Full installer and install it. You do not need to uninstall the previous version; the new full installer will overwrite any old versions that need to be updated. After the full installer has run, you will be asked to restart your computer in order to complete the process of updating system files; this only happens with the full installer, not with normal updates using the latest

Update installer. After the full install has completed and your computer has been restarted, you may proceed to install the latest update if its minor revision number is different from the minor revision number of the full installer you just ran.

Manually Installing a Latest Update

If you encounter an error when attempting to automatically install a Latest Update, you will need to get the file the old-fashioned way. To update manually:

- Go to the website
- Navigate to >Downloads >Program Files >Latest Update Files
- Right-click and Download the most recent “Latest Update” exe file
- Execute that EXE file locally from Windows File Explorer

Thereafter the Updates will resume automatic notifications.

Moving N1MM Logger+ to a New Computer

The easiest and best approach is simply to run the Full Installer and Latest Update to install the program on the new computer. Now copy your **Documents\N1MM Logger+** folder and subfolders from the old machine to the same location on the new one. Overwrite any “starter” versions of files and folders that are already there.

We recommend deleting or renaming your old **N1MMLogger.ini** file, so that the program will create a new one. You can try keeping the old .ini file, but you will probably find that your old .ini file won't work properly, because port numbers, port addresses, sound card numbers and other hardware-related items in the .ini file will probably be different on the new machine. It is a lot easier to make those changes in the Configurer than using Notepad and editing the old.ini file.

Moving Data from an N1MM Logger Classic Installation to N1MM Logger+

As mentioned above, N1MM Logger+ stores all user-created data, including databases, Function key message files, .wav files, Call History files, and User Defined Contest files in the N1MM Logger+ Documents folder. You will need to copy each type of file to the appropriate folder from wherever you were storing them in N1MM Logger Classic.

Since N1MM Logger+ uses an entirely different database scheme, there is an option on the File menu in the Entry window to import and convert databases for use with N1MM Logger+. Click on Convert N1MM database to N1MM Logger+, select your old database, and a converted version will be placed in the right folder, ready for use. This only applies to databases, though – configuration information that was stored in N1MM Logger.ini cannot be converted automatically. You will have to configure



these items using the N1MM Logger+ Configurer. Some other supporting files, such as function key message (.mc) files, User Defined Contest (.udc) files, Call History files, etc. will work directly; you can simply copy them from our N1MM Logger Classic program folder and copy them into the appropriate subfolder in the N1MM Logger+ user files area.

Converting Old N1MM Logger Classic Databases

There have been various changes to the N1MM Logger Classic database structure over the years. N1MM Logger Classic contained code to update its databases automatically if an older database was opened with a newer version of the code. This automatic upgrading code was not incorporated in the database conversion routines in N1MM Logger+. **The only database format supported in the conversion routines is that used in N1MM Logger Classic version 14.0.0 (and newer).** Therefore, if you wish to convert a database that was created in an older version of N1MM Logger Classic and that has never been opened by a program version 14.0.0 or newer, you need to perform the conversion in two steps: 1. Open the database in N1MM Logger Classic version 14.0.0 or newer and then close N1MM Logger Classic (this will automatically update the database structure); and 2. Use the N1MM Logger+ File menu option mentioned above to convert the updated database to the .s3db format used by N1MM Logger+. If your only copy of N1MM Classic is a version older than 14.0.0, you can find a newer version at [>Downloads >Program Files >N1MMClassic](#).

Another common situation - you have more than one database in Classic, and you want to save them all together in one N1MM+ database. This detailed explanation from Rich, VE3KI:

For safety, first shut down N1MM+ and make a backup copy of your existing N1MM+ database. It's in Documents\N1MM Logger+\Databases, with the name you gave it when you converted it. The file extension will be s3db - for example, ham.s3db or Contests2014.s3db, or whatever you called it.s3db. There will also be some other s3db files in the same folder - just leave them alone.

Start up N1MM Classic. Open the Classic database you want to convert. Do the following steps for each contest in that database: Open the contest and do an export to ADIF. **Do not try to short cut by exporting all the contests at once.** Each contest has to be exported separately so that it will have the correct Contest_ID in its ADIF file, and so it can be imported separately into its own contest instance in the N1MM+ database.

Now close Classic and open N1MM+. Create a new contest in your database for the first one you exported from Classic. The contest type must be the same as it was in Classic. Set the start date and time correctly for that contest so you can tell contests of the same type apart in the new database. Once the contest is set up correctly, do a File > Import from the ADIF file. Use Tools > Rescore Current Contest



to update the score for that contest. Repeat these steps for each of the other contests you exported. All of your contests should now be in the one N1MM+ database.

Uninstalling the Program

If you are thinking of uninstalling and reinstalling the program in order to fix a problem you have encountered, you should know that this is rarely the solution. The majority of problems encountered by users are configuration problems that are not resolved by uninstalling and reinstalling. If the problem is a configuration problem, uninstalling and reinstalling in the same location will not fix it. Instead, [LOOK HERE](#) for suggestions for other, less drastic methods.

However ... if you really want to uninstall N1MM Logger+ entirely, including any registry entries, the best way is to navigate to the program directory and find the program cleverly titled **Uninstall.exe**. with the N1MM Logger+ icon. Run the uninstaller and follow any prompts you see. Note that this will not remove your user files in the Documents\N1MM Logger+ directories. If you want to remove all traces of the program, you will need to remove this folder manually using Windows Explorer and the [Delete] button.

Interfacing Basics

Interfacing Basics

Operating without an Interface - Manual Mode

There are many reasons why you could find yourself operating in manual mode. Maybe you're just getting started and have not had time to install and configure an interface? Perhaps your radio does not support PC integration, or you have a computer but it lacks the necessary I/O ports to connect a radio? Or maybe you're operating from a short-term portable location and don't have the time or equipment to connect the radio to the computer? Whatever the reason, there are special keystrokes that you need to enter in the Entry Window to inform N1MM Logger+ of the band and mode that you are operating.

Set your frequency by typing it into the Callsign textbox and hitting Enter. If you want the log to only indicate the band, and not specific frequency information, enter the frequency of the bottom of the band in kHz (note that some contest administrators request that manual frequency entries always be bottom of band). If you want the log to include the actual frequency, enter the complete frequency in kHz. For example 14025.1 (or 14025,1 if your computer uses comma as the decimal separator). The new frequency will appear in the title bar of the Entry window.

Enter mode changes similarly. Recognized entries are CW, RTTY, PSK and SSB, USB or LSB. If you enter SSB, the program will substitute the customary sideband (e.g., LSB on 40-160) USB and LSB can be used to enter the opposite sideband, should you ever need to. The mode to be recorded in the log is displayed in the title bar of the Entry window.

For more details about these commands, see the [Entry Window Text Commands](#) in the manual.

Basic Radio Control Interfacing

Regardless of whether you want to operate phone, CW or digital modes, the most useful and important interface is the one between your computer, N1MM Logger+ and your radio. Fortunately, virtually all modern radios incorporate a serial port to enable them to swap information and commands with the computer.

A first step is to look up your transceiver in the manual section titled [Supported Radios](#). Assuming you find your radio there, look for any specific settings or peculiarities that need to be addressed and make a note of them.

USB is rapidly replacing both RS-232 serial ports and LPT parallel ports. If your radio

has a standard RS-232 serial port, once you have purchased a USB-to-serial adapter and installed the drivers for it, N1MM logger can work with your radio just fine. If your radio uses either Icom's CI-V standard or another non-RS-232 serial port, you'll need an appropriate converter cable to get from either USB or RS-232 to your radio.

Some USB adapters, particularly those using a Prolific chip-set, are erratic with some programs, particularly programs written in Visual Basic (like N1MM Logger Classic). If you encounter quirky performance or an 8020 error, that may be why. See [USB Interface Devices](#) for a full rundown on user experience with various specific adapters.

Radios are starting to appear now with USB ports. If yours is one of these, check the [Supported Radios](#) entry for your radio (and the radio manual) to find USB interfacing details.

See [this earlier section](#) for information on avoiding problems with USB ports going to sleep.

Once you have the hardware hooked up between your computer and your radio, start N1MM Logger+ and open the Config menu in the Entry window. Choose Configure Ports, Mode Control, Audio, Other. Ignore all the other stuff for now.

That brings up the following, rather intimidating dialog. Don't worry, we'll walk you through the part you need now.

Configurer [X]

Hardware | Function Keys | Digital Modes | Other | Winkey | Mode Control | Antennas | Score Reporting | Broadcast Data

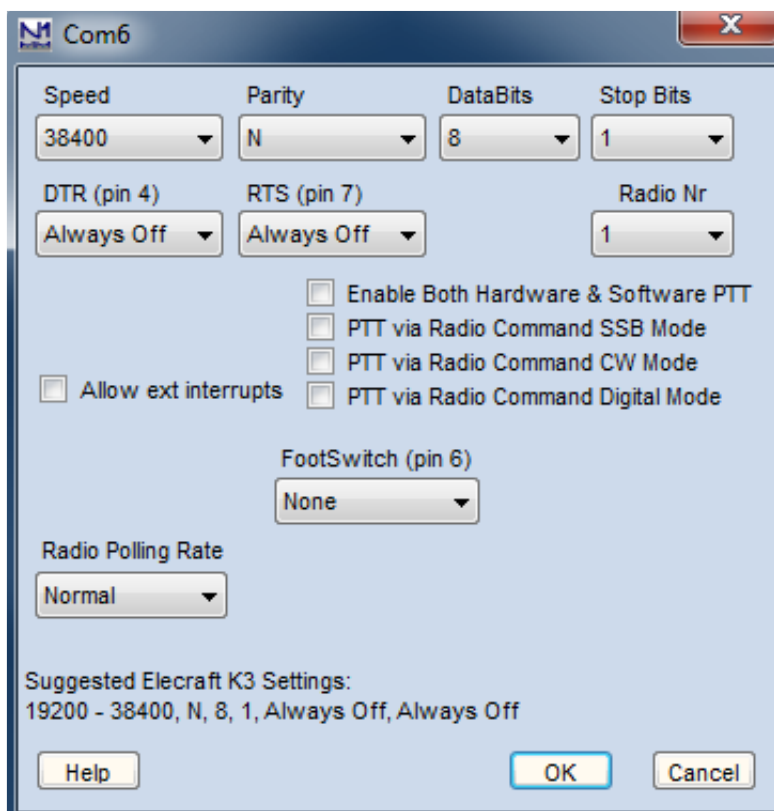
Port	Radio	Digi	CW/Other	Details
COM6	Elecraft K3	☐	☐	Set
COM8	None	☐	☒	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
LPT1			☐	Set
LPT2			☐	Set
LPT3			☐	Set

☐ SO1V ☒ SO2V ☐ SO2R
 38400,N,8,1,DTR=Always Off,RTS=Always Off,Tx:
 DTR=Always On,RTS=Always Off,Tx=Both

OK Cancel Help

You may want to select SO1V if this is your first experience with N1MM. SO1V allows N1MM to control VFO A in your transceiver. If you are an experienced contester and understand how to operate in split mode (for example, working DX on 40 meter sideband), and especially if you have a radio with dual receivers, you may want to select SO2V. It allows N1MM to simultaneously control both VFO A and VFO B in your transceiver. If you are an advanced contester, whose station is configured with TWO transceivers (one for running contacts and the other for searching for new multipliers), then you will want to select SO2R. One of the advances in N1MM+ is that you can use any COM port numbered 1-99. Click the drop-down arrow to the right of the Port column, and you will see all the serial ports, hardware or USB/virtual, that are active on your PC. Select the one that is connected to your radio. Now click the drop-down arrow to the right of the Radio column, and select your specific radio model. Virtually all Kenwood models use the one common radio configuration, while Yaesu and Icom radios are generally designated by the specific model number – refer to the manual under [supported radios](#) for more information. Icom radios also require a Radio Address (Hex Code) – that’s in the same place.

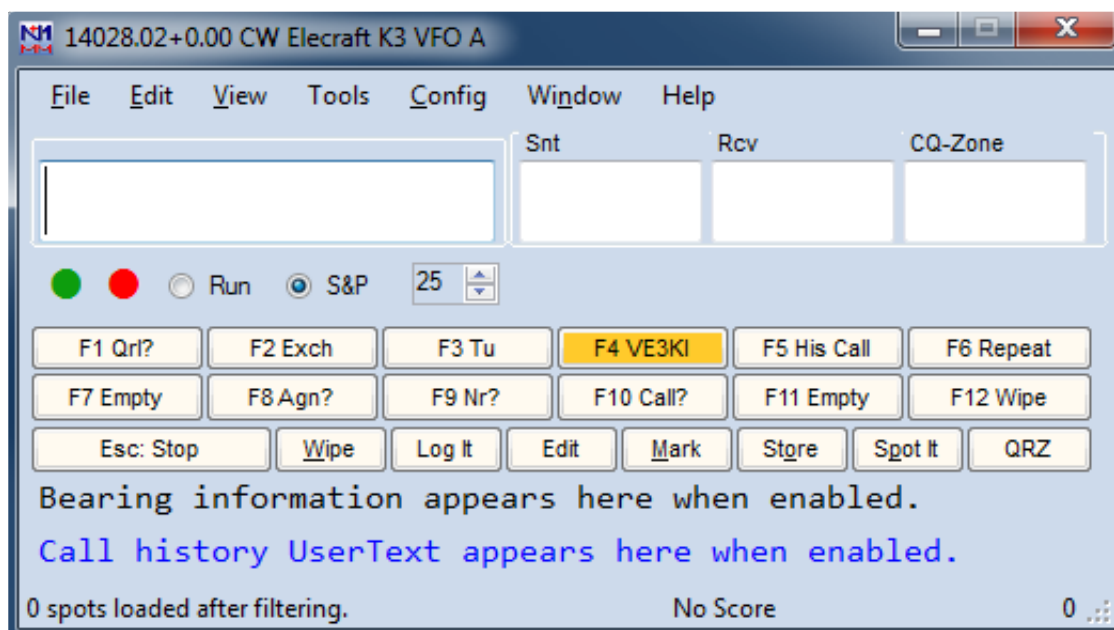
Now click the “Set” button next to the port you have chosen.



That will bring up this dialog, with connection details. Normally, N1MM Logger chooses the parameters in the first two rows for you, and does a good job. You might want to verify them with your radio manual, just in case. Radio/VFO number should be 1, so that your main VFO will be displayed in the main (first) entry

window. The rest of the stuff on this dialog is not important right now, so just click OK to get back to the previous dialog, and then OK again to return to the Entry Window.

If all is well (you did turn your radio on, right?), when that big multi-tabbed dialog closes and the Entry Window reappears, the title bar of the Entry Window will display the radio's frequency and mode. It's magic. The "+0.00" simply means that RIT is turned on, but set to zero (no offset)



Now that you have radio control, you can do a lot of neat things, but one of the most basic is that you will never again have to worry about accidentally logging QSOs on the wrong band or mode.

Interfacing for Phone, CW and PTT

Of course, controlling your radio through a serial port isn't the only way to interface N1MM Logger+ and your radio – in fact, long before there were computer-controllable radios, the pioneering logging software authors developed several standards for CW and PTT interfacing, using either serial or LPT (printer) ports.

We'll start, though, with a discussion of phone interfacing, on the theory that this will be of most interest to new users. Once you're interfaced, you will be able to store voice messages and play them back through your radio, to save your voice during phone contests.

Phone Interfacing

This topic is covered in introductory form here, and in more detail in two parts of

the manual. This rather awkward organization is necessary because N1MM Logger+ is transitioning from Classic's audio function setup, on the Audio tab of the Configurer, to a new improved option currently on the Config menu, Logger+ Audio.

The Audio tab version works with all versions of the Windows operating system from Windows XP forward. Logger+ Audio works with Windows Vista and thereafter. If you check Logger+ Audio on the Config menu, and you are running an operating system after XP, the Audio tab on the Configurer will not be visible. If you are running Windows XP, the Config menu option is disabled.

Interface Hardware

Of course, you can always use one of the many commercial audio interfaces designed primarily for digital modes. However, if you have a sound card that permits feeding microphone input through it to the line output (most do), and has a mixer that will allow you to independently set the level of the microphone, .wav playback and internally-generated audio (such as for AFSK), you really don't need an interface at all. On SSB, simply plug your microphone into the sound card mike input. Cable the sound card's Line Out to the Line In or Phone Patch input of your transceiver, and you're done.

You may encounter hum, resulting from difference in AC potential between the chassis of your computer and that of your transceiver. In that case, a 600-ohm isolation transformer in the cable between sound card and transceiver is a likely cure. Another approach is to bond the transceiver and computer chassis together with a heavy wire. Many people do both.

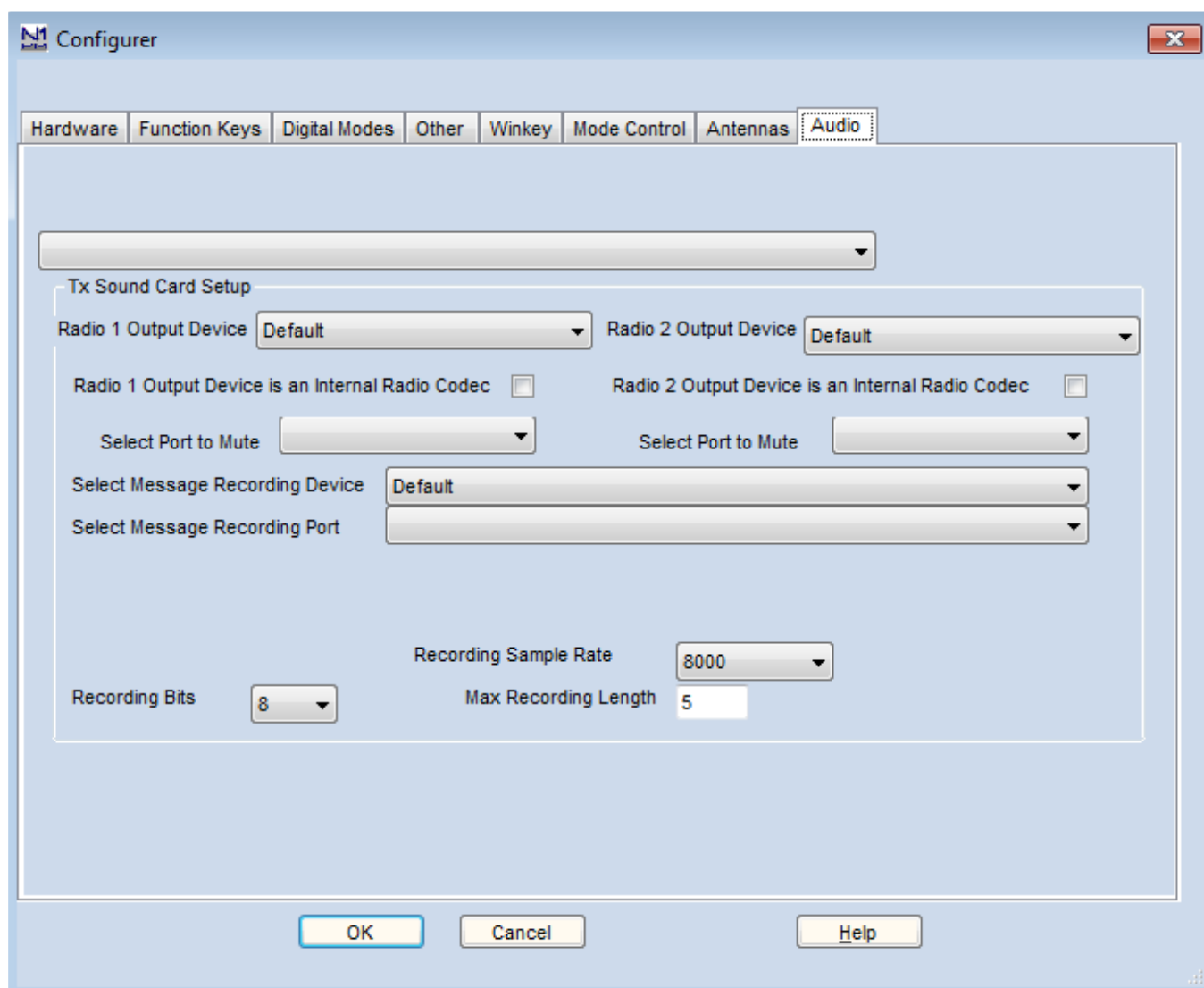
If you absolutely must feed the audio output of your sound card into the microphone jack of your transceiver, the level will be far too high. In that case, a simple 10:1 resistive voltage divider is the solution, placed in the audio cable before the microphone jack.

Trouble-shooting phone interfacing

The following discussion is cribbed almost verbatim from audio trouble-shooting notes by David Robbins, K1TTT. If any mistakes have crept in, blame the manual team, not him. It assumes that you're running Windows XP, using the Configurer's Audio tab, and all the screenshots below are from that version.

To begin with, make sure you close Windows Media Player, RealPlayer, Audacity, or any other sound playback/recording program you may have open. Start N1MM Logger. On the Config menu, open "Configure Ports, Mode Control, Audio, Other", also known as the Configurer.

Now select the Audio tab:



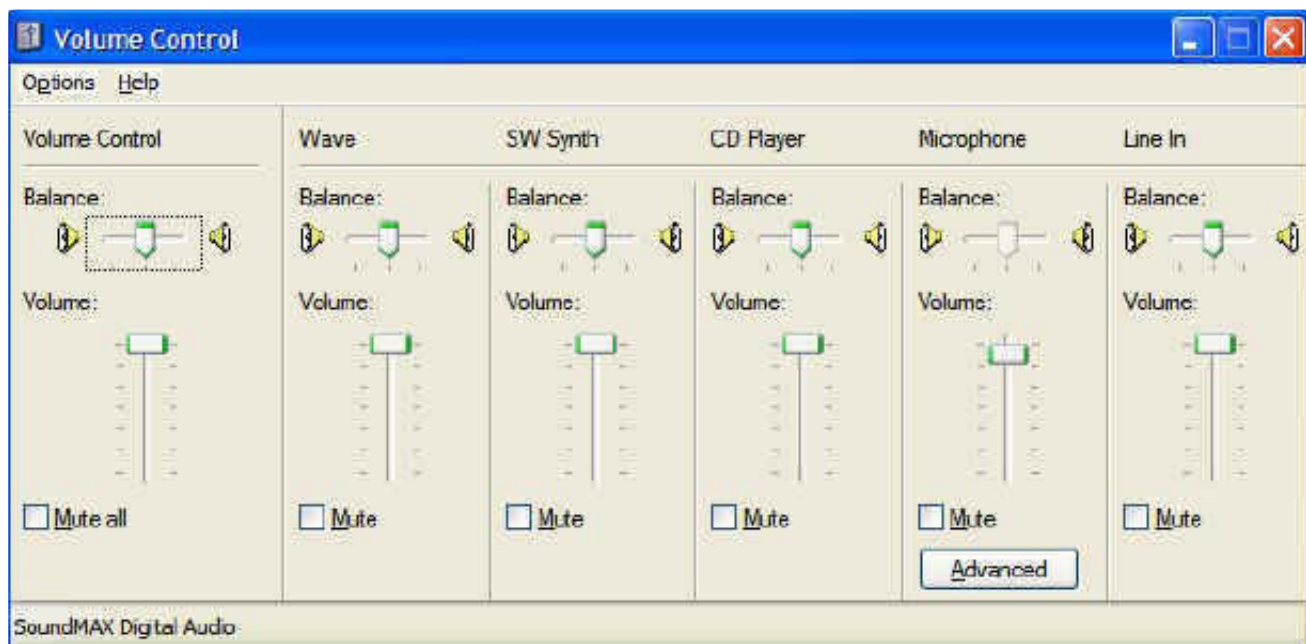
Select option 1 “Only use Radio 1 Output Device. Output on both channels.”

Choosing from the drop-down list at the upper left in “Tx Sound Card Setup”, make sure that the Radio 1 Output Device is correct for your sound card. Typically, the name will appear as “Speakers” with the name of the associated sound device in parentheses. You can select Default as your Output Device, if you have set it as that in Windows, but depending on your version of Windows that may prevent you from muting your microphone while stored voice messages are playing.

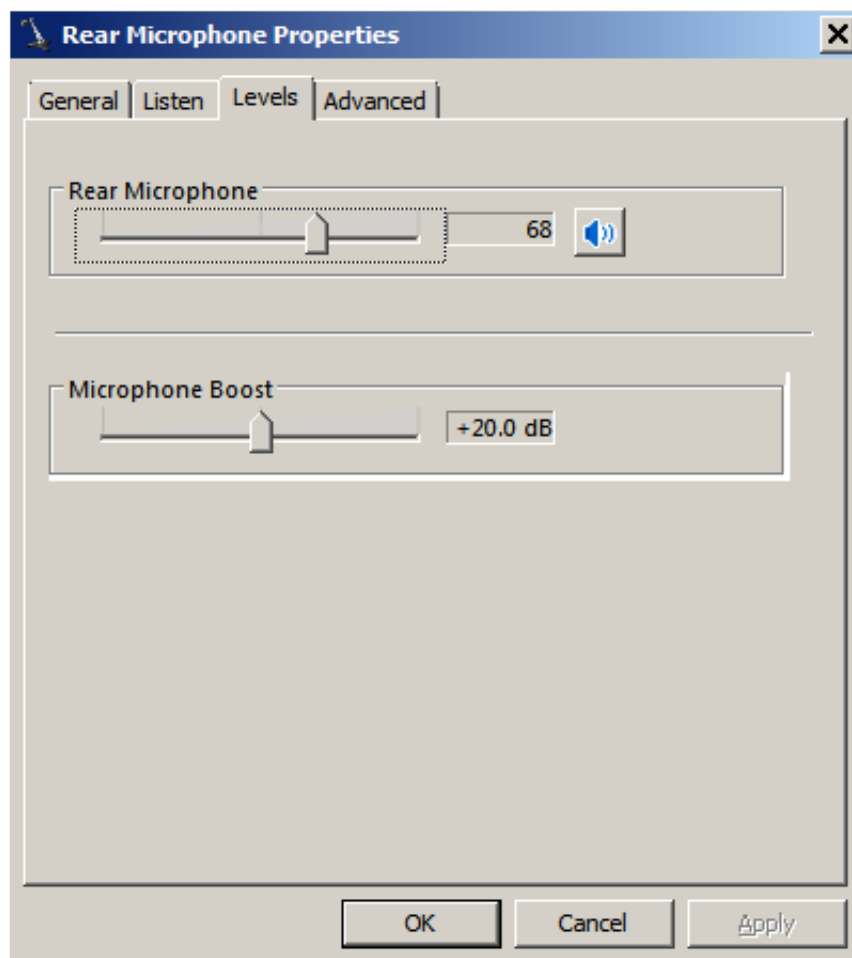
If you make an explicit choice of Output Device, you’ll be presented with options under Select Port to Mute. Select Microphone. Then make sure that the Message Recording Device (sound card) is correct (typically the same as your Output Device), and that the Message Recording Port is set to Microphone. Make sure the Recording Sample Rate and the Recording Bits numbers are set to values supported by your sound card.

Now OK out to save these settings, and close N1MM Logger. It’s time to test.

Plug your microphone directly into the microphone jack on your sound card. Plug your headset directly into its speaker output. Open the Windows Volume Control. It should come up with a set of sliders. In Windows XP, they look like this:



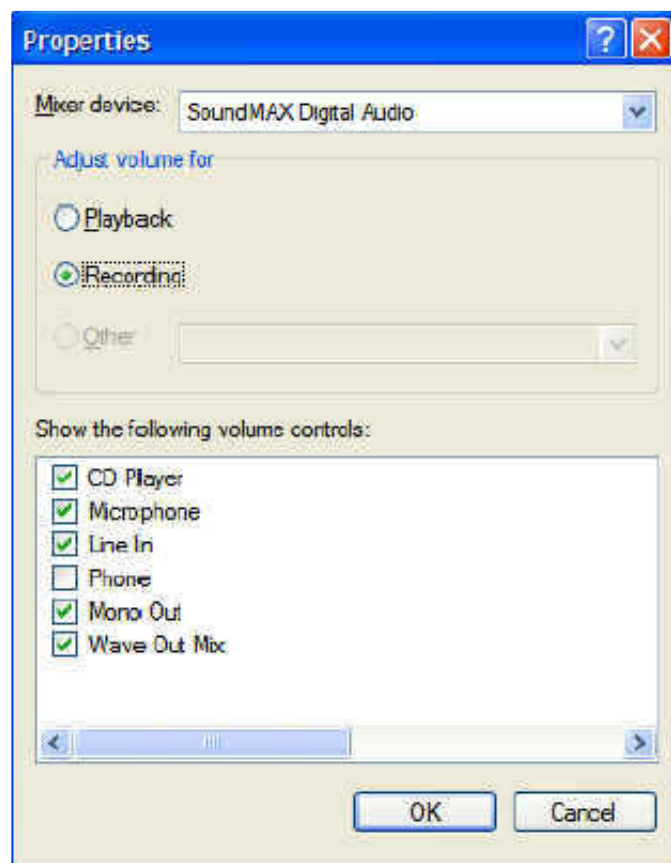
Or this, in Windows 7, after you finally drill down through the options on the Control Panel, under Sound”:



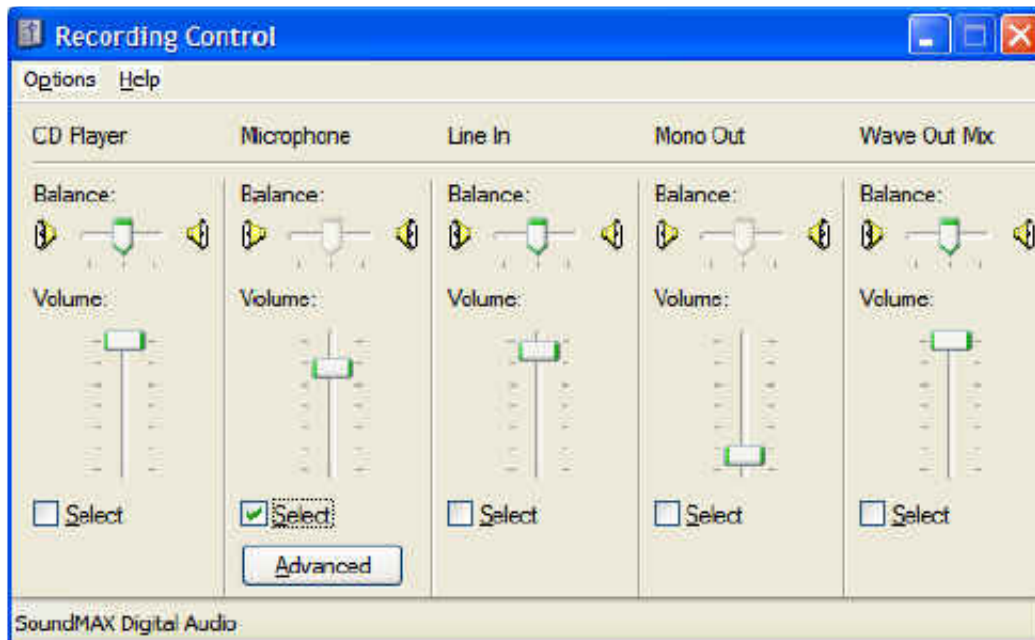
Sound Cards are weird

Unfortunately, sound card manufacturers have added a dazzling number of bells and whistles the past few years, including software-configurable input and output ports and other gadgets that affect recording. We have to leave you a little on your own here. The important thing is to find the microphone recording volume control, make sure it is selected, and that the level is about 50 percent.

In Windows XP, you may have to go into Options>Properties to check the box to let you see the microphone volume control and those for other sound sources. Under Options>Properties, click the 'Recording' radio button, and make sure the microphone is checked on the list of controls:

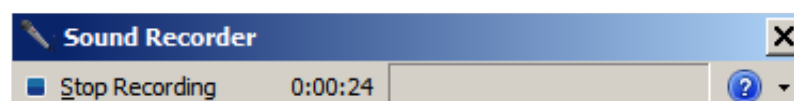


In Windows XP, make sure the Microphone slider is at mid-range and that there is a check in the Select box. If you are using a typical ham microphone, such as a Heil, and you have the "Advanced" button, click on it and select Mic Boost if that option is available, because it provides a 20-30 dB preamp. Now OK out.



Now, when you talk in the microphone, you should be able to hear yourself in the headset. If you can't, then something is wrong with your settings, hardware or drivers. Try playing existing .wav files using the Windows Control Panel's Sounds option. Recheck volume and mute settings, check that the microphone is plugged into the right jack, try a different microphone, try a different headset. **DO NOT PASS THIS POINT UNTIL YOU CAN HEAR YOURSELF!**

Now open Windows Sound Recorder, which is usually found in the Accessories category in your program list. **DO NOT** open Audacity, any of the audio tools that came with your sound card, or your other favorite tool. Some of them play with the mixer settings and we don't want that now that they are set. These are for QWindows XP and Windows 7, respectively.



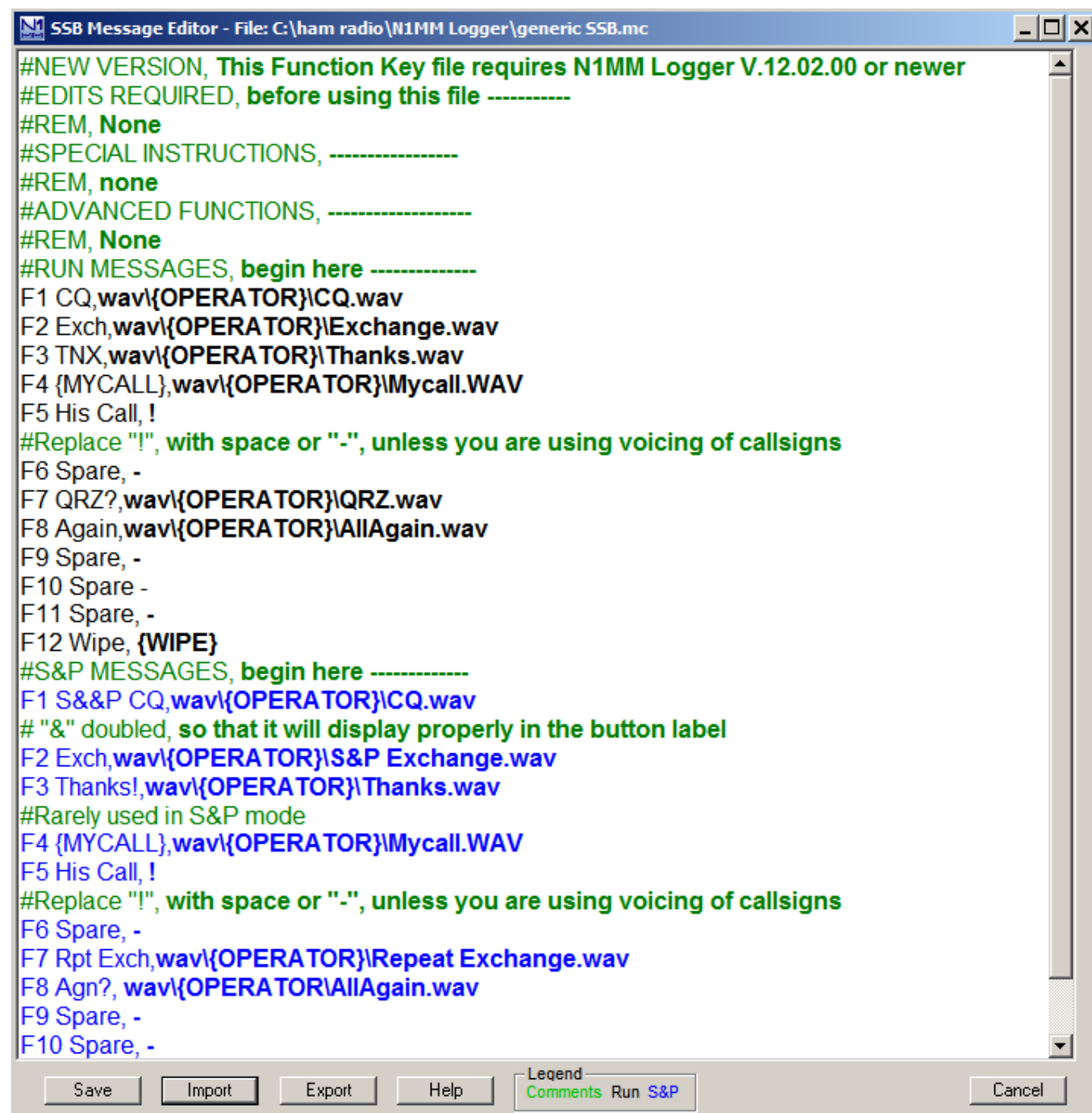
Click the Record or Start Recording button in Sound Recorder, and speak a few words into the microphone. You should see the level indicator deflect in time with your voice. Now press Stop. Press the Play button and you should hear what you



just said. If you don't there is something wrong with your hardware or drivers. Check recording control settings, adjust volume, make sure the microphone is selected as the recording source, and get that 8 year old back to help again! DO NOT PASS THIS POINT UNTIL YOU CAN RECORD AND PLAY. If Windows Sound Recorder doesn't work, then N1MM likely won't work and since N1MM is much more complicated it is harder to troubleshoot.

If it's working OK, now close the Sound Recorder and start N1MM Logger. Put the program in Run mode (Alt+U or click in the Running box) and your radio on USB or LSB, and make sure that the Entry Window's title bar specifies either USB or LSB (if you don't have a radio connected, type the appropriate mode in the callsign box and hit [Enter]).

Right-click on any of the message buttons in the entry window. That will bring up the Function Key message editor:



Don't be intimidated – we're just going to use this screen to set up a single function key to send a single message, so we can check out the entire flow from pressing a Function Key to having an audio message properly sent to your radio. The filenames and remarks you see in the editor now are the default filenames that are put into the table when you first install MM. If this is not your first time using N1MM Logger, these may not be the first ones you see. For the full story on the message editor, see [this page](#) in the manual.

For test purposes, we are just going to use one message, in the slot for Run F1. This is the message that will be sent when the program is in Run mode and F1 is pressed. This is intended to be the location for your CQ Message. If the editor shows "F1 CQ,CQ.wav" in the first row of the Run Messages section, then you're ready to go. Just close the window with the X in its upper right.

XXXX

The Difference Between "Save" and "Export"

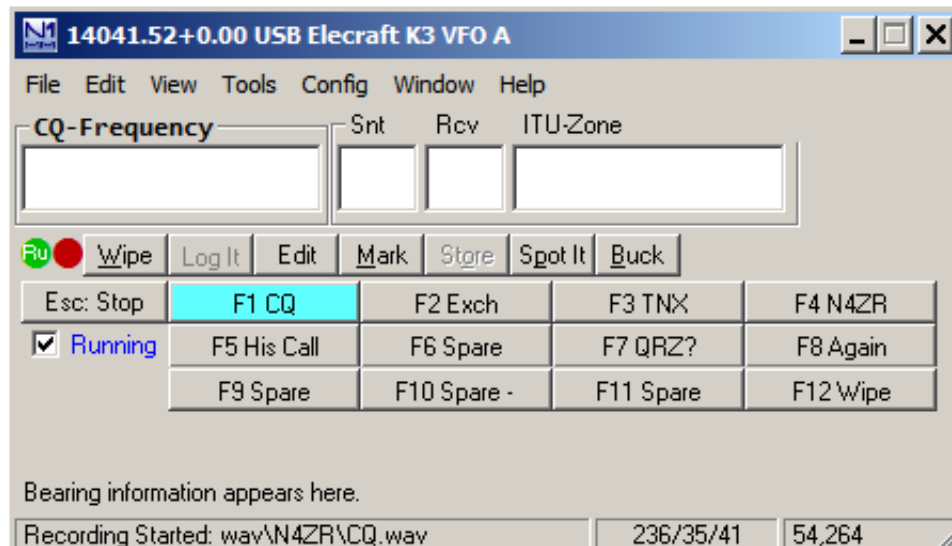
There is a critical difference between the "Save" and "Export" buttons in the bottom frame of the Function Key Message Editor. If you click "Save", the currently-displayed contents (including any changes you have made) are saved in your current database, for use the next time you press a function key. **They are also written to the file-name shown in the upper frame of the editor.** To save a change on the fly and get back quickly to using the program, all you need to do is click Save and then X in the upper corner to leave the editor and return to the Entry Window. However, if you want to retain the file that was loaded into the editor **in its original form** – as you might want to with the default files, for example – then you must first click Export, select a filename in the Save Macros to File dialog that opens, and then click Save. **Then, you must click Save in the Function Key message editor to load the edited function keys into the current database.**

Now, make sure you are in Run mode – that is, that the Run checkbox in the Entry Window is checked. Now watch the bottom line of the Entry Window (called the Status Line) and press Ctrl+Shift+F1. You should see:



One important thing to note here. If you have not entered your callsign under change Station Data on the Config menu, you will not see your callsign in the status line. This is important – stop, go do that, and then repeat this step.

If you speak into the microphone at this point, whatever you say will be recorded in the file CQ.WAV under WAV\your_callsign... Press Ctrl+Shift+F1 again (or ESC) to stop the recording, and look for this report in the same place:



Now press F1. You should hear what you just recorded in the speaker. If you don't, make sure you're still in Run mode and look for an error message in the Status Line. We suggest using the Ctrl+Shift+Fx process to record within N1MM Logger, at least until you get truly comfortable with audio files, because a lot of the problems people run into are a result of recording with different programs, or in filenames that are different than the program expects to see.

Now that you've got things working, you need to program at least the first few

function keys. It's best to follow the order in the example above, at least for F1-F8, because a little later, when we talk about ESM (Enter Sends Messages) mode, the order is important. Be sure that each Function Key message line begins with the Function Key number, a brief label (like CQ), **a comma**, and the content of the message

OK, so now you have everything you need to play “canned” audio messages on the air. If you're content to use VOX to switch your transmitter, and you're not interested in CW, then you can stop here, for now.

CW Keying and PTT Control

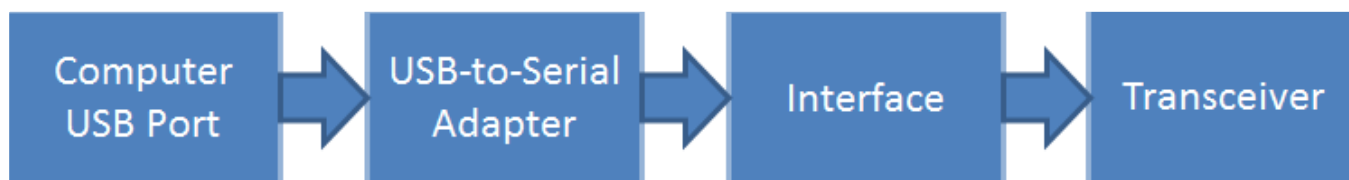
Unsupported Methods of CW Keying

N1MM Logger+ supports several methods of CW keying, but two are not supported. The first of these unsupported methods is CW by audio tone, or MCW, as is done by software such as FLDIGI. The reason for this is that if it is not set up carefully, this method can produce unnecessarily wide signals, or even in some cases two closely-spaced signals from one transmitter.

The second unsupported method involves sending ASCII characters to the radio, which then converts them to CW. Only a few radios have this capability, and in most or all of these the resulting CW operation is far less suited to contest use than the Logger's own. N1MM Logger+ does not support this method directly, although it is possible for users to use this capability by means of radio control macro commands incorporated into function key messages, provided they are willing to accept some loss of functionality as compared with the directly supported methods.

A full discussion of interfacing is in the [Interfacing](#) section of the manual.

In its simplest form, CW is sent and PTT is controlled by switching lines on a COM or LPT port. This technique allows the simplest possible interface, but one **is** required. Here's a block diagram of the COM port setup. For LPT port keying, a USB adapter will not work. Your computer must have a hardware LPT port:

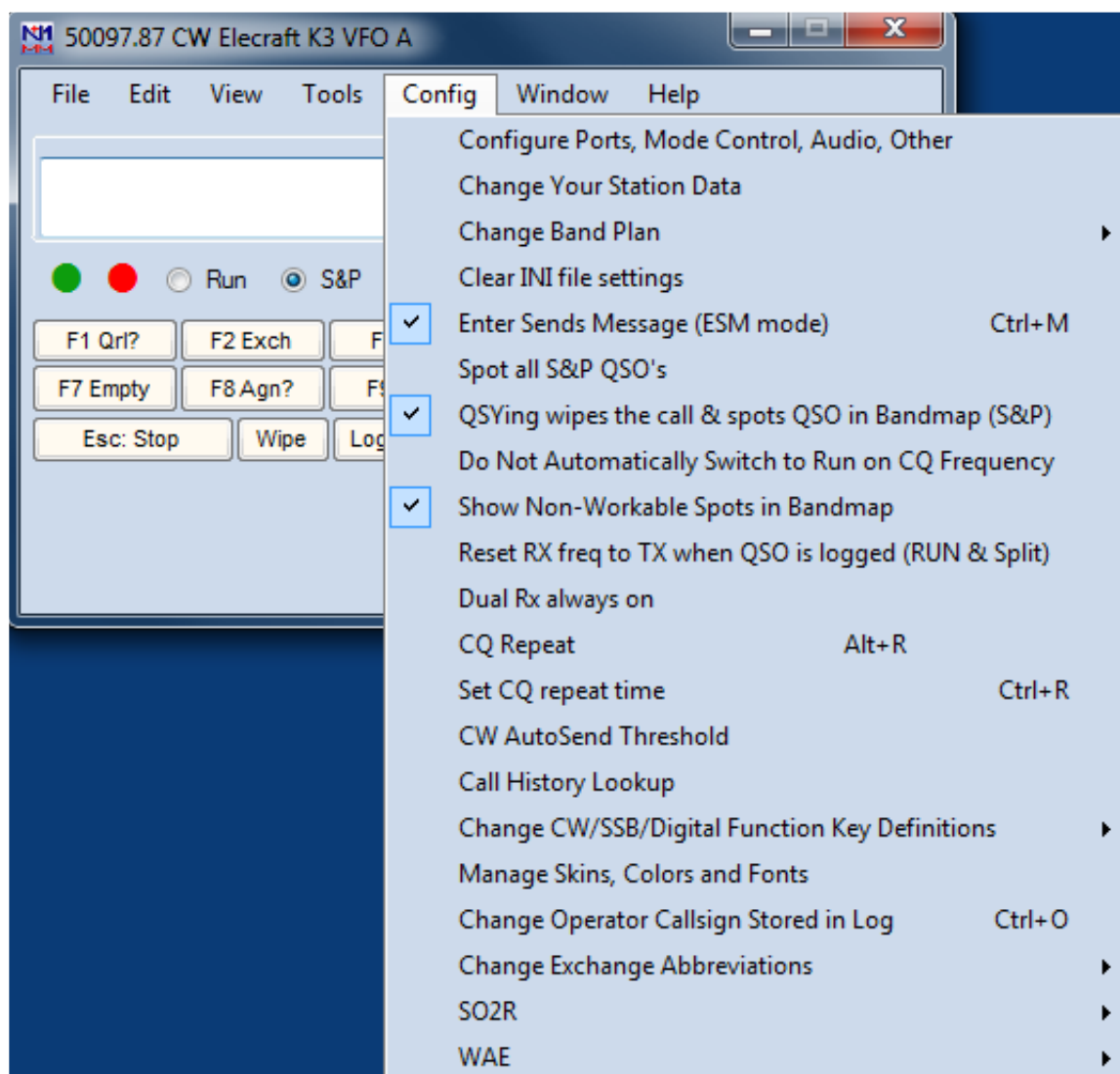


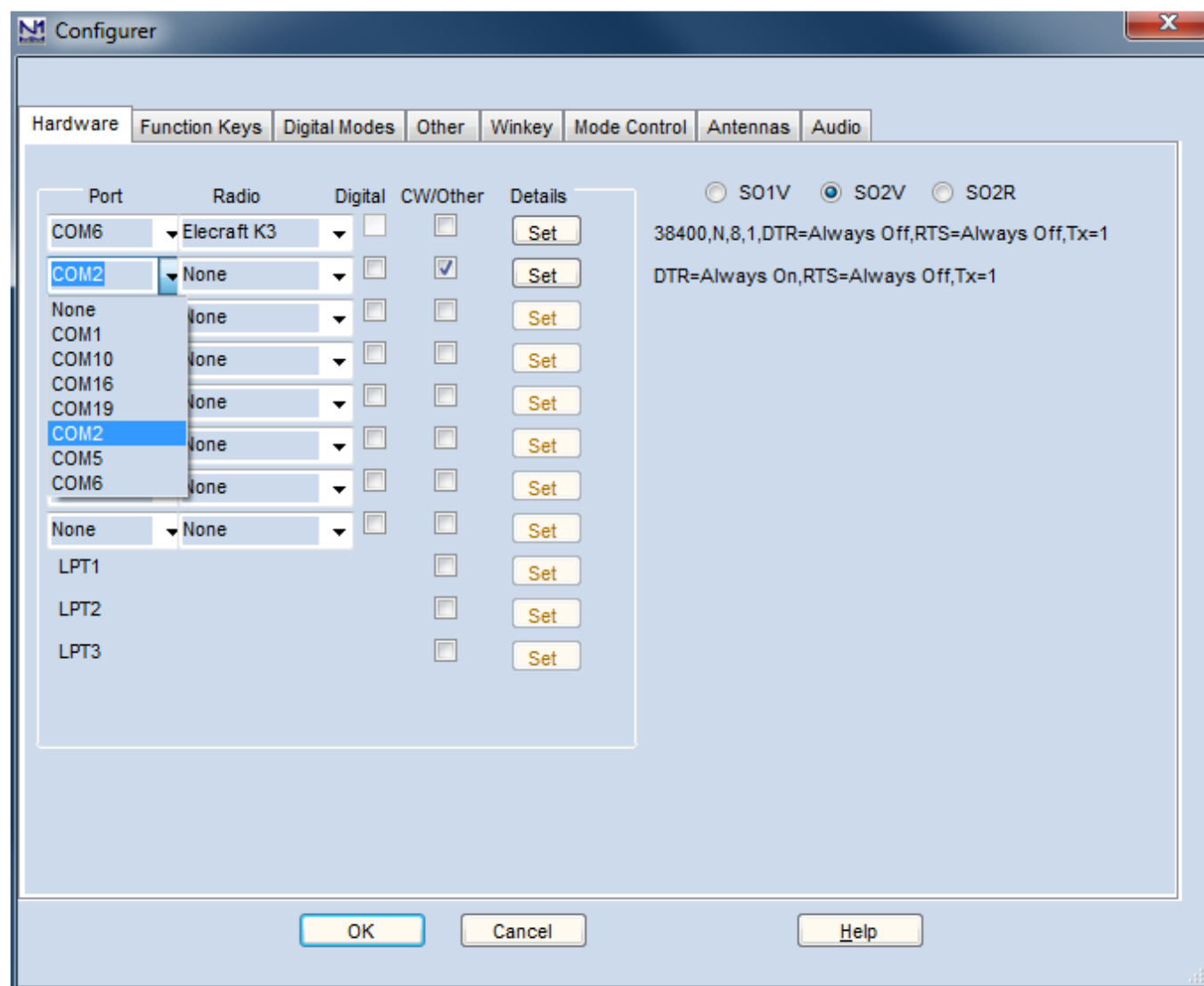
Please note that only a very few radios permit CW and PTT via their built-in serial ports. The rest require that the interface be plugged into the CW key jack on the transceiver. The exceptions to this are covered under [Supported Radios](#).

The interface can be anything from the simplest – one resistor and one transistor –

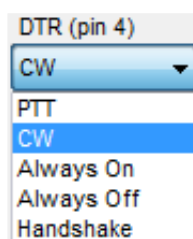
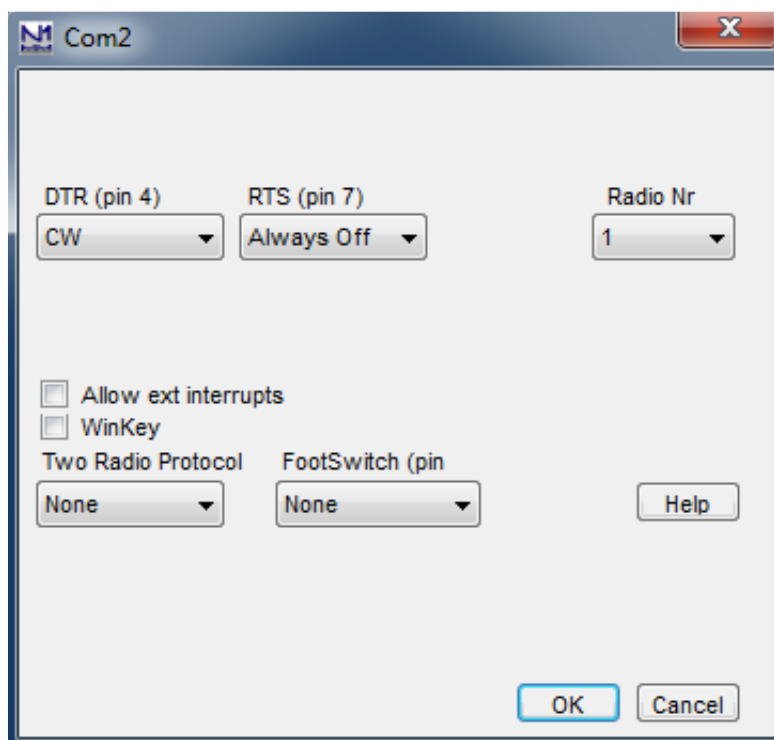
to one of the many units on the market that handle both CW and various digital modes.

Let's assume you're going to use this method to start with. Begin by opening the Config menu to the Ports, other dialog:

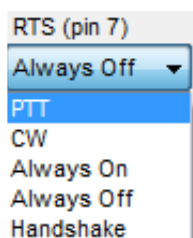




For this example, our CW port will be on the second port we configure (the first port, COM6, will be used for radio control). let's choose COM2 as our CW/PTT port. After selecting COM2 from the pull-down list of available ports, put a check in the CW/Other box and you'll notice that the Set button is no longer greyed. Click on it, and open the dialog for that port:



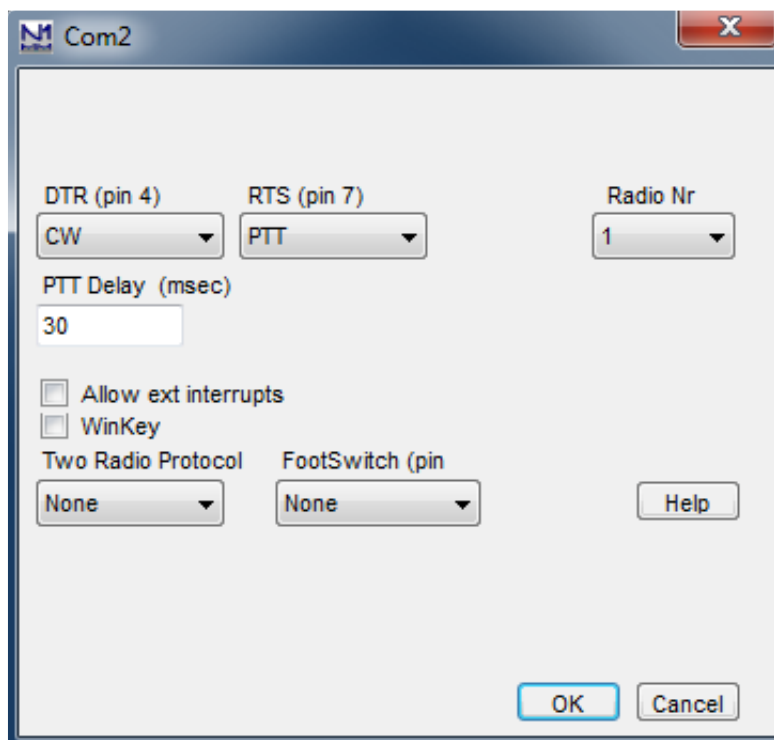
You can configure the DTR pin as either CW or PTT. Click the down arrow and you'll see the list of possibilities:



Highlight the one you want, depending on your interface. Now do the same with the

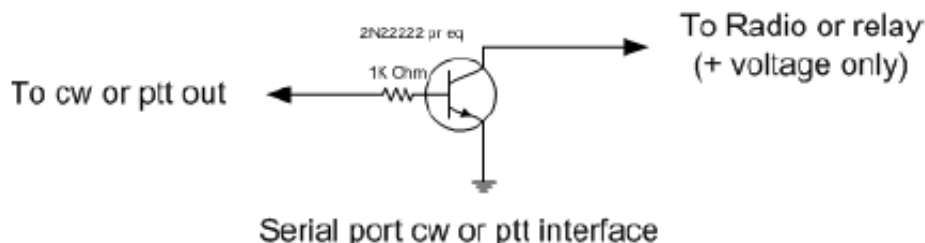
RTS pin:

You can use either signal line (DTR or RTS) for either function (CW or PTT); just make sure your choice matches up with the way the hardware is wired up.



Set the Radio Nr to 1. The PTT Delay setting is to protect the relays in an amplifier by making sure that the T/R relay is closed before the program starts sending CW. The default value of 30 ms. is fine even if you don't have an amplifier.

OK, now to interface to the rig. The very simplest interface imaginable will work just fine for either the CW or PTT functions with any modern radio; again, there are many commercial options, but here's the Radio Shack parts solution:



Using Winkey/Winkeyer for CW

K1EL's Winkey/Winkeyer devices have become very popular with N1MM Logger+ users. The chips are built into a number of interfaces. The stand-alone Winkeyer USB will key two radios and provide PTT functions for both on all bands, simplifying changing modes considerably.

Follow the instructions that come with your interface in setting up CW keying. For the stand-alone unit, You'll need to determine which port your Winkeyer is listening on, and then check its CW/Other box. Finally, click the Set button and check the Winkey box. That's all there is to it. Do **NOT** try to configure DTR or RTS for a Winkeyer; checking the Winkey check box automatically sets these to the correct settings for the Winkeyer.

You will probably also need to review (and likely change) settings on the Winkey tab of N1MM Logger+'s [Configurer](#) (Config>Ports, Other). One important one with many transceivers is the Lead Time parameter, needed to prevent Winkey from starting to send CW before your transceiver is ready to make RF. A setting of 2 (20 mS.) is usually plenty; more can make manual keying difficult.

Learning Your Way Around

Learning Your Way Around

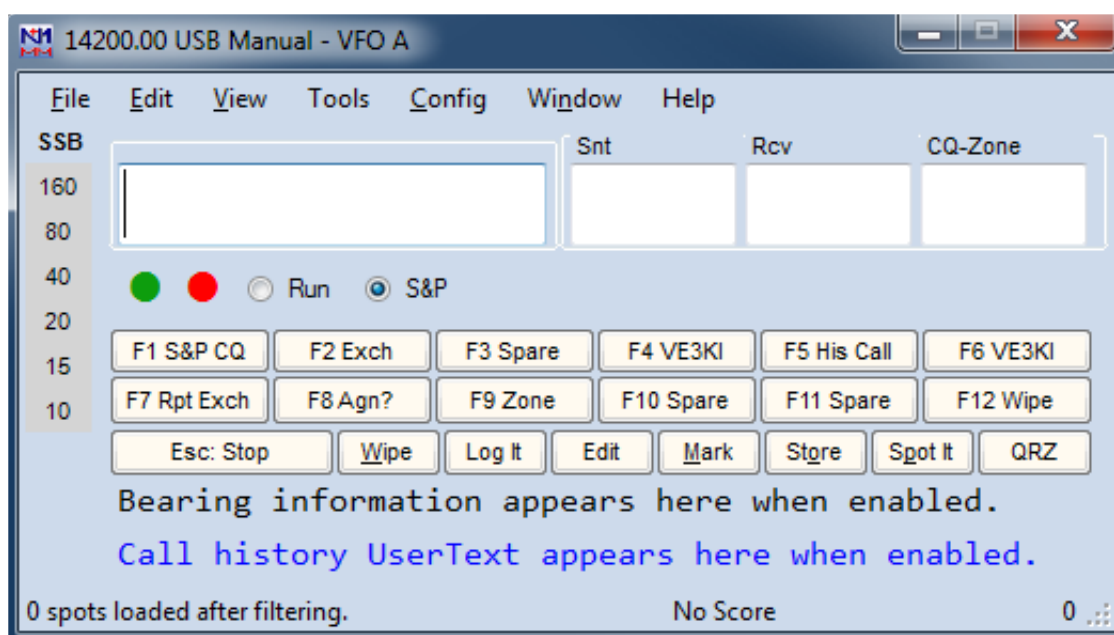
Take a few minutes to learn your way around the four windows that you need to make your first contest QSOs with N1MM Logger+. Additional information about each window will be found in the window-specific pages linked to [HERE](#).

The Entry Window

Let's get a little terminology out of the way first. The top blue part of this (or any) window is called the Title Bar. Each of the places where you can type information is called a textbox. The Title Bar displays the current frequency, mode (if one has been selected), and which radio it is (nominally, Radio A). You will have to enter a mode before you begin to operate, and a band and/or mode each time you change either. Simply type a frequency in KHz (3500, 7000, etc.) in the Call-Sign textbox (to the far left) and hit Enter; then type a mode (CW, USB, LSB) there, hit Enter again, and you're set.

The Entry Window is your main starting place for everything you do with N1MM Logger+. The first row is a standard Windows-style menu, and we'll be using it in a minute. Take a moment and explore the various drop down menu choices, but don't change anything right now.

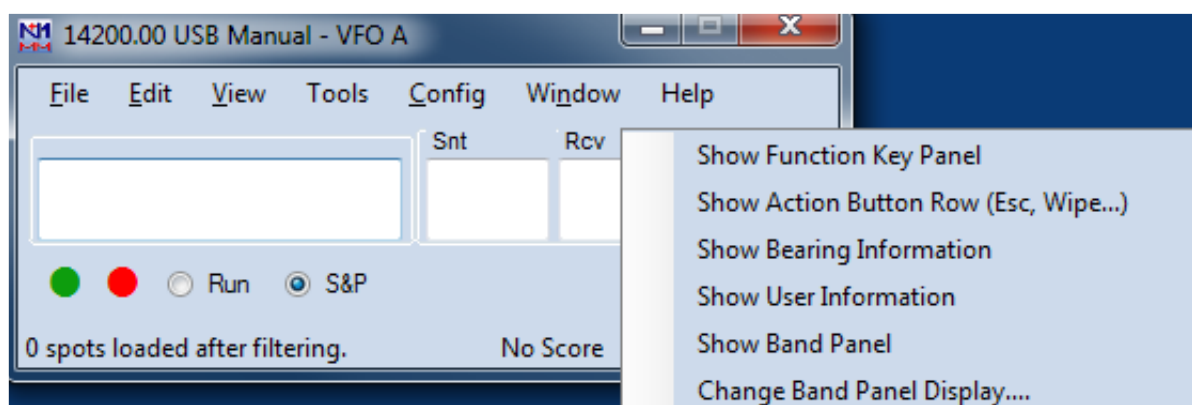
Below the menu is a set of entry textboxes. This row is where you log your contest QSOs. The left-most textbox is the Call-Sign textbox. You always enter the call-sign of the station you are working into this textbox.



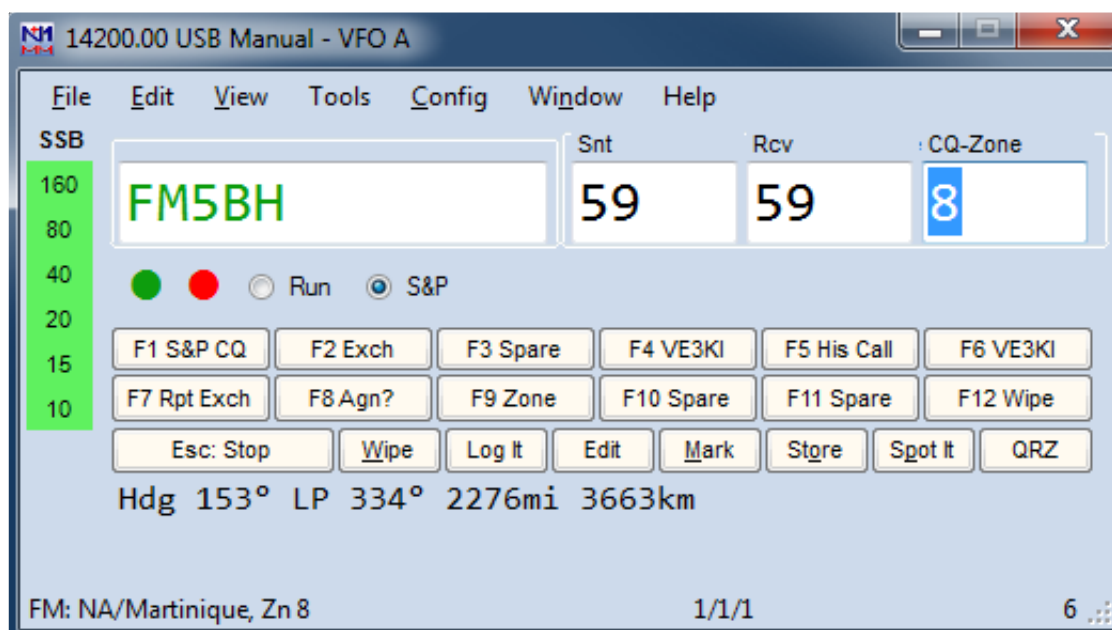
The rest of the data entry textboxes are titled above them – depending on how you have resized the window, the titles may not line up perfectly with the entry textboxes, but they are always in the same sequence as those textboxes. Depending upon the specific contest and the required contest exchange, the number of textboxes and the titles may be different from what you see here. The example Entry Window shown above would be used during the CQ WW Contest. This contest requires that a call sign, sent and received signal reports and the CQ Zone be logged for each contact

For now, you can ignore the ‘Run’ and ‘S&P’ buttons, as well as the colored dots alongside them. These control one of the most important features of N1MM Logger+ – it distinguishes between Run and Search and Pounce modes, providing different features for each. However, these aren’t really relevant until you get into sending stored CW and phone messages, which are covered later. The rest of the buttons in the Entry Window are related to this and to other advanced capabilities.

If you want to save space on your screen, you can reduce the size of the Entry Window, like this. Right-click in an empty part of the window and uncheck the options for items you do not wish to have displayed.



There are two more useful features of the Entry Window. The box in the lower left corner, called the Status Line, provides a lot of useful program status information. For example, if you enter a call sign, the Status Line will tell you what country it represents. If you have chosen to show bearing information in the right-click menu, it will also show you the distance and bearing above the status line, like this.

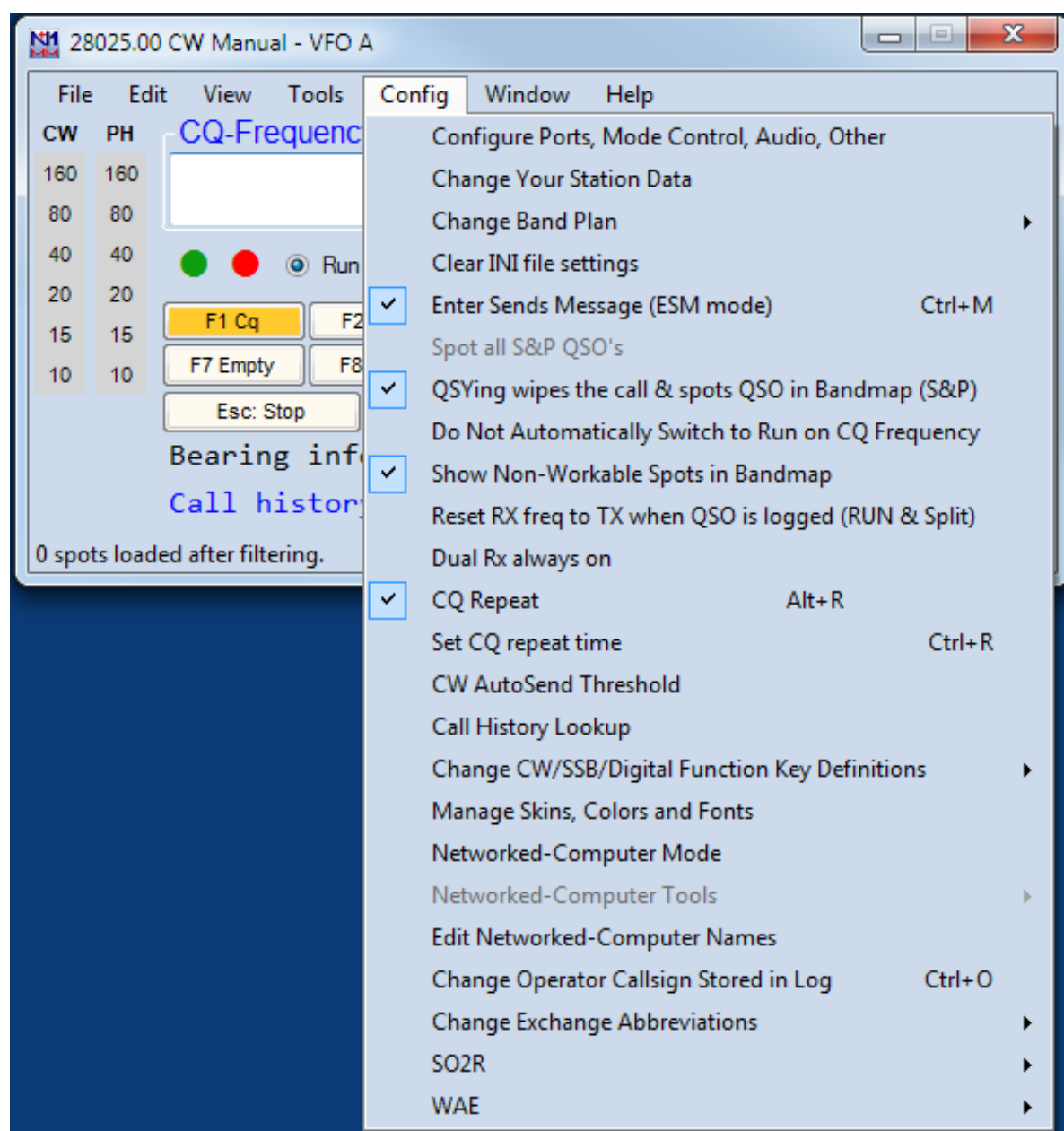


To the right of the Status Line is the progress box, where you can keep track of your QSOs and multipliers without having another window open, and to its right is a running score.

If you press the backslash “\” key (and the program is in SO2V or SO2R mode), the program opens a second, almost-identical entry window. The only difference is that it will have a “B” instead of the “A” in the title bar of the first entry window, and it may well have a different frequency and/or mode as well. But if you pop up the second Entry Window by mistake, and want to get rid of it, you simply close it by clicking the big red X.

When you first open the program, it will be in SO2V (Single Operator Two VFOs) mode. The idea is this – most modern transceivers have two VFOs, or a main VFO and a sub-VFO. There will be circumstances – during a contest on 40 meter SSB, for example – when you will want to receive on one frequency and transmit on another, widely-separated one.

For the moment, you should probably change to SO1V (Single Operator One VFO) mode. Select the Config menu, and under the dropdown menu, select Configure Ports, Telnet Address, Other and then click on the SO1V button. This will prevent the second Entry Window from opening.



The Entry Window is the nerve center of N1MM Logger+. The program returns focus to this window automatically in many situations.

Program Menu Descriptions

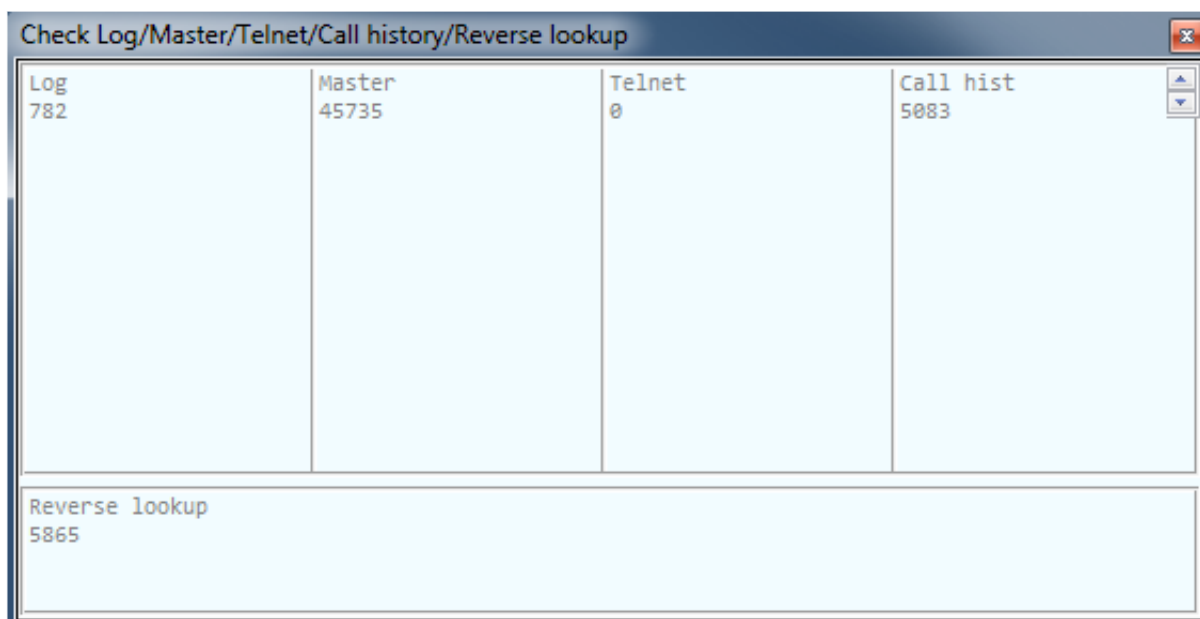
The manual contains detailed information about the Entry Window's menu choices:

- [File](#)
- [Edit](#)
- [View](#)
- [Tools](#)
- [Config](#)
- [Window](#)



- [Help](#)

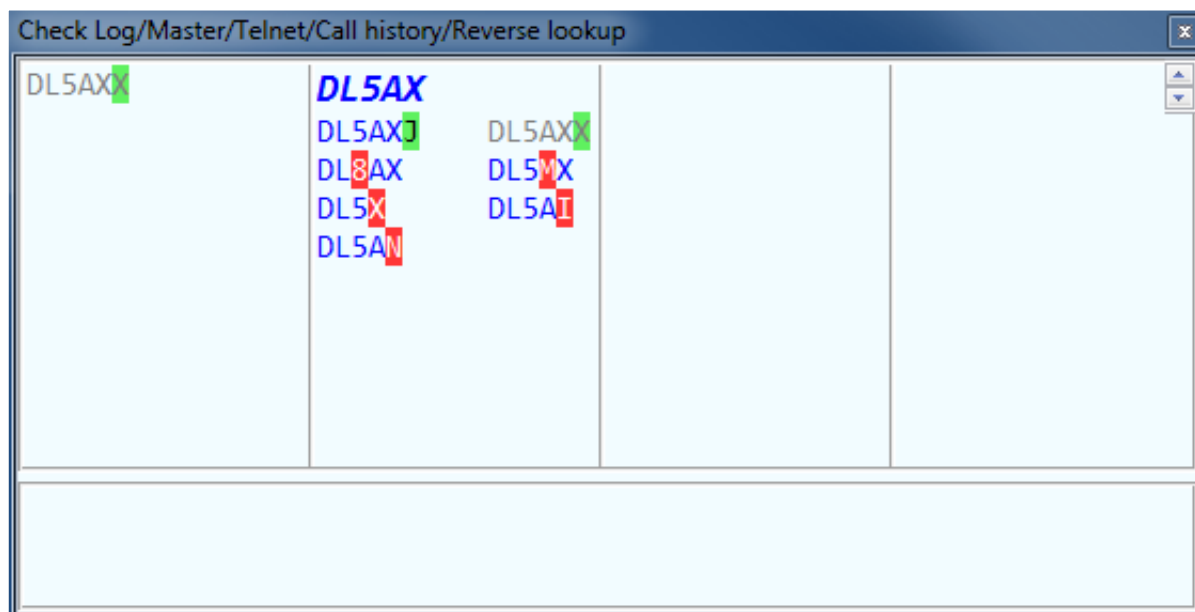
The Check Window



OK, another important window – the Check window. You open it by clicking on Check in the Entry window’s Windows menu.

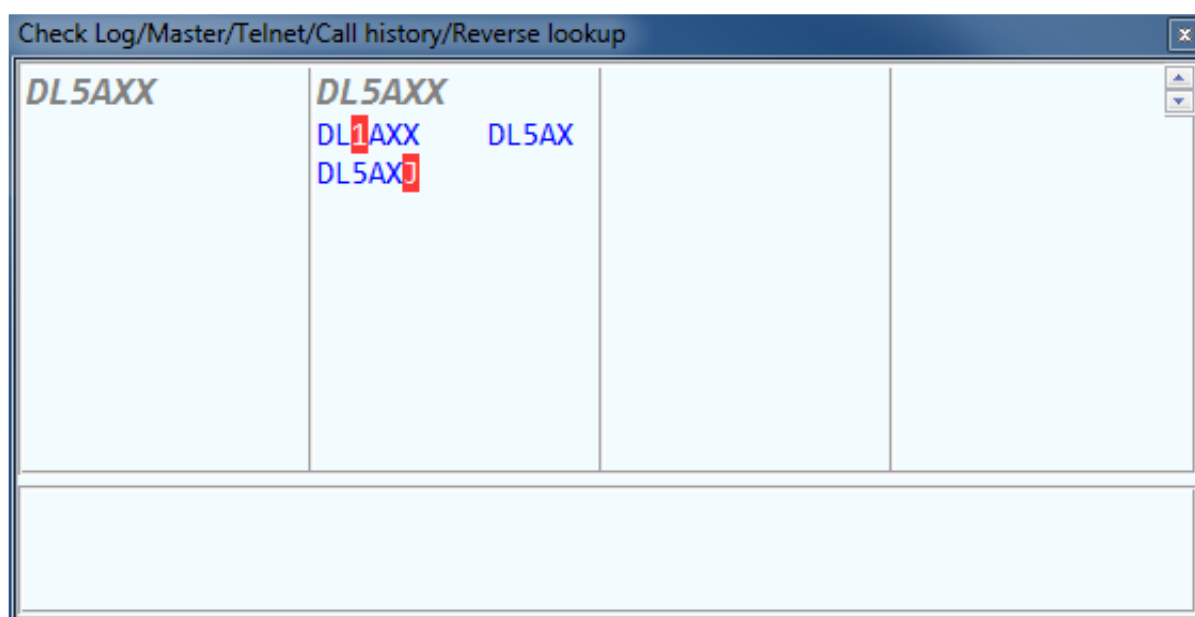
This window is used to display the results of checking a call sign against any or all of the following: your log; a master list of calls, variously called the master.scf or Super Check Partial file; call signs that have been spotted and received in the Telnet window; and call signs in a user-defined file called the Call History file. A Super Check Partial file is provided when you install the program, and the process of updating is covered in the [Tools Menu](#) section of the manual page on the Entry window.

First things first, though. When you type a call sign in the Entry Window, the Check window displays whether a match was found or not in the various selected sources. Call signs that differ from the one you have typed in by only one letter have the different letter highlighted in red, while similar call signs that are longer than the one you have typed in have the additional characters highlighted in green:



In this example, all four possible sources have been selected. You are in the process of typing DL5AXX into the Entry Window, and so far you have typed DL5AX. This exact call sign (DL5AX) was found in the master.scp file, and therefore it is displayed in bold-face italic font at the top of the master.scp pane. It is blue, indicating that you have not worked this call sign and it would be a valid QSO in the contest. Note in the left (log) pane that DL5AXX already appears in your log. A number of other call signs that differ from DL5AX in only one character were also found in the master.scp file.

If you keep on typing until the entire call sign has been entered, you will see:



Now the station's call appears in grey, meaning that it would be a dupe. There is much more on the Check window [here](#).

The Log Window

To begin with, click on Log in the Entry window's Windows menu. That will open a Log window on the screen, like this:

MM-DD HH:MM	Call	Freq	Snt	Rcv	M1	ZN	M2	Pfx	Pts
05-03 15:41	FM5BH	14195.00	59	59	✓	08	✓	FM	2
05-03 15:41	FM5BH	14195.00	59	59	✓	08	✓	FM	2

First, you should notice that the title bar of the Log Window gives the current date and exact time, the name of the contest, and the database in use. As you log QSOs, they will appear in the log. One is logged one above just to indicate how it looks. You'll note that each column has a fixed label – these labels change between contests. CQWW is a 2-multiplier contest, so the log shows columns for two multipliers: M1, which is the CQ zone, and M2, which is the country. The check mark in each multiplier column simply means that it is the first station for that multiplier on that band.

If you click on any column heading, the entire log is sorted by that attribute – for example, if you click on the “Call” heading, the log will be sorted by call sign. Click on the MM-DD HH:MM heading to switch back to the normal chronological order.

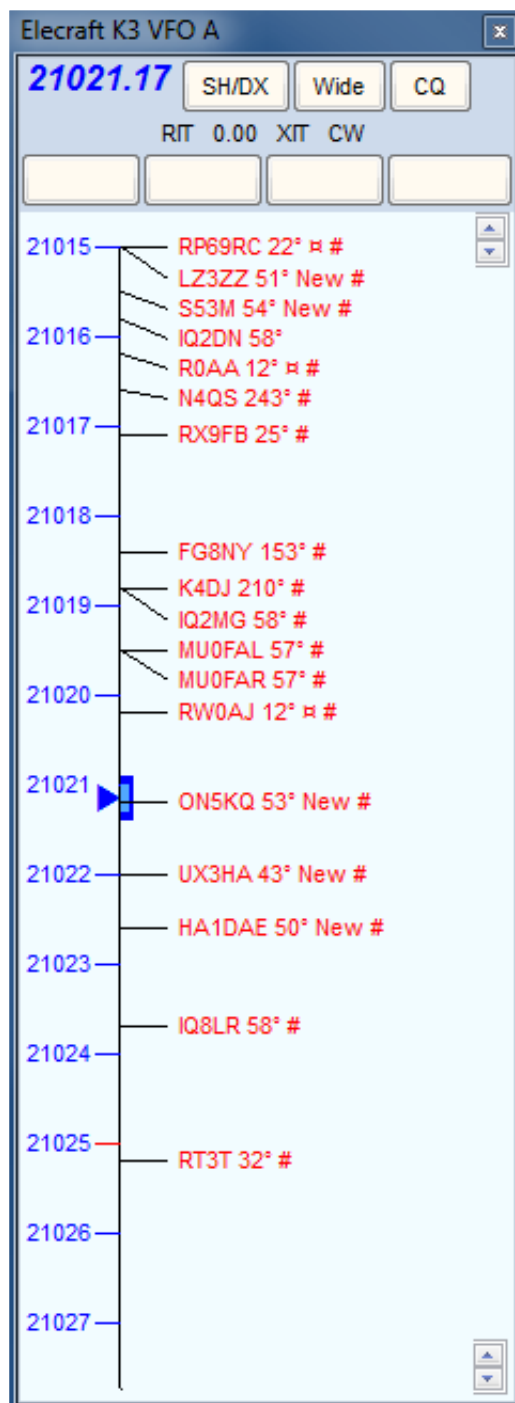
A further nice touch – if you click a second time on the column heading, for example the “Call”, the sort order switches from Ascending to Descending, so that all your “Z” QSOs come first, and your “As” last. Same goes for the date/time heading – normally, you'll want to leave the Log Window in ascending chronological order, so that each QSO you log appears immediately at the bottom of the list.

The Log window has two “panes”; the one above the grey bar is the normal log, while the one below the line is to show you previous QSOs with a station each time you type its call into the Entry Window. This makes it very easy to see quickly all the information about previous QSOs with a station, e.g. for that special someone who drops by and asks, “What was the serial number you gave me yesterday?”

Check out [this section](#) of the manual for more details.

Like all windows in N1MM Logger+, the Log window is resizable, as are the individual log columns - to resize the whole window, use your mouse to drag the lower right corner, and to resize a column grab the between-column divider and drag it right or left. You can move any window around the screen by dragging its title bar. Also, you can change the font size in the Log window by clicking on the font sizer buttons at the top right.

The Bandmap

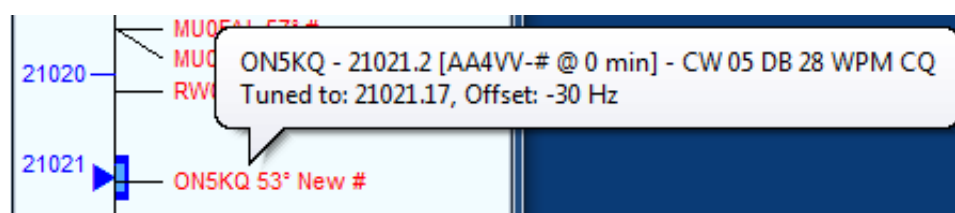


With an interfaced radio, you will find it useful to open a Bandmap window. Click Window, then select Bandmap, and the Bandmap corresponding to your entry window will be displayed.

In the example at left, I have filled the Bandmap with spots from a packet cluster, just to illustrate how spots are displayed. The stuff in the top bar is pretty self-explanatory. The SH/DX button, when mouse-clicked, sends that request to the cluster (which you don't know how to set up yet). The button labelled Wide toggles filters in your radio, though you may have to set it up first (the process is explained in the manual). In any case, clicking on it switches TO the filter mode shown. The button labelled CQ will QSY the radio to your last CQ frequency, if there is one on this band. The RIT, XIT and CW are clickable. Clicking on RIT will turn RIT on and the label will turn red; ditto for XIT. The number between RIT and XIT is the RIT/XIT offset. The CW indicates the radio's mode; you can click on it to change modes on the radio. The four buttons below those are user-programmable buttons, typically used to control radio functions such as filters, noise blanker settings, AGC settings and so on.

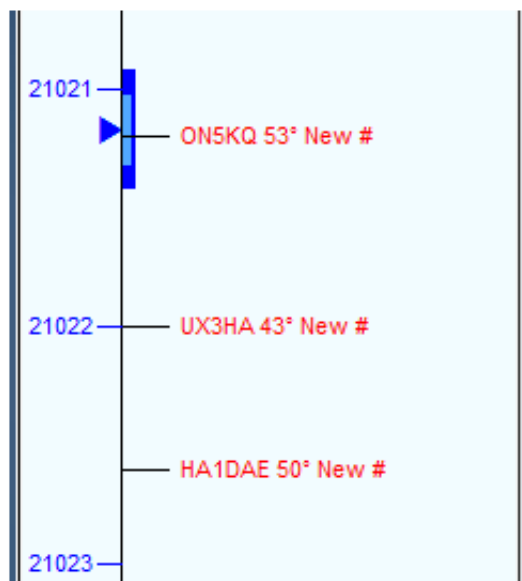
The color-coding of spots in the Bandmap is the same as in the Entry Window, so each of those red calls represents a new multiplier in the contest. Spots that came from a CW Skimmer on the Reverse Beacon Network are marked with a #. If a spot was newly spotted within the last two minutes, the word "New" will appear beside it. You can change the font size in the Bandmap window using the font sizer up/down arrows at the top right of the bandmap.

If you want, you can mouse over a spot, and the program will tell you more about it in a "tooltip" (unless tooltips have been disabled in the "Skins, Colors and Fonts" window).



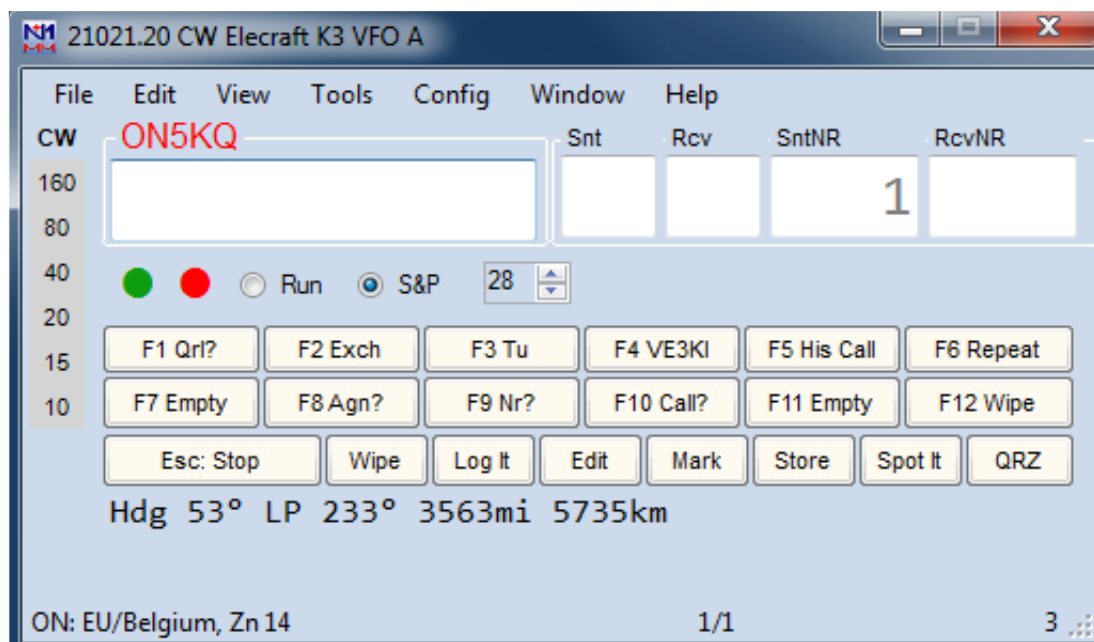
The information about the spot includes the frequency, who spotted it, how long ago the spot was posted, and spot comments (the comments on this spot came from a CW Skimmer). The second line in the tooltip, telling you how closely you are tuned to the spot, only appears if the radio is tuned to a frequency close to the spot.

In a busy contest, certain parts of the band can get pretty crowded with spots. Pressing the numeric keypad "+" key will zoom the Bandmap in and spread the spots out, like this:



Pressing the numeric keypad “-” key will have the opposite effect. You can also zoom the Bandmap using the up and down arrow buttons in the lower right corner of the Bandmap window.

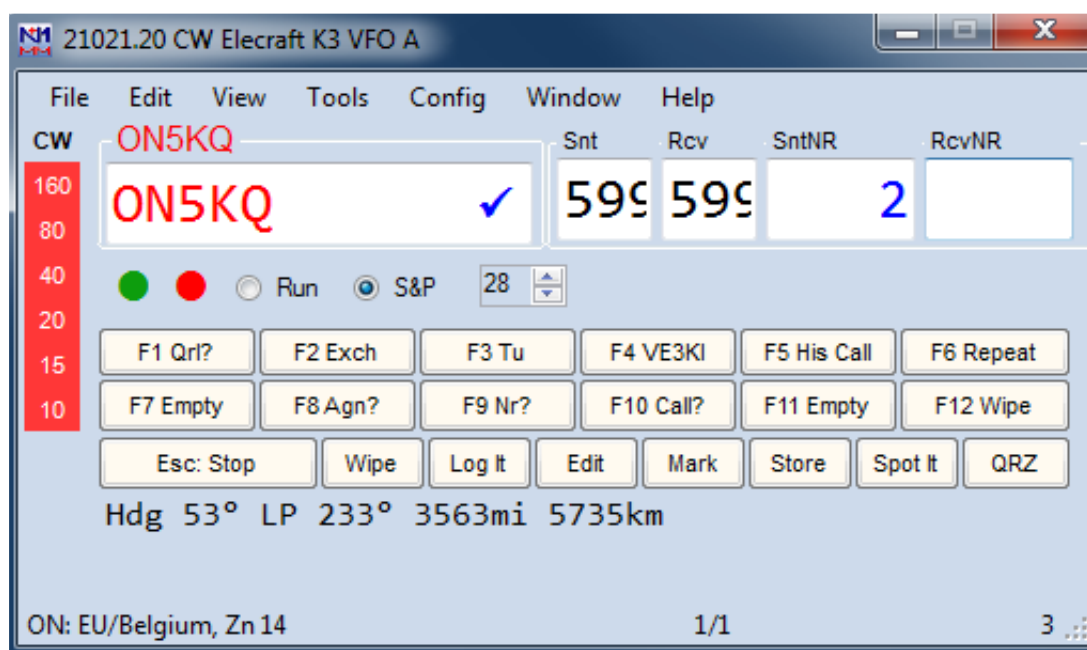
Another useful thing about the Bandmap: If you single-click on a spot, your radio will automatically be sent to that spot. If, instead, you click on the frequency scale (anywhere within the width of the frequency hash marks), the radio will go to that frequency. There are also keyboard shortcuts that will move your radio from spot to spot up and down the band. More on this later.



When you single-click on a spot, something else useful happens – the call-sign of that station is copied to the Call-Frame of the Entry window, like this. This is done this way so that if you discover that the station on that frequency isn’t ON5KQ after

all, you can just type in the correct call. This does happen now and then with packet spots.

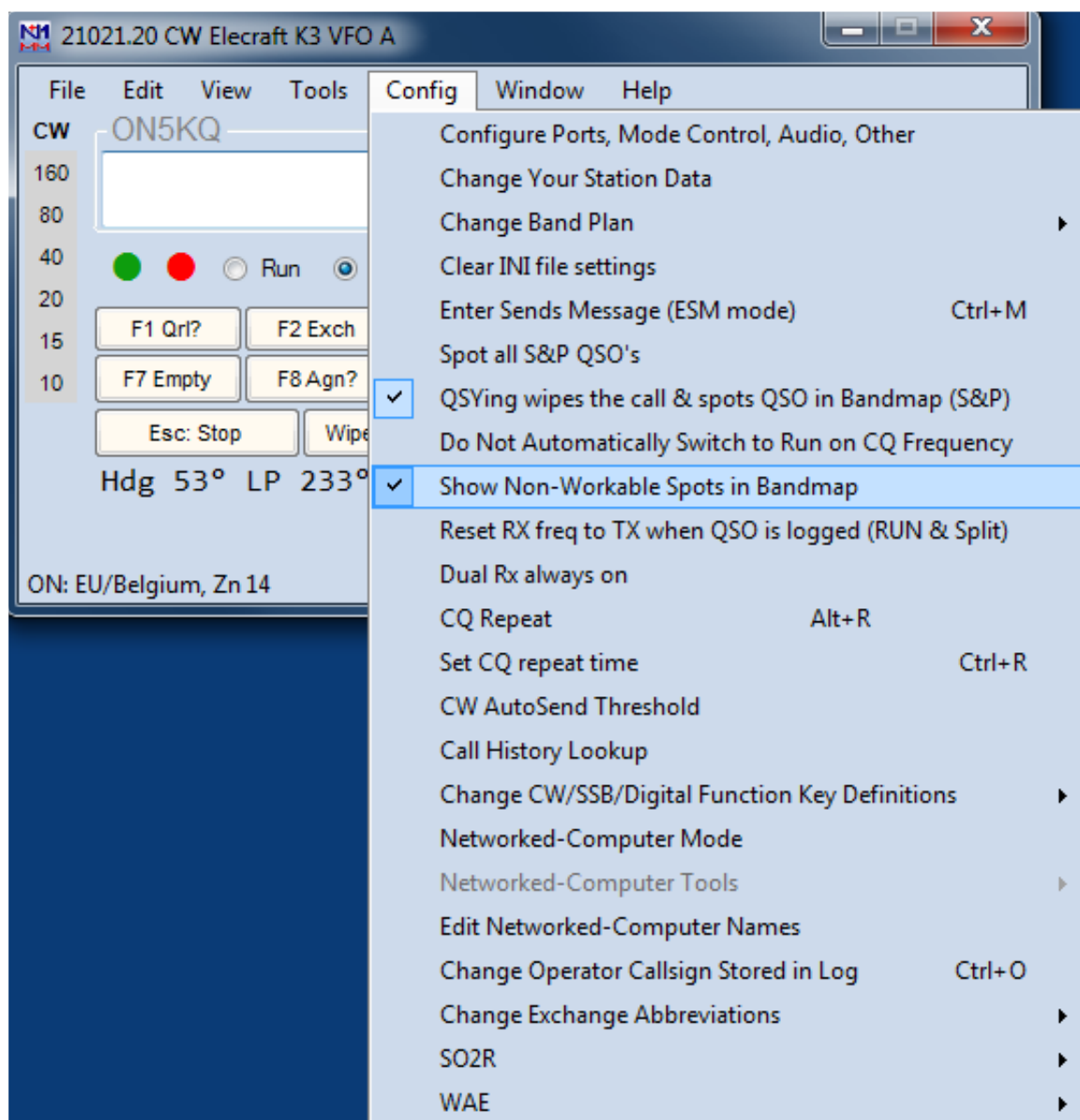
However, let's assume it's correct. In that case, all you have to do is call the station, get him to answer you, and hit [space]. Here's what happens - the call sign is pulled down into the Call-sign field, and the QSO is all set for logging, once you complete the exchange.



Another good thing **can** happen on the band-map when you complete a QSO and tune off the frequency - the spot's color code turns to grey, so that you know at a glance that you have worked the station already, and won't waste time when you come back to that frequency again.



To turn on this feature, click Config, and then, in the dropdown menu, click on the two items checked called "QSYing wipes the call & Spots QSO in Bandmap (S&P)" and "Show Non-Workable Spots in Bandmap" (see below). You need them both because grey spots are regarded as non-workable, and they will disappear unless Show non-workable spots is checked. If you hear a station and type in his call sign, but you don't work him and tune off his frequency, his call sign will appear in the appropriate color to denote whether he's a new multiplier or simply a valid QSO; either way you know to go back and work him later, if he's still there.



By the way, even if you never plan to use packet spots, the Bandmap is a very useful window. As you S&P your way up and down the band, each station you've worked will be marked with a grey self-spot, so you can skip by them the next time even if you have no packet spots.

You may be wondering how to move quickly up and down the Bandmap, hitting only the workable spots, or those that represent multipliers. This might be a good time to introduce another very useful section of the Manual. N1MM Logger+ makes extensive use of "hot-keys" to largely or entirely eliminate the use of the mouse during contest operations. There is a very useful section in the manual titled [Key Assignments \(Keyboard Shortcuts\)](#) which explains each and every such key combination. For example, under "Active Radio/Bandmap Key Assignments" it lists:

Jump to Spots *Note: If you are operating single mode, your mode won't change when jumping between spots.*



- **Ctrl+Down Arrow** – Get next spot higher in frequency.
- **Ctrl+Up Arrow** – Get next spot lower in frequency.
- **Alt+Ctrl+Down Arrow** – Get next spot higher in frequency that is a multiplier.
- **Alt+Ctrl+Up Arrow** – Get next spot lower in frequency that is a multiplier

Try these and see – with a full Bandmap and these keystrokes, it is easy to work 100+ search and pounce QSOs per hour, something that used to be regarded as impossible.

As we're finishing up this introduction to the Bandmap, it might be a good idea to offer another general hint when you're exploring the program. Be sure to right-click on each new window (other than the Entry Window), to see what options involving that window might be available to you. Each of these options is explained in the section of the manual dealing with that window.

If you do this with the Bandmap, you'll see this right-click menu:



Elecraft K3 VFO A

21021.20 SH/DX Wide CQ

RIT 0.00 XIT CW

21020 RW0AJ 12° 8 #

21021 ON5KQ 53°

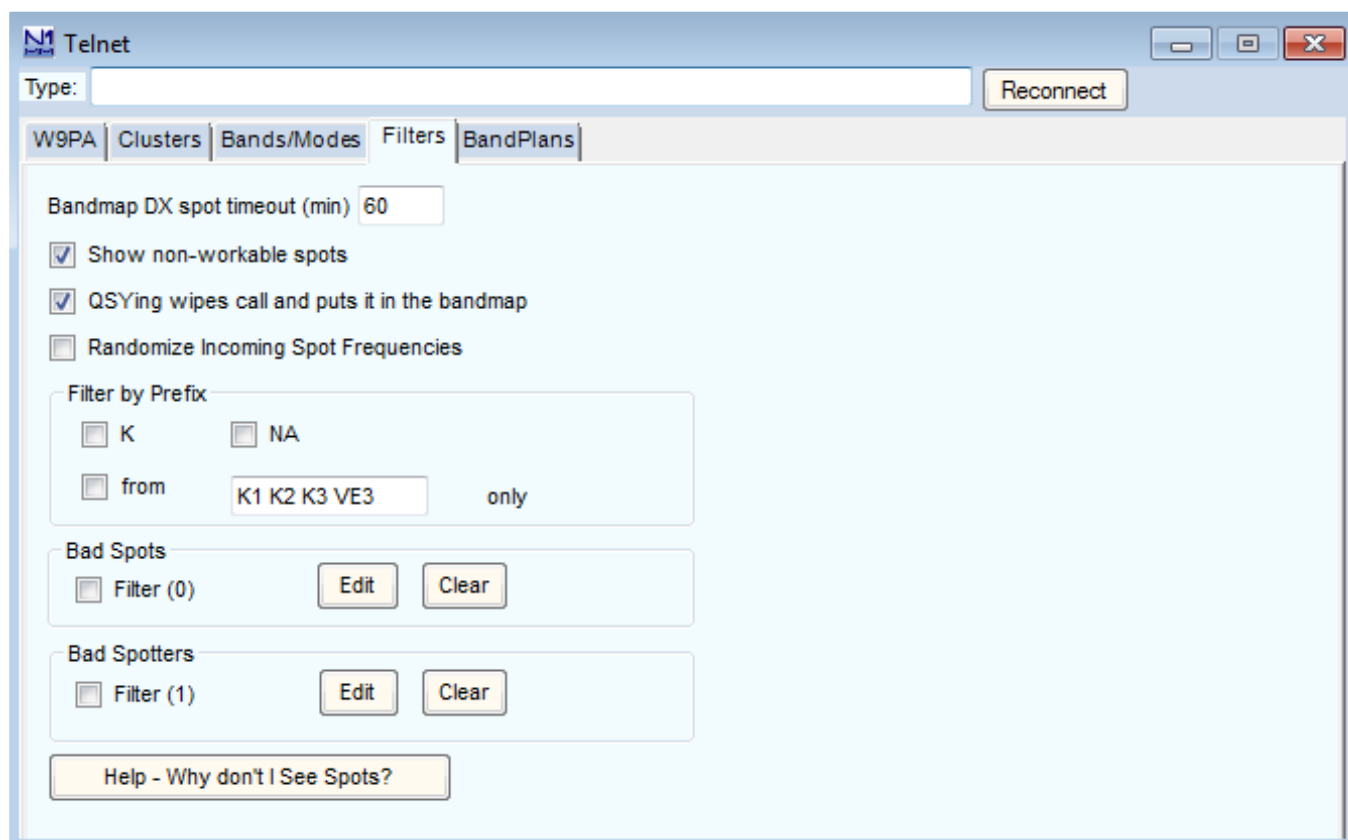
21022

21023

21024

- Remove Selected Spot
- Blacklist callsign
- Blacklist spotter
- Zoom In (Numeric Pad +)
- Zoom Out (Numeric Pad -)
- Go to Bottom Of Band
- Go to Top of Band
- Remove Spots, This Band Only, Leave Self Spots
- Remove Spots, This Band Only
- Remove Spots, ALL Bands, Leave Self Spots
- Remove Spots, ALL BANDS
- Turn Rotor
- Show Last 10 Spots
- Show QRZ
- Show Station
- Show Sunrise/Sunset
- Set Transceiver Offset Frequency
- Set Transceiver Timeout Time
- Set Transceiver Filter Codes ▶
- Find a Callsign (use Alt+F8 to Return)
- Bring to Foreground When Made Active
- Reset Radios
- Telnet Bands/Modes
- Telnet Filters
- Show Telnet History
- Show My Call Spot History
- Help

Of the choices here, Telnet Filters is perhaps the most useful. Click there and set the timeout interval in minutes – both self-spots and spots from packet will disappear after however many minutes you choose. Note that you can also set the two Config options mentioned above from this window as well.



The Reset Radios command in the right-click menu is also useful in case you lose control of your radio for some reason. Click it, and the program resets the connection. Check [here](#) for much more.

Logging Essentials

This listing pulls together a dozen (or so) keyboard commands that are essential in N1MM Logger. It was originally prepared to help a club planning first-time use of the program on Field Day

General

- Esc : stop, exit, abort, back out of whatever you are doing

Logging

- Spacebar or Tab : move between exchange elements



- Enter : log a completed valid QSO
- Ctrl+Alt+Enter : log an incomplete/invalid QSO with a note in the log
- Ctrl+N : add a note to the log
- Ctrl+O : to enter the operator's name or call sign (or type OPON in call sign field) – optional, use to keep track of who was operating when
- Alt+W : wipe whatever is entered so far (Alt+W again to undo the wipe)

Changing logged contacts

- Ctrl+D : delete last QSO from log
- Ctrl+Q : Quick Edit last QSO
 - while in Quick Edit (blue background), use Ctrl+Q to go to earlier QSO in log, or Ctrl+A to go to later one
 - Enter to accept changes, Esc to abort and return to logging

Changing current frequency & mode

- To change modes, type CW or SSB or RTTY or PSK into Entry window, hit Enter – or, if your radio is interfaced for radio control, just change modes on the radio
- To change frequency, type the frequency in kHz into the Entry window, hit Enter – or, if your radio is interfaced for radio control, change frequency on the radio

CW/SSB/Digital (needs CW keying interface/voice keyer/Digital interface respectively)

- Alt+U : switch between Run & S&P mode and messages
- F1 : send CQ message and switch to Run mode
- F4 : send your own call sign (S&P)
- ; key or Ins : send his call sign + exchange message (F5 + F2)
- ' key : send TU and log QSO (F3 + Enter)
- = key : re-send last function-key message
- Alt+K : edit current function-key message buttons
- Ctrl+K : ad lib keyboard CW/digital text (use Enter or Esc or Ctrl+K to end)
- PgUp/PgDn : CW speed up/down

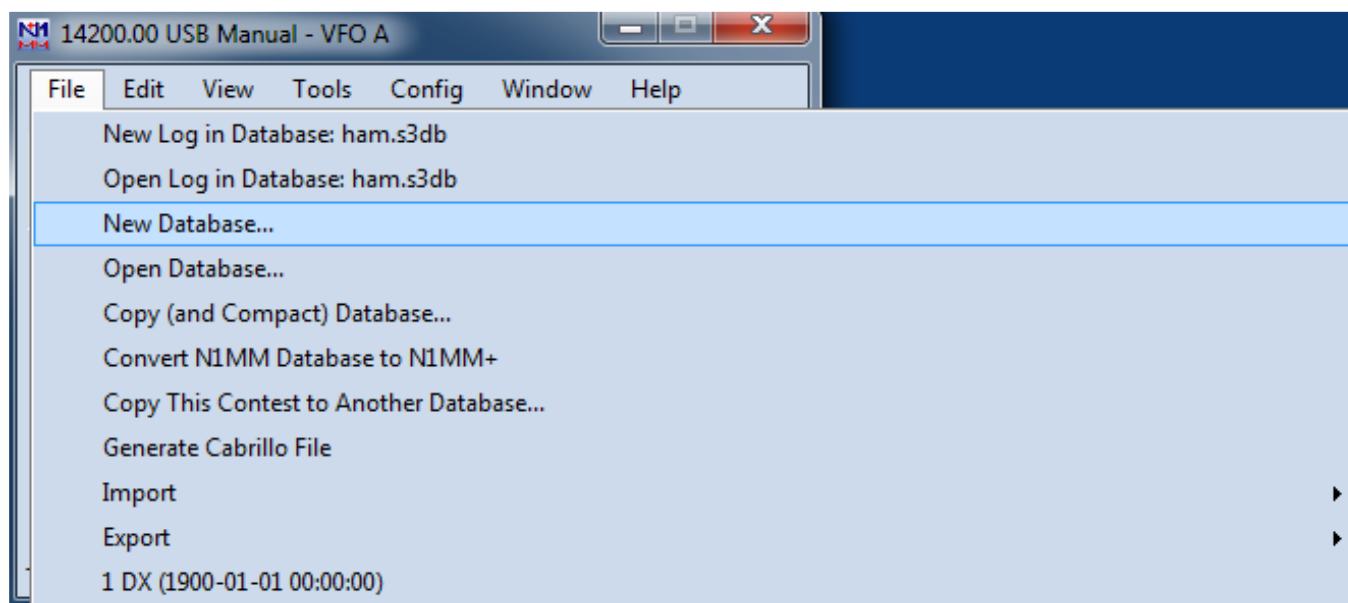
Setting up for a Contest

Setting up for a Contest

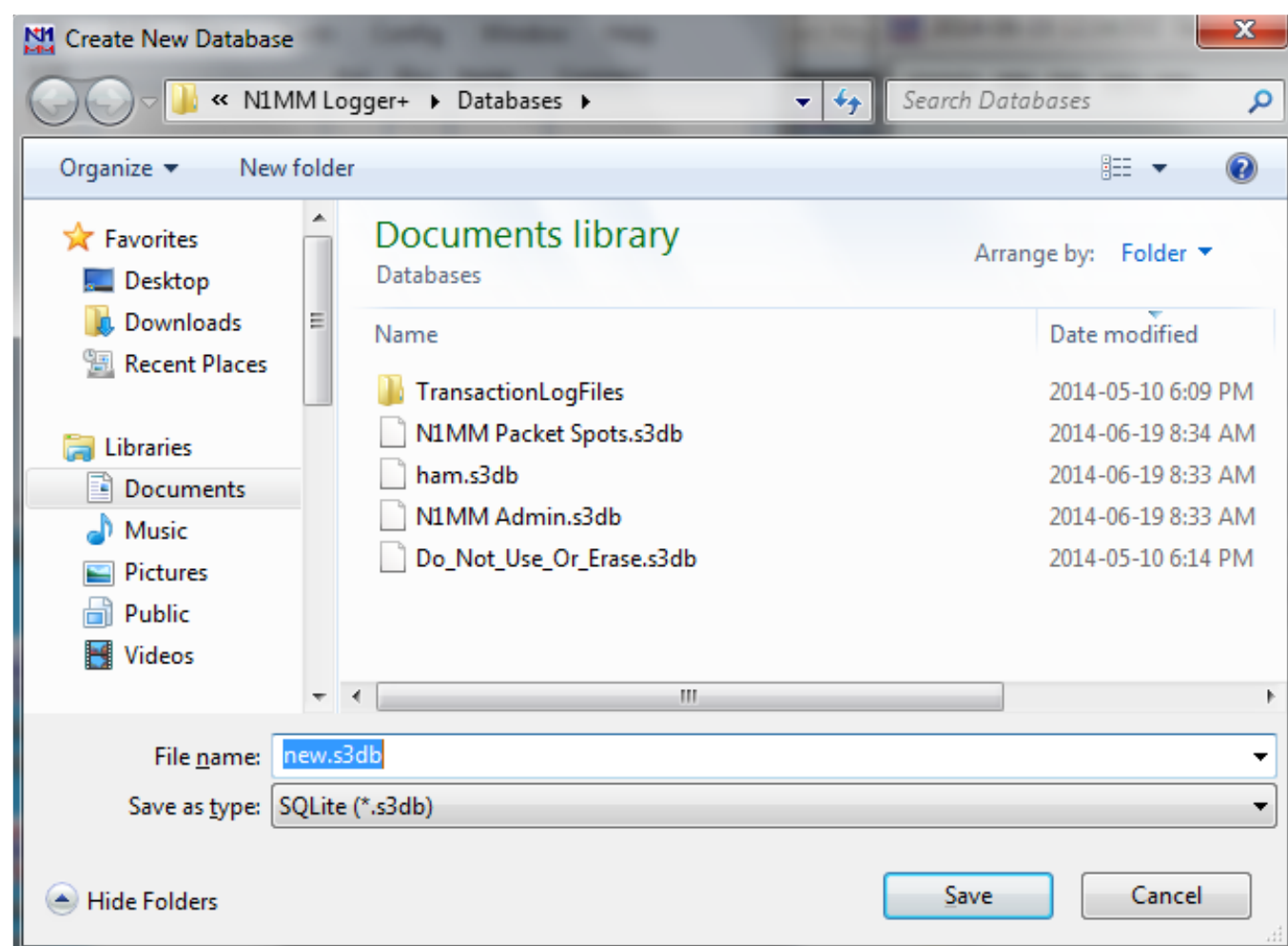
Preparing for a Particular Contest

Now that you have set up the hardware interfaces to your radio, including radio control (often called CAT), PTT, CW, etc., let's move on to setting up for a particular contest.

Note that the first database the program creates is named ham.s3db by default – you can have as many databases as you want, and name them what you want. Some people prefer to create a database for every contest, while others create one for a period of time, like every year. If you want to create a new database, for example “2014.s3db”, just click Files to drop down the menu, and then click on “New Database”.



That will open a standard file creation dialog in your N1MM Logger+ databases directory (inside the User files area):



Name your new database and click Save. You'll be switched to the new database and ready to go.

Back to the Files menu again. This time click "New Log in Database: XXXXXX" A new dialog opens, called the Contest Setup Dialog.

hamtest.s3db

Select Existing Log

Contest	Start Date	Contest Description
CQWPXCW	2017-07-08 00:00:00	CQ WPX CW
CWOPS	2017-06-28 13:00:00	CWops Mini-CWT Contest
ARRLVHFJUN	2017-06-10 18:00:00	ARRL VHF QSO Party (June)
ARRLVHFJUN	2017-04-22 18:00:00	ARRL VHF QSO Party (June)
VHFENAC	2017-04-21 22:00:00	Nordic Amateur Radio - VHF Activity

Contest Associated Files

Category Show Setup Show Rules 2 Contacts

Operator SINGLE-OP

Band ALL

Power HIGH

Mode CW

Overlay N/A

Station FIXED

Assisted ASSISTED

Transmitter ONE

Sent Exchange #

Operators W1AW

Soapbox

Note - the program does not validate categories. Check the contest rules for valid categories.

Time Category N/A

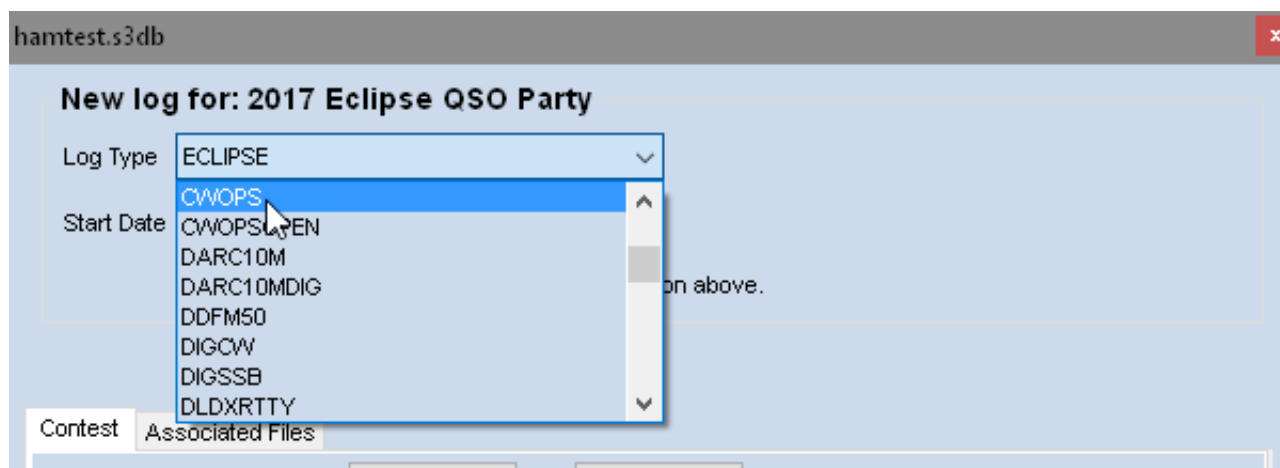
Omit RST. E.g. CQ/WW: 05 SS: A 56 EMA

Update Ops from Log

OK Help Cancel

This dialog has two important aids to completing it properly, the buttons labeled "Show Rules" and "Show Setup". Show Rules takes you (via Internet) to the sponsor's web page, while Show Setup takes you (again via Internet) to the Contest Setup page, located in [this section](#) of the manual. Typically, the latter will give you what you need to fill in the Contest Setup dialog.

The first thing to do is to click on the downward-pointing arrow in the Log Type field. That will open a list of abbreviated contest names. You can use your mouse to scroll through the list, or type the first letter of the contest to jump to the right general area. Once you have found the contest you want and highlighted it, click back in the original field and the drop-down list will close.



When you set up a new contest, the Start Date defaults to the Saturday (usually) following the current date. This can be useful if you have several versions of a given contest in your database. Year to year, dates of contests change, but the day of the week usually remains the same. **For this reason, the program assumes that the contest will actually start on the correct day of the week (and time of day) following the date when the new contest was set up.** For example, if you set up a new contest on Wednesday, and that contest normally starts at 0000Z on Saturday, the program assumes that 0000Z on the following Saturday will be the actual start time, for purposes of computing time on or off the air, and for displaying any goals you have set in the Info window.

To avoid confusion, it is best to set up the log you will actually use within a week before the start of the contest. You can always use a practice version earlier. So long as it is in the same database, you'll be able to set goals, set up your function keys and other associated files, and all of this will be available for use when you set up the "real" log. Just create a new log for that contest with the correct starting date and time and you're ready to go. You can delete the practice log or not, as you prefer.

Next, fill in the information in the next few fields, denoting the class and category you intend to enter in the contest. In each case, you have drop-down lists available. "Overlay category" refers to contests like WPX, which have both regular classes and categories like Rookie or "Tri-bander plus wires". In most cases, "N", for not applicable, is the answer you want there.

Beginning in 2011, some contests adopted the Cabrillo 3.0 standard for their log submissions, while others continued to require Cabrillo 2.0. The new standard



(embraced by the ARRL, IARU and some others) required a different breakdown of information in the Contest Setup dialog. The one shown above is for Cabrillo 3.0. Both dialogs are self-explanatory, but you can find more information on the Contest Setup dialog for Cabrillo 3.0 [here](#).

Next comes the most important part of this dialog, the Sent Exchange field. This field specifies what will be entered in your Cabrillo file as your sent exchange and what is inserted in the {EXCH} macro in your function key definitions:



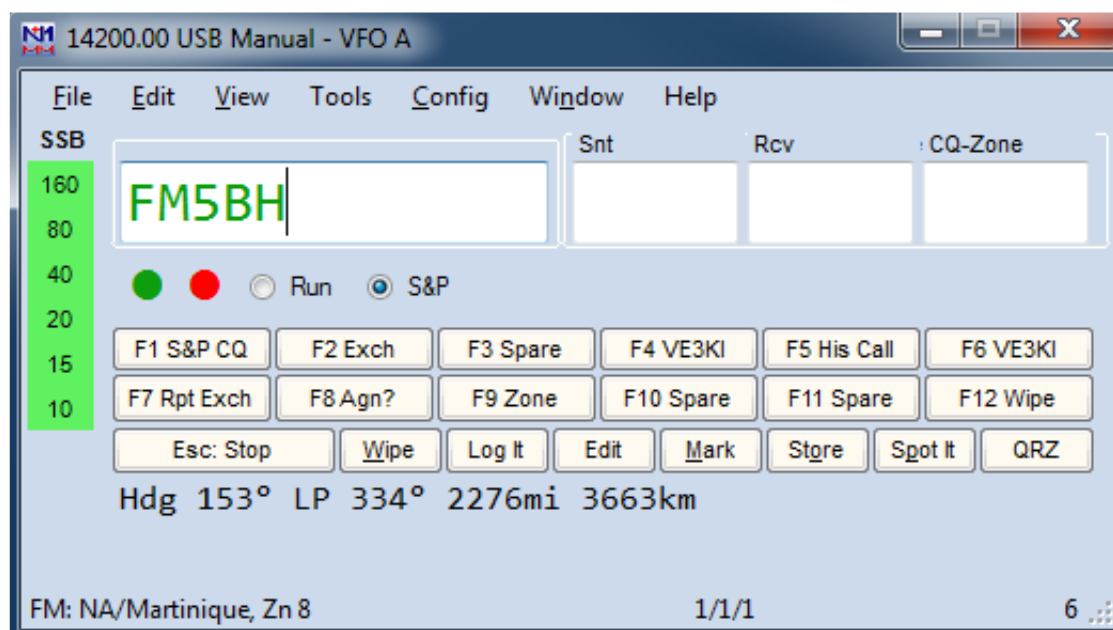
For many contests, the program guesses what you will want, based on the contest type and the contents of your Station Information dialog. For example, in this case, since the CQWW contest uses CQ zones as the exchange, it has already entered the zone, based on the zone already entered in my Station Information. Of course, this can be overridden if it is incorrect. Note the “Omit RST” warning – do not include 59 or 599 in the sent exchange. If the contest you choose has serial numbers, like WPX or the NA Sprint, then you need to put “001” at the start of the Sent Exchange field, separated from what follows by a single space if there is more to the exchange. Hence, for WPX, the Sent Exchange would read 001. An important exception is the ARRL Sweepstakes. The serial number is *assumed* for this contest only, so for example N4ZR’s Sent Exchange for SS would read B 54 WV. More information on the Sent Exchange for individual contests is in the [Supported Contests](#) section of the manual.

Once you have filled in the Sent Exchange, you’re done for now. Just Click OK and hit Enter.

Trying It Out

So really, that’s all you need to operate contests with N1MM Logger controlling your radio – the Entry Window, the Check Window, the Log Window and the Bandmap.

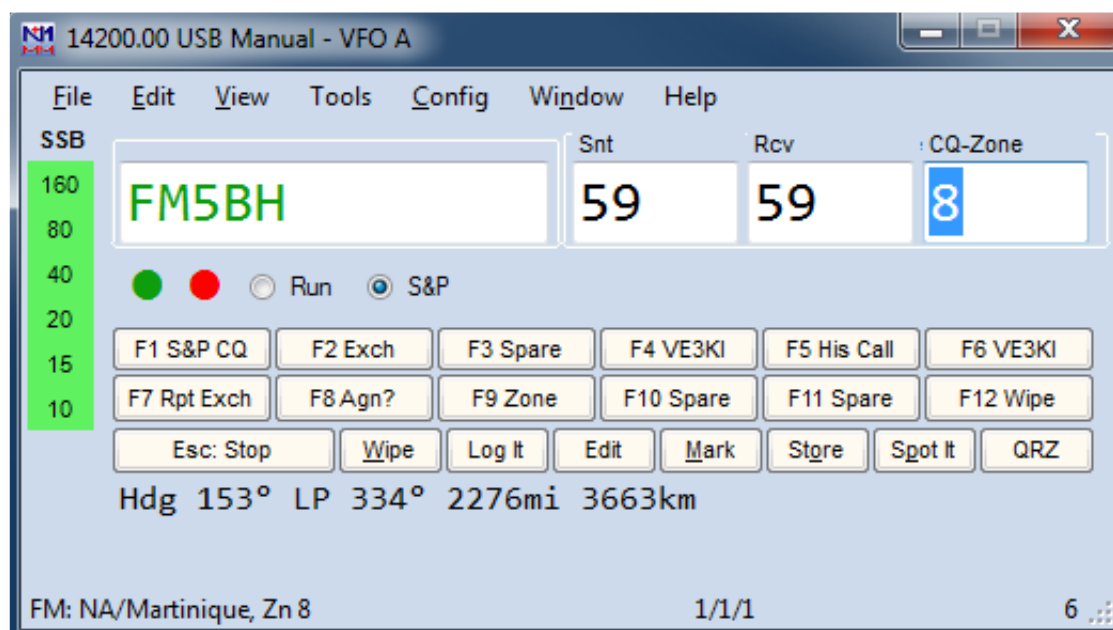
For the purpose of this guide, we’ll assume that you’re operating in the CQWW SSB contest. In that case, the Entry window will look like this:



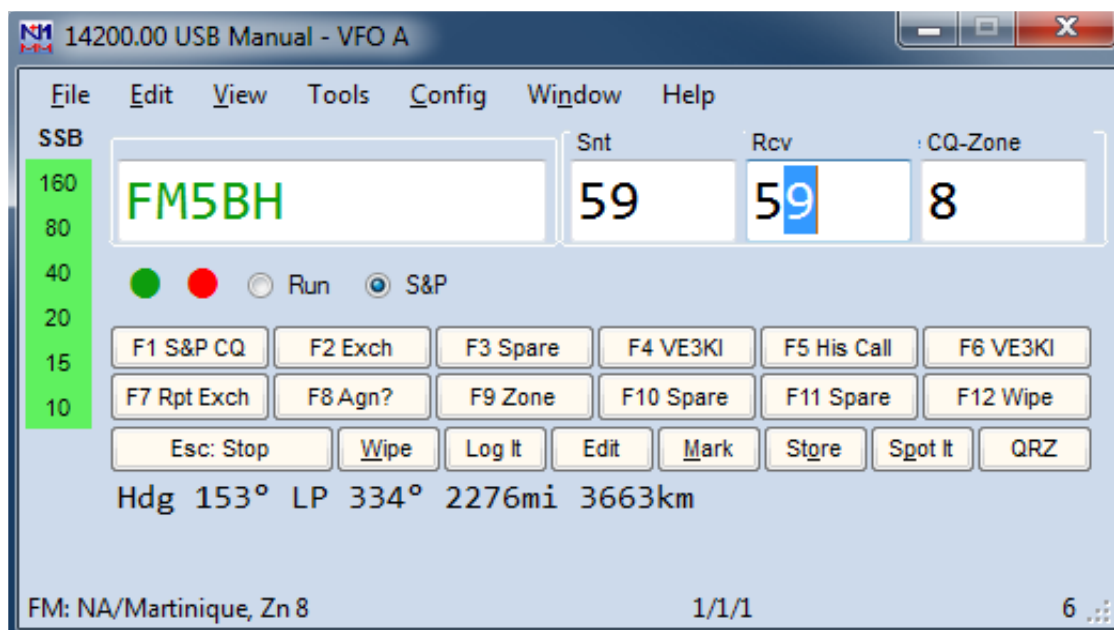
I'm assuming that you're going to operate phone to start, so I have typed in USB in the call-sign field, and hit [Enter] I have left the default frequency (20M phone) in place, but if I wanted to show another band, I need only type a frequency (in KHz) in that band (like 21200, for example) in the call-sign field and hit [Enter] to change bands.

When I've done these things, I then type a call-sign in the call-sign field. Even before I look at the Check window, I see that the call sign is color-coded green. This means that it is both a new contact and a double multiplier (in this case, both the new country of Martinique and the new Zone 8). If I had already worked Zone 8 on this band, then the call sign would be color-coded red, signifying just a new country. If both the country and zone had been worked before, but the station has not, then the color code would be blue. If it is a dupe, the call sign will be coded grey, and the warning "Dupe!" appears to the right of the entry fields. There is also a column of band buttons to the left, all of which are also colored green in this example, indicating that this station would also be a double multiplier on each of the other bands. The beam heading is displayed below, as are the country, its zone and continent (which affects points per QSO).

So, you call him, and he answers. At this point, just hit [Space] to fill in the expected signal reports and move the cursor to the Zone field. N1MM Logger uses the [Space] bar as a "smart tab." The idea is that it will skip fields you are unlikely to want to change and move immediately to the one you may need to. Note, too, that the zone is highlighted. This means that if you need to change it ... for example, if FM5BH really was in Zone 9 (he isn't) - you would just type "9" and the "8" would be replaced.



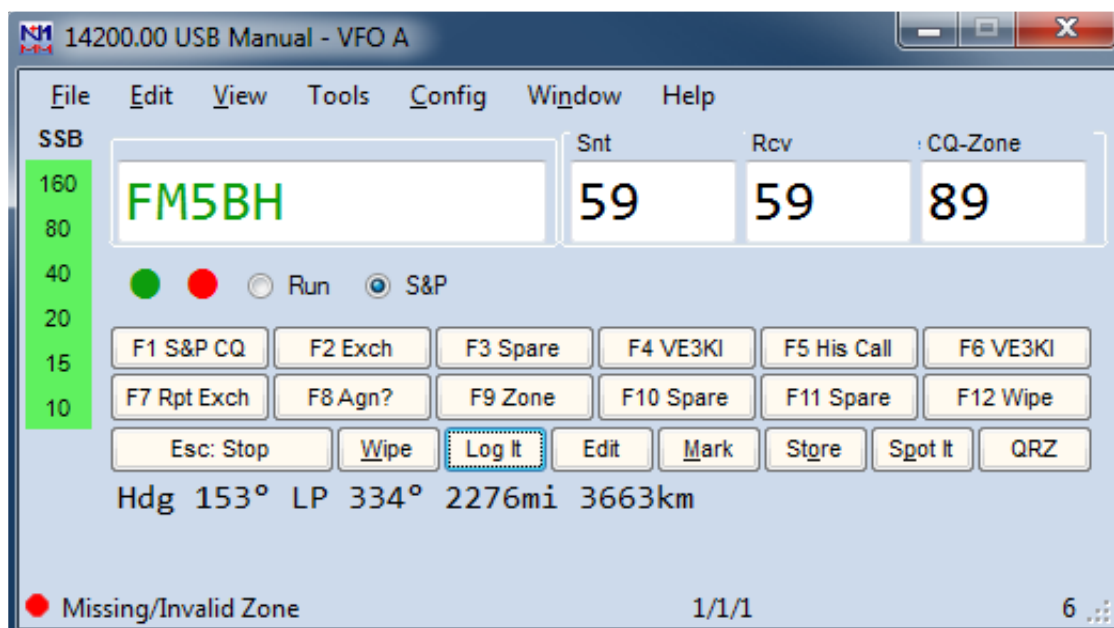
Ok, but suppose he gives you a “57” report instead of “59”. No problem – you just use the [Tab] key twice, and the cursor will be on the second digit of the received signal report, ready for you to type over. The [Tab] and Shift+Tab work just as you’d expect in Windows, moving forward or backward one field. Here’s how it looks:



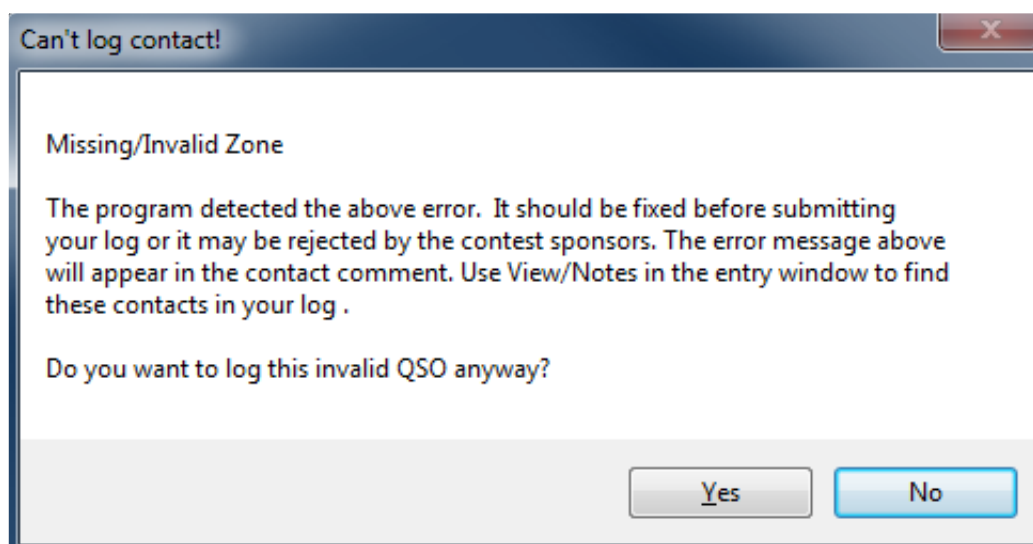
If you need to correct the call-sign, use the [Space] bar to get you quickly there and edit as necessary. Then, once everything is as you want it (and the QSO is done), all you do is hit [Enter] , and the QSO will be logged.

One thing that trips everyone up at least once is that the program checks to make sure that you have entered everything, and that everything is correctly formatted.

For example, if you accidentally fat-finger the zone number, like “89”, the program won’t let you enter the QSO. This can be disconcerting at first – you get an error message in the status line, like this:



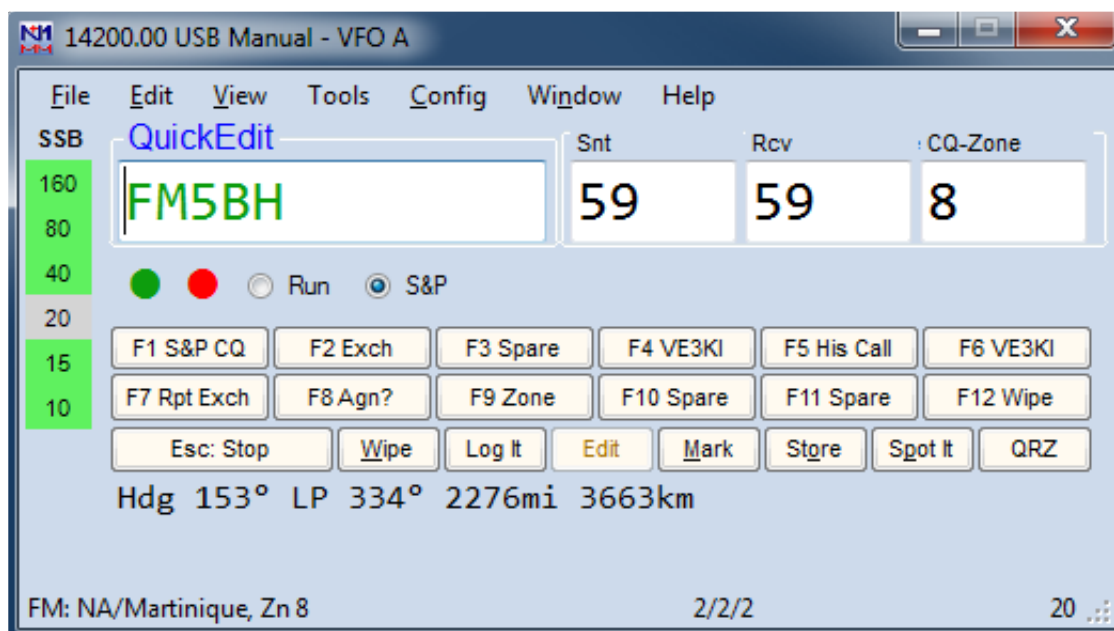
If the program has blocked you from logging the QSO, just use the [Space] bar to move to the appropriate field, correct it, and hit Enter to log. If you absolutely can’t figure out what the correction should be (for instance, with an ARRL section in Sweepstakes), you can hit Ctrl+Alt+Enter to bypass the exchange checking and log the QSO “as is”. or you can just press Enter again, which will give you the following warning dialog and allow you to log the contact despite the error:



Just in case you want to put a note in the log, when you use Ctrl+Alt+Enter to log an invalid contact, a note window opens. Type whatever note you want and Hit Enter, or just hit Enter to skip it and get back to the contest.

Suppose you miscopied a call sign, or he didn't really come back to your call, so you now have a mistake in your log. If you need to delete the QSO altogether, just hit Ctrl+D. The program will ask you if you really want to move the QSO to a Deleted QSOs file. Just hit [Enter] to do so, or type N for No.

If you need to edit the QSO, hit Ctrl+Q, and put the program in QuickEdit mode:



You'll notice the words QuickEdit above the call-sign field. You can move through the fields as before and make your corrections. Then hit Enter and the QSO will be corrected in the log, or else hit [Esc] to get back to normal logging mode and cancel any changes. Be careful not to leave the program in QuickEdit mode for your next QSO, or you'll screw up two QSOs at once!

As you log more QSOs, you'll note that the call-sign of your last previous QSO will appear in the space right above the call-sign field. This area, called the Call-Frame, will be very important once you have interfaced the program with your radio, but for the moment it is just a reminder of who that last guy was.

Remember

Remember, unless you have interfaced your radio, each time you change bands, you need to enter the frequency of that band in the call-sign field, and, if you change modes, enter that there too. For example, if you switch to 40M CW, you would need to enter 7000 and then enter CW (separately) before you begin logging QSOs on that band.

Operating a Contest

Operating a Contest

Before the Contest

This section addresses, in a brief and informal way, steps that you should take to get ready for a contest season and for each contest. It is worth reading. Where appropriate, links are included to point you to more extensive information.

Update Your Data Files

Make sure you have imported the latest **wl_cty.dat** file and downloaded the latest Super Check Partial (**master.scp**) file prior to the contest. Menu options for doing this may be found on the [Tools menu](#) of the Entry window.

If you are using a Call History file, import that into the database also and make sure Call History Lookup is on. More information about Call History can be found in [this section](#). Load the function key definition file that you plan to use into the database too. If you make any changes during testing, export your function keys to make sure your changes are saved. An explanation of how to create function key definitions is found [HERE](#), with additional information specific to phone function key messages [HERE](#). **Sample Function Key files** for the major contests can be found in the *>Downloads >Function Key Files* folders for CW, SSB, and Digital modes . Click here to [watch videos about downloading and configuring](#) your data files.

If you're going to be operating in a remote location without Internet access, go to the *>Downloads >Documentation Downloads (PDF)* folder for a PDF version of the manual. Store a local copy of the documentation in case you need to reference it when disconnected from the website.

Test

Today, the program supports CW, SSB and multiple digital modes, close to 300 contests, and a wide variety of radios and ancillary equipment. Contest rules change all the time, and organizers often forget to let logging software developers know. If this were a conventional software project, any sane programmer would declare it "untestable."

Since its early days, the N1MM Logger project has relied on users to do most of the testing. Rapidly releasing relatively small updates, with the option of retreating a version or two if necessary, makes this a relatively low-risk approach, **so long as users test each one enough in advance of the next contest they want to get into.**

If you are planning to operate in a contest a couple weeks from now, load the latest update NOW, create a contest “instance” as outlined [here](#), sit down with your radio, computer, DX cluster connection, keyers, and whatever else you use, and simulate logging a dozen contacts as if you were running (enter a make-believe call, type and hit function keys as fast as you can). Then log a few more in S&P mode. Make sure your messages and macros work as expected, make sure you can record and playback SSB messages on the fly, make sure the multipliers you think should be counted are scored right, log some contacts that **shouldn't be** multipliers or points and make sure they are handled properly. If operating Assisted, grab some spots, make some spots, check the color-coding of spots against the contest rules. Make detailed notes of problems, if any.

A lot of problems are the result of a local issue – hardware settings, user options or the like. Do take the time to check the documentation first, but then don't hesitate to ask for help on the [N1MM reflector](#). 4000 users and the N1MM team are there to help. *With thanks to David Robbins K1TTT, from whose input this section was adopted.*

During the Contest

Making Contest QSOs

Make sure you have your CW or SSB or digital function key definitions set up the way you want, set up as outlined in [Before the Contest](#).

Now let's begin. There are several ways to make and log a contest QSO with N1MM Logger+, depending on how much you want to automate the process. The details are the same for either phone or CW. The 4 main ways you can use the stored messages are listed here in ascending order of speed and convenience.

1. One key at a time – press a function key when you want to send the associated message. Use the [Space] bar to move your cursor. When you have everything filled in, press [Enter], and the QSO will be logged. Done this way, a typical Run (CQ) QSO would look like this:

1. F1 (CQ)
2. Station answers – copy call in callsign box
3. Say his callsign (phone) or press F5 to send it (CW)
4. Press F2 to send the exchange (either a stored voice message or CW)
5. Press [Space] to move the cursor to the exchange field
6. Type in the received exchange
7. Press F3 to send your acknowledgment
8. Press [Enter] to log the QSO

2. Semi-CT Style – CT was the DOS logging program that pretty much started all

this. It used the following convention to save keystrokes:

Enter the callsign of the station calling you. Press the [Ins] key to send his call and your exchange (CW), or speak his call and then press [Ins]. Once you have copied his exchange, press F3 (TU) and [Enter] to Log. If you are calling other stations (Search and Pounce, or S&P), you would first press F4 to send your call, and when the station responds follow the sequence as above.

3. Early N1MM style – Enter the callsign of the station calling you. Press the [;] key to send his call and your exchange. Copy his exchange and press the “[’] (right next to ; on US keyboards). The program sends the F3 (TU) message and logs the QSO. In S&P, you would hit F4 first, then [;] and then [’].

This saves some keystrokes, but there’s an easier way. A couple of decades ago, N6TR developed the idea of making TR Log “modal.” By that, he meant that the program would behave differently depending on whether you were in Run or S&P mode. Making this distinction let him massively simplify and shorten the sequence of keystrokes required to complete a QSO.

4. Enter Sends Messages – N1MM Logger has now evolved N6TR’s invention into what is called Enter Sends Messages, or ESM for short. You’ll find a full explanation of this mode in [this section](#).

In short, ESM enables you to enter a callsign and then step through the remaining steps in logging a QSO, simply by hitting the Enter key. The program anticipates what you’ll want to do next, moves the cursor, and highlights what canned message will be sent if you press Enter the next time. Note that if you wish, you can still press individual function keys at any time, to send a repeat or otherwise bypass ESM.

Once you’ve used ESM, we think you’ll never go back to the old way again.

Bugs Encountered During a Contest

When a bug was missed during testing and comes out during the contest please report it on the reflector right after the contest or, during the contest if it is a show stopper. Tom and the developers participate in many contests but they also read the mail during contests and can suggest work-arounds or sometimes bring out a new version. In addition, there are many other hams available there who can help.

Rather than writing down problems during the contest, try the following:

1. Use Alt+N to write a Note that will be attached as a comment to the QSO
2. At the end of the contest, use the menu option >View >Notes to see all the notes you have made during the contest

After the Contest

First, a Word on Protecting Your Data

After almost every contest, we hear from a new user (or sometimes even an experienced one) who is afraid he or she has lost the log from the contest just completed. Fortunately, it is usually not true, but here are a few things to remember:

- **Backup** – this is just as important with logging software as with any other computer application. Data not backed up can be data lost if something happens to your hardware or you make a mistake while manipulating the log database **if you haven't backed it up**. N1MM Logger+ stores all your QSO data in a file with the extension **.s3db**. The name of the file is whatever name you assigned to it when you first set up the program. There are other databases also used by the program – N1MM Admin.s3db, N1MM Packet Spots.s3db, and Do_Not_Use_Or_Erase.s3db, but all the QSO data are in that first one. The easiest way to do really secure backup is to use a free backup program such as Syncback SE to back up your active QSO database to a USB “thumb drive.” Any such drive you can buy today is plenty big enough, dirt cheap, and safe from virtually anything short of a ball peen hammer.
- **Save A Copy** – Before you do anything, even if you just want to peek into your QSO database with an SQLite viewer, save a copy manually to a safe location. You are, after all, only human; we all can make mistakes, so it's wise to do what you can to protect yourself against them.
- **Transaction Files** – During normal operation N1MM Logger+ saves the information about each QSO in a simple text file. These files are stored in a sub-folder in the Databases folder in the user files area and can be used to recover in the event the database file is corrupted.
- Here's an explanation of how you can use those files to recover your data quickly, during a contest, or at your leisure if you haven't done one of the two steps suggested above:
 - The transaction log is created for each contest you log to
 - The file is closed after each transaction and reopened to force the data to be written to disk
 - To keep things simple and foolproof, you are not allowed to change the name of the transaction log
 - The name is used to make sure you are loading it properly, and to prevent mixing logs of two contests. Example name: 'CQWWCW – 2005-09-19 – 14.TRN' i.e.: Contest name – date log created – an internal index number
 - To Recover your log, you **MUST** import the transaction log into a

NEW (empty) database and a NEW contest log. See [this link](#)

- The new contest log must be the same contest as the contest from the transaction file (Example: if restoring CQWPXCW, the new contest must also be CQWPXCW). Why? To prevent a user recovering from a database problem making the problem worse. This will prevent any issues from duplicate contacts and a number of other problems
- As you load the transaction log, a new transaction log is automatically made with the transactions in the first log. Thus you should never have to merge logs. You always use the last one

Editing Individual QSOs

The easiest way to edit a QSO is by double-clicking in the Log window on the data you want to change. In rare cases, you may need to select the QSO in the Log Window and right-click. Select “Edit Contact.” The Edit Contact Window will appear – for full details see the explanation [here](#).

Crackdown on Post-Contest Logging Changes

Contest sponsors are cracking down on post-contest log “massaging” that uses resources you access after the contest is over. The CQWW Contest Committee has recently been particularly explicit about this, saying that “the...Committee considers it unsportsmanlike to ‘clean’ your log post-contest using data sources such as recordings, call sign databases, etc.” This kind of restriction is **not** intended to apply to post-contest log changes that are based on things you noted during the contest, such as problems with the CTY.DAT file, bad abbreviations for counties, states or provinces, etc. If you caught it during the contest, you should feel free to fix it afterward.

Sometimes you may need to recover a QSO that you deleted by mistake during the contest. When a QSO is deleted, it is not completely removed from the database; instead, it is moved into a special log called DELETEDQS, from which it can be recovered as follows:

- First, export the contest log to ADIF (File > Export > Export ADIF to file > Export ADIF to file...). Open that ADIF file with Notepad and look for an entry that looks like <CONTEST_ID:nn>contest-name in each QSO record. Take a note of what nn and contest-name are – you will need to use them in the next step. Keep that Notepad window open.
- Open the DELETEDQS log from inside N1MM+ (File > Open Log in Database... – it will be the bottom log entry on the list), find the QSO in question, right-click on it and select Copy > Copy ADIF string (Copy is near the bottom of the popup menu). Then you can paste that into the Notepad window with the main contest log ADIF file in it. Edit the <CONTEST_ID:8>DELETEDQS field in the recovered QSO record to change it



to match the other QSOs in the file. Save the file.

- In N1MM+, create a new database (File > New Database...). In that new database, create a new contest log of the correct type. The start date and time won't be right, but you can edit those to change them to the actual contest date. Now import the edited ADIF file into the log (File > Import > Import ADIF from File...), and use the Tools > Rescore Current Contest menu item to recalculate the score.

Entering Multiple QSOs After the Contest

Computer trouble? Made a paper log during (part of) the contest? The program has some nice features that will allow rapid QSO entry. You can either enter the time for each QSO, or there are features to let you set the date and time via interpolation. (Remember, exact QSO times are not critical for contest sponsors, just within reason).

- Type frequency band (4 or 5 digit numeric frequency, e.g. 7000, 14000) in the call-sign textbox of the Entry window and hit Enter. Then type the mode (CW, USB, LSB, etc.) and hit Enter.
- Enter calls and exchanges, and log them, as long as they are on the same band. Don't worry about date and time right now.
- When you need to change bands, enter the new frequency band and continue.

Change Time/Date for a Single Hand-Entered QSO

Updating the date and/or time of a single QSO is best done by double-clicking on the time stamp for that QSO and then using the date-time box that appears to edit the date and time. Alternatively, you can use the Edit Contact option in the right-click menu associated with the Log Window and edit the date and/or time in the Edit Contact window.

Change Time for Multiple Hand-Entered QSOs

This method can be used to interpolate approximate times for a series of contacts. This time interpolation feature is most useful if you have a bunch of QSOs to enter. If you have one or two QSOs whose times need changing it is easier to do it by editing in the [Log](#)

Make a Copy of Your Log

Make a backup copy of your log database. You cannot (automatically) reverse the time interpolation process below. You have been warned!

- In the Log window, single-click the **first QSO** whose time and date you want



- to change. to highlight the row
- With mouse over the Log window, right click
 - Select >Set Start Interpolation Time Row
 - Enter the new timestamp for the first QSO, and click [OK]
 - Now, click on the **last QSO** whose time/date you want to change, to highlight the row
 - With mouse over Log window, right click
 - Select >Set Stop Interpolation Time Row
 - Enter desired time for that last QSO, and click [OK]

Changing QSO Time and Date

The utility will average out and interpolate the time for each QSO in the group of QSOs you have selected. **Remember there is no “undo” feature.** If you have a large gap in time in your hand log, enter the first batch of QSOs, and do the interpolation. Then enter the second group of QSOs and do a 2nd interpolation.

Single Computer Mode Only

If you have more than one computer networked in N1MM+, this feature does not work. The option is disabled whenever Networked Computer Mode is on.

Change All QSO Times/Dates by a Fixed Amount

Back Up Your Log Database

While you could easily recover from a mistake during the following adjustment by performing another offset, it is still a good idea to play safe.

This will fix a log where all QSOs are off by a fixed amount of time (for example, when the times are correct but the dates are wrong by one or more days because the QSOs were entered after the contest).

- Right click in the Log window
- Select >Change timestamps of the entire log by a fixed amount
- A dialog box will open, and enter offset time (+ or -) in minutes

The date will automatically adjust if the offset rolls a QSO into a different day. Time is entered in minutes, and can be negative time to go backwards. (You might need a calculator to determine the offset minutes if your date was off by many days, months, or years). For example, entering +1440 will shift a complete day forward; -2880 two days back.

How to Create Cabrillo Files

To submit your log, you need to export it from the database in the proper format.

Cabrillo is used by all major contests.

- Select File >Generate Cabrillo File.
- Make sure that your Station information (Config >Change Your Station Data), and overall contest setup are correct (in the Contest Setup dialog, reached through File >Open Log in Database ...). For example, is your entry class correct? Your power classification? Whether Assisted or not? Are your State and ARRL Section both entered correctly in your station data?
- Did you put the right information in the Sent Exchange field, and nothing else? For example, when the exchange in a contest is 5NN WV, it may be tempting to put the whole thing in the Sent Exchange. That will screw up the Cabrillo file with multiple signal reports for each QSO, so get in the habit of putting the signal report in your stored messages, **not** in this field.
- A Cabrillo file will be created named your_call.LOG. By default this is placed in the ExportFiles sub-folder in the N1MM Logger+ user files directory, but you are given the options of choosing a different name and/or of saving the file anywhere else you wish.

It is a good idea to rescore your log (Tools >Rescore Current Contest) before generating the Cabrillo file.

How to Merge Contest Logs

If you ran a multi-op station but did not network your logging computers, you will need to combine the logs from each computer into a single log submission for the contest sponsors.

Using N1MM Logger+ and ADIF Files to Merge Logs

This merge method is the most automated and should require no manual log editing, but will only succeed if the contest types in each logging computer were identical. If the contest types were not identical, it may be possible to recover with the help of a text editor and some detective work, but it will likely not be easy. It's better by far to avoid this situation by using the identical contest types during the contest.

1. Examine the logs to ensure that the contest types are identical in each computer: >File >Open Log in Database
2. Export an ADIF file from each logging computer: >File >Export >Export ADIF to file. Assign a unique name to each ADIF file to distinguish it from others when importing. Before continuing, guarantee that the contest types from each computer were identical by opening each ADIF file with a text editor (like Notepad) and looking for the ADIF expression `CONTEST_ID`. They should all be the same length and contest name. For example:
`<CONTEST_ID:14>ARRL-FIELD-DAY`
3. Copy all exported ADIF files to the computer that will create the merged log



4. Launch N1MM Logger+ in the merge computer. If the merge computer is one of the ones that was used during the contest, you will need to create a new database for the merged log: >File >New Database. Now in the new database or on the new computer, create a new contest log for the merged records: >File >New Log in Database. Be careful to make the contest type identical to the contest type that was used during the contest
5. Import the extracted ADIF files one after another into the new contest log: >File >Import >Import ADIF from file
6. Use >Tools >Rescore Current Contest to rescore the contest
7. Extract the new, merged contest log for submission to the contest sponsor: >File >Generate Cabrillo File

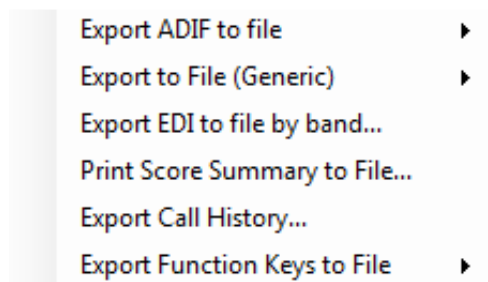
Using Excel and Cabrillo Files to Merge Logs

In some circumstances, it might be easier to combine logs outside N1MM Logger+ by importing the Cabrillo files into a spreadsheet program like Excel. As with the ADIF method, this works best if the contest types are identical, or at least use the same Cabrillo format (i.e. similar contest exchanges, same columns).

1. Create a Cabrillo file from each log: >File >Generate Cabrillo file. Assign a unique name to each log file to distinguish it from others when importing
2. Copy all exported Cabrillo log files to the computer that will create the merged log
3. Combine the QSO records from each Cabrillo log into a single text file using a text editor (like Notepad). Open each Cabrillo file, and copy only the QSO records – leave out the header information in the beginning and END-OF-LOG statement at the end. Paste this QSO information into a new text document (a .TXT file) with the QSOs from every log.
4. Launch Excel in the merge computer, and import the combined .TXT file into a spreadsheet. In Excel: >File >Open, set file type for TXT, and select the merged QSO log file. In the Excel text import wizard, declare the original data type as fixed width. In the Data Preview dialog window, adjust the field delimiters as necessary to begin each Excel column at the beginning of a log field. Press [Finish]. Examine the QSO columns in the spreadsheet to ensure that your import was successful
5. Select the entire spreadsheet using your mouse or [Ctrl]A, then sort the spreadsheet by date and time: >Data >Sort, column D (date), and column E (time)
6. Export the sorted log data to a space-delimited file: >File >Save as >FORMATTED TEXT (Space Delimited) .PRN
7. Using an editor, copy/paste the Cabrillo header information and END-OF-LOG statement from one of the original Cabrillo logs into the sorted data file. Rename this file as a .LOG file type and submit it to the contest sponsor.

How to Print the Log

There is no specific option for printing a log directly. However, if you Click on Export on the File menu, there's a variety of options that can be used to create a file that you can then print a copy of:



The most likely reason for wanting a printed log is for awards submissions or archiving. Because N1MM Logger+ is not intended as a general-purpose logging program, it does not offer award tracking functions. However the ADIF file option will give you a file that can be readily imported into any popular general logger. If you just want something for a notebook, the Generic export will give you a text file that can be printed from Notepad.

How to Get Statistics

From the View menu item in the Entry window, choose Statistics. This tool allows you to select any two data points of interest. For example, you can select hours for the Row and Zones for the Column, and the program will display a table of how many QSOs in which zones were worked in which clock hours. This is a lot easier to use than it is to explain in words, so give it a try.

Finding Help

Finding Help

The On-Line Manual

This WordPress-based manual is maintained in real-time by volunteer authors who make changes to this document as the program changes. If you are reading the >N1MM Manual on the web, you are reading the absolute latest version of the N1MM Logger+ manual. It may lag announced program changes by a few days, but hopefully not more than that.

Off-Line PDF Files

However, you may need to access the N1MM Logger+ manual from a location without Internet access; or you may prefer using Adobe Reader to view and search the manuals.

There are two methods for local storage of the documentation in Adobe PDF format.

- Automatically download the latest PDF file *from within the program* by selecting >Tools >Download Latest N1MM Logger pdf manual. This method will automatically locate the file on the website. Save the file to your Documents/N1MM Logger+/SupportFiles folder.
- Manually download the latest PDF file *from the website* by selecting >Download >Documentation Download(PDF). With this method, you may save the file to any location, but the recommended directory would be your Documents/N1MM Logger+/SupportFiles folder.

Opening the PDF Manual from within N1MM+

When you download the *n1mmplus.pdf* file to your Documents/N1MM Logger+/SupportFiles directory - using either of the methods described above - that file can now be easily opened from within the program by selecting >Help >N1MM Logger Manual.

N1MM Logger Discussion Forum

You will find that the N1MM Forum is the most active and helpful resource for getting answers to your questions about N1MM+. Refer to the [>Support >N1MM Forum](#) section for registration and participation information.

Setup

Software Setup

Software Setup

Initial Installation

Downloading and installing the program is described in detail in the Getting Started section of the manual, at [Downloading the Software](#) and [Installing the Software](#). The purpose of this section of the manual is to document advanced methods for setting up the program for multiple independent configurations. Users of basic single-user installations who do not need more than one configuration will not need to use the methods described in this section, and should consult the **Getting Started** section instead.

Do not try to install multiple copies of the program

There should never be more than one copy of the program installed in a single operating system. The program and its installer use Windows Registry entries that only allow for one copy of the program. There are mechanisms to support multiple call signs, multiple hardware configurations, and even multiple Windows user accounts from a single program installation. See the sections below for information on these.

Comments on the Transition from N1MM Logger Classic

The file structure is changed in N1MM+ as compared with N1MM Logger Classic. The program itself is now installed under **C:\Program Files** (or **C:\Program Files(x86)** on 64-bit systems), but none of the files it writes to are stored there. All user files (databases, ini files, error logs, mc files, wav files, ADIF files, Cabrillo files, UDC files, call history files, etc.) are stored in dedicated subfolders in a Logger+ user files area, which by default is installed inside your personal **My Documents** folder. The installer offers the capability to change either of these locations, but it is recommended that you do not do so; just accept the defaults.

Digital engine files (MMTTY, 2Tone, Fldigi) have not been rewritten, and still need to be stored outside the **C:\Program Files** path in Windows Vista, 7, 8 and 10, just as they did with Logger Classic. One solution is to leave them where they were with Logger Classic (e.g. under **C:\Hamradio\MMTTY** or **C:\MMTTY** or ...); a second solution is to create a folder inside your Documents folder for digital engines. Either way works.

Your existing message files from N1MM Logger Classic will work. A partial exception is SSB message files, where the default location for wav files has changed; you can either keep the old mc files and bury your wav files one level deeper in the wav folder (i.e. create a wav subfolder within the wav folder that was created during the install, and put any operator-specific folders within that second-level wav folder), or you can remove the leading wav\ from filenames in the old mc file. Either way works.

Call history files and UDC (User Defined Contest) files should also transfer over without a problem. However, the Logger's ini file(s) will **not** transfer (you will have to redo your hardware configuration), and we recommend that you go with the Telnet cluster list supplied with N1MM+. It has recently been augmented and revalidated.

Multiple Call Signs

If you use the Logger with more than one call sign, you should set up a separate database for each call sign. This includes call signs that have a modifier prefix or suffix (like W1ABC/3, or ZL/G4ABC), as well as club call signs, call signs of guest operators who use their own call sign during a contest, or the call sign of a multi-operator station where your computer is used. In each database, make sure that the call sign in the **Call** box in the Station Information dialog window (from the **Config > Change your Station Data...** menu item) is the actual call sign used when that database is open. The call sign from this dialog window is what is sent using the **{MYCALL}** and * macros, and it is also the sent call sign that appears in every QSO: line in the Cabrillo file. For log-checking purposes, this needs to be the call sign that was sent over the air, not the operator's call sign (to change the operator's call sign in the log, use the **OPON** command or **Ctrl+O** ; to change it in the Cabrillo file, change the contents of the **Operators** box in the Contest Setup window for that contest).

If you already use more than one database with the same call sign, you should take note that when you create a new database (from the **File > New Database...** menu item), the station information is carried over from the database that was open at the time you created the new database. Therefore if you want to create multiple databases with one of your alternate call signs, you should first switch to an existing database that uses that call sign before creating the new database, in order to avoid having to re-enter the station information in the new database.

If the only thing that changes between databases is the call sign and related information in the Station Information dialog, using separate databases is all you need to do. If you also change hardware configurations for different call signs, you might want to use the **Multiple ini Files** capability described in the next section.

The use of call signs in ADIF, Cabrillo and N1MM Logger+

There are as many as three different ways call signs are used: as station

identification on the air, as identification of the operator, and to identify the station owner. The first two of these are used by N1MM Logger+ and appear in different places in the Cabrillo file. The third one normally does not appear in Cabrillo files, although there is a way to add it to the **OPERATORS:** line in the header. All three can appear in ADIF files, but the Logger only exports the first two to ADIF.

The most important one is the station call sign, i.e. the call sign that the station identifies with over the air. This is the **STATION_CALLSIGN** field in ADIF. It is the call sign that appears as the sent call sign in every QSO: line in the Cabrillo file, as well as in the **CALLSIGN:** line in the Cabrillo header. In N1MM Logger+, this is the call sign that is entered in the top (Call) box in the Station Information dialog (**Config > Change Your Station Data...**). It is the call sign that is sent when you use the **{MYCALL}** or * macro in function key messages. It is only stored in one place in a database, because it is supposed to be the same for every QSO in that database. It does not change between contests in a database.

If you use more than one station call sign (e.g. your own and a club or secondary call sign), you should use separate databases, one for each station call sign that is used on the air as station identification. You can create new databases using the **File > New Database...** menu item, and set up the station call sign and other station-related data in the Station Information dialog at the time you create each database.

Note, by the way, that the file name of the database is immaterial. The file name is only the name that Windows uses to find the file. It has no effect on the contents of the file, nor on the Cabrillo and ADIF files that you export. The file name does not have to be a call sign. You can use a call sign as the file name if you want, in order to make it easy for you to remember what the database is used for, but that is entirely optional.

The **OPERATOR** field in ADIF files is the call sign of the operator who operated the station during that QSO. It is most often used in multi-ops, but it can also be used when a single op uses a club call sign or secondary call sign. In N1MM Logger+ it is stored separately with every QSO in the database, to allow for changing operators in multi-ops. It can be changed using the **OPON** command, **Ctrl+O**, or the **Config > Change Operator Callsign Stored in Log** menu item.

If you never change the operator call sign in the Logger, it will be the same as the station call sign, and you don't need to think about it. However, if you ever use one of these methods to change the operator's call sign, it will be remembered from then on for subsequent QSOs, even from one contest to the next. If you use a station call sign at a multi-op and have the operators enter their individual operator call signs whenever the operator changes, then for the next contest using that same database the Operator field in all your QSOs will still be the call sign of the last person who operated during the multi-op, unless you change it at the end of the multi-op or at the beginning of the new contest.

The operator field in the log is not output to Cabrillo, except perhaps in the **OPERATORS:** line in the header. After a contest, if you want to you can use the **Update Ops from Log** button in the Contest Setup dialog to collect all of the operator call signs that are stored with QSOs in that log and place them in the **Operators** box, or you can just type them into the box by hand.

The third call sign that appears in some ADIF files is the station owner's call sign (**OWNER_CALLSIGN**). This is only rarely used, usually in situations where a club call sign is used as the station call sign and the operation takes place at one of the members' stations. N1MM Logger+ does not export this field to ADIF, but some general-purpose logging programs do. The owner's call sign can be added to a Cabrillo file in the **OPERATORS:** line in the header by placing the @ character in front of the owner's call sign as one of the operators.

For example, if VE3KI were to operate using the VA3RAC club call sign from VE3FU's home station, he would use a database with VA3RAC as the station call sign. Before the contest he would use Ctrl+O to enter VE3KI as the operator's call sign. He would enter VE3KI @VE3FU in the Operators field in the contest setup dialog in order to output that information to the OPERATORS: line in the Cabrillo file. The Cabrillo header would contain the line CALLSIGN: VA3RAC, and every QSO: line in the Cabrillo file would have VA3RAC as the sent call sign. The ADIF file exported by the Logger would contain the fields <STATION_CALLSIGN:6>VA3RAC and <OPERATOR:5>VE3KI in every QSO record, but the owner's call sign (VE3FU) would not appear in the ADIF file.

Multiple INI Files

For installation of NEW RTTY RoundUp - WSJT, FT8 and N1MM+ Interface - click [HERE](#)

Previous users of N1MM Logger Classic may be familiar with a capability to start the program with alternative .ini files, for example for different configurations for different radios, different modes, etc. A similar capability exists in Logger+. You can use alternative .ini files for different screen layouts and skins, different hardware, or even as an alternative method for calling up different databases in place of using the **File > Open database...** menu item.

The following instructions assume you did a standard install, with the program files stored in **C:\Program Files (x86)\N1MM Logger+**, and the modifiable (user) files in **Documents\N1MM Logger+**. Step-by-step instructions follow for making two new shortcuts called Radio1 and Radio2 (you can, of course, call them something else), using new ini files called Radio1.ini and Radio2.ini . If you want only one new shortcut, or three, the process is the same with the obvious changes to accommodate the number you want.

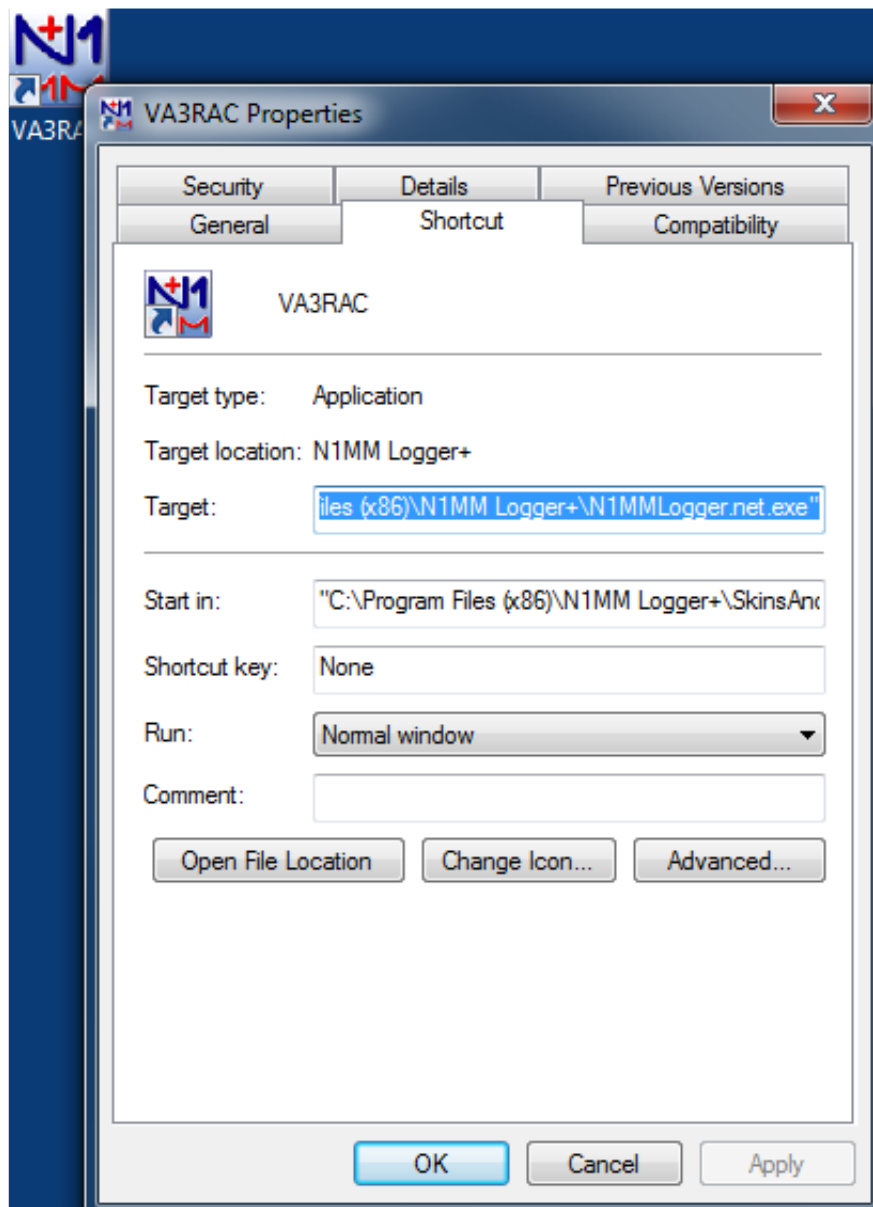
First, in File Explorer navigate to your **C:\Program Files (x86)** folder. If yours is a 32-bit system, and there is no **C:\Program Files (x86)** folder, then go to **C:\Program Files** instead. Either way, inside that folder find the **N1MM Logger+** subfolder and open it. Find the file called **N1MM Logger.net.exe**, right-click on it and select “Create shortcut” from the pop-up menu. In Windows versions after XP, a small window will open up that says “Windows can’t create a shortcut here. Do you want the shortcut to be placed on the desktop instead?”. Click on Yes – the desktop is where you want the shortcut anyway. That will create a new shortcut on your desktop called **N1MMLogger.net.exe - Shortcut**. Right-click on this shortcut and select “Rename” from the pop-up menu. Change the name to Radio1 (or whatever you want to call this shortcut).

For a second desktop shortcut, repeat the entire process in the previous paragraph, except when you rename the second new shortcut, call it Radio2 (or whatever you want to call it, as long as it’s not the same as the first one or any other shortcut on your desktop).

Next, in File Explorer navigate to your **Documents\N1MM Logger+** folder where your user files are kept. Find the file called **N1MM Logger.ini**, right-click on it and select “Copy” from the pop-up menu. Right-click somewhere else in the File Explorer window (the part where all the files and folders are displayed) and select “Paste” from the pop-up menu. This should create a new file called **N1MM Logger - Copy.ini** (or possibly **N1MM Logger - Copy (1).ini** if there is already another file with the first name). Right-click on this file and select “Rename” from the pop-up menu. Change the name to Radio1.ini (or whatever you want to call it).

Again, for a second shortcut you would repeat the entire process in the previous paragraph, and name the second new file Radio2.ini (or whatever you want to call it).

Now, back on the desktop, right-click on the Radio1 shortcut and select “Properties” from the pop-up menu. A dialog window should open with the shortcut properties pane visible, and the name of the program in the Target: box highlighted in blue. It should look something like this:



In that Target box, move the mouse cursor just to the right of the rightmost “, but still inside the text box, and left-click. That should turn the blue highlighting off and leave the mouse cursor just to the right of the ” (you can use the right arrow key to move the cursor there if you didn’t quite get it where you want it). Type a single space, then **Ini=Radio1.ini** . If the name you chose for the ini file had a space in it, then surround either the file name alone or the whole argument in quotation marks, e.g. **Ini=“Radio 1.ini”** or **“Ini=Radio 1.ini”**. Do not leave any spaces immediately before or after the = sign. Click on OK.

Once more, for a second shortcut you would repeat the process in the previous paragraph with the Radio2 shortcut except now the argument should read **Ini=Radio2.ini** (or whatever you called it).

When you start the program using the Radio1 shortcut the first time, the configuration will be the same as it was before, but now you can make changes (different radio, different COM ports, etc.) that will only apply to the Radio1 shortcut. Ditto for Radio2. Note that although the configurations can be different, both configurations can still point to the same database or to different databases – that’s your choice. You can change databases from the **File > Open Database...** menu item, but that only changes the remembered database for the current desktop icon and ini file, not for the other one(s). If both configurations point to the same database, then any new contests or new QSOs you add to the database from one desktop shortcut will also be there with the other one, since they are using the same database.

Multiple Users on a Single Computer

N1MM Logger+ stores the station call sign and some related data in the same database file where the QSOs are stored. If you are happy with an overall configuration but want to use multiple station call signs (e.g. a club callsign or a special event callsign instead of your own), you can simply create a different database for each call sign, and you can probably skip the rest of this section.

On the other hand, if you want completely different user file environments for different setups, you might want to set up separate user file areas for each configuration. Or, if you install N1MM Logger+ on a computer that is used by different users and you want a means to protect each user’s files from the other users, you may want to learn how to set up N1MM Logger+ for multiple different configurations on the same computer under different user accounts.

First, you need to decide whether you will restrict the changes from one configuration to another to those that are controlled from the **N1MM Logger.ini** file (in a nutshell, hardware configuration items that are set up in the Configurer, window layouts, and the initial choice of which database and contest log the

program starts up in), or whether you want more extensive differences between configurations. For most users, the former capability, which existed in N1MM Logger Classic, will be enough. This capability is described in the previous section, on **Multiple ini files**.

In the most complex setups, you may wish to set the program up for different users who will be using different Windows user accounts, or for different user file environments for different program and hardware configurations. If only one Windows user account is used, either by multiple users or by a single user using different program configurations, you can create multiple N1MM Logger+ user files areas within the same **Documents** folder. If multiple Windows user accounts are involved, each user can have their own independent Logger+ user files area stored in their own personal **Documents** folder. In this scenario, each Logger+ user file area will only be accessible to that particular user. In either case, any changes that are made in one Logger+ user file area will **not** be reflected in other user file areas. This includes everything from hardware configuration changes to logging of individual QSOs. If you want to use multiple Windows user accounts but allow all users to share a single Logger+ user file area, for example in order to log QSOs to a single shared contest log, there is also a way to do this. You can place the Logger+ user file area in the Windows Public Documents folder instead of in an individual user's My Documents folder, so that all user accounts on that computer will have access to that user file area and can share the data in it, and then create desktop icons that can be used to direct the program to use the Public user files area instead of the one in their own Documents folder.

Regardless of how many user accounts you may run the program from, the program itself is only installed once. The installation is a normal one. The program installation, both for the initial install and for subsequent updates, should be done from a user account that has administrative privileges on that computer.

The program files will be installed to the program files area (normally **C:\Program Files\N1MM Logger+** on a 32-bit system, or **C:\Program Files(x86)\N1MM Logger+** on a 64-bit system). The Logger's user file area will usually be the file area you want to use with the first or main configuration, and is normally located in your **My Documents** folder. In Windows 7 or 8 this would be **C:\Users\[username]\Documents\N1MM Logger+** where [username] is the user name you log into Windows with. In Windows XP SP3, the corresponding location would be **C:\Documents and Settings\[username]\My Documents\N1MM Logger+**.

Now, for the second configuration, create a new folder in a location that the user of the second configuration will have access to. If that user is you, you might simply create another folder in your **My Documents** folder and give it a name that reflects the new configuration. If that user is someone else who is using a different user name to log in to Windows on your computer, it might be a new folder in that user's personal **My Documents** folder, either called N1MM Logger+ (so it will be called up

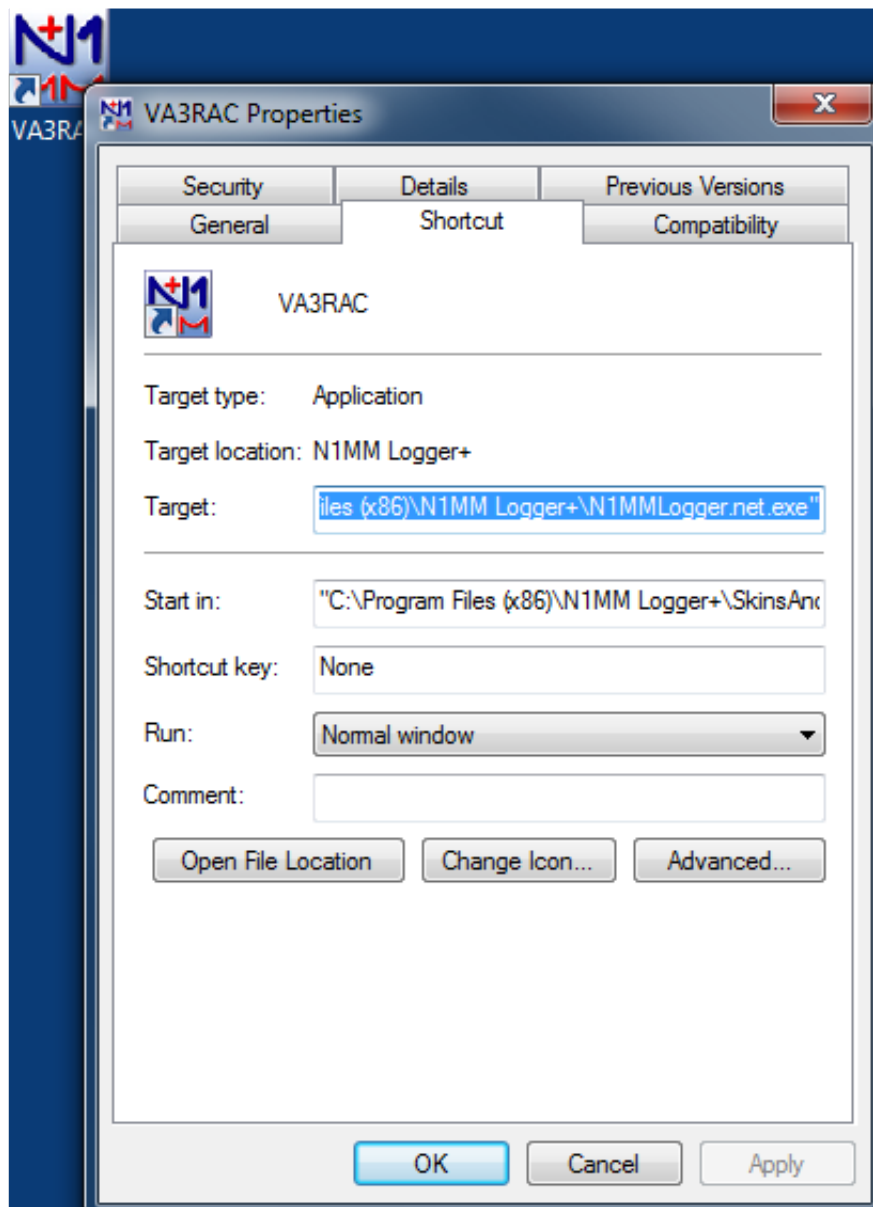
from the default desktop or Start Menu icon) or named otherwise for use with a customized desktop icon.

Now you need a way to tell N1MM Logger+ which user file area to use. The original N1MM Logger+ desktop icon created during program installation will start the program using the configuration and database files in the original user files area when the program is run from the account that was used to install the Logger, or from the assumed default location in the local **My Documents** folder when it is run from a different account. If you want to use a customized file area, you need a way to tell the program to use the new user files area you just created instead of the default.

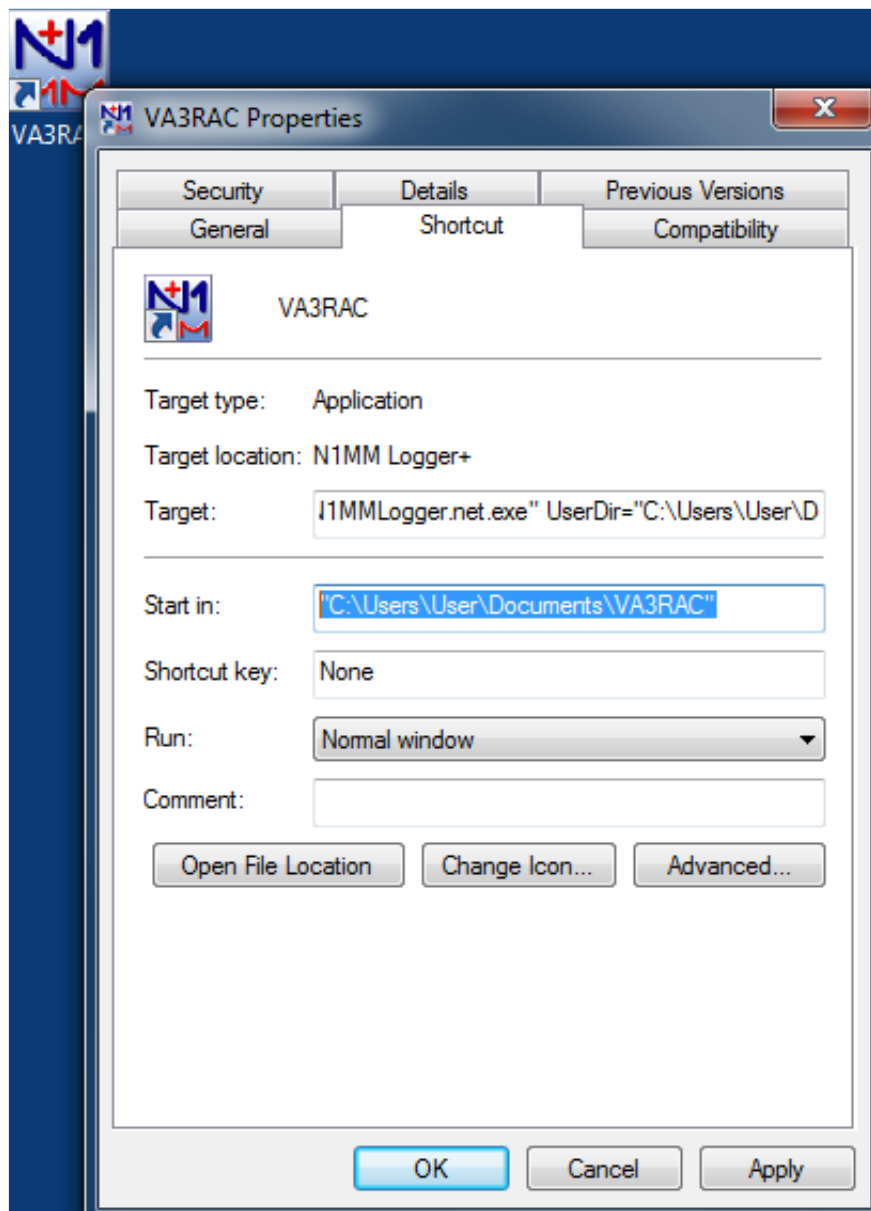
While logged into the Windows account from which the program will be used, use Windows File Explorer to find the **N1MMLogger.net.exe** file in the N1MM Logger+ program folder, right-click on the file in Windows Explorer and select “Copy”, then right-click on an empty area of the desktop and select “Paste Shortcut”. This should create a new shortcut on that user’s desktop.

Rename the new shortcut to differentiate it from the original short cut. To do this, right-click on the new shortcut, select Rename, and type the new name reflecting the new configuration you will use it with into the space just below the icon.

Now right-click on the icon once more, and select Properties from the pop-up menu. You should see a dialog that looks something like this:



Mouse-click to the right of the highlighted program name in the Target text box, type one space, then the keyword **UserDir=** and the full pathname to the new folder between quotation marks, e.g. either **UserDir="C:\Users\[username]\Documents\[new folder name]"** or **"UserDir=C:\Users\[username]\Documents\[new folder name]"** (Windows 7 or 8 - in Windows XP SP3, this would be **"UserDir=C:\Documents and Settings\[username]\My Documents\[new folder name]"**). There must be no spaces between the UserDir and the =, or between the = and the folder name. In the screen shot below, I have copied that same pathname (without the UserDir= keyword) into the "Start in" text box; the Target text box is not wide enough to show its entire contents:



Click on OK to exit the Properties dialog. The new shortcut will now start the program up using the user files from the new folder instead of from the original N1MM Logger+ user files area. The first time it is run, if the new user files area is empty the program will create a new set of user files from scratch, just as it did in the original installation. Open the program from the new shortcut, enter any changes in call sign and related data into the Station Information dialog (Config > Change Your Station Data), use the File > New Database menu item to create a new database in the new Databases folder to hold contest logs using the new configuration, and proceed to the Configurer to do the hardware setup. You can copy other user files (function key message files, call history files, etc.) from the original user file area to the corresponding places in the new user file area to save time in setting them up.

From this point on, you can use the original N1MM Logger+ desktop icon to call up the program using the first configuration, and the new desktop icon to call up the program using the second configuration. In effect, you now have two virtual copies of the program. You can run either virtual copy, but only one at a time – you can't have two copies running simultaneously in the same computer.

You can configure each of these virtual program copies independently; any new contest logs you create in one copy will not be visible to the other copy, and any changes you make to the configuration, databases, window locations and layout, skins, and so on in one copy will not have any effect on the other copy. Because of this, if you add new hardware that requires you to make changes in the Configurer, you will have to make those changes in both places. If you want to share user data, such as function key messages or call history files, you can make changes in one place and copy the changed files into the corresponding location(s) in the other user file area.

Note that if you have two configurations that are used from different Windows accounts, users in one Windows account will have no access to the files in the user areas under other Windows accounts. If you would like the ability to easily share files among users by copying them back and forth between different N1MM Logger+ user file areas, you might want to consider placing the user file areas in the Windows Public Documents folder. All users on the computer can have direct (no password) access to this folder (on some systems, public folder sharing may need to be enabled from the Control Panel to make this possible). By creating customized program icons on each account's own desktop, you can set things up so that users in multiple accounts can run the program using the same shared user file area. Of course, for security reasons this might be the exact opposite of what you want, i.e. you might want to isolate user file areas from one another so users cannot inadvertently or maliciously change each other's user files. In that case, one way to copy files between users would be to use the Public Documents folder as a file transfer location, while keeping the actual user files areas hidden from each other under different Windows user accounts.

The Configurer

The Configurer

Hardware Tab

The Configurer is our name for the tabbed dialog that appears when you click Config on the Entry Window top menu, and then choose Configure Ports, Mode Control, Audio, Other. The Configurer has many tabs with program settings influencing all aspects of the behavior of the program. Be careful in setting up items on the different tabs, to be sure that you understand that the option you are choosing is what you want.

Configurer settings are remembered by the program in the **N1MM Logger.ini** file, which is in the N1MM Logger+ user files area. Function key definitions, telnet clusters, call history, and country information are not saved in the .ini file, but in the database that was in use when you loaded them. That means, for example, that function key definitions loaded or modified when you are using one database will only appear in that database. You will need to export them from that database and load them into another database before they would show up there. The **N1MM Logger.ini** file contains the name of the database file you were last using, which the program will load when it is started, as well as the name of the current contest and other recently-opened contests.

If you have not unchecked “Hide extensions for known file types” in Windows Explorer Options, you will not see **N1MM Logger.ini**. You will see “N1MM Logger” with a Type of “Configuration Settings”.

Configurer

Hardware
Function Keys
Digital Modes
Other
Winkey
Mode Control
Antennas
Score Reporting
Broadcast Data

Port	Radio	Digi	CW/Other	Details
COM6	Elecraft K3	☐	☐	Set
COM8	None	☐	☒	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
LPT1		☐	☐	Set
LPT2		☐	☐	Set
LPT3		☐	☐	Set

☐ SO1V
☒ SO2V
☐ SO2R

38400,N,8,1,DTR=Always Off,RTS=Always Off,Tx:
DTR=Always On,RTS=Always Off,Tx=Both

OK
Cancel
Help

The Configurer – Hardware Tab

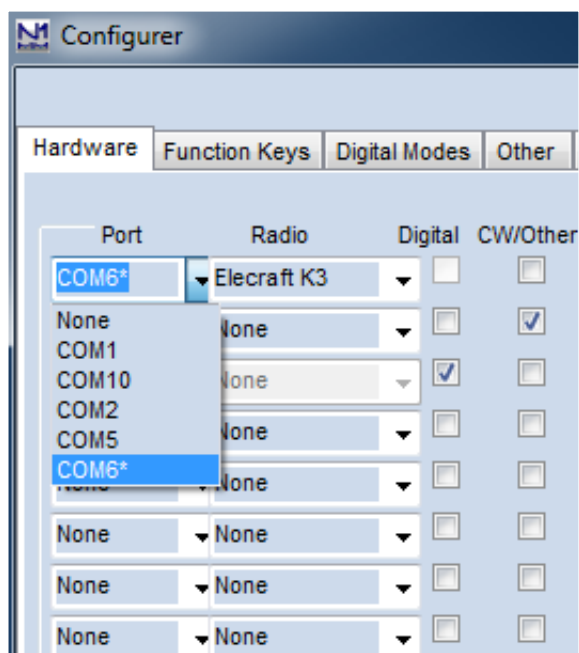
The Hardware tab is used to set up your radios, packet interfaces, telnet connections, CW/PTT/digital ports and the interfaces to other devices, such as SO2R controllers, multi-purpose interfaces, and keyers, if they require serial or parallel ports. Set the values appropriate to your station. If you do not have one of the items listed connected to a port, make sure the port selection is 'None' and the check boxes are not checked for that port.

Hardware setup options

The program supports up to 8 serial ports, each of which can be anywhere in the range COM1-COM99, and 3 parallel ports (LPT1 – LPT3). Set up each port depending on what equipment is connected and enter the appropriate information.

A more detailed explanation of each of the controls on this window follows.

- **Port** – for each device that is to be connected via a COM port, the COM port number is selected in this column from a pull-down list:



This example screen shot shows a case in which three COM ports are being used. COM6 is used for radio control of an Elecraft K3. COM2 is being used for a Winkeyer for CW keying. COM10 is connected to a TNC or terminal unit for RTTY. The radio has two receivers and the program is configured for SO2V (Single Operator, 2 VFOs)

with two Entry windows, one for each VFO/receiver.

- This list displays all of the COM ports the program was able to open. In this example, COM1, COM2, COM5 and COM10 were found by the program when the Configurer window was opened. These ports might include real serial ports, USB-to-serial adapters, and/or virtual serial ports created by software drivers (e.g. microHam Router, LP-Bridge, etc.)
- COM6 also appears on the example list above, but with an asterisk beside it. The asterisk indicates that this port was previously configured at this position in the N1MM Logger.ini file, but when the Configurer was opened, the program was unable to open the port. This could be the result of a USB-to-serial adapter being unplugged, or as the result of other software that had previously created a virtual serial port but that was not running at the time the Configurer was opened
 - If this asterisked device is left configured for COM6, after exiting the Configurer the program will issue a warning that it was unable to open the port. The function that should be provided by this port will be unavailable. This can be corrected by connecting the USB adapter or creating the software virtual port in the other software, then reopening and closing the Configurer
 - If a different COM port is selected from the list, the missing COM port denoted by the asterisk will disappear from the pull-down list
- **Radio** – The pull-down list in the box in this column can be used to select a radio that is to be interfaced with the program using this port for radio control, i.e. control of the radio's frequency and mode. A maximum of two radios can be connected. Select 'None' if this port is not being used for radio control. ***If you have only one radio connected, only one of the boxes in this column should be configured to anything other than "None"***
- **Digital** – Checking this box means this port is used for digital communication (MMTTY/MMVARI/Fldigi engine or TNC). This box cannot be checked if this port is used for radio control. Conversely, if this box is checked the pull-down list in the Radio column is disabled. Not all ports used for digital communication are configured here; check this box only if one of the following conditions is met:
 - Use this to indicate a port that is used for a TU or TNC for RTTY
 - Use it to indicate a port that is used for PTT from MMVARI in digital modes. This is not necessary with the external digital engines (MMTTY, 2Tone and Fldigi), only with MMVARI
 - Use it to indicate a port that will be time-shared between digital and non-digital modes. This could be, for example, a port that is used for serial port CW keying when the operating mode is CW, and for FSK and/or PTT keying when the operating mode is RTTY. The CW/Other box will also be checked for such a time-shared port
 - If the only time the port is used is in digital modes from MMTTY, 2Tone or Fldigi, it is not necessary to check this

- check box; simply configure the port directly within the digital engine without setting it up in the Configurer
 - If you control PTT from the radio control port or from a Winkeyer, do not check the Digital box for that port
 - If you are using a port for FSK keying with MMTTY or MMVARI via the EXTFSK or EXTFSK64 add-in, the port cannot be time-shared, and therefore you would not check the Digital box for this port
- **CW/Other** – Check this box if this port is used for CW, PTT, a footswitch, a DVK or an SO2R controller. This selection may be made in combination with a Radio or Digital selection provided the uses are compatible (e.g. Winkeyer and radio control cannot use the same serial port, because both use serial communications, whereas keying CW on the DTR control line can be compatible with radio control on the same port if your hardware interface supports it). In addition to the serial ports, the CW/Other box can also be selected for one or more parallel ports (LPT1/2/3) to be used for CW or PTT keying or for other types of device control. Of course, you must specify serial or parallel port to be used

Configuring a Port for a Winkeyer

To configure a port for a Winkeyer, first select a port, in the left-most column of the Hardware tab. Then check the CW/Other box in that same row. finally, click the Set button and check the Winkeyer box in the dialog that appears.

Use ONLY ONE method of PTT or CW keying

Note that having multiple ports configured for CW or PTT can cause problems; for example, having two methods of PTT control operating at the same time can result in the radio failing to switch to transmit, or worse, locking up in transmit at the end of a function key message. Pick one method of CW keying and one method of PTT control, check the CW/Other box for the port or ports you need for them and complete the port configuration using the Set button, and make sure CW/Other is not checked for ports that you are not currently using. For digital modes, do not configure PTT control from the digital engine (MMTTY or Fldigi) if you have PTT control operating from the main N1MM Logger program.

- **Details** – Click on the **Set** button in this column to open a window with a set of controls that depends on what is selected in the preceding columns (Radio, Digital, Packet, CW/Other). To the right of the details column is a summary of the detailed settings. See below for details.

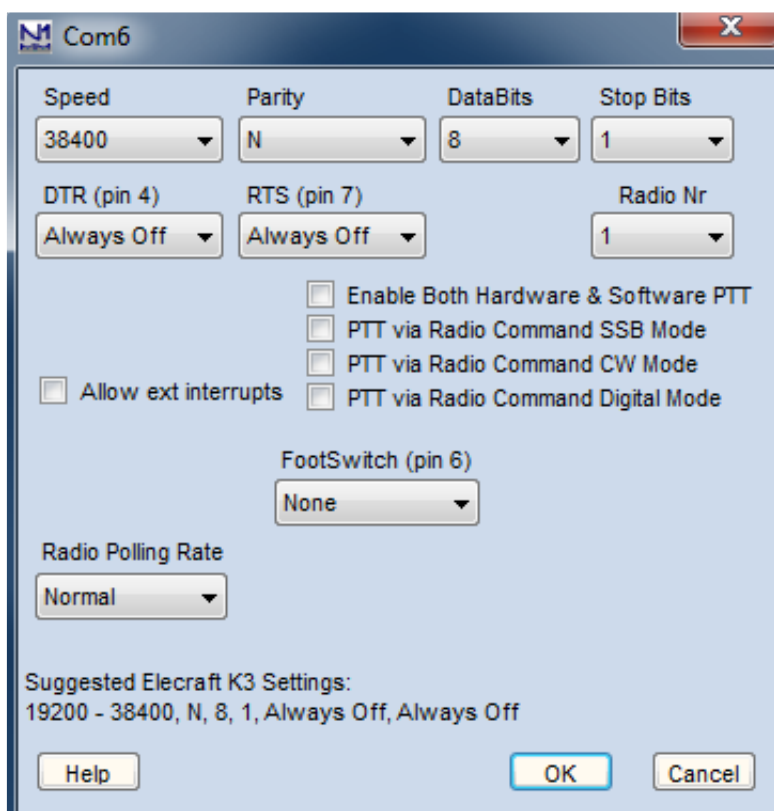
The radio buttons in the upper right corner are used to fit the program to your desired mode of operation.

- **SO1V** – Single Operator 1 VFO

- In SO1V mode, the backslash, Pause, Ctrl+Right-arrow, grave accent(`) and Ctrl+Alt+K keys are disabled to prevent opening the second Entry window. If the second Entry window and/or Bandmap window were open when the Configurer was opened, they will be closed when exiting the Configurer after selecting SO1V
- **SO2V** – Single Operator 2 VFO (one radio, using both VFOs)
 - Permits using two separate Entry windows, one for each VFO; the full SO2V functionality is usable only with radios that have dual receivers
- **SO2R** – Single Operator 2 Radios
 - Permits using two separate Entry windows, one for each radio

Set Button Examples

Some examples of the dialog box that appears when you click on the Set button are given here.



For a port selected for radio control:

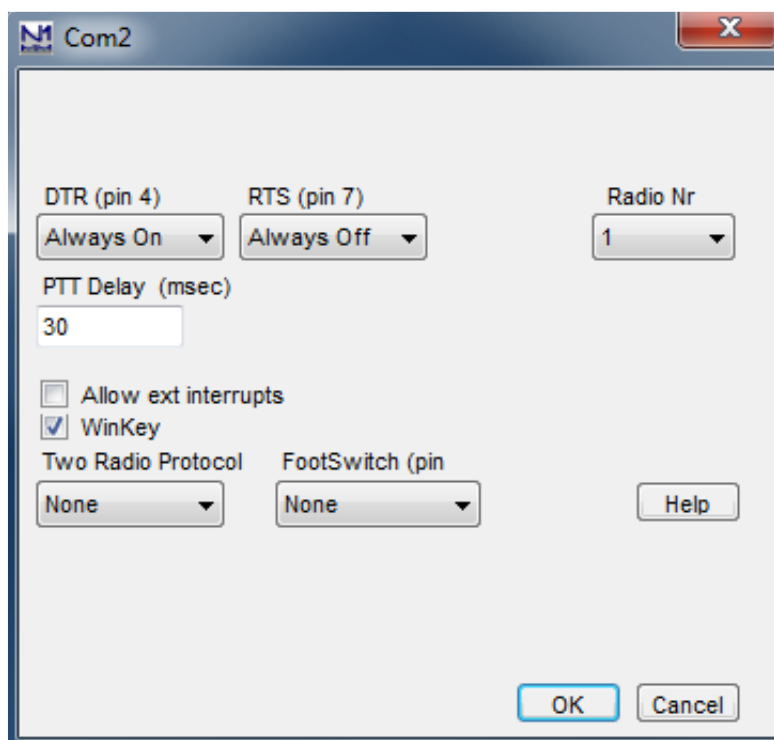
- **Speed** – The speed of the serial port (check the manual of your radio)
- **Parity** – The parity used (check the manual of your radio)
- **Data Bits** – The number of data bits used (check the manual of your radio)
- **Stop Bits** – The number of stop bits used (check the manual of your radio)
- **DTR** – The following selections can be made for DTR (pin 4 on DB9 connector):

- **PTT** – used for keying the radio
- **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require either a keying circuit between DTR and the radio's PTT input or CW key jack, or a transceiver that can accept direct switching on the DTR line on its radio control port (such as an Elecraft K3). The **CW/Other** check box in the main Configurer window must be checked to enable PTT or CW switching via DTR
- **Always on** – DTR is always 'high'
- **Always off** – DTR is always 'low'
- **Handshake** – DTR is used for handshaking
- **RTS** – The same selections as for DTR can be made for RTS (pin 7 on DB9 connector):
 - **PTT** – used for keying the radio
 - **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require either a keying circuit between RTS and the radio's PTT input or CW key jack, or a transceiver that can accept direct switching on the RTS line on its radio control port (such as an Elecraft K3). The **CW/Other** check box in the main Configurer window must be checked to enable PTT or CW switching via RTS
 - **Always on** – RTS is always 'high'
 - **Always off** – RTS is always 'low'
 - **Handshake** – RTS is used for handshaking
 - When both RTS and DTR are set to PTT they will both be keyed for PTT with the set PTT delay
 - When using a self-powered interface for radio control, set DTR and/or RTS to Always On to supply power to the interface
- **Icom Addr (hex)** – The hex address for the radio. Enter without the "H" i.e. 26 not 26H. This field is only shown when an Icom is the selected radio
- **Radio Nr** – The radio controlled from this port:
 - In **SO1V** (one radio, one VFO used) Radio Nr = 1
 - In **SO2V** (one radio, two VFOs) Radio Nr = 1
 - In **SO2R** select the radio (1 or 2) that will be controlled from this port
- **PTT Delay (msec)** – This box only appears if DTR or RTS is set to PTT. It is used to configure a delay between the time the PTT signal is switched and CW sending starts, in order to prevent hot-switching
- **Enable Both Hardware & Software PTT** – This check box allows both hardware and software PTT control methods to be used. USE WITH CAUTION. With some radios, using software and hardware PTT control at the same time can lead to problems such as the radio hanging up in transmit at the end of CW or RTTY messages
- **Allow ext. interrupts** – Allow external interrupts from this port (DSR – pin 6), e.g. from a footswitch. An interrupt on this line will bring focus to the Entry window and stop a CQ in progress. See **FootSwitch** settings below

- **PTT via Radio Command Digital Mode** – If this check box is checked, a software radio command will be used to control PTT in digital modes
- **PTT via Radio Command SSB Mode** – If this check box is checked, a software radio command will be used to control PTT in SSB modes
- **PTT via Radio Command CW Mode** – If this check box is checked, a software radio command will be used to control PTT in CW mode
 - By using these check boxes selectively, you can choose to control PTT in some modes and not others (e.g. controlling PTT in digital modes for FSK RTTY while using VOX for SSB and QSK for CW)
- **FootSwitch** – The DSR input (pin 6 on a 9-pin serial port) can be used for one of the following options. The external interrupts box should NOT be checked for most applications. It causes additional code to be executed that may effect the operation. For all footswitch options except “First One Wins”, the DSR input should be low (0V or negative) when the footswitch is not pressed and pulled high (greater than 3V) when the footswitch is pressed. The footswitch operates on the “active” radio. The RadioNr box selection is not used (ignored). Multiple footswitches (one per COM port) can be used with different settings for each footswitch.
 - **None** – No footswitch
 - **ESM Enter** – Pressing Footswitch will cause the same action as pressing Enter key in ESM mode
 - **Typing Focus** – Pressing Footswitch will switch typing focus
 - **Switch Radios** – Pressing Footswitch will switch the radios (in SO2R)
 - **Normal** – Pressing the footswitch it will behave if it was connected to the PTT of the active radio transmitter (radio with TX focus or red dot).
 - **F1** – Pressing Footswitch will cause the same action as pressing function key F1
 - **F2** – Pressing Footswitch will cause the same action as pressing function key F2
 - **F3** – Pressing Footswitch will cause the same action as pressing function key F3
 - **F4** – Pressing Footswitch will cause the same action as pressing function key F4
 - **F11** – Pressing Footswitch will cause the same action as pressing function key F11
 - **F12** – Pressing Footswitch will cause the same action as pressing function key F12
 - **Band lockout** – Implemented mostly for multi user stations to block a second signal on the same band/mode. It may be useful for single users as well. This mode should allow you to control PTT for both radios (in case of SO2R) in different modes (SSB/CW). The advantage of using it (compared to a foot switch directly connected to the radio) is that it stops AutoCQ and Dueling CQ’s.
 - **First One Wins** – This mode is intended for multi stations that want to prevent other transmitters from beginning a transmission. The

COM port DSR input is active when low (0V or negative) and intended to be connected to an open collector PTT line of the partner station. Note that the DSR sense is the reverse of the footswitch options above. Pull DSR high (greater than 3V) with a resistor and connect the DSR input to the active low open-collector PTT of the partner station. If more than one station needs to be interlocked, add a GE diode in series with the open collector PTT line creating a wire-OR circuit. Before the station begins a transmission, the state of the DRS input is checked. If low (the partner station is transmitting), the current station will not transmit.

- **Radio Polling Rate** – use this to change the rate at which the radio is polled – **Normal**, **50% Slower** or **100% Slower**. The **50% Slower** setting increases the time between polls to 1.5 times normal, and the **100% Slower** setting increases the time between polls to 2 times normal.
- **Help** – used to display Help for the Configurer from the on-line manual
- **OK** – save the settings and exit this dialog window
- **Cancel** – exit this window without saving the settings

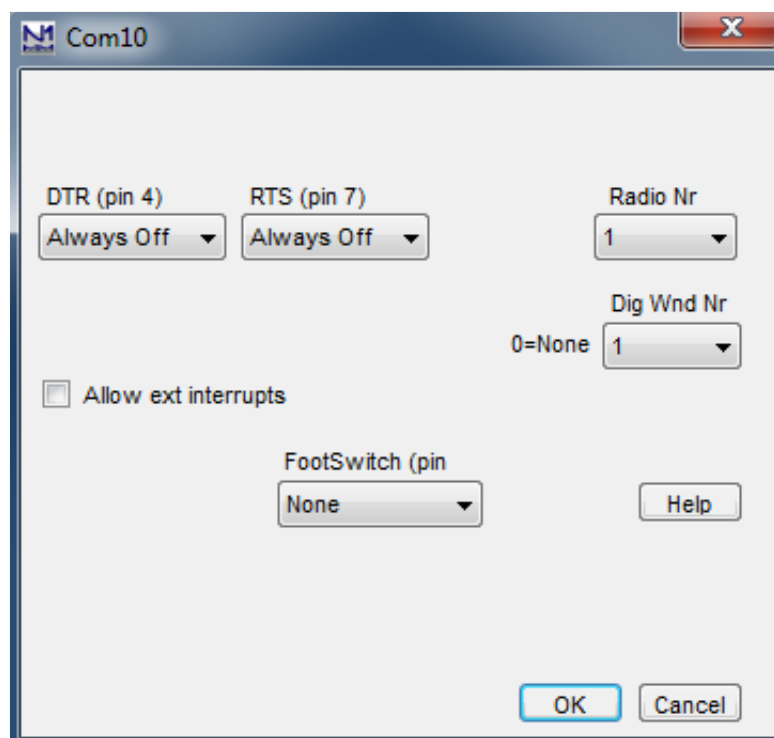


For a port whose CW/Other check box is checked:

- **DTR** – The following selections can be made for DTR (pin 4 on DB9 connector):
 - **PTT** – used for keying the radio
 - **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require a keying circuit between DTR and the radio's PTT input or CW key jack

- **Always on** – DTR is always ‘high’
- **Always off** – DTR is always ‘low’
- **Handshake** – DTR is used for handshaking
- **RTS** – The same selections as for DTR can be made for RTS (pin 7 on DB9 connector):
 - **PTT** – used for keying the radio
 - **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require a keying circuit between RTS and the radio’s PTT input or CW key jack
 - **Always on** – RTS is always ‘high’
 - **Always off** – RTS is always ‘low’
 - **Handshake** – RTS is used for handshaking
- **Radio Nr** – The radio that this port is used with:
 - In **SO1V** (one radio, one VFO used) Radio Nr = 1
 - In **SO2V** (one radio, two VFOs) Radio Nr = 1
 - In **SO2R** select the radio (1 or 2) that this port is used with
- **PTT Delay (msec)** – This box is used to configure a delay between the time the PTT signal is switched and CW sending starts, in order to prevent hot-switching an amplifier, for example
- **Allow ext. interrupts** – Allow external interrupts from this port (DSR – pin 6), e.g. from a footswitch. An interrupt on this line will bring focus to the Entry window and stop a CQ in progress
- **Winkey** – Select when using a Winkeyer. Speed, Parity, Data bits, Stop bits or Handshake settings do not have to be adjusted; they are fixed and set by the program. Settings for the keyer are made on the Winkeyer tab in the Configurer. **If you select Winkeyer, DO NOT set DTR to CW.**
 - Note: Only one Winkeyer is supported, but a single Winkeyer can key two radios
- **Two Radio Protocol** – Support for an SO2R controller using a COM port. This provides USB-only SO2R control (no LPT port required). Protocol used may be either the microHam proprietary protocol (MK2R) or OTRSP (Open Two Radio Switching Protocol)
 - More info in the chapter on [supported hardware](#)
- **FootSwitch** – Pin 6 on the serial port can be used for one of the following options (if external interrupts are enabled on this port):
 - **None** – No footswitch
 - **ESM Enter** – Pressing Footswitch will cause the same action as pressing Enter key in ESM mode
 - **Typing Focus** – Pressing Footswitch will switch typing focus
 - **Switch Radios** – Pressing Footswitch will switch the radios (in SO2R)
 - **Normal** – Pressing the footswitch it will behave if it was connected to the PTT of the active transmitter and is automatically connected to the proper (active) radio. When the footswitch is released the focus will be set to main Entry window
 - **F1** – Pressing Footswitch will cause the same action as pressing function key F1

- **F2** - Pressing Footswitch will cause the same action as pressing function key F2
- **F3** - Pressing Footswitch will cause the same action as pressing function key F3
- **F4** - Pressing Footswitch will cause the same action as pressing function key F4
- **F11** - Pressing Footswitch will cause the same action as pressing function key F11
- **F12** - Pressing Footswitch will cause the same action as pressing function key F12
- **Band lockout** - Implemented mostly for multi user stations to block a second signal on the same band/mode. It may be useful for single users as well. This mode should allow you to control PTT for both radios (in case of SO2R) in different modes (SSB/CW). The advantage of using it (compared to a foot switch directly connected to the radio) is that it stops AutoCQ and Dueling CQ's
 - It is possible to connect a separate footswitch to each serial or parallel port. A pull-up resistor is needed between DSR input (pin 6) and +12 VDC. Multiple footswitches (one per port) can be used with different settings for each one.
- **Help** - used to display Help for the Configurer from the on-line manual
- **OK** - save the settings and exit this dialog window
- **Cancel** - exit this window without saving the settings



For a COM port for which the Digital check box has been checked, either in order to use a TNC or to time-share the port:

- **DTR** – The following selections can be made for DTR (pin 4 on DB9 connector); if the port is time-shared, these selections will only apply in non-digital modes:
 - **PTT** – used for keying the radio
 - **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require a keying circuit between DTR and the radio's PTT input or CW key jack. The **CW/Other** check box in the main Configurer window must be checked to enable PTT or CW switching via DTR
 - **Always on** – DTR is always 'high'
 - **Always off** – DTR is always 'low'
 - **Handshake** – DTR is used for handshaking
- **RTS** – The same selections as for DTR can be made for RTS (pin 7 on DB9 connector); if the port is time-shared, these selections will only apply in non-digital modes
 - **PTT** – used for keying the radio
 - **CW** – used for sending CW to the radio
 - Note: The **PTT** and **CW** selections require a keying circuit between RTS and the radio's PTT input or CW key jack. The **CW/Other** check box in the main Configurer window must be checked to enable PTT or CW switching via RTS
 - **Always on** – RTS is always 'high'
 - **Always off** – RTS is always 'low'
 - **Handshake** – RTS is used for handshaking
- **Radio Nr** – The radio this port is used with:
 - In **SO1V** (one radio, one VFO used) Radio Nr = 1
 - In **SO2V** (one radio, two VFOs) Radio Nr = 1
 - In **SO2R** select the radio (1 or 2) that this port is used with
- **Dig Wnd Nr** – This MUST be set to indicate which Digital Interface window uses this port. If it is set to 0, the port will not be used in digital modes
 - If only one DI window is used (e.g. SO1V), select 1
 - If two DI windows are used, select the DI window number this port will be used for
- **Allow ext. interrupts** – Allow external interrupts from this port (DSR – pin 6), e.g. from a footswitch. An interrupt on this line will bring focus to the Entry window and stop a CQ in progress; non-digital modes only
- **FootSwitch** – Pin 6 on the serial port can be used for one of the following options (if the interface allows this line to be broken out and external interrupts are enabled on this port):
 - **None** – No footswitch
 - **ESM Enter** – Pressing Footswitch will cause the same action as pressing Enter key in ESM mode
 - **Typing Focus** – Pressing Footswitch will switch typing focus
 - **Switch Radios** – Pressing Footswitch will switch the radios (in SO2R)
 - **Normal** – Pressing the footswitch it will behave if it was connected to the PTT of the active transmitter and is automatically connected

to the proper (active) radio. When the footswitch is released the focus will be set to main Entry window

- **F1** - Pressing Footswitch will cause the same action as pressing function key F1
- **F2** - Pressing Footswitch will cause the same action as pressing function key F2
- **F3** - Pressing Footswitch will cause the same action as pressing function key F3
- **F4** - Pressing Footswitch will cause the same action as pressing function key F4
- **F11** - Pressing Footswitch will cause the same action as pressing function key F11
- **F12** - Pressing Footswitch will cause the same action as pressing function key F12
- **Band lockout** - Implemented mostly for multi user stations to block a second signal on the same band/mode. It may be useful for single users as well. This mode should allow you to control PTT for both radios (in case of SO2R) in different modes (SSB/CW). The advantage of using it (compared to a footswitch directly connected to the radio) is that it stops AutoCQ and Dueling CQ's
 - It is possible to connect a separate footswitch to each serial or parallel port. A pull-up resistor is needed between DSR input (pin 6) and +12 VDC. Multiple footswitches (one per port) can be used with different settings for each one.
- **Help** - used to display Help for the Configurer from the on-line manual
- **OK** - save the settings and exit this dialog window
- **Cancel** - exit this window without saving the settings

For an LPT port:

- Pin 17 – always used for CW keying; greyed out because it cannot be changed
- Pin 16 – used for PTT, except when an external DVK is used; greyed out because it cannot be changed
- **Radio Nr** – The radio that this port is used with:
 - In SO1V (one radio, one VFO used) Radio Nr = 1
 - In SO2V (one radio, two VFOs) Radio Nr = 1
 - In SO2R without an automatically controlled SO2R box, select the radio (1 or 2) that this port is used with
 - If using an LPT SO2R box, set the Radio Nr for the first LPT port to **Both**. Pin 14 will be used to select the radio for CW, PTT, etc.
 - If using band data lines with this setup, band data for the first radio is routed to the first LPT port (Radio Nr = Both) and band data for the second radio is routed to the second LPT port (Radio Nr = 2)

LPT Port Numbers with N1MM

SO2R and LPT CW, the LOWEST numbered port must have the CW output set to BOTH if it is used with a conventional LPT SO2R box (DXD, KK1L, N6BV, etc.) or microHAM MK2R/MK2R+ in LPT (Classic auto control) mode. The LPT with CW, PTT and the TX/RX/Split controls must be connected to the SO2R controller. If N1MM is configured for CW on TWO LPT ports (first port: Radio=1, second port Radio=2) then CW will be present only on the port representing the radio with transmit focus.

- **PTT Delay (msec)** – This box is used to configure a delay between the time the PTT signal is switched and CW sending starts, in order to prevent hot-switching an amplifier, for example
- **Allow ext. interrupts** – Allow external interrupts from pin 15, e.g. from a footswitch. An interrupt on this line will bring focus to the Entry window and stop a CQ in progress
- **DVK** – DVK interface for MK2R, W9XT & other external DVKs. See [this page](#) for detailed information, pinouts, and limitations
 - When DVK is selected, Antenna selection via the LPT port is disabled (the DVK pins and the antenna pins on the LPT port overlap)
 - When using an external DVK, all of the Run and S&P SSB function keys should be set to empty.wav and not left blank
 - microHAM MK2R: if DVK is checked, N1MM Logger will use the DVK in Router instead of its own DVK support
- **FootSwitch** – Pin 15 on the parallel port can be used for one of the following options:
 - **None** – No footswitch
 - **ESM Enter** – Pressing Footswitch will cause the same action as pressing Enter key in ESM mode
 - **Typing Focus** – Pressing Footswitch will switch typing focus
 - **Switch Radios** – Pressing Footswitch will switch the radios (in SO2R)
 - **Normal** – Pressing the footswitch it will behave if it was connected to the PTT of the active transmitter and is automatically connected to the proper (active) radio. When the footswitch is released the focus will be set to main Entry window
 - **F1** – Pressing Footswitch will cause the same action as pressing function key F1
 - **F2** – Pressing Footswitch will cause the same action as pressing function key F2
 - **F3** – Pressing Footswitch will cause the same action as pressing function key F3
 - **F4** – Pressing Footswitch will cause the same action as pressing function key F4
 - **F11** – Pressing Footswitch will cause the same action as pressing function key F11
 - **F12** – Pressing Footswitch will cause the same action as pressing function key F12
 - **Band lockout** – Implemented mostly for multi user stations to block a second signal on the same band/mode. It may be useful for single users as well. This mode should allow you to control PTT for both radios (in case of SO2R) in different modes (SSB/CW). The advantage of using it (compared to a footswitch directly connected to the radio) is that it stops AutoCQ and Dueling CQ's
 - It is possible to connect a separate footswitch to each serial or parallel port. A pull-up resistor is needed between DSR input (pin 6) and +12 VDC. Multiple footswitches (one per

port) can be used with different settings for each one.

- **CW/PTT Port Addr** – specify port address (**Required!**)
 - The initial default address in this box, if there is one, may not be correct in some computers or for some add-in cards; if the port does not work, check the port's properties in Device Manager to determine the correct address. There is more information on this topic in the Interfacing chapter
- **Help** – used to display Help for the Configurer from the on-line manual
- **OK** – save the settings and exit this dialog window
- **Cancel** – exit this window without saving the settings

Additional signals are also present on the parallel port. See the [Interfacing](#) chapter for more detailed info.

PTT Options

Originally, Push-to-Talk (PTT) was actually a copyrighted term, describing how operators of one company's radios could press a button on their microphones to switch from Receive to Transmit. Over the years, however, it has come to denote any form of transmit/receive switching external to the radio. It could be as simple as a microphone button or a footswitch working directly with the radio, or as sophisticated as control by a logging program.

N1MM Logger+ provides several options:

- PTT via serial or parallel port – This option uses the RTS or DTR lines on a serial port or pin 16 on an LPT port. This more-or-less standard method usually requires a simple one-transistor interface to switch the radio. USB-to-serial adapters can be used for this function; ordinary USB-to parallel (printer) adapters will not work, because they lack the ability to control individual lines in the parallel interface – the one exception is the SO2RXLAT interface developed by PIEXX.
- PTT via Winkeyer – If a Winkeyer, a keyer that emulates the Winkeyer, or an interface incorporating a Winkeyer chip is used, its PTT output can be used in all modes to control transmit/receive switching.
- PTT via radio command – For radios that support it, this option eliminates any need for external hardware other than a serial port cable or a serial to USB converter. Check your radio manual for details.

Warning: At the moment, there is no provision for both controlling radio PTT via radio command and simultaneously introducing a delay before the Logger begins to send a stored message, so if you need to protect external equipment (see below) you should not use this option.

PTT Delay

This is an important aspect of PTT operation. Some amplifiers are slower than many radios, so if the radio begins to transmit as soon as PTT is asserted, it may result in hot-switching of the amplifier's internal transmit/receive relays, which can result in damage. In addition, for VHF operation, preamplifiers located at the antenna may need to be properly sequenced to avoid damage from transmitted RF.

- In the case of PTT via serial or parallel port, this delay is set in the Configurer, on the Hardware tab, when configuring a port for PTT. Note that for a serial port, you will only see this option if you have first selected PTT on either RTS or DTR.
- For Winkeyer PTT, set this delay (called lead-time in Winkeyer parlance) on the Winkeyer tab of the Configurer. This affects both hand-sent CW and stored messages. You will probably find that any value over 20 milliseconds (probably enough for most amps) throws off your hand-sent keying.

Other Information

Under 32 and 64 bit Windows operating systems, using the parallel and serial ports for PTT and CW keying requires a special dll called inpout32.dll. This dll is installed with the Logger, but if the file is not installed for some reason, information on finding and installing it can be found in the [Installation](#) chapter.

Function Keys Tab

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Broadcast Data Audio

☐ Send leading zeros in serial numbers
 ☒ Stop sending CQ when callsign is changed

☒ Send cut numbers
 ☐ ESM sends your call once in S&P, then ready to copy received exchange

☒ Send corrected call before end of QSO
 ☒ Work dupes when running

☐ Send partial calls
 String to use on cw between his call key and exchange key (default is one space)

☒ Use CW contest word spacing
 Keycode of Ins Key

AutoHotKey file
 Keycode of TU/Log Key Substitute

Make sure that the key mappings defined below match the contents of the keys as defined in Config/Change CW buttons, Config/Change SSB Buttons and Config/Change Digital Buttons.

CQ Key F1	End of QSO F3	My Call Key F4	Again Key F8	Next Call Disabled
Exchange Key F2	His Call Key F5	QSO B4 Key F6	Cut Number Style (if enabled) T1234567890 (leading T)	

OK Cancel Help

Function key operation is controlled from this tab.

Function Keys Field Descriptions

- **Send leading zeros in serial numbers** - Serial numbers, which are sent either using the # macro or the {EXCH} macro (if the Sent Exchange box in the Contest Setup contains 001), may be sent either with or without leading zeros (e.g. 003 or just 3), depending on whether this option is checked or not. In CW, the “cut numbers” option can be used to send the leading zeros as T or O instead of 0. The leading zeros option does not affect numbers other than serial numbers
- **Send cut numbers** - In CW this causes serial numbers, and RSTs if you are using the {SENTRSTCUT} macro, to be sent using the Cut Number Style set at the bottom of the dialog. Ctrl+G can be used to toggle this option while operating. The new status after toggling will be shown in the status line at the bottom of the entry window. Numbers other than serial numbers and {SENTRSTCUT} will not be affected by this option. The cut numbers option does not apply to SSB or digital modes
- **Send corrected call before end of QSO** - If the callsign is corrected after answering a call, then the corrected call will be sent before the End of QSO message (as configured by the End of QSO Key). E.g. ‘PA1M TU DE N1MM’ instead of ‘TU DE N1MM’
- **Send partial calls** - CW only. When sending a partial corrected call only the corrected part will be sent (prefix or suffix). If not checked the whole call will be sent.
- **AutoHotKey file** - Type here the name of any AutoHotKey script(.ahk) file that you wish to have started and stopped when N1MM Logger+ is started and stopped. To use this feature, AutoHotKey must be installed on your computer. Download it at [this page](#).
 - AutoHotKey scripts are very useful for keyboard remapping. Examples can be found in the Third Party Software section of the manual. If you put this file in the Support Files sub-folder of your N1MM Logger+ Documents folder, then you need only name the file itself; alternatively you can use the entire path to a script file anywhere on your computer.
- **Use CW contest word spacing** - This setting changes the spacing between words in your CW, where “N1MM 599 5” is 3 words. Default is 6 bits for “contest spacing”. When box is not checked, 7 bits between words is used, which is “normal spacing”
- **Stop sending CQ when callsign is changed** - Typing a character in the callsign field will stop a (repeated) CQ
- **ESM sends your call once in S&P, then ready to copy received exchange** - This is often called the “Big Gun / Little Pistol switch” . When selected and in Enter Sends Message mode the cursor moves to the

Exchange field when there is something in the Callsign field and Enter is pressed (so it does not keep the cursor in the callsign field). If you don't usually get a station on the first call then deselect this option. Read more about Big Gun \ Little Pistol operation under((ESM+-+Enter+Sends+Message|ESM)).

- **Work dupes when running** – This determines what is sent when a dupe calls you and you press Enter in ESM. Normally you DO want to work dupes, so this box would normally be checked. See the chapter [Off topic](#) for a discussion
- **String to use on cw between his call key and exchange key (default is one space)** – Just as it says. Example ' ur '
- **Keycode of Ins Key Substitute** – Enter the number for the Ins Key substitute as mapped below in this configurer dialog. Defaults to 186, the ; character. The program can automatically enter the keycode in this field . Place the cursor in the keycode field and press the key you want to substitute, it will put the correct keycode in. 186 is an extended key code. Not all keyboards map keys the same way. Note that you can't use a Shift, Ctrl, Alt etc. key. I would not advise using a key like Numeric + that is already in use. It may or may not work. In this case Numeric +, does NOT work
- **Keycode of TU/Log Key Substitute** – Enter the number for the TU/Log Key substitute as mapped below in this configurer dialog. Defaults to 222, the ' character. The program can automatically enter the keycode in this field . Place the cursor in the keycode field and press the key you want to substitute, it will put the correct keycode in. 222 is an extended key code. Not all keyboards map keys the same way. Note that you can't use a Shift, Ctrl, Alt etc. key. I would not advise using a key like Numeric + that is already in use. It may or may not work. This particular case (Numeric +) does NOT work
- **Cut Number Style** – the following cut number styles can be chosen:
 - T1234567890 (leading T) – leading 0 will be replaced with a T. So 007 will become TT7 and 030 will become T30
 - O1234567890 (leading O) – leading 0 will be replaced with an O. So 007 will become OO7 and 030 will become O30
 - T123456789T (all T) – all zeros will be replaced with a T. So 007 will become TT7 and 030 will become T3T
 - O123456789O (all O) – all zeros will be replaced with an O. So 007 will become OO7 and 030 will become O3O
 - T12345678NT (TN) – all zeros will be replaced with a T, all nines with an N. So 097 will become TN7 and 090 will become TNT
 - O12345678NO (ON) – all zeros will be replaced with an O, all nines with an N. So 097 will become ON7 and 090 will become ONO
 - TA2345678NT (TAN) – all zeros will be replaced with a T, all nines with an N, all ones with an A. So 091 will become TNA and 190 will become ANT
 - TA234E678NT (TAEN) – all zeros will be replaced with a T, all nines

with an N, all ones with an A, all fives with an E. So 091 will become TNA and 1590 will become AENT

- TAU34E67DNT – the zero, one, two, five, eight, nine will be replaced with a T, A, U, E, D, N respectively

Remapping Function Keys

Select which function keys to send messages. Each type of message has a combo box for you to set the appropriate function key. If the program is sending the wrong message check here first. The only restriction is that a key must mean the same thing in Running and in S&P. Function keys do not have to be unique for a selected message. There is little reason to do so although if you want it can be done. For the following messages a function key can be selected

- CQ Key – defaults to F1
- Exchange Key – defaults to F2
- End of QSO Key – defaults to F3
- His Call Key – defaults to F5
- My Call Key – defaults to F4
- QSO B4 Key – defaults to F6 (can be disabled)
- Again Key – defaults to F8 (can be disabled)
- Next Call Key – defaults to Disabled

ESM mode	Work dupes when running	Mode	QSO B4 key	Again key	Action	Result action
On	don't work dupes	Run	Disabled	F-key	DUPE callsign entered	Send AGN message when Enter pressed
On	don't work dupes	Run	Disabled	Disabled	DUPE callsign entered	Send the EXCH when Enter is pressed, station will be worked and logged with Enter, Enter
On	don't work dupes	S&P	Disabled	F-key	DUPE callsign entered	Pressing Enter does nothing, no blue buttons in the Entry

On	don't work dups	S&P	Disabled	Disabled	DUPE callsign entered	window Pressing Enter does nothing, no blue buttons in the Entry window
On	work dups	Run	-	Disabled	DUPE callsign entered. Mistake with received QSO data	Send EXCH when Enter is pressed
On	don't work dups	Run	-	Disabled	Mistake with received QSO data	Send EXCH when Enter is pressed
On	-	S&P	-	Disabled	Mistake with received QSO data	Send EXCH when Enter is pressed. After the user corrects the entry, it will log and not send anything

Digital Modes Tab

 Configurer
 ✕

Hardware
Function Keys
Digital Modes
Other
Winkey
Mode Control
Antennas
Score Reporting
Broadcast Data

Digital Interface 1

TU Type

Soundcard

Speed

Parity

Data Bits

Stop Bits

Flow

Digital Interface 2

TU Type

Soundcard

Speed

Parity

Data Bits

Stop Bits

Flow

DI-1 MMTTY Setup (If used)

MMTTY Mode: ☒ AFSK ☐ FSK

MMTTY Path:

C:\Users\Richard\Documents\W1MM Logger+V

Select

DI-2 MMTTY Setup (If used)

MMTTY Mode: ☒ AFSK ☐ FSK

MMTTY Path:

C:\Users\Richard\Documents\W1MM Logger+V

Select

DI-1 Fldigi Setup (If used)

Fldigi Path:

C:\HamRadio\W1MM+DigitalEngines\DI-1\fldig\

Select

DI2 Fldigi Setup (If used)

Fldigi Path:

C:\HamRadio\W1MM+DigitalEngines\DI-2\fldig\

Select

DI-1 MMVARI Setup

MMVARI RTTY Mode: ☒ AFSK ☐ FSK

FSKPort

Select

DI-2 MMVARI Setup

MMVARI RTTY Mode: ☒ AFSK ☐ FSK

FSKPort

Select

Note: Any Changes made in this section will require the digital windows to be closed and re-opened before changes take effect.

Path to WSJT/JTDX

WSJT/JTDX Path Used for S01V,S02V mode and Radio1 in S02R.

Command Line Params

C:\HamRadio\wsjtx2\bin\wsjtx.exe

Select

Not Set

WSJT/JTDX Path Used for S02R Radio 2

Command Line Params

Select

Not Set

OK

Cancel

Help

The Digital modes tab is used to set up the interfacing to external Controllers (TNCs), or to digital engines (MMTTY/MMVARI/Fldigi/2Tone) for sound card digital modes.

In SO1V mode, there is only one Digital Interface window, DI-1. In SO2V and SO2R modes, there are two Digital Interface windows, DI-1 and DI-2. Each DI window is associated with one of the two Entry windows. Each DI window is opened from the Window > Digital Interface menu item in the corresponding Entry window. The Digital Modes tab in the Configurer is used to configure both Digital Interface windows.

