Ham Radio Deluxe

User Guide
Version 6.2

2014 HRD Software LLC,

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1 Introduction

What is Ham Radio Deluxe?

Ham Radio Deluxe (HRD) is an integrated suite of software products for amateur radio. The five modules in the suite provide rig control, logging, digital communications, satellite tracking, and rotator control.

Rig Control

Ham Radio Deluxe Rig Control provides rig control through a richly featured full screen interface and other products in the Ham Radio Deluxe Suite via a direct connection or TCP/IP remote access.

Logbook

Ham Radio Deluxe Logbook provides QSO logging, DX cluster connectivity, callsign lookup, awards tracking (with integration to LoTW, eQSL, and Ham Radio Deluxelog.net), and contesting. Microsoft Access and MySQL are support with strong features for backup and recovery.

Digital Master (DM-780)

DM-780 provides most popular sound card digital modes with direct integration to Ham Radio Deluxe Logbook.

Satellite Tracking

Ham Radio Deluxe Satellite Tracking provides satellite operations with rig control and Google Earth integration.

Rotator

Ham Radio Deluxe Rotator provides control for 15 popular models of antenna rotators.

How It All Began

In early 2003 Peter PH1PH and Simon HB9DRV talked about developing a simple program to control the soon to be released ICOM IC-703.

Maybe it was the beer, maybe the desire to give something back to the radio amateur community, however on June 6th, 2003 the first line of code was written, Ham Radio Deluxe (Ham Radio Deluxe) was born.

By late 2005 the number of registered users stood at 20,006 – quite an achievement in such a short time.

This Guide

If you are only going to read one more section, then now go to Getting Started.

Please report errors and omissions to n0zrd(at)mnyarc.org or in the Ham Radio Deluxe forums
http://forums.hrdsoftwarellc.com.
When you get there, select *Headquarters>Documentaton*.

As this guide matures further it may flow differently than it currently does. Please check the table of contents for the new evolving layout. Note that this document has some sections that are still in *DRAFT* mode which means that it can have lots of old or wrong information.

System Requirements

Computer

Ham Radio Deluxe is designed for Windows XP/SP3, Vista and Windows 7 or 8), also Internet Explorer 6.0 (or higher) is required. Most modules will work on Windows 2000. Digital Master 780 does not, however, work with Windows 2000. The policy is to support Windows versions which are supported by Microsoft.

There are no plans for a LINUX or Macintosh native version, Ham Radio Deluxe is known to run under Wine for LINUX and PC emulators for the Macintosh.

The suggested minimum computer specification is:

Windows XP/SP3

Processor	Ham Radio Deluxe	500 MHz
	DM780	1 GHz
	HRD Logbook	500 MHz
Memory	Ham Radio Deluxe	1 GB
	DM780	2 GB[a]
	HRD Logbook	2 GB
Hard Drive Storage	Ham Radio Deluxe	20 MB
	DM780	50MB
	HRD Logbook	20 MB
Color Display	1024 x768 minimum	1280 x 1024 preferred

a. DM780 uses more resources than Ham Radio Deluxe when decoding many signals simultaneously.

Windows Vista

Processor	Ham Radio Deluxe	2 GHz
	DM780	2.4 GHz
	HRD Logbook	2 GHz
Memory	Ham Radio Deluxe	3 GB
	DM780	3 GB
	HRD Logbook	3 GB
Hard Drive Storage	Ham Radio Deluxe	20 MB
	DM780	50MB
	HRD Logbook	20 MB
Color Display	1024 x768 minimum	1280 x 1024 preferred

Windows 7/8 32 bit

Processor	Ham Radio Deluxe	2.4 GHz
	DM780	2.8 GHz Dual Core
	HRD Logbook	2.4 MHz
Memory	Ham Radio Deluxe	4 GB
	DM780	4 GB
	HRD Logbook	4 GB
Hard Drive Storage	Ham Radio Deluxe	20 MB
	DM780	50MB
	HRD Logbook	20 MB
Color Display	1280 x1024 minimum	1920 x 1080 preferred

Windows 7/8 64 bit

Same requirements as 32 bit operating system EXCEPT double the memory to 6 GB.

Other Software

In addition, you will need the following free software for viewing demos and user documentation.

- Adobe Reader 9 or newer
- Adobe Flash Version 11 or newer

If you do not have them, they can be downloaded from the Adobe website at: *http://get.adobe.com/reader/* and *http://get.adobe.com/flashplayer/*

Supported Radios

You don"t need a radio – Ham Radio Deluxe comes with built-in Dem-o-matic radio support (FTDX-5000, FTDX-9000, FT-450, FT-950, FT-2000, K2, Orion, TS-480, TS-570, TS-590 and TS-2000).

Ham Radio Deluxe currently supports these 'real' radios:

- *Alinco*: DX-77, SR8, SR9
- *Elecraft:* K2, K3, KX3
- *FlexRadio:* PowerSDR
- *ICOM:* IC-31, IC-51, IC-5100, C-703, IC-706, IC-706MkII, IC-706MkIIG, IC-707, IC-718, IC-7200, IC-725, IC-726, IC-728, IC-729, IC-7200, IC-735, IC-736, IC-737, IC-738, IC-7400, IC-7410, IC-746, IC-746Pro, IC-751A, IC-751A (Piexx), IC-756, IC-756Pro, IC-756ProII, IC-756ProIII, IC-761, IC-765, IC-775DSP, IC-781, IC-821H, IC-7000, IC-7200, IC-7410, IC-7600, IC-7700, IC-7800, IC-9100, IC-910H, IC-R10, IC-R20, IC-R7000, IC-R75, IC-R8500, IC-R9000, IC-R9500, PCR-1000
- *Kenwood:* TS-50S, TS-60S, TS-140S, TS-440S, TS-450S, TS-480, TS-570, TS-590, TS-680S, TS-690S, TS-790, TS-850, TS-870, TS-940S, TS-950, TS-990, TS-2000, TS-B2000, R-5000
- *Microtelecom:* Perseus
- *SDR-Radio:* SDR-Radio
- *Ten-Tec:* TT-Argonaut, TT-Jupiter, TT-Pegasus, TT-Omni VII(Radio), TT-Omni VII(Remote), TT-Orion, TT-Eagle, RX-350
- *Yaesu:* FT-100, FT-450, FT-600, FT-767GX, FT-817, FT-840, FT-847, FT-857, FT-890, FT-897, FT-900, FT-920, FT-950, FT-990, FT-1000D, FT-1000MP MkV, FT-2000, FTDX-3000, FTDX-5000, FTDX-9000.

Internet Connection

Not absolutely required but really is essential to fully utilize all the features. The best connection is a full time connection such as cable or DSL. Registering the program is much easier when done online.

Radio Interfacing

Ham Radio Deluxe is designed to be used with one of the rigs listed above. Some modules, however, can be used without a connection to a rig. Logging will work but will not be as automated. Satellite tracking is still fun without a rig connected. In fact, there are only a few of the above listed rigs that "really" work fully with the satellite module.

Some of the rigs listed above do not fully avail themselves to all the features of Ham Radio Deluxe. A number of the rigs do not provide Tx control easily. That is the limit of the rig, not Ham Radio Deluxe.

For CAT control, all radios require some sort of SERIAL connection between the radio and the computer. Some of the newer model radios are equipped with a USB port on the back of the radio. All that is needed there is a USB cable from the radio to a USB port on the computer.

Other radios have a standard DB9 serial port on the back which either connects directly to a DB9 Serial port connector on the back of the computer or through a Serial/USB converter to a USB connector the computer, while others connect from an ACC or DATA plug on the back of the radio through a Serial/USB converter to the computer.

Many of these cables use the serial port. If you don't have a serial port all is not lost – USB serial converters are widely available. Also, there are options available that are USB based.

One of these is HamLinkUSB from Timewave. This will allow rig control with most of the radios listed above.

Note: If you need a Serial/USB converter be specially aware of the type of chips and drivers that are in the converter you choose. We recommend ONLY converters with FTDI or SI Labs chipsets and drivers. We have found these to preform exceptionally well with HRD and other radio related software.

Beware of Prolific chipsets and drivers. There are many of these on the market which are counterfeit and the chipsets are of poor quality. The drivers are also poorly written and will not work properly with HRD, especially if trying to use them on a Windows 7 or 8 system.

Some of the problems you may experience with these chipsets and drivers are system crashes, BSOD, program lock-ups, drivers won't install properly, comports disappear for no reason, just to name a few.

If in doubt as to what you need to connect your radio to the computer running Ham Radio Deluxe, contact support@hrdsoftwarellc.com or Timewave either through their website at www.timewave.com or phone them at 1-651-489-5080. They can provide you with cables and connectors to meet your needs.

The future trend in radio control and interfacing is the USB connection. More and more radios will only have USB ports and not Serial or Parallel ports. The USB port will even pass audio as rig control with a few of the radios.

For the majority of the radios listed above, you will need to have a more robust interface if you need to send or receive audio. The audio recorder and PSK31 are two examples of this need.

For more interfacing information visit the Downloads page at *http://www.ham-radio-deluxe.com/* for *A basic guide to CAT* and *Audio interfacing* which contains many designs for both CAT and audio interfaces for use with Ham Radio Deluxe.

Check out the cable and interface solutions from:

- Timewave *http://www.timewave.com*
- Tigertronics *http://www.tigertronics.com*
- ZLP Electronics *http://g4zlp.ham-radio.ch/*

- West Mountain Radio *http://www.westmountainradio.com/*.

Public Interfaces

Other (non-Ham Radio Deluxe) programs are supported via a DDE interface (see DDE Support) and a serial port (see 3rd-Party Programs).

Logbooks typically use these interfaces; for example - contest-oriented logbooks.

Installation

Introduction

Ham Radio Deluxe is designed for Windows XP, Vista and Windows 7) and 8, Internet Explorer 6.0 (or higher) is required. The policy is to support Windows versions which are supported by Microsoft.

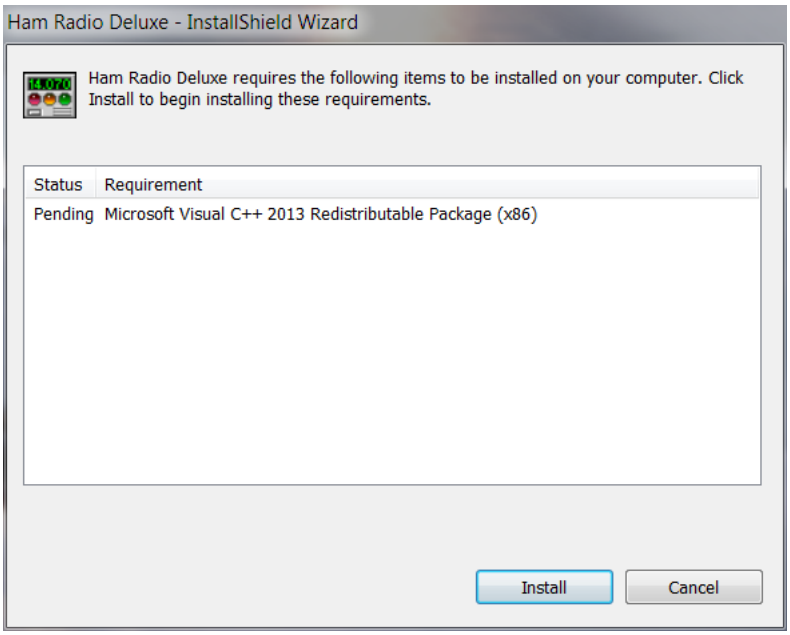
The Logbook uses MS Access by default or you can use MySQL, see Database for more information.

Ham Radio Deluxe

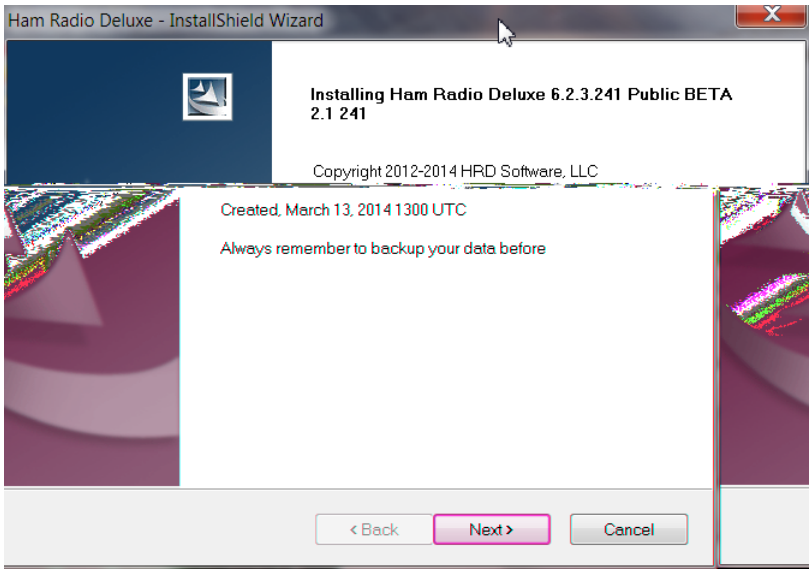
Ham Radio Deluxe can be installed in under a minute. Special knowledge is not needed – the kit does everything for you!

You will not need to reboot your computer, Ham Radio Deluxe does not update your system files or change your system's configuration in any way.

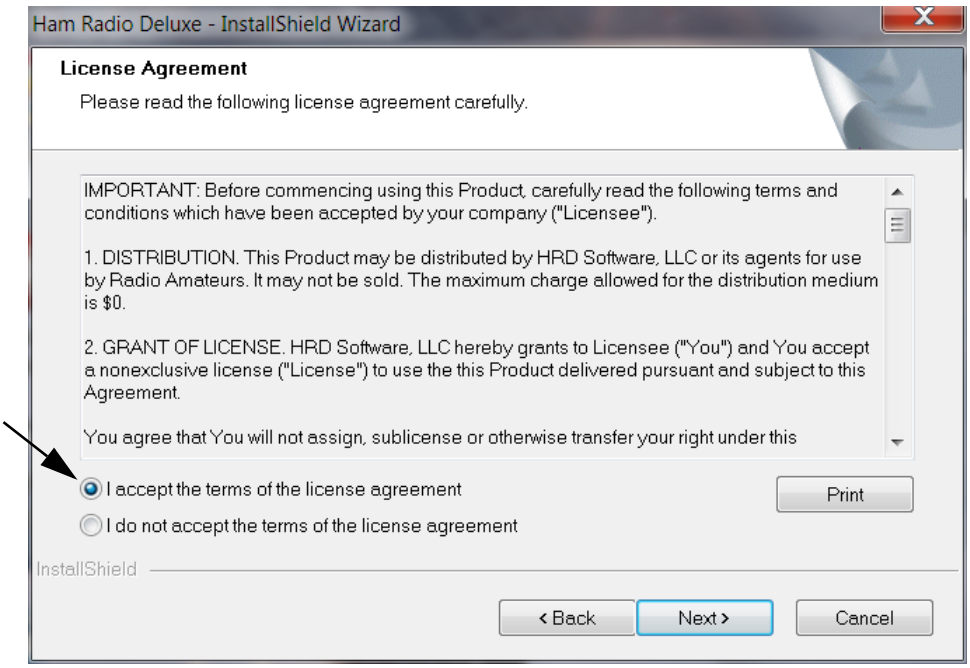
You may or may not see the following screen depending upon the update status of your machine.



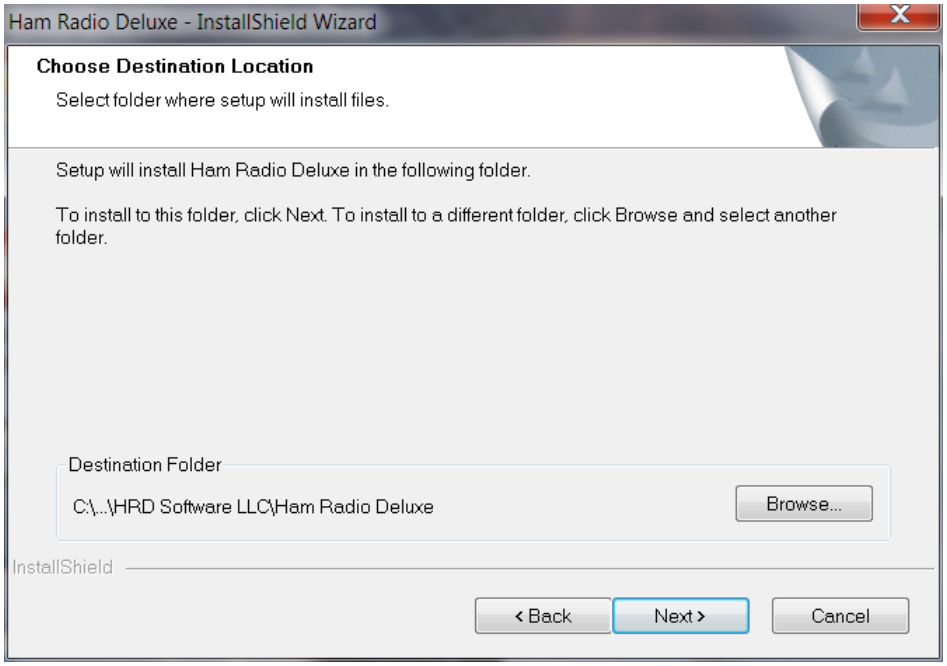
You will see this or an updated version of this screen to get you started with the installation.



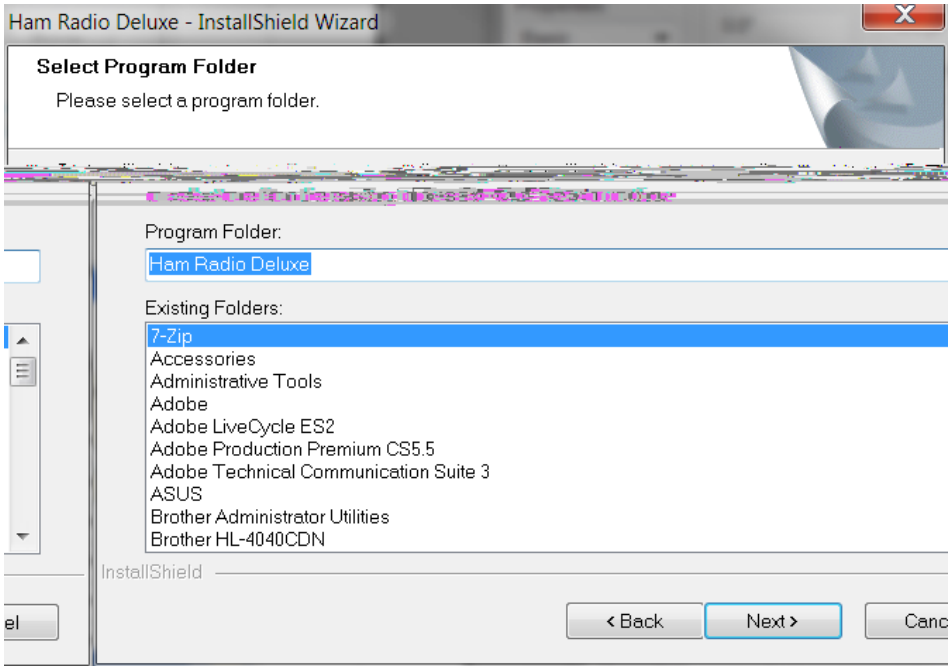
When you start the installation the first screen shows the release and build you are installing.



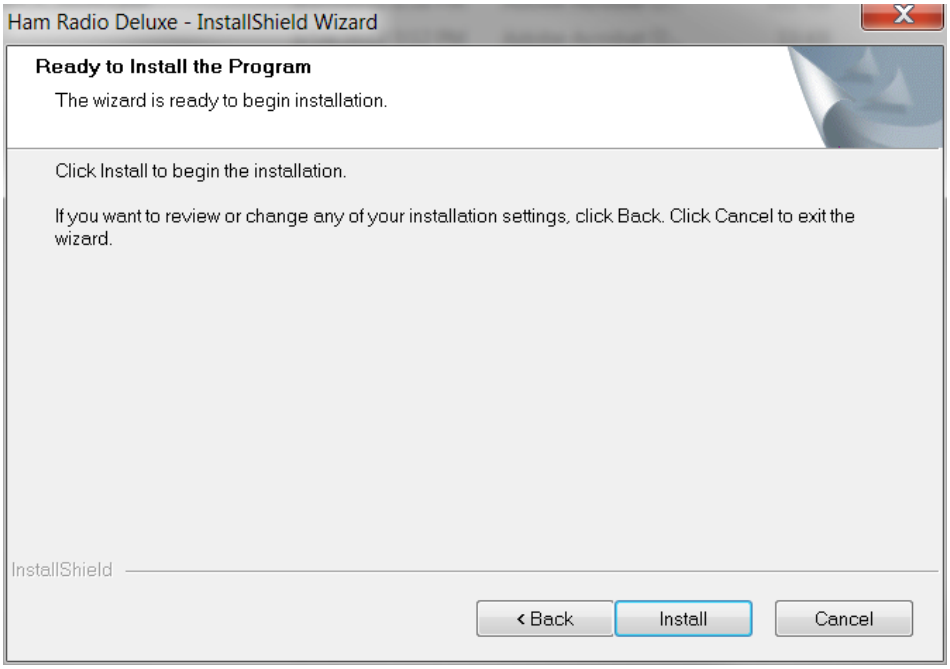
You must accept the licensing conditions.



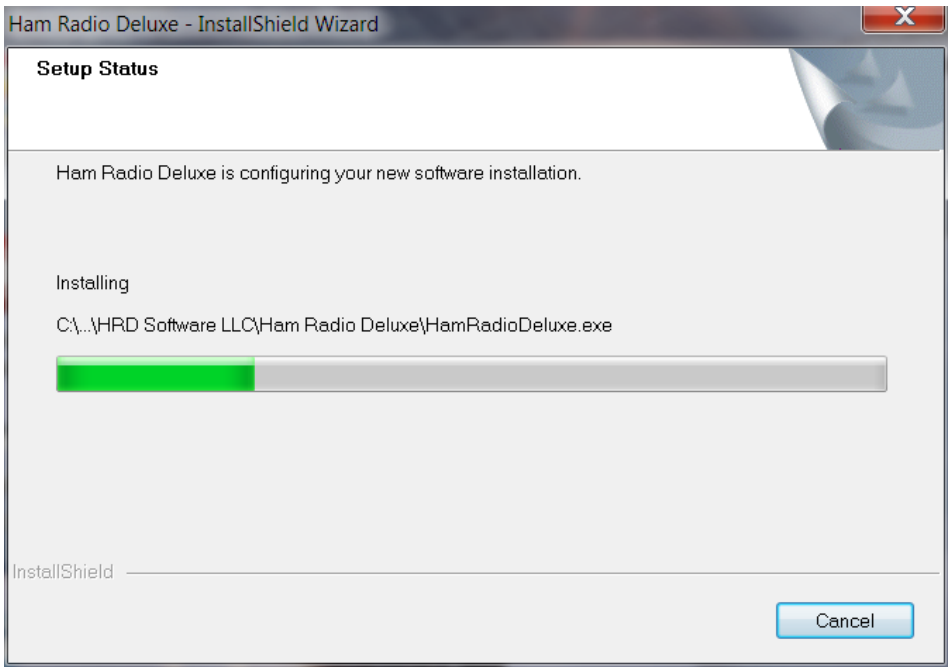
Select the folder where Ham Radio Deluxe will be installed, the suggested default is usually sufficient.



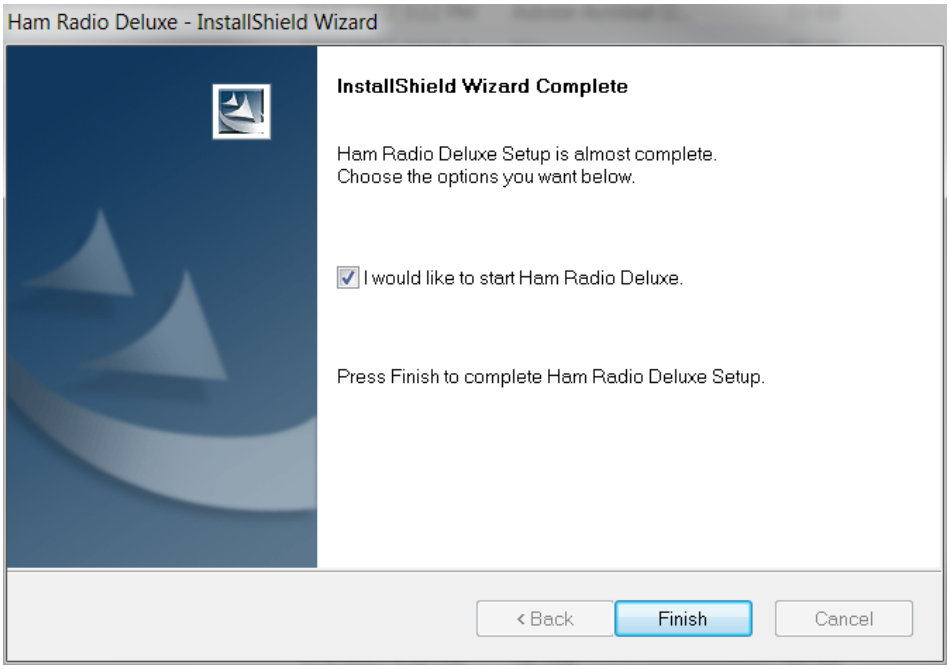
Select the folder in the *Start* menu where the Ham Radio Deluxe entries will be added, the suggested default is usually sufficient.



Click **Install** to start the installation.



The progress of the installation is shown while the software is being installed.



When the software has been installed select the programs to be started, then press **Finish**.

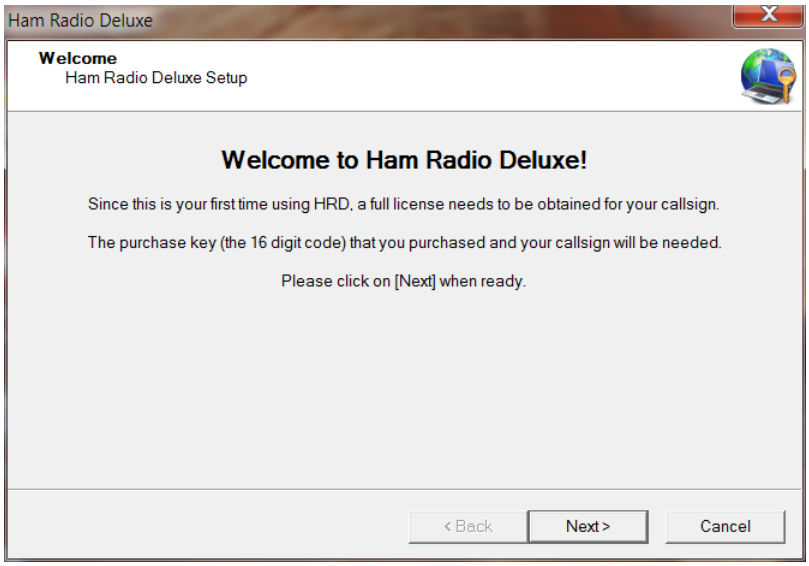
First Steps

Product Activation

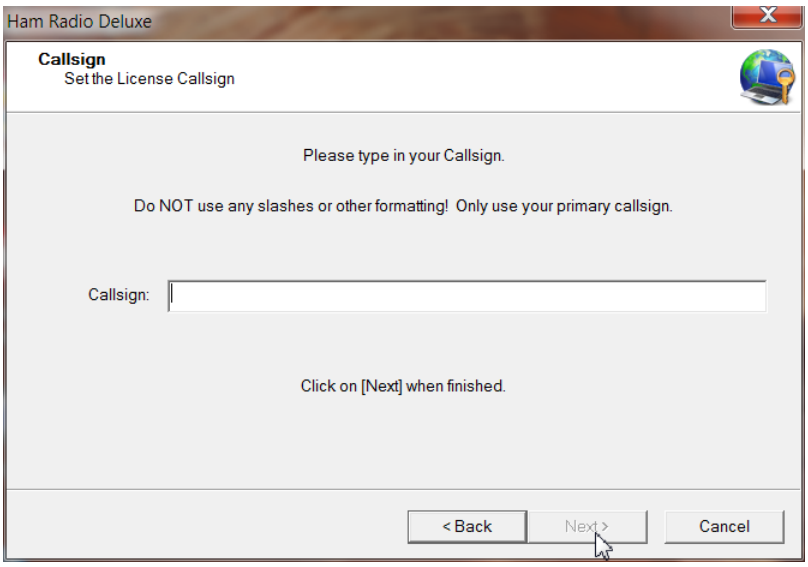
Registration

Ham Radio Deluxe has an improved registration system. The following instructions should get you up and running without any problems.

When you first start Ham Radio Deluxe you will be presented with the following welcome screen.

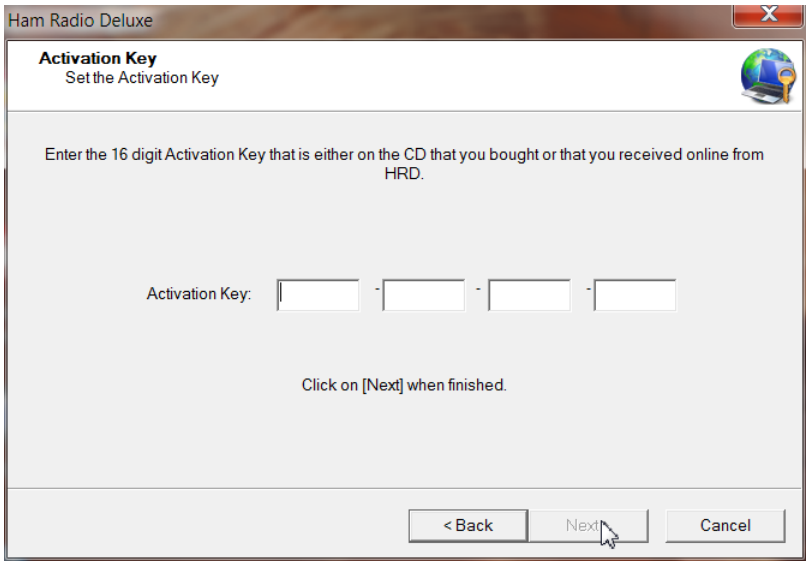


Pressing **Next** at this screen will continue on with the registration process.



1 This screen asks for your call sign. Enter ONLY your assigned call sign. DO NOT enter any prefix such as KR6/N4XXX or modifiers like /P or /?.

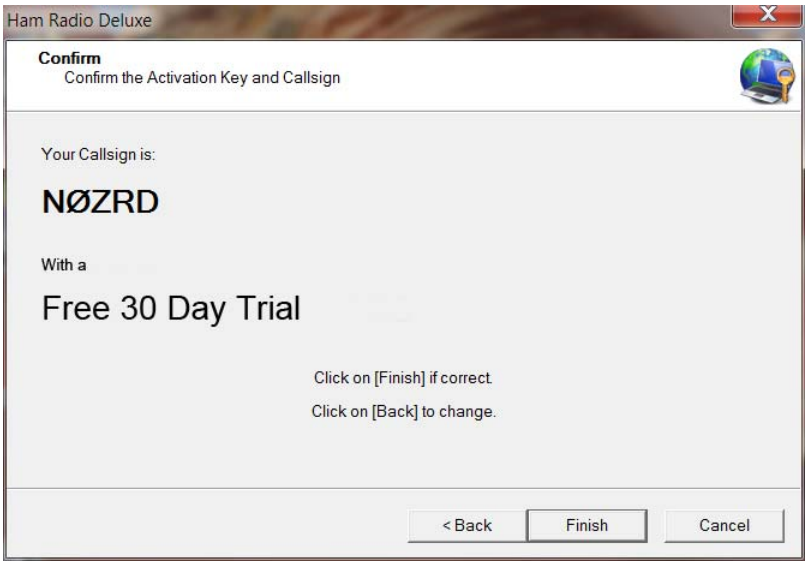
After you have entered your call sign press **Next**.



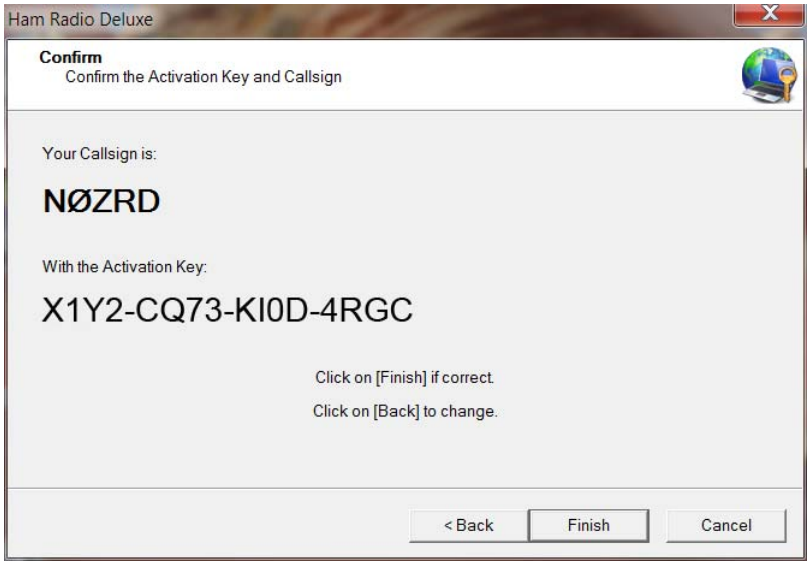
2 If you purchased Ham Radio Deluxe from a distributor and received a CD or if you purchased online and were sent a key, here is where you enter the 16 character Main Activation Key. The activaton key may be copied and pasted from the e-mail you received to avoid any mistakes in entering. Just highlight the entire purchase key in the e-mail, right click and select **Copy**. Place your cursor in the first box of the above screen, right click and click **Paste**. Once the key is entered, press **Next**.

If you do not have a Activation Key and would like to continue with the 30-day trial subscription, just press the **Next** button when you reach this screen.

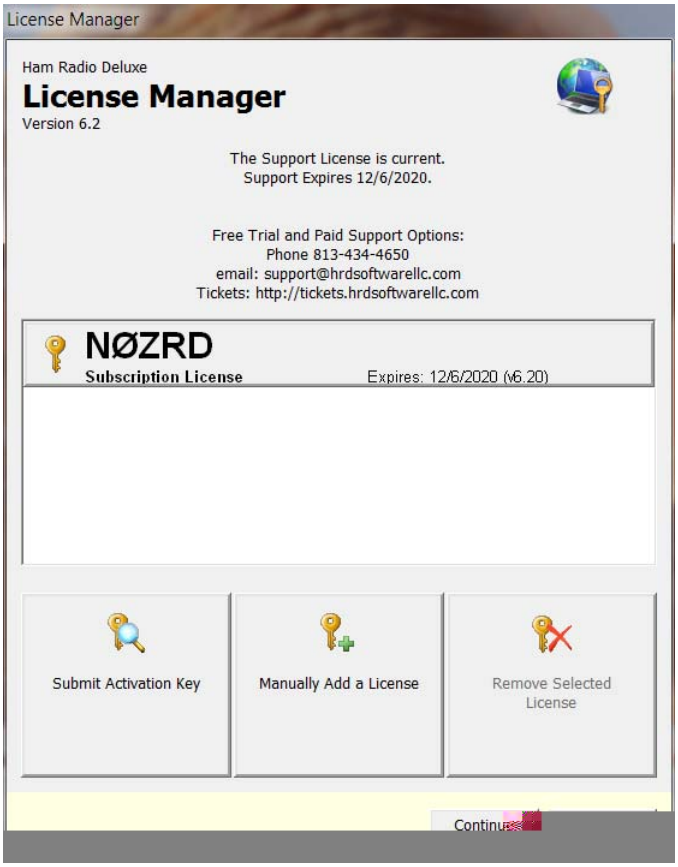
Note: If you already have a registered subscription and are installing Ham Radio Deluxe on a second computer or re-installing Ham Radio Deluxe for any reason, entering your call sign in step 1 and just clicking next on the above screen will also bring up the following screen. However, when you click **Finish** it will automatically change to a full registered version.



If running the 30-day trial you will now see the above screen.



If you entered a activation key you will now see the above screen with your call-sign and activation key. Just click the **Finish** button to continue to the next screen.



Those who have purchased the software with the support will see a screen like this, showing your call sign, telling you that you have a Subscription License and indicating the expiration date.

Those running the Trial version will show have their call sign, Trial Subscription and an expiration date 30 days from the date installed on your computer. At this screen, just click on the **Continue** button at the bottom of the screen to continue on to the Rig Control setup screen.

If you have any problems or questions about the registration please contact support either by phone at **(813) 434-4667** or send an e-mail to **support@hrdsoftwarellc.com**

Connection

You can dive into Ham Radio Deluxe using a demo radio or your radio. A good way to explore the program is with a demo radio first and then connect your rig.

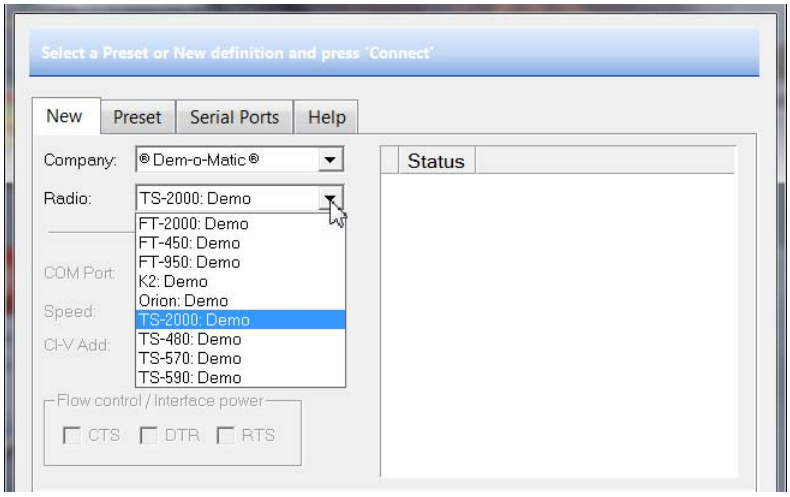
Demo-o-matic Radio

Now that you have installed Ham Radio Deluxe you can try it out using a *Dem-o-matic* radio. This is a reasonably accurate simulation of the real thing, designed for use during presentations and while developing Ham Radio Deluxe when a radio is not available (on the train, in a plane, in an airport, stuck in a hotel room in Finland etc.).

From the Start menu select **Programs > Ham Radio Deluxe**. Once the splash screen has closed you see the *Connect* window. If you do not have the correct connection cable, select one of the **Dem-o-matic** radios so that you can open Ham Radio Deluxe.

Dem-o-matic

The *Dem-o-matic* radios do not need cables – simply select **Dem-o-matic** in the Company drop down, select an option in the Radio drop down, and then press **Connect.**



They are ideal for demonstrating Ham Radio Deluxe when you do not have a suitable radio available. It is also the only way that you can open Ham Radio Deluxe if you do not have a supported radio or the correct connecting cable.

Your Radio

PLEASE DO SOME HOMEWORK!!! Read your radio's manual to find out exactly how it is supposed to be connected to a computer for CAT control. Some radios require special drivers to be loaded in the computer to access certain model radios. These drivers can usually be downloaded from the manufacturers website. All this information is in your radios user manual or from the radio's manufacturers tech support system.

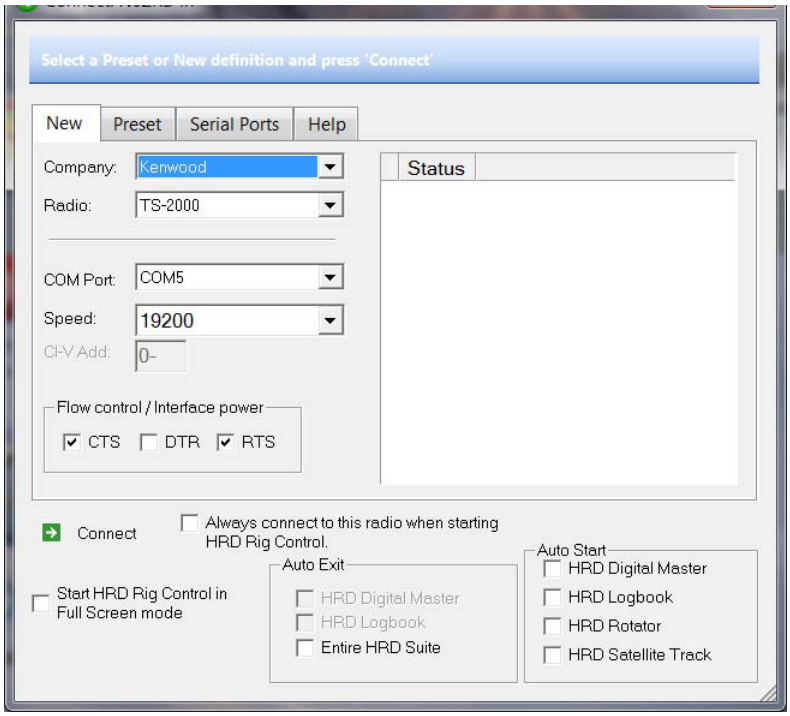
Please refer to See “*Radio Interfacing” on page 3.* to review the requirements for Ham Radio Deluxe interfacing.

Configuration Options

To connect your radio you will need to connect the necessary cables and install drives if needed. You must also do some configuring within Ham Radio Deluxe. This is usually a one time exercise.

Once you have all your cables in place it's time to turn on your radio, boot up your computer and start Ham Radio Deluxe. The next screen you should see is the radio connection setup screen. This is where you select your radio and set some parameters to allow the Ham Radio Deluxe Rig Control software to connect to your radio.

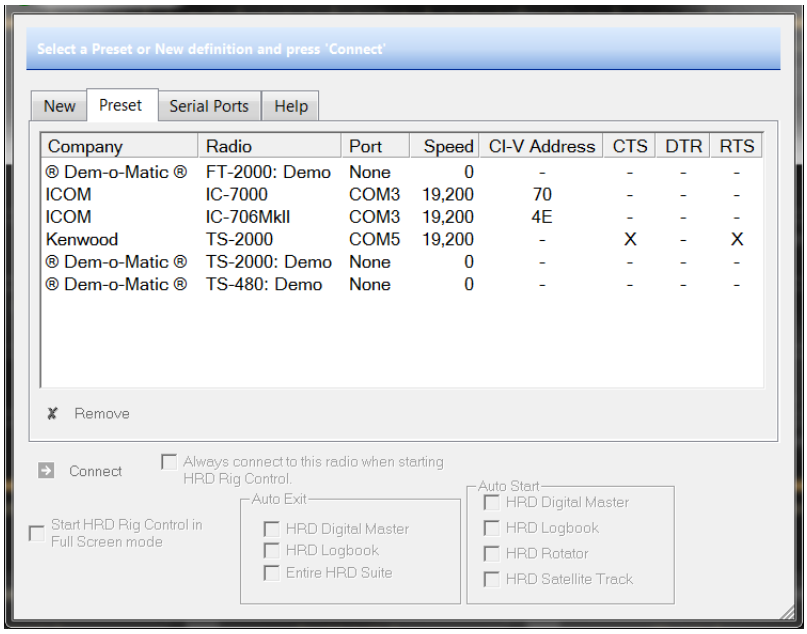
The New Tab



Notice there are four tabs at the top of this display. The one currently showing is the *NEW* tab. This is where you configure the setup for any new radio you want to connect to the Ham Radio Deluxe software. We will continue with this setup in the next section.

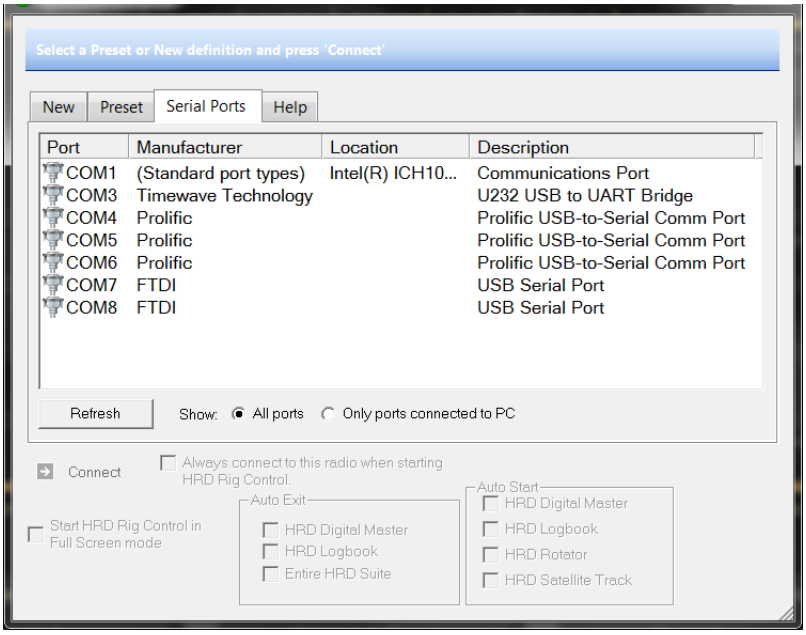
This is where you actually configure how Ham Radio Deluxe connects to your radio. It also allows you to configure what modules Ham Radio Deluxe loads, by default, on start-up.

The Preset Tab



Once you have a radio configured properly and it starts from the *NEW* window, the configuration is saved in the *Preset* page. As you can see here, there are several radios configured both real ones and demo-o-matic ones.

Serial Ports Tab



The Serial Ports tab displays all the comports available on your computer. You will notice just below the window near the center it has two radio buttons. One says Show *All ports* and the other says *Only ports connected to PC*. These buttons come in handy when you are trying to figure out which ports are actually being used by the Ham Radio Deluxe Software and which are just available for use.

The Connection Process

Each radio must be on a different comm port from the computer. This allows you to actually operate two or more radios at the same time and switch between them with a couple clicks of the mouse. We will also show that in another section of this manual.

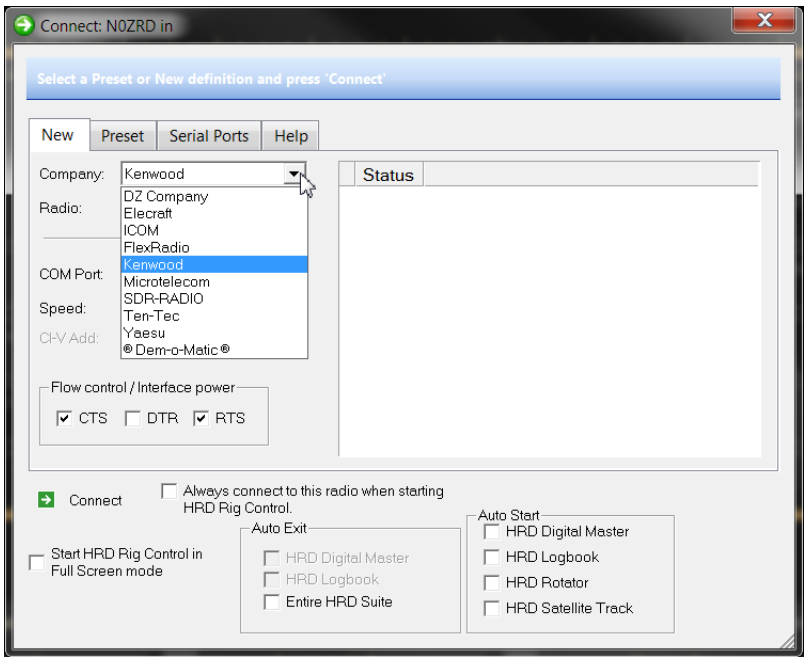
If you have a radio configured in this screen which you no longer own or have connected to Ham Radio Deluxe, you can easily remove it from the Presets by clicking on the setup line in the display window, to highlight the unwanted configuration, and click on the "X Remove" located on the left just below the slider near the left center of the dialog box.

Company

Select your radio manufacturer from the drop-down list. The Dem-o-Matic radios do not require a COM port, they are for demonstrating Ham Radio Deluxe when you do not have a suitable radio available.

FlexRadio: you must install the vCOM virtual serial port drivers from Philip Covington (N8VB). These are used to provide the connection between Ham Radio Deluxe and the PowerSDR software that must be running before you try to create the connection with Ham Radio Deluxe.

Note: It seems that vCOM will not run on Vista/Windows 7 64bit because the 64-bit version is very insistent on having signed drivers. A signed 64 bit versions might be available for a few dollars from VSPE. More information is available from *http://www.flex- radio.com/*, to install the vCOM drivers see *N8VB vCOM*

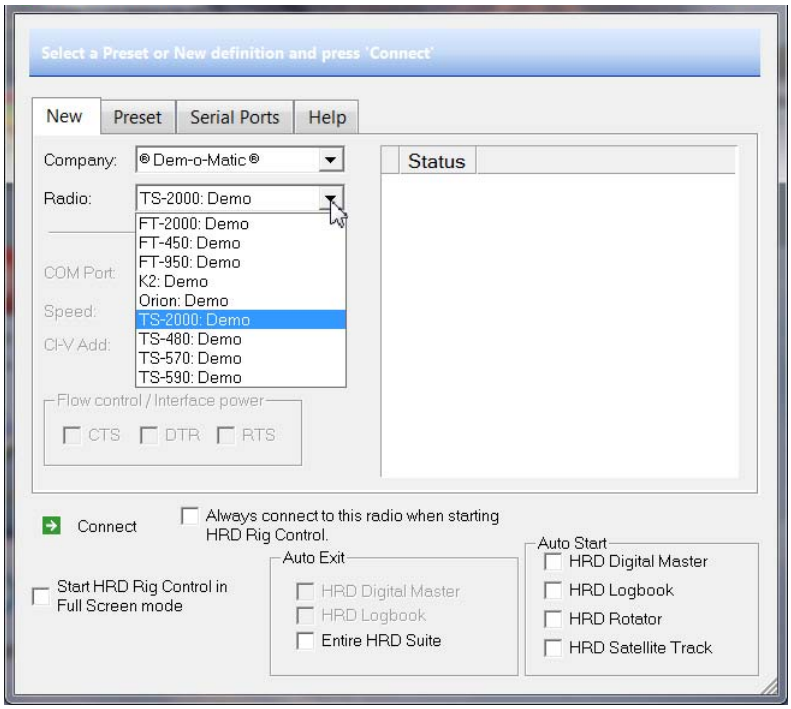


ICOM: disable the CI-V Transceive option for best performance.

Kenwood: make sure Packet communication mode is switched OFF (if supported). Most Kenwood radios require CTS and RTS to be ON for flow control.

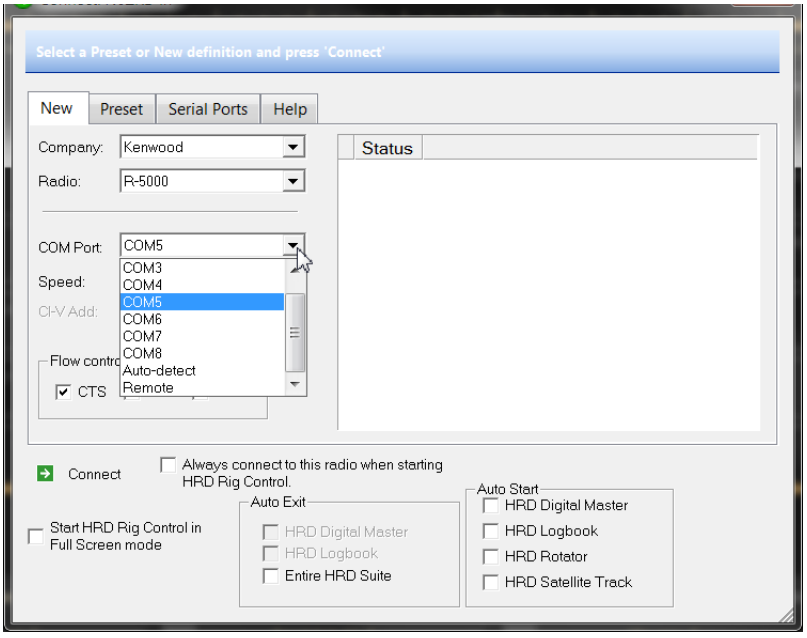
Radio

Select your radio model from the drop-down list.



If your radio does not appear in this drop-down list there is a chance it can be supported by the commands of a different model from the same manufacturer. Contact HRD Support or the manufacturer of your radio for information on about compatibility with another models firmware CAT command set.

COM Port



The COM port on this computer where you have connected the radio interface cable. Make sure that you do not have other programs using the same port, for example mobile phones and personal organizers. It is recommended you NOT use the Auto-Detect. The Auto-Detect can sometimes fail to detect the port. To see the COM ports on your computer select the Serial Port tab to see a display.

Speed

The speed used for communicating with the radio, check the speed setting via the radio's configuration menu. Again, it's not recommended to use the Auto-Detect. Also remember that "FASTER IS NOT ALWAYS BETTER". Sometimes faster speeds can cause timing problems when sending commands back and forth between Ham Radio Deluxe and the radio. The important thing is that you set the speed in Ham Radio Deluxe and the port speed in the radio the same. Check your radio manual to find out how to set the com port speed. A 4800 baud connect speed is normally plenty fast enough to support most radios.

CI-V Address

ICOM only: the address assigned to the radio, consult the radio's documentation for the default address. This can also be configured via the radio's configuration menu.

CTS

Enables the CTS flow control, required for Kenwood radios.

DTR

Enables the DTR line when the COM Port is opened and leaves it on, usually to provide power for an interface cable. For Yaesu CT-62 and ICOM CT-17 interfaces this can be left unchecked (off).

RTS

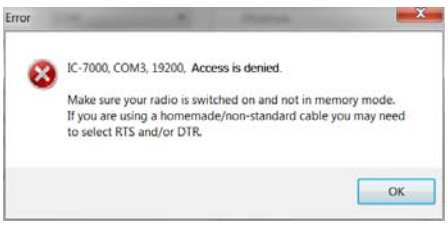
Enables the RTS line when the COM Port is opened and leaves it on, usually to provide power for an interface cable. For Yaesu CT-62 and ICOM CT-17 interfaces this can be left unchecked (off).

Next, put a check in the boxes for DTR and RTS. Some radios don't require both of these settings checked so they can be unchecked if there is a failure to connect to the radio.

Note: If you will be connecting more than one radio to Ham Radio Deluxe and you would like the current one to be the default radio, place a check in the box where it says "Always connect to this radio when starting HRD Rig Control".

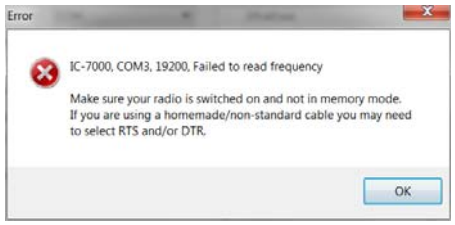
Connecting

Press **Connect** to connect to the radio. If you see the error below then the COM port is currently held open by another program or the radio is not turned on.



Check that you have not started another radio control program. Other culprits are PDA and mobile phone connections. Even if you have disconnected a device from a COM port you must make sure that the software is no longer running.

Once connected Ham Radio Deluxe reads the radio's frequency to ensure that the options you selected are correct. If you see the error below then Ham Radio Deluxe failed to read the radio's frequency:



If Ham Radio Deluxe can read the frequency the Connect window is replaced with the main radio display – you are now using Ham Radio Deluxe!

If Ham Radio Deluxe cannot read the frequency then check:

- Correct COM port is selected,
- Speed on radio is the same as the speed selected in Ham Radio Deluxe,
- Your cable – you may have a NULL modem cable when a normal serial cable is needed,
- Cable is connected correctly to your PC (you may have more than one COM port),
- DTR / RTS are selected if required to power an active cable such as CT-62 or a cable from third-party provider.

If you still can't get started refer to:

- Command Tester, and
- Portmon.

Icom CI-V Details

Icom's CI-V Protocol

ICOM's CI-V protocol is based on a relatively simple bi-directional, single-wire TTL level signaling system. The single wire consists of a communications line (DATA) and a ground reference (GND). The DATA line is held high when there is no traffic. As long as the DATA line is high, any device can initiate communication by pulling the line low and sending the Icom attention command (FEFE). When the line goes low, the other devices see this as a BUSY indication, allowing the single DATA line to offer some amount of basic flow control. Multiple devices may connected across the CI-V port in parallel, as long as each device is set up with a unique hex address. All in all, it's quite elegant in it's simplicity.

Default Icom CI-V Addresses

Each Icom model has it's own, distinct default address. As a general rule, Icom used only even addresses ($02, $04, $06 ...). Each model was given a new default address when it came out. The user can change the default address if required. On older rigs this was done by (re-) soldering some diodes, on newer rigs the adress can be changed by setup through the front panel or even by CI-V commands. Addresses can be selected from $01 to $EF, giving 239 distinct addresses. The following is a nearly complete table of all known addresses from CI-V capable rigs, not only by Icom.

Icom Model	Addr	Memories	Band Edge	Type
IC-271	$20	32	1,2	VHF All mode
IC-275	$10	99+3	P1,P2	VHF All mode
IC-375	$12	99+3	P1, P2	220MHz All mode
IC-471	$22	32	1,2	UHF All mode
IC-475	$14	99+3	P1,P2	UHF All mode
IC-575	$16	99+2	P1,P2	10m & 6m All mode
IC-7000	$70	500+2	6	HF/VHF/UHF All mode
IC-703	$68	99+2	P1, P2	HF All mode QRP
IC-706	$48	99+3	P1, P2	HF/VHF All mode
IC-706MkII	$4E	99+3	P1, P2	HF/VHF All mode
IC-706MkIIG	$58	99+3	P1, P2	HF/VHF/UHF All mode
IC-707	$3e	?	?	HF All mode
IC-718	$5E	99+2	?	HF All mode
IC-7200	$76	200	P1,P2	HF All mode
IC-725 $	28	26	25,26	HF All mode
IC-726	$30	24+2	P1, P2	HF/6m All mode
IC-728	$38	26	25, 26	HF All mode
IC-729	$3A	26	25, 26	HF/6m All mode
IC-735	$04	12	11, 12	HF All mode
IC-736	$40	?	?	HF/6m All mode
IC-737	$3C	99+3	P1, P2	HF All mode
IC-738	$44	?	?	HF All mode
IC-7400 (IC-746Pro)	$66	99+2	P1, P2	HF/VHF All mode
IC-746	$56	99+2	P1, P2	HF/VHF All mode
IC-751A	$1C	32	1,2	HF All mode
IC-756	$50	99+2	P1, P2	HF/6m All mode
IC-756Pro	$5C	99+2	P1, P2	HF/6m All mode
IC-756ProII	$64	99+2	P1, P2	HF/6m All mode
IC-756ProIII	$6e	99+2	P1, P2	HF/6m All mode
IC-761	$1E	?	P1, P2	HF All mode
IC-765	$2C	99+2	P1, P2	HF All mode
IC-775	$46	99+2	P1, P2	HF All mode
IC-7700	$74	100	P1, P2	HF All mode Contest
IC-78	$62	?	?	HF All mode
IC-7800	$6A	99	P1, P2	HF All mode
IC-781	$26	99+2	P1, P2	HF All mode
IC-820	$42	2x80+3	P1, P2	VHF/UHF All mode
IC-821	$4C	2x80+3	P1, P2	VHF/UHF All mode
IC-910	$60	2x100 + 1	2 x 6	VHF/UHF All mode
IC-970	$2E	99+3	P1, P2	VHF/UHF All mode
IC-1271	$24	32	1,2	SHF
IC-1275	$18	32+3	P1, P2	SHF
IC-X3	?		P1, P2	Commercial HF Transceiver
IC-R10	$52	?	?	Handheld scanner
IC-R20	$6C	1000+200	50	Handheld scanner
IC-R71	$1A	32	?	General Coverage Receiver
IC-R72	$32	101	?	General Coverage Receiver
IC-R75	$5A	100	P1, P2	General Coverage Receiver
IC-R7000	$08	?	?	General Coverage Receiver
IC-R7100	$34	99	10xP1,P2	General Coverage Receiver
IC-R8500	$4A	800	n/a	General Coverage Receiver

Icom Model	Addr	Memories	Band Edge	Type
IC-R9000	$2A	99	10xP1, P2	General Coverage Receiver
IC-R9500	$72	1000	Auto: 100, Skip: 100, Scanedge: 20	General Coverage Receiver
IC-RX7	$78	1600	Organized by Category, Group etc.	Handheld Scanner

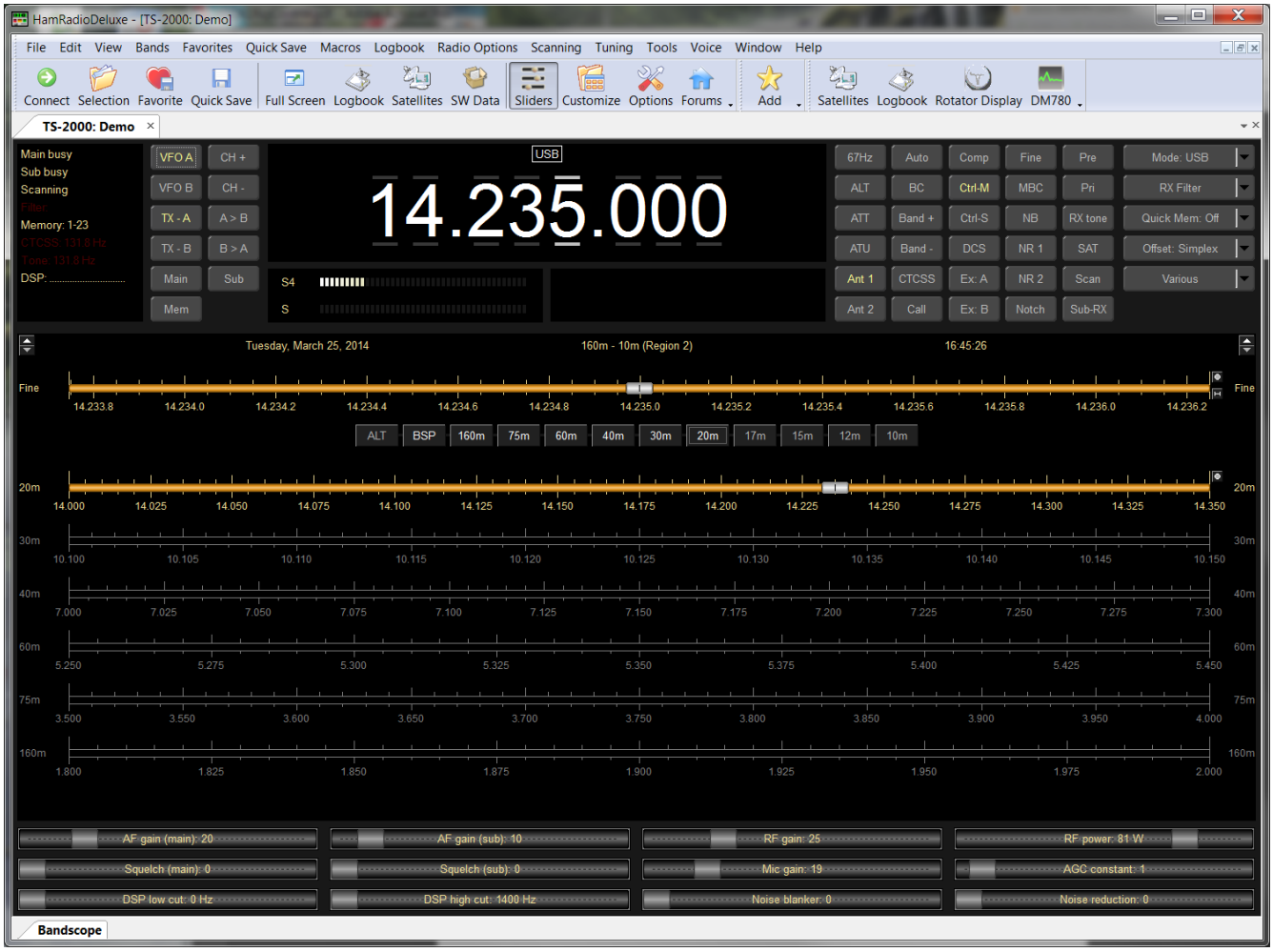
What's Next

It is time to play a little Ham Radio Deluxe to see what it does. Even if you can connect to a radio, let's start by connecting to a Kenwood TS-2000 through Demo-matic.

Appearance

You should now have something that looks like the display below. The Rig Control Display (GUI) is a generic representation of an HF radio's front panel. It contains most of the operating functions and controls of the actual radio it is connected to. This display does not in any way and can not be made to actually depict the front control panel of your actual radio.

Below is a screen shot of the Rig Control Display representing a Kenwood TS-2000 all band, all mode radio.

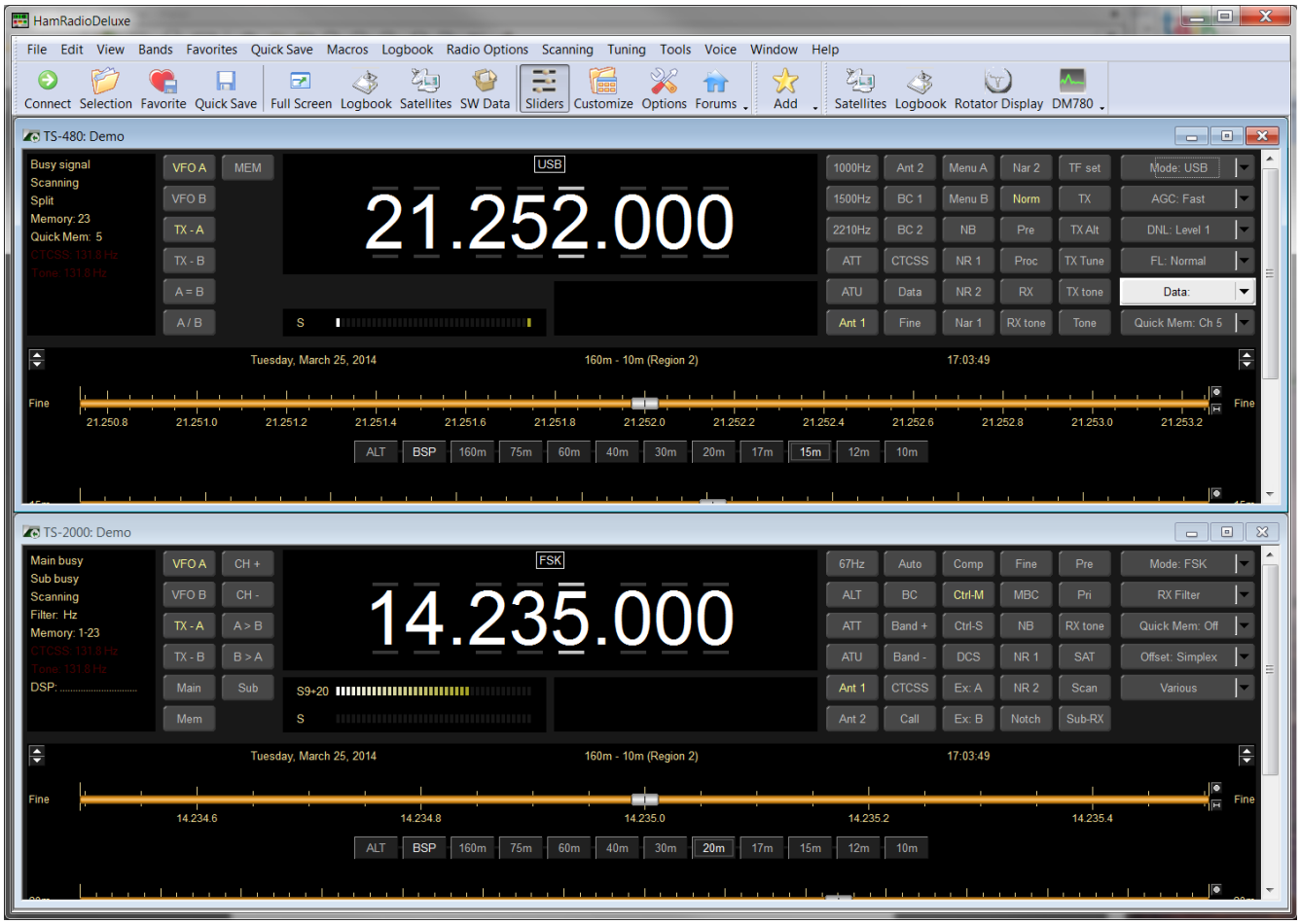


This is the default appearance for Ham Radio Deluxe. For the sake of quality documentation we will change the appearance to ***LCD*** which is a reverse of what we now see**.**

Multiple Radios

HRD has the capabilities to display an operate multiple radios from one screen. In the image below we see a Kenwood TS-480 displayed and controlled by the top pane while a Kenwood TS-2000 is being displayed and operated from the bottom pane.

Each radio can be accessed and operated with just a few clicks of the mouse button.



Each radio must have it's own dedicated comport on the computer. It can be either through USB/Serial connections or you can have a multi-port serial card installed in your desktop.

To configure your setup for multiple radios, once you have your first radio installed and connected via the connection manager, adding a second or third radio is quite simple.

In the main Rig Control screen of the first radio installed either click on **Files > Connect** or click on the icon that has the round green circle with the white arrow in it. This brings up the Radio Connection screen that you have seen before when you set up your first radio.

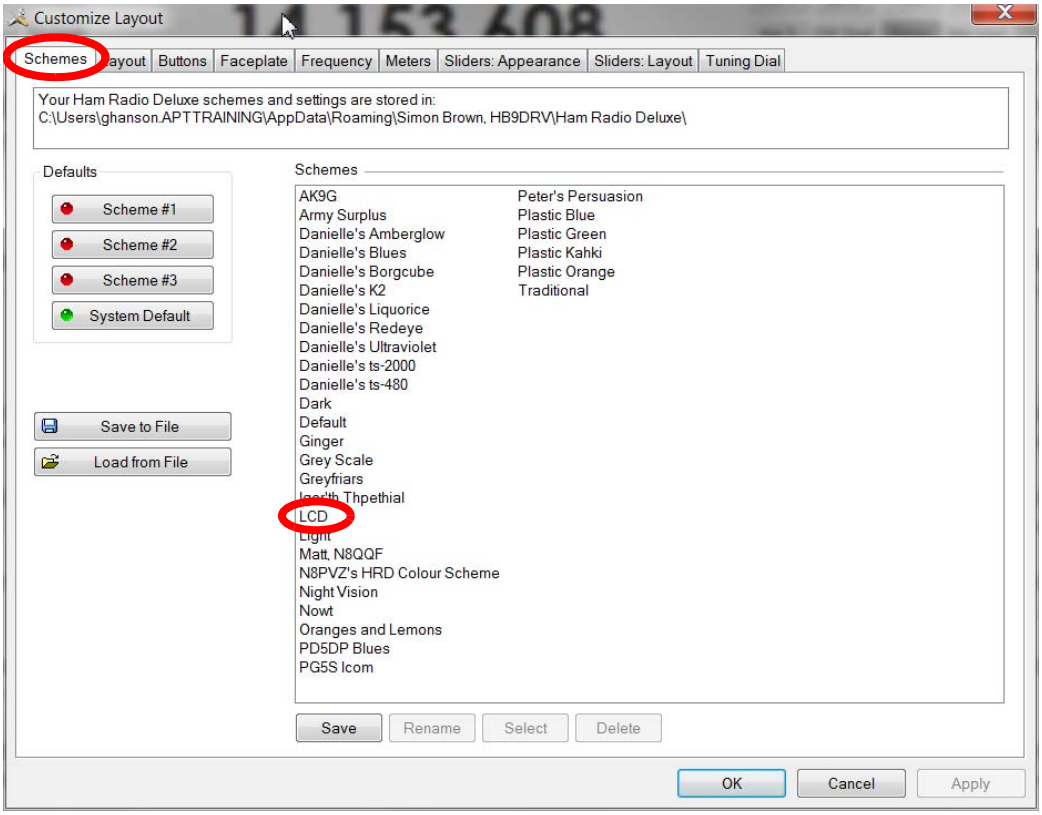
In this screen you configure the second radio, just like you did for your first in the initial setup of Ham Radio Deluxe. You select the Manufacturer, the radio model, the comport and the comport speed. You also select the flow control used to communicate with this second radio.

Note: Make sure you don't have a check mark in the *Always connect to this radio when starting HRD Rig Control*. This will allow you to select which radio you would like to connect to first.

Click on the Connect button to allow Ham Radio Deluxe to connect to and control this second radio. Once in the Rig Control screen you can click on the Windows menu option and select with radio window to display or configure the display to show both radios in the same window, as we did earlier in this section.

After you shut Ham Radio Deluxe down, and restart it, when the Connection window opens, select the Preset tab on the window. This shows you the radios you have connected to your computer and allows you to select which radio you would like to start first.

To change the appearance:



1 From the *View* menu select **Color Schemes,**
2 Select the **Schemes** tab if it is not selected.
3 In the Schemes list locate **LCD** and double click on it.
4 Your display should have changed to a white background with black text. If you want to keep the change, press **OK** otherwise press **Cancel** and your display will revert back to the default appearance.

Congratulations. You have made your first of many modifications of Ham Radio Deluxe.

Like many features of this and other well designed programs there a several ways on doing the same task. For example, you can get to same customize menu by any of the following methods.

- From the *View* menu select **Customize** and then **Radio Layout.**
- From the *Toolbar* select **Customize**.
- Right click over most locations except the frequency display and select **Customize Layout**.
- Press **[Ctrl+F8]**

You will find this to be true for most of the functions within Ham Radio Deluxe. Use whatever process that you like the most. That's it for the introduction. Let's move on to learning more about Ham Radio Deluxe.

Ham Radio Deluxe

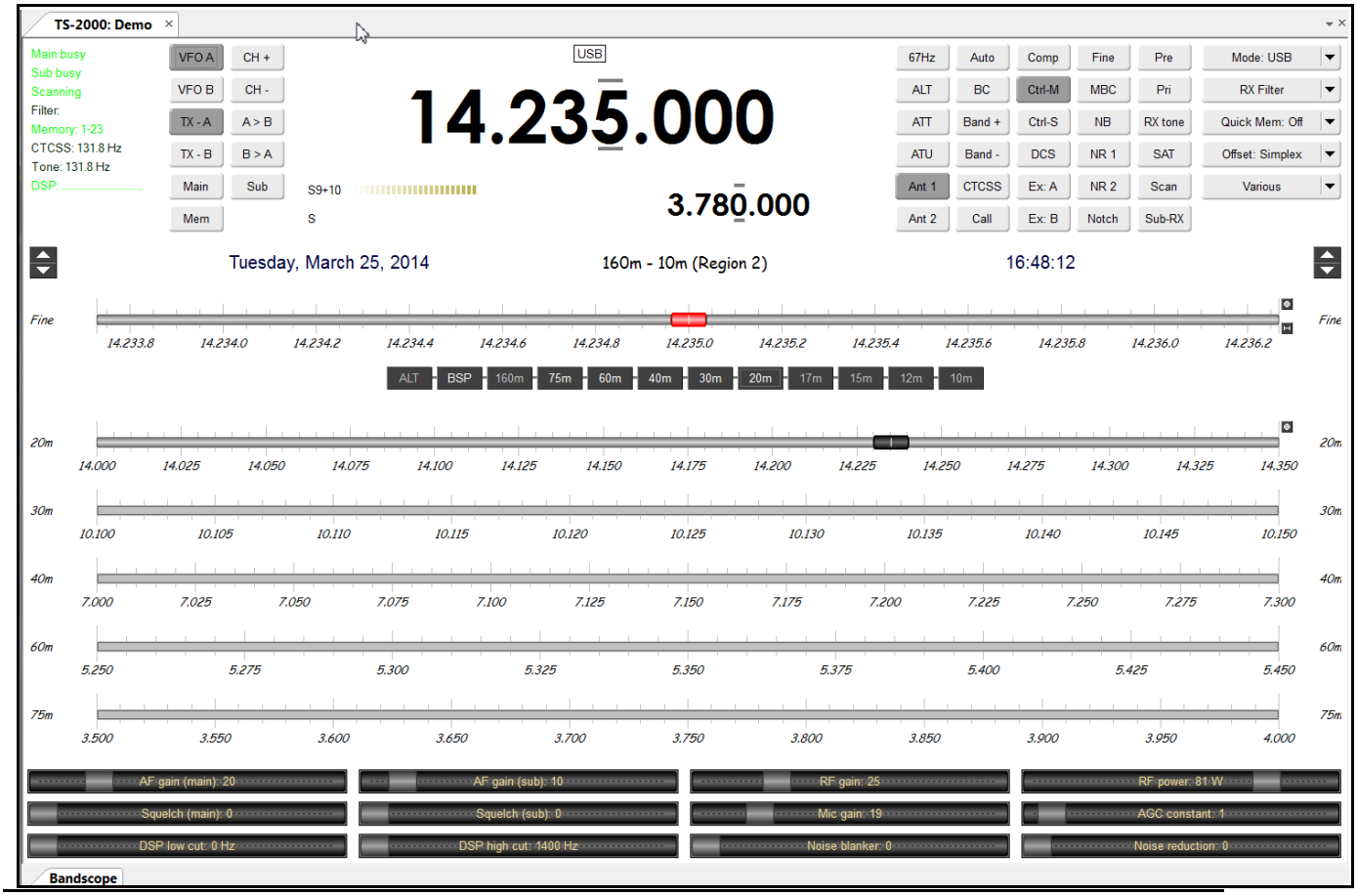
Rig Control

2 Getting Started

Rig Control Tour

The Ham Radio Deluxe program has many, many features. This section attempts to describe the essentials you need to know to get started. Ham Radio Deluxe is designed to be intuitive; nevertheless even the most experienced user has problems remembering all the available options!

To aid in the clarity of the screen shots the LCD Scheme is used and we will continue to use the Dem-o-matic TS-2000 so that you can follow along if you like.



Tuning the Radio

OK! We know you want to find if this software works. Take a few minutes to search the bands to see if you can hear anyone. Please come back and we will help you get more comfortable with the many features and benefits of Ham Radio Deluxe.

Frequency Selection

You can adjust or select a frequency in several different ways. The currently active digit has a bar above and below the digit. Our example above has the active digit, which is 3, for the main band and for the MHz “5” on the sub band. You can change the active digit by either clicking on it or using the left or right arrow keys.

Mouse Wheel
When you rotate the mouse wheel in the frequency display the currently active digit is incremented / decremented depending on the scroll direction.

If you rotate while the cursor is over an inactive digit then the digit is activated.

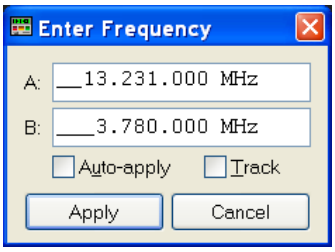
Up/Down
The up-arrow, down-arrow, - and + keys increment / decrement the active digit.

Mouse-click
Select a digital by clicking over the digit. To increment / decrement click above / below the center of the digit and keep the mouse button pressed.

Direct Entry
You have two ways to do direct entry of a frequency.

Choice A
To enter values just press a numeric key (0-9). The active digital is updated and the next digit to the right is made active.

Choice B
1 With your cursor placed anywhere with the rig control window press **Enter** to display the Enter Frequency window.



2 Enter the new frequency, and then press **Apply**.

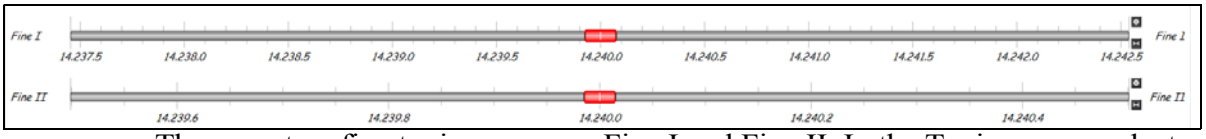
If you check Auto-apply then the new frequency is applied every time you make a change.

If you check Track this window is updated with changes made to the frequency display – for example when you tune the radio manually.

Griffin etc.
Support for third-party devices such as the Griffin Powermate is available – see *Keyboard Accelerators on page 46*.

Tuning Dial

Fine Tuning



There are two fine tuning ranges – Fine I and Fine II. In the Tuning menu select Show Fine II to show the second range. (If you are only showing the default Fine I, then the title is Fine.)

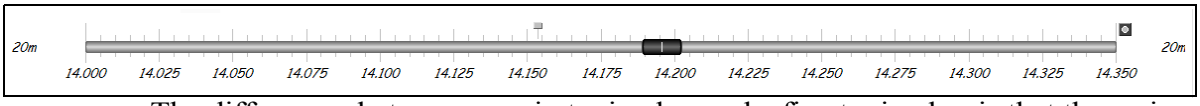
Set the range from the Tuning menu or by clicking the H button.

To change the mouse wheel step, click the button (also set with the Mouse Wheel pane of Program Options on *page 50*).

This allows you to easily make small adjustments in the frequency. To change the frequency either:

- Drag the marker with the mouse (and keep on dragging – the bar will scroll to the left or right),
- Rotate the mouse wheel (press Shift to increase the mouse wheel step by a factor of 2, press Ctrl to increase by a factor of 5),
- Click in the tuning bar or on frequency text such as 14.235.0.

Main Tuning



The differences between a main tuning bar and a fine tuning bar is that the main tuning bar shows the whole band range as defined by the band layout.

Band Selection

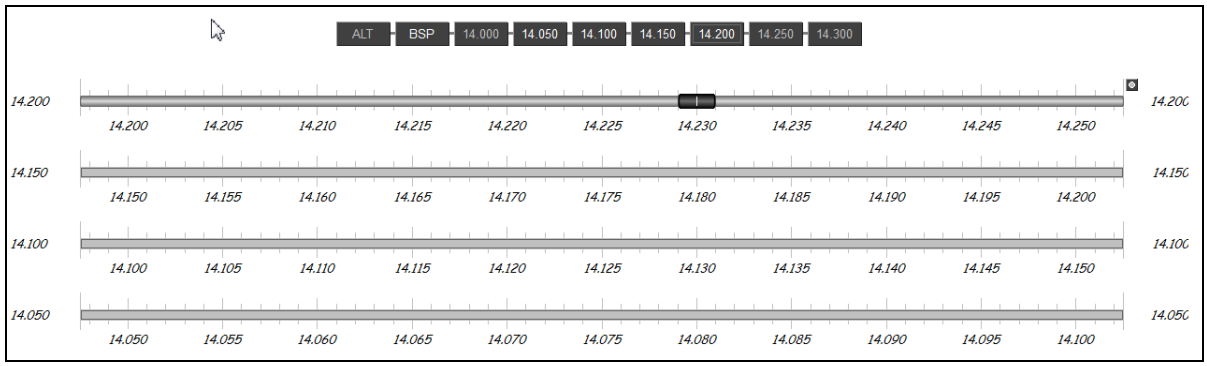
The Band Section buttons are shown between the Fine and Main layouts.

The buttons currently displayed are:

- ALT,
- BSP,
- Band buttons – 160m, 80, … and 10m.

ALT – only displayed if you have two VFO's displayed (for example Kenwood TS-2000), switches between the main and alternate (second) VFO. When highlighted you are tuning the second VFO with the tuning dial.

BSP (bandspread) – when you press BSP a new layout is dynamically created. The current band is split into multiple segments, for example the 20m band (14 MHz – 14.350 MHz) can be split into 7 segments, each of 50 kHz. To restore the previous layout press BSP and select Off.



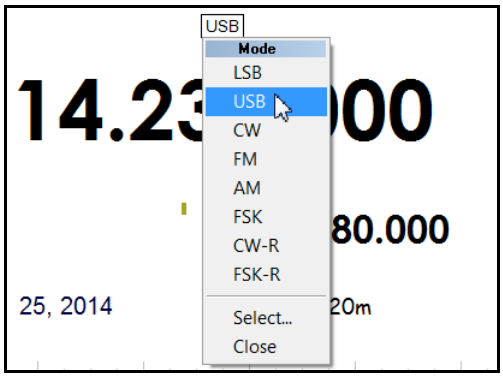
The band buttons select the corresponding band; the last used frequency and mode for the band are restored. They also show which bands are currently displayed. The displayed bands have the text in white while the hidden bands text is displayed in grey.

Display Scroll

If there is not enough room to display all the frequency ranges defined in the current band layout use this button to scroll the frequency ranges (bands) up or down

Mode Selection

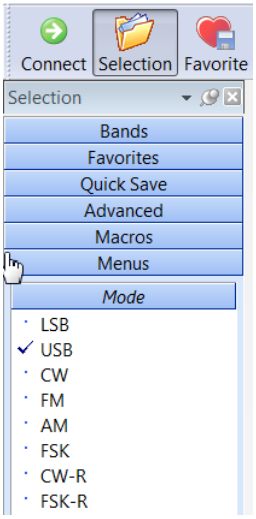
As you would now expect, there are several ways to select your operating mode. The most obvious method to click on the small mode display above your displayed frequency.



A small button just above the frequency display shows the current mode. To select or change the mode click on this button. A drop-down menu will come up where you can choose which operating mode you want to use.

Another method of selecting an operating mode:

1. Select an operating mode is to press the **Selection** button in the toolbar.
2. In the drop down that opens select **Mode**.
3. Select the desired mode.
4. If you would like to close the selection window press the X in the top right corner of the selection window. Check the next page for more information on the selection window.



Your rig configuration may have a list button displayed to allow to change the operating mode. This button is usually located in the upper right corner of the button display at the top of the screen. Press the selection arrow and make your choice.

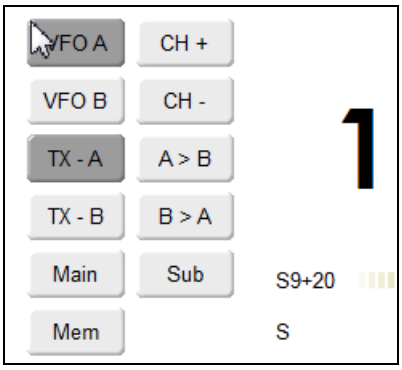
Controlling Your Radio's Features

One main reason you have obtained Ham Radio Deluxe is to control your radios many features from one location. You have already seen how easy it is to tune your radio and select the operating mode without touching the radio. Let's explore how to access the other features.

Buttons

Located on each side of the frequency window are buttons. All kinds of buttons. The first impression is, wow this is great. Then the cold reality hits you that you need to figure out what they all do. The good news is they are laid out with a plan. You can change the layout to suit your needs add operating style. We will get to that later.

Tuning Control

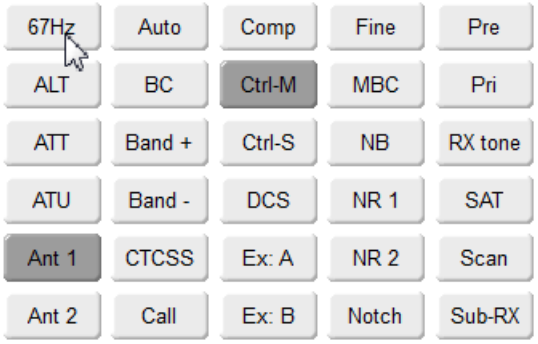


To the left of the frequency window is a group of buttons that aid in tuning your radio.

Press a button to activate the option. If it is a button where the option state can be read from the radio – for example the selected VFO A– the button indicates whether the option is currently selected.

The buttons displayed will depend upon the radio that is connected to Ham Radio Deluxe.

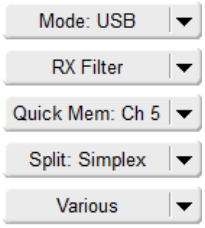
Radio Feature Control



To the right of the frequency window is a group of buttons that control features of your radio. This display will be different for each model of radio. The Kenwood TS-2000 is used for this example.

We see buttons for antenna selection, noise reduction, attenuation and preamp control to mention a few.

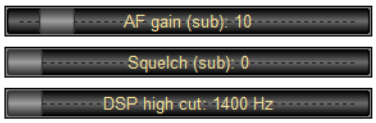
Drop Downs



Drop downs are multiple choice buttons and are most often located in the top right portion of your screen. . When to press a drop down button a popup menu is displayed. Select an option or press escape. If possible the drop down displays the current selected option.

The drop down buttons displayed will depend upon the radio that is connected to Ham Radio Deluxe. The layout for your radio can be changed in the Customize Layout. More on that later.

Sliders

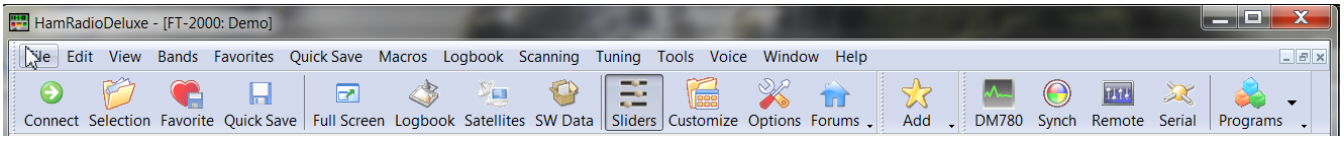


If your radio has the option for slides, they can be displayed either by pressing the Sliders button on the tool bar or by clicking on View in the menu bar and and selecting Slider controls at the bottom of the list.

Use the mouse to adjust a slider value.

To select the sliders that are displayed with the Sliders – see *Sliders: Appearance on page 44*.

.Menus and Toolbars



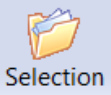
Menu Bar

The menu bar is very similar to any other program that you have used. You can find all the commands available somewhere in the menu bar. This bar also shows you keyboard shortcuts when they are available. We will refer to the menu bar many times as you read through this manual. Take a moment and look in each of the menu item by clicking on the item.

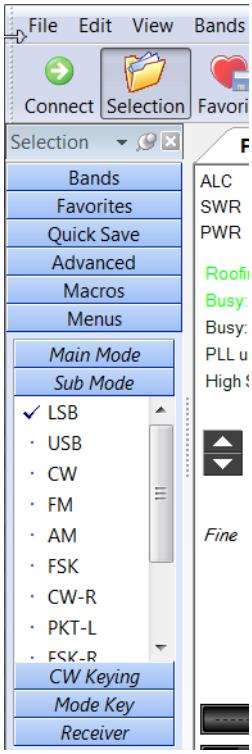
Toolbar

The toolbar hold the tools that you will need most often when using Ham Radio Deluxe. Each icon displayed is a functional button for selection of that task.

The *Connect* tool, which you have already used, is for connecting your radio to Ham Radio Deluxe. You can have more than one radio connected at a time. This could easily happen when working a satellite or connecting to a dx cluster.



The *Selection* tool toggles a menu pane along the left side of your screen that allows you to have many selections available quickly.



1 Press the **Selection** Button.

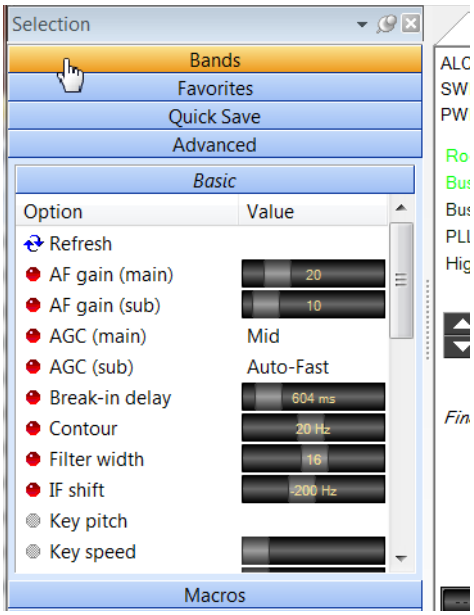
2 Select **Menus**. You will see a list of the possible signal modes displayed.

3 Select **Advanced**. You see a list that does not mean much yet partly because you can see only a small portion of the window.

You need to move your cursor onto the right edge of the selection menu. Press the left mouse button and drag the window wider.

You now see both the option and the value. For this radio, you have a set of sliders that do the same function as the slides at the bottom of your screen.

Your screen should now low something like the image below. Place you mouse on the grey area of the slider and move it to the right. You should see the value changing in the middle of the slider.

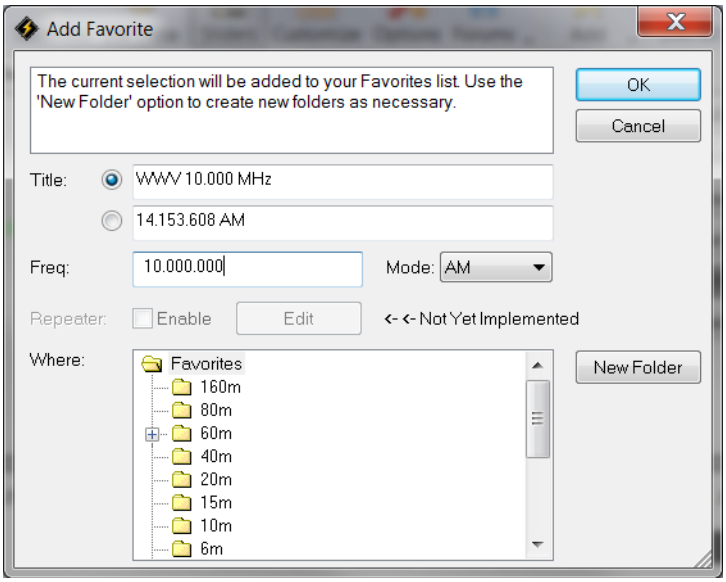


The Selection menu is also available by selecting **Favorites > Display** from the menu bar.

Select **Favorite** to add a selection to your favorites list. The list is displayed from the *Selection* tool that we just discussed or by selecting **Favorites** from the Menu Bar and choosing **Display**.

