
Ham Radio Deluxe

User Guide v 4.0

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Introduction

How It All Began

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

We had previously developed the FT-817 Commander, which proved to be very popular, the main lesson being learnt that future programs must not be tied to a single radio or a single manufacturer; rather they must be designed to support all current and future radios.

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 (HRD) was born.

The inspiration for the design came from a variety of sources: Internet Explorer (especially the Favourites), my old Eddystone EA12 and a desire to prove that Peter and myself could develop something better than the current 'not quite so free and fantastic' products being peddled to radio amateurs.

On December 23rd, 2005 the number of registered users stood at 20,006 – quite an achievement in such a short time.

--- --- ---

Very sadly Peter passed away on June 8th, 2005. His contribution to Ham Radio Deluxe will never be forgotten.



This Guide

Kevin Crockett, VK3CKC, wrote the original user guide. Now that HRD is a more mature product the time has come to write the document you are currently reading.

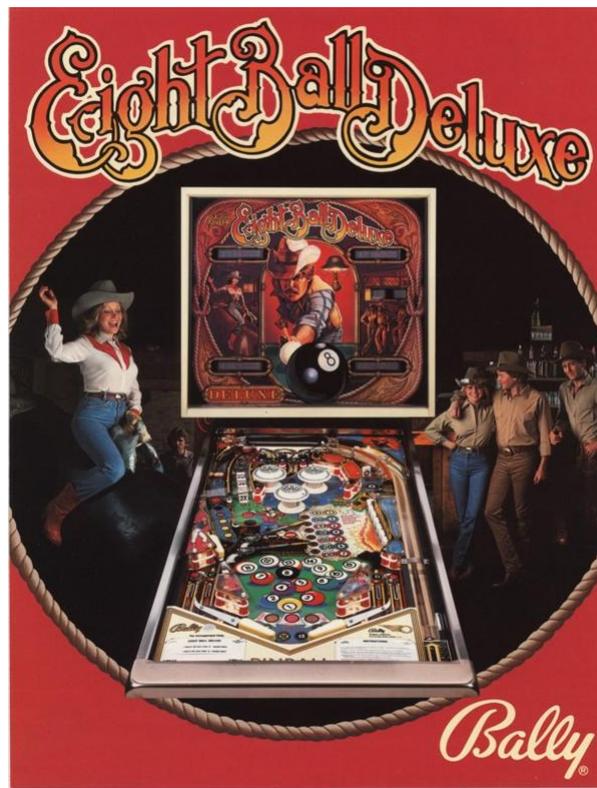
Thank-you for reading this guide - and before you ask it's written in British English, with plenty of my favourite colours despite Word's attempts to change the spelling ☺.

If you are only going to read one more section then now go to Radio Display on page 23.

Please report errors and omissions to simon@hb9drv.ch or in the HRD forums <http://forums.ham-radio.ch/>.

The Name

The influence for the name comes from Eight Ball Deluxe, which was one of the finest Macintosh games of the 1990's.



Sponsors

To help keep HRD free for all Amateurs and SWL's several companies have helped by sponsoring the HRD development. If I have missed your company please let me know.

And a very big thank-you to everybody when has lent radios to Peter and myself so that we have been able to provide the current level of support.

West Mountain Radio



ZLP Electronics



Requirements

Computer

You can run HRD on any Windows 98 or Windows NT/2K/XP computer. Please note: version 3.4 is the last release that will ‘intentionally’ run on Windows 98.

There will never be a LINUX or Macintosh native version, HRD is known to run under Wine for LINUX and PC emulators for the Macintosh.

I may be crazy undertaking a project like this in my spare time¹; I am not ‘deep stir-fry serve in a bun with extra chilies’ crazy²!

The code is not open source; it cannot be ported to Linux and will never be released as some of the code is protected under copyright and if released will land the author with a nice big legal ‘fee’.

Supported Radios

You don’t need a radio – HRD comes with built-in Dem-o-matic radio support (FTDX-9000, K2, Orion, TS-480, TS-570 and TS-2000).

HRD currently supports these ‘real’ radios:

- *Elecraft*: K2
- *FlexRadio*: SDR-1000
- *ICOM*: IC-7000, IC-703, IC-706, IC-706MkII, IC-706MkIIG, IC-707, IC-718, IC-725, IC-726, IC-728, IC-729, IC-735, IC-736, IC-737, IC-738, IC-7400, IC-746, IC-746Pro, IC-751A, IC-751A (Piexx), IC-756, IC-756Pro, IC-756ProII, IC-756ProIII, IC-761, IC-765, IC-775DSP, IC-7800, IC-781, IC-821H, IC-910H, IC-R10, IC-R20, IC-R7000, IC-R75, IC-R8500, IC-R9000, PCR-1000
- *Kenwood*: R-5000, TS-140S, TS-2000, TS-440S, TS-450S, TS-480, TS-50S, TS-570, TS-60S, TS-680S, TS-690S, TS-790, TS-850, TS-870, TS-940S, TS-950, TS-B2000
- *Ten-Tec*: Argonaut, Jupiter, Orion, RX-350
- *Yaesu*: FT-100, FT-1000D, FT-1000MP MkV, FT-600, FT-817, FT-840, FT-847, FT-857, FT-890, FT-897, FT-900, FT-920, FT-990, FTDX-9000.

¹ It was the voices in my head that made me do it

² Medical opinion may differ here

Interfacing

You will need a cable to connect your radio to the computer's serial (COM) port.

If you don't have a serial port all is not lost – USB ⇔ serial converters are widely available. Please note: not all USB ⇔ serial converters work well enough for HRD. If in doubt ask for a recommendation in the HRD support forums.

For more interfacing information refer to:

- The HRD Interface guide, and
- CATbox, a Modular Computer Interface by Bas Helman G4TIC.

These files are downloadable from the HRD download center - <http://hrd.ham-radio.ch/downloads.html>.

Check out the cable solutions from:

- G4ZLP <http://g4zlp.ham-radio.ch/> and
- West Mountain Radio <http://www.westmountainradio.com/>.

Public Interfaces

Other (non-HRD) programs are supported via a DDE interface (see DDE Support on page 61) and a serial port (see 3rd-Party Programs on page 149).

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

Installation

Introduction

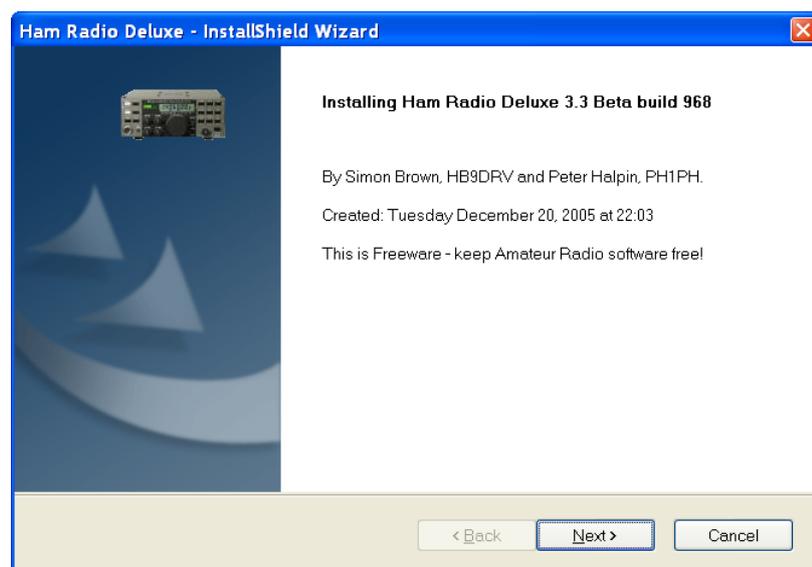
The Ham Radio Deluxe kit is a standard Windows kit – it supports Windows 98, Windows 2000, XP and more recent releases. Please note: version 3.4 is the last release that will ‘intentionally’ run on Windows 98.

The Logbook uses the Microsoft Jet 4.0 Database Engine, see Database on page 73 for more information.

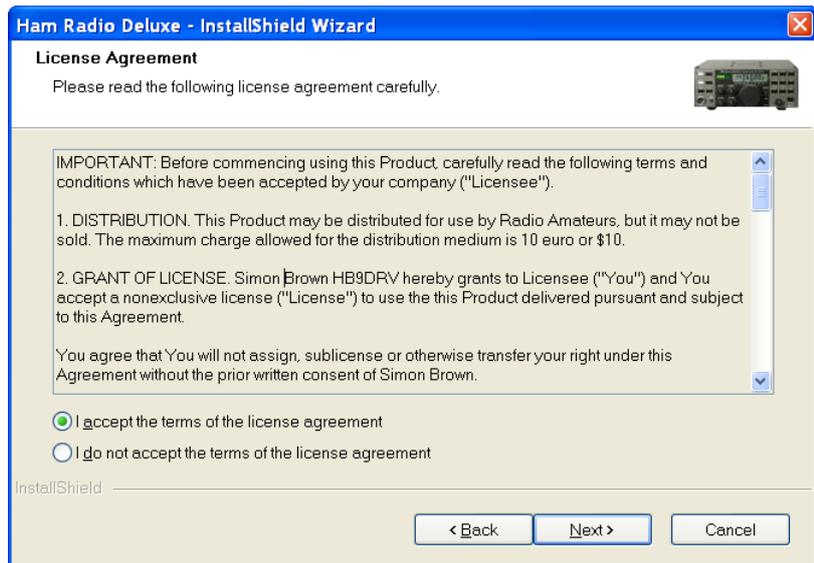
Ham Radio Deluxe

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, HRD does not update your system files or change your system’s configuration in any way.

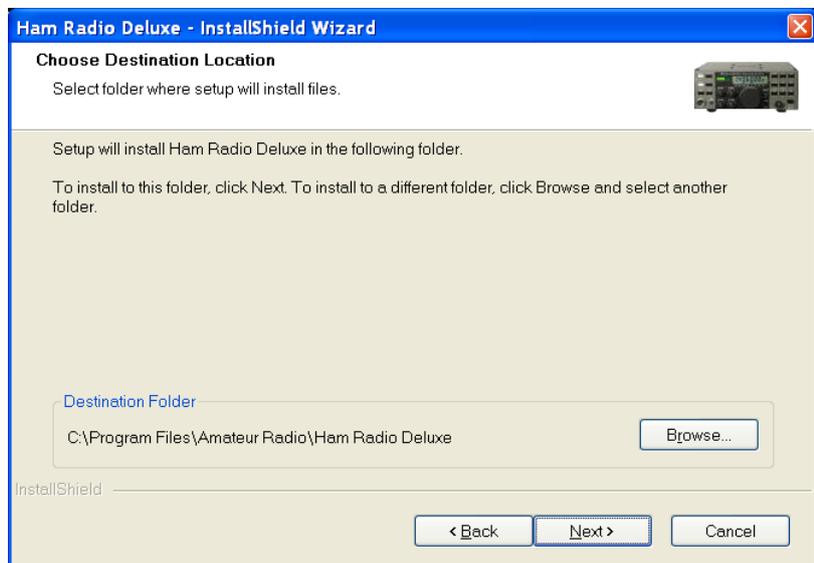


When you start the installation the first screen shows the release and build you are installing.

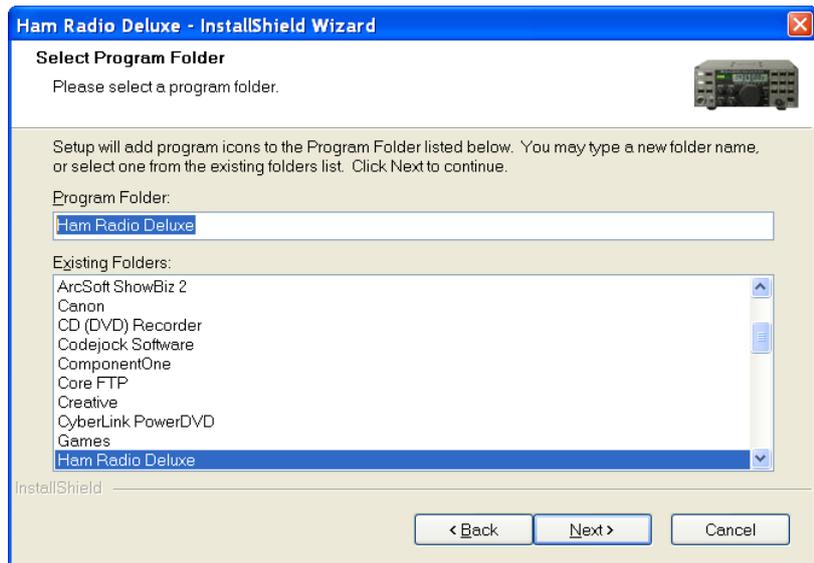


You must accept the licencing conditions. Ham Radio Deluxe is free for radio amateurs and shortwave listeners, commercial use requires a licence.

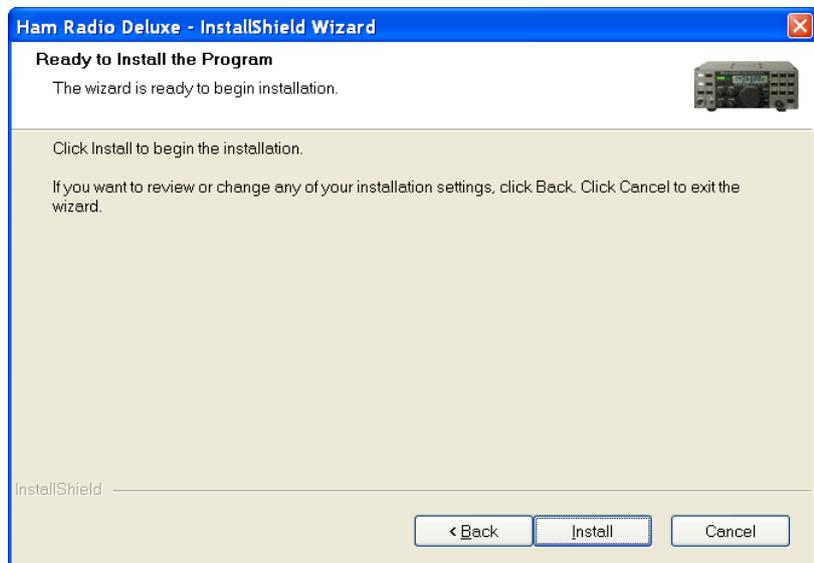
If you are a commercial (non-amateur user) stop the installation now unless you have a licence.



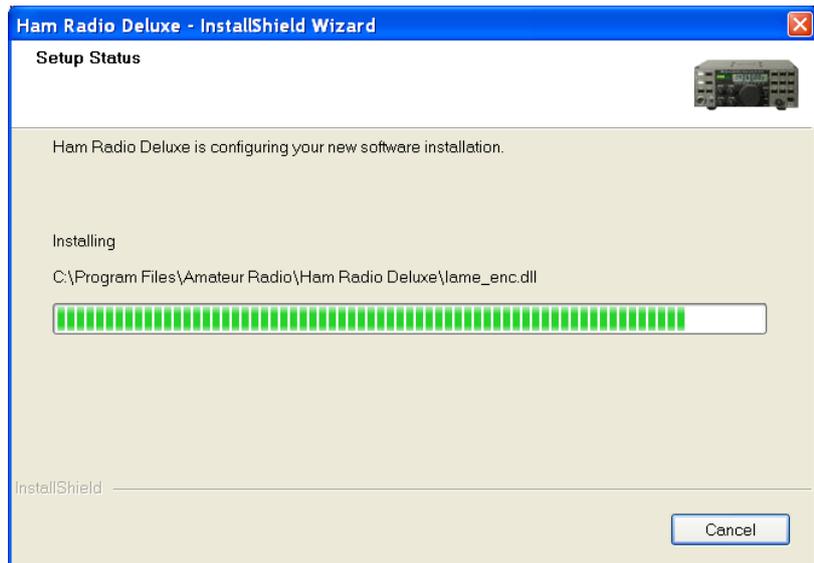
Select the folder where Ham Radio Deluxe will be installed, the suggested default is usually sufficient.



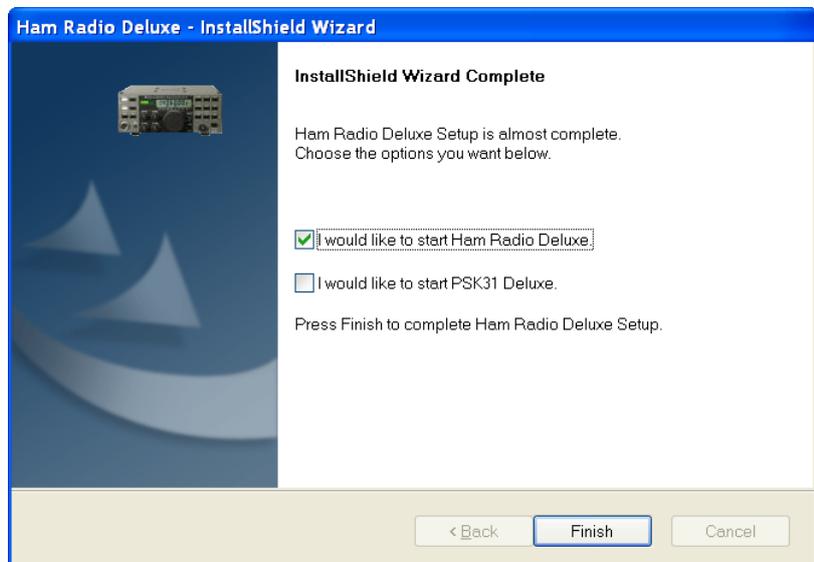
Select the folder in the *Start* menu where the Ham Radio Deluxe entries will be added, the suggested default is usually sufficient.



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

Connection

Now that you have installed HRD 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 HRD 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.



Dem-o-matic

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

They are ideal for demonstrating HRD when you do not have a suitable radio available.

Options

Company

Select your radio manufacturer from the drop-down list.

FlexRadio: you must install the vCOM virtual serial port drivers from Philip Covington (N8VB). These are used to provide the connection between HRD and the PowerSDR software that must be running before you try to create the connection with HRD. More information is available from <http://www.flex-radio.com/>, to install the vCOM drivers see Annex: N8VB vCOM on page 163.

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.

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 organisers.

Select 'Auto-detect' to try all available ports.

Speed

The speed used for communicating with the radio, check the speed setting via the radio's configuration menu.

Select 'Auto-detect' to try all available speeds.

CI-V Address

ICOM only: the address assigned to the radio, consult the radio's handbook 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

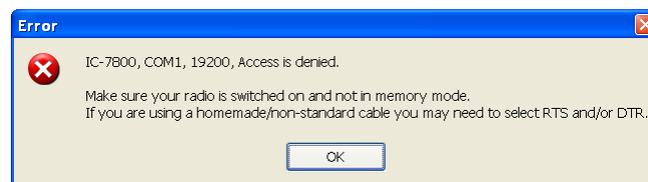
Enables the DTR line when the COM Port is opened and leaves it on, usually to provide power for an interface cable. For Yaesu CT-62 and ICOM CT-17 interfaces this can be left unchecked (off).

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).

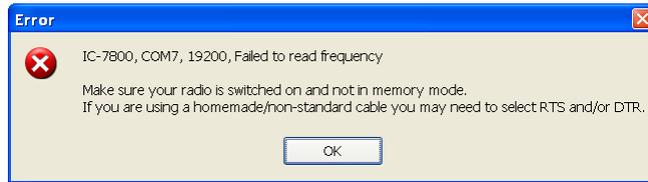
Connecting

Press *Start* to connect to the radio. If you see the error below then the COM port is currently held open by another program.



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.

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



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

If HRD cannot read the frequency then check:

- Correct COM port is selected,
- Speed on radio is the same as the speed selected in HRD,
- 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:

- Annex: Command Tester on page 153, and
- Annex: Portmon on page 161.

What's Next

A taste of what's to come later in this guide...

Appearance

Set the appearance:

- From the *View* menu select *Colour Schemes*,
- Select *Customise Layout* and *Program Options* from the *Tools* menu.

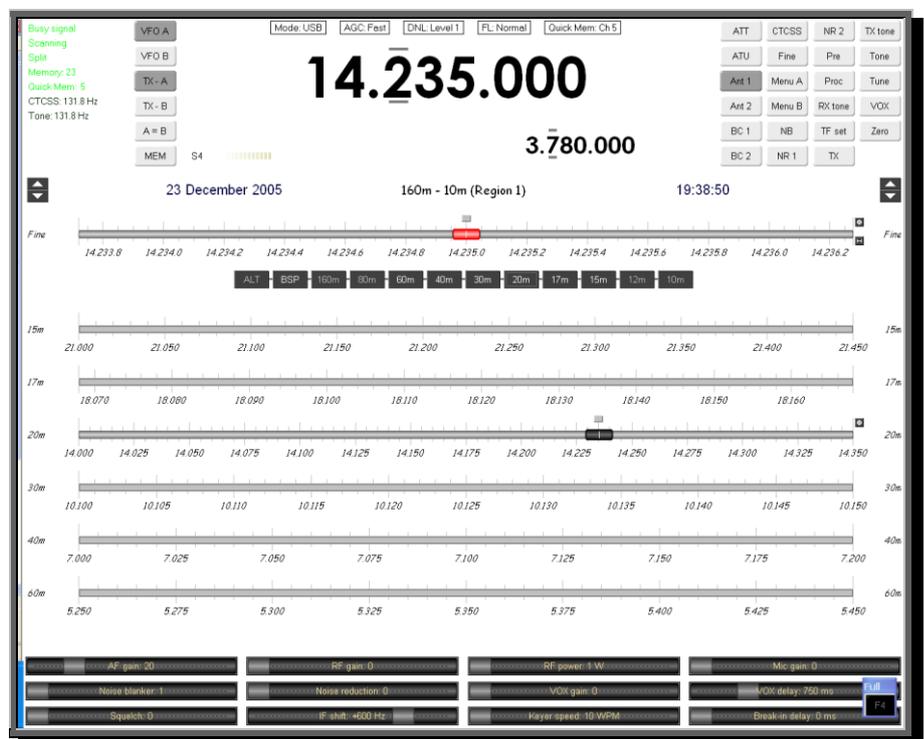
Radio Display

Introduction

The HRD radio display has many, many features. This section attempts to describe everything you can do in this display.

HRD is designed to be intuitive; nevertheless even the author has problems remembering all the available options!

To aid in the clarity of the screenshots the LCD Scheme is used.



Frequency Display



Configuration

See Frequency on page 34.

Dropdowns

If you have enabled dropdowns as part of the configuration just click on a dropdown and make a new selection.

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.

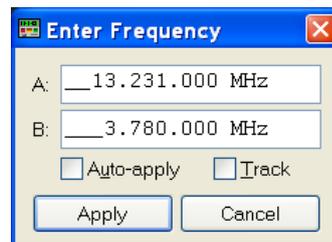
Mouse-click

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

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.

Press *Enter* to display the Enter Frequency window.



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.

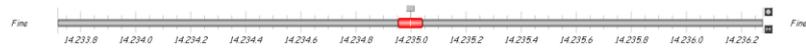
If you check *Track* this window is updated with changes made to the frequency display – for example when you tune the radio manually.

Griffin etc.

Support for third-party devices such as the Griffin Powermate is available – see Accelerators on page 39.

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 *Fine I* then the title is *Fine*.)

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

To change the mouse wheel step click the  button (also set with the Mouse Wheel pane of Program Options on page 44).

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 are:

- The range is fixed (defined by the Band Layouts on page 57),
- The bar does not automatically scroll to the left or right.

Band Selection

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



The buttons 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.

Display Scroll

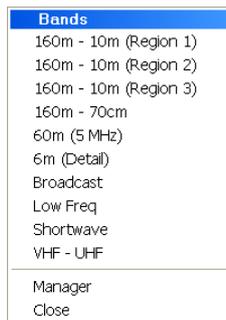


If there is not enough room to display all the frequency ranges defined in the current band layout use this button to scroll the frequency ranges (bands) up or down.

Band Selection

160m - 10m (Region 1)

The current band layout. Click here to select a different layout from the Bands menu.



Date & Time

25 December 2005 11:40

Click here to set the clock format.



Buttons



What would a radio be without buttons? Press a button to active the option. If it is a button where the option state can be read from the radio – for example the selected VFO – the button indicates whether the option is currently selected.

This should be obvious 😊 .

Dropdowns



When to press a dropdown button a popup menu is displayed. Select an option or press escape. If possible the dropdown displays the current selected option.

Again, this should be obvious.

Sliders



Select the sliders that are displayed with the Sliders: Layout pane of Customise Layout – see page 36.

Use the mouse to adjust a slider value.

In the *View* menu select whether sliders are displayed with the *Slider Controls* option.

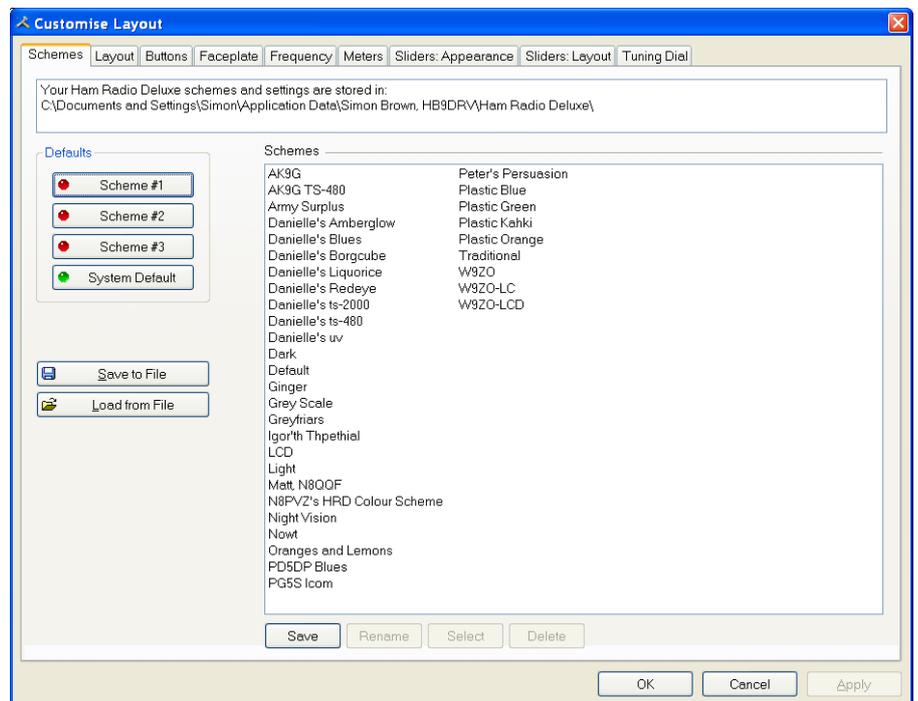
Customise Layout

Introduction

Used to define the appearance of the radio display, *Customise Layout* is selected from the *Tools* menu, or by pressing the *Customise* button.



Schemes



Schemes are pre-defined customizations created by author and by other HRD users.

There are four default schemes shipped with HRD: Scheme #1 - #3 and the System Default.

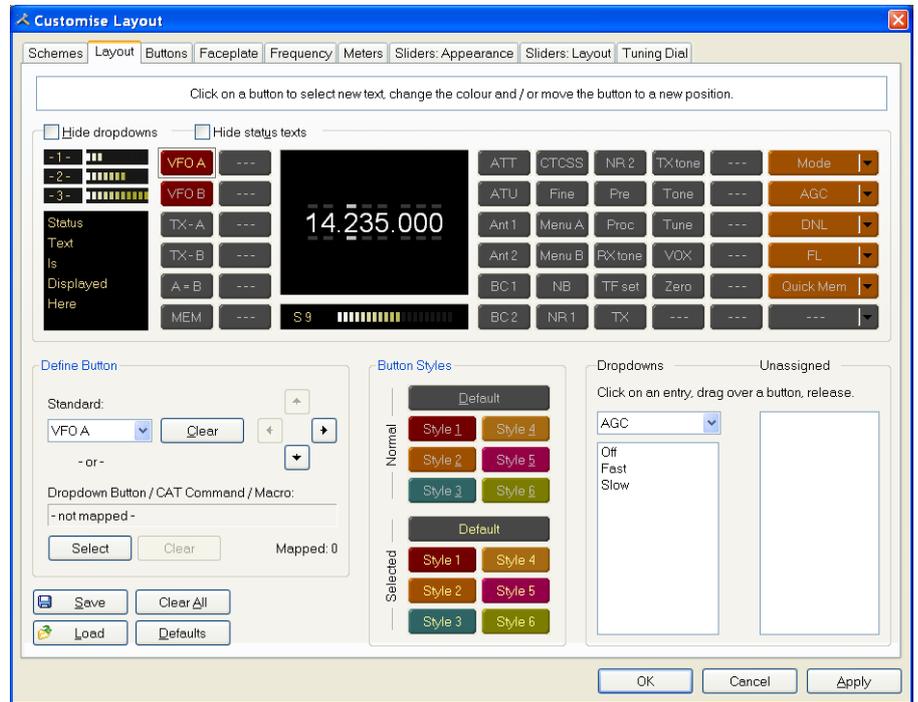
The HRD team and the HRD users have created the other schemes. Special thanks to Danielle in Northallerton, UK.

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.

To save the current layout press *Save* – you will be prompted for a Scheme name.

Use *Rename* and *Delete* to organise the available schemes.

Layout



HRD is a data-driven program. For each radio there is a table of supported commands and associated button / dropdown / slider names. The layout order is more-or-less alphabetical.

An early complaint was that the buttons positions were not user-definable; as a result the Layout window was designed.

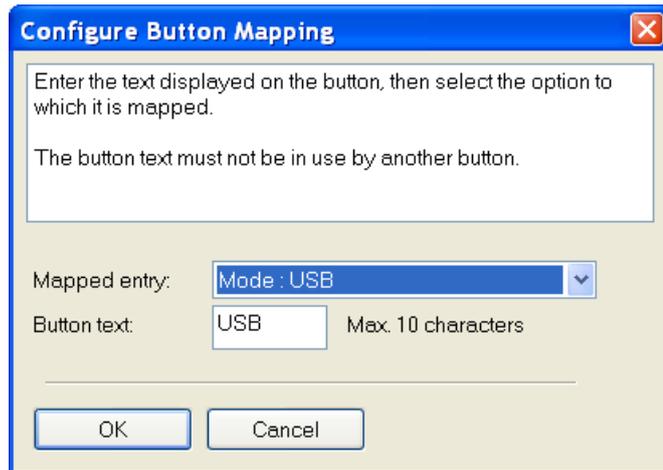
Don't be put off by the amount of information in this window – take it slowly and read the information here.

The layout definition is saved on a per-radio basis in the registry.

Dropdown Button / CAT Command / Macros

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

- Select an empty button position – the selected entry will start to blink (you can reposition this button later),
- Press *Select* (above the *Save* and *Load* buttons),
- In the *Configure Button Mapping* window select Mode : USB and enter the text to appear on the new button, then press *OK*.



- The previously empty button position now has a new value – *USB!*

Hiding

Hide dropdowns hides the dropdown buttons to the right 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.

Moving Entries

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



Removing Entries

To remove an entry either drag it into the *Unassigned* list or right-click on the button and select *Clear* from the popup menu.

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 pane (page 32) you define up to seven button styles, shown here in the Button Styles group.

