

DIGITAL MASTER

780

USER GUIDE



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Martin Lynch and Sons of London supplies all radios used by HB9DRV and GD4ELI.

Special thanks are due to Chris Taylor for his friendly and efficient service.



If you are looking for a new radio to use with digital mode software I recommend Kenwood's TS-480SAT. It offers excellent value for money, is very easy to use and has the best computer support available today.

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Introduction

Digital Master (DM780) is a new program supporting the most commonly used digital modes, a replacement for PSK31 Deluxe. DM780 is closely integrated with Ham Radio Deluxe.

To see what is new look at the Change Log (page 65).

Supported Modes

The first release supports PSK/QPSK 31/63/125 using the PSK engine developed by Moe Wheatley AE4JY and modified by myself. The source for the DLL is available, if you can't find it on the Ham Radio Deluxe website just ask and I'll make sure it's available.

In DM780 you find all the features you expect of a modern program such as an integrated logbook, world map and web browsers. The DM780 philosophy is to get the UI working properly before more modes are added.

The development target is to support the commonly used digital modes by the end of 2007, these modes being:

- CW
- DominoEX 4, DominoEX 5, DominoEX 8, DominoEX 11, DominoEX 16, DominoEX 22
- Feld-Hell, FSK-Hell, FSK-Hell 105
- MFSK-8, MFSK-16, MFSK-16 pix
- OLIVIA various tones and bandwidth
- RTTY various Baud Rates, Shifts, Number of data bits, etc.
- Throb-1 Throb-2 Throb-4 ThrobX-1 ThrobX-2 ThrobX-4

The above list is taken from Fldigi, a fine digital mode program for Linux. For more information: <http://www.w1hkj.com/Fldigi.html> . The author of Fldigi, W1HKJ has kindly allowed me to use his code for these modes.

Once this work is finished WSJT will very probably be added.

Operating System Support

DM780 is designed for Windows 2000, XP and VISTA. Older versions of Windows such as Windows 98 are not supported.

There are *no* plans for Linux or Mac OS versions. The UI code cannot be made available; also it is not possible to port it to a

UNIX-based operating system. If you want a UNIX / Linux solution look at Fldigi (see above).

VISTA

Although the first release works with VISTA, the soundcard names and input sources will not be displayed with the same titles seen when using VISTA's soundcard programs. To add correct support for VISTA more code must be written on a VISTA development machine, this will be part of the second release of DM780.

Hardware Requirement

Although one member of the test team has satisfactory results using a 500 MHz CPU and Windows XP a realistic minimum system would be a 1 GHz Intel CPU and 512 MB of RAM.

A high-end soundcard such as the M-Audio Delta 44 is not essential but recommended.

If you are using a laptop be aware that the internal soundcard may be very poor indeed, consider the Signalink USB from Tigertronics <http://www.tigertronics.com/> .

Meet The Users

The HRD and DM780 support forums are found at <http://forums.ham-radio.ch/> .

You do not need to register to view the forums!

Getting Started

Follow these steps to configure DM780 and enjoy your first digital mode QSO.

Audio Interfacing

You need an audio interface to connect your rig's audio in/out to the computer's soundcard. This eliminates troublesome ground loops and prevents hum and noise from degrading the signals.

Audio interfacing can be done in so many ways that it would take days to plough through all the available information. It is possible to connect your radio directly to your soundcard without any form of isolating interface but this is not recommended.

Commercial Solutions

From England there are the ZLP Electronics DigiMaster interfaces, inexpensive, *very well made* and used with my TS-480SAT.



From Oregon USA, Tigertronics manufactures the Signalink interfaces, used with my IC-703 and FT-817.



From Connecticut USA, West Mountain Radio provide the RIGBlaster solutions.

Tags

Enter values in the Tags window; these values are used in macros (shortcuts which save you entering the same text every time you have a QSO). The values are saved automatically.



About Me	
Callsign	HB9DRV
Name	Simon
Age	95
Locator	JN46pt
QTH	Laax
E-Mail	simon@hb9drv.ch
Home Page	www.hb9drv.ch
Clubs	RSGB, G-QRP, ARRL

Soundcard

Select your soundcard as follows:

Either:

- From the *View* menu select *Soundcard*,
- In the Soundcard pane press the *Options* button.

Or:

- Press *F8* to display the *Program Options* (or select *Program Options* from the *Tools* menu),
- Select the *Soundcard* page.



Soundcard

Input (Receive)

Device: Creative Sound Blaster PCI

Source: Line In

Select the soundcard used for input (receive) and output (transmit).

Select the mixer controls shown in the Soundcard toolbar.