When you press *Favorite*, a dialog appears that allows you to add a new favorite.

1 Press the **Favorite** button.



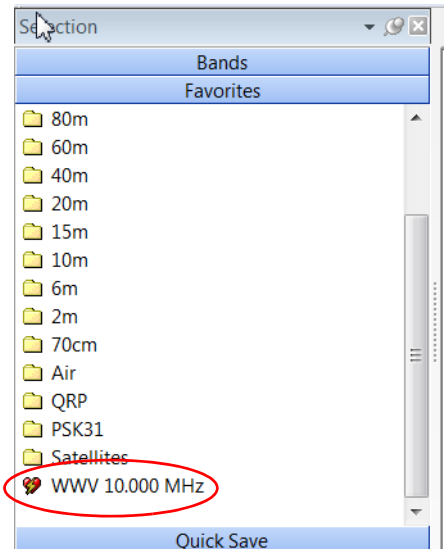
2 In the field labeled *Title* enter [**WWV 10.000 MHz]**

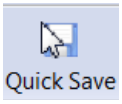
3 In the field labeled *Freq:* enter [**10.000.000]**

4 Click on the **Mode** box and select **AM**.

5 Click on **OK** to save your new favorite.

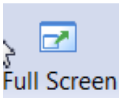
6 Look at the bottom of your Favorite list and you should see your latest creation.





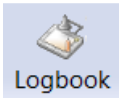
Quick Save tool as the name implies is a way to rapidly save marker so you can move between the selections with a click of the mouse. The markers are displayed above the frequency band at the designated frequency.

We will discuss this more later. Please see *Quick Save on page 59*

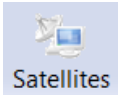


The *Full Screen* tool toggles Ham Radio Deluxe into an out of Full Screen Mode.

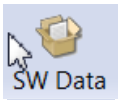
Try clicking it and view the results.



The *Logbook* tool starts the Ham Radio Deluxe Logbook application.

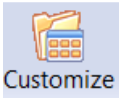


The *Satellites* tool starts the Ham Radio Deluxe Satellite Tracker application. This application show the current location of many satellites and will run without a radio attached.

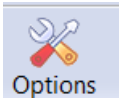


The *SW Data* tool toggles the Shortwave Database which displays at the bottom of your screen.

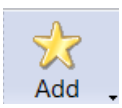
The *Sliders* tool toggles the slider controls at the bottom of the screen. This button will be grayed out for radios that do not have this option available for controlling functions.



The *Customize* tool opens the *Customize Display* dialog where you can modify you display. We touched briefly on this in the last chapter and we will cover it in detail later. Please see *Customize Layout on page 37*.



The *Options* tool opens the Options dialog where many settings can be made. The dialog is a chapter all by itself. Please refer to *Program Options on page 46*/

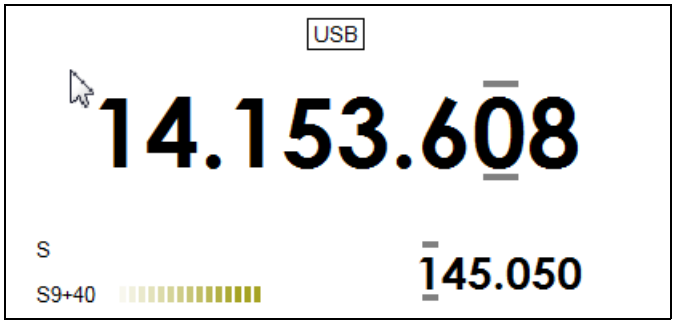


The *Add* tool adds an entry to the Logbook. This will open a dialog window if you have Logbook open.

The DM780 tool starts Digital Master 780 which is a Ham Radio Deluxe application for operating in the digital modes. To use this application you must be able to pass audio to and from your radio through an interface. Please refer to *Digital Master-780 on page 159* for more information.

There a few other tool in the tool bar but we will leave them for later as they are for advanced features not used to get started in Ham Radio Deluxe.

Frequency Display



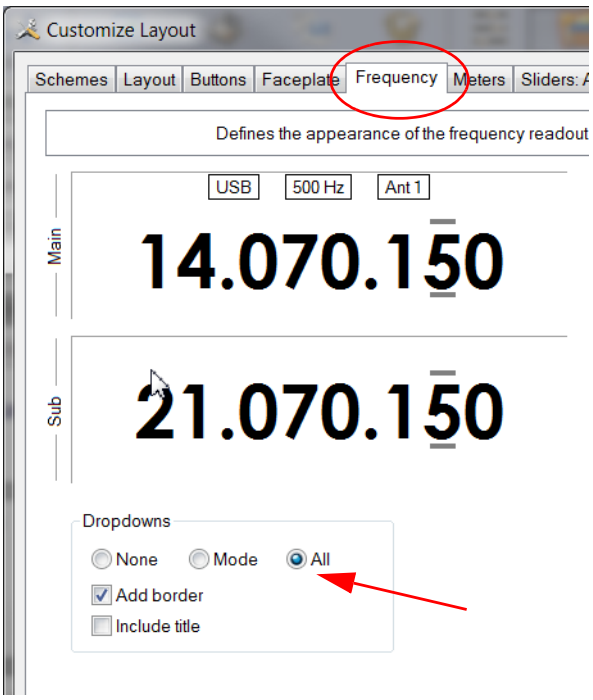
The image above shows the default view of the frequency display. We have the mode for the main band at the top enter of the display. Below that is the frequency setting for the main band.

The lower right area displays the sub band if it is available. Not all radios have the sub band available. The lower left displays the meters if the radio sends that data out.

Enhanced Display

You have the option to add additional information to the frequency display by changing your *Customize Layout* Options. To do that:

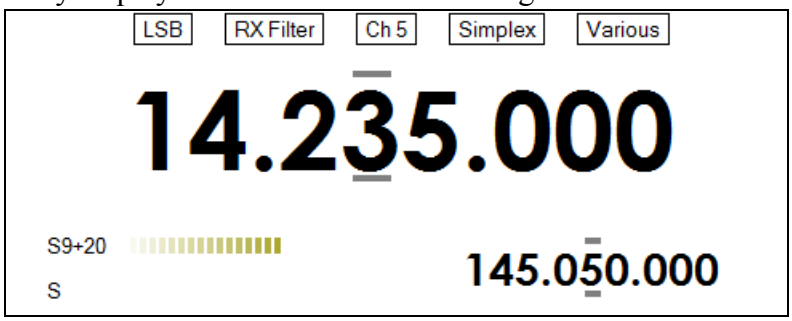
1. Click on the **Customize** button on the tool bar. This opens the *Customize Layout* dialog.
2. Select the **Frequency** tab.



3 In the *Dropdowns* area of the dialog select **All**.
You should see additional items displayed at the top of the sample main display. The actual items that will be displayed depend upon the radio you have connected. With the Kenwood TS-2000 that we are using for our examples we have several items that will display.

4 Click on **OK** to accept the change.

Your frequency display should now look something like this:



You can click on any of these drop downs and change their settings from a list. If that is too much information, you can go back and select **Mode**.

Configuration

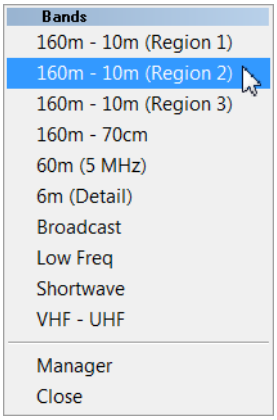
See *Frequency Display on page 43*.

Band Layout Selection

160m - 10m (Region 1)

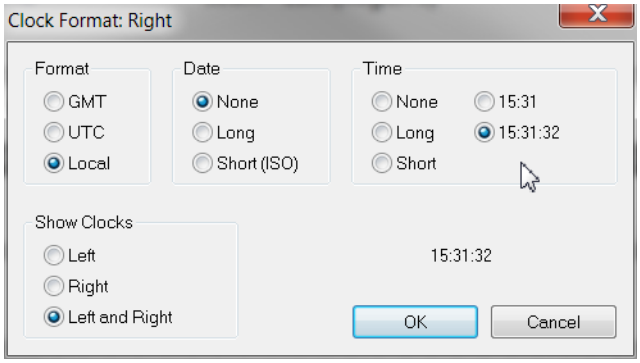
The current band layout is displayed below the frequency display and able the fine tuning bar.

Click here to select a different layout from the Bands menu. If you reside in the americas, select Region 2.



Date & Time

By default the date is displayed to the left of the Band Layout and the time is displayed in local format to the right of the Band Layout. This can be changed by clicking on each to set the clock and time format.



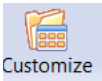
3 Configuration

Customize Layout

Introduction

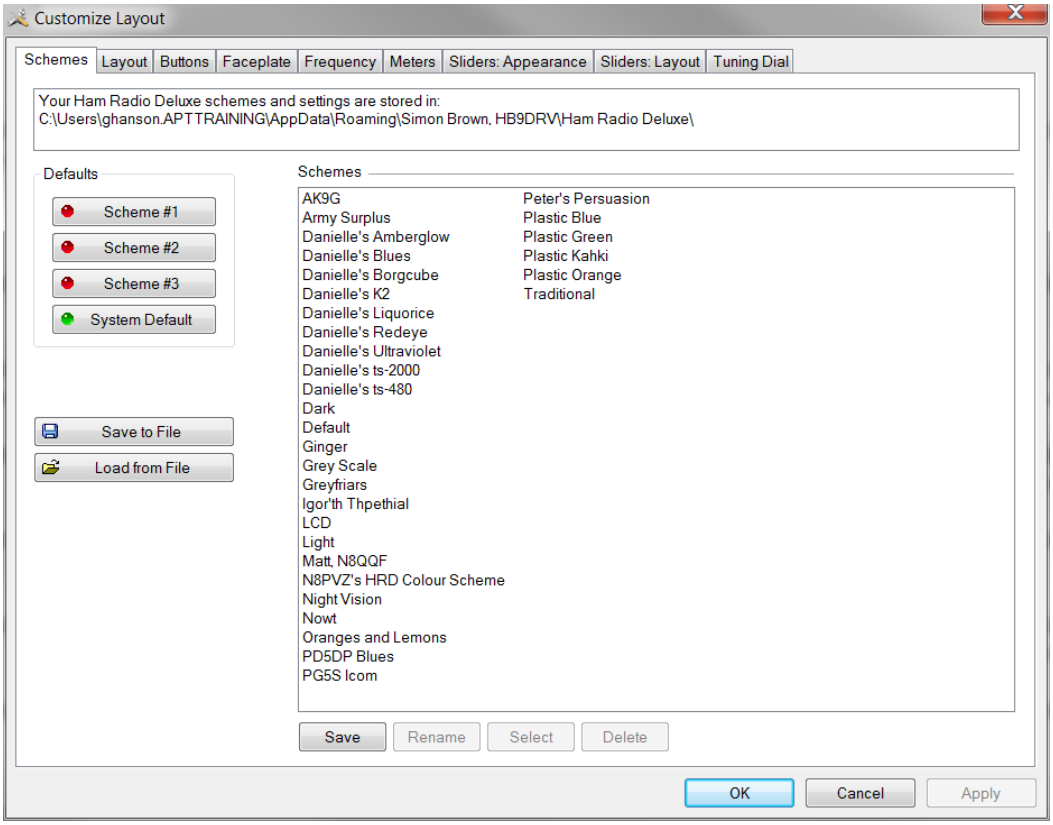
In the previous chapter we explored the layout as delivered. We did do some small acts of customization We will now explore most of the items that can be changed, modified, or even removed. The final layout is up to the user to define. Just because it is delivered as the default view, it may not be what you want or desire. Before you start making wholesale changes, make sure that you have your radio connected and working.

There are, as usual, several ways to navigate to the *Customize Layout* dialog window which is used to define the appearance of the radio display. Your choices are:

- From the menu bar select **Tools**. Near the bottom of the selection box, click on **Customize Layout.**
- Press **Ctrl**+**F8** keys.
- Press the 

Customize button on the tool bar.

Schemes



The first tab on the display is *Schemes*. Schemes are pre-defined customizations created by the Ham Radio Deluxe software creative team and other Ham Radio Deluxe users. There are four default schemes shipped with Ham Radio Deluxe: Scheme #1 - #3 and the System Default. You can not change the look of the default schemes.

Note: The scheme that you choose applies to all radio windows.

You can add or modify schemes displayed in the large Schemes list. The Ham Radio Deluxe team and the Ham Radio Deluxe users have already created the schemes that are there. Special thanks to Danielle in Northallerton, UK. for his contributions.

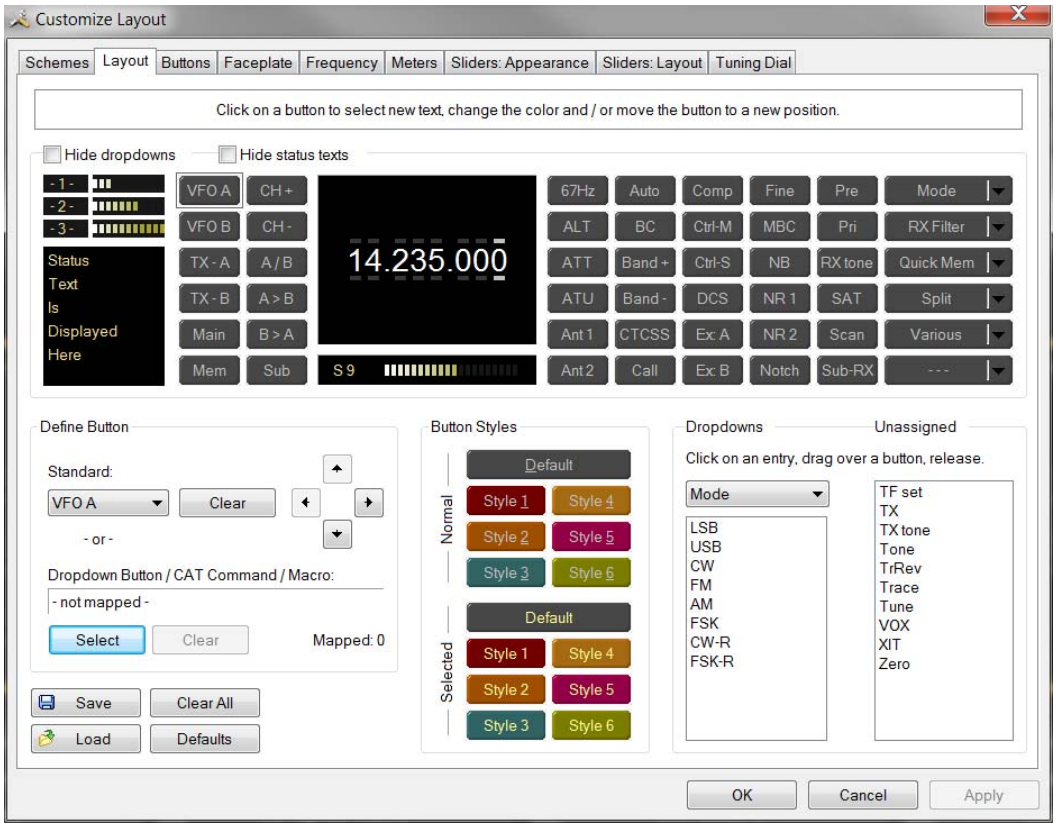
- Select a default scheme by pressing the scheme button (or select an entry and press **Select**);
- Select one of the other schemes by **double-clicking** on the entry in the *Schemes* list.

If you have modified a layout scheme and wish to save it with a new name press **Save** and you will be prompted for a Scheme name. Use *Rename* and *Delete* to organize the available schemes.

If you need to save the file to a location different than the default location press the **Save as File** button. This allows you to save your options file to any location.

If you receive a options file from someone else, you can add it to your copy of Ham Radio Deluxe by pressing the **Load from File** button and navigating to the options file location and selecting the file.

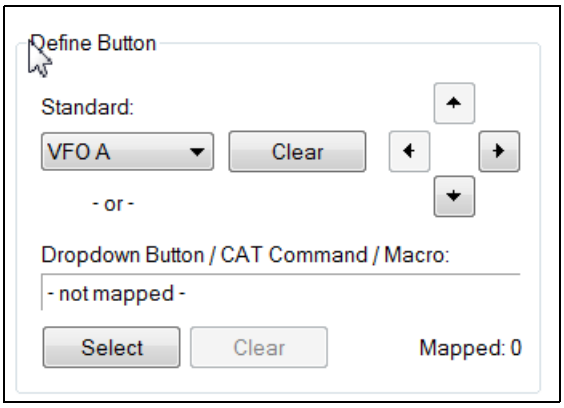
Layout



The next tab is the *Layout* tab. This is where we can modify the screen layout for our buttons and drop downs. This is one place where personal preference will cause you to pull your hair out because things are not where YOU want them. Re mapping the layout is really quite easy.

Ham Radio Deluxe is a data-driven program. For each radio there is a table of supported commands and associated button / drop down / slider names. The layout order is more-or-less alphabetical. Don't be put off by the amount of information in this window – take it slowly and read the information here.

Note: The layout definition is saved on a per-radio basis in the registry. For your sanity only have a connection open to the radio that you plan to modify the layout. Close any other radio connections.

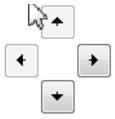


This small portion of the dialog allows us to do amazing things.

Clear Entry

If we click on a button above the area such as the *VFO A* button, we can clear the button so we can use the location for some other function. This is done by clicking the **Clear** button. We can also remove an entry by dragging it into the *Unassigned* list on the right side of the dialog box.

Moving Entries

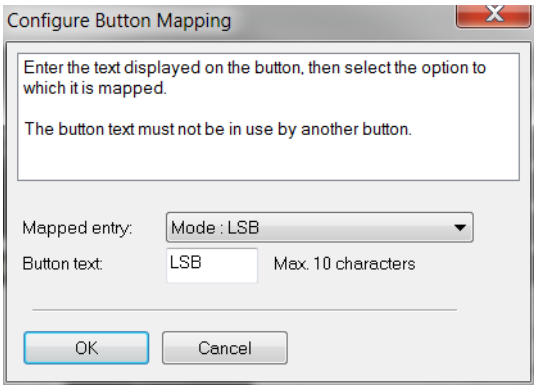


We can move the selected entry by simply dragging it with the mouse or by using the four arrow-buttons.

Dropdown Button / CAT Command / Macros

You can create new buttons - for example, to create a USB button from the Mode dropdown:

1. Open the *Customize Layout* dialog and click on the **Layout** tab.
2. Select or create an empty button position – the selected entry will start to blink (you can reposition this button later),
3. In the Define Button area of the dialog, press **Select** (above the *Save* and *Load* buttons), This will open the *Configure Button* dialog.
4. In the *Configure Button* dialog window select **Mode: LSB** and enter the text to appear on the new button.
5. Press **OK**.

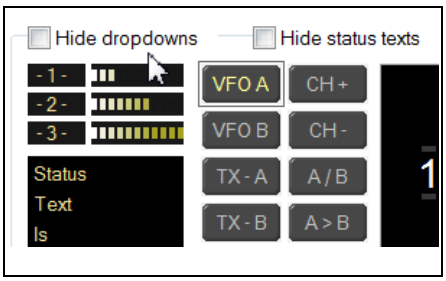


6 Press **Apply** in the lower left corner of the current screen.

7 The previously empty button position now has a new value – LSB!

If you had previously created a macro or created a custom CAT command, you would have had the choice of applying one of them to your button. We will cover macros and CAT commands later in this manual.

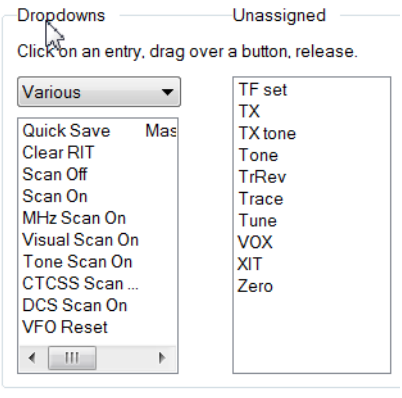
Hiding Dropdowns



Hide dropdowns hides the dropdown buttons on the top right edge of the layout window, releasing two columns where you can assign new button definitions.

Hide status texts hides the three top-left meters (-1-, -2-, -3-) and the status text area underneath, releasing two columns where you can assign new button definitions.

Dropdowns



Select the dropdown menu, and then simply drag an entry to an unused location in the display.

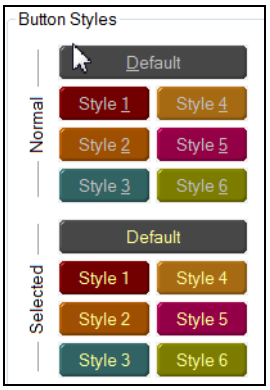
If you drag to a location that already has a definition the current definition is removed, if a standard button it is returned to the unassigned list.

Unassigned

Entries in the *Unassigned* list are standard buttons that are not currently displayed. Simply drag an entry to an unused location in the display.

If you drag to a location that already has a definition the current definition is removed, if a standard button it is returned to the Unassigned list.

Styles



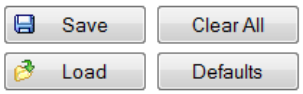
In the *Buttons* tab you can define up to seven button styles, shown here in the Button Styles group. The *Buttons* tab is the next tab we will visit.

To assign a style to a button either:

•Drag the style over the button, or

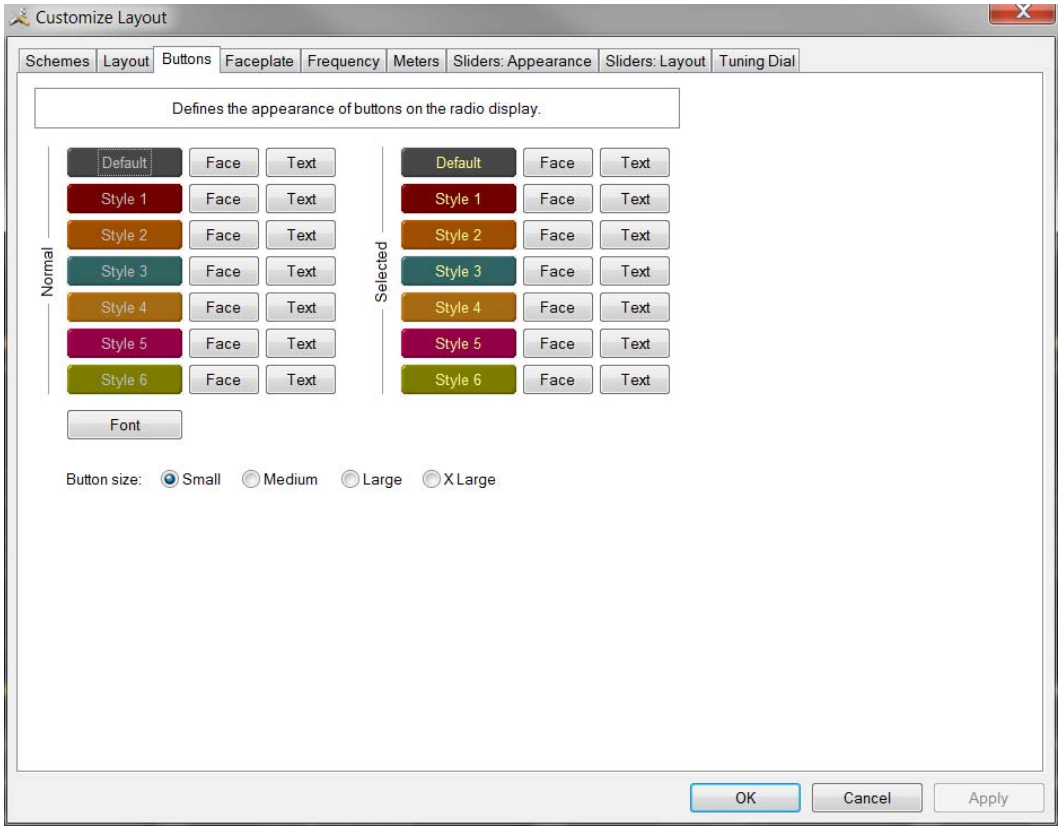
•Click a style to apply it to the currently selected (blinking) button.

Save / Load



To distribute your layouts with other users of your radio model use the *Save* and *Load* buttons. You can also clear the deck and start over fresh or revert back to the default button layout.

Customizing Buttons



Within the *Buttons* tab you can define:

- Seven button color combinations,
- The font, and
- The button size.

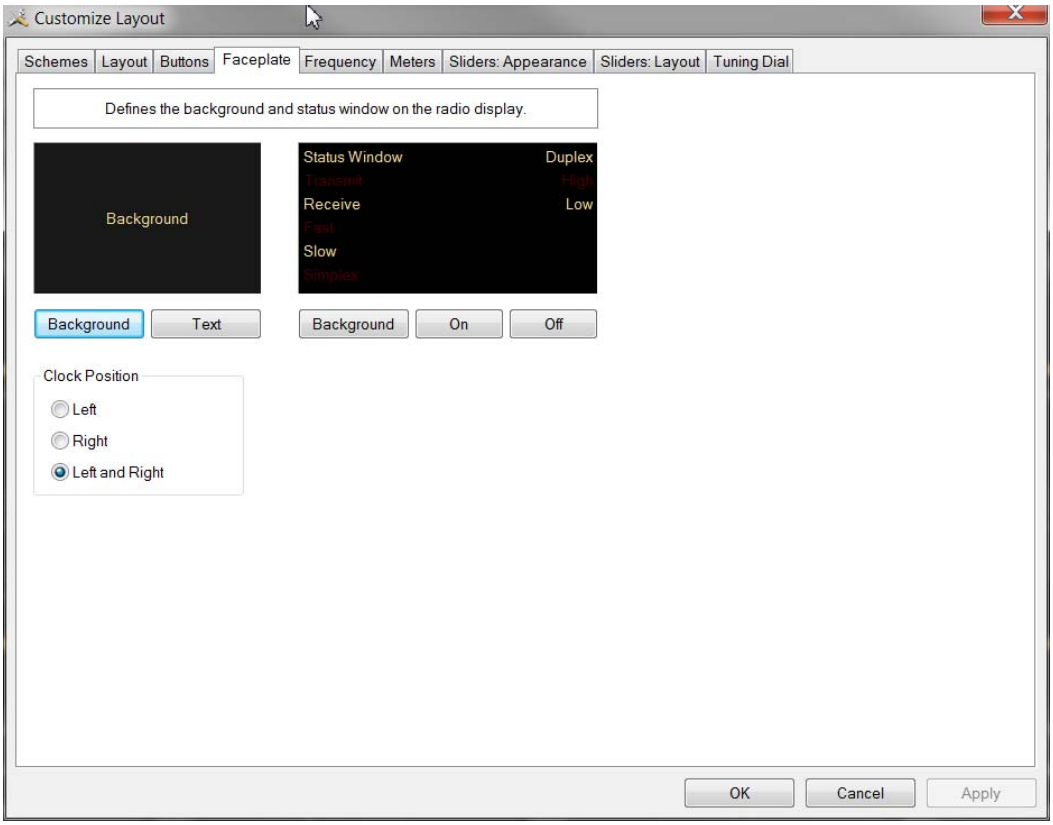
The default button size is small; this is so that users with low resolutions such as 800 x 600 still have a usable configuration. There are no rules when using the button size; select the size which pleases you most.

For the technical readers the button size is tied to the font size of the radio display form (font is Microsoft Sans Serif, size is 8, 9, 10 or 12 point).

Changing the font size simply changes the font assigned to the form.

The button size can also be changed by selecting **View** on the menu bar and then selecting **Layout Size**. You can also [**right click]** on any button on your display and select **Layout Size**.

Faceplate



Background

These colors are applied to the background area of the display and to the transmit meters (if any) such as PWR, SWR and ALC.

Status Window

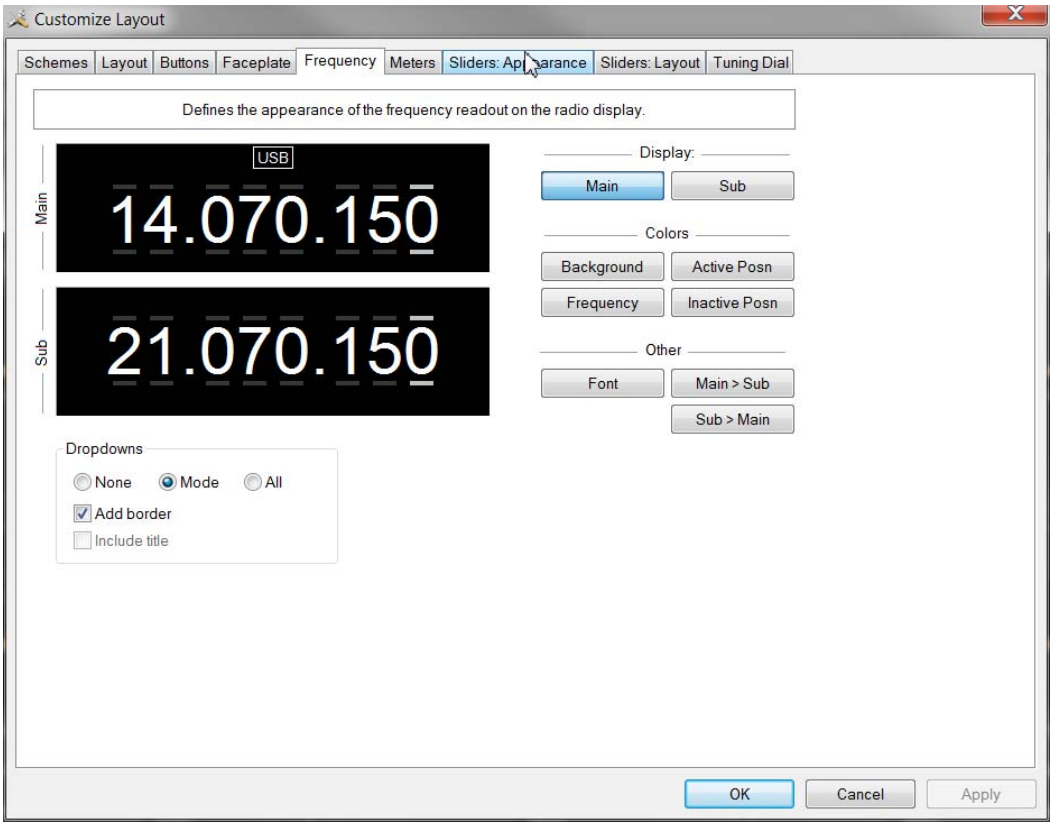
The status window displays information which you cannot normally change using buttons or sliders in Ham Radio Deluxe.

Typical examples are Scanning status, Split mode and Memory channels.

Clock Position

The clock is displayed to the left, right or both sides of the band title.

Frequency Display



If your radio supports simultaneous access to two VFO's (Kenwood, some Yaesu) then Ham Radio Deluxe will display two VFO's, otherwise just one VFO is displayed.

First select the VFO you are updating – main or sub. The colors you can set are:

- Background,
- Frequency – the digits,
- Active Posn – the bar above and below the current digit,
- Inactive Posn – the bar above and below the other digit. Default is the same as the background color.

The Font can also be set, use the **Main > Sub** and **Sub > Main** buttons to copy settings between VFO's.

Dropdowns

The dropdown buttons (Mode, Filter…) can be displayed at the top of the main frequency display.

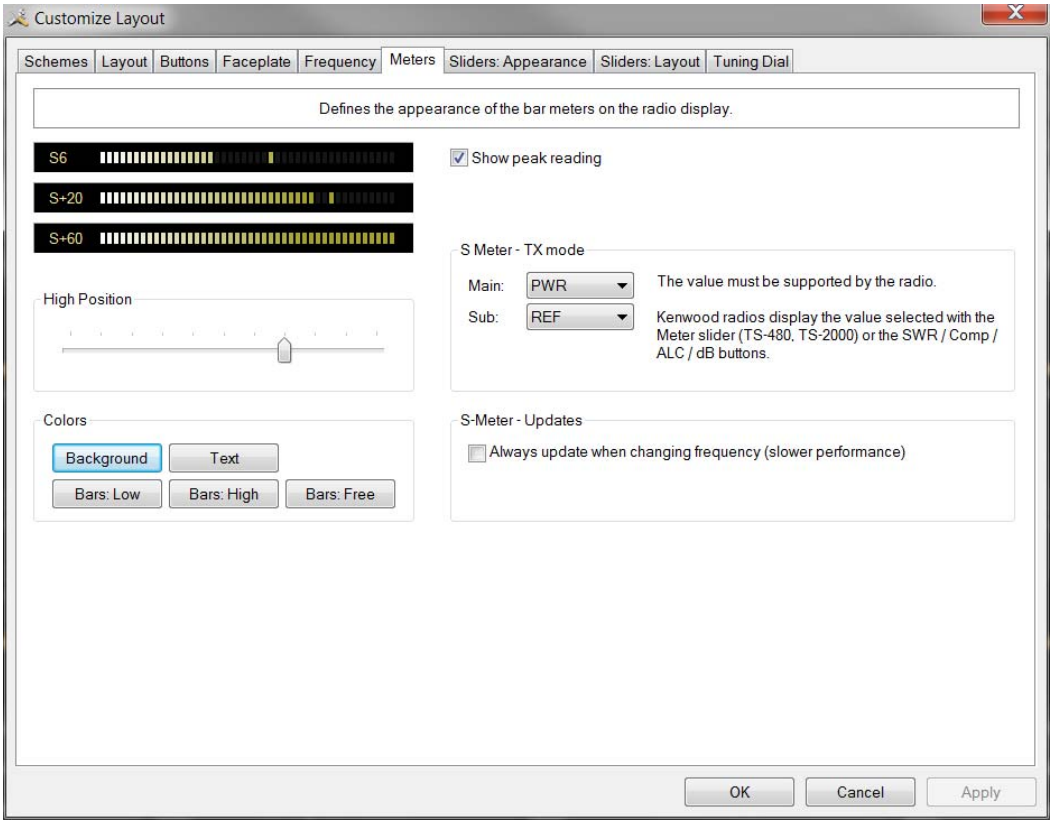
Select:

- None (no dropdowns),
- Mode (only the mode dropdown) or
- All (all dropdowns).

If *Mode* or *All* is selected you can check **Add Border** to add a border around the text.

If *All* is selected you can check **Include Title** to add the Dropdown button's title (if there is room).

Customize Meters



The *Background* and *Text* colors should be obvious. There are three graduation colors:

- Bars: Low – the first bar color,
- Bars: High – the color at the position set by the High Position slider, and
- Bars: Free – the color for the free (empty) bars.

If you check Show peak reading the recent peak value is displayed.

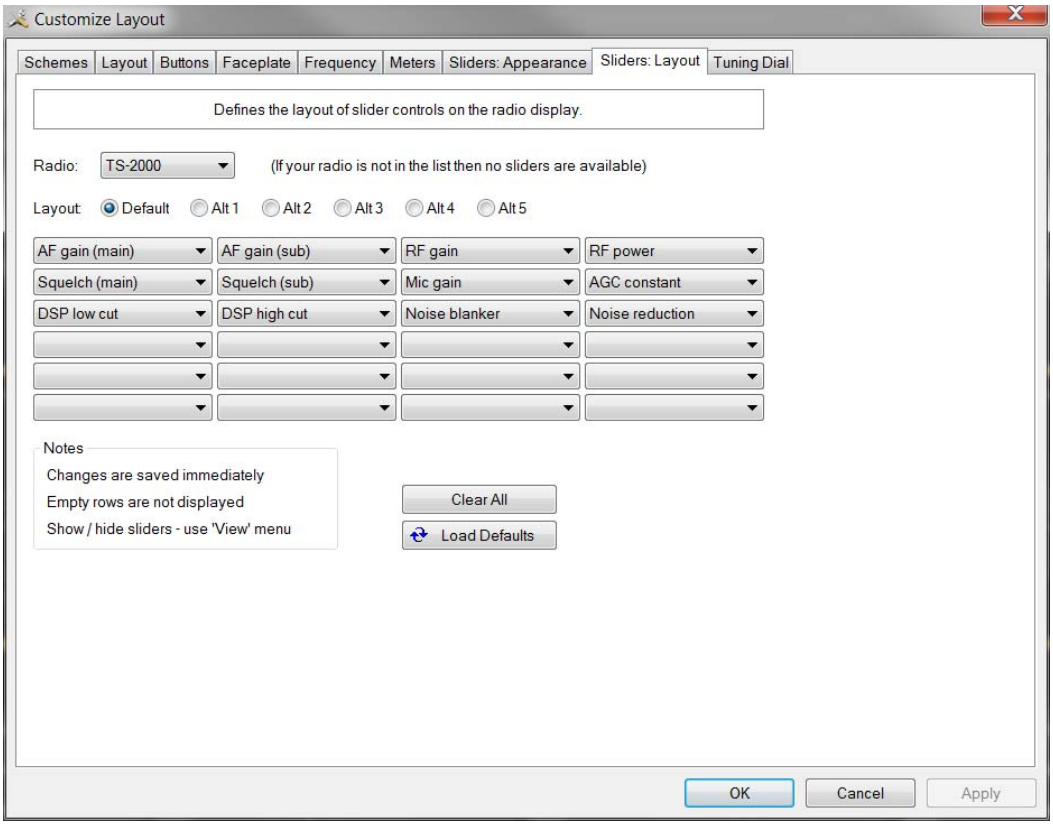
When Ham Radio Deluxe is in TX mode the S Meter value is replaced by the value selected in the *Main* and *Sub* dropdowns, the value you select must be displayed by Ham Radio Deluxe in the upper right hand corner of the display. For Kenwood radios the value to be displayed is selected with the meter slider or the individual buttons (SWR / Comp / ALC / dB).

If you check the **Always update…** option then the S Meter is updated when you change frequency – this results in slower performance.

Sliders: Appearance

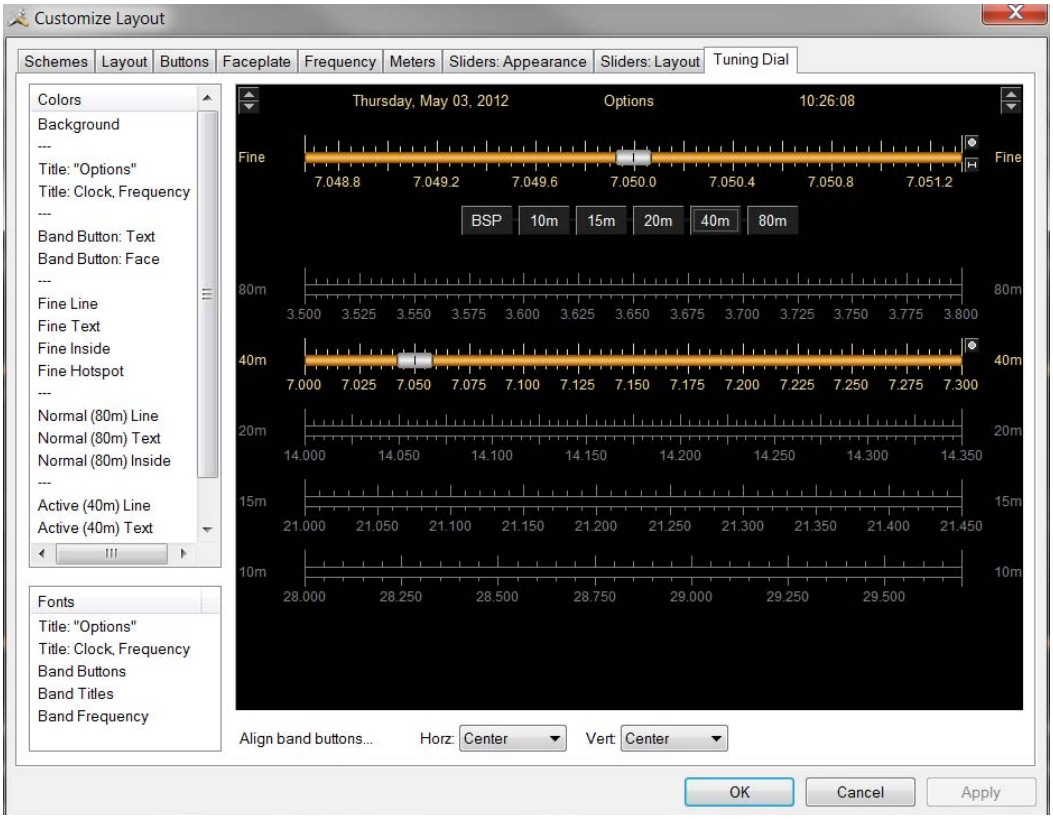
If supported by your radio, sliders are displayed at the bottom of the display. Here you define the appearance of the sliders. These colors are optionally applied to the sliders in the *Advanced* selection windows (select **Advanced** from the *View* menu).

Sliders: Layout



Here you select the sliders to be displayed. Define up to six layouts, for example one layout for SSB and another for CW.

Tuning Dial



Here you define the colors, fonts and band button positions.

Program Options

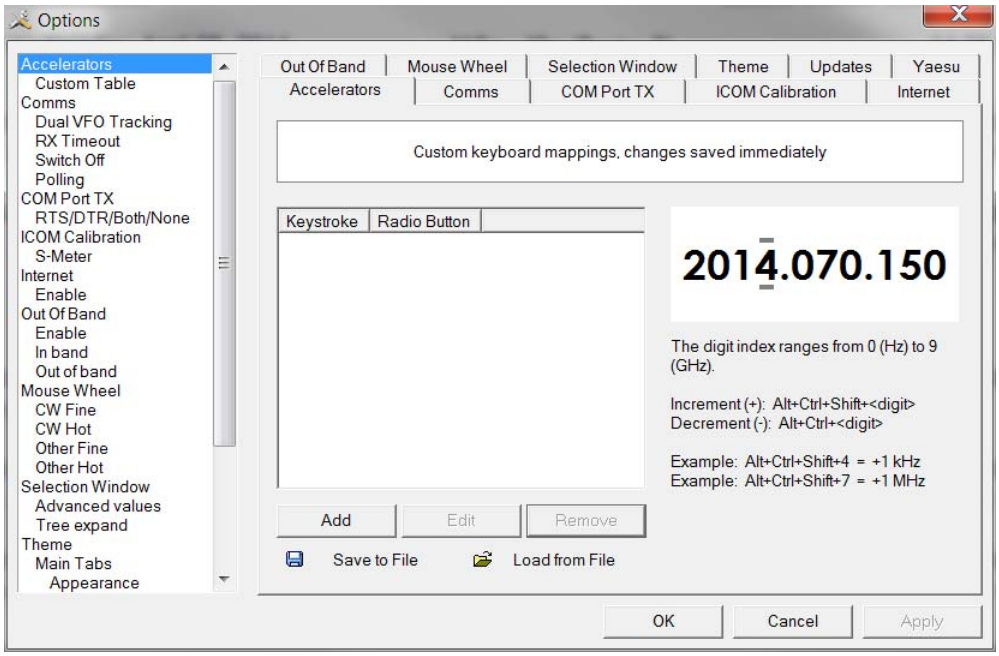
Introduction

Used to define various Ham Radio Deluxe features, *Program Options* can be selected in three different ways:

- From the menu bar, select **Tools > Program Options** at the bottom of the list.
- Press **F8**
- Press the **Options** icon on the toolbar.

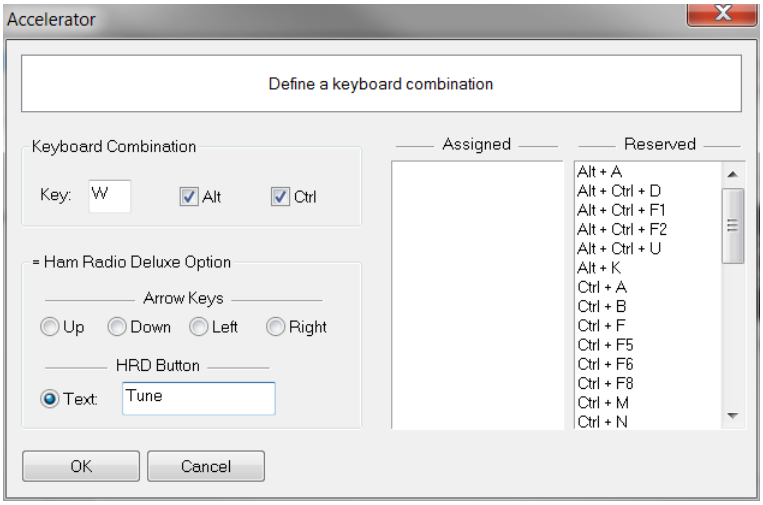
Most users will find that they can live with the defaults that can be modified in this dialog.

Keyboard Accelerators



Define accelerators for use with the Keyboard or with programmable interfaces such as the Griffin Powermate.

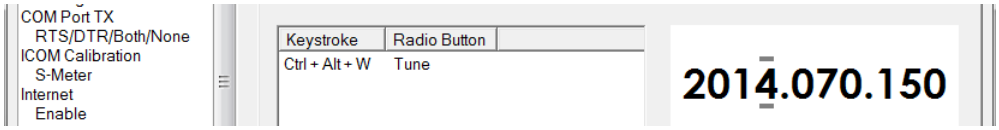
When you press *Add* the definition window is displayed.



Keyboard combinations are assigned to display buttons and arrow keys. As an example, we will assume that we want tot assign the key combination **Ctrl+Alt+W** to the Tune button. To do this we would do the following steps:

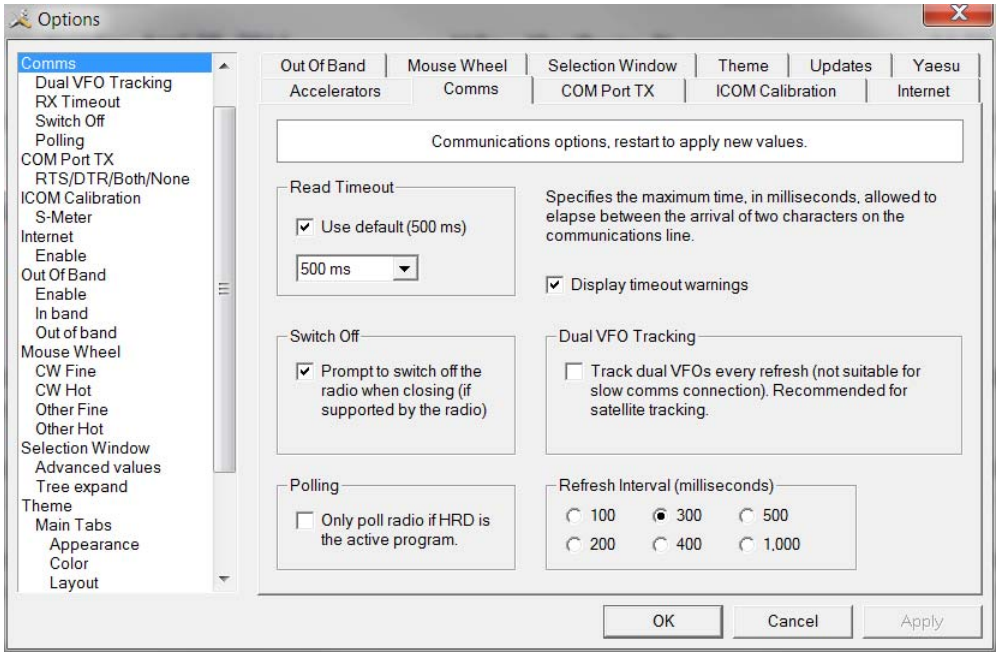
1 In the *Key* field we would enter the letter **W**.
2 Place a check mark in the boxes preceding *Alt* and *Ctrl*.
3 In the text box below *HRD Button* enter the word **Tune**.
4 Press **OK** to save your new accelerator.

You will now see your new accelerator listed.



The Ham Radio Deluxe menu has pre-assigned accelerators; these cannot be redefined. These are listed in the Reserved window.

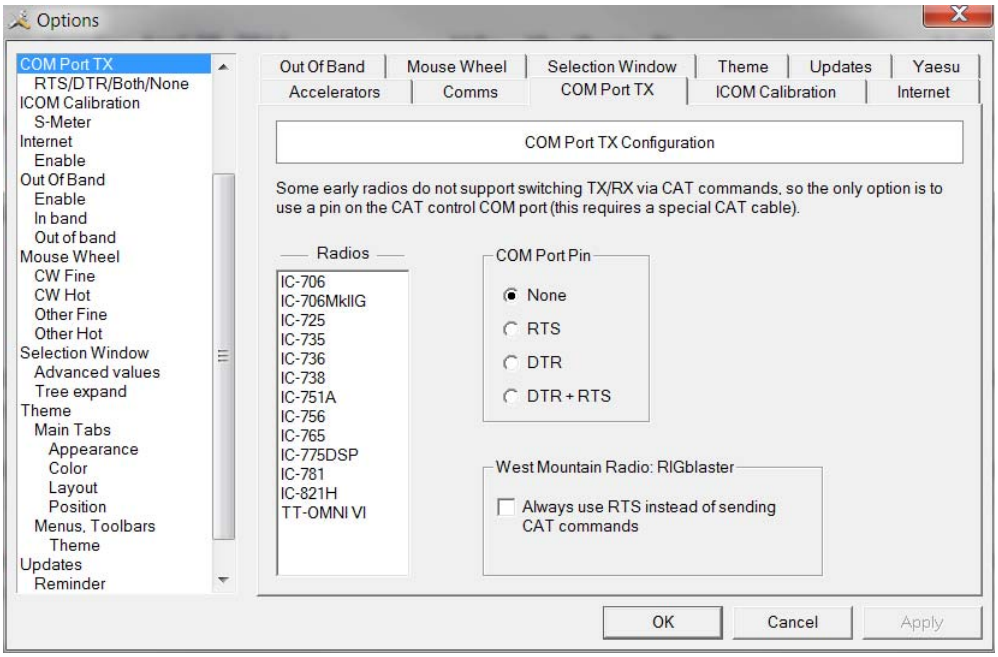
Comms



Normally you will not have to change the default settings.

- Read timeout – serial port timeout.
- Switch off – some radios such as the FT-817 or the Kenwood TS-2000 can be powered down using a CAT command. If this option is selected you are prompted to switch off the radio.
- Polling – to reduce CPU load for slower systems.
- Dual VFO tracking – if selected both VFO's are tracked on every refresh. Only of use with Satellite Tracking (*Satellite Tracking on page 209*).
- Refresh interval – the interval between consecutive refreshes of the display.

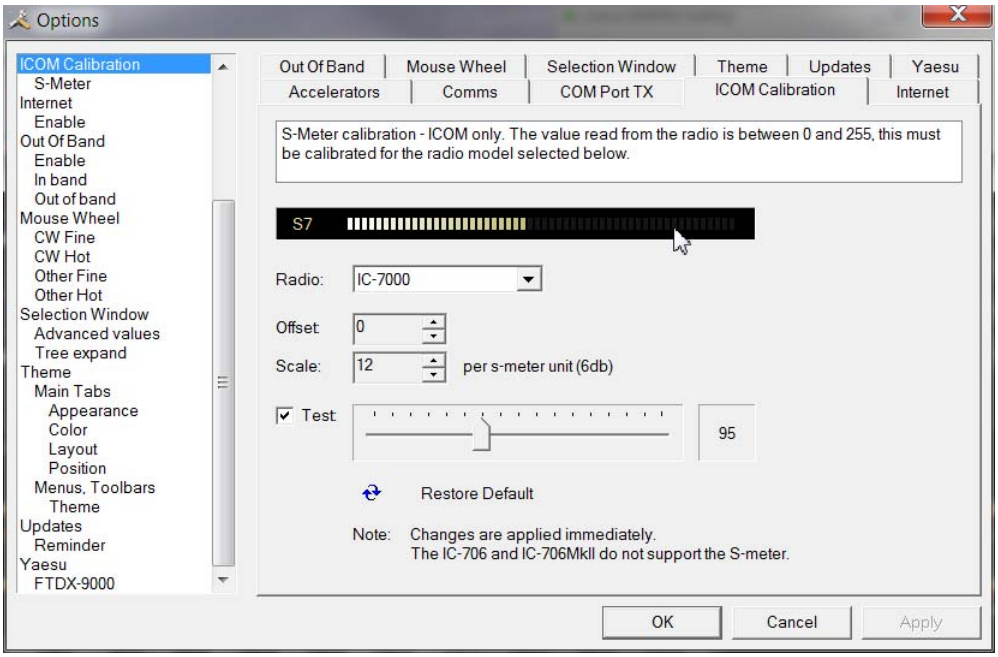
COM Port TX



Some early ICOM radios do not support switching between TX and RX using CAT commands. The only way to enable computer controlled TX/RX this is by toggling a COM port pin.

You require a special CAT cable if you select this option.

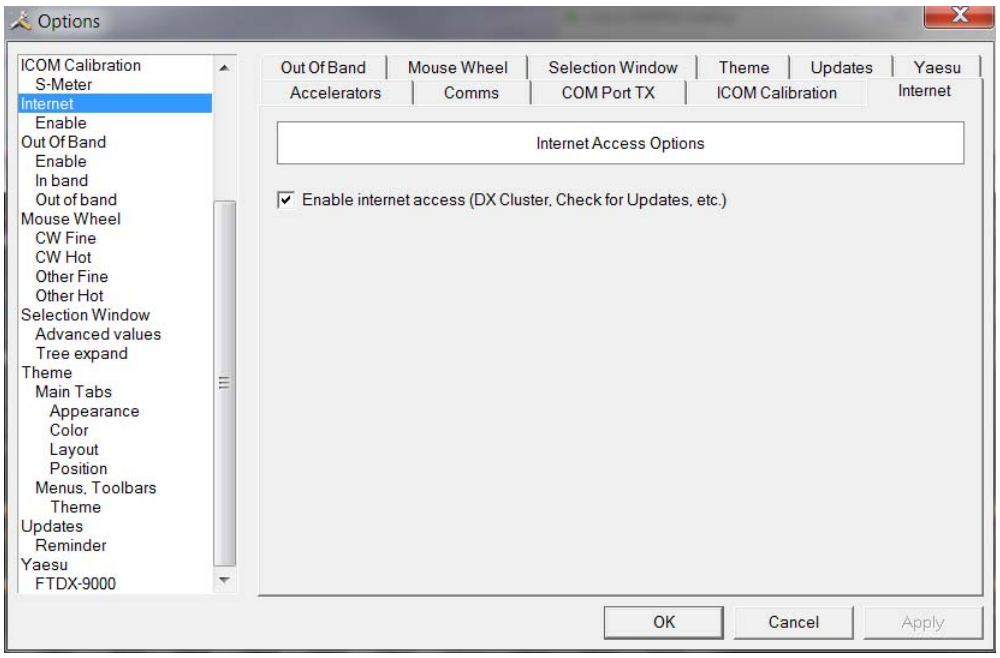
ICOM Calibration



ICOM radios return a S Meter value between 0 and 255, normally 0 is S0, 12 is S1 and so on. As a S Meter unit is 6 dB the algorithm applied is to divide the returned value by two to get dB, then divide dB by 6 to get S units.

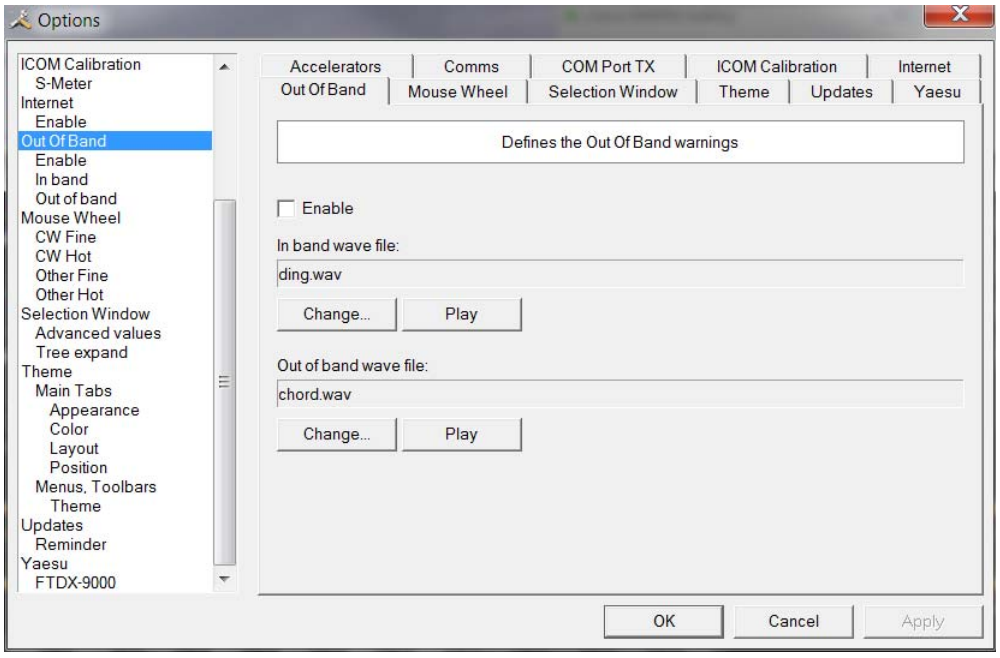
Some radios such as the IC-706 have a different logic – use the *Offset* and *Scale* values to adjust the returned values so that the S Meter in Ham Radio Deluxe corresponds to the S Meter on your radio.

Internet



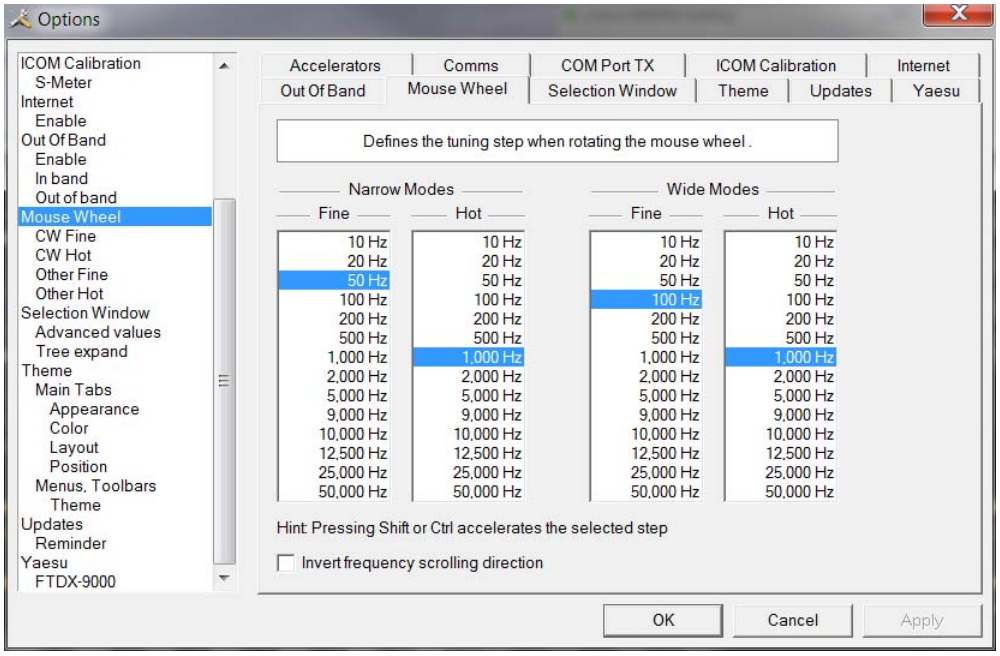
Ham Radio Deluxe is able to detect whether you have an Internet connection with Internet GetConnectedState(). Uncheck this option if you do not want Internet access.

Out Of Band



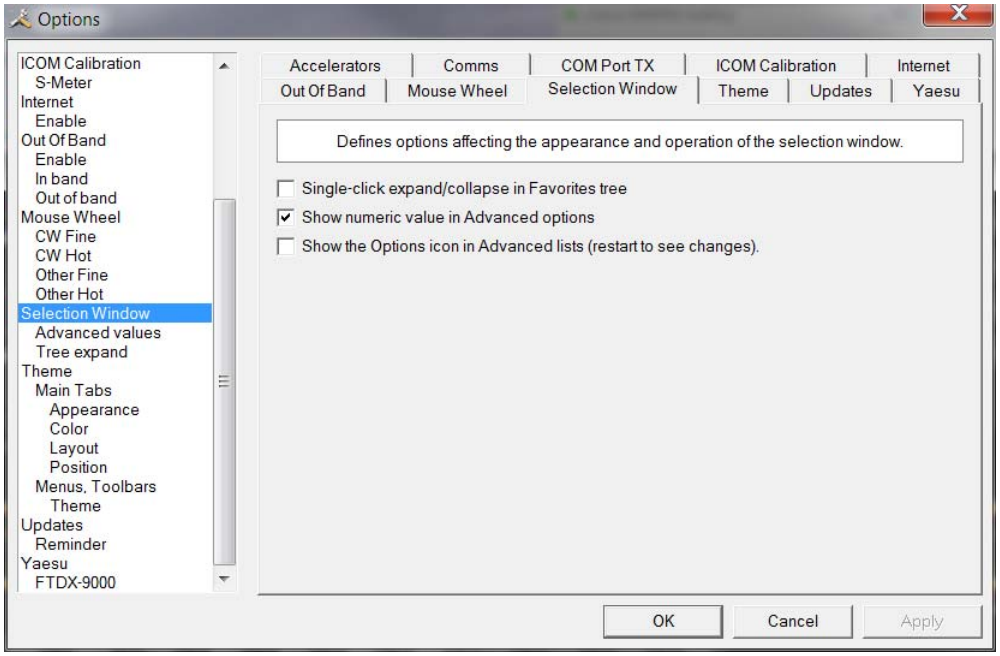
If you like to know where your band limits are when you are scrolling through a band and not watching the frequency window you can enable the optional sound files played when you tune in / out of band. You also have the ability to use a sound file of your choosing.

Mouse Wheel



You can define the tuning step when rotating the mouse wheel over the active tuning bar here.

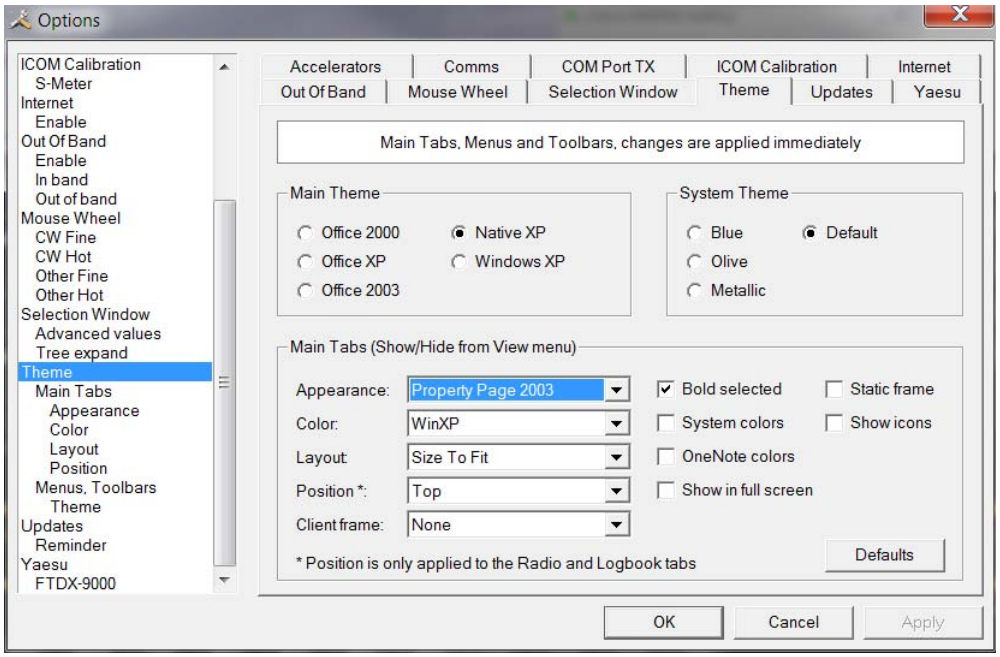
Selection Window



Defines options affecting the appearance and operation of the selection window.

- *Single-click* – normally the Favorites tree folders are opened / closed with a double-click. Check this option to enable single-click operation.
- *Show numeric value* – the Select Windows‟s Advanced slider values are optionally superimposed on the slider.
- *Show the Options icon* – historical support for the version 2 Advanced slider look and feel.

Themes



Docking panes are used for optional windows such as: *Bandscope, Calendar, DX Cluster, Logbook, Selection, Shortwave Database* and *WinKey.*

Main Theme

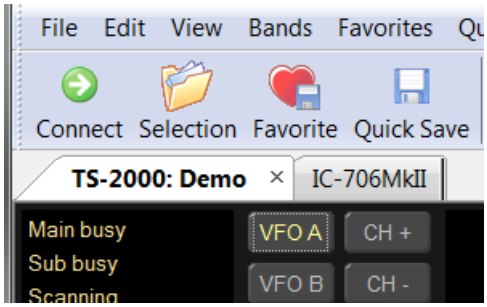
Select whichever visual theme you want – Office 2003 is an acceptable default.

System Theme

When you select Office 2003 or Windows XP for Menus and Toolbars you can select an optional System theme.

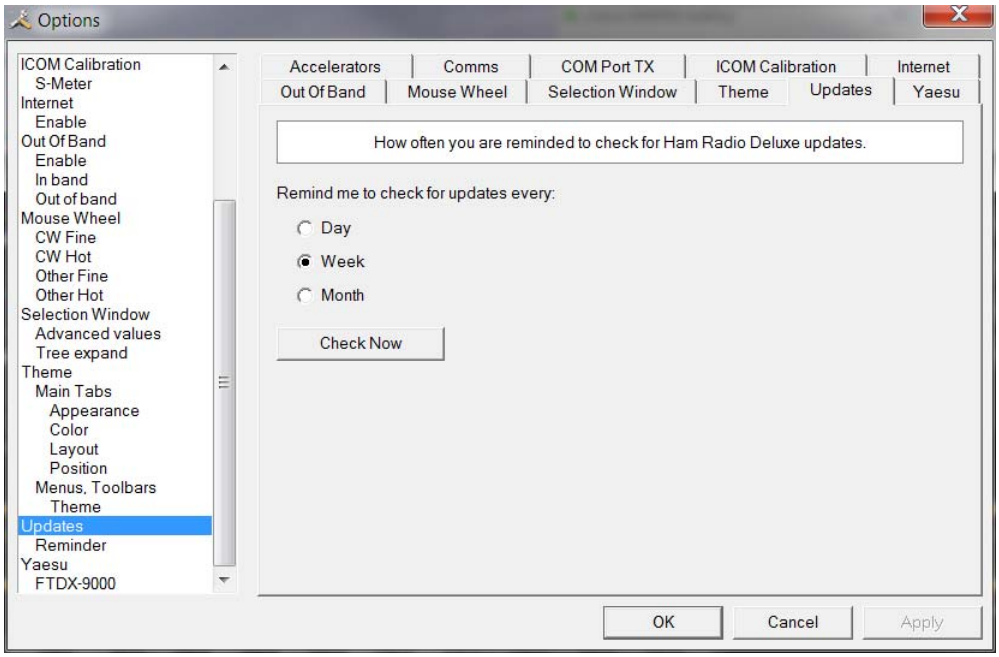
Main Tabs

If you have more than one main window open – for example Radio and Logbook – then the main tabs are a useful way of switching between windows.



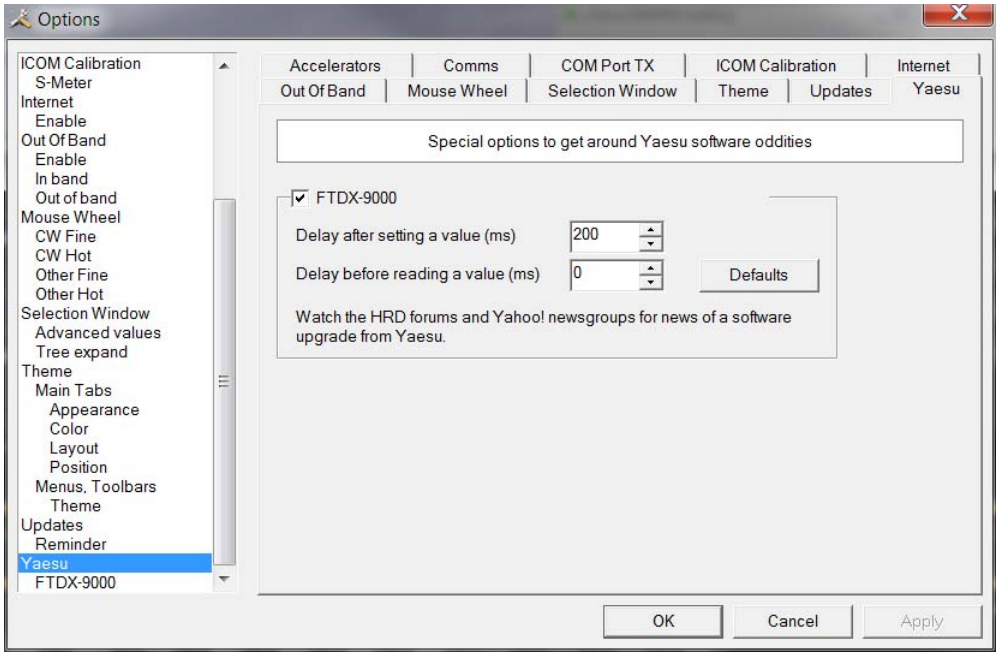
Main tabs can be toggled On / Off by selecting from the Menu Bar **View> Main Tabs**.

Updates



Select how frequently Ham Radio Deluxe reminds you to check for new updates.

Yaesu



Special options for Yaesu radios. Due to firmware “features” in the FTDX-9000 it is necessary to wait up to 250ms after writing a command to the radio. With any luck Yaesu will fix this at some date in the future.

Band Layouts

Introduction

A necessary feature of a fully customizable radio program such as Ham Radio Deluxe is the definition of custom band layouts.

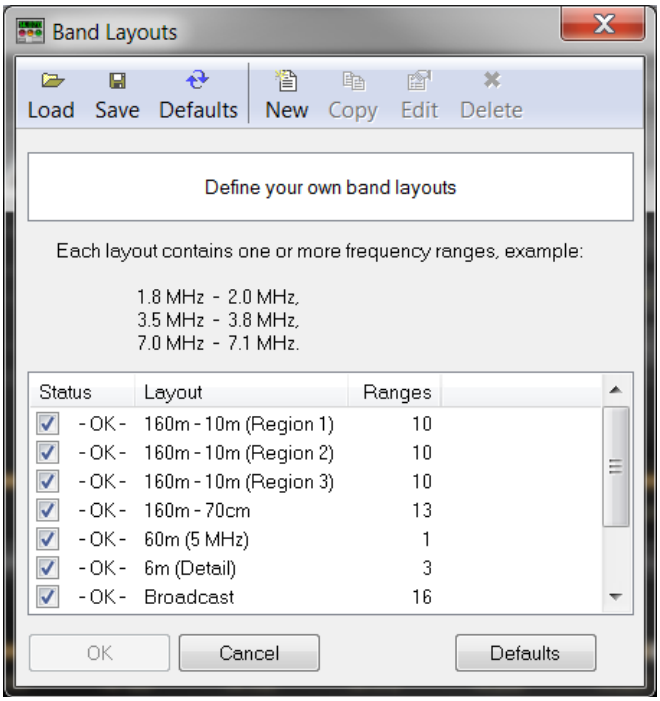
The IARU regions have own band plans; there is no doubt that these will change in the future. Consider also the traditionalist who has never owned a microphone in his life and is only interested in the CW portions of the bands – he wants his own band layouts.

With this feature you can edit any band so only the frequencies are shown which are allowed by your License class. You can then activate the Out-Of-Band alarms to notify you when you tune outside of your allowed frequency ranges.

Manager

To start the Manager do one of the following:

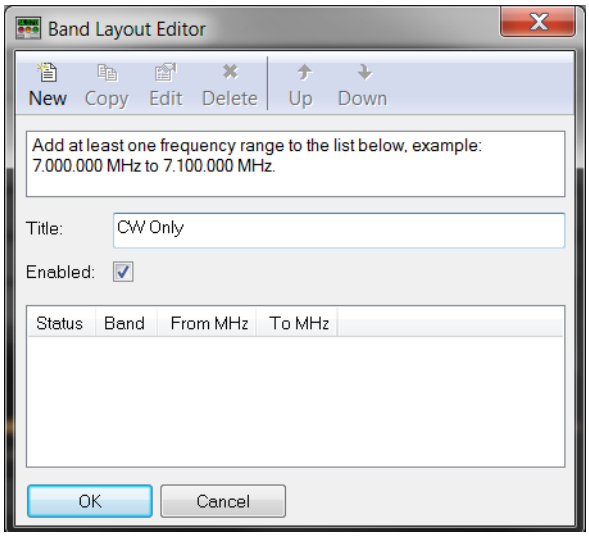
- Select Manager from the Bands menu. or
- Press C**TRL+B**.



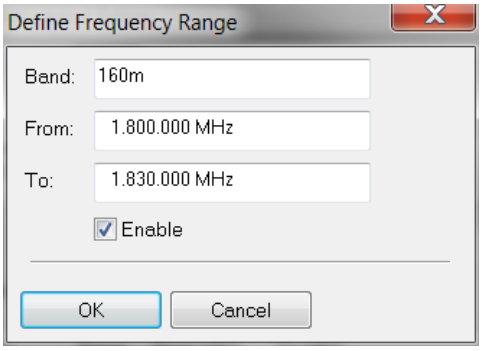
Here you see the existing definitions. In the *Edit* menu you have the expected *New*, *Copy*, *Edit* and *Delete* options.

Adding A Definition

In this example a band layout is created for our CW enthusiast. Select **New** from the *Edit* menu to create a new definition using the *Band Layout Editor*.



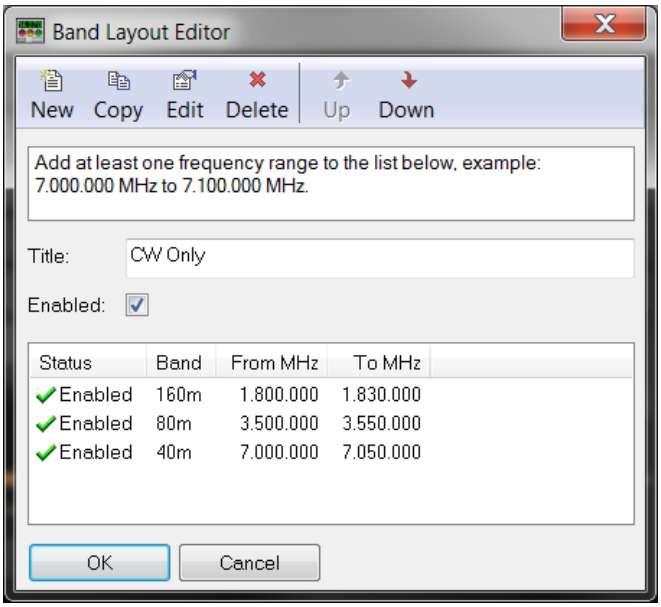
1. In the *Title* field enter **CW Only.**
2. From the *Edit* menu select **New** to define a new frequency range.
3. In the *Band* field enter **[160m]**
4. In the *From* field enter **[01.800.000]**
5. In the *To* field enter **[01.830.000]**
6. Ensure *Enable* is **checked**
7. Press **OK**

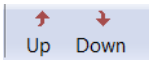


When you press OK the frequency range is added to the band layout. Repeat the steps above for 80m and 40m using the values below:

- 80m, 3.5MHz to 3.55MHz, (Remember the leading zero)
- 40m, 7.0MHz to 7.05MHz.

The band layout now looks like this:

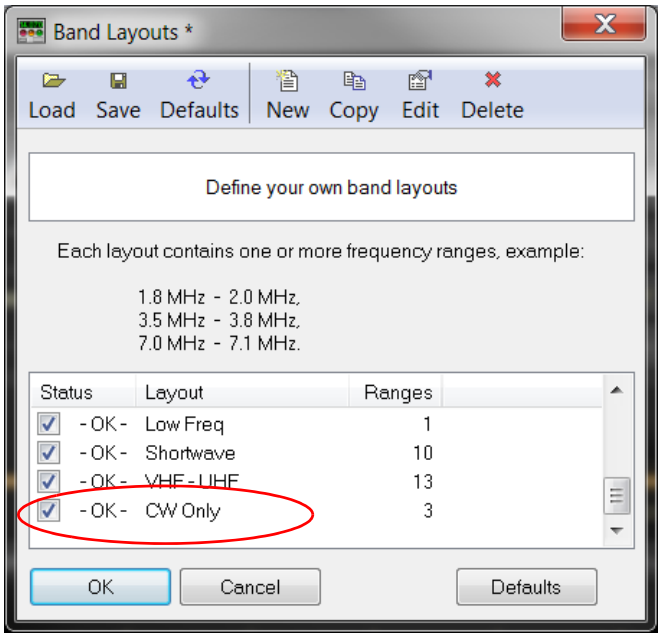




To rearrange the order of the frequency ranges just select a range and use the *Move* menu options or the *Move* buttons.

8 When you have finished your new layout press **OK**. The *CW Only* definition is added to the band layouts.

9 In the Band Layouts window press **OK** to save the definitions and close the window.



Copying A Definition

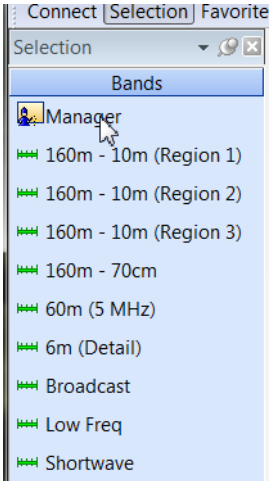
To copy an existing band layout:

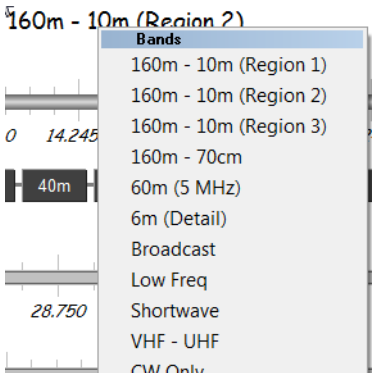
1 Start the **Manager**,
2 Select the entry to be copied,
3 Select **Copy** from the *Edit* menu,
4 Enter the new title,
5 Change the frequency ranges are appropriate,
6 Press **OK**.

Selecting

To select a band layout either:

- Open the *Bands* pane in the Selectionwindow (select *Display* from the *Bands* menu) and select an entry in the list, or
- Click on the Band Title *160m – 10m (Region 1)* in the radio display and select a new layout from the popup window.





Favorites

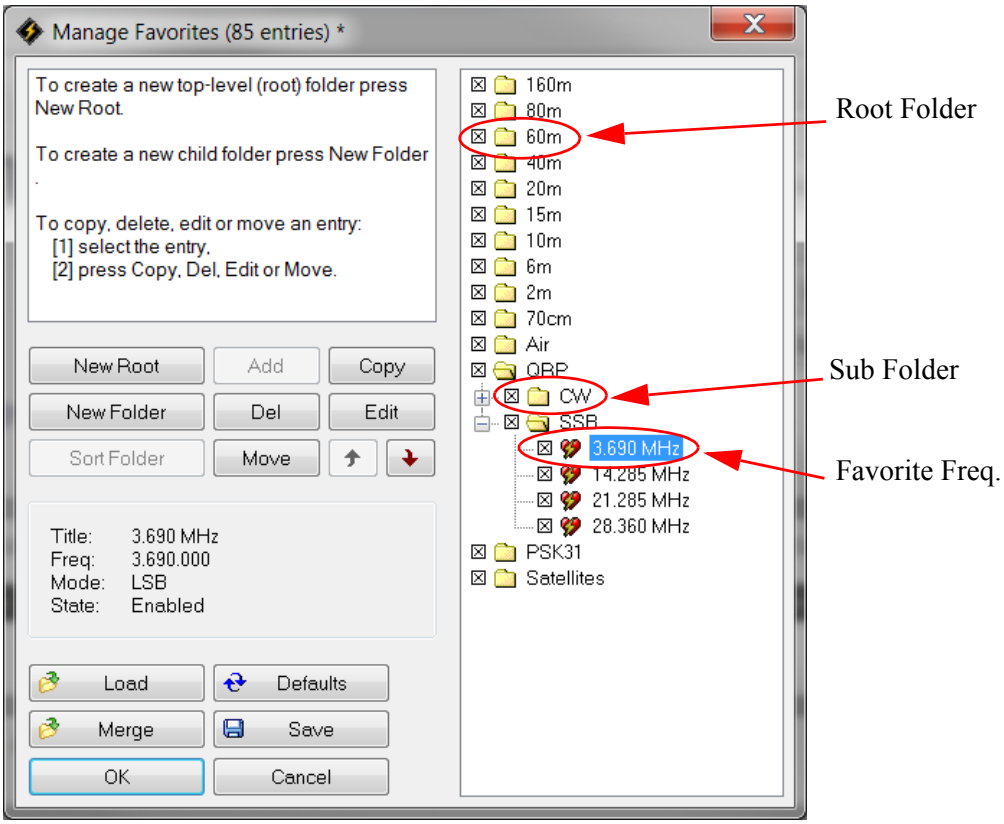
Favorites was introduced in the Getting Started chapter. We will now look at the favorites manager in detail. Favorite definitions are selected from the *Favorites* pane in the *Selection* window.

Manager

Start the manager from the Favorites menu or the Favorites pane in the Selection window. It is designed to be easy to use – let's see.

The favorites manager, as the name implies, provides a means to manage your favorite frequencies. The can be grouped in Root folders my band, mode, topic, or interest. New Root folders are created using the New Root button. Root folders can have sub folders to help further group your favorites. These sub folders are created using the New Folder button. You add your favorite frequency using the Add button.

Root folders and their associated sub folders can be turned on and off by checking or unchecking the box in front of the folder. If for example you do not have an antenna for 160m, you can uncheck the box in front of the folder and 160m will no longer be listed in the Favorites pane of the Selection window. They will still be visible, however, in the band display above the 160m band.



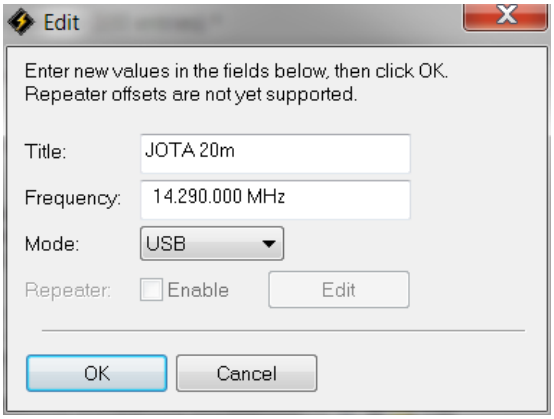
New Root – create a new top-level (root) folder. Folders are not saved if they are empty (no child folders or definitions). An example would be a Root Folder labeled JOTA for Jamboree on the Air.

New Folder – create a new folder as a child of the currently selected folder. An example would be to create a sub folder under JOTA labeled SSB or CW.

Sort Folder – sort the entries in the currently selected folder:

- By title,
- By ascending frequency, or
- By descending frequency.

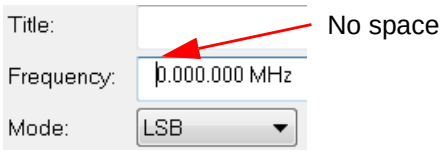
Add – add a new definition. If you have crated a new empty folder, you can not add a favorite frequency to it. You need to add the frequency to either a higher level folder or in a folder that has favorites in it. You can then move the new favorite to the new folder that you created earlier.



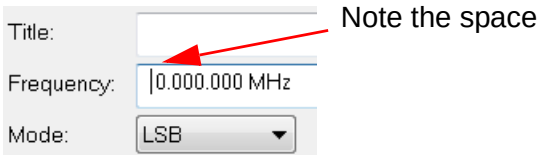
To add a new favorite frequency to an existing folder:

1 Click on the folder that you wish to add a favorite to.
2 Click on Add.
3 Enter a title for your favorite.
4 Enter the desired frequency without the decimal point.

If you are adding a frequency that starts with a single digit before the first decimal point, place your cursor immediately adjacent to the left side of the first digit.



If you are adding a frequency that starts with two digits before the first decimal point, place your cursor a bit further to the left so there is a small space between the cursor and the leading zero.



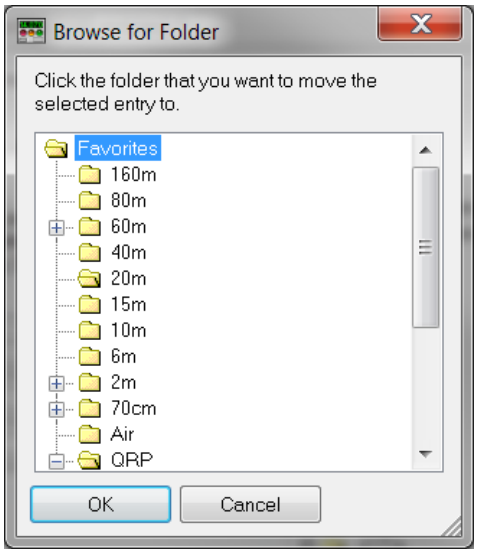
For three digits place your cursor a bit more to the left.

5 Select you operating mode.
6 Click on **OK** and your new favorite will be saved in the selected folder.

You can also select **Add** from *Favorites* in the menu bar to add a new definition.You can also use Cntrl+A keystroke combination to access the add function.

Del – delete the current folder or definition (depending on which you have selected).

Move – move an entry to another folder (alternatively drag entries between folders with your mouse).



1 Highlight the folder or definition.
2 Click on **Move**.
3 Select the new folder.
4 Click on **OK**.

Copy – make a copy of an existing definition.

Edit – edit the selected folder / definition.

Arrows – rearrange the selected folder / definition.

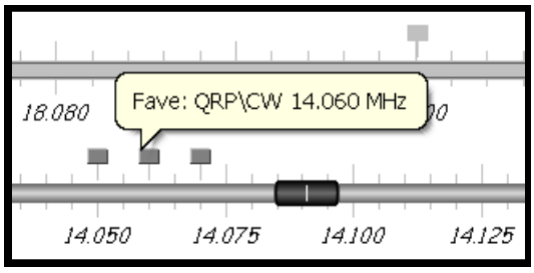
Load – load a new set of definitions from a file previously created using Ham Radio Deluxe; all current definitions are discarded.

Merge - merge definitions from a file previously created using Ham Radio Deluxe. Defaults – restore the default list (hard-coded into Ham Radio Deluxe).

Save – save current definitions to a file.

Favorites Markers

To display your favorite markers in the Ham Radio Deluxe display select *Show Markers* from the *Favorites* menu. The marker size is selected from the *Marker Size* option in the Favorites menu.



The popup text is displayed as you move the mouse pointer over a marker. The text is constructed from the favorite title and frequency.

Quick Save

Introduction

This is a simple way of marking a frequency as being interesting – you are monitoring three QSO's with a single radio and you want to quickly switch between the frequencies – for example during a 6m sporadic-E opening.

Each definition consists of the frequency in Hertz and mode; definitions are saved in the registry.

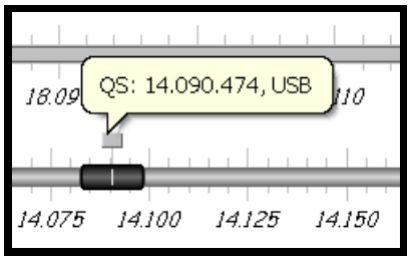
To switch between Quick Save definitions use the accelerator key combinations for the Quick Save menu options Next (Ctrl+F5) and Previous (Ctrl+F6).

Add Entry

Select **Add** from the *Quick Save* menu or just click the **Quick Save** button. An entry is added to the Quick Save pane in the Selection window.

Quick Save Markers

To display Quick Save markers in the Ham Radio Deluxe display select **Show Markers** from the *Quick Save* menu. The marker size is selected from the *Marker Size option* in the *Quick Save* menu. This only toggles the *Quick Save* markers. It does not toggle the *Favorites* markers.



The popup text is displayed as you move the mouse pointer over a marker. The text is constructed from the frequency and mode.

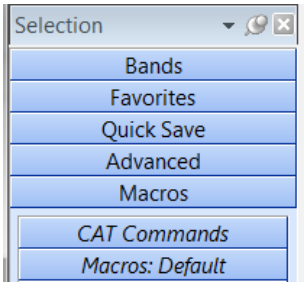
Macros

Introduction

Ham Radio Deluxe supports two types of custom definitions:

- CAT commands
- User defined macros which are a combination of standard Ham Radio Deluxe input fields

Macros are selected from the *Macros* pane in the *Selection* window.



CAT Commands

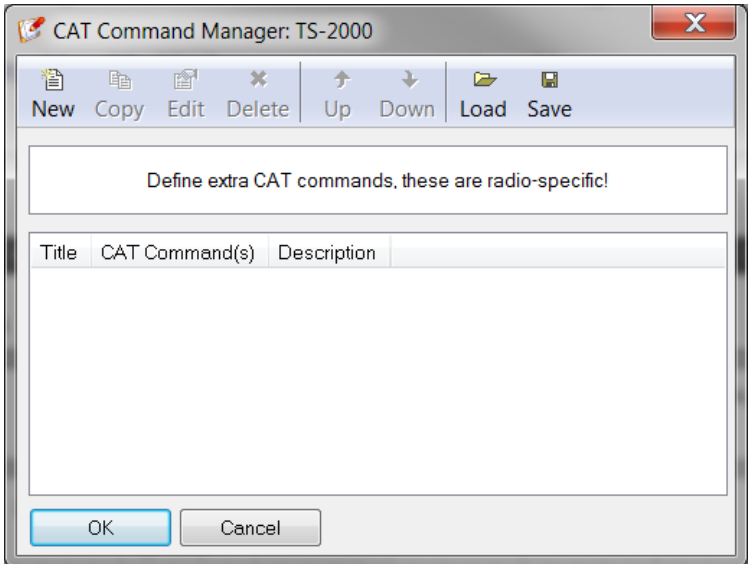
A CAT command macro is a command that you define yourself, containing one CAT commands as describer in your radio's handbook. The commands you enter must be supported by your radio.

Use CAT commands to add support not provided by the Ham Radio Deluxe interface.

Manager

To open the CAT Command macro manager do one of the following:

- Press *Manager* in the *Macros> CAT Commands* selection pane
- Select *CAT Command Manager* from the Macros menu



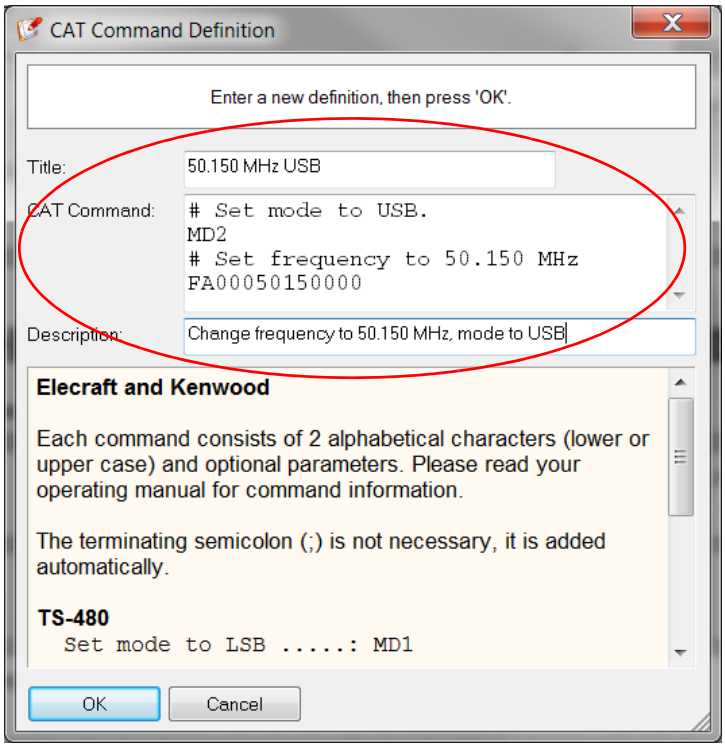
1 Press **New** to create a new command definition.
In this example a Kenwood command is defined for the TS-2000. The mode is set to USB and the frequency to 50.150 MHz.

2 In the *Title* field enter [**50.150 MHz USB]**.

3 In the *CAT Command* field enter the following commands:

```
# Set mode to USB.
MD2
# Set frequency to 50.150 MHz
FA00050150000
```

4 In the *Description* field enter **[Change frequency to 50.150 MHz, mode to USB]**.



5 Click on **OK**. The new definition is added to the list in the Manager window.

Protocols Reference

Each brand of radio has a slightly different protocol for their CAT commands. Below is are examples of the differences. For complete information, please refer to the operating manual for your radio.

ELECRAFT AND KENWOOD

Each command consists of two alphabetical characters (lower or upper case) and optional parameters.

The terminating semicolon (;) is not necessary, it is added automatically.

TS-480, TS-2000

```
Set mode to LSB .....: MD1
Set mode to USB .....: MD2
Set AF gain to 0 ....: AG0000
Set AF gain to 100 ..: AG0100
Select VFO-B ........: FT1
```

You can define more than one command; to do this start each command on a new line.

Special Commands

```
Comment ..........: # Some interesting text.
Pause of 250 ms ..: @ 250
```

ICOM

ICOM radios use the CI-V format to communicate with the radio. Please read your operating manual for command information.

Each entry defined here consists of:

- [1] command,
- [2] optional sub-command and
- [3] optional data.