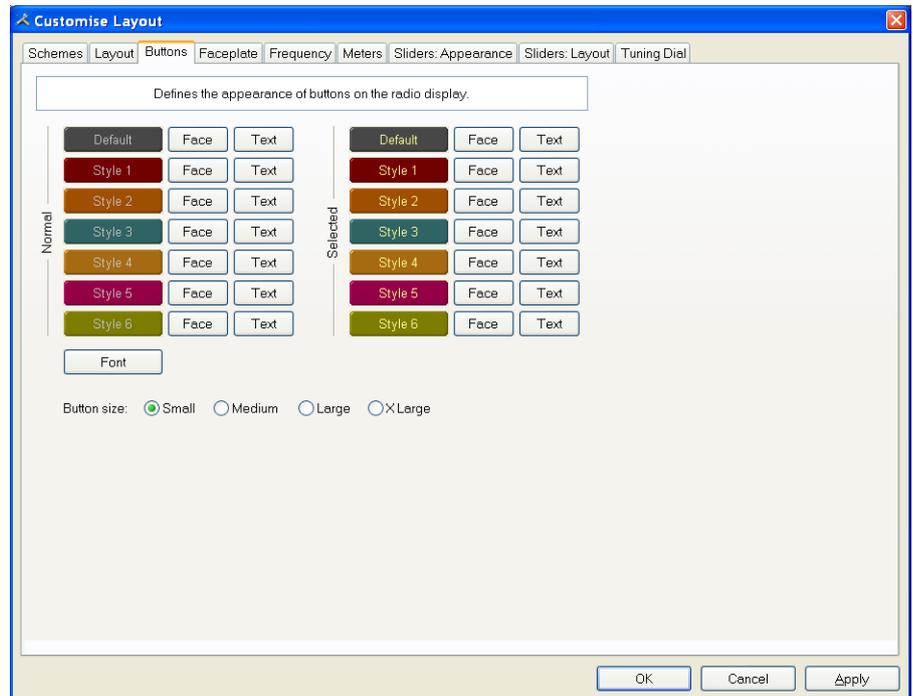
To assign a style to a button either:

- 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.

Buttons



Define:

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

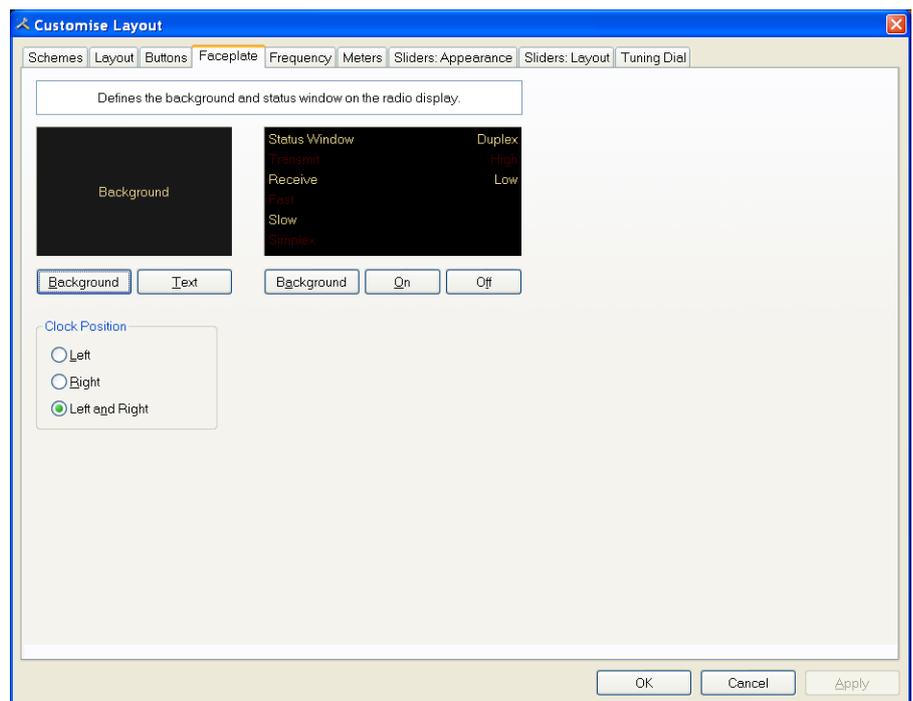
The default button size is small; this is so that users with low resolutions such as 800 x 600 still have a usable configuration.

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.

Faceplate



Background

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

Status Window

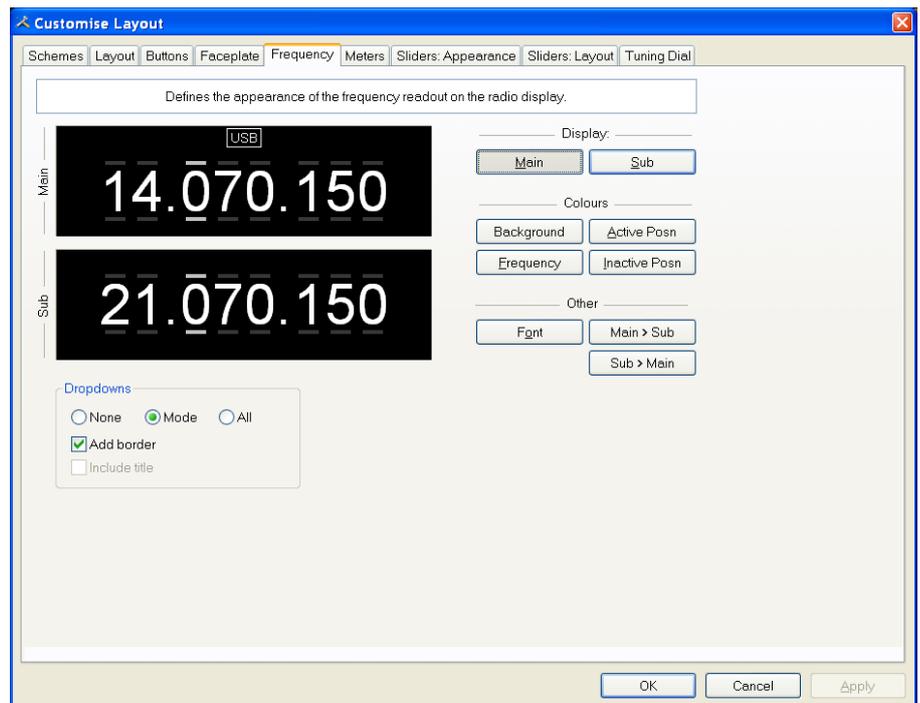
The status window displays information which you cannot normally change using buttons or sliders in HRD.

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



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

First select the VFO you are updating – main or sub.

The colours 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,

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.

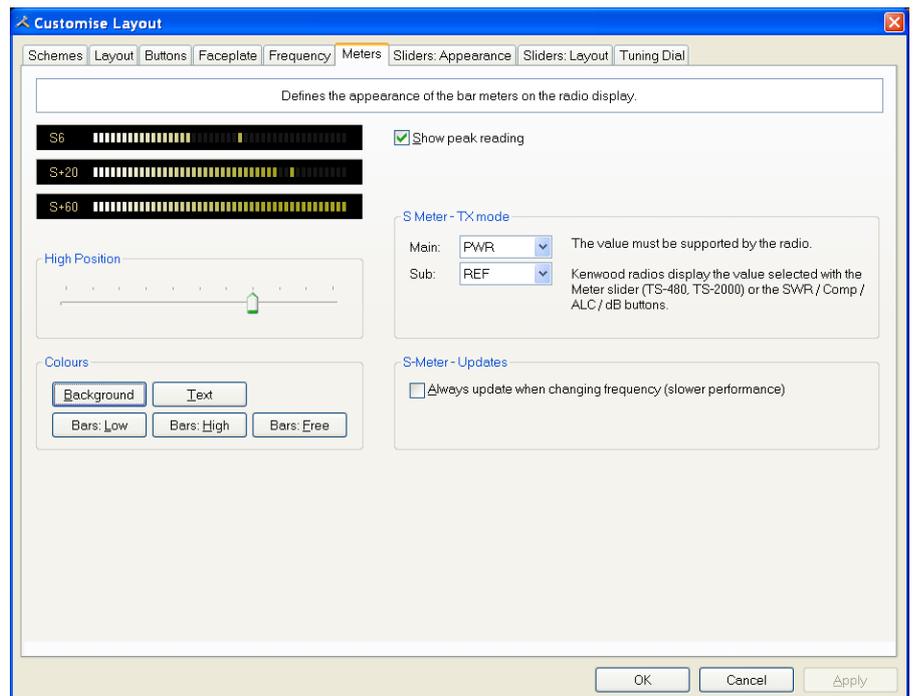
Select:

- 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).

Meters



The design aim of the bar meters was heavily influenced by my fine Sony stereo, still giving fine service here in the HRD R&R suite after some 15 years of abuse.

The *Background* and *Text* colours should be obvious.

There are three graduation colours:

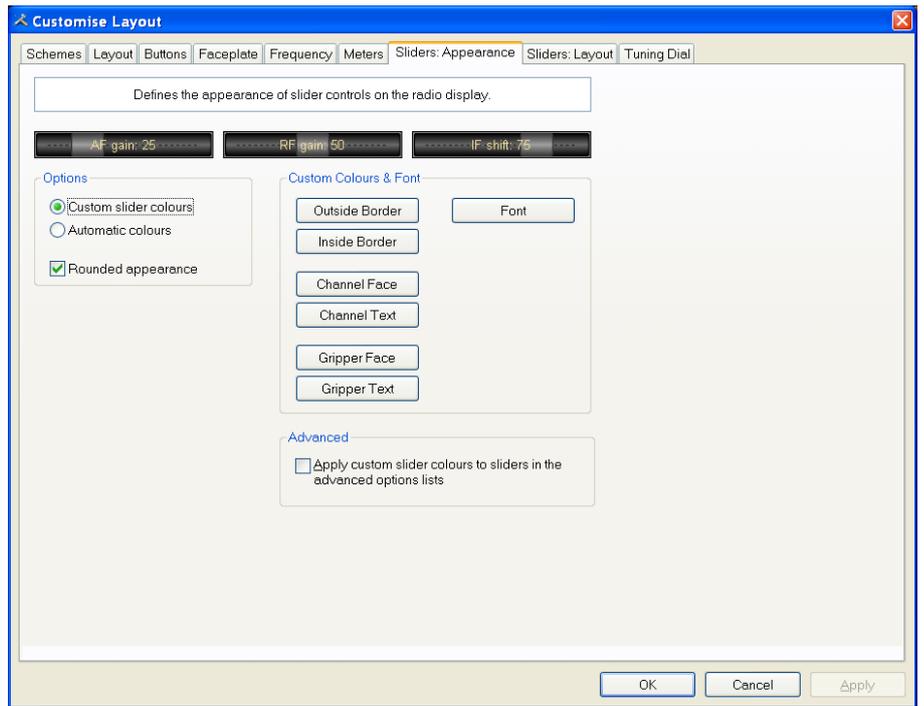
- Bars: Low – the first bar colour,
- Bars: High – the colour at the position set by the High Position slider, and
- Bars: Free – the colour for the free (empty) bars.

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

When HRD 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 HRD 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.

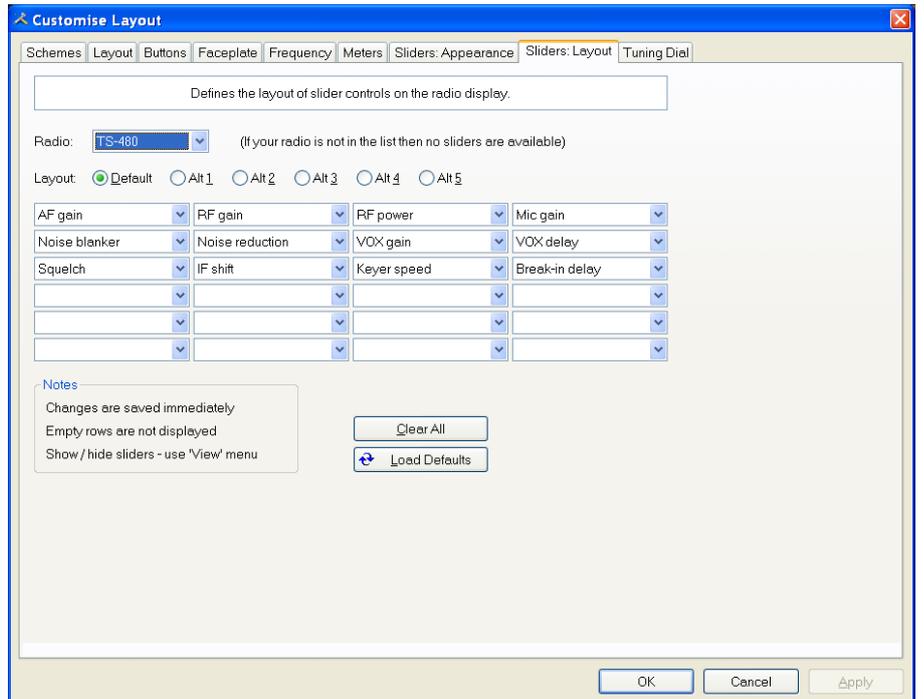
Sliders: Appearance



If supported by your radio, sliders are displayed at the bottom of the display. Here you define the appearance of the sliders.

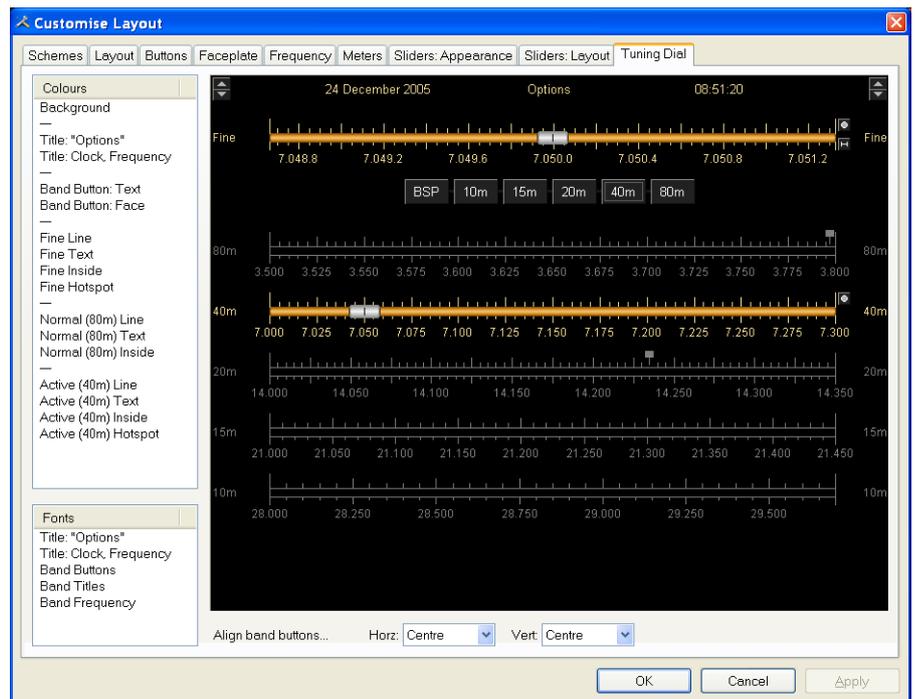
These colours are optionally applied to the sliders in the *Advanced* selection windows (select *Advanced* from the *View* menu).

Sliders: Layout



Here you select the sliders to be displayed. Define up to 6 layouts, for example one layout for SSB and another for CW

Tuning Dial



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

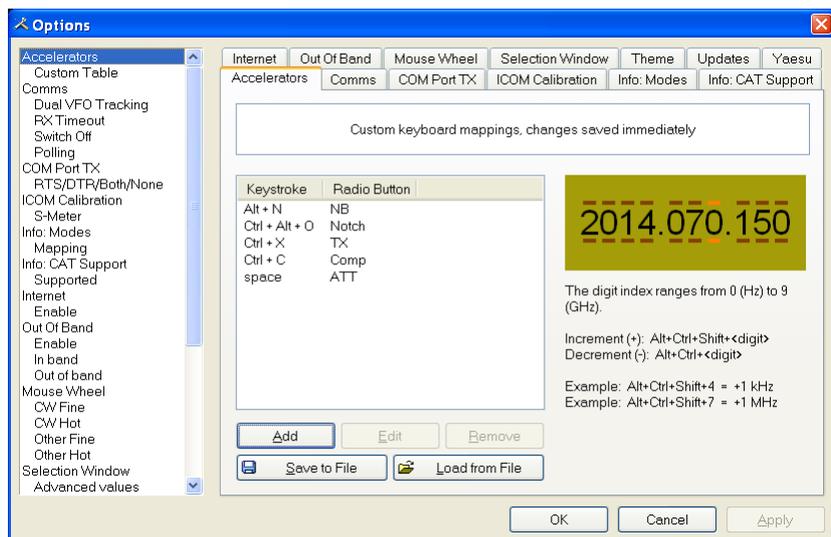
Program Options

Introduction

Used to define various HRD features, *Program Options* is selected from the *Tools* menu, or by pressing the *Options* button.

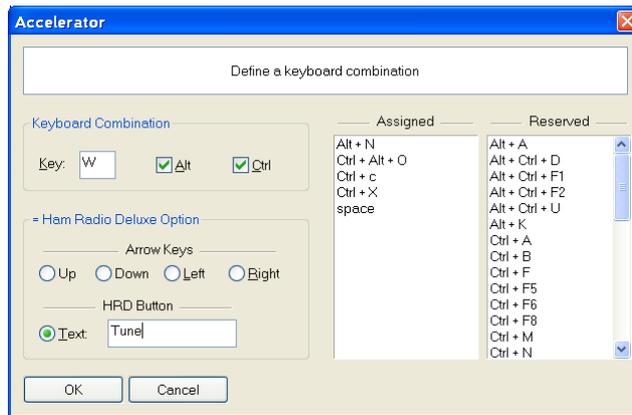


Accelerators



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

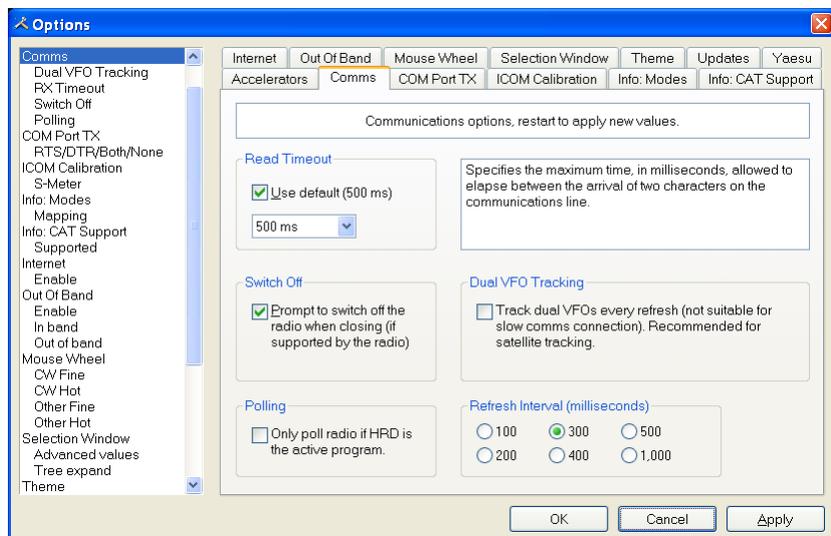
When you press *Add* the definition window is displayed.



Here Ctrl+Alt+W is assigned to the *Tune* button. Keyboard combinations are assigned to display buttons and arrow keys.

The HRD menu has pre-assigned accelerators; these cannot be redefined.

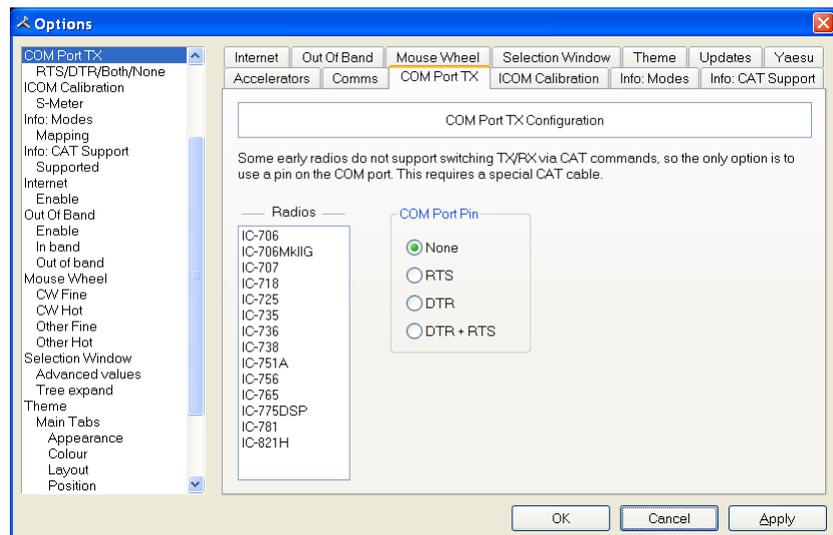
Comms



Normally you will not have to change the default settings.

- Read timeout – serial port timeout.
- Switch off – some radios such as the FT-817 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 (page 129).
- Refresh interval – the interval between consecutive refreshes of the display.

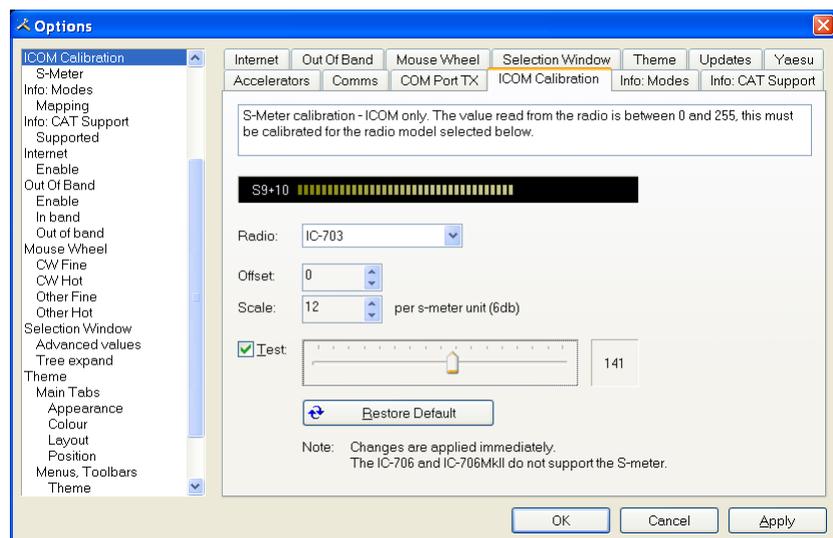
COM Port TX



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

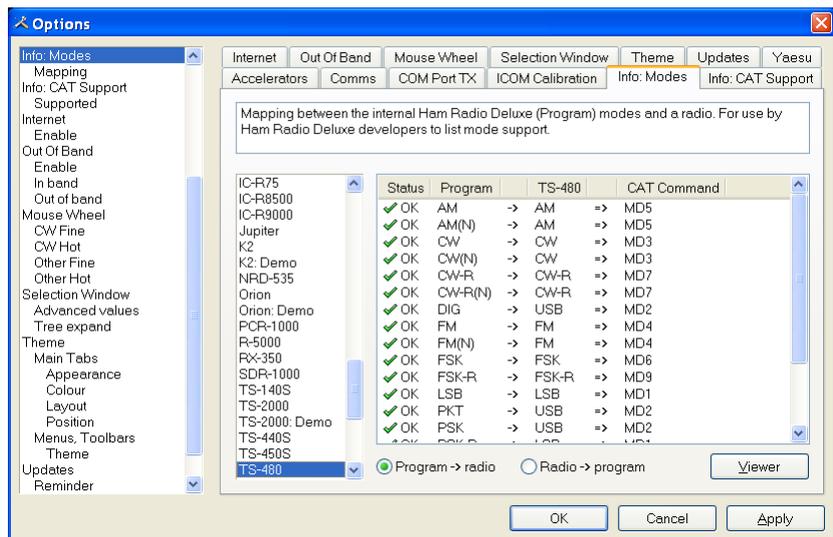


ICOM radios return a S Meter value between 0 and 255, normally 0 is S0, 12 is S1 and so on.

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.

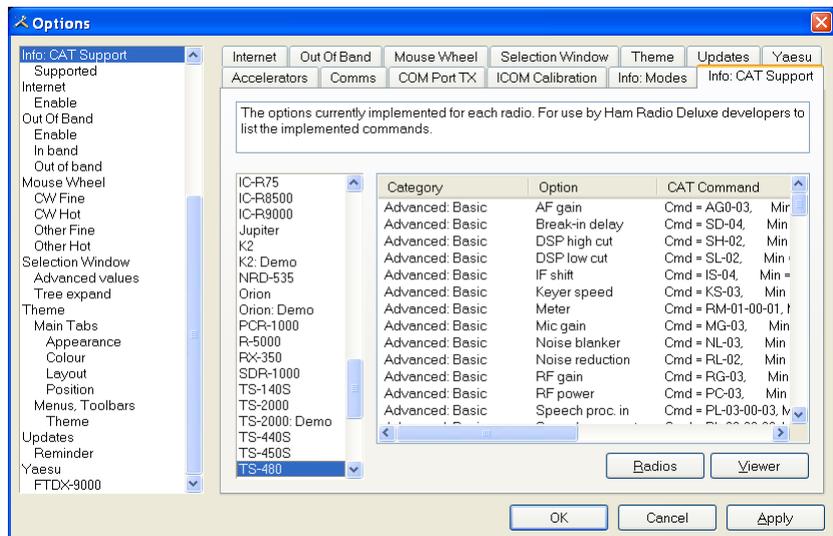
Some radios such as the IC-706 have a different logic – use the Offset and Scale values to adjust the returned values so that the S Meter in HRD corresponds to the S Meter on your radio.

Info: Modes



Mainly for use by the HRD programming team, all modes for each radio are listed. For each mode the mapping to the internal HRD mode is shown.

Info: CAT Support



Mainly for use by the HRD programming team, all commands are listed for each radio.

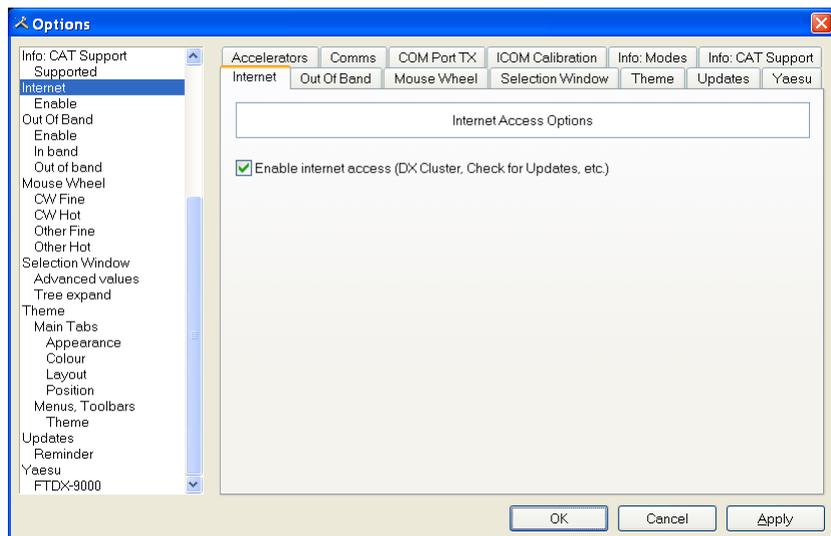
Press *Radio* for a list of all supported radios.

To display the commands:

1. Select a radio,
2. Press Viewer.

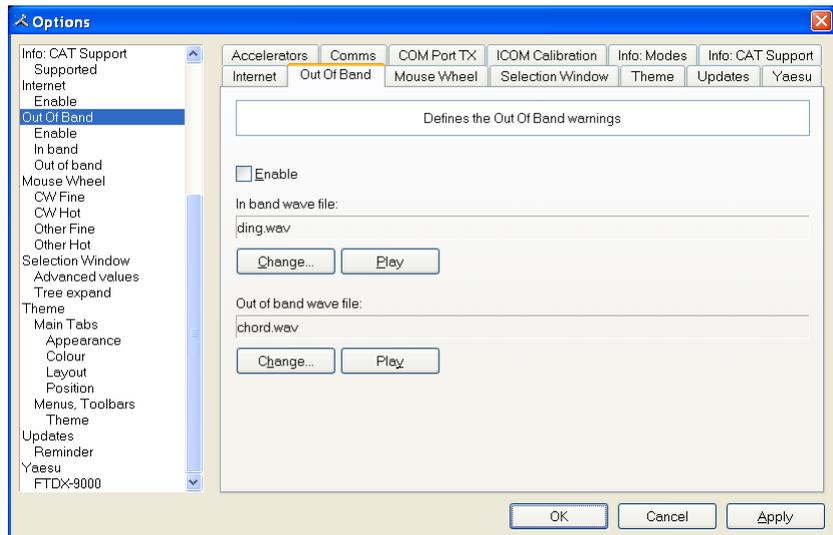
Category	Option	CAT Command
Advanced: Basic	AF gain	Cmd = 14-01, Min = 0.00,
Advanced: Basic	Compression	Cmd = 14-0E, Min = 0.00,
Advanced: Basic	IF shift	Cmd = 14-04, Min = 0.00,
Advanced: Basic	Meter	Cmd = 1A-03-12, Min = 0.00,
Advanced: Basic	Mic gain	Cmd = 14-0B, Min = 0.00,
Advanced: Basic	NB level	Cmd = 1A-03-17, Min = 0.00,
Advanced: Basic	NR level	Cmd = 14-06, Min = 0.00,
Advanced: Basic	RF gain	Cmd = 14-02, Min = 0.00,
Advanced: Basic	RF power	Cmd = 14-0A, Min = 0.00,
Advanced: Basic	Squelch	Cmd = 14-03, Min = 0.00,
- - -	- - -	- - -
Advanced: CW	Break-in	Cmd = 16-47, Min = 0.00,
Advanced: CW	Break-in delay	Cmd = 14-0F, Min = 1.00,
Advanced: CW	Carrier point	Cmd = 1A-03-05, Min = 0.00,
Advanced: CW	Contact no. style	Cmd = 1A-03-22, Min = 0.00,
Advanced: CW	Key speed	Cmd = 14-0C, Min = 0.00,
Advanced: CW	Key type	Cmd = 1A-03-18, Min = 0.00,
Advanced: CW	Keyer ./- ratio	Cmd = 1A-03-19, Min = 2.80,
Advanced: CW	Keyer repeat	Cmd = 1A-03-20, Min = 1.00,
Advanced: CW	Keyer tx ind.	Cmd = 1A-03-21, Min = 0.00,
Advanced: CW	Keying polarity	Cmd = 1A-03-16, Min = 0.00,
Advanced: CW	Pitch	Cmd = 14-09, Min = 2.00,
Advanced: CW	Side tone level	Cmd = 1A-03-06, Min = 0.00,
Advanced: CW	Side tone limit	Cmd = 1A-03-07, Min = 0.00,
- - -	- - -	- - -
Advanced: Packet/RTTY	9600 bps	Cmd = 1A-03-08, Min = 0.00,
Advanced: Packet/RTTY	Marker freq	Cmd = 1A-03-14, Min = 0.00,
Advanced: Packet/RTTY	Shift width	Cmd = 1A-03-15, Min = 0.00,
- - -	- - -	- - -
Advanced: Various	Anti-VOX gain	Cmd = 1A-03-10, Min = 0.00,
Advanced: Various	Beep band	Cmd = 1A-03-02, Min = 0.00,
Advanced: Various	Beep enable	Cmd = 1A-03-01, Min = 0.00,
Advanced: Various	Beep level	Cmd = 1A-03-03, Min = 0.00,
Advanced: Various	Beep limit	Cmd = 1A-03-04, Min = 0.00,

Internet



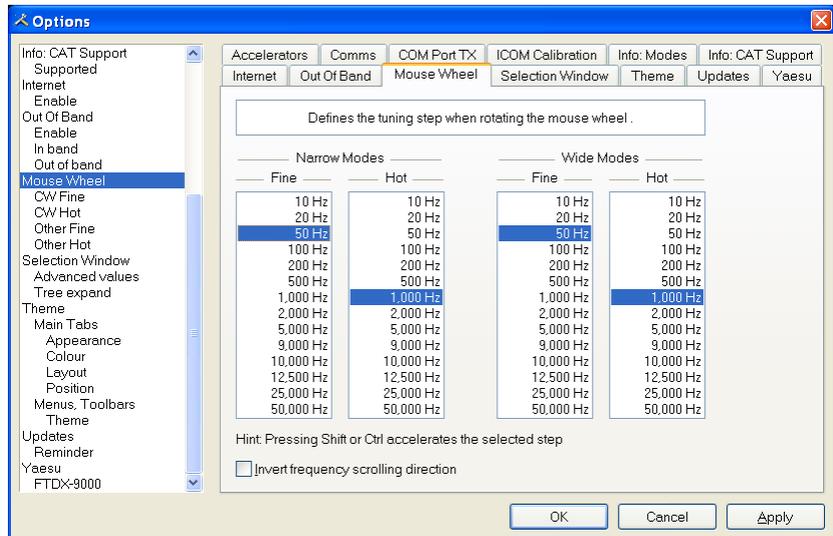
HRD is able to detect whether you have an Internet connection with `InternetGetConnectedState()`. Uncheck this option if you do not want Internet access.