Output (Transmit) Use input device

Device: Creative Sound Blaster PCI

Source: Wave

Default Sample rate

8 kHz

48 kHz (recommended)

Show Supported Formats

A good soundcard is recommended; some PC's come with very poor solutions built onto the motherboard (this is especially true for laptops). You can use the PC's default soundcard to get going, but the difference between a poor soundcard and a card such as the M-Audio Delta 44 or a Creative Audigy is like night and day. *You will be able to decode signals much better with a good soundcard.*

Signalink USB

Tigertronics make a great external soundcard that you connect to a USB port on your computer; this is the Signalink USB, which also provides an audio interface between the radio and PC to isolate your computer from your radio.

Available direct from [Tigertronics](#) and [Martin Lynch & Sons \(UK\)](#).



An advantage of a second soundcard is you can use the internal card for normal Windows sounds and the DM780 alarms.

Radio Control

DM780 uses Ham Radio Deluxe (HRD) for radio control. To set up a connection between DM780 and HRD:

- In DM780 open the Radio display (select *Radio* from the *View* menu),
- Press  Configure (the right-most button on the toolbar),
- Read the help text, this contains everything you need to know!



To configure the radio interface:

- Make sure Ham Radio Deluxe (HRD) is started and connected to a radio, you must use build 1317 or later.
- In HRD select IP Server from the Tools menu, make sure the IP Server is started and is configured to start when HRD starts.



- In DM780 select *Radio* from the *View* menu, in the *Radio* pane press the *Configure* button.

In the *Configure Radio Pane* window:

- HRD address - the address or name of the computer where HRD is running, localhost (or 127.0.0.1) if the local computer.
- HRD port - the default port is 7809.
- Press *Connect* to HRD.

If a connection can be established:

- All buttons are enabled,
- The Dropdown buttons are automatically loaded with the dropdown buttons shown the HRD's display,
- The **TX** push button is automatically loaded (if available for your radio).
- TS-480SAT - the **TX Alt** button is used for PTT via the rear connector.

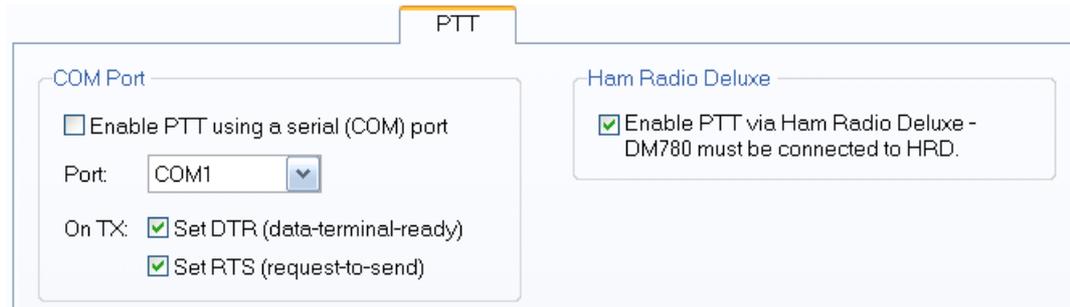
To change a selection click on a button, then select an entry from the popup window. To clear the current selection, select the first entry '- - -'.

When you have finished defining your layout press *Save*. The definitions are saved in your local storage folder (from the Tools menu select Program Options, then select the Storage pane). For example, the IC-703 definitions are stored in DMRadioLayout_IC-703.xml .

In the *Radio* pane press the *Connect* button  to connect to HRD.

PTT

Normally you use HRD for PTT control, PTT is configured on the PTT pane of the Program Options (page 61).



COM Port

To use a COM port for PTT:

- Select [X] Enable PTT...
- Select the COM port; this must not be in use by another program,
- Select DTR, RTS or DTR and RTS.

When you switch to TX DTR and/or RTS are set (raised), when you return to RX they are cleared.

Ham Radio Deluxe

To use HRD the radio pane must be connected to HRD:

- In the *View* menu select *Radio*
- In the Radio pane press *Configure* and read the instructions!

Your First QSO

If a QSO window is not displayed just press the QSO button. A typical QSO window layout is shown below.

The screenshot displays the Digital Master 780 software interface. The main window is titled "Digital Master 780 - Terry - [BPSK-31]". The interface is divided into several sections:

- Top Menu:** File, Edit, View, QSO, Browser, Logbook, SuperBrowser, World Map, Tools, Window, Help.
- Left Panel (Radio/Soundcard):** Contains fields for "Add Log Entry" with Start and End times (19:14), Callsign, Name, OTH, Locator, Country (Aaland Is.), Frequency (0), Band (2190m), Mode (PSK31), Sent (599), Rcvd (599), and Remark.
- Tags Panel:** A tree view showing categories like "About Me", "My Equipment", "Other", and "Computer" with various sub-fields.
- Main Text Area:** Displays a QSO log entry starting with "19:21:45> Main" and the text: "l au dnrmtion Many thanks for this nice QSO. All the best to you and your family. Good luck and good dx ! 73 73 73 from Boryspil. 1 Mar 2007 09:04:15z UTC. BTU IW1AOB IW1AOB de UR4UP pse Ket l au".
- Bottom Panel (Waterfall):** A spectral display showing frequency (100-2900 Hz) over time. A red vertical line indicates the current frequency (894 Hz). The waterfall shows a signal at approximately 950 Hz.