You must add a - between each byte (each byte is two hexadecimal characters).

IC-7800

```
Set mode to LSB ..........: 06-00
Set mode to USB ..........: 06-01
Set AF to 0 ..............: 14-01-00
Select preamp 2 ..........: 16-02-02
MOD I/P (data off) MIC ...: 1A-05-00-31-00
MOD I/P (data off) SPDIF .: 1A-05-00-31-07
```

You can define more than one command; to do this start each command on a new line.

Special Commands

```
Comment ..........: # Some interesting text.
Pause of 250 ms ..: @ 250
```

TEN-TEC

In general Ten-Tec commands are two character commands followed by data and a carriage return <cr> or <0x0d>. Do NOT add the carriage return - this is added automatically.

Some data must be sent in binary format, hexadecimal is used to represent binary data. To set Split mode on for the Argonaut the documented command is *O<0x01><0x0d> which is entered here as *Ox01, that is *O (Split mode) + x (switch to binary) + 01 (Split On). The carriage return <0x0d> is not added. Please read your operating manual for command information.

When you enter x the format switches to binary mode - two hexadecimal characters per byte. Only enter x once, even if entering more than one byte of data.

Argonaut

```
Set mode to LSB .....: *M2
Set mode to USB .....: *M1
Set split mode on ...: *Ox01
Set split mode off ..: *Ox00
```

Jupiter

```
Set mode to LSB .....: *M2
Set mode to USB .....: *M1
Set AF gain to 32 ...: *Ux20
Set filter to 450Hz .: *Wx1D
```

You can define more than one command; to do this start each command on a new line.

Special Commands

```
Comment ..........: # Some interesting text.
Pause of 250 ms ..: @ 250
```

YAESU

Starting with the FTDX-9000 Yaesu has changed the CAT protocol to one very similar to that used by Kenwood. So if you are fortunate enough to have the FTDX-9000 please use the Kenwood commands – See “*ELECRAFT AND KENWOOD” on page 61*.

Each Yaesu command consists of five bytes. The bytes are defined in the order in which they are sent to the radio. You must add a - between each byte.

Each command consists of four bytes of data and an OpCode. The order in which P1-P4 are shown in your operating manual does not matter here - there are difference between Yaesu radios, just remember that the bytes are defined in the order in which they are sent to the radio.

FT-817

```
Set mode to LSB ..: 00-00-00-00-07
Set mode to USB ..: 01-00-00-00-07
Split on .........: 00-00-00-00-02
```

FT-1000MP

```
Set mode to LSB ..: 00-00-00-00-0C
Set mode to USB ..: 00-00-00-01-0C
Split on .........: 00-00-00-01-01
```

You can define more than one command; to do this start each command on a new line.

Special Commands

```
Comment ..........: # Some interesting text.
Pause of 250 ms ..: @ 250
```

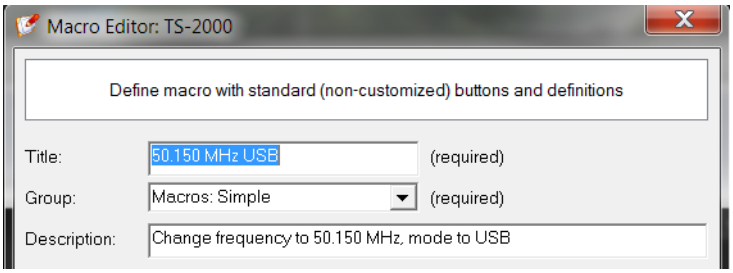
User Defined Macros

User created macros are combinations of fields on the Ham Radio Deluxe radio display. Users of Microsoft Office will be familiar with the concept supported here. When you start out you will see a Macros: Default sub tab in the Selection window. This name will / can change depending on how you define your macros. You can also add more sub tabs allowing you to sort your macros in a manner convenient to your operating style. Let's do a couple of examples.

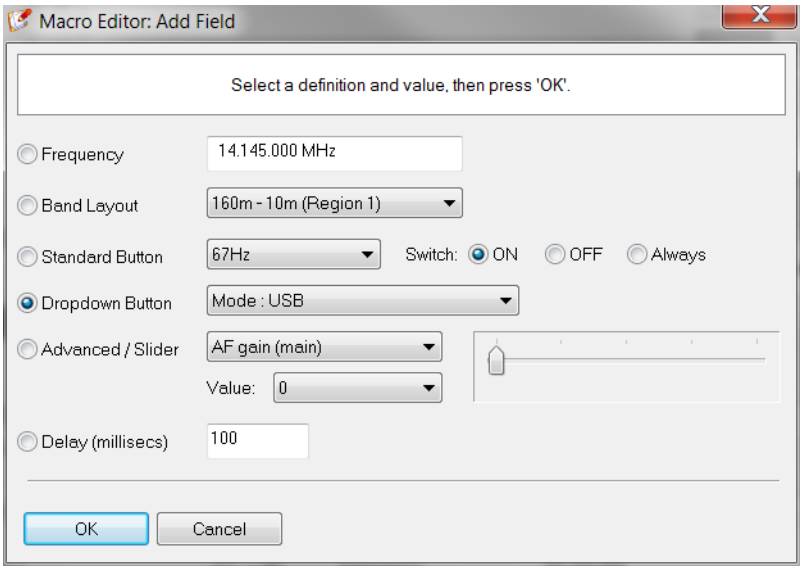
Manager

Select **Manager** from the *Macros: Default* menu, and then press **New** to create our first new macro. This macro will switch your radio to 50.150 MHz in USB.We will put it in a new sub folder called "Simple".

First we will name the macro and where it will reside. We can then set the mode to USB:



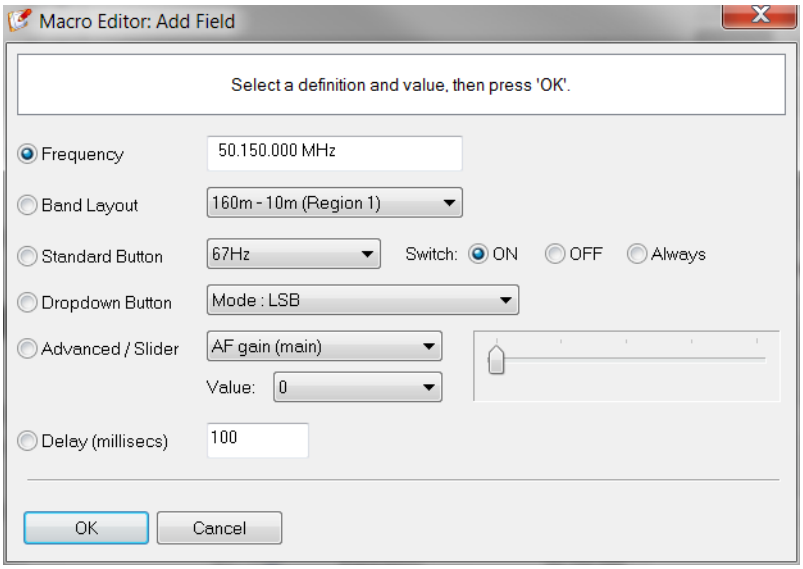
1. In the Title field enter **[50.150 MHz USB]**.
2. In the Group field enter **[Macros: Simple]**.
3. In the Description field enter **[Change frequency to 50.150 MHz, mode to USB]**.
4. Press **Add** to open the *Macro Editor.*
5. Click on **Dropdown** Button
6. Select **Mode: USB**



7. Press **OK**.

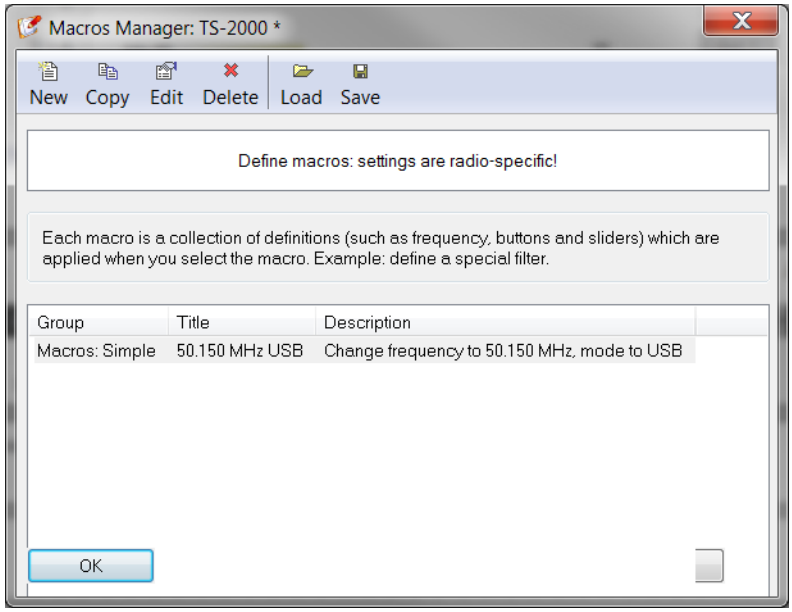
Now we need to set the frequency to 50.150.000:

8. Press **Add** again to open *Macro Editor*
9. Click on **Frequency** button
10. Enter **[50.150.000 MHz].**

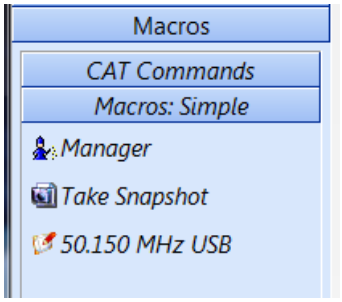


11 Press **OK**. Your definition now contains two entries:

12 Press **Save**, this returns you to the Macros Manager.



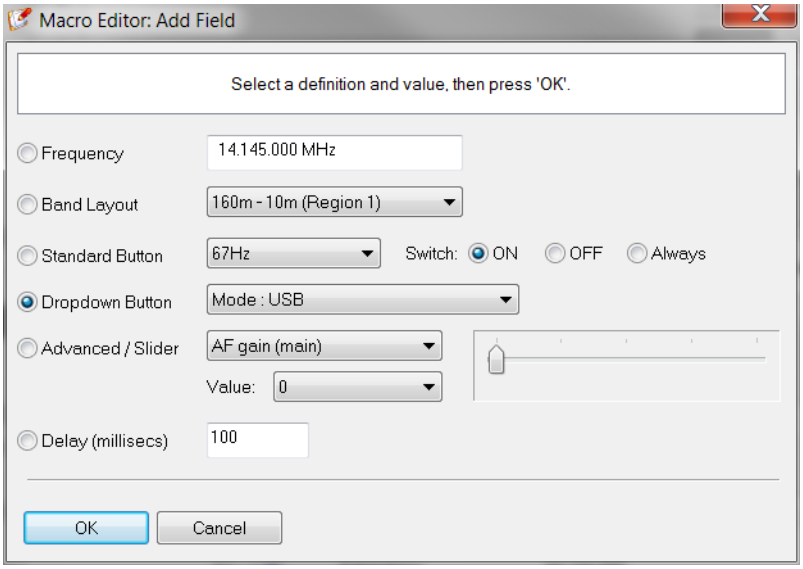
13 Press **OK**. The window closes.



Another Example

This macro will switch your radio to 14.070 MHz in USB.We will put it in a new sub folder called “PSK”.

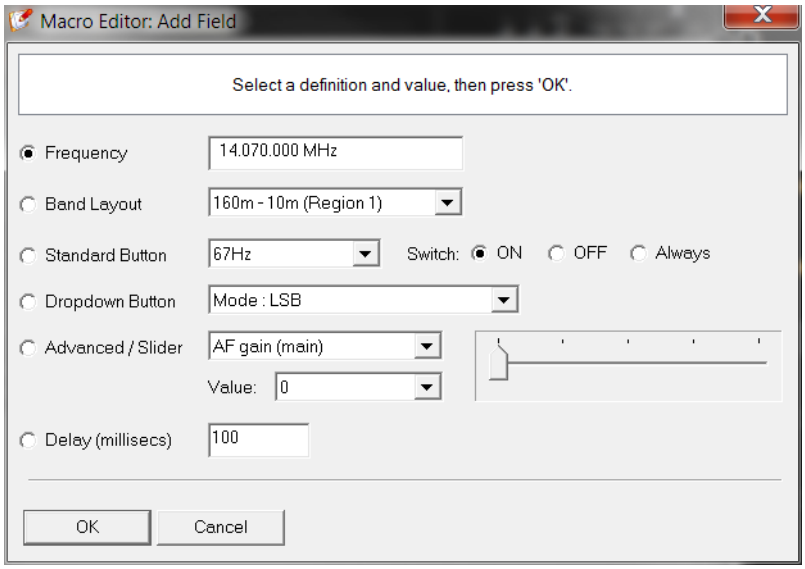
1 Reopen the Macro Manager which now can be found in the Macro: Simple sub-folder.
2 In the Title field enter **[20M PSK]**.
3 In the Group field enter **[Macros: PSK]**.
4 In the Description field enter **[Tune radio to 20M PSK]**.
5 Press **Add** to open the *Macro Editor*.
6 Click on **Dropdown** Button
7 Select **Mode: USB**



8 Press **OK**.

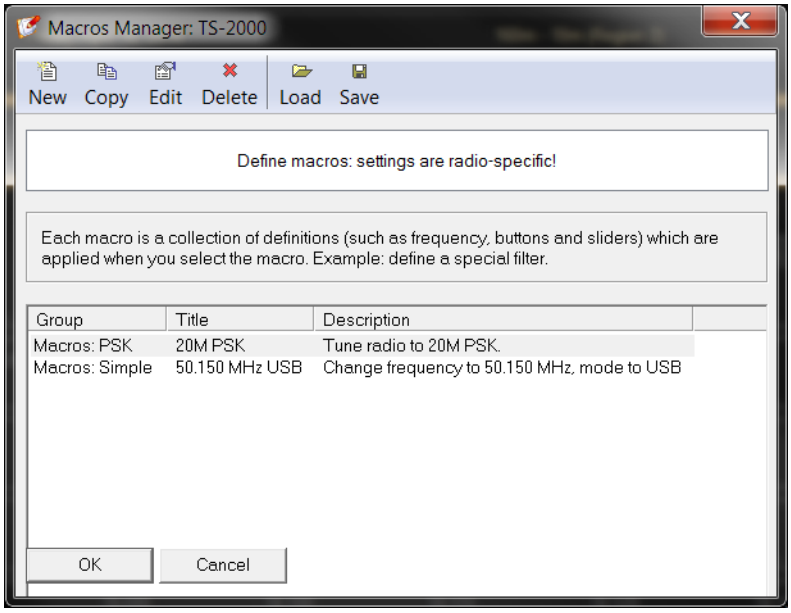
Now we need to set the frequency to 14.070.000:

9 Press **Add** again to open *Macro Editor*
10 Click on **Frequency** button
11 Enter **[14.070.000 MHz].**



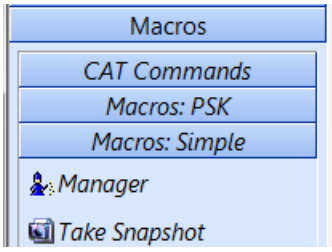
12 Press **OK**. Your definition now contains two entries:

13 Press **Save**, this returns you to the Macros Manager.



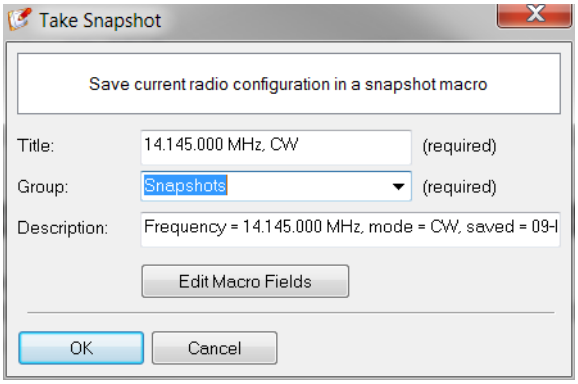
14 Press **OK**. The window closes.

You now have two sub-folders of macros displayed in the *Selection* window. You can create more to match your operating needs.

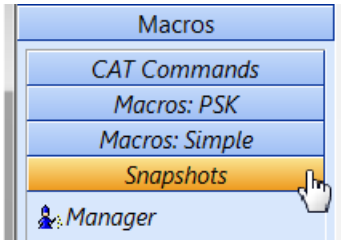


Snapshots

The snapshot button creates a definition that contains the state of all input fields. This is an easy way of preserving a known state of your radio once you have set it up exactly the way you want. You can add functions as you did previously to further enhance your snapshot.



Your snapshots will be found in their own sub-folder of macros.



4 Remote Radio Control

Remote Station Support

Introduction

A popular feature found in Ham Radio Deluxe that is not found in many other ham radio software packages is the ability to operate your station via HRD's built-in remote server software.

There are places, however, where you may not be able to operate your base system from remote. These places are, for example, your work environment where the computers you use are behind a firewall or router that are not under your direct control. Certain ports need to be available through the firewall and routers in order for you to connect remotely to your base station and these may be blocked in a corporate environment due to various reasons.Ham Radio Deluxe is evolving into a program that supports all the serial port-enabled devices that you control at your remote station.

For radio control you use the *Ham Radio Deluxe Remote Server*. For other devices such as keyers and rotators you use the *Ham Radio Deluxe Serial Port server*. Note that the *Ham Radio Deluxe Remote Server* is highly optimized for use with Ham Radio Deluxe and should be used to control the radio.

The Ham Radio Deluxe Serial Port Server enables a connection between Ham Radio Deluxe and serial port-enabled devices (keyers, rotators) connected to a remote computer that can be contacted via TCP/IP.

Note: The process of setting up these remote servers is not something an inexperienced computer user should attempt. Find a friend who makes his living setting up and maintaining computer networks. Be kind to them and reward them so they will come again and help when something stops working.

Requirements

The remote computer must be running Windows XP through Windows 8.1. Windows server software is also supported for 2003 and higher.

Technology

A Windows service is installed on the remote service. This listens on a port (usually 7805) for incoming connections from Ham Radio Deluxe (the client). For more technical information see *Ham Radio Deluxe Remote Server on page 70*

External IP Address

When setting up your remote server there is one important thing you need to take into consideration. If you plan to use the remote server and connect from within your home network, lets say between the shack and your laptop on the patio out back, there will be no problem. You will use the "localhost" or 127.0.0.1 address to connect from the remote computer to the host system.

However, if you are planning on connecting to your system via the internet from outside your home network you are going to have to know the exact internet IP

Address of the computer you are connecting to. This connection must be a full time connection.

ISPs assign a Dynamic IP Address to your computer system. For example, your dynamic IP address may be 68.74.165.227. This would be the address you would use to connect from your remote computer to your base system over the internet. The problem comes in when most ISPs change that address from time to time without you knowing it. Some change the IP address at random times, others change your IP address each time you disconnect and reconnect your modem to the internet while others change your IP address each day.

There are two solutions to this problem. The first is to contact your ISP and request a STATIC IP address for the system where the remote server is running, (your shack computer). This is usually inexpensive, around $5.00 or so a month added to your internet bill.

The second solution would be to use a service such as NO-IP, DYNDNS or any one of many such services which provide a free solution to the problem of not having a static IP address. These services monitor your IP address and track any changes while providing you with a constant connection through their DNS servers so any change in your IP address will not effect the address you use to connect to your remote system.If you are installing on a remote computer then the computer must have a static (non-changing) public IP address. If you have a public IP address which is not static then visit *http://www.no-ip.com/* and use the free IP redirection option.

Internal IP Address

There is another IP address that also requires attention if you plan to run the HRD Remote server on a computer in your shack.

If you have only one computer in your shack and it is connected directly to the internet via a modem there isn't much problem. A problem arises if you have more than one computer in your house and they each connect to the internet through a router, wireless or hard wired.

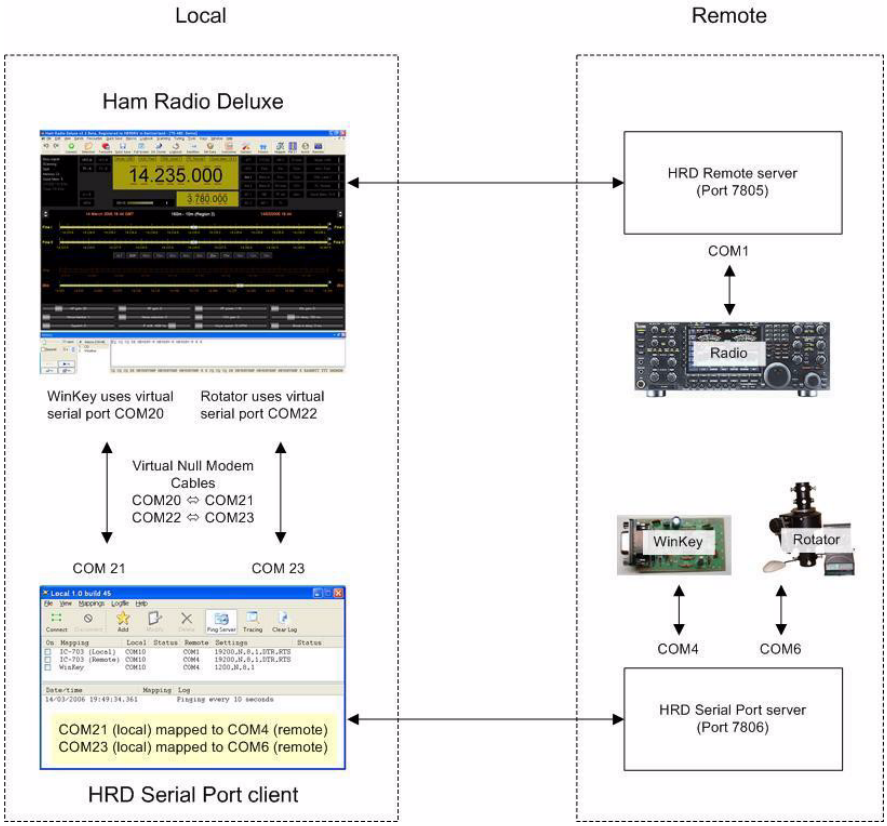
When connected to the internet via a router, each computer connected to the router has it's own INTERNAL IP Address. Just like with your Internet IP address, this internal IP address can change depending on the sequence the different computers are booted up and access the router.

It is advised you set an internal STATIC IP address for the computer running HRD's Remote Server software. You will find instructions to do this in the next section of this documentation.

Firewall

Make sure you open up ports 7805 (Ham Radio Deluxe Remote Server) and 7806 (Ham Radio Deluxe Serial Port server) for incoming TCP traffic. This will probably will need to be done on your router where your internet service enters your home. The port assignments can be changed in the configuration files.

Example



In this example the remote station uses serial ports as follows:

- COM1 --> IC-7800,
- COM4 --> WinKey keyer,
- COM6 --> AlfaSpid rotator.

Two virtual null modem “cables” are installed (pure software, no hardware involved). The vCOM driver from N8VB is highly recommended;

See *http://www.philcovington.com/SDR.html*. To install the vCOM drivers see *N8VB vCOM on page 243*.

In this example the “cables” map ports as follows:

- COM20 <-> COM21, and
- COM22 <-> COM23.

The local station connects as follows:

IC-7800

Remote port selected, TCP/IP connection made with the Ham Radio Deluxe Remote Server running on the remote computer (port 7805).

The Ham Radio Deluxe Remote Server connects to the IC-7800 using COM1.

Keyer

The Ham Radio Deluxe Winkey interface connects to the Ham Radio Deluxe Serial Port client on the local computer using the COM20 <-> COM21 virtual cable.

The Ham Radio Deluxe Serial Port client connects to the Ham Radio Deluxe Serial Port server on the remote computer using TCP/IP (port 7806).

The Ham Radio Deluxe Serial Port server connects to the K1EL WinKey using COM4.

Rotator

The Ham Radio Deluxe Rotator interface connects to the Ham Radio Deluxe Serial Port client on the local computer using the COM22 < - > COM23 virtual cable.

The Ham Radio Deluxe Serial Port client connects to the Ham Radio Deluxe Serial Port server on the remote computer using TCP/IP (port 7806).

The Ham Radio Deluxe Serial Port server connects to the AlfaSpid rotator using COM6.

Virtual Null Modem Software

The vCOM driver from N8VB is highly recommended; see *http://www.philcovington.com/SDR.html*.

This is the same as a null modem cable except it is made using software. The vCOM software supports up to 10 cables. Each cable is allocated two COM ports.

You simply connect Ham Radio Deluxe to one end and the Ham Radio Deluxe Serial Port Client to the other.

To install the vCOM drivers see *N8VB vCOM on page 243*.

Ham Radio Deluxe Remote Server

Gathering Necessary Information

It is very important to setup a static ip address, if you are going to use port forwarding. When you have port forwarding setup, your router forwards ports to an ip address that you specify. This will probably work when you initially set it up, but after restarting your computer it may get a different ip address. When this happens the ports will no longer be forwarded to your computer's ip address. So the port forwarding configuration will not work.

What is an IP Address?

IP addresses are four sets of numbers separated by periods that allow computers to identify each other. Every computer has at least one ip address, and two computers should never have the same ip address. If they do, neither of them will be able to connect to the internet.

Dynamic vs Static IPs

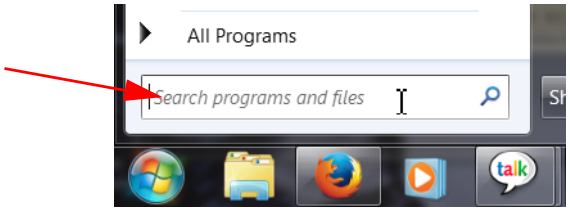
Most routers assign dynamic IP addresses by default. They do this because dynamic ip address networks require no configuration. The end user can simply plug their computer in, and their network will work. When ip addresses are assigned dynamically, the router is the one that assigns them. Every time a computer reboots it asks the router for an ip address. The router then hands it an ip address that has not already been handed out to another computer. This is important to note. When you set your computer to a static ip address, the router does not know that a computer is using that ip address. So the very same ip address may be handed to another computer later, and that will prevent both computers from connecting to the internet. So when you assign a static IP addresses, it's important to assign an IP address that will not be handed out to other computers by the

dynamic IP address server. The dynamic IP address server is generally referred to as the dhcp server.

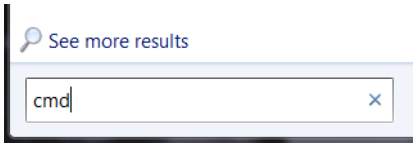
Setting Up a Static IP For Windows 7

Windows 7 and 8 set up in a similar manner. Windows XP uses a slightly different process. If you can, print out these pages of instructions as you will have difficulty viewing them online while you preform the config task.

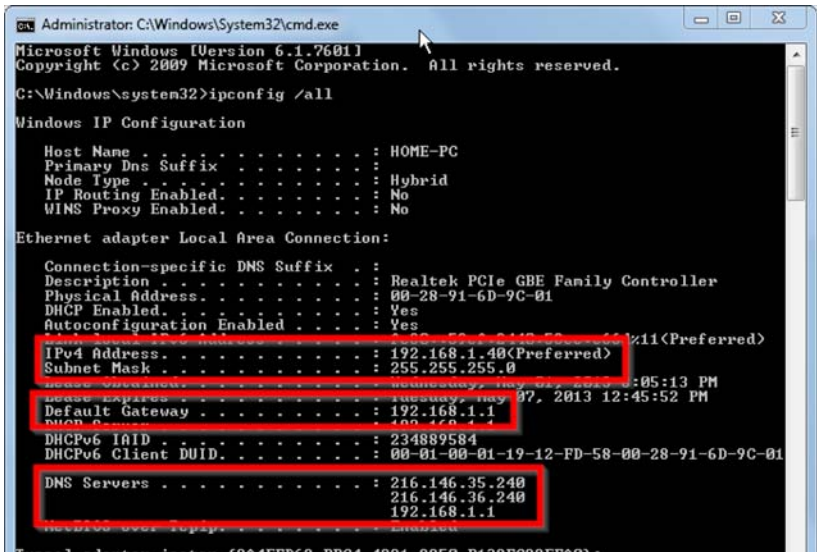
1 Open up the start menu, and look for the *Search programs and files* box.



2 Type **cmd** in the *Search programs and files* box, and press Enter on your keyboard. This will bring up a black command prompt window.



3 The command prompt may look different on your screen, but it doesn't really matter. Type **ipconfig/all** in that window, and then press the **enter** key. This will display a lot of information. If it scrolls off the top you may need to enlarge the window.



4 Record the following information:

IP address _____._____._____._____

Subnet Mask _____._____._____._____

Default Gateway _____._____._____._____

DNS Servers _____._____._____._____

_____._____._____._____

_____._____._____._____

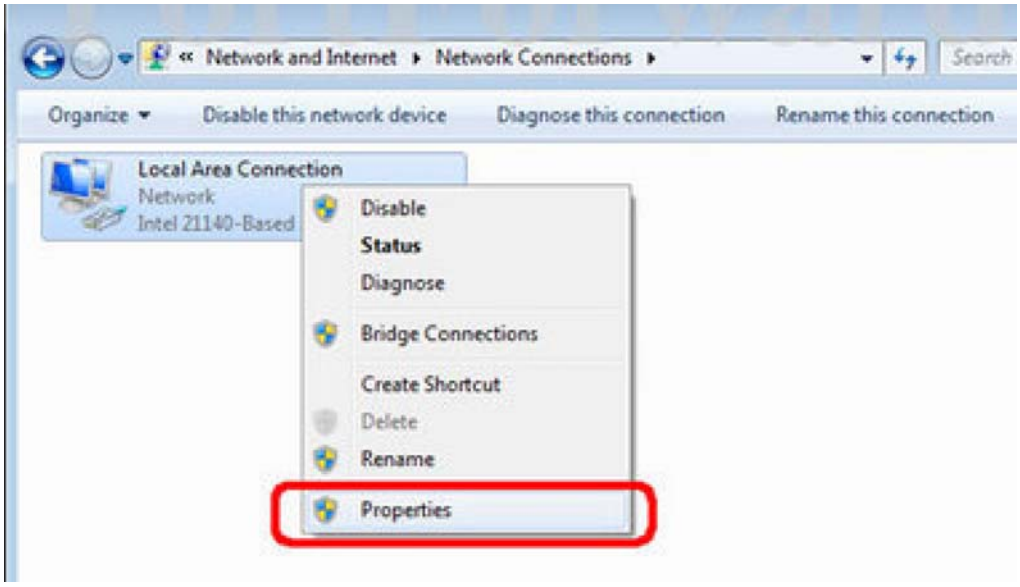
You may not have three DNS Servers. Just leave the unused blank. We are only concerned with IPv4 entries, you can ignore the IPv6 stuff.

The name server entries are a bit complicated. Name Server is just another name for DNS (domain name server). Some router's act as a proxy between the actual name servers and your computer. You will know when this is the case, because the Default Gateway will list the same ip address as the Name Servers entry.

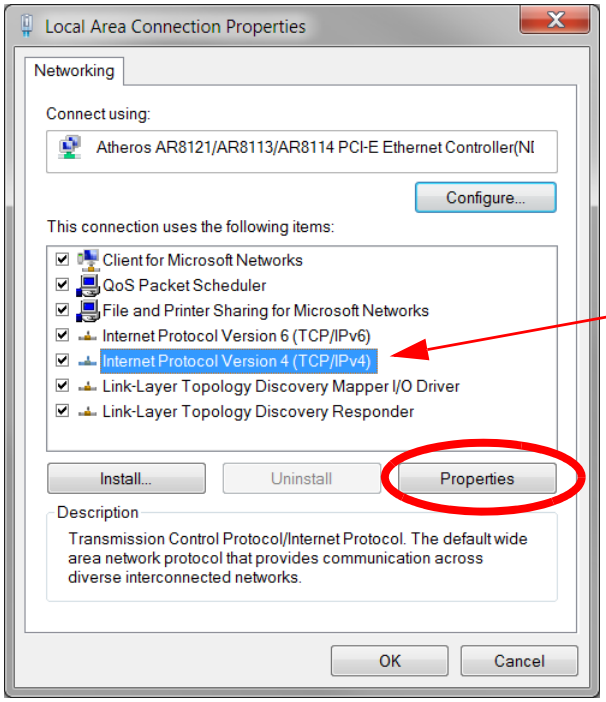
We need to have the correct Name Server IP addresses. If we do not, you will not be able to browse the web. There are a couple ways to get these. The first way is to log into your router's web interface, and look at your router's status page. On that page you should see an entry for DNS Servers, or Name Servers. Write down the ip addresses of your Name Servers.

Another way to get the correct Name Servers to use, is to give your ISP a call. They should know the ip addresses of your Name Servers right off. If they ask you why you need them, you can tell them you are trying to setup a static IP address on your computer.

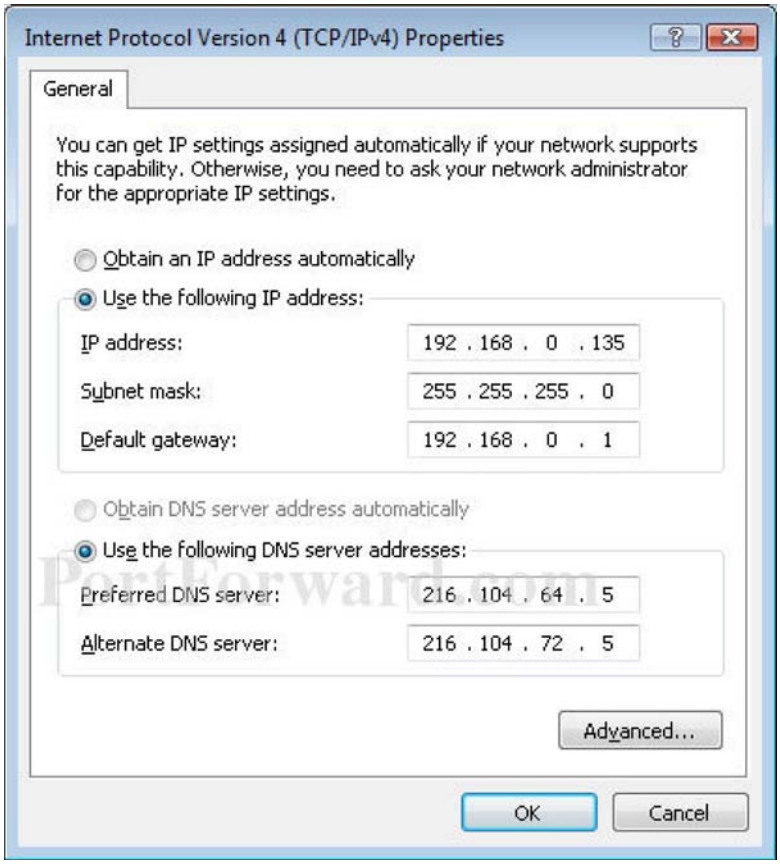
5 Type **exit** in this window, then press the **enter** key to close it.
6 Once again open the *start menu*. This time click **Control Panel**.
7 Click on **Network and Sharing Center**.
8 Single click **Change adapter settings** on the left side of your screen.
9 You might have more than one Internet connection listed here. You will need to determine which adapter is your connection to the Internet if this is the case. If you have a choice of a wired or wireless connection, choose the wired connection.
10 You can either right click or double click on your network adapter and choose **properties** to open up the properties window of this internet connection.



11 Click on **Internet Protocol Version 4(TCP/IPv4)** and then the **Properties** button.



12 You will see the following screen:



13 Before you make any changes, write down the settings that you see on this page. If something goes wrong you can always change the settings back to what they were! You should see a dot in the **Obtain an IP address automatically** box. If you do not, your connection is already setup for a static ip. Just close all these windows and you are done.

Pick an ip address and enter it into the IP Address box. The ip address you choose should be very similar to the router's ip address. Only the last number of the ip address should be different. If the router's ip address is 192.168.1.1, I might choose 192.168.1.10. The ip address you choose should end with a number between 1 and 254, and should not be the same as the router's ip address. Every device that connects to your network needs to have it's own IP address.

Put the subnet mask we previously found in the **subnet mask** section. The default gateway should go into the **Default gateway** box. Enter the DNS Servers we previously found into the two **DNS Server** boxes. Click okay all the way out of this menu.

If you find that you can not pull up web pages, the problem is most likely the DNS numbers you entered. Give your ISP a call, and they will be able to tell you which DNS servers to use.

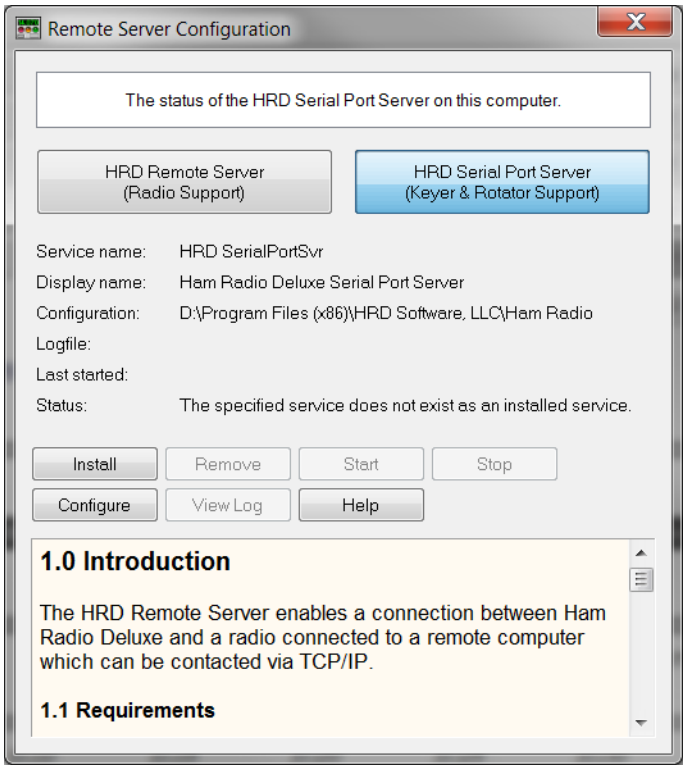
That's it you should be done! If you can't connect to the internet go back and change your configuration back to what it originally was.

Installing

The Ham Radio Deluxe Remote Server files are:

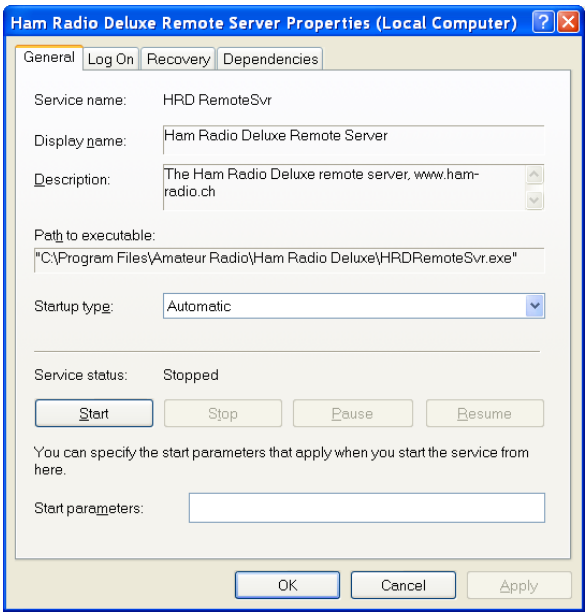
- Ham Radio DeluxeRemoteSvr.exe – the executable, and
- Ham Radio DeluxeRemoteSvr.cfg – configuration file.

To install the service select **Remote Service** from the *Tools> Programs* menu.



1. Press **Ham Radio Deluxe Remote Server** to select this server.
2. Press **Install** to install the service, and then press Start to start the service.

You can start the Windows Services applet (*Start > Settings > Control Panel > Administrative Tools > Services)* to modify the properties of the service, for example disabling automatic startup.



Firewall

Allow incoming connections on port 7805.

Configuring

Press **Configure** to edit the file that contains the service configuration. Lines needing configuration are highlighted in the configuration file below. Each user who accesses the system must have a username and password. A pound sigh (#) as the first character of a line indicates the line is a comment and the # must be removed from the line before it is recognized by the software.


```
#   Ham Radio Deluxe Remote Access Server
#   ------------------------------------
#   Copright (c) 2011-2013 HRD Software LLC
#
#   Note: Remote Server Runs on Windows XP/SP3, Windows7 and Windows 8
#
#   This file defines the configuration of the Remote Access Server.
#   The format of each entry is TOKEN = VALUE.
#
#
#   Supported tokens
#   ----------------
#   COM
#   PORT
#   USER1 to USER20
#   WELCOME
#
#
#   A comma-separated list of COM ports that are returned. If not defined then
#   the server returns a list of all COM ports available on the computer.
#
#COM = COM1,COM2,COM3,COM4
#COM = COM3
```

Config file continues on next page.

```
#
##   The TCP/IP port on which the server listens for connections. If not defined
#   then the default value of 7805 is used. Select any port number you want which
#   is not in use by other programs.
#
PORT = 7805

#
#   Username/passwords, these are case-insensitive. Spaces are removed
#   from the beginning and end of the username and password.
#
#   The format is USERx = username,password
#
USER1  = Simon,SnowTime,restart
USER2  = Peter,Uberwald
USER20 = Donald,California

#
#   Welcome text, displayed on the remote user's computer. Note that
#   \n is replaced with a newline. Enter up to 511 characters on a single line.
#
WELCOME = Welcome to the HRD Remote Access Server.\n\nPlease don't break anything!
```

The contents of this file should be obvious. After changing the configuration, save the changes and you should restart the service.

Restricting TX

One special note – to restrict a user's ability to switch the radio to transmit there are now optional tokens added with the username and password to disable access to the TX and any Tune buttons. Add **no_tx** after the password.

In addition you will want to disable macros as a knowledgeable user can define a CAT command to enable TX. Add **no_macros** after the password.

Enable Restart

The *RESTART* token enables the Restart button on the connection window. Restarting the service will close all COM ports opened by the service and drop all connections by Ham Radio Deluxe users.

This should only be allocated to yourself and your friends!

Connecting to the Remote Server

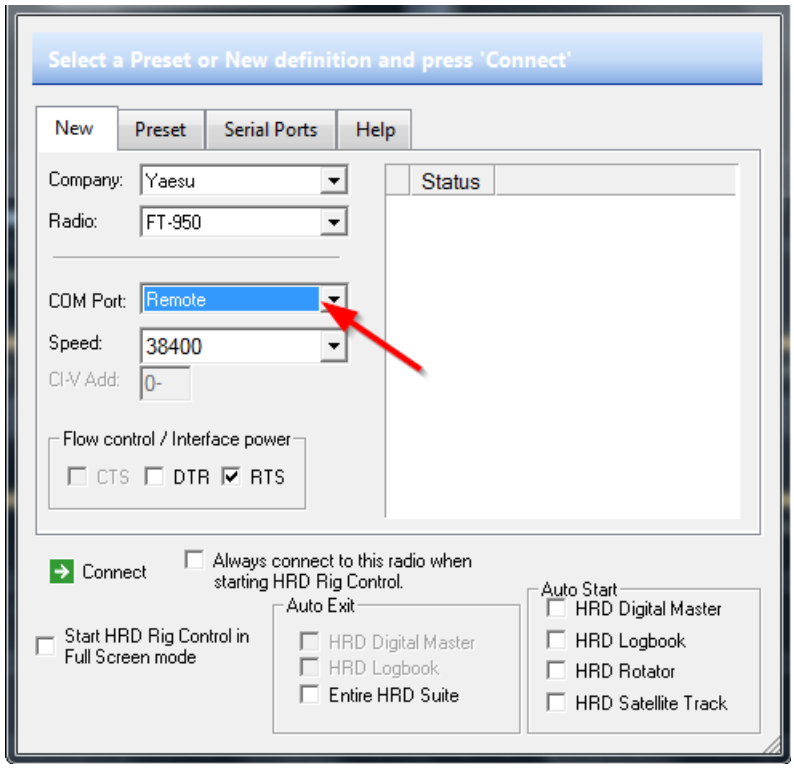
Connecting to the host computer from remote is almost like connecting to the radio while on the base computer system.

If you don't already have it done, you will need to

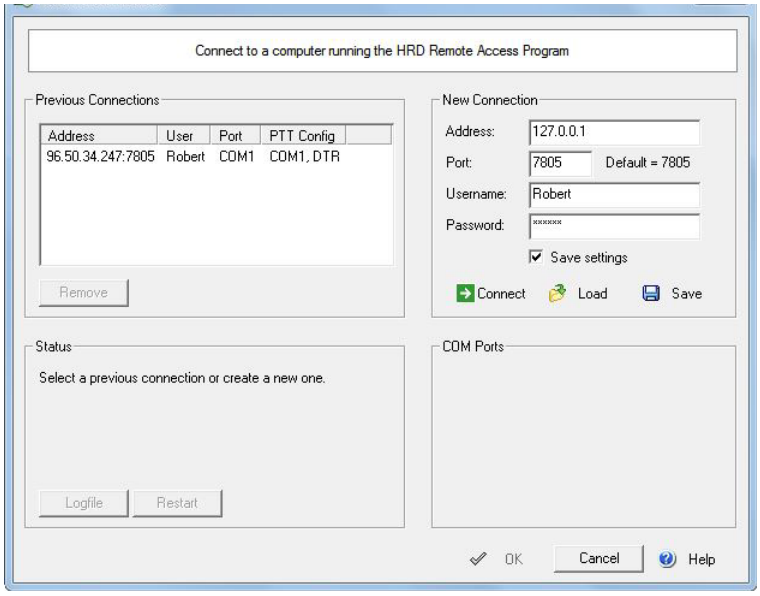
1 Install Ham Radio Deluxe, if you have not done so, on the computer you plan to use for the remote connection.

2 Once installed, run Ham Radio Deluxe.

3 When the Rig Connection screen appears, you will need to set this up EXACTLY as it appears on your HOST system, with ONE exception. Instead of entering a comport number you select REMOTE from the drop down box as indicated by the red arrow in the image below.



4 Press **Connect** and the Remote Connection window will display.



5 In the New Connection area of this window enter the IP address or the domain name of the HOST system. If you are working from inside your home through a router, enter the address of 127.0.0.1. The port is the default port of 7805.

6 Now you enter a valid user name and password that was configured in the Rig Control Configuration file. You can check the Save Settings box so next time you connect you just select the connection from the list on the left side of the display. The user name and password are not case sensitive.

7 To save these values make sure the Save settings option is checked [X].

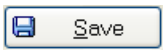
8 Press the **Connect** button. The display will change showing the Com Ports in the lower right half of the screen.

9 Select the com port from the drop down box that connects to the radio at the HOST location. You can also uncheck the box for the optional PTT com port.

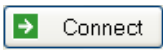
10 Press the OK button at the bottom of the window and the next screen you see should be the rig display from the remote server.

At this point if you have problems connecting to the host machine, you need to double check all your settings. Check to make sure the firewall or router are not blocking the ports required. If you are still having problems and can't find the answer, feel free to contact HRD Customer support for help.

Load connection information from a file.

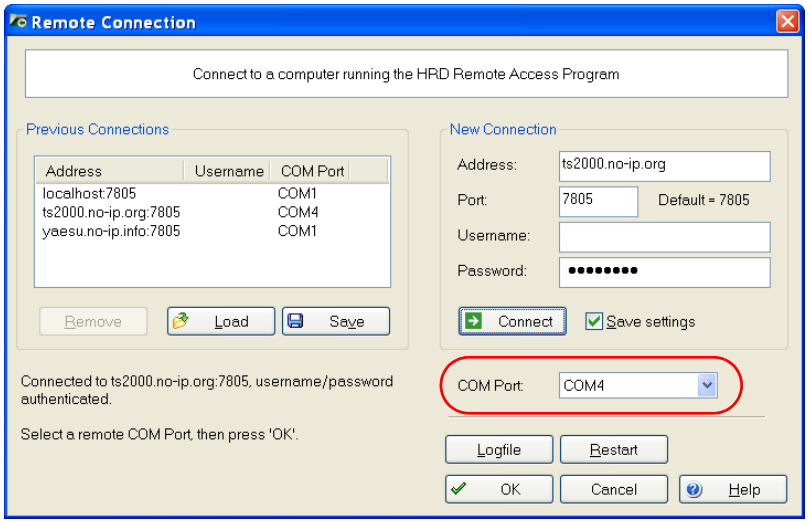


Save connection information to a file.



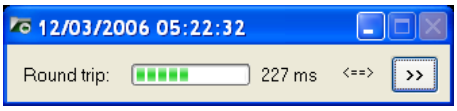
Press **Connect**.

If the connection is successful you will see the confirmation window and the text Username / password authenticated. Select a remote COM port, then press 'OK' is displayed below the Connect button.

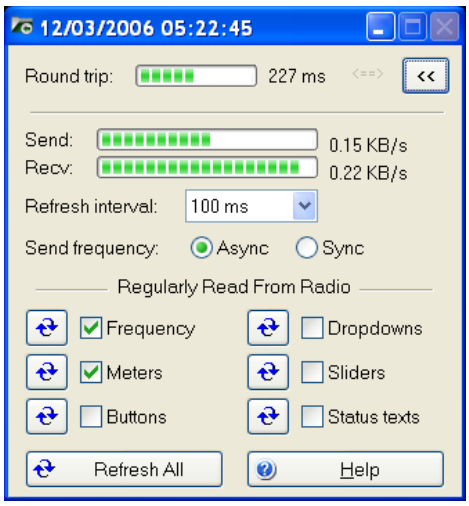


Now select the COM port, and then press OK to connect to the remote COM port and start the Ham Radio Deluxe radio display.

When the connection with the radio has been confirmed a Remote Connection display window shows you the data throughput and average round-trip time.



Remote Connection



Use the Remote Connection window to show the status of the remote connection.

- **Round-trip time:** the time required to send a message from Ham Radio Deluxe to the remote server and get a response. This will be very similar to the value shown when you use Ping to interrogate a remote host. Typically values of 50 milliseconds or less are very usable.
- **Refresh interval:** the interval between refreshes of the selected Regularly Read options.
- **Send frequency:** when the frequency is updated over a link with a high round trip time (> 100ms) the performance will be less than optimal with Sync selected so if the round trip is high select Async, otherwise just select Sync. The disadvantage of using Async is an 'elastic band' effect while tuning by dragging Ham Radio Deluxe's small tuning marker.
- **Regularly Read:** the options that are regularly updated. If you are using a fast link - for example to a local station with a low round- trip time then you can safely select all options. The disadvantage of selecting options such as Buttons, Dropdowns, Sliders and Status Texts is that it may take a second or two before Ham Radio Deluxe detects that you are changing the frequency by dragging the tuning marker and the current refresh operation cannot be interrupted.

Slow Link

If you have a slow link - a round-trip time > 100 ms - then select only Meters. As this is a remote station it is unlikely that anyone else will be adjusting the radio's controls so you will not need to refresh buttons and dropdowns as you would with a locally connected radio.

The disadvantage of not selecting Buttons and Dropdowns is that inter-button dependencies will not be shown - for example you may have 4 AGC buttons Off, Fast, Medium and Slow, only one of which will be active at any one time. If Buttons is not enabled for regular refreshes then pressing Fast will not update the other AGC buttons. In this case you must press the small refresh button to the right of the Buttons check box.

To refresh all display options click Refresh All.

Problem Solving

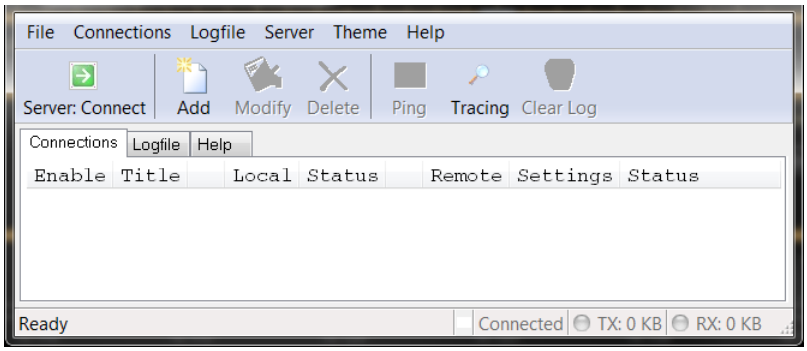
The following steps are recommended to solve problems using the remote server.

1. Run Ham Radio Deluxe on the remote computer to check that you can actually connect to your radio.
2. When you connect to the remote server make sure you have closed Ham Radio Deluxe on the remote computer. If you get the error "Access is Denied" then the COM port is held open by another program.

Ham Radio Deluxe Serial Port Client

Starting

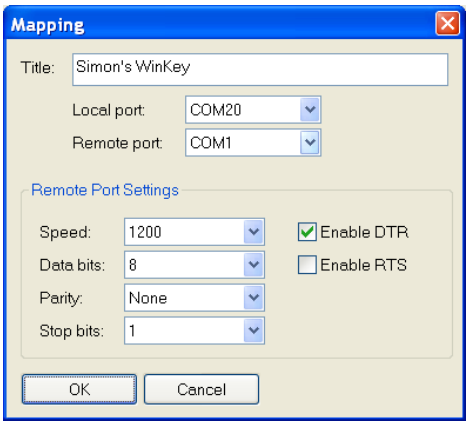
Select Port Client from the from the *Tools> Programs* menu.



You must define the serial port mappings before you connect to the serial port server running on the remote computer.

Mappings

Press **Add** to define a new mapping.



Each mapping consists of:

- Title – whatever makes sense to you. In this case we're mapping to a K1EL WinKey on Simon's remote station in the south pacific.
- The local port – one of the virtual null modem ports. Here the two ports are COM20 and COM21.
- The remote port – Simon has connected the WinKey to COM1 on the remote computer.
- Remote port settings – WinKey uses 1200,8,none,1.
- [X] Enable DTR and [_] Enable RTS – usually checked to provide power to a special powered cable or device. For Winkey you must check DTR to provide power to WinKey!

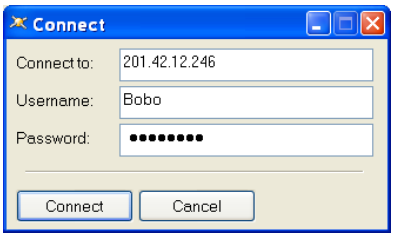
Remote Port Settings

Some useful remote port settings are:

- WinKey – 1200,8,none,1 and [X] Enable DTR.
- AlfaSpid RAS rotator – 600,8,none,1.
- AlfaSpid RAS rotator – 1200,8,none,1.
- Idiom Press rotator – 4800,8,none,1.

Connecting

Press **Connect** to connect to the serial port server on the remote computer.

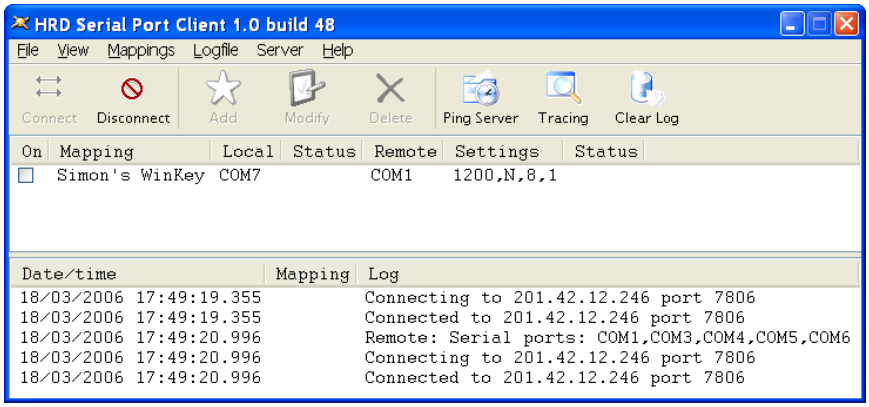


In the Connect to field enter the remote address, for example 201.42.12.246. If you are not using the default port (7806) then append a colon and the port number, for example 201.42.12.246:7808 to connect to port 7808 on 201.42.12.246.

In the Username and Password fields enter the username and password you have been given; these must also be entered in the configuration file.

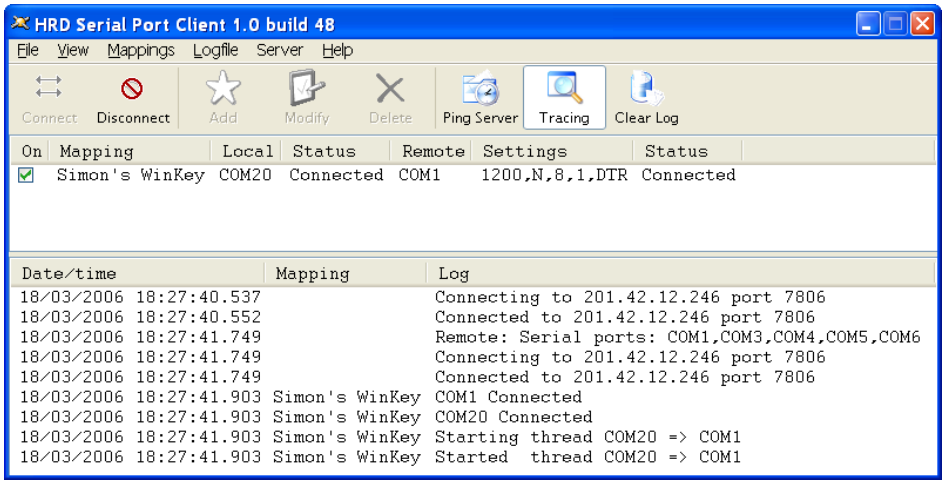
When you have finished just press Connect.

Assuming everything works correctly the client will display log information similar to that below:



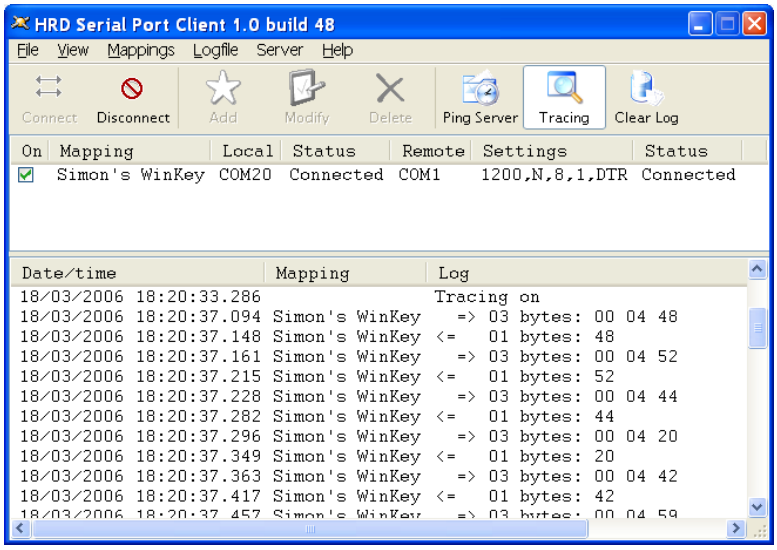
The client makes two connections; one to send data, the other to receive data. The remote server returns a list of known serial ports after the first connection is established, in this case COM1, COM3, COM4, COM5 and COM6.

Now check the Simon's WinKey mapping and you see logfile messages as the local (COM20) and remote (COM1) serial ports are opened.



Now you can connect to the remote WinKey using COM21 (the other half of the COM20 <-> COM21 virtual cable).

If you enable Tracing you see the data sent and received as the WinKey code runs through the initialization and performs an echoback test.



Congratulations – you can now use your remote WinKey.

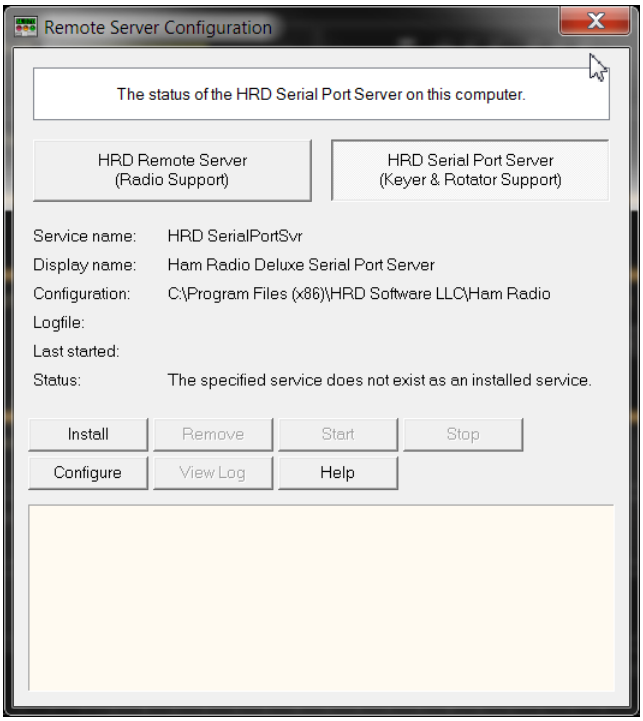
Ham Radio Deluxe Serial Port Server

Installing

The Ham Radio Deluxe Serial Port files are:

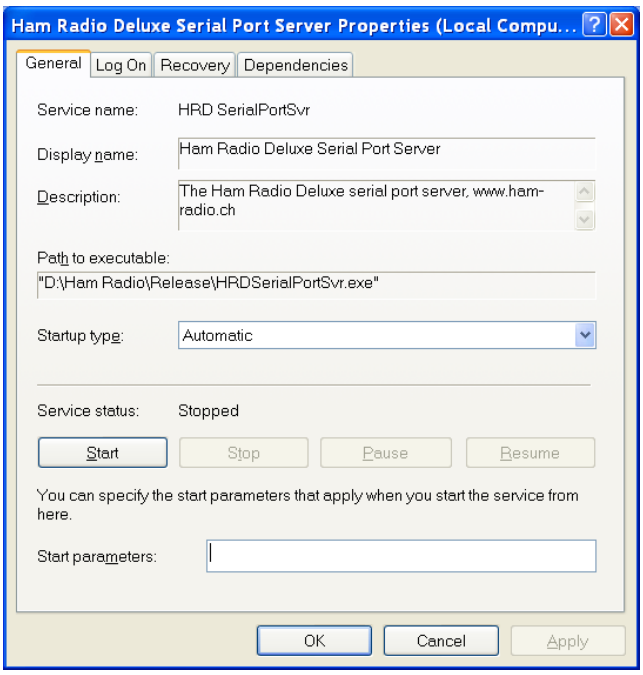
- Ham Radio DeluxeSerialPortSvr.exe – the executable, and
- Ham Radio DeluxeSerialPortSvr.cfg – configuration file.

To install the service select Remote Service from the Tools> Programs menu.



1 Press **Ham Radio Deluxe Serial Port Server** to select this server.
2 Press **Install** to install the service.
3 Press **Start** to start the service.

You can start the Windows Services applet (*Start* > *Settings* > *Control Panel* > *Administrative Tools* > *Services*) to modify the properties of the service, for example disabling automatic startup.



Firewall

Allow incoming connections on port 7806.

Configuring

Press Configure to edit *Ham Radio DeluxeSerialPortSvr.cfg* that contains the service configuration.

```
#
#   Ham Radio Deluxe Serial Port Server
#   -----------------------------------
#
#   Copyright (c) 2006 by Simon Brown, HB9DRV.
#
#   Note: this only runs on Windows NT/2K/XP. It does not run
#   on Windows 95/98/ME/SE.
#
#   This file defines the configuration of the Remote Access Server.
#   The format of each entry is TOKEN = VALUE.
#
#   Supported tokens
#   ----------------
#   COM
#   PORT
#   USER1 to USER20
#   WELCOME
#

#
#   A comma-separated list of COM ports that are returned. If not defined then
#   the server returns a list of all COM ports available on the computer.
#
#COM = COM1,COM2,COM3,COM4
#COM = COM1

#
#   The TCP/IP port on which the server listens for connections. If not defined
#   then the default value of 7806 is used. Select any port number you want which
#   is not in use by other programs.
#
PORT = 7806

#
#   Username/passwords, these are case-insensitive. Spaces are removed
#   from the beginning and end of the username and password.
#
#   The format is USERx = username,password,options where options is a
#   list of case-insensitive tokens seperated by spaces (not commas).
#
#   The supported options are:
#       RESTART
#
#   RESTART allows the user to restart the service, usually reserve this for only
#   for yourself and friends you trust!
#
USER1  = Simon,SnowTime,restart
USER2  = Peter,Uberwald
USER20 = Donald,California

#
#   Optional welcome text, displayed on the remote user's computer. Note that
#   \n is replaced with a newline. Erter up to 511 characters on a single line.
#
#   Remove this line if you do not want a welcome message.
#
WELCOME = Welcome to the HRD Serial Fort Server.\n\nPlease don't break anything!
```

Passing Audio

After the completing of the rig control portion of a remote station you will need to setup the ability to pass audio to and from the remote station. If you are only working the digital modes like PSK31 you will not need to worry about this. Cw was discussed previously in this chapter.

Skype has been a tradional method of passing audio in both directions. A great new option has been added to DM-780 in Ham Radio Deluxe Version 6.2. This new option brings us one step closer to being able to provide fully integrated audio within the Ham Radio Deluxe suite of programs for remote operation, without having to rely on 3rd party software such as skype.

HRD has added an option which allows you can operate voice communications using a standard, inexpensive computer headset.

Voice

This Option Will Not Work On All Radios!!!

This option will NOT work on some radios due to the following conditions.

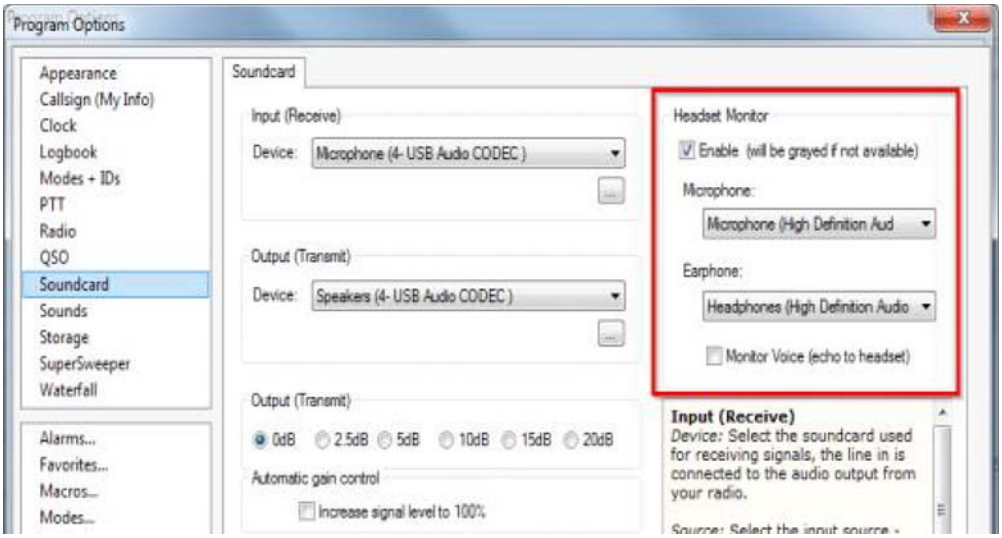
This failure to work is NOT a fault of our code but rather caused by variations in the implementation of PTT on different radios.VOX won't work on some radios, PTT won't work via rig control on some radios, there may be no audio out if an external PTT foot switch is used with a back-panel ACC connection, some radios will have to be programmed via their menus and there are a variety of other possibilities. Some radios have at least six different methods of PTT and each PTT input has it own foibles! This makes it almost impossible for Ham Radio Deluxe to cover ALL the different ways in which PTT is handled. Therefore, this option is available ONLY for those radios that can handle it, and those that can't, it's the fault of a "non-standard" implementation of the PTT function in the different manufacturer's radios.

Configuration

The Ham Radio Deluxe Voice option is easily activated from within the DM-780 module.

1 Open DM-780.

2 Click on *Program Options* and open the *sound card* dialog as indicated below.



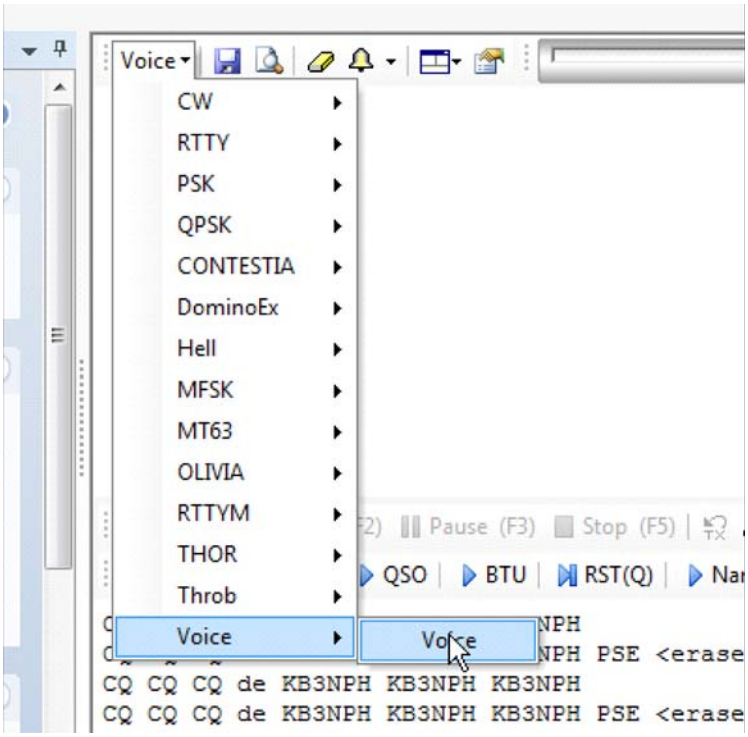
3 You will notice on the right side of the dialog a new section has been added. You will also notice the note that states the enable function will be "GRAYED OUT IF UNAVAILABLE". To activate this function, place a check-mark in the enable box.

4 Next, select the Microphone you intend to use, which is normally the default microphone for the computer sound card.

5 Next, select the Headphone, again normally the default. Once these are set your almost ready to go.

6 The next step is to select the VOICE mode from the modes listing as shown to the right.

7 Once this step is complete you will notice a change n the *Transmit* Toolbar. Instead of seeing the normal "*SEND (F4)*" you will see instead "*PTT (F4)*" This is your PTT button for the microphone. Just click the PTT button and start talking and click the "*STOP*" button to return the radio to the Receive mode.



This new function has been tested with the FT-857D using the Timewave Navigator interface. It seems to work great on Upper Side Band, however, on this particular radio, if you plan on using the function to communicate on any 2-meter FM repeaters, you MUST put the radio into the PKT mode. The reason for this is the FT-857D can only accept audio through the DATA plug on the back of the radio with the rig set to USB or PKT and not set to any other mode.

When tested with some contacts on a local repeater, I received very good audio reports using an inexpensive, $14.00 computer headset purchased from Walmart.

5 Advanced Features

Audio

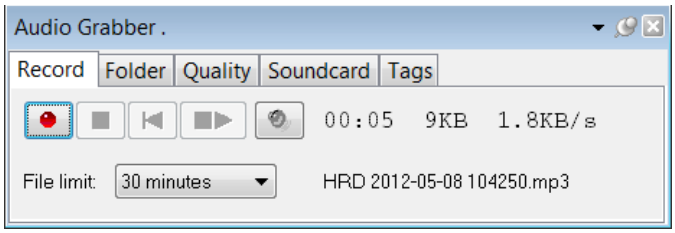
Introduction

Ham Radio Deluxe has a built-in audio grabber and audio playback. This feature requires a connection from your radio the your sound card in your computer or an external sound card interface.

Audio Grabber

The audio grabber stores incoming audio in MP3 files using the MP3 tags to store information about the radio settings (or any other information you feel to be important).
An alternative to MP3 would be Windows Media format (WMA) but the programming of WMA files is rather complex.
To display the audio grabber select **Audio Grabber** from the *Tools* menu.
By default the Audio Grabber is docked at the bottom of your Ham Radio Deluxe Screen. By grabbing the top bar o the Audio Grabber you can undock it and make it a separate window. To redock the wind grab the top bar of the Audio Grabber and start moving it into your Ham Radio Deluxe window. You will see arrows at the four edges plus four arrows in the middle of the screen. Move the Audio Grabber over the desired arrow and it will dock in that location.

Record

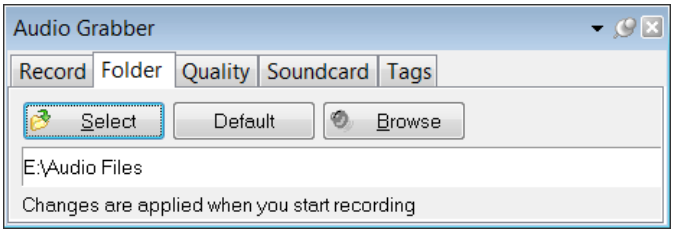


Here you have the standard recording buttons. From left to right:

- Record,
- Stop,
- Reset current recording,
- Restart (close current file first),
- Browse for MP3 files.

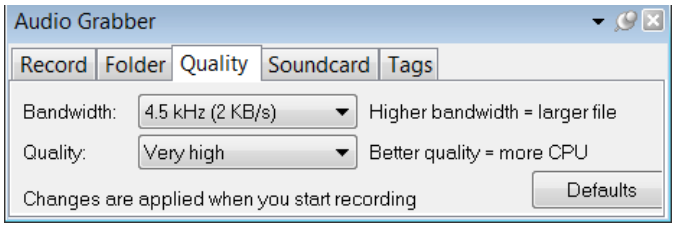
You also set a file limit – a downside of MP3 is that the tags are written at the end of the file when it is closed, so to avoid losing information in the event of an unexpected event it is best to use more, smaller files.

Folder



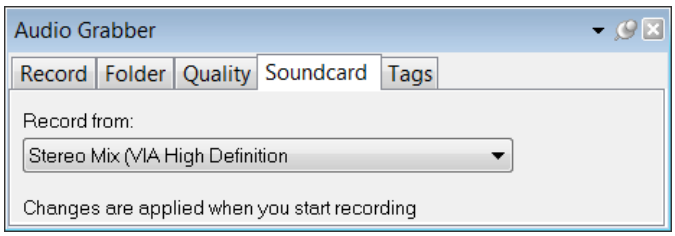
Here you select the folder where the MP3 files are stored.

Quality



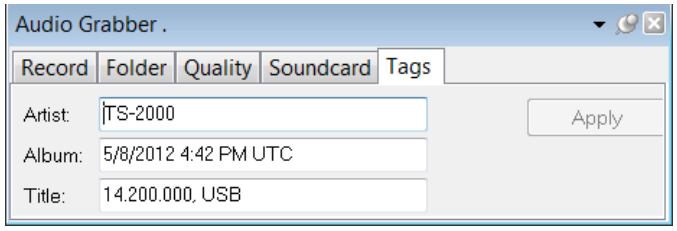
Here you select the bandwidth and quality. Modern computers have more than enough CPU power to support a very high quality. A bandwidth of 4.5 kHz is usually acceptable unless you are recording a WFM broadcast.

Soundcard



Select the soundcard that you are recording from.

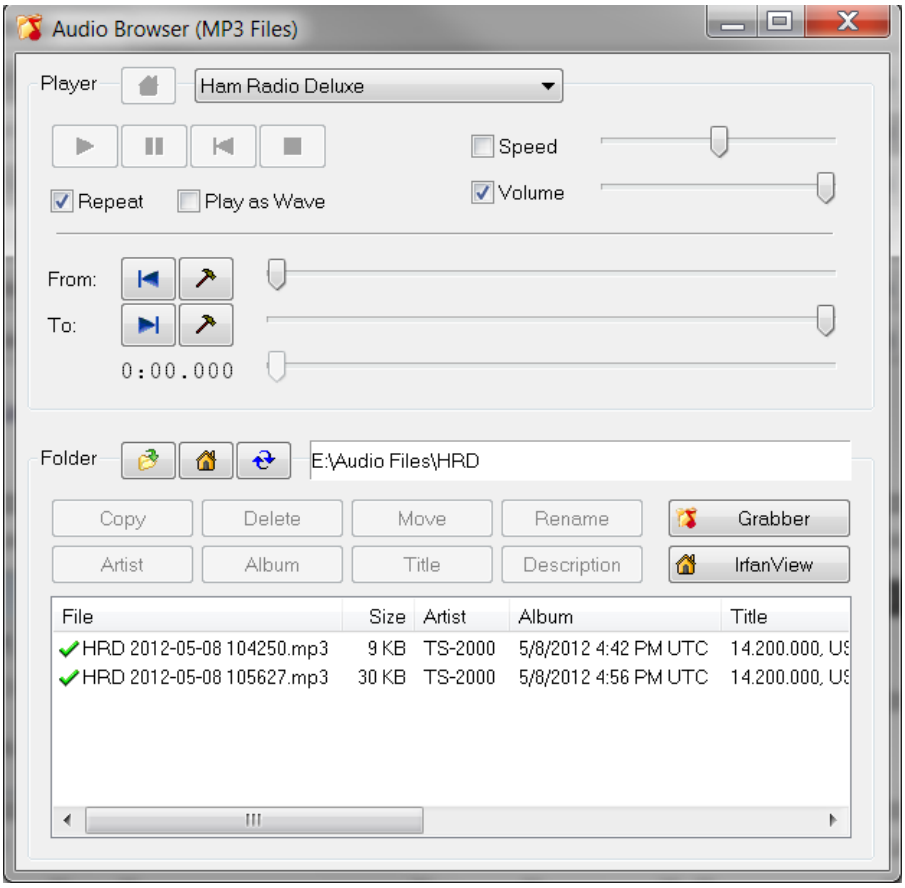
Tags



Here you see the values stored in the MP3 tags. To change the values just add the new text and then press *Apply*.

Audio Browser

Use the audio browser to playback MP3 files. To open the Audio Browser, select **Audio Browser** from the *Tools* menu. You can also start the Audio Browser by clicking on **Browser** in the *Folder* tab within *Audio Grabber*.



Peter PH1PH came across *IrfanView* – an excellent freeware utility.

MP3 Player Options

Player

Select MP3 player – a basic MP3 player is built into Ham Radio Deluxe, however you can select an alternate player such as the excellent Windows Media Player. Press Default to select the default player.

Folder

Select the folder to browse

Select default folder

Refresh the current folder

Audio File

Select a file to play from the list at the bottom of the window.

Play currently selected file

Pause

Start again

Stop

From

Start at beginning of file

Set **From** at the current position

To

To end of file

Set **To** at the current position

Use the *From* and *To* slider positions to select the part of the file to repeated over and over and over again. This is useful for determining exactly what the station was sending.

Other Options

The other options are:

- **Copy** – copy the selected files to another folder.
- **Delete** – delete the selected files.
- **Move** – move the selected files to another folder.
- **Rename** – rename the selected file.
- **Artist** / **Album** / **Title** / **Description** – change the MP3 tags.

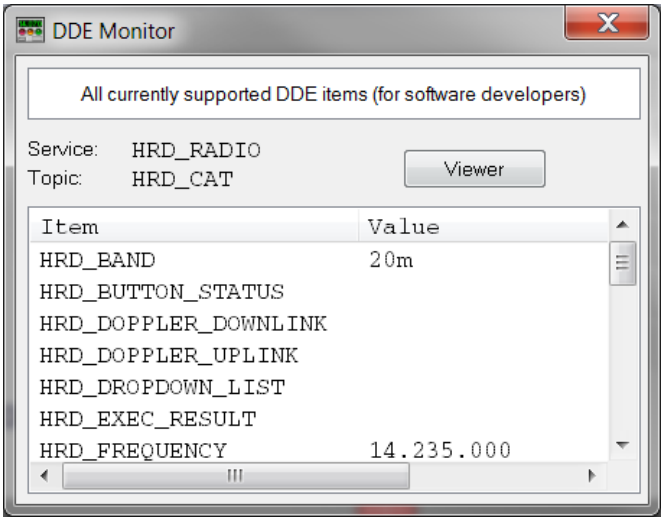
DDE Support

Introduction

Ham Radio Deluxe uses dynamic data exchange (DDE) for inter-process communication. DDE allows two or more applications running simultaneously to exchange data and commands.
For more information *See "3rd-Party Programs" on page 94.*

Available Support

Select **DDE Monitor** from the *Tools* menu to display the supported DDE items.



Commands

The commands below are supported by Ham Radio Deluxe.

Add ADIF Record

```
ADIF <data>
```

Adds a record to the logbook; the record is supplied in ADIF format. Used by PSK31 Deluxe.

Refresh

```
REFR button_status
```

Refreshes all buttons.

```
REFR dropdown_list
```

Refreshes all dropdown.

Set Button

```
BUTN button_title=value
```

Sets a button state. For normal buttons the value is either on or off.
If title starts with @ then it's a dropdown, the value must be a dropdown value.

Set Dropdown

```
DROP button _title=value
```

Selects a dropdown value.

Set Frequency

```
FREQ <hertz>
```

Sets the frequency to the value supplied in Hertz.

Set Mode

```
MODE <mode>
```

Sets the mode to the supplied value.

Top Window

```
TOPW
```

Makes the Ham Radio Deluxe the top-most window in the Z-order, in other words brings Ham Radio Deluxe to the front of your monitor.

Synchronizer

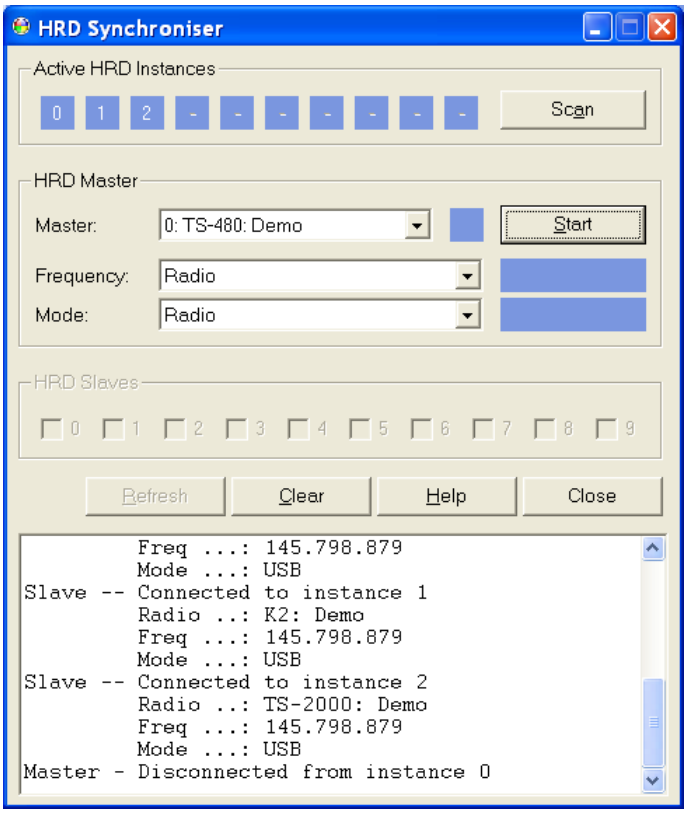
```
#
#   Ham Radio Deluxe Serial Port Server
#   -----------------------------------
#
#   Copyright (c) 2006 by Simon Brown, HB9DRV.
#
#   Note: this only runs on Windows NT/2K/XP. It does not run
#   on Windows 95/98/ME/SE.
#
#   This file defines the configuration of the Remote Access Server.
#   The format of each entry is TOKEN = VALUE.
#
#   Supported tokens
#   ----------------
#   COM
#   PORT
#   USER1 to USER20
#   WELCOME
#

#
#   A comma-separated list of COM ports that are returned. If not defined then
#   the server returns a list of all COM ports available on the computer.
#
#COM = COM1,COM2,COM3,COM4
#COM = COM1

#
#   The TCP/IP port on which the server listens for connections. If not defined
#   then the default value of 7806 is used. Select any port number you want which
#   is not in use by other programs.
#
PORT = 7806

#
#   Username/passwords, these are case-insensitive. Spaces are removed
#   from the beginning and end of the username and password.
#
#   The format is USERX = username,password,options where options is a
#   list of case-insensitive tokens seperated by spaces (not commas).
#
#   The supported options are:
#       RESTART
#
#   RESTART allows the user to restart the service, usually reserve this for only
#   for yourself and friends you trust!
#
USER1  = Simon,SnowTime,restart
USER2  = Peter,Uberwald
USER20 = Donald,California

#
#   Optional welcome text, displayed on the remote user's computer. Note that
#   \n is replaced with a newline. Erter up to 511 characters on a single line.
#
#   Remove this line if you do not want a welcome message.
#
WELCOME = Welcome to the HRD Serial Port Server.\n\nPlease don't break anything!
```

Introduction

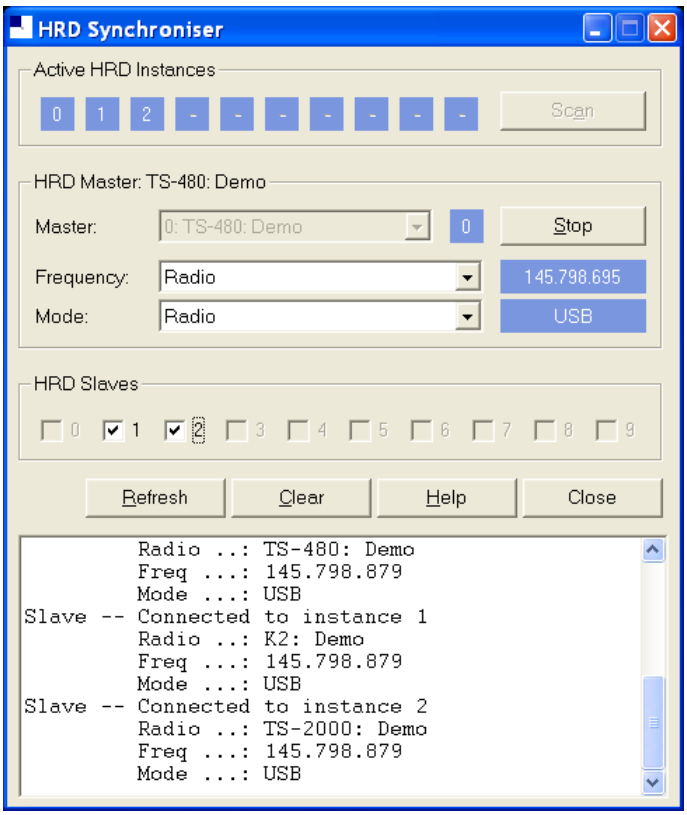
The synchronizer is used to control two or more radios where a common frequency is shared by using the Dynamic Data Exchange (DDE) mechanism. For each radio you are using you start an instance of Ham Radio Deluxe, one instance is the Master, the rest are the Slaves, the slaves receive frequency and mode information from the master.

Starting

Start the Synchroniser from the *Tools> Programs* menu, then press Scan to find the active Ham Radio Deluxe instances.



Select the master instance (supplied the frequency and mode), and then press Start.



In the Frequency and Mode dropdowns you select the corresponding source from the Ham Radio Deluxe master instance:

- Radio – as seen on the main Ham Radio Deluxe display,

- Transverter – frequency is taken from the Transverter window (selected from the Tools menu).
- Satellite uplink – the uplink frequency and mode (see *Ground Control on page 213*).
- Satellite downlink – the downlink frequency and mode (see *Ground Control on page 213*).

In the Ham Radio Deluxe Slaves group box check the instances to be controlled by the Synchroniser.
As soon as you check a slave the slave‟s frequency and mode are updated with the current values from the master; every time the master frequency and / or mode change they are sent to the slave for so long as the slave option remains checked.

Dual Radio Satellite Tracking

Refer to *Satellite Tracking on page 209*, specifically *Ground Control on page 213*.
If you are using two radios for satellite tracking (for example two FT-817 or IC-7000):

1. Start an instance of Ham Radio Deluxe for each radio; connect to the radios.
2. Select an instance to use as the master, in this example the radio used for receive.
3. In the master (receive) instance:
   - Start the display.
   - Enter transmit and receive frequency information for the satellite you are tracking.
   - Check the RX VFO, do not check a TX VFO as this instance will not be used for transmit.
4. Start the Synchroniser:
   - Master is the receive instance,
   - Slave is the transmit instance,
   - Select the Satellite uplink option for Frequency and Mode so that the slave receives the frequency and mode used for transmit as computer by the Master instance.

The slave will now be updated with the transmit frequency and mode for transmit every time it changes in the master instance.

3rd-Party Programs

Introduction

Ham Radio Deluxe supports 3rd-party programs such as logbooks via a virtual serial port. See also *DDE Support on page 90*.
An example of a virtual serial port is available from Phil Covington N8VB. His homepage is http://www.philcovington.com/SDR.html look for the N8VB vCOM Virtual Serial Ports Driver download.
To install the vCOM drivers see *N8VB vCOM on page 243*. The N8VB driver works with Windows 2000, XP and higher.
N8VB's solution creates a pair of virtual COM ports (virtual because there is no hardware associated with a virtual COM port). The ports are effectively connected back-to-back – just like a normal serial cable.
In the description that follows two ports are created during the installation, COM7 (used by Ham Radio Deluxe) and COM8 (used by the 3rd-party program).

- Ham Radio Deluxe opens and listens on COM7 port for incoming requests.
- The other program opens COM8 in exactly the same way it would connect

to a radio using a hardware serial port.

The connection parameters used by the 3rd-party program to connect with COM8 are:

- Speed – any (9600 by default but this really doesn't matter),
- Stop bits – 2,
- Parity – none.

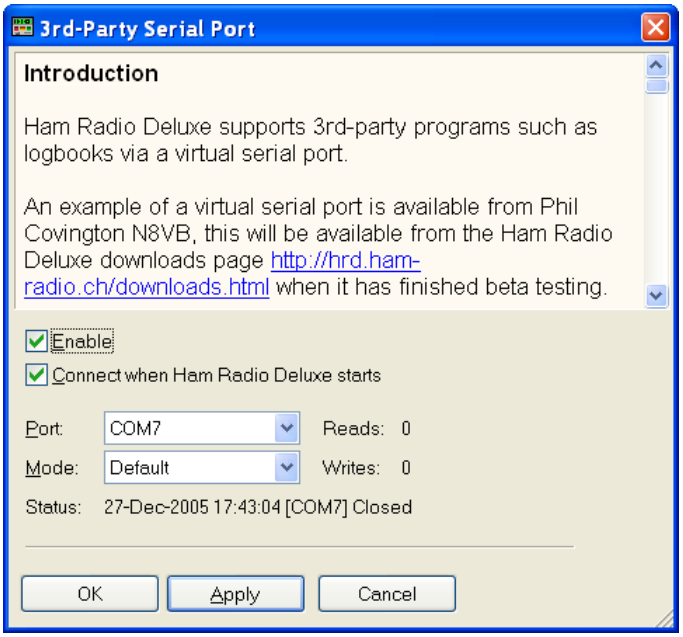
The protocol supported is Kenwood, the command set current supported is:

- FA – Get / set VFO-A.
- FB – Get / set VFO-B.
- MD – Get / set mode.
- IF – Read status, currently frequency, TX status, and mode are supported,
- SM – Read the S-Meter.

To use this option Ham Radio Deluxe must be connected to a radio, otherwise the standard Kenwood error response?; will be returned. The radio does not have to support the Kenwood protocol as Ham Radio Deluxe makes the necessary conversions.

Configuring

Select **3rd-Party Serial Port** from the *Tools* menu.



1. Enable opens the connection on the selected port – in this case COM7.
2. Check Connect to automatically open the connected everything Ham Radio Deluxe starts.
3. In the Port dropdown you select the COM port to use
4. The Mode dropdown is reserved for future use. The only option is Default.
5. Press OK

And that‟s all there is to it.

Testing

To test the connection:

1. Start *HyperTerminal* (supplied with Windows thru XP. If you are using Vista or Win7 download *TeraTerm* which is a free app and is better than HyperTerminal).
2. Connect to COM8 (the virtual serial port used by the 3rd party programs).
3. Enter FA; you will see a value such as FA00050100000; returned

(50.1 MHz).

Command Detail

FA Reads and sets the VFO A frequency in Hz

```
Set     FA<11 digit frequency>;
Read    FA;
Answer  FA<11 digit frequency>;
```

FB Reads and sets the VFO B frequency in Hz

```
Set     FB<11 digit frequency>;
Read    FB;
Answer  FB<11 digit frequency>;
```

IF Retrieves the transceiver status

```
Read    IF;
Answer  IFP1P2P3P4p5P6P7P8P9P10P11P12P13P14P15;

Where:
  P1 = 11 digits, frequency in Hz
  P2 =  5 digits, not used
  P3 =  5 digits, not used
  P4 =  1 digit, not used
  P5 =  1 digit, not used
  P6 =  1 digit, not used
  P7 =  2 digits, not used
  P8 =  1 digit, 0: RX, 1: TX
  P9 =  1 digit, see MD above
  P10 = 1 digit, not used
  P11 = 1 digit, not used
  P12 = 1 digit, not used
  P13 = 1 digit, not used
  P14 = 2 digits, not used
  P15 = 1 digit, not used
```

MD Recalls or reads the operating mode status

```
Set     MD<mode>;
Read    MD;
Answer  MD<mode>;
Where mode is one of:
  0: None
  1: LSB
  2: USB
  3: CW
  4: FM
  5: AM
  6: FSK
  7: CWR (CW Reverse)
  8: Tune
  9: FSR (FSK Reverse)
```

SM Retrieves the S-Meter value

```
Read    SM;
Answer  IF<4 digit value>;
Where the returned value range is from 0000 to 0030. Each
unit is 1/2 an S-unit. S5 is 0010, S9 is 0018.
```

Ham Radio Deluxe

Logbook

Logbook

6 Logbook

Introduction

It is time to be impressed! Ham Radio Deluxe Logbook is probably the best logbook program and it keeps getting better. As you will see later, the awards tracking capability is second to none.