Out Of Band



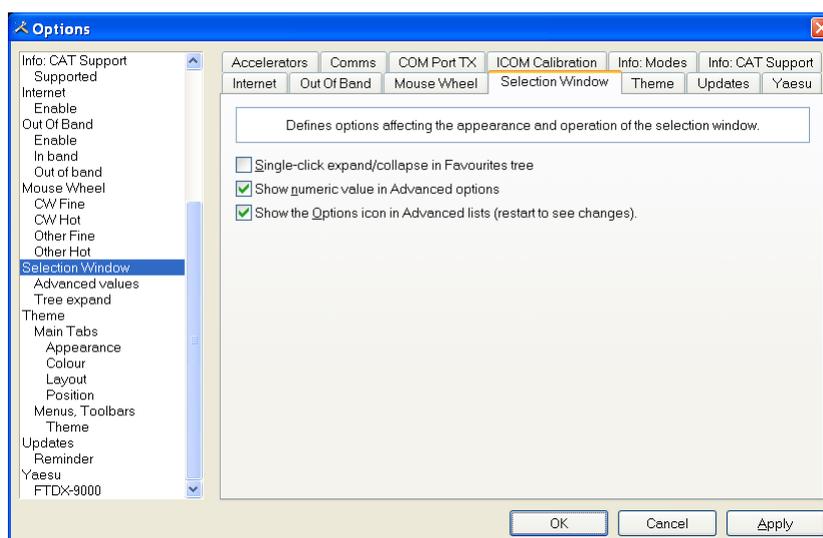
Configure the optional sound files played when you tune in / out of band.

Mouse Wheel



Define the tuning step when rotating the mouse wheel over the active tuning bar.

Selection Window



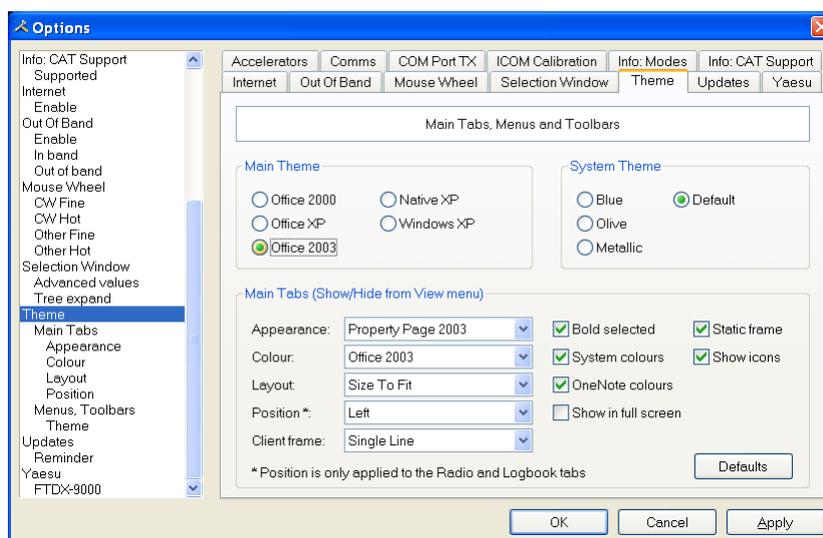
The appearance and operation of the selection window.

Single-click – normally the Favourites 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



HRD uses the excellent programming library from [Codejock Software](#) to support toolbars, main window tabbing and docking pane options

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

Main Theme

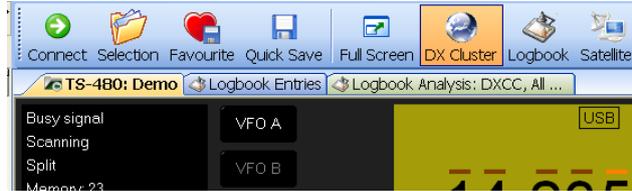
Select whichever visual theme you want – Office 2003 is an acceptable default.

System Theme

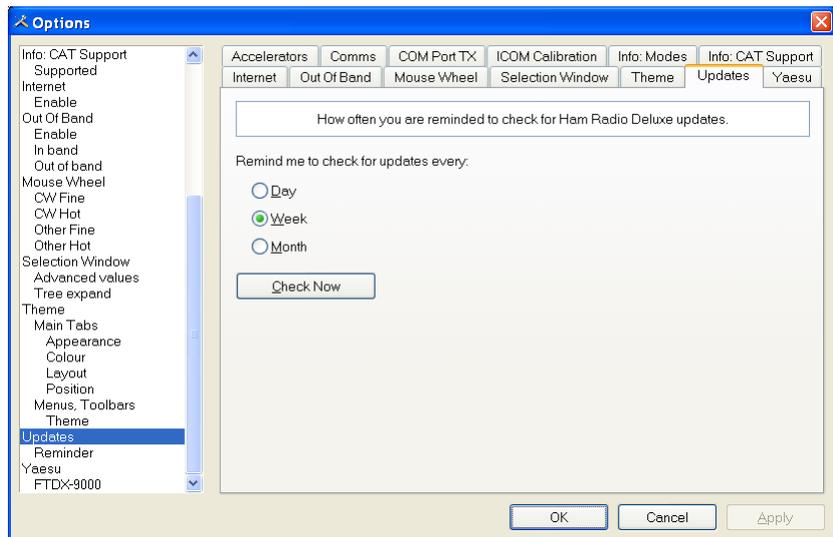
When you select Office 2003 or Windows XP for Menus and Toolbars you can select an optional System theme.

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.

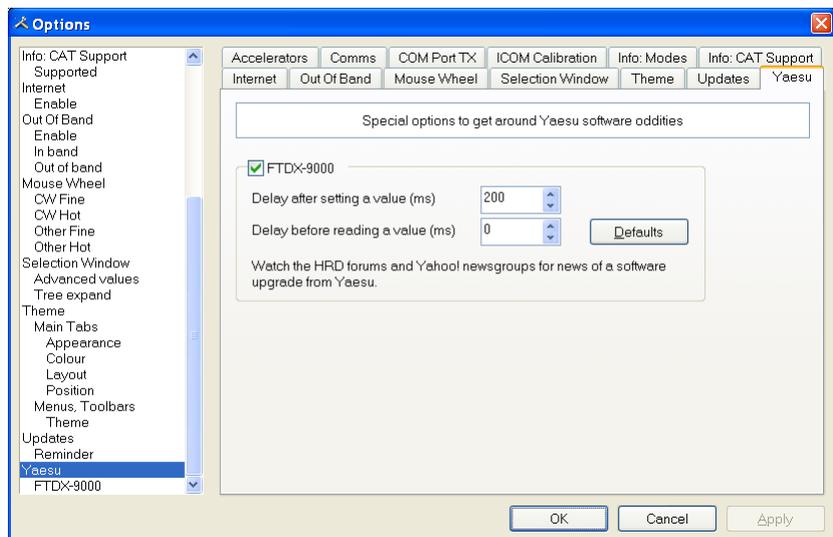


Updates



Select how frequently HRD 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.

Audio

Introduction

HRD has a built-in audio grabber and audio playback. The long-term aim is to automatically add audio clips into the logfile.

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.

Record

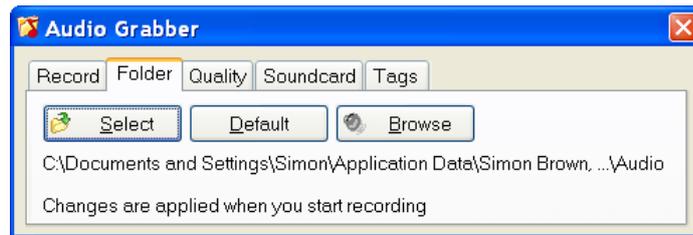


Here you have the standard recording buttons. From left to right:

- Record,
- Stop,
- Reset current recoding,
- 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.

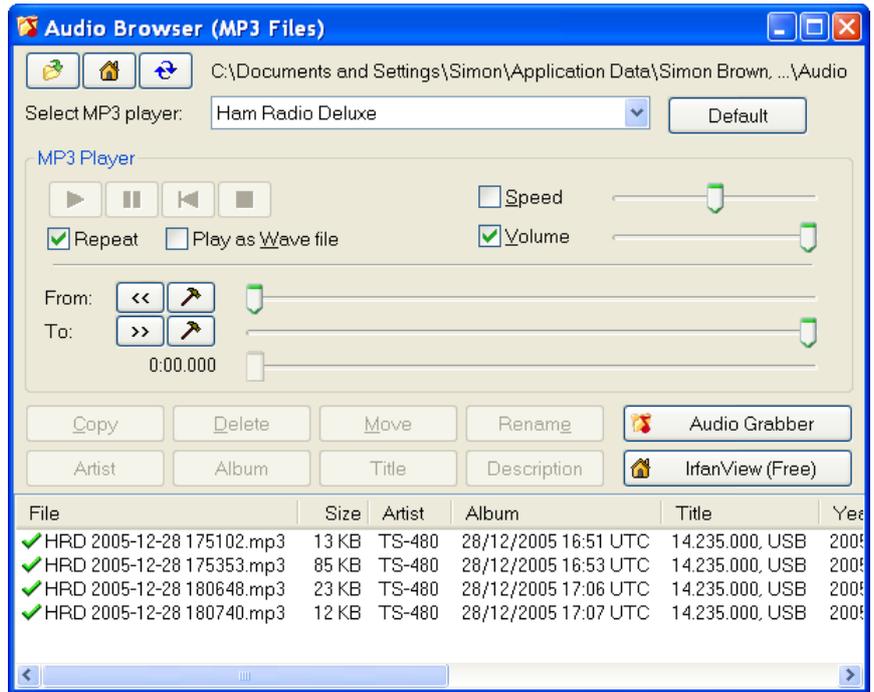
Tags



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.



 Select the folder to browse

 Select default folder

 Refresh the current folder

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

Peter PH1PH came across [IrfanView](#) – an excellent utility.

MP3 Player Options

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' to the current position

To

 To end of file

 Set 'To' to 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.

Auxiliary Switching

Introduction

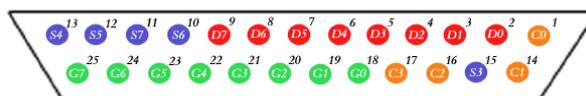
A standard PC comes equipped with an 8-bit parallel port that can be used to switch auxiliary equipment such as antennas, bandpass filters and power amplifiers.

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 8 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.

Manager

The manager window is invoked from the *Tools > Parallel Port* menu.

Definitions

Each definition consists of:

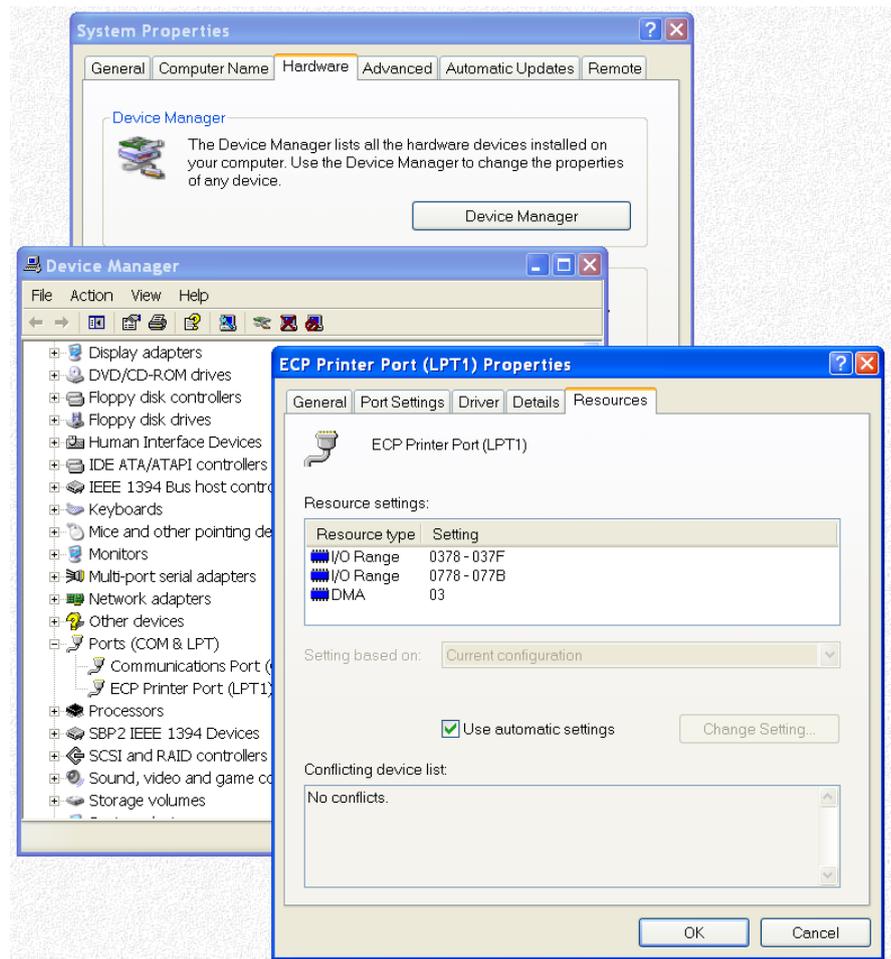
- [X] Enabled selection – if not checked then the definition is ignored when Ham Radio Deluxe detects a new frequency. The definition is still shown in the selection window if this option is enabled.
- Title – a description of the antenna or component that will be switched when the entry is selected.

- 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 below 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 HRD selection window. See Selection Window on page 45.

Monitor

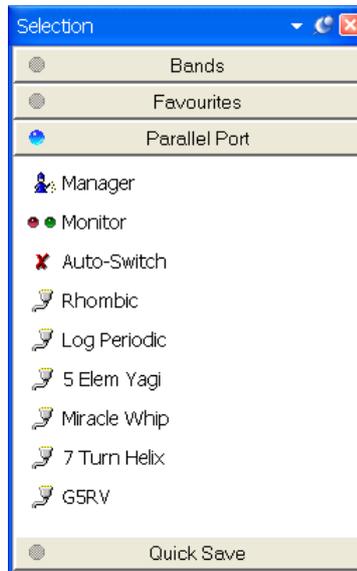
The monitor window is started from the *Tools > Parallel Port* menu. The monitor:

- 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).

Selection Window

To display the selection window select the selection window option in the Parallel Port Manager.



The options are:

- Manager – starts the Parallel Port Manager.
- Monitor – starts the Parallel Port Monitor.
- Auto-switch – if enabled (tick) then a match is made with the first enabled definition when the frequency changes. If not enabled (cross) then a match is not made.
- Definitions – click on a definition to apply the definition to the port.

The icon indicates whether a definition that has been enabled or disabled. Disabled definitions can be selected in this window; they are only ignored when matching a new frequency against the list of definitions.

Band Layouts

Introduction

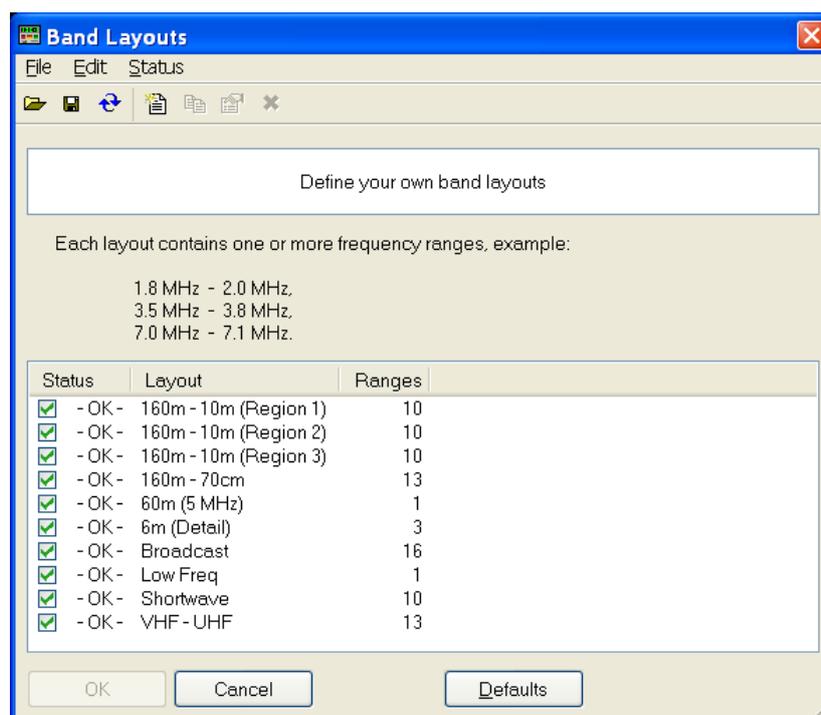
A necessary feature of a fully customizable radio program such as HRD is the definition of custom band layouts.

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.

Manager

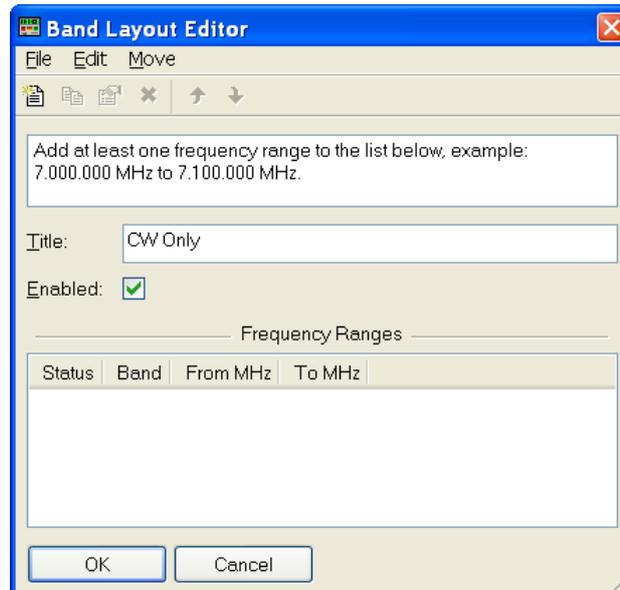
To start the Manager select *Manager* from the *Bands* menu.



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

Adding A Definition

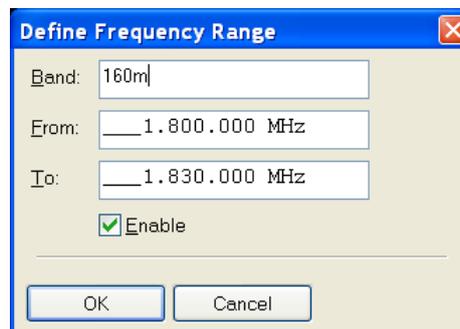
In this example a band layout is created for our CW enthusiast. Select *New* from the *Edit* menu to create a new definition using the *Band Layout Editor*.



In the *Title* field enter *CW Only*.

From the *Edit* menu select *New* to define a new frequency range.

- In the *Band* field enter *160m*
- In the *From* field enter 1.800.000
- In the *To* field enter 1.830.000
- Ensure *Enable* is checked
- Press *OK*

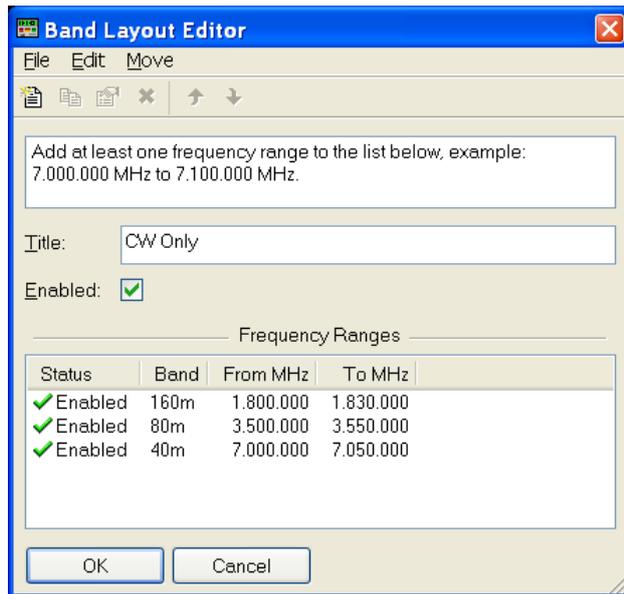


When you press OK the frequency range is added to the band layout.

Repeat for 80m and 40m:

- 80m, 3.5MHz to 3.55MHz,
- 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 .

When you have finished your new layout press *OK*. The *CW Only* definition is added to the band layouts. In the Band Layouts window press *OK* to save the definitions and close the window.

Copying A Definition

To copy an existing band layout:

- Start the Manager,
- Select the entry to be copied,
- Select *Copy* from the *Edit* menu,
- Enter the new title,
- Change the frequency ranges are appropriate,
- Press *OK*.

Selecting

To select a band layout either:

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

160m - 10m (Region 1)

The image shows a software window titled "Bands" with a close button (X) in the top right corner. The window is overlaid on a background that appears to be a frequency spectrum or band plan. The background has several horizontal bars representing frequency bands, with numerical labels: 14.0, 14.2, 24.93, 24.95, 21.200, and 21.250. The "Bands" menu lists the following options from top to bottom: 160m - 10m (Region 1), 160m - 10m (Region 2), 160m - 10m (Region 3), 160m - 70cm, 60m (5 MHz), 6m (Detail), Broadcast, Low Freq, Shortwave, VHF - UHF, and CW Only. At the bottom of the "Bands" window is a button labeled "Manager".

DDE Support

Introduction

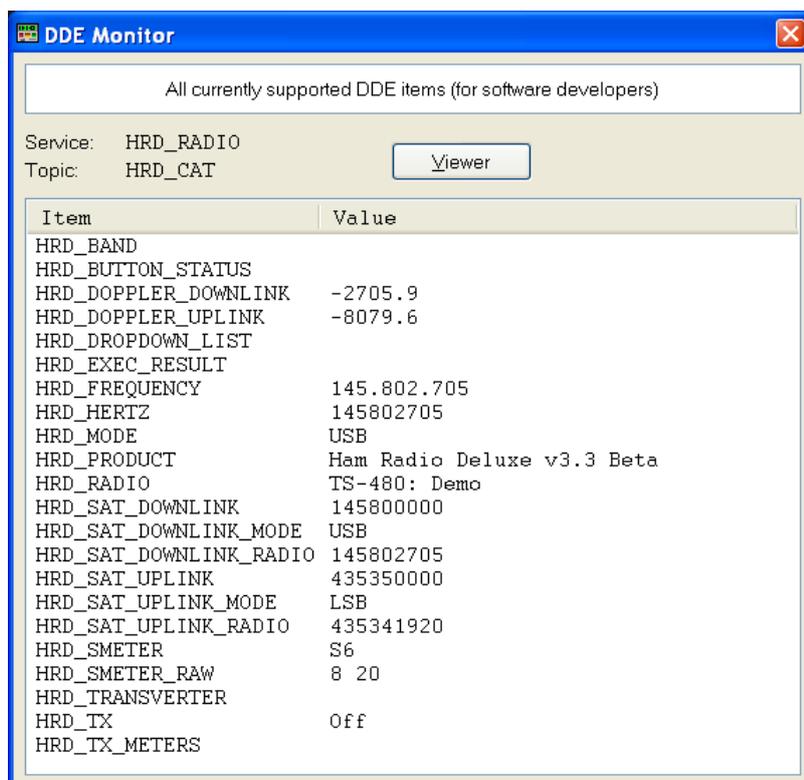
HRD uses dynamic data exchange (DDE) for inter-process communication.

DDE allows two or more applications running simultaneously to exchange data and commands.

See also 3rd-Party Programs on page 149.

Available Support

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



Commands

The commands below are supported by HRD.

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 HRD the top-most window in the Z-order, in other words brings HRD to the front of your monitor.

DX Cluster

Introduction

A DX Cluster is a means for Amateur (Ham) Radio operators to tell each other, in real-time, about DX stations (other interesting or rare Amateur Radio stations all over the world).

(From <http://www.dxcluster.org/> by Dirk Koopman G1TLH)

One station is set up with Packet Cluster and is linked to one or more other stations who have installed the software. These nodes when connected are called a cluster. Clusters are connected to clusters, expanding the network. Individual users connect to the nodes on a frequency different from what the node stations are linked on. Users are capable of announcing DX spots and related announcements, send personal talk messages, send and receive mail messages, search and retrieve archived data, and access data from information databases among its many features.

(From <http://www.dxcluster.org/> by Chuck K6PBT)

HRD supports:

- [OH2AQ](#) web-based cluster (the original and most widely used),
- [HRD's](#) own web-based cluster,
- Direct connections to a DX Spider node using a DX cluster client (which in turn uses the telnet protocol).

The OH2AQ and HRD clusters are available using just your web browser.

OH2AQ

DX Summit
Wherever you are

NO FRAMES

Spot Database Search

DX-SPOTS
25, 50 HF, 50 VHF
HF/CW, HF/PHONE
VHF/CW, VHF/PHONE
250, 1,000
or 10,000 pieces.
Most Wanted
SEND your own!

ANNOUNCEMENTS
25, 250, 1,000
or 10,000 pieces
SEND your own!

WWWs
25, 250, 1,000
or 10,000 pieces

CUSTOM SPOTS
137kHz, 1.8MHz,
3.5MHz, 7MHz, 10MHz,
14MHz, 18MHz,
21MHz, 24MHz,
28MHz, 50MHz,
70MHz, 144MHz,
430MHz, 1.2GHz,
10GHz.
Beacon, Digital, IOTA,
QRP, Satellite, Mobile

W9CA	24895.0	F2/WB9Z	Still here Jerry?	2042	22	Dec
N91W	24895.1	F2/WB9Z	calling cq	2009	22	Dec
NO9Z	24895.0	F2/WB9Z		2001	22	Dec
N91W	24950.0	F2/WB9Z	jerry tnx for 12m	1956	22	Dec
K7JE	24950.0	F2/WB9Z	95 plus 10 into AZ	1956	22	Dec
W6VA	24950.0	F2/WB9Z		1954	22	Dec
K5ZG	24895.0	T18CBT		1951	22	Dec
DF4FL	24967.0	EA8/OZ5BF		1212	22	Dec
W6TA	24950.0	NTOD	TEST!!	1857	21	Dec
SF3DSC-@	24895.1	RN6HZ	CQ BIG SIGNAL	0853	21	Dec
RN6HZ	24895.0	RN6HZ	CQ test prop	0836	21	Dec
WP4NIX	24935.0	VE7NS	59 na-036	2136	20	Dec
WP4NIX	24935.0	VE7NS	59 NA-036	2012	20	Dec
K4KAL-@	24935.0	VE7NS	Strong in GA.	2019	20	Dec
W5RY	24935.0	VE7NS		2006	20	Dec
KA2FIR	24930.0	YV5B/B		1912	20	Dec
KA2FIR	24930.0	ZS6DN/B		1910	20	Dec
DL7YS	24940.0	DL7RD	cq on beacon, fb idea	1008	19	Dec
IZ5EKV	24930.0	ZS6DN/B	599	1006	19	Dec
LU3HY	24950.0	ZD7VC	59 in LU	1418	18	Dec
IW1QN	24950.0	ZD7VC	59+ on my R8, strong and Easy	1415	18	Dec
DL9NDC	24950.0	ZD7VC	IH74 55 - 59 Bruce in JN59	1406	18	Dec
DL5FU	24895.0	Z2/UA4WHX	fb sigs nw	1406	18	Dec
W1ZT	24895.1	Z2/UA4WHX		1404	18	Dec
T18CBT	24895.2	Z2/UA4WHX	Pse Beam To Costa Rica	1403	18	Dec

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OH2AQ - OH0AAQ
CU in the Contest!