Digital Modes Field Descriptions

- **Digital Interface 1 / 2**
 - **TU type**
 - **None**
 - **Soundcard** – use this selection for MMTTY, 2Tone, MMVARI or Fldigi sound card software
 - **Other** – use this selection for a TNC or TU such as a PK-232 or KAM
 - **Dxp38** – for the HAL DXP-38 TU
 - **TinyFSK** – for the K0SM TinyFSK interface
 - **Winkey** – for the K1EL Winkeyer version 3.1 or later interface
 - **Note:** in order to enable the Winkey interface, you also need to check the **Enable RTTY Mode using Winkey** check box under the Winkey tab, and set the Winkey port up under the Hardware tab if you haven't already done so for CW
 - **Port, Speed, Parity, Data Bits, Stop Bits, Flow Control** – Used when Other, Dxp38 or TinyFSK is selected, to set the parameters for the COM port used to communicate with the TNC or TU (e.g. 9600 baud, N, 8, 1, no flow control for the DXP-38 or TinyFSK)
- **DI-1 MMTTY Mode | DI-2 MMTTY mode**
 - Use the MMTTY section for 2Tone as well as MMTTY
 - When using MMTTY, select whether AFSK or FSK is being used
 - The serial port MMTTY will use for PTT and FSK has to be set in the MMTTY Setup. More information in the [MMTTY support](#) chapter
 - When using a TinyFSK for FSK transmitting, you will still need a sound card interface for receiving; even though you are actually going to transmit using FSK, you configure the sound card interface for AFSK
- **DI-1 MMTTY Path | DI-2 MMTTY Path**
 - The path to the MMTTY (or 2Tone) engine goes here including the file

name of the program

- The path and file name can be selected using the **Select** buttons
- The two instances of MMTTY should be in two separate folders. You **must** do this if you want the MMTTY settings in the two instances to be different (e.g. left vs. right channel, different sound cards, etc.)
- **DI-1 Fldigi Path | DI-2 Fldigi Path**
 - The path to the Fldigi engine goes here including the file name of the program
 - The path and file name can be selected using the **Select** buttons
- **DI-1 MMVARI RTTY Mode | DI-2 MMVARI RTTY Mode**
 - When using MMVARI for RTTY, select whether AFSK or FSK is being used
 - If AFSK is selected the serial port (if any) with a check in the Digital check box and with Dig Wnd Nr corresponding to the DI window number will get passed to MMVARI when the DI window is opened, so that MMVARI can use it for PTT control
 - If FSK is selected, the port to be used for PTT control is not passed to MMVARI. It must be defined in the FSK8250, EXTFSK or EXTFSK64 setup window
- **DI-1 MMVARI FSKPort | DI-2 MMVARI FSKPort**
 - **Warning:** You must use the Windows “Run as Administrator” option when starting N1MM+ if you want to use FSK with MMVARI. Running MMVARI in FSK without using “Run as Administrator” will result in a program hangup or crash when the FSK8250/EXTFSK/EXTFSK64 plugin tries to write to its configuration file
 - Choose **FSK8250** if you are using a true serial port or a device that can simulate a serial port and handle 5-bit codes at 45.45 baud (this does **not** include most consumer-grade USB-to-serial adapters, but it does include some commercial interfaces, such as interfaces specifically designed to support FSK RTTY)
 - When MMVARI is opened for FSK RTTY, a small window labelled FSK8250/16550 1.03 will open, or appear on the Windows Task bar. In this window you select the COM port number and the signal line to be used for PTT (RTS or DTR). FSK keying will be done on the TxD line. If this is a USB device that simulates a serial port, check **Limiting speed** in the MMTTY setup. You can use the _ box at the top right to minimize this window after completing the setup
 - Choose **EXTFSK** if you are using a regular USB-to-serial adapter
 - When MMVARI is opened for FSK RTTY, a small window labelled EXTFSK 1.05a will open, or appear on the Windows Task bar. In this window you select the COM port number and the signal lines to be used for FSK keying (normally TxD) and PTT (RTS or DTR). You can use the _ box at the top right to minimize this window after completing the setup
 - On high-performance multi-core systems only, you may choose

EXTFSK64 instead of EXTFSK. EXTFSK64 uses a more accurate timing mechanism than EXTFSK, but this mechanism uses significant CPU resources. EXTFSK64 is not appropriate for use on XP based systems or hardware running older dual-core Intel/AMD CPUs or Atom based CPUs. On systems that are capable of supporting it, EXTFSK64 can key FSK at speeds other than 45.45 baud, and it can also key FSK from LPT ports as well as USB-to-serial adapters. See <http://www.qsl.net/ja7ude/extfsk/indexe.html> for more detailed information on EXTFSK64

- When MMVARI is opened for FSK RTTY, a small window labelled EXTFSK64 will open, or appear on the Windows Task bar. In this window you select the COM or LPT port number and the signal lines to be used for FSK keying (normally TxD) and PTT (RTS or DTR). You can use the _ box at the top right to minimize this window after completing the setup
- **Path to WSJT/JTDX** (version 1.0.7845 and earlier only – in version 1.0.7860 and later, these options have been moved to the [WSJT/JTDX Setup](#) tab):
 - The upper box contains the path to the WSJT (or JTDX) program that will be used from within N1MM+ for WSJT modes like FT4 and FT8. When the **Window > Load WSJT/JTDX** menu item is used in the Entry Window, the entry in this box tells the program where to find the WSJT or JTDX program. Use the **Select** button to change the path.
 - To the right of the Select button is a box in which additional command-line parameters may be set for WSJT. In most installations, this box is not used.
 - The lower box can be used for running WSJT-X from Radio 2 in SO2R.
 - Detailed information on setting up and operating with WSJT-X or JTDX is found in the manual page for the [WSJT Decode List](#) window.

Other Tab

 Configurer
 ✕

Hardware
 Function Keys
 Digital Modes
 Other
 Winkey
 Mode Control
 Antennas
 Score Reporting
 Broadcast Data

Letters Wav File Path

Primary CW Speed Step 2	SSB Tuning Tolerance (Hz) 500	SSB Up/Down Arrow Incr (kHz) 0.10
Secondary CW Speed 4	CW Tuning Tolerance (Hz) 200	CW & Dig Up/Down Arrow Incr 0.02
Repeat time in millisecs 1800	RTTY Tuning Tolerance 200	PgUp/PgDn Incr (kHz) 10.00
Default # Spots in SH/DX/ 30	CW Weight 50	

☒ Clear automatically populated exchange on callsign change
 ☐ Mute mic on supported radios

☐ Per Operator Function Key Messages
 ☒ Check for new program versions

☐ MorseRunner Mode
 ☐ CC Cabrillo to logs@supercheckpartial.com

☒ Show text cursor position in inactive EntryWindow
 ☐ Use Reverse CW Radio 1

☒ Overwrite serial number in Entry Window

OK

Cancel

Help

The Other tab is used to set up default values and select special modes and functions.

Other Tab Field descriptions

- **DVK Letters File Path** – This is where you specify the sub-path (relative to the Wav\LettersFiles subdirectory in the N1MM Logger+ User Files area) where the program will look for individual letter and number files for voicing of call signs and serial numbers in SSB. You can use {OPERATOR}\ in this file path, in which case each operator (specified using OPON or Ctrl+O) will have their own separate letters file subdirectory within the wav\LettersFiles directory
- **Primary CW Speed Step** – The primary speed step is used with **PgUp/PgDn** keys or the speed adjust buttons in the Entry Window
- **Secondary CW Speed** – The secondary speed step is used when **Shift+PgUp/PgDn** is pressed. **Alt+PgUp/PgDn** adjusts the CW speed of the inactive radio/VFO in SO2R/SO2V mode
- **Repeat time in millisecs** – Specify the CQ repeat interval in the Entry window (Auto-CQ). The default value is 1.8 seconds. Enter a value in seconds or milliseconds. The maximum value is 32767. This is the same as Ctrl+R or 'Config | Set CQ repeat time' in the Entry Window
- **Default # Spots in** – The number of spots returned by the SH/DX command in the bandmap window. The default value is 30 spots. The number of returned spots for the SH/DX command in the Telnet window is not affected by this value and has to be changed in the Telnet Options window
- **SSB Tuning Tolerance (Hz)** – SSB mode: Clicking on or next to a station in the bandmap window will put the call on the callsign frame (if the callsign field is empty) of the Entry window. This value gives the maximum frequency distance to the call on the bandmap when it will be put on the callsign frame. The value has to be between 0 and 20000 (20 kHz). The default value is 300
- **CW Tuning Tolerance (Hz)** – CW mode: Clicking on or next to a station in the bandmap window will put the call in the callsign frame (if the callsign field is empty) of the Entry window. This value gives the maximum frequency distance to the call on the bandmap when it will be put on the callsign frame. The value has to be between 0 and 20000 (20 kHz). The default value is 300
- **RTTY Tuning Tolerance** – RTTY mode: Clicking on or next to a station in the bandmap window will put the call on the callsign frame (if the callsign field is empty) of the Entry window. This value gives the maximum frequency distance (in Hz) to the call on the bandmap when it will be put on

the callsign frame. The value has to be between 0 and 20000 (20 kHz). The default value is 300

- **CW Weight** – Adjusts the CW weight (between 30-70% limits). The default value is 50. This weight command works not only for serial or LPT port CW but also for Winkeyer
- **SSB Up/Down Arrow Incr** – This value gives the frequency jump amount (in kHz) of the up/down arrow keys, or by spinning the mouse wheel, in SSB . Set to 0.00 to disable
 - **NB.** Never make this smaller than the smallest step your radio can make in SSB. Older Icom rigs are known to have a smallest step of 100 Hz which is quite big. When the step is made smaller than the minimum step size the Up/Down Arrows don't seem to work. Also controls the amount of each frequency change when tuning the RIT on radios that support doing so from the computer
- **CW Up/Down Arrow Incr** – This value gives the frequency jump amount of the up/down arrow keys, or by spinning the mouse wheel, in CW and digital modes. Set to 0.00 to disable
 - **NB.** Never make this smaller than the smallest step your radio can make in CW. Most rigs have a smallest step in the order of 10 Hz. When the step is made smaller than the minimum step size the Up/Down Arrows don't seem to work. Also controls the amount of each frequency change when tuning the RIT on radios that support doing so from the computer.
- **PgUp/PgDn Incr (kHz)** – This value gives the frequency jump amount for the {PGUP} {PGDN} macros (Note: the PgUp and PgDn keys are not used for this; the {PGUP} and {PGDN} macros must be used in function key macros. These macro names are holdovers from early versions of N1MM Logger Classic)
- **Clear automatically populated exchange on callsign change** – When selected, if the callsign in the Entry window is changed by the operator, this option clears the contents of exchange fields in the Entry window that were populated (filled in) from a Call History file, from previous QSOs in the contest, or from a Telnet spot. Does not affect exchange data that have been manually filled in
- **Per Operator Function Key Messages** – This feature is intended for multi-operator situations where it is desirable to enable different function key messages depending on which operator has logged on the program (with Ctrl+O or the text command OPON [Callsign]).
 - When the Per Operator Function Key Messages option is not checked, the function key message file specified on the Associated Files tab of the Contest Setup dialog will be used by all operators. Any operator can modify the file that is in use through the Function Key Editor.
 - If a specific Associated File is not defined, then the Default message file for that mode will be used.

- When the **Per Operator Function Key Messages** option is checked:
 - If the Station callsign is the same as the Operator callsign, the main function key message associated with the contest is selected, as above. Only the Station callsign operator can edit this function key message file; any edits performed by other operators affect only their personal copy of the message file.
 - If the Station callsign and the Operator callsign are different, the current Associated Function Key Message file is copied into an operator sub-directory during the first OPON or Ctrl+O by that operator. The operator directory files are then loaded each subsequent time that operator signs on using OPON or Ctrl+O. The station callsign operator should verify that the associated function key message files are correct prior to allowing operators with different callsigns to log on, otherwise any errors in the master set will have to be corrected individually by every other operator who signs on.
 - It is not necessary to create the operator directories yourself. The program code will create the necessary sub-directories and the operator directory when needed. The operator directory is a sub-directory of the directory where the base function key message files are stored (e.g. C:\Users\[Station Login]\FunctionKeyMessages\), named with the call sign or name used in the Ctrl+O or OPON command.
 - If you want to reset and delete the operator directories, uncheck (disable) the Per Operator Function Key Message option first.
 - If a base associated function key message file cannot be found, the Default [mode] message file is used to create one.
- **MorseRunner Mode** – checking this option enables communications via UDP packets between N1MM Logger and a specially modified version of VE3NEA's MorseRunner program that can be downloaded from the Additional Support Files gallery on the N1MM Logger web site. These communications allow you to use the N1MM Logger entry window, keyboard and mouse commands to control the sending of "QSOs" in MorseRunner. This feature takes the place of the former AutoHotKey script that could be used to link MorseRunner with the Logger; by checking this option, you no longer need to use the AHK script.
- To use this, download the zip file containing the special version of MorseRunner and expand the files from it into a non-protected location. You can put the MorseRunner files anywhere you want as long as they are not in a protected path (e.g. don't put them in C:\Program Files or C:\Program Files (x86)). You could put them in a folder or folders in your My Documents folder, or in a folder or folders in C:\.
 - There are two Morse Runner zip files, one for CQWW (exchange = CQ zone) and one for CQ WPX (exchange = serial number). The one with CQWW in the file name is the one for CQWW.

- Follow the instructions in the Readme.txt file with the special version of MorseRunner. You may need to edit the MorseRunner.ini file to select the desired sound card.
- If you want to practice dueling QSOs in SO2R, you should create two folders with two copies of the special version of MorseRunner. In the MorseRunner.ini file for the Radio 2 (Entry window 2) copy, in the [Station] section, change the Radio= line to Radio=2. You will also need to use a separate sound card for each copy (the two copies will not be able to share the same sound card), which is set up in the [System] section of the ini file (SoundDevice).
- Your radio should be off or otherwise configured in such a way that it isn't actually transmitting and you are not listening to the receiver. The sounds you listen to are generated by MorseRunner through a sound card in your computer. You need to have a CW port configured so that N1MM Logger+ will operate normally, but you don't actually use the CW it generates. Create a new CQWPXCW contest (or CQWWCW if you are using the CQWW version of Morse Runner) in N1MM Logger+ to log the MorseRunner contacts in. You might want to do this in a different database from your real contests, so as to avoid confusion later.
- For SO1R, connect your headphones to the computer's sound card. If you want to use it to practice dueling CQs in SO2R, you will need to use two separate sound cards, and you might need to make up a wiring harness to convey the sound from the two sound cards to the two earpieces of a stereo headset.
- MorseRunner does not start by itself. You have to start it either by double-clicking on the exe file in the folder you put it in, or by creating a desktop icon that will start it from there. You also have to start a MorseRunner session by clicking on the Run button in MorseRunner, exactly the same as if you were running MorseRunner on its own.
- What the new check box does is tell N1MM Logger+ to convey keystrokes to MorseRunner without the need for an AutoHotKey script. The end result is that you do your typing in N1MM Logger+, but it is MorseRunner that generates the audio that you hear. The function key messages that you hear are the ones hard-wired in MorseRunner, not your own function key messages in N1MM+.
- The MorseRunner window is still "live". If you need to correct a mis-typed call sign, you can either make the correction in the MorseRunner window, or wipe the call sign from the N1MM Logger+ entry window and restart the QSO.
- **Show text cursor position in inactive EntryWindow** - Used in SO2R and SO2V. When this option is checked, there will be an indicator in the inactive Entry Window of where the text entry cursor for that window will be when and if keyboard focus is changed to that window. Unlike the cursor in the active Entry Window, this indicator does not blink.
- **Overwrite serial number in Entry Window** - When this option is checked (default), when the cursor moves to the exchange box in a serial number

contest, the entire serial number will be selected ready to be overtyped. If you don't want this behavior, you can uncheck this option, which will place the cursor at the end of the serial number instead of selecting the entire number.

- **Mute mic on supported radios** – Mute the microphone during transmit. Normally used to enter audio via a radio input other than the microphone. Default is to not mute
 - For use only with the Logger's own digital voice keyer (wav files). Do not check this option if you are using a DVR in the radio or an external DVK
 - Supported radios are: Tentec Orion and Elecraft K3
 - Tentec Orion: If "Mute" is checked, it causes the Orion's mic input to be muted and the Aux input to un-mute during voice keyer events
- **Check for new program versions** – At program startup, check for a new version and if one is available, offer to download and install it. If you choose not to download a newer program version when prompted, you will not be prompted again for that program version.
- **CC Cabrillo to logs@supercheckpartial.com** – enables an Email button in the popup menu that appears when you generate a Cabrillo file that will automatically send a copy of the Cabrillo file to the supercheckpartial.com web site for use in creating the master.scp files. Requires an email client program to be configured to send emails.
- **Use Reverse CW Radio 1** – When selecting CW send a command to Radio 1 to use Reverse CW
- **Use Reverse CW Radio 2** – (SO2R only) When selecting CW on Radio 2 use Reverse CW

Winkey Tab

 Configurer
 ✕

Hardware
Function Keys
Digital Modes
Other
Winkey
Mode Control
Antennas
Score Reporting
Broadcast Data

lambic A
Keying Mode
☐ Autospace

☐ Pot is wired with two leads

Winkey
PTT
Pin 5 Function
469
Sidetone Frequency

Winkey 2/3
☐ Sidetone
☐ Use 2nd Output
☐ Paddle only sidetone

Winkey Lite
For WKLite, J1 tip is set to CW,
ring is set to PTT

☐ Reverse Paddles

Winkey Speed Pot Control
☒ Ignore Winkey Speed Pot
☐ Use Winkey Speed Pot
☐ Use Winkey Speed Pot for Paddle and Keyboard CW Only

Winkey RTTY
☐ Enable RTTY Mode using Winkey

1
Lead Time (0-250) x 10
1
Tail Time (0-250) x 10 msec
0
First Character Extension (0-250) in msec
0
Keying Compensation (0-250) in msec
1.00
Hang Time

OK
Cancel
Help

The Winkeyer tab is used to control functions of a K1EL Winkeyer chip. (or 100% compatible clone). Winkeyer is designed by K1EL and G3WGV. **It is only active when the Winkeyer box has been checked on a serial port, and that port (whether real or virtual), has been connected either to a stand-alone keyer or to a device that embeds the Winkeyer chip, such as various MicroHAM and RigExpert products. Consult your unit's manual along with the Winkeyer chip manual for more information on these settings.**

To set up a port for a Winkeyer (or for a device that embeds a Winkeyer chip), select the COM port number that Windows has assigned to the Winkeyer, check the CW/Other check box for that port, click on the Set button, and check the WinKey check box. You do not need to change any of the other settings on the port setup dialog.

Winkeyer is fed ASCII characters from N1MM Logger (via COM or USB Ports), and converts the ASCII to timed CW. The pot speed range is from a minimum of 10 wpm to a maximum of 55 wpm. Winkeyer can also be used to control PTT. Winkeyer PTT can be used on modes other than CW. Note: This only works for Winkeyer versions 10, and 21 and greater.

Winkeyer Field Descriptions

- **Keying Mode** – Select the keying mode. Choices are: Iambic A, Iambic B, Ultimatic and Semi-Automatic. The default is Iambic B
- **Autospace** – Select when the autospace feature should be used. When using the paddles to send, if a pause of longer than one 'dit' time is detected, THREE dit times of pause will be inserted before the next character. See the manual for more information
- **Pot is wired with two leads** – This option applies to Winkey version 1 only. Select when the potentiometer on the board is wired only with two instead of three wires. Under normal operation, leave unchecked. Unless you've built the keyer yourself, or your keyer vendor recommends this, leave unchecked
- **Pin 5 Function** – (Winkey version 1) Select the function of pin 5. Unless your keyer's manual tells you otherwise, the default of PTT is likely what you want here. The Winkeyer manual is also a good reference. The choices are:
 - PTT (default)
 - Sidetone
 - 2nd CW (second output, do not use for SO2R – see below))
 - None
- **Sidetone Frequency** – Select the Winkeyer's sidetone frequency. The default sidetone frequency is 469 Hz
- **Reverse Paddles** – Reverse the left and right paddle
- **Winkey Speed Pot Control** – Three options:

- Ignore Winkey Speed Pot (when N1MM+ is running)
- Use Winkey Speed Pot (matches the N1MM+ speed to the pot setting)
- Use Winkey Speed Pot for Paddle and Keyboard CW only (enables QRS for manual CW)
- **Lead Time** – Set the lead time value in 10ms Increments (up to 2.55 seconds). This value reflects the amount of time that the Winkeyer PTT will be asserted BEFORE keying commences
 - If when sending CW you are missing the first dot or dash, or if paddle-sent CW doesn't seem responsive (again, missing the first character) set this to at least 10 mSec
 - NOTE that this field denotes 10 mSec intervals — '1' in this box means 10 mSec
 - If Pin 5 function is set to PTT, set this value to at least 1 (10 mSec)
- **Tail Time** – Sets the tail time in 10 mSec Increments (up to 2.55 SECONDS). This value reflects the amount of time that the Winkeyer PTT line will be held after keying stops. Tail Time = 1 results in a tail time of one dit time (v2.2; 10 msec in earlier versions of Winkeyer), Tail Time = 2 adds 10 msec to that, Tail Time = 3 adds another 10 msec, and so on. If Tail Time is set to zero, then Hang Time is used instead
- **First Character Extension** – Sets the extension time in 10 mSec steps (up to 2.55 seconds). Normally ONLY used with older, slower-keying rigs at speeds above 25 wpm, this setting will add time to the first element sent to help with the lack of T/R speed of those rigs. This value is usually set by experimentation. See the Winkeyer manual for more information on setting this value
- **Keying Compensation** – Normally only used with high speed (>30 wpm) QSK operation. Adds time (in 1 mSec increments) to both dashes and dots to adjust for rig switching delays (however slight). See the Winkeyer manual for more information
- **Hang Time** – Provides a CW speed-dependent means of holding PTT **during** CW sending. Hang Time can be used to set a CW-speed dependent delay of 1, 1.33, 1.67 or 2 letterspaces (not dit spaces) after the last paddle closure. Hang Time is only activated when Tail Time is set to zero.
- **Winkeyer 2**
 - **Sidetone** – Gives a sidetone when sending CW (both when using a paddle and from computer input)
 - **Paddle only sidetone** – Gives a sidetone only when sending by paddle
 - **Use 2nd output** – If this option is checked, when the transmit focus is in the second radio Entry window, CW and PTT will be switched to Winkeyer Output 2. This is convenient for minimal CW SO2R, because no additional hardware is needed to switch CW and PTT between radios. You'll still need to do something about the received audio switching, though. Select this option for SO2R operation, or for RTTY operation using an output connector other than KEY1 (see

below)

- **Enable RTTY Mode using Winkey** – (Winkeyer version 3.1 or later only)
Check this option and select Winkey as the TU Type under the Digital Modes tab to use the Winkeyer for RTTY FSK keying
 - **Select Winkey RTTY Keying Port** (only visible if **Use 2nd output** is checked) – use this to select one of the other Winkey outputs (PTT1, KEY2 or PTT2) for RTTY

Setting CW Speed and Weight in Winkeyer

Speed setting is done just as with other keying methods. The PgUp and PgDn keys will increase or decrease the speed (default is 2 WPM steps). You can also overwrite the value in the speed window, or use its up/down arrows. Ctrl+PgUp/PgDn increases or decreases the speed by a larger amount (default is 4 WPM). Both values can be adjusted on the Configurer's Other tab.

If the option to ignore the speed pot has not been selected, setting the speed using the speed control pot changes BOTH the paddle speed and the N1MM sending speed. Setting the speed using the entry window changes both the paddle sending speed and N1MM sending speed but ONLY UNTIL the next time the speed pot is adjusted, i.e. the absolute position of the speed pot then overrides any changes made in the entry window.

CW weight for Winkeyer can be set on the Other tab, but is not usually changed from the 50% default.

Mode Control Tab

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting

Mode recorded in log

☒ Use radio mode (default)
☐ Follow band plan
☐ Use contest mode or bandplan
☐ Use contest or radio mode
☐ Always: RTTY

Mode sent to radio

Mode	Radio 1 / VFOA	Radio 2 / VFOB
RTTY to	AFSK	AFSK
PSK	PSK	PSK

☒ Always use packet spot mode

OK Cancel Help

The mode control tab determines **how (and whether) the mode will be controlled on the connected radio**, whether the program sets the mode when changing frequency or not, and **what mode it changes it to**. This dialog also gives you control over the mode used when contacts are logged.

Mode logged vs. Radio mode

In an ideal world, the mode in the log, the radio's mode and the mode in the software would all be the same. For traditional voice and keyed CW modes (CW, USB, LSB, AM, FM) this actually holds true. With the obvious exception of radios that do not support all of these modes, there is a one-to-one correspondence between the names of the modes on the radios, in the software and in the log. If these were the only modes that existed, it would always be possible to change modes on the radio and have the software follow (or vice versa) without risk of confusion or error, and there would be no need for mode control configuration settings.

However, when digital modes are brought into the picture this one-to-one correspondence breaks down. Any SSB-capable radio can be used for digital modes using a sound card, even if the radio itself does not have any native digital modes. This results in a many-to-one relationship (many different modes in the log can map to a single mode on the radio). In the case of RTTY, some radios have a native RTTY mode using FSK keying, and when it exists, this mode is uniquely associated with RTTY and not with any other digital mode in the log. However, the reverse is not true; depending on the hardware configuration and the operator's choice, RTTY in the log may correspond with either RTTY or SSB on the radio. In the case of some radios, there may also be an additional mode or modes in the radio tailored either specifically for AFSK RTTY or for sound-card digital modes generally. Radio manufacturers use a bewildering and inconsistent variety of names for these modes.

For information about mode control for your specific radio, go to [Supported Radios](#) . In particular, for the correspondence between the mode names used in the right-hand side of the Mode Control window in the Configurer and the names used by the radio's manufacturer, see the [Digital Mode Mapping](#) table. See the text box below called "Digital Mode Selection" for more details.

Because of this breakdown in the one-to-one correspondence, a radio-first priority system cannot be imposed in all situations – once digital modes are involved, setting the mode on the radio does not always uniquely identify the mode that should be logged. Instead, the primary rule is "software first". Setting the mode in the software always controls what the radio does. You can select the mode in the software simply by typing the name of the mode (CW, SSB, USB, LSB, AM, FM, RTTY, PSK) into the entry window in the callsign box and pressing the Enter key. Provided the mode you have chosen is supported by the contest (this is determined by the Mode category in the contest setup window), the software and the radio will switch

to the mode you have commanded, and that is the mode that will be logged. When the MMVARI or Fldigi digital engine is used, the specific digital mode logged will depend on what mode has been selected within the digital engine. Since not all radios use the same radio mode for digital modes, there are settings in the right side of the mode control configuration window that determine which radio mode is used for each of RTTY and PSK.

Automated Mode Switching

Despite the lack of a complete one-to-one correspondence between the modes in the log and in the radio, there are many situations where some degree of automated mode switching is possible, based either on the radio's mode or on the frequency, and within the limits imposed by the current contest setup (i.e. what modes are supported within the current contest). The settings that control whether this kind of automation is used, and on what basis, are in the left side of the mode control window.

One of these options is to use the band map. You may be able to use this within a single mixed-mode contest where the modes are kept well-separated in frequency. Unfortunately, this doesn't work in all situations. During major CW contests, for example, CW may be used pretty much throughout the normal digital sub-band. On the other hand, during a major RTTY contest you may find RTTY being used on frequencies that would normally be considered to be CW frequencies. For this reason, using the band map to determine the mode is not a foolproof set-and-forget option. Depending on the modes supported by your radio and the nature of the particular contest(s) you are operating in, you may need to choose one of the other options.

Digital Mode Behavior is Different

There is a difference in mode control behavior between the situation where the DI window and digital engine window are open and the situation where they are closed. This is due to the way serial ports are used by the digital engines and by the Logger. The digital engines are separate processes from the rest of the Logger, and a single serial port cannot be shared between two processes. Since serial ports can be a scarce resource in a complex contest station, the Logger allows time-sharing of serial ports between digital (FSK & PTT) and non-digital (CW & PTT) uses. It does this by switching the ports between the processes depending on whether the DI window is open or not. When the DI window is opened, serial ports that have the Digital box checked in the Configurer are closed by the Logger so that they can be opened by the digital engine. When the DI window is closed, these ports are released so that the Logger can open them for use in other modes.

Thus, whether the DI window is open or closed can make a significant difference to the hardware configuration. Whenever a serial port is time-shared between the Logger and a digital engine, that port cannot be used for PTT or CW keying in non-digital modes while the DI window is open.

In order to support the wide range of possible hardware configurations in a hardware-independent fashion, mode control in the Logger depends on whether the DI window is open or not. When the DI window is closed, radio-first mode control works between non-digital modes, but switching the radio mode to (or through) a digital mode or tuning the radio's frequency into (or through) a digital band segment does not open the DI window and switch the software to digital mode. To switch into a digital mode, the DI window must be opened from the software. This can be done by using the Entry window to select RTTY or PSK mode in a contest that supports digital modes, or by using the Window > Digital Interface menu item.

Once the DI window is open, changing modes on the radio does not close the DI window and the software does not switch out of digital mode, which means that radio mode-driven mode control does not work when the DI window is open. Mode changes in this state must be performed from the software. If the software is commanded from the Entry window to use a non-digital mode, the DI engine is closed by the software in order to free up any time-shared ports for the Logger to use.

Mode Control Field Descriptions

- **Mode recorded in log** – Set how to determine the mode that will be entered in the log
 - Use radio mode (default) – if the DI Window is not open, the mode is determined from the radio's mode setting. If the DI Window is open, the mode used depends only on the digital engine and not on the mode received from the radio, as follows:
 - In digital modes, the mode in the log will be RTTY if using the MMTTY or 2Tone engine or a TNC
 - When using the MMVARI or Fldigi engine, the mode will be as selected in the MMVARI or Fldigi window (digital modes only for Fldigi)
 - **Follow band plan** – the program will use the mode the bandplan gives for the frequency. For CW and Phone, this affects both what is entered in the log and what happens when you click on a spot in the Bandmap or the Available Mults and Qs window, but does not switch the radio automatically to a digital mode if you click within a digital band segment.
 - **Use contest mode or bandplan** – In a single-mode contest, that mode is both logged and sent to the radio. If the contest is mixed mode (e.g. the Russian DX Contest) the bandplan is followed as above.
 - **Use contest or radio mode** – In a single-mode contest, that mode is both logged and sent to the radio. In a mixed mode contest, the radio's mode is used.
 - **Always:** – always log the mode selected here (CW, SSB, RTTY, PSK31, PSK63, PSK125) regardless of the mode set on the radio.

Be careful when using the Follow band plan option

When you use the “Follow band plan” option for the Mode recorded in the log, it is imperative that the sub bands be set correctly in the Bandmap window, as the program will log contacts using the mode from the band plan as configured in the Bandmap window regardless of the mode you were actually using. Failing to set the sub band limits appropriately in the Bandmap window is a frequent cause of logging errors.

- **Mode sent to radio** – Select how to determine the mode sent to the radio
 - This applies only for digital modes, including FT8/FT4, PSK31/PSK63, and RTTY. See the note below for details
 - The row called RTTY is for RTTY only, since RTTY often uses a different mode in the radio from other digital modes.
 - The row called DIGI (starting with version 1.0.7937; it was previously called PSK) is for all digital modes other than RTTY, including FT4/FT8 as well as PSK31/PSK63, etc.
 - If your radio has a special mode(s) for sound card digital modes, the mode labels in the pull-down list probably won't match the mode names in your radio. See the text box below.

Digital Mode Selection

Every radio seems to have a different range of choices and names for digital modes. Some radios have no modes specialized for digital modes, some have only one digital mode for FSK RTTY (for sound-card digital modes, you use USB or LSB), some add to this a separate mode intended for sound-card digital modes like AFSK RTTY, PSK31 and FT8, and some radios have three separate digital modes for FSK RTTY, AFSK RTTY, and other sound-card digital modes like PSK31 and FT8. There may also be two versions of each of these, one “normal” and one “reverse” (opposite sideband). Every manufacturer uses different names for these specialized modes.

For simplicity, N1MM Logger has its own radio-independent terminology. The Logger uses RTTY for the radio mode normally used for FSK RTTY (which is usually but not always called FSK or RTTY on the radio). If the radio has a mode that is designated for AFSK RTTY, the Logger calls it AFSK (your radio manufacturer may have a different name for this, such as LSB-D or PKT-LSB). AFSK-R is the “reverse” of this AFSK mode, i.e. on the upper sideband instead of LSB (and might be called USB-D or PKT-USB on the radio). If there is a mode intended for sound card data modes that is different from the AFSK-R mode (such as the DATA A mode in the Elecraft K3/K3S), it will be called PSK in the Logger. Not all radios have all of these modes, so not all choices will necessarily be available, depending on what radio(s) is/are configured.

The translation between the mode name used on the radio and the mode name used in N1MM Logger is described at [Click here to see the table](#)

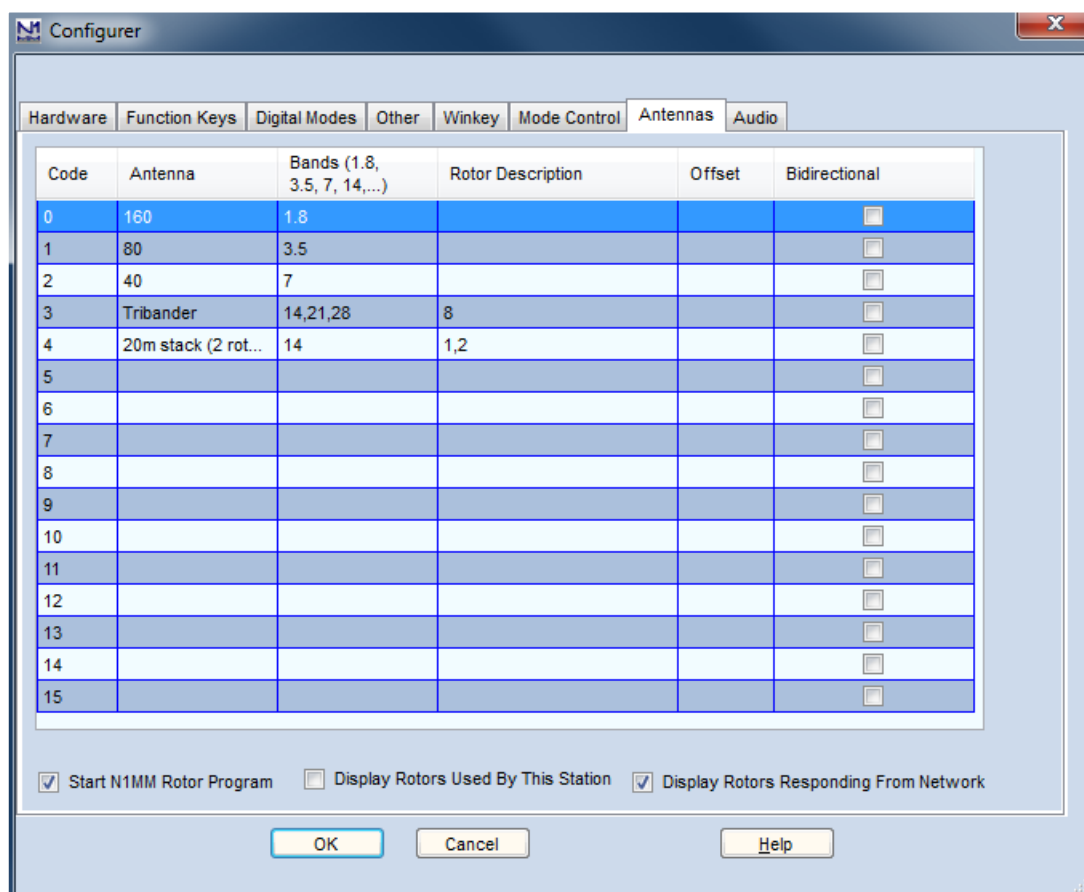
For RTTY, if you are using FSK, you should normally select RTTY. If you are using AFSK, you should normally select AFSK or LSB/USB, depending on whether your radio offers a specialized AFSK mode or not.

For other digital modes (including PSK and WSJT modes), the choice would normally be one of: PSK (if available, e.g. Elecraft K3/K3S), AFSK-R (on some radios, e.g. IC-7300), or USB (older radios that do not have a dedicated mode for sound card digital modes).

Always use packet spot mode check box:

If this box is checked, then clicking on a spot in the Bandmap (or jumping to a Bandmap spot using the keyboard) may change the mode of the radio, depending on whether the spot notes describe the mode or on the sub-band settings in the Bandmap window, and on whether the Mode Category in the Contest Setup dialog includes the packet spot mode as determined either by the spot notes or by the band plan settings. In a single-mode contest, you probably do not want to change the radio's mode as a result of clicking on a spot, and so this option should not be checked. In a multi-mode contest or for general logging, you might want to allow the packet spot mode to change the mode of the radio, but in this case **it is important to set the CW, Digital and SSB sub-band limits appropriately in the Bandmap window**, otherwise spots without spot notes (e.g. many human-generated spots) may cause the radio's mode to change in an unwanted manner.

Antennas Tab



The Antennas Tab defines how antennas can be selected by the program, if you have appropriate hardware, and also controls the rotor program. The example above illustrates the features of this tab.

The program uses a variety of antenna-related interfacing options, depending on your hardware and preferences. For example, antenna selection can be controlled by using a [band decoder](#) in conjunction with a real LPT port. USB-to-parallel adapters do not work in this or other parallel port interfacing functions, because they do not allow program control of individual pins on the port.

Antenna selection can also be controlled by one of two serial port protocols, the proprietary MicroHam protocol and the Open Two Radio Switching Protocol (OTRSP). Rotators can be controlled either by using the [N1MM Rotor Program](#), or by various third-party software packages that make use of UDP broadcasts sent by N1MM Logger+.

Tip

Unlike most software you don't map bands to bcd outputs 0-15 with N1MM Logger. You map **antennas** to bcd outputs 0-15. You can still map bands, but the antenna approach is **much** more powerful. It supports multiple antennas per band, stacks, and multiple bands per antenna. See the screen shot above and the Field Descriptions below. You can have multiple antennas for a band and use Alt-F9 to

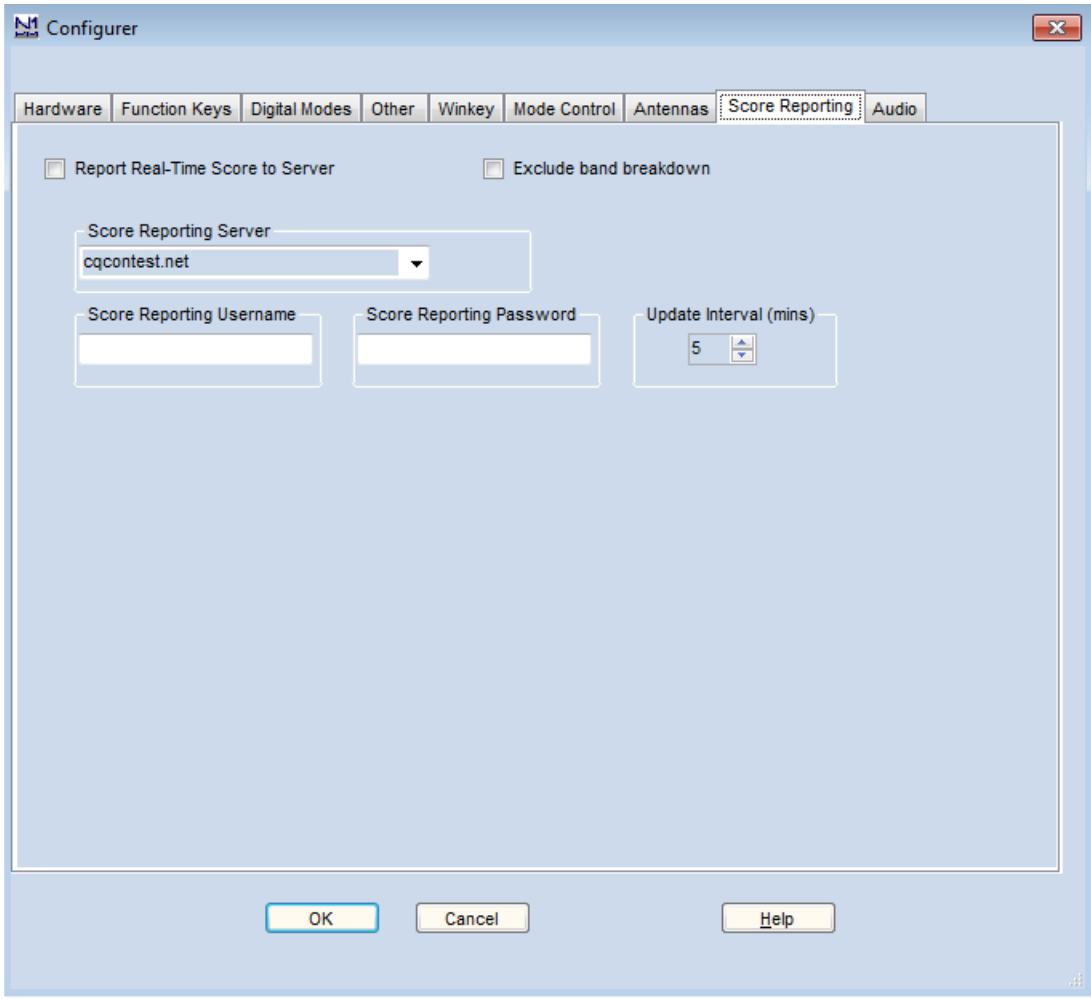
cycle through them.

Antennas Tab Field Descriptions

- **Code** – The code which will be presented on the LPT port as binary coded decimal output, using pins 9, 8, 7 and 2
 - The codes themselves are pre-determined. Sixteen different codes are the most that can be represented by the state of 4 pins. In the example above, no antenna for Code 0 is defined – this is because in that case that code is used to select automatic operation from the front panel of the remote antenna switch.
 - Each code represents ONE ANTENNA,, and you can have many different combinations.
 - Two available band decoders. google ham radio band decoders for more options:
 - W9XT decoder for DIY projects:
<http://www.unifiedmicro.com/decoder.html>
 - Top Ten Devices: <http://www.qth.com/topten/bdecoder.htm>
- **Antenna** -Text to describe the antenna. This text will appear on the status bar of the Entry window when you change bands or switch antennas for a given band. Use **Alt+F9** to toggle through all the antennas defined for the current band. The selected antenna will show in the lower-left corner of the status pane.
- **Bands** – The bands on which this antenna will be selected
 - List bands in MHz e.g. 1.8, 3.5, 7, separated by commas if more than one is covered by the antenna, as in the illustration. The band text list is: 1.8, 3.5, 5, 7, 10, 14, 18, 21, 24, 28, 50, 70, 144, 222, 420, 902, 1240, 2300, 3300, 5650, 10000, 24000, 47000, 76000, 142000, 241000.
 - The first antenna in the table will be selected when changing to a band. Press Alt+F9 to toggle through all the antennas for the current band.
 - An antenna may be used on any number of bands
- **Rotor Description** – enter the description as defined in [setting up the rotor program](#). It must be exactly the same in both places, because these names make the connection between the two programs.
 - More than one rotor can be selected (separate using commas), for example to turn a stack where more than one rotor is involved.
- **Offset** – This offset is added to the rotor position to determine the antenna position. This is useful for antennas that are mounted at 90 degrees for pattern interference reasons, or for antennas that have simply turned some in the wind over the winter. The offset can also be entered for the selected rotor in the rotor program
- **Bidirectional** – Check this box if the antenna can be set bidirectional (0 = not bidirectional, 1 = bidirectional) (e.g. Steppir)

- **Start N1MM Rotor Program** – Start the N1MM Rotor program automatically from the N1MM Logger+ main program. You will need to stop it manually
- **Display Rotors Used By This Station** –
- **Display Rotors Responding From Network** –

Score Reporting Tab



The screenshot shows the 'N1MM Configurer' window with the 'Score Reporting' tab selected. The window has a title bar with the N1MM logo and a close button. The tab bar at the top includes: Hardware, Function Keys, Digital Modes, Other, Winkey, Mode Control, Antennas, **Score Reporting**, and Audio. The main area contains two checkboxes: 'Report Real-Time Score to Server' (checked) and 'Exclude band breakdown' (unchecked). Below these are three input fields: 'Score Reporting Server' (a dropdown menu showing 'cqcontest.net'), 'Score Reporting Username' (an empty text box), and 'Score Reporting Password' (an empty text box). To the right of the password field is an 'Update Interval (mins)' spinner box set to '5'. At the bottom are three buttons: 'OK', 'Cancel', and 'Help'.

In N1MM Logger+, the Real-Time Score Reporting function has been integrated with the rest of the program. Instead of checking a box on the Other tab of the Configurer to start it, it now has its own tab in the Configurer.

Following, left to right, are the options you will need to set up to use it.

- **Report Real-Time Score to Server**– this checkbox is checked to start reporting real-time scores. It will stay selected until you uncheck it.
- **Exclude band breakdown** – if you feel that for competitive reasons you don't want to disclose your band breakdown, revealing your band-change strategy, leave this box unchecked.

- **Score Reporting Server** – The server name is editable. At this time, both cqcontest.net and contestonlinescore.com are in the pulldown list.
- **Score Reporting Username** and **Score Reporting Password** – For security reasons, the score reporting web sites require that you register your callsign and password. Once you have done so, enter them in the textboxes provided.
- **Update Interval** – Adjustable from 2 minutes to 60 minutes.

To be sure that your scores are being sent, check just above the lower text pane in the Info window. Each time a score is sent and acknowledged by the server, you'll see a notification there.

Broadcast Data Tab

Select the type of data you wish to broadcast, and the the IP Address(es) and port(s) for the receiver(s) of the data. Use 127.0.0.1 for the local machine. Use 12060 as the port unless the receiving application requires a different port. 255 in the low order octet will broadcast to your current subnet.

Type of data	IP Addr:Port IP Addr:Port...
☐ Application Info	127.0.0.1:12060
☒ Radio	127.0.0.1:12060 127.0.0.1:13063 192.168.0.10:13063
☒ Contacts ☐ All Computers	127.0.0.1:12060
☒ Spots	127.0.0.1:12060 127.0.0.1:13063 192.168.0.10:13063
☐ Rotor	127.0.0.1:12040
☐ Score	127.0.0.1:12060
☐ External Callsign Lookup	127.0.0.1:12060

WSJT and JTDX UDP connection settings. IP Address and port must match each programs settings. This allows UDP message communications to take place, usually done on port 2237. Logging from other programs can also take place, usuallv done on port 2333. Default: 2237.

Sets the IP Address and port that an external program can connect to N1MM+ via TCP Port for logging purposes. The Default port for JTDX is 52001.

N1MM+ Logger needs to be restarted for changes made below to take effect.

Enable	IP Address	UDP Port
☒ Enable	127.0.0.1	2237

Enable	IP Address	TCP Port
☐ Enable	127.0.0.1	52001

OK Cancel Help

To enable external UDP broadcasts, before December 2015 some lines needed to be added manually to the N1MM Logger.ini file, This editing function has now been incorporated in the External Broadcasts tab of the Configurer, shown above. If you had been using External Broadcasts before this change, the contents of your

existing External Broadcast section should be reflected on the tab. For example, if you have `IsBroadcastContact=True` in your existing ini file, then the Contact box on the tab should be checked.

To set up your UDP broadcasts, you need to decide which broadcasts to enable, by checking the relevant box, and then fill in the IP addresses and UDP ports to which you want each broadcast to go. Typically, UDP broadcasts are used to communicate with other programs, so begin by reviewing the documentation of the program you want to communicate with, to learn what port it wishes to receive data on. In most cases, the port number will be 12060, the default.

In filling in the IP Addresses and Port numbers for each broadcast, you need to put in the 4-part IP address, separated from the port number by a colon. Each IP/Port pair is separated from the next by a single space, as shown in the example on the tab.

You can start with IP address 127.0.0.1 (the PC you are running N1MM+ on) and add other PCs' IP addresses. For each receiving computer, separate the address and a port number with a colon (:), as in the illustration.

Typically, home networks are all one "sub-net." Most home networks use either 192.168.0 or 192.168.1 to designate their "sub-net", plus a 3-digit number in the last section that identifies the specific computer. Usually, these numbers are automatically assigned by the router through something called DHCP, though you may have the option to fix them in the router software., and doing so will help to avoid confusion later .

You can send UDP broadcasts to all the IP addresses in the subnet by specifying 255 for the last section, or "octet". For example, 192.168.1.255 will send to all computers that are in the 192.168.1 subnet. **Be sure you only use 255 in the last section or octet, because if you put that number in one of the earlier/higher-order sections, you will risk broadcasting to the internet. While eventually the packets will be discarded by the internet, it will not endear you to your ISP.**

Broadcast Data Details

When properly configured, N1MM Logger+ sends external UDP packets to other applications. Details about those packets can be found in the >Appendices >External UDP Broadcasts section of this documentation.

All QSOs

This command is useful only in Networked Computer mode. When checked, together with Contact, at any station on the network, that station will rebroadcast every contact that it receives to the UDP port specified. The XML format is the same as for Contact.

Exercise caution when using this feature. Multiple, misconfigured stations with AllQSOs checked could result in a circular network path.

Spots

N1MM Logger+ sends external UDP packets about packet spots to other applications. Details about these packets can be found in the >Appendices >External UDP Broadcasts section of this documentation.

Log data input from other programs

Note: In version 1.0.7860 and later, these settings have been moved from the Broadcast Data tab to a new [WSJT/JTDX Setup](#) tab in the Configurer.

N1MM+ can accept log data from other programs, either using UDP packets (JTAlert, WSJT-X, JTDX), or TCP packets (JTDX). To enable this in N1MM+ version 1.0.7845 or earlier, you need to check the Enable box in one of the two labelled sections near the bottom of the window. You may also need to do some configuration setup in the sending program, WSJT-X or JTDX (JTAlert does not need to be specially configured). If both programs are running on the same computer, the default IP address and port number should work, but if necessary for more complicated setups, the IP address and port number can be changed here.

If WSJT-X or JTDX is to be called up from the **Window > Load WSJT/JTDX** menu item in the Entry Window, then the upper Enable check box must be checked, and the port must be set to 2237 (unless the port has been changed in the WSJT-X settings). In the WSJT-X Settings window under the Reporting tab, in the area called “UDP Server”, the “Accept UDP Requests” check box must be checked.

If the JT-modes program is to be run independently rather than called up from the Window menu, as is required by JTAlert and some WSJT “clone” programs that cannot be called up directly from the Entry Window’s Window > Load WSJT/JTDX menu (because they do not support the UDP server method that N1MM+ uses for this), then it may be necessary to change the port number to 2333 (depending on the program). In WSJT-X, there is a “Secondary UDP Server” area (formerly called “N1MM Logger+ Broadcasts”) at the bottom of the Settings window under the Reporting tab. When using WSJT-X from inside N1MM+, this area is not used (the Enable button in this area should be unchecked), but when WSJT-X (or other similar program) is run independently, the Enable button may need to be checked and the port number in the N1MM+ Configurer changed to match the port number in this area.

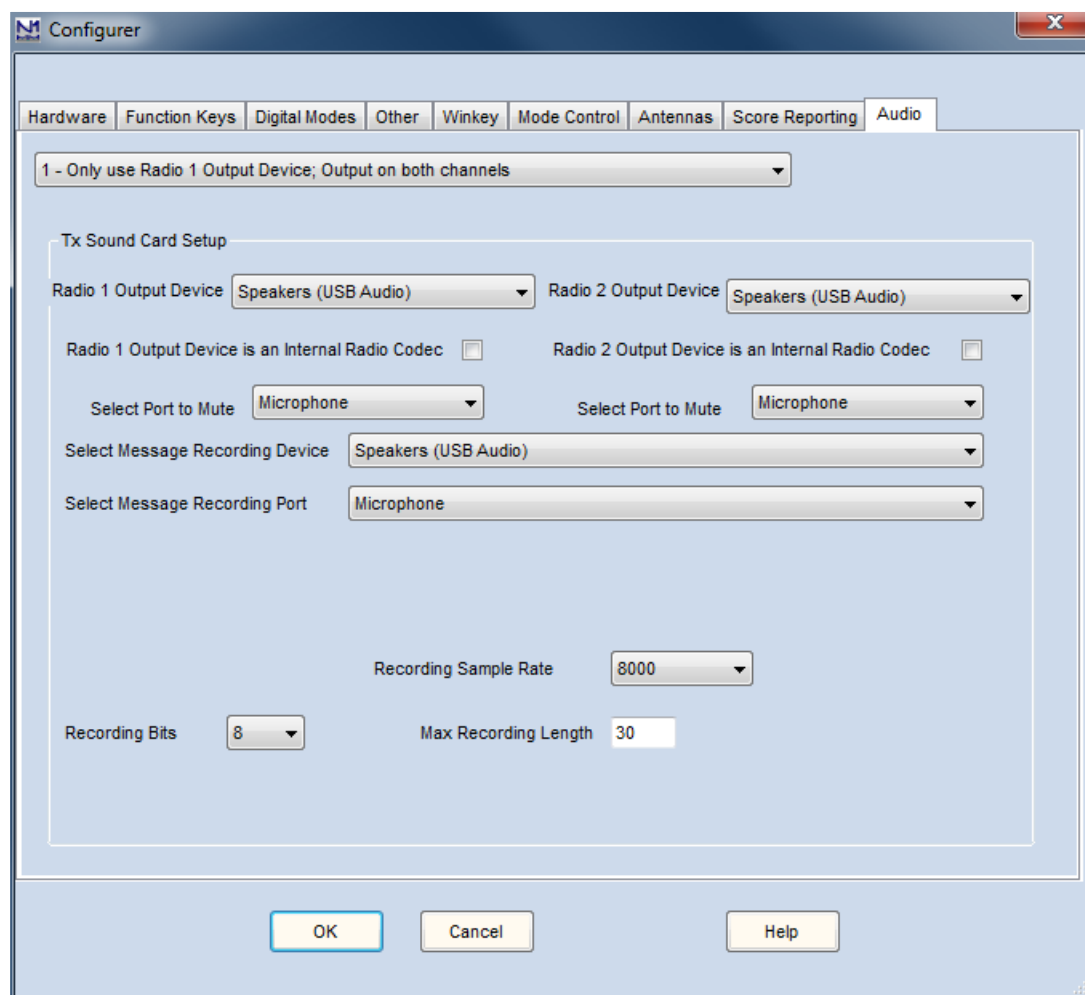
For more information on setting up and operating with WSJT-X or JTDX, see the > [Window >WSJT Decode List](#) page in this manual.

JTAlert cannot be used with Window > Load WSJT/JTDX

Note that if you are calling WSJT-X or JTDX up from within N1MM+, you cannot use

JTAlert at the same time. This is because it uses the same UDP port that N1MM+ uses, and the port cannot be shared.

Audio Tab



Two Audio Methods

If you have checked the “Use Logger+ audio” menu item in the Entry window’s Config menu (not available in Windows XP), the “Audio” tab will not appear in the Configurer. In its place, use the “[Logger+ Audio Setup](#)” menu item in the Config menu to set up Logger+ audio.

Before We Start

Any time you change the Default sound card in your Windows Control Panel while N1MM Logger+ is running, you **must** shut N1MM Logger+ down and re-start it. Otherwise, the program and the operating system may be on “different pages”, and it can cause audio functions not to work or to work strangely. Moreover, any time that you change the Windows Default sound card, you will have to come back to this tab and reset your audio options. You can imagine how we found this out!

Introduction to Audio & Sound Cards

Users of N1MM Logger Classic may recall when we deleted the QSO recording function from this tab in favor of a separate recorder, [QSOOrder by K3IT](#). QSO recording is configured there, and not in the Configurer. Currently, the Audio tab in the Configurer **only** controls settings that are used for playback of stored voice messages and for recording those messages. This includes on-the-fly re-recording, such as might be required in contests for split SSB operation on 40 meters, for example.

Running Windows XP?

If your computer is using Windows XP SP3, then this audio setup is the only one available to you. If you are using a later operating system, you have the option of using either this setup or a new Logger+ audio configuration dialog, which is found on the Config menu of the Entry window. If you check the option on the Config menu, you will note that the Audio tab on the Configurer will no longer be visible, and you will need to use the Audio configuration dialog which is on the Config menu. Conversely, if you are using XP, the Config menu entries will disappear. Full details on the newer Logger+ audio will be found in [the description of these menu items](#).

If you are setting up this tab for the first time, a good beginning is to familiarize yourself with your computer's sound card(s). At the same time, you can assure yourself that all of your computer's audio settings are correct for recording from your microphone and playing back to your radio's audio input (microphone or line). A step-by-step procedure for doing so is in the [Interfacing section of Getting Started](#). A much more detailed treatment of the use of stored messages in SSB contests is [here](#).

Audio Output

- **1 - Only use Radio 1 Output Device, Output on both channels**
 - One radio and one sound card, to play stored messages, record or re-record messages and mute the microphone when playing stored messages.
 - Use this setting with two radios **if you are using separate sound cards for the two radios**.
- **2 - Two Radio, Output left channel on left radio, right channel on right radio**
 - Use this setting if you are using a single sound card to play stored message files to two separate radios in SO2R (one channel for each radio)

Tx Sound Card Setup

This is where it gets a little messy, largely because of differences in the way Windows XP handles sound cards, versus the way they are managed in Vista, 7 and 8. Let's look at that a bit.

In Windows XP,

- **Select Radio 1 Output Device** – Select the sound card to use for sending [stored messages](#) (.wav files) on Radio 1.

In Windows Vista and later operating systems, the pull-down list shows output (playback) ports available on the computer, including those on multiple sound cards if more than one is available.

If there is a CODEC built in to Radio 1, choose that (CODEC is used here and elsewhere in this manual as a synonym for sound card). If not, choose the Line Out or Speaker Out port on the sound card that is connected to Radio 1's audio input.

In Windows XP, the pull-down list shows sound cards available on the computer; choose the built-in radio CODEC in Radio 1 or the sound card whose Line Out or Speaker Out port is connected to Radio 1's audio input.

- **Select Radio 2 Output Device** – Same as for Radio 1.

CODEC

Built-in sound card capability is just starting to appear in new-generation transceivers.

- **Radio 1 Output Device is an Internal Radio Codec** – Check this box if you are using a CODEC built into Radio 1 instead of a separate sound card
- **Radio 2 Output Device is an Internal Radio Codec** – Check this box if you are using a CODEC built into Radio 2 instead of a separate sound card

Select Port to Mute

Typically, this is used to mute the microphone during stored message playback, so you would select Microphone from the drop-down list. The two options are for Radio 1 and 2, left to right

Select Message Recording Device

Select the sound card to use for recording stored messages for later playback on either radio. In Windows Vista and newer versions, the pull-down list displays **playback** ports available on the computer. Choose a port that is on the sound card that you will be using to record SSB messages. In Windows XP, select the sound card that will be used to record SSB messages.

You may ask what playback ports have to do with recording – we'll just have to ask you to trust us on this one. you must select a device in order for recording ports to appear (see below).

Select Message Recording Port

Having selected the sound card device, use this pull-down list to select the **recording** port you will use on the selected sound card device to record SSB messages. This is normally the microphone input

Recording Bits and Sample Rate

- **Recording Bits** – this setting determines how your sound card digitizes analog audio **levels** – generally, the lower the bit rate the smaller the file but also the lower the fidelity
- **Recording Sample Rate** – This setting determines how your sound card digitizes analog audio__ frequencies. Select the sample rate to record. The lower the rate the smaller the files but audio quality will be less.
- **Max Recording Length** – Upper limit on the length of a recorded message, in seconds.

Not All Sound Cards are Created Equal

The Configurer lets you pick parameters that your sound card may not support. If you choose a parameter that is not supported by your card, you should see Error 4 in the status line of your Entry Window when you try to play back a message, but under some circumstances, this may not happen. Our best advice is to verify that sample rates match and test before the contest starts.

This can be tricky. Even though playback rate is not specified, some sound cards permit playback only of .wav files recorded at a given sample rate, such as 44.1 or 48 KHz. Make sure your recording parameters match those, or you will not hear any output from your recordings (don't ask how we know).

WSJT/JTDX Setup Tab

Starting in version 1.0.7860, settings related to WSJT and JTDX that were formerly under the Digital Modes tab and Broadcast Data tab have been moved to a new WSJT/JTDX Setup tab in the Configurer:

 Configurer

Hardware
 Function Keys
 Digital Modes
 Other
 Winkey
 Mode Control
 Antennas
 Score Reporting
 Broadcast Data
 WSJT/JTDX Setup

N1MM+ Logger needs to be restarted for changes made below to take effect.

WSJT-X and JTDX UDP Settings

WSJT and JTDX UDP connection settings. IP Address and port must match each programs settings. This allows UDP message communications to take place, usually done on port 2237. Logging from other programs can also take place, usually done on port 2333. (Radio #1 Default:

Radio #1 Settings			Radio #2 Settings		
Enable	IP Address	UDP Port	Enable	IP Address	UDP Port
☒ Enable	127.0.0.1	2237	☐ Enable	127.0.0.1	2239

JTDX / Others TCP Settings

Sets the IP Address and port that an external program can connect to N1MM+ via TCP Port for logging purposes. The Default port for JTDX is 52001. (Radio #1 Default: 52001 - Radio #2 Default:

Radio #1 Settings			Radio #2 Settings		
Enable	IP Address	TCP Port	Enable	IP Address	TCP Port
☐ Enable	127.0.0.1	52001	☐ Enable	127.0.0.1	52006

Path to WSJT/JTDX

WSJT/JTDX Path Used for SO1V,SO2V mode and Radio1 in SO2R.

Command Line Params

WSJT/JTDX Path Used for SO2R Radio 2

Command Line Params

Auto Load the WSJT Band Details Window when WSJT-X/JTDX Loads.

Radio #1 ☒ Enable Radio #2 ☐ Enable

N1MM+ also uses TCP ports for Radio Communications with WSJT-X/JTDX.
(Radio #1 Default:52002 - Radio #2 Default: 52004)

The top part of this page is where you set up the UDP port addresses for communicating with WSJT-X or JTDX. The IP address is the address of the computer on which WSJT-X or JTDX is being run; if that is the same computer on which N1MM+ is running, the IP address is 127.0.0.1. In the normal configuration, when WSJT-X or JTDX is run from within N1MM+, the default port number is 2237. If you are in SO2R mode and using WSJT-X or JTDX from the second Entry window (EW1), you need to configure a different UDP port number for Radio #2 (EW2) (by default, port 2239) – this port number will also need to be entered in the settings for WSJT-X or JTDX for the second Entry window, since the default 2237 will not be correct for this copy.

If you are using a JT-mode program that does not support the communications method used between N1MM+ and WSJT-X or JTDX and therefore cannot be called up from the N1MM+ Load WSJT/JTDX menu item, you may still be able to send log data from that program to N1MM+ on another UDP port (usually port 2333). If you are using one of these programs, set the UDP port for Radio #1 in the top part of this window to 2333 and ignore the other settings on this window.

If you are using JTDX, it needs to use a TCP port in addition to the UDP port, and the settings for this are in the next part of the window (you can ignore these settings if you are using WSJT-X). The default TCP port for JTDX is 52001. In SO2R, the suggested TCP port for the Radio 2 copy of JTDX is 52006, and the port number in the JTDX settings for the second Entry window (EW2) will need to be changed to correspond.

The next part of this window is where the path to the WSJT-X or JTDX program is entered in order to enable the program to be called from the N1MM+ Windows menu. The recommended way to enter this path is to click on the Select button and then navigate in the File Open dialog window to the location of the wsjtx.exe or jtdx.exe program and click on the Open button. As illustrated in the screen shot, SO2R stations can make both paths the same. There is also a box on the right side of the window where other command line parameters may be entered; this is optional and in the majority of cases will not be used.

At the bottom of the page are two check boxes to enable automatic startup of the WSJT Decode List window when WSJT-X or JTDX is started up from the N1MM+ Window > Load WSJT/JTDX menu item. The second check box is only used for SO2R.

For instructions on using WSJT-X or JTDX together with the WSJT Decode List window, see the [WSJT Decode List Window](#) section of the manual.

Contest Setup Dialog

Contest Setup Dialog

The Contest Setup Dialog - Basics

This dialog is reached from the File menu in the Entry Window, by clicking on either New Log in Database or Open Log in Database. It is used either to set up a new contest or to modify something about a contest that you have already created.

There Are Contests, and Then There Are Contests

As it is generally used in ham radio, the word “contest” refers to a competitive operating event of some kind. As the term is used in N1MM Logger+, it can refer either to such an event or to a specific occurrence of a particular event, for which you have set up a log. You can have an unlimited number of CQWWCW “contests” (distinct contest logs) in a single database – it might be better to call them “contest instances”, but it is probably too late to find and correct every use of the term according to its meaning in context. In virtually all cases, what is meant will be obvious from context.

Databases versus Logs

Before starting your first contest, you should understand how N1MM Logger+ stores contests and contacts. The two key terms are Databases and Logs. As an analogy, think of your PC’s hard disk as a large room containing computer stuff. Into this room, N1MM Logger+ places File Cabinets (Databases) and within those File cabinets, N1MM Logger+ adds individual Folders (Logs). For each contest that you operate, you will add a new Log to hold the contacts for that contest. Your large room with computer stuff can hold as many File Cabinets (Databases) and as many Folders (Logs) as you want – until, of course, your hard drive is full.

Continuing our File Cabinet and Folder analogy, there are many methods by which you can arrange your file cabinets (Databases). Here are some examples:

- **DATABASE PER CONTEST TYPE** – Some hams prefer to create a Database for each major contest type. The Databases folder in your N1MM Logger+ user files area might contain databases (>File >New Database) named CQWW.s3db, ARRLDX.s3db, ARRL160.s3db and CQWPX.s3db. When setting up each contest, you >File >Open the Database corresponding to the contest to be operated, then >File >New Log (folder) for that particular contest. So, one of these databases could contain CW, Phone, and RTTY logs from 2014, 2015, and 2016... for that particular contest. You might want to add a database like MISCELLANEOUS.s3db for the smaller contests or



contests that you only plan to operate a couple of times.

- **DATABASE PER CALENDAR YEAR** – Some hams create a new Database each year. At the beginning of each year, you would >File >New Database a database named K8UT_2014.s3db, K8UT_2015.s3db or K8UT_2016.s3db. In each database would be the Logs (folders) for every contest you operate during that year. When setting up each contest, you would >File >Open Database for the correct year, then >File >New Log (folder) for that particular contest. So, this database would contain all contests (CQ WW, ARRL DX, CQ WPX...) worked during that year.
- **DATABASE PER EACH CONTEST** – Some hams create a new Database each time they operate a contest. The Databases folder in your N1MM Logger+ user files area would contain lots of databases – one for each contest that you operate. When setting up each contest, you would >File >New Database, and then within that database you would >File >New Log. Although some hams may find this the easiest method to understand, managing all of those files after many years may become a problem.
- **DATABASE FOR EACH DIFFERENT CALL SIGN** – If you use more than one call sign (including club call signs as well as call signs with modifier suffixes or prefixes, such as W1ABC/3 or ZL/G4ABC), then you should create a separate database for each new call sign. The call sign used over the air is stored in the Call field in the Station Information dialog, and this is what controls the sent call sign field in each line of the Cabrillo file as well as the call sign sent by the {MYCALL} and * macros.

These aren't your only Database/Log options, but perhaps one of them matches the way your brain works. How about organizing your logs by mode: CW.s3db, PHONE.s3db, DIGITAL.s3db? N1MM Logger+ can do any of these – choose the method that provides the easiest way for you to create new logs before the contest and find your old logs after the contest.

What Else is In a Database?

In addition to your QSOs, there are a number of tables in the database that contain data that may, and probably will vary from one contest to the next. These include such things as multiplier lists for particular contests, function key definitions for CW, SSB and digital modes, the contents of the last wl_cty.dat file that you loaded, and a Call History table (if one has been loaded).

Why should you care? For several reasons:

If you modify the function key definitions while operating, that modification applies only to the current database. Each database only has space for one set of function keys for each mode, one Call history file, one set of Telnet buttons, and a pointer to one master.scp file in the program directory.

When you switch to another database, those definitions (and in particular, any changes you made) are left behind. That's why the program provides for exporting

function key definitions (among other things) to text files, which can then be loaded into the database as needed. You can label these text files in a contest-specific way so that it will be easy to find when you set up for the next time.

Master.scp files may change from contest to contest, too. You don't have to load them into the database, but you do have to make sure that you have pointed to the appropriate file for each contest. That is one reason for the Associated Files tab in the Contest Setup dialog – so that when you switch contests, the files you need (or pointers to them) are automatically loaded.

The same thing applies to Call History files. One common error that Call History users often make is to forget to load the appropriate file into the database. They set up a contest and find they are getting the wrong information about stations they work because the Call History table still contains data that is appropriate for a different contest.

The takeaway is this – when you change contests within a database, or change databases, your function keys, master.scp file, Call History file, and Telnet buttons will still be those from the last contest you worked using that database, **UNLESS** you have identified the appropriate files on the Associated Files tab while setting up the new contest.

N1MM Logger+ has transitioned to using SQLite as its database engine, and no longer uses a single database to store both contest logs and other administrative data. What this means is that in addition to the databases that contain your contest logs, there are also some other databases in the same Windows directory that the program uses for other purposes. If you don't know what a database file is used for, don't delete it. Also, do not try to open the file called "Do_Not_Use_Or_Erase.s3db". Just leave it alone, like the file name says.

Start a New Contest Log

Once you have chosen and opened the database you want to use, to start a new contest in that database select **>File >New Log in Database**. This will open the Contest Setup dialog.

Initially, you'll see the name of the contest last used by the program from this database.



hamtest.s3db

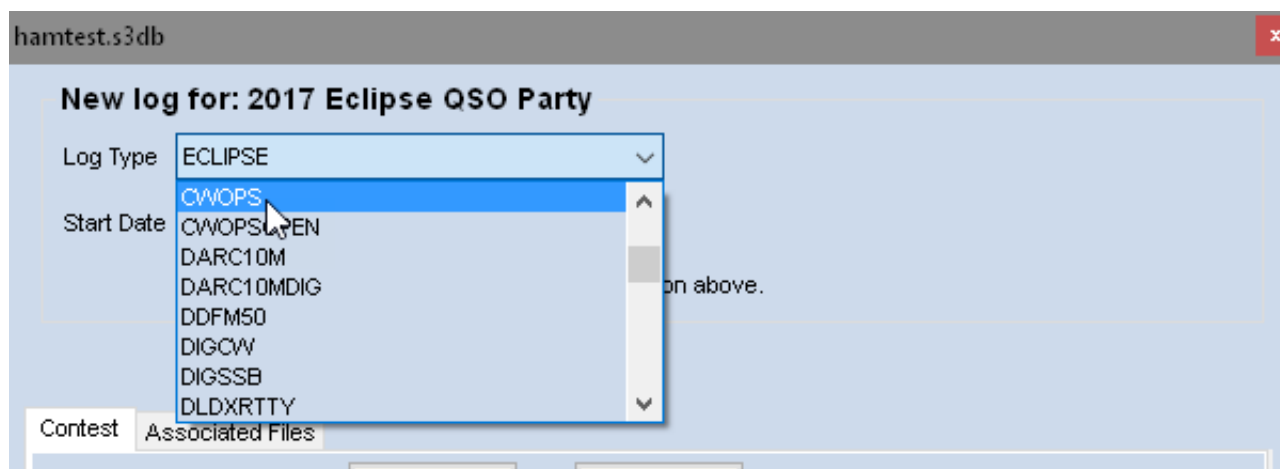
New log for: 2017 Eclipse QSO Party

Log Type

Start Date

Use Up/Down cursor keys to see long description above.

Click the downward-pointing arrow to the right of the current contest name (called the “handle”) to drop down the list of all supported contests.



- You can search alphabetically by pressing the first letter of a contest’s short name, and then scrolling to find the right one, or else repeatedly pressing the first letter until you get there.

A list of supported contests can be found in the [Supported Contests List](#) chapter. Check the contest website for the latest rules and check the contest setup information in the [Contest Setup Instructions](#) chapter.

Showing the Long Name of the Contest

Sometimes it is difficult to choose a contest based solely on its short contest acronym. Contests have longer display names that will show in a tool tip if you use the up/down cursor keys to scroll through the list of contests. This can make it easier to decide which contest type to select.

Start Date

The Start Date distinguishes between multiple versions or instances of a given contest in your database. It is possible to have two instances of the same contest with the same start date and time, but it can get confusing trying to figure out which one is which, so the program allows you to change the start dates and times in order to distinguish between them.

- When you set up a new contest, the Start Date defaults to the first following date corresponding to the day of the week on which the program expects that the contest will start, and the correct start time. Year to year, dates of contests change, but the day of the week usually remains the same. In the example above, a new CQWWSSB contest was created during the week of April 14. The program defaulted the start date and time to 0000Z on the following Saturday, April 19 (which is not, of course, the correct date for the

actual CQWWSSB contest).

- to enter the correct date (and time, if necessary), single-click on the date in the Start Date box.

Don't screw up your contest goals

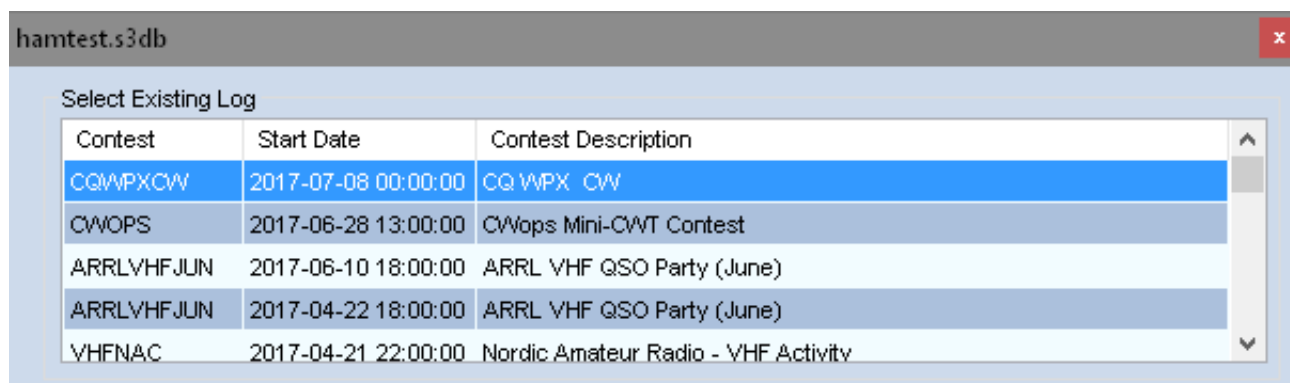
In addition to distinguishing between multiple instances of a contest, the Start Date also affects calculation of on-off times and goals. If you set the Start Date to the “wrong” day of the week, then for purposes of computing time on or off the air and for displaying any goals you have set in the Info window the program will assume the contest starts at the correct time on the correct day of the week following the Start Date you entered.

To avoid confusion, it is easiest to set up the log you will actually use within a week before the start of the contest, or else to change the Start Date for that log to the correct date for the contest. If you want to practice ahead of time, you can set up a practice version of the contest with a different start date and/or time. As long as it is in the same database, you'll be able to set goals, set up your function keys and other associated files, and all of this will be remembered when you set up the “real” log. Just delete the practice log (or leave it in the database – no harm done, except for a bit of wasted space) and you're ready to go.

Open an Existing Contest Log

To open an existing contest log in the currently selected database. Select **>File >Open Log in Database**

- In the top part of the dialog the currently available (already created) contest logs can be selected by clicking on the down arrow to the right of the textbox. Note that the textbox is captioned “Select Existing Log”
- Contest-specific changes can be made in the **Contest** and **Associated Files** tabs. More information in the paragraphs below



When you highlight a contest log in the list, the number of contacts in that log is displayed below the Contest tab below the list box, over to the right just above the



box that says “State for Log Type QSOPARTY”. You can use this to tell whether this is a new contest log that hasn’t been used yet, or maybe a test log that you created in order to log a few dummy contacts and check out the operation and setup, versus a real contest log with a large number of contacts in it.

You may wish to delete a test log with only dummy contacts in it, or perhaps a log that you set up in anticipation of a contest and then never actually logged any contacts in. To **delete a contest**, click on the contest in the contest pane, as shown above, so it is selected. Then press Delete. For example, the CQWWCW contest in the screen shot above is selected and can be deleted by pressing the Delete key.

Don’t Make This Mistake!

Deleting a contest permanently removes the contest and all of its QSOs from the database; you won’t be able to recover them. By contrast, if you **delete individual QSOs** from a contest log, they are not really deleted, just moved from the contest they were logged in to the DELETEDQS contest where you can still get at them if you need to. But if you remove an entire contest, those contest QSOs are gone, gone, gone!

Contest-Specific Information

Below the contest selection area is a section where you define your entry in this particular running of the contest. This is further divisible into Categories, Sent Exchange, Operators and Soapbox Comments

Of these, the first is Categories – are you single op or multi-op, high or low power, and so on. Depending on the contest you will see one of two lists of categories to be chosen. This is because some contest organizers (the ARRL and IARU in particular) have adopted the Cabrillo 3.0 format for contest entries, while the others continue to accept Cabrillo 2.0. The Cabrillo file headers are different, requiring different lists.

These lists may seem a bit daunting at first, but remember a couple of things. You can always change your selections before the contest if things don’t come up as you expect them to, or after the contest if you have trouble getting the contest organizer to accept your Cabrillo entry. As a last resort, you can use a text editor on the header of the Cabrillo file.

hamtest.s3db

Select Existing Log

Contest	Start Date	Contest Description
CQWPXCW	2017-07-08 00:00:00	CQ WPX CW
CWOPS	2017-06-28 13:00:00	CWops Mini-CWT Contest
ARRLVHFJUN	2017-06-10 18:00:00	ARRL VHF QSO Party (June)
ARRLVHFJUN	2017-04-22 18:00:00	ARRL VHF QSO Party (June)
VHFNAC	2017-04-21 22:00:00	Nordic Amateur Radio - VHF Activity

Contest Associated Files

Category Show Setup Show Rules 2 Contacts

Operator SINGLE-OP

Band ALL

Power HIGH

Mode CW

Overlay N/A

Station FIXED

Assisted ASSISTED

Transmitter ONE

Sent Exchange #

Operators W1AW

Soapbox

Note - the program does not validate categories. Check the contest rules for valid categories.

Time Category N/A

Omit RST. E.g. CQWW: 05 SS: A 56 EMA

Update Ops from Log

OK Help Cancel

Always check these entry categories. **Some of the defaults may not be correct for your entry in the new contest you are setting up.**

Contest Tab

Operator Category

Make a choice for your situation. Choices in Cabrillo 2.0 contests are:

- SINGLE-OP
- SINGLE-OP-ASSISTED
- MULTI-ONE
 - In CQWW contests, you will be asked whether this station is a Run or



- a Mult station
- MULTI-TWO
 - An identifier is needed for Station 1 and Station 2 that must be specified when setting up initially in this category. Each time the program is loaded or the contest changed, the program will ask you to specify Station 1 or 2
- MULTI-MULTI
- SCHOOL-CLUB
- CHECKLOG
- SINGLE-OP-PORTABLE
- ROVER
 - If your entry is in this class, selecting Rover will enable some useful additional functions.
- MULTI-UNLIMITED
- MULTI-LIMITED

Band Category

Make a choice for your situation. Choices are:

- ALL
- 160M
- 80M
- 40M
- 20M
- 15M
- 10M
- LIMITED
- CHECKLOG

Power Category

Make a choice for your situation. Choices are:

- HIGH
- LOW
- QRP
- MEDIUM

Mode Category

Make a choice for your situation. Choices are:

- CW
- SSB



- RTTY
- PSK
- MIXED – both CW and SSB are allowed in this contest. The band buttons in the Entry window will show one column each for CW and SSB
- DIGITAL = no CW & SSB, just RTTY and/or PSK (defined by the contest)
- MIXED+DIG = CW & SSB & Digital all allowed

Overlay Category

Used in relatively few contests. In Cabrillo 3.0 contests, only N/A, TB-WIRES, NOVICE-TECH, OVER-50 and ROOKIE are valid. Choices are:

- N/A (default)
- ROOKIE
- BAND-LIMITED
- TB-WIRES (tri-bander and wires)
- OVER-50
- HQ
- NOVICE-TECH
- EXPERT – The EXPERT overlay category in contests where it exists must be selected for the 5 minute band change counter to be inactive for SINGLE-OP stations.

In CQ WPX CW and CQ WPX SSB, category overlay may be any combination of ROOKIE, BAND-LIMITED, or TB-WIRES. In STEW PERRY, the category overlay may be OVER-50. In IARU-HF and RSGBBERU, the category overlay may be HQ. In PACC the category overlay may be NOVICE-TECH.

The following items are required by Cabrillo 3.0

Station Category

Choices are:

- FIXED
- MOBILE
- PORTABLE
- ROVER
- EXPEDITION
- HQ
- SCHOOL

Assisted Category

- ASSISTED



- NON-ASSISTED

Xmitter Category

- ONE
- TWO
- LIMITED
- UNLIMITED
- SWL

Time Category

- N/A
- 6-HOURS
- 12-HOURS
- 24-HOURS

Assisted Category

- Xmitter Category
- Time Category

Sent Exchange

- Sent exchanges are defined for each contest. Look in the [Supported Contest Setup](#) instructions for guidance. Usually a serial number, zone, state etc
- Do not put 59, 599, or RS(T) information in the Exchange field

No RST in the Exchange

Do not put a signal report in the sent exchange. It will cause incorrect Cabrillo output. Typically, the program will warn you if you make this mistake.

If the Exchange is a serial number

- Enter the expression 001 in the Sent Exchange box in the Contest Setup dialog. Note that 001 is not a program macro and will not work correctly in function key messages – the only place it should be used is in the Sent Exchange box

Starting with a Serial Number other than Zero

- Some contests which have more parts/sessions there is the need to start a next session with the next number given in the previous part. So how not to start with 001?
- There are two workarounds:



- Start second part as a separate contest and make the first QSO with number 001 and log it, then correct (Ctrl+Y) to proper sent number
- Start second part as a separate contest, enter fake QSO, open QSO in EDIT window, change SENT number from 001 to last number you sent in the previous part of the contest, save changes, et voila, it's done. When a couple of real contacts have been entered, delete the fake QSO

Using a Serial Number Server

N1MM logger supports a single sequence of serial numbers for SO2R, MS, M2 and MM.

The serial number is reserved in S&P mode when the cursor leaves the callsign field or the Exchange key (F2 default) is sent either through spacing, tabbing, hitting Enter in ESM or pressing the Exchange Function Key. This is needed so you can enter calls to check for dupes while not reserving a serial number

The serial number is reserved and displayed in Run mode as soon as you enter a letter in the call-sign field. This is because on SSB people frequently talk before they type, and they need to see the serial number displayed earlier.

In SO2R and SO2V, typing Alt+W (wipe) after a serial number has been reserved or clearing the entry window through QSY will “un-reserve” that number.

Because of the way the serial number server works, there are a few cautions:

- Serial numbers issued by the second radio may be out of time sequence with those issued by the main one. This occurs because certain program actions cause a serial number to be reserved for the use of a station, and if that station does not use that number until after the other station has made several QSOs, when the log is viewed in chronological order the serial number will appear to be out of order. I don't think there is anything to be done about this
- For similar reasons, depending on operator actions at one or the other station, such as shutting down the program while a number is reserved, there may be some gaps (numbers not issued) when reviewing the final log
- The most important aspects of serial numbering are that the serial sent to a station be correctly logged, and that there be no duplicate serial numbers sent; the intent is always to meet both these criteria
- Sometimes it's possible a number will be skipped when given out but not used (example: QSO not made after all or deleted). Contest committees do accept this behavior!
- The maximum sent number to give is 32767. The maximum received number is 99999



What Do Sponsors Look For?

Most sponsors are more interested in serial number accuracy than in serial number time order. If you think about it, it is impossible to guarantee the order of serial numbers in a two radio situation. This assumes that you always log the time when the QSO is added to the log, which is the right time from a rules point of view. i.e. end of contact.

Addendum by Steve, N2IC

Let me say a few words about the way serial numbers are “reserved” in N1MM Logger. For the sake of this discussion, I’ll assume that ESM is being used.

When you enter a callsign in the Entry Window, and hit the Enter or Space key, a serial number is reserved and locked-in to that QSO. If it turns out that the QSO is not completed and logged, that serial number is “lost”, and will be not used for a subsequent QSO.

This gets to be especially interesting with SO2R and SO2V. Let’s say you are running on Radio 1, and search-and-pouncing on Radio 2. You enter a call on Radio 2, and hit the Enter key, reserving a serial number on Radio 2. You get beaten out on Radio 2, and go back to running stations on Radio 1, advancing the serial number beyond the number reserved on Radio 2. A few minutes pass, and you finally work the station on Radio 2. Your log now appears to have non-sequential serial numbers. If you never work that station on Radio 2, the reserved serial number on Radio 2 is lost, and will not be used for any subsequent QSO.

I can’t speak for all contest sponsors, but for Sweepstakes and CW/SSB WPX, this is not an issue. There is no problem for these log adjudicators if your serial numbers are out-of-sequence, or if there are missing serial numbers in your log. Your log will be correctly processed. In addition, the N1MM Logger Summary window reports the correct number of successfully completed QSO’s.

Image not found

In summary, stop fretting about out-of-sequence or missing serial numbers. The software is working as designed

Operators

- Enter here all the operators’ callsigns
- Update Ops from Log – If you have been using Ctrl+O or OPON to enter operator callsigns in the log, clicking the button ‘Update Ops from Log’ will transfer all operators from the contest log to the Operators field

Soapbox comments

- Your comments on the contest, results, propagation etc., for inclusion in your Cabrillo submission. This text is cleared when selecting a new contest.

Section Lists

- When operating a state QSO Party, select the State from the drop-down list. If in doubt, click on the Import Section List button to make sure you have the most current list of county abbreviations:



- These selection buttons are only shown when the contest has a section list (like QSO parties)
- In the example above the state QSO party for CA (California) has been selected
- The **Edit Section List** button is used to edit the list
 - This function edits the section table in the current database. It does NOT edit the section text file. If you want to export your section file after editing, use the File export menu link in the upper left corner of the Edit Section List dialog
- The **Import Section List** button is used to import a new list from a file. Section list files are stored in the SupportFiles folder in your N1MM Logger+ User files area, or in a subfolder of the SupportFiles folder
- There may be two section lists, for in-state or in-country and for other entrants. You will be prompted to import both section lists if more than one exists
- The appropriate section list is used to determine multipliers (States, Provinces etc.) for the contest, which will be shown in the Multiplier window
- The name of the list is hardcoded and will be shown while importing the file

Associated Files Tab



C:\Users\User\Documents\N1MM Logger+\Databases\TEST - new.s3db

Select Contest Type for New Log

Log Type

Start Date

Contest Associated Files

Sample Function Keys

CW Function Key Filename	CQWWCW.mc	Change	
SSB Function Key Filename	SSB Default Messages.mc	Change	
Digital Function Key Filename	Digi Default Messages.mc	Change	
Master.scf Filename	master.scf	Change	Default
Call History Filename		Change	Clear
Goal Filename		Change	Clear



Change from N1MM Logger Classic

In N1MM Logger+, the Associated Files designated for a given contest – e.g, ARRL DX CW, WAE RTTY – remain the same for all instances of that contest, regardless of the database. Put another way, if you have defined Associated Files for ARRL DX SSB in one database, and you open another instance of that contest in another database, the filenames you set up will be transferred to the new Associated Files tab.

For each of the following Associated Files, the Change and Clear buttons have the same function – the Change button allows you to select or change the file to be used. The Clear button lets you clear the filename if you don't wish to load one.

Function key files are stored in the FunctionKeyMessages folder within your N1MM Logger+ User files area. You can create subfolders within this folder, but you cannot load or save function key files from the program into a folder that is outside this folder. You cannot clear the function key file entirely; if you are not using a contest-specific function key file, or for modes that are not included in the contest, just set the file to the mode-specific Default Messages.mc file (as in the example above for the SSB and Digital message files).

- **CW Function Key Filename** – Select the CW function keys to use with this contest
- **SSB Function Key Filename** – Select the SSB function keys to use with this contest
- **Digital Function Key Filename** – Select the Digital Interface function keys to use with this contest from the Entry Window (not the extra keys that can be set up in the Digital Interface)
- **Master.scp Filename** – Select the master.scp file for this contest type. Normally this will be the Default file, but some contests may use a restricted version. Use the **Change** button to select a different file, or the **Default** button to return to the default. Master.scp files are stored in the SupportFiles folder (or a subfolder of that folder) within the N1MM Logger+ User files area
- **Call History Filename** – You can select a Call History file to be loaded for use with this contest. This is entirely optional. See the manual [section on Call history Lookup](#) for details. If you want to use a Call History file, don't forget to turn on Call History Lookup on the Config menu. Call History files are stored in the CallHistoryFiles folder (or a subfolder of that folder) within the N1MM Logger+ User files area
- **Goal Filename** – You can select an optional Goals file to be loaded for use with this contest. The Goals file is used for the Goals area in the Info window. Goals files are stored in the GoalFiles folder (or a subfolder of that



folder) within the N1MM Logger+ User files area

Update Your WL_CTY.DAT File Before Each Contest

In addition to these files, be sure always to load the most recent WL_CTY.DAT file before entering a DX contest. This is a 2-step process. Download the most recent country file from the Internet using >Tools >Download latest country file (wl_cty.dat) (Internet). Then import it into the current database using >Tools >Import country list from downloaded file. The program will warn you if you open a database whose CTY table is less recent than the wl_cty.dat file in your N1MM Logger program directory.

Key Assignments - Keyboard Shortcuts

Key Assignments - Keyboard Shortcuts

Key Assignments Short List

Key Assignments Short List

Table of Shortcut Keys by Operating Mode (RUN vs S&P)

Running keys

F1 = CQ

; or insert = Send call and report

' = Send TU message and enter in log

Alt+R = Enable CQ repeat

Ctrl+R = Set repeat time

Esc = Stop sending, stop repeat

General keys

Ctrl+O = Set operator call (or OPON in Callsign field)

Ctrl+N = Add note to log

Ctrl+W or **Alt+W** = Wipe entry fields, or unwipe a previously wiped contact.

Release a reserved serial number

SPACE or **TAB** = Move between logging fields

ENTER = Log it (see ESM mode)

Ctrl+Q/A = Quick edit previous or next call

Ctrl+D = Delete last qso. Asks for confirmation

Alt+H = Show help

Alt+K = Edit message buttons

Ctrl+Alt+Enter = Log a not accepted qso (invalid exchange, usually)

-

S&P keys

Shift+F1 = Call CQ and switch to run

Alt+U = Toggle S&P/Run. Set CQ-frequency for pass

Alt+Q = Return to CQ-frequency

Ctrl+Up/Dn arrow = Grab next qso from bandmap

Ctrl+Alt+Up/Dn arrow = Grab next mult from bandmap

-

Radio control

Alt+F10 = Swap VFOs

Alt+Q = Return to CQ frequency

Alt+F8 = Return to last frequency

Ctrl+PgUp/PgDn = Up/Down a band

Type CW/USB/LSB/RTTY = Change mode

Type frequency in KHz = Change frequency or band

Ctrl+S = Set radio into split **Ctrl+Alt+S**

- Toggle split mode

Ctrl+Enter = Set split frequency

Alt+F7 = Set split frequency or offset to specified frequency

Alt+' = Toggle between the wide and narrow filters

Alt+F12 - Copy frequency and mode to other radio/VFO. Some radio-specific differences.

Backslash (\) = Change Receive (RX)

**DX Spots and Band Map****Mouse wheel** = Zoom in/out bandmap**Keypad +/-** = Zoom in/out bandmap**Alt+D** = Remove spot**Alt+P** = Send spot**Ctrl+P** = Send spot with comment**Ctrl+Tab** = Toggle to/from packet window**Alt+O** = Store contact in the Bandmap**Alt+Q** = Jumps to the CQ frequency on this band**SO2R****Backslash (\)** - Two radios = Change Receive (RX) focus**Pause** = Swap both Transmit and Receive/Keyboard focus**Ctrl+Enter** = Send next ESM state on alternate radio**Ctrl+F1 to F12** = Send message on alternate radio**Ctrl+B** = Dueling CQ's**` (Back-quote)** = Toggle Stereo/Mono (LPT pin 5)**Alt+L** - Turn rotor to long path bearing

-

focus (VFO/Radio)

ESM Mode**Ctrl+M** = Turn on/off**Insert or ;** = Send call and exchange**Enter** = Send TU and log it**Enter** = Start CQ again...**Alt+Enter** = Log without sending anything**Multi-User Mode****Alt+Z** = Set pass frequency (broadcast to all computers)

-

Specific radios / Rotor control**FT-1000MP + FT1000D + some Icom****Dual Watch radios Alt+F12** = Dual Receive toggle

-

TenTec Orion Alt+F12 = Toggle Main/left Sub/Right and Active in both ears.

-

Rotor control for the callsign in the Entry window**Alt+J** - Turn rotor to bearing

-

Ctrl+Alt+J - Stop turning the rotor**Table of Shortcut Keys by Transmit Mode****CW****Page Up** = speed up**Page Down** = speed down

= = send last Fkey again

Shift + Fx = send opposite mode Fx**Ctrl+K** = toggle CW -**SSB****Ctrl+Shift+F1** =Record CQ**Ctrl+Shift+F*** =Record F-key message**NB.** Same keys again to stop recording

Same

RTTY**Alt+G** = Grab call from stack**Alt+T** = RX/TX toggle**Ctrl+Arrows** = Swaps DI

Same

Ctrl+K = toggle**VHF****Alt+minus** = Toggle grids**Ctrl+E** = Send message to stations

-

Same

Alt+Z = Set pass



window

Esc = Stop sending -
immediately and
close window

manual window

Esc = Stop sending -
immediately and
close window

frequency

Note: The keys below work from all main windows

General Key Assignments

- **Space** - The spacebar will jump from field to field filling in defaults like the callsign from the call-frame, 59/599, and information from previous contacts with this station. **SPACE IS THE PREFERRED TAB CHARACTER.**
- **Tab** - Jump to the next entry field in the Entry Window.
- **Shift+Tab** - Jump to the previous entry field in the Entry Window.
- **Alt+H** - open Internet help. Most windows have contest-specific help accessible from their right-click menus.
- **Ctrl+Tab** - Toggle between the Entry window and the Packet window.
- **Alt+F9** - toggle through all the antennas defined for the current band. The selected antenna will show in the lower-left corner of the status pane.
- **Alt+F4** - Quit the program. If two Entry windows (SO2R) the program will not exit. You are being asked if you are sure.

Active Radio/Bandmap Control Key Assignments

Jump to Spots

Note: If you are operating single mode, your mode won't change when jumping between spots.

- **Ctrl+Down Arrow** - Get next spot higher in frequency.
- **Ctrl+Up Arrow** - Get next spot lower in frequency.
- **Ctrl+Alt+Down Arrow** - Get next spot higher in frequency that is a multiplier.
- **Ctrl+Alt+Up Arrow** - Get next spot lower in frequency that is a multiplier.
- **Shift+Alt+Up Arrow** - Get next spot lower in frequency that is self-spotted.
- **Shift+Alt+Down Arrow** - Get next spot higher in frequency that is self-spotted.

Jump to CQ Frequencies

- **Alt+Q** - Jumps to the last CQ frequency on this band (active bandmap) and will clear all textboxes in the Entry Window.
- **Shift+Alt+Q** - Jumps to the last CQ frequency on other band (non-active bandmap).



- **Ctrl+Alt+Q** - Jumps to your last used CQ frequency on any band and tune active bandmap to that frequency.
- **Alt+F8** - Return to your previous frequency (you can use this to “undo” Alt+Q).

Tune the Radio

- **Ctrl+Page Up** - Go up one band. WARC bands are skipped while logging for a contest.
- **Ctrl+Page Down** - Go down one band. WARC bands are skipped while logging for a contest.
- **Up Arrow** - Tune radio down 100 Hz on SSB, 20 Hz on CW (adjustable in the configurer).
 - **FT-1000MP, FT-890, FT-920, FT-990 and FT-1000 and all Kenwood radios**
 - **In S&P** - pressing the up/down arrows will turn off RIT and tune your main VFO.
 - **In Running mode** - it will turn on your RIT and tune the RIT.
- **Down Arrow** - Tune radio up 100 Hz on SSB, 20 Hz on CW (adjustable).
 - See Up Arrow information above
- **Mouse wheel** - With the mouse in the Entry Window, QSY the radio using the same increment as the Up/Down arrow keys
 - **Alt+Mouse wheel** - With the mouse in the Entry Window, QSY in increments of 1 kHz
 - **Ctrl+Mouse wheel** - With the mouse in the Entry Window, QSY in increments of 10 kHz
- **Alt+F7** - Set split frequency or offset from current frequency for the active radio. When hitting Enter or click OK with nothing on the line split will be cleared. Press ESC or click Cancel to exit. More information about working split can be found in the [Single Operator Split Operation](#) chapter.
- **Ctrl+Enter** - Entering a frequency or offset in the callsign field and entered with Ctrl+Enter will set a split frequency.
- **Alt+S** - When your rig is in the split mode, Alt+S will reset the RX frequency back to your transmit frequency, but the split mode is preserved. “Reset RX frequency when running split” is associated with Alt+S. When invoked, the program will automatically do an Alt+S as you log each QSO. Operates on VFO-A only!
- **Ctrl+S** - Set radio to split operation, if not in split mode already.
- **Ctrl+Alt+S** - Toggle Split mode on the radio. ‘Split’ will be shown in the Entry window.
- **Alt+F5** - Swap radio frequency, mode, and callsigns between VFOs (SO2V) or radios (SO2R). In SO2R, the receive focus changes to the non-active radio.
- **Alt+F6** - SO2R only command. Identical to Alt+F5 except the receive focus does not change.
- **Alt+F8** - Jump to your last frequency.



- **Alt+' (Alt+singlequote)** - toggle between the wide and narrow filter for the selected mode (SSB, CW and Digi modes).
- **Ctrl+Alt+D** - Allows the SO2V user to enable CQ repeat, call CQ on VFOA, and tune the sub-receiver (VFOB) between CQ's. Currently, this feature is only enabled for the K3, IC756, IC756Pro, IC756Pro2, IC756Pro3, IC7800, and IC7600.
 - If "Dual RX always on" is ON and the Sub RX is ON, turn "Dual RX Always On" to OFF and leave the Sub RX ON
 - If "Dual RX always on" is ON and the Sub RX is OFF, turn "Dual RX Always On" to OFF and leave the Sub RX OFF
 - If "Dual RX always on" is OFF and the Sub RX is ON, turn "Dual RX Always On" to ON and leave the Sub RX ON
 - If "Dual RX always on" is OFF and the Sub RX is OFF, turn both ON

Change Keyboard & Radio Focus

- **Ctrl+Left arrow** - Move both TX and RX/Keyboard focus to VFO A or in SO2R to left radio
- **Ctrl+Right arrow** - Move both TX and RX/Keyboard focus to VFO B or in SO2R to right radio
- **Alt+F10** - Swap between VFOs when using one radio (VFO A-B). On Icom 756 and 7800 toggle between Main and Sub frequencies.
 - Command is disabled during SO2R for Icom radios that lack a swap VFO CAT command. This is because the program is unaware of Icom VFO B frequency in SO2R mode.
- **Pause** - Swap radios and match keyboard to radio.
- **Backslash (\)** - Move RX focus and launches a second Entry Window if only one Entry window is open (not supported for SO1V).
 - **SO2V** - One radio - 2 VFOs - Moves RX focus between the 2 VFOs on the radio.
 - **SO2R** - Two radios - Moves RX focus between the 2 radios.

Other Nifty Tricks

- **Numeric keypad + (plus)** - Zoom in the bandmap which has KEYBOARD focus to show fewer stations (less bandwidth).
 - You can also zoom in by using the mouse wheel when the mouse is over the Bandmap window
- **Numeric keypad - (minus)** - Zoom out the bandmap which has KEYBOARD focus to show more stations (more bandwidth).
 - You can also zoom out by using the mouse wheel when the mouse is over the Bandmap window
- **Ctrl+T** - Turn on the radio and send continuous CW (tune). Ctrl+T again or the Escape key ends the transmission.
- **Alt+F12** - Most radios use this command to copy frequency and mode to



other radio/VFO.

- A few radios use Alt+F12 for specific features and then mostly swaps MAIN and SUB using the CAT radio command
- **FT-1000MP + FT1000D + Elecraft K3 + Icom IC-756 series, IC-781 ,IC-775 and IC-7800 only**
 - Dual Receive toggle. NB. Only turn Dual Receive on/off from the keyboard so it stays in sync with the program.
- **TenTec Orion**
 - Toggle between Main/left Sub/Right and Active in both ears.
- **` (backquote or grave accent)**
 - SO2R mode,Toggle Stereo/Mono (LPT pin 5). If MK2R or OTRSP is enabled send stereo commands to the external SO2R controller.
 - SO2V mode, some radios containing Dual Rx have specific functions assigned to this key. See the Supported Radios section for the specifics.
 - SO1V mode, disabled.
 - Backquote (grave accent) can be found on US keyboard as the unshifted tilde ~
- **= (equal key)** - Will send the last message key (F1-F12) again.
- **Alt+F11** - Disable/Enable the switching between RUN and S&P. In a networked environment with more than one RUN station on the same band, the switch to S&P must be disabled. This is also used during DXpeditions to stay in Run mode all the time and not jump inadvertently to S&P mode when you QSY a small amount and don't call CQ. This behavior can be toggled using the Alt+F11 key and the state will be indicated in the Entry window status bar. Look for "Run/S&P auto-toggle disabled" or "S&P and Run Mode enabled".

Non-Active Radio/Bandmap Control Key Assignments

Jump to Spots

- **Ctrl+Shift+Down Arrow** - Get next spot higher in frequency and will skip over CQ-Frequency when radios/VFOs are on the same band. Proper keystroke operation is radio dependent. Disabled for SO1V.
- **Ctrl+Shift+Up Arrow** - Get next spot lower in frequency and will skip over CQ-Frequency when radios/VFOs are on the same band. Proper keystroke operation is radio dependent. Disabled for SO1V.
- **Shift+Ctrl+Alt+Down Arrow** - Get next spot higher in frequency that is a multiplier. If you are operating single mode, your mode won't change when jumping between spots. Disabled for SO1V.
- **Shift+Ctrl+Alt+Up Arrow** - Get next spot lower in frequency that is a multiplier. If you are operating single mode, your mode won't change when jumping between spots. Disabled for SO1V.
- **Shift+Alt+Q** - Jumps to your last CQ frequency on the inactive VFO/radio.



Tune the Radio

- **Ctrl+Shift+Page Up** – Go up one band.
- **Ctrl+Shift+Page Down** – Go down one band.
- **Shift + Numeric keypad + (plus)** – Zoom in the inactive bandmap
- **Shift + Numeric keypad - (minus)** – Zoom out the inactive bandmap

Logging Key Assignments

- **Enter**
 - Log contact, when 'Enter sends message' is off in config menu.
 - Sends message when 'Enter sends message' is on in config menu. The send messages depend on the field values i.e. in which field the cursor is in the Entry Window. Check the highlighted keys.
- **Space** – Preferred character to move sequentially through Entry Window fields .
 - Jumps from callsign to Exchange field or vice versa.
 - Other fields' default values will be filled in
 - If there is a call on the callsign frame and if the callsign field is empty, the call from the frame will be placed in the callsign textbox.
- **Alt+Enter** – Send End of QSO message key and log the contact. In ESM it just logs the contact (nothing sent).
- **Insert or ;** – Sends His Call key followed by the Exchange key.
- **'** – Send End of QSO message and enter in log .
- **Alt+W or Ctrl+W** (Alt+W = Ctrl+W)
 - Wipe Out Entry Fields, clear information about the current contact in this window
 - If all of the entry fields are blank, this restores the last wiped contact ("unwipe" function)
 - Serial number contests: Release a reserved serial number after it has been reserved
- **Ctrl+Shift+W** – Wipe out other window's contact information.
- **Ctrl+Alt+Enter** – Log a not accepted 'invalid' qso (invalid exchange etc.). It will prompt for a comment. Use 'View | Notes' to correct later.
 - When no comment is entered "Forced QSO" will be added to the comment field.
- **Ctrl+Y** – Edit last contact.
- **Ctrl+D** – Delete the last contact.
- **Alt+O** – Store contact in the bandmap.
- **Alt+M** – Mark this frequency in the bandmap as being in use.
- **Alt+D** – Removes the spot from the bandmap which is on the callsign frame or in the callsign field in the Entry window when S&P or CQ-frequency when Running.
- **Ctrl+F** – Find the callsign entered in the callsign field in the log. Pressing Ctrl+F again will find the next instance.



- **Ctrl+M** – Enable/disable ‘Enter sends message’ mode.
- **Ctrl+N** – Add a note/comment to your last or current contact.
- **Ctrl+Q** – Quick Edit mode, go back one qso in the log. Enter logs and Escape discards the changes made. No content checking!
- **Ctrl+A** – Quick Edit mode, go forward one qso in the log. Enter logs and Escape discards the changes made. No content checking!
- **Ctrl+U** – Increase the number in the exchange field by 1.
- **Alt+U** – Toggles “Running’ box”. When running is checked, the behavior of Enter Sends Messages mode changes appropriately. Additionally contacts are logged as being part of a run.
- **Alt+K** – Change the contents of the Packet/CW/SSB/Digital message buttons.
- **Alt+Y** – Will “yank” the first call from the Check window in the Entry window callsign field.
- **Ctl+G** – Cut number mode toggle.
- **Ctrl+Alt+G** – to stack additional callsigns in all modes. Same as the macro {STACKANOTHER}
- **Ctrl+Alt+M** – Toggle between Run/Mult (Multi-1) or Run1/Run2 (Multi-2)
- **Ctrl+Shift+M** – Used to set the Autosend threshold. Autosend will start sending the callsign before you have finished copying a full callsign. i.e. starting after a certain number of characters has been typed AFTER the last number in the callsign. The minimum threshold is 1. Zero will turn off the feature. Only when in RUN mode.
 - The Autosend rules are:
 - Find the first letter in the call
 - Find the last number after the first letter
 - Find the Nth letter after step 2
 - For example: Threshold set to 2
 - W4WYP would start sending at Y
 - S57AD would start sending at D
 - KH6/WA4WYP would start sending at Y (using the “/” rule as well)
 - WA4WYP/4 would start at Y (/4 will not be looked at)
 - WYP, WWYP and WAWYP do not meet the criteria for autosend to begin.
 - Prefixes like KH6/ are ignored and do not themselves trigger the autosend threshold.

Key	Send function key(s)	Action(s)
Insert	His Call Key & Exchange Key	Send his call followed by the Exchange.
;	His Call Key & Exchange Key	Send His call followed by the Exchange.
Alt+Enter	–	Log the contact.
‘	End of QSO Key & Log contact	Send the End of QSO message and log the



contact.

Callsign/Exchange Editing Features

- **Space Bar** – Moves cursor to the last position the cursor was in prior to leaving the Callsign or Exchange fields.
- **Tab** – Move to the next field.
- **Shift+Tab** – Move to the previous field.
- **Home** – Moves cursor to beginning of the field it's in.
- **End** – Moves cursor to end of the field it's in.
- **Question mark (?)** – Sends a ?, and will cause the ? to be highlighted when you reenter the field . E.g. N?MM will send what is typed, but automatically highlight the ? so you can replace it. A double ?, as in DL?K?A will highlight all text in between and including the ? marks. The first keystroke entered will replace all three characters.
- **Left/Right Arrow** – Moves cursor to left or right one position within the field it's in.
- **Backspace** – Delete character to the left.
- **Delete** – Delete character to the right.
- **Shift+Home** – Will highlight from the cursor insertion point to the home (beginning) of the textbox.
- **Shift+End** – Will highlight from the cursor insertion point to the end of the textbox.
- **Shift+arrow key** – Will highlight as you press the keys. When you type the first character, it will delete the highlighted character.

Message Key Assignments

There are two sets of messages stored for F1 through F12, one for Running mode and one for Search and Pounce mode. However, you can send the message from the opposite mode by pressing Shift+Fx. The assignments below apply to both modes.

Below is a table of the function keys with their associated default messages. Note that the CQ key always switches the program to Running mode regardless of which mode it was in at the time. All of the keys named in the table are used by ESM. The His Call key, Exchange key and End of QSO key are called up by logging key shortcuts (Insert or ; key and ' key) regardless of whether the Enter Sends Messages (ESM) feature is used or not. The function keys can be remapped to others on the Function Keys tab in the Configurer, **but be very careful in doing so, because if you do, you may disrupt the functioning of the Enter Sends Messages (ESM) feature.**Default Function Keys

F1	CQ key	F2	Exchange key	F3	End of QSO key	F4	My Call key



F5	His Call Key	F6	QSO B4 Key	F7	-	F8	Again Key
F9	-	F10	-	F11	-	F12	-

- **Esc** - Stop sending CW or wav. file.
- **Ctrl+R** - Set CQ repeat time in seconds or milliseconds (Example: 1.8 or 1800)
- **Alt+R** - Toggles repeat mode. Hit Esc or begin entering a callsign to stop repeat temporarily
- **Shift+Fx** - Sends the contents of the function key definition for the opposite mode. If you are in **Run** mode and press Shift+Fx, the program sends **S&P** Fx. The reverse is also true.
- **Ctrl+Shift+Fx** - Record SSB message for the selected function key. Pressing Ctrl+Shift+Fx again stops the recording. Fx can be F1 to F12 in either the Run or S&P lists of function key definitions. Make sure that the program is in the correct mode (either Run or S&P), and that you have filled in filenames in rows Filenames must be entered in at least the first 12 function key slots (right-click on the message buttons in the Entry window to edit); if names are only in the first 12, then the program will play those messages when the corresponding function keys are pressed, regardless of whether you are in Run or S&P mode.
- **Ctrl+Alt+Fx** - Record external DVK memories 1 to 4, **only on the W9XT card or other DVKs that emulate it**

CW Key Assignments

- **PgUp/PgDn** - Adjust CW speed Up/Down active radio using Primary CW Speed Step (Other tab in Configurer).
- **Shift+PgUp/PgDn** - Adjust CW speed Up/Down active radio/VFO using Secondary CW Speed Step (Other tab in Configurer) in SO2R/SO2V mode.
- **Alt+PgUp/PgDn** - Adjust CW speed Up/Down inactive radio/VFO using Secondary CW Speed Step (Other tab in Configurer) in SO2R/SO2V mode.
- **Ctrl+K** - This will open the CW window to send manual CW. Pressing Ctrl+K again will close the window
 - Pressing Ctrl+K or Enter within the CW window closes the CW window and any remaining characters in the buffer will be sent
 - Pressing Escape closes the CW window and stops sending immediately. No remaining characters in the buffer will be sent
- **Ctrl+Alt+R** - Toggle CW Reverse/No Reverse.

Enter Sends Message Mode (ESM)

- **Ctrl+M** - Toggle 'Enter Sends Message' mode
- **Alt+Enter** - Log without sending anything
- **Ctrl+Alt+Enter** - Log even if exchange is invalid or missing



Note: ESM is affected by two options in the Configurer under the Function Keys tab:

- the “ESM sends your call once in S&P, then ready to copy received exchange” check box (sometimes called the “Big Gun” option)
- the “Work dupes when running” check box (recommended)

ESM Mode *Enter* Key Actions

Callsign field	Exchange field	In Run, Enter sends	Is S&P, Enter sends
Empty	Empty	CQ (F1)	My Call (F4)
New Call (1st time)	Empty or invalid	His Call + Exch(F5 + F2)	My Call (F4)
New Call (repeat)	Empty or invalid	Again? (F8)	My Call (F4)
New Call (repeat) - ESM sends call once... checked	Empty or invalid	Again? (F8)	Again? (F8)
New Call (before sending exchange)	Valid	His Call + Exch(F5 + F2)	Exchange + Log(F2 + Log It)
New Call (after sending exchange)	Valid	End QSO + Log(F3 + Log It)	Log(Log It)
Duplicate Call	Empty or invalid	QSO B4 (F6)	do nothing
Duplicate Call (before sending exchange)	Valid	His Call + Exch(F5 + F2)	Exchange + Log(F2 + Log It)
Duplicate Call (after sending exchange)	Valid	End QSO + Log(F3 + Log It)	Log(Log It)
Dupe (1st time) - Work Dupes checked	Empty or invalid	His Call + Exch(F5 + F2)	do nothing
Dupe (repeat) - Work Dupes checked	Empty or invalid	Again? (F8)	do nothing
Dupe (before sending exchange) - Work Dupes checked	Valid	His Call + Exch (F5 + F2)	Exchange + Log(F2 + Log It)
Dupe (after sending exchange) - Work Dupes checked	Valid	End QSO + Log (F3 + Log It)	Log(Log It)

Telnet Key Assignments

- **Alt+P** - Spot the callsign of the last station logged or the one currently in the callsign textbox in the format DX CALL Frequency, without comment unless one has been specified on the Spot Comment tab of the Telnet window.
- **Ctrl+P** - Spot the callsign of the last station logged or the one currently in the callsign textbox. You will be prompted for a comment. Hit ESC,click



“Cancel” or click the red X to exit the comment window without spotting. If you do not enter a comment, and one has been specified on the Spot Comment tab, it will be sent when you click OK. If you specify a comment, it will be sent along with the one specified on the Spot Comment tab.

- **Left-click** – Tune the active radio to the frequency of the spot.
- **Shift+Left-click** – Tune the inactive radio to the frequency of the spot.
- **SH/DX** – Entered in Entry window Callsign field will be passed through to active Packet window for processing.

Available Window Key Assignments

- **Left-click** – Mostly tunes the active radio to the frequency of the spot. Behavior depends on SO1V, SO2V or SO2R and on options in the right-click menu in the Available window.
- **Shift+Left-click** – Mostly tunes the inactive radio to the frequency of the spot. Behavior depends on SO1V, SO2V or SO2R and on Available window right-click options.
- **Double click** – Go to the frequency with the active VFO.
- **Alt+A** – Starting with the top row of the window’s lower pane, grabs the callsign there and transfers it to the call-frame of the entry window. Repeating steps **down** through the spots one at a time and transfers the next one to the call-frame. Color of the transferred spot changes to black.
- **Shift+Alt+A** – Same, except that it starts with the current row, and repeated keypresses step **up** through the spots.

SO2R Key Assignments

- **Ctrl+Enter** – Send next ESM state on alternate radio (assuming ESM turned on).
- **Ctrl+F1 to F12** – Send Fn message on alternate radio.
- **Ctrl+Left Arrow** – In SO2R move both Transmit and Receive/Keyboard focus to left radio, or in SO2V move both TX and RX/Keyboard focus to VFO A.
- **Ctrl+Right Arrow** – In SO2R move both Transmit and Receive/Keyboard focus to right radio, or in SO2V move both TX and RX/Keyboard focus to VFO B.
- **Pause** – Move both TX and RX Keyboard focus to other radio (or other VFO in SO2V). If TX and RX focus are split when you hit pause, TX focus will move to where the RX focus is.
- **Ctrl+B** – Dueling CQ’s will send CQ (without delay) alternately on each radio. If Dueling CQ’s is turned on, both radios become run radios. Dueling SSB and CW CQ’s are supported too.
- **Grave accent, backquote, or unshifted tilde key (~)** Toggle STEREO mode on/off, or toggle Auto/PTT modes with modified DXD . Notes: On US keyboards, the key we are talking about is the key just to the left of the



number 1 key.

- **Ctrl+I** - Toggle SO2R Mode (Soundcard). Toggle through the SO2R modes supported by the program. Only operative in '\$SO2R' when N1MM logger controls the audio, not when using an external SO2R controller.
- **Ctrl+PgUp/Down** - When changing band using Ctrl+PgUp/Down will skip the other radio's band.
 - THIS IS NOT A SUBSTITUTE FOR HARDWARE LOCKOUT!!
- **Ctrl+Shift+K** - FocusOther, Another method of automated focus control. Forces entry focus to non-transmitting radio, with entry focus returning to the transmitting radio as soon as it reverts to receive. See [SO2R](#). Disabled in SO1V mode.
- **Ctrl+Shift+L** - Toggle CTRLFX Macro. This macro allows the user to send on the other radio (RTTY and CW only).

RTTY Key Assignments

- **Alt+T** - Toggle TX - RX
- **Alt+G** - Grab callsign
- **Ctrl+K** - Toggle TX/RX, and displays the CW/Digital Keyboard window to send manual information using the keyboard
- **Ctrl+Arrows** - Swaps from one active DI to the other DI. DI1 will follow entry window 1. DI2 will follow entry window 2
- **Esc** - Stop sending

Gridsquare Key Assignments (VHF and up)

- **Alt+equal (=)** - Search entered info from both the Callsign field and the Gridsquare field in the call history table.
 - The results will be shown in the Check window.
- **Alt+minus (-)** - Toggle through call history and entered grid squares (max 3) in the grid square entry field.
 - When no grids are found in the call history there is nothing to toggle..

Rotator Key Assignments

- **Alt+J** - Turn rotor to bearing for the callsign in the Entry window or to the callsign in the callframe (when callsign field is empty).
- **Alt+L** - Turn rotator to long path bearing for the callsign in the Entry window.
- **Ctrl+Alt+J** - Stop turning the rotator when turning and no bearing in callsign field in Entry window.

Window Key Assignments



- **Ctrl+Tab** - Toggles between the Entry window and Packet window.
- **Ctrl+K** - Display the CW/Digital Keyboard window to send manual information using the keyboard.
- **Ctrl+L** - Display the Log window (toggles between open and minimized).

Lookup Table Edit

- **Ctrl+D** - to delete a row in the table or use the right click menu
- **Scroll Lock** - the Scroll Lock key selects the current row for editing

QTC Keys (for WAE contests)

- **Ctrl+Z** - in CW/SSB, enters or leaves QTC mode; in RTTY, cycles through Send, Receive and QTC Off
 - If Ctrl+Z is pressed before the QSO with the station has been logged, logs the QSO
- **Enter** - logs the next QTC (receiving), or sends the next QTC in the batch (sending)
- **F3** (End of QSO Key) - sends the TU message and exits QTC mode
- **Alt+W** - wipes the current row
- **Esc** - terminates sending (CW or RTTY), or if the program is not currently sending, exists the QTC window (same as the Cancel button)
- **Alt+Enter, Keypad + (plus) key** (sending QTCs only) - re-sends the last sent string
- **Alt+Enter, Alt+Tab, Alt+Space** (receiving QTCs only) - force-logs the current QTC; overrides error-checking
- **Ctrl+A** (receiving QTCs only) - removes the last blank line of received QTCs and reduces the count in the QTC header
 - Used, for example, when the number in the header was copied incorrectly and fewer QTCs are received than expected
- **Alt+A** (receiving QTCs only) - adds a new QTC line (if fewer than 10) and increases the count in the QTC header
 - As above, when more QTCs are received than expected
- **1, 2, 3** (sending QTCs only) - if pressed while the Agn button is highlighted, resends the time(**1**), call(**2**) or serial number(**3**) from the previous QTC
- **Shift+1, Shift+2, Shift+3** (receiving QTCs only) - asks for a repeat of the time(**1**), call(**2**) or serial number(**3**)

Function Keys, Messages and Macros

Function Keys, Messages and Macros

Definitions and Fundamentals

One of the things that differentiates contest logging programs from general-purpose loggers is the ability to send stored messages, to save energy during long contests. N1MM Logger can send stored messages in CW, SSB and digital contests. These messages can incorporate macros, short-form statements which perform program tasks automatically.

It will help you to follow the discussion below if you first understand, in general terms, how N1MM Logger's message-sending capabilities are organized. The architecture consists of three primary components: Function Key Files, Messages, and Macros

- **Function Key Files** are text files with a .mc extension that can be edited with a text editor (Notepad) or the program's internal Function Key Editor
 - Each row of text in a Function Key file is either a Comment or a Message
 - Comments begin with a pound sign “#” and help to explain the purpose of surrounding Messages. Comments are black text in the Function Key Editor
- **Messages** are lines of text in a Function Key file that do not begin with a pound sign “#”
 - Messages begin with a label (text that will appear on the keys in the Entry Window), followed by comma “,”, followed by the message itself
 - Messages can contain ordinary text, macros, or – in Messages for phone contests – WAV filenames
 - The first 12 Message lines are called Run Messages. They are assigned, in sequence, to the keyboard Function Keys F1 – F12 when you are in Run mode. Run Messages are blue text in the Function Key Editor
 - The next 12 Message lines (13 – 24) are called Search and Pounce Messages. They are also assigned, in sequence, to the keyboard Function Keys F1 – F12, but only when you are in Search and Pounce mode. Search and Pounce Messages are green text in the Function Key Editor
- **Macros** are special text expressions surrounded by curly braces “{...}”
 - There are also a few single-character macros: !, *, #, @
 - Macros can either trigger a program action or expand to a string of text to be transmitted in CW or digital modes



Three default Function Key message files are included with the program, one for each mode: *SSB Default Messages.mc*, *CW Default Messages.mc*, and *Digi Default Messages.mc*. These are assigned automatically when you open a new contest (>File >New Log in database), as indicated on the Associated Files tab of the [Contest Setup Dialog](#). You can edit the messages in the default files, export the messages to a new .mc file, or load different messages from an existing .mc file (for example, a .mc file that you download from the website's >File >Sample Function Key Files gallery). We'll get further into this below.

A Macro is Not a Message

Early in the use of computers for amateur radio contesting, the term "macro" was used to denote **any** stored message. We follow a different convention – for us, the term Macro means a message component that either triggers a program action or expands to a string of text to be transmitted in CW or digital modes. The use of the .mc filename extension for our Function Key message files is a left-over from those days. Don't be misled.

Important Change for Those Transitioning from N1MM Classic

N1MM Logger Classic found its wav files assuming the starting directory was the N1MM Logger program directory. Typically users would place their wav files in a sub-directory of the N1MM Logger program directory called wav. To call up a wav file in this sub-directory, you would specify the file name in the form wav\filename.wav (or wav\{OPERATOR}\filename.wav if you were using operator-specific files) in your function key messages.

N1MM Logger Plus finds its wav files assuming the starting directory is the wav sub-directory created by the installer inside the N1MM Logger+ user files directory (*not* the program files directory). To call up a wav file in this sub-directory, you specify the file name in your function key messages as filename.wav, i.e. without the leading wav\ (or if you are using the {OPERATOR} macro, as {OPERATOR}\filename.wav, again without the leading wav\). If you edit your message files by removing the leading wav\ on file names in messages, you will be able to access wav files you have placed in the wav sub-directory.

Alternatively, if you want to continue to use the same message files you used with Classic without editing them to remove all those leading wav\'s, you can create a new wav sub-sub-directory inside the wav sub-directory in the N1MM Logger+ user files directory (so that these wav files are located at My Documents\N1MM Logger+\wav\wav\filename.wav, or My Documents\N1MM Logger+\wav\wav\{OPERATOR}\filename.wav – note the two levels of wav\ in the path name), and once you have placed your wav files in that new sub-directory (or in operator-specific sub-directories under that wav\wav sub-directory if you are using the {OPERATOR} macro), you can call those wav files up using your old function key message files.



The Function Key Message Editor

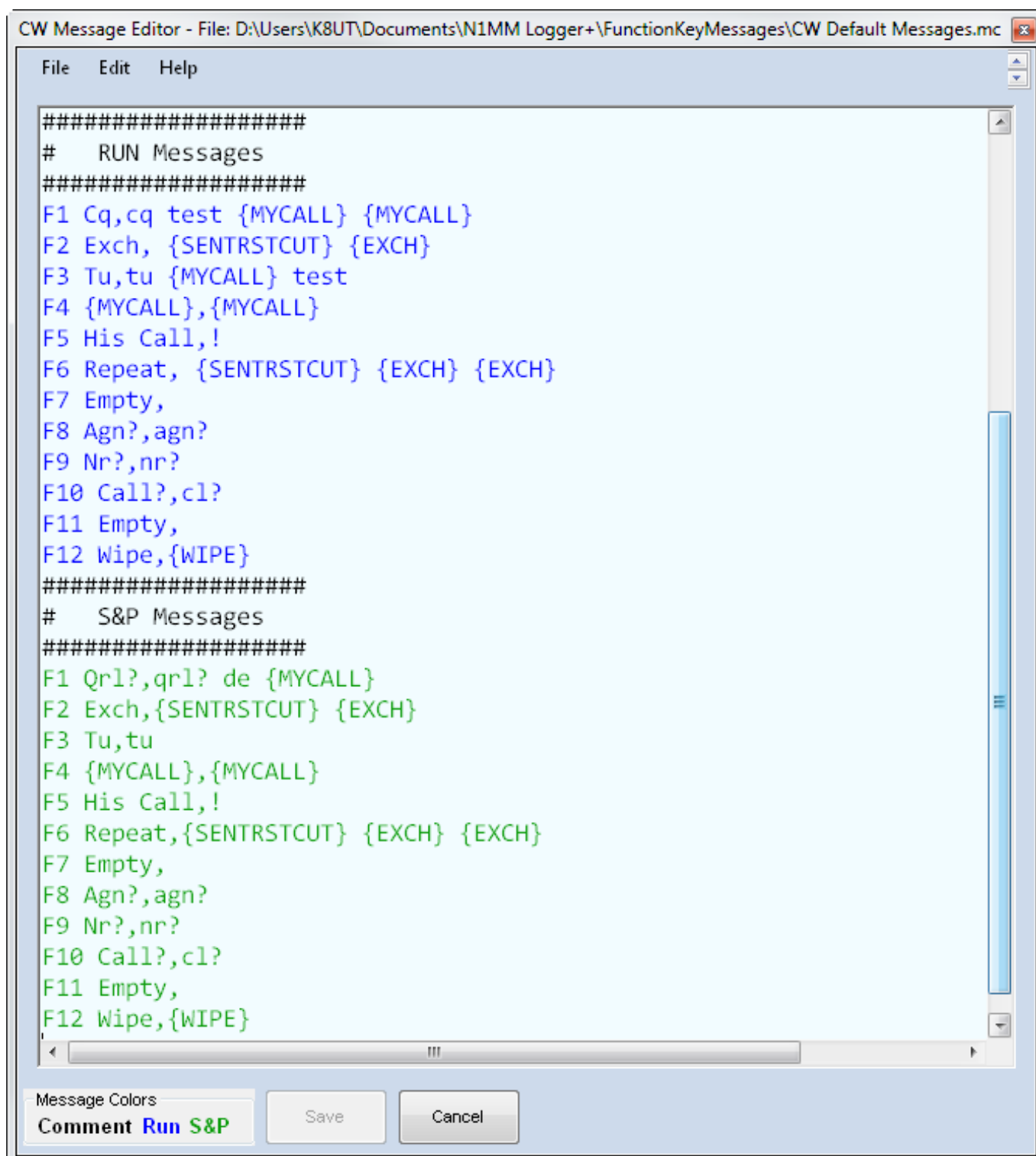
The Function Key Message Editor is the key tool for managing your Function Key messages. It provides the best way for assigning, managing and editing Function Key Message files using a Notepad-like editing window. You can import and export function key message files, edit them, and save them.

The easiest way to open the Function Key Message Editor is by typing Alt+K in the Entry Window, or by simply right-clicking on the message buttons in the Entry Window. The editor will display the message file associated with the current program mode (CW, SSB or digital). If you want to open the message files associated with the other modes, select >Config >Change CW/SSB/Digital Function Key Definitions and select the desired mode.

Unknown Operating Mode?

If right-clicking on a message button or pressing Alt+K results in an error message to the effect that the function key editor cannot be opened because the operating mode is not set, or if the function key editor opens up but the messages you see are for the wrong mode, you must first set the operating mode (CW, SSB or digital) before opening the function key editor. You do this by typing the mode (CW, SSB, RTTY or PSK) into the call sign box and pressing Enter. Once you have done this, right-clicking on a message button or pressing Alt+K will open the function key editor with the messages for the mode you entered.

The Function Key Editor dialog window:



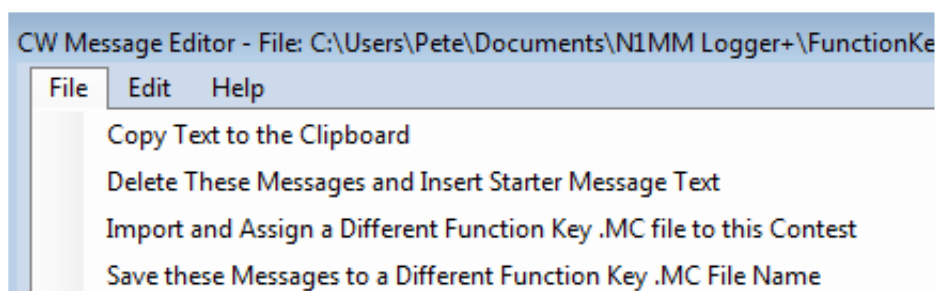
The Save and Cancel Buttons

- **Save** assigns the messages to the current contest and saves them to the file indicated in the title bar of the Function Key Editor. If you want to save those changes to a different file, use Export. **Note: It is easy to change a default function key file without meaning to, if you forget that it is the file in the title bar and Save a modified version. If you do this,**

use the Sample Function Keys function below to retrieve the defaults, and then save them to the original file name.

- **Cancel** closes the editing window without saving. If you have made any changes, or imported a file, the program will ask you whether you want to save the changes. Answer Yes and the editor assigns the messages to the current contest and saves them to the file indicated in the title bar of the Function Key Editor. Answer No and the editor just closes, abandoning any changes you may have made.

The File Menu



- **Copy these Messages to the Clipboard** places the entire contents of the editor on the clipboard
- **Delete These Messages and insert Starter Message Text** if you want to revert to the standard messages for the current mode, this option will copy them into the editor in place of the messages that were there, retaining the original filename. You will be asked if you wish to save your changes. OK makes the changes in the database and in the open .mc file; Cancel reverts to the previous message set.
- **Import and Assign a Different Function Key (.MC) file to this Contest** assigns a file that you choose to this contest. It is entered on the Associated Files tab and will be automatically opened whenever you open this or another instance of this contest.
- **Save these Messages to a Different Function Key (.MC) filename** opens a dialog where you can copy the current contents of the Function Key Message Editor to an .MC file of a different name.

Starter Messages

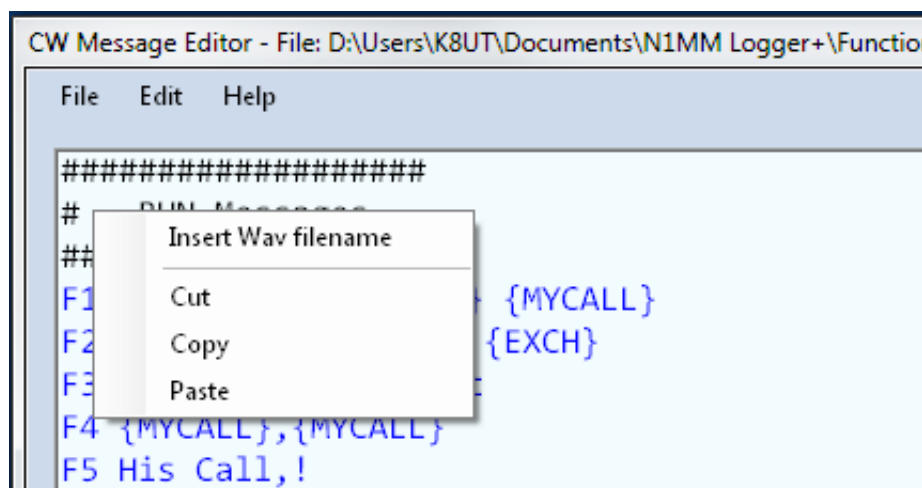
There has been a significant change in the way Default [mode]Message text is handled.

A set of Default .mc files is loaded in the Documents folder at program installation. If you wish, you may modify these to your heart's content, changing them to fit each contest, or you may create and save contest-specific .mc files. Note, though, that if you start with a Default CW file, for example, make changes in the Function Key Editor, and Save them, they will be saved under that filename.

If you wish to restore the original Default messages, you can do the following:

- Click on “Import and Assign a Different Function Key File” on the File menu, and select the Default [mode] Messages.mc file you wish to revert.
- Click on “Delete these Messages and Insert Starter Message Text” (also on the File Menu).
- Click the Save button in the Function Key Editor, to save the Starter messages to the database and to the Default [mode] Messages.mc file, effectively recreating it in original form. If you exit without clicking Save, you will be prompted to decide whether you want to save the changes or not.

The Edit or Right-click Menu



If you select the drop-down menu item >Edit, or right-click in the Function Key Message Editor Window, you'll see a short menu. Three of the choices – cut, copy and paste – are the familiar Notepad editing commands and should need no explanation.

- **Insert wav filename** selection does what its name implies. Click on it and you will be asked to select a wav filename from the N1MM Logger+\Wav directory. Select a Wav file, and its filename will be inserted at the location of your cursor. The intended use of this function is to make it easy to construct complex SSB messages, combining macros and filenames.

Databases and Function Key Assignments

Each database remembers your preferred Function Key file for a particular contest. For example, if you assign *CQWWCW.MC* to the CQ Worldwide CW contest in 2014, the database will remember your preference and also automatically assign the same file to the CQ Worldwide CW 2015 contest. However, if you open a new database for your logs, that memory is lost and you will begin with the default assignment of *CW Default Messages.MC*.



Function Key Message File Contents

Refer to the previous Fundamentals section and the Function Key Editor Dialog window screenshot for the following explanations

N1MM Logger accommodates up to 24 messages for each mode (CW, SSB and Digital), each divided into two sets of 12, one for Run mode, the other for Search and Pounce (S&P). (For more information on Run vs. S&P and other features of function key usage, see the [Entry Window](#) chapter section on Function Keys). This means that your Function Key message files can have as many as 24 active lines, plus an unlimited number of Comment lines. Here's an example::

Comment Line - any line that begins with a pound sign “#”

- Comment Example: **#This is a comment line**

Message Line - any line that does not begin with a pound sign “#”

- Simple Message Example: **F1 CQ, CQ**
Message lines have two elements - a Label and the Message itself. The Label is separated from the Message with a comma “,”. In this example, the label is “F1 CQ” and the transmitted message is “CQ”
- Simple Message Example with a Macro: **F1 CQ, CQ de {MYCALL}**
In this example, the transmitted message is “CQ de” followed by my callsign, which the program will retrieve from the >Config >Change Your Station Data “Call” dialog
- Message Example with multiple Macro: **F2 Exch,! {SENTRST} {EXCH} de {MYCALL}**
In this example of a contest exchange, the transmitted message begins with the other station's callsign “!”, followed by an RST report “SENTRST”, followed by the contest exchange (which could be an incrementing contact number, a state, a CQ zone, or any number of parameters based on the contest and the contents of the Sent Exchange box in the Contest Setup dialog), followed by “de”, and finally my callsign

Message Content Limitations

- Label length is limited to 29 characters, though you would never want to use that many
- Message total length is limited to 255 characters



- Message line count is usually 24 – 12 for Run and 12 for Search & Pounce. However, if you do not assign S&P messages the program will automatically substitute the Run messages in their place. For example if your S&P messages for F9 – F12 are identical to those in Run, you can leave those lines blank. But be careful – because you cannot have any gaps in the sequential numbering of the S&P messages

Function Key Examples

Sample Function Key Files

In addition to the three default message files that install with the program, there are also a large number of Sample Function Key files available for download [here](#) on the website. The advantage of these sample files, over the default files, is that they have been customized for the major contests and can be used without further modification.

There are sample function key files on the web site at [Sample Function Key Files](#). There are three sub-directories, one for each mode (CW, SSB and Digital). Open the sub-directory for the mode you are interested in and download the files for the contests you are interested in. To use them, you can name these files when you set up for a new contest, or you can import them into the function key editor. You can examine them either in the function key editor or simply from a text editor like Notepad.

The program comes preloaded with standard generic function key message files for all three modes, called CW Default Messages.mc, SSB Default Messages.mc and Digi Default Messages.mc . These work for contests with simple exchanges (like CQ WW or CQ WPX), and basically for all SSB contests.

If you are using the Default Messages.mc file for a given mode and use the function key editor to make changes, those changes will be permanent, i.e. they will apply to all future contests where you use that file. Therefore if you make changes for a particular contest but you don't want those changes to apply to other contests, you should use a contest-specific mc file instead of the generic default file. You can create or download contest-specific files and use the Associated Files tab in the Contest Setup dialog to name the file you want to use for that contest. Once you have done that, future contests of the same type will automatically use the same message files as the previous contest of that type.

In message files, # starts a comment line. Any line not starting with # is used as a function key definition, regardless of whether it looks like one or not.

Each active (non-comment) line contains a button label (appears on the button in the Entry window), then a comma, then the contents. If you want to put an

ampersand in a label (as in S&P), you must type in two ampersands (as in S&&P).

The label is arbitrary. It is suggested that you put the fkey name (F1, F2, etc.) and a very brief description in the label, because this makes the button labels in the EW act as visible documentation for the fkeys even if you never use the mouse. However, putting F3 in a label DOES NOT automatically mean that this message will go into F3.

The association between lines in the mc file and the function keys is strictly positional. The first non-comment line (starting with any character other than #) is the F1 message regardless of what the label says. The second line is the F2 message. And so on.

There are up to 24 active lines in a file. The first 12 are for Run mode, the second 12 are for S&P. If there are fewer than 12 active lines, function keys after the last one will be empty, and S&P keys will be identical to Run. If there are exactly 12 active lines, S&P will be identical to Run. If there are between 12 and 24 active lines, the S&P lines after the last one will be identical to their Run counterparts. So for example, if there are 15 active lines, the first 12 are Run F1-F12. The next 3 are S&P F1-F3, and S&P F4-F12 will be identical to Run F4-F12.

There may not be any skipped lines in the file. If you leave a line out, all the following lines will effectively be shifted up by one.

SSB

SSB files contain wav file names. wav files are assumed to be in the wav subdirectory of the N1MM Logger+ user files area. If an {OPERATOR}\ macro appears in the file name, the file will be found in a sub-subdirectory named with the current operator's call sign. It is possible for !, # and @ macros to appear as well, but only if a complete set of individual wav files for each letter and number is found in the wav\LettersFiles sub-subdirectory (or a sub-sub-subdirectory named in the Configurer under the Other tab, DVK Letters File Path box). There is one sample SSB file on the web site (Generic-SSB-Plus.mc). The differences between different contests are mainly in the contents of the recorded wav files, not in the contents of the function key messages.

Basic example file illustrating the use of the {OPERATOR} macro:

```
F1 CQ, {OPERATOR}\CQ.wav
F2 Exch, {OPERATOR}\Exchange.wav
F3 TNX, {OPERATOR}\Thanks.wav
F4 {MYCALL}, {OPERATOR}\Mycall.WAV
F5 His Call, empty.wav
F6 Spare, empty.wav
F7 QRZ?, {OPERATOR}\QRZ.wav
```



F8 Agn?, {OPERATOR}\AllAgain.wav
F9 Exchg?, {OPERATOR}\Exchange query.wav
F10 Spare, empty.wav
F11 Spare, empty.wav
F12 Wipe, {WIPE}
F1 CQ, {OPERATOR}\CQ.wav
F2 S&P Exch, {OPERATOR}\S&P Exchange.wav
F3 Spare, empty.wav
F4 {MYCALL}, {OPERATOR}\Mycall.WAV
F5 His Call, empty.wav
F6 {MYCALL}, {OPERATOR}\Mycall.wav
F7 Rpt Exch, {OPERATOR}\Repeat Exchange.wav
F8 Agn?, {OPERATOR}\AllAgain.wav
F9 Spare, empty.wav
F10 Spare, empty.wav
F11 Spare, empty.wav
F12 Wipe, {WIPE}

Make sure your wav directory contains a subdirectory named with your call sign, and that that directory contains all of the filenames listed in the file except for “empty.wav”, which is installed with the program.

CW

CW files contain the actual text that is to be sent, possibly intermixed with substitution macros (like {MYCALL}, !, #, {EXCH}) and control macros (like {WIPE}, {CLEARIT}). Note that if the {EXCH} macro is used, you must enter the correct exchange in the Sent Exchange box in the Contest Setup dialog – consult the Contest Setup instructions for the contest. There are CW files on the web site in the Sample Function Key Files gallery for most major contest types.

Generic CW example

F1 Cq,cq test {MYCALL} {MYCALL} test
F2 Exch, {SENTRSTCUT} {EXCH}
F3 Tu,tu {MYCALL} test
F4 {MYCALL}, {MYCALL}
F5 His Call, !
F6 Repeat, {SENTRSTCUT} {EXCH} {EXCH}
F7 Empty,
F8 Agn?, agn?
F9 Nr?, nr?
F10 Call?, cl?



```
F11 Empty,  
F12 Wipe,{WIPE}  
F1 Qrl?,qrl? de {MYCALL}  
F2 Exch,{SENTRSTCUT} {EXCH}  
F3 Tu,tu  
F4 {MYCALL},{MYCALL}  
F5 His Call,!  
F6 Repeat,{SENTRSTCUT} {EXCH} {EXCH}  
F7 Empty,  
F8 Agn?,agn?  
F9 Nr?,nr?  
F10 Call?,cl?  
F11 Empty,  
F12 Wipe,{WIPE}
```

Sprint CW examples

Whether you operate the NA Sprint or not, these examples will illustrate the use of various macros in combination with text in function key definitions.

Sprint CW Example #1

This Function key set is based on a set posted by Kenny, K2KW:

```
F1 CQ, * * NA  
F2 Exch, * {EXCH}  
F3 TU,EE{S&P}  
F4 {MYCALL},*  
F5 His Call,!  
F6 QS0 B4,B4 E E  
F7 ?,?  
F8 Agn,AGN  
F9,  
F10,  
F11,  
F12,  
F1 CQ, * * NA  
F2 Exch,! {EXCH} *  
F3 TU,EE{RUN}  
F4{MYCALL},*  
F5 His Call,!  
F6 QS0 B4,B4 E E  
F7 ?,?
```



F8 Agn, AGN

F9,

F10,

F11,

F12,

Running Message Notes

- For F2, there is a space before the *; E.G. "[space] * {EXCH}"
- For F3, "EE" is there to confirm the QSO. You could easily use "TU".
- After the "EE" is sent on the F3 message, the {S&P} macro puts you into the S&P mode. Then just hit your UP/DOWN arrow to QSY.
- Personally I have F6 programmed as {EXCH} to send a repeat on the exchange

S&P Message Notes

- Note the difference in the sequence for the F2 message compared to the Running F2 message
- For the F3 message, the {RUN} macro puts you in the running mode, ready to work a tail ender and send him the correct QSO sequence
- Personally I have F6 programmed as {EXCH} to send a repeat on the exchange

Sprint CW Example #2

This function key set is based on one posted by Pete, N4ZR:

F1CQ, * * NA{CLEARIT}

F2 Exch, * {EXCH}|

F3 TU,E~E {CLEARIT}

F4 {MYCALL}, *

F5 His Call, !

F6 QSO B4,B4 *

F7 Rpt Exch,{EXCH}

F8 ?,?

F9,

F10,

F11,

F12,

F1 CQ, * * NA{CLEARIT}

F2 Exch,! {EXCH} * {RUN}

F3 NR,#



F4 {MYCALL}, *
F5 His Call, !
F6 Name, PETE
F7 State, WV
F8 ?, ?
F9,
F10,
F11,
F12,

Note two things about this set:

1. The {RUN} macro is in S&P F2, not F3. This worked great for me – when I pressed Enter to send the S&P exchange, the exchange was sent, the QSO was logged, and the mode changed to {RUN} with the cursor in the call sign box. Therefore I did not have to press F3 to get from S&P to Run. The main problem with this is that if anyone asks for a repeat of the serial number, the Run keys are already active, so you have to either remember how to get the serial number from the S&P set (Shift+F3), or else just use the paddle, which is what I did.

2. There is no {S&P} macro in this set. At the end of a Run QSO, you switch to S&P mode by just QSYing. This also worked OK for me; since you are going to have to QSY anyway, there seems to be no real need to force a change to S&P mode. I also had the “QSYing wipes the call & spots QSO in bandmap” option selected, which may have helped ensure that the cursor was in the right place after QSYing by wiping the entry window. Of course I did not actually have the band map open, and I just ignored any call signs that showed up in the frame in the entry window.

Sprint CW Example #3

Customizing N1MM Logger for the North American CW Sprint by Steve, N2IC

I’m not going to try to explain how to operate the Sprint – for this, there is an excellent writeup at: <http://www.kkn.net/~n2ic/sprint.html>

What I will do is describe how to get the most out of N1MM Logger in the Sprint. My operation is SO2R, and my configuration is optimized for that mode. However, I’m sure you SO1R guys will pick up a few tricks from what I have done for SO2R. The most important thing is to get your options, windows and function keys setup correctly before the Sprint starts.

The Options...



Start up N1MM Logger+, and create a new SPRINTCW contest.

In the Config menu, select the following options:

- Enter sends message (ESM)
- QSYing wipes the call & spots QSO in bandmap
- Do not automatically switch to run on CQ frequency
- Show non-workable spots
- SO2R->Toggle CTRLFX Macro

Note: SO2R->Focus on Other Radio is NOT turned on

The Windows...these are the only windows I have on my screen and all fit nicely on my small monitor

- Entry Window (one for each radio)
- Visible Dupesheet (one for each radio)
- Info
- Log
- Score Summary

The screenshot displays a Windows XP desktop environment with several Ham Radio software applications open. The windows are arranged as follows:

- 7050.00 Manual - A:** A window with a menu bar (File, Edit, View, Tools, Config, Window, Help) and a control panel with buttons like Wipe, Log It, Edit, Mark, Store, Spot It, Buck. It also features a grid of function keys (F1-F12) and a status area at the bottom showing '381/45' and '17,145'.
- Dupesheet - Manual - A:** A large window displaying a grid of call signs and their corresponding frequencies, organized in columns.
- Info - N2IC - Exch: 001 STEVE NM:** A window showing a table of call signs and frequencies, with a 'N2IC' logo on the right.
- 9/1/2008 21:06:57Z NA Sprint CW - ham.mdb:** A window showing a table of call signs and frequencies, with a 'Score: 17,100 Points' displayed on the right.
- N2IC:** A window showing a table of call signs and frequencies, with a 'N2IC' logo on the right.
- 14020.00 CW Manual - B:** A window with a menu bar and a control panel similar to the 7050.00 Manual window, but with different function key labels.
- Dupesheet - Manual - B:** A large window displaying a grid of call signs and their corresponding frequencies, organized in columns.

The desktop background is orange with various icons. The taskbar at the bottom shows the Start button and several open applications.



The Visible Dupesheet is really nice once you get used to it. To see if a station is a dupe, you just scan the dupesheet with your eyes, rather than frantically type a call into the Entry Window. You can change the font size in the Visible Dupesheet by dragging it wider, so that there is white space past right-most column. Then right-click in the white space for a choice of a small font or a large font.

Notice that I do NOT have the “Available Mults & Q’s” window open. Open the Bandmap window, but size it to a very small size. It’s needs to be open, even though it is of no use in Sprint.

Open the Telnet window. Select the Filters tab. Change the Bandmap DX spot timeout to 1 minute. That’s right....1 minute. Press Update. Now close the Telnet window. Don’t reopen it. It is of no value in Sprint, but it is important to change the bandmap DX spot timeout value to 1 minute. This controls how long calls stay on the bandmap and the appearance of calls in the “on deck” frame of the Entry Window. We’re obviously not using packet in the Sprint.

Function Keys

Here are my function key definitions. I’ll explain a few that aren’t obvious.

```
F1 CQ,{JUMPRX}cq na cq na * na
F2 Exch,* # steve nm
F3 TU,{CLEARIT}T{END}{CONDJUMP}{STOPTX}
F4 (MYCALL),*
F5 His Call,!
F6 QS0 B4,! QS0 B4 * NA
F7 Other Short,{CTRLF10}
F8 Other Long,{CTRLF11}
F9 Go S&&P,{S&P}
F10 CQ,CQ NA * * NA {RUN}
F11 Long CQ,CQ NA CQ NA * * NA {RUN}
F12 , -
F1 S&&P CQ,{JUMPRX}CQ NA CQ NA * NA
F2 S&&P Exch,! # STEVE NM *{RUN}
F3 S&&P TU,TU
F4 S&&P{MYCALL},*
F5 S&&P His Call,!
F6 S&&P Name,-
F7 S&&P Other Short,{CTRLF10}
F8 S&&P Other Long,{CTRLF11}
F9 Go Run,{RUN}
F10 CQ,CQ NA * * NA {RUN}
F11 Long CQ,CQ NA CQ NA * * NA {RUN}
F12,
```



With the CQ F3 key, my “thank you” message is sent. When you QSY, you will automatically be changed to the S&P mode. Do not include the {S&P} macro here -it will cause the last station worked to get “stuck” in the on-call fame of the Entry Window.

With the S&P F2 key, as soon as I send my exchange, it immediate switches to Run mode.

I can also force myself into Run and S&P modes with the F9 key.

The F7 and F8 keys send CQ’s on the “other” radio. This is very useful when the other station is sending his exchange, and you are going to lose the frequency (i.e. it will become “his” frequency). You can send a CQ on the other radio, while he is sending his exchange. Then, when he finishes sending his exchange and you need to send your “thank you” message to finish the QSO, all you have to do is hit Enter, which will stop the CQ on the other radio, and send your CQ F3 message on the active radio. However, you had better be ready to copy a new caller on the “other” radio. You also need to be sharp with the Pause key to jump between the two radios when this happens. The {CONDJUMP} macro in the Run F3 message will move your entry focus to the “other” radio, so that you will be ready to copy a new caller.

When I’m CQing on the active radio, but simultaneously doing S&P on the other radio, and hear a new station, I can just hit the Enter key. This will stop the CQ, and send my call on the other radio.

One thing you need to do is keep an eye on where your transmit and receive focus is (the red and green dots on the Entry Window). When you’re doing SO2R in the Sprint, there will be times where your focus is not where you might expect it, or want it. Always be ready with the \ and Pause keys to jump between radios. Yes, this takes lots of practice, and you will make mistakes. The Thursday night NCCC Sprints are good practice for this.

73 and see you in the Sprint !
Steve, N2IC

CW Messages Deep Dive

From the Config menu, you can select Change CW/SSB/Digital Function Key Definitions, and then Change CW Function Key Definitions, or you can simply right-click on one of the 12 function key buttons in the Entry window. That will bring up this window:



CW Message Editor - File: C:\Users\User\Documents\N1MM Logger+\FunctionKeyMessages\CW Default Messages.mc

File Help

```
#REM, This Function Key File requires N1MM Logger V12.02.00 or newer
#RUN -----, Run Messages begin here -----
F1 Cq,cq test {MYCALL} {MYCALL} test
F2 Exch, {SENTRSTCUT} {EXCH}
F3 Tu,tu {MYCALL} test
F4 {MYCALL},{MYCALL}
F5 His Call,!
F6 Repeat, {SENTRSTCUT} {EXCH} {EXCH}
F7 Empty,
F8 Agn?,agn?
F9 Nr?,nr?
F10 Call?,c1?
F11 Empty,
F12 Wipe,{WIPE}
#S&P -----, Search and Pounce Messages begin here -----
F1 Qrl?,qr1? de {MYCALL}
F2 Exch,{SENTRSTCUT} {EXCH}
F3 Tu,tu
F4 {MYCALL},{MYCALL}
F5 His Call,!
F6 Repeat,{SENTRSTCUT} {EXCH} {EXCH}
F7 Empty,
F8 Agn?,agn?
F9 Nr?,nr?
F10 Call?,c1?
F11 Empty,
F12 Wipe,{WIPE}
#REM -----, Special instructions begin at end-of-file -----
#REM, This file can be used in most CW contests with a simple exchange
#REM, The {EXCH} macro uses the contents of the Sent Exchange box in the contest setup
#REM, Designed to work in either ESM or non-ESM mode
#REM, To respond to caller, CQing station sends F5 then F2, or ; or Insert, or Enter in ESM
#REM, F5 uses "!" macro for his callsign
#REM, In F2 & F7 {SENTRSTCUT} macro defaults to 5NN or allows manual entry of signal report
#REM, S&P F1 calls QRL? before placing the program in RUN mode for calling CQ
```

Message Colors
Comment Run S&P

Help Save Cancel

What it is displaying is the default function key message file that is now shipped with N1MM Logger+. There is much more on the Function Key Message Editor [here](#), but for the moment, let's use what we find already in place.

Going down from the top, note the macro {MYCALL}. An alternative to this is the single-character macro *. Either one denotes your callsign, from the Station Data window. This is a text macro. There are two types of macros, text macros and action macros – text macros substitute a string of text for the macro, while action macros perform some program action. Both are often used in combination with regular text in a message, as shown here – when you press the function key or click the on-screen F1 button, the program will send CQ TEST N4ZR N4ZR TEST (substituting your call for the asterisk). There's a table of the many recognized [Macros](#) in the chapter by that name in the manual but for now let's go on.

Conventionally, F2 is used for your contest exchange. The sample file uses the {EXCH} macro, which is a text macro that substitutes whatever you put in the Sent Exchange part of your Contest Setup. Say, for example, we were setting up for a contest where the exchange is signal report, your name and your state. When N4ZR sets up the contest, he puts PETE WV in the Sent Exchange. Now when he presses or clicks F2, the program will send PETE WV.

Also in Run F2 is the macro {SENTRSTCUT}. Many of us just put 5NN explicitly in F2, but this macro is a little cleverer. It sends the signal report (nominally 599, but can be modified from the Entry window on a per-QSO basis). This macro substitutes whatever cut number style you choose in the Configurer [here](#) (e.g 599 -> 5NN, 579 -> 57N, etc.).

One fine point – you might think of putting the 5NN in your Sent Exchange in the Contest Setup dialog – after all, everyone's 599, right? Well, don't, because it will screw up your Cabrillo log. Just resign yourself to putting 5NN or {SENTRSTCUT} in your function key messages wherever you want it sent.

The next handy trick to notice is in Run F5, where ! is used. That always denotes the other station's call, grabbed from the Entry Window

A final tip – most macros are in the form of {WORD}, where “word” is the macro (the main exceptions are *, ! and #, which do not appear inside curly brackets). The curly brackets around the macro name are necessary so that the program knows it's time to substitute something or take some action. It is awfully easy to type a square bracket or common parenthesis instead of the curly bracket, so look carefully.

From now on, if you want to change the content of any message buttons, just right-click in the area of the buttons, and the editor we just left will reappear.



OK – you’ve hooked up your interface, so now you’re ready to send some canned CW. As explained above, you can either hit the function key F1, or click on the F1 button. Either way, the program will switch your radio from Receive to Transmit (assuming you have PTT connected – you can also use VOX or break-in, of course) send the message, and then go back to Receive again.

RTTY

Digital file messages generally begin with {TX} and end with {RX}, except for program control macros.

General RTTY example

The way the keys below are designed, they will work in many RTTY contests without any changes. Whether these particular ones suit your situation will depend on your antennas, your power, QTH, etc.; but maybe these will give you some ideas to work with:

```
F1 CQ,{TX} CQ TEST * * CQ {RX}
F2 EXCH,599 {EXCH} ! {RX}
F3 TU,{TX}{ENTERLF} ! TU * QRZ? {RX}
F4 {MYCALL},{TX} * {RX}
F5 His Call{TX}{ENTERLF}!
F6 QS0 B4, {TX} QS0 B4 * CQ {RX}
F7 Rpt Exch,{TX} {EXCH} {EXCH} {EXCH} {RX}
F8,{TX} AGN AGN * {RX}
F9,
F10,
F11,
F12,
F1 CQ,{TX} CQ TEST * * CQ {RX}
F2 EXCH,{TX}{ENTERLF} ! TU 599 {EXCH} {EXCH} {RX}
F3 TU,{TX} ! TU {RX}
F4 Call Him,{TX} * * {RX}
F5 1x1,{TX} ! * {RX}
F6 0x1,{TX} * {RX}
F7 Rpt Exch,{TX} {EXCH} {EXCH} {EXCH} {EXCH} {RX}
F8 Agn,{TX} AGN AGN {RX}
F9,
F10,
F11,
F12,
```

When using the above keys it is assumed that ESM is on. The Run mode keys F5, F6 and F7 are not very useful when you are S&Ping, this is why I put those keys to better use by programming them differently from the Run mode keys.

Note also that you can use up to 24 additional buttons (mouse only, no keyboard access) on the digital interface window. For example, you can set up 0x1, 0x2, 0x3 and 0x4 calls, single, double and triple exchanges, separate requests for his zone and state and repeats for your zone only and for your state only, and so on.

Example RTTY where the time is part of the exchange (like BARTG)

In the following table only the keys that are different from the general example above are shown:

```
F2 Exch,{TX}599 {EXCH} {EXCH} {TIME2} {TIME2} ! {RX}  
F7 Rpt Exch,{TX} 599 {EXCH} {EXCH} {TIME2} {TIME2} {RX}
```

Per-Operator Function Key Files

There is an option, selectable under the Other tab in the Configurer, which allows individual operators in a multi-operator station to each have their own function key message files. This gives different operators the capability to have function key message files tailored to their individual preferences. The function key file for all operators is based on the function key message filename specified under the Associated Files tab in the contest setup window. The master function key file is edited when the OPERATOR is set to the station call sign.

In phone contests it is not necessary to use this option simply to change the voice in recorded messages (see the description of the {OPERATOR} macro in the next section on SSB function key messages instead). However, by using individual per-operator function key files, it is possible for one operator to use a function key message file that includes ! and # macros for voicing of call signs and serial numbers using pre-recorded letters and numbers, while another operator can use a function key message file that does not include these macros, and speak call signs and serial numbers into the microphone. In CW and digital modes, by using this option different operators can tailor their function key messages to match their individual preferences.

When this option is enabled, changing operators using the OPON or Ctrl+O command will switch the function key message file currently in use to that operator's personal function key message file. These operator-specific files are stored in a sub-directory of the main function key messages directory. The first time an operator whose call sign is different from the station call sign signs on using Ctrl+O or OPON, the personal function key message file for that operator is

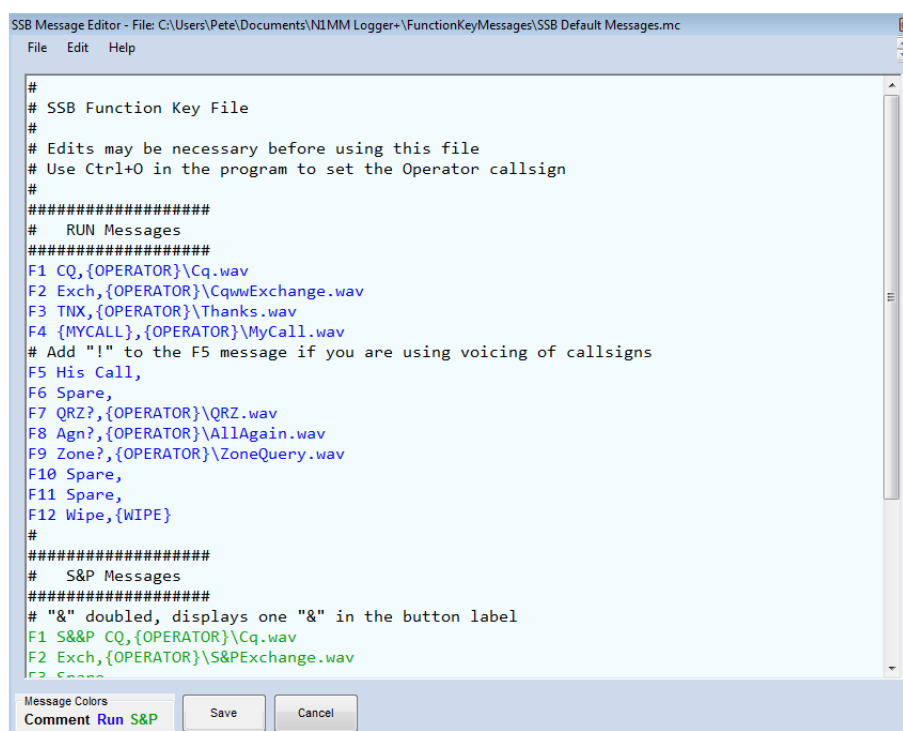
initialized from the “master” file specified under the Associated Files tab in the contest setup window. Subsequently, that operator can make changes to the file using the Function Key Message Editor without having any effect on other operators’ function key message files, thus enabling each operator to have their own individual files. The “master” file specified under the Associated Files tab can be edited only by the operator whose call sign is the same as the station call sign. See the description of Per-Operator Function Key Messages under the Other tab in the [Configurer](#) section of the manual for more information on how this is implemented.

If an operator changes the function key message filename specified under the Associated Files tab in the contest setup window during the contest, all operators will be assigned new message files based on the new filename as they OPON.

Special Measures for SSB Function Keys

CW and RTTY messages are quite straightforward. SSB messages, however, require additional instruction.

The *SSB Default Message.mc* file, as shown in the Function Key Editor



This screenshot shows the default SSB function keys, as supplied with the program initially. You’ll note that each of the function key messages includes only one Wav filename. F5-His Call, which can either be a single space character, or if you are using voicing of call signs, the “!” macro character. This is the macro that is used to

tell the program to voice a callsign by putting together letter and number files, so it would not normally be used. If you are not voicing call-signs or serial numbers (see below), you should **not** have the “!” macro in your SSB definitions. The same goes for the “#”, “*”, and “@” macros. Use an explicit filename like mycall.wav.

The Wav files must be placed in the N1MM+ user directory, which would be C:\Users\{username}\Documents\N1MM Logger+\Wav (unless you changed the default user directory at time of installation). There is no “empty.wav” file; the program looks for that file name and treats it as a do-nothing command. In the case where a station has multiple operators, each operator’s Wav files would be in an operator subdirectory C:\Users\{username}\Documents\N1MM Logger+\Wav\callsign\. For example, K3CT’s Wav files when operating at N1MM’s station would be located in C:\Users\N1MM\Documents\N1MM Logger+\K3CT\. Use the CTRL+O or OPON command to change the operator and tell the program to switch to that operator’s Wav files.

Playing Multiple Wav Files

To play more than one wav file with a function key, separate the wav file strings with a comma.

F1 CQ,{OPERATOR}\Cq.wav,{OPERATOR}\Cq.wav

The {Operator} Macro

As you probably noticed above, there is an {Operator} macro in the path for each of the .wav message files. The purpose of this is to enable you to change the stored message files to match the operator currently on duty (in a multi-op or guest op situation), so that the voice used in the stored message files will be the same as the live operator’s voice when using the microphone. For example, if a set of messages (such as CQ.wav) are stored in My Documents\N1MM Logger+\Wav\N1MM, then if N1MM is the operator and the message refers to {OPERATOR}\CQ.wav, the program will send **his** stored CQ.wav file when that key is pressed. The same is true for stored letters and numbers, used in voicing callsigns and serial numbers, except that those are stored in the path which is identified [on the Other tab of the Configurer](#). If the path specified in the Configurer is {OPERATOR}\, N1MM’s letter and number files will be found at My Documents\N1MM Logger+\wav\LettersFiles\N1MM\ .

The current operator is displayed in the title bar of the Info window, and also in large blue letters inside that window, to the right. It is pre-filled with the callsign in the Station Data. To change the operator, just press Ctrl+O and enter the desired call-sign.

Even if you operate alone, and never need to change operators, we recommend you leave the {Operator} macros in place and put the wav files in folders with your

callsign as the title. That will make it easy to add a guest op, and in the meantime the substitution for {OPERATOR} will be provided from the Station Data page.

Recording on the Fly

If you need to record or re-record a function key file in a hurry, you can do so from inside the program, so long as the Function Key message calls only a single .wav file. This method also assumes that the microphone is connected to the radio via the sound card (either permanently, or temporarily while you are making the recording). Despite the limitations, this is still very useful, particularly for split operation in SSB contests where you want to specify a listening frequency that changes often.

The key sequence to start and stop on-the-fly recording is Ctrl+Shift+Fkey, in either Run or S&P mode.

When you start on-the-fly recording, a message will appear in the status line of the Entry window. If all is well, it will read "start recording:[file path and name]". Press Ctrl+Shift+Fkey after you have finished recording, and the status line will read "recording saved: [file path and name]". If you get an error message, and the Entry window is not large enough to read the whole thing, simply stretch it horizontally until you can.

If you invoke a .wav file that is not found (for example, by having the wrong .wav file or an incorrect path in the .mc file), you'll be warned in the same place. To trouble-shoot path problems, you may have to stretch the Entry window horizontally, because there is only limited space for the message in the status line.

Voicing Call-signs, Serial Numbers and Frequencies

This option appears to be growing in popularity among SSB contesters. One operator, to protect the sleep of his wife and young children, even created such a complete set of voicing files that he could operate an entire Sweepstakes without a microphone.

When voicing is used, the !, # and @ macros can be used in SSB messages, and the program will send the full (001.wav) or individual letter and number files that make up the call name or number that is to be sent. The individual letters, numbers and special characters used for voicing are stored in the location defined in the letters file path on [the Other tab of the Configurer](#). Again, if you wish to have more than one operator, you will want to insert the {Operator} macro in the letters file path in the Configurer, and then record in a subdirectory named with the operator's call-sign, so that Ctrl+O can be used to tell the program which operator's letter files to use.

Function key messages that use voicing may have more than one wav file or macro



in them. Use commas to separate the individual wav file names and macros within a message. For example, to send 59 followed by a serial number, you could program your F2 exchange key as follows:

F2 Exch,fivenine.wav,#

where fivenine.wav is a wave file containing “five nine”. The # macro is separated from the wav file name with a comma.

Note: If you do not want to use voicing, be sure that your Run F5 key is programmed to a single space, not “!”.

Simple Voicing

This technique is used for voicing call-signs, as the simplest way of voicing serial numbers, and for giving your listening frequency when operating split. The operator records files for the letters A-Z, the numerals 0-9, and a few special characters – **query.wav** for the “?” character, **stroke.wav** for the slash indicator used with reciprocal operating callsigns, portable operation, etc. (which you denote in your log using the “/” or slash character), and **point.wav** to voice the decimal point (in a frequency, for example). You can optionally also record a file called **strokep.wav** for the “/P” (portable) indicator (e.g. to send “stroke portable”, instead of “stroke papa” with the separate stroke.wav and P.wav files). When the ! macro is included in a function key definition, and the key is pressed, the program substitutes a sequence of .wav files for the number or callsign. **N1MM** is parsed into **N.wav+1.wav+M.wav+M.wav**. The # and @ macros work the same way for serial numbers and frequency, respectively.

When voicing callsigns or serial numbers the software looks in the user programmable “Letters Wav File Path” for all files. This path is set in Config, Other tab and it allows the user to select the directory to use below Wav\LettersFiles. The default path is: {Operator}\ meaning it will look for files in Wav\LettersFiles\OperatorCallsign.

If the Entry window callsign exists as a callsign.wav or a character group fragment (two or more characters/numbers) in this directory, the character group wav file is played when voicing the callsign. If any unvoiced remaining characters exist, they will be voiced as individual letter wav files. When defining function key wav file names, use file names that will not appear in callsigns (use CQ_RUN.wav instead of CQ.wav).

Advanced Voicing

This technique is used to voice serial numbers in a way that is considered to be more intelligible than a simple string of numbers. The theory is that “One hundred twenty three” will likely be more easily understood than “one two three”, because of the redundancy added by the “place markers.”

In order to implement advanced voicing, you will need to record the following wav files. These files must be stored in the user programmable “Letters Wav File Path” (Config, Other tab). The letters file path may contain the **{Operator}** macro, which is essential if you have more than one operator. Example: If the path in the Configurer is {OPERATOR}\, the letter and number files will be in **My Documents\N1MM Logger+\Wav\LettersFiles\{Operator}**

0.wav through 19.wav (20 files)

20.wav through 90.wav (only the even tens intervals) (8 files)

hundred.wav and **thousand.wav**

When you try to voice a number for the first time after program start, the program checks to see whether **all** the needed files for advanced voicing are present. The outcome of the check is displayed in the bottom section of the Info window, so be sure to open it. If one or more are missing, serial numbers will be voiced using the simple voicing method. The same check is also made with changing operators (with Ctrl+O).

A complete table showing the files voiced for each number can be found in the files section [here](#), in the file called “Advanced voicing of serial numbers.txt”. There is one further variation – if you have Logger set to use leading zeros, then one or two leading 0.wav files are voiced before the number, as appropriate. We do not recommend using leading zeros with Advanced Voicing. As you can imagine, “zero eleven” is probably not an improvement in intelligibility over “eleven” or “zero one one.”

A good way to get natural-sounding numbers is to record full compound numbers, like “one hundred ten” or “two thousand four hundred and thirteen” with a program like Audacity (see below), and then use it to cut up the recording into the various components you need. This will help you get a natural intonation pattern, making your voiced numbers easier to understand. For example, numbers like “thirteen” are generally only at the end of compound numbers, and will typically be voiced naturally with a falling intonation.

Recording Letters and Numbers

This is the hardest part of voicing. A more natural-sounding output will be much easier for other stations to understand, a particularly important point with serial numbers. The question of how to reduce the robotic sound is a complicated one, as users of the phone companies’ 411 service will appreciate.

The program-induced lag between numbers is very brief, so the real tricks are:

- trimming the individual voice files so that they have as little “dead air” as possible before and after the letter or number.
- adjusting the speed, intonation and audio level of the individual number files

so that they go together as naturally as possible.

The best single tool we have found so far for this purpose is the freeware [Audacity](#) audio editor. It incorporates a variety of excellent tools for trimming, equalizing levels, and so on. A lot will always depend on how much time the individual op is willing to devote.

When recording with Audacity, be sure to “Export as .WAV” using the default file creation settings; these work fine with N1MM Logger, while some of its other .wav file options will not.

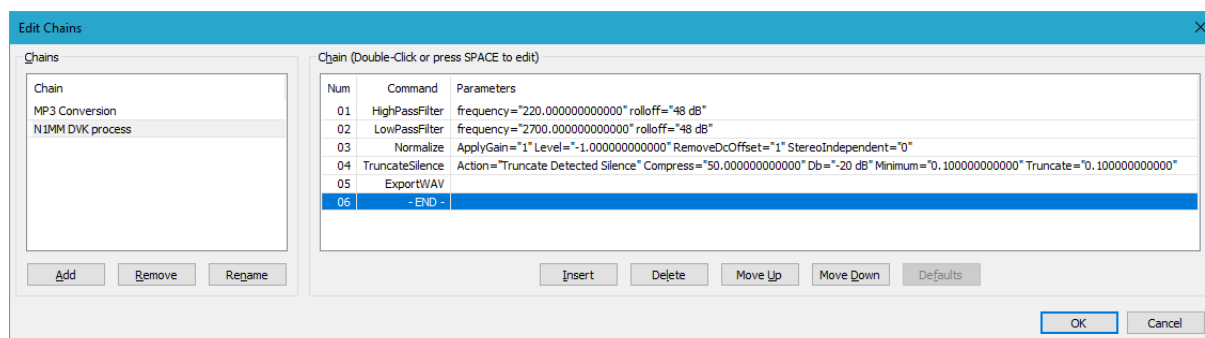
Here’s a tip some people have found to be helpful. This may or may not work for you.

- Do not record individual letters and numbers. Instead, record callsign-like strings, such as A1BCD, E2FGH and so on. Try to speak at the same speed you would during a contest. Then use Audacity (or whatever editor you favor) to cut the recording apart, trim off any dead time, and equalize the levels. You can even use the Change Tempo tool (under Effects) to speed up your recorded letters and numbers to sound more natural while retaining your voice’s pitch and other characteristics – amazing!

Processing All Recordings with Audacity

Audacity is capable of processing files in bulk using “Chains”. If you are using callsign voicing you may find this capability helpful. Chains are created and run from the Audacity File menu. You can select multiple files to process. The chain shown below does the following:

- Removes high frequencies
- Removes low frequencies
- Normalizes the levels
- Truncates silence (watch out for silence between syllables/words)



Should I Use Voicing?

This remains controversial. Is the saving in energy during a contest worth the potential loss in intelligibility? You can potentially operate an entire contest using “search and pounce”, without ever having to say a word yourself. On one hand, when you are running, voicing the other station’s call-sign is pretty safe, since he knows who he is, and needs only to be confident that you’re calling him. On the other hand, some operators feel that the loss of the “human touch” may deter casual testers from calling in.

From an intelligibility standpoint, voicing serial numbers is less attractive. In poor conditions, the “robotic” quality may make copy harder, particularly for non-English-speakers. The jury is still out on this one as well.

Macros

One of the great strengths of N1MM Logger+ is its ability to send stored messages during contest QSOs, and to embed macros in those messages. Macros are so called because they either expand to a given text string, for CW and digital modes, or execute some program function. An example of the first is the {EXCH} macro, which expands to the exchange which you entered in the Contest Setup Dialog’s Sent Exchange field – for example, if you enter John CT, that is what will be sent whenever the {EXCH} macro is encountered.

The second (program control) type of macro is much more complex and more powerful. These macros can switch the program from RUN mode to S&P mode, an essential attribute during NA Sprint; set or clear your transceiver’s RIT function; or a myriad of other possibilities. In the sections that follow, you will find a comprehensive list of all the macros available in N1MM Logger+, as well as useful examples of how stored messages can be structured for efficient operating.

General Macros

General macros can be used in all the places mentioned above.

Note that the table below is sortable alphabetically by the name of the macro, by clicking on the up/down arrow icon just to the left of the “Result” heading.

[table id=36 alternating_row_colors=true /]

Macro keyword	Result
*	Call from the Station info dialog, same as {MYCALL}
!	Sends the callsign entered in the Callsign field of the Entry window, or if that field is empty the last call logged. Use this macro rather than {CALL} if you wish to have the Send Corrected Call function work correctly.



Macro keyword

@

Result

To voice the current receive frequency, if you have recorded files for individual letters and numbers. Configurer, Other tab, "DVK Letters Path" is used for the location of the wav files. Typically this will contain {Operator}\ so operator specific wav files will be played. The frequency will be voiced to the nearest 100 Hz, dropping .0 if receiving on an even KHz frequency. This capability can be used to avoid having to rerecord CQ messages on 40m split. Here is an example:

{operator}\CQ Listening.wav,@,{operator}\AndThisFreq.wav

{CALL}

Sends the call in the Callsign field of the Entry window as it was at the time the message started, or (if that field is empty) the last call logged. Note: This will send the call as it was when the message STARTED. Use the ! macro instead to use the Send Corrected Call function. Do not use the **{CALL}** macro in F5 (HisCall key) if you use ESM; instead, use the ! macro in F5. **This is critically important if you ever hit [ENTER] in ESM before you have finished typing the call-sign, because if you do, the characters entered after you hit [ENTER] will not be sent unless you use !.**

{CHNAME}

If a Call history file is loaded into the current database, and a callsign is entered for which a name is present in the file, then this macro will send that name. Call History lookup does not have to be enabled for this macro to function. Cluster callsign from Station info dialog. See examples

{CLUSTER}

{COMMENT}

Macro to add string following **{COMMENT}** to comment field of current or last QSO

{CQ}

Switches to Run mode

{END}

This macro stores all macro text after the **{END}** macro string and executes it after CW, SSB or DIGI messages are sent. One



Macro keyword

#

{EXCH}

{FORCELOG}

{FORCELOGNOTE}

{FREQ}

{FREQROUND}

{GRID}

{GRIDSQUARE}

{GRIDBEARING}

{REVGRIDBEARING}

{KMGRIGDISTANCE}

{LOG}

Result

use of the **{END}** macro is to send CAT commands to the radio(s) after a transmission ends. All QSO message text placed after the **{END}** macro command is not sent.

Send serial number for this QSO, or if there is no call sign in the Entry window, the serial number for the previous QSO. When voicing numbers, Configurer, Other tab, "DVK Letters Path" is used for the location of the wav files. Typically this will contain {Operator}\ so operator specific wav files will be played.

Sent Exchange, based on the contents of the Sent Exchange box in the Contest Setup dialog. When the sent exchange includes a serial number (001 in the Sent Exchange box), the number sent will be for the current QSO if there is a call sign in the entry window, or for the previous QSO if there is no call sign in the entry window.

Same effect as Ctrl+Alt+Enter, but does not ask for a note to be entered

As above but asks whether you want to enter a note.

Frequency from the contact in the Entry window. Substitutes "R" for decimal on CW

Frequency from the contact in the Entry window, rounded to the nearest kHz

Gridsquare from Station info dialog

Gridsquare from grid textbox (contact in Entry window)

Bearing between own gridsquare and grid textbox (contact in Entry window)

Reverse bearing between own gridsquare and grid textbox (contact in Entry window)

Distance in kilometer between own gridsquare and grid textbox (contact in Entry window)

CW: Logs the current contact. Same as ENTER in the Entry Window. Digital: Put the **{LOG}** macro after the **{RX}**

Macro keyword	Result
{LASTCALL}	macro... The receive frequency is being reset to the transmit frequency. Note: does not work in phone (SSB, FM etc)
{LASTEXCH}	Call of last station logged
{MYCALL}	Exchange of last station logged. For ROPOCO and LZOPEN only. It does NOT work for other contests!
{NAME}	My Call from Station info dialog, same as *
{NAMEANDSPACE}	Sends the name as entered in the Entry window name field (Example: TARA) or when no Entry window name field, searches the name in the call history table and adds a space behind it
{OTHERFREQ}	Is replaced by the frequency of the non-active radio. Used for passing stations to other bands. Substitutes "R" for decimal on CW
{OTHERFREQROUND}	Is replaced by the frequency of the non-active radio, rounded to the nearest kHz. Used for passing stations to other bands.
{OTRSP XXXX}	Used to send a command to an OTRSP (Open Two-Radio Switching Protocol) device. XXXX can be any command known to the OTRSP device
{OTRSP RX}	Sends the OTRSP RX command to the OTRSP device to activate RX corresponding to the currently active radio.
{OTRSPOTHER RX}	Sends the OTRSP RX command to the OTRSP device to activate RX corresponding to the currently inactive radio. For example, if Radio 1 currently has keyboard focus and the {OTRSPOTHER RX} macro is invoked, the OTRSP RX2 command is sent to the OTRSP device, but keyboard focus remains on Radio 1.
{PGDN}	Change frequency up equal to amount set under 'PgUp/PgDn Incr (kHz)' 'in the Configurer under the 'Other tab'. Can be

Macro keyword	Result
{PGUP}	used after the {END} macro, as in NA Sprint function-key messages Change frequency down equal to amount set under 'PgUp/PgDn Incr (kHz)' 'in the Configurer under the 'Other tab'. Can be used after the {END} macro, as in NA Sprint function-key messages
{PREVNR}	Sends the QSO # of the last logged QSO
{DIGQTCR}	WAE contest only. Open the QTC Receive window
{DIGQTCS}	WAE contest only. Open the QTC Send window
{QTC}	WAE contest only. In CW, can be used in the TU message sent after a block of QTCs has been completed. In RTTY, used in the Send All Heading SQTC message for the QTC block number (see the Config > WAE > Open QTC setup area in the Entry Window)
{LRMHZ}	Frequency Left Radio/VFO-A in MHz. Example: 28 when on 28.1234 MHz
{RRMHZ}	Frequency Right Radio/VFO-B in MHz. Example: 14 when on 14.1235 MHz
{RUN}	Switches into Running mode
{S&P}	Switches into S&P mode
{SPACE}	Equivalent to pressing the spacebar key. Useful in non-ESM mode for auto-filling the exchange. For example: F2 exchange, 5nn 4 {END} {SPACE}
{STEREOOFF}	Stereo audio will be set to OFF
{STEREON}	Stereo audio will be set to ON
{TIMESTAMP}	Date and Time from the contact in the Entry window
{TX}	CW/SSB: when sent in a function key will key ptt. Use Esc to turn off. This is a manual PTT from the keyboard. RTTY: Check out the Digital macros below. Note: This does not appear to work with some radio/interface combinations.
{CLEARIT}	Reset the RIT to zero. Could be used in the macro that confirms the contact, usually F3. Use the RIT when the station is calling and when logged the RIT clears (using F3). Note: Will only work for radios

Macro keyword	Result
{CTRL-A}...{CTRL-Z}	that support that function. Most ICOM radios do not. Your manual will tell you for sure Sends Ctrl+A character to TNC. All characters from the alphabet can be used (A to Z). Not valid in MMTTY and PSK. See examples
{ENTER}	Sends ENTER to TNC
{ENTERLF}	Sends Return/Line Feed to the TNC. Try this if {ENTER} doesn't seem to work
{ESC}	Sends Escape character to TNC. Not valid in MMTTY and PSK. See examples
{DATE}	Short date in Windows format as set in Regional settings
{DATE1}	Date in Nordlink-TF/WA8DED format (dd.mm.yy)- format: 26.02.99
{SENTRST}	Sends the RST sent as entered in Entry window Snt field. Do not expect the RST to be correct if the Snt box is not populated.
{SENTRSTCUT}	Sends the RST of the "current contact" using cut format. Send the number 9 sent as the character N. If the callsign box is blank, the "current contact" mode is not set. Therefore, do not expect the sent RST to be correct if the callsign box is blank. If you want to send exchanges with a blank callsign box, remove this macro and insert 5NN or 5N in the appropriate function key message.
{TIME}	Time in Windows format as set in Regional settings
{TIME1}	Time in Nordlink-TF/WA8DED format (hh:mm:ss)- format: 20:36:55
{TIME2}	Short GMT time (hhmm)- format: 2036 Information how this macro works in digital contests can be found at: Time2 - How it works
{DAYTIME}	Date in TAPR DayTime format - format: 0107162036
{DATEGMT}	Date and GMT time - format: 16-jul-01 18:36:55
{TIMEGMT}	GMT time - format: 18:36:55
{F1} - {F12}	Sends text assigned to function keys F1 through F12



Macro keyword

{SOCALLSTACK}

Result

This macro enables single operator callsign stacking. When in RUN mode, this macro gives the operator the ability to stack and retrieve a single callsign when multiple stations are calling. The stacked callsign does not need to be a full call and it can contain a "?". Single operator call stacking can be used in SO1V/2V or SO2R mode, in both entry windows, and with/without ESM. When in RUN mode, **{SOCALLSTACK}** will move a call or partial call and place it in the callsign frame and bandmap. If a stacked call exists on the call frame, the callsigns will be exchanged. If the callsign contains a question mark ("?"), the cursor will highlight the question mark when the text is popped off the stack. If the callsign does not contain a question mark, the cursor is placed at the beginning of the callsign upon return to the entry window. Using the existing command ALT+D, it is possible to delete a stacked call from the bandmap and call frame without popping it off the stack with when the callsign entry window is blank. **{SOCALLSTACK}** will also pop the call off the stack if ESM replaced the stacked call with the string CQ-Frequency. When this occurs, the stacked call will be visible in the bandmap. **{SOCALLSTACK}** is not intended to be used with the MM call stacking function. See also the macro **{STACKANOTHER}**. Callsigns stacked by **{SOCALLSTACK}** can be popped off the stack by pressing the space bar when the CQ-Literal is on the call frame. More info and examples in the chapter: [Single Operator Call Stacking](#)

Macro to stack additional callsigns in all modes. Also check the keycombination CTRL+ALT+G More info and examples in the chapter: [Single Operator Call Stacking](#)

Clears the call stack

RUN mode only. Intended for with the

{STACKANOTHER}**{CLRSTACK}****{LOGTHENPOP}**



Macro keyword

{ROVERQTH}**{VARYMSG1} {VARYMSG2}**

Result

single operator call stacking feature. It logs the current station sending corrections if enabled, pops the next call off the stack, and updates ESM if enabled, to the correct step. The macro can be used with or without ESM. The suggested message is: **{LOGTHENPOP} TU NW {F5}{F2}** (Note: In contests with serial numbers, do NOT use # in the LOGTHENPOP macro). In CW, if **{LOGTHENPOP}** can not pop a call off the stack and the logged callsign was changed, send corrected call if enabled and the TU message. More info and examples in the chapter: [Single Operator Call Stacking](#). Example function key setup can be found in the Chapter [Function Key Examples](#) (CW: example 3)

Sends the Rover QTH. Check out the chapter [Setup QSO Parties](#) for more information on Rover support

These macros can be used in all modes. They allow the user to control how often an alternate form of a function key message is sent instead of the primary form. Each can be used once in a given Function Key set. The form of the macro is **{VARYMSGn&Primary Message&Alternate Message&How Often to Send Alternate&}**. Substitute the form of the message you want to send most often for Primary Message. Substitute the message you want to send at intervals for Alternate Message. Finally, specify how often you want to send the Alternate message in “How Often to Send Alternate”. A “0” in the “How Often to Send Alternate” field sends the Primary Message every time. A “1” in the “How Often to Send Alternate” field sends the Alternate Message every time. Placing a number, N, greater than 1, in the “How Often to Send Alternate” field sends the Alternate Message every Nth time.

Examples: in the CQ Key definition (RUN

Macro keyword

Result

F1), **{VARYMSG1 &CQ * *&CQ CQ * *&3&}** will send a slightly longer CQ every 3rd time. In the TU Key definition (RUN F3), **{VARYMSG2 &TU&TU *&4&}** will send TU alone after a completed QSO, and send TU followed by your call only every 4th time. Any function key text before or after the **{VARYMSGn}** macro string is preserved. So, RTTY users may place the **{TX}** **{RX}** macros before and after the **{VARYMSGn}** macro string. The primary and alternate **{VARYMSGn}** fields may contain other macros but the two **{VARYMSGn}** macros may not be nested.

The TNC Interface accepts all of the macros above.

{END} Macro Examples

The **{END}** macro signals the program that the remaining {} commands are to be executed when the program returns from sending the CW, SSB or DIGI messages. Here is an example:

- Message: F1 **{STEREOOFF}CQ TEST *{END}{STEREOON}**

Whenever the F1 key is pressed, the stereo bit on the LPT port will be set to OFF. CQ will be sent via the current mode, and after the message is complete, the stereo bit on the LPT port will be turned back on. Thus, one can listen to just the second radio while the CQ is being sent, then listen to both radios after it is finished.

More to send after the {END} Macro?

Only Macros that do not involve sending messages are executed when they are placed after the {END} macro. For example, if you put {MYCALL} or "5NN" after the {END} macro, they will be ignored. Why? Well the message is over, there is nothing more to send. Conversely, all macros that only trigger program functions (don't send messages) are executed before any messages are sent, unless they appear after an {END} macro.

CATHEX and CATASC Radio Hex Macro Commands

Macros: **{CAT1HEX radio_hex_command(s)} {CAT2HEX radio_hex_command(s)}**

These macros can be used to send commands to radio # 1 or radio # 2 requiring hex data input. The macro name must be followed by the radio hex data and closing terminator }. An example is shown below. There must be two hex characters per byte including zero (zero is entered as 00). Spaces are allowed anywhere in the hex command string to make entry and verification easier.

You can not place more than one CAT1HEX or CAT2HEX macro in a function key message but the message can contain one of each macro. The exception to this rule is when the {END} macro is used. More than one radio command can be sent to the radio by placing a \ character between the radio commands. Spaces are allowed around the \ character. Multiple radio commands are broken into separate radio commands and sent to the radio using internal command pacing.

Depending on the computer speed and the number of commands in the string, the use of these macros may delay the operation of the program during sending of CW or other program operation. There are no precautions which prevent the use of these macros while the radio is transmitting. If the user wants to switch an antenna port safely, use the {ANTRX#TOGGLE} macros which contain a TX inhibit.

An example of an Icom command is: {CAT1HEX FEFE66E01C0102FD \ FE FE 66 E0 1C 01 02 FD }

Macros: **{CAT1ASC radio_ASCII_command(s)} {CAT2ASC radio_ASCII_command(s)}**

These macros can be used to send commands to radio # 1 or radio # 2 requiring ASCII data input. The macro name must be followed by the radio ASCII data and closing terminator }. An example is shown below. All leading spaces before the radio command portion begins are removed and not sent to the radio. All other spaces in the command are sent to the radio.

You can not place more than one CAT1ASC or CAT2ASC macro in a function key message but the message can contain one of each macro. The exception to this rule is when the {END} macro is used. More than one radio command can be sent to the radio by either placing a \ character between the radio commands or by concatenating them together. Spaces before or after the \ character are sent to the radio. Multiple radio commands using the \ separator are broken into individual radio commands and sent to the radio using internal command pacing.

Special characters may be included in the radio command string by delimiting the two character hex value with < >. The leading < and trailing > characters are not sent to the radio. Spaces are not allowed inside the < > characters. If the ASCII radio command requires you to use characters that are interpreted by the Logger as macros (*, !, #), then in order to hide the character from the Logger's macro processing and send it to the radio, it must be encoded using this hex notation (replace * with <2A>, ! with <21>, and # with <23>).

Depending on the computer speed and the number of commands in the string, the use of these macros may delay the operation of the program during sending of CW or other program operation. There are no precautions which prevent the use of these macros while the radio is transmitting. If the user wants to switch an antenna port safely, use the {ANTRX#TOGGLE} macros which contain a TX inhibit.

Examples of several forms of this command are: {CAT1ASC PB1;PB2;} {CAT1ASC



PB1;PB2;} {CAT1ASC P<42>1;PB2;} . You may place a space between the macro name and the radio CAT command to improve readability. All leading spaces after the CAT1ASC macro command name are removed. As an example of the use of hex notation, this command contains a macro character {CAT1ASC *UM0} and will not work correctly; the correct form using hex notation would be {CAT1ASC <2A>UM0} . If the radio command needed to be terminated with a CR (Orion), the command would be {CAT1ASC <2A>UM0<0D>}

CATAHEX, CATIHEX, CATAASC, CATIASC, CATACTASC, CATACTHEX Macro Commands

Active Radio Macros: **{CATA1HEX radio_hex_command(s)}**
CATA2HEXradio_hex_command(s)} **{CATA1ASC radio_ASCII_command(s)}**
{CATA2ASC radio_ASCII_command(s)}

Inactive Radio Macros: **{CATI1HEX radio_hex_command(s)}** **{CATI2HEX radio_hex_command(s)}** **{CATI1ASC radio_ASCII_command(s)}** **{CATI2ASC radio_ASCII_command(s)}**

These eight macros's provide flexibility to send ASCII or HEX commands to either radio in SO2R mode (or VFO in SO2V) mode based on Active or Inactive radio/VFO. Radio specific commands were added for those SO2R users that do not have identical radios. The new macros follow the same syntax as the CAT1HEX and CAT1ASC macros.

The F-key macro text passes through a routine that removes CAT macros for radio(s) that do not qualify based on Active/Inactive radio(s). This allows one F-key string to be used for multiple purposes.

An example of a Pro3 macro string that switches DualWatch and the Rx antenna based on the radio activity is shown below. {catA1hex fefe6ee0 12 00 00fd}{catI1hex fefe6ee0 12 00 01fd}{catA2hex fefe6ee0 07 c0 fd}{catI2hex fefe6ee0 07 c1 fd}

Macro: **{CATACTASC}** This macro sends the ASCII command to the currently active radio

Macro: **{CATACTHEX}** This macro sends the HEX command to the currently active radio

Macro: **{CATDELAY}** This macro suspends the entire program operation to allow CAT commands to be received and executed by the radio possibly before a transmission begins. The need for this macro is dependent on the computer speed, radio interface rate, and radio type. The form of the CATDELAY macro is {CATDELAY N} where "N" is a user programmable delay in 50ms increments. The value of N is

internally limited to 20 which would be a delay of 1 second. Note that the delay will precede the sending of the macro. Delay will not insert a delay with a string of multiple macros.

Antenna and Rotor Control Macro Commands

Macros: **{ANTRX1TOGGLE}** **{ANTRX2TOGGLE}** **{ANTRX3TOGGLE}**
{ANTRX4TOGGLE}

These macros can be used to switch between antenna ports and toggle the receive antenna input on some radios when the program is not transmitting. Some radio models have multiple inputs but lack the CI-V command to control the port so the functionality of these macros is radio dependent. When the **{ANTRX#TOGGLE}** macro is executed, the numbered antenna port is selected. If the same antenna port macro executed again and the radio is equipped, the receive antenna will be toggled on and off with each macro execution. If the antenna port is switched to another port, the current setting of the RX antenna is stored and used when this antenna is selected again. If only one radio antenna port is used it is only necessary to assign that **{ANTRX#TOGGLE}** macro to a F-key to toggle the RX antenna on/off quickly.

Supported radios: Yaesu FT950, FTDX9000, FT2000 Icom: IC746, IC746Pro, IC756, IC756Pro, IC756Pro2, IC756Pro3, IC775, IC7700, IC7800 and Elecraft K3, TenTec Orion, Kenwood TS2000, Kenwood TS-590S

Macro: **{TURNROTOR}** Turn the rotor to the direction based on the calculated direction

Macro: **{LONGPATH}** Turn the rotor to the calculated longpath direction

Macro: **{STOPROTOR}** Stop turning the rotor. Note that per the manual some functions are not supported for all rotor brands

CW Macros

CW macros are only substituted when used in substitutions for CW buttons.

CW Program Control and Prosign Macros

Macro keyword	Substituted by
<	Increment CW speed with 2 wpm.
>	Decrement CW speed with 2 wpm.
~	Send half space character. See examples
]	SK prosign . . . _ . _
[	AS prosign . _ . . .
+	AR prosign . _ . _ .

= BT prosign _ . . . _

Punctuation Macros

Macro keyword	Substituted by	Macro keyword	Substituted by
?	. . _ _ . .	/	_ . . _ .
,	_ _ . . _ _	.	. _ . _ . _

Improving CW Readability

Some calls have letter combinations where it's hard for to copy correctly. E.g. 6Y2A is often copied as BY2A. To help make your call easier to copy, go to Config >Change Packet/CW/SSB/Digital Message Buttons >Change CW Buttons, and try changing the default F1 and/or F4 message where * is used for your call. In this example, 6Y2A changes F4 from * to: **>6<~Y2A**.

Result: the 6 is sent 2 WPM slower compared to the rest of the call, and an additional half space is added between the 6 and Y. Try other combinations of the greater than symbol ">", less than symbol "<", or tilde "~" to make your call easier to copy.

CW Macro Examples

- Send the call entered in the callsign field
 - Macro: **!**
 - Send his call. The callsign entered in the callsign entry field will be sent by the program via the serial or parallel port
- Send CQ with your call sent as a macro substitution
 - Macro: **cq~test~de~***
 - The time between the words is a half space (~).
 - The * will be replaced with the callsign from the Station dialog {MYCALL}
- Send part of exchange faster (report sent 6 wpm faster)
 - Macro: **<<<5nn>>>{EXCH}**
 - The report 5nn is sent 6 wpm faster than the exchange (<<< >>>).
 - It is not necessary to return the CW speed back the original speed at the end of the function key message.

SSB Macros

SSB macros are only substituted when used in substitutions for SSB messages. SSB wav file names can be concatenated using a comma.

SSB Macros



{OPERATOR} Used to specify different wav files for each operator, to prevent confusion caused by having recorded wav files in a different voice than the operator's voice using the microphone.

See examples

SSB Macro Examples

- Send the call entered in the callsign field
 - Macro: **!**
 - Send his call. The callsign entered in the callsign entry field will be sent by the soundcard. The location of the letter and number files used to make up his call sign is set up in the Configurer under the Files tab. All of the WAV files for the letters/numbers etc. must be present in that folder. See [here](#)
- Let each operator have his own WAV files
 - Wave file name, e.g.: **{OPERATOR}\cq.wav**
 - If you specify WAV files like: {OPERATOR}\cq.wav , then as you change operators in a multi-operator contest station, the WAV files will change as well. You will have to create a full set of wav files for each operator. Note that the WAV directory syntax indicates a subdirectory under the Wav sub-directory in the N1MM Logger+ user files directory. You can also fully qualify the file name, as in:
"C:\Users\[yourWindowslogonusername]\Documents\N1MM Logger+\wav\{OPERATOR}\cq.wav"
 - The {OPERATOR} macro can be concatenated with other characters; for example, if you really wanted to, you could use: {OPERATOR}CQ.wav and keep separately-named files in the same directory:
 - **N1MMCQ.wav**
 - **PA1MCQ.wav**
 - Play exchange with operators voice: **{OPERATOR}\5905.wav**
 - {OPERATOR} is a string substitution that is only implemented for SSB messages

SO2V/SO2R Macros

SO2V/SO2R macros are only substituted when SO2V or SO2R is selected. The {CTRLFx} macros work only in SO2R mode, because their functionality is not useful in SO2V.

Single Op 2 VFO and Single Op 2 Radio Macros

Macro keyword

{ACTIVEAUDIOTOGGLE}

Substituted by

Toggles the muting and unmuting of the



{INACTIVEAUDIOTOGGLE}

AF gain on the **active** radio. This works only on radios that support this capability via the radio control port

Toggles the muting and unmuting of the AF gain on the **inactive** radio. This works only on radios that support this capability via the radio control port.

{ACTIVEAUDIOON}

Unmutes audio on the active radio; same limitation as above

{ACTIVEAUDIOOFF}

Mutes audio on the active radio

{INACTIVEAUDIOON}

Unmutes audio on the inactive radio

{INACTIVEAUDIOOFF}

Mutes audio on the inactive radio

{OTHERBAND}

Sends the band of the other (inactive) VFO/radio (e.g. 80)

{OTHERMHZ}

Sends the frequency of the other (inactive) VFO/radio in MHz (e.g. 3.5 and 3R5 in CW)

{OTHERFREQCUT}

CW only. Sends last digits of the frequency of the other (inactive) VFO/radio as cut numbers. Uses the cut number style selected in Configurer

{JUMPRX}

Change the RX focus to the other input window. If only one input window is shown the second window will be opened

Change both the RX and TX focus to the other input window. If only one input window is shown the second window will be opened

{WIPE}

Wipe the focus window. If the entry boxes are all empty, restores the last wiped contact ("unwipe")

{CTRLFX}

SO2R only. Works with RTTY and CW. Sends on the other radio. Thus a CW Button might look like: "tu EXCH{CTRLF9}" where F9 on the other radio is set to send a CQ. It is important to note that via hotkey Ctrl+Shift+L will turn this feature on or off. When off the CTRLFn macro is ignored. Entry focus moves to the other radio only when the callsign field on the current radio is empty.

{CONDJUMP}

When RX and TX focus are split between two radios, and the user hits the Enter key, TX focus is first moved to the radio with RX focus. The CW message is sent.



After the CW message has been completed, TX and RX focus are both moved to the other radio. When RX and TX focus are not split between radios, and the user hits the Enter key, the CW message is sent. When the CW message has been completed, TX and RX focus remain unchanged.

Typical usage in Sprint is: Run F3: TU {END} {CONDJUMP}

{QSYCQ}

Allows QSYing to the last CQ frequency on the focus radio

{STOPTX}

In specialized SO2R scenarios, forces PTT to be released. Rarely needed, and not for SO1R use.

Multi-User Macros

Multi-User macros are only substituted when in Multi-User mode.

Macro keyword

{MESSAGE}

Substituted by

Send a message (via function key) to other connected computers over the network. Explained in the next section. Substitute the computer name for NAME. Pass frequency to the computer name on the network. The computer names are listed in the Network window. The Pass frequency is rounded to the nearest kHz. Insert pass frequency for first connected computer found on the designated band. Valid frequency values are every band in kHz 1800 through 241000000 (example: PASS 1800).

{PASS NAME}

{PASS 1800}

...

{PASS 241000000}

{PASSMSG NAME}

Substitute the computer name for NAME. Pass last QSO information to the computer name on the network. The computer names are listed in the Network window.

{PASSMSG 1800}

...

{PASSMSG 28000}

Pass last QSO information to the first connected computer found on the designated band. Valid frequency values are every band in kHz 1800 through 28000 (example: PASSMSG 1800).

{LASTPASSEDFREQ}

Sends the pass frequency for the station most recently alerted to expect a pass.



Typical use case would be to right-click on the band button for the band you want to pass the other station to, then send a function key message containing the {LASTPASSEDFREQ} macro to tell the other station what frequency you want him to QSY to. The right-click on the band button sends a message to the operator for that band, telling him the call sign of the station being passed, and the {LASTPASSEDFREQ} macro is replaced by the pass frequency for the station he is being passed to. If the frequency includes a non-zero fractional part (rounded to one digit), an R is sent in place of the decimal point. If there is more than one station on the selected band, the Run station is selected if there is one, otherwise the first station on that band that has a pass frequency set is selected. Note that if the last frequency passed has not changed (e.g. the station being passed to is running and was passed to before), it is not necessary to right-click on the band button to reset the pass frequency.

{MESSAGE} Macro Examples

The {MESSAGE} macro sends a message (via a function key) to other connected stations over the network. The info will be shown in big red letters in the Info window from the receiving station(s). Place the name of the station directly after the {MESSAGE} macro if you want to send the message to one specific station. If you don't want to send to a specific station, put "- " in front of the message.

{MESSAGE} Macro Examples

Button text F8 Pass station

Macro

```
{MESSAGE} BobsPC {TIMEGMT} {PASS  
1} {CALL} {GRIDSQUARE}  
{GRIDBEARING}deg. {KMGRIDDISTANCE}  
km.
```

Message sent to the station named "BobsPC" with info about the station in the callsign field. This is a macro which could be used in a contest where a station is sent from one band to another

F8 Pass station

{MESSAGE} - {TIMEGMT} {PASS 1}
{CALL} {GRIDSQUARE}
{GRIDBEARING}deg. {KMGRIDDISTANCE}
km.
Message sent to all connected stations
with info about the station in the callsign
field

Digital Macros

The following substitutions will be made when sending function key.
In the Digital interface the macros below can be used but also all other macros
shown under general macros.

Macro keyword

{TX}

{RX}

{CLRRX}

{CLRTX}

{SCQ}

{GRAB}

{DELALL}

{DELTOP}

{DELSEL}

_

^

{FILE:xxxx}

Substituted by

Start transmission in the digital interfaces
(needed to transmit!) Needed at
thebeginning of every Digital macro!
Switch to receive in the digital interfaces
(needed to get back to receive). Needed
at the end of every Digital macro!
Clear the RX window. This macro can be
used either alone or after an {END}
macro.
Clear the TX window.
Placed at end of TU macro, resume CQ
Grab first callsign from grab callsign
window
Delete all entries from grab callsign
window
Delete Top Entry from grab callsign
window
Delete highlighted entry from grab
callsign window
(Underscore) MMTTY only. Send an idle
tone
Send the ! character (! sends the other
station's call; use ^ to put a ! character in
a message)
Send a textfile. xxxxx is replaced by the
name of the text file, which must be in
the FunctionKeyMessages subdirectory in
the N1MM Logger+ user files area. The
macro works any place in a macro string.
If the text file only contains one line it
does not add CR to end of line. When the



{LDIGFQ}
{RDIGFQ}
{PREVTIME}

{ALIGN}

{PROFILE0}

{PROFILE1}

...

{PROFILE8}

{HXXXX}

{DI1}...{DI24}

{LOGTHENGRAB}

\$

text file contains multiple lines the CR from the last line will be removed so the following text will be on the same line (use an {ENTER} macro if you wish to separate the following text from the end of the file). Multiple {FILE:xxxx} macros are allowed in one macro string

Left Digital Interface Frequency

Right Digital Interface Frequency

Send previously sent time (for ANARTS and BARTG and similar contests)

Move signal into bandpass range. Does the same as Align Buttons on Digital Interfaces and the PSK Engine

MMTTY only. Reset to HAM default

definitions for RTTY mark, space, width

MMTTY only. {PROFILE1} through

{PROFILE8} in the function keys at the

start of a CQ or S&P macro will change

MMTTY's profile. This way it is possible to

have one profile for CQing and another

one for S&P or however you want to set

them up

HAL DXP38 only. The DXP-38 commands

are in the form of Hex that look like \$80

\$EA. This macro substitution takes the

text string in the form of {HXXXX} or

{H80EA} and converts this to the

appropriate command that should be sent

to the TU. See the RTTY chapter for more

HAL DXP38 info

Send text assigned to the digital macro keys DI-1 to DI-24 on the Digital Interface

Run Mode only. Log the current contact

and grab the top callsign from the Grab

window of the DI. If the grab window is

empty, logs the current contact and then

switches to the TU key message instead

of continuing with the rest of the

message containing {LOGTHENGRAB}.

See the documentation in the Digital Call

Stacking section at [Single Operator Call](#)

[Stacking](#)

WAE contest only. Used in the Agn RQTC

message to send the QTC number when

asking for a repeat of a single QTC (see



	the Config > WAE > Open QTC setup area > RTTY Setup menu item in the Entry Window)
{ALT-T}	Same as keyboard ALT+T - Toggle TX/RX state
{ALT-Q}	Same as keyboard ALT+Q - Return to CQ frequency
{ENABLEAFC}	Turn AFC on
{DISABLEAFC}	Turn AFC off
{ENABLENET}	Turn NET on (not applicable in FSK)
{DISABLENET}	Turn NET off

Always use {TX} and {RX} together

Use {TX} and {RX} together in your macros. Otherwise, {TX} alone in a macro will cause the radio to **remain in transmit** until you press an RX button or the ESC key

TNC - Clear Buffer After Abort

It is best to add the command that your TNC uses to clear the transmit buffer to the end of your Abort Macro. If not, the transmit buffer still holds the remaining characters that were left in the sent string and will get sent the next time the TNC sends.

RTTY and PSK Macro Examples

Example Function Key Macros

Macro: **{TX}{ENTER} ! {LOGTHENGRAB} TU NW {F5}{F2}{RX}**

Log the contact, grab a call from the Grab box and give an exchange to the next station. If the Grab box is empty, this macro will log the contact and just send the TU message instead.

Macro: **{TX}{ENTER} ! {LOGTHENPOP} TU NW {F5}{F2}{RX}**

Log the contact, pull the next callsign from the call stack and send the exchange to him (see [Single Operator Call Stacking](#)). If you want to stack another station that has called you, just Alt-Click on the call in the RX window and it will be placed on the call stack where you can get it with this macro.

Example Macros for the PK-232 (Digital Interface window)

Button text

Abort

TX

RX

Macro

{CTRL-C}R{ENTER}TC{ENTER}

X{ENTER}

{CTRL-D}

Band Up RxReverse

RB U{ENTER}
RXREV T{ENTER}

Example Function Key Macros for the PK-232 (Entry window)

Mode	Button text	Macro
Running	F1 CQ	X{ENTER}CQ CQ CQ TEST DE {MYCALL} {MYCALL} K CQ{CTRL-D}
Running	F2 Exch	X{ENTER} ! UR 599 {EXCH} 599 {EXCH} BK{CTRL-D}
Running	F3 Tnx/Grz	X{ENTER} ! TU GL DE {MYCALL} QRZ{CTRL-D}
S&P	F1 {MYCALL}	X{ENTER}! DE {MYCALL} {MYCALL}{CTRL-D}
S&P	F2 Exch	X{ENTER}! UR 599 {EXCH} 599 {EXCH} GL DE {MYCALL}{CTRL-D}

Example Macros for the KAM

Button text	Macro
Abort	{CTRL-C}R RTTY {ENTER}
TX	{CTRL-C}T
RX	{CTRL-C}E

Example Macros for the SCS PTC (Digital Interface window)

Button text	Macro
Abort	{ESC}CLR{ENTER}{CTRL-D}{ENTER}
TX/RX	{CTRL-Y}
RX-Reverse	{ESC}TR 1{ENTER}
RX-Norm	{ESC}TR 0{ENTER}
45 Baud	{ESC}BAU 45{ENTER}
75 Baud	{ESC}BAU 75{ENTER}
Command mode	{ESC}Q{ENTER}
- - -	- - -
RTTY	{ESC}Q{ENTER}BAU{ENTER}
PSK31	{ESC}Q{ENTER}PSKT{ENTER}

Example Function Key Macros for the SCS PTC (Entry window)

Mode	Button text	Macro
Running	F1 CQ	{CTRL-Y}CQ TEST DE * * * k{ENTER}{CTRL-Y}



Running	F2 Exch	{CTRL-Y}! HI 599 {EXCH} {EXCH} K{CTRL-Y}
Running	F3 CFM	{CTRL-Y}! QSL TU DE * QRZ? K{CTRL-Y}
S&P	F1 {MYCALL}	{CTRL-Y}! DE * * K{CTRL-Y}
S&P	F2 Exch	{CTRL-Y}DE * TU 599 {EXCH} {EXCH} GL DE *{CTRL-Y}

Example Function Key Macros for MMTTY (Entry window)

Mode	Button text	Macro
Running	F1 CQ	{TX} CQ CQ CQ TEST {MYCALL} {MYCALL} CQ {RX}
Running	F2 Exch	{TX} ! UR 599 {EXCH} 599 {EXCH} {RX}
Running	F3 Tnx/Qrz	{TX} ! TU {MYCALL} QRZ {RX}
S&P	F1 {MYCALL}	{TX} ! {MYCALL} {MYCALL}{RX}
S&P	F2 Exch	{TX} ! 599 {EXCH} 599 {EXCH} {MYCALL}{RX}
Send CQ on new line	F1 CQ	{TX}{ENTERLF} CQ {MYCALL}{RX}

Packet/Telnet Macros

Packet/Telnet macros are only substituted when used in the packet/telnet buttons.

Macros for use in packet/telnet buttons

Macro keyword	Substituted by
{WAIT}	Wait 5 seconds (fixed value)

Macros for use in 'Comment For All Spots' (in Telnet/Packet window)

Macro keyword	Substituted by
{GRIDSQUARE}	Gridsquare from grid textbox in Entry window
{MODE}	Mode used during contact in Entry window
{QTH}	QTH from section/qth textbox in Entry window
{ZONE}	Zone for

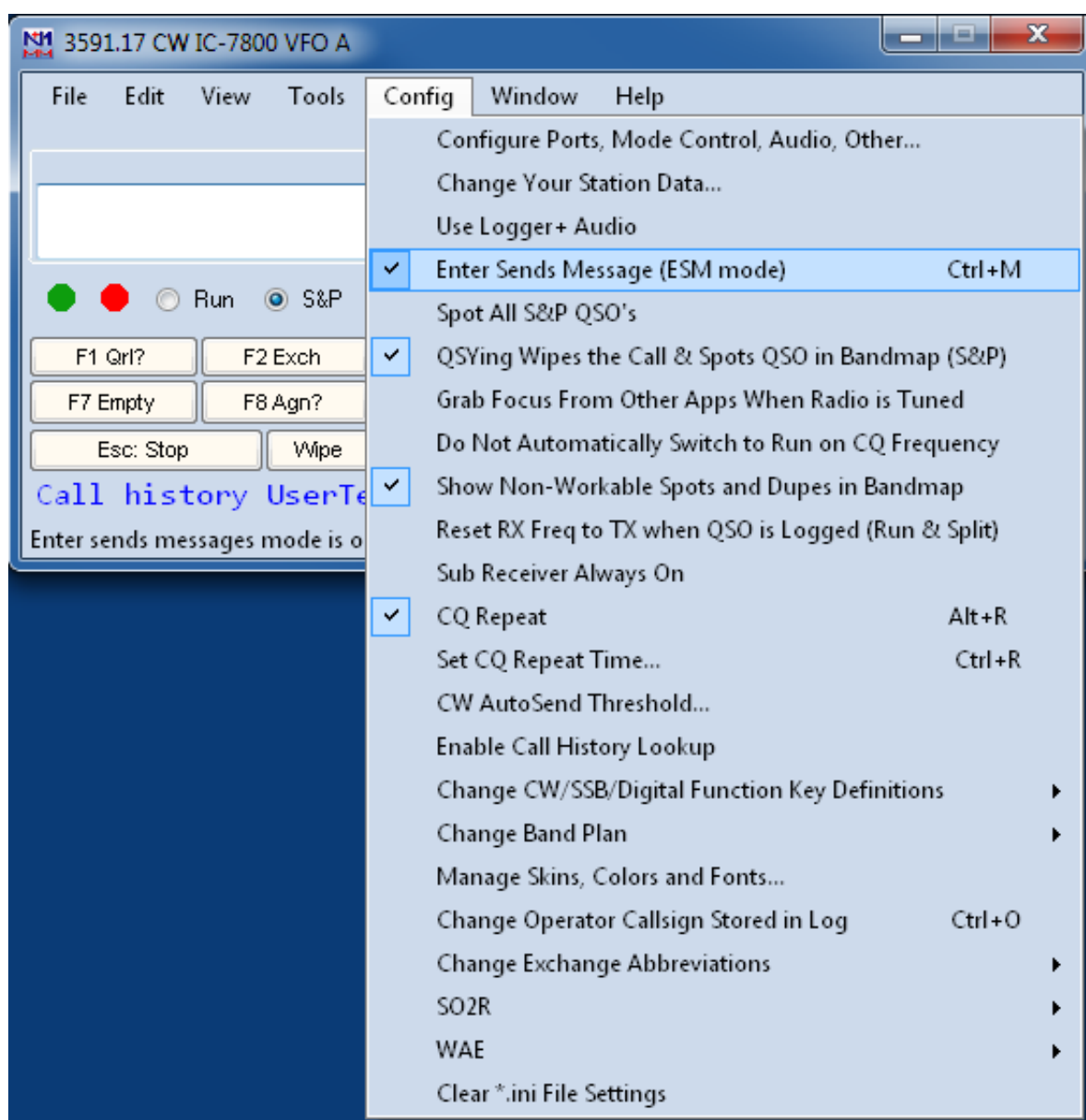
state/province/section/oblast/other
textbix in Entry window

ESM - Enter Sends Message

ESM Overview

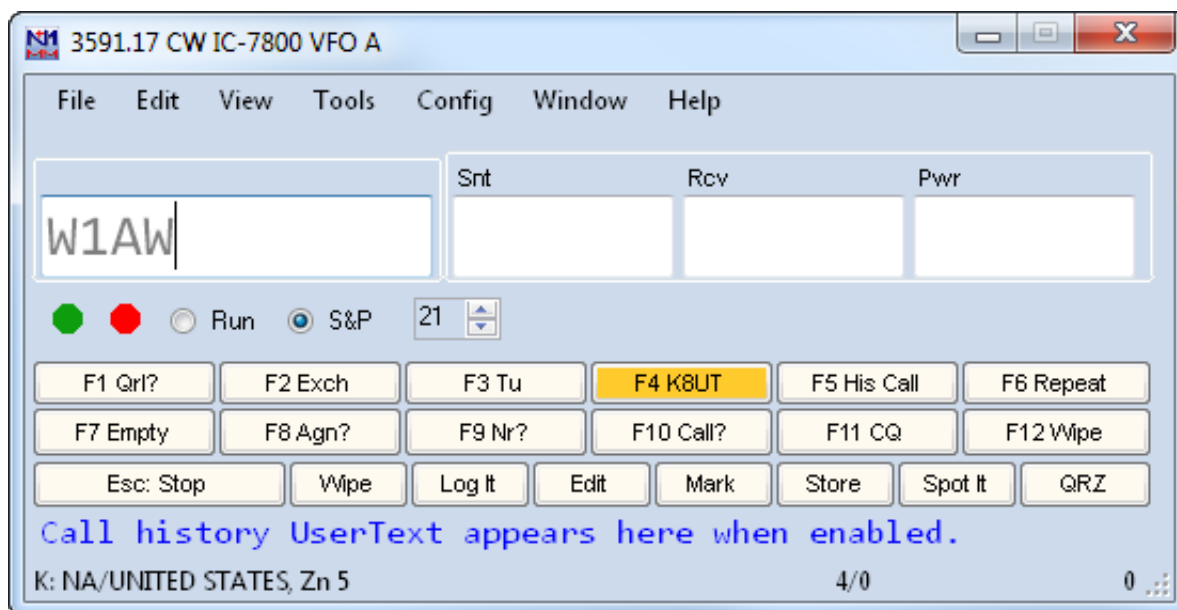
This section provides a step-by-step introduction to ESM. Try it, and we can almost guarantee you'll like it.

The first step is to turn it on. Open the Config menu in the Entry Window, and select ESM

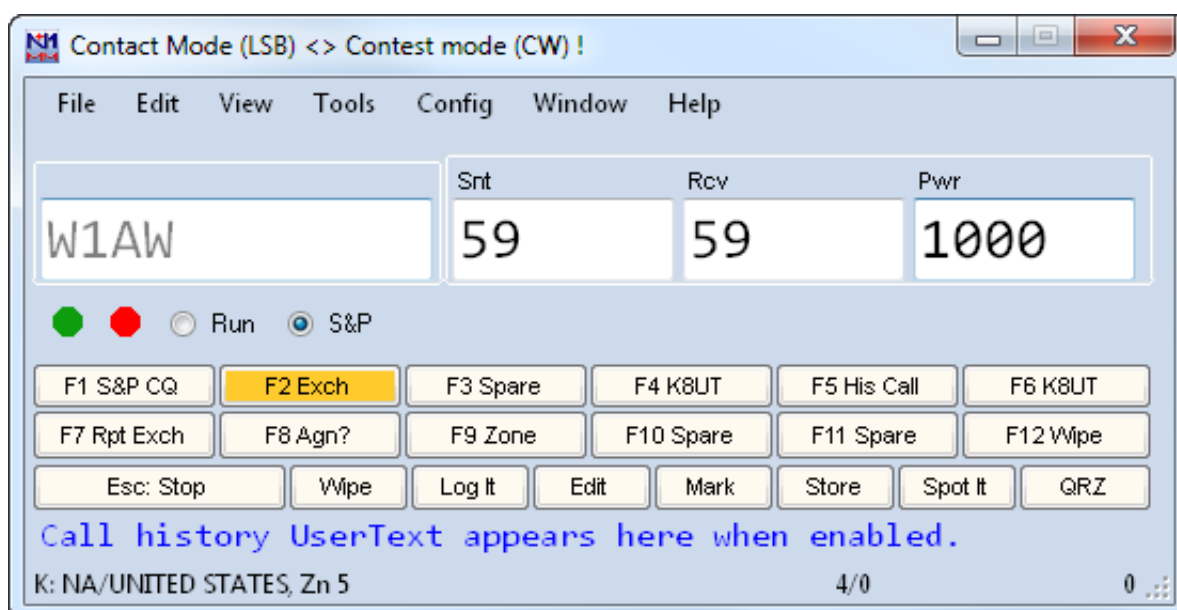


Now close the menu and enter any call in the entry window. We're assuming that

you are doing S&P.



What's different? Take a look at the F4 button. The highlight means that if you press [Enter] at this point, the F4 message will be sent (which is what you want – your call). Press [Enter], your call is sent, but the cursor remains in the callsign field, and F4 is still highlighted. If he doesn't answer the first time, just press [Enter] again. If he answers you, hit [Space], and the cursor will move to the Exchange box. You are not ready to send your exchange to him yet, because you have not yet copied his exchange, so now F8 (Agn?) is highlighted. Type in the exchange you receive from him, and look!



Now F2 is highlighted. That means that the next time you hit [Enter], the program sends F2 and logs the QSO.



So instead of an 8 step process to work an S&P QSO, you have either 3 or 4:

1. Enter the callsign
2. Press [Enter]
3. (optional) If he doesn't answer, press [Enter] when it's time to call him again; if he does, press [Space] and copy his exchange
4. Press [Enter] again to send your exchange to him and log the QSO.

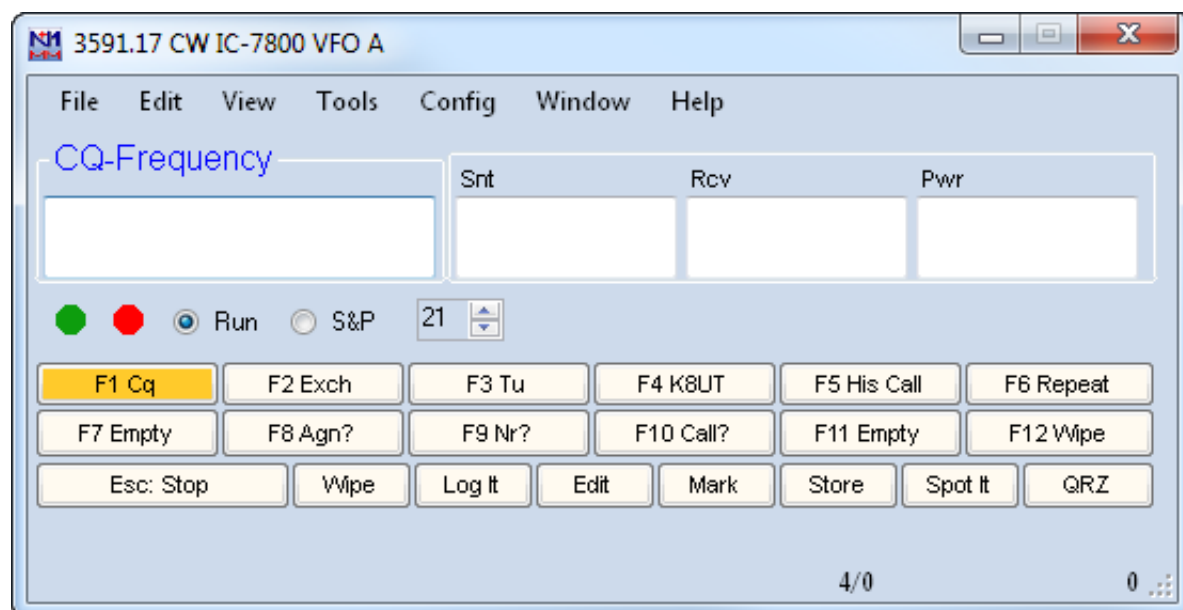
What is this “Big Gun” switch?

What's described above is the default behavior in S&P ESM, which assumes you won't get answers every time (or even most times) you call somebody. If you're louder than that, you may want to change the behavior. Go to the Configurer (the first option on the Config menu), click it, choose the Function Key tab, and look for the option “ESM sends your call once, then ready to copy S&P exchange.” Check that, and the behavior changes. Enter now sends your call once, and the cursor then moves to the Exchange textbox. At the same time, the Function Key highlight moves to F8 Agn. Type in his exchange, and the highlight moves to F2 Exchange. Press Enter, and your exchange is sent to him. If you already have a valid exchange in the Exchange textbox, whether you type it or it is pre-filled, the highlight will move directly to F2 instead of going to F8. Once F2 is sent, the QSO is logged, and the highlight moves back to F4, ready to call the next station.

Big Gun Tip

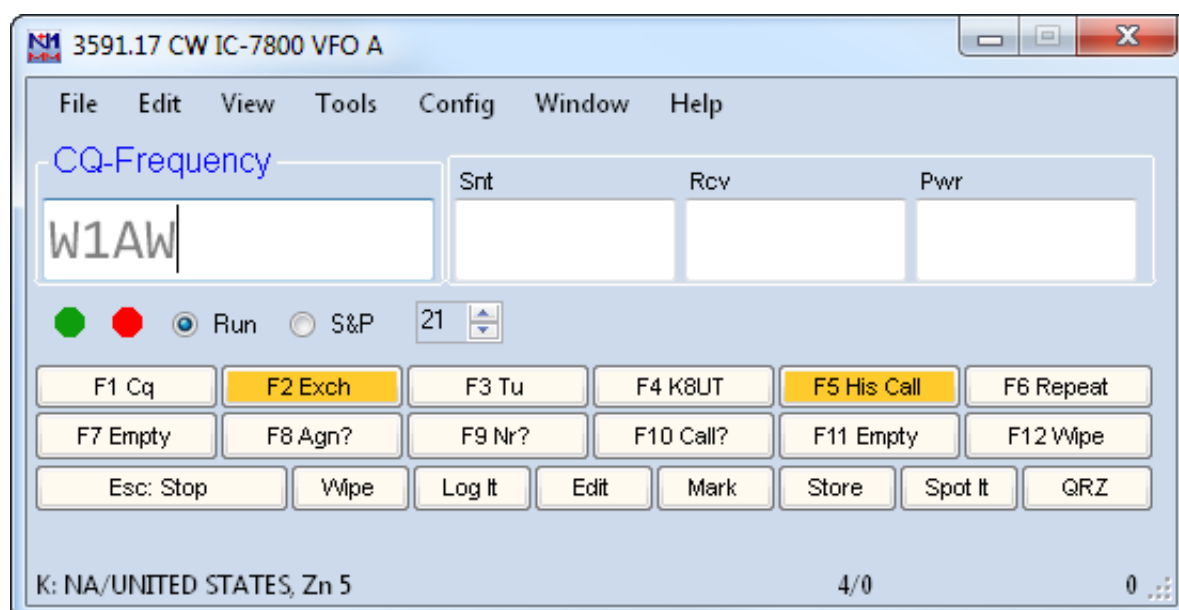
One little trick to use with the Big Gun switch **on** is to program your call in F8 instead of “again”. This way, when you don't get the guy on the first call, hit Enter again to repeatedly send your call until he answers (and the cursor is always in the right place when he does answer). 73 de Ted W4NZ

But suppose you're Running (Calling CQ)? The first thing to do is tell the program. You do that by checking the box next to the word “Run”, either with your mouse or by hitting [Alt]+U. Now your Entry Window looks a bit different:



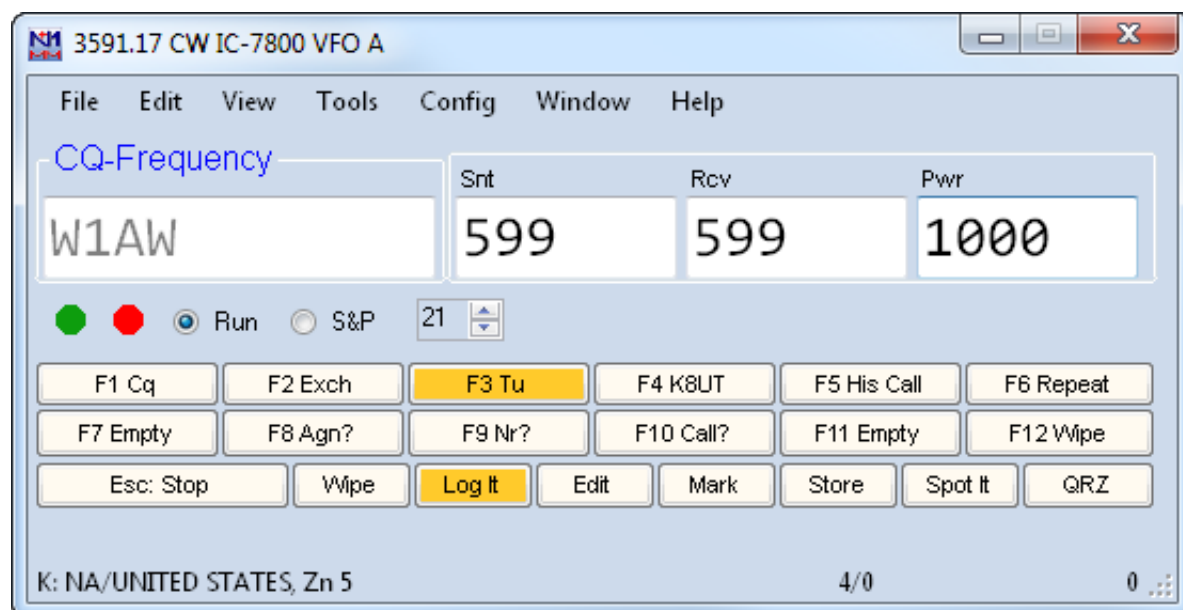
Note the highlight is now on F1, because the first thing in most Run QSOs is a CQ. Press [Enter] and the program will send F1.

Now someone answers. Type in his callsign and the window changes.



You're starting to get the hang of this - the highlights mean that when you hit [Enter] the program will send F5 followed by F2 (on CW - on phone you would speak the callsign and then press [Enter] to send your exchange).

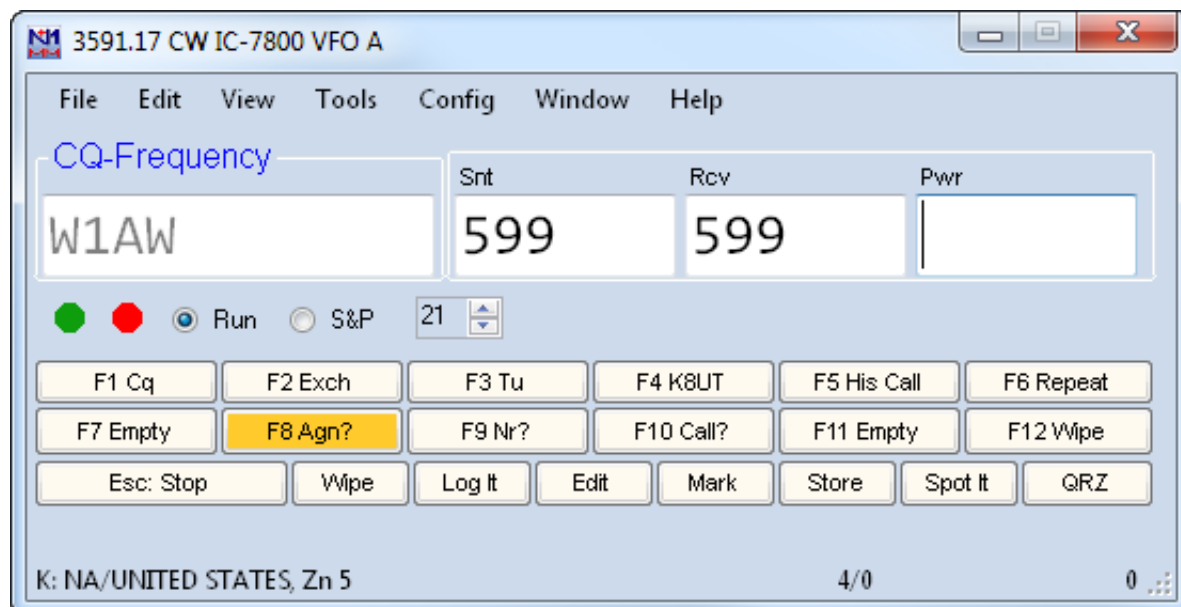
Once you have done that, the window changes again.