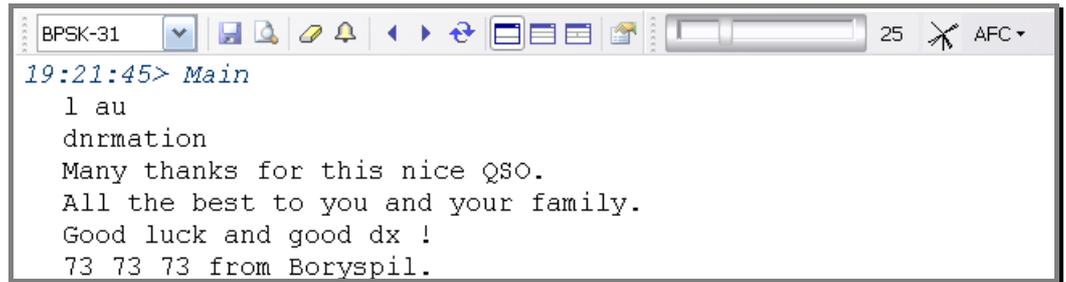
QSO Window

The major components of the QSO window are:

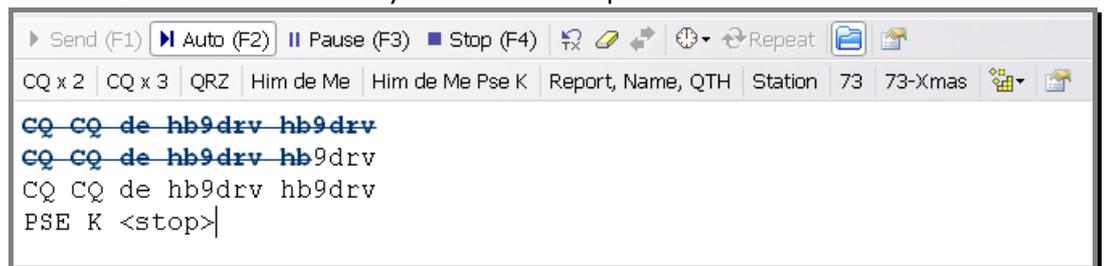
- Logbook (Add Log Entry) add an entry to DM780's logbook. Click on the tabs to select the pages.



- Macros, Tags, Modes:
 - Macros – pre-defined text that you use when composing the text you want to send.
 - Tags – information about yourself and your station, which is organized into fields, which in turn are used by macro definitions.
 - Modes – add modes currently supported by DM780.
- Receive window – decoded text is displayed here.



- Transmit window – the text you send is composed here.



- Waterfall - at the bottom you see the Waterfall, the red stripes are PSK31 signals. To select a signal, just click on the stripe.

More Detail

If the Waterfall is not displaying signals, check:

- Your radio is switched on,
- The correct soundcard is selected,
- The correct input source is selected and enabled,
- The cables are correctly connected to your radio and soundcard interface.

Mode

Select the correct mode. The default is PSK31, used in 95% or more PSK QSO's. Select the mode with either:

- The dropdown option in the receive window, or

- The Modes pane.

Transmitting

Before you make your first test transmission you must decide how you will switch your radio between transmit and receive.

The options are:

- PTT using a serial (COM) port,
- PTT via Ham Radio Deluxe,
- VOX (depends on your radio and soundcard interface).

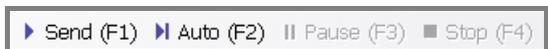
To select PTT open the PTT page of the Program Options (selected from the Tools menu).

Test Transmission

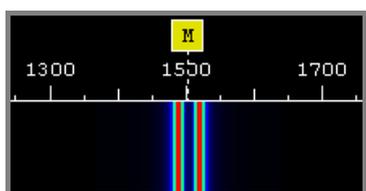
It is very important that you transmit a clean, linear signal. Never, ever use any compression or ALC.

To transmit just press either:

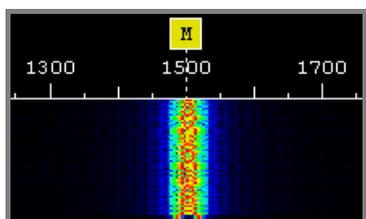
- Send (F1) – starts sending, when all text has been sent press Stop (F4).
- Auto (F2) – starts sending, stops when all text has been sent.