Kolumbus

27 Aug ja3qgi (15)	I= 93, A= 12, K= 2, R= 57	No storms=) No storms
27 Aug k3ake (12)	I= 93, A= 12, K= 2,	NO STORMS ; NO STORMS
27 Aug dl7arv (11)	I= 93, A= 12, K= 2,	NO STORMS=) NO STORMS
26 Aug ja3qgi (21)	I= 93, A= 12, K= 2, R= 76	No storms=) No storms
26 Aug ja3qgi (19)	I= 93, A= 12, K= 2, R= 76	No storms=) No storms

HRD

Ham Radio Deluxe - DX Cluster Analysis

Top 50	24 MHz	UTC	Spotter	Comment
PJ2/WB9Z	24895.0	22 Dec 20:42	W9CA	Still here Jerry?
PJ2/WB9Z	24895.1	22 Dec 20:09	N91W	calling cq
PJ2/WB9Z	24895.0	22 Dec 20:01	NO9Z	
PJ2/WB9Z	24950.0	22 Dec 19:56	N91W	jerry tnx for 12m
PJ2/WB9Z	24950.0	22 Dec 19:56	K73E	95 plus 10 into AZ
PJ2/WB9Z	24950.0	22 Dec 19:54	W6VA	
T18CBT	24895.0	22 Dec 19:51	K5ZG	
EA8/OZ5BF	24967.0	22 Dec 12:12	DF4PL	
N7OD	24950.0	21 Dec 18:57	W6TA	TEST!!
RN6HZ	24895.0	21 Dec 08:36	RN6HZ	CQ test prop
VE7NS	24935.0	20 Dec 21:36	WP4NIX	59 na-036
VE7NS	24935.0	20 Dec 20:12	WP4NIX	59 NA-036
VE7NS	24935.0	20 Dec 20:19	K4KAL	Strong in GA.
VE7NS	24935.0	20 Dec 20:06	W5RY	
YV5B/B	24930.0	20 Dec 19:12	KA2FIR	
ZS6DN/B	24930.0	20 Dec 19:10	KA2FIR	
DL7RD	24940.0	19 Dec 10:08	DL7YS	cq on beacon, fb idea
ZS6DN/B	24930.0	19 Dec 10:06	IZ5EKV	599
ZD7VC	24950.0	18 Dec 14:18	LU3HY	59 in LU
ZD7VC	24950.0	18 Dec 14:15	IW1QN	59+ on my R8, strong and Easy
ZD7VC	24950.0	18 Dec 14:06	DL9NDC	IH74 55 - 59 Bruce in JN59
Z2/UA4WHX	24895.0	18 Dec 14:06	DL5FU	fb sigs nw
Z2/UA4WHX	24895.1	18 Dec 14:04	W1ZT	
Z2/UA4WHX	24895.2	18 Dec 14:03	T18CBT	Pse Beam To Costa Rica
Z2/UA4WHX	24895.2	18 Dec 14:01	YU1JF	simplex
Z2/UA4WHX	24894.9	18 Dec 14:10	EA5DYB	
UA4WHX	24895.0	18 Dec 14:10	EA5DYB	
Z2/UA4WHX	24895.0	18 Dec 13:59	IZ5EKV	wkD Iso
Z2/UA4WHX	24895.0	18 Dec 13:56	ON5JY	pse Vlad 17m cw
ZD7VC	24950.0	18 Dec 13:55	HAI1RW	rare opening but chatting style
Z2/UA4WHX	24894.9	18 Dec 13:54	OK2YFA	BACK CW...
Z2/UA4WHX	24940.0	18 Dec 13:49	IT9FGA	CQ CQ
Z2	24940.0	18 Dec 13:50	SP4Z	heavy QSB on 12m from NEOFEU
ZD7VC	24950.0	18 Dec 13:48	DF2UU	cq
Z2/UA4WHX	24940.0	18 Dec 13:48	IZ5EKV	ISO Few Takers
Z2/UA4WHX	24940.0	18 Dec 13:46	OE1DWC	
Z2/UA4WHX	24940.1	18 Dec 13:41	GB7CQL	CQ now vy easy

Top 50 * 30s refresh *
ALL HF
1.37 MHz
1.8 MHz
3.5 MHz
7 MHz
10 MHz
14 MHz
18 MHz
21 MHz
24 MHz
28 MHz
VHF
50 MHz
70 MHz
144 MHz
220 MHz
430 MHz
1.2 GHz
2.3 GHz
3.4 GHz
5.6 GHz
10 GHz
24 GHz
47 GHz
Announce WCY WMY

Top 250 * 180s refresh *
ALL HF
1.37 MHz
1.8 MHz
3.5 MHz
7 MHz
10 MHz
14 MHz
18 MHz
21 MHz
24 MHz
28 MHz
VHF
50 MHz
70 MHz
144 MHz
220 MHz
430 MHz
1.2 GHz
2.3 GHz
3.4 GHz
5.6 GHz
10 GHz
24 GHz
47 GHz
Announce WCY WMY

Starting

Select *DX Cluster* from the *Tools* menu.

DX	Freq	UTC	Spotter	Comment
A71BX/P	14022.0	23 Dec 09:47	4Z5ML	Qatar: CQ
G0CGL	10109.6	23 Dec 09:47	JJ2LPV	England:
GW3YDX	10106.5	23 Dec 09:43	DC9ZP	Wales:
EA1VHF/B	144404.4	23 Dec 09:44	G4RRA	Spain: IN53RE<TR>IC
GW3YDX	10106.3	23 Dec 09:42	JJ2LPV	Wales:
VR2MY	18132.0	23 Dec 09:42	LX1AX	Hong Kong: 58-9
XU7TZG	18128.0	23 Dec 09:40	DC9ZP	Cambodia: Sri Call
A43AXK	14005.4	23 Dec 09:41	F8DGY	Oman:

When you click on an entry the frequency is sent to the HRD display.

Configuration

Press to open the Configuration window.

Cluster Source

There are three possible sources for DX spots:

- OH2AQ – the original and most widely used web-based cluster. The spots are read by parsing data from the pages on the OH2AQ site at <http://oh2aq.kolumbus.com/dxs/>.
- Ham Radio Deluxe – a web-based cluster with data downloadable in CSV format from <http://dxcluster.ham-radio.ch/>. These web pages were made available by the HRD team as the OH2AQ cluster can be overloaded at times, especially at the weekend and during contests.
- Custom – using the DX Cluster Client built into HRD. Here you connect to any DX cluster node.

OH2AQ / Ham Radio Deluxe

Using these web-based clusters is the easiest way to get started. All you need is an Internet connection.

OH2AQ supports the *Spot* option; the Ham Radio Deluxe cluster offers a faster response when OH2AQ is overloaded.

Custom – DX Cluster Client

This option is only supported on Windows NT/2K/XP. It is not supported in Windows 98/ME/SE.

In the DX Cluster Client pane you connect to a DX Spider cluster, for example GB7MBC in sunny Morecambe or HB9DRV in snowy Laax.

```

Connecting to gb7mbc.spoo.org port 8000...
Connected

+-----+
+ Warning: Computer Misuse Act (1990) UK applies +
+ This system may only be accessed by Radio Amateurs using their real +
+ call signs and in accordance with their jurisdiction's licensing +
+ conditions. All connections to this system are recorded. +
+-----+

login: gd4eli

*** Connected to GB7MBC

Hello Simon, this is GB7MBC in Morecambe, Lancashire
running DXSpider V1.52 build 58.404
#
# Welcome to GB7MBC, the North West DX-Cluster in I084NB
# Your SysOps are Ian, GOVGS and Linda GOYLM - 01524 421164
#
# To get more information please type MOTD
# To read our usage policy please type POLICY
Linda and Ian would like to wish all of you a very Merry Christmas
and a Happy and Peaceful New Year. Many thanks for your support
this year.
Cluster: 306 nodes, 18 local / 2574 total users Max users 2574 Uptime 0 02:03
GD4ELI de GB7MBC 23-Dec-2005 1008Z dxspider >
DX de IK1XVO: 14202.9 A43XA special call 1009Z JN35
DX de F8CKS: 7086.0 F5PRR/P dmf55012 moulin de VILLI 1007Z
DX de 9A2F: 18160.0 HZ1IK Manfred cq 1009Z JN86
DX de DM2AU0: 18083.1 4S7NE nelson 1011Z
DX de VE1TK: 3799.7 LA6WEA cqdx 1009Z

```

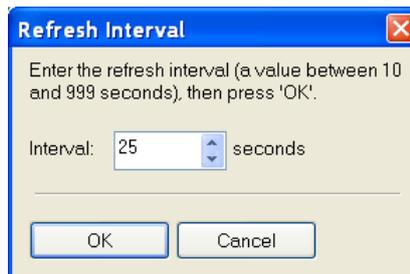
Here GD4ELI has logged on to GB7MBC. DX spots are displayed in this window as they are received and are sent to the DX Cluster window for immediate display.

DX	Freq	UTC	Spotter	Comment
A43XA	14202.9	1009	IK1XVO	Oman: special call
F5PRR/P	7086.0	1007	F8CKS	France: dmf55012 moulin de V
HZ1IK	18160.0	1009	9A2F	Saudi Arabia: Manfred cq
4S7NE	18083.1	1011	DM2AU0	Sri Lanka: nelson
LA6WEA	3799.7	1009	VE1TK	Norway: cqdx
007UZ	10138.5	1011	007UZ	Belgium: CQ OLIVIA
UA9FGR/MM	14177.0	1011	G6IQJL	Asiatic Russia: Ken, rough S
HA3UU	144370.0	1011	OE3DXA	Hungary: cq 1st
007UZ	10138.5	1011	007UZ	Belgium: CQ OLIVIA

The advantage here is that you can apply any filtering supported by the DX Spider node you connect to. If your interest is European 144MHz then you don't want to see 144MHz spots from the rest of the world.

Options

Press ► to enable regular updates; the update interval is set by pressing ⌘ (not applicable is using a custom DX cluster). Press ↻ to refresh the display.



Press aA to change the font size.

Select an entry in the display, then press QRZ to perform a lookup of the station from the [QRZ website](#).



Press  to display the homepage for the selected source (not available if using a custom DX cluster).

Press  to submit a spot (not available is using the HRD source).



Favourites

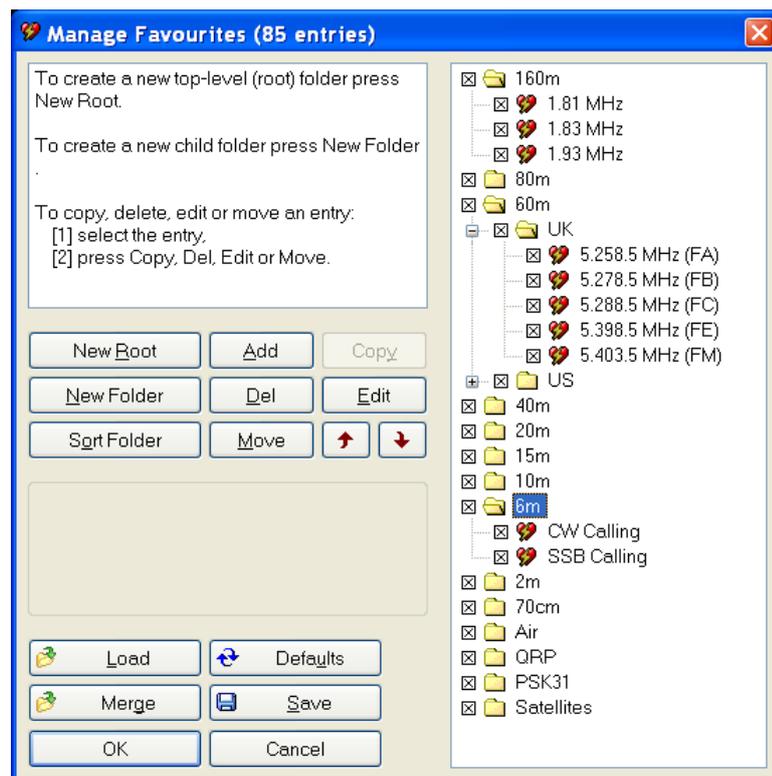
Inspiration

Obviously Internet Explorer had an influence here – as most computer users have experience with web browsers a conscious decision was made to use familiar concepts.

Favourite definitions are selected from the *Favourites* pane in the Selection window.

Manager

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



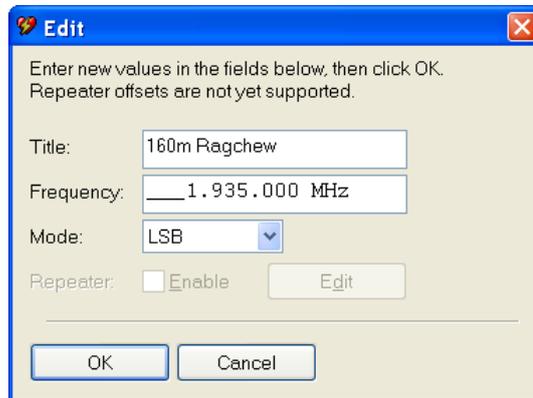
New Root – create a new top-level (root) folder. Folders are not saved if they are empty (no child folders or definitions).

New Folder – create a new folder as a child of the currently selected folder.

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

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

Add – add a new definition.

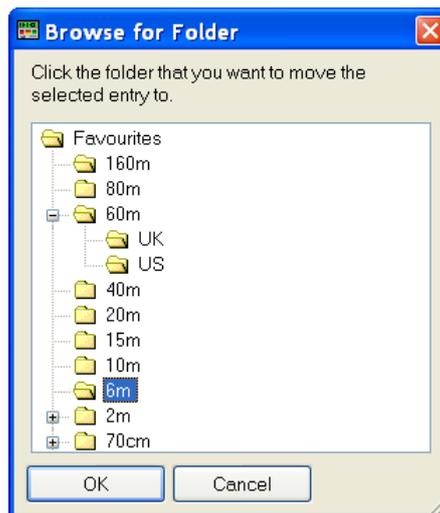


Enter the title, frequency and mode, and then press *OK*. The new definition is added to the current folder.

You can also select *Add* from the *Favourites* menu to add a new definition.

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).



Select the new folder, then press *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 HRD; all current definitions are discarded.

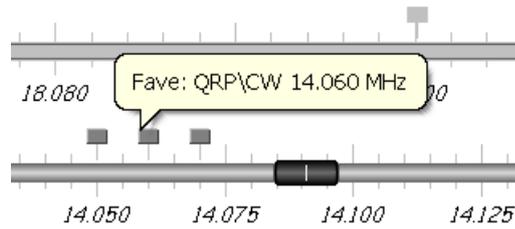
Merge - merge definitions from a file previously created using HRD.

Defaults – restore the default list (hard-coded into HRD).

Save – save current definitions to a file.

Markers

To display markers in the HRD display select *Show Markers* from the *Favourites* menu. The marker size is selected from the *Marker Size* option in the *Favourites* menu.



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

Logbook

Introduction

The logbook was originally planned to be a simple replacement for the standard paper logbooks that one can purchase from all major radio societies. This idea didn't last long as the user requests piled in; as a result a more sophisticated logbook was implemented.

Other (non-HRD) logbooks are supported via a DDE interface (see DDE Support on page 61) and a serial port (see 3rd-Party Programs on page 149). So you can use the logbook of your choice with HRD provided it supports DDE or the Kenwood protocol via a COM port.

Database

The database engine originally used was DAO; this was replaced in early 2006 with ODBC, as DAO is not supported on 64-bit Windows systems.

The driver used is the *Microsoft Access Driver (*.mdb)* ODBC driver. If you do not have the *Microsoft Access Driver (*.mdb)* ODBC driver on your system then download the latest Jet 4.0 files from www.microsoft.com.

See also:

How to obtain the latest service pack for the Microsoft Jet 4.0 Database Engine
<http://support.microsoft.com/default.aspx?kbid=239114>.

INFO: How to Install ODBC Components and Drivers
<http://support.microsoft.com/default.aspx?scid=kb:en-us:313008>

Refer to Annex: Logbook Database on page 173 for details of the database design.

Starting

There are two logbook windows:

1. Main,
2. Small.

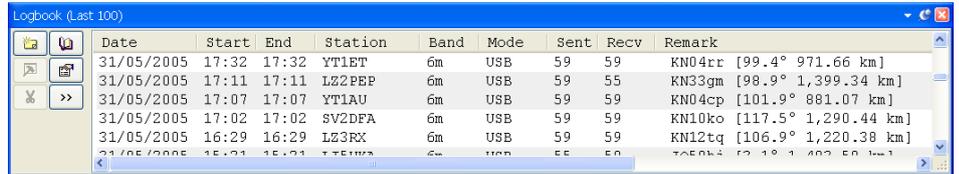
The main display is a standard full-blown logbook; the small display has a fixed set of fields and a simple QSO entry area.

Select the default display from the *Logbook* menu.

Small Display

As you see in the picture below, the small display is very simple.

The window can be docked to the top or bottom of the main HRD display and used at the same time as the radio display.

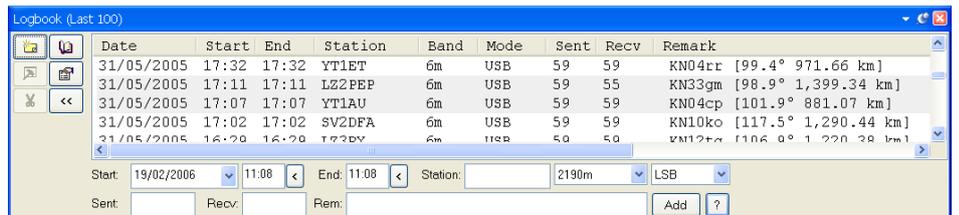


The display lists the 100 most recent QSO's. The options are:

-  Add an entry using the advanced logbook entry window.
-  Show main logbook window.
-  Edit selected entry.
-  Logbook options.
-  Delete the selected entries.
-  Show or  Hide the input fields.

Input Fields

When you press  the input fields are displayed.



Just enter the QSO information, then press .

Pressing  loads the current time into the appropriate field. Pressing  displays the options window where you select whether the Frequency and Mode fields track the values shown in the radio display.



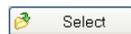
Main Display

The main display has a more traditional logbook approach.

Date	Start	End	Station	Band	Mode	Sent	Recv	Name	Address
27/06/2005	13:38	13:38	EH7HG	6m	USB	59	55	EUGENIO F. MEDI...	OBISPO A
19/06/2005	13:55	13:55	EH5CGU/P	6m	USB	59 005	59 083		
19/06/2005	10:56	10:56	9H9H	6m	USB	59 004	59 168		
19/06/2005	10:53	10:53	EH5GLN	6m	USB	59 003	59 047		
19/06/2005	10:51	10:51	EH5HT	6m	USB	59 002	59 088		
18/06/2005	17:06	17:06	SP5QWB	6m	USB	59 001	59039	BART WIACEK	P.O.BOX
17/06/2005	14:30	14:30	IW9GXT	6m	USB	59	59	Daniele PEPE	Stazzoni
17/06/2005	13:26	13:26	IW9HDD	6m	USB	55	58		
11/06/2005	15:40	15:40	I2MHH	6m	USB	59	59	MAURIZIO COLOMBO	VIA S.CA
11/06/2005	09:01	09:01	YU7DP	6m	USB	59	59		
08/06/2005	09:23	09:23	IG9/I2ADN	6m	USB	59	59	ANGELO D'ANNA	VIA ORTI
03/06/2005	16:24	16:24	IW9HDD	6m	USB	59	59		
01/06/2005	17:12	17:12	EH5CGU	6m	USB	59	59		
01/06/2005	16:52	16:52	EH3AXV	6m	USB	59	59	JORQUIM SANDALINAS	C/ EIXAM
01/06/2005	16:47	16:47	IT9RZR	6m	USB	59	59	CANNARELLA MAUR...	P.O.BOX
01/06/2005	13:34	13:40	HB9TSI	6m	USB	57	58	André Rieser	Gotthard
01/06/2005	13:31	13:34	G0JHC	6m	USB	53	52	NEIL CARR	15 WESTL
01/06/2005	12:39	12:39	G6YJD	6m	USB	55	59	JOHN GOVIER	14 Witha
01/06/2005	12:35	12:35	M3FIM	6m	USB	55	59/57	KEVIN	
01/06/2005	11:57	11:57	G4DEZ	6m	USB	59	59	BCS, LLEWELLYN	EASTFIEL
01/06/2005	11:44	11:44	SP8FKH/8	6m	USB	59	59	Jan	
01/06/2005	10:57	10:57	LZ1RB	6m	USB	59	59	Andrey Totev	Box 20 6

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

Options



Select the database – if the file you select does not exist then a new database is created.



Auto-Apply If selected then changes in the selection fields (below) are applied immediately, if not checked you must press *Apply*.



Press to apply changes made in the selection fields, only enabled if Auto-Apply is checked.

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.

Summarise – 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’.

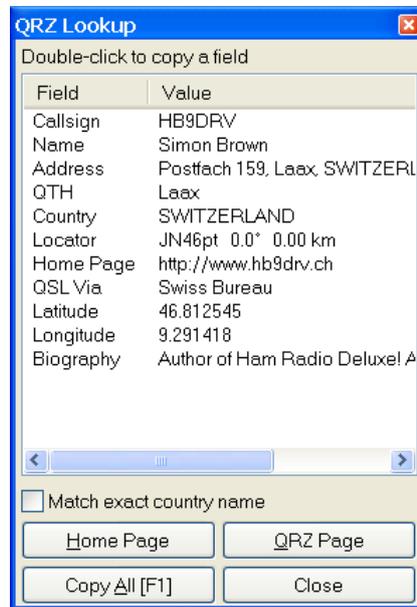
Field	Description
Start	The QSO start date and time. With the Options you can: <ul style="list-style-type: none"> automatically set the start (and end) time to the current time when pressing the Reset button, and Set the start time when a callsign is entered in the Station field (the time is set when 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: <ul style="list-style-type: none"> 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: <ol style="list-style-type: none"> the RST sent, and the additional information sent, for example a serial number. With the Options you can select that the RST sent count is automatically incremented.
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 <i>track radio mode</i> then the value here is taken from the HRD display. If this option is not enabled then pressing  loads the current HRD mode.
Band	The band – determined from the HRD frequency is the option <i>track radio frequency</i> is enabled. If this option is not enabled then pressing  loads the current HRD band.

Freq	The frequency – determined from the HRD frequency is the option <i>track radio frequency</i> is enabled. If this option is not enabled then pressing <input type="button" value="←"/> loads the current HRD 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 <i>find callsign from callsign prefix</i> 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 HRD to find station information. The fields supported are shown below. HRD 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

Date	Start	Station	Sent	Recv	Locator	Band	Mode	Name
22/05/2004	10:53	ON4AGB	59	59		40M	SSB	Walther
06/05/2004	04:14	G3ORE	59	59		160M	SSB	Peter
06/05/2004	03:53	F8HJM	59	59		80M	SSB	Jacques
06/05/2004	03:53	F8WV	59	59		80M	SSB	Édouard
06/05/2004	03:53	F5TXT	59	59		80M	SSB	Jean
06/05/2004	03:53	F8GFN	59	59		80M	SSB	Bernard
05/05/2004	21:07	F8BWO	59	59		160M	SSB	Jeff

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

Log	Contact	Location	QSL	eQSL	Ant/Sat	Contest	Propagation	My Station	Custom
Age:	48	SIG:	FOC						
Email:	simon@hb9drv.ch	SIG info:	Fourth class operator's club						
URL:	http://www.hb9drv.ch	10-10:							
Equipment:	Far too many toys								
Biography:	Author of Ham Radio Deluxe! Also known as GD4ELI.								

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 group.
10-10	Ten-Ten number

Location

Log	Contact	Location	QSL	eQSL	Ant/Sat	Contest	Propagation	My Station	Custom
County:		CQ zone:							
State/province:	GR	ITU zone:							
ARRL sect:		Distance:	1318	kms					
Continent:	<input type="radio"/> AF <input type="radio"/> AN <input type="radio"/> AS <input checked="" type="radio"/> EU <input type="radio"/> NA <input type="radio"/> OC <input type="radio"/> SA <input type="radio"/> Unknown		Lat/Lon:	46.812500	9.291667				

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 <i>Locator</i> field value in the <i>Main</i> part of the window.

QSL

Log Contact Location **QSL** eQSL Ant/Sat Contest Propagation My Station Custom

QSL Sent: No 08/02/2006 <

QSL Recv: No 19/02/2006 <

QSL Vja: Swiss Bureau

Standard QSL information.

eQSL

Log Contact Location QSL **eQSL** Ant/Sat Contest Propagation My Station Custom

eQSL Sent: No 09/02/2006 < eQSL User: Simon

eQSL Recv: No 19/02/2006 < eQSL Pwd:

eQSL Status:

eQSL.cc real-time uploads

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

Log Contact Location QSL eQSL **Ant/Sat** Contest Propagation My Station Custom

Antenna

Azimuth: 10 Path: Short Long Greyline Other

Elevation: 21

Reset fields after adding an entry

Satellite

Name: AO-51

Mode: USB

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

Log Contact Location QSL eQSL Ant/Sat **Contest** Propagation My Station Custom

Check:

Class:

Precedence:

Contest: CA-QSO-PARTY

Reset fields after adding an entry

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

Log Contact Location QSL eQSL Ant/Sat Contest **Propagation** My Station Custom

A index: 3 Num bursts:

K index: 1 Num pings:

Solar flux: 79 Max bursts:

MS shower: Prop mode: Sporadic E

Last updated: 2006 Feb 19 1208 UTC

Basic propagation information, press *WWW Download* to load the latest information from <http://www.sec.noaa.gov/ftpd/ir/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.
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

Log Contact Location QSL eQSL Ant/Sat Contest Propagation My Station Custom

Callsign: HB9DRV SIG: Ham
 Owner: HB9DRV SIG info: Rahm Radio
 Operator: HB9DRV Locator: JN46pt
 Name: Simon Lat/Lon: 46.812500 9.291667
 Street: Via Plauna 431B CQ zone: 1
 City: Laax IOTA: 100-iom

Save

Profile

1 6
2 7
3 8
4 9
5 10

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

Log Contact Location QSL eQSL Ant/Sat Contest Propagation My Station Custom

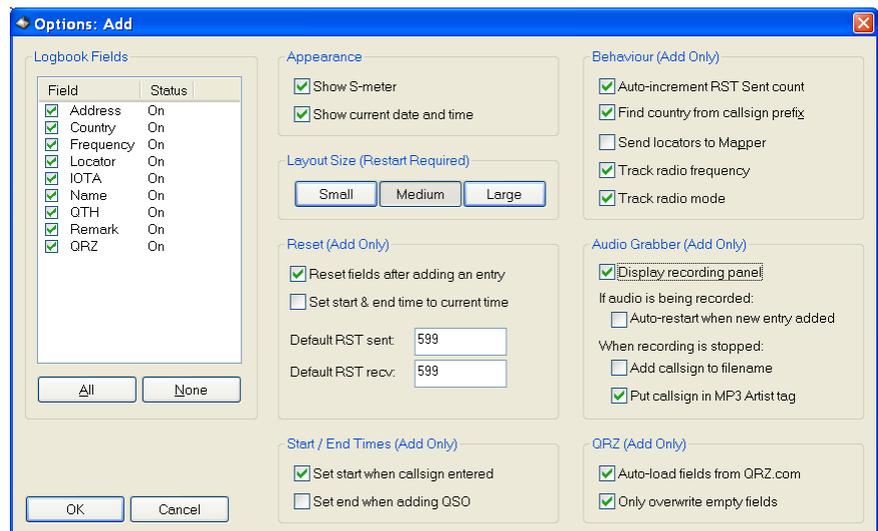
Brewery #: Senior Citizen #:
 Lighthouse: Custom field 4:
 Custom field 5:
 Custom field 6:

Reset fields after adding an entry

Configure

Here are six totally customisable 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 HRD.

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 HRD 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.

Behaviour (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.

Database Configuration

Here you control many aspects of the logbook.



Configuration is selected from the Logbook menu or the configuration toolbar button.

Files

Files used by the Ham Radio Deluxe logbook

File	Size	Location
Database	558 KB	U:\Ham Radio\Simon New DB.mdb

Backup Folder

D:\Ham Radio Support\Backups

Select a backup folder on a second disk or USB memory key in case your main disk drive fails.
Take regular backups!

The current database file's size and location are displayed.

Selects a new database, this is created if it does not exist.

Moves the database to a new folder.

Select the folder where backups are stored when you press the *Backup* button in the logbook toolbar (remember to take regular backups).

Appearance

List Colours and Font

Date	Start	End	Station	Band	Mode	Sent
17/12/2004	19:03	19:03	ASDF	2190m	LSB	551 s
22/06/2004	17:29	17:29	F6DHI	40M	SSB	59
22/06/2004	07:33	07:33	F4EEU/P	80M	SSB	59
22/06/2004	07:33	07:33	F1INT	80M	SSB	59
20/06/2004	17:31	17:31	PA/G3IIC/P	40M	LSB	59
20/06/2004	14:00	14:00	F4DCG/P	40M	LSB	59
19/06/2004	22:05	22:05	K1QS	20M	FM	59
19/06/2004	13:25	13:17	F5PYJ/M	2M	FM	59
12/06/2004	06:00	06:00	F9CZ	80M	SSB	59
12/06/2004	05:59	05:59	F1CZS	80M	SSB	59
12/06/2004	05:24	05:24	TM7OAA	80M	SSB	59
09/06/2004	20:51	06:05	F4DQM	80M	SSB	59
09/06/2004	20:48	20:48	F6ESF	160M	SSB	56
07/06/2004	20:58	20:58	F1TF	160M	SSB	58
07/06/2004	20:55	20:55	F4DQM	160M	SSB	58

Colour

Alternate colours every 2 rows.

Font

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

My Station

Optional information about your station – equipment and location.

You have 10 profiles.

Custom Fields

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

Various

Various

Various options

Remark: Locator (small display)

Insert locator + distances *

Insert locator + bearings *

* From my locator (if defined)

Remark: Frequency (Add)

Append frequency to Remark field
(radio window must be started)

Prefix:

Distances

Units: kms miles

Mapper

Send any locator and callsign to Mapper (if Mapper is running)

Toolbar Icon Toggles

Main Small

Time Zone (Display)

Times are always stored using GMT / UTC, this option determines how they are displayed.

GMT / UTC Local

The options here should be self-explanatory.

List – Bands

List - Bands

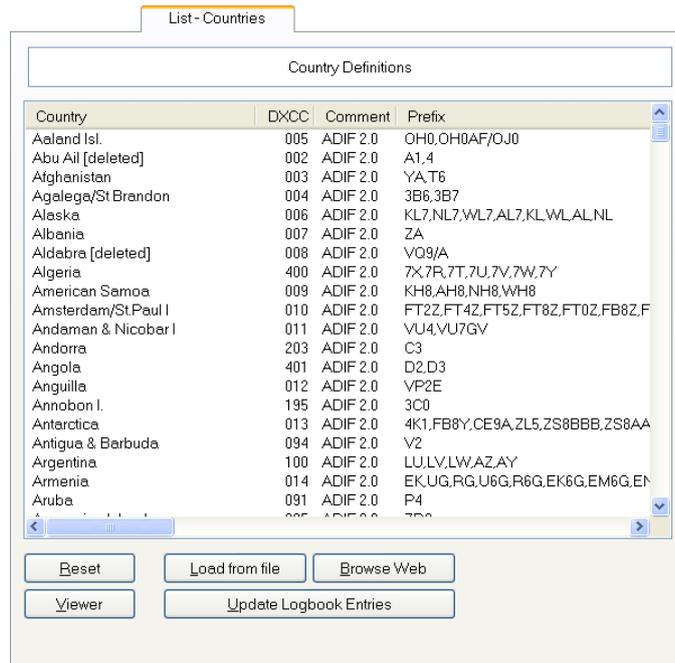
Band Definitions

Title	MinFreq	MaxFreq	ADIF	Comment
2190m	130.000	140.000	2190m	ADIF 2.0
160m	1.800.000	2.000.000	160m	ADIF 2.0
80m	3.500.000	4.000.000	80m	ADIF 2.0
60m	5.200.000	5.500.000	60m	ADIF 2.0
40m	7.000.000	7.300.000	40m	ADIF 2.0
30m	10.100.000	10.150.000	30m	ADIF 2.0
20m	14.000.000	14.350.000	20m	ADIF 2.0
17m	18.000.000	18.200.000	17m	ADIF 2.0
15m	21.000.000	21.450.000	15m	ADIF 2.0
12m	24.850.000	25.000.000	12m	ADIF 2.0
10m	28.000.000	30.000.000	10m	ADIF 2.0
6m	50.000.000	54.000.000	6m	ADIF 2.0
4m	70.000.000	70.500.000	4m	ADIF 2.0
2m	144.000.000	148.000.000	2m	ADIF 2.0
1.25m	220.000.000	225.000.000	1.25m	ADIF 2.0
70cm	420.000.000	460.000.000	70cm	ADIF 2.0
33cm			33cm	ADIF 2.0
23cm	1240.000.000	1300.000.000	23cm	ADIF 2.0
13cm	2320.000.000	2450.000.000	13cm	ADIF 2.0
9cm			9cm	ADIF 2.0
6cm			6cm	ADIF 2.0
3cm			3cm	ADIF 2.0
1.25cm			1.25cm	ADIF 2.0
6mm			6mm	ADIF 2.0

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

- Resets the table and loads the latest values built into HRD.
- 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 HRD.