Now the highlights tell you that you have copied a legitimate exchange (in this case the program has supplied it from the callsign), and that the next [Enter] will send your F3 message and log the QSO.

So, type a callsign, hit [Enter] 3 times, and you've logged a QSO. Pretty slick!

Now suppose you're like me and you fat-finger copying the exchange, so that you have nonsense in the Exchange box, like this. In that case, the program reminds you:



If you hit [Enter] with an incorrect exchange, the program will send the F8 message and request a repeat. Alternatively, if you see your mistake and correct it, the screen changes again to show the "F3 and Log It" highlights. Just press [Enter], the

program sends the F3 message, logs the QSO, and you're done.

Once you've used ESM, I predict you'll never go back to the old way again.

F1 Call CQ - A special Function Key that switches to Run Mode automatically

The developers have reserved F1 as the "Call CQ" key. Pressing it while in Search and Pounce mode will switch you to Run mode. Although we do not recommend changing it, there are at least two ways to redefine F1: modify the ESM function key assignment table (see below) or use the {S&P} macro at the end of your F1 definition to force the program back to S&P mode.

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting

☒ Send leading zeros in serial numbers ☒ Stop sending CQ when callsign is changed

☐ Send cut numbers ☐ ESM sends your call once in S&P, then ready to copy received exchange

☒ Send corrected call before end of QSO ☒ Work dupes when running

☒ Send partial calls

☒ Use CW contest word spacing

String to use on cw between his call key and exchange key (default is one space)

186 Keycode of Ins Key

222 Keycode of TU/Log Key Substitute

Make sure that the key mappings defined below match the contents of the keys as defined in Config/Change CW buttons, Config/Change SSB Buttons and Config/Change Digital Buttons.

CQ Key: F1

End of QSO: F3

My Call Key: F4

Again Key: F8

Next Call: Disabled

Exchange Key: F2

His Call Key: F5

QSO B4 Key: F6

Cut Number Style (if enabled): T1234567890 (leading T)

OK Cancel Help

Two further refinements, and then this chapter is done. Open the Config menu again, and then open the “Configure Ports, Telnet Address, Other” sub-menu. Click on the Function Keys tab:

In the left-hand column, note that I have checked “Send Corrected Call.” This neat feature, in Run mode, keeps track of whether you have changed the callsign in the callsign box. For example, say you only copied “DL6A” at first, and filled in the rest later. Eventually, you copy DL6ABC, and when you press [Enter] to send the F3 (TU message), on CW the program sends “DL6ABC TU ...” On phone, you’ll need to supply the correction.

In the right-hand column, the third checkbox is clumsily titled “ESM only sends your call once in S&P, then ready to copy received exchange.” In shorthand, we call this the “Big Gun switch.” If you nearly always get stations you call the first time, you can save a keystroke by having the cursor advance automatically to the exchange box after the first time you call. If you often need to call again, don’t check it. If you have checked it, and need to call a station more than once, you just press **F4**, regardless of where the cursor is.

ESM cursor behavior and the Digital Interface window

Because of the ability to transfer data from the DI window to the Entry window with a mouse-click, the behavior of the cursor moving between the boxes in the Entry window is slightly different when the DI window is open than when it is closed. If you are using ESM in CW or SSB with the DI window open and the cursor does not move between the call sign and exchange boxes when you expect it to, try closing the DI window.

Repeating what was last sent

When in ESM mode, you sometimes need to repeat whatever you last sent, be it your call or exchange element or other function key. The “=” key will do that. Rather than look at the Entry Window and figure out which function key to send, just press the equal key if you just want to send what you last sent again. Easy!

Caution

Don’t change the “key mappings” (below the red type on the Function Key tab of the Configurer) unless you absolutely know what you’re doing – it can make a horrible hash out of ESM.

The chart below outlines the possible combinations of information in the Entry window, and what will be sent in each situation.

Note: ESM is affected by two options in the Configurer under the Function Keys tab:



- the “ESM sends your call once in S&P, then ready to copy received exchange” check box (sometimes called the “Big Gun” option)
- the “Work dupes when running” check box (recommended)

ESM Mode *Enter* Key Actions

Callsign field	Exchange field	In Run, Enter sends	In S&P, Enter sends
Empty	Empty	CQ (F1)	My Call (F4)
New Call (1st time)	Empty or invalid	His Call + Exch(F5 + F2)	My Call (F4)
New Call (repeat)	Empty or invalid	Again? (F8)	My Call (F4)
New Call (repeat) - ESM sends call once... checked	Empty or invalid	Again? (F8)	Again? (F8)
New Call (before sending exchange)	Valid	His Call + Exch(F5 + F2)	Exchange + Log(F2 + Log It)
New Call (after sending exchange)	Valid	End QSO + Log(F3 + Log It)	Log(Log It)
Duplicate Call	Empty or invalid	QSO B4 (F6)	do nothing
Duplicate Call (before sending exchange)	Valid	His Call + Exch(F5 + F2)	Exchange + Log(F2 + Log It)
Duplicate Call (after sending exchange)	Valid	End QSO + Log(F3 + Log It)	Log(Log It)
Dupe (1st time) - Work Dupes checked	Empty or invalid	His Call + Exch(F5 + F2)	do nothing
Dupe (repeat) - Work Dupes checked	Empty or invalid	Again? (F8)	do nothing
Dupe (before sending exchange) - Work Dupes checked	Valid	His Call + Exch (F5 + F2)	Exchange + Log(F2 + Log It)
Dupe (after sending exchange) - Work Dupes checked	Valid	End QSO + Log (F3 + Log It)	Log(Log It)

ESM on Phone - One Special Feature

There’s every reason, when running CW or RTTY, to use stored messages for almost every transmission. Phone is different - you may not want to have the computer talk for you all the time.

- Most operators choose to say callsigns and serial numbers themselves, rather than having the computer assemble them from individual letters and numbers. See the next section for more discussion of these issues, and for information on how to set up your Function Key definitions, whether you

choose to let the computer do it all or not.

- In some contests like CQWW, the exchange is so short that it may be more hassle than it is worth to have the computer voice your CQ zone.

Or... you may forget, particularly when you are running tired, and say the other station's call and your exchange before you realize you've done so.

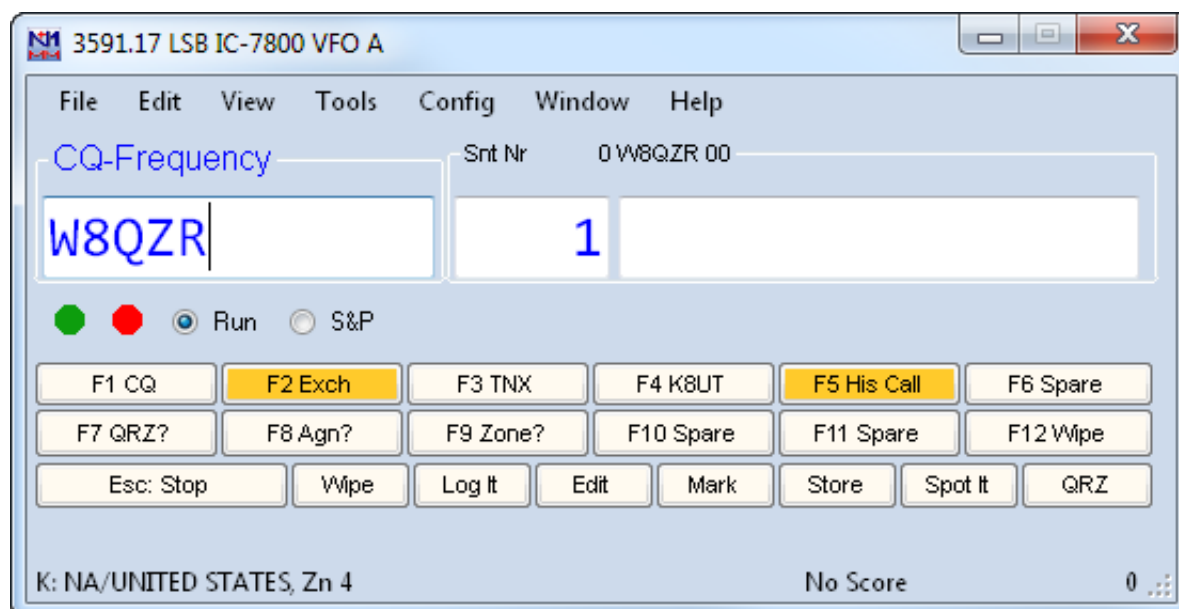
To deal with this, N1MM Logger incorporates some additional flexibility. Here's how it works, courtesy of the inventor, N2IC:

You are in Run mode. A station answers. You type in the callsign, and you use your live voice to send the callsign and exchange. Now, the station you are working is about to send his/her exchange. If, at this point, you hit the Enter key, your exchange wav file would be sent. That is bad – you already used your live voice to send the exchange. Instead of hitting the Enter key, hit the Space bar. Now, type in the other station's exchange. Hit the Enter key, and the "Thanks" message will be sent, and the QSO will be logged.

In summary, the decision of whether to use the Enter key or the Space bar at that step in the logging process depends on whether you use your live voice to send your exchange, or a wav file.

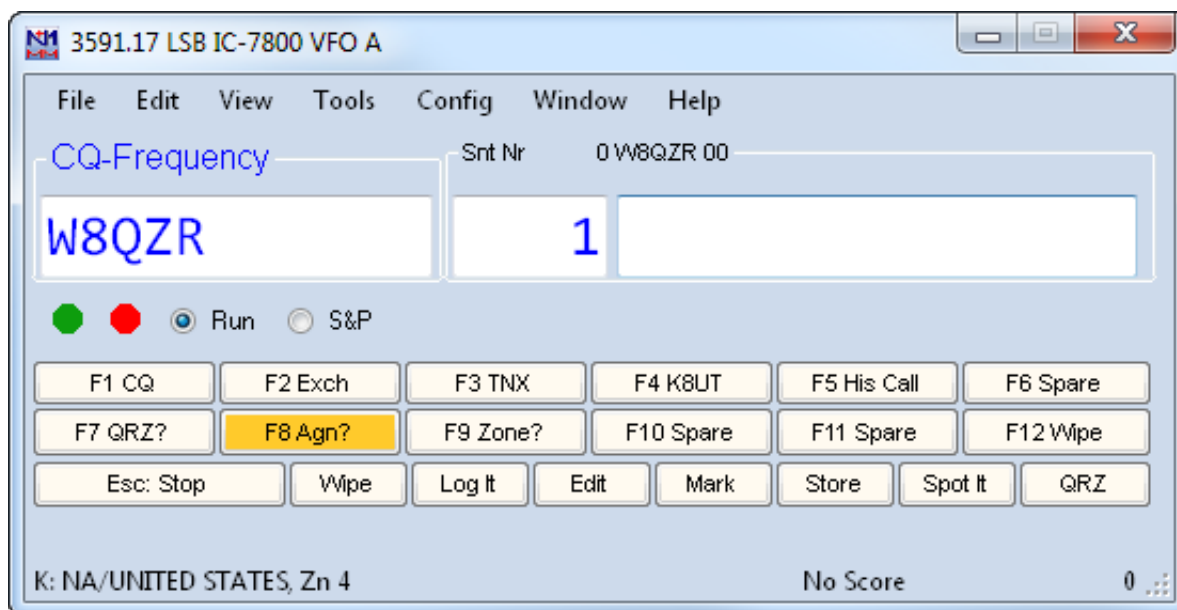
Here's an illustrated version of how it works:

You're running, and W8QZR calls you. You type his call into the callsign field.

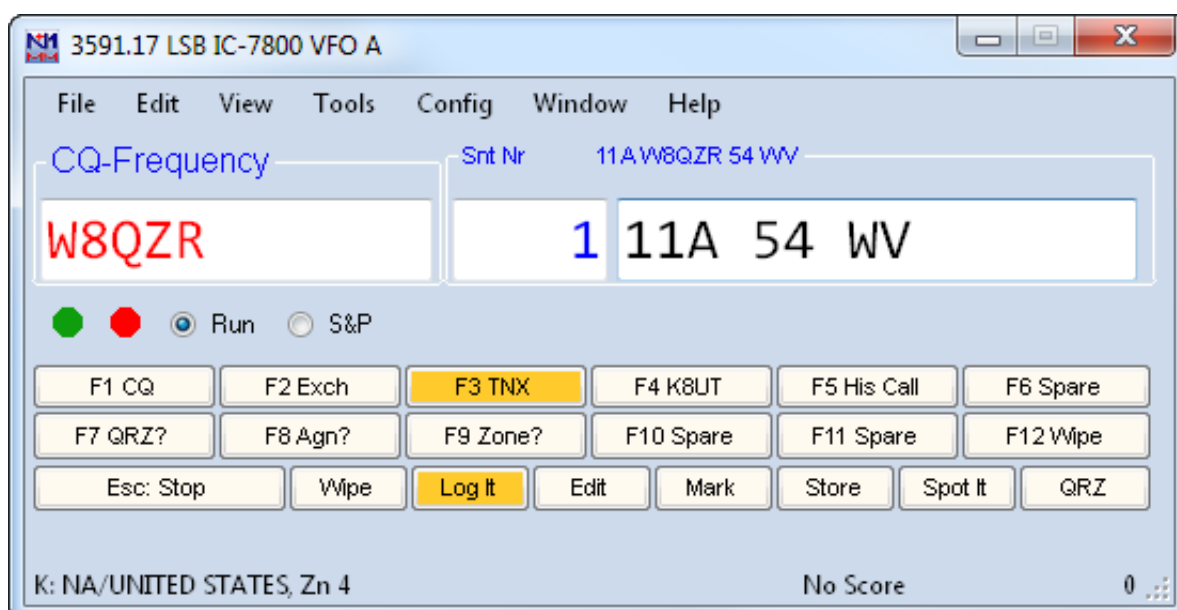


Then, for whatever reason, you **say** his call and the exchange instead of having the computer do it. If you then hit Enter, the program will, as it says, transmit his call and the stored exchange message. Not what you want.

Instead, you hit the Space bar.



Perfect! Now the cursor is in the Exchange field. There is nothing in the exchange field yet, so F8 (Agn?) is highlighted. Type in his exchange.

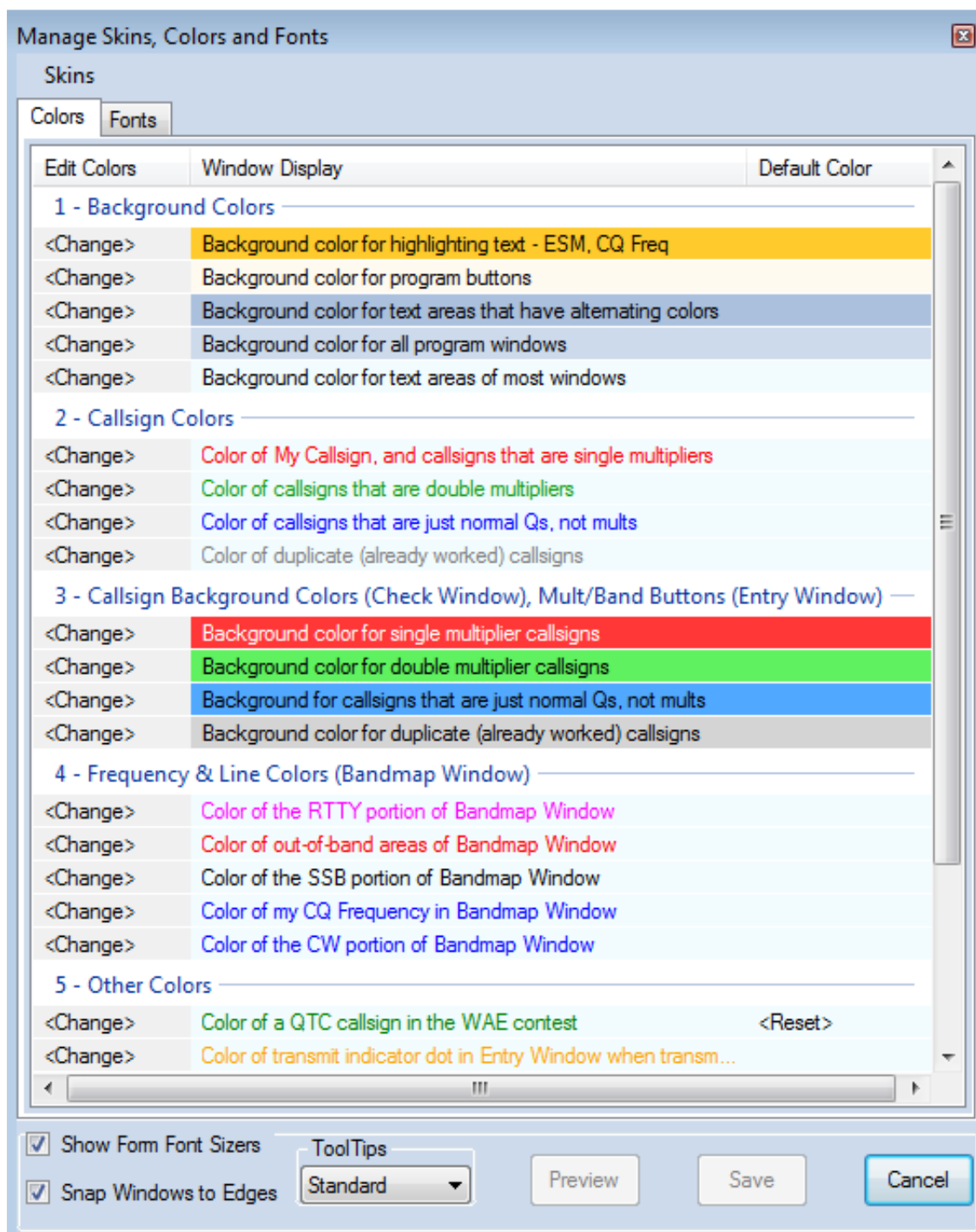


The highlight moves to the TU and "Log It" buttons, just where they should be. Hit Enter, and the computer will log the QSO, send your "TU QRZ" message and be all ready for the next QSO.

Skins, Colors and Fonts

Skins, Colors and Fonts

The configuration settings for N1MM Logger Plus allow customization of most of the fonts and colors used in the program. To access the Manage Skins, colors and Fonts dialog window, select *Manage Skins, Colors and Fonts* on the Entry window's Config menu.



Colors Tab

The Colors tab displays the current setting for 24 program colors. Clicking the [Change] button in the left column allows you to select a different color. If you select a color different than the default skin color (read about the default color below), a [Reset] button will appear in the right hand. Clicking [Reset] will revert that color to the program's default value, regardless of the skin you are currently using.

Color settings can be grouped in three categories: Global, Shared, and Dedicated.

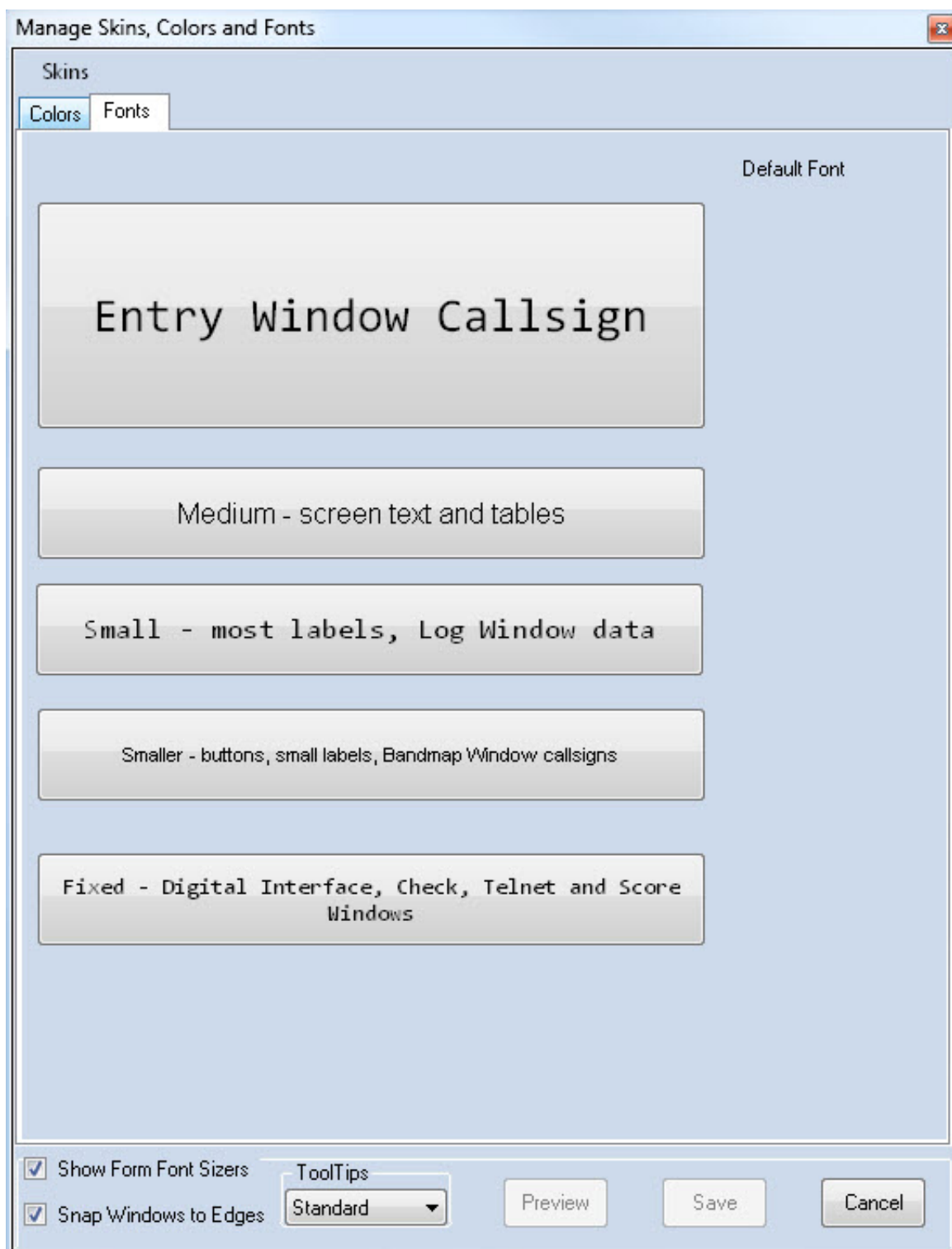
- Global color settings affect every window in the program. Examples of Global colors are:
 - Background color for all program windows
 - Background color for program buttons
 - Background color for text areas of most windows
- Shared color settings affect several windows in the program. Examples of Shared colors are:
 - Callsign colors (dupes, normal Qs, mults, double mults): Affect the colors of callsigns in the Bandmap, the Digital Interface Receive window, and the Entry Window callsign field
 - In an example of *extended sharing*, in the Function Key Editor, Comment lines are identified by using the callsign Dupe color, Run Message lines are the normal QSO color, and S&P Message lines are the Double Mult color.
 - Callsign background colors (dupes, normal Qs, mults, double mults): control background colors in the Check window and the Entry window Band Panel buttons.
- Dedicated colors affect only one window. Examples of Dedicated colors are:
 - Frequency and line colors only affect the Bandmap(s)
 - Background color, color of normal text, and Color of My Callsign all apply only to the DI Receive window
 - Color of transmit indicator dot in the Entry Window - the color the normally red dot turns to when transmitting

Fonts Tab

The Fonts tab displays the current setting for five program fonts. Clicking on the font description allows you to select the font family and default font size. If the selected font family and size are different than the default program font (read about the default font below), a [Reset] button will appear to the right of the font description. Pressing [Reset] will revert that font to the program's default value, regardless of the skin you are currently using.

When making large changes to font sizes, some windows may not automatically

adjust to the new sizes. It might be necessary to close and re-open the windows for the new size to display properly.



- Entry Window Callsign
Controls the font family and size for the Entry Window fields – callsign, signal report and contest exchange
- Medium – Screen Text and Tables



Controls the font family and size of warnings and special messages in the Entry, Info, and Multipliers windows

- Small – most labels, Log and Network Status Window data
Controls the font family and size for notes in the lower portion of the Info Window and the grids of the Log and Network Status Windows
- Smaller – Buttons, Small Labels, Bandmap Window Callsigns
Controls the font family and size for all program buttons and tabs, notes in the upper portion of the Info Window, summary table in the Available Mults and Qs Window, frequency and callsigns in the Bandmap, text in the Multiplier Window. This font is used in every window of the program.
- Fixed – Digital Interface, Telnet and Score Windows
Controls the font family and size for the Check Window, Telnet Window, Digital Interface Receive Window and the Score Summary Window.

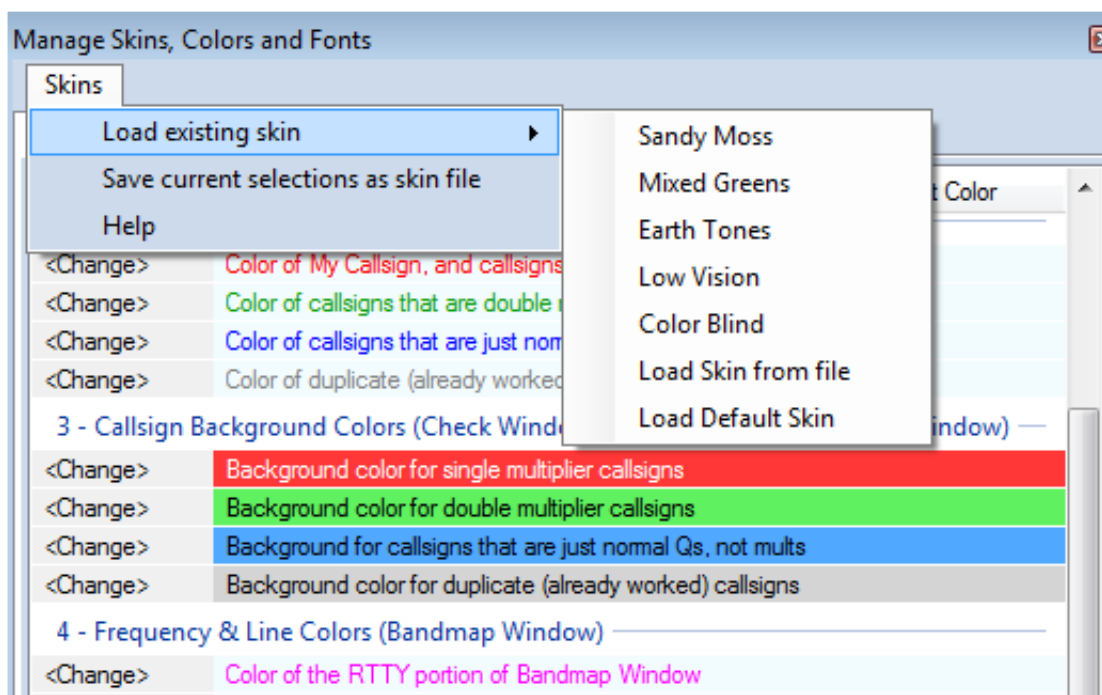
Font Sizer

Most windows have a “Font Sizer” in the upper right-hand corner. You can use this control to adjust the font of a particular window to be larger or smaller than the default. This control only changes the main font of the window. See [Show Form Font Sizers](#) below.

The Skins Menu

Click the link at upper left.

Load Existing Skin



Skins are collections of settings that include the font family, font size, and colors. N1MM Plus includes a variety of built-in skins (see screenshot) from which you can choose. You cannot change these built-in skins, but you can use them as a foundation in creating customized skins.

Load Skin from File

Loads font and color settings from a .SKIN file. The files must be located in your Documents\N1MM Logger+\SkinsAndLayouts directory.

Load Default Skin

Self-explanatory. Gets you back to the default set of colors and fonts.

Save Current Selections as Skin File

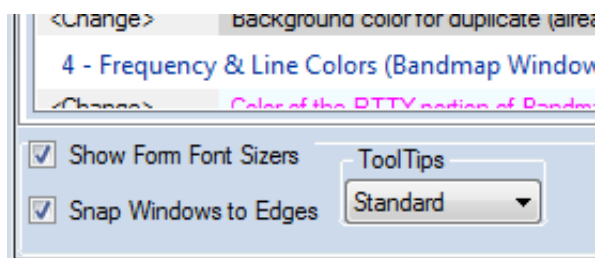
After adjusting colors and fonts, you can save the settings in a .SKIN file, which will be stored in your My Documents\N1MM Logger+\SkinsAndLayouts directory.

Saving Your Skin

From a process perspective, you do not make Skin Changes. You make Font and Color changes. Begin by loading a skin that resembles what you want. Then make changes to Fonts and Colors. When you settle upon a combination that you like, select *>Skins >Save current selection as a skin file*.

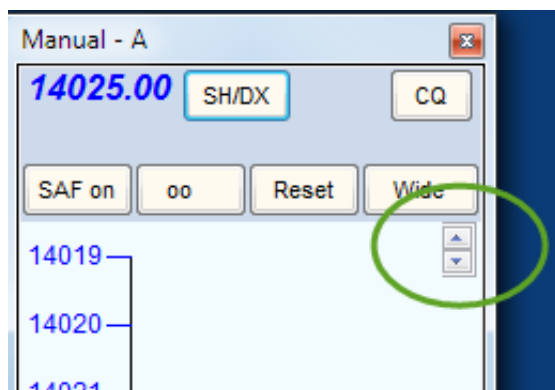
Pressing the *>Save* button after making changes to Fonts and Colors will preserve the changes you have made, but does not write those changes to a skin file. The original skin file from which you started is unaffected unless you overwrite it with *>Save current selection as a skin file*.

Other Settings



These are found in the lower frame of the dialog, and displayed along with any of the tabs

Show Form Font Sizes

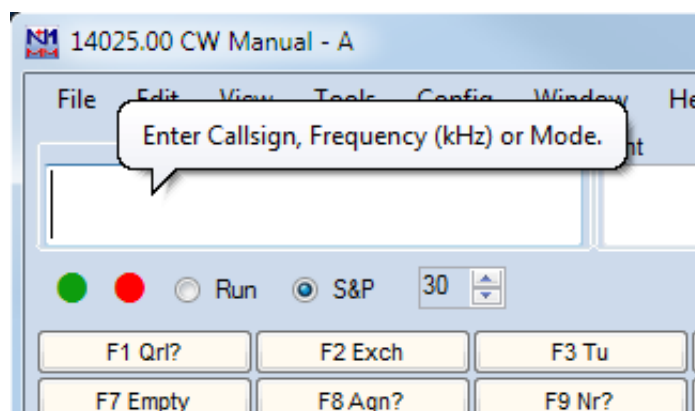


Enabling this setting allows individual font sizes in specific windows, regardless of the default font size setting. When enabled, Font Sizer controls will appear in the upper right-hand corner of the following windows: Telnet, Log, Available Mults & Qs, Multiplier, Digital Interface, Info, Check, Score Summary, and Bandmap.

Snap Windows to Edges

Enabling this setting simplifies the task of aligning program windows adjacent to each other.

Tooltips



Tooltips display helpful hints that appear when you pause your mouse over certain locations in program windows. The option at the bottom of the Skins, Colors and Fonts window allows you to choose between **no** tooltips (once you feel comfortable with the program), “standard” tooltips (usually one line of text) and “balloon” tooltips that may be several lines. You’ll find tooltips particularly useful in the Bandmap and Available Mults and Qs windows, where mousing over a call-sign displays the age of the spot, who spotted it, how long ago, and anything that was in the Comment field of the spot.

Changing Font Size and Color in Windows’ Title Bars

From Tom, N1MM - 2017-04-05



N1MM+ users have posted questions and submitted feature requests to change the appearance of the title bars in the application. Unfortunately, that is not something that Microsoft puts under application control. There are two things I found that you can do to improve the appearance of the title bars.

1. This is the important one. Go to Display Settings/Advanced Display Settings/Advanced sizing of text and other items/Title bars and set the text size & bold attribute that you like. The bigger the text, the more legible it will be (especially if bold), but the more space every window on your computer will take up.
2. To change the background color of the **inactive** windows, go to <https://www.tenforums.com/tutorials/32118-change-color-inactive-title-bar-windows-10-a.html> to learn how to do it. You have to edit the registry, and be pretty facile with hex/decimal manipulation to be successful at this one. Not recommended for most users. Again, this affects all the windows on the system. I chose to make my idle title bars the same color as the main window color in the skin that I use. Note that the color order is BGR, **not** RGB.

Interfacing

Interfacing

Serial, Parallel and Sound Card Interfacing

Ports Used for Interfacing

The program can interface with your radio using several ports from the computer. These ports are:

- Serial port – A serial port can send CW, control PTT or communicate with your radio; with some radios you may be able to do all three on one port. Hardware serial ports are rapidly disappearing from most computers, but if the computer has open PCI bus slots, inexpensive serial and serial/parallel port cards are available. Alternatively, USB-to-serial adapters may be used.
- Parallel port – Parallel (LPT) port interfacing is quite flexible. In addition to controlling CW and PTT, N1MM Logger uses the LPT port to control popular SO2R control boxes, and to send band information to a band decoder for automatic antenna or bandpass filter switching. With one exception, USB-to-parallel adapters will not work here. Note also that you will still need a separate virtual or hardware serial port for radio control, because radio control cannot be done from a parallel port.
- USB port – Most computers now have multiple USB ports. USB-to-serial adapters can be used to provide full serial port capabilities, but be aware that not all such adapters (or their drivers) work well with N1MM Logger+. See [USB Interface Devices](#) for specifics. There are also many different interface devices available that use USB port control for a full gamut of capabilities. See the chapter [Supported Hardware](#) for more information.
- Sound card – N1MM Logger+ can use your computer's sound card to record your contest QSOs, and also to send stored audio messages to your transmitter in response to function key presses. The sound card may be on the computer's motherboard, or a separate card internal to the computer, or an external sound card interfaced to the computer with a USB cable. For these purposes, it is best to find a computer or sound card that has separate microphone and line input jacks, as well as a line out jack. Some sound cards (particularly in laptops) now come with only two jacks, or even with only one "combo" jack, and the input jack may not be switchable between microphone and line levels. If this is the case, you will not be able to run your microphone through your sound card and record QSOs at the same time.

Troubleshooting Com Port In Use Errors

Com Port In Use Error Messages – Occasionally Windows can get confused and orphan both physical and virtual comports. These ports are not visible to the user in Device Manager, but Windows will enumerate them causing failures when trying to create a virtual com port where one invisibly already exists. This procedure will in most cases allow the user to un-hide hidden com ports in order to delete them eliminating possible com port conflicts. Before starting, shut down your radio and close any programs what may be using the virtual com ports, like SmartSDR CAT or other third-part applications.

- Click Start, point to All Programs, point to Accessories, and then click Command Prompt.
- At a command prompt, type the following command , and then press ENTER: `set devmgr_show_nonpresent_devices=1`
- Type the following command a command prompt, and then press ENTER: `start devmgmt.msc`
- Troubleshoot the devices and drivers in Device Manager.
- Click Show hidden devices on the View menu in Device Manager before you can see all devices associated with the computer.
- Scroll down to the Ports section and you will be able to see all the hidden and unused COM ports. The hidden com ports have a grayed out icon next to them.
- To delete a particular port, click to highlight it and hit the Delete key on your keyboard. In the Confirm Device Removal dialog box, click OK.
- After you have deleted the unused and hidden COM ports, the list will show only those COM ports you use or may use in the future. Be careful not to delete com ports that are working properly.
- When you finish troubleshooting, close Device Manager.
- Type exit at the command prompt.

Note that when you close the command prompt window, Window clears the `devmgr_show_nonpresent_devices=1` variable that you set in step 2 and prevents ghosted devices from being displayed when you click Show hidden devices.

Finally – if all else fails – this suggestion from Peter DF1LX: “I had this problem for some month. Nothing helped me what was mentioned in this thread. Only using the registry editor and searching for the comx value show, that another program, which never use any com port have a registry entry which show this com port. Deleting this registry entry and the problem was done. I would do this as last option if the given hints are not working.”

Radio interfacing

Radio manufacturers have supplied various means for interfacing radios with computers for radio control functions. All of these interfaces appear to the computer software like a standard RS-232 serial port, but the hardware actually used varies

considerably. At a minimum, the features supported by radio control interfaces include reading and setting operating frequencies and modes. Most but not all radios that support radio control from a computer also supply commands for the computer to control TX/RX switching (PTT). Newer radios support control of a wide variety of other features, such as RIT/XIT control, switching of filters, and other functions.

The earliest radio control interfaces generally used TTL voltage levels on the radio connector which were not compatible with RS-232 signal levels, and therefore required external radio control interface boxes to perform the level switching between TTL (0 and +5V) and RS-232 (-12V and +12V) logic levels. These interfaces use the RS-232 TxD and RxD signal lines for data communication, and some of them also require RTS/CTS handshaking, which can often be simulated by simply setting the RTS line always on. These external radio control interfaces require DC power, which can either be supplied separately, or in some cases from one of the RS-232 control lines (usually DTR or RTS), in which case the control line supplying the DC power must be configured to be always on. At the computer end or the hardware connection, if the computer does not have serial ports a USB-to-serial adapter can usually be substituted.

Some newer radios have true RS-232 serial ports, in which case an external level switching interface is not needed, but otherwise these are configured similarly to the earlier TTL-level radio control ports. For the most part, these serial ports still only support radio control data over the RxD and TxD lines, possibly supplemented by RTS/CTS handshaking, but in at least one case (the Elecraft K3), the radio's RS-232 port also supports direct keying of CW and PTT inputs using the DTR and RTS control lines. Again, either a true serial port or a USB-to-serial adapter can be used at the computer end of the connection.

More recently, as serial ports on computers have become increasingly rare, some newer radios have incorporated a USB-to-serial adapter internally, so that the hardware connection to the radio is a simple USB cable. Nevertheless, the drivers for these USB ports still appear to the software to be standard RS-232 serial ports. In many cases, the same USB connection is also used to drive a CODEC ("sound card") internal to the radio, which eliminates the need for audio connections between the computer and the radio, but from the point of view of the software, that single USB connection appears to be two separate devices: an RS-232 serial port, and a standard computer sound card. These two devices must be configured separately, regardless of the fact that they share a single cable.

Interfacing for PTT and CW Keying

Choosing Your PTT Method

N1MM Logger+ offers multiple methods for controlling PTT on your radio. Unless

you use VOX, or QSK on CW, you will need to select one of these methods, and your choice may vary depending on the mode you want to operate, your radio's capabilities and how you choose to use them, any existing interfaces or other PTT wiring done for use with other programs, and so on.

The available methods are:

- **Hardware PTT** – uses serial (COM) or parallel (LPT) ports. Software controls the state of individual lines on the port for PTT and CW (and in the case of the LPT port, additional SO2R-related functions). This requires a driver (INPOUT32) – see [Installing the Software](#) for specifics. Works with USB-to-serial adapters, but will not work with USB-to-LPT adapters except for the [Piexx SO2RXLAT](#).
- **Software PTT** – uses PTT (TX/RX) commands sent to the radio through the radio control port. For certain radios that incorporate a radio CODEC (effectively, a sound card inside the radio), if you wish to use it either for AFSK (digital modes) or as a voice keyer for SSB, you will need to use Software PTT. Check the [Supported Radios](#) section for your radio setup instructions. Software PTT is great with some radios, such as the TS-590, but with others, which require a longer delay between CAT commands, it will be slower than hardware or Winkey PTT. In the case of Icom radios, when a data collision is detected, the PTT may fail to actuate or hang in transmit, requiring an ESC to return to receiving. Also, please note that N1MM Logger+ cannot control PTT for a built-in DVK, as compared to a CODEC, because if the recorded message is not sent from the computer, the program cannot know when the recorded message has finished. Such DVKs must use VOX, for this reason.
- **Winkeyer PTT** – uses PTT provided by the Winkeyer USB series of CW keyers, but also works for SSB and digital modes. If a port is set up to control a Winkeyer, PTT is automatically active on the real-panel jacks of the Winkeyer, and it needs only to be cabled to the appropriate jack on your radio. If you are using the original, version 10 of the K1EL Winkeyer, the Pin 5 Function in the Configurer Winkey tab must be set to PTT. Winkeyer PTT is the most flexible of the PTT options, particularly on CW, because you can set the inter-character “Hang Time” separately from the end-of-message Tail Time. The settings are on the [Winkeyer tab in the Configurer](#). If you chose to use one of the other methods for PTT control, simply omit this cable.
- **Digital Modes PTT** – If using FSK, configure MMTTY to a COM port or EXTFSK/EXTFSK64 for FSK keying, and also configure it for PTT on the same port. To use a radio CODEC for AFSK in digital modes, PTT must be handled by N1MM Logger+ using Software PTT (see above). For AFSK not using a built-in radio CODEC, use the Logger's PTT options for other modes, or configure PTT in MMTTY. If you want to use the same COM port for PTT in digital and non-digital modes, then you must check “Digital” on that port in the Hardware tab of the Configurer, and configure MMTTY for PTT. This tells the Logger to close the port and hand it over to MMTTY when you switch to a

digital mode.

For SSB or digital modes, use any of the options above. Remember, if you are using your radio's audio CODEC, you will need to use Software PTT and omit COM or LPT hardware PTT control.

For CW, if you have a Winkeyer, Winkeyer PTT is recommended, because it gives you the most flexibility in setting hang and tail time. If you do not have one, but have a serial or USB port, Hardware PTT is probably the simplest. You can do this with a simple transistor switch off the appropriate line of a serial port or a USB-to-serial adapter. CW and PTT can be handled on a single port, and with some radios it may even be possible to do radio control on that port as well if the radio does not need the RTS and DTR lines to be set in a particular way (since these lines are used for CW and PTT).

Choosing Your CW Method

N1MM Logger+ offers multiple methods for keying CW on your radio.

The available methods are:

- Hardware CW – uses serial (COM) or parallel (LPT) ports (usually separate from the radio control port). Software controls the state of individual lines on the port for PTT and CW (and in the case of the LPT port, additional SO2R-related functions). This requires a driver (INPOUT32) which is installed by the Full Installer. Works with USB-to-serial adapters, but will not work with USB-to-LPT adapters except for the [Piexx SO2RXLAT](#).
- Winkeyer CW – uses a K1EL Winkeyer or equivalent. This is the most-recommended method, because it is virtually immune to timing problems that might be caused by unexpected events in the computer (such as a Windows Update, virus checker update, or other resource-intensive activity that might be taking place behind the scenes). CW timing with a Winkeyer is controlled externally to the computer. The Winkeyer can also be used with a paddle as a regular CW keyer, with the advantage (over a separate keyer or the built-in keyer in some radios) that paddle and computer keying are integrated, e.g. touching the paddle interrupts computer keying without any doubling up or garble, and paddle and computer speeds are the same).

No Support for CW Keying by CAT Command

There are a few radios (Kenwood, Elecraft, Flex) that allow sending CW via “KY” radio command messages. This method is **not supported** by the Logger team. This does not mean it won't work at all. You can program such radio command messages into function key messages using {CAT1ASC} macros, but apart from the fact that this only works with certain radios, there are several other limitations to this method:

- You can only put one of these CAT1ASC macro commands in each function key message.
- The number of characters that can be sent in such a message is limited (or with some radios, fixed to an exact specified number of characters). Note that this is the number of Morse code characters, including spaces, that the message is converted to, not a count of the number of characters in the N1MM Logger+ command. Therefore you need to design your messages so that they will take no more than (or exactly) that number of characters, even with the longest call sign and exchange you are likely to need during the contest. **If you exceed the length limit in a composed message, nothing might be sent.**
- You cannot send ad lib Morse code from the program this way, i.e. the Ctrl+K command to send keyboard CW does not work with this method.
- Editing call signs on the fly does not work with this method.
- The “send corrected call sign” feature does not work with this method.
- The “CW autosend” feature does not work with this method.
- The CW speed using this method is controlled from the radio’s CW Speed control, not from N1MM Logger+. The Logger’s CW speed control macros and the PgUp/PgDn keys will not work with this method.
- Once the function key containing one of these messages has been pressed, you can only use the Esc key to interrupt the message from N1MM Logger+ if the radio supports this capability via CAT command and it has been implemented in N1MM+ for that radio. If not, you might be able to interrupt a message in progress from the radio’s front panel controls.
- If you want to use auto CQ repeat in N1MM Logger+, the repeat interval is measured from the start of one message to the start of the next one, i.e. it includes the message as well as the time between messages. Therefore it has to be longer than the duration of your CQ message at the slowest CW speed you use. If you change CW speeds using the radio’s speed control, a repeat interval that is appropriate for the slowest CW speed will likely be longer than you would like at higher speeds.

N1MM Logger+ Does Not Support CW Keying by Audio Tone

The team sometimes gets queries about why the Logger’s CW won’t work with software or interface units that feed audio tones to a transceiver. Typically, this involves the Signalink USB interface or the software program FLDIGI.

N1MM Logger+ does not and will not support this way of generating CW. There are a couple of reasons. First, on many transceivers, when they are in USB or LSB mode, you are precluded from using CW filters and other CW receiving aids. Second, sound-card CW is fraught with problems, including audio noise in your CW, RF interference to the CW tones, and the possibility of generating two or three separate CW signals due to audio harmonics. It’s just a bad idea!

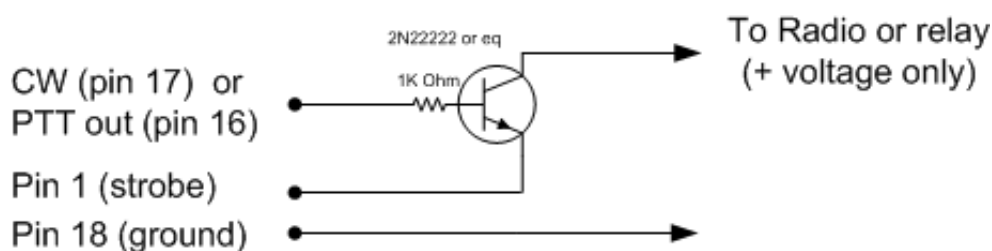
The simple interfaces described below are easily constructed at minimal cost with

readily available components.

Circuits for CW and PTT Keying

Parallel (LPT) Port for CW and PTT

This is a typical simple interface that can be used for parallel port CW and PTT keying. Separate circuits (transistors) are used for CW and PTT.



Parallel port cw or ptt interface.

LPT pin	Function
1	Strobe
16	PTT output
17	CW output
18	Ground

For hints on diagnosing problems with a parallel port, see the note under Additional Parallel Port Interfacing just a bit further on.

Serial (COM) Port

When a serial port is used for CW and/or PTT keying, it is the RTS and DTR lines that are used.

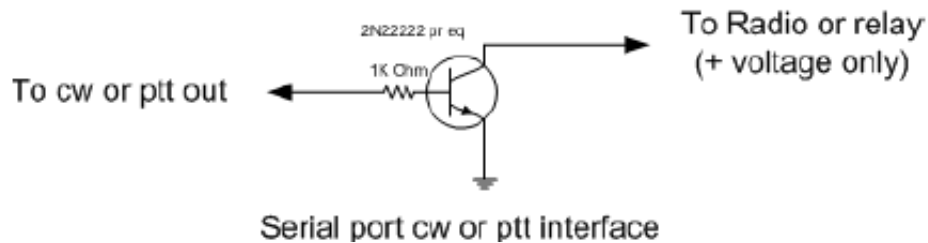
DB9 pin	DB25 pin	Function
7	4	PTT output (RTS)
4	20	CW output (DTR)
5	7	Ground

CW and PTT Port Assignments

The CW **and** PTT lines for a radio must be on the same serial/parallel port. Example: When COM4 is the CW Port and Radio 1 or Both is selected, PTT control for Radio 1 must also be on COM4. USB-to-serial converters are supported, but USB-to-LPT (parallel) converters are not.

Using a transistor

The keying circuit for serial port CW or PTT keying is similar to the circuit used with a parallel port.



- Equivalents for the 2N2222 are 2N3904, BC547 or BC548.
- NB. It isn't a bad idea to add a 1 kOhm resistor from base to ground, also adding a shunt capacitor of 10 nF is highly recommended at the collector output to ground in order to prevent RF feedback to base and subsequent blocking.

Using an opto-Isolator (opto-coupler)

Some users prefer to use an opto-isolator rather than a transistor, in order to provide more protection for the serial port in the event of something going wrong downstream. In that case, however, two special considerations may apply:

- You may need to place a diode in series with the input of the opto-isolator, to protect it from negative voltage swings on a standard serial port. Check the specifications of the opto-isolator you use to determine whether this is necessary.
- Some opto-isolators may not pull their output "low" enough (close enough to zero volts) to switch PTT or CW on a given transceiver. In that case, appropriate "pull-down" measures must be applied.

USB Port Keying

Not all computers have serial ports any more, or even if they do, there are not enough to control transceivers, packet, serial CW keying etc. In this case consider a USB-to-serial port adapter. Most of them do nicely for basic radio control functions and/or for CW and PTT keying. These devices require drivers within the computer; make sure that drivers for your operating system are available before trying to use one of these adapters.

The timing of serial port or parallel port keying can be subject to "stuttering"

caused by the CPU being unavailable to control the port while it is busy with other tasks. For perfect CW not dependent on Windows processes the usual answer is to use a Winkeyer by K1EL. The computer communicates with the Winkeyer using normal ASCII characters via the serial port, which are buffered inside the Winkeyer and converted to CW there. The CW timing is thus independent of computer processing delays. A USB/serial adapter will work fine with a Winkeyer; in fact, most Winkeyers delivered today are WKUSB keyers with a USB-to-serial adapter built in to the keyer. Check the Winkeyer manual for more information.

In some cases PTT and CW keying may unexpectedly stop working when using a USB-to-serial converter, because Windows has shut down the USB port to save power. Check this Windows setting:

- Control Panel; System Icon,
- Hardware Device Manager Tab or button.
- Expand USB Serial Bus Controllers
- Highlight each USB Root Hub or Generic USB Hub in turn
- Double click for Properties settings, Power Management tab
- Remove the check mark from 'Allow the computer to turn off this device to save power'
 - The box is checked by default in most cases
- Repeat for every USB Root Hub and Generic USB Hub
- Reboot the computer

Another overview of serial- to-USB converters can be found at the RTTY contesting page by AA5AU at: <http://www.rttycontesting.com>.

Additional Parallel Port Interfacing

If the type of CW port chosen is LPT1, LPT2 or LPT3, and a hardware LPT port is used, additional information will be present on the chosen parallel port. In the Configurer, select the radio that corresponds with the selected port (Radio 1 or Radio 2). The BCD data on the LPT is that of the current active radio/VFO. The band data is available on multiple LPT ports — Radio 1 on LPT1, Radio 2 on LPT2 and so on. USB-to-LPT converters are not supported.

LPT pin and Description

- 1** Return for PTT and CW output. This pin has limited sink capability, so you may need to buffer it
- 2** Band output (Least Significant Bit) set by Antenna tab in Configurer. This pin is also used to stop the message sent on the hardware DVK.
- 3** NA-compatible TX focus. – Radio 1/2 Pin 3 will go to a logic LOW level (0V) when Radio 1 has TX focus and to a logic HIGH level (5V) when Radio 2 has TX focus. (NB. LPT pin 3 is the complement of Pin 14). Set ONLY if no hardware DVK output is selected (msg# 1).

- 4** NA-compatible RX focus. LPT Pin 4 will go to a logic LOW level when Radio 1 has RX focus and to a logic HIGH level when Radio 2 has RX focus. Set ONLY if no hardware DVK output is selected (msg# 2).
- 5** (Shift+singlequote) to toggle for Stereo mono. LPT Pin 5 will go to a logic LOW level for mono audio and to a logic HIGH level for stereo audio. Set ONLY if no hardware DVK output is selected (msg# 3).
- 6** Set ONLY if no hardware DVK output is selected (msg# 4).
- 7** Band output set by Antenna tab in Configurer
- 8** Band output set by Antenna tab in Configurer
- 9** Band output (Most Significant Bit) set by Antenna tab in Configurer
- 14** Radio select A/B (transmit focus) for DX Doubler compatibility. LPT Pin 14 will go to a HIGH level when Radio 1 has TX focus and to a LOW level when Radio 2 has TX focus. (NB. LPT pin 14 is the complement of Pin 3)
- 15** Footswitch input port
- 16** PTT output, high = transmit mode
- 17** CW output
- 18 - 25** Return for Band output

Diagnosing Parallel Port Problems

Will all PCI-e Parallel Port Cards Work?

As fast as technology moves, it is difficult to be categorical about this, and there has been some traffic on the reflector suggesting that some families of LPT port chips are not compatible with the software components used by N1MM Logger+ to control individual lines on an LPT port. Experimental results show, however, that two families of chips do work, as of February 2013: These chips are used both in single-port cards and in combination cards (2 serial and one parallel, for example), but have only been systematically tested in the one LPT port variant.

- MOSChip Semiconductors series MCS9900. This company is now owned by Asix Electronics Corporation,. and the very latest driver can be downloaded [here](#). Specify PCIe Bridge for the product family. These chips are used in the SYBA SD-PEX10005 1 Port Parallel Card, available from the usual online sources.
- Oxford Semiconductor OX16PC952-954. This company's chips are used in several 1-port LPT cards, including the StarTech.com PEX1P, which also is widely available. Originally, they were thought to be incompatible with parallel port switching, but this does not appear to be the case (contact N4ZR for details).

Diagnosing LPT Port Issues

Recently, a number of users have encountered difficulty using PCI-e LPT ports to control band decoders, SO2R controllers, and other devices. After a great deal of experimentation, here are a few things to try if you have trouble.

- Make sure you have the correct address specified in N1MM's Configurer.

Typically, PCI-e add-in cards seem to have I/O addresses that are not the standard ones for a given port number. For example, built-in LPT1 ports typically have an address of 0378 for our purposes, which is the lower of the two I/O addresses given for the port in Device Manager. On the other hand, 3 different PCI-e cards tested all have fixed I/O addresses at D000 and D010, regardless of the LPT port number, and the correct address is the higher one – D010. When in doubt, try them both.

- The first time you run N1MM Logger+ after a new installation, don't run it from a shortcut. Instead, go into the N1MM Logger+ program directory, right-click on the executable (.exe) file, and select "Run as Administrator". It has been suggested that this step may be necessary in some cases, in order for the component that drives the parallel port to be registered properly, and it can't hurt. This is a one-time only step.

LPT Port Utility Program

K8UT discovered a nifty parallel port test utility at [HERE](#). The crucial thing it does is to tell you— if it cannot find a port at a given address. It's freeware, and can be used with a voltmeter or something controlled by the LPT port (like a band decoder), with N1MM Logger+ settings put aside for the moment it will quickly establish whether the port is working properly.

External DVK Interfacing

When you select DVK on a parallel port, antenna selection via that port is disabled, because the DVK pins and the antenna pins on the LPT port overlap. Following is the table of pin-outs for external DVK control:

F1 pin 3
F2 pin 4
F3 pin 5
F4 pin 6
F5 pins 4 and 6
F6 pins 4 and 5
F7 pins 4, 5, and 6.

When F1-F7 are pressed, a 100 ms. pulse is sent to the relevant pins for external DVK control.

In order to record messages on an external DVK, you will need to connect your microphone to it directly, and follow the procedure outlined in the DVK manual; N1MM Logger+ support is limited to triggering the first 7 memories when the corresponding Function Key (F1-7) is pressed, and stopping stored message playback when the ESC key is pressed. Some external DVKs have as few as 4 memories, in which case only F1-F4 will trigger playback.

Band Decoder Output

Pins 9, 8, 7 and 2 can be set using the Antenna tab in the Configurer. The output on the pins will follow the selected code which is being set up by the selected antenna.

Code	Result on LPT port				Code	Result on LPT port			
	pin 9 D	pin 8 C	pin 7 B	pin 2 A		pin 9 D	pin 8 C	pin 7 B	pin 2 A
0	0	0	0	0	8	1	0	0	0
1	0	0	0	1	9	1	0	0	1
2	0	0	1	0	10	1	0	1	0
3	0	0	1	1	11	1	0	1	1
4	0	1	0	0	12	1	1	0	0
5	0	1	0	1	13	1	1	0	1
6	0	1	1	0	14	1	1	1	0
7	0	1	1	1	15	1	1	1	1

Sample configs

Code	Antenna	Bands	Code	Antenna	Bands
0			0		
1	160 mtr	1.8	1	3 el yagi 10-15-20	10, 21, 14
2	80 mtr	3.5	2	3 band vertical	7, 3.8, 1.8
3	40 mtr	7	3	40 mtr dipole	7
4	30 mtr	10	4	80 mtr dipole	3.8
5	20 mtr	14	5		
6	17 mtr	18	6		
7	15 mtr	21	7		
8	12 mtr	24	8		
9	10 mtr	28	9		

To replicate the default Top-Ten Devices behavior, you would need to set up the Antenna tab in Configurer as shown above to the left|

It is possible to use more than one antenna per band with N1MM Logger+. With Alt+F9 it is possible to toggle between these antennas. List the bands for each antenna with a comma separating them - e.g. 3.5,7

Sample Config > Antenna for two stacked antennas

Code	Antenna	Bands (1.8, 3.5, 7, 14,...)	Rotor Description	Offset	Bidirectional
0	20m stack - Both	14			☐
1	20m stack - Upper	14			☐
2	20m stack - Lower	14			☐
3					☐
4					☐
5					☐
6					☐
7					☐
8					☐
9					☐
10					☐
11					☐
12					☐
13					☐
14					☐
15					☐

☐ Start N1MM Rotor Program
 ☐ Display Rotors Used By This Station
 ☐ Display Rotors Responding From Network

OK Cancel Help

You will need to make appropriate provision with a diode matrix on the output of your band decoder to select the appropriate antenna or antennas when a given code is sent from the program to the decoder. For example, if your band decoder outputs positive voltage and you use a tri-band beam with a single coax feedline, you will need diodes to sum the three signals from your band decoder into the one feedline.

Bearing Data

Bearing data for rotator control is currently not available on the LPT port.

Sound Card Interfacing

Of course, you can always use one of the many commercial audio interfaces designed primarily for digital modes. However, if you have a sound card that permits feeding microphone input through it to the line output (most do), and has a

mixer that will allow you to independently set the level of the microphone, .wav playback and internally-generated audio (such as for AFSK), you really don't need an interface at all. On SSB, simply plug your microphone into the sound card mike input. Cable the sound card's Line Out to the Line In or Phone Patch input of your transceiver, and you're done.

You may encounter hum, resulting from difference in AC potential between the chassis of your computer and that of your transceiver. In that case, a 600-ohm isolation transformer in the cable between sound card and transceiver is the cure. Another approach is to bond the transceiver and computer chassis together with a heavy wire. Many people do both.

If you absolutely must feed the audio output of your sound card into the microphone jack of your transceiver, the level will be far too high. In that case, a simple 10:1 resistive voltage divider is the solution, placed in the audio cable before the microphone jack.

In Windows 10, starting some time in 2018, there is a Privacy setting in Windows that must be set correctly to enable applications, including N1MM Logger+, to gain access to sound card inputs (e.g. for recording received audio or for decoding digital modes). In the Windows Settings window, choose Privacy, then from the areas on the left side of the window, select Microphone. An option should appear called "Let apps use my microphone". Set this to On. Starting with the Spring 2018 release, Windows 10 interprets this setting to apply to all sound card inputs, not just to the default microphone input.

Serial and Parallel port interfacing under Windows XP/ Vista/ 7/ 8/ 10

Windows XP, Vista, 7, 8 and 10 require a special dll which will be installed automatically by N1MM Logger+ to use the parallel ports.

Exposing and Deleting Phantom Serial Ports

Unlike N1MM Logger Classic, N1MM Logger+ can support serial ports numbers up to 99. The following procedure is not likely to be necessary, but you may still wish to use it to eliminate "phantom" (not used, but unavailable) serial ports from your system,

Here is how to have Device Manager expose and remove invisible serial port assignments:

1. Click on the Start button and select **All Programs > Accessories**.
2. In Windows XP, Click on **Command Prompt**; in Windows Vista, 7 or 8, Right-click on **Command Prompt** and select the **Run as administrator** menu

item.

3. Type **set devmgr_show_nonpresent_devices=1** and hit the Enter key.
4. Start Device Manager. There are many different ways to do this; one is to right-click on **Computer** (or My Computer), select **Properties**, and then click on **Device Manager**. Another is to find **Device Manager** in the Control Panel.
5. In the Device Manager window, select the **View > Show Hidden Devices** menu item.
6. Click on the + sign next to Ports to see the full list of COM ports that have been assigned in your computer.
7. Highlight an unused port number you wish to remove from the list and then press the Delete key. Accept when asked to confirm and continue with any more port numbers that you wish to delete.

Thanks to KK1L and N7WY for this tip.

Hooking up a Footswitch

A footswitch can be hooked up to a serial port or a parallel port. The footswitch program action is the same for both LPT and COM ports, i.e. footswitch closure causes the action selected in the Configurer for that port.

Parallel port

If pin 14 is not used to switch radios using an external SO2R box (for example, by using the Pause key), then hooking up a footswitch to LPT1 can be done by connecting a 10k resistor from pin 14 to pin 15. Pin 14 is normally +5V and provides pull-up voltage for pin 15.. Then connect a normally open footswitch between pin 15 and pin 18 of LPT1. Closing the footswitch pulls pin 15 low and performs the function selected in the configurer.

If pin 14 is being used for Radio A/Radio B control of an external SO2R box, a 5V supply with a 10k series resistor can be used to provide the pull-up voltage for pin 15.

Serial port footswitch information (using the 9 pin connector numbers)

Connect a 10k resistor between pin 6 and pin 7. Set DTR, pin 4 to “Always On” and RTS, pin 7 to “Always Off”. Connect the footswitch between pins 4 and pin 6. The program action will be on footswitch closure. The footswitch wires can not be referenced or connected to ground.

Avoiding RFI and Other Common Interfacing Maladies

More often than not, reports of quirky, intermittent issues with radio control, CW

and PTT interfacing, as well as hum and distortion in sound card audio, wind up being traced back to RFI – your own signal turning up where it doesn’t belong, or to improper grounding.

While we can’t afford the space to deal exhaustively with this topic, there are several good resources – the RFI reflector (RFI@contesting.com), [this paper](#) by Chuck Counselman, W1HIS, and [these papers](#) by Jim Brown, K9YC

USB Interface Devices

With the disappearance of serial and parallel ports on most new PCs, most N1MM Logger+ users are now forced to use USB interface devices to accomplish functions formerly performed using serial and parallel ports. These include consumer-grade USB-to-serial adapters as well as devices designed and manufactured specifically for amateur radio use. For the most part, with the help of software drivers installed when the device is first connected to the PC, these devices are configured in N1MM Logger+ as if they were true serial ports, with some important caveats and exceptions noted in the following sections.

A separate category of USB devices is the “USB Sound Card”, which are similar in function to on-board and bus-based sound cards except that its interface with the PC is through a USB port. Some devices aimed at the amateur community combine USB sound cards and USB-to-serial adapters in a single box. Some transceivers are now delivered with such USB devices incorporated internally. Generally speaking, once the appropriate drivers have been installed, these devices are configured in similar ways, regardless of whether they are in a transceiver or in a separate box or boxes.

USB-to-parallel adapters generally will not work

USB-to-parallel adapters will not work for keying CW or controlling PTT through the standard parallel port interface, because these adapters do not permit controlling individual lines.

The only exception we are aware of is the SO2RXLAT by [Piexx](#), which is designed specifically for this purpose.

CW issues with USB Adapters

N1MM Logger+’s serial and parallel port CW options are a simple and easy way to generate CW, but if your computer is slow, you may find the CW is not always smooth, particularly when receiving spots from a Telnet cluster in a busy contest. If this happens with serial keying, try using a parallel port if you have one. If you

don't, or if you want to put an end to CW issues once and for all, the answer is K1EL's Winkeyer USB, which handles CW and **all-mode** PTT by offloading these functions from the computer entirely. It is also an excellent stand-alone keyer with 4 built-in memories.

Another issue can be poor weighting when using serial port keying. Some adapters have a lot of latency and will mangle your CW. Usually this can be corrected by finding a better driver for the adapter. Make sure you are running the latest vendor-provided driver for your operating system, not the one the OS picks. Some adapters allow you to set the latency in control panel. [See this article](#).

General Comments on USB to Serial I/O Interface Devices

There are three different problems that are often encountered by N1MM Logger+ users trying to use USB-to-Serial adapters.

The first is loss of communications due to Windows powering down one or more USB ports. This problem and the solution are covered in [this section](#).

The second of these problems relates to the specific chipsets and drivers used in these adapters. The market for these adapters is dominated by two chipsets, called Prolific and FTDI. There is a potential problem with adapters using the Prolific chipset for serial communications (in particular, for rig control) from N1MM Logger+. This problem only applies to actual serial communications; simple on-off keying of DTR and RTS for CW and PTT keying is not affected. There are several versions of the Prolific chipset (including counterfeit knock-offs), and also several versions of the drivers, and at least some of these drivers are incompatible with the Microsoft library routines used by N1MM Logger, DXLab Suite, Logger32 and some other amateur radio programs. The symptom is an error message with the error number 8020. The result is that with some combinations of Prolific chipset and/or driver software, adapters using the Prolific chipset may not work properly for rig control and similar purposes with N1MM Logger+. Rather than attempting to list all of the possible combinations of chipset version, driver version and operating system in order to determine which ones work and which ones do not, our simplest advice is to avoid using USB-to-serial adapters using the Prolific chipset for rig control, rotor control or similar serial communications purposes.

The third problem relates to FSK RTTY keying from MMTTY. MMTTY can use a true serial port for FSK keying, by programming the port to send 5-bit characters at 45.45 baud. Unfortunately, most single-port USB-to-serial adapters, or at least those that are new enough to work with Windows 7, cannot go slowly enough to do 45.45 baud Baudot. Some multi-port adapters (two or four serial ports from a single USB port, e.g. Edgeport) are capable of going slowly enough, but if there are currently-sold single-port adapters that can do direct FSK keying, they are few and far between.

The standard solution to this is to use EXTFSK (or EXTFSK64, on systems whose CPU is capable of supporting it). EXTFSK does all the timing internally instead of using the serial port hardware. EXTFSK is capable of keying FSK on any of the TxD, RTS or DTR lines on any serial port or any USB-to-serial adapter, and even on a true parallel port (but **not** on USB-to-parallel printer adapters, which are incapable of bit-twiddling). There is a downside to using EXTFSK – the timing is less accurate than the hardware timing from a true serial port. This may result in a slightly less readable signal under difficult conditions.

We are not aware of any USB-to-serial adapters that will not do FSK with the help of EXTFSK or EXTFSK64, nor are we aware of any USB-to-serial adapters that will not key CW or PTT on their DTR/RTS lines other than adapters that don't have any physical connections for these control lines (such as the Elecraft KXUSB which does not implement the DTR and RTS control lines and therefore cannot use DTR or RTS).

Drivers: One key thing to never do is to allow Windows to tell you that it already has the driver for a particular device – you should always install the driver that comes with your interface. Windows can misidentify these devices when you plug them in and Windows will let you fail by using the driver it thinks is correct – and often Windows is dead wrong.

Generally speaking, with XP you can use most any USB to serial device (Prolific or FTDI chipsets) as long as you do not have a conflict. When it comes to Vista or Windows 7, FTDI seems to be the only game in town for close to sure results (Editor's note – not all users agree with this characterization.)

Even with all of this, depending on what you have done with your computer previously, you may have problems. And again, the point of all of this is that the problems may have nothing to do with what hardware you are trying to use. It could be something left over by some earlier activity on your computer. That said, most installations of these devices goes well right from the start. When they do not, it can be very frustrating.

A further technical note, posted on the N1MM Logger reflector by Joe, W4TV, concerns an easy way to tell whether a given adapter can handle 45.5 baud RTTY:

Windows serial drivers set the data rate (baud rate divisor) with 14 bits of a “double word.” That limits the max/min range of the driver/UART to $2^{14}:1$... and **any maximum rate higher than 512K will preclude operation at 45.45 bps.**

The lower rates are not a 100% guarantee of compatibility but the higher rate is a certain sign that EXTFSK or AFSK will be required for RTTY.

Sound Interfacing and USB External Sound Cards

If you want to record your contest QSOs, or use stored messages in phone contests, you will need to interface your computer to the audio system of your transceiver.

This requires a little thinking ahead. If you wish both to record QSOs and to use stored messages, then you will need a sound device (be it internal or external) that has both Line and Microphone inputs, and that is capable of duplex operation – that is, it can both record and play back at the same time. This is not a rare capability, or something found only on expensive sound cards, but something to check in choosing which card to buy.

A more common problem, these days, seems to be sound cards – particularly those integrated into laptop computers – that have only a single input that can be used for either Line or Microphone, but not both at the same time. In those cases your best bet may be to get an external USB sound card. Again, it is not necessary to go high-end for this application, so long as both criteria above are met.

Two external USB cards that have been tested with N1MM Logger are the Encore, sold by [NewEgg here](#) for under US\$20, and the GWC, also sold by NewEgg at [this URL](#) for about the same price.. The ByteRunner UA-580 also works fine. (Thanks, Joe W4TV for this info)

Supported Hardware

Windows and External USB Peripherals

One word of caution about external (USB) sound cards ... and other USB peripherals.

Windows can only address the “USB root hub” ... they are directly connected to the internal PCI bus. Windows will process data from all “Root Hubs” in a machine in parallel. However, all of the “child” devices are like leaves on a tree, each leaf which “grows” from the same “root” receives a time slot (generally 16 msec) in turn. If you have too many “leaves” on one root hub, the delay can become excessive and result in communications failures (time outs) with the controlling software (Logger).

This can be particularly problematical with some software that polls every 50 to 100 msec and will timeout if a response has not been received before the next poll interval. USB can easily handle the aggregate throughput (it will do something like 240 mb/sec) but the delays can be a problem if the software writer does not account for them.

Be particularly aware of this issue if you use external hubs and add many devices – particularly devices like memory sticks and “thumb drives.”

73, Joe Subich, W4TV

Green Heron Engineering Inc. - GH Everyware (rotator control)

N1MM Logger can send bearing information direct to the Green Heron GH Everyware software. N1MM Logger must be configured to send rotor information over the network (using UDP packets). This can be done by editing the N1MM Logger.ini file. Information regarding this is given in the supplied documentation with the Green Heron software, which is bundled with Everyware Remote and Base hardware and not sold separately.

Please refer to the Everyware documentation for further details.

Ham Radio Solutions - EZmaster

EZ Master is an LPT port and USB Device that interfaces your PC with several devices in your shack like radios, antennas, filters switching, microphone, headphones etc. Including PHONE, CW, RTTY, DIGITAL Mode interface and internal DVK, CW Keyer and SO2R switching.

More information can be found on [the Ham Radio Solutions website](#).

K1EL - Winkeyer

Winkeyer is an external keyer chip designed by K1EL and G3WGV, which combines full electronic keyer features with a serial interface to a computer. Winkeyer is intended to interface with compatible Windows software and produce CW from ASCII characters sent to it, avoiding CW timing problems caused by multitasking.

N1MM Logger was one of the first Windows logging program to support Winkeyer, and it has become a favorite CW solution for N1MM Logger+ users. Serial or parallel port keying may work fine, particularly with faster computers, but using Winkeyer can enable you to get by with a slower machine or run other programs in conjunction with N1MM Logger+, while keeping your CW perfect. Stand-alone keyers are available, and the Winkeyer keyer chip is also used in multi-function interfaces such as Ham Radio Solutions EZMaster, RigExpert, and several microHAM interfaces.

More information can be found on [K1EL's website](#).

A full explanation of setting up N1MM Logger+ to work with Winkeyer is found in the [Configurer section of the N1MM Logger+ Manual](#).

microHAM - microKEYER

The authoritative source for information on configuring N1MM Logger to work with various microHAM products is [the microHAM web site](#) which offers a variety of “Example Configurations”. These configurations are also accessible through the Help menu of the microHAM Router software, under “Document Download.”

Tentec ORION + “Mute mic on supported radios”

In the Configurer dialog, Other tab, make sure that “Mute mic on supported radios” is *NOT* checked. If that is checked, the Logger mutes the microphone and turns on the AUX input during DVK operation. By design the microKEYER routes DVK audio to the microphone input.

ICOM CI-V Interfaces + Transceive on/off Features

How to connect microHAM devices to N1MM Logger+ together with, for example, a SteppIR antenna which needs Transceive ON to know the radio frequency while N1MM Logger+ likes to see Transceive OFF.

- connect all of the CI-V devices in parallel (tip to tip, ground to ground)
- turn off Transceive in the Icom rig
- turn ON “polling” in microHAM Router
- turn OFF “polling” in microHAM Band Decoder

The microKEYER (Router) will poll only when the logging software is not polling (for example, Router will poll even though N1MM Logger+ does not). The Router polls will keep data flowing on the CI-V bus to allow the SteppIR and other similar hardware to stay “in sync.”

The microHAM Band Decoder will provide antenna switching (including support for multiple antennas per band with the appropriate external switch) according to your normal programming , provide drive for bandpass filters (several brands) and can do “format conversion” which will allow a Yaesu (Quadra, FL-7000) or Icom (IC-2KL, IC-4KL, IC-PW1) solid state amplifier to work with any other (supported Yaesu, Kenwood, Icom, or TenTec) radio.

The same capability exists with non-Icom radios.

N1MM Logger+ can’t read the RX frequency (shows as 0) - frequency shown fine in microHam router without the Logger

N1MM Logger+ polls for slightly different data than Router (VFO A and VFO B vs. “Current operating frequency”) so Router “times out.” Solution:

Open Router | Control | Set and uncheck “Disable router queries” .

Truncation of Messages (When Using Winkeyer Keyer)

Symptom: Sends all the macro CW messages except the last letter and then goes back to receive. The solution is to add a space or the | character (the shifted \ character) at the end of the macro message. The | character is about 1/3 of a space.

microHAM - MK2R/MK2R+

- To set up MK2R+ with N1MM using **LPT** control see:
http://www.microham.com/Downloads/MK2R_N1MM_Setup.pdf

Q. When I load N1MM logger the message shows: “Winkeyer v2 detected, Only Winkeyer v4 and higher are supported in N1MM.”

A. That’s a Winkeyer initialization error of some kind which shows when the MK2R+ is not switched on when N1MM logger is started.

Q. How many serial ports are needed by MK2R to fully work

A. In any case, one only needs five ports for a fully functioning system with N1MM (Radio 1, Radio 2, PTT 1, PTT2, and Winkeyer). Any other functions (Packet, rotor control, etc.) do not need to be in the “first eight.” MMTTY/Digital Interface will share a port with PTT (and CW if you are not using Winkeyer) ... and MMVARI or MMTTY in AFSK mode does not require a port at all. Even if/when the SO2R control signals get mapped to serial handshake lines or the software adds support for the microHAM control protocol (on a virtual port) one additional port will not push most systems “over the line” – although the ability to start the block of eight other than at COM1 would provide a bit of insurance.

73, Joe, W4TV

An example setup

microHAM Router

- VOICE Audio Switching for both radios: CmCmCm

FT1000MP, Proset Plus plugged to front mic jack.

N1MM Logger (6.10.9 or higher)

- Configurer >Audio tab
 - 2 – Single Card – Two Radio, No sound card SO2R
 - Select Device = USB Voice CODEC
 - Select Input Line = Microphone
 - Select Line to Mute = Microphone
 - Recording bits = 16
 - Sampling rate = 22050

Ctrl+Shift+Fx to record, Fx to playback.

USB-only SO2R Support

With USB-only SO2R support using the the MicroHam SO2R protocol, an LPT port to command various SO2R functions with the MK2R/MK2R+ is no longer needed.

Designate a virtual COM port as your MK2R control port in N1MM logger. To do this, check the CW/Other box for the port, click on 'Set', and check the MK2R box on the port details dialog. Then go to the SO2R tab on the MicroHam Router, select Microham SO2R protocol with the "radio button", and identify the COM port in the drop-down list just below. Finally, if you want to use program-derived band data, on the ACC tab change the Radio 1 and Radio 2 options to "SO2R protocol controlled". If you want to control band decoders for two radios, you may need to wire up a new cable to get Radio 1 data from pins 6-9 on the ACC connector, and Radio 2 data from pins 10-13.

Record-on-the fly within the program is supported using USB-only.

Suggested Port Setup by Joe, W4TV

"The MK2R/MK2R+ operates very well with six total ports (I will use A - F to avoid particular numbers):

MK2R/MK2R+ with 6 Total Ports

Port	Connected device
COM A	Winkeyer (it is best to assign Winkeyer to the "lowest" port to avoid loss of CW if another port is activated for CW)
COM B	Radio #1 (PTT and Footswitch is optional on this port)
COM C	Radio #2 (PTT and Footswitch is optional on this port)
COM D	Digital #1 FSK and PTT for Radio #1 (assign Radio 1)
COM E	Digital #2 FSK and PTT for Radio #2 (assign Radio 2)
COM F	MK2R (protocol port)

A user who does not choose to do FSK (uses AFSK only) can survive with FOUR virtual ports as PTT can be enabled on each of the radio ports - even with radios that normally expect "handshake" - as the MK2R does the handshaking and frees both RTS/DTR lines for control functions."

The COM D and COM E PTT settings (or the optional radio port PTTs) are necessary

if you wish to use the built-in N1MM Logger “DVK” with PTT (rather than VOX). This does not mean that you have to designate COM 5 and 6 on the Ports tab as PTT – instead you can just make sure the PTT box is checked on your two FSK ports in Router. If you wish to use the MK2R’s built-in DVK instead, you will need to check the “DVK” box on the port you are using for the MK2R.

On-the-Fly Recording from within N1MM Logger

In order to make on-the-fly recording with Ctrl+Shift+Fx work with N1MM and the MK2R+, there are a couple of unusual requirements:

- if using the MK2R SO2R protocol (USB-only), you need to use MM 7.10.9 or later
- If your computer uses the Realtek or Soundmax chips for its on-board sound, then you will need temporarily to set the USB Voice CODEC to be the default sound device in Windows and be sure to turn off all Windows sounds for the duration, also in the Control Panel. There’s a glitch in the Realtek/Soundmax drivers that doesn’t let mic audio get through to the MK2R+’s USB Voice CODEC (which it uses to record and play Function Key messages) unless you do this.

RigExpert

When installing drivers for RigExpert Std or Plus, it creates 4 virtual COM Ports on your computer along with USB Audio Codec (for its internal sound card). Some users of the RigExpert TI-5 interface have reported that the 4th virtual port, for FSK keying, does not work with MMTTY. It is still possible to key FSK RTTY, using the 2nd virtual port (PTT/CW/SoftFSK) using the version of EXTFSK supplied with the RigExpert, and configuring MMTTY to use EXTFSK.

Click on “Show Serial Ports” (ListRE program which comes with RigExpert software) and write down COM port numbers for CAT and PTT/CW for future reference.

Then run your N1MM. (Make sure you are not running other logging programs at the same time to avoid port conflict).

Go to Configure and click on Configure Ports, Telnet Address, Other. Click on Hardware. You will see a selection of COM port from COM 1 to COM 8. Select the proper COM port number for CAT (the one you memorized before), select your radio model and in Details select the proper parameters for your radio (baud rate, etc.). Then select proper COM port number for CW/PTT (check CW/PTT) and in the details set DTR to CW and RTS to PTT. If you are using RigExpert Plus, then you may also set a separate COM port for Winkeyer.

If you want to use RigExpert as your Sound card (for SSB messages or RTTY) you may go to Audio (under the same Configurer menu) and select USB Audio Codec as you Sound Device.

Don’t forget that you can not run two programs that use the same USB Interface at the same time.

If you have older RigExpert – SD or 2.2, you still may use it with N1MM, just need to

install additional driver (REAUDIO).

When RigExpert SD is used with N1MM for Voice Keying, in the Configurer's Audio select "RigExpert" as a Device. Then configure the Recorded wav file path in the "Files".

The older RigExpert models, need to have REAUDIO installed. For newer RigExpert models REAUDIO is not needed "USB Audio Codec" in the "Select Device" menu should be selected.

Top Ten Devices - Band Decoder and DX Doubler

To replicate the default Top Ten Devices behavior, you would need to set up Configurer >Antenna tab as shown in the Interfacing section.

Hardware Update: 'Both Ears on the Inactive Radio' versus 'Both Ears on the Active (or Run) Radio' from the Keyboard

I wanted to go one better and mimic the "PTT" operation of the DXD, which puts both ears on the INactive radio for aggressive S&P, but still be able to put both ears on the Active (or Run) radio from the keyboard, to help pick up weak answers to my CQs while HC8N is blasting on the S&P radio at S9 +40. You can do this manually by switching the DXD audio mode switch from PTT to Auto, but I'd rather keep my hands on the keyboard.

After corresponding with George, W2VJN and Dave, N3RD, of Top Ten, and entirely thanks to them, I have it working. I also owe a vote of thanks to Terry, N4TZ/9, whose article in September/October NCJ describes modifying the DXD to do the same trick, but with a footswitch, and got us all thinking.

First, put the DXD jumpers (2) in their CT/Writelog/TR/MM position. This has the effect of isolating pin 5 of the LPT port. Then put a 2N2222 open collector switch between pin 5 and the Auto terminal of S3 on the DXD (that's the audio mode switch). Specifically, pin 5 drives the base of the transistor through a 1K resistor connected to the high side of R22, just like the basic CW keying interface. The emitter is grounded to the ground side of R22, and the collector is wired to the switch side of R29. I mounted the transistor next to R22 with double-sided tape. Ugly but effective. That's all there is to it.

DX Doubler on port other than LPT1

When using the DX Doubler on a port other than LPT1 check out the proper addresses.

73, Pete N4ZR

West Mountain Radio - RIGblaster

CW and Digital Setup RIGblaster Plus

Inside the RIGblaster Plus set the following jumpers on the P5 jumper block: D9 and D12, corresponding to RTS on PTT and DTR on KEY. Switch the port on which the RIGblaster is set from DIGITAL to OTHER. In N1MM's configuration use DTR (pin 4) set to CW and RTS (Pin 7) set to PTT. Using this configuration, everything works properly generating CW from N1MM and furthermore, this combination will allow the other soundcard related things to work (MMTTY, SSTV, PSK, Voice Key Express, etc). (by David, K1TTT)

CW key down problem and RIGblaster Pro

When your radio in CW stays in key down position try setting DTR to CW

SSB Setup RIGblaster Plus

- Serial port setup (configurer)
 - Com2 (any com port will do)
 - DTR: Always OFF
 - RTS: PTT
- On the RIGblaster itself
 - Set the Tx/Auto switch to Auto.
- Sound Volume Level
 - Use your soundcards volume control

With it set up this way, it correctly mutes the microphone while transmitting a wav file and the VOX works when not transmitting a wav file.

RIGblaster Advantage

A number of our users have experienced difficulty setting up the RIGblaster Advantage to do various modes. The following is based on information from West Mountain Radio's support department, but any errors are ours alone.

When you load the RIGblaster driver onto your computer (we won't document that process here, because it is well covered in the Advantage manual), you will see a new virtual COM port and a new USB Audio Device reflected in your computer's Device Manager. Make note of the COM port's number

The virtual COM port can be used for PTT using RTS), CW or FSK (using DTR) keying, and control of your radio. The USB Audio device (called "RIGblaster Advantage Audio" in Device Manager) has both playback and record channels, and can be specified anywhere you are asked to specify a sound card.

Control of your radio is available from the Advantage in one of two forms – an

RS-232C level DB-9 connector, and a TTL level 3.5mm stereo jack. The TTL jack (labeled CTL IN/OUT) is suitable for controlling radios that use TTL-level control – such as Icom’s CI-V remote jack and the 8-pin mini-din CAT jack found on some Yaesu models. It is **not** suitable for driving older Kenwood radios which employed a “negative TTL” scheme (such as the TS-440S and TS-850). Your best bet in this case is to buy or build an adapter to convert the Kenwood control setup to basic RS-232.

The Advantage’s RS-232 port can drive many RS-232C equipped radios with one proviso – the transceiver must not require hardware flow control. Otherwise what happens is that the radio holds RTS high and the Advantage will be stuck in transmit.

Many Yaesu radios have a menu option “CAT RTS” which can be disabled – this will get CAT working on those radios with just a straight serial cable between the Advantage and transceiver.

The FT-847 actually requires a null-modem cable but this is the only radio WMR knows of which does. Because the FT-847 does not require flow control this works fine with the Advantage.

Kenwood radios without the ability to disable flow control require a modified serial cable which shorts RTS/CTS at the radio end, to fool the radio into believing flow control is active. This works in practice on most radios we have tried it with, but has not been tested with N1MM Logger. A more elegant solution is just to use a separate USB to RS-232C adapter cable, giving you a second virtual COM port in Windows which is dedicated just to radio control. In this configuration, the Advantage COM port is used only for PTT and CW keying.

The Advantage has a 3-position toggle switch on the front panel to determine how PTT is handled. In the “COM” position, PTT is under the control of the RTS line of the Advantage’s virtual COM port. The center position, “OFF”, disables PTT and CW through the Advantage. The third option is “VOX”, which is derived from the audio signal itself in phone and data modes using AFSK.

Remember that if N1MM is configured for PTT by radio command, the Advantage has no way of knowing this and will not go into transmit even though the radio does. Always make sure that PTT is done by RTS if under serial port control, or use the VOX position if using PTT via radio control.

In summary, most radios can be set up for PTT (using RTS) and CW/FSK keying (using DTR). As long as the radio has either an 8 pin round mic jack or an RJ-45 mic jack it will work, because this is how audio and PTT get to the radio. For many radios, CAT can be achieved with a simple cable. For radios equipped with RS-232C jacks and which insist on flow control it is probably just simpler to use a separate USB to RS-232C cable.

Setting Up N1MM Logger with the RIGblaster Advantage

Now we get to the easy part. Go to Config > Configure Ports. Open the hardware tab.

The screenshot shows the 'Configurer' window with the 'Hardware' tab selected. The window contains a table for configuring ports and radio settings. The table has columns for Port, Radio, Digi, CW/Other, and Details. The 'COM9' port is selected, and the 'IC-706MKIIG' radio is chosen. The 'CW/Other' checkbox is checked. The 'Details' column shows 'Set' buttons for each row. To the right of the table, there are radio buttons for SO1V, SO2V, and SO2R, with SO1V selected. Below the radio buttons, the text '115200,N,8,1,DTR=CW,RTS=Always Off,Tx=1' and 'DTR=Always On,RTS=Always Off,Tx=1' is displayed. At the bottom of the window are 'OK', 'Cancel', and 'Help' buttons.

Port	Radio	Digi	CW/Other	Details
None	None	☐	☐	Set
COM8	IC-7300	☐	☐	Set
COM9	None	☐	☒	Set
None	FLEX-6000 Series	☐	☐	Set
None	IC-706MKIIG	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
LPT1			☐	Set
LPT2			☐	Set
LPT3			☐	Set

SO1V SO2V SO2R

115200,N,8,1,DTR=CW,RTS=Always Off,Tx=1
DTR=Always On,RTS=Always Off,Tx=1

OK Cancel Help

Select the virtual COM port number you will be using for radio control. Select your radio from the drop-down list. Click "Set". Do **not** select PTT via Radio Command. Make sure the communication parameters match between the program and your radio (found in its manual). If you do not need the RigBlaster CW/PTT interface (using just a single COM port for all functions), set DTR to CW and RTS to PTT (if needed), check the CW/Other box and you're done.

Com8

Speed: 115200, Parity: N, DataBits: 8, Stop Bits: 1

DTR (pin 4): Always Off, RTS (pin 7): Always Off, Icom Code (hex): 94, Radio Nr: 1

☐ Enable Both Hardware & Software PTT
☐ PTT via Radio Command SSB Mode
☐ PTT via Radio Command CW Mode
☐ PTT via Radio Command Digital Mode

☐ Allow ext interrupts

Two Radio Protocol: None, FootSwitch (pin 6): None

Radio Polling Rate: Normal

Suggested Icom Settings:
 9600 - 19200, N, 8, 1, Always Off, Always Off, Icom Hex Code

Help OK Cancel

To configure the RigBlaster Advantage for CW/PTT, select the Advantage's COM port, check its CW/Other box. Click "Set" for the Advantage's COM port. Set DTR on **that** port to CW, and RTS to PTT (if needed). Typically the radio will require hardware PTT, radio command PTT, or the radio's VOX to be enabled.

Com9

DTR (pin 4): CW, RTS (pin 7): PTT, Radio Nr: 1

PTT Delay (msec): 0

☐ Allow ext interrupts
☐ WinKey

Two Radio Protocol: None, FootSwitch (pin 6): None

Help OK Cancel

Transverters

N1MM Logger+ has transverter support in the form that per bandmap an offset frequency can be set. Right click menu bandmap and select Set transceiver offset frequency. Enter the transceiver offset frequency in kHz (minus is allowed). Example: 116000 when using a transverter from 28 MHz to 144 MHz ($144000 - 28000 = 116000$). The same for other bands (up or down). This can be set per bandmap so when using two transceivers with transverters they can each be on a different band. The offset is saved by the program so after a restart the offset is still there.

Other Hardware Information

All by Joe Subich, W4TV

USB Soundcards

The manuals for the soundcards below (in alphabetic order) indicate they have independent microphone and stereo line inputs.

- Audigy 2NX External
- Creative SoundBlaster MP3+
- Turtle Beach "Audio Advantage Roadie"

The "low price option" below does not have an on-line manual but the specs on the web site show separate mic and line jacks.

- Byterunner UA-580
 - appears to be the recommendation for those who need an external sound card (laptop, etc.).

Other Soundcards

- SoundBlaster Live 24 External
 - The one issue with the Live 24 External is that you cannot use the mic and line inputs at the same time (connecting the mic will disconnect the line). It will work fine for internal DVK in N1MM but you cannot "record QSOs" and use DVK at the same time if you loop the microphone through the Live! 24 External.

External *versus* Internal Soundcards

There are claims that External USB soundcards work substantially better (and should be used) than internal soundcards (on digital signals).

Joe, W4TV: The claimed “advantage” comes from flawed tests which fail to properly set the input level to each sound device to take maximum advantage of its dynamic range.

Except for the very worst sound cards or exceptionally noisy systems, internal sound cards have at least 60 dB of usable dynamic range (the better 16 bit cards have 80 dB of dynamic range and 24 bit cards with high level inputs can have dynamic ranges that approach 100 dB). If the audio from the transceiver is such that the receiver noise floor (no antenna) is six to ten dB above the noise floor of the sound card, the software DSP (MMTTY, etc.) will be able to operate at its full capacity. Receiver AGC, etc. will limit the receiver output to a level well below the input capacity of the soundcard. Most receivers will not vary more than 30 to 40 dB from quiet band to S9 +40 dB receive signals. Soundcard performance is not a matter of internal vs. external. It is a matter of careful attention to setting the proper level to allow the soundcard to function properly.

Unsupported Hardware - W5XD MultiKeyer

The W5XD MultiKeyer is not supported and there are no plans to do so. SO2R support is provided by sound cards and Winkeyer or by other external hardware using serial and parallel ports.

N1MM Rotator Control

Rotator control by N1MM Logger is supported using

- External software
 - N1MM Rotor (comes with N1MM logger)
 - PSTRotatorAZ (15 Euros/US\$22 by Codrut Buda - YO3DMU)
- External hardware
 - ARSWIN by EA4TX
 - ERC and ERC-M by Rene Schmidt DF9GR - PSTRotatorAZ required for ERC-M to control two rotators

Rotators can be controlled in several different ways:

- **Entry window:**
 - by entering a beam heading in the callsign field and press Alt+J. The rotor will turn to the entered beam heading
 - Example: **234 Alt+J** will turn the rotor to 234 degrees
 - The number must be numeric, **↗** = 0 and **↘** = 360
 - using the menu items in the Tools menu
 - **Turn Rotor Alt+J** - Turn rotor to bearing for the callsign in the Entry window
 - **Stop Rotor Ctrl+Alt+J** - Stop turning the rotor when

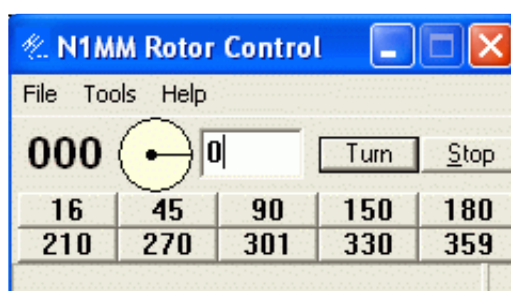
- turning and no bearing in callsign field in Entry window
 - using the short cut keys below:
 - **Alt+J** - Turn rotor to bearing for the callsign in the Entry window or to the callsign in the callframe (when callsign field is empty)
 - **Alt+L** - Turn rotor to long path bearing for the callsign in the Entry window
 - **Ctrl+Alt+J** - Stop turning the rotor when turning and no bearing in callsign field in Entry window
- Bandmap window: by right clicking on a spot and select: 'Turn Rotor'
- Available Mult's and Q's window: by right clicking on a spot and select: 'Turn Rotor'
- N1MM Rotor stand-alone program

Some remarks

- If there is a call of less than three characters in the callsign field in the Entry window nothing will happen.
- The status bar will show the bearing it will turn to. Example: Turning Rotor to 123 degrees
- Normally the rotor will turn to the country bearing after a callsign is entered. This info comes from the country file and mostly is the center of the country. In grid square contests however that is mostly not practical so when a grid is entered the rotor will turn to the calculated bearing between the own grid and entered grid square.

Rotator Control Basics

N1MM Rotor has the ability to control up to 16 rotors per station, and to control rotors connected to other computers on your LAN. Each rotator requires its own COM port, unless external interfacing software is used. N1MM Rotor leverages the Antenna tab to define what rotators are controlled when you are on a band. N1MM Rotor can even rotate a stack with one command. N1MM Rotor is an external program which can be used from within N1MM Logger or as a stand-alone program.



Supported Rotator Types

- DCU1 – No Stop button supported.
- M2 Orion – Speed shown to bottom right of status bar.
- Prosistel
- AlfaSpid
- Yaesu
- RC2800P-A
- Rotor-EZ
- AlfaSpid ROT2
- Prosistel C
- Green Heron RT-21 (use DCU-1 option or Rotor-EZ setting)

All rotators except the DCU1 support position reporting. It would be worth trying the Rotor-EZ setting with other rotators that use the DCU-1 protocol or a superset of it, because the antenna position may be reported in the Rotor window.

Upper pane: The upper pane shows the selected rotator (as entered in the Setup under Tools) and behind the @ the current rotator position.

Menu bar: Shows the File, Tools and Help menus.

The big digits indicate the current rotator position. When an antenna offset has been entered this will be shown in small digits to the right of the current rotator position.

More to the right a visual indication where the rotator is pointing. The line in the circle can be dragged to turn the rotator, for rotators that support position reporting.

The textbox is an entry field where you enter the bearing the rotator is to be turned to.

Clicking the Turn button will turn the rotator to that position, and the Stop button will stop turning the rotator at the current position.

A reverse offset will be shown as (R) .

Status bar: Shows the speed when reported by the rotator.

The program will be brought to top when turning (unless minimized)

File Menu Selections

- **File**
 - **Always on Top** – Select to have the program always on top
 - **Exit** – Exit the program
- **Tools**
 - **Setup Rotors** – a dialog named 'Rotor Setup' will be displayed as shown below

Rotor Setup

Port	Rotor Type	Description
Com1	None	
Com2	None	
Com3	None	
Com4	Yaesu	tribander
Com5	Yaesu	rotor20
Com6	Yaesu	rotor40
Com7	None	
Com8	None	
Com9	None	
Com10	None	
Com11	None	
Com12	None	
Com13	None	
Com14	None	
Com15	None	
Com16	None	

Ok Cancel

- **Set Current Antenna Offset**
 - The offset is entered on the antennas tab of the Configurer, or can be entered for the selected rotor. This offset is added to the rotor position to determine the antenna position, so it should be entered with a "-" sign when the offset antenna is rotated clockwise relative to the rotator direction. This is useful for antennas that are mounted at 90 degrees for pattern interference reasons, or for antennas that have simply turned some in the wind over the winter
- **Set Current Antenna Bidirectionality**
 - Bidirectional is for dipoles, or SteppIR's where the user wants to reverse the antenna rather than turn it more than 180 degrees
- **Calibrate Rotor** - Calibrate the rotator. Only when supported by the rotator like the M2 Orion. The ERC/ERC-M hardware does calibration in firmware.
- **Prosistel C Config**
 - A dialog will open where you can set the rotator stop to North or South and the delay of the characters
- **Set rotation limits**
 - This feature is for owners of rotators with brakes that jam. You may enter a number which will restrict how close the rotator will be turned to 0 or 360 degrees. If you enter 10, the limits will be 10 to 350 degrees. Note that this can only be set for all rotators handled by an instance of the program. It didn't seem worth adding it to the antenna tab
- **A new line will be shown for every rotator that has been set up**
 - Each line represents a rotator as entered in the setup under Tools

Button and Mouse Assignments

- **Manual entry field** - Type a heading and press Enter or the Turn button to turn the rotator. The entered number is in degrees.
 - Maximum: 450 and minimum 0. An error message will appear when entered otherwise when pressing the Turn button.
- **Turn** - Click to turn rotator to heading in textbox. Pressing Enter will also turn the rotator, if the entry focus is on N1MM Rotor.
- **Stop Alt+S** - Press to stop rotator turning. Pressing Alt+S or Escape will also stop turning the rotator.
 - This button is only shown when the rotator supports this feature.
- **F1 - F10** - Pressing the F-keys mapped to the bearing buttons will turn the rotator to the position as shown on the button. Right click to set the heading value.
- **Bearing buttons (F1 - F10)**
 - **Left mouse button click**
 - Pressing one of the bearing buttons will turn the rotator to

the position as shown on the button.

- The F-keys F1 through F10 are mapped to the 10 bearing buttons.
- **Right mouse button click**
 - **Set Button to Current Position**
 - The heading as entered in the manual entry field will be used to set the position.
 - **Set Button to a Specific Heading**
 - A dialog will appear and a frequency can be entered which will be used to set the position.

Only rotators that report position will be able to show the current position (also when rotating).

Sending Rotor Position Information to N1MM Logger

By default, N1MM Rotor sends position information only to the N1MM Logger main program that is running on the same computer as N1MM Rotor. If you are using only one computer, with both N1MM Rotor and N1MM Logger running on that computer, you can skip the rest of this section, but if N1MM Rotor is running on a different computer from N1MM Logger, you need to read on.

If you want to send position information to copies of N1MM Logger running on other computers, you must use a text editor to manually edit the N1MMRotor.ini file in order to tell N1MM Rotor which computers to send the information to. Look for the line "RotorReportingIP" in the [Rotors] section; if it doesn't exist, you will have to add it.

If all of the computers in the network are in the same subnet, i.e. they all have IP addresses that start with the same three numbers, such as 192.168.1.xxx, then you can send position information from N1MM Rotor to all of the computers in the network simply by setting RotorReportingIP to the broadcast IP address (last number = 255), as in:

```
[Rotors]
RotorReportingIP=192.168.1.255
```

If you only want to send position information to certain selected computers on the network, you can specify one or more individual IP addresses, separated by spaces. For example:

```
[Rotors]
RotorReportingIP=127.0.0.1 192.168.1.10 192.168.1.12
```

This will send rotor position information from N1MM Rotor to N1MM Logger running on three computers: the same computer that N1MM Rotor is running on, which is

always denoted by 127.0.0.1 regardless of which subnet it is in, and two additional computers whose IP addresses in this example are 192.168.1.10 and 192.168.1.12. Other computers in the network whose addresses are not specified in the N1MMRotor.ini file will not receive the rotor position information. The IP addresses do not all have to be in the same subnet, but of course they must all be reachable from the computer that N1MM Rotor is running in.

Using N1MM Rotor Stand-Alone

Go into the N1MM program directory with Windows Explorer and find 'N1MMRotor.exe'. This is the N1MM Rotor program. A shortcut on the desktop would be an easy way to start the program. All features mentioned above can be used.

Using N1MM Rotor with the Main N1MM Logger Program

Configure your rotors using the N1MM Rotor standalone program, as shown in the previous section. Verify that the rotors work correctly.

The N1MM Logger main program has the capability to turn rotors from the Entry Window, as described [earlier](#). To configure this capability in the N1MM Logger main program:

- Setup the antenna selections in the Configurer; Tab: Antennas

N1MM logger setup dialog in >Config >Configure Ports, Antennas tab

Configurer

Hardware Files Function Keys Digital Modes Other

Winkey Mode Control **Antennas** Audio

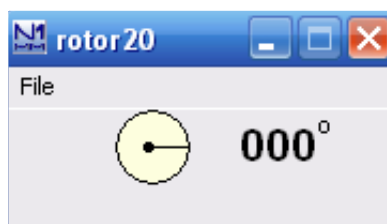
Code	Antenna	Bands (1.8, 3.5, 7...)	Rotor Description	Offset	Bidirect
0					0
1	160	1.8			0
2	80	3.5			0
3	40	7	rotor40		0
4					0
5	20	14	rotor20,tribander		0
6					0
7	15	21	tribander		0
8					0
9	10	28	tribander		0
10					0
11					0
12					0
13					0
14					0
15					0

☐ Start N1MM Rotor Program
☒ Display Rotors Used By This Station
☒ Display Rotors Responding From Network

OK Cancel Help

The alphanumeric name entered in the Rotor Description in the Configurer Antennas tab, must be exactly the same alphanumeric name entered in the [N1MM Rotor Setup form](#).

The N1MM Logger main program also has the capability to display the current direction of any rotor used by the controlling station, or any rotor in the network. To configure this capability, use the checkboxes “Display Rotors Used By This Station” and “Display Rotors Responding From Network” in the Configurer Antennas tab. A new display form will appear for each responding rotor:



When “Display Rotors Used By This Station” is enabled, only the rotors used by the currently active bands in the Entry Window(s) will be displayed. When you change bands, the displayed rotors will be automatically updated.

When “Display Rotors Responding From Network” is enabled, all rotors that report their position to the computer, from any N1MM Rotor running on the network, will be displayed.

To start N1MM Rotor automatically from within the N1MM Logger main program, use the checkbox ‘Start N1MM Rotor Program’ in the Configurer Antennas tab.

One Rotator Per Radio - how to do it

Occasionally, we get questions about how to relate a rotator to a specific radio or VFO, in SO2R – so that when you enter a callsign in that radio’s Entry Window, the rotator for that radio’s antennas receives the command.

The answer is simple – On the Antennas tab of the Configurer, define the antennas for the second radio as if they were alternative antennas for a given band, and specify the desired rotator’s COM port . Then, while the second radio’s Entry Window is active, hit Alt+F9. You only need to do this once, each time you change bands on the second radio. See [this page](#) for more on configuring more than one antenna for a given band.

N1MM Rotor running on another computer

Let’s assume that N1MM Rotor is on a separate computer which has IP address

192.168.1.14, and your computer, running N1MM logger, is 192.168.1.10.

- Make sure N1MM Rotor is running on the computer that has the rotor connected to it.
- Network the computers together.
- In the Configurer, Broadcast Data tab
 - Rotor =127.0.0.1:12040 192.168.1.14:12040
- Enable “Display Rotors Responding From Network” in the Antennas tab
- Put this in your N1MMRotor.ini file on the computer running N1MM Rotor:
 - [Rotors]
 - RotorReportingIP=127.0.0.1 192.168.1.10
- Control the rotator by menus in the Tools menu. You put the direction or a callsign in the call textbox and press Alt+J
- The requesting station will see a Rotor Form window open, showing the current direction of the rotator. Note that some rotators cannot report progress.

Turning a Stack

In the example picture above at the right the stack is on Com3 and Com4 and are turned at the same time when turning antenna 4 (stack).

Enter 3,4 and the heading selected will be sent to the rotor program and it will tell the rotators (of whatever type) on COM3 and COM4 to turn to that azimuth. If you want to control a single antenna, you will have to switch to that single antenna using the antenna toggle (Alt+F9) in the main program, press ALT+J and then toggle to the set of antennas that you want.

Run time error: 126

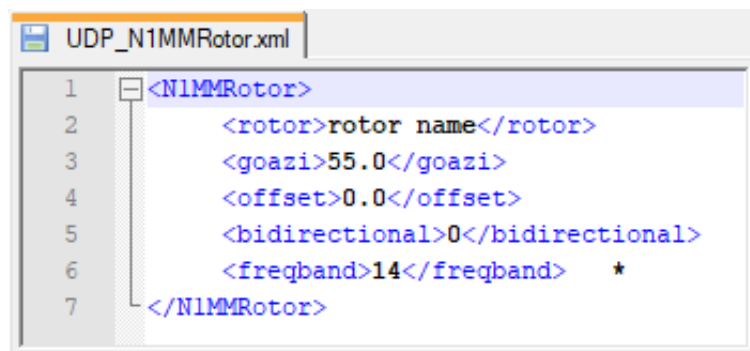
Run time error 126 could be caused by a firewall that doesn't like a UDP message sent to 127.0.0.1 to notify the rotor program of what window is active. If you want to use the rotor program without getting this error, you will need to figure out what program is causing this interference. First check your firewall. If that is not it, one user found that a program called “Port Explorer” was the cause. When “Port Explorer” was closed, the problem went away.

Rotator UDP Packet Information

Broadcasts to operate the separate [Rotator Control](#) program are sent automatically when the user selects >Tools >Turn Rotor (alt+J), and do not require configuration settings or modifications to the N1MM Logger.ini file. The broadcasts are always sent on port 12040. *Developer Note: the rotator packet lacks XML header tags and is not XML compliant. We know that and will not fix it because we fear breaking third-party routines written years ago.*

The Entry Window >Tools >Turn Rotor command produces the following UDP

message on UDP port 12040:



```

1  <N1MMRotor>
2      <rotor>rotor name</rotor>
3      <goazi>55.0</goazi>
4      <offset>0.0</offset>
5      <bidirectional>0</bidirectional>
6      <freqband>14</freqband> *
7  </N1MMRotor>
  
```

N1MM Rotor packet

Note *: Examples of freqband encoding are 1.8, 3.5, 7, 14, 21, 28

The Entry Window >Tools >Stop Rotor (ctrl+alt+j) command produces the following UDP message on UDP port 12040:



```

1  <N1MMRotor>
2      <stop>
3          <rotor>YaesuCom9</rotor>
4          <freqband>21.0</freqband>
5      </stop>
6  </N1MMRotor>
  
```

N1MM Rotor Stop packet

Note: the rotor may be specified with the name shown in the Rotor program setup dialog, or the number of the com port to be controlled (e.g. "3")

Rotor status update messages sent from the separate N1MM Rotor program on UDP port 13010 are in this format:

rotorname@rotorheading

External Rotator Hardware and Software

Rotator control is supported directly by software and/or hardware from:

- ARS-USB by EA4TX
- PSTRotatorAZ (15 Euros/US\$22 from Codrut Buda, YO3DMU) See the links

section for urls.

Start your ARS-USB or PSTRotatorAZ software before attempting to control rotators.

The ERC-M rotator controller by DF9GR offers control of an AZ-EL rotator system or two azimuth rotators using a single COM port. However, this mode of operation is not supported by N1MMRotor at this time. You will need to use two linked instances of PSTRotatorAz as intermediary between N1MM Logger+ and the ERC-M. Setup is a little tricky but is fully documented and works fine.



Call History and Reverse Call History Lookup

Call History and Reverse Call History Lookup

Call History

Call History Lookup is a feature that can be used to pre-fill the exchange during a contest to save typing, or to display user comments or notes for specific call-signs. The sources of Call History data can be files from other sources, previous contest logs, or hand-generated data files of your own. Your club may generate Call history files for Sweepstakes, for example, or you may choose to generate your own from last year's log. You might choose to harvest names and call-signs from your general log, so that you can recognize people by name on the air.

Before using the Call History Lookup feature, Call History Lookup must be enabled on the Entry Window's Config menu (exception: the UserText field – see below), and the user must import a text file or files containing comma-or semicolon-separated data.

A fairly large number of contest-specific Call History text files may be found in the Call history Files section of the Files menu on this web site. For many of us, these will be the preferred source of data for the Call History Lookup function.

Where are the PreAssembled Call History Files? A fairly large number of contest-specific Call History text files may be found the **>Downloads >File Explorer >Call History Files** of the website. For many of us, these will be the preferred source of data for the Call History Lookup function.

You can also build a Call History text file from your previous year's log. Simply open the old log, optionally click **> Tools > Clear Call History** to empty the Call History database table, then click **Update with Current Log**. To save the Call History text file, use the **Export >Export Call History** option on the Entry window's Files menu, and give the exported file an easy-to-find filename.

And, of course, you can always load Call history text files into the database directly from the Call History Files user directory.

If you want to draw on multiple logs for the same contest, or indeed combine multiple Call History files into a single database table, you can do so simply by going to **File >Import >Import Call History** and holding down the Ctrl key while you click multiple text files.

The Call History data is not stored in the same database as the QSO data.



The Call History table remains until it is replaced with another set of data. A Call History text file (or multiple files) can be imported manually, or associated with a specific contest on the Associated Files tab of the Contest Setup dialog. As you can imagine, it is easy to forget that you have the wrong call history table in the database, left over from last weekend. We recommend that users add the contest name to the Call History data files as explained in the “Identifying the Call History Lookup Data Contests” section below.

When a callsign is typed into the Entry window and the focus is moved into the Exchange box, either by pressing the Space bar, or if Enter Sends Messages (ESM) mode is enabled, by pressing Enter, the Call History database table is searched. If the callsign is found, the associated Call History data is displayed on the “beam heading” line in the Entry window. If the contest exchange fields are blank, the data retrieved from the database are also used to pre-fill any relevant exchange field(s) in the Entry window.

Cursor Movement Triggers the Call Lookup

The event that triggers the Call History lookup is the movement of the cursor from the call sign box to the exchange box in the Entry window. In ESM mode, there are some situations in which pressing Enter does not cause the cursor to move to the exchange box, and in those cases a Call History lookup will not be invoked by pressing Enter. In particular, in S&P mode if the “ESM sends your call once in S&P ...” option is not selected, pressing Enter to send the F4 message will leave the cursor still in the callsign box, so a Call History lookup will not be performed; pressing the Space bar will move the cursor into the exchange box and cause a Call History lookup.

If “Show User Information” is checked on the Entry window’s right-click menu, data from the Call History table is also displayed on the Bearing line. Even if Call history Lookup is not enabled, data from the User Text field of the table is still displayed on the User Data line, below the Bearing line.

Here are some Entry window examples. The first shows the Entry window with both the exchange data and user data (his QTH, in this case) displayed.



14066.57+0.00 CW Elecraft K3 VFO A

File Edit View Tools Config Window Help

CW

160
80
40
20
15
10

VE2FK

Name: CLAUDE Exch: 1181

Run S&P 27

F1 Qrl? F2 TU Exch F3 Tu F4 N4ZR F5 His Call F6 Repeat
F7 Empty F8 Agn? F9 Nr? F10 Call? F11 Empty F12 Wipe
Esc: Stop Wipe Log It Edit Mark Store Spot It QRZ

Hdg 354° LP 174° 348mi 559km CLAUDE 1181

Matane QC

VE: NA/CANADA, Zn 5 No Score 0

In VHF contests, the grid square from the Call History table is used to calculate the beam heading reported in the Bandmap.

14004.40 CW Elecraft K3 VFO A

File Edit View Tools Config Window Help

CW PH

6m 6m
2m 2m
1.25m 1.25m
70cm 70cm
35cm 35cm
23cm 23cm

W3BGN

Snt: 599 Rcv: 599 Grid: FN20

Run S&P 27

F1 Qrl? F2 Exch F3 Tu F4 N4ZR F5 His F6 Repeat
F7 Empty F8 Agn? F9 Empt F10 Call? F11 F12 Wipe
Esc: Stop Wipe Log Edit Mark Stor Spot QRZ

FN20 176 mi 62° Rev = 242°

K: NA/UNITED STATES, Zn 5 No Score 0

The Call History Text File

This section describes the layout of the default Call history text file and the database table into which the Call history is imported.

The Call History Text File can be created by any text editor – Notepad is fine. The file is comma- or semicolon-delimited, which means that the items of data are in specific locations. The default structure, also reflected in the database table, is:



Call, Name, Loc1, Loc2, Sect, State, CK, BirthDate, Exch1, Misc, UserText, LastUpdateNote. This order is fixed, and if you use the default order, then you must include a comma in each record in the input text file for each field, even if the field is empty. Here's an example:

N9RV,,,,06,-1,1900-01-01,,,,Log update edit fields

As you can see, the file has a number of empty fields before we come to "06", which is the ITU zone number, and is put in the Sect field, because this contest draws from the Sect field to prefill the station's zone.

Call History Import Directives

You can move or exclude columns of data, map ARRL section to State, map State to ARRL section, or truncate a six character grid square to four characters. This is accomplished with the use of import directive commands, which are surrounded with "!!" , to tell the program that they are instructions, not data. When an import directive command is read, the import routine follows that instruction until another import directive command is read or all data is imported. Import directive commands can be repeated if the data structure or field order changes in the data.

Here is a list of the import directive commands that can be used in a Call History text file:

- !!Order!! – defines the order of the comma separated input data that follow
- !!MapStateToSect!! – populate empty Sect field from the State information
- !!FourCharGridSq!! – truncates 6 character grid squares to 4 character grid squares
- !!AppendUserText!! – append additional user text into the UserText field (default)
- !!NoAppendUserText!! – do not append user text into the UserText field, new data replaces prior
- !!Validate50State!! – ignore all state data that isn't one of the 50 states
- !!NoLoc2AltGrid!! – do not move the existing Loc1 grid into Loc2 for an alternate grid location
- !!MapOnSection!! – map GTE, ONN, ONE, ONS to ON section
- !!ValidateArrlSection!! – remove any section that is not an ARRL section (includes VI, PR) Can be used to remove ON

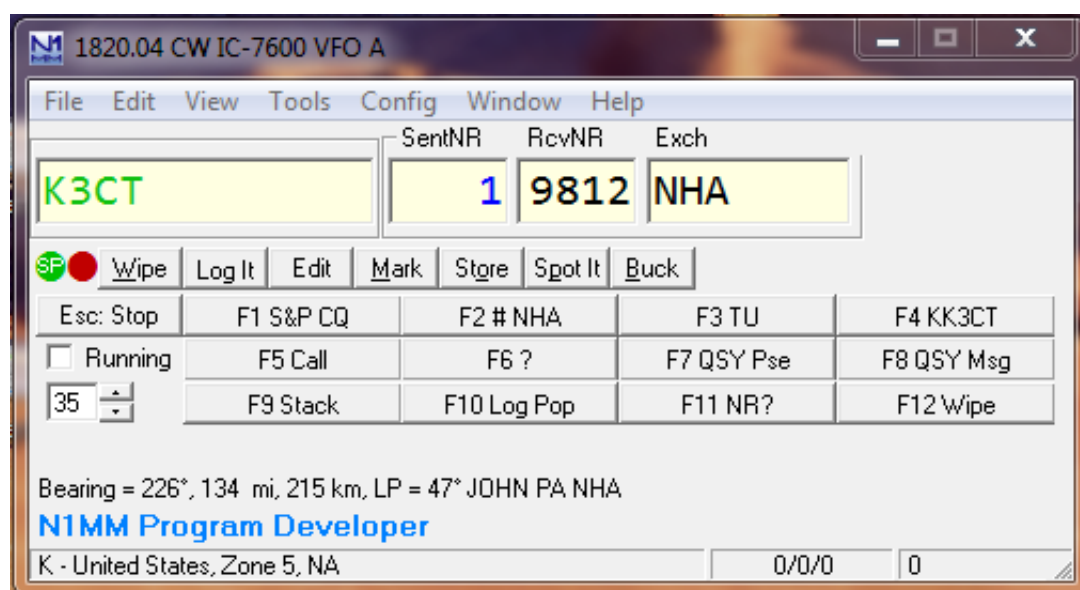
Every exported Call History text file lists the import directives, the field names, and the maximum size. Here are the Call History field names along with the maximum size. The import routine will truncate any field that exceeds the maximum, discard any CK value that is not a number, and discard any Birthdate that is not a date. If an !!Order!! input directive is not read during file import, the routine expects the data to be in this comma separated order:

Call(15), Name(20), Loc1(6), Loc2(6), Sect(8), State(8), CK(#), Birthdate(date), Exch1(12), Misc(15), UserText(60),

Here's an example of Call History data that will import without an import directive:

K3CT, JOHN , , , ,PA , , ,NHA, , N1MM Program Developer

As you can see, each comma denotes a field. Successive commas mean empty fields. Spaces can be added to make it easier to count the number of commas. If this single line file was imported into the Call History database and the Call History Look Up option is enabled, the Entry window for the PA QSO Party would appear like this when the callsign K3CT was entered and spacebar pressed (or if ESM mode is enabled, when Enter is pressed):



As you can imagine, making sure you have the right number of commas between actual data in the text file can be a problem. Fortunately, the !!Order!! command offers a simple solution. For example, you create a text file that looks like this:

!!Order!!, Call, Name, CK, Sect
N4ZR, Pete ,54 ,WV
N3OC, Brian, 67, MDC

When you load it into the Call History database, the data will be put in their proper places in the Call History table, and when you operate in Sweepstakes, for example, with Call History Lookup enabled, the program will pre-fill the check and section in the Exchange field, and will display the name and all the other data in the Bearing line of the Exchange Window. This redundancy is deliberate, because if you set out to edit the Exchange and then realize that the pre-filled data were correct, they are there for ready reference.

What this change has done is to make it much easier to generate Call History text files for importing into the Call History database. For example, you could generate a file that contains calls, names, checks and sections for everyone you worked last year in Sweepstakes, and by writing the correct !!Order!! line, like this:



!!Order!!,Call,Name,CK,Sect

The !!Order!! import directive can also be used to ignore columns of data. For instance, if the data file contains additional columns as shown below:

DD3JN, 70 23, GERD, JO42AI,JO31OE
PA1M, 144 70, Carel, JO33FE, JO33II

The second column can be ignored with the import directive prior to the data.

!!Order!!, Call,, Name, Loc1, Loc2
DD3JN, 70 23, GERD, JO42AI,JO31OE
PA1M, 144 70, Carel, JO33FE, JO33II

Alternately, the second column of data can be placed in the **UserText** field with the following import directive:

!!Order!!,Call,UserText,Name,Loc1,Loc2
DD3JN, 70 23, GERD, JO42AI,JO31OE
PA1M, 144 70, Carel, JO33FE, JO33II

The Supported Contests section of this manual may include the Call History field(s) used for exchange information. If the field information is not listed in this section follow this procedure to determine which Call History field to populate.

- Open a new contest log.
- Log some dummy QSO's that contain the exchanges of interest.
- Click Tools, Clear Call History then Update with Current Log.
- Export the Call History (File, Export, Export Call History) and examine the exported QSO text.
- Place the exchange data in the populated call history field. The coding of some contests is complex. It is not unusual to find that contests that store information in fields for points calculation, determining multipliers, or exporting Cabrillo. Therefore, it may not be necessary to populate all of the Call History fields.

If your Call History file import doesn't function correctly, review the import directive(s) to make sure they match the field names. For example, you must use **Sect**, not sec or Sec, and **Ck**, not Check. **Field name case is not important.** All of these field names will import data into the **Sect** field: Sect, SECT, sect, sEcT, SeCt. If problems continue, post a message on the N1MM Logger email reflector asking the other users for help.

Associating Call History File with a Contest

If you want to have a specific Call History Lookup file loaded and enabled whenever you start that contest, add the filename to the Associated Files tab for the contest log. From that point forward, whenever this contest is opened in any database, the specified Call History Lookup file will be imported.



Identifying the Call History Lookup Data Contests

If you add the short contest name (the one in the Contest Setup dialog) to the Call History text file as a comment (preceded by a "#") the program will automatically enable or disable Call History Lookup when the contest log is opened or Call History data is imported. When the Call History Lookup options has been changed a short message will appear in the Entry Window indicating the action.

The loaded Call History Lookup data can be identified for use in more than one contest by adding multiple contest name comments as shown in the example below (omit the quotation marks):

"#NAQPCW"

"# naqpssb"

For QSO parties, the state abbreviation is required after the contest name. Notice the space before the state. Example:

"# QSOParty PA"

- The "#" must be the first character on the line. Adding one or more spaces after the "#" is allowed.
- Only one contest name per line is allowed.
- Duplicate contest associations are ignored.
- The contest name may be upper, lower, or mixed case.
- The contest names are validated. If the validation fails, the contest association is ignored.
- The user can turn Call History lookup On or Off manually. The association is not checked at program start.
- The contest association identifiers are exported with a Call History file export.

Related Menu Options

- **>Config >Enable Call History Lookup**
 - Check to enable Call History Lookup.
- **>File >Import >Import Call History**
 - Select the file(s) to be imported. All information in the Call History table in the Admin database is erased, and the imported information substituted.
- **>Tools >Update Call History with Current Log**
 - Update the call history table in the current database with the QSOs from the current log. Contacts will be added when new or updated when already in the call history table. For the 2 grid fields the behavior is a bit different. When both grid fields are filled and a new third grid has been logged, the second grid (oldest) will be removed, and replaced by the contents of the first field. The new grid will be added to the first position. The same change in position will happen when only the first grid is filled and a new grid has to be added from



the log. A 4 digit grid will be overwritten by a 6 digit grid when the first 4 characters are the same.

- **> Tools > Clear Call History then Update with Current Log**
 - As above, except clears the call history table before adding contacts from the current log. Can be used to start a new Call History table.
- **>File >Export >Export Call History**
 - Exports the information in the Call History table. It is very important, particularly if you have changed the Call History table, to re-export the data as a Call History text file. **Otherwise, any changes will be lost.** You are given the opportunity to rename the text file so that, for example, a 2008 SS file can be renamed 2009 SS, to indicate that it has been updated.

You **can** import any Call History file that you formerly used without an **!!Order!!** directive. When you export a Call History text file, the program fills in the commas that are necessary to fit the default order, as well as -1 for each empty CK and 1900-01-01 for each empty Birthdate. This is necessary to ensure compatibility with your old Call History files.

Reverse Call History Lookup

In addition to the regular Call History lookup, where you type a call sign into the Entry window and the program pre-fills the exchange based on the data in the Call History file, there is also a Reverse Call History lookup feature, where you can enter an exchange into the Entry window and the program will search the log and the Call History file for callsigns that correspond with that exchange. This does not work in all contests (for example, it makes no sense for serial numbers and it doesn't work for Sweepstakes because of the complicated exchange). If the Call History lookup option is selected, the Reverse lookup feature will search the Call History file as well as the log.

The Reverse lookup feature is enabled using a pop-up (right-click) menu item in the [Check](#) window. If the Reverse lookup feature is not available for that contest, the menu item will be greyed out. Once the Reverse lookup feature has been enabled, you can type an exchange, or a partial exchange, in the exchange box in the Entry window, and if the number of characters typed in is equal to or greater than the threshold (which you can set with another pop-up menu item), the program will search in the log and the Call History table for callsigns whose exchange matches the typed-in exchange. Up to 100 matching callsigns will be displayed in the Check window. Once you have determined which of the matching callsigns is the correct one, you can click on it in the Check window and the callsign and exchange will be transferred into the Entry window.

If there was a full or partial call sign entered into the callsign box in the Entry



window before entering the exchange, only call signs from the log or Call History file that match the partial call sign in the Entry window will be displayed in the Check window, and they will appear below the regular matching callsigns that were filled in from the log and the SCP file.

You can also control whether the matches for the partial exchange can be found anywhere in the exchange field in the log and Call History file, or if the match must begin with the first character (that is, whether BC will match all of AABCD, ABC, BC, BCDE, etc. or whether it will only match BC, BCDE, etc.). Limiting the match to the first characters and/or increasing the threshold for the number of characters matched will result in faster lookups and smaller numbers of matching callsigns found.

The Names Must Match

Both for prefilling the exchange and for reverse lookup, the name of the field in which the data is stored in the Call History file must match the name of the field that is used in that particular contest. For example, if the state/province is part of the exchange, depending on the contest that part of the exchange might match the State, Sect or Exch1 field in the Call History file. You can use the **!!Order!!** directive to ensure that data in the Call History file is associated with the appropriate field name for the contest.

For example, if you have a Call History file for the NAQP that looks like this:

!!Order!!,Call,Name,State
K3CT,John,PA

then to use this same data file in a state QSO Party, you might have to change the first line of the file to **!!Order!!,Call,Name,Exch1** while leaving the rest of the data unchanged. You can determine which fields are used in a given contest type by creating a dummy instance of the contest, entering some typical fake contacts, using the Tools > Clear Call History then Update with Current Log menu item, exporting the Call History file to a temporary text file, and then examining that file with a text editor to see which field names are used for which exchange fields in that contest type. For some contest types, you may find the same exchange data in two fields in the Call History file. In such cases you may have to experiment to determine which of the fields is/are used for reverse lookup.

Windows

The Available Mults and Qs Window

The Available Mults and Qs Window

The Available Mults and Qs window is most useful when spots are being received from a Telnet DX cluster (e.g. in a multi-operator setup, in Assisted or Unlimited class, or in contests that allow spots to be used in the single-operator class).

The Available Mults and Qs window looks like this.

Available - 45 Mults 79 Qs of 105 total spots

Mults Only Bands & Modes

	160	80	40	20	15	10
Mults	0	1	7	18	15	4
Qs	0	3	21	28	23	4
Total Qs	0	3	21	28	24	4

Call	Freq	Dir	Mode	S/N	Time v	Spotter
BG8EHZ	21020.1	000° #	CW	06dB	1132Z	DQ8Z-#
YD1CSV	21017.0	346° #	CW	06dB	1132Z	DL1EMY-#
FS/K4UEE	21034.0	144° #	CW	09dB	1132Z	DL1EMY-#
SN0DMY	21018.1	043° #	CW	08dB	1131Z	DQ8Z-#
JO7KMB	21028.1	331° #	CW	23dB	1131Z	OH6BG-#
SV5/DL3DRN	21024.3	052° #	CW	24dB	1131Z	OH6BG-#
IK2CKR	21021.0	054° #	CW	07dB	1130Z	JA1LZR-#
SV2/RW3AL	21021.2	053° #	CW	02dB	1127Z	RZ3DVP-#
JQ2LYP	21040.3	331° #	CW	34dB	1125Z	BY5CD-#
OK2PX	21014.2	046° #	CW	04dB	1125Z	WZ7I-#
ZS2I	21030.0	108° #	CW	40dB	1124Z	BY5CD-#
KP4CPC	21027.6	152° #	CW	04dB	1124Z	5B4AGN-#
EG5FAS	21023.0	064° #	CW	01dB	1122Z	HA6M-#
UA9CDC	21040.3	022° #	CW	04dB	1121Z	JJ1LIB-#
EI5DR	21019.7	049° #	CW	03dB	1121Z	HB9DCO-#
DL5ZBA	21039.6	047° #	CW	09dB	1120Z	EA4TX-#

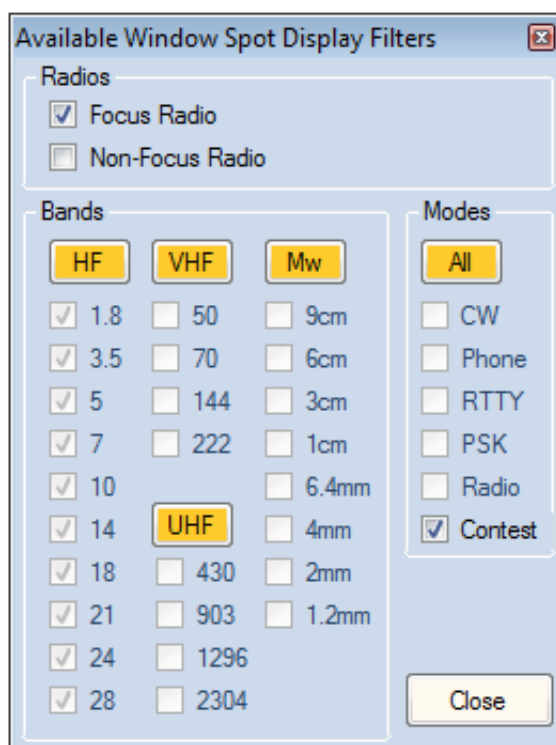
The Band Buttons Have Moved!

Before you ask – the Band Buttons in N1MM Logger Classic's Available Mults & Qs

window have moved to the Entry window in N1MM Logger+.

Key Features

- **The Header** – The header shows the number of Available Multipliers and QSO's. (Example 4 Mults 12 Qs)
- **The Summary Panel** – the table in the center of the window header indicates how many new QSOs and new multipliers are currently available on each of the contest bands. The bands with the most multipliers and QSOs available is highlighted in red.
- **The Mults/Mults&Qs Button** – clicking this button toggles between showing both Qs and Mults and only Mults in the lower pane of the Window (also known as the Spots listbox). It is color-coded with standard N1MM coding for Mults and Qs to remind you of which is which at 3 AM on Sunday. Its color and caption always reflect your current choice, **not** the one that will be invoked when you click it.
- **The Bands & Modes Button** – Clicking this button opens a Bands/Modes menu which looks in general like the Bands/Modes tab of the Telnet window, but which only affects the contents of the lower pane of the Available window. Options which are not available in the current contest are greyed out.



- If you check the Focus Radio box, the spots listbox will only display spots that are on the band to which the focus radio or VFO is set. If you change



the focus to another radio or VFO, the spots listbox will switch to displaying only those spots. The non-focus radio or VFO selection is disabled when SO1V is selected

- If you check Contest under Modes, only those spots that fit the contest modes will be displayed in the Available window's spots listbox.

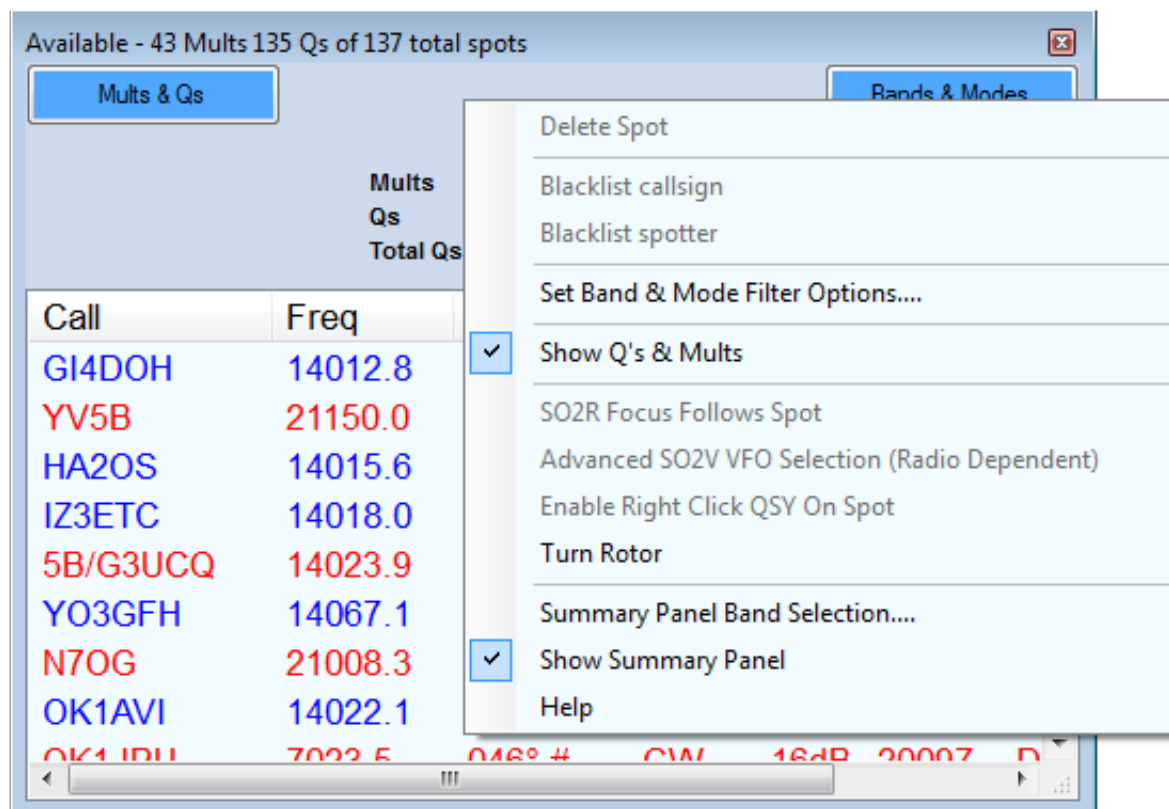
Spot Listbox

The list box (the lower section of the window) shows spots received via Telnet. There are 7 columns, nominally in this order: Call, Frequency, Dir (bearing), Mode, SNR (Signal-to-noise ratio) for Skimmer spots, Time (hhmmZ) and Spotter.

- You can click and drag the column headings to any order you want, and narrow the window to reduce its size and hide columns you don't care about.
- You can size the columns by dragging the right edge of the column title. Columns that appear to be missing will show with a very light colored double bar. Grab the right side and drag.
- Clicking on a column title will sort the column, and clicking again will reverse the sort order.
- An indicator of split spots appears next to frequency.
- Spots coming from a local Skimmer are shown with a (!) to the right of the bearing, and those from a non-local Skimmer or the RBN (other than your spots, if you are a contributor) are tagged with with (#). A sunrise/sunset indicator is shown to the right of the bearing where applicable, as an aid to determining which spots may either be "perishable" or particularly suited to a gray-line QSO.
- Spots are colored by default as follows:
 - Green – double multiplier
 - Red – single multiplier
 - Blue – valid QSO

The colors may be changed in [Manage Skins, Colors and Fonts](#), on the Entry window's Config menu.

Right-Click Menu



- **Delete Spot** – If you right-click on a spot in the spot listbox, the right-click menu will come up, and the “Delete spot” option will not be greyed out. Click it to delete the selected spot. **Do not** left-click the call first.

Deleting Spots – Another Way

If your mouse has a clickable scroll wheel, you can also delete spots by clicking on the callsign with it

- **Blacklist callsign/Blacklist spotter__** – Right-click on a spot, and click either option to get rid of either a persistent busted spot (e.g., EK3LR) or a problem spotter.
- **Set Band & Mode Filter Options** – Opens the same dialog as the Bands & Modes button on the window header.
- **Show Qs & Mults** – Replicates the toggling function of the Mults & Qs button on the window header.
- **SO2R Focus Follows Spot** – When enabled, when you click on a spot, and you are not currently transmitting, the Entry focus will move to the Entry Window of that spot.
- **Advanced SO2V VFO Selection (Radio Dependent)** – ((Single Operator Two VFO Operation (SO2V)|#Advanced_SO2V_for_Radios_with_Separate_Sub-Receiver|the chapter on SO2V operation)) for details. Works on radios with separate sub-receivers.
- **Enable Right-click QSY on Spot** – In SO2V and SO2R operation, QSYs the



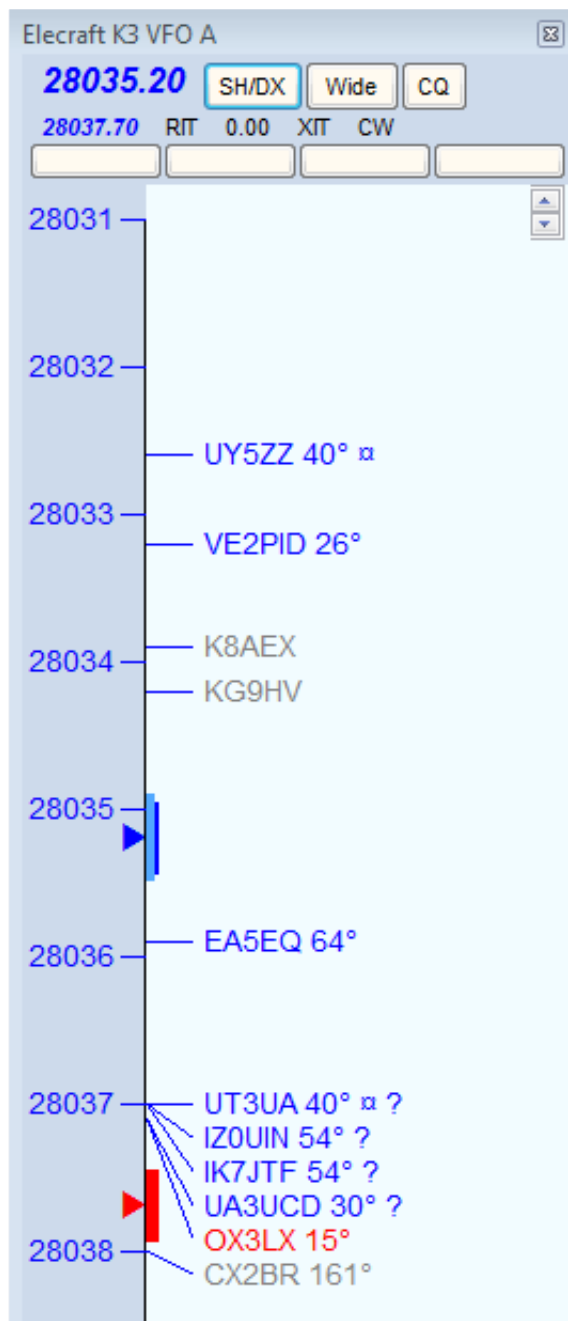
second VFO or radio to a spot when it is right-clicked, without changing the entry focus.

- **Turn Rotor** – turns the rotator for the Entry window that has the entry focus to the bearing for the station in the call-frame or call-sign textbox
- **Summary Panel Band Selection** – Allows you to customize the Summary Panel for any desired mix of HF, VHF and microwave bands.
- **Show Summary Panel** – uncheck this option to reduce the size of the Available window by hiding the Summary Panel
- **Help** – Internet connection required – displays this section of the manual

The Bandmap Window

The Bandmap Window

Your Bandmap window will be similar to this one.



Key Features

The Bandmap window represents a VFO or a radio. There are three scenarios: one radio with 1 VFO displayed (SO1V); one radio with 2 VFOs displayed (SO2V); or two

radios with one VFO shown for each radio (SO2R). Bandmaps can be zoomed down to just a few KHz or up to the entire band.

With one radio in SO1V mode, only one bandmap can be displayed. With one radio in SO2V mode, two bandmaps may be displayed, one for each Entry window. Each bandmap represents one VFO. With two radios the operation is exactly the same, except that each bandmap represents one of the radios.

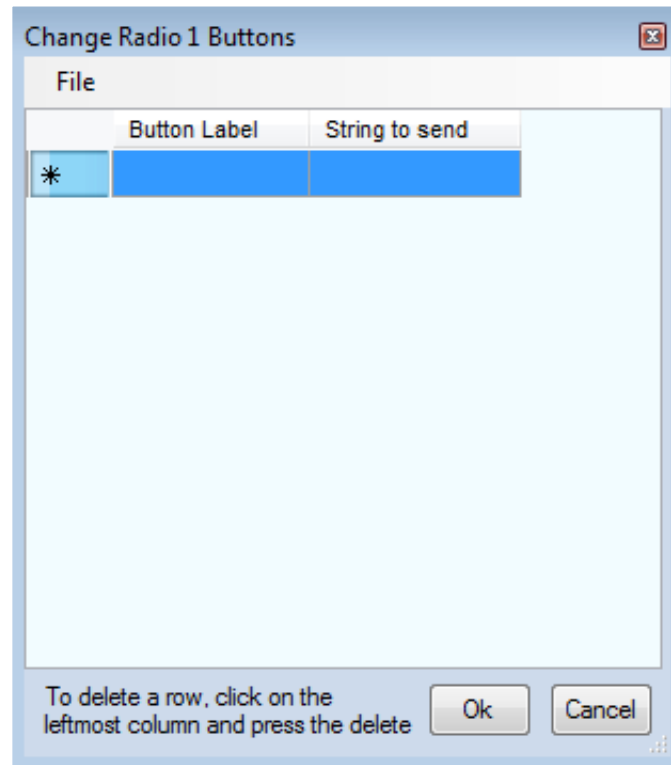
To switch the Entry or RX Focus from one bandmap to the other, Press “\”. To switch both the Transmit and Entry/RX Focuses, press “Pause”.

The Bandmap window includes the following basic features:

- Current receiving frequency is denoted by a blue arrow. If split, the current transmit frequency is denoted by a red arrow. At the point of each arrow is a graphic depiction of whether the radio is currently in a wide or narrow filter setting for its current mode.

In this example, the radio is in the CW band. The dark blue and red bands are a notional (not actual) representation of the CW filter bandwidth, while the light blue represents the tuning tolerance set in the [Configurer](#). If you tune the VFO outside that range, any call-sign captured into the Entry window’s call-frame or brought into the Entry window’s call-sign textbox will be erased. If you have elected to set the Config menu option “QSYing wipes the call and spots QSO in bandmap,” the station you did not work is spotted in boldface as a reminder to come back to it.

- The up/down arrows in the upper right control the size of text in the window, independent of the global setting for the rest of the program.
- In the title bar, the first line of smaller type shows the name of the connected radio, and the VFO or radio denoted by the Bandmap. Immediately below in larger type is the receiving frequency and below that, in smaller type, is the transmit frequency if different (when Split). To the right are three clickable buttons. The first sends SH/DX to the Telnet cluster to which you’re connected. The second toggles between wide and narrow filter settings, always displaying the one that will be selected next if it is clicked. Clicking on the third (labeled “CQ”) will jump your radio’s VFO to the last frequency on which you called CQ on the current band. The text CQ-Frequency is shown on the Bandmap on the frequency where you last went into Run mode, and used as the target for this function.
- Below the three buttons are text prompts to remind you that RIT or XIT are on (by turning red), report the amount of the RIT or XIT offset, and remind you what mode the radio is in. Each of these is clickable to turn the function off or on, or to step through the available modes – see [Clickable Text Messages](#) below.
- In the bottom line of the header are four programmable radio control buttons. Right-click on any of them, and an editing dialog will appear:



- The string to send is in the format of a radio control macro (e.g. CAT1ASC or CAT1HEX macro). Enter a label into the button label column and a radio control macro in the same format you would use in a function key message, including the curly braces. into the “String to send” column. Now clicking on this button will send the selected command to the radio. You can use “|” to set up commands and labels to toggle between the information on either side of the button. For an Icom 7300, here are some examples:
 - Scope on|Scope off {CAT1HEX FEFE94E0271001FD}|{CAT1HEX FEFE94E0271000FD}
 - 100w|50w|20w {CAT1HEX FEFE94E0140A0255FD}|{CAT1HEX FEFE94E0140A0128FD}|{CAT1HEX FEFE94E0140A0051FD}
 - IP+ on|IP+ off {CAT1HEX FEFE94E01a0701FD}|{CAT1HEX FEFE94E01A0700FD}
 - NR On|NR Off {CAT1HEX FEFE94E0164001FD}|{CAT1HEX FEFE94E0164000FD}
 - NB On |NB Off {CAT1HEX FEFE94E0162201FD}|{CAT1HEX FEFE94E0162200FD}
- You can mouse over any call-sign on the Bandmap and a tool-tip will appear briefly, telling you when the station was spotted, by whom, and anything else about the spot. In addition, when a spot is less than three minutes old NEW will be placed behind the call and bearing on the Bandmap. When the spot includes split frequency information, the station’s receiving (QSX) frequency will be shown behind the bearing. Splits are shown as 3 digits on HF. The bearing to a station is shown only for stations outside your own



country, with exceptions for USA and Canada.

- Spots of stations close to their sunrise/sunset time are marked with a sunrise/sunset indicator “ α ”.
- CW Skimmer spots are marked with “#” in spotter’s call-sign as skimmer spot in the bandmaps (see picture at right above). If you are the spotter, then the spots are marked with a “!”.

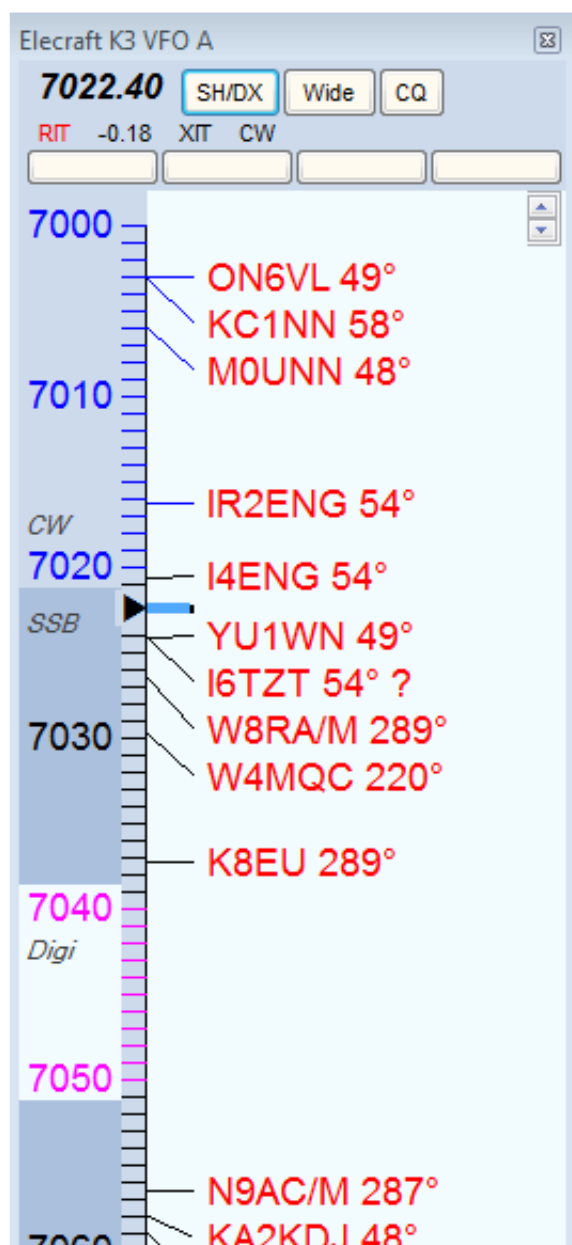
Colors of the Incoming Spots

- Blue: Will be a good QSO, not a multiplier
- Red: Single Multiplier Example: CQWW – QSO is either zone or country multiplier (one multiplier)
- Green: Double or better Multiplier Example: CQWW – QSO is a zone and a country multiplier (two multipliers)
- Gray: Dupe
- **Bold** – This is a self-spotted call. In this context “self spotted” means that the user typed in the call, not that the spot came from the spotting network.

Note– A different set of color codes is provided for the WAE contests, to assist with QTCs. Read about it [here](#).

Display and Adjustment of Band Plans in Background of Bandmap Frequency Scale

The band plans (mode-based sub band limits) in the Bandmap window are important for other parts of the program besides the Bandmap window itself. These limits determine what mode the program assigns to incoming spots in the Telnet window if those spots do not contain the mode in the spot notes. This in turn can affect how the spots are filtered and whether or not they are passed from the Telnet window to the Bandmap and Available Mults & Qs window. Also, if the “Follow band plan” option has been chosen in the Configurer under the Mode Control tab, the mode that contacts are logged in will depend on the frequency. For these reasons it is important to understand how to set the sub band limits appropriately for the type of contest you are entering. The appropriate sub band limits can vary depending on the contest (DX vs. domestic, SSB vx. CW vs. digital vs. mixed mode). Inappropriate choice of the sub band limits is a frequent cause of logging errors.

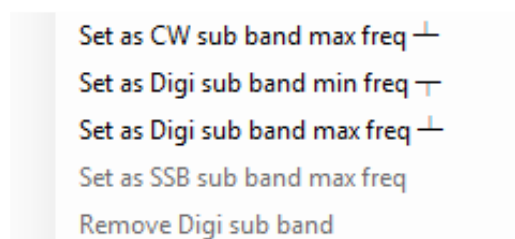


The illustration above depicts the new feature in N1MM Logger+ for displaying and modifying band plans. This is an alternative to the procedure provided on the Config menu of the Entry window. **Note: This is not real - there is no digital sub-band inside the SSB portion of the band. It only illustrates all of the options.**

There are some considerations to be aware of before you begin.

- You can only designate CW and digital band plan segments. It is assumed that anything not designated for one of those modes is SSB territory.
- You can only designate one band segment per mode, but by understanding the rules of precedence used by the program you should be able to handle this. For example, SSB is defined as not CW and not digital, so there is no need to set SSB limits.

To set the band plans from the Bandmap window, right-click **on a frequency number** in the Bandmap. That will bring up the following menu:



Instead of using this method, you may prefer to use “Change Band Plan” in the Entry Window, Config menu.

Note that you click on the frequency you want to set, and then click in the sub-menu to set it. For example, if you want to set the digital sub-band minimum frequency on 40 meters for a major RTTY contest, you might click on “7020” and then click “Set as Digi sub band min freq”.

- The “Set” options are self-explanatory. Options that are not available on a given band or frequency are greyed out.
- The “Remove” option is for CW contests, when many CW operators migrate into what are normally digital sub-bands. To prevent these being logged as RTTY, you can remove the digital sub-bands and re-establish them after the contest.

Keyboard Shortcuts

- **Numeric keypad + key** - Zoom In on the Bandmap associated with the Entry window that has entry focus.
- **Numeric keypad - key** - Zoom out on the Bandmap associated with the

Entry window that has entry focus.

- **Shift - Numeric keypad + key** - In SO2V or SO2R, zoom in on the Bandmap associated with the Entry window that does **not** have entry focus.
- **Shift - Numeric keypad - key** - Zoom out on the Bandmap associated with the Entry window that does not have entry focus.

Jumping to Spots on the active radio or VFO (the one with the Entry focus)

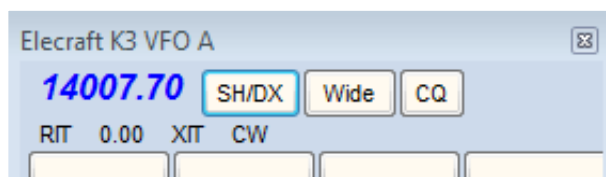
- **Ctrl+Down Arrow** - Jump to next spot higher in frequency.
- **Ctrl+Up Arrow** - Jump to next spot lower in frequency.
- **Ctrl+Alt+Down Arrow** - Jump to next spot higher in frequency that is a multiplier.
- **Ctrl+Alt+Up Arrow** - Jump to next spot lower in frequency that is a multiplier.

Jumping to Spots on non active radio/VFO

- **Ctrl+Shift+Down Arrow** - Jump to next spot higher in frequency on the inactive radio/VFO. This will skip over CQ-Frequency when radios or VFOs are on the same band. Proper keystroke operation is radio dependent. Disabled for SO1V.
- **Ctrl+Shift+Up Arrow** - Jump to next spot lower in frequency on the inactive radio/VFO. This will skip over CQ-Frequency when radios/VFOs are on the same band. Proper keystroke operation is radio dependent. Disabled for SO1V.
- **Shift+Ctrl+Alt+Down Arrow** - Jump to next spot higher in frequency on the inactive radio/VFO that is a multiplier. If you are operating single mode, your mode won't change when jumping between spots. Disabled for SO1V.
- **Shift+Ctrl+Alt+Up Arrow** - Jump to next spot lower in frequency on the inactive radio/VFO that is a multiplier. If you are operating single mode, your mode won't change when jumping between spots. Disabled for SO1V.
- **Shift+Alt+Q** - Jumps to your last CQ frequency on the inactive VFO/radio. Disabled for SO1V.

Clickable Text Messages

These are found below the radio frequency at the top of the Bandmap.



- **RIT Offset** (already 0.00 in the illustration) - Click this label to clear the RIT offset.



- **RIT** – Click this label to toggle the RIT on and off.
- **XIT** – Click this label to toggle the XIT on and off.
- **CW/USB/LSB/RTTY/PSK/AFSK/AM/FM** – Click this label to toggle from USB/LSB (band-specific) through RTTY to CW/PSK/AFSK/AM/FM (radio dependent).

Mouse Actions

- Click on frequency – Moves the active VFO/radio to that frequency.
- Shift+Click on frequency (SO2R only) in inactive Bandmap – Tune the non-active radio without changing window focus. Allows you to be active and sending on one radio and change the frequency on the non-active radio without changing Entry window focus.
- Shift+Click on bandmap callsign (SO2R only) in inactive Bandmap – Same as Shift+Click on Frequency with the addition that the callsign is placed in the non-active radio's Entry window call-frame.
- Click on call – Jump to that frequency and place the call in the Entry window call-frame. When the call-sign field is empty, hit Space to copy the call-sign from the Entry window call-frame to the call-sign textbox.
- Double-Click on call – Jump to that frequency, place call in the Entry window call-frame and the call-sign textbox, replacing anything that was previously there.
- Click on or to the left of the vertical frequency scale – Jump to that frequency.
- Click frequency label – Jump to that frequency.
- Right Click call – Display the right-click menu for the selected call (see Right-Click menu below).
 - The selected call will be shown in italic font and underlined when the right-click menu is open
- Right Click anywhere else – Display the right-click menu with some options grayed out which are call related.

Right-click Menu Options

If you right click in the Bandmap window the right-click menu will appear. If you do not click on a particular spot, certain options will be grayed out.

Elecraft K3 VFO A

14021.53 SH/DX Wide

RIT 0.00 XIT CW

- Remove Selected Spot
- Blacklist callsign
- Blacklist spotter
- Zoom In (Numeric Pad +)
- Zoom Out (Numeric Pad -)
- Go to Bottom Of Band
- Go to Top of Band
- Remove Spots, This Band Only, Leave Self Spots
- Remove Spots, This Band Only
- Remove Spots, ALL Bands, Leave Self Spots
- Remove Spots, ALL BANDS
- Turn Rotor
- Show Last 10 Spots
- Show QRZ
- Show Station
- Show Sunrise/Sunset
- Set Transceiver Offset Frequency
- Set Transceiver Timeout Time
- Set Transceiver Filter Codes ▶
- Find a Callsign (use Alt+F8 to Return)
- Bring to Foreground When Made Active
- Reset Radios
- Telnet Bands/Modes
- Telnet Filters
- Show Telnet History
- Show My Call Spot History
- Help



- **Remove Selected Spot** – equivalent to Alt+D with the spot callsign in the call-frame; removes the selected spot. Grayed-out when not right-clicking on a particular spot.

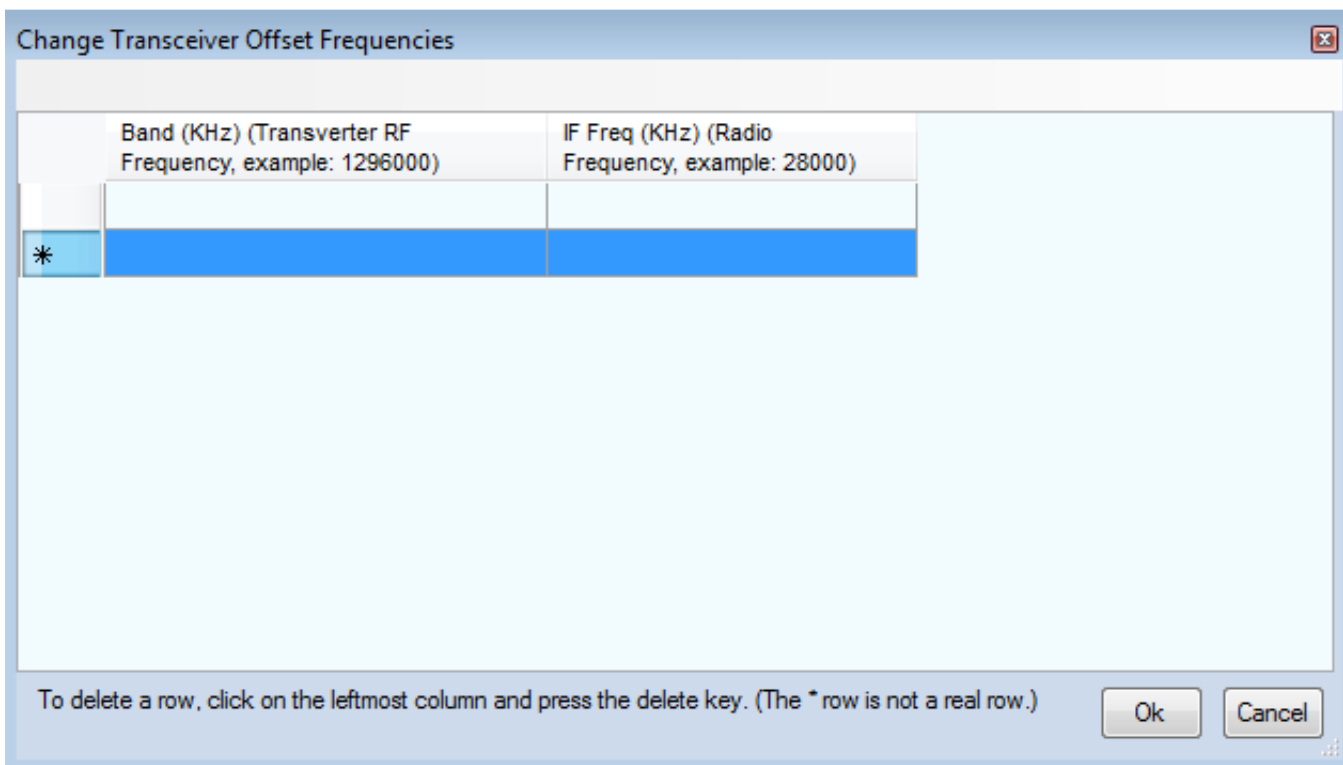
Deleting Spots - Another Way

If your mouse has a clickable scroll wheel, you can also delete spots from the Bandmap simply by clicking on them with it.

- **Blacklist callsign** – if you click on this option and the **Filter Blacklisted Spot Calls** option in the **Filters** tab of the Telnet window's right-click menu is enabled, subsequent spots of that station will not be displayed on the Bandmap or in the Available window. Used to get rid of busted spots that recur often, such as LW3LPL. To edit the list of blacklisted spots, or to remove a call from the list, use the Edit option on the filter tab.
- **Blacklist Spotter** – designed in particular for use when an RBN station is feeding spots that are badly off-frequency (due to I/Q image problems) or otherwise defective. Could also be used for the occasional harasser on traditional DX clusters. Again, this feature is enabled/disabled in the **Filters** tab of the Telnet window's right-click menu; the blacklist can also be edited from that tab.
- **Zoom In** (Numeric Pad + or use the mouse wheel with the mouse over the Bandmap window) – Show a smaller frequency range on the Bandmap that has entry/RX focus; spreads frequency markers and spotted call signs farther apart.
- **Zoom Out** (Numeric Pad – or use the mouse wheel with the mouse over the Bandmap window) – Show a larger frequency range on the Bandmap that has entry/RX focus; brings frequency markers and spotted call signs closer together.
- **Go to Bottom of Band** – Go to the bottom of this SSB/CW subband.
- **Go to Top of Band** – Go to the top of this SSB/CW subband.
- **Remove Spots, This Band Only, Leave Self Spots**
- **Remove Spots, This Band Only**
- **Remove Spots, ALL BANDS, Leave Self Spots**
- **Remove Spots, ALL BANDS**
- **Show Last 10 Spots** – click this option (which is gray unless a callsign has been clicked on) and the cluster will be asked for the last 10 spots **of that station**. These are displayed in the Telnet window.
- **Show QRZ** – requests address information from the DX cluster
- **Show Station** – sends the SH/STA [callsign] command to the DX cluster
- **Show QSL/Packet** – sends the SH/QSL [callsign] command to the DX cluster
- **Show Sunrise/Sunset** – sends the SH/SUN [callsign] command to the DX

cluster

- **Set transceiver offset frequency** – This is for transverter support. The offset is saved when the program closes and read again when opened. Remember to enter the frequency of the transceiver and not that of the transverter when going into split mode (Alt+F7). Information how to fill in this table (which frequencies to enter and how to calculate the IF frequency) can be found in the [VHF and Up Contesting](#) chapter.



	Band (KHz) (Transverter RF Frequency, example: 1296000)	IF Freq (KHz) (Radio Frequency, example: 28000)
*		

To delete a row, click on the leftmost column and press the delete key. (The * row is not a real row.)

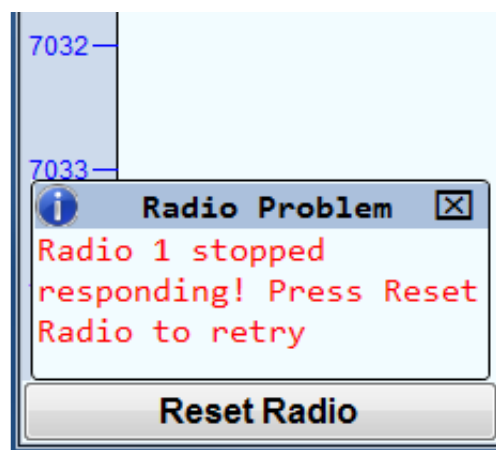
Ok Cancel

- **Set transceiver timeout time** – Sets the time interval after which, if no communication with a radio is occurring, the program will alert you. The value is set for each radio (default is 15 seconds). Entering a value of zero will disable the timeout function. Entering a negative number will set the time out value to 15 seconds. Entering a number that is too large for the program variable will set the timeout to the program maximum. The positive minimum is 5 seconds.
- **Set transceiver filter codes** – This setting controls what is sent to your radio when you click the “Wide/Narrow” button at the top of the Bandmap to toggle between wide and narrow filters. If no value is set, then the program uses the default values set for your radio.

You will be prompted for the wide or narrow string to set the filters. For Kenwood, it's pretty easy. You just look up in your manual the string you want and enter it. For other radios, like FT-1000MP, it's harder. You must enter a series of space-delimited codes in DECIMAL. Therefore, when an FT-1000MP filter code of 0 0 0 0 8C is required, you must enter 0 0 0 0 140 (8C hex).

To reset to the default values in the program enter a space and press the OK button. It is possible to use {CR} in the filter codes which will be replaced with the return character. These selection are disabled when manual radio is selected (i.e. no radio selected).

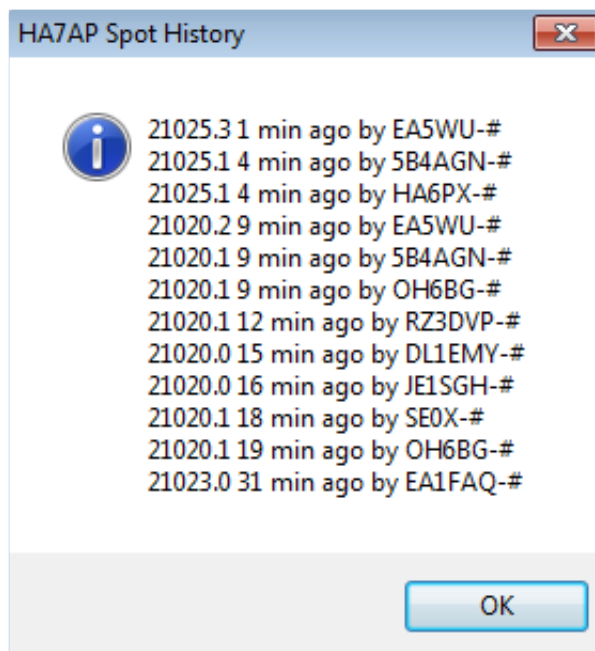
- CW Wide
- CW Narrow
- SSB Wide
- SSB Narrow
- Digi Wide
- Digi Narrow
- **Find a Callsign (use Alt-F8 to return)** - This option allows you to search for a particular callsign in the bandmap. Searches from current frequency up to find each instance.
- **Bring to foreground when made active** - This brings the active bandmap to the foreground. If you don't have enough monitor space, you can place Bandmaps on top of one another, and when you move the entry focus between Entry windows, the active bandmap will be shown hiding the non-active bandmap.
- **Reset Radios** - Allow manual reset of all attached radios. When contact with a radio is lost the dialog below will appear at the bottom of the Bandmap window. The "Radio Problem" popup will disappear after a few seconds, but the "Reset Radio" button will remain until communications with the radio has been restarted. Once any physical problem (such as a disconnected cable) has been corrected, you can click on the "Reset Radio" button or right-click on the bandmap and choose "Reset Radios" from the right-click menu to restart the connection.



- **Telnet Bands/Modes** - opens the Bands/Modes tab of the Telnet window so you can adjust which bands and modes will be displayed on Bandmaps and in the Available Mults & Qs window.
- **Telnet Filters** - opens the Filters tab of the Telnet window so you can

adjust which spots will be displayed on Bandmaps and in the Available Mults & Qs window.

- **Show Telnet History** – Shows the Telnet history of any station on the bandmap. Select the station by right-clicking on it and then clicking on this option.



- **Show My Call Spot History** – Shows the recent Telnet history for spots of your station.
- **Help** – Show the help file for this window.

When the cluster to which you are connected is a DXSpider cluster, select 'Format for DX Spider cluster' on the Other tab in the Configurer.

Hovering with the mouse over a spot

Hovering with the mouse over a spot in the Bandmap gives the following info about the spotted station:

- Exact frequency sent by spotter.
- Call-sign of spotter.
- The time in minutes since the station was placed on the DX cluster network.
- Comments sent with the spot.
- The notation "Self Spotted" indicates that you spotted the station.

Hovering with the mouse over the blue arrow marking your receiving frequency – shows the exact frequency and tuning tolerance.

Example Bandmap Usage

by Tom, N1MM

In Search & Pounce (S&P) the call-frame will show you each spotted station as you come within “tuning tolerance” (user settable) of that station. I’m terrible at remembering whether I worked a station and on what frequency. With worked stations in the bandmap, the program will tell you that they are not workable again. You can tune by them more quickly. The same feature is useful in contests with unworkable stations.

In a contest like CQ WPX, with (basically) no value multipliers, here is how I use the Bandmap. Whenever I can’t get a run going I start S&P on a band with a lot of unworked stations (use the available window). I use Ctrl+Up and Ctrl+Down arrow to go to the next station. If that station is at the beginning of a QSO, I move to the next one. If the QSO is near the end, I wait and work the station. Then I move on. If I reach the top of the band, I start coming back down the band, working the ones I missed on the way up. If there is no station at a frequency, that’s my new running frequency!

In contests with valuable multipliers, you should use Ctrl+Alt up/down to get the multipliers first, then go back and get the QSOs.

If the rate drops fairly low, sweep the band using your VFO. That is where the old calls in the bandmap come in useful. If you copy a call, but it seems like it is going to take a long time to work him, tune to the next guy. If you have “QSYing wipes the call & spots QSO in bandmap” turned on, the call will be spotted in bold, so you can Ctrl+Up/Ctrl+Down to him later.

Remember: if a call is in the callframe, space will load it into the call textbox.

If all this seems very unfamiliar, you haven’t read the Key Assignments help (and/or the Key Assignments Shortlist).

Reading that single item is your single best time investment in using this program.

Spots and the time shown

When you hover with the mouse over a spot in the bandmap, it will show the relative age of a spot in minutes. The time shown here depends on the spot format. There are two formats for spots. One is for current spots, one is for SH/DX spots. Some clusters allow to show old spots in the current spot format. The program handles the two types of spots differently.

- Current spots go into the bandmap with the computer’s local (converted to UTC) time. This is to remove variations in cluster times and order the spots into the time they were received.
- Old spots are logged with the originating cluster’s time with the provision that it cannot be later than the current local (UTC) time.



With AR-Cluster you can display old spots with SH/DX or SH/FDX. It is recommended to use SH/DX, as it will be recognized as an old spot. Other cluster software may have similar capabilities.

Red lines indicating US license frequencies

On the bandmap there are red lines to indicate extra, advanced and general portions of each band. Since US hams can operate only in their section and the sections of lower class licenses, it is in your interest to operate some in the higher portions of each band. Otherwise there are some US hams you will not ever be able to work.

The lines can be found on:

- SSB: 3775, 3850, 7225, 14175, 14225, 21225 and 21300.
- CW: 3525, 7025, 14025 and 21025.
- No lines on 160 and 10 meters.

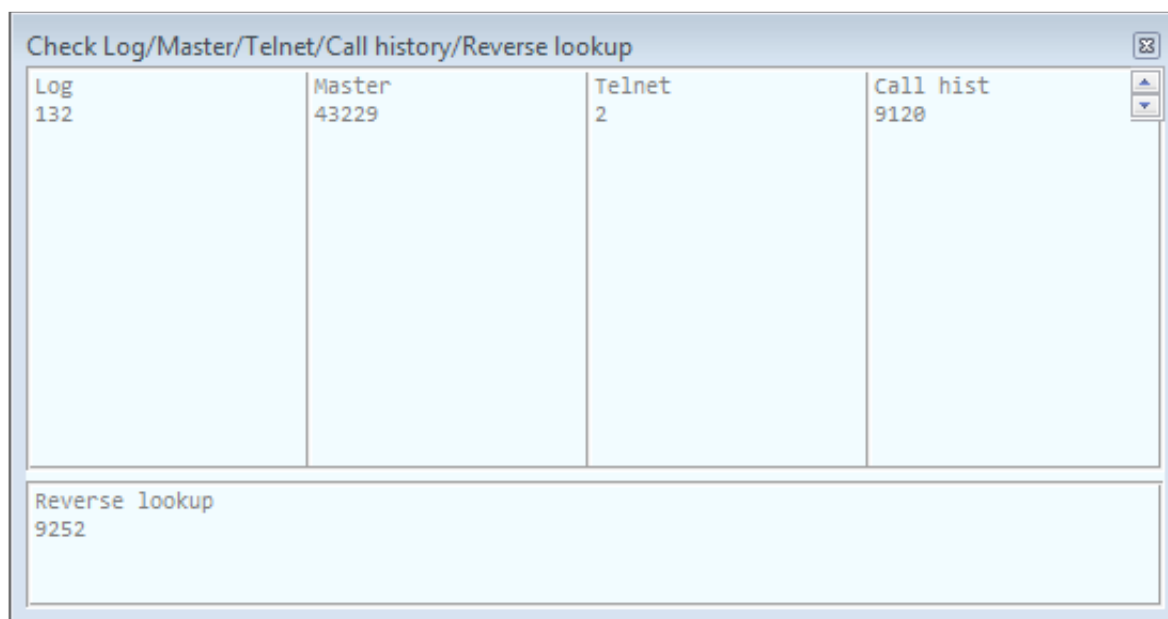
The Check Window

The Check Window

Key Features

The N1MM Logger+ Check window is the latest evolution of the Super Check Partial idea originated by K1EA in the CT logging program. It combines up to four separate sources for checking the validity of an entered or spotted call-sign. Its system of color-coding helps the operator determine if the call-sign as copied is correct, and, **if not, where the error probably lies.**

When first opened, before a partial or complete callsign is visible in either the callframe or the call-sign textbox of the Entry window, the default Check window looks like this:

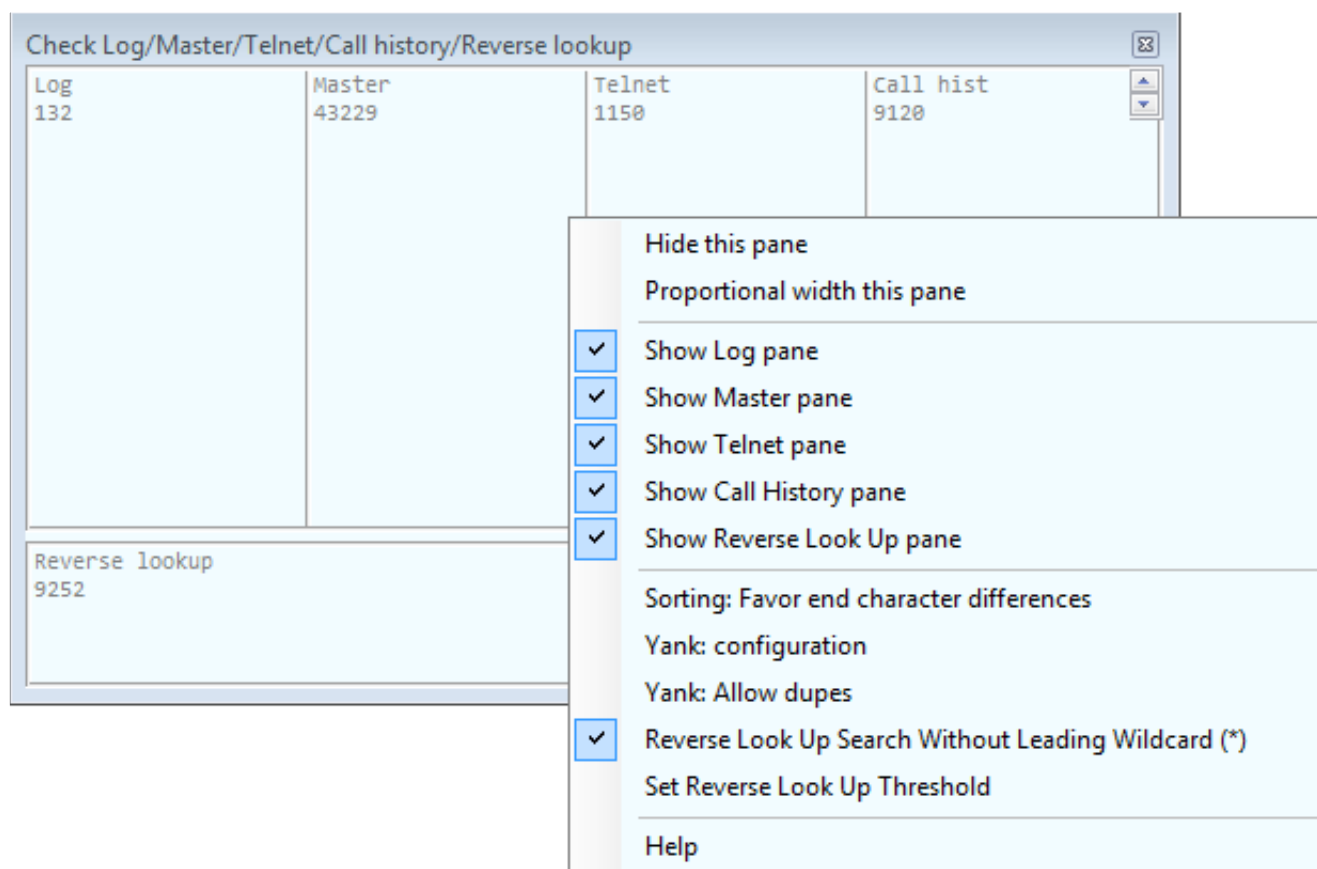


The four upper panes, left to right, will contain results derived from comparison with your current log; with a Master.scp data file downloaded on the Tools menu of the Entry window; with Telnet spots received by the program, and with a Call History file, if one has been loaded. The numbers immediately below the grey pane titles reflect the size of the files under comparison, at the moment the check window was opened. The log and Telnet totals will continue to grow for as long as the underlying database tables continue to grow, but will not be seen again until you re-start the program.

The bottom pane is for Reverse Call History Lookup, discussed below.

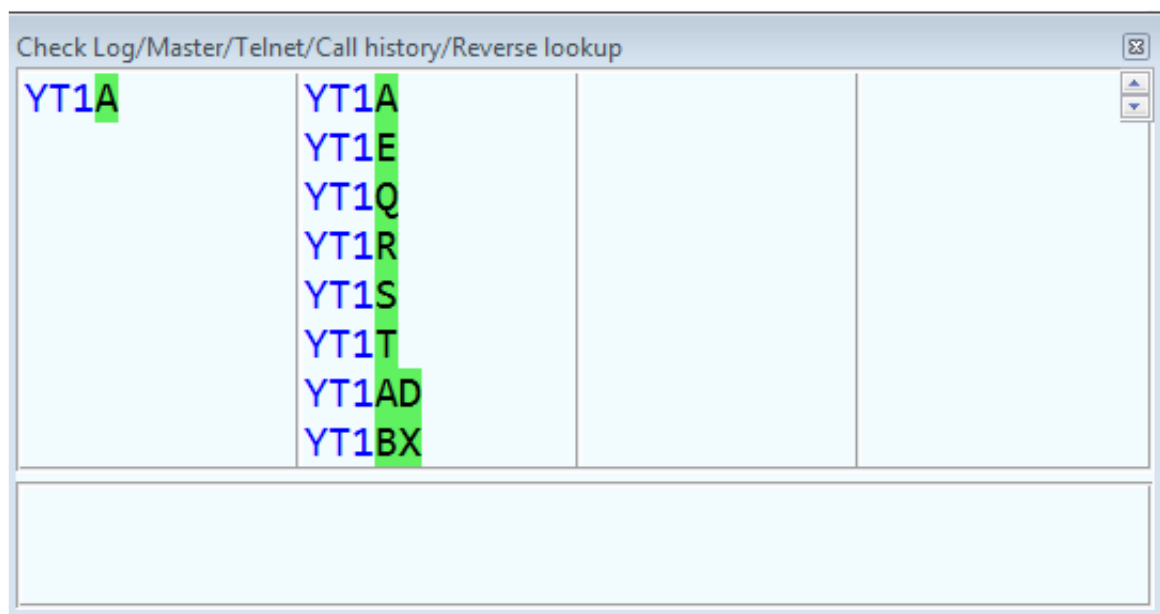
You do not have to display results from all these sources, or from the reverse lookup

window. A right-click menu lets you uncheck any panes you do not wish to see:



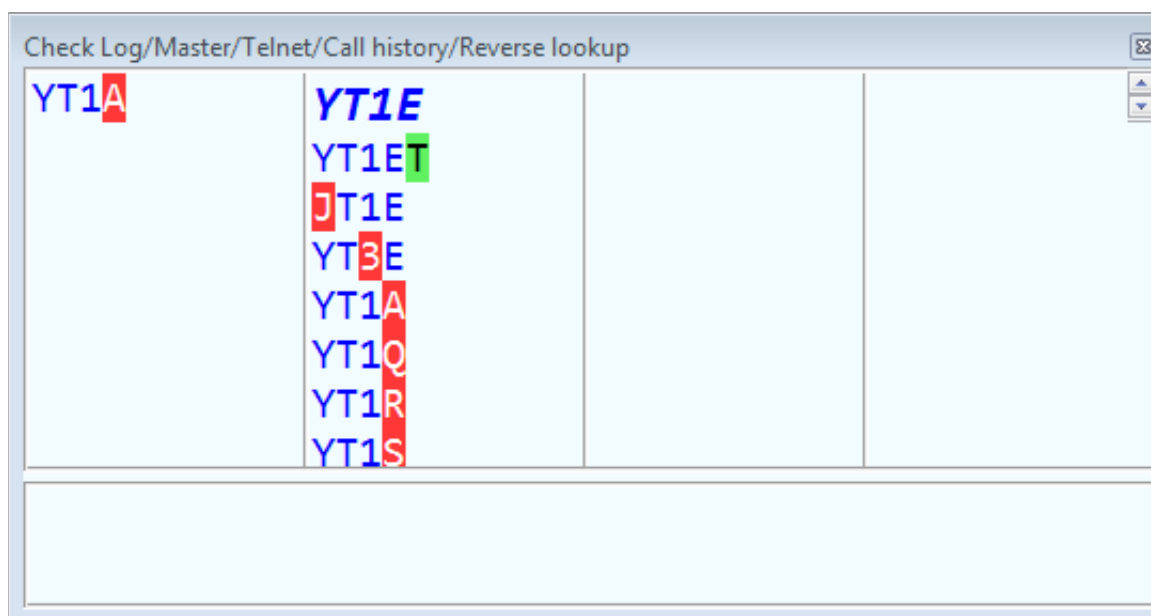
The other choices on this menu will be discussed below.

- When you enter a call-sign in the Entry window's call-sign textbox, beginning with the third character, or a call-sign is transferred into the call-frame from the Bandmap, the Check window will begin trying to check it against the selected sources of information. The check results are displayed as below, using "YT1" as an example:



Note the green highlights – given the first 3 characters, the Check window is telling you that there are matches with those characters, and that any of the callsigns with one or two green-highlighted characters could be correct, based on what has been found in the various call-sign files.

Now enter another character, making the possible call-sign YT1E. The Check window changes:



In the first row, the bold and italicized callsign reflects a perfect match in the master file. "YT1A" with the "A" highlighted in red means that an imperfect match was found in the current log – you may actually have heard YT1A rather than YT1E, since the station has already been logged once in the contest.

There is another list of suggested call-signs in the master file pane. The first, with the green highlight, means that “YT1E” matched a call in the master file, but only in part. The full call found in that file is YT1ET, so the “T” is highlighted in green. But there are other possibilities, if you miscopied one of the characters. Each of the characters that would have to be changed is highlighted in red.

Special Telnet Features

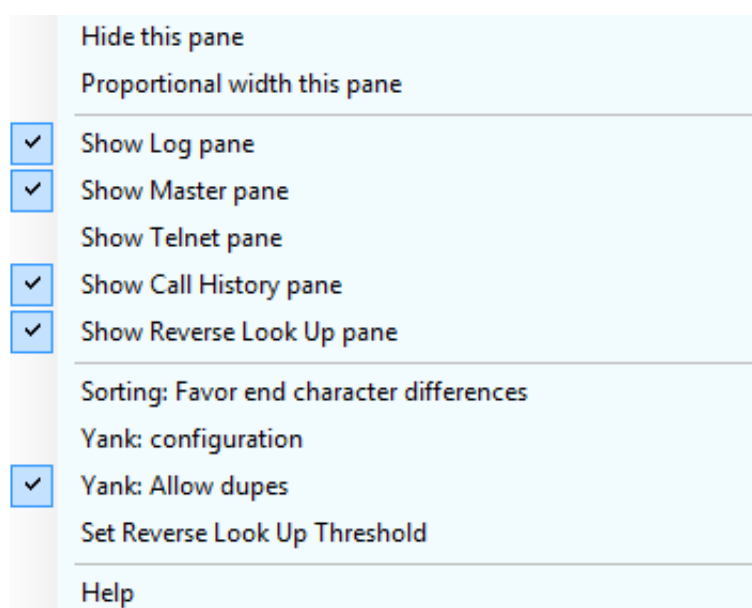
Because of uncertainty about the quality of Telnet spots, a spot will only appear in the Telnet section if:

- It has been spotted at least 3 times or
- It has been spotted with a Q or V spot-quality tag on AR Cluster version 6.
- If the Save Spots checkbox on the Filters tab of the Telnet window is checked, this check of Telnet spots will be retrospective to the beginning of the current contest. If it is not checked, the retrospective check is limited to the Packet Spot Timeout interval set either on the Filters tab or on the Bandmap’s right-click menu.

Reverse Call History Lookup

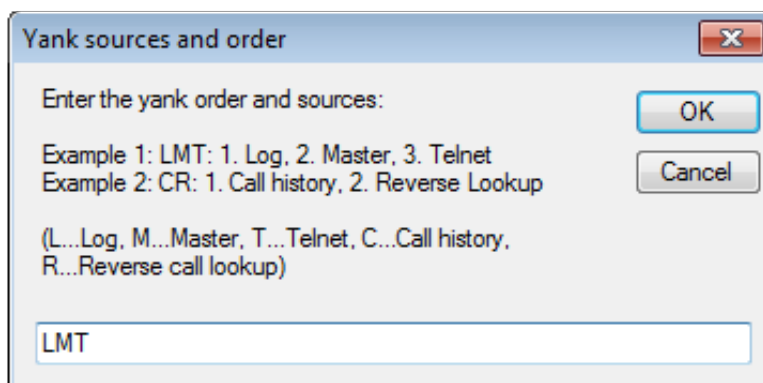
In contests where this feature is supported you may enter a sought-for multiplier (for example, a rare county in a QSO party) in the Exchange textbox of the Entry window. The call-signs of any stations with that multiplier in either the current log or the Call History file will then be displayed in the bottom pane of the Check window. A full description of the Reverse Call History Lookup feature may be found [here](#).

Right-Click Menu



The right-click menu contains user-selected options for the Check window, along with some actions that can be taken “on the fly.” It is opened by clicking in the text area of the Check window (not in the header).

- **Hide this pane** – used to get rid of a pane in the Check window quickly. Right-click in the target pane and click this option to hide it.
- **Proportional width this pane** – This feature can be used to make one section of the Check window larger than others. Right-click in the pane you want to enlarge, select this option, and enter a number in the pop-up dialog that appears. Panes are all the same width by default, so entering “2” will make the target pane twice as wide as the others, “3” will make it three times as wide, and so on. This choice remains in effect until the Check window is closed and reopened.
- The next five checkable options determine which panes appear in the Check window. If you are not running Assisted, for example, there is no reason to display the Telnet pane; if you have not loaded a Call History file, you can hide that pane, and so on.
- **Sorting: Favor end-character differences** – Used to determine how much weight to give the last character in an entered call sign. This will help determine how high up the listing of possible calls a call sign with a /P, for example, might appear.
- **Yank: configuration** – The hot-key Alt+Y can be used to “yank” a call sign from the Check window into the call sign textbox of the Entry window, replacing what is currently there. Clicking this option on the right-click menu opens a sub-menu:



This sub-menu determines the panes in which call signs will be selected for yanking and the order in which those panes are selected with consecutive yanks. In this example, with LMT entered as the Yank order, the Log, Master and Telnet panes will supply the call signs to be yanked. The first Alt+Y will yank the first call in the top row in the Log pane. Subsequent Alt+Ys will step through the calls in the top row in that pane, and then do the same in the Master file pane, and then in the Telnet pane. After the first row in all the panes has been exhausted, the next Alt+Y will yank the first call in the second row in the Log pane and proceed through the second row in the three panes in the order specified, and so on.



- **Yank: allow dupes**– As the name suggests, checking this option will allow you to yank call signs which are in your log and reported as dupes.
- **Set Reverse Lookup Threshold** – opens a sub-menu where you can select how many characters must be entered in the Exchange field before the Reverse Lookup occurs. When using a very large Call History file or operating in a QSO party such as 7QP where the first two letters of each multiplier only denote the state, increasing the threshold above the default “2” may help to speed up delivery of meaningful results.

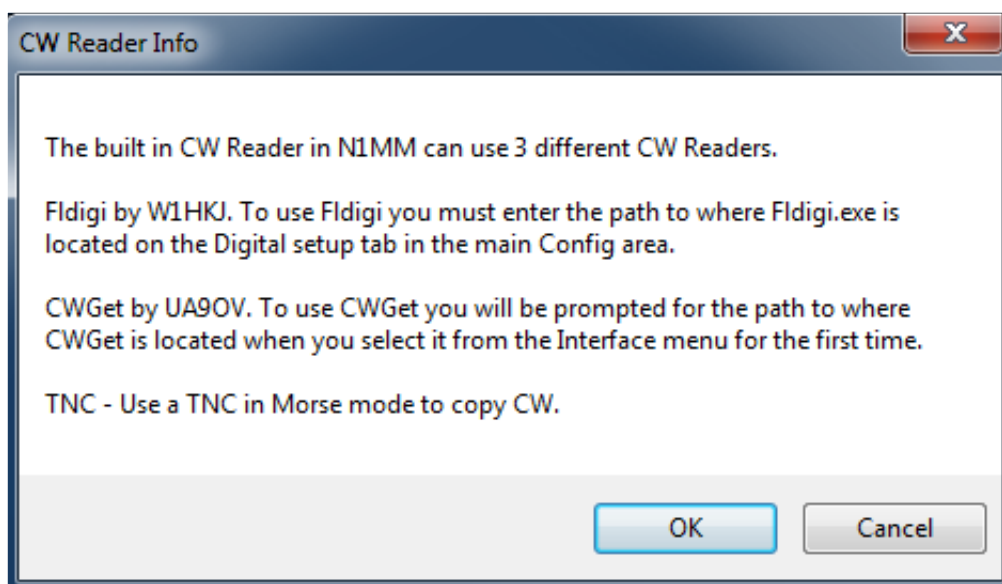
The CW Reader Window

The CW Reader Window

The Logger's CW Reader is receive-only. The CW reader engine cannot be used to transmit CW; to transmit CW, you must configure some other method in the Logger (serial or parallel port keying, or a Winkeyer, for example).

CW Reader Setup

The first time you open the CW Reader window, or any time the window is opened with no CW reader engine selected in the setup, the following dialog will be displayed:



After clicking on OK in the above window, or at any time thereafter by selecting the Setup menu in the main CW Reader window, the following setup window will be displayed:

CW Reader 1 [Minimize] [Maximize] [Close]

CW Reader Settings

CW Engine to Use

Fldigi

☒ **Enable**

Path to Fldigi:

C:\Users\User\Documents\N1MM Logg [Browse]

CW Get

☐ **Enable**

Path to CW Get:

C:\Users\User\Documents\N1MM Logg [Browse]

TNC

☐ **Enable**

Com Port	Data Bits	RTS	Parity
NONE ▾	8 ▾	Always Off ▾	▾
Speed	Stop Bits	DTR	Flow Control
9600 ▾	1 ▾	Always Off ▾	None ▾

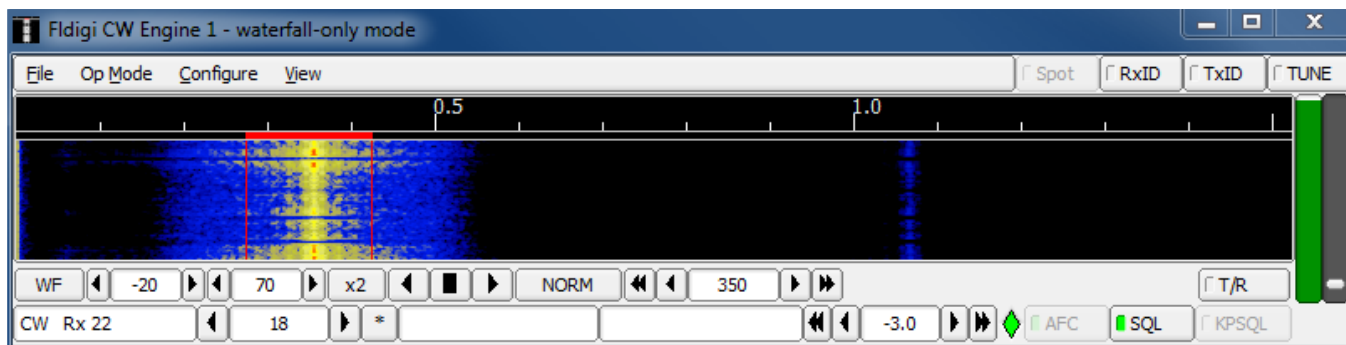
Initialization String

None

[Save] [Cancel]

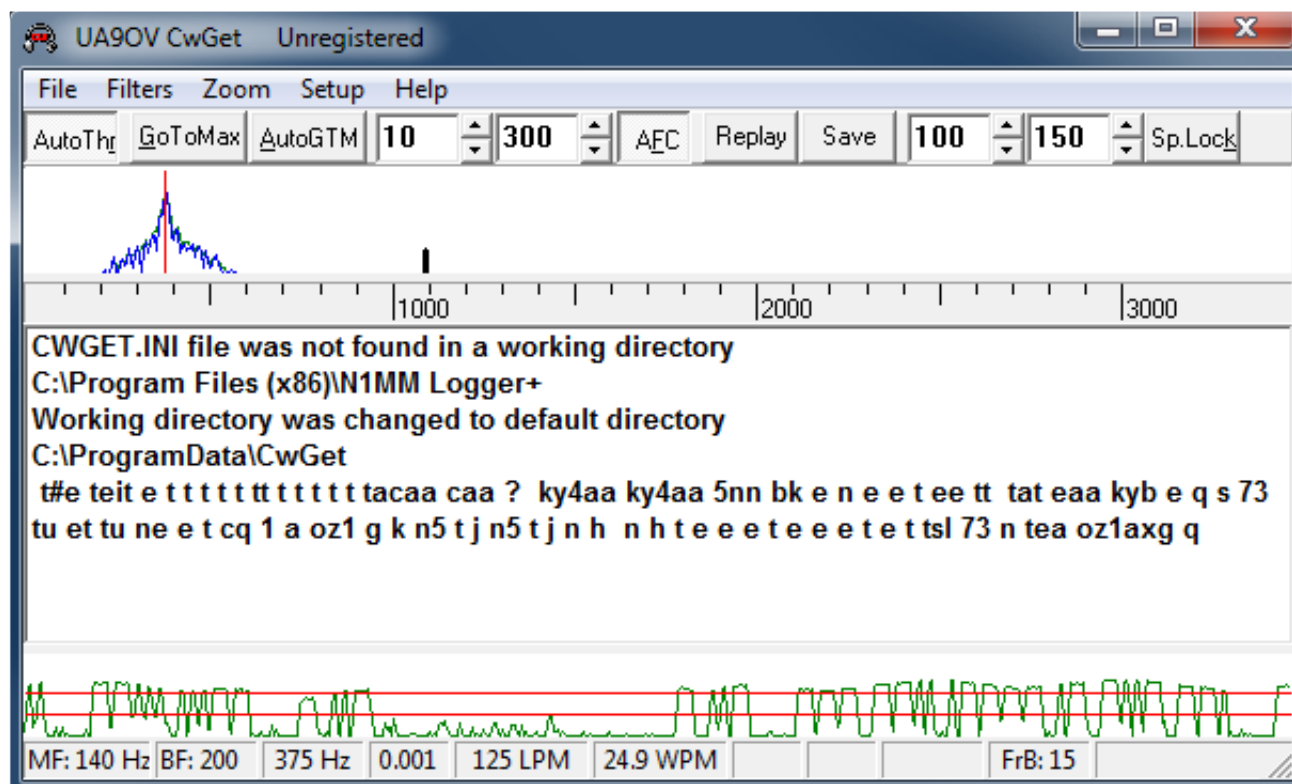
N1MM Logger+ supports three different CW reader programs, or “engines”.

The first, Fldigi by W1HKJ, is also one of the digital engines that is supported by the Logger for digital modes. Fldigi is not automatically installed with N1MM Logger+; if you want to use it, you must download and install it. Once fldigi has been downloaded (and optionally configured for digital mode operation – see the [Digital - Fldigi for Sound Card Modes](#) chapter), it can also be used as a receive-only CW reader (N1MM Logger+ does not support transmitting CW from fldigi). Click on the Enable check box for Fldigi and set up the location of the fldigi.exe file you are using as a CW reader. You should create a separate folder for the fldigi CW reader and copy fldigi.exe from the main fldigi installation folder into this separate folder. You may wish to use a separate copy of fldigi for CW from the N1MM+ digital modes copy as well; that way, the configuration setups for fldigi for CW and for digital modes can be saved separately. Both of these copies of fldigi should be outside the Program Files or Program Files(x86) paths in Windows Vista or later, in order to enable the configuration files to be saved. Although you can run fldigi stand-alone from a location in the Program Files path, any copy of fldigi that is run from N1MM Logger+ in Windows Vista or newer must not be located in a protected Program Files path. When you first install fldigi, you do not need to do the original installation of fldigi outside the Program Files path. Simply install in the default location, create a new location outside the Program Files path, and copy the fldigi.exe file from the original installed location into the new location. The first time it is run from the Logger, fldigi will create the other files it needs in the new location.



The second supported CW reader program is CwGet by UA9OV. This is a shareware program that can be downloaded from the www.dxsoft.com web site. It may be used either unregistered (free), or registered (requires a fee to be paid to the author). The unregistered version does not save configuration information between runs, which means that you will have to perform the setup (primarily selection of the sound card to be used) each time the CwGet engine is started. In either case, after downloading and installing CwGet you can select it in the CW Reader setup window by checking the Enable check box for CW Get and entering the path to the program. It is also possible to select command line settings for CwGet in the setup window. Unlike fldigi, CwGet may be run from the default installation location even

if that location is in C:\Program Files or C:\Program Files(x86). You do not need to make a separate copy of CwGet outside the Program Files path.



The third supported CW reader type is an external TNC that is capable of decoding Morse code. You set up the COM port communications parameters for the TNC in the bottom part of the window.

Once the CW reader engine has been selected, click on Save to save the selection and exit the Setup window. This will open one or two new windows: the CW reader engine window (if you are using fldigi or CwGet) and the CW Reader text window (see next section). There will be further configuration required in the CW reader engine window the first time it is used (or every time if you are using an unregistered copy of CwGet), in order to select the sound card that is used for decoding. The fldigi configuration window may open the first time you use it; if it does, the first part of the configuration information that is needed for the CW Reader engine is the sound card setup. You also need to ensure that rig control and PTT control are both disabled in fldigi. The first time fldigi is used as a CW reader engine, it may start up in a digital mode and you may need to change its operating mode to CW.

Since N1MM Logger+ supports two Entry windows (for two VFOs in SO2V, or for two radios in SO2R), it also supports two CW Reader windows. The CW Reader window corresponding to each Entry window is opened from the Window > CW Reader menu item in that Entry window. In order to save separate configurations for the fldigi engines in the two CW Reader windows, you will need to use two separate



copies of fldigi, one for each CW Reader window. If you want to use CwGet in both Entry windows, it should be a registered copy.

Both CW Reader software engines (fldigi and CwGet) use a sound card for decoding. This requires an audio cable connection between the radio and a sound card input. The radio output can from a speaker or headphone output, or a line output if a separate output (possibly labelled for digital modes) is available. The sound card can be a motherboard sound card or a separate sound card, either internal or external. If possible, the input used should be a line-level input. If the only input available is a microphone input, you may need to supply an attenuator (resistive voltage divider) between the high-level output from the radio and the low-level microphone input on the sound card. In Windows 10, starting with the Spring 2018 update, you may need to adjust a Windows privacy setting (Windows Settings > Privacy > Microphone) called “Let apps use my microphone”. This option must be turned On to give programs like the CW Reader software engines access to sound card inputs.

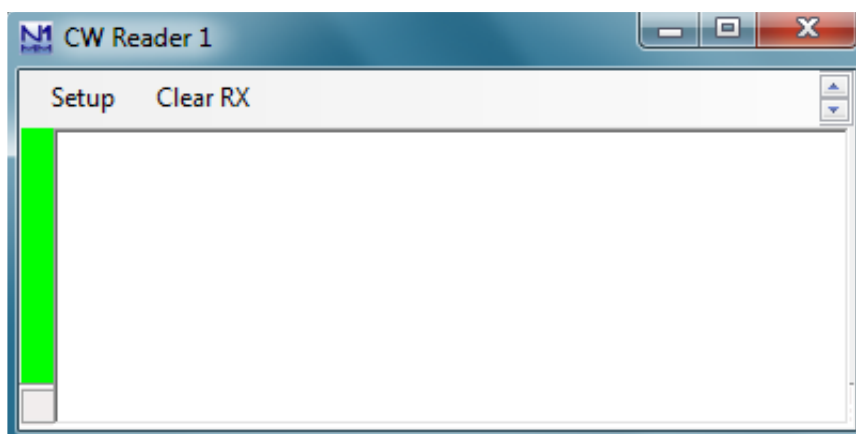
If you are using a TNC as the CW Reader engine, the audio connections will be between the radio and the TNC, and there will be a serial port connection between the TNC and the computer.

Note that older versions of fldigi only use the left channel on input; for that reason, in most SO2V installations these older versions of fldigi can only be used from Entry Window 1. Starting with fldigi version 3.22.06, fldigi is now capable of using either sound card channel for input. In any copy of fldigi that you want to use with the right channel of the sound card, use the Configure > Sound Card menu item in the fldigi window to open the fldigi configuration window. Select the Right channel tab, and near the bottom under Receive Usage, check the Reverse Left/Right channels check box to switch fldigi to use the right channel on receive. Click on Save to save the configuration change, and then close the configuration window.

Recent versions of fldigi may default to requiring confirmation from the user before you shut them down. If that shutdown is initiated by shutting down N1MM Logger+, instead of by shutting down the CW Reader window and engine first, this can result in fldigi continuing to run after the Logger has shut down. This can cause problems the next time you start up the Logger. To prevent this from happening, you need to make a change in the fldigi configuration file. In each folder that fldigi is run from, find the file called fldigi_def.xml. (Note: this file is created the first time fldigi is run from this location, i.e. it will not exist until after you have run that copy of fldigi at least once). Right-click on the file name, select Open with... and then select Notepad or WordPad as the program to open the file with. Look for a line that reads `<CONFIRMEXIT>0</CONFIRMEXIT>` or `<CONFIRMEXIT>1</CONFIRMEXIT>`. If you see a 1 between the two keywords, change it to a 0 and save the file. Repeat this for every copy of fldigi you use from within N1MM Logger+ (CW Reader 1, CW Reader 2, DI1, DI2, and any digital RX-only windows you use fldigi in).

If you choose to use CwGet as the engine, note that if you use an unregistered copy of CwGet with input from the right channel of the sound card, that unregistered copy will not transfer decoded text to the corresponding CW Reader window. In most SO2V installations CwGet will have to be registered if you want to use it from Entry Window 2. Also, unregistered copies of CwGet will not save their configuration data, meaning you will have to set up the sound card parameters every time you start CwGet; registered copies will save their configuration data and remember it between sessions. The configuration data is stored in an ini file in the N1MM Logger+ user files area (the same location as the N1MM Logger.ini file). It will be called CWGET1.INI (Entry Window 1) or CWGET2.INI (Entry Window 2 in SO2R or SO2V).

CW Reader Operation



The CW Reader window is where decoded received text appears. If the scrolling method selected in the Digital Interface Setup window is “scrolling”, then as new incoming text is decoded, older text is scrolled off the top of the screen. If the scrolling method selected for the Digital Interface is “non-scrolling”, then text does not move, but incoming text overwrites previous text on the current line; the current line where incoming text is displayed is indicated by underlining, and moves down the window one line at a time, jumping back to the top of the window once the bottom line is filled. You can stop scrolling temporarily by clicking on the green bar at the left of the window; the green bar will turn yellow and the text will stop scrolling so you can copy it without having to follow it up the screen or catch it before new incoming text overwrites it. When you click on the yellow bar to resume normal scrolling, the bar will turn green, text that was decoded while scrolling was stopped will be sent to the window, and then normal operation will resume.

You can click on call signs and exchanges in the text window; depending on where the focus is in the Entry window, this will automatically transfer the text that was clicked on into the call sign or exchange box in the Entry window. This operation is similar to the way the Digital Interface window is used in RTTY and PSK31.

There are two menu items in the CW Reader window. The first one, **Setup**, opens the setup window to enable you to change the CW reader engine. The second one, **Clear RX**, simply clears the received text window.

In order for the CW reader engine to work, the signal you wish to copy must be tuned in correctly. The CW reader engine has tuning aids (either a waterfall or a spectrum display in Fldigi, and a spectrum display in CwGet) to help you tune signals accurately. You can fine tune by clicking in the spectrum display, but be aware that fine tuning in the CW reader engine will have no effect on your transmitted signal's frequency. If you wish to transmit on the same frequency as you are receiving on, your best bet is to set the CW reader engine's audio frequency to be the same as your transmitter's sidetone frequency, and then tune signals using the transceiver's tuning knob (not by clicking in the spectrum display or waterfall).

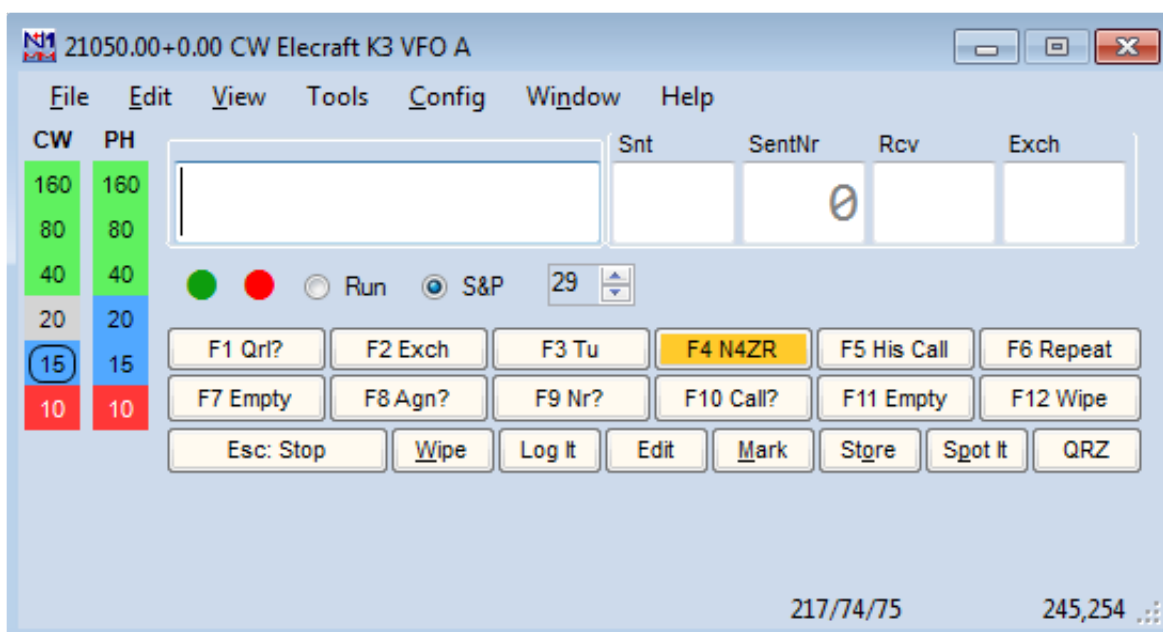
Software decoding of CW (Morse code) has its limitations. The signal to be copied must be fairly strong (at normal CW speeds, the human ear can decode CW at lower signal-to-noise ratios than software can) and clear of QRM and QRN (heavy QRM or QRN can render the CW undecodeable). The sent CW timing must also be accurate (e.g. machine-sent CW). On a good machine-sent signal such as ARRL CW bulletins, software copy can be nearly perfect. On the other hand, sloppy hand-keyed CW can result in errors ranging from poor spacing (v e 3 k i instead of ve3ki) to a complete failure to copy (nothing but Es and Ts displayed, as the reader software triggers on individual dits and dahs).

The Entry Window

The Entry Window

Key Features

The Entry window is the main program window; it's the “central control panel” for the program. Your entry window will be similar to this one:



Customizable Skins, Colors and Fonts

Note that while the colors and font sizes displayed here and in other screenshots mimic the original N1MM Logger Classic, Logger Plus provides for [extensive customization](#) of colors and fonts in every window, part of an effort to improve accessibility.

Which Entry window textbox has the entry focus?

Versions 1.0.5108 and after include a change to how Entry Window textboxes are highlighted to show you which has the entry focus. This is active in SO1V, SO2V and SO2R.

What inspired this change is that Win 10 is particularly bad at visual cues to show you which window is active. In Win 10, if the title bar is grayed, then the window is inactive. Problem is, some windows don't have titles. Sigh. It's probably possible to change this with the OS, but I doubt many will do it, thus the change.

Beginning with version 1.0.5108, the [Skins, Colors and Fonts Window](#) will allow you to choose the old method of indicating focus, and two choices for background highlighting corresponding to the two colors you have chosen for the Log window grid. It is important that your mult and dupe foreground colors are easily visible on the background that you choose. The default color scheme is pretty reasonable in this regard.

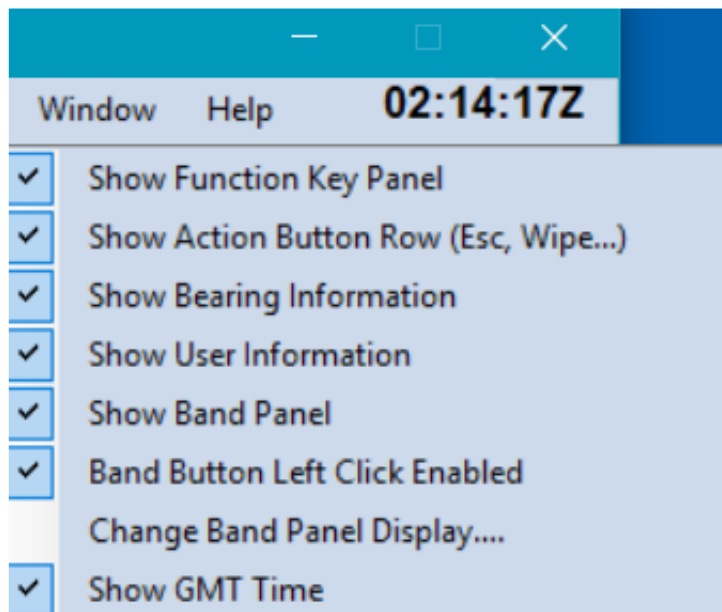
What is different in the new scheme is that only the textbox with focus, in the window with focus, will have a white background. The white textbox will always tell you where the next character you type will go. If neither Entry window has focus, then all the textboxes in both will show with a colored background. If you are working in another application, then you will need to use your mouse to bring focus back to N1MM+.

There is a bonus to this change. We spent a lot of time trying to get focus back to the Entry Windows in a sensible way when you use the other windows in N1MM+. With the EW textboxes flashing white/color, this focus behavior is made much more obvious. I would ask that you not complain about the focus movement behavior for a week or two because it has not changed with the “colorization”. Once you have acclimated to the new version, then it would be a good time to point out whatever inconsistencies there may be in the focus behavior.

Finally, in working on this improvement, I ran across this feature of Windows: <http://www.howtogeek.com/194095/how-to-change-the-blinking-windows-keyboard-cursor-thickness/>

It allows you to change the thickness of the cursor. I changed mine to 2. It’s much more visible without being obstructive.

Right-click Menu



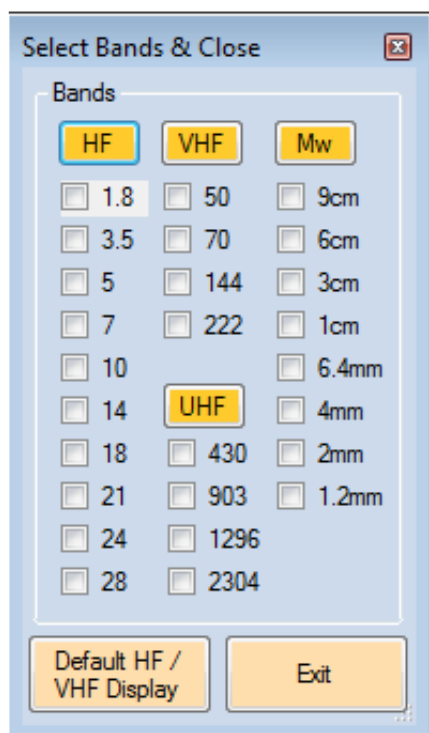
In addition, this right-click menu is provided.

The first 5 choices affect the size of the entry window. Uncheck them to remove things in the window that you do not need.

“Show User Information”, if selected, will display Call History User Text.

The 6th option, Band Button Left Click Enabled, is on by default, but may be turned off. In a multi-op station, it may be helpful to turn off the left-click band change to prevent accidentally changing bands.

If you click on the 7th option, “Change Band Panel Display”, this dialog will appear.



Click the Default button to display the traditional contest bands (HF or V/UHF depending on contest), or all HF bands except 60M when using the DX general logging “contest.” Check individual bands to display **only** those bands. Note that if you select a single band contest on either HF or VHF, the Band Panel will continue to display the full list until you check the bands you want to have displayed.

There is an 8th menu item, “Show GMT Time”, which causes a GMT (UTC) clock to be displayed in the upper right corner of the Entry window.

Display of Check status

If the [Check window](#) is open and an exact match to the entered call-sign is found, a check will appear in the right end of the call-sign text box. The check is colored to match the call-sign color and reflect multiplier status – by default, the colors are green for double, red for single, blue for no multiplier but a workable station for QSO credit. A “?” appears if no match is found, unless you opt to turn that option off in the [View Menu](#) of the Entry window.

Band Panel

- There is one column of band buttons in the Band Panel for each permitted mode in the current contest, just to the left of the Call-sign textbox. The color codes shown, when a callsign has been entered, are for the currently-entered call-sign in the call-sign textbox. Green=“double mult” red=“single mult” blue=“not worked yet” grey=“dupe”). These are default color choices – see the [Skins, Colors and Fonts window](#), reached from the Config menu, to

change these color codes throughout the program.

- The Band Panel modes are determined by the Mode Category set in the Contest Setup Dialog (File > New Log or Open Log), **not** by the mode of the radio or one entered in the call-sign textbox ("CW", "USB", etc.).
- Left click on a mode/band button to move the program to that mode and band; an attached radio will follow, to the last frequency you used on that band. The rounded rectangular box around "15 CW" in the illustration above is an indicator of that radio's current band and mode, which may be useful during rapid band changes.
- To change the bands and modes displayed in the Band Panel, right-click on a blank area of the Entry Window and choose "Change Band Panel Display..."
- When **not** in Networked Computer mode, if you **right** click on a mode/band button, your radio will QSY to that band and mode, to the last frequency you used on that band, and the callsign of the last station you logged will be locally spotted (**not sent out to the Internet**). This feature is primarily intended for VHF contests where you may want to move a station to many band/mode combinations in quick succession.
- When in Networked Computer mode with a callsign in the Callsign textbox, if you **right-click** on a band/mode button, the callsign and frequency of the station you are working will be passed to the networked computer on that band. An Info window message will be sent to the recipient station, and the passed callsign will be placed on the recipient station's Bandmap on its specified Pass frequency.

Action Button Row

- **Esc:Stop** – Immediately ends transmission of a stored message (all modes)
- **Wipe (Alt+W, Ctrl+W)**– Clears information about the current contact. You can also program this into a Function Key, using the {WIPE} macro, for one-keystroke operation. A second press will restore the information that was wiped out.
- **Log It (Enter)** – Writes this contact to the log. Disabled when in Quick Edit mode. If you have not filled in all needed exchange information, you will be prompted before logging will occur. You can use Ctrl+Alt+Enter to circumvent this "editing" function and log whatever you have entered, for correction later.
- **Edit** – Pops up the full Edit window to edit the last contact. Use Ctrl+Q (Quick Edit) as a convenient alternative. Greyed out when in Quick Edit mode.
- **Mark (Alt+M)** – Marks the current frequency in the Bandmap as being in use. Used when you don't want to take time to enter the call of the station using the frequency.
- **Store (Alt+O)** – Spots on the Bandmap the call-sign you have entered in the Call-sign textbox. It will be shown in bold because it is self spotted. The Telnet Filter tab option "QSYing wipes the call and spots QSO in Bandmap"

is an easier way to do this, whether you have worked the station or not.

- **Spot It (Alt+P)** – Spots either the callsign in the callsign textbox or the last QSO logged, if Telnet is active. See [this section](#) for more information.
- **QRZ** – Performs a lookup on QRZ.com of the call-sign in the Call-sign textbox, if your computer is connected to the Internet.

Function Key Panel

- **F1 through F12** – Sends the associated CW/Digital text or .wav file, and executes any macros stored in the message. Right click on the buttons to open the [Function Key Editor](#). Running and S&P modes each have 12 stored messages. Press Shift+F1 through F12 to send the Run message when in S&P mode, or vice versa.

Run/S&P (radio buttons) (Alt+U)

Switch between Run and S&P mode. This also switches between the Run (first 12) and S&P (second 12) messages in the .mc file (unless the second 12 messages are not present in the .mc file).

CW speed (PgUp/PgDn)

- The textbox shows the current CW speed. Either PgUp/PgDn or clicking the up/down arrows alongside the speed will change the speed. Only visible when CW mode is selected. The interval in WPM is set on the Other tab in the [Configurer](#). Additional keystroke combinations for changing speed by a larger (secondary) interval may be seen under [Key Assignments](#).

The Ignore Winkey Speed Pot setting

When using a Winkeyer, if you do not check “Ignore Winkey Speed Pot” on the Winkey tab in the Configurer, the program’s starting CW speed will be set by the Winkeyer speed knob. If you check that box, the program will start at the last CW speed used.

Entry and Transmit Focus - The Red and Green dots (“LEDs”)

On the Entry Window below the left end of the Call-sign textbox you will see either a green or a red dot (LED), or both. The LEDs are visual aids that help you keep track of what is happening on each VFO/radio, particularly when operating SO2V or SO2R. This is part of N1MM’s continuing philosophy of letting the operator easily know what’s happening at any given time.

Green dot/LED – This VFO/radio has Entry focus – also known elsewhere in this manual as RX (Receive) focus or Keyboard focus. This means that any information entered by keyboard goes in that window, including function keys. Depending on

your SO2R switching setup, it **may** also denote which radio you are hearing in your headphones.

Red dot/LED – This VFO/radio has the Transmit focus. When actively transmitting, the red LED turns to orange (default) or another color defined in the Manage Skins, Colors and Fonts window, reached from the Config menu. Note that the Transmit focus does not necessarily tell you which radio will transmit next; this depends on whether transmitting is initiated from the keyboard or by some other method. For example, if the red LED is in Entry window A, but the green LED is in Entry window B, pressing F1 will send CQ on radio/vfo B, because it has the Entry or Keyboard focus; the red LED will move to that window before transmitting starts, and remain in the active transmit color for the duration of the CQ before returning to the darker red color. On the other hand, if transmitting is initiated without using the keyboard (e.g. from an external paddle or footswitch), the transmit focus will not move.

The following table explains how certain keystrokes and mouse-clicks move the LEDs from one entry window to the other

Action	Starting condition	First keystroke	Subsequent keystrokes
Back-slash	Both in one Entry window	RX focus to other Entry window	Toggle RX focus between Entry windows
One in each Entry window	RX focus to other Entry Window	Toggle	–
Pause	Both in one Entry window	Both to other Entry window	Toggle both
One in each Entry window	Both to Entry window with Transmit focus	Toggle both	–
Mouse click (anywhere but buttons)	N/A	RX to clicked window	N/A
Ctrl+left arrow	Both in one Entry window	Both to VFO/Radio A	Nil
One in each Entry window	Both to VFO/Radio A	Nil	–
Ctrl+right arrow	Both in one Entry window	Both to VFO/Radio B	Nil
One in each Entry window	Both to VFO/Radio B	Nil	–

Messages Based on Radio/VFO with Entry Focus

When using function keys to transmit either CW or stored voice messages, the message will be sent on the radio or VFO that has the Entry focus, **not** the one that has the Transmit focus. When you press the function key, the red LED denoting

Transmit focus first switches to the Entry window that has the Entry (Keyboard) focus, and then the message is transmitted. On the other hand, when using either manual CW or phone, messages will be sent on the radio or VFO that has the red LED, so if you grab the microphone or paddle, that's what you'll get. After a while, it becomes second nature – we promise!

Callsign/Exchange Editing Features

- **Space Bar** – moves cursor between the Call-sign and Exchange textboxes. The cursor will always return to the position it was in when last in that textbox.
- **Tab** – Moves to the next textbox.
- **Shift+Tab** – moves to the previous textbox.
- **Home** – moves cursor to beginning of the current textbox.
- **End** – moves cursor to end of the current textbox.
- **Question mark (?)** – In the Call-sign textbox, sends “?”. The “?” will be highlighted (selected) when the cursor returns to the textbox. For example, entering N?MM in the Call-sign textbox will send what is typed, and automatically highlight the “?” when you space back to it, so you can easily replace it. A double “?”, as in DL?K?A will highlights all text in between and including the “?” marks, and the first keystroke entered will replace all three characters.
- **Left/Right Arrow** – moves cursor to left or right one position within a textbox.
- **Backspace** – deletes character to the left of the cursor position.
- **Delete** – deletes character to the right of the cursor position.
- **Shift+Home** – highlights from the cursor position to the beginning of the current textbox, so that you can easily replace all the highlighted text.
- **Shift+End** – highlights from the cursor position to the end of the textbox.
- **Shift+arrow key** – highlights as you press the arrow keys in either direction. When you type the first new character, it replaces all the highlighted characters.

Keyboard Shortcuts

Check out the Key Assignments page in Keyboard Shortcuts for a listing of all available “hot-key” assignments in the program.

Entry Window Text Commands

While N1MM Logger+ does not make extensive use of text commands (as CT did and Win-Test still does), there are a few that may prove useful.

In each case, the command is typed into the Call-sign textbox of the Entry window, and executed when Enter or Ctrl+Enter is pressed.



- **Mode Changes** – Enter CW, SSB, USB, LSB, RTTY, PSK31, PSK63, FT8, FT4, SSTV, AM or FM, and the program (together with your radio, if one is connected) switches to the requested mode to log contacts in. This is particularly useful when you have not connected a radio, but wish to change the mode recorded in your log. For SSB, the switch will be to the conventional sideband (e.g., USB on the higher bands, or LSB on 40M and down). If you need to be on the opposite sideband for some reason, enter USB or LSB as needed.
- **Frequency Changes**– Enter a full frequency in kHz (e.g., 14025.1 , or 14025,1 if your computer uses comma as the decimal separator) and the program moves to that frequency. Type a partial frequency relative to the current lower band edge (e.g. 025.1) and the program goes to that frequency relative to the band edge. Type a desired shift (in kHz) with a + or – sign (e.g. +2, -3) to QSY by the selected amount (i.e. up 2 kHz or down 3 kHz).Type a zero (0) and the VFO will QSY to the bottom of the band. If your radio is interfaced for radio control, its frequency will follow the program. Type a frequency, but execute with Ctrl+Enter, and the program (and radio, if connected) goes into split mode and uses the frequency you entered as the transmit frequency. For full information on split operation, see [this chapter](#).
- **Wipe the Log**– WIPELOG -This command is used to delete any “practice” QSOs from a log before you begin actual operation. In single-computer stations it may be as easy simply to create another instance of the contest from the Contest Setup dialog. In networked computer stations such as multi-ops, use of WIPELOG is helpful for ensuring that the logs maintained on each computer will be consistent with one another. It is important that every computer on the network performs the WIPELOG command before any contacts are made. Any spare computers should be set up for the contest, and the WIPELOG command executed, **before** they are connected to the network.
- **TOUR** command – A very few contests allow for multiple sessions in which you can work the same station in every session for QSO credit. You can enter TOUR into the Entry window in place of a call sign to reset dupe checking at any time before or during the contest. This command has 2 required parameters that are entered into the Sent RST field, separated by a forward slash “/”. The first parameter is the time when the current session begins (GMT) and the second parameter is the duration of the session. The format for both parameters is hhmm. For example, 1200/30 means the session starts at 1200Z and has a duration of 30 minutes. The minimum value for the duration parameter is 10 (10 minutes). If the TOUR command is entered without any parameters, the current values of the start time and duration will be displayed. The default values are 0000/00.
 - At the beginning of each session the start time and duration will be displayed in the status field at the bottom of the Entry Window. After the first QSO has been logged during the new session you should see the Multiplier window reset and dupes will be reset for this new

session as well.

- Most of the contests supported by the Logger do not need this command but some (mostly Russian and Ukrainian) have it built into the contest module and do not require it entered manually.
- If you are planning on using TOUR command with other contests, keep in mind that settings for it will be lost when the Logger is restarted. If the Snt (sent RST) field is not displayed in the Entry window, you will not be able to use this command.

Multi-op features

OPON – This command is the equivalent of Ctrl+O, and opens a sub-window for a new operator to “sign on.” The operator is saved in the log with each contact for later display and analysis (for example, using the View > Statistics menu item and selecting Operator as the row or column to be displayed). The operator currently “ON” is displayed in large blue letters in the Info window.

QSO-specific operator information is not included in the Cabrillo file (it is included in ADIF exports), but the “Update Ops from Log” button in the Contest Setup Dialog can be used to create a list of operators to be included in the Cabrillo header.

OPON also determines what will be returned by the {OPERATOR} macro, which can be used in SSB function key message files to invoke individual wav files in each operator’s voice.

In addition, after you have entered your call, you can execute Save Window Positions on the Entry window’s Tools menu and thereafter when you sign on again using OPON, your personal saved window positions will be retrieved.

Mobile/Rover/VHF Commands

- ROVERQTH – for use in QSO parties, opens a pop-up window into which you enter your current or planned county abbreviation, in the form specified by the contest organizer. See [the section on Mobile/Rover Support](#).
- COUNTYLINE – for use when operating from a county line in QSO parties. Opens a pop-up window into which you enter the county abbreviations, separated by a comma. After you exit this window, check the title bar of the Entry window to ensure the correct counties are listed.
- BEACONS – This command will load a user-prepared file called Beacons.txt from the N1MM Logger+ document directory (which sub-folder?) unto the database. The file format is:

```
# Hours to stay in bandmap (mostly > 24 or > 48)
60
# call beacon;frequency;locator;comment
```

```
OZ7IGY/B;144471,1;J055WM;
PI7CIS/B;144416,2;J022DC;Should always be heard
DL0PR/B;144486,3;J044JH;Switches power!
GB3VHF/B;144430.4;J001DH;QRG with a .
ON0VHF/B;144418,5;J020;4 digit grid
```

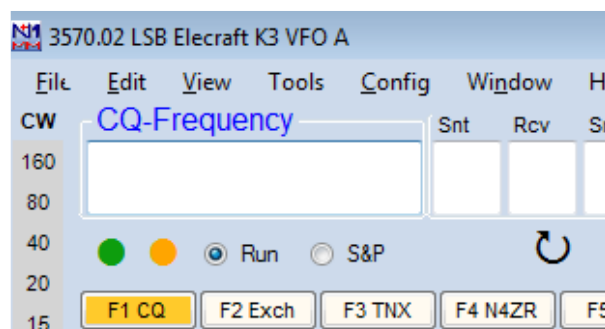
The purpose of this function is to permit users to display beacons on their Bandmaps for much longer than the normal packet timeout, as a reminder to listen for those stations periodically. In the sample above, the beacons will continue to be displayed for 60 hours after the command is invoked. Note that unlike the other Entry window text commands, this one pops up a file selection dialog as soon as the last letter is typed; no Enter is required, other than to exit the dialog and load the file once it has been selected.

Repeat CQ

Alt+R – Toggles between Repeat CQ and normal CQ modes. The message “CQ Repeat is on/off” appears in the Status Bar with each Alt+R entered.

Ctrl+R – opens a dialog for setting the repeat interval (in seconds).

When you first press F1 after selecting repeat CQs, an icon will appear in the Entry window, like this.



As long as the icon is visible, the CQ will repeat at the repeat interval. If you interrupt with a call-sign or the ESC key, it will disappear.

Bearing and Call History Information

If they are enabled in the right click menu, the two lines below the buttons will display useful information.

The **Bearing** line displays short and long path beam headings and short-path distance to the station whose call-sign is entered in the Call sign textbox. Call

history information for the entered call sign also appears in this line when Call History Lookup has been enabled on the Config menu.

If there is information in the UserText field in the call history for the entered call sign, it will be displayed in blue font in the following **User Information** line.

The Status Bar

The Status Bar is the bottom line of the Entry window is always displayed. It is divided into three panes

- **Left pane** – Information
 - After entering a call-sign – Country, Zone, Continent
 - Otherwise – Program messages (error messages, results from commands such as CW speed changes, or recording of .wav messages. You may need to widen the Entry Window temporarily to display full file paths and other long messages.
- **Middle pane** – QSOs /multipliers (/zone) depending on the selected contest.
- **Right pane** – Current score

Dual Entry Windows

The program can have two Entry windows, one for each VFO (SO2V) or for each radio (SO2R). Select these, or SO1R, in the [Configurer](#).

The **master Entry window**, which is always open, is linked to VFO-A or radio 1. The **second Entry window** is linked to VFO-B (SO2V) or radio 2(SO2R). The second Entry window is automatically opened when SO2V or SO2R is selected. If it is closed for any reason, it can be reopened by typing “\” (backslash) anywhere in any of the Logger+’s active windows, except for the Telnet window.

If two Entry windows take up too much screen space, you can right-click on either window and reduce its size by omitting lines of content, such as the row of Action buttons. you’ll note that in the VFO-B example below, some lines have been omitted. You can also position the second Entry window over the first Entry window. Typing “\” (as above) will bring the one that has been hidden to the front, with Entry focus.

The Entry Window examples below reflect a typical setup: VFO-A is now assigned to running, and VFO(B) is assigned to S&P.

14053.63 CW Elecraft K3 VFO A

File Edit View Tools Config Window Help

CQ-Frequency

RT9G

Snt SentNr Rcv Exch

2

Run S&P 31

F1 CQ F2 Exch F3 TU F4 N4ZR F5 His Call F6 #

F7 ? F8 Agn F9 Rpt F10 QRL F11 Move F12 LONG

Esc: Stop Wipe Log It Edit Mark Store Spot QRZ

Hdg 23° LP 204° 5205mi 8377km

UA: EU/EUROPEAN RUSSIA, Zn 17 1/1/0 3

7007.00 CW Elecraft K3 VFO A

File Edit View Tools Config Window Help

HA8LLK

HA8LLK

Snt SentNr Rcv Exch

599 2 599

Run S&P 31

CQ F2 Exch F3 F4 F5 F6

F7 F8 F9 F10 F11 F12 LONG

Esc: Stop Wipe Log It Edit Mark Store Spot QRZ

Hdg 47° LP 228° 4597mi 7397km

HA: EU/HUNGARY, Zn 15 1/1/0 3

All of the Entry window features that are available to the single radio operator also work in SO2R/SO2V. For example, when tuning the band with the S&P VFO, spots that are in the bandmap are automatically inserted into the relevant call-frame (above the Call-sign textbox) when you tune across the frequency of the spot. Hitting the space bar (or Enter, in ESM) will pull the call-sign from the call-frame into the Call-sign textbox. Then if a station calls you on the run radio, toggling back and forth between Entry Windows with the \ key will keep the information in each Entry Window until the respective stations are logged.