Setup

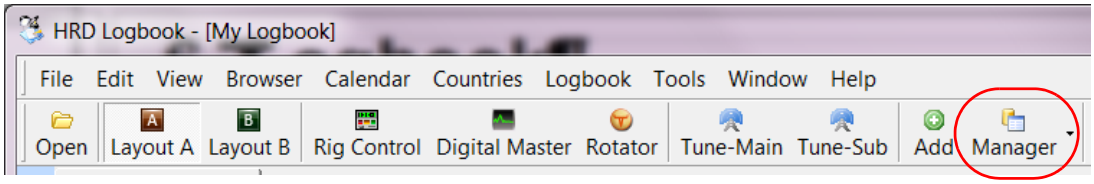
You will need to go through a few steps to configure logbook.

Database

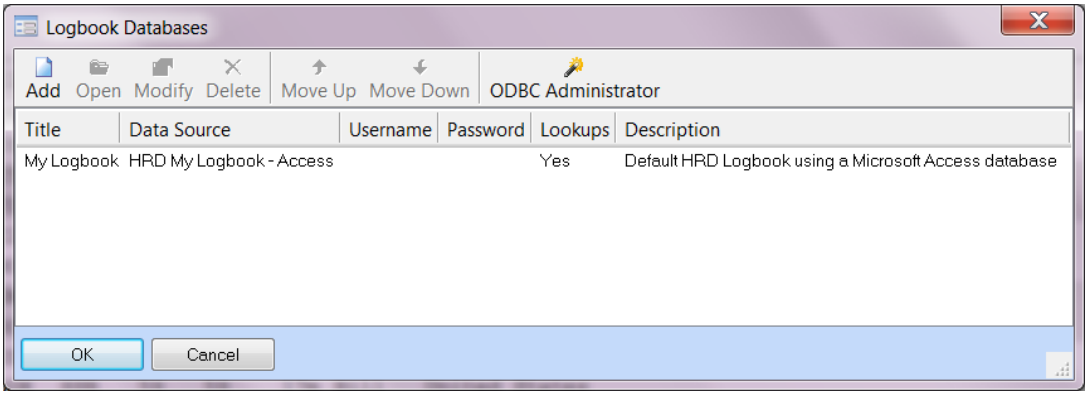
Ham Radio Deluxe Logbook is built on Microsoft Access. The driver normally used is the Microsoft Access Driver (*.mdb)ODBC driver. You do not need a license to use Access databases - the runtime DLLs are included in Windows XP or newer.

You can create and manage additional databases for use within Logbook. You can, if you desire, create a separate database for contest work or a special event. Beware that this can create issues if you are interested in awards tracking.

To manage your database(s), select **Manager** from the Toolbar.



This opens the *Logbook Databases* window.



Within this window you can add new or modify existing databases.

Other Databases

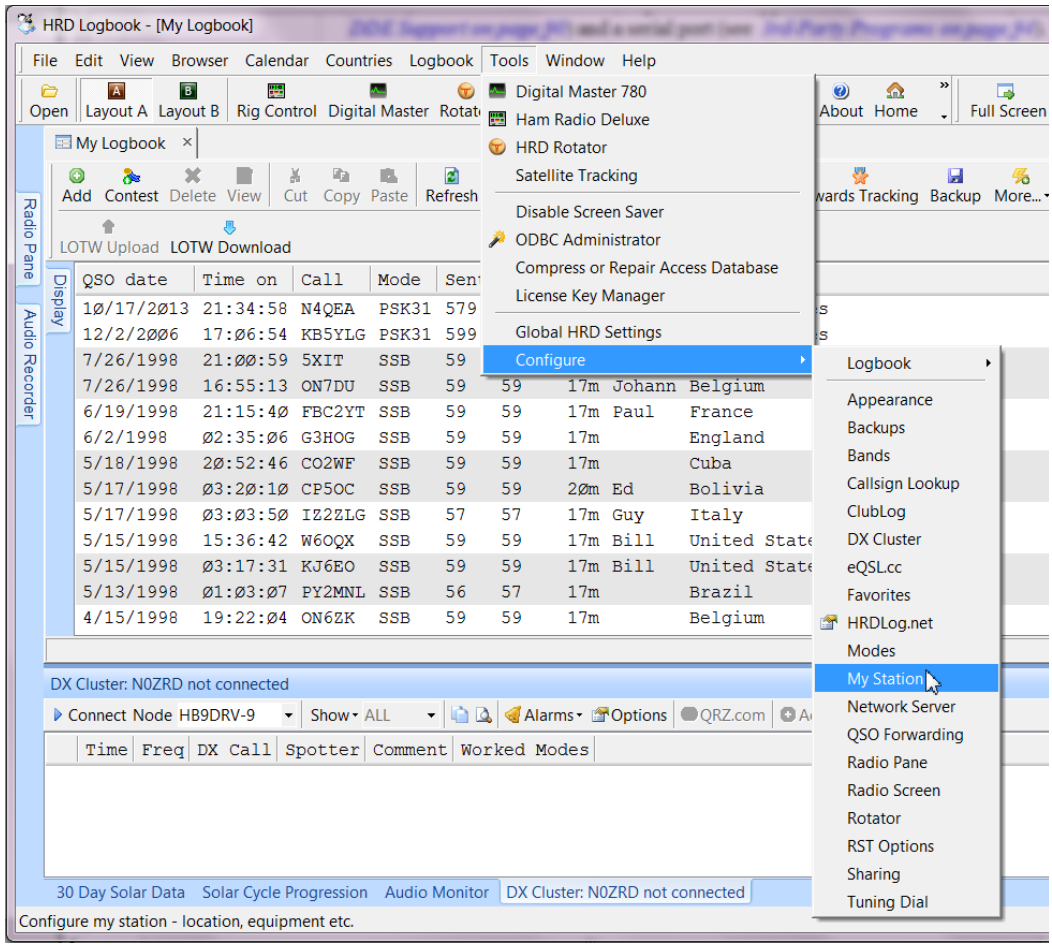
Logbook can be built on MySQL if you choose. Support for MySQL is beyond the scope of this document.

Other (non-Ham Radio Deluxe) logbooks are supported via a DDE interface (see *DDE Support on page 90*) and a serial port (see *3rd-Party Programs on page 94*). So you can use the logbook of your choice with Ham Radio Deluxe provided it supports DDE or the Kenwood protocol via a COM port.

My Station

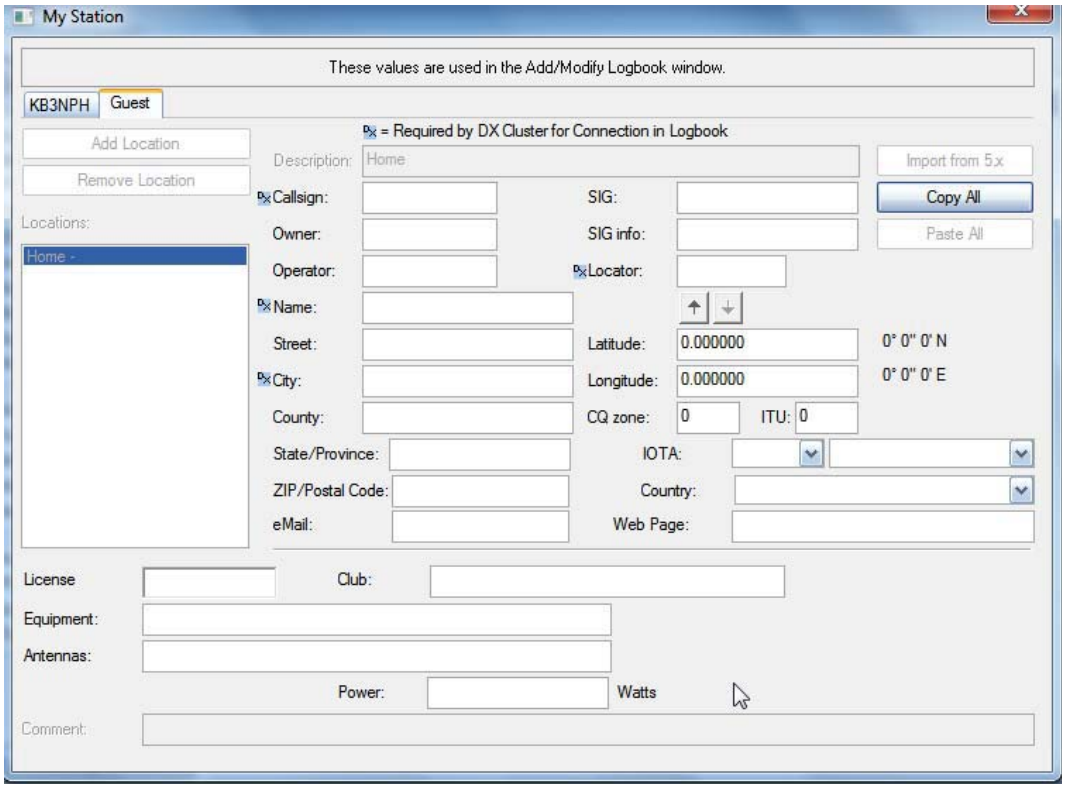
If you have not already set up the necessary information within my station you will need to do that now. This will prove to be critical later so best do it now.

1 From within Logbook select from the *Tools* menu, **Tools > Configure > My Station**.



2 Information in the *My Station* screen is used by Ham Radio Deluxe Logbook and DM-780.

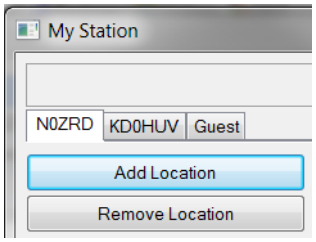
Note: If you have already set up the DM-780 portion of the suite, this screen should be populated with the required information and you can just close it out and continue with the set up.



My Station Set Up

Ham Radio Deluxe allows you to set up multiple QTH locations. This allows you to have a *Home* location as well as other locations such as a vacation home or favorite portable locations.

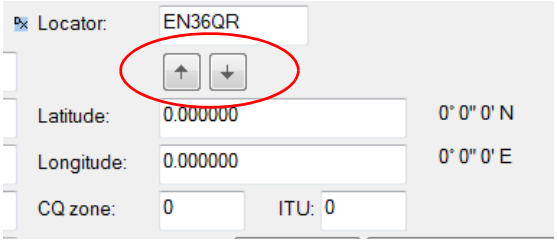
Multiple Callsigns



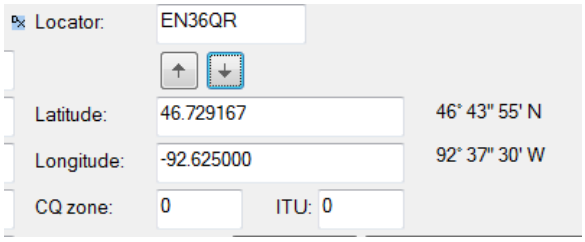
If your License Manager shows more than one callsign such as for parent and child or husband and wife, you are able to enter station set up information for each call-sign. You can also set up "Guest" accounts for club or special event stations.

If you haven't already set up the *My Station* data, in the *Description* field you see the word **HOME** for a profile of your Home QTH. This generates your main ***l****ocation*. Then go ahead and fill in all the rest of the information for this location. Please note which fields are required if you use one of the DX Clusters.

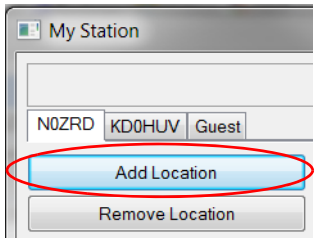
Most of the fields are self-explanatory. A couple of the fields do need a little explanation. The field SIG stands for Special Interest Group. This could be a club or any organization you belong to. The SIG Info field could be a website address for a group. You could leave these fields blank if you like.



Another spot you might need help is once you enter your **Locator**, for example EN36QR, if you hit the little arrow that points downward, that will automatically fill in your *Latitude* and *Longitude* fields.



By the same token, if you know your *Latitude* / *Longitude*, enter them and hit the upward pointing arrow to fill in your **Locator**.



If you operate from mobile or maybe have a vacation home, you can generate My Station profiles for those locations as well by clicking on the **Add Location** button. You can copy the data from the Home location to be placed in an additional location then just edit anything that is to be different for that profile. Each profile is auto-saved when you exit the screen by clicking the red **X** in the upper right corner.

Once you've completed configuring your *Tags* and *My Station*, your almost home. Just a couple more things before you can go on the air live with DM-780.

Note: This chapter is currently being totally re-written. The many new features need to be discussed in detail. Some are covered in the next two chapters. The outline below lists what is coming in this chapter. Watch the website for updates.

Setup topics

- How Logbook works
  - MS Access based or MY SQL if you dare
  - My Station setup
  - Manual data entry
  - Auto entry
- General features

- Allows you to easily store QSO info and track awards
- Integrated call sign lookup
- Adding entries from paper logs
- Interfacing with DM-780

Logbook – A Tour

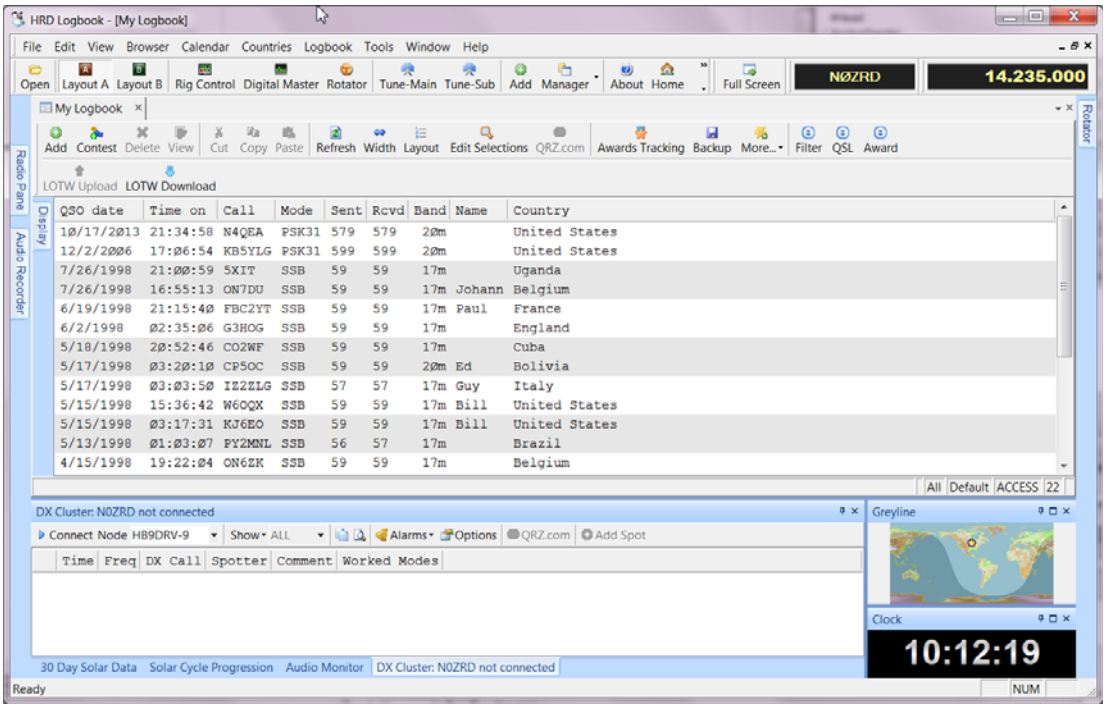
- Menus
- Toolbar
- Radio pane
- Audio monitor and recorder
- Browser
- Monitor
- Digital clock
- Favorites
- Greyline
- Logfile
- Radio Pane, Radio Screen
- Solar data
- Rig tuning (Main and Sub)

Layouts – tuning the product to your style

As you can many great improvements are forthcoming. Everything from here to the end of chapter is old and highly suspect for accuracy.

N0ZRD - The Work Wacker

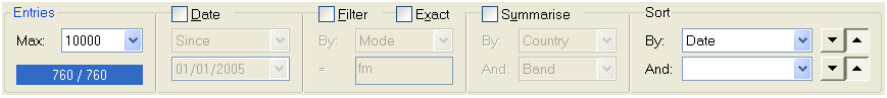
Main Display



When you start Ham Radio Deluxe a default logbook is created in the default files folder, see Files on page 84.

Options

Selection fields:



Select the entries that are displayed:

Entries – the maximum displayed in the main list. The fewer you display the faster they are loaded. The maximum you can display is 25,000 – if you have more than 25,000 entries in your database then only the first 25,000 that match the selection criteria are displayed.

Date – display entries since this date. Typically you will only display entries from the last few days.

Filter – filter by any field (except dates) – for example mode or callsign. Check Exact for an exact match.

Summarize – display the first entry that matches the selection. For example, if you select Country and Band you see the first entry for each country and band.

Sort – select the sort criteria (alternatively click the column headers).

Print the logbook (page 90). Select Print Setup from the File menu to select paper size, layout, etc. Use Print Preview first to see what it will look like.

Print preview – see what your logbook looks like before you print it. Print preview can be very CPU intensive with a large logbook (25,000 or more entries) so be prepared to wait a few seconds before it starts drawing.

Add a new entry (page 76).

Edit the currently selected entry.

Delete the selected entries.

Start the logbook analyser.

Plot selected entries using Mapper. To be plotted an entry must have a valid locator.

Reload the database and refresh the display.

Auto fit the column widths to their contents.

Define column layout.

Backup the database.

Database configuration.

Lookup station using QRZ.com.

Plot station locations using Google Earth.

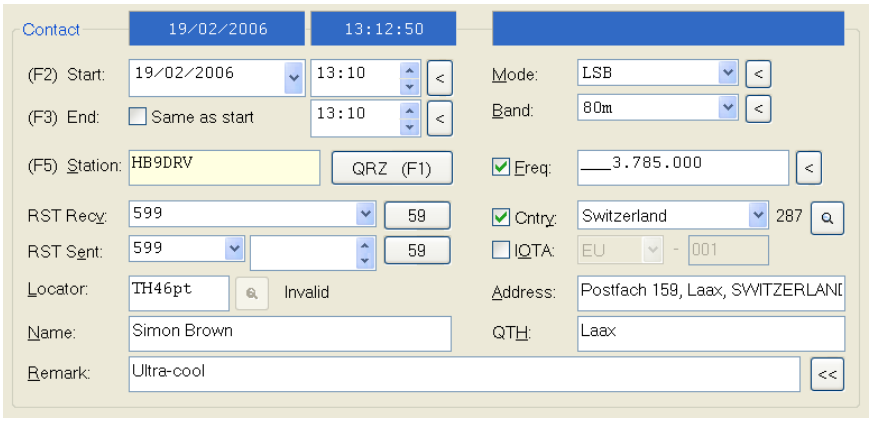
Adding An Entry

Select Add Entry from the Logbook menu. Here you see many more fields than those in a paper logbook; only a few are mandatory.

The entry window is divided into two sections: Main and Tabbed (for want of a better description).

The Main section contains the frequently used fields whereas the Tabbed section contains the less-frequently used fields.

Main



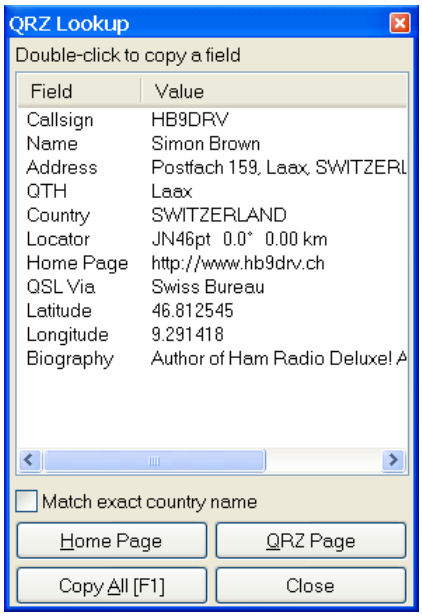
The buttons [<<] and [>>] respectively hide and show the tabbed fields, ideal for simple contest operation when you want the minimum of visual “noise”.

Field	Description
Start	The QSO start date and time. With the Options you can: • automatically set the start (and end) time to the current time when pressing the Reset button, and • Set the start time when a callsign is entered in the Station field (the time is set when the Station field loses focus).
End	The end time. The date is taken from the start date, if the end time is less than the start time then it is assumed that the QSO ends on the next day. With the Options you can: • automatically set the end (and start) time to the current time when pressing the Reset button, • set the end time when you add the QSO.
Station	The callsign of the other station.
QRZ	Press QRZ to retrieve information from QRZ.com (see below).
RST Recv	The report received from the other station. With the Options you can select the default value (if any) entered in this field when you press Reset.
RST Sent	The report sent to the other station. This field is divided into two parts: 1 the RST sent, and 2 the additional information sent, for example a serial number. With the Options you can select that the RST sent count is automatically
Locator	Maidenhead locator square. If a valid 4-character (major) or 6-character (minor) square the distance and bearing from you locator in the My Station tab is shown. Filled in by you or via a QRZ.com lookup.
Name	The other station‟s name, filled in by you or via a QRZ.com lookup.
Remark	Whatever you want; filled in by you or via a QRZ.com lookup.
Mode	The mode – if you enable the option *track radio mode* then the value here is taken from the Ham Radio Deluxe display. If this option is not enabled then pressing < loads the current Ham Radio Deluxe mode.
Band	The band – determined from the Ham Radio Deluxe frequency is the option *track radio frequency* is enabled. If this option is not enabled then pressing < loads the current Ham Radio Deluxe band.
Freq	The frequency – determined from the Ham Radio Deluxe frequency is the option *track radio frequency* is enabled. If this option is not enabled then pressing < loads the current Ham Radio Deluxe frequency. **[X] Freq:** Make sure this checkbox is checked otherwise the frequency is not added.
Cnty	Country – selected from the dropdown list or determined automatically if the option *find callsign from callsign prefix* is enabled. **[X] Cntry:** Make sure this checkbox is checked otherwise the country is not added.
IOTA	Islands on the Air - http://www.rsgbiota.org/.
Address	The address field, filled in by you or via a QRZ.com lookup.
QTH	The station location, as in „my QTH is…“. Filled in by you or via a QRZ.com lookup.

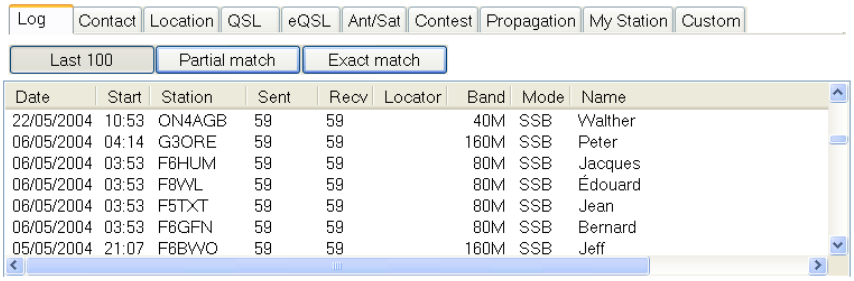
QRZ.com

An excellent Internet resource, http://www.qrz.com/ is used by Ham Radio Deluxe to find station information. The fields supported are shown below. Ham Radio Deluxe extracts information by parsing the detail field for a station, for example http://www.qrz.com/detail/HB9DRV.

In the Options window you can enable automatic QRZ lookups.

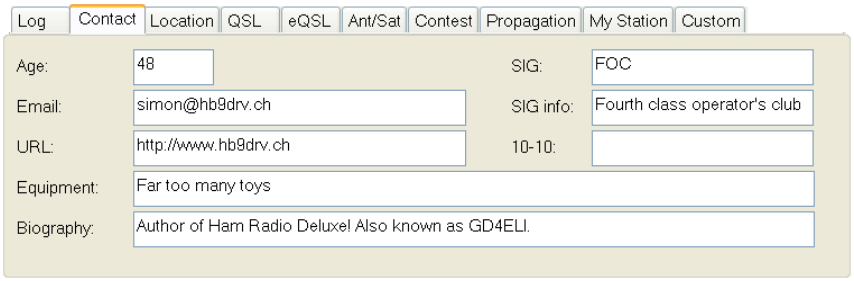


Log



Field	Description
Last 100	Shows the most recent 100 entries from the logbook.
Partial match	List the most recent 100 entries from the logbook that partially match the currently entered callsign.
Exact match	List the most recent 100 entries from the logbook that match the currently entered callsign.

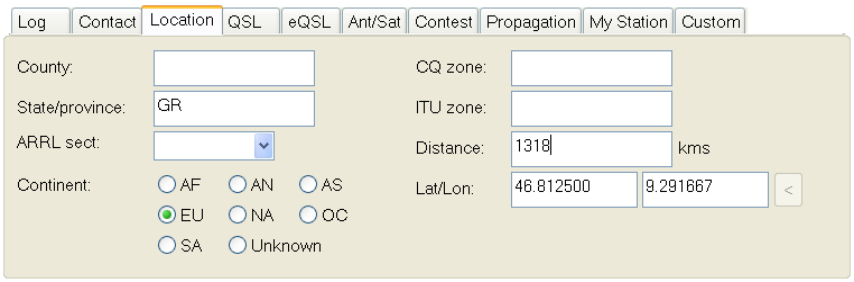
Contact



More information about the station you have contacted.

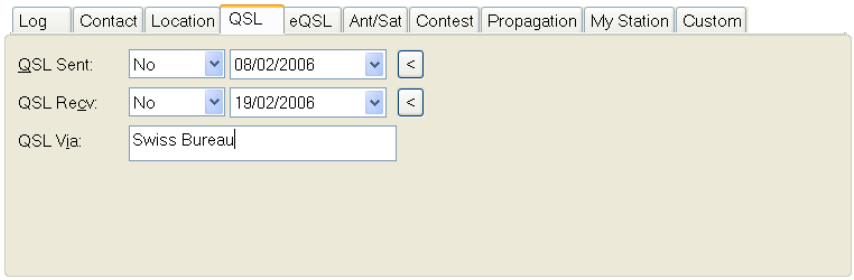
Field	Description
SIG	The name of the contacted station"s special activity or interest group.
SIG info	Information associated with the contacted station's activity or interest
10-10	Ten-Ten number

Location



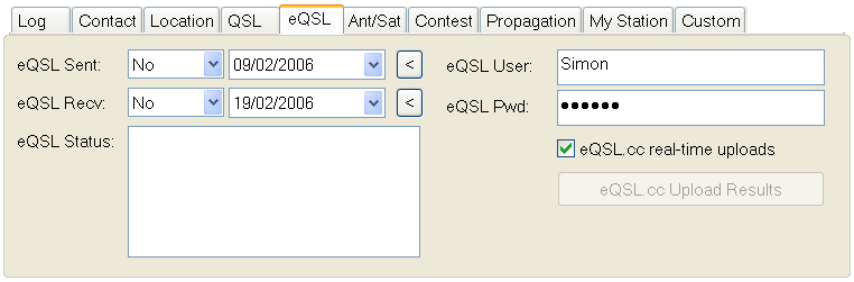
Field	Description
County	The contacted station's Secondary Administrative Subdivision of contacted station (e.g. US county, JA Gun).
State/ province	The code for the contacted station's Primary Administrative Subdivision (e.g. US State, JA Island, VE Province).
ARRL sect	The contacted station's ARRL section.
CQ zone	The contacted station‟s CQ Zone.
ITU zone	The contacted station‟s ITU zone.
Distance	The distance between the logging station and the contacted station in kilometers.
Lat/Lon	The contacted station‟s latitude and longitude. Press < to determine the latitude and longitude from the *Locator* field value in the *Main* part of the window.

QSL



Standard QSL information.

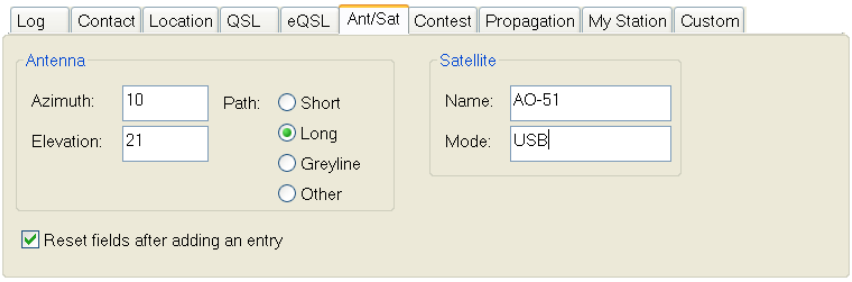
eQSL



Not supported by ADIF, these are fields for use with eQSL.cc.

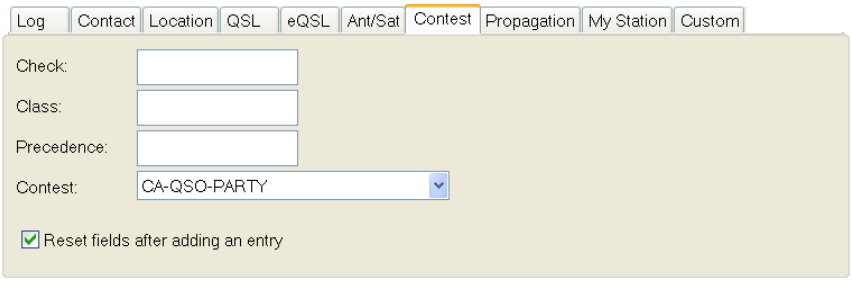
Field	Description
eQSL status	Status of the most recent upload.
eQSL user	Logon username
eQSL pwd	Logon password
eQSL.cc real-time uploads	If checked then an upload is made every time you add a QSO. This is also known as real-time uploads.

Ant/Sat



Field	Description
Azimuth	The logging station's antenna azimuth, in degrees.
Elevation	The logging station's antenna elevation, in degrees.
Path	The signal path.
Name	Name of satellite.
Mode	Satellite mode.

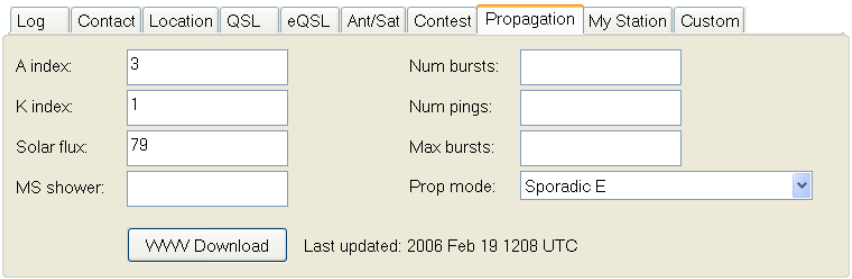
Contest



If you check [X] reset fields after adding an entry then the fields are erased when an entry is added. If not checked then the fields are not erased.

Field	Description
Check	Contest check (e.g. for ARRL Sweepstakes).
Class	Contest class (e.g. for ARRL Field Day).
Precedence	Contest precedence (e.g. for ARRL Sweepstakes).
Contest	QSO Contest Identifier.

Propagation



Basic propagation information, press WWV Download to load the latest information from http://www.sec.noaa.gov/ftpdir/latest/wwv.txt.

Field	Description
A index	The geomagnetic A index at the time of the QSO.
K index	The geomagnetic K index at the time of the QSO.

Field	Description
Solar flux	The solar flux at the time of the QSO.
MS shower	For Meteor Scatter QSO's, the name of the meteor shower in progress.
Num bursts	The number of meteor scatter bursts heard by the logging station.
Num pings	The number of meteor scatter pings heard by the logging station.
Max bursts	Maximum length of meteor scatter bursts heard by the logging station, in seconds.
Prop mode	QSO propagation mode.

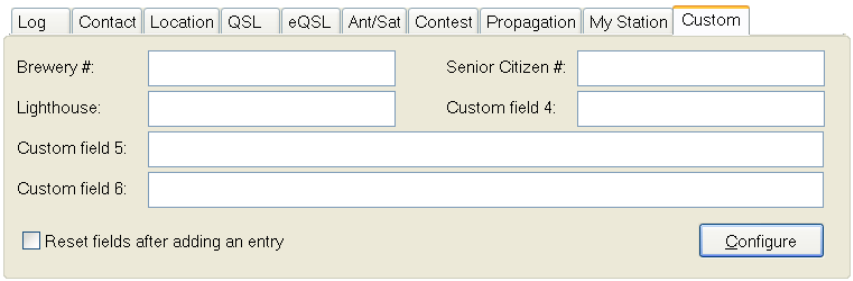
My Station

A description of your station at the time of the QSO. These fields are the same as those in My Station on page 85.

Select a profile by pressing the corresponding button; press Save to save any changes you make.

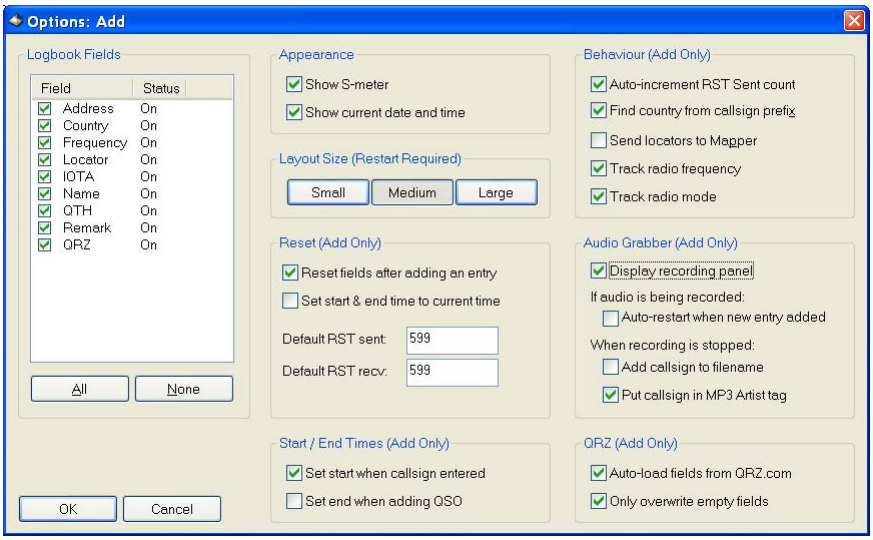
Field	Description
Callsign	The logging station's callsign (the callsign used over the air).
Operator	The logging operator's callsign.
Owner	The callsign of the owner of the station used to log the contact (the callsign of the Operator‟s host).
SIG	The logging station‟s special activity or interest group.
SIG info	Information associated with the logging station's activity or interest group.

Custom



Here are six totally customizable fields, use them as you wish. If you check [X] reset fields after adding an entry then the fields are erased when an entry is added. If not checked then the fields are not erased; the values are stored in the registry and loaded the next time you start Ham Radio Deluxe.

Options



Logbook Fields

Select the fields that are displayed – reduce clutter during a contest when you only want the bare minimum.

Appearance

The current S-Meter and date/time are shown at the top of the window; remove these if you don't want them.

Reset (Add Only)

Select what happens when you press Reset or when you add a new QSO and the [X] Reset fields… option is checked.

Layout Size (Restart Required)

For tired eyes – set the window size to Small, Medium or Large. You must reset Ham Radio Deluxe for the change to take effect.

Reset (Add Only)

Select what happens when you press Reset or when you add a new QSO and the [X] Reset fields… option is checked.

Start / End Times (Add Only)

As part of the QSO automation enable these options to set the start time when you first move out of the Station field and the end time when you add the QSO.

Note – the start time is not updated if you edit the callsign. It is set only when you move out of the Station field for the first time.

Behavior (Add Only)

During a contest you will want to auto-increment the RST sent counter – the first numeric part of the RST sent field is updated, for example 042GR is updated to 043GR.

The country is determined from the callsign prefix using the logbook's country data (List - Countries on page 87).

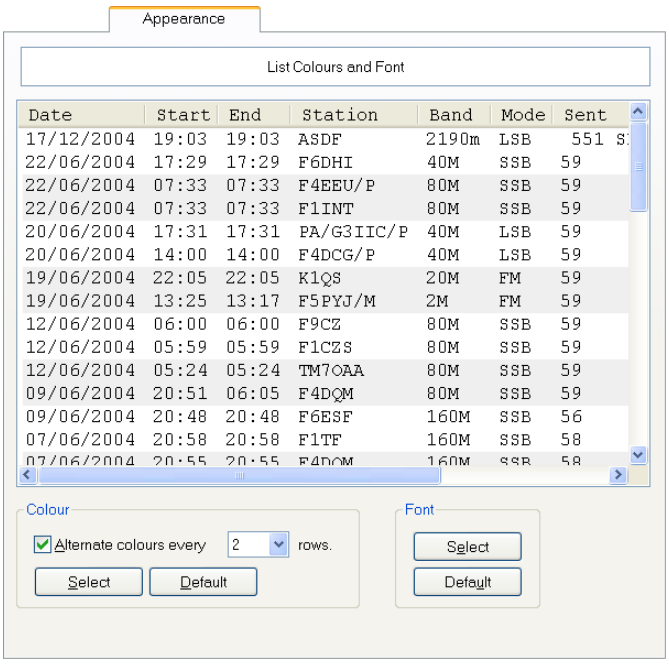
Audio Grabber (Add Only)

Enable display of the Audio Grabber so that a new audio file is created for each QSO.

QRZ (Add Only)

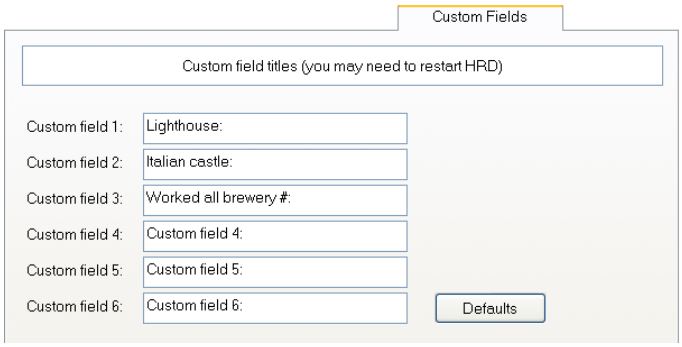
QRZ.com is an excellent resource – here you enable automatic lookups.

Appearance



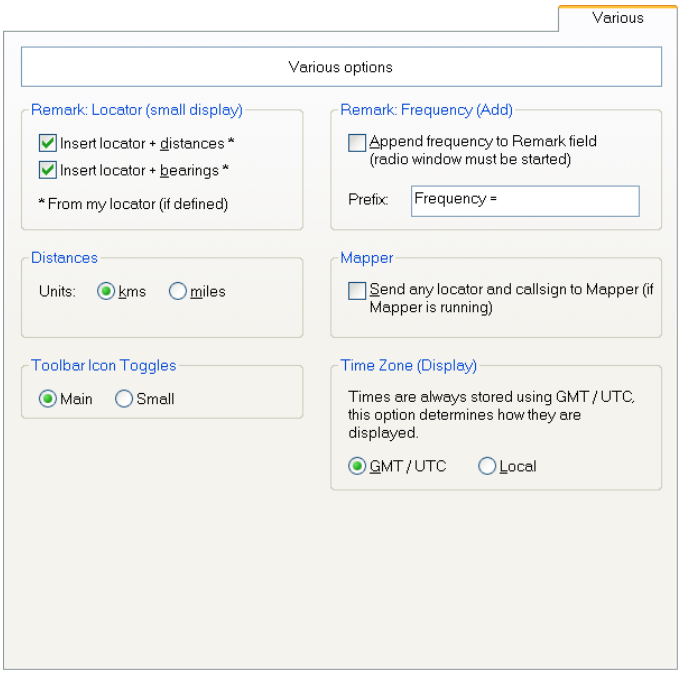
Adjust the appearance of the display to suit your own taste. Using alternate colors makes reading copious data much easier. Using a larger font helps with tired eyes

Custom Fields



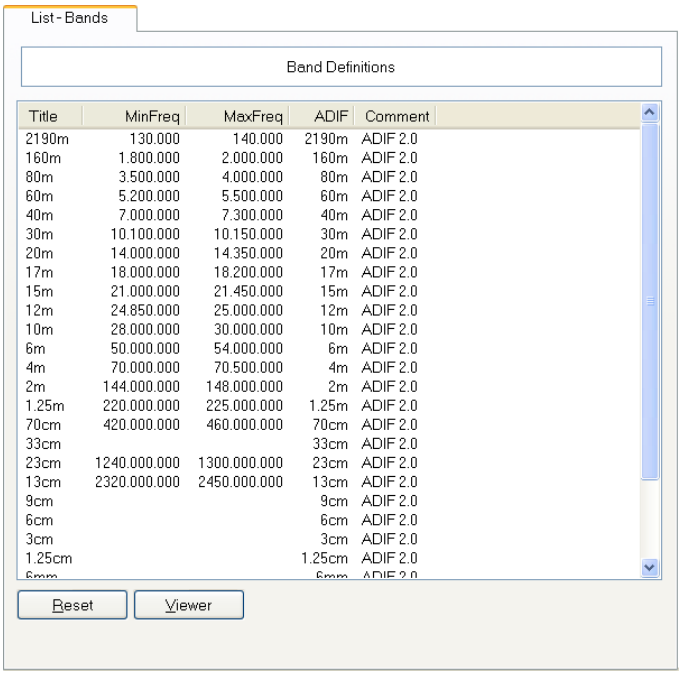
Define the titles for the six custom fields available in the logbook windows. Use these fields for values not supported elsewhere.

Various



The options here should be self-explanatory.

List – Bands

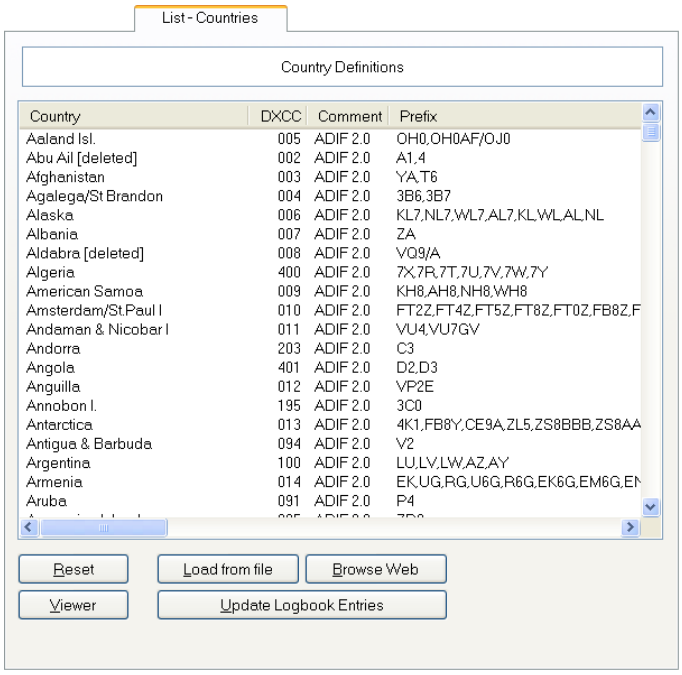


The band ranges. This information is taken from the ADIF specifications; it is used to determine the correct band from a frequency.

Reset Resets the table and loads the latest values built into Ham Radio Deluxe.

Viewer Display this data with the default text file viewer.

List - Countries



The data used to determine country from the callsign prefix.

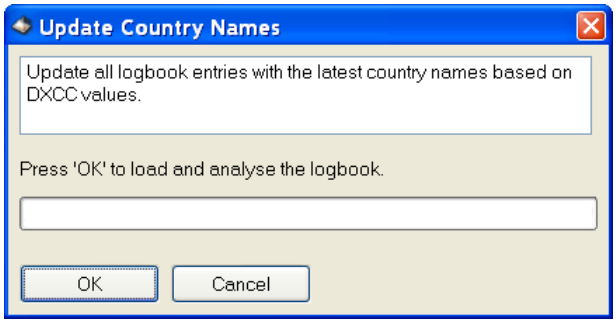
Reset Resets the table and loads the latest values built into Ham Radio Deluxe.

Viewer Display this data with the default text file viewer.

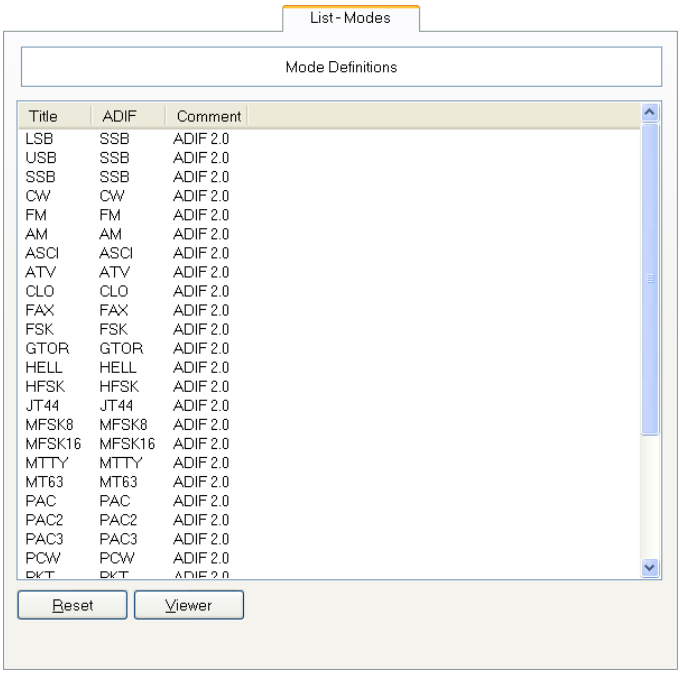
Load from file Loads new data from a text file.

Browse Web Browse the web for a new countries file, default URL is *ftp://www.ham-radio.ch/countries/* .

Update Logbook Entries Update logbook entries with the latest countries file data.



List – Modes



The supported modes; this information is taken from the ADIF specifications.

Reset Resets the table and loads the latest values built into Ham Radio Deluxe.

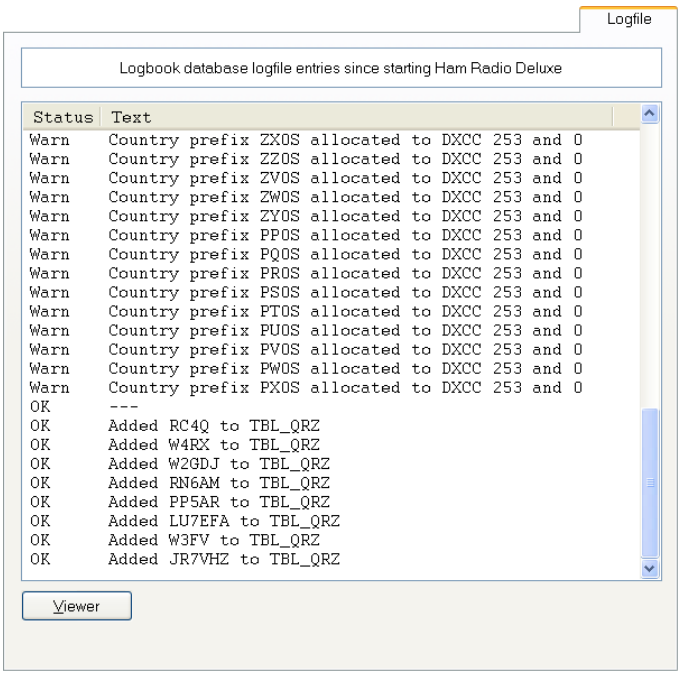
Viewer Display this data with the default text file viewer.

Reset Resets the table and loads the latest values built into Ham Radio Deluxe.

Viewer Display this data with the default text file viewer.

Refresh Refresh this window.

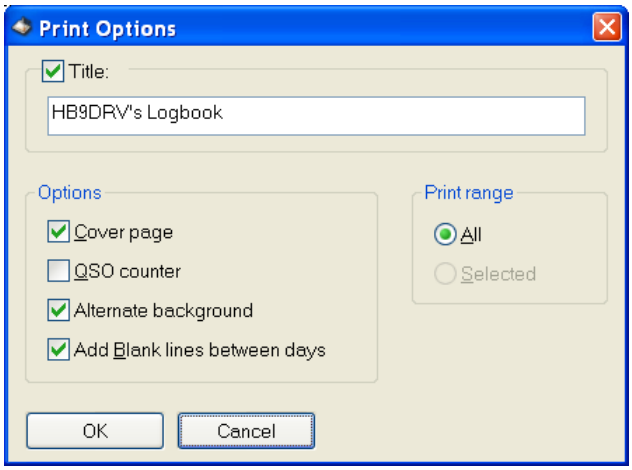
Logfile



All database activity since starting Ham Radio Deluxe.

Printing

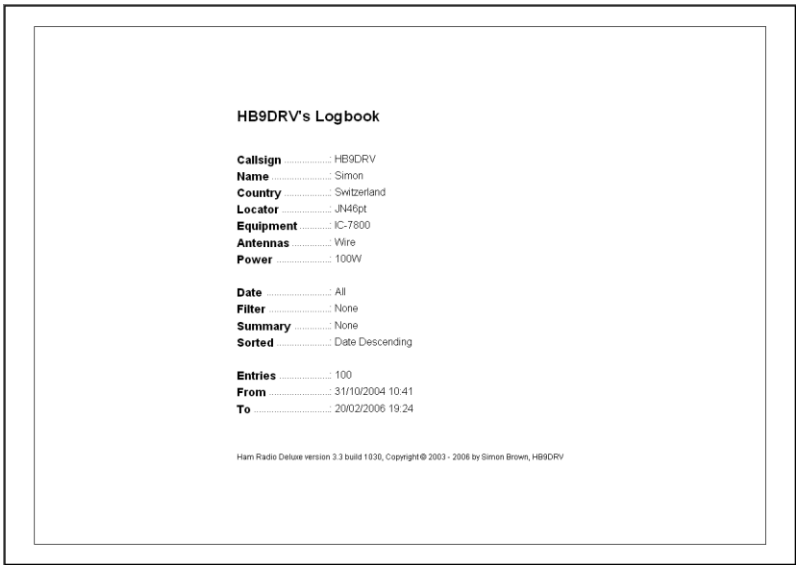
There's nothing better than a paper log for reviewing your on-air achievements. Before you select the Print option you should first use the Preview option to review what you will be printing before committing another rain forest to the recycling bucket!

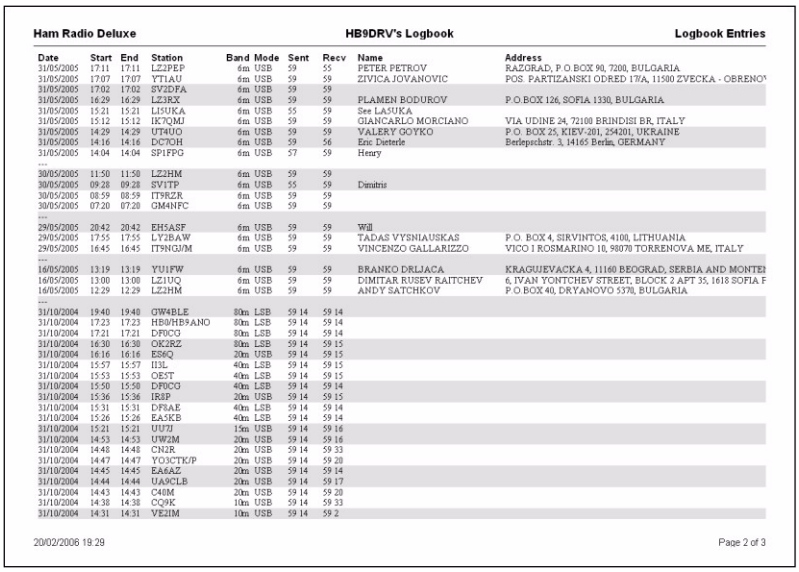


When you select Print or Preview the Print Options window is displayed.

When reviewing a contest or QSO's selected for an award you will usually enable the QSO counter option.

The alternate background option makes the log easier to read (just try it), adding blank lines between days is very much a personal preference.





Ham Radio Deluxe — HB9DRV's Logbook — Logbook Entries

Date	Start	End	Station	Band	Mode	Sent	Recv	Name	Address
31/05/2005	17:11	17:11	LZ2PEP	6m	USB	59	55	PETER PETROV	RAZORAD, P.O.BOX 90, 7200, BULGARIA
31/05/2005	17:07	17:07	YT1AU	6m	USB	59	59	ZIVICA JOVANOVIC	POS. PARTIZANSKI ODRED 17/A, 11500 ZVECKA - OBRENO
31/05/2005	17:02	17:02	SV2DFA	6m	USB	59	59		
31/05/2005	16:29	16:29	LZ3RX	6m	USB	59	59	PLAMEN BODUROV	P.O.BOX 126, SOFIA 1330, BULGARIA
31/05/2005	15:21	15:21	LI5UKA	6m	USB	55	59	See LA5UKA	
31/05/2005	15:12	15:12	IK7QMJ	6m	USB	59	59	GIANCARLO MORCIANO	VIA UDINE 24, 72100 BRINDISI BR, ITALY
31/05/2005	14:29	14:29	UT4UO	6m	USB	59	59	VALERY GOYKO	P.O. BOX 25, KIEV-201, 254201, UKRAINE
31/05/2005	14:16	14:16	DC7OH	6m	USB	59	56	Eric Dieterle	Berlepschstr. 3, 14165 Berlin, GERMANY
31/05/2005	14:04	14:04	SP1FPG	6m	USB	57	59	Henry	
...									
30/05/2005	11:50	11:50	LZ2HM	6m	USB	59	59		
30/05/2005	09:28	09:28	SV1TP	6m	USB	55	59	Dimitris	
30/05/2005	08:59	08:59	IT9RZR	6m	USB	59	59		
30/05/2005	07:20	07:20	GM4NFC	6m	USB	59	59		
...									
29/05/2005	20:42	20:42	EH5ASF	6m	USB	59	59	Will	
29/05/2005	17:55	17:55	LY2BAW	6m	USB	59	59	TADAS VYSNIAUSKAS	P.O. BOX 4, SIRVINTOS, 4100, LITHUANIA
29/05/2005	16:45	16:45	IT9NGJ/M	6m	USB	59	59	VINCENZO GALLARIZZO	VICO I ROSMARINO 10, 98070 TORRENOVA ME, ITALY
...									
16/05/2005	13:19	13:19	YU1FW	6m	USB	59	59	BRANKO DRLJACA	KRAGUJEVACKA 4, 11160 BEOGRAD, SERBIA AND MONTE
16/05/2005	13:00	13:08	LZ1UQ	6m	USB	59	59	DIMITAR RUSEV RAITCHEV	6, IVAN YONTCHEV STREET, BLOCK 2 APT 35, 1618 SOFIA F
16/05/2005	12:29	12:29	LZ2HM	6m	USB	59	59	ANDY SATCHKOV	P.O.BOX 40, DRYANOVO 5370, BULGARIA
...									
31/10/2004	19:40	19:40	GW4BLE	80m	LSB	59 14	59 14		
31/10/2004	17:23	17:23	HB0/HB9ANO	80m	LSB	59 14	59 14		
31/10/2004	17:21	17:21	DF0CG	80m	LSB	59 14	59 14		
31/10/2004	16:30	16:30	OK2RZ	80m	LSB	59 14	59 15		
31/10/2004	16:16	16:16	ES6Q	20m	USB	59 14	59 15		
31/10/2004	15:57	15:57	II3L	40m	LSB	59 14	59 15		
31/10/2004	15:53	15:53	OE5T	40m	LSB	59 14	59 15		
31/10/2004	15:50	15:50	DF0CG	40m	LSB	59 14	59 14		
31/10/2004	15:36	15:36	IR4P	20m	USB	59 14	59 15		
31/10/2004	15:31	15:31	DF8AE	40m	LSB	59 14	59 14		
31/10/2004	15:26	15:26	EA5KB	40m	LSB	59 14	59 14		
31/10/2004	15:21	15:21	UU7J	15m	USB	59 14	59 16		
31/10/2004	14:53	14:53	UW2M	20m	USB	59 14	59 16		
31/10/2004	14:48	14:48	CN2R	20m	USB	59 14	59 33		
31/10/2004	14:47	14:47	YO3CTK/P	20m	USB	59 14	59 20		
31/10/2004	14:45	14:45	EA6AZ	20m	USB	59 14	59 14		
31/10/2004	14:44	14:44	UA9CLB	20m	USB	59 14	59 17		
31/10/2004	14:43	14:43	C40M	20m	USB	59 14	59 20		
31/10/2004	14:38	14:38	CQ9K	10m	USB	59 14	59 33		
31/10/2004	14:31	14:31	VE2IM	10m	USB	59 14	59 2		

20/02/2006 19:29 Page 2 of 3

Now press [?] Save to Database to save the displayed entries in your database.

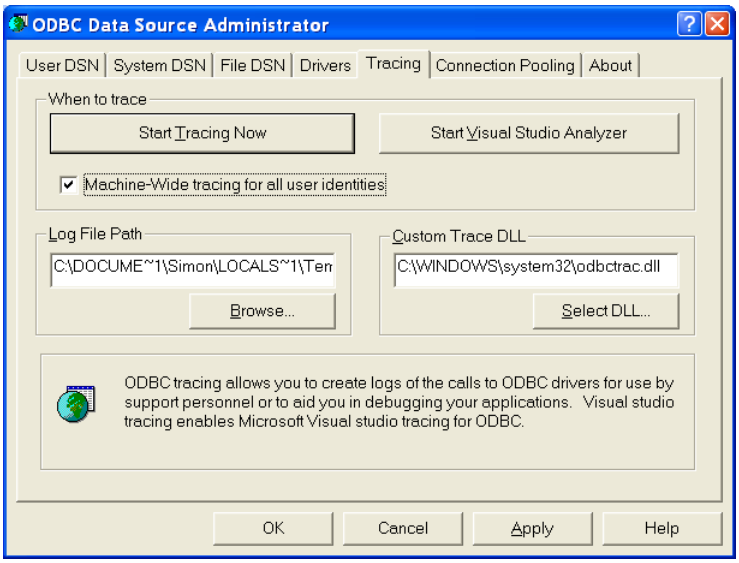
Select the fields and entries to be exported.

If you are only uploading to the ARRL's Logbook of The World then there is no need to export unnecessary fields – this just makes the whole LoTW experience Problems

Performance

If you find that the database is exceptionally slow make sure that ODBC tracing is switched off.

From the Start menu select Settings / Control Panel / Administrative Tools / ODBC Data Source Administrator select Tracing. Here you stop tracing (if started).



Errors

If you get problems using the Logbook – for example a window such as:

then follow the steps below to generate a trace file which provides all information required to diagnose the problem.

1. Close Ham Radio Deluxe.
2. From the *Start* menu select *Settings/Control Panel/Administrative Tools/ ODBC Data Source Administrator* select *Tracing*.
3. Press Start Tracing Now.
4. Start Ham Radio Deluxe, open the Logbook, and perform the steps necessary to generate the error.
5. Stop tracing.

Save the logfile to a ZIP archive and forward to the Ham Radio Deluxe developers.

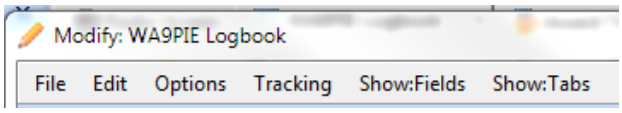
7 Logging and Managing QSO Records

Add Logbook Entry (ALE)

Ham Radio Deluxe Logbook has a number of powerful features for tracking QSO data. This information is contained within the Add Logbook Entry (ALE) window and its fifteen tabs. This section will describe these areas. The ALE window is opened by clicking on the **Add** button in the toolbar.

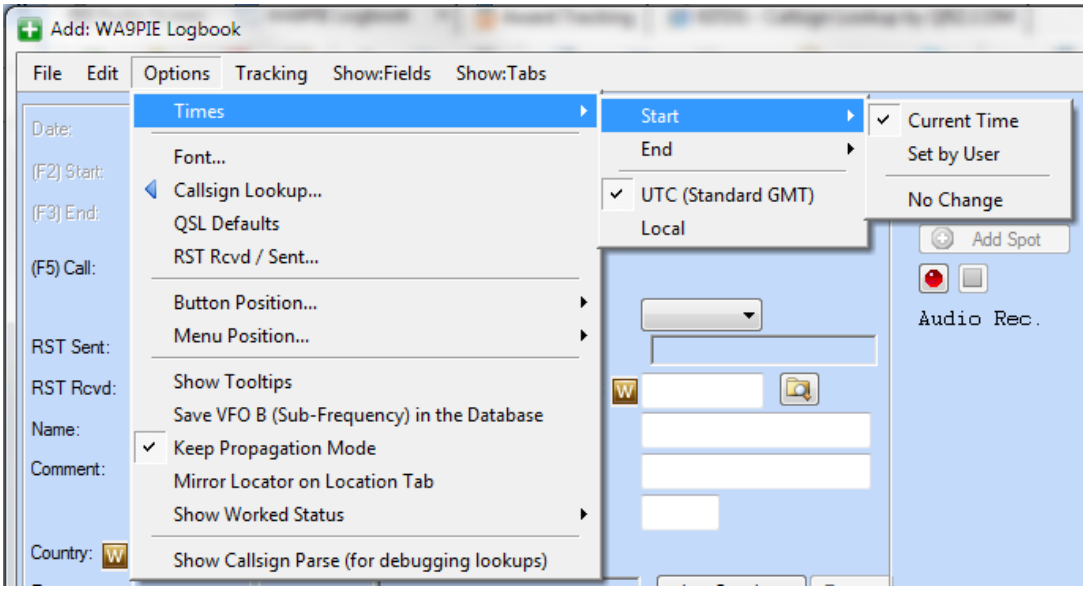
Menu Bar

But first, it's necessary to understand the options for the ALE. The ALE's menu bar has a number of menu items.



Options

Clicking the **Options** menu renders the following choices:



The **Times** option can be selected for *UTC* or *Local* time.

The *Start* and *End* times can be set according to the operator's operating style.

Recommendations

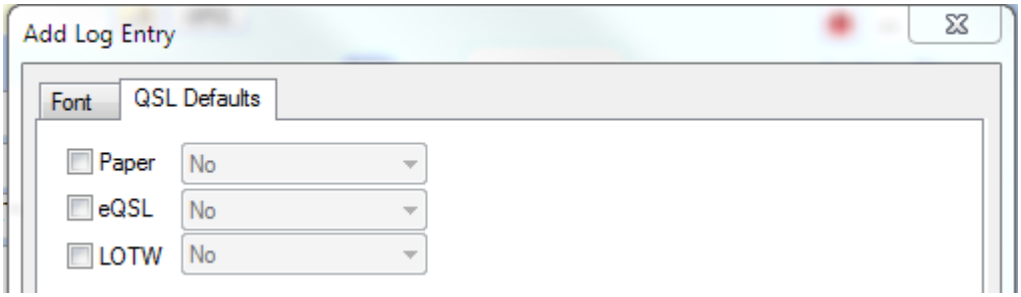
- DXers and Contesters should use **Current Time** in the *Times* selection. This uses the time of the computer clock when the QSO is logged. Because DX and Contest exchanges are so short – lasting for only a few seconds – there's an increased likelihood of making a QSL match to services like LOTW if the QSO is set to **Current Time**.
- Rag-chewers may want to use **Set by user**. This accommodates QSOs of longer durations.

Font Option

This enables the operator to change the fonts used in the dialog ALE.

QSL Defaults

This enables the operator to choose the initial values for the three QSL fields. This is helpful when using a value like *Queued* to set the LOTW value so that it's easy to do a search for QSLs that need to be uploaded to LOTW.



RST Rcvd / Sent

This provides options for *canned* values of RST.

Button Position

The operator can select from **bottom**, **middle**, and **right** side location of the *Update*, *Cancel*, *Reset*, and *Add Spot* buttons. This is useful when vertical or horizontal space is restrained.

Menu Position

The choices of positioning the menu on top or bottom are provided.

Other options

Toggle on/off options

- Show Tooltips
- Save VFO B in database
- Keep Propagation Mode
- Mirror Locator on Location Tab

Show Worked Status

This option enables a **W** icon to display for Call, Country, and Locator fields. This lets the operator know that these items have been worked before.

Tracking

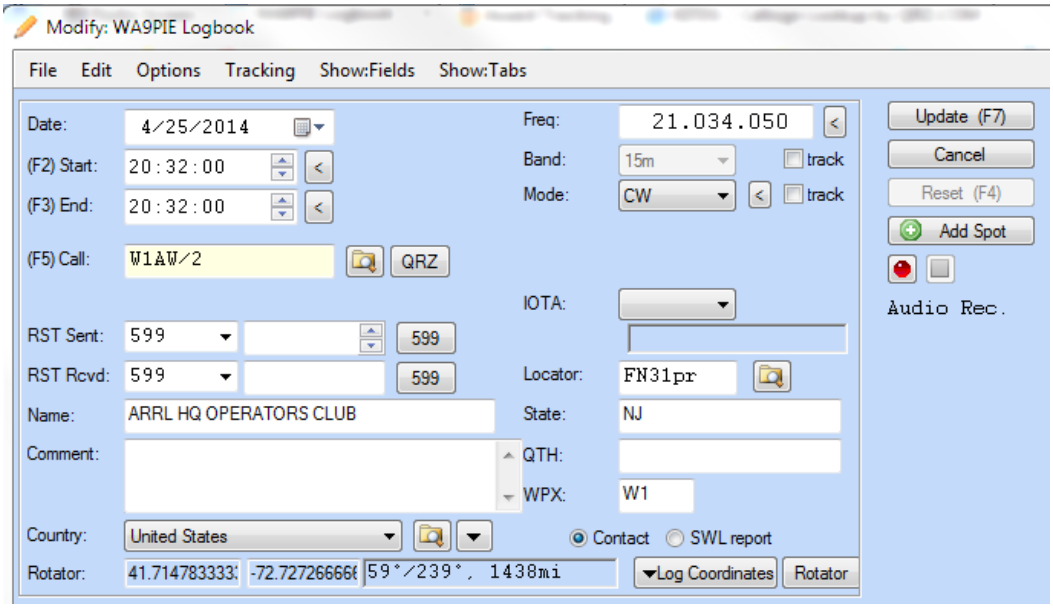
The Tracking menu enables the ALE to use the data coming from the rid for frequency or mode and automatically populated into the ALE. (Default is ON for both.)

Show:Fields

This option enables the operator to choose which of the thirteen fields will be displayed in the ALE. (Default is all ON.)

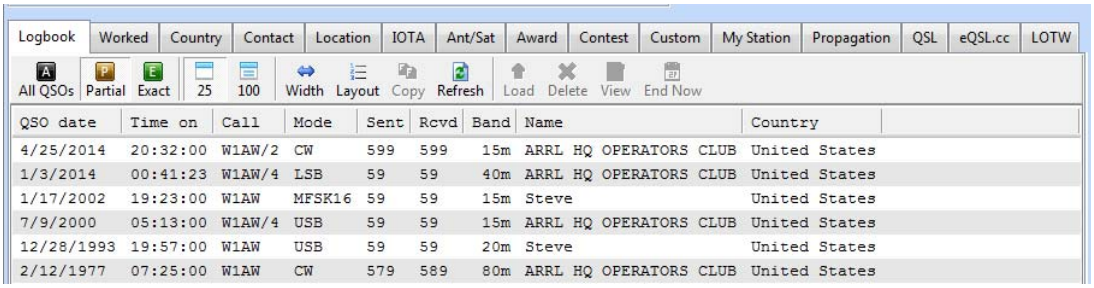
Show:Tabs

This option enables the operator to choose which of the fifteen tabs will be displayed in the ALE. (Default is all ON.)



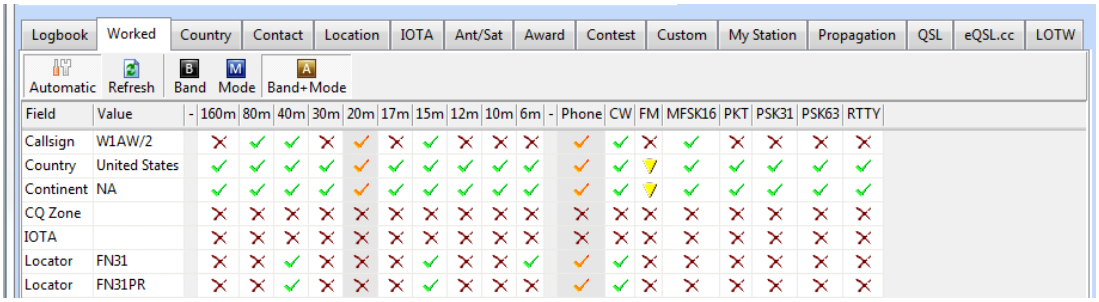
Logbook Tab

The *Logbook* tab which is the first of many tabs at the bottom of the ALE window provides detail on previous QSOs with the *station* being logged. Partial and Exact matches are options



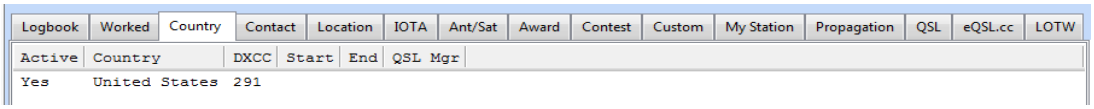
Worked Tab

The Worked tab provides detail about previous QSOs with that callsign, country, continent, zone, IOTA, or locator… by band and/or mode.



Country Tab

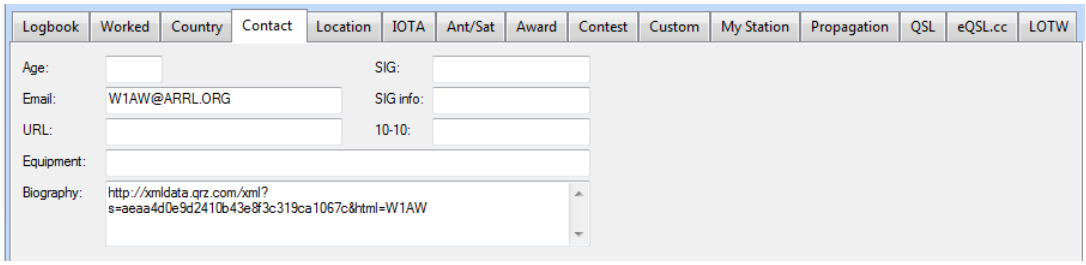
The country tab contains the DXCC information about the country being logged. This data is ‘display only’ and is not saved in the QSO record.



Contact Tab

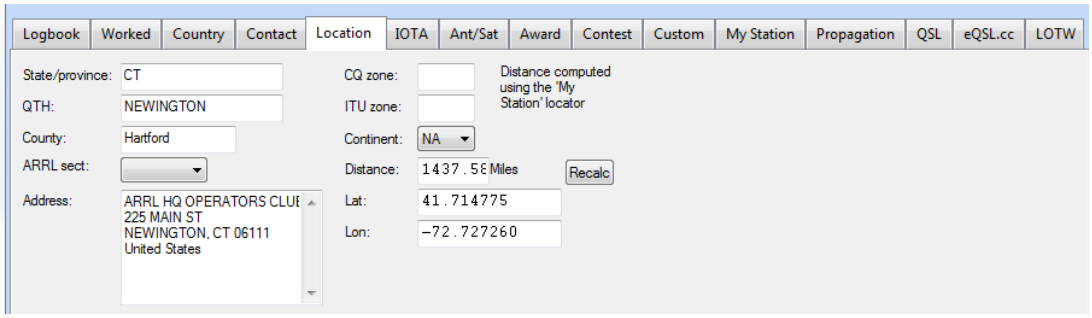
The Contact tab provides a place to store information about the station operator’s age, Special Interest Group (SIG, or club), SIG website, email address, website

URL 10-10 number, equipment, and biography. Callsign Lookup sources often provide much of this information.



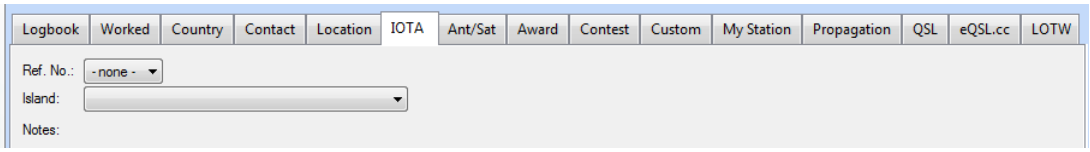
Location Tab

The Location tab provides a place to store information about the station operator's location – including State/province, City (QTH), County, ARRL Section, postal address, CQ and ITU Zone, continent, distance, and polar coordinates. Callsign Lookup sources often provide much of this information.



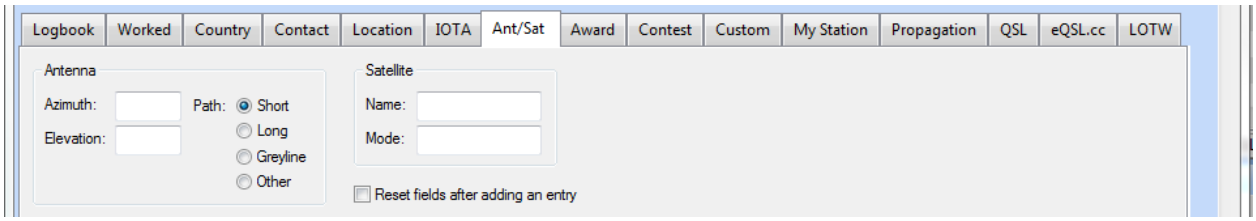
IOTA Tab

The IOTA tab provides a place to store information about the IOTA reference number and Island name.



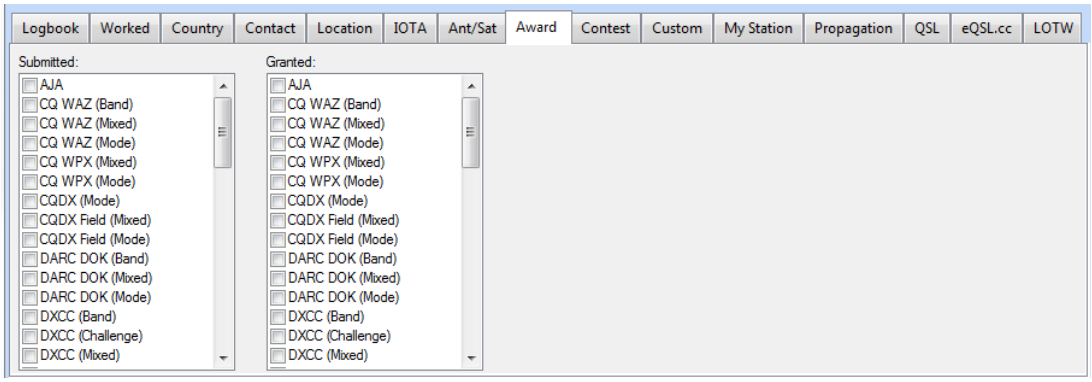
Antenna/ Satellite Tab

The Ant/Sat tab provides a place to store beam heading and satellite information.



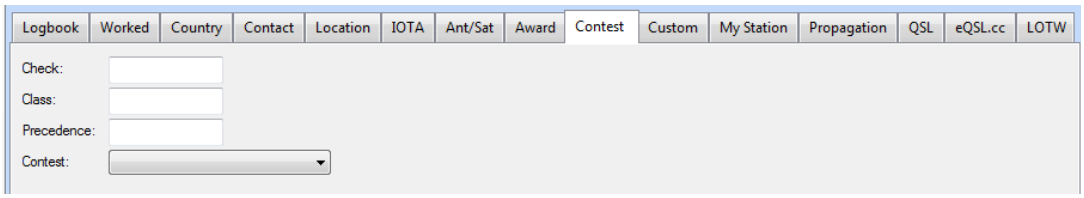
Award Tab

The Award tab is for tracking the award credits within the various awards programs. A QSO record cannot have both Submitted and Granted status for a given award. Selecting one de-selects the other. More information about the use of this tab can be found in the Awards Tracking section of this manual. These values are determinants of what is displayed in the Not Submitted, Submitted, and Granted columns in the Awards Tracking tab.



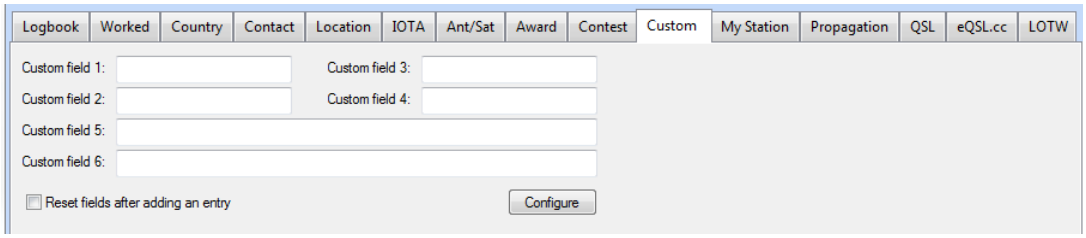
Contest Tab

The Contest tab provides a place to store data related to contest exchanges.



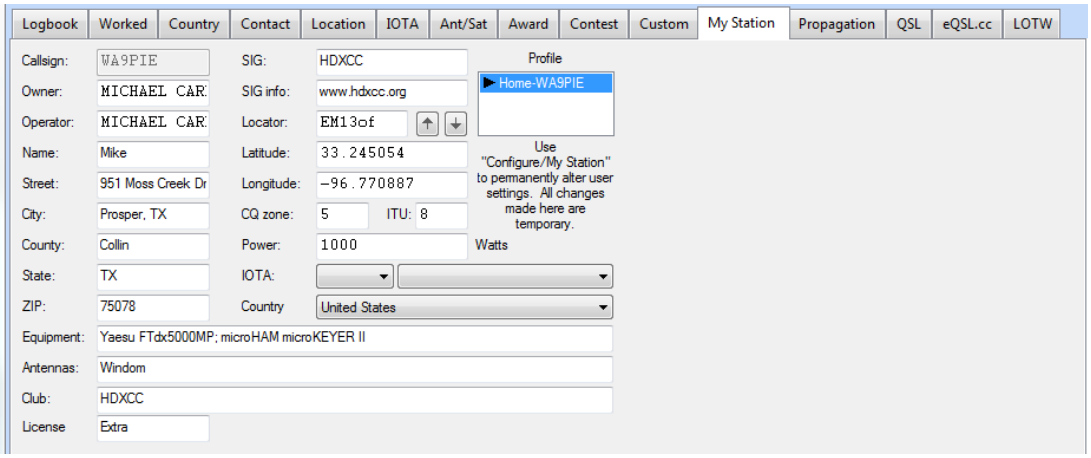
Custom Tab

Six Custom fields can be defined and used by the operator. This is useful for tracking awards that are not hard-coded within Ham Radio Deluxe such as *Summits on the Air* (SOTA). Clicking on the **Configure** button enables the operator to rename these fields.



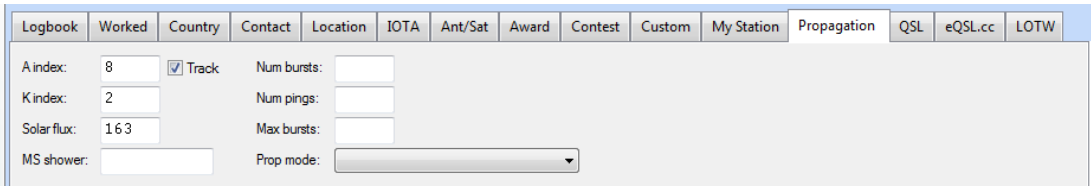
My Station Tab

The My Station tab is particularly useful when the operator has multiple operating locations. The operator can select from profiles (stations) created in Ham Radio Deluxe Logbook



Propagation Tab

The propagation tab saves solar data into the QSO record. Be sure to check the **Track** box to turn this feature on. The information comes from the most recent WWV or WCY information.



QSL, eQSL.cc, and LOTW tabs

The QSL tab is for tracking paper and electronic QSLs. QSL Sent and Rcvd have the following values:

QSL Rcvd:

Y yes (confirmed); an incoming QSL card has been received, or the QSO has been confirmed by the online service

N no; an incoming QSL card has not been received, or the QSO has not been confirmed by the online service

R requested; the logging station has requested a QSL card, or the logging station has requested the QSO be uploaded to the online service

I ignore or invalid

V (deprecated) verified

QSL Sent:

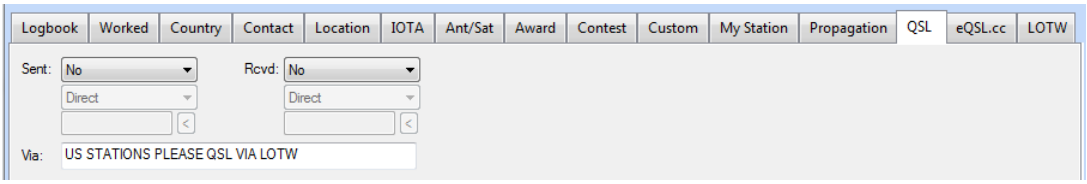
Y yes; an outgoing QSL card has been sent, or the QSO has been uploaded to, and accepted by, the online service

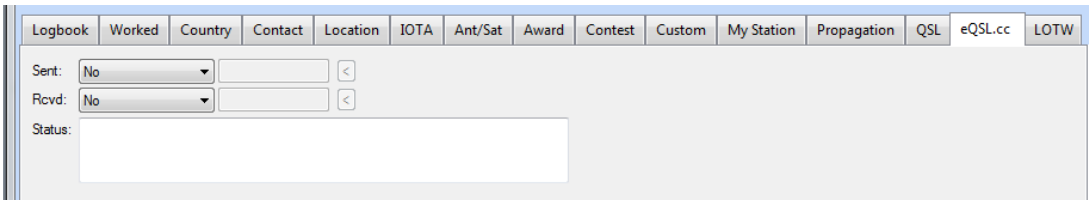
N no; do not send an outgoing QSL card; do not upload the QSO to the online service

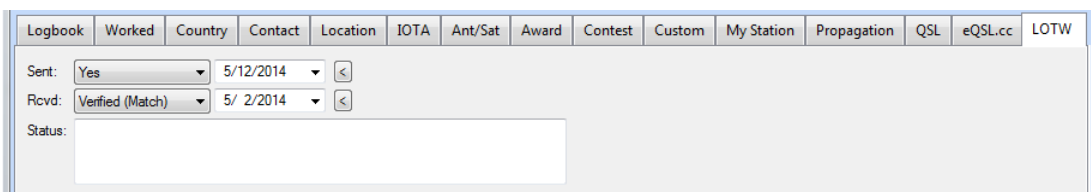
R requested; the contacted station has requested a QSL card, or the contacted station has requested the QSO be uploaded to the online service

Q queued; an outgoing QSL card has been selected to be sent, or a QSO has been selected to be uploaded to the online service

I ignore or invalid



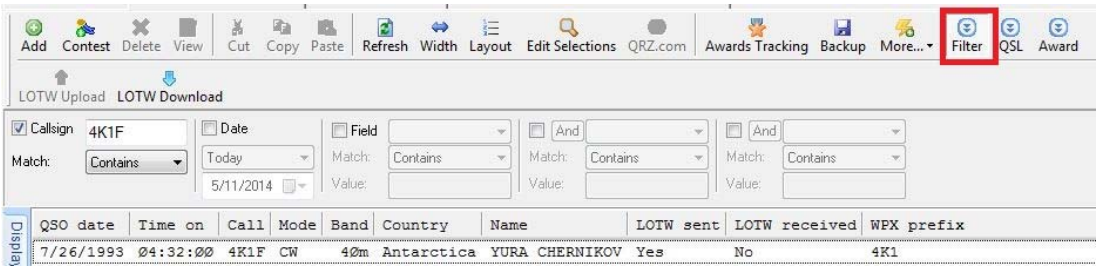




Note: These values are determinants of what is displayed in the Confirmed and Need QSL columns in the Awards Tracking tab.

Logbook Search

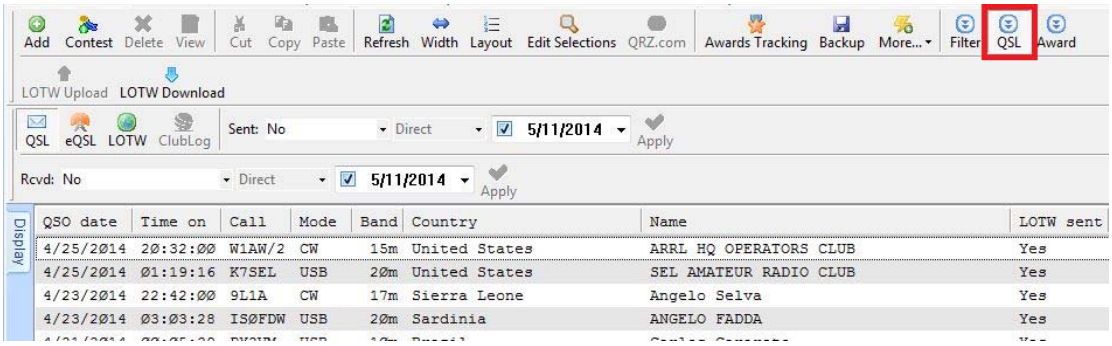
The *Filter* button enables the operator to perform a logbook search, based on selected field criteria.



Once selected, the operator can find QSOs based on Callsign, Date range, and a combination of any three additional fields. This is helpful when trying to find something unique in the log. These types of database queries are also used in displaying awards totals.

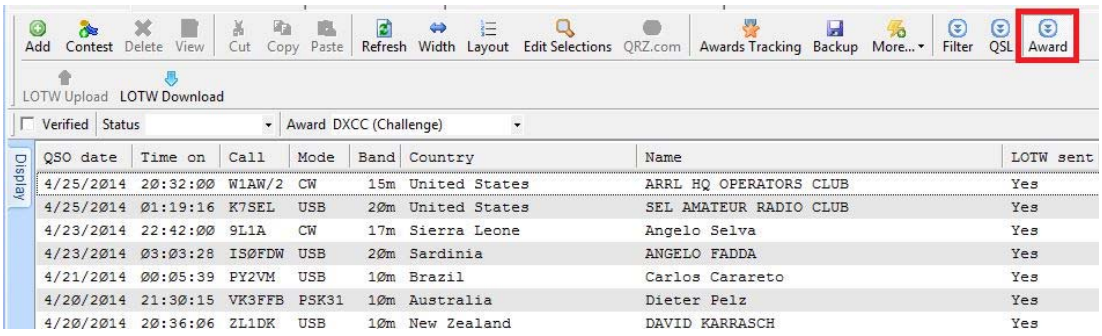
QSL Filter

The **QSL filter** button enables the operator to search and update QSL Status in-bulk. This is helpful when printing a significant number of QSL cards over a given date range.



Award Filter

The **Award filter** button enables the operator to search and update award tracking status in-bulk. This is helpful when making an award application.

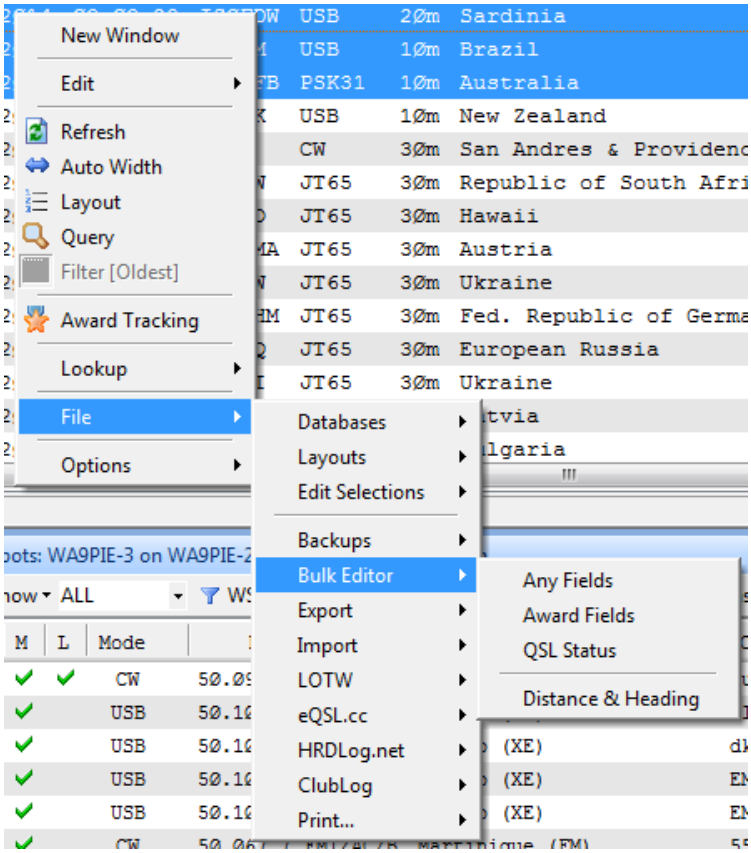


Bulk-Editing QSOs

The bulk-editor is a powerful tool for making mass changes to the data in the log-book. It is highly recommended that a logbook back be made prior to using this tool.

To use the bulk-editor, first select a number of QSO records where the same change is desired by using the “Filter” (search) or by selecting some number of records manually within the log.

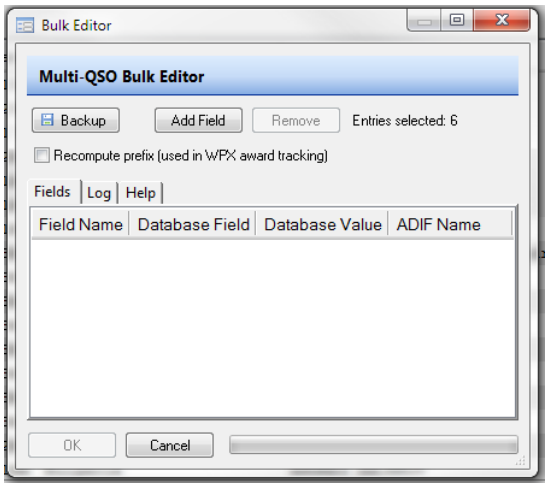
There are a number of places to find the *Bulk Editor* menu option. To use one as an example, right-click on any of the highlighted QSO records, and select one of the provided options.



Any Fields is a very powerful choice, as it enables the operator to change anything in the database in mass (use with care). For this example, **Any Fields** is selected and the option to backup the logbook is provided.

1 Select **Any Fields.**
2 Next, select the "Add Field" button.
3 Select the desired field (CQ Zone, in this example)
4 Enter the desired value (10, in this example)
5 Click "Ok"

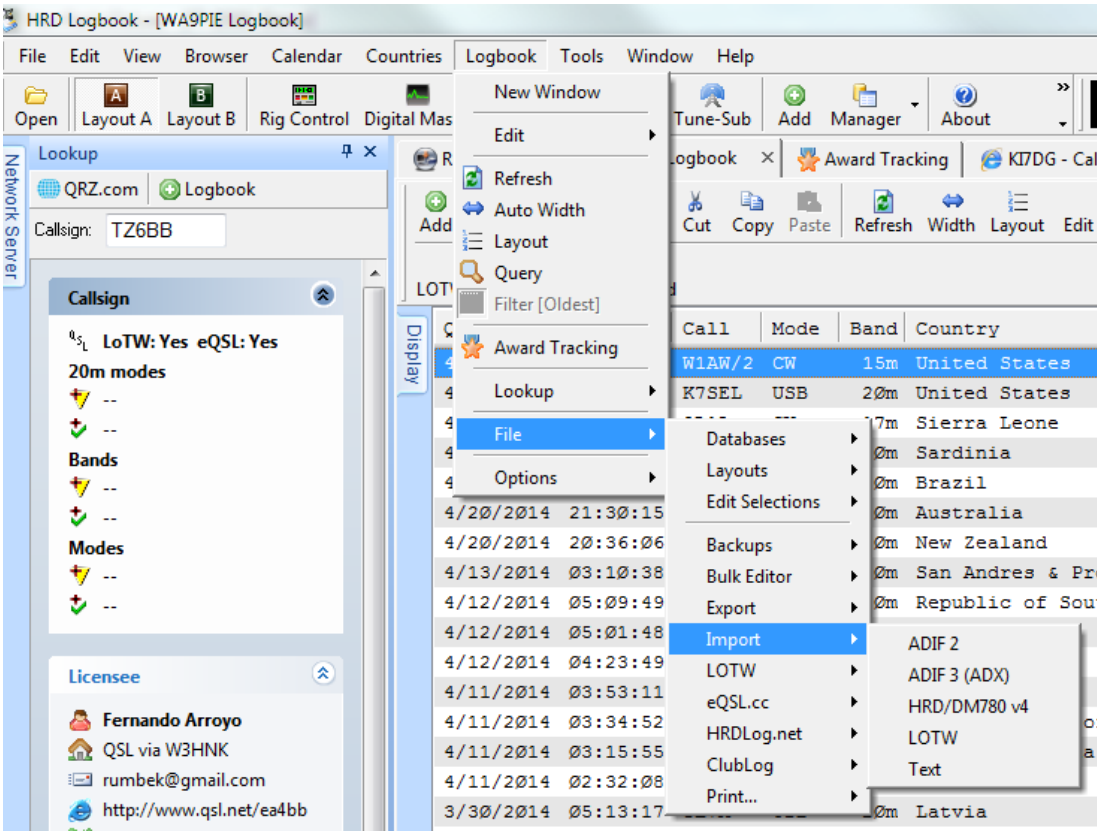
All the selected QSO record will be updated with the desired value.