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

List - Modes

Mode Definitions

Title	ADIF	Comment
LSB	SSB	ADIF 2.0
USB	SSB	ADIF 2.0
SSB	SSB	ADIF 2.0
CW	CW	ADIF 2.0
FM	FM	ADIF 2.0
AM	AM	ADIF 2.0
ASCI	ASCI	ADIF 2.0
ATV	ATV	ADIF 2.0
CLO	CLO	ADIF 2.0
FAX	FAX	ADIF 2.0
FSK	FSK	ADIF 2.0
GTOR	GTOR	ADIF 2.0
HELL	HELL	ADIF 2.0
HFSK	HFSK	ADIF 2.0
JT44	JT44	ADIF 2.0
MFSK8	MFSK8	ADIF 2.0
MFSK16	MFSK16	ADIF 2.0
MTTY	MTTY	ADIF 2.0
MT63	MT63	ADIF 2.0
PAC	PAC	ADIF 2.0
PAC2	PAC2	ADIF 2.0
PAC3	PAC3	ADIF 2.0
PCW	PCW	ADIF 2.0
PXT	PXT	ADIF 2.0

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

Resets the table and loads the latest values built into HRD.

Display this data with the default text file viewer.

List – QRZ Cache

List - QRZ Cache

Cache of QRZ.com Data

Callsign	Saved	Name
3YDX	19/02/2006 13:17:39	BOB SCHENCK
4L0ABC	19/02/2006 13:18:22	Gia (Grigol) Gvaladze
7Q7PF	19/02/2006 13:25:04	Cato Bramwell De Savigny
7Q7VB	19/02/2006 13:20:46	VLADIMIR M. BYKOV
7S2E	19/02/2006 13:32:36	RAINER MARTINSSON
9A7W	19/02/2006 13:25:05	OZREN NIKSIC
9N7JO	19/02/2006 13:26:52	Stig Lindblom
AA3B	19/02/2006 13:21:00	JOSEPH W TRENCH
AH7A	19/02/2006 13:22:43	Clarence E Smith
AH7ZA	19/02/2006 13:23:54	Kauelani Contest Group
C6AKQ	19/02/2006 13:22:42	ROBERT PATTEN
CO6LPB	19/02/2006 13:34:12	Luis M. Pineda
CO8LY	19/02/2006 13:27:15	Eduardo Somoano Cremati
CT3KN	19/02/2006 13:18:21	RICARDO MARTINS
CX9FD	19/02/2006 13:28:37	VITERBO LÓPEZ
DK4U	19/02/2006 13:25:05	Activity Group DARC Chapter N59
DR1A	19/02/2006 13:27:06	Bernd 'Ben' Och (DL6FBL)
EA1YB	19/02/2006 13:20:08	GUILLERMO ESTEBAN RUIZ
EA2AAZ	19/02/2006 13:31:48	Iñaki Echeveria
EB7CAV	19/02/2006 13:35:05	José A. Rueda Tejada
ES7NY	19/02/2006 13:27:27	OSKAR NOGES
EW6GF	19/02/2006 13:33:16	ANDREI V. KOLTUNOV
EF1CC	19/02/2006 13:22:38	OSCAR EDUARDO

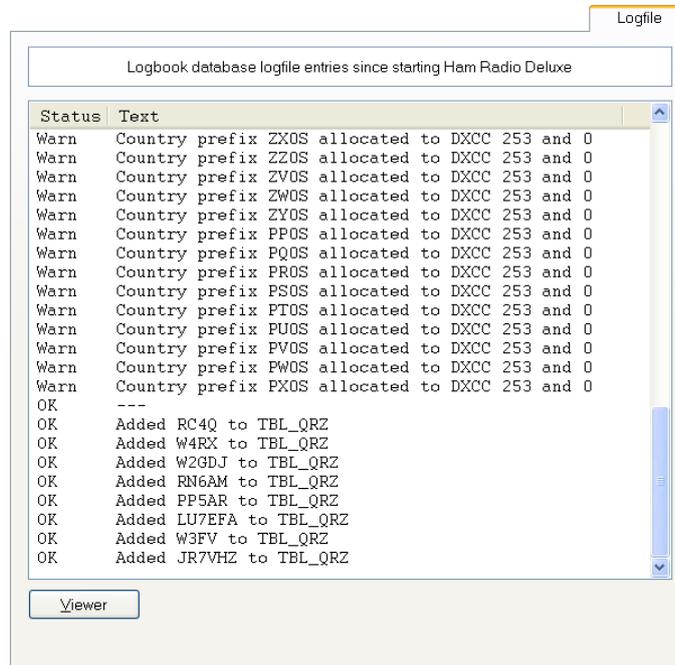
Entries: 131

QRZ.com is an invaluable resource; HRD supports callsign lookups using QRZ.com in the DX cluster and logbook.

A cache is maintained of data retrieved from QRZ.com. Data is taken from the cache unless the user of HRD selects the refresh option when viewing QRZ.com data.

- Resets the table and loads the latest values built into HRD.
- Display this data with the default text file viewer.
- Refresh this window.

Logfile



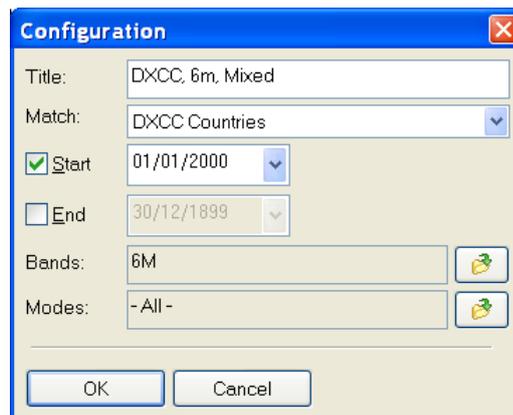
All database activity since starting HRD.

Analysis

The logbook does not have an award tracker as such; there are so many awards available you could spend all your time just filling in the forms and submitting your QSL cards.

To help you see what you have achieved use the Analysis option .

You define the criteria for one or more analysis configurations; the database contents are compared to each configuration and the results are displayed in the analysis window.



The logbook entries that match the configuration selected in the top half of the analysis window are shown in the bottom half of the window.

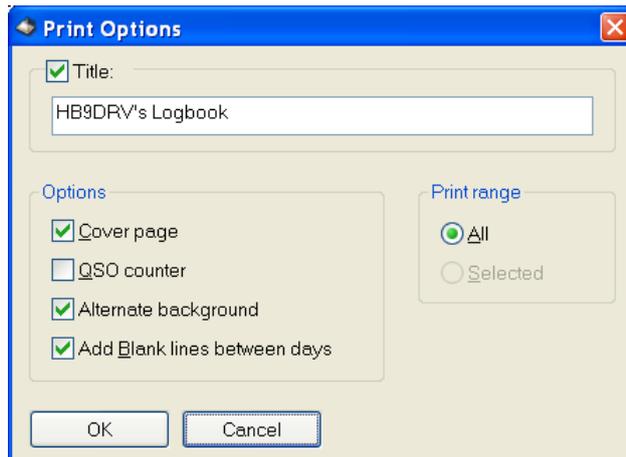
Title	Start	End	Band	Mode	Total
DXCC, All Bands, Mixed, 2005	01/01/2005	31/12/2005	- All -	- All -	16
DXCC, All Bands, Mixed, 2006	01/01/2006	31/12/2006	- All -	- All -	2
DXCC, 2m, Mixed			2M	- All -	2
DXCC, 6m, Mixed			6M	- All -	41
DXCC, 10m, Mixed			10M	- All -	28
DXCC, 15m, Mixed			15M	- All -	34

Nr.	Start	Station	Country	DXCC	Band	Mode	Sent	Recv
1	25/05/2004 18:40	OH0JFP	Aaland Isl.	5	6m	USB	59	59
2	26/05/2004 07:36	ZA/PE1LWT	Albania	7	6m	USB	59	59
3	18/06/2004 20:45	7X2RO	Algeria	400	6m	USB	57	55
4	14/07/2004 12:47	EH6CC	Balearic Is.	21	6m	USB	59	59
5	24/06/2004 11:34	T99C	Bosnia-Herzegovinia	501	6m	USB	59	59
6	15/05/2004 09:28	LZ2QS	Bulgaria	212	6m	USB	59	59
7	02/07/2004 18:26	EH8BPX	Canary Is.	29	6m	USB	59	59
8	26/05/2004 11:26	EH9IB	Ceuta and Melilla	32	6m	USB	59	59
9	27/04/2004 17:29	9A7D	Croatia	497	6m	USB	57	56
10	08/07/2004 13:11	OK1DCF	Czech Rep.	503	6m	USB	59	59
11	06/07/2003 10:52	OZ1ALS/P	Denmark	221	6m	USB	59003	
12	17/08/2003 15:42	G4DEZ	England	223	6m	USB	59	53
13	31/05/2005 14:16	DC7OH	Fed Rep of Germany	230	6m	USB	59	56
14	10/07/2004 08:03	OH3WW	Finland	224	6m	USB	55	57
15	29/05/2004 11:17	F4DXW	France	227	6m	USB	59	59
16	05/06/2004 16:27	SV2DCD	Greece	236	6m	USB	59	59
17	16/05/2004 10:44	EI2JD	Ireland	245	6m	USB	59	59
18	22/06/2003 16:00	MD6V	Isle of Man	114	6m	USB	59	
19	21/06/2003 18:05	IZ0EUI/PO	Italy	248	6m	USB	59	
20	27/06/2004 14:37	HB0/MDDOV	Liechtenstein	251	6m	USB	59	59

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.

HB9DRV's Logbook

Callsign HB9DRV
Name Simon
Country Switzerland
Locator JN46pt
Equipment IC-7800
Antennas Wire
Power 100W

Date All
Filter None
Summary None
Sorted Date Descending

Entries 100
From 31/10/2004 10:41
To 20/02/2006 19:24

Ham Radio Deluxe version 3.3 build 1936, Copyright © 2003 - 2006 by Simon Brown, HB9DRV

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	SAGORAD, P.O. BOX 90, 7200, BULGARIA
31/05/2005	17:07	17:07	Y71AU	6m	USB	59	59	ZIVICA JOVANOVIC	POS. PARTIZANSKI ODRED 17A, 11500 ZVECKA - OBRENOVA
31/05/2005	17:02	17:02	SV2DFA	6m	USB	59	59		
31/05/2005	16:29	16:29	LZ3RZ	6m	USB	59	59	PLAMEN BODUROV	P.O. BOX 124, SOFIA 1330, BULGARIA
31/05/2005	15:21	15:21	L1SUKA	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	UR4UD	6m	USB	59	59	YALERY OBYKO	P.O. BOX 23, KIEV 001, 25001, UKRAINE
31/05/2005	14:16	14:16	DC7DH	6m	USB	59	56	Eric Dieterle	Berlepschstr. 3, 14165 Berlin, GERMANY
31/05/2005	14:04	14:04	SP1FFG	6m	USB	57	59	Henry	
...									
30/05/2005	11:50	11:50	LZ3HM	6m	USB	59	59		
30/05/2005	09:28	09:28	SV1TP	6m	USB	55	59	Demits	
30/05/2005	08:59	08:59	TR7RR	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 VYSHIAUSKAS	P.O. BOX 4, SIRVINTOS, 4100, LITHUANIA
29/05/2005	16:45	16:45	IT9NG/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 DR LJACA	KRAGUJEVACKA 4, 11160 BEOGRAD, SERBIA AND MONTENEGRO
16/05/2005	13:00	13:00	LZ1DQ	6m	USB	59	59	DMITAR RUSEV RAITCHEV	6, IVAN FONTCHEV STREET, BLOCK 2 APT 35, 1618 SOFIA 16, BULGARIA
16/05/2005	12:29	12:29	LZ3HM	6m	USB	59	59	ANDY SATCHEV	P.O. BOX 40, DRYANOVYO 5376, BULGARIA
...									
31/10/2004	19:40	19:40	OPWALE	80m	LSB	59	59	14	
31/10/2004	17:23	17:23	HB0/HB9AND	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	OE2RZ	80m	LSB	59	14	59	15
31/10/2004	16:16	16:16	ES0C	20m	USB	59	14	59	15
31/10/2004	15:57	15:57	H3L	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	IR3P	20m	USB	59	14	59	15
31/10/2004	15:31	15:31	DFRAE	40m	LSB	59	14	59	14
31/10/2004	15:26	15:26	EA5EB	40m	LSB	59	14	59	14
31/10/2004	15:21	15:21	UJ7J	15m	USB	59	14	59	16
31/10/2004	14:53	14:53	UR2M	20m	USB	59	14	59	16
31/10/2004	14:45	14:45	CN2R	20m	USB	59	14	59	33
31/10/2004	14:47	14:47	YO3CTCP	20m	USB	59	14	59	20
31/10/2004	14:45	14:45	EA6AG	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	C4IM	20m	USB	59	14	59	20
31/10/2004	14:38	14:38	CQHC	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

Import / Export

All logbooks must support the import and export of entries; HRD's logbook is no exception to this rule.

Import

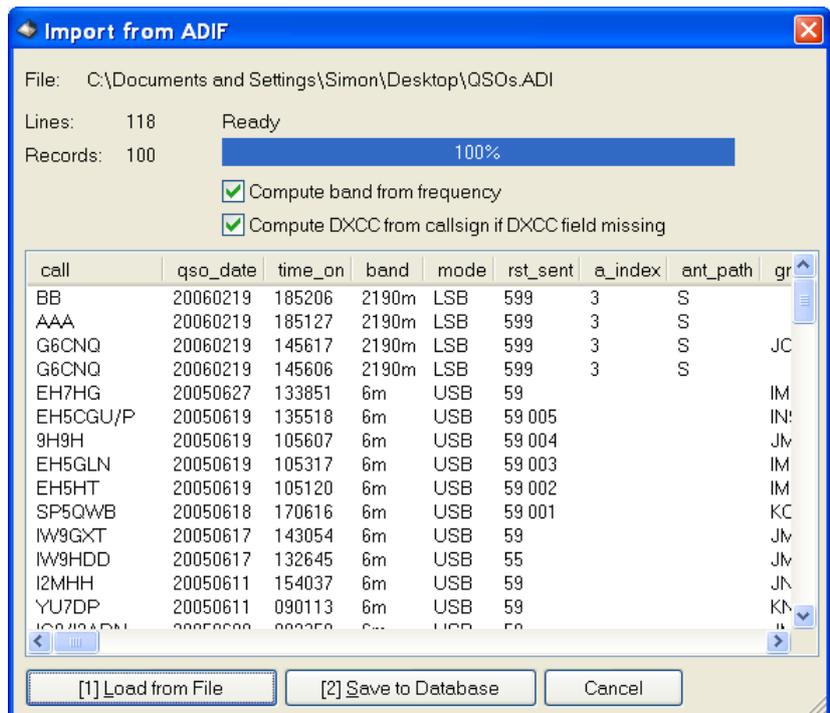
You can import from ADIF and also merge another HRD logbook database.

To import an ADIF file select *Import from ADIF* from the *Logbook* menu. You are prompted to select an ADIF file (*.AID, *.ADF, *.ADIF or *.TXT). When you have selected the file to be imported the Import from ADIF window is displayed.

Check *Compute band from frequency* to fill in the band field from the frequency field.

Check *Compute DXCC from callsign if DXCC field missing* to automatically determine the corresponding DXCC value.

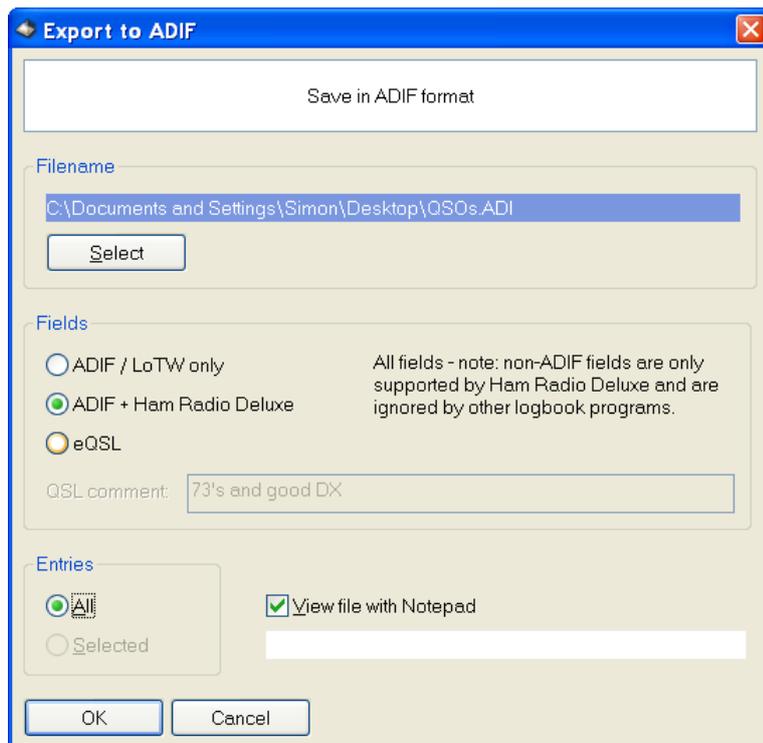
Press to load the file into memory. The contents are analysed and displayed.



Now press to save the displayed entries in your database.

Export to ADIF

Select *Export to ADIF* from the *Logbook* menu, the *Export to ADIF* window is displayed.



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 slower.

Similarly if you are uploading to eQSL there is no need to upload unnecessary data.

ADIF files can be viewed with any text reader such as Notepad, an example of an eQSL export is shown below.

```
#++
#
# Ham Radio Deluxe version 3.3 build 1030, Copyright © 2003 - 2006 by Simon Brown, HB9DRV
# http://www.hb9drv.ch
#
# Free software for ever!
#
# Created: 20-Feb-2006 20:26:09
# Database: U:\Ham Radio\Simon New DB.mdb
# Exported: 100 records
#
#--
<ADIF_VERS:3>2.0
<PROGRAMID:14>HamRadioDeluxe
<PROGRAMVERSION:22>version 3.3 build 1030
<EOH>
<call:2>BB <qso_date:8:d>20060219 <time_on:6>185206 <band:5>2190m <mode:3>LSB <rst_sent:3>5
<call:3>AAA <qso_date:8:d>20060219 <time_on:6>185127 <band:5>2190m <mode:3>LSB <rst_sent:3>
<call:5>G6CNO <qso_date:8:d>20060219 <time_on:6>145617 <band:5>2190m <mode:3>LSB <rst_sent:
<call:5>G6CNO <qso_date:8:d>20060219 <time_on:6>145606 <band:5>2190m <mode:3>LSB <rst_sent:
<call:5>EH7HG <qso_date:8:d>20050627 <time_on:6>133851 <band:2>6m <mode:3>USB <rst_sent:2>5
<call:8>EH5CGU/P <qso_date:8:d>20050619 <time_on:6>135518 <band:2>6m <mode:3>USB <rst_sent:
<call:4>9H9H <qso_date:8:d>20050619 <time_on:6>105607 <band:2>6m <mode:3>USB <rst_sent:6>59
```

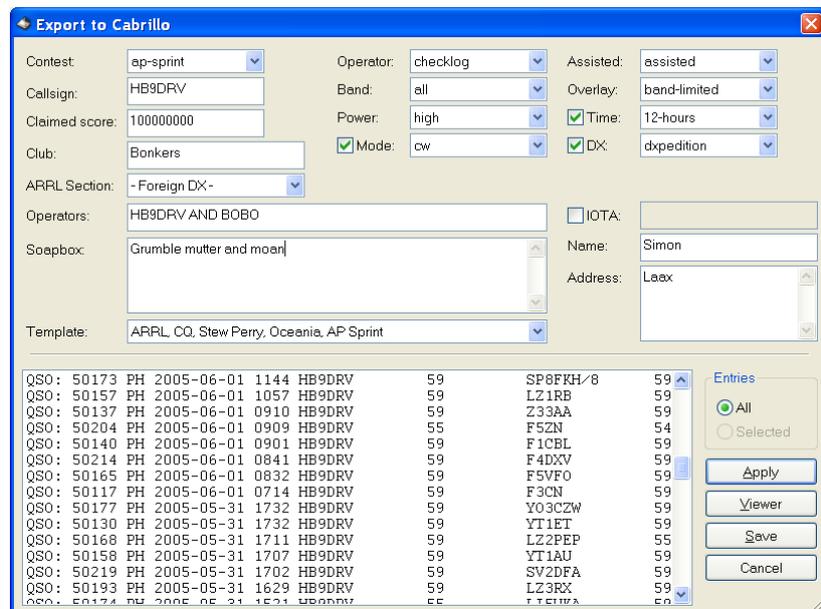
Export to Cabrillo

Why Cabrillo? From the Cabrillo FAQ: ‘Cabrillo is an interface between logging program authors and contest sponsors. It is a simple and practical modification to the ARRL electronic log format, intended to simplify the automation of log collecting and reporting of contest results.’

In reality supporting Cabrillo is a pain in the neck for any programmer with even the remotest grasp on reality. Let’s hope that the ARRL and other sponsors of Cabrillo move towards a better standard such as XML.

The Cabrillo website is <http://www.kkn.net/~trey/cabrillo/>.

Here’s the HRD Export to Cabrillo window. At present HRD does not support all the Cabrillo formats.

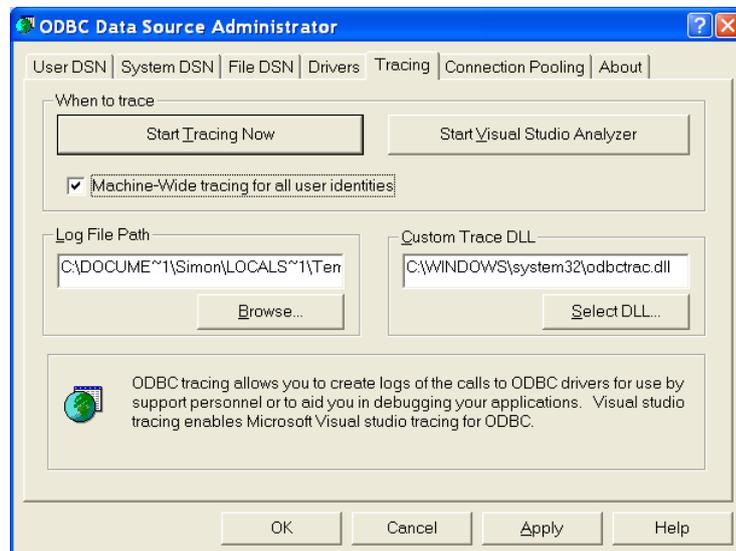


Problems

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 HRD.
2. From the *Start* menu select *Settings / Control Panel / Administrative Tools / ODBC Data Source Administrator* select *Tracing*.
3. Press *Start Tracing Now*.
4. Start HRD, open the Logbook, and perform the steps necessary to generate the error.
5. Stop tracing.
6. Save the logfile to a ZIP archive and forward to the HRD developers.

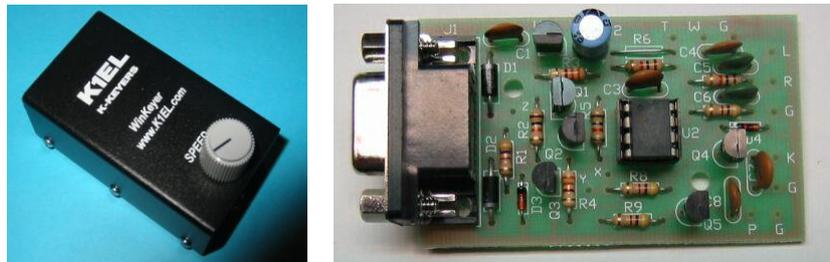
K1EL WinKey

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.



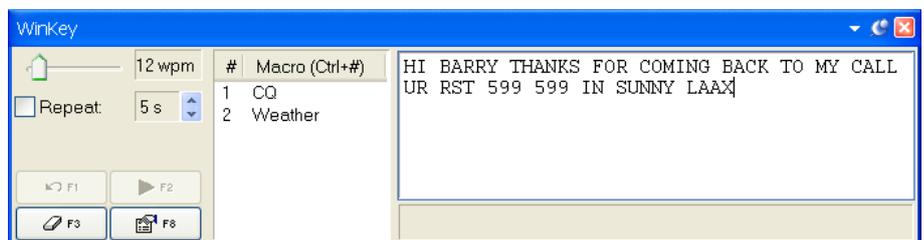
(Photos from <http://www.k1el.com/>)

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 HRD 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.

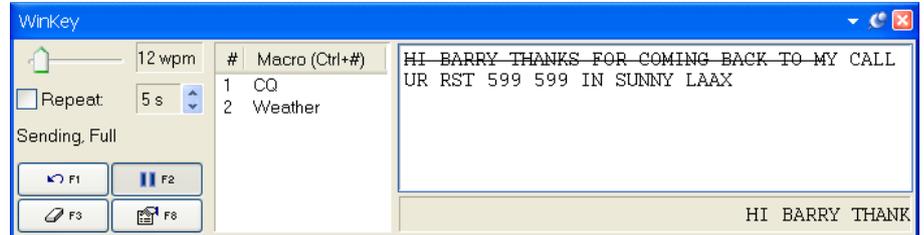


Here the user is sending text at 12 wpm – the speed is adjusted with the slider in the top-left. If *Repeat* is checked the text is retransmitted after a user-configurable value between 2 to 60 seconds, in this example 5 seconds.

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+I*.

Press F2 to start sending.



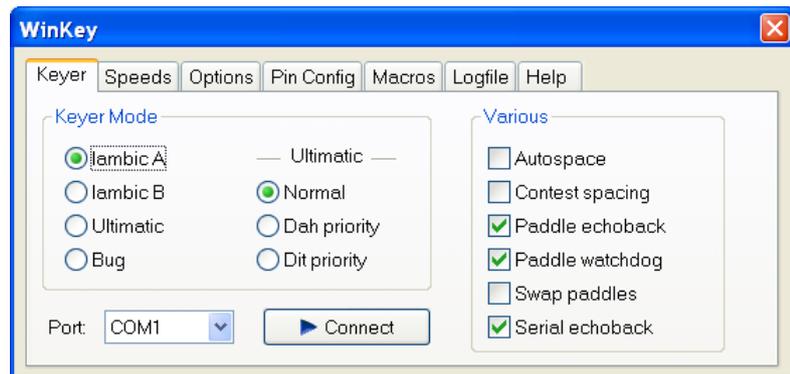
Characters sent to the keyer are marked with the ~~strike through~~ effect. Characters sent by the keyer to the radio are displayed at the bottom of the window.

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.

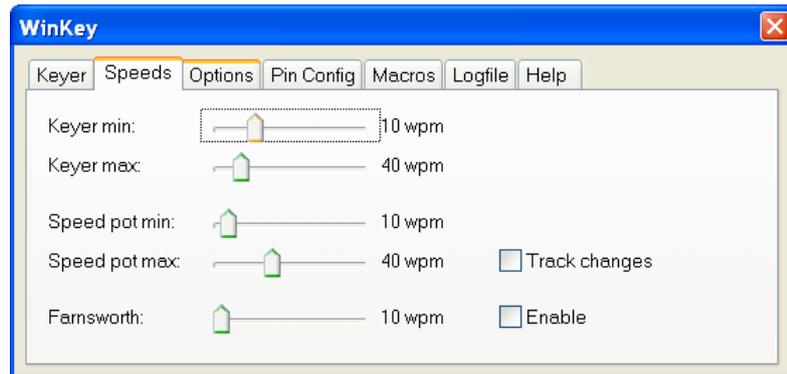
Swap Paddles

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

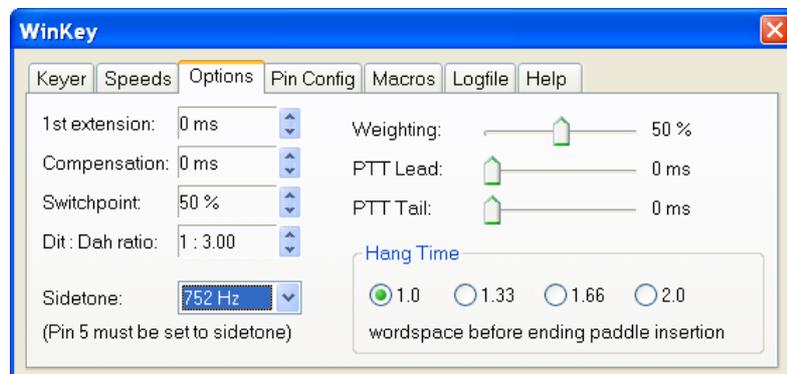


With Keyer min and Keyer max you set the range available in the WinKey main window.

Similarly with Speed pot min and Speed pot max 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:

$$\text{DELAY_TIME} = (\text{SWITCHPOINT} * \text{DIT_TIME}) / 50$$

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:

$$\text{DAH/DIT} = 3 * (\text{nn}/50)$$

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 ops 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.

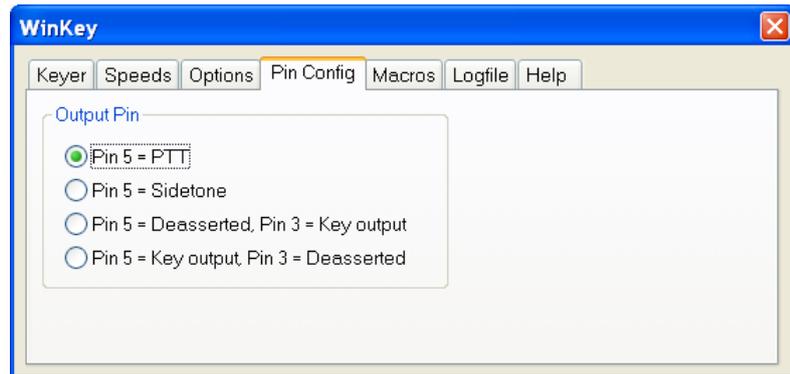
Note: PTT pin 5 can be reconfigured as a sidetone output, see Sidetone Frequency option.

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.

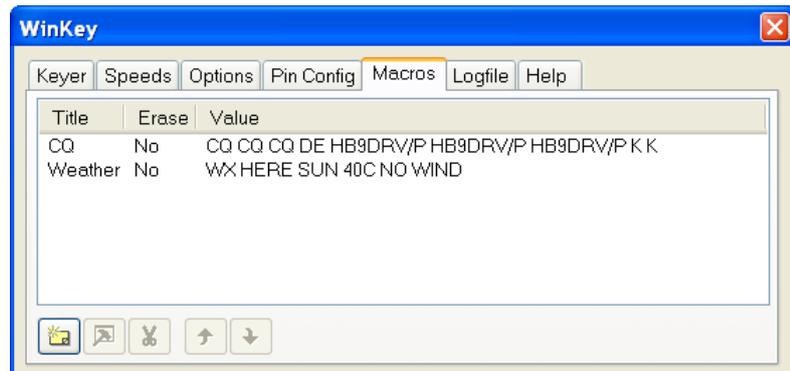
Available sidetone frequencies are: 3759 Hz, 1879 Hz, 1252 Hz, 940 Hz, 752 Hz, 625 Hz, 535 Hz, 469 Hz, 417 Hz, 375 Hz.

Pin Config



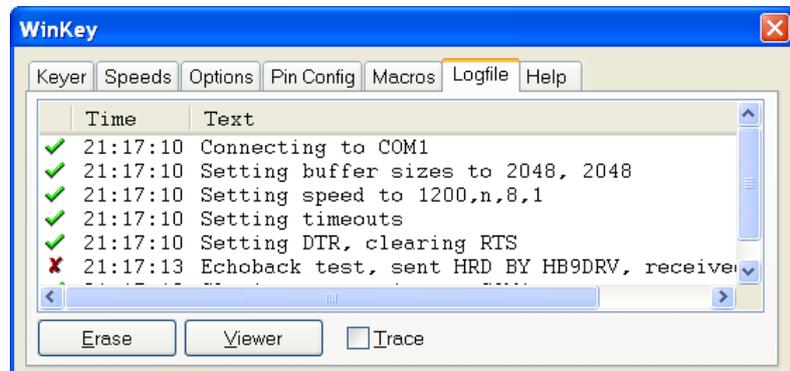
Determines how the output pins are mapped.