The second Entry window will be opened when a call is clicked in the second bandmap, if it is not already open.

More SO2R info can be found in the [SO2R](#) section of the manual.

SO2V - Two VFOs, Two Entry Windows, Two BandMaps

In SO2V (one radio – two VFOs = ‘normal’ operation) QSOs made on VFO-A have to be entered in the standard (first) Entry window. Making a QSO on VFO-B (transmitting and receiving on VFO-B) has to be done by using the second (VFO) Entry window. So when using both bandmaps, both Entry windows are needed to make QSOs on both VFOs. However, when operating split, the program transmits on VFO-A, and only the master Entry window needs to be open. If both are open in SO2V the second entry window displays the receive frequency.

Call-sign Colors

There are two places where a call-sign can be shown in the Entry window , in the Call-sign field and in the Call-frame. The default colors for the call-sign text are consistent with other places throughout (such as the Band Panel and Available Mults and Qs windows), and are described below:

Red	Single Multiplier Example: CQWW – qso is either zone or country multiplier (one multipliers)
Green	Double or better Multiplier Example: CQWW – qso is a zone and a country multiplier (two multipliers)
Blue	New contact
Gray	Dupe contact or an unworkable station in a non-workable country . This means that you don’t need this station because he is a dupe or you are not even ‘allowed’ to work him in this contest according the contest rules.

Alternative colors may be used by specifying them in the Manage Skins, Colors and Fonts window, reached from the Config menu.

Other Features

- Clicking on the Exchange textbox will have the same effect as pressing Space when the cursor is in the call-sign textbox.
- The frequency, emission mode (e.g. CW, USB) and radio name are shown on the Entry window title bar.
- When tuning the band, if a station on the Bandmap is within the tuning tolerance, its call will be placed in the Entry window’s call-frame. When the call-sign textbox is empty, pressing the space bar will copy the call-sign from the call-frame to the call-sign textbox.

- **Ctrl+P** – Spot the station entered in the call-sign field to the active Telnet cluster, if any. You will be prompted for a comment. If no station is entered in the call-sign field, the last logged station this session will be spotted. Macros are accepted in the comment sent
- **Alt+R** – Toggles Repeat CQ. You can stop repeat CQing by beginning to enter a call-sign, or by hitting Escape. After you complete manual input, if you press F1, Repeat CQ will resume. Press Alt+R again to exit this mode.
 - **Ctrl+R** sets the period of repeat in seconds or milliseconds.
 - A 'R' will be shown in the red TX status LED when repeat mode is on.
 - The repeat timer for CW and SSB is for the interval from when you stop sending CQ until CQ resumes.
 - Repeat CQ is not available when using an external DVK, because there is no indication of when a message has ended.
 - When using a radio with internal voice message memories, the repeat timer can be used together with a CAT macro in the relevant function key. Note: The repeat timer in this case starts when the radio command is sent to the radio. Users that use this function to trigger radio voice keyers must assign the radio command to abort the message to a separate function key, as Escape will not stop it.
- **Ctrl+Shift+Fx** – Record SSB message for the assigned function key. Pressing Ctrl+Shift+Fx again stops the recording. Fx can be F1 to F12, either Run or S&P mode.
- **Ctrl+Alt+Fx** – Record external DVK memory 1 to 4. Fx can be F1 to F4. An external DVK has to be connected and configured on an LPT port.
- **Enter sends messages** – An entire normal contact can be completed with the Enter key. More information is given in the Using Stored Messages chapter under [ESM \(Enter Sends Messages\)](#)

Ctrl+Q – enters Quick Edit mode. When you are in QuickEdit mode, the background of the Entry window textboxes are colored light blue. “QuickEdit” is also shown in the callframe.

- *There is no check of the exchange against the contest rules, as is done when the QSO is entered normally. So check thoroughly what you change.*
- If you have multiple filters or a crystal filter and DSP, Alt+' (Alt+single quote) toggles between a wide and narrow filter for the selected mode (SSB, CW or Digital). This hot-key will work whether you have changed your filter codes or not. Filter codes can be set in the the bandmap right click menu.
- A warning message will be shown if user tunes away before logging a qso in the Entry window.
- **Force logging** – The program tries to help you by validating what you copy as the Exchange, but if it is balking and you don't want to stop to figure it out, you can force logging with Ctrl+Alt+Enter. A small Note window will pop up, pre-filled with the words “Forced QSO”. You can type over to remind yourself later what you copied, or simply hit Enter to log the default note.

Function Keys

General

Function keys F1-F12 are used for sending stored messages. The use of stored messages is covered in detail [in another section](#). This section deals with the generic behavior of the Function keys.

The Function keys can be stacked. This means you can press several Function keys in close succession, and the contents will be sent in full in the selected order, with a space between. For example, you could press F4 to re-send your call (if you think the other station did not get it right) and immediately press F2 to send the exchange. The program will send the two messages seamlessly.

When hovering with the mouse over a Function key button the text to be sent is shown.

Run mode and S+P mode

If the Run radio button is selected, you will see the Run messages, and vice versa. Pressing Shift and a Function key sends the message stored in that key **in the opposite mode** (Run if S&P, and vice versa)

When you press Shift alone, the labels will change to those from the other mode (if different). This will help you decide if you want to send one of those messages by holding the Shift and pressing a Function key.

When you call CQ on a frequency, the marker **CQ-Frequency** is placed at that frequency on the Bandmap. Thereafter, if you are in S&P mode and you tune within the tuning tolerance of the marker, the program will switch automatically to Run mode. Clicking on the 'CQ-frequency' in the Bandmap also will place the program in Run mode again.

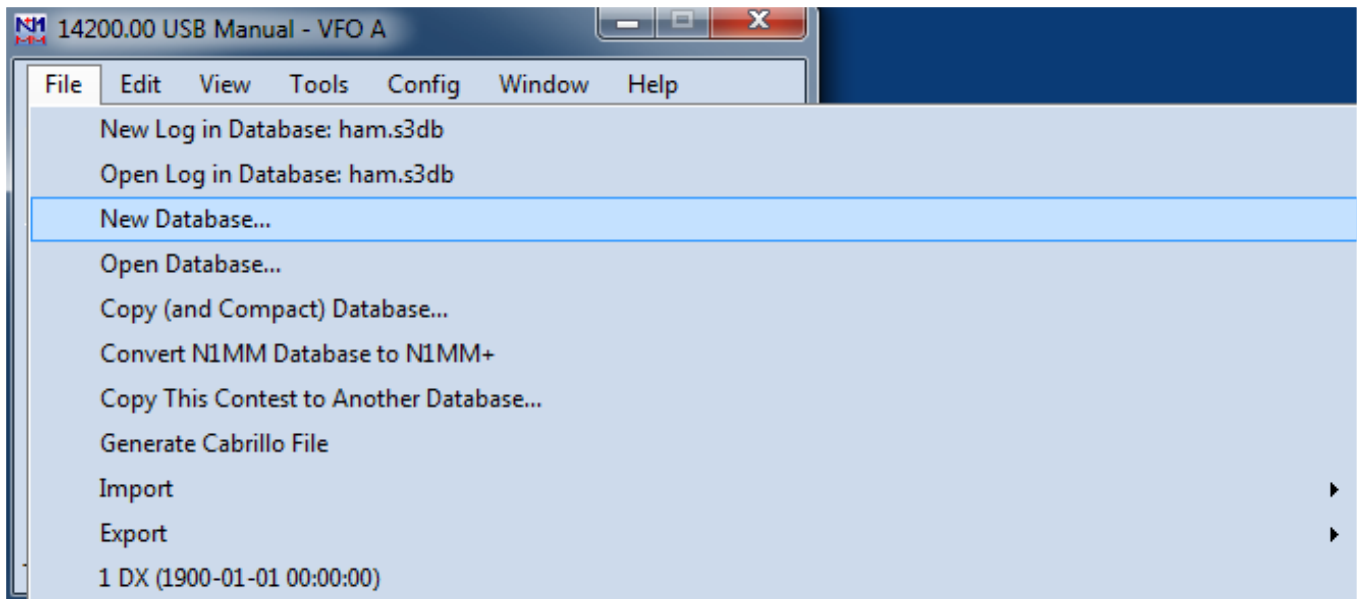
Note that when in Search and Pounce mode, you can switch to Run mode by pressing F1 to send what is called the S&P CQ message. That will send the S&P F1 message (for example, "QRL?") and switch the program to Run mode.

Alt + F11

Normally when you are on your CQ-frequency you will be in Run mode and QSYing will switch to S&P mode. Press Alt+F11 to disable this automatic mode change, and again to re-enable it. A message in the Entry window status bar will indicate what the current state is. When on a DXpedition this behavior can be very useful.

Entry Window Menus

File Menu Selections



New log in database

Create a new contest log in the current database. More info [here](#).

Open log in database

Open an existing log in the current database. More info [here](#).

New Database

Create a new log database. Change the proposed name (ham.s3db) into a meaningful name for the use or contents of this new database. Until you change to another database (see Open Database below), this database will be opened by default at startup of the program.

Open Database

Open an existing log database. Select from databases already created.

Convert N1MM Database to N1MM+

This option is intended for use after you install N1MM+ but before you delete N1MM Classic from your computer. Because N1MM+ uses SQLite, in order to access an old database (.mdb file) you need to do two things. First, open the old database in N1MM Classic (**any version 14.0.0 or after** – if your only copy of N1MM Classic is older than 14.0.0, you can find an updated version on the web site at >Downloads > File Explorer > All Downloads > Program Files > N1MM Classic Archive). Then

close it, close N1MM Classic and open N1MM+, select Convert...(this option) in N1MM+, and navigate to your N1MM Classic program directory. Select the database you want to convert, and hit Open. You will be asked for the name you want to give it under N1MM+, and when you hit Enter the database will be converted and placed in the [user]\My Documents\N1MM Logger+\Databases subfolder.

Copy This Contest to Another Database

Copy the current contest log to another database. If the target database does not exist, you should create it first, using the New Database command. The original database is not changed, nor does the program start using the new database unless Open Database is subsequently used to open it.

Why Copy A Contest to Another Database?

There are many reasons why you might want to copy contests from one database to another. Many users have created databases organized by year, by contest type, and so on. This option makes that easy. Some users, particularly those whose CPU or PC memory capacity is limited, have found that they get improved program performance by using a database that has only one contest (or relatively few QSOs) in it. If you start off using a database with many contests already in it, you can always create a new database and then copy the QSOs you have already made to it.

Generate Cabrillo File

Invites you to name your Cabrillo file for the current contest, double-checks your sent exchange, creates the file, and opens it in Notepad for you to check before you send it in.

Once created, the Cabrillo file can be edited using Notepad or any text editor. Make sure that the Station information (Config > Change Your Station Data) and Contest Setup (File > Open Log in Database) are correct before creating this file. Be sure to enter the correct Sent Exchange in the Contest Setup dialog, or else your Cabrillo file will be wrong.

Double-check your entry class before generating the Cabrillo file. The defaults may well not be appropriate for your entry in this particular contest. The program defaults to Single Op Assisted as your class, and you may not want that. For Multi-op stations select the correct Operator Category in the Contest Setup window. This generates the correct numbers for each station; in Multi-single, the station number field (the last digit in each line) identifies the Mult and Run station.

It is a good idea to rescore the contest (Tools>Rescore Current Contest) before submitting and check to be sure that the header of the Cabrillo file is correct before submitting the log. Some contest organizers use non-standard operator categories

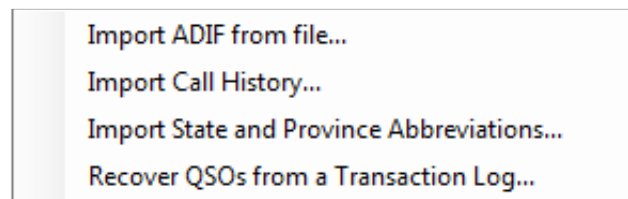
(i.e. not in the official Cabrillo specification); in these contests you will have to edit the category by hand to make it agree with the organizer's requirements.

Note that if your radio was not interfaced to the program when contacts were logged, those contacts will be exported with bottom-of-band frequencies (e.g. 14000), whereas if you used an interfaced radio, the exact frequencies will be exported in the Cabrillo file.

Digital Mode Designators

Note: The Cabrillo standard only supports one mode designator for digital modes: RY. In some digital or mixed-mode contests, PSK and RTTY may be considered separate modes, and the contest organizers may specify additional non-standard designators such as PK. The Logger's Cabrillo mode export string for PSK is "PK" unless the contest considers RTTY and PSK to be a single digital mode. When this occurs the mode export string is "RY". Because the use of these mode designators is non-standard, you should always check with the organizer's file specification and if necessary, edit the Cabrillo file to meet the organizer's requirements.

Import



Import ADIF from File

=****Import ADIF from file...** – Load the data from an ADIF file into the current database. The Contest Name in the ADIF file **must** match the contest name in the current database.

Date & Time Conflicts in a Database

A single N1MM Logger+ log database cannot contain QSO's with identical time stamps (time and date). If the contacts contained in the ADIF already exist in the current database, YOU MUST open a new database and contest before importing the ADIF file.

If the ADIF file contains tags that are not used by the N1MM Logger+ program, they are ignored. This is often the case when the ADIF file is generated by a different program. To view the N1MM Logger+ ADIF tags open a contest of the same type, log one or more dummy QSO(s), then export the ADIF file. Compare the Contest Name and QSO tags for the important QSO elements. Note that ADIF files for WAE contest logs do not contain QTCs, only QSOs, and therefore you cannot transfer

WAE logs including QTCs between databases using ADIF files. See the FAQ for more information.

The imported contacts are not scored during the import process. It is necessary to do a rescore (Tools > Rescore Current Contest) after the import in order to have the points and multiplier status of the newly imported contacts recorded and included in the calculated contest score.

Import Call History

- **Import Call History...** – Call history files (typically with the extension .ch or .txt) are used to suggest exchange elements based on past experience with the current station. See [this full explanation](#)
- **Import State and Province Abbreviations...** – Import the state and province abbreviations used in many contest modules. This is done automatically when changing databases, but may be worth trying if you have trouble in a contest (particularly a QSO Party) with the program not recognizing certain county, state or province abbreviations. Do a rescore after executing this menu item, when QSOs have already been logged.

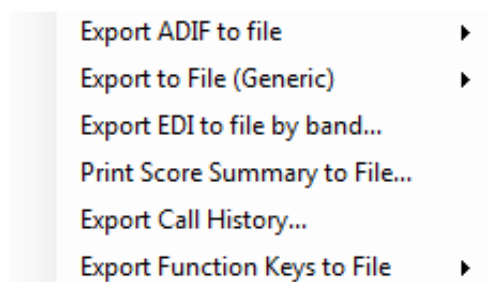
Import QSOs from a Transaction (TRN) Log File

- **Recover QSOs from a Transaction Log...** – Import the created transaction log (also known as a transaction file). This file is created automatically and stored in the Databases\TransactionLogFiles sub-directory within the N1MM Logger+ User files area and have the filename suffix TRN. These files are used as follows: During normal operation N1MM Logger+ saves the information about each QSO in a simple text file. These files are stored in a sub-folder of the user Databases folder, normally C:\Users\login_name\Documents\N1MM Logger+\Databases\TransactionLogFiles and can be used to recover in the event the database file is corrupted. Here's an explanation of how you can use those files to recover your data quickly, during a contest, or at your leisure later:
 - The transaction log is created for each contest you log to
 - The file is closed after each transaction and reopened to force the data to be written to disk
 - To keep things simple and foolproof, you are not allowed to change the name of the transaction log
 - The name is used to make sure you are loading it properly, and to prevent mixing logs of two contests. Example name: 'CQWWCW – 2005-09-19 – 14.TRN' i.e.: Contest name – date log created – an internal index number
 - **To Recover your log, you MUST import the transaction log into a NEW (empty) database and a NEW contest log.**
 - The new contest log must be the same contest type as the contest

from the transaction file (Example: if restoring CQWPXCW, the new contest must also be CQWPXCW)

- As you load the transaction log, a new transaction log is automatically made with the transactions in the first log. Thus you should never have to merge logs. You always use the last one

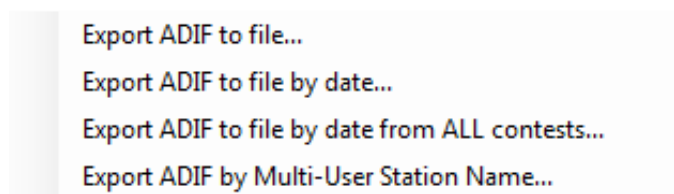
Export



Filename Tip

Whenever the “Save File” window prompts for a filename, the default is {your callsign}.txt (the callsign comes from the Station Information dialog). “/” and some other common characters are not accepted by Windows, so if your contest call sign was N1MM/P, use something like “N1MM_P.txt” instead.

ADIF Export Sub-menu



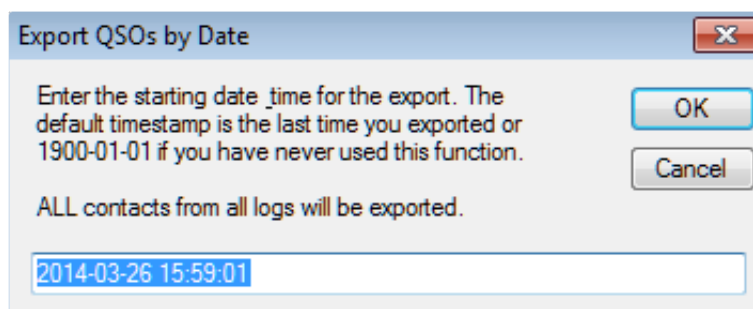
- **Export ADIF to file...** – Create an ADIF file. This file can be used to export **the current contest**, for import into a logging program or another contest program (horrors!). Deleted QSOs are not exported; select the ‘DELETEDQS’ contest to export these.

Note: QTCs in WAE contest logs are not exported in ADIF files, because there is no provision for QTCs in the ADIF specification.

- **Export ADIF to file by date...** – Create an ADIF file from the currently-selected contest, starting from the date set. The first time you use this function the default date will be 1900-01-01 (yyyy-mm-dd). The second time the suggested date and time will be the last time you exported with this option. You can always over-write the date/time if you want. This function is especially useful when you want to export into a (general) logging program

to do award tracking etc.

Deleted QSOs are not exported; select the 'DELETEDQS' contest to export these.



- **Export ADIF to file by date from ALL contests...** – Create an ADIF file from all QSOs in all contests starting from the date set. The first time you use this function the default date will be 1900-01-01 (yyyy-mm-dd). The second time the suggested date and time will be the last time you exported with this option. You can always over-write the date/time if you want. This function is especially useful when you want to export into a (general) logging program to do award tracking etc.

ADIF file compatibility when importing into other logging programs

When a contest exchange uses a ADIF field that is not included in N1MM+'s contest database, the N1MM+ ADIF Export will define that exchange with an ADIF custom tag like <APP_N1MM_EXCHANGE1:2>1D. To import into a general logging program that is expecting standard ADIF tags, you will need to use a text editor with Global Search & Replace to change the custom tag to a standard tag. For example, in Field Day, ADIF exports the CLASS exchange as <APP_N1MM_EXCHANGE1:2>1D. You would need to globally replace all "APP_N1MM_EXCHANGE1" with "CLASS" for a successful import.

Deleted QSOs are not exported; select the 'DELETEDQS' contest to export these.

- **Export ADIF to file by Multi-User Station Name** – Create an ADIF file from all QSOs from one station in a Multi User environment when you are currently logging DX. Otherwise, it exports only from the contest you are logging in. A station name has to be supplied from the [Network Status window](#), after which you will be asked for a filename.

Note: When using ADIF export and the contest name contains "RTTY" or "JARTS" the export mode is set to "RTTY" even when the log file shows otherwise (i.e. LSB).

- **Export to File (Generic)**
 - **Export to File (Generic), order by QSO Time (normal)...** – Creates a generic file named *call-sign.txt* from the contest log

ordered by time (and not by band). In some cases this will be the file requested by the contest manager. This file can also be used to import into a spreadsheet or database program, or your logging program if it can't import ADIF format. The exported file can be edited with a text editor like Notepad.

- **Export to File (Generic), order by Band...** – Creates a generic file named *call-sign.txt* from the contest log ordered by band, per band ordered by time. In some cases this is the file requested by the contest manager, for example in VHF and up contests.
- **Export EDI to file by band...** – Create an EDI (REG1TEST) file. This is a regular file format used for VHF contests in Europe. A separate file will be created for each band with QSOs made on it.
- **Print Score Summary to File...** – Print the contents of the Score Summary window to a text file with the default name *call-sign.SUM* Example: N1MM.SUM. This can also be done by right-clicking the Score Summary window.
- **Export Call History...** – Exports the information in the Call History database table. This table can only be filled or revised by using Import Call History. Do your editing on the Call History text file before import.
- **Export Function Keys to file** – Export the contents of the function keys to file (*.mc). Exported function key definitions can be imported using the [Function Key Editor](#)
 - **SSB Function Keys...** – Export the SSB function keys.
 - **CW Function Keys...** – Export the CW function keys.
 - **Digital Function Keys...** – Export the Digital function keys (the Entry window keys, not the extra keys from the Digital Interface).

Contest List

At the bottom of the File Menu is a list of the last 9 contests you have had open, along with the databases they are contained in. This provides a very convenient way to switch between contests when you want to participate in more than one simultaneously. You can open the File menu and use your mouse to select the contest you want to work next, or you can hit Alt+F, which opens the File menu, and then hit the number (1-9) corresponding with the contest you want.

The contest you currently have open will always be numbered “1”, and the next previous will be numbered “2”, so if you want to toggle between just two contests, all you need to do is set them up and then Hit Alt+F, then 2, to jump back and forth.

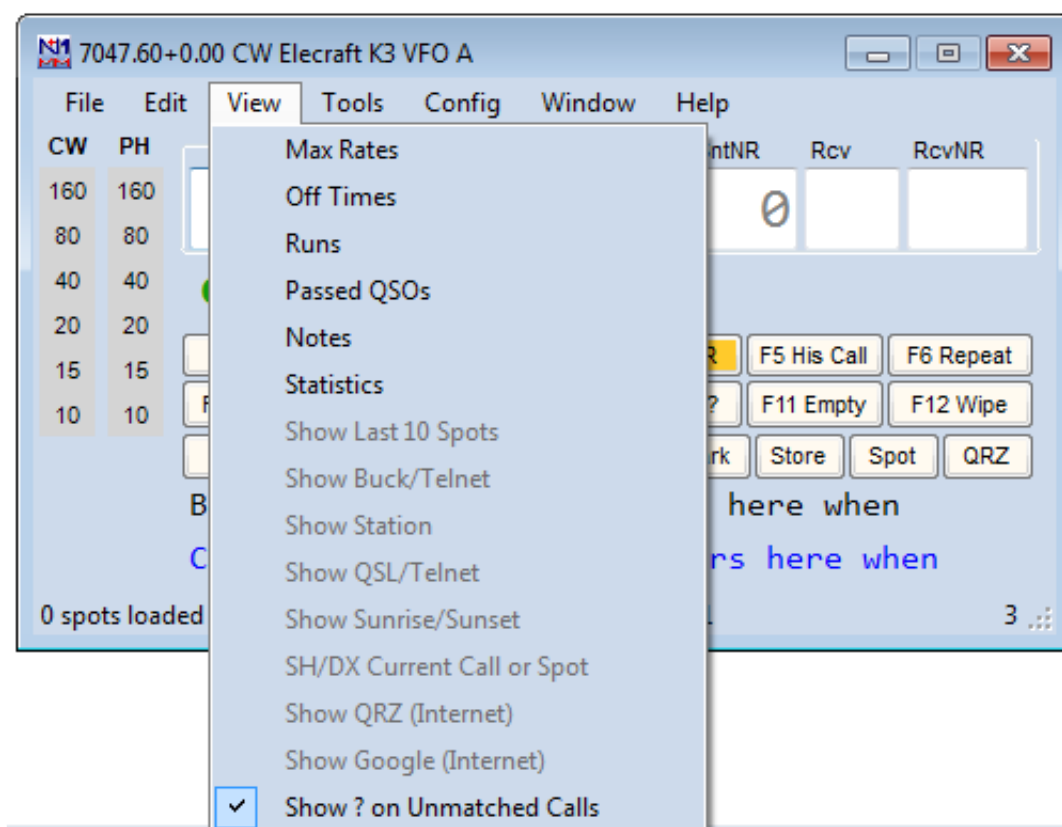
Edit Menu Selections



Edit	View	Tools	Config	Window	Help
Wipe Out Entry Fields					Ctrl+W
Edit Last Contact					Ctrl+Y
Add a Note to Last/Current Contact					Ctrl+N
Edit Current Contact					
Quick Edit Previous Contacts (Back)					Ctrl+Q
Quick Edit Previous Contacts (Forward)					Ctrl+A
Increase Received NR by 1					Ctrl+U
Find/Find Again					Ctrl+F

- **Wipe Out Entry Fields Ctrl+W** – Clear information from the current contact (equal to Alt+W).
- **Edit Last Contact Ctrl+Y** – Open a dialog to allow all fields for the last contact in the log to be modified.
- **Add a Note to Last/Current Contact Ctrl+N** – Add a note to the current contact in the Entry window, or the last QSO logged when no call-sign is shown in the Entry window.
- **Edit Current Contact** – Open a dialog to allow all fields for the current contact (still in the Entry window) to be modified. Double clicking in the Log window on a field with user-supplied data will open in-line editing of that particular item. See the Log Window below for more details on this.
- **Quick Edit** – Quickly edit QSOs already in the log. **If the text boxes in the Entry window are colored blue, you are in Quick Edit mode.** Quick Edit (Ctrl+Q) always starts with the last QSO in the log. The call-sign and any exchange elements are displayed in the Entry window, with the legend “QuickEdit” in the call-frame. Correct any errors and hit Enter, or hit Esc to exit quick Edit mode. Once you are in Quick Edit mode, hitting Ctrl+A moves forward one QSO, while hitting Ctrl+Q moves backward (in time) one QSO.
- **Quick Edit Previous Contacts (Forward) Ctrl+A**– Quickly edit the QSOs worked before in the log. Ctrl+Q moves back one QSO, Ctrl+A moves forward one QSO.
- **Increase Received NR by 1 Ctrl+U** – Increase the number in the exchange field by 1. You will find this useful during serial number contests when you are in a pileup and you need to keep incrementing the DX station’s serial number because you can’t get him in the log...
- **Find/Find Again Ctrl+F** – Find the call-sign entered in the call-sign field in the log. Pressing Ctrl+F again will find the next instance.

View Menu Selections



- **Max Rates** – Shows the best 1-minute, 10-minute and 60-minute rates achieved in the current contest. File > Copy these messages to the Clipboard is self-explanatory, and appears for all of the View functions below..
- **Off Times** – Shows off times. Lists each off period that complies with the contest rules, or each off-time of 30 minutes or more if the contest rules do not specify. Each off period shows when it began and ended, and the duration. Total on and off time is also given. Time between the start of the contest and the first logged QSO is counted as off time, as is time between the last QSO and the end of the contest.
- **Runs** – Shows all runs. The program counts consecutive QSOs in run mode until an S&P QSO or band change. Off times do not break a run if you resume in Run mode on the same band.
- **Notes** – displays all contacts with notes.
- **Statistics** – Show statistics for the selected contest. Many choices available. See the [Statistics Window section](#).

Inactive Menu Choices

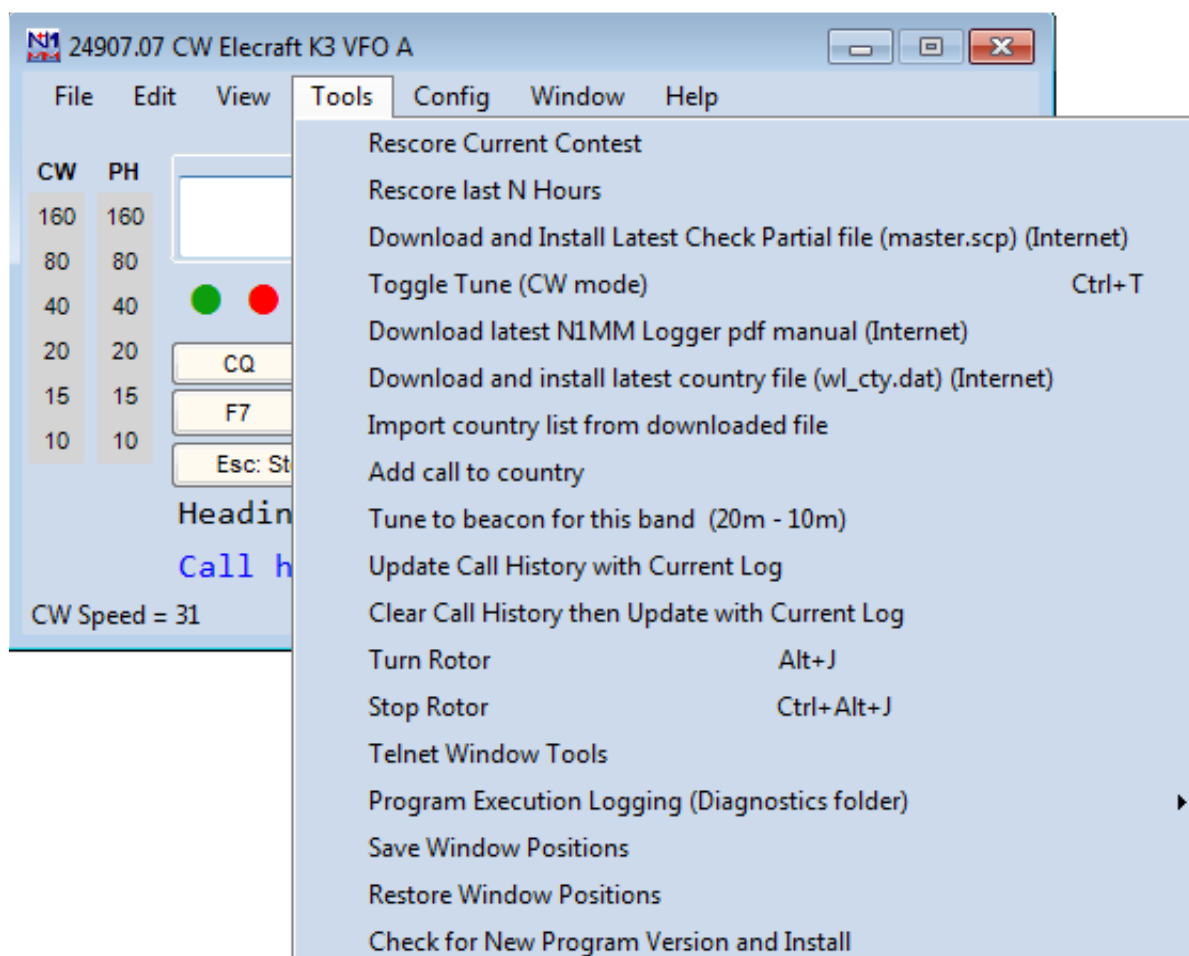
All greyed-out 'Show' items below become active when valid call-sign information is entered in the call-sign textbox or the call-frame. Some formats may not be compatible with all current cluster command sets.

- **Show Last 10 Spots** – Show the last 10 DX cluster spots for the call in the

call-sign field or call-frame. Telnet cluster connection required. Format may not be compatible with some cluster nodes.

- **Show Station** – Show the station information for the call in the call-sign field or call-frame. Telnet cluster connection required
- **Show QSL/Telnet** – Show the QSL information for the call in the call-sign field or call-frame. Telnet cluster connection required.
- **Show Sunrise/Sunset** – Show the Sunrise/Sunset information for the call in the call-sign field or call-frame. Telnet cluster connection required.
- **SH/DX Current Call or Spot** – Shows DX information from the current call in the call-sign field or spot. Telnet cluster connection required.
- **Show QRZ (Internet)** – Show the information that QRZ.com has for this call using your browser. An Internet connection is required. present.
- **Show Google (Internet)** – Show the information that Google.com has for this call using your browser. An Internet connection is required.
- **Show ? on Unmatched Calls** – When the Check window is open and a call-sign is entered in the call-sign textbox, a “?” will appear following the call-sign if no matching call-sign was found in the Check window’s sources. Uncheck the option if you do not wish this to happen.

Tools Menu Selections





- **Rescore Current Contest** – Rescores the current contest. This is required before submitting a log if anything has changed, such as a `cty.dat` or `.sec` file, or if you have edited or imported any QSOs. It rechecks QSO points and multipliers and makes any corrections needed
- **Rescore last N Hours** – Rescores the last N hours for the current contest. It may be run at any time but is rather slow.
- **Download and Install Latest Check Partial file (Master.scp)(Internet)** – Opens your web browser to download the latest version of the check partial file. Select the file to download and save it in the Support Files subfolder of the N1MM Logger+ folder, under [user]\My Documents.
- **Toggle Tune (CW mode) Ctrl+T** – Switches the radio into CW mode and using the CW keying interface, keys the transmitter. PTT is asserted. To stop tuning, press the Esc key or Ctrl+T again. After tuning ends and PTT is released, the radio returns to the original mode.
- **Download latest N1MM Logger+ pdf manual (Internet)**
- **Download and install latest country file (wl_cty.dat)(Internet)** – Downloads and installs the latest `wl_cty.dat` file in the correct location (Internet connection required).
- **Import country list from downloaded file (Internet)** – This option is retained for contests that use a non-standard `cty.dat` file that is not on the standard country file website.
- **Add call to country** – Specify a country for the call-sign in the call-sign textbox in the Entry window. If no call-sign is entered this menu item will be grayed out. This is a quick way during the heat of a contest to add a country temporarily, until the next time you import `wl_cty.dat`. Making changes permanent requires editing the country file (`wl_cty.dat`) to be imported.
- **Tune to beacon for this band (20-10M)** – This will change the radio's mode to CW and tune to the NCDXF beacon on the current band, if that band is 20, 15 or 10 meters. The station currently transmitting and the power steps are displayed in the status bar of the Entry window that has the Entry focus (green LED). Short Path and Long Path bearings to the beacon are shown. See [this website for current information on the beacon program](#).
- **Update Call History with Current Log** – Update the current call history table in the Admin database with the QSOs from the current log file. Information associated with a call-sign will be added, or updated if already in the call history table. For VHF contest, in particular, where two Maidenhead grid fields are provided, the behavior is a bit different. When both grid fields are filled and a new, third grid has been logged, the oldest grid will be removed, and replaced by the grid from the first field. The new grid will be added in the first position. The same change in position will happen when only the first grid field is filled and a new grid is added from the log. A 4-digit grid will be overwritten by a 6-digit grid when the first 4 characters are the same, adding precision to the entry.
- **Clear Call History then Update with Current Log** – As above, except

clears the call history table before adding contacts from the current log. Can be used to start a new call history file.

Saving an Updated Call History file

After you have done this, the modified Call History table is only in the Admin database. To get it into a Call History text file, you must export the table to a file. Do this on the File menu, under Export>Export Call history.

If you want to have a specific Call History Lookup file loaded and enabled whenever you start that contest, you need to add the short contest name (the one in the Contest Setup dialog) to the Call History text file as a comment (preceded by a "#"). You can even have it loaded and used for more than one contest, by putting in multiple contest names. Example (omit the quotation marks):

"#NAQPCW"

"#NAQPSSB"

For QSO parties, the state abbreviation is required after the contest name.
Example:"#QSOParty PA"

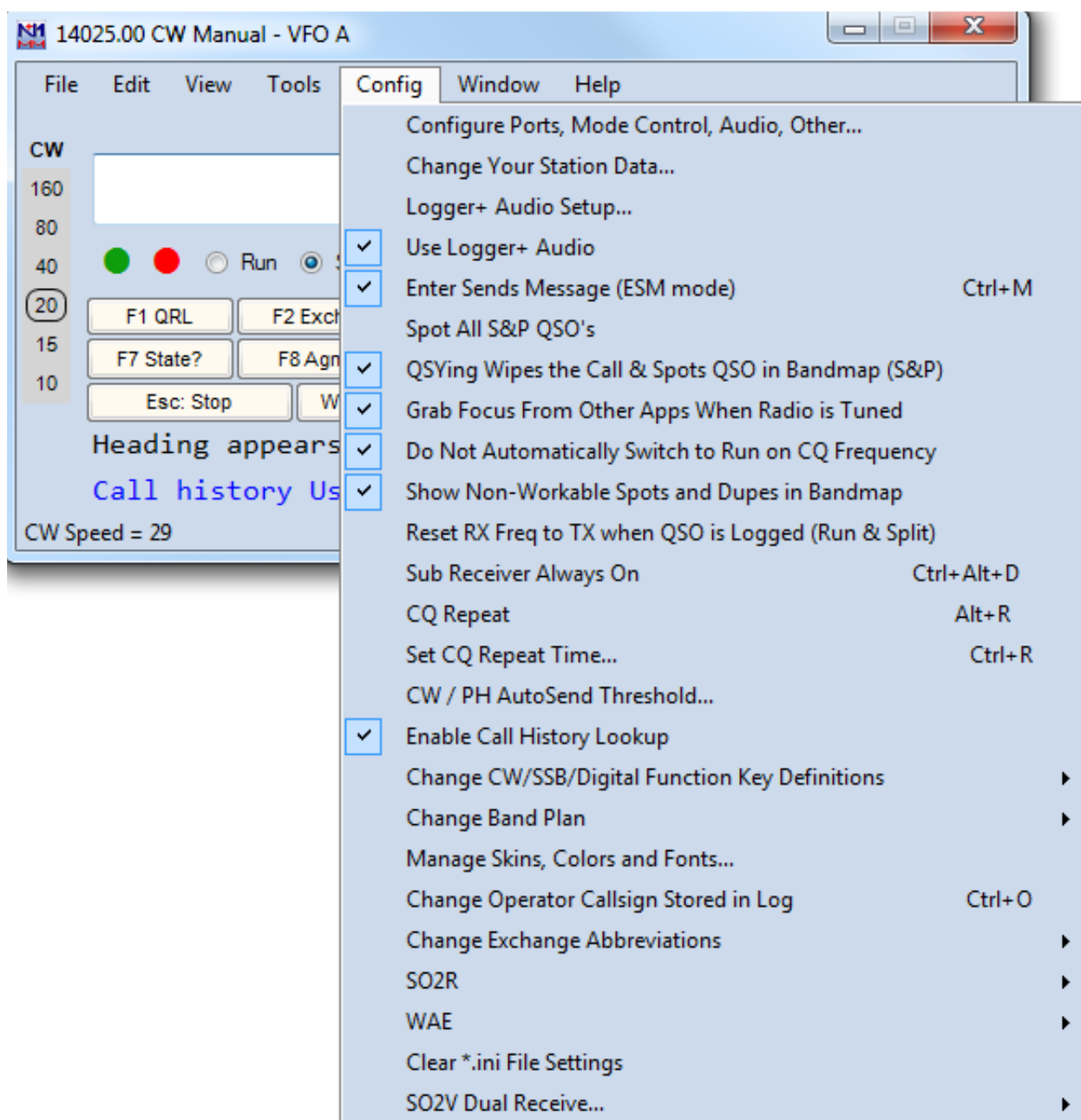
- **Turn Rotor Alt+J** - Turn rotor to bearing for the call-sign in the Entry window or to the call-sign in the callframe (when call-sign field is empty).
 - **Alt+L** will turn the beam to the proper bearing for long path
- **Stop Rotor Ctrl+Alt+J** - Stop turning the rotator.
- **Telnet Window Tools** - Opens the Filters tab of the Packet Window.
- **Program Execution Logging (Diagnostics folder)** - There are several different logging options, all of which export to the Diagnostics folder, and may prove useful to the developers in tracking down performance and other problems. We recommend that you click Disable All on the sub-menu unless you are encountering serious delays or other execution anomalies.
- **Save Window Positions** - Save the current window positions to the .ini file.
 - Window positions are automatically saved when the program is closed.
 - Window positions are saved per operator. Use Ctrl+O to enter the call of the operator, and click "Save Window Positions". The next time that operator signs on (using Ctrl+O), the window setup will be adjusted to the saved layout.
- **Restore Window Positions** - Restore from the .ini file the most recent saved window positions. The screen will update immediately
 - Window positions are restored per operator (when saved first by the operator). Use Ctrl+O to select Operator and press 'Restore Window Positions'. The windows will change to their new positions immediately. This enables easy reconfiguration of the screen when

changing operators at a multi-op.

- **Check for New Program Version and Install** – Useful if you have elected not to install a new version when the chance was automatically offered, and now want to remedy your “grievous error.”

Note –More info about rotator control can be found in the Supported Hardware chapter under [Rotator control](#).

Config Menu Selections



Many of the selections after the Configurer can also be invoked in other ways, such as hot-keys or from other windows.

Configure Ports, Mode Control, Audio, Other – Also called [Configurer](#).

This a very important dialog which determines many aspects of the program's external interfaces and operation. Go [here](#) for detailed documentation of this dialog.

Change Your Station Data

Modify overall Station information – name, call, address, state, latitude, longitude, etc. The call-sign and location information entered here is very important for most contests, It determines what country, state or province you are in, which may in turn affect the required exchange, scoring, which stations may be worked for contest credit, etc. See [this section](#) for more discussion.

Logger+ Audio Setup

This menu item only appears when the following menu item has been checked. For users with Windows Vista or later operating systems, this is where you set up your audio options for the new Logger+ Audio functions, including playback and on-the-fly recording of stored voice messages. If you are running Windows XP, you will not see this option. If you check the next option below, Use Logger+ Audio, then the Audio tab will not be present the next time you open the Configurer.

The Monitor tab

This tab opens whenever you open the Logger+ Audio Setup



The left-hand slider ("Set") sets the output level going to your radio. You will want to set this so that your radio indicates the correct microphone level and amount of compression. When playing a .wav file, the narrow "Wav" bar-graph displays the relative level of the peaks of the recording being played. The wide "Output" bargraph displays the peaks of the output going to your radio. The two are

independent; if the Wav file bargraph shows relatively low peaks, you may want to re-record it to improve the signal-to-noise ratio.

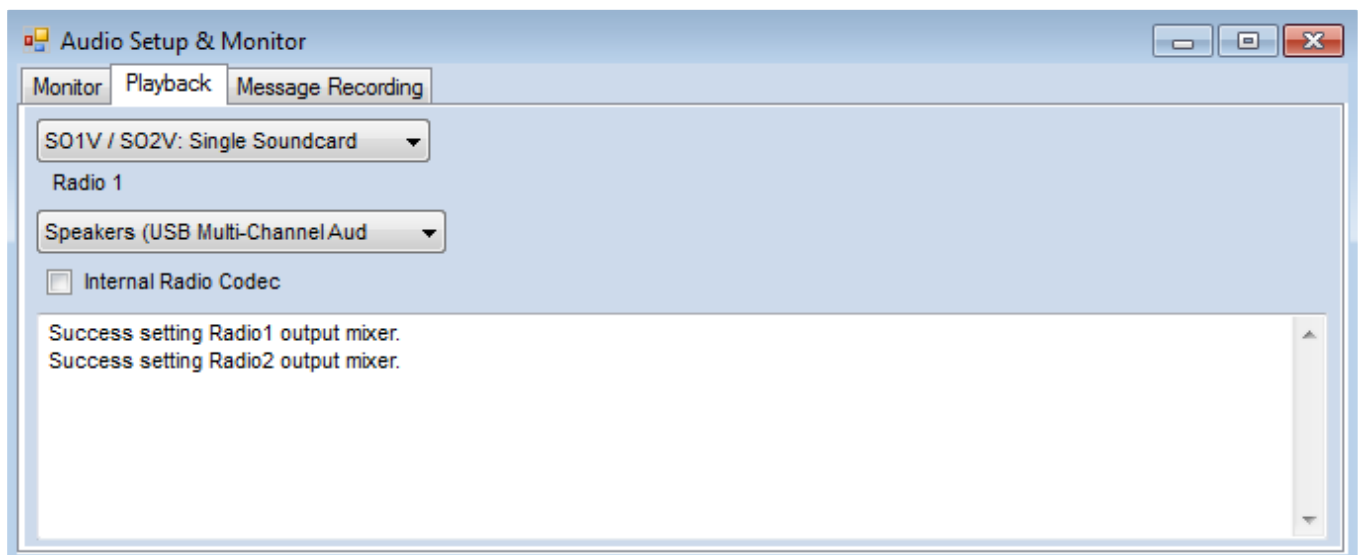
The right-hand slider sets the record level for “on-the-fly” recording, and the narrow bargraph just to its right displays the relative sound level that is being recorded.

When you close N1MM+, the soundcard(s) output level(s) and microphone input(s) levels are returned to the previous settings.

The “Test” button will play a pre-recorded message, so that you can test your playback setup without having to record something first.

The lower pane of this tab reports each stored message that is sent, which can be helpful for debugging.

The Playback tab



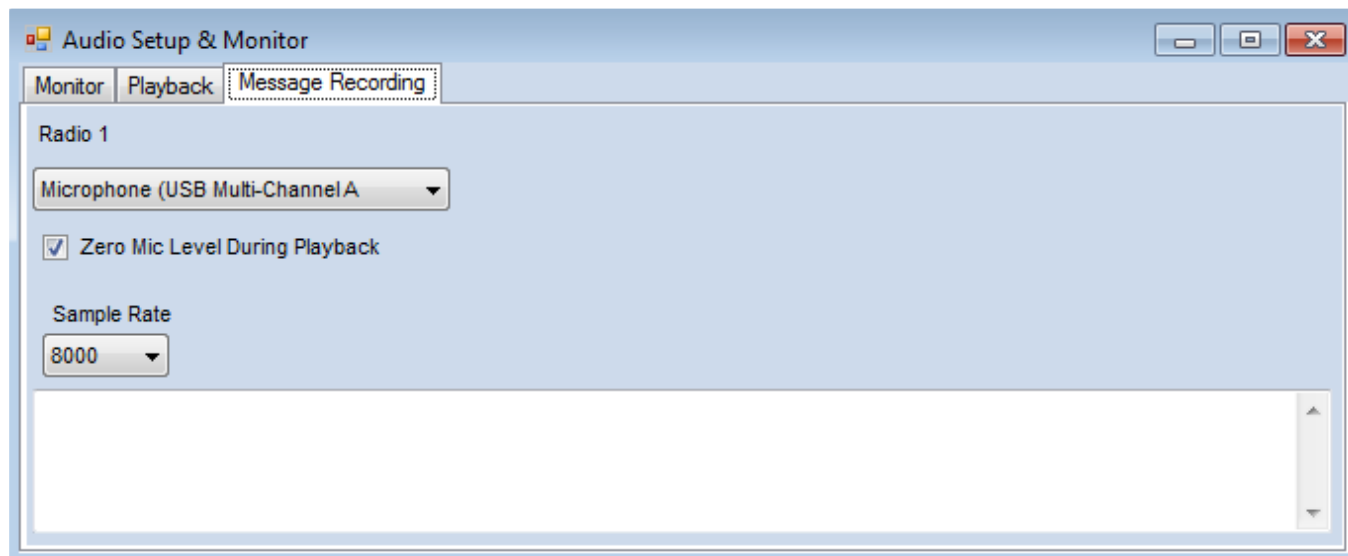
In the first options box, the first choice uses a single soundcard for SO1V/SO2V. The other 3 are all for SO2R – Single Soundcard Mono (where an external controller is used to route the audio between radios), SO2R Single Soundcard L/R (using one channel for each radio), and SO2R Two Soundcards Mono, where each soundcard is connected to one radio.

In the second options box, select the Playback device that will feed audio to your radio. The set of possibilities displayed is dependent on your specific computer configuration.

A growing number of radios have internal “sound cards”, called CODECS. If you have one of these and wish to use it as the sound card for that radio, check the box. Of course, you cannot use a single radio CODEC for more than its own radios, so the first option needs to be set to match.

The lower pane of this tab shows interactions between N1MM+ and windows audio functions.

The Message Recording Tab



This tab will vary with your choices on the Playback tab. If you choose two-soundcard SO2R you will need to choose inputs for each card to enable on-the-fly re-recording of stored messages

The Sample Rate options are 8000 and 12000, and are set here for on-the-fly recording only.

The lower pane will report the beginning and end of each on-the-fly recording event.

Your microphone will be muted during playback if you check that option.

Use Logger+ Audio

Activates the audio setup in the selection just above, and deactivates the audio tab in the Configurer, if your PC is running Windows 7 or later. If you are running Windows XP, neither this option nor the configuration menu above will appear on your screen.

Enter Sends Message (ESM mode)

Ctrl+M toggles this mode on and off – first introduced by N6TR in TRLog, and much improved in N1MM Logger. The program anticipates the needed sequence of messages to complete a QSO in either Run or Search & Pounce mode, and sends each one in turn by simply hitting Enter. See [ESM](#) for further details.

Spot all S&P QSOs

Spot the contact when you log it. This option is turned off by default when starting the program, to avoid spotting everything you work unless you want to.

If this option is checked, a contact is automatically spotted when:

- You complete the QSO in S&P mode **and**
- the spot is not already on your Bandmap at the same frequency (+/- the tuning tolerance)

The Spot Comment tab on the Telnet window allows the user to specify a comment for spots, including elements of the log entry for the spotted call, such as Zone or Exchange.

QSYing wipes the call & spots QSO in bandmap

Very useful for S&P. If you enter a station's call in the Entry window, and then tune off for any reason (he doesn't answer your call, or...) the call is shown bold in the bandmap. These 'spots' are not sent out on Telnet. The setting of this feature remains as it was across program restarts.

All bandmap features work on these 'spotted' stations so they are easy accessible if needed. Self-spotted stations are easily recognized because they are shown in bold.

This option is also available on the Filters tab of the Telnet window.

Grab Focus From Other Apps When Radio Is Tuned

Brings N1MM+ to the front over any other app when you tune a radio that is interfaced with the program.

Do not automatically switch to Run on CQ-frequency

When selected and you QSY back to an old Run frequency, the mode stays in S&P. F1 and Alt+Q continue to switch to Run mode. This is most useful in Sprint-like contests, where you QSY frequently and want to avoid unexpected switches to Run mode

Show Non-workable Spots and Dupes in Bandmap

This option is also found on the Filters tab of the Telnet window. When checked, this option displays all previously worked (dupe) call-signs, as well as stations that don't count in the current contest, in grey on the bandmap. When navigating the bandmap with hot-keys (Ctrl+Up/Dn, for example), grey calls are ignored. Its use is highly recommended to avoid wasting time on non-workable stations when S&P, even if operating unassisted.

Reset Rx freq to TX when QSO is logged (RUN and split)

When using the main VFO to transmit and the other to receive (split mode) after each logged QSO the RX frequency will be made equal to the TX (main VFO) frequency. It resets after every RUNNING QSO. Using a radio with VFOs A and B, this feature is there to let you use the main frequency control as an RIT. With Main/Sub radios like the Icom 756/7800 series you can not RX on SUB without receiving on both VFOs. In this case put RX on Main and TX on SUB for Alt+S to work.

Sub Receiver Always On

Yaesu FT-1000 series, Icom IC-756 series, IC-781, IC-775, IC-7800, Elecraft K3 with subRX only: Selects the mode for Dual Receive toggle (Alt+F12).

- When selected –
 - Yaesu FT-1000 series: The sub receiver will be left on (blinking green RX led)
 - Icom IC-756 series, IC-781, IC-775 and IC-7800 only: Dual watch is not turned off when you switch from SUB to Main with **Ctrl+Left Arrow** or **PAUSE**
 - Elecraft K3: The sub receiver will be left on
- Not selected – The sub receiver will be switched off (RX led off)

CQ Repeat - Alt+R

Toggle for repeat CQing. With Winkeyer, beginning to enter a call-sign in the Entry Window terminates the CQ, but the program remains in CQ repeat mode. The function is automatically turned off when no longer on the CQ-frequency and the mode changed to S&P.

Set CQ repeat time - Ctrl+R

Specify the repeat interval (CW or SSB with sound card) in seconds. The default value is 1.8 seconds.

CW / PH AutoSend Threshold - Ctrl+Shift+M

Start sending the call-sign after a certain number of characters typed AFTER the last number in the call-sign. The minimum threshold is 1. 0 will turn off the feature. Only works when in RUN mode, not in S&P. More info in the [Logging Key Assignments](#) section.

Enable Call History Lookup

When enabled, [Call History Lookup](#) can be used to pre-fill the exchange during a contest to save typing, or to display user comments or notes for specific call-signs.

[Reverse Call History Lookup](#) uses the same Call History file to find stations whose exchanges fit what you have entered in the Exchange field. It is enabled by the same Config menu entry. Follow the links above for the full story.

Change CW/SSB/Digital Message Buttons - Alt+K

Change the contents of the CW/SSB/Digital Function Key messages). The maximum length of text in each CW, SSB and RTTY button is 255 characters. Alt+K will access the relevant list of definitions, depending on the mode you are in, or you can right-click in the button area to get there. See [the discussion of the Function Key Editor here](#).

- **Change CW Function Key Definitions** - Change the contents of the CW messages.
- **Change SSB Function Key Definitions** - Change the contents of the SSB messages (.wav files).
- **Change Digital Function Key Definitions** - Change the contents of the Digital messages.

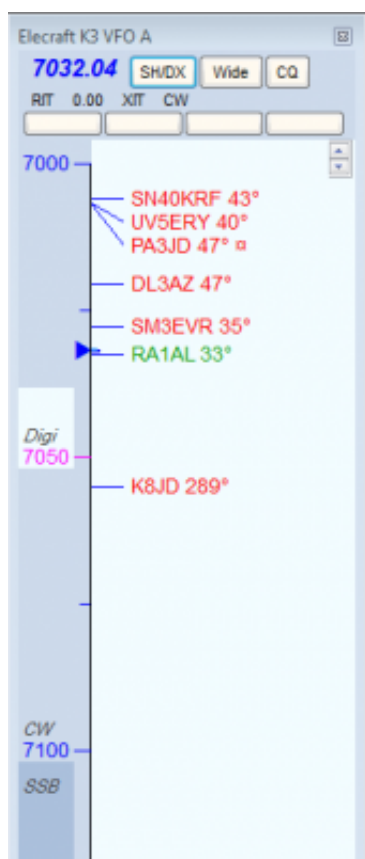
Change Band Plan

Band plans play important roles in a number of places in the program. They can affect the mode contacts are logged in, the mode that is assigned to incoming Telnet spots, and whether or not those spots are displayed in the Bandmap and Available Mults & Qs window. The usage of modes in some frequency segments depends on the contest. For example, frequencies in the 7040-7070 kHz segment of 40 meters might be used for SSB (DX stations operating split in a DX phone contest), digital modes (in a RTTY DX contest), or for CW (in a CW contest or a domestic North American contest). There is no one size fits all setting, and even for a single operator the choice of where to place the sub band limits can depend on the contest. Therefore it is important to be able to adjust the band plan. This section describes one method; alternatively, there is a graphically-based method that can be used from the Bandmap window.

The sub-menu offers the choice of CW or digital bandplan tables which can be edited and saved. You can only designate one CW and one digital band segment per band.

By definition, digital segments override cw segments, and both override SSB segments. That means that unless a band segment is designated for CW or digital modes, it will be shown as SSB.

For example, on 40 meters, you can enter a CW segment of 7000-7100 KHz, and a digital segment of 7040-7050. The resulting bandmap markings will look like this:



Changes in Band Plan Management N1MM Logger+ has adopted a new approach to designating and displaying CW, digital and SSB band plans. You can now adjust the sub-bands that are displayed for any individual band through right-clicking on frequency labels (e.g. “7045”) in the relevant Bandmap. See [this link](#) for details.

Manage Skins, Colors and Fonts

See the [Skins, Colors and Fonts Window](#).

Change Operator Call-sign Stored in Log (Ctrl+O)

This function is used mostly in multi-operator situations, to change the operator callsign stored in the log and to call up a preferred window configuration when a new operator takes over.

Change Exchange Abbreviations

The idea here is to hedge against having people send you abbreviations during contest that are not the same as those recognized by the contest organizers. We’ve all had people send us “ALA” when they meant “AL” or ALTA when they meant “AB”. The problem is particularly bad in QSO parties. Put the non-standard

abbreviation in the “Abbreviation” column, with the correct one in the Section Column. Click on the Section heading to sort by the standard abbreviation, so you can see various alternatives that you have entered.

SO2R

More info about Single Operator Two Radio operation of the program can be found in the [SO2R](#) chapter.

- **Dueling CQ's (Ctrl+B)** – SO2R feature that alternates sending CQ on each radio in turn, listening on one while transmitting on the other. Supported for both CW and SSB.
 - Changing either radio in frequency more than 200 Hz will terminate Dueling CQ.
- **Set Dueling CQ Repeat Time** – Adjusts time in seconds after CQ ends on one radio before it starts on the other.
- **Set Radio Swap Transmit Tail Time (msec)** – Time delay after a radio has stopped transmitting, before initiating transmission on another band. Typically used to interrupt a CQ on one radio to S&P on the other radio.
- **Set Radio Swap Transmit Lead Time (msec)** – Time delay when swapping radios, whether or not the radio is transmitting. Typically used to allow station accessories to detect that the active radio has been changed.
- **Focus on Other Radio (Ctrl+Shift+K)** – FocusOther, See [FocusOther](#). A method of focus control preferred by many contesters. When FocusOther is active, the RX focus is automatically shifted between the “Run” radio and the “S&P” radio, depending on whether the Run radio is transmitting. When the Run radio is transmitting, RX focus is shifted to the S&P radio. When the Run radio stops transmitting, RX focus shifts back to the Run radio, unless an unworked callsign has been entered in the S&P entry window. This allows a callsign to be entered in the S&P radio Entry Window while CQ is being sent on the Run radio.
- **FocusOther Always Swap** – Used in conjunction with Focus on Other Radio. Focus always switches to the other radio when one radio is transmitting, and always switches back to the original radio when transmission is completed.
- **Toggle CTRLFx Macro (Ctrl+Shift+L)** – This enables/disables the use of {CTRLFx} in function key macros. When enabled and present in one of the function key definitions, the {CTRLFx} macro executes Fx (Function key definition x) on the opposite radio. An example is TU{CTRLF1} in Radio 2's F3 slot, which sends TU and then sends the other radio's F1, used to get quickly back to the Run radio and call CQ after finishing an S&P QSO on Radio 2.
- **Toggle Stereo/OTRSP Macro (Ctrl+~)** – Can be used to enable/disable all {STEREOOFF}/{STEREON} and {OTRSP RX}/{OTRSPOTHER RX} macros temporarily. Used to disable stereo switching if only one EntryWindow is being used temporarily.

- **Two Keyboards** – Enables the use of two keyboards, one for each Entry window. Plug in two keyboards before starting N1MM Logger+. The first keyboard you type in after starting the program will control the left (Radio 1) Entry Window. The other keyboard will control the right (Radio 2) Entry Window. The pause key is disabled, since you no longer need to be able to switch Entry windows from a single keyboard. The \ key moves keyboard focus to the Entry Window associated with that keyboard without actually sending any keyboard commands to that window. Note that the use of keyboard remapping software, such as AutoHotKey, may not work correctly with two keyboard operation.
- **TX Lockout (Digital)** – Select a lockout option (digital modes only).
 - **Multi-TX** – This is the default setting. Start CQ on radio A, next a CQ on radio B, both are active (no lockout)
 - **First one wins** – Start CQ on radio A, pause, start CQ on radio B. The radio B CQ is ignored since radio A is already active, so if you press a F-key for the second radio while radio A is transmitting, the radio B F-key is ignored.
 - **Last one wins** – Start CQ on radio A (CQ starts), pause, start CQ on radio B. The CQ on radio A will be aborted and the CQ on radio B will start, so if you press a F-key for the second radio while radio A is transmitting, the radio A transmission is interrupted and radio B transmits.

There's No Substitute for A Hardware Lockout

Software lockouts are inherently less reliable than hardware systems, because of the vagaries of networking, RFI, etc. We urge you not to rely solely on software lockouts to prevent rule violations or hardware damage.

WAE – Special commands for the WAE DX contest only

- **Toggle WAE QTC mode - Ctrl+Z** – Toggle the WAE QTC mode between QSO and sending/receiving QTCs. See [WAE contest setup instructions \(WAE RTTY instructions\)](#).
- **WAE Received QTC Confirmation** – Can be used to enter the WAE confirmation string or .WAV file (CW/SSB only). See the **Open QTC Window Setup Area** menu item for more comprehensive QTC setup options
- **Max QTC Number for callsign colors in Band Map** – opens a dialog box to allow you to set the number of QTCs to be used for displaying the special colors in the bandmap for stations with QTCs remaining
- **Ctrl-Z sends QTC? automatically (EU stations, Run mode only)** – When this option is checked, pressing Ctrl+Z while in Run mode automatically sends QTC? and puts the program into QTC mode (CW only, EU stations only).
- **Open QTC Window Setup Area** – Opens a dialog window in which you can

change various settings for QTCs. This window has three tabs, one for CW, one for SSB and one for RTTY.

- **CW Setup** – checkboxes for a series of options applicable to EU stations receiving QTCs, plus a box where you can customize the TU message on exit. Check any of the check boxes that you wish to activate; if the option is not checked, the default action will be selected.
 - **In CW when moving out of Serial QTC window Send CFM String and move to next line bypassing CFM button.**
 - **In CW when moving from QTC header send QRV string and move to first QTC entry line.**
 - **In CW pressing Hdr Agn clears the QTC Header Window.**
 - **In CW pressing Agn clears all QTC textboxes for that row.**
 - **TU message to send on Exit** – Can be used by either EU or non-EU stations to set the message to send at the end of a block of QTCs. The {QTC} macro may be used to send the QTC block number from the header in the TU message. If the TU message is left at the default (“Not Set”), the normal F3 TU message will be sent when exiting the QTC window
- **SSB Setup** – selection boxes containing the locations of wav files the program will look for wav files to be used for QRV, Confirm, Again? and TU voice keyer messages by EU stations receiving QTCs. The Logger+ audio method must be used, i.e. these files will not work if the legacy audio method from Logger Classic is used. There are three boxes to the right of each path name. The first one is green or red depending on whether the file was found or not. The second box is a button labelled R, which you can use to start recording. The R will change to S while recording is active; click on the S to terminate recording. The third box is a button labelled P; press this button to play the wav file (for testing).
- **RTTY Setup** – boxes containing the messages that will be sent during the QTC process by both receiving (RQTC) and sending (SQTC) stations. Note that you do not need {TX} and {RX} macros in these messages
 - **RQTC Messages:**
 - **RX Ready**
 - **All Agn**
 - **Agn** – the \$ macro is used in this message to send the number of the QTC whose Agn? button (in the RQTC window) was pressed
 - **Save QTC** – the message to send when the QTCs have all been received and recorded
 - **SQTC Messages:**

- **RU QRV**
- **Send All Heading** – the {QTC} macro is used in this message to send the header number, e.g. 26/10
- **Send All Ending** – message to send after the block of QTCs has been sent
- **Save QTC** – message to send after the QTCs have been acknowledged
- **QTC Spacing** – normally {ENTER}, but some users may need {ENTERLF}
- **Default Number of QTCs to Send** – sets the maximum number of QTCs that will be sent in a QTC package (normally 10)

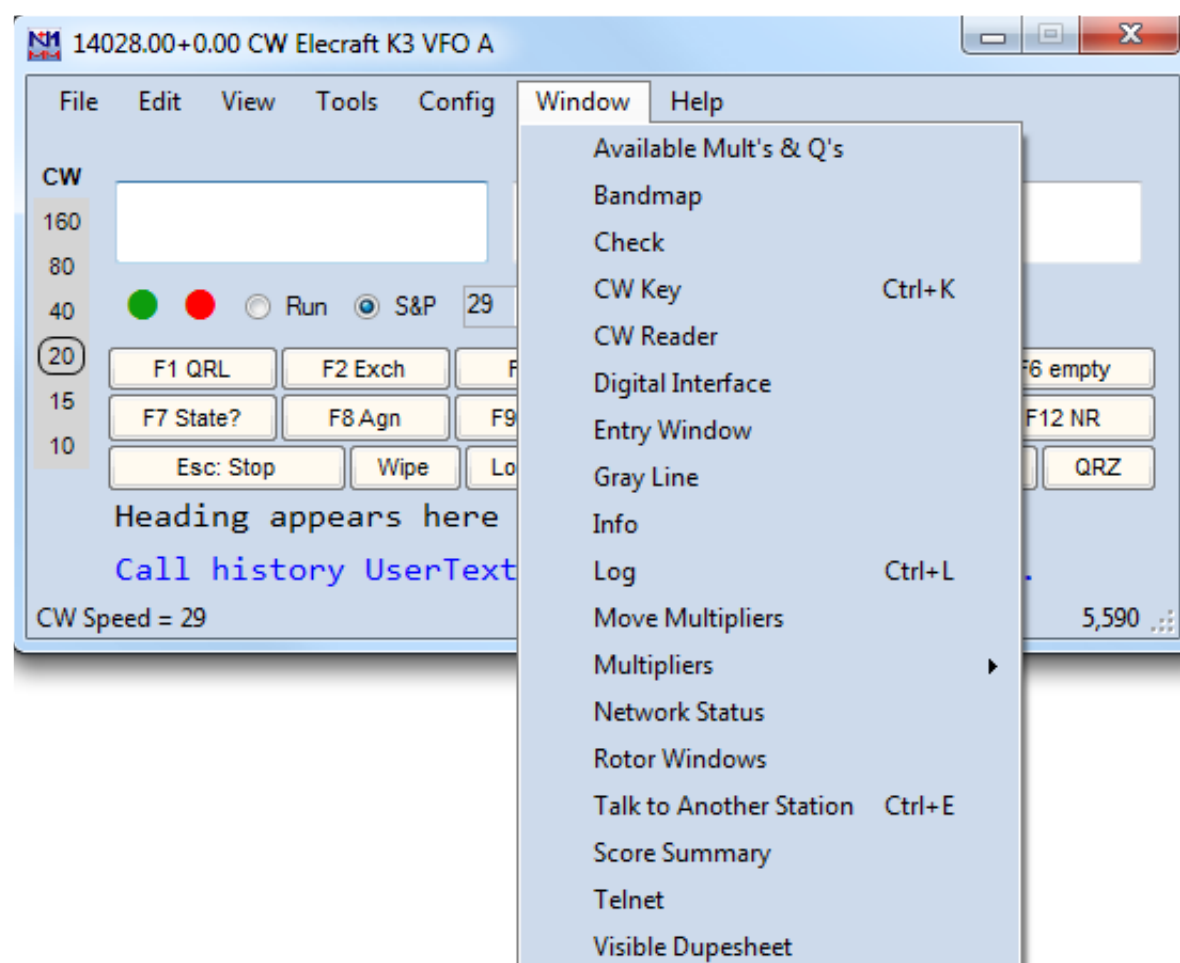
Clear INI file settings

Option to clear out the 'N1MM logger.ini' file. Generally, it will be preferable to rename the existing .ini file to something like N1MM Logger.**old**, so that you can retrieve your settings if you need them to re-configure.

SO2V Dual Receive

- **Repeating CQ Ends With VFOB Window Entry** – When this option is selected, after every CQ sent from VFO A using the Auto CQ Repeat function, the keyboard focus is automatically shifted to the VFO B Entry window. If someone responds to your CQ, you will need to press the \ key before starting the QSO, but if no-one responds, the keyboard focus is in the VFO B Entry window to allow you to make an S&P QSO there.

Window Menu Selections



- **Available Mult's and Q's** – Display the Available Mult's and Q's window. More info in the [Available Mults and Qs Window](#) chapter
- **Bandmap** – Display the Bandmap window. In SO2R/SO2V each Entry window has its own Bandmap window. More info in the [Bandmap Window](#) chapter
- **Check** – Display the Check window. More info in the [Check Window](#) chapter
- **CW Key Ctrl+K** – Display the CW Key window. Pressing Ctrl+K again or Enter will close the window but will continue sending the message. Pressing Escape will stop sending the message. The window is multiline (for pasting in text) and can be resized. The font type and size is the same as used in the Entry Window



- **CW Reader** – Display the [CW Reader](#) window.
- **Digital Interface** – Display the Digital Interface window – see the [Digital Modes](#) chapter
- **Entry Window** – Displays the Entry window
- **Gray Line** – Opens the Grayline window. More info in the [Grayline Window](#) chapter.
- **Info** – Display the Info window. More info in the [Info Window](#) chapter
- **Log Ctrl+L** – Display the Log window (toggles between open and minimized). More info in the [Log Window](#) chapter
- **Move Multipliers** – Display the Move Multipliers window. For every call sign in the spot table and every band/mode selected using the **Select Band & Mode** button, displays the multiplier status of that call sign and indicates with background shading which band that station was spotted on. The multiplier status depends on the program's ability to determine the multiplier status solely from the spot information. It is not updated when a contact is logged, deleted, or spotted, but only when the **Refresh** button is used. A left-click on a call sign will QSY the radio to the first spotted band. If a station is spotted multiple times, repeated clicks will QSY to the next spot on the line. In SO2R or SO2V, if a radio or VFO is already on the spot band, that radio/VFO will be used, otherwise the active focus radio will be used, or Shift+Click will QSY the other radio. A mouse wheel click will delete the line.

Callsign	Mode	160	80	40	20	15	10
KD8SAV	CW	M1	M1	M1	M1	M1	M1
KM5PS	CW	M1	M1	M1	M1	M1	M1
N1BG	CW	M1	M1	M1	M1	M1	M1
N4DR	CW	M1	M1	M1	M1	M1	M1
NM3B	CW	M1	M1	M1	M1	M1	M1
VE4AK	CW	M1	M1	M1	M1	M1	M1
W2LJ	CW	M1	M1	M1	M1	M1	M1

- **Multipliers** – Click to display the [Multipliers](#) sub-menu
 - **Countries** – Country multipliers are displayed
 - **Grid Squares** – Grid square multipliers are displayed
 - **Grid Field Map** – (for WW-DIGI contest) A world map with overlaid field multipliers on the current band is displayed
 - The first time this option is used, the world map underlay will be downloaded from the Internet. Subsequently the downloaded map will be used
 - **Grid Square Map** – A schematic map of grid square multipliers on the current band is displayed
 - The “map” is a matrix of grid squares, centered on a grid square that can be selected via a right-click menu choice
 - **Sections/states** – Section or state multipliers are displayed
 - **Zones** – Zone multipliers are displayed
 - **Counties/Other** – County multipliers (or other multipliers in some contests) are displayed
 - **Additional Counties** – (usually greyed out) Displays county multipliers for another QSO Party contest on the same weekend (AZ/NV/PA QSO Parties)
- **Network Status** – Display the network status window – see the [Network Status Window](#) chapter
- **Rotor Windows** – Opens the rotor windows (only if rotor windows are selected to be displayed in the Configurer under the Antennas tab) – see the [Rotator Control](#) chapter
- **Talk to Another Station Ctrl+E** – If networking is enabled, opens the network Talk window – see the [Network Status Window](#) chapter
- **Score Summary** – Display the score summary window. More info in the

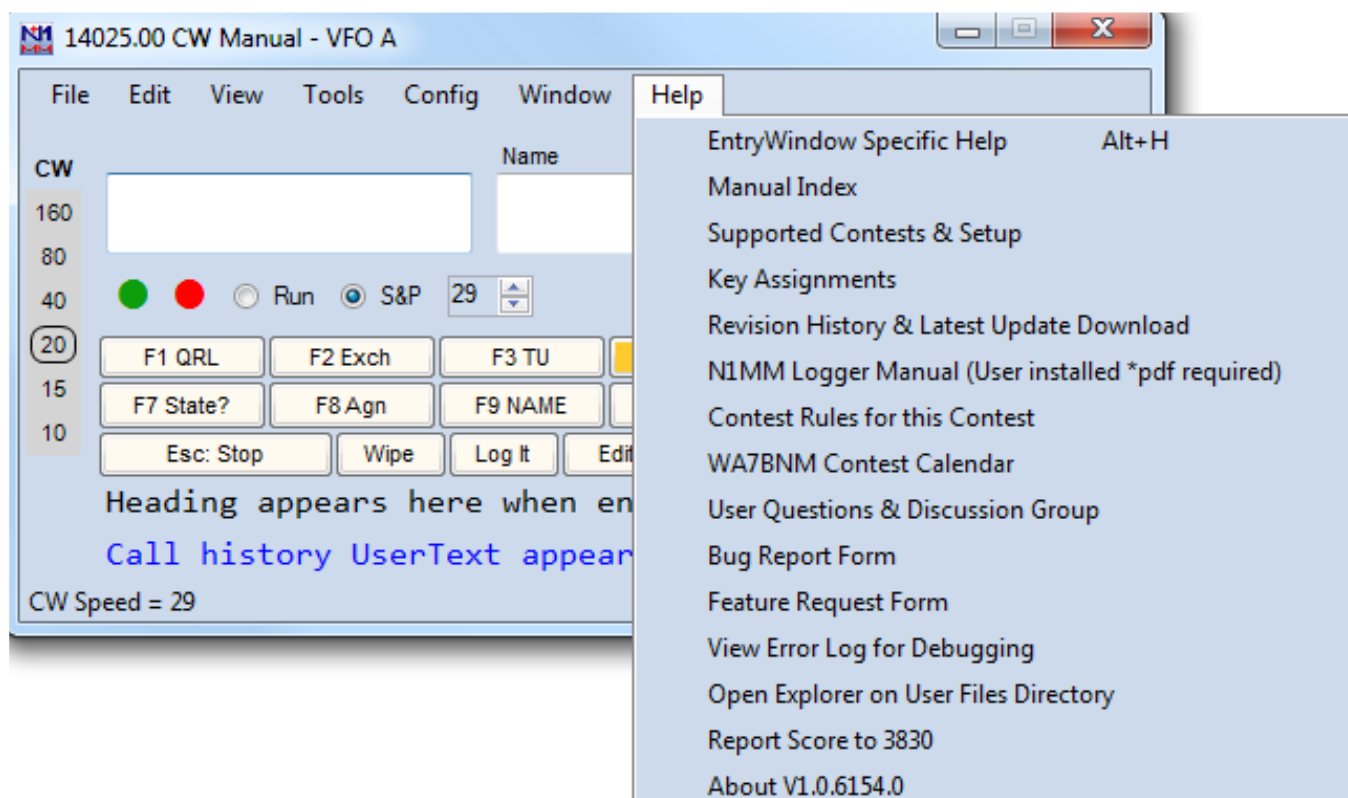
[Score Summary Window](#) chapter

- **Spectrum Display** - Display the Spectrum Display window. More info in the [Spectrum Display Window](#) chapter
- **Telnet** - Display the Telnet window. More info in the [Telnet Window](#) chapter
- **Visible Dupesheet** - Display the Visible Dupesheet window. More info in the [Visible Dupesheet Window](#) chapter
- **WSJT Decode List** - Display the WSJT Decode List window. More info in the [WSJT Decode List](#) chapter
- **Load WSJT/JTDX** - When the link to the WSJT-X or JTDX program has been entered into the Configurer under the Digital Modes tab, this menu item opens the WSJT-X or JTDX program for use in making JT-mode (e.g. FT8) contacts. More info on using these programs with N1MM+ will be found in the [WSJT Decode List](#) chapter

Ctrl+Tab can be used to rotate focus among open windows in a round-robin fashion.

Ctrl+Shift while clicking on the name of an already opened window will move it to the upper left corner of the screen. This is useful for windows that have been lost.

Help Menu Selections



- **EntryWindow Specific Help** - Shows the Entry Window page of the on-line manual. Requires an active Internet connection
- **Manual Index** - Shows the full index of the on-line manual. Requires an

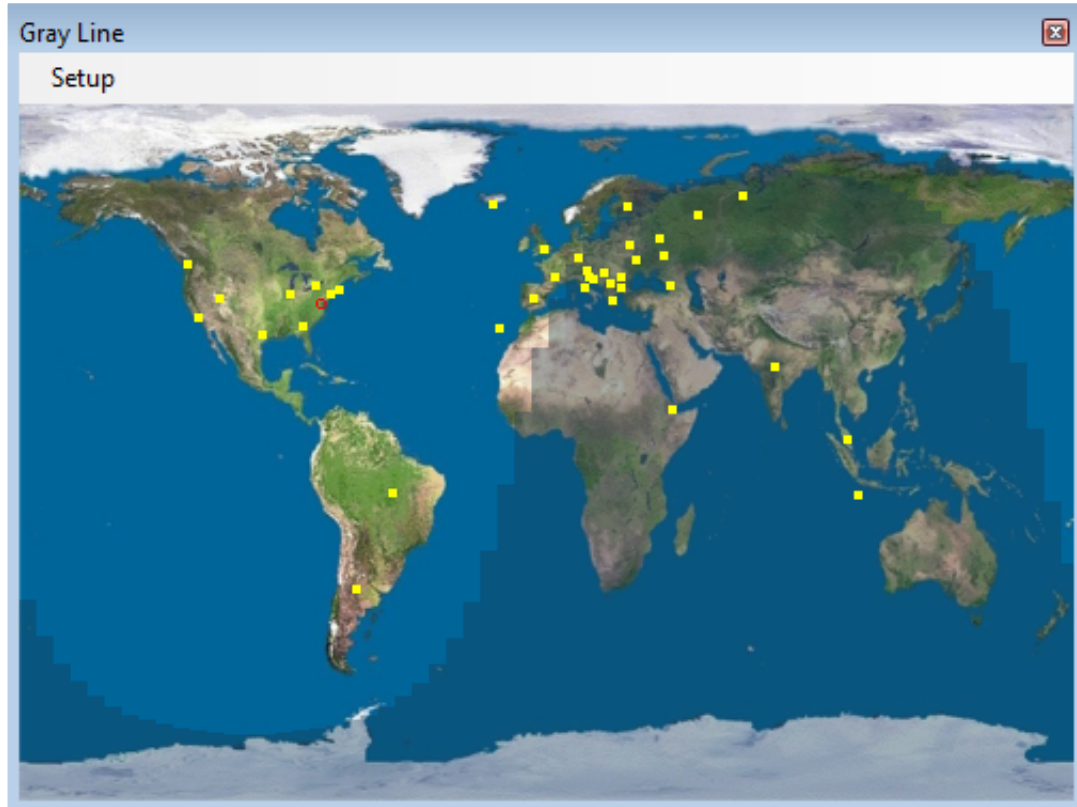


active Internet connection

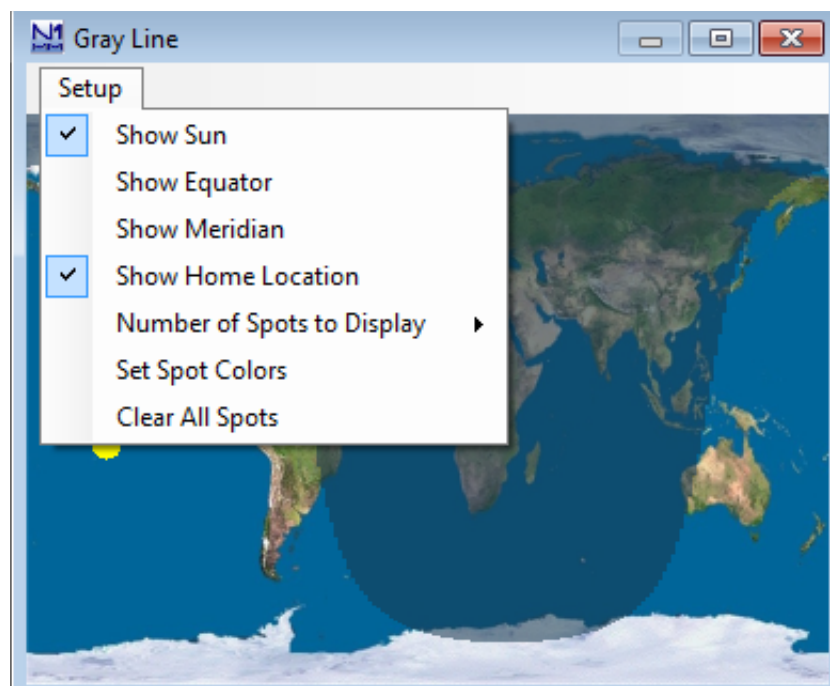
- **Supported Contests & Setup** – Shows the Supported Contests chapter of the on-line manual. Requires an active Internet connection
- **Key Assignments** – Shows the Key Assignments list from the on-line manual. Requires an active Internet connection
- **Revision History & Latest Update Download** – Shows the Latest Update section of the Files Menu on the web site. Requires an active Internet connection
- **N1MM Logger Manual (User installed *pdf required)** – Read the manual off-line. There is a link on the Tools menu that will download this file – be sure you download it into the Support Files folder in the N1MM Logger+ user files area. Requires Adobe Reader or another .pdf reader
- **Contest rules for this contest**– Go to the web site from the contest sponsor on the Internet where the rules can be found. Requires an active Internet connection
- **WA7BNM Contest Calendar** – Go to WA7BNM's contest calendar site on the Internet. Requires an active Internet connection
- **User Questions & Discussion Group** – Go to the groups.io Discussion Group page on the Internet. Requires an active Internet connection
- **Bug Report Form** – Go to the form on the N1MM Logger web site. Please note, **this is not the place to report difficulties such as installation or setup problems – far better to use the groups.io group for that.** Requires an active Internet connection
- **Feature Request Form** – Go to the form on the N1MM Logger web site. Requires an active Internet connection
- **View Error Log for Debugging** – View the latest 'Errorlog.txt' file generated by the program. The program creates and updates the contents of this file when the program generates an error. This could be used to help pinpointing a problem in the program
- **Open Explorer on User Files Directory** – Open the Windows File Explorer to display the N1MM Logger+ User Files directory
- **Report Score to 3830**– Go to the 3830 score reporting site on the Internet. Requires an active Internet connection
- **About Vx.yy.zzzz** – Show the About Dialog

The Grayline Window

The Grayline Window



Setup Menu Selections



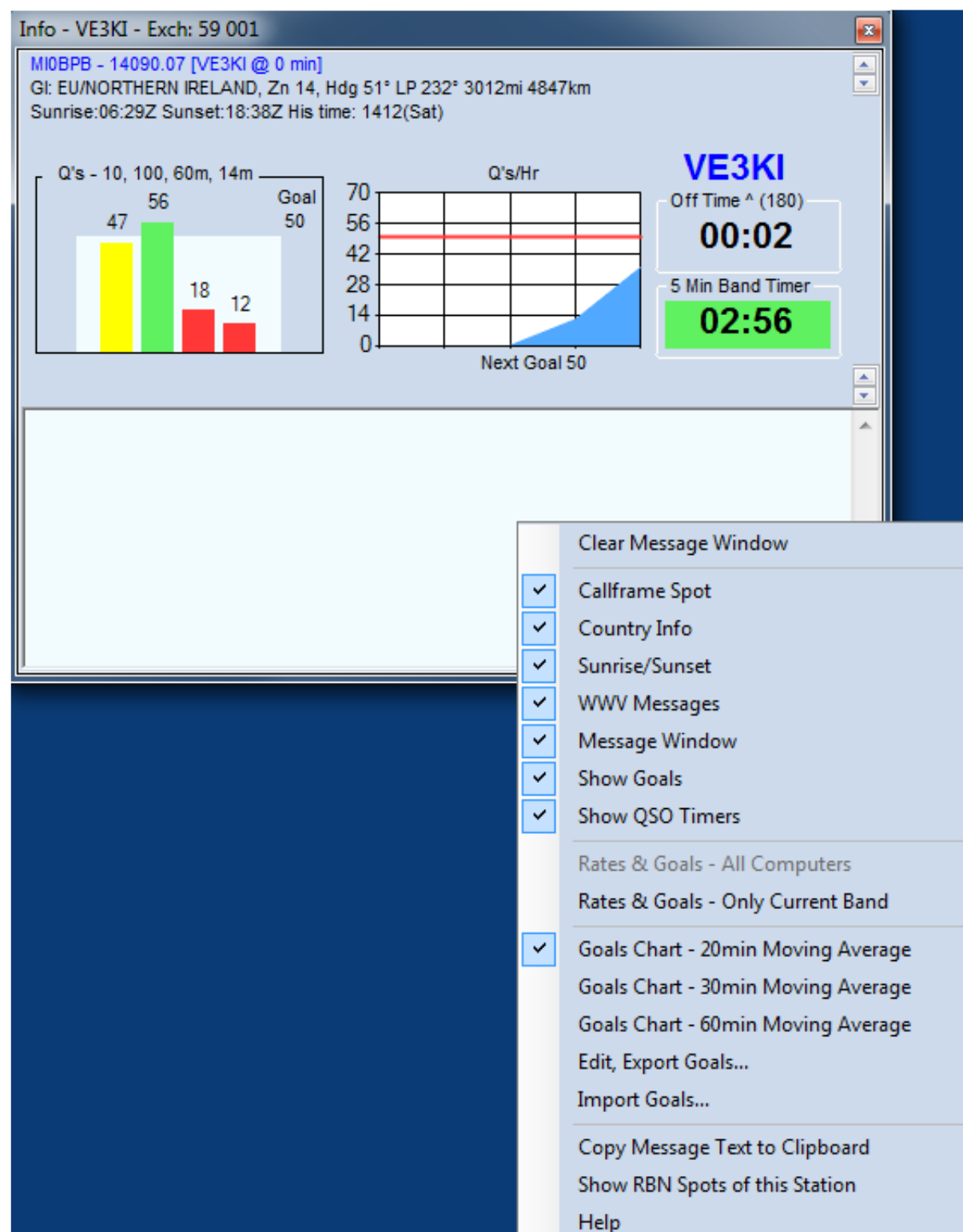


- **Show Sun** – Select or de-select showing the current position of the sun on the Grayline map
- **Show Equator** – Show or hide the Equator on the map
- **Show Meridian** – Show or hide the Greenwich Meridian
- **Show Home Location** – Will show a red dot on your location as set in N1MM+ and explained in [Installing the Software](#).
- **Number of Spots to Display** – Select 0, 50, 100, 150 or 200 most recent spots to be displayed on the map.
- **Clear All Spots** – self-explanatory

The Info Window

The Info Window

The illustration below is a typical Info window with all options enabled in the right-click menu, also shown.



To open the Info window, select “Info” on the Window menu of the Entry window

Key Features

- The title bar shows the station call sign (from the Station Data table) and the default Sent Exchange for the current contest. The operator’s call sign is shown in blue on the right side of the window. If another operator signs on using Ctrl+O or the OPON text command, that call sign will replace the previous one.
- The sent exchange is shown in the title bar. The next QSO number will be shown on the title bar if it is a serial number contest. Example: Exch: 59 002
- The content of the window, other than the long-term and short-term rate displays, is selectable from the right-click menu.
 - The first line is the spot that is in the call-frame of the Entry window, including any comment.
 - The second line provides country information, including long and short-path headings, as well as short path distance to the country of the call-frame spot.
 - The third line provides sunrise and sunset times in UTC at the DX location, plus his local time
 - The fourth line displays the last WWV message received from the connected Telnet node. There were none when this screenshot was taken.
- Below the information lines are two graphs for rates (and if selected from the right-click menu, goals). The left-hand one shows near-term rates. Left to right, these are the rate for the last 10 QSOs, the last 100 QSOs, the last hour, and the interval since the start of the current clock hour. The right-hand graph displays hourly rates for five intervals, selected from the right-click menu to be either 20, 30 or 60-minute moving averages. Each vertical line represents one such interval – the rightmost edge is the current interval, which may not have been completed at any given moment
- When “Show messages” is selected from the right-click menu, there is an open area in the bottom part of the window for messages from the program. One important use is for notification when you are spotted on the DX Cluster network, and by whom. It is also the place, in a multi-op, where the program reports any difference in entry category between computers on the network (multi-single versus multi-two, for example).

One of the right-click menu options (“Show RBN Spots of this Station”) opens a browser window displaying recent spots for the station call sign on the Reverse Beacon Network (RBN – requires a connection to a telnet cluster that carries RBN spots). This can be a useful indicator of whether and where your signal is being heard in CW and RTTY modes; it is of no use in phone contests.

Note that with the advent of the RBN, the sheer number of spots received and listed in the Available Window and on the Bandmaps within the spot timeout period may exceed the computer's capacity to process them. The program monitors CPU utilization, and when it approaches a dangerous level, automatically trims a small number of the oldest spots. When this takes place, you will see an advisory message in this section of the window, so that you can decide if you wish to make any changes in your DX cluster filtering or other variables.

QSO Timers and Counters

When "Show QSO Timers" is checked in the right-click menu, the Info window also displays, under the current operator's callsign, a number of useful indicators. These include:

- A timer to indicate off time for contests where there are minimum limits on off times, or to display the time elapsed since the last contact was made as a supplement to the goals charts. Right-clicking on the time in this box will open a pop-up menu in which you can choose what is displayed in this timer. The available options include:

- Display Off Time (full clock minutes with no QSO's) - off time timer for rules compliance
 - Current Interval Count Down Timer - counts down in hours and minutes from the beginning of the clock minute after the last QSO was logged, starting at the off time limit and counting down towards zero
 - Current Interval Count Up Timer - counts up in hours and minutes from the clock minute after the last QSO was logged, starting at 0:00
 - Cumulative Contest Off Time - adds the durations of off times that were long enough to qualify under the contest rules. If the current off time is not yet long enough to qualify, it is not included in the total. Note that the Start date and time for the contest in the Contest Setup dialog must be correct for the cumulative off time to be calculated correctly.
- Time Since Last QSO (not for off time rule compliance) - counts the minutes and seconds since the last QSO was logged
 - All Computers Radios - the time since the last QSO was logged from any station in the network
 - Both Radios (SO2R), VFO A/B (SO1V/2V) - the time since the last QSO was logged from this station
 - Left Radio (SO2R), VFO A (SO2V) - the time since the last QSO was logged from the left/VFO A Entry window
 - Right Radio (SO2R), VFO B (SO2V) - the time since the last QSO was logged from the right/VFO B Entry window

When an off time option is selected, the frame for this timer includes, besides the

words “Off Time”, an arrow (^ or v) indicating whether the timer is counting up or down, and the minimum duration (in minutes) for off times for that contest and category. The timer is in hours and minutes; the background will change to light green once the minimum time has been reached.

– In some contests and entry categories, there is a second timer or counter display to help you comply with contest rules for band changes when there are band change time limits or counters. If there is a band change time limit, this timer appears below the QSO timer, and counts down in minutes and seconds from the beginning of the clock minute after the first QSO logged on a new band. The band change timer does not start until the first band change of the contest. The background color changes to pale green once the required time limit has been reached and the counter has reached 0:00.

If the contest and category has a limit on the number of band changes per hour, there is a band change counter which appears to the right of the QSO timer (you may have to make the Info window wider to see it). This band change counter has a “stop light” (red/yellow/green) colored background, to warn the operator when nearing or exceeding the allowed number of band changes in the current clock hour.

– There may also be a mult-run indicator that displays MULT or RUN in the Multi-One category or “1” or “2” in the Multi-Two category. This indicator is below the band change counter, to the right of the band change timer. The Multiplier or Run status for this station can be toggled with the key combination Ctrl+Alt+M.

Contest Goals

How Active Goals are Stored

In N1MM Logger+, goals are stored in a table in the Admin database. **Only one set of goals can be active at any time, and regardless of the contest you open, they remain active until replaced.** However, if you have defined a goal file on the Associated Files tab for a given contest, that goal file will be loaded whenever you start a new instance of that contest. For example if you define CQWW goals.txt as an Associated File in one instance of CQWWCW, that goal file will be loaded any time you open any instance of that contest.

Here are some other key things to remember about N1MM Logger+ goals:

Editing and Exporting Goals

Right-click in the Info window, and click on Edit and Export Goals. That opens the following dialog:

Change QSO Goals by Hour

File

	Hour (dhh)	Goal (Q's)
	217	55
	218	36
	219	28
	220	38
	221	33
	222	34
	223	20
	300	26
	301	21
	302	21
*		

To delete a row, click on the leftmost column and press the delete key. (The * row is not a real row.)

Ok Cancel

You'll note that the hour is stored in the form "dhh" where "d" is __the day of the contest and "hh" is the beginning of the hour, in clock time, not in terms of the hour in the contest. Hence, for example, "222" denotes the second day of the contest and the hour beginning at 2200Z. In the example, the goals were derived from an ARRL November Sweepstakes, which runs until 0300Z on the third day.

You can edit this table just as you would any other table in an N1MM Logger+ database. Be careful with the "hour" column until you are comfortable with the convention. When you have made your changes, you can either export to a goals file in text format, which will be placed in **Documents\N1MMLogger+\GoalFiles**, or simply OK out of the dialog, in which case the changes are saved to the Admin database's Goals table.

Goal Files

This is the Goal file format:

```
Type=GOAL  SubType=
100 100
110 100
111 100
112 100
113 130
114 160
115 180
116 220
117 230
118 111
119 234
120 138
121 109
122 77
123 82
210 2
211 84
212 103
213 23
214 26
215 29
216 35
217 28
218 79
```

You can create a Goal file with a text editor and import it into the database using the Import Goals function (see below). Be sure that you use a straight text editor for this, such as Notepad. Word processing programs can insert special codes that N1MM+ does not understand.

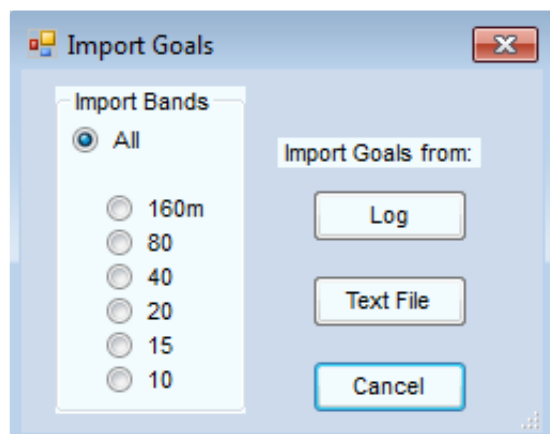
Note that you do not need to enter anything for those hours when you do not plan to operate, but you do need the header just as it appears here.

Set Your Start Time

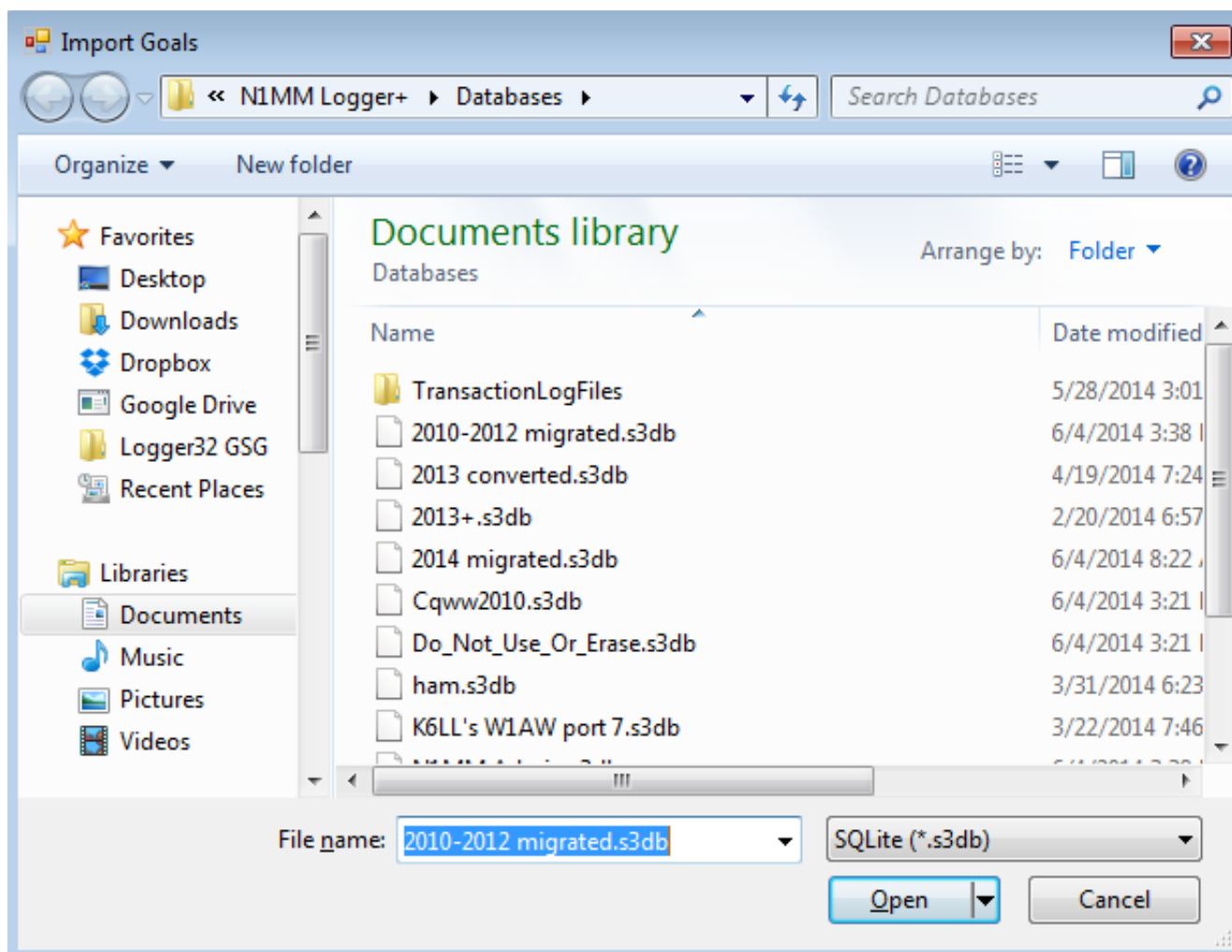
Be sure to set the contest start time (in the Contest Setup dialog) to the correct value for any contest in which you intend to use goals. As you can imagine, this is important to ensure that the appropriate goal is displayed for the appropriate hour of the contest.

Importing Goals

Click on Import Goals, and this submenu will appear. You can import goals from a prior contest log or a .txt file in the GoalFiles Document directory

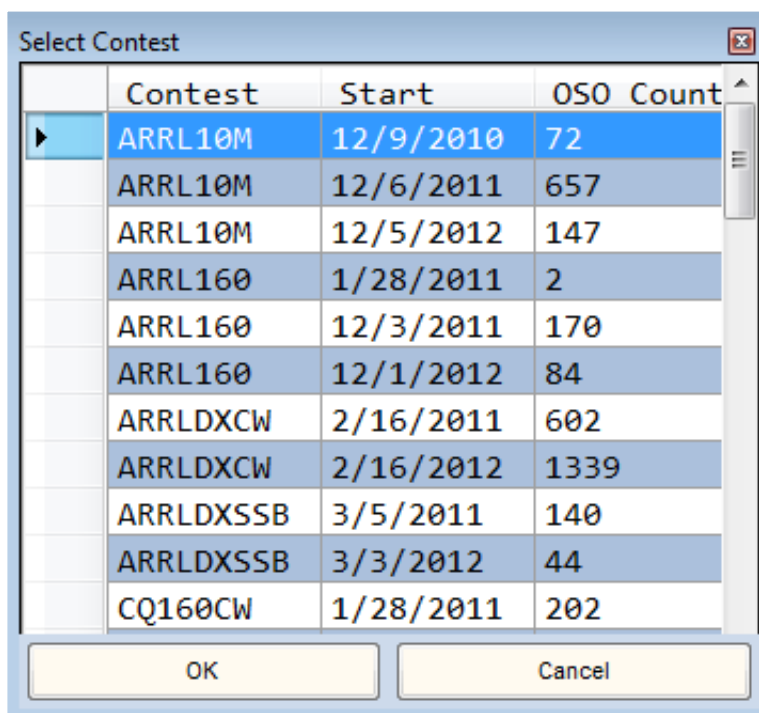


- Typically, you will want to import goals from all bands, but if you plan to enter a contest single-band, you can set goals for that band only by clicking the appropriate radio button.
- Click on the “Text File” button, and a dialog opens showing you all the goal files in the GoalFiles document folder. Select one, open it, and the contents are transferred to the database.
- Click on “Log” and something new happens. This window opens:



Select the database you want to get your goals from, and click “Open”.

Now this dialog opens:



Select the contest from which you want to derive your new goals, and OK out. Once imported you can edit the goals as outlined above, and optionally export them to a Goals file.

Importing Goals (Developer notes)

For the goal import files:

- All import blank lines are ignored.
- All import lines beginning with a # in the first character position is considered a comment line and is ignored.
- The Goals hour is defined as the hour of the day, not the hour of the contest. This is to make it easy to align goals with GMT time when the contest doesn't start at 00:00gmt.
- Before the contest start, the Goals will be set to the contest first hour goal.
- The Goals are set to zero if Info window charts display 96 hours after the start of the contest.
- If the user Right Clicks on a QSO in the Log Window and selects the option to display Rates & Goals in the Info Window, the Charts will update with the Goals as if it occurred during the contest.
- If the database doesn't contain goals, a default goal of 50 is used.
- If an error occurs during the selecting the goal, a goal of 50 is used.
- File formats accepted:

- The View, Statistics text file (*.TXT or *.txt) can be used as a goal import file. All bands or one band can be selected during import. Opened in an editor it has this format:

Day	Hr	1.8	3.5	7	14	21	28	Tot	Accum
2010-11-27	00	0	70	146	5	0	0	221	221
2010-11-27	01	0	116	119	0	0	0	235	456
2010-11-27	02	71	27	128	0	0	0	226	682
Total	0	306	867	2088	2156	1763	542	7722	7722

- The Goals import file can be a .TXT or *.txt file hand generated space(s) or tab delimited, repeated spaces or tabs are OK. Examples are:

```
0 100
1 111
2 222
```

- The Goals import file can be a *.CSV or *.csv hand generated file, comma separated, repeated spaces or tabs are OK, only one comma in the line is allowed

```
0, 100
1, 111
2, 222
```

- The Goals import can also be the *.TXT file exported from Edit, Goals window.

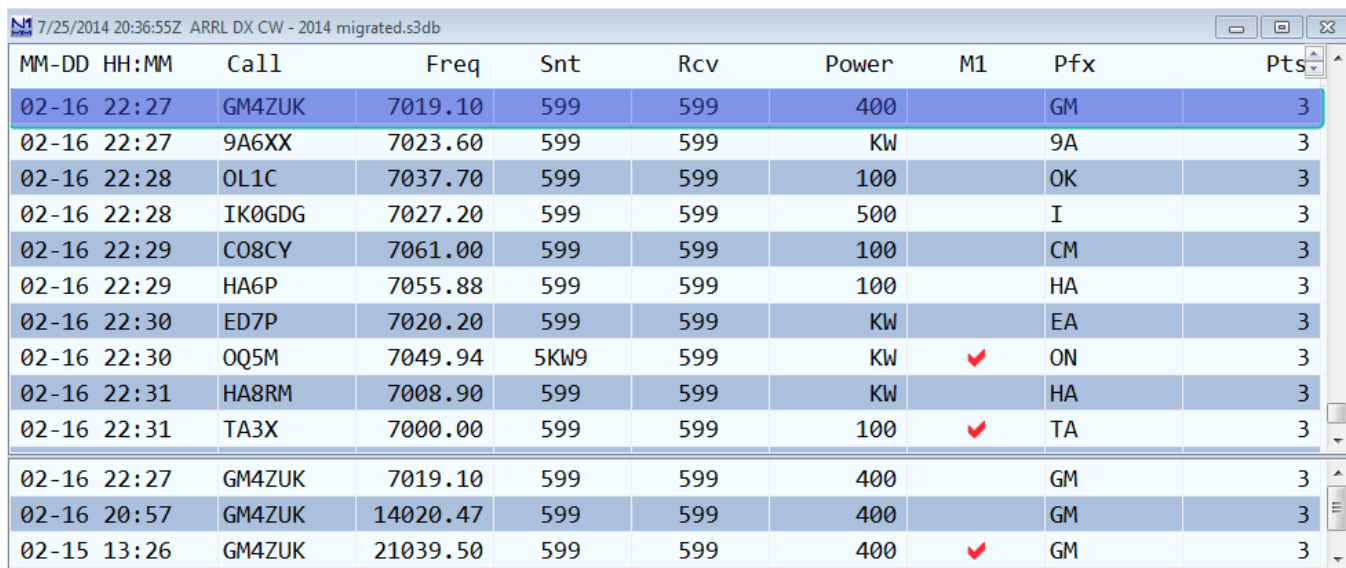
```
Type=GOAL  SubType=
100        350
101        337
102        321
```


The Log Window

The Log Window

In addition to the Entry window, the Log window is the one other window that always opens when you first start the program, regardless of whether you had it open or not the last time the program was shut down. The title bar always displays the currently selected contest and the database file name. If the boxes in the Entry window don't look right for the contest exchange, check the name of the contest in the title bar of the Log window to see whether you have the wrong contest selected.

Your Log window will be similar to this one:



MM-DD HH:MM	Call	Freq	Snt	Rcv	Power	M1	Pfx	Pts
02-16 22:27	GM4ZUK	7019.10	599	599	400		GM	3
02-16 22:27	9A6XX	7023.60	599	599	KW		9A	3
02-16 22:28	OL1C	7037.70	599	599	100		OK	3
02-16 22:28	IK0GDG	7027.20	599	599	500		I	3
02-16 22:29	C08CY	7061.00	599	599	100		CM	3
02-16 22:29	HA6P	7055.88	599	599	100		HA	3
02-16 22:30	ED7P	7020.20	599	599	KW		EA	3
02-16 22:30	OQ5M	7049.94	5KW9	599	KW	✓	ON	3
02-16 22:31	HA8RM	7008.90	599	599	KW		HA	3
02-16 22:31	TA3X	7000.00	599	599	100	✓	TA	3
02-16 22:27	GM4ZUK	7019.10	599	599	400		GM	3
02-16 20:57	GM4ZUK	14020.47	599	599	400		GM	3
02-15 13:26	GM4ZUK	21039.50	599	599	400	✓	GM	3

- The **top** pane is the log.
- The **bottom** pane shows the contacts in your log that match the partial or full call entered in the Entry window. It is sorted by band, call, date & time.
- The separator bar is set at a percentage of window size. When shrinking the window vertically, both sections get smaller. After resizing the window, decide how much space to allocate to dupes by setting the separator bar.
- The title bar gives date and time (in UTC), the selected contest and the name of the current database.
- To resize the text in the log, click on the resizer arrows at the upper right corner of the window.
- There are options for modifying the width of individual columns, to be found on the Right-Click Menu (see below). You can also resize them by click-and-drag of the invisible dividers between the header items. This will not work in the log itself.
- Click on the heading of any column to sort the log by that column. Click the header of the datestamp column ("MM-DD HH:MM") to return to normal log

order.

- When a Multi operator mode (Multi-One, Multi-Two, Multi-Multi) is selected, the “Op” and R# columns appear in the log, and the radio number and operator call-sign are shown for each QSO.

Editing the Log

Double-click any user-entered field in a QSO record to edit it; type the correction and hit Enter to save it. **This can be done in either the upper or lower panes of the Log window, to facilitate correcting earlier QSOs with a station when you need to.**

- Program generated fields, such as QSO points, cannot be edited.
- If you want to edit the sent serial number in a QSO, you will note that up/down arrows are displayed, on the assumption that you probably are just off by one. Click the appropriate arrow and hit Enter, or type the correction if you need to.
- If you want to edit the timestamp (date and time) of a QSO, first make sure that the date/time column is no wider than it needs to be. You can accomplish this, if there is white space to the right of the time, by right-clicking in the Log window and selecting “Auto Set Column Widths.” Now double-click on the time, and you’ll see the time in hours:minutes:seconds format, with the hours selected and a calendar icon with down arrow at the right end. If you need to enter a new hour, do so, and then hit Tab or Enter to exit. If you need to change the minutes, click on them with your mouse to select them, enter the new value, and hit Tab or Enter to finish editing. If you need to change the date, click on the down arrow next to the calendar icon, click on the date to change to, and hit Tab or Enter to exit.
- The Log window displays the RX frequency. If you want to change the RX & TX frequency use the right click – Edit Contact option.

Editing QSOs does not update your score

When you edit one or more QSOs in the Log window, that might result in a change in the multiplier status of that QSO and/or in your claimed score. The score is not recalculated automatically when you edit QSOs, so you can end up with incorrect multiplier counts and claimed scores. To correct your claimed score after performing edits in the Log window, use the **Tools > Rescore Current Contest** menu item in the main Entry window.

Marking Multipliers

The check-marks denote whether a given QSO accounted for one or more multipliers. They are provided by the program based on the received exchange, callsign, and built-in data resources, such as the wl_ct.dat file. They cannot be edited.

Serial Numbers

In a serial number contest the serial numbers in the log window will be displayed without any leading zeros even when zeros are entered before the number (001 becomes 1, and so on).

Warning of Possible Errors

When a station is worked on multiple bands or modes with varying exchanges (zones 14 and 15, for example), this will be highlighted in red in the lower pane. The red highlight color indicates that there is a strong likelihood of an error.

Calls with no match in the master.scp file and zones that don't match the country file will also be highlighted. The highlighting for no match in SCP file is the same color as the highlighted buttons in ESM, yellow/orange by default. This color can be changed in Config > Manage Skins, Colors and Fonts – it is the background color for highlighting text (the first entry in that dialog). This is usually not an error; the highlight is just a reminder to take a second look to make sure you typed the call sign in correctly.

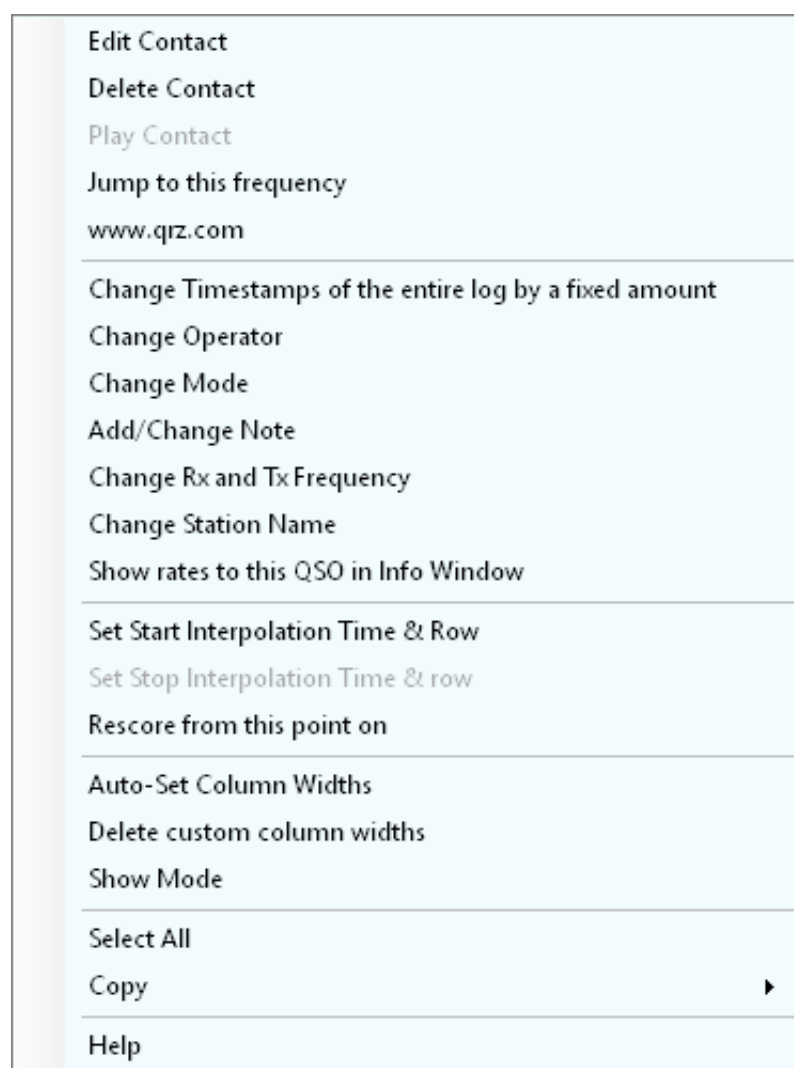
These highlights only last for the duration of the contest. After the contest is over, the highlighting will disappear in order not to facilitate log washing after the contest.

Keyboard Shortcuts

- **Delete (Ctrl+D)** – Delete the last contact in the log.
- **QuickEdit (Ctrl+Q)** – Moves the last QSO in the log into the Entry window, and signals the mode with “QuickEdit” in the call-frame. You can tab or space through the window, make the changes you need, and then hit Enter to save them. Hit Esc to exit QuickEdit without making changes, or Ctrl+Q again while in this mode to switch to the next previous QSO.

Right-click Menu

Right-click in one of the rows in the upper pane – not in the title bar – and the following menu will appear.



- **Edit Contact** – Opens a dialog to edit the selected contact – the one on which you click to open the right-click menu. Items which cannot be edited are greyed-out. This is mainly retained for those who have become accustomed to editing their log this way in N1MM Logger Classic.

 Edit Contact 

General Contact Information

Call	GI5I	Timestamp	3/16/2014 11:13:59	
Rx	14044.3	Tx Frequency	14044.3	
Mode	CW	Contest Name	RUSSIANDX	
RST Sent	599	RST Received	599	
Country	GI	Station Call	N4ZR	
Name		QTH		
Comment				

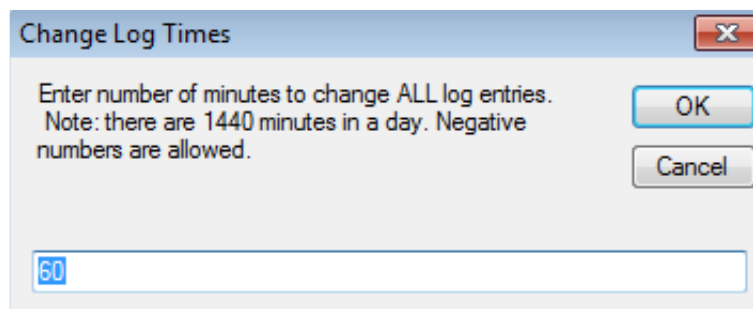
Contest Information

Nr	1105	Nr Sent	211	Points	5	Power	
Zone	14	Section		Mult	☒	Band	14
Che	0	Precedence		Mult	☐	WPX	GI5
Exchange	1105	Run1/	1	Mult	☐	Radio	1
Grid		Op	N4ZR	Misc			
Rover QTH							

Update Delete Help Exit  

You can move up and down the log with the large black arrows.

- **Delete Contact** – Asks whether you want to delete the selected contact.
- **Play Contact** – Used to play back the selected QSO if recorded using the qorder.exe program by K3IT (see References, [Third Party Software](#)). This selection will be greyed out if there is no recording. Contact audio will play on your default sound player. Make sure you don't have the sound player connected to your radio's audio input.
- **Jump to This Frequency** – Moves a connected radio to the frequency of the selected QSO. This can be useful in S&P mode if you look at the log after a couple of QSOs and discover a discrepancy that you need to ask the running station about.
- **www.qrz.com** – Opens QRZ.COM's record for the call-sign in the selected QSO.
- **Change timestamps of the entire log by a fixed amount** – Useful when you discover your clock has been off since yesterday.



- **Change Operator** – Changes the operator credited with the selected QSO.
- **Change mode** – Changes the mode of the selected QSO.
- **Change RX and TX Frequency** – Allows you to enter a replacement frequency for that entered in the log for the selected QSO. Can be useful with a non-interfaced radio, if you discover that you forgot to log a band change.
- **Change Station Name** – can be used to change the station name of the PC that made the QSO.

Changing more than one QSO at a time

You can also make the five types of changes above in more than one QSO at a time. Click the first log entry you want to change. Then either Shift+Click on the last QSO in a consecutive group, or Ctrl+Click on multiple non-consecutive QSOs. **The highlighting for which lines are selected is very subtle in the default color scheme, so be careful.**

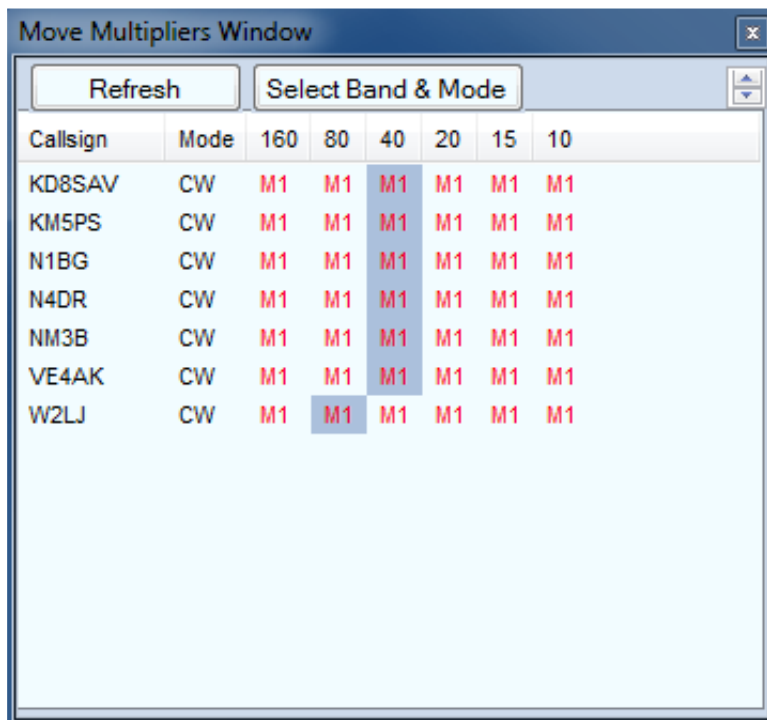
When you have selected all the QSOs you want, right-click one of them to bring up the right-click menu, select the action you want, and fill in the replacement value.

Hit Enter, and you'll see a pop-up, asking you whether you really want to make this change in X QSOs. You can cancel at this point if you are not absolutely sure.

- **Show rates to this QSO in Info window** – If the Info window is open, displays QSO rate up to the selected QSO.
- **Set Start Interpolation Time and Row** – Used to adjust times in the log, often when entering contacts manually after the contest. An example of how to use this can be found in the [After the contest](#) chapter. This option is grayed out when networking is turned on.
- **Set Stop Interpolation Time and Row** – As above. After setting the start time and row, the end time and row can be selected, and then times on intervening rows will be interpolated between the start and end times. Not available in multi-computer mode.
- **Rescore from this point on** – Rescore from the selected QSO forward
- **Auto-set Column Widths** – A quick way to make sure column widths will suffice for the entire log, while minimizing the size of the log window. This option sets column widths based on contents, not the width of the headings, so some headings may be truncated in contests with short exchanges, for example.
- **Delete custom column widths** – Restores the default values, as defined by the length of the headings.
- **Show Mode** – Option whether to show a Mode column in the log – may be useful to help minimize the size of the Log window on a crowded screen in a single-mode contest.
- **Select All** – Select all the QSOs in the log for Copy to the Clipboard.
- **Copy** – Copies the selected QSO(s) to the Clipboard as either an ADIF string or a Generic string (used in European VHF contests).
- **Help** – Opens the manual page on the Log window (Internet connection required)

The Move Multipliers Window

The Move Multipliers Window



The screenshot shows a window titled "Move Multipliers Window" with a "Refresh" button and a "Select Band & Mode" dropdown. Below is a table with columns for Callsign, Mode, and multiplier status for bands 160, 80, 40, 20, 15, and 10. The 40m band column is highlighted in blue, and the multiplier status for W2LJ in the 40m band is highlighted in blue.

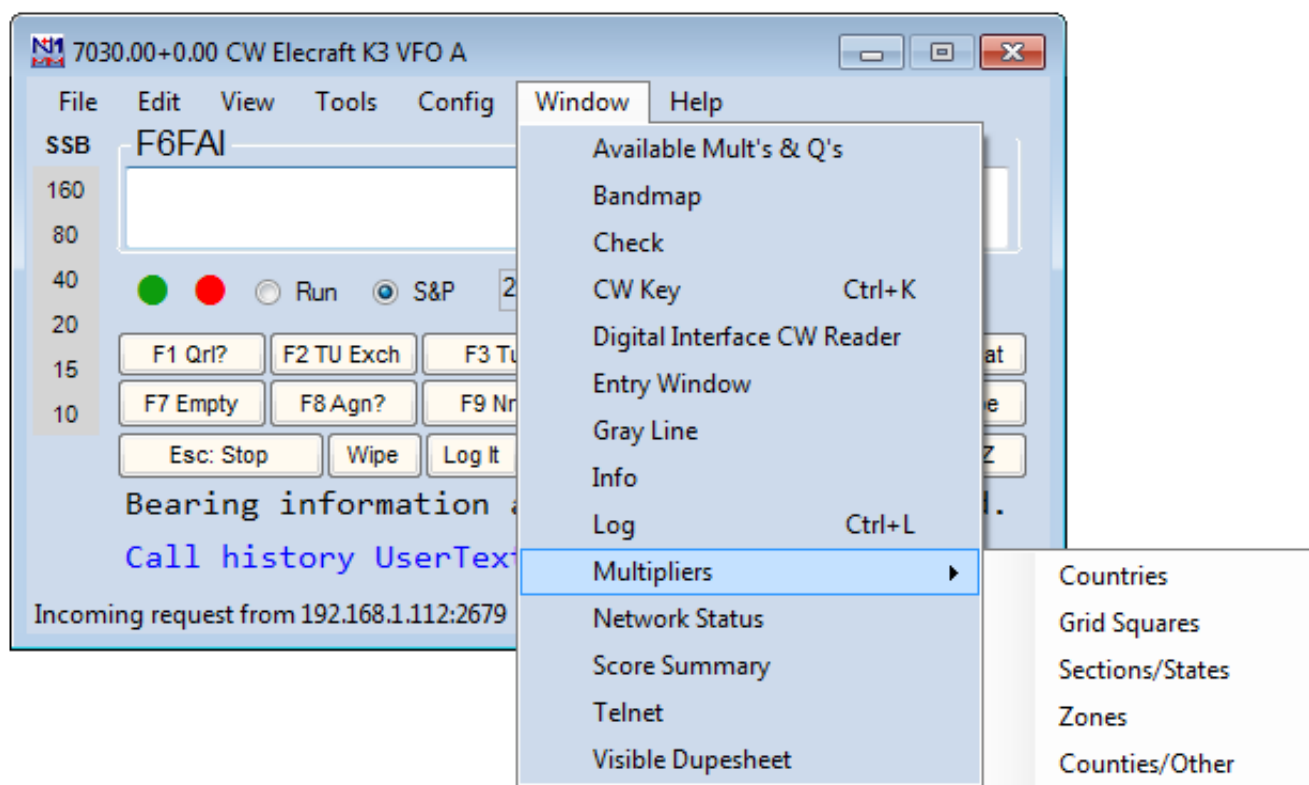
Callsign	Mode	160	80	40	20	15	10
KD8SAV	CW	M1	M1	M1	M1	M1	M1
KM5PS	CW	M1	M1	M1	M1	M1	M1
N1BG	CW	M1	M1	M1	M1	M1	M1
N4DR	CW	M1	M1	M1	M1	M1	M1
NM3B	CW	M1	M1	M1	M1	M1	M1
VE4AK	CW	M1	M1	M1	M1	M1	M1
W2LJ	CW	M1	M1	M1	M1	M1	M1

Move Multipliers – The Move Multipliers link on the Window menu of the entry Window will display this window. For every call sign in the spot table and every band/mode selected using the **Select Band & Mode** button, displays the multiplier status of that call sign and indicates with background shading which band that station was spotted on. The multiplier status depends on the program's ability to determine the multiplier status solely from the spot information. It is not updated when a contact is logged, deleted, or spotted, but only when the **Refresh** button is used. A left-click on a call sign will QSY the radio to the first spotted band. If a station is spotted multiple times, repeated clicks will QSY to the next spot on the line. In SO2R or SO2V, if a radio or VFO is already on the spot band, that radio/VFO will be used, otherwise the active focus radio will be used, or Shift+Click will QSY the other radio. A mouse wheel click will delete the line.

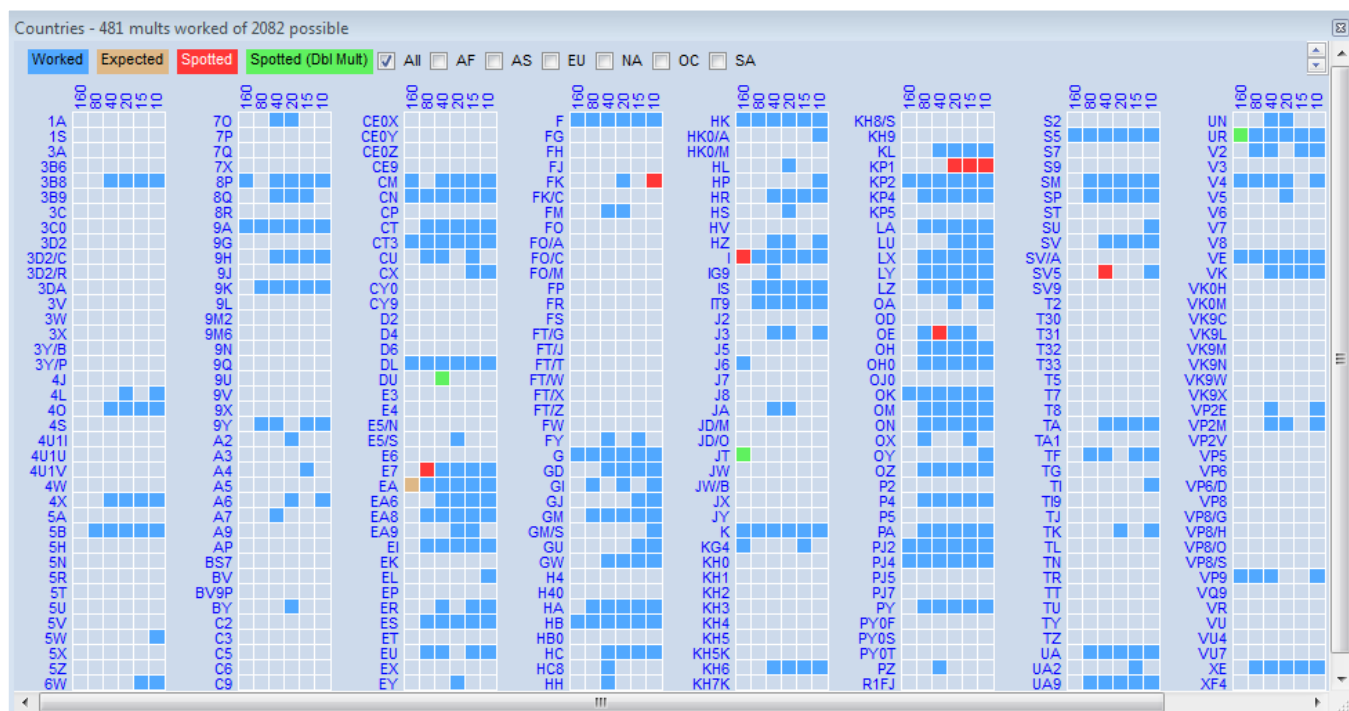
The Multipliers Window

The Multipliers Window

The Multipliers window is opened from the Entry window's Window menu. Clicking on the "Multipliers" selection opens a sub-menu from which you can choose one of seven multiplier displays. Which of these displays is relevant or useful depends on the contest.



Choosing Countries, in a CQWW log, displays a chart like this:



My Multipliers Window Looks Funny

If your Multipliers window is empty or incomplete, right-click and look on the right-click menu for the option “Show Only Worked & Expected to be Worked Mults.” If it is checked, then The multiplier window will only show mults that have been worked, ones that you have included in an expected mult list, and mults that have been spotted. **Uncheck** it, and the Multipliers window will show all possible spots, worked or not.

Key Features

The drop-down menu gives seven choices, each of which is tailored to meet needs in certain contests. Whichever you pick, there are some key common features.

Color-Coding

The color blocks displayed are, by default, blue for a band where the mult has already been worked (but a valid QSO is available), red meaning that a station is available for a single multiplier on that band, and green meaning a double multiplier QSO is available on that band, in those contests that have them. These colors may be changed to meet special needs through the [Manage Skins, Colors, and Fonts editor](#) on the Config menu of the entry window.

Decisions by the program about whether a multiplier is available on a given band are based on callsigns, and for those contests in which multipliers are determined by the content of the exchange, the color-coding may not be accurate. A multiplier block remains on the chart until the underlying spot has expired under the current

bandmap spot timeout setting. Open a Bandmap along with the Multipliers window, set a short timeout, and you will be able to see this happen.

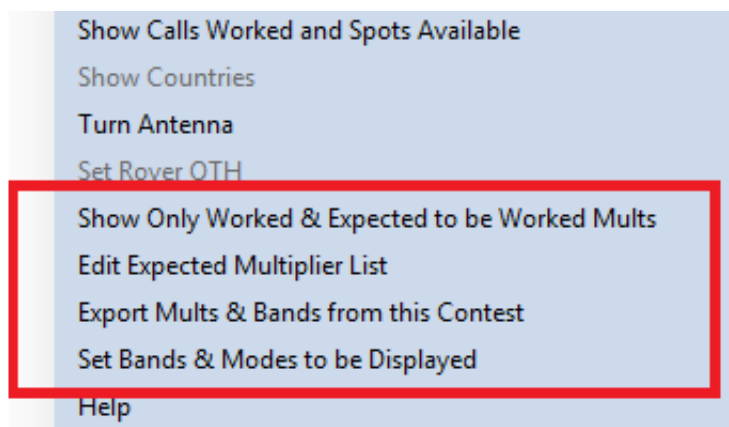
Tailoring Mult Lists for Particular Contests

Users will often want to tailor one of the seven available multiplier lists to a particular contest or QSO Party; for example, in WAE, non-European competitors will only want to keep track of European country multipliers.

As a first step in this direction, the seven check boxes across the top right of the Countries multiplier window permit you to limit the display to a single continent. Only one can be displayed at a time, but once you leave the “All” display, you will discover that you have some flexibility in the way that the columns of multipliers are arranged, to help you make best use of your screen space. This varies from one type of multiplier to another – for example, the States/Sections window must be displayed as a wide rectangle to group 10 US call areas and the Canadian sections in logical order.

Gerald, VE1DT has done considerable work on defining the other tailoring possibilities, and much of what follows is based on his efforts.

Options for doing this are found in the right-click menu reached from any of the multiplier lists. Depending on the contest and the window, some of these entries may be greyed out.



Show Only Worked & Expected to Be Worked Mults – Checking this option limits the mults displayed to those specified by one of the methods below.

Edit Expected Multiplier List – Clicking this option opens the following dialog



Enter List of Mults and Bands That You Expect to Work

File

	CountryPr	Comma-delimited band list (blank for all)
*		

To delete a row, click on the leftmost column and press the delete

Ok Cancel

You can use this dialog to edit the list of expected multipliers, one at a time. For example, if you are editing the countries to be displayed, you'll need to enter the country prefixes one line at a time, **in upper case exactly as they are shown in the Multipliers window**. For example, you need to enter "CE0X" not "CE0/X". If you enter specific bands, note that they are specified by frequency in MHz, not by wavelength in meters. Here's a simple example:

Enter List of Mults and Bands That You Expect to Work

File

Comma-delimited band list (blank for all). Use 1.8 & 3.5 for 160/80

		CountryPr
	3.5,14	G
	14,21,28	F
✎	1.8,3.5	EA
*		

To delete a row, click on the leftmost column and press the delete

Ok Cancel

Click OK to save the list, and if you check the “Show Only” option described above, the Multiplier window will look like this:

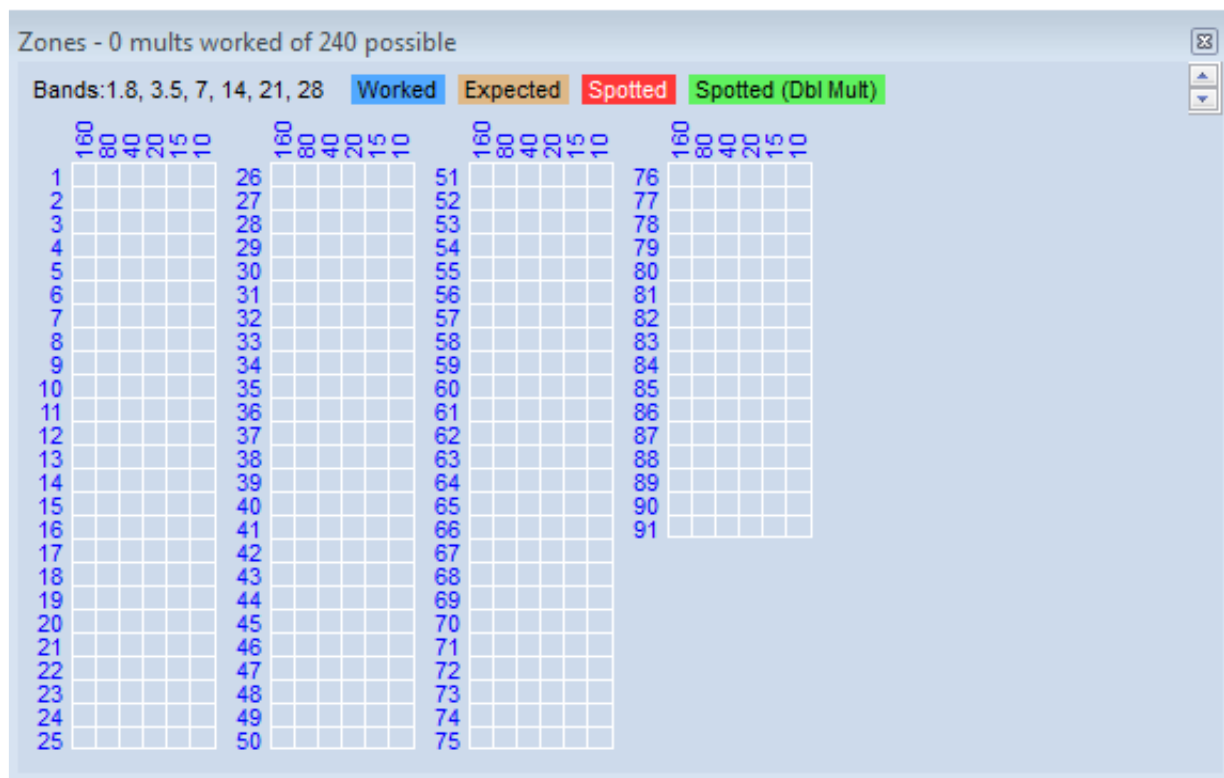
Countries - 0 mults worked of 2082 possible

Worked Expected Spotted Spotted (Dbl Mult)

	160	80	40	20	15	10
EA						
F						
G						

Similarly-limited multiplier displays can be generated by the same process in the Zones display. Before the “Show Only” option is checked, this display may look like

this:



The reason for the 91 zone lines in this example is to cover both CQ and ITU zones. In the CQWW contests, the display will only show the 40 CQ zones. In the ITU list, zones 76-91 are sea zones and you may wish to eliminate them from the display.

- Hand editing – you can use the **Edit Expected Multiplier List** dialog to enter each of the 75 land zones and list all six bands for each zone, in order to limit the display to only those 75 zones. After creating the list, you can use the **File > Export** menu item in the edit window to export the list to a file.
- Create a list of the zone/band combinations worked in the current log using the **Export Mults & Bands from this Contest** menu item. This will create a file of those combinations that appear in the log, which can later be imported using the next method.
- Imported file – after having created a file by either of the first two methods, you can use the **File > Import** menu item in the **Edit Expected Multiplier List** dialog to import the list. The list is a simple text file, so you can use a text editor instead of the edit window to make changes before importing the file.

Mouse-over

Mousing over any prefix will display information about it – the name of the country, its continent and zone, long and short-path bearings, and the distance

Resizing

The Multipliers window may be reduced in size, in case your screen real-estate is too limited to show the whole thing. If you shrink it right-to-left or left-to-right, a horizontal scroll bar will appear to remind you that there is more information to be seen. Vertically, down-sizing causes the chart to be rearranged, so that a vertical scroll-bar is not necessary.

Clicking on Multipliers

Left-clicking on a block that is colored to denote either a single or double multiplier will QSY VFOA or Radio A to the frequency of the station that you can work for that multiplier. Blocks denoting stations that would be valid QSOs **but not multipliers** are not clickable.

- The program will first look for multipliers that match on this band. If there are no mults that match on this band, then it will look on all band for the latest mult spotted.
- The program searches through all spots regardless of the filter settings for the mult window. If, for example, you do not want to jump to SSB spots in a cw contest, filter out those spots using the Telnet window filters. You might want to move a SSB station however, so consider that possibility.

Right-clicking on a multiplier block or elsewhere in the open Multipliers window (other than the title bar) opens the right-click menu.

Right-Click Menu - multiplier-specific options

- Some of the options are keyed to the particular multiplier block clicked, and will be greyed out if you click elsewhere. To Show Calls Worked and Spots Available, you will need to right-click one of the band blocks, not the prefix.
- **Show Calls Worked and Spots Available** will display a list of all stations already worked for the multiplier, regardless of band, whether the box you clicked is green, blue, red or empty. It will also display a list of spots currently available for the multiplier on a new band or mode.
- **Show Countries** - If you are showing a chart of zones worked (in CQWW, for example), this option can be clicked to show the country prefixes that count for the zone on which you right-clicked.
- **Turn Antenna** - if [rotator control](#) is enabled, clicking on this option will turn the antenna to the short-path direction of the multiplier from your QTH.
- **Set Rover QTH** - If [Rover mode](#) is enabled, the RoverQTH county or grid square can be set using this option.

Other Right-Click Options

- **Set Bands and Modes to be Displayed** - opens a dialog that looks very



much like the Telnet and Available windows' Bands and Modes dialogs. The purpose of this option is to control the boxes that appear beside each multiplier. For example, you might use it to eliminate the boxes for a band(s) for which you do not have an antenna, or to limit the display to only a single box for the band of a single-band entry. Note that this operates on the display boxes, not on the spots themselves. In a contest in which there are no per-band multipliers (e.g. ARRL Sweepstakes or ARRL RTTY), and in which there is only one box per multiplier, using this option will have no effect on which multipliers are spotted and displayed.

- **Set Grid Square Map Center** (grid square map only) – On the grid square map (which is not really a map, since there is no geographical information displayed, only grid square designators), you can choose which grid square to center the display on. This is functionally equivalent to scrolling the display left/right/up/down.
- **Show Beam Heading to Grid Center** (grid square and grid field maps only) – Right-clicking on a grid or field square in the map will display a beam heading to the center of that grid square or field.
- **Help** – will take you via the Internet to this section of the manual.



- Run – Whether each station is in Run or S&P mode
- 10/100 – What its current QSO rate is (last 10 and last 100 QSOs)
- Freq – What frequency it is currently on.
- Op – Who is operating (as set by OPON or Ctrl+O)
- Msg – What, if anything, that station has just done, such as pressing a function key
- Send/Receive – normally reads “OK” unless there is a problem with the network.
- Master – Permits checking to select one station on the network as the master. Check one to determine which connects to the Internet for cluster spots and time synchronization.
- Band – Note that if you sort on band, you will also sort on Run/S&P as the secondary sort. This may be useful for very large multi-ops where the station name does not indicate the band.

A (((*))) in the title bar of the Network Status window means that your computer just broadcasted its IP address, usually in the process of establishing a connection to the network. When connection is established, the title bar will reflect the number of stations in the network.

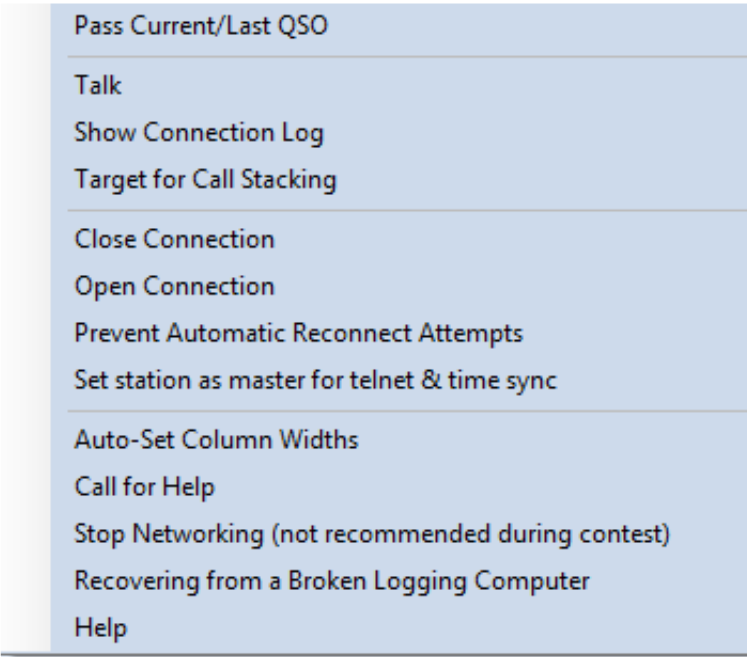
The red highlight on the Messages tab means that there is a network message waiting there that has not yet been read. In most cases, it is normal administrative traffic, such as a connect request from another station on the network. The red highlight may also be seen on the computer name during the connection process, usually accompanied by a red highlight in the Send or Receive column. These will disappear when a good connection is established.

Keeping Computer Clocks in Sync

In order to keep all of the clocks on a network in sync, either all computers must be running accurate time synchronization programs (like those used for computers running WSJT mode programs), or else all “slaves” – all computers other than the one designated as “master” – must be run as Administrator (by right-clicking on the desktop icon and selecting “Run as administrator” from the pop-up menu), and the master must be set up to sync with Internet time (at Date/Time in Control Panel).

Right-Click Menu

The right-click menu on the Stations tab opens a menu of powerful functions that most multi-op operators will find important in real time. The rationale for placing it here is that most operators will keep this tab on-screen, since it contains so much important operational information. **Each of these functions requires right-clicking on the line entry of a computer other than the current one, to identify the affected computer and open the right-click menu.**



A screenshot of a context menu from the Network Status Window. The menu is light blue with a thin border and contains the following items: 'Pass Current/Last QSO', 'Talk', 'Show Connection Log', 'Target for Call Stacking', 'Close Connection', 'Open Connection', 'Prevent Automatic Reconnect Attempts', 'Set station as master for telnet & time sync', 'Auto-Set Column Widths', 'Call for Help', 'Stop Networking (not recommended during contest)', 'Recovering from a Broken Logging Computer', and 'Help'.

- Pass Current/Last QSO
- Talk
- Show Connection Log
- Target for Call Stacking
- Close Connection
- Open Connection
- Prevent Automatic Reconnect Attempts
- Set station as master for telnet & time sync
- Auto-Set Column Widths
- Call for Help
- Stop Networking (not recommended during contest)
- Recovering from a Broken Logging Computer
- Help

- **Pass current/last QSO** – If you right-click on a computer to which you wish to pass your current or last QSO (assuming that the station just worked has agreed to QSY), and then click this option, a Talk message will be sent to the Info window of the target computer, telling the other operator who to expect and on what frequency. If that computer's Pass Frequency is set to zero, then the Message will show the receiving computer's frequency at that time.
- **Talk** – A right-click on any computer in the network, followed by a click on this option, will open the Talk sub-window with that computer's name already entered. **Talk messages appear in the Info window of the receiving computer.**
- **Show connection log** – Right-click on a computer and then on this option, and a log of communications events between your computer and the one selected will be displayed as an aid to trouble-shooting.
- **Target for call stacking** – The intended use of this feature is for large multi-ops that have more than one radio on a given band, to permit the "helper" operator to identify and queue stations for the run operator to work. If the two computers are on the same frequency (+/- a small tolerance), a right-click on the target computer turns on call stacking. Thereafter, any callsign that the "helper" op enters in his Entry window will appear in the call-frame of the target computer's Entry window. The run operator only needs to hit [Space] to pull the call down into the call-sign textbox, ready to work. **There is a checkbox on the Options tab which, if selected, will clear the sending computer's Entry window if the target computer works the station that has been stacked.**
- **Close and Open connection** – These options are used to open and close connections between the current computer and the one you right-clicked on.
- **Prevent automatic reconnect attempts** – used when trouble-shooting the network to stop the selected computer from sending reconnect requests

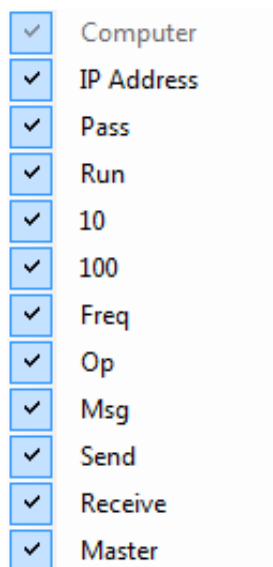


every thirty seconds.

- **Set station as master for telnet and time sync** – Another way to set any given computer on the network as the Master for receiving DX cluster spots and performing time synchronization. Note that time synchronization requires that N1MM Logger+ be run as Administrator on the receiving computer(s).
- **Auto-set column widths** – used to adjust the format of the Stations display to the minimum required to display the information currently present on-screen
- **Call for Help** – Sends an audio request for assistance to the computer you clicked on, together with a text message in the receiving computer's Info window.
- **Stop Networking (not recommended during contest)** – self-explanatory.
- **Help** – when Internet access is available, displays the appropriate section in the User Manual.

What, Another Right-Click Menu?

There is a second right-click menu associated with this tab. It is made visible when you right-click on the column headings row of the tab ("Computer", "IP Address", etc.) . It allows you to select which columns on the Stations tab you want to display, in the event that you want to minimize required screen space while still monitoring network activity.



Adjusting the Stations Tab's Format

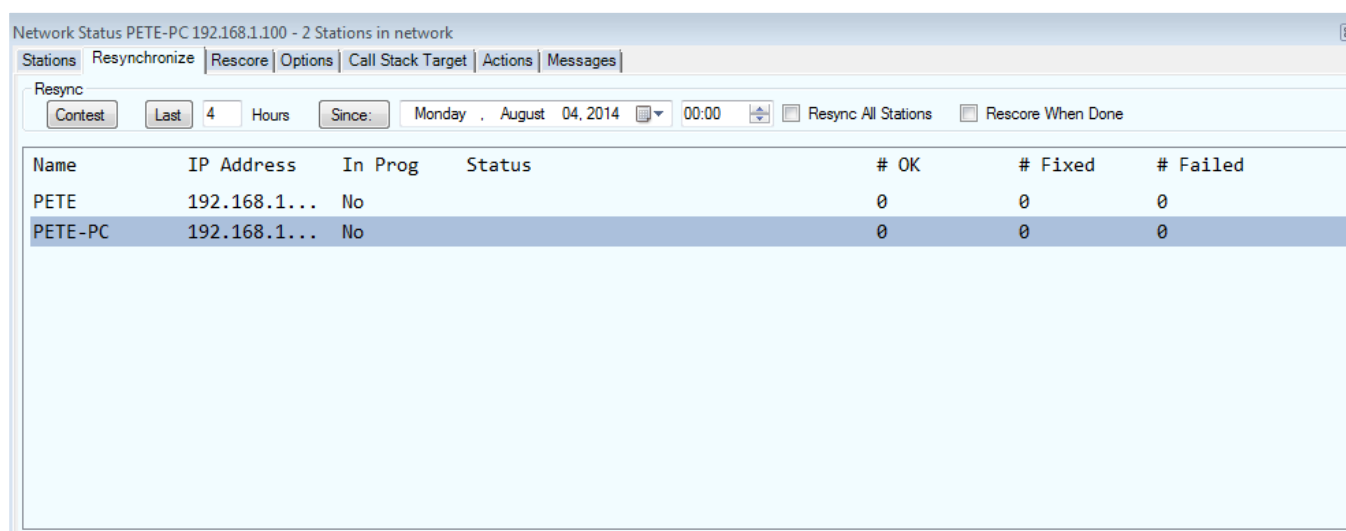
If you put your cursor between column headings in that row and move it rightward almost to the next column to the right, you'll see that it changes to a standard Windows "change width" character (a vertical line with horizontal arrows facing away from it). You can drag that marker right to increase the width of the column to

its left, or left to decrease the width of that column.

It is possible using this control to make the heading of a column disappear altogether. If you do that and want to recover, right-click in the body of the tab, and select “Auto-Set Column Widths” to get back to the full set of minimum-width headings.

You can also reorder the columns, by clicking on a column heading itself and dragging it where you want it. Be a little cautious in doing this, though, because there is no command for automatically restoring column order to the original – you’ll have to do that manually or by erasing the NetworkStatus.ini file in SystemFiles directory.

The Resynchronize tab



Normally every computer has a copy of every QSO in the log. If all computers stay connected at all times, new QSOs entered on one computer are broadcast to the other computers in the network so that every computer always has a complete copy of the log.

If it is necessary to edit or delete a QSO, the computer that the QSO was initially logged from must be used to perform the change. Other computers do not have permission to change the QSO. Any such change made at the originating computer will be reflected on all computers that are connected to the network at the time the change is made.

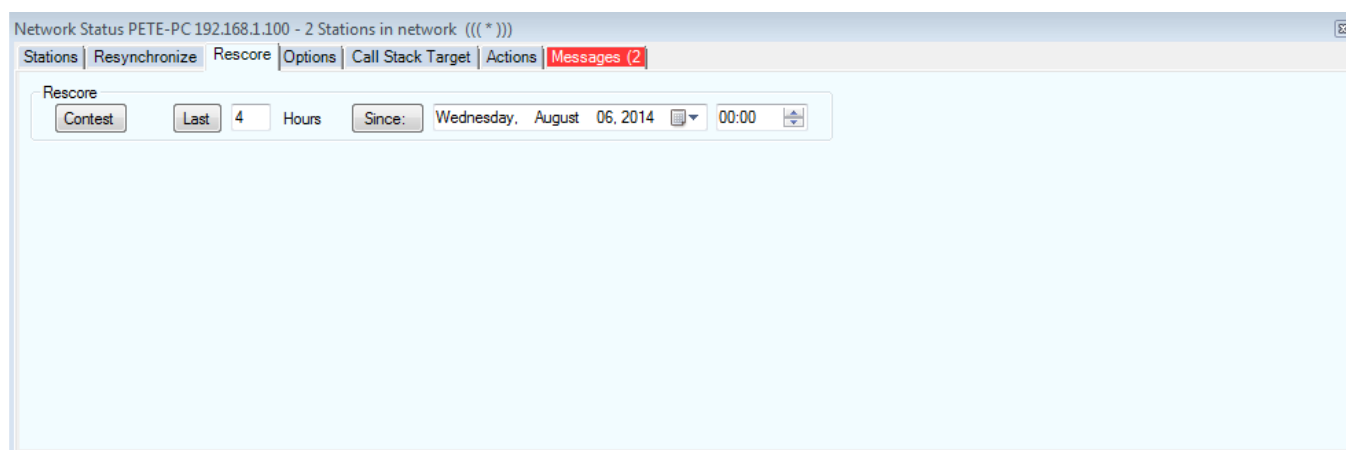
If a computer becomes disconnected from the network, you can continue to log contacts on it. When the computer rejoins the network, all QSOs made on that computer will automatically be sent to the other computers, and all new QSOs made on the other computers will be copied to the rejoining computer. This process is called resynchronization (resync for short).

Resynchronization of newly added QSOs is automatic. However, if changes (edits or deletions) are made to previously existing QSOs while a computer is disconnected from the network, those changes will not be applied during the automatic resync process. In other words, the automatic resync when a computer reconnects to the network only updates new QSOs; it does not update QSOs that were already in the log. Because of this, it is a good idea to perform an additional manual resync at the end of the contest in order to ensure that all the logs are identical, and that is the purpose of this tab.

A manual resync operation initiated from this tab requests each other computer in the network to update the requesting station's copies of all QSOs that were originally logged at the other computer in order to take into account the effects of any changes (edits or deletions) that were made during network outages.

- The "Contest" button will resynchronize from the start of the contest.
- The "Last" button and the textbox next to it are used to resync for a shorter period when you know when the problem occurred.
- The "Since" button works the same way but by resync start date and time rather than duration.
- The "Resync All Stations" checkbox syncs each log with all others simultaneously. Use this after the contest is over to ensure that all logs are identical. This can be a resource-intensive process; in order to avoid disrupting operations at other computers, do not use it during the contest while any computers are still being used to log new contacts.
- The "Rescore When Done" checkbox rescores the contest after the resync is complete on this computer, or all computers if Resync All is selected

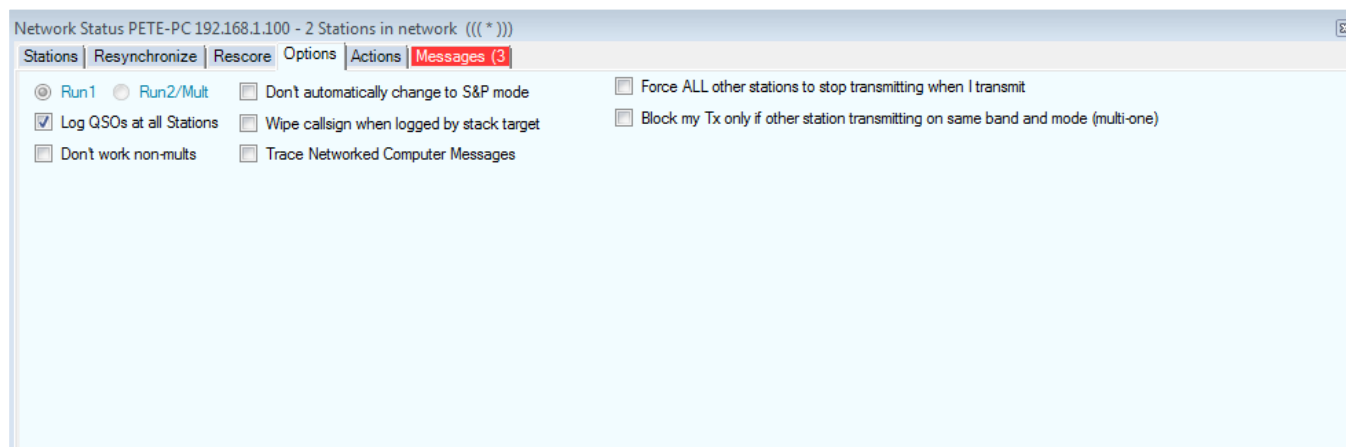
The Rescore tab



This tab controls rescoring the log on the local computer, recalculating QSO points and multipliers, in order to take into account the effects of any changes (edits or deletions) on the final score. This is recommended practice at the end of a contest, before a Cabrillo file is generated for sending to the contest sponsor. The buttons

are the same as those on the left-hand side of the Resynchronize tab, and are used similarly .

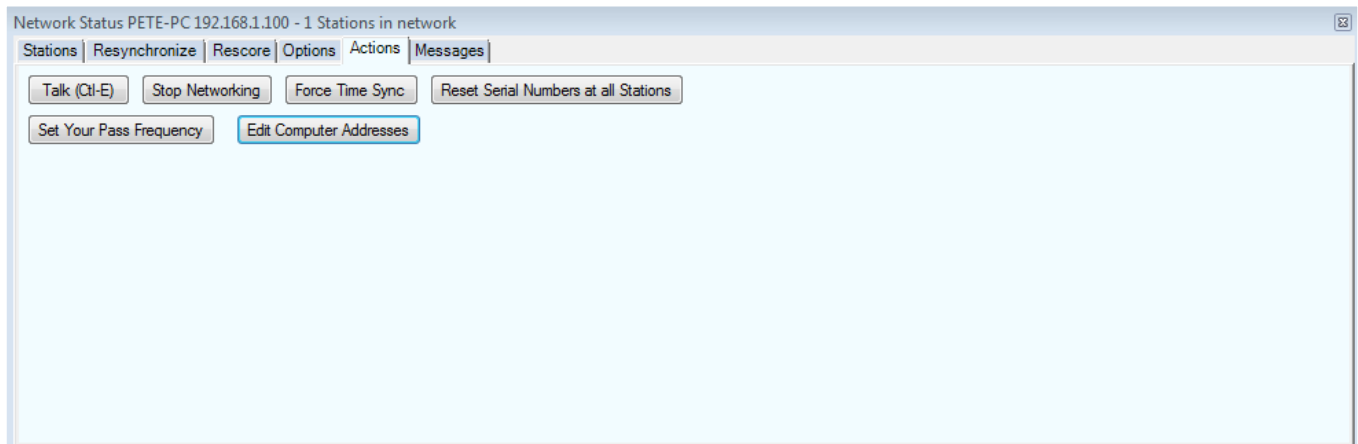
The Options tab



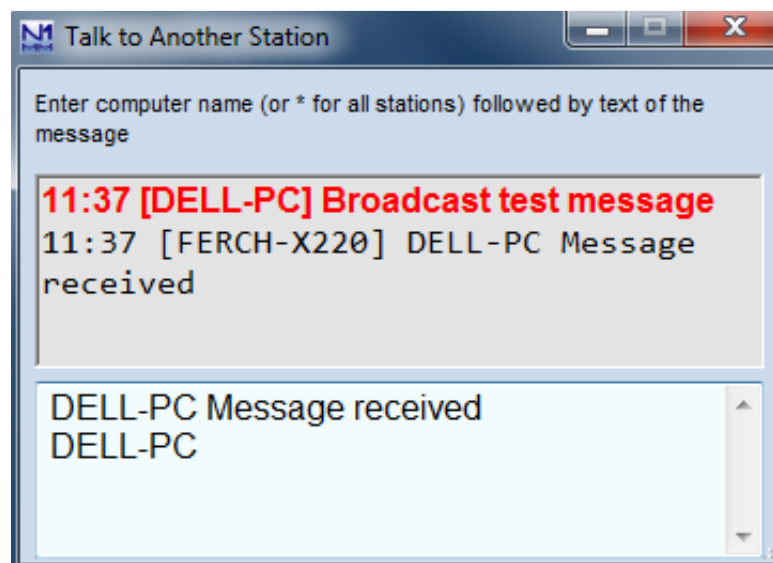
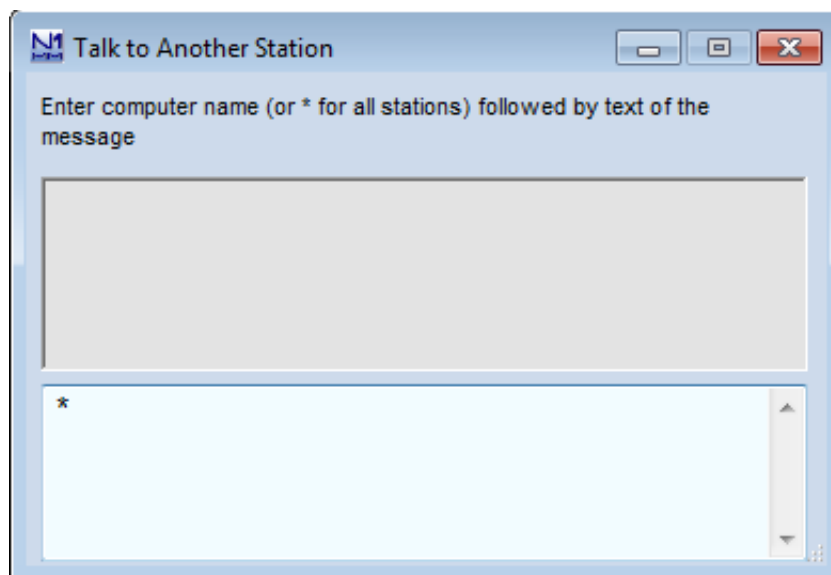
Left to right and top to bottom, following is a description of the radio buttons and checkboxes on this tab.

- **Run1/Run2 radio buttons** – these buttons are greyed out except in the case of the Multi-2 class, in which case you can click the radio button to designate the current computer as Run 1 or 2.
- **Don't work non-mults** – check this box if you are entered in the multi-single class in contests where the current computer must not work non-multipliers. When checked, will block the station from working non-mults. Function key messages will not be sent to a non-mult.
- **Don't automatically change to S&P mode** – When checked, prevents the current computer from switching from Run to S&P mode when QSYing by more than the tuning tolerance for its mode. See [this page](#) for more details on per-mode tuning tolerance.
- **Wipe callsign when logged by stack target** – Use in conjunction with call stacking. If you stack a callsign for your partner to work, and he works it, your call-sign textbox will automatically be cleared so you can stack another.
- **Trace Networked Computer messages** – a trouble-shooting tool that logs messages between computers on the network to a file titled MultiUserMessages.txt
- **Force ALL other stations to stop transmitting when I transmit** – self-explanatory
- **Block my Tx only if other station transmitting on the same band and mode (multi-one)** – self-explanatory

The Actions Tab



- **Talk (Ctrl+E)** – opens a sub-window, in which you can send or receive talk messages to/from the other station(s) on the network.



The first of these two illustrations is an empty Talk window. By default, Talk messages are sent to all stations, denoted by the asterisk. If you enter a computer name in place of the asterisk, followed by a space and the text of a message, the message will be sent only to that station. That computer name then becomes the default address for Talk messages from you until replaced. Note: you must enter the computer name exactly as shown in the left-most column of the Stations tab, except that whatever case you enter will be changed to all upper-case to conform with the Microsoft standard.

The upper pane is now where talk messages are received, as in the second illustration. Messages in red have been received, and are also displayed in the bottom pane of the Info window, Ctrl+E can now be used to toggle the Talk window between full size and minimized to the lower left corner of your screen.

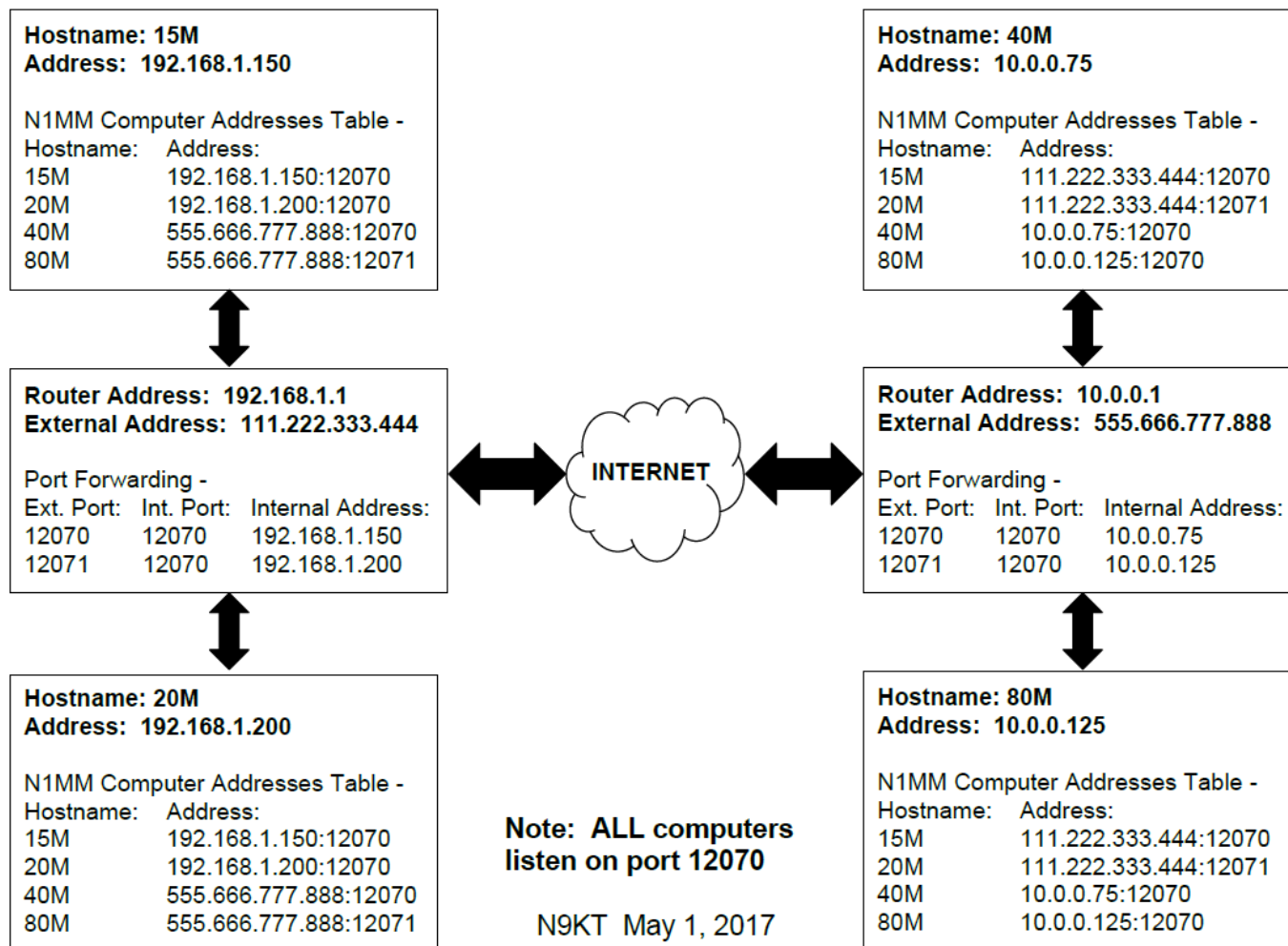
The first time you receive a Talk message while the Talk window is open but minimized, you will notice a new icon in the right-hand end of the Windows taskbar, with a message balloon above it. The icon will remain there until the Talk window is closed. This is in addition to the N1MM+ logo you will see over to the left, which is present any time the program is open. Thereafter, each time a new talk message comes in while the Talk window is minimized, a message balloon will appear above the new icon, as illustrated below. The message balloon is displayed for 5 seconds and then disappears.



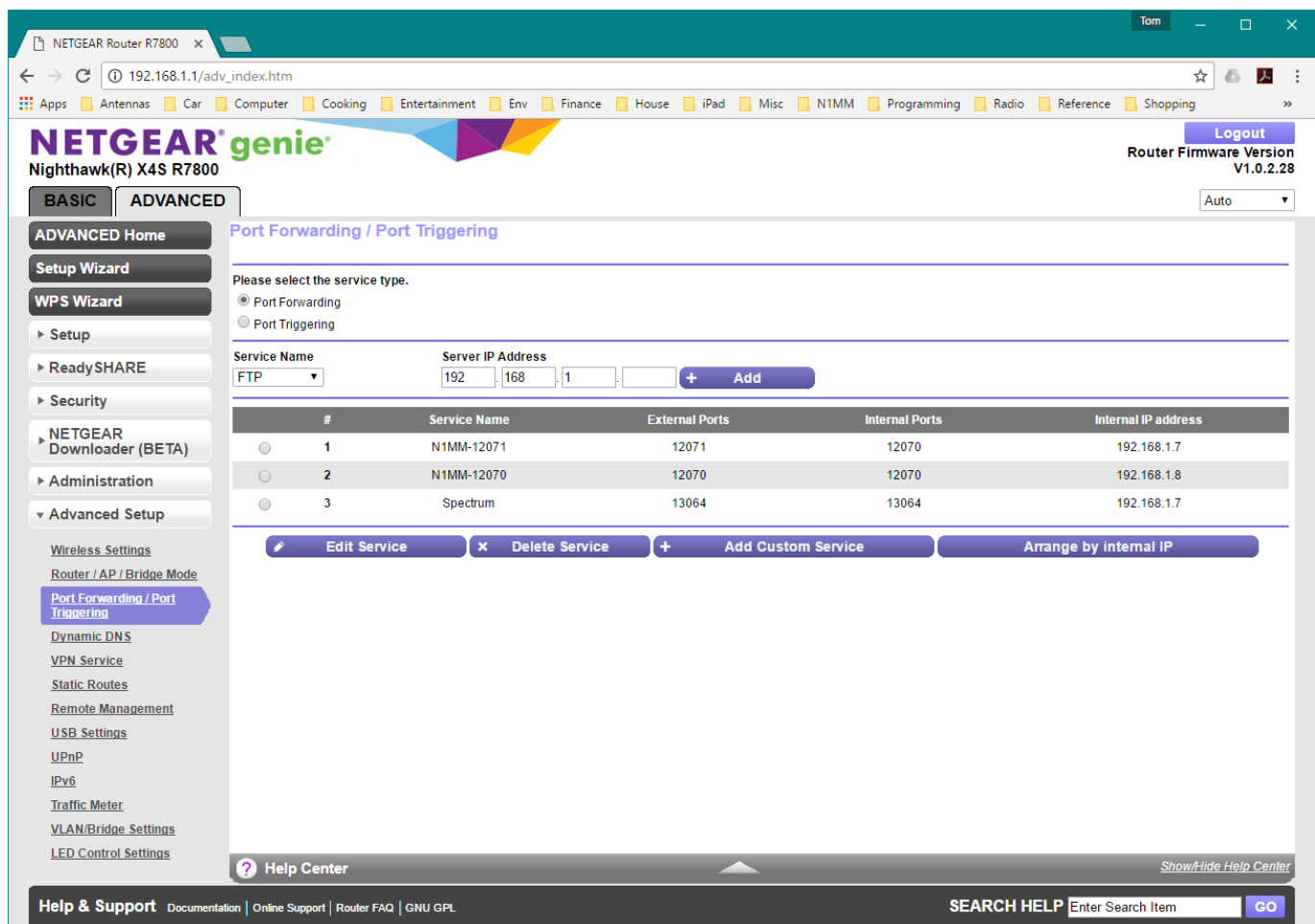
If you want to send a message only to a particular station, right-clicking on that station's line on the Stations tab and then selecting "Talk" will relieve you of having to fill in the computer name. Other operation is as above.

- **Set Your Pass Frequency** – enter the frequency you want other stations on the network to pass stations to. It will appear on all stations' Stations tab.
- **Stop Networking** – Self explanatory – strongly discouraged during a contest.
- **Force Time Sync** – Self-explanatory
- **Edit Computer Addresses** – N1MM Logger+ networking is automatic within a single subnet, which is usually the case in local area networks. However, if you want to network across a Wide Area Network, or in rare instances where your network involves more than one subnet, auto-configuration will not work. In that case you will need to fill in computer addresses in this table **exactly as assigned by the network(s)**. For WAN networking you must enter the external IP addresses of each LAN and also port numbers for all the computers you wish to connect to, in the format XXX.XXX.XXX.XXX:port number}. Separate port numbers are needed for

computers outside the local network, in order to permit operators to set up forwarding through their router firewalls to the right computer. If going subnet-to-subnet, you do not need to enter port numbers and the IP addresses would be the **internal** IP address. Here's an example in the WAN case, such as would be needed for a distributed IARU HQ "station". Note that the Hostnames are the Netbios (computer) names of the computers being networked. In this example illustration, for clarity the computer Netbios names have been reassigned in the illustration to denote the various bands:



- Please refer to your router help file for instructions on setting up port forwarding. Here is a sample Netgear Port forwarding setup. In this example, the site has two N1MM+ instances running on 192.168.1.7 and 192.168.1.8. The router will receive *TCP* connections coming in on port 12071 and 12070, but both connections will be sent to 12070 on their respective computers. 13064 is a spectrum *UDP* port being forwarded to 192.168.1.7



- **Reset Serial Numbers at All Stations** – only for use when you have screwed up. Sets the serial numbers on all computers to the highest value in any of the logs, plus 1, so you can start a new serial number sequence without duplicate numbers. This does not change the serial numbers of QSOs that are already logged.

The Messages Tab

Displays networking messages

Troubleshooting

- **Check first:**
 - All computers have different Netbios (computer) names and they are all 15 characters or less
 - All computers are running the same version of N1MM+. Please use the latest version
 - All computers have the same time with 2 seconds or you are running all the non-master computers in admin mode so they can set the time when the master requests it.
 - All computers have the same copy of Master.SCP and wl_cty.dat



- **Computers don't connect at all, or connect in one direction only**
 - If computers are not on the same subnet, they will not automatically connect. Enter their Netbios names and ip addresses in the computer addresses table – see Actions Tab to access
 - Start without a computer address table – make sure you do not have any entries in it. If you need entries, make sure they are correct. – see Actions Tab to access
 - Make sure each computer is allowed to connect to other computers by Windows firewall or any other firewall. It may be quicker to turn off the firewall and test. If that solves the problem (like one-way communication), then figure out how to put N1MM+ into the firewall exception list and restart the firewall. We do not recommend running your computer without a firewall
- **Remote computers don't connect**
 - N1MM+ receives data on port 12070. Routers must translate the port being SENT from remote computers to the particular computer on the network. If you SEND on port 12071 to computer Bob, the router must route 12071 as 12070 to Bob. You will need to route as many ports in your router as there are computers running N1MM+ at that location.

Recovering from a Broken Logging Computer

What do you do if one of your computers no longer works?

DO NOT ADD ANOTHER COMPUTER WITH THE SAME NAME!

If you do not replace it on the network

1. Each computer will have a copy of the QSOs logged by the broken computer. If they all agree on the number of QSOs, then you should be fine. If not, you will need to compare the lists from each one and determine which QSOs are missing.

If you replace it on the network

1. Locate a running network computer whose log includes the QSOs from the broken logging computer. **SHUT THE PROGRAM DOWN** on this computer.
2. Copy that computer's database_name.S3DB, database_name.s3db-wal and database_name .s3db-shm database files (The last two are temporary files that usually do not exist) to a network drive, diskette or flash drive.
3. Copy the database_name.S3DB* database files from the temporary medium to the replacement computer's \database directory
4. Configure the replacement computer and N1MM Logger and begin logging. Any new QSOs will be identified by the replacement computer's name, **which MUST NOT be the same as the broken machine's name.**



5. Restart the source computer and resume logging

NOTE:

Each computer is the “book of record” for the QSOs logged on that computer, even though all QSOs are normally logged on every computer for redundancy. Resync simply compares what your computer’s log shows for QSOs by a particular computer (as identified by its network name) to what that computer has in its log. If there is a difference, the computer that logged the QSO sends the updated QSOs to the requesting computer. If a QSO is deleted or removed from the log in the computer that “owns” the QSO (as identified by the computer’s name), the Resync operation will delete that QSO from the logs in the other computers.

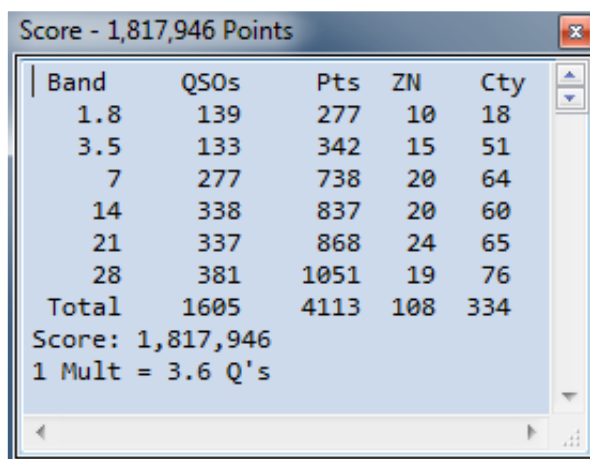
Therefore, if the problem was with the database on the “broken” computer, **DO NOT** create a new database (or a new contest within the existing database) on the problem computer in order to resolve the problem. That will cause all the QSOs that were formerly logged on that computer to disappear from all of the logs. Likewise, **DO NOT** swap in a new computer with the same name and a new empty log, as that will have the same effect. To avoid this, make sure the name of the new computer is different from the name of the broken computer (the computer name can be changed in Windows if necessary to avoid duplication).

The best way to avoid all this is to keep a spare computer (with its own unique network name) up and running N1MM+ on the network. You can then just swap it in for the broken one. The QSOs from the broken computer will still be in the logs in all the other computers.

The Score Window

The Score Window

The Score window is automatically formatted to display the components of the score (such as QSOs, zones, and country multipliers) in the current contest.



Score - 1,817,946 Points

Band	QSOs	Pts	ZN	Cty
1.8	139	277	10	18
3.5	133	342	15	51
7	277	738	20	64
14	338	837	20	60
21	337	868	24	65
28	381	1051	19	76
Total	1605	4113	108	334

Score: 1,817,946
1 Mult = 3.6 Q's

The Score window has an independent font resizer – the up/down arrows in the upper right corner – and is now resizeable. If you reduce its size so that not all the contents can be seen on-screen at once, scroll bars will appear to allow you to see parts of interest without re-sizing.

With a right mouse click, a menu will appear

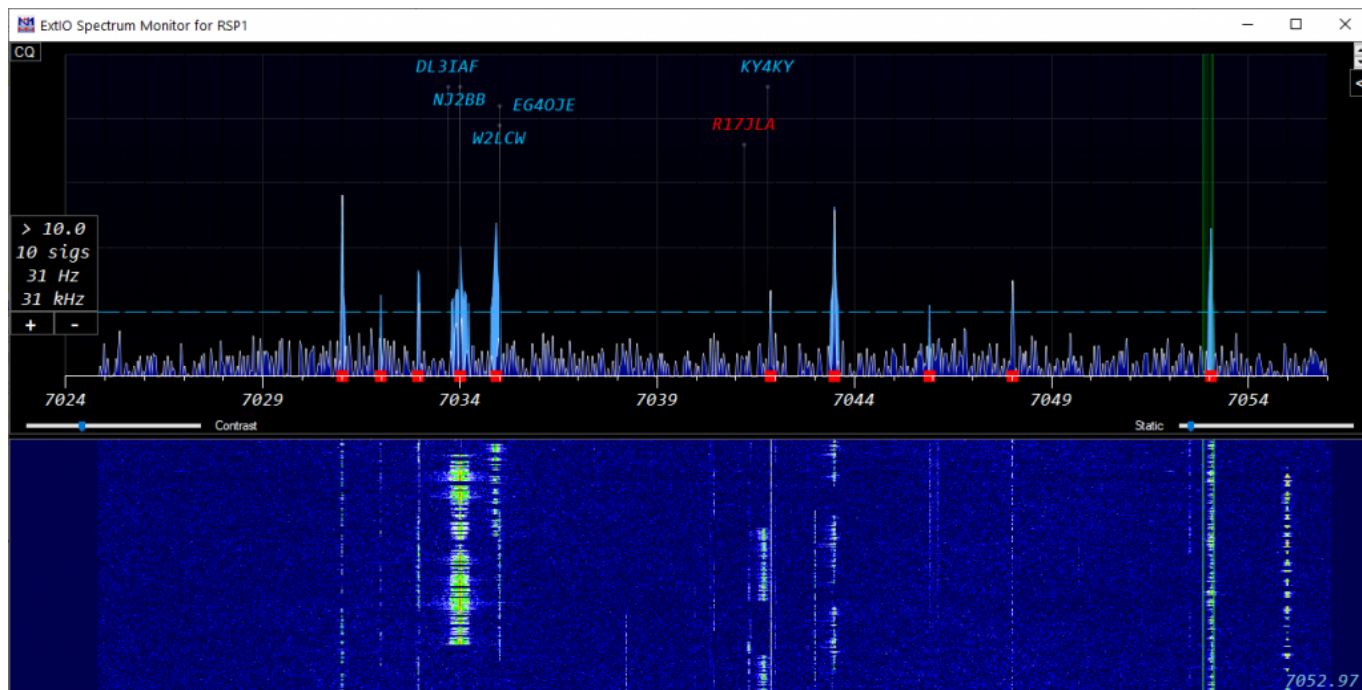
- **Copy all** – Copy all info to the Windows Clipboard.
- **Print to file** – Print the score summary to a file.
- **Help** – Show the user manual section for this window (Internet required).

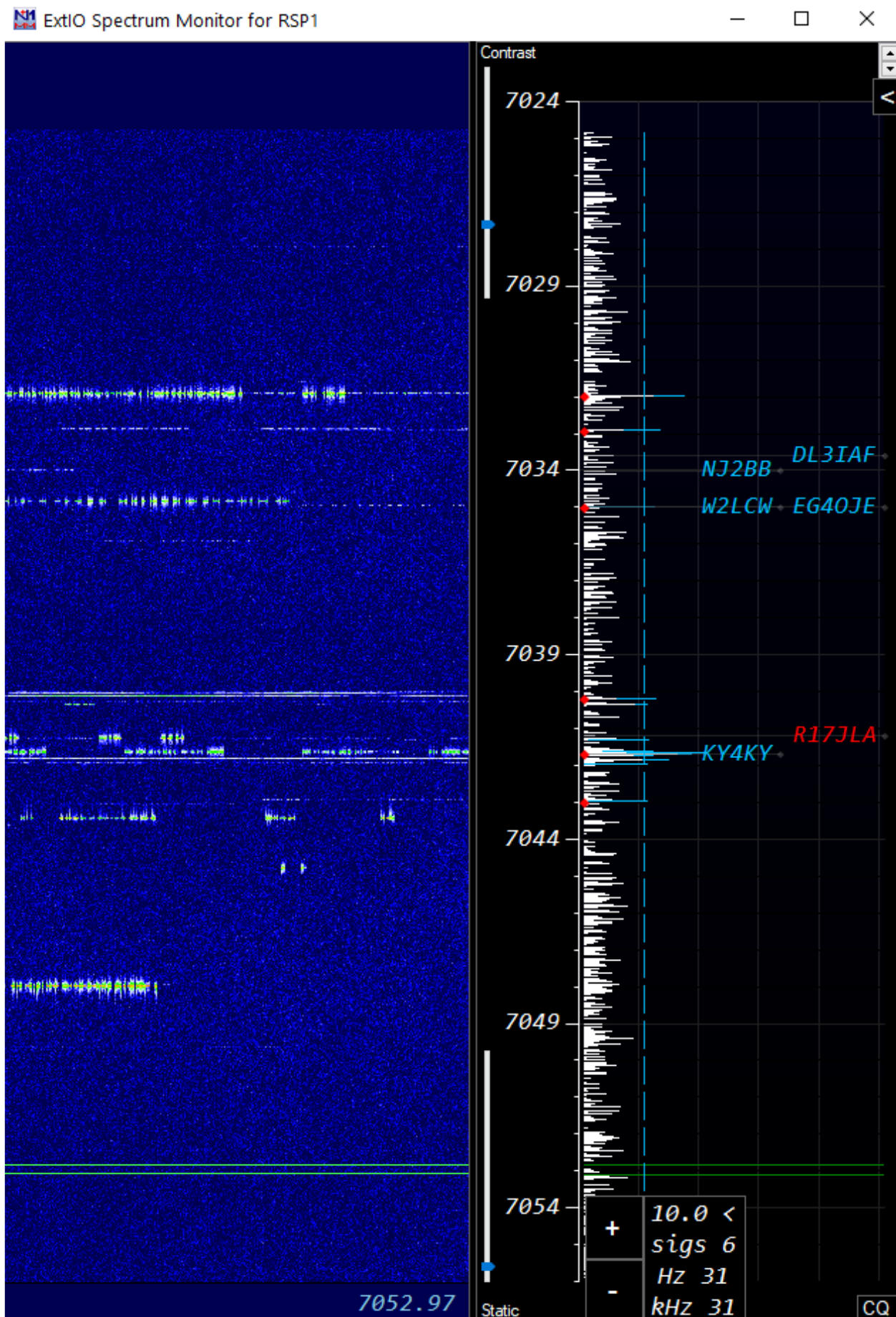


The Spectrum Display Window

The Spectrum Display Window

Spectrum Display Window - ***If your red dots don't line up with signals, adjust the noise floor. Then use Shift+up/down to jump from signal to signal! If you are having trouble finding a CQ frequency, press the CQ Button!***







The Spectrum Display Window is a window that takes advantage of CAT spectrum output from certain radios. It also supports displaying spectrum data from other programs via its UDP interface. What is unique about the N1MM+ Spectrum Window is its ability to identify *signals* and allow the user to jump to those via keystroke as well as compare them to local and RBN spots to identify unspotted and already worked *signals*.

Supported Radios & Interfaces

SDR Radios via SDR Vendor Provided ExtIO*.dll

- Download the correct ExtIO dll from the vendor website and place in the N1MM+ *Program Install* directory. This usually C:\Program Files (x86)\N1MM Logger+. (Some radios, like the IC-7610 require additional files. Read the radio's documentation for using HDSDR with the radio and emulate the install instructions, but put in the N1MM Logger+ directory.)
- Start N1MM+ and open a Spectrum Window. Right-click and set the source to "I/Q via ExtIO.dll"
- Select the correct dll in the " < " IQ tab.
- Tested radios include: SDRPlay RSP1, RSP2, Airspy HF+, Icom IC-7610.
- A link to the Airspy HF+ extio dll can be found in Airspy HF+ page in the "Supported Software" section.
- Be sure to install the driver for the SDR if required. SDRPlay would need you to install SDRUno to install the USB driver.
- You can only run one program at a time using the output of an SDR. Don't try to run SDRUno and N1MM+ spectrum at the same time.
- Other radios may need the "Reverse I/Q" checkbox checked if the spectrum moves in the wrong direction. Notify the team and we will include the Radio to select I/Q properly. We will need to know the ExtIO*.dll name for your radio.
- I don't plan to support any other radios at this point. Why? Two reasons. SDRs are very idiosyncratic in how they work. Each seems to have its own set of issues. I don't have all these radios to debug (and I don't want to have them). The second reason is that owners usually just say something like "I tried the spectrum window with my Toothgnasher SuperSDR and it doesn't work. What gives?" There is not a lot to go on to debug that. You might want to report what settings you used, and the actual symptoms.
- SDRPlay Tips: Open the SDR UI with the button from the IQ tab. Set it to Low IF and minimum bandwidth. Adjust the gain for a reasonable amount of "grass" at the bottom of the spectrum display. Close the SDR UI by pressing the button on the IQ tab.

IC7610 using native FTDI interface



- Download the correct Icom HSDR installer. This will install the USB driver. Install it with the radio disconnected.
- Install a USB cable from the second USB port on the rear of the IC7610 to your computer. Start N1MM+ and open a Spectrum Window.
- Right-click and set the source to "IC7610 I/Q via FTDI.dll"
- Note that the IQ tab dll combobox will hide any IC7610 Extio dlls. They are no longer needed. This connection allows choosing of main/sub rx by selecting the Associated radio. The ExtIO.dll version did not.
- You may open two instances of the IC7610 I/Q via FTDI.dll with associated radios of 1 & 2. These correspond to main and sub receivers. In order for this to work, you will need Dual Watch to be on. Note that this configuration overloads the radio to the point where the touch screen does not reliably work. Turn off Dual Watch and touchscreen operation will resume. Another way of getting both receivers to display a spectrum is to use the CAT spectrum of the radio on one of the receivers.

Icom IC-7300, IC-7850/51, IC-7610

- Must use the USB cable virtual COM port for radio control. Unplug the CI-V cable.
- Set Right-Click Radio source to Radio 1 or Radio 2 as appropriate
- Must have the radio menu CI-V USB Port set to Unlink from [Remote]
- Must have the radio and program baud rate set to 115200 baud.
- After the program and the radio is set to 115200 baud, exit the program and restart.

Flex 6300/6400/6400M/6500/6600/6600M/6700 Radios

These radios are supported via CAT and UDP – requires SmartSDR V2.0 or later software.

- If a supported Flex radio is detected, N1MM+ will send commands to the radio to start and stop the spectrum. It will send your local IP address and port 13064 to the radio. Note that the program can get confused if there is more than one local IP address in the computer, e.g. a NIC connected directly to the Flex separately from the NIC or WiFi adapter connected to the LAN. Therefore, do not connect your Flex directly to the computer via Ethernet. Connect the Flex to the radio via your router so that the network adapter connected to the LAN is the only one active in the computer.
- The Spectrum Window should automatically find the Flex spectrum feed if it is already sending it. Otherwise, start the Flex and do the following
 - Start a new Spectrum window and select External ("For all other radios, source named...") as the source. The Flex should already be transmitting its identifying information, so when you go to choose the source, pick the source you want from the drop-down list
- Resolution in the N1MM+ spectrum display will be dependent on the zoom



level of the Flex panadapter. Bear in mind that the precision of the signal marking is dependent on the zoom level & consequent bin/pixel size. Something between 20 and 50 Hz per pixel would be a good place to start

Elecraft K3/K3S/KX3 plus software/hardware:

- **Win4K3Suite (<https://va2fsq.com/>) software plus hardware as described below:**
- **K3S, or K3 with KXV3, plus LP-PAN or SoftRock II Lite, plus stereo sound card** – connect LP-PAN or SoftRock to IF Out, set right-click spectrum source to “For all other radios, source named > Win4K3Suite”. See Win4K3Suite documentation for Win4K3Suite software setup
- **K3S, or K3 with KXV3, plus SDRPlay (RSP1 or RSP2)** – connect SDRPlay to IF out, see Win4K3Suite documentation
- **KX3 plus stereo sound card** – see Win4K3Suite documentation
- **KX2 plus SDRPlay (RSP1 or RSP2) plus an external transmit/receive switch** – see Win4K3Suite documentation
- **Waterfall bandmap (<https://groups.io/g/waterfallbandmap>) software plus hardware as described below:**
- **K3S, or K3 with KXV3, plus LP-PAN or SoftRock, plus stereo sound card:**
 - Connect LP-PAN or SoftRock to IF Out. Put WB in Sound Card mode, Offset with LP-PAN is approx. -6000 (varies with mode, roofing filter offset, SHIFT control settings). If traces move the wrong direction in the waterfall when tuning, check (or uncheck) Swap I&Q. Swap I&Q checked/unchecked setting for 6m is opposite to the setting for HF. Set right-click spectrum source to “For all other radios, source named > Waterfall Bandmap”
- **K3S, or K3 with KXV3, plus ExtIO-capable SDR (including SDRPlay):**
 - Put WB in ExtIO mode (ExtIO dll must be in the WB program directory)
 - RF-based: Connect SDR to a splitter in a jumper between RX Ant Out and RX Ant In – RX Ant must be selected in the K3. Offset zero, SDR at IF check box unchecked . Set right-click spectrum source to “For all other radios, source named > Waterfall Bandmap”
 - IF-based: Connect SDR directly to IF Out. Check the SDR at IF check box, set IF to 8215, Offset to zero as a starting point, but offset varies with mode, roofing filter offset, SHIFT control settings. May need to check Swap I&Q if traces move in the wrong direction when tuning – 6m and HF will be opposite settings for this, and offset settings may also differ between 6m and



HF. Set right-click spectrum source to “For all other radios, source named > Waterfall Bandmap”

- **KX3 plus stereo sound card:**

- Connect KX3’s I/Q output to the sound card. Make sure the box to the right of the Start button reads “Sound card based SDR”. Select the sound card connected to the I/Q output to be the Input device. The offset should be set to zero. If traces move the wrong direction in the waterfall when tuning, check (or uncheck) Swap I&Q . Set right-click spectrum source to “For all other radios, source named > Waterfall Bandmap”

Yaesu FTDX5000, FTDX3000, FTDX1200, FTDX9000, FT991

Requires Win4YaesuSuite (<http://yaesu.va2fsq.com/>) software, plus hardware as described below:

- **LP-PAN plus stereo sound card (FTDX5000 or FTDX3000 only)** – connect LP-PAN to IF Out, see Win4YaesuSuite documentation for software setup
- **SDRPlay (RSP1 or RSP2)** – connect SDRPlay to RX out or IF out (depends on radio model), see Win4YaesuSuite documentation for hardware and software setup

Waterfall Bandmap Software

<https://groups.io/g/waterfallbandmap>

- SDRPlay, FunCubeProPlus, HackRF, LP-PAN, SDR-IQ, RTLSDR, SoftRock, etc. – SDRs and panadapters that produce I/Q output either via ExtIO.DLL or via a sound card can be used together with almost any transceiver using **Waterfall Bandmap** software
- The SDR may be connected to an antenna, to an RX Ant output on some transceivers, or to an IF output on transceivers that have an IF output. Note that if the SDR is connected directly to an antenna, an external TX/RX switch may be required to protect the SDR against RF from the transmitter.
- Start Waterfall Bandmap after starting N1MM+ but before starting the N1MM+ spectrum display window. Configure Waterfall Bandmap according to the Waterfall Bandmap documentation.
- The Spectrum Window should automatically find the spectrum feed if Waterfall Bandmap is already sending it. Otherwise, start Waterfall Bandmap and do the following
 - Start a new Spectrum window and select External (“for all other radios, source named...”) as the source. The Waterfall Bandmap should already be transmitting its identifying information, so when you go to choose the source, pick Waterfall Bandmap from the drop-down list (if the list does not already contain Waterfall Bandmap,



type it in)

- If you find “smearing” of the blue spectrum lines while tuning, use the right-click option “Reduce spectrum smearing while tuning” to clear spectrum data each time the frequency is changed. This is needed because the source is getting the radio frequency information after the spectrum window gets it.
- RF or IF > SDR/panadapter > Waterfall Bandmap > N1MM+ Spectrum Window
- **SDRPlay**
 - In Waterfall bandmap, after choosing the SDRplay ExtIO dll in the text box at the top of the window, select Configure and set the SDRPlay’s IF Mode to Low IF and the IF Bandwidth to 200 kHz. Adjust the LNA & gain controls to limit the amount of noise generated when strong signals are present. The noise will appear as traces in the waterfall, but there are no signals there. The traces will occur coincident with the strong signal transmitting and will occur at various places in the spectrum. The SDRPlay has very high gain to work with short, inefficient antennas, but you don’t need that much gain with a beam or full size dipole.
 - Use the zoom control in Waterfall Bandmap to set the zoom level as shown in the box on the left hand side of the spectrum window to about 40 Hz/pixel or less for CW & RTTY and to about 100 Hz/pixel for SSB. Higher numbers will result in poor signal detection accuracy.

KE9NS PowerSDR

Supports the Spectrum Window as of version 2.8.0.43 (6/29/17)

<http://ke9ns.com/flexpage.html>

- Start PowerSDR before starting N1MM+
- The Spectrum Window should automatically find the spectrum feed if it is already sending it. Otherwise, start PowerSDR and do the following
 - Start a new Spectrum window and select External (“for all other radios, source named”) as the source. The radio should already be transmitting its identifying information, so when you go to choose the source, pick the source you want from the drop-down list

CW Skimmer version 2.0

<http://www.dxatlas.com/cwskimmer/>

- In CW Skimmer’s Settings window, select the Network tab and check the “Send Spectrum via UDP” box to send spectrum data to the N1MM+ spectrum window.
- In the Spectrum window, select External (“For all other radios, source named”) as the source and pick CW Skimmer from the drop-down list (or

type it in if it is not already there).

Airspy HF+

No other Airspy models are supported

- Download SDR# software to downloads from **<https://airspy.com/download/>**
- Create a new directory SDR# on your C drive (i.e. C:\SDR#) or in your N1MM+ *program* install directory (typically, C:\Program Files (x86)\N1MM+ Logger+\SDR#).
- Copy all the files from the downloaded SDR# to the new directory. If you want to start the server manually, you can put it wherever you want.
- Important: Change the device_type= in spyserver.config to AirspyHF+
- Change fft_fps= to 6. This improves cpu consumption
- Start N1MM+ and open a spectrum window
- Right-click and set the Source for the spectrum window to Airspy HF+
- If there are bugs in setup, closing the program and restarting at this point may clear them. I need to fix them, but you probably want to get on with using it at this point.
- There is code included for local Airspy servers to suppress the spectrum & waterfall displays for 200 msec after the associated radio stops transmitting. It will also suppress the display if a very strong signal is present on the transmit frequency.
- To add a second Airspy HF+ you will need to:
 - Specify the airspy serial number that you want to serve in spyserver.config. That should show up in the window that runs when you start it. You may have to connect them one at a time to figure this out.
 - Change the bind port from 5555 to 5556 (or whatever) and bind to that port in the 2nd spectrum window “ ◀ ” pane Connect tab.
 - You will need to start a second copy of spyserver manually with the different ini file.

Other vendors TBD

- Start the source before starting the N1MM+ spectrum window
- The Spectrum Window should automatically find the spectrum feed if it is already sending it. Otherwise, do the following
 - Start a new Spectrum window and select External (“For all other radios, source named”) as the source. The source should already be transmitting its identifying information, so when you go to choose the source, pick the source you want from the drop-down list

Layout

Spectrum Pane

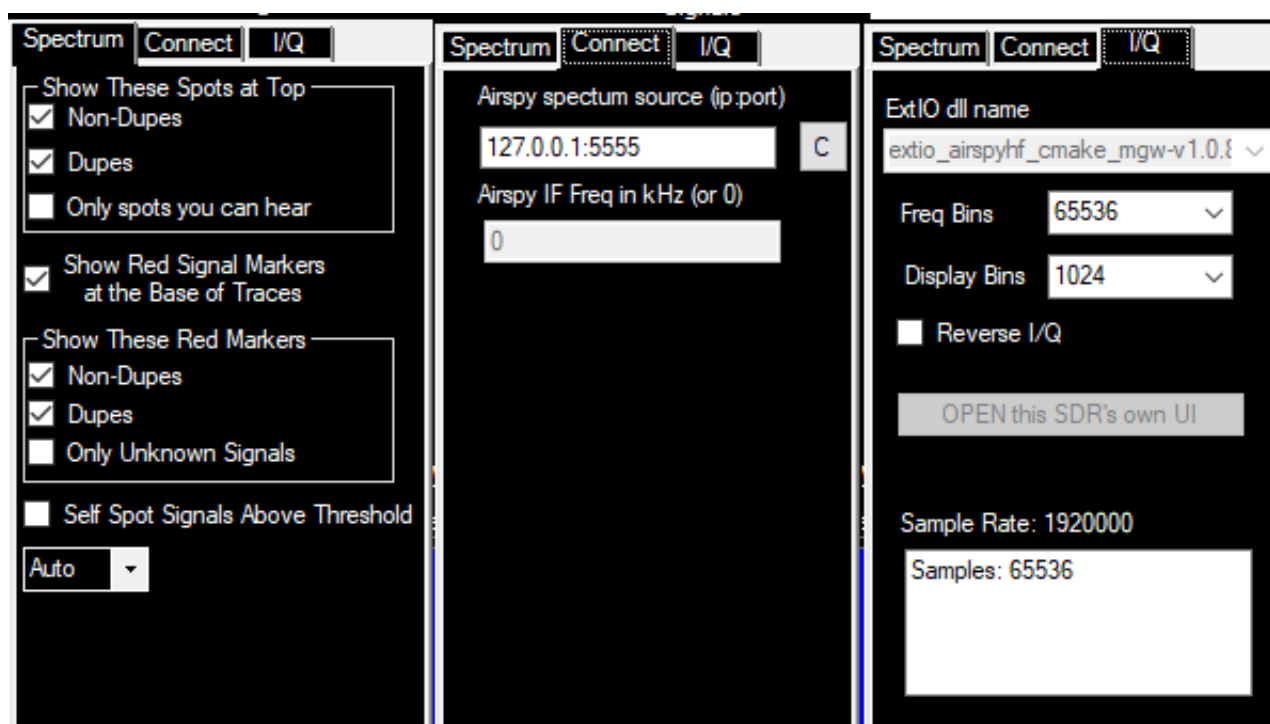
- The spectrum is displayed in the top or right-hand pane, depending on the orientation you choose. Since the option defaults to “Auto” the orientation will change depending on the dimensions of the spectrum window

Waterfall Pane

- The Waterfall pane, when the show waterfall option is selected will appear at the bottom or left of the spectrum pane. Note that in portrait (or bar-chart) mode, the waterfall moves from right to left so that one can see the start and stop of sending and potentially read cw for sources that refresh at a rapid enough rate.

Setup, Connect I/Q Panes

Click the “ < ” to access



- These panes are accessed by clicking on the “ < ” or “ > ” button at the top right (just below the font sizer arrows) to open or close it
 - Setup Pane
 - At the top is the legend for colors in the spectrum display
 - The display can show spots superimposed on the signals. These spots can be from Telnet (assisted or multi-op), or locally generated by logging QSOs or entering a call and tuning away from that signal (all categories). “The Show These Spots at Top” lets you control which, if any spots are



shown. You can even restrict the spots to only those that have signals recognized by the software that are within the tuning tolerance of the spot. If the associated radio is tuned to the spot, the callsign will have a box drawn around it

- The “Show Red Signal Markers at the Base of Traces” will display a marker everywhere the software determines there is a signal. When you press Shift+Up/Down, the associated radio will jump to the red markers
- Show these Red Markers allows you to restrict which signals are marked in the window. Typically you will want to show markers for Non-Dupes (signals you can work) but not show markers for Dupes (which includes zero point QSOs).
- If you want to watch for new signals on a band before the Reverse Beacon Network spots them, check show “Only Unknown Signals”, but jump on them fast, because somebody’s skimmer will be spotting it within seconds!
- Static sensitivity removes samples from the display if certain criteria are met that make a sample look like a static crash. If you are getting lots of false signals due to static crashes, raise the Static Sensitivity until most are removed.
- The control shown as “Auto” above controls the orientation of the spectrum display. If you leave it on Auto, it will pick the right orientation based on the shape of the window
- Signals detected by the Spectrum Display that are above the noise threshold, but without a previously identified callsign will put spots of the form @frequency in the bandmap and available windows for tracking unknown signals, provided the option to do so has been selected in the setup pane.
- Connect Pane
 - This pane allows specification of an Airspy HF+ SpyServer source other than 127.0.0.1:5555. It is restricted to LAN addresses when logging in contests. If the DX Log is open any address may be specified.
 - If using the Airspy HF+ at IF, enter the IF frequency on the Connections tab of the setup pane. You may have to adjust it by mode.
- I/Q Pane
 - On this pane enter ExtIO.dll names for accessing SDRs.
 - For ExtIO supported SDRs and for IC7610 supported via FTDI I/F, you may enter the number of frequency bins for fast fourier transform. The higher the number of bins, the higher resolution possible. It will also use more cpu time. The program keeps the zoom level constant (if possible) when this is change. You will need to zoom (+/-) to see different zoom levels.
 - Display bins is also settable for these SDRs. Using a higher



number than the number of pixels on your spectrum window will just use more cpu time.

- Reverse I/Q is off automatically and is not needed for supported radios. For non-supported radios, check it if the display does not match the heard signals.
- The open button allows the user to display the UI for the SDR. Always close the display with this button not the “X” button in the SDR UI.
- Sample rate is the SDR’s reported sample rate.

General Setup

- Keep the noise level low by setting the ref level (whatever control sets the “grass” level in the source’s spectrum display) in the radio menu low
- For supported Icom and Flex radios, the spectrum scope will be turned on startup and turned off on exit
- The window can be opened from the Entry Window “Windows” menu.

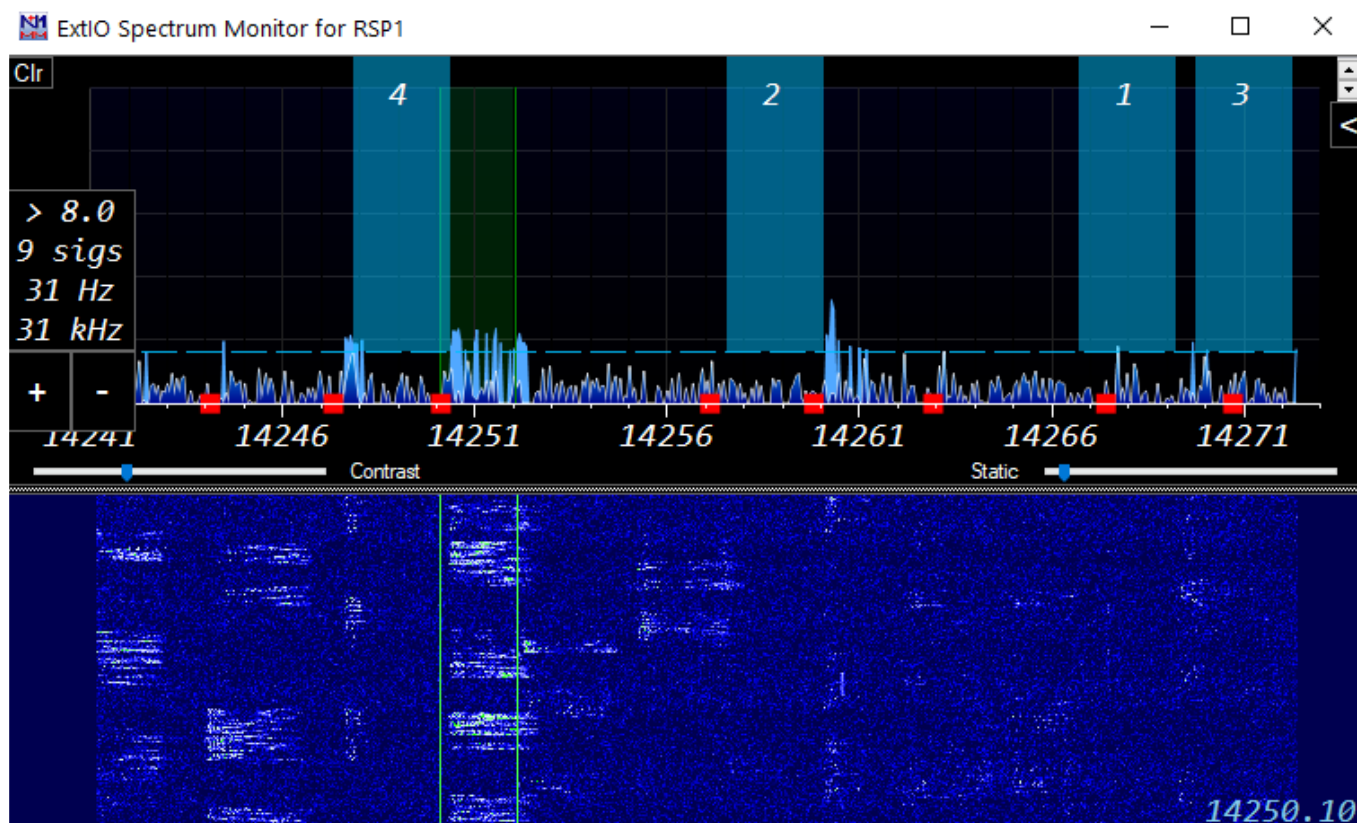
Controls

- With focus set on the Entry Window, **Shift+up** will move the frequency to the next signal up in frequency. **Shift+down** will move the frequency to the next signal down in frequency. This is the reverse of bandmap functions which are oriented towards the display of frequencies rather than their value.
 - If you use the spectrum display in the vertical (bar chart) orientation, there is a right-click menu option to change the direction of movement to match the direction of bandmap functions.
- **Show signals** will show all the signals the window has identified on the frequency axis using your multiplier background color. These signals are also counted in the box that shows the noise floor and pixel width in Hz.
- **Shift+up/down** will *skip* signals that are within tuning tolerance of dupes and non-workables, depending on the options you have chosen in the setup pane.
- **Shift+up/down** will stop at the low and high frequencies in the spectrum. If you are using center mode, the spectrum will re-center on the low or high edge frequencies as appropriate
- Use the **up/down** keys to fine-tune signals. If the tone is too high, press the down key. Use the up key for signals too low in tone (depends on the sideband in use, i.e. CW-R will be opposite to CW).
- Sig (db) is level of signal as shown on the display, relative to ref and includes the preamp level
- **Snap to sig** – when checked jumps to the nearest signal when you click on the chart. (within 2 kHz). No effect when clicking on the waterfall.
- The noise floor threshold is adjustable with the mouse wheel.
- Signal count is the number of “signals” found above the noise floor



reference. Roughly equivalent to how many times your cursor will stop traversing the screen. The count includes non-workable spots.

- To mark signals that you don't want to work, use the **Mark** button (**Alt+M** to mark, **Alt+D** to remove)
- The **Static Sensitivity** slider should be adjusted until large static crashes light up the "Static Sensitivity" label
- Left single click on the spot label will QSY your Rx & Tx to the frequency of that spot - including split. If you have the noise floor, source level and static sensitivity set properly, you will find that clicking on the spectrum will usually tune the signal more accurately than a cw spot. Note that you must have "**snap to signal**" turned on for this effect.
- +/- zooms the spectrum in/out. Not all SDR sources support this function. If not supported, the +/- boxes will be hidden. These zoom boxes appear under the threshold/sigs/Hz box.
- **Alt+Q** still returns to your CQ frequency. **Alt+F8** still returns to your last frequency
- The CQ button will display up to five recommended CQ frequencies. These represent the frequencies with least signal content above the signal threshold. This level is computed with a 60 second decay time constant. It changes to Clr after being pressed. If pressed again, the markers disappear. Pressing a function key will also remove the markers. While the markers are present the Shift+Up/Down keystrokes will jump from one candidate CQ frequency to another in frequency order. The numbers indicate the rank of the frequencies from 1-5.





CQ Frequencies

Mouse (see also the *Strange and Mysterious Mouse Wheel*, below)

- Left click will set radio receive frequency and snap to closest signal if check box is checked
- Ctl+left click will set split frequency to that frequency. Snap to signal is ignored

The Strange and Mysterious Mouse Wheel

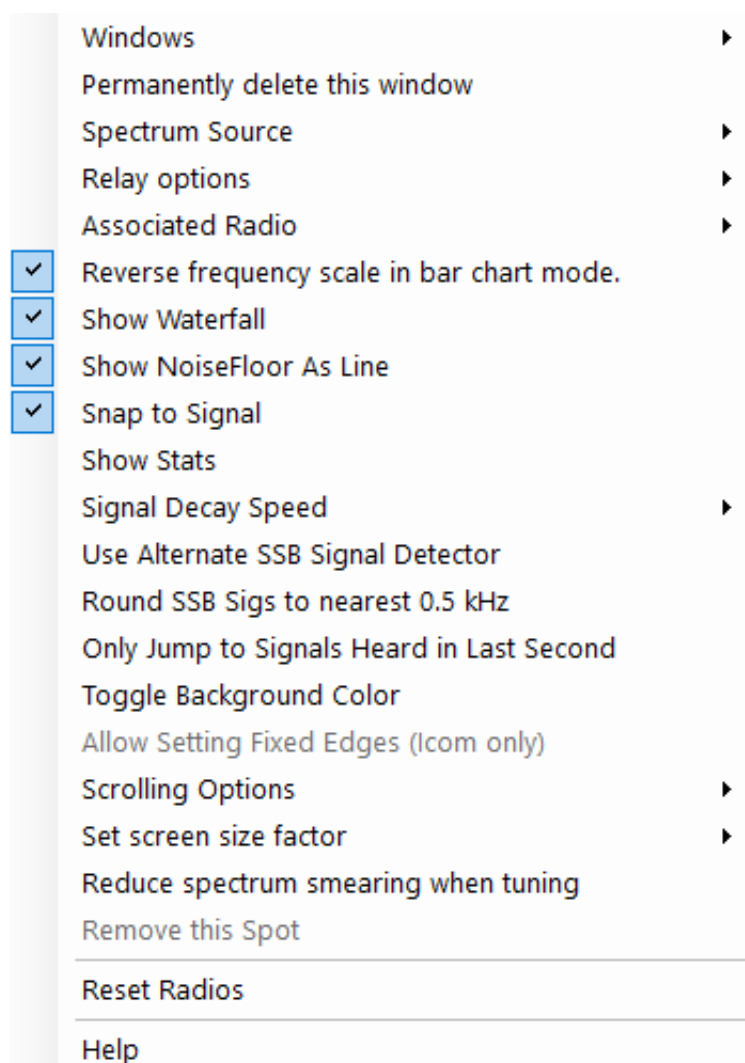
The mouse wheel is used for a number of functions in the Spectrum Window. Lets look at them by pane:

- Spectrum Pane
 - When the mouse is over the main portion of the spectrum, the mouse wheel controls the noise floor. You will see the blue dashed line move up and down
 - With Icom radios, holding down the Ctl key while moving the mouse wheel in the main portion of the spectrum window will control the REF level of the radio's spectrum
 - With the Airspy HF+ and SDRPlay, holding down the Ctl key while moving the mouse wheel in the main portion of the spectrum window will control level of the spectrum. Scrolling all the way down will set the level to Automatic
 - With the Airspy HF+, moving the mousewheel when the cursor is over the frequency scale and the Airspy scrolling mode is Fixed, will shift the spectrum frequency
 - When the mouse is over the contrast slider, it will control the color of the Waterfall in the pane below. Yeah, I know it belongs in the Waterfall pane, but it flickered badly. You'll like it better where it is
 - When the mouse is over the static sensitivity slider, it will control how much static is detected and discarded. Static does not show in the waterfall
 - When the mouse is over the left of spectrum in a landscape/column mode spectrum or over the top of the spectrum in a portrait/bar chart mode spectrum, it will control the dB range displayed. Use the " < " & " > " buttons to see the dB scale
- Waterfall Pane
 - When double vertical bars are displayed, and the mouse is in the Waterfall pane, moving the mouse wheel will tune the radio. Adjust the CW/SSB/Digi tuning values in Configurer/Other tab to your liking and the speed of your radio's CAT. The frequency as you tune will show in the lower part of the Waterfall. Note that this is the radio

reporting back the frequency, so depending on the radio there may be a little lag or a whole lot. If you press Ctl or Shift while turning the mouse wheel, the radio will make larger frequency jumps, just like it does in the Entry Window. The main purpose of this tuning is to allow you to fine tune a signal after clicking on its trace in the Waterfall

- Other
 - The mouse wheel will change the dB scale range when the mouse is positioned above (column mode) or to the right of (bar mode) the noise floor/signals/resolution box.

The Right-Click Menu



Spectrum Right-Click Menu

- Right-click opens a context menu
 - **Windows** – lets you choose between spectrum windows that have been configured
 - **Open a new window** – to create a new spectrum window



- **Permanently Delete this window** – close this window and delete its configuration. It will no longer show in the spectrum window list. For use when you have created multiple spectrum windows
- **Spectrum Source** – Sources heard by the software will be shown as choices. Until a source name shows up in that drop-down menu, it will not display, or will be greyed out, as it is not being received
 - **Radio 1 (Icom 7300/7851/7851 only)** – if one of the specified radios is configured as Radio 1
 - **Radio 2 (Icom 7300/7851/7851 only)** – if one of the specified radios is configured as Radio 2
 - **Airspy HF+** – this will use the Airspy HF+ via Spyserver either locally or remotely. It will open the Spyserver app automatically. The IP address (usually 127.0.0.1) is specified in the " < " menu Connect tab.
 - **I/Q via ExtIO.dll** – this option requires the dll to be copied into the N1MM+ program install directory. The available ones will appear in the " < " menu I/Q tab.
 - **IC7610 I/Q via FTDI.dll** – Similar to IQ via ExtIO, but using Icom's native interface. Note that polling both main & sub receivers will render the IC7610 touchscreen unusable. Disable "Dual Watch" temporarily to allow manipulation of the touchscreen.
 - **For all other radios, source named** – opens a submenu with a list of any other sources that have been named. External software sources supply their own names. Spectrum data forwarded by another N1MM Logger+ user is named according to that user's choice in the Relay Options
- **Relay Options** – allows you to provide the spectrum displayed in this window to another N1MM Logger+ user.
 - **Do not relay this spectrum** (default)
 - **Broadcast on IP ports(s)...** – Enter list of IP addresses: data is sent to the user specified IP & port. The only port that N1MM+ will listen on is 13064, so only use another port to provide port forwarding with a router at another site
 - **Name of this source** – the name which the other N1MM Logger+ user will use to access this spectrum source
- **Associated Radio** – assign which radio will change frequency when you jump to signals from this window (Radio 1 or Radio 2)
- **Reverse frequency scale in bar chart mode** – if you check this option, the low frequency of the spectrum will be at the top, matching the way the band map is oriented
- **Show Waterfall** – controls whether the waterfall is displayed. When the waterfall is displayed the current radio frequency will appear in the waterfall pane. When it is not displayed, the current frequency appears in the spectrum pane
- **Show Noise Floor as Line** – This is effective only in column



(landscape) chart mode. Instead of columns, the instantaneous signal values will be shown as a line and the (decaying) average values that exceed the noise floor will show as a filled line series

- **Snap to Signal** – When on, clicking on the spectrum will jump to the nearest signal center rather than to the precise point which you click. It will look +/- 2 kHz for a signal
- **Show Stats** – shows information that the window has collection about the currently displayed spectrum. It will remain for 25 seconds, or click on the X to hide it
- **Signal Decay Speed** – Controls how fast the blue signal indicator lines decay. For SSB, if you set the signal decay speed to fast, it will find signals more accurately, but skip signals not transmitting at that instant. Use fast for SSB and crowded conditions, slow for quiet bands.
- **Use Alternate Signal Detector** – If there is an alternate signal detection algorithm being tested, you can select it here.
- **Round SSB Sigs to nearest 0.5 kHz** – experimental option to help with regular dxing. This is not expected to be useful in a contest. Non-sticky to prevent its inadvertent use during a contest
- **Only Jump to Signals Heard in the Last Second** – Shift+up/down will ignore any signals that are not currently transmitting (experimental)
- **Toggle Background Color** – to toggle to higher contrast backgrounds – both white & black. Black background is the most readable.
- **Set screen size factor** – Submenus let you choose between 1x, 2x or 3x the number of pixels sent by the source. The control will not have to interpolate points if you choose one of these. The size of the spectrum window does NOT affect the finding of signals. That is always done with the incoming source data, not the data as displayed
- **Reduce spectrum smearing when tuning** – some sources that follow the radio's frequency receive updated vfo frequency data after they have sent updated spectrum data to the program. This will cause the data in the spectrum window to "smear". Selecting this option will clear old spectrum data whenever the frequency limits of the spectrum source changes
- **Remove this spot** – does what it says, but is only enabled when you hover over a spot in the spectrum panel of the window.
- **Reset Radios** – Sends the commands to reinitialize the radios connected to the program (similar to the same option in the Bandmap window). This will often restart the spectrum display on a supported radio.
- **Help** – link to this documentation

Colors



- White is the instantaneous signal level as shown in white on the radio (black on light color skins)
- Blue is a “decaying” representation of the signal *similar* to that on the radio
- The green line is the current Rx frequency
- The horizontal blue line is a measure of the noise floor above which signals are found
- The vertical red line, if shown, is the tx frequency when split

Operation

**** Adjust the REF level on your radio (or equivalent in your source) and the mouse-wheel noise floor to the point where the number of signals counted drops suddenly from a high number to a reasonable one. The noise floor is adjustable in 0.2 dB steps from 0-1 dB and in 1 dB steps thereafter. Check that you don't have the noise floor too high by tuning for a weak signal***

- Use the mouse wheel in the chart area to adjust the noise floor. You will see the number of sigs change as you scroll the blue line. If a blue or white signal is above the floor, Shift-up/down will jump to that signal. The noise floor value and # of signals detected are shown in the box near the dB scale.
- Also shown in the little noise floor/signal box is the number of Hz represented by one pixel of incoming data. Note that to see all the incoming pixels, you need to make the graph area of the spectrum window greater than the number of pixels. The number of Hz per pixel affects how many signals can be found. If you have a source generating pixels greater than 100 Hz apart you may lose the ability of the program to find some signals as they are not represented in the source data stream. The size of the spectrum window does NOT affect the finding of signals. That is always done with the incoming source data, not the data as displayed
- If you are short on screen space, Ctl-up/down does not need the old bandmap to be open to work. You can use this one instead
- Turn off “snap to spot” if you find it is interfering with you clicking on signals. You don't need it if you are zoomed way in as you would often be in center mode
- For DX split operation, use Ctl+click to set the Tx frequency to the point where you think the dx op will answer the next caller. That might be the frequency of the last station that worked him or it might be higher or lower
- Pro Tip: Try setting your up/down tuning increments in Config/Config Ports.../Other to match your preferred zoom level for your spectrum as seen in the left-hand box in the spectrum display. For example, if you like CW resolution at 42 Hz/pixel choose .021 as your up/down increment. For SSB and 105 Hz/pixel, you might choose .0525 as your increment. By choosing multiples, you will minimize jitter in the waterfall display that results from

imprecise changes in tuning. Doing this only helps when using the up/down keys to tune or the mouse wheel equivalent.

Relaying and Port Forwarding

The Spectrum Display window can forward the data it receives to another spectrum display window. The other spectrum window can be running in the original instance of N1MM+ or in N1MM+ running on any computer that is reachable via UDP packets. The forwarding computer only sends its spectrum display data: band, frequency, signal strength, display name, scaling factor. The destination instance of N1MM+ is responsible for display settings, the noise floor, and capturing packet spots.

Step 1. Preparing the source instance of N1MM+ to forward its Spectrum Display window

- Using your mouse, right-click in the Spectrum Display window to be forwarded
- From the right-click menu, select >Relay options >Name of this source
- Enter a unique name for this Spectrum Display window. For example, “20M Radio”

Step 2. Preparing and launching the destination Spectrum Display window

Choose one (or more!) of the following options

- **Option1. Local Forwarding to a second Spectrum Display in the same instance of N1MM+ (you have only one computer)**
 - Using your mouse, right-click in the Spectrum Display window to be forwarded (the source window)
 - From the right-click menu, select >Relay options >Broadcast on IP/port(s)
 - Enter an IP address of 127.0.0.1
 - To open the second spectrum display, right-click in the source spectrum display
 - From the right-click menu, select >Windows >Open a new window
 - In that new window, right-click and select >Spectrum Source >Source named
 - Choose the source name that you assigned in the first step of this process. In our example “20M Radio”
- **Option 2. Forward a spectrum to another computer on the same LAN (you have more than one computer)**
 - Using your mouse, right-click in the Spectrum Display window to be forwarded (the source window)
 - From the right-click menu, select >Relay options >Broadcast on IP/port(s)



- Enter the IP address of the destination computer. For example 192.168.1.123. You can run IPCONFIG in a cmd window to determine the destination computer's IP address
- If N1MM+ is already running on the destination computer, close and re-launch N1MM+
- To open a spectrum display window on the destination computer, from the drop-down N1MM+ menu on the destination computer select >Window >Spectrum Display
- In the destination computer's spectrum display, right-click and select >Spectrum Source >Source named
- Choose the source name that you assigned in the first step of this process. In our example "20M Radio"
- Option 3. **Forwarding to remote instance of N1MM+ (you have more than one site)**
 - Using your mouse, right-click in the Spectrum Display window to be forwarded (the source window)
 - From the right-click menu, select >Relay options >Broadcast on IP/port(s)
 - Enter the IP address of the remote destination computer. For example 71.233.1.123. From a browser on the remote destination computer, entering "my ip address" will tell you your external IP address
 - Set up port forwarding on the router of the remote computer LAN to route incoming port 13064 to 13064 on the destination computer
 - If N1MM+ is already running on the remote destination computer, close and re-launch N1MM+
 - To open a spectrum display window on the remote destination computer, from the N1MM+ drop-down menu on the destination computer select >Window >Spectrum Display
 - In the remote destination computer's spectrum display, right-click and select >Spectrum Source >Source named
 - Choose the source name that you assigned in the first step of this process. In our example "20M Radio"
- Option 4. **Forwarding to 2nd remote instance of N1MM+ (you have more than one computer at a remote site)**
 - Using your mouse, right-click in the Spectrum Display window to be forwarded (the source window)
 - From the right-click menu, select >Relay options >Broadcast on IP/port(s)
 - Enter the IP address of the second destination computer and specify a different port. For example 71.233.1.321:13900. (cannot be any port currently in use)
 - Set up port forwarding on the router of the remote computer LAN to route that new incoming port to port 13064 on the second destination computer
 - If N1MM+ is already running on the second destination computer,



close and re-launch N1MM+

- To open a spectrum display window on the second destination computer, from the N1MM+ drop-down menu on the destination computer select >Window >Spectrum Display
- In the second destination computer's spectrum display, right-click and select >Spectrum Source >Source named
- Choose the source name that you assigned in the first step of this process. In our example "20M Radio"

Note that *Broadcast on IP/Port* can be a comma separated list of IP addresses. For example: 192.168.1.1,79.235.146.132:13064,29.235.146.132:13900 (separate with a comma, but no spaces)

Frequency & Mode Forwarding

If you want one instance of N1MM+ (e.g. a "slave" instance on a computer that is the source for spectrum data but that is not directly controlling the transceiver) to follow another N1MM+ instance's frequency & mode (the "master" instance that is interfaced to the transceiver), you can forward the master instance's broadcast data (in the Configurer broadcast tab) to the slave computer's IP address, port 13064. You will have to open this port on the destination computer's network router if the destination is at a remote site or just using a different router.

NETGEAR genie®
Nighthawk(R) X4S R7800

Router Firmware Version V1.0.2.28

Port Forwarding / Port Triggering

Please select the service type.
☒ Port Forwarding
☐ Port Triggering

Service Name: FTP Server IP Address: 192.168.1.1

#	Service Name	External Ports	Internal Ports	Internal IP address
1	N1MM-12071	12071	12070	192.168.1.7
2	N1MM-12070	12070	12070	192.168.1.8
3	Spectrum	13064	13064	192.168.1.7

Buttons: Edit Service, Delete Service, Add Custom Service, Arrange by internal IP

Help Center | Show/Hide Help Center

Help & Support | Documentation | Online Support | Router FAQ | GNU GPL

SEARCH HELP Enter Search Item GO

Netgear Routing Example

In the example above, external port 13064 is being routed to port 13064 on the computer with IP address 192.168.1.7 on the LAN. (Line 3 "Spectrum"). This menu is accessed from Netgear's Advanced/Advanced Setup/Port Forwarding & Port Triggering selection.

Notes

- With most SDRs, if you feed a narrower bandwidth slice to the spectrum display, less noise will be sent as well. Try to use wide bandwidths only on quiet bands where you want to scan the whole band for new signals
- Gaps will appear at the beginning and end of the center mode spectrum display if you are not currently tuned to a whole kHz frequency. This is normal
- If your radio is turned off or not configured properly, you may need to close the spectrum display or perhaps close the program and reopen to get the display to work
- We are focusing on CW and RTTY operation. You can play with other modes, but bear in mind little work has been put into making the window play nice with them
- In SO2V only, the second VFO will be shown with a line in your skin's



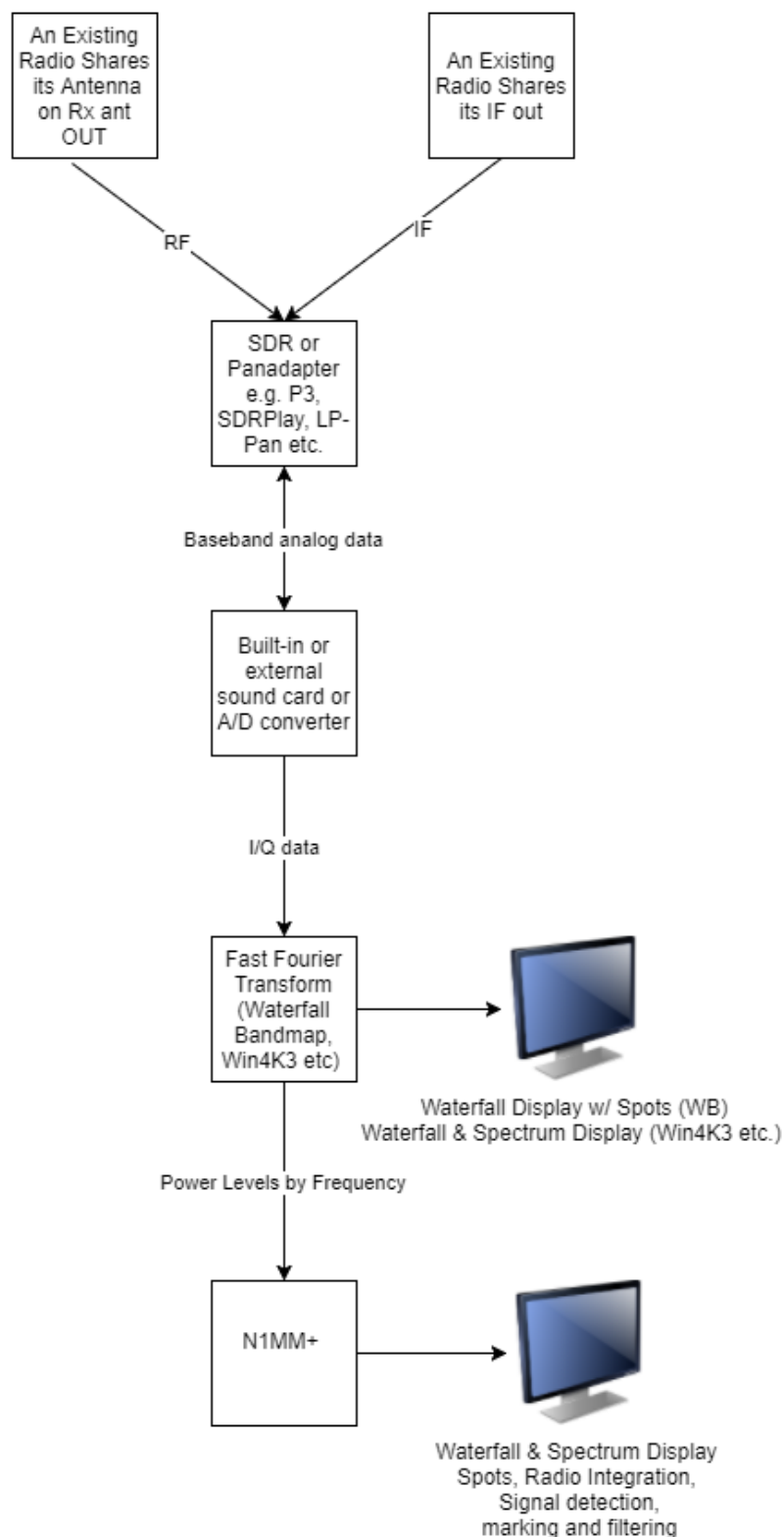
highlight color

- Use Fast signal decay for SSB signal detection. Slow signal decay can be used with CW & RTTY to keep signals on the screen longer.
- If you detest the tool tips, you can turn them off at the bottom of Config/Manage Skins, Colors and Fonts

SDR Block Diagram

Software Defined Radio Block Diagram

(aka, How do I get N1MM+ to open a Spectrum Window for MY radio?)