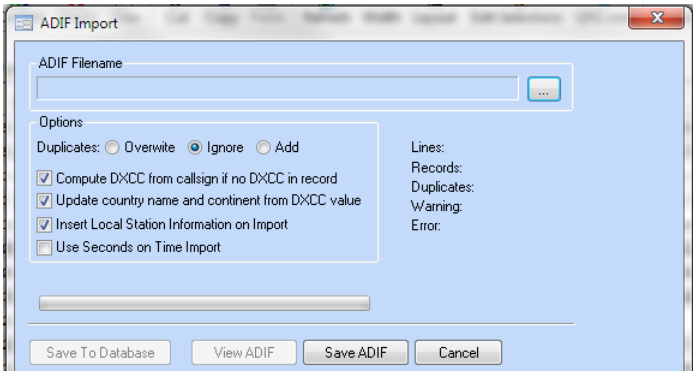
Importing Log Files

Logs can be easily imported from other logging programs. To import a log from another logging program, follow these steps:

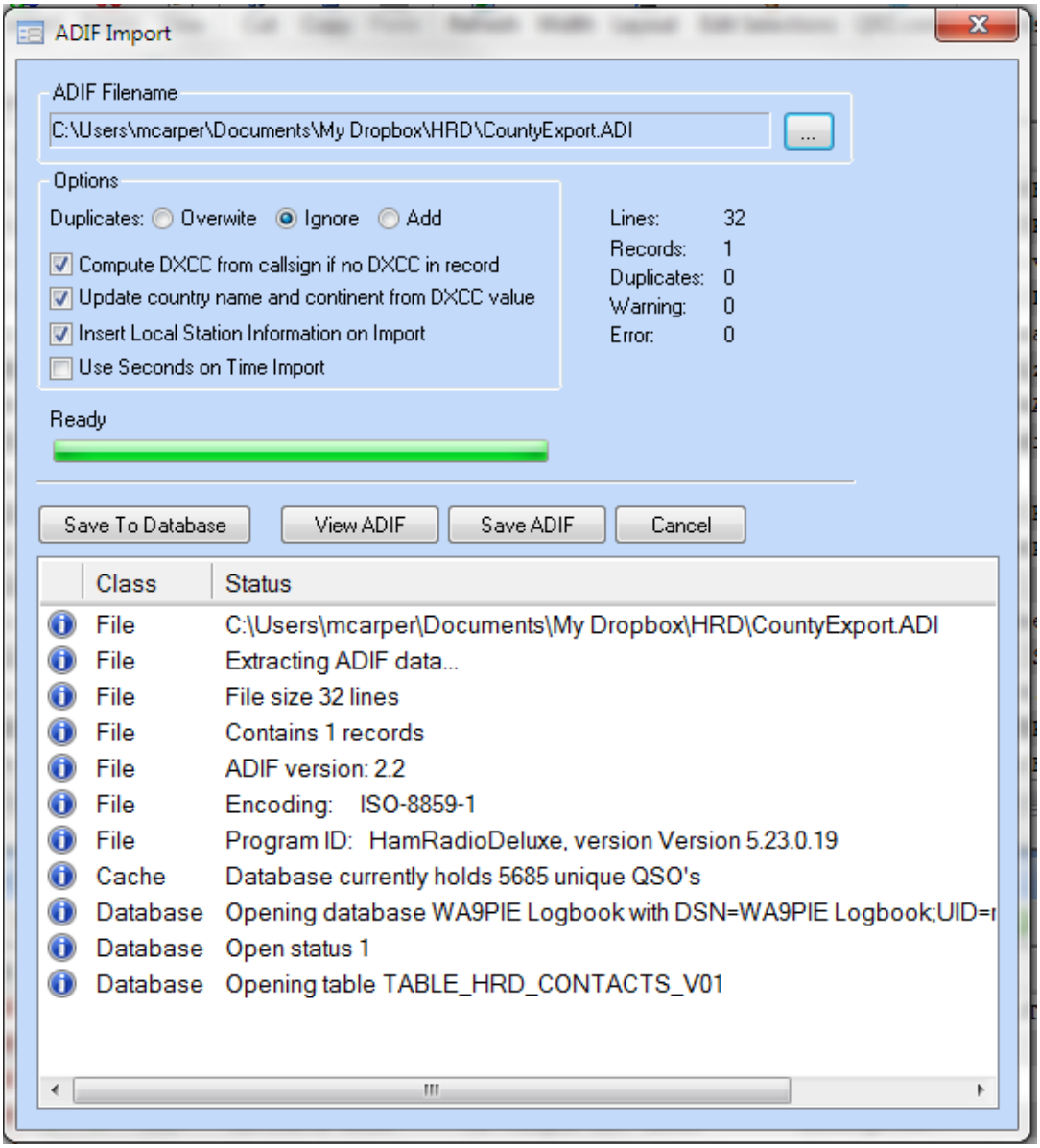
1 Export the log into ADIF format from the other logging program. Make sure that it is configured to provide all available fields.
2 From the menu in Logbook, select **Logbook >File > Import**, and then choose the relevant option from the list of five shown. Most often, **ADIF 2** is used.



3 Then select the ADIF file for input by clicking the button to the right of "**DIF Filename**. The recommended options are shown here:



4 Once the file has been analyzed, the results will be shown. select **Save to Database**".



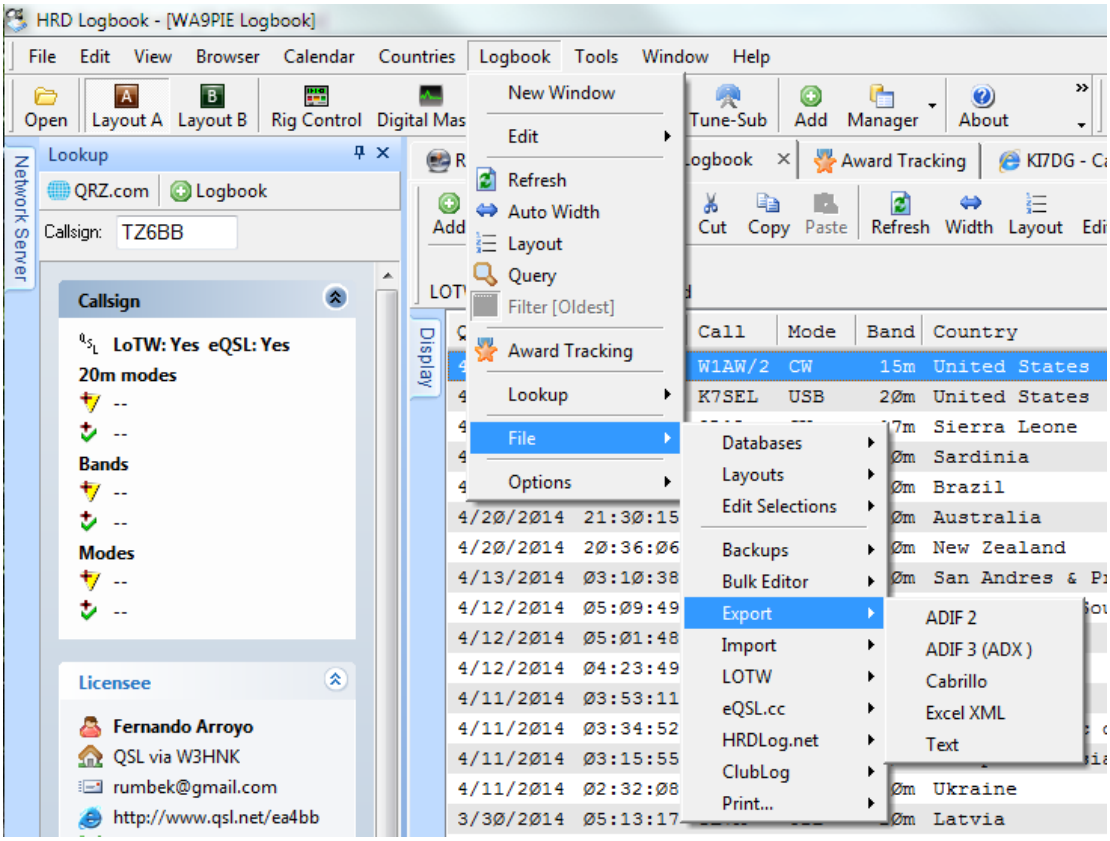
If there are errors in the source ADIF, the operator will see this in the results displayed below.

Note: Be aware of the "garbage-in/garbage-out" scenario. The information provided in Ham Radio Deluxe Logbook (for awards and QSO fields) is only as good as the data that comes from the other logbook source. There will always be some anomalies that the operator will have to sort out. This is generally because other programs may not have country data that is up-to-date.

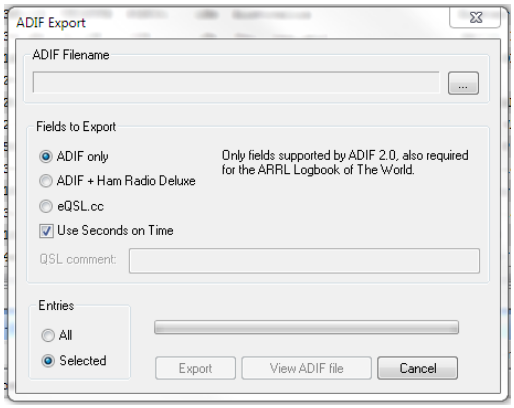
Exporting Log Files

Logs can be easily exported for import into other logging programs. To export a log from Ham Radio Deluxe Logbook, follow these steps:

1 From the menu in Logbook, select **Logbook > File > Export**, and then choose the relevant option from the list of five shown. Most often, **ADIF 2** is used.



2 Provide the export filename by clicking the button to the right of "ADIF Filename".



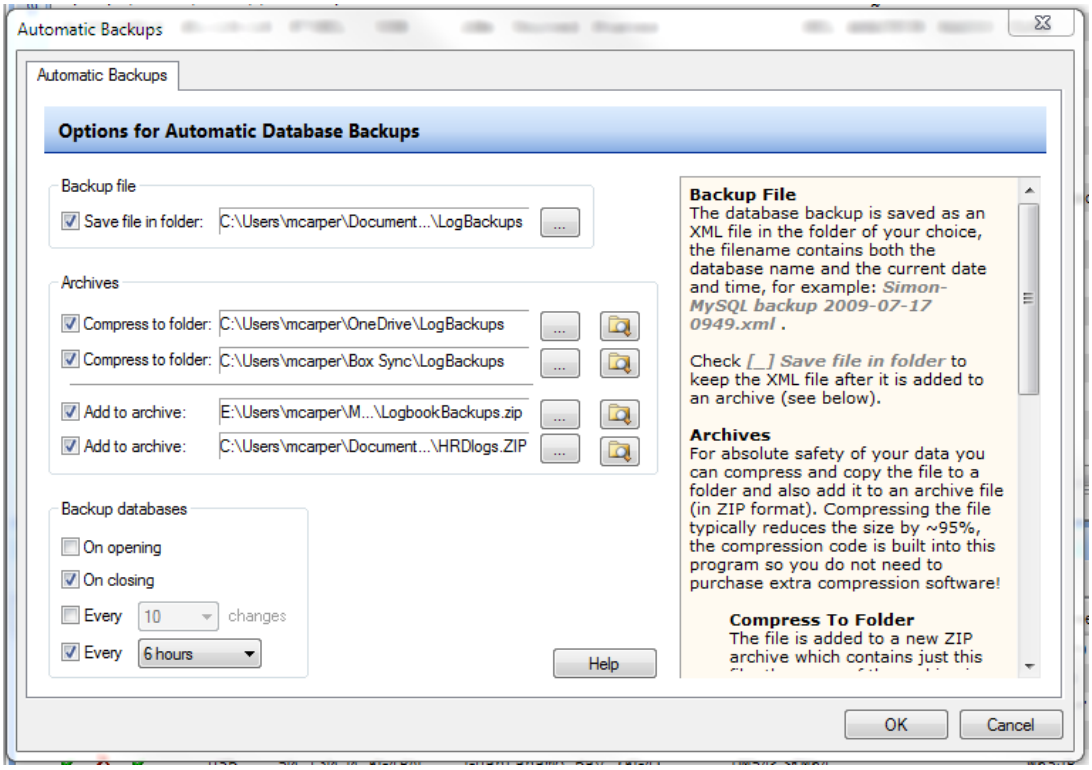
3 Options are provided to select the field set for exporting.

4 The operator can export All or Selected logbook entries.

- Tip: Exporting selected logbook entries is a great way to update stand-alone logbook databases located on multiple computers.

Backup & Restore

Operators are encouraged to allow the automatic log backup to keep their log data safe.



The "**Automatic Backups**" is found in the file menu under Tools, Configure, Backups. Backup files are saved in a proprietary XML format that ensures that information that is unique to Ham Radio Deluxe Logbook (like user-defined fields) are safely backed up. Some, but not necessarily all, of the backup locations should be used.

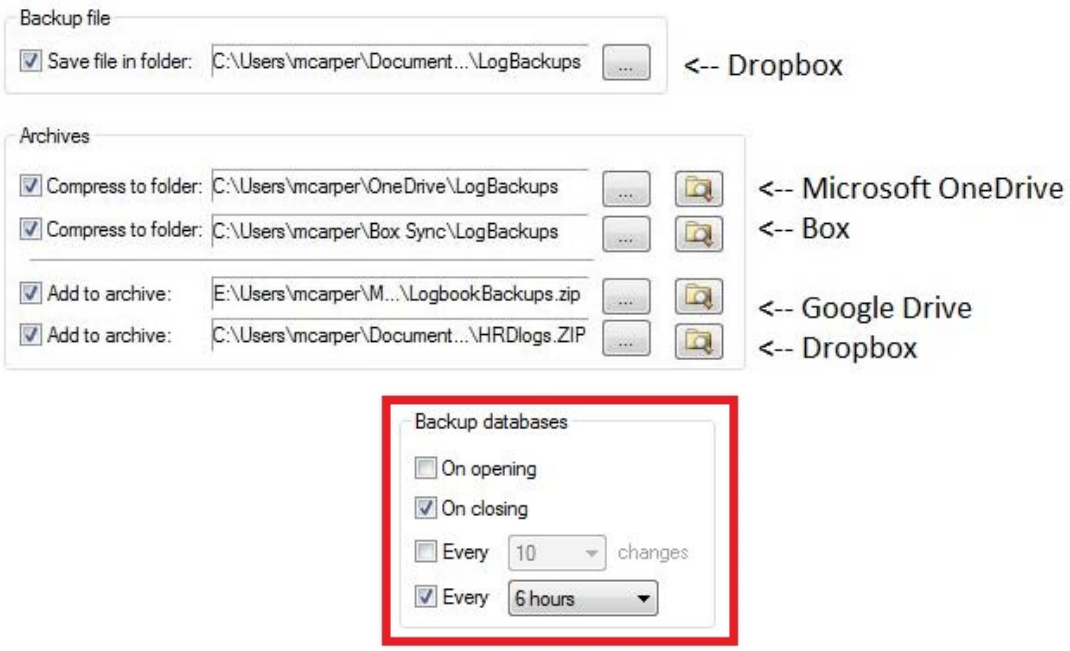
Note: For this reason, making copies of ADIF files is not considered a backup method. Using an ADIF as a backup method could result in data loss. ADIF is an "amateur radio interface format" and was intended to interface logs between dissimilar systems by defining common fields.

The *Backup file* field is the folder where the native XML file is created. This is the most commonly utilized backup file.

The *Archives* section provides two options.

- **Compress to folder** creates a compressed version of the XML for every backup made. It's a compressed version of the *Backup file* and placed into the folder of the operator's choosing.
- **Add to archive** puts the XML into a compressed folder selected by the operator.

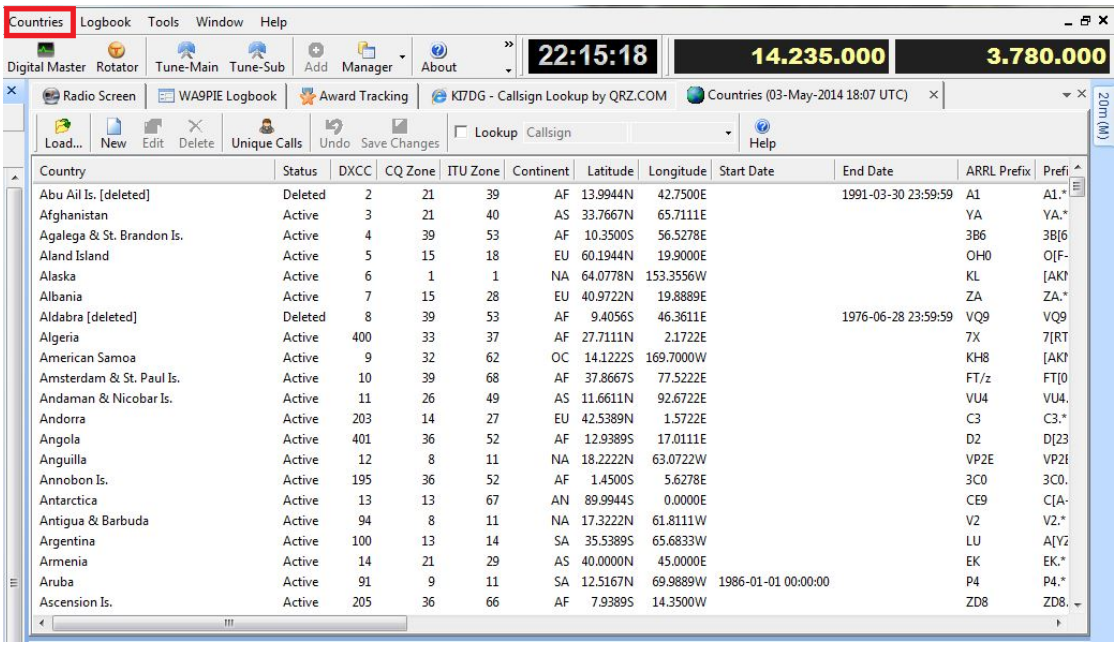
One successful approach is to make use of some of the free cloud storage services like Dropbox, Microsoft OneDrive, Box, and Google Drive to ensure that a hard drive failure could not cause a loss of logbook data.



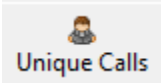
The *Backup databases* selections determine the frequency or conditions for which backups are made to the selected methods above.

Country Data

Ham Radio Deluxe utilizes a country and prefix database that is roughly equivalent to the AD1C list (*http://www.country-files.com*). The country data itself doesn't require constant maintenance. It is updated when new countries are added or removed from the DXCC list. The prefix masks contained within this data is rather complex and it is recommended that operators do not modify it. Updates will be made as frequently as necessary.

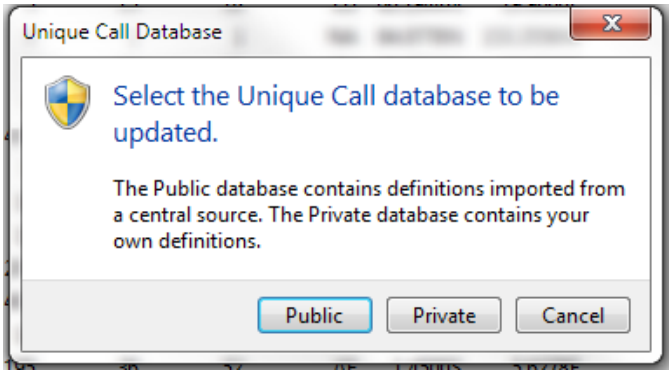


The countries information can be seen by clicking on Countries and then Manager within the Logbook main menu.

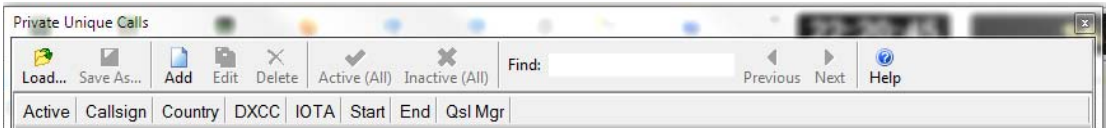


From here, users can also access the Unique Callsign Database by clicking on the "Unique Calls" button.

This prompts the operator for the Public or Private UCSDB.



It is recommended that operators do not add or modify the entries in the Public UCSDB. These will be maintained and updated as frequently as necessary by Ham Radio Deluxe Software. Operators can create entries in the UCSDB by clicking **Private** and entering specific information about a callsign.



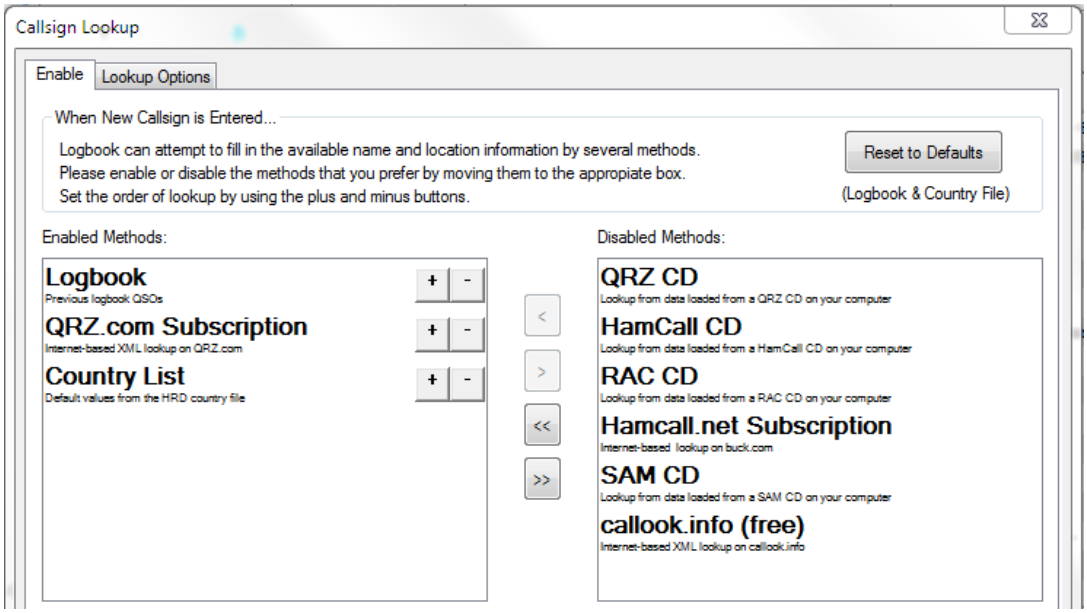
Clicking the **Add** button provides a dialog box that the operator can use to enter the information.

Note: While this method can be very effective, the operator should consider that using the Logbook as a callsign lookup source provide the same capability in real-time. That is – if the operator gets a call logged to the correct country on the first QSO, then the need to maintain a Private USCDB is unnecessary.

Hint: The lookup methods already use the Public UCSDB to assist the operator in logging the QSO to the correct country on the first try.

Callsign Lookup sources

It has become very popular to use callsign databases from the Internet or CD to lookup information about another station. Ham Radio Deluxe supports a number of callsign databases for lookup sources.



Callsign Lookup options are found under **Tools > Configure > Callsign Lookup**. The supported database sources are shown above. Two of them require a subscription (QRZ.com and Hamcall.net), four of them require a CD, one of them pro-

vides free information about US callsigns (callook.info), and the Logbook and Country List are also used.

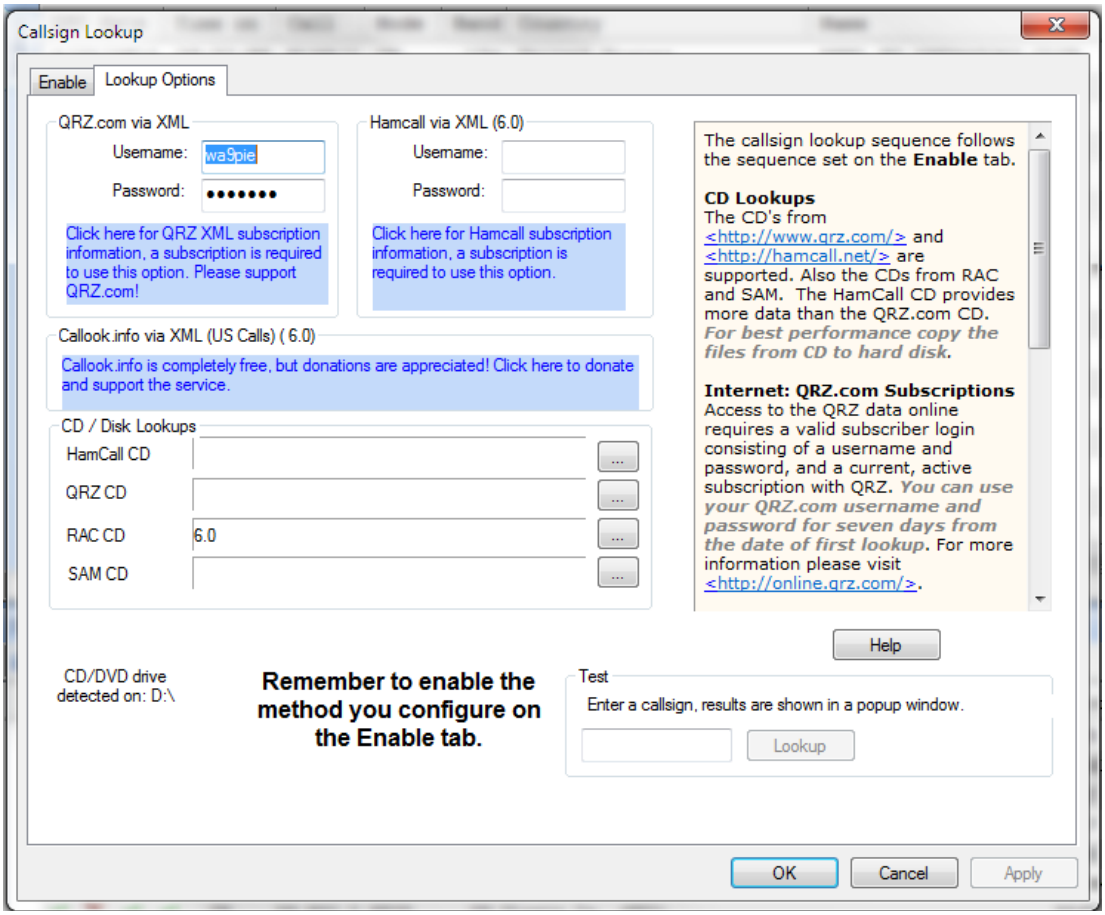
When the ALE is populated with a callsign, "tabbing" out of the callsign field or clicking the QRZ button executes the callsign lookup. At that point, the empty fields in the ALE begin to populate based on the following logic:

- If the callsign is contained within the Unique Callsign Database (UCSDB), the Country and IOTA will be populated from this source first. (This is not operator configurable.)
- Fields remaining empty from the UCSDB (if applicable) will be populated from the "Enabled Methods" in the order selected by the operator. For example (using the image above):
  - **Logbook** – If there is an existing QSO in the log for this callsign, then all populated fields from that logbook entry will be copied to the new QSO record. Putting Logbook at the top of the list is a good idea, as it turns the operator's logbook into a private UCSDB.
  - **QRZ.com** (Subscription) – If there are any remaining empty fields from the previous sources, they will be populated by this choice if the data is available in this choice.
  - **Country List** – If the previous sources did not populate the Country field, the callsign prefix is compared to the Country list and then the country field is populated. Country list should never be moved to the top spot in the Enabled Methods and should normally be at the bottom of the list (last resort choice).

Note: To reiterate, the order of the Enabled Methods is important. The empty fields are filled from the top method to the bottom method until the empty fields are filled with "available" data. If the sources in the Enabled Methods do not provide certain data, the field will be left intentionally empty.

Operators who use a CD database for lookup options see a performance benefit from copying those database files to the local hard drive.

Lookup Options



The *Lookup Options* tab enables the operator to provide the login information for online sources. CD fields provide the ability for the operator to provide the file path to the CD ROM drive or to the hard drive location where the databases were copied.

Test Lookup

The *Test Lookup* button is very important. This enables the operator to test and confirm that the selected methods are functional. Simply enter a callsign in – such as the operator's call – and click **Lookup**. A file will pop-up that displays the retrieved information. If information is missing, then there is a problem with obtaining data from that source. (Commonly, the QRZ or Hamcall subscription are expired and need to be renewed online.)

External Log Interfaces

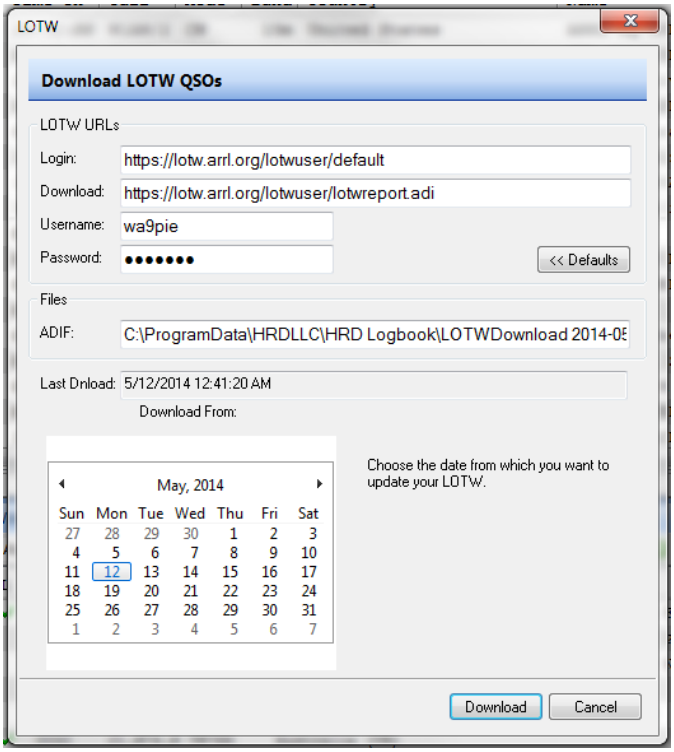
Ham Radio Deluxe Logbook has the ability to interface with a number of external online logging and awards systems. Presently the following systems are supported - LOTW, eQSL, HRDLog.net, and ClubLog.

Logbook of the World (LOTW) is supported when the *TrustedQSL* application is installed (required). Configuring LOTW is as follows:

LOTW Download

Click the **LOTW Download** button, or access the download function through the Ham Radio Deluxe Logbook menu by selecting Logbook, File, LOTW, Download. The following dialog box will be displayed.

Note: TrustedQSL is not used or required for LOTW Download.



1 The LOTW URLs **should not** be changed or the download will not work correctly.

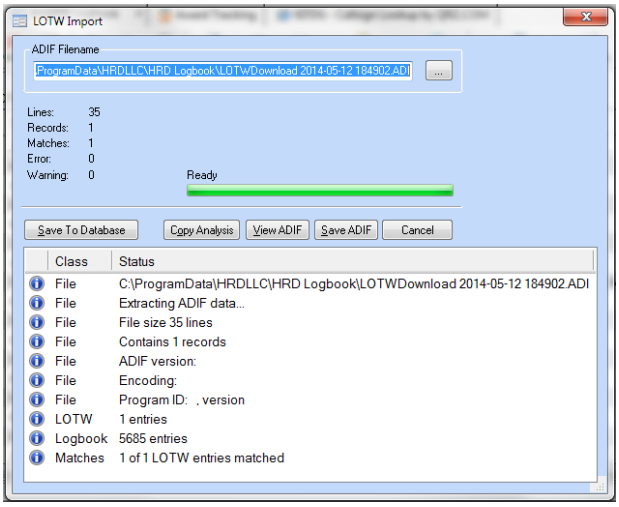
2 The operator adds the **Username** and **Password** for the LOTW account.

3 The ADIF field will populate automatically and it's rarely necessary to change it.

4 Select a date range.

Hint: By default, the download will begin where the last one left off.

5 Then click the **Download** button and the results will be shown after the file is downloaded.



If there are any errors in the downloaded file, they will be described in the above dialog box. Most commonly, there is a mismatch between the mode or band for the data previously uploaded to LOTW and the data in Ham Radio Deluxe Logbook. This will tell the operator what needs to be resolved. Then a repeated upload will be successful.

6 Click **Save To Database**

7 Click **Finish**

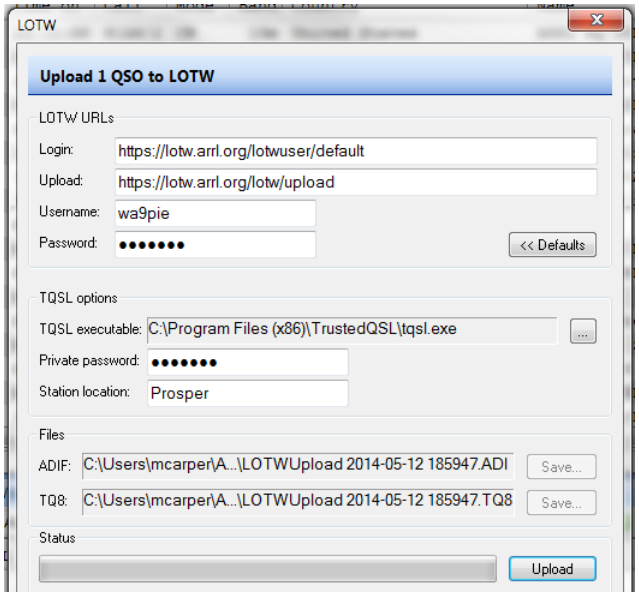
Hint: This is the method that updates the QSL and (some) Award status fields in the Awards Tracking module. You will have to hit the **Refresh** button in the *Awards Tracking* tab in order to update the totals.

LOTW Upload

Begin by selecting the QSOs that the operator wants to upload. From within Logbook, this is done by using the **Ctrl** button and either **left-click** or **shift-click** to select records.

Then click the **LOTW Upload** button, or access the download function through the Ham Radio Deluxe Logbook menu by selecting **Logbook > File > LOTW > Upload**.

Note: TrustedQSL is required for LOTW Upload. The following dialog box will appear:



1 The LOTW URLs **should not** be changed or the upload will not work correctly.

2 The operator adds the **Username** and **Password** for the LOTW account.

3 The operator must tell Ham Radio Deluxe Logbook what folder TrustedQSL is installed.

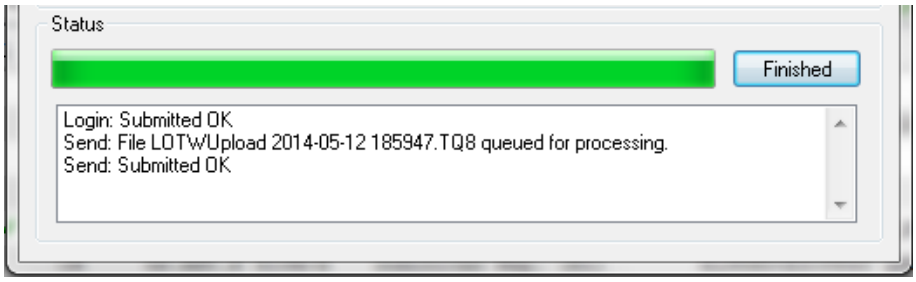
4 If a *Private password* is used in TrustedQSL, it must be entered into the provided field.

5 The *Station location* must match exactly to the station location created and listed in the TQSL application under *Add/Edit Stations*.

HINT: This is the most frequent cause of upload failures.

The file fields will populate automatically and it's rarely necessary to change them.

6 Then click the **Upload** button and the results will be shown after the file is uploaded.



Tip: In order to know which QSOs to upload, it is quite helpful to add the *LOTW sent* field to the logbook layout (by clicking the Layout button and adding **LOTW sent**). Select the QSOs where LOTW sent is *No* before clicking the **LOTW Upload** button.

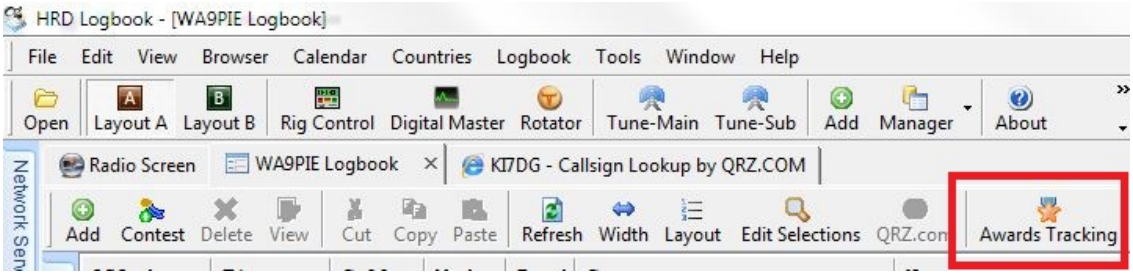
QSO date	Time on	Call	Mode	Band	Country	Name	LOTW sent
4/25/2014	20:32:00	W1AW/2	CW	15m	United States	ARRL HQ OPERATORS CLUB	Yes

8 Awards Tracking

The Awards Tracking module in Ham Radio Deluxe Logbook provides the most complete award tracking features of any software available on the market. It tracks over 200 awards and endorsements in sixteen awards programs. Additionally, users have the ability to create and track additional awards of the operators choosing.

Introduction

To open the Awards Tracking tab, click on the Awards Tracking icon in Logbook.



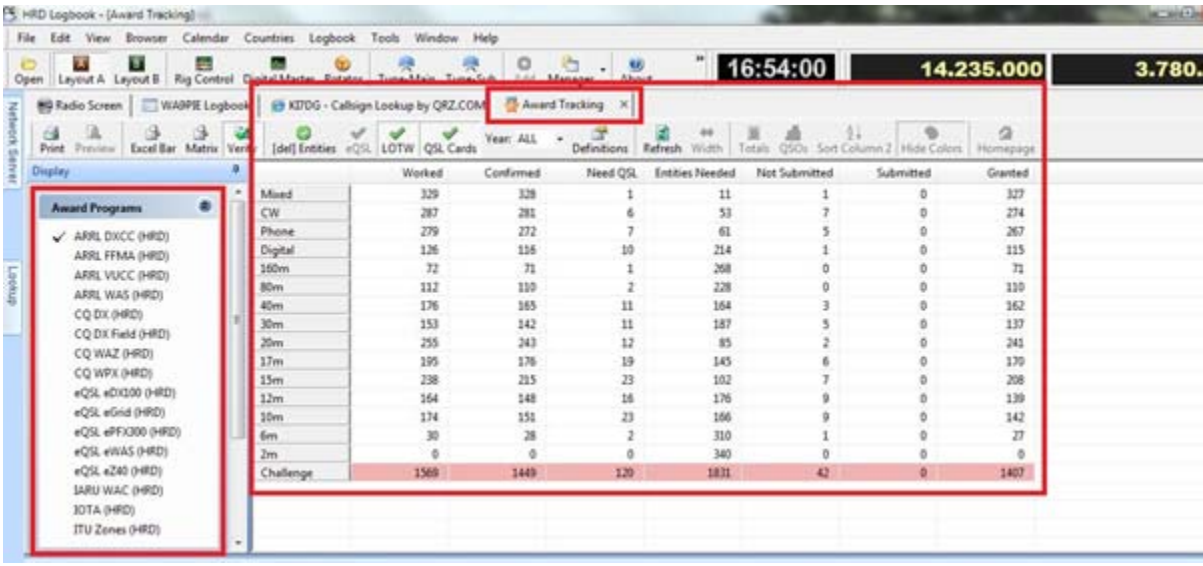
The Awards Tracking tab will be displayed. On the left of your screen you will see a list of sixteen Award Programs that are currently supported by Ham Radio Deluxe.

To the right of the list of awards programs, you will see the awards totals for the selected awards program (DXCC, in this example). When the award name is followed by "(Ham Radio Deluxe)", this signifies that the award is hard-coded into the program and cannot be modified. It is possible to copy these hard-coded awards and customize them to suit the user's liking (this will be covered later).

The awards totals panel consists of "rows, columns, and cells" – similar to a spreadsheet. Understanding the meaning of the rows, columns, and cells is an easy but important step in using the awards feature. All awards programs conform to this format.

The rows represent awards or endorsements within the selected awards program.

Endorsements are listed beginning with an asterisk below the related award.



The columns represent QSO, QSL, and Award credits within the selected awards program.

Column descriptions are as follows:

Worked

This is the total number of entities within the awards program that have been worked, regardless of QSL or award credits. This is a QSO status column.

Confirmed

This is the total number of entities within the awards program that have qualifying QSL confirmations. Each awards program accepts different QSLs (for example, QSL cards, eQSL, and LOTW confirmations may not be accepted for all awards). The award is created to only include the QSL types relevant for that award. This is a QSL status column.

Need QSL

This is the number of entities within the awards program that have been worked but not confirmed. The information directs the operator to the QSOs that can be pursued for confirmation. This is a QSL status column.

Entities Needed

This is the number of entities within the awards program that have not been worked. This is a QSO status column.

Not Submitted

This is the number of entities within the awards program that have been confirmed, but not yet included in an awards application. This information will be used by the operator to make an awards application. QSOs are not included in this total once they have been included in an application and appear in the Submitted column. This is an awards status column.

Submitted

This is the number of entities within the awards program that are part of a current application and awaiting approval. QSOs are not included in this total once they have been granted award credit within the program and appear in the Granted col-

umn. LOTW download provides this data for confirmations obtained through LOTW. This is an awards status column.

Granted

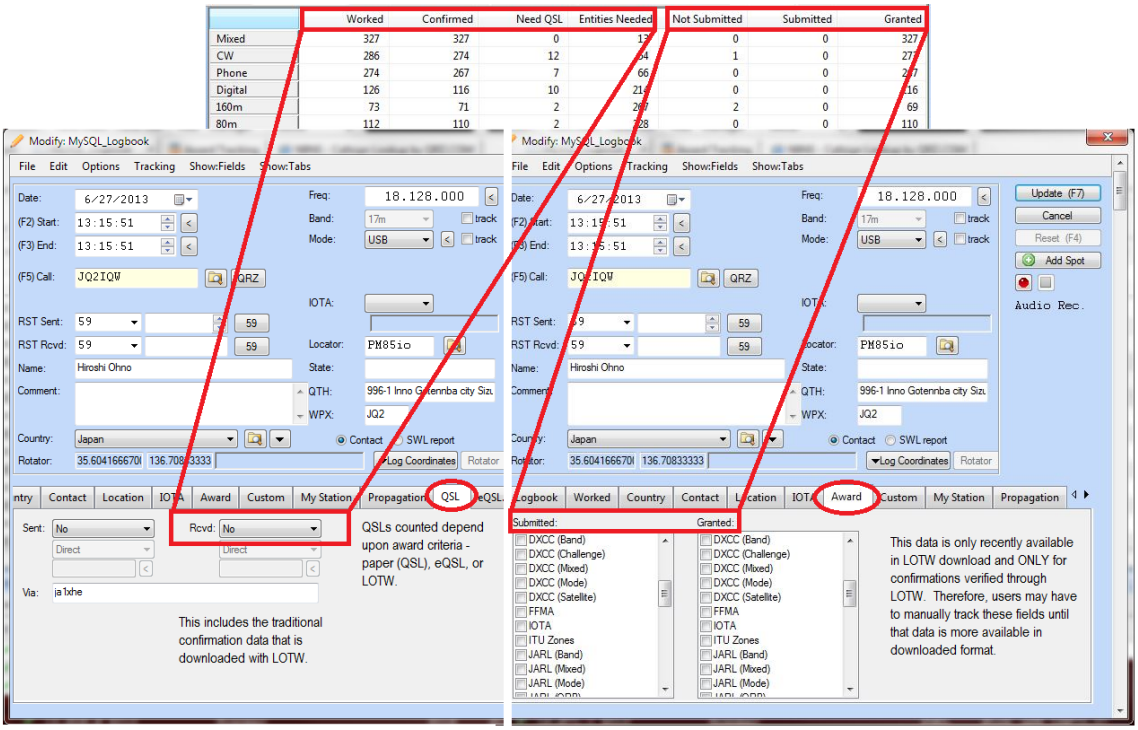
This is the number of entities within the awards program that have been included and approved for award credit. LOTW download provides this data for confirmations obtained through LOTW. (Cards included in applications prior to LOTW are not included in the LOTW download information and must be added manually.) This is an awards status column.

Note: The "Not Submitted", "Submitted", and "Granted" awards status columns are "transitional" columns. That is – a given QSO can be in only one of these columns.

Award Reports

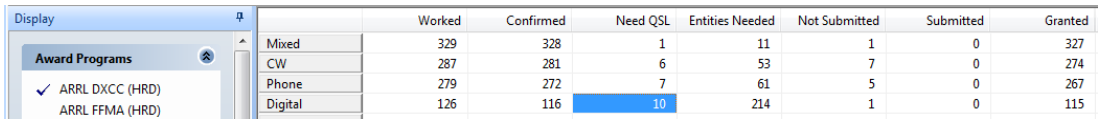
Printing awards reports is accomplished by selecting the **File/Print** option in the Ham Radio Deluxe Logbook main menu.

The data that rolls-up to the totals in these columns come from information contained within the QSO records in the logbook as follows:



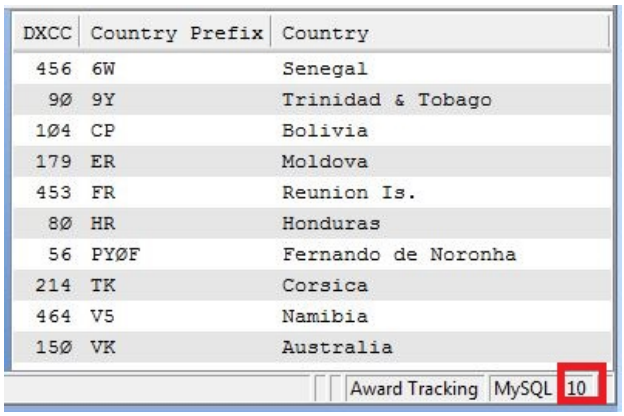
The Worked, Confirmed, Need QSL, and Entities Needed data comes from the QSL, eQSL, and LOTW tabs in the ALE. The Not Submitted, Submitted, and Granted data comes from the Award tab in the ALE. When the Award tab is not populated automatically from the online system (like LOTW), the information should be populated manually when applications are made. (Again, a given QSO cannot have both Submitted and Granted values. Selecting one de-selects the other.)

The cells provide the totals for the column within the selected award. When you double-click on a cell, it will produce a list of the entities that represent that total. For example, the following image indicates that there are ten entities worked for the DXCC Digital award where QSLs are needed:



	Worked	Confirmed	Need QSL	Entities Needed	Not Submitted	Submitted	Granted
Mixed	329	328	1	11	1	0	327
CW	287	281	6	53	7	0	274
Phone	279	272	7	61	5	0	267
Digital	126	116	10	214	1	0	115

Double-clicking on the "10" provides a list of those entities:

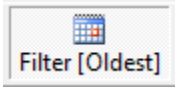


DXCC	Country Prefix	Country
456	6W	Senegal
9Ø	9Y	Trinidad & Tobago
1Ø4	CP	Bolivia
179	ER	Moldova
453	FR	Reunion Is.
8Ø	HR	Honduras
56	PYØF	Fernando de Noronha
214	TK	Corsica
464	V5	Namibia
15Ø	VK	Australia

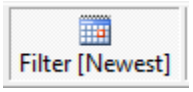
Award Tracking | MySQL | 10

There are three choices for displaying the QSOs represented by this list. These three choices are available in the *Filter* icon in the icon bar above the list. Clicking this button "toggles" the filter between the three values.

The **Filter [Off]** condition assumes that the operator wants to see all the QSOs among the list of entities shown. This is most helpful for chasing QSL cards (*Need QSL* column), where the operator wants to see all the QSOs with the displayed list of entities.



The **Filter [Oldest]** assumes the operator wants to see only one QSO among the list of entities shown. This is most helpful for making award submissions (*Not Submitted* column) where only one qualifying QSO is needed.



The **Filter [Newest]** assumes the operator wants to see only one QSO among the list of entities shown. This is most helpful for making award submissions (*Not Submitted* column) where only one qualifying QSO is needed.

Once the desired filter is selected, the operator can display the results by clicking the *View All* button.

Example 1

What QSOs do I need to obtain cards from to increase my DXCC Digital Awards confirmation?

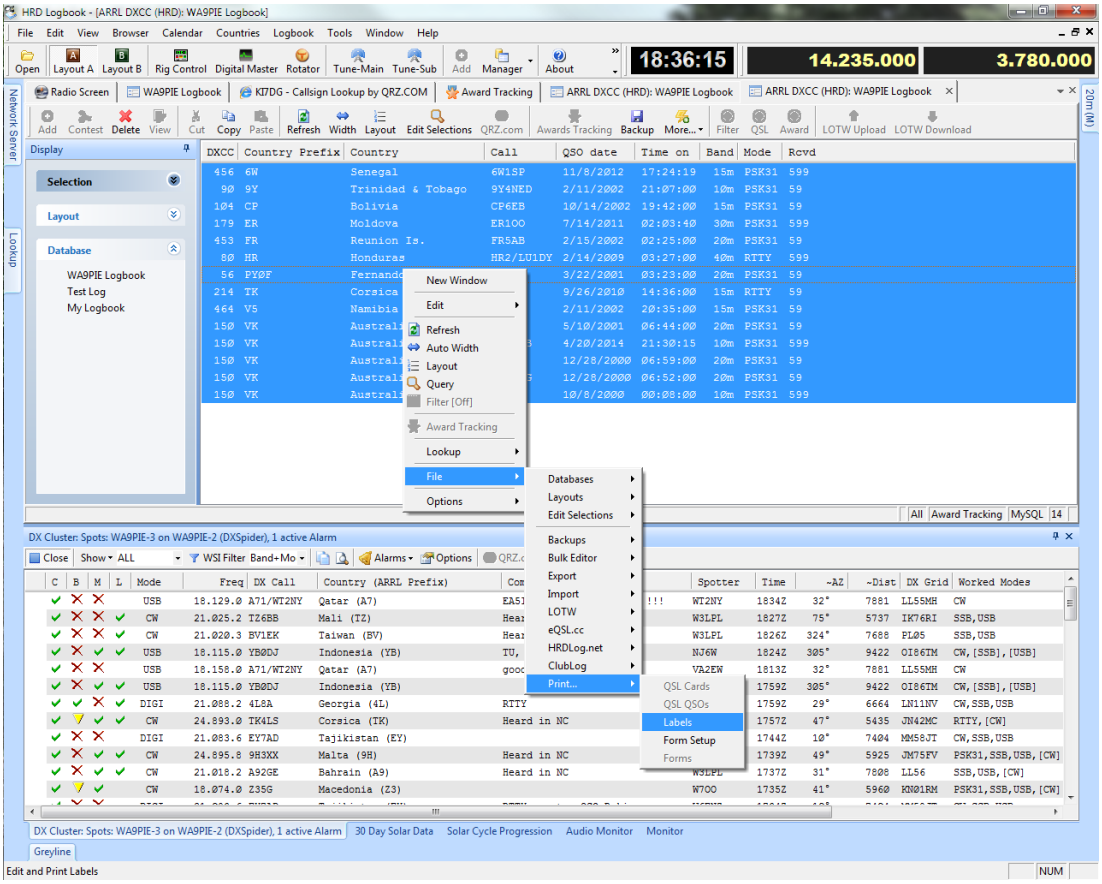
Going back to the ten entities in the *Need QSL* column, the operator would want to select **Filter [Off]** and **View All**. This would render a complete list of QSOs with those ten entities where a QSL could be obtained.

DXCC	Country Prefix	Country	Call	QSO date	Time on	Band	Mode	Rcvd
456	6W	Senegal	6W1SP	11/8/2012	17:24:19	15m	PSK31	599
9Ø	9Y	Trinidad & Tobago	9Y4NED	2/11/2002	21:07:ØØ	1Øm	PSK31	59
1Ø4	CP	Bolivia	CP6EB	1Ø/14/2002	19:42:ØØ	15m	PSK31	59
179	ER	Moldova	ER1OO	7/14/2011	Ø2:Ø3:4Ø	3Øm	PSK31	599
453	FR	Reunion Is.	FR5AB	2/15/2002	Ø2:25:ØØ	2Øm	PSK31	59
8Ø	HR	Honduras	HR2/LU1DY	2/14/2009	Ø3:27:ØØ	4Øm	RTTY	599
56	PYØF	Fernando de Noronha	PYØFZ	3/22/2001	Ø3:23:ØØ	2Øm	PSK31	59
214	TK	Corsica	TK5MH	9/26/2Ø1Ø	14:36:ØØ	15m	RTTY	59
464	V5	Namibia	V51GB	2/11/2002	2Ø:35:ØØ	15m	PSK31	59
15Ø	VK	Australia	VK5PO	5/1Ø/2001	Ø6:44:ØØ	2Øm	PSK31	59
15Ø	VK	Australia	VK3FFB	4/2Ø/2014	21:3Ø:15	1Øm	PSK31	599
15Ø	VK	Australia	VK3PK	12/28/2ØØØ	Ø6:59:ØØ	2Øm	PSK31	59
15Ø	VK	Australia	VK2DSG	12/28/2ØØØ	Ø6:52:ØØ	2Øm	PSK31	59
15Ø	VK	Australia	VK7SA	1Ø/8/2ØØØ	ØØ:Ø8:ØØ	1Øm	PSK31	599

All | Award Tracking | MySQL | 14

Notice that, for the 10 entities where a QSL is needed, there are fourteen QSOs. This gives the operator the ability to decide which QSOs to pursue. The operator can select QSOs in this view and print QSL cards or labels from this list.

Hint: Select **Ctrl** + **A** will select all the QSO. Press the **Ctrl** button, while clicking individual QSOs, will select a number of individual QSOs as desired.

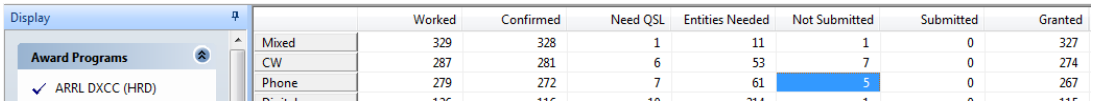


Logbook

Example 2:

What QSLs do I need to submit to include in my next awards application for the DXCC Phone Award?

The awards totals indicate that five QSLs are ready for to be submitted in an award application:



	Worked	Confirmed	Need QSL	Entities Needed	Not Submitted	Submitted	Granted
Mixed	329	328	1	11	1	0	327
CW	287	281	6	53	7	0	274
Phone	279	272	7	61	5	0	267

Double-clicking on the "5" generates a list of the entities that will be submitted:

DXCC	Country Prefix	Country
5Ø8	FO/a	Austral Is.
298	FW	Wallis & Futuna Is.
225	IS	Sardinia
49Ø	T33	Banaba I. (Ocean I.)
11	VU4	Andaman & Nicobar Is.

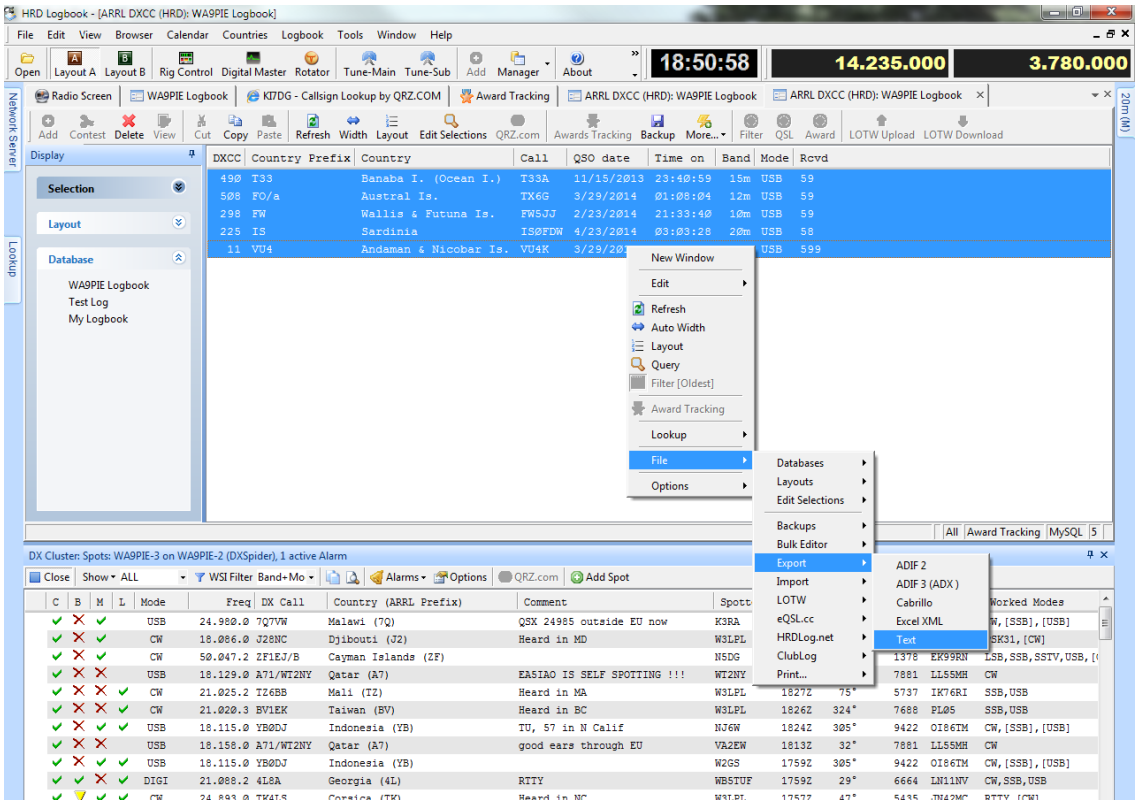
Award Tracking | MySQL | 5

Because there may be more than one QSL for some of these entities in this list, I will select **Filter [Oldest]** and **View All**. This provides the list needed for submission:

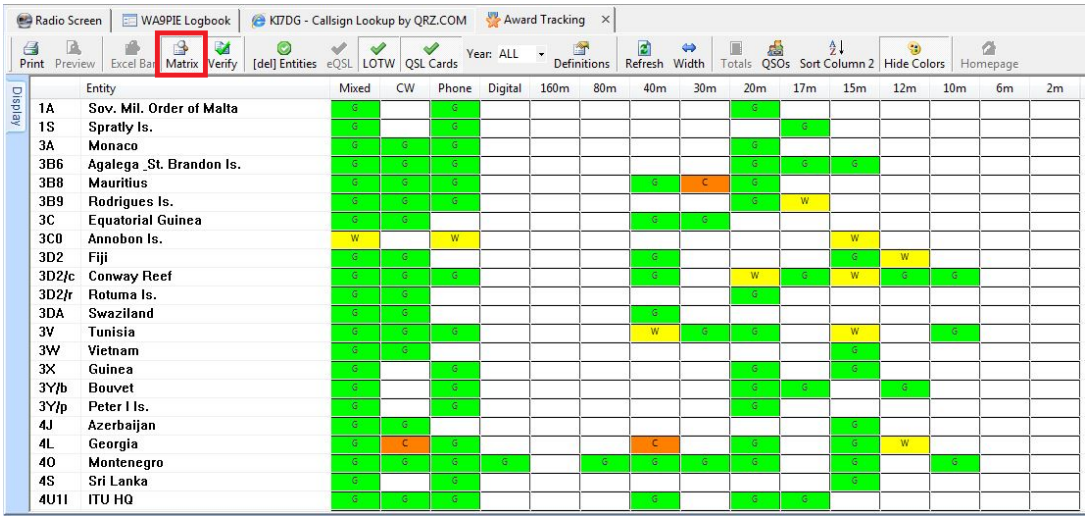
DXCC	Country Prefix	Country	Call	QSO date	Time on	Band	Mode	Rcvd
49Ø	T33	Banaba I. (Ocean I.)	T33A	11/15/2Ø13	23:4Ø:59	15m	USB	59
5Ø8	FO/a	Austral Is.	TX6G	3/29/2Ø14	Ø1:Ø8:Ø4	12m	USB	59
298	FW	Wallis & Futuna Is.	FW5JJ	2/23/2Ø14	21:33:4Ø	1Øm	USB	59
225	IS	Sardinia	ISØFDW	4/23/2Ø14	Ø3:Ø3:28	2Øm	USB	58
11	VU4	Andaman & Nicobar Is.	VU4K	3/29/2Ø14	Ø1:56:Ø7	12m	USB	599

All | Award Tracking | MySQL | 5

The operator can print this list by clicking **File/Print** in the Ham Radio Deluxe Logbook menu. Additionally, the operator can save this list as an Excel or delimited text file so that the information can be combined into a single award application.

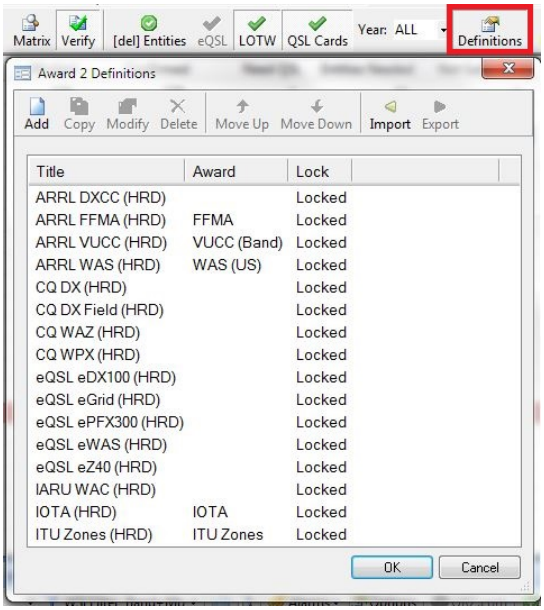


Clicking on the **Matrix** button generates a matrix report for the selected awards program. This is very similar to the style of report that is provided by the ARRL for DXCC awards. But this report shows Granted (G), Confirmed (C), and Worked (W) countries by award.

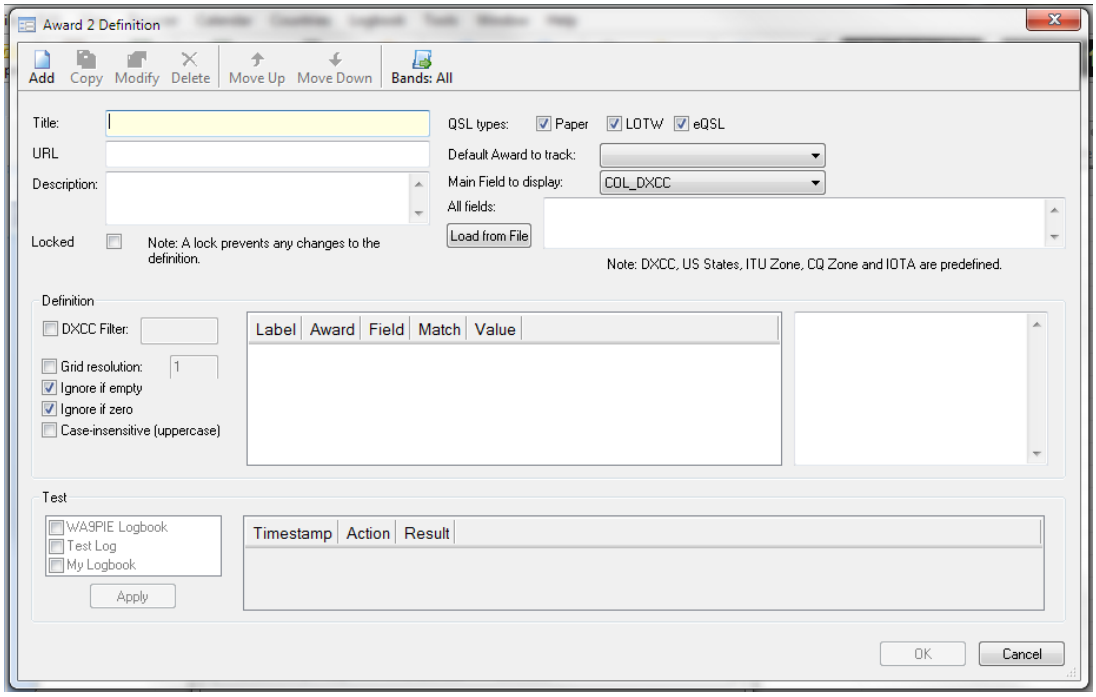


	Entity	Mixed	CW	Phone	Digital	160m	80m	40m	30m	20m	17m	15m	12m	10m	6m	2m
1A	Sov. Mil. Order of Malta	G		G						G						
1S	Spratly Is.	G		G							G					
3A	Monaco	G	G	G						G						
3B6	Agalega _St. Brandon Is.	G	G	G						G	G	G				
3B8	Mauritius	G	G	G				G	C	G						
3B9	Rodrigues Is.	G	G	G						G	W					
3C	Equatorial Guinea	G	G					G	G							
3C0	Annobon Is.	W		W								W				
3D2	Fiji	G	G					G				G	W			
3D2/c	Conway Reef	G	G	G				G		W	G	W	G	G		
3D2/r	Rotuma Is.	G	G							G						
3DA	Swaziland	G	G					G								
3V	Tunisia	G	G	G				W	G	G		W		G		
3W	Vietnam	G	G									G				
3X	Guinea	G		G						G		G				
3Y/b	Bouvet	G		G						G	G		G			
3Y/p	Peter I Is.	G		G						G						
4J	Azerbaijan	G	G									G				
4L	Georgia	G	C	G				C		G		G	W			
4O	Montenegro	G	G	G	G		G	G	G	G		G		G		
4S	Sri Lanka	G		G								G				
4U1I	ITU HQ	G	G	G				G		G	G					

Operators can create (define) their own awards by selecting the **Definitions** button in the Awards Tracking tab.



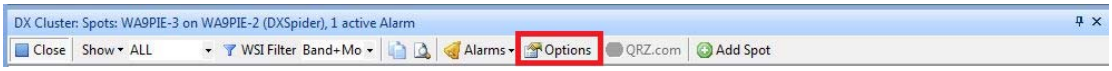
The operator can create a new award based on one of the hard-coded (Locked) awards by selecting one and clicking **Copy**, or build a new award from scratch by selecting **Add**.



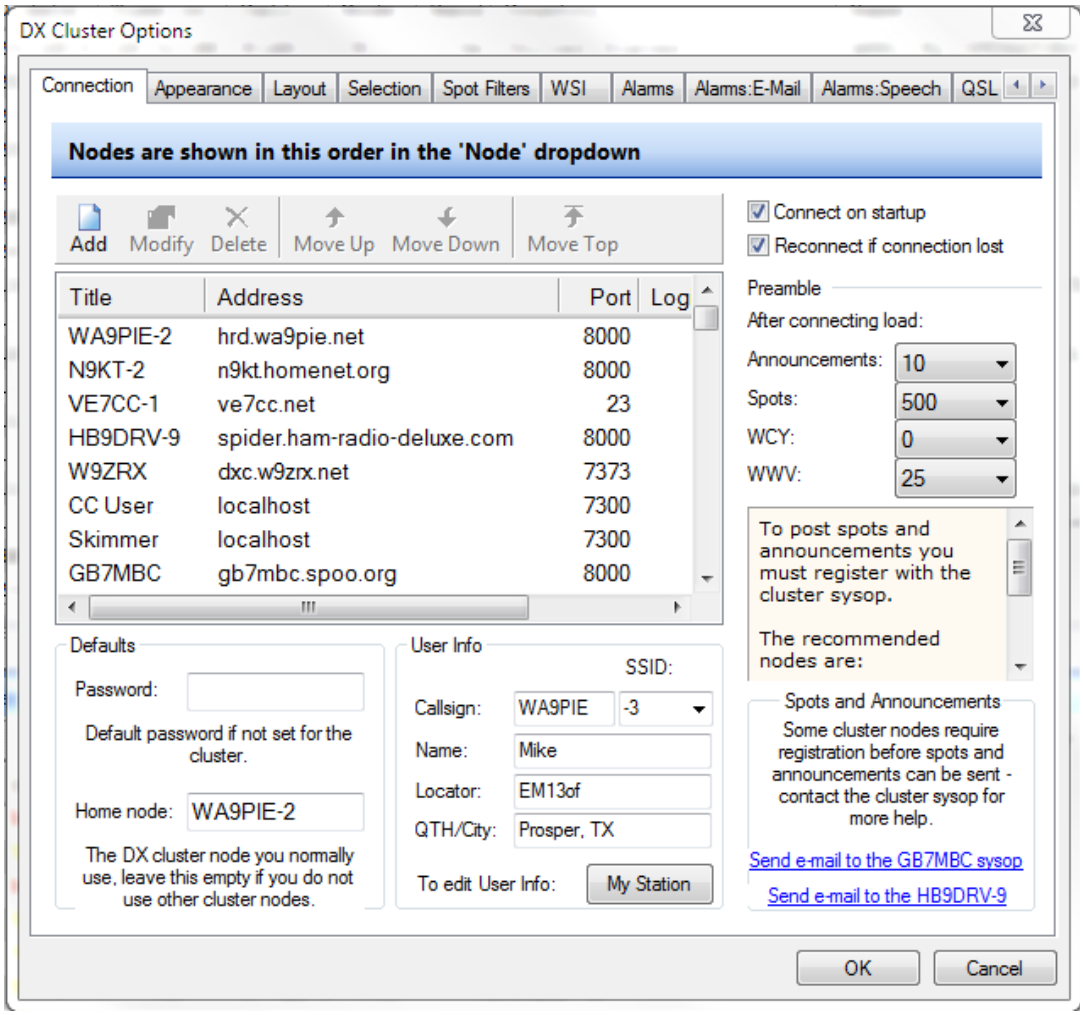
Because the awards definition builder is very flexible, it would be hard to describe a specific example. It is recommended that the operator tinker with this by creating a copy of a hard-coded (Locked) award and learning it through trial-and-error.

DX Cluster (and the associated Options)

Ham Radio Deluxe has a very powerful DX Cluster capability that is designed to maximize a DXer's productivity. Configuring the DX Cluster window is done by clicking the **Options** button in the DX Cluster pane.



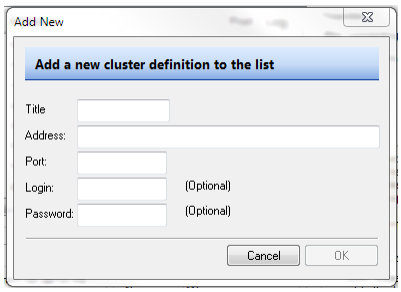
The following DX Cluster Options dialog box will be displayed:



Connections Tab

The **Connections** tab defines how the operator will connect to the DX Cluster system:

A list of DX Cluster nodes (telnet servers) are shown. There are about 500 cluster nodes included. The operator can choose from one of those or add one that's not included by giving it a title, providing the IP address or DNS name, and the IP port number.



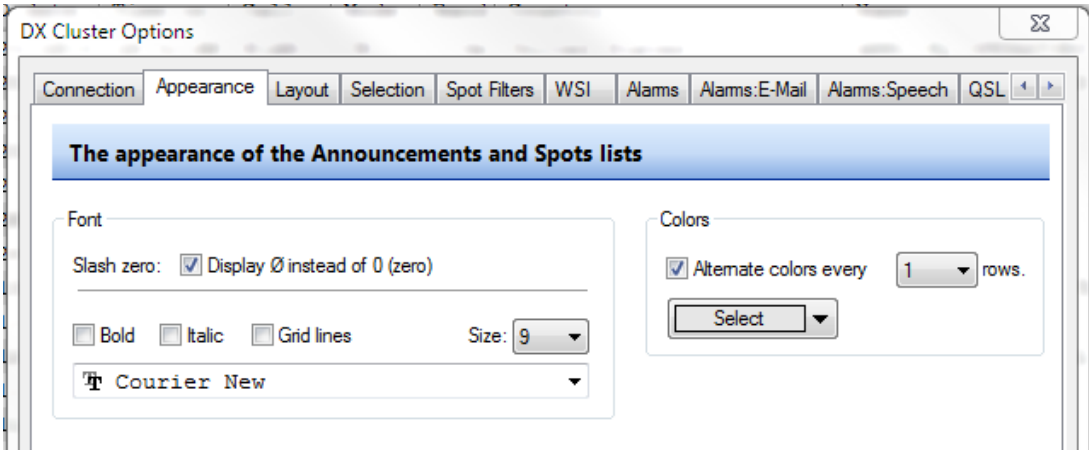
If a password is required for the selected cluster, or *Home node* is defined by the operator, these are added in the *Defaults* section.

If the operator desires that the connection to be made when Ham Radio Deluxe Logbook is launched, or reconnected in the event of a disconnect, those options can be set in the upper right.

At logon, the operator can opt to automatically pull down Announcements, Spots, or solar data from WCY or WWV. The number of each can be specified here.

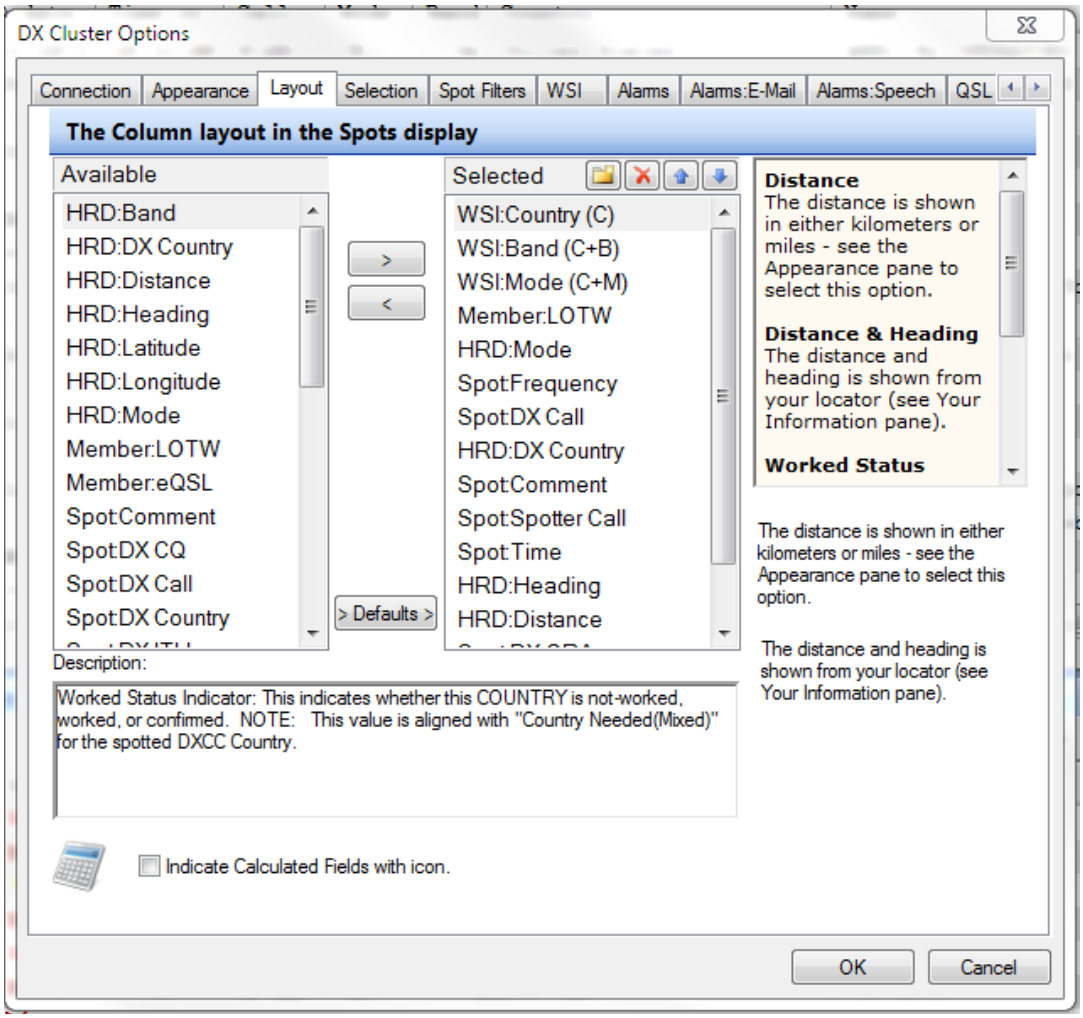
The User Info is obtained from the *My Station* data.

Note: If you are connecting to the same node from multiple computers, it is necessary to select a unique identifier – or SSID – for each connection. Failure to do so will disconnect the previously connected session.



Appearance Tab

The **Appearance** tab provides options for changing the font or alternating row colors:



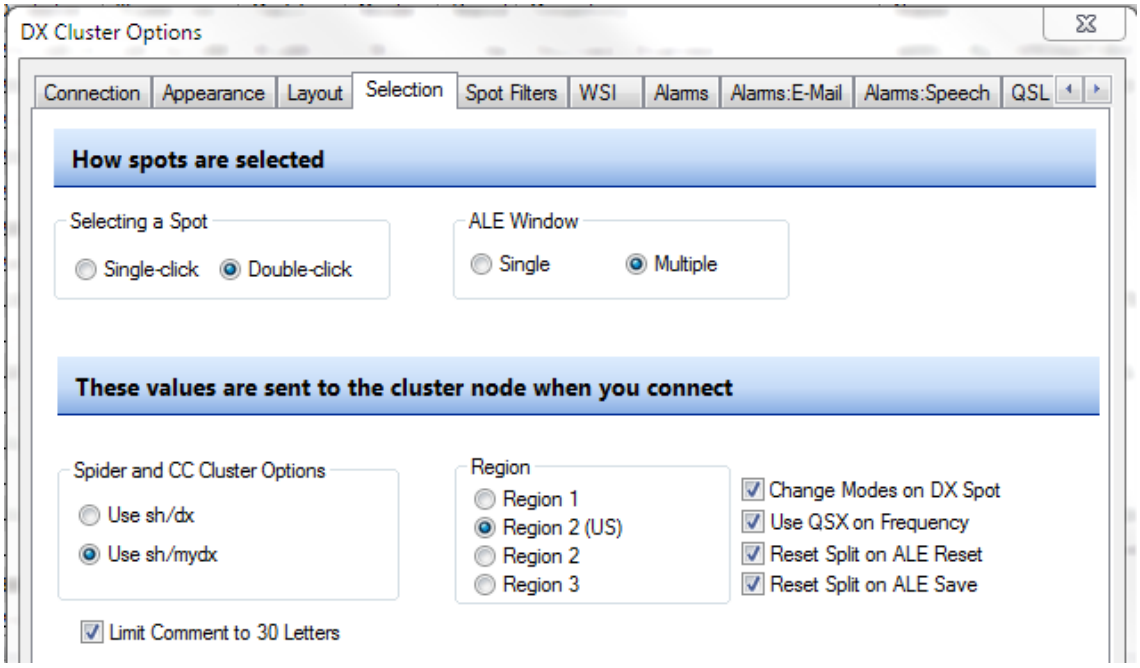
Layout Tab

The **Layout** tab is a very important tab, as it is where the operator will select the information that they wish to display in the DX Cluster pane.

The field names now provide an indication about the source of the information.

- Fields that begin with *HRD* indicate that the information provided is created by logbook from other related sources of information about that spot. For example, heading and distance are estimated using the "center-of-country" coordinates for the spotted station's country.
- The fields that begin with *Spot* contain information that comes straight from the DX Cluster node. For example, the Country provided by the cluster varies in format between cluster nodes. Selecting **Spot:DX Country** will display exactly what the cluster node provides (which is why most operators prefer **HRD:DX Country** so that it's shown in a consistent format).
- The fields that begin with "WSI" are Worked Status Indicators. These columns assist the DXer in determining what spots are needed for new countries on band or mode.
- The fields that begin with "Member" display an indicator that shows whether or not the spotted station is a user of LOTW or an AG member of eQSL.

Note: It is HIGHLY recommended to use the layout *Defaults* for some period of time to gain familiarity with the most commonly selected fields.



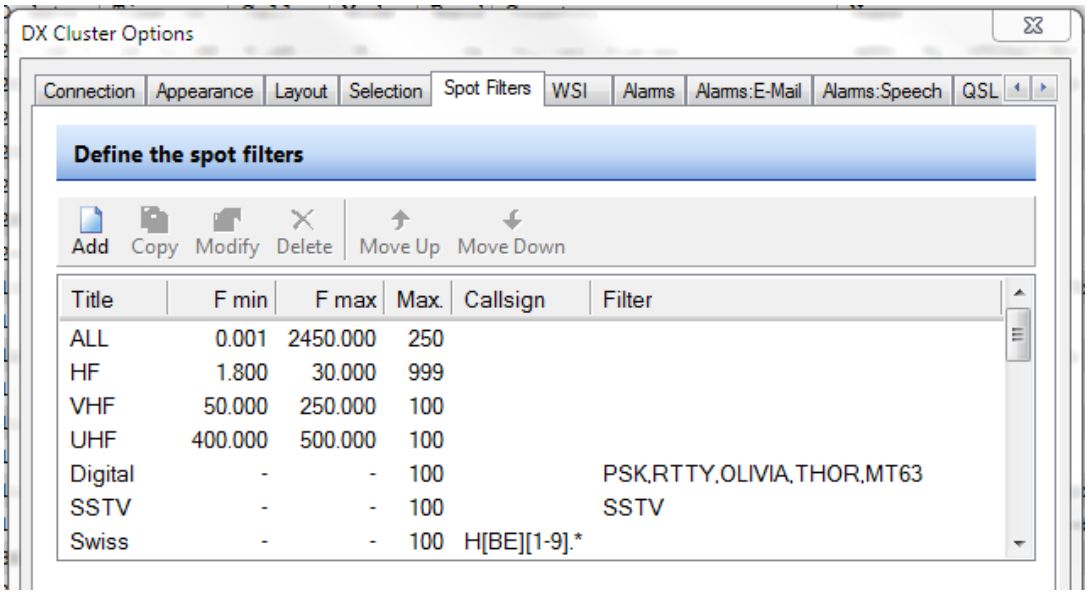
Selection Tab

The **Selection** tab provides options for the behavior when selecting spots.

- Selecting a spot – with frequency and mode change for the rig – can be done with a single-click or double-click. A double-click is recommended, as this gives the operator the ability to single-click to display the spotted station's information in the Lookup Pane.
- Some operators want the ability to open multiple ALE windows simultaneously.
- DX Spider and CC Cluster have the ability to send the first "lot" of spots (as determined by the Connection tab) in a format that honors the server-side

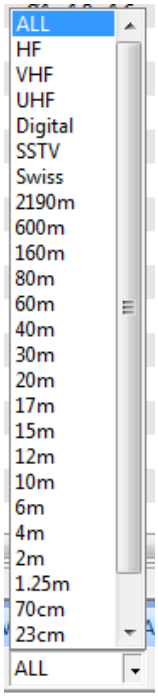
filters. Using ***sh/mydx*** is recommended (this works regardless of the existence of server-side filters).

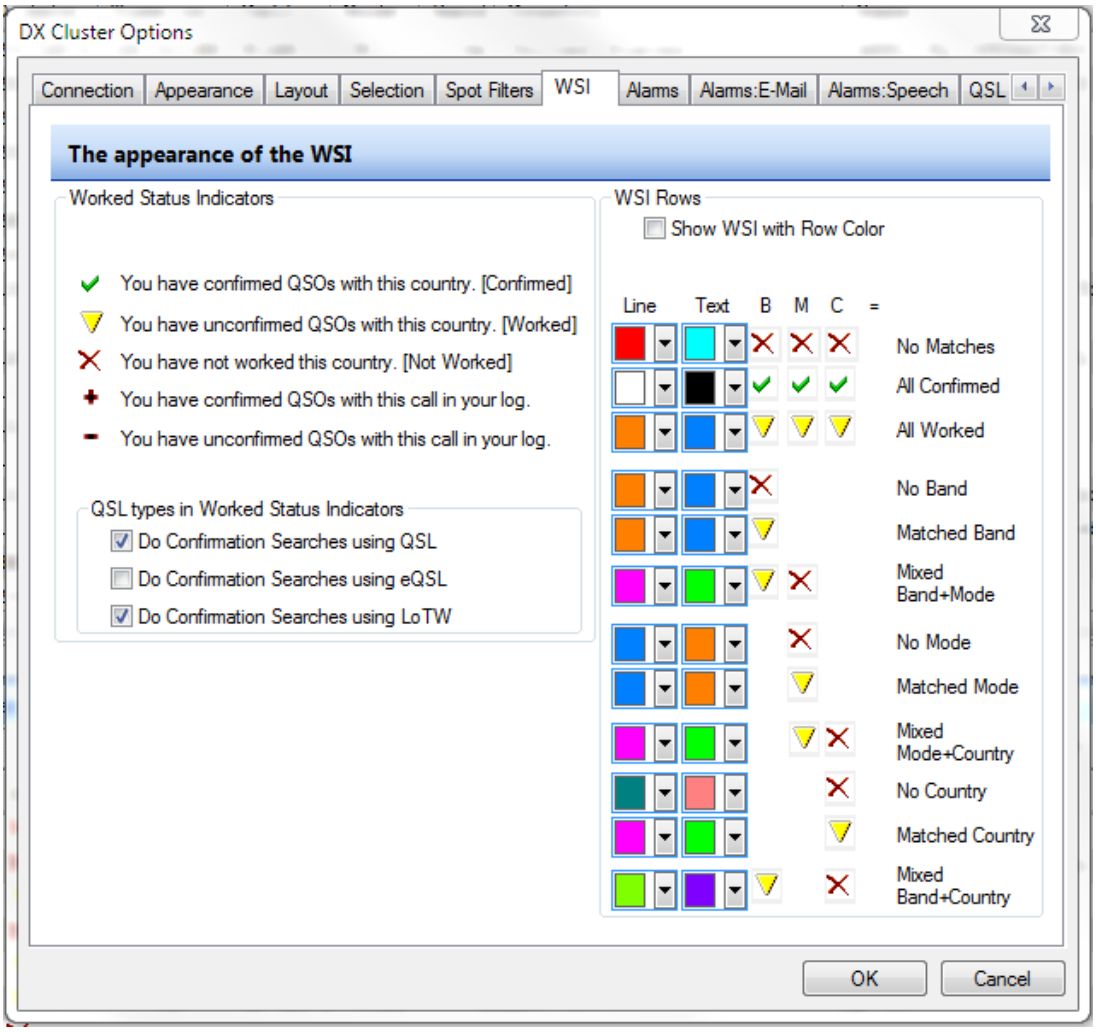
- ITU region is selected here.
- The behavior of mode change and QSX are selected here.



Spot Filters

The **Spot Filters** tab enables the operator to create filters for the data being delivered to the DX Cluster window (ie. after the application of server-side filters). These filters are displayed in the dropdown menu in the DX Cluster window.



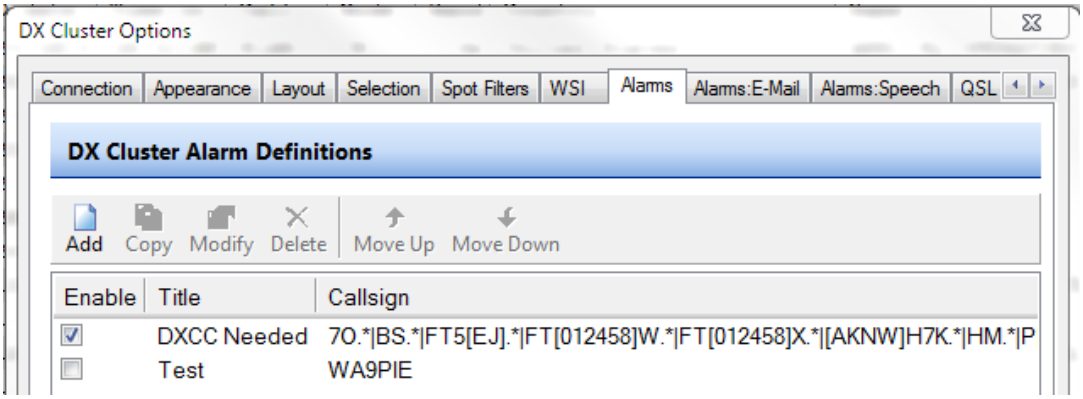


WSI Tab

The **WSI** tab defines the behavior of the Worked Status Indicator fields in the layout.

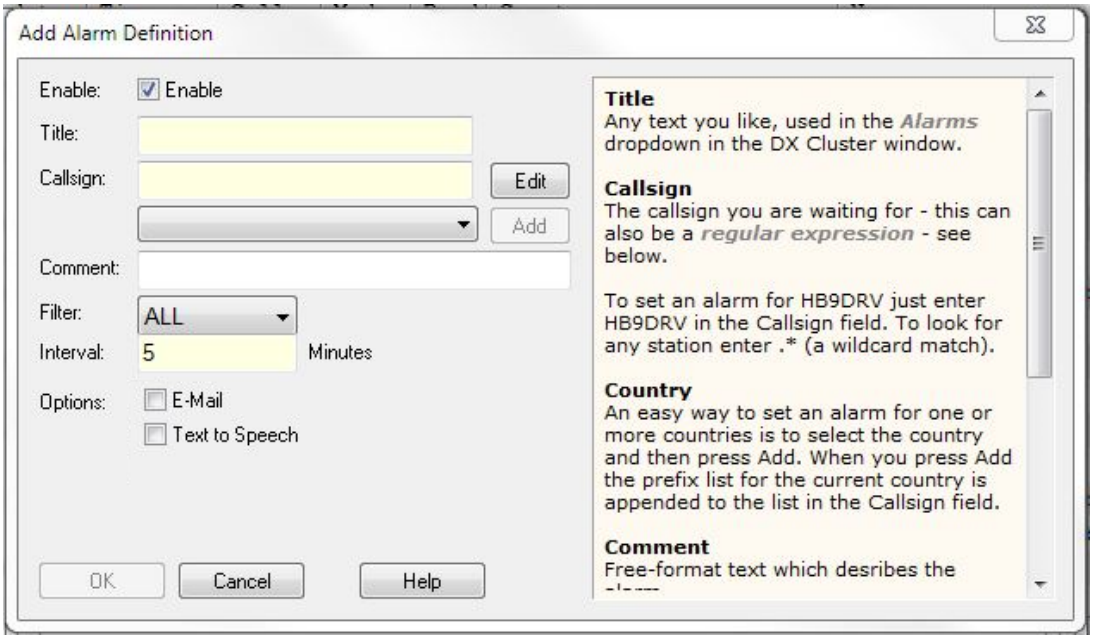
On the left hand side, the WSI icons are defined and the QSL types to include in WSI are selected. In the right-hand side, the operator has the option of color-coding spots based on selected criteria.

Note: If no QSL types are included, then the DX Cluster will not show a yellow yield sign (Worked, but not confirmed). Please select at least one QSL type.



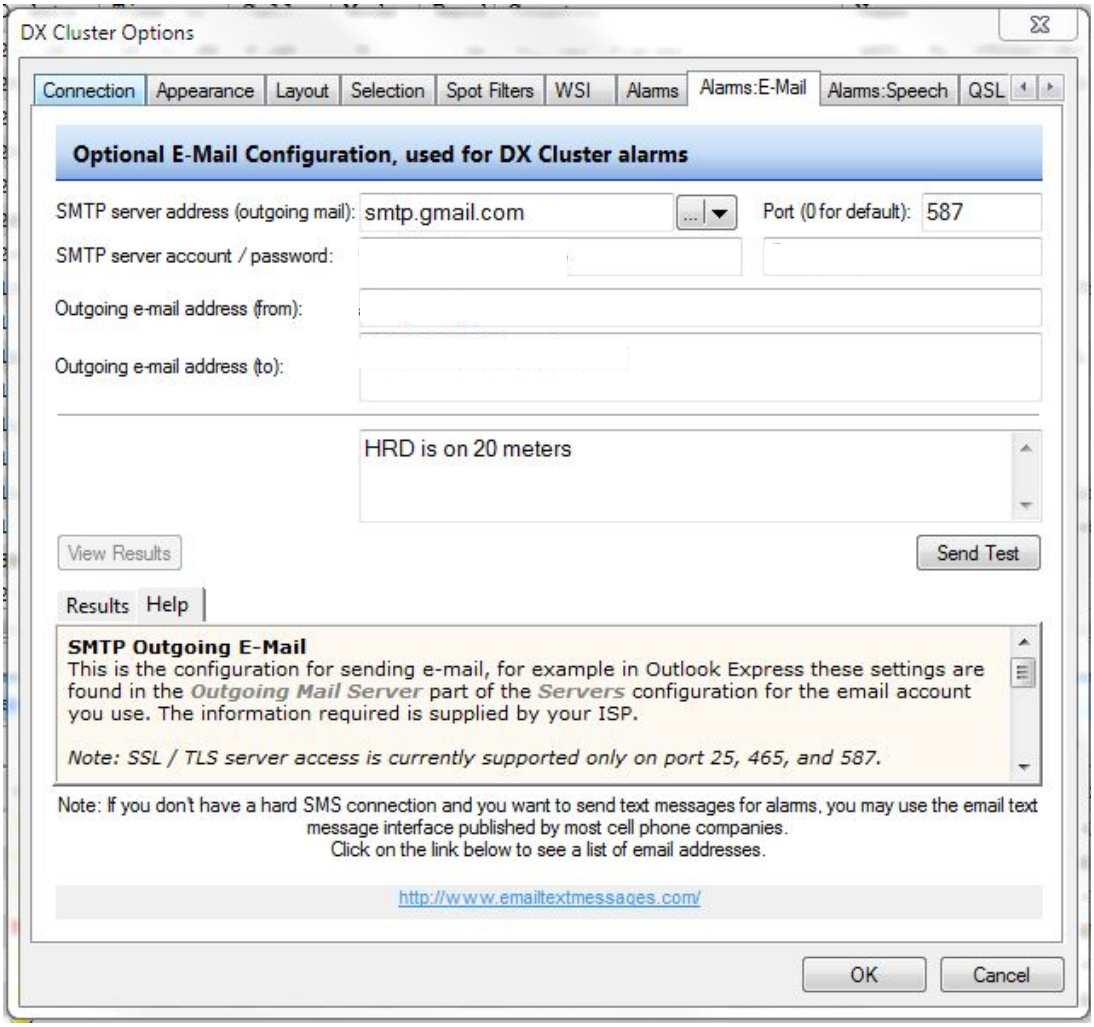
Alarms Tab

The **Alarms** tab enables the operator to define the criteria with which email or speech alarms are generated.