Macros



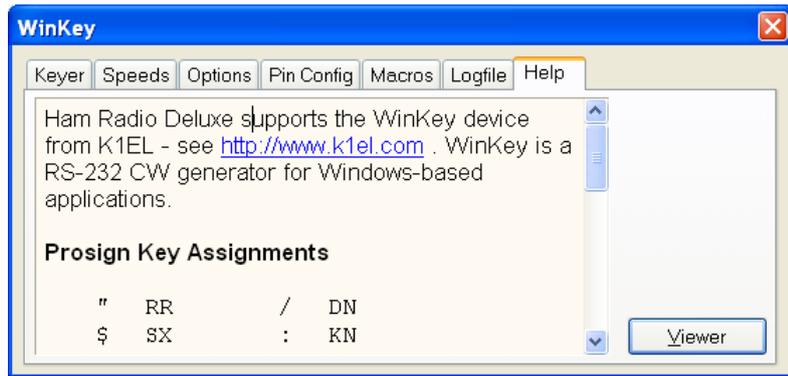
Define an unlimited number of macros that can be selected in the WinKey main window.

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

Macros

Introduction

HRD supports two types of custom definitions:

- CAT commands, and
- Combinations of standard HRD input fields.

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

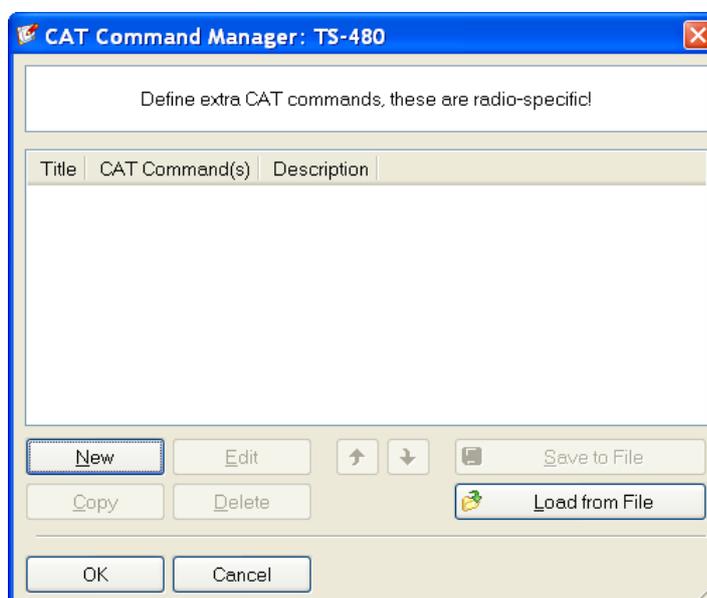
CAT Commands

A CAT command macro is a command that you define yourself, containing one CAT command as described 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 HRD interface.

Manager

Either press *Manager* in the *Macros > CAT Commands* pane or select *CAT Command Manager* from the Macros menu.



Press *New* to create a new command definition.

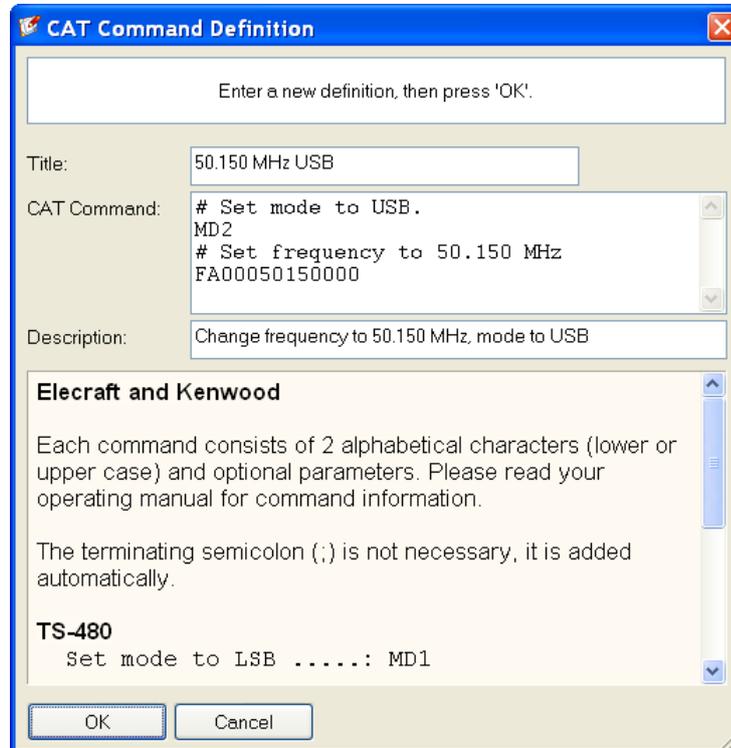
In this example a Kenwood command is defined for the TS-480. The mode is set to USB and the frequency to 50.150 MHz.

In the *Title* field enter '50.150 MHz USB'.

In the *CAT Command* field enter:

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

In the *Description* field enter 'Change frequency to 50.150 MHz, mode to USB'.



Now press *OK*. The new definition is added to the list in the *Manager* window.

Protocols

Elecraft and Kenwood

Each command consists of 2 alphabetical characters (lower or upper case) and optional parameters. Please read your operating manual for command information.

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

TS-480

```
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 104.

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*. Please read your operating manual for command information.

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-100MP

```
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
```

Input Fields

Input field macros are combinations of fields on the HRD radio display. Users of Microsoft Office will be familiar with the concept supported here.

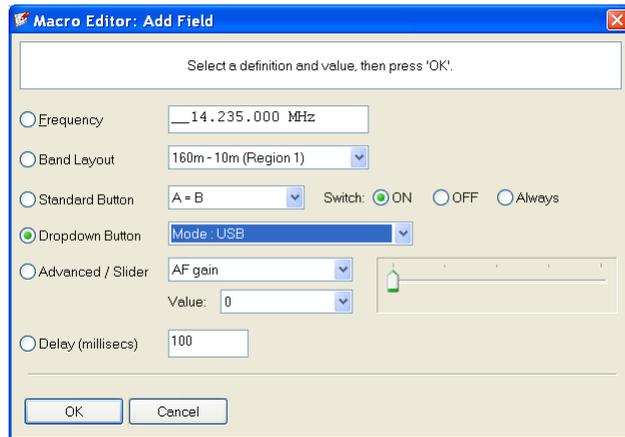
Manager

Select *Macros Manager* from the *Macros* menu, and then press *New* to create a new macro. This macro will switch your radio to 50.150 MHz in USB.

First we will set the mode to USB:

- In the *Title* field enter '50.150 MHz USB'.
- In the *Group* field enter 'Macros: Simple'.
- In the *Description* field enter 'Change frequency to 50.150 MHz, mode to USB'.

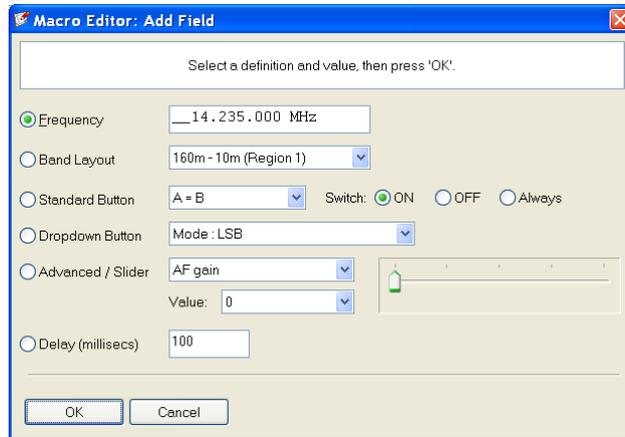
- Press *Add* to select Dropdown Button Mode: USB



- Press *OK*.

Now set the frequency to 50.150.000:

- Press *Add* to select Frequency 50.150.000 MHz.

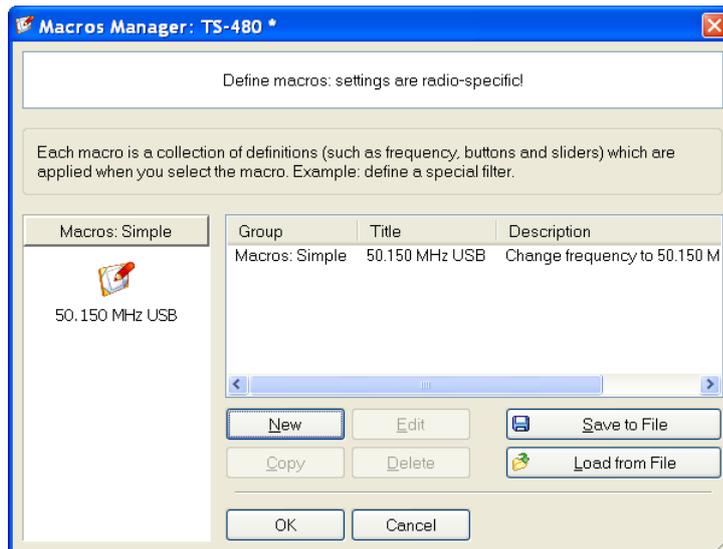


- Press *OK*.

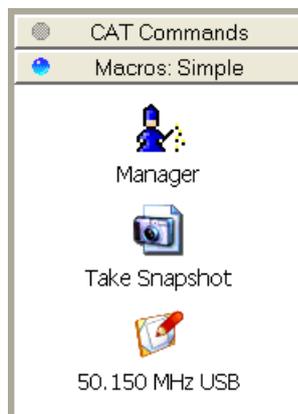
Your definition now contains two entries:

Enable	Type	Title	Value
<input checked="" type="checkbox"/>	Dropdown Button	Mode : USB	
<input checked="" type="checkbox"/>	Frequency		14.235.000

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



Press *OK*. The window closes; the *Macros* sub-pane *Macros: Simple* now contains your new macro.



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.

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.

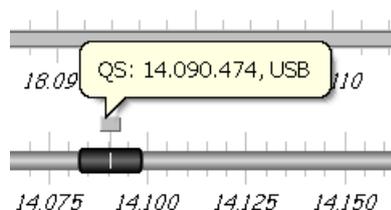


Quick Save

An entry is added to the Quick Save pane in the Selection window.

Markers

To display markers in the HRD display select *Show Markers* from the *Quick Save* menu. The marker size is selected from the *Marker Size* option in the *Quick Save* menu.



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

Remote Station Support

Introduction

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

The *HRD 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.

Requirements

The remote computer must be running Windows NT – that is NT 4.0, 2000, 2003 or XP. Windows 95, 98 and various flavours thereof are not supported.

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 Annex: Remote Server on page 167.

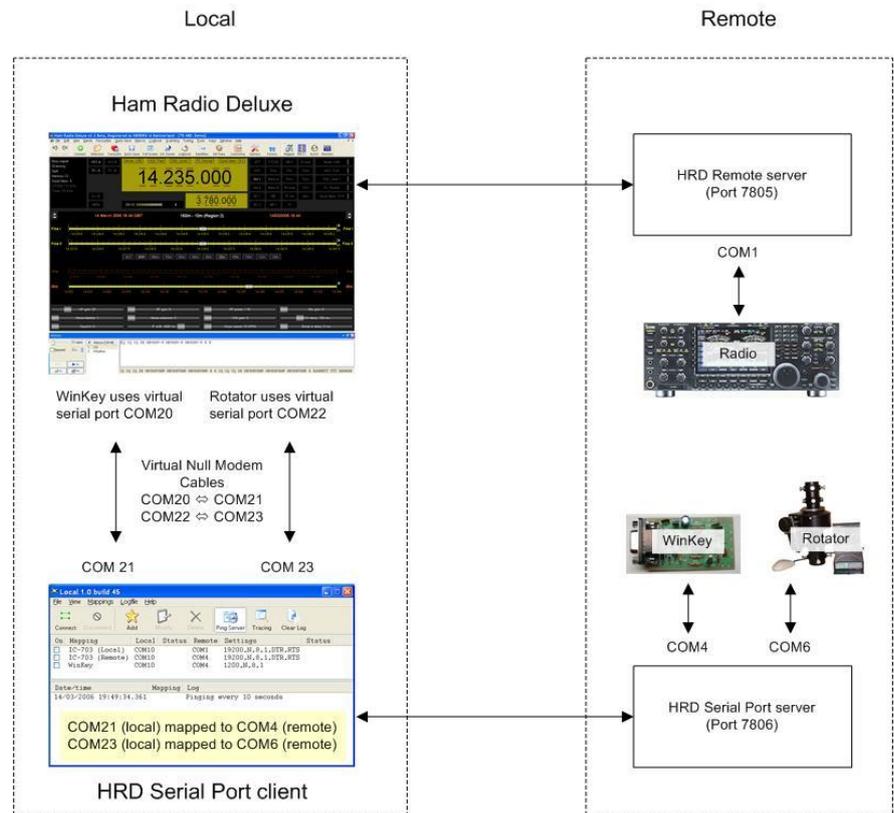
IP Address

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.

Firewall

Make sure you open up ports 7805 (HRD Remote Server) and 7806 (HRD Serial Port server) for incoming TCP traffic. 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 Annex: N8VB vCOM on page 163.

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 HRD Remote Server running on the remote computer (port 7805).

The HRD Remote Server connects to the IC-7800 using COM1.

Keyer

The HRD Winkey interface connects to the HRD Serial Port client on the local computer using the COM20 ⇔ COM21 virtual cable.

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

The HRD Serial Port server connects to the K1EL WinKey using COM4.

Rotator

The HRD Rotator interface connects to the HRD Serial Port client on the local computer using the COM22 ⇔ COM23 virtual cable.

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

The HRD 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 HRD to one end and the HRD Serial Port Client to the other.

To install the vCOM drivers see Annex: N8VB vCOM on page 163.

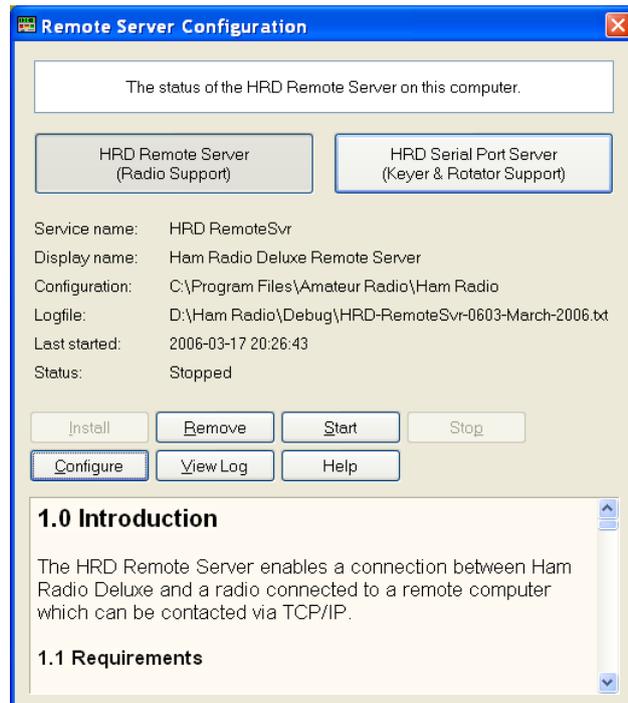
HRD Remote Server

Installing

The HRD Remote Server files are:

- HRDRemoteSvr.exe – the executable, and
- HRDRemoteSvr.cfg – configuration file.

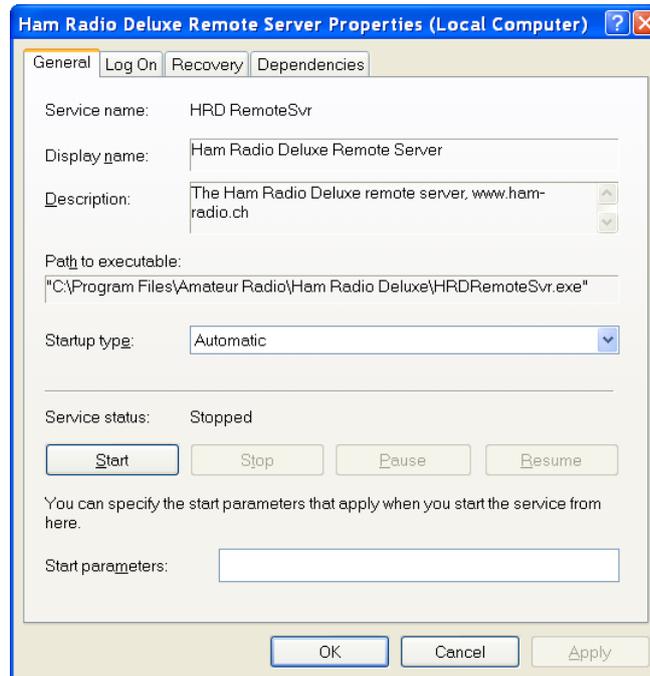
To install the service select *Remote Service* from the *Tools > Programs* menu.



Press *HRD Remote Server* to select this server.

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 *HRDRemoteSvr.cfg* that contains the service configuration.

```

#
# Ham Radio Deluxe Remote Access Server
# -----
#
# Copyright (c) 2005 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 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,options where options is a
# list of case-insensitive tokens separated by spaces (not commas).
#
# The supported options are:
#
# NO_MACROS
# NO_TX
# RESTART
#
# For example: USER1 = Simon,SnowTime,no_tx no_macros
# Disables the TX and TUNE buttons and all Macros on the user's instance of HRD.
# (The user could enable TX via a Macro or CAT Command.)
#
# 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,no_macros no_tx
#
# Optional 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.
#
# Remove this line if you do not want a welcome message.
#
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 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.

In addition you will want to disable macros as a knowledgeable user can define a CAT command to enable TX.

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 HRD users.

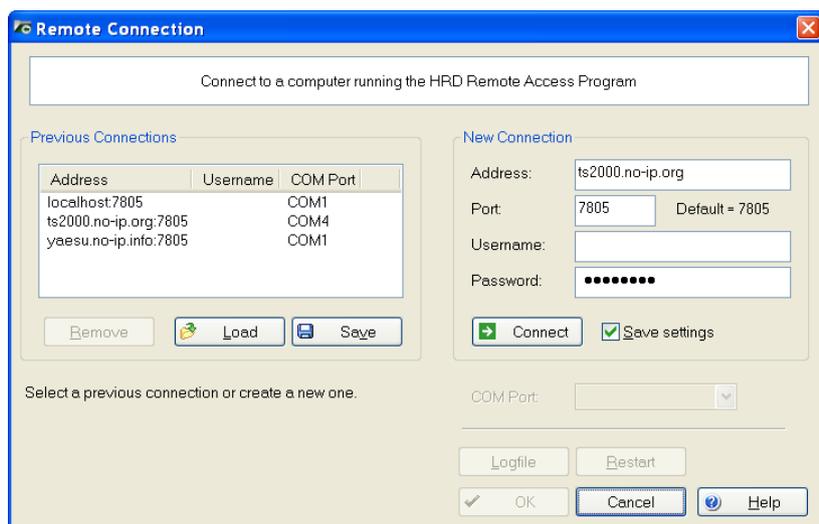
This should only be allocated to yourself and your friends!

Connecting

To connect to the remote server enter values as normal when starting HRD but select the Remote port, then press *Connect*.

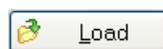


When you press *Connect* the Remote Connection window is displayed.

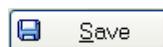


Enter connection information:

- Address: the remote computer address in either numeric or alphabetic form – for example 195.154.179.101 or www.simon-home.ch .
- Port: the port assigned to the remote service, usually 7805.
- Username: a valid username defined in the configuration file. This is case-insensitive.
- Password: the password corresponding to the username. This is case-insensitive.
- To save these values make sure the *Save settings* option is checked [X].



Load connection information from a file.



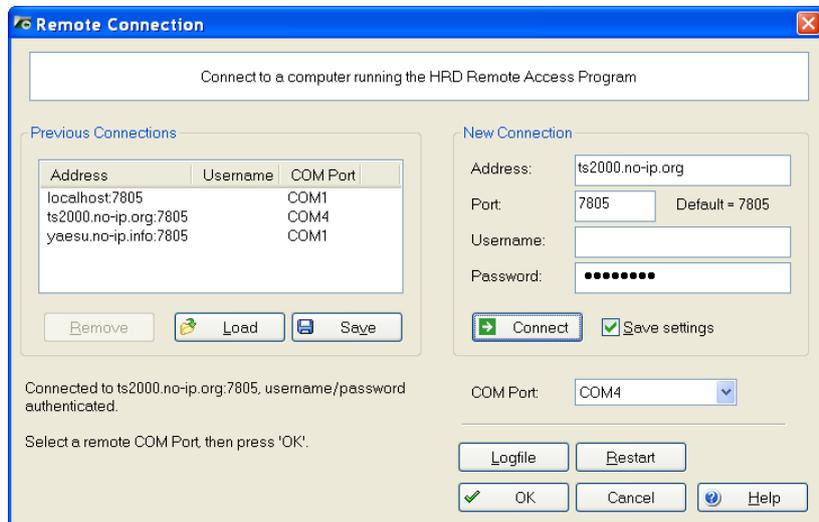
Save connection information to a file.



Press *Connect*. If the connection is successful you see the confirmation window

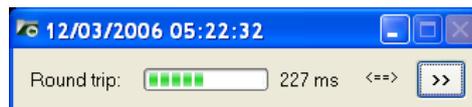


and the text *Username/password authenticated. Select a remote COM port, then press 'OK'* is displayed below the *Connect* button.

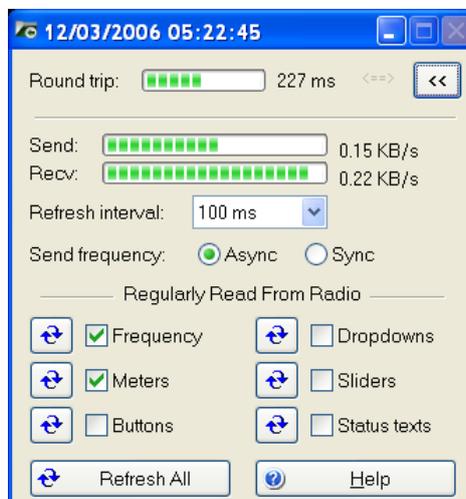


Now select the COM port, and then press OK to connect to the remote COM port and start the HRD radio display.

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 HRD 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 HRD'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 HRD 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

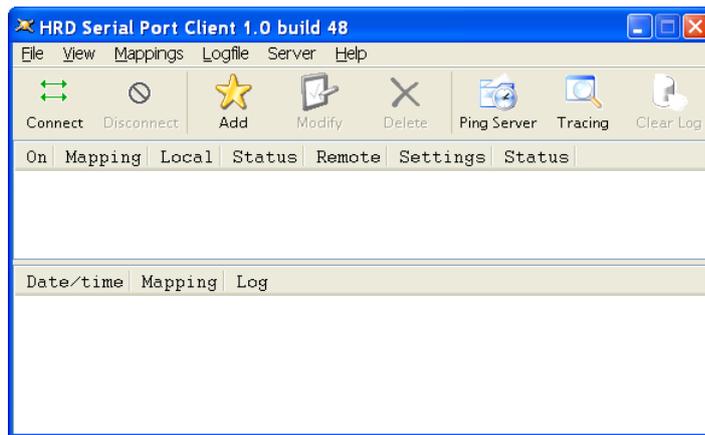
The following steps are recommended to solve problems using the remote server.

1. Run HRD 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 HRD on the remote computer. If you get the error "Access is Denied" then the COM port is held open by another program.

HRD Serial Port Client

Starting

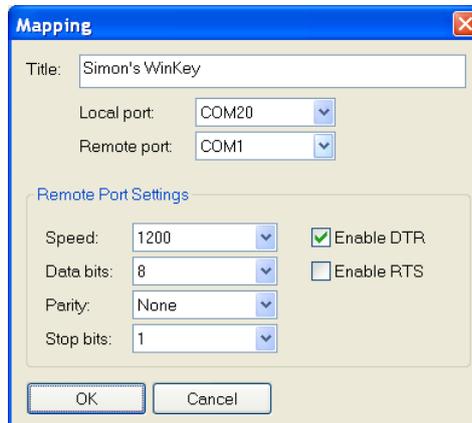
Select *Port Client* from the from the *Tools> Programs* menu.



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!

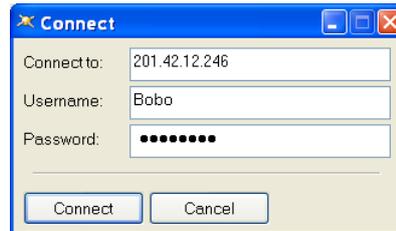
Remote Port Settings

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.

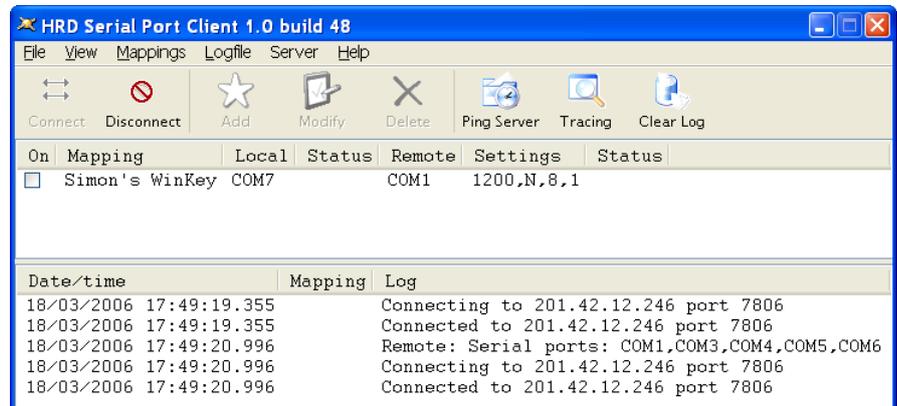


In the *Connect to* field enter the remote address, for example 201.42.12.246. If you are not using the default port (7806) then append a colon and the port number, for example 201.42.12.246:7808 to connect to port 7808 on 201.42.12.246.

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*.

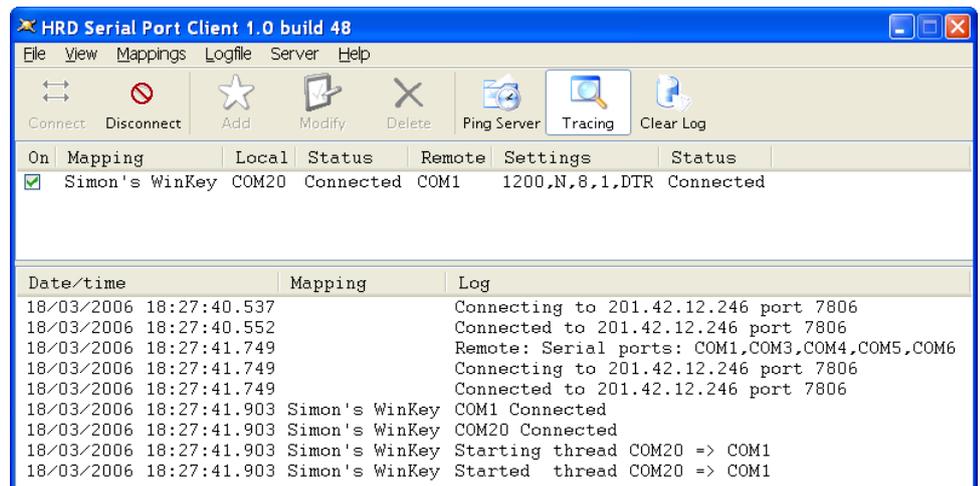
Assuming everything works correctly the client will display log information similar to that below:



The client makes two connections; one to send data, the other to receive data.

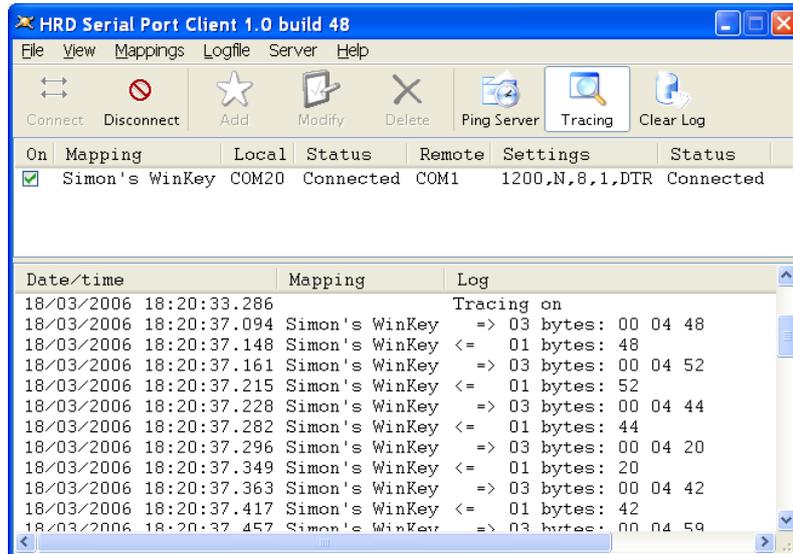
The remote server returns a list of known serial ports after the first connection is established, in this case COM1, COM3, COM4, COM5 and COM6.

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.

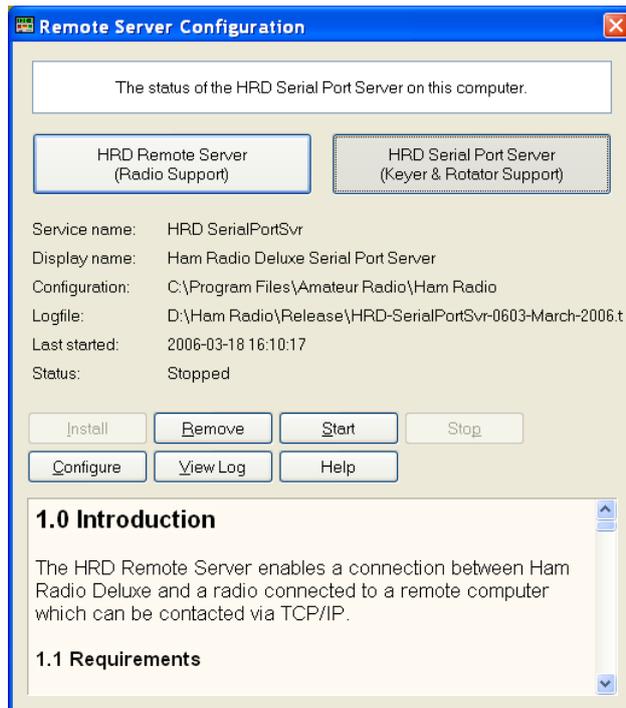
HRD Serial Port Server

Installing

The HRD Serial Port files are:

- HRDSerialPortSvr.exe – the executable, and
- HRDSerialPortSvr.cfg – configuration file.