This picture represents non-I/Q support.

For I/Q supported radios (SDRPlay, Airspy HF+ via ExtIO, IC7610 via FTDI), the FFT occurs within N1MM+.

The Statistics Window

The Statistics Window

The Statistics window can be found under View > Statistics in the Entry Window. New in N1MM Logger+ is provision of graphical as well as tabular presentation of data. Select either by clicking the tabs at the top of the screen.

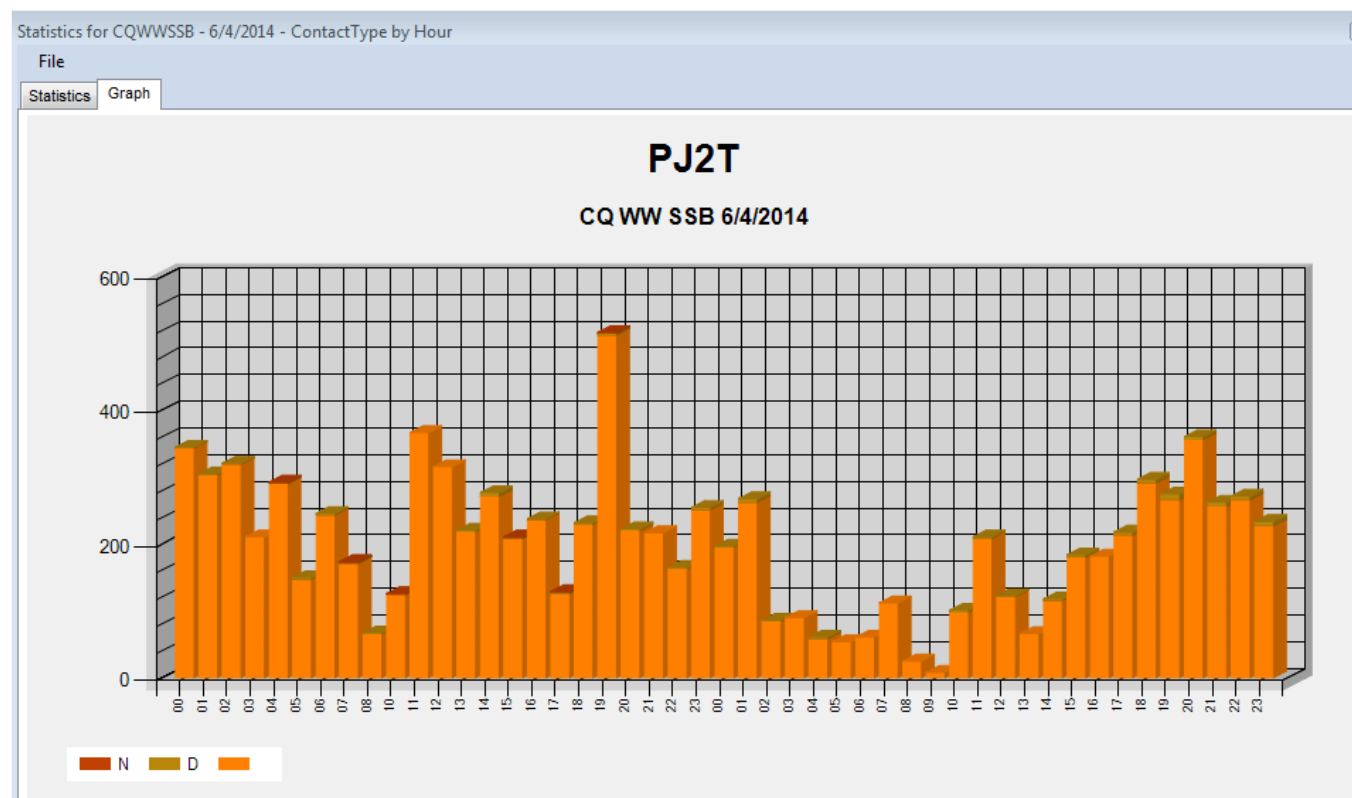
Statistics for CQWWSSB - 6/4/2014 - Cont... 

File

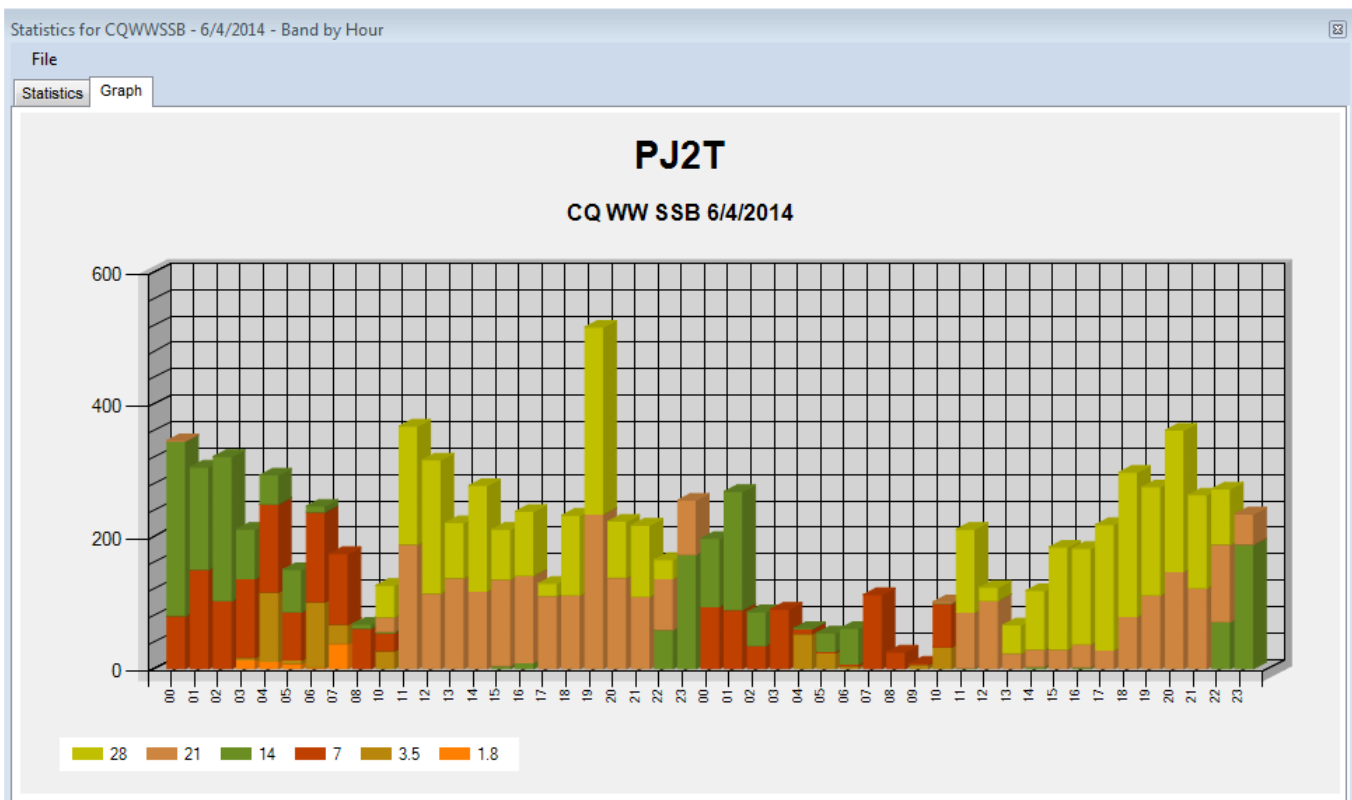
Statistics **Graph**

Day	Hr	D	N	Tot
2012-10-28	00	196	1	197
2012-10-28	01	263	5	268
2012-10-28	02	85	1	86
2012-10-28	03	90		90
2012-10-28	04	59	2	61
2012-10-28	05	54		54
2012-10-28	06	61		61
2012-10-28	07	112		112
2012-10-28	08	25		25
2012-10-28	09	8		8
2012-10-28	10	98	3	101
2012-10-28	11	209	2	211
2012-10-28	12	122	1	123
2012-10-28	13	66		66
2012-10-28	14	116	2	118
2012-10-28	15	181	3	184
2012-10-28	16	182		182
2012-10-28	17	214	4	218
2012-10-28	18	292	5	297
2012-10-28	19	267	8	275
2012-10-28	20	357	4	361
2012-10-28	21	257	6	263
2012-10-28	22	267	5	272

Or you can present the same data in graphical form. Be forewarned, this is **not** a PJ2T log – that call is just an example.



The graphical representation really comes into its own when the data are more complex. For example, if you want to know at a glance which bands were most productive when, graph hours versus bands.



Typing with the Statistics Window open

During a contest, if you are checking Statistics and a station comes back, just start typing. The statistics window will go to the background and every typed character will go to the Entry window.

General

The Statistics window allows you to select almost all database fields from a contest for display in tabular form by row and column, or in graphical form. The following table explores the options and their usefulness in various contexts.

Fields	Row	Column	Remarks
Band	Y	Y	-
Operator	Y	Y	compare operators. Only useful when running Multi-operator
Hour	Y	N	-
RadioNr	Y	Y	only useful when using more than one radio
Mode	Y	Y	useful in mixed contests
CountryPrefix	Y	N	worked number of stations per country or mode
Zone	Y	Y	-
Section	Y	Y	used in many domestic or local contests - may equate to province, oblast, ARRL section, etc., depending on the contest
CK	Y	N	2 digit number used in Sweepstakes, formally denoting the year first licensed
Prec	Y	Y	Precedence used in Sweepstakes to denote class of entry
Points	Y	Y	-
Mult1	Y	Y	multiplier, or first multiplier in contests

Mult2	Y	Y	with more than one Second multiplier in contests with more than one
Mult3	Y	Y	Third multiplier where applicable
WPXPrefix	Y	N	prefix as determined by WPX rules
GridSquare	Y	Y	4-character of grid square
Run1Run2	Y	Y	useful when doing SO2R
MiscText	Y	N	Contest specific information
ContactType	Y	Y	Blank = qso, "D" = dupe, "N" = non- workable or zero- point station (same country in CQWW, for example)"
IsRunQSO	Y	Y	To find out how many QSOs were made while running, rather than S&P.
Day	Y	Y	first or second day of the contest
Mode & Band	Y	Y	-
Exchange1	Y	Y	Use in some contests (like WAE to show QTCs)

Old Contest Data

Old contests may not have valid values in fields that have been added since the contact was logged. The number of contacts shown on screen and printed on the summary sheet are without dupe contacts.

File Menu

- **Copy All** – Copy the contents of the window to the Clipboard, either as text or as a graphic
- **Print** – Print the statistics table to a printer. Font can be set by user. Also prints graph displays if supported by your printer
- **Print to File** – Print the statistics table to a file. This function is greyed out when a graph is being displayed.

Example Statistics

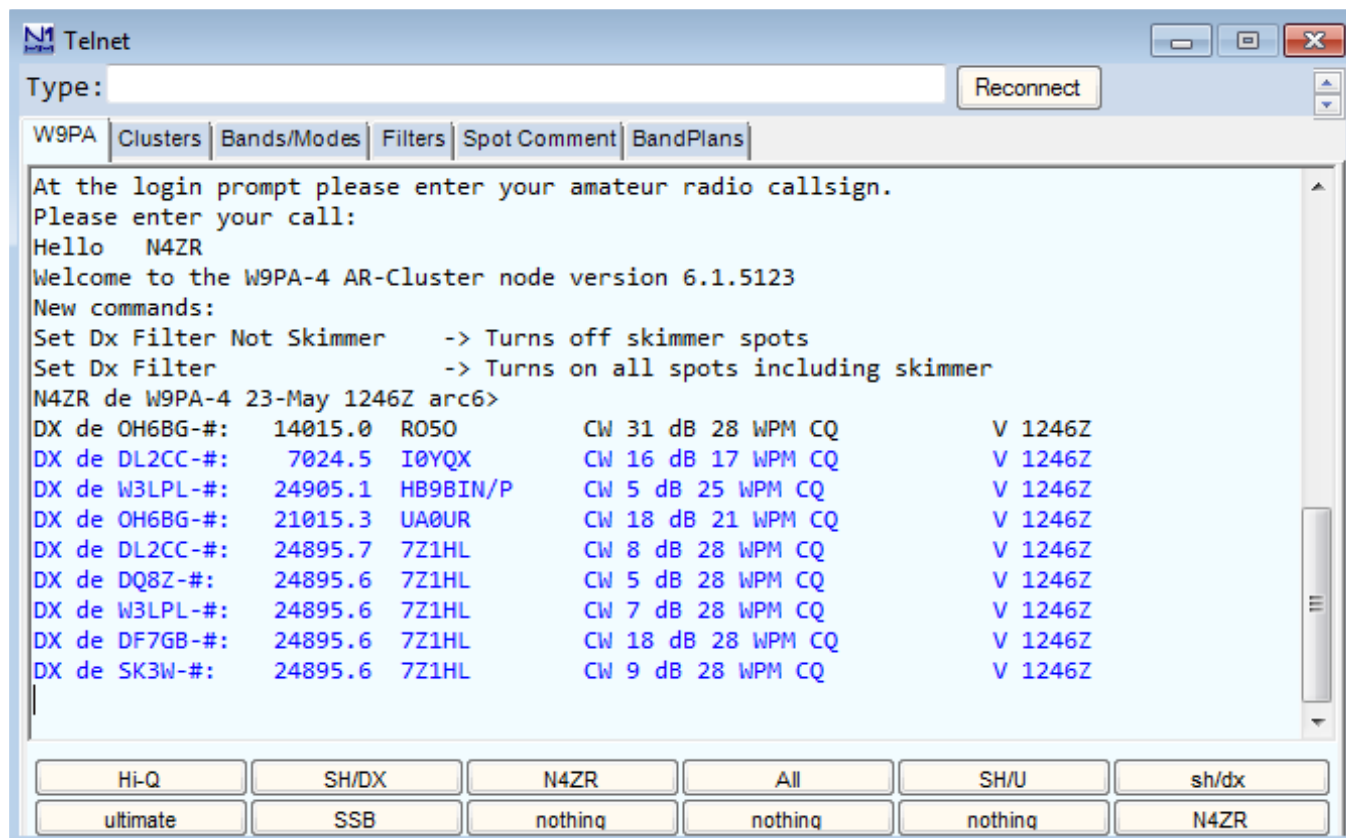
Try these examples with an old log:

Row	Column	Usage	Description
Country Prefix	Band	Always	QSOs per country per band
Hour	Operator	Multi User	QSOs per hour per operator
Band	Operator	Multi User	QSOs per band per operator
Grid Square	Band	Grid contests	QSOs per gridsquare per band
Band	Exchange1	WAE and some other	Show RQTC and SQTC info

The Telnet Window

The Telnet Window

Your Telnet window will be similar to this one, with six tabs.



- The textbox labeled “Type:” is where you can input any text commands to send to the cluster. For example, typing “bye” without the quotes and hitting Enter will disconnect you from most clusters.
- The “Reconnect” button will re-establish your connection to the cluster shown on the label of the first tab (see below).
- A font sizer is at the upper right, just below the “X” to close the window. Click the up or down arrows to change the size of the text in the text pane below.
- The text pane is where all messages from the Telnet cluster will appear. Click in the text pane to temporarily halt scrolling; move the mouse cursor out of the text pane to restart it.
- All incoming information from the connected DX cluster is displayed in the text area of the Telnet window. They are color-coded by mode – defaults are blue for CW, magenta for digital, and black for SSB. Spots forwarded to the Bandmaps and Available Mults & Qs window are filtered as provided on the Filters tab. Spots that are filtered out (not forwarded) are greyed out in the

text area.

Split information given in the spot comment will be recognized and forwarded to the Bandmaps and Available window. When such a spot is selected the transceiver will go into split mode (if applicable). The program recognizes: UP, U, DOWN, DN, D and the word QSX. Examples: QSX 3.838, QSX 4, UP 5, DOWN 2, U 5, D4, U4, DN4, UP4, DOWN4, QSX7144 etc.

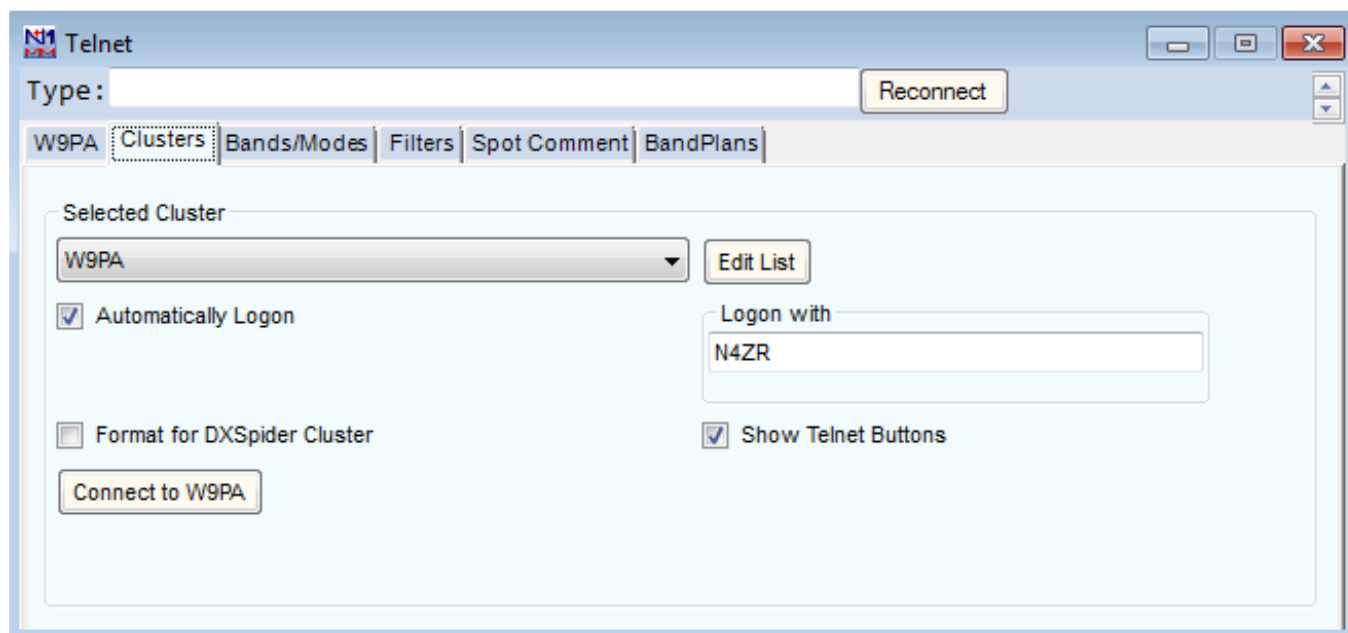
Tabs

There are six tabs above the text pane, which is displayed by default and also tied to the left-most tab, which always displays the call-sign of the currently-selected cluster.

The first tab displays the callsign of the Telnet cluster node to which you are connected, and opens the lower pane so that you can see the flow of spots from the node. Except as noted, any changes made on the other tabs take effect when you switch back to this tab.

Clusters (including problems connecting)

The Clusters tab is used to select the cluster to which you want to connect, from a list that you can also edit from the tab. The Edit List button in the window under the Clusters tab opens a new edit window where you can make changes to the list. You can import or export the list of clusters from/to a file using the File menu in the edit window. By default, these files are stored in the ExportFiles folder in the N1MM Logger+ user files area.



Also on the tab:

- A checkbox to tell the program to automatically log on to the selected cluster whenever the Telnet window is open.
- A checkbox to format some commands properly when you are connecting to a DXSpider cluster.
- A “Logon with” field, where you fill in the callsign the cluster is expecting to see at logon.
- A “Show Telnet Buttons” checkbox. Uncheck it to reduce the size of the Telnet window as much as possible, saving screen space.
- A “Connect” button that will send the logon sequence to the selected cluster and switch your view of the window back to the selected cluster.

Problems Connecting

If you cannot connect to a cluster check the following:

- Edit the clusters list and make sure that the domain name of the cluster is correct.
- Edit the clusters list and make sure the port of the cluster is correct and it is separated from the domain name by a colon (:), e.g. k1ttt.net:7300
- Disable your anti-virus software and (re)install the latest update. Test the connection. Reenable your anti-virus software.
- Check your software firewall to make sure N1MM Logger+.exe is allowed to connect externally.
- Check your hardware firewall to make sure that connecting to port 23 (default) or port nnnn (as specified in the cluster list) is allowed.
- Try testing using the Windows Telnet program to connect. For Windows 10, you can enable Telnet by going to Programs and Features, Turn Windows Features on or off, select Telnet client and press OK.
- Connect via Telnet by issuing the following command in the Windows command box next to the Windows button: Telnet , e.g. Telnet dxc.w9pa.net 7373 If this connects, it means that you have the wrong dns or port, or that something in your machine is blocking N1MM Logger+ from connecting.

Connecting to Telnet from a multi-computer network

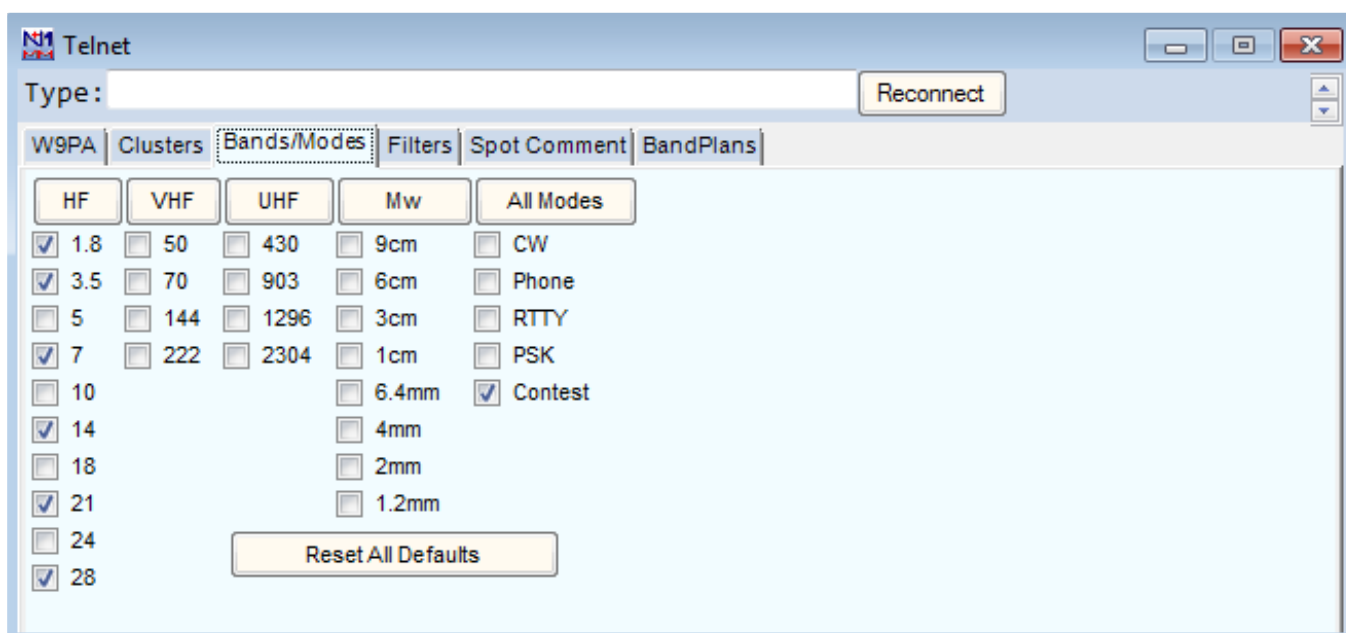
If you are using N1MM Logger+’s networking to connect multiple computers together in a network, only one of the computers in the network (the one designated as “Master”) connects to a Telnet cluster. The other, non-Master computers need to have their Telnet windows open to receive spots from the Master computer, but they do not connect directly to a Telnet cluster.

Bands/Modes

The Bands/Modes tab allows you to select which bands and modes will be passed through to the Bandmap(s) and Available Mults & Qs window. Select bands individually or select groups of bands with the large buttons across the top (“HF”,

“VHF”, etc.). Select mode(s) individually, by clicking the “All” button, or by checking “Contest” to pass only the mode(s) valid in the current contest. The “Reset All Defaults” button will check every band and mode.

Note that if any of the check boxes in the mode column is/are checked, spots for that or those modes are the only ones that will make it through the filter. The sub-bands set up in the Bandmap window for CW, Digital and SSB can have a major effect on this, too. Any spot that does not have its mode mentioned explicitly in the spot notes will be assigned a mode based on its frequency relative to the Bandmap window band plans, and spots that have been assigned a mode that is not checked will not be passed through. If spots do not seem to be getting passed from the Telnet window to the Bandmap and Available windows, check the sub-band definitions in the bandmap as well as the mode and band check boxes in this window.



Filters

The Filters tab provides another set of filters, as well as checkboxes for a few related options.

 Telnet

Type: Reconnect

W9PA Clusters Bands/Modes Filters Spot Comment BandPlans

Bandmap DX spot timeout (min) ☐ Save Spots Update

☒ Show non-workable spots

☒ QSYing wipes call and puts it in the bandmap

☐ Randomize Incoming Spot Frequencies

Filter by Prefix

☐ K ☐ NA

☐ from only

Tip: Filter as many spots as you can at the cluster. It lowers the cpu workload on your computer (s).

Blacklisted Spots

☐ Filter (1) Edit, Import or Export Clear

Blacklisted Spotters

☐ Filter (0) Edit, Import or Export Clear

Preferred Spotters

☐ Enabled

Help - Why don't I See Spots?

- Set the desired Bandmap timeout for DX spots by entering time in minutes.

Save Spots

The “Save Spots” checkbox is a new feature, added to solve an issue with packet spot processing that caused the spots database (Spots.s3db in the Databases folder) to grow too large and impact program performance. If you are experiencing symptoms of this, check the size of your Spots database. If it is more than a few MB, that may be why.

The “Save Spots” box is unchecked by default, and if left that way, the Spots database is not used at all. The advantage is very low performance impact from Telnet use. The drawbacks are that when you restart N1MM Logger+, the Bandmap will be empty. The check for Telnet spots in the Check window will not be active, and the “Spotted” option in the Multiplier window will not work.

If the box is checked, N1MM+ now honors the Bandmap timeout value set on this tab. For example, if you set the timeout value at 20 minutes, the Spots database will only retain spots for the last 20 minutes. When you restart NL+, the Bandmap will only display spots for the last 20 minutes, and the Check and Multiplier windows will only use spots from the last 20 minutes. The developers are aware that the latter is a slight drawback, and may look at other options after the high contest season is over.

Show non-workable spots and QSYing wipes call and puts it in the bandmap

These options have the same effects as the corresponding entries in the Config menu in the Entry window. “Show non-workable spots” will display duplicate or zero-point call signs so you know to tune past those frequencies instead of having to stop and listen to determine whether the station is workable. The “QSYing wipes” option automates the adding of spots to the bandmap when you are S&Ping. If you enter a call sign in the Entry window and then tune away, perhaps because the pileup is too large at the moment, the call sign will be placed in the bandmap, marked with its multiplier color status, so you can easily tune back to it later (or avoid that frequency if it is a dupe). If you work a station and then tune away, and if “Show non-workable spots” is selected, the worked call sign will be placed in the bandmap in grey as an indication that the station on that frequency has been worked. By default these spots to the bandmap are local only, i.e. they are not sent to the spotting network unless you have also selected the Config > Spot All S&P QSOs option in the Entry window.

Randomize incoming spot frequencies

Automatically adds or subtracts a small amount from the received spot frequency, so as to improve your chances of breaking a “packet pileup” when you click on a spot.

Spot origin filtering

If you only want to see spots originating (i.e. the spotter’s location) in certain countries or areas, you can use the **Filter by Prefix** area to limit the spots to those from your own country, continent or specific call area(s) using the check boxes in the top row, and/or by entering country or call area prefixes in the text box in the second row, separated by spaces. Beware: if anything is checked in this section, the **only** spots that will make it through the filters are those that meet the prefix, country or continent criteria you have checked or entered into the list.

The filtering capabilities of the cluster node are usually more powerful and flexible. Using them also reduces telnet traffic and the processing load on your computer’s CPU by limiting the number of spots sent to your computer from the cluster node. Generally, we recommend that you use the spot filtering at your chosen Telnet cluster where possible.

Spotter and spotted station blacklisting

You can “blacklist” either specified spotters or specified stations spotted, or both. The **Edit, Import or Export** buttons allow you to create and edit lists of stations whose spots you do not want to see, while the **Clear** buttons allow you to clear the list and start over. In both cases, the feature is enabled by a check box, i.e. you can create a list but only enable it in certain contests or at certain times. This filtering acts in addition to filtering by origin, or by bands and modes, i.e. the various filters are cumulative.

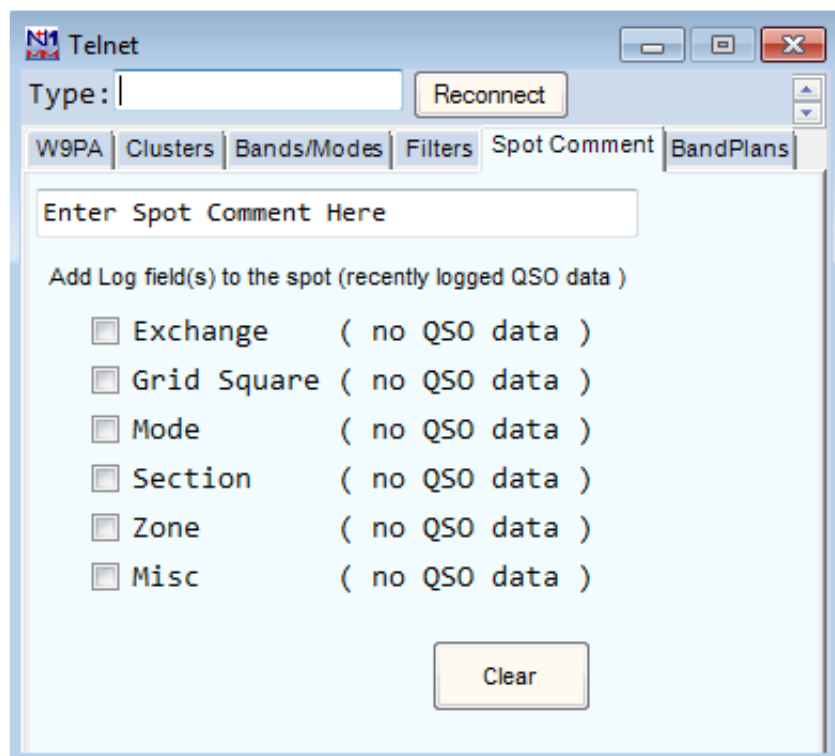
Preferred Spotters

When enabled, this command permits listing 1 to 3 spotters whose spots you wish to have highlighted in all windows where spots appear. Enter the preferred spotters’ callsigns in the box, separated by spaces. This is particularly designed to highlight a local Skimmer if you have one.

As an added touch, the three preferred spotters can each include variations on the base callsign. Hence, listing WZ7I will also highlight WZ7I-2, WZ7I/3, etc.

Spot Comment

This tab lets you specify a comment for each spot you make (such as “WPX”) and add log data fields to the fixed comment.



Band Plans

The Band Plans tab formerly permitted setting limits for mode segments within band plans. This function has now been moved to the Bandmap window, and is accessed by right-clicking on a frequency label (e.g. "7045") in the Bandmap window.

Nevertheless, even though this function is no longer carried out from the Telnet window, the choice of sub band limits in the Bandmap window can have a significant effect on telnet spot processing. Spots that do not have a mode designated in the spot notes will be assigned a mode based on those sub band limits, regardless of whether the Bandmap window is actually open or not. If the sub band limits are not set appropriately, this can result in incorrect modes being assigned to spots, which can in turn affect how those spots are filtered and processed, and whether or not the spots are displayed in the Bandmap and Available Mults & Qs window. The sub band limits are not set based on FCC regulations, as new US licensees might expect. The appropriate sub band limits vary depending on the nature of the contest (CW vs. SSB vs. digital vs. mixed mode, domestic vs. DX contest). It is up to the user to set the limits in the Bandmap window according to the patterns of usage in the current contest.

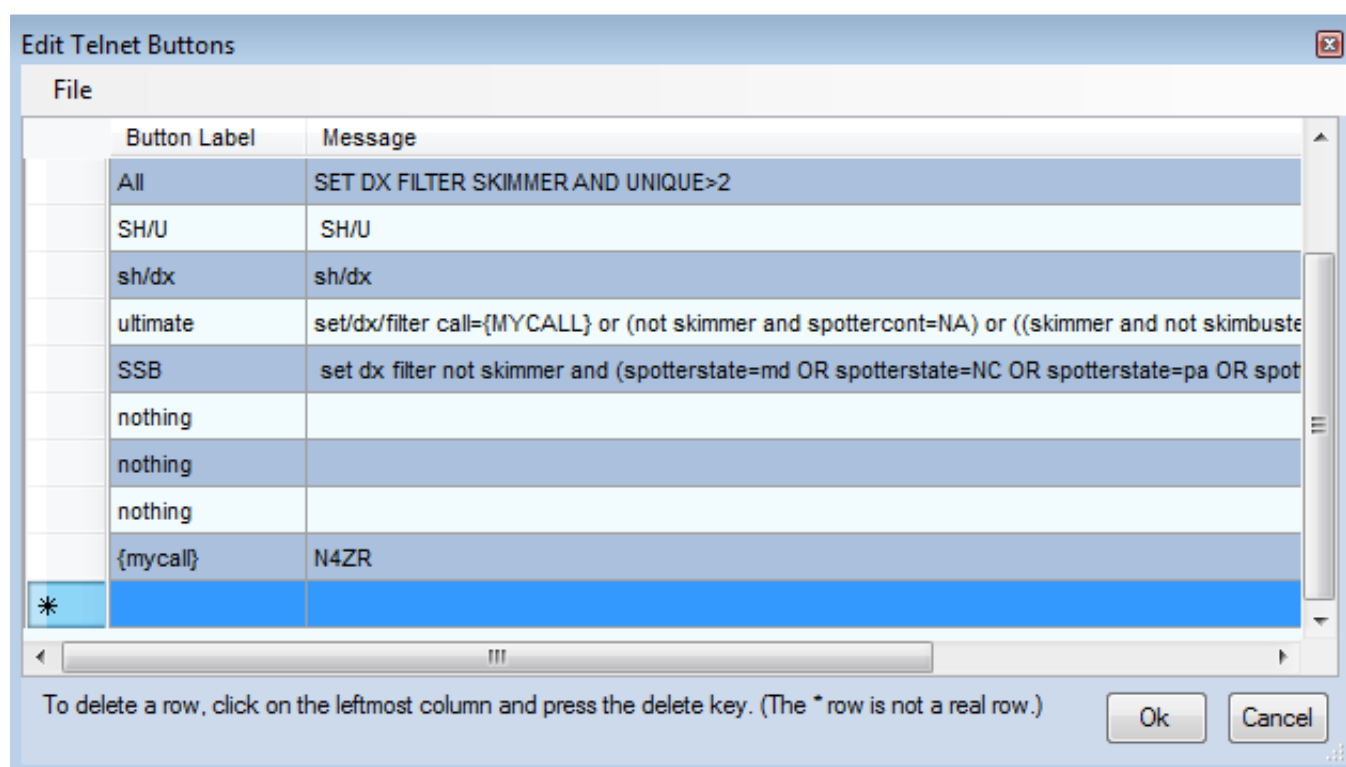
For example, in a DX phone contest you might need to set the top of the 40 meter CW sub band very low in the band in order to ensure that spots of DX stations operating split, transmitting below 7100 kHz and listening higher in the band, show up on the bandmap and in the Available window. On the other hand, if you leave this same setting in place for a CW contest, that could result in CW spots being

missed because the program assigns unlabeled spots of CW signals to SSB. To prevent this, you will need to manage the location of the CW vs. SSB sub band limit in order to ensure that it is consistent with the current situation.

If you want to use spots for a digital contest, you may need to define digital sub bands for each band in the Bandmap window. On 40 meters, the appropriate location of the digital sub band will depend on whether the contest is a DX contest or a domestic North American contest. After the digital contest is over, if you don't remove or adjust the digital sub band, some CW spots might get missed because the program assigns a digital mode to them based on the sub band limits in the Bandmap window.

Sending Stored commands to the cluster

Across the bottom of the Telnet window are twelve buttons which can be individually programmed with stored messages to be sent to the Telnet node. Right-click in the button area to bring up the editor.



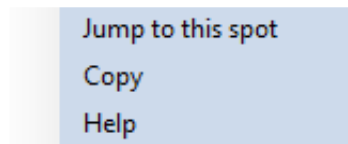
Different button sets can be saved and recalled for use with the File menu at the upper left. By default the text files containing sets of button messages are stored in the FunctionKeyMessages folder in the N1MM Logger+ user files area.

You can also use one or multiple buttons to store a quick-connect command to connect to a specific telnet cluster. The syntax expects a '{CONN}' node. Example: Assuming you have added a cluster with the name RBN to the list of clusters, you

can assign it to a button by adding ‘{CONN} RBN’ to a button value.

Mouse Clicks

- When the you left- or right-click in the text area, scrolling is stopped. A right-click on a callsign brings up a small menu



Click on “Jump to this spot” to send the active radio to the spot frequency. This option is mainly retained for nostalgia. It makes far better sense to click in the Bandmap or the Available window while maintaining the Telnet window minimized, once you have the filters, bands and modes set up as you want them.

Multi-User Setup

When running in networked computer mode, only the Master station has to be connected to the DX-cluster. The master station will relay all information to and from the connected computers to the cluster node.

CW Skimmer and the Reverse Beacon Network (RBN)

CW Skimmer version 1.1 and up has a built in Telnet server which allows N1MM Logger to receive spots from it. Add an entry to your Telnet list with the address: 127.0.0.1:7300 if you are running Skimmer on the same machine as N1MM Logger. If running on a different PC on the same network, use that machine’s internal IP address in the same format.

The Reverse Beacon Network’s Telnet relay servers make all of the RBN’s Telnet spots available to users worldwide. Because of the huge volume of spots on a major contest weekend – at least fifty times as many as the conventional cluster network – we highly recommend that you connect to a “retail” server and use the node’s filtering capabilities to manage the quantity actually sent to you. It will be helpful to use a short Packet Spot Timeout (set on the right-click menu of either the Bandmap or on the Filters tab of the Telnet window) – 15 minutes should be more than adequate, because CW Skimmer re-spots stations that remain on the same frequency every 10-12 minutes.

Because of the high volume of spots, the RBN uses specially-designed relay servers on its Telnet nodes, which are internally streamlined. **A side-effect is that these nodes do not respond to user commands. This is another good reason to connect to a “retail” cluster that handles both RBN and traditional spots.**

You can find a list at [this site](#) .

Local Skimmer spots can be merged with spots from conventional DX clusters using software such as WintelnetX or CC User, freeware by K1TTT and VE7CC respectively. Skimmer spots are distinguished from regular spots by the addition of unique markers. In the Bandmaps, Skimmer or RBN spots are identified with “#” after the callsign and bearing; spots from your own Skimmer, identified by the callsign set in your Station Data), are marked with “!”

Spot Filtering

There are three levels of spot filtering available. The first and most powerful of these using whatever filtering capabilities are built into the node. The second is established by the Band/Modes and filters tabs of the Telnet window. A third is set by the Available Mults & Qs window’s Bands and Modes button. The latter only affects what is seen in **that** window.

AR Cluster V6’s Skimmer Spot Quality Filtering

Because of the large volume of spots generated by the RBN, even at very high accuracy rates (over 99 percent), a large number of busted spots have been noticed. Toward the end of major contests, these may be a significant problem for serious competitors. In addition, calibration and image errors are occasionally encountered due to hardware and software issues.

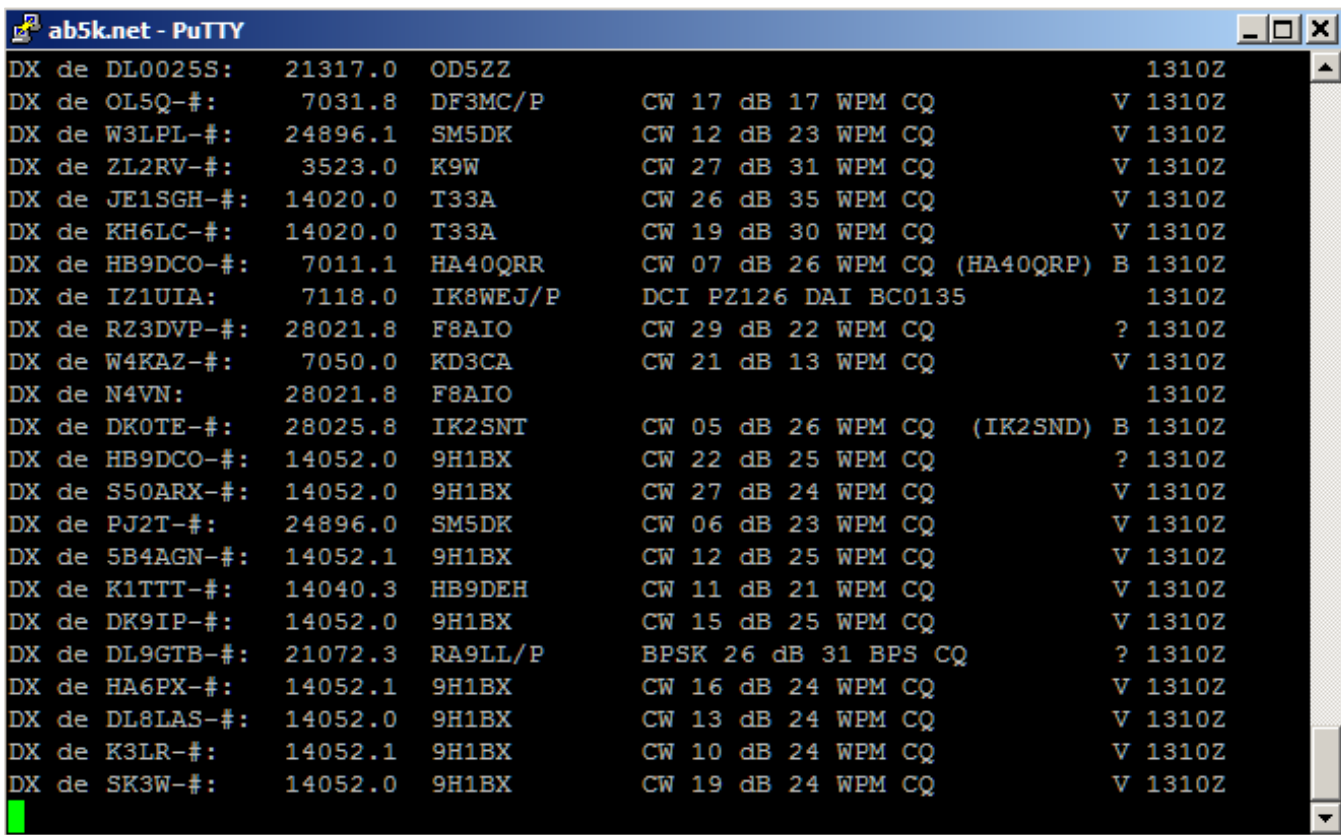
CT1BOH has developed and AB5K has implemented DX cluster-based evaluation of spot quality, in an effort to reduce the number of bad spots seen on the RBN. This nice piece of work was implemented in Version 6 of AR Cluster. AB5K.net was the first node offering this feature, and many more now have it too. You can find an exhaustive list at [this web site](#).

The evaluation is subdivided into 3 categories:

- Validation – When a callsign is first spotted on a given frequency, it is tagged with a “?” in the last column of the Comment field of the spot. When two or more other RBN nodes agree on the spot, the tag on each subsequent spot becomes “V”
- Frequency – After a station has been spotted on a given frequency, if it is then spotted on another frequency the spot is tagged as above, but with a “Q”, for QSY? Again, once the move is confirmed, subsequent spots are tagged with V. The idea here is to catch I/Q image spots, spots sent by badly-calibrated Skimmers or spots inadvertently sent on the wrong band.
- Busted Spots – This is the real high point of the Quality Tags. The algorithm uses some sophisticated measures of the “resemblance” between the busted spot and the real one, and will tell you both what spots are busted and what the real call is, based on other spots at or very near the same

frequency.

Here is a brief snapshot of one minute of RBN plus traditional spot flow.



```

ab5k.net - PuTTY
DX de DL0025S: 21317.0 OD5ZZ 1310Z
DX de OL5Q-#: 7031.8 DF3MC/P CW 17 dB 17 WPM CQ V 1310Z
DX de W3LPL-#: 24896.1 SM5DK CW 12 dB 23 WPM CQ V 1310Z
DX de ZL2RV-#: 3523.0 K9W CW 27 dB 31 WPM CQ V 1310Z
DX de JE1SGH-#: 14020.0 T33A CW 26 dB 35 WPM CQ V 1310Z
DX de KH6LC-#: 14020.0 T33A CW 19 dB 30 WPM CQ V 1310Z
DX de HB9DCO-#: 7011.1 HA40QRR CW 07 dB 26 WPM CQ (HA40QRP) B 1310Z
DX de IZ1UIA: 7118.0 IK8WEJ/P DCI PZ126 DAI BC0135 1310Z
DX de RZ3DVP-#: 28021.8 F8AIO CW 29 dB 22 WPM CQ ? 1310Z
DX de W4KAZ-#: 7050.0 KD3CA CW 21 dB 13 WPM CQ V 1310Z
DX de N4VN: 28021.8 F8AIO 1310Z
DX de DK0TE-#: 28025.8 IK2SNT CW 05 dB 26 WPM CQ (IK2SND) B 1310Z
DX de HB9DCO-#: 14052.0 9H1BX CW 22 dB 25 WPM CQ ? 1310Z
DX de S50ARX-#: 14052.0 9H1BX CW 27 dB 24 WPM CQ V 1310Z
DX de PJ2T-#: 24896.0 SM5DK CW 06 dB 23 WPM CQ V 1310Z
DX de 5B4AGN-#: 14052.1 9H1BX CW 12 dB 25 WPM CQ V 1310Z
DX de K1TTT-#: 14040.3 HB9DEH CW 11 dB 21 WPM CQ V 1310Z
DX de DK9IP-#: 14052.0 9H1BX CW 15 dB 25 WPM CQ V 1310Z
DX de DL9GTB-#: 21072.3 RA9LL/P BPSK 26 dB 31 BPS CQ ? 1310Z
DX de HA6PX-#: 14052.1 9H1BX CW 16 dB 24 WPM CQ V 1310Z
DX de DL8LAS-#: 14052.0 9H1BX CW 13 dB 24 WPM CQ V 1310Z
DX de K3LR-#: 14052.1 9H1BX CW 10 dB 24 WPM CQ V 1310Z
DX de SK3W-#: 14052.0 9H1BX CW 19 dB 24 WPM CQ V 1310Z

```

You can see that the node software picked up two busted spots, and also was skeptical about others until they were repeated. There are no QSY spots in this sampling, but if there had been, you would have seen the “Q” tag.

When you first connect to an AR Cluster, make sure it is sending RBN spots as well as traditional ones by commanding it to “set dx filter”. Once RBN spots are flowing, you can set any other filters you want to, such as limiting spots to stations in your geographic area. Then all you have to do is send “set DX extension skimmerquality”, and the Quality Tags will start to appear at the right end of the Comment field.

Some operators will prefer to filter out certain of these spots. Most likely candidate for this treatment are spots tagged with “B”., but you can filter out “?” or “Q” spots too, and the node will not send spots of those stations to you until they are confirmed (and tagged V). Here’s a partial list:

Set DX filter Skimbusted – only send me those spots that are marked as busted, together with the node’s identification of the correct spot)

Set Dx Filter NOT Skimbusted – don’t send me any spots that are tagged as B

Set DX filter NOT SKimQSY – don't send me any Q spots until they are verified

Set DX filter Skimvalid – only send me spots that have been tagged with a V

These and other Skimmer-related filtering commands are found on [AB5K's website](#).

One of the neat things about AR Cluster V6 is that you can create complex filters to show you exactly what you want. For example:

SET DX FILTER {MYCALL} OR (spotterstate=MD OR spotterstate=PA OR spotterstate=VA OR spotterstate=WV)

This filter will tell me whenever I am spotted anywhere in the world, and otherwise will show me all spots, both traditional and RBN, made by stations in the states around my QTH.

Abbreviating ARC V6 filter commands

While N1MM Logger+'s Telnet buttons will accommodate fairly long commands, stringing together a lot of "state=" or "cty=", or "state<>" or "cty <>" commands could be too much. Fortunately, there is an abbreviated syntax. The "[entity]=/(<>)" filters can be abbreviated as follows: state=[MD,VA,WV,PA] or CTY=[K,VE,KP4]

You could add some Quality Tag-specific filters – for example:

SET DX FILTER call={MYCALL} OR NOT skimbusted and (spotterstate=md OR spotterstate=pa OR spotterstate=va OR spotterstate=WV)

This filter will work the same as that above, but also will not show me any spots that the cluster evaluates as busted.

Here's another filter that lays on some more complexity, written by CT1BOH and recently published on CQ-Contest:

Set DX Filter (skimValid OR not skimmer or ((SkimQsy OR SkimUnknown) AND (cty <> K AND cont <> EU)))

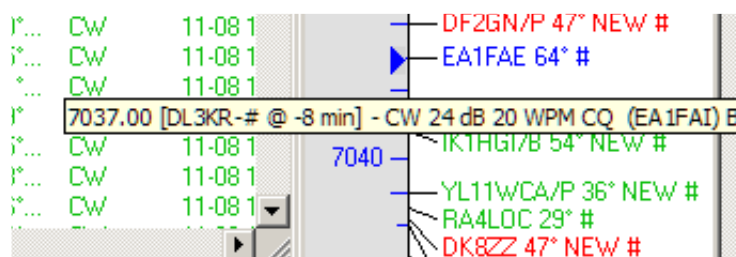
This filter shows human spots, Skimmer spots appraised as V(alid), and Q and ? spots from outside Europe and the USA. It filters out Q(new frequency?) and ? (not yet valid) spots from the US and Europe, on the theory that it's less important to jump on those first.

So that's the story – whether you choose to filter at the cluster node, or see everything coming in and make your own decisions, Quality Tags can be a very useful tool. Congratulations to CT1BOH and AB5K for their achievement.

Using Filters

Many operators will prefer to make their own judgments, rather than using filters. There are some advantages to this, probably. For example, a rare multiplier spotted initially by only one RBN node would carry a “?” tag until two more confirm the spot. Waiting for it to come through a Skimvalid filter could result in your being twentieth in the pileup instead of first or second. Late in a big contest, a large multi-op will have worked many of the stations on each band. A lot of busts will seem to be valid, but operators may want to make that judgment quickly for themselves rather than relying on the node. The next section shows how you can use N1MM features to make this approach easier.

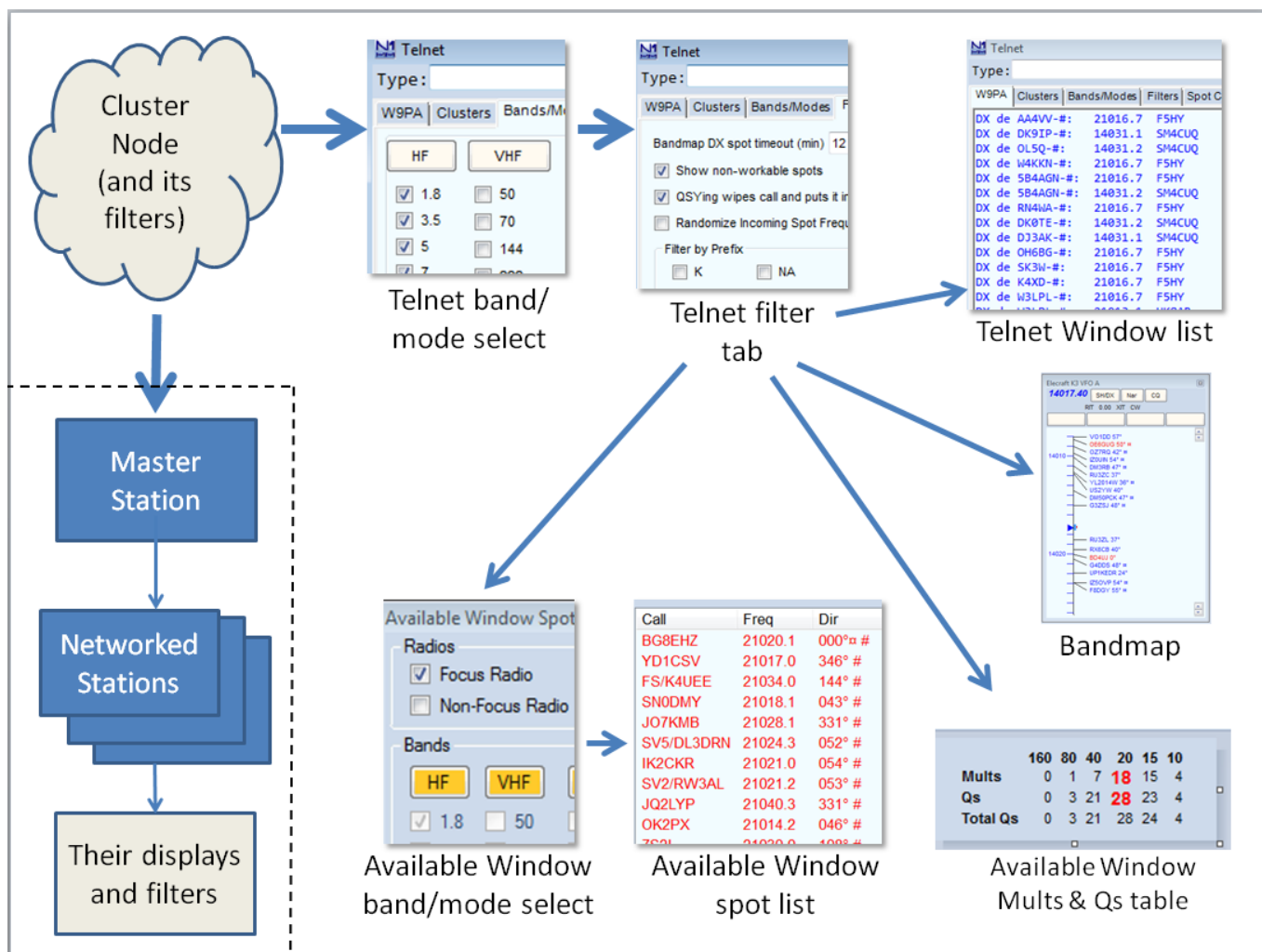
N1MM Logger has two main ways of initiating S&P QSOs, by using either the Available Mults and Qs window or the Bandmap(s). Of the two, the Bandmaps are the easiest way to work with Quality Tags, simply because the Available window scrolls so quickly when receiving spots from the RBN. Just mouse over the callsign on the Bandmap that you wonder about, and the full spot, including the Quality Tag, will appear in a tooltip. This makes it really quick and easy to skim over the bandmap and dismiss the busted ones with Alt+D Here’s an example



In this example, if you had worked EA1FAI a couple of minutes before, when you saw EA1FAE pop up, you moused over him, and he was revealed as a busted spot. Alternatively, you can click on a call to select him for a possible QSO, and if the tooltip reveals he’s a bust, you just hit Alt+D and move on.

Spot Flow in N1MM Logger+

The following diagram may help you visualize how Telnet spots flow through N1MM Logger+



Spot Filter Tips

The Available window band/mode settings only affect what is displayed in the Available window's spot list. Spots flow to them **through** the band/mode and filter tabs of the Telnet window, and so must be the same as, or more restrictive than, those settings. If you discover that certain band or mode choices are greyed out, take a look at your Telnet window settings. Also, check to make sure that the sub band limits in the Bandmap window are set appropriately. Inappropriate choices for the sub band limits can result in spots being assigned to the wrong mode and being greyed out as a result.

In networked-computer mode, spots flowing to the Networked Computers are not affected by any filter settings in the Master Station. Networked Stations' spots arrive unfiltered, in order to let the operators at those stations set their own filters in N1MM Logger+.

The Visible Dupesheet Window

The Visible Dupesheet Window

Example Visible Dupesheet

Dupesheet - Elecraft K3 VFO A 14 MHz										
K1 DW	OH2 BN	N3 JT	W4 AAX	N5 AW	F6 HKA	K7 SV	N8 BJQ	HB9 ARF	N0 AC	
K1 ESE	VE2 FK	N3 ND	N4 AF	K5 AX	K6 MR	KU7 Y	EA8 OM		W0 EJ	
K1 GQ	JF2 IWL		WN4 AFP	K5 OT	K6 RB	W7 ZRC			SM0 Y	
K1 GU	AA2 ZW		K4 BAI	N5 RR						
W1 RM			W4 BQF	ON5 UK						
K1 SM			N4 FP	SI5 Y						
			GW4 J	N5 ZO						
			NN4 K							
			N4 UP							
			W4 VQ							

The Visible Dupesheet is a quick way to determine if a station is a dupe without having to enter the callsign in the program. The calls already worked will be indexed much like a paper dupesheet that is organized by call area and suffix. The Visible Dupesheet is especially useful for short, high speed contests like the NA Sprint. It is closely patterned on the Visible Dupesheet used by TR Log.

- Each VFO/Radio/Bandmap has its own Visible Dupesheet. The VFO/Radio A sheet displays all of the contacts for the band VFO/Radio A is on. VFO/Radio B does the same for whatever your VFO B/Radio is set to even if you don't (or cannot) use VFO B
- The columns signify call areas. If a call area exceeds the number of calls that will fit it will overlap into an adjacent column with some dash lines to differentiate
- Each call area is sorted by **suffix**
- To see the dupe sheet for any band, set your radio to that band
- To check for a dupe, first look for the call area column, then look up the suffix, then the prefix
- If you don't want both windows open, close one, position the other where you want it and then use Tools > Save Window Positions. The next time you



start the program only one window will open

- Unless you can copy RTTY in your head, you do not need the Visible Dupesheet for RTTY contests. Obviously RTTY calls will tell you they are dupes or not as soon as they print
- The Visible Dupesheet can hold a maximum of 800 stations per band. Going above this limit will give a warning . Depending on computer speed and configuration, users may experience noticeable delays when using the Visible Dupe Sheet with logs containing more than 300 calls. Performance with 600 callsigns is acceptable with a 2.6 GHz computer running only Logger
- Font size is set [here](#). The Visible Dupesheet uses the last (Fixed) font.
- There are no menus in this dialog

What is the Usefulness of the Visible Dupesheet?

By Steve, N2IC

First, let me say what this feature is not: It is NOT intended to be a step towards paper (or electronic) dupe sheet submission. A paper dupe sheet is an obsolete artifact of the pre-computer logging era.

Now, I'll be perfectly honest about the utility of the Visible Dupesheet. I have been a user of TRLog for many years, as well as a fan of the NA Sprint contest. To do very well in an extremely fast-paced contest, like the NA Sprint, you have to minimize the amount of non-productive time. Any time you are not actually making a QSO is non-productive time. As you tune around a band, looking for new stations to work, you need a really fast way to determine if a station that you hear is a dupe. The fastest way to do this is to use only your brain. Some contesters have an amazing ability to keep their dupesheet completely "in their head". For the rest of us, we typically reach for the keyboard and type the call into the entry window. As soon as you do this, N1MM Logger+ instantly tells you whether it's a dupe. Excellent. However, some of the NA Sprint operators who use TRLog have found an even faster way to check for a dupe - using TRLog's Visible Dupesheet feature. As you tune the band, you keep your eyes focused on the Visible Dupesheet. It becomes second nature to scan the Visible Dupesheet. When you hear a non-dupe that you want to call, you don't even have to enter the call in the Entry Window, yet. Just hit the Enter key. If he/she comes back to you, you now have time to enter his/her call and exchange.

Obviously, in a contest where you work many, many stations on each band, this feature won't work - it takes too long to scan the Visible Dupesheet when it is crowded with calls. However, this is not the case with the NA Sprint. The winners work no more than 150 stations per band, making the Visible Dupesheet an ideal way to dupe check.



The WSJT Decode List Window

The WSJT Decode List Window

The WSJT Decode List provides a bi-directional interface between the Band Activity Panel in WSJT-X or JTDX and N1MM+'s contest log. Since these modes are quite different in several ways from traditional digital modes (as well as CW and SSB), and since the actual operating in these modes is done from the WSJT-X or JTDX program window, not from an N1MM+ window as in other modes, it is recommended that users familiarize themselves with the WSJT-mode program in non-contest situations before trying to set up and operate in contests with N1MM+.

Key Features

- QSO initiation, auto-sequencing, and logging from within the WSJT-X or JTDX program
- Contact logging in both the WSJT-X or JTDX log and the N1MM+ contest database
- Callsign prioritization (normal, mult, double mult) based on contest contacts in the N1MM+ log
- Dupe callsign warnings based on contest rules (bands, modes) and existing contacts in the N1MM+ log

Configuring the WSJT Decode List Window

Within N1MM+

There are several places in the Configurer that need to be set up for WSJT-X interoperation with N1MM+. These include the [Mode Control](#) page and the [WSJT/JTDX Setup](#) page in the Configurer window (note: in versions 1.0.7645 and earlier, the settings that are now on the WSJT/JTDX page were on the [Broadcast Data](#) page and the [Digital Modes](#) page). You also need to ensure that the [Contest Setup](#) is configured to include Digital modes (otherwise digital mode contacts will not be given points credit).

To enable logging from WSJT-X to N1MM+, configure per the following settings on the Configurer's >[WSJT/JTDX Setup](#) page.

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Broadcast Data **WSJT/JTDX Setup**

N1MM+ Logger needs to be restarted for changes made below to take effect.

WSJT-X and JTDX UDP Settings
WSJT and JTDX UDP connection settings. IP Address and port must match each programs settings. This allows UDP message communications to take place, usually done on port 2237. Logging from other programs can also take place, usually done on port 2333. (Radio #1 Default: 2237)

Radio #1 Settings			Radio #2 Settings		
Enable	IP Address	UDP Port	Enable	IP Address	UDP Port
☒ Enable	127.0.0.1	2237	☐ Enable	127.0.0.1	2239

JTDX / Others TCP Settings
Sets the IP Address and port that an external program can connect to N1MM+ via TCP Port for logging purposes. The Default port for JTDX is 52001. (Radio #1 Default: 52001 - Radio #2 Default: 52006)

Radio #1 Settings			Radio #2 Settings		
Enable	IP Address	TCP Port	Enable	IP Address	TCP Port
☐ Enable	127.0.0.1	52001	☐ Enable	127.0.0.1	52006

Path to WSJT/JTDX
WSJT/JTDX Path Used for SO1V,SO2V mode and Radio1 in SO2R.
C:\Hamradio\WSJT\wsjtx\bin\wsjtx.exe

WSJT/JTDX Path Used for SO2R Radio 2
C:\Hamradio\WSJT\wsjtx\bin\wsjtx.exe

Command Line Params
Not Set

Auto Load the WSJT Band Details Window when WSJT-X/JTDX Loads.
Radio #1 ☒ Enable Radio #2 ☐ Enable

N1MM+ also uses TCP ports for Radio Communications with WSJT-X/JTDX.
(Radio #1 Default:52002 - Radio #2 Default: 52004)

To enable logging from JTDX to N1MM+, in addition to configuring the UDP port as for WSJT-X above, you also need to configure the TCP port for JTDX logging to use port 52001 and check the Enable box in the “JTDX / Others TCP Settings” area.

In order to allow N1MM+ to call up the WSJT-X or JTDX program, you must also enter the location of the WSJT-X or JTDX program. Rather than attempting to type in the path to the WSJT-X or JTDX program manually, use the Select button. Clicking on this button opens an Open File dialog window, in which you can navigate to the location of the executable program (wsjtx.exe or jtdx.exe) and select it to fill in the box automatically.

The bottom section on this page implements the Auto Load feature for the Decode List window. If the Enable check box is checked, calling up the WSJT-X or JTDX program from the Window > Load WSJT/JTDX menu item will also automatically



open the Decode List window as well (recommended).

Starting with version 1.0.7860, N1MM+ supports running two copies of WSJT-X or JTDX in SO2R (but not in SO2V). There are boxes on the [WSJT/JTDX Setup](#) page in the Configurer for entering the port number(s) and program location for the second radio. The UDP/TCP port number(s) for the second radio are different from the UDP/TCP port number(s) for the first radio, and will need to be changed in the settings for the Radio #2 (EW2) instance of the WSJT-X or JTDX program. You can use the same copy of the WSJT-X or JTDX program .exe file from both radios, even though they will use different settings; each one will store its settings in a different location.

When you are using WSJT-X or JTDX, the radio should be in the same mode as you would use for PSK. N1MM+ uses the settings under the Mode Control tab in the Configurer to control the mode used by the radio. Still in the Configurer, on the > [Mode Control](#) page, on the right-hand side under **Mode sent to radio**, you need to set the mode in the **DIGI** row (called the **PSK** row in versions prior to 1.0.7937) correctly for your radio. The modes that appear in the pull-down lists on this page may not match the mode names used in your radio. The correct choice might be PSK (e.g. Elecraft K3/K3S), or AFSK-R (e.g. IC-7300), or if your older radio does not have a separate Data mode for digital modes, it might be USB. Consult the [Digital Mode Mapping](#) table in the Supported Radios chapter of this manual for the mapping between mode names in your radio and the mode names that appear in the pull-down list on the Mode Control page of the Configurer.



Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Broadcast Data WSJT/JTDX Setup

Mode recorded in log

- ☒ Use radio mode (default)
- ☐ Follow band plan
- ☐ Use contest mode or bandplan
- ☐ Use contest or radio mode
- ☐ Always: RTTY

Mode sent to radio

Mode	Radio 1 / VFOA	Radio 2 / VFOB
RTTY to	AFSK	AFSK
PSK	AFSK-R	AFSK-R

☐ Always use packet spot mode

OK Cancel Help

Make sure the correct contest mode is selected

Note that for duplicate and multiplier information to be recorded and transferred correctly, the correct contest must be selected in the N1MM+ Contest Setup window, the Mode Category in this window must include digital modes, and the program must be in Digital logging mode (the easiest way to do this is to type FT8 or FT4 into the call sign box in the Entry window and press Enter).

Note that the contest Mode category in the [contest setup](#) dialog window must contain DIGITAL. If the contest mode is RTTY, contacts in other modes (including FT8 and FT4) will be assigned zero points. After changing RTTY to DIGITAL or SSB+CW to SSB+CW+DIGITAL in the contest setup window to correct this, you may need to use the **Tools > Rescore Current Contest** menu item to rescore any FT8 or FT4 QSOs that had not originally been assigned the correct score.

Within WSJT-X/JTDX

First, if you have made custom changes to the WSJT-X or JTDX settings and wish to retain those same settings when running together with N1MM+, you might want to follow the procedure described in the colored text box at the end of this section before starting to configure the special instance of the program that is used with N1MM+.

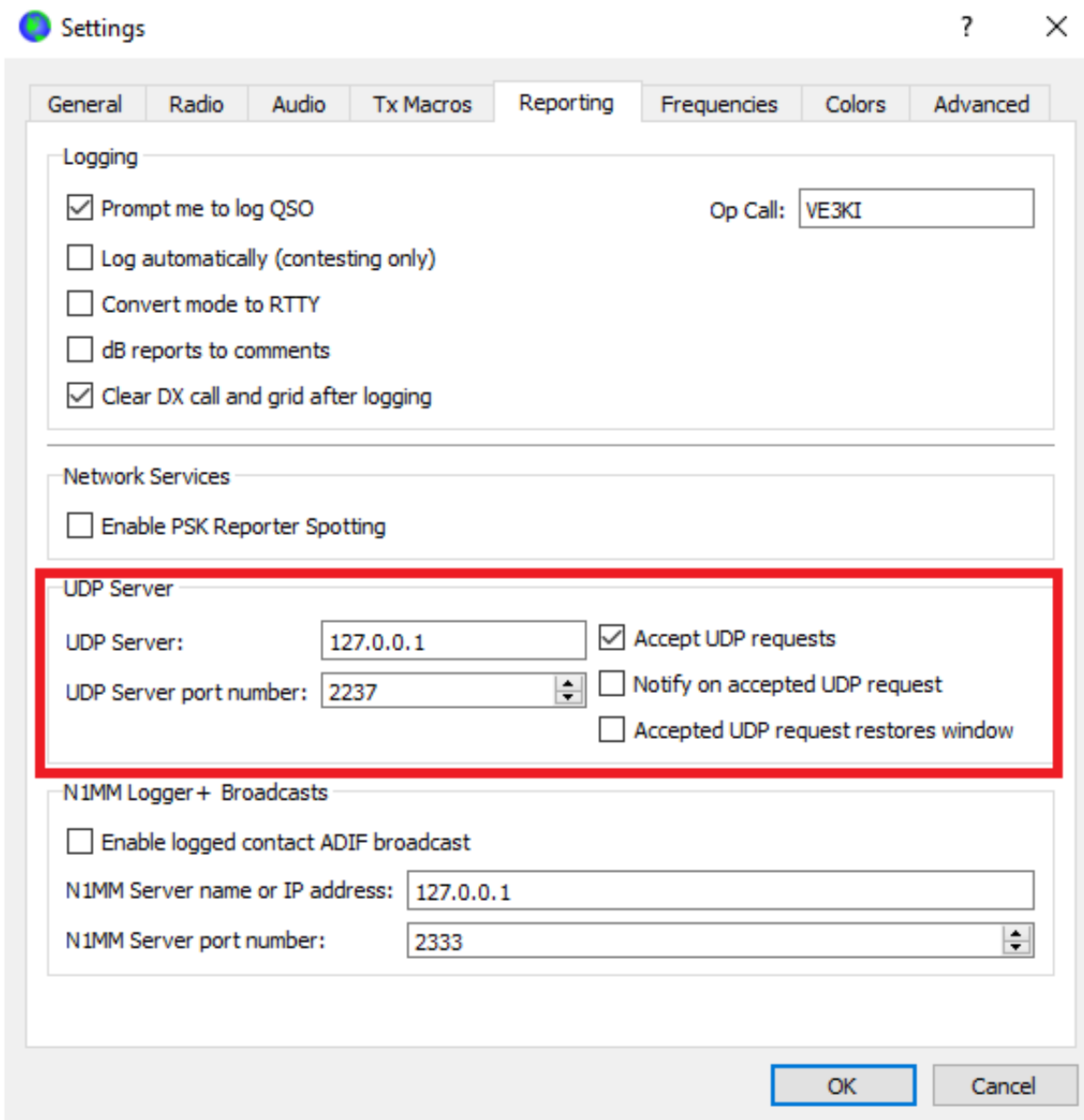
You must make the WSJT-X (JTDX) configuration changes described below from WSJT-X (JTDX) **after** it has been called from within N1MM+, not after it has been started stand-alone. The stand-alone configuration settings do not apply when WSJT-X/JTDX is run from within N1MM+. Changes you make in one instance of the program (stand-alone, from N1MM+ for Radio 1 or from N1MM+ for Radio 2 in SO2R) will not apply to any of the others.

You can tell which instance of WSJT-X you are operating from or making changes in by looking at the title bar of the main WSJT-X window. If it says WSJT-X – forEW1, this is the copy that is running from the N1MM+ Entry Window 1. If it says WSJT-X – forEW2, this is the copy that is running from Entry Window 2 (SO2R setups only). If it just says WSJT-X, that is a stand-alone copy. Each of these three copies has its own separate file area where configuration files and the WSJT log files are stored.



After starting WSJT-X or JTDX from N1MM+, configure per the following settings on

the >File >Settings page in the UDP Server panel under the Reporting tab:



The screenshot shows the 'Settings' window with the 'Reporting' tab selected. The 'UDP Server' section is highlighted with a red rectangular box. Within this section, the 'UDP Server' field is set to '127.0.0.1', the 'UDP Server port number' is set to '2237', and the 'Accept UDP requests' checkbox is checked. Other options like 'Log automatically (contesting only)', 'Convert mode to RTTY', 'dB reports to comments', 'Clear DX call and grid after logging', 'Enable PSK Reporter Spotting', and 'N1MM Logger+ Broadcasts' are also visible but not highlighted.

In the “Logging” area, the upper two check boxes control how logging in WSJT-X is controlled. Most users will likely want one or the other checked – i.e. either have the program prompt the user to log the QSO at the end of the QSO sequence, or else do the logging automatically. If neither one is checked, you must remember to click on the “Log QSO” button at the end of every QSO, and it is very easy to forget to do this, in which case the contact will not be logged.

In the “UDP Server” area, the “Accept UDP requests” check box must be checked in order for the WSJT Decode List window to work. It enables the passing of duplicate/multiplier information from N1MM+ to WSJT-X or JTDX, as well as allowing WSJT-X/JTDX to use N1MM+ for rig control if it is called up from the N1MM+ Window menu. For SO1R or Radio #1 in SO2R (EW1), the default port number of 2237 is



correct; for Radio #2 in SO2R (EW2), change the UDP server port number to 2239.

In JTDX, there is another TCP port that needs to be set up in the “External logbook connection” area. For SO1R or for the first radio in SO2R, the default TCP port is 52001. For the second radio in SO2R, this would be changed to correspond with the setting in the N1MM+ Configurer’s [WSJT/JTDX Setup](#) tab (suggested 52006).

In WSJT-X, do **not** check the Enable check box in the “Secondary UDP Server” (WSJT-X version 2.1.0) or “N1MM Logger+ Broadcasts” (WSJT-X version 2.0.1) area. This is not used when WSJT-X is run from inside N1MM+.

In order to enable N1MM+ to call up WSJT-X or JTDX from the Window > Load WSJT/JTDX menu item, under the Radio tab in WSJT-X or JTDX change the rig control method to “DX Lab Suite Commander”.::

Settings

General Radio Audio Tx Macros Reporting Frequencies Colours Advanced

Rig: DX Lab Suite Commander Poll Interval: 1 s

CAT Control

Network Server:

Serial Port Parameters

Baud Rate: 4800

Data Bits

☒ Default ☐ Seven ☐ Eight

Stop Bits

☒ Default ☐ One ☐ Two

Handshake

☒ Default ☐ None
☐ XON/XOFF ☐ Hardware

Force Control Lines

DTR: RTS:

PTT Method

☐ VOX ☐ DTR
☒ CAT ☐ RTS

Port: USB

Transmit Audio Source

☐ Rear/Data ☒ Front/Mic

Mode

☐ None ☐ USB ☒ Data/Pkt

Split Operation

☐ None ☐ Rig ☒ Fake It

Test CAT Test PTT

OK Cancel



Second radio settings for SO2R

For SO2R, in the setup for the Radio #2 (EW2) copy of WSJT-X or JTDX, immediately below the Rig: box, you will need to change the Network Server port to **127.0.0.1:52004** . You do not need to enter anything in this box for SO1R or for Radio #1 in SO2R.

Note that you do not actually run DXLab Suite's Commander program; N1MM+ uses the same method as Commander to communicate with WSJT-X or JTDX, so the same Rig setting can be used in WSJT-X/JTDX. Choose your PTT Method, radio's Mode and Split Operation method depending on your radio.

Do not try to run DXLab Suite Commander

Do not let the instruction to set the Rig type in WSJT-X to DXLab Suite Commander fool you into trying to run Commander at the same time as N1MM+. When WSJT-X/JTDX is run from inside N1MM+, the programs use the same UDP port that is used by Commander. If both N1MM+ and Commander are running and both using this port, their messages will interfere with one another, leading to failures of rig control in WSJT-X/JTDX and/or failures of communication with the Decode List window.

If you choose CAT as the PTT method, what that really does is tell WSJT-X or JTDX that N1MM+ will be handling PTT control. You **must** have a method of PTT control configured in the N1MM+ [Configurer](#) for this to work. You can check the "PTT via Radio Command Digital Mode" check box in the setup window for the radio control port in the Configurer, or configure a serial port in the Configurer for PTT control, or if you are using a Winkeyer, connect a PTT cable from the Winkeyer's PTT output to the rig's PTT input jack. Any of these will work with the CAT PTT method selected in WSJT-X/JTDX when it is run from inside N1MM+. If you are using a Signalink to perform the PTT function, or if you are using the rig's own VOX function, select VOX as the PTT method in WSJT-X/JTDX.

The Mode section in the WSJT-X and JTDX setup is used to tell the program which mode to put the radio in while operating in JT modes. If your radio has a special radio mode for sound-card data operating modes that you want to use, make sure to select the Data/Pkt setting in the setup here. You **must** also ensure that the N1MM+ [Mode Control](#) is set properly for your radio as described in the previous section. Consult the [Digital Mode Mapping](#) table for the correct mode setting for your radio. For older radios that do not have a data mode, you might need to choose USB in order to put the radio into USB mode. If you are unable to determine the correct settings for N1MM+ Mode Control, you can choose None in WSJT-X. If you do this, then it will be up to you to verify that the radio is in the correct mode,

and if not, select the correct mode on the radio before starting to use WSJT-X each time.

The Split Operation pane in the WSJT-X and JTDX setup controls how WSJT-X/JTDX handles audio frequencies outside the “ideal” 1500-2000 Hz range. If either Rig or Fake It is chosen, then if an audio frequency outside that range is chosen, whenever WSJT-X/JTDX commands N1MM+ to put the rig into transmit, it will also request that N1MM+ QSY the radio by a multiple of 500 Hz so as to put the audio frequency back into the “ideal” range. This avoids problems with audio harmonics or with reduced audio gain in other parts of the bandpass. If Rig is chosen, the QSY will be done using the rig’s split operation capability; if Fake It is chosen, the main VFO will be QSYed every time you switch between transmit and receive. With some rigs, there may be an objectionable delay or other problems when switching to transmit with the Rig setting chosen; if this happens to you, try using the Fake It setting instead. If you choose None, the radio will not change frequency between transmit and receive, and you may need to restrict your choice of the transmit audio frequency in the waterfall to avoid problems that may occur near the edges of your transmitter’s bandpass.

There is another setting under the General tab in the WSJT-X/JTDX Settings window that is not strictly speaking necessary, but that will probably make operating easier, and that is the “Double-click on call sets Tx enable” check box, which we recommend you check. You might also want to check some of the other options, depending on your operating preferences.

WSJT-X/JTDX Configuration when run from inside N1MM+

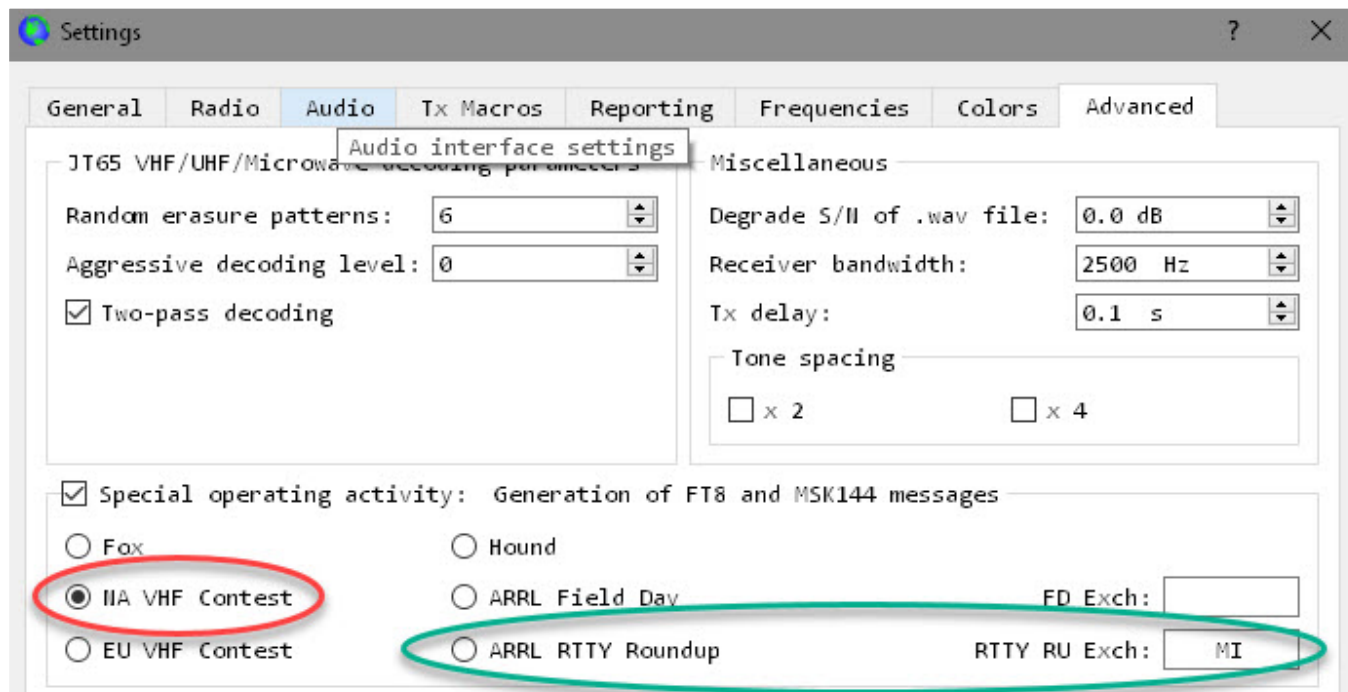
The first time you open WSJT-X or JTDX from N1MM+ you may notice that all of the WSJT-X/JTDX settings have been restored to default values – for example, your call sign and grid square may not be entered under the General tab. If you want to avoid having to manually re-enter all of your preferred settings (other than the ones described above), there is an optional way to transfer them over from your stand-alone setup to the setup within N1MM+.

In WSJT-X, use the **File > Open log directory** menu item to open a Windows File Explorer window open to the directory where WSJT-X stores its settings. If you do this from the stand-alone version of WSJT-X, this will be C:\Users\[yourusername]\Appdata\Local\WSJT-X. If you do it from WSJT-X after it has been called up from within N1MM+, the directory will be C:\Users\[yourusername]\Appdata\Local\WSJT-X – ForEW1 (or ForEW2 for the copy of WSJT-X called up for the second radio in SO2R). You can navigate to the ...\\WSJT-X directory, find the file called WSJT-X.ini, copy it and paste the copy into the ...\\WSJT-X – ForEW1 directory. Then rename the copy to WSJT-X – ForEW1.ini (after deleting or renaming any existing file with that file name). If you had already made the configuration setting changes described earlier on this page, you will have to make them again. From now on the two configurations will be independent; changes

made to one will not affect the other.

In JTDX, the same procedure applies, except that the path names and file names will say JTDX instead of WSJT-X.

Configuration for a Specific Contest (WSJT-X only)



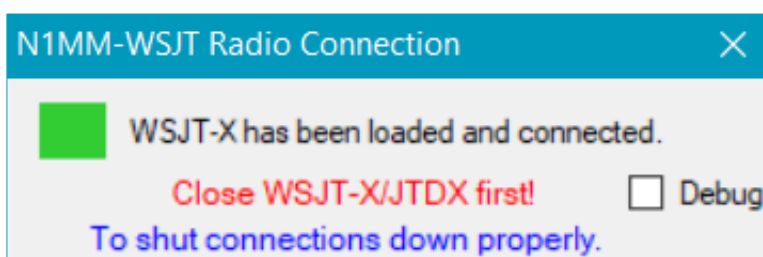
- For general non-contest logging, do not check the “Special operating activity” checkbox,
- For most contests, check the “Special operating activity” checkbox, the radio button adjacent to the contest that you intend to operate, and in some cases the Exchange box at the right, as follows:
 - For the ARRL RTTY Roundup – W/VE stations should insert their two character state/province abbreviation. DX stations should use the expression “DX”, which will enable sequential serial number exchanges.
 - For the ARRL Field Day – Enter the exchange information describing your station configuration (e.g. 1D EMA – see [ARRL instructions](#)).
 - For the WW Digi contest at the end of August, use the NA VHF Contest setting (during pre-contest testing, you can leave the “Special operating activity” check box unchecked and use normal non-contest mode; the WW Digi contest exchange is compatible with the normal non-contest mode in WSJT-X).
 - Note that when you are operating in contest mode, WSJT-X will use only a subset of the regular messages, and this may confuse other operators who are operating in non-contest

modes. For this reason, it is best not to use the contest mode outside of the contest and pre-contest test sessions.

- If during the contest you are called by someone who is in non-contest mode while you are in contest mode, the other station will not receive some of the messages it is expecting and its auto-sequencing may not work correctly. In such situations you may have to initiate sending of the missing message directly instead of relying on auto-sequencing, in order to complete the contact with the non-contest station.
- When one of the contest modes is selected, WSJT-X will open a third log window. This window is for information only; you can minimize it to the Task Bar to free up screen space, but do not close it.

Launching WSJT Decode List

To start WSJT-X or JTDX from within N1MM+, use the N1MM+ **>Window > Load WSJT/JTDX** menu item (last one in the list) to start WSJT-X/JTDX, as configured under the [WSJT/JTDX Setup tab](#) in the Configurer. In addition to the WSJT-X or JTDX windows, there will also be a small N1MM+ window that opens:

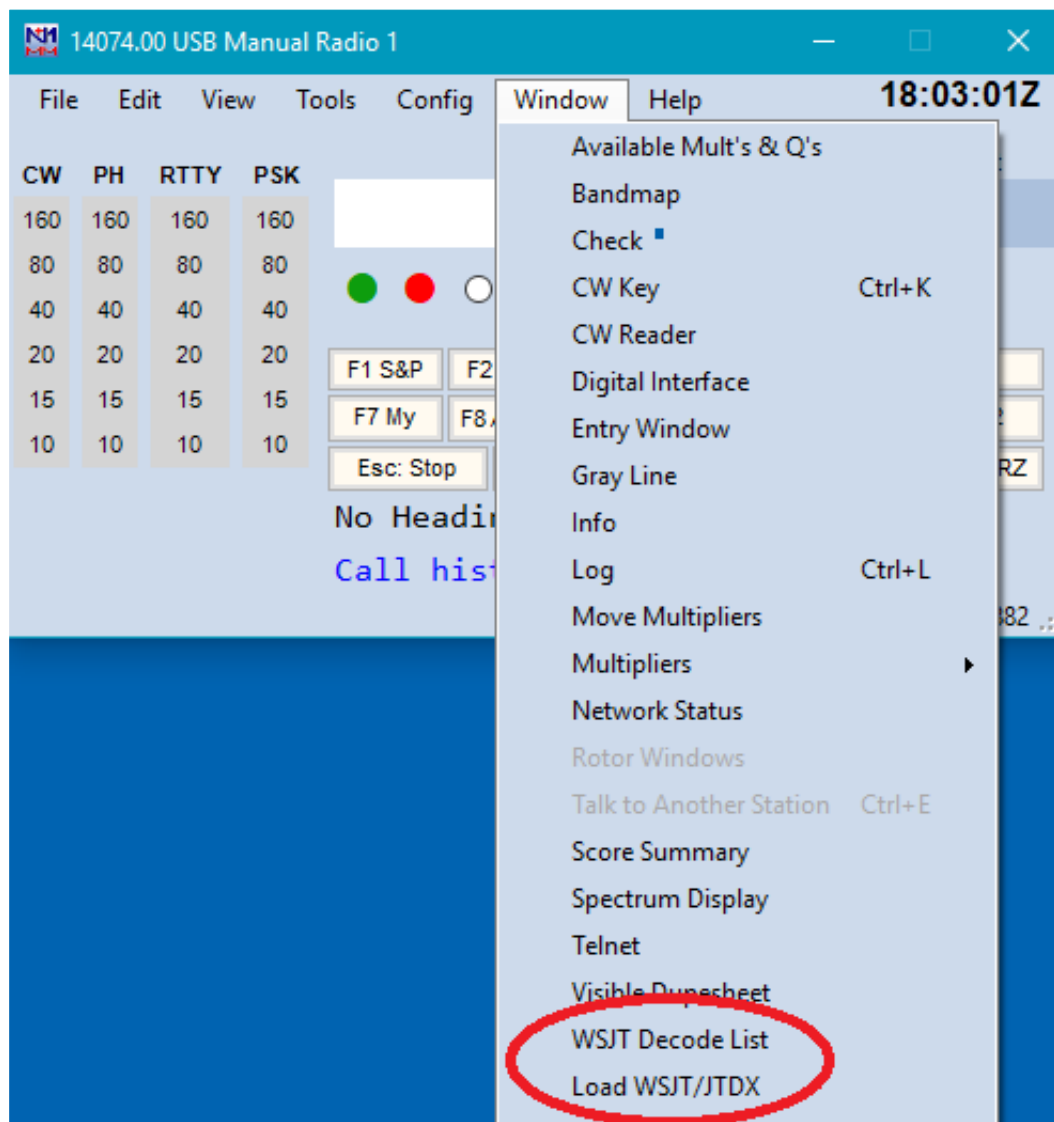


The green box near the left of this window indicates that communications between the two programs is working. The WSJT Decode List window must be open for this to happen. If this box either stays red or turns red during an operating session while the Decode List window is open, that indicates that the communications has stopped working. If this happens, try closing this window and WSJT-X/JTDX and then restarting it from the N1MM+ Window > Load WSJT/JTDX menu item. If that does not resolve the issue, there is probably a configuration error in one or both programs that will need to be fixed.

When WSJT-X or JTDX opens, two new windows will appear (three, if WSJT-X is in contest mode). One of those, called the Wide Graph window, is a waterfall window, which you use to help select audio operating frequencies. The other is the main WSJT-X/JTDX operating window – you will do all of your operating from this window and the Decode List window, and not from the N1MM+ Entry window. This includes changing frequency and operating mode (between FT8 and FT4, for example). If WSJT-X is in contest mode, there will be a third contest log window opened in WSJT-X. This window is informational; you can minimize it to the Windows Task Bar to free

up screen space, but do not close it.

If you have checked the Auto Load check box on the WSJT/JTDX Setup page, the Decode List window will open automatically at the same time as the WSJT-X or JTDX program. If you have not checked this option, you can open the WSJT Decode List from the N1MM+ >**Window** >**WSJT Decode List** menu choice:



Opening the WSJT Decode List window, whether automatically when WSJT-X or JTDX is loaded or manually from the Window menu item, will automatically initiate the UDP Server communications between WSJT-X/JTDX and N1MM+ for the transfer of duplicate/worked/multiplier status from N1MM+ to WSJT-X or JTDX. Once the window has been opened, you will do all of your operating from the main WSJT-X or JTDX window plus the Decode List window, and not from the N1MM Entry Window. In fact you can even minimize (but do not close) the WSJT Decode List window and just use the main WSJT-X/JTDX window. You can hide the N1MM+ Entry window behind another window and minimize other N1MM+ windows to the Windows Task Bar if you need to to free up screen space while you are operating WSJT-X/JTDX.



Log contacts in WSJT-X or JTDX, not in N1MM+

If something (such as anti-malware software, or a configuration error in one or the other of the programs) prevents the transfer of logging information, you need to fix that. For example, you may need to configure a firewall in your anti-malware program to permit N1MM+ and WSJT-X/JTDX to use the UDP or TCP ports they need to use to communicate with each other. **DO NOT** try to bypass the automated logging by entering exchange data directly into the N1MM+ Entry window and pressing Enter to log it. Doing so may result in incorrect information being logged.

Using WSJT Decode List



WSJT-X v2.0.0 by K1JT

File Configurations View Mode Decode Save Tools Help

WSJT Decode ...

Clear MaxLines

Call	Freq	Msg
W7AMC	1140	CQ W7AMC DM26
KA1YQC	525	CQ KA1YQC FN42
WB0IWG	1353	CQ WB0IWG EN06
JA1FVE	1751	CQ JA1FVE PM95
CO8LY	1989	CQ CO8LY FL20
KK5ZV	2548	CQ KK5ZV EL29
KM6GU0	879	CQ KM6GU0 CM88
ZS1SBW	1943	CQ ZS1SBW JF95
N2KBF	1272	CQ N2KBF FN20
OA1F	1711	CQ OA1F FI03
CE1ANF	2791	CQ CE1ANF FG46
NX0I	1651	CQ NX0I EM29
W5BN	457	CQ W5BN FN33
KD5SYI	1091	CQ KD5SYI DM81
N7XG	1233	CQ N7XG CN84
W6DPM	393	CQ W6DPM DM04
KL7YK	1090	CQ KL7YK BP51
KM4BGB	1482	CQ KM4BGB EM50
JA1JAN	2138	CQ JA1JAN PM95
CO2VE	315	CQ CO2VE EL83
N8AB	995	CQ N8AB EN82
WA6MBL	1915	CQ WA6MBL DM13
VE6BTC	2648	CQ VE6BTC DO33

Band Activity

UTC	dB	DT	Freq	Message
220500	-14	0.8	2411 ~	ZS1SBW NYOV +10
220500	-11	0.8	315 ~	CQ CO2VE EL83 Cuba
220500	-1	0.2	898 ~	AI5I C5YK 73
220500	-9	0.3	995 ~	CQ N8AB EN82 U.S.A.
220500	10	0.1	1128 ~	JQ1SUO K1BMW CM99
220500	-4	-0.1	1405 ~	OA1F KM4ODS FM04
220500	-6	0.2	1651 ~	N3LFC W7OM R+02
220500	4	0.3	1863 ~	ZS1SBW K6JEY DM03
220500	-7	0.1	1915 ~	CQ WA6MBL DM13 U.S.A.
220500	-17	0.6	1989 ~	KN4PPD CO8LY 73
220500	-8	0.2	2091 ~	K6QU HI8S +03
220500	-13	0.1	2280 ~	HR1LW KD2GXL FN30
220500	-5	0.2	2648 ~	CQ VE6BTC DO33 Canada

☐ CQ only Log QSO Stop Monitor Erase

20m 14.074 000

☐ Tx even/1st

Tx 1247 Hz

Rx 2410 Hz

Report -15

☒ Auto Seq

DX Call DX Grid

PM96

Az: 327 10240 km

Lookup Add

With the WSJT Decode List enabled, a list of up to 30 recent callsigns will be displayed with row colors indicating each callsign's contest priority (by default, these will be grey for dupe or zero points, blue for workable but not a multiplier, red for new multipliers). Callsigns in the corresponding WSJT-X/JTDX Band Activity panel will reflect those same contest color priorities as a background color. The only callsigns that are marked are callsigns of stations calling CQ. Callsigns of stations with QSOs in progress are not marked and do not appear in the WSJT Decode List.

While not shown in the screen shot above, there is additional information in the Decode List window, including time stamps for when the CQ message was sent, SNR numbers from WSJT-X/JTDX, and even points value for the QSO in the WWDIGI contest. Different time cycles will be indicated in the window by different background color shading to help you determine whether the CQ that station sent was in the current cycle or a previous cycle.

To initiate a contact with a listed station, you may click on a callsign in either location (in the Logger's WSJT Decode List window, or in the WSJT-X or JTDX Band Activity window). A single click just transfers the call sign and grid square information without enabling transmit; if the "Double-click on call sets Tx enable" option has been checked in WSJT-X, a double-click does the same and also enables transmit on the next valid time slot. Note that if you double-click on an "old" callsign, i.e. one that was sending CQ during the 15-second (FT8 – 7.5 seconds in FT4) sequence before the most recent one, WSJT-X/JTDX will not start transmitting until the correct time slot for calling that station (e.g. in FT8, if the other station called CQ on an "even" time slot starting at 0 seconds or 30 seconds, WSJT-X/JTDX will only call that station on an "odd" time slot starting at 15 seconds or 45 seconds).

When you click or double-click on a callsign, either in the WSJT Decode List window or in the WSJT-X/JTDX Band Activity window, that call sign will also appear in the N1MM+ Entry window. This is for the purpose of doing a dupe/multiplier check; it is not part of the logging process. **Do not** enter the exchange into the Entry window. Simply complete the QSO in WSJT-X or JTDX, up to and including the point where the QSO is logged. If you have not chosen the "Log automatically" option in WSJT-X/JTDX, you will need to mouse click in WSJT-X/JTDX's Log Contact window to log the contact. After completing and logging a contact in WSJT-X or JTDX, that contact will be logged in the WSJT-X or JTDX ADIF log and the N1MM+ contest database simultaneously.

Do not type anything into the Entry window or any other N1MM+ window; in fact, it is possible to operate in FT8 or FT4 with all of the N1MM+ windows minimized to the Windows Task Bar and still have all of your FT8/FT4 QSOs recorded in the N1MM+ log. It is not actually necessary that the WSJT Decode List window in N1MM+ be visible (although you may prefer to use it for choosing stations to work); it can be

minimized to the Task Bar and will still carry out its function of relaying dupe/multiplier status to WSJT-X or JTDX.

When a callsign is listed in the WSJT-X or JTDX DX Call field, the Decode List interface will persistently copy that callsign into the N1MM+ Entry Window callsign field (for example, the call will stubbornly reappear after using [Wipe] to clear the N1MM+ Entry window). After you have completed a QSO in WSJT-X and it has been safely logged, you can use the F4 key in WSJT-X to clear the DX Call field while still running WSJT-X. This will clear the callsign field in the Entry window as well. If you are entering a contest that allows multiple modes, having WSJT-X or JTDX put calls into the Entry window, or having it clear the Entry window, is definitely not something you want to have happen while you are using a non-WSJT mode (RTTY, CW, SSB, PSK). Therefore, you should always close the WSJT Decode List window and shut down WSJT-X/JTDX before changing to a non-WSJT mode.

To change modes from a WSJT mode to a “normal” N1MM_ mode (CW, SSB, RTTY, PSK31/PSK63), type the name of the mode into the Entry window and press the Enter key. If this does not close the WSJT-X or JTDX program automatically, close it as well. Either way, the WSJT Decode List window should close (if it doesn’t, close it as well). Now QSY to the frequency you want to operate the new mode in (for example, by typing the frequency into the Entry window) and carry on operating in that mode. To switch from that mode back to FT8 or FT4, either use the **>Window > Load WSJT/JTDX** menu item, or just type FT8 or FT4 into the Entry window. Then, if the Decode List window does not open automatically, use the **>Window > WSJT Decode List** menu item to open the WSJT Decode List window.

WSJT Decode List FAQs

Rig Control - Can both WSJT-X and N1MM+ control the radio?

Yes, if you are calling up WSJT-X from within N1MM+ using the **>Window > Load WSJT/JTDX** menu item and N1MM+ and WSJT-X have both been configured appropriately. When you do this, N1MM+ handles rig control on behalf of WSJT-X, using the same technique as is used by the DXLab Suite Commander program (which is why WSJT-X is configured to use “DX Lab Suite Commander” as its rig control method). If you change modes from the WSJT-X/JTDX Mode menu, or if you change bands or frequencies in WSJT-X/JTDX (just below the Band Activity list), WSJT-X/JTDX will change the frequency in the radio via N1MM+.

Generally speaking, the radio mode you use for WSJT-X will be the same as the radio mode you would use for PSK. If the **Mode sent to radio** is not set up correctly under the Mode Control tab in the Configurer, N1MM+ may put the radio into the wrong mode when using WSJT-X. If this happens to you and you are unable to determine the correct settings to use in the Configurer, you can try setting the Mode under the Radio tab in the WSJT-X Settings window to None, and then make sure you switch the radio into the correct mode manually before starting to use



WSJT-X.

If you have some method of sharing rig control, such as one of the Win4K3Suite/Win4YaesuSuite/Win4IcomSuite programs, or SmartSDR with a Flex radio, then you may be able to use a stand-alone copy of WSJT-X or JTDX concurrently with N1MM+, including the Decode List window, without loading WSJT-X/JTDX from within N1MM+. Detailed setup instructions for doing this are beyond the scope of this document.

No Rig Control - Does it work without rig control?

There are two parts to this answer. First, it is possible to use WSJT-X with rig control directly from WSJT-X but with rig control disabled in N1MM+, and still use the Decode List window. In fact, this was the only way to operate the two programs together prior to N1MM+ version 1.0.7651. However, this method will require you to change configurations between JT modes (no rig control in N1MM+) and other modes (where N1MM+ controls the radio). When using this older method, you do not start WSJT-X from the Window > Load WSJT/JTDX menu item; instead, you start WSJT-X/JTDX in stand-alone mode separately from N1MM+. To open the Decode List window, use the Window > WSJT Decode List menu item (not the Load WSJT/JTDX menu item).

It is also possible to use WSJT-X without any rig control at all, but this requires some careful attention to detail when changing bands. You will need to change bands manually in both programs every time you change bands on the rig. Checking for duplicates and multipliers will not work correctly if the N1MM+ program is not set to the band you are operating on. Operating without rig control also means that some of WSJT-X's features, notably the "Split" or "Fake It" techniques used to keep the sound card audio in the 1500-2000 Hz "sweet spot", as well as the automatic choice of operating frequency depending on the mode selection, will not work.

My radio does not go into transmit when I try to transmit from WSJT-X. What causes this and how can I fix it?

There are several possibilities.

First, if you have configured WSJT-X to use CAT for PTT control, you must have a method of rig control configured separately in N1MM+. The simplest such method is to check the "PTT via Radio Command Digital Mode" option in the setup for the rig control port in N1MM+. If you have configured WSJT-X to use RTS or DTR for PTT, you must have a separate serial port interface that is not used by N1MM+.

Second, if you have configured WSJT-X's Mode control to use Data/Pkt mode on the radio, you must ensure that the Mode Control setting in the N1MM+ Configurer is set appropriately for your radio. With some radios, if the wrong mode is selected here, PTT may stop working. A test for this problem is to set WSJT-X's Mode control

to None, and then set the mode on the radio manually to the correct mode for sound card digital communications.

If PTT works intermittently, or very slowly (e.g. takes several seconds), the culprit might be the Split Operation setting in WSJT-X/JTDX. The “Rig” setting seems to require a lot of handshaking between the two programs that delays the start of each transmit cycle. You might find that “Fake It” works more reliably.

My radio is changing frequency when WSJT-X transmits. What gives?

This is by design, and is controlled by the “Split Operation” section in the WSJT-X/JTDX Settings window. The basic idea is to try to keep the audio frequency used in the sound card during transmit within the “ideal” 1500-2000 Hz window. This avoids potential problems with the radio’s transmit filtering, which may roll off at low and high audio frequencies, and is also intended to minimize the chances of audio harmonics of a low-audio-frequency signal being transmitted, by ensuring that any such audio harmonics are outside the transmit filter’s passband.

When “Split Operation” is set to “Fake It”, the program achieves this goal by simultaneously changing the rig’s frequency and the sound card audio frequency in opposite directions by the same amount (always a multiple of 500 Hz), so that the audio frequency used in the sound card is within the “ideal” range. When the program goes back to receive, the rig is QSYed back to the original frequency so that received signals appear at the same places in the waterfall.

If “Split Operation” is set to “Rig”, instead of changing the rig’s main VFO frequency, the program uses the rig’s second VFO and Split capability to achieve the same result. This method appears to involve more handshaking between the rig, N1MM+ and WSJT-X/JTDX, which makes this method paradoxically slower or less reliable than the brute-force “Fake It” method, which is why we suggest switching from “Rig” to “Fake It” if you are having problems using the “Rig” setting.

Compatibility with DXLab Suite Commander - Can I run Commander at the same time?

No. The Decode List window uses the same UDP port as Commander to communicate with WSJT-X/JTDX. If both programs are running, their messages will interfere with each other, leading to failures of rig control in WSJT-X/JTDX and failures of communication between the Decode List window and WSJT-X/JTDX.

Compatibility with JTAlert - Can I run JTAlert at the same time?

No. The current versions of JTAlert and N1MM+ do not permit port sharing. You must close JTAlert for the WSJT Decode List to function. Furthermore, if you enable both the WSJT-X -to- N1MM+ logging interface and the JTAlert logging interface (without using the WSJT Decode List window in N1MM+), your contacts will be



double-logged into the N1MM+ contest database.

Supported Contests - Does this only work with specific contests or can I use it with my general log?

You can use the WSJT Decode List with your general DX or VHFDX log or with one of the contests supported by WSJT-X.

For general logging, use WSJT-X in normal non-contest mode and use either the DX log or the VHFDX log in N1MM+ (the VHFDX log displays grid squares, the DX log does not; you can use the VHFDX log on HF, in which case you may want to change the Band Panel display using the right-click menu in the Entry window). Make sure the Mode category in the Contest Setup window for your DX or VHFDX log is set to SSB+CW+DIGITAL. If you leave it at the default SSB+CW, digital mode contacts made from WSJT-X may not be logged correctly, and the dupe checking will be wrong.

For contest logging, if the contest exchange sequence is different from the normal non-contest exchange sequence in WSJT-X, you will need to set the contest mode in WSJT-X under the Advanced tab in the Settings window. Check the check box called "Special operating activity" and then select the applicable contest and if necessary, fill in the contest exchange box. In N1MM+, open a contest log of the appropriate contest type, make sure the Mode category includes DIGITAL, and in the Entry window, put N1MM+ into Digital mode (e.g. by typing FT8 or FT4 into the call sign box and pressing Enter).

Callsign Colors - What do the callsign colors mean?

The callsign colors displayed by WSJT Decode List and transferred as background colors to the Band Activity window in WSJT-X/JTDX are derived from your N1MM+ settings found in the **>Config >[Manage Skins, Colors, and Fonts >Colors](#)** window under 3. Callsign Background Colors. By default those colors are:

- Grey = dupe or non-workable (zero-point contact)
- Blue = normal (new contact but not a new multiplier)
- Red = new multiplier
- Green = double multiplier (not applicable in contests supported by WSJT-X at this time, but may apply in future)

Serial Numbers - Will serial numbers from the two programs be in sequence?

In a word, no. If you make some contacts from N1MM+ (in RTTY, for example) and some contacts from WSJT-X (in FT8, for example), the serial number sequences from the two programs will not be in sequence. There is no way for WSJT-X to know what serial numbers you have used in N1MM+, so it will issue its own serial



numbers independently of what N1MM+ does. Don't try to edit serial numbers to make the sequence look pretty – just accept whatever the two programs generate. What matters most is that your log reflects accurately what your software actually sent.

What do I need to do to switch between CW/SSB/RTTY and FT8?

When you run WSJT-X or JTDX from the N1MM+ Entry Window's **>Window > Load WSJT/JTDX** menu item, you can change modes simply by typing the name of the mode (FT8, FT4, RTTY, PSK31, PSK63) into the Entry window.

Make sure the rig's IF filtering is appropriate for FT8/FT4 (wide), and using the frequency selector in WSJT-X, tune the radio to a frequency where contest FT8 or FT4 QSOs are taking place (on the HF bands, the regular non-contest FT8 frequencies are generally not good places to try to make contest QSOs – you can add contest frequencies to the frequency list in the WSJT-X Settings window to make this easier).

Note that if you leave WSJT-X running with the WSJT Decode List window active while you are trying to make CW/SSB/RTTY contacts, WSJT-X will take control of the N1MM+ Entry window and you will be unable to log contacts. WSJT-X is persistent in sending the characters from its DX Call field into N1MM+'s Entry Window callsign field. Even if DX Call is empty (blank) it sends a blank to N1MM+ – wiping out anything you may try to enter in N1MM+. You must close the WSJT Decode List window and the WSJT-X program when operating from N1MM+. Conversely, you must do all of your FT8 and FT4 operating from WSJT-X. *Do not try to enter anything into the N1MM+ Entry window while WSJT-X is active and the WSJT Decode List window is open.*

Why are my FT8 and FT4 contacts being scored with zero points?

If your FT8 and FT4 contacts are being assigned zero points in the Log and Score Summary windows, it is likely that you have selected the wrong Mode category in the N1MM+ contest setup. Use the File > Open Log in Database... menu item to open the contest setup dialog window, and change the Mode category from RTTY to DIGITAL (ARRL RTTY contest), or from SSB+CW to SSB+CW+DIGITAL (VHF contests, general DX logging).

The logging interface into N1MM+ does not refresh the contest score when you change the contest category. Use the >Tools >Rescore Current Contest menu item to rescore previously-logged QSOs, and the score should be accurate thereafter (as long as you don't change contest settings again).



Supported... Supported Contests List

Supported Contests List

Types of Contests in the List

general = General Contest Logging (all modes)

hf cw&ssb = Supported HF Contests - CW and SSB. All contests are supported 'both' sides unless specifically mentioned.

qso party = QSO Parties (CW/SSB)

- United States
 - The QSO parties listed below are supported by N1MM Logger+.
 - Select: QSOPARTY and select the correct state in the dropdown box which will appear.
 - The QSO parties use a configuration file named 'QSOparty.sec' with the used sections per QSO party.
 - See the [QSO Party Setup Instructions](#) for more information on QSO parties in general and some specifics. There are some scoring anomalies with some of the QSO parties.
- Canada = Province and Sponsor Link
- Other QSO Parties = For the Elecraft and QCWA QSO Parties

vhf = Supported VHF CW and SSB Contests. All contests are supported 'both' sides unless specifically mentioned.

rtty&fsk = Supported RTTY/PSK Contests

udc = Supported User Defined Contests (UDC). See the installation and setup instructions for UDCs [HERE](#).

The Complete List

How to Find Your Contest in This Huge List

This list can be overwhelming when looking for a contest and not quite sure of its name. Rather than browsing the whole list, you can sort the list by column (especially type or name) or – even more powerful – you can **use the Search field to quickly locate an expression describing the contest**. For example, terms like "CQWW," "Field Day," "QSO Party," "Michigan" will immediately reduce the list to a small number that match your query.



[table id=56 alternating_row_colors=true /]

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
general	DX (General log)	DX	Sent RST, Received RST fields, Name and Comment field
general	DXPEDITION	DXPEDITION	Only has Sent and Received RST fields
general	DXSERIAL	DXSERIAL	Sent and received RST, Nr fields and a Comment field for Generic Serial number contests. Default multipliers and points.
general	DXSATELLIT	DXSATELLIT	Only three fields: Call, Grid and Satellite
general	VHFDX	VHFDX	Sent RST, Received RST fields, Grid and Comment field
general	VHFSERIAL	VHFSERIAL	Sent and received RST, Nr fields and Grid fields. For generic VHF serial number contests. Comments possible.
hf cw&ssb	Croatian CW Contest	9ACW	CW only; 3rd full weekend in December
hf cw&ssb	AGCW Happy New Year	AGCW	Happy New Year
hf cw&ssb	All Asian DX contest CW / SSB	ALLASIACW ALLASIASSB	CW - Third Saturday of June (48 hours) SSB - First Saturday of September (48 hours)
hf cw&ssb	Asiatic Russia Championship	ASRUCHAMP	January, 6 hours, 160-40 meters, SSB/CW
hf cw&ssb	ARCI QRP Contests	ARCI	This contest supports 7 ARCI QRP contests plus several other QRP contests with similar

Supported...Supported Contests List

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
hf cw&ssb	Italian Radio International DX Contest	ARIDX	exchanges Per version 4.0.63
hf cw&ssb	ARRL 10 Meter contest	ARRL10M	

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	

Supported Contests Setup

Supported Contests Setup

When a contest has a specific mode (SSB, CW or RTTY) then the Mode Category is automatically changed to that mode. So when you select CQWWSSB for the CQ World Wide SSB contest the Mode Category will be set by the program to SSB. You can change this but that will give wrong Cabrillo output and maybe even erroneous behavior of the program, so don't!!

If the selected contest doesn't have a specific mode the program will set the Mode Category to MIXED.

If the radio is interfaced, its mode will be changed. The frequency is not changed; it is up to the user to ensure that the radio is tuned to the correct part of the band.

This is a contest program, but for general logging you can use DX as the selected contest. Dupes are allowed and an exchange is not necessary.

To import a contest into your regular logging program use ADIF export (and ADIF import in your general logging program).

When going through the possible contests you will see a "contest" DELETEDQS. This is not actually a contest. QSOs deleted from other contests will be put in here by the program. This is especially important for multi-user support.

The maximum received serial number is 99999 (for serial number contests). Check out info about the serial number server in the [Contest Setup Dialog](#) chapter .

Read the Contest Instructions!

Always read the instructions from the contest committee prior to the contest. Then you know how to set up the program, what exchange to give and what to expect in return, which hours to operate etc.

Generic Contest Types

DX Log

Window: Select Log type

- Log Type: DX
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

For general or DX logging.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
- Entered QSOs in General log (or DX log) don't need to have an exchange - Dupes are shown by the word Dupe! but the qso can be logged			

DXpedition

Window: Select Log type

- Log Type: DXPEDITION
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

For DXpedition logging

- Entered QSOs in the DXPEDITION log don't need to have an exchange
- Dupes are shown by the word **Dupe!** but the QSO can be logged

Working with split VFOs on a DXpedition - Rx on VFOa, Tx on VFOb

Most DXpedition operators will leave VFOb on a stationary transmit frequency while tuning the pile-up with VFOa in receive. For optimal results in N1MM+ perform the following three actions: Set >Config >Hardware for SO2V (Single Op 2 VFO) operation. Place the program and the radio in Split mode by typing ctrl+S. Disable Run/S&P auto-toggle by pressing alt+F11.

DX Serial

Window: Select Log type

- Log Type: DXSERIAL
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

For general Serial Number contest logging

- Entered QSOs in DXSERIAL don't need to have a comment
- Dupes are shown by the word **Dupe!** but the QSO can be logged
- 'Standard' points calculation; 1 point per qso, DXCC countries are counted
 - All other kind of multiplier and point calculations have to be done by hand
 - This for all not supported serial number contests

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

DX Satellite

Window: Select Log type

- Log Type: DXSATELLIT
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

For Satellite logging.

- Entered QSOs in the DXSATELLIT log don't have an exchange and don't need to have a grid
- When a grid is entered it needs to be 4 or 6 characters long
- Duplicates are shown by the word **Dupe!** but the QSO can be logged

VHF DX

Window: Select Log type

- Log Type: VHFDX
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

For VHF and up logging.

- Entered QSOs in VHFDX don't need to have a grid
- When a grid is entered it needs to be 4 or 6 characters long
- Duplicates are shown by the word **Dupe!** but the qso can be logged
- Bearing info is shown in the log window and saved in the Misc field
- Distance info is shown in km in the log window and saved in the Points field

VHF Serial

Window: Select Log type

- Log Type: VHF SERIAL
- Mode Category: MIXED if you want to log both SSB and CW contacts, MIXED+DIG to add digital modes as well

Comments need to be added using **Ctrl+N**. There is no room left in the Entry Window to add a separate field. Comments will be shown in the log window and added to the Cabrillo and generic output reports

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
For VHF and up logging			

- Entered QSOs in VHF SERIAL don't need to have a grid
- When a grid is entered it needs to be 4 or 6 characters long
- Dupes are shown by the word **Dupe!** but the QSO can be logged
- Bearing info is shown in the log window and saved in the Misc field
- Distance info is shown in km in the log window and saved in the Points field

Deleted QSOs

DELETEDQS "contest"

QSOs which are deleted from other logs using 'Edit Contact' are moved to this 'contest'.

This is especially important for multi-user support. The moved QSOs can be exported.

Setup HF Contests - CW and SSB

9A CW contest

The 9A (Croatian) CW contest is a CW only contest.

- Window: Select Log type
 - Log Type: 9ACW
 - Mode Category: CW
 - Sent Exchange: 001

AGCW

CW-only, on New Year's Day

- Window: Select Log Type
 - Log Type: AGCW
 - Mode Category: CW
 - Sent Exchange: 001 + AGCW Member Nr.

All Asian CW / SSB

The All Asian contest can be used by Asian stations and DX stations.

- Window: Select Log type
 - **CW**

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	
	- Log Type: ALLASIA CW - Sent Exchange: Your age Example: 34 - XYL and YL stations may give 00		
	SSB - Log Type: ALLASIA SSB - Sent Exchange: Your age Example: 34 - XYL and YL stations may give 00		

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Asian station or a non-Asian station.

Asia Pacific Sprint CW / SSB

The Asia-Pacific Sprint contest can be used by Asia-Pacific stations and DX stations.

- Window: Select Log type
 - CW**
 - Log Type: APSCW
 - Sent Exchange: 001
 - SSB**
 - Log Type: APSSSB
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Asia-Pacific station or a DX station.

Asiatic Russia Championship

- For Asiatic Russian stations only.
- Exchange consists of 2-digit location (one-digit lat/one-digit long rounded **up** to nearest 10 degrees e.g. 59N 81E > 69) plus serial number
 - Use 001 for Sent Exchange, incorporate location in F2 message e.g. "69 {EXCH}"

ARCI QRP Contests & Michigan QRP Contest

The ARCI contest supports 7 ARCI QRP Contests. The Michigan QRP Contest has almost the same rules. Several other QRP contests use the same exchange type, although the scoring may be different.

- Window: Select Log type
 - Log Type: ARCI
 - Mode Category:

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
	▪ CW • for Spring QSO party ; HootOwl Sprint ; Summer Homebrew Sprint ; Fall Qso Party ; Holiday Spirits ; Michigan QRP Contest ▪ SSB • for Winter Fireside ▪ MIXED • for Topband Sprint		
	◦ Sent Exchange: ▪ First Part • State abbreviation for USA stations. Example: CT • Province abbreviation for VE stations. Example: ONT • Country abbreviation for non US or VE stations. Example: DL ▪ Second Part • ARCI number for ARCI members • Sent power for non-ARCI members		
	• Log Window: Mult = DXCC Mult2 = Section (State or Province) Example: CT • Power is recognized by containing a non numeric character. Example: 100W is power, 100 is a member number • There is a check on provinces and states, no check on countries. The program will give a proposal for the country prefix if non VE or K • No calculations made for power multi or Bonus Points, this has to be done by the operator after the contest on the summary sheets • Select CW, SSB or MIXED as 'mode Category 'to have the multiplier window work correctly • The program allows stations to work each other in the contests in both modes, even when only CW or SSB is allowed according the rules. We assume the operator knows the rules and follows them...		

ARI International DX Contest

The ARI International DX contest can be configured for Italian stations and DX stations.

- Window: Select Log type
 - Log Type: ARIDX
 - Sent Exchange:
 - 001 for non-Italian stations
 - Your Province for Italian stations
- Call History: ARIDX (Thanks to UR7QM for 2019 version)

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Italian station or a DX station.

ARRL 10 Meter contest

The ARRL 10M contest can be used by K/VE stations and DX stations.

- Window: Select Log type
 - Log Type: ARRL10M
 - Sent Exchange:
 - Your state/province – for K/VE stations Example: NY
 - 001 – for DX stations (non K/VE)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a W, KH6, KL7, VE station.

All non-28 MHz spots are marked as unworkable.

ARRL 160 Meter contest

The ARRL 160M contest can be used by K/VE stations and DX stations.

- Window: Select Log type
 - Log Type: ARRL160 (not ARRL160M if shown)
 - Mode Category: CW
 - Sent Exchange:
 - ARRL/RAC section – for ARRL/RAC stations Example: VI
 - DX stations should enter their prefix or “DX” here. By this contest’s rules, DX stations only send a report, no further exchange, but this is needed nonetheless to ensure a correct Cabrillo file for submission to the contest sponsors. This means that DX stations should not use the {EXCH} macro in their messages for this contest, so if you are using the default CW messages, they will need to be edited.

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or an ARRL/RAC station.

The ARRL/RAC sections can be found at

<http://www.arrl.org/contests/sections.abv.html>

The contest module accepts ITU regions: R1, R2 or R3 for /MM and /AM stations.

All non-160 meter spots are marked as unworkable.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

ARRL Field Day contest

The ARRL Field Day contest can only be used by US (K, KL and KH) & Canada stations (i.e. there are more FD contests outside the US & Canada which are not covered by this contest type – see FDREG1).

- Window: Select Log type
 - Log Type: FD
 - Sent Exchange:
 - Your Class Your section
 - Call History File: FD.txt – ARRL FD 2019 (Original file from Mike AA1AR) with Club/Group name (will be updated until FD send corrections direct to ve2fk@arrl.net)

Here is word from Dan Henderson from the ARRL contest branch on using Cabrillo for your log submission.

Field Day is not included in the Cabrillo format. It has no way to mark/indicate power sources, GOTA station callsigns, bonus points, NTS traffic messages, etc. Also, Field Day only requires Dupe Sheets, not full logs. It is perfectly acceptable to include the Cabrillo log in lieu of the Dupe Sheets, but Field Day must have a completely filled out Summary sheet that includes all necessary information. This can be done with a “reasonable facsimile” electronically. However, since “proofs of bonus” (i.e. copies of letters to newspapers, visitor logs, photos, etc) are abundantly provided, most people find it easier to do Field Day via the regular mail – and use a combined system of part-electronic added to the paper summaries. Anything received electronically for Field Day will be receipted but we may have to manually follow up if we can’t get the basic required information from the email.

73’ Dan Henderson, N1ND

Here are some logging tips from Jim, VE7FO

Q: I always have a problem with the FD GOTA log. Besides just logging the QSO, I also need to ID the operator, the operators age and the GOTA coach. This has always been difficult to reconstruct after the fact. Any body else seen this?

A: Just give the GOTA coach the following responsibilities: When a new op comes on have him hit CTRL-O and enter his call or name followed by a space and his age. This gets two of the vital pieces of info into the log. Require the coach to keep a log of his on and off times at the GOTA position; or you could add the coach’s call at the end of the CTRL-O stuff too. You’ll have to increase the width of the operator column in the log in order to see all this.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

Changing from HF to VHF (and back)

ARRL Field Day is unusual because it includes both HF and VHF bands. Switching bands with Ctrl+ PgUp/Dn won't work for band changes across the HF/VHF divide, but you can operate, dupe and log on the right band by one of two methods:

- if your radio is interfaced, just change bands on the radio and your log will follow.
- If your radio is not interfaced, just type an appropriate frequency in KHz (such as 50125 for 6 meters) in the Entry window's callsign field) and press Enter.

In either case, the band buttons in the Entry window will continue to display HF bands, but the Available window and Bandmaps will display spots for the band you have selected.

Using FT8 on Field Day

Users planning to operate the FT8 (or related) mode with WSJT-X on Field Day should read about the WSJT-X to N1MM+ interface in the manual section on the [WSJT Decode List](#) window. Remember to set the Mode category in the Contest Setup to SSB+CW+DIGITAL.

ARRL International DX contest CW / SSB

- Window: Select Log type
 - **CW**
 - Log Type:ARRLDXCW
 - Mode Category: CW
 - Sent Exchange: Your state/province – for K/VE stations
Example: NY
 - Sent Exchange: Power – for DX stations (non K/VE) Example: 200
 - **SSB**
 - Log Type:ARRLDXSSB
 - Mode Category: SSB
 - Sent Exchange: Your state/province – for K/VE stations Example: NY
 - Sent Exchange: Power – for DX stations (non K/VE) Example: 200

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX stations or a W/VE station.&&&

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

The default power for DX stations is:

- 100 Watts – Default
- 200 Watts – For the following countries: UA, UA2, UA9, UK, UN, UR, R1FJ, R1MV
- 400 Watts – For the following countries: G, GM, GI, GD, GM, GM/s, GW
- 500 Watts – For the following countries: I, IS, IT9

Use the Space bar when the cursor is in the callsign field to have the 'Power' field filled with the default power. The default power will only be entered when the Power field is empty. If you type another power level, it will replace the default power that the program put in there.

Some stations use K or KW for 1000 watts in the exchange. You don't have to enter 1000, just type K. The log checking software from the contest committee will understand.

Call History for DX stations: When Call History is selected and a file is imported with US callsigns and States, the bandmap will be checked against the log and the call history and colored for mults when needed. So incoming spots will be colored when they are a qso, dupe or mult and found in the log or call history.

ARRL November Sweepstakes CW / SSB

- Window: Select Log type
 - **CW**
 - Log Type: SSCW
 - Mode Category: CW
 - Sent Exchange box: Precedence, Year first licensed, and ARRL/RAC section (and in this order!). Example: B 70 EMA (make sure there is no leading space, and only one space character each between the precedence and check and the check and section) (NOTE: This is **not** what you should send over the air or in your F2 exchange messages; it's what you must enter into the Sent Exchange box in the Contest Setup window in order to create a valid Cabrillo file)
 - **F5** key: !
 - **F2** key: Right click on the CW message buttons and change F2 to: # B * 70 EMA (or whatever your own precedence, check and section are). The # and * will be automatically converted on the fly to the serial number and your call sign

If you have separate Run and S&P buttons, you will have to do this for both of them.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

Don't put a serial number in the Sent Exchange box in the Contest Setup window

Sweepstakes is unlike most other serial number contests in that it does not require you to enter "001" (or #) in the Sent Exchange box in the Contest Setup dialog window. In fact, you must NOT do that. The ONLY things you put in the Sent Exchange box are your Precedence, Check and Section, separated by single spaces and without any leading or trailing spaces. This is required in order to produce a valid Cabrillo file.

Don't use the {EXCH} macro in your Sweepstakes exchange messages

The standard default function key message file that you use in other contests will not work for Sweepstakes. Do **not** use the {EXCH} macro in your Sweepstakes exchange messages. Instead, program the full exchange explicitly in your Exchange messages: # (Precedence) * (Check) (Section), as in # A * 78 WMA .

- **SSB**

- Log Type: SSSSB
- Mode Category: SSB
- Sent Exchange box: Precedence, Year first licensed, and ARRL/RAC section, separated by single spaces (and in this order with no leading space before the precedence!). Example: B 70 EMA (do not put in any extra space characters) (NOTE: This is not what you should send over the air; it's what you must enter into the Sent Exchange box in the Contest Setup dialog window in order to create a valid Cabrillo file)
 - **F5** key: Normally empty; use ! only if you have pre-recorded letter and number wav files in the wav\LettersFiles sub-directory for voicing of call signs
 - **F2** key: Normally, most users should plan on saying callsigns and serial numbers and **then** pressing F2 for the rest of a pre-recorded exchange message, beginning with your precedence, then your call sign, your check (year licensed) and your section. If you are using voicing of call signs and serial numbers, the F2 message would start with # followed by the pre-recorded message for the rest of the exchange

We do not recommend starting out using voicing of serial numbers in SSB contests, because experience has shown that serial numbers enunciated as "one two three

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	

one”, no matter how skillfully recorded, are never as easily understood as “one thousand two hundred thirty one.” However, once you have experience with using simple SSB messages, if you want to go to the next step and explore advanced voicing of serial numbers or callsigns, click [here](#).

Example of playing WAV files using ESM.

Put a single space in the message column of the F5 line of the SSB function key table.

Speak the callsign of the station you’re working and the serial number and press Enter. Your exchange.wav file should be something like “Bravo N1MM Check 61 Connecticut”

Entering Received Exchanges

Entering the received exchange is different in Sweepstakes than for any other contest because SS uses a five part exchange (nr, prec, call, ck, section). After you enter the call and move to the Exchange window (either by ESM or by pressing the Space Bar) you can enter all five in one window, and the program will do its best to interpret what you enter.

If you use a Call History file in Sweepstakes (don’t forget to check Call History Lookup on the Config menu), when you enter a callsign that is in the file and press the Space bar, it will pre-fill the Check (CK) and Section (SEC) for you and position the cursor one space behind the pre-filled information. All you need to do, then, is type the Serial Number and Precedence as you copy them. They look like they are in the wrong order, but look above the Exchange textbox for the line of small black type. You’ll see it in the correct order, as it will be entered in your log.

You do not need to type the call again unless you had it wrong the first time, in which case you can type it into the exchange box and you’ll see the program magically correct it (again in the small black type). If the program thinks there may be a problem, it tries to signal that by changing the type color to blue, so be aware of that. If something is screwed up, we recommend backspacing to the point where the exchange (or partial exchange) looks right again, and then re-entering the information. You should never have to wipe, or highlight and hit Delete.

There are a couple of important rules. You **must** always enter the Serial Number and Precedence as a single element – e.g. “23B” not “23 B”. This helps the program tell a check from a serial number. Otherwise, you should put a space between elements. This is probably a good habit to get into, because when you need to correct something you have copied (see below) you’ll need to do this.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks

Correcting what you copied

This is where N1MM Logger+ gives you a real advantage in Sweepstakes. The basic idea is that you never have to tab or space back to the Callsign field, or to space back in the Exchange field, to make corrections. The basic rule is simply to type your correction at the **end** of the Exchange string you have already copied. This includes callsigns.

You **can** confuse the parser (the routine that generates the black type above the Exchange window). Here are easy rules you can apply to help with proper parsing:

- When you are correcting a Callsign in the Exchange field – make sure you set it off with spaces.
- If you need to enter or correct a Serial Number, enter it **with** the Precedence, **without** a space between – e.g “99B”, not “99 B”. Similarly, enter the Check and Section as another “couplet” – e.g., “54WV”, not “54 WV”. If you do this, we don’t think you will be able to make the parser get it wrong.

ARRL Rookie Roundup

Rookies (operators licensed 3 years or less) work everyone; non-rookies work only rookies. Rookie status is determined by the 2-digit licensing year as entered in the Sent Exchange field of the Contest Setup Window (reached by File > New Log in Database or Open Log in Database). BOB 08 WV in the Sent Exchange field tells the program Bob’s a rookie; BOB 54 WV tells it he’s not.

You do not need any special suffix on rookie calls (do not use /ROK. This is a rule change since the first running). Rookies are encouraged to call “CQ Rookie Roundup” on phone and “CQ RR” on CW and digital modes. Non-rookies should call “CQ Rookies” on phone and “CQ R” on CW or digital modes. A sample CW function key definition (message) file is [here](#), in the file called “RRCW.mc” in the Function Key Files – CW subfolder. The messages are set for Rookies, non-rookies will need to change the **CQ RR** to **CQ R**.

Log the exchange in order — name, 2-digit year, and state. Check the space immediately above the exchange field, where the program will indicate how it has “parsed” the exchange, and correct if necessary. 4-digit years should not be sent or logged – it will only cause confusion

Score summaries are due within 72 hours of the end of the contest – 2359 Wednesday evening UTC, or 1859 EST. Use the “Submit your score” link under “Score submission” at the [ARRL web page](#) for the RR. ARRL says logs are not required or accepted.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
- Window: Contest Setup Make sure that you have entered your 2-digit licensing year in the Sent Exchange field. - Select Log Type - Log Type: RRSSB, RRRTTY, RRCW (pick the appropriate one) - Sent Exchange: Name, two-digit check (year first licensed), and State or Canadian Province, Mexican call area (XE1-4), or DC (examples: PETE 54 WV, BOB 67 XE1, MARY 09 NU, ANN 10 DX)			

ARRL School Club Roundup

The station categories in this contest are different from those in the Cabrillo specification. You can choose a station category from the pull-down list, but you will have to edit it after the contest to read CLASS-I, CLASS-C, CLASS-S-EL, CLASS-S-JH, CLASS-S-HS or CLASS-S-UN according to the category of your station.

- Window: Contest Setup
- Select Log Type
 - Log Type: ARRL-SCR
 - Sent Exchange: Category (I, C or S for Individual, Club (non-school) or School class) and QTH (2-letter state/province abbreviation in W/VE, DX for other locations)

Asia Pacific Sprint Contest CW / SSB

- Window: Select Log type
 - CW**
 - Log Type: APSCW
 - Mode Category: CW (spring and fall)
 - Sent Exchange: 001
 - SSB**
 - Log Type: APSSSB
 - Mode Category: SSB (summer)
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX stations or an Asia-Pacific station.

Baltic contest

The Baltic contest can be configured for stations from the Baltic countries (ES, YL, LY) and DX stations.

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
- Window: Select Log type - Log Type: BALTIC - Sent Exchange: 001			

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a Baltic station.

Black Sea Cup International

- Window: Select Log type
 - Log Type: BSCI
 - Mode Category: MIXED
 - Sent Exchange: ITU Zone
 - HQ stations: IARU society abbreviation
 - BSCC members: membership number, e.g. BS17

CNCW Spanish contest

The CNCW contest (EA CW NATIONAL CONTEST) is only for Spanish stations operating inside the national territory.

- Window: Select Log type
 - Log Type: CNCW
 - Mode Category: CW
 - Sent Exchange: Spanish Province letters Example: SG

CQ M International DX contest

- Window: Select Log type
 - Log Type: CQM
 - Mode Category: Select what category you enter (SSB, CW or Mixed)
 - Sent Exchange: 001

Special country file needed

The CQM contest uses a special country list. In order to score properly, you need to import that country list into the database you will be using. First download the file by selecting the >Files >Additional Support Files menu item on the N1MM Logger+ web site and copying the file Cty-CQM.dat to your N1MM Logger+ user directory. Then, from the Tools menu in the N1MM Logger+ program, select Import Country List from Downloaded File, and select the special Cty-CQM.dat file. Import it, and you're good to go.

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	

After the contest, don't forget to re-import the wl_cty.dat file to restore the normal country list.

If you discover after the contest that you skipped this step, just be sure to submit your log in Cabrillo format, and the organizers will re-score it for you. Alternatively, you can import this special country list and re-score the contest (Tools > Rescore), but **if you do that be sure to back up the database first**, just in case.

CQSA SSB Contest

- This contest uses the Cabrillo 3.0 log file format so be careful to check the Contest Setup Window (File > Open Contest) to make sure you have filled in appropriate entry class, etc.

CQ 160 Meter DX contest CW / SSB

- Window: Select Log type
 - **CW**
 - Log Type: CQ160CW
 - Mode Category: CW
 - **SSB**
 - Log Type: CQ160SSB
 - Mode Category: SSB
 - Sent Exchange:
 - Your state/province – for K/VE stations Example: NY
 - Your CQ zone – for DX stations (non K/VE)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX stations or a W/VE station.

All non-160 meter spots are marked as unworkable. Spots are marked with state from call history lookup as mults (if needed) in Bandmap and Available windows.

CQ World Wide DX contest CW / SSB

- Window: Select Log type
 - **CW**
 - Log Type: CQWWCW
 - Mode Category: CW
 - Sent Exchange: Your zone Example: 14
 - **SSB**
 - Log Type: CQWWSSB

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
	▪ Mode Category: SSB ▪ Sent Exchange: Your zone Example: 14		
	• The default zone values for US (K,N,W,A) stations are ◦ Zone 3 – If number in callsign is 6 or 7 ◦ Zone 4 – If number in callsign is 5 or 8 or 9 or 0 ◦ Zone 5 – If number in callsign is 1 or 2 or 3 or 4 • The default zone values for Canadian (VE) stations are ◦ Zone 1 – If callsign starts with: VY1 ◦ Zone 2 – If callsign starts with: VE2, VO2 ◦ Zone 3 – If callsign starts with: VE7, VC7 ◦ Zone 4 – If callsign starts with: VE3, VE4, VE5, VE6, VA3 ◦ Zone 5 – If callsign starts with: VO1, VE1, XJ1, VY2 • Press the Space bar when the cursor is in the 'Callsign' field to have the 'Zone' field filled with the default value • The default zone will be selected, so that if you type another zone, it will replace the numbers that the program put in there • For US users, Ctrl+Up/Ctrl+Dn doesn't stop at US stations • US spots are not grayed out for Canadian users • Don't show and count own countries as workable in the Bandmaps and the Available window • A new zone will be shown in red in the Entry window • Band changes ◦ The allowed band changes are 8 for all CQ Contests ◦ The band change counter is reset to 0 on first contact after the top of the hour • The program will look up the zone if the call has been changed, provided no zone was typed by the user		

CQ World Wide WPX contest CW / SSB

- Window: Select Log type
 - **CW**
 - Log Type: CQWPXCW
 - Mode Category: CW
 - Sent Exchange: 001
 - **SSB**
 - Log Type: CQWPXSSB
 - Mode Category: SSB
 - Sent Exchange: 001
- Multi-Single and Multi-Two entries have a single set of serial numbers across all bands; per the rules, in multi-single a single sequence of serial numbers is generated regardless of band.
- Band changes (per hour)
 - The allowed band changes are 8 for all CQ Contests

Contest_Type	Contest Name	Log Type	Remarks
	Sponsor Link	Setup Link	
	◦ The band change counter is reset to 0 on first contact after the top of the hour		

CIS contest - CW / SSB

The Commonwealth of Independent States Contest where everybody can work everybody for QSO and multiplier credit.

- Window: Select Log type
 - Log Type:
 - CW: CISCW
 - SSB: CISSSB
 - Sent Exchange:
 - CIS stations: CIS area code Example for Moscow City: RU11
 - Non-CIS stations: 001

Cup of the Russian federation RFC contest CW / SSB

The RFC Contest is an internal Russian contest only between Russian stations.

- Window: Select Log type
 - Log Type:
 - **CW**: RFCCW
 - **SSB**: RFCSSB
 - Sent Exchange:Grid Example: 115

CWops Mini CWT

Several 1-hour mini-contests each week. Each 1-hour segment is a separate contest.

- Window: Select Log type
 - Log Type: CWOPS
 - Mode Category: CW
 - Sent Exchange:
 - Name and membership number (members)
 - Name and state/province/country (non-members)

Call history lookup for member numbers in the Sect or Exch1 field of the call history file is supported.

CWops CW Open

Contest_Type	Contest Name Sponsor Link	Log Type Setup Link	Remarks
Three four hour contests – September 6 (0000-0359Z, 1200-1559Z and 2000-2359Z) in 2014			

- Window: Select Log type
 - Log Type: CWOPSOPEN
 - Mode Category: CW
 - Sent Exchange box:
 - 001 and name (e.g. 001 JOHN)

DARC 10 meter contest

- Window: Select Log type
 - Log Type: DARC10M
 - Mode Category: MIXED or CW (depends on the entry class)
 - Sent Exchange:
 - In the contest setup dialog window, Sent Exchange field, put only #
 - DL stations: (in your Function Key definition, put **{SENTRST} {EXCH} DOK** or **NM**)
 - DARC members send: RST + # + DOK (Example: 599 092 A12)
 - non-DARC members send: RST + # + NM (NM stand for non-member)
 - Foreign stations send: RST + # (in your Function Key definition, put **{SENTRST} {EXCH}**)

Call history lookup for DOK's is supported. Make a text file with Call and DOK and import this in the program. See the chapter Before the Contest for information how to use Call History and how to create the text file. During the contest "Call History Lookup" has to be enabled under the Config menu. When a station (which is in the Callhistory lookup table) is entered, pressing SPACE when the cursor is in the callsign field will enter the DOK in the section field.

The contest manager from the DARC 10 meter contest approved and will accept the files made by N1MM Logger+ and likes to receive:

File	How to make...	Exported
Log file	>File >Export >Export to File (Generic) >Generic File Output sorted by time	[callsign].txt
Summary sheet	>File >Export >Print Score Summary to File	[callsign].sum

- Send the “Generic File Output sorted by time” as a txt-File named with your call like DL8WAA.TXT
- Don’t forget your used own call, category and if you are a DL station: own sent DOK. This can be put in the Email or sent in the Cabrillo file.

DARC Weihnachtswettbewerb XMAS contest

The DARC Weihnachtswettbewerb is a contest on December 26 from 08.30-10.59 UTC between any station on 40 and 80 meters.

The DARC contest manager for the Xmas contest accepts the standard generic file as log together with the summary sheet..

- Window: Select Log type
 - Log Type: XMAS
 - Mode Category: MIXED
 - Sent Exchange:
 - DL stations:001 + DOK Example: 001 A12
 - Non-DL stations: 001

During the contest info about suspicious DOK’s are shown in the info bar and written to the Notes filed.&&&

After the contest check >View >Notes for the following situations:

- “DL station non DARC member” – no DOK is given (DL station who is not a DARC member)
- “DL station with DOK length 1” – DOK length is only one
- “DOK with only numbers” – no letters in DOK

DIG contest CW / Phone

- Window: Select Log type
 - Log Type:
 - CW: DIGCW
 - SSB: DIGSSB
 - Sent Exchange: anything as it is not being used (DIG members could enter their DIG number here)

Elecraft QSO Party

- Window: Select Log type
 - Log Type: EQSO
 - Mode Category: Mixed
 - Exchange: State/Province/Country, Rig code + Rig serial number, or Power (non-elecraft rigs)
 - e.g. K3 serial #1234 would send 31234

European Sprint CW/ SSB

- Window: Select Log type
 - **CW**
 - Log Type: EUSCW
 - Mode Category: CW
 - Sent Exchange: Serialnumber & Operator name Example: 001 Tom
 - **SSB**
 - Log Type: EUSSSB
 - Mode Category: SSB
 - Sent Exchange: Serialnumber & Operator name Example: 001 Tom

Example: The Exchange key (**F2**) can look like this: de * # {Exch} where “#” is current QSO Number and “{Exch}” is the Operator name.

EU HF Championship

- Window: Select Log type
 - Log Type: EUHFC
 - Sent Exchange: Last two digits of the year of operator’s first official amateur radio license Example: 82 (for 1982)

Field Day Region 1

The Region I field day contest can be configured for Region 1 stations and DX stations. Supported are the rules for stations in Belgium, Germany, United Kingdom (**), Netherlands, Switzerland, Ireland (only CW), Italy, Slovenia (S5) and Russia (UA, UA2, UA9).

- Window: Select Log type
 - Log Type: FDREG1
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Region 1 supported station or not and if you are /P etc. or not..

N1MM Logger+ checks whether the callsign used is a portable or a fixed station by checking the callsign in the Station dialog under config! So using a /P, /M etc there could make a difference in scoring!

United Kingdom: The ModeCategory selects the CW or the SSB version of the contest. The rules between the CW and the SSB version are very different.

First Class Operators Club (FOC) Marathon - members only

- Window: Select Log type
 - Log Type: FOCCW
 - Sent Exchange:membership number

The calculation of bonus points for working the same station on 5 (10 additional points) or on 6 bands (an extra 5 points) is not supported by the program.

Martin/OK1RR and John/G3WGV have posted contest routines to rescore the contest from a Cabrillo file to a fully correct (including the 5/6 band bonuses).

First Class Operators Club (FOC) QSO Party

- Window: Select Log type
 - Log Type: FOCCWQP
 - Sent Exchange:
 - FOC members: Name and FOC Number
 - Non-members: Name

GACW WWSA CW DX contest

The GACW WWSA CW DX contest can used by South American stations and DX stations.

- Window: Select Log type
 - Log Type: GACW
 - Mode Category: CW
 - Sent Exchange: Your zone Example: 14
- The rules are almost equal to the CQWW contests.
- Default zones for US (K,N,W,A) and Canadian (VE) stations apply

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a SA station or a DX station.

Gagarin Cup

- Window: Select Log Type
 - Log Type: GCUP
 - Mode Category: CW
 - Sent Exchange: Your ITU zone (not CQ zone e.g., 8 rather than 5 for eastern USA)

Special country file needed

The Gagarin Cup contest uses a special country list. In order to score properly, you

need to import that country list into the database you will be using. First download the file by selecting the >Files >Additional Support Files menu on the N1MM Logger+ web page and copying the file Cty-CQM.dat to your N1MM Logger+ user directory. Then, from the Tools menu in the N1MM Logger+ program, select Import Country List from Downloaded File, and select the special Cty-CQM.dat file. Import it, and you're good to go.

After the contest, don't forget to re-import the wl_cty.dat file to restore the normal country list.

If you discover after the contest that you skipped this step, just be sure to submit your log in Cabrillo format, and the organizers will re-score it for you. Alternatively, you can import this special country list and re-score the contest (Tools > Rescore), but **if you do that be sure to back up the database first**, just in case.

HA DX Contest

The Hungarian DX Contest can be configured for HA stations and DX stations.

- Window: Select Log type
 - Log Type: HADX
 - Sent Exchange:
 - non-HA stations: 001
 - HA stations
 - HADXC members: HADXC membership number
Example: 101
 - Other HA stations: two letters county code. Example: GY

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a HA station or a DX station.

Helvetia Contest

The Helvetia Contest can be configured for HB stations and DX stations.

- Window: Select Log type
 - Log Type: HELVETIA
 - Sent Exchange:
 - 001 for non-HB stations
 - 001 Your Canton Example: ZH for HB-station

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a HB station.

High Speed CW Contest

The HSC CW contest can be configured for members and non-members.

- Window: Select Log type
 - Log Type: HSCCW
 - Mode Category: CW
 - Sent Exchange:
 - Non-members: NM
 - Members: HSC-Membershipnumber

Holyland Contest

The Holyland Contest can be configured for 4X stations and DX stations.

- Window: Select Log type
 - Log Type: HOLYLAND
 - Sent Exchange:
 - 001 for non-4X stations
 - Your Area Example: E15RH

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a 4X station.

IARU Radiosporting Contest HF

- Window: Select Log type
 - Log Type: IARU
 - Mode Category: CW or SSB or MIXED
 - Sent Exchange: IARU member society abbreviation for IARU member society HQ stations and IARU International Secretariat club station
 - AC for IARU Administrative Council
 - "R1," "R2," and "R3" for the three IARU regional Executive committees
 - ITU zone for all other stations Example: 27

The zone is prefilled while typing the callsign to allow multipliers to be shown while typing the callsign.

Call history lookup for HQ multipliers is supported. Correct format is:

W1AW,,,,ARRL,,,

- If Call History Lookup is enabled, and a Call History file containing HQ multipliers has been loaded, then when an HQ multiplier or partial HQ multiplier (at least two letters) is entered into the exchange field and there

is no call sign in the call sign field, the Check window will display all call signs in the Call History file with that same HQ multiplier in the Reverse Call Lookup pane

- The call signs can be clicked on with the mouse to transfer one of them to the call sign window
- If there is a partial call sign in the call sign field, possibly using wild cards for missing characters, the list of call signs displayed will be limited to those matching the partial call sign

IOTA Islands On The Air Contest

- Window: Select Log type
 - Log Type: IOTA
 - Sent Exchange:001 NA123 (default exchange) **Be sure to delete the “NA123” from the Sent Exchange field in the Contest Setup dialog if you are not an island station, because otherwise the program’s scoring will be incorrect.**
 - Your own IOTA reference must be in the form XXYYY where XX = letters and YYY = numbers.

NB: The syntax for the sent IOTA reference must be in the form XXYYY where XX = letters and YYY = numbers. Example: 001 EU001 and not 001 EUTT1 or 001 EU1. If you wish to transmit your exchange with cut numbers or without leading zeros in the IOTA reference, you will have to hard-code your desired exchange in your exchange messages instead of using the {EXCH} macro

- The received IOTA reference does not need the dash (-) when logged. Example: Enter EU123 in the IOTA field, not EU-123. The Cabrillo output will have the - added automatically
- The IOTA contest has many multipliers and therefore the program will only show worked IOTA references and add a new IOTA reference when a new multiplier is worked. In the Multiplier window, choose the “Sect” tab
 - If Call History Lookup is enabled, and a Call History file containing IOTA references has been loaded, then when an IOTA reference or partial IOTA reference is entered into the exchange field and there is no call sign in the call sign field, the Check window will display all call signs in the Call History file with that same IOTA reference in the Reverse Call History pane
 - The call signs can be clicked on with the mouse to transfer one of them to the call sign window
 - If there is a partial call sign in the call sign field, possibly using wild cards for missing characters, the list of call signs displayed will be limited to those matching the partial call sign
- If your Call History file contains a list of country prefixes and island codes for those DXCC countries that are entirely on islands (e.g. G, VK), then entering a call sign from one of these countries will automatically pre-fill the IOTA

reference field with the most common IOTA code for that country (see the IOTA Call History.txt file distributed with the program – country references are at the end of the file)

- Since in many cases there is more than one IOTA reference for the same country, you must be prepared to override this code; when the cursor is moved to the IOTA field, the second (numerical) part of the IOTA reference code is highlighted to make it easy to override the default number

Note for multi-operator stations:

- The IOTA contest allows multi-operator stations to use two radios, one of which is only allowed to work new multipliers. This is similar to the Multi-Single category in the CQ WW and CQ WPX contests; note that in this contest, the two stations are allowed to transmit simultaneously
 - If you wish to make use of two radios, in the contest setup window choose the MULTI-ONE category (Operator category MULTI-OP and Xmtr category ONE). Select Networked-Computer Mode on both computers (see the Networked-Computer Support section of the manual for detailed instructions)
 - At the multiplier-only station, check the following options under Config > Networked-Computer Tools: Is Mult Station, and Don't work non-mults
 - If you wish to allow simultaneous transmitting at both stations, check the Block my Tx Only if Other Stn Transmitting on Same Band&Mode (Multi-One) option. This will allow both transmitters to operate simultaneously. This option is not “sticky”, i.e. you will have to check it every time you restart the program, otherwise your radio will be blocked from transmitting whenever the other radio is transmitting.
WARNING: DO NOT rely on the software lockout to protect your radios – the lockout is intended only to facilitate compliance with contest rules, and should not be relied upon to protect against damage

International Naval Contest

- Window: Select Log type
 - Log Type: NAVAL
 - Sent Exchange:
 - Club+Membership number for Naval Club member, e.g. PN007
 - 001 for non-Naval Club member

2009 contest rules: [are here](#).

2010 dates: 8 / 9 May – CW and SSB, 15/16 May – PSK and RTTY;

JA domestic contests

This is a general contest class for Japanese domestic contests and only for use by JA stations.

- Window: Select Log type
 - Log Type: JAdomestic
 - Sent Exchange: Section + class Example: 25M or 10L

General rules:

- Japanese stations may only work Japanese stations
- Example exchange numbers in ALL JA contest with assuming as follows.
 - I am in Osaka with 100W output and another party is in Tokyo with 10W. send:59925M receive:59910L
 - I am in Okinawa with 1KW output and another party is in Sapporo in JA8 with 50W. send:59947H receive:599106M
- Dupe and multiplier examples
 - 20 mtr JE1CKA 10H SSB 1 point + multiplier
 - 20 mtr JE1CKA 10H CW 0 points dupe, no multiplier
 - 20 mtr JE1CKA 10H SSB 0 points dupe, no multiplier
- Same station should counts for 1 point only once on each band regardless of mode.
- The multiplier counts once on each band regardless of mode.
- When the SentExchange does not end on H, L, M or P then there is no Powercode check.

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a JA station.

JIDX Contest

This JIDX contest contest can be configured for Japanese stations and DX stations.

- Window: Select Log type
- **CW**
 - Log Type: JIDXCW
 - Mode Category: CW
 - Sent Exchange:
 - non-JA stations: CQ Zone number Example: 14 (01 to 40)
 - JA stations: Your Prefecture Example: 34 (01 to 50)
- **SSB**
 - Log Type: JIDXSSB

- Mode Category: SSB
- Sent Exchange:
 - non-JA stations: CQ Zone number Example: 14 (01 to 40)
 - JA stations: Your Prefecture Example: 34 (01 to 50)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a JA or a DX station.

JT DX Contest

- Window: Select Log Type
 - Log Type: JTDX
 - Mode Category: CW or SSB, select one only
 - Sent Exchange: CQ Zone (e.g., 5, 14, 23, etc.)

King of Spain Contest

The King of Spain contest can be configured for EA stations and DX stations.

- Window: Select Log type
 - **CW**
 - Log Type: KINGEACW
 - Mode Category: CW
 - Sent Exchange:
 - non-EA stations: 001
 - EA stations:Your Province Example: AV
 - **SSB**
 - Log Type: KINGEASSB
 - Mode Category: SSB
 - Sent Exchange:
 - non-EA stations: 001
 - EA stations:Your Province Example: AV

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a EA station.

Logbook of the World Contest CW / SSB

- Window: Select Log type
 - Log Type:
 - **CW**: LOTWCW for the Digital part of the contest (LOTWRTTY)
 - **SSB**: LOTWSSB
 - Sent Exchange:
 - For North American stations: State/Province abbreviation Example: CT

- For non North American stations: Countryprefix

LZ DX Contest

The LZDX contest can be configured for LZ stations and DX stations.

- Window: Select Log type
 - Log Type: LZDX
 - Sent Exchange:
 - non-LZ stations: ITU zone
 - LZ stations:Your District abbreviation Example: BU

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a LZ station.

LZ Open and LZ Sprint Contests

Supports all three versions of the contest (LZ Open contest, LZ Open 40 meter Sprint contest and LZ Open 80 meter Sprint contest)

- Window: Select Log type
 - Log Type: LZOPEN
 - Sent Exchange: 001
 - Select LZOPEN contest. The Sent Exchange in the “contest selection window” is 001 or #.
 - Your F2 exchange message should be: {EXCH}{LASTEXCH} or #{LASTEXCH}
 - Since it is required, the program will always send leading zeros for this contest. Unchecking the leading zeros box in Configurer will have no effect
 - When a callsign is in the Entry Window, the Info Window displays the time since you last worked the station
 - If you have a radio interface enabled, the bandmap colors of the callsigns will update when you can work the station again for points
 - Set the Bandmap Packet Spot Timeout greater than 30 minutes
 - Do not enter received cut letters into the exchange box. They will not be converted to numbers
 - Read the contest rules
 - Submit the contest results with the Cabrillo output

The 30 minute time period is computed per the organizers instructions. That is to ignore the seconds of the logged QSO when computing the 30 minute interval. The 30 minute interval is computed from the last QSO on the current band so it is not recommended to log a contact that will not produce any points.

LZ Open and LZ Sprint contests display the sent exchange on the Entry Window status line. This addition expects that the {LASTEXCH} macro is used as required by these contests.

Manchester Mineira Contest

The Manchester Mineira Contest by CWJF is the major CW contest in South America. Since 2011 this contest is now open to stations anywhere in the world.

- Window: Select Log type
 - Log Type: CQMMDX
 - Mode Category: CW
 - Sent Exchange: Continent (e.g. NA), or Continent + M (member), Y (YL), Q (QRP) or G (multi-operator group)

Michigan QRP Contest

See the [ARCI contest](#) which uses almost the same rules.

Supported are: January CW Contest ; Memorial Day CW Sprint ; July 4th CW Sprint ; Labor Day CW Sprint

MiniTest CW Test

Almost every week on Wednesday at 18 GMT and lasts only one hour. It has 6 time periods

(10 minute each). Band: 3520 – 3570 kHz, mode: CW, exchange: RST+serial.

Every QSO gives 1 point, multiplier: the number of unique calls during this hour of the contest. Classes: 1- club station, 2 – SO, A- power $\geq$ 100 W, B – power $\leq$ 100 W, 3 – SWL. The results can be submitted at 19.00 GMT on 3720 KHz (SSB) or on 3541 KHz (CW).

The submitted information (QSO number, multiplier, class) will look like this: “125 36 A”. The results are published here:

<http://www.minitest.narod.ru/2009/2009.htm>

NA Sprint CW / SSB

- Window: Select Log type
 - Log Type:
 - **CW**: SPRINTCW
 - **SSB**: SPRINTSSB
 - Sent Exchange: 001 Tom CT
 - Serial number, your name and your location (state, province or country) Example: PA1M DE N1MM 123 TOM CT K

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a North American station or a non-North American station.

- Example function keys can be found in the [Example Function Keys](#) chapter
- Check out the [Macros](#) chapter. The {PGUP} and {PGDN} macros are useful in the Sprint.
 - By Tom – W4BQF: Open config – Configure Ports.... – Other. Under the ‘Other’ tab, look at the right-most column, where you will see “CW Up/Down Arrow” and “PgUp/PgDown”. These can be configured to QSY. Configure the Up/Down Arrow keys to QSY, say 2 kHz each time you press your keyboard up or down arrow keys. Configure PgUp/Down to QSY ‘x’ kHz, and then use {PGUP} or {PGDN} as a macro assigned to any of the function keys. Example: F10 Freq UP, {PGDN} {run} F11 Freq DN, {PGUP}{run} In my case “PgUp/Down” will move my frequency 5.5 kHz and the “CW UP/Down Arrow” keys set to QSY 1.5 kHz. A little tricky because {PGDN} actually moves you UP in frequency, but it works very well.

N1MM Logger Sprint Survival Tips – Version 1.7, by N2IC (written for Logger Classic, should be applicable to Plus)

I thought I would share what I have learned about customizing N1MM Logger for this contest.

I’m not going to try to explain how to operate the Sprint – for this, there is an excellent writeup by Tree, N6TR [here](#).

What I will do is describe how to get the most out of N1MM Logger in the Sprint. My operation is SO2R, and my configuration is optimized for that mode. However, I’m sure you SO1R guys will pick up a few tricks from what I have done for SO2R.

The most important thing is to get your options, windows and function keys set up correctly before the Sprint starts.

The Options...

Start up N1MM Logger using version 12.1.0 or later, and create a new SPRINTCW contest.

I assume that your radio(s) are interfaced to N1MM Logger, so that N1MM Logger will automatically track the frequency of each radio. If you do not have interfaced radios, this configuration and function key assignment will not work correctly for the Sprint.

In the Config menu, select the following options:

- Enter sends message (ESM)
- QSYing wipes the call & spots QSO in bandmap
- Do Not Automatically Switch to Run on CQ Frequency
- Show non-workable spots
- SO2R->Toggle CTRLFX Macro

The “Toggle CTRLFX Macro” can also be toggled using Ctrl+Shift+L. This is handy if you need to turn off {CTRLFX} during the contest.

The Windows...

These are the only windows I have on my screen:

- Entry Window (one for each radio)
- Visible Dupesheet (one for each radio)
- Info
- Log
- Score Summary

They all fit nicely on my small monitor. My screen layout is shown at <http://www.kkn.net/~n2ic/sprint.bmp> .

The Visible Dupesheet is really nice once you get used to it. To see if a station is a dupe, you just scan the dupesheet with your eyes, rather than frantically type a call into the Entry Window.

Open a Bandmap window. Right click and select “Packet Spot Timeout”. Change the packet spot timeout to 1 minute. That’s right....1 minute. Hit OK. Now close the Bandmap window. Don’t reopen it. It is of no value in Sprint, but it is important to change the packet spot timeout value to 1 minute. (Side note: This option should really be called “Bandmap Timeout” not “Packet Spot Timeout”. It controls how long calls stay on the bandmap and the appearance of calls in the “on deck” frame of the Entry Window. We’re obviously not using packet in the Sprint.)

Notice that I do NOT have the “Available Mults & Q’s” nor the Bandmap windows open.

Function Keys

Here are my function key definitions. I’ll explain a few that aren’t obvious:

```
F1 CQ,{JUMPRX}cq na cq na * na
F2 Exch,* # steve nm
F3 TU,{CLEARIT}t{END}{CONDJUMP}{STOPTX}
F4 {MYCALL},*
F5 Call,!
F6 QSO B4,qso b4 *
```

```
F7 Other Short,{CTRLF10}  
F8 Other Long,{CTRLF11}  
F9 GoS&&P,{S&P}  
F10,cq na * * na {RUN}  
F11 Long CQ,cq na cq na * * na {RUN}  
F12, -  
F1 S&&P CQ,{JUMPRX}cq na cq na * na  
F2 S&&P Exch,! # steve nm * {RUN}  
F3 S&&P tu,tu  
F4 S&&P,*  
F5 S&&P his call,!  
F6 S&&P,-  
F7 S&&P Other Short,{CTRLF10}  
F8 S&&P Other Long,{CTRLF11}  
F9 GoRun,{RUN}  
F10,cq na * * na {RUN}  
F11 Long CQ,cq na cq na * * na {RUN}  
F12, -
```

With the Run F3 key, my “thank you” message is sent. When you QSY, you will automatically be changed to S&P mode. Do not include the {S&P} macro here – it will cause the last station worked to get “stuck” in the on-call frame of the Entry Window.

With the S&P F2 key, as soon as I send my exchange, it immediately switches to Run mode.

I can also force myself into Run and S&P modes with the F9 key.

The F7 and F8 keys send CQ’s on the “other” radio. This is very useful when the other station is sending his exchange, and you are going to lose the frequency (i.e. it will become “his” frequency). You can send a CQ on the other radio, while he is sending his exchange. Then, when he finishes sending his exchange and you need to send your “thank you” message to finish the QSO, all you have to do is hit Enter, which will stop the CQ on the other radio, and send your Run F3 message on the active radio. After the “thank you” message is sent, the {CONDJUMP} macro in the Run F3 message will move your entry focus to the “other” radio, so that you will be ready to copy a new caller on the radio you were CQing on.

When I’m CQing on the active radio, but simultaneously doing S&P on the other radio, and hear a new station, I can hit the Enter key. This will stop the CQ, and send my call on the other radio.

One thing you need to do is keep an eye on where your transmit and receive focus is (the red and green dots on the Entry Window). When you're doing SO2R in the Sprint, there will be times where your focus is not where you might expect it, or want it. Always be ready with the \ and Pause keys to jump between radios. Yes, this takes lots of practice, and you will make mistakes. The Thursday night NCCC Sprints are good practice for this.

NA Sprint CW by Kenny, K2KW

North American Sprint CW is just a few hours away, and thought I would take a moment to help others get their CW messages ready. Your messages may differ slightly from mine, but I just wanted to highlight what's happening on the F2 and F3 messages which are the key setup items for Sprint. The F2 exchange is set up to give you the correct sequence for this contest using ESM, and the exchange sequence varies based on if you are Calling CQ, or you answered someone while S&P. F3 is used to confirm the message, and change your state from S&P to Running, or Running to S&P. The {RUN} and S&P} macros are inserted at the end of the F3 message, and will automatically change your state, and thus exchange sequence.

I have also changed the Up/Down Arrow to move 1.5 kHz, giving you an "instant QSY" per the rules. You may choose to use a wider QSY increment, but the goal was to offer you an idea for QSYing so you can abide by the rules.

If you are not aware of the uniqueness of the Sprint exchange and QSY rule, check out: <http://n6tr.jzap.com/sprint.html> and <http://www.ncjweb.com/sprintrules.php>

73 and CU in the contest,

- Set the Exchange:
 - >File >Choose Which Contest to Log >Sent Exchange
 - # yourname yourstate
 - Example: # **KEN CA**
- Set QSY distance:
 - In the >Config >Configurer >Other window, change the CW Up/Down Arrow Incr = 1.5
 - That gives me an instant QSY somewhat greater than the minimum QSY required after you leave a frequency. Any value over 1 kHz is recommended

SprintNS and Sprint Ladder

Window: Contest Setup

These contests are identical except for the dupe rule that is incorporated. SPRINTNS does not allow no in-band dupes, while SPRINTLADD allows dupes with one

intervening QSO.

- Log Type:
 - SPRINTNS, SPRINTLADD
- Sent Exchange: 001 Tom CT
 - Serial number, your name and your location (state, province or country) Example: PA1M DE N1MM 123 TOM CT K

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a North American station or a non-North American station.

See NA Sprint above for more information (rules for the NS Sprint and Sprint Ladder are derived from but slightly different than NA Sprint, so be advised!).

NAQP North American QSO Parties CW / SSB

- Window: Select Log type
 - CW
 - Log Type: NAQPCW
 - Operator Category: SINGLE-OP or MULTI-TWO
 - For Multi-Two see the extra info below!
 - Mode Category: CW
 - Sent Exchange:
 - For North American stations – Operator name and station location (state, province, or country) Example: Tom CT
 - For non-North American stations – Operator name only Example: Thomas
 - SSB
 - Log Type: NAQPSSB
 - Operator Category: SINGLE-OP or MULTI-TWO
 - For Multi-Two see the extra info below!
 - Mode Category: SSB
 - Sent Exchange:
 - For North American stations – Operator name and station location (state, province, or country) Example: Tom CT
 - For non-North American stations – Operator name only Example: Thomas

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a North American station or a non-North American station. Contest rules require the Multi-Operator stations use a single name throughout the entire contest.

Note: There are two multipliers in this contest with identical exchange abbreviations: Hawaii (HI) and Dominican Republic (HI). The program scores these correctly despite the ambiguity, i.e. if you work them both on the same band you will get credit for both multipliers (one in each multiplier column in the Log and Score Summary windows).

NRAU Baltic Contest

This contest is only for stations from the following countries: ES, JW, JX, LA, LY, OH, OH0, OX, OY, OZ, SM, TF, and YL

- Window: Select Log type
 - Log Type:
 - CW: NRAUCW
 - SSB: NRAUSSB
 - Sent Exchange: Section Example: AA

When a station is logged the following checks are made:

- Is the logged station from a valid country (ES, JW, JX, LA, LY, OH, OH0, OX, OY, OZ, SM, TF, and YL)
- Is the entered section a valid section (from NRAU.sec)
- A warning is given when a qso is made on another band than 7 or 3,5 MHz. A note is made with the logged qso.

Oceania Contest

Supported are the CW and SSB version of the contest

- Window: Select Log type
 - Log Type:
 - CW: OCEANIACW
 - SSB: OCEANIASSB
 - Sent Exchange: 001

Note: The rules have special instructions for not complete portable callsigns so a prefix can not be deduced normally. Adding numbers like the rules state is not supported and should be done by editing the log file (afterwards). Example: N8BJQ/PA would be PA but is not a valid prefix and should become PA0 (add the zero).

OK OM DX contest

The OK-OM DX contest can be configured for OK/OM stations and DX stations.

- Window: Select Log type
 - Log Type: OKOMDX
 - Mode Category: CW (it is a CW only contest)
 - Sent Exchange:
 - Non-OK/OM stations: 001
 - OK/OM stations: district abbreviation Example: BPZ

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an OK/OM station or a DX station.

PA Beker Contest

The PA-beker contest is a local Dutch contest on 40 and 80 meters. The text below is in Dutch.

- Window: Select Log type
 - Log Type:
 - CW: PABEKERCW
 - SSB: PABEKERSSB
 - Sent Exchange:
 - QSL regio Voorbeeld: 27 (en niet R27)
- QSL regio ingeven en invoeren zonder R dus 27 en geen R27
- Log, Entry en Score summary geven de juiste scores.
- De multiplier window (Ctrl+J) geeft onder 'Sect' de gewerkte QSL regio's alleen daar wordt de eigen regio wel getoond indien gewerkt.
- Er zit geen beperking op banden (dus let op dat je op 40 en 80 meter logt).
- In te zenden log bestanden:

File	How to make...	Exported
Log file	>File >Export >Export to File (Generic)	[callsign].txt
Summary sheet	>File >Export >Print Score Summary to File	[callsign].sum

PACC Contest

The PACC contest can be configured for PA stations and DX stations.

- Window: Select Log type
 - Log Type: PACC
 - Sent Exchange:
 - Non-PA stations: 001
 - PA stations: Your province Example:DR

PA stations ONLY (i.e. not stations outside the Netherlands) have to import an

adapted CTY.DAT file for the PACC contest so the right multipliers will be used. In the 'Entry window' go to 'Tools', and select 'Import country list from downloaded file'. This adapted country file can be downloaded from the N1MM website, under 'Files', select in the menu: 'Additional Support Files'. Don't forget importing the original CTY.DAT file again when entering other after the PACC contests.

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a PA station.

The PACC contest committee approved and will accept the files made by N1MM logger and likes to receive:

File	How to make...	Exported
Cabrillo Log file	>File >Generate Cabrillo File	[callsign].log

PA stations: Vergeet niet in de **cabrillo log file** te vermelden de **klasse** waarin je mee doet en de **afdeling** voor het afdelingsklassement!

PA stations kunnen tijdens de PACC contest op 160 meter gelijktijdig meedoen aan de RSGB 1.8 MHz CW contest in de avonduren. N1MM accepteert na het volgnummer ook de districtcode. Voorbeeld: 599 123AA (NB, geen spatie tussen het ontvangen volgnummer en de district code)

Portugal Day Contest

The Portugal Day contest can be used for Portuguese stations (CT, CT3 or CU) and DX stations.

- Window: Select Log type
 - Log Type: PORTUGAL
 - Operator setting MUST be: SINGLE-OP
 - Exchange:
 - District or Autonome Region for Portuguese stations
 - 001 for DX stations (serialnumber)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Portuguese station or DX.

QCWA QSO Party

- Window: Select Log type
 - Log Type: QCWAQSO
 - Mode Category: Mixed
 - Exchange: Year licensed, Name, Chapter (or state/province/country)
- The unique scoring for operating within 50 miles of the special events

station and the one QSO rule for your home chapter are not supported.

RAC Canada Day Contest / RAC Canada Winter Contest

Both contests are supported with the same set of rules. These RAC contests can be used both for VE stations and DX stations.

- Window: Select Log type
 - Log Type: RAC
 - Exchange:
 - Province or territory for stations in Canada
 - 001 for VE0 stations and stations outside Canada (serialnumber)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are from Canada, VE0 or outside Canada.

The 6m and 2m bands are included in the RAC contest. You can use the “Change Band Panel Display” item in the right-click pop-up menu in the Entry window to add these two bands to the band panel buttons and enable switching to them using the Ctrl+PgUp/PgDn keys, provided the radio, if one is interfaced, is capable of switching to those bands. If you are using two (or more) radios, one of which is interfaced to the computer, then you should configure N1MM+ for SO2R and log each contact in the Entry window associated with the particular radio that is used for the contact.

RAEM CW Contest

The RAEM Contest is CW only and has no multipliers, only points. These points are calculated based on QSO points and distance between the stations (based on exchanged coordinates). Extra points are added for polar stations. Extra bonus points for RAEM memorial stations are not added because the call RAEM has no number is will not be accepted by the program. Use RAEM99 or so and update the log and score (300 additional points) after the contest. 10 band changes per hour are permitted, and a band change counter is activated when this contest is selected.

- Window: Select Log type
 - Log Type: RAEM
 - Mode Category: CW (it is a CW only contest)
 - Sent Exchange: 001 & Coordinates Example: 001 53N60
 - The own coordinates is the **second** token in Sent Exchange **without spaces** (one ‘word’)

Coordinate rules: These rules apply for the ‘Sent Exchange’ and also when entering

a coordinate in the Entry Window.

- Own coordinates: Second token in Sent Exchange **without spaces** (one 'word')
- First part is the Longitude with at the end N or S Example: 53N
- Second part is the Latitude with at the end W or O (not E) Example: 6O
- As a total this makes: 53N6O

Log and rescore: To generate the log use the Generic log file and the Score summary. Always rescore and check the log. If a qso has 1 point then the Received exchange is not correct. If there are QSOs who have gotten 2 points then your Sent Exchange is not correct. Update your Sent Exchange in the contest setup and rescore. Check again.

Call History: The call history can be used but... the coordinates have to be entered in the Name field of the Call History table. This is the only field which is capable of handling all different coordinates 1N2W but also 67N169O

REF Contest CW / SSB

The REFContest can be configured for stations in REF countries and DX stations.

- Window: Select Log type
 - Log Type:
 - CW: REFCW
 - SSB: REFSSB
 - Sent Exchange:
 - For DX stations: 001
 - For stations in REF countries – Department (F and TK) or Prefix (all other REF countries)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a station in a REF country.

RF Championship

The RF Championship is a contest for stations of the Russian Federation only.

- Window: Select Log type
 - Log Type: RFCHAMP
 - Mode Category: Select mode used in contest (CW, SSB)
 - Sent Exchange: 001

Please add the zone to sent in the Function keys. The points are calculated based on your callsign and the callsign received.

RSGB 160 Meter CW Contests

The RSGB 1.8MHz CW Contests can be configured for RSGB stations and DX stations.

- Window: Select Log type
 - Log Type: RSGB160CW
 - Mode Category: CW (it is a CW only contest)
 - Sent Exchange:
 - For DX stations: 001
 - For stations in the UK - 001 & District Example: 001 ZE

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are in the UK or not.

Serial numbers must be logged from UK stations.

There is no check by the program if a serial number is entered for non-UK stations. This because there are often several other EU contests going on at the same time and an entrant in those may not sent a serial number just an area code like DR (PACC) or a French department like 78. If a non UK station sends a serial number it must be logged in the received serial nr field, if it sends a code like DR is must be logged in the districts field.

RSGB 21/28 MHz Contest

The RSGB 21/28 MHz CW Contests can be configured for RSGB stations and DX stations

- Window: Select Log type
 - Log Type: RSGB2128
 - Sent Exchange: 001

RSGB 80 Meter Club Championship

The RSGB 80 Meter Club Championship can be configured for RSGB stations and DX stations

- Window: Select Log type
 - Log Type: RSGB80MCC
 - Sent Exchange: 001

RSGB Affiliated Societies Team Contests AFS

The RSGB Affiliated Societies Team Contests can be configured for RSGB stations and DX stations

- Window: Select Log type
 - Log Type:
 - CW: RSGBAFS-C
 - SSB: RSGBAFS-S
 - Sent Exchange: 001

RSGB Club Calls Contest

The RSGB Club Calls contest can be configured for RSGB stations and DX stations

- Window: Select Log type
 - Log Type: RSGBCLUB
 - Sent Exchange: 001

RSGB Commonwealth Contest

- Window: Select Log type
 - Log Type: RSGBBERU
 - Exchange: 001 (**HQ stations enter 001 HQ in this box, with a single space between the 001 and the HQ**)

This contest is for British Commonwealth stations only. The callsign in the Station Information dialog (Config >Change Your Station Data >Call) determines whether you are in the Commonwealth or not.

There are no multipliers in this contest. Contacts with Commonwealth stations outside your own Commonwealth Call Area (CCA) are worth 5 points; contacts within your own call area or with non-Commonwealth stations are worth zero points. There are bonus points for the first 3 contacts on each band in each CCA (25 points instead of 5 points). HQ stations send HQ after the serial number in the exchange (enter HQ in the HQ block in the entry window when you work one of these), and are also worth 25 points. You can work three bonus stations in each CCA on each band for 25 points each; any additional contacts in that CCA are worth 5 points each (unless there is an HQ station in that CCA – HQ stations are always worth 25 points). You can work the HQ station in your own call area for bonus points. HQ stations can work all CCAs including their own.

Bonus stations (first three contacts in a CCA, and HQ stations) are shown in red in the Entry window; other Commonwealth stations are in blue. Non-Commonwealth stations and stations in your own CCA are shown in grey (including the HQ station in your CCA until the HQ box in the Entry window is filled in). If you wish to work and log a zero-point QSO, use Ctrl+Alt+Enter to force-log the contact.

To have the Multiplier window show only Commonwealth Call Areas, go to the Files > Additional Support Files on this web site and download file cty-

BERU-20150131.dat into the SupportFiles subfolder in your N1MM Logger+ user files folder, then use the Logger's Tools > Import country list from downloaded file menu item to import this list into the database. You will have to close and reopen the Multiplier window for this change to take effect. The Multiplier window only shows whether one station has been worked in that CCA. **Remember to reload the normal wl_cty.dat file into the database after the contest is over and your log has been exported!**

Unless you are using a BERU-specific Call History file containing only HQ station call signs, Call History Lookup should be turned off in this contest to prevent state/section information for other contests from prefilling the HQ box.

HQ stations are recorded in the "Sect" column in the log. Call areas are recorded in the "Exch" column. In the Score Summary window, the "Cty" column indicates the number of bonus-point QSOs (first three QSOs in a CCA), and the "Sec" column indicates the number of HQ stations worked.

After the contest, review your Cabrillo file header using a text editor and compare it against the [RSGB Cabrillo instructions](#). The RSGB uses some non-standard fields in its Cabrillo file headers, so you may need to make some changes.

RSGB SSB Field Day & RSGB National Field Day

The Region I field day contest can be configured for RSGB and DX stations.

- Window: Select Log type
 - Log Type: FDREG1
 - Mode Category: The ModeCategory selects the CW or the SSB version of the contest. The rules between the CW and the SSB version are very different..
 - CW for the CW Field day contest
 - SSB for the SSB Field day contest
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a RSGB station or not and if you are /P etc. or not..

N1MM Logger+ checks whether the callsign used is a portable or a fixed station by checking the callsign in the Station dialog under config ! So using a /P, /M etc there could make a difference in scoring!

RSGB Low Power Field Day

The RSGB Low Power Field Day can be configured for RSGB stations and DX stations

- Window: Select Log type
 - Log Type: RSGBLP
 - Mode Category: CW (it is a CW only contest)
 - Sent Exchange: 001 Power Example: 001 2W5

RSGB ROPOCO

The RSGB ROPOCO (re-named ROLO) is an RSGB contest and open to all stations.

- Window: Select Log type
 - Log Type: ROPOCO
 - Mode Category: CW/SSB (SSB April, CW October)
 - Sent Exchange: First contact your full Locator (taken from station info) then last Locator received.

NOTE. Use the macro {LASTEXCH} to send the postcode from the previous qso.
Example F2 key: <<<5nn>>> {LASTEXCH}

Russian District Award Contest

The Russian District Award contest can be configured for Russian stations and DX stations.

- Window: Select Log type
 - Log Type: RDAC
 - Sent Exchange:
 - Non-Russian stations: 001
 - Russian stations: District code by RDA list (for example TB02)
- Call History exchange field: Exch1

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Russian station or a DX station.

Russian DX Contest

The Russian DX contest can be configured for Russian stations and DX stations.

- Window: Select Log type
 - Log Type: RUSSIANDX
 - Sent Exchange:
 - Non-Russian stations: 001
 - Russian stations: Your oblast code (two letters)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Russian station or a DX station.

Example: Default RU1A would have SP, in the call history RU1A could be added so it will give the correct exception LO.

When a station is found in Call history it will use the section/oblast from it. If not found in Call history it will use the default oblast.

Example Call history

RA1AR,,,, LO

RU1A,,,,LO

RU6FA,,,,KM

Log submission notes:

‘CATEGORY-OVERLAY’. In the RDXC you can submit one log and have it scored as two single band entries. Like operating 10m during day time and 160m at night. Now, this is particular to this contest and you need to submit your log like this:

CATEGORY-OVERLAY: [operator-cat] [band-cat] [power-cat] [mode-cat] The category overlay of the log submission when appropriate. In RDXC, two single band entries are allowed from one participant. In this case, one entry must be listed under CATEGORY tag, the other one under CATEGORY-OVERLAY, such as:

- CATEGORY: SINGLE-OP 80M HIGH MIXED
- CATEGORY-OVERLAY: SINGLE-OP 15M HIGH MIXED

Russian Radiosport Team Championship

- Window: Select Log type
 - Log Type:
 - RRTCT (invited teams)
 - RRTC (everyone else)
 - Sent Exchange:
 - three-letter code (teams)
 - ITU zone (others)

Russian YL/OM Contest

- Window: Select Log type
 - Log Type: RUSYLOM
 - Sent Exchange:
 - 73 for male stations (OM)
 - 88 for female stations (YL)

YL stations (female) may only work OM stations (male) and vice versa.

SAC Contest CW / SSB

The Scandinavian Activity Contest can be configured for Scandinavian stations and DX stations.

- Window: Select Log type
 - CW
 - Log Type: SACCW
 - Sent Exchange: 001
 - SSB
 - Log Type: SACSSB
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Scandinavian station or a DX station.

Spanish Towns Contest

The Spanish Towns contest can be configured for EA stations and DX stations.

- Window: Select Log type
 - Log Type: CME
 - Mode Category: SSB
 - Sent Exchange:
 - non-EA stations: 001
 - EA stations: Your INE code Example: 18145

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX station or a EA station.

SPDX Contest

The SPDX contest can be configured for Polish stations and DX stations.

- Window: Select Log type
 - Log Type: SPDX
 - Multi-Op set Operator Category = MULTI-ONE
 - Sent Exchange:
 - 001 for non-SP stations
 - Your province Example: B for Lubuskie

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Polish station or a DX station.

The band and mode change counter is shown in the Info window.

Stew Perry Topband Distance Challenge

The Stew Perry contest is CW only.

- Window: Select Log type
 - Log Type: STEWPERRY
 - Power category:
 - HIGH when > 100 Watt
 - LOW when 10 – 100 Watt
 - QRP when less than 10 Watt
 - Sent Exchange:
 - Your four character grid Example: JO33

The point calculation in the log is multiplied by a power multiplier for each qso point value. This factor depends on the selected Power category chosen. HIGH is multiplied by a factor 1, LOW by a factor 2 and QRP by a factor 4.

Scandinavian Young Ladies Radio Association SYLRA

- Window: Select Log Type
 - Log Type: SYLRA
 - Mode: Mixed+Dig
 - Sent Exchange: 88 for YLs, 73 for OMs

UA1DZ Memorial Cup

The UA1DZ Memorial Cup can be used by St.-Petersburg and Leningrad region stations and DX stations.

- Window: Select Log type
 - Log Type: DZCUP
 - Mode Category: Select mode used (CW, Mixed, SSB)
 - Sent Exchange:
 - For non-St.-Petersburg and Leningrad region stations: Grid Square e.g. EL98
 - For St.-Petersburg and Leningrad region stations: RDA (administrative area)

UBA Contest CW / SSB

The UBA DX Contest can be configured for ON stations and DX stations.

- Window: Select Log type

- Log Type:
 - CW: UBACW
 - SSB: UBASSB
- Mode Category: CW
- Sent Exchange:
 - For non-ON stations:001
 - For ON stations: 001 + Your province Example: 001 OV

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an ON station or a DX station.

Log submitting for non Belgian stations:

Before submitting your log look at [this page](#) from Franki, ON5ZO

The information tells how to update the category in the Cabrillo file so you are placed in the right category.

The UBA contest manager approved and will accept the Cabrillo output made by N1MM Logger+.

IMPORTANT NOTE quoted from the rules as found on the UBA website, regarding log submission:

Log submission info from UBA: The UBA likes to receive a Cabrillo file

Special Setup for Belgian participants:

How to include your province abbreviation in the Cabrillo output?

This MUST be done for both SSB and CW contests! Go to Config > Change your Station Data > State field: fill in the abbreviation for your province (OV, VB etc). It is VERY IMPORTANT to do this, as it will determine what you have sent in the log (Cabrillo output), and it is needed by the UBA Contest Team. The official abbreviation (2 letters) for the Belgian Provinces is to be found on the UBA site, under the rules for HF contests.

Non-Belgian participants can leave this field 'as is', it is only used for Belgian testers.

How to send your province abbreviation after the serial number in CW?

When you have selected to begin a new log for the UBA DX CW contest, you must change the F2 button message to send your province.

This is done like this; go to: Config > Change Packet /CW/SSB/Digital Message buttons > Change CW buttons In the right column, second row, there is:

《《《5nn》》》 {EXCH} This means the incrementing serial number. Now you have to add your province abbreviation, preceded by a slash (/). It should look like this: 《《《5nn》》》 {EXCH}/OV or 《《《5nn》》》 {EXCH}/AN

WARNING: Never change the '001' as the Sent Exchange value in the Select Log Type window, as the software will no longer send serial numbers!!!

UBA ON Contest

The UBA ON Contests (4 in total) can be configured for ON stations and DX stations.

- Window: Select Log type
 - Log Type: UBAON
 - Mode Category: Select mode used (CW, Mixed, SSB)
 - Sent Exchange:
 - For non-ON stations:001
 - For ON stations – Serial + Your UBA gewest Example: 001 AAA

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an ON station or a DX station.

UBA Spring

The UBA Spring contest (4 in total) can be configured for ON stations and DX stations.

- Window: Select Log type
 - Log Type: UBASPRING
 - Mode Category: Select mode used (CW, Mixed, SSB)
 - Sent Exchange:
 - For non-ON stations: 001
 - For ON stations – Serial + Your UBA gewest Example: 001 AAA

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an ON station or a DX station.

UBA Low Band Winter

The UBA Low Band Winter contest (4 in total) can be configured for ON stations and DX stations.

- Window: Select Log type
 - Log Type: UBAWINTER
 - Mode Category: Select mode used (CW, Mixed, SSB)
 - Sent Exchange:
 - For non-ON stations:001
 - For ON stations – Your UBA gewest Example: AAA

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an ON station or a DX station.

UK/EI DX CW and SSB

- Window: Select Log type
 - Log Type: UKEIDXCW or UKEIDXSSB
 - Mode Category: Select mode used (CW, SSB)
 - Sent Exchange: (Macro “001”: N1MM replaces the 001 with the correct sequential serial number)
 - For non-UK/EI stations: **001**
 - For UK/EI stations: **001** followed by YOUR District code (NOTE: no space following the 001 macro)
 - e.g. **001BM** District codes can be found in the rules [HERE](#)

Ukrainian Championship

The Ukrainian Championship is run on CW, SSB and RTTY.(for Ukrainian stations only)

- Window: Select Log Type
 - Log Type: UKRCHCW, UKRCHSSB, UKRCHRTTY
 - Sent Exchange: two-letter district designator, plus serial number – e.g., KV 001

Ukrainian DX contest

The Ukrainian DX contest can be configured for Ukrainian stations and non-Ukrainian stations.

- Window: Select Log type
 - Log Type: UKRAINDX
 - Mode Category: MIXED
 - Sent Exchange:
 - Oblast for Ukrainian stations Example: CH
 - 001 for non-Ukrainian stations

Note: Countries are counted per band for SSB, CW and RTTY, because RTTY is in a separate contest module they won't be counted correct when a station makes next to SSB and CW also RTTY q's or the other way around...

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Ukrainian station or a non-Ukrainian station.

UN DX Contest

Kazakhstan Open Championship

- Window: Select log type
 - Log Type: UNDX
 - Mode Category: Mixed
 - Sent Exchange:
 - District code for Kazakhstan stations Example: L17
 - 001 for non-Kazakhstan stations

Independence of Venezuela Contest

- Window: Select Log type
 - Log Type: YV
 - Sent Exchange: 001

The YV call areas are shown in the Multiplier window, choose the tab “Sect”.

WAEDC Contest CW / SSB

The WAEDC Contest can be configured for European stations and non-European stations.

- Window: Select Log type
 - Log Type:
 - CW: WAECW
 - SSB: WAESSB
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a European station or a non-European station.

Introduction to WAE DX CW/SSB - based on an article originally written by Franki, ON5ZO

WAE has something no other contest has, that you'll either love or hate - the exchange of information on past contacts in the contest, or QTC. Except in WAE RTTY, a QTC is a piece of traffic that can only be sent from stations outside EU to EU stations. EU stations will beg to get them. Why? Simply because for both sides each QTC is added to the QSO total. If N1MM makes a QSO with ON5ZO, then they both get 1 point for the QSO. If they decide to exchange 10 QTCs during this QSO, they each earn 11 points, 1 QSO + 10 QTCs. If, after the contest, ON5ZO made 300 QSOs, during which he got 500 QTCs, his total count will be 800, multiplied by the number of multipliers.

Each QTC has three main parts – time, call and received serial number of a QSO from the DX (non-European) station's log. Suppose that N1MM logged ON5ZO at 0123UTC, and ON5ZO gave '012' as his serial number. Later in the contest, N1MM can send the QTC to 9A7P, for example.: He would send 0123 ON5ZO 012.

The rules say that a DX station can only send a total of 10 QTCs to a EU station, and that previous QSOs with the receiving station cannot be included in the batch of QTCs sent. Each QSO can only be sent once as a QTC, so a DX station can never have more QTCs sent than QSOs logged. A EU station however, can have many more QTCs than QSOs, as each non-duplicate QSO can yield up to 10 QTCs.

A DX station can choose to send 10 QTCs to a single recipient during a single QSO, or piecemeal. In addition, QTCs do not have to be exchanged only during a non-dupe QSO. Suppose that early in the contest, ON5ZO is running, and N1MM calls on 20m. They have a regular QSO and exchange serial numbers. ON5ZO asks 'QTC?' but N1MM wants to make some QSOs first, so he declines. Towards the end of the contest, N1MM is running on 20m and ON5ZO finds him, ON5ZO sees that N1MM is a dupe because they QSO'd at the beginning of the contest. However, they didn't pass QTCs, so ON5ZO asks 'QTC? de ON5ZO'. N1MM sees that they have worked but indeed: there were no QTCs sent then, and N1MM is now eager to send 10 of his QSOs as QTCs. They do it, and both go away happy. The second QSO doesn't count, of course, but the QTCs do.

Each set of QTCs must be numbered. The sending station initiates the series of QTCs with a "batch" number like 'QTC 11/10', which means that it is the 11th batch sent by the DX station, and there will be 10 QTCs in the batch.

All this sounds terribly complicated, doesn't it?. Fortunately, N1MM Logger takes care of all the clerical work. Let's look at how it works in detail, starting with

WAE from Europe (ON5ZO as an example)

After completing the QSO, where both stations exchange serial numbers, ON5ZO goes into QTC mode by pressing Ctrl+Z. In CW, the program can be set up so that this triggers the program to send 'QTC?' to ask the other station if he wants to send QTCs. This is controlled by a menu option "Config > WAE > Ctrl+Z sends QTC? automatically (EU stations, Run mode only)" in the Entry window. In SSB, he might uncheck this option and ask the other station "Do you have QTCs for me?" before pressing Ctrl+Z. Either way, pressing Ctrl+Z opens a Receive QTC window like the one below:

QTCWindow

Receive QTC - N4ZR

Setup QTC Header : QRV

 Hdr Agn Cfm

			Agn 1	Cfm1
			Agn 2	Cfm2
			Agn 3	Cfm3
			Agn 4	Cfm4
			Agn 5	Cfm5
			Agn 6	Cfm6
			Agn 7	Cfm7
			Agn 8	Cfm8
			Agn 9	Cfm9
			Agn 10	Cfm10

Shift,Tab,Enter Move Focus - Arrow keys move within QTC windows
Green = Saved , Red = Not filled/Saved , Yellow = Format Error

Cancel Exit Clear

The cursor starts in the QTC header field, and ON5ZO logs the QTC batch number sent by the other station, such as '12/10'. If he only types the batch number without the forward slash and count, the program will assume the count is 10. ON5ZO then hits Space, which sends QRV in CW and moves the cursor to the first QTC window. In SSB he can tell the other station he is ready by using the microphone, or he can record a wav file to be sent at this point (see the Entry window "Config > WAE > Open QTC Window Setup area" menu item). Each time he copies a part of the QTC, he presses Space to move into the next box. If he doesn't copy the QTC, he can click on the numbered "Agn" button for that QTC to ask the other station to send it again. If he only wants a repeat of one part of the QTC, he can use the Shift+1, Shift+2 or Shift+3 key to ask for a repeat of the time, call or serial number. When the QTC is received and logged, he presses Enter or clicks on the "Cfm" button and the program logs the QTC and sends a confirmation message, so that the other station knows ON5ZO got it OK and he can start transmitting the next QTC.

Supported...

Supported Contests Setup

Receive QTC - N1MM				
QTC Header :				
QTC 12/10				
0206	UU7J	0103	Agn 1	Cfm1
0207	DL0GL	114	Agn 2	Cfm2
0207	F6HKA	123	Agn 3	Cfm3
0208	G0ORH	78	Agn 4	Cfm4
			Agn 5	Cfm5
			Agn 6	Cfm6
			Agn 7	Cfm7
			Agn 8	Cfm8
			Agn 9	Cfm9
			Agn 10	Cfm10

Shift,Tab,Enter Move Focus - Arrow keys move within QTC windows
Green = Saved , Red = Not filled/Saved , Yellow = Format Error

Cancel Exit Clear

When the series of QTCs is copied, ON5ZO presses the Exit button or F3, the program sends a TU message and closes the QTC window, returning to normal QSO mode. There are options in the “Config > WAE > Open QTC Window Setup area” for customizing the actions at various points in the process (CW), or the messages to be sent using the internal voice keyer (SSB) at various points.

Sometimes when conditions are poor or deteriorating or QRM is getting heavier, it is not possible to complete a batch of QTCs. If you want to start the batch over again, you can use the Clear button to clear the window and start fresh. Or, if you click on the Cancel button or press the Esc key, the QTC process is aborted. Note that both Clear and Cancel leave any QTCs that have already been logged still in the log. Depending on the circumstances, you can either leave those QTCs in the log, or if necessary (for example, if you start over and find you have duplicated some QTCs in the log) you can delete individual QTCs in the Log window.

You can use Alt+W to wipe the current line, or Ctrl+Q to place the Entry window into Quick Edit mode to edit a QSO or QTC. Normally the program will prevent you from logging an invalid QTC (non-number in the time or serial number fields, or an invalid call sign). Whenever the Agn button is highlighted, you can override this validity checking and force-log the QTC using Alt+Enter, Alt+Space or Alt+Tab.

Sometimes the number of QTCs in the header was miscopied, and the number of QTCs actually received is smaller or larger than the number originally expected. You

can use Ctrl+A to remove the last blank line from the QTC window and reduce the count in the QTC header (and in logged QTCs in that batch) by 1. Or, you can use Alt+A to add a new blank line and increase the count in the header and the log (up to a maximum of 10).

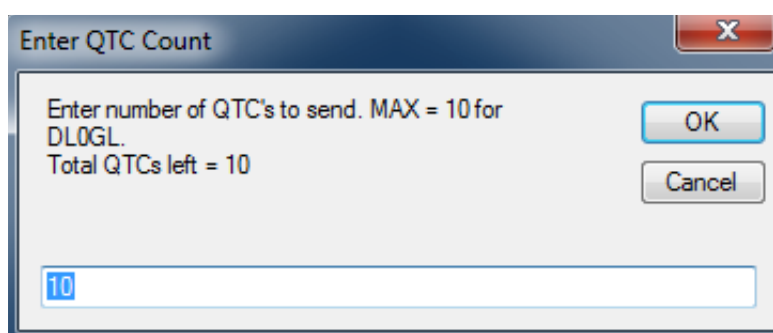
Note: Sometimes DX stations don't repeat the two digits representing the hour in the time part of the QTC. They just send the minutes, because the hour is the same for a bunch of QSOs. For example, the DX station might send '1134' for the time of the first QTC, but then send 35 and 36 for the next two.

When copying QTCs at 36 wpm or faster, you don't have the time to do anything but type what you copy. If you copy two numbers, and the next character is a letter, you usually know you need to press Space and begin typing the callsign. N1MM Logger will automatically add the two hour digits to your log. This doesn't work so well with number prefixes like 5B or 4Z unless the sending station is careful with his spacing, and we'd welcome suggestions on a better approach.

The QTC process works in either Run or S&P mode. The same keystroke, Ctrl+Z, turns it on and off (in case you need to abort QTC mode).

WAE from the DX (non-Europe) side

The process is even easier from the non-European (DX) side. If you want to send QTCs, you simply press Ctrl+Z. If you've forgotten to log the QSO first, Ctrl+Z will do it for you. A pop-up window opens, asking you how many QTCs you want to send to the EU station:



The pop-up defaults to the maximum number you can send that station, but if you want to send fewer, you can just type in the new number over the old one. When you exit from the pop-up by hitting Enter or pressing OK, the QTC header is sent to the other station, and a QTC window opens up, populated with all the information you need to send:

Supported...

Supported Contests Setup

Send QTC - ON5ZO			
QTC Header :			R U QRV
QTC: 3/10 - ON5ZO			Snd Hdr
0125	DL1IAO	0750	Snd 1
0128	HA30S	0944	Snd 2
0129	IR2C	0988	Snd 3
0131	OE3K	0080	Snd 4
0132	SN7Q	0893	Snd 5
0133	OH0R	0911	Snd 6
0135	UY5ZZ	0493	Snd 7
0137	DJ9AO	0504	Snd 8
0138	HG7T	1034	Snd 9
0140	RW1A	0954	Snd 10

Cancel Save Clear

Once the other station indicates he's ready, usually with 'QRV' in CW, you can press Enter to send each QTC in turn, waiting for the other station to acknowledge after each QTC. The following screen shot shows the window after the 5th QTC has been sent - note that the highlight is on the "Snd 6" button, because that is the one that will be sent if you press Enter at this point:

Supported...

Supported Contests Setup

Serial	Call Sign	Time	Action
1421	UR7GO	0747	Snd 1
1421	DR5M	0724	Snd 2
1422	RG3K	0218	Snd 3
1422	DK1YY	0396	Snd 4
1423	LY2J	0549	Snd 5
1423	DL5L	0731	Snd 6
1423	DM6V	1044	Snd 7
1424	DK3KD	0421	Snd 8
1424	DK9PY	0986	Snd 9
1425	9A2AJ	0466	Snd 10

Shift,Tab,Enter Move Focus - Arrow keys move within QTC windows
Green = Saved , Red = Not filled/Saved , Yellow = Format Error

Cancel Exit Clear

If he asks for a repeat, you can press the = key, Alt+Enter, or + key, or you can click on the "Snd" button for the previous QTC, i.e. the one that was not yet received and acknowledged. If he asks for a repeat of only part of the QTC, you can right-click on one of the three parts to re-send it, or you can press the 1, 2 or 3 keys to re-send just the time, call sign or serial number respectively. Once all of the QTCs have been sent and the European station acknowledges the QTC batch, you click on the Exit button to end the batch and log the sent QTCs. The Clear and Cancel buttons work the same way as for a station in EU.

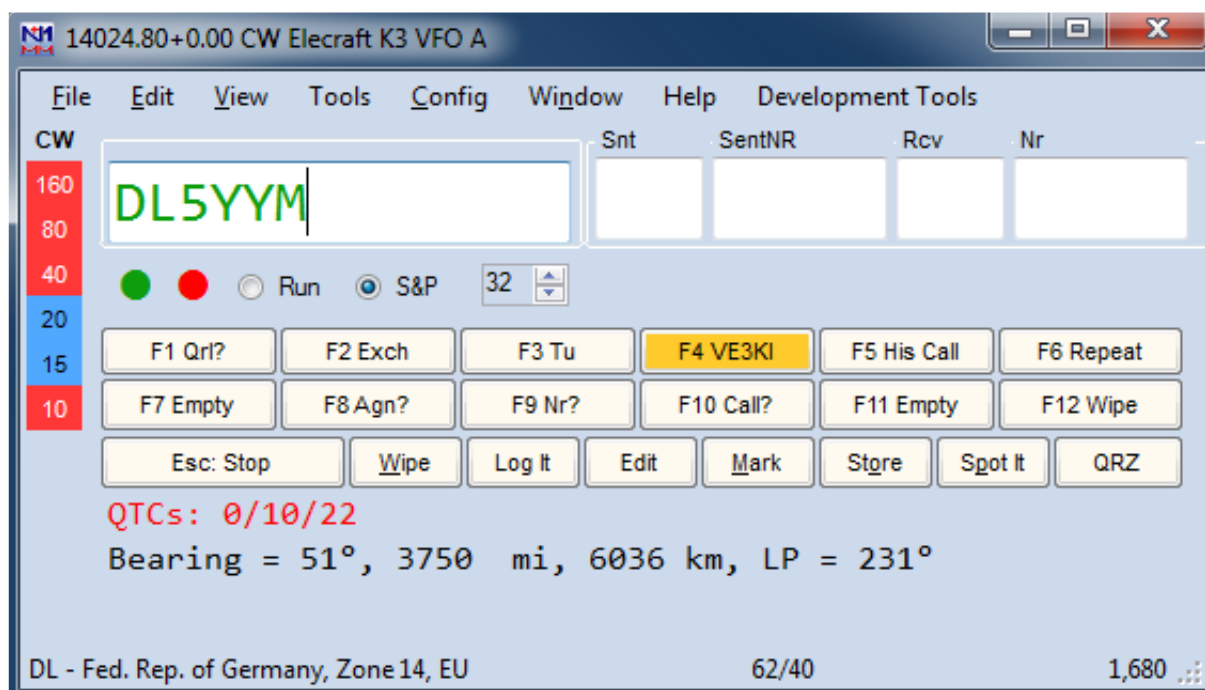
Both sides

There are a number of setup options available to customize QTC operation, including the messages sent at various points in the process. These are found in the main Entry window's **Config > WAE** menu - see the manual section on the [Entry window](#) for details.

After you enter the callsign of the other station in the entry window, a new line in red type will appear below the buttons in the Entry Window to tell you the QTC status.

Supported...

Supported Contests Setup



This line will appear regardless of whether you have worked the station yet or not. The left-most number tells you how many QTCs you have already exchanged with that station. The next number tells you how many QTCs you still have available to send to that station (up to the maximum of 10), and the last number tells you the total number of unsent QTCs in your log.

The Entry Window and the Bandmap window contain visual cues about the QTC status of stations spotted in the bandmap. A special color scheme for spotted call signs has been implemented, as follows (colors are configurable – these are the defaults):

RED: the station is a new multiplier on this band (single multiplier color, the same as in other contests)

GREEN: this is a new station on this band, and you can also exchange QTCs with him (you have not yet exchanged 10 QTCs with this station) (in other contests, this is the double multiplier color, but there are no double mults in WAE)

BLUE: this is a new station on this band, but you have no more QTC's available that can be exchanged with this station (you have already exchanged 10 QTCs, or else you are both EU stations or both DX stations, so you cannot exchange QTCs) (normal QSO color in other contests)

BLACK: this station is a dupe on this band, but you still could exchange QTCs with him for QTC points (this color is the “Color of a QTC callsign in the WAE contest” color in the Manage Skins, Colors and Fonts window)

GREY: dupe, and there are no QTC that can be exchanged – this station is non-workable for any kind of credit, so just pass him by (the same as in other contests)

One final item to be aware of: If you export your contest log to ADIF after the contest, the ADIF file will not contain QTCs, only QSOs. This is not a problem if you

are exporting for purposes of a general logging program, QSLing, etc., but if you want to transfer a WAE contest log between databases or between computers, you cannot use ADIF files to do this unless there are no QTCs in the log. To transfer a complete WAE log between copies of N1MM Logger+ on two computers, you must either copy the entire database between the computers, or else you must copy the TRN file for the WAE contest to the second computer and then import it into a new empty N1MM+ database on the second computer.

WAG Contest

The WAG contest is for German stations and non German stations.

- Window: Select Log type
 - Log Type: WAG
 - Sent Exchange:
 - non-DL stations: 001
 - DL stations:
 - DARC member:DOK (example: V11)
 - non-DARC member:001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a German station or a non-German station.

Non DL stations may only give a number.

DL stations give a DOK (DARC members) or a number (non DARC members)

For stations not giving an exchange put 000 in the exchange field

- minimal DOK length is 2
- 0 is allowed to be entered

Note: When updating a DOK in the log window you have to update not only the Exchange but also the Section by hand....only when the qso is in the Entry window the program strips the Section (V) from the Exchange (V11) automatically.

World Wide Iron Ham Contest

- Window: Select Log type
 - Log Type: WWIH
 - Sent Exchange: RS/RST and CQ Zone

Note: The contest allows CW, SSB and RTTY, but there are specific limitations on how often a station may change modes. See the rules for complete details.

World Wide Peace Messenger Contest

The Peace Messenger Contest can be configured for Peace Messenger Contest stations and non Peace Messenger stations

- Window: Select Log type
 - Log Type: WWPMC
 - Mode Category: CW, SSB or Mixed
 - Sent Exchange PMC station: 001 PMC abbreviation Example: 001 ABI
 - Sent Exchange non PMC station: 001 NON Example: 001 NON

WRTC Contest

The World Radiosport Team Championship (WRTC) contest is fully supported for use by on-site participant teams

- Window: Select Log type
 - Log Type: WRTC
 - Sent Exchange: 001 i.e Serialnumber Example: 001

The WRTC follows the rules for the WPX contest (please check above) with some additional WRTC specific changes below.

- Check Partial is disabled from master.scp for this contest only.

YO HF DX Contest

The YO HF DX contest can be used by Romanian stations and non Romanian stations.

- Window: Select Log type
 - Log Type: YOHFDX
 - Sent Exchange:
 - non-YO stations: 001
 - YO stations: Romanian county abbreviation (two letters)
Example: AR

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Romanian station or a non-Romanian station.

Setup QSO Parties - CW and SSB

XXX Screen shots and text on this page are from N1MM Logger Classic. The appearance of some screen shots may have changed slightly in PlusXXX

The program supports many US and Canadian QSO parties. Depending on the complexity of the rules, there may be minor scoring anomalies. For example, some

QSO parties offer bonus points to rovers or mobile stations for activating multiple counties; these bonus points may not be included in the score calculated by the program.

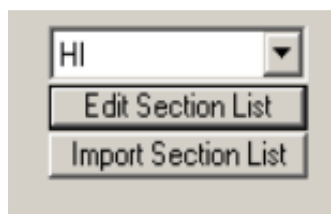
- It is **very** important for proper operation of the program in QSO parties that the program “know” whether you are an in-area (state or province) or out-of-area participant. All QSO parties require different program operation and scoring rules for in-area and out-of-area participants.

The program determines which you are from the ARRL Section that you have entered in the Station Data dialog (under the Config menu). When creating a new log for a QSO party, a message box will inform you whether the program thinks you are an in-state, or out-of-state participant, based on your ARRL section, so that you can correct things if anything is wrong.

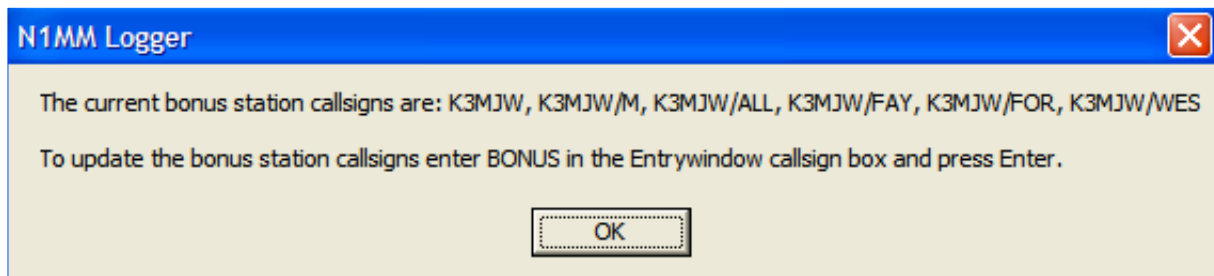
Non-US/VE stations should enter “DX” in the ARRL SECTION field. If you enter an ARRL section with a non-US/VE callsign, you will be warned to correct your Station Data before continuing.

N1MM Logger+ offers enhanced support for county-line operations, whether you are the in-state Rover on a county line or an out-of-state station wanting an easy way to log a QSO with a county-line rover. Full details are in the Mobile/Rover Support section below.

- Window: Select Log type
 - Log Type: QSOPARTY
 - After selecting QSO Party, a list box shows up in the right-hand part of the contest selection dialog box, with buttons below it for importing and editing the section list. Click on the down arrow to choose the QSO Party you want (example image shows Hawaii HI) . When in doubt, do the import, to make sure you pick up any changes in the official abbreviations since the last running.
 - Example: The entry in the list of QSO Parties for the New England QSO Party is “NEWE” (“NE” is for the Nebraska QSO Party). Most of the entries in this list are states or provinces, except for the NEWE (New England) and MAQP (Mid-Atlantic) entries.



-
- Mode Category: MIXED
 - Sent Exchange:
 - The exchange depends on the QSO party. Most use county for in-area participants and state for those out of the area. Some use serial numbers as well.
 - Inside the selected State/Province – See contest instructions
 - Outside the selected State/Province – See contest instructions
 - if you need to send a serial number, enter 001 and the abbreviation for your location in the Sent Exchange field, to automatically increment the serial number for each QSO.
 - QSO Party Bonus Station Support – A few state QSO parties have “bonus stations”, which you can work for extra point credit. When the state party has bonus station(s), the program will display the bonus station callsign list on program start and upon exiting the contest dialog.



This list of bonus stations can be modified by the user by entering the command BONUS + Enter in the Entry Window callsign box. This will pop up a window where you can enter a revised list.

Each callsign, and each variation (CALL, CALL/M, CALL/CTY) must be on the list in order to get credit for the bonus station(s).

Note: The program does not store bonus station callsign changes, so if there are changes, you will need to re-enter the complete list each time you re-start the program or change logs to that QSO party. You can't simply enter the changes.

To view the QSO's logged, enter the bonus station callsign in the Entry window and look at the lower portion of the Log window. To view the number of bonus stations counted in the score, export the Score Summary to a file.

Help Keep Your Favorite QSO Party up to Date

You can help keep N1MM Logger up to date for your favorite QSO Party by notifying the N1MM team of and changes in scoring, bonus stations, etc. Just post the changes in the N1MM Reflector, or send a Feature Request. Obviously, earlier is better.

-
- Simple Call History Procedure – The steps for generating a Call History file from a previous QSO party are as follows:
 - Open last year’s QSO party contest log.
 - Click Tools, Clear Call History then Update with Current Log
 - Click File, Export Call History and export the data into a file.
 - Using NotePad add any new stations to the end of this file. The UserText field will allow you to make personal notes for specific callsigns. This display line appears below the Bearing information line. Make the height of the Entry Window taller to enable the display of this information.
 - Open the new QSO party contest log for the current year. Associating the saved call history file with this state party is possible using the Associated Files tab. Alternately, click on File, Import Call History after the contest is open.
 - Click on Config and place a checkmark in front of Call History Lookup.
 - The call history data is stored in the database. If you open a different contest and have Call History Lookup enabled, the program will use this data. So uncheck this option after the contest.
 - Users can combine exported call history files from several years. The recommended editor is NotePad. Some editors place non-ASCII characters in the file and this will cause import issues. Place the oldest contest at the top of the merged file. The import routine will merge the data and deal with duplicate entries. You can look at the result by exporting the call history and viewing it with NotePad.

Same weekend: 7QP, Indiana QSO Party, New England QSO Party (NEWE), Delaware QSO Party

Four QSO parties – the 7QP (7th Call Area QSO Party), Indiana QSO Party, Delaware QSO Party and New England QSO Party – are all on the same weekend. The program software allows users to log stations active in all four QSO parties and automatically determine the state multiplier from the received exchange (other contest county exchange). Log the exact exchange that is received and send the same Cabrillo output to all four contest sponsors. If you are an “in-state” user of one of these QSO parties, select the appropriate state party option in the QSO party contest selector. If you are “out-of-state” for all contests this weekend, select the IN7QPNE option in the dropdown state selector. The instructions are the same, log the exchange that you receive and send the same Cabrillo file without editing to all four sponsors. All sponsors re-calculate the score of all submissions.

N1MM supports the 7QP shorthand county exchanges (e.g., “ORDES/JEF” or “IDFRA/UTCAC”) and will log one QSO for each valid exchange. You must do this at

the time the contact is logged. Do not edit the QSO and force the exchange to be of the form: "ORDES/JEF". This will cause database errors and the program will not be able to score or rescore correctly.

FL QSO party

For in-state users, the software automatically counts the first FL QSO as the FL multiplier.

PA QSO party

For in-state stations, the first EPA and WPA county worked will count both the county and the section multiplier in the score. Likewise, the first DXCC station worked counts as the single DX multiplier. See the information in the general section above for working bonus stations and county line stations. It is not necessary to include a Dupe Sheet with the contest submission when N1MM Logger is used for the PA QSO Party logging.

MARAC QSO Party

Sponsored by MARAC and also known as the U.S.Counties QSO Party. This QSO party has 3077 US county multipliers. Because of the screen area required, it is not recommended to display the counties in the Multiplier window. See the MARAC website for the county abbreviations.

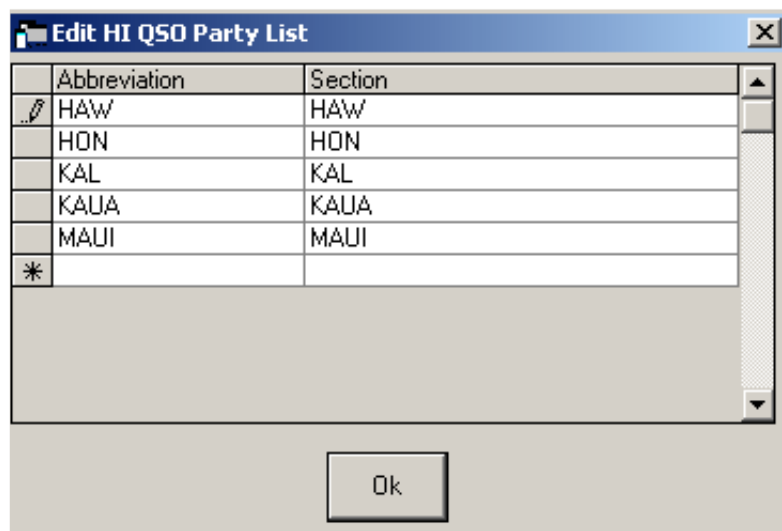
Modifying and Importing the QSO Party County Abbreviations

It is not expected that users will need to manually update or edit the county abbreviation list. It is easy to make a change that will effect the program operation or eliminate secondary information stored in other database fields during QSO logging. This is especially true for the 7QP, IN, IN7QPNE, NEWE, and PA QSO parties. Please report any changes made by the QSO party sponsors to the development team several weeks prior to the contest.

The county abbreviations stored in the database can be edited by opening the contest dialog (File, Open Log in Database) and select 'Edit Section List'. A sample edit window is shown below. The modification will remain in the current database until the developers make a change to any QSO party county abbreviation.

Supported...

Supported Contests Setup



To revert back to the original county and state abbreviation list provided by the developers, manually import the original files into the database with this procedure. Open the contest dialog (File, Open Log in Database) and select 'Import Section List'. It is not recommended that the user edit the state and county files provided by the developers.

Rover, Mobile, and County Line Support

N1MM Logger supports Rover/Mobile and County Line operation and for QSO party contests, the software contains features allowing the home station to quickly log the County Line station.

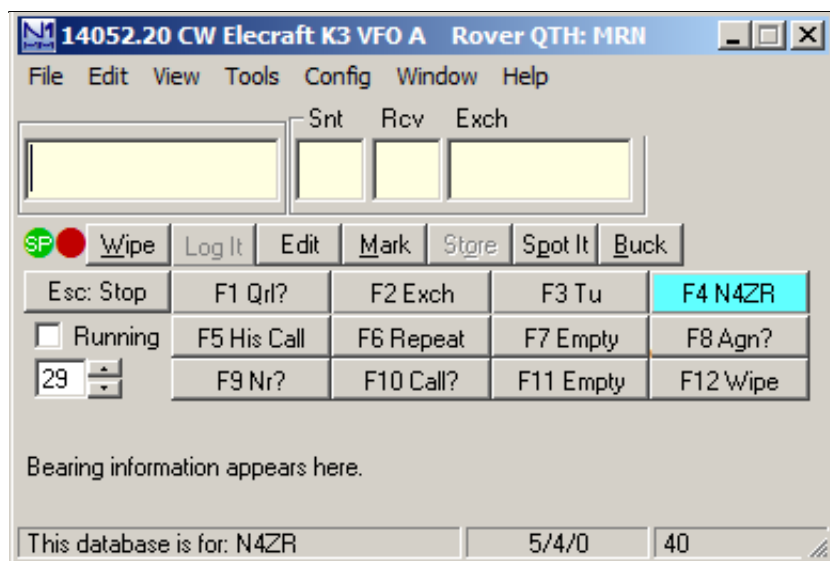
Rover/Mobile Operation

N1MM logger supports Rover or Mobile operation in the ARRL VHF contests and all QSO parties. It gives a Rover entrant a quick, easy way of changing counties, re-programming F-key messages in one step, and produce a single composite log for the entire event.

Rover mode is enabled when one of these selections is made in the Contest Setup dialog: Operator Category = Rover. or Station Category = Rover or Mobile. The option that appears in the Contest Setup dialog will depend on the Cabrillo version requested by the sponsor. When Rover mode is enabled, the Entry Window title bar will include the RoverQTH as shown in the snapshot below.

Supported...

Supported Contests Setup



The operating location or RoverQTH can be set:

- in the Station Data window, RoverQTH box. This box will automatically update when you use any of the other methods of setting RoverQTH below.
- by right clicking on the county or grid in the Multiplier window and selecting "Set RoverQTH"
- by typing CTRL+H
- or by typing ROVERQTH in the Entry Window callsign box and pressing Enter. This opens a window to input the county designator, typically 3 or 4 characters.

If the RoverQTH is typed when a QSO party is selected, one of the approved county abbreviations must be entered. When the RoverQTH is changed, the Entry Window title bar is updated and the Station Data, RoverQTH box is updated. This saves the RoverQTH for program restart.

The {ROVERQTH} macro, when placed in your F-key messages will always send the current RoverQTH string. If, for example, your F2 key is defined as "5NN{ROVERQTH}", the macro will substitute the RoverQTH operating location in place of {ROVERQTH}. The operating location will also appear in the Log window for each QSO. If the {COUNTYLINE} macro (explained below) is included in the F-key message it will be ignored when the program is in rover mode. This allows a station to operate as a rover and county line station during the same QSO party without editing the F-key messages.

RoverQTH can be 10 characters long but most Cabrillo output is limited to five or six characters.

When a new ROVERQTH is set in the Entry window, the program checks with the list of accepted county designators for the current QSO party. If for some reason an unlisted county designator is required, it can be entered in the RoverQTH Field of

your Station Data page.

QSO Party County Line Operation

County line operation is popular with in-state operators in QSO parties because you can give out more than one county designator from a single location. The out-of-state operators receive two or more counties – often rare ones – in a single QSO, and earn multiplier credit for each county. If the QSO party exchanges serial numbers, be sure to read the QSO party rules to determine if the county line QSO's need to be logged with incrementing serial numbers.

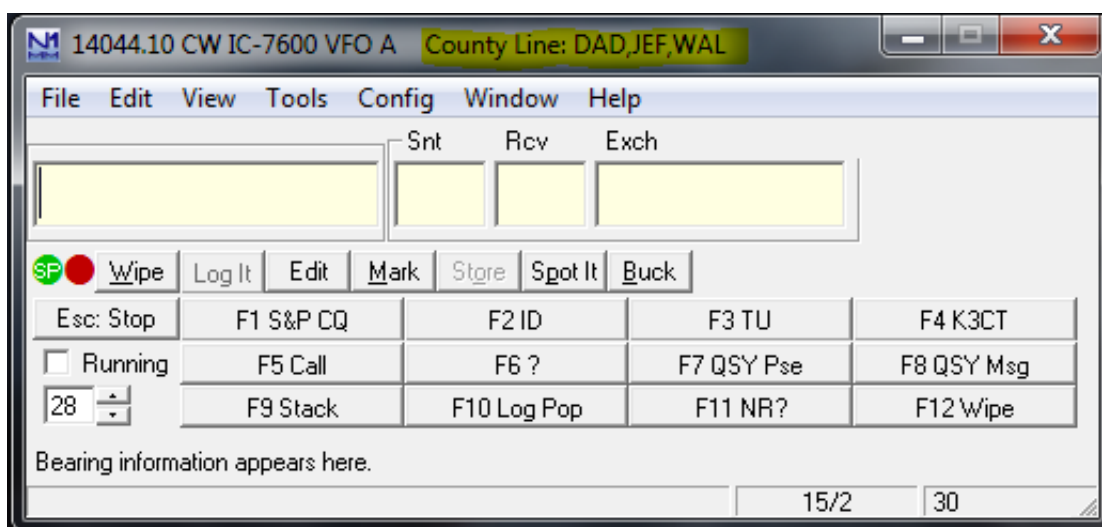
Logging QSO Party County Line Stations

Regardless of whether you are an in-state or out-of-state participant, if you work a county-line station, simply log it using the DAD/JEF/WAL format in the Exchange field. Separate QSOs will appear in your log, one for each county.

If the QSO party exchanges serial numbers, the same received serial number will be used when logging the separate QSO's. If the sending station sends a different serial number for each QSO you can Quick Edit the QSO and change the received serial number. It is also acceptable to manually log individual QSO's without the compound exchange (DAD/JEF/WAL) entry.

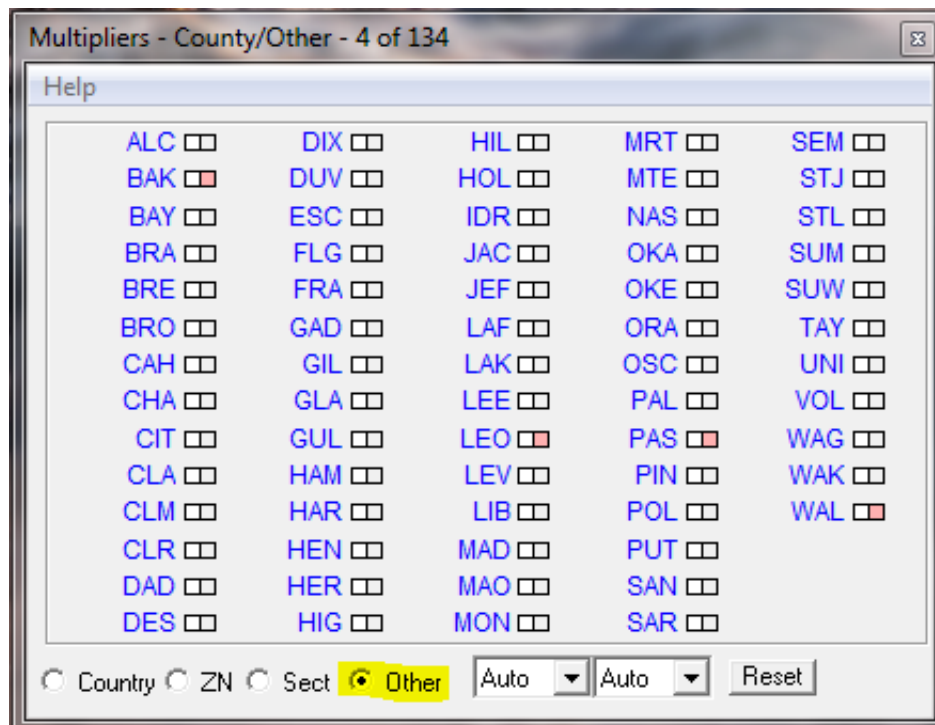
A limitation of county line logging with the multiple county exchange is that the 'same callsign' can not be logged again on any band or mode until the computer clock advances beyond the time stamp of the last logged QSO. This will unlikely be an issue for the home station.

Operating From a County Line



Begin by selecting Operator Category = Rover or Station Category = Rover or Mobile in the Contest Setup dialog. The county line mode is enabled by entering the

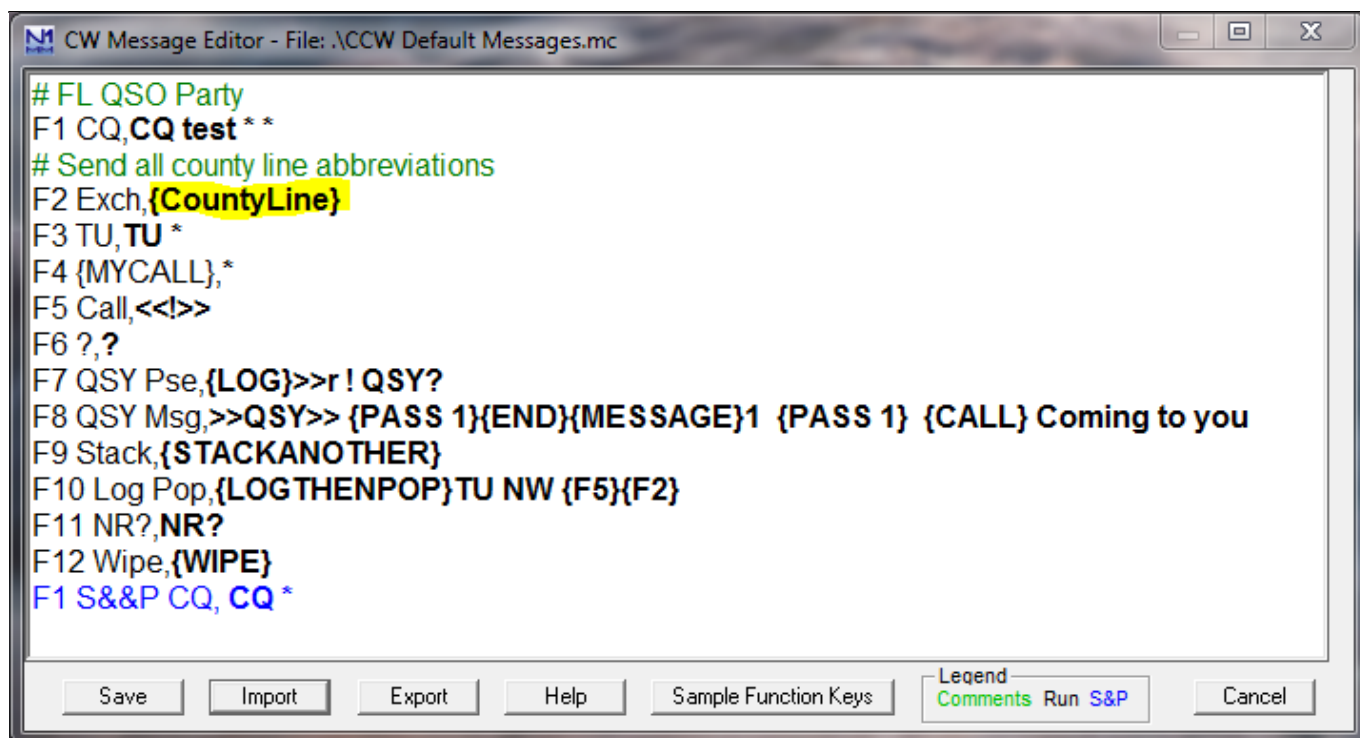
word COUNTYLINE in the callsign field of the Entry window and pressing Enter. A pop-up box will appear, asking you to enter the county abbreviations, separated by commas. If the QSO party exchanges serial numbers, a prompt will appear asking if the serial numbers of the subsequent logged QSO's should be incremented. The answer to this is dependent on the QSO party rules. The simplest operation for everyone involved is no incrementing serial numbers for county line QSOs. There is additional information about the selection to increment serial numbers below but when the entry is complete, the counties will appear in the title bar of the Entry window so you can be sure they will be right in the log.



You must enter the full county abbreviations specified by the contest sponsors. Shortcuts omitting state are not allowed. If you can't remember, Windows > Multipliers > Other selection will display a complete list for the current QSO party. Unlike your RoverQTH, which becomes part of your Station Data page, in County Line mode you will need to re-enter the string of counties if you restart the program.

Supported...

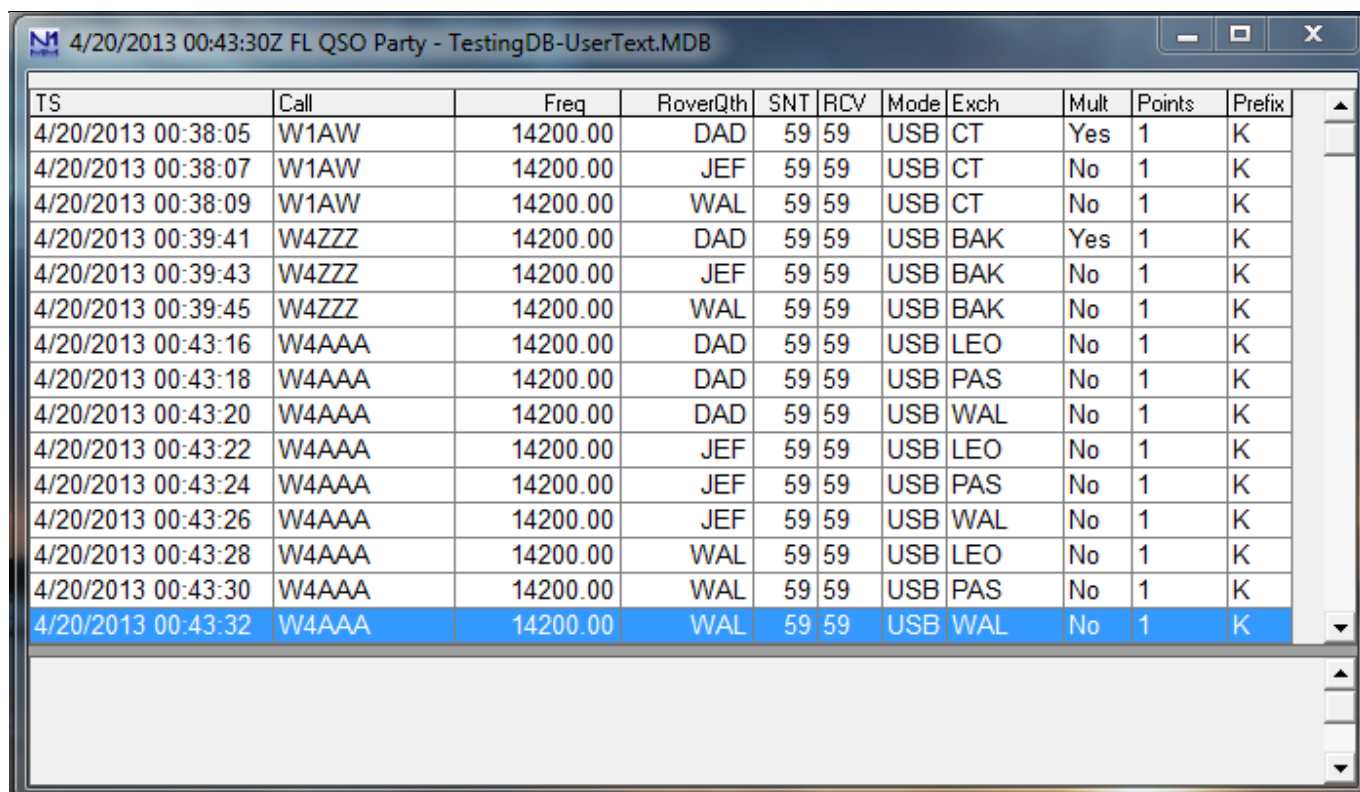
Supported Contests Setup



The use of stored messages, for CW or digital modes is simplified with the use of the {COUNTYLINE} macro which sends the string of counties separated with a "/" character. Simply use the {COUNTYLINE} macro in place of the {EXCH} macro normally used in Run F2 and S&P F2. If the {ROVERQTH} macro (explained above) is included in the F-key message it will be ignored when the program is in county line mode. This allows a station to operate as a rover and county line station during the same QSO party without editing the F-key messages.