Selecting **Add** provides a dialog box for a new alarm. It must have a title, and then the operator can choose between callsign or Country alarm, by dropping the field down to select from a list of Countries. The filter field provides the option to select among the filters created in the *Spot Filters* tab.

The options select email and/or text to speech alarms configured in the next two tabs.

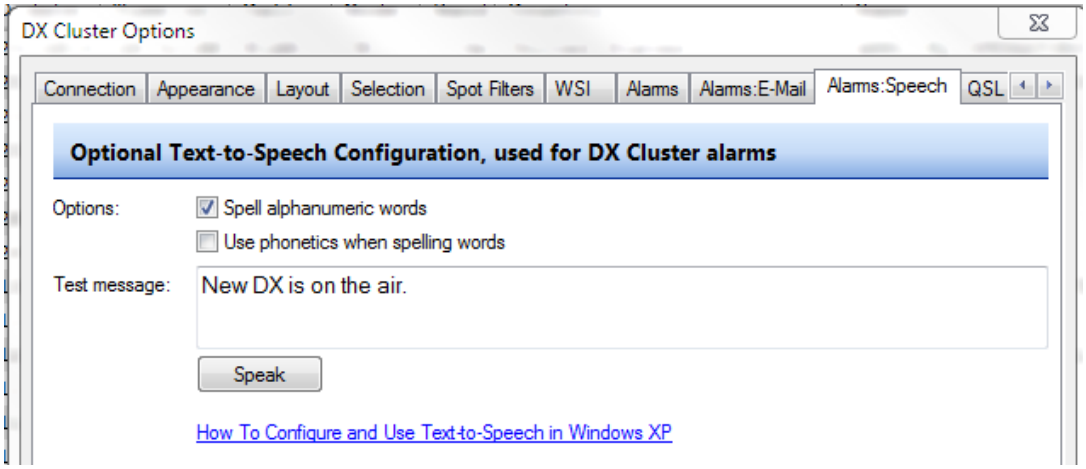


Alarms:E-Mail Tab

The **Alarms:E-Mail** tab enables the operator to configure and test the email alarms. Using the email address for the operator's smartphone is a nice option, as MMS text messages display nicely on a phone.

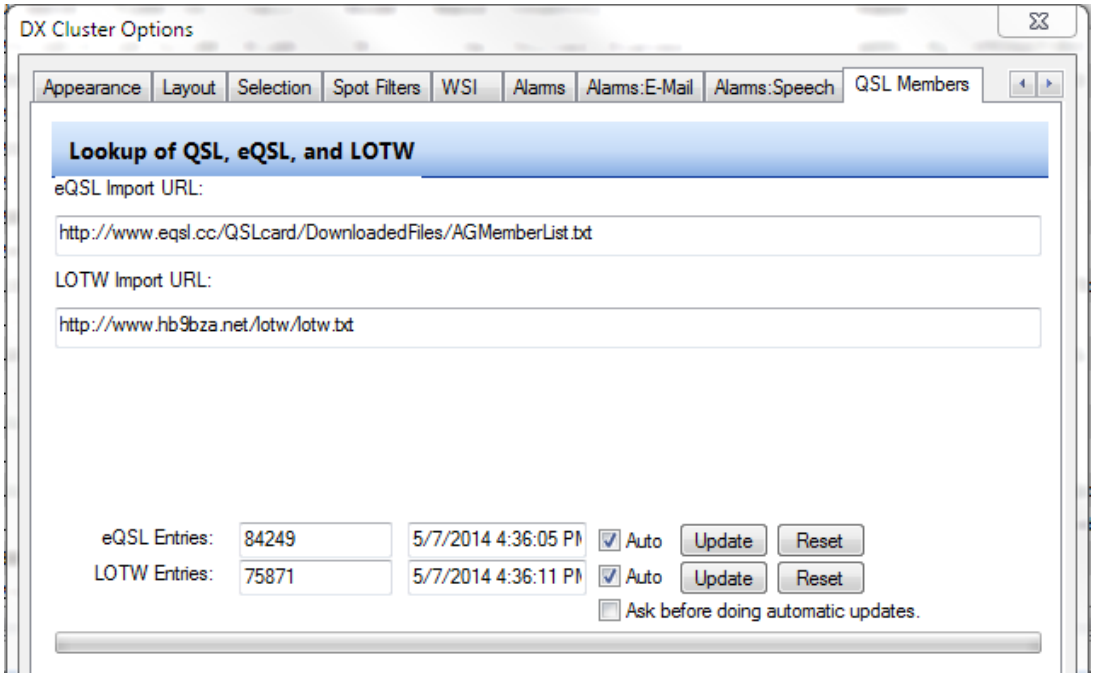
HRD DX Cluster> 3C0BYP 21280.0
HRD DX Cluster

DX Callsign .....: 3C0BYP
DX Locator .....:
DX Country .....: Annobon-3C0
Frequency .....: 21280.0
Date .....: 23-Feb-2014 2130Z
Spotter .....: WB0RUR
Spotter locator ..:
Spotter comment ..:



Alarms:Speech Tab

The **Alarms:Speech** tab provides an audio indicator that an alarm has triggered.



QSL Members Tab

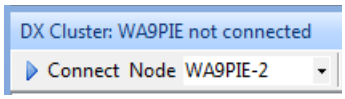
The **QSL Members** tab configures the update frequency and automation for the LOTW and eQSL (AG) member's list. Operators are prompted for this when launching Logbook for the first time. The **set-it and forget-it** option is the recommended choice. This sets both lists to **Auto** and does not ask before automatic updates.

(Interesting note: This data indicates that there are about 9,000 more eQSL AG members than LOTW members).

Button Bar

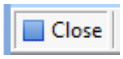
The button bar in the DX Cluster pane provides a number of useful options.

Connect



The connect button starts a connection to the selected DX Cluster node. The DX Cluster node can be selected from a dropdown list.

Close



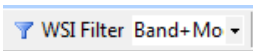
This button terminates the telnet session with the selected DX Cluster node.

While connected, the title bar shows what SSID the operator is using (WA9PIE-3, in the above example), the cluster node the operator is connected to (WA9PIE-2, in the above example), the type of DX Cluster node the operator is connected to (DXSpider, in the above example), and how many alarms are active.

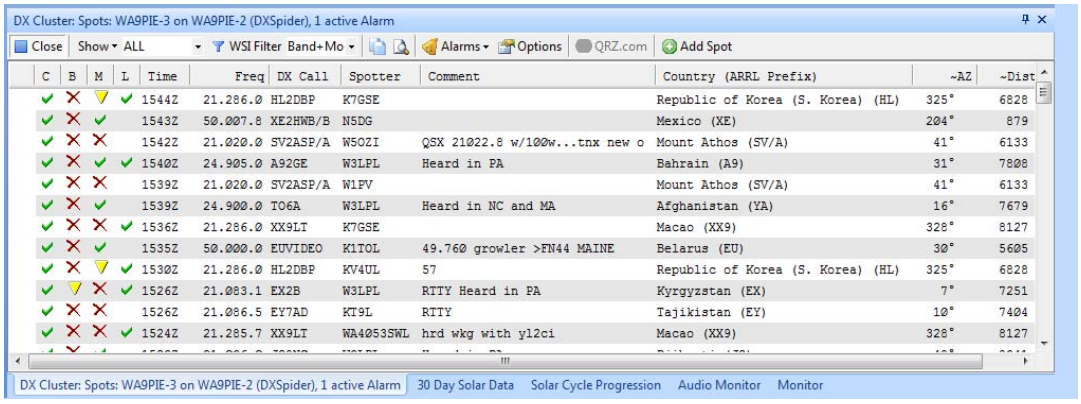
Note: Ham Radio Deluxe Logbook supports DXSpider, CC Cluster, and AR Cluster server nodes via telnet.

The filters dropdown (shown above) enables the operator to filter DX Spots based on the filters created in Options/Spot Filter. Provided values include HF, UHF, VHF, 160m, 80m… etc.

> **HINT**: It is not good practice to try to filter spots by geographic zone from within Ham Radio Deluxe. These types of filters are best when created on the server/node. Google search can provide the filter command set for DXSpider, CC Cluster, and AR Cluster.



NEW – The WSI Filter is a powerful asset to the DXer and DX awards fan. This filter is capable of *hiding* spots that are not needed for band or mode. Options are **Band**, **Mode**, and **Band or Mode**. As a result, the DX Cluster window will display the following:



Ham Radio Deluxe

Digital Master 780

Digital Master 780

9 Digital Master-780

Introduction

DM-780 is a very sophisticated, feature packed, program that allows you to send and receive many of the popular amateur radio digital modes, including SSTV and several PSK versions using a computer sound card. It supports AFSK modes as well as FSK RTTY.

The program integrates with the Ham Radio Deluxe *Rig Control* program to control band and frequency changes without exiting the program. It's also integrates with the Ham Radio Deluxe Logbook to allow easy callsign look-ups and logging of your digital contacts through its built-in Add Log Entry (ALE) screen.

DM-780 has features not found in any other program on the market today. The SuperSweeper gives you the ability to view and decode multiple signals using CW, BPSK and RTTY in single window. You can also enable the SuperSweeper History file to keep track of and display information about callsigns you have heard from your location.

The SSTV module has a built-in editor for creating templates for your outgoing messages on background pictures from your own photo collections. It can also place an incoming picture within one of your outgoing pictures so your contact can see just exactly how his transmission looked when you received it. These are just a few of the many great features of DM-780.

Getting Started

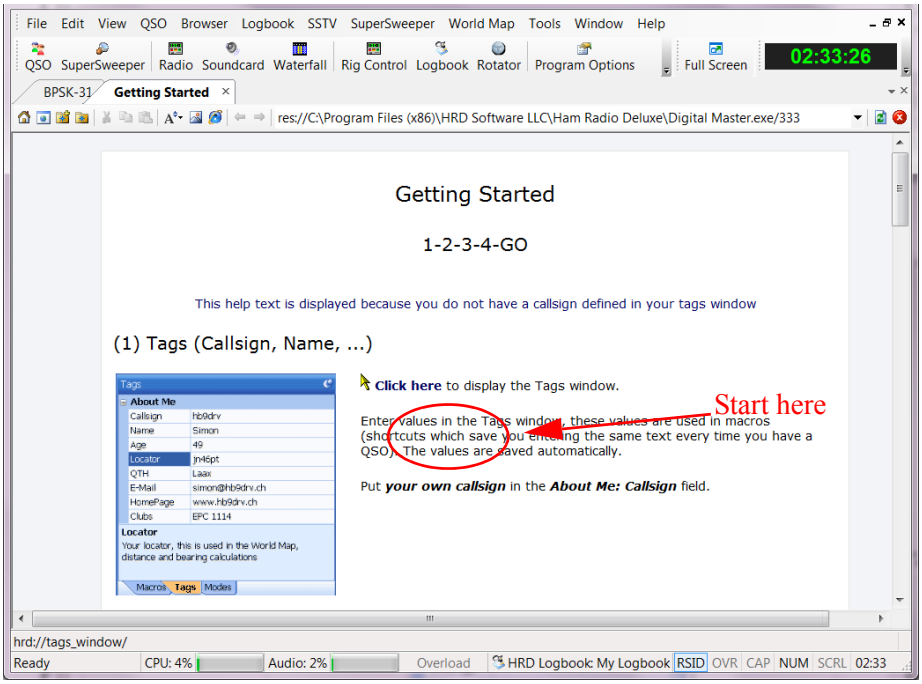
Computer requirements

Our suggestion of a minimum specification would be a Pentium 4 machine with 2Gb RAM running at least Windows XP Service pack 3 - The program runs very well on Windows XP, Vista and 7 but will not run satisfactorily on older Windows operating systems.

Lets start...

Start DM780 from within your Ham Radio Deluxe application by clicking on the DM780 button in the toolbar. For now continue to use the Dem-o-matic TS-2000 rig if you do not have a data interface with your radio.

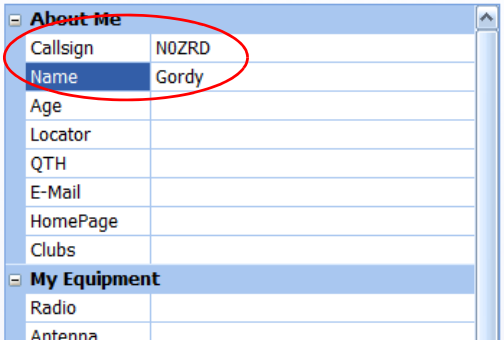
When you first open the DM780 for the first time you will see a Getting started dialog that you must complete. The first item of business is entering your callsign.



1 Click where is says **Click here**. This will open the *Programs Options* window.

2 In the first dialog line your callsign should auto-populate with the callsign listed in License Manager.

3 Enter you name in the line below labeled *Name*. We will come back and enter more information later in this chapter.



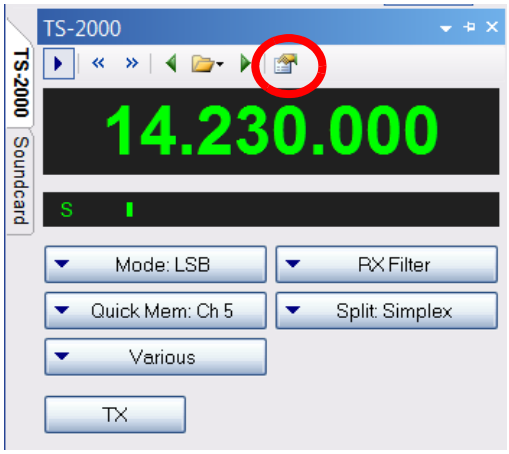
4 In the *Programs Options* window, select **Soundcard** in the first window on the left side.

5 Verify that correct sound card is selected. If it is not... well you know what to do. We will save calibration for a bit later.

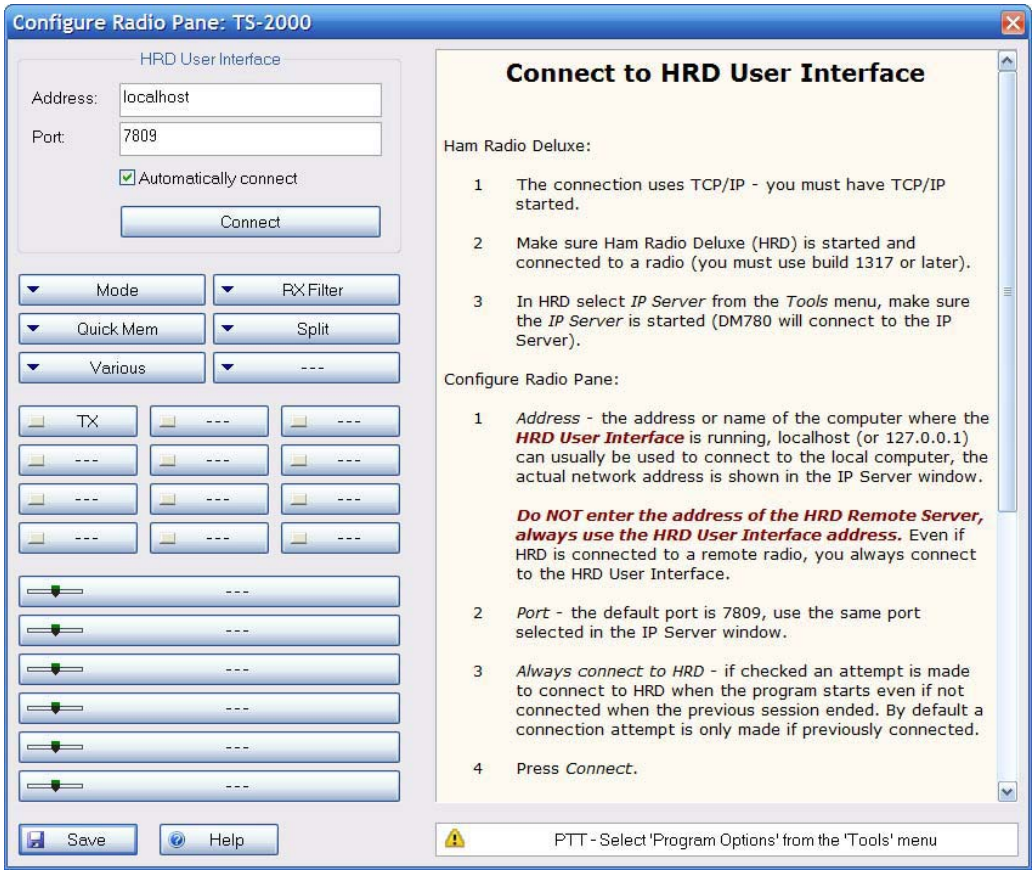
6 Close the *Program Options* dialog window.

7 On the *Toolbar* click on **Radio** if it is not open.

8 Click on the **Configure** button in the *Radio* tool bar. This will open the *Radio Configure* dialog window.



9 The *Configure Radio* window is where you layout your display. This is similar to what you can do in Ham Radio Deluxe *Rig Control*. If you do not see any radio functions, click on the **Connect** button.



10 You can close the Configure Radio window.

Connections

Before you really use the DM-780 program you must make some connections to your rig for CAT control and audio input/output.

CAT Control

CAT control provides software control of your rigs receive and transmit features via a cable connected from the rig to either a serial port or USB port on your computer.

Some rigs, like the Kenwood TS-2000 only need a serial cable connection between the rig and the computer for rig control. Others require a CAT interface product of which there are several good ones on the market. Keep reading and we will discuss some of them. Some do rig control only while others interface rig control and audio.

Audio Input /Output

You also need an audio interface to send and receive the data (Audio tones) to and from your rig and this is done by connecting your rigs audio output and input to your computers sound card.

Audio Interfacing

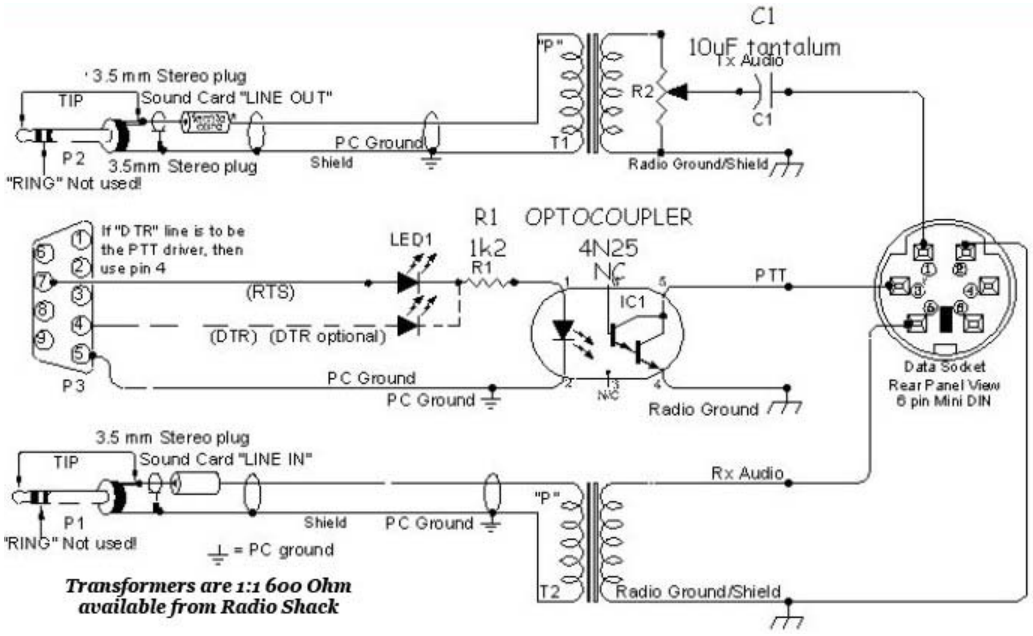
DM-780 requires the use of a sound card some type of interface from the sound card to the radio. Although the computers built-in sound card can be used it is recommended you either install a second sound card. The second sound card can be either internal or external. The advantage of having the second sound card it can be used for your digital communications while eliminating the possibility of transmitting unwanted computer sounds. You would also be able to listen to music on your computer while still operating in the digital modes.

Next we need to interface the sound card to the radio. Interfacing can be done in so many ways that it would take days to plow through all the available information. You can do a Google search and find hundreds of articles on the subject. It is possible to connect your radio directly to your sound card without any form of isolation but it is not recommended. We'll assume that you want to do things properly, so here is a home brew circuit that has proved its worth many times.

DIY Solution Audio Interface with Tx/Rx Control

This solution will work with any Icom or Yaesu rig that has a 6-pin mini-DIN connector for external audio. It will work on just about any other rig but you will have to modify the connections to your radio. If you plan to use the circuit below, please check the actual connections to the mini-DIN connection of your rig.

Note: HRD Software LLC does not accept responsibility for damage to your rig should things go wrong.



A proven audio interface: Cheap and easy to build

You should always use the rig's high-impedance audio output if there is one available: this supplies a constant signal level to the sound card. Most rigs also have a TX audio connector independent to the microphone input: you are advised to use this input. Some commercial interfaces don't allow this: It is recommended that you avoid any interface requiring use of the microphone connector and speaker output of your radio unless there is no other option for getting the audio signals to and from the radio.

Commercial Interface Solutions

There are also some very nice commercial solutions available for interfacing the radio's audio to the computer.

Timewave Technology has a very good reasonably priced CAT rig control product called the *HamLink USB* which allows rig control. As with all CAT rig control interfaces, the level of rig control is controlled by the capabilities of the rig.

Timewave also offers the *PK232SC* - which has a built in sound card and CAT rig control. This unit has many other useful features such as Digital Signal Processing which helps clean up the audio signal. More information can be found at their website: *http://www.timewave.com*

Tigertronics provides two different interfaces. One has a built-in sound card and one does not. The advantage of having an interface with a built-in sound card is it frees up the computer's internal sound card for computer audio, such as listening to CDs, while using the external sound card for the digital modes.

SignaLink Model SL-1+

The *SL-1+* connects to your computer's sound card and to your radio's Mic, Data or Accessory Port. It is designed to work with ALL computer sound cards, and with ALL radios. The SignaLink SL-1+ is compact, low powered and fully isolated for optimum performance. It supports ALL sound card Digital and Voice modes, and does NOT use a serial or USB port!

SignaLink USB

Note: Neither SignalLink product interfaces with the radio for CAT control.

The SignaLink™ USB combines the legendary performance of their *SignaLink SL-1+* with a state of the art "built-in" low-noise sound card. The *SignaLink USB* has only one USB connection to the computer, and in most cases, only one connection to the radio. Convenient front panel controls make setup and operation very easy. The SignaLink USB is fully isolated and is compatible with ALL radio Mic, Data, and Accessory Ports, and supports virtually ALL sound card Digital and Voice modes. Both of the above interfaces are available from on the Tigertronics website at *http://www.tigertronics.com*

Another commercial solution to interfacing the radio's audio to the computer is the *Navigator*.

The Navigator

The *Navigator* interface is available on the web from U.S. Interface Products. The website is at *http://www.navigator-interface.com/naviusa_004.htm* The Navigator is a high quality interface between the rig and the computer, for use in running the digital modes such as PSK31, Olivia, MFSK, Hellschreiber, MT-63, etc. It also works fine for SSTV.

The Navigator interfaces to the rig using a USB port, thus it does not require a serial port on the computer. The Navigator has a built-in sound card for audio from the radio to the computer. It also provides CAT control to the rig via a serial connection from the Navigator to the rig. The Navigator is completely configured and defined in software, and future updates are expected to be flash-ROM updates that can be installed by the user.

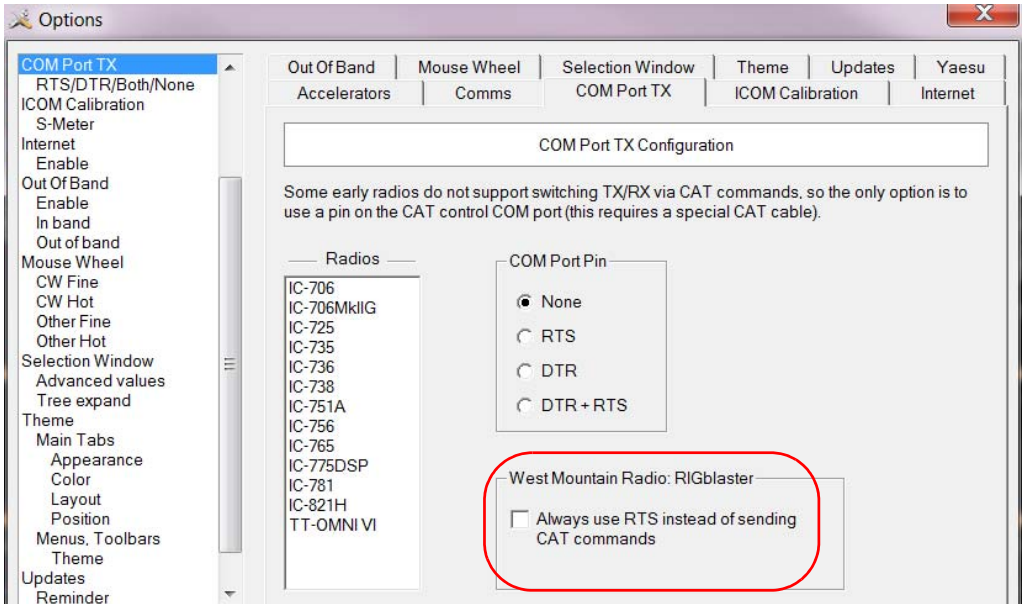
The Navigator is also directly supported by DM-780 by clicking on **Program Options** and then selecting *Navigator* from the list of options on the left side of the window.

micro KEYER II

Micro KEYER II™ is the most powerful single radio All-In-One USB interface and the only USB interface to fully support voice operation including microphone switching. With an single USB port, micro KEYER II™ works with any Windows based logging or control program for CW, voice, FSK and digital (RTTY, PSK31, SSTV, OLIVIA, MFSK, WSJT, etc.) operation. micro KEYER II™ includes a radio control interface that supports all standards (RS-232, CI-V, Kenwood and Yaesu TTL), a powerful CW memory keyer using K1EL's WinKey, a Digital Voice Keyer, two channel audio for transceivers with dual receivers, automatic microphone selection, and a buffer/sequencer for amplifier or LNA control. micro Keyer II is available from the MicroHam website at *http://www.microham.com.*

West Mountain Radio offers several *RIGblaster* products with various features. Visit their website at *http://www.westmountainradio.com* for more information.

Note: Because West Mountain Radio control the radio in a slightly different manner we had to add special support for these interfaces. Please visit the Options in Ham Radio Deluxe and select the COM Port TX tab then click the West Mountain - RIGblaster support box (See image below)

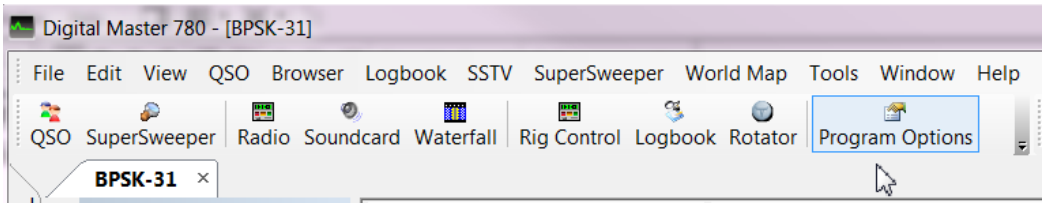


Other companies who provide audio interfacing solutions that work well are:

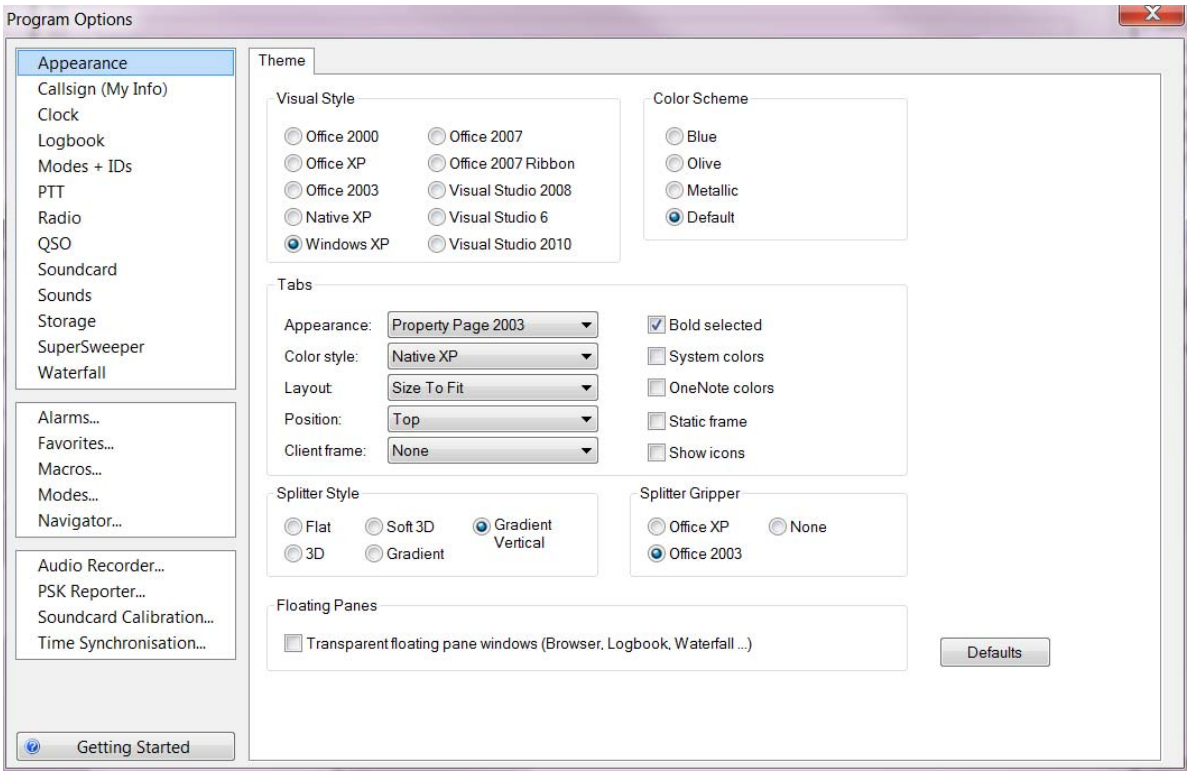
- **ZLP Electronics:** *http://www.g4zlp.co.uk*
- **Rig Expert:** *http://www.rigexpert.com/index?s=standard*

If you choose to use one of the commercial audio interfaces, make certain you follow the manufacturer's instructions carefully for installation and set up.

Program Options Overview



Clicking on the **Program Options** icon brings up the menu where you can configure the appearance and many options found in DM-780. Below is a brief description of each option.



Program Options Menu

Appearance: Select the theme and skins used for the main display

Callsign (My Info): Enter information about your station used in macro tags and the My Station screens.

Clock: Configure appearance and time format of the tool bar clock

Logbook: Configures and connects DM-780 to Ham Radio Deluxe Logbook.

Modes + IDs: Configure CW and RTTY Ports and setup RSID and Video ID

PTT: Configure transmit Push To Talk options

Radio: Configure appearance of the radio pane

QSO: Configure appearance of the receive and transmit panes

Soundcard: Configuration of the soundcard used by DM-780

Sounds: Enable warning sounds used by DM-780

Storage: Configure program and storage directories for DM-780

SuperSweeper: Configure DM-780's panoramic frequency monitor screen

Waterfall: Configure DM-780's waterfall appearance and options

Alarms: Set and maintain alarms

Favorites: Set up and maintain frequency/mode listings

Macros: Access to the Macro Manager

Modes: Create Modes tool bar on the waterfall display

Navigator: Configuration for U.S. Interface Navigator

Audio Recorder: Configure Ham Radio Deluxe audio recorder utility

PSK Reporter: Configure PSK Propagation Reporter

Soundcard Calibration: Calibrates soundcard for use in SSTV

Time Synchronization: Adjust computer's time to national time standards

Configuring DM-780

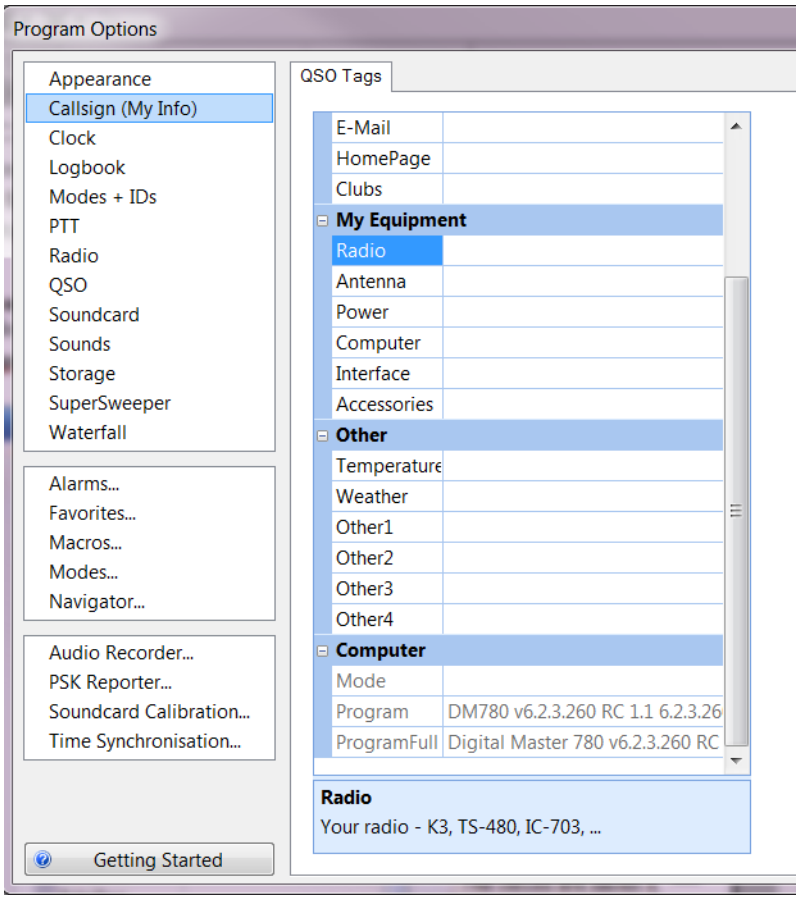
You should now have your audio connection made between the radio and the computer so it's time to start configuring DM-780.

Now, let's get started. DM-780 can be run as a standalone program, however, to take advantage of the many integrated features from Rig Control and Logbook, we recommend running the entire Ham Radio Deluxe suite.

Your Information

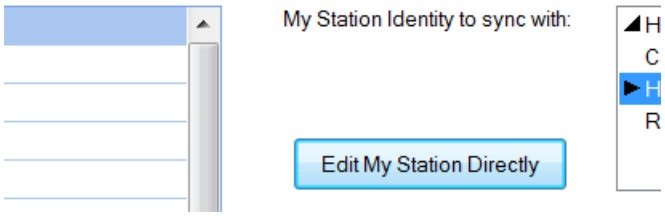
1 Select P**rogram Options** from the Toolbar. This will bring up the *Program Options* window used to configure DM-780.

2 Select **Callsign (MyInfo)** from the menu on the left side of the screen.



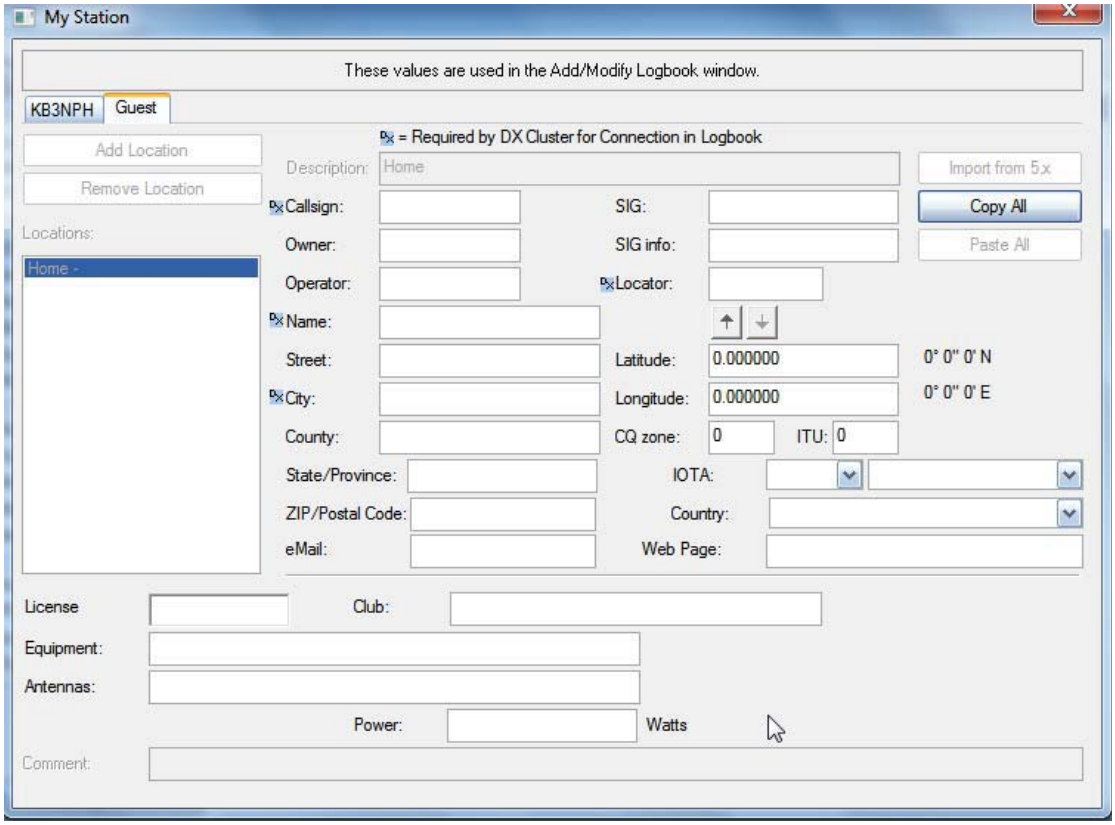
QSO Tag and My Station Set up

3 Enter any additional information that you would like displayed. The center portion of this option contains information about you and your station used for *substitution tags* within DM-780 macro sets. We'll discuss setting up the macro sets later on in the documentation, but for now, just type in all information under the *QSO Tags* section. Don't worry about the lack of a SAVE button on this screen, your data is automatically saved when you exit this screen by clicking the red X in the upper right corner of the display.



4 After you have entered the information in the QSO Tag portion, you will notice on the right side there is a button **Edit My Station Direct**. Clicking on this brings up the *My Station* data screen.

Information in the *My Station* screen is used by Ham Radio Deluxe Logbook. If you have already set up the Logbook portion of the suite, this screen should be populated with the required information and you can just close it out and continue with the set up.

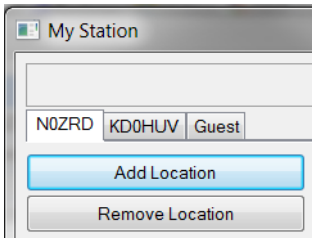


My Station Set Up

Ham Radio Deluxe allows you to set up multiple QTH locations. This allows you to have a "Home" location as well as other locations such as a vacation home or favorite portable locations.

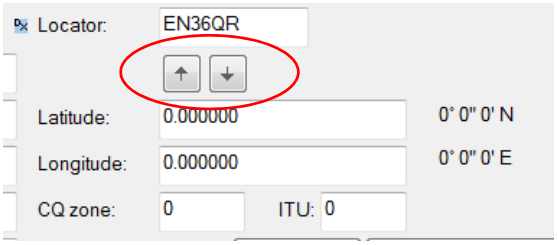
Multiple Callsigns

If your License Manager shows more than one callsign such as for parent and child or husband and wife, you are able to enter station set up information for each call-sign. You can also set up "Guest" accounts for club or special event stations.

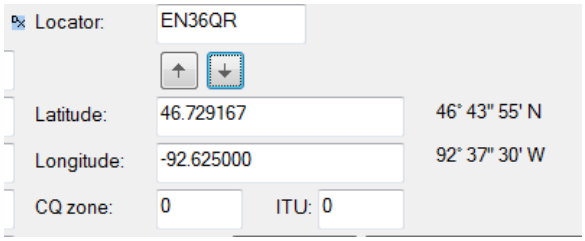


If you haven't already set up the *My Station* data, in the *Description* field you see the word **HOME** for a profile of your Home QTH. This generates your main *"location"*. Then go ahead and fill in all the rest of the information for this location. Please note which fields are required if you use one of the DX Clusters.

Most of the fields are self-explanatory. A couple of the fields do need a little explanation. The field *SIG* stands for Special Interest Group. This could be a club or any organization you belong to. The SIG Info field could be a website address for a group. You could leave these fields blank if you like.

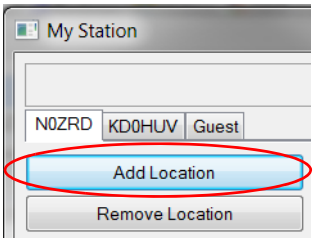


Another spot you might need help is once you enter your **Locator**, for example EN36QR, if you hit the little arrow that points downward, that will automatically fill in your *Latitude* and *Longitude* fields.



By the same token, if you know your *Latitude* / *Longitude*, enter them and hit the upward pointing arrow to fill in your **Locator**.

If you operate from mobile or maybe have a vacation home, you can generate My Station profiles for those locations as well by clicking on the **Add Location** button. You can copy the data from the Home location to be placed in an additional location then just edit anything that is to be different for that profile. Each profile is auto-saved when you exit the screen by clicking the red **X** in the upper right corner.



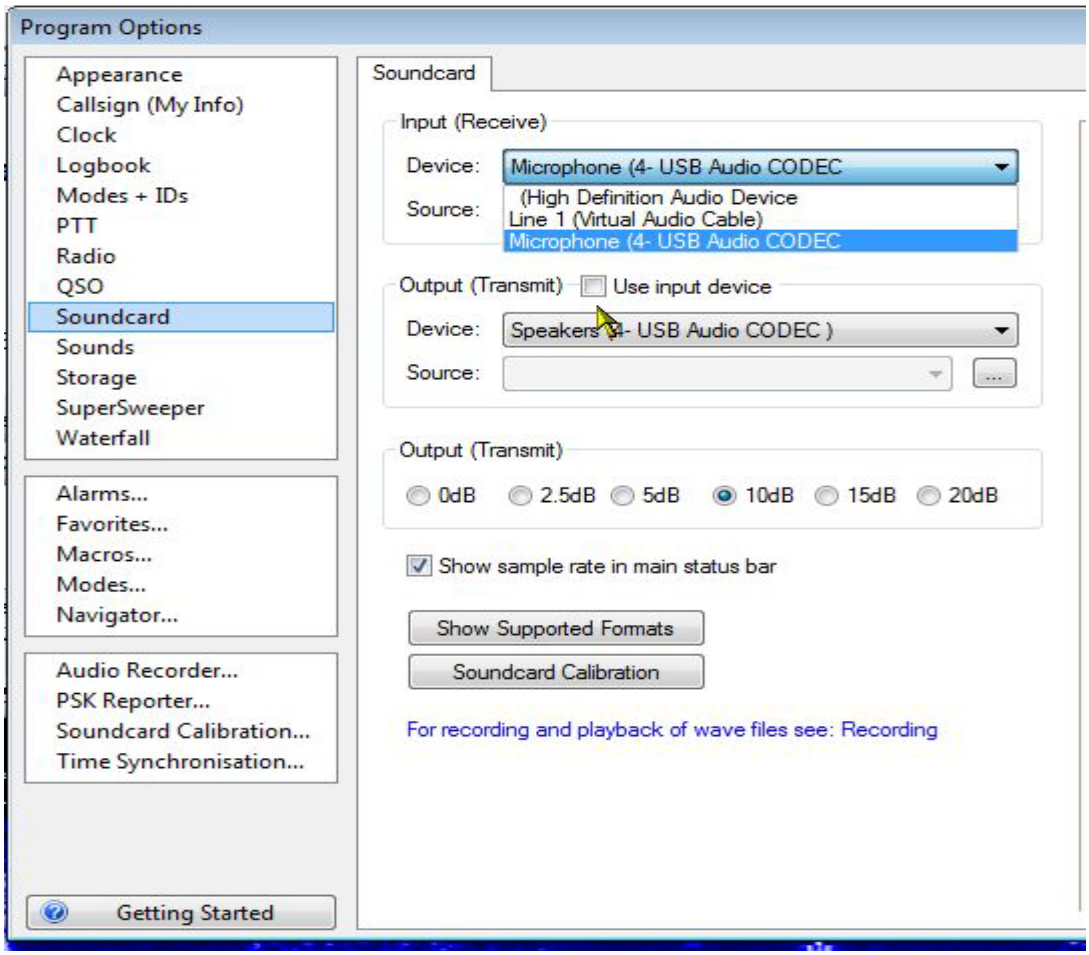
Once you've completed configuring your *Tags* and *My Station*, your almost home. Just a couple more things before you can go on the air live with DM-780.

Soundcard Setup

Now that we have our sound card interfaced to the radio and our personal information set up its time to start configuring DM-780 to receive some signals.

The first thing we need to do is tell our software where the sound card for our digital operation is located.

1 Click on **Program Options**, on the *toolbar.*
2 Select the **soundcard** option.

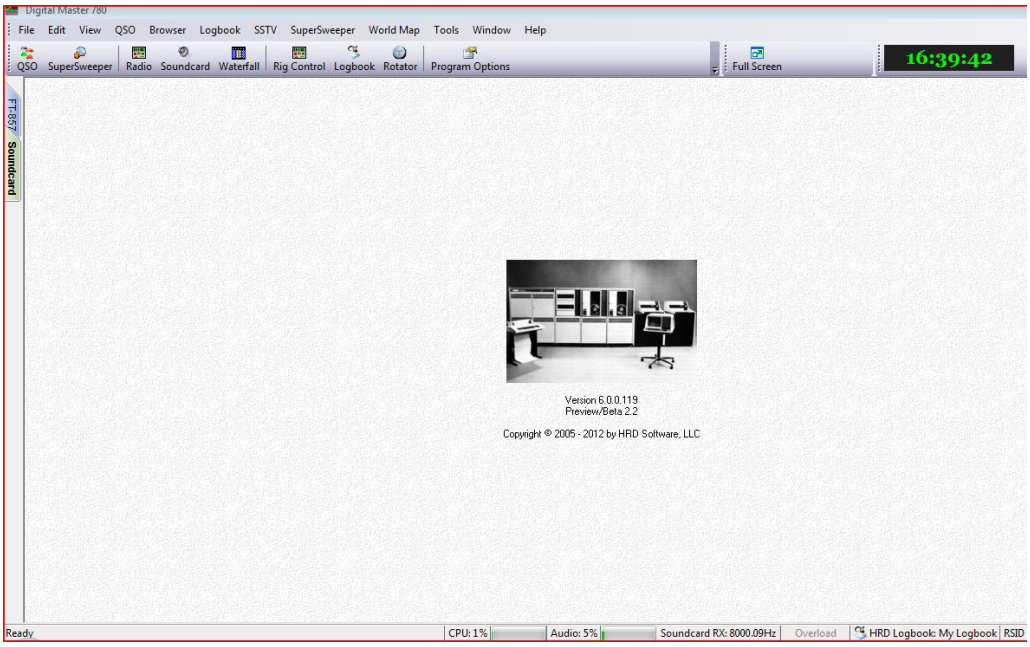


3 Locate the **Input (Receive)** device at the top of the options. There is a drop-down box where you select the input device on the sound card that receives the audio from the radio. In this illustration we are using the Microphone input from our USB external sound card.

4 For the **Output (Transmit)** device, another drop-down box where you select to send the audio from the sound card to the radio. In this case, the Speakers of our external sound card is selected.

5 Everything else should be left at **DEFAULT** for your system at this time. Just click the "X" in the upper right corner to exit the *Program Options* and your settings will be saved automatically.

You should now be back to the *Getting Starte*d Screen in DM-780. To clear this window, let's click on the "**X**" on the tab just to the right of where it says "*Getting Started*". This tab is located just below the *QSO* and the *SuperSweeper* icons on the menu bar. Your screen should now look like the picture below.



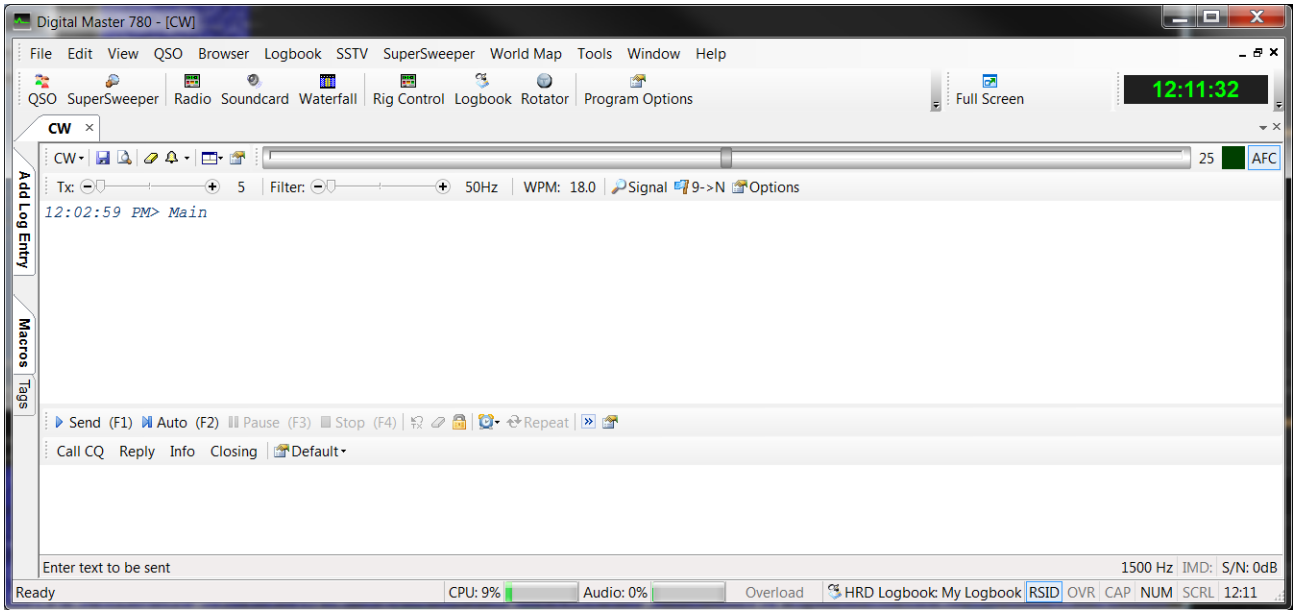
DM-780 Tour

Now that we have the bawsic setup completed for DM-780 it is time to take a tour of the program. You will find this program to be both confusing and easy at the same time. That is what happens when you have a powerful application available to use.

DM-780 Toolbar

QSO Window

Click on the **QSO** icon, located on the left end of the toolbar. This is going to open DM-780s main display window.



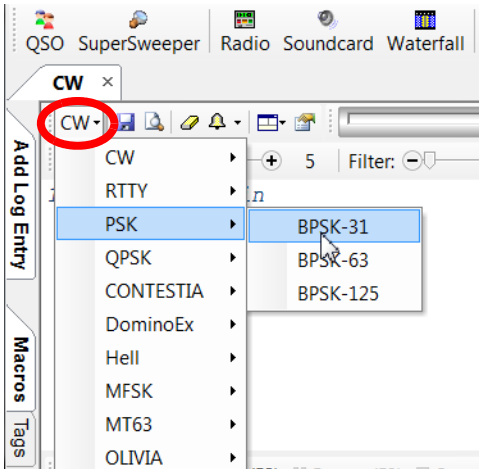
The CW Mode screen above is divided into several sections. The larger white section is the receive panel, the smaller white section is the transmit panel.

On the left side of the screen are several tabs. The top one is for the ALE (*Add Log Entry*) panel. The next one is for *Macros*. Both of these will be discussed in detail later in this section. The bottom tab opens the *Tag* window which you have already seen.

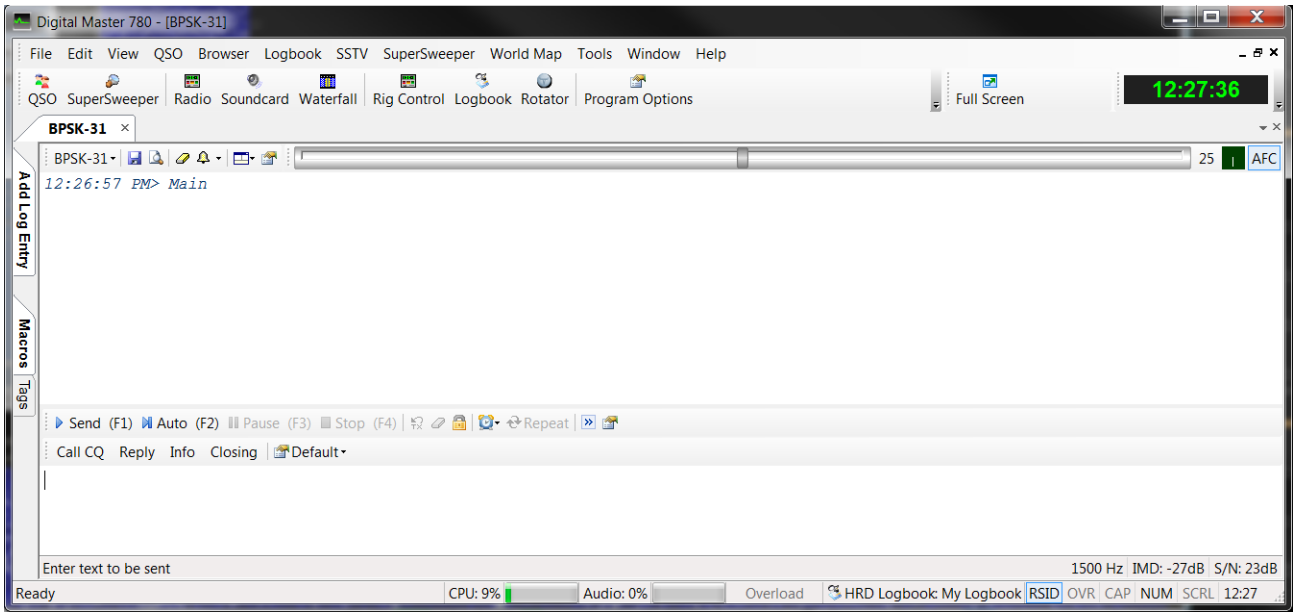
The receive panel and transmit panel are self-explanatory. The receive panel is where incoming text is displayed. The transmit panel is where text is prepared for transmission. The ALE (Add Log Entry) section is just that. This is where data about your contact is placed to be added to the logbook after your QSO is over. Information in the ALE can be entered manually from the keyboard or automatically from one of the Call Sign look-up services configured in HRD's logbook module.

Changing Operating Mode

To change this window to a different operating mode click on the mode select tab in the top left corner of the QSO window, There you will see over a dozen different digital operating modes displayed. Each of these modes is further sub-divided into variants of the digital mode. Note our example of PSK offers three variants of PSK for you to choose from. We have selected to most popular PSK operating mode.



After you have made your selection you will notice that there has been some subtle changes in the QSO window for operating in PSK.



Some things, however, have not changed as they are common to all of the operating modes.

Next to the mode selection tab is a series of tool icons. In order from the left:

Save Received Text - This allows you to save all your received text to a file in Rich Text Format in a location of your choice.

Viewer - Opens a viewer so you can view your saved received text.

Erase - Clear the receive screen.

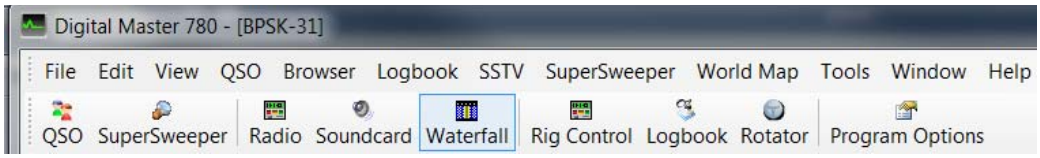
Alarms - Manage and select user defined alarms. Help you spot desired stations.

Channels - Select to receive one, two or three channels at one time. Allows you to keep tabs on up to three different conversations at one time. You can only transmit on the Main channel which is the top most or left most depending upon your display choice.

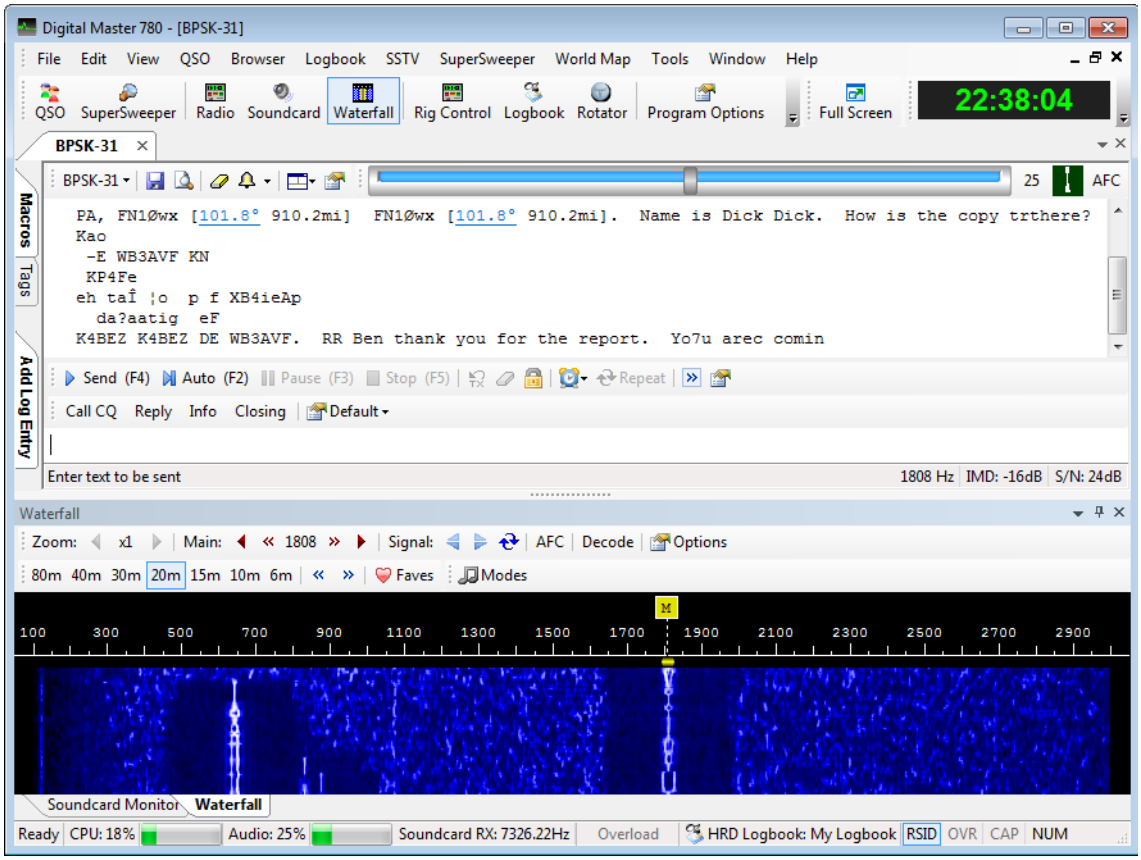
Options - This is another way to access *Program Options* that you have access through the toolbar.

Waterfall

There is one important panel missing from our display. There has to be a way to tune in the digital signals on a frequency. That's the job of the **Waterfall**.

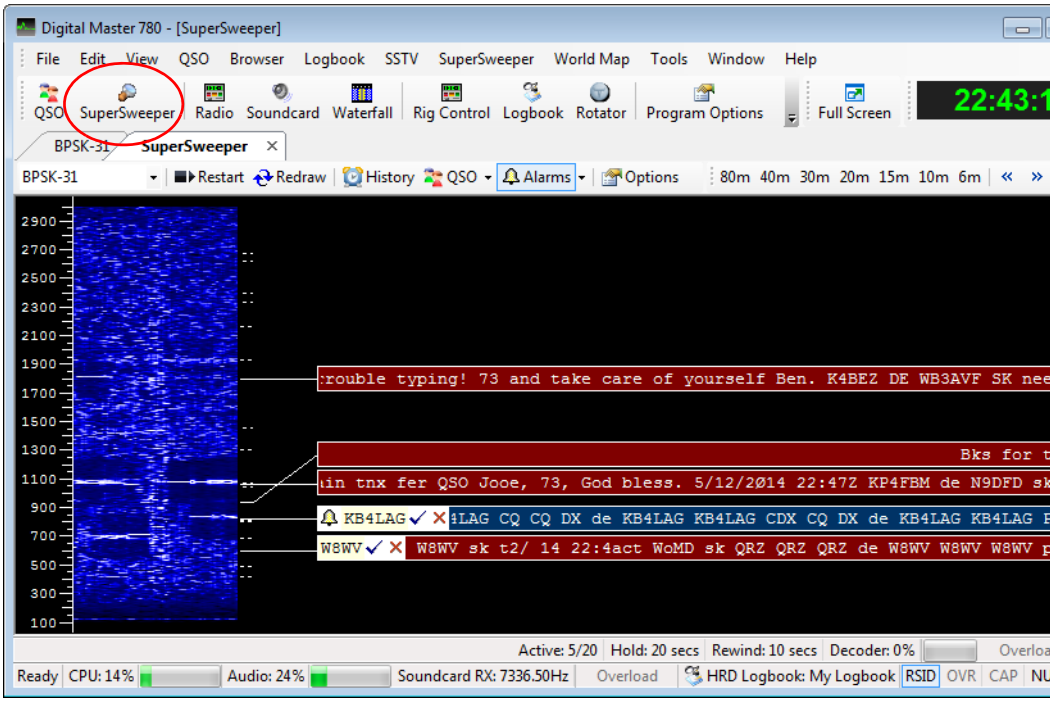


On the tool bar click the Waterfall icon.



The waterfall is a requirement for working PSK and this version is loaded with features to make your digital contacts jump. Full operational details can be found later in this section.

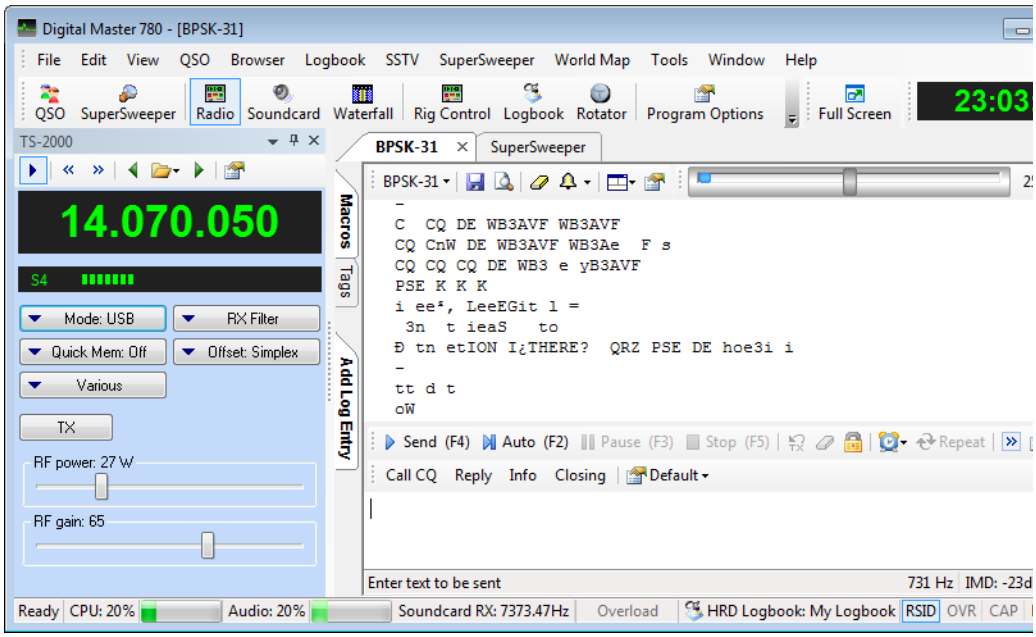
SuperSweeper



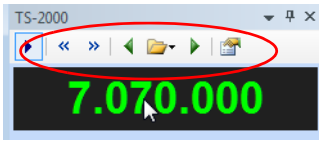
SuperSweeper is a great tool to see what is happening on the bands. This high powered tool allows you to set alarms to alert you of stations that you want to locate. The blue signal is caused by an alarm for stations calling CQ. The setting up and use of SuperSweeper is discussed later in the section.

Radio Panel

Thee next operational feature found on the toolbar is **Radio**. This allows control of your radio without switching back to *Rig Control*.

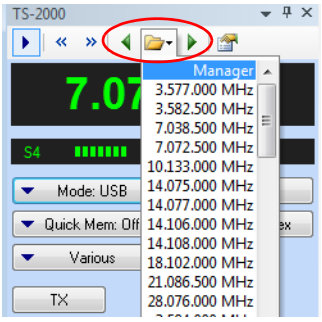


You can see that you have some controls displayed when you open up the window. There are built in features.

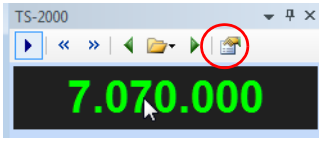


There are several items in the radio panel toolbar that make operation easier. The << and >> icons shift your frequency up or down in 500 Hz increments.

The next group of icons allow to tune to preselected favorite frequencies either by selecting the frequency from the drop down list or by using the two arrow icons to scroll through the list. You can managed the contents of this list by selecting **Manager** from the drop down list.



Radio Panel Config



The last icon in the Radio panel is the config button. This allows you to cofigure buttons, drop downs and sliders that are very similar to those you set up in Rig Control. If the item does not have a label, no function is assigned and it does not display.

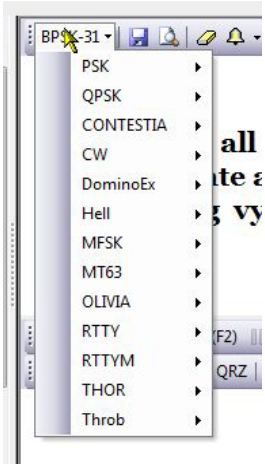
To assign a function to one of the buttons, click on a button to select it and you will see a *Select Button* window where you can make your assignment. Do the same for the drop downs and sliders. When you are done click on the **Save** button.

The remainder of the icon buttons in the toolbar should be familiar to you by now.

Main Window Tour

We now return back to our main display.

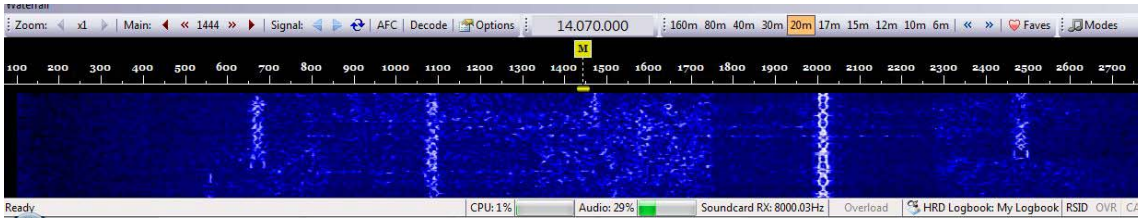
Now, let's review selecting a mode. The most popular of the digital modes is BPSK-31 and the most used frequency for this mode is 14.070 in the 20 meter band. At this time, tune your radio to 14.070 and set it to **upper sideband**, since ALL digital modes are used in upper sideband, with maybe one exception and that's QPSK which can be used in USB or LSB. You might also want to tune your antenna for lowest SWR on this frequency before we go any farther.



Next, in the upper left corner of the large receive panel, you will see a small tab with a drop-down arrow. Clicking on this brings up the Modes menu. Highlight PSK and another menu will show up with BPSK-31, BPSK-63 and BPSK-125. Click on the BPSK-31 mode to select.

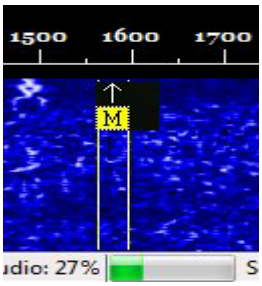
Looking at the main display, you will also notice that the tab just above the ALE also reflects the current mode being used.
We have selected the mode so now take a close look at the Waterfall.

Waterfall



The Waterfall actually has three sections. The top gray section is the Waterfall tool bar. The black area contains audio frequencies calibrated in HZ, and the blue area is the actual Waterfall. The reason for the name is the light colored signal traces flow from the top to the bottom of the display just like a waterfall. The traces are actually signals from different stations.

PSK Bandwith



The bandwidth of a BPSK-31 signal is 31.25 Hz. Our waterfall is about 3000 Hz wide. Since BPSK has such a narrow bandwidth, the use of audio off-set frequencies can be used to display many BPSK signals on the waterfall at one time. Notice how each signal is displayed under a different audio frequency on the waterfall. In the picture on the left you see what our cursor looks like on the waterfall. The yellow bar is about 31.25 Hz wide. There is an arrow at the top of the cursor and two lines extending downward from the cursor. Placing he cursor on a BPSK-31 signal with the arrow in the center of the signal and the trailing lines on either side of the signal tunes in the base frequency of 14.070 + the audio frequency off-set to allow you to decode that signal in the Receive panel.

Go ahead and try a few on your own. It takes a little practice to position the cursor properly.

Display Check

At this point if you are not showing any traces on your waterfall or are unable to decode the traces, go back and recheck your sound card settings, cables, and if using a commercial audio interface, read the manufacturer's installation instructions over again to make sure everything is set correctly.

Once you are receiving and decoding signals its time to try to transmit using DM-780 and BPSK-31.

Transmit Panel

The Transmit panel is where you prepare text to be transmitted. This text can either be entered manually thru the keyboard or by using one of the pre-defined macros. For this test we will be entering the text manually.

In the waterfall, place your cursor somewhere near the center of the waterfall on an area where you don't see any signals. Wait a short time to make sure the frequency is clear and then proceed.

Before we continue with the transmit test it is recommended you install a dummy load, if you have one. If you don't have a dummy load it's best then to decrease your RF output to it's lowest possible setting which will give you some deflection of your power meter to indicate you are indeed transmitting.

Place your cursor inside the lower Transmit panel of the main display. Now, type in the following:

CQ CQ CQ DE (your callsign 3 times with a space between each) followed by PSE K

The transmit panel should look something like this:

Text in Transmit panel for sending

Transmitting

Pressing the Send or the F4 key will transmit the string you just typed in the Transmit panel. Your transmitter should now key and the text transmitted. As the text transmits it will show in the Receive panel and a strike-through will move through the text in the Transmit panel. Immediately after sending the text, press the Stop or the F5 key to un-key your transmitter.

Text send from the Transmit Panel

If your transmitter keyed and you have seen deflection on your power meter, you're in business. If the transmitter keyed and you see no deflection of the power meter, first, go back through the audio set up and make sure you have selected the proper Output (Transmit) device in the Program Options sound card settings. If everything is correct there, try increasing the RF power just a bit and maybe even increasing the audio volume on the sound card you're using. If you're using one of the commercial external interface devices, check the installation instructions to make sure you have everything set correctly for the unit you're using.

If all else fails, first contact the manufacturer or distributer for the sound card device your using. If all seems fine there contact HRD support through one of the methods listed on the support page at *www.hrdsoftwarellc.com*

Transmit Toolbar

Now we will take a closer look at the tools available on the Transmit Toolbar.

Transmit Tool Bar

Clicking on the **Send** button OR pressing the **F4** key starts transmitting data currently in the Transmit panel.

The Auto button or F2 on your keyboard will start transmitting data currently in the Transmit panel and will automatically stop and return to receive mode when all text is sent.

The next two options are normally grayed out when in the receive mode. They are the Pause (F3) and Stop (F5) buttons. The Pause button allows you to pause transmitted text at any point while it is send. This allows you to edit the text following the pause, such as inserting a comment or deleting part of it, then clicking the Pause again resumes transmission where it left off to the end of the text.

The Stop (F5) immediately stops the transmission and returns the rig to the receive mode.

The Break-In is a toggle and turns the Break-In mode ON or OFF. With this mode toggled on, text that is typed into the transmit panel is sent immediately, however, if you pause typing while this mode is turned on, the transmitter switches back to receive. Once you start typing again, the transmitter keys and you continue from where you stopped. This allows you to listen briefly to see if your contact is trying to Break-In on your transmission, just like is done during CW operation when a sender pauses briefly to see if his contact is trying to break in.

As text is being sent, an overstrike line moves thru the text in the Transmit panel. If you Pause the transmission at any point, when you Un-pause it, the transmission continues where you left off. Pressing this icon removes the overstrike line from the sent portion of the text making it appear to be un-sent. When you resume, the transmission begins again from the beginning of the text in the window.

The Eraser icon does just that. Pressing this icon erases all text in the Transmit Panel.

DM-780 can send the contents of text files. Clicking on this icon allows you to navigate to a folder where you have text files stored. Once in the folder you can select a text file which will automatically be opened in the Transmit Panel where you can then transmit the contents of the file.

Clicking on this icon allows you split frequency operation in the current passband. To do this, first select the frequency or audio frequency where you want to transmit. Place your main cursor on that frequency and press the lock icon. An indicator will appear with a TX inside a little box that shows the transmit frequency. This will be the frequency where your contact will receive your transmissions.

Now, move your cursor to the frequency you are receiving on. This will be your contacts Transmit frequency. When you transmit, DM-780 will automatically shift and transmit on the frequency indicated by the TX marker on the Waterfall. In this case, the audio frequency is 1600 for transmit and 1700 for receive, a 100 Hz split.

To clear the split and go back to normal, just click that lock icon to release it.

This icon brings up a drop-down menu that allows you to turn off or set an interval timer. This comes in handy when calling CQ. You can set a time interval in this option to automatically send a CQ call for you at the specified time interval. Once you set a time interval, you start sending your CQ macro. Once it starts sending you will see the Repeat icon on the tool bar becomes active. Clicking on the Repeat icon now sets DM-780 to transmit the CQ macro, wait the preset time interval, and resend the macro again. This will continue until you click the Repeat icon to toggle the repeat off.

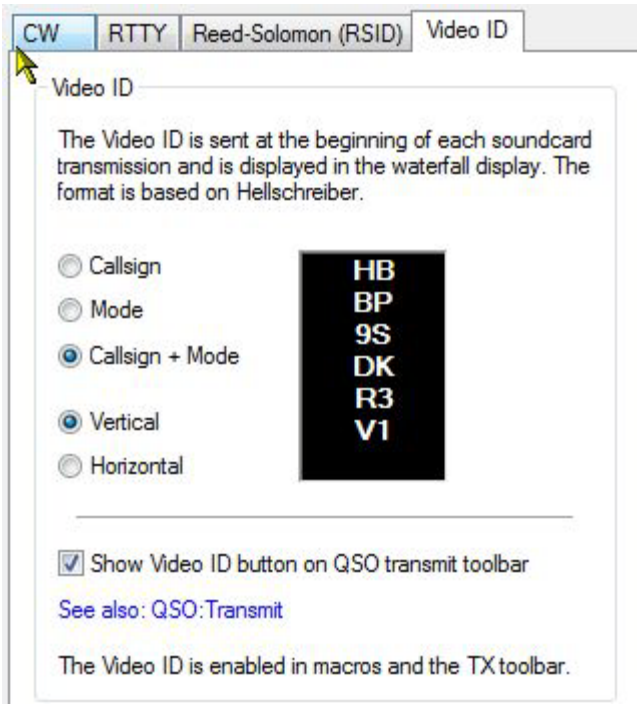
This is the icon to toggle your RSID on or off. For those not familiar with RSID, it stands for Reed-Solomon ID

RSID was originally developed by Patrick Lindecker, F6CTE. The Reed-Solomon ID (RSID) is a short 16-tone MFSK transmission which identifies the mode in use. The RSID transmission is about 180Hz wide and lasts for just less than two seconds.

You should enable RSID when using an 'exotic' mode such as Olivia so that users of programs with RSID support know what mode you are using. For a full list of modes supported by this program look in the Program Options for Modes + IDs.

There are two ways to enable RSID: 1) In Program Options select Modes + Ids and check the option to show the RSID button in the Transmit tool bar, 2)Add the tag <rsid> to the beginning of a CQ macro. The latter is most recommended since it is rather annoying to have the RSID popup coming up EVERY time a contact transmits during a QSO. By including the tag in the CQ macro, the RSID information only displays when the CQ is received.

When activated, the Video ID places text in the waterfall which can be seen by the sending and receiving stations. The Video ID is based on the Hellschrieber digital mode.



Video ID Set Up Screen

The Video ID is set up in the Modes + IDs area in the Program Options display of DM-780. Above you can see there are several items you can have sent in the Video ID. Callsign, Mode, or both. When activated a display is seen on the Waterfall that looks similar to the one shown above. It can be sent in a Vertical or a Horizontal display. This is an eye-catcher for anyone sitting watching the waterfall.

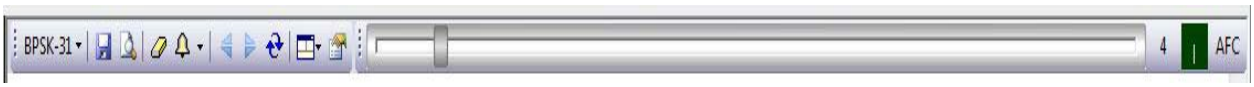
This next icon toggles a mini-logbook display on the Transmit tool bar. Click once to turn it on and again to turn it off.

Mini-Log on Transmit Tool Bar

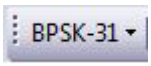
Last but not least, clicking on this icon activates the QSO Options panel from the Program Options menu.

Receive Panel Toolbar

We've gone through the options on the Waterfall and the Transmit toolbars, so now we'll look at the Receive Panel Toolbar.



Receive Panel Tool Bar



Clicking on this icon revels a drop-down menu where you can select the digital mode you would like to operate.

Click on this icon to allow you to save to a file all the text in the current receive panel.

Opens a Viewer to allow you to go back and review all text in the receive panel.

This icon erases all text in the receive panel.

Clicking on this icon allows you to manage, select and activate alarms.

These icons move your cursor up and down the waterfall to the next active signal.

Rewind (replay) the last transmission on the current frequency selected on the Waterfall.

This icon has a drop-down menu that allows you to activate up to three receive panes (channels), along with associated channel markers for each channel on the Waterfall. This allows you to monitor and participate in three QSOs at the same time, if you are one of those "Muli-taskers"…..

Activates the QSO Options panel in the *Program Options* Menu.

Waterfall Toolbar

Looking at the Waterfall tool bar you will see buttons that control various things. On the left end you will see **ZOOM.** To the right of word ZOOM you will see a left pointing arrow, the number x1 followed by a right pointing arrow. This number controls the magnification of the waterfall. Click on the x1 will increment it to x2 and the arrows on each side will become active. Pressing on the left arrow will now shift the waterfall to the left and pressing the right arrow will shift it to the right. The magnification can be increased up to x4 by clicking on the number.

To the right of the word **Main** you will see a number. In the above picture the number is 1862. That is the audio frequency that your main cursor is currently sitting on. On the left of this number you can see the left pointing solid red arrow. Clicking on this arrow moves the main cursor down the waterfall in 10 Hz increments. Clicking on the left pointing chevrons, between the arrow and the number, moves the cursor down the waterfall in increments of 1 Hz. These can be used for fine tuning in on a waterfall signal. The arrow and chevrons on the right side perform the same function except they move the cursor up the waterfall.

The next control is **Signal**. The blue arrows to the right move the cursor up or down the waterfall to the next signal detected.

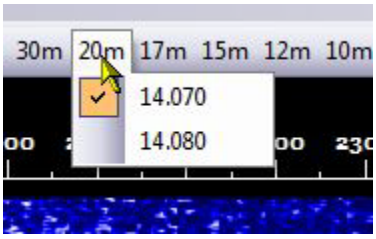
The **Re-cycle** symbol to the right of this plays back the last transmission received from a trace on the waterfall.

AFC toggles the Automatic Frequency Control on or off.

The **Decode** button toggles a little receive pane on the waterfall that displays the text being received from the signal your cursor is centered on.

The **Option** button brings up the Waterfall Options screen where visual changes can be made to the Waterfall.

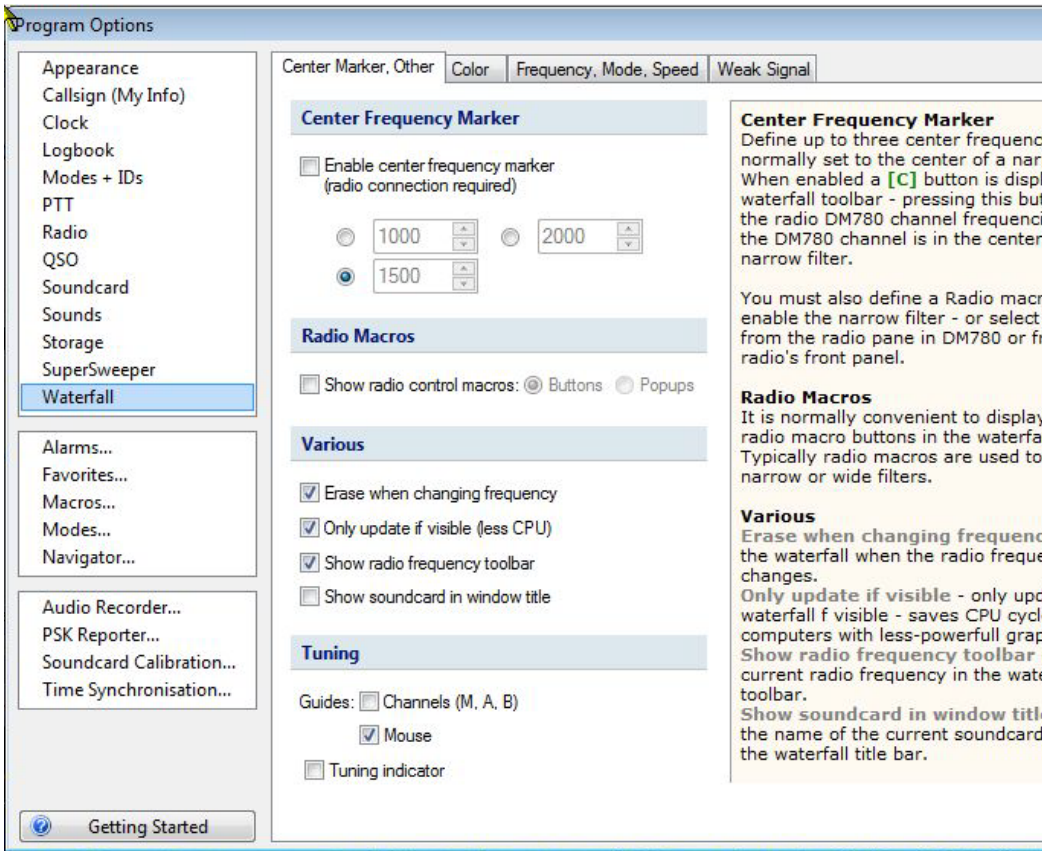
Next is the Frequency Tool bar. When activated from the Options it displays the frequency the radio is tuned to. HRD Rig Control must be running for this option to work.



The rest of the tool bar explains itself. There is a list of bands. Clicking on a band button brings up a drop-down list of frequencies available on the band which are used by the mode you are in. If you change mode, the available frequencies change. Check the frequency to change the radio frequency.

Clicking on the **Faves** tool activates the Favorite Frequency panel. This panel contains an editable listing of modes and frequencies normally used by the modes in each band. Items with check marks in the Enabled column are the ones contained in the band buttons we previously described.

The Modes icon activates a panel where you can add another tool bar to the waterfall. This would be a Modes Tool bar, and could be displayed by individual mode buttons, such as BPSK-31, Olivia, RTTY, CW SSB, etc. It could also be configured to just display groups with drop-down pick menus for each mode. This is a choice for the operator. Use the extra space for the waterfall or take part of the waterfall to display this tool bar.

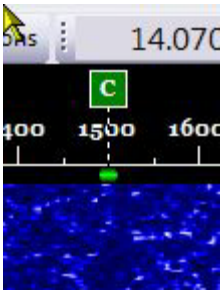


Configuration Tabs

Above is the Waterfall Configuration panel. There are 4 tabs on this panel and each configure a different aspect of the waterfall. Below is a list of the options that are configured from this tab.

Waterfall Options Center Frequency Marker

Define up to three center frequencies, normally set to the center of a narrow filter. When enabled a **[C]** button is displayed in the waterfall tool bar.



Here the Center Frequency Marker is activated and set to the center of the filter. If you are decoding a trace to the left or right of this marker, clicking on the [C] marker tunes the radio to bring the bring the signal to center on this marker, therefore placing the signal your decoding in the center of the narrow filter.

You must also define a Radio macro button to enable the narrow filter - or select the filter from the radio pane in DM780 or from your radio's front panel.

Radio Macros

It is normally convenient to display special radio macro buttons in the waterfall tool bar. Typically radio macros are used to enable narrow or wide filters.

Various

Erase when changing frequency - erase the waterfall when the radio frequency changes.

Only update if visible - only updates the waterfall f visible - saves CPU cycles on computers with less powerful graphics cards.

Show radio frequency tool bar - shows the current radio frequency in the waterfall tool bar.

Show sound card in window title - shows the name of the current sound card selection in the waterfall title bar.

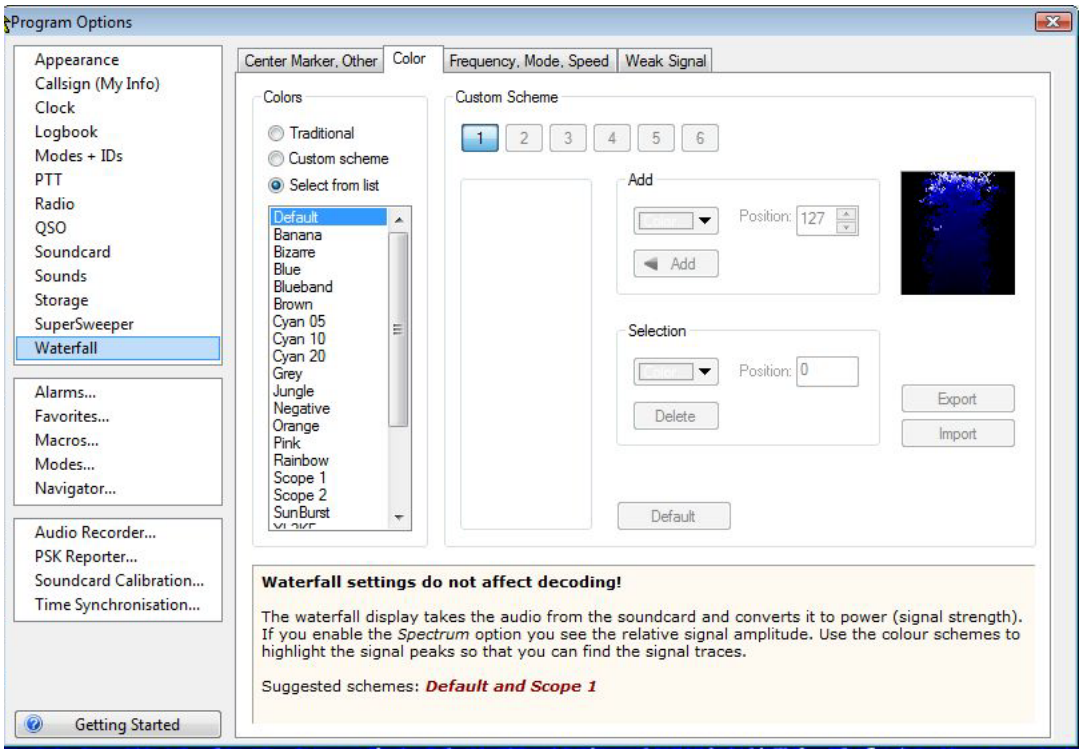
Tuning Guides

Tuning guides - channels - vertical bars displayed in the waterfall when help you position the M, A and B channels over the received signal.

Tuning guides - mouse - vertical bars displayed at the current mouse position in the waterfall, helps you correctly select a signal.

Tuning indicator - the traditional display which helps you tune a signal correctly.

Waterfall Configuration



Waterfall Color Options

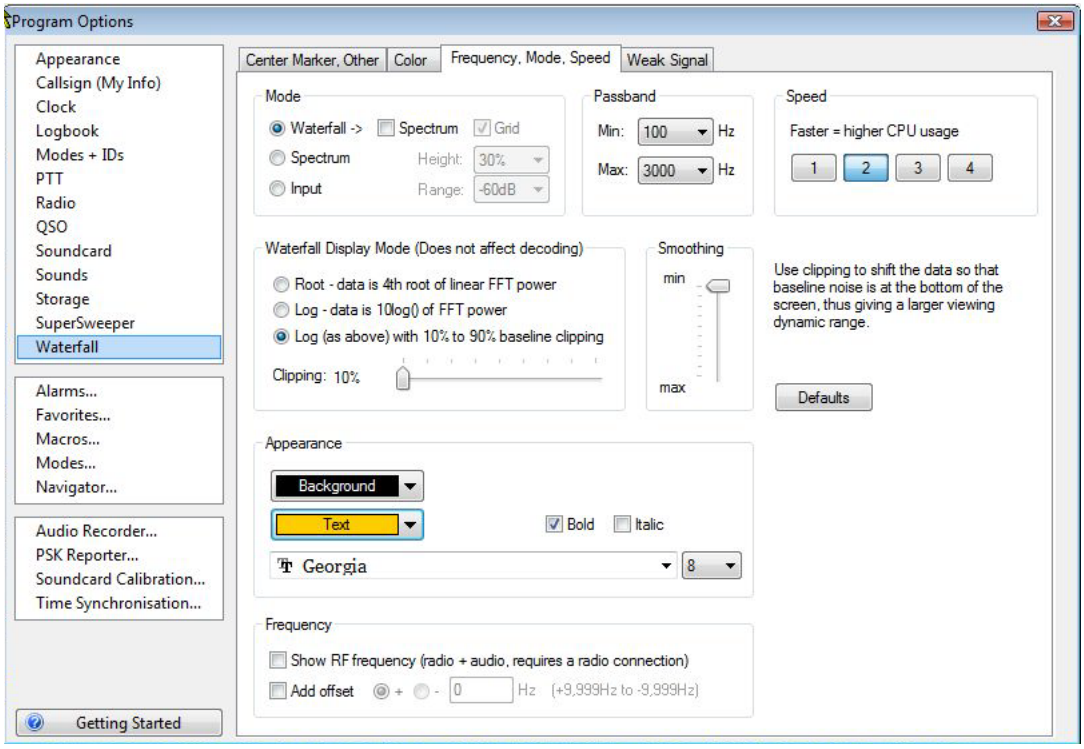
On this option panel the operator can adjust the color settings of the Waterfall to his own preference. This is strictly a trial and error type adjustment. If you don't like one color setting, try another until you find something that you like and is easy on your eyes.

Waterfall color settings do not affect decoding!

The waterfall display takes the audio from the sound card and converts it to power (signal strength). If you enable the *Spectrum* option you see the relative signal amplitude. Use the color schemes to highlight the signal peaks so that you can find the signal traces.

Suggested Schemes

The best and most commonly used schemes are: **Default** and **Scope 1**



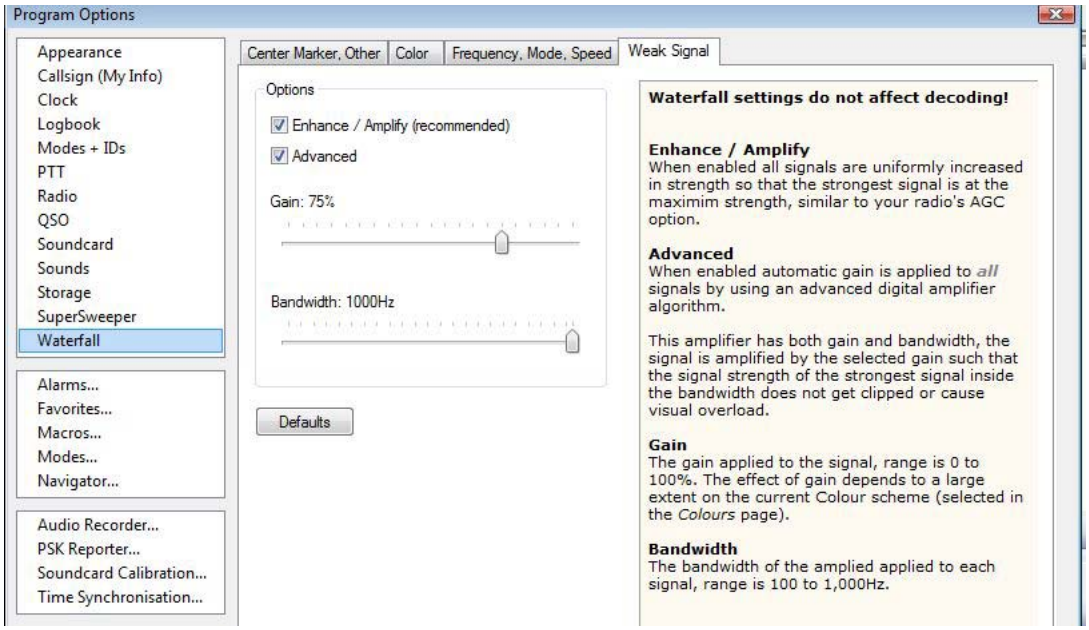
Frequency, Mode, Speed Tab

This top section allows you to select the Mode for the Waterfall. You can display the standard Waterfall, display a Spectrum representation, or both. You can also adjust the Passband width to your taste. You can also adjust the speed that the Waterfall moves. The higher the speed the higher the CPU usage, so those with a slow CPU might want to select a slow speed to avoid a possible jerky display or pauses during printing of received or transmitted text.