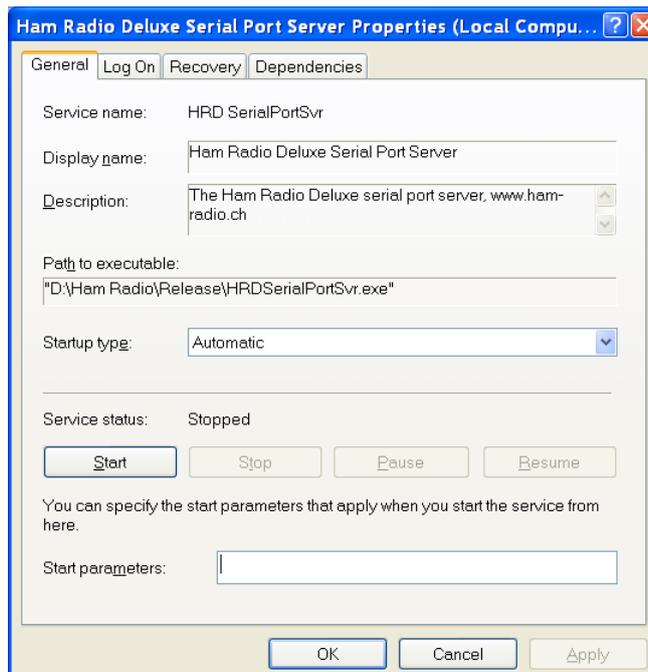
To install the service select *Remote Service* from the *Tools> Programs* menu.



Press *HRD Serial Port Server* to select this server.

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 7806.

Configuring

Press *Configure* to edit *HRDSerialPortSvr.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 separated 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,ShoTime,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. Enter 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!
```


Rotator

Introduction

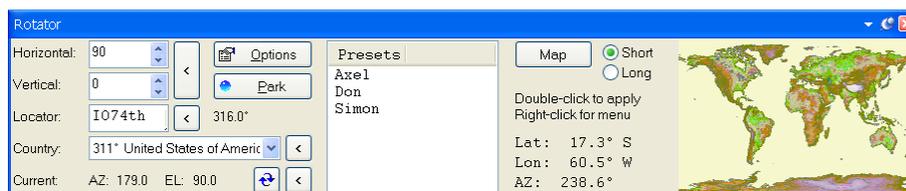


What better way to spend money than on a nice set of antennas for your Satellite Tracking array, or how about a nice 4-element yagi for 80m?

Whichever solution you chose HRD has the support you need.

Main Window

To open the rotator window select *Rotator* from the *Tools* menu.



HRD supports both azimuth-only as well as Azimuth-Elevation rotators such as the excellent AlfaSPID.

To get started press Options (page 9126).

To change the current bearing either:

- Enter the new bearing in the Horizontal field and press .
- Enter the locator of the station and press .

- Select a country from the Country dropdown list and press ,
- Select a preset, or
- Double-click on the world map.

Press *Park* to park the rotator.

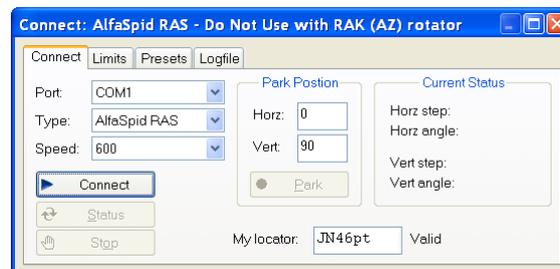
To select a new bitmap for the World map press *Map*. Currently only BMP files are supported; in a future release other formats and a better resolution will be added.

To switch between short path and long path use the two radio buttons *Short* and *Long*.

Options

Here you configure the rotator you are using.

Connect



To connect to a rotator:

- Select the COM port,
- The rotator type,
- The connection speed,
- Press *Connect*.

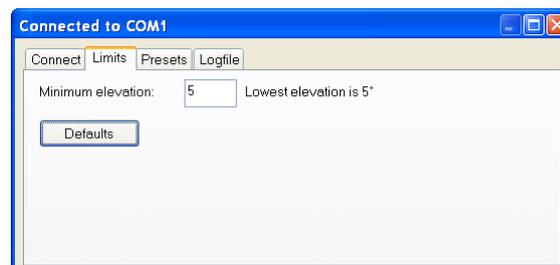
Look in the Logfile (page 127) if you have problems connecting.

Enter the park position for the rotator – nice shortcut especially if using a satellite array.

Enter your locator so that HRD can compute bearings from your station.

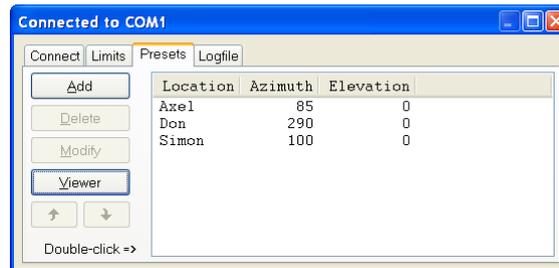
The most recently returned status is displayed in the Current Status area. The current status is read when you connect to the rotator controller.

Limits



For rotators with elevation support – enter the minimum elevation. If you look at the picture on page 125 you see that there is no point in using an elevation lower than 5 degrees.

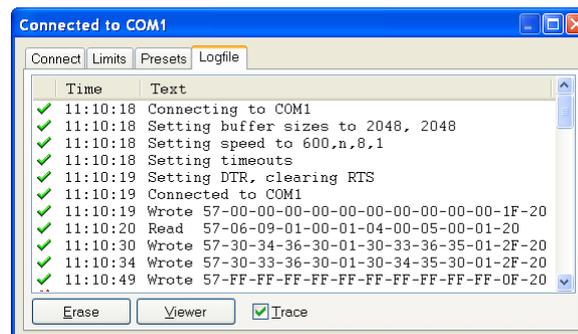
Presets



Enter preset bearings for your friends, DX-expeditions or just anywhere of interest. As you change this list the main window's preset list is updated.

Double-click on entries to apply immediately.

Logfile



The logfile is an invaluable aid for you and software developers when diagnosing a problem. You see all traffic over the COM port.

In this example a connection is made with an AlfaSPID rotator.

Satellite Tracking

Introduction

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.

HRD'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 HRD and based on NORAD SGP4/SDP4 Implementations by Michael F. Henry. Full source is available on request.

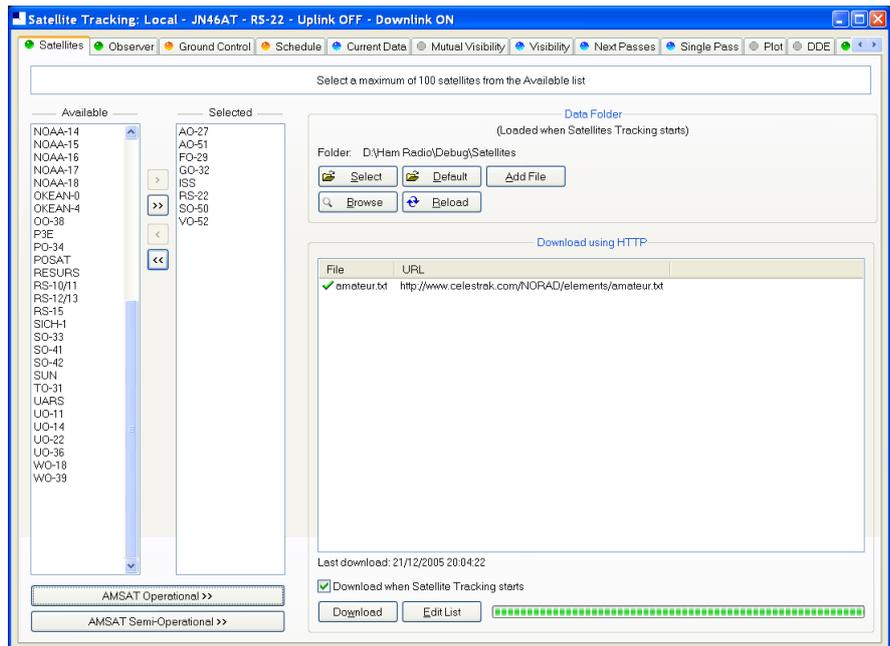
The most important rule: it's the frequency on the satellite that is important, not the frequency on your radio. This is the most common mistake made when using a satellite.

If you are using two radios for satellite tracking – one for transmit, the other for receive – read this section first, then refer to Synchroniser on page 145.

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 HRD - 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 *HRD 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

Enter your location and height above sea level and any other stations to be plotted

Your Location

Locator: JN46AT

or enter direct

Latitude: 46 ° 48 m 45 s N

Longitude: 8 ° 4 m 1 s E

Height

Meters: 1035

Feet: 3395

Formats

Local Kms

UTC/GMT Miles

Changes are applied immediately

Station	Latitude	Longitude
<input checked="" type="checkbox"/> GD4EU	54.31250000	4.37500000

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.

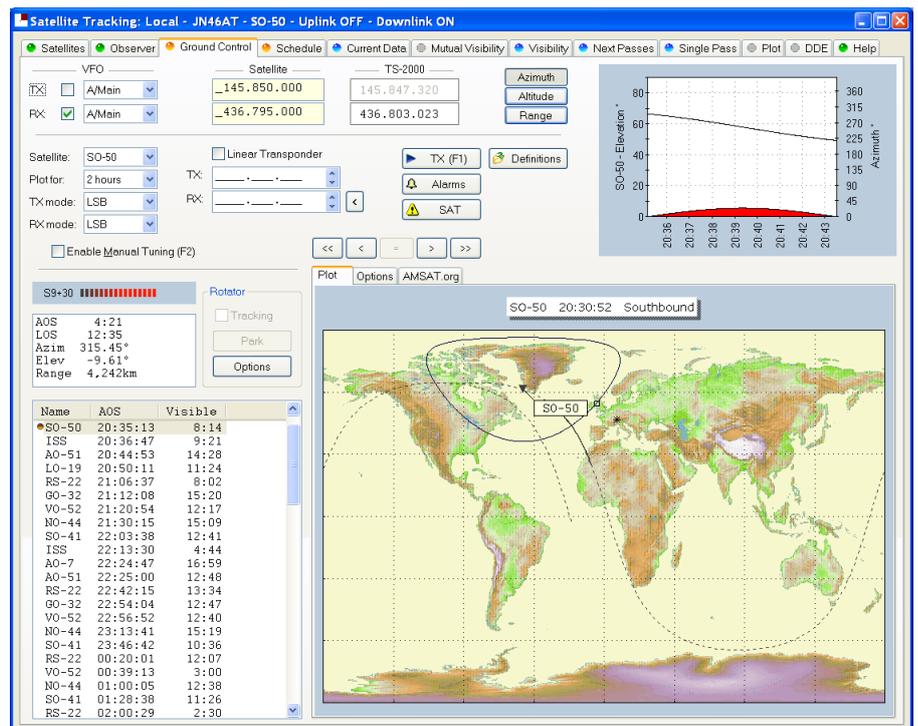
Enter your location either:

- 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.

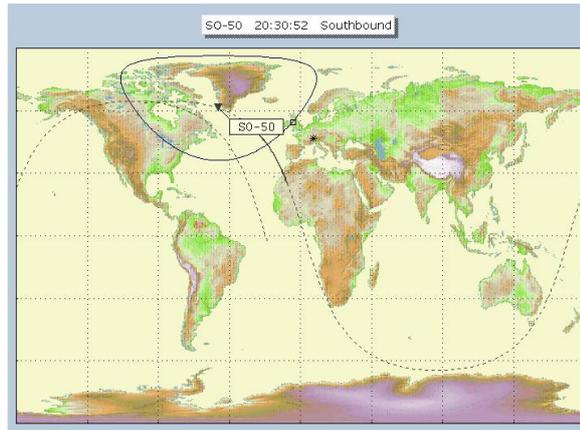
- Enter the satellite uplink (your TX) frequency in the Satellite TX field.
- Enter the satellite downlink (your RX) frequency in the Satellite RX field.
- Select the VFO you will use for TX and RX (see rest of this section).
- If you are using a transverter select the Options tab and enter the transverter 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	Doppler	
TX ⇒ RX	TX: <input type="text" value="-1.882"/>	
RX ⇒ TX	RX: <input type="text" value="+5.637"/>	
Pass Details	Transverter	
Reload Data	TX: <input type="text" value="_407.000.000"/>	
	RX: <input type="text" value="_116.000.000"/>	

- **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

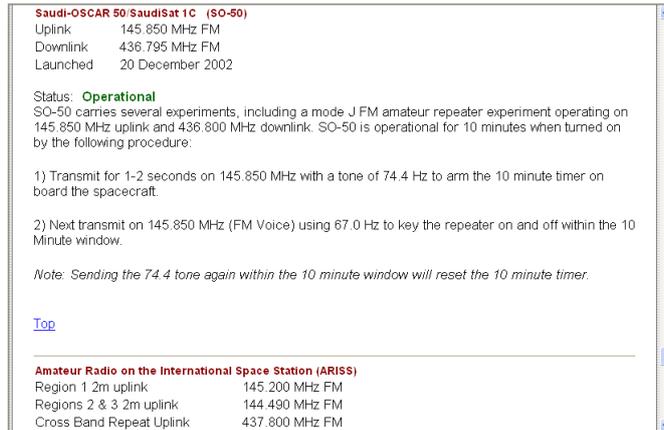
Date / time	Azim	Elev	Receive	Transmit
wed 11-Jan-2006 07:38:00	109.4	-0.2	436.796.788	145.849.402
wed 11-Jan-2006 07:38:30	105.3	0.1	436.796.169	145.849.609
wed 11-Jan-2006 07:39:00	101.3	0.3	436.795.532	145.849.822
wed 11-Jan-2006 07:39:30	97.1	0.3	436.794.888	145.850.037
wed 11-Jan-2006 07:40:00	93.0	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 B/Sub (the TS-2000 always uses the Sub VFO for TX),
- 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 HRD 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 HRD 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 HRD a few seconds before it detects that you are transmitting. When HRD 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 HRD 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 HRD 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 HRD 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 HRD 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:

1. The TX mode is not updated from the radio.
2. 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 HRD 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) 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.

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 HRD 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:

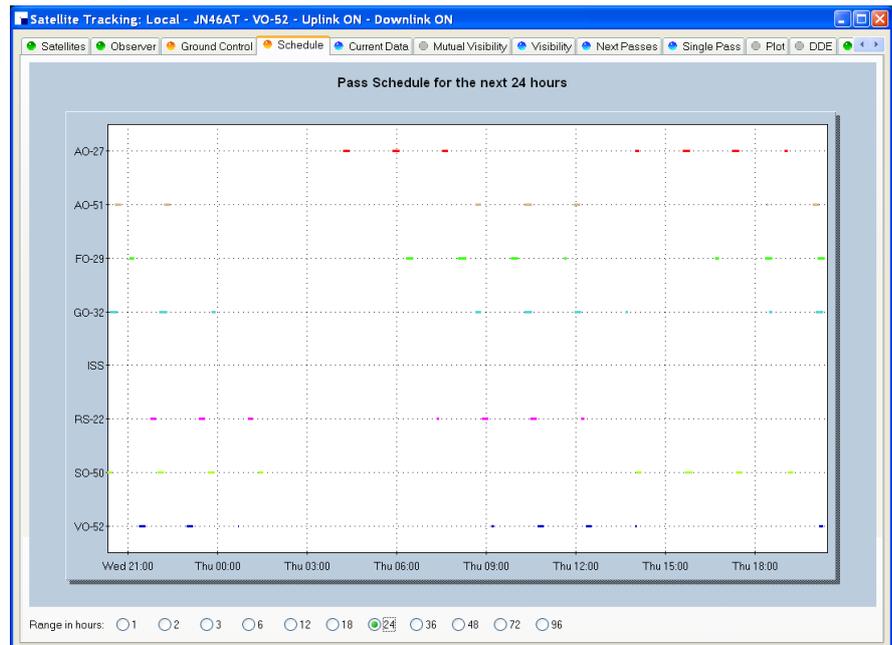
- All ICOM,
- All Elecraft,
- All FlexRadio,
- All Kenwood .

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

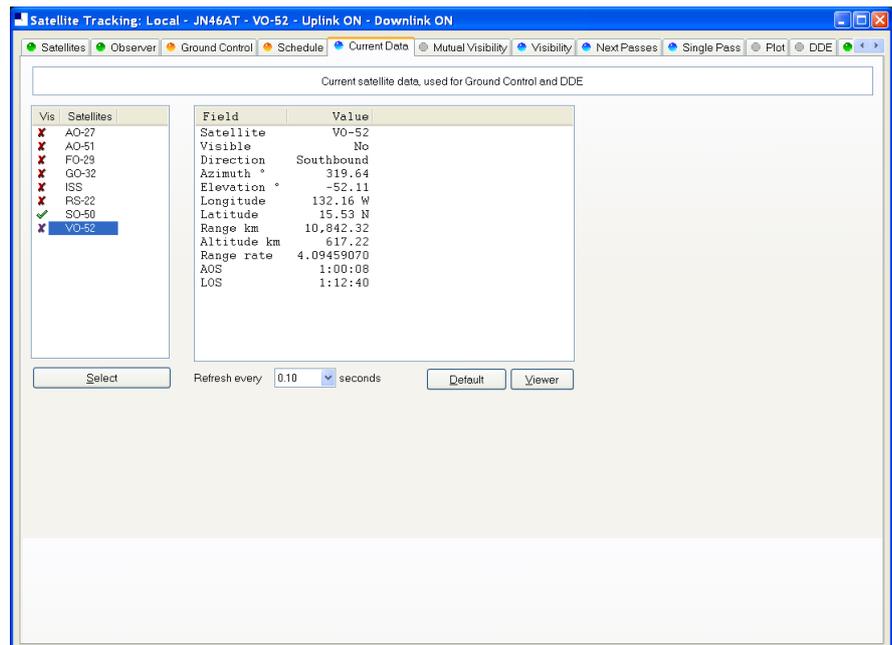
Option	Description
VFO	The VFO used for the uplink (TX) and downlink (RX). If checked [X] the selected VFO is updated regularly as the satellite frequency is corrected for Doppler shift.
Satellite	The satellite frequency. Click the Open button to select a new frequency from a popup window containing the Favourites definitions or enter the new frequency.
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 HRD 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.

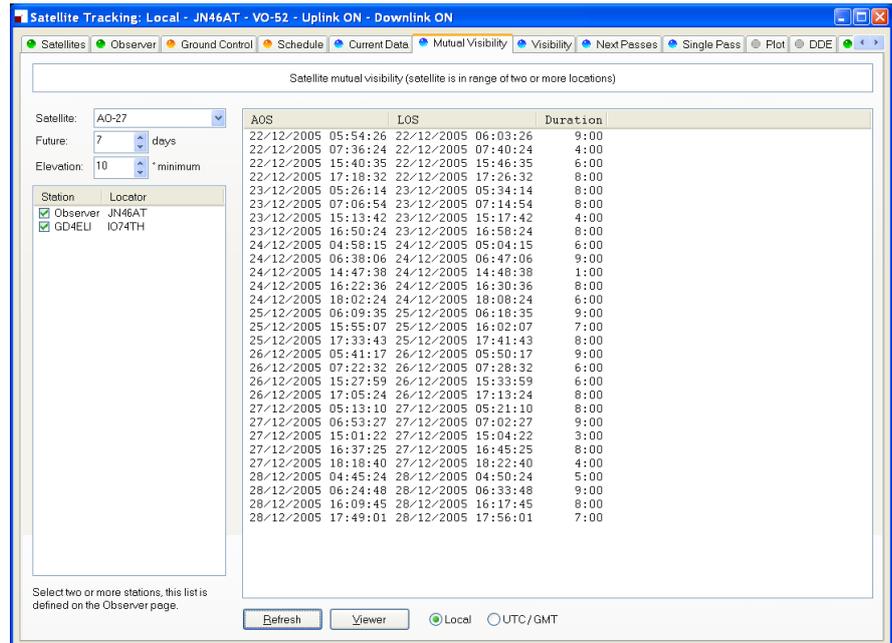
Current Data



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  | I074TH  |
+-----+
```

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

Vis	Satellite	Azimuth	Elevation	d AOS	d LOS	Lon	Lat	Range	Altitude	Range Rate
X	AO-27	126.80	-70.04	7:48:54	8:01:53	127.35 E	56.15 S	12,826.37	822.27	-0.19481537
X	AO-51	154.42	-26.63	10:11	23:51	31.26 E	12.88 S	7,056.20	714.95	-6.11760712
X	FO-29	158.29	-73.39	39:12	49:49	150.92 E	72.10 S	13,557.11	1,325.30	-1.65916760
X	GO-32	136.73	-1.67	0:31	14:58	29.41 E	23.04 N	3,518.51	817.68	-6.35537886
X	ISS	0.00	0.00	Visible		0.00 E	0.00 N	0.00	0.00	0.00000000
X	RS-22	132.69	-19.12	1:21:50	1:33:32	42.74 E	6.02 N	5,747.98	676.69	4.79986937
✓	SO-50	8.30	9.02	Visible	5:01	13.75 E	64.05 N	2,146.57	684.28	0.02066673
X	VO-52	318.42	-54.29	59:00	1:11:32	133.05 W	11.36 N	11,112.16	616.10	3.88572984

The visibility window gives you an overview of the satellites you have selected in the Satellites window.

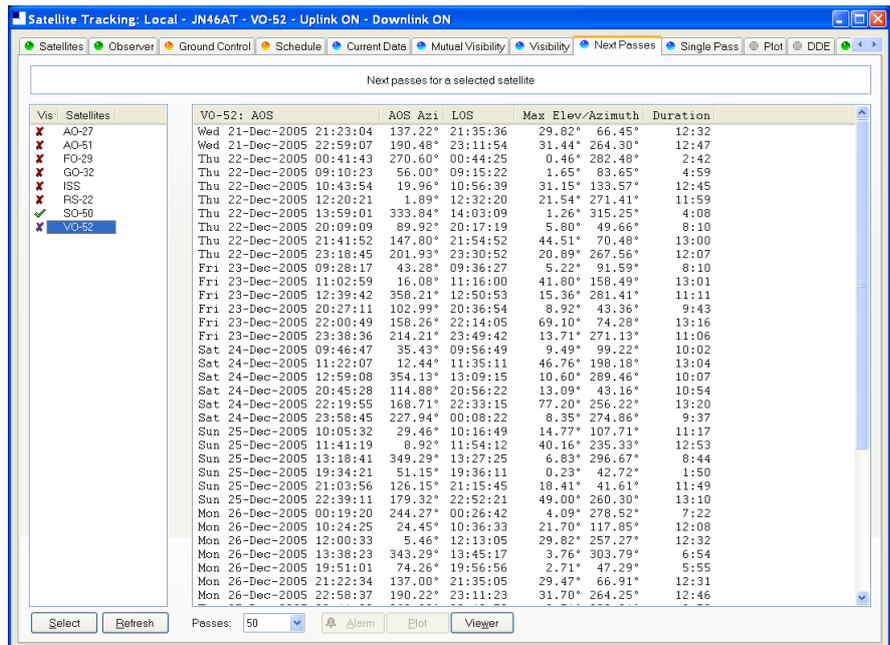
Select the satellites that are displayed:

- 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



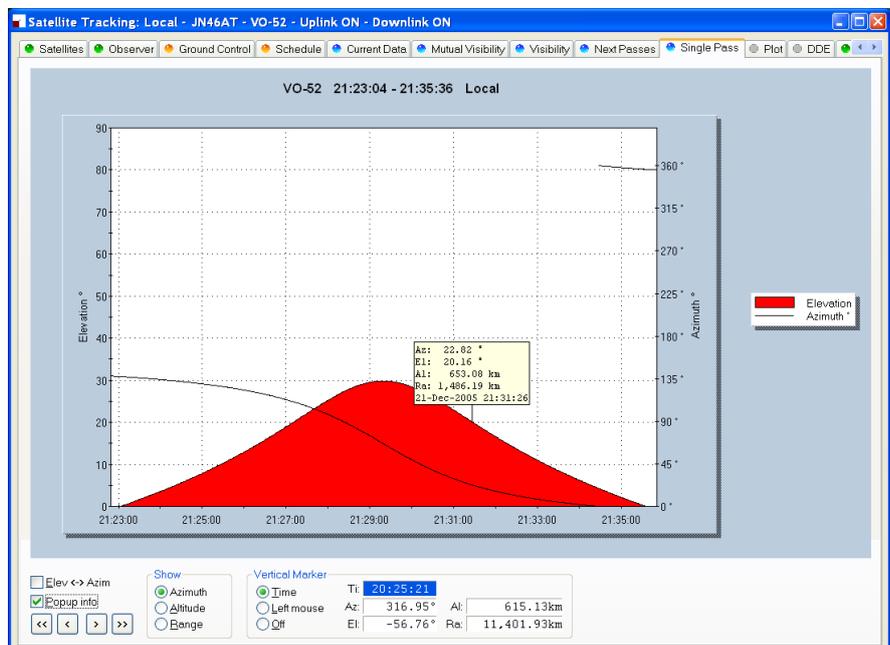
This window shows up to 1,000 passes for a selected satellite. Note: do not select more than 100 passes unless you have a very powerful computer, minimum CPU frequency of 2 GHz is recommended.

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

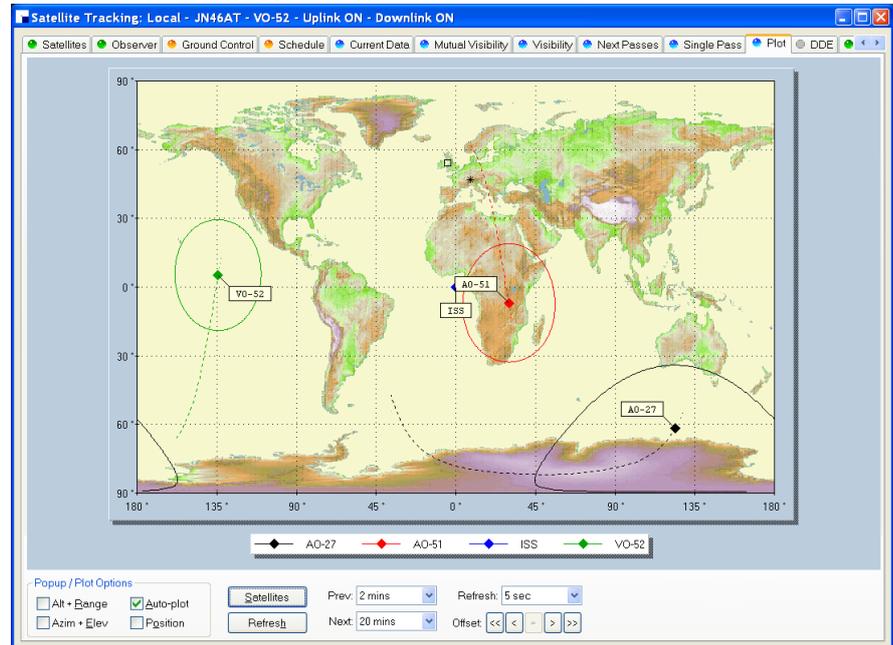


This window plots a single pass for the satellite selected in the Next Passes window. The elevation is plotted on the left y-axis; time is on the x-axis. Select Azimuth, Altitude or Range to be plotted on the right y-axis.

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.

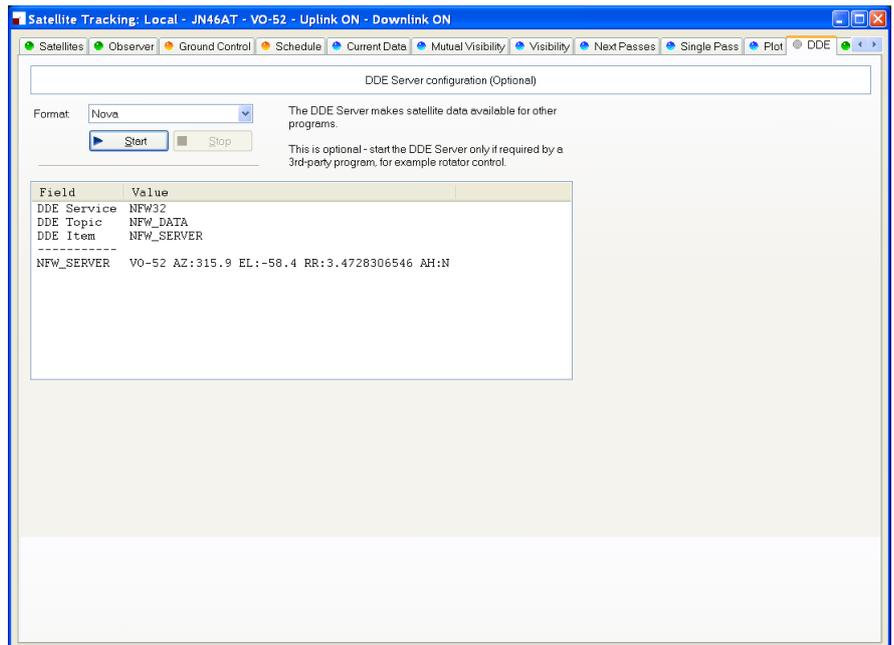
As the marker position changes, the azimuth, elevation, altitude and range are displayed in the marker fields.

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 HRD's data with another program you must start HRD's DDE Server. Select the DDE format: currently only Nova is supported. Press *Start* to start the DDE server.

Synchroniser

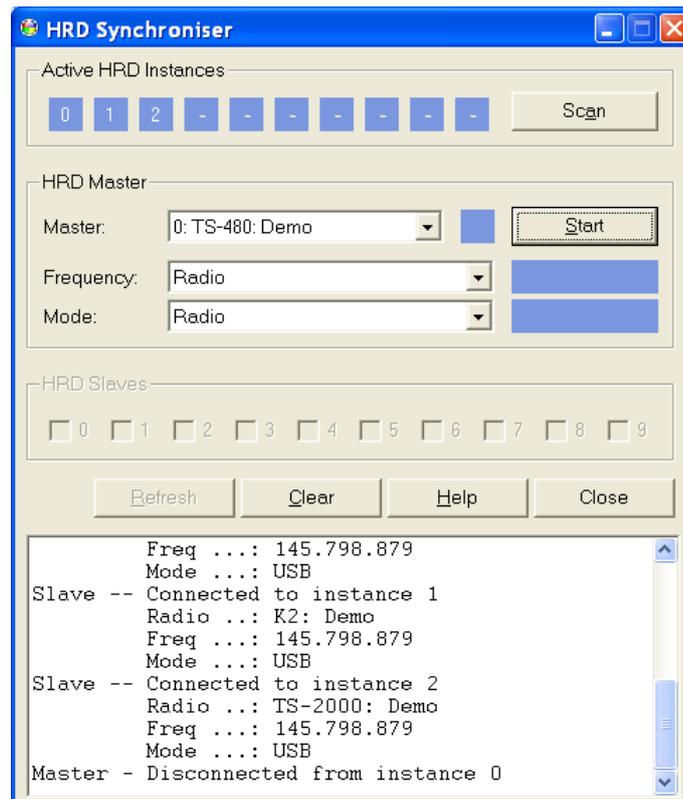
Introduction

The synchronizer is used to control two or more radios where a common frequency is shared by using the Dynamic Data Exchange (DDE) mechanism.