Supported...

Supported Contests Setup



TS	Call	Freq	RoverQth	SNT	RCV	Mode	Exch	Mult	Points	Prefix
4/20/2013 00:38:05	W1AW	14200.00	DAD	59	59	USB	CT	Yes	1	K
4/20/2013 00:38:07	W1AW	14200.00	JEF	59	59	USB	CT	No	1	K
4/20/2013 00:38:09	W1AW	14200.00	WAL	59	59	USB	CT	No	1	K
4/20/2013 00:39:41	W4ZZZ	14200.00	DAD	59	59	USB	BAK	Yes	1	K
4/20/2013 00:39:43	W4ZZZ	14200.00	JEF	59	59	USB	BAK	No	1	K
4/20/2013 00:39:45	W4ZZZ	14200.00	WAL	59	59	USB	BAK	No	1	K
4/20/2013 00:43:16	W4AAA	14200.00	DAD	59	59	USB	LEO	No	1	K
4/20/2013 00:43:18	W4AAA	14200.00	DAD	59	59	USB	PAS	No	1	K
4/20/2013 00:43:20	W4AAA	14200.00	DAD	59	59	USB	WAL	No	1	K
4/20/2013 00:43:22	W4AAA	14200.00	JEF	59	59	USB	LEO	No	1	K
4/20/2013 00:43:24	W4AAA	14200.00	JEF	59	59	USB	PAS	No	1	K
4/20/2013 00:43:26	W4AAA	14200.00	JEF	59	59	USB	WAL	No	1	K
4/20/2013 00:43:28	W4AAA	14200.00	WAL	59	59	USB	LEO	No	1	K
4/20/2013 00:43:30	W4AAA	14200.00	WAL	59	59	USB	PAS	No	1	K
4/20/2013 00:43:32	W4AAA	14200.00	WAL	59	59	USB	WAL	No	1	K

Now you're ready to go. Each time you work a station from a county line, the program will transmit all the county abbreviations you have entered, separated by a "/" - in this example, "DAD/JEF/WAL". It will also enter a QSO in the log for each county line county listed under the Rover QTH column in the Log window. A Log window example is shown below operating from the DAD/JEF/WAL county line. Three stations were logged W1AW - CT, W4ZZZ-BAK, and another county line station W4AAA at LEO/PAS/WAL producing 15 logged contacts.

If you work a county-line station, you log it by simply by entering the received county abbreviations separated by a "/", as explained in the next section below. The logged result will be separate logged QSOs, one for each county combination.

If incrementing sent serial numbers was selected when entering the county line counties, the following information is important. The program uses a serial number reservation system to insure that serial number does not change after it is reserved by a VFO, radio, or multi-user station. If a county line station chooses incrementing serial numbers and reserves a serial number on more than one VFO, radio, or multi-user station at the same time, the logged county line serial numbers will not be in sequential order. If the QSO party sponsor requires incrementing county line serial numbers and that they be in sequential order, the county line operation will be limited to one station, radio, and VFO. Contact the QSO party sponsor for the expectations of the sent and received county line QSO serial numbers.

One limitation of county line logging is that the 'same callsign' can not be logged again on any band or mode until the computer clock advances beyond the time

stamp of the last logged QSO. This will only be a concern when moving a station to another band or mode, operating from more than two county lines, and working another county line station.

Setup VHF and Up Contests - CW and SSB

In VHF and up contest it is the norm to give accurate signal reports. Use the Tab to go from the callsign filed to the signal report fields. You will note that it highlights the strength to allow quick modification of that.

Feature - All QSOs in a Grid are Displayed

When a grid is entered but no call, all QSOs with that grid will show in the lower part of log window

Logging Digital Mode Contacts

N1MM+ supports a few digital modes: RTTY, PSK31 and PSK63 via the [Digital Interface](#) window. "JT" modes such as FT8, MSK144, FT4, etc. are supported via the WSJT-to-N1MM+ interface described in the manual under the [WSJT Decode List](#) window. Remember to set the Mode category in the Contest Setup dialog to SSB+CW+DIGITAL to enable scoring of digital modes. Other modes can also be entered by entering the contact in one of the supported modes (such as SSB) and then editing the mode in the Log window. You will need to do a Tools > Rescore Contest operation to correct the score after doing any editing in the Log window.

ARRL 10GHz and Up

- Window: Select Log type
 - Log Type: ARRL10GHz
 - Sent Exchange: Your six character grid Example: JO33ab

Be sure to read the official contest rules: <http://www.arrl.org/10-ghz-up>. Stations are encouraged to operate from more than a single location, which is referred to within the N1MM+ program as a "Rover." So although the contest rules never mention the word "Rover," these N1MM+ setup instructions use Rover as its method for identifying a portable station.

- The contest takes place over two weekends in August and September. Select >File >New Log in Database "ARRL10GHZ." Use that same log for both weekends to ensure proper score and DUPE tracking
- **To display the UHF/SHF bands in the Entry Window**, open the new ARRL10GHz log. If the UHF/SHF bands that you intend to operate are not listed in the Entry Window (EW), right-click in the EW, select >Change Band Panel Display, and enable/disable the desired bands
- **To change bands**, click on the desired band in the EW Band Panel Display

or enter the new frequency (value in kHz) into the EW callsign field

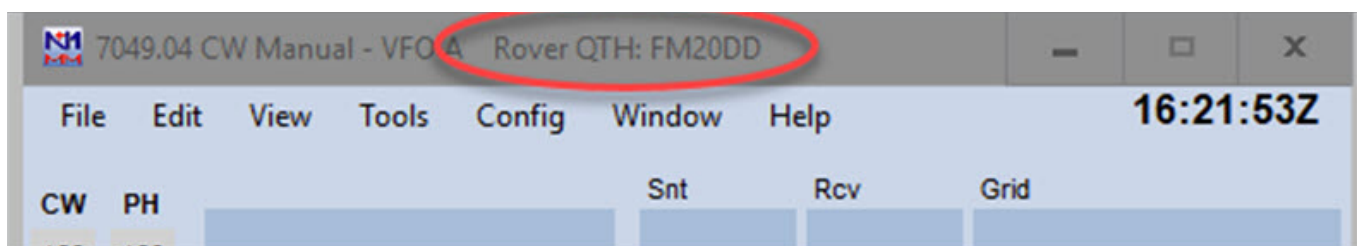
- **To automatically send your grid square** in CW or digital modes
 - **Fixed stations** (and all non-Rovers) use the standard {EXCH} macro in F1-F12 messages
 - **Portable stations** (Rovers) use the special {ROVERQTH} macro in F1-F12 messages
- **Portable stations** (Rovers) – every time you change locations (and before logging any contacts) the operator should use the ctrl+H command or type “ROVERQTH” in the Entry Window callsign field to designate the new grid square

NOTE 1: If you made contest QSOs in the first weekend, not using N1MM+, you can enter those contacts manually into a new N1MM+ contest log before the second weekend (date and time should be corrected manually). This will help to avoid DUPE contacts during the second part of the contest.

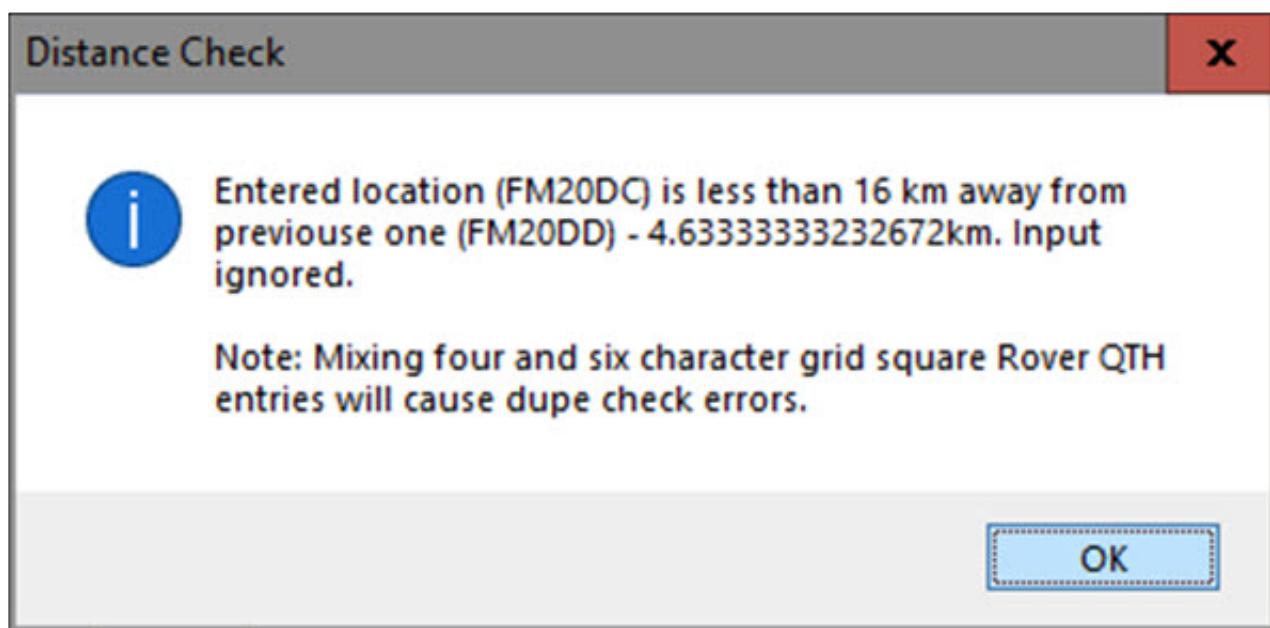
NOTE 2: N1MM+ is unable to calculate Off Times correctly because N1MM+ determines off times based on QSOs logged and the contest rules require that you take listening times into account. Also the rules specify local time for Start and End of contest which is very unusual.

Portable Stations Pre-Contest Location Test

- When creating the new ARRL10GHz Log (and before logging any contacts), stations should select “Rover” as the Station category in the >File >Open Log in Database >Category >Station field of the dialog window
- If you know your initial portable start-point for the contest, enter that initial 6 character grid location in N1MM+’s >Config >Change Your Station Data >Rover QTH field. This Rover QTH field will be updated throughout the contest each time you adjust your location with a ctrl+H command or by typing “ROVERQTH” in the Entry Window Callsign field
- Portable stations should do a preliminary check of all their planned locations by entering them one-after-another before the contest by using ctrl+H or “ROVERQTH” in Entry Window. The current Rover QTH will always be listed at the top of the Entry Window



- As each new portable location is entered, N1MM+ will check for compliance with the contest’s 16km rule. If the proposed new location is within 16km, the following popup error message will appear:



PORTABLE STATION NOTE: After checking all of your proposed portable locations, write them down on a piece of paper. N1MM+ does not store that information. When finished with testing the proposed locations, re-enter your initial portable start-point in N1MM+'s >Config >Change Your Station Data >Rover QTH field.

ARRL-222 and Up

August UHF Contest (aka "222 MHz and Up Distance Contest")

- Window: Select Log type
 - Log Type: ARRL-222
 - Sent Exchange: Your six character grid Example: JO33ab

Exchange of signal report is optional. Foreign stations work W/VE amateurs only.

Stations can be logged more than once from a different grid without being a dupe (for Rover stations).

Dupe check on first 4 characters of grid.

The score for Rover stations is not being calculated by the program!

Scoring is correct for fixed and Rover stations except for Rule 3.2. Currently Rule 3.2 is not implemented in N1MM for a fixed station working a rover in multiple 6-digit grids all within the same 4-digit grid on the same band. The contact that has the longest distance and highest calculated score should be used for scoring, with the other contacts given zero points. Instead all contacts are given the score and the final score will be higher than it should be. (Nick NA3M, 2019-08-01)

ARRL January VHF Sweepstakes

- Window: Select Log type
 - Log Type: ARRLVHFJAN
 - Sent Exchange: Your four character grid Example: JO33

Exchange of signal report is optional. Foreign stations work W/VE amateurs only.

Stations can be logged more than once from a different grid without being a dupe (for Rover stations).

Dupe check on first 4 characters of grid.

The score for Rover stations is not being calculated by the program!

ARRL June VHF QSO Party

- Window: Select Log type
 - Log Type: ARRLVHFJUN
 - Sent Exchange: Your four character grid Example: JO33

Exchange of signal report is optional. Foreign stations work W/VE amateurs only.

Stations can be logged more than once from a different grid without being a dupe (for Rover stations).

Dupe check on first 4 characters of grid.

The score for Rover stations is not being calculated by the program!

ARRL September VHF QSO Party

- Window: Select Log type
 - Log Type: ARRLVHFSEP
 - Sent Exchange: Your four character grid Example: JO33

Exchange of signal report is optional. Foreign stations work W/VE amateurs only.

Stations can be logged more than once from a different grid without being a dupe (for Rover stations).

Dupe check on first 4 characters of grid.

The score for Rover stations is not being calculated by the program!

CQ WW VHF Contest

- Window: Select Log type
 - Log Type: CQWWVHF
 - Sent Exchange: Your four character grid Example: JO33

Exchange of signal report is optional.

Rover stations can be logged more than once from a different grid without being a dupe.

Dupe check on first 4 characters of grid.

The score for Rover stations is not calculated by the program.

- A Reverse Call History Lookup feature has been implemented for this contest
 - If Call History Lookup is enabled, and a Call History file containing grid squares has been loaded, then when a grid square or partial grid square (at least two characters) is entered into the exchange field and there is no call sign in the call sign field, the Check window will display all call signs in the Call History file with that same grid square
 - The call signs are entered in magenta color, and can be clicked on with the mouse to transfer one of them to the call sign window
 - If there is a partial call sign in the call sign field, possibly using wild cards for missing characters, the list of call signs displayed will be limited to those matching the partial call sign

IARU Region 1 contesting - 50 MHz, VHF, UHF/Microwaves

Region 1 contesting uses a serial number and gridsquare as exchange. The points per qso is the calculated distance between your sent gridsquare and the received gridsquare.

- Station Information ('Config | Change Your Station data')
 - Grid Square: [gridsquare] Example: JO33fd
 - This grid square is used in calculating the distance between the stations (and is part of the exchange)
- Window: Select Log type ('File | Choose Which Contest to Log')
 - Log Type: VHFREG1
 - Sent Exchange: 001 [gridsquare]
 - Example: 001 JO33fd
 - The sent exchange is not used by this specific contest otherwise the use in the macros for the function keys.

This contest type has the possibility to use the CallHist table in which information can be stored which can be easy to have during a qso like name and gridsquares used in previous contests. This specific contest type uses the Name, Locator1 and Locator2 fields from the CallHist table. Entering any information in this table is not necessary for the contest module to work but can be very handy. For this to work information has to be imported in the Call History table ('File | Import | Import Call History'), also this feature has to be enabled to work ('Config | Call History Lookup').

- When a callsign is entered and the SPACE or TAB key is pressed the program will check next to the normal things like dupe check the following:
 - Check the log if the callsign is known and if already worked the gridsquare is entered from the log in the Entry Window grid square exchange field.
 - If not found in the log file it will check the CallHist table. If the callsign is found it will place the content from Locator1 in the Entry Window grid square exchange field. The callsign is 'normalized' before searching in the CallHist table which means that /P, /A, /2 etc. will be removed before searching. Information in the CallHist table should be in its normalized form.
- Information from the CallHist table i.e. Locator1, Locator2 and the name field will be shown below the function keys.
- Normally this feature is not turned on (it gives a very short delay while searching the table), to turn it on select: 'Config | Call History Lookup'
- Note: Any information already typed in the grid square exchange will not be overwritten by the log file or CallHist table search. So first entering a grid square and afterwards a callsign is possible without overwriting the already entered grid square information. A callsign already worked will be shown in the bottom pane of the log window and marked with the dupe message. If the station is not worked before and is present in the CallHist table, this information will always be shown below the function keys.
- More information about importing information in the CallHist table can be found in chapter VHF and Up contesting. A zip file with an import file for the 'Call history' lookup function and a ready master file with known calls can be downloaded from the N1MM website, select 'Other Files' under 'Downloads'. Don't forget to turn on the lookup function under 'Config | Call History Lookup'
- More information about VHF related contesting and features can be found in chapter VHF and Up contesting

A QSO can not be entered when

- The serial number is missing
 - Warning: "Missing Serial Number!"
- The grid length is not 6
 - Warning: - "6 character grid required!"
- The grid format is not correct.

-
- Warning: - "Wrong format grid. Format = AA##AA"

These checks will (only) be done: when trying to log the qso (mostly by pressing Enter)

How VHFREG1 looks for a known grid square

- Look in the log if the station has been worked before (on any band)
 - If found show the grid and calculate distance and bearing
- If not found look for the call sign in the 'call history' table including any /P /3 etc when applicable.
 - If found show the grid and calculate distance and bearing
- If not found look for the call sign in the 'call history' table with the /P /3 etc removed (normalized callsign)
 - If found show the grid and calculate distance and bearing
- If not found add the 'big grid' from the country when known by VHFREG1
 - If found show 'big grid' (no calculations done)
 - If not show nothing in grid square field
- The check will (only) be done: When space is pressed and the cursor is in Callsign field

Bearing and distance calculations

- When space is pressed and the cursor is in Callsign field
- When trying to log the qso (mostly by pressing Enter)
- The grid square length has to be 4 or 6 digits.
- Bearing info is shown in the log window and saved in the Misc field.
- Distance info is shown in km in the log window and saved in the Points field.
- Use Rescore to have the bearing and distance (re)calculated.

Check Grid with country

- When a grid is entered the program will check if the 'big grid' is a possible grid for the entered callsign.
 - Example: A Dutch station is always in JO.
- When the callsign is entered with /MM the check will not be done.
- The check will (only) be done:
 - When space is pressed and the cursor is in Callsign field
 - When trying to log the qso (mostly by pressing Enter)

Add 'big grid' to 4 digit grid (if last 4 digits entered)

- When a 4 digit grid is entered the program checks if these are the last four characters from a 6 digit grid. If so it will add the 'big grid' from the country (for a Dutch station it will add JO).
- The check will (only) be done:

-
- When space is pressed and the cursor is in Callsign field
 - When trying to log the qso (mostly by pressing Enter)

Add 'big grid' when no grid is found (from log or 'call history' table)

When a station is entered in the callsign pressing SPACE will search the 'call history' table. When the entered callsign is not found the program will try to add the 'big grid' who belongs to that country. If more grids are possible it uses the grid which occupies the most space in the country (IO in England) or is the easiest workable grid from Western Europe (JP for Norway, most south grid. The Netherlands will always give JO because this is the only grid possible for PA.

- The check will (only) be done:
 - When space is pressed and the cursor is in Callsign field

For DL stations: The German contest manager hat informiert dass er die Logeinsendungen von N1MM gerne akzeptiert. Wie immer akzeptiert er den postalischen Versand des Logs, jedoch auch Email ist möglich, lediglich müssen die Daten druckfähig sein.

Vorab also einige Hinweis:

1. Jedes Log muß mit dem Generic-File-Output als TXT-Format sortiert nach Zeit abgespeichert werden und als Bezeichnung "CALLBAND.TXT" lauten. Also DH5HV2m.txt zum Beispiel für einen Contest unter DH5HV auf 2m.
2. Bei der Einsendung mehrerer Bänder sollte man diesbezüglich den Generic-File erstellen mit "sorted by Band" und dann mit einem Editor kurz bearbeiten, sodass man als Beispiel eine 2m-Datei, eine 70cm-Datei, eine 23cm-Datei, etc. hat. Auch hier natürlich dann DH5HV2m.txt und DH5HV70cm.txt und DH5HV23cm.txt erstellen bzw. benennen.
3. Und wie bisher auch üblich wird für jedes Band ein separates Deckblatt benötigt, was nur komplett ausgefüllt gewertet werden kann. Man findet dies unter <http://www.darc.de/referate/ukw-funksport/index.html> ganz unten als PDF- oder DOC-File.

Marconi CW contest

The Marconi CW contest is CW only. For settings see the [VHF Region 1](#) contest.

- Window: Select Log type
 - Select: Log Type: VHFREG1

NAC Activity Contest

As there is no serial number needed in the NAC contest exchange serial numbers are not shown and not added to the EDI output (opposed to VHFREG1).

In the EDI output the scoring, bonus and multipliers are calculated. The grid locator from the station information is used in the calculations. Also the antennas, heights etc. are taken from this dialog.

For more settings and possibilities see the VHF Region 1 contest.

- Window: Select Log type
 - Select: Log Type: VHFNAC
 - Sent Exchange: Nothing specific needed but the 6 digit grid would be fine to use it in the Sent Exchange macros.

REF Departments contest 50 Mhz

- Window: Select Log type
 - Log Type: DDFM50
 - Sent Exchange: Serial Number + Your four character grid Example: 001 JO33

VHF/UHF Helvetia 26 contest

- Window: Select Log type
 - Log Type: VHFHELV26
 - Sent Exchange: 001

Local Swiss VHF/UHF and up contest. Uses almost the same rules as VHFREG1 but with an added field for Swiss stations for exchanging Cantons which are also multipliers for the contest. All features mentioned above for VHFREG1 can be used in this contest. Use in the Multiplier sheet the Sect tab to view the worked Cantons (select VHF and auto).

VHF HG OB contest

- Window: Select Log type
 - Log Type: VHFHGOB
 - Sent Exchange: 001

Local Hungarian VHF contest. Uses almost the same rules as VHFREG1 but dupes per mode CW or FM/SSB (station may be worked twice per band). All features mentioned above for VHFREG1 can be used in this contest.

VHF UA1DZ Cup

- Window: Select Log type
 - Log Type: VHFDZCUP
 - Sent Exchange: 001 gridsquare Example: 001 KO94BD

Russian VHF contest. Exchange is RST + serial number + grid square.

VRZA - Nederlandse Locator Contest - WANLC

- Window: Select Log type
 - Log Type: REGIOVHF (is dus nu de WANLC contest)
 - Sent Exchange: 001

Only for Dutch stations.

Noot: Deze contest kent een aantal mogelijkheden om extra multipliers te halen middels een soort 'Rover' stations. Dit wordt niet ondersteund door het programma en deze stations worden een DUPE! Ofwel: De multipliers en punten voor /M en /P stations gewerkt voor een tweede keer worden NIET door het programma automatisch bepaald. Deze dupes dus WEL loggen en achteraf de score en multiplier aanpassen op 'generic log' en de 'summery sheet'.

Cabrillo output wordt ondersteund (File, Export, Cabrillo).

Voor stations in de secties B en J (Single Operator / Mixed mode)

- Selecteer SINGLE-OP-ASSISTED (onder File, Choose Which Contest to Log, Operator Category) voor een doorlopende nummering over de banden heen!

YU DX Contest

- Window: Select Log Type
 - Log Type: YUDX
 - Sent Exchange: your ITU zone. (remember also to put RST in your exchange messages)

UKSMG sporadic-E competition

- Window: Select Log type
 - Log Type: UKSMG
 - Sent Exchange: Your six character grid (Example: IO75UU) and your UKSMG membership number, if any.

Your function key exchange messages should also include an RST and serial number (#), but you do not put these in the Sent Exchange box in the setup.

Only the 6 meter band is shown in the Multiplier window.

Setup Digital Contests - RTTY and PSK

When doing RTTY and PSK contests always check the Mode tab in Configurer for

correct settings!

{TIME2} - how it works

The time will be set if

- You have a call sign in the Entry Window
- The contents of the database field that holds the time is empty for that callsign, **and** one of the following conditions is met:
 - F2 is pressed or sent
 - Insert is pressed and the code that is run from the insert key sends the contents of the F2 macro
 - {TIME2} is contained in the macro string that is sent

If you do not have a call in the Entry Window or the database field is not empty, the {TIME2} macro will be replaced by the Last Sent Time. So if you have not sent the time and you are trying the macro out you will see 0000 printed on the screen. But if 0512 was the last time sent then that is what the {TIME2} macro will send. {TIME2} stays locked until the contact is logged or the callsign wiped.

10 Meter RTTY (AA5AU / W0YK)

The 10 meter RTTY contest can be used by K/VE stations and DX stations.

NOTE: This is NOT the ARRL 10 meter contest (that's a CW/SSB contest), and it's also NOT the ARRL RTTY Roundup contest (see lower on this page), although the contest rules are the same as for ARRLRTTY

- Window: Select Log Type
 - Log Type: 10MRTTY
 - Contest Exchange: K/VE stations – signal report and state/province. Others (DX stations) – signal report and serial number
 - Sent Exchange in Contest Setup dialog window:
 - Your state/province – for K/VE stations Example: NY
 - 001 – for DX stations (non K/VE)
 - Sample Function Key file available: see the file called ARRLRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site
 - Call History File available – see >Files >Call History Files “NAQP...”

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX stations or a W/VE station.

Note: US stations who work US “/MM” stations are also allowed to log serial numbers.

ANARTS WW RTTY contest

The last running of this contest was in June 2009. It has been replaced by the DRCG-WW Long Distance contest (DRCGWWRTTY).

- Window: Select Log Type
 - Log Type: ANARTSRTTY
 - Sent Exchange: Zone Example: 14

ANATOLIAN RTTY contest

- Window: Select Log Type
 - Log Type: ANATOLRTTY
 - Sent Exchange: 001

ARRL Rookie Roundup RTTY

To create the Rookie Roundup log in your database:
Select >File >New log in database

- Window: Select Log Type
 - Log Type: RRRTTY
 - Sent Exchange: [your name] space [two digit year licensed] space [US state/Canadian province/Mexican call area] or "DX"
 - Examples:
 - JOHN 68 OH (non-rookie station, John, licensed in 1968, from Ohio)
 - JOSE 10 XE1 (rookie station, JOSE, licensed in 2010, from Mexican XE1 call area)
 - JEAN 09 DX (rookie station, Jean, licensed in 2009, from "DX" - outside of North America)

Any licensed ham can run the ARRL Rookie Roundup RTTY, but scoring and log submission is limited to Rookie stations licensed within the last 3 years.

Score summaries are due within 72 hours of the end of the contest - 2359 Wednesday evening UTC, or 1859 EST. Use the "Submit your score" link under "Score Submission" at the [ARRL web page](#) for the RR. ARRL says logs are not required or accepted.

Calling CQ

- Use your standard callsign during the contest - no special suffix (do not use /ROK. This is a rule change since the first running). Rookies are encouraged to call "CQ RR"; non-rookies should call "CQ R." RTTY Rookies might want to

download and use a Sample Macro file created specifically for the RRRTTY contest. See the website under >Files >Sample Macros files “ARRL RRRTTY.MC.” The macros are set for Rookies, non-rookies will need to change the CQ RR to CQ R.

Contest Exchange

- Your name, year licensed (last two digits, example: 09), state/province abbreviation – for K/VE/XE stations (example: NY) or “DX” for other stations. The two digit year in your Sent Exchange automatically determines your status as a Rookie or a non-Rookie station. The 2 digit year in the Received Exchange determines the status of the station you are working. Do not use 4 digit years, it will only cause confusion for both Rookies and logging software.

ARRL RTTY Roundup

The ARRL RTTY Roundup can be used by K/VE stations and DX stations.

- Window: Select Log Type
 - Log Type: ARRLRTTY
 - Contest Exchange: K/VE stations – signal report and state/province. Others (DX stations) – signal report and serial number
 - Sent Exchange in Contest Setup dialog window:
 - Your state/province – for K/VE stations Example: NY
 - 001 – for DX stations (non K/VE)
 - Sample Function Key file available: see the file called ARRLRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a DX stations or a W/VE station.

Note: US stations who work US “/MM” stations are also allowed to log serial numbers.

Using FT8 in the ARRL RTTY RoundUp

Contesters planning to operate the FT8 mode with WSJT-X in this contest should read about the WSJT-X to N1MM+ interface in the manual section on the [WSJT Decode List](#) window.

If you are using this contest type for the 10 meter RTTY contest, which uses the same rules, you should change the CONTEST: line in the Cabrillo header from ARRL-RTTY to TEN-RTTY (the contest submittal robot for the 10 meter RTTY contest will do

this for you if you forget).

BARTG Spring RTTY contest

- Window: Select Log type
 - Log Type: BARTGSRTTY
 - Sent Exchange in the Contest Setup dialog window: 001
- Sample Function Key file available: see the file called BARTGSRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

Be careful not to confuse this contest with the BARTG RTTY Sprint contest.

The actual sent exchange includes a signal report, serial number and the UTC time. Program this into your Exchange messages using the {TIME2} macro, e.g.: {TX} 599 {EXCH} {TIME2} {RX}, or {TX} 599 # {TIME2} {RX}.

Testing the {TIME2} macro

If you test out the Exchange message using the {TIME2} macro without first entering a call sign into the Entry window, the Exchange message will send “0000”. This is expected, and it does not mean there is something wrong with your Exchange message. The time sent by the {TIME2} macro will be initialized only after a valid call sign has been entered into the call sign box and the cursor has been moved into the exchange box.

Needed W,VE,JA,VK call area mults in bandmap and available window are highlighted.

Added EXPERT to list of overlay categories choices. The EXPERT overlay category must be selected for the 5 minute band change counter to not be active for SINGLE-OP

BARTG RTTY Sprint contest

- Window: Select Log type
 - Log Type: BARTGRTTYS
 - Sent Exchange:001
- Sample Function Key file available: see the file called BARTGRTTYS.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

Be careful not to confuse this contest with the BARTG Spring RTTY contest (BARTGRTTYS versus BARTGSRTTY).

Note that there is no signal report in the sent exchange, just a serial number.

Needed W,VE,JA,VK call area mults in bandmap and available window are highlighted.

Added EXPERT to list of overlay categories choices. The EXPERT overlay category must be selected for the 5 minute band change counter to not be active for SINGLE-OP.

BARTG Sprint75 RTTY contest

- Window: Select Log type
 - Log Type: BAR75RTTYS
 - Sent Exchange:001

This contest type is used for the BARTG 75 baud sprints in April and September. For information on setting up MMTTY and N1MM Logger for 75 baud RTTY, see the section on Using MMTTY for 75 baud RTTY at the end of the [Using MMTTY](#) section in the Digital Modes chapter.

CQ World Wide DX contest - RTTY

- Window: Select Log type
 - Log Type: CQWWRTTY
 - Mode Category: RTTY
 - Sent Exchange:
 - North American/Canadian stations – Your zone plus the STATE or PROVINCE Example: 05 NY
 - NB For cabrillo log submission the order must be:
Zone first, then state (or province) with no leading spaces, and ONLY ONE space between the zone and the state.
 - Other stations – Your zone Example: 14

The default zone values for US (A,K,N,W) stations before the state is known are

- Zone 3 – If number in callsign is 6 or 7
- Zone 4 – If number in callsign is 5 or 8 or 9 or 0
- Zone 5 – If number in callsign is 1 or 2 or 3 or 4

The default zone values for Canadian (VE) stations are

- Zone 1 – If callsign starts with: VE8, VY1
- Zone 2 – If callsign starts with: VO2, VY0
- Zone 3 – If callsign starts with: VE7
- Zone 4 – If callsign starts with: VE3, VE4, VE5, VE6

- Zone 5 - If callsign starts with: VE1, VE2, VE9, VO1, VY2
- Press the Space bar when the cursor is in the Callsign field to have the Zone field filled with the default value and move the cursor to the state/province field for W/VE call signs, or directly to the zone field for DX call signs.
- The province code is pre-filled for Canadian stations based on the call sign prefix.
- The state field for US stations is pre-filled if you have worked that station on another band, or if you are using a Call History file.
- Once the state has been entered either by pre-fill or by the user based on the received exchange, the zone will be recalculated if the default zone based on the number in the callsign was wrong.
- When typing the section and the entered section is new the call sign will be shown in **RED**. The Available window will also show if a section multiplier is needed on other bands
- When pressing Space and the entered callsign is not US or VE, the cursor will skip the state/section field.
- When submitting your log to the contest robot make sure you have in the Sent Exchange the correct order: **Zone first, then state (or province)**.

Cabrillo output

The Cabrillo file must be in the order zone, state because that's how the official Cabrillo template for CQ WW RTTY is defined. However, this has **nothing** to do with how you operate during the contest, it only applies to the post-contest log submission. During the contest, you can send in either order; all the rules say is you must send both.

Call History in CQWWRTTY

If you like to use Call History Lookup and you plan to use a generic call history file that contains state information for W stations, you should be aware of a potential problem with call signs from AK and HI. If you invoke a call history lookup for a call sign in AK or HI, the call sign is in the file, and there is an entry for the state for that call sign in the file, the state/province field in the Entry window will be pre-filled, even though under the rules for this contest the state field should be blank. This in turn may lead to an error in logging the contact; you may have to edit that entry in the log to remove the unwanted state code. You can avoid this by removing the state codes from the call history file for call signs in AK and HI, or more simply by turning Call History Lookup off for this contest.

CQ World Wide WPX contest - RTTY

- Window: Select Log type
 - Log Type: CQWPXRTTY
 - Mode Category: RTTY

-
- Sent Exchange: 001 (set *Send Leading Zeroes* in Configurer >Function Keys)
 - Sample Function Key file available: see the file called CQWPXRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

CIS contest - RTTY

The Commonwealth of Independent States Contest where everybody can work everybody for QSO and multiplier credit.

- Window: Select Log type
 - Log Type: CISDXRTTY
 - Sent Exchange:
 - CIS stations: CIS area code Example for Moscow City: RU11
 - Non-CIS stations: 001

DL DX RTTY contest

- Window: Select Log type
 - Log Type: DLDXRTTY
 - Mode Category: RTTY
 - Sent Exchange: 001

DMC RTTY contest

- Window: Select Log type
 - Log Type: DMCRTTY
 - Mode Category: RTTY
 - Sent Exchange: 001

DRCG-WW Long Distance RTTY contest

This contest replaced the ANARTS RTTY contest.

- Window: Select Log type
 - Log Type: DRCGWWRTTY
 - Mode Category: RTTY
 - Sent Exchange: Zone Example: 14
- Sample Function Key file available: see the file called DRCGWWRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

The actual sent exchange includes a signal report and your CQ zone

See contest sponsor website for new contest times and bandchange restrictions.

EA PSK31 contest

- Window: Select Log type
 - Log Type: EAPSK
 - Mode Category: PSK
 - Sent Exchange:
 - For Spanish stations – Province Example: AL
 - For non-Spanish stations – Serialnumber Example: 0001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Spanish station or a non-Spanish station.

EA RTTY contest

- Window: Select Log type
 - Log Type: EARTTY
 - Mode Category: RTTY
 - Sent Exchange:
 - For Spanish stations – Province Example: AL
 - For non-Spanish stations – Serialnumber Example: 0001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Spanish station or a non-Spanish station.

EPC PSK63 QSO party

- Window: Select Log type
- Log Type: EPCPSK63QP
- Sent Exchange:
 - EPC member stations: EPC membership number Example: EPC0001
 - Non-EPC member stations: 001

EPC PSK World Wide DX contest

- Window: Select Log type
- Log Type: EPCWWDX
- Sent Exchange:
 - EPC member stations: EPC membership number Example: EPC0001
 - Non-EPC member stations:

EU PSK DX contest

- Window: Select Log type
 - Log Type: EUPSKDX
 - Sent Exchange: 001

JARTS WW RTTY contest

- Window: Select Log type
 - Log Type: JARTSWWRTY
 - Sent Exchange: Your age Example: 34
 - XYL and YL stations may give 00
 - Multi-operator stations must send 99 as a operator age.

JT RTTY DX Contest

- Window: Select Log Type
 - Log Type: JTDXRTTY
 - Mode Category: RTTY
 - Sent Exchange: CQ Zone (e.g., 5, 14, 23, etc.)

Makrothen RTTY Contest

- Window: Select Log type
 - Log Type: MAKRORTTY
 - Mode Category: RTTY
 - Sent Exchange: 4 digit grid Example: JO33

Logbook of the World Contest - RTTY/Digital

- Window: Select Log type
 - Log Type:
 - LOTWRTTY
 - Sent Exchange:
 - For North American stations: State/Province abbreviation Example: CT
 - For non North American stations: Countryprefix

NA Sprint RTTY

- Window: Select Log type
 - Log Type: SPRINTRTTY
 - Mode Category: RTTY
 - Sent Exchange: 001 Tom CT
 - Serial number, your name and your location (state, province or country) Example: PA1M DE N1MM 123 TOM CT K

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a North American station or a non-North American station.

The Sprint QSY rule calls for a different strategy in function key messages than is usual in other contests. The exchange in the Sprints must include both call signs, but although the rules do not require a specific order, there is a conventional order that is used by experienced Sprinters to make things flow more smoothly.

By convention, the Running station (the one who called CQ, or the one who was on the same frequency during the previous QSO) sends his exchange in the format:
HISCALL MYCALL NUMBER NAME STATE

He does **not** put his own call sign at the end of the message. This exchange format with no call sign at the end is a signal to others tuning across the frequency that the QSO is not over yet, and also that this station will not be staying on the frequency after the QSO is over.

The S&Ping station (the one who answered the QSO or who is newest on the frequency) uses a different format:

HISCALL NUMBER NAME STATE MYCALL

Unlike the common practice in other contests, he does **not** repeat the other station's call sign at the end of the message. His own call sign at the end of the message is a signal to others tuning across the frequency that he is the one who will be holding the frequency, so he is the one they should call once the Running station's TU message has completed.

The Running station also uses a different TU (F3) message than he would in a normal contest. The Running station should **not** put his own call sign in his TU message, because that causes instant confusion about who will be staying on the frequency. Some people send the other station's call sign followed by TU, but the most efficient format is simply to send only TU or RR and nothing else. The shorter this message, the more quickly the next station can call and start the next QSO.

See

<http://n1mmwp.hamdocs.com/wp-content/uploads/attachments/RTTY-Sprinting-Part1.pdf> for a detailed explanation of how this works.

North American QSO Parties RTTY - NAQP

- Window: Select Log type
 - Log Type: NAQPRTTY
 - Operator Category: SINGLE-OP or MULTI-TWO
 - For Multi-Two see the extra info below!
 - Mode Category: RTTY
 - Sent Exchange:
 - For North American stations – Operator name and station

-
- location (state, province, or country) Example: Tom CT
 - For non-North American stations – Operator name only
Example: Thomas

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a North American station or a non-North American station.

MULTI-TWO operating: When changing operator you have to use Ctrl+O to set the NAME (not Call) of the operator. This name set with Ctrl+O will be used in the Cabrillo file. So from the Sent Exchange only the state is being used but the name is needed. (Example: Tom CT).

OK DX RTTY Contest

- Window: Select Log type
 - Log Type: OKDXRTTY
 - Mode Category: RTTY
 - Sent Exchange: CQ zone

Quick PSK63 Contest

The contest uses the same rules as the SARTG WW RTTY contest so select that contest (SARTGRTTY).

After the contest the Cabrillo output has to be updated (take SARTG WW out and replace with Quick PSK63)

Russian PSK DX Contest

- Window: Select Log type
 - Log Type: RUSDXPSK
 - Mode Category: PSK
 - Exchange:
 - Russian stations: Two-letter oblast code, e.g. MA
 - Others: 001

Russian DX RTTY contest

- Window: Select Log type
 - Log Type: RUSDXRTTY
 - Mode Category: RTTY
 - Sent Exchange:
 - Non-Russian stations: WAZ zone Example: 14 for Western Europe
 - Russian stations: Your oblast code (two letters)

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Russian station or a DX station.

Russian Cup RTTY contest

- Window: Select Log type
 - Log Type: RUCUPRTTY
 - Mode Category: RTTY
 - Sent Exchange: 001

This contest is for Russians only.

SARTG New Year RTTY Contest

- Window: Select Log type
 - Log Type: SARTGNYRTY
 - Mode Category: RTTY
 - Sent Exchange: 001 Name
 - Soap Box Comments: "Happy New Year" in your native language
- Add "Happy New Year" in your native language to the Function Key macro. Do not add it to the Sent Exchange. If you do, the Cabrillo output and General Log output may not be correct.

Logging an exchange with spaces is not supported and logging of the Happy New Year greeting is **not** required. If you want to record the Happy New Year greeting it can be added **without** spaces after the name preceded by a "/". Example: Jim/HappyNewYear. If added, the Cabrillo output generator will remove the "/" and everything that follows when generating the output file.

The sponsor informed the developers that as of December 21, 2013 they will accept Cabrillo 3.0 formatted logs. It is necessary to follow the Sent Exchange & Soap Box instructions above to export a Cabrillo file. The Happy New Year message that you sent will appear in the Cabrillo Soap Box Comment.

SARTG WW RTTY Contest

- Window: Select Log type
 - Log Type: SARTGRTTY
 - Mode Category: RTTY
 - Sent Exchange: 001
- Sample Function Key file available: see the file called SARTGRTTY.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

SCC RTTY Championship

- Window: Select Log type
 - Log Type: SCCRTTY
 - Mode Category: RTTY
 - Sent Exchange: four-digit number of the year the amateur radio license was FIRST officially issued (e.g. 1983) to the operator.

The score Summary window only shows your total score and the number of mults you have worked per band. There is no breakdown by points. In SCC there is one extra column of mults but that had to be there as the way things are setup to calculate the first multiplier (different years). Thus the name of the second mult is "N/A" . The only way to do a breakdown on points is to go through your log and manually do it.

SP DX RTTY contest

- Window: Select Log type
 - Log Type: SPDXRTTY
 - Mode Category: RTTY
 - Sent Exchange:
 - 001 for non-SP stations
 - Your province Example: B for Lubuskie

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Polish station or a DX station.

TARA Grid Dip contest

- Window: Select Log type
 - Log Type: TARAGRID
 - Mode Category: RTTY or PSK
 - Sent Exchange: name + 4 digit grid locator Example: Tom FN12

TARA PSK Rumble

- Window: Select Log type
 - Log Type: TARAPSK
 - Mode Category: PSK
 - Sent Exchange: Name and Call Area Example: Tom W1

TARA RTTY Melee

- Window: Select Log type
 - Log Type: TARARTTY

- Mode Category: RTTY
- Sent Exchange:
 - State for USA stations Example: CT
 - Province for Canadian stations Example: NB
 - 001 for all other stations (serial number)

TARA Skirmish

- Window: Select Log type
 - Log Type: TARAPSK, or SKIRMRTTY (SKIRMRTTY requires that you download the SKIRMRTTY.udc user-defined contest file)
 - Mode Category: DIGITAL
 - Sent Exchange: Name and Prefix Example: Tom N1

Note: Download the SKIRMRTTY.udc file into your UserDefinedContests folder and use SKIRMRTTY. If you do not want to use the udc file, the TARAPSK contest will also work for the Skirmish, but the scoring of multipliers will not be correct. Use the Tara on-line log submission page and enter the correct prefix multiplier count there. If you use more than one digital mode during the contest, submit a separate entry for each mode as per the contest rules.

Ukrainian DX Classic RTTY contest

The Ukrainian DX contest can be configured for Ukrainian stations and non-Ukrainian stations.

- Window: Select Log type
 - Log Type: UKRAINDX (use this contest Log Type for the Ukrainian DX Classic RTTY contest)
 - Mode Category: RTTY (NOTE: this contest will default to phone. You need to manually reset for RTTY!)
 - Sent Exchange:
 - Oblast for Ukrainian stations Example: CH
 - 001 for non-Ukrainian stations
- Sample Function Key file available: see the file called UKRAINDX.mc in the Function Key Files – Digital subfolder in the >Downloads >File Explorer >Sample Function Key Files folder on the N1MM+ web site

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Ukrainian station or a non-Ukrainian station.

Ukrainian Open RTTY Contest

- Window: Select Log type

-
- Log Type: UKRRTTYOPEN
 - Mode Category: RTTY
 - Exchange: 2-letter province code + 3-digit serial number

Ukrainian RTTY contest

The Ukrainian DX contest can be configured for Ukrainian stations and non-Ukrainian stations.

- Window: Select Log type
 - Log Type: UKRAINRTTY
 - Mode Category: RTTY
 - Sent Exchange:
 - Oblast for Ukrainian stations Example: CH
 - 001 for non-Ukrainian stations

Country Count

Countries are counted per band for SSB, CW and RTTY. Because RTTY is in a separate contest module, they won't be counted correctly when a station makes SSB and CW QSOs as well as RTTY QSOs with a country.

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an Ukrainian station or a non-Ukrainian station.

Ukrainian DX DIGI Contest

75 baud RTTY and PSK63 modes

- Window: Select Log type
 - Log Type: UKRAINDIGI
 - Sent Exchange:
 - Oblast for Ukrainian stations Example: CH
 - 001 for non-Ukrainian stations

United Kingdom DX contest RTTY

The UK DX contest can be configured for UK stations and non-UK stations.

- Window: Select Log type
 - Log Type: UKDXRTTY
 - Sent Exchange:
 - Area code for UK stations Example: BS
 - 001 for non-UK stations

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an UK station or a non-UK station.

VOLTA RTTY Contest

- Window: Select Log type
 - Log Type: VOLTARTTY
 - Mode Category: RTTY
 - Sent Exchange: RST + QSO number + Your CQ Zone. Example: 599 001 15

The four Band Multiplier count for this contest is displayed on info window.

WAEDC RTTY contest

The WAEDC RTTY Contest can be configured for European stations and non-European stations.

- Window: Select Log type
 - Log Type: WAERTTY
 - Sent Exchange: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are an European station or a non-European station.

Making QSOs in WAE RTTY:

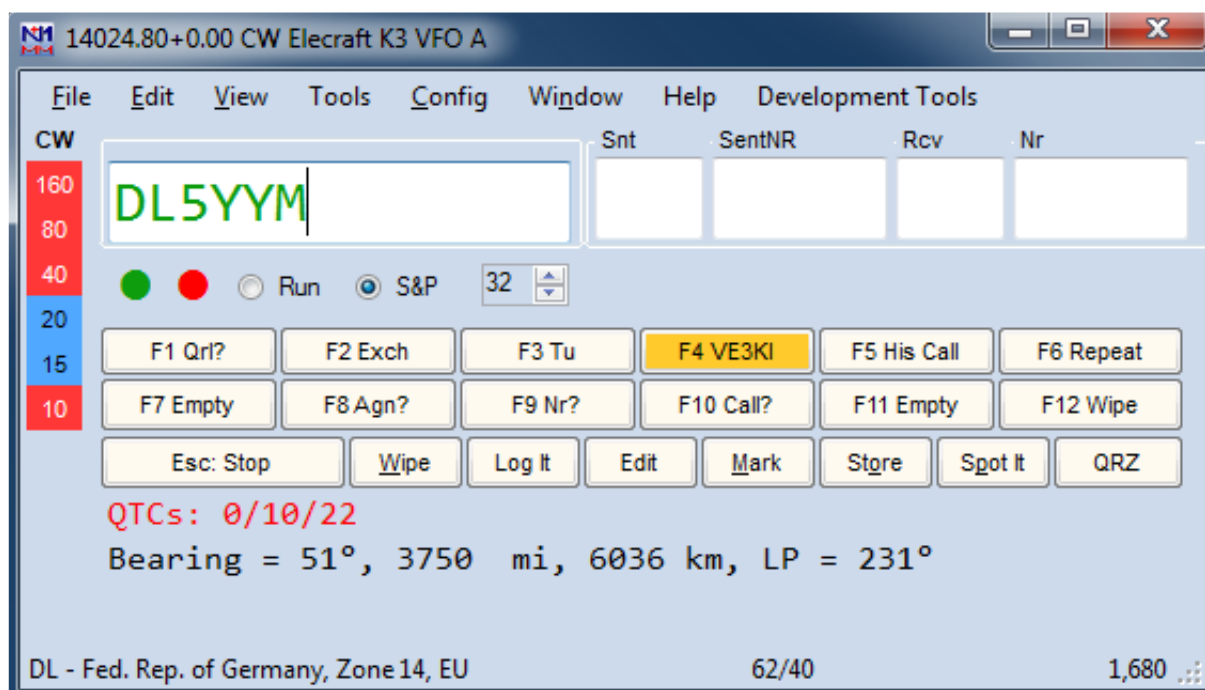
To start with, a QSO in WAE is just like a QSO in CQ WPX or SARTG, and I would suggest using a similar function-key set. The special feature of WAE is QTCs, which are reports of previous QSOs that can be exchanged for additional points.

In CW and SSB WAE, QTCs can only be sent from non-EU to EU, but in RTTY there are many more possibilities. QTCs can be sent in either direction between any two continents (not with a station in the same continent).

In N1MM Logger+, the user interface for QTCs in RTTY is very similar to that in CW/SSB. The Logger has features to automate the sending and receiving of QTCs. There is also information in the Entry and Bandmap windows to tell you whether the rules permit you to exchange QTCs with another station. In the bottom part of the Entry window, while you are in QSO with a station information about the number of QTCs you have available to exchange with him is displayed. In the following example, the three numbers in red after “QTCs” mean that you have not exchanged any QTCs with this station yet (0), you have 10 QTCs available to send to him, and you have 22 total unsent QTCs in your log.

Supported...

Supported Contests Setup



The Bandmap and Entry windows contain visual cues about the QTC status of stations spotted in the Bandmap or entered into the Entry window. A special color scheme for spotted call signs has been implemented, as follows:

RED: the station is a new multiplier on this band (same as in other contests)

GREEN: this is a new station on this band, and you can also exchange QTCs with him (you are on different continents and you have not yet exchanged 10 QTCs)

BLUE: this is a new station on this band, but you have no more QTC room available (same continent, or you have already exchanged 10 QTCs)

BLACK: this station is a dupe on this band, but you still could exchange QTCs with him for QTC points

GREY: dupe, and there is no QTC room either - this station is non-workable for any kind of credit, so just pass him by

Note that this special color scheme only applies to the Bandmap and Entry windows; the colors in the Digital Interface and Available Mults and Qs windows use the normal color scheme, the same as in other contests.

OK, let's look at the process. First, let's suppose you are CQing. If you have a good run going and you are getting new multipliers calling in, you may decide you don't want to break your rhythm for QTCs. As long as there are people waiting to work you when you CQ, you may decide you will be best off adding to your QSO and multiplier counts rather than adding a quick 10 QTCs, which increases your net QSO+QTC point count but does nothing for your multiplier points.

However, especially later in the contest, you might want to pick up your score with some QTCs, as you will probably be able to exchange a batch of 10 QTCs more quickly than you could work 10 more QSOs, and the odds of finding a new multiplier may be much lower than earlier in the contest. In fact, you can even call someone

who is a dupe just so you can exchange QTCs; the extra QSO will not count for points, but the QTCs will.

First, let's look at the case where you do not have many unsent QTCs to send (that's previous QSOs that you have not already sent as QTCs). In this case, if you work someone who has a good clear signal (you won't want to do this with someone you have trouble copying) and you have not yet exchanged QTCs with him, you may want to receive some.

Start by asking him if he has any QTCs for you ("QSL TNX. ANY QTCS FOR ME?"). If he says yes, press Ctrl+Z once. That gets you to the RQTC window for receiving QTCs.

Receive QTC - PI4DX

Setup QTC Header : **RX Ready**

Hdr Agn All Agn

			Agn 1	S
			Agn 2	S
			Agn 3	S
			Agn 4	S
			Agn 5	S
			Agn 6	S
			Agn 7	S
			Agn 8	S
			Agn 9	S
			Agn 10	S

Enter, Tab Moves Button Focus - Space key moves within QTC windows
 Green = Saved , Red = Not filled/Saved , Yellow = Format Error

Cancel Save Clear

After you tell him you are ready with the RX Ready button, he will send you a message whose first line is something like "QTC: 22/10 QTC: 22/10". The first number is the group number (the 22nd group he has sent), the second is the number of QTCs in the group (maximum 10, and especially in RTTY it is most efficient to send only large groups). If you click on this in the RX window, it should transfer to the RQTC window for recording in your log. If the incoming data is garbled so you cannot copy it, you can click on the "Hdr Agn" button to ask for the header to be sent again.

The heart of his message will be a set of up to 10 QTCs. Each QTC contains three

elements: the time, the call sign, and the serial number. Each time you receive a QTC, left-click on it and the entire QTC should transfer into the corresponding panes in the RQTC window. You can also enter or edit elements by hand, or you can right-click on a single element and then left-click in the box where you want it to go. After you have received all the QTCs in the group, it may help to click on the green bar at the left of the RX window so you can freeze the RX window, scroll back and complete or fix any missing or garbled elements. Remember to click on the yellow bar when you are done so you can receive again.

After he has sent the batch of QTCs to you, you may need him to repeat some of the information. There are buttons in the RQTC window for asking for repeats for individual QTCs ("Agn #1", etc.) or for the whole series ("All Agn"). Once you have them all, press the "Save" button, which will send an acknowledgement message to him and log the QTCs, and then you can start CQing again.

There is a series of buttons labeled "S" (for "Skip") to the right of the "Agn" buttons. If, while you are receiving a set of QTCs, one of them is so badly munged by a noise hit that there is nothing useful to click on to fill the boxes, you can click on the "S" button for that QTC to leave the boxes for that QTC empty and continue with the rest of the QTCs. After the entire set has been sent, you can then click on the corresponding "Agn" button to ask for a repeat of that individual QTC so you can fill in the missing data. By doing this you preserve the correct order of the QTCs as sent.

QTCWindow

Receive QTC - PI4DX

Setup QTC Header : RX Ready

QTC: 7/10 Hdr Agn All Agn

0923	DF3EH	0009	Agn 1	S
0924	UA3XO	0099	Agn 2	S
0925	DV1JM	0099	Agn 3	S
0925	7K4QOK	0058	Agn 4	S
0926	JA1CCX	0061	Agn 5	S
0928	PA3DBS	0036	Agn 6	S
0928	JA1HFY	0079	Agn 7	S
0929	PA2CVD	0037	Agn 8	S
0930	BV1EK	0031	Agn 9	S
0930	OH8F	0156	Agn 10	S

Enter, Tab Moves Button Focus - Space key moves within QTC windows
Green = Saved , Red = Not filled/Saved , Yellow = Format Error

Cancel Save Clear

Suppose instead that you do have a bunch of unsent QTCs ready to go. Then what you may want to do at the end of a QSO with a station with a good clear signal (if you have trouble copying someone's signal, you probably will not want to try QTCs with him) is to ask if he wants to receive QTCs ("QSL TNX. DO YOU WANT QTCs?"). If he says yes, press Ctrl+Z twice to get to the SQTc window.

Snd QTC - DF2SD			
QTC Header :			
QTC: 2/10 - DF2SD			R U QRV
			Send All Snd Hdr
0009	OK4RQ	0007	Snd # 1
0019	VA2UP	0016	Snd # 2
0020	DQ4W	0023	Snd # 3
0022	K9OM	0016	Snd # 4
0023	YQ6A	0010	Snd # 5
0024	IK0GDG	0017	Snd # 6
0025	DR5M	0023	Snd # 7
0028	UW5M	0029	Snd # 8
0033	EF8S	0043	Snd # 9
0033	WE4M	0033	Snd # 10
Cancel Save Clear			

This window starts out pre-filled with all the information you need to send – as you can see, sending QTCs is quite a bit easier than receiving them! The buttons in this window should be self-explanatory. The “Send Hdr” button is what you use to send the QTC batch number (e.g. QTC: 2/10), and once the other station has acknowledged that, the “Send All” button is what you use to send the batch. After the batch has been sent, if he asks for a repeat of #3, 7 and 9 you can resend them by pressing Snd #3, Snd #7 and Snd #9. Once he acknowledges them all, press Save and go back to CQing.

If you get into the wrong QTC window by mistake, you can either press Cancel or press Ctrl+Z once or twice until the QTC window closes. Note also that if you aren't able to exchange QTCs with a station (you're on the same continent, or you have already filled your quota of 10), the QTC window will not open. If you are able to receive QTCs but don't have any QTCs to send, the RQTC window will open, but the SQTc window will not.

S&Ping works much the same. The color coding in the Bandmap window can let you know whether you will be able to exchange QTCs even before you start a QSO, or once you are in QSO the detailed QTC status is visible in the Entry window. Often

you will let the running station decide if he wants to do QTCs or not, depending on how well his run is going, but sometimes you may want to initiate the process yourself, as described above.

If the other station wants to send QTCs to you, you can either reply "SRI QRU" (not quite correct, but he will get the message) or you can press Ctrl+Z once to get the RQTC window and press the RX Ready button to tell him you are ready, then receive QTCs the same as described above. If he asks you whether you have QTCs for him, you have three options: press Ctrl+Z twice and press the R U QRV button to give him the cue to get ready; send "SRI QRU"; or send a message telling him you don't have any but are willing to receive some ("SRI QRU. ANY QTCS FOR ME?").

Most of the basic QTC messages are sent by buttons in the SQTC and RQTC windows. You can program the messages in these buttons either by using the **Setup** button in the QTC window, or from the **Config > WAE > Open QTC Window setup area** menu item in the Entry window, using the third tab ("RTTY Setup").

There are a few additional messages you may want to program into the buttons at the bottom of the Digital Interface window, such as:

{TX} QSL TNX. GOT ANY QTCS FOR ME? {RX}

{TX} QSL TNX. DO YOU WANT QTCS? {RX}

{TX} SRI QRU {RX}

{TX} SRI QRU. ANY QTCS FOR ME? {RX}

You may think of more – that's OK, there are up to 24 clickable message buttons in the Digital Interface window. I often find myself changing them on the fly during a contest. You can get to the programming window by right-clicking on the button you want to change.

- QTC Lines on the frame are broken up into separate boxes. This was done to allow error checking of any data that is input by hand and clicking on data in RX window.
- If you click on data or enter data in the QTC windows if the routines detect bad data it will flag that data in red. So when you are receiving QTCs and you get one that is garbled, Click on it anyway and it will get placed into the QTC area. The boxes for that QTC will turn red.
- Upon completion of the sending QTC's all you have to do is look at the QTC window and it will tell you by the red colors what QTC you need to RX again. You press the AGN # button and it sends your message out. At the same time your message is going out the QTC line is cleared. Now when the station sends the repeat of the QTC you requested and you click on it and it will then be placed into that blank line that was just cleared.
- When saving QTC if any of the data still hasn't been corrected it will send the received ok message but if there is an error in the Time or the Callsign the program will let you save the QTC and not care about it. But if there is

an error in the serial number (If it contains anything besides a number) it will not let you save it. The reason for this is in the program the serial number needs to be a certain type of variable(numeric) and if it is not a numeric variable it will not save it. So the flow of it if there is an error in the serial section and you press Save is:

- A. Sends the confirm string you have setup
- B. Tells you on the entry window there is a Format error
- C. Waits for you to fix it.
- D. So now you would have to scroll back to see what was sent of take out the extra letter your finger hit then hit save.

By doing it this way you are not slowing down the other station

- The program will not save info into the log until the bad data is fixed. Once fixed just click Save again and it will save the data without sending the received message. A warning message is given in the Entry window status bar.
- Sometimes a call sign reported in a QTC will not pass the call sign recognition routines and the QTC will be displayed in red. If it was a special call sign, not a copying error, and you want to log it anyway, you can “force-log” the QTC by Ctrl+clicking on the Save button
- To select whole lines of received QTC just place the cursor over the line and left click.
- To select individual QTC sections place the cursor over the item you want to select and right click on it. After the data is selected place the cursor over the text box you want the data to go into and left click it will be placed into it.
- When pressing Ctrl+Z to switch modes the program will display the total QTC sent and received from the station being worked.
- When pressing Ctrl+Z to switch modes if you have reached the MAX amount of QTC the QTC window will close and give a warning message in Entry windows status bar.
- When left clicking on a Received QTC line will split data on " ", "/", ", "- separators if the routines can't split the data it will not copy the data over. You will have to click each item separate or hand type it in.
- Selecting of individual QTC items can be done by right clicking on item. Left clicking on the box where the data to be placed places text.
- Ctrl+Z cycles through QSO, receive QTC and send QTC modes. After you enter a callsign in the entry window pressing Ctrl+Z will cycle through the RQCT and SQTC modes. If you are receiving QTC press Ctrl+Z once and as the QTC appears in the digital window just click on it one time and it will transfer over to the QTC entry window. To send a QTC press Ctrl+Z one more time and it will show you all the QTCs you have available to send.
- The status line in the Info window shows the total QTC Sent and Received from the station being worked.
- Upon entering a callsign in the entry window and pressing the spacebar, the

number of total QTC's exchanged with that callsign and the Total of all unsent QTC is displayed on the entry window so you should be able to keep track easier of what your QTC numbers are

- If you work a station that is on your same continent and try to send them QTC or try to receive QTC from them the program will tell you you can not do that. Press Enter and move on.....
- On the WAE Tab located in the settings area will allow you to set the maximum number of QTC you want to send. Whatever this setting is set to is the number that will send unless you do not have that many QTC to send. This defaults to 10.
- The total unsent QTC's is displayed along with # of QTC's exchanged with current callsign on the Entry window
- Continent is checked when sending and receiving QTC's
- Default number of QTC to send can be entered on the Tab WAE RTTY configuration under Settings in the menu from the DI interface.
- The number of QTC sent and total QTC available is shown in the Entry window upon Entering Callsign
- Hover mode is disabled if the QTC window is open
- The number of CR's between QTC's sent is configurable (Setup QTC)
- Placing a QTC into the QTC window is possible by clicking in line of QTC boxes where you want QTC to be placed into.
- When tuning in the bandmap the Entry Window will show the QTC status of the tuned callsign; the color in the Bandmap window also shows the status
- **Warning:** In this contest it is allowed to log a contact with a zero serial number (such as a non-contest DXpedition you work during the contest). Therefore the normal ESM flow is altered; F8 (Agn?) is not highlighted when the exchange box is empty during a QSO. In a normal QSO where you receive a serial number, you have to be careful not to hit Enter too soon and forget to log the received serial number; make sure to enter the serial number before you hit Enter to finish the QSO!

For those who are familiar with WAE CW/SSB, note that although the QTC user interface in N1MM Logger+ is similar, there are fundamental differences in the contest rules between the RTTY and the SSB/CW version of the contest:

1. Everyone can work everyone, so DX can work DX and EU can work EU
2. Everyone can both send and receive QTCs, however they can only be exchanged between stations in a different continent

How do I know how many QTCs I can receive from a station or how do I know the number to send to them?

The program will do all this for you in a number of ways...

- The first number that is displayed on the entry window by the QTCs title is the total number of QTC's you have exchanged with that station. If it says 8

then you can either receive or send 2 more

- When you press Ctrl+Z to switch to RQTC mode the program already knows how many QTC you can receive and will only enable that many entry points on the QTC frame
- When you press Ctrl+Z to switch to SQTC mode the program will either set the maximum number you want to send or however many QTC's you are still allowed to send to that station. (Whichever is smaller)

One final note: If you export your contest log to ADIF after the contest, the ADIF file will not contain QTCs, only QSOs. This is not a problem if you are exporting for purposes of a general logging program, QSLing, etc., but if you want to transfer a WAE contest log between databases or between computers, you cannot use ADIF files to do this unless there are no QTCs in the log. To transfer a complete WAE log between copies of N1MM Logger+ on two computers, you must either copy the entire database between the computers, or else you must copy the TRN file for the WAE contest to the second computer and then import it into a new empty N1MM+ database on the second computer.

WW-DIGI Contest

Note: This contest is for FT8 and FT4 modes. You must use WSJT-X or JTDX as the digital program for these modes. See the [WSJT Decode List](#) window documentation for setup instructions for using WSJT-X or JTDX with N1MM+. Note that all logging must be done in the WSJT-X or JTDX program; do not enter call sign or exchange data directly into N1MM+.

- Window: Select Log type
 - Log Type: WWDIGI
 - Mode Category: DIGITAL
 - Sent Exchange: your grid square. Example: FN31

For this contest, the exchange has been chosen to be compatible with the normal non-contest exchange in FT8. In WSJT-X, you can either choose the NA VHF Contest type under the Advanced tab in the WSJT-X Settings window, or you can leave the "Special operating activity" check box unchecked and use the full normal message sequence. If you use the normal message sequence, do not skip the normal grid square (Tx1) message in an attempt to save time, as that will result in an invalid contest exchange (you must send your grid square). Using the NA VHF Contest type will ensure that the correct exchange is sent and logged.

XE RTTY Contest

- Window: Select Log type
 - Log Type: XERTTY

- Mode Category: RTTY
- Sent Exchange:
 - Mexico: State. Example: AGS
 - Non-Mexico: 001

The callsign in the Station Information dialog (>Config >Change Your Station Data >Call) determines if you are a Mexican station or a non-Mexican station.

Setup User Defined Contests (UDC)

The User Defined Contests listed below have been developed by users of N1MM Logger+, and should work as described although they are not officially supported by N1MM Logger+.

There are probably additional details within the .UDC file regarding contest setup and exchange. Use a text editor to examine the file after downloading from the >Files >User Defined Contests gallery. Be advised that there are known scoring anomalies with some of the UDC contests.

Installation Instructions for a User Defined Contest (UDC)

User Defined Contests are not distributed with the program installer, either Full or Latest Update

- A list of available User Defined Contests is located on the [Supported Contests List](#) page (enter udc in the search window).
- The UDC files themselves are found on the N1MM Logger+ website, located under >Downloads >File Explorer >[User Defined Contests](#)
- To enable a UDC contest and select it in the contest configuration dialog window
 1. Locate the desired UDC file on the website in >Downloads >File Explorer >User Defined Contests page (Note: for some UDCs, the file is a Zip archive file that contains the UDC and other files)
 2. Download the .UDC or .zip file to your computer's hard drive in the UserDefinedContests directory in the N1MM Logger+ user files area, at **My Documents/N1MM Logger+/UserDefinedContests**. If the file is a zip file, open it from Windows File Explorer and extract all of the files it contains directly into the UserDefinedContests directory (not into a subdirectory, as Windows may offer to do); after you do this, the UDC file should be visible in the contents of the directory. If there is a readme file, read it and follow the instructions there (for example, it may tell you to move a .sec file to your SupportFiles directory)
 3. Restart N1MM Logger+
 4. Within N1MM Logger+, select >File >New Log in Database.
 5. Find and choose the UDC contest name you downloaded (without the

.UDC file suffix). It will be included in alphabetic order among the list of all other supported contest names. *NOTE: if you do not see the contest in that list, use a text editor (Notepad) to open the UDC file. Find the "Name =" statement (around line 10 of the file) which defines the actual contest name. In some instances the Name= statement may not match the Windows .UDC file name.*

6. If the contest files include a **companion section list (.sec) file**, you need to move/copy the .sec to your computer's *My Documents\N1MM Logger+\SupportFiles* folder. Then, launch N1MM+ and the >File >Open Log in Database contest dialog window will display the "Import Section List" button. Click on that button to import the section list for this particular contest.

50RS VHF

50MHz RASE DX Sprint

- See the UDC file for more details
- Filename: EARSVHF.udc

ACHAMPCW

Asiatic Russia (UA9) Championship CW

- See the UDC file for more details
- Filename: ACHAMPCW.UDC

Activity Group CW - DL QRP-QRP Party

Held 1st May each year.

- Exchange: RST + Serial Nr + Category
- See the rules for more details.
- Filename: 1MAY_AGCW.udc

Alexander Savenkov Memorial

Alexander Savenkov Memorial

- See the rules for more details.
- Filename: UR5IOK_MEM udc

ARKTIKA-SPRING

ARKTIKA-SPRING contest file

-
- See the UDC file for more details
 - Filename: AC-SPRING.UDC

AEGEAN RTTY Contest

Generic – RST and Serial Nr. Runs OK with a fixed amount of points per qso.
Select log type: AEGEANRTTY

- See the UDC file for more details
- Filename: AEGEANRTTY.udc

AGB

AGB-NEMIGA Contest. Third Friday of September (16 Sep 2011) 2100 – 2400 UT

- See the UDC file for more details
- Filename: AGB.udc

AGB NYSB/NEMIGA/PARTY

AGB NEMIGA, Allows RY and PSK modes. Select “MIXED+DIG” for “Mode Category”
Exchange: RS(T) + Serial Nr and AGB Member Nr (if a member)
Complete Contest name in log.

- See the UDC file for more details
- Filename: AGB_RTTY.UDC

AGB Party

AGB-PARTY (Activity Group of Belarus) Contest. Third Friday of December (16 Dec 2011) 2100 – 2400 UT

- See the UDC file for more details
- Filename: AGBPARTY.UDC

AGCW VHF - UHF Contests

Held quarterly.
Exchange: RS(T) + Serial Nr + Category + Full Locator

- See VHF_AGCW.txt
- Filename: VHF_AGCW.udc in VHF_AGCW.zip

Alaska QSO Party

Supported...

Supported Contests Setup

If using SSB/CW plus Digital, Select MIXED+DIG in the Contest Setup Window. Enter QSO points on logging line.

Select file name: AKQP_RTTY

Exchange: Serial Nr, Name and Grid Square

- See the UDC file for more details
- Filename: AKQP_RTTY.UDC

Araucaria VHF Contest

World wide VHF contest.

Exchange: RS(T) and 6 character Locator

- See the rules for more details, follow directions after the contest to work out your claimed score.
- Filename: VHFARAU_SA.udc

ARI BASSO FERRARESE Contest

Exchange: RS(T)+Serial# Wildcard stations will send op name.

- See the rules for more details.
- Filename: ARI_BASFER.udc

ARI RTTY 80/40m

(Set up for Italian domestic) ARI 80/40m RTTY Contest

Select file name: ARIRTTY

Exchange: Your Area Code

- See the UDC file for more details
- Filename: ARIRTTY.UDC

ARI SEZIONI Contest

ARI SEZIONI Contest

- See the Read_Me file
- Filename:ARI_SEZIONI.zip

ARKTIKA Polar Radioman

Exchange: RST + Arktika Club Member Number e.g. 599 AC999. Non-members send RST + Serial Number. Club member numbers are mults, once only.

-
- See ARKTIKA_read-me.txt
 - Filename: ARKTIKAPR.zip.

ARRL-EME

VHF/UHF only, signal report as exchange, dupes are not allowed on same band CW, SSB and FM modes

- See the UDC file for more details
- Filename: ARRL_EME.udc

ARRL International Grid Chase

RS(T)(optional) 4 Character Grid

- See ARRL Web for full details
- Filename: GRIDCHRTTY.udc in GRIDCHASE.zip

ARR PSK63

ARR PSK63 contest.

Select log type: ARR_RTTY. Exchange RST and Serial. Multipliers are DXCC and "CT" Callsigns.

- See the UDC file for more details
- Filename: ARR_RTTY.udc

Bande Basse Italia Contest

Italian internal contest

- See the Read-Me file
- Filename:BB_ITALIA udc in BB_Italia.zip

Battle of Riachuelo

Battle of Riachuelo Contest PSK125

- See the Read-Me file
- Filename:CBNRBRASIL.zip

Bavarian Contest Club QSO Party (BCCPARTY)

- Filename: BCC-QSO-Party.udc
- Run logger and open new log for BCCPARTY contest

-
- Import Call History file BCC-Members.txt
 - In the Config menu Enable CallHistory Lookup

Belgian Data Modes WW Contest

Belgian Data Modes WW Contest. If using AFSK, Select DIGITAL in the Contest Setup Window.

- See the UDC file for more details
- Filename: BDMWWRTTY.udc

Belgorod Open Champion Contest

Belgorod Open Champion Contest, Select MIXED+DIG in Contest Setup Window

- See the rules for more details
- Filename: BELGO_RTTY.udc in BELGOROD.zip

Brazil Independance Day Contest

Brazilian Independance Day PSK31 Contest. Select DIGITAL in Setup Window.
v1.0.1,

- See the UDC file for more details
- Filename: BRAZ_IRTTY.udc

Brazilian Farroupilha Contest (FRPHF)

- See the UDC file and the sponsors website for more details
- Filename: FRPHF.zip

Bucuresti Contest

Generic, Serial # and YO District or Country WEB Identifier (e.g. Belgium=BE, Sweden=SE) as exchange.

If using Mixed modes, select MIXED+DIG in the Contest Setup Dialogue.

- See Bucuresti_Read_Me.txt file for more details (In Bucuresti.zip)
- Filename: BUCURRTTY.udc

CA HF

Central America contest. Contact Argentinean & Nearby countries. Exchange RST and Serial. Provinces are mulpliers,

-
- See the UDC file for more details
 - Filename: CAHF.udc

Championship of Astrahan oblast

Russian internal contest (????????? ?????????? ?????????????? ?????????)

- See the UDC file for more details
- Filename: R6U-Champ.udc

CONCURSO NACIONAL FONIA

Spanish National Phone Contest (RADIO CLUB SEVILLA)

- See the UDC file for more details
- Filename: EACNF.UDC

CQ WE

CQ Western Electric Contest. Contact Employees, Retired Employees or other Amateurs. Exchange Name, WE Locator and years of service. Non-employees give number of CQ WE Contests entered (1 if current is the first, can be 1-6) If using all modes, be sure to select 'MIXED+DIG' on contest set-up page.

- See the rules for full details.
- Filename: CQWE_RTty.udc

CSA-VHF

South American VHF contest

- See the UDC file for more details
- Filename: CSA-VHF.udc

CUCALAMBE Contest

National Cuban contest \Cucalambe

Select log type: CUCALAMBE

Exchange: AREA Code

Import Section file (CUCALAMBE.sec required in N1MM main folder)

- See the UDC file for more details.
- Filename: CUCALAMBE.udc

DEUTSCHLAND EASTER CONTEST

Deutschland Easter Contest.

Exchange: RST + Serial Nr. (+DOK)

- Filename: DC_EASTER.udc

DigiFest

Digifest Contest. Exchange: RSQ and Locator(4 digits) Locator is mult (once only). Work Station each band and mode. Note1 – In the ‘Set up Contest Window’ Set the Mode Category to ‘DIGITAL’. Note2 – not all digital modes allowed in the contest are supported in MMVARI, most are in FLDIGI.

- See the UDC file for more details
- Filename: VHF_DFRTTY.UDC

DIG_PA Contest

DIG_PA Contest

Select log type: DIG_PA

Exchange: RS(T) and Member Number or just RS(T) if not a member.

- See UDC file for more details.
- Filename: DIG-PA.udc

DL DTC Contest

German Telegraphy Contest, held 3rd October.

Select log type: DL – DTCDL.udc non-DL – DTCDX.udc

Exchange: RST and LDK, non DL only RST

- Filename: DL-DTC.zip

DNIEPER CUP

DNIEPER CUP. Send and receive two-letter AREA + Serial Nr. Set Mode to SSB+CW+DIGITAL in Contest Setup Window. v1.0.3

Select file name: DNIEPERTTY.

Sent Exchange: Serial Nr -must be first and a two letter Area or District or County Code. Set your Macro to send AREA then SerNr

Filename: DNIEPERTTY.UDC

EA QRP Contest

Exchange: RST + Category + M (if a member)

- See the Read-Me file and rules for more details
- Filename: EA_QRP.udc in EAQRP.zip

EPC French DX Contest

EPC French DX Contest. Select log type: See Read-Me.txt in EPCFR.zip. Exchange Call, RST, Dpt. Nr. or Serial Nr.

After the contest, edit CATEGORY-OPERATOR: SOAB-HP, SOAB-LP, MOAB-HP in log (see rules).

- See the Read_Me file for more details. N1MM+ v4698 or later.
- Filename: EPCFR.zip

EPC Ukrainian DX

Set of files for EPC Ukraine DX Contest (for participants outside of Ukraine). See the post on 11/29/2011 in N1MMLogger-Digital@yahooogroups.com for installation instructions

- See the UDC file for more details
- Filename: EPCUkrDX_FOR_DX.zip

Esenin Russia Contest

Esenin Russia contest. SSB/CW 80+40M. Mults are Russian Regions and DXCC. Band and Mode restrictions.

- Exchange: RS(T) + Serial Nr

File Name: ESENIN udc

ES OPEN HF

ES Open HF Championship

- See the Read_me.txt file for more details
- Filename: ES_OPEN_DX.udc or ES_OPEN_ES.udc

EUCW Fraternizing Party

EUCW Fraternizing Party. Whatever is entered in Comment (Club Name) is a multiplier.

Select log type: EUCWFP

Exchange: Your name, (Club name), Member Nr. or NM

-
- See the UDC file for more details
 - Filename: EUCWFP.udc

EUCW ON5ME-160

EUCW ON5ME-160 Party. Whatever is entered in Comment (Club Name) is a multiplier.

Select log type: EUCW160

Exchange: Your name, (Club name), Member Nr. or NM

- See rules for more details.
- Filename: EUCW160.udc

FELD HELL CLUB

Monthly Sprints. See the Read-Me file.

- See the rules for more details.
- Filename: FELDHELLCLUB.zip

FGUP 2011

“Generic” contest, RS(T) and Serial Nr Exchange, All Callsigns are Multipliers.

- See the UDC file for more details
- Filename: FGUP-2011.UDC

FIRAC Contest

Exchange: Members send; RS(T) + Serial Nr + F, Non Members send; RS(T) + Serial Nr.

- See FIRAC_Read-Me in FIRAC.zip
- Filename: FIRAC.udc in FIRAC.zip

Fists Sprints

All Fists Sprint Contests. Exchange RST, S/P/C, Name and Fists Member Nr or Power, include ‘W’.

- Filename: FISTSSPR.udc

Flight of the Bumblebees

Flight of the Bumblebees contest.

Select file name: FLTOTBBS

Exchange: State/Province/DXCC Entity and Power or Bumblebee Nr.

- See the UDC file for more details
- Filename: FLTOTBBS.udc

Florida Parks on the Air

Florida Parks on the Air

- See the rules and the Read-Me file
- Filename: FLSPOTA.zip

FRR CN US Contest

FRR CN US Contest. 30 minute sessions. Exchange: Serial Nr and 3 digit Nr made up from Nr in Callsign and op age. e.g. YO9xx sends 001 959, if he rcvd 001 345, his next sent Exch would be 002 345 etc.

- See the rules
- Filename: YO_CN_US.zip

G3ZQS Memorial Contest

Fists G3ZQS Memorial Contest, can be used for Fists Sprints.

Exchange: RST, State/Prov/DXCC, Name, and Fist# or Power

- See the UDC file for more details.
- Filename: G3ZQSMEM.udc

GEDEBAGE

Generic, RS(T) + Serial Nr. WPX Prefix Mult.

- Filename: GEDEBAGE.udc

GENERIC

Template for Serial # and State(Prov) as exchange. One multiplier – Section

- See the UDC file for more details
- Filename: Generic.udc

GENERIC2

Template for Serial # and State(Prov) as exchange. 2 multipliers: Section and Country

- See the UDC file for more details
- Filename: Generic2.udc

GENERIC RTTY

Generic, Serial # and State(Prov) as exchange

- See the UDC file for more details
- Filename: GenericRTTY.udc

HA National Championship OB

Exchange: RS(T) + Last 2 characters of previous station worked, your own for the first contact

- See the Read_Me file for more details
- Filename: HA_NChamp zip

HA3NS Memorial Contest

Exchange RST and HACWG Member Nr or NM

- See the UDC file for more details
- Filename: HA3NS.udc

HF Region 2 RTTY Contest

Exchange: Full Locator

- See the Read Me file for more details.
- Filename: VHFR2RTTY.zip

Hiram Percy Maxim 150th Birthday (HPM150)

- See the UDC file for more details
- Set the >Contest >Exchange to your ARRL section! (MI, ON, WTX...)
- Filename: HPM150.zip
- August 31 through September 8, 2019

Invalid Section Errors?

To verify valid sections, HPM150 UDC relies upon the section list from the Winter Field Day contest: **WinterFD.sec**. That file is included in the HPM150.ZIP file. After

unZIPping the file you need to move/copy WinterFD.sec to your computer's *My Documents\N1MM Logger+\SupportFiles* folder. Then, launch N1MM+ and the >File >Open Log in Database contest dialog window will display the "Import Section List" button. Click on that button to import the valid section list.

International 2010

SWL template, both Callsigns, RS(T) and Serial numbers are logged

- See the UDC file for more details
- Filename: SWL.udc

International Lighthouse Week 2010

International Lighthouse Week (Serial#, Name, Member# as applicable, Lighthouse# as applicable, State(Prov), as exchange)

- See the UDC file for more details
- Filename: ILLW-2010.udc

Indonesian DX Contest

Indonesian DX Contest for DX (non-Indonesian stations) Work anyone.

- Exchange: RS+Serial Nr. YB Prefixes and Country multipliers. Remember to set for correct Mode when setting up.
- Filename: YBDXC.udc

Indonesian DX Contest

Indonesian DX Contest for YB (Indonesian stations) Work anyone. Remember to set for correct Mode when setting up.

- Exchange: RS+Serial Nr. World Prefixes and Country multipliers
- Filename: YBDXCYB.udc

Indonesian JAKARTA DX Contest

Indonesian JAKARTA DX Contest, 40M only, SSB only, work anyone, 2nd weekend in May.

- Exchange: RS + Serial Nr. WPX and DXCC multipliers.
- Filename: JAKARTA.udc

Indonesian Padang DX Contest

Indonesian Padang DX Contest, 40M only, SSB only. 3rd Weekend December.

- Exchange: RS + Serial Nr
- Filename: PADANG_DX.udc

International Police Association Radio Club Contest

International Police Association Radio Club Contest, open to all.

- Exchange: RS(T)+Ser Nr. +(if Member) IPA + State/Country Prefix(e.g. IPAFL or IPAG)
- Filename: IPA_RC.udc

IRTS80M

IRTS 80 Metres Counties Contest. CW/SSB, 80m only, Serial # and County as exchange

- See the UDC file for more details
- Filename: IRTS80M.udc

IRTS CQIR

IRTS CQIR Contest

Select File name: IRTSCQIR

Exchange: Irish - Serial and County Code, Others - only Serial

- See the UDC file for more details
- Filename: IRTSCQIR.udc

HINA33

JLRS Hina 33 Contest. Multi Band, Multi Mode Contest. If using Data, Select MIXED+DIG on Contest Dialogue Setup window.

Exchange: YLs send RS(T) and YL, OMs send RS(T) only.

- Filename: HINA33RTTY.udc

JW-FD

JOCK WHITE MEMORIAL FIELD DAY (NZART). 80/40m, SSB/CW, Report/Serial #/Branch # as exchange, 1 hour sessions

- See the UDC file for more details
- Filename: JWFD.udc

Kanagawa

Internal JA contest

- See the UDC file for more details
- Filename: kanagawa.udc

KCJ

KCJ(Keymen's Club of Japan) contest. Version for the rest of the world (not JA),
Prefecture as exchange

- See the UDC file for more details
- Filename: KCJ.udc

Keymens Club of Japan

KCJ (Keymen's Club of Japan Contest).

Select file type: KCJ_JA or KCJ_DX as appropriate.

Exchange: JA – Prefecture or District Code, Others, Continent Code e.g. EU

See KCJ-DX.UDC for Non-JA entrants. v1.0.2; KCJ_JA.UDC for JA entrants

- See the UDC file for more details
- Filename: KCJ_DX.udc

KT Serbia Cup

KT Serbia Cup Contest

- See KTKUP.txt in KTKUP.zip
- Filename: KTKUP.udc or KTKUP_YU.udc

Lighthouse Christmas Lights 2010

Lighthouse Christmas Lights 2010

- See the UDC file for more details
- Filename: LCL-2010.udc

Lighthouse Spring Lites 2010

Lighthouse Spring Lites 2010,

Supported...

Supported Contests Setup

-
- See the UDC file for more details
 - Filename: LightHouseEvent.udc

Lithuanian Cup Contest

Lithuanian Cup Contest

Select file type: LYxxCUP (on-site) LYCUP others

Exchange: RS(T)+Serial Nr.

- See the Read-Me file for more details
- Filename: LYCUP.zip

LY WAL Contest

LY WAL Contest (Worked All Lithuania)

Select file type: LYWAL

Exchange: LY – WAL Area, Others, DX

- See the UDC file for more details
- Filename: LYWAL.udc

Marconi Memorial Contest

Marconi Memorial Contest. Generic, RST+Serial NR Exchange, CQWW-type Country Prefix as Multiplier

- See the UDC file for more details
- Filename: MARCONIMEM.udc

Memory Lives Forever Contest

Memory Lives Forever Contest. RS(T) and Op Age MAY Also Send and Rcv S.K. Callsign & Age. e.g. 559 79 G8FW 88 as exchange.

- Filename: MEMORY.udc

Michurinsk Contest Group Autumn Sprint

Autumn Sprint. CW and SSB. Exchange RS(T)+Serial Nr. Mults are DXCC and Oblasts

- See the Read-Me file
- Filename: AUTUMN_SPR.udc in Autumn_Spr.zip

MOON CONTEST

MOON CONTEST

Select file type: MOONRTTY

Exchange: Serial Nr + 6 Character Locator + Name of QTH

Note =Use for all – restrict Band to suit. Generate correct claimed score after contest by editing qso points – do not rescore when prompted.

- See the UDC file for more details
- Filename: MOONRTTY.udc

Moscow-Championship

Moscow Championship. Oblast(Rus) and Serial # as exchange. Oblast and every Moscow (MA) callsign is multiplier

- See the UDC file for more details
- Filename: Moskwa_Champ.udc

MULAN WAP

MULAN DX Contest. 80,40,20,15,10m SSB/CW,Serial/Province

- See the UDC file for more details
- Filename: MulanDXC.udc

Natal Digital Group PSK125

Now a DIGITAL Contest

- See the Rules and Read-Me file
- Filename: NDGPSKRTTY.zip

North American QRP CW Club Sprints.

Exchange: RST, State/Province/DXCC and Member Nr. or Power (include the 'W')

- See the rules for more details.
- Filename: NAQCC.udc

NAURYZDX - Central Asia Nauryz Contest

Exch: RS(T)+Oblast or ITU Zone.

- See the UDC file for more details
- Filename: NAURYZDX.ZIP

New Jersey NJQRP Skeeter Hunt Contest

Exchange: RST, S/P/C or NPOTA Designator(for 2016 only), Skeeter number/Power.

- Filename: SKEETER.udc

NRL Cup

(Russian internal contest).

- See the UDC file for more details
- Filename: NRLC.UDC

NRRL TELEFONITEST

NRRL (Norsk Radio Reliabelitet Liga) TELEFONITEST
(Internal Norwegian Contest)

- See the UDC file for more details
- Filename: NRRLTELE.udc

NZART WW11 Memorial and VHF and up Contests.

- See the Read_Me file
- Filename: NZART.zip

OBLAST

Use as a template - serial # and Oblast(Rus) as exchange. Oblast is multiplier

- See the UDC file for more details
- Filename: Oblast.udc

OH Domestic Events, Easter, Sainio, Summer, Autumn and Xmas.

Exchange: RS(T) Serial Nr. and County Code.

- See the ReadMe.txt file.
- Filename: FINNdom.zip

OH-PARKS

OHIO State parks are multipliers. 1 point per every QSO

-
- See the UDC file for more details
 - Filename: OH-Parks.udc – download/copy this file to your Documents\N1MM Logger+\UserDefinedContests folder
 - Section filename: OH-PARKS.sec – download/copy this file to your Documents\N1MM Logger+\SupportFiles folderFilename: OH-Parks.udc

OK-OM DX SSB

OK-OM DX SSB Contest. OK-OM Stations send RS + County Code, Others send RS + Serial Nr. CQWW and County Codes are Mults.

- See OKOM DX SSB.txt in OKOM DX SSB.zip
- Filename: OKOMDXS.udc or OKOMDXS_DX.udc

OK1WC Memorial

OK1WC Memorial Contest. Callsign last letter is Multiplier.

- Exchange: RS(T)+Serial Nr
- Filename: OK1WC.udc

Old New Year

RS(T) and NR (Age of OP. plus Years of Experience) as exchange

Select file name: OLDNEWYEAR

Exchange: Serial Nr and (Total of your Age + Number of Years YOU have held Licence).

- See the UDC file for more details
- Filename: OLDNEWYEAR.udc

Original QRP

O R I G I N A L – Q R P – C O N T E S T. Serial # and Category (VLP, QRP or MP) as exchange

- See the UDC file for more details
- Filename: OQRP.udc

OZ ACTIV Contest

(Danish Internal Contest?)

OZ Activity Contest (Serial # and Post Code (first digit) as exchange)

- See the UDC file for more details

- Filename: OZACTIV.udc

OZCHR-VHF

OZCHR-VHF (Russian VHF contest).VHF bands only, 6 char. GriqSquare as exchange, dupes are not allowed on same band different modes

- See the UDC file for more details
- Filename: OZCHR_OCHN.udc

PARLA

PARLA(EA) CW CONTEST

- See the UDC file for more details
- Filename: PARL.UDC

Pro CW Contest

CW or Digi. Exch: RST+SerNr+/M – if a member of any CW Club. CW 1st Weekend December, Digi 2nd Weekend.

- See the rules for more details
- Filename: PCC_MEM.udc (members) PCC_NM.udc (non-members) in PCC.zip. See the Read-Me file.

Phone Fray

Weekly Phone contest. Exchange: Name + S/P/C Name only for non-NA stations.

- Filename: PHONEFRAY.udc

PN QUICK CW Contest

Short Portuguese CW Contest. Members send PN Number, Others send Serial Nr.

- See the Read-me file for more information.
- Filename: PN_QUICKCW.udc or PNMQUICKCW.udc (in zip file)

Portuguese Navy Day Contest

Takes place over 8 days. Naval Clubs Members send RS(T)+Club I.D.+#, others send RS(T)+SerialNr. PN Club Members are mults. Work each band and mode each day.

- Download PND.zip
- Filename: PND_M_RTTY.udc or PND_NMRTTY.udc

PODXS 070 Contests

Use for several PODXS070 Club contests. Exchange Call, RST and State/Province or DXCC Entity. Use for PSK Festival, Jay Hudak Memorial, Pumpkin Sprint and Firecracker

- See the UDC file for more details
- Filename: PODXS1RTTY.udc

PODXS 070 St. Patrick's Day Contest

Use for PODXS070 Club St. Patrick's Day Contest. Exchange Call, Name, State/Province or DXCC Entity and Member Nr.

- See the rules for more details
- Filename: PODXS2RTTY.udc

PODXS Triple Play Low Band Sprint

PODXS070 Club Triple Play Low Band Sprint. Select log type: 070TPRTTY. Exchange Call, RST and State/Province/DXCC Entity.

- See the PODXS Website for more details
- Filename: 070TPRTTY.udc

PODXS Three Day Weekend Contest

PODXS 070 Club Three Day Weekend Contest. (Members only) First Friday after Memorial Day. Exchange RSQ + Name + Member#

- See the PODXS Website for more details and PODXS_TDW-ReadMe.txt in PODXS_TDW.zip
- Filename: PODXS_TDW.udc in the zip file. Update the bonus calls in PODXS_TDW_BP.txt

PODXS Valentine Sprint Contest

PODXS070 Club Valentine Sprint. Select log type: 070VSRTTY. Exchange Call, Name, OM/YL and State/Province/DXCC Entity.

After the contest, edit "YL"s to 2 points. Complete Contest name in log.

- See the UDC file for more details

-
- Filename: 070VSRTTY.udc

POPOV YOUTH CUP

POPOV YOUTH CUP

- Exchange: RS + Serial Nr + Last Serial Nr received (as LZ Open – start with 001 000)
- Filename: POP_YTHCUP.udc

Popov Memorial

POPOV MEMORIAL CONTEST – RS(T) and NR (Years of Experience) as exchange

- See the UDC file for more details
- Filename: PopovMemorial.udc

POPOV-VHF

(Russian internal VHF contest). 2M only, serial # and GriqSquare as exchange, dupes are not allowed on same band CW, SSB and FM modes

- See the UDC file for more details
- Filename: Popov_Cup_VHF.udc

Primorsky HF Contest

- See the UDC file for more details
- Filename: PRIMOR_HFC.udc

PSK 31 Flavors

31 FLAVORS CONTEST (PODXS). Former name – FLAVORSPSK.udc,

Select file type: FLAVORRTTY

Exchange: State/Province or DXCC Entity + 070 member number/Name, if not member

- See the UDC file for more details
- Filename: FLAVORRTTY.udc

PW 144 and 70Mhz

PW 144 and 70Mhz.

Select file name: PW_144_70

Exchange: Locator. 4 Character Square

-
- See the UDC file for more details
 - Filename: PW_144_70.UDC

QRP HF RTTY

QRP HF RTTY Contest.

Exchange: RST and CQ Zone

- See the UDC file for more details
- Filename: QRPHFRTTY.UDC

R3A Cup Digi

R3A Cup Digital Contest

Exchange: RST and Oblast or Serial Nr

- See the Read Me file in R3A_CDRTTY.zip
- Filename: R3A_CDRTTY.udc

R3E-SC

Russian internal contest See the UDC file for more details

Filename: R3E-SC.UDC

R3L_HF_CUP - Smolensk HF Cup

- See the UDC file for more details
- Filename: R3L_HF_CUP.udc

R4C Champ

Russian internal contest

- See the UDC file for more details
- Filename: R4C-Champ.UDC

R4W (Udmurtia, Russia) Open Championship

Russian internal contest

- See the UDC file for more details
- Filename: r4w-champ.udc

R6H Champ

Russian internal contest

- See the UDC file for more details
- Filename: R6H-Champ.UDC

RCWC 4 Seasons

Russian 4 Seasons Contests

- See the Read_Me file for more details
- Filename: RCWC4.zip

RCWC RPX Contest

Russian CW Club RPX Contest. Exchange; RST+SerNr.

- See the rules for more details
- Filename: RCWC_RPX.udc

REGION-NR

Russian internal contest

- See the UDC file for more details
- Filename: REGION-NR.udc

RSGB 40m QSO Party

RSGB 40m QSO Party. Exchange; RS + Name (Please keep to 8 characters or less)

- Filename: RSGB_40QP.udc

RSGB FT4 Contest Series

A series of three short duration events to allow entrants to experience the latest machine-generated contest mode. As this series is experimental, there are likely to be changes as we develop experience with this mode, so please check the rules prior to each event

- Exchange; Report and 4-character Locator (e.g. IO91)
- Filename; RSGBVHFFT4.udc (in RSGB_FT4.zip)

RSGB UKAC (VHF)

RSGB UKAC (VHF). VHF+ only, Points per Km and UK Grid Square multiplier “,

- See the UDC file for more details
- Filename: VHF_Paul4.UDC

RSGB VHF Contests

One Generic, Exchange RS(T), Serial Nr and Full Locator. 1 Point/Kilometer. No Multipliers.

- See VHF_RSGB_ReadMe.txt in VHFRSGB.zip for other RSGB VHF Contests covered.
- Filename: VHFRSGB.udc

RTC_PARTY

DL RTC Party. Exchange: RST (+Member Nr) + 4 Character Grid

- See the rules for full details
- Filename: RTC_PARTY.udc

RUSSIAN160

RUSSIAN 160 m contest (Contest Board will calculate points)

- See the UDC file for more details
- Filename: RUSSIAN160.UDC

SM Monthly Test

SM Monthly Contest. Exchange: RS(T) + Serial Nr + Full Locator.

- See the rules for full details
- Filename: SM_MT.udc

South America 10 Meter

South America 10 Mtr. Exchange: RS + CQ Zone.

- See the rules for more details.
- Filename: SA10M.zip

SALMON-RUN

This contest is published for learning purposes only. WA QSO party (aka Salmon

Run) is fully supported by the logger

- See the UDC file for more details
- Filename: Salmon_Run.udc

SARA Spring Sprint

SARA Spring Sprint. Exchange: RST, Locator and Class, Locator and WPXprefix are Mults

Select file name: SARA

Exchange: Your Locator and Class of entry.

- See the UDC file for more details
- Filename: SARA.UDC

SARA Spring Sprint (OM)

SARA Spring Sprint (for OM stations). Exchange: RST, Locator and Class, Locator and WPXprefix are Mults

Select file name: SARAOM

Exchange: Your Locator and Class of entry.

- See the UDC file for more details
- Filename: SARAOM.udc

SARL Contests

Several SARL Contests. See the Read_ME file in SARL.zip

- Filename: SARL.zip

SCAG SPRINT

SCAG Sprint Cup

Select file name: SCAG

Exchange: Name + Member (SCAG Club) Nr or NM

- See the UDC file for more details
- Filename: SCAG.udc

Seanet Contest

Seanet Contest , RST + Serial as exchange, DXCC Countries as Multipliers.

Seanet Countries use SEANETRTTY.UDC; Non Seanet countries use

SEANETRTTY2.UDC (Rename to SEANETRTTY.udc after copying to N1MM\UDC

folder)

- See the UDC file for more details
- Filename: SEANETRTTY.udc

SDXC

Scottish DX Contest, RS(T) + GM Area Code or Serial Nr. GM Area Codes and WAE Countries as Mults.

- See the ReadMe file in zip file
- Filename: SDXC.zip

SKMEM

Silent Key Memorial Contest. Exchange RST+ITU Zone or RST+a Silent Key Callsign.

- Correct claimed score by deducting 1 point x Nr of Mults for each ITU Zone exchange received.
- Filename: SKMEM.udc

SMIRK

Six Meter International Radio Klub contest. Exchange: SMIRK number, if the station worked has one, and grid

- See the UDC file for more details
- Filename: SMIRK.udc

SP PGA Contest DX

Polish PGA-Test, Non-SP Stations",

- See the UDC file for more details
- Filename: PGATEST-DX.udc

SP PGA Contest SP

Polish PGA-Test, for Polish Stations",

- See the UDC file for more details
- Filename: PGATEST-SP.udc

SSA Monthly Test

SM Monthly Contest. Exchange: RS(T) + Serial Nr + Full Locator.

- See the rules for full details
- Filename: SSAMTCW.udc, SSAMTSSB.udc in SSA_MT.zip

Suffixes XXIX National

Suffixes XXIX National (EA). RS and Province as exchange.

- See the UDC file for more details
- Filename: EASUFF29.zip

SP WW EPC BPSK63

SP WW EPC BPSK63 Contest.

Exchange: RST+Serial or SP Province Code. Province and DXCC are Multipliers.

- See SPEPC_RTty.text in SPEPC_RTty.zip
- Filename: SPEPC_RTty.udc or SPEPCORTTY.udc

SPAR Winter FD

SPAR (Society for the Preservation of Amateur Radio) Winter Field Day,

- See the UDC file for more details
- Filename: SPAR_FD.udc

SRR JR

SRR (Russia) youth hams contest

- See the UDC file for more details
- Filename: SRRJR.UDC

SV Triathlon

Exchange: RS(T) and Serial. Entrants using all three modes select MIXED + DIG in the Contest Setup Window. Correct claimed score – multiply 'B3' number by 3, then by number of multipliers, add to previous claimed score.

- Filename: TRIATHRTTY.udc

TA VHF UHF

TA VHF UHF Contest. Exchange: RS(T) Serial Nr. (Start at 001 on each band) Full

Locator. Select MIXED in the Contest Setup Dialogue Window.

- Filename: VHF_UHF_TA.udc

TARA SKIRMISH

TARA SKIRMISH Contest. Exchange: Name and Prefix (Area locator),

- See the UDC file for more details
- Filename: SKIRMRTTY.udc

TenTen QSO Parties

Exchange: Name, TenTen #, & State(Prov. or Country). Use for all QSO parties – restrict mode to suit.

- See the ReadMe file for more details
- Filename: TENTEN.zip

Tesla HF Memorial Contest

Exchange: RST, Serial Nr. and 4 Character Grid. After contest, edit own square contacts to 90 points.

- Filename: TESLA_VHF.udc

Texas Parks On The Air

Exchange: Callsign and Park Designator, State, Province or DX Prefix

- See the Read-Me file in the zip file.
- Filename: TX-PARKS.udc

The Day of YLs

\Days of YLs\ (YL/OM party) – Exchange: RS(T) + YL or OM. Work same station each band and mode.

Select log type DOYLSRTTY

Mode Select: If using all modes, select MIXED+DIG

Exchange: OM or YL

- See the UDC file for more details
- Filename: DOYLSRTTY.udc

UBA PSK63 Prefix Contest

Exchange: RSQ and Serial Number Starting at 001. Mults are WPX Prefix

- See UBAPSK63_ReadMe.
- Filename: UBA63RTTY.udc in UBAPSK63.zip

UFT HF All Band Contest

Exchange RST, Member Number or NM

- Filename: UFT-HF.udc (in UFT-HF.zip)

UFT QRP Contest

Exchange: RST/QRP(QRO)/MemberNr(NM) Mults are Member Numbers.

- See the Read-Me file
- Filename: UFT_QRP.zip

UFT-YL-CW Contest

Exchange: YLs send; RST + Serial Nr + YL + Name, OMs send; RST + Serial Nr + Name

- See the Rules for more details
- Filename: UFT-YL-CW zip

UK DXC BPSK63

Exchange Real RSQ, Serial Nr. and your DXDA Number.

- See UKDX63.txt in UKDX63RTTY.zip
- Filename: UKDX63RTTY.udc

UKSMG Winter Marathon

Exchange RS(T) and 4 Character Locator. If intending to use Data modes, select MIXED+DIG in the Contest Setup Dialogue Window

- See the Read-Me text file in the zip file.
- Filename: 6M_WMRTTY.zip

URAL CUP

Ural Cup (Kubok Urala)

- See the UDC file for more details
- Filename: Ural_Cup.udc

USi W/VE Islands Qso Party

USi W/VE Qso Party

If a station is going to use all three modes, in the contest set-up window select Mixed+Digi.

Island stations should start a new log for each location (to re-start Serial Nr)

Select file name: USI_QPRTTY

Exchange: Island Designator(If Island station) and/or State/Province or DXCC Entity.

- See the UDC file for more details
- Filename: USI_QPRTTY.udc

UT5EU-MEMORIAL-VHF

VHF only, serial # and GridSquare as exchange, dupes are not allowed on same band CW, SSB and FM modes

- See the UDC file for more details
- Filename: UT5EU_Memorial_VHF.udc

VHF GRIDS

Worked All Provinces of The Netherlands: Exchange RS(T), Serial NR and Grid, Dutch Stations send RS(T), Serial NR and 2 figure Province Code. Unzip the file (there will be 2 files – udc and txt), import CallHist_VHF_WAP.txt and turn Call History Lookup on.

- See the UDC file for more details
- Filename: VHF_WAP.zip

VU Himalayan Contest

Indian Stations send RS(T) and 2 figure State or Union Territory Code. Others RS(T) and Power

Use the correct UDC file for your location.

- See VU_Read-Me.txt in VU.zip for more details.
- Filename: VU_HIMA_DX.udc or VU_HIMA_VU.udc (in VU.zip)

VU International DX Contest

Indian Stations send RS(T) and 2 figure State or Union Territory Code, others RS(T)

and Serial Number.

Use the correct UDC file for your location. Select log type: VU_DX_VU=VU Stations, DX=Non-Asian Stations, ASIA=Non-VU Stations.

- See VU_Intl_Read-Me.txt in VU.zip for full details.
- Filename: VU_DX_VU.udc or VU_DX_ASIA.udc or VU_DX_DX.udc

VU Summer (Internal) Contest

Exchange: RS(T) and Serial Number

- Select correct Mode Category in the Contest Set up Dialogue Window, e.g. MIXED+DIG if working all three modes.
- Filename: VUSUMMRTTY.udc (in VU.zip)

Vytautas Magnus trophy

Vytautas Magnus Trophy (v1.0.2) Held the first Sunday AFTER the new year. 80m and 2m. CW and Phone. Exchange RS(T), Serial Nr and full Locator(Multipliers)

- See the UDC file for more details
- Filename: VMTROPHY.udc

WAB Contests

Worked All Britain Contests

- See WAB ReadMe in WAB.zip
- Filename: WAB.udc

Wisconsin Parks on the Air (WI-PARKS)

- Third Saturday in September every year
- Filename: WI-PARKS.UDC file and section list (WI-PARKS.SEC) file

Winter Field Day Association Contest

Last full weekend in January. Exchange: Category + State/Section/DX

- See the rules for more details. 2016 change: No signal reports (RST) required
- Filename: WFDA2RTTY.udc – in WFDA.zip

Worked All China Provinces BY

Worked All Provinces of China contest (for BY stations)

Select log type: BY_WAPC_BY

Contest Exchange: RS(T) and your Province i.d. DX send RS(T) and Serial Nr.

- See the UDC file for more details
- Filename: BY_WAPC_BY.udc

Worked All China Provinces DX

Worked All Provinces of China (for DX stations)

Select log type: BY_WAPC_DX

Contest Exchange: RS(T) and Serial NR, Chinese Stations send RS(T) and 2 figure Province Code.

- See the UDC file for more details
- Filename: BY_WAPC_DX.udc

Worked all VK Shires

Exchange RS(T) and VK Shire code, (DX send CQ Zone)

- See VKshires_readme.txt in the zip file.
- Filename: VKSHIRES.zip

World Lighthouse On The Air (OTA)

World Lighthouse OTA. Exchange: RS(T) Serial Nr, plus Lighthouse Expeditions send Reference Nr (Lxxxx)

- See the UDC file for more details
- Filename: WLOTARTTY.udc

WESM minitest

This contest is already implemented as MINITESTCW in the logger. Use this udc file for learning only. RST, Serial Nr, 80 metres only. Note=Contest is every Wednesday, 1800-1900 GMT, six periods, work each station each 10 minutes, each call is mult once “,

- See the UDC file for more details
- Filename: WESM.udc

YACHAMP

YAKUTIA CHAMPIONSHIP

-
- See the UDC file for more details
 - Filename: YA CHAMP.UDC

YL-OM

The YL-OM Contest is scheduled (1400 UTC Feb-11-2011 thru 0200 UTC Feb-13-2011)

Exchange: Station Worked, QSO Number, RST, ARRL/RAC Section or DX Country",

- See the UDC file for more details
- Filename: YLOM.udc

YO PSK31

YO PSK31 contest. RST, Serial NR and Country ID (e.g. G) – YO send County Code as exchange

Select file name: YORTTY

Exchange: Serial Nr and Your Country Prefix – YO Stations: Serial Nr and County Code

- See the UDC file for more details
- Filename: YORTTY.udc

Battle of Carabobo Contest.

Exchange: RS, Serial Nr, YV Stations also send District code(Mults by band)

- See the Read-Me file in YV_CARABOBO.zip
- Select file name: YVBC_SSBYV.udc or YVBC_SSBDX.udc

ZOMBIE

Exchange: S/P/C + Zombie NR/Phone 3 digit area code + Name + Years held Licence. CW only.

Select file name: ZOMBIE.udc

Exchange: State/Province/Country I.D. and your Zombie Member Nr or 3 Digit phone area code and your Name and Number of years you have held Licence.

Work out your score. (See rules)

- See the UDC file for more details
- Filename: ZOMBIE.udc

Supported Radios

Supported Radios

Note: Known settings for specific transceivers, as well as program features that they do not support are mentioned below as far as we know them. Please advise us of any corrections or needed changes.

General Information

- When using a home-brew self-powered interface set the handshaking to:
 - DTR – Always On
 - RTS – Always On
 - Like when using ICOM clone cables
- All radios: Band change is not allowed while transmitting
- All radios: Timeout for all radios is default set to 10 seconds (user settable). Users generally increase this value to 13 – 15 seconds.
 - Some radios require initialization commands for configuration. These are sent to the radio when the program starts. Users should have the radio and interface powered prior to starting the program so this can occur. If the radio needs to be power cycled after the program has initialized, right click in the Bandmap and select Reset Radio to perform this initialization again.
 - A warning message will be displayed when no response received from the radio and the radio will be changed to a manual radio by the program.
 - To restart the radio radio interface polling select in the right-click menu from the bandmap “Reset radios”
 - When the radio control gives a warning 10 seconds after you start the logger, then you never had radio control at all, and you should check your hardware, and serial port settings. Consult the manual from your radio and also read below. Some radios require initialization commands for configuration. These are sent to the radio when the program starts. Users should have the radio and interface powered prior to starting the program so this can occur. If the radio needs to be power cycled after the program has initialized, right click in the Bandmap and select Reset Radio to perform this initialization again
- Polling of radios while sending CW is supported for all radio except for FT-1000.
- It may appear that the Up Arrow, Down Arrow, Page Up or Page Down are not working when incrementing or decrementing the current frequency with these keys.
 - The VFO frequency will not change if the incremented/decremented

amount is smaller than the frequency deltas supported by your rig. This is not always well documented by the manufacturer. Icom 751 rigs for example do support 10 Hz steps but only show 100 Hz steps on the display.

- The keys mentioned above have to be set higher than the minimum step size supported by the radio.
- It's easy to test if it is the keys are working. Check the frequency while pressing the keys mentioned above. If the frequency moves nothing has to be changed.
- The default increment/decrement for CW is 10 Hz. If this doesn't work, try changing it to 100 Hz, under the Configurer, Other tab.
- This only applies to the keys that increment/decrement the current frequency.
- Memory mode – most modern radios have a kind of memory mode. In this mode, the radio will not provide the correct polling data to the program. Memory mode is not supported; VFO mode is required.
- When SO1V mode is selected, VFOB is not defined for receiving. The second Bandmap and Entry window are automatically closed.
- Sending CW characters via radio command (CAT) is not supported due to the limitations and contesting requirements. A COM, LPT, WinKey, or similar interface built into the radio (e.g. RTS or DTR keying on the Elecraft K3) is required to send CW.
- USB and USB to COM interfaces:
 - Do not turn off radios while the program is running if the radio is connected via USB port. Exit the program first.
 - Do not unplug a USB to COM converter while the program is running. Exit the program first.
 - The device driver will remove the COM port from the hardware table and the program will hang then eventually timeout. Programs written in Visual Basic and use MSCOMM control can not detect a COM port that is removed from the hardware device table. This is a Microsoft bug.
- If the radio has an internal USB sound card ("USB Audio Codec") which you use either in voice modes or in digital modes, then in the Logger+ Audio Setup window under the Playback tab, check the "Internal Radio Codec" check box.
 - Open the Logger+ Audio Setup window from the Config > Logger+ Audio Setup... menu item. If that menu item is grayed out, first check the Config > Use Logger+ Audio menu item.

Manual Mode - No Radio Selected

In manual mode no radio is selected and attached to the program. If possible always connect a radio using the CAT interface or serial port. Older radios (or very new not supported radios) can still be used with the program by selecting Manual

but many functions in the program will not work as well as they could or will not work at all. When a radio is not configured, it is the user's responsibility to make sure the mode and band are correct when logging contacts. When no radios are selected in Configurer, the program will attempt to set the initial operating mode and frequency in single mode contests when the program starts or a new contest is opened. The program uses information from the contest selection and the mode tab settings in Configurer.

Digital Mode Mapping

Below information by Rick, N2AMG and John, K3CT regarding supported Digital configurations by N1MM logger.

The mode names labelling the columns in the table below are used when setting up the "Mode sent to radio" under the [Mode Control](#) tab in the Configurer. Failure to set the "Mode sent to radio" to the correct value can lead to the program putting the radio into the wrong mode. These are also the mode names that are displayed at the top of the Bandmap window and in the title bar of the Entry window.

Radio Modes Corresponding to N1MM Logger Digital Mode Designations Column Headings = Mode names used in N1MM Logger

Radio	RTTY	RTTY-R	AFSK	AFSK-R	PSK	PSK-R
Flex	-	-	DIGL	DIGU	-	-
FT990/1000/1000MP	RTTY-L	RTTY-U	PKT-LSB	(4)	-	-
FT100	-	-	Dig(3)	-	-	-
FT950/2000/3000/5000/9000	FSK(RTTY-LSB)	FSK-R(RTTY-USB)	PKT-LSB	PKT-USB	-	-
FT450	RTTY-L	RTTY-U	User-L	User-U	-	-
FT817/857/897	-	-	Dig(3)	-	-	-
FT920	Data-LSB(2)	Data-USB(2)	-	-	-	-
IC7600/7610/7700/7800/7850	RTTY	RTTY-R	LSB-D1	USB-D1	PSK	PSK-R
IC746Pro/756Pro/7200/7300/7410/9100	RTTY	RTTY-R	LSB-D	USB-D	-	-
Older Icom	RTTY	RTTY-R	-	-	-	-
Orion/Omn	FSK	-	-	-	-	-

iVI/OmniVI

I

K2	–	–	RTTY	RTTY-R	–	–
K3	FSK D	FSK D-R	AFSK A	AFSK A-R	DATA A	DATA A-R
TS2000	FSK	(1)	–	–	–	–
TS480/59	FSK	FSK-R	–	–	–	–

0/Other

Kenwood

(1) = radio menu selection

(2) = FSK/AFSK selected by a rear panel switch

(3) = Radio menu programmable for RTTY, RTTY-R, PKT-L, PKT-U

(4) = FT990/1000/1000MP selection does not support PKT-USB

If your radio does not have an entry under AFSK or PSK, use LSB or USB (e.g. Argonaut/Jupiter/FT840/847/890/900/757GXII). If there is an entry under AFSK-R but not under PSK, try using AFSK-R for PSK31 and other digital modes.

Alinco

DX-77 - supported

Elecraft

- Elecraft USB-serial converter issues and N1MM logger
 - Situation: Setting up Elecraft K3 to work with N1MM logger and simply key CW with DTR line of CAT port.
 - Results: CAT works fine, but every time I try to send CW there appears an error window “CommPortDev_OnComm 4 - 2147417856”
 - N1MM is totally blocked and has to be killed using task manager.
 - Solution: Early Elecraft USB-serial converters used a Prolific chip, and the (Win2K) Prolific driver doesn't work correctly for CAT and DTR-CW-keying using the same port. Elecraft has since that time switched to an FTDI USB-serial converter, and newer Elecraft USB-to-serial adapters don't have this problem
 - A USB-serial converter using a FTDI-chip and the FTDI drive is working fine, CAT ok, fast CW keying, ESC immediatly interrupts message ...
 - All ufb now :- Tnx Thomas DK3DUA

K2

- Uses Kenwood-style commands but has its own radio selection. Only the KY command which is Elecraft specific is not supported.
- Use default Kenwood parameters but sometimes one (1) stopbit only works (contrary to the K2 KPA100 manual saying that 2 stop bits should also work).
- N1MM Logger does not support the K2 “virtual keying” feature using commands sent to the K2 serial port.
- Setting the “Wide” and “Narrow” filter codes.
 - Remember to set the filter codes for both VFOs. Get the appropriate N1MM Logger screen menu prompt by left clicking when your cursor is over the active VFO window.
 - Substitute this code for the complete Kenwood “FL” code that comes up by default: K22;FW99991;K0; (no spaces, all caps, include the “;”’s) This will set the filter to “FL1” on the K2. If you put this code in the SSB “Wide” section for the filter code, it will give you FL1 for SSB – if you put this in the CW “Wide” section, it will give you FL1 for CW. Remember that the actual bandwidth of the filter will depend on how you have set FL1 on your K2. The same is true when you substitute this string for the “Narrow” settings. If you want a filter other than FL1 in either mode, just change the “1” after the 9999 to the number of the filter you want to invoke ie: 1,2,3 or 4. As an example, K22;FW99993;K0; placed in the code section for CW “Narrow” would invoke FL3 when the switch is set to “Narrow” and you are on CW.
 - Briefly, “K22” tells the K2 that this is an “extended command mode” – the “;” tells the K2 that this command is finished – the “FW” tells the K2 that this is a command to set the filter width – the 9999 number is ignored in the string but is necessary to include (it can be any set of four numbers between 0 and 9999 – I just picked 9999) – the “1” is the number of the filter to invoke (1 – 4) – the “K0” (that is “K” zero) tells the K2 to go back to the “normal command mode.”
 - Use the same technique to set the RTTY filters as well. Have fun es 73, Don N4HH
- Please check out the feature which works great with the K2 and TS850 etc that don’t have RIT clear IF you are Running (doesn’t work for S&P). Put the rig into split, and use VFO B as your “RIT”. Then go into Config, and turn on “Reset RX Freq when Running Split”. Using VFO B for RIT, tune in a caller off freq, work him, and at the end of the QSO VFO B will be set to VFO A freq. Neat feature, and specifically designed for this situation.

K3 and K3S

- If you experience issues with the radio not returning to RX when a transmission is terminated with the ESC key install firmware version 5.43 or newer.
- Radio control issues have been reported when running other K3 utility software (such as LP-Bridge) in conjunction with N1MM Logger. Please

repeat the test with only N1MM Logger+ running without the other software before reporting a radio control issue, in order to eliminate the other software as a possible source of the problem.

- Note also that when using LP-Bridge, changes of band, mode and VFO may take longer than without LP-Bridge. During the process, it is possible for the radio and the program to be temporarily out of sync, and you may see some apparent instability in the band panel in the entry window and/or brief flashing of the Split indicator in the entry window. This is normal and should clear within a fraction of a second.
- A single receiver K3 can be used in SO1V or SO2R mode. A dual receiver K3 can be used in all program modes, including SO2V. In order to transmit from VFO B in SO2V or split mode, both VFOs must be on the same band (the K3 does not support cross-band split operation, although it is possible to receive on two separate bands simultaneously).
- In a dual receiver K3, the radio's front panel Split indicator can be misleading. What it actually means is that the transmitter is using VFO B. In SO2V, if you use a function key while the keyboard/RX focus is in the VFO B Entry window or if you click on a function key button in the VFO B Entry window, the radio's Split indicator will be displayed even though you are not actually operating split. This is because you are transmitting from VFO B. To determine whether you are logging in split mode or not, look for the Split indicator in the Logger's Entry window and not the indicator on the radio's front panel.
- You can operate split from either Entry window in SO2V, but in order to transmit from the correct VFO and have the transmit and receive frequencies logged correctly, you must enter Split mode from the program (using Ctrl+S or Ctrl+Alt+S), and **not** by pressing the K3's Split button. If you are using "reverse split" (i.e. logging the contact in the VFO B Entry window, listening to the other station in the subreceiver on VFO B and transmitting from VFO A) the Split indicator in the Entry window will be displayed, but the K3's front panel Split indicator will not be displayed because the transmitter is using VFO A.
- When you change transmit focus between Entry windows, the Logger may display a Split indication temporarily in the Entry window(s) while the program and radio status are temporarily out of sync in the process of changing. This condition is most likely to be seen when using LP-Bridge. It should only last for a fraction of a second. If the condition persists, check to see whether you are trying to operate in a mode the radio does not support (e.g. transmitting from VFO B with the two VFOs on different bands is not supported by the radio).
- The stereo (grave accent - ` key, at the left end of the number keys row on many keyboards) toggles Sub on and off. It is identical to pressing the SUB

radio button. To leave SUB on all the time, select **Config > Sub Receiver Always On**

- If you have selected Diversity mode on the radio, toggling Sub off and on via ` or Alt+F12 will turn Diversity mode off
- Logger preserves diversity reception on the K3 unless RX Focus changes to vfoB at which time the subRX will switch to vfoB (note that in diversity reception mode, both receivers are using VFO A, so full SO2V functionality is not available without leaving diversity mode)
- K3 SubRX ON/OFF control by Logger
 - Independent of the state of Sub Receiver Always On:
 - changing RX Focus to vfoB turns the subrx ON
 - Ctrl+Shift+Up/Dn does not change the state of the subrx
 - Alt+F12 or ` toggles subRX ON/OFF if RX Focus is on vfoA (action disabled if RX Focus on vfoB)
 - Sub Receiver Always On checked:
 - clicking any vfo bandmap/avail. window spot or Ctrl+Up/Dn turns the subRX ON
 - changing RX Focus turns the subRX ON
 - if Sub Receiver Always On was unchecked and the user checks it, subRX is turned ON
 - Sub Receiver Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX Focus changes to VFOA (\ keystroke), the subRX stays ON
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is on VFOA (PAUSE, CTRL+Left or vfoA Bandmap/Available window spot click), the subRX is turned OFF
 - if Sub Receiver Always On was checked and the user unchecks it, subRX is turned OFF
- Ctrl+Alt+D command action:
 - If “Sub Receiver Always On” is ON and the SubRX is ON, turn “Sub Receiver Always On” to OFF and leave the SubRX ON
 - If “Sub Receiver Always On” is ON and the SubRX is OFF, turn “Sub Receiver Always On” to OFF and leave the SubRX OFF
 - If “Sub Receiver Always On” is OFF and the SubRX is ON, turn “Sub Receiver Always On” to ON and leave the SubRX ON
 - If “Sub Receiver Always On” is OFF and the SubRX is OFF, turn both ON
- Alt+F12 command action:
 - If the subRX is OFF – check “Sub Receiver Always On” and turn the subrx ON
 - If the subRX is ON – uncheck “Sub Receiver Always On” and turn the subrx OFF unless RX Focus is on vfoB
- Digital radio sub-modes FSK D, AFSK A and DATA A are supported

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- FSK D, AFSK A and DATA A are displayed in N1MM+'s Entry and Bandmap windows (and in the Configurer under Mode Control – Mode sent to radio) as RTTY, AFSK and PSK respectively
 - If the current contest allows digital modes, typing RTTY into the Entry window will put the radio into the mode selected in the Configurer's Mode Control tab under Mode sent to radio for RTTY, which should be either RTTY (for FSK D) or AFSK (for AFSK A)
 - If the current contest allows digital modes, typing PSK31 or PSK63 into the Entry window will put the radio into the mode selected in the Configurer's Mode Control tab under Mode sent to radio for PSK, which should be PSK (for DATA A)
 - The K3's PSK D sub-mode is not supported by N1MM+; the digital engines in N1MM+ cannot transmit PSK using the PSK D sub-mode
 - The K3's data sub-mode is stored in the firmware on a per-band basis
 - If VFO B and VFO A are on the same band, the data sub-mode will be the same in both VFOs
 - If VFO B and VFO A are on different bands, their data sub-modes can be different, but the firmware does not provide a way to poll the K3 for the VFO B data sub-mode. N1MM Logger+ will assume that the VFO B sub-mode is the same as in VFO A when the two VFOs are on different bands
 - Always adjust audio levels in AFSK A and DATA A to give 4-5 bars on the K3's ALC meter. This allows the K3's firmware ALC to control power without clipping peaks and causing IMD. Use the K3's PWR control to control output power; do not try to control power output by adjusting the audio level. In PSK31 and other digital modes requiring high linearity, keep the requested power setting below 50 watts (AFSK RTTY can be safely used at 100 watts)
- RIT control – When in RUN mode, the Up/Dn arrow keys change the RIT frequency (if the K3's RIT is turned on). When in S&P mode the radio frequency is changed
 - Using the program as a voice keyer to play wav files with a K3 on SSB:
 - Option 1
 - Connect your microphone to the Mic input of the sound card and the Line Out of the sound card to the Line In jack on the back of the K3
 - If you are using the internal codec in a K3S, connect the microphone to the K3S as usual and make sure nothing is plugged into the external Line In input on the back of the K3S
 - Select the desired sound card output as the audio source in N1MM+, and set the sound card driver to direct microphone input to this output (“Listen to this device” in the Windows

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- sound card setup – some older sound card/driver combinations may not support this, in which case you will have to use Option 2)
 - Select LINE IN with MENU:MIC SEL on the K3
 - Command Tx (or PTT or...) and adjust the K3's MIC GAIN control (which now controls LINE IN gain) for proper audio level; the K3's ALC triggers at 4-5 bars on the K3's meter, so set levels such that the meter reaches 5-7 bars on peaks. Setting the audio level too low will result in unwanted "power hunting" (varying power output levels) as the K3's firmware tries to adjust its internal audio gain to achieve the power level set with the PWR control
 - Option 2
 - Connect microphone to desired microphone connection on the K3
 - Select the desired microphone input with MENU:MIC SEL
 - Turn transmit on and set Mic Gain for normal microphone input level (the K3's ALC meter should read 5-7 bars on peaks)
 - Connect sound card as described under Option 1
 - Temporarily select LINE IN with MENU:MIC SEL on the K3 in order to adjust the LINE IN gain while playing a wav file from the Logger
 - Restore MENU:MIC SEL to the microphone input and set MENU:MIC+LINE to ON so that both audio sources will drive the K3. The MIC GAIN control will control the microphone gain only. Line In gain can only be set when LINE IN is the selected source via MENU:MIC SEL. Note that the microphone is always live in this method, even when wav files are playing
 - The K3 can accept PTT switching from several sources, including: a keying circuit from a serial or parallel port to the K3's PTT IN; PTT from a Winkeyer; RTS (pin 7) on the radio control RS232 port; using "Radio PTT via command"; or VOX
 - It is better not to use multiple methods of PTT control in parallel; in some cases, and depending on which version of firmware is installed, doing so can leave a K3 stuck in transmit at the end of function-key messages. You should not check "Radio PTT via command" if you are using RTS on the radio control port, or any other hardware PTT connection, to control PTT
 - Procedure for configuring RTS on the radio control RS232 port: Starting with the K3's CONFIG:PTT-KEY set to OFF-OFF, check the CW/Other box beside the radio control port in the Configurer and configure N1MM+ to control PTT from RTS on the radio control port (Port setup), and then set the K3's CONFIG:PTT-KEY to RTS-OFF (or RTS-DTR if you are also using CW via DTR)
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- Warning: leaving RTS set to Always on with the K3's CONFIG:PTT-KEY set to RTS-OFF or RTS-DTR will cause the K3 to be permanently in transmit
 - The K3 accepts CW keying on DTR (pin 4) of the same COM port you're using to control the K3. This method can be used when other methods (e.g. Winkeyer or a keying circuit on a separate COM or LPT port) are not available
 - CW and radio control on the same COM port do NOT work in SO2R mode
 - CW on DTR does NOT work with some USB-to-serial adapters (e.g. Prolific chipset – may depend on the driver version)
 - CW on DTR may be missing some capabilities and may have other undesired side effects – use at your own risk
 - Procedure: Starting with the K3's CONFIG:PTT-KEY set to OFF-OFF, check the CW/Other box beside the radio control port in the Configurer and configure N1MM+ to use DTR for CW on that port; set the K3's CONFIG:PTT-KEY to OFF-DTR (or RTS-DTR if you are also using PTT via RTS)
 - Warning: leaving DTR set to Always on with the K3's CONFIG:PTT-KEY set to OFF-DTR or RTS-DTR will cause a permanent “key-down” condition
 - Cat Macro strings used to play back Radio # 1 internal K3 CW/data messages or DVR voice keyer messages
 - M1 = {CAT1ASC SWT21;}
 - M2 = {CAT1ASC SWT31;}
 - M3 = {CAT1ASC SWT35;}
 - M4 = {CAT1ASC SWT39;}
 - It is not necessary to program a function key to send RX; to the radio for a DVK stop. The program code sends RX; to the radio when the Esc key is pressed
 - It is not necessary to include the K31; command in any K3 Cat Macro. The radio is in K31 mode all the time and sending this command just adds delay
 - In the K3S (or a K3 backfitted with the KIO3B card) USB radio control and the Radio Codec are supported. Instructions for setting up USB communications may be found under >Files >[Additional Support Files](#). The file is titled “K3RadioCodecSetup.pdf”.

KX3

- Radio control issues have been reported when running other K3 utility software (such as LP-Bridge) in conjunction with N1MM Logger. Please test with only N1MM Logger running before reporting a radio control issue, in order to eliminate other software as a possible source of the problem

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- The KX3 can be used in SO2V mode, within the limitations of the KX3's Dual Watch feature (e.g. VFO B must be within 15 kHz of VFO A). See the description of subreceiver control for the K3 above
 - The KX3 does not have an FSK keying input, so the digital engines (e.g. MMTTY) cannot transmit in FSK. To do RTTY, put the KX3 into AFSK A mode and configure the Logger and the digital engine for AFSK
 - The KX3's radio control port does not have DTR or RTS inputs, so unlike the K3 these signals cannot be used on the radio control port to key CW or PTT
 - The digital engines (MMVARI and Fldigi) cannot transmit in PSK D. To do PSK, put the KX3 into DATA A mode and configure the Logger and the digital engine for PSK
 - Cat Macro strings used to playback Radio # 1 internal KX3 DVK voice keyer
 - M1 = {CAT1ASC SWT11;SWT19;}
 - M2 = {CAT1ASC SWT11;SWT27;}
 - Cat Macro strings for other functions are listed below as examples
 - To tune the ATU{CAT1ASC SWT44;}
 - To enable VOX{CAT1ASC SWH29;}

FlexRadio

- Portions of this may not be valid for the Flex-6000.
- Playing Audio *.wav Files (pre-6000 series)
 - Transmissions made with Logger+ Audio de-energize PTT when the end of the wav file is reached. The transmit / virtual audio cable (VAC) path has latency. Reduce the 120ms default latency setting on the Flex SDR software VAC1 tab to the minimum possible. This will reduce the amount of time that each on-the-fly recorded wav file will need to contain at the end of the recording. If needed, the user can build a zero audio wav file of the correct duration to account for the audio path latency and add it to the end of the function key message.
- Flex VAC is required for digital or to send/record audio files to the radio without cables. The radio's VOX does not function when VAC is enabled. See the setup at: <http://kc.flexradio.com/KnowledgebaseArticle50230.aspx>
- Radio control
 - Third party COM port mapping software is required to create a virtual COM port for radio control. See the Flex documentation for computer and radio configuration.
 - Software was tested with COM port settings: 38400, N, 8, 1, DTR=Always Off, RTS=Always Off

- CW sending
 - Depending on your computer hardware and system DPC latency, users may find that CW generated by the N1MM Logger program or with external devices like WinKey may not be acceptable. Contact Flex Radio for CW sending issues.
- Glitches or pops in audio
 - Users experiencing intermittent glitches or popping sounds in the receiver audio while radio polling is enabled should contact Flex Radio.
- PowerSDR
 - The code was tested with public version PowerSDR 2.0.22.
 - There may be some interaction between the PowerSDR radio “model” and the requirements for SO2V operation. Generally, controlling split, RX2 On/Off, or MultiRx (Non-RX2 models) from the N1MM program is recommended.
- Digital Modes
 - Both Flex digital modes are supported. They are mapped to the N1MM Logger program selections of AFSK and AFSK-R. Open Config, Mode Control tab, and set Mode Sent to Radio for RTTY and PSK. Most users will likely select RTTY to AFSK and PSK to AFSK-R.
 - VAC does not allow the RX2 to be used with multiple Digital Interfaces. This is not a program limitation.
- The Flex5000 RX2 radio selection is intended for use with the Flex 5000 with the optional RX2 receiver. The Flex radio selection is intended for use with the Flex 1500, 3000, and the 5000 without the RX2. The Flex5000 RX2 option implements SO2V using the RX2 for VFOB and the Flex selection implements SO2V using the MultiRx feature. There are limitations to the tuning range of the MultiRx and how the radio reacts when it’s instructed to change to a frequency outside of this operating range.

Flex-6000 Series

- To use on the fly voice recording and playback:
 - Check “PTT via Radio Command SSB Mode” in the radio COM port configuration window.
 - Check “Internal Radio Codec” in the Playback tab of Logger+ Audio Setup.
- Program Feature Set
 - The radio selection supports all of the standard program features including Reverse CW, Mute Mic, Audio Muting Macros, Antenna Macros, and Advanced SO2V. The three program options SO1V, SO2V, and SO2R are supported.
- SO2V
 - Users are able to have a repeating CQ running on VFOA and tune the band with VFOB. Start the repeating CQ then press the \ key to

switch RX focus to the VFOB Entry window. If a station is called using the Function keys, the TX focus will switch, the message will be sent, and the repeating CQ will not restart. Shift-F# can be used to send a message on VFOA (example: Shift F1 to restart the CQ again). PAUSE or CTRL+Right/LeftArrow keys can be used to switch both RX and TX focus together.

- Users can program VFOB with the next Bandmap spot without changing focus using Ctrl+Shift+Up/Dn. This allows users to program the VFOB frequency and toggle receiver 2 On/Off with various keyboard commands when the VFOA frequency is not busy.
- Receiver 2 can be programmed to be On all the time. See the Config option Dual RX Always On.
- Receiver 2 state can be toggled with the stereo key (`) and the VFO frequencies swapped with ALT+F10. See other features below.
- If Diversity mode is enabled on the radio, toggling Sub off and on via ` or Alt+F12 will turn Diversity mode off.
- Logger preserves diversity reception unless RX Focus changes to VFOB.
- Receiver 2 ON/OFF control by N1MM Logger is independent of the state of Config>Dual RX Always On.
 - Changing RX Focus to VFOB turns receiver 2 ON.
 - Ctrl+Shift+Up/Dn does not change the state of receiver 2.
 - Alt+F12 or the stereo key (`) toggles receiver 2 ON/OFF if RX Focus is on VFOA (action disabled if RX Focus on VFOB).
 - Dual RX Always On checked:
 - Single clicking in any VFO Bandmap, on an Available window spot, or Ctrl+Up/Dn turns receiver 2 ON.
 - Changing the RX Focus turns the receiver 2 ON.
 - If Dual Receive Always On is unchecked and the user checks it, receiver 2 is turned ON.
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX focus changes to VFOA (\ keystroke), receiver 2 stays ON.
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is switched to VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), receiver 2 is turned OFF.
 - If Dual Receive Always On is checked and the user unchecks it, receiver 2 is turned OFF.
- Ctrl+Alt+D command action:
 - If “Dual RX Always On” is ON and receiver 2 is ON, change “Dual RX Always On” to OFF and leave receiver 2 ON.
 - If “Dual RX Always On” is ON and receiver 2 is OFF, turn “Dual RX Always On” to OFF and leave the receiver 2 OFF.
 - If “Dual RX Always On” is OFF and receiver 2 is ON, turn “Dual RX Always On” to ON and leave the receiver 2 ON.

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- If “Dual RX Always On” is OFF and receiver 2 is OFF, turn both ON.
 - Alt+F12 action is similar to the stereo (`) key, but also affects “Dual RX Always On” state:
 - If receiver 2 is OFF – check “Dual RX Always On” and turn receiver 2 ON.
 - If receiver 2 is ON – uncheck “Dual RX Always On” and turn receiver 2 OFF unless RX focus is on VFOB.

Flex-5000A with RX2

- Program Feature Set
 - The Flex5000 RX2 radio selection supports all of the standard program features including Reverse CW, Mute Mic, Audio Muting Macros, Antenna Macros, and Advanced SO2V. The three program options SO1V, SO2V, and SO2R are supported.
- Playing Audio *.wav Files
 - Transmissions made with Logger+ Audio de-energize PTT when the end of the wav file is reached. The transmit / virtual audio cable (VAC) path has latency. Reduce the 120ms default latency setting on the Flex SDR software VAC1 tab to the minimum possible. This will reduce the amount of time that each on-the-fly recorded wav file will need to contain at the end of the recording. If needed, the user can build a zero audio wav file of the correct duration to account for the audio path latency and add it to the end of the function key message.
- SO2V
 - The RX2 option is required for SO2V operation.
 - Users are able to have a repeating CQ running on VFOA and tune the band with VFOB. Start the repeating CQ then press the \ key to switch RX focus to the VFOB Entry window. If a station is called using the Function keys, the TX focus will switch, the message will be sent, and the repeating CQ will not restart. Shift-F# can be used to send a message on VFOA (example: Shift F1 to restart the CQ again). PAUSE or CTRL+Right/LeftArrow keys can be used to switch both RX and TX focus together.
 - Users can program VFOB with the next Bandmap spot without changing focus using Ctrl+Shift+Up/Dn. The state of the RX2 is unchanged. This allows users to program the VFOB frequency and toggle the RX2 On/Off with various keyboard commands when the VFOA frequency is not busy.
 - The RX2 can be programmed to be On all the time. See the Config option Dual RX Always On.
 - The RX2 state can be toggled with the stereo key (`) and the VFO frequencies swapped with ALT+F10. See other features below.
 - If Diversity mode is enabled on the radio, toggling Sub off and on via

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- ` or Alt+F12 will turn Diversity mode off.
 - Logger preserves diversity reception unless RX Focus changes to VFOB at which time the RX2 will switch to VFOB.
 - Subrx ON/OFF control by N1MM Logger is independent of the state of Config>Dual RX Always On.
 - Changing RX Focus to VFOB turns the RX2 ON.
 - Ctrl+Shift+Up/Dn does not change the state of the RX2.
 - Alt+F12 or the stereo key (`) toggles RX2 ON/OFF if RX Focus is on VFOA (action disabled if RX Focus on VFOB).
 - Dual RX Always On checked:
 - Single clicking in any VFO Bandmap, on an Available window spot, or Ctrl+Up/Dn turns the RX2 ON.
 - Changing the RX Focus turns the RX2 ON.
 - If Dual Receive Always On is unchecked and the user checks it, the RX2 is turned ON.
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX focus changes to VFOA (\ keystroke), the RX2 stays ON.
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is switched to VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), the RX2 is turned OFF.
 - If Dual Receive Always On is checked and the user unchecks it, the RX2 is turned OFF.
 - Ctrl+Alt+D command action:
 - If “Dual RX Always On” is ON and the RX2 is ON, change “Dual RX Always On” to OFF and leave the RX2 ON.
 - If “Dual RX Always On” is ON and the RX2 is OFF, turn “Dual RX Always On” to OFF and leave the RX2 OFF.
 - If “Dual RX Always On” is OFF and the RX2 is ON, turn “Dual RX Always On” to ON and leave the RX2 ON.
 - If “Dual RX Always On” is OFF and the Sub RX is OFF, turn both ON.
 - Alt+F12 action is similar to the stereo (`) key, but also affects “Dual RX Always On” state:
 - If the RX2 is OFF – check “Dual RX Always On” and turn the RX2 ON.
 - If the RX2 is ON – uncheck “Dual RX Always On” and turn the RX2 OFF unless RX focus is on VFOB.

Flex-1500, Flex-3000, Flex-5000A without RX2

- Program Feature Set
 - The Flex radio selection supports all of the standard program features including Reverse CW, Mute Mic, Audio Muting Macros, Antenna Macros, and SO2V. The three program options SO1V, SO2V,

and SO2R are supported.

- Playing Audio *.wav Files
 - Transmissions made with Logger+ Audio de-energize PTT when the end of the wav file is reached. The transmit / virtual audio cable (VAC) path has latency. Reduce the 120ms default latency setting on the Flex SDR software VAC1 tab to the minimum possible. This will reduce the amount of time that each on-the-fly recorded wav file will need to contain at the end of the recording. If needed, the user can build a zero audio wav file of the correct duration to account for the audio path latency and add it to the end of the function key message.
- SO2V
 - The MultiRx is used for VFOB. Frequency and mode limitations of VFOB and how the radio responds to frequencies outside this range are controlled by the radio.
 - Given this, users are able to have a repeating CQ running on VFOA and tune the band with VFOB. Start the repeating CQ then press the \ key to switch RX focus to the VFOB Entry window. If a station is called using the Function keys, the TX focus will switch, the message will be sent, and the repeating CQ will not restart. Shift-F# can be used to send a message on VFOA (example: Shift F1 to restart the CQ again). PAUSE or CTRL+Right/LeftArrow keys can be used to switch both RX and TX focus together.
 - Users can program VFOB with the next Bandmap spot without changing focus using Ctrl+Shift+Up/Dn. This allows users to program the VFOB frequency and toggle MultiRx On/Off with various keyboard commands when the VFOA frequency is not busy.
 - The MultiRx can be programmed to be On all the time. See the Config option Dual RX Always On.
 - The MultiRx state can be toggled with the stereo key (`) and the VFO frequencies swapped with ALT+F10. See other features below.
 - MultiRx ON/OFF control by N1MM Logger is independent of the state of Config>Dual RX Always On.
 - Changing RX Focus to VFOB turns the MultiRx ON.
 - Ctrl+Shift+Up/Dn does not change the state of the MultiRx.
 - The stereo key (`) or Alt+F12 toggles MultiRx ON/OFF if RX Focus is on VFOA (action disabled if RX Focus on VFOB).
 - Dual RX Always On checked:
 - Single clicking in any VFO Bandmap, on an Available window spot, or Ctrl+Up/Dn turns MultiRx ON.
 - Changing the RX Focus turns MultiRx ON.
 - If Dual Receive Always On is unchecked and the user checks it, MultiRx is turned ON.
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX focus changes to VFOA (\ keystroke), MultiRx stays ON.

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- If the TX & RX Focus is initially on VFOB and then RX & TX Focus is switched to VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), MultiRx is turned OFF.
 - If Dual Receive Always On is checked and the user unchecks it, MultiRx is turned OFF.
 - Ctrl+Alt+D command action:
 - If “Dual RX Always On” is ON and MultiRx is ON, change “Dual RX Always On” to OFF and leave MultiRx ON.
 - If “Dual RX Always On” is ON and MultiRx is OFF, turn “Dual RX Always On” to OFF and leave MultiRx OFF.
 - If “Dual RX Always On” is OFF and MultiRx is ON, turn “Dual RX Always On” to ON and leave MultiRx ON.
 - If “Dual RX Always On” is OFF and MultiRx is OFF, turn both ON.
 - Alt+F12 action is similar to the stereo (`) key, but also affects “Dual RX Always On” state:
 - If MultiRx is OFF – check “Dual RX Always On” and turn MultiRx ON.
 - If MultiRx is ON – uncheck “Dual RX Always On” and turn MultiRx OFF unless RX focus is on VFOB.

SDR-1000 and SDR-5000A (using Kenwood settings)

- By: Rob AB7CF
- Some setup details are not really needed but are included for completeness. One thing I notice different is in PowerSDR Cat setup I use ID as: “PowerSDR” though it shouldn’t make a difference. Probably the most common Vcom mistake is a failure to click Update Driver and following the procedure after making a change in Vcom configuration..
- Example: using VCom configurator using ports 4-5 defines and VAC
- Check your VCom configurator to make sure you have a check box in the COM4 – COM5 pair and you have clicked Save Configuration. MAKE SURE you click the Update Driver and follow the instructions. Close VCom configurator. Click on Window’s Start Button, Click on ControlPanel, Click System, Click on the Hardware Tab, Click on Device manager.
- In Device manager make sure there ISN’T a yellow question mark on the entry labeled “Multi-port serial adapters.” If there is no yellow question mark your Vcom virtual cable should be working properly. If there is an yellow question mark there is a problem with your Vcom installation which needs attention. Assuming no problem, Close ControlPanel.
- Now check PowerSDR. Open PowerSDR Setup and click on the CAT Control tab. In CAT Control make sure Enable CAT is checked. Under PTT make sure Port 4 is selected and RTS and DTR are unchecked. Select ID as: PowerSDR. Click Apply. Close PowerSDR Setup.
- Now check N1MM. Click Config. Select “Configure Ports, Telnet

Address,Other” Under Com-5 select Kenwood. Make sure CW/PTT is unchecked. Now click Set. In the popup box the settings should be: Speed 4800, Parity: N DataBits: 8, Stop Bits: 1 DTR (pin 4) = Handshake. RTS (pin 7) =Handshake, 1 selected in Radio/VFO. Leave the “Radio PTT via command” check box UNCHECKED. Check the “Allow external interrupts” check box. Click Okay (twice) to back out.

- Now you should be communicating with your SDR. Check that clicking a new frequency in the Panadapter changes frequency in N1MM. With the focus in N1MM check that the keyboard up and down arrows change the PowerSDR frequency.

Icom

General Icom Information (all Icom owners please read)

- Almost every Icom rig requires an ICOM CT-17 CI-V interface or compatible. If your Icom radio has a USB computer interface (IC-7200, IC-7600, etc), install the latest driver for the virtual COM port and audio codec.
- Icom rigs use software handshaking. That means they do not use DTR and RTS. However, interfaces that get their power from the RS232 port require you to set DTR and/or RTS to “Always On” to supply power to the interface. Check your interface manual to see how DTR and RTS must be set.
- Set N1MM Logger and the rig to:
 - Address – see specific rig information below
 - Baud Rate – 9600 or 19200 (see specific rig maximum rates below). When a slower baud rate is selected, the program will disable CI-V acceleration features added for radio programming and keyboard tuning.
 - Data Bits – 8 bits
 - Parity – None
 - Stop Bits – 1 bit
- On your rig, set:
 - “CI-V Transceive” to OFF – If CI-V is set to ON, the Bandmaps will not update as the VFO is turned.
 - “Some Icom rigs have a “4 or 5 Byte Data” or “Frequency Data Length” interface option. Set the radio to use 5 data bytes for the frequency.
- Due to the limited Icom radio control, the user needs to control the radio from the keyboard. This means that the user can not press these buttons on the radio: SPLIT (most radios), DUALWATCH, CHANGE, VFO/MEMO, A=B, A<>B, or MAIN/SUB. Icom radios only report the VFO frequency of the active VFO. Because of this, the program will select each VFO to read the frequency during initialization. During 2011, Icom added a firmware command to poll the radio split to the latest firmware updatable and new radios. Those radios that are capable of reading the split have been updated

in program versions 12.03.01 or newer. See the specific radio text for the firmware revision. When using these radios with the proper firmware and program version 12.03.01 or newer, users can change the radio split by pressing the radio button and the program will track.

- To set and clear split under program control, use ALT+F7 or one of the other keyboard commands. Split is correctly set/cleared when clicking in the Bandmap or Available windows. To select VFOB (SO2V mode only), use the PAUSE, "\", or CTRL+Right/Left Arrow keys. In SO2V mode, the VFO is also selected with a Right or Left click on the band buttons in the Available window.
- Frequencies > 2 GHz are ignored and not sent to the radio.
- For CW sending, a separate CW interface cable is needed between the radio and the computer. This interface may be serial or parallel port or a WinKey. The CI-V cable or serial cable to the radio alone is not enough to do CW.
- The ALT+F10 swap VFO frequency command is disabled during SO2R for Icom radios that lack a swap VFO CAT command. This is because the program is unaware of Icom VFO B frequency in SO2R mode.
- The Icom command set (CW via CAT control) is not supported. A COM, LPT, or WinKey is required to send CW.
- The models below are supported:

IC-271 / IC-471 / IC-1271

- Select IC-706 and set the radio address to hex 48 or program the default radio address in the program setup window. Please report on program functionality.
- There are several limitations caused by the lack of several CI-V commands. VFO select and split commands are not supported. This will prevent the program from controlling the radio split and reading or programming VFOB frequency. SO2V mode should not be attempted and VFOB's Bandmap and Entry windows can be closed.

IC-275A/E/H using address 10 hex

- The CI-V command set lacks split ON/OFF commands. This prevents the program from controlling the radio split.

IC-375 / IC-575 (all versions)

- Select IC-706 and set the radio address to hex 48 or program the default radio address in the program setup window. Please report on program functionality.
- The CI-V command set lacks split ON/OFF commands. This prevents the program from controlling the radio split.

IC-475A/E/H using address 14 hex

- The CI-V command set lacks split ON/OFF commands. This prevents the program from controlling the radio split.

IC-703 using address 68 hex

IC-706 using address 48 hex

- This radio firmware does not include a CAT command to key the radio. This causes the radio command PTT options to be non-functional.

IC-706MKII using address 4E hex

- This radio firmware does not include a CAT command to key the radio. This causes the radio command PTT options to be non-functional.

IC-706MKIIG using address 58 hex

- This radio firmware does not include a CAT command to key the radio. This causes the radio command PTT options to be non-functional.

IC-718 using address 5E hex

- Set N1MM Logger to 19200 bps and the radio to "AT" (AuTo).

IC-725 using address 28 hex

IC-728 using address 38 hex

IC-729 using address 3A hex

IC-735 using address 04 hex

- The CI-V command set lacks split ON/OFF commands. This prevents the program from controlling the radio split.
- When the IC-735 is used with factory settings (1200 baud, transceive ON), the bandmap response of N1MM is extremely slow. Jumpers J22 located on the PL-unit board (upper side under PA unit) allow baud-rate, address and CI-V transceive to be changed. But.. the jumpers are not labeled and not in the order as stated in the Service manual. In fact transceive ON/OFF is the last one (front panel toward you, starting from left) this one should be removed to turn transceive OFF. The 2 first ones set the baud-rate (move the second one to the

first position to switch from 1200 to 9600 baud) the 3 remaining ones are the CI-V address – default 04; is with last the last one of this group of 3 – ON.

Jumper J22 settings for 9600 baud, transceive OFF and default address 04 – from left to right with front panel toward you...

1	2	3	4	5	6
ON	OFF	OFF	OFF	ON	OFF
Baud rate	Baud Rate	Address	Address	Address	CI-V transceive

These settings make the 735 operable with N1MM (trx IC735 / baud rate 9600 / 8 data bits / no parity / 1 stop bit). DTR and/or RTS are not used by the Icom CI-V (no handshake) so does not matter. However, they should be turned to “always ON” if using an interface powered through those pins. Alternatively, they can be used for CW and PTT, for example if you are limited by the number of COM-ports on your machine. 73’ Patrick F6IRF

IC-736 using address 40 hex

IC-737/737A using address 3C hex

- The CI-V command set lacks split ON/OFF commands. This prevents the program from controlling the radio split.

IC-738 using address 44 hex

IC-746 using address 56 hex

- VFO-B is a virtual VFO as long it isn’t activated. The scale is not controlled by the VFO-B of the transceiver. It becomes an active VFO when it is activated. The IC-746 is switched to VFO-B and set to the frequency shown in the VFO-B bandmap.

IC-746 PRO using address 66 hex

- USB-D / LSB-D digital modes supported.

IC-751/751A using address 1C hex

- There are several limitations caused by the lack of some CI-V commands. VFO select and split commands are not supported. This will prevent the program from controlling the radio split and reading or programming VFOB frequency. SO2V mode should not be attempted and VFOB’s Bandmap and Entry windows can be closed.

To communicate with the radio, the baud rate, CI-V Transceive, and number of bytes of frequency data must be set correctly. This is set via a DIP switch on the Icom UX-14 interface board. Using the DIP switch S1 location in the beginning of the manual (page 11 has the DIP switch positions reversed) set S1 to the following:

1-----6

On - Off - Off - Off - Off - On

This will set the baud rate to 9600, the length of the frequency information to 5 bytes, and turn CI-V Transceive OFF.

If the radio contains the Piexx UX-14 CI-V board, set the DIP switches per the Piexx manual for the same configuration

IC-756 using address 50 hex

- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.

IC-756 PRO using address 5C hex

- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.

IC-756 PRO II using address 64 hex

- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.
- USB-D / LSB-D digital modes supported.

IC-756 PRO III using address 6E hex

- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.
- USB-D / LSB-D digital modes supported.

IC-761 using address 1E hex

- There are several limitations caused by the lack of some CI-V commands. VFO select and split commands are not supported. This will prevent the program from controlling the radio split and reading or programming VFOB frequency. SO2V mode should not be attempted and VFOB's Bandmap and Entry windows can be closed.

To communicate with the radio, the baud rate, CI-V Transceive, and number of bytes of frequency data must be set correctly. This is set via a DIP switch inside the radio. Set the baud rate to 9600, the length of the frequency information to 5 bytes, and turn CI-V Transceive OFF.

The manual lacks the details but it is suspected that DIP S1 should be set to the

following:

1-----6

On - Off - Off - Off - Off - On

If the radio contains the Piexx UX-14 CI-V board, set the DIP switches per the Piexx manual for the same configuration.

IC-765 using address 2C hex

IC-775/775DSP using address 46 hex

- The IC-775 firmware is limited and lacks commands to select Main or Sub. It is also not possible to read the frequency of the Sub VFO without moving it into the Main VFO and polling. This is done at program start, Configurer exit, and Reset Radios. Because of this radio limitation, the SO2V functionality is limited. This radio is better suited for SO1V or SO2R use.
- The radio firmware lacks the ability to poll the VFOB frequency. Frequency changes to the SUB made by tuning the SUB VFO knob will not be sensed and tracked by the program in SO2V mode.
- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.

IC-781 using address 26 hex

- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.

IC-821H using address 4C hex

- The ALT+F12 radio specific command swaps MAIN and SUB using the CAT radio command.
- The ALT+F10 command swaps the VFOA/B frequency and mode only in SO1V and SO2V program modes.

IC-910H using address 60 hex

- The ALT+F12 radio specific command swaps MAIN and SUB using the CAT radio command.
- The ALT+F10 command swaps the VFOA/B frequency and mode only in SO1V and SO2V program modes.

IC-1275A/E using address 18 hex

IC-7000 using address 70 hex

- The CI-V command set lacks split ON/OFF commands. This prevents the program from setting or clearing the radio split.

IC-7100 using address 88 hex

If using the USB interface the manual will tell you to install the Icom driver before connecting the cable to the radio. But Icom owners that connect the cable first typically have issues because Windows installs the wrong driver. If this occurs, disable the device using Device Manager, then disconnect the USB cable, install the Icom driver, and finally reconnect the USB cable.

Set the serial port for:

- Baud Rate = 19200
- Parity = None
- Stop Bits = 1
- Data Bits = 8

IC-7200 using address 76 hex

- Radio control via USB with Icom driver or CI-V interface.
- The IC-7200 radio codec is supported. IC-7200 users can use the USB cable with the Icom drivers for radio control, AFSK RTTY, PSK, voice message playback, and recording QSOs. Owners can not record messages on the fly because the radio lacks the capability to send the MIC audio to the radio codec. In CW, only the received portion of the QSO is recorded. This is a radio limitation.
- Detailed instructions for setting up USB communications with this radio may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf"

IC-7300 using address 94 hex

- This radio can not be used in SO2V mode because Icom did not provide VFO specific polling commands. Currently they provide Selected and Unselected VFO Frequency & Mode commands.
- Radio control via USB with Icom driver or CI-V interface.
- To control the radio via the USB interface with baud rates above 19200, the radio menu Connectors, CI-V, CI-V USB Port must be set to "Unlink from Remote". Then set the menu item below this, CI-V USB Baud Rate, to the baud rate above 19200.
- USB-D / LSB-D digital modes supported.
- The radio codec is supported. With the Icom drivers the USB cable can be used for radio control, AFSK RTTY, PSK, recording voice messages on the fly, voice message playback, and QSO recording.
- To record both sides of a CW transmission with the radio codec, enable this option in the Set Menu: Connectors, ACC/USB AF Beep/Speech....Output = ON. The CW sidetone level changes the audio level in the recording. If you set the CW sidetone level to zero,

the recording will not contain the transmitted audio.

- Detailed instructions for setting up USB communications with these radios may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf" If you have questions post a message on the Logger+ reflector.
- To play an internal voice (DVK) message, program function key or Bandmap button with the CatMacro below. Pressing the ESC key will stop a voice message. There is no need to program a STOP command. These commands work, but they are undocumented for the IC-7300. Thus, there are no guarantees that they will work. Be sure you are running the latest firmware update. They were tested with V1.20 of the firmware.
 - Voice Message1 = {CAT1Hex FE FE 94 E0 28 00 01 FD}
 - Voice Message2 = {CAT1Hex FE FE 94 E0 28 00 02 FD}
 - Voice Message3 = {CAT1Hex FE FE 94 E0 28 00 03 FD}
 - Voice Message4 = {CAT1Hex FE FE 94 E0 28 00 04 FD}
 - Voice Message5 = {CAT1Hex FE FE 94 E0 28 00 05 FD}
 - Voice Message6 = {CAT1Hex FE FE 94 E0 28 00 06 FD}
 - Voice Message7 = {CAT1Hex FE FE 94 E0 28 00 07 FD}
 - Voice Message8 = {CAT1Hex FE FE 94 E0 28 00 08 FD}
 - Stop Voice Message = {CAT1Hex FE FE 94 E0 28 00 00 FD}
(programmed into the ESC key)
- Note: The CatMacro command can be entered with or without spaces:
 - {CAT1Hex FE FE 94 E0 28 00 01 FD} or {CAT1Hex FEFE94E0280001FD}

IC-7400 using address 66 hex

- Select the IC-746 PRO as radio.
- USB-D / LSB-D digital modes supported.

IC-7410 using address 80 hex

- Program releases 12.03.01 and later support polling the radio for split status
- Radio control via USB with Icom driver or CI-V interface.
- USB-D / LSB-D digital modes supported.
- The radio codec is supported. Users with the Icom drivers can use the USB cable for radio control, AFSK RTTY, PSK, recording voice messages on the fly, voice message playback, and recording QSOs. In CW, only the received portion of the QSO is recorded. This is a radio limitation.
- Detailed instructions for setting up USB communications with these radios may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf".

IC-7600 using address 7A hex

- Program releases 12.03.00 or newer require radio firmware that contains the get split command (firmware 1.11 or newer).
- Radio control via USB with Icom driver or CI-V interface.
- USB-D / LSB-D digital modes supported.
- The IC-7600 radio codec is supported. Users with the Icom drivers can use the USB cable for radio control, AFSK RTTY, PSK, recording voice messages on the fly, voice message playback, and recording QSOs. In CW, only the received portion of the QSO is recorded. This is a radio limitation.
- Detailed instructions for setting up USB communications with these radios may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf"

IC-7610 using address 98 hex

- This radio has been added, waiting for it to ship and debug the code.
- Radio control via USB with Icom driver or CI-V interface.
- To control the radio via the USB interface with baud rates above 19200, the radio menu Connectors, CI-V, CI-V USB Port must be set to "Unlink from [[REMOTE]]". Then set the menu item, CI-V USB Baud Rate to 115200 baud rate. When the baud rate is set to 115200, the radio polling is faster.
- USB-D / LSB-D digital modes supported.
- Using the Icom drivers, the USB cable can be used for radio control, AFSK RTTY, PSK, recording voice messages on the fly, voice message playback, and QSO recording.
- To record both sides of a CW transmission with the radio codec, enable this option in the Set Menu: Connectors, ACC/USB AF Beep/Speech....Output = ON. The CW sidetone level changes the audio level in the recording. If you set the CW sidetone level to zero, the recording will not contain the transmitted audio.
- IC-7610 specific instructions for single USB cable configuration can be found under >Files >[Additional Support Files](#), in a file called "IC-7610_CW_SSB_RTTY_FSK_Config.pdf".
- Generic detailed Icom instructions may be found under >Files >[Additional Support Files](#). The filename is "IcomUSBCodecInstructions.pdf".
- Tracking/Diversity: When tracking is enabled, the following behavior should be expected:
 - Dual Watch is enabled, split is turned OFF, and the Sub frequency is set to the Main VFO frequency.
 - Radio operation is expected to be Main VFO centric.
 - Setting a frequency or band with the software will set both

-
- VFO's to the same frequency and mode.
 - Clicking on a split spot or turning ON split with Ctrl+Alt+S will disable tracking.
 - Turning OFF Dual Watch with ` or Alt+F12 will turn tracking OFF.
 - The Bandmap radio buttons can be used to quickly enable or toggle tracking. Right click and program one or two buttons with the following values:
 - Track On {CAT1HEX FE FE 98 E0 16 5E 01 FD}
 - Track Off|Track On {CAT1HEX FE FE 98 E0 16 5E 01 FD}|{CAT1HEX FE FE 98 E0 16 5E 00 FD}
 - To play an internal voice (DVK) message, program function key or Bandmap button with the CatMacro below. Pressing the ESC key will stop a voice message. There is no need to program a STOP command.
 - Voice Message1 = {CAT1Hex FE FE 98 E0 28 00 01 FD}
 - Voice Message2 = {CAT1Hex FE FE 98 E0 28 00 02 FD}
 - Voice Message3 = {CAT1Hex FE FE 98 E0 28 00 03 FD}
 - Voice Message4 = {CAT1Hex FE FE 98 E0 28 00 04 FD}
 - Voice Message5 = {CAT1Hex FE FE 98 E0 28 00 05 FD}
 - Voice Message6 = {CAT1Hex FE FE 98 E0 28 00 06 FD}
 - Voice Message7 = {CAT1Hex FE FE 98 E0 28 00 07 FD}
 - Voice Message8 = {CAT1Hex FE FE 98 E0 28 00 08 FD}
 - Stop Voice Message = {CAT1Hex FE FE 98 E0 28 00 00 FD} (programmed into the ESC key)
 - Note: The CatMacro command can be entered with or without spaces:
 - {CAT1Hex FE FE 98 E0 28 00 01 FD} or {CAT1Hex FEFE98E0280001FD}

IC-7700 using address 74 hex

- Program releases 12.03.00 or newer require radio firmware that contains the get split command (firmware 1.20 or newer).
- USB-D / LSB-D digital modes supported.

IC-7800 using address 6A hex

- Requires radio firmware 3.10 or newer to poll both VFO's.
- Please see also Key Assignments (Alt+F12) and the setting 'Dual Rx always on' in the Config menu.
- USB-D / LSB-D digital modes supported.

IC-7850/7851

- Radio control via USB with Icom driver or CI-V interface.

-
- USB-D / LSB-D digital modes supported.
 - The radio codec is supported. Users with the Icom drivers can use the USB cable for radio control, AFSK RTTY, PSK, recording voice messages on the fly, voice message playback, and recording QSOs.
 - To record both sides of a CW transmission with the radio codec, enable this option in the Set Menu, ACC menu: USB AF Beep/Speech....Output = ON. The CW sidetone level changes the audio level in the recording. If you set the CW sidetone level to zero, the recording will not contain the transmitted audio.
 - Detailed instructions for setting up USB communications with these radios may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf"

IC-9100 using address 56 hex

- Program releases 12.03.01 or newer require radio firmware that contains the get split command (firmware E1 or newer).
- USB radio control and audio CODECS are supported. Detailed instructions for setting up USB communications may be found under >Files >[Additional Support Files](#). The file is titled "IcomUSBCodecInstructions.pdf"

Kenwood

General Kenwood information

- All models are supported
 - Newer models connect directly via a serial port cable or USB port. The use of the USB port requires a Kenwood driver be installed.
 - If your radio has an internal USB audio codec, to use it for voice keying or for digital modes check the "Internal Radio Codec" check box under the Playback tab in the Logger+ Audio Setup window (Config > Logger+ Audio Setup... menu item).
 - Older models need the Kenwood IF-10 and/or the IF-232C interface (or compatible). Please check the radio's manual.
 - Almost any of the earlier generation Kenwood radios need some sort of level conversion, and at least some also come without the necessary chip set. Radios like the TS-940S, TS-440S, TS-811, TS-711 need both a chip and a level converter.
 - PIEXX (www.piexx.com) makes a combined level converter and chip set replacement for the TS-940, as well as a complete replacement microprocessor for the TS-930 to provide communications.
- The stock Kenwood interfaces (IF-232 for the older -x40 and -x50 series

transceivers) and a bare RS-232 cable for the more recent TS-480/570/870/2000 require handshake. Except for the TS-570. the solution is either to set RTS to “Always on” or to “handshake”, or else to install a jumper between CTS/RTS pins at the RS-232 input of the Kenwood interface (in the case of the -40 and -50 transceivers) or transceiver (TS-480/870/2000). The TS-570 can lock-up if RTS is connected to CTS and requires RTS=Always On to be reliable.

- Using such a jumper to over-ride hardware handshaking will free RTS for PTT in addition to DTR for CW. The alternative to over-riding the hardware flow control is to set RTS=Always On and use DTR for PTT or CW as necessary (DTR is not connected in the radio/interface).
- RX/TX information from the radio is ignored while sending is in progress to avoid glitches in sending.
- Typical Kenwood radio defaults:
 - Speed: 9600 Baud; Parity: N ;Databits: 8; **Stopbits: 2** and “hardware handshaking” (RTS and DTR set to “Handshake”). It is recommended by the developers to use a baud rate above 9600 baud if possible. The radio menu and the program setup must be changed together.
- When setting split both VFOs are forced in the same mode.
- The Kenwood KY command set (CW via CAT control) is not supported due to significant limitations. A COM, LPT, or WinKey is required to send CW.

TS-480

- Select: Kenwood. Note that handshaking options may vary – check your manual
 - “AFSK” via the data jack with software PTT is supported. Check the “Digital Modes Acc Jack Radio Command PTT” and the “Software PTT Via Radio Command – Digital” in the radio COM port setup window.
- To play the internal voice message with a Logger+ CatMacro use these function key strings.
 - Play Message 1 = {CAT1ASC PB1;}
 - Play Message 2 = {CAT1ASC PB2;}
 - Play Message 3 = {CAT1ASC PB3;}
 - Stop Message = {CAT1ASC PB0;}
- The TS-480 DVK stop command is sent to the radio when the ESC key is pressed.

TS-570

- Select: Kenwood
- When using the ACC2 port on the back, you must send both the audio signal and the PTT signal to the ACC jack.
- You can't use the normal PTT connection from the MIC jack if you are inputting audio into the ACC jack.

-
- SO2V: 9600,N,8,1,handshake,handshake,radio/VFO=1

TS-590 & TS-590D

- Select: TS-590
- Follow the Owners Manual for port speed, parity, number of databits, and stopbits
- Make sure the COM port speed set in N1MM Logger is the same as the speed in TS-590 menu item 62. After changing the speed in menu item 62, exit the TS-590 menu and cycle the front panel power switch off/on.
- A COM port speed of 38400 or 57600 baud is recommended.
- When using the TS-590S radio codec as a sound card for a DVK, the live microphone has priority over the codec. This means that if live audio is being sent from the microphone, a .wav file cannot be sent over the codec at the same time. Starting of the .wav file will be blocked, even if the microphone VOX drops shortly thereafter. So, if you're running, and using the microphone to say callsigns, but F2 to send the exchange, you have to wait until the VOX drops before pressing F2.
- To use the radio's internal audio codec for voice keying or for digital modes, check the "Internal Radio Codec" check box under the Playback tab in the Logger+ Audio Setup window (Config > Logger+ Audio Setup... menu item).
- When using the ACC2 radio jack, there are three PTT options. PTT for digital modes (pin 9), PTT for non-digital modes (pin 11), and software PTT (PTT via radio command by mode). The ACC2 pin 13 PTT is exactly the same as the Remote connector pin 3 PTT. If you use Remote connector pin 3 PTT while using the internal radio codec, there will be no RF output.
- To use the ACC2 for digital modes with software PTT, check "Digital Modes Acc Jack Radio Command PTT" and the "Software PTT Via Radio Command - Digital" in the setup window of the COM port used for radio control.
- ARCP-590 or ARUA-10 are not needed when using N1MM Logger with the TS-590.
- Detailed instructions for setting up USB communications with this radio may be found under >Files > [Additional Support Files](#). The file is titled "KenwoodTS-590SCodec 2011-04-02.pdf".
- Assigning these basic example macros to Function Keys will allow you to play and stop the internal DVK (voice keyer) on radio #1. Other macro strings can be inserted to playback on radio #2 or both radios. See the Macros section of the manual.
 - Message1 = {CAT1ASC PB1;}
 - Message2 = {CAT1ASC PB2;}
 - Message3 = {CAT1ASC PB3;}
 - Stop Playback = {CAT1ASC PB0;}
 - The TS-590 DVK stop command is sent to the radio when the ESC key is pressed.

TS-850

- Select: Kenwood
- Turn off AI on init
- Speed: 4800 Baud; Parity: N ;Databits: 8; Stopbits: 2 (!)
- Check out the possible communications issue [below](#) with this radio

TS-870

NOTES provided by Jim W2JC for connecting Kenwood TS-870S Transceiver to N1MM+ Logging software to provide Logging control of the Transceiver.

One of the biggest challenges to setting this up is to get the COM port to work with the USB to 9-pin interface cable.

- With no cables plugged into any USB port on the laptop, go to the Windows Control Panel / System / Hardware / Device Manager
 - Look on the list for an entry called “Ports (COM & LPT).” Expand the list by pressing the “+” sign so you can see all port assignments
 - Now plug the cable USB connector into the USB socket on the left side of laptop
 - The “Ports (COM & LPT)” entries should now include one more listing – the port assigned to the TS-870 cable
 - Right click on the port number assigned to the T-870 and select Properties at the bottom
 - Click on the “Port Settings” tab. Be sure the settings are as follows:
 - Bits per second = 4800; Data Bits = 8; Parity = None; Stop Bits =2; Flow Control = None
 - If it is necessary to change the COM port number, click the **Advanced** button; and use the drop-down menu at the top to select the desired COM number
 - Check to make sure that the USB port does not power down when the computer is idle. For details look in the “via USB” section of the documentation for “See “<http://n1mm.hamdocs.com/tiki-index.php?page=Serial+Parallel+and+Sound+Card+Interfacing>”

DO NOT change any other settings on the “Advanced Settings” page, they should be:

Under “Miscellaneous Options” ONLY “Serial Enumerator” should be checked. The remaining settings should be 4096; 4096; 16; 0; 0;
Click **OK** button to exit.

- Minimize the Device Manager window
- Plug the other end of the USB / 9-pin interface cable into the 9-pin connector on the rear of the TS-870S, under the power connector
- If it is not already ON, turn ON the TS-870S

-
- If it is not already open, start N1MM+ Logging software
 - Only the N1MM Entry Window and the Bandwidth Window need to be open at this time
 - In the Entry Window, click on the Config tab
 - Click “Configure Ports, Mode Control, Audio, Other...” at top of the menu
 - Click on the Hardware tab
 - On the right side of the Hardware window, be sure SO1V is selected
 - In the top entry of the Port column, use the drop-down menu to select COM2 (or whatever COM number was set up in the above steps)
 - In the top entry of the Radio column, use the drop-down menu to select “Kenwood”
 - In the top entry of the CW/Other column, click to show a checkmark in the box if it is not already showing a checkmark
 - Click once on the **Set** button; a new, small window should open
 - Be sure all settings in this window are as shown below:

Speed = 4800; Parity = N; Data Bits = 8; Stop Bits = 2; DTR (Pin 4) = Handshake;
RTS (Pin 7) = Handshake
Radio Nr = 1; Two Radio Proto = None; Foot Switch (Pin 6) = None; Radio Polling
Rate = Normal

- Check **OK** button to exit
 - Back on the Configurer page, click **OK** button to exit
-
- In the Entry Window, the window title should show the current frequency, mode, and “Kenwood VFO A”
 - In the BandMap window, the top should show “Kenwood VFO A” and under that the current TS-870 radio frequency. IF it does not, then RIGHT-click in an open area of the Bandmap Window and select “Reset Radios” (6th up from the bottom)
 - Now tune the TS-870S to different frequencies and be sure that N1MM+ is displaying the correct radio frequency
 - At the lower right of the TS-870S tuning knob, press the UP button to change Band — be sure that N1MM+ follows and displays the new frequency. Repeat with the UP and DOWN buttons to ensure that N1MM+ is tracking the band changes

END OF SETUP !!

TS-950sdx

- Select: Kenwood
- Some (older) TS-950sdx radios drop power when polled by a logging program. It's pretty obvious on either CW or SSB.
- The problem is not the program but the ROM firmware chip. The big one on the digital board of the 950sdx.
 - Just replace the chip, the problem should go away. Costs about \$27.00 – and very easy to install (about 10 minutes)
 - Order a battery if you haven't replaced it already – it's right next to the chip on the same board....
- Speed: 4800 Baud; Parity: N ;Databits: 8; Stopbits: 2 (!)
- Check out the possible communications issue below with this radio.

TS-990

- Select: TS-990
- Follow the Owners Manual for port speed, parity, number of databits, and stopbits
- Make sure the COM port speed set in N1MM Logger is the same as the speed in TS-990 menu item 7-00 or 7-01. Note: 57600 baud is recommended for radio control.
- ARCP-590 or ARUA-10 are not needed when using N1MM Logger with the TS-990.
- To play the internal voice message with a Logger+ CatMacro use these function key strings.
 - Play Message 1 = {CAT1ASC PB01;PB115;}
 - Play Message 2 = {CAT1ASC PB01;PB125;}
 - Play Message 3 = {CAT1ASC PB01;PB135;}
 - Play Message 1 = {CAT1ASC PB01;PB145;}
 - Play Message 2 = {CAT1ASC PB01;PB155;}
 - Play Message 3 = {CAT1ASC PB01;PB165;}
- Stop Message = {CAT1ASC PB01;PB110;PB120;PB130;PB140;PB150;PB160;PB00;}
- The TS-990 DVK stop command above is sent to the radio when the ESC key is pressed in voice mode.

TS-50

- Use Kenwood-Slow radio selection
- 4800, N, 8, 2, Handshake, Handshake

TS-140, TS-440, TS-680,TS-711,TS-790,TS-811,TS-940

- The radio firmware revision of some of these radios may require the use of

Kenwood-Slow rather than Kenwood.

TS-2000

- Use the radio selection TS-2000. It was added to allow control of RX antenna input.
- Use the highest baud rate possible, something above 9600 baud. The window selections should be No Parity, 8 Databits, **1** Stopbits, DTR = Handshake, and RTS = Handshake. According to the owners manual, if 4800 baud is used, Stopbits needs to be **2**. The radio default baud rate can be changed with radio menu 56. Since hardware hand shaking is used by the TS-2000, the serial cable needs to contain wires for the hardware flow control pins.
- Do not use the radio function called “auto-mode”. This function automatically changes the radio mode and changes the radio mode set by N1MM logger.
- Radio NB: This may produce AFSK RTTY (LSB) problems when changing between the higher (USB) and lower (LSB) bands.
- Do not use the radio in memory mode, use VFO mode. The program will not function when in memory mode with the program.
- The radio control works for frequencies above 6 meters.

N1MM logger loses communication with the radio (TS-850, TS-950 etc.)

- This problem is based in the radio’s firmware. Some Kenwood radios are not capable of communicating with N1MM Logger while the VFO knob is being turned. If you turn the VFO knob smoothly and continuously, no matter how slowly, the radio will not respond to radio polls and the link will time out. For these radios there are two choices, pause when tuning the VFO so the radio will answer the program polling requests or increase the ‘transceiver timeout time’. The transceiver timeout time is set by right-clicking in the Bandmap window. This is a radio firmware limitation, not a software issue. Using Kenwood-Slow will **not** solve this firmware limitation.

TenTec

General TenTec information

- The models below are supported, other models are not supported.

ARGONAUT V

- Use the Argonaut radio selection.

ARGONAUT VI

- Use the Eagle radio selection. The Argonaut V and Argonaut VI radio commands are different.
- This radio is NOT capable of SO2V operation. Select SO1V or SO2R program operation.
- The radio firmware requires a 200ms delay after every Set-type command. Users may notice this delay when the program is setting the frequency, mode, or split.

JUPITER

- Uses 1 stopbit and DTR and RTS 'Always on'. Do NOT check the CW check box on the port setup screen for this com port.

OMNI-VI

- The Omni VI+ the "Cde" item under menu 2 should be set to "off". Otherwise there will be collisions between the data sent from the rig when N1MM polls for data and the data that is being continuously sent by the radio which will cause erratic behavior.
- In the COM port setup window for the radio, the "Icom Code" box should be set to 4. This radio uses the Icom protocol for radio communications.

OMNI-VII

- The Omni-VII does not support antenna switching in "radio" mode. It is only possible in "remote" mode. So owners of the Omni-VII can not use the antenna switch macros.
- Alt+F10 (exchange VFO) and CW-Reverse operation supported
- The Omni-VII can not receive on VFOB.

Orion

- Uses default 56000 Baud and 1 stopbit and hardware handshaking. Note: handshaking requires that CTS is connected per the Orion manual.
- Firmware version 1.363 or greater needed.
- Note that the Orion does not support PTT on CW via computer command. This does work on SSB, but on CW, you need to set a parallel or serial port to assert PTT for that radio. Then use a cable from that adapter to pin three (PTT) of the aux port on the Orion. This is the black RCA Phono connector on the aux cable. By use of a Y connector, you can parallel your footswitch and this CW PTT cable.
- When using PTT and CW lines off a serial or parallel port. Be sure to go into the Orion CW menu and set "PTT in CW as" to the value

“Mox”.

- Default bandwidths: CW: 300/800; SSB: 2000/2800; RTTY 250/400
- Supports Digital Voice Keying (DVK) via the AUX port. Audio should be fed to the AUX port and NOT the microphone.
 - When no DVK is specified the front microphone gain will normally set to 0
 - Microkeyer users: check out the Supported Hardware chapter regarding muting of the ORION microphone audio input.
 - When a DVK is specified for that radio the microphone gain will not change (mostly fed to the front microphone).
- When up/down pressed, turn on RIT if in S&P, turn off RIT if in running mode.
- Clear RIT by setting to 1 Hz not 0. Avoids turning off RIT.
- Narrow SSB bandwidth set to 1990 Hz to force the use of 2.4 kHz filter in auto mode.
- RIT can be changed using the up/down keys if RIT on. Note that you must turn on RIT from within the program!
- Swap VFOs using Alt+F10. This will replace the contents of memories 199 and 200
- Example Setup FSK/CW/SSB
 - In FSK or SSB mode the program uses the PTT input to key the rig.
 - In CW mode the program uses the PTT as the CW key.
 - Digital setup and MMTTY.
 - N1MM Config / Config Ports / Hardware Tab.
 - Set the CW menu choice for the interface com port to DTR (Pin 4).
 - MMTTY Setup / Setup MMTTY / TX Tab / Radio command button.
 - Checked the PTT button under DTR/RTS.
- Interface information
 - LINE OUT (74) is fixed level output (RCA connector)
 - Should be fed to LINE IN on the soundcard.
 - Yellow phono plug on Pin 4 of the AUX I/O cable assembly
 - NB this is a combined output for both receivers, use the AUX I/O port for separated outputs (pin 4 and 6)
 - AUX I/O port (80): AUX IN (pin 1) for transmit audio from the soundcard
 - Should be fed to LINE OUT on the Soundcard.
 - The AUX gain can be set under the SSB menu
 - Set the AUX gain to 65 and use the computer audio setting to drive the rig to 100 watts for RTTY.
 - AUX port: PTT (pin 3)

-
- A transistor switch is needed from a serial or parallel port.
 - Works fine for digital modes but also for recording and the voice keyer.
 - Switch between MIKE and AUX via the menu.

This is a summary of the SO2V features for the Orion.

- The stereo (grave accent - `) key toggles Sub audio On and Off. To leave SUB audio selected all the time, select **Configurer>Dual RX always on**
 - If you are using Diversity mode on the radio, toggling Sub off and on via ` or Alt+F12 will turn Diversity mode off
 - Logger preserves diversity reception unless RX Focus changes to vfoB at which time the subrx will switch to vfoB
- Subrx ON/OFF control by Logger
 - Independent of the state of Dual RX Always On:
 - changing RX Focus to vfoB turns the subrx ON
 - Ctrl+Shift+Up/Dn does not change the state of the subrx
 - Alt+F12 toggles subrx ON/OFF if RX Focus is on vfoA (action disabled if RX Focus on vfoB)
 - Dual RX Always On checked:
 - clicking any vfo bandmap/avail. window spot or Ctrl+Up/Dn turns the subrx ON
 - changing RX Focus turns the subrx ON
 - if dual rx always on was unchecked and the user checks it, subrx is turned ON
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX Focus changes to VFOA (\ keystroke), the subrx stays ON
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is on VFOA (PAUSE, CTRL+Left or vfoA Bandmap/Available window spot click), the subrx is turned OFF
 - if dual rx always on was checked and the user unchecks it, subrx is turned OFF
- Ctrl+Alt+D command action:
 - If “Dual RX always on” is ON and the Sub RX is ON, turn “Dual RX Always On” to OFF and leave the Sub RX ON
 - If “Dual RX always on” is ON and the Sub RX is OFF, turn “Dual RX Always On” to OFF and leave the Sub RX OFF
 - If “Dual RX always on” is OFF and the Sub RX is ON, turn “Dual RX Always On” to ON and leave the Sub RX ON
 - If “Dual RX always on” is OFF and the Sub RX is OFF, turn both ON
- Alt+F12 command action:
 - If the subrx is OFF – check “Dual RX always on” and turn the subrx ON

-
- If the subrx is ON – uncheck “Dual RX always on” and turn the subrx OFF unless RX Focus is on vfoB

Eagle

- This radio is NOT capable of SO2V operation. Select SO1V or SO2R program operation.
- The radio firmware requires a 200ms delay after every Set-type command. Users may notice this delay when the program is setting the frequency, mode, or split.

Yaesu

General Yaesu information

- The models below are supported, other models are not supported.
- Required interfaces
 - Newer models connect directly via a serial port cable.
 - Older models need the Yaesu FIF-232C CAT interface (or compatible).
- Use hardware handshaking where possible.
- Yaesu uses by default:
 - Speed: 4800 Baud Parity: N Databits: 8 Stopbits: 2

FT-80C

- It has been reported that this radio will not transmit key CW or MIC audio while it is sending the radio polling data to the computer. The radio polling string is fixed by the radio firmware and it requires over 800ms to send the data to the computer at 4800 baud. This radio should only be used without radio control. This operation just isn't practical for contesting.

FT-100(D)

- The FT-100D has an internal jumper for either CAT/TUNER or LINEAR. This should be set for CAT/TUNER.
- Configure the radio as FT-100, 4800, N, 8, 2, Handshake, Tx=1, DTR=Always on or off, RTS=Always on or off.
- Needs a standard FT-100 CAT cable (CT-62).

FTDX101D

- The radio menu CAT Time Out Time should be set to 1000 or higher.
- The radio menu CAT RATE must match the program radio port baud rate. The suggested baud rate is 38400.

-
- Set the radio COM port to 38400, N, 8, 2, Handshake, Handshake.
 - There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB0#;} (where # is a number 1 – 5 for message 1 – 5)
 - {CAT1ASC PB00;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.

FT-736

- Not supported and probably never will be. It seems that once the radio is controlled by CAT it can't be controlled by hand anymore.

FT-450

- The radio menu item CAT TOT should be set to 1000 and CAT RATE must match the program configuration.
- When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program radio COM port RTS to Handshake.
- When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
- There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memory 1 & 2 and stop the message are:
 - {CAT1ASC PB1;} (message 1)
 - {CAT1ASC PB2;} (message 2)
 - {CAT1ASC PB0;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.

FT-747GX

- It has been reported that this radio will not transmit key CW or MIC audio while it is sending the radio polling data to the computer. The radio polling string is fixed by the radio firmware and it requires over 800ms to send the data to the computer at 4800 baud. This radio should only be used without radio control. This operation just isn't practical for contesting.

FT-757

- Select FT-757GXII as radio and disable the radio communications timeout via the bandmap menu option (set it to 0).
- The FT-757GX does NOT send anything to the computer and the radio mode can not be set by the program so the radio control

functionality will be limited.

FT-757GXII

- Supported

FT-767 / FT-767GX

- There are no plans to support this radio.

FT-817

- 19200, N, 8, 1, Handshake, Handshake. FT-817 CI-V Baud "Hi". When using a USB/Serial adapter set DTR to 'Always on' and RTS 'Always off'.
- There are some limitations in the radio control provided by Yaesu.
 - The best way to understand what is possible is to take few minutes and review the available CAT Commands on page 72 of your operating manual.
 - VFO A/B : It is only possible to switch from one VFO to the other but there is no way to know by the program if the radio is on VFO A or VFO B.
 - Narrow CW Filter : There is no CAT Command to set Filters on the radios.

FT-840

- Supported

FT-847

- Split operation via the program is not functional due to Yaesu radio control limitations. Split needs to be set/cleared manually by the operator.

FT-857, FT-857D

- This radio should only be used in SO1V or SO2R modes. The radio control has limitations, SO2V mode is not supported.

FT-890

- Supported

FT-891

- This radio has limited radio control. It can only be used in SO1V or SO2R mode always receiving on VFOA.

-
- The radio firmware currently does not contain a command set Split On and Off. Until this is corrected by Yaesu, all functions relating to setting and clearing split will not function.
 - The radio adds two virtual COM ports. Only one of these ports can be used for radio control. Some users report that the radio control port is distinguished by the name Enhanced USB port. Others report program errors when they try to use the CW/PTT only virtual COM port for radio control. Make sure you use the correct COM port for radio control.
 - The radio menu CAT TOT should be set to 1000 or higher.
 - The radio menu CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400.
 - The radio menu CAT RTS should be set to DISABLE.
 - The program radio COM port should be set to 38400, N, 8, 1, DTR to Always OFF, and RTS to Always OFF.

FT-897

- The radio control provided by Yaesu is limited. This radio should only be used in SO1V or SO2R modes, SO2V mode is not supported.
- The PTT line in the DATA jack on the rear of the radio cannot be used for CW, because when it is asserted, the radio sends a continuous key-down tone. To actuate PTT from the program using RTS or DTR, the interface must be wired to the front-panel microphone jack's PTT pin.

FT-897D

- The radio control provided by Yaesu is limited. This radio should only be used in SO1V or SO2R modes, SO2V mode is not supported.
- The PTT line in the DATA jack on the rear of the radio cannot be used for CW, because when it is asserted, the radio sends a continuous key-down tone. To actuate PTT from the program using RTS or DTR, the interface must be wired to the front-panel microphone jack's PTT pin.

FT-900

- Supported

FT-920

- The radio control provided by Yaesu does not include an indicator in the polling data to indicate which VFO is selected or active. If the user changes the VFO by pressing the radio buttons, the program can not detect this change. This is a radio limitation, not a program limitation. It is recommended to use this radio in SO1V or SO2R mode.

FT-950

- The radio menu CAT TOT should be set to 1000 or higher.
- The radio menu CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
- When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program radio COM port RTS to Handshake.
- When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
- There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB0#;} (where # is a number 1 - 5 for message 1 - 5)
 - {CAT1ASC PB00;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.

FT-980

- There are no plans to support this radio.

FT-990

- FT-990 and early FT-1000 had a design problem in the CAT interface. It used an open emitter transistor on the serial out line. That worked fine for TTL HIGH (+5 V) but some TTL to RS232 interfaces did not have enough load to cause the output to go low ... the interface would “float” in the undefined logic state between .3 and 3.5 volts. The solution is to add a 1.5K Ohm resistor from “serial out” to ground. When using the ARRL handbook design the 1.5k resistor needs to be added between pin 1 of the 7417 (which is pin 2 of the DIN) to ground.
- The radio control provided by Yaesu does not include an indicator in the polling data to indicate which VFO is selected or active. If the user changes the VFO by pressing the radio buttons, the program can not detect this change. This is a radio limitation, not a program limitation. It is recommended to use this radio in SO1V or SO2R mode.

FT-991

- The radio firmware has been updated several times. Be sure to install the latest firmware.
- Due to the design, this radio can only be used in SO1V or SO2R modes.
- Setup information and notes:
 - Install the Silicon Laboratory drivers onto your computer per the Yaesu website instructions.
 - Install a Standard USB cable between the FT-991 and your computer.

If the Silicon Labs drivers were successfully installed, you will have an enhanced port and a standard port showing in device manager. Only one of these ports can be used for radio control. Some users report that the radio control port is distinguished by the name Enhanced USB port. Others report program errors when they try to use the CW/PTT only virtual COM port for radio control. Make sure you use the correct COM port for radio control.

- Set the following menu items on the ft-991. Note: the menu #'s may change with future firmware updates.
 - 012keyer typeoff
 - 031CAT rate38400
 - 032CAT Tot1000
 - 033CAT rtsdisable
 - 060PC keyingdtr
 - 071Data PTT selrts
- Select the hardware tab. Under Port, select your enhanced port. Under radio select FT-991. Click on SET and input 38400,N,8,2 always off, always off. Select Radio NR1.

FT-1000(D)

- Cat control will not work with FT-1000D internal software version lower than v6....most older ft1000d's have version v5.8... you need an update!
- Older versions do have a CAT control problem. Check out the information with the FT-990 (above).
- If the bandmap/frequency is not updating, the radio probably is in Mem/Tune mode. Deselect using the VFO/MEM switch.
 - The program forces the radio at startup from Mem/Tune mode in VFO mode to avoid this problem.
 - For filter settings see below

FT-1000MP (Mark-V)(Field)

- The program can't send CW via the MP's serial cable. See the help for how to build a CW interface
- If the bandmap/frequency is not updating, the radio probably is in Mem/Tune mode. Deselect using the VFO/MEM switch.
 - The program forces the radio at startup from Mem/Tune mode in VFO mode to avoid this problem.
 - The indicator should show VFO.
- Use a straight serial cable
- 4800,N,8,2 and DTR and RTS set to "Always Off"
- A big issue with the FT-1000MP is that you cannot set the radio to split with VFO-B as the RX. Well, you can, but you cannot control whether you are listening dual, or just VFO-B from the computer. You

can detect it, but not set it. The user will have to press the main RX button to turn off the main receiver when split from VFO-B. Note that Alt+F10 will swap VFO A & B frequencies. That is very useful in this case.

- Optimum configuration for those who wish to operate AFSK and/or PSK. There will be an 85 Hz display offset between RTTY and PSK but that is minor.
- PKT is LSB with the frequency display shifted by 2.125 KHz (or other user defined offset at menu 6-4). It also selects audio input from the PACKET jack on the rear of the radio, disables the processor and mutes the microphone. Finally, it offsets the filters so the narrow filters are properly placed (centered as specified in menu 6-5).
- Using QMB memories
 - When doing a QMB RCLl press M>A until it transfers the QMB frequency to the VFO. After this it should work as normal, but you lose the original frequency that was in VFO-A.
- For filter settings see below

FT-1000 series, FT-990 and FT-920 Setting filters

Simply right-click on the bandmap and you will get a menu which includes “Set transceiver filter codes” ... there are six submenus: CW Wide, CW Narrow, SSB Wide, SSB Narrow, Digi Wide and Digi Narrow. In my case the commands for SO2V are:

- The settings below will work for the FT-1000, FT-1000D, the FT-1000MP, the FT-1000MP/MKV and the FT-1000MP/MKV Field (or any combination of two FT-1000 “family” of rigs in SO2R).

BandWidth	VFO-A (main)	VFO-B (sub)	Filter	Remarks
2.4 kHz	0 0 0 0 140	0 0 0 128 140	SSB Wide or Digi— Wide	
2.0 KHz	0 0 0 1 140	0 0 0 129 140	SSB Narrow or Digi Narrow	will use 2.4 kHz on VFO-B
500 Hz	0 0 0 2 140	0 0 0 130 140	CW Wide or Digi — Wide	
250 Hz	0 0 0 3 140	0 0 0 131 140	CW Narrow or Digi Narrow	will use 500 Hz on VFO-B
6.0 KHz (thru)	0 0 0 4 140	0 0 0 132 140	—	—

- The VFO-B (sub) only supports bandwidths of 6.0 KHz, 2.4 KHz and 500 Hz.
- For SO2R (two rigs) configure the two bandmaps the same.
- Some notes:
 - “Duplicates default filter settings” is appropriate to the FT-1000 MK/V and Field only. The FT-1000/D/MP permit more

flexible filter selection.

- The FT-920 does not support 2.0 KHz and 250 Hz filters ... it might make more sense to revise CW and Digi settings for 2.4/500 Hz (0 0 0 0 140 and 0 0 0 2 140) filters.
- Even though the FT-920 lacks the second receiver, the FT-920 permits selecting different bandwidths for each VFO. The CAT commands are the same as those for the second receiver in the “1000” series: 0 0 0 130 140 selects 500 Hz and 0 0 0 128 140 selects 2.4 KHz.
- The FT-990 commands are the same as those for VFO A in the “1000” series of radios.

FT-2000

- A user has reported communications issues when using firmware version 11.54 1.55. It's unclear if a CAT menu has been changed or added. The user reported no issues when using firmware 11.53 1.50.
- The radio menu CAT TOT should be set to 1000 or higher.
- The radio menu CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
- When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program radio COM port RTS to Handshake.
- When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
- There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB0#;} (where # is a number 1 - 5 for message 1 - 5)
 - {CAT1ASC PB00;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.
- The stereo (grave accent - `) key toggles Sub RX On and Off. To leave SUB On all the time, select **Configurer>Dual RX Always On**
- Subrx ON/OFF control
 - Independent of the state of Dual RX Always On:
 - Changing RX Focus to VFOB with \, PAUSE, or CTRL+RightArrow turns the subrx ON
 - Ctrl+Shift+Up/Dn used to store the next Bandmap spot in the Sub does not change the state of the subrx
 - The ` key or Alt+F12 toggles subrx ON/OFF when RX Focus is on VFOA. This action is disabled if RX Focus on VFOB.
 - Dual RX Always On checked:
 - Clicking any VFO, Bandmap, or Available window spot or Ctrl+Up/Dn turns the subrx ON

- Changing RX Focus with \ turns the subrx ON
- If Dual RX Always On was unchecked and the user checks it, subrx is turned ON
- Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX Focus changes to VFOA with the \ keystroke, the subrx stays ON
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is on VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), the subrx is turned OFF
 - If Dual RX Always On was checked and the user unchecks it, subrx is turned OFF
- Ctrl+Alt+D command action:
 - If “Dual RX always on” is ON and the Sub RX is ON, turn “Dual RX Always On” to OFF and leave the Sub RX ON
 - If “Dual RX always on” is ON and the Sub RX is OFF, turn “Dual RX Always On” to OFF and leave the Sub RX OFF
 - If “Dual RX always on” is OFF and the Sub RX is ON, turn “Dual RX Always On” to ON and leave the Sub RX ON
 - If “Dual RX always on” is OFF and the Sub RX is OFF, turn both ON
- Alt+F12 action is similar to the stereo (`) key, but also affects “Dual RX Always On” state:
 - If the subrx is OFF - check “Dual RX always on” and turn the subrx ON
 - If the subrx is ON - uncheck “Dual RX always on” and turn the subrx OFF unless RX Focus is on VFOB
- Also see the [Advanced SO2V for Radios with Separate Sub-Receivers](#) section of this manual.

FTDX-1200

- The radio menu settings:
 - CAT TOT should be set to 1000 or higher.
 - CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
- The stop DVS command is sent to the radio when the ESC key is pressed.

FTDX-3000

- The radio menu settings:
 - CAT TOT should be set to 1000 or higher.
 - CAT SELECT must be set to USB if you wish to use the internal USB port for CAT control.
 - PC KEYING must be set to DTR to send CW with a COM port or with the USB port on the radio.

-
- CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
 - When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program radio COM port RTS to Handshake.
 - When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
 - There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB0#;} (where # is a number 1 - 5 for message 1 - 5)
 - {CAT1ASC PB00;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.
 - The USB driver for the FTDX-3000 will install two virtual serial ports. One, called the “enhanced COM port”, can be used for CAT control, while the other, the “standard COM port”, can be used for PTT, CW or FSK keying

FTDX-5000

- The radio menu CAT TOT should be set to 1000 or higher.
- The radio menu CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
- When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program radio COM port RTS to Handshake.
- When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
- There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB0#;} (where # is a number 1 - 5 for message 1 - 5)
 - {CAT1ASC PB00;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.
- The SCU-17 does not allow for PTT with CW when used with the FTdx5000 (the FTdx5000 uses the PTT line instead of FSK line for CW). There are two PTT choices when using a SCU-17. Use VOX and set the semi break-in delay (vox delay in the transceiver) for CW or enable software control of PTT (“PTT via Radio Command CW Mode”) in the radio COM port configuration window.
- The stereo (grave accent - `) key toggles Sub RX On and Off. To leave SUB On all the time, select **Configurer>Dual RX Always On**
- Subrx ON/OFF control
 - Independent of the state of Dual RX Always On:

-
- Changing RX Focus to VFOB with \, PAUSE, or CTRL+RightArrow turns the subrx ON
 - Ctrl+Shift+Up/Dn used to store the next Bandmap spot in the Sub does not change the state of the subrx
 - The ` key or Alt+F12 toggles subrx ON/OFF when RX Focus is on VFOA. This action is disabled if RX Focus on VFOB.
 - Dual RX Always On checked:
 - Clicking any VFO, Bandmap, or Available window spot or Ctrl+Up/Dn turns the subrx ON
 - Changing RX Focus with \ turns the subrx ON
 - If Dual RX Always On was unchecked and the user checks it, subrx is turned ON
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX Focus changes to VFOA with the \ keystroke, the subrx stays ON
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is on VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), the subrx is turned OFF
 - If Dual RX Always On was checked and the user unchecks it, subrx is turned OFF
 - Ctrl+Alt+D command action:
 - If “Dual RX always on” is ON and the Sub RX is ON, turn “Dual RX Always On” to OFF and leave the Sub RX ON
 - If “Dual RX always on” is ON and the Sub RX is OFF, turn “Dual RX Always On” to OFF and leave the Sub RX OFF
 - If “Dual RX always on” is OFF and the Sub RX is ON, turn “Dual RX Always On” to ON and leave the Sub RX ON
 - If “Dual RX always on” is OFF and the Sub RX is OFF, turn both ON
 - Alt+F12 action is similar to the stereo (`) key, but also affects “Dual RX Always On” state:
 - If the subrx is OFF – check “Dual RX always on” and turn the subrx ON
 - If the subrx is ON – uncheck “Dual RX always on” and turn the subrx OFF unless RX Focus is on VFOB
 - Also see the [Advanced SO2V for Radios with Separate Sub-Receivers](#) section of this manual.

FTDX-9000

- The radio menu CAT TOT should be set to 1000 or higher.
- The radio menu CAT RATE must match the program COM port baud rate. The suggested baud rate is 38400 (38400, N, 8, 2).
- When using a COM port cable that contains signaling wires (RTS & DTR), verify that the radio menu CAT RTS = ENABLE (default) and the program

radio COM port RTS to Handshake.

- When using a COM port cable with only three wires (TX, RX and ground) set CAT RTS = DISABLE on the radio menu and set the program radio COM port RTS to Always OFF.
- There are other forms of the CATMacros for SO2R use but a basic form to play the internal radio voice memories are:
 - {CAT1ASC PB#;} (where # is a number 1 - 5 for message 1 - 5)
 - {CAT1ASC PB0;} (stop)
 - The DVK stop command is sent to the radio when the ESC key is pressed.
- The stereo (grave accent - `) key toggles Sub RX On and Off. To leave SUB On all the time, select **Configurer>Dual RX Always On**
- Subrx ON/OFF control
 - Independent of the state of Dual RX Always On:
 - Changing RX Focus to VFOB with \, PAUSE, or CTRL+RightArrow turns the subrx ON
 - Ctrl+Shift+Up/Dn used to store the next Bandmap spot in the Sub does not change the state of the subrx
 - The ` key or Alt+F12 toggles subrx ON/OFF when RX Focus is on VFOA. This action is disabled if RX Focus on VFOB.
 - Dual RX Always On checked:
 - Clicking any VFO, Bandmap, or Available window spot or Ctrl+Up/Dn turns the subrx ON
 - Changing RX Focus with \ turns the subrx ON
 - If Dual RX Always On was unchecked and the user checks it, subrx is turned ON
 - Dual RX Always On unchecked:
 - If the TX & RX Focus is on VFOB and the RX Focus changes to VFOA with the \ keystroke, the subrx stays ON
 - If the TX & RX Focus is initially on VFOB and then RX & TX Focus is on VFOA (PAUSE, CTRL+Left or VFOA Bandmap/Available window spot click), the subrx is turned OFF
 - If Dual RX Always On was checked and the user unchecks it, subrx is turned OFF
- Ctrl+Alt+D command action:
 - If "Dual RX always on" is ON and the Sub RX is ON, turn "Dual RX Always On" to OFF and leave the Sub RX ON
 - If "Dual RX always on" is ON and the Sub RX is OFF, turn "Dual RX Always On" to OFF and leave the Sub RX OFF
 - If "Dual RX always on" is OFF and the Sub RX is ON, turn "Dual RX Always On" to ON and leave the Sub RX ON
 - If "Dual RX always on" is OFF and the Sub RX is OFF, turn both ON
- Alt+F12 action is similar to the stereo (`) key, but also affects "Dual RX Always On" state:

-
- If the subrx is OFF – check “Dual RX always on” and turn the subrx ON
 - If the subrx is ON – uncheck “Dual RX always on” and turn the subrx OFF unless RX Focus is on VFOB
- Also see the [Advanced SO2V for Radios with Separate Sub-Receivers](#) section of this manual.

Unsupported Radios

- JRC JST-145 & JST-245 – These radios are unsupported because they lack commands to determine if the radio is in split, no means to set or clear split, the VFO can not be selected, and they lack an indicator to determine which VFO is active.

Other Models

- Submit a Feature Request along with a URL for the developers information for the computer interface. Radios with limited radio control or very long data exchanges are not well suited for this software application.

Operating Digital Modes

Digital Modes

General RTTY and PSK Information

Digital mode contesting is growing rapidly. N1MM Logger+ supports digital mode contesting, not only RTTY but also other digital modes including the modes implemented in WSJT-X and similar programs. If you are new to digital modes, you might want to read over this section. If you are familiar with digital modes and eager to get N1MM Logger+ working for them, you might want to proceed directly to the [Digital Setup section](#) for keyboard-to-keyboard modes like RTTY and PSK, or to the [Decode List Window](#) chapter for WSJT modes like FT8 and FT4.

RTTY Information

This section contains some general information about operating in RTTY that is not directly related to N1MM Logger+. For RTTY newbies, it is recommended that you read [AA5AU's tutorial on getting started on RTTY](#). If you are new to digital mode contesting in general and RTTY in particular, the following information may also be helpful. If you are an old-timer on RTTY, you can probably skip this section.

Before the spread of personal computers, RTTY was the most prevalent digital mode (other than CW, that is), and was done using surplus teletype equipment – mechanical teleprinters. This equipment posed severe constraints on the RTTY mode that are still evident today. Despite these constraints, RTTY has proven to be quite well-adapted to contesting, and it is still by far the most common digital contesting mode.

More recently, these mechanical teleprinters have been replaced by other devices. At first these were mostly separate boxes containing embedded microprocessors (called “terminal units”. “TUs” or “TNCs”), but now the most common device for decoding and encoding RTTY is simply a sound card in a personal computer. N1MM Logger+ is capable of using either a hardware terminal unit or one of several software “engines”, including MMTTY, MMVARI, Fldigi and 2Tone. Because there is no one method, whether it be a software program or a hardware modem, that performs better than the others under all conditions, N1MM Logger+ also supports the capability to run two or more such methods in parallel, thus gaining the advantages of both. For example, a user might choose to use a terminal unit such as the HAL DXP-38 in parallel with one or more copies of MMTTY using different decoding algorithms and parameters, in the hope that when conditions are marginal, one or another of the parallel decoders will succeed even when the others are failing to decode accurately.

The most commonly used digital engine for RTTY is MMTTY. MMTTY performs very well, and offers a wide range of adjustments and options that are not available with the other available choices. However, MMTTY does not support other digital modes like PSK31. Amateurs who wish to use other digital modes will have to use either MMVARI or Fldigi as the digital engine for those modes, and users who are accustomed to using one of these engines for other modes may prefer to use the same engine for RTTY instead of switching to MMTTY. MMVARI comes pre-loaded with N1MM Logger+, whereas MMTTY, Fldigi and 2Tone must be downloaded and installed separately.

An RTTY signal is a single carrier (like CW), but instead of being modulated on and off like CW, the transmitted power is kept constant, and modulation is imposed by changing the frequency by a preset amount; in amateur usage, the historical practice is to use a “shift” of 170 Hz. That is, RTTY is modulated using frequency-shift keying (FSK). The frequency shifting can be done either within the radio in radios which support this method, or external to the radio at audio frequencies (for example, in a computer sound card).

The first method (usually called FSK) requires an on-off keying signal to be applied to a keying input to the radio. This keying is very similar to CW keying, except that instead of turning the carrier on and off as in CW, closing the key input shifts the transmitter’s frequency. FSK therefore requires an on-off keying interface between the computer and the radio, and the radio must have the internal circuitry required to perform the frequency shifting. Radios that support this FSK mode usually have other features that assist RTTY operators, such as specialized filtering.

The second method, using audio tones fed into an SSB transmitter which converts the tones to RF in exactly the same way that SSB converts audio voice frequencies to RF, is called Audio Frequency Shift Keying (AFSK). AFSK can be used with any SSB transmitter. Because the optimum filtering and other settings for RTTY operation are different from those for voice communication, some transceivers offer special AFSK or digital-mode modes, but fundamentally these specialized audio digital modes operate in the same way as SSB.

There are never-ending arguments among amateurs as to which method is better, FSK or AFSK. If a station has been successfully set up for other sound-card digital modes, such as PSK31, that same setup can be used for AFSK RTTY, whereas the hardware configuration needed for FSK is unique to RTTY and cannot be used for other digital modes. However, some radios do not support the use of narrow receiving filters in SSB mode, which makes FSK better for RTTY contesting with those radios from an operational point of view. From a signal quality point of view, the very best AFSK setups can produce signals that are somewhat cleaner (occupy less spectrum) than most FSK transmitters are capable of, but on the other hand, a poorly set up AFSK station can transmit spurious signals, splatter or hum and noise. Badly configured AFSK setups are unfortunately more common than they should be, and give AFSK a bad name. When using AFSK, care must be taken to ensure that

audio levels are set correctly; FSK does not require the same level of care.

Whether using FSK or AFSK, digital modes are harder on transmitting equipment than CW and SSB because of the higher duty cycle (sustained periods of full-power transmitting). As a result, it is important not to overstress the transmitter. It is also important to take steps to avoid transmitting extraneous noises or spurious signals, and to ensure that neither audio harmonics nor intermodulation distortion (IMD) products are generated anywhere in the signal chain.

Here are some tips for RTTY setup and operation:

Hardware interfacing:

- Unless your radio has a USB Codec built in (e.g. IC7200 and 7600), in order to receive RTTY you will need to connect the audio output from your radio to the input of the sound card being used with your computer, or if you are using a TNC or TU, to its audio input (see the manual for your TNC/TU for details)
- To transmit:
 - For AFSK, you need to connect the audio output from your sound card or TNC/TU to an audio input on your radio (exception: radios with a built-in USB Codec), either directly or via a sound card interface
 - For FSK, you need a keying circuit from a serial port to your radio's FSK keying input. If you are using a USB-to-serial adapter, you will probably need to use the EXTFSK or EXTFSK64 plug-in in MMTTY
 - For either AFSK or FSK, you need some way to control PTT (TX/RX switching). In AFSK, VOX operation is the simplest method with many radios, although some radios do not support the use of VOX with the line-level audio inputs used for AFSK. Also, VOX is not possible in FSK. If you use PTT control from N1MM Logger in other modes, the same method can be used in digital modes. Alternatively, you can control PTT from the digital engine using a serial port with a keying circuit. In FSK, the same port can be used for both PTT and FSK
 - When using AFSK, make sure that all forms of audio processing, compression, speech processing, hi boost, etc. are turned off
 - If you are using SSB for AFSK, MMTTY expects the radio to be in LSB on all bands, whereas Fldigi expects the radio to be in USB on all bands. Both of these engines have means to operate on the "other" sideband, using a "Reverse" ("Rev" or "Rv") button
 - See the [Interfacing](#) chapter for url's and tips on interfacing
 - Note that the character set used in RTTY does not have all ASCII characters, so some special characters can not be printed/transmitted

Common RTTY Frequencies

Contests	USA (KHz)	USA (KHz)	Europe/Africa (KHz)	Japan (KHz)
Common	Common	DX frequency	Common	Common
1800 - 1810	1800 - 1810	1838 - 1843	1838 - 1843	-
1835 - 1845				
3570 - 3600	3580 - 3600	3590	3580 - 3620	3520 - 3530
7025 - 7100	7025-7050	7040	7035 - 7045	7025 - 7040
	7080 - 7100			
-	10120 - 10150	-	10140 - 10150	-
14060 - 14120	14080 - 14100	-	14080 - 14100	-
-	18100 - 18110	-	18100 - 18110	-
21060 - 21150	21080 - 21100	-	21080 - 21120	-
-	24910 - 24930	-	24920 - 24930	-
28060 - 28150	28080 - 28100	-	28050 - 28150	-

General RTTY Information

There are two aspects of RTTY which are often confusing to newcomers to the mode.

The first of these is the “polarity” of the signal. In FSK, there are two frequencies, conventionally called “mark” and “space”. In amateur RTTY, these two frequencies are almost always separated by 170 Hz, and the mark frequency is the higher of the two RF frequencies. Someone who is transmitting with the opposite polarity is said to be transmitting “upside down”. His signal will be gibberish at the receiving station, unless the operator there inverts his receive polarity. When first setting up for RTTY, if you appear to be unable to decode any signals you receive, try inverting your receive polarity (in MMTTY, use the “Rev” button; in 2Tone, use the “⟨Swap⟩” button; in MMVARI, switch between RTTY-L and RTTY-U settings; in Fldigi, use the “Rv” button).

In FSK, getting the polarity right involves arranging things so that the switching conventions (does closing the keying input result in mark or space?) match between the radio and the computer. Unfortunately, the switching conventions are not universal. Fortunately, almost all radios affected by this have a menu item in the radio to reverse the keying polarity. Once this option is set correctly, the radio’s transmit RTTY polarity will be correct from then on. On receive, most if not all radios in FSK mode receive RTTY on the lower sideband. If software is used to demodulate the received signal, it must be set so that the lower of the two audio tones is converted to mark and the upper tone to space. This is the default configuration in most software that supports FSK keying. Note that in FSK, the transmit and receive polarities are determined independently, i.e. it is possible to receive correctly and yet to transmit upside down.

In AFSK, getting the polarity right involves coordination between the choice of audio frequencies generated in the sound card and the choice of sideband on the radio.

The default combination in MMTTY and 2Tone is to use lower sideband on the radio, combined with an audio tone pair in which the mark tone is the lower of the two audio frequencies (e.g. the most common pair is mark = 2125 Hz, space = 2295 Hz). The use of the lower sideband inverts these tones at RF to match the standard amateur convention. Software like Fldigi that uses the opposite convention (mark tone higher than space) is used with the radio in upper sideband. Fortunately, once the receive polarity is correct in AFSK, the transmit polarity will also be automatically correct.

The second sometimes puzzling aspect is related to the RTTY character set. The digital code used in RTTY predates the ASCII code used by modern computers. Instead of 8 bits, which allows for 256 different characters, the Baudot or Murray code used in RTTY has only 5 bits. This 5-bit code only has enough different characters for 26 letters plus 6 control codes, so to get numbers and punctuation the text has to be preceded with a special "FIGS" character (one of the 6 control codes) to get a second set of 26 characters (10 numbers plus 16 punctuation marks). FIGS is "sticky", so there is another special "LTRS" character to switch back to the letters case.

Just like any other character, these FIGS and LTRS characters can be damaged by noise, QRM, QSB, etc., and if they are, the received info is displayed wrongly until the next LTRS or FIGS character (or in some situations, the next space character) comes along and sets things right. Sometimes the opposite happens - a text character is converted by noise into a FIGS or LTRS code, with similar results.

The most common problem that results is numbers being printed as letters, so with a bit of experience, many RTTY operators will get used to interpreting TOO as 599 and UE as 73. Serial numbers are slightly more difficult; PQW in the input data is most likely 012, and so on. You can see which letter corresponds to which number by comparing the top (QWERTY) row of letters on the keyboard with the numbers immediately above and to the left. Letters can also be printed as numbers and punctuation; for example, CQ TEST when converted to FIGS case becomes :1 53'5 .

Various software has different ways of helping out with this. When you run MMTTY stand-alone, if you right click on a "word" (delimited by spaces), the entire word changes to the opposite case. So, for example, VE4AEO is changed to ;3R-39 and vice versa. N1MM's digital window has a box titled Letters/Figs for opposite-case display, that shows text that the mouse "hovers" over (no click necessary) in the opposite case. This requires you to move the mouse over the text that you want to convert; the unconverted text is displayed in the MouseOver box.

There is a common feature called Unshift on Space (UOS or USOS) whose purpose is to deal with the lost {FIGS}/{LTRS} problem. It was designed for normal text, where the majority of information is alphabetic.

MMTTY has two UOS options. One of these is a button on the MMTTY main window

that affects what you see in the receive window; the other is a setup option (under the Tx tab in the MMTTY setup) that affects what you transmit.

The receive option in the main window simply changes the receive window's case back to {LTRS} at the beginning of every new "word", i.e. after a space, unless of course the new "word" starts with {FIGS}. This takes no extra time, but improves reliability of receipt of alphabetic text.

The transmit option, on the other hand, actually transmits extra {FIGS} characters at the beginning of every numeric "word" to try to ensure greater reliability. It does not transmit an extra "LTRS" at the beginning of every alphabetic word, because using UOS on receive is a more efficient way to achieve the same end result.

When you are ragchewing, you should always use UOS on both receive and transmit. UOS assumes that the majority of "words" are alphabetic, which is true of normal text.

During contests, the receive UOS option is still helpful, especially when the exchange includes letters, and it does not cost anything. The N1MM Logger DI window's "Letters/Figs" line can be used to deal with those cases where receive UOS converts an intended numeric field to letters.

The transmit UOS option achieves greater reliability of numeric exchanges at the cost of some extra {FIGS} characters. If you are concerned about the slight speed penalty it imposes, you can leave transmit UOS on and use dashes ("-") instead of spaces between all-numeric fields, e.g. 599-123-123 . Do not make the mistake of using dashes between alphabetic fields though; dashes between alphabetic fields are both slower and less reliable than spaces. The downside of using dashes in this way between numeric fields is that if the initial {FIGS} character is lost, the entire exchange will be in the wrong case, e.g. TOO AQWEAQWE. Sending spaces with transmit UOS on costs two extra {FIGS} characters but is more reliable (our example with an initial lost {FIGS} character becomes TOO 123 123). On the other hand, turning transmit UOS off results in 599 QWE QWE in any receiver using UOS, even with no errors at all. A compromise among all of these possibilities is to always turn transmit UOS on, but use a hybrid exchange: 599-123 123 (a dash instead of a space after the signal report, but spaces after that). A single {FIGS}/{LTRS} error will not prevent at least one copy of the exchange from being decoded correctly regardless of whether the receiving station is using UOS or not.

PSK Information

General PSK Information

PSK31 (and its higher-speed versions, PSK63 and PSK125) is an example of a "sound-card digital mode", i.e. a digital mode that was made possible by the use of sound cards in PCs. The advent of sound cards in PCs made these sound-card

modes available for anyone to use with a minimum of expense. All that is needed is an SSB transceiver, an audio interface (which can be as simple as patch cables, or can include isolation and attenuation controls) and a means of controlling PTT, unless VOX is used.

N1MM Logger+ supports PSK31 and other sound-card digital modes using either of two digital engines: MMVARI and Fldigi. MMVARI comes pre-loaded with the program, whereas Fldigi has to be downloaded separately. Fldigi supports a wider variety of digital modes than MMVARI, although the majority of these modes are not used for contesting.

Conventionally, sound-card digital modes are communicated using USB, regardless of the band. Many PSK31 users set their radio's dial to a standard frequency (14070.0 kHz is the most common) and then look for signals anywhere within their SSB filter bandwidth (e.g. from 250 Hz to 2750 Hz or so, which would correspond to transmitted frequencies from 14070.25 kHz to 14072.75 kHz). PSK31 signals are narrow-band, so there can be many different PSK31 signals simultaneously copyable within the available frequency range without changing the radio's dial setting. Tuning is often done simply by clicking on the desired signal in the waterfall display.

PSK31 is short for "Phase Shift Keying, 31.25 baud". There are also higher-speed versions, PSK63 (62.5 baud – seen fairly often) and PSK125 (125 baud – not quite so common). Actually, in addition to using phase shift keying for modulation, PSK31 also uses amplitude modulation ("waveform shaping") to minimize the bandwidth occupied by a signal. As a result of this combination of phase and amplitude modulation, PSK31 places great requirements on the linearity of the equipment used, from the sound card generating the signal to the transmitter, and also the receiver. The peak power of a PSK31 signal can be approximately twice as high as the average power. If a transmitter is operated near its power handling capacity, it can clip these peaks, resulting in "splatter", which shows up on the waterfall as extra "tracks" in addition to the two main modulation tracks that are normally visible. To avoid having this happen, the audio levels in the sound card and in the transmitter's input audio stages must be controlled to avoid reaching power levels that would result in clipping. In most transmitters, this is equivalent to keeping the power below the level that would result in ALC action, and usually this also means powers below approximately half the transmitter's maximum power rating.

Standard PSK31 (sometimes also called binary phase shift keying, or BPSK31) is sideband-independent. There is a rarely-used variation called QPSK31 (or QPSK63 for the 62.5 baud speed) that uses four phases instead of two (quadrature phase shift keying). This allows for some error correction while still delivering the same text speed. QPSK31 is sideband-dependent, i.e. the transmitting and receiving station must both be using the same sideband in their radios (by convention, upper sideband).

PSK31 works well even at low powers. In fact, once the transmitted power is sufficiently high to give an acceptable level of copy, there is no advantage to be gained by increasing power further. Unlike analog modes, where increasing power may make your signal louder relative to QRM and therefore easier to copy, increasing the power in PSK31 does not necessarily improve your signal's readability. It can even degrade copy by overloading the other station's receiver and creating splatter within the receiver. More importantly, a very strong signal will affect the AGC in every receiver that picks it up, causing the receiver gain to decrease and making copy of signals on other frequencies more difficult. For this reason, high-power operation is unpopular in PSK31.

When you plan to run PSK:

- Keep your macros short.
 - PSK is about 1/3 slower than RTTY; you can really impact your rates with wordy macros
- Use lower case letters wherever possible
 - PSK is a varicode mode. That means that characters contain a variable number of bits, unlike ASCII characters that have a fixed number of bits. Most lower-case PSK characters have fewer bits in them than their upper-case equivalents, so lower-case (in general) transmits faster
- Make sure all forms of speech processing and audio processing in the radio are turned off. Also, make sure any special effects in the sound card are turned off as well
- Transmitter linearity is extremely important in PSK
 - Keep power below 1/2 the transmitter rating to avoid clipping peaks
 - Avoid any visible ALC action (except in radios with ALC designed for PSK, e.g. Elecraft K3/KX3)

Common PSK and Digital Frequencies

PSK31 activity generally starts from the bottom edge of the IARU RTTY bandplan, expanding upwards as activity increases.

Band	Digital frequencies (KHz)	PSK frequencies (KHz)	Remarks
160 meter	1800 - 1810	1807	1807 in Region 2
	1838 - 1843	1838	
80 meter	3575 - 3585	3580	-
40 meter	7030 - 7040	7035	7080 in Region 2
	7060 - 7085	7080	
30 meter	10130 - 10145	10142	WARC, no contesting
20 meter	14065 - 14090	14070	-
17 meter	18100 - 18110	18100	WARC, no contesting
15 meter	21060 - 21090	21080	-

12 meter	24920 - 24930	24920	WARC, no contesting
10 meters	28110-28125	28120	-

WSJT modes

The WSJT-X program and offshoot or clone programs based on it (such as JTDX) implement a number of weak signal modes, including FT8, FT4, JT65, JT9, MSK144, and several others. These are not contesting programs, and while WSJT-X does support a limited number of contests, its support for duplicate checking, multiplier checking, and score calculation is minimal. Since some contests (digital HF contests and VHF contests) make use of these modes, a way to integrate WSJT-X with N1MM Logger+ has been implemented in order to enable the use of N1MM+'s contesting features while operating in these modes.

N1MM Logger+ has the capability to interoperate with WSJT-X and similar programs so that contacts made in the WSJT-mode program will be logged directly into the N1MM+ log. The actual operating is done in WSJT-X, but dupe checking, multiplier checking, scoring and generation of Cabrillo files can all be done by N1MM+.

For instructions on how to set up and operate in WSJT modes with N1MM+, see the chapter on the [WSJT Decode List Window](#). This window controls the communications between the two programs.

Digital Overview and Features

The digital part of the N1MM logger program (including the integration with WSJT-X/JTDX) is designed, coded and maintained by Rick Ellison, N2AMG.

After the first overview part, which should be of interest to anyone getting started using digital modes with the Logger, the remainder of this section of the manual is a potpourri of miscellaneous ideas and suggestions on how to use the Logger in digital modes other than the WSJT modes. If your main interest is in getting N1MM Logger+ up and running in keyboard-to-keyboard digital modes like RTTY and PSK, after checking out the overview you might prefer to proceed directly to the [Digital Setup](#) section. If your main interest is in WSJT modes, see the [Decode List Window](#) chapter.

Digital Overview

N1MM Logger+ supports a variety of methods to decode and transmit digital modes, including an external **TNC/TU**; the **MMTTY** engine for RTTY (sound card on receive, either sound card AFSK or FSK keying on transmit); G3YYD's **2Tone** drop-in replacement for MMTTY, for AFSK RTTY; the **MMVARI** engine for RTTY (AFSK or FSK), PSK31, PSK63, PSK125 (both BPSK and QPSK), and MFSK16; or the **Fldigi** engine for a broad range of sound-card digital modes including AFSK RTTY, PSK and

many more. Regardless of which of these engines is used, the digital data streams pass to and from the engine via the Digital Interface (DI) window. At least one DI window must be open to operate the Logger in digital modes. Depending on your hardware configuration and operating mode, you may have either one (SO1V, SO2V) or two (SO2V, SO2R) DI windows open. Both DI windows have full receive and transmit capabilities. It is also possible to supplement the two DI windows with up to four additional receive-only windows each. The user can interact with the DI windows using either the keyboard or the mouse as the primary control interface. There is a wide variety of options available to customize the operation of the digital interface.

There is a separate set of digital modes, originally designed for weak-signal situations, and implemented in WSJT-X and other programs based on the WSJT-X code (such as JTDX). These modes can also be used with N1MM+, but unlike RTTY and PSK modes, they do not use the Digital Interface window that is described here. For information on how to operate in these JT modes, see the manual section on the [WSJT Decode List](#) window.

For RTTY, the most popular interface engine is MMTTY. MMTTY performs very well, supports both FSK and AFSK, and has a wide variety of options and parameters that can be adjusted to tweak its performance. Many new users of N1MM Logger+ will already be familiar with MMTTY, either from using it stand-alone as an RTTY program, or from using it from within another contesting or general logging program. MMTTY does not come pre-installed with N1MM Logger+; it must be downloaded and installed separately, and then the Logger can be configured to use it.

An alternative to MMTTY, using different decoding and encoding algorithms that perform better than MMTTY under some (but not all) conditions, is 2Tone. 2Tone was written by G3YYD to be a replacement for MMTTY without requiring any changes to the interface programming. That is, anywhere the MMTTY program is called up in N1MM Logger+, 2Tone can be used instead simply by changing the path to the program in the configuration. Probably the most common use for 2Tone is in parallel with MMTTY. One of the programs is used in the main Digital Interface window, and the other one is used in an additional RX-Only window. You may choose to use MMTTY in the main window and 2Tone in the additional window (this arrangement is popular with people using FSK), or vice versa.

MMTTY and 2Tone do not support other sound card digital modes, of which the best-known is probably PSK31. Users of those other digital modes can choose either MMVARI or Fldigi as the digital engine for those modes. MMVARI comes pre-loaded with N1MM Logger+, whereas Fldigi has to be downloaded and installed separately. Fldigi supports a wider variety of modes, although most of those modes are not used for contesting. For most users, it is probably the user interface that determines which of these two engines they prefer. Users who are accustomed to operating digital modes using one of these engines may be more comfortable using the same

engine for RTTY as well, instead of switching to MMTTY.

While MMTTY typically performs as well as or better than most of the hardware interfaces that were formerly common for RTTY (e.g. multi-mode TNCs), there are some terminal units that can rival or exceed it in performance under some conditions. Users who already have one of these devices may wish to consider using it with N1MM Logger+, either on its own or in parallel with MMTTY. For most such terminal units, the user will have to program the software commands needed to control the unit into the digital interface. An exception is the HAL DXP-38, which is supported directly without requiring user programming.

The remainder of this section describes the operation of the DI windows, including basic operation as well as advanced features that can help make operation easier and more efficient. A separate section describes how to [set up](#) N1MM Logger and the DI Window for digital modes regardless of which type of digital engine is used. Engine-specific details are described in separate sections for each of the supported engines ([MMTTY](#), [MMVARI](#), [Fldigi](#) and [external TNCs](#); 2Tone is included under MMTTY).

Problems?

Check out the [Digital Modes](#) part of the Frequently Asked Questions (FAQ).

Making QSOs

This section explains:

- How to make a Digital mode transmission
- Keyboard, Insert key and Mouse Assignments
- Function keys
- Macros

Make a Digital Mode Transmission

- Select 'Window | Digital Interface' and the Digital Interface will open. The Digital Interface window can be positioned and resized on your monitor as desired
- In the Entry window's call sign box, type "RTTY" (without the quotation marks) if you want to use RTTY, or "PSK" (without the quotation marks) if you want to use PSK or another sound-card digital mode
- If an external TNC is used only the Digital Interface window is opened. When one of the sound card interfaces is chosen an extra window will appear: MMTTY (or 2Tone), MMVARI or FLDIGI depending on which interface is selected in the DI window's Interface menu
- Left clicking on a call will grab the callsign. Right clicking on the RX and TX

-
- windows will show a menu (this can be changed via a menu setting)
 - Pressing Insert will Grab the highlighted call and sends Hiscall followed by the Exchange button
 - Double clicking on a call sign in the call sign box from the Digital Interface sends that call to the Entry window
 - A call sign is automatically highlighted if recognized by the program. Call signs are always recognized when they are both preceded and followed by a space. There is also an option to recognize call signs buried in garbage (without a leading or trailing space), provided that call sign is in the master.scp file

Digital Need to Know

- If the call sign in the call sign field in the Entry window is equal to the call sign in the received text, the call in the Entry window does not get placed into the Grab list.

Staying Focus'ed

Focus is automatically returned back to the Entry window when clicking a call sign in the Receive window

- Pressing Ctrl while single clicking on a call will force the call into the Entry window
- Click in the Entry window input field you want data to go to and then hold down the Ctrl key while clicking on the corresponding data in the RX window. It will paste to the field you clicked into
- “-” separators between exchange elements are removed automatically
- CQ Repeat time starts
 - when using a sound card engine, from when the sending stops
 - when using an external TNC, from when the message begins, as there is no way to tell when the TNC finishes sending
- During transmit, call signs are not grabbed from the receive window
- Linefeed characters (LF) in incoming text are replaced with Carriage Return (CR) characters
- **Auto-CQ with a TNC** To get auto-CQ to work correctly with a TNC set your repeat time to at least 9 or 10 seconds. It may need to be longer if you have a longer CQ macro. This will stop the TNC buffer from receiving the next string before it finishes sending the last one.
- **Clear the TNC Transmit Buffer** It is best to add the command that your TNC uses to clear the transmit buffer to the end of your Abort Macro. If not, the transmit buffer still holds the remaining characters that were left in the sent string and will get sent the next time the TNC sends.
- **Stop Sending CQ** When using a TNC turn off Config >Function Keys >Stop

Sending CQ when Callsign changed. If not every time you stop an auto-CQ and you type a callsign in the box it will send the abort string to the TNC.

Tips for Making QSOs

Callsigns and exchanges are displayed in the Digital Interface (DI) window. This information can be transferred to the Entry window's Callsign field and exchange fields with the mouse, or it can be typed in manually the same as you would do in CW and SSB. Call signs recognized in the input stream are also placed in the Grab window, and can be transferred from there to the Entry window using the Grab button, the {GRAB} macro or Alt+G on the keyboard.

Using Hover Mode

- Hover Mode places the callsign in the callsign field in the Entry Window when you hold the mouse over a valid callsign. If you use this in combination with the 'Right click = Return NOT menu' option, you hover over the call then right click to plant the call and send your call; when the station comes back to you you click on the exchange to place it in the Entry Window. Right clicking again sends TU and logs the Q. Right click, left click, right click and you're done...
 - Note: Your own call is excluded from being picked up.
 - Hover mode is used in conjunction with the menu selection 'Rt Click = Return NOT menu' which will send a Return when right clicking in the DI RX window instead of displaying a pop up menu

The Rate Improver - *Right Click = Return NOT Menu*

Select from the settings menu in the Digital window "Right Click = Return NOT menu". This setting could improve your rate greatly as your hand never leaves the mouse except for the occasional difficult exchange. Making a qso:

- While in **Run** mode with ESM on
 - **Right click** in the DI's RX window to send **CQ**
 - When a station replies **left click** on the **call**
 - **Right click** sends your **exchange**
 - As he sends his **exchange**, **left click** on it
 - **Right click** again to send **TU** and **log** the QSO
 - **Right click** again sends **CQ** (and you're back at the first bullet)
- In **S&P** it does the same thing as hitting **Enter** to advance thru the ESM mode

Right click takes the place of hitting Enter for ESM. Most of the time while in the contest I have one hand on the mouse and the other hand I have one finger resting on the space between the Esc and F1 keys. With that finger I can hit Esc if I have started a CQ and someone has started coming back to me. 73 Rick N2AMG

Do You Have... (what to check when it does not work)

Below are the most common mistakes made setting up or using N1MM logger in RTTY mode.