The center portion of the above panel adjusts the Waterfall Display Mode only, and does not affect decoding. This section adjusts for clipping of the signal. Use clipping to shift the data so that baseline noise is at the bottom of the screen, thus giving a larger viewing dynamic range.

The lower portion of the panel adjusts the appearance of the frequency bar of the Waterfall. You can select the background and text color, and font for the numeric display. You can also adjust it to show either the audio frequencies or show the RF frequency + Audio. To do the later, requires a radio connection.

Weak Signal Configuration



Weak Signal Panel

This panel helps adjust and compensate for weak signals on the Waterfall.

Enhance / Amplify

When enabled all signals are uniformly increased in strength so that the strongest signal is at the maximum strength, similar to your radio's AGC option.

Advanced

When enabled automatic gain is applied to all signals by using an advanced digital amplifier algorithm.

This amplifier has both gain and bandwidth, the signal is amplified by the selected gain such that the signal strength of the strongest signal inside the bandwidth does not get clipped or cause visual overload.

Gain

The gain applied to the signal, range is 0 to 100%. The effect of gain depends to a large extent on the current Color scheme (selected in the *Colors* page).

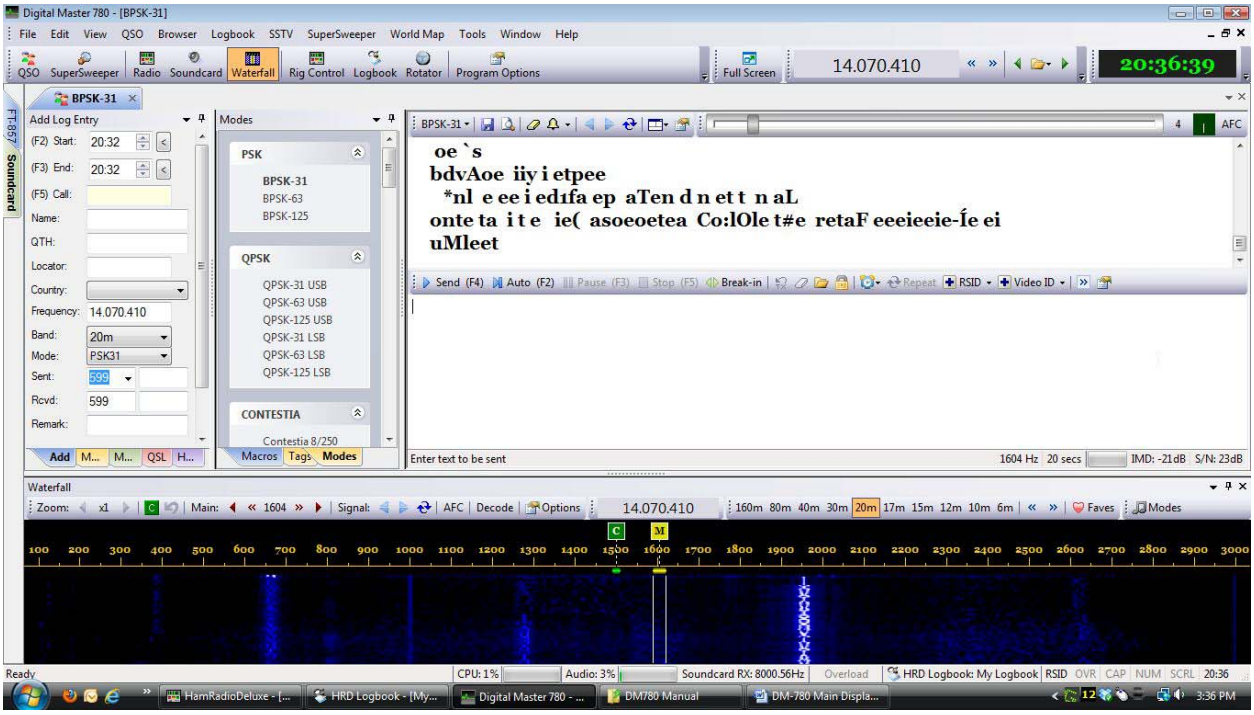
Bandwidth

The bandwidth of the amplification applied to each signal, range is 100 to 1,000Hz.

Now that we have DM-780 configured, can both transmit and receive digital modes, and have gone through some of the various tool bar options, its time to start looking into the more advanced features of the program. This includes the use of macros to create short-cuts to use during your QSOs, logging QSOs, using SSTV and customizing your display.

Since you should be basically up and running at this point, HRD Software LLC would like to welcome you to the fascinating world of Digital Communications.

Main Display Configuration



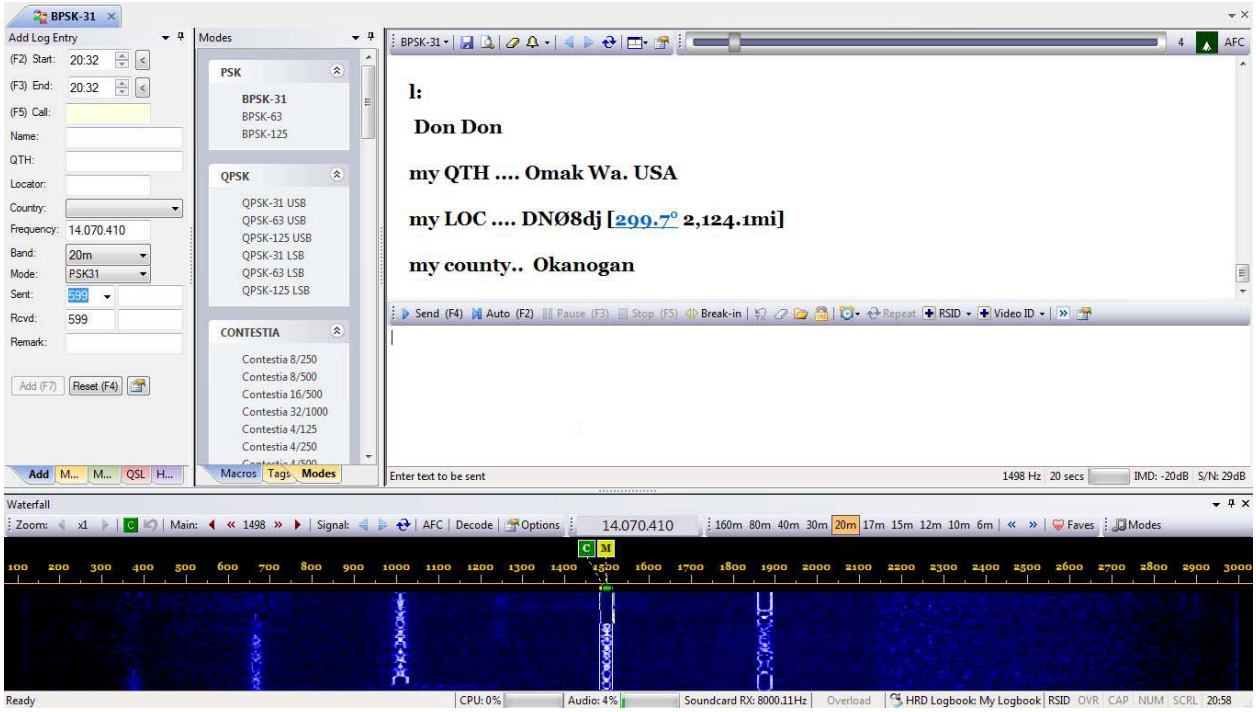
DM-780 Main Display

There are many configuration options available for the visual display of DM-780. If you will notice there is a scroll bar located on the right side of the ALE panel. Using the scroll bar and sliding down to the bottom of the ALE reveals more control buttons for the ALE. Many people don't like to have to use this scroll bar so one option is to reduce the hight of the Waterfall.

Placing your cursor along the top edge of the waterfall, just below the transmit panel, clicking and holding the left mouse button, will allow you to drag the top of the Waterfall down so you can see the options on the bottom of the ALE. Doing this, though, brings up another problem. When you get it to the point where you can see the bottom of the ALE, the Waterfall is so narrow it makes it hard to select the signals.

Full Screen Mode

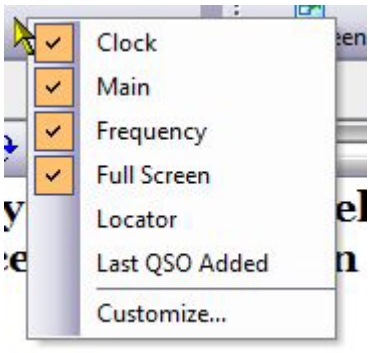
An alternative would be to press your F11 key. This takes the display to the Full Screen mode.



F11 – Full Screen Mode

Now in this mode you can see the lower part of the ALE, and as you will learn later, below the three icons at the bottom a line of text will appear when you have a call in the Callsign box indicating the worked status of that call. Plenty of room for all of that now, but another problem has been introduced.

You have lost your tool bar and have no way of selecting any other options available.

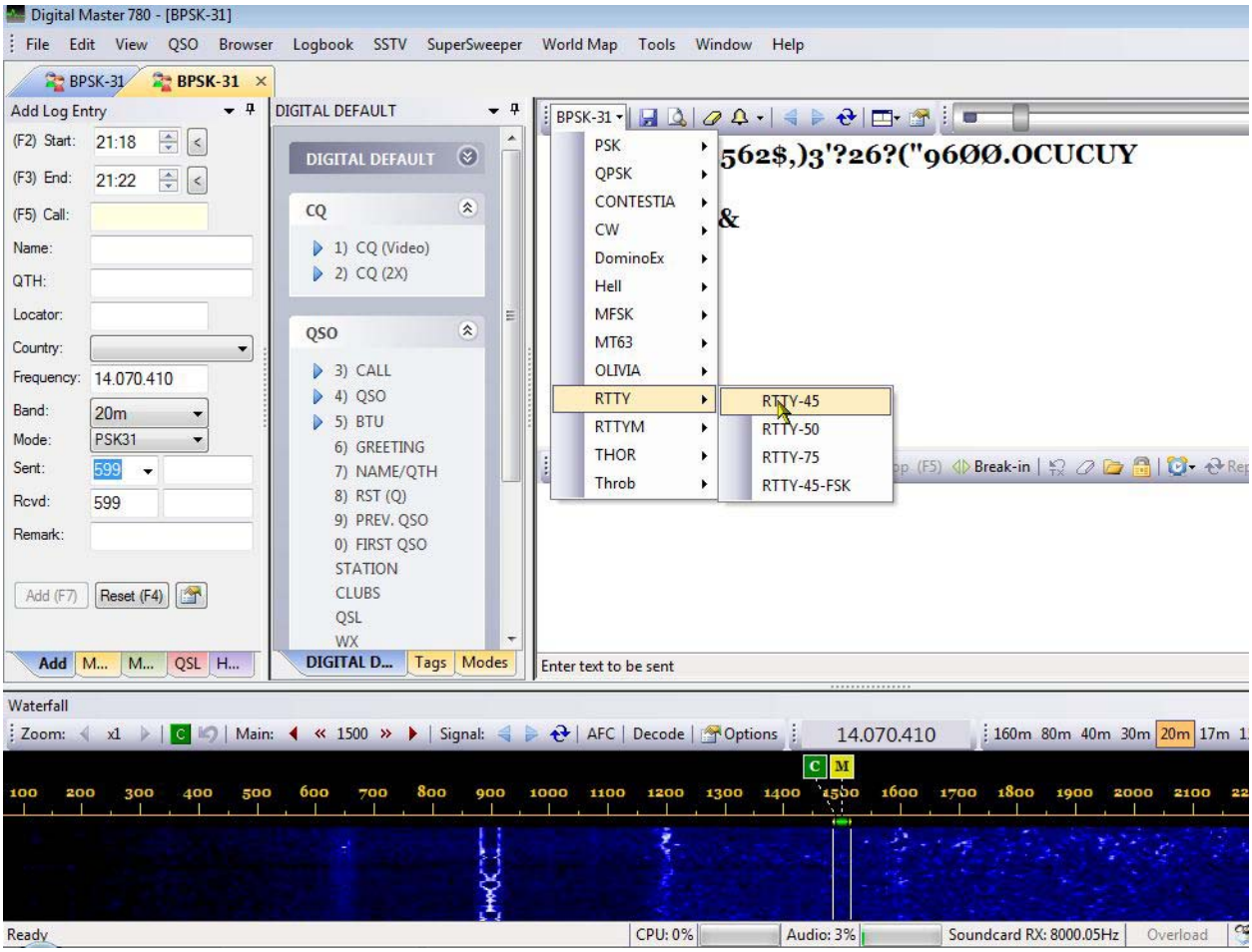


SOLUTION: Select an empty spot on the tool bar and click your right mouse button. A menu will pop up looking like the one at the left. Un-check each of those checked options in this menu to remove them from the tool bar. Remember, removing the Clock from the tool bar isn't going to hurt you, you always have the system clock on the Windows Task bar. The frequency is displayed on the Waterfall tool bar. Everything else will now be available from the Text Menu at the top of the screen.

Now you can adjust the height of the waterfall to something easier to work with and still see the entire ALE without having to use the scroll bar.

Multiple QSO Windows

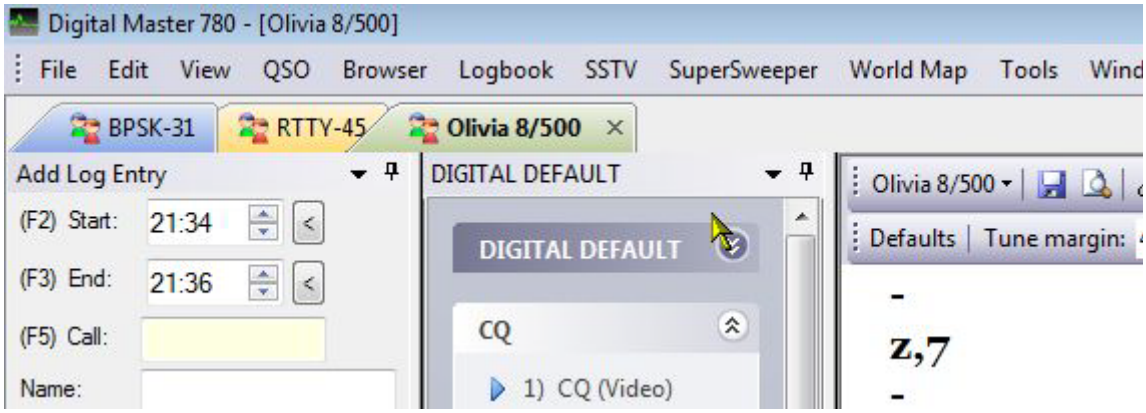
On the Text menu at the top of the display, click on QSO and select New Window. You will see a new tab appear on the display. The tab will be identical to the first one created. Click on this new tab. It doesn't look like anything changed. Your still in the BPSK-31 mode and the screen looks just like the previous tab.



Click on the BPSK-31 tab, in the upper left corner of the Receive panel. When the drop-down selection box opens, come down to RTTY and click on RTTY-45. You now have TWO mode tabs open on the main display.

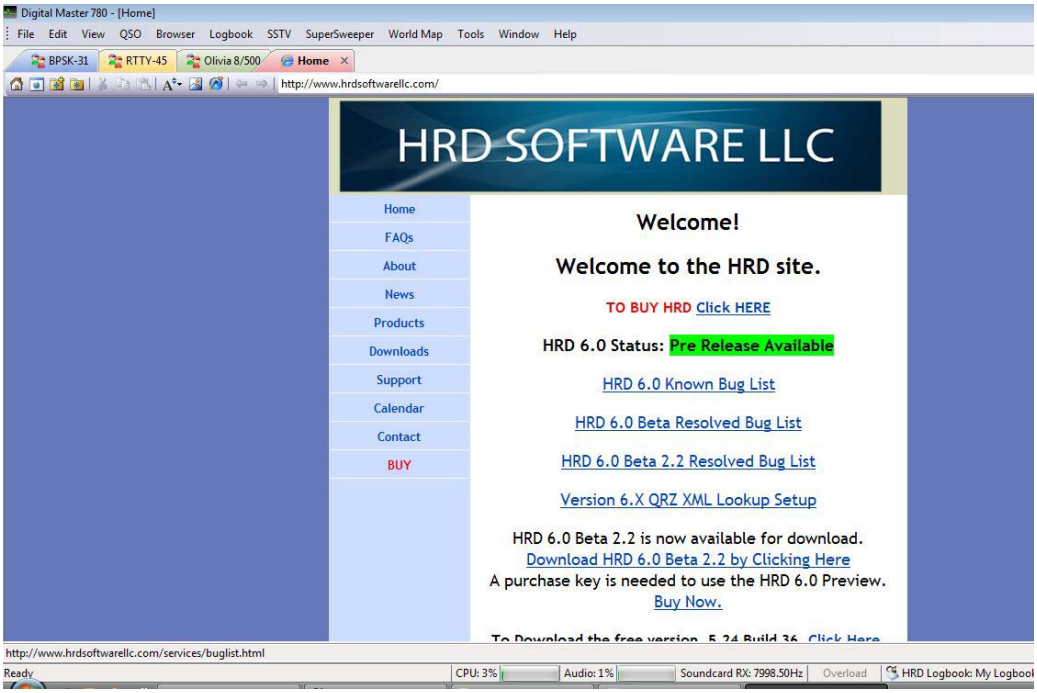
Let's try another. Click on QSO on the Menu and select New Window. You now have THREE mode tabs. In this new tab, let's select Olivia 8/500.

The tabs in your display should look like the following picture.



You can have as many mode tabs open as you like and easily switch back and forth just by clicking on the tabs. To close a tab just click on the "X" located to the right of the tab name.

If you a QSO and someone sends you a link a website, you don't have to exit DM-780 to view the site. You don't even have to open your favorite browser. All you have to do is click on the link, in the receive panel, a browser tab will open to the website you clicked.

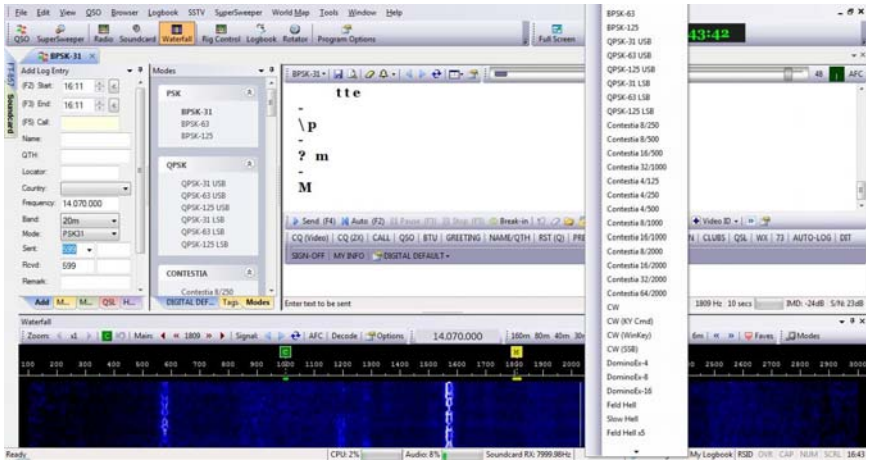


Looking closely at the above picture, you can see you now have four tabs on the display. Three Mode tabs and the **Browser** tab.

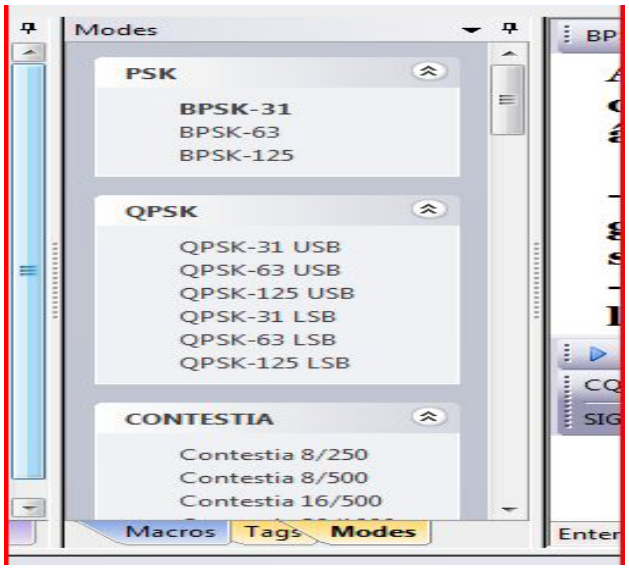
DM-780 – Digital Modes

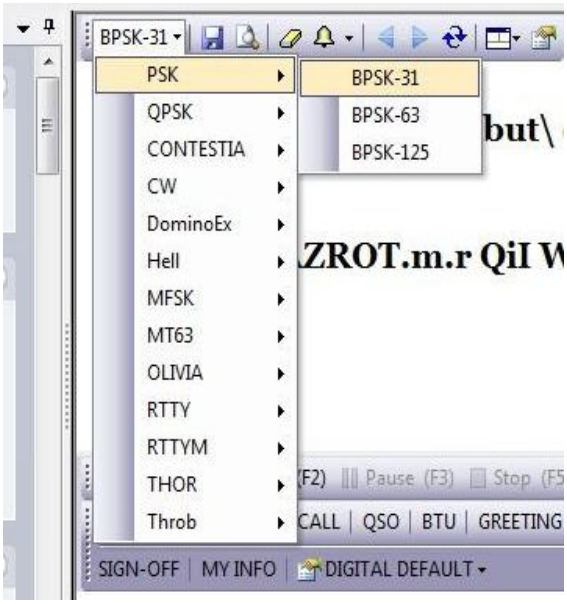
At present, DM-780 handles 14 of the most popular digital modes used in amateur radio. These modes are BPSK, QPSK, CONTESTIA, CW, DOMINOEX, HELLSCHRIEBER (HELL), MFSK, MT63, OLIVIA, RTTY, RTTYM, THOR and THROB and VOICE. Each mode is subdivided into variants of the mode.

The mode can be selected from a number of places in the DM-780 display, depending on how you customize your display. Modes can also be selected by right-clicking on the waterfall and choosing from the popup menu.



You can select from the Modes Pane, which can be pinned to the display or by clicking on the small mode drop-down tab located in the upper left corner of the Receive Pane.



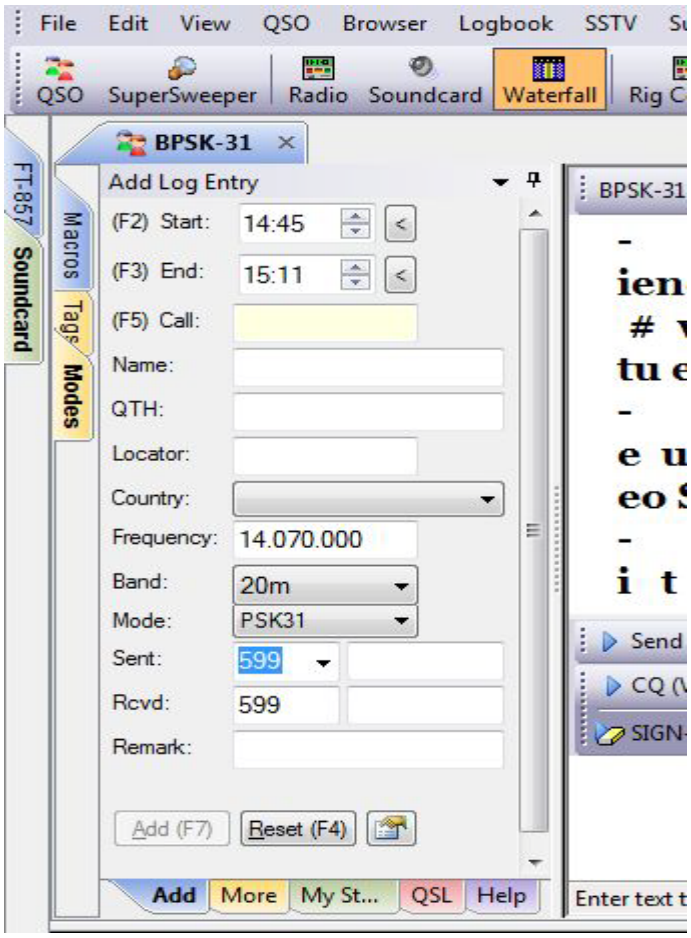


You will find that some modes, like BPSK and QPSK require only about 25 to 40 watts to maintain a good QSO contact, while others require more power. You will also find that some modes, like OLIVIA and CONTESTIA, require more RF power but perform extremely well under adverse band conditions. You can often be able to copy an extremely weak DX station when there is a high noise level using one of these modes.

Experimenting with the different modes and variants can be a lot of fun and you can find the mode that works best for you under even the worst band conditions.

DM-780 – Logging QSO

DM-780's integration with the Ham Radio Deluxe *Logbook* makes it very simple to log each QSO by using the ALE (Add Log Entry) panel.



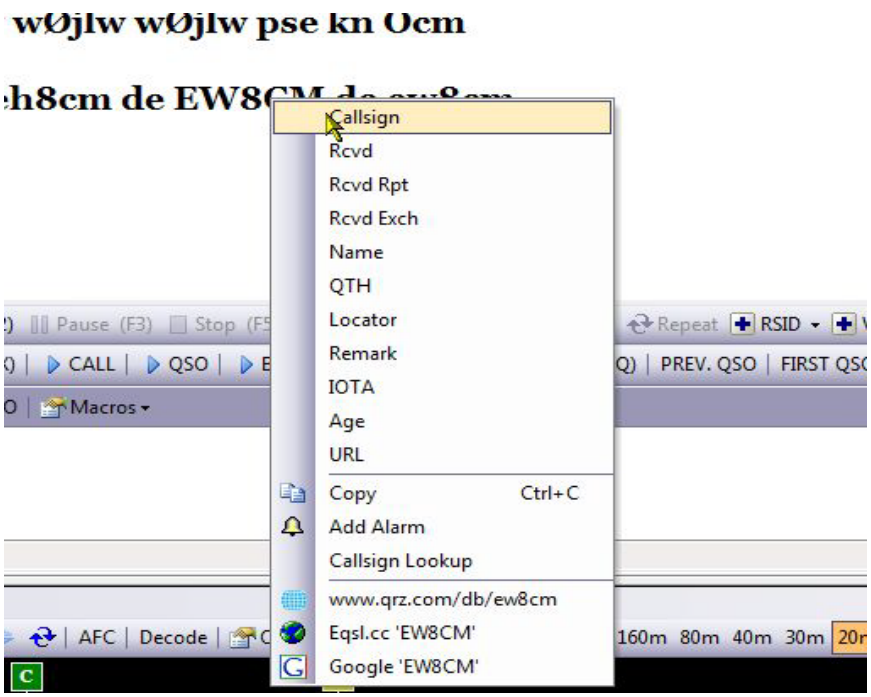
Add Log Entry (ALE) panel

If you DO NOT have Ham Radio Deluxe Logbook running and ARE NOT connected to it, this panel will be grayed out. If active, you can manually enter a callsign in the ***Call*** field, press the **TAB** key on your keyboard and depending on how you have the call look-up configured in Logbook, the call will be looked up and all information will be populated in the ALE.

Once the callsign and other information is entered in the ALE, the "*HIS TABS*" will become active in the macros and when used will be replaced with the data from the ALE window.

There is also an alternate method of entering the callsign into the ALE and automatically completing the look-up.

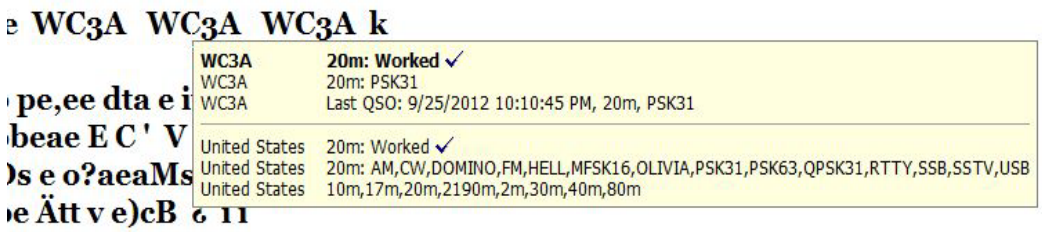
You can place your mouse cursor on the callsign in the Receive Pane and right-click.



ALE Alternate Method

Using this method brings up a context menu where you can select **Callsign**, left-click and the call will automatically be added to the ALE and the look-up will be performed to populate the rest of the data. This method makes logging quick and easy, especially during contesting.

In performing this alternate method of entering a callsign into the ALE, you might have noticed another feature of DM-780. When you hover over a callsign, a balloon will pop up indicating whether you have worked and logged the call in the past.

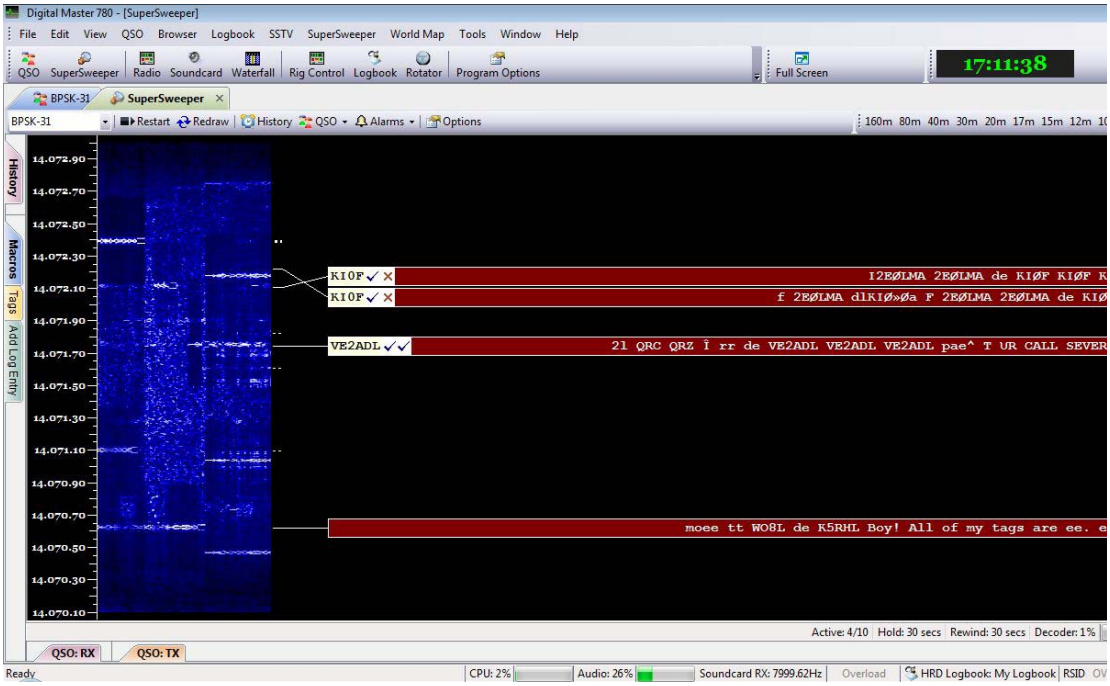


Worked Status Pop-up

Again, these features will only work if you have Ham Radio Deluxe *Logbook* running and connected to DM-780.

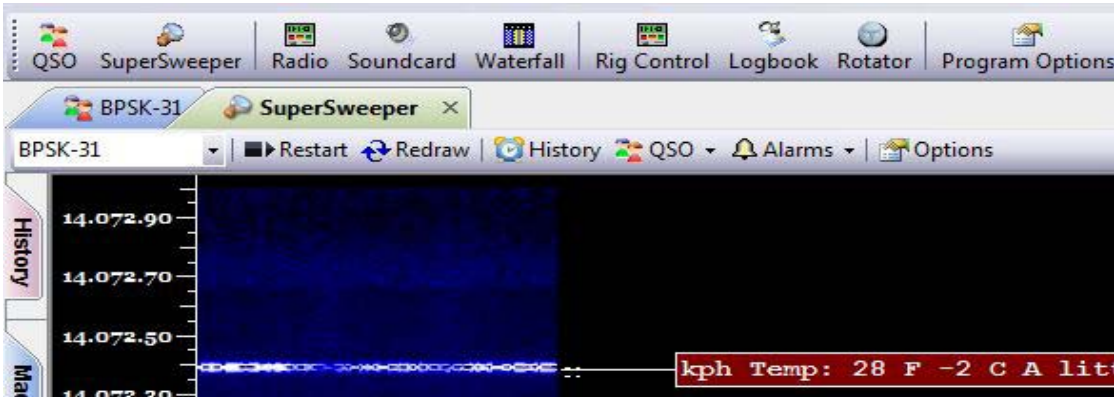
10 DM-780 – SuperSweeper

From the DM-780 tool bar, clicking on the SuperSweeper icon adds a tab to the main DM-780 display and brings up an outstanding feature of the program.



SuperSweeper Display

You can now switch between the SuperSweeper and the BPSK-31 display by clicking on the tabs just above the display window. You can also close the active window by clicking the “X” on the right end of the tab.

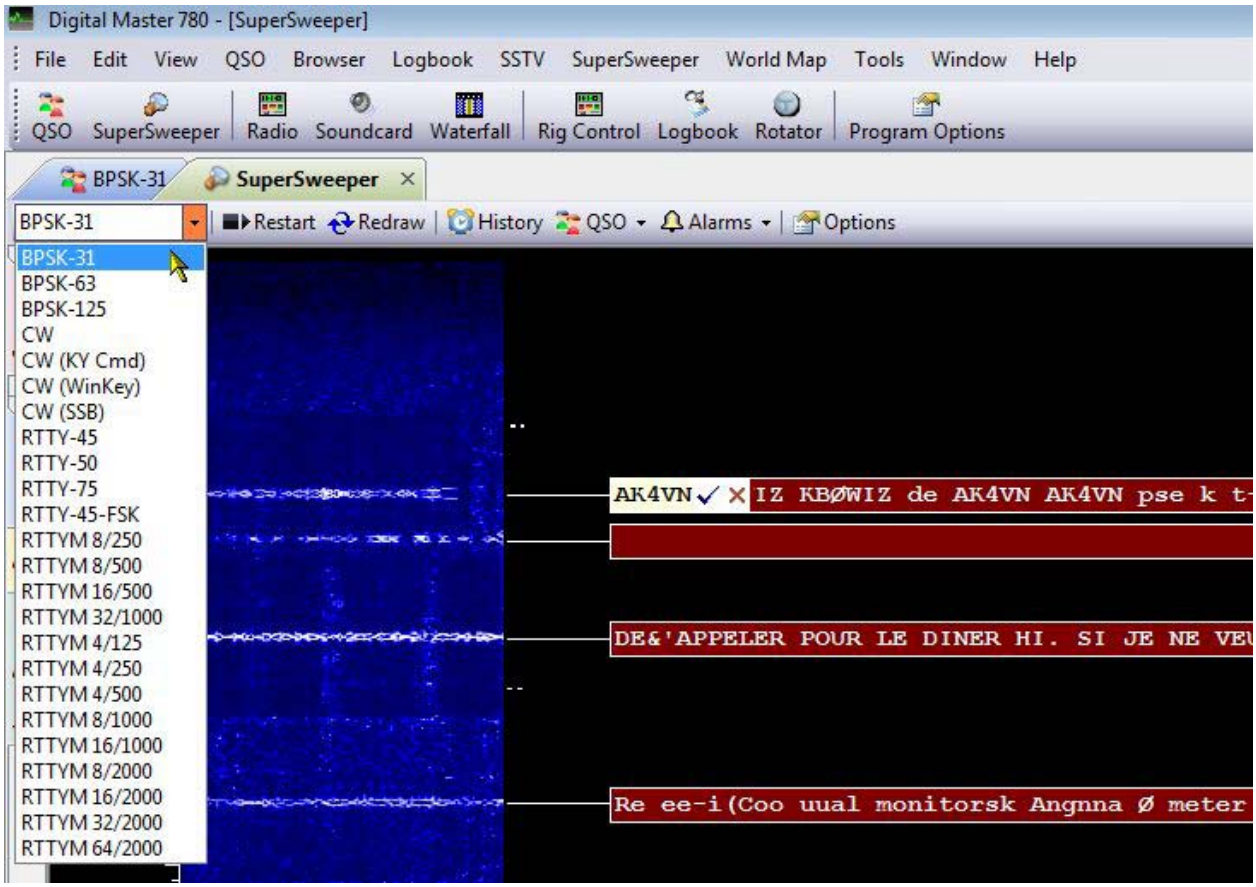


BPSK-31 – SuperSweeper Tabs

The advantage of using the SuperSweeper window is its capability to decode multiple signals on one screen. This is a lot different than using the main display with the waterfall or spectrum display where you can decode only the signal you have marked with your cursor.

Modes

Modes available in SuperSweeper are selected by clicking on the drop-down mode indicator in the upper left corner of the window.

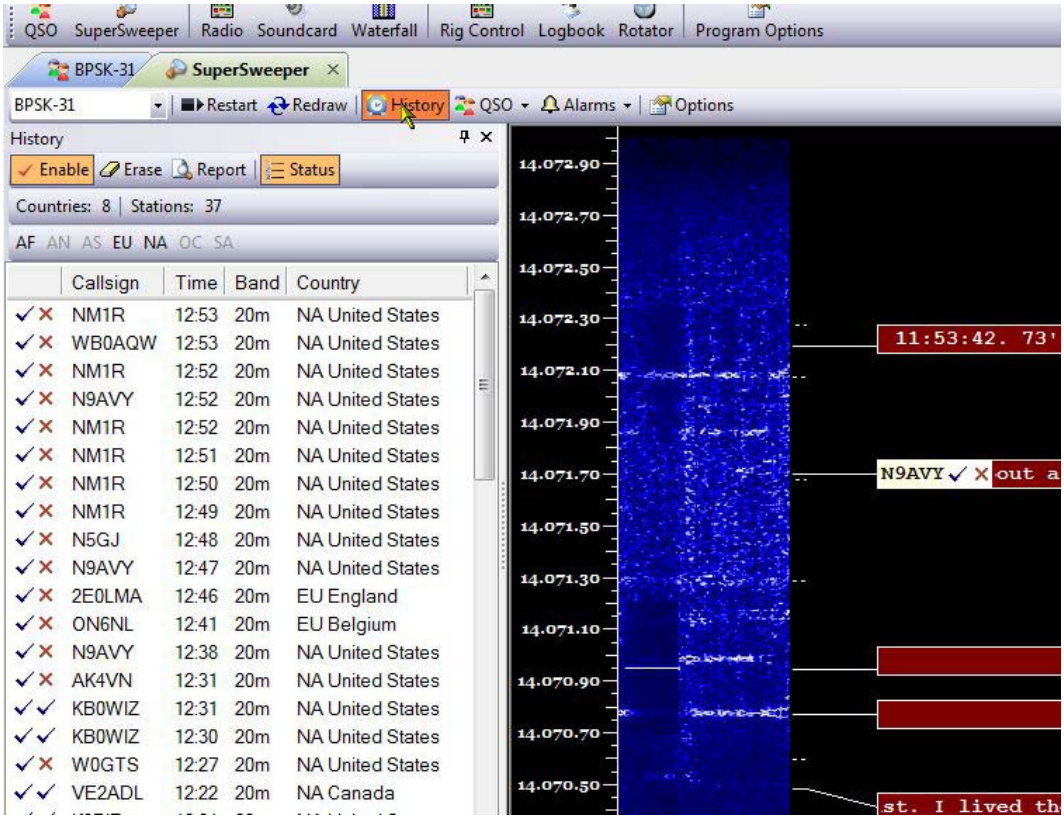


SuperSweeper Mode Selection

In the screen shot above, you will notice the call AK4VN followed by a check mark and a red **X**. If you have HRD Logbook running and are connected, when SuperSweeper recognizes a call it places it on the end of the red trace. The symbols after the call are Work Status Indicators. The first, the green check mark, indicates you have worked the country of origin for this call. The red **X** indicates that you HAVE NOT worked this operator. In the above, what we're seeing is, the country of origin of this call is the United States and we have worked it, but we have not had a QSO with AK4VN.

History Report

Another useful feature of SuperSweeper is the History report. Clicking on the **History** icon in the *SuperSweeper* tool bar brings up this feature.



SuperSweeper History

When enabled, the History logs callsigns recognized, by *SuperSweeper*, the time, band, continent and country of origin. It also shows if you have worked the country, indicated by either a green check mark for worked or a red **X** for not worked, and whether or not you have worked that particular call.

This feature can come in handy if you are trying to determine how the propagation on a band is running. You can find what areas are being received the most, at your local station, and by checking the times you can see what time of day the propagation into an area was the best from your station.

This feature can be enabled or disabled by clicking the **Enable** button on the History panel. You can also enable or disable the *Status*, which shows at a glance how many countries, how many stations and what continents were heard by clicking on the **Status** icon.

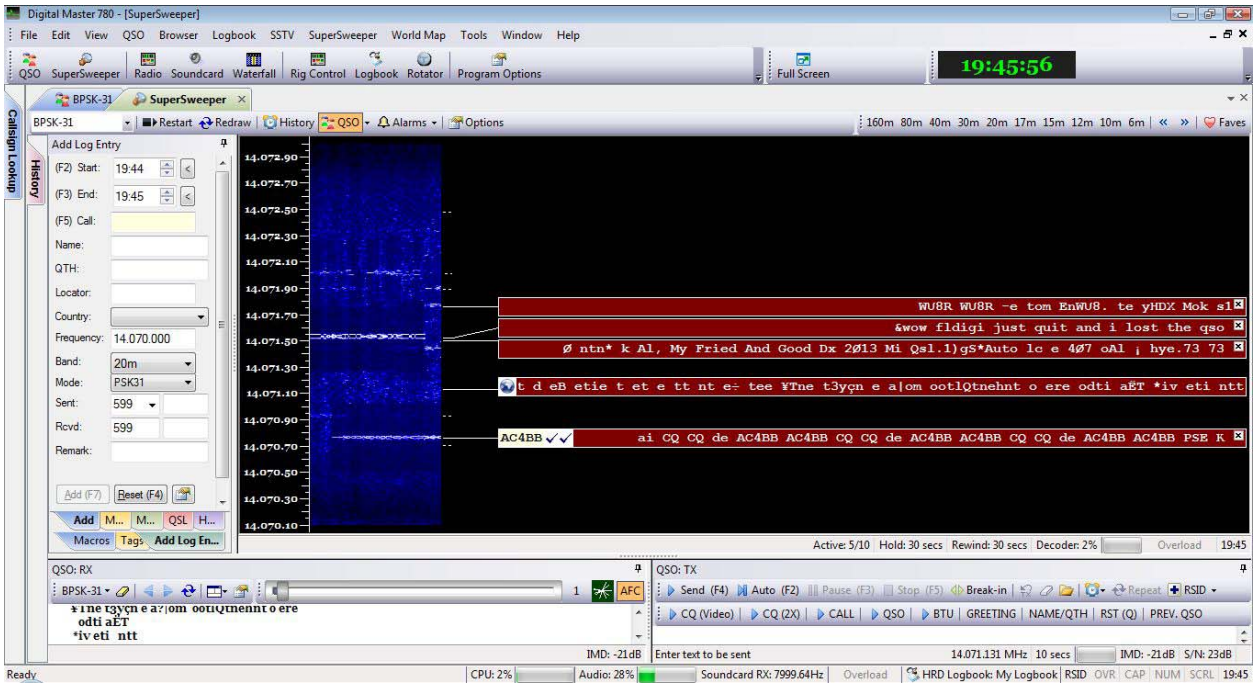
Clicking the **Report** icon transfers the data from the History panel to the Notepad, where you can save or print the report if you choose to keep it for future reference. Clicking on the **Erase** icon clears the History.

Starting a QSO from the SuperSweeper can be done using two different methods. In the first method, while watching SuperSweeper, and you see a callsign in light colored area on the left end of the trace, if you double-left-click on the callsign two things will happen. First you will be taken back to the main DM-780 display. The second thing that happens is the call you clicked on will automatically be transferred to the ALE and an automatic look-up will be done to populate the information about the call. You will also find your cursor is on the frequency that is being used by the QSO.

QSO Connection

From here all that needs to be done, when the contact finishes his current QSO, you hit your CALL macro which puts out a call for the station callsign appearing in the ALE call field. From there just proceed as normal to carry on your QSO with the contact.

The second method is holding a QSO in the actual SuperSweeper window. On the SuperSweeper tool bar, clicking on the QSO option changes the layout of the window.



SuperSweeper QSO Display

You will now notice you have the *ALE* panel, a *QSO RX* and a *QSO TX* panel displayed along with the SuperSweeper. Clicking on the red trace of any QSO will now display the received text in the *QSO RX* window located in the lower left part of the window. If there is a callsign displayed in the white end of the trace, hovering your cursor over the call will bring up the balloon to let you know whether or not you have worked that station. If you double-click on that callsign, the Call Look-up panel will open in the display. The callsign will be transferred to the Look-up panel and details will be populated from the call look-up service you have configured in the Ham Radio Deluxe Logbook. If you decide you would like to work this station, on the top of the Look-up panel, click on the **LOG** icon. This will populate the ALE panel.

You can now make your contact and carry on your QSO just as you would do from the main DM-780 display using the *QSO TX* and the *QSO RX* windows.

When your QSO is completed, click the **ADD (F7)** icon at the bottom of the *ALE* to save the contact to your logbook and clear the ALE for the next contact.

11 DM-780 – Macro Manager

Macros are a great way to handle repetitive operations in the digital modes. They allow you to pre-define operating procedures and execute them with just a click of the mouse. It's much more convenient to just click on a macro to send a CQ call rather than type in the call each time.

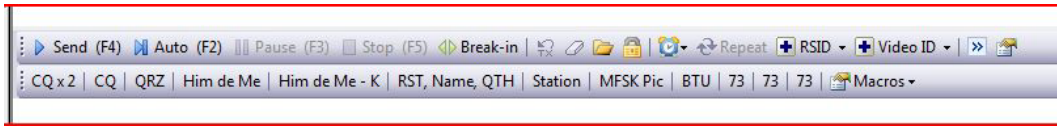
DM-780 contains a Macro Manager tool that allows you to set up and maintain an unlimited number of macro sets to handle these procedures. When installing DM-780 for the first time you will find a default set of macro definition. This is usually a READ ONLY file and should be kept as a template to build other editable sets. Sets can be made mode specific for CW, PSK, RTTY or set up for contesting exchanges. The uses for macros are almost unlimited.

When you create a custom set of macros it's recommended that you not only save the set within the DM-780 directory but also in an external directory, such as in a folder in your Documents. In the event you have to re-install HRD from scratch, having the macro sets saved in an external folder will eliminate the need to re-create the sets. You can just load them from the external folder and save them back into the DM-780 program folder.

Macros can be accessed from either a tool bar located between the Receive Pane and the Transmit Pane of DM-780 or from a macro pane which can be pinned to the display. This choice is yours.

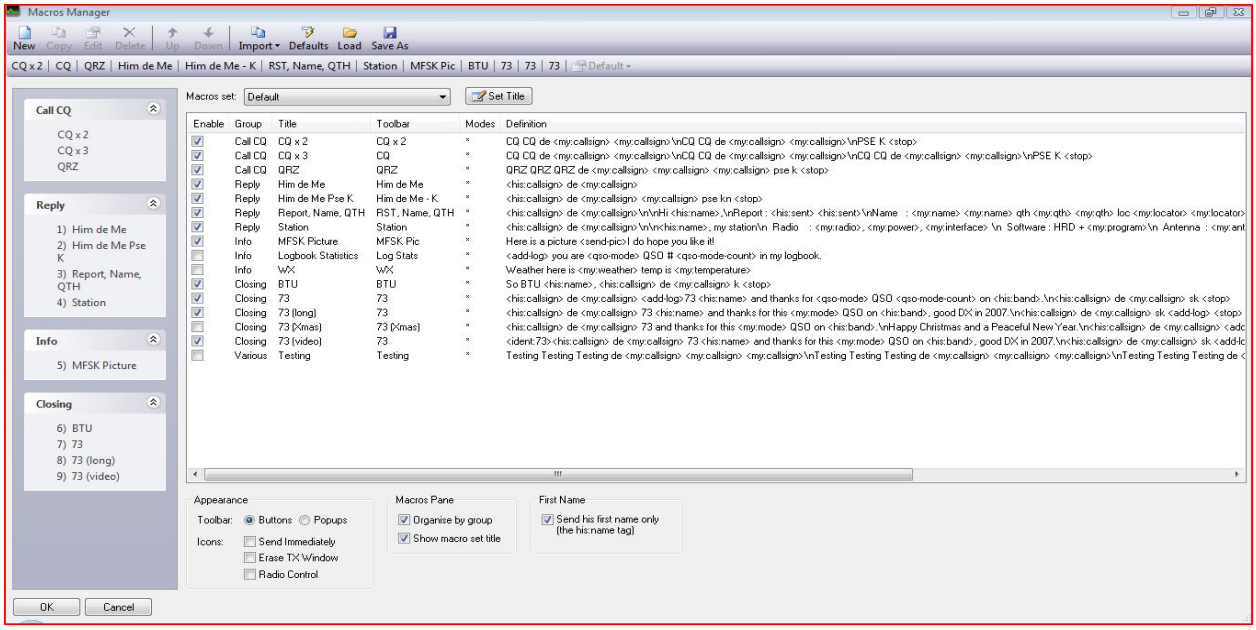
Macro Toolbar

Between the Receive pane and the Transmit pane, just below the Transmit tool bar, you will find the Macro toolbar. Left clicking on any one of the Macro buttons will automatically transfer the contents of the macro to the Transmit pane and depending on how the individual macro is configured, it will *AUTO SEND* the contents or wait till you press the *SEND* button to transmit the contents.



From here we can send a macro by clicking on the macro button or we can edit individual macros by right clicking on the macro button which will take you directly to the **Macro Editor**. For this part of the documentation we are going to use the Macro Manager by clicking on the far right icon called **Macros** then click on the drop-down option **Manager**.

Macro Manager



Above is a screen shot of the Macro Manager with the *Default* macro set displayed. From the Macro Manager you can edit the contents of individual macros, create new sets, modify the macro tool bar and edit how each macro functions.

Tool Layout

In the bottom portion of the Macro Manager you will see three columns.

Appearance

The first column manages how the tool bar appears on the main display. With a tick in the "*Button*" option, the macros are shown on the tool bar as individual macro buttons.

With the tick in the "*Popup*" option, the macros are displayed as *GROUPS* with a drop-down menu for each group to select the macros within that group.

The next option under appearance is "*Icons*".

- If the function of a macro is set to "*Send Immediately*", an arrowhead is placed to the left of the macro name in the tool bar.
- If it is set to "*Erase TX Window*" after sending, there will be an "*Eraser*" icon in front of the macro name.
- If both are ticked, both icons will appear.
- If the macro is a *Radio Control* macro, another icon will appear to designate the macro as a control macro.

In the Macro Manager screen you will see a column named "*GROUP*". Each macro is assigned to a group. Under the Macro Pane heading there is a check box to display the macros in order of groups. You also see a check box for showing the macro set title. This title is displayed on the tool bar and also at the top of the macro pane.

The third column shows *First Name*. When a call is looked up and the data is entered in the ALE the contacts full name usually appears in the Name field of the ALE. By checking the box under First Name, when a macro is sent that contains the <his: name> tab, instead of sending the contacts full name, the macro will only send the contacts first name.

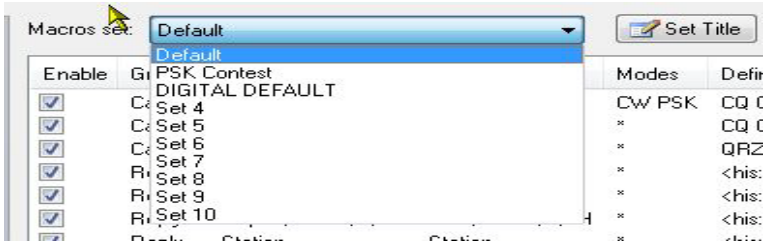
Macro Manager toolbar

Above is the Macro Manager toolbar.

- The **New** icon opens an empty *Macro Editor* window.
- **Copy** allows you to highlight a portion of one macro definition and paste it into another macro.
- Highlight a macro and click the **Edit** button brings up the **Macro Editor** and allows you to edit an individual macro.
- Highlighting a macro and clicking the **Delete** icon deletes the macro from your list.
- Highlighting a macro and pressing the **up** or **down** arrow on the tool bar moves the icons position up or down in the list.
- Clicking on the **Import** icon brings up a drop-down menu of the ten macro sets in DM-780. This can be used when creating a new macro set. You can create an empty set then Inport an already created set into the blank one to use as a template to edit the new set.
- Clicking the **Defaults** loads the Default set of macros.
- If you have created more than ten sets of macros, you have the ability to Save these additions sets to some location of your choice. Once the set is created click the **Save As** icon to save the set.
- The **Load** icon allows you to load any macro sets you have saved. These functions give you the ability to have an unlimited number of macro sets.

New Macro Sets

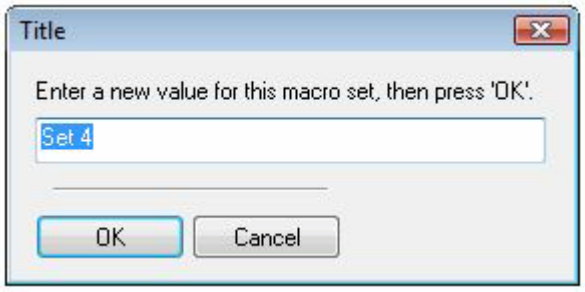
This next section will deal with creating a new macro set. As mentioned before, it's always best to keep the default macro set as a template. This can remind us of the format for each macro.



To create a new macro set, just above the window that contains the macro definitions, you will see a field called **Macro Set**. This is a drop-down field which currently contains the word **Default**. Clicking on the drop-down arrow in the field brings up a box containing 10 macro sets. Some of these sets may already have names assigned, which indicates there are already macros created within the set.

Select an empty set from this drop-down menu. Usually a name like *Set* followed by a number is an empty set.

Let's say for example that you select *Set 4*. Clicking on **Set 4** will bring up an empty editor screen with **Set 4** showing in the *Macro Set* field. To the right of this field you will see a button that says *Set Title*. Clicking on the Set Title button will bring up a box where you can enter a name for this group of macros.

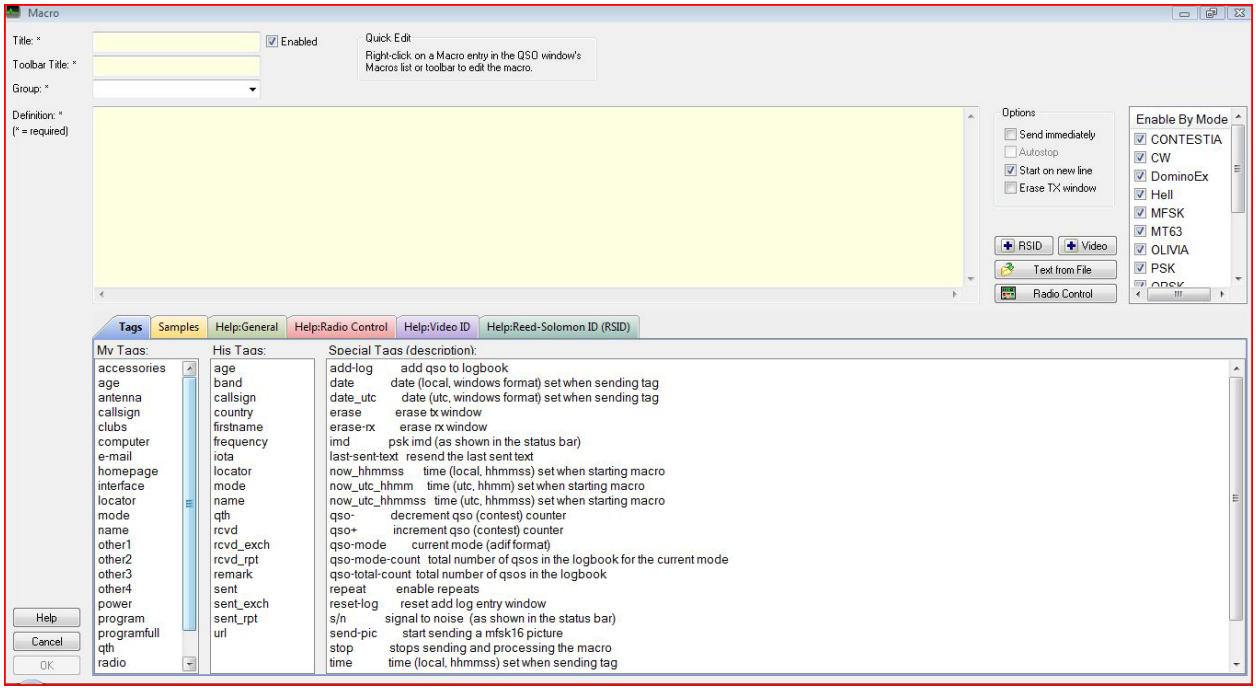


In our example, let's name this new set *My PSK* so type this name over the name currently in the Set Title box and click the **OK** button. *My PSK* now appears in the Macro Set field. We are now ready to create the individual macros for this set.

We now have an empty macro set named *My PSK* in the Macro Manager. Since we're new to programming macros we are going to use the Default set as a template to make our My PSK macro set.

On the Macro Manager tool bar click the **Import** macro. A drop-down box will appear and from that, place your cursor on **Default** and click the left mouse button. A new dialog box will pop up asking you if want to **Replace** *My PSK* with *Default* or **Add *Default*** to *My PSK*.

Since we're starting with a blank set it really doesn't matter which you select. If you had macros already in this set and just wanted to add the Defaults to those you would select the **Add** option, or if you wanted to replace them you would select the **Replace** option.



With the Macro Editor, we create each individual macro and set how it executes. Here is a brief explanation of the various functions available in the Macro Editor.

Macro Editor

Macros contain free-format text with optional tags. Tags are enclosed within angle brackets <> and contain:

- Information about yourself such as your callsign and name - taken from the *Tags* window,
- Information about the other station such as his callsign and name - taken

from the *Add Log Entry (ALE)* window,

- Special tags such as the date and time.

Example:

```
<his:callsign> <his:callsign> de <my:callsign>
<my:callsign>
73's and thanks for the <my:mode> QSO k
```

In this example `<his:callsign>` is replaced with the value in the *Callsign* field in the *Add Log Entry* window and `<my:callsign>` is replaced with the value in the *Callsign* field in the *Tags* pane of the QSO window. (Select *Tags* from the *QSO* menu to display the *Tags* pane.) The

tag is replaced with the current mode (PSK31, RTTY etc.) as shown in the mode dropdown in the QSO window.

So if HB9DRV is working GD4ELI using RTTY the actual text sent is:

```
GD4ELI GD4ELI de HB9DRV HB9DRV
73's and thanks for the RTTY QSO k
```

Adding Tags

To add a tag to the current macro:

1. Position the cursor in the definition field where the tag is to be inserted.
2. Make sure *Tags* is selected in the tab strip.
3. Double-click on an entry - the my: and his: prefixes are added automatically.

Options

The extra options are:

- **Send immediately** - when the macro is selected DM780 starts sending.
- **Autostop** - switch to receive when the macro is sent.
- **Start on new line** - make sure the text starts on a new line.
- **Erase TX window** - erase the contents of the TX window when selected.

Load Text from File

When you select this option the text

```
<file:YOUR-FILENAME-HERE>File-contents-go-here<eof>
```

is added to the macro. Replace `YOUR-FILENAME-HERE` with the full path of the filename. the contents of the file replace the text between the `<file:...>` and `<eof>` tags. This option is typically used for sending weather reports from automatic weather stations.

Now we'll create a macro that does a CQ call. The first thing is to create a title for the macro. In this case, the title will be *CQ*. Type the title in the title box at the top of the editor.

The next field is "tool bar Title". This is the title that appears on the macro button. Since we are going to have this macro do a CQ call two times, we will make the tool bar Title *CQ X2*, again without the quotation marks.

We'll now create a *Group* for this macro. Let's call this group *CQ*. Enter `CQ` in the Group field.

We want to make sure this macro is going to be Enabled on the macro toolbar, we need to place a check mark in the box to Enable the macro. This box is just to the right of the macro title field.

In the large yellow area we can now build our macro. Place your cursor in the editor area and type `CQ CQ CQ DE`. Hit the space bar after the DE and look down at the Tags list. In the My Tabs column you will see *callsign*. Double-click on **callsign** and you will see the `<my:callsign>` tag displayed in the editor after the DE. Your macro will look something like this….. `CQ CQ CQ DE <my:callsign>.` Place the `<my:callsign>` in the macro two more times, making a space between each tag. Immediately after entering the last tag press **ENTER** on the keyboard and repeat the sequence.

After entering the second CQ call, place `PSE K` and from the Special Tags column, double click on the Stop to place the `<stop>` tag at the end of the macro. Your finished macro should look like:

```
CQ CQ CQ DE <my:callsign> <my:callsign> <my:callsign>
CQ CQ CQ DE <my:callsign><my:callsign> <my:callsign> PSE
K <stop>
```

When you're finished entering your macro definition we can now set the macro options. For this macro, under the Macro Options, located on the right of the upper portion of the macro editor, place a check in all four options. These options determine how the macro is transmitted. It will start transmitting immediately when you press the macro button, it will begin on a new line, it will automatically stop at the end of the text and erase the transmit window when finished executing.

To save the macro just click the **OK** button in the lower left corner of the editor and you will be returned to the Macro Manager screen.

Now we'll talk just a bit about some special tags used within macros. There are several of these tags that perform various operations. Some are used in standard macros and some are used to create Rig Control macros.

Reed-Solomon IDs

This idea was originally developed by Patrick Lindecker, F6CTE.

The Reed-Solomon ID (RSID) is a short 16-tone MFSK transmission which identifies the mode in use. The RSID transmission is about 180Hz wide and lasts for just less than two seconds.

You should enable RSID when using an 'exotic' mode such as Olivia so that users of programs with RSID support know what mode you are using.

For a full list of modes supported by this program look in the *Program Options* for *Modes + IDs*.

There are two ways to enable RSID:

1. In *Program Options* select Modes + Ids and check the option to show the RSID button in the transmit tool bar. Clicking this button will transmit the RSID at the beginning of each transmission you make.
2. Add the tag <rsid> anywhere in the text being sent. By adding this tag to a macro, the RSID will only be sent when the macro is executed.

Insert Video ID

A special feature of DM780 is the ability to send an ID string which can be read in the waterfall - for more information select *Modes* from the *Program Options* in the main menu and tool bar. Many thanks to *Dave Freese W1HKJ* for the original design and coding in fldigi.

The Video ID bandwidth is ~ 80Hz.

When you select *Insert Video ID* the text

```
<ident:YOUR-TEXT-GOES-HERE>
```

is added to the macro, the `<ident>` tag must be at the start of the macro. Replace **YOUR-TEXT-GOES-HERE** with the text to be sent, for example:

- Callsign: `<ident:HB9DRV>`
- CQ: `<ident:CQ>`
- 73: `<ident:73>`

There are two special options:

- Call: replaced with the callsign in the tags window, and
- Mode: replaced with the current mode.

Whatever you send - keep the text short!

Callsign

```
<ident:call>CQ CQ CQ de HB9DRV HB9DRV HB9DRV pse K
```

Mode

```
<ident:mode>CQ CQ CQ de HB9DRV HB9DRV HB9DRV pse K
```

CQ

```
<ident:CQ>CQ CQ CQ de HB9DRV HB9DRV HB9DRV pse K
```

73

```
<ident:73>G4POP de HB9DRV 73 and thanks for this QSO
```

Radio Control

A radio control macro contains commands sent to Ham Radio Deluxe to configure your radio, for example to set a special filter. The text in the definition is not added to the input (TX) window. These definitions are specific to the radio you are using.

The tag **{{RADIO-CONTROL** must appear anywhere in the macro definition. If you have added this by mistake just remove the lines containing the tag.

The easiest way to add entries is to use the Radio window, as you select options in the Radio window the options are sent to Ham Radio Deluxe and the corresponding text is added to the definition (remember to press the *Connect* button in the Radio window). *Only add one entry per line.*

Note: Lines starting with # are treated as comments and are not passed to Ham Radio Deluxe. Blank lines are ignored.

Commands

There are four command types:

- Center frequency on/off,
- Drop down (menu) buttons,
- Normal press buttons,
- Sliders.

To simplify the command parsing any spaces in the button / slider names are replaced with a tilda (~). Slider entries contain the radio title, this is for historical reasons.

Center Frequency

- center-on
- center-on 1750
- center-off

To enable the current center frequency option in the waterfall enter *center-on*.

Note: The center frequency option must be enabled (checked). To specify the center frequency just add the frequency in Hz after the center-on tag, for example *center-on 1750*.

To undo the center frequency option and restore the previous radio frequency enter *center-off*.

The *center-on* and *center-off* text must be the only entry on the line. Typically you combine these options with a filter settings, for example when enabling the center frequency option a narrow filter is selected, when undoing a normal (wide) filter is selected.

```
#++
#
# {{RADIO-CONTROL
#
# For the TS-2000
#
# Set the center frequency to 1250Hz, adjust DSP
filtering
# to Low = 1000Hz, High = 1400Hz.
#
#--


center-on 1300
Set slider-pos TS-2000 DSP~low~cut 11 // DSP low cut = 11
Set slider-pos TS-2000 DSP~high~cut 0 // DSP high cut = 0
```

Drop down-Button

When you select an entry from a drop down button it is added to the end of the definition. Existing entries for the same drop down button are not overwritten as a drop down button can contain unrelated commands.

Press Button

When you press a button the editor first tries to replace an existing entry for this button; if there is no entry then a new entry is added to the end of the definition.

Ham Radio Deluxe

Satellite

12 Satellite Tracking

Introduction

Note: This chapter needs a lot of TLC to get it to match the current build. It will get totally redone soon.
N0ZRD - The Work Wacker

If you are new to satellite tracking visit *http://www.amsat.org/* maintained by The Radio Amateur Satellite Corporation (AMSAT) for excellent articles written for new satellite users.

Ham Radio Deluxe‟s Satellite Tracking support would not be possible without the help of David Taylor and his open source satellite-tracking library. After using David‟s code to get started I wrote my own library, shipped as a DLL with Ham Radio Deluxe and based on NORAD SGP4/SDP4 Implementations by Michael F. Henry.

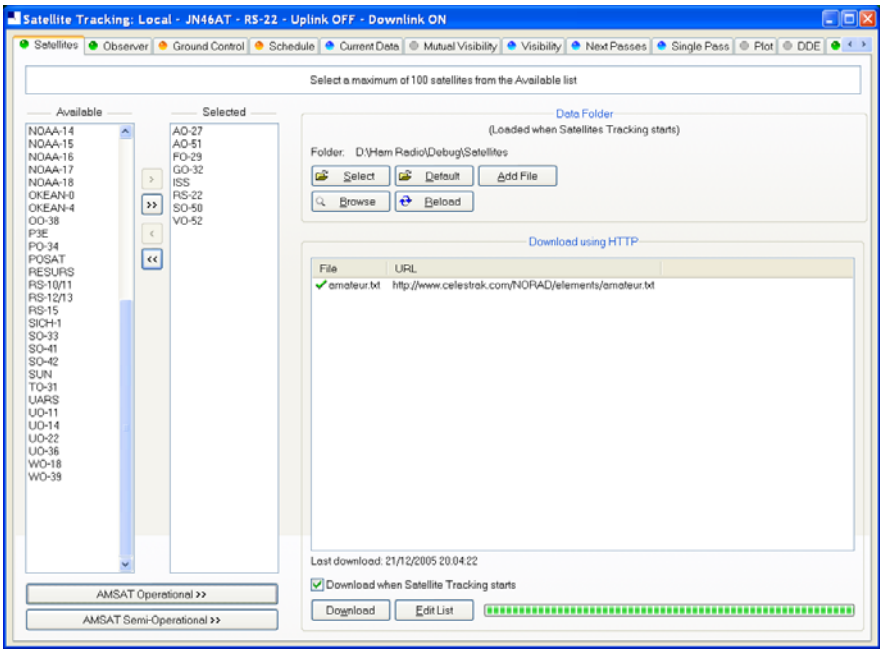
Note: The most important rule: it's the frequency on the satellite that is important, not the frequency on your radio. This is the most common mistake made when using a satellite.

If you are using two radios for satellite tracking – one for transmit, the other for receive – read this section first, then refer to *Synchronizer on page 92*.

Dual radio support is arguably the most flexible way to work with satellites.

Satellites

The software requires information about the satellites you will be tracking, this information is known as Keplerian elements. Johannes Kepler (1571 – 1630) discovered the three laws of planetary motion in 1609 and 1619 – a remarkable feat!



The satellites window lists the files containing the Keplerian elements used to plot the position of satellites and compute the correct frequencies for the uplink and downlink.

The default folder is Satellites located below the folder where you have installed Ham Radio Deluxe - for example:

C:\Program Files\Amateur Radio\Ham Radio Deluxe\Satellites.

To change the folder just press Select.

It is recommended that you update the data files in the Satellites folder when you start using Ham Radio Deluxe as the files shipped in the kits will be out of date by the time you start to use them. These files should ideally be refreshed every few days.

If you check the ‘Download when Satellite Tracking starts’ option then the files are downloaded every time you start satellite tracking.

To download the latest Kepler data files press Download. The files are downloaded to the folder containing your satellite data.

To edit the list of files press Edit List. The file is Ham Radio Deluxe Satellite List.txt in the folder Satellites folder.

Example:

```
#++
#
#   The entries below are downloaded using the Satellites page
#   in the Satellites data option. Data is saved in .txt files.
#
#   Entries must start with http://
#
#   Ham Radio Deluxe only supports the two-line format, for example:
#
#   AO-40
#   1 26609U 00072B   03309.95521145 -.00000007  00000-0  00000+0 0  3675
#   2 26609   9.9303  22.9678 7977178 228.8131  28.6254  1.25597973 13867
#
#--

########################################################################
#                                                                      #
#   When you change this list you should delete old files which are    #
#   no longer being used.                                              #
#                                                                      #
########################################################################

#
#   From AMSAT (recommended for Amateur radio satellites).
#
# http://www.amsat.org/amsat/ftp/keps/current/nasabare.txt

#
#   From Celestrak
#
#   Remove the # comment to add these.
#
http://www.celestrak.com/NORAD/elements/amateur.txt
# http://www.celestrak.com/NORAD/elements/goes.txt
# http://www.celestrak.com/NORAD/elements/stations.txt
# http://www.celestrak.com/NORAD/elements/visual.txt
# http://www.celestrak.com/NORAD/elements/weather.txt
#
```

New satellite data files can be downloaded from the Internet, for example from *http://www.amsat.org/* or from *http://www.celestrak.com/* maintained by T.S. Kelso.

The only supported file format is two-line element sets, for example:

```
AO-7
1 07530U 74089B   03265.96753648 -.00000029  00000-0  10000-3 0  2356
2 07530 101.7328 311.4393 0012255  21.1784 338.9793 12.53565904320301
AO-10
1 14129U 83058B   03265.06525444 -.00000148  00000-0  10000-3 0  9658
2 14129  26.3223 129.7582 5974698  27.0721 354.5394  2.05868478124501
```

The verbose format is not supported.

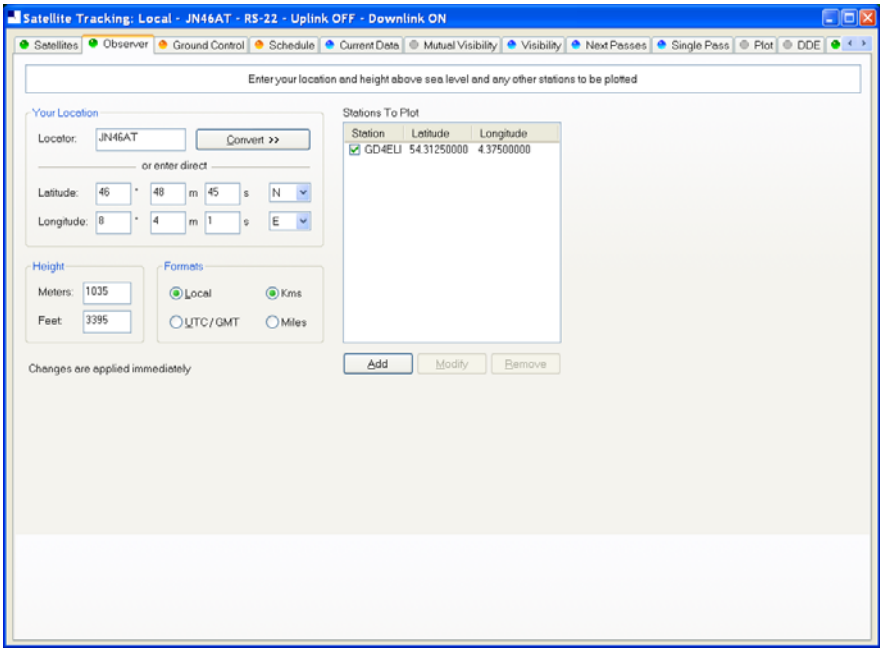
The bare NASA format elements from *http://www.amsat.org/* contain all satellites of interest to radio amateurs.

Alternatively if you look at *http://www.celestrak.com/NORAD/elements/* you will see many files that can be downloaded. Just download these files and save them in the Satellites folder selected previously. For more information about the contents of these files browse *http://www.celestrak.com/*.

All text files in the Data Folder are loaded into Ham Radio Deluxe, so you should delete old files if you no longer need them.

Select up to 100 entries from the Available list by either double-clicking on individual entries or by highlighting one or more entries and pressing >. By pressing >> all entries (up to a maximum of 100) are moved to the Selected list.

Observer



In the Observer window you enter your location and height above sea level in meters or feet (for users more familiar with imperial measurements: 1 metre is 3.3 feet). You also enter an optional list of stations that are plotted on the world maps. Only the checked [X] entries are plotted.

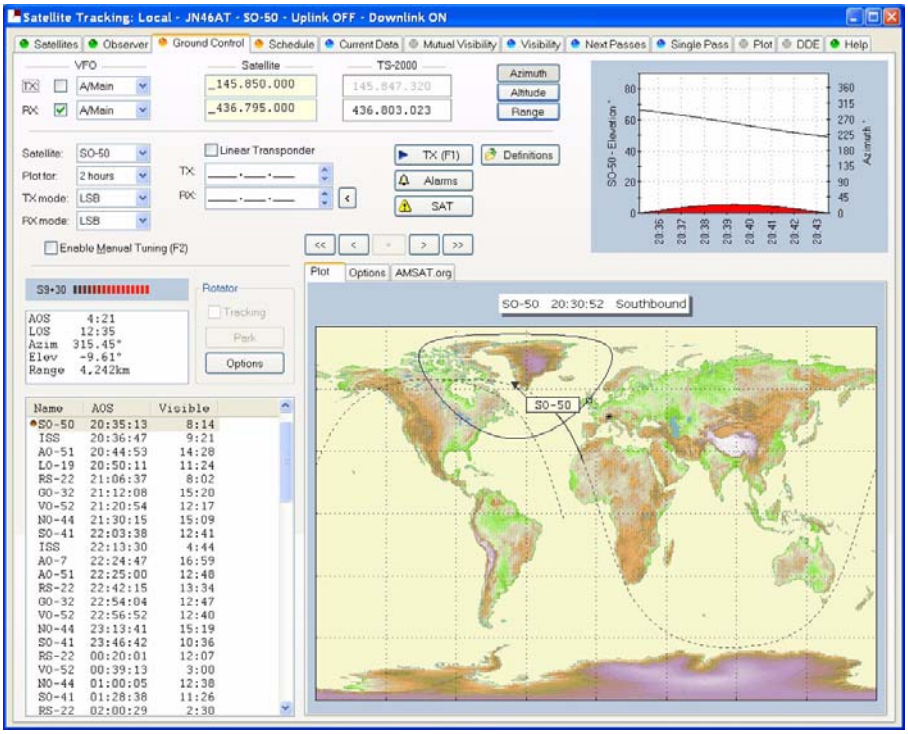
Enter your location either:

- By entering your Maidenhead Locator in the Locator field and the pressing Convert >> or
- By entering the Latitude and Longitude directly.

You also select the preferred time format; either Local (default) or UTC. Distance is displayed in either kilometers or miles.

You must press Apply to update the satellite settings.

Ground Control



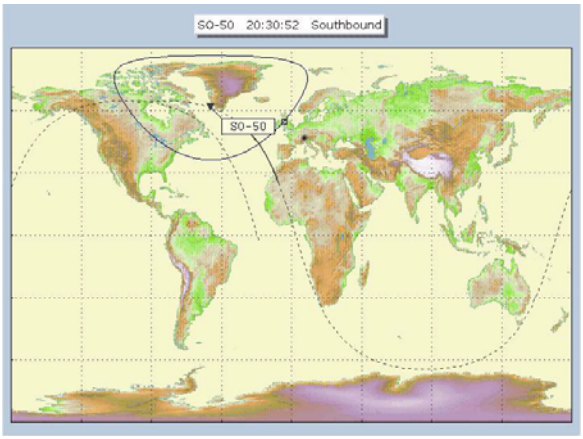
- This window is used to adjust your radio's TX (uplink) and RX (downlink) frequency to compensate for the Doppler effect (the apparent shift in frequency of a wave due to the relative motion of source and observer). Doppler shift is calculated in accordance with Kepler's laws.
- Enter the satellite uplink (your TX) frequency in the Satellite TX field.
- Enter the satellite downlink (your RX) frequency in the Satellite RX field.
- Select the VFO you will use for TX and RX (see rest of this section).
- If you are using a transverter select the Options tab and enter the transverter offsets.

When you are tuning remember that the important frequency is the satellite frequency, not the frequency on your radio. The frequency on your radio is the satellite frequency corrected for Doppler shift.

Tabs

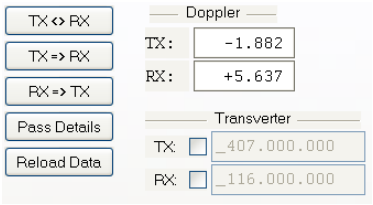
Plot

A plot of the selected satellite‟s position and footprint. Use the plot offset buttons << < - > >> to offset the plot time.



Options

Infrequently used options are located here to avoid cluttering up the display.



TX <> RX Swaps TX and RX frequencies.

TX => RX Copies TX frequency to the RX.

RX => TX Copies RX frequency to the TX.

Pass Details Displays pass details using the default text editor, useful for programming memories in a handheld UHF/VHF transceiver.

For example:

```
SO-50

TX: _145.850.000
RX: _436.795.000

Date / time               Azim   Elev  Receive       Transmit
-------------------------------------------------------------------
Wed 11-Jan-2006 07:38:00  109.4  -0.2  436.796.788   145.849.402
Wed 11-Jan-2006 07:38:30  105.3   0.1  436.796.169   145.849.609
Wed 11-Jan-2006 07:39:00  101.3   0.3  436.795.532   145.849.822
Wed 11-Jan-2006 07:39:30  97.1    0.3  436.794.888   145.850.037
Wed 11-Jan-2006 07:40:00  93.0    0.2  436.794.243   145.850.252
Wed 11-Jan-2006 07:40:30  89.0    0.0  436.793.609   145.850.464
Wed 11-Jan-2006 07:41:00  85.0   -0.3  436.792.992   145.850.670
```

Reload Data Reloads the latest Kepler data – see Satellites on page 129.

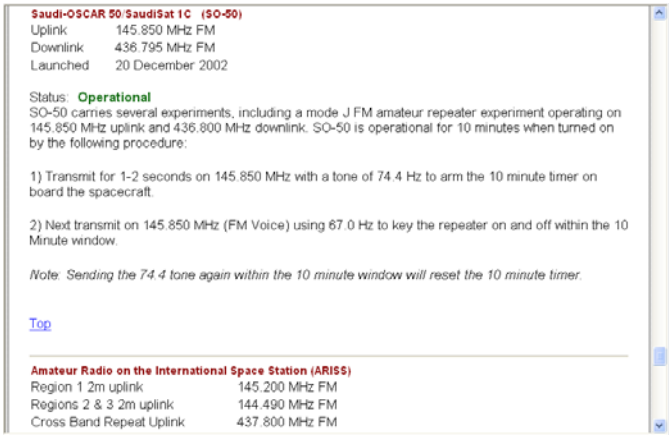
Doppler – the current frequency correction.

Transverter – if you are using a transverter enter the correct offsets here and check TX and RX as appropriate.

AMSAT.org

The satellite‟s page in AMSAT.org (if available). Note: not all satellites are supported yet.

This is a useful way of getting information about satellites modes and frequencies.



Kenwood TS-2000

The computer can only update both main and sub frequencies either:

- In receive mode, or
- In transmit mode with SAT selected.

A special solution is required when the uplink (TX) and downlink (RX) frequencies are in the same band. When you start the TS-2000 you have an extra TX VFO option Sub+XIT which is only used for same band split operation (see below). When selected the Sub VFO is used for transmitting, Doppler correction is applied by adjusting the XIT value.

Cross Band

In normal cross-band satellite mode (for example transmit on 70cms and receive on 2m) select:

TX VFO TX),	B/Sub (the TS-2000 always uses the Sub VFO for
RX VFO	A/Main,
SAT	on
Split	off

The TS-2000 must be in satellite mode so that the computer can update the TX frequency.

Be careful with the TS-2000's TF SET button, each time you press TF-SET the uplink (TX) frequency and the downlink (RX) frequency are swapped. So if the frequencies in Ham Radio Deluxe are the opposite of those shown on the radio just press TF SET once.

Same Band (Split)

An example is talking to the astronauts on the ISS where the TX frequency is 145.200.000 MHz and the RX frequency is 145.800.00 MHz. You cannot use SAT mode as this is only used for cross-band operation, so you use Split mode.

TX VFO	Sub+XIT,
RX VFO	Main,
SAT	off,
Split	on.

XIT will be switched on as soon as you check TX [X] updates. If you switch it off then Ham Radio Deluxe will switch it on again.

The RX (main) frequency on the TS-2000 is set to the correct RX frequency (satellite + Doppler correction).

The TX (sub) frequency on the TS-2000 is set to the TX satellite frequency; the Doppler correction is applied by adjusting the XIT value. When you transmit the TS-2000 displays the TX (sub) frequency +/- XIT so the frequency displayed on the TS-2000 is the correct frequency (satellite + Doppler correction).

When you start transmitting you may hear beeps from the radio - it takes Ham Radio Deluxe a few seconds before it detects that you are transmitting. When Ham Radio Deluxe detects transmit mode it stops updating the RX (main) frequency until you return to receive as the frequency cannot be updated by the computer while transmitting with SAT off.

Yaesu

FT-847

You must select SAT mode on the FT-847 so that Ham Radio Deluxe can read and set both the TX and RX frequencies. It is not possible to determine the state of the FT-847's SAT button so you must press the SAT button in Ham Radio Deluxe so that it shows SAT as being enabled.

In normal cross-band satellite mode (for example transmit on 70cms and receive on 2m) select:

TX VFO	B/Sub
RX VFO	A/Main
SAT	on
Split	off
Tracking	off (you do not need to enable tracking, the computer does everything for you, also the tuning response with Ham Radio Deluxe is much faster with tracking off). To switch tracking off press the A > B button underneath Track.

The FT-847 must be in satellite mode so that the computer can update the TX frequency.

When in SAT mode the FT-847 takes a long time to respond to 'Read Frequency' requests - especially if tracking is on, as a result when you tune the FT-847 with the radio's tuning dial the displayed frequency will not update very quickly.

Other

The transmit frequency of some Yaesu radios such as the FT-817 and FT-857 cannot be changed while in transmit mode, so it is not possible to apply Doppler correction while transmitting. If you think your Yaesu radio can be updated while transmitting please contact the author.

ICOM

IC-910H

In normal cross-band satellite mode (for example transmit on 70cms and receive on 2m) select:

TX VFO	Sub
RX VFO	Main
SAT	on

The IC-910H must be in satellite mode so that the TX uses the Sub frequency. If the bands on the radio are the same as Ham Radio Deluxe but reversed press M / S to switch the Main and Sub frequencies.

Because the IC-910H cannot display the same band on both Main and Sub Ham Radio Deluxe cannot update the frequencies unless the correct bands are select using the radio controls.

In same-band mode:

TX VFO	Main
RX VFO	Main
SAT	off

A few notes:

- The TX mode is not updated from the radio.
- The software has to switch between Main and Sub so that the Sub VFO is updated, it is not possible to detect the radio's current Main / Sub selection so the radio operates in main mode all the time. If you press Sub on the radio you will see that radio switch back to Main as soon as the Sub frequency is updated.

Single VFO Radios

If you are using a single VFO radio such as the FT-817 then you use the same VFO for TX and RX. Use the TX (F1) button to switch between TX and RX. When you switch to TX the transmit frequency is loaded into the radio before it switches to transmit, when you return to receive the receive frequency is loaded into the radio after it switches to receive.

So the rule is: always use the TX (F1) button to switch between transmit and receive.

Linear Transponders

Check [X] the Linear Transponder Tracking option if you are using a linear transponder such as HAMSAT / VUSAT / VO-52. These satellites receive a specific range of frequencies (typically 40 - 100 kHz) in one band, convert them to another band and amplify the converted signal for transmission back to your planet. The converted signal is inverted - LSB becomes USB etc. - this is known as an inverting transponder.

Do not use the satellite tracking built into your radio - let Ham Radio Deluxe do the work for you (for example on the FT-847 this is the Tracking option). To set up the linear transponder frequencies:

TX center	The center frequency of the uplink (TX) band. For example on VO-52 the uplink band is 435.220-435.280 MHz (LSB/CW) so the center frequency is 435.250.000 MHz.
RX center	The center frequency of the downlink (RX)

As you tune your RX frequency the TX frequency will be correctly adjusted by applying [1] offsets from the center frequencies and then [2] Doppler correction.

To adjust your transmit signal so that it matches the receive frequency use the spin button to the right of the TX center field. It will be necessary to adjust the transmit

signal as your radio(s) may not be correctly aligned, also the linear transponder in the satellite may also not be correctly aligned.

The tracking option in a radio cannot correctly compensate for Doppler, this is one reason why many QSO's drift gently across the linear transponder's available bandwidth. Only correct computer control will ensure that two or more stations stay on the same frequency while the satellite passes overhead. When using the linear transponder option Ham Radio Deluxe will correctly control your radio's frequencies so that are they are both compensated for Doppler shift.

Frequency Resolution

The frequency resolution is set the 1 Hz for:

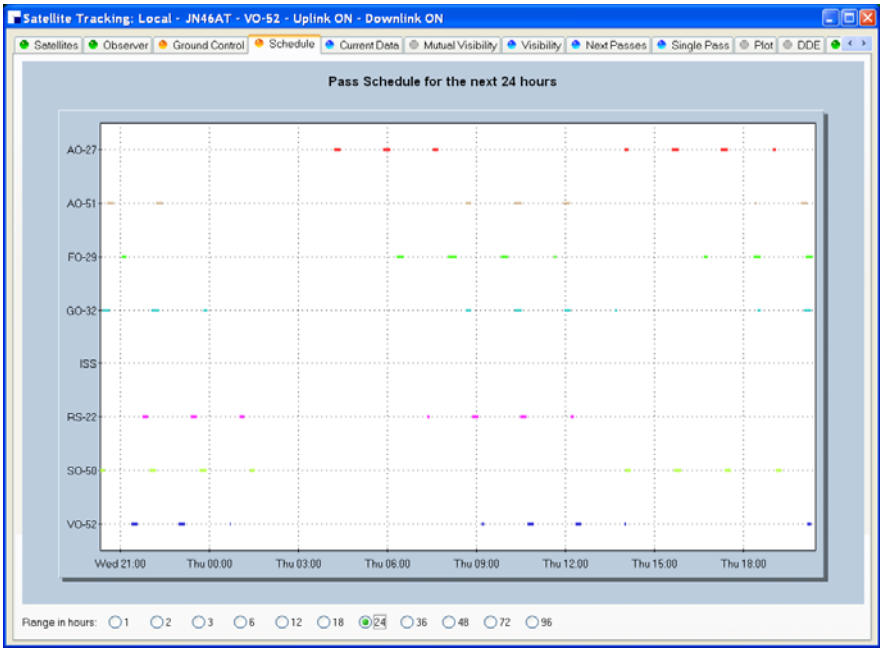
- All ICOM,
- All Elecraft,
- All FlexRadio,
- All Kenwood.

All other radios are set to 10 Hz. If you have a radio that supports 1 Hz resolution and is not in the above list please contact the author.

Options

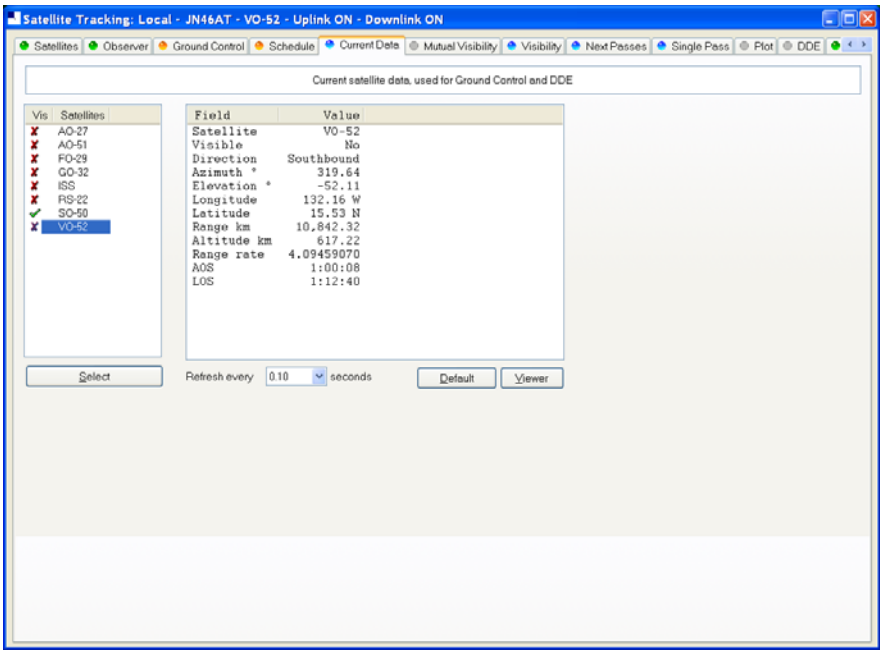
Option	Description
VFO	The VFO used for the uplink (TX) and downlink (RX). If checked [X] the selected VFO is updated regularly as the satellite frequency is corrected for Doppler shift.
Satellite	The satellite frequency. Click the Open button to select a new frequency from a popup window containing the Favorites definitions or enter the new frequency. band. For example on VO-52 the downlink band is 145.870-145.930 MHz (USB/CW) so the center frequency is 145.900.000 MHz.
Transverter	If you are using a transverter enter your transverter's intermediate frequency here and check the [X] box. If you are not using a transverter either leave this field empty or do not check the [X] box. The radio frequency is calculated as: Satellite - Transverter + Doppler shift.
Radio	The radio frequency as computed by Ham Radio Deluxe taking Doppler shift into account.
Satellite	Select the current satellite from a dropdown list that contains the entries selected earlier in the Satellites window.
Plot for	Determines the amount of information that is plotted over the surface of the planet for the current satellite.
TX > RX	Copy the Uplink satellite frequency to the Downlink satellite frequency.
RX > TX	Copy the Downlink satellite frequency to the Uplink satellite frequency.
TX <> RX	Exchange the Uplink and Downlink satellite frequencies.

Schedule



This window shows the pass schedule for the satellites selected in the Satellites window.

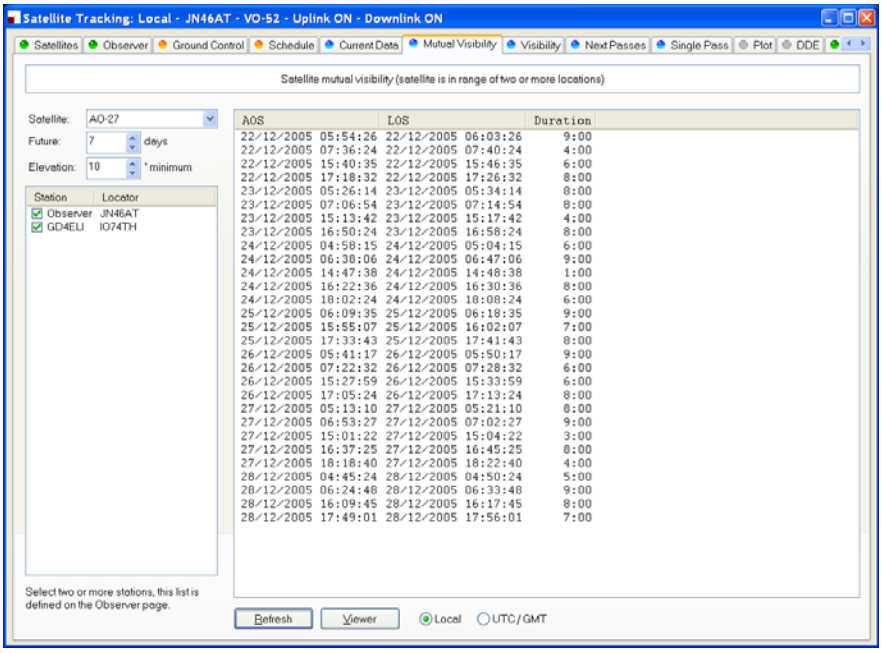
Current Data



This window shows all computed information for a selected satellite. This window provides the data for the Ground Control and DDE windows.