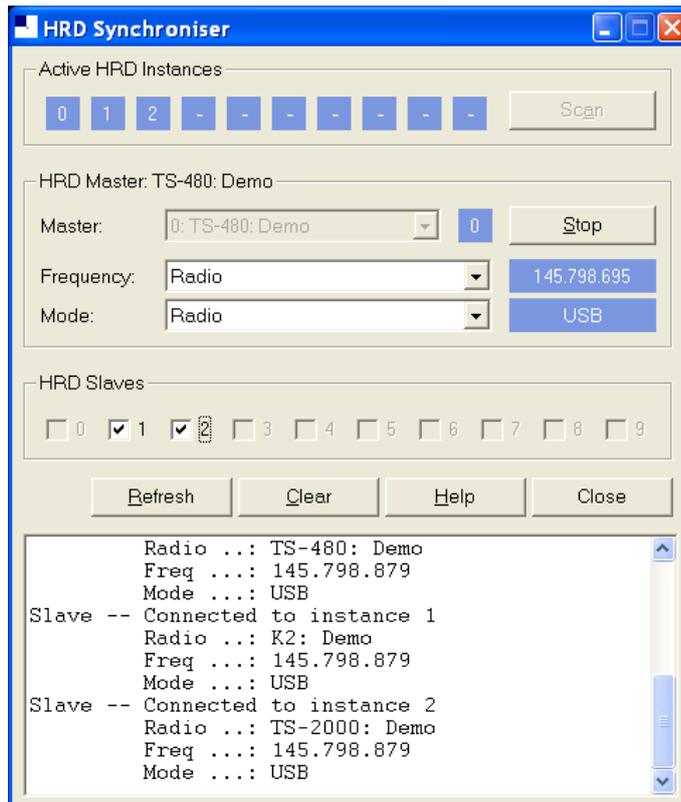
For each radio you are using you start an instance of HRD, one instance is the *Master*, the rest are the *Slaves*, the slaves receive frequency and mode information from the master.

Starting

Start the Synchroniser from the Tools> Programs menu, then press Scan to find the active HRD 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 HRD master instance:

- Radio – as seen on the main HRD 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 133).
- Satellite downlink – the downlink frequency and mode (see Ground Control on page 133).

In the HRD 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 129, specifically Ground Control on page 133.

If you are using two radios for satellite tracking (for example two FT-817 or IC-7000):

1. Start an instance of HRD 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

HRD supports 3rd-party programs such as logbooks via a virtual serial port. See also DDE Support on page 61.

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 Annex: N8VB vCOM on page 163.

The N8VB driver works with Windows 2000, XP and higher. Windows 95/98/SE/ME and NT 4.0 are not supported.

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 HRD) and COM8 (used by the 3rd-party program).

- HRD 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.

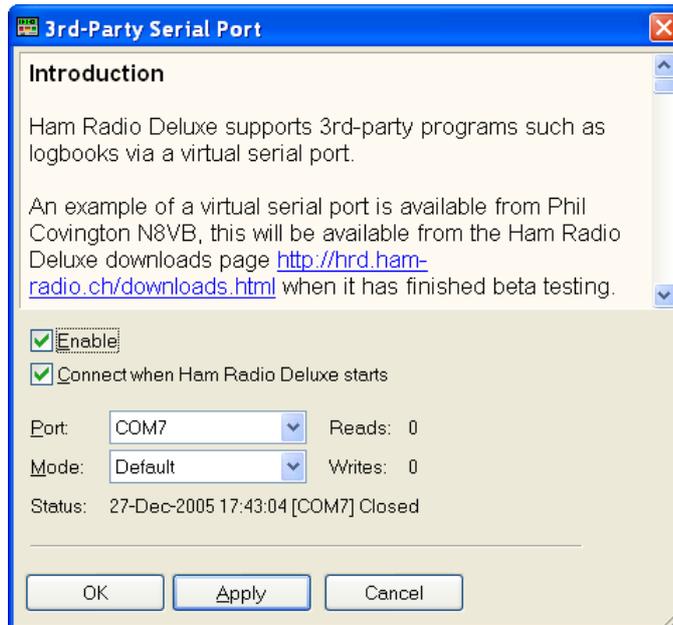
The protocol supported is Kenwood, the command set current supported is:

- **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.



Enable opens the connection on the selected port – in this case COM7.

Check *Connect* to automatically open the connection everything HRD starts.

In the *Port* dropdown you select the COM port to use

The *Mode* dropdown is reserved for future use. The only option is *Default*.

And that's all there is to it.

Testing

To test the connection:

- Start HyperTerminal (supplied with Windows).
- Connect to COM8 (the virtual serial port used by the 3rd party programs).
- 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.

Annex: 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.

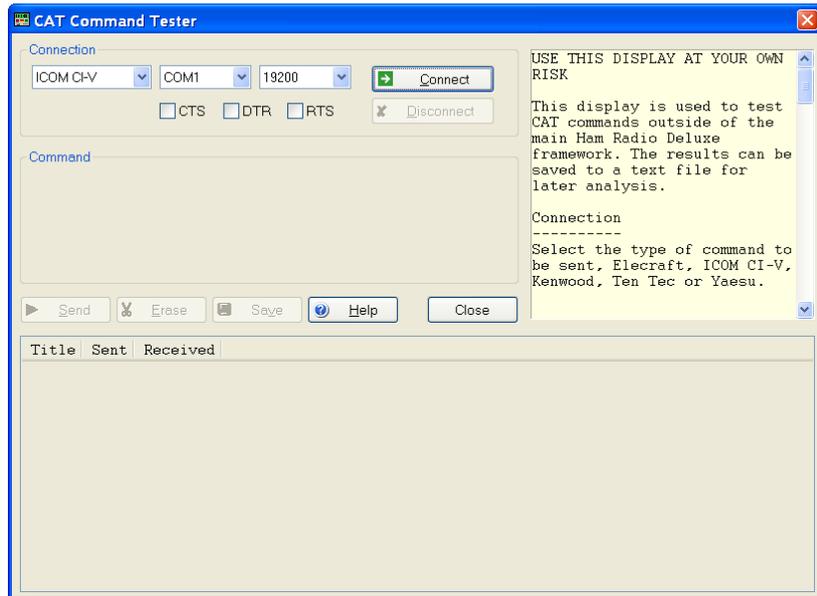
Command Tester supports both Get and Set commands.

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.



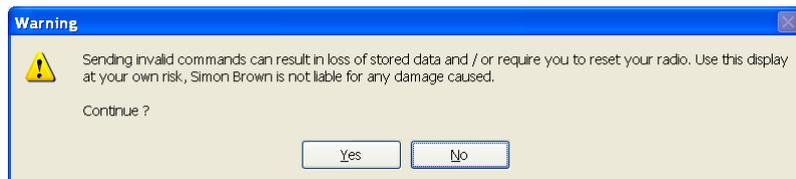
Connect

To connect to your radio you must select:

- COM port where you have connected the interface cable to the radio,
- The baud rate (COM port speed). If you are not sure of the correct speed consult your radio manual.
- CTS used for flow control, specifies whether the CTS (clear-to-send) signal is monitored for output flow control. Used by Kenwood.
- 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.
- RTS used either for flow control or to provide power for the CAT interface. This depends on the manufacturer's protocol and your CAT interface.

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*.



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 HRD use with various platforms is shown here.

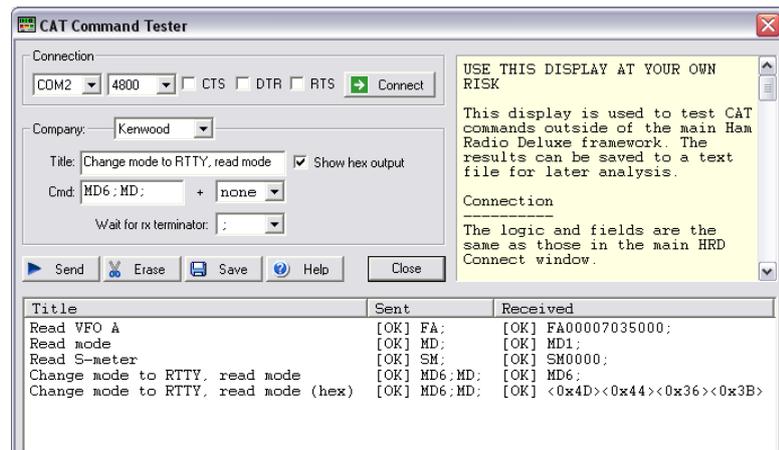
Elecraft

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

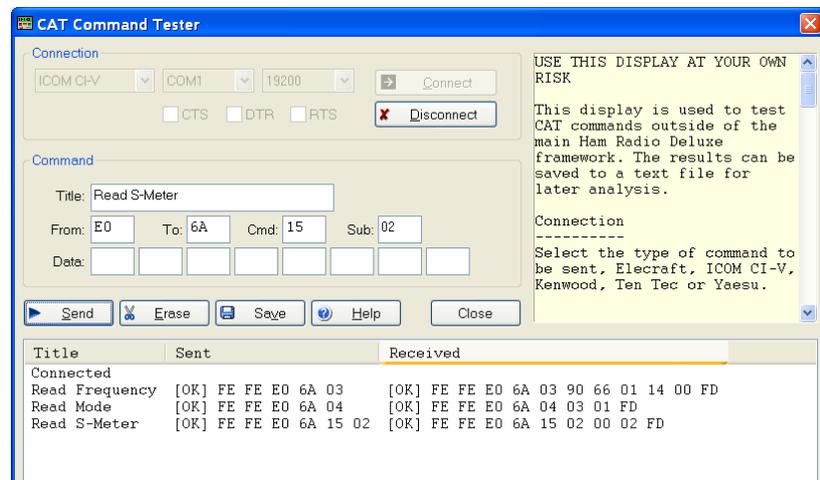
Test	Description
Read Frequency	Command is FA; returned data format is FA + 11 digits + ;. <ul style="list-style-type: none"> • FA00007035000; Frequency is 7.035.000 MHz.
Read Mode	Command is MD; returned data format is MD + 1 digit + ;. <ul style="list-style-type: none"> • MD1; (1=LSB, 2=USB, 3=CW, 6=RTTY, 7=CW-REV, 9=RTTY-REV)
Read S-Meter	Command is SM; returned data format is SM + 4 digits + ;. <ul style="list-style-type: none"> • 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

- 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	<p>Command is 03, no sub command or data; these fields must be left empty.</p> <p>The returned data is:</p> <ul style="list-style-type: none"> • 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	<p>Command is 04, no sub command or data; these fields must be left empty.</p> <p>The returned data is:</p> <ul style="list-style-type: none"> • 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	<p>Command is 15, sub command is 02. There is no data; these fields must be left empty.</p> <p>The returned data is:</p> <ul style="list-style-type: none"> • 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:

- Select the Mode and Filter on your rig using the rig buttons and controls.
- 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.
- Enter a command of 04; clear the sub command and data fields.
- 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:

- Select the option on your rig using the rig buttons and controls.
- Enter a value in the Command Tester Title field that corresponds to the option you are investigating.
- 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.
- Press *Send*.

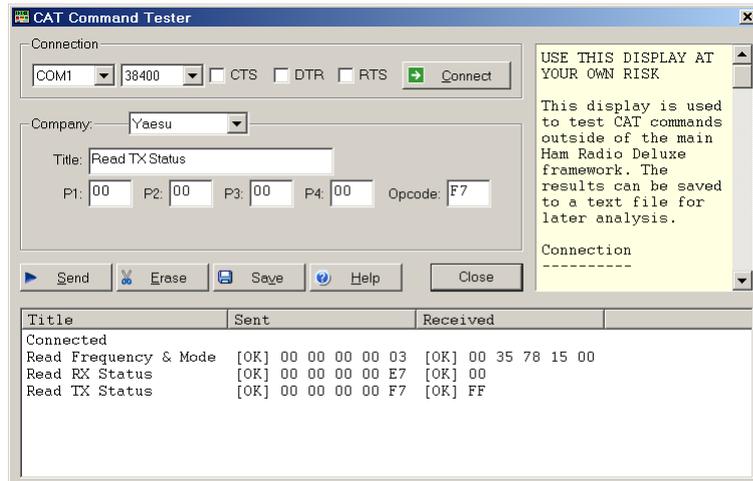
Yaesu

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 if 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

- Title - a description of the command you are testing, for example 'Read Frequency' or 'read Mode'. Mandatory
- P1 – P4 - the 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	<p>The OpCode is 03, P1-P4 can have any value, in this example they are set to 00.</p> <ul style="list-style-type: none"> • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: 03 <p>The format of the returned data is 5 bytes, the first four containing the frequency in binary coded decimal followed by the mode.</p> <p>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.</p>
Read RX status	<p>The opcode is E7, P1-P4 can have any value, in this example they are set to 00.</p> <ul style="list-style-type: none"> • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: E7 <p>The format of the returned data is 1 byte.</p> <p>The returned value is 00.</p>
Read TX status	<p>The OpCode is F7, P1-P4 can have any value, in this example they are set to 00.</p> <ul style="list-style-type: none"> • P1: 00 P2: 00 P3: 00 P4: 00 OpCode: F7 <p>The format of the returned data is 1 byte.</p> <p>The returned value is FF (not in TX mode).</p>

Other Commands

For the commands you want to investigate:

- Select the option on your rig using the rig buttons and controls.
- Enter a value in the Command Tester Title field that corresponds to the option you are investigating.
- 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.

- Press *Send*.

Annex: Portmon

Introduction

This excellent utility for monitoring COM port activity can be downloaded from <http://www.sysinternals.com/>.

Quoting the *Sysinternals* 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:

- Close any programs connected to your radio or device being interrogated.
- Start Portmon.exe
- 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

- Start HRD then connect to your radio.
- Let HRD run for about 60 seconds while you perform your tests.
- Stop HRD (File menu: Disconnect).

- In Portmon set the Capture: Capture Events option to OFF.
- 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

Annex: 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 HRD to the 3rd-party program. HRD opens one end of the virtual cable; the 3rd-party program opens the other.

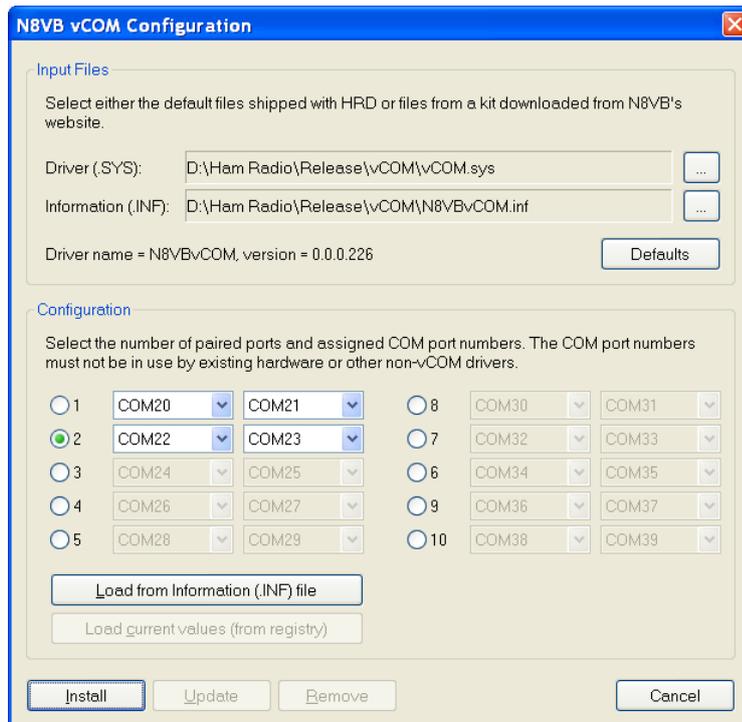
Virtual null-modems are also used in the remote station support to connect HRD to the HRD serial port client program – see Remote Station Support on page 111.

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.

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.

Selects the default files shipped with HRD.

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
  
```

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 * *****
@ECHO -install N8VBvCOM.inf n8vbvcom
devcon
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 and the installation proceeds.

A typical log is shown below:

```
C:\Documents and Settings\Simon\Application Data\Simon Brown, HB9DRV\Ham Radio Deluxe>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, HB9DRV\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 Data\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 .

Annex: Remote Server

Technical Information

Remember that the software is designed for Windows NT but it should be possible to map all these commands to Linux and other UNIX derivatives.

The source code for the main processing thread is available; the rest is highly-Windows oriented and is of no use for other platforms.

Commands

The supported commands are:

Command	Description
MSG_CMD_AUTHENTICATE	Authenticate username/password
MSG_CMD_CLOSE_HANDLE	Close COM port.
MSG_CMD_CREATE_FILE	Open a COM port
MSG_CMD_DEVICE_IO_CONTROL	Send control code to COM port driver
MSG_CMD_GET_COM_PORTS	Return a list of COM ports
MSG_CMD_PURGE_COMM	Discards all characters from the input buffer of the COM port. Terminates pending read or write operations on the resource
MSG_CMD_READ_FILE	Read the COM port
MSG_CMD_READ_FILE_EX	Read the COM port (extended read)
MSG_CMD_SET_COMM_MASK	Specify events to be monitored.
MSG_CMD_SET_COMM_STATE	Configure COM port.
MSG_CMD_SET_COMM_TIMEOUTS	SET timeouts.
MSG_CMD_WRITE_FILE_ASYNC	Asynchronous write, no reply expected
MSG_CMD_WRITE_FILE_SYNC	Synchronous write (reply expected)

All commands expect a reply except for MSG_CMD_WRITE_FILE_ASYNC.

The command values are:

```
enum RemoteSvrMessages
{
    MSG_CMD_AUTHENTICATE           = 0,
    MSG_CMD_GET_COM_PORTS         = 1,
    MSG_CMD_CREATE_FILE           = 2,
    MSG_CMD_DEVICE_IO_CONTROL     = 3,
    MSG_CMD_SET_COMM_MASK        = 4,
```

```

MSG_CMD_PURGE_COMM           = 5,
MSG_CMD_SET_COMM_STATE       = 6,
MSG_CMD_SET_COMM_TIMEOUTS   = 7,
MSG_CMD_READ_FILE            = 8,
MSG_CMD_READ_FILE_EX         = 9,
MSG_CMD_WRITE_FILE_SYNC      = 10,
MSG_CMD_CLOSE_HANDLE         = 11,
MSG_CMD_WRITE_FILE_ASYNC     = 12,
};

```

Structures

The structures used are shown below. All members are byte-aligned. All commands start with the structure

```

typedef struct {
    UINT nSize;        // Total command size
    UINT nHead;        // 4 bytes, 'HRD*'
    UINT nCmd;         // Command index
} MSG_HEADER;

```

- nSize - the total size in bytes of the message being sent.
- nHead – 4 bytes of sanity– ‘HRD*’.
- nCmd – a command from the table below.

Command	Structure
MSG_CMD_AUTHENTICATE	MSG_AUTHENTICATE
MSG_CMD_CLOSE_HANDLE	MSG_COM_PORT
MSG_CMD_CREATE_FILE	MSG_COM_PORT
MSG_CMD_DEVICE_IO_CONTROL	MSG_COM_PORT
MSG_CMD_GET_COM_PORTS	MSG_GENERAL
MSG_CMD_PURGE_COMM	MSG_COM_PORT
MSG_CMD_READ_FILE	MSG_COM_READ
MSG_CMD_READ_FILE_EX	MSG_COM_READ
MSG_CMD_SET_COMM_MASK	MSG_COM_PORT
MSG_CMD_SET_COMM_STATE	MSG_COM_PORT
MSG_CMD_SET_COMM_TIMEOUTS	MSG_COM_PORT
MSG_CMD_WRITE_FILE_ASYNC	MSG_COM_WRITE
MSG_CMD_WRITE_FILE_SYNC	MSG_COM_WRITE

MSG_AUTHENTICATE

```

typedef struct {
    MSG_HEADER header;
    BOOL        bAuthenticated;
    char        szUsername[64];
    char        szPassword[64];
    char        szStatus[512];
} MSG_AUTHENTICATE;

```

MSG_COM_PORT

```

typedef struct {

```

```

MSG_HEADER      header;
char            lpFileName[32];
DWORD          dwDesiredAccess;
DWORD          dwCreationDisposition;

DWORD          dwIoControlCode;
BYTE          byInBuffer[64];
DWORD          dwInBufferSize;
BYTE          byOutBuffer[64];
DWORD          dwOutBufferSize;
DWORD          dwBytesReturned;

DWORD          dwFlags;
DWORD          dwEvtMask;

DCB            dcb;
COMMTIMEOUTS  timeouts;

HANDLE         hHandle;
BOOL          bStatus;
char          szStatus[256];
} MSG_COM_PORT;

```

MSG_GENERAL

```

typedef struct {
MSG_HEADER  header;
BOOL        bStatus;
BYTE        byData[4096];
} MSG_GENERAL;

```

MSG_COM_READ

```

typedef struct {
MSG_HEADER  header;
HANDLE      hHandle;
DWORD       dwNumberOfBytesToRead;
BYTE       byTermChar;
DWORD       dwNumberOfBytesRead;
BOOL       bStatus;
OVERLAPPED overlapped;
BYTE       byData[4096];
} MSG_COM_READ;

```

MSG_COM_WRITE

```

typedef struct {
MSG_HEADER  header;
HANDLE      hHandle;
DWORD       dwNumberOfBytesToWrite;
DWORD       dwNumberOfBytesWritten;
OVERLAPPED overlapped;
BOOL       bStatus;
BYTE       byData[4096];
} MSG_COM_WRITE;

```


Annex: 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 HRD is:

HKEY_CURRENT_USER
Software
Simon Brown
HamRadioDeluxe
Options

The values in this key will not make much sense – they are used by HRD 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 HRD!

Files

HRD 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.

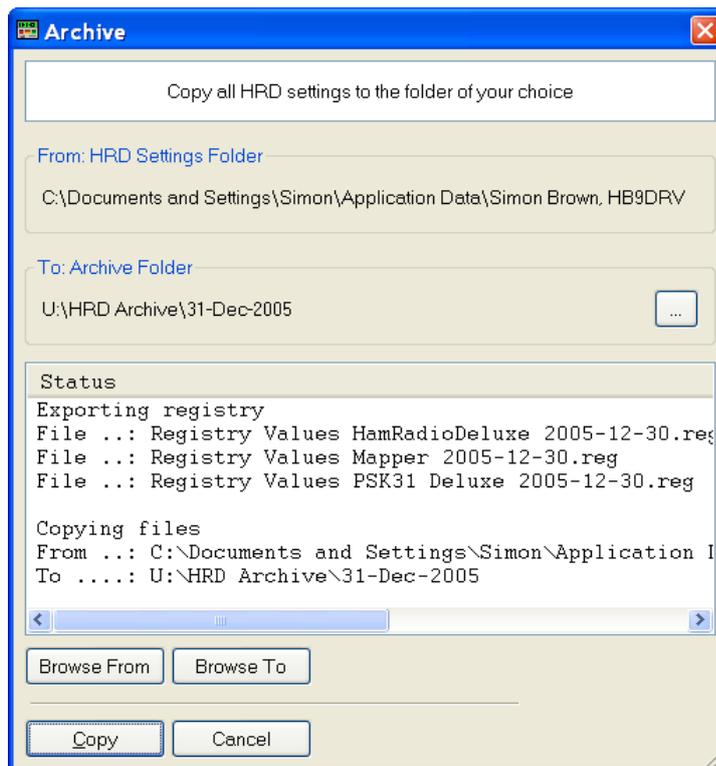
You will not normally need to directly access the files in this folder.

File	Description
*.css	Cascading style sheets, used by HTML export options – for example in Logbook Analysis.
HRD Logbook.mdb	Logbook database
*.opt	Optional schemes – see Schemes on page 29.
HRD Bands 02.txt	Band layouts
HRD Countries.txt	A default Log Windows country file
HRD Custom Defs - <radio>.txt	Custom CAT commands for a specific radio – see CAT Commands on page 103.

HRD Favourites 01.txt	See Favourites on page 69.
HRD Logbook Analysis Defns.txt	TBA
HRD Macros - TS-480.txt	Macro definitions – see Macros on page 103.
HRD Parallel Port Defns.txt	Parallel port definitions – see Auxiliary Switching on page 53.
HRD 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 HRD programs (HRD, PSK31 Deluxe, Mapper) and copies them to another folder.



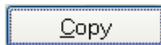
Select the destination folder



Browse the *From* folder



Browse the *To* folder



Start copying files and registry values.

When you press *Copy* you see a DOS window appear briefly a few times. HRD 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.

Annex: 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 analyse the database yourself:

- Start Microsoft Access,
- Convert the database if necessary using the *Convert Database* option selected from the *Tools* menu; do not overwrite the database!
- 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 HRD.
-  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
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
StationAge	Text	4
StationSig	Text	32
StationSigInfo	Text	64
StationTenTen	Text	10
PropagationAIndex	Text	10
PropagationKIndex	Text	10
PropagationMaxBursts	Text	10
PropagationNumBursts	Text	10
PropagationNumPings	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
QRZLongitude	Text	32

ADIF

Ideally HRD'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 HRD Field.

- *Antenna and Satellite* are combined into one dialog.

For ADIF information: <http://groups.yahoo.com/group/adifdev/files/> .

HRD Window	HRD Field	ADIF Field
Antenna/Satellite	Azimuth	ANT_AZ
Antenna/Satellite	Elevation	ANT_EL
Antenna/Satellite	Mode	SAT_MODE
Antenna/Satellite	Name	SAT_NAME
Antenna/Satellite	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-only)	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
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
<i>Deprecated</i>		OPERATOR
<i>Deprecated</i>		VE_PROV

<i>In ADIF files</i>		PROGRAMID
<i>In ADIF files</i>		PROGRAMVERSION
<i>t.b.a.</i>		BAND_RX
<i>t.b.a.</i>		FORCE_INIT
<i>t.b.a.</i>		FREQ_RX
<i>t.b.a.</i>		GUEST_OP
<i>t.b.a.</i>		NOTES
<i>t.b.a.</i>		OWNER_CALLSIGN
<i>t.b.a.</i>		PFX
<i>t.b.a.</i>		PUBLIC_KEY
<i>t.b.a.</i>		QSL_RCVD_VIA
<i>t.b.a.</i>		QSL_SENT_VIA
<i>t.b.a.</i>		QSLMSG
<i>t.b.a.</i>		QSO_COMPLETE
<i>t.b.a.</i>		QSO_RANDOM
<i>t.b.a.</i>		RX_PWR
<i>t.b.a.</i>		SRX
<i>t.b.a.</i>		SRX_STRING
<i>t.b.a.</i>		STATION_CALLSIGN
<i>t.b.a.</i>		STX
<i>t.b.a.</i>		STX_STRING
<i>t.b.a.</i>		SWL

Annex: Links

HRD

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.

Annex: Building HRD

Overview

HRD is a Windows-only program; please do not ask for the source code for porting to other platforms such as Linux or the Macintosh. Not only are there legal reasons (see below), it's also a technical waste of time! It would be much easier to start from scratch than try to port the code.

The information here is provided for anyone who takes over the development and maintenance of HRD for whatever reason.

Note that commercial programming libraries have been used – this saves a lot of time and provides a much better ‘look and feel’.

The HRD source is copied into a password-protected ZIP archive every night, transferred to a backup server then uploaded to an archive folder on a central web server.

The source is copyright (s) Simon Brown, HB9DRV unless already copyrighted.

Source Code

The root folder is `\Ham Radio` containing the folders in the table below.

Folder	Description
Alerter	Source for the Alerter module used by the satellite tracking. The Alerter is a standalone executable that announces upcoming satellite passes.
APEX	Contains Olectra Chart 6.0.6 now owned by http://www.componentone.com/ and called <i>ComponentOne Chart</i> . A license is required to use the contents of this folder for development, the <code>olch2d32.dll</code> DLL can be redistributed.
boost_1_20_1	The boost library, provides regular expression support used in PSK31 Deluxe.
CD Image	The CD Image which contains a full HRD distribution containing absolutely everything (except the source).
Codejock Software	Xtreme Toolkit Pro - a fine programming library from http://www.codejock.com/ . A license is required to use the contents of this folder for development.
Common	Code common to more than one HRD component.
DDE Demos	DDE demonstration programs, source can be distributed.
Debug	All executable code compiled in debug mode, this is not shipped to

	end-users.
Defaults	Default files shipped in the HRD kits. Examples are colour schemes and satellite data.
Doc	Source for this document. The PDF is in the <i>Ship</i> sub-folder.
Dundas	A fine programming library from http://www.dundas.com/ subsequently sold to http://www.theultimatetoolbox.com/ . A license is required to use the contents of this folder for development.
Dundas Software 001	See <i>Dundas</i> above.
HamRadioDeluxe	The source code for ham Radio Deluxe.
HRDSats	The source code for the HRD Sats DLL. This may be redistributed; it comes mostly from public domain sources and freely available work from other people, notably Michael F. Henry.
HRDSync	The source code for the program used to synchronise multiple instances of HRD.
InstallShield	The InstallShield folder contains the InstallShield DevStudio 9 project that builds the distribution kit. A licence is needed for InstallShield products. The project file is <i>Ham Radio Deluxe.ism</i> .
Kit	To build a kit run Make.bat .
lame-3.92	Open source MP3 encoder, used by the Audio Grabber.
mad-0.14.2b	Source code to produce a DLL that converts MP3 files to WAV or PCM. It is based on the open source library libmad.
madlplib	See <i>mad-0.14.2b</i> above.
Mapper	Source code for <i>Mapper</i> , slowly being replaced with Google Earth and Google Maps.
PSK31 Deluxe	Source for <i>PSK31 Deluxe</i> .
PSKCore119	The PSK31 engine, copyright 2000, Moe Wheatley, AE4JY. Licence is <i>not</i> needed.
Release	All executable code compiled in release mode, this is shipped to end users.
RemoteSvr	The source code for the HRD Remote Server.
Workspace	Contains the Microsoft VisualStudio workspace <i>HamRadio.dsw</i> .

Additional Libraries

You also need:

- Microsoft Speech SDK 5.1 (or higher),
- Microsoft Driver Development kit for Windows 2000 (or higher) also known as NTDDK,
- Microsoft Platform SDK for Windows.

The Platform SDK and NTDDK provide definitions not available in the files shipped with *Visual C++ version 6.0* from Microsoft. If you are using a newer version of C++ you may not need these libraries.

As a Visual C++ programmer you will be familiar with the use of the Microsoft libraries.

Tools

To compile HRD you need *Visual C++ version 6.0* from Microsoft. There is no reason to use a later version such as *Visual Studio 2005* as by all accounts the user interface is less friendly and the compiler is slower.

To build kits you need *InstallShield DevStudio 9*. As this version can no longer be purchased you will have to buy the latest version available.

Note that you will need licences for the products listed in Source Code on page 183.

- ComponentOne Chart,
- Codejock Software's Xtreme Toolkit Pro,
- Ultimate Toolbox.

Visual Studio Settings

In the examples below Visual Studio and the SDKs / DDKs are installed on the C: drive, the Ham Radio Deluxe source is on the D: drive.

Include Directories

The recommended include directories are:

- C:\MICROSOFT SDK\INCLUDE
- C:\Program Files\Microsoft Visual Studio\VC98\INCLUDE
- C:\Program Files\Microsoft Visual Studio\VC98\MFC\INCLUDE
- C:\Program Files\Microsoft Visual Studio\VC98\ATL\INCLUDE
- C:\NTDDK\INC;D:\MICROSOFT SPEECH SDK 5.1\INCLUDE
- D:\Ham Radio\Dundas Software 001\Ultimate Toolbox\include

Library Directories

- C:\Program Files\Microsoft Visual Studio\VC98\LIB
- C:\Program Files\Microsoft Visual Studio\VC98\MFC\LIB
- C:\MICROSOFT SDK\LIB
- D:\Ham Radio\APEX\LIB
- D:\MICROSOFT SPEECH SDK 5.1\LIB\I386
- D:\HAM RADIO\BOOST_1_20_1\LIBS\REGEX\LIB\VC6
- D:\HAM RADIO \DUNDAS SOFTWARE 001\ULTIMATE TOOLBOX\LIB\LIBS
- D:\HAM RADIO \DUNDAS\ULTIMATE TOOLBOX\LIB\LIBS

Building

To rebuild:

- Open the workspace,
- Build all Win32 Release configurations,

- Build the kit.

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