- Forgetting to add {TX} and {RX} to each of the F Keys
- Setting up Mode Control in the Configurer incorrectly
- Incorrect settings in the Configurer under the Digital Modes tab
- Forgetting to set up the Dig Wnd Nr in the Configurer under Hardware for ports that have the Digital check box checked

Insert Key Assignments

Mode	Enter Sends Message (ESM mode)	Ins key or ; does the following:
RUN and S&P	OFF	1. Grab Callsign from call list if callsign field empty otherwise use call in callsign field
-	-	2. Prefills Exchange Boxes
-	-	3. NO DUPE: Sends F5 (Hiscall) + F2 (Exchange) or DUPE: Sends Nothing
-	-	4. Places cursor in next exchange field (Example: Sect)
RUN	ON	1. Grab Callsign from call list if callsign field empty otherwise use call in callsign field
-	-	2. Prefills Exchange Boxes
-	-	3. NO DUPE: Sends F5 (Hiscall) + F2 (Exchange) or
-	-	3. DUPE
-	-	— WorkDupes checked: Sends F5 (Hiscall) + F2 (Exchange)
-	-	— WorkDupes not checked:Sends F6(Dupe)
-	-	4. Places cursor in next exchange field (Example: Sect)
-	-	5. Highlights F8 button
S&P	ON	1. Grab Callsign from call list if callsign field empty otherwise use call in

-	-	callsign field.
-	-	2. Prefills Exchange Boxes
-	-	3. NO DUPE: Sends F4
-	-	(Mycall) or
-	-	3. DUPE
-	-	— WorkDupes checked:
-	-	Sends F5 (Hiscall) + F2
-	-	(Exchange)
-	-	— WorkDupes not
-	-	checked:Sends F6(Dupe)
-	-	4. Once exchange entered
-	-	INSERT sends F5-F2
-	-	** Pressing INSERT again
-	-	will continue to send F5-F2
-	-	5. Places cursor in next
-	-	exchange field (Example:
-	-	Sect)

Configuring the Entry Window Function Keys

- There are separate Entry window function keys for 'Running' mode and 'Search & Pounce' mode
- The function keys use the same macros for both PSK and RTTY
- The function keys can be changed using the Config | Change CW/SSB/Digital Function Key Definitions | Change Digital Function Key Definitions menu item, or more simply by right-clicking on one of the buttons
- The function key editor is the same as for CW and SSB message buttons

Some tips for function key and button messages:

- Text to be transmitted in digital modes must be preceded and followed by {TX} and {RX} macros
- Always begin and end the actual text of your messages with a space character to separate the content of your message from garbage characters generated by noise. If your call sign is the last thing in a message and there is no following space, the person at the other end will not be able to tell where your call sign ends and the garbage begins
- With the sole exception of consecutive all-numeric elements, where a hyphen ("-") can optionally be used instead of a space, always separate call signs and exchange elements from each other with single spaces
- To set your messages off from previous text, you can start with a single {ENTER} instead of a space. Do not waste time by sending more than one {ENTER}. Never end a message with {ENTER}; that causes your information to scroll upwards on the received screen just as the other operator is trying to click on it
- Don't put in long sequences of spaces, periods or other punctuation; that

just wastes time without making it any easier to copy

- Do not place any kind of punctuation immediately before or after a call sign; always set call signs apart from the rest of the text with single spaces
- Ending messages with K, KN or BK is unnecessary in RTTY; the receiving station knows that you are finished when your carrier drops
- In contests where the US state is part of the exchange, do not use DE before your call sign; that can be confused with the exchange for Delaware. Also, do not use IN as a preposition to indicate that what follows is your QTH; that may be interpreted as Indiana
- Do not repeat unnecessarily. If signals are strong, you only need to send your exchange once; if conditions are poor, sending your exchange twice or even three times can pay off by reducing the number of requests for repeats, but when conditions are very good, this is unnecessary. Adjust your exchanges to suit conditions (the extra buttons in the DI window are useful for this)
- If a signal report is part of the required contest exchange, send it once and once only. Everyone knows what it is going to be, so there is no need to repeat it. Always send the report as 599 (all-numeric), never 5NN (5NN takes more time in RTTY than 599; **5NN is for CW only**)
- If you are CQing and more than one station is responding to you, it may help to put the other station's call sign at the end of the exchange as well as at the beginning, to take care of situations where other stations who are still calling cover up the call sign at the beginning
- In general, though, don't send the other station's call sign more often than is necessary to ensure he knows you are talking to him and he has copied the call sign correctly
- Don't send your own call sign more often than necessary to ensure that the other station knows your call sign. There is no need to send both call signs in every message; once the call signs have been exchanged correctly, subsequent repeats don't add anything
- Don't send the other station's exchange back to him. If you are not sure you got it right the first time, ask for a repeat, but once you feel you have copied it correctly, move on. Sending his exchange back puts doubt in the other station's mind unnecessarily, and in poor conditions he can confuse it with your own sent exchange
- When responding to a CQ call, never send your exchange until after the CQing station has sent you his exchange and you have copied it correctly. Do not include any part of your exchange in your F4 message

Message Buttons

- There are 0, 8, 16 or 24 extra message buttons possible on the digital interface (DI window)
- A right click on one of the message buttons brings up the Digital Setup dialog where the messages can be configured
- These extra message buttons support regular macros but don't support

‘Running’ mode and ‘Search & Pounce’ mode

- If using a TNC, include in your messages the control commands needed to turn on the TNC and switch to RX
- Macro key substitution is supported by the buttons in the RTTY window as well as the function keys on the Entry window

The macros which can be used and some examples can be found in the [macros](#) reference section

There are several additional buttons for an External TNC. Please check the [Digital – External TNC support](#) chapter. Also please check the rules for messages and macros when using [MMTTY](#) and [MMVARI](#).

Name Lookup

The program has the possibility to lookup the name from a station entered in the Callsign field. For this to happen the following has to be done.

- Import a callsign versus name text file
 - The famous ‘Friend.ini’ file used in the WF1B program can be directly imported
 - Also a text file using the format for Call History import can be used
 - Callsign [comma] Name. For example: N1MM,Tom
- Select >Config >Call History Lookup
- Use the {NAME} macro to have the name sent
 - Note: The name is looked up in the Call History table with the cursor in the callsign field and pressing the Spacebar!

Example how to import the Friend.ini file from the WF1B program.

- Select >File >Import >Import Call History
- Select your ‘Friend.ini’ file by changing ‘Files of type:’ to ‘All Files (*.*)’.
- Select the ‘Open’ button. The callsigns with names from the text file will be imported
- NB. Importing info in this table will delete all previous content. There is no merge option! So if there is information in it and you only want to add info, first export this info (Select >File > Export >Export Call History) and merge the data outside the program with a Text editor like Notepad. After this import the new merged file ‘Friend.ini’ file
- The program will show in the bottom pane of the Entry Window status information during importing and afterwards the number of imported callsigns

Output RX Data to a Text File

Sending your RX data to a text file can be done in N1MM Logger+ or in MMTTY. These files are a safety feature, as you can go back through them for any info you missed or lost during a crash.

- N1MM Logger+: Right click in the RX window and select >Output to Text File (this choice is not available if you have selected the 'Right Click = Return NOT menu' option; to turn the RX text file option on or off, you will have to temporarily disable the Right Click = Return option)
- MMTTY: Doing this in MMTTY is a bit tricky. Go to the directory where the copy of MMTTY that you use with the Logger has been installed and run that copy of MMTTY in stand-alone mode. Click on File/Log RX and close the program. From now on every time you start that copy of MMTTY either via the Logger or in stand-alone mode an output text file will be created and all your info will be stored in this text file. In the directory where MMTTY is located files will be created that have names like 131127.txt (yymmdd.txt). MMTTY creates a new file for each day. This MMTTY file also contains lines indicating the times when MMTTY started and stopped, and the times when transmissions from MMTTY started and stopped, which can be quite helpful

Single Operator 2 Radios (SO2R)

N1MM Logger+ also supports SO2R for RTTY. You can use any combination of either 2 MMTTY windows, 2 TNC windows or a combination of MMTTY and a TNC for SO2R operation. Info about MMTTY soundcard setup and SO2R can be found in the N1MM Logger+ Help file in the [SO2R chapter](#).

Additional Receive-Only Windows for RTTY

N1MM Logger+ supports up to four additional RTTY receive-only windows for each DI window. The purpose of these windows is to allow simultaneous use of more than one decoding algorithm on the same audio input. While it is possible, by using wide bandwidth filters, to use the additional windows to decode different signals from the one in the main DI windows, the normal use of the additional windows is to decode the same signal as the one in the main window, using a different decoding method to improve the overall ability to decode signals in difficult situations.

These receive-only windows may use additional copies of MMTTY or 2Tone, configured with different "profiles" (e.g. multipath, fluttered, different detection algorithms), or they can be used with additional TNCs or TUs. You can use any of the possible digital interface engines in the main DI window (MMTTY, 2Tone, MMVARI, Fldigi or a TNC/TU), but regardless of which engine is used in the main window, the additional receive-only windows can only use MMTTY, 2Tone or a hardware decoder (MMVARI and Fldigi are not supported in these additional windows).

There are setup instructions for the additional receive-only windows [here](#).

Digital Setup

For information on how to set up N1MM+ and WSJT-X for operating in modes like FT8, FT4 and MSK144, see the [WSJT Decode List Window](#) chapter. For traditional keyboard-to-keyboard modes like RTTY and PSK, see the following sections.

Quick Start RTTY Setup

First, make sure you are familiar with basic operation of N1MM Logger+ in CW and SSB. It's not a good idea to try to use the program in digital modes if you aren't familiar with at least the basic operation (see the Getting Started section of the manual for an introduction).

Next, have a quick look at the Overview section below – if you are new to digital modes, this may give you a better idea of how things fit together, and even if you are an old hand at digital modes, it's worth taking a few minutes to ensure you know how to adjust sound card levels and sampling rates.

Once you are ready to begin, decide which digital engine(s) you want to use – an external TU/TNC, MMTTY, 2Tone, MMVARI or Fldigi. One of these (MMVARI) is built in to the Logger, but the others all will need to be downloaded. Each digital engine used by the Logger stores its configuration information in the directory the engine is run from. For that reason, you should create a separate directory for each copy, separate from the directory you use when you run it stand-alone or from some other logging program. These directories should not be in the C:\Program Files or C:\Program Files(x86) path; putting the program in one of those paths prevents it from writing to its own configuration files. If you use more than one copy of a digital engine (for example, for SO2V or SO2R, or for additional RX-only windows), you need a separate directory for each copy. For more detailed information, check out the following sections on Downloading and Installing MMTTY/2Tone/Fldigi/GRITTY (GRITTY is receive-only and cannot be used from the main Digital Interface window).

After these preliminaries, start N1MM Logger+ and open the Configurer (Config > Configure Ports, Audio, Mode Control, Other). Make sure the Hardware tab is selected (this is the tab the Configurer starts up in by default).

In what follows, it is assumed that you already have radio control, CW keying and PTT control configured and working, and what you are trying to do is add in the capability for digital modes.

In many cases, especially if you are planning to use AFSK, you will already have PTT control configured from the Logger. If the same method you use in other modes is acceptable for digital modes, you don't need to do anything special about PTT for

digital modes. If you are planning to use FSK for RTTY, you will be setting up a serial port for FSK keying from within the digital engine, and you can use that same serial port for PTT control in RTTY. If you are using VOX (or an external VOX such as a Signalink), you do not need to configure PTT control in the Configurer.

All that being said, there are two cases where you need to do something about PTT control for digital modes in the Configurer. The first is if you plan to use MMVARI as your digital engine, and you want to use a control line from a serial port for PTT control. In that case, you must designate that serial port in the Configurer, check the Digital check box for that port, set the appropriate control line (DTR or RTS) for PTT, and set the DigWndNr to 1 for most cases, or 2 for DI-2 in SO2R/SO2V. The second case occurs if you are using a single serial port interface for both CW/PTT keying in CW/SSB, and also for FSK keying in RTTY. In that case you must check both the Digital and CW/Other check boxes for that port, configure DTR and RTS for CW/SSB, and set the DigWndNr (1 for SO1V or for DI-1 in SO2R/SO2V, 2 for DI-2 in SO2R/SO2V).

Next, you need to select the Digital Modes tab in the Configurer. First, set the TU Type to Soundcard (unless you happen to be using a hardware TU/TNC). If your main digital engine is MMTTY or 2Tone, then under DI-1 MMTTY Setup, select AFSK or FSK as appropriate for your setup and set the MMTTY Path to point to the copy of MMTTY.exe or 2Tone.exe you will be using with the Logger. If you will be doing SO2V or SO2R, repeat for a separate copy of the digital engine under DI-2 MMTTY Setup. If you will be using Fldigi, there are separate places to enter the paths to Fldigi.exe. For all of these, it is recommended that you do not try typing in the path directly. Instead, click on the Select button, which opens a standard Windows file Open dialog window, and then navigate till you find the desired .exe file and select it.

Once the paths to the digital engines are set up, select the Mode Control tab in the Configurer. On the right side, beside RTTY, set the Mode sent to radio – this should be RTTY if you are using FSK, but if you are using AFSK, it should be either AFSK (if your radio offers a separate mode for AFSK RTTY), LSB (for most radios with MMTTY or 2Tone), or USB (for Fldigi).

This completes the basic steps in the N1MM Logger+ Configurer. For more detailed explanation of the various options available, see the section below titled Setting Up the Configurer.

Back in the main Entry window, if you have not already done so, choose a contest type that allows digital modes (i.e. not a CW- or SSB-only contest), and set the Mode Category to one that includes RTTY or Digital (don't choose MIXED – that's for CW+SSB only; choose MIXED+DIG instead). Type RTTY into the call sign box and press Enter. This should open the Digital Interface window. If it does not, use the Window > Digital Interface menu item to open the Digital Interface window (in SO2R/SO2V, each Entry window has its own Digital Interface window that opens

from that Entry window's Window menu). If your preferred digital engine does not open (e.g. if you see the MMVARI window when you wanted MMTTY), then in the Digital Interface window use the Interface menu item to switch to the digital engine you want to use (use the MMTTY menu setting for both MMTTY and 2Tone).

Select the Setup > Settings menu item in the Digital Interface window. Under Preferred RTTY Interface, select your preferred digital engine. Under Alignment Frequency, enter your preferred Mark audio frequency (e.g. 2125 Hz), after making sure that this preferred Mark frequency is consistent with the default frequency in your digital program (e.g. the HAM setting in MMTTY) and the default frequency in your radio. If you are using MMTTY, then under MMTTY Window Settings, select either Normal or Control Menus, in order to have easy access to the MMTTY setup window. When you have completed the setup in the Digital Setup window, click on Save Configuration.

There are a host of other options in the Digital Interface and Digital Setup windows. A complete reference manual for the menu options in the DI window is in the section below titled The Digital Interface – Menu Selections, and a reference manual for the Digital Setup window is in the section titled The Digital Interface – Setup. For a description of how to use the DI window, see the section titled The Digital Interface – Window.

You're not done yet. Now you have to complete the configuration inside the digital engine itself. This is especially important for FSK, since the configuration of the FSK port is carried out inside the digital engine, not in the N1MM Logger+ program. There are separate chapters in the manual for [MMTTY](#), [MMVARI](#), [Fldigi](#), and [TNCs/TUs](#). There are too many possibilities to cover here, so consult the chapter(s) appropriate to your situation and complete the setup as described there.

Setup Overview

Setting up an interface requires configuring the Logger for the selected interface. Configuring has to be done within N1MM Logger+ in a few places, including the Configurer as well as the Digital Interface window. You will also have to perform some configuration from within your chosen digital engine.

You do not need to download or install any additional files or programs to use MMVARI or a TU/TNC. However, before you can use MMTTY, you will have to download and install it. The same applies to 2Tone and Fldigi. This process is described in the next two sub-sections.

A brief note about hardware connections. If you are using a TNC or TU, the hardware connections will be explained in the documentation for the TNC. If you are doing sound card digital modes (including RTTY) using MMTTY, 2Tone, MMVARI or Fldigi, your hardware connections will depend on the radio, the sound card and the interface (if any) in use. It is impossible to cover all of the permutations and

combinations in detail, but the following general comments apply.

First, unless the sound card (or “codec”) is built in to your radio, you must have some means of connecting the radio’s audio output to the sound card’s input. The ideal connection would be from a fixed-level (“line out”) output on the radio to a “line in” input on the sound card. If your radio has one receiver, this will probably use the left channel of the sound card; with dual receivers, the second receiver may use the right channel (of course, this requires a stereo sound card; some external sound cards, such as the Signalink, are mono and will not support dual-channel receive; also, in Windows Vista, 7, 8 and 10 the Windows configuration for the sound card device must be set to two channels for the sound card to work in stereo). If your sound card does not have a line level input, you may need to use a microphone input, and in this case you may need an attenuator to reduce the line level output from the radio to the lower level needed for the microphone level input on the sound card.

To transmit, there must be some means to convey modulation from the computer to the radio. For FSK RTTY, this is an on-off keying signal, which is normally generated by a serial port connected to the radio’s FSK keying input through a simple keying circuit. This serial port cannot be the same port that is used for radio control or for a Winkeyer or other serial device. If it is a USB-to-serial adapter, you will probably need to use MMTTY’s EXTFSK or EXTFSK64 plugin. If you are using MMVARI for RTTY using FSK keying, select the appropriate plugin (FSK8250 for true serial ports, EXTFSK or EXTFSK64 for USB-to-serial adapters) in the Configurer under the Digital Modes tab.

For AFSK RTTY and for all other sound card digital modes (e.g. PSK31), with the exception of radios with an internal codec, there must be a connection from the sound card’s output (“line out”, or speaker or headphone output) to the radio’s audio input. If the only audio input on the radio is a microphone input, you may need attenuation to reduce the level to avoid overdriving the transmitter.

In Windows 10, starting with the Spring 2018 update, there is a privacy setting that may need to be adjusted to permit digital mode programs to gain access to sound card inputs. In the Windows Setting window, select Privacy, and then among the functions on the left side of the window, select Microphone. An option called “Let apps use my microphone”. This option must be set to On; if it is set to Off, Windows will block programs from gaining access to any sound card inputs.

You also need some means to control TX/RX switching (PTT). The most common method is to use hardware PTT control from a serial or parallel port via a simple keying circuit. Hardware PTT can be controlled either from the digital “engine” (MMTTY, MMVARI, 2Tone or Fldigi), or from N1MM Logger+ itself. N1MM Logger+ can use the same port for PTT control that it uses for radio control, but if you want to use serial port PTT from the digital engine instead, you must use a different port from the one that is used by the Logger for radio control. If you have a serial port

set up for FSK keying, you can use a control line (RTS or DTR) on this same port for PTT control from the digital engine. If PTT is controlled from a digital engine rather than from the Logger, and you use that same serial port from the Logger in other modes (e.g. for CW keying), then you must check the Digital box for that serial port in the Configurer and make sure to indicate the appropriate Dig Wnd Nr (1 for DI1, 2 for DI2).

If you do not have a separate serial or parallel port available for PTT in digital modes, you can control PTT directly from the Logger. For example, if your radio control interface supports PTT using RTS or DTR on the radio control serial port, you can configure the Logger to use this method. If no method of hardware PTT control is available and if your radio supports PTT via radio command, you can use software PTT control from the Logger. Warning: Using both software and hardware PTT control at the same time can cause problems; do not use both methods in parallel.

As an alternative to hardware and software PTT control, you may be able to use VOX. This does not work with all radios, it cannot be used for FSK RTTY, and setting of audio levels and VOX triggering levels can be tricky, but some users have found this to be the simplest method of PTT control, since it does not require any additional hardware connections. Some external interfaces (e.g. Signalink) perform a VOX function external to the radio, i.e. they generate a hardware PTT signal based on the presence of an audio signal without any connection to a serial port on the computer. If you are using such an interface, or VOX within the radio, you do not configure any PTT in the Logger or in the digital engine, as PTT control in these cases is external to the software.

If your radio has a built-in codec connected to the computer via a USB cable, you can configure the digital engine (sound card software) to use this codec in place of a sound card in the computer. The only difference between this and a conventional computer sound card installation is that the audio cables between the sound card and the radio are replaced by a USB cable between the computer and the radio. This USB cable may also service one or more USB-to-serial adapters inside the radio, for CAT control and possibly also for CW/PTT/FSK keying. Despite the fact that the codec and the serial adapter share the same physical cable, there is no logical connection between the two devices. If the virtual serial port created by the USB device driver is used for CAT control, it must be configured in the Logger, while the codec using the same USB cable is configured separately in the digital engine. If there is a virtual serial port used for “hardware” keying of PTT/CW/FSK, it must be configured in the same way as it would have been if it were a real serial port in the computer, e.g. in the Logger if it is used for CW keying, or in the digital engine if it is used for FSK keying.

Sound Card Level Settings

On receive, to make best use of the sound card’s available dynamic range you would adjust the sound card’s recording level control (and/or any other level

controls or attenuators there might be in the receive audio path) so as to just barely avoid overdriving or saturation on the loudest signals. In MMTTY, an input signal that is too strong will cause the word “Overflow” to be displayed in the MMTTY spectrum window. The recording sound level should be adjusted to be just below the point where this word is displayed on the strongest signals.

On transmit (AFSK RTTY and other digital modes), it is important to avoid setting levels high enough to cause either appreciable audio harmonics or intermodulation distortion (IMD). The goal is to come up with a combination of settings in the sound card playback mixer and the radio’s mic gain or line in gain setting that results in audio signals just below the point where fast-acting ALC is triggered. On many radios, this is the point where the ALC meter just starts to move (special case: this is not true of the Elecraft K3/K3S and KX3, where the proper audio settings are those that result in 4-5 bars displaying on the radio’s ALC meter). With many sound cards, you should try to avoid setting the playback gain in the sound card all the way to the maximum; the sound card’s output may not be very linear at the maximum setting. A setting somewhere in the upper middle part of the range is ideal, provided it produces enough signal for the radio. Gain distribution is also important. A very low level out of the sound card followed by large amounts of amplification in the radio’s audio circuits will risk picking up hum and noise and adding them to your transmitted signal.

Sound card level adjustment should always be done using an audio frequency in the middle of the radio’s filter bandpass. This is where both received and transmitted signals will be strongest. If level adjustment is performed using an audio frequency near the edge of the bandpass, the resulting level settings will be too high. During operation, if a desired signal is found near the edge of the bandpass, the Logger’s Align button can be used to retune the radio so the desired signal is placed at the optimal point in the bandpass.

If you are using the Windows default sound card for generating transmitted signals in digital modes, make sure to disable all Windows sounds. Most amateurs who spend significant time in digital modes prefer to use a separate sound card. It does not need to be a high-end audiophile sound card; digital modes like RTTY do not require anything extraordinary in the way of a sound card. The parameter of most interest is the noise floor; the noise level in a second sound card may be lower than that in the sound card on the computer’s motherboard, and this may help improve reception of digital signals.

If you are using a USB audio codec inside the radio as your sound card, make sure that it has not been set to be the Windows default sound card. In this situation, the Windows default should still be set to be the sound card in the computer. There are two reasons for this. One is that the radio’s sound card will disappear from Windows when the radio is turned off, which makes it unsuitable as the default device. A more important reason from an amateur radio point of view is that if it is the Windows default, it will cause Windows sounds to be transmitted by the radio

instead of playing them on the computer's speaker – not a good idea! Also, setting one of the inputs or outputs on a sound card to be the Windows default causes Windows to disable the other inputs or outputs on that sound card, which can lead to inability to select the desired input or output. For all of these reasons, if at all possible you should avoid letting Windows select as its default the sound card or codec you are using for digital modes.

Sound Card Sampling Rate

If you are using a sound card or codec, you may also need to pay some attention to the sound card sampling rate. This will be the case either if you are using Windows Vista, 7, 8 or 10, or with any version of Windows when you are using 2Tone, regardless of whether that is as your main digital engine or as an auxiliary decoder in one of the additional RX windows.

In Windows XP, application software programs (such as the digital engines in the Logger) are able to set the sound card sampling rate directly. If you use two or more engines in parallel with the same card, you need to ensure that all of the engines are using the same sampling rate. The 2Tone engine does not offer a choice of sampling rates; it always uses 12000 Hz. Since the sampling rate for all digital engines connected to the same sound card should be the same, this means that if you are using 2Tone and MMTTY in parallel, you should set MMTTY's sampling rate to 12000 Hz as well.

In Windows Vista, 7, 8 and 10, application software cannot set the sampling rate directly. The hardware sampling rate is set in the Windows Control Panel. Many sound card drivers will offer a choice between DVD (48000 Hz) and CD (44100 Hz) sampling rates. Software that uses the sound card should have its sampling rate adjusted to an exact integer sub-multiple of the hardware rate. If you are using 2Tone, since the software sampling rate is fixed at 12000 Hz, you would set the sound card to an exact multiple of 12000 Hz (such as 48000 Hz, the standard DVD sampling rate). If you are not using 2Tone, you can choose either hardware sampling rate, but whichever one you choose in the Control Panel, you should choose corresponding rates in the sound card applications (12000 Hz corresponding with 48000 Hz, or 11025 Hz corresponding with 44100 Hz).

If the hardware and software sampling rates are incompatible (e.g. software set to 11025 Hz using a sound card set to 48000 Hz, or two different software engines, one set to 12000 Hz and the other set to 11025 Hz), you may find that the software calculates audio frequencies incorrectly. For example, tones that the software generates using 2125/2295 Hz settings may actually be at lower pitches with a smaller shift, and if you are using narrow filters in the radio, the filter bandpass may appear at the wrong place in the waterfall. In AFSK, logged and spotted frequencies may also be incorrect.

In Windows Vista, 7, 8 and 10, to set the sampling rate in the sound card, open the

Control Panel and find the area for Sound settings. You can also find this by right-clicking on the little speaker icon at the right end of the Task Bar and selecting "Recording devices". Under the Recording tab in the Sound settings window, select the sound card device and input that you are using for receive audio in digital modes and click on the Properties button. Select the Advanced tab, and set the sample rate and bit depth (16 bits is good) to the desired values (e.g. 16 bit, 48000 Hz). If you are using AFSK, do the same under the Playback tab for the sound card device and output that you are using for transmit audio.

To set the sampling rate in MMTTY, open the MMTTY Setup window, select the Misc tab, and in the lower left part of the window set the Clock to the desired setting (e.g. 12000 Hz). To set the sampling rate in MMVARI, open the Digital Setup Window, select the MMVARI Setup tab and the Soundcard Setup tab under that, and set the Clock Adjustment RX Freq to the desired setting (e.g. 12000 Hz). In Fldigi, the sample rate is found in the Fldigi configuration under the Audio/Settings tab - there are separate sample rate settings for Capture (receive) and Playback (transmit). Remember to save the configuration in Fldigi after you make any changes.

Downloading and Installing MMTTY

MMTTY is not installed as part of the installation of N1MM Logger+. It must be downloaded and installed separately. It is possible to use N1MM Logger+ in RTTY without using MMTTY (e.g. by only using an external TNC, or AFSK RTTY from MMVARI). If you intend never to use MMTTY, you can skip the rest of this section. However, most RTTY users will probably want to have the ability to use MMTTY, at least as an option. In particular, if you would like to make use of the additional RX windows for "diversity decode", you will most likely need to install MMTTY (unless you have several TUs/TNCs you can use for the purpose).

If you do not have a copy of MMTTY, then before continuing with the digital setup it is recommended that you download a copy of the MMTTY installer from the [MM HamSoft website](#). You can find a copy of the full installer for the current version of MMTTY at that website. This installer file is a self-extracting executable, similar to the N1MM Logger+ installer. Download the file to a temporary folder and then execute it in order to extract and install the actual MMTTY program. It is recommended that you install MMTTY in its own program folder and not in the N1MM Logger program folder. By default, the installer will try to install MMTTY to C:\Program Files\MMTTY\, but in Windows Vista, 7, 8 or 10 you should **not** install MMTTY in the Program Files or Program Files(x86) path, because that will prevent MMTTY from saving its settings. Instead, tell the installer program to install MMTTY in a different location from the default.

Note for users of Windows Vista and Windows 7, 8 and 10: User Account Control (UAC) in these versions of Windows prevents user programs from writing configuration information into the Program Files path. Even if programs are run with

Administrator privileges, UAC may interfere with the ability to use separate configuration files for separate copies of the same program. Therefore, it is suggested that the folder for MMTTY, as well as any folders for extra copies used in the second DI window and the four additional RX windows, should not be in the Program Files path. It is suggested that you create a new folder outside the Program Files path, such as C:\Ham Radio\MMTTY, and then place any individual sub-folders for separate copies of MMTTY within that folder. Another option would be to create a DigitalEngines subfolder inside the N1MM Logger+ user files folder (the one inside your My Documents folder), and then create various subfolders within DigitalEngines for copies of MMTTY, 2Tone and Fldigi that you want to use with various DI windows and RX-only windows, as illustrated lower down in this section.

If you wish to use FSK keying from MMTTY through a USB-to-serial adapter or via an LPT port, you will also need to download a copy of EXTFSK (from the [MM HamSoft website](http://www.hamsoft.com)) or EXTFSK64 (from <http://www.qsl.net/ja7ude/extfsk/indexe.html>) and install the appropriate files in each folder or sub-folder from which you intend to use MMTTY to transmit FSK using a USB adapter or LPT port.

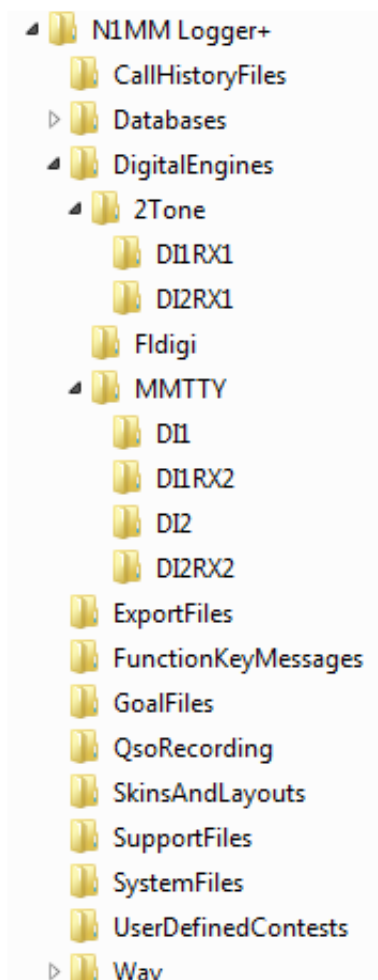
If you already have a copy of MMTTY installed on your computer, you can use that copy from N1MM Logger+. However, if you also use MMTTY stand-alone, it is possible that you may want (or need) to have a different setup for stand-alone use than with N1MM Logger+ (e.g. if you use the radio control port from within MMTTY stand-alone; this is not possible when MMTTY is used with the Logger). If you need a different setup with the Logger than the one you use stand-alone, then you should create a separate folder for each copy (for example, you can create a sub-folder inside either the N1MM Logger+ user files folder or the MMTTY program folder for the second copy of MMTTY). You need to copy only the MMTTY.exe and UserProfile.ini files from the main MMTTY folder into the additional folder (plus the extfsk.dll and/or extfsk64.fsk file(s) if you are using EXTFSK and/or EXTFSK64 for FSK keying). You can also copy MMTTY.ini, but if you don't, MMTTY will create a new copy of MMTTY.ini when it is run.

If you plan to use two copies of MMTTY in SO2V or SO2R mode, one for each received audio stream, you will need to create two copies in separate folders with different configurations. In SO2V, one of these copies can be configured to use the left channel and the other copy to use the right channel of a single stereo sound card. In SO2R, you can either use a stereo sound card as in SO2V, or you can use two separate sound cards, one for each radio.

If you want to use MMTTY for diversity decoding in additional RX windows, you will need to create another separate sub-folder for each additional RX window. For example, you can create sub-folders called DI1, DI2, DI1RX1, DI1RX2, DI2RX1, DI2RX2, etc. so that you can run several copies of MMTTY simultaneously; one for each main DI window, plus up to 4 additional RX windows for each DI window. Into each of these windows, you need only copy the MMTTY.exe, MMTTY.ini and UserPara.ini files from the main MMTTY program folder created when you first

installed it. Each copy of MMTTY must then be configured to use the appropriate sound card and channel. The “Additional RX” copies usually use the same sound card and channel as the parent copy in the main DI window, but they can be configured to use different decoding algorithms or profiles to give you “diversity decoding”, i.e. several different decoding methods used on the same receive audio.

A sample folder structure might be as follows (each of the bottom-level folders contains a copy of the .exe file and .ini or other configuration files for that particular instance of the program).



Once MMTTY has been downloaded and installed, you can proceed to use the Configurer to set up N1MM Logger+ to use it – see [here](#). For instructions on setting up additional RX windows, see [here](#).

Downloading and Installing 2Tone

2Tone is not installed as part of the installation of N1MM Logger+. It must be downloaded and installed separately. You cannot run 2Tone stand-alone. Most people who use 2Tone have already downloaded and configured MMTTY, and simply use 2Tone as a drop-in replacement for the MMTTY engine. If you are using 2Tone in

the main DI1 or DI2 window, change the MMTTY path in the Configurer under the Digital Modes tab to point to a copy of 2Tone.exe . If you are using 2Tone in an additional RX window, configure that window for MMTTY but change the path in the setup to point to that window's copy of 2Tone.exe . Note that if you are using 2Tone in more than one DI or RX window, every window you use it in must point to a different copy of 2Tone.exe, i.e. a copy that has been unzipped into a different folder.

You can find the latest version of 2Tone in the G3YYD folder in the Files area of the N1MMLoggerPlus user group at groups.io . Download the zip file containing the latest version and unzip its contents into the folder(s) or sub-folder(s) you wish to run it from (a separate folder for each window you wish to use it in). The first time you install 2Tone in a folder, copy the entire contents of the zip file into the folder; when installing updated versions, you do not need to extract the ini files from the zip file if you wish to keep using the configuration information from the previous version.

The configuration steps in N1MM Logger+ are the same for 2Tone as for MMTTY. To configure N1MM Logger to use 2Tone as the decoder for one of the main Digital Interface windows (DI1 or DI2), follow the instructions in section 2.5 below, taking care to ensure that the DI Path points to 2Tone.exe instead of MMTTY.exe . If you wish to configure N1MM Logger to use 2Tone as the decoder in one of the additional RX windows, use the **Setup > Add. RX Windows > Open Add. RX Window (4 Avail.)** menu item to open the additional RX window. The first time that window opens, it will display a setup window – see section 2.6 below. Set the Window Type to MMTTY, but then in the Path box change the path to point to the appropriate copy of 2Tone.exe instead of MMTTY.exe . Click on Save.

Initially the additional RX window will be in a separate window from the main DI window. If you wish to embed the additional RX window into the DI window so that text decoded in the main and additional RX windows will appear one above the other within the DI window, select the **Setup > Add. RX Windows > Enable Attached RX Windows** menu item from the DI window's menu bar. The separate window will be minimized to the task bar; if you want to close the additional RX window, or if you need to change settings in its Setup window, you can open it from the task bar.

For detailed instructions on configuration settings within 2Tone itself, see the **2Tone.pdf** file in the downloaded 2Tone zip file.

Downloading and Installing Fldigi

FLdigi is not installed as part of the installation of N1MM Logger+. It must be downloaded and installed separately. It is possible to use N1MM Logger+ in RTTY and PSK contests without using fldigi. Fldigi supports a wide range of other digital modes, but most of these are rarely used for contesting. Fldigi can also be used as a

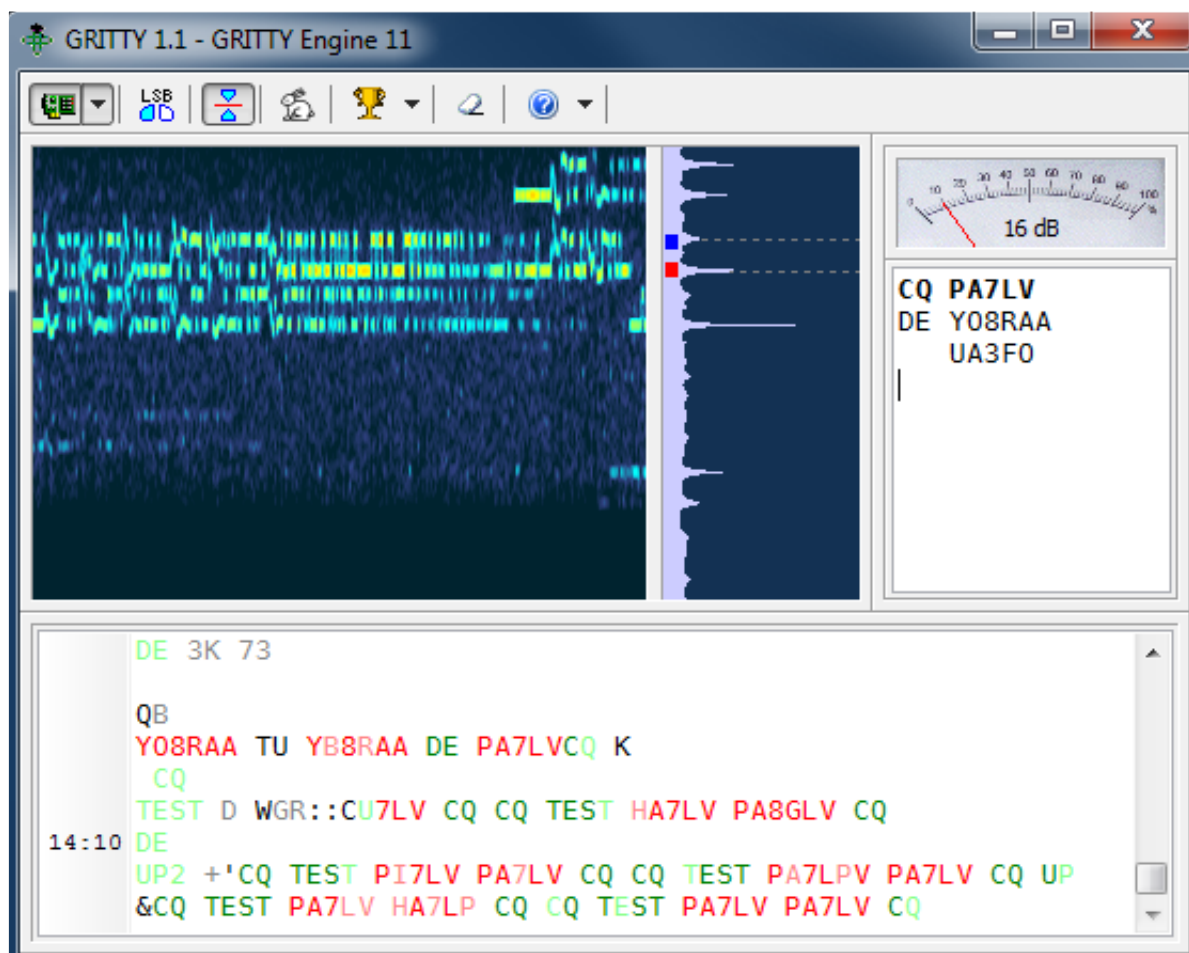
receive-only CW decoder. If you want to use fldigi as a CW decoder, you need to download and install it. If you intend never to use fldigi, you can skip the rest of this section.

If you do not have a copy of fldigi and you wish to be able to use it, then before continuing with the digital setup you should download a copy of the Fldigi installer from the W1HKJ website at <http://www.w1hkj.com/>. You can find a copy of the full installer for the current version of fldigi at that website. This file is a self-extracting executable, similar to the N1MM Logger+ installer. Download the file to a temporary folder and then execute it. It is recommended that you install fldigi in its own program folder and not in the N1MM Logger program folder. By default, the installer will install fldigi to C:\Program Files\Fldigi-x.xx.xx\, where x.xx.xx is the Fldigi version number. This is OK for fldigi when it is run stand-alone, but in Windows Vista, 7, 8 and 10, a copy of fldigi that is used from within N1MM Logger+ cannot be placed in the Program Files or Program Files(x86) path. Therefore it is recommended that you create a separate folder for fldigi somewhere outside the Program Files paths (for example, in a special folder within the N1MM Logger+ user files folder in your My Documents area), make a copy of fldigi.exe from the original fldigi program folder and place the copy in the new folder. You do not need to copy any of the other files; that copy of fldigi will create new configuration files the first time it is run from the Logger.

Note that older versions of fldigi only use the left channel on input; for that reason, in most SO2V installations these older versions of fldigi can only be used from Entry Window 1. Starting with Fldigi version 3.22.06, fldigi is now capable of using either sound card channel for input. In any copy of fldigi that you want to use with the right channel of the sound card, use the Configure > Sound Card menu item in the fldigi window to open the fldigi configuration window. Select the Right channel tab, and near the bottom under Receive Usage, check the Reverse Left/Right channels check box to switch fldigi to use the right channel on RX. Click on Save to save the configuration change, and then close the configuration window.

Newer versions of fldigi may default to requiring confirmation from the user before you shut them down. If that shutdown is initiated by shutting down N1MM Logger+, instead of by shutting down the DI windows and engines first, this can result in fldigi continuing to run after the Logger has shut down. This will cause problems the next time you start up the Logger. To prevent this from happening, you need to make a change in the fldigi configuration file. In each folder that fldigi is run from, find the file called fldigi_def.xml (Note: this file is created the first time fldigi is run from this location, i.e. it will not exist until after you have run that copy of fldigi at least once). Right-click on the file name, select Open with... and then select Notepad or Wordpad as the program to open the file with. Look for a line that reads `<CONFIRMEXIT>0</CONFIRMEXIT>` or `<CONFIRMEXIT>1</CONFIRMEXIT>`. If you see a 1 between the two keywords, change it to a 0 and save the file. Repeat this for every copy of fldigi you use from within N1MM Logger+ (DI1, DI2, CW Reader 1 and/or CW Reader 2).

Downloading and Installing GRITTY



GRITTY is an innovative receive-only RTTY decoder by Alex VE3NEA (the author of DX Atlas, CW Skimmer and several other amateur radio programs). Its decoding algorithm is quite different from the algorithms used by other RTTY decoders. It can be used as one of the additional RX windows in N1MM Logger+ (see section 1.6 below) to provide additional information about received call signs and exchanges which can sometimes enable you to copy a signal even when the decoder in the main Digital Interface window is unable to decode the information successfully.

GRITTY is not installed as part of the installation of N1MM Logger+. It must be downloaded and installed separately. A zip file containing the GRITTY installer can be downloaded from <http://www.dxatlas.com/Download.asp>. The installer is a self-extracting executable, similar to the N1MM Logger+ installer. Download the zip file to a temporary folder and then unzip it and execute the setup program. It is recommended that you install GRITTY in its own program folder. By default this will be in the Program Files path. Unlike MMTTY, 2Tone and Fldigi, when GRITTY is used from N1MM Logger+ it can be run from the program files path. GRITTY's configuration information is stored outside the program files path, and the interface with N1MM Logger+ creates a specially-named ini file to allow different configuration files to be used from the Logger as compared with GRITTY run stand-

alone. The name of this ini file indicates which DI window (1 for SO1V, 1 or 2 for SO2R or SO2V) and which additional RX window number (1 through 4) the configuration applies to (for example, Config13.ini contains the GRITTY setup for additional RX window no. 3 from the DI-1 window). You can find the location of these configuration files from the GRITTY Help > Data Folder menu item.

GRITTY's decoding method is based on Bayesian statistics. It performs an analysis on the received characters bit-by-bit and develops a probabilistic model, comparing incoming text to known-good call signs, common keywords and previously-decoded text in order to predict the most likely correct interpretation even in the presence of errors. In some situations, it can pick out call signs from error-filled text that would appear to be garble to other decoders. Of course, it must be used with care; while it can predict the most probable interpretation of a received string of bits and noise, this interpretation is not guaranteed to be correct. For example, it can sometimes be tricked into decoding apparent call signs from pure band noise.

GRITTY performs best when the incoming audio is not passed through a narrow filter, e.g. by using a wide SSB filter instead of narrow CW-style filters. When used with narrow filters, GRITTY can sometimes refuse to decode anything even when other decoders are succeeding. When this happens, one tactic that may work is to temporarily widen the IF filter in your rig to pass a broader range of audio frequencies. In the presence of heavy QRM such as strong nearby signals, it may be necessary to use narrow filtering in order to prevent AGC pumping from adversely affecting the other decoders using more traditional methods. Fortunately, once GRITTY has started to decode using a wider filter, the IF filter can often be narrowed back down and GRITTY will continue to decode now that it has some previously-decoded text to work with.

You can find more information on setting up and using GRITTY, and on how it works, in the GRITTY Help file.

Setting Up the Configurer

There are three tabs in the Configurer that need to be set up when configuring N1MM Logger for keyboard-to-keyboard digital modes (like RTTY and PSK). The first is the Hardware tab, where serial ports used for digital modes are set up. If you are using VOX or an interface that performs the VOX function externally (e.g. Signalink), you do not need to configure a port for digital modes under this tab.

Operating

Digital Modes

Configurer [X]

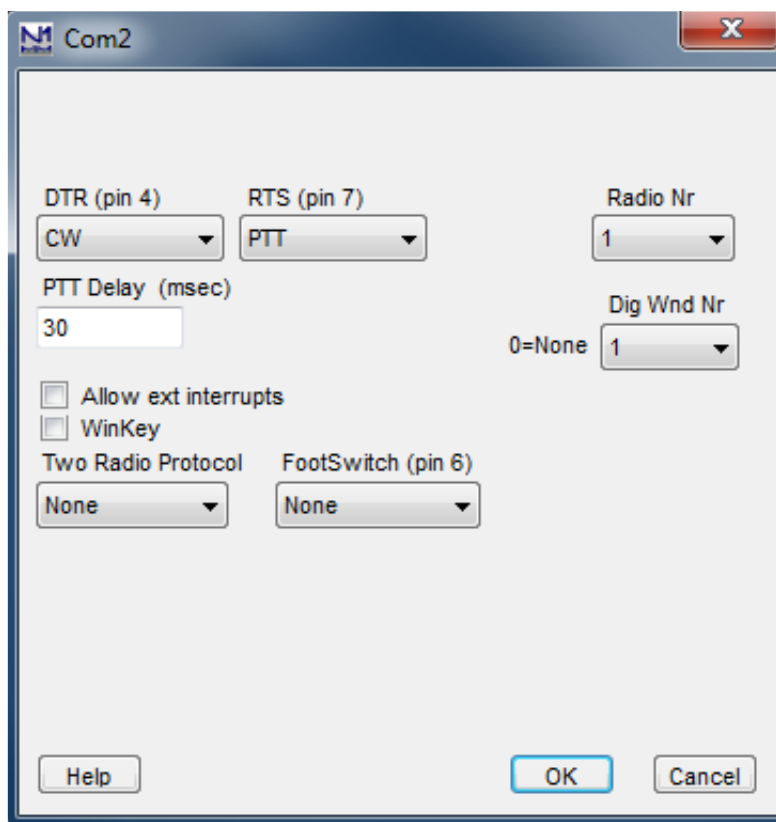
Hardware | Function Keys | Digital Modes | Other | Winkey | Mode Control | Antennas | Score Reporting | Audio

Port	Radio	Digi	CW/Other	Details
COM6	Elecraft K3	☐	☐	Set
COM2	None	☒	☒	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
None	None	☐	☐	Set
LPT1			☐	Set
LPT2			☐	Set
LPT3			☐	Set

☐ SO1V ☒ SO2V ☐ SO2R
 38400,N,8,1,DTR=Always Off,RTS=Always Off,Tx=1
 DTR=CW,RTS=PTT,Tx=1

OK Cancel Help

- The **Digital** box in the main Configurer window indicates to the Logger that this port is used for digital mode control in certain special cases, as follows:
 - Use this to indicate a port that is used for an external TNC – only the Digital check box is checked for the port
 - Use it to indicate a port that is used for PTT control from MMVARI
 - It is possible to time-share a port (sequentially, not simultaneously) for both serial port CW keying (e.g. on DTR) and for PTT and FSK using MMTTY or 2Tone for RTTY (e.g. on RTS and TxD). If you are time-sharing a port like this, check both **Digital** and **CW/Other** for that port. When the DI window is closed, the settings in the DTR and RTS boxes will determine how the port is used; whenever the DI window is open, it will be the settings in the digital engine (e.g. MMTTY or 2Tone) that determine how the port is used. The figure above shows COM2 being used by the Logger for CW keying and by MMTTY for FSK keying
 - If you use a serial port with MMTTY or 2Tone for FSK and/or PTT keying and you do not use that serial port in other modes or in MMVARI, there is no need to configure that port in the Configurer; in this case, all of the setup is done within MMTTY



If you have checked the **Digital** check box, click on the **Set** button for the same port and select the radio number and DI window number to be associated with the

port. The figure above demonstrates an example where COM2 is being used by the Logger for CW keying from DTR, and by MMTTY for FSK keying from VFO B (SO2V).

- The **Radio Nr** box indicates which radio this digital interface is for in SO2R mode; in SO2V and SO1V, **Radio Nr** is always = 1
- The **Dig Wnd Nr** indicates whether this port is used for DI1 or DI2. This applies to SO2V and SO2R; in SO1V, **Dig Wnd Nr** is always = 1

Be Sure to Assign a Dig Wnd Nr

You must choose a **Dig Wnd Nr** for each port that has the **Digital** box checked; otherwise the program will not assign the port to a DI window!

The next tab to be set up is the Digital Modes tab.

The screenshot shows the 'Configurer' window with the 'Digital Modes' tab selected. The window has a tabbed interface with tabs for Hardware, Function Keys, Digital Modes, Other, Winkey, Mode Control, Antennas, Score Reporting, and Audio. The 'Digital Modes' tab contains settings for two digital interfaces, DI-1 and DI-2.

Digital Interface 1 settings:

- TU Type: Other
- Speed: 9600
- Parity: N
- Data Bits: 8
- Stop Bits: 1
- Flow: (empty)

Digital Interface 2 settings:

- TU Type: Soundcard
- Speed: (empty)
- Parity: (empty)
- Data Bits: (empty)
- Stop Bits: (empty)
- Flow: (empty)

Note: Any Changes made in this section will require the digital windows to be closed and re-opened before changes take effect.

DI-1 MMTTY Setup (If used)

- MMTTY Mode: ☒ AFSK ☐ FSK
- MMTTY Path: C:\Users\User\Documents\N1MM Logger+Dig (Select)

DI-2 MMTTY Setup (If used)

- MMTTY Mode: ☒ AFSK ☐ FSK
- MMTTY Path: C:\Users\User\Documents\N1MM Logger+Dig (Select)

DI-1 Fldigi Setup (If used)

- Fldigi Path: C:\Users\User\Documents\N1MM Logger+Dig (Select)

DI-2 Fldigi Setup (If used)

- Fldigi Path: C:\Users\User\Documents\N1MM Logger+Dig (Select)

DI-1 MMVARI Setup

- MMVARI RTTY Mode: FSKPort
- ☒ AFSK ☐ FSK
- Select (dropdown)

DI-2 MMVARI Setup

- MMVARI RTTY Mode: FSKPort
- ☒ AFSK ☐ FSK
- Select (dropdown)

Buttons at the bottom: OK, Cancel, Help.

-
- **Digital Interface 1/2** (left part of window)
 - **TU Type:**
 - **None** – if you do not plan to use the DI1 or DI2 digital interface
 - **Soundcard** – for any of the sound card digital engines (MMVARI, MMTTY, 2Tone or Fldigi)
 - **Other** – use this setting for most terminal units or TNCs (e.g. for a PK-232 or KAM TNC)
 - **Dxp38** – use this setting for the HAL DXP-38 terminal unit
 - **Speed, Parity, Data Bits, Stop Bits, Flow:**
 - These are only used when the **TU Type** is **Other** or **Dxp38**
 - Set these parameters appropriately for the TNC or TU (Example settings: 9600, 8, N, 1, Xon-Xoff)
 - **DI-1/2 MMTTY Setup** (upper right part of window – this area is also used for 2Tone setup)
 - **MMTTY Mode:** Select AFSK or FSK
 - **MMTTY Path:** Select path to MMTTY.EXE or 2Tone.exe, including the name of the executable file (i.e. not just the path to the folder). Using the **Select** button for this purpose will open a File Open dialog that will allow you to navigate through the file system to find the MMTTY.exe or 2Tone.exe file, which avoids the possibility of a typing error when entering the path
 - The paths for the two DI windows are not the same, since each DI window runs its own copy of MMTTY or 2Tone

SO2V/SO2R in MMTTY

You can use MMTTY with both receivers in a two-receiver setup with a single stereo sound card. You will need to install two copies of MMTTY in two separate program folders in order to allow one copy to be configured to use the left channel of the sound card and the other copy to be configured to use the right channel of the sound card.

SO2V/SO2R Shut Down Issue

When two copies of MMTTY are used in DI1 and DI2 with a different COM port for each copy for PSK/PTT keying, you may need to close the two DI windows separately before shutting down N1MM Logger. If both DI windows are open at the time N1MM Logger is shut down, the COM port assignments in the two copies may get confused due to a glitch in MMTTY, which means the port assignments may be wrong the next time the Logger is started up.

- **DI-1/2 Fldigi Setup** (midle right part of window)

-
- **Fldigi Path:** Select path to fldigi.exe (complete path, including the name of the executable file). Use the **Select** button to simplify the task of finding the path and typing it in correctly
 - The paths for the two DI windows will normally be different in order to allow for different configurations (e.g. different audio sources) in the two copies

SO2V/SO2R in Fldigi

Starting with Fldigi version 3.22.06, you can use Fldigi with both receivers in a two-receiver setup with a single stereo sound card. You will need to install two copies of Fldigi in two separate program folders in order to allow one copy to be configured to use the left channel of the sound card and the other copy to be configured to use the right channel of the sound card on receive.

- **DI-1/2 MMVARI Setup** (bottom part of window)
 - **MMVARI RTTY Mode:** Select AFSK or FSK
 - **FSKPort:** (FSK only)
 - Choose **FSK8250** if you are using a true serial port or a device that can simulate a serial port and handle 5-bit codes at low speeds (this does **not** include most USB-to-serial adapters, but it does include some commercial interfaces designed to support FSK RTTY as well as some multi-port USB-to-serial adapters)
 - When MMVARI is opened for FSK RTTY, a small window labelled MMVARIFSK1 1.04 will open, or appear on the Windows Task bar. In this window you select the COM port number and the signal line to be used for PTT (RTS or DTR). FSK keying will be done on the TxD line. If this is a USB device that simulates a serial port, check **Limiting speed**. You can use the _ box at the top right to minimize this window after completing the setup
 - FSK8250 supports all of the RTTY speeds supported by MMVARI and the selected COM port or device
 - Choose **EXTFSK** if you are using a regular USB-to-serial adapter
 - When MMVARI is opened for FSK RTTY, a small window labelled EXTFSK 1.06 will open, or appear on the Windows Task bar. In this window you select the COM port number and the signal lines to be used for FSK keying (normally TxD) and PTT (RTS or DTR). You can use the _ box at the top right to minimize this window after completing the setup
 - The only RTTY speed supported by EXTFSK is 45.45

baud

- On high-performance multi-core systems only, you may choose **EXTFSK64** instead of EXTFSK. EXTFSK64 uses a more accurate timing mechanism than EXTFSK, but this mechanism uses significant CPU resources. EXTFSK64 is not appropriate for use on XP based systems or hardware running older dual-core Intel/AMD CPUs or Atom based CPUs. On systems that are capable of supporting it, EXTFSK64 can key FSK from LPT ports as well as USB-to-serial adapters. See <http://www.qsl.net/ja7ude/extfsk/indexe.html> for more detailed information on EXTFSK64
 - When MMVARI is opened for FSK RTTY, a small window labelled EXTFSK 2.0 will open, or appear on the Windows Task bar. In this window you select the COM or LPT port number and the signal lines to be used for FSK keying (normally TxD) and PTT (RTS or DTR). You can use the _ box at the top right to minimize this window after completing the setup
 - EXTFSK64 can key FSK at speeds other than 45.45 baud (e.g. 75 baud)

SO2V/SO2R in MMVARI

You can use MMVARI with both receivers in a two-receiver setup with a single stereo sound card. In the DI Window's Digital Setup dialog box under the MMVARI Setup tab, simply configure the DI1 SoundCard to use the left channel and the DI2 SoundCard to use the right channel.

The third tab to be set up is the Mode Control tab, which determines what mode the radio will be set to use in RTTY and PSK.

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Audio

Mode recorded in log

- ☒ Use radio mode (default)
- ☐ Follow band plan
- ☐ Use contest mode or bandplan
- ☐ Use contest or radio mode
- ☐ Always: RTTY

Mode sent to radio

Mode	Radio 1 / VFOA	Radio 2 / VFOB
RTTY to	AFSK	RTTY
PSK	PSK	PSK

☒ Always use packet spot mode

OK Cancel Help

This example is for a radio or radios with separate modes for FSK, AFSK and PSK (e.g. Elecraft K3 using FSK D, AFSK A and DATA A respectively). This particular setup uses AFSK from DI-1 (radio 1) and FSK from DI-2 (radio 2). The appropriate choices in the list boxes under **Mode sent to radio** will depend on the particular radio type (see [Supported radios](#)). For FSK RTTY, the correct choice will normally be RTTY. For AFSK RTTY, depending on the radio the appropriate choice might be AFSK or LSB/USB (or if you are using Fldigi and your radio has an upper sideband digital audio mode, perhaps PSK). For PSK31 and other sound card modes, the radio mode would be PSK (if available), AFSK-R (on some radios) or USB on most radios. For more information, see the [Configurer](#) page under the Config > Mode Control tab.

Additional RX Windows for RTTY

N1MM Logger+ supports up to four additional RTTY receive-only windows for each DI window. The purpose of these windows is to allow simultaneous use of more than one decoding algorithm on the same audio input. While it is possible, by using wide bandwidth filters, to use the additional windows to decode different signals from the one in the main DI windows, the normal use of the additional windows is to decode the same signal as the one in the main window, using a different decoding method to improve the overall ability to decode signals in difficult situations.

These receive-only windows may use additional copies of MMTTY or 2Tone, configured with different “profiles” (e.g. multipath, fluttered, different detection algorithms). Alternatively, they can be used with a copy of Fldigi or GRITTY, or with additional TNCs or TUs. You can use any of the transmit-capable digital interface engines in the main DI window (MMTTY, 2Tone, MMVARI, Fldigi or a TNC/TU). The additional RX windows may be configured to use either the same sound-card interface engine as the main DI window with a different profile, or a different interface engine, including GRITTY (read-only), but not including MMVARI (MMVARI can only be used in the main DI window).

The receive-only windows are invoked from the DI window’s **Setup > Add. RX Windows > Open Add. Rx Window (4 Avail.)** menu item – the number in the menu item indicates how many of these windows are unused and still available. The first time one of these windows is opened, its Setup window will be displayed.

DI1 RX Window 1

Setup

RX Window Settings

Window Type
MMTTY

MMTTY Setup

Path: ☐ On Top
C:\Hamradio\DigitalEngines\2Tone\DI1RX1\2Tone.exe Select

Window Size
☐ Normal ☒ Menus ☐ Buttons ☐ Small

Fldigi Setup

Path: C:\Hamradio\DigitalEngines\Fldigi\DI1RX1\fldigi.exe Select

TNC Setup

Com Port	Data Bits
NONE	8
Speed	Stop Bits
9600	1
Parity	Flow Control
	None
RTS	DTR
Always Off	Always Off

Initialization String
None

GRITTY Setup

Path: C:\Program Files (x86)\Afrete\GRITTY\GRITTY.exe Select

Save Cancel

The setup information that must be entered includes the engine type (MMTTY, TNC, Dxp38, GRITTY or Fldigi – the MMTTY setting is also used for 2Tone), the path to the copy of MMTTY/2Tone, Fldigi or GRITTY for that window (if used), and/or the COM port information for a TNC (if used). Note that the path is the path to the .exe or executable file, not just the path to the directory in which it is located, i.e. when you use the Select button to find the engine, you must click on the actual executable file, then on the Open button in the File Open window. Alternatively, you can double-click on the executable file in the window.

After the setup information has been entered, click on the Save button to register the information. The additional RX window must be closed and re-opened (it may do this automatically), and then it will be available for use. If the engine type is MMTTY, Fldigi or GRITTY, a separate spectrum display window is also opened for the software digital engine, and can be used as a tuning indicator. Once the additional RX window is active, you can click on call signs and exchanges in the text window to pass them to the Entry window, the same as you can in the main DI window.

It is possible to embed or attach a copy of the additional RX windows directly into the RX window area in the main Digital Interface DI window, using the DI window's **Setup > Add. RX Windows > Enable Attached RX Windows** menu item. Each such attached window is denoted with its number (1, 2, 3 or 4), which is normally on a green background. If the number is clicked on with the mouse, the background color changes to yellow and the text in that window is frozen temporarily, similarly to the green/yellow bar on the left of the main receive window and the regular additional RX windows.

 Digital Interface Soundcard (MMVARI)1

Setup Interface Help

TX

Letters/Figs

MouseOver

1

GRITTY Not Use in Add on RX Windows Use GRITTY Window

1

IKBCVHI **EMYIU4OIP** 599 024 02 BPWR **IU4BIP** HPZWVKOHRAVXB FSO

2

HM2BFT XUBB
IU4BIP U DE OHWWBBT QRZ? QBSQHEM((

3

IMCQ ARIDX TEST **H2BB** OH2/(?)5 CQ HDE **U4BIP** UE VQMZIUOIP 599 024 02?024
IU4BIP OOH VCCV **E2XBT** YXO
IU4BIP TU D **OH2BBT** QRZ? B)YS

/00XIQ ARIDX TEST DE WBBT **OH2BBT** IQ
 ALYZ
 CUXLJIQ ARDEST **DETOH2BBT** OH2BBI-98)3/YNOQGYZTPV
 XCU A
 IDF TEST EE OHPWBBH2BBT CQ QZBPLEEQKPFHVCJEMCQ AJIDX TEST **H2BB** OH2/(?)5 CQ
 M

 DE **U4BIP** UA:0)IUOIP 599 024 02
 ?024 **IU4BIP** B
 KACVKO EM 2XBT **YBIU4BIP** TU D **OH2BBT** QRZ? S QJE

Clr RX

TX

RX

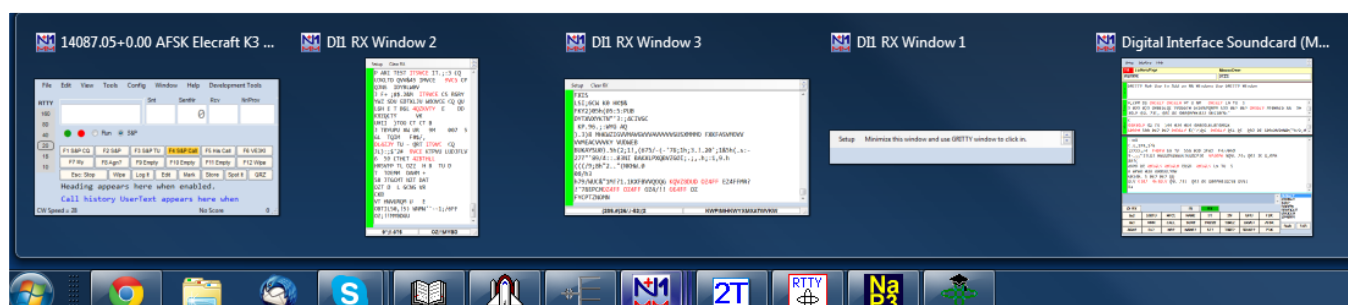
0x2	599TU	MYCL	NAME	ST	ZN	QRU	FSK
0x3	RRR	CALL	SER#	PREV#	TIME2	HAVE?	AFSK
AGN?	CL?	NR?	NAME?	ST?	TIME?	WANT?	PSK

OH2BBT
IU4BIP
YBIU4BIP
HM2BFT
E2XBT
EMYIU4OIP
IU4BHP

Grab

CLR

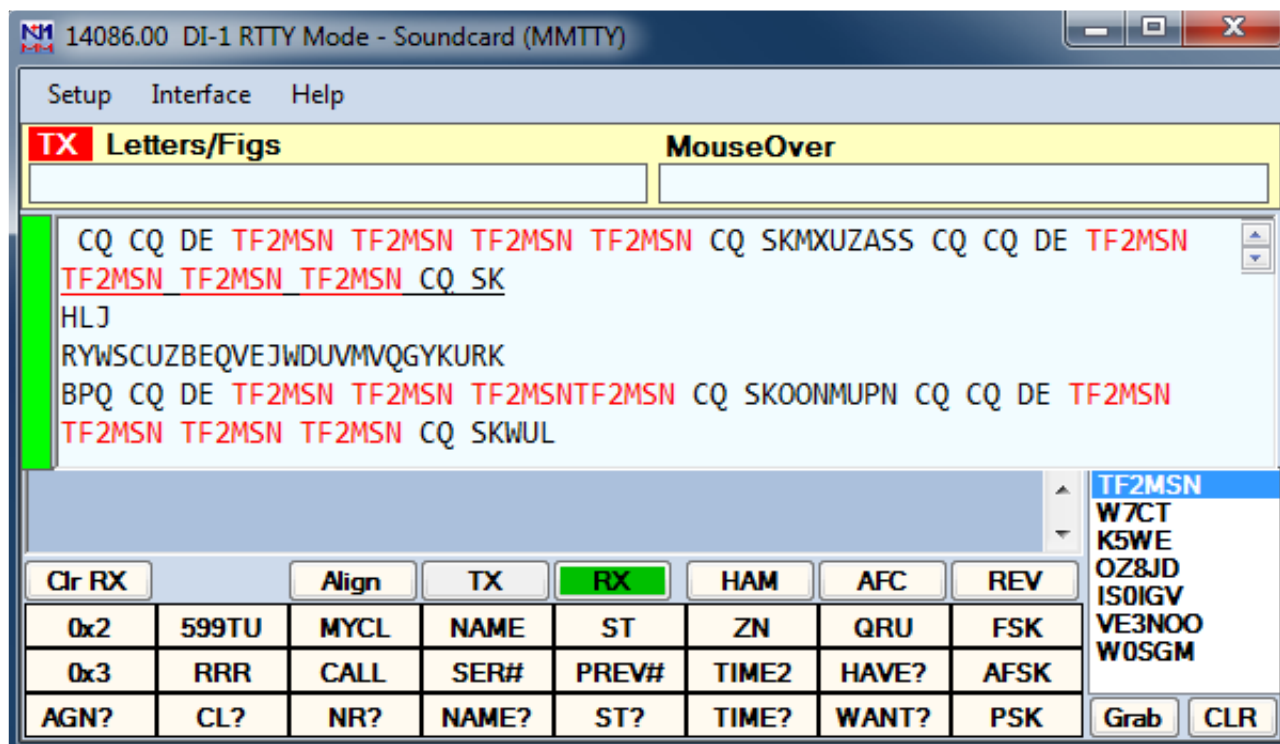
The separate additional RX window(s) is/are minimized to the task bar when the attached windows are enabled, but they may be restored from the task bar in order to be able to change setup parameters or to close the additional RX window. The icon(s) for the additional RX window(s) are grouped together with the icons for N1MM Logger+ on the task bar. If any of the additional RX windows use sound card software for decoding, the spectrum display windows for those digital engines may also be mimimized to icons on the task bar, but these will be separate from the Logger icons; note that the icon for the digital engine (MMTTY - black crossed ellipses on a white background; 2Tone - 2T; GRITTY - green crossed ellipses; or Fldigi - miniature waterfall) controls the display for the digital engine only, not the RX text window. In the screen shot below, as a result of hovering the mouse over the the N1MM Logger+ icons they have been expanded to thumbnail images above the task bar. The title of each thumbnail indicates which window will be restored if you click on that thumbnail.



If Fldigi is used in parallel with other decoder engines, you need to be aware of the fact that fldigi assumes by default that the radio is in USB, whereas the other decoders assume LSB. If your radio is in LSB (this includes the FSK RTTY mode in amateur transceivers), you will need to tell fldigi to reverse its tones using the Rev button in the corresponding DI or additional RX window. This Rev button is not accessible from the attached RX-only windows; if you have enabled attached windows, you will need to restore the non-attached window to gain access to the Rev button for that copy of fldigi. Alternatively, if the radio is in USB (or FSK-R, etc.), fldigi will be on the correct sideband but you will need to reverse the tones in the other decoders using their respective reverse settings in the digital engine windows.

The Digital Interface Window

The Digital Interface window, or DI window, is nearly the same regardless of which type of interface (MMTTY, MMVARI, FLDIGI or TNC) is being used. Its appearance (font sizes and foreground and background font colors) can be customized using the Skins, Colors and Fonts dialog window (main Entry window, Config > Manage Skins, Colors and Fonts).



The Digital Interface is opened from the Entry window's Window > Digital Interface menu item. If you are using two entry windows (SO2V/SO2R), each entry window has a separate DI window associated with it – DI1 with the VFO A/Radio 1 Entry window, and DI2 with the VFO B/Radio 2 Entry window. Each DI window is opened from its corresponding Entry window's menu bar. If the digital “engine” chosen in a Digital Interface window is sound card software (MMTTY, MMVARI, Fldigi or 2Tone), a separate window including a tuning display and various other digital engine-specific information will also be opened when the Digital Interface window is opened – see the section of the manual relevant to the specific digital engine that has been selected.

The DI window may be configured either in scrolling mode or in non-scrolling mode. Scrolling mode is the same as N1MM Logger Classic – new text is always added below previous text (i.e. usually on the bottom line of the RX window), and previously received lines scroll off the top of the window. Non-scrolling mode is new in N1MM Logger+ – previously received text does not move, but stays where it was first displayed until it is overwritten with new text. The line on which incoming text is being displayed is indicated with an underline, and this line moves steadily down the screen until it reaches the bottom, after which the top line in the window becomes the new incoming text line. The advantage of this mode is that received call signs and exchanges do not move, making them easier to click on.

The Digital Interface caption displays either the offset frequency (radio's dial frequency +/- audio frequency) or the radio's dial frequency, depending on what you have chosen in the Digital Setup.

-
- **TX** - Indicator to show which window has transmit focus (useful when using two sessions like SO2R)
 - **Letters/Figs** - Shows the text under the mouse in reverse case (letters/figures switched)
 - **MouseOver** - Shows the text under the mouse; this is the text that would be selected by a mouse click

Top RX window - This is the receive window. Depending on the scrolling option you choose in the Digital Interface's Setup window, you can make this window either a scrolling window (old text scrolls off the top of the window as new lines are inserted at the bottom), or non-scrolling (new text appears on the active line, which is underlined; each time a new line starts, the text that was previously in the next line down is cleared and that line becomes the new current line; if the current line is at the bottom of the RX window, the line at the top of the window is cleared and becomes the current line where new text is entered). Some users find it easier to use a non-scrolling window where text does not move after it is entered (so incoming newlines do not cause text to scroll up just as you want to click on it). Other users find it easier to use a scrolling window so that new incoming text is always near the bottom of the window where they don't have to move the mouse very far to click on it. The Logger gives you the choice.

There are 2 ways of moving a callsign from the RX window into the callsign box in the Entry window. You can single click on a callsign and it will transfer over to the main logging window, or, whenever a callsign is detected in the RX window it will be sent to the callsign grab window for easy movement to the logging window by clicking the Grab button or using a function key with a {GRAB} macro in it.

Pause bar (green/yellow bar at the left of the RX window) -By clicking on the colored bar on the left you can pause input to the receive window to scroll back through the (last 2000 lines of) text using the scroll bars. When the window is paused the color of the bar will turn yellow. To turn input to the window back on click in the bar again and everything that was to be printed to the window will now enter the window. When the receive window is paused it is possible to select and copy text in the window.

Bottom TX window - This is the transmit window, a free form typing window. In the screen shot above, it is the darker grey area below the received text window and above all the buttons. If you click on the TX button the cursor will be placed into this window and whatever is typed will be sent. The size is static and doesn't change size (2 lines). For TNC users: when not transmitting, anything typed in the TX Window will be sent to the TNC. Used to send TNC commands to change settings etc.

Callsign Textbox and Grab - When a callsign is encountered in one of the receive windows it will be placed in the Grab list in this textbox and when you press the Grab button it will transfer the callsign over to the main Entry window. The grab

callsign window holds the last 10 callsigns seen in the RX window. The most current one is at the top and is highlighted. Dupe callsigns will not be shown in the grab window. The Sort Order in the grab window can be selected by right-clicking; you can choose either Last In First Out or First In First Out as the sort order

Callsign not added to grab List

Callsign not added to grab List

If the callsign in the callsign field in the Entry window is the same as the callsign in the received text, the call in the Entry window does not get placed into the grab call list. Clicking on a callsign in the RX window to move it into the Entry window will remove that callsign from the Grab list.

Message buttons – The Digital Interface window can display 0, 8, 16 or 24 extra message buttons for preprogrammed messages. Configuring these message buttons is done in the Digital Interface window under ‘Setup | Settings’ or by right clicking on them, which brings up the Digital setup dialog. The width of these message buttons dynamically adjusts in relation to the width of the interface window

- **Clr RX** – Clear the receive window (also possible using the right click menu, unless the Rt Click = Enter option has been selected)
- **Align** (MMTTY and Fldigi only) – This is used to move the signal that you are copying into the passband of your filters. Set the frequency in the setup area. For example, if your filters are centered on 2210 Hz, RTTY signals close to the 2125/2295 Hz pair will be copied well, but signals at higher or lower frequencies may not make it through the filters. If you click on a signal at a frequency in the waterfall that is not close to the nominal 2125/2295 pair, it may not decode very well. After clicking on the signal, if you click on the Align button your transceiver will be retuned to line the signal up on the configured frequency. This is essential in FSK where the transmit frequencies are fixed in the radio, and useful also in AFSK if you want to use narrow filters
 - Note that when you are using the MMVARI interface engine, the Align button appears on the MMVARI window instead of on the Digital Interface window
- **TX** – Start the RTTY transmission, the transceiver is keyed. Will be colored Red when transmitting
- **RX** – Stop the RTTY transmission – the transceiver changes back to receive. Will be colored Green when in receive
- **HAM** (MMTTY only) – Restore the MMTTY frequency and shift settings to the HAM default
- **AFC** (MMTTY only) – Can be used to turn MMTTY’s AFC on or off (colored background means AFC is on)

-
- **Lock** (Fldigi only) – Locks the transmit frequency at the current location. If you move the receive frequency, e.g. by clicking elsewhere in the waterfall, the transmit frequency does not change. Used for operating split
 - **Rev** (MMTTY and Fldigi only) – In sideband-sensitive modes like RTTY, reverses the tones (e.g. opposite sideband)
 - **Grab** – Transfer the selected callsign in the Callsign textbox to the callsign field on the main Logger Entry window. Once the callsign is filled, whatever you click on next will fill the next exchange box. When the Digital Interface is in transmit, calls are not added to the Grab window
 - **CLR** – Clear the Grab list

Receive Window Callsign Colors

When a callsign is recognized in the receive input stream the callsign will be colored according to the same color scheme that is used in the [Bandmap Window](#) and brought to the Grab window. Valid callsigns that are separated by spaces are always recognized, and optionally the Search routine can be used to search for known call signs from the Master.scp file in garbage text strings. When the search in garbage text is enabled and two calls are found in the same string, only the last one gets highlighted. Also, if the call sign being copied contains a shorter call sign that is in the Master.scp file, using the search in garbage feature may result in the shorter call sign being recognized instead of the longer one. The highlighted calls in text strings are clickable.

If the “Use Generic Routines” option is chosen under Callsign Validity and Highlight in the Digital Setup, anything that looks like a callsign will be highlighted with a color that indicates its multiplier status using the same colors as in the Bandmap and Entry window. If the “Use Master.scp File” option is chosen, callsigns that are not in the Master.scp file will be highlighted in yellow in addition, either by changing the background to yellow (if the multiplier color is in the foreground), or by changing the text color to yellow (if the multiplier color is in the background). Regardless of which option is chosen, anything that passes the check routines and looks like a callsign will be placed in the Grab window.

Mouse Assignments

- **Left mouse key clicking**
 - **Single clicking** on a callsign grabs it and places it in the Callsign field on the Entry Window dialog
 - **Single clicking** on Exchange info etc. (not on a callsign) grabs it and places it in the Exchange field on the Entry Window dialog. If there are two or more exchange fields, as in some contests, you must take care to ensure that the keyboard cursor is in the exchange box corresponding to the element you are clicking on; if you click on an exchange element while the cursor is in the wrong

box, the element will be transferred to the wrong place, and if there was something else there, it will be overwritten

- **Note:** The callsign field must be filled first! If there is nothing in the callsign field, single clicking on exchange info will not do anything
- **Double clicking** on a callsign grabs it and overrides the current information in the Callsign field on the Entry Window dialog
- **Ctrl+Single clicking** – will force what ever you are clicking to be sent to the box containing the typing cursor in the Entry window (You may need to click first in the Entry window, or else use the space bar, to select the box where you want to place the new data)
- **Shift+Single clicking** – will cause the moused over text to be Letter/Figs converted on the fly while sending to Entry Window (only in RTTY Mode)
- **Alt+Single clicking** – if Digital Call Stacking is enabled, will transfer the call sign being clicked on to the Bandmap call stack (see [Single Operator Call Stacking](#) for more information)
- **Right mouse key clicking on RX window**
 - Will give a menu ***only when the menu item 'RT Click = Return NOT menu' is NOT selected!***
 - **Clear RX** – Clear the receive window. This receive buffer can contain a maximum of 10,000 characters
 - **Output to Text File** – Output the received text to a text file named RTTY1.txt
 - **Help** – Show the help file for this window
- **Right mouse key clicking on TX window**
 - Will give a menu ***only when the menu item 'RT Click = Return NOT menu' is NOT selected!***
 - **Clear TX** – Clear the transmit window
 - **Paste** – Place the TX text in the Paste buffer
- **Right mouse key clicking in GRAB window**
 - Gives a menu:
 - **Clear List** – Clear the entire grab window
 - **Clear Selected Call** – Clear the selected call in the grab window
 - **Sort Order** – Choose the order in which call signs are pulled from the grab window:
 - **Last In, First Out**
 - **First In, First Out**

Keyboard Assignments

- **Alt+T** – Toggle TX/RX, when in TX the cursor will be set to the TX window of the active interface
- **Ctrl+K** – Toggle TX/RX and move the cursor into the DI's TX window to send manual information using the keyboard; press Esc or click on the RX button

to terminate manual sending

- **Alt+G** – Grab most recent callsign from callsign textbox. Upon grabbing that callsign gets deleted from the grab list
- **Ctrl+Left/Right arrows** – When two radios are configured in SO2R or a dual-receiver radio is used in SO2V, and two digital windows are open, pressing Ctrl+Left arrow or Ctrl+Right arrow will swap from one active Digital Interface to the other. Digital Interface 1 will follow VFO A/Radio 1, Digital Interface 2 will follow VFO B/Radio 2

The Digital Interface - Menu Selections

The digital interface has a menu at the top which varies slightly depending on which type of interface is selected under the Digital Modes tab in the Configurer.

Configurer Selection: Soundcard

- **Setup**
 - **Settings** – Opens the Digital Setup window; see the section on ‘The Digital Interface - Setup’ below
 - **Turn AutoTRXUpdate On/Off**
 - If your radio’s dial displays the actual transmitted frequency (i.e. the Mark frequency in FSK RTTY), you would turn this option off
 - If your radio’s dial displays the suppressed carrier frequency (e.g. SSB mode), you would turn this option on. This causes the program to add (USB) or subtract (LSB) the audio frequency from the digital engine to/from the radio’s dial frequency so that the frequency that appears in the Entry window, the Bandmap, the log and spotted to the DX cluster is the actual transmitted frequency, not the suppressed carrier frequency

AutoTRXUpdate can affect other modes

If the AutoTRXUpdate option is turned on, it takes effect whenever the DI window is open. If you leave the DI window open and switch to CW or SSB, the offset will continue to be applied, and the frequencies in the Entry window, Bandmap and your log will be incorrect. You should always close the DI window when switching from digital modes to other modes. Also, if you are likely to want to use a non-digital mode the next time you start the program, you should close the DI window before shutting down N1MM Logger in order to ensure that the DI window does not cause this option to be applied the next time you start the Logger.

-
- **Bring to Foreground when made Active** – Bring the Digital Interface and Engine to the foreground when its Entry window has focus
 - This adds ability to stack Digital Interfaces and Engines and have the correct one on top when the associated Entry window has focus
 - **SoundCard**
 - **RX Mixer** – Shows the Record control mixer dialog from the Windows operating system. Only for Windows versions XP and earlier
 - **TX Mixer** – Shows the Play control mixer dialog from the Windows operating system. Only for Windows versions XP and earlier
 - These menu items are not available when using the Fldigi engine. They are also not available in Windows 7, 8 and Vista
 - **Setup MMTTY** – The MMTTY setup is shown. This menu item is only visible when MMTTY is selected
 - **AFC On/Off with CQ** – If set then the AFC will turn on with CQ message or TU messages. Turning AFC on when soliciting new callers with a CQ or QRZ message can help tune in off-frequency callers
 - **NET On/Off with Run Change** – Option to turn Net function on in S&P and off in Running mode. In S&P mode, you normally want to transmit on the same frequency you are receiving on; in AFSK, turning NET on ensures this. In Run mode, you normally leave NET off in order to allow the receiver to track off-frequency callers without moving your TX frequency
 - **Turn Hover Mode On/Off** – With this option selected, when the mouse is hovered over a valid callsign the callsign is automatically transferred to the Entry window's callsign box without having to click on it. This option is most effective when used in combination with the RT Click = Return NOT menu option
 - Note: Your own call is excluded from being picked up
 - **RT Click = Return NOT menu** – When this option is selected, a right-click in the RX window will perform the same functions as pressing the Enter key. This is designed to work with ESM; in ESM, in a routine QSO pressing the Enter key automatically sends the next message in the normal QSO sequence. For example, when CQing, once a callsign has been placed in the callsign box (either by left-clicking on it or using the Hover mode option), right-clicking will send the exchange and move the cursor to the exchange box, left-clicking on the received exchange will transfer the exchange to the entry window and right-clicking will send the TU message and log the contact. A complete QSO can be performed with simply a couple of left-clicks and a couple of right-clicks. As always with ESM, you need to be aware of the current ESM state. If the exchange data is not yet valid, or if the cursor is in the callsign box after the exchange data has been entered, the ESM state and the resulting action may not be what you expect
 - **Send Text File** – Send a text file. A file open dialog will appear from which the file to be sent can be selected
 - **Output Main RX Window to Text File** – When this is checked, text that is displayed in the main RX window will be saved to a text file in the ExportFiles directory in the N1MM Logger+ user files area. The file name will
-

be date stamped (mmddyyyy), as in 05312012DigitalInterface1Output.txt (for DI1)

- **Digital Call Stacking** - Used together with the {LOGTHENPOP} macro. See [Single Operator Call Stacking](#) for more information
 - **Enable using First In First Out** - Enables the Digital Call Stacking feature. Calls are popped off the stack in the order they were placed there
 - **Enable using Last In First Out** - Enables the Digital Call Stacking feature. Calls are popped off the stack in reverse order, i.e. most recent first
 - **Enable using FIFO Mults First** - Enables the Digital Call Stacking feature. Calls are popped off the stack in order of their multiplier value. In those contests where one QSO can yield 2 or 3 mults, the higher-mult calls will be taken first. Among calls with the same multiplier value, calls are popped in FIFO order, i.e. in the order they were placed there
 - **Disabled** - Disables the Digital Call Stacking feature
- **Use RX Window Callsign Pause Routines** - When this option is selected, moving the mouse in the RX window over a valid callsign while the callsign box in the Entry window is empty will cause incoming text to stop appearing and the RX window to pause scrolling. At this point you can either click on the callsign to transfer it into the Entry window, display any incoming text that was held back during the pause and resume scrolling, or simply move the mouse off the callsign to display any held incoming text and resume normal scrolling. Also with this option selected, when the left mouse button is clicked in the RX window to select text the RX window will pause until the mouse button is released after the text has been selected, at which point the selected text will be copied to the clipboard, any held incoming text will be displayed and normal scrolling will resume. If there is a scrollbar present in the RX window, moving the scroll bar will cause incoming text to be paused until either text has been selected and the mouse has been released, the pause strip at the left side of the window is clicked, or the right mouse button is clicked in the RX window
- **Add. RX Windows**
 - **Enable Attached RX Windows** - After one or more additional RX window(s) has/have been set up using the last submenu item below, this option can be selected in order to attach or embed small RX text displays from the additional RX window(s) into the main DI window. When the additional RX windows are attached to the main RX window using this option, the attached windows appear above the main RX window. The non-attached RX windows are minimized to the task bar when the attached windows are enabled, but they may be restored from the task bar in order to see more text than is visible in the attached window, to access the setup options, or to close the additional RX window without closing the main DI window. The task bar icon for the additional RX window is grouped with the

main N1MM Logger icons. If the additional RX window is using a software decoder, there will also be a separate task bar icon for the digital engine; do not confuse the two task bar icons

- **Open Add. RX Window (4 Avail.)** – This allows you to open an auxiliary RX window for diversity decoding of the same RTTY signal, e.g. by using a TNC in the main DI window and MMTTY or 2Tone in the auxiliary window, or by using a different copy of MMTTY or 2Tone with a different decoding algorithm to decode the same audio input. There are up to 4 such windows available (the remaining number available appears in the menu). Each additional window is associated with either DI1 or DI2, depending on which DI window menu was used to open it. There is a separate Setup dialog for each additional RX window, which is accessible from the menu bar at the top of the additional window. The first time an additional RX window is opened, its setup dialog will automatically be displayed. The decoder type (MMTTY, TNC or DXP38 – use MMTTY for 2Tone), and the path to the program or the COM port information for a TNC must be filled in before the additional RX window can be used. Once all of the additional RX windows you intend to open from either DI window have been set up and tested, you can use the **Enable Attached RX Windows** option to attach the additional windows to the main DI window

Configurer Selection: OTHER

- **Setup**

- **Settings** – Opens the Digital Setup window; see the section on ‘The Digital Interface – Setup’ below
- **Turn AutoTRXUpdate On/Off**
 - If your radio’s dial displays the actual transmitted frequency (i.e. the Mark frequency in FSK RTTY), you would turn this option off
 - If your radio’s dial displays the suppressed carrier frequency (e.g. SSB mode), you would turn this option on. This causes the program to add (USB) or subtract (LSB) the audio frequency from the digital engine to/from the radio’s dial frequency so that the frequency that appears in the Entry window, the Bandmap, the log and spotted to the DX cluster is the actual transmitted frequency, not the suppressed carrier frequency

AutoTRXUpdate can affect other modes

If the AutoTRXUpdate option is turned on, it takes effect whenever the DI window is open. If you leave the DI window open and switch to CW or SSB, the offset will continue to be applied, and the frequencies in the Entry window, Bandmap and your

log will be incorrect. You should always close the DI window when switching from digital modes to other modes. Also, if you are likely to want to use a non-digital mode the next time you start the program, you should close the DI window before shutting down N1MM Logger in order to ensure that the DI window does not cause this option to be applied the next time you start the Logger.

- **Bring to Foreground when made Active** – Bring the Digital Interface and Engine to the foreground when its Entry window has focus
 - This adds ability to stack Digital Interfaces and Engines and have the correct one on top when the associated Entry window has focus
- **Turn Hover Mode On/Off** – With this option selected, when the mouse is hovered over a valid callsign the callsign is automatically transferred to the Entry window's callsign box without having to click on it. This option is most effective when used in combination with the RT Click = Return NOT menu option
 - Note: Your own call is excluded from being picked up
- **RT Click = Return NOT menu** – When this option is selected, a right-click in the RX window will perform the same functions as pressing the Enter key. This is designed to work with ESM; in ESM, pressing the Enter key automatically sends the next message in the normal QSO sequence. For example, when CQing, once a callsign has been placed in the callsign box (either by left-clicking on it or using the Hover mode option), right-clicking will send the exchange and move the cursor to the exchange box, left-clicking on the received exchange will transfer the exchange to the entry window and right-clicking will send the TU message and log the contact. A complete QSO can be performed with simply a couple of left-clicks and a couple of right-clicks
- **Send Text File** – Send a text file. A file open dialog will appear from which the file to be sent can be selected
- **Output Main RX Window to Text File** – When this is checked, text that is displayed in the main RX window will be saved to a text file in the ExportFiles directory in the N1MM Logger+ user files area. The file name will be date stamped (mmddyyyy), as in 05312012DigitalInterface1Output.txt (for DI1)
- **Digital Call Stacking** – Used together with the {LOGTHENPOP} macro. See [Single Operator Call Stacking](#) for more information
 - **Enable using First In First Out** – Enables the Digital Call Stacking feature. Calls are popped off the stack in the order they were placed there
 - **Enable using Last In First Out** – Enables the Digital Call Stacking feature. Calls are popped off the stack in reverse order, i.e. most recent first
 - **Enable using FIFO Mults First** – Enables the Digital Call Stacking feature. Calls are popped off the stack in order of their multiplier value. In those contests where one QSO can yield 2 or 3 mults, the

higher-mult calls will be taken first. Among calls with the same multiplier value, calls are popped in FIFO order, i.e. in the order they were placed there

- **Disabled** – Disables the Digital Call Stacking feature
- **Use RX Window Callsign Pause Routines** – When this option is selected, moving the mouse in the RX window over a valid callsign while the callsign box in the Entry window is empty will cause incoming text to stop appearing and the RX window to pause scrolling. At this point you can either click on the callsign to transfer it into the Entry window, display any incoming text that was held back during the pause and resume scrolling, or simply move the mouse off the callsign to display any held incoming text and resume normal scrolling. Also with this option selected, when the left mouse button is clicked in the RX window to select text the RX window will pause until the mouse button is released after the text has been selected, at which point the selected text will be copied to the clipboard, any held incoming text will be displayed and normal scrolling will resume. If there is a scrollbar present in the RX window, moving the scroll bar will cause incoming text to be paused until either text has been selected and the mouse has been released, the pause strip at the left side of the window is clicked, or the right mouse button is clicked in the RX window
- **Add. RX Windows**
 - **Enable Attached RX Windows** – After one or more additional RX window(s) has/have been set up using the last submenu item below, this option can be selected in order to attach or embed small RX text displays from the additional RX window(s) into the main DI window. When the additional RX windows are attached to the main RX window using this option, the attached windows appear above the main RX window. The non-attached RX windows are minimized to the task bar when the attached windows are enabled, but they may be restored from the task bar in order to see more text than is visible in the attached window, to access the setup options, or to close the additional RX window without closing the main DI window
 - **Open Add. RX Window (4 Avail.)** – This allows you to open an auxiliary RX window for diversity decoding of the same RTTY signal, e.g. by using a TNC in the main DI window and MMTTY or 2Tone in the auxiliary window, or by using a different copy of MMTTY or 2Tone with a different decoding algorithm to decode the same audio input. There are up to 4 such windows available (the remaining number available appears in the menu). Each additional window is associated with either DI1 or DI2, depending on which DI window menu was used to open it. There is a separate Setup dialog for each additional RX window, which is accessible from the menu bar at the top of the additional window. The first time an additional RX window is opened, its setup dialog will automatically be displayed. The decoder type (MMTTY, TNC or DXP38 – use MMTTY for 2Tone), and the path to the program or the COM port information for a TNC must be filled in

before the additional RX window can be used. Once all of the additional RX windows you intend to open from either DI window have been set up and tested, you can use the **Enable Attached RX Windows** option to attach the additional windows to the main DI window

Configurer Selection: DXP38

- **Setup**

- **Settings** – Opens the Digital Setup window; see the section on ‘The Digital Interface – Setup’ below
- **Turn AutoTRXUpdate On/Off**
 - If your radio’s dial displays the actual transmitted frequency (i.e. the Mark frequency in FSK RTTY), you would turn this option off
 - If your radio’s dial displays the suppressed carrier frequency (e.g. SSB mode), you would turn this option on. This causes the program to add (USB) or subtract (LSB) the audio frequency from the digital engine to/from the radio’s dial frequency so that the frequency that appears in the Entry window, the Bandmap, the log and spotted to the DX cluster is the actual transmitted frequency, not the suppressed carrier frequency

AutoTRXUpdate can affect other modes

If the AutoTRXUpdate option is turned on, it takes effect whenever the DI window is open. If you leave the DI window open and switch to CW or SSB, the offset will continue to be applied, and the frequencies in the Entry window, Bandmap and your log will be incorrect. You should always close the DI window when switching from digital modes to other modes. Also, if you are likely to want to use a non-digital mode the next time you start the program, you should close the DI window before shutting down N1MM Logger in order to ensure that the DI window does not cause this option to be applied the next time you start the Logger.

- **Bring to Foreground when made Active** – Bring the Digital Interface and Engine to the foreground when its Entry window has focus
 - This adds ability to stack Digital Interfaces and Engines and have the correct one on top when the associated Entry window has focus
- **Turn Hover Mode On/Off** – With this option selected, when the mouse is hovered over a valid callsign the callsign is automatically transferred to the Entry window’s callsign box without having to click on it. This option is most effective when used in combination with the RT Click = Return NOT menu option
 - Note: Your own call is excluded from being picked up

-
- **RT Click = Return NOT menu** – When this option is selected, a right-click in the RX window will perform the same functions as pressing the Enter key. This is designed to work with ESM; in ESM, pressing the Enter key automatically sends the next message in the normal QSO sequence. For example, when CQing, once a callsign has been placed in the callsign box (either by left-clicking on it or using the Hover mode option), right-clicking will send the exchange and move the cursor to the exchange box, left-clicking on the received exchange will transfer the exchange to the entry window and right-clicking will send the TU message and log the contact. A complete QSO can be performed with simply a couple of left-clicks and a couple of right-clicks
 - **Send Text File** – Send a text file. A file open dialog will appear from which the file to be sent can be selected
 - **Output Main RX Window to Text File** – When this is checked, text that is displayed in the main RX window will be saved to a text file in the ExportFiles directory in the N1MM Logger+ user files area. The file name will be date stamped (mmddyyyy), as in 05312012DigitalInterface1Output.txt (for DI1)
 - **Digital Call Stacking** – Used together with the {LOGTHENPOP} macro. See [Single Operator Call Stacking](#) for more information
 - **Enable using First In First Out** – Enables the Digital Call Stacking feature. Calls are popped off the stack in the order they were placed there
 - **Enable using Last In First Out** – Enables the Digital Call Stacking feature. Calls are popped off the stack in reverse order, i.e. most recent first
 - **Enable using FIFO Mults First** – Enables the Digital Call Stacking feature. Calls are popped off the stack in order of their multiplier value. In those contests where one QSO can yield 2 or 3 mults, the higher-mult calls will be taken first. Among calls with the same multiplier value, calls are popped in FIFO order, i.e. in the order they were placed there
 - **Disabled** – Disables the Digital Call Stacking feature
 - **Use RX Window Callsign Pause Routines** – When this option is selected, moving the mouse in the RX window over a valid callsign while the callsign box in the Entry window is empty will cause incoming text to stop appearing and the RX window to pause scrolling. At this point you can either click on the callsign to transfer it into the Entry window, display any incoming text that was held back during the pause and resume scrolling, or simply move the mouse off the callsign to display any held incoming text and resume normal scrolling. Also with this option selected, when the left mouse button is clicked in the RX window to select text the RX window will pause until the mouse button is released after the text has been selected, at which point the selected text will be copied to the clipboard, any held incoming text will be displayed and normal scrolling will resume. If there is a scrollbar present in the RX window, moving the scroll bar will cause incoming text to be

paused until either text has been selected and the mouse has been released, the pause strip at the left side of the window is clicked, or the right mouse button is clicked in the RX window

- **Add. RX Windows**

- **Enable Attached RX Windows** – After one or more additional RX window(s) has/have been set up using the last submenu item below, this option can be selected in order to attach or embed small RX text displays from the additional RX window(s) into the main DI window. When the additional RX windows are attached to the main RX window using this option, the attached windows appear above the main RX window. The non-attached RX windows are minimized to the task bar when the attached windows are enabled, but they may be restored from the task bar in order to see more text than is visible in the attached window, to access the setup options, or to close the additional RX window without closing the main DI window
- **Open Add. RX Window (4 Avail.)** – This allows you to open an auxiliary RX window for diversity decoding of the same RTTY signal, e.g. by using a TNC in the main DI window and MMTTY or 2Tone in the auxiliary window, or by using a different copy of MMTTY or 2Tone with a different decoding algorithm to decode the same audio input. There are up to 4 such windows available (the remaining number available appears in the menu). Each additional window is associated with either DI1 or DI2, depending on which DI window menu was used to open it. There is a separate Setup dialog for each additional RX window, which is accessible from the menu bar at the top of the additional window. The first time an additional RX window is opened, its setup dialog will automatically be displayed. The decoder type (MMTTY, TNC or DXP38 – use MMTTY for 2Tone), and the path to the program or the COM port information for a TNC must be filled in before the additional RX window can be used. Once all of the additional RX windows you intend to open from either DI window have been set up and tested, you can use the **Enable Attached RX Windows** option to attach the additional windows to the main DI window

- **Help** – Shows help file

The Digital Interface - Setup

This setup dialog is for all interface types, but some settings are only for MMTTY or MMVARI. When selecting 'Setup | Settings' in the Digital Interface window a dialog like the one below will be shown. Any changes made in the setup form must be saved by clicking the Save Settings button located on the bottom of the form. Any changes made and saved will be changed as soon as the setup area closes.

Tab: General/MMTTY Setup

This interface has general setup information for ANY type of interface (Soundcard or external TNC) and some specific settings for MMTTY, MMVARI and Fldigi.

DigitalSetupWindow

General / MMTTY Setup MMVARI Setup Message Setup

General Settings

- ☒ RX Windows add to Grab window
- ☒ Display Radio Freq and not Exact Freq in DI Caption
- ☒ Add Callsign to Bandmap on Alt-G
- ☐ Send Space on Callsign Mouse Click
- ☒ (MMTTY)Send HamDefault on Run to S&P Change
- ☐ (MMTTY - MMVARI)Turn AFC On/Off on Run Change
- ☒ Do Not add Dups to Grab Window
- ☐ Send Space on Using Grab
- ☐ If QSY Wipes call is checked Clear Grab Window on QSY
- ☐ QSY will clear Grab Window
- ☒ Clear Grab Window On CQ
- ☐ Only Grab Master.scp Calls and

On Top Settings

- ☐ MMTTY Always on Top
- ☐ MMVARI Always on Top
- ☐ FLDIGI Always on Top

Window Scroll

Window Scroll Scrolling

☐ Highlight insertion line in Light Gray

Note: When using multiple windows in the PSK Engine, Scrolling Text will be used.

Shift Frequency Compensation

Enabled Offset Frequency

DI1 ☐ 0

DI2 ☐ 0

Callsign Validity and Highlight Routines

- ☒ Use Generic Routines Using Generic Routines will highlight anything that passes the callsign validity check routines.
- ☐ Use these resources:
 - ☐ Master.scp
 - ☐ Call History
 - ☐ Telnet Calls
 - ☐ Logged Calls
- ☐ Use Combination of both
- ☐ Use Search Routine to find master.scp calls in Garbage Text
- ☒ Highlight Foreground Text ☐ Highlight Background of Text

Alignment Frequency

MMTTY	RTTY	MMVARI	FLDIGI
2125	2210	2125	2125
Other	1500	Other	1500

MMTTY.FLDIGI = Mark Freq MMVARI = Center Freq

* Add 85 to place Mark Freq on desired frequency. Ex. On 2000 enter 2085

Default RTTY Interface

MMTTY

Default PSK Interface

MMVARI

MMTTY Window Layout

Normal

Save Settings

Digital Setup Window

- **RX Windows add to Grab window** – If this option is checked, callsigns detected in the Additional RX windows will be sent to the Grab window
- **Display Radio Freq and not Exact Freq in DI Caption**
 - Check this option if you are using a radio mode that displays the actual transmitted frequency rather than the suppressed carrier frequency (e.g. FSK RTTY)
 - Note that this setup option only affects the frequency that is displayed in the DI window and that is returned by the {RDIGFQ} or {LDIGFQ} macro. To change the frequency that is sent to the Entry window and recorded in the log, see the DI window's **Setup > Turn AutoTRXOffset On/Off** menu item
- **Add Callsign to Bandmap on Alt+G** – (MMTTY and PSK) Option to send callsign from station in callsign field (Alt+O) when doing a grab (Alt+G)
- **Send Space on Callsign Mouse Click** – Sends a space to advance the entry window cursor after clicking on a call sign
- **(MMTTY) Send HamDefault on Run to S&P change** – (MMTTY only) Ability to have Ham Default(MMTTY) sent when going from Run to S&P to reset Mark Frequency. Select to enable

-
- **(MMTTY-MMVARI) Turn AFC Off when switching to S&P** – (MMTTY and PSK) Ability to Turn AFC Off when going from Run to S&P. Select to enable. Many people when in Running mode will leave the Net Off and turn on AFC to find people coming back to them a little off frequency. So to turn the AFC back off when you go to S&P (without forgetting) this setting comes in handy
 - **Do Not add Dups to Grab Window** – Setting for adding dups to Grab window or Not
 - **Send Space on Using Grab** – when doing a grab from the grab window it will also send a space press command to Entry window to advance the cursor
 - **If QSY Wipes call is checked Clear Grab Window on QSY** – If QSY Wipes and Spot call is checked then Clear the Grab window on wipe of callsign.
 - **QSY will clear Grab Window** – Changing frequency will clear the Grab window
 - **Clear Grab Window On CQ** – sending CQ will clear the Grab window
 - **Only Grab Master.scp Calls and** – Will only send calls that are found in Master.scp to the Grab window; if this is left unchecked, anything that passes the callsign validity check routines will be sent to the Grab window
 - **On Top Settings**
 - **MMTTY always on Top** – MMTTY is always in front of all other N1MM logger windows. A restart of N1MM logger is needed to activate this function. Minimizing the N1MM logger program will not minimize the MMTTY engine
 - **MMVARI always on Top** – MMVARI is always in front of all other N1MM logger windows. A restart of N1MM logger is needed to activate this function. Minimizing the N1MM logger program will not minimize the MMVARI engine
 - **Fldigi always on Top** – Fldigi is always in front of all other N1MM logger windows. A restart of N1MM logger is needed to activate this function. Minimizing the N1MM logger program will not minimize the Fldigi engine
 - **Shift Frequency Compensation** – for radios which use/need Shift Frequency Compensation
 - **Enabled** – Select to enable Shift Frequency Compensation
 - **Offset Frequency** – the frequency offset
 - **Window Scroll**
 - **Window Scroll Type** – You can choose between two scrolling behaviors in the RX window:
 - **Scrolling** – New text is always added at the bottom of the RX window. Each time a new line starts, previous text scrolls up one line to make room for the new line at the bottom of the

window. The most recent text will always be near the bottom of the window, so you don't often need to move the mouse away from the bottom two lines or so, but if a newline character is received just as you want to click on something, the text you wish to click on will scroll upward

- **Non Scrolling** – Previous text does not move when new text is added. The line where text is currently being entered is underlined, and each time a new line starts, the line immediately below the old current line is cleared and it becomes the new current line. If the previous current line was the bottom line of the display, the new current line will be the top line in the display, overwriting whatever was there before. Text does not move after it is entered, which can make it easier to click on than text in a scrolling window, but the most recent text can be anywhere in the window

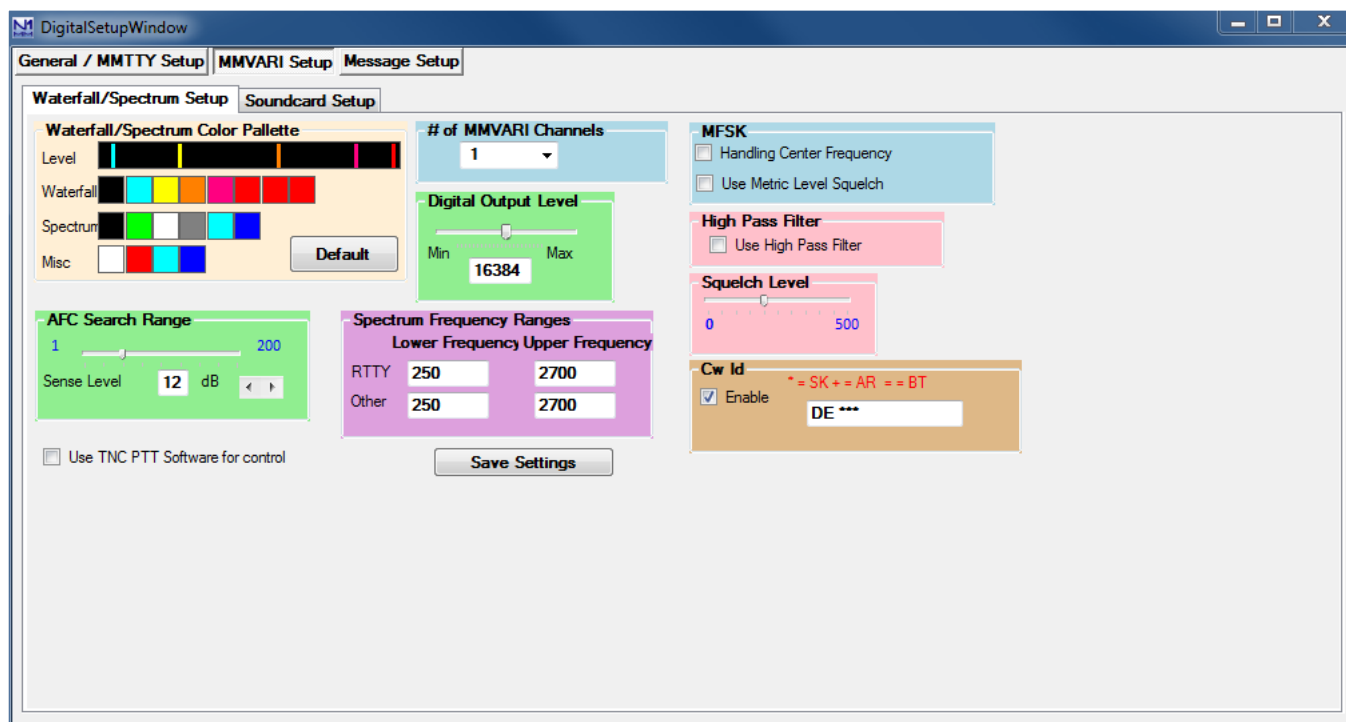
- **Callsign Validity and Highlight Routines**

- **Use Generic Routines** – the generic routines will highlight anything that passes the check routines (and probably will look like a callsign), using the standard colors for multipliers, QSOs and dupes
 - **Use these resources:** – when selected, only call signs that are found in at least one of the selected resources will be highlighted
 - You can select any combination of the Master.scf file, the Call History file, calls that have been spotted on the cluster and appear in the Telnet window, and/or calls that have been logged in this contest
 - **Use Combination of both** – when selected there will be additional highlighting for callsigns that are not found in the selected resources. If the normal highlight is foreground, the background will be changed to yellow; if the normal highlight is background, the text color will be changed to yellow. The yellow color is not configurable
 - **Use Search routine to find Master.scf in Garbage Text** – turn checking for callsigns in garbage text in digital modes on or off. When this is turned on, callsigns that appear in the Master.scf file will be highlighted even if there are garbage characters before and after the call. Note that if a longer callsign is found that contains a callsign in Master.scf, only the callsign from Master.scf will be highlighted; you will have to enter the longer call sign by hand
 - **Highlight Foreground Text** – call sign text will be in the highlight color on the normal background
 - **Highlight Background of Text** – background color surrounding call sign will be changed to the highlight color
- **Alignment Frequency** – frequency used by the Align button = preferred audio frequency. If you are using FSK RTTY, be sure to set the RTTY alignment frequency corresponding to your radio's transmit frequency (i.e.

set Align frequency to your radio's Mark frequency in MMTTY, Mark frequency + 85 in MMVARI and Fldigi)

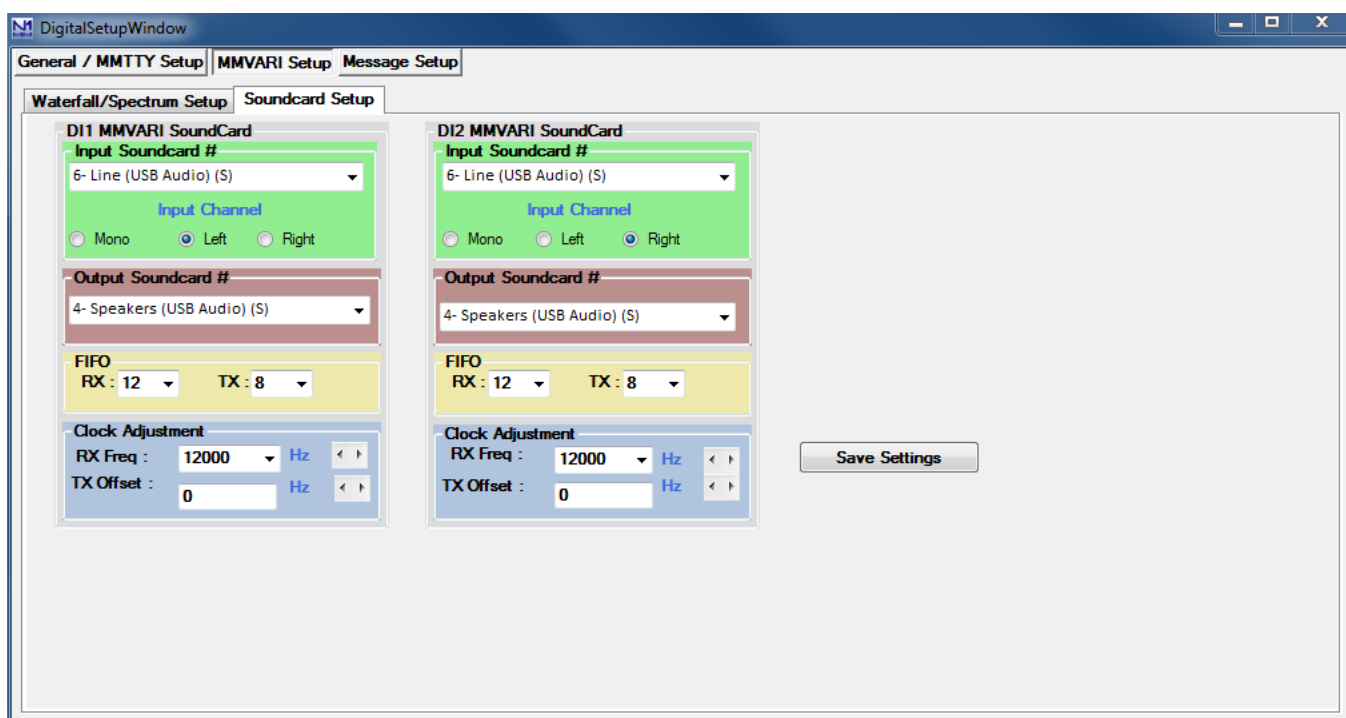
- **MMTTY** – RTTY alignment frequency. This is the Mark frequency
 - **MMVARI** – Alignment frequencies for MMVARI
 - **RTTY** – RTTY alignment frequency in MMVARI
 - NB Add 85 to place MMVARI's Mark Frequency on desired frequency. Example: For 2125 Mark, enter 2210
 - **Other** – alignment frequency for other modes than RTTY (e.g. PSK)
 - **FLdigi** – Alignment frequencies for Fldigi
 - **RTTY** – RTTY alignment frequency in Fldigi
 - **Other** – alignment frequency for other modes than RTTY (e.g. PSK)
- **Default RTTY Interface** – Select the preferred RTTY interface. Choices are: MMTTY, MMVARI, FLDIGI, TNC or DXP-38
 - **Default PSK Interface** – Select the preferred interface for PSK (and other sound card modes). Choices are MMVARI or FLDIGI
- **MMTTY Window Layout**
 - **Normal** – The normal size MMTTY window is shown, including waterfall/spectrum, menu bar and control buttons
 - **Small** – The small size MMTTY window is shown, i.e. waterfall/spectrum display only
 - **Control Menus** – Shows waterfall/spectrum plus menu bar
 - **Control Buttons** – Shows waterfall/spectrum plus control buttons
 - **Save Settings** – Save the configuration changes you just made. If you want to back out without saving the changes, click on the X in the upper right corner to close the window; the program will ask you whether you are sure you don't want to save the changes

Tab: MMVARI Setup



- **Waterfall/Spectrum Setup**
 - **Waterfall/Spectrum/Misc Color palette** – The colors that make up the color palette can be changed to represent whatever colors you would like. The colors go from the weakest signal on the left to the strongest signal on the right. There is a color palette setting for the Waterfall, Spectrum and for Miscellaneous colors. The Default button changes the colors back to the default colors
- **AFC Search Range** – This is how far in Hz the interface will track a drifting signal i.e the frequency sweeping width (+/-Hz) for the AFC
 - Sense Level – specifies the S/N level (dB) for the wide AFC. When the search range is less than or equal to 50 Hz, the wide AFC does not function. The sense level is applied to all the RX channels
- **Digital Output Level** – specifies the digital output level in the range of 0 to 32767. The default value is 16384
- **Use TNC Software for control** – When selected N1MM logger will release the serial port for the TNC so the soundboard in the TNC can have control. When using an external TNC the internal soundboard can be used
- **# of MMVARI channels** – Number of MMVARI channels to use. Choices are 1, 2, 3 or 4
 - Note that if this is set to 1, you have the option to select the Multi-Channel Rx menu item in the MMVARI menu bar, but when it is set to 2, 3 or 4 this option is not available
- **MFSK** (MFSK only)

- **Handling Center Frequency** – When selected the center frequency is used for the carrier frequency. When not selected the base tone frequency is used for the carrier frequency
- **Use Metric Level Squelch** – Select to use the metric level for the squelch. When not selected the S/N level is used for the squelch
- **Squelch Level** – This level represents the noise level where you would like the interface to start copying signals. 0 indicates an open squelch and everything will be decoded
- **High Pass Filter** – Select 'Use High Pass Filter' to use the internal high pass filter for RX. Although this is unnecessary with most soundcards, it sometimes is effective for eliminating hum in the input audio
- **Spectrum Lower Freq** – the lower frequency to display when the Spectrum view or Waterfall is active
- **Spectrum Upper Freq** – the upper frequency to display when the Spectrum view or Waterfall is active
- **CW ID**
 - **Enable** – If this check box is checked (Enabled) the interface will send the string entered in the field (Enter CWID String) in CW after every transmission. A * will be substituted by SK, + by AR and = by BT
- **Save Settings** – Save the configuration changes you just made. If you want to back out without saving the changes, click on the X in the upper right corner to close the window

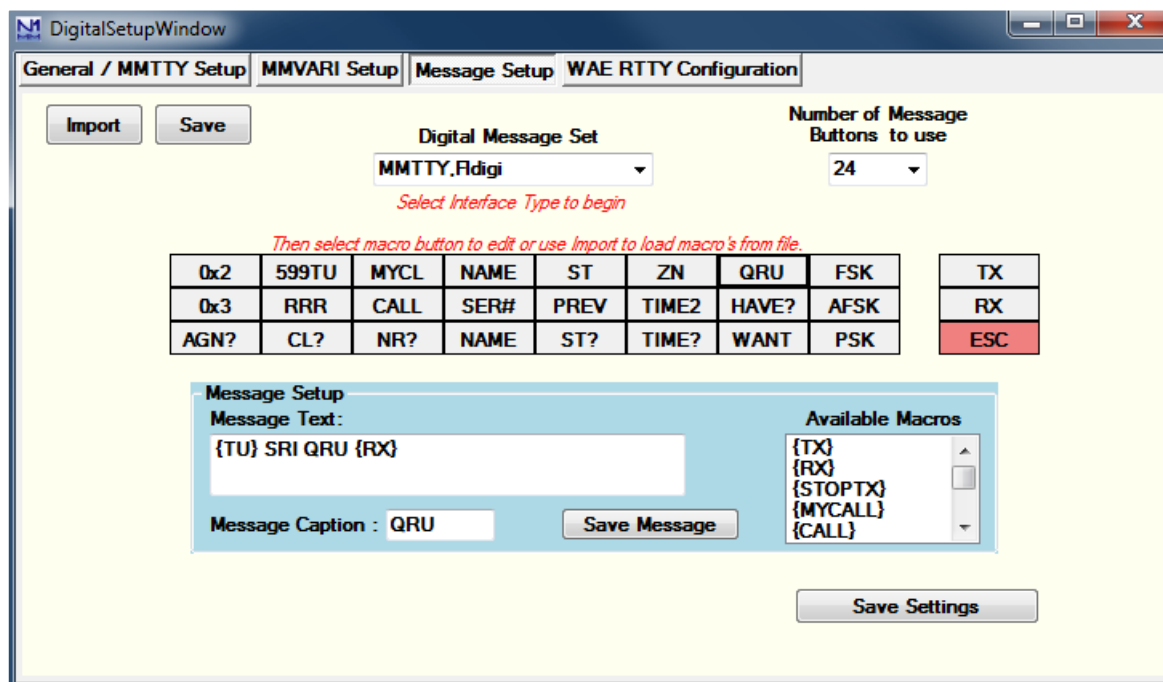


-
- **Soundcard Setup**
 - **DI1/DI2 MMVARI Soundcard**
 - **Input Soundcard #** – Select the input soundcard to be used
 - **Input Channel** – Select the input channel. Mono, Left channel or Right channel
 - **Output Soundcard #** – Select the output soundcard to be used)
 - **FIFO**
 - **RX** – specifies the depth of the RX FIFO buffer. Valid values are 4 to 32
 - **TX** – specifies the depth of the TX FIFO buffer. Valid values are 4 to 32
 - **Clock** – Soundcard Clock adjustment
 - **RX Freq** – specifies the sampling rate
 - **TX Offset** – the offset of the TX frequency compared to the RX frequency (some sound cards have an offset between record and playback)
 - **Save Settings** – Save the configuration changes you just made. If you want to back out without saving the changes, click on the X in the upper right corner to close the window

Tab: Message Setup

This tab is where you can edit the message buttons that are displayed in the lower part of the DI window. In addition to selecting this tab from the DI Setup window, you can also open this window by right-clicking on one of the buttons.

There are four separate sets of message buttons stored in the database, one for each type of digital interface (MMVARI, MMTTY/2Tone/Fldigi, TNC and DXP38). Before importing, exporting or editing buttons you need to select the particular message set you will be working on.



- **Import** – Once a message set has been selected under **Digital Message Set**, you can import buttons for that set from a .mc file using the **Import** button
- **Save** – You can save the current message buttons in a .mc file in the N1MM Logger+ user files area by using the **Save** button
- **# of Messages** – Select the number of message buttons to be displayed in the DI window. You can select 0, 8, 16 or 24
- **Digital Message Set** –
 - Select an interface type from the drop down menu. Choices are:
 - **MMVARI** – messages for the MMVARI interface
 - **MMTTY,Fldigi** – messages for the MMTTY, 2Tone and Fldigi interfaces
 - **Other** – messages for a TNC (such as a PK-232 or KAM)
 - **Dxp38** – messages for a DXP38
 - Click on the message button which is to be updated to transfer that button to the **Message Setup** area
 - The Macro buttons at the right are for TNC interfaces only. Enter the control codes that are needed to switch your TNC between RX and TX
 - *Only visible when Other is selected*
 - **RX** – Receive macro, i.e. the command(s) your TNC needs to put it into transmit. This will become the contents of the {RX} macro
 - **TX** – Transmit macro, i.e. the command(s) your TNC needs to put it back into receive at the end of a message. This will become the contents of the {TX} macro

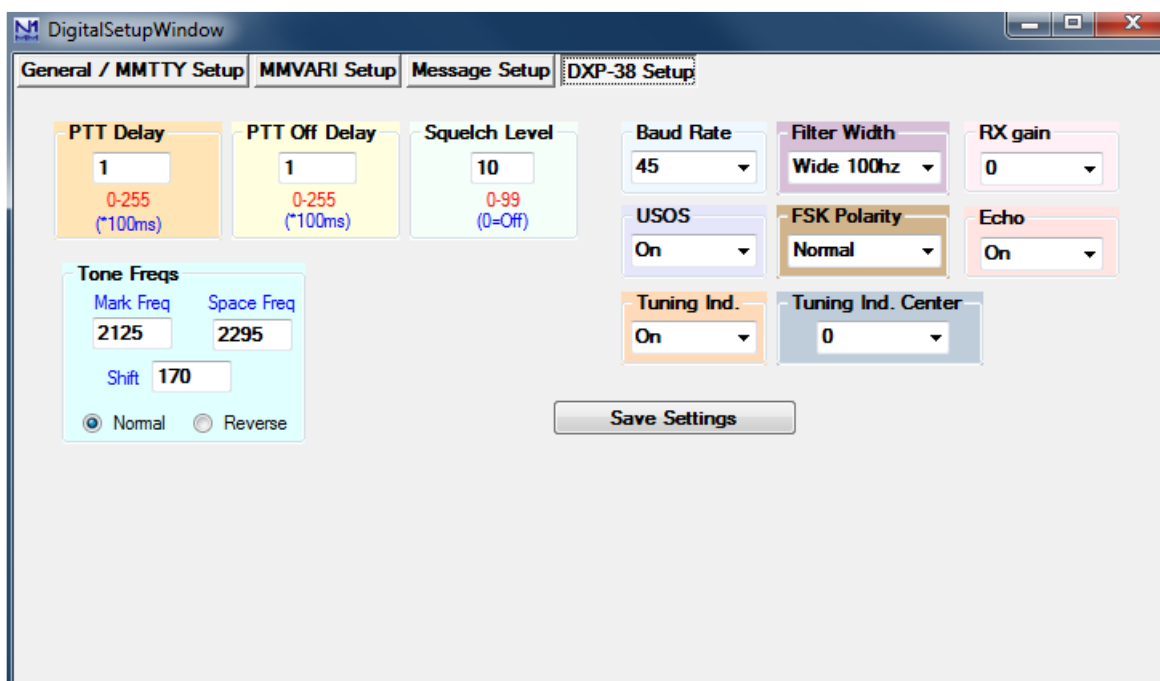
- **ESC** – Abort macro, i.e. the command(s) your TNC needs to abort an ongoing message immediately. This will be executed when you press the Escape key

- **Message Setup**

- **Message Text** – This is where the text of the message sent by the selected button is displayed and can be edited
 - **Message Caption** – This is where the caption that will appear on that button is displayed and can be edited
 - **Available Macros** – Shows the available macros that can be used in messages. Clicking on a macro will transfer it to the message text area
 - **Save Message** – Save the contents of the **Message Text** and **Message Caption** into the selected button
- **Save Settings** – Save the configuration changes you just made, i.e. the entire set of 24 buttons. If you want to back out without saving the changes, click on the X in the upper right corner to close the window

Tab: DXP-38 Setup

This tab will only show when the DXP-38 TU has been selected under the Digital Modes tab in the Configurer.



The various settings in this window are for setting up DXP-38 parameters. Consult the DXP-38 manual for detailed instructions on setting them up.

- **Save Settings** – Save the configuration changes you just made. If you want

to back out without saving the changes, click on the X in the upper right corner to close the window

Digital - MMTTY for RTTY support

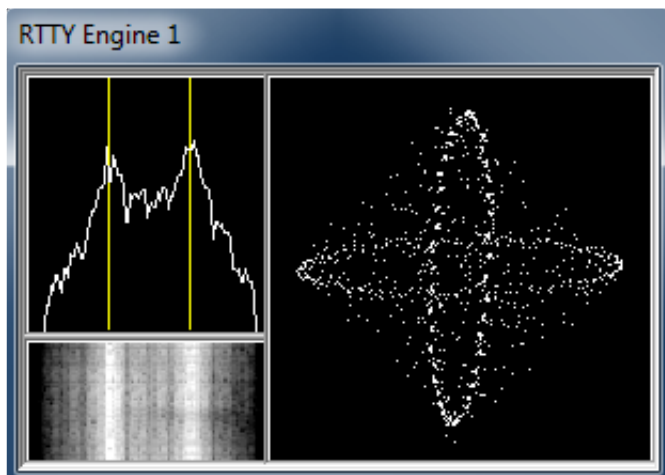
The MMTTY soundcard interface, which uses the MMTTY engine by Makoto Mori, JE3HHT, is the most popular method for RTTY. Amateurs who use RTTY are indebted to Mori-san for the positive impact MMTTY has had on amateur radio RTTY.

The 2Tone soundcard interface was written by David Wicks, G3YYD, as a replacement for the MMTTY interface in programs like N1MM Logger. It can be substituted for MMTTY as the digital engine used in any of the Logger's DI windows or Additional RX-only windows. The 2Tone windows are different in appearance from the MMTTY windows, but perform similar functions. These windows are described and documented in pdf files that you download with 2Tone.

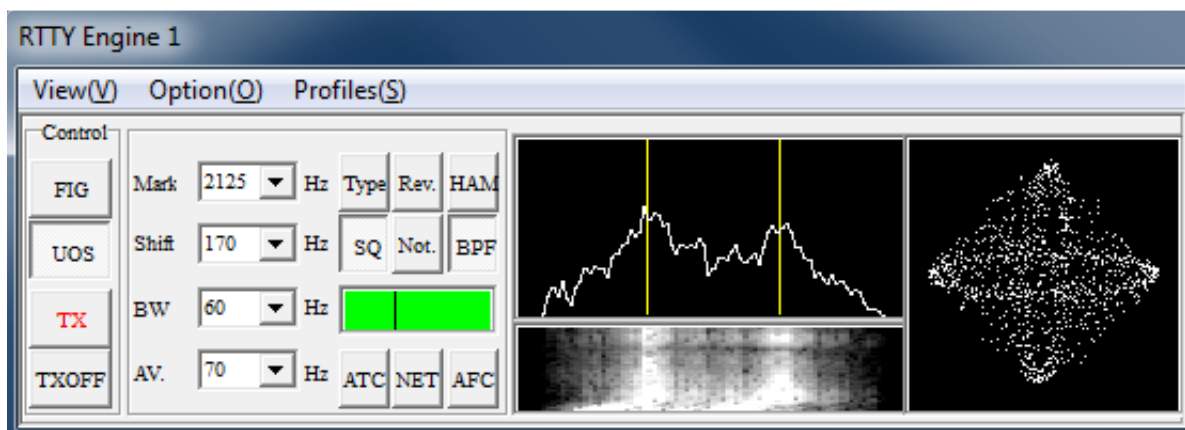
MMTTY Windows

When using MMTTY two windows will open.

- the N1MM+ Digital Interface window
 - this is the window where received and transmitted text appears, and where the primary operating controls are located
 - this window is similar for MMTTY, MMVARI, Fldigi and external Interfaces (TNCs or TUs). See the [Digital Interface](#) section
- the MMTTY engine window
 - the primary purpose of this window is for its tuning indicators, but you can optionally have it display some of the MMTTY engine controls as well – but unlike the stand-alone MMTTY window, there are no text panes and no macro buttons
 - there are four versions which can be selected in the Digital Interface menu under Settings.
 - Small version MMTTY engine window (tuning displays only):



- Normal, or Large version MMTTY engine window, including some control buttons for various MMTTY settings:



- Control Menus – small window plus the menu bar (View, Option, Profiles)
- Control Buttons – large window minus the menu bar

Note: In the larger windows with the control buttons, there is a TX button. However, this may or may not be operative, depending on whether PTT is controlled from MMTTY (often the case for FSK keying, but rarely for AFSK) or from N1MM+ (such as PTT via Radio Command or from a Winkeyer). In either case, the TX button in the N1MM+ Digital Interface window will always work if the hardware configuration is correct.

Download, Configure and Test MMTTY

Download MMTTY

- Download the installer for the current release of MMTTY [here](#)
 - At least version 1.64 is needed; version 1.68A or later is

recommended

- Run the installer program and install MMTTY to your computer in its own directory
 - In Windows 7, 8, 10 and Vista, you must install MMTTY to somewhere other than the Program Files or Program Files(x86) directories (for example, you can create an installation folder such as C:\MMTTY or C:\HamRadio\MMTTY)
 - If you are using a standard USB-to-serial adapter for FSK keying, you will probably need to use the EXTFSK plug-in. You can find a link to EXTFSK on the MMTTY download page (near the bottom of the page). Go to the EXTFSK page, then download the ExtFSK106.zip file from the link at the bottom of that page and unzip it into the MMTTY program folder
 - Users with high-performance multi-core CPUs (typically a 2.4 GHz i5 or faster Intel based system or 2.4 GHz quad core or faster AMD based system running Windows 7, 8 or 10 or Windows 8) may be able to use EXTFSK64 instead of EXTFSK. EXTFSK64 has improved timing relative to EXTFSK, it supports speeds other than 45.45 baud, and it can be used with LPT ports on 64-bit systems, but its CPU requirements are much greater than those of EXTFSK. See <http://www.qsl.net/ja7ude/extfsk/indexe.html> for more information and downloads
 - When you run MMTTY from inside N1MM Logger+, you will likely want the MMTTY configuration to be different from the configuration used when MMTTY is run stand-alone. MMTTY always saves its configuration data to files within its program folder. Therefore, any copy of MMTTY that is used from within the Logger should be stored in a different folder from the main MMTTY folder. This can be a separate sub-folder in the MMTTY program folder (but **not** in the C:\Program Files or C:\Program Files(x86) path), or it can be a folder in the N1MM Logger+ user files area, which is normally in your My Documents folder (e.g., you can create a DigitalEngines sub-folder in the Logger+ user files area and then create separate subfolders in that folder for each copy of MMTTY you wish to run from within the Logger; one for DI-1, one for DI-2, and one for each additional RX-only window you might want to use it in). Then copy only the following files from the main MMTTY program folder into the new folder(s): MMTTY.exe, MMTTY.ini, UserPara.ini, and if you need it for FSK transmitting, Extfsk.dll or Extfsk64.fsk. If you use more than one copy of MMTTY (e.g. for SO2R/SO2V, or for additional RX-only windows), each copy must be installed in its own folder
- The 2Tone engine, which can be used as a drop-in replacement for MMTTY, can be downloaded from the G3YYD folder in the Files area of the N1MMLoggerPlus user group at groups.io, in the form of a zip file containing

the 2Tone engine together with documentation for installing and using it. Each copy of 2Tone you plan to run (from DI windows or additional RX-only windows) must be placed in its own folder, the same as described above for MMTTY

Configure MMTTY

FSK KEYING

1. In the N1MM Logger Entry window, select >Config >Ports, Telnet Address, Other >Digital Modes tab

- Select Soundcard as your Interface type
- Select for the selected Digital Interface as MMTTY, Mode FSK
- Select the path to your MMTTY directory (for DI-2 if you are configuring for the second DI window)

2. Save and exit the Configurer

- If MMTTY is already loaded you may get an error message about not being able to open port xxxx. This is not a problem at this point; note that you can always re-initialize MMTTY by closing and re-opening the Digital Interface window

3. Open the Digital Interface window (under the Window menu)

- Select the Interface > MMTTY menu item in the DI window
- Select: Option > Setup in the MMTTY window, or use the DI window's Setup > Setup MMTTY menu item
 - Select the TX tab and under PTT, set the serial port that you will be using for FSK keying; if you also use this port in other modes for CW or PTT keying, the Digital and CW/Other check boxes in the Configurer should also be checked for this port, and the DigWndNr in the setup dialog box for that port must indicate which DI window the port will be used with (1 or 2)
 - If you are using a control line other than TxD for FSK keying, you must select EXTFSK or EXTFSK64 as the serial port and configure the port and signal line information in the EXTFSK window. If you are using a USB-to-serial adapter, you will most likely also have to select EXTFSK or EXTFSK64 as the serial port and configure the port and signal line information in the EXTFSK window, as most USB-to-serial adapters are not capable of keying FSK RTTY without EXTFSK
 - Note that MMTTY's Radio Command port must be set to NONE; if you use MMTTY's Radio Command port when running MMTTY stand-alone, you must reconfigure MMTTY

not to use this port when it is run from N1MM Logger+

- Select the Misc tab in the MMTTY Setup window and check COM-TxD(FSK) for the Tx Port
 - If you are using a USB device to do FSK keying, click on the USB Port button and set the option to C. Limiting Speed
- Select the Sound Card tab (in MMTTY version 1.66G or later) and choose the correct sound card for Reception (the Transmission sound card is not used in FSK) (Note: Users of newer versions of Windows should consult the text box on sound card selection in Windows 7 in the section below on AFSK, as the same issues may apply to sound card selection for reception in FSK.)
- If you are using two copies of MMTTY to decode signals using the two channels of a stereo sound card for different receivers (SO2V) or different radios (SO2R), select the Misc tab again and in the Source pane, select either “Left” or “Right”, depending on which channel you want this copy of MMTTY to decode
- Close the MMTTY Setup dialog
- Close the Digital Interface window to have the Logger and MMTTY save the settings

Using the RIGblaster Interface for FSK with N1MM/MMTTY

The default for FSK via MMTTY is TxD. You'll need to change the jumpers when using a RIGblaster. Also, make sure you get MMTTY working as a standalone first. Then you should just be able to specify MMTTY (select Soundcard) in the Digital Interface config in N1MM and it should take off.

AFSK KEYING

1. Open the Configurer (Configure Ports, Telnet Address, Other in the Config menu).

- Select the Digital Modes tab
 - Select Soundcard as your Interface type.
 - Select for the selected Digital Interface as MMTTY, Mode AFSK
 - Select the path to your MMTTY directory (for DI-2 if you are configuring for the second DI window)
- Select the 'Hardware' tab
 - You can let N1MM Logger+ control PTT, or if you don't use PTT in other modes and want to have MMTTY control PTT, you can configure MMTTY to control PTT from a serial port. You can time-share a serial port between CW/PTT keying in N1MM Logger+ and PTT from MMTTY; to do this, you must place a check mark under the Digital column beside the port that you are using for the digital port
 - If you are using VOX or an external VOX unit like the Signalink interface to control PTT, you don't need to configure anything for it in the Logger

-
- If you have checked the Digital box, click on the Set button and set the Dig Wnd Nr to 1 (or 2 if you are configuring for DI-2)
 - If you are using 2Tone in place of MMTTY, do not check the Digital check box for your PTT port

2. Save and exit the Configurer.

3. Open the Digital Interface window (under the Window menu)

- Select the Interface > MMTTY menu item in the DI window
- Select: Option > Setup in the MMTTY window, or use the DI window's Setup > Setup MMTTY menu item
 - If you are using 2Tone rather than MMTTY, you will make the configuration settings below in the 2Tone Setup window, which is opened from the 2Tone window
 - If you have chosen to have MMTTY control PTT (not applicable with 2Tone), select the TX tab and under PTT, set the serial port that you will be using for PTT. If the port is being time-shared with other modes, this should be the same port that you checked the Digital box for in the Configurer
 - Note that MMTTY's Radio Command port must be set to NONE; if you use MMTTY's Radio Command port when running MMTTY stand-alone, you must reconfigure MMTTY not to use this port when it is run from N1MM Logger
 - Select the Misc tab and check Sound for the Tx Port
 - Select the SoundCard tab (in MMTTY version 1.66G) and choose the correct sound card for both Reception and Transmission (users of Windows 7, Vista and newer versions should read the note below)
 - If you are using two copies of MMTTY to decode signals using the two channels of a stereo sound card for different receivers (SO2V) or different radios (SO2R), select the Misc tab again and in the Source pane, select either "Left" or "Right", depending on which channel you want this copy of MMTTY to decode
 - Close the Setup dialog
- Close the Digital Interface window to have the Logger and MMTTY save the settings

Sound Card Selection in Windows 7, 8, 10 and Vista

In earlier versions of Windows, selecting the sound card was relatively straightforward. Windows assigned a number (or two numbers, one for recording=receiving and one for playback=transmitting) to each sound card device when it was installed, and that number could usually be relied upon not to change. Once you had selected the desired sound card in MMTTY, you were finished with the sound card configuration.

Starting with Vista and continuing in Windows 7, 8 and 10, Windows has made life for sound card users more complicated. The list now enumerates each active input or output as a separate device. The list of active inputs or outputs can change dynamically. Plugging or unplugging a cable into one of the jacks on a sound card can create or delete a new entry on the list. Windows power management can turn a USB port off if it has not detected any keyboard activity for some time, causing any inputs or outputs on a USB sound card on that port to be removed from the list. When the computer is restarted or reawakened after hibernating or sleeping, the list may be reconstructed and if there have been changes since the last restart, the order of devices on the list may change. If you are using a radio with a built-in USB codec, turning the radio on or off will add or remove that codec to/from the list. If any of these changes in the list results in a different number being assigned to a device you are using in MMTTY, that device will appear to stop working and you will have to readjust the sound card configuration in MMTTY.

If this happens to you, the way to avoid it is as follows: Immediately before the contest, make sure that every sound card or codec that you plan to use during the period of the contest is turned on and stays on for the duration. Verify your sound card configuration immediately before the contest and then avoid doing anything during the contest that might result in a change to the list. Disable power management features that might result in a USB port you are using being shut off by Windows (these include not only advanced settings including USB selective power suspend under Power Options in the Windows Control Panel, but also power management settings for each Generic USB Hub and USB Root Hub in Device Manager). If you are using the USB codec inside a radio, always turn on the radio before opening the DI window, and close the DI window before turning off the radio; preferably, don't turn the radio off during the contest. Fortunately not all of these precautions will be necessary in every case, but you should be aware of the possibility just in case.

Another wrinkle introduced in newer versions of Windows is that with some sound cards, the default for the sound card input in the Windows Control Panel may have been set to single channel (mono) instead of two channels (stereo). If you are planning to use both channels of a stereo sound card to decode signals from two receivers (SO2V) or two radios (SO2R), you may need to verify that the default recording format for that sound card input is set to two channels. This is done via the Windows Control Panel (Sound > Recording > select the input you are using and click on Properties > Advanced)

While you are checking the default recording format for number of channels, you will likely also have the choice of setting the sample rate and bit depth. Bit depth is not a problem (16 bits is fine), but the sample rate has become an issue in Windows 7, 8 and Vista. The sampling speeds in all applications that are using the same sound card in parallel should be the same, and they should be integer sub-multiples of the hardware sampling rate. The default sampling speed in MMTTY is 11025 Hz, which is suitable for a sound card that is set for CD quality (44100 Hz). However,

the sampling speed in 2Tone is 12000 Hz, which is suitable for a sound card that is set for DVD quality (48000 Hz), and it is not user-adjustable. Your best bet is probably to set the sound card's sampling rate to 48000 Hz (DVD quality), and to change the sampling speed in MMTTY to 12000 Hz (MMTTY Setup window, Misc tab, lower left corner – it's called "Clock").

Finally, if at all possible make sure that the sound card you select for digital modes has not been set to be the Windows default sound input or output device. Setting one of the inputs or outputs on a sound card to be the Windows default can disable other inputs or outputs on that sound card, which can make it very difficult to configure those devices in digital mode programs.

Testing MMTTY

MMTTY is also a stand-alone application, so testing can be done outside N1MM Logger+. You can use the originally-installed copy of MMTTY for stand-alone testing. Configuration changes you make in the stand-alone copy will not be applied to the copies that you run from inside the Logger; once you have settled on a setup item in one copy, if you want that same item to apply in other copies you will have to use the Setup window from within each separate copy to change that item.

Dual Receiver/Dual Radio Setup

In a dual-receiver setup (SO2R or SO2V), you may wish to be able to copy two separate RTTY signals (e.g. on two separate bands or two separate frequencies) simultaneously. To do this, you would open two Entry windows (VFO A/Radio 1 and VFO B/Radio 2) and open the Digital Interface window from each Entry window. You can then run MMTTY (or other digital interface engine, such as 2Tone) from each of these DI windows.

The two audio streams from the two receivers can either be decoded by two separate sound cards, or in a single stereo (two-channel) sound card using the left and right channels for the two receivers. In either of these situations, the two copies of MMTTY must have different configurations; in particular, each one must be configured to use a different channel of the sound card, or a different sound card. In the case of a dual radio setup, if you are using FSK on both radios and/or if MMTTY is used to control PTT on both radios, each copy of MMTTY would also have to have access to its own serial port for PTT & FSK. This is also true in SO2V setups in order to enable transmitting from either VFO; even though there is only one FSK keying input to the radio in SO2V, the two DI windows need two separate serial ports for FSK keying, both connected to the same keying input on the radio.

These serial ports are configured in MMTTY. You must set up each copy of MMTTY to use its respective serial port by choosing the relevant serial port in the PTT & FSK Port box under the TX tab in the MMTTY Setup window. If one or both of these ports

is time-shared with N1MM Logger+ for CW/PTT keying, then in the Configurer you must indicate this with check marks in the Digital column (Note: in order to check two Digital mode ports in the Configurer, you must be in SO2V or SO2R mode). You must also click on the Set button for each port in the Configurer and set the Dig Wnd Nr to 1 or 2, to indicate which of the two DI windows that serial port will be associated with.

If the two copies of MMTTY are to use different channels of the same sound card, each copy must be configured to use its respective channel on the sound card under the Misc tab in the MMTTY Setup window; or, if they are using different sound cards, each copy must be configured to use its own sound card under the SoundCard tab.

In order to support separate configurations for the two copies of MMTTY, each copy must be located in a separate folder. You can either use the main MMTTY program folder for one copy and a separate subfolder for the other copy, or you can create two subfolders for use by the Logger, leaving the copy in the main MMTTY program folder for stand-alone use. These subfolders must each contain, at a minimum, a copy of the MMTTY.exe file and the UserPara.ini file from the main MMTTY program folder. A copy of MMTTY.ini will be created the first time MMTTY is run from the folder if it was not previously present. If you are using the EXTFSK plugin, you will need a copy of the extfsk.dll file in the folder as well (or the extfsk64.fsk file if you are using EXTFSK64). Other files from the main MMTTY program folder are not used.

The Logger's DI windows have an additional RX window feature as well. Up to four additional RX-only windows can be invoked from the Setup menus in the two DI windows. They can use either hardware decoders, MMTTY or 2Tone, but the most common use is for separate copies of MMTTY or 2Tone using different decoding algorithms or profiles on the same data stream. Because they are receive-only, these windows do not need access to serial ports and are not configured in the Configurer. However, to be fully useful, although they most likely will share the same sound card and channel with their parent DI window, they do need to have separate setups from the main copy of MMTTY (e.g. to use a different decoding algorithm or profile). Therefore, if you wish to use these additional RX-only windows with MMTTY, you will need to create additional folders, one for each additional window, containing copies of the MMTTY.exe, MMTTY.ini and UserPara.ini files (or if you are using 2Tone instead of MMTTY, the 2Tone.exe, MMTTY.ini and 2Tone.ini files). These additional folders do not have to be created at the time you first install MMTTY, i.e. you don't need to do this until you are ready to use the additional RX windows. In Windows 7, 8 and Vista, all of these folders must be outside the Program Files and Program Files(x86) paths.

Using MMTTY

- Messages must begin and end with {TX} and {RX}; these macros tell MMTTY to perform PTT switching

-
- There is no special abort macro needed for use with MMTTY; just using the ESC key will stop transmitting
 - The TX and RX buttons in the DI window can be used for free form typing in the TX window pane of the DI window

How to Tune RTTY

- Use the VFO on your radio and dial in the peaks to match the 2 yellow lines on the spectrum
- Click view and the X-Y scope to see a crossed-ellipses tuning display
 - If the X-Y display seems to rotate in the wrong direction, open the MMTTY Option > Setup window (or the DI's Setup > Setup MMTTY menu item), select the Font/Window tab and check (or uncheck) the Reverse rotation button
- Make sure you click the "HAM" button to set MMTTY to the correct mark and shift settings
 - The default values for the HAM setting can be changed under the Demodulator tab in the MMTTY Option > Setup window
- It's better to turn AFC off when you are in a crowded section of the band and manually tune the signals; if you leave AFC on, nearby strong signals may pull the tuning away from the signal you want to copy
- Also in crowded sections it can be helpful to use the built-in notch and bandpass filters
- If you are using AFSK, unless your radio has a specialized mode for AFSK RTTY, the conventional choice with MMTTY is to use LSB on all bands
 - If you use USB, make sure you click the "Rev" button in MMTTY
- If you are using FSK, you need to be aware that NET does not work, and that tuning in a received signal by clicking in the waterfall or by allowing AFC to tune in the signal will result in your receive frequency being different from the transmit frequency. The "HAM" button will restore the correct audio frequency in your receive decoder but without retuning the radio. The "Align" button in the DI window can be used to retune your radio so that the received signal is lined up with your radio's transmit frequency

When Should I Use AFC?

- Use AFC (automatic frequency control) when MMTTY should automatically track the incoming RTTY signal. The best example of this is when you are CQing and want to tune in off-frequency callers
- With AFC and NET both turned on, MMTTY will track the incoming signal and also keep your transmitter frequency locked to the received signal when using AFSK (NET does not work in FSK)

When MMTTY is set to transmit FSK, AFC will work on receive only. When in "Running" mode, you want to keep your TX frequency stable, but with RX AFC set on you can pick up stations who reply a bit off your frequency and copy the

exchange without losing your TX spot. Just don't let the AFC spread get too far from where you're transmitting.

- A nice option to use is: AFC On/Off with CQ – If set then the AFC will turn on with CQ message or TU messages. This way when Running the AFC is on and during S&P the AFC is off

When Should I Use the NET Option: NET On/Off with Run Change

NET only operates in AFSK. If you are using FSK, your transmit frequency is fixed by your transmitter, and the NET software feature does not work.

- When in 'Search and Pounce' mode the program will check the NET option so that once you tune a signal in, you will transmit on the same frequency you are receiving him on (Warning: this doesn't work in FSK)
- When in 'Running' mode the program will uncheck the NET option, which allows your receive decoder to follow an off-frequency caller while still leaving your transmit frequency unchanged

Why to Use "Auto Update TRX Offset w/Mark Freq."

If you are using FSK RTTY, most radios display the actual mark frequency on the tuning dial. A few even do this in AFSK RTTY. If your radio is like this, you don't need to use this option. The DI window title bar may display an offset frequency (radio dial (+/-) audio), but if this option is turned off the offset frequency will not be logged and you can ignore it.

If you are using AFSK RTTY, especially with the radio in LSB or USB mode, as well as when you are doing a sound card digital mode like PSK (using MMVARI or Fldigi), the radio probably displays the suppressed carrier frequency on its dial. This is different from the mark frequency. If you are using the default mark frequency of 2125 Hz, the radio's dial display will be 2125 Hz too high (LSB) or too low (USB) as compared with the actual mark frequency. By checking this option, N1MM Logger will perform the correction automatically and display the actual mark frequency in the Entry window and the Bandmap window, as well as in the DI window title bar.

Using MMTTY for 75 baud RTTY

There are some RTTY contests that specify 75 baud (100 wpm) RTTY instead of the usual 45.45 baud (60 wpm) speed. MMTTY can be used for 75 baud RTTY, but there are a few quirks:

- If you use EXTFSK for FSK keying (e.g. via a standard USB-to-serial adapter), you will not be able to use this combination for 75 baud. *EXTFSK does not support 75 baud*. Instead, you must reconfigure for AFSK
- If your CPU is capable of running EXTFSK64, it can be used in place of

EXTFSK. EXTFSK64 supports 75 baud; see

<http://www.qsl.net/ja7ude/extfsk/indexe.html> for information on EXTFSK64

- In the MMTTY Setup window, select the Decode tab, and at the top of the window, for BaudRate select 75
- If you are using MMTTY version 1.68 or newer, in the MMTTY Setup window under the Demodulator tab, in the section labelled HAM Default, UNcheck the “Fixes 45.45 baud” check box
- If you are using an older version of MMTTY, you will need to be aware of the following:
 - The pre-version 1.68 MMTTY HAM Default button cannot be used in 75 baud RTTY; *if you press HAM, the speed will be reset to 45.45 baud*. Besides not pressing the HAM button in the MMTTY window, there are a couple of other setup items you need to take care of:
 - In the DI Setup window, under the General/MMTTY Setup tab, make sure the following item is NOT checked:
 - **(MMTTY)Send HamDefault on Run to S&P Change** (*if you forget to uncheck this item, you will be switched back to 45.45 baud every time you switch from Run to S&P*)
 - If you are using FSK with a true serial port or with an interface that supports FSK without using EXTFSK (e.g. a microHAM microKeyer), turn AFC off in the MMTTY window, and make sure the following item in the DI Setup window is NOT checked:
 - **(MMTTY - MMVARI)Turn AFC On/Off on Run Change** (*if you forget to uncheck this item, AFC will pull your receive frequency off your transmit frequency and you will be unable to use the HAM button to correct the situation*)
 - In the DI Window’s Setup menu, UNcheck **AFC On/Off with CQ** (*same reason*)
 - If you are using AFSK and like to use AFC, you may continue to do so, provided you are careful to ensure that your transmit and receive frequencies stay together. The HAM button is not available to re-align your transmit and receive frequencies. Therefore if you are using AFC, you should have NET on as well, to keep your transmit and receive frequencies together. (Note: NET does not work in FSK)
- After the 75 baud contest is over, be sure to restore the 45.45 baud speed and any of the other configuration options you changed for 75 baud, in order to restore normal functioning

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MMVARI for PSK and Other Modes

The MMVARI Interface

The MMVARI Interface The MMVARI soundcard interface is based on the MMVARI engine by Makoto Mori, JE3HHT.

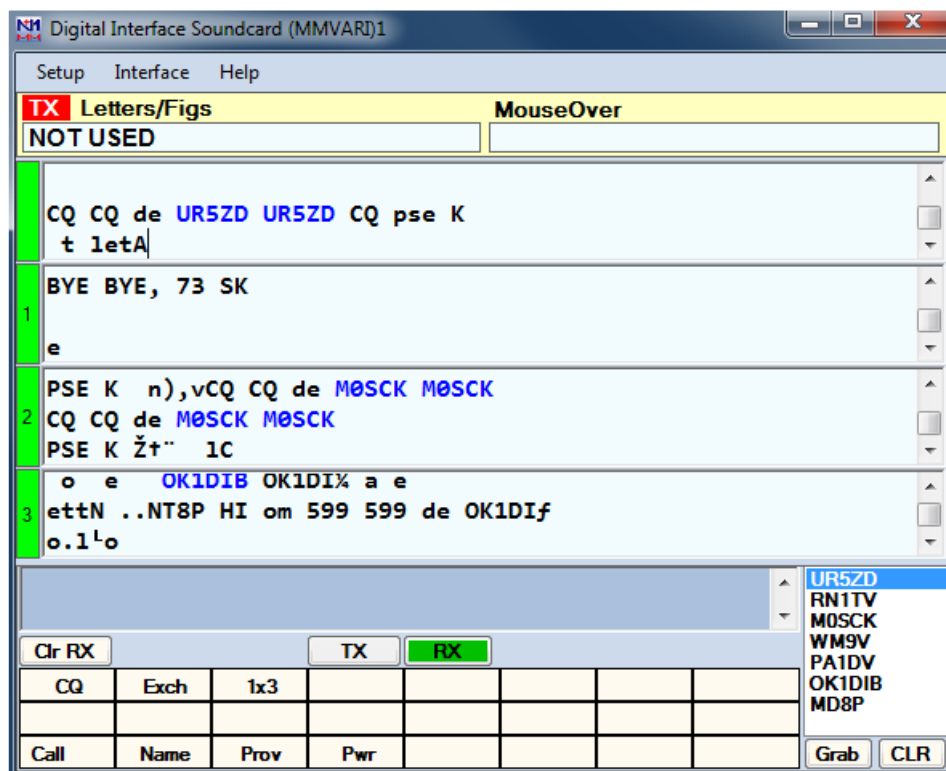
All modes from the MMVARI engine are supported including bpsk (e.g. PSK31 and PSK63), qpsk-L (LSB), qpsk-U (USB – e.g. QPSK63), also RTTY-L (LSB), RTTY-U (USB), MFSK-L (LSB) and MFSK-U (USB) as well as non-standard modes GMSK (HF), FSK (V/UHF), FSK-W (V/UHF, satellite). The -L and -U variants of some of these modes are there to allow you to choose which sideband you use on the radio. In other words, you are not restricted to using LSB for RTTY and USB for other digital modes; you can choose to use either USB or LSB on the radio, and if you have chosen the correct mode variant in MMVARI, it will adjust the audio tones it uses to correspond to the sideband you have chosen.

RTTY

MMVARI is capable of using FSK keying for RTTY (selected from the Configurer under the Digital Modes tab, using a specialized version of EXTFSK; this also requires the Logger to be started with the “Run as Administrator” option). Note that the “FSK” mode in the MMVARI mode box is an entirely different mode – it is **NOT** FSK RTTY.

The MMVARI engine does not have to be installed separately, it is included in the N1MM Logger+ program program/update files and is the default digital engine when loading the digital window for the first time.

The MMVARI Digital Interface Window



The Digital Interface window when using the MMVARI engine is sub-divided into several areas which will be covered from the top down.

- **TX** - Indicator to show which DI window the transmit is going to take place from (useful when using two DI windows for SO2R/SO2V)
- **Letters/Figs** - Shows the text under the mouse in the other case (FIGS/LTRS - RTTY only)
- **MouseOver** - Shows the text which would be selected where the mouse is positioned over
- **Receive Windows** - The MMVARI engine supports from 1 to 4 receive windows. The number of receive windows is selected from the DI window's Setup > Settings menu item in the Digital Settings window under the MMVARI Setup tab (# of MMVARI Channels). All of these windows operate in the same manner and you are able to grab callsigns from any of them and place them into the Entry window. Note that when the # of MMVARI Channels is set to 1, a different method of multiple RX channels becomes available (see **The Waterfall or Spectrum Window** below)

There is a narrow green pane on the left side of each receive window. By clicking on the green pane you can pause input to the receive window to scroll back through the (last 2000 lines of) text using the scroll bars. When the window is paused the color of the pane will turn yellow. To turn input to the window back on click in the pane again and everything that was to be printed to the window will now enter the window. When the receive window is paused it is possible to copy text in the

window.

If you click on a callsign using your mouse it will be put into the callsign field in the Entry window.

Also, whenever a callsign is printed to any of the receive windows followed by a space it will be sent to the callsign grab window for easy movement to the logging window by clicking the Grab button.

You can select any exchange info by single clicking on the sent info. This info will be transferred over to the logger Entry window item by item after the callsign is filled in.

The top receive pane is the window used for making QSOs. Selecting another frequency for this window is done by left clicking in the Waterfall or Spectrum window. Changing the frequency of the other three receive windows is done by moving the numbered marker above the waterfall to the desired location. You can also use the Swap buttons in the lower part of the Waterfall window to exchange the selected window with the top receive window.

- **Transmit window** – This is a free form typing window. If you click on the TX button the cursor will be placed into this window and whatever is typed will be sent. The size of this window is fixed at 2 lines
- **Callsign Textbox and Grab** – When a callsign is encountered in one of the receive windows (followed by a space) it will be placed in this textbox and when you press the Grab button it will transfer the callsign over to the main logger window. The grab callsign window holds the last 10 callsigns seen in the RX window. The most current one is at the top and is highlighted. A right click in this box brings up a menu to clear list or selected callsign. Dupe callsigns will not be shown in the grab window

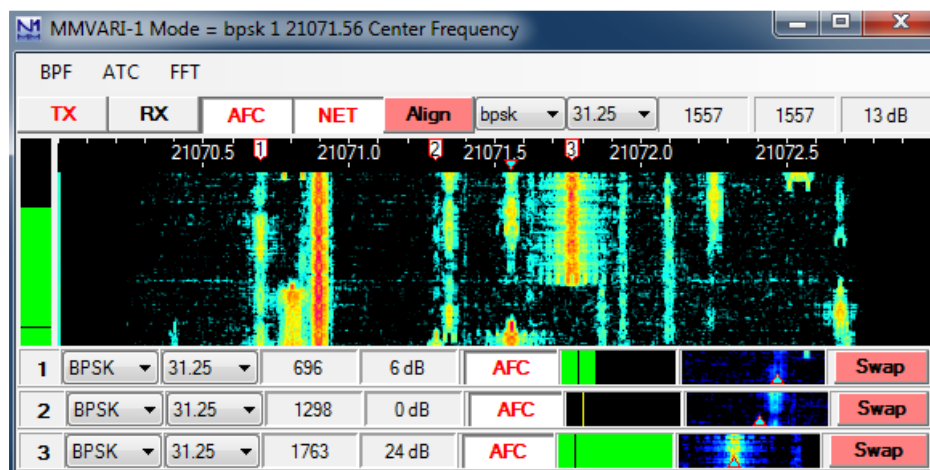
Note: If the callsign in the callsign field in the Entry window is the same as the callsign in the received text, the call in the Entry window does not get placed into the call list.

- **Clr RX** – Clear all receive windows
- **TX** – Places the interface into transmit, the transceiver is keyed, and places the cursor into the TX window for input. See the Radio Interfacing section for Parallel and Serial port info on configuring for hardware PTT
- **RX** – This will place the interface back into receive mode after all the characters in the transmit buffer have been sent. To abort transmit immediately without waiting for remaining characters to be sent, press the **Esc** key
- **Message buttons** – These buttons on the Digital Interface are up to 24 extra preprogrammed messages. Configuring these macros is done in the Digital Interface window under 'Setup, Settings' (Message Setup tab), or by right clicking on one of the buttons, which brings up the Digital Setup window. The button widths dynamically adjust in relation to the width of the

DI window. If the caption for a button is too long to fit on the button, the button will appear blank; you can cause the caption to appear by making the window wider, or you can edit the caption to make it shorter so it will fit

- **Grab** – Transfer the selected callsign in the callsign text box to the callsign field on the main logger window. The cursor advances to the exchange box ready to accept the exchange when you click on it
- **CLR** – Clears the grab window

The MMVARI Waterfall or Spectrum Window



The MMVARI digital engine window – This window uses the MMVARI control from Makoto Mori, JE3HHT. Across the top the title bar shows either the offset frequency (radio (+/-) audio) or the radio's dial frequency, depending on a setup option. As you tune your radio this will update and the numbers will change.

The screen shot here shows the window with four receive channels selected in the Digital Setup. There are cursors corresponding to each of the receive windows. The inverted triangle cursor, filled in in light blue, is for the main receive window. If NET is on, this is also your transmit frequency. If NET is off, there will be another inverted triangle filled in in dark blue indicating your transmit frequency. If you have more than one receive window enabled, a cursor with a number in it (1, 2, ...) corresponds to each additional receive window. To change frequency for the main receive window you can place your mouse pointer over a signal trace and click with your left mouse button. To change frequency for one of the other receive windows, you can click on the numbered cursor and drag it to the desired location in the waterfall.

TX Frequency and NET in FSK RTTY

Note that if you are using FSK keying in RTTY, MMVARI has no control over your transmit frequency. Your transmit frequency in FSK RTTY is fixed by the radio. Therefore, moving the dark blue transmit indicator does not change your actual transmit frequency in FSK RTTY. Likewise, the NET function is inoperative in FSK

RTTY.

- **Buttons above the waterfall**

- **TX** – Start the transmission, the transceiver is keyed and places the cursor into the TX window for input. See the Radio Interfacing section for Parallel and Serial port info for TX/RX switching (PTT)
- **RX** – Stops the transmission, the transceiver changes back to receive after all the characters in the transmit buffer have been sent. To abort immediately, press the **Esc** key
- **AFC** – Turns AFC on or off. Selected (white) means AFC on (Note: This button is greyed out and disabled when the Multi-Channel RX browser feature is enabled)
- **NET** – Turns NET on or off. Selected (white) means NET on. When NET is on the TX frequency follows the RX frequency (this function is inoperative in FSK RTTY)
- **Align** – This is used to move the signal under the receive indicator to the Alignment Frequency set up in the Digital Setup window. This can be used in most sound card modes to center the received signal in your filter bandpass, and in FSK RTTY it is used to align the received signal with your transmitter's signal

Example: Suppose the center of the filter pass band is 2200 Hz. When clicking on a signal at about 1400 Hz the signal may be difficult to copy unless you are using wide filters. To move the signal to the center of your filter bandpass, click **Align** and the rig shifts and the spectrum frequency shifts and places the station on the frequency that was initialized in the Digital Setup window in the Alignment Frequency area. This allows you to narrow your filter bandwidth around the selected signal. If you are using FSK keying for RTTY and if your receive frequency is not exactly on the center frequency of your radio's mark/space tone pair (e.g. 2210 Hz for the standard 2125/2295 "high" tone pair), then you can use the Align button to retune your radio so your receive and transmit frequencies will be aligned correctly.

- **Mode selection** – Select the mode to use by clicking on this button. The Speed selections are mode dependent. Selections are:
 - **GMSK** – MBCS experiment (HF) – Possible speed selections: **31.25, 62.5, 125, 250**
 - not used for contests
 - **FSK** – MBCS experiment (V/UHF) – Possible speed selections: **31.25, 62.5, 125, 250**
 - not used for contests
 - Do not confuse this mode with FSK RTTY – MMVARI's "FSK" mode is **not** FSK RTTY. MMVARI in N1MM Logger+ does support FSK RTTY, but this can only be selected from the Configurer, not from the MMVARI window
 - **FSK-W** – MBCS experiment (V/UHF, satellite) – Possible speed

selections: **31.25, 62.5, 125, 250**

- not used for contests
- **BPSK** – MBCS experiment (HF) – Possible speed selections: **31.25, 62.5, 125, 250**
 - for contesting purposes, BPSK and bpsk are equivalent
- **bpsk** – Standard BPSK (e.g. PSK31) – Possible speed selections: **31.25, 62.5, 125, 250**
- **rtty-L** – BAUDOT RTTY (LSB) – Possible speed selections: **45.45, 50, 56, 75, 100, 110, 150, 200**
- **rtty-U** – BAUDOT RTTY (USB) – Possible speed selections: **45.45, 50, 56, 75, 100, 110, 150, 200**
 - You may choose either AFSK or FSK keying method for RTTY in the Configurer under the Digital Modes tab
- **mfsk-L** – MFSK (LSB) – Possible speed selections: **15.625, 31.25**
- **mfsk-U** – MFSK (USB) – Possible speed selections: **15.625, 31.25**
- **qpsk-L** – QPSK (LSB) – Possible speed selections: **31.25, 62.5, 125, 250**
- **qpsk-U** – QPSK (USB) (e.g. QPSK63)- Possible speed selections: **31.25, 62.5, 125, 250**
- **Speed selection** – Select the speed to use in bps by clicking on this button. The speed to select is mode dependent as described above
- **Main Channel receive frequency** – audio frequency
 - In RTTY, MMVARI displays the center frequency, not the mark frequency as displayed in MMTTY
- **Main Channel transmit frequency** – audio frequency
- **Main Channel S/N reading**
- **The Waterfall or Spectrum Display**
 - At the top of the waterfall offset frequency (radio (+/-) audio) labels and tick marks are displayed
 - Receive channel markers
 - Top markers (tag cursors)
 - 1,2,... – frequency receive channel 1,2,...
 - N – indicates a notch filter
 - The light blue colored marker (inverted triangle on the waterfall) indicates the main RX frequency
 - The dark blue colored marker (waterfall) indicates the TX frequency if it is different from the main RX frequency (only possible if NET is off)
- **Mouse key clicking**
 - **Left mouse key clicking** – single clicking in the waterfall will change the main RX frequency
 - **Right mouse key clicking** – the audio frequency at the point clicked on will be shown. Also a menu will show:
 - **Set notch on here** – adds a new notch filter on the selected frequency indicated by a N in a yellow area. Multiple notches

can be set; you can clear an individual notch by right-clicking on the N

- **Delete all notches** – all set notches will be removed
- **Set TX Carrier on here** – can be used to set the TX frequency (with NET off)
- **Turn Off Bandpass Filter** – Turns the BPF off
- **RX 1 (2,3) Freq Here** – can be used to set the RX 1, 2, or 3 frequency here (only if the # of MMVARI Channels is greater than 1)

The left vertical indicator shows the signal level meter (green) and the squelch level (yellow line). By clicking on it the squelch level can be changed.

- **Receive channels below the waterfall**

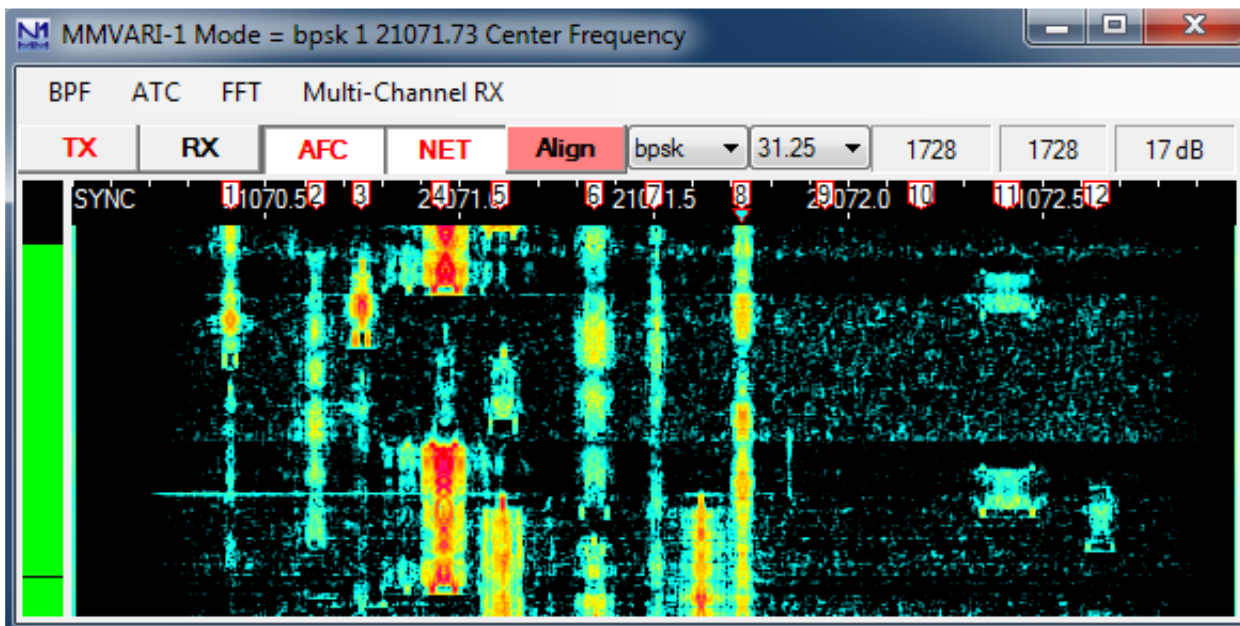
- If you have chosen to use more than one MMVARI channel, below the waterfall the additional receive channels will be shown. The number of additional channels below the main waterfall is one less than the total number of MMVARI Channels set, i.e. there can be up to three additional channels (up to four MMVARI channels in total – to display more than four channels, see the Multi-Channel RX feature below)
- **Mode** – Select the mode to use for this receive channel
- **Speed** – Select the speed to use for this receive channel
- **Receive channel frequency**
- **Receive channel S/N value**
- **AFC** – Turns AFC on or off for the selected channel. Selected (white) means AFC on
- **Squelch indicator** – The squelch can be adjusted by dragging the line indicator to where you want it and turning off the squelch by dragging it all the way left
- **Miniature waterfall display** – shows within 500 hz of the signal that that channel is on. You can click anyplace in this miniature waterfall or drag the indicator to where you want it
- **Swap** – Exchanges this receive window with the main receive window. While working one station, you can dial the second station in via a second receive window and after you finish the first contact just hit swap button and then call the other station. See below for an alternative method of multi-channel receive

- **Menu at the Top**

- **BPF** – Used to enable/disable an internal audio Band Pass Filter. The BPF filter has steep skirts and 80db of rejection outside the bandpass. However, because it is in the sound card and not in the radio, it has no effect on unwanted signals inside the radio, i.e. a strong unwanted signal inside the radio's IF filter bandpass can still trigger the radio's AGC and cause gain blocking, even though the signal has been rejected in the sound card by the BPF. You can only

prevent this by selecting narrow filters in your radio

- **Enable/Disable BPF** – turns BPF on or off
- **Wide 1000 Hz, Middle 500 Hz, Narrow 250 Hz, Ultra Narrow 100 Hz, Custom** – filter bandwidth settings (grayed out when the BPF is disabled)
 - To set Custom width after enabling the BPF, left click in the waterfall where you want the BPF bandpass to start. Drag your mouse with the left button held down and release it where you want the BPF bandpass to end. The waterfall display will immediately select the chosen Bandpass. This makes it simple to eliminate an offending station on the fly
 - The minimum width of the BPF that can be set is 100 Hz
- The BPF can be turned off by selecting **Disable BPF** on the BPF menu or by right-clicking in the waterfall and selecting **Turn off bandpass filter**
- The BPF settings are retained when you close and reopen the digital engine window
- **ATC** – Used to turn Automatic Timing Control (ATC) on or off. It is recommended to keep ATC on all the time for better signal decoding
 - when RTTY is selected ATC is always off
 - in MFSK mode ATC is always on
- **FFT** – FFT is Fast Fourier Transform, which is a method of extracting the spectrum out of a waveform. That is the basic tool that gives the waterfall and spectrum scope displays
 - **FFT Type** – Select the FFT display method. Selections are: Spectrum, Waterfall, Sync or Wave Input
 - **FFT Width** – Select the display width (frequency range). Selections are: 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz or User Defined. User Defined width is set in the Digital Setup window
 - **FFT Scale** – Select the vertical scale to use. Selections are: 100 dB, 60 dB, Square Amplitude
 - **Waterfall AGC** – Turn the waterfall AGC on or off
 - **Align after Left Click** – Automates the Align process. Any time a signal is clicked on in the waterfall, an automatic Align operation is performed to re-center the audio frequency on the Alignment Frequency you have selected in the Digital Setup window
- **SHIFT** – Shift selections. The choices are 170 Hz, 200 Hz, 23 Hz or User Defined
 - Only in RTTY-L, RTTY-U and GMSK
- **RTTY Demodulator** – select either IIR or FFT decoder. Depending on conditions, one may decode better than the other
 - Only in RTTY-L and RTTY-U



- **Multi-Channel Rx** – *This feature is only available when the # of MMVARI Channels in the Digital Setup window under the MMVARI Setup tab is set to 1. It is an alternative method of receiving multiple signals simultaneously with MMVARI*
 - **Enable Multi Channel Brower** – turns this feature on
 - When the Multi-Channel RX feature is turned on, there will be several numbered tag cursors at the top of the waterfall, and a separate browser window will open (see below). The number of channels is user-selectable (from 2 to 24)
 - Each line in the browser window shows text decoded under the corresponding numbered cursor
 - There is only one RX pane in the Digital Interface window, which displays text from the main RX signal under the light blue inverted triangle cursor
 - You can move the main RX cursor to the position of any of the numbered tag cursors simply by clicking in the corresponding small text window
 - You can use this feature to keep track of several separate signals being received. You can work each one in turn by clicking in the corresponding numbered text window to move the main RX/TX frequency (with NET on) to each numbered cursor position in turn (if NET is off, or you are using FSK RTTY, clicking in the text window only moves the RX frequency but not the TX frequency)
 - **Open/Close Multi Channel Brower** – turns the feature on or off (only visible after it has been enabled)
 - **Set Number of RX Channels** – you can select from 2 to 24 channels to display in the browser window
 - **Set AFC Search Level** – Used to set the signal level (S/N ratio) used

to determine whether a signal is strong enough to activate the AFC and cause the RX frequency to move to it (can be set from 1 to 20 dB)

- **Set AFC Search Range** – Each extra RX channel has AFC (automatic frequency control) which moves the cursor to keep it centered on a signal if the frequency changes slightly. This menu item is used to set the frequency range over which this feature operates (can be set from 100 to 500 Hz)
- **Set Spectrum Search Frequencies** – Allows you to set the lower and upper limits for the browser channels. The lower limit can be 250 Hz or higher, and the upper limit can be 2700 Hz or lower
- **Turn Channel Markers On** – If unchecked, channel markers will not be displayed
- **Show Audio Frequency Only** – if checked, audio frequencies will be displayed instead of RF frequencies

The Multi-Channel RX method allows you to keep track of more channels (max 24) than the older # of MMVARI Channels method (max 4) that you set up from the Digital Setup window. The memory for each channel is limited to 80 characters. You can click on callsigns in the callsign column of the browser window in order to transfer them to the Entry window, or in Dxpedition mode (see below), you can click on a callsign in the browser window in either the decoded stream or the callsign column to: move the RX cursor (and if NET is on, the TX cursor) to that channel, transfer the callsign to the Entry window, and transfer the last 80 characters decoded in that channel into the main RX window. All channels in the browser in this method will be in the same mode. In RTTY, clicking on the channel marker for a channel switches between normal and reverse decoding in that channel. (For another way to do multiple receive in PSK only, you can also try the PSK Browser in Fldigi).

MMVARI Multi-RX Browser-1			
Setup Clear			
1	21.070409	ID de U&EWN UR4WXN UR4WXN PSA K e e TAIZ5KI	UR4WXN
2	21.070627	EM CQ CQ CQ D tRG22EM RG22EM RG22ET CQ pc vu	TRG22EM
3	21.070749	d de ?die> FN de UR5EDC Hello old man Tk o for call R	UR5EDC
4	21.070974	/o ttt tttmr nnoo EXt@spc e v ee pr aee i e nr Z e i	EOTO2
5	21.071061	et eOwwar ie e i e eoe ~Eego>Eego~Eegoia etX Gmt	ET4I
6	21.071368	ett oW >Ik h op t asrt feOo6 n te- co G m ti E	FE006
7	21.071505	a 2 elemet quad qsl Frank ? WB9VKZ DE F5MFO Baeh	F5MFO
8	21.071728	e OH6XB OH6XB CQ CQ CQ de OH6XB OH6XB PSE K - I	OH6XB
9	21.071940	DO9Reegnnoem oCPT N4CPT N4CPT pse kn r ewee o	N4CPT
10	21.072189	et S	
11	21.072411	elo w-r e t ai Dt n tdi S ee el iGiT) odiGi T9oo t eie	
12	21.072639	ft:th=nb a euncr?7 4 [f e.lt tsne teeohc s p	5NU

Browser window in multi-channel RX

- **Setup** menu
 - **Set On Top** – check this if you want to ensure that the browser window is always on top of other windows
 - **Set AFC Width** – set the frequency range for AFC in each browser channel
 - **Set AFC Level** – set the signal level that activates AFC
 - **Set Squelch Level** – set the squelch level in the browser
 - **Set Channel Background Color** – set the background color for the text in the browser window
 - **Set Channel Text Color** – set the color for text in the browser window
 - **Set Channel Highlight Color** – set the color for the highlighted channel
 - **Dxpedition mode** – turns Dxpedition mode on or off
 - With Dxpedition mode off, clicking on a channel in the browser moves the main RX cursor to the frequency of that channel. If NET is on, the TX cursor also moves to the same frequency
 - With Dxpedition mode on and NET off, clicking on a callsign in either the text stream or the callsign box in a browser channel:
 - Moves the main RX cursor to the frequency of that channel, leaving the TX cursor where it was
 - Transfers the last 80 characters from that channel into the main RX window
 - Transfers the callsign into the Entry window
 - Can be used in a Dxpedition situation where your TX frequency is fixed and you want to work stations anywhere in your receive range
 - With Dxpedition mode on and NET on (this is not possible in FSK RTTY), clicking on a callsign in either the text stream or the callsign box in a browser channel:
 - Moves the main RX and TX cursors to the frequency of that channel
 - Transfers the last 80 characters from that channel into the main RX window
 - Transfers the callsign into the Entry window
 - Can be used for normal S&P operating. After switching to the frequency of the selected channel, you can click on the Align button to center that channel in your receiver's filter bandpass
- **Clear** menu – clears the browser window

Setting Up the Digital Interface

The setup dialog is for both MMTTY and MMVARI, this means that some settings are only for MMVARI, MMTTY or both. When selecting 'Setup | Settings' in the Digital Interface window a dialog will be shown which is both for MMTTY and MMVARI. Please check the setup information in the [Digital Setup](#) chapter.

MMVARI Example

- Select 'Window > Digital Interface' in the Entry window to open the Digital Interface and the Waterfall/Spectrum window. The Digital Interface dialog can be positioned and resized on your monitor as desired
- Left clicking on a call will grab the callsign. Right clicking on the RX and TX window will pop a menu (S&P mode) or send the Exchange function key in Running mode, depending on your choice for the Rt. Click option in the DI Window's menu
- Pressing Insert will Grab the highlighted call and send this call followed by the Exchange button
- Double clicking on a callsign in the callsign box from the Digital Interface sends that call to the Entry window
- A callsign is automatically highlighted if recognized by the program. For that to happen it needs to have a space before and a space after the callsign

Digital - Fldigi for Sound Card Modes

The Fldigi interface

The Fldigi sound card interface is based on the fldigi code by Dave Freese, W1HKJ.

Fldigi supports a wide variety of digital modes, including not only AFSK RTTY and PSK, but also other less common modes such as MFSK, MT63, Olivia, Throb, etc.

Fldigi is a stand alone application, so you can also use it separately from N1MM Logger. Note that the configurations for Fldigi stand-alone and within the Logger are separate, i.e. changes made to the stand-alone configuration will not be applied to the configuration within the Logger, and vice versa.

Fldigi does not support keying outputs on serial or parallel ports, as used by N1MM Logger for CW and FSK keying. Fldigi can be used from the Logger for AFSK RTTY or for PSK31 or other digital modes, but not for transmitting RTTY using FSK unless you use an external hardware circuit to convert audio output from Fldigi to an on-off keying signal for FSK. It can also be used as a CW receive-only decoder, but not for transmitting CW. For transmitting CW, use one of the CW interfacing methods detailed in the "Basic Interfacing - Radio, CW, PTT" chapter. You must not check the Digital check box on a port that will be used for CW keying while the DI window or

the CW Reader window is open.

Download and Configure Fldigi

Download Fldigi

- Download the current release of fldigi from the W1HKJ website at <http://www.w1hkj.com/> . You can find a copy of the full installer for the current version of fldigi at that website. This file is a self-extracting executable, similar to the N1MM Logger installer. Download the installer file to a temporary folder and then execute it. It is recommended that you install fldigi in its own program folder and not in the N1MM Logger+ program folder. By default, the installer will install fldigi to C:\Program Files\Fldigi-x.xx.xx\, where x.xx.xx is the fldigi version number.
- If you are using Windows Vista, 7, 8 or 10, and you want to run fldigi from inside N1MM Logger+, you must use a copy of fldigi.exe that is located in its own folder outside the Program Files (or Program Files(x86)) folder. You can, for example, create a folder for fldigi inside your N1MM Logger+ user files area, then make a copy of fldigi.exe from the original installation location and copy it into the new folder. The only file you need to copy is the exe file; it will create whatever other files it needs the first time it is run.

Fldigi Initial Configuration

After fldigi has been downloaded and installed, open the Configurer and set up the path to fldigi.exe under the Digital Modes tab. After closing the Configurer, choose a contest in N1MM Logger that supports digital modes, select the Window > Digital Interface menu item from the Entry window, and then in the Digital Interface window, select the Interface > Fldigi menu item.

When you first open the fldigi interface from the Logger, and also any time you install fldigi into a different location, such as separate locations for the two digital interface windows or for the DI window and the CW Reader window, you will be prompted to fill in some configuration information by the fldigi configuration wizard, as follows:

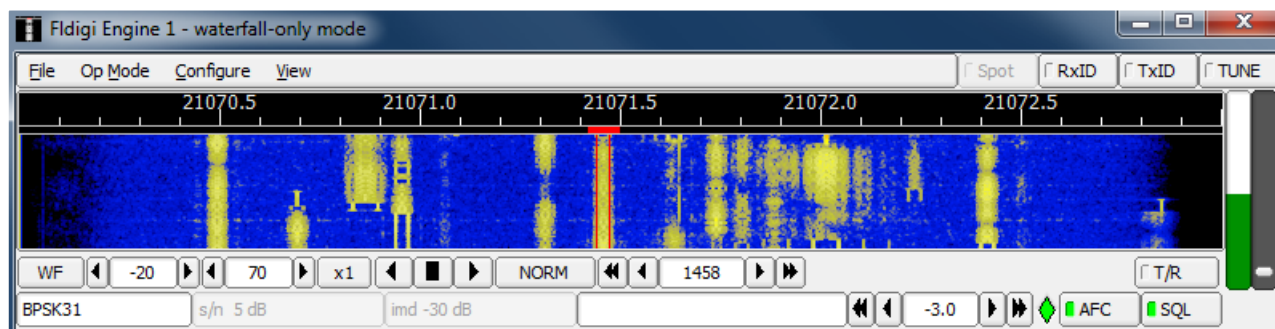
- **Operator information** – You do not need to fill in any of this information; N1MM Logger+ handles logging and all related information
- **Audio devices** – Under the **Devices** tab, check the **PortAudio** box and select the sound card input and output you are using for **Capture** and **Playback**. Click Next
- **Transceiver control** – In fldigi version 4.1.02 and newer, do not select any method of rig control in fldigi. In older versions, select the **XML-RPC** tab, check the **Use XML-RPC Program box**, and click the **Initialize** button. Do **NOT** select flrig, RigCAT, Hamlib, or MemMap for rig control; none of those will work with N1MM Logger+

-
- You can let N1MM Logger handle PTT, in which case you do not need to configure PTT in fldigi. This is the simplest (recommended) configuration. However, if you do not use PTT in other modes and you want to use hardware PTT controlled by fldigi, you can select the **Hardware PTT** tab, check the **Use separate serial port PTT** checkbox, select the appropriate COM port in the Device: window, and check either **Use RTS** or **Use DTR**, depending on which one your hardware setup uses. If the label on the **Initialize** button is red, click on the button. Note that a COM port that is used by fldigi cannot be used simultaneously by the Logger for other purposes. If you are time-sharing a serial port between fldigi in digital modes (not including CW) and the Logger in CW or SSB, check the Digital check box beside the COM port in the Configurer to ensure that the Logger will not try to use this port while the Digital Interface is open
 - If you intend to use fldigi as a receive-only CW decoder, be aware that you cannot use fldigi to transmit CW. Also, you cannot control PTT from fldigi on the same port that N1MM Logger+ uses for CW keying; do not check the Digital check box beside this port, and do not configure it within fldigi as a PTT port
 - Click Finish

The fldigi configuration wizard does not automatically save its settings. After you have exited the configuration wizard and the main fldigi interface window has opened, you must save the configuration settings using the fldigi **Configure > Save Config** menu item. If you don't do this, then every time you open the fldigi window you will have to go through the configuration wizard steps again. Similarly, any time you make a subsequent change to the fldigi configuration you must explicitly save the new configuration if you want the change to be remembered.

Newer versions of fldigi may default to requiring confirmation from the user before you shut them down. If that shutdown is initiated by shutting down N1MM Logger+, instead of by shutting down the DI windows and engines first, this can result in fldigi continuing to run after the Logger has shut down. This will cause problems the next time you start up the Logger. To prevent this from happening, you need to make a change in the fldigi configuration file. In each folder that fldigi is run from, find the file called fldigi_def.xml. (Note: this file is created the first time fldigi is run from this location, i.e. it will not exist until after you have run that copy of fldigi at least once). Right-click on the file name, select Open with... and then select Notepad or Wordpad as the program to open the file with. Look for a line that reads `<CONFIRMEXIT>0</CONFIRMEXIT>` or `<CONFIRMEXIT>1</CONFIRMEXIT>`. If you see a 1 between the two keywords, change it to a 0 and save the file. Repeat this for each and every copy of fldigi you use from within N1MM Logger+ (DI1, DI2, additional RX-only digital windows, CW Reader 1 and/or CW Reader 2).

The Fldigi Interface Window



- **Menu**

- **File**

- **Exit** – closes the Fldigi window

- **Op Mode**

- **CW** – This configures Fldigi to decode CW (receive-only)
 - **PSK** – select BPSK-31 for normal PSK31, BPSK-63 for PSK63, etc.
 - **RTTY** – select RTTY-45 for normal 45 baud AFSK RTTY
 - Other selections can be used for other modes – see the fldigi help for details

- **Configure**

- **Waterfall** – under the **Display** tab, you can select whether to show audio or RF frequencies in the scale at the top of the waterfall, and whether to display transmitted as well as received signals
 - **Rig control** – you can use the **Hardware PTT** tab to change the PTT settings for a separate hardware PTT port
 - **Sound card** – you can select the sound card to be used by Fldigi under the **Devices** tab
 - **Modems** – this is where you make configuration changes that apply to specific modes only (e.g. PSK-specific changes, or RTTY-specific changes)
 - **Save Config** – use this to save the new configuration any time you make changes

- **View**

- **PSK Browser** – opens a browser window that can display up to 30 signals within the waterfall simultaneously (PSK only). To configure this browser window, use Fldigi's Configure > Modems > PSK > Viewer configuration window to set the number of channels, the starting (lowest) audio frequency (channel separation is 100 Hz), and various other parameters

Most Fldigi menu items not mentioned above are either not used by N1MM Logger, or perform advanced functions that are not needed for basic operation. See the fldigi help at the W1HKJ web site for more details (there is a link to the Fldigi-Help page from the download page at

<http://www.w1hkj.com/download.html>).

Note also that when the Fldigi engine is selected, additional buttons appear in the Logger's Digital Interface window:

- **Align** – for retuning the radio so that the desired signal is aligned on a pre-configured frequency
- **Lock** – to lock the transmit frequency at the present position in the waterfall while allowing the receive frequency to vary (for operating split)
- **Rev** – in sideband-sensitive modes like RTTY, reverses the tones
 - Unlike the other digital engines used in the Logger, Fldigi assumes the rig will be in USB for RTTY. If you are using LSB, you will need to use the **Rev** button to tell Fldigi to reverse the tones. If you have tuned in a signal but all you see in the receive text window is garble, try clicking the **Rev** button once or in some cases, twice (sometimes you may find it necessary to toggle the Rev state off and back on to get it to “take”)

Note that older versions of Fldigi only use the left channel on input; for that reason, in most SO2V installations these older versions of Fldigi can only be used from Entry Window 1. Starting with Fldigi version 3.22.06, Fldigi is now capable of using either sound card channel for input. In any copy of Fldigi that you want to use with the right channel of the sound card, use the Configure > Sound Card menu item in the Fldigi window to open the Fldigi configuration window. Select the Right channel tab, and near the bottom under Receive Usage, check the Reverse Left/Right channels check box to switch Fldigi to use the right channel on RX. Click on Save to save the configuration change, and then close the configuration window.

Digital - External TNC Support

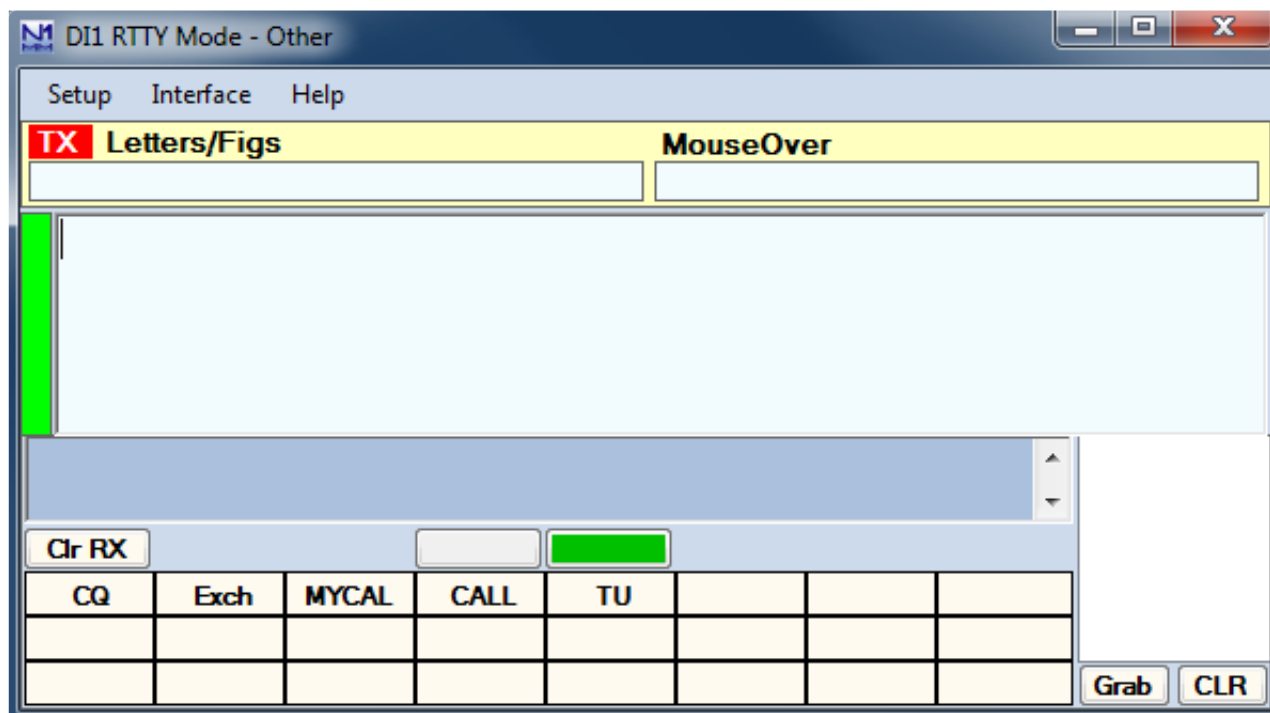
The Digital Interface will not only work with MMTTY, MMVARI and external TNC's like the PK232, HAL DXP38 but with ANY TNC.

This is because (with the special-case exception of the HL DXP-38) the commands for the TNC are not hard coded into the program. This has to be done by the user of the program.

Information about the following external TNCs can be found below but as already stated ANY TNC that uses serial communication can be used with N1MM Logger.

The Digital Interface

The Digital Interface can be used with any external TNC.



Using a TNC will show an interface like the one above.

Setting Up the TNC in the Configurer

1. Start the N1MM Logger application
2. On the Logger Main Window select >Config >Configure Ports, Telnet Address, Other >Digital Modes tab
3. In Digital Setup
 1. Choose Other for Interface (for any TNC except for the HAL DXP-38; for the DXP-38, see separate instructions below)
 2. Set other parameters accordingly (Example settings: Com 4 ,9600 ,8 ,N ,1, RST-Xon)
 3. Save the configuration [OK]
4. Load the Digital Interface from the Window menu
5. Program the RX, TX and Abort macros by opening the Digital Setup window (Setup > Settings menu item in the DI window), selecting the Macro Setup tab, selecting the "Other" digital macro set, and then right-clicking on each of the TX, RX and Esc buttons at the right side of the window and programming them with the appropriate codes to put your TNC into transmit, to put it into receive at the end of a message, and to abort a message, respectively. Once you have done this, the {TX} and {RX} macros will work in function-key messages and the other DI button messages, and the Esc key can be used at any time to abort a transmission.

Make sure your interface is set to copy RTTY at 45 baud and 170 Hz shift. If necessary, you can type the TNC command(s) for this in the transmit window so it will be sent to the TNC, or (better) you can program it into one of the DI message

buttons.

Test Your External TNC

- Test stand-alone
- See the separate sections for the PK-232, KAM, HAL etc. If your TNC is not mentioned please set it up like the other mentioned TNC's

Make sure your radio and TNC work on your computer's serial port by testing them with an existing terminal program. Connect your TNC/Radio into your computers serial port. The Hyperterm terminal program is included with Windows and works well. Make sure you note all COM port parameters. You should be able to tune in a RTTY signal and print it using the Hyperterm program. The Windows Hyperterm is geared toward modem communications and is not especially intuitive for direct COM port use. As stated previously, you can use any number of terminal emulator programs. For example, the Tera Term Pro 3.1.3 by Ayera Technologies is a small, open source, free terminal emulator that is available for download.

The interface has been tested with the three mentioned TNC's below and works fine with them. Any other TNC should also work as long as you place the right commands for that TNC in the macros.

Additional Macros for the External TNC Interface

The Digital Interface will accept all of the Macro keywords that can be used in the Packet window and other places in the Logger and will also accept the following: {CTRL-A} - {CTRL-Z}, {ESC}, {ENTER}.

These macro keywords can be used in any of the DI message buttons or the Logger function keys in the Entry window.

The TX window will accept all control key commands except for the Esc key, which must be sent as a Shift+Escape combination.

Remember that when setting up a message key that is not a TNC command you will need to include the {TX} macro (or the equivalent TNC command) to key the TNC before it sends. If a message does not start with the {TX} macro, your TNC will think it is a command being sent to it instead of message text, and it will not know how to process it. Before using the {TX} and {RX} macros in messages, you need to initialize them with the correct commands for your TNC, by opening the Digital Setup window, selecting the Macro Setup tab, selecting the "Other" Digital Macro Set, and then programming the TX, RX and Esc buttons with the correct command sequences for your TNC.

To use free form typing in the TX window you need to first key your TNC (e.g. using

the TX button after it has been programmed correctly for your TNC). Click the TX button to start transmitting and then click in the TX window. Whatever you type in the TX window now will be sent out. After you have finished typing, click on the RX button to return to receive mode.

HAL DXP38 Setup

The HAL DXP-38 is supported as one of the possible interfaces. Setup for the DXP-38 is different from setup for other TNCs.

There is a selection for the DXP-38 interface type in the Configurer under the Digital Modes tab, TU type.

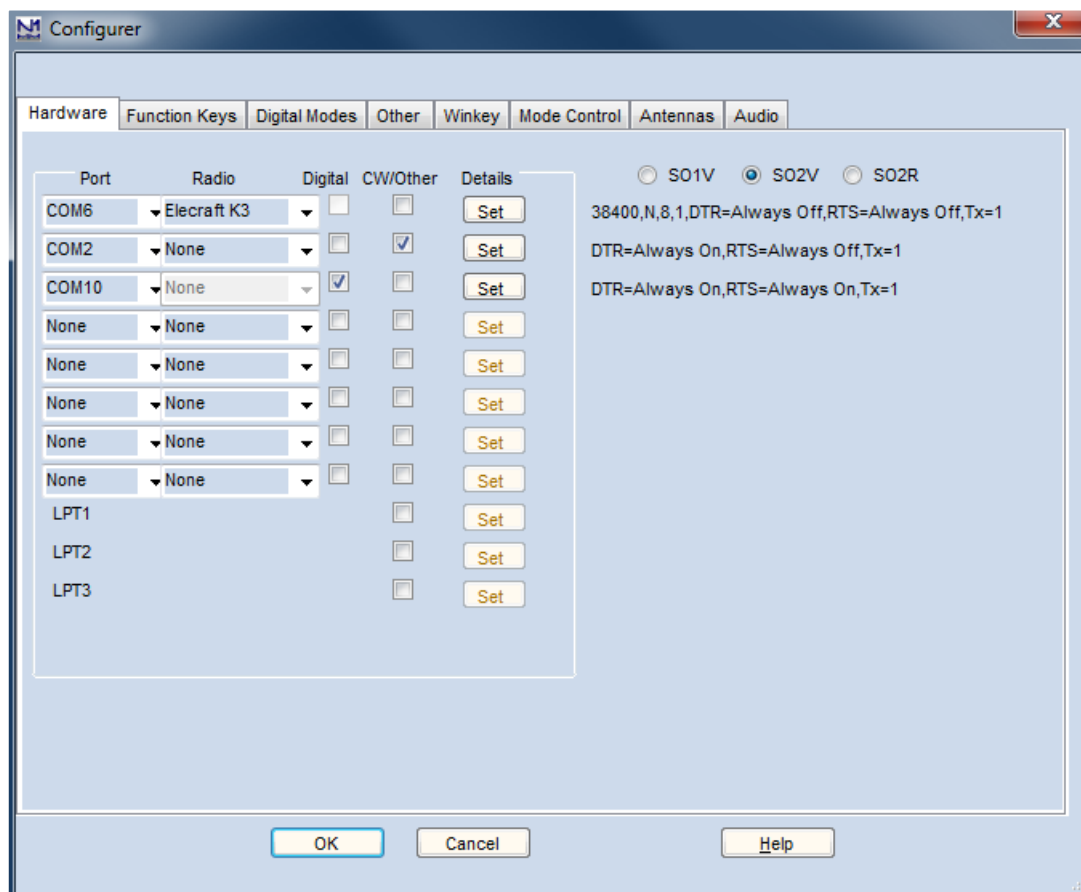
Hardware Setup

It is a good idea to get the DXP38 running with WF1B, HAL or another known software package before trying to set it up for the first time in N1MM Logger. Doing this eliminates the need to troubleshoot both hardware and software simultaneously when configuring N1MM Logger. Hardware setup:

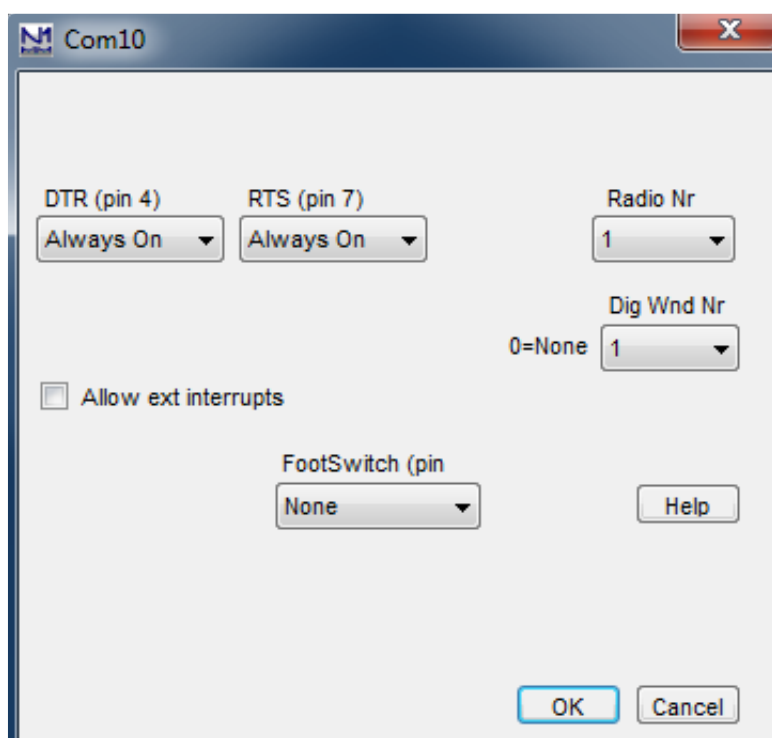
1. Connect the PTT and FSK lines to the rig
2. Connect the COM port (1 for HAL software) to the TNC
3. Connect audio input to the DXP-38
4. Connect the power
5. Connect AFSK output to the rig (AFSK only)
6. Consult the DXP-38 manuals for the details. The rig must be set to FSK RTTY (LSB) or LSB for AFSK

Software Setup in N1MM Logger

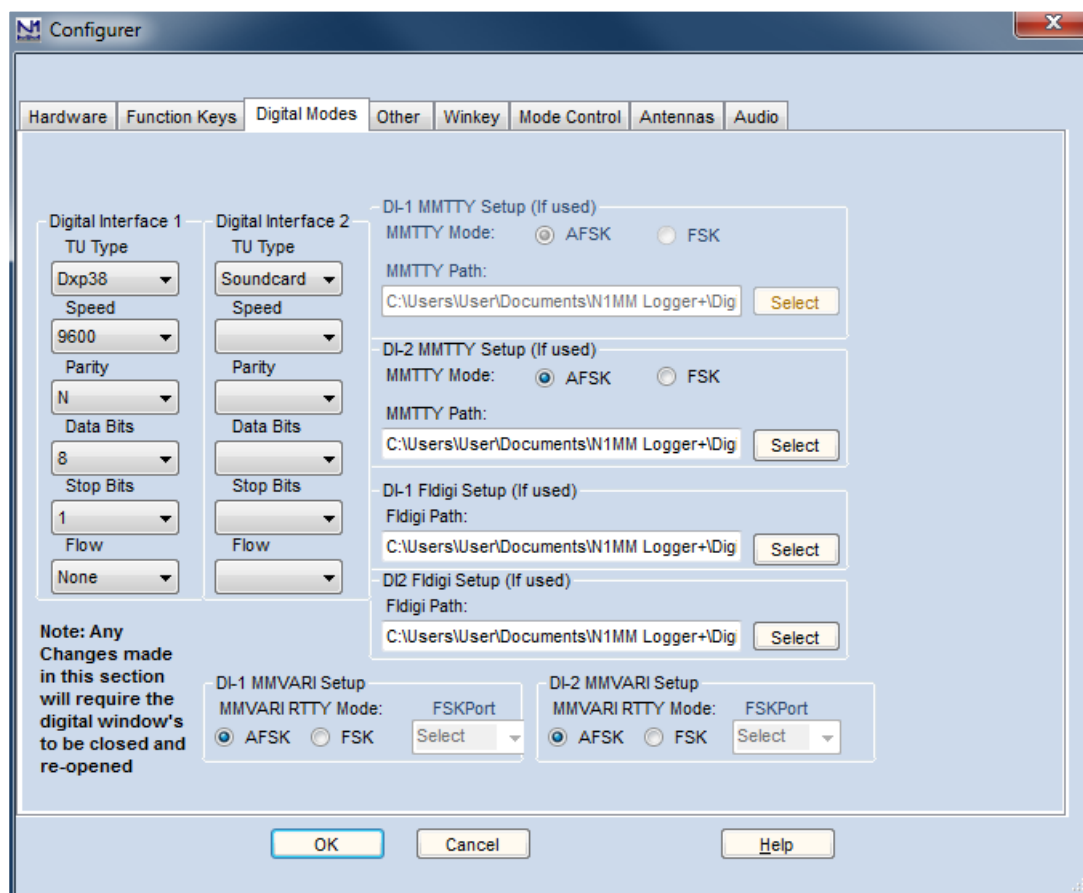
Port configuration – The COM port used for the DXP38 port should have a check mark in the Digital check box in the Configurer.



Under the port settings (Set button), DTR/RTS should be set to Always On. Set the DigWnNr to the digital window number that the DXP38 will be used with (1 or 2, for DI window #1 or #2).



Digital configuration – In the Configurer under the Digital Modes tab, in the left side for the digital interface window that the DXP38 will be used with (Digital Interface 1 or 2), the port settings should be 9600 baud, N,8,1 and no handshaking:



Command macros to control the DXP38

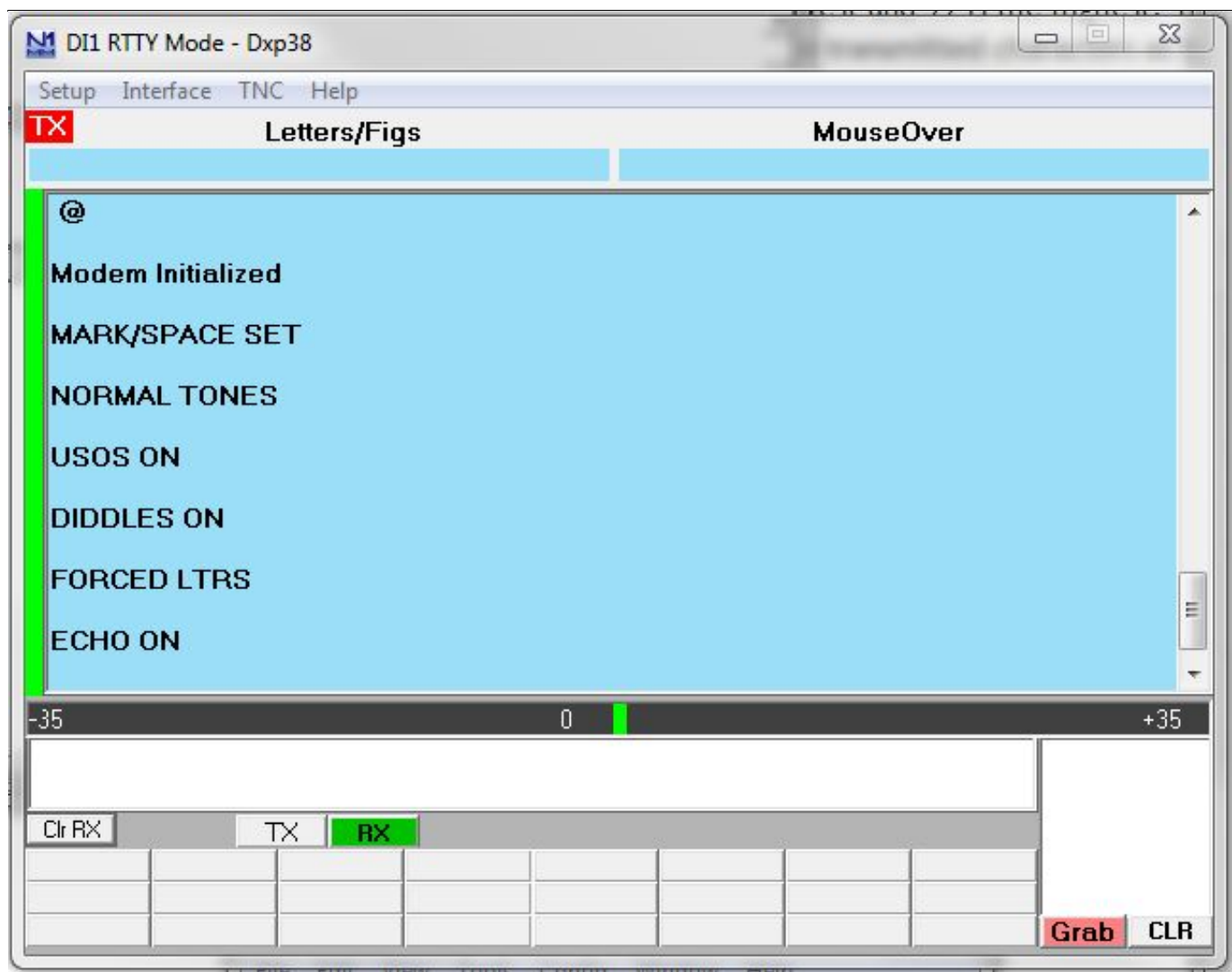
Most of the useful DXP38 features can be controlled from the DI Setup window under the Dxp-38 Setup tab. However, you may also use DXP38 macros in the DI window buttons (but NOT in the Entry window function keys). To program one or more of these buttons, you can right-click on one of the buttons to open the editing screen. The HAL command set is documented in the DSP4100 technical documentation at the HAL website. The HAL macros are in the form of two hexadecimal bytes, the first of which is a hex 80. To program a command whose second byte is xy (where x and y are hexadecimal digits), include a macro in the form {H80xy} in the message button. You must follow this exact template: the macro is surrounded by curly braces and starts with an H, followed by four hexadecimal digits (8, 0 and the two digits corresponding to the desired HAL command). Once you have edited one or more of the message buttons, you can save the entire file in the Dxp38 macro button set using the Save Macros button in the edit window.

RTTY messages

Your contesting and other RTTY messages can be either in the Entry window function keys (F1-F12, e.g. for use from the keyboard or with ESM) or in some of the DI window buttons (for auxiliary messages that are only used occasionally, by clicking on them with the mouse). These messages work the same way with the DXP38 as for other digital interfaces. Start each message with {TX} and end it with {RX}. Note that message buttons that are programmed in the DI window set with Dxp38 selected as the interface type will be stored in the Dxp38 macro set, i.e. they will be saved separately from message buttons that you set up for MMTTY or for MMVARI.

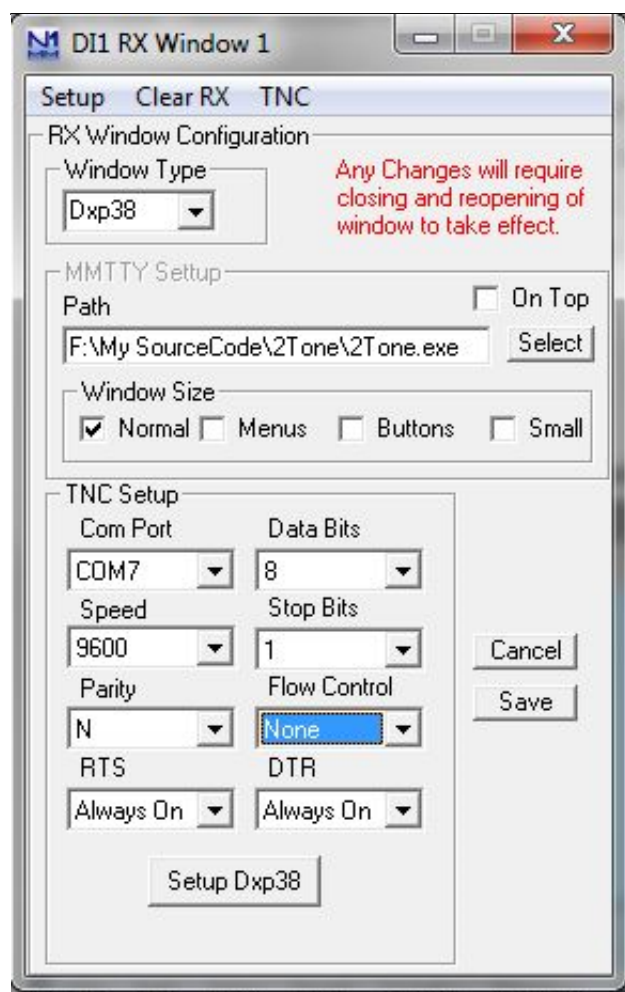
First time startup

- Start up N1MM logger first
 - After the program loads, make sure focus is on the TNC received text screen. Then turn on the DXP38. If the data link is OK , an @ will be printed on the screen. It takes about 20-30 seconds for the DXP to initialize after the @ appears in the RX window.
- Subsequent startups
 - Turn on the DXP38. Start N1MM logger. After the DXP38 initializes, you should see a text rendition of the initialization process on the screen. The following screen shot is from the classic (pre-Logger+) version of the Logger, so yours may look slightly different, but you should see the same initialization messages in the RX window (the DXP-38 tuning indicator has been enabled in this screen shot, but none of the 24 message buttons in the DI window has been programmed yet):

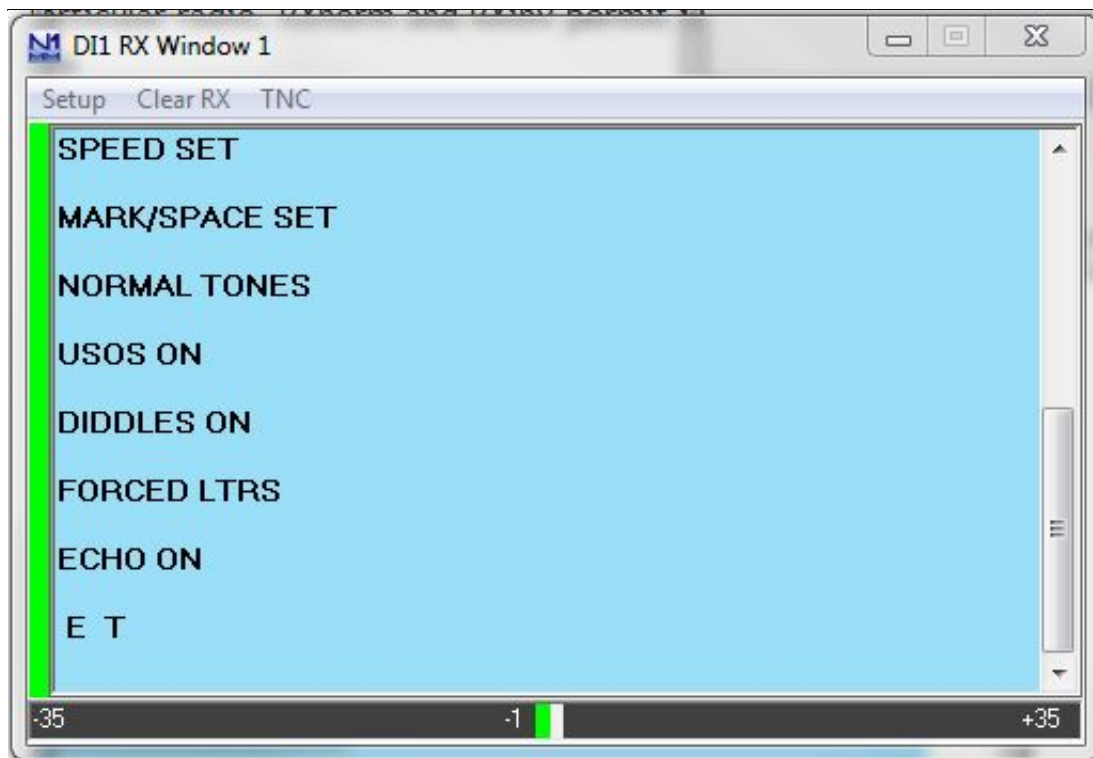


Configuring a DXP-38 in one of the additional RX windows

The DXP-38 can be configured to be used in one of the additional RX-only windows. To do so, use the Setup > Open Add. RX Window menu item in the Digital Interface window. If this is the first time this window has been opened, the Setup window will open, otherwise you may have to use the Setup menu item in the RX window:



Select Dxp38 as the window type. The MMTTY Setup section is not used for the DXP-38. Under TNC Setup, select the COM port used for the DXP-38 and set the other parameters to 9600, N, 8, 1, no flow control, DTR and RTS both Always On. Once you click the Save button to save the configuration, close and reopen the RX window. The following screen shot is from an older version of the Logger, so yours may not look exactly like this, but you should see the same initialization messages on startup:



HAL ST-8000 Setup (not supported)

The HAL ST-8000 TNC is not supported and will not work with N1MM Logger as the baud rate used by the HAL is 45 baud and the serial port control in N1MM will only go as low as 110 baud...

KAM Setup

- Launch Hyperterm and set its parameters to 9600 bps, 8 databits, no-parity, 1 stopbit and no flow control
- Connect the KAM to the port configured in Hyperterm
- Turn on the KAM
- When you see the message 'Press (*) to set Baud Rate, press the "*" button'
- Then set your callsign as prompted
- To place the unit into RTTY mode type "RTTY"
- Also make sure the unit is set up for software handshaking XFLOW = ON
- Once you are communicating with the KAM and have it in the RTTY mode, you can also tune in a RTTY signal and it will decode and print on the Hyperterm window
- Now try to transmit by typing a Ctrl+C and a "T" on the keyboard followed by several characters that you wish to transmit. To get back to receive, type a Ctrl+C and a "R"
- If you have problems, consult your KAM manual
- Now exit the Hyperterm program and start Logger

Below are sample RTTY settings for the KAM TNC

AUTO CR	0	AUTO LF	ON	AUTO STRT	OFF
BKONDEL	ON	CD	SOFTWARE	CRADD	OFF
DIDDLE	ON	ECHO	ON	FILTER	OFF
FSKINV	OFF	INVERT	OFF	LFSUP	OFF
LOWTONES	OFF	MARK	2125HZ	RBAUD	45
SHIFT	170	SPACE	2295HZ	USOS	ON
XFLOW	ON	XMITECHO	ON	-	-

There are three parts in setting up N1MM logger to work with the KAM.

1. Port configuration in the Configurer under the Hardware tab:

- The serial port used by the KAM should have a checkmark in the Digital check box

2. Digital configuration (Configurer, Digital Modes tab)

- Set the TU Type to “Other” and configure the port for 9600 baud, N,8,1 and none

3. Macro Creation required to control the KAM (Digital Interface Setup window, Message Setup tab)

- Select the “Other” Digital Message Set
- Set the TX macro to: {Ctrl-C}T
 - this programs the {TX} macro to put the KAM into transmit
- Set the RX macro to: {Ctrl-C}E
 - programs the {RX} macro to return to receive after the message is completed
- Set the ESC macro to: {Ctrl-C}R
 - Use the Esc key to immediately return the system to receive without sending unsent text that may still be in the transmit buffer
- You can now program your messages with the {TX} and {RX} macros, for example
 - CQ message: {TX} CQ CQ CQ DE W3PP W3PP W3PP KKK {RX}

PK-232 Setup

- Make sure the PK-232 autobaud is set and the unit is set to RTTY mode
- Launch Hyperterm and set its parameters to 1200 baud, 8-data, no-parity, 2 stop bits, and no flow control
- Connect the PK-232 to the port configured in Hyperterm
- Turn on the PK-232
- Type a few “*” characters so your PK-232 will autobaud to the 1200 baud rate
- Now place the PK-232 in the RTTY mode by typing the command “BAUDOT”.

It should respond OPMODE now BAUDOT

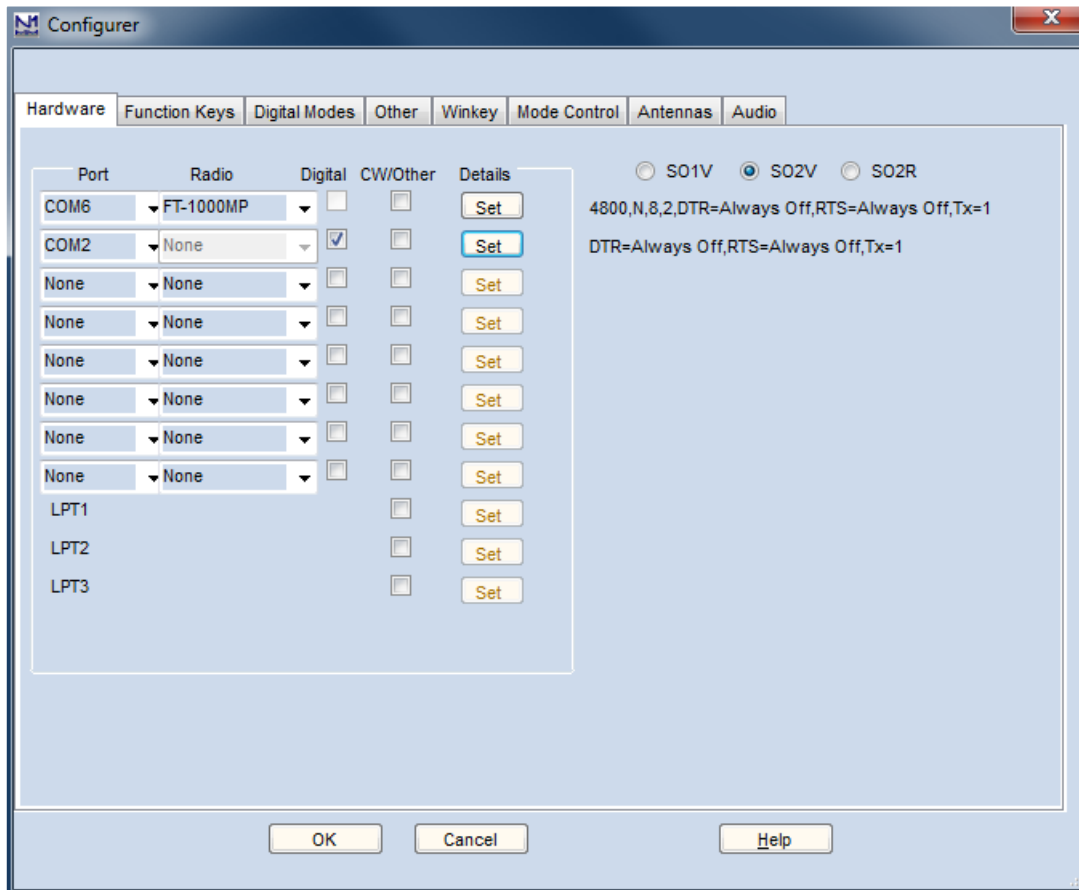
- Turn the threshold pot full clockwise and make sure the LED is on
- Also make sure the unit is set up for software handshaking XFLOW = ON
- Once you are communicating with the PK-232 and have it in the BAUDOT mode, you can also tune in a RTTY signal and it will decode and print on the Hyperterm window
- Now try a transmit by typing a "X" on the keyboard followed by several characters that you wish to transmit. To get back to receive, type a Ctrl+C and a "R"
- If you have problems, consult your PK-232 manual
- Now exit the Hyperterm program and start Logger. In the DI Setup window under the Macro Setup tab, select the "Other" Digital Macro Set, and program the TX, RX and Esc buttons as follows:
 - TX: X{ENTER}
 - RX: {CTRL-D}
 - Esc: {CTRL-C}R{ENTER}TC{ENTER}
- If this has been done correctly, the {TX} and {RX} macros in your messages should now work correctly, and the Esc key should be able to interrupt (abort) an outgoing message immediately when it is pressed

Setting up the PK-232

By John VK4WPX / VK4CEJ

Setting up the PK-232 for RTTY is very simple and straightforward.

- First, open the 'Configurer' (On the main logging window click Config, Configure Ports, Telnet addresses, Other)
- Click the Hardware tab
 - Click in the box adjacent to the COM port that you have your PK-232 connected to in the column labeled 'Digital'
 - See picture below, the example here shows the PK-232 on COM-2



- Next, click on the Digital Modes tab and set up the Digital Interface 1 parameters
 - The example in the picture below shows that the PK-232 is set for 9600 baud, no parity and 8 data bits

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting Audio

Digital Interface 1

TU Type
Other

Speed
9600

Parity
N

Data Bits
8

Stop Bits
1

Flow

Digital Interface 2

TU Type
Soundcard

Speed

Parity

Data Bits

Stop Bits

Flow

DI-1 MMTTY Setup (If used)

MMTTY Mode: ☒ AFSK ☐ FSK

MMTTY Path:
C:\Users\User\Documents\W1MM Logger+IDig Select

DI-2 MMTTY Setup (If used)

MMTTY Mode: ☒ AFSK ☐ FSK

MMTTY Path:
C:\Users\User\Documents\W1MM Logger+IDig Select

DI-1 Fldigi Setup (If used)

Fldigi Path:
C:\Users\User\Documents\W1MM Logger+IDig Select

DI-2 Fldigi Setup (If used)

Fldigi Path:
C:\Users\User\Documents\W1MM Logger+IDig Select

Note: Any Changes made in this section will require the digital windows to be closed and re-opened before changes take effect.

DI-1 MMVARI Setup

MMVARI RTTY Mode: FSKPort

☒ AFSK ☐ FSK Select

DI-2 MMVARI Setup

MMVARI RTTY Mode: FSKPort

☒ AFSK ☐ FSK Select

OK Cancel Help

Setting up macros and the main logging window “F” keys for the PK-232 is also really very simple.

- Modify any existing macros that came pre-configured by replacing every instance of ‘ {TX} ’ with ‘ {Ctrl-C}Xmit{ENTER} ’
 - I found that the command did not work every time unless it was followed by the {ENTER}
 - or, if the macro does not have {TX} or {RX} in it and you want it to start transmitting or go to receive, add those commands and, replace every instance of {RX} with {Ctrl-D}
- Example: F1 “CQ” macro would therefore be “ {Ctrl-C}Xmit{ENTER}CQ CQ CQ DE * * * K{Ctrl-D} ”
- Example: F5 macro “Hiscall” would be “ {Ctrl-C}Xmit{ENTER}! ”
 - Which would leave the rig in transmit mode so that you could type more info in the transmit window
 - To return to receive, press Ctrl+D (hold down the Ctrl key and press D)

SCS PTC Setup

- Take the PTC as you use it for other digimode programs e.g. ALPHA (by DH7RG), XPWIN (By KF7XP), LOGGER (by K4CY)
- Set the PTC to SERBAUD 19200 (not AUTO !) > switch the PTC OFF
- Start N1MMLogger and go to ‘Config | Configure Ports, Telnet Address, Other’, Select the tab ‘Digital Modes’. Set ‘Digital Interface 1 TU Type’ to ‘CW/Other’, set the used serial port to 19200 Baud, N-8-1-none. Set the ‘Digital Interface 2 TU Type’ to ‘None’. Save with ‘OK’
- Click on Windows and select Digital Interface
- Be sure that the PTC is connected to the right serial port and switch it ON and the start info will appear in the upper window finished by the prompt cmd: If you can’t see anything check serial port and settings
- Click in the lower window, enter with the keyboard ‘Escape+Shift bau 45 ENTER’ the PTC will switch to RTTY (look at the PTC mode display). Add ‘Escape+Shift term 1 ENTER’ to switch the PTC to echo the transmitted signs in the upper window. Note : Escape without Shift will switch the cursor to the main window
- In the open Digital Interface select ‘File | Settings’ and select Tab: ‘Macro Setup’. Select behind ‘Digital Macro Set’ ‘Other 1’. Now three buttons appear with TX, RX and ESC on it. These buttons have to filled with the sequence to put the PTC in TX and RX and to get a correct function for canceling the AUTO-CQ function or make a break with the ESC-key on the keyboard
 - Digital Macro Set: Other 1
 - TX button: {Ctrl-Y} NB. in capital letters

-
- Now the macro {TX} can be used to switch the TX ON
 - RX button: {Ctrl-Y} NB. in capital letters
 - Now the macro {RX} can be used to switch the TX OFF
 - ESC button: {ESC}CLR{ENTER}{Ctrl-D}{ENTER}
 - The macro will reset the PTC-2 to PACTOR, clear the TX buffer and switch the PTC-2 back to RTTY
 - There are a maximum of 24 extra functionkeys. One of them may be configured to switch the PTC-2 from the default state PACTOR to RTTY
 - Name button: RTTY
 - Contents button: {ESC}clear{ENTER}{ESC}bau45{ENTER}{ESC}term 1{ENTER}
 - Every time you start the PTC-2 you may click on this key to start the RTTY-mode. You need 'term 1' to get a delayed echo on the RX-window when your text is transmitted
 - You may generate more macros with simple QSO texts using the installed N1MMLogger macros as !, *, DATE, TIME etc
 - Don't forget to start a functionkey with {TX} and at the end place {RX} to switch back to receive
 - See for some macro examples at macros page

TinyFSK by Andy Flowers, K0SM

TinyFSK is a software program written for the Arduino hardware platform that produces FSK RTTY by emulating a traditional TNC for transmitting. TinyFSK does not have a receive capability, so you use one of the sound card interface choices to receive with.

Preparing to use TinyFSK

These instructions assume that you have connected your Arduino to your computer, uploaded the TinyFSK "sketch" to the Arduino, installed the hardware keying interface for PTT and FSK from the Arduino to your radio, and that you know the COM port number that Windows has assigned to the Arduino. For information on how to perform these preliminary tasks, visit K0SM's website [HERE](#) or google "TinyFSK." There are many helpful TinyFSK tutorials on the Internet.