Press Viewer to display the data with the default text file viewer, usually Notepad.

Mutual Visibility



The mutual visibility window answers the question 'when is a satellite simultaneously visible from two or more locations'.

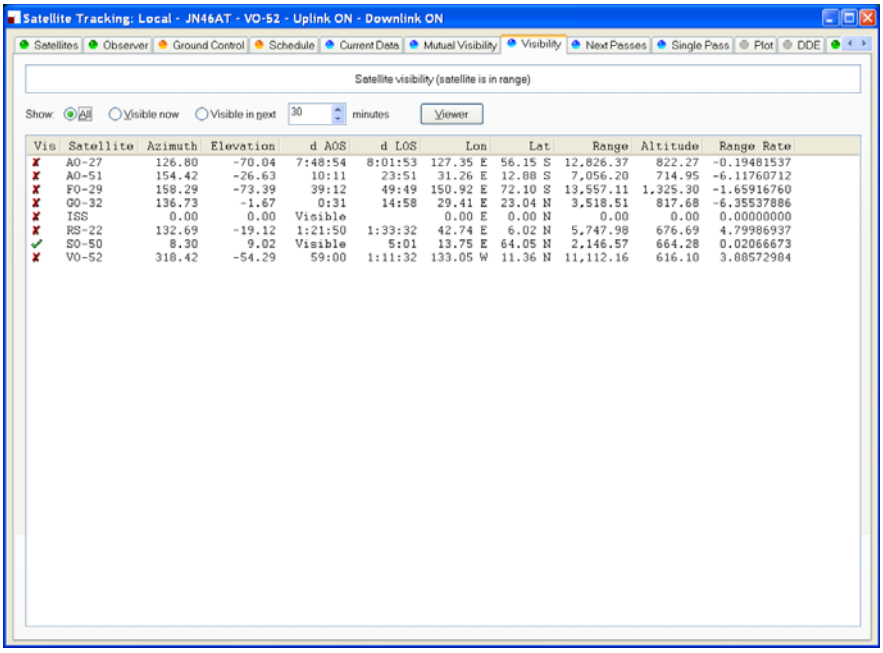
The information is determined up to 99 days in the future for any stations from the list defined in the Observer page.

The satellite is considered to be visible if the elevation is the same as or greater than the selected value.

Use the Viewer option to display the data in Notepad, for example:

```
Satellite ......: AO-27
Future .........: 7 days
Min elevation ..: 10 °
Time format ....: Local

+--------------------+
| Station  | Locator |
+--------------------+
| Observer | JN46AT  |
| GD4ELI   | IO74TH  |
+--------------------+

+-----------------------------------------------------+
| AOS                 | LOS                 | Duration |
+-----------------------------------------------------+
| 22/12/2005 05:54:26 | 22/12/2005 06:03:26 |     9:00 |
| 22/12/2005 07:36:24 | 22/12/2005 07:40:24 |     4:00 |
| 22/12/2005 15:40:35 | 22/12/2005 15:46:35 |     6:00 |
| 22/12/2005 17:18:32 | 22/12/2005 17:26:32 |     8:00 |
| 23/12/2005 05:26:14 | 23/12/2005 05:34:14 |     8:00 |
| 23/12/2005 07:06:54 | 23/12/2005 07:14:54 |     8:00 |
| 23/12/2005 15:13:42 | 23/12/2005 15:17:42 |     4:00 |
| 23/12/2005 16:50:24 | 23/12/2005 16:58:24 |     8:00 |
| 24/12/2005 04:58:15 | 24/12/2005 05:04:15 |     6:00 |
| 24/12/2005 06:38:06 | 24/12/2005 06:47:06 |     9:00 |
| 24/12/2005 14:47:38 | 24/12/2005 14:48:38 |     1:00 |
| 24/12/2005 16:22:36 | 24/12/2005 16:30:36 |     8:00 |
| 24/12/2005 18:02:24 | 24/12/2005 18:08:24 |     6:00 |
| 25/12/2005 06:09:35 | 25/12/2005 06:18:35 |     9:00 |
| 25/12/2005 15:55:07 | 25/12/2005 16:02:07 |     7:00 |
| 25/12/2005 17:33:43 | 25/12/2005 17:41:43 |     8:00 |
| 26/12/2005 05:41:17 | 26/12/2005 05:50:17 |     9:00 |
| 26/12/2005 07:22:32 | 26/12/2005 07:28:32 |     6:00 |
| 26/12/2005 15:27:59 | 26/12/2005 15:33:59 |     6:00 |
| 26/12/2005 17:05:24 | 26/12/2005 17:13:24 |     8:00 |
| 27/12/2005 05:13:10 | 27/12/2005 05:21:10 |     8:00 |
| 27/12/2005 06:53:27 | 27/12/2005 07:02:27 |     9:00 |
| 27/12/2005 15:01:22 | 27/12/2005 15:04:22 |     3:00 |
| 27/12/2005 16:37:25 | 27/12/2005 16:45:25 |     8:00 |
| 27/12/2005 18:18:40 | 27/12/2005 18:22:40 |     4:00 |
| 28/12/2005 04:45:24 | 28/12/2005 04:50:24 |     5:00 |
| 28/12/2005 06:24:48 | 28/12/2005 06:33:48 |     9:00 |
| 28/12/2005 16:09:45 | 28/12/2005 16:17:45 |     8:00 |
| 28/12/2005 17:49:01 | 28/12/2005 17:56:01 |     7:00 |
+-----------------------------------------------------+
```

Visibility



The visibility window gives you an overview of the satellites you have selected in the Satellites window.

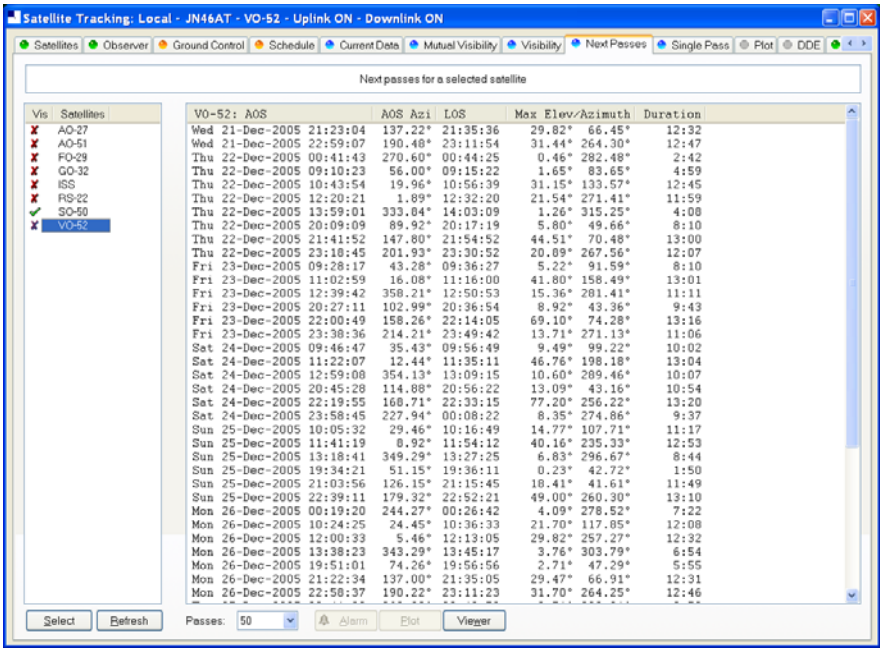
Select the satellites that are displayed:

- All - displays all satellites,
- Visible now - displays only the satellites which are currently visible,
- Visible in next… - displays the satellites visible at any time in the time period you select, for example the next 60 minutes.

For each entry in this display the columns are:

Column	Description
Vis	Whether the satellite is currently visible.
Satellite	The name of the satellite.
Azimuth	The azimuth of a satellite is the angle between the vertical plane containing it and the plane of the meridian. It is customary to reckon the azimuth of a line from the south point of the horizon around by the west from 0[deg] to 360[deg].
Elevation	The angular distance above the horizon.
AOS	Acquisition of signal is the elapsed time at which the satellite becomes visible and a signal can theoretically be heard. If empty then the satellite is already visible.
LOS	Loss of signal is the elapsed time after which the satellite is no longer visible and the signal can theoretically no longer be heard.
Lon	The satellite's current longitude.
Lat	The satellite's current latitude.
Range	The distance of the satellite from the observer's location measured in kilometers. (A mile is 1.6 kilometers; a kilometer is 0.62 miles.)
Altitude	The altitude of the satellite above sea level measured in meters.
Range Rate	The value required to calculate Doppler frequency adjustment.

Next Passes

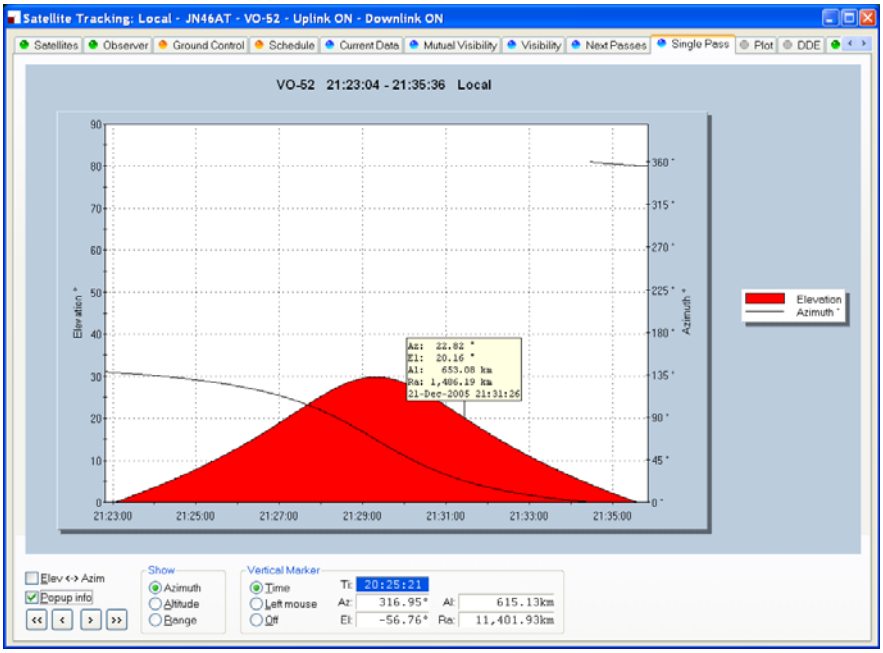


This window shows up to 1,000 passes for a selected satellite. Note: do not select more than 100 passes unless you have a very powerful computer, minimum CPU frequency of 2 GHz is recommended.

Press Alarm to add an audio alarm when a satellite is about to pass overhead. Press Plot to plot a selected pass in the Single Pass window.

Press Viewer to display the data with the default text file viewer, usually Notepad.

Single Pass

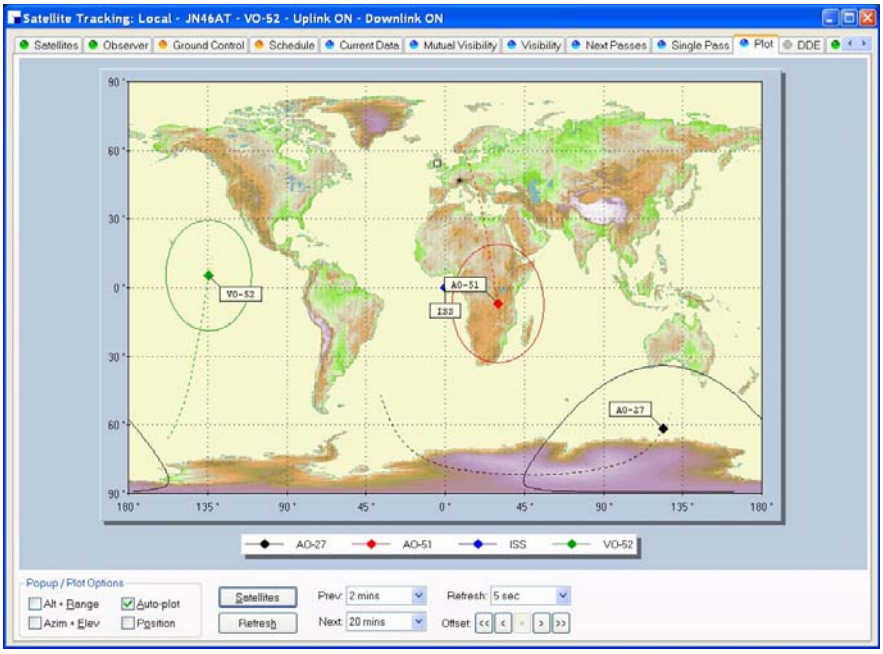


This window plots a single pass for the satellite selected in the Next Passes window. The elevation is plotted on the left y-axis; time is on the x-axis. Select Azimuth, Altitude or Range to be plotted on the right y-axis.

If Popup info is checked a vertical dashed marker line is displayed which either tracks the current time or is positioned by clicking on the chart with the left mouse button.

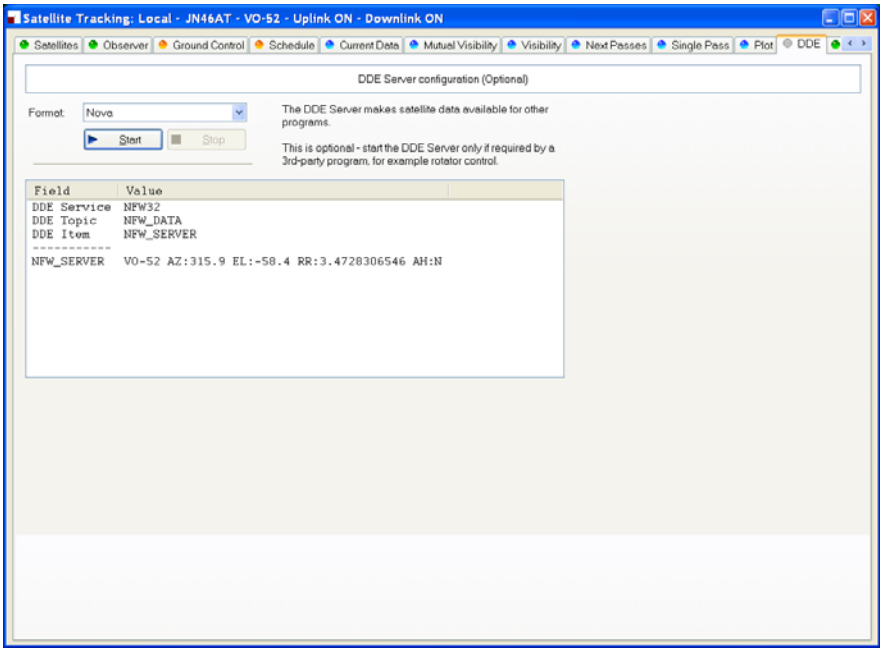
As the marker position changes, the azimuth, elevation, altitude and range are displayed in the marker fields.

Plot



This window shows the position of one to four satellites above the surface of the planet.

DDE



This window controls the DDE server. If you want to use Ham Radio Deluxe's data with another program you must start Ham Radio Deluxe's DDE Server. Select the DDE format: currently only Nova is supported. Press Start to start the DDE server.

Ham Radio Deluxe

Antenna Rotator

13 Antenna Rotator

Introduction

Why?

This program was written to provide better support in Ham Radio Deluxe and the associated satellite tracking software.

The Main Features

The main features are:

- Support for NOVA and Orbitron DDE.
- Connect to an unlimited number of rotators simultaneously.
- Many rotator protocols supports, for example:
  - AlfaSpid,
  - EA4TX,
  - GS-232A,
  - Idiom Press,
  - Prosistel.
- Works maps – double-click to move the rotator.
- Full diagnostics in the logfile.

Your Locator

Select ***Options*** from the ***Tools*** menu and enter your locator in the ***Your Information*** pane.

Rotator Display

The same display is used for all rotators:

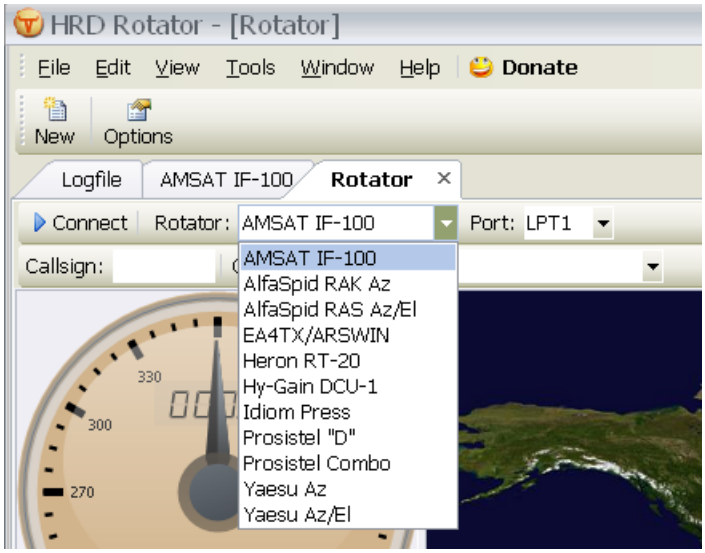
In the example above you see the software connected to an AMSAT IF-100 rotator which supports both azimuth and elevation (it's designed for tracking satellites). The world map uses the famous Blue Marble image from NASA.

Connecting

To connect the program to your rotator:

1 Make sure all cables are correctly inserted,
2 Start your computer,
3 Start this program

Select the correct rotator type from the ***Rotator*** dropdown:



If the rotator supports more than one protocol then a Protocol dropdown is displayed, if so select the correct protocol to be used. If in doubt consult the rotator handbook.

If a serial or parallel port is used to connect to the rotator then select the correct port from the ***Port*** dropdown.

The EA4TX/ARSWIN option communicates with EA4TX's ARSWIN software using the DDE protocol – ARSWIN must be already be started.

Select the ***Refresh rate*** – how often the rotator controller is polled for the current status. Some controllers such as the IF-100 cannot provide this information, in which case the ***Refresh rate*** dropdown is not shown.

Finally press ***Connect***. If you experience problems look in the ***Logfile*** window.

Selecting a Bearing

Select a bearing by either:

1 Entering a callsign – the HRD countries file is used to locate the latitude and longitude for the country.
2 Selecting a country from the ***Country*** dropdown.
3 Entering a 4- or 6-character Maidenhead locator.
4 Just double-clicking anywhere on the map.

Switch between short and long path bearings by pressing either ***Short*** or ***Long***.

Formats

Two map formats are currently supported:

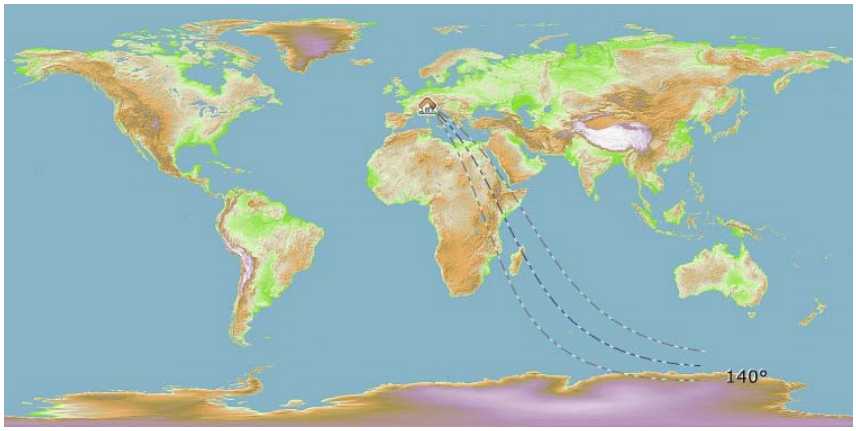
1 ***Mercator*** – an aspect ratio of 2:1, and
2 ***Great Circle*** – created from the Mercator image. A great circle map

You can zoom the image from 100% to 1,000%.

The Great Circle map can be rotated in steps of 30 degrees. This is often desired by users in the southern hemisphere.

Displaying Tracks

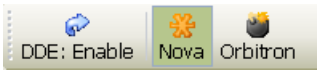
In the Mercator map you can display the signal track and bearing at the current cursor position by selecting Show Track from the Rotator toolbar.



DDE Support

Supported Format

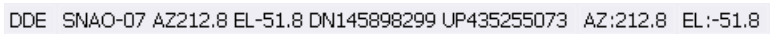
The program contains a DDE client which accepts DDE data in the Nova and Orbitron formats from external programs such as *HRD Satellite Tracking*.



Before enabling DDE support:

1. Select either ***Nova*** or *Orbitron* in the DDE toolbar.
2. Make sure the Nova or Orbitron software is started.
3. Press ***Enable***.

The DDE data is shown in the status bar.

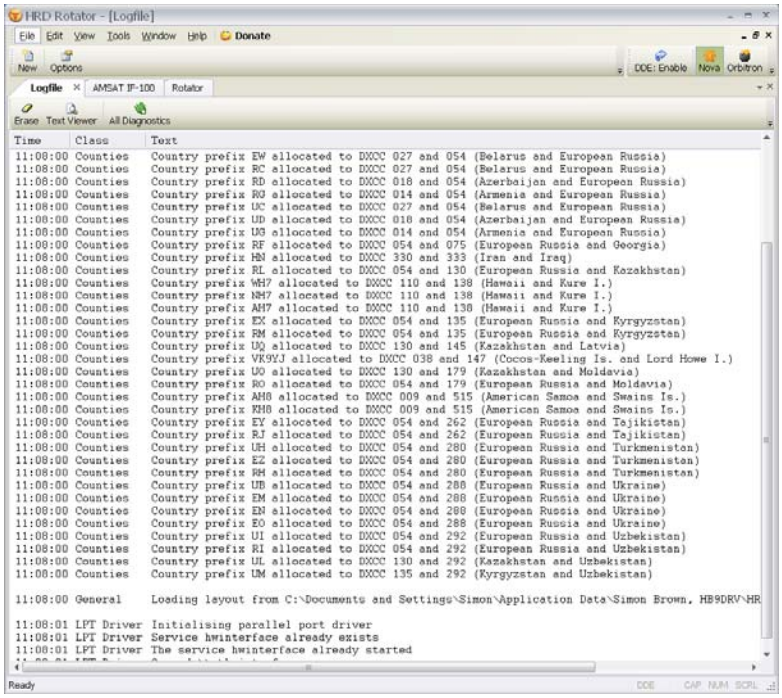


You can now use the DDE data to drive the rotator – press ***Track DDE*** in the Rotator window.

Logfile

Using

The logfile contains all diagnostic information. For full diagnostics make sure the ***Full Diagnostics*** option is selected.



Use the ***Text Viewer*** option to display the logfile in your default text program (usually this is Notepad) from where you can save the logfile as a file on your hard disk.

Options

Appearance

Select ***Appearance*** from the ***Tools*** menu.

Skin

As you have already seen in other Ham Radio Deluxe programs you can select a skin and display theme. Select ***Appearance*** from the ***Tools*** menu top display the ***Skin*** and ***Theme*** windows.

Image

Two images are included as resources in the executable file:

- NASA's blue marble and
- David Taylor's WXtrack.

You can select an image from a file on your computer; a good site for maps is http://flatplanet.sourceforge.net/maps/ with many great options.

Select High quality for image scaling unless you have a very low power CPU, normally CPU usage will not be a big problem. The quality is noticeable when zooming.

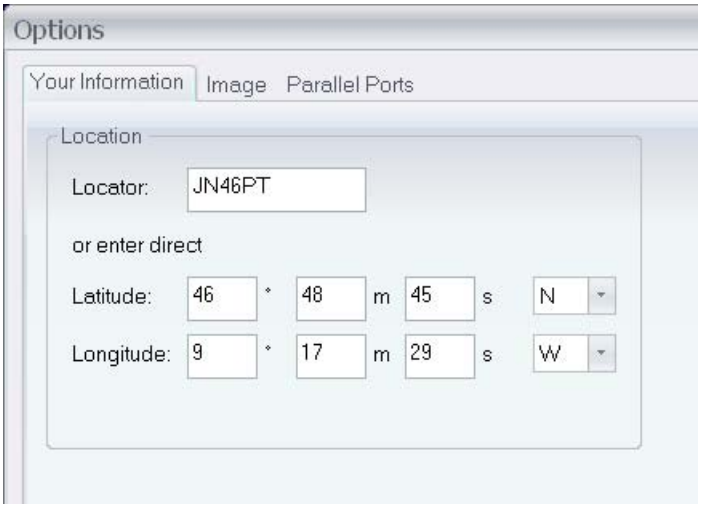
Select ***Options*** from the ***Tools*** menu or press the ***Options*** toolbar button to display the general options:

General

Select ***Options*** from the ***Tools*** menu or press the ***Options*** button in the main toolbar.

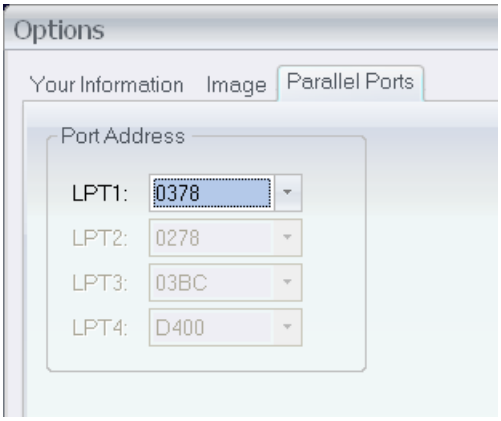
Your Information

You ***must*** enter your locator in this window so that the program can correctly compute bearings.



Parallel Ports

Use this window to configure your parallel ports if you are using and older rotator controller with a parallel port connection.



Ham Radio Deluxe

Appendix

Appendix A

Command Tester

Introduction

Too Many Radios

In a project like Ham Radio Deluxe it is not always possible for the developers to have every radio available for their own use: it's very expensive and takes up too much room.

This is where the user community helps - by using the Command Tester individual commands are tested by the users of Ham Radio Deluxe and the results sent to the developers as a text file in a standard format.

Very often the problem is either determining the data returned for the various mode / filter / frequency combinations supported by a rig or working out how to set a rig option.

The handbooks supplied by manufacturers can be wrong or just not contain enough information to successfully implement a command.

Data Formats

There are major differences in the formats selected by the manufacturers whose radios are supported by Ham Radio Deluxe.

The Command Tester supports all necessary formats for the radio manufacturers supported by Ham Radio Deluxe.

Command Types

There are two types of command – Get and Set.

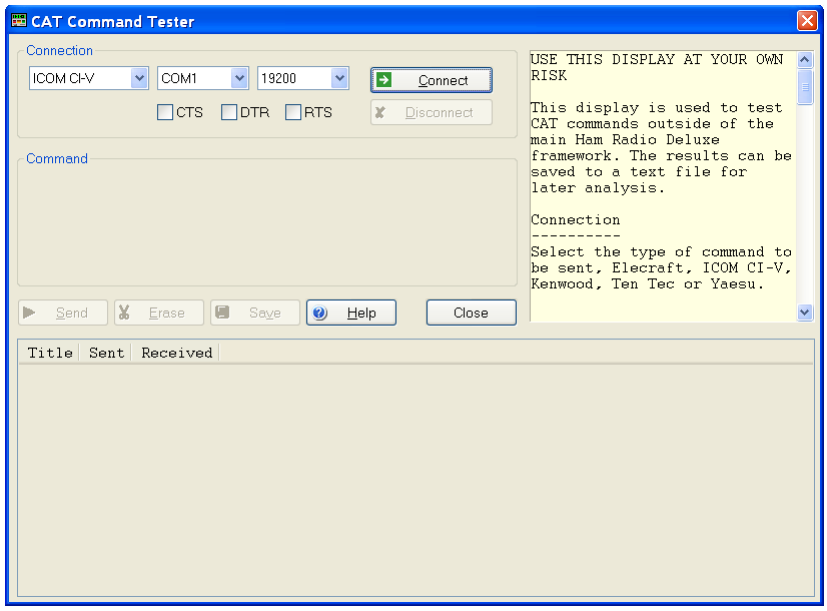
- A Get command returns an item of information, for example the VFO frequency or mode.
- A Set command changes a rig setting, typically the frequency or mode.

Command Tester supports both Get and Set commands.

Starting

To start the Command Tester:

- Make sure you have not connected to a radio with Ham Radio Deluxe if you will be using the same COM port for the Command Tester. If you have a radio connection then you must disconnect using the Disconnect option in the File menu.
- Select **Command Tester** from the *Tools* menu.

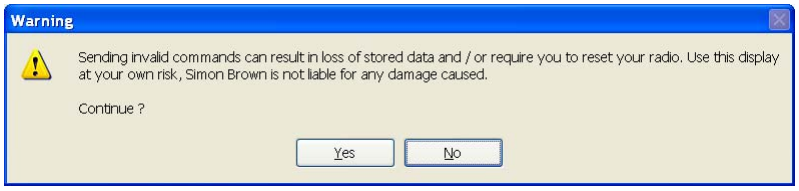


Connect

To connect to your radio you must select:

1. COM port where you have connected the interface cable to the radio,
2. The baud rate (COM port speed). If you are not sure of the correct speed consult your radio manual.
3. CTS used for flow control, specifies whether the CTS (clear-to- send) signal is monitored for output flow control. Used by Kenwood.
4. DTR used either for flow control or to provide power for the CAT interface. This depends on the manufacturer's protocol and your CAT interface.
5. RTS used either for flow control or to provide power for the CAT interface. This depends on the manufacturer' protocol and your CAT interface.
6. Then press Connect.

   When you press Connect a warning message is displayed. Using incorrect commands can confuse some radios, so if you are not sure what you are doing now is the time to leave Command Tester.



7. Press Yes to continue.

General Options

These options are common to all formats.

- Send – sends a command to the radio.
- Erase – clears the contents of the results window.
- Save – saves the contents of the results to a file in ASCII format. You can send the contents of this file by email to help the developers of ham Radio Deluxe.
- Help – pressing help displays the contents of the small help window as a text file using Notepad.
- Close – closes the Command Tester. If there are entries in the results window you are prompted to save them first.

Results

The results are shown in the bottom half of the Command Tester window.

- Title – as entered in the Title: field.
- Send – the command sent to the rig, shown in ASCII and/or Hex as appropriate.
- Received – the received data, shown in ASCII and/or Hex as appropriate.

Platforms

Examples of Ham Radio Deluxe use with various platforms is shown here.

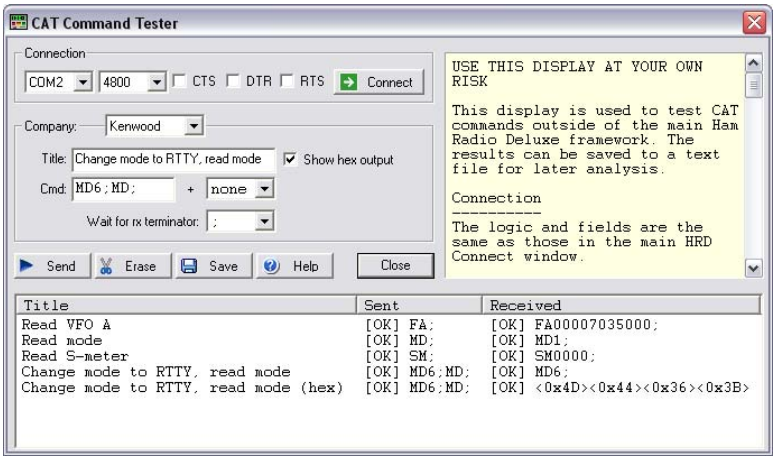
Elecraft

The Elecraft protocol uses ASCII characters; it appears to be based more-or-less on the Kenwood protocol. Refer to the „Elecraft KIO2 Programmer‟s Reference‟ for full information.

The data sent and received is always shown in ASCII (text) that makes debugging relatively easy.

If you select Show hex output the returned data is also shown in hexadecimal (see the Change mode to RTTY below).

When a Set command is sent – for example MD6; to set the mode to RTTY there is no response from the rig, so instead MD6;MD; is sent – set the mode to RTTY (MD6;) and then read the mode (MD;) – this way there is always returned data.



In the Change mode to RTTY example above the returned string is shown in both ASCII and hexadecimal because the Show hex output option was selected for this command.

Fields

- Title – a description of the command you are testing, for example “Read Frequency” or “read Mode”. Mandatory
- Cmd – the ASCII string sent to the rig. Elecraft strings are terminated with a ;
- Wait for rx terminator – when reading the response read characters from the rig until this character is returned or a timeout occurs.

Examples

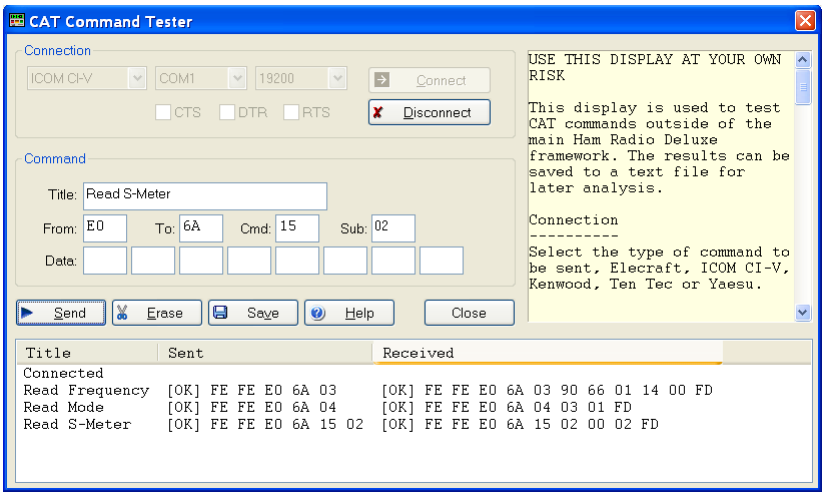
Test	Description
Read Frequency	Command is FA; returned data format is FA + 11 digits + ;. • FA00007035000; Frequency is 7.035.000 MHz.
Read Mode	Command is MD; returned data format is MD + 1 digit + ;. • MD1; (1=LSB, 2=USB, 3=CW, 6=RTTY, 7=CW-REV, 9=RTTY-REV)
Read S-Meter	Command is SM; returned data format is SM + 4 digits + ;. • SM0000; Returned value is in the range 0000 to 0015.

ICOM CI-V

The example below is uses an IC-7800 with:

- From: (controller address) E0 (personal computer, the default value),
- To: (CI-V address) 6A (the default for the IC-703). Refer to your ICOM radio manual for the correct CI-V address for your rig.

The data received from the radio is always shown in hexadecimal.



Fields

Field	Description	Status
Title	a description of the command you are testing, for example “Read Frequency” or “read Mode”.	Mandatory
From	controller‟s default address. Enter E0 (Personal Computer).	Mandatory
To	transceiver‟s default address, the IC-703 uses 68. The address used by your radio is found in the user manual.	Mandatory
Cmd	command number (refer to the radio handbook).	Mandatory
Sub	Sub command number (refer to the radio handbook). If there is no sub command then this field must be left empty.	Optional
Data	if the command supplies data (for example setting a new frequency or mode) then enter the values in these fields.	If there is no data for the command then these fields must be left empty.

Examples

These examples show a CI-V address of 6A, the default for the IC-7800. Change this to the CI-V address assigned to your radio.

Test	Description
Read Frequency	Command is 03, no sub command or data; these fields must be left empty. The returned data is: • FE FE (preamble) • E0 (Controller address) • 6A (IC-7800 CI-V address) • 03 (Command number) • 89 38 06 07 00 (frequency in BCD format) • FD (end of message)
Read Mode	Read ModeCommand is 04, no sub command or data; these fields must be left empty. The returned data is: • FE FE (preamble) • E0 (Controller address) • 6A (IC-7800 CI-V address) • 04 (Command number) • 00 01 (mode) • FD (end of message)
Read S-Meter	Command is 15, sub command is 02. There is no data; these fields must be left empty. The returned data is: • FE FE (preamble) • E0 (Controller address) • 6A (IC-7800 CI-V address) • 15 (Command number) • 02 (Sub command number) • 01 09 (s-meter value) • FD (end of message)

Mode / Filter

A common problem is determining the data returned for the possible mode and filter combinations.

To list all combinations follow the following steps for each mode and filter combination:

1. Select the Mode and Filter on your rig using the rig buttons and controls.
2. Enter a value in the Command Tester Title field which corresponds to the mode and filter selected in 1 above, for example Mode = USB, Filter = Wide.
3. Enter a command of 04; clear the sub command and data fields.
4. Press Send.

When you have finished press Save to save the contents of the Results window to a file which you can forward to the Ham Radio Deluxe development team.

Other

Follow the logic in Mode / Filter above for other commands which you want to investigate:

1 Select the option on your rig using the rig buttons and controls.
2 Enter a value in the Command Tester Title field that corresponds to the option you are investigating.
3 Referring to your rig‟s handbook enter the command, sub command and data value as appropriate to read the rig‟s current value or set a new value. If there is no sub command or data then these fields must be left empty.
4 Press **Send**.

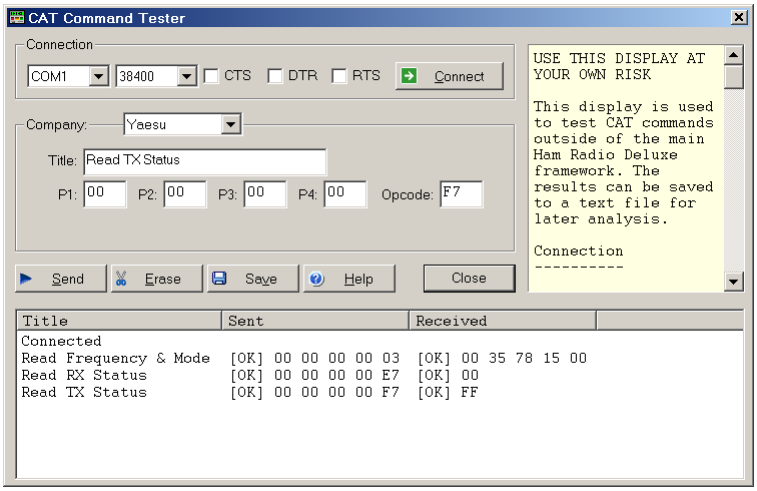
Yaesu

Starting with the FTDX-9000 Yaesu has changed the CAT protocol to one very similar to that used by Kenwood. So if you are fortunate enough to have the FTDX-9000 please use the Kenwood commands.

The example below uses the FT-817. The data received from the radio is always shown in hexadecimal. The overall format of Yaesu commands is always P1 – P4 + OpCode, the actual commands and the data returned from the rig depends on the model and also on the EPROM revision level.

Some commands do not require specific values for P1 – P4, it is recommended that is a value is not specified in the radio handbook then you enter 00, this is the approach taken in Ham Radio Deluxe.

Be aware that there are many errors in the Yaesu documentation, so the data returned may not agree with the handbook and the radio‟s current settings.



Fields

Field	Description	Status
Title	a description of the command you are testing, for example “Read Frequency” or “read Mode”.	Mandatory
P1 – P4	cthe command parameters.	Not all commands require parameters; it is recommended that parameters that can be set to any value be set to 00. Fields left empty are set to 00.
OpCode	the instruction OpCode.	Mandatory

Examples

Test	Description
Read Frequency and Mode	The OpCode is 03, P1-P4 can have any value, in this example they are set to 00. • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: 03 The format of the returned data is 5 bytes, the first four containing the frequency in binary coded decimal followed by the mode. The returned value is 00 35 78 15 00 which corresponds to a frequency (00 35 78 15) of 51.875.300 and a mode (00) of LSB.
Read RX Status	The opcode is E7, P1-P4 can have any value, in this example they are set to 00. • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: E7 The format of the returned data is 1 byte. The returned value is 00.
Read TX status	The OpCode is F7, P1-P4 can have any value, in this example they are set to 00. • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: F7 The format of the returned data is 1 byte. The returned value is FF (not in TX mode).

Other Commands

For the commands you want to investigate:

1. Select the option on your rig using the rig buttons and controls.
2. Enter a value in the Command Tester Title field that corresponds to the option you are investigating.
3. Referring to your rig‟s handbook enter the P1 – P4 parameters and OpCode as appropriate to read the rig‟s current value or set a new value. If there are no values specified for P1 – P4 then enter 00 in these fields.
4. Press Send.

Portmon

Introduction

This excellent utility for monitoring COM port activity can be downloaded from *http://www.sysinternals.com/*.

Quoting the Sys internals website: “Portmon is a utility that monitors and displays all serial and parallel port activity on a system. It has advanced filtering and search capabilities that make it a powerful tool for exploring the way Windows works, seeing how applications use ports, or tracking down problems in system or application configurations.

Portmon works on NT 4.0, Win2K, XP and Server 2003, Windows 95 and Windows 98.

It is often useful to run Portmon when unexpected results are returned from a radio (or other device such as a rotator or keyer).

The Steps:

1. Close any programs connected to your radio or device being interrogated.
2. Start Portmon.exe
3. Make sure these options are set:

Menu	Option	State / Comment
Options	Show Time	ON
Options	Show HEX	ON if ICOM, Yaesu or TenTec OFF if Elecraft, Kenwood ON if you are not sure (I read hex)
Options	Clock Time	OFF
Computer	Select your local computer	
Capture	Ports	The COM port where you have connected the interface to your radio, select only one COM port to avoid confusion.
Capture	Capture Events	ON

4 Start Ham Radio Deluxe then connect to your radio.

5 Let Ham Radio Deluxe run for about 60 seconds while you perform your tests.

6 Stop Ham Radio Deluxe (File menu: Disconnect).

7 In Portmon set the Capture: Capture Events option to OFF.

8 Save the logfile to disk, put into a zip file if possible and send to *mailto:simon@hb9drv.ch* .

Sample Log

For this example the Process and Port columns are not shown to save space. The log shows the startup for an IC-7800, results are in Hex. The Time for each command is shown which helps detect timeouts.

#	Time	Request	Result	Other
0	0.00005929	IRP_MJ_CREATE	SUCCESS	Options: Open
1	0.00000167	IOCTL_SERIAL_SET_QUEUE_SIZE	SUCCESS	InSize: 1024 OutSize: 1024
2	0.00000341	IOCTL_SERIAL_PURGE	SUCCESS	Purge: TXABORT RXABORT TXCLEAR RXCLEAR
3	0.00000261	IOCTL_SERIAL_GET_BAUD_RATE	SUCCESS	
4	0.00000123	IOCTL_SERIAL_GET_LINE_CONTROL	SUCCESS	
5	0.00000092	IOCTL_SERIAL_GET_CHARS	SUCCESS	
6	0.00000088	IOCTL_SERIAL_GET_HANDFLOW	SUCCESS	
7	0.00000903	IOCTL_SERIAL_SET_BAUD_RATE	SUCCESS	Rate: 19200
8	0.00000479	IOCTL_SERIAL_SET_RTS	SUCCESS	
9	0.00000371	IOCTL_SERIAL_SET_DTR	SUCCESS	
10	0.00000278	IOCTL_SERIAL_SET_LINE_CONTROL	SUCCESS	StopBits: 1 Parity: NONE WordLength: 8
11	0.00000118	IOCTL_SERIAL_SET_CHAR	SUCCESS	EOF:0 ERR:3f BRK:3f EVT:0 XON:11 XOFF:13
12	0.00000257	IOCTL_SERIAL_SET_HANDFLOW	SUCCESS	Shake:1 Replace:40 XonLimit:341 XoffLimit:341
13	0.00000085	IOCTL_SERIAL_SET_TIMEOUTS	SUCCESS	RI:500 RM:250 RC:250 WM:250 WC:250
14	0.00000421	IOCTL_SERIAL_SET_DTR	SUCCESS	
15	0.00000396	IOCTL_SERIAL_SET_RTS	SUCCESS	
16	0.00000200	IOCTL_SERIAL_SET_WAIT_MASK	SUCCESS	Mask: RXCHAR TXEMPTY CTS DSR RLSD BRK RING
17	0.00000270	IOCTL_SERIAL_PURGE	SUCCESS	Purge: TXABORT RXABORT TXCLEAR RXCLEAR
18	0.00002902	IRP_MJ_WRITE	SUCCESS	Length 7: FE FE 6A E0 19 00 FD
19	0.00576019	IRP_MJ_READ	SUCCESS	Length 1: FE
20	0.00000294	IRP_MJ_READ	SUCCESS	Length 1: FE
21	0.00000237	IRP_MJ_READ	SUCCESS	Length 1: 6A
22	0.00000230	IRP_MJ_READ	SUCCESS	Length 1: E0
23	0.00000228	IRP_MJ_READ	SUCCESS	Length 1: 19
24	0.00000231	IRP_MJ_READ	SUCCESS	Length 1: 00
25	0.00000229	IRP_MJ_READ	SUCCESS	Length 1: FD
26	0.01237115	IRP_MJ_READ	SUCCESS	Length 1: FE
27	0.00000319	IRP_MJ_READ	SUCCESS	Length 1: FE
28	0.00000233	IRP_MJ_READ	SUCCESS	Length 1: E0
29	0.00000226	IRP_MJ_READ	SUCCESS	Length 1: 6A
30	0.00000232	IRP_MJ_READ	SUCCESS	Length 1: 19
31	0.00000229	IRP_MJ_READ	SUCCESS	Length 1: 00
32	0.00000229	IRP_MJ_READ	SUCCESS	Length 1: 6A
33	0.00000231	IRP_MJ_READ	SUCCESS	Length 1: FD
34	0.00002705	IRP_MJ_WRITE	SUCCESS	Length 6: FE FE 6A E0 03 FD
35	0.00524006	IRP_MJ_READ	SUCCESS	Length 1: FE
36	0.00000282	IRP_MJ_READ	SUCCESS	Length 1: FE
37	0.00000228	IRP_MJ_READ	SUCCESS	Length 1: 6A
38	0.00000234	IRP_MJ_READ	SUCCESS	Length 1: E0
39	0.00000228	IRP_MJ_READ	SUCCESS	Length 1: 03
40	0.00000237	IRP_MJ_READ	SUCCESS	Length 1: FD
41	0.01239791	IRP_MJ_READ	SUCCESS	Length 1: FE
42	0.00000308	IRP_MJ_READ	SUCCESS	Length 1: FE
43	0.00000231	IRP_MJ_READ	SUCCESS	Length 1: E0
44	0.00000231	IRP_MJ_READ	SUCCESS	Length 1: 6A
45	0.00000229	IRP_MJ_READ	SUCCESS	Length 1: 03
46	0.00000230	IRP_MJ_READ	SUCCESS	Length 1: 00
47	0.00000237	IRP_MJ_READ	SUCCESS	Length 1: 00

N8VB vCOM

Introduction

N8VB"s vCOM driver creates up to ten sets of paired virtual COM ports; use these like you would use a null-modem cable. Virtual null-modems are pure software; no hardware is involved.

Note: vCOM is only supported on Windows 2000, and Windows XP.

When using the 3rd-party program support you must use a virtual null-modem cable to connect Ham Radio Deluxe to the 3rd-party program. Ham Radio Deluxe opens one end of the virtual cable; the 3rd-party program opens the other.

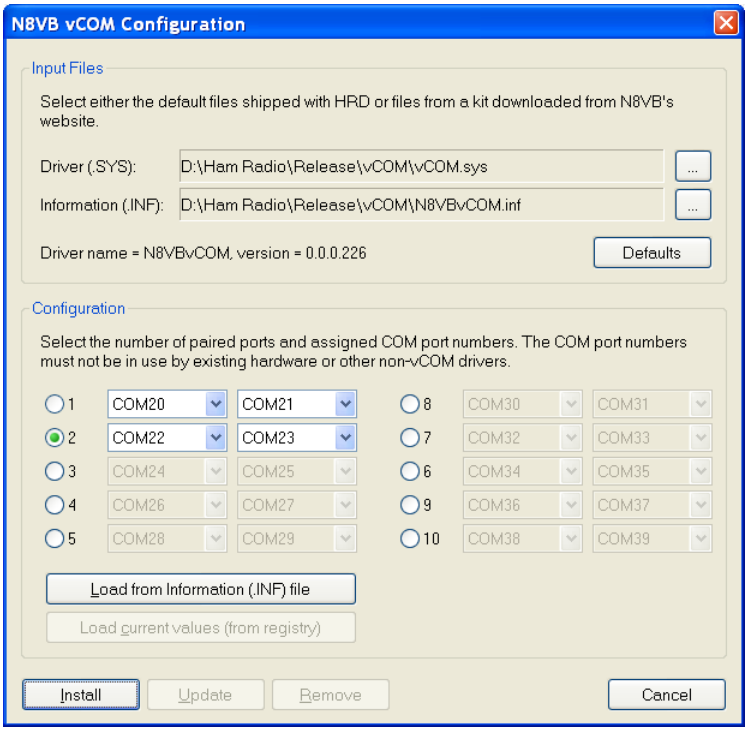
Virtual null-modems are also used in the remote station support to connect Ham Radio Deluxe to the Ham Radio Deluxe serial port client program – see Remote Station Support on page 111.

N8VB"s vCOM driver is copyrighted 2005 by Philip A Covington N8VB.

Configuration

The easiest way to install the N8VB vCOM driver is by selecting N8VB vCOM Configuration from the Tools menu.

With this window you can install, update or remove the vCOM driver.



In the above example the driver version is 0.0.0.226 or build 266.

Input Files

The key files are:

- Driver – vCOM.sys,
- Information – N8VBvCOM.inf,
- Device console utility - devcon.exe (a command-line utility that acts as an alternative to Device Manager).

These files are shipped in the vCOM sub-folder.

Appendix

... To install a different version of the vCOM driver you must find the kit on N8VB‟s website, unpack it and select the information and device driver files.

Defaults Selects the default files shipped with Ham Radio Deluxe.

Ports

Select the number of paired ports (null-modem cables) to be created and the port numbers assigned to the pairs. The port numbers must be unique; you must not select a port number already assigned to a hardware device such as the COM port on your computer.

If the vCOM driver is already installed the current values are read from the registry, the key is:

```
HKEY_LOCAL_MACHINE SYSTEM
  CurrentControlSet
      Enum
          Root
              MULTIPORTSERIAL
                  0000
                      Device Parameters
```

Load from Information (.INF) file Loads the default values from the currently select information (.INF) file.

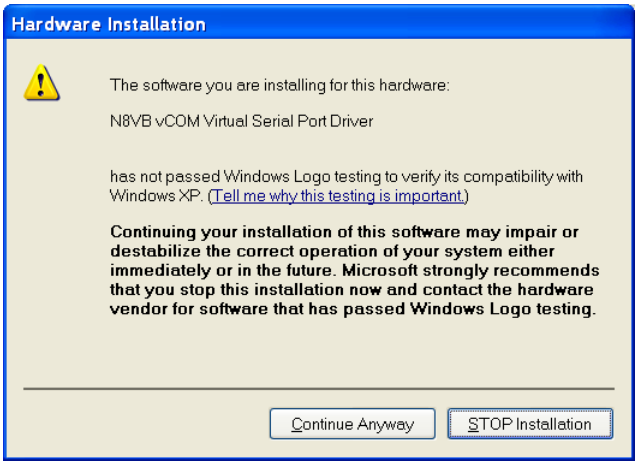
Installation

To install the driver a batch file (install.bat) is created which in turn uses devcon.exe. A sample batch file is shown below:

```
PROMPT $G
CD /D C:\Documents and Settings\Simon\Application Data\Simon Brown, HB9DRV\Ham
Radio Deluxe\vCOM_Temp
DIR
@ECHO ********************************************************************************
@ECHO *                                                                              *
@ECHO *   The N8VB vCOM driver will now be installed                                 *
@ECHO *                                                                              *
@ECHO *   You must REBOOT your computer after the installation is complete           *
@ECHO *                                                                              *
@ECHO ********************************************************************************
devcon -install N8VBvCOM.inf n8vbvcom
PAUSE
```

The batch file, device console (devcon.exe), device driver (vCOM.sys) and information file (.INF) are copied to a temporary folder. The BAT file is then run from this folder.

When devcon starts you see a window similar to that below if you are using Windows XP:



Press [Continue Anyway] and the installation proceeds. A typical log is shown below:

```
C:\Documents and Settings\Simon\Application Data\Simon Brown, HB9DRV\Ham Radio D
eluxe>PROMPT $G

>CD /D C:\Documents and Settings\Simon\Application Data\Simon Brown, HB9DRV\Ham
Radio Deluxe\vCOM_Temp

>DIR
 Volume in drive C is System
 Volume Serial Number is 307E-B730

 Directory of C:\Documents and Settings\Simon\Application Data\Simon Brown, HB9D
RV\Ham Radio Deluxe\vCOM_Temp

23/04/2006  20:38    <DIR>          .
23/04/2006  20:38    <DIR>          ..
24/03/2003  23:13            55,808 devcon.exe
24/04/2006  19:36               725 Install.bat
24/04/2006  19:36             3,937 N8VBvCOM.inf
23/04/2006  21:11               696 Update.bat
09/07/2005  13:05            19,456 vCOM.sys
               5 File(s)         80,622 bytes
               2 Dir(s)   9,087,946,752 bytes free
********************************************************************************
*                                                                              *
*   The N8VB vCOM driver will now be installed                                 *
*                                                                              *
*   You must REBOOT your computer after the installation is complete           *
*                                                                              *
********************************************************************************

>devcon -install N8VBvCOM.inf n8vbvcom
Device node created. Install is complete when drivers are updated...
Updating drivers for n8vbvcom from C:\Documents and Settings\Simon\Application D
ata\Simon Brown, HB9DRV\Ham Radio Deluxe\vCOM_Temp\N8VBvCOM.inf.
Drivers updated successfully.

>PAUSE
Press any key to continue . . .
```

After installing you must reboot your computer.

Update and Remove follow the same logic as installation using a custom BAT file and devcon.exe.

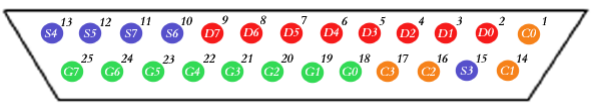
Auxiliary Switching

Introduction

A standard PC used to come equipped with an 8-bit parallel port that can be used to switch auxiliary equipment such as antennas, bandpass filters and power amplifiers. If yours does not, you can obtain an online or at a well equipped computer store a parallel port card that you can plug into your computer. This expansion card will not work on a laptop computer.
Ham Radio Deluxe supports the parallel port via fully configurable manager and monitor displays.
Typical uses of this option are to switch antennas, either automatically as the frequency changes, or by selecting an option from the *Parallel Port* pane of the *Selection* window.

Technology

The parallel port sends eight bits at a time. The layout of the parallel port pins is shown below.

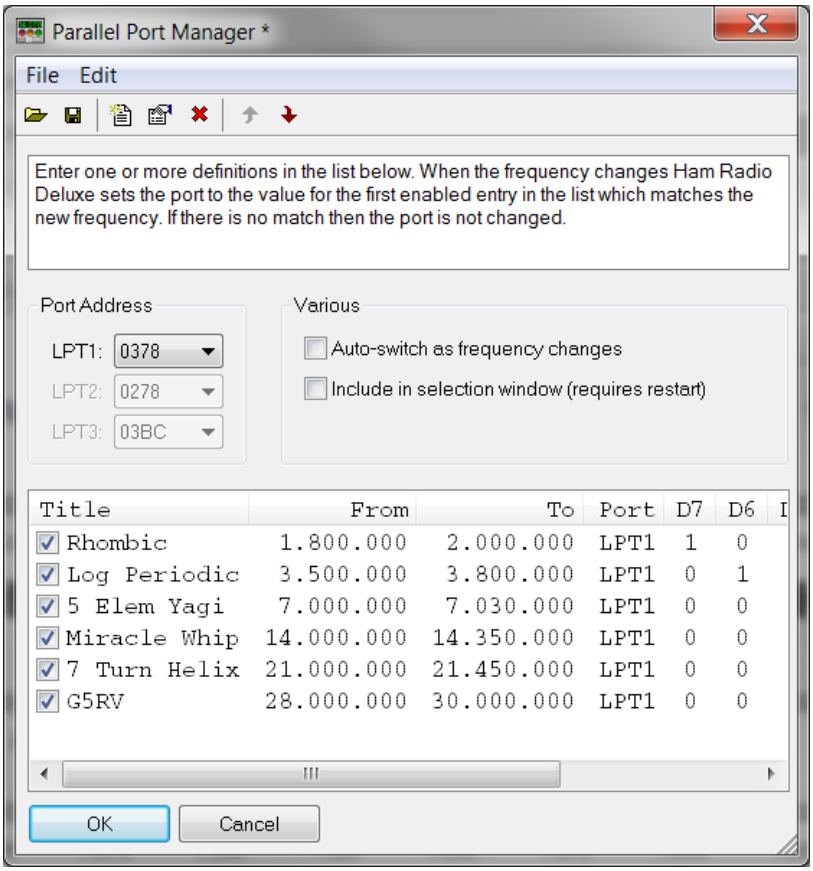


The data pins are shown in red; D0 is pin 2, D7 is pin 9.
To indicate that a bit has a value of 1, a charge of 5 volts is sent through the correct pin. No charge on a pin indicates a value of 0. This is a simple but highly effective way to transmit digital information over an analog cable in real-time.

Appendix

Manager

The manager window is invoked from the *Tools* > *Parallel Port* > *Manager* menu.



Definitions

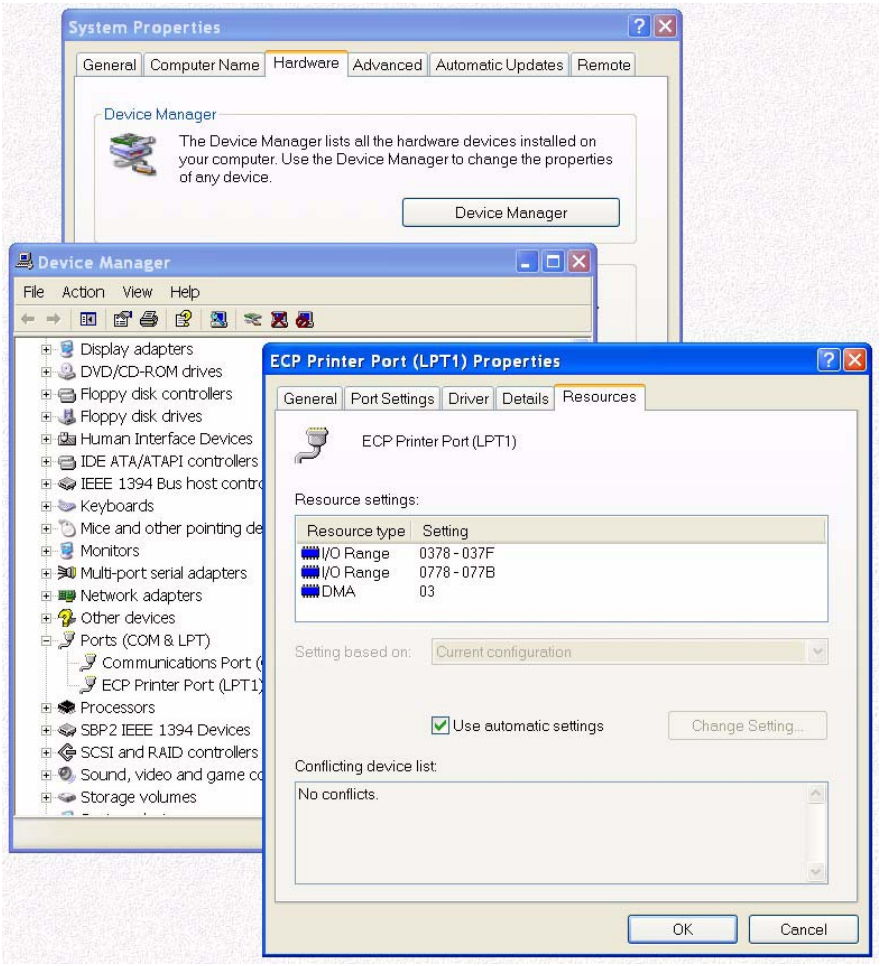
Each definition consists of:

- **[X] Enabled selection** – if not checked then the definition is ignored when Ham Radio Deluxe detects a new frequency. The definition is still shown in the selection window if this option is enabled.
- **Title** – a description of the antenna or component that will be switched when the entry is selected.
- **From** – the lower end of the frequency range.
- **To** – the upper end of the frequency range.
- **Port** – the LPT port to be switched by the definition.
- **D0-D7** – the parallel port data bit settings, each bit is either 1 (on) or 0 (off). D0 is pin 2, D7 is pin 9.

Port Address

The default port addresses for LPT1, LPT2 and LPT3 are 0378, 0278 and 03BC respectively. If your computer has a different configuration just select the address that corresponds to the port.

You will find the port address via the *Device Manager* settings display located in the System control panel applet.



In the Windows XP example above the base address is 0378.

Various

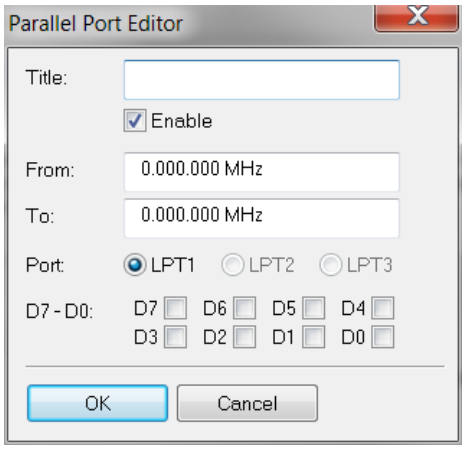
The options are:

- **Auto-switch**: as the frequency displayed by Ham Radio Deluxe changes a lookup is made against the parallel port definitions and the parallel port switched to the configuration for the first definition in the list that matches the new frequency.
- **Selection window**: displays a Parallel Port pane in the main Ham Radio Deluxe selection window. See Selection Window on page 45.

Creating or Modifying Definitions

To create a new definition:

1 Select **Edit > New** from the *Manager* menu bar.



2 Enter a title for the definition.

3 Enter the frequency range for the definition.

4 Choose the port if you have more than one.

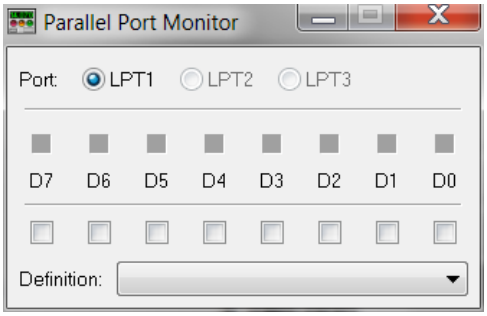
5 Choose a pin number. Make sure you are not using one that is already defined with another definition unless you have a need to.

6 Click on **OK** to save your new definition.

The steps to modify a definition are the same except that you must first highlight the definition and then select **Edit > Modify** from the manager menu bar.

Monitor

The monitor window is started from the *Tools > Parallel Port > Monitor* menu.



The monitor:

- shows the current state of the data pins for a selected parallel port,
- allows you to select a definition, and
- toggle the data pins directly.

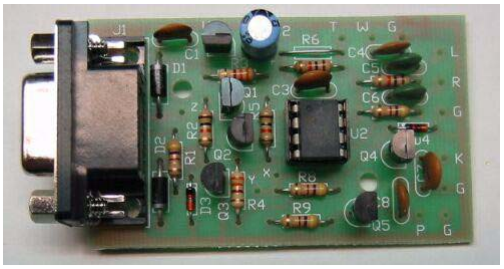
The Definition field shows the definition that matches the current pin selection (if any).

K1EL WinKey

Introduction

"WinKey brings high functionality, fully featured Morse keying to logging applications. Although designed for Windows-based software implementation, WinKey can add value to all logging programs regardless of operating system or platform. Can also be used as a stand-alone keyer."
Source: *http://www.k1el.com/*

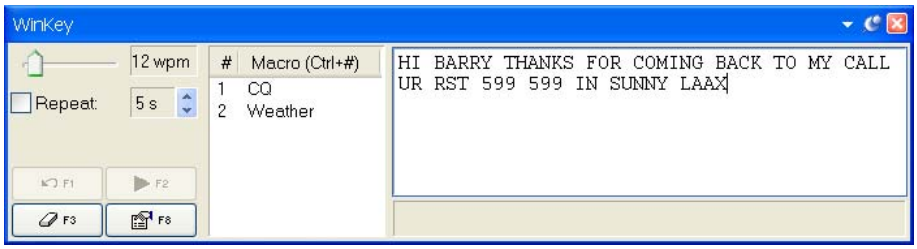
A lot of the description of the WinKey support is taken from the WinKey documentation, copyright K1EL.



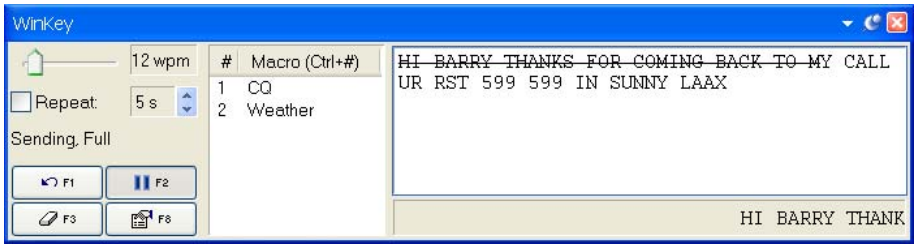
(Photos from http://www.k1el.com/)
K1EL's WinKey is an excellent computer controllable keyer solution. It supports everything a CW enthusiast could want. Many computer programs support WinKey; here is a description of the Ham Radio Deluxe support.
You will need a standard 9-pin serial cable (not NULL-modem).

Main Window

Select K1EL WinKey from the Tools menu, the WinKey window is displayed.



Here the user is sending text at 12 wpm – the speed is adjusted with the slider in the top-left. If Repeat is checked the text is retransmitted after a user- configured value between 2 to 60 seconds, in this example 5 seconds.
Text is entered using the keyboard; only the allowable CW characters can be entered.
Macros are selected by double-clicking on an entry in the macros list or by using an accelerator key combination such as Ctrl+1.
Press **F2** to start sending.

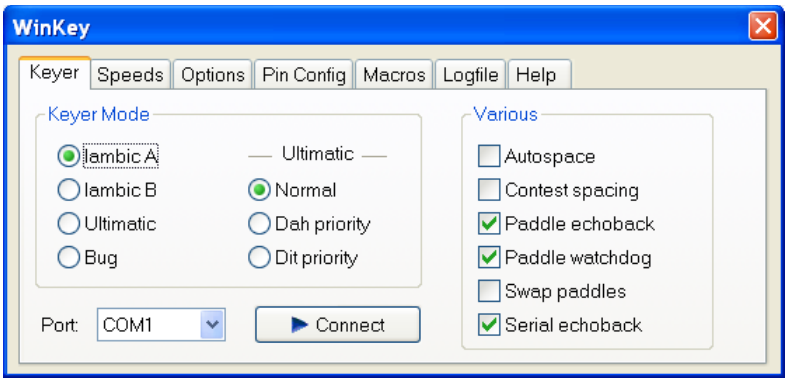


Characters sent to the keyer are marked with the strike through effect. Characters sent by the keyer to the radio are displayed at the bottom of the window.
Press F1 to mark sent text as unsent, F3 to erase the contents of the window.

Options

Press the Options button (F8) to display the Options window. As an intelligent owner of the WinKey you will have studied the available literature, so some of the information here should be obvious. But in case you have forgotten something…

Keyer



Select the type of keyer and the COM port to which the keyer is connected. When you press *Connect* the keyer is initialized and an echo-back test performed. The test must succeed for the connection to stay open. This ensures that you have not accidentally connected to another device such as a rotator, which may have a fit if driven by the WinKey protocol!
A sample log for a successful connect:

```
+-------------------------------------------------------------------------+
| Time     | Text                                                         |
+-------------------------------------------------------------------------+
| 09:58:02 | Connecting to COM1                                           |
| 09:58:02 | Setting buffer sizes to 2048, 2048                           |
| 09:58:02 | Setting speed to 1200,n,8,1                                  |
| 09:58:02 | Setting timeouts                                             |
| 09:58:02 | Setting DTR, clearing RTS                                    |
| 09:58:04 | Echoback test, sent "HRD BY HB9DRV", received "HRD BY HB9DRV" |
| 09:58:04 | Firmware revision 10                                         |
| 09:58:04 | Starting read thread                                         |
+-------------------------------------------------------------------------+
```

Autospace

If you pause for more than one dit time between a dit or dah WinKey will interpret this as a letter-space and will not send the next dit or dah until full letter-space time has been met.
The normal letter-space is 3 dit spaces. WinKey has a paddle event memory so that you can enter dits or dahs during the inter-letter space and WinKey will send them as they were entered. With a little practice, autospace will help you to send near perfect Morse.

Contest Spacing

Reduces the wordspace time by one dit. Instead of 7 dits per wordspace, contest spacing selects six dits per wordspace.

Paddle Echoback

When enabled all characters entered on the paddles will be echoed back to the host. From the host perspective paddle echo and serial echo are the same, in either case the letter sent in Morse by WinKey is echoed back to the host. The echo occurs after the letter has been completely sent.

Paddle Watchdog

The paddle watchdog counter disables the key output after 128 consecutive dits or dahs. This is to guard against the paddles being accidentally keyed continuously.

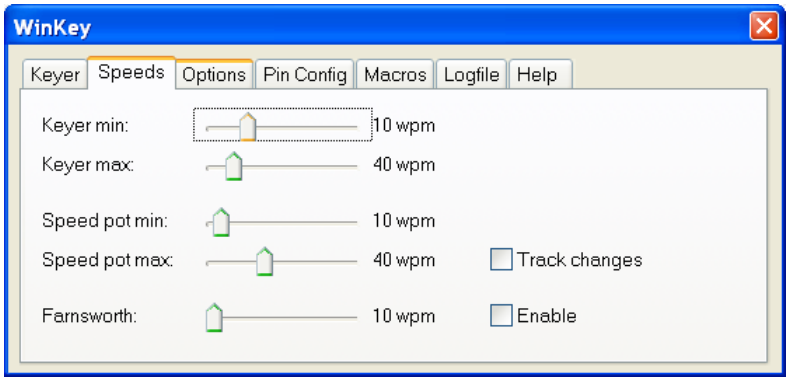
Swap Paddles

Allows right- and left-handed operators to share the same keyer.

Serial Echoback

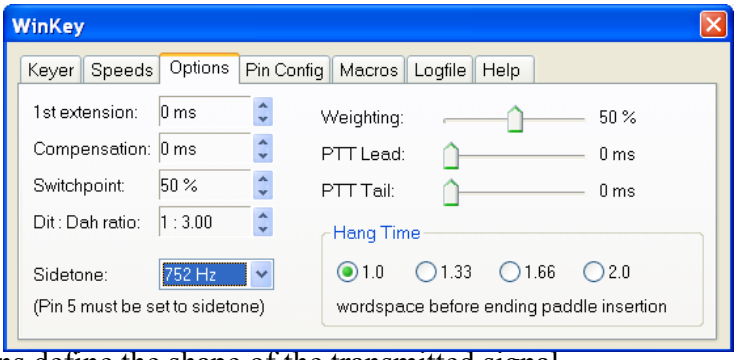
Echo back is a feature that is included to allow a host application to stay exactly in sync with Morse letters sent. When this mode is enabled all data taken out of the serial buffer is sent to the host after it has been sent in Morse. This allows the host to reconcile differences in timing introduced by WinKey‟s internal 32-byte serial buffer. Note that only letters, and not buffered commands with their parameters or wordspaces, are echoed back to the host.

Speeds



With Keyer minimum and Keyer maximum you set the range available in the WinKey main window.
Similarly with Speed pot minimum and Speed pot maximum you set the range available with the potentiometer mounted on the top of the WinKey enclosure.
Farnsworth speed is the speed at which characters are actually sent.

Options



These options define the shape of the transmitted signal.

Ist Extension

This addresses a problem often encountered when keying older transceivers that have a slow break-in response. Due to a slow receive to transmit changeover time, the first dit or dah of a letter sequence can be chopped and reduced in length. Adding a fixed amount to the first element of a sequence can compensate for this. For example, an R would be sent with the first dit elongated but the subsequent dah-dit sent normally. The compensation amount is transceiver dependent and is generally independent of sending speed. Note though that this is usually only a noticeable problem at higher CW speeds >25 WPM.

Compensation

This allows a fixed amount to be added to the length of all dits and dahs. QSK keying on modern transceivers can cause shortening of the dit and dah elements

that is especially noticeable at high speeds. WinKey allows the length of the dit and dah elements to be increased uniformly to compensate for this. The adjustments are made in units of one-millisecond steps. The maximum adjustment is 250 msecs.
Key compensation is very similar to Weighting in that any adjustment added to the dits and dahs is subtracted from the spacing so the speed is not changed. The difference between weighting and compensation is that compensation is independent of speed, so if 10 msec of key compensation is selected 10 msec will be always be added regardless of speed. So be careful at high speeds and large values of key compensation, you may end up with no inter-element space.

Switchpoint

Controls when WinKey will start looking for a new paddle press after sensing the current one. If there is not enough delay the keyer will send unwanted dits or dahs, if there is too much delay it bogs you down because you can't get ahead of the keyer. The default value is one dit time (50) and is adjustable in percent of a dit time. Faster operators report a setting somewhat less than default is more pleasing. If the paddle sensitivity is set to zero, dit and dah paddle memory is disabled. The delay is calculated with this formula:

```
DELAY_TIME = (SWITCHPOINT * DIT_TIME)/50
```

where SWITCHPOINT is a value between 10 and 90.

Dit: Dah Ratio

Allows WinKey to deviate from the standard 1:3 ratio of dit/dah. The formula to determine dah/dit ratio is:

```
DAH/DIT = 3.(nn/50)
```

A value of 50 selects 1:3, a value of 33 would select 1:2, and a value of 66 would select 1:4. This causes an intentional distortion of the Morse waveform. Some operators use this option to make their CW sound less “machine like”.

Weighting

This command allows a proportional amount to be either added or subtracted from the length of all dits and dahs sent. A value of 50 selects no weighting adjustment. Values less than 50 reduce weighting and values greater than 50 increase weighting. Note that weighting does not affect sending speed because any increase in keyed time is subtracted from spacing time. A reduction in weighting results in a thinner sounding keying; increased weighting results in a heavier sound. Since weighting tracks speed, a given weighting will sound the same at all speeds.

PPT Lead / PTT Tail

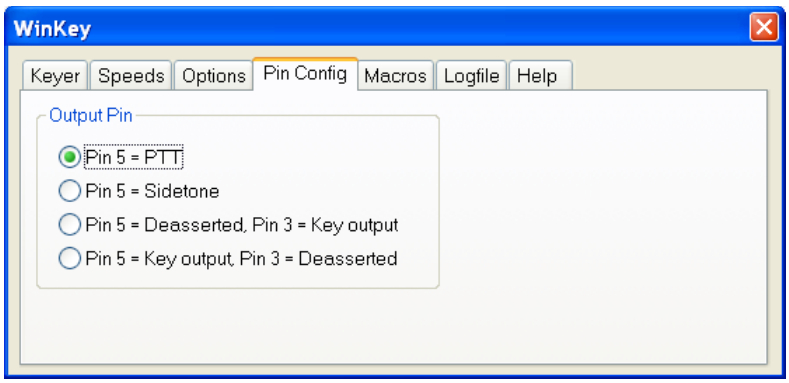
WinKey provides a transmitter PTT output that can be used to switch a transmitter or linear amplifier over to transmit mode in advance of actual CW keying. You have control over the time delay between when PTT is asserted and when CW keying will start, this is lead-in. You also have control over how long the transmitter will stay in transmit after keying has stopped; this is the tail delay.
Note: PTT pin 5 can be reconfigured as a sidetone output, see Sidetone Frequency option.

Sidetone

Pin 5 can be configured to output a square wave sidetone by using the Set Pin 5 Mode option. When sidetone is enabled, pin 5 functions as a sidetone square wave

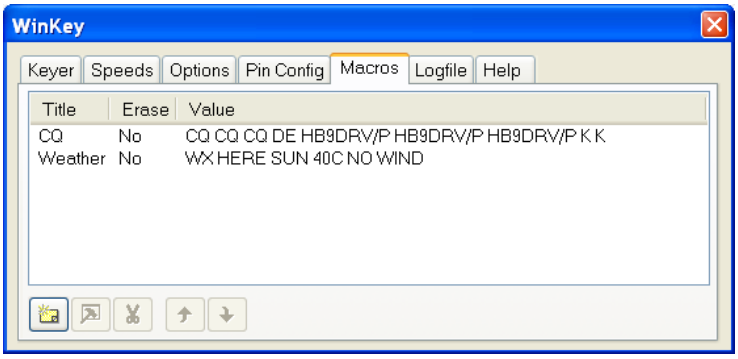
output. The PTT delays still work as described by the Set PTT Lead/Tail Command, but a PTT output is not available.
Available sidetone frequencies are: 3759 Hz, 1879 Hz, 1252 Hz, 940 Hz, 752 Hz, 625 Hz, 535 Hz, 469 Hz, 417 Hz, 375 Hz.

Pin Config



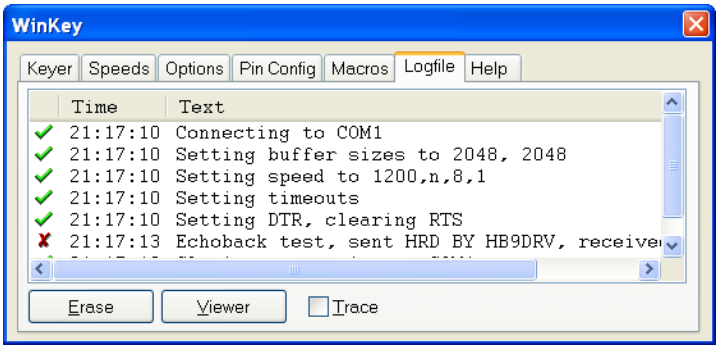
Determines how the output pins are mapped.

Macros



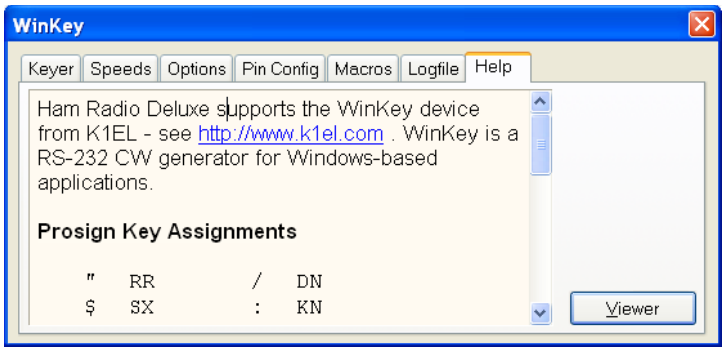
Define an unlimited number of macros that can be selected in the WinKey main window.

Logfile



To help diagnose problems use the Logfile window. The Viewer option displays the contents of the window in your default text file (.txt) editor. If you check Trace then all traffic over the COM port is logged.

Help



Some basic help text; specifically the Prosign key assignments.

Prosign Assignments

"	RR	/	DN
$	SX	:	KN
'	WG	;	AA
(	KN	<	AR
)	KK	=	BT
+	AR	>	SK
-	DU	@	AC

Settings

Overview

User settings are stored in the registry and in files in the user's application- specific data folder.

Registry

The registry key used for storing options in Ham Radio Deluxe is:

```
HKEY_CURRENT_USER Software
  Amateur Radio
       HamRadioDeluxe
            Options
```

The values in this key will not make much sense – they are used by Ham Radio Deluxe to preserve settings such as window geometry (size, position) and the current scheme.

The values in the key can be safely deleted at any time. Don't change values with a registry editor – you may cause unexpected problems for Ham Radio Deluxe!

Files

Ham Radio Deluxe stores files in the folder defined by CSIDL_APPDATA, this is the file system directory that serves as a common repository for application-specific data. A typical path is:

```
C:\Documents and Settings\username\Application
Data\Simon Brown, HB9DRV\Ham Radio Deluxe.
```

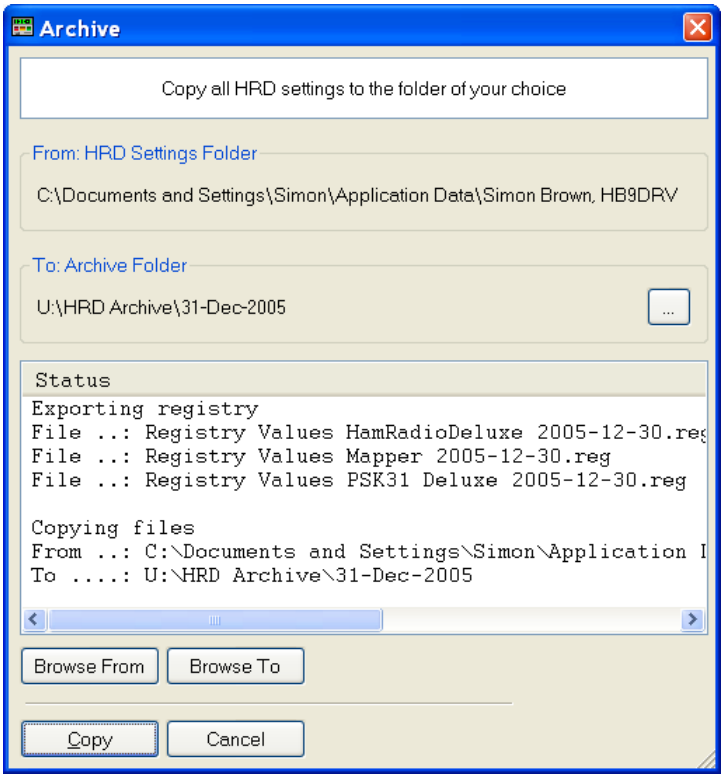
You will not normally need to directly access the files in this folder.

File	Description
*.css	Cascading style sheets, used by HTML export options – for example in Logbook Analysis.
Ham Radio Deluxe Logbook.mdb	Logbook database
*.opt	Optional schemes – see Schemes on page 29.

File	Description
Ham Radio Deluxe Bands 02.txt	Band layouts
Ham Radio Deluxe Countries.txt	A default Log Windows country file
Ham Radio Deluxe Custom Defs - <radio>.txt	Custom CAT commands for a specific radio – see CAT Commands on page 103.
Ham Radio Deluxe Favorites 01.txt	See Favorites on page 69.
Ham Radio Deluxe Logbook Analysis Defns.txt	TBA
Ham Radio Deluxe Macros - TS-480.txt	Macro definitions – see Macros on page 103.
Ham Radio Deluxe Parallel Port Defns.txt	Parallel port definitions – see Auxiliary Switching on page 53.
Ham Radio Deluxe Satellite Definitions.txt	Used by Ground Control on page 133 – contains a list of satellites and associated frequencies and modes.

Archiving

The Archive option in the *Tools* menu takes a copy of the registry values and files used by all Ham Radio Deluxe programs (Ham Radio Deluxe, PSK31 Deluxe, Mapper) and copies them to another folder.



... Select the destination folder

Browse From Browse the From folder

Browse To Browse the To folder

Copy Start copying files and registry values.

Appendix

When you press Copy you see a DOS window appear briefly a few times. Ham Radio Deluxe uses regedit /e to copy the registry values, this in turn causes the DOS to appear.

To restore registry values just double-click on a .reg file. Windows will prompt you to load the values into the registry.

Logbook Database

Introduction

The logbook uses a very simple Access database. Originally DAO 3.5 (Access 97) was used as the programming interface; this has been replaced with ODBC in early 2006 starting with version 3.3 build 984.

Apart from getting away from DAO and the need to install the DAO support (not shipped with Windows) ODBC is needed for used of 64-bit Windows, as DAO is not supported on 64-bit Windows.

The database structure is the same for DAO and ODBC. Each table contains an auto-incrementing primary key.

To analyze the database yourself:

1. Start Microsoft Access,
2. Convert the database if necessary using the Convert Database option selected from the Tools menu; do not overwrite the database!
3. Use the Analyzer> Documenter option selected from the Tools menu.

Notes:

- Do not use programs such as Microsoft Access to convert the database – or if you do just make sure that you do not overwrite the database. If you convert to a newer version of Access you may not be able to open the database with Ham Radio Deluxe.
- Take regular backups.

Tables

Bands

This table defines the frequency ranges for the ADIF bands, used when exporting to ADIF.

Columns

Name	Type	Size
PrimaryKey	Long Integer	4
MinFreq	Long Integer	4
MaxFreq	Long Integer	4
Title	Text	32
ADIF	Text	32
Comment	Text	64

Countries

The country list; used to lookup a country based on prefix, also to cross- reference a country and DXCC number.

Columns

Name	Type	Size
PrimaryKey	Long Integer	4
Country	Text	64
DXCC	Text	32
Comment	Memo	-
Prefix	Memo	-

Logbook

This table stores information for each QSO.

Columns

Name	Type	Size
PrimaryKey	Long Integer	4
Created	Date/Time	8
Modified	Date/Time	8
Station	Text	32
EndTime	Date/Time	8
StartTime	Date/Time	8
Remark	Memo	-
ReportRecv	Text	32
ReportSent	Text	32
BandMHz	Text	32
Mode	Text	32
Frequency	Text	32
Locator	Text	32
Country	Text	64
DXCC	Text	10
IOTA	Text	10
QSLRecv	Text	10
QSLSent	Text	10
QSLRecvDate	Date/Time	8
QSLSentDate	Date/Time	8
eQSLRecv	Text	10
eQSLSent	Text	10
eQSLRecvDate	Date/Time	8
eQSLSentDate	Date/Time	8
eQSLStatus	Text	255
QSLVia	Text	64
Name	Text	128
Address	Text	255
QTH	Text	255
MyStation	Text	128
MyOperator	Text	32
MyOwner	Text	32

Name	Type	Size
MyAntenna	Text	128
MyCallsign	Text	32
MyLocator	Text	10
MyPower	Text	32
MyName	Text	32
MyCountry	Text	64
MyStreet	Text	64
MyCity	Text	64
MyCounty	Text	64
MyState	Text	64
MyZip	Text	20
MySig	Text	32
MySigInfo	Text	64
MyLatitude	Text	12
MyLongitude	Text	12
MyCqZone	Text	8
MyItuZone	Text	8
MyIota	Text	10
Custom1	Text	64
Custom2	Text	64
Custom3	Text	64
Custom4	Text	64
Custom5	Text	255
Custom6	Text	255
AntAz	Text	3
AntEl	Text	2
AntPath	Text	1
SatName	Text	32
SatMode	Text	32
ContestCheck	Text	8
ContestClass	Text	8
ContestPrecedence	Text	8
ContestContest	Text	64
LocationCounty	Text	64
LocationState	Text	64
LocationContinent	Text	2
LocationArrlSect	Text	4
LocationCqZone	Text	8
LocationItuZone	Text	8
LocationDistance	Text	10
LocationLatitude	Text	12
LocationLongitude	Text	12
StationEmail	Text	64
StationUrl	Text	64
StationEquipment	Text	255

Name	Type	Size
StationAge	Text	4
StationSig	Text	32
StationSigInfo	Text	64
StationTenTen	Text	10
PropagationAInde	Text	10
PropagationKInde	Text	10
PropagationMaxB	Text	10
PropagationNumB	Text	10
PropagationNumPi	Text	10

Modes

The supported modes, this list contains all modes supported by ADIF.

Columns

Name	Type	Size
PrimaryKey	Long Integer	4
Title	Text	32
ADIF	Text	32
Comment	Text	64

QRZ

When a QRZ lookup is made a copy of the returned data is stored in this table so that subsequent lookups are much faster.

The fields correspond to the fields extracted from the returned QRZ data.

Columns

Name	Type	Size
PrimaryKey	Long Integer	4
QRZUpdated	Date/Time	8
QRZCallsign	Text	255
QRZName	Text	255
QRZAddr1	Text	255
QRZAddr2	Text	255
QRZCountry	Text	255
QRZGrid	Text	255
QRZHomePage	Text	255
QRZQslMgr	Text	255
QRZLatitude	Text	32
QRZLongi-	Text	32

ADIF

Ideally Ham Radio Deluxe's logbook will support all ADIF fields. The table below contains all ADIF fields as of ADIF spec 2.1.7 and the location in the Add/Modify window. Grateful thanks to Dave, AA6YQ for maintaining order in the Yahoo! ADIF group.

This table is really a programmer's checklist to ensure essential fields are supported. ADIF fields that have not yet been added have empty values in Ham Radio Deluxe Field.

- Antenna and Satellite are combined into one dialog.

For ADIF information: *http://groups.yahoo.com/group/adifdev/files/* .

Ham Radio Deluxe Window	Ham Radio Deluxe Field	ADIF Field
Antenna/	Azimuth	ANT_AZ
Antenna/	Elevation	ANT_EL
Antenna/	Mode	SAT_MODE
Antenna/	Name	SAT_NAME
Antenna/	Path	ANT_PATH
Contact	10-10	TEN_TEN
Contact	Age	AGE
Contact	Email	EMAIL
Contact	Equipment	RIG
Contact	SIG	SIG
Contact	SIG info	SIG_INFO
Contact	URL	WEB
Contest	Check	CHECK
Contest	Class	CLASS
Contest	Contest	CONTEST_ID
Contest	Precedence	PRECEDENCE
Location	ARRL sect	ARRL_SECT
Location	Continent	CONT
Location	County	CNTY
Location	CQ zone	CQZ
Location	Distance	DISTANCE
Location	ITU zone	ITUZ
Location	Latitude	LAT
Location	Longitude	LON
Location	State/province	STATE
Main	Address	ADDRESS
Main	Band	BAND
Main	Cntry	COUNTRY
Main	Cntry (read-	DXCC
Main	End	TIME_OFF
Main	Freq	FREQ
Main	IOTA	IOTA
Main	Locator	GRIDSQUARE
Main	Mode	MODE
Main	Name	NAME
Main	QTH	QTH
Main	Remark	COMMENT

Ham Radio Deluxe Window	Ham Radio Deluxe Field	ADIF Field
Main	RST Recv	RST_RCVD
Main	RST Sent	RST_SENT
Main	Start	QSO_DATE
Main	Start	TIME_ON
Main	Station	CALL
My Station	City	MY_CITY
My Station	Country	MY_COUNTRY
My Station	County	MY_CNTY
My Station	CQ zone	MY_CQ_ZONE
My Station	Equipment	MY_RIG
My Station	IOTA	MY_IOTA
My Station	ITU zone	MY_ITU_ZONE
My Station	Lat	MY_LAT
My Station	Locator	MY_GRIDSQUARE
My Station	Lon	MY_LON
My Station	Name	MY_NAME
My Station	Operator call	OPERATOR
My Station	Owner call	OWNER_CALLSIGN
My Station	Power	TX_PWR
My Station	SIG	MY_SIG
My Station	SIG info	MY_SIG_INFO
My Station	State	MY_STATE
My Station	Street	MY_STREET
My Station	ZIP	MY_POSTAL_CODE
Propagation	A index	A_INDEX
Propagation	K index	K_INDEX
Propagation	Max bursts	MAX_BURSTS
Propagation	MS shower	MS_SHOWER
Propagation	Num bursts	NR_BURSTS
Propagation	Num pings	NR_PINGS
Propagation	Prop mode	PROP_MODE
Propagation	Solar flux	SFI
QSL Info	QSL Recv	QSL_RCVD
QSL Info	QSL Recv	QSLRDATE
QSL Info	QSL Sent	QSL_SENT
QSL Info	QSL Sent	QSLSDATE
QSL Info	QSL Via	QSL_VIA
Depreciated		OPERATOR
Depreciated		VE_PROV
In ADIF files		PROGRAMID
In ADIF files		PROGRAMVERSIO
t.b.a.		BAND_RX
t.b.a.		FORCE_INIT
t.b.a.		FREQ_RX

Ham Radio Deluxe Window	Ham Radio Deluxe Field	ADIF Field
t.b.a.		GUEST_OP
t.b.a.		NOTES
t.b.a.		OWNER_CALLSIGN
t.b.a.		PFX
t.b.a.		PUBLIC_KEY
t.b.a.		QSL_RCVD_VIA
t.b.a.		QSL_SENT_VIA
t.b.a.		QSLMSG
t.b.a.		QSO_COMPLETE
t.b.a.		QSO_RANDOM
t.b.a.		RX_PWR
t.b.a.		SRX
t.b.a.		SRX_STRING
t.b.a.		STATION_CALLSIG
t.b.a.		STX
t.b.a.		STX_STRING
t.b.a.		SWL

Links

Ham Radio Deluxe

Homepage – *http://hrd.ham-radio.ch/.*

Forums – *http://forums.ham-radio.ch/*.

Yahoo! Mailing list – *http://groups.yahoo.com/group/ham-radio-deluxe/*.

Other Software

BV Software by DF3CN - *http://www.df3cb.com/* . Excellent QSL management and label printing software.

DXLab by Dave Bernstein AA6YQ - *http://www.qsl.net/dxlab*.

IrfanView - *http://www.irfanview.com/*. Great image viewer and sound file player.

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