TinyFSK and 2Tone

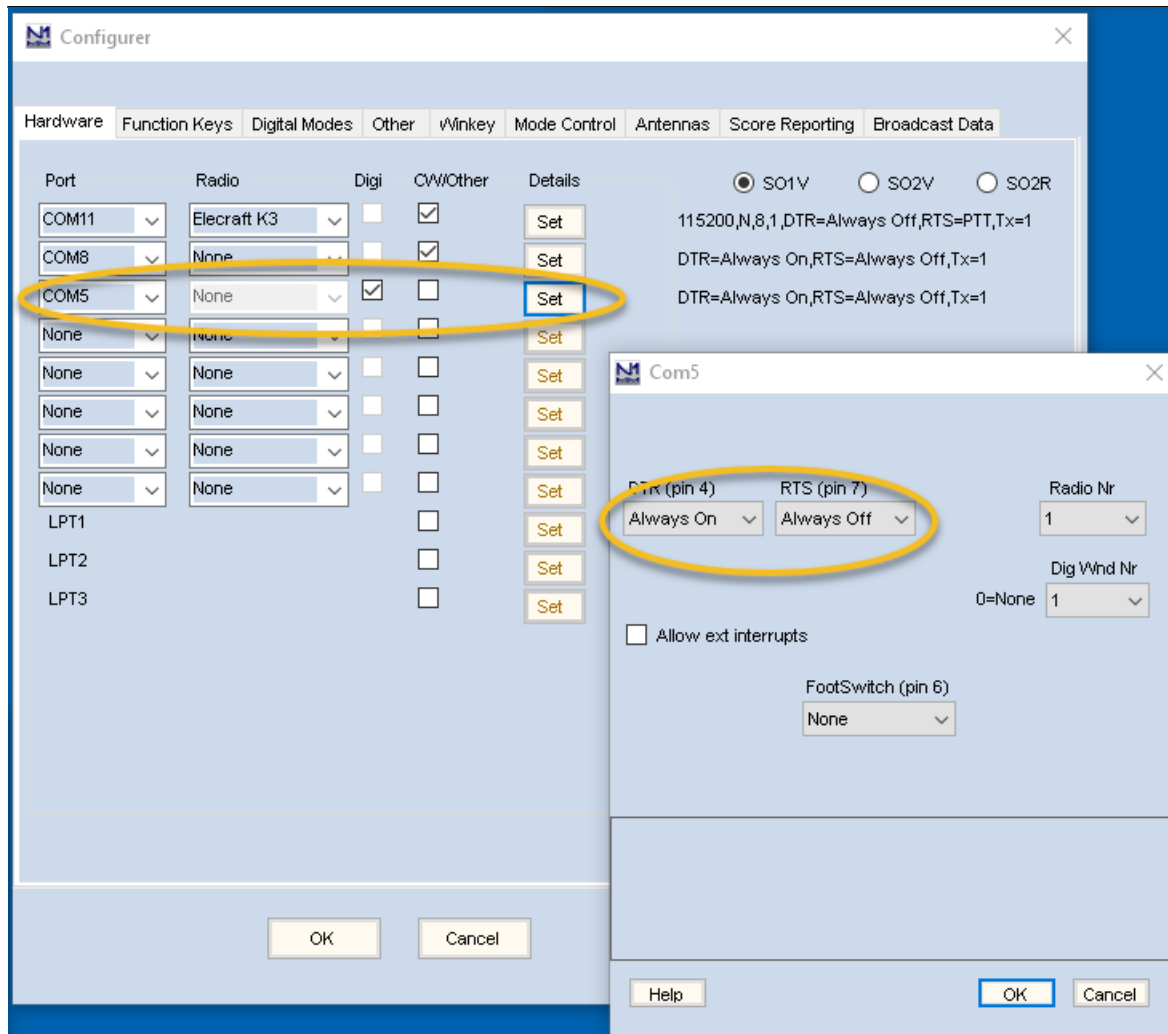
The instructions in the next two sections should work with any of the sound card digital engines, including 2Tone. However, if you are using 2Tone as your primary digital engine for receiving in the main Digital Interface window, there is an alternative method available as well. Unlike the other digital engine programs, 2Tone can support TinyFSK directly. To use this feature, you would configure the N1MM+ Configurer and Digital Setup windows the same as if you were using AFSK, except that in 2Tone's own setup window you tell 2Tone to use TinyFSK, and in the

N1MM+ Configurer under the Mode Control tab, Mode sent to radio, you tell the program you want to put the radio into RTTY (FSK) mode, not AFSK or SSB mode. Do not configure the FSK serial port in the Configurer under the Hardware tab, and do not select TinyFSK as the TU type under the Digital Modes tab. Let 2Tone take care of all of that. Of course, if you then decide to switch from 2Tone to MMTTY as your primary digital engine, you will have to change the setup in the Configurer as described in the next two sections.

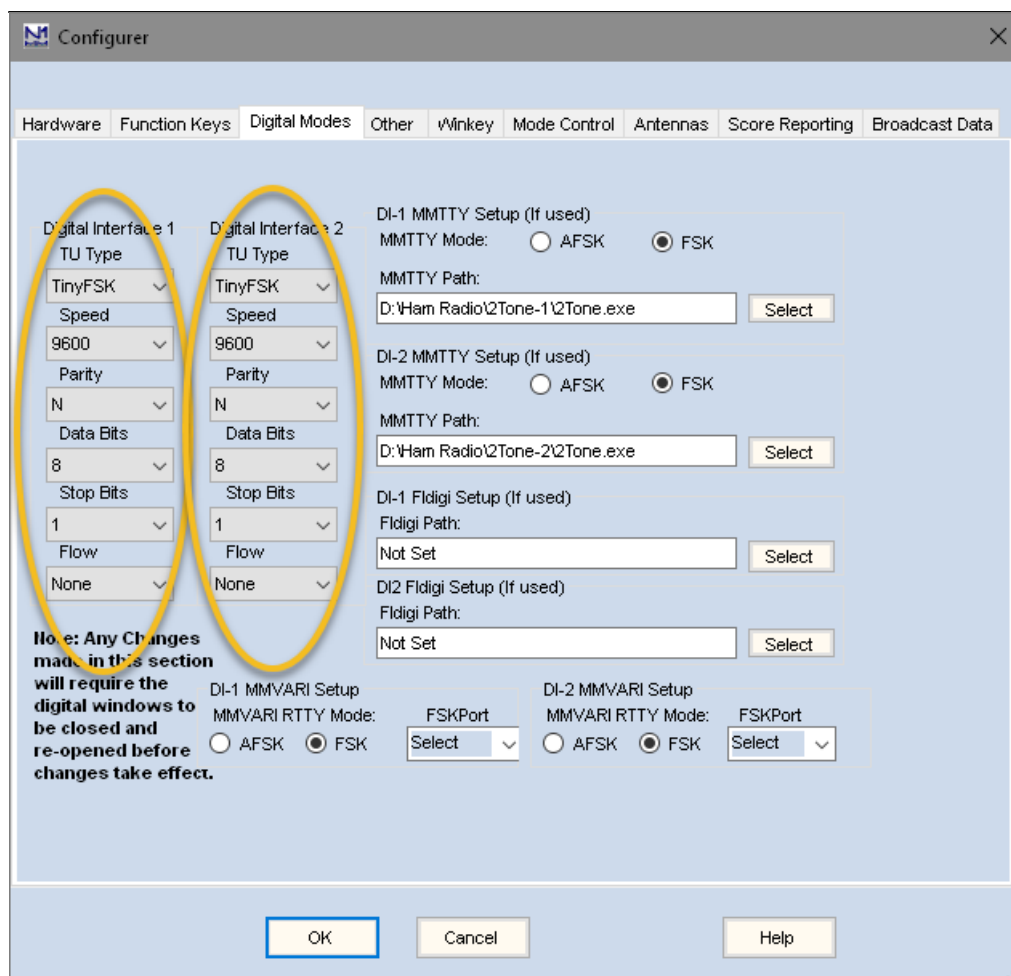
TinyFSK In the N1MM Configurer

From the N1MM Logger Entry Window, select >Config >Configure Ports, Mode Control...

- In the Configurer Dialog Window, select the >Hardware tab
 - In the **Port** column, identify the serial port connected to the Arduino
 - In the **Digi** column, check the box adjacent to the Arduino port number
 - In the **Details** column, press the adjacent Set button and set DTR = Always On and RTS = Always OFF
 - Set the **Radio Nr** to the radio number (1 in SO1R and SO2V, either 1 or 2 in SO2R depending on which radio the TinyFSK will be keying)
 - Set the **Dig Wnd Nr** to correspond with the Digital Interface window the TinyFSK will be associated with and transmitting from



- In the Configurer Dialog Window, select the >Digital Modes tab
 - Under Digital Interface 1, TU Type
 - Select TinyFSK, and enter the serial port settings as 9600, N, 8, 1, None
 - If planning to operate SO2V, under Digital Interface 2, TU Type
 - Select TinyFSK, and enter the serial port settings as 9600, N, 8, 1, None

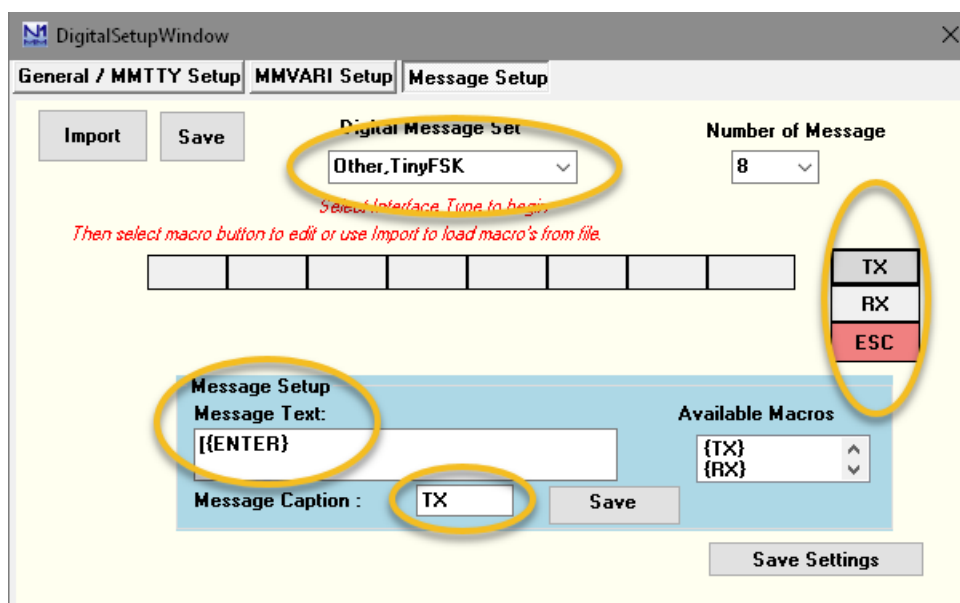


- Note that when you use TinyFSK, you are in effect using a TNC to transmit, but a sound card program such as MMTTY to receive. Therefore, in addition to configuring the TinyFSK serial port on the left side of this window, you also need to configure the sound card interface you will be using to receive with on the right side of the window. Since you are only using the sound card interface to receive, you should configure it for AFSK (even though you are actually transmitting using FSK), in order to prevent the sound card interface from trying to key FSK in parallel with the TinyFSK. You can configure the sound card program to use a sound card output that is otherwise unused. Do not configure the sound card program (e.g. MMTTY) to transmit using FSK, as that could conflict with N1MM+'s use of the TinyFSK for FSK keying.
- In the Configurer Dialog Window, select the >Mode Control tab
 - On the right side, under Mode sent to Radio, in the row for RTTY set the "Mode sent to radio" to RTTY (to put the radio into FSK mode when the program is in RTTY mode)

TinyFSK In the Digital Interface (DI)

From the N1MM Logger Digital Interface (DI) Window, select >Setup >Settings

- In the Digital Setup Window
 - Under the **General/MMTTY Setup** tab, at the right side, set the Preferred RTTY Interface to whichever sound card program you are using to receive with (if you are using 2Tone, select the MMTTY setting)
 - Under the **Message Setup** tab, Digital Message Set, select **Other, TinyFSK**
 - Press, in sequence, the three buttons labeled TX, RX, ESC. For each of these verify the following settings
 - Press TX: Message Text = **[{ENTER}** , Message Caption = **TX**
 - Press RX: Message Text = **] {ENTER}** , Message Caption = **RX**
 - Press ESC: Message Text = **** , Message Caption = **ESC**



K1EL Winkeyer 3.1 RTTY Interface

Starting with version 3.1, the K1EL Winkeyer can do FSK RTTY keying in addition to CW keying. The Winkeyer does not have a receive capability, so you use one of the sound card interface choices to receive with.

Preparing to use the Winkeyer for RTTY

These instructions assume you have connected an FSK keying cable between the Winkeyer and your radio's FSK keying input, as described in the Winkeyer 3.1 documentation. Note also that this method is not available with older versions of Winkeyer.

Winkeyer RTTY in the Configurer

From the N1MM Logger Entry Window, select >Config >Configure Ports, Mode Control...

If you are already using the Winkeyer for CW, skip this paragraph. If not, you must configure a serial port for it the same as if you were using it for CW (see the instructions for doing this on the Configurer page).

In the Configurer Dialog Window, select the >Digital Modes tab

- Under Digital Interface 1, TU Type
 - Select Winkey
- If planning to operate SO2V, under Digital Interface 2, TU Type
 - Select Winkey
- Note that when you use the Winkeyer for RTTY, you are in effect using a TNC to transmit, but a sound card program such as MMTTY to receive. Therefore, in addition to configuring the Winkeyer for RTTY, you also need to configure the sound card interface you will be using to receive with on the right side of the window. Since you are only using the sound card interface to receive, you should configure it for AFSK (even though you are actually transmitting using FSK), in order to prevent the sound card interface from trying to key FSK in parallel with the Winkeyer. You can configure the sound card program to use a sound card output that is otherwise unused. Do not configure the sound card program (e.g. MMTTY) to transmit using FSK, as that could conflict with N1MM+'s use of the Winkeyer for FSK keying.

In the Configurer Dialog Window, select the >Winkey tab and check the check box called "Enable RTTY Mode using Winkey".

In the Configurer Dialog Window, select the >Mode Control tab

- On the right side, under Mode sent to Radio, in the row for RTTY set the "Mode sent to radio" to RTTY (to put the radio into FSK mode when the program is in RTTY mode)

Winkeyer RTTY in the Digital Interface

From the N1MM Logger Digital Interface (DI) Window, select >Setup >Settings

In the Digital Setup Window

- Under the **General/MMTTY Setup** tab, at the right side, set the Preferred RTTY Interface to whichever sound card program you are using to receive with (if you are using 2Tone, select the MMTTY setting)
- Under the **Message Setup** tab, Digital Message Set, select **Other**,

TinyFSK, Winkey

- Press, in sequence, the three buttons labeled TX, RX, ESC. For each of these verify the following settings
 - Press TX: Message Text = **[** , Message Caption = **TX**
 - Press RX: Message Text = **]** , Message Caption = **RX**
 - Press ESC: Message Text = **** , Message Caption = **ESC**

Single Operator Contesting

Single Operator Contesting

SO2V and SO2R Operation

Many of the features of N1MM Logger+ work identically for SO2V and SO2R. Features common to both SO2V and SO2R are discussed in this section; unless specifically indicated, they will work in both SO2V and SO2R.

Single Operator 2 Radio (aka SO2R) is an operating technique that when done properly, can add many extra QSOs and multipliers to your log. This is accomplished by increasing your efficiency during slow times, for example, when you are CQing on one radio, but getting few answers. Efficiency is increased by listening on a 2nd radio while you are transmitting on the 1st radio. On the 2nd radio you are scanning the bands for needed QSOs and multipliers. If you find a new station to work on the 2nd radio, you leave it staged on the 2nd Entry Window until you get a free moment to work this station. Even adding a few QSOs an hour will greatly boost your score.

The philosophy for SO2R development is to allow any two radios to be used; they do not have to be identical. In its most simple form, two transceivers feed two separate antennas on two different bands. With sufficient attention to antenna separation and filtering, it is possible to do this without interference from a transmitting radio to a receiving radio. Many serious SO2R operators use identical radios to reduce the confusion factor, but having identical radios isn't necessary.

The receiver on one band is used to locate new contacts during the time that the transmitter on the other band is active. This can mean that you tune the 2nd radio while N1MM Logger sends CQ on the 1st radio. The most critical requirement for SO2R is automated transmission — if you have to speak into a microphone or squeeze a paddle while you tune the receiver you will not make the most of the second radio. It's easy to reach a level of mental fatigue while operating SO2R that results in an overall score reduction rather than helping your score.

If your radio is not supported by N1MM Logger, or it's an older radio with no computer interface, the radio can still be used, but you just don't get many of the advantages automated radio control offered by N1MM Logger.

N1MM Logger also supports "Single Operator 2 VFOs", or SO2V. If your radio simply has 2 VFOs, VFO A/B will be assigned to each of the two Entry Windows. If you have a radio with a sub-receiver, each of the receivers gets assigned to each of the Entry Windows.

N1MM Logger's SO2V interface is essentially identical to the SO2R interface, but

with SO2V you are using a single radio. Two windows can be displayed in SO2V, one for VFO A & B. SO2V makes better use of the 2nd receiver now present in most high-end radios. With the 2nd receiver, you can be tuning the band while you are listening for a response to your CQ. Since you cannot listen on the sub-receiver while transmitting, SO2V is not as efficient as SO2R.

Radio Nr in Configurer

When operating SO2V or SO2R, you also need to change your LPT or Winkeyer keying from Radio 1 (default) to BOTH. Otherwise, you will not get any keying on VFO B or Radio 2.

A maximum of two radios are supported with N1MM Logger using a single computer. There is a workaround for 2-computer 2-radio SO2R, explained below.

For the new SO2R operator, we have 3 words for you: practice, practice, practice! SO2R is definitely a learned skill that takes time to learn, and even longer to master.

Intuitive User Interface

As you will quickly see, N1MM Logger's SO2R implementation is more intuitive than most other SO2R implementations:

- Entry Windows can be arranged to reflect equipment layout
- Entry Windows can be used for any function (not dedicated functions like others)
- You always know what each VFO or radio is going to send next (when in ESM mode)
- Visual cues identifying transmit focus, Run vs. S&P, and more!

Supported Features

N1MM Logger supports all of the features you would expect from any world-class SO2R software. In addition, there are a lot of unique features:

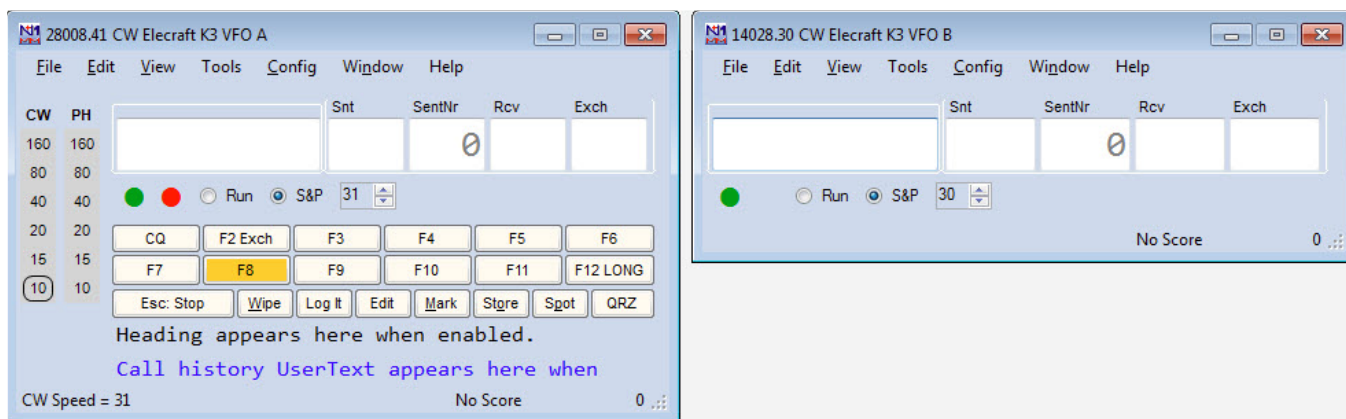
- Two Entry windows are displayed that are fully interchangeable in functionality (windows are not dedicated to a specific task)
- Running and S&P modes are maintained for each SO2R Entry window, such that the 2 windows can be used for
 - Running / S&P
 - S&P / Running
 - S&P / S&P
 - Running / Running
- Entry windows can be arranged on screen as desired: typically left/right, or

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- top/bottom, to represent physical station layout
 - Each Entry Window has a frequency readout in the top pane
 - 'LEDs' identify which radio has focus. The sending radio has a red LED indicating TX Focus, a green LED identifies the radio that has RX **and** Keyboard focus (combined)
 - Background colors of the entry field change color depending on whether that radio is running or S&P: white = run; canary = S&P
 - Ability to change frequency of inactive radio from the active radio. Use the / before entering the frequency in the callsign field to enter frequency for other radio/VFO
 - Supports Enter Sends Messages Mode (ESM) on both windows
 - Typing a call in inactive radio Entry window does not abort sending on the active radio
 - Hitting Escape stops sending on either VFO or radio, but does not change keyboard focus
 - Changing transmit focus (for any function) stops sending before switching and sending on alternate radio
 - **Ctrl+function keys** and **Ctrl+Enter** sends messages on alternate radio (Concept is Ctrl = Alternate radio control)
 - "Hotkey's" for specific tasks and sending on alternate radio
 - All Key Assignments work on both radios (unless otherwise specified)
 - Supports Top Ten DX Doubler, WX0B Station Master, Microham MK2R, YCCC SO2R, and other SO2R controllers.
 - Support SO2R without interfaced radios.
 - Dueling CQ's will send CQ alternately on each radio (**Ctrl+B**)
 - If dueling CQ's is enabled, and CQ sent then both radios become Run radios
 - **Ctrl+F1** or **Ctrl+Enter** will not start Dueling CQ
 - Dueling SSB and CW CQ's (different modes in each Entry window) are supported
 - When you disable Dueling CQs, the pre-existing SO2R options are restored
 - A SO2R software radio lockout for preventing both radios from operating on the same band is implemented
 - CQ-repeat is terminated when a message is sent on the other radio
 - The macro {JUMPRX} changes the receive focus to the other input window
 - Supports 2 radios - No support for 3 or more radios
 - Support SO2R with zero, one or two sound cards (5\$ SO2R)
 - When changing band using **Ctrl+PgUp/Down** key will skip the other radio's band
 - THIS IS NOT A SUBSTITUTE FOR HARDWARE LOCKOUT!!
 - The sent CW will echo in the status bar of the Entry Window (only when in SO2R)
 - During VOX operation, in "\$5 SO2R" operation the TX audio should will track the TX focus all the time
-

Entry Windows

Entry windows can be placed anywhere on the screen. Typically people will position them similar to their equipment layout i.e. if the radios are positioned left/right, the windows are arranged reflect that. For those who stack their equipment top/bottom, you can position the screens so they logically mirror that radio setup too.

Screen real estate is in short supply. To minimize screen real estate, you can shrink the Entry Windows compared to the default layout. Below is an example of the default Entry Window and a minimized version. Also the use of two monitors more screen real estate.



Full Size Entry Window vs Minimized Entry Window

To launch the 2nd Entry Window, hit the \ button.

Most people who are comfortable with N1MM Logger+ tend to use the reduced size Entry Windows for the second radio or VFO.

All of the central features that are available to the single radio operator also work in SO2R/SO2V. For example, when tuning the band with the S&P VFO, spots that are in the bandmap are automatically inserted into each call frame (above the callsign in the Entry window) when you tune across the frequency of the spot. Hitting the Space bar will pull the callsign from the call frame into the callsign field. If a station calls you on the run radio, toggling back and forth between Entry Windows with the \ key or Ctrl Left/Right arrows will maintain the all of the information in each Entry Window until the respective stations are logged, wiped clean via **Alt+W** or **Ctrl+W**, or you QSY and the callsign is entered into the bandmap (if “QSYing wipes the call & spots QSO in bandmap” is implemented).

The SO2R/SO2V Dots (LEDs)

On the Entry Window a green and/or a red dot (LED) will be shown. The LEDs are

visual aids that help you easily identify what is happening on each radio. This is part of N1MM's continuing philosophy of letting the operator easily know what's happening at any give time.

The green LED indicates that the VFO or radio has receive/entry focus and the red LED indicates that VFO has transmit (TX) focus. In addition, the red TX LED changes between dark red (not transmitting) and yellow (VFO/radio is transmitting).

Dot/LED Colors Used:

Green dot/LED – This VFO/Radio has receive (RX) and entry focus. RX and entry focus are always together.

- Receive focus can be toggled between the VFOs/radios by
 - using a mouse to click on the background of one of the two Entry windows
 - pressing the \ key (backslash)
- To move both Transmit and Receive focus
 - Press **Pause** or **Ctrl+Left-Arrow** / **Ctrl+Right-Arrow** to move both foci between the left and right radios.

Red dot/LED – This VFO/Radio has transmit (TX) focus. This means that the radio or VFO either **is** transmitting (a lighter orange-red color) or was the last to transmit and will be the one that transmits if you transmit by means other than pressing a function key (darker red color). When the other window has entry focus and you press a function key to send a stored message, the transmit focus shifts to that radio as soon as the function key is executed.

- Pressing **Pause** or **Ctrl+Left-Arrow** / **Ctrl+Right-Arrow** will move both foci between radios. If the foci are split, the first press of Pause moves the Transmit focus to the radio with the receive focus; thereafter, both foci will move together each time it is pressed.
- When transmitting the TX focus can not be changed.

Key Assignments for SO2R and SO2V

- **Backslash (\)** – Launches a second Entry Window if only one Entry window is open
 - **One radio** – Moves RX focus between the 2 VFOs on the radio
 - **Two radios** – Moves RX focus between the 2 radios
- **Ctrl+Enter** – Send next ESM state on alternate radio or VFO (assuming ESM turned on)
- **Ctrl+F1 to F8** – Send Fn message on alternate radio or VFO.
- **Ctrl+Left Arrow** – In SO2R move both Transmit and Receive/Keyboard focus to left radio, or in SO2V move both TX and RX/Keyboard focus to VFO

A

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- **Ctrl+Right Arrow** – In SO2R move both Transmit and Receive/Keyboard focus to right radio, or in SO2V move both TX and RX/Keyboard focus to VFO B
 - **Pause** – Move both TX and RX Keyboard focus to other radio (or other VFO in SO2V). If TX and RX focus are split when you hit pause, TX focus will move to where the RX focus is
 - **Alt+F5** – Swap radio frequency, mode, and callsigns between VFOs (SO2V) or radios (SO2R). In SO2R, the receive focus changes to the non-active radio.
 - **Alt+F6** – Identical to Alt+F5 except the receive focus does not change. No effect in SO2V
 - **Ctrl+B (SO2R only)** – Toggles dueling CQs on and off. Dueling CQ's will send CQ alternately on each radio or VFO, with the RX focus moving to the Entry window that is not transmitting. If Dueling CQ's is turned on, both radios become run radios. A delay can be inserted between each CQ by setting the "Set Dueling CQ Repeat Time" under the SO2R menu. Dueling SSB and CW CQ's are supported too. An icon denoting Dueling CQs appears in the entry windows when dueling CQs are actually being transmitted.

Don't Be Labeled a Lid

The practice of alternating CQs on two frequencies in the same band is undesirable and is outlawed in many contests, because spectrum space is already scarce enough without multiple stations each taking up two Run frequencies. If your radio(s) can do it, reserve use of this feature for CQing on two different bands.

- **Backquote (grave accent or unshifted tilde key (~))** – Toggle STEREO mode on/off, or toggle Auto/PTT modes with modified DXD . Notes: On US keyboards, the key we are talking about is the key just to the left of the number 1 key.
- **Ctrl+PgUp/Down** – When changing band using Ctrl+PgUp/Down will skip the other radio's band
 - ***THIS IS NOT A SUBSTITUTE FOR HARDWARE LOCKOUT!***
- **Ctrl+Shift+K (SO2R only)** – FocusOther, Another method of focus control (Focus on Other Radio), preferred by many contesters. When FocusOther is active, the RX focus is automatically shifted between the "Run" radio and the "S&P" radio, depending on whether the Run radio is transmitting. When the Run radio is transmitting, RX focus is shifted to the S&P radio. When the Run radio stops transmitting, RX focus shifts back to the Run radio, unless an unworked callsign has been entered in the S&P entry window. This allows a callsign to be entered in the S&P radio Entry Window while CQ is being sent on the Run radio.
- **Ctrl+Shift+L (SO2R only)** – This enables/disables the use of {CTRLFx} in function key macros. {CTRLFx} is a convenient way to automatically send a function key on the alternate radio. For example, by programming your S&P F4 key to "* {CTRLF1}", your call will be sent on the S&P radio, immediately

followed by your CQ message on the Run radio.

Bandmap Features

- **Shift+Click on frequency** - Jump to that frequency on the inactive radio, without changing TX or RX focus. This allows you to be active and sending on one radio and change the frequency on the other radio without making it the active radio.
- **Shift+Click on bandmap callsign** - Send the frequency to the inactive radio and place the callsign on the other radio's callsign frame, without making it the active radio.

Single Operator Two VFO Operation (SO2V)

A number of N1MM users are interested in using the advanced VFO and/or subreceiver capabilities of modern transceivers to improve their scores by approximating SO2R techniques, but with a single radio. This has led to the definition of an operating mode called SO2V (Single Operator Two VFOs). This section will deal with the features of N1MM Logger that are designed for use in this mode.

Advanced SO2V for Radios with Separate Sub-Receivers

Additional SO2V features are available for radios that have dual receivers or Main/Sub receive. The list of such radios includes: IC-756/Pro/Pro2/Pro3, IC-7600, IC-7800, IC-781, Orion/2, K3, KX3, TS-990, FTdx9000, FTdx5000, FT2000, FT1000/D/MP/MKV/MPStepplr, and the Flex Radios.

In SO2V mode, the \ key changes the RX focus to the Sub receiver and enables the Sub audio if necessary (Orion). To use this feature set the CQ repeat time a little longer than normal and start a repeating CQ using VFOA (Main). If nobody answers, press the \ key to enable the Sub receiver and tune the band. Pressing \ again will change the RX focus back to VFOA and turn off the Sub if Config > Dual Rx Always On is not checked. With Icom radios that only have one VFO knob, pressing the \ key also changes the knob association to the Sub VFO.

If you do not find someone to call before the CQ timer expires, the program will call CQ again on VFOA. With RX focus on VFOB (Sub) Entry window, typing a letter will cancel the repeating CQ running on VFOA.

Pressing a function key to call someone or send an exchange will automatically switch the TX focus to the proper VFO prior to transmitting. Some radios will impose a detectable delay during switching, other radios may switch faster because they require fewer configuration commands. If the RX focus is on then VFOB (Sub) Entry window and the CQ repeat needs to start again on VFOA, simply press the CTRL+CQ-

Key. The program default for the CQ-key is F1 and this is set in Configurer > Function Keys tab.

If someone answers your CQ while the RX focus is on VFOB (Sub), press the \ key to change the RX focus prior to entering the callsign. If you want to change the TX and RX focus together press the PAUSE key.

There is special functionality associated with the Ctrl+Alt+D and Grave accent keystrokes for the SO2V radios. See the appropriate radio model in the [Supported Radios](#) section.

Approximating the Capability with Radios that do not have a Sub-Receiver

Some basic SO2V functionality has been implemented for all VFOA/B radios (those without a sub-receiver).

You may find the CTRL+Shift+Up/Dn command useful. It programs VFOB with the next spot Up or Dn in the Bandmap. When you have time to listen or call the station, press the PAUSE (or Ctrl+RightArrow) key. To return to your Run frequency, press the PAUSE (or LeftArrow) key, it won't change your RUN frequency. Instead, the program will let you know that split is necessary with a status message at the bottom of the Entry window.

See the Supported Radios section of the manual for radio specific information regarding general and SO2V operation.

Some advice on using SO2V

SO2V is a kind of halfway point between SO2R (single-op two radios) and SO1V (standard single-receiver operation). The most efficient of the three is SO2R. The main advantage of SO2R over traditional one-radio one-VFO operation (SO1V) is that you can be listening in one QSO while you are transmitting in a different QSO. Ideally, you could be doing two QSOs at once on different bands even though you never have more than one transmitted signal at a time, interleaving between the two and doubling your overall speed (at least when things are going very well). This is simply not possible with only one radio, even if it has two receivers, but SO2V is an attempt to make use of the second receiver to gain at least some of the advantages of SO2R.

In SO2V, you are deaf whenever you are transmitting, so the key advantage of SO2V over SO1V is to be able to receive two signals in parallel. You don't conduct two QSOs at once, but you can at least determine whether there is someone worth working on either of two frequencies at once. That would seem to require two receivers, one receiver in each ear, not just two VFOs. You need to be able to tell

which signal is coming from which receiver (e.g. stereo headphones).

I am by no means all that proficient, but the main way I use SO2V is CQing on one frequency while S&Pping elsewhere in the same band. Again, more to get this out of the way than to describe SO2V, note that if it's a good run, people are coming back to you right away and you don't have time for SO2V techniques. In fact, what you may need is LOGTHENPOP to cope with multiple callers, and when you are doing this in CW or SSB you don't need the distraction of a second receiver. Instead, you would leave the second receiver turned off while things are going this well.

However, if things slow down, as they often do late at night or late in the contest, then while you are CQing on VFO A and find you have to send CQ several times before anyone shows up calling you back, you can turn your second receiver on and start using it to S&P up and down the band while you keep on CQing.

After your transmitter stops at the end of the CQ message, in SO2V you have two receivers both active. One is on your transmit frequency, listening for someone calling you back. The other one is somewhere else on the band, looking for a station CQing that you can call.

Suppose: (1) no-one answers your CQ (IMHO your first duty is always to answer someone who answers your CQ); and (2) you find someone on VFO B that you haven't worked yet, and they are calling CQ or just about at the end of a QSO. In that case, what you can do is switch to the VFO B entry window (with the mouse if you are mousing, e.g. in RTTY, or with the \ key if you are keyboarding) and have (or try to have) a QSO on the VFO B frequency. Once that QSO is completed (or as soon as the other guy comes back to someone else instead of you), you switch back to VFO A, hope that someone hasn't taken over your run frequency while you were away, and send a CQ again to repeat the whole process.

In SO2R, you can keep listening to the other station on the S&P VFO even while you are transmitting on your CQ frequency in between transmissions on the S&P radio, but in SO2V you have to stay on the S&P frequency for the entire duration of the S&P QSO, which means you run a significant risk of losing your run frequency. You have to weigh the risk of this happening against the benefit of picking up the S&P QSO during a dead period on your run frequency.

You will probably want to turn autoCQ off while you are doing this. If I leave autoCQ on, inevitably I find that the transmitter fires up at exactly the wrong time, just before the other station sends his call sign, or when his QSO is ending and it's time to drop in my call sign on the VFO B frequency.

You can also use SO2V to S&P with two receivers at once. Tune one up the band and the other down the band at the same time, and simply decide which one to use based on where you hear a new station to work first. You can use the \ key to jump back and forth between the two entry windows.

SO2V is more productive if you are in the Assisted class. You can use spots from the cluster or RBN to guide where you tune with VFO B, instead of just tuning up and down the band. Instead of turning the VFO B tuning knob to find the next station to work, you can jump VFO B to the next workable spotted station using Ctrl+Shift+Up/Down arrows. This greatly increases the odds of quickly finding someone to work on VFO B versus just randomly tuning and screening out the ones you have previously worked.

You can also use the cluster this way in SO1V with only one receiver, but with a significant disadvantage. Once you tune away from your run frequency after listening for someone calling you back, you then often have to wait some more listening on the second frequency until the caller is at the right point for you to call him. With two receivers, you can time your CQs on VFO A so that you don't have to waste time listening first on VFO A and then on VFO B; you can listen to both at the same time and line up the times so you either respond to a caller on VFO A if one is there, or else send your call to a CQer on VFO B, in this way minimizing the time you are away from your run frequency.

To set up for SO2V with a dual-receiver radio, you select the SO2V button in the Configurer, and in the Config menu you check the "Dual Rx always on" menu item. In RTTY, you can set up the two DI windows with two separate interfaces listening on different channels of the sound card and just leave both receivers on all the time. In CW/SSB, you will probably want to learn how to use the ` and Ctrl+Alt+D keys (see the documentation on Supported Radios) to turn the second receiver on and off.

I am probably missing some important things, but this is how I use SO2V with my dual-receiver K3.

SO2V RTTY with MMTTY

Instructions for setting up two copies of MMTTY for use in SO2V (Note: there are more detailed instructions on setting up for digital modes in the [Digital Modes](#) section – this section focuses on the SO2V aspects):

- Create two separate folders for the two copies of MMTTY. This allows each copy to have its own configuration. These folders must be outside the C:\Program Files and C:\Program Files(x86) paths
- Copy the MMTTY.exe, MMTTY.ini and UserPara.ini files (plus extfsk.dll if you use EXTFSK, or extfsk64.fsk if you use EXTFSK64) from the main MMTTY program folder into each of the two folders you will use for SO2V
- Start N1MM Logger and open the Configurer (Config > Configure Ports, Audio, Mode Control, Other)
- Select the Hardware tab
 - Select the SO2V option
 - This next step is optional for most users, but mandatory for some. If

you are using serial ports for PTT and/or FSK from MMTTY, and you also use the same serial port(s) for CW or PTT keying from N1MM Logger+ in CW or SSB modes, then you may need to check the Digital check box beside the ports that are shared the two copies of MMTTY (for RTTY) and the Logger (for CW and SSB). If the only place you use a port is from MMTTY, you should skip this step, don't mention the port at all in the Configurer, and perform all of the setup for this port within MMTTY

- Note that you must use either two serial ports, one for each copy of MMTTY, or no serial ports (AFSK; PTT controlled either by the main N1MM Logger program or in hardware, e.g. PTT via radio command or by VOX). If you are using two serial ports, their FSK keying outputs must both be connected to the radio's FSK input (e.g. by wire-ORing the keying outputs)
- Click on the Set button for the port you will use with VFO A and set the Radio Nr and the Dig Wnd Nr both to 1
- Click on the Set button for the port you will use with VFO B and set the Radio Nr to 1 and the Dig Wnd Nr to 2
- Select the Digital Modes tab
 - Under Digital Interface 1, TU Type, select Soundcard. Similarly for Digital Interface 2
 - Under DI-1 MMTTY Setup, select AFSK or FSK as appropriate for your setup and set the MMTTY Path to point to the copy of MMTTY.exe in the first folder
 - Under DI-2 MMTTY Setup, select AFSK or FSK as appropriate and set the MMTTY Path to point to the copy of MMTTY.exe in the second folder (this must be a different copy from the one in the DI-1 MMTTY Setup path)
- Close the Configurer
- Open the Digital Interface 1 Window (Window > Digital Interface menu item in the main VFO A Entry window). Make sure the program is in RTTY mode (if necessary, type RTTY into the Entry Window callsign box and press Enter)
 - If an MMTTY window does not appear (e.g. if you see an MMVARI window instead), then in the DI-1 Window select the Interface > MMTTY menu item to open the MMTTY window
 - Select the Setup > Settings menu item in the DI-1 window
 - Under Preferred RTTY Interface, select MMTTY
 - Under Alignment Frequency, enter your Mark audio frequency (e.g. 2125)
 - Under MMTTY Window Settings, select either Normal or Control Menus, in order to have easy access to the MMTTY setup window
 - Click on Save Configuration
 - In the MMTTY window for the first copy of MMTTY (the title bar reads RTTY Engine 1), select the Option(O) > Setup(O) menu item
 - Select the TX tab and set the PTT & FSK port you will be

- using for the VFO A copy of MMTTY (this is the port with Dig Wnd Nr = 1 in the Configurer). If you are using AFSK and doing PTT from the main N1MM Logger program, set this port to None
 - Select the SoundCard tab (MMTTY version 1.66 or newer) and select the Reception sound card you will use with VFO A. If you are using AFSK, you must also select the Transmission sound card
 - Under the Misc tab, select the channel (left or right) under Source (usually the left channel for VFO A)
 - Close the MMTTY Setup window
- Check the Config > Sub Receiver Always On option in the main Entry Window to ensure that both receivers will be on
- If the second Entry window is not open, open it by pressing the Pause key, the backslash (\) key or Ctrl+Right Arrow
- Open the Digital Interface 2 Window (Window > Digital Interface menu item in the VFO B Entry window). Make sure the program is in RTTY mode for VFO B (if necessary, type RTTY into the VFO B Entry Window callsign box and press Enter)
 - If an MMTTY window does not appear (e.g. if you see an MMVARI window instead), then in the DI-2 Window select the Interface > MMTTY menu item to open the MMTTY window
 - In the MMTTY window for the second copy of MMTTY (the title bar reads RTTY Engine 2), select the Option(O) > Setup(O) menu item
 - Select the TX tab and set the PTT & FSK port you will be using for the VFO B copy of MMTTY (the port with Dig Wnd Nr = 2 in the Configurer); this must be a different COM port from the one that is used for VFO A. If you are using AFSK and doing PTT from the main N1MM Logger program, set this port to None
 - Select the SoundCard tab (MMTTY version 1.66 or newer) and select the Reception sound card you will use with VFO B. If you are using AFSK, you must also select the Transmission sound card (in SO2V this will likely be the same as the Transmission sound card used for VFO A)
 - Under the Misc tab, select the channel (left or right) under Source (usually the right channel for VFO B)
 - Close the MMTTY Setup window

SO2R - Single Operator Two Radio Operation

Using SO2R Key Assignments

Backslash (\) - Once you have launched your second Entry Window, the \ key will likely be your most widely used key in SO2R. The \ key will move RX and Entry focus

between Entry Windows A & B (often referred to as Radio 1 & Radio 2 respectively). When using the \ key to control RX focus, you really don't have to worry where TX focus is. By using the \ key to control only RX focus, when you hit a Fn key or Enter (using ESM), the TX focus will move to where the RX focus is, and send the corresponding message.

Example: You are CQing on Radio 1, and S&Ping on Radio 2. Both RX and TX focus start off in your Run Entry Window (Radio 1 in this example). You are S&Ping on Radio 2, and you hear someone on the S&P radio you want to look up in your Check Window. Hit the \ key to move RX focus to the S&P Entry Window. You type in the call, and you need it, and are just waiting for a good time to send your call. If no one is answering your CQ on the Run Radio, just hit the Enter Key (assuming you are using ESM), and the TX focus will move from the Run Radio to the S&P radio (Radio 2), and send your callsign (actually the first ESM message in the S&P sequence). If the station comes back to you, then hit Enter again to send your exchange, and you just completed a S&P QSO. Now move the RX focus with the \ key to the Run radio, or just leave it in the S&P Entry Window if S&P is more productive.

Now let's assume in the middle of the S&P QSO, someone answers your CQ on Radio 1. Your exchange just happens to be sending on the S&P radio. To copy the call on the Run Radio (while your exchange is being sent on the S&P radio), hit the \ key to move RX focus to the Run Radio, and type his call in the Run Entry Window. Assuming your exchange is finished sending on Radio 2, just hit Enter again, and the TX focus will move back to the Run Radio, and the program will send his call and your exchange on the Run Radio. You now have QSOs going on both radios! Just move RX focus as needed to send/copy on what ever radio you need. This is easier said, than done during a contest !

Tracking TX Focus

In the above examples, you never have to control where TX focus is, since TX focus always moves automatically to where the RX focus is when Fn or Enter (ESM) is used. This should be your standard operating mode, as you only need to worry about using a single key to do most of your navigation between the two Entry Windows.

Ctrl+Enter, or **Ctrl+Fn** – Using these commands will send the corresponding message on the alternate radio; with the alternate radio defined as the radio that does not have RX focus. Using **Ctrl+Fn** (or **Ctrl+Enter**) will only move the TX focus to send the message – RX focus will stay in it's current location. Once the message is sent, TX focus will remain on the alternate radio. This is done by design.

The most common scenario would be if you are CQing on Radio 1, but you are not getting callers. You hit the \ key to copy a callsign on the S&P radio. Without moving the RX focus from the S&P radio, at some point you will probably want to send another CQ on the Run Radio. You do this by hitting Ctrl+F1 or Ctrl+Enter. You will

also likely use these commands if you have a QSO in progress at the same time on both the Run and S&P radio. The easiest way to send a message at the right time on the other radio is to use these commands, and leave RX focus where it is. Alternatively, you can program function keys with the {CTRLFx} macro to send messages to the other radio.

Pause Key – If both TX and RX focus are in the same Entry Window, hitting Pause will move both TX and RX focus to the other radio. If TX and RX focus are split between the Entry Windows, the pause key will move TX focus to where RX focus is. Mostly you will use this key in order to get your foci back in sync.

Ctrl+Right Arrow and **Ctrl+Left Arrow** – These commands will force both TX and RX focus to the right or left radio.

Ctrl+B – Toggle Dueling CQ's.

{CTRLFn} macro – This macro allows the user to send on the other radio.

- Make sure that “Toggle {CTRLFx}” macro is checked on in the Configurer SO2R submenu (or use Ctrl-Shift-L to enable/disable the use of {CTRLFx} macros. When disabled, the {CTRLFx} macro is ignored.
- Thus, a CW Button might look like: “tu EXCH{CTRLF9}” Where F9 on the other radio is set to send a CQ.
- Example: If your entry focus is on the S&P radio and you manually press **Ctrl+F1**, the program will send F1 on the OTHER radio. That's all the {CTRLFx} macro does. For a simple test, modify your S&P F4 key to read *{CTRLF1}. Now, when you press that key, the program sends your call on the S&P radio and then sends the contents of F1 on the Run radio. In a practical situation, you would probably not want to send a full-length CQ while trying to work someone on the S&P radio, because that will nearly always require you to interrupt it before it is done. So the idea of {CTRLFx} is that you can stash a short CQ (like “N1MM test”) in, for example, Run F12. Then make S&P F4 read “* {CTRLF12}. Now when you press F4 on the S&P radio, it will send your call, and immediately switch to the Run radio and send F12, that very short CQ. Should help hold your frequency.
- Another way to use this: Make your S&P F2 read, for example, 5NN14{CTRLF1}. Then when you press F2 or Enter to send your exchange and/or log the S&P QSO, the program will automatically begin a CQ on the Run radio as soon as that is done.

Mouse Assignments

- **Left mouse** and **Right mouse buttons**
 - On an empty space in one of the two Entry windows, these mouse buttons change the Receive focus to that radio/VFO

SO2R Menu

- **SO2R**

- **Dueling CQ's (Ctrl+B)** – SO2R feature that alternates sending CQ on each radio in turn, listening on one while transmitting on the other. Supported for both CW and SSB. Changing either radio in frequency more than 200 Hz will terminate Dueling CQ.
- **Set Dueling CQ Repeat Time** – Adjusts time in seconds after CQ ends on one radio before it starts on the other.
- **Set Radio Swap Transmit Tail Time (msec)** – Time delay after a radio has stopped transmitting, before initiating transmission on another band. Typically used to interrupt a CQ on one radio to S&P on the other radio.
- **Set Radio Swap Transmit Lead Time (msec)** – Time delay when swapping radios, whether or not the radio is transmitting. Typically used to allow station accessories to detect that the active radio has been changed.
- **Focus on Other Radio** – A method of focus control preferred by many contesters. When FocusOther is active, the RX focus is automatically shifted between the “Run” radio and the “S&P” radio, depending on whether the Run radio is transmitting. When the Run radio is transmitting, RX focus is shifted to the S&P radio. When the Run radio stops transmitting, RX focus shifts back to the Run radio, unless an unworked callsign has been entered in the S&P entry window. This allows a callsign to be entered in the S&P radio Entry Window while CQ is being sent on the Run radio.
- **FocusOther Always Swap** – Used in conjunction with Focus on Other Radio. Focus always switches to the other radio when one radio is transmitting, and always switches back to the original radio when transmission is completed.
- **Toggle CTRLFx Macro** – This enables/disables the use of {CTRLFx} in function key macros. When enabled and present in one of the function key definitions, the {CTRLFx} macro executes Fx (Function key definition x) on the opposite radio. An example is TU{CTRLF1} in Radio 2's F3 slot, which sends TU and then sends the other radio's F1, used to get quickly back to the Run radio and call CQ after finishing an S&P QSO on Radio 2.
- **Toggle Stereo/OTRSP Macro (Ctrl+~)** – Can be used to enable/disable all {STEREOOFF}/{STEREON} and {OTRSP RX}/{OTRSPOTHER RX} macros temporarily. Used to disable stereo switching if only one EntryWindow is being used temporarily.
- **Two Keyboards** – Enables the use of two keyboards, one for each Entry window. Plug in two keyboards before starting N1MM Logger+. The first keyboard you type in after starting the program will control the left (Radio 1) Entry Window. The other keyboard will control the right (Radio 2) Entry Window. The pause key is disabled, since you

no longer need to be able to switch Entry windows from a single keyboard. The \ key moves keyboard focus to the Entry Window associated with that keyboard without actually sending any keyboard commands to that window. Note that the use of keyboard remapping software, such as AutoHotKey, may not work correctly with two keyboard operation.

- **TX Lockout ((Digital)** – Select a lockout item (Digital modes only)
 - **Multi-TX** – This is the default setting. Start CQ on radio A, start CQ on radio B, both are active (no lockout)
 - **First one wins** – Start CQ on radio A, pause, start CQ on radio B. The radio B CQ is ignored since radio A is already active, so if you press a F-key for the second radio while radio1 is transmitting, the radio B F-key is ignored
 - **Last one wins** – Start CQ on radio A (CQ starts), pause, start CQ on radio B. The CQ on radio A will be aborted and the CQ on radio B will start so if you press a F-key for the second radio while radio A is transmitting, the radio A transmission is interrupted and radio B transmits

There's No Substitute for A Hardware Lockout

Software lockouts are inherently less reliable than hardware systems, because of the vagaries of networking, RFI, etc. We urge you not to rely solely on software lockouts to prevent rule violations or hardware damage.

“Sticky” options

The Focus Other (Ctrl+Shift+K) and Ctrl+Fx settings, whether controlled through keyboard shortcuts or through the SO2R sub-menu of the Configurer, are “sticky” – that is they are remembered the next time the program is opened. This can surprise you if you don't remember having set them.

Software Setup

Setting up SO2R and SO2V starts in the Config menu:

- Config > “Configure Ports, Telnet Address, Other” > Hardware Tab

If SO2R

Set up radios
Set up keying if necessary (Serial port, LPT port or Winkeyer)
Click SO2R button
Click OK to close out
Launch N1MM Logger, set up contest etc

If SO2V

Set up radio
Set up keying if necessary (Serial port, LPT port or Winkeyer)
Click SO2V button
Click OK to close out
Launch N1MM Logger, set up contest etc

If 2nd Entry Window is not shown, hit the \ key (backslash key)		If 2nd Entry Window is not shown, hit the \ key (backslash key)	
Selected mode	Radios attached	Choices	Selection
SO2R	none	SO2R – Left Manual, Right Manual	Automatically selected
SO2R	1 (Kenwood)	sO2R – Left Manual, Right Kenwood Com1	Select one
SO2R	2 (Kenwood & FT847)	SO2R – Left Kenwood Com1, Right Manual	Select one
SO2R		SO2R – Left Kenwood Com 1, Right FT847 Com 2	
SO2R		SO2R – Left FT847 Com1, Right Kenwood Com 2	
SO2V	1 (Kenwood)	SO2V – Kenwood	Automatically selected

LPT Keying

When operating SO2V, and using LPT port keying, the Radio Nr in the LPT port configuration must be set to Both.

When operating SO2R, and using a single LPT port for keying, the Radio Nr in the LPT port configuration must be set to Both. This configuration will require an external box to switch the keying line between the two radios. The external box can be controlled using LPT pin 14.

When operating SO2R and using a separate LPT port for each radio, the Radio Nr in each LPT port configuration must be set to The corresponding radio, 1 or 2.

Winkeyer and WinkeyerUSB keying

When operating SO2R, and using Winkeyer, the Radio Nr in the Winkeyer COM port configuration must be set to Both.

When operating SO2R, and using a single Winkeyer port for keying and PTT, the Radio Nr in the Winkeyer COM port configuration must be set to Both. This configuration will require an external box to switch the keying line between the two radios. The external box can be controlled using LPT pin 14.

When operating SO2R and using Winkeyer's 2nd CW and PTT Outputs (available in later models), the Radio Nr in the Winkeyer COM port configuration must be set to Both.

SO2R Radio Support

All supported radios will work with SO2R. N1MM Logger will allow you to use any combination of computer controlled and non-computer controlled radios. If you use a radio that is not supported or has no radio control, do not set up a radio COM port. You only set up that information when you have a computer controlled radio.

Using External SO2R Controllers

N1MM Logger is compatible with most older hardware SO2R controllers using the LPT port such as the Top Ten Devices “DX Doubler”, and the Array Solutions “SO2R Master”. These products will automatically switch keying, PTT and audio lines between radios. New products like the microHAM MK2R can be fully controlled via USB or via an LPT port. The EZmaster from Ham Radio Solutions is only supported using its LPT port and not its USB port.

Controllers using the LPT port will require a straight-through DB-25 cable from your LPT port of your computer to the input DB-25 connector.. For hooking up the rest of the keying and audio lines, consult their respective manuals. All products use the same pin-outs on the LPT port.

To get N1MM Logger to correctly key and control these devices, you need to set up your keying as follows:

LPT Keying with External SO2R Controllers Using LPT Port

- Open Config >Configure Ports, Mode Control, Other >Hardware tab
- Check LPT keying box – check only one LPT box unless using another one for antenna selection control
- Click on the corresponding “Set” button for the LPT port
- Click on “Radio Nr” drop down box and select “Both”
- Click on OK to set configuration

Using Winkeyer and WinkeyerUSB

The original Winkeyer, used a RS-232 COM port, and is not a USB device. Winkeyer has an internal pin 3 output, which is normally CW for 1 radio, and an internal pin 5 which is normally PTT for a single radio. Under N1MM Logger software control, pin 3 can set for Radio 1 CW output and Pin 5 can be set for Radio 2 CW output. The virtual serial port assigned to the Winkeyer USB device should have the “Hardware” tab “Set” and Winkeyer checked and Radio Nr set to ‘Both’. Then go to the “Winkeyer” tab and set Pin 5 function to “2nd CW”

The “K” output on the Winkeyer board goes to Radio 1 CW and the “P” output goes to Radio 2 CW. N1MM Logger takes care of all the switching provided you activate

the proper radio.

The WinkeyerUSB (sometimes called “Winkeyer 2”) has separate CW and PTT outputs for each radio. The 2nd radio CW is enabled from the Winkeyer tab “Use 2nd Output”.

SO2R Using the DX Doubler

Setting Internal DXD Jumpers to Enable Stereo Feature

Thanks to W4NZ, long-time N1MM and DXDoubler user, for the following:

Here is my baseline configuration – the one that has been working for me in contests for quite a while. This is also compatible with all the SO2R features in N1MM. Control of the DXD is from a hardware LPT port.

Jumper 1: 2-3
Jumper 2: 5-6
Jumper 3: 9-10

Coincidentally, these are the same as the jumper settings for the “NA” software as shown in the DXDoubler manual.

If you change the jumper settings to those shown in the DXD manual for CT/TR/WL,

Jumper 1: 1-2
Jumper 2: 4-5
Jumper 3: 8-9

then testing the SO2R features, N1MM Entry window focus moves to the correct radio just as it should but the DXD does not automatically switch radios (RX audio/TX focus) to follow the window focus. However, the DXD can be switched manually by using the PAUSE key or CONTROL + Left/Right Arrow. The Backslash key (\) also moves focus without switching the DXD.

With the NA jumper settings, now you can use the “tilde” key (~/`) to toggle stereo audio (Left radio-left ear/Right radio-right ear) on and off.

You can use the macros **{STEREOON}** **{END}** **{STEREOOFF}** in Function Key Messages) to switch the audio automatically according to the operator’s preference. Refer to [this page](#) for more details.

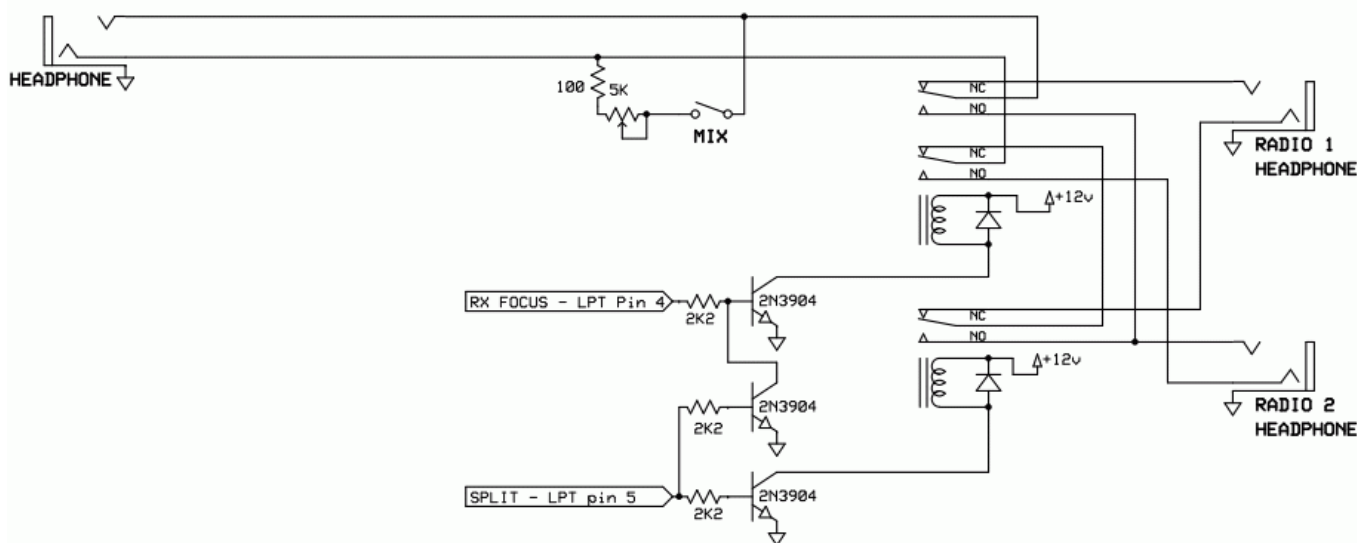
Example for F1 – CQ Message: **{STEREOON} CQ TEST * * TEST {END} {STEREOOFF}**. This sequence will turn on Stereo during transmission of the CQ so that you can listen on the second radio, and then go back to both ears on the CQing radio when the CQ finishes. Note that the {END} macro is required, because

otherwise the {STEREOOFF} macro will be executed **before** the CW is sent.

LPT Port Basic SO2R Controller Design

A basic SO2R controller design ... it's about as simple as there is but it works well with N1MM (or Writelog) in LPT mode. I decided to add support for CW from the LPT - the PTT relay can be replaced with a SPDT relay if CW is taken from two COM ports or Winkeyer USB is used (better). Joe, W4TV - 5/30/2009 - Revision 1.0

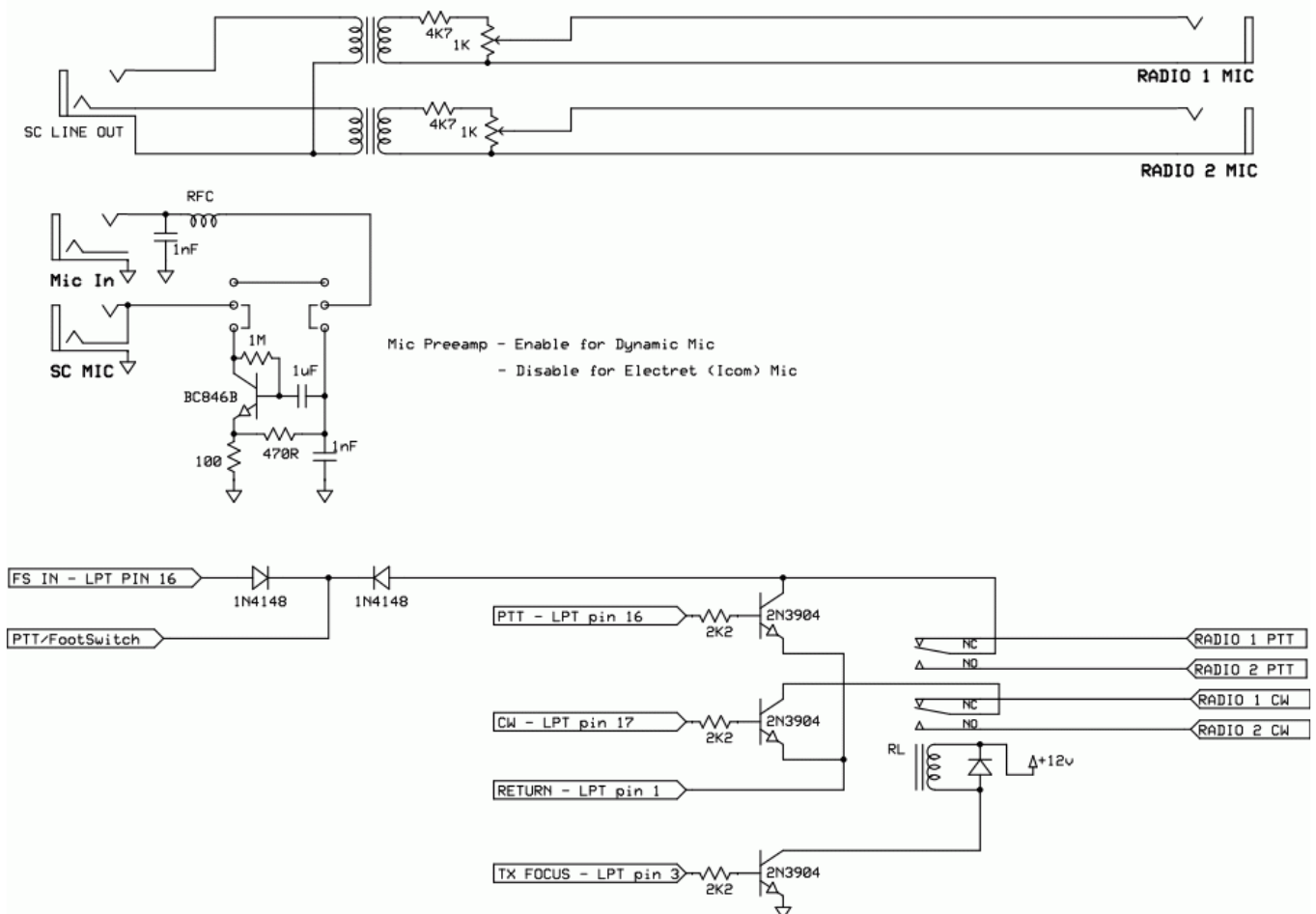
Basic SO2R LPT Port - Receive Interface



Basic SO2R LPT Port - Transmit Interface

Operating

Single Operator Contesting



Focus on Other Radio (FocusOther)

A method of focus control, preferred by many contesters. When FocusOther is active, the RX focus is automatically shifted between the “Run” radio and the “S&P” radio, depending on whether the Run radio is transmitting. When the Run radio is transmitting, RX focus is shifted to the S&P radio. When the Run radio stops transmitting, RX focus shifts back to the Run radio, unless an unworked callsign has been entered in the S&P entry window. This allows a callsign to be entered in the S&P radio Entry Window while CQ is being sent on the Run radio.

SO2R and MMTTY

Instructions for setting up two copies of MMTTY for use in SO2R (Note: there are more detailed instructions on setting up for digital modes in the Digital Modes section – this section focuses on the SO2R aspects):

- Create two separate folders for the two copies of MMTTY. This allows each copy to have its own configuration
 - Copy the MMTTY.exe, MMTTY.ini and UserPara.ini files (plus extfsk.dll if you use EXTFSK, or extfsk64.fsk if you use EXTFSK64) from the main MMTTY program folder into each of the two folders you will use for SO2R
- Start N1MM Logger+ and open the Configurer (Config > Configure Ports, Audio, Mode Control, Other)
- Select the Digital Modes tab
 - Under Digital Interface 1, TU Type, select Soundcard. Similarly for Digital Interface 2
 - Under DI-1 MMTTY Setup, select AFSK or FSK as appropriate for your setup and set the MMTTY Path to point to the copy of MMTTY.exe in the first folder
 - Under DI-2 MMTTY Setup, select AFSK or FSK as appropriate and set the MMTTY Path to point to the copy of MMTTY.exe in the second folder
- Select the Hardware tab
 - Select the SO2R option
 - This next step is optional for many users, but mandatory for some. If you are using serial ports for PTT and/or FSK from MMTTY, you may need to check the Digital check box beside the ports used by the two copies of MMTTY. This step is necessary if you use the same port for CW or PTT keying from N1MM Logger in CW or SSB modes; if the only place you use a port is from MMTTY, this step is unnecessary
 - Click on the Set button for the port you will use with Radio 1 and set the Radio Nr and the Dig Wnd Nr both to 1
 - Click on the Set button for the port you will use with Radio 2

and set the Radio Nr and the Dig Wnd Nr both to 2

- Close the Configurer
- Open the Digital Interface 1 Window (Window > Digital Interface menu item in the main or Radio 1 Entry window)
 - If an MMTTY window does not appear (e.g. if you see an MMVARI window instead), then in the DI Window select the Interface > MMTTY menu item to open the MMTTY window
 - Select the Setup > Settings menu item
 - Under Preferred RTTY Interface (lower left), select MMTTY
 - Under Alignment Frequency (lower right), enter your Mark audio frequency (e.g. 2125)
 - Click on Save Configuration
 - In the DI Window, select the Setup > Setup MMTTY menu item
 - Select the TX tab and set the PTT & FSK port you will be using for the Radio 1 copy of MMTTY
 - Select the SoundCard tab (MMTTY version 1.66 or newer) and select the Reception sound card you will use with Radio 1. If you are using AFSK, you must also select the Transmission sound card
 - Under the Misc tab, select the channel (left or right) under Source. If you are using an older version of MMTTY, you may also have to set the Device numbers (this is not necessary if you have selected the sound card using the SoundCard tab)
 - Close the MMTTY Setup window
- If the second Entry window is not open, open it by pressing the Pause key, the backslash (\) key or Ctrl+Right Arrow. In this window, select the Window > Digital Interface menu item to open the second Digital Interface window. Repeat the above steps using the COM port, sound card device and channel you will use with Radio 2

SO2R RTTY with 1 Soundcard

If you have a two-channel sound card and the necessary cabling to send audio output from both radios to the line input of the same sound card (left radio on the left channel, right radio on the right channel), you may be able to use a single sound card for SO2R RTTY. Just set both MMTTY instances to the same card, and in the configuration for each copy of MMTTY select the appropriate channel for that radio. Note that for AFSK transmit, MMTTY only uses the left channel regardless of which channel it is using on receive. Therefore if you are using AFSK for transmitting you will have to route the audio output from the left channel of the sound card to the audio inputs on both radios and rely on the SO2R switching to control which radio gets PTT.

If your sound card does not support separate inputs for the two channels, such as a laptop sound card with only a mono mic input, you won't be able to do this and you will have to use two sound cards for SO2R.

Two-Computer SO2R

Some operators, particularly on RTTY, prefer to use separate computers for SO2R. This is not explicitly supported by N1MM Logger, but there is a way.

First, be sure both computers are running the same version of N1MM Logger. Turn on Networked-Computer mode (Config >Networked-Computer Mode), and configure the network between your computers as explained in the manual pages for the [Network Status Window](#). Then set up your contest class as Multi-One.

Set your lockout style under Config >SO2R >TX Lockout as explained [here](#)

- **First One Wins**

- UNCHECK >Multi-User Tools >*Force Other Station to Stop Transmitting When I Transmit*
- UNCHECK >Multi-User Tools >*Block My TX Only if Other Stn Transmitting on Same Band & Mode (Multi-One)*

- **Last One Wins**

- CHECK >Multi-User Tools >*Force Other Station to Stop Transmitting When I Transmit is CHECKED*
- UNCHECK >Multi-User Tools >*Block my TX Only if Other Stn Transmitting on Same Band & Mode (Multi-One)*

Please note that a number of N1MM Logger's advanced SO2R features cannot be used in this style of SO2R operation,. The list includes Ctrl+Fx (send Fx on the opposite radio), {CtrlFx} (the same as a macro), dueling CQs, and FocusOther. All of these require both radios to be connected to the same computer. Serial numbering, if used, will conform to the Multi-Single rules for the contest in question.

Don't forget to change your entry class back to Single Op or Single Op Assisted in the Contest Setup window before you generate your Cabrillo file.

Users Please Note

Please be aware that the developers will not implement Feature Requests or respond to Bug Requests that result from 2-computer SO2R's not conforming to single-computer SO2R expectations.

Two Band Split Interleaved QSO (2BSIQ) with the YCCC Controller

This description of a sample 2BSIQ configuration posted to the N1MM+ reflector by Steve N2IC on 2019-05-30:

First of all, let me make it clear – there is nothing easy about doing 2BSIQ. I feel exhausted after just a few hours. I have huge respect for guys like KL9A, N6MJ,

8P5A (W2SC), CT1BOH, N4YDU, etc. that strive to stay in 2BSIQ mode for 48 hours. I couldn't do it. Also, my way is not the only way to do it with N1MM+. I encourage folks to experiment and see what works best for them.

Settings: In SO2R menu: Two Keyboards, Toggle Stereo/OTRSP Macro. Nothing else checked. Configurer, Function Keys – set Again Key to F7.ESM (of course !) All radio sidetones muted.

In the YCCC SO2R Box settings, Headphones Normal. No latch or split stereo.

Make sure that two keyboards are activated – type one character on the left keyboard, it should appear in the left entry window. Type one character on the right keyboard, it should appear in the right entry window. Two keyboard mode is now activated.

I do all CQing manually by pressing the Enter key on each keyboard when needed. No dualing CQ or other automation. One hand on each keyboard. Yes, it has taken lots of practice to be able to use only one hand on each keyboard. Breaks all rules about touch typing that you might have learned.

Here's the .mc file I used for WPX CW.

```
F1 Cq,cq test *{OTRSPOTHER RX}{END}{STEREOON}
F2 Exch,5nn|||#{OTRSPOTHER RX}{END}{STEREOON}
F3 Tu,??tu?? *{CLEARIT}{OTRSPOTHER RX}{END}{STEREOON}
F4 {MYCALL},*
F5 His Call,!
F6 ?,?
F7 NR,#
F8 LOGIT,{LOG}
F9 nr?,nr
F10 Call?,cl?
F11 STERTOG,{STEREOTOGGLE}
F12 RX Ant Toggle,{ANTRX1TOGGLE}
#S&P ---, Search and Pounce Messages begin here -----
F1 Qrl?,cq test *
F2 Exch,5NN|||#
F3 Tu,tu
F4 {MYCALL},*{CTRLF7}{END}{STEREOON}
F5 His Call,!
F6 Repeat,{SENTRSTCUT} {EXCH} {EXCH}
F7 NR,#
F8 LOGIT,{LOG}
F9 nr?,nr
F10 Call?,cl?
F11 STERTOG,{STEREOTOGGLE}
F12 RX Ant Toggle,{ANTRX1TOGGLE}
```

The CQ is kept very short to match the duration of the callsign you are receiving on the other radio. The F11 {STEREOTOGGLE} is wired to a footswitch. You often want to quickly get out of stereo to focus on one radio. Pressing the footswitch is faster than searching for the ~ key.

Here's an ideal 2BSIQ sequence. Each line represents events happening at the same time. The — separates left and right entry window actions.

CQ enter key left keyboard—(nothing done on right keyboard)

Station answers, type call on left EW—CQ Enter key right keyboard (press the CQ enter immediately after the left CQ has completed)

Send run exchange enter key left keyboard— Station answers, type call on right EWReceive exchange, typing on left keyboard— Send run exchange enter key right keyboard

Send TU enter key left keyboard— Receive exchange, typing on right keyboard

Station answers, type call on left EW— Send TU enter key right keyboard

There - you have just completed two QSO's, simultaneously (and a third QSO is just getting started on the left EW). Ideally, you don't have guys sending to you simultaneously on both radios. Ideally, you don't have to make the other station wait while you are sending on the other radio. Real life is not ideal as you will quickly discover.

It is very important to be constantly looking at the echo'd CW characters at the bottom of the entry windows, so you know where you are in the flow.

That should get you started.

73, Steve, N2IC (and sometimes WK5T)

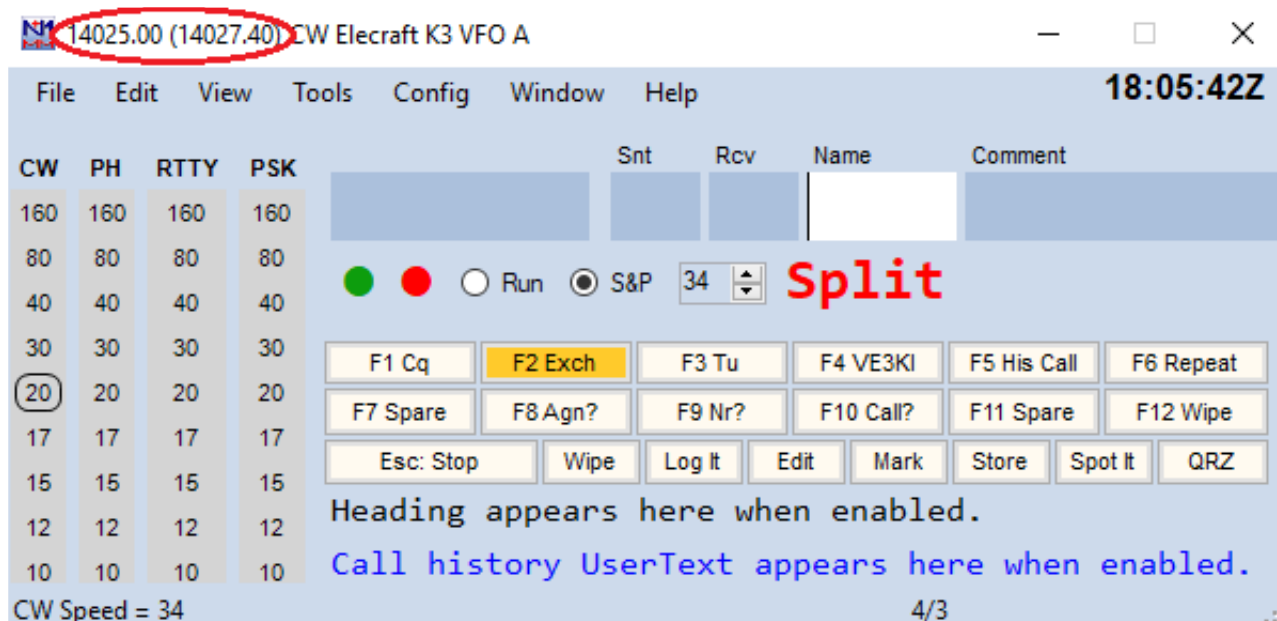
Single Operator Split Operation

Split operation is when you transmit on a frequency different from the one where you are listening. This is often used when stations have huge pileups like some DXpeditions, or when frequency allocations do not allow people in different countries or IARU regions to make contact on the same frequency. An example is 40 meter SSB between Europe and the USA. Many European stations operate below 7.125 MHz, the bottom edge of the US allocation. When N1MM Logger is controlling a transceiver with split capability, the program enables you to split and "unsplit", to change frequencies, and perform other useful operations.

When used in this manual, the term "split frequency" always refers to the transmitting frequency. The assumption is that you will listen first, either to identify a station to call or a clear listening frequency to use while running, and then set your transmit frequency.

Am I Transmitting Split?

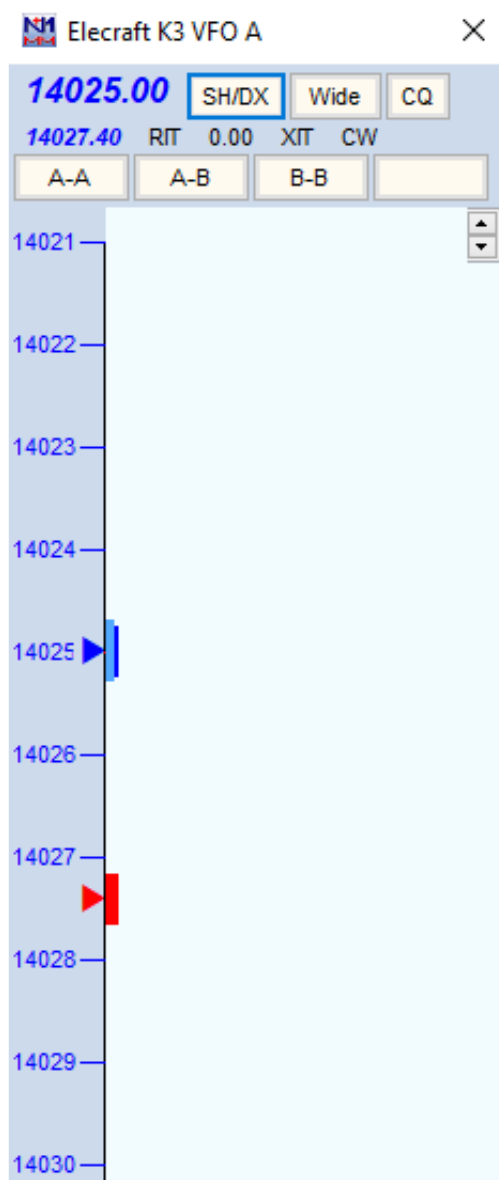
There are a number of ways that the program tells you whether you are in Split mode, which can avoid some embarrassing moments or potentially, a citation for out-of-band operation. In the Entry window Split is displayed in the title bar. The receive frequency is always displayed first, and the transmit frequency in parentheses, as in this example.



In the Bandmap, there are two sets of indicators, shown in this example.

Operating

Single Operator Contesting



You'll notice that the receive frequency is shown in bold blue letters at the top of the Bandmap, and the transmit frequency is shown below it in smaller type. You are also reminded by the indicators for your receive frequency (always blue) and your separate transmit frequency (always red).

Clicking on either the receive or transmit frequencies in the top part of the Bandmap will toggle split operation.

Running While Split

Some people prefer to be in Split mode while running, in order to use the main tuning knob to tune in calling stations that are off frequency. One drawback is that if you tune your receive frequency outside the tuning tolerance set on the "Other" tab in Config > Ports, Other, the program switches from Run mode to S&P. The way to avoid this is to use Alt+F11 to temporarily lock the program in the current mode. That is, if you press Alt+F11, the program will not automatically change modes when you tune. Press Alt+F11 again to return to normal operation.

Setting Split Transmit Frequencies Manually

The easiest way to set a split transmit frequency is to type the desired frequency in kHz into the Callsign textbox in the Entry window, and then hit Ctrl+Enter. Another alternative is to use Alt+F7 to open the Split dialog, type the transmit frequency, and hit Enter. The split frequency may be entered either in full (e.g. 7027), as a difference from the lower band edge (e.g. 27), or as a positive or negative difference from the receive frequency (e.g. +2) . Decimals are allowed (7032.3, or 7032,3 if your regional preferences in Windows use the comma as the decimal separator).

Split Mode and Frequencies Set Automatically from Cluster Spots

If you click on a station in the Bandmap which was spotted with a QSO (transmit) frequency specified — in the format "DX PA1T 7095 QSO 7130", the radio will be put into split mode and the frequencies set automatically. You will be set up to transmit on 7130 (in this example).

Resetting to Non-Split Mode

Resetting to non-split mode is done by moving to another frequency or band, **using the program to do so**. Simply turning the VFO on your transceiver will not do it. You can:

- Click on another spot or frequency in the Bandmap

-
- Click on a non-split spot in the Packet/Telnet window
 - Click on the transmit frequency or receive frequency in the top part of the Bandmap
 - Click on a band button in the Available Mult's & Q's window to change bands
 - Press Ctrl+PgUp or Ctrl+PgDn (which also changes bands)

Icom Precautions

Icom radios can't report VFO B without being set to VFO B, and don't report whether the radio is in Split mode. To operate split successfully, you need to set and cancel splits solely from the computer. Use Ctrl+Enter or Alt+F7, as above. Only turn Split on/off from the keyboard/program and not on the radio, to make sure it stays in sync with the program.

Split Operation Key Assignments

Alt+F7 – Set split frequency or offset from current frequency for the active radio. When hitting Enter or click OK with nothing on the line split will be cleared. Press ESC or click Cancel to exit.

Alt+S – When your rig is in Split mode, Alt+S will reset the receive frequency back to your transmit frequency, but the split mode is preserved. This is used to run a pileup with the rig in split mode. With a radio which has VFO A/B they use the 2nd VFO as an RIT. This is done since many RIT knobs are small or hard to get at, while some find it more natural to use the main VFO to tune in a caller rather than use the RIT. By running split, you can use the main knob to tune in the caller, while your TX frequency doesn't change. The Alt+S acts like an "RIT clear" when you are running split.

This operates on VFO-A only. With Main/Sub radios like the Icom 756/7800 series you can not RX on SUB without receiving on both VFOs. In this case put RX on Main and TX on SUB for Alt+S to work.

"Reset RX freq when running split", an option found on the Entry window's Config menu, is a way of automating the Alt+S function. When this option is checked, the program will automatically do an Alt+S as you log each QSO. This gives you an automated "RIT clear" after every QSO when you are running split.

Ctrl+S – When not in split mode, the first press of this combination puts the radio and program into Split mode. After that Ctrl+S will toggle the RX frequency between the split RX frequency and the RX/TX frequency while maintaining split mode. Application: This was designed primarily to help SSB operators run on 40 or 80mM where split operation is widely used. For example, "CQ CQ de N1MM listening on this frequency (7183) and 7068". Use the Ctrl+S key to toggle between 7183 and 7068 to check for both USA or DX callers.

Ctrl+Alt+S – Toggle Split mode on the radio. ‘Split’ will be shown in the Entry window.

Ctrl+Enter – Entering a frequency or offset in the callsign with Ctrl+Enter will set a split frequency.

Using Split - Some Hints

Click on a spot in the Bandmap or Available window. Then look at the Bandmap or the Entry window title bar to see if you are going to transmit out-of-band. If you SINGLE-click on a spot on 40 or 80, and don't see the split indicator, then wait for the station to announce his listening frequency. If he says “listening 214.5”, type 214.5 in the Callsign textbox and press Ctrl+Enter – you are then ready to call him.

Split mode vs. SO2V

With a dual-receiver radio, the difference between Split mode and dual receive operation can be tricky. If both receivers are on, the radio is set up exactly the same way for split from the VFO A Entry window (listen to the other station on VFO A, monitor your transmit frequency on VFO B, transmit on VFO B) and for SO2V with the Entry window focus on VFO B (conduct a simplex QSO on VFO B while monitoring the VFO A receiver somewhere else on the band). However, although these two situations are identical on the radio, they are quite different in the logging software. In the split operation scenario, the QSO is logged from the VFO A Entry window, with different RX (VFO A) and TX (VFO B) frequencies in the log. In the SO2V scenario, the QSO is logged from the VFO B Entry window with the RX and TX frequencies the same (both from VFO B).

By changing the transmit VFO from VFO B to VFO A, you can switch to either one of two new situations – split from the VFO B Entry window (listen to the other station on VFO B, monitor your transmit frequency and transmit on VFO A) or SO2V with the Entry window focus on VFO A (conduct a simplex QSO on VFO A while monitoring the VFO B frequency somewhere else on the band). Again, these two are the same on the radio, but different in the logging software – split logged from the VFO B Entry window with different RX and TX frequencies in the log vs. SO2V logged from the VFO A Entry window.

Because there are four possible logging scenarios but only two different radio configurations, you cannot depend on making adjustments from the radio to get QSOs logged correctly. By default, in SO2V mode with both receivers active, N1MM Logger will assume you are operating in one of the two SO2V modes and will log QSOs using the callsign and exchange from the active Entry window and logging both TX and RX frequencies from the active Entry window's VFO.

It is possible to work and log split mode QSOs in SO2V mode, but it takes care and practice to get it right. In order to work and log QSOs in split while the Logger is in

SO2V mode, you must tell the Logger that you are operating split. Since you cannot do this from the radio, you must turn Split on or off from the keyboard/program, using Ctrl+S and Ctrl+Alt+S. You need to take care to do this from the correct entry window (the one whose VFO you are receiving the other station on), and to be aware at all times of which frequency you are transmitting on.

Single Operator Call Stacking

Call Stacking Overview

Single Operator Call stacking allows a CQing operator to enter multiple call signs that are received in response to a CQ message, and work them one after the other sequentially without re-entering a new call sign for each QSO. Macros and keystrokes used for call stacking include **{SOCALLSTACK}**, **{STACKANOTHER}**, **CTRL+ALT+G**, **{LOGTHENPOP}**, and **ALT+D**. The first three are used to place calls onto the stack and the last two are used to take calls off the stack. The macros only operate in RUN mode. Stacked callsigns appear in a small CallStack window that appears immediately above the Entry window the first time a call is stacked. You can move this window to another location on your display with the mouse, or dismiss it with the X in the title bar, in which case the next time it appears it will be above the Entry window again.

Single Operator Call Stacking is functional in CW, phone, and digital modes and is compatible with manual key operation or ESM. It can also be used in SO1V, SO2V and SO2R modes and in multi-station environments.

{SOCALLSTACK} or **{STACKANOTHER}** or **CTRL+ALT+G**

The operator can stack a full callsign or a partial callsign that may include a “?” that will be highlighted when that callsign is removed from the stack. The operation of the **{SOCALLSTACK}** and **{STACKANOTHER}** macros differ slightly:

{STACKANOTHER} or the keystroke short cut, **CTRL+ALT+G**, simply pushes callsigns onto the stack and clears the Entry Window callsign box.

{SOCALLSTACK} functions as a single level stack macro. The first execution of **{SOCALLSTACK}** stacks the first callsign and clears the Entry Window callsign line. When a second callsign is entered and **{SOCALLSTACK}** is executed again, the two callsigns are exchanged. If the callsign window is empty when **{SOCALLSTACK}** is executed, the callsign is removed from the stack and placed into the callsign Entry Window. The user can thus control which call sign will be worked first, whereas with **{STACKANOTHER}** the last call sign entered is the first one to be worked.

If you have **{SOCALLSTACK}** programmed to an F-key, pressing it once at any time will exchange the current callsign with the next callsign on the stack. If there is no callsign on the stack, then it stacks the call and gives you an empty callsign window

to enter one. Pressing the F-key again will reverse them again.

{LOGTHENPOP}, ALT+D

The stacked callsigns can be removed from the stack with several methods: logging the current call, unstacking the next callsign with {LOGTHENPOP} or manually deleting the stacked callsign with the keystroke ALT+D. The ALT+D keystroke is useful if a callsign appears on the stack via a telnet spot and is not one of the ones you want to work. The next callsign on the stack is displayed in the On Deck box in the CallStack window. Pressing Space will move a stacked call from the CallStack window to the callsign box in the Entry window.

ESM Automation

The Configurer, Function Key tab, Next Call Key is used to select the function key that contains the {LOGTHENPOP} macro along with the message string for ESM automation. If a Next Call Key has been specified, then when Enter is pressed to finish a QSO and there is another call sign on the callsign stack, the Next Call Key will be sent instead of the TU(F3) Key. The last option in the drop down menu for the Next Call Key allows the ESM SOCallstacking automation to be disabled.

SOCALLSTACK ESM Example

Program F9 key to: {STACKANOTHER} or {SOCALLSTACK}

Program F10 key to: {LOGTHENPOP}TU NW {F5} {F2}

For SSB, the appropriate SSB wave file can be inserted into the F10 message in place of the " TU NW" letters above.

Set >Config >Function Key tab >"Next Call Key" to F10

Select RUN mode and turn ESM on. For this example two stations are calling, N2IC and K3CT

Type K3CT, press F9, type N2IC and press Enter

Copy N2IC's report and press Enter. This will log N2IC, and then instead of F3 it will invoke F10, which will send the TU, unstack K3CT, and send the exchange

SOCALLSTACK Non-ESM Example

Program the function keys as listed above.

Select RUN mode.

Type K3CT, press F9, type N2IC and press the exchange key programmed in Configurer, usually ";". This key is programmed to F5 & F2.

Copy N2IC's report and press F10. This will log N2IC, unstack K3CT, and send the exchange.

If multiple callsigns are stacked, ESM will continue to unstack the callsigns. The same is true in non-ESM mode as the Next Call key (F10) is pressed. Should a logging error occur such as a bad call, the sequence will be interrupted until the error is corrected. When no calls remain on the stack, the normal TU message is

sent (if not using ESM, you would normally press F3 instead of F10 at this point). If there are multiple callsigns on the stack, the order that they are removed or exchanged with {SOCALLSTACK} depends on the internal sorting order and not necessarily the order they were stacked.

Additional SOCALLSTACK Information

If a callsign was placed on the callsign stack but you want to remove it without working it, use the ALT+D keystroke to remove it without popping it off the stack into the Entry window.

Single Operator Call Stacking does overlap slightly with multi-operator call stacking. Multi-operator call stacking is the program feature that allows a second operator to listen to the run radio and send calls to the run operator's Entry Window.

Digital Call Stacking

In digital modes there are two different ways to work stations one after the other in series when more than one station responds to your CQ. The first method is based on the Single Operator Call Stacking described in the previous sections, adapted to use the features of the DI window. The second method, using the Grab list, is unique to digital modes.

LOGTHENPOP: To use this, you must program a function key using the {LOGTHENPOP} macro, e.g.:

{TX} ! {LOGTHENPOP} TU NW {F5}{F2} {RX}

When this function key is pressed or clicked on at the end of a QSO instead of the normal TU key, it will log the previous contact, pull the next call sign off the single operator call stack in the CallStack window, and send the exchange to the new station. If you designate this function key as the Next Call Key in the Configurer under the Function Keys tab, ESM will automatically select this key instead of the TU key at the end of a QSO whenever there is an unworked call sign remaining on the call stack in the CallStack window. Note that you must use two different function keys for the TU and Next keys; do not put {LOGTHENPOP} into the TU key. Don't program the exchange (e.g. # in a serial number contest) directly into the Next Call key; use the {F2} macro to call up your regular exchange message, as in the example above. Using # in the Next Call key will send the wrong serial number.

How do you get call signs into the CallStack? You can do this effectively in digital modes by selecting the **Setup > Digital Call Stacking** menu item in the Digital Interface window's menu bar. This enables an efficient way to place call signs on the single operator call sign stack. You have three choices, depending on which order you want calls to be popped off the stack ready to be worked: Enable using First In First Out (FIFO – the first call to be worked will be the one that was placed on the stack first); Enable using Last In First Out (LIFO – the first call to be worked will

be the one that was most recently placed on the stack); and Enable using FIFO Mults First (callsigns will be taken off the stack in order of their multiplier value. In those contests where one QSO can yield 2 or 3 mults, the higher-mult calls will be taken first. Among calls with the same multiplier value, the first call to be worked will be the one that was placed on the stack first).

When Digital Call Stacking is enabled and you are in Run mode:

- If there is already a call sign in the call sign box in the Entry window when you mouse-click on another call sign in the RX window, clicking on the new call sign in the RX window will either put the new call sign directly on the stack (FIFO), or else (LIFO) it will move the call sign that was formerly in the Entry window onto the stack in the CallStack window, and will bring the new call sign into the Entry window
- Alt+left-clicking on a call sign in the RX window will move that call sign directly onto the stack in the CallStack window without changing the call sign in the call sign box in the Entry window. You can place any number of call signs on the stack ready for working one after the other
- Instead of clicking directly on a call sign, you can also use {GRAB} or Alt+G to pull the highlighted call sign off the Grab list into the Entry window. The call sign that was formerly in the Entry window will be moved onto the stack
- Instead of using {GRAB} or Alt+G, you can use {STACKANOTHER} or Ctrl+Alt+G to move that call sign from the Grab list directly onto the stack without changing the call sign in the call sign box in the Entry window

When Digital Call Stacking is enabled, left-click, Alt+left-click, {GRAB}/Alt+G and {STACKANOTHER}/Ctrl+Alt+G give you a variety of ways to choose which call signs you want to place onto the call sign stack and into the Entry window. Once there are one or more call signs on the call sign stack, after working the first station in the Entry window, the Next Call key (automated with ESM) lets you work the call signs from the stack rapidly one after the other.

LOGTHENGRAAB: There is a separate method that uses the Grab list in the DI window with the {LOGTHENGRAAB} macro. You do not need to enable Digital Call Stacking to use this method. You can use any method you wish to get the first call sign into the Entry window so you can work that station. At the end of the QSO with the first station, if you want to work the call sign that is highlighted in the Grab list, you can use an F-key or message button that contains:

{TX} ! {LOGTHENGRAAB} TU NW {F5}{F2} {RX}

This will log the contact with the first station, then grab the highlighted call sign from the Grab list and send the exchange to that station. You can repeat this for as long as there are workable call signs being highlighted in the Grab list. If the next highlighted call sign in the Grab list is invalid or not workable, you should press or click on the normal TU key instead, in order to avoid attempting to work a bad call sign. You can also program a {DELSEL} macro into an unused function key or DI message button for use in removing unwanted call signs from the Grab list. Don't

program the exchange (e.g. # in a serial number contest) directly into the function key that has the {LOGTHENGRAB} macro in it (the # macro in this key will send the wrong serial number); use the {F2} macro to call up your regular exchange message, as in the example above, to get the correct exchange sent to the second station.

Using this method, the Grab list is populated automatically, but you have to decide manually whether to use the normal TU function key or the message key containing the {LOGTHENGRAB} macro. This is because of the possibility of unwanted or incorrect call signs in the Grab list – it is up to you to decide whether the next call in the Grab list is one you want to work using {LOGTHENGRAB}, or whether you just want to end the QSO with a normal TU message. Do not put a {LOGTHENGRAB} macro in your normal TU function key, or in the Next Call function key if you are using one. {LOGTHENGRAB} must be in a separate function key or in one of the DI message buttons. Also, if you have enabled the Next Call key in the Configurer, do not put a {LOGTHENGRAB} macro in the Next Call key message; the correct macro to use in the Next Call key is {LOGTHENPOP}.

Multi-Computer and Multi-Op Contesting

Multi-Computer and Multi-Op Contesting

Introduction

The purpose of Multiple Computer Networking is to support logging of QSOs on multiple computers. This is accomplished with application-defined data replication. Each computer will have its own copy of ALL the QSOs and N1MM+ will synchronize the data so that it is the same on each computer. This approach is used because testers usually operate in a high-RF environment and using a single database would not be as reliable as having each computer log its own QSOs and replicate them on all the other computers. The station that logged the QSO, as identified by its NetBios name is the keeper of that data. When data is out-of-sync, the QSOs on each computer will be replaced with QSOs from the computer that logged them. NEVER, EVER REPLACE A COMPUTER IN A NETWORK AND USE THE SAME NetBios NAME while in multiple-computer network mode. You risk losing ALL the QSOs from the computer you are replacing. Likewise, do not shut down networking and modify QSOs. When you bring the network back up, the system will replace your changes with the originals from the owner's computer. You can log with the network down, but you are confined to the QSOs that you own and that you add.

There are major changes in N1MM Logger+ networking, as compared with N1MM Logger Classic, which will affect both multi-op contesting and those operators who network multiple computers for single-op categories, particularly on digital modes.

- You no longer need to enter computer names and IP addresses when networking on a typical LAN. When networking is turned on, N1MM Logger+ detects the presence of computers on the same subnet that are running the same version of N1MM Logger+, and automatically connects to them. You will be warned if there are discrepancies in contest or multi-op class among the computers, so that you can correct them.
- The Network Status Window is brand new in N1MM Logger+.

[illegible]

All network-related options and actions except for informational functions such as received Talk messages and band-change status have been moved to this new window. Those remain in the Info window.

A full explanation of this window and each of its functions is found [here](#).

Key Features

- Use of standard network interface cards (NIC's) and wireless interfaces
- Point to point or broadcast Talk capability between networked stations
- Automatic time synchronization (if non-master stations are Run as Administrator)
- Pass frequencies displayed at all stations
- DX Spots distributed by master station to all connected computers
 - Spotting commands can be sent by any station on the network
- Extensive error trapping and diagnostics
- Auto resync when a station comes on-line

CAUTION about Software Lockouts

The “**Force Other Station to Stop Transmitting When I Transmit**” and “**Block my Tx Only if Other Stn Transmitting on Same Band&Mode (Multi-One)**” items on the Options tab of the Network Status window are software lockouts. They are subject to network latencies and cannot be guaranteed to prevent simultaneous transmitting. Because of network latencies, lost packets, network dropouts or network failures there could be short overlaps in transmissions, or even complete failure of the lockout. For protection against damage from simultaneous transmitting, and/or to be absolutely certain that contest rules forbidding simultaneous transmissions are obeyed at all times, you must use a dependable hardware lockout system. **Do not depend on software lockouts to prevent equipment damage and do not expect software lockouts to give you an ironclad guarantee of compliance with contest rules!**

The Simplest Multi-Op

The simplest form of multi-operator contesting involves a single radio and a single computer, i.e. it is just like single-operator contesting except that two or more operators take turns, spelling each other. Of course, you have to ensure the correct entry class is entered in the Contest Setup dialog. From there on, if you wish to keep track of which contacts were made by which operator, you should use Ctrl+O, or the OPON direct entry command in the Entry window, and enter the call sign of the incoming operator every time the operator is changed. N1MM Logger+ will keep track of which operator made each contact, and that information will be displayed in the Log window. For the simplest setups, including CW and RTTY, and SSB without voice keying messages, this is almost all there is to it.

Multiple Radios and Multiple Computers

Most multi-operator setups will involve more than one radio and/or more than one networked computer. The details of how to set up a networked computer system are in the [Network Status window](#) section of this manual.

Stored Voice Messages in a Multi-Op (Any multi-op)

If you are using stored voice messages in a phone contest and you change operators while using the same stored voice messages, the voices heard over the air could vary during a single QSO between recorded messages and live voicing. This can be very confusing to the other station. To avoid this, it is best to have each operator record a separate complete set of voice keyer messages. To do this, create a separate subfolder for each operator within your wav files folder, labelled with that operator's call sign. Make sure the paths to your wav files in your function key messages includes the {OPERATOR} macro, as in "{OPERATOR}\CQ.wav". Before the contest, have each operator enter his or her call sign with Ctrl+O or OPON and then record all of the voice keyer messages in his or her own voice. Once the messages are all set up, the Logger will use the operator call sign entered during the contest with Ctrl+O or OPON to select which set of recorded messages to use.

If your multi-op uses multiple computers, and if any individual operator will use more than one of these computers during the course of the contest, that operator will need to create and populate a subfolder with his personal wav files on each of the computers that he or she will be using.

"Distributed" Multi-Ops (IARU Headquarters stations, for example)

It is possible to set up N1MM Logger to allow some or all of the other stations outside your LAN to communicate over the internet. Possible uses for this feature are: Headquarters (HQ) stations in the IARU contest and distributed special event stations.

Footswitch lockout support has been added for multiple distributed stations.

In the IARU contest a headquarters station is allowed to use multiple stations located within one IARU zone, but the rule of one signal per band/mode is still in effect. So there could be 2 (one running station and another looking for multiplier) or more stations on the same band and same mode and they should keep only one TX signal on this band at any time. Now you can hook up a footswitch to the LPT port 15 (the LPT port must be enabled even if it is not being used for other purposes. There is no special check box to turn the footswitch feature on/off). If the station is not in multi-multi operator category the footswitch will directly control PTT just like Alt+T. If it is a multi-multi station (connected to other stations on LAN or via the Internet in Multi User mode) it will prevent two stations on the network from both transmitting on the same band/mode combination.

This is a software lockout only, and is subject to network latencies. As such, it should be considered a backup. Multiple stations on the same band/mode should always coordinate operations (with the help of message passing over the network from the Info window), and not depend on software lockout to ensure compliance with contest rules.

Multi-Operator Capabilities and Techniques

N1MM Logger+ attempts to simplify and streamline important multi-operator functions. These are collected here to help the new multi-op participant quickly learn how to use N1MM logger+ effectively in this context.

Messaging

Frequently, in a multi-op situation, there is a need to communicate to other operators without shouting across the room. For this purpose, there is a Talk function, which can be used either one-to-one or one-to-many. It can be invoked in several ways:

- Ctrl+E
- The Talk button on the Actions tab of the Network Status window
 - either of these options assumes you want to send a message to all stations, so it enters an "*" to denote that your message will go to all stations.
- Right-clicking on a line in the Stations tab of the Network Status window.
 - Doing this will open the Talk window and enter the computer name of the station you clicked on.

In either case, you need to be sure and type a space before you begin your message, to keep the program from misunderstanding your message as part of the computer name.

You'll note that the Talk window stays open until closed by clicking on the "X" at upper right. However, if you right-click in the window, it brings up a menu with a single self-explanatory option, "Enter moves focus to Entry window".

Passing

Passing – referring stations you have worked to the operator on one or more other bands – is an essential tool for optimizing multiplier counts and total scores in a multi-op. There are two basic forms that this can take:

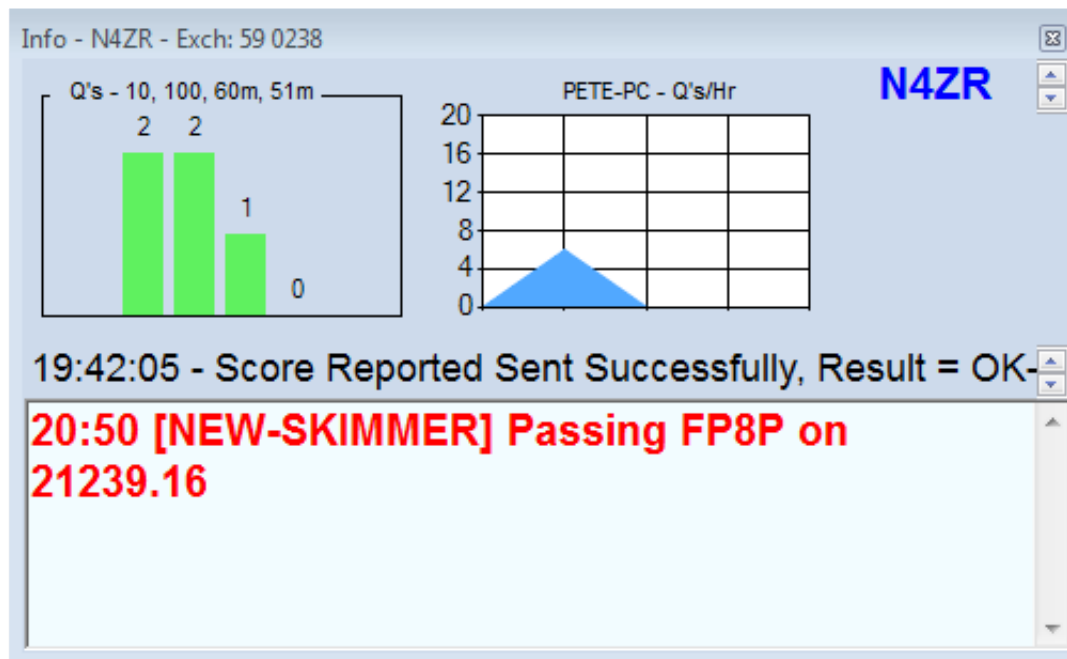
- You are running, and you pass someone you work to another band where your station is also running.
- You are running, and you pass someone you work to a specified frequency on another band. This might be useful, for example, if your station's operator on that band is searching and pouncing.

Some basics – if the station on a given band is in Run mode, then his pass frequency will be his running frequency. If that station is in S&P mode, then he will want to set a pass frequency – perhaps somewhere high in the band he is on. To set a pass frequency, click on the Actions tab of the Network Status window, then click on "Set Your Pass Frequency." A dialog will open, where you can enter a frequency, or 0 (zero) to clear your pass frequency. If you switch from S&P to Run mode, your pass frequency will change automatically to your current frequency. Don't leave a zero in your pass frequency while you are in S&P mode, or other stations will not be able to pass to you. If you are not using an interfaced radio, be sure to enter your current frequency in the callsign field of the Entry window.

You can pass the station currently in your Entry window, or the one you worked last, in one of two ways:

- Right click on the station you want to pass to, in the Network Status window, and click on Pass Current/Last QSO.
- Right click on the Band Button in the Entry window corresponding to where you want to pass the station. For example, if you've told him, "Please go to [your 20M station's Run or Pass Frequency]", then right-click the 20M Band Button.

Either way, a pass message will be sent, in red to get the other operator's attention, and a message will be entered in black in your Info window confirming that it was sent.



Managing A Multi-Op Station

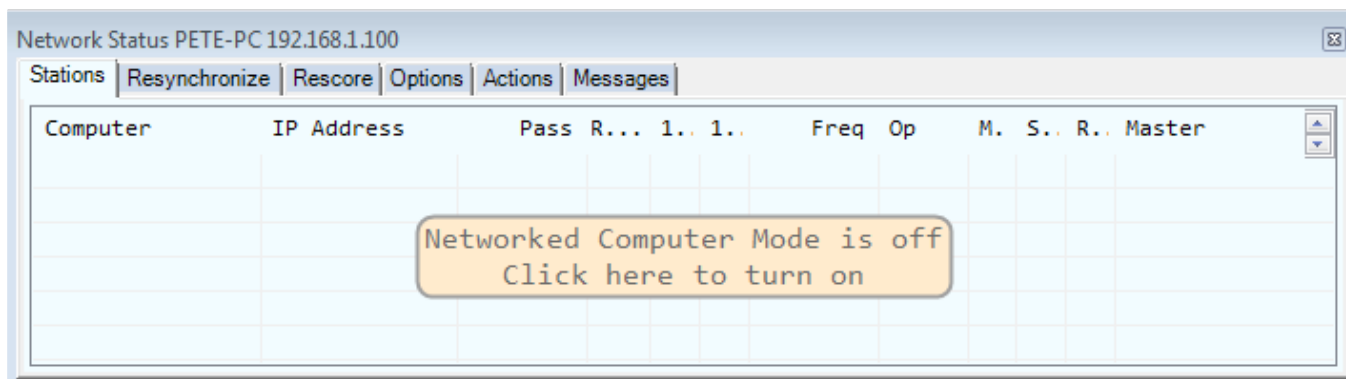
A smooth, trouble-free multi-op contest requires a good deal of systematic management. This section attempts to provide checklists for Before, During and After a contest.

Setting Up the Network

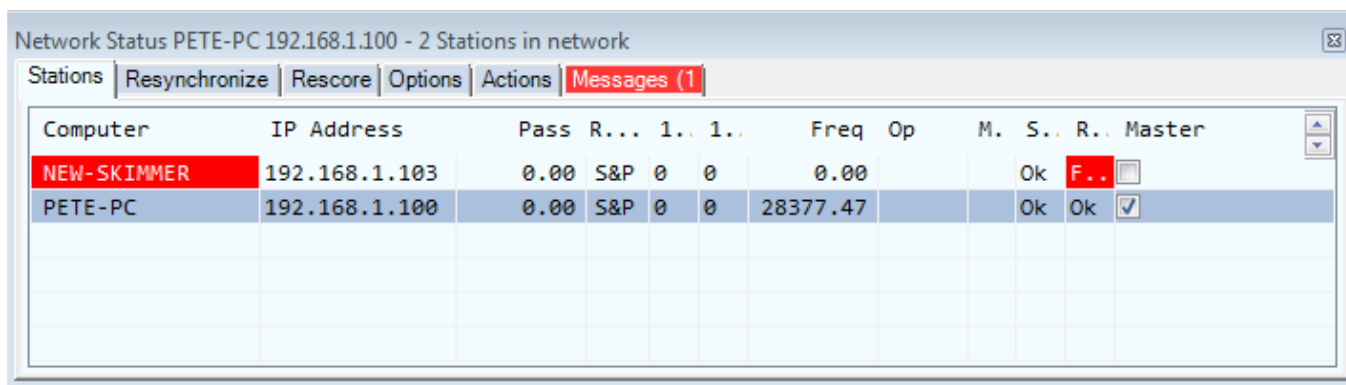
- Verify that all of the computers you intend to use are running, and that Windows networking is functional. **It is a very good idea to have a “hot spare” on the network, just in case.**
- Install the same version of N1MM Logger+ on all of the computers.
- Run N1MM Logger+ on each machine, **using the right-click option to Run as Administrator** on all machines except the one you will be designating as “master”. This will enable the “master” station to keep all the other computer clocks in sync with Internet time. Alternatively, you can disable the built-in Windows Internet time synchronization (which is not accurate enough for this purpose) and install more accurate time synchronization software (such as the Meinberg NTP client or Dimension 4) on **all** of the computers in the network to ensure that they are all synchronized.
- Create a new empty database on each machine.
- Start a new log for the contest on each machine, making sure to set the contest, operator category and transmitter category correctly.
- Configure external interfaces at each operating position (radio control, CW, PTT, etc.)
- Set up Function Key Messages on each computer. If using operator-specific wav files for SSB, make sure that each operator has his or her own wav file

sub-folder on every computer that he or she will be using.

- Make sure that Master.SCP and wl_cty.dat files are up to date (on the Tools menu) on all computers
- Turn off Windows Sounds (in SSB contests) to prevent transmitting odd noises (Control Panel – Sounds – Scheme: No Sounds)
- Set N1MM+’s Networked Computer mode on – from the Network Status Window on each machine



- At this point you should see the names of all the computers running on the network. Initially, i.e. for the first several seconds or so, they may display various red warning flags .



- This will only persist until the network finishes connecting, at which time the red flags will disappear, unless you have something wrong, such as a mismatch between N1MM+ versions, between the contests on the different computers, or between operator categories or transmitter categories. In this case, the red flag will remain on the Messages tab in the Network Status window, and you will find an explanation there of what needs to be fixed.

Now it's time to make some test QSOs. Verify that when a given station makes a QSO, the QSO appears on all of the networked computers. Repeat this process with each computer on the network, including the master, even if you do not anticipate making QSOs with it during the actual contest, in order to verify that network communications are working correctly.

just before the contest start, have each operator type WIPELOG in the callsign field and press the Enter key. This will remove all the test QSOs. Then have the starting operator use Ctrl+O to set his or her callsign for the first session.

Make sure that...

* You are running the same version of the program on all computers

- You have set up the same contest and same operator and transmitter categories on all computers
- All computers have the same version of wl_cty.dat installed
- All computers have the same time zone and daylight savings offset
- All computers have the same regional settings for numbers, dates, etc, and the same short and long date and time formats

Multiple networks

There are some situations in which there may be more than one network active at the same time on the same computer(s). One such situation might be one where the N1MM Logger+ network is a wired network (perhaps because some of the computers on the network do not have wireless adapters), but where there is a wireless network operating at the same location. On any computer where there are two network adapters connected and active, N1MM Logger+ will not be able to reliably detect which adapter you intend to use for the N1MM+ network, and 50% of the time it will guess wrong. A work-around for this is to temporarily disable the other network while you are starting up N1MM+ and connecting to the N1MM+ network, in order to ensure that the N1MM+ network connection uses the correct network adapter. Once the N1MM+ network connection is established, you can re-enable the other network on any computers that need it (for example, if the Internet gateway is on the other network, the Master computer will need to be connected to both networks).

VHF and Up Contesting

VHF and Up Contesting

Help Wanted

VHF Contester to review, edit, and add screenshots to this section of the manual

This page is simply a copy without screen shots of the corresponding page in the N1MM Logger Classic manual. xxx

N1MM logger has some features which will be appreciated especially by VHF and up contesters. The program supports bands up to the SHF bands 10, 24, 47, 76, 142 and 241 GHz

VHF Options

Frequency display

The frequency is shown in the Bandmap and in the Entry window. When the frequency is above 1 GHz the band will be shown in cm, not the exact frequency in the Entry window. When entering QSOs it's easy this way to recognize the band in which you log.

Multiplier by Band Window

The Multiplier by Band window includes a Grid Square option. Start the program, open a VHF contest, open the Multiplier window and then click on the "Other" radio button at the bottom. You'll see the following display, centered on your grid square – the one entered on your Station Data window.

Image not found

The Grid Square display has a few additional features, in a right-click menu. Click somewhere in the grid array and the following menu appears:

Image not found

- Show Calls Worked – Grid squares you have already worked are colored pink. To see which calls you've worked in a given grid, right-click on that square to bring up the menu, and then left-click on this option. A separate window will open displaying the calls and times they were worked.

-
- **Set Grid Center** – Right-click anywhere in the grid array, and then left-click on this option. Enter the four-character grid square you want in the dialog that appears, and hit Enter.
 - **Show Bearing to Grid** – Right-click on a grid square, left-click on this option, and a window will open displaying the bearing and distance from your QTH to the center of the square.
 - **Turn Antenna to Grid** – Right-click on a grid square, left click on this option, and if you have a rotator interfaced with the program, the antenna will be turned to the correct bearing.
 - **Set Rover QTH** – Right-click on the square you are in, and left-click on this option, and the program will temporarily reset the reference point for bearings, etc. to your current location. Works only if you select Rover as your class.
 - **Minimum Grid Square Box** – Right-click anywhere in the grid array, and then left-click in this option to display a grid array with absolutely minimum-sized squares (just large enough to contain 2 letters and 2 numbers). You can toggle this off, or it will close automatically if you either close the Multiplier window or the program.

Gridsquare Key Assignments (VHF and up)

- **Alt+equal (=)** – Search entered info from both the Callsign field and the Gridsquare field in the call history table
 - The results will be shown in the Check window
- **Alt+minus (-)** – Toggle through call history and entered grid squares (max 3) in the grid square entry field
 - When no grids are found in the call history there is nothing to toggle

Call History Lookup

More information about this can be found [here](#).

This feature is very useful in VHF contests. Lookup examples are lookups for names (Friends file in RTTY contests), gridsquares for VHF contests, ages in All Asian DX contests etc. With the importing and exporting options the call history table can be updated.

Call history lookup is enabled with the option >Config >Call History Lookup. If enabled, it will look up in VHF contests: Grid Square (max 2) and Name.

Updating the Call History File

There is a function to export the log file to (update) the call history table under >Tools >Update Call History with current log'. This function will fill the call history table with the contents of the currently selected log.

Transverter Support

N1MM logger has transverter support in the form that per band an offset frequency can be set. Right click on the bandmap and select >Set transceiver offset frequency. The offset value is saved by the program so after a restart the offset is still there.

Image not found

- **Band (kHz)** – enter the transmit frequency of the transverter
- **IF Freq (kHz)** – the frequency used between the radio and the transverter

An offset can also be added to adjust the transverter or radio to the exact frequency (like when the oscillator is a bit off).

See the 432000,12 example where a correction is being made of 120 Hz. Great to have to be right on the packet cluster spots!

Bandup/Banddown

If you have a radio that has 160-2m, and you want to use bandup/banddown, you'll need to put entries in for bands that you do not have transverters for, if there are gaps in bands that the radio/transverters cover. You would really have to put a lot of transverters offsets in if you want the frequencies to "wrap".

Next Offset Band

If the next band is not defined as offset to a frequency that my radio can handle and bandup/down is used, it goes to an HF frequency (without offset).

- It does not work if your radio does not accept the calculated frequency. For example, set up for Band: 144000 and IF freq: 28000 and you put in 146100 and your radio can't go to 30100, you will get strange results
- Remember to enter the frequency of the transceiver and not that of the transverter when going into split mode (Alt+F7).

VHF Beacons

N1MM logger is capable to show beacons in the bandmaps for a defined period of time. Normally every spot in the bandmaps will disappear after the 'Packet Spot Timeout' which is valid for every spot in the bandmap. The same for beacons coming in as spots. So an extra import option has been added for beacons with where the spot timeout can be set to a much higher value (like days or even weeks).

Importing beacons and showing them in the bandmaps for the bands can be done by importing a text file in a specific format. Enter the text BEACONS in the Entry window callsign field and a file selection dialog will open where a .txt file (with beacons in the correct format) can be imported. An example beacons text file can be found in the N1MM logger program directory (called Beacons.txt). In the beacons text file lines with a # are remarks, the first line in the text is the timeout for all beacons in hours. Every line with a beacon must contain callsign, frequency (in kHz) and grid locator (4 or 6 digit). The frequency may be in either US (50000.25) or European (50000,25) format. A comment per beacon is optional. Note the ; as separator (don't forget one or it won't import). Below an example beacons.txt file.

```
# Hours to stay in bandmap (mostly > 24 or > 48)
60
# Call beacon;Frequency;Grid;Comments
OZ7IGY/B;144471,1;J055WM;
PI7CIS/B;144416,2;J022DC;Should always be heard
DL0PR/B;144486,3;J044JH;Switches power!
GB3VHF/B;144430.4;J001DH;QRG with a .
ON0VHF/B;144418,5;J020;4 digit grid
```

A file with beacons in the correct format for Europe (Region I) can be found on the N1MM website under 'Other Files' in the 'Download' menu.

The NCDXF/IARU Beacon Network

No need to add the NCDXF/IARU Beacon Network on 14.100, 18.110, 21.150, 24.930 and 28.200. They are already incorporated in the program and the beacon transmitting at that time (when your PC clock is correct) will be shown in the Entry window statusbar when you are listening on one of these frequencies.

Example Contest Setup

Additions are welcome!

Create (Days Before the Contest)

- New master.scf file
 - Use the Tools > Download and Install Latest Check Partial File (master.scf) menu item
- Create 'N1MM logger.ini' to use during the contest
 - Set up all the program settings and place the windows as you like them during the contest (on the computer to use)
 - Don't forget the tab 'Mode Control' in the Configurer.

-
- After closing the program it has created a file called 'N1MM logger.ini' with all the settings
 - Copy 'N1MM logger.ini' (not .init) to 'VHFsettings.ini'.
 - Text file with contents Function keys for SSB/CW
 - As a start:
 - 'File | Export | Export Function Keys to file... | SSB Function Keys'
 - Give a name like: VHFssbfunctionkeys.mc
 - 'File | Export | Export Function Keys to file... | CWFunction Keys'
 - Update these text files if needed
 - Check possible macros in the [Macros chapter](#)
 - Packet/Telnet button text file
 - As a start: >File >Export >Export Packet/Telnet Buttons to file...'
 - Update this text file if needed
 - Give a name like: VHFpacketbuttons.txt
 - Check possible macros in the [Macros chapter](#) like {GRIDSQUARE}
 - Lookup database text file for the VHF contests to use
 - Create a text file with callsign, name, locators etc.
 - Give a name like: VHFlookup.txt
 - See info about CallHist file
 - SSB: Wav files for CQ, rst, exchange etc.
 - Create wav files for all operators
 - See {OPERATOR} macro in the [Macros chapter](#)
 - Download up to date country file (cty.dat)
 - mostly a country file is not used for VHF and up contesting but the program gives information in the Info window about the logged callsign so download the latest version
 - Check if the selected contest is still ok, make some test QSOs
 - This should be done weeks before the contest!
 -

Before Starting the Program

- Copy the created master.dta file in the N1MM logger program directory
- Copy the wav files from all operators in the WAV directory
- Turn off Windows sounds if using WAV files
 - Windows >Control Panel >Sounds – Scheme: No Sounds
- Rename 'VHFsettings.ini'. to 'N1MM logger.ini' and copy it into the program directory
 - The program will start using the settings as set up days before the contest

After Starting the Program

- Select/Check if correct database is used

-
- >File >Open Log in Database, select VHF database’.
 - Import
 - This has to be done only once if every time the same database is used!
 - Each database can handle many contests and thousands of QSOs, don’t use a database for every contest!
 - Updated files (like the lookup file) have to be imported before every contest.
 - The function keys macros (SSB/CW)
 - >File >Import >Import Function Keys to file... >SSB Function Keys. Use file created above (Example: VHFssbfunctionkeys.mc)
 - >File >Import >Import Function Keys to file... >CW Function Keys. Use file created above (Example: VHFcwfunctionkeys.mc)
 - The packet/telnet buttons
 - >File >Import >Import Packet/Telnet Buttons from file... Use file created above (Example: VHFpacketbuttons.txt)
 - Lookup file
 - >File >Import >Import Call History File. Use file created above (Example: VHFlookup.txt)
 - Country file
 - >Tools >Import country list from downloaded file. Use file downloaded/updated above
 - Check Station dialog (>Config >Change your Station Data)
 - The locator from this dialog is used for distance calculation so needs to be entered!
 - Check contest (>File >Choose Which Contest to Log)
 - Check if entered information is correct.
 - Enter Sent Exchange (this is contest specific, see [Setup Contests chapter](#))
 - Setup configuration (Rig control, PTT, CW)
 - Check Configurer >Mode Control tab
 - When using a transverter, enter offset for bandmap A and bandmap B
 -

Have fun during the contest!

Appendices

The User Defined Contest (UDC) Editor

The User Defined Contest (UDC) Editor

Where to Find UDC Materials

There are more than 200 User Defined Contests available from the website's Supported Contests page. The contests are listed on the *Supported Contests List* page, described on the *Supported Contests Setup* page, and available for download in the >*Downloads* >*User Defined Contests* folder.

UDC Editor Overview

Enabling users of a contest logger to define their own contests has always been a very difficult thing to do. With the proliferation of contests, often with (ahem) innovative rules, it has gotten harder in recent years. Normally, it requires someone with knowledge of the programming language to create a contest "module", and even then the rules may defy incorporation.

In an effort to help with this problem, Nick, NA3M has written a very clever User Defined Contest (UDC) module in the Logger. This module uses a text file in a predefined format, called a User Defined Contest (.udc) file. These files may be created either with a text editor or with Nick's UDC Editor program, which can be downloaded from the website's >User Defined Contests (UDC) folder.

The description of how to use this editor program is found both here and in the file named **_UDC_Help.txt** which contains information in different languages selectable from the UDC File Editor. New features are added to the UDC capability from time to time, and when this happens the Help file in the UserDefinedContests folder may be more up-to-date than this page in the manual. The Help file can be opened from the UDC File Editor by clicking its HELP button or by double-clicking a specific contest parameter line. Notepad will automatically start and display the Help file. Resize windows so you can see both the UDC Editor window and the Notepad window at the same time. **Double-clicking on a parameter is particularly useful because Notepad then goes directly to that parameter in the Help file.** The first time you call for help during an editing session, you will be asked to select the language. This selection stays in memory until you close the editor. If the wrong language was selected, you will have to close and restart the UDC Editor.

There are three ways that you can take advantage of the User Defined Contest feature: build your own UDC using the UDC Editor; use a text editor to build a UDC file, starting from a previous UDC file as a template; or download a UDC that was built by another ham and contributed to the **N1MM**

Logger+\UserDefinedContests folder.

Regardless of which method you use, the drop-down list of available contests in N1MM Logger+'s Contest Setup dialog will only list UDCs that have been copied to the UserDefinedContests folder in the N1MM Logger+ user files area at **My Documents\N1MM Logger+\UserDefinedContests**.

If you have developed and thoroughly tested a UDC file for a particular contest, please share it with other users by uploading it to the Files Section of the N1MMLoggerPlus group on groups.io . But please remember – **UDC files are USER-defined, and bug fixes or feature improvements are the responsibility of the user who created the UDC, not the N1MM Development Team.**

Limitations

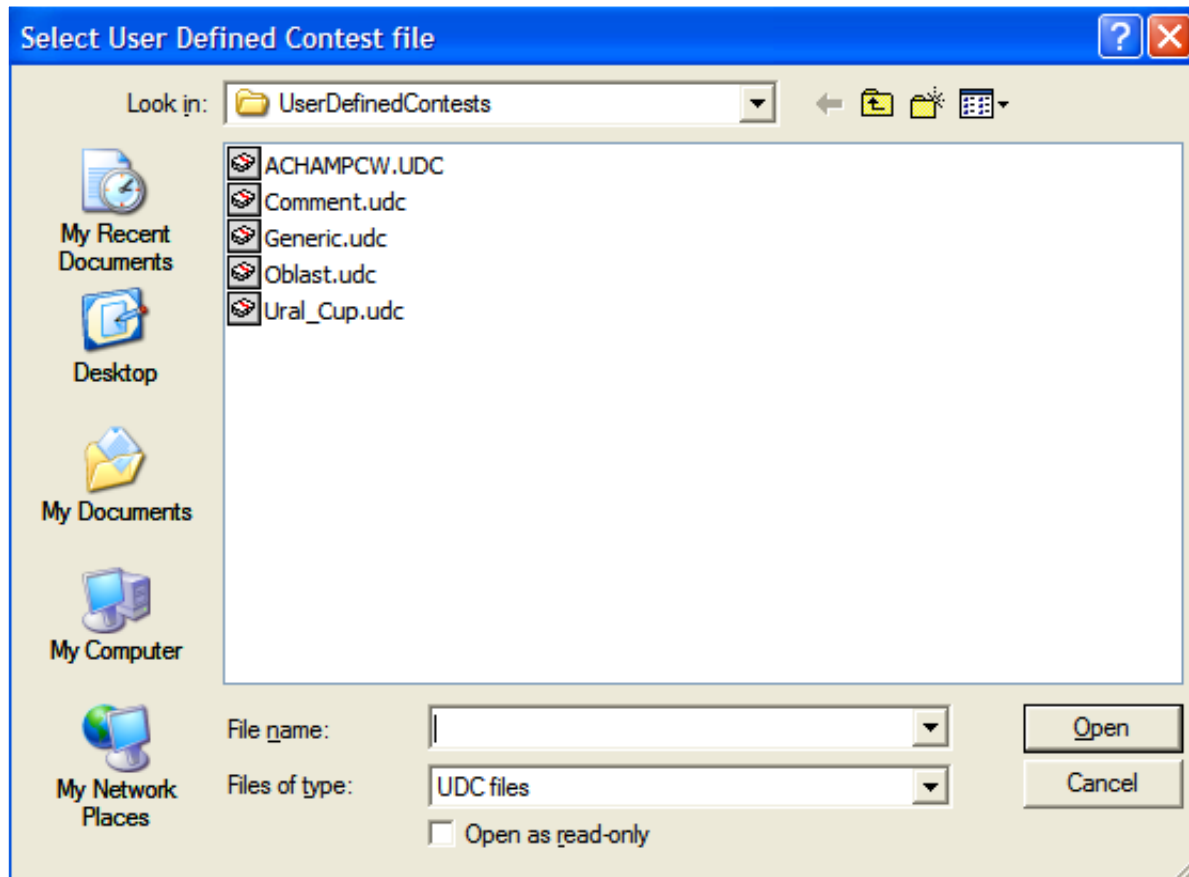
While UDC files give a user extensive options for adapting N1MM Logger+ to the rules of many contests, they cannot provide the same control that a programmer has, or that may be required to fully implement them. For example, a contest defined with a UDC file can only give a fixed number of points per QSO. Many contests (WPX is a good example) are more complicated. Also, in many contests the rules are different for contestants from one area than for those from another – a good example is QSO parties with different rules for in-state and out of state participants. In those cases, it may make sense to create two UDC contests, for use by in-area and out-of-area contestants.

The UDC Editor

The UDC Editor is quite simple. Download and unzip the file, **_UDCeditor.ZIP**, from the >Downloads >[User Defined Contests](#) folder. When you open the Editor you will first be asked to select a User Defined Contest file. You'll note that these files all have the extension ".udc"), and are stored in the UserDefinedContests sub-folder in the N1MM Logger+ user files folder, at **My Documents\N1MM Logger+\UserDefinedContests**. You will find a starter UDC file "_Template.udc" on page 1 of the UDC Gallery.

Appendices

The User Defined Contest (UDC) Editor



When you open an existing contest file, you will be warned to do a “Save As...” unless you intend to edit the file you have opened. This is because any changes are saved immediately to the file you have opened. You have to be careful not to damage the existing User Defined Contest file that you are going to use as a starting point for your new contest file. Therefore it is recommended that you save the file with a new name, then use the editor to edit that new file, leaving the original file unchanged.

Here is an example of a contest created by a user during testing, as viewed in the UDC Editor.

Appendices

The User Defined Contest (UDC) Editor

UDC file Editor - C:\Program Files\N1MM Logger\UserDefinedContests\ACHA...

[Author]
AuthorName=Victor
Callsign=RW9SZ
Email=rw9sz@mail.ru
[File]
Revision=1.0.2
LastUpdate=16.01.2010
Description=ACHAMPCW
[Contest]
Name=ACHAMPCW
DisplayName=ACHAMPCW
CabrilloName=ACHAMPCW
Mode=CW
DupeType=2
Multiplier1Name=Sect
MultSqlString=Section
MultWindowType=Grid
IsMultPer=1
NumMults=1
QsoErrorString=Any
EntryWindowInfo=SntNrText, 700, Exchange1Text, 500, RcvNrText, 500
FrameText=SntNr Grid RcvNr
LogInfo=SentNR, 500, Exchange1, 500, NR, 500, IsMultiplier1, 500, Points, 500
DefaultContestExchange=001
CabrilloFormat=99
CabrilloString=SentExchPart2, 2, SentNr, 4, CallSign, 13, Exchange1, 3, RcvNr, 8
GenericPrintString=SntExchPart2, 4, SentNr, 0, CallSign, 15, Exchange1, 4, RcvNr, 0
GenericPrintStringHeader=Date Time Freq Mode MyCall RST Snt Call Exchange
IsWorkable=Any
IsMultPer=1
WebAddress=http://qrz.ru/contest/detail/64.html
MultipleSessions=1400/200

File Parameters:
Author Name: Victor
Callsign: RW9SZ
File Rev.: 1.0.2
Last Upd.: 16.01.2010

Section:
File

Key:
Revision

Value:
1.0.2

Set Value for Key...

Save File As ...

Help

Exit

☐ Show Default

To change a contest parameter, click once on it. You'll note that the parameter and its value appear in the gray pane to the right. Change the value in the Value field. Click on Set Value for Key to save it. This will save it in the file immediately. That is why the Editor does not have a Save button. When you are done editing a contest just exit, and your contest file will have all changes saved.

Once the new (or modified) .udc file is ready to test, save it one last time into the **My Documents\N1MM Logger+\UserDefinedContests** folder and start N1MM Logger+. Go to File > New Contest in Database, and you should be able to see your new contest in the list of available contests. Test it to make sure everything works as you planned. If there is something wrong, you can edit the .udc file and save it. You can keep .udc file edit window open. To test any changes you will have to restart N1MM Logger+.

If you want to help with this project and add one more language – simply add your translation to an empty [Language...] section in the UDC help file and send the file to na3m@arrl.net, Please use UNICODE encoding when saving the file.

Editing Tips

The UDC Editor will not allow you to delete parameter names but you can erase or omit the value in the gray pane, in which case the default value will be used (these are marked with * in the list of values for each parameter). You should only use values mentioned below. At the moment, there is no check for correctness of the value supplied for a parameter. An invalid value for a parameter may cause unpredictable N1MM Logger+ behavior, such as display of warning messages with the name of the wrong parameter.

By default, the UDC editor does not show “empty” parameters, for which N1MM Logger+ will be using default values. You can see the full list of parameters by clicking on the “Show Default” check box, and edit them by assigning a non-default value. Do not attempt to remove “empty” parameters – they may be needed in case this file is later used as a template for another contest.

Keep your .udc files in the **My Documents\N1MM Logger+\UserDefinedContests** folder. If you define a UDC and store it in the database, but subsequently remove its .udc file from the folder, then the next time you try to open that contest, a warning message will be displayed and the contest will not work. You can make editing of UDC files faster by right-clicking on a udc file name, selecting “Open with...”, selecting the UDC Editor and checking the box that says “Always use this program to open this kind of file”. Subsequently, double-clicking on a .udc file name will automatically open it with the UDC Editor.

Don't worry about messing up

One of the nice things about the UDC Editor is that you can't do much damage if you mess up. The only thing you are editing is the .udc file, and if it doesn't work and you can't fix it, you can always just delete it from the UDC folder and start over.

Running a User Defined Contest

User defined contests appear in the drop-down list of contests in the Select Contest dialog, just like those programmed at the factory.

The UDC File

Note: it is not recommended to use any language other than English for contest parameters. Take a look at the sample UDC files using a text editor, if you want to understand the file format, but we recommend you use the UDC Editor to edit or create a new file.

File Format with Explanations

This is the English-language text from the UDC Editor help file, describing how to configure a User Defined Contest for N1MM logger. Versions in Portuguese, Spanish, Russian can be found in the Help.txt file that is downloaded with every Latest Update.

The most convenient way to use this information is to open the help.txt file from the UDC Editor, by pressing its HELP button or by double clicking on a contest parameter line. You will be asked to select a language. This selection stays in memory until you close the Editor. If a language is selected that is not there, you will have to restart the Editor. Assuming you choose one of the languages that is there, Notepad will automatically start and open the Help file.

It's best to resize the Notepad window so you can see both the UDC Editor window and the Notepad window at the same time.

To change a parameter in the UDC Editor, click once on it and change its value in the Value field. Click on Set Value for Key to save it. This will save it in the file immediately. That is why the UDC Editor does not have a Save button. When you are done editing, all you have to do is exit, and your contest file will have all your changes saved.

Because of this, if you use an existing UDC file as a starting point for your new one, you will have to be careful not to damage it. Open it with the UDC Editor, and click the Save File As... button. Give your new contest file a name that positively identifies it (preferably its short name, like ARRLDXCW).

Once the new (or modified) UDC file is ready, copy it into the N1MM Llogger/UserDefinedContests folder and start the Logger. You should be able to see your new contest in the list of contests in the Contest Setup Dialog.. Test it to make sure everything works as you planned. If there is something wrong – you can keep editing it even while it is loaded in the Logger. Once you make a change to a parameter of the UDC file simply reload the contest (select “File” and then your contest name in the drop down menu). Note: this will not work if you change the name of the contest while editing.

If you decide to help with this project and add another language – simply add your translation to an empty section [Language..] and send the file to na3m@arrl.net so it can be included in the next update of this program.

Note: Be sure to use UNICODE encoding when saving the file.

The UDC Editor will not allow you to delete parameters, but you can set a parameter to “nothing”. If you do this, the default value will be used marked with * in this file). You should only use values listed in this file. There is no check for correctness of the value in this Editor at the moment. A wrong value may cause unpredictable Logger behavior. Some wrong values may cause Logger to display warning messages with the name of the wrong parameter.

By default, the UDC Editor does not show “empty” parameters. Logger will be using default values for them. You can see them by clicking on the “Show Default” check box. After that you will be able to edit them by assigning non-default values. Do not remove “empty” parameters – they may be needed in case this file is used as a template for another contest.

Keep your .UDC files in the **My Documents\N1MM**

Logger+\UserDefinedContests folder if you are planning to use contests defined by those files. If you try to load some previously used (and stored in the current database) User Defined Contest and the .udc file for it is not in the folder, Logger will not start the contest, and there will be a warning message displayed.

To start the UDC Editor by clicking on a .udc file, right-click on one of them, select “Open with”, “Choose program” and select “UDCeditor.exe” as the “Recommended Program” for this type of files.

[Author] section

/AuthorName/ = Put your name here. Users should know who will be able to help them with this contest file.

/Callsign/= your callsign

/Email/= your email

[File] section

/Revision/ = Start with 1.0.0 It is recommended that you increment this every time you modify the UDC file.

/LastUpdate/ = Will be automatically filled with the current date if you create a new file (using Save File As...) or edit the current file.

/Description/ = Short description of the contest type (one line). Example: "Finnish Domestic VHF Contest"

[Contest] section

/Name/ = This is the short name that will be used in the Contest Setup dialog. 10 Characters maximum, no spaces, upper case only. Example: ARRLDXCW. RTTY contests must have RTTY somewhere in the name; VHF contest names must start with VHF.

/DisplayName/ = Your choice, spaces allowed (50 characters maximum). Example: ARRL DX CW

/CabrilloName/ = Your choice, 15 characters maximum, no spaces allowed. Example: ARRL- DX-CW This name will be used in the Cabrillo file header

/Mode/ = Valid modes are: CW SSB BOTH RTTY (default = CW; use BOTH if all modes are allowed in the contest)

/DupeType/ = Dupe-checking parameter for QSOs (not multipliers). Defines what combination of band, mode and callsign constitute a duplicate entry. Valid values are 1, 2, 3 , 4 - default is 2

1 = All bands (stations may be worked only once in the contest)

2 = Each band (stations may be worked once on each band - default value)

3 = Each band & mode (stations may be worked on each band/mode combination, e.g. 40 SSB, 40 CW, 40 RTTY)

4 = no check (stations may be worked multiple times per band/mode)

Also used in the Multiplier window to show modes (when 2 or 3) in the Section window.

/Multiplier1Name/ = See table below

/Multiplier2Name/ = See table below (or N/A if the contest recognizes only one multiplier type)

/Multiplier3Name/ = See table below (or N/A if the contest recognizes only one multiplier type) Show 102550100 entries Search:

[table id=7 alternating_row_colors=true /]

/MultSqlString/ = See table below

/MultSqlString2/ = See table below (or N/A if the contest recognizes only one multiplier type)

/MultSqlString3/ = See table below (or N/A if the contest recognizes only one multiplier type)

[table id=8 alternating_row_colors=true /] Showing 1 to 10 of 15 entries [P](#)

/Period/ = How many days is the contest (not used at the moment). Options are 1 or 2, currently always 2

/PointsPerContact/ = Default 1. May be any integer.

You can put several parameters in one line. Separate each with a comma: For example OH, 5, SM, 5, MyCountry, 1, SameContinent, 2, OtherContinent, 3 (will award 5 points for QSOs with OH or SM, 1 point for contacts in your own country, etc.(NOTE: country prefixes should match those that are in wl_cty.dat file and be the first in line if used)

Another example: SSB, 2, CW, 3, DIGI, 4, RTTY, 4, PSK, 5, FM, 2

(2 points for SSB, 3 points for CW, 4 for RTTY and so on)

And yet another: 160m, 5, 80m, 4, 40m, 3(5 points for QSO on 160m and so on). In this type of entry, the allowed bands are 160m, 80m, 40m, 20m, 15m, 10m, 6m, 4m, 2m, 1.25m, 70cm, 33cm, 23cm, 13cm, 9cm. The values for this parameter can be mixed, but if the QSO meets two or more criteria (for example, 160m and OH), then priority order will be: band, mode, continent, country.

IsMisc, 3 - number of points to give if there is any value in MiscText

IsComment, 4 - number of points to give if there is any value in Comment

NOTE: for VHF contests the numeric value will be used as the multiplier, i.e. KM*multiplier.

Exchange, * - use numeric value entered in Exchange as Points (do not replace *, just use "Exchange, *")

Misc, * - use numeric value entered in Misc as Points (do not replace *, just use "Misc, *")

Exch, 3 - if anything in Exchange, give the number of points specified (3 in this example)

ExchIsNum, 4 - if numeric value in Exchange, give the number of points specified

MiscIsNum, 4 - if numeric value in Misc, give the number of points specified

ExchIsNotNum, 5 - if value in Misc is not numeric, give the number of point specified

/P, 5 - if portable station, give the number of points specified (can use /A, /M, /AM, /MM, /QRP, /QRPP as well)

EU, 10 - give the specified number of points (10 in this example) for EU station (can use AF, AS, AN, SA, NA, OC as well)

SectIs_xxx, nnn - xxx is a set of characters (maximum 10) and nnn is the number of points to give (e.g. SectIs_TB, 7 - award 7 points for TB section). NOTE: If there are several parameters for PointsPerContact, SectIs_xxx must come first.

/PointsMultAtTimeLocal/ = 0000, 2359, n

Points for QSOs made from 00:00 to 23:59 LOCAL time will be multiplied by n (default 2). Note: 24 hours format should be used (no AM or PM) but do not use 24:00, use 23:59 instead.

/PointsMultAtTimeGMT/ = 0000, 2359, n

Points for QSOs made from 00:00 to 23:59 GMT time will be multiplied by n (default 2). Note: 24 hours format should be used (no AM or PM) but do not use 24:00, use 23:59 instead.

/PointsMultByMode/ = CW, 3, USB, 2, LSB, 2

Points for QSOs made in specific mode will be multiplied by corresponding number. Supported modes are: CW, USB, LSB, DIGI, RTTY, PSK, FM, AM

/PointsMultByContinent/ = MyContinent, 1, OtherContinent, 2

Points for QSOs with specific continent(s) will be multiplied by corresponding number. Supported arguments are: MyContinent, OtherContinent, AS, AF, EU, SA, NA, OC

/PointsMultByCountry/ = SV5, 3, SV9, 3

Points for QSOs with specific country(s) will be multiplied by corresponding number. Supported arguments are all countries from wl_cty.dat file

/PointsMultByCategory/ = QRP, 2

Points for QSOs with /QRP or /QRPP stations will be multiplied by corresponding number. Supported arguments are: QRP, QRPP

/ShowMyCountryStations/ = True(default) or False

True Yes show My Country stations in the bandmap (normal)

False No don't show them in the bandmap

/ShowWarcBands/ = True or False(default)

True Yes show the WARC bands (only for general logging (DX))

False No don't show WARC bands (all contests)

/ZoneType/ = CQ(default) or IARU

CQ* CQ type zones should be shown (for most contests)

IARU IARU zones should be shown

/MultWindowType/ = see table below (default is Section)

[table id=9 alternating_row_colors=true /]

/CQZoneMultContest/ = True or False(default)

True Contest uses CQ zones as a second multiplier e.g. CQWW

False It doesn't! (Mostly)

/NumMults/ = 0, 1 (default), 2 or 3

0 for Field Day or other contests with no multiplier

1 for most contests

2 for CQWW (i.e. Country and Zone)

3 if three multipliers

/BonusPoints/ =

Several bonus callsigns, DXCC entities, /P, /M or /QRP stations are allowed, use comma to separate bonus call from bonus points. Leave empty if no bonus station(s) or countries.

Example: RM1DZ, 20, RA1DZ, 20, DL, 25, /M, 4, /P, 2, /QRP, 5,IsComment,6,IsMult1,10

IsComment, n: give n points if there is anything in the Comment field

IsComment,*: give the number of points in the Comment field (if there are several numbers in the Comment field, only the first one will be used)

If IsMult1(2,3) is used it will work for all QSOs except the last one in the log. The last QSO in the log will give BonusPoints after manual rescore only.

ExchIs_xxx, nnn where xxx is a string of characters (up to 10) to be matched from the Exch field and nnn is the number of points to be allocated.

MisclIs_xxx, nnn where xxx is a string of characters (up to 10) to be matched from the Misc field and nnn is the number of points to be allocated.

NOTE: During final points calculation if BonusPoints are not 0 then PointsPerContact value will be ignored.

If you would like bonus points to be added to PointsPerContact add "+" character in front of the value like this: BonusPoints =F, +25, F4GVZ, +105, IsComment, +10, IsMult1, +50.

If you would like bonus points to be multiplied by some factor, add "*" character in front of the value

To add points from the Comment field to PointsPerContact, use IsComment, +*; to add points from ExchIs, use ExchIs, +nnn. To multiply points from the Comment field by PointsPerContact, use IsComment, ** .

/BonusPoints2/ = points, filename

This allows using a file with a number of Callsigns that give bonus points.

Parameter format: BonusPoints2 = 5, BonusPoints.txt (points, file name). Filename can be any name with the extension *.txt but the file must be in the main Logger folder. Every callsign in the file should have a comma at the end, including the last one:

⟨ file starts ⟩

Call1,

Call2,

```
Call3,  
...,  
LastCall,  
⟨file ends⟩
```

or

```
⟨file starts⟩ Call1, Call2, Call3, ... LastCall, ⟨file ends⟩
```

BonusPoints2 extends BonusPoints but has higher priority. In other words, if the callsign is found in the BonusPoints string and also in the file BonusPoints.txt, then the bonus point assigned for BonusPoints2 will be used. If you would like bonus points to be added to PointsPerContact add “+” character in front of the value like this: /BonusPoints2/ = +5, BonusPoints.txt

/DoNotCountMeAsMult/ = True or False (default)

True Do not count Multiplier1 for my Country, Section or WPX prefix (depends on what was set as MultSqlString)

False Count Multiplier1 for my Country, Section or WPX prefix.

/DoNotCountMeAsMult2/= True or False (default)

True Do not count Multiplier2 for my Country, Section or WPX prefix (depends on what was set as MultSqlString2)

False Count Multiplier2 for my Country, Section or WPX prefix.

/DoNotCountMeAsMult3/= True or False (default)

True Do not count Multiplier3 for my Country, Section or WPX prefix (depends on what was set as MultSqlString3)

False Count Multiplier3 for my Country, Section or WPX prefix.

/CountMultOnlyFor/ =

Default value is empty. Set it to one or several countries from the wl_cty.dat file to make the multiplier work for those countries only.

Example: CountMultOnlyFor =G, GW, GM, GI, GD, GU, GJ. Do not use too many countries here – it may stop working if the line is too long and also will slow down the computer .

/CountMultOnlyFor2/ =

Same as for /CountMultOnlyFor/ but will be applied for Multiplier2

/CountMultOnlyFor3/ =

Same as for /CountMultOnlyFor/ but will be applied for Multiplier3

/DoNotCountMultOnlyFor/ =

Default value is empty. Set it to one or several countries from the wl_cty.dat file to make the multiplier not work for those countries only. Example:

DoNotCountMultOnlyFor =G, GW, GM, GI, GD, GU, GJ. DO not use too many countries here – it may stop working if the line is too long and also will slow down the computer.

/DoNotCountMultOnlyFor2/ =

Same as for /DoNotCountMultOnlyFor/ but will be applied for Multiplier2

/DoNotCountMultOnlyFor3/ =

Same as for /DoNotCountMultOnlyFor/ but will be applied for Multiplier3

/CountMultOnlyForSec/ =

Default value is empty. Set it to one or several sections from the .sec file to make the multiplier work for those sections only. Example: CountMultOnlyForSec = MA, MO. Do not use too many sections here – it may stop working if the line is too long and also will slow down the computer.

/CountMultOnlyForSec2/ =

Same as for /CountMultOnlyForSec/ but will be applied for Multiplier2

/CountMultOnlyForSec3/ =

Same as for /CountMultOnlyForSec/ but will be applied for Multiplier3

/MultiplierBands/ = 1 (default), 2, 3 or 4

1 All HF Contest Bands

2 All HF Bands

3 All HF Contest Bands plus 6 meters and 2 meters

4 All VHF Bands

/QsoErrorString/ = The exchange field will be checked according to this setting before logging QSO

Numeric – only numbers allowed (like serial number) 12 characters max, empty field will be accepted.

Numeric_not_Empty – as above, but empty field will not be accepted.

Any – both numbers and letters allowed (12 characters max), empty field will be accepted.

Any_not_Empty – as above, but empty field will not be accepted.

Grid – Grid Square Text, 4 or 6 characters, empty field will not be accepted.

If none of the above, put in some text (“XXXX” for example) in order that only exchanges listed in XXXX.sec file will be accepted (maximum of 9 characters in XXXX).

Add _or_Empty (e.g. Sect_or_Empty) to allow empty fields as well as exchanges listed in the .sec file.

If this parameter is left empty, then do not check (anything including empty field will be accepted, 12 characters max)

/EntryWindowInfo/ = List of EntryWindow items from the table below, each followed

by a number indicating the field width

Example: SNTText, 500, SntNrText, 700, RCVText, 500, Exchange1Text, 500

The following table shows possible EntryWindow Items, followed by the width normally used.

[table id=10 alternating_row_colors=true /]

/FrameText/ = SntRpt SntNR RcvRpt NR

These are the names displayed on top of each field of Entry Window, except for the callsign. Adjust the field names and spacing for the frame text by adding/deleting spaces in this line. Any names allowed.

Note: If you would like to prefill proper zone from wl_cty.dat file (it will show up in Exchange1Text field), use "CQ" or "IARU" in the ZoneType parameter (example: ZoneType =CQ) and put "CQZone" or "IARUZone" in FrameText (example: FrameText =SntRST RcvRST CQZone).

/LogInfo/ = List of Log Window items from the list below, each followed by a number indicating the field width

SentReport, SentNR, ReceiveReport, NR, IsMultiplier1, IsMultiplier2, CountryPrefix, GridSquare, Exchange1, MiscText, Points, opname,

Example: SentReport, 500, SentNR, 500, ReceiveReport, 500, NR, 500, Points, 500

Comment: adjust the field names and spacing for the log window by adding/deleting relevant name and length (only names in the list are allowed)

/DefaultContestExchange/ = (default is 001)

This will show up in the contest selection window for editing. It may have two or three parts like this: "001 Prov", "001 NA123". If the first part is 001 the logger will generate a serial number for every QSO and the second part will be sent by F2 with the number unchanged

Last2L - to set sent exchange = RS(T) + Last 2 letters of previous call (anything after "/" will be ignored). Use {SENTRST} in F2 macro to send RST and last 2 letters. Add GridSquareText in EntryWindowInfo parameter to display RS(T) + Last 2 letters on the screen (may be useful in SSB mode). Note: {SENTRSTCUT} will not send cut numbers in RST when using this exchange.

LastCallSuff - to set sent exchange = RS(T) + suffix of previous call (anything after "/" will be ignored). Use {SENTRST} in F2 macro to send RST and suffix of previous call. Do not use GridSquareText in EntryWindowInfo parameter to display suffix on the screen , as this will break ESM. Note: {SENTRSTCUT} will not send cut numbers in RST when using this exchange.

/IsWorkable/ = choose from list below (default is Any)

Any, MyContinentOnly, NAonly, SAonly, EUonly, ASIAonly, AFonly, Oonly, MyCountryOnly, ExceptMyCountry, or a list of countries (prefixes from wl_cty.dat file) separated by comma: UA2, UA, UA9. In the last case make sure you are using correct prefixes

/SpecialInstructions/ =

Special Instructions. Any text terminated by CR/LF This message will show up after Cabrillo file was generated - use it for a note to the operator. Leave it empty if not needed.

/DupeSqlString/ = 0(default), 1, 2, 3 or 4

Select clause that will uniquely identify a dupe:

0- turns it off,

1 - use Section,

2 - use whatever is in ExchangeText,

3- use mode (this will allow QSO with same station but different modes (CW, SSB, FM, AM)

4- use GridSquare; This is needed for qso parties where you can have mobile stations in different counties.

/StartOfContest/ = see below

Example 7, 1.5

First number - day of week (Saturday=1, Sunday=2, Monday=3,....., Saturday=7)

Second number - offset in hours (1.5 = 1 hour and 30 minutes) relative to GMT time, i.e. if it starts at 00.00 GMT the offset should be 0. This will be used to calculate OFF times.

/EndOfContest/ = 1, 1.5 Same format as for StartOfContest. This will be used to calculate OFF times

/IsMultPer/ = 0(default), 1, 2, 3 or 4

0 NoMults

1 OncePerBand

2 OncePerMode

3 OncePerBandAndMode

4 OncePerContest

/IsMult1Per/ = as above, but affects Multiplier 1 only

/IsMult2Per/ = as above, but affects Multiplier 2 only

/IsMult3Per/ = as above, but affects Multiplier 3 only

/MinimumOffTime/ = Min. Off time in minutes (default = 30)

/UsesWAECountries/ = True or False (default)

Answer whether this contest uses the WAE countries list (countries with '*' in

cty.dat). For example, for CQWW it should be True

/SetSentTimeForContact/ = True or False (default)

Used to set Sent Time in contests that require it. See CBARGT for use

/ScoreSummaryMultNames/ = Sec, Cty or Grd

Used to set title of Mult column in Score Summary

/WebAddress/ = Web address for the contest rules (**CURRENTLY NOT WORKING**)

Example: http://www.srr.ru/CONTEST/cup_raem_engl_08.php

/CabrilloFormat/ = 0, 1(default), 2, 3, 4, 5 or 99

0 = Cabrillo is not supported

1 = standard format

2 = NAQP format

3 = NASPRINT format

4 = SS (Sweepstakes) format

5 = RFC (Russian Federation Cup) format

99 = handcoded, uses CabrilloString (see below)

/CabrilloString/ =

Format: value1 name, value1 width, value2 name, value2 width, ...

Will work with: SNT, SentNr, CallSign, RCV, RcvNr, Comment, GridSquare,

Exchange1, Name, SentExch, SentExchPart1, SentExchPart2, SentExchPart3

Example: SNT, 4, SentNr, 4, CallSign, 13, RCV, 4, RcvNr, 4, Comment, 40

To add some number of spaces use Space, N (N - number of spaces)

/GenericPrintString/ = This will configure Generic file output that can be used instead of Cabrillo.

Format: value1 name, value1 width, value2 name, value2 width, ...

Will work with: SNT, SentNr, CallSign, RCV, RcvNr, Comment, GridSquare,

Exchange1, Name, Points, SentExch, SentExchPart1, SentExchPart2, SentExchPart3, Multiplier1, Multiplier2, Multiplier3.

Example: SNT, 4, SentNr, 0, CallSign, 15, RCV, 4, RcvNr, 0, Comment, 12

/GenericPrintStringHeader/ = header text

Adjust the names and number of spaces here according to the values in GenericPrintString (above)

Example: Date Time Freq Mode MyCall RST Snt Call RST Rcvd Comment

/QsoNumbersByBand/ = 0(default), 1 or 2

0 = Use a single sequence of QSO numbers (default)

1 = QSO Numbers by Band for all categories

2 = QSO Numbers by Band for Multi-Multi category only

`/DigitalModeSqlString/` = True or False(default)

True Used to merge RTTY and PSK into one digital contest mode

`/MultipleSessions/` = multiple session information

Leave it empty if the contest time is not broken into sessions

Examples: 0000/30 - starting at 00:00 UTC, sessions = 30 minutes 0000/60 -

starting at 00:00 UTC, sessions = 60 minutes 0000/200 - starting at 00:00 UTC, sessions = 2.00 hours It is OK to use 0000 for contest start time if it starts in the beginning of any other hour and sessions are less than or equal to 60 minutes.

Dupes will be allowed when new session starts. Dupes will be allowed when new session starts and the Multiplier window will be cleared upon first contact in the new session. Minimum session length is 10 minutes.

`/ResetMultsEverySession/` = 0 (default) or 1

When MultipleSessions is used, this parameter will allow multipliers to be reset in the beginning of every new time session, if set to 1.

`/ResetSNEverySession/` = 0 (default) or 1

When MultipleSessions is used, this parameter will allow serial numbers to be reset in the beginning of every new time session, if set to 1.

`/CabrilloVersion/` = 2.0 (default) or 3.0

When set to 3.0 the log file will be saved using version 3.0 of Cabrillo format. Also new fields will show up in the contest configuration window. Any other value or if left empty will turn on Cabrillo version 2.0

`/MultMult/` = 0 or 1(default)

`/MultMult2/` = 0 or 1(default)

`/MultMult3/` = 0 or 1(default)

When any of these 3 values is changed to 0, the multiplier will not be used for score calculation. This is useful when you need to use multipliers for display purposes only (Band Maps and Available windows).

`/BandChangesPerPeriod/` = limit on number of band changes per session (default 10000)

~~THIS IS NO LONGER USED. REPLACE IT WITH NEW PARAMS FOR BAND CHANGE TIMER/COUNTER LISTED BELOW~~

When set to a smaller number (for example 5) there will be a reminder at the bottom of Entry Window about number of band changes approaching the limit. Also at any time you can check how many band changes were already made if you move cursor over the Exchange frame (located to the right of the Callsign frame). Internal BandChange counter gets reset in the beginning of every time period set by `/MultipleSessions/` parameter. Setting the `/MultipleSessions/` parameter is not

required for this parameter to work. In this case the whole contest time will be used to count band changes. Note: the internal band change counter gets reset every time the logger restarts.

`/SingleOpCountableBandChange/` = True or False (default)

If set to TRUE Band Change Counter in the Info window will be enabled for Single Op categories.

`/MultiOpCountableBandChange/` = True or False (default)

If set to TRUE Band Change Counter in the Info window will be enabled for Multi Op categories.

`/CountBandOrModeChange/` = True or False (default)

If set to TRUE Band Change Counter in the Info window will be counting both band and mode changes.

`/SOBandChangeCountMax/` = Number of band changes allowed for Single Op categories (default 0 = no limit imposed).

If `CountBandChangesPerContest` or `CountBandChangesPerPeriod` are not set to TRUE, band changes will be counted per clock hour.

`/MOBandChangeCountMax/` = Number of band changes allowed for Multi Op categories (default 0 = no limit imposed).

If `CountBandChangesPerContest` or `CountBandChangesPerPeriod` are not set to TRUE, band changes will be counted per clock hour.

`/CountBandChangesPerContest/` = True or False (default)

If set to TRUE Band Change Counter will never be reset during the whole contest time.

`/CountBandChangesPerPeriod/` = True or False (default)

If set to TRUE Band Change Counter will be reset for every contest period/session (see `MultipleSessions` parameter).

`/SOBandChangeTimerDuration/` = Number of minutes Single Op station must stay on a new band (default 0 = no time limit).

If >0, band change timer will show up in Info window.

`/MOBandChangeTimerDuration/` = Number of minutes Multi Op station must stay on a new band (default 0 = no time limit).

If >0, band change timer will show up in Info window.

NOTE: Counter will show up in Info window only if `xxxxCountableBandChange` param is set to true AND `xxBandChangeCountMax` is set a value > 0.

Timer will show up in Info window when it is set to a value > 0. To see a new value in the Counter or Timer you should make a QSO on the new band, that is how both

Counter and Timer are getting initiated. The Timer will count down to tell operator how much time he/she will have to stay on this new band and Counter will count all band changes changing it's background color based on its value (if it is max-1, it will be yellow and if it is = max, it will be red).

/UsesLASTEXCHmacro/ = True or False (default False)

Answer whether this contest uses {LASTEXCH} in .mc files (it should be True if you are planning to use macro {LASTEXCH}).

Note: use MiscText in the Entry Window for received exchange, and LastExch with Misc in the CabrilloString (see FRN_CN_US.udc as an example)

/DupeQSOMinutesAgo/ = AllowableTime, CompareToSecond, IgnoreBand, InfoStatus, ThisMode (example: DupeQSOMinutesAgo = 10, True, False, True, False)

AllowableTime (number), QSO with the same station is allowed after this amount of minutes (0 will disable this UDC parameter)

CompareToSecond (default = True), if set to False compute time since last QSO based on minutes discarding seconds.

IgnoreBand (default = False), if set to True search for a Dupe QSO regardless of the band.

InfoStatus (default = True), if set to True the attempt to make a QSO too early will display this message in the Info window: "CallSign worked nn minutes ago".

ThisMode (default = False), if set to False search for a Dupe QSO regardless of the mode.

Note: /DupeType/ should be set to 4 to get this parameter working properly. Spots in the BandMaps are scanned every 30 seconds to repaint Callsigns (change Grey color to Blue or Red) is station can be worked again.

/PowerMult/ = QRPP, 5, QRP, 3, LP, 2, HP, 1 (this is an example, numbers can be different)

Multiplies the score by specified multiplier depending on the station power category selected in the contest configuration window.

Third Party Software

Third Party Software

All programs below are freeware programs, except as noted.

AutoHotKey - AHK

Description

[AutoHotKey](#) is extraordinarily powerful scripting and keyboard remapping **freeware**. You can remap keyboard, joystick, and mouse and run simple or very complex multi-step scripts. Virtually any key, button, or combination can become a hotkey.

AutoHotKey has no detectable performance impact on the operation of N1MM Logger+.

Once you have AutoHotkey installed, you create a script file in Notepad, name it with an .ahk extension, and double-click it. Windows knows that you want to run AHK, so an AHK logo for the script will appear in the system tray, and stay there until you actually exit from it. You can edit the script, read the help file, and reload the script from right-clicks on that logo. **Each time you edit the script you need to reload it** - also through the right-click on the logo.

Examples

Any of the following scripts can be copied verbatim and pasted into Notepad, then modified or saved with a new filename and an .ahk suffix.

Special Characters in AutoHotKey Definitions

Text after a semicolon is comments, and is not executed. The symbol “^” denotes the [Ctrl] key, and “!” denotes the [Alt] key. When one of those symbols is combined with a key (such as ^i), the effect is to send Ctrl+i (i.e., both keys pressed simultaneously). See the AutoHotKey help file and tutorials for further details.

Simple key remapping

```
NumpadEnter::F10 ;Remap the number pad Enter key to F10
```

Using one key to send any multi-key combination

```
#UseHook
#SingleInstance force
#IfWinActive,,S&pot It ; makes script active only when N1MM Logger Entry window
is active. This works because the word Spot occurs only in that window.
SetNumlockState, AlwaysOn
Numpad7::Send !{F9} ; Numeric key 7 - toggle antennas for a band
Numpad4::Send ^b ; Numeric key 4 - toggle dueling CQs
Numpad9::Send !r ; Numeric key 9 - toggle repeat CQs
Numpad5::Send ^{F1} ; Numeric key 5 - send CQ on radio that does not have entry
focus
Numpad6::Send !w ; Numeric key 6 - wipe
Numpad0::Send {ESC}\“ ; Numeric key 0 - return from S&P to work station calling
on run radio
Numpad1::Send \“; Numeric key 1 - go back to S&P on opposite radio
```

Using one key to send multiple keys at the same time

```
Numpad1:: ; Pressing number pad 1 invokes F5 and Pause
Send {F5}
Send {Pause}
return
```

Add more functionality to an existing key

```
$Pause:: ;Changes the Pause key to first do F5, then do the N1MM Pause key
function. The $ keeps the script from calling itself.
Send {F5}
Send {Pause}
return
```

For SO2R, place a call in the inactive radio EntryWindow, emulating the TRLog Alt-D function

```
!d:: ;Alt-D
InputBox call
Send {\}
Send ^w
Sleep 200
Send %call%
Send {\}
return
```

Set the numeric pad 8 & 2 keys to jump multipliers in the bandmap (normally a 3-finger combination)

```
#SingleInstance force ; Force this script to replace the last one, not append
```

SetNumlockState, AlwaysOn

#ifWinActive,,S&pot It ; Look for the spot button on the entry window to see if entry window has focus

Numpad8::sendinput, !^{up}

Numpad2::sendinput, !^{down}

Using single keys to grab multipliers on VFO A and B

#UseHook

#SingleInstance force

#IfWinActive,,S&pot It ; makes script active only when N1MM Logger Entry window is active. This works because the word Spot occurs only in that window.

SetNumlockState, AlwaysOn

Numpad7::Send ^!{Up} ; Numeric key 7 - VFO A Go to next multiplier up the bandmap

Numpad1::Send ^!{Down} ; Numeric key 1 - VFO A Go to next multiplier down the bandmap

Numpad9::Send ^!{Up} ; Numeric key 9 - VFO B Go to next multiplier up the bandmap

Numpad3::Send ^!{Down} ; Numeric key 3 - VFO B Go to next multiplier down the bandmap

Send a canned CW message from a non-Fkey

#UseHook

#SingleInstance force

#IfWinActive,,S&pot It ; makes script active only when N1MM Logger Entry window is active. This works because the word Spot occurs only in that window.

SetNumlockState, AlwaysOn

Numpad1::Send ^k testing?^k ; Send a CW message from a designated hotkey (Numeric key 1 in the example). You'll see the Ctrl+K keyboard window appear and quickly disappear, but the CW continues to be sent until it is done (unless you hit ESC to interrupt it)

Tune your radio's VFO with the mouse wheel

Script written by K8UT, with revisions by KU1T

;next two lines are for testing the definition. uncomment them to make them work

;WheelDown::MsgBox You turned the wheel DOWN

;WheelUP::MsgBox You turned the wheel UP

;This script works, but you lose the Bandmap zoom mouse wheel feature. Use the keypad + and - keys instead

#UseHook

```
#SingleInstance force
#IfWinActive,,S&pot It ; makes script active only when N1MM Logger Entry window
is active. This works because the word Spot occurs only in that window.
SetNumlockState, AlwaysOn
```

```
Numpad9::Send {Up} ; Numeric key 9 - toggle repeat CQs
```

```
;— x10 large frequency shift - hold down Left Shift, numeric pad 9 = 10 keypresses
LShift & Numpad9::Send {Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up}
```

```
Numpad6::Send !w ; Numeric key 6 - wipe
```

```
Numpad3::Send {Down} ;
```

```
;— x10 large frequency shift - hold down Left Shift button, Numeric pad 3 = 10
keypresses
```

```
LShift & Numpad3:: Send
{Down}{Down}{Down}{Down}{Down}{Down}{Down}{Down}{Down}
```

```
;and finally wheel works
```

```
WheelUp::Send {Up} ; spin wheel forward, frequency moves UP
```

```
WheelDown::Send {Down} ; spin wheel backward, frequency moves DOWN
```

```
;— x10 large frequency shift - hold Left Shift button, spin wheel = 10 keypresses
```

```
LShift & WheelUp::Send {Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up}{Up} ;
```

```
LShift & WheelDown:: Send
```

```
{Down}{Down}{Down}{Down}{Down}{Down}{Down}{Down}{Down} ;
```

Use extra mouse buttons for common keystrokes

```
; Special keys using the Microsoft model 1007 mouse which has two additional aux
buttons
```

```
; Send N1MM common keystrokes from the mouse
```

```
; Facilitates RTTY operation entirely from the mouse
```

```
MButton:: Send {Enter} ; press wheel sends [Enter] for ESM
```

```
XButton1:: Send {Enter} ; press wheel sends [Enter] for ESM
```

```
XButton2:: Send {Esc} ; aux mouse button2 sends [Escape]
```

```
Return
```

CC User (formerly AR Cluster User)

CC User by Lee, VE7CC is a full featured Telnet and TNC program for use with AR Cluster, CC cluster or DX Spider Nodes.

It has telnet and RS-232 outputs for logging and contest programs like N1MM logger. Runs under Windows 95 to Windows 8 and can auto reconnect and automatically gets missed spots. It can be used with telnet and TNC's.

The program can receive spots both in connected and unconnected modes, this means it also recognizes spots when NOT connected to any packet node, just monitoring the RF channel where other users are receiving spots is good enough. CC User greatly simplifies the process of setting up spot filters at the cluster node.

Setting up CC User with N1MM logger

- Settings CC User
 - Connect to your packet node with CC User
 - Go to Configuration – Ports/Logger Program
 - Check “Telnet” Logging Program Connection, Apply for both the Node Connection and the Logging Program Connection
- Open N1MM Logger
 - Open the Telnet window, click on the Clusters tab and look at the pulldown list of cluster nodes for CC User, (or LocalHost or 127.0.0.1)
 - If there isn’t already an entry, add CC User
 - Use 127.0.0.1:7300 if CC User and N1MM are on the same computer
 - Check the CC User website for instructions on using multiple computers
 - Connect to CC User from the Telnet window
- You should see spots flow into N1MM Logger from CC User

Check out the the [CC User](#) website.

2Tone (by David, G3YYD)

2Tone is a drop-in replacement for MMTTY using different decoding and encoding algorithms. It can be used in any of the Digital Interface or Additional RX digital windows in N1MM Logger+ in place of MMTTY. Many users have found that it decodes more accurately than MMTTY under difficult conditions.

To obtain a copy, you must join the N1MMLoggerplus user group at groups.io . Go to the groups.io web page for the group, select the [Files page](#), find the folder named “G3YYD”, and look in that folder for the latest version. Download the zip file containing the most recent version and unzip it into a suitable folder (NOT within the C:\Program Files or C:\Program Files (x86) paths). Read the 2Tone documentation that is included in the zip file for installation and operating instructions. Note that when configuring any of N1MM Logger+’s digital windows to use 2Tone, you set up the window as if you were using MMTTY, except that the fully qualified filename in the setup ends with “2Tone.exe” instead of “MMTTY.exe”. For more detailed information see the Downloading and Installing 2Tone section in the [Digital Setup](#) chapter of the manual.

2Tone offers four different decoders for different propagation conditions. By far the

two most commonly used ones are Selective and Flutter. The best way to use 2Tone is with two copies of 2Tone (in different folders) open at the same time with one set for Selective and the other set for Flutter.

In transmit 2Tone must be used in the main DI window and can be set for AFSK, DOOK (a narrower and slightly higher performing version of AFSK), pseudo FSK requiring special hardware, TinyFSK using an Arduino via a COM port, or FSK via a COM port RTS, DTR or TxD line. In the AFSK/DOOK modes the left or right stereo output of the sound card can be used so SO2R can be used with one stereo sound card, with 2Tone on DI1 set up to use the left channel and another copy of 2Tone on DI2 set up to use the right channel of the sound card.

Notifications of 2Tone updates are sent out on the N1MMLoggerplus groups.io user group.

QSOOrder (by Vasily, K3IT)

QSOOrder is a QSO recording program written by Vasily, K3IT, to enable N1MM Logger users to record contest QSOs on the fly and replay them. QSOs are stored individually in folders labelled with the contest name.

Download QSOOrder as a zip file from the [QSOOrder project area at GitHub](#). Create a folder in which you will store the contest recording folders (e.g. a Contest Recordings folder within your N1MM Logger+ user files folder) and unzip the contents of the zip file into that folder.

QSOOrder uses N1MM Logger's UDP broadcasts. Follow the instructions in the downloaded readme.txt file to use the Configurer, Broadcast Data tab to include broadcasts of contact information from N1MM Logger to QSOOrder. Note that the default port in the instructions is 12060. If you use other plugins that rely on UDP broadcasts from N1MM Logger, you may need to change the port number used by QSOOrder in order to avoid conflicts. If you wish to use a different port number, change the port number used for contact broadcasts in Configurer, Broadcast Data tab, "Contacts" and use QSOOrder's PORT command-line flag to tell it to use the port number you have chosen (e.g. -P 12061).

To use QSOOrder for a particular contest, start the QSOOrder program and run it at the same time as N1MM Logger. Each time a QSO is logged in the Logger, a UDP broadcast will trigger QSOOrder to save a recording of that QSO. Recordings are saved in a sub-folder named by contest-name and year, and each QSO is saved in a file whose name includes the callsign of the station worked, the name of the contest, the date, time and band. The length of each recording is determined by the buffer length option, and the recordings are set to run until a specified delay time after the contact is logged; both of these time parameters are configurable using command-line flags. To use one of these command-line flags, insert it into the

Target: line in the desktop shortcut you use to start QSOOrder with, e.g. Target: "C:\Users\User\Documents\N1MM Logger+\QSOrecording\QSOOrder.exe" "-P 12061" (the program name and each command-line flag should be enclosed in a separate set of quotation marks).

Real-time Log Backup - TRNMirror (by Larry, K8UT)

TRN_Mirror monitors the N1MM Logger transaction log files and maintains a shadow copy of your contest log in a second location.

Updated: v1.3 2018-07-01

Features

- Provides a log recovery mechanism in the event of a hard drive or computer crash
- Automatically tracks new transaction files from new logs and new contests
- Creates mirror files on a second hard drive in the PC, a USB thumbdrive, a networked drive, or cloud storage
- Copies the N1MM Logger TRN file based on events (when the TRN file changed) or time (after n minutes since last copy)
- Avoids any file access errors that can occur when accessing the live contest database
- Efficiently makes a mirror file only when the TRN file has changed
- Creates n versions of the transaction file, based on configuration settings
- Renames the mirror files using version numbers (filename(1).trn, filename(2).trn, filename(3).trn...)
- Stores latest settings and mirror version counts in INI files

Documentation and download instructions: <http://www.k8ut.com/file-gallery/programs>

Multiplier Map Display - Mult Chaser (by Patrick, NA0N)

Mult Chaser is a free add-on program for N1MM Logger that displays contest multipliers on a map of North America as they are worked. The program reads from the specified N1MM Logger database after each contact, provided that Mult Chaser and N1MM Logger are both configured appropriately. Mult Chaser supports contests with ARRL/RAC sections as multipliers (Sweepstakes, Field Day, ARRL 160), contests with states/provinces as multipliers (NAQP, ARRL RTTY), contests with grid squares as multipliers (Stew Perry), and US State QSO parties.

Documentation: <https://sites.google.com/site/korkowp1/mult-chaser-help>

Downloads: <https://sites.google.com/site/korkowp1/mult-chaser-downloads>

R8 Brain - Audio File Resampler

Sample rate and bit resolution converter for audio recording .wav files.
It includes a batch mode to modify all .wav files.

Download: <https://www.voxengo.com/product/r8brain>

Customizing the DXCC List

N1MM Logger+ uses the country file WL_CTY.DAT from <http://www.country-files.com/> which has extra CQWW zone information for several countries including: Canada, Australia, and China. Because each of these countries is allocated a multitude of prefixes, but the CQWW zone is determined by the call area regardless of prefix, a very large number of entries would be necessary to spell out all the combinations. Instead, WL_CTY.DAT contains special “macro” commands that indicate how the CQWW zones are determined for that country. This file can be downloaded and installed from the **Tools > Download and install latest country file (wl_cty.dat) (Internet)** menu item in the main Entry window. This should be done regularly, as the country file is updated frequently, especially before major contests. Access to the Internet is required in order to perform this operation.

There are some special situations where the country file may need to be customized. The **Tools > Import country list from downloaded file** menu item may be used to import a customized country file from the SupportFiles subdirectory in the N1MM Logger+ user files area. If you do this for a particular contest, ***remember to restore the normal country file before starting another contest.***

Occasionally the country file may need to be edited, for example in order to add a special call sign that was not caught in the regular file. In 95% of such cases, all you need to do is download and install the latest file, but occasionally you may need to edit the file to add a call sign. The file is a text file and can be edited with a text editor.

- You can override the continent, zone etc. on a prefix-by-prefix basis.
- Primary prefixes preceded by an * are only valid for the CQWW and WAE contests. The logging program will ignore these lines otherwise. When updating the country file please don't remove the *.
- The logging program doesn't handle prefixes such as FR5ZQ/J correctly. Listing FR/J as a prefix for Juan de Nova in the country file doesn't work unless a station signs “FR/J” as his callsign. If you work one of these islands, you'll have to add the callsign of the worked station to the country file manually before it is counted as the right country.
- When updating the WL_CTY.DAT file use a text editor, not a word processor. Notepad is fine, watch out for WordPad etc., always save as a text file!
- After updating the WL_CTY.DAT file it has to be reloaded. Reload the file via Tools/Import country list from downloaded file menu item.
- After a Reload the prefixes are imported into the database which you are using. When changing to another database you have to do a reload again to be sure that you use the most recent country file for that database (or the one you want).
- When a database is copied, also the country list in it will be copied. So if the

country file was updated in the original file after a copy you don't have to import the country list again.

Note on KG4 stations: When a KG4 callsign is a 2×2 callsign it is assumed to be Guantanamo otherwise it is K (2×1 or 2×3). When the exact callsign appears in the loaded cty.dat the associated country will be used (K or KG4 are then not automatically assumed).

Examples

Netherlands: an easy example with nothing special. The program will assign all calls starting with PA, PB, PC, etc. to the country Netherlands in CQ zone 14, ITU zone 27 and EU as continent. PA will be the prefix shown in the multiplier window.

Netherlands: 14: 27: EU: 52.40: -4.90: -1.0: PA:

PA,PB,PC,PD,PE,PF,PG,PH,PI;

Greenland: Normally only stations with OX are counted as Greenland. The callsign XP1AB has been added which normally belongs to Denmark (OZ). XP1AB will be valid as Greenland with standard Greenland parameters i.e. zones, continent etc.

Greenland: 40: 05: NA: 62.50: 45.00: 3.0: OX:

OX,XP1AB;

African Italy: This is an example where a * is added before the primary prefix which means that the country only counts in CQ-sponsored contests.

African Italy: 33: 37: AF: 35.40: -12.50: -1.0: *IG9:

IG9,IH9,IQ9L,IZ9;

WI_cty.dat macro example.

The macro starts with # and ends with the next ; It means that for all the prefixes in China the zones are determined by the call area and first letter of the suffix.

China: 24: 44: AS: 40.00: -116.40: -8.0: BY:

1. BY: BY3G(23),BY3H(23),BY3I(23),BY3J(23),BY3K(23),BY3L(23),

BY9A(23),BY9B(23),BY9C(23),BY9D(23),BY9E(23),BY9F(23),BY9G(23),
BY9H(23),BY9I(23),BY9J(23),BY9K(23),BY9L(23),BY9T(23),BY9U(23),
BY9V(23),BY9W(23),BY9X(23),BY9Y(23),BY9Z(23),BY0(23);

3H,3I,3J,3K,3L,3M,3N,3O,3P,3Q,3R,3S,3T,3U,BG,BT,BW,BY,BZ,XS;

Technical Information

Technical Information

N1MM Logger+ is a contest program written in Microsoft Visual Basic .NET. It uses an SQLite database for storing information. Writing and retrieving data to and from the database is done with SQL (Structured Query Language).

Running the program needs no more programs or files than supplied in the installation package and the program update (NewExeVx.x.x).

Do you need all the information given below to use the program? **NO**

Warning to Anyone Tempted to Directly Edit N1MM's Database Files

We recommend not to change any data in the database or any other files unless you are very sure what you are doing. It is possible to change the behavior of the program and get erroneous results. If you have changed the contents of the database and the program behaves strangely, go back to the original (unaltered) version of the database.

No support will be given to users who change the database structure or contents. The same goes for changing other files used by the program.

You are on your own!

Don't make changes if you are not very sure what you are doing. Second and last warning!

Note about scoring

After changing QSO information always do a rescore! Multiplier information and QSO points will be updated after a rescore so any changes made to these directly in the database will be lost.

Adding new contest types

It is not possible to add a contest to the program by editing the database. Contests can be added using the User Defined Contest method.

For contests other than those in UDC files, contest rules etc. are in the main program file (N1MM logger.net.exe) and are not stored in the database or any other files!

Directory Structure

The program itself is installed under **C:\Program Files** (or **C:\Program Files(x86)** on 64-bit systems), but none of the files it writes to are stored there. All user files (databases, ini files, error logs, mc files, wav files, ADIF files, Cabrillo files, UDC files, call history files, etc.) are stored in dedicated subfolders in a Logger+ user files area, which by default is installed inside your personal **Documents** folder. The installer offers the capability to change either of these locations, but it is recommended that you accept the defaults.

Digital engine files (MMTTY, 2Tone, Fldigi) have not been written to accommodate this two-folder structure, and need to be stored outside the **C:\Program Files** path in Windows Vista, 7, 8 and 10. One solution is to place them in a directory outside the normal pre-defined Windows paths (e.g. under **C:\Hamradio\MMTTY** or **C:\MMTTY** or ...); a second solution is to create a folder inside your Documents folder for digital engines. Either way works.

The SQLite Databases

Information that does not change between contests is kept in a database called **N1MM Admin.s3db**. Contest QSOs and related information are in databases that may be created or switched from the File menu. All of these databases are stored in the Databases subdirectory in the N1MM Logger+ user files area.

Do_Not_Use_or_Erase.s3db File

There is a special database file called **Do_Not_Use_or_Erase.s3db** in the Databases directory – **do not erase this file, and do not name it as your log database!**

The “N1MM Logger.ini” file

The N1MM Logger.ini file is in the *Documents\N1MM Logger+* user files directory. Everything in the “N1MM Logger.ini” file should be settable through the program’s user interface. An item may not appear in the “N1MM Logger.ini” file if its value is left at the default.

Removing the ‘N1MM Logger.ini’ file will cause the program to start with default settings and will require all configuration items to be re-entered. In some cases where data in the file has become corrupted, this may be necessary. Before doing that, it is worthwhile to try renaming a recent backup from before when the problems started. There are up to seven backups retained in the main user *Documents\N1MM Logger+* directory, one for each day of the week, as in N1MM Logger.ini.Monday.bak, etc.

To Revert to a Previous INI BAK file

- Close N1MM Logger
- Rename the current “N1MM Logger.ini” file to something else, for example “N1MM Logger.ini.CURRENT”
- Make a copy of one of the backup files, based on when the program was last working properly. When you make that copy in Windows Explorer, it will add the word Copy. For example, the copy of “N1MM Logger.ini.Friday.bak” will be called “N1MM Logger.ini.Friday - Copy.bak”
- Rename that copy “- Copy.bak” file to the active ini file name. For example rename “N1MM Logger.ini.Friday - Copy.bak” to “N1MM Logger.ini”
- Launch N1MM+ and see if your previous configuration is working properly.

ADIF Fields

N1MM Logger+ complies with the ADIF standard. However in the N1MM Logger+ database there is more information stored then we can export (and import) using standard ADIF tags. A number of N1MM Logger-specific tags have been added so when exporting an ADIF file and importing it again all information from the DXLOG table will be restored. A rescore will update the fields not imported and to get the score and multipliers shown correct on the screen.

APP_N1MM_EXCHANGE1 - content of the Exchange1 field

APP_N1MM_POINTS - content of the Points field

APP_N1MM_RADIO_NR - content of the RadioNr field (SO2R or SO2V)

APP_N1MM_MISCTEXT - content of the MiscText field (if used)

APP_N1MM_CONTINENT - content of the Continent field

APP_N1MM_CONTACTTYPE - content of the ContactType field (e.g. D for dupe)

APP_N1MM_ISRUNQSO - 0 for contacts made while in S&P mode, 1 for contacts made while in Run mode

APP_N1MM_RUN1RUN2:1 - content of the Run field. 1 means radio 1 was the Run radio, 2 means radio 2 was the Run radio.

APP_N1MM_RADIOINTERFACED - indicates whether a radio was interfaced for radio control(1) or not (0)

APP_N1MM_ISORIGINAL - True or False (meaning ?)

APP_N1MM_NETBIOSNAME - the NetBIOS name of the computer on which the contact was originally logged

APP_N1MM_RoverQTH - Rover QTH (if used)

APP_N1MM_HQ - IARU member organization abbreviation (for HQ stations in IARU contest)

Note that some fields in the database are used for different purposes in different contests, and may be exported/imported with different ADIF tags in different contests. For example, the Zone field in the database usually contains a CQ zone (CQZ tag in ADIF), but in some contests such as the IARU HF Championship, it

contains the ITU zone (ITUZ tag in ADIF) instead. The Section and Misc fields are likewise often used for different purposes in different contests.

In the WAE contests, QTCs are not exported to or imported from ADIF. Exporting a WAE contest to ADIF and importing it into a different database will lose all information about QTCs exchanged during the contest. In order to copy QTC as well as QSO data, you must either use the File > Copy This Contest to Another Database menu item, or else import the TRN file created with the original contest log into a new empty database.

Callsign Checking in the Digital Interface

Below describes how callsign checking is done in the Digital Interface windows.

It first checks to see if the callsign is of the right length (More than 2 less than 11). It then checks to see if someplace in the first 6 characters there is a number. 3rd it checks to see if there are no invalid characters in it. Then if it all that passes it goes through the Busted Call Checker. If the Busted Call Checker returns an Error message then the call is invalid. Anything else from the Busted Call Checker makes it a valid call.

As text comes into the Receive screen of the Digital Interface it gets printed to the window and placed in a temp buffer. When a space or a CR or LF is encountered the program will send the text in the temp buffer to the check callsign routines. If it comes back as a valid callsign it is sent to another routine that looks back thru the last 25 characters of the Receive screen and colors them accordingly. At the time the space is encountered the temp holding buffer is cleared and things get sent there all over again. The whole process above takes just over a millisecond to complete.

Unlike other software DE before the call is not required, it looks for space mostly after callsign.

Take a look at this sequence it explains how it picks up callsigns in the RX window:

A QWSCFGTWA5TTT WA5TTT UR 599 XXXXXXXXXXXX

The program sees the space between the TTT and the WA so it looks into its previous holding buffer which contains "QWSCFGTWA5TTT" that string does not equal a valid callsign even though there is one in it. So because it encountered the space the buffer is cleared and the next string starts being placed into it. When it hits the third space it goes back and checks the buffer again this time it finds WA5TTT and it says it is a valid call. The program now looks back 25 characters and any time it finds WA5TTT it will color it accordingly and also place it in the grab window.

As for the clicking on callsigns it follows the same rule except there is a routine that looks to see the characters that are under the mouse. If it is a valid call then it gets sent through the routines to place it in the entry window. There is a ltrs/figs line of text that shows the actual text that is being converted. This will give you an idea of what text is getting selected etc.

Problems will happen if the rules change in various countries and the rules in the Busted Call Checker can't keep up with the country changes so you get callsigns that do not come out of it OK. The main reason to add the Busted Call Checker routines in there is to cut down on a lot of garbage that would be getting colored that passed all of the check routines but were not really callsigns

Routers and Firewalls

A router provides your principal defense against the wild, wooly Internet. Everyone who connects to a broadband Internet service should only do so through a router.

A software firewall (like the Windows XP firewall, Zone Alarm, etc.) provides protection from the other computers behind your router. It's probably okay to turn off the Windows Firewall in a contest station.

Routers provide an important function called network address translation (NAT). If you look at your computer's IP address and see 192.168.x.y (or 10.x.y.z), then you're golden. The 192.168.x.y (and 10.x.y.z) address ranges are defined as local only and cannot be routable across the Internet. If your PC has one of these addresses, it's as if you're behind a telephone switchboard and do not have a direct dial number. That's a good defense.

Software firewalls protect you from other computers behind your router. So if you take your laptop around with you and use various wireless networks, you absolutely need a software firewall. The other computers at Starbucks may be full of viruses, and you need a software firewall to protect you from them. Also, if you have a computer in your house that may be used for some less-than-safe surfing, you should have a software firewall. Kids may have permitted access for online gaming, peer-to-peer file sharing, or may have downloaded software that has spyware, etc. Protect your PC by running a software firewall. Finally, if you have a wireless network, make sure you control who access it. If your neighbor can access your network and has a bunch of malware on his machine, your machines could get infected, too.

Robert K5PI.

Adding N1MM to the Windows Firewall

When you do not want to turn off the Windows Firewall you can leave your windows

firewall on even though you are behind a router. Add N1MM to your exceptions list and better yet add the local subnet (usually 192.168.1.0 (255.255.255.0)) to the port exceptions.

DX Clusters

There are several types of DX clusters used during contests. Most of them have the same type of basic commands (SH/DX style by the original from AK1A), but advanced commands such as filters differ between cluster types. Below is a summary of the most used DX cluster types with some sample commands. For more information read the Help from the cluster you are using.

Overview

Cluster	AR-Cluster	CLX	DXnet	DXSpider	Wincluster	Cluster	PacketCluster(tm)
By (author)	AB5K	DJ0ZY and DL6RAI	F5MZN	G1TLH	KH2D	OH7LZB	AK1A
Operating System	Windows 32 bits	Linux	Linux, Dos	Linux	Windows 32 bits	Dos	Dos
Command Set	SH/DX	SH/DX	SH/DX	SH/DX	SH/DX	Own	SH/DX
Version used for overview	-	5.04	4.3b9	1.51	2.3.8	1.0	not found
Still supported	Yes	Yes	Yes	Yes	Yes	No	No
Freeware	\$\$\$	Freeware	Freeware	Freeware	\$\$	Freeware	\$\$
Multilingual	?	?	Yes	Yes	No	Yes	?
Website	Website	Website	Website	Website	Website	Website	No
Help file	Web	Web	not found	Web help PDF help from FRC	not found	not found	not found
Help on DX spots	Web	Web	not found	Web	not found	not found	not found

Table of cluster types

Commands

Action	AR-Cluster	CLX	DXnet	DXSpider	Wincluster	Cluster
General command set	SH/DX	SH/DX	SH/DX	SH/DX	SH/DX	List
Show	SH/USERS	SH/USERS	SH/USERS	SH/USERS	SH/USERS	-

Action	AR-Cluster	CLX	DXnet	DXSpider	Wincluster	Clusse
users						
Show	SH/WWV	SH/WWV	SH/WWV	SH/WWV	SH/WWV	-
WWV						
Configurat-	-	-	SHow/Conf	-	-	-
ion						
network						
Show	show/filters	show/filters	SHow/Filter	show/filter	-	-
Filters						
Set Filter	set/filter [..]	set/filter 5	-	-	-	-
Reset	-	set/nofilter	-	clear/spots	-	-
Specific		1		1		
Filter						
Reset All	set/nofilter	set/nofilter	SET/NOFilter	clear/spots	-	-
Filters			r	all		
Set	-	-	-	-	SET/PAGE 0	-
number of						
lines to 0						
Show DX	-	SHOW/DXD-		-	-	-
S		EDX				

SH/DX command set

- SET/FILTER
- SHow/Filter
- SET/NOFilter
- SET/DX_announcements
- SET/NODx_announcements
- SET/Announcements
- SET/NOAnnouncements
- SET/nodx - You do not get spots from the cluster but you can send them out on the network (i.e for SO unassisted stations)

Filter and other examples/features

Setting band/mode type filters are not recommended as they will often block split frequency operations on the low bands.

Filter examples AR-Cluster and DX-spider by the [Yankee Clipper Contest Club](#) (YCCC).

AR-cluster

For full details see: <http://www.ab5k.net/ArcDocs/UserManual/ArcFilters.htm>

You only want stateside generated spots and announces? Use: **set/filter k/pass**

set/filter k,ve/pass – You will only see DX spots from spotters in the United States (K) and Canada (VE).

set/filter dxbm/reject vhf,uhf – VHF and UHF spots will be suppressed.

Remove all filters with: **set/nofilter**

Examine your settings with: **show/filters**

CLX

For full details see: <http://clx.muc.de/user/english/html/userman.html>

SET/FILTER <nr1,nr2,...,nrX>

This command lets you set reject filters as defined by your sysop. You first should look up which filters are defined at your CLX node. This is the default list:

Filter Meaning

-
- 1** VHF 144.000 MHz and up
 - 2** HF 30.000 MHz and down
 - 3** TOP 1.800-2.000 MHz
 - 4** all the CW band segments
 - 5** all the SSB band segments
 - 6** all the RTTY band segments
 - 7** all the WARC bands
-

Your sysop may or may not have defined further filters. You can find out by using the SHOW/FILTERS command. After you have decided which filters you would like to switch in, you use the command as follows: **SET/FILTER 4,6**

This turns on the CW and RTTY filters, so will leave you only with SSB spots. To further narrow the filter settings, you can add more filters: **SET/FILTER 1,3**

The setting is now 1,3,4 and 6 which eliminates all spots except SSB spots on the HF bands from 80 to 10 meters, including the WARC bands.

SET/DXDEDX and SET/NODXDEDX

This command is used to turn off so-called Internet spots. DX spots originating from specific WAZ zones are not forwarded to you when you have issued a SET/NODXDEDX command. This flag is saved in your user record so you will only have to specify it once to turn these (for you) annoying messages off. The default is to send all DX spots. For example, your sysop could have defined zones 03, 04, 05 and 25 as DX zones. If you then turn on the NO-DX-de-DX filter, you will never again receive any spots from these areas although other users probably will.

To look up, which zones were being defined as DX zones, use the command **SHOW/DXDEDX**.

When you have previously disabled DX spots from other continents with **SET/NODXDEDX**, you can re-enable them with **_SET/DXDEDX_**.

SET/DX_ANNOUNCE and SET/NODX_ANNOUNCE

This command turns the reception of DX spots on or off. This could, for example be used if you were reading a lengthy message and did not want DX spots in between the lines. This command is permanent, it will enable or disable the sending of DX spots. To enable the sending of DX-spots use **SET/DX_ANNOUNCE**

SET/LOGIN_ANNOUNCE

Set to see user logins and logouts locally. For each login or logout, a message is sent to you from the system. On a busy node this will generate a lot of traffic.

Login at 1929Z: DL6RAI

Logout at 1930Z: DK2OY

DXSpider

For full details see: <http://www.dxcluster.org/main/usermanual.html> or download it as PDF file (from FRC) at: <http://n1mmwp.hamdocs.com/wp-content/uploads/attachments/dxspider.pdf>

A great PDF file on User Configurable Spot Filters in DXSpider by Jim Samuels – W3BG can be found at:

<http://n1mmwp.hamdocs.com/wp-content/uploads/attachments/Filter Primer.pdf>

SET/USSTATE is a feature where the US STATE is automatically added before or behind the time field. The information is taken from the FCC database.

The basic format for a spot filter is:

accept/spots <pattern>
reject/spots <pattern>

As you can see, there are fundamentally two broad classes of filter... accept & reject. A different way of looking at them is:

accept - bandpass filter, as in, "Pass these spots to me"

reject - bandreject filters, as in, "I don't want to see spots like this"

The <pattern> has many, many different combinations. For now, I'm going to address just two classes... "by" and "call". "By" means that the spot is "by someone" as in a spot "by k1xx" or "by a VE" or "by someone in Maine"

The exact syntax is:

by_zone - spotter in the CQ Zones, 1-40

by_dxcc - spotter is a W or VE or F or G

by_state - spotter is in ME, CT, RI, NH

Remember, spots "by" means callsign of the station doing the spotting, the spotter.

"Call" on the other hand refers to the call, zone, state of station being spotted, the spottee. The syntax here is:

call_zone - the spottee's zone

call_dxcc - the spottee's country

call_state - the spottee's state

Now, on to some simple examples.

accept/spots by_dxcc w,ve - spots only by W & VE stations

accept/spots by_zone 5 - spots only by stations in Zone 5

accept/spots by_state me - spots only by stations in Maine...slow weekend

reject/spots call_dxcc G - I don't want to see G stations spotted

reject/spots call_zone 14 - No spots of stations in Zone 14

reject/spots call_state md – Please, no more spots of Maryland stations

With the following command I only get spots with “RTTY” in the comment field. This is nice during RTTY contests.

accept/spot 0 info rtty – Only show spots with “RTTY” in the comment field

If you want to get rid of a filter, use: **clear/spots all**

Spot filters remain on a DXSpider node until you clear them out. No need to re-enter the same filter each time you log in.

Just a couple words about frequency. You can combine frequency on the same line as an accept/reject filter. For example:

accept/spots by_dxcc w,ve and on 10m – only 10 meter spots by W & VEs

reject/spots call_zone 25 and on 160m – I don’t want more spots of JAs on 160 meters

Links

DX PacketCluster WebNet <http://www.dxcluster.info/>

Webclusters and other useful information <http://hamgallery.com/clusters/>

OH2AQ WebCluster (DX-Summit) <http://oh2aq.kolumbus.com/dxs/>

External UDP Broadcasts

External UDP broadcasts pass information from N1MM Logger+ about the contest in progress to various [third-party software programs](#). UDP broadcasts stay in the same network (same subnet) and cannot be broadcast directly over the Internet.

There are additional UDP broadcasts built into N1MM Logger+, which are sent by default, but (except as noted) they are not very useful for general users. One example is the real-time score reporting application.

A note to software developers

Vasily K3IT has found that if both `SO_BROADCAST` and `SO_REUSEADDR` options are used when a UDP port is opened, it is opened in a 'non-exclusive' mode. This allows multiple applications to share the same port, as long as they all follow this method. Using these flags helps avoid port conflict issues.

Appendices

External UDP Broadcasts

Configurer

Hardware Function Keys Digital Modes Other Winkey Mode Control Antennas Score Reporting **Broadcast Data**

Select the type of data you wish to broadcast, and the IP Address(es) and port(s) for the receiver(s) of the data. Use 127.0.0.1 for the local machine. Use 12060 as the port unless the receiving application requires a different port. 255 in the low order octet will broadcast to your current subnet.

Type of data	IP Addr:Port IP Addr:Port...
☐ Application Info	127.0.0.1:12060
☒ Radio	127.0.0.1:13063 127.0.0.1:13065
☒ Contacts ☐ All Computers	127.0.0.1:12060
☒ Spots	127.0.0.1:13063 127.0.0.1:13065
Rotor	127.0.0.1:12060 127.0.0.1:12040
☐ Score	127.0.0.1:12060

JTAlert connection settings. IP Address and port must match JTAlert Settings. Allows JTAlert logging into N1MM

Enable	IP Address	UDP Port
☒ Enable	127.0.0.1	2333

Sets the IP Address and port that an external program can connect to N1MM+ via TCP Port for logging purposes. (JTDx)

Enable	IP Address	TCP Port
☐ Enable	127.0.0.1	52001

OK Cancel Help

To enable external UDP broadcasts select >Config >Config Ports... >Broadcast Data.

Selecting which UDP Broadcasts to Send

Checkbox

Application Info

Explanation

Broadcasts information about the station and the current contest (station name, contest database, contest name...) when the program launches, when a new contest is opened, or when a different contest is selected in the Contest Dialog window. See full field list below

Radio

Broadcast radio information (mode, frequency, antenna, operator...) at least every 10 seconds or when radio frequency or mode change. See full field list below

Contact

Broadcasts contact information (time, callsign, mode, frequency, exchange...) when a new contact (QSO) is added to the log, when an existing contact is edited in the log, or when an existing contact is deleted from the log. See full field list below All QSOs, Broadcast all contact info from all stations on a network from this station. This command is useful only in Networked Computer mode. When enabled (together with Contact) at any station, that station will rebroadcast every contact that it receives to the UDP port specified. The XML format is the same as for Contact except that IsOriginal will be set false. CAUTION: Multiple, misconfigured stations with All QSOs enabled could result in a circular network storm of contact packets

Spots

Broadcast info about spots as they are processed (added or deleted). Spots may originate from telnet (including RBN), from logging QSOs, or from local spots stored in the Bandmap

Setting the Destination IP Addresses

The Application, Radio, and Contact packets will be addressed to destinations indicated in this dialog window. To send them to a program running on this PC, use the address 127.0.0.1. To send them to another PC on this subnet, enter its IP on the corresponding line. To send them to all PCs on this subnet, enter 255 as the last number (octet) of this subnet's address. For example: if PCs on this subnet have the address 192.168.1.n, use 192.168.1.255 to send the packets to all of the PCs on this network. Separate multiple destination IP address from each other with a space. Do not specify 255 in the higher order octets, or you will risk broadcasting to the internet. While eventually the packets will be discarded by internet routers, it will not endear you to your ISP.

Setting the Destination IP Port Numbers

The recommended default port number for N1MM Logger applications is 12060. Destination port numbers are defined by adding a colon ":" to the IP address, followed by the port number. For example, to send packets at port 12060 to this PC and to all other PCs on this subnet: 127.0.0.1:12060 192.168.1.255:12060

Other UDP Broadcast Settings

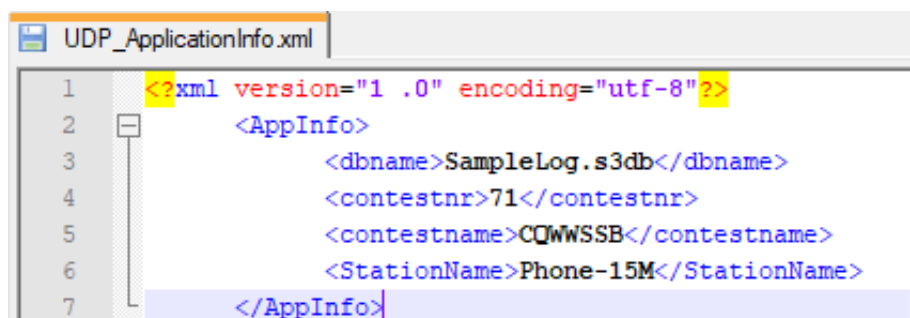
Optional External Broadcast statements allow different external broadcast types to be sent to different IP addresses, multiple IP addresses, and multiple port numbers. Refer to the instructions for those applications for configuration details about adding their packet addressing information to the N1MM Logger.INI file.

Interface Developers - XML Packet Descriptions

Formatted XML text of the following packets is available in the Downloads section of the website under Additional Support Files.

XML Schema and Broadcast Field Lists

Application Info



Application Info packet

NOTE: *contestnr* is a unique number assigned to this contest in this database. Do not expect the same *contestnr* to be assigned to another computer running the same contest name.

Contact

Contact Info UDP packet

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <contactinfo>
3      <contestname>DXPEDITION</contestname>
4      <contestnr>10</contestnr>
5      <timestamp>2016-04-10 16:17:41</timestamp>
6      <mycall>K8UT</mycall>
7      <band>21</band>
8      <rxfreq>2125500</rxfreq>
9      <txfreq>2125500</txfreq>
10     <operator>K8UT</operator>
11     <mode>USB</mode>
12     <call>W2BBB</call>
13     <countryprefix>K</countryprefix>
14     <wprefix>W2</wprefix>
15     <stationprefix>K8UT</stationprefix>
16     <continent>NA</continent>
17     <snt>59</snt>
18     <sntnr>2</sntnr>
19     <rcv>59</rcv>
20     <rcvnr>0</rcvnr>
21     <gridsquare></gridsquare>
22     <exchangel></exchangel>
23     <section></section>
24     <comment></comment>
25     <qth></qth>
26     <name></name>
27     <power></power>
28     <misctext></misctext>
29     <zone>5</zone>
30     <prec></prec>
31     <ck>0</ck>
32     <ismultiplier1>0</ismultiplier1>
33     <ismultiplier2>0</ismultiplier2>
34     <ismultiplier3>0</ismultiplier3>
35     <points>1</points>
36     <radionr>1</radionr>
37     <RoverLocation></RoverLocation>
38     <RadioInterfaced>0</RadioInterfaced>
39     <NetworkedCompNr>0</NetworkedCompNr>
40     <IsOriginal>True</IsOriginal>
41     <NetBiosName>DEV-PC</NetBiosName>
42     <IsRunQSO>0</IsRunQSO>
43     <Run1Run2></Run1Run2>
44     <ContactType></ContactType>
45     <StationName>PHONE-15M</StationName>
46 </contactinfo>

```

Contact Info packet

NOTE: *IsOriginal* indicates that this is the station on which this contact was initially logged – to differentiate from another station that may be forwarding the contact record. *StationName* is the netbios name of the station that sent this packet, not necessarily the name of the station that logged this contact.

NOTE: “power”, “name” and “qth” refer to information about the station being worked in this contact. In a contest where transmit power is part of the exchange, “power” will contain the received power exchange from the other station.

NOTE: “band” is composed of 2 or 3 characters that may include localized delimiters. For example, 80 meters may be “3.5” or “3,5”; 160 meters as “1.8” or “1,8” The user’s Windows setting will determine which delimiter is present in the band tag.

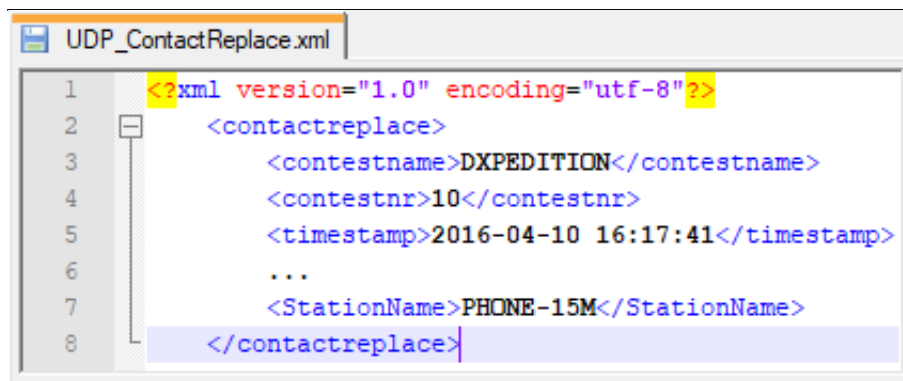
NOTE: It may be tempting to assume that there is a one-to-one correspondence between fields in the contactinfo broadcasts and similar fields in the ADIF specification, but this is not always the case. The best example is the *Section* field in the contactinfo broadcast; this means whatever the rules for the particular contest define it to mean. In a few contests, the *Section* field is the same as the ADIF ARRL_SECT; in many more contests and for most geographical locations, it may be the same as STATE in ADIF. However, in some contests for some geographical locations (e.g. Alaska, Hawaii, the District of Columbia, the Canadian Atlantic provinces, Canadian northern territories) the section identifier specified in the contest rules might not match either ADIF field. Another example is the *Zone* field, which often means the same as CQZ in ADIF, but in some contests it means the same as ITUZ. Yet another example is the frequency field, which is not in the same format as in ADIF; in the contact info and radio info broadcasts, the frequency is exported in units of 10 Hz.

Contact Replace

The Contact Replace packet contains the same fields as Contact Info above, but with `<contactreplace>` XML tags.

IMPORTANT NOTE TO DEVELOPERS:

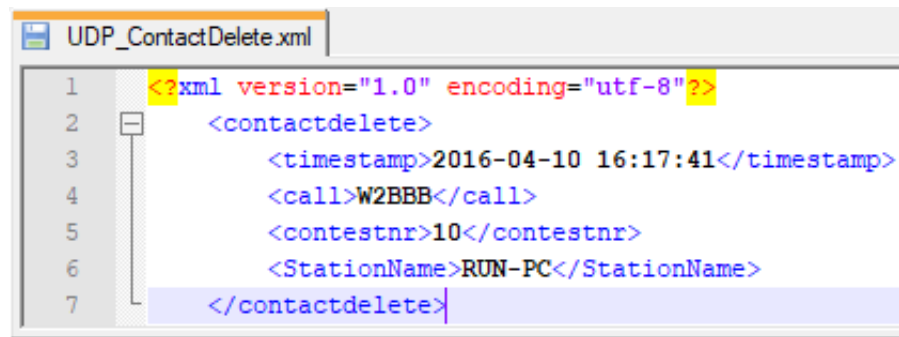
When a user edits an existing contact record, the program will send a pair of UDP packets: A `<contactdelete>` packet, followed by a `<contactreplace>` packet. The `<contactdelete>` packet will contain the existing record’s callsign and timestamp, in the event that the `<contactreplace>` packet includes a new timestamp or callsign for this record.



```
1 <?xml version="1.0" encoding="utf-8"?>
2 <contactreplace>
3   <contestname>DXPEDITION</contestname>
4   <contestnr>10</contestnr>
5   <timestamp>2016-04-10 16:17:41</timestamp>
6   ...
7   <StationName>PHONE-15M</StationName>
8 </contactreplace>
```

Contact Replace packet

Contact Delete



```
1 <?xml version="1.0" encoding="utf-8"?>
2 <contactdelete>
3   <timestamp>2016-04-10 16:17:41</timestamp>
4   <call>W2BBB</call>
5   <contestnr>10</contestnr>
6   <StationName>RUN-PC</StationName>
7 </contactdelete>
```

Contact Delete packet

5.3. LookUp


```

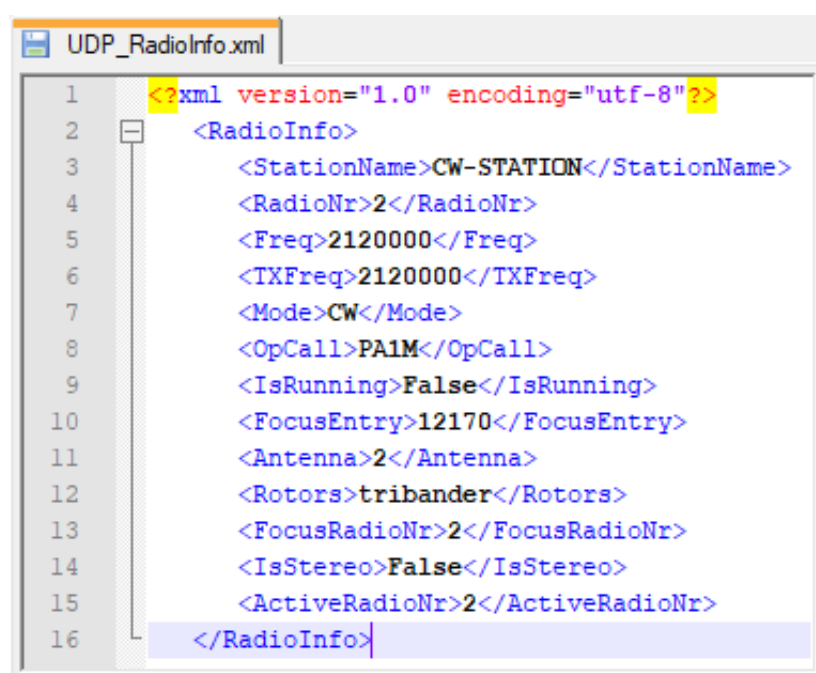
1  <?xml version="1.0" encoding="utf-8"?>
2  <lookup>
3      <contestname>DXPEDITION</contestname>
4      <contestnr>10</contestnr>
5      <timestamp>2016-04-10 16:17:41</timestamp>
6      <mycall>K8UT</mycall>
7      <band>21</band>
8      <rxfreq>2125500</rxfreq>
9      <txfreq>2125500</txfreq>
10     <operator>K8UT</operator>
11     <mode>USB</mode>
12     <call>W2BBB</call>
13     <countryprefix>K</countryprefix>
14     <wprefix>W2</wprefix>
15     <stationprefix>K8UT</stationprefix>
16     <continent>NA</continent>
17     <snt>59</snt>
18     <sntnr>2</sntnr>
19     <rcv>59</rcv>
20     <rcvnr>0</rcvnr>
21     <gridsquare></gridsquare>
22     <exchangel></exchangel>
23     <section></section>
24     <comment></comment>
25     <qth></qth>
26     <name></name>
27     <power></power>
28     <misctext></misctext>
29     <zone>5</zone>
30     <prec></prec>
31     <ck>0</ck>
32     <ismultiplier1>0</ismultiplier1>
33     <ismultiplier2>0</ismultiplier2>
34     <ismultiplier3>0</ismultiplier3>
35     <points>1</points>
36     <radionr>1</radionr>
37     <RoverLocation></RoverLocation>
38     <RadioInterfaced>0</RadioInterfaced>
39     <NetworkedCompNr>0</NetworkedCompNr>
40     <IsOriginal>True</IsOriginal>
41     <NetBiosName>DEV-PC</NetBiosName>
42     <IsRunQSO>0</IsRunQSO>
43     <Run1Run2></Run1Run2>
44     <ContactType></ContactType>
45     <StationName>PHONE-15M</StationName>
46 </lookup>

```

LookUp packet

NOTE: The LookUp UDP packet structure is identical to the ContactInfo packet described previously. The purpose of the LookUp packet is to advise a third-party application (usually a general purpose logging program) of the intention to work a station. The difference between the two packets is the timing of their transmission. The LookUp packet is broadcast after entering a callsign in the Entry Window and pressing the [Tab] key or [spacebar], but **before the callsign is logged in the N1MM database**. In contrast, the ContactInfo packet is broadcast **after a new record has been added to a contest log**. LookUp and ContactInfo are two separate functions and each needs to be configured in N1MM+'s Configurer >Broadcast Data tab. The default port for LookUp packets is 12060.

5.4. Radio Info



```
1 <?xml version="1.0" encoding="utf-8"?>
2 <RadioInfo>
3   <StationName>CW-STATION</StationName>
4   <RadioNr>2</RadioNr>
5   <Freq>2120000</Freq>
6   <TXFreq>2120000</TXFreq>
7   <Mode>CW</Mode>
8   <OpCall>PA1M</OpCall>
9   <IsRunning>False</IsRunning>
10  <FocusEntry>12170</FocusEntry>
11  <Antenna>2</Antenna>
12  <Rotors>tribander</Rotors>
13  <FocusRadioNr>2</FocusRadioNr>
14  <IsStereo>False</IsStereo>
15  <ActiveRadioNr>2</ActiveRadioNr>
16 </RadioInfo>
```

Radio Info packet

Radio Info Notes:

- **StationName** is the NetBios name of the computer that is sending these messages. It is the name used in Mult-Computer networking. Windows limits it to 15 characters. If the computer name is greater than 15 characters long, the first 15 characters will be used.
- **RadioNr** is the radio number associated with a specific XML packet – in other words, the source of the information in that packet. When in SO2V or SO2R mode, N1MM+ sends two packets every ten seconds – one packet each from RadioNr1 and RadioNr2
- **Freq** is the receive frequency represented as values to the tens digit with no delimiter. For example: 160 meters: 181234; 40 meters: 712345; 10

meters: 2812345; 6 meters: 5012345

- **TXFreq** is the transmit frequency represented as values to the tens digit with no delimiter. For example: 160 meters: 181234; 40 meters: 712345; 10 meters: 2812345; 6 meters: 5012345
- **Mode** could be any one of the following: CW, USB, LSB, RTTY, PSK31, PSK63, PSK125, PSK250, QPSK31, QPSK63, QPSK125, QPSK250, FSK, GMSK, DOMINO, HELL, FMHELL, HELL80, MT63, THOR, THRB, THRBX, OLIVIA, MFSK8, MFSK16
- **OpCall** is the callsign entered by the operator after OPON (or Ctl-O). Defaults to the station call
- **IsRunning** represents the value of the RUN versus S&P radio buttons in the Entry Window. If you are on your CQ frequency, IsRunning will be True
- **FocusEntry** is the Windows assigned handle of the Entry Window with program focus
- **Antenna** is the currently selected antenna for this radio (0-15), from the Antenna tab in the Configurer
- **Rotors** is the name of the currently selected rotor from the Antenna table in the Configurer
- **FocusRadioNr** Receive Radio Focus - the Green Dot in the Entry Window. Enables signal switching for SO2R operation - facilitating the routing of Microphone, Audio, PTT, CW signals to/from the selected radio. FocusRadioNr toggles between 1 and 2 when the program, a mouse click, or the \ key selects the opposite Entry Window
- **IsStereo** enables audio switching for SO2R operation. The ` key (backquote) toggles its value between True and False
- **ActiveRadioNr** Transmit Radio Focus - the Red Dot in the Entry Window. Enables signal switching for SO2R operation - facilitating the routing of Microphone, Audio, PTT, CW signals to/from the selected radio. ActiveRadioNr toggles between 1 and 2 when the program or pressing the [Pause] key selects the opposite Entry Window

The program sends Radio Info packets at 10 second intervals, or immediately after an event where any of the information in one of these fields changes (for example: user changes bands, spins the VFO dial, switches from Run to S&P, or selects VFOb).

Rotator Control

Broadcasts to operate the separate [Rotator Control](#) program are sent automatically when the user selects >Tools >Turn Rotor (alt+J), and do not require configuration settings or modifications to the N1MM Logger.ini file. The broadcasts are always sent on port 12040. See the [Rotator Control](#) chapter for more information.

Spot Data

The Spot Data packet contains all spots processed by the program whether from

Telnet (including RBN), Logging QSOs, or local spotting.

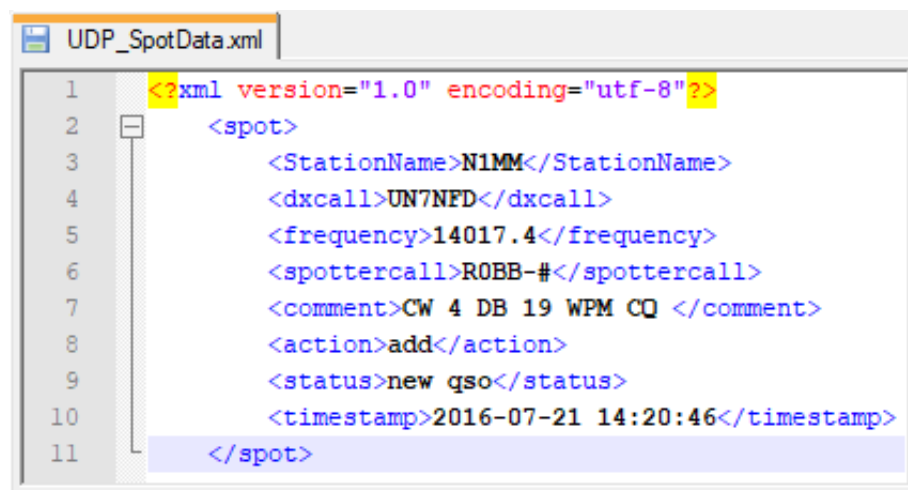
The values for action are:

- add
- delete

The values for status are:

- busy - marked by N1MM user as a frequency to note
- bust - a busted call (when CT1BOH tags are present)
- cq - the cq frequency on this band (last place F1 was pressed)
- dupe - duplicate contact
- qtc - a WAE qtc
- single mult - this spot is a single multiplier in this contest
- double mult - this spot is a double (or more) mult in this contest
- new qso - a logged qso (this is now a dupe by definition)

Spot UDP Packet:



```
1  <?xml version="1.0" encoding="utf-8"?>
2  <spot>
3      <StationName>N1MM</StationName>
4      <dxcall>UN7NFD</dxcall>
5      <frequency>14017.4</frequency>
6      <spottercall>ROBB-#</spottercall>
7      <comment>CW 4 DB 19 WPM CQ </comment>
8      <action>add</action>
9      <status>new qso</status>
10     <timestamp>2016-07-21 14:20:46</timestamp>
11 </spot>
```

Spot Data packet

- StationName - the callsign shown in the station dialog
- dxcall - the station that is spotted
- spottercall - the station that spotted the call (StationName for stations worked, or spotted locally)
- comment - the comment from the spot
- action - whether this spot was added or deleted (spots are deleted when they move within a band)
- status - dupe, mult etc. See above for values
- timestamp - the time of the spot

Sending Spectrum Data to N1MM+

N1MM+ receives spectrum data from SDR receivers on port 13064. Follow this XML layout:

[illegible]

Notes:

- **Name** is the name of your source. It will be shown in the N1MMPlus UI
- **LowScopeFrequency** is lowest frequency represented by the signal levels in **SpectrumData**
- **HighScopeFrequency** is highest frequency represented by the signal levels in **SpectrumData**
- **ScalingFactor** is a number that converts your 0-N data in **SpectrumData** to dB for display in the UI
- **DataCount** is the number of signal levels sent in **SpectrumData**
- **SpectrumData** is comma separated signal level values. Icom uses a range from 0-160. We can accept integer values from 0-65535.
- Spectrum Window help can be found at: [Spectrum Window Help](#)

To show this data in N1MM+:

- Open a Spectrum Display window (Windows/Spectrum Display).
- Right-click and change Spectrum Source to “Source Name”.
- Set the source name to the **Name** you are sending in the message above.

We've tried to minimize the development effort from your side by only requiring six pieces of meta data and your level information in the same fashion that you display level data on your UI. Icom provides this data about 3x per second and that seems adequate. We wouldn't want more than 5x to 10x per second to avoid overloading the users machines, since so many users have older processors.

In addition to the xml data, you would need to allow your users to specify an IP address to send the data to. You will probably want to allow your users to name the source, in the event there is more than one spectrum display on their networks.

If you would like to see what the spectrum UI looks like, I have prepared a 4 minute

video at: [Spectrum Video](#)

Sending Log Data to N1MM+

N1MM+ can receive log data from other logging programs (such as JTDX, JTAlert and WSJT-X version 1.9.0) via connections on the IP address and port specified at the bottom under the Broadcast Data tab in the Configurer (the default for JTDX **TCP** packets is 127.0.0.1:52001, for JTAlert and WSJT-X **UDP** packets is 127.0.0.1:2333). There is an Enable check box that must be checked before the program will accept data on either port; you may need to shut down and restart N1MM+ after checking the Enable check box.

The screenshot shows the 'Configurer' window with the 'Broadcast Data' tab selected. The window has a title bar with a close button. Below the title bar is a tabbed interface with tabs for 'Hardware', 'Function Keys', 'Digital Modes', 'Other', 'Winkey', 'Mode Control', 'Antennas', 'Score Reporting', and 'Broadcast Data'. The 'Broadcast Data' tab is active, displaying a text box with instructions: 'Select the type of data you wish to broadcast, and the the IP Address(es) and port(s) for the receiver(s) of the data. Use 127.0.0.1 for the local machine. Use 12060 as the port unless the receiving application requires a different port. 255 in the low order octet will broadcast to your current subnet.' Below this is a section titled 'Type of data' with a table of checkboxes and IP address/port fields. The 'Radio' checkbox is checked, and its field contains '127.0.0.1:13063 127.0.0.1:13065'. The 'Contacts' checkbox is checked, and its field contains '127.0.0.1:12060'. The 'Spots' checkbox is checked, and its field contains '127.0.0.1:13063 127.0.0.1:13065'. The 'Rotor' checkbox is checked, and its field contains '127.0.0.1:12060 127.0.0.1:12040'. The 'Score' checkbox is unchecked, and its field contains '127.0.0.1:12060'. Below the 'Type of data' section are two sections for connection settings. The first section is for 'JTAlert connection settings' and has an 'Enable' checkbox checked, with 'IP Address' set to '127.0.0.1' and 'UDP Port' set to '2333'. The second section is for 'Sets the IP Address and port that an external program can connect to N1MM+ via TCP Port for logging purposes. (JTDX)' and has an 'Enable' checkbox unchecked, with 'IP Address' set to '127.0.0.1' and 'TCP Port' set to '52001'. At the bottom of the window are three buttons: 'OK', 'Cancel', and 'Help'.

Type of data	IP Addr:Port IP Addr:Port...
☐ Application Info	127.0.0.1:12060
☒ Radio	127.0.0.1:13063 127.0.0.1:13065
☒ Contacts ☐ All Computers	127.0.0.1:12060
☒ Spots	127.0.0.1:13063 127.0.0.1:13065
☒ Rotor	127.0.0.1:12060 127.0.0.1:12040
☐ Score	127.0.0.1:12060

Enable	IP Address	UDP Port
☒ Enable	127.0.0.1	2333

Enable	IP Address	TCP Port
☐ Enable	127.0.0.1	52001

The data sent from the other program must be in the following format:

⟨command:3⟩Log ⟨parameters:nnnn⟩QSO data record (where “nnnn” = length of ADIF character string)

For example,

```
⟨command:3⟩Log ⟨parameters:146⟩ ⟨Band:3⟩20M ⟨Call:5⟩M4HXM
⟨Freq:6⟩14.076 ⟨Mode:4⟩JT65 ⟨QSO_DATE:8⟩20110419

⟨TIME_ON:6⟩184000 ⟨RST_Rcvd:3⟩-03 ⟨RST_Sent:3⟩-07 ⟨TX_PWR:4⟩20.0
⟨EOR⟩
```

The QSO data will be inserted into the currently defined N1MM+ contest log.

The following ADIF field tags are supported:

“CALL”, “QSO_DATE”, “TIME_ON”, “CONTEST_ID”, “MODE”, “FREQ”, “FREQ_RX”, “BAND”, “COMMENT”, “CQZ”, “ITUZ”, “GRIDSQUARE”, “NAME”, “RST_RCVD”, “RST_SENT”, “TX_PWR”, “RX_PWR”, “SRX”, “STX”, “QTH”, “OPERATOR”, “RADIO_NR”, “POINTS”, “ARI_PROV”, “ARRL_SECT”, “DIG”, “DISTRIKT”, “DOK”, “IOTA”, “KDA”, “OBLAST”, “PFX”, “RDA”, “SAC”, “SECT”, “STATE”, “IARU_ZONE”, “SECTION”, “NAQSO_SECT”, “VE_PROV”, “UKEI”, “WWPMC”, “PRECEDENCE”, “CHECK” and “EOR”.

Using Two Rig Control Programs Simultaneously

You will encounter port errors when two programs – like N1MM+ and WSJT-X – try to access the same com ports in Windows. The solution requires some form of serial port sharing. You have many choices: VSPE, com0com, LP-Bridge, Win4K3... We do not plan to be prescriptive – use whichever one you can get to work or is included with your general logging program.

OR

If you are going to be running a dedicated JT65 / FT8 operation with WSJT-X and just using N1MM+ as a back-end contest database, you can create a custom INI file that launches N1MM+ without enabling its CAT interface. This prevents any of the serial port complications. See the documentation about using a custom INI file and launching N1MM+ with custom INI settings enabled [here](#), in the section called **Multiple ini files**.

Frankly, though, if at all possible it would probably be better to use the integration between WSJT-X and N1MM+ described [here](#) (in the description of the WSJT Decode List window). This method in effect allows both programs to share rig control by having WSJT-X do its rig control via sending commands to N1MM+ instead of directly to the radio. This method does not use UDP port 2333; instead, it communicates with WSJT-X using the protocol defined in WSJT-X (and not described here) on port 2237.

Off Topic, But Nice to Know

This chapter gives general information about contesting coming from discussions on the N1MM Logger reflector. Should this be placed in a help/manual for a contest program? We don't know but as the title says: Off topic, but nice to know. We thank the authors for their approval so we could add this to the help/manual.

RFI, Grounding, Shielding and All That

As our radios, computers, and other peripheral equipment become more and more interconnected, it seems as if many calls for help on the reflector are traceable to system problems of this sort. RFI gets into computers, radio control, keyers, and other equipment. Equipment is needlessly damaged by EMP (electro-magnetic pulse) from lightning nearby. The list goes on.

We can't solve these problems here. Following are two links to the extensive work of two experts in the field. Read, try and see for yourself.

[**A Ham's Guide to RFI, Ferrites, Baluns, and Audio Interfacing**](#) by Jim Brown, K9YC

[**Common Mode Chokes**](#) by Chuck Counselman, W1HIS

Work Dupes or Not?

In paper log days you used to get penalized for too many dupes that weren't marked as such in the log. I don't know of any contest that has ever penalized you for working too many dupes as long as you marked them in your log and didn't try to claim points for them.

Its kind of ironic that the Cabrillo log format has no way to mark dupes, the sponsor's log processing software automatically rescores all the logs so you don't have to worry about even recognizing dupes or worrying about not claiming points for them.

On your specific question. You log by2a but 6y2a properly logs on5zo... 6y2a would get credit because the log checking software would properly match up the one-off call by2a with their log entry of on5zo. If there really is a by2a and they send in a log you would lose credit for a confirmed not-in-log. If there is no such callsign as by2a issued you would lose credit and penalty and lose the multiplier (assuming you didn't work any other by) as a bad call. If there is a by2a but they didn't send in a log you might get to keep the credit if the log checking software and manual checkers don't recognize the busted call.

Lets take it one step further. Say you really screwed up and logged by2et so the log checking software can't figure out that it was really 6y2a that you worked... now 6y2a loses qso credit and penalties for being not in the on5zo log. You may or may not lose credit as above based on the by2et log and callsign status.... now, later on you hear 6y2a and call them again. If they recognize you are a dupe and come back 'qso b4' and refuse to work you, THEY LOSE! They will never get credit for on5zo and will lose the penalty points. If instead they ignore the dupe and work you again the original not-in-log doesn't matter as they are now in your log and everyone gets credit... so NOT logging the dupe is bad.

The same holds for other combinations of them busting your call, or both of you busting each other, etc. It is always better to just log the dupe and move on. There is actually less of a chance you will get penalized if you work the dupe than if you don't.

David Robbins, K1TTT

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Types of Operating

Running

- In this mode you normally only want to only see new multipliers so the Check spot window serves well. You can set the filters to only see new multipliers so you can easily go grab them and get right back to your run frequency.

Search and Pounce

- The traditional S&P mode. In this mode you dial up the band checking each signal you hear. In this mode the bandmaps work well as they can help you quickly identify each station you hear and determine their status as a new QSO or multiplier or dupe.

The 'New' Packet Assisted S&P Mode

- In this mode you start at one end of the band and quickly go from spot to spot and work all the new stuff on a band. With today's high spotting rates you often find that almost every station you would hear doing the traditional S&P is already in the band map so for an operator in a hurry to work out a band and move on this could be very useful. Also for an operator working a 2nd VFO while still running, or running SO2R to tune one band while CQing on another one this could be useful as you typically have less time to spend figuring out who someone is and would rather

have a screen full of new stuff than a screen full of dupes to tune through.

David Robbins, K1TTT

A QSO Speedup Tip (How is Your Typing Speed?)

Being raised as a contester using CT, I was taught this trick (drill exercises on PED CT trainer, tnx to my contesting elmer ON5YR). By pressing "Insert" to send RST (CT uses "insert" to send call+RST).

I type the prefix, copy suffix in head, start sending RST while typing the suffix.

Saves a lot of time and the calling station does not have to wait that extra split second, as soon as his TRX goes from TX to RX, he hears me coming back to him already.

So although I use ESM a lot, whenever I use this trick I still press "Insert", works FB!

Try it, it works FB in combination with ESM.

73 es CU in contest!

Franki ON5ZO

NB. N1MM logger can be set up to send call+rst when pressing 'Insert'.

GMT is GMT, or Not?

Not quite. Some of Bill Gates' boys didn't know the difference between Greenwich Mean Time and the local time in Greenwich, England. In some versions of Windows, one of the choices for time zone is labeled (GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London, but unfortunately, despite what the time zone list says this setting is NOT repeat NOT Greenwich Mean Time; it's local time in Greenwich (and Dublin, Edinburgh, Lisbon and London), which in the summer is daylight savings time, i.e. GMT + 1:00 .

There's an often published workaround. If you absolutely gotta put your computer on GMT because you're tired of resetting some old DOS software that doesn't know any better, you can set the computer for (GMT) Casablanca, Monrovia. Those places never go on daylight savings time, so their local time really is the same as GMT all year round, not like Greenwich.

But you know what? If you're using Windows software like N1MM Logger, it's a lot easier to set your computer to your own local time zone and let the operating

system take care of all that time zone and daylight savings time stuff automagically.

73, Rich VE3IAY

Which Monitor to Choose

I have also been evaluating choices for more screen real estate. A couple of pointers that may be of interest.

Once you get into the bifocal stage of life, pixel size ends up being as important as screen resolution, if not more-so. You will find that most 17" and 19" monitors are at 1280 by 1024 resolution. The difference between 17" and 19" is not more real estate but the size of the pixels. Both 17" and 19" monitors will show the same number of pixels, but with the smaller pixels on the 17" monitor, you may end up having to increase font sizes to make the text readable, so you end up with less effective screen real estate. I recommend 19" over 17" monitors for this reason.

As far as economics is concerned, the wide angle format monitors appear to generally be the best bang for your buck. But keep in mind that a widescreen 19" monitor which is 1680 by 1050 resolution will have smaller pixels than a 19 inch 1280 * 1024 resolution monitor. If you are considering a widescreen monitor, make sure your video card can drive it. The video card in my almost two year old Dell box can't!

Prices start to go up rapidly once you get into 1600 * 1200 resolution, which becomes available in the 20" and 21" sizes. At this size and bigger, there are also wide screen versions. Again, make sure the resolution is supported by your video card.

Another thing to consider is whether or not you are going to be using an analog or digital interface. I find that driving a 1280 * 1024 monitor in analog mode gives very fine lines and makes text difficult to read. Using the same monitor with a digital interface usually gives better results. Microsoft's ClearType software also helps somewhat in this regard.

To summarize, for our application, you want to look for displays with big (0.27mm) pixels. For me, that narrows the choices down to the following, in order of increasing cost/pixel for monitors:

Two 19" 1280 * 1024 monitors

One 20" or 21" 1600 * 1200 monitor

One large 22" and up widescreen monitor

Gerald Boutin, VE6WA