When you start sending you will see the classic PSK 'tramlines' in the waterfall window:



When text is being sent the signal looks like this:



If you have configured your radio interface correctly your radio will switch to transmit mode when you start sending.

Using Macros

To select a macro either:

- Select an entry from the Macros pane, or
- Click an entry in the Macros bar.

The macros bar is usually the most convenient option. In the picture below the macros bar is the second strip of buttons.

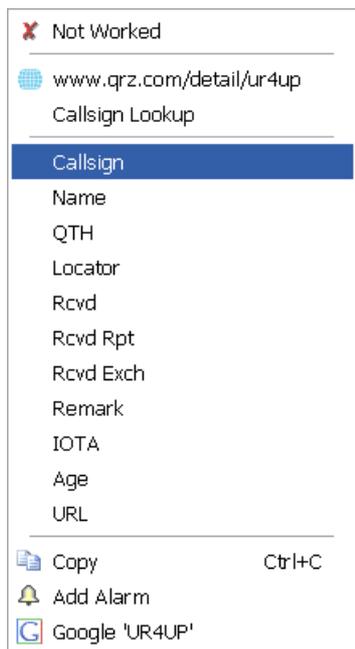


In this example the text that has been sent is displayed with a blue strikethrough font.

To directly edit a macro right-click on the button in the macros bar.

Add Log Entry

Although you can type values into the fields in the Add Log Entry window, a faster option is to double-click on text in the receive window and select options from the popup menu.



In this example the text UR4UP has been selected.

(Because UR4UP is an alphanumeric string and possibly a valid callsign, the entries in the popup window include the callsign lookup / QRZ options.)

To copy UR4UP into the Callsign field in the Add Log Entry window just select *Callsign* from the popup menu.

Hint: if you press Shift while double-clicking the selected text is copied into the Callsign field without displaying the popup menu.

The entries in the menu are:

- Worked status,
- Lookup using QRZ.com or DM780's Callsign Lookup window,
- The Add Log Entry fields – the main fields are supported,
- Copy to clipboard,
- Add Alarm – create an alarm from the callsign,
- Google for the callsign.

Add

This page contains the most commonly used fields.

Start and End Times

The times are usually shown using UTC, use the Program Options / Logbook pane to select either UTC or Local time. The time is always stored in the logbook using UTC.

Start

The start time for the QSO. If you check *Now* the start time is updated with the current time.

In the Program Options / Logbook pane optionally select:

Update when adding callsign - the time is updated when you add a new value in the Callsign field if previously empty,

Update when adding logbook entry.

End

The end time of the QSO. If you check *Now* the end time is updated with the current time. In the Program Options / Logbook pane optionally select:

Update when adding logbook entry.

Callsign

The station contacted. When you enter the callsign the *Country* is updated automatically. This field is mandatory.

Name

The operator's name, free-format text.

QTH

The operator's location, free-format text.

Locator

The Maidenhead locator, usually 6 characters, for example JN46pt.

Country

Updated automatically when you enter a callsign, the list shown corresponds to the latest DXCC list of countries.

Frequency

The current frequency, updated automatically from the Radio pane.

Band

The current band, determined from the frequency.

Mode

The current mode - the list contains the ADIF modes that are used for logbook import / export, awards, etc.

Sent

Sent has two fields: *Report* (example - 599) and *Exchange* (for contests).

Report

The standard, select from the dropdown or entered via the keyboard.

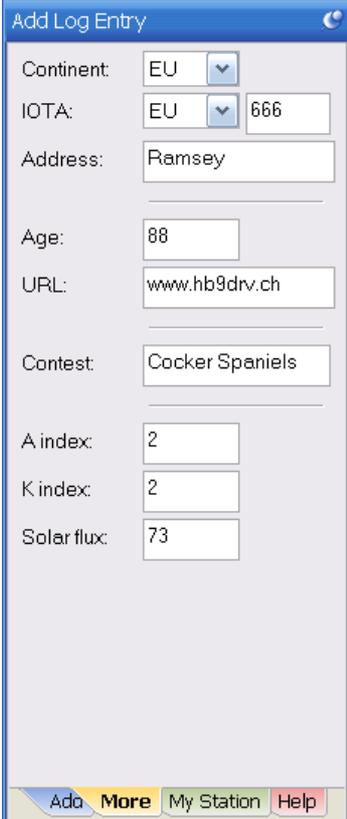
Exchange

To enable auto-incremented values in the Exchange field enclose the numeric value to be incremented inside square brackets. For example, if you enter [001] then the value added to the logbook and inserted in macros is 001 and this value is incremented to 002 when you press *Add*. The square brackets are ignored.

Remark

A free-format text field.

More



The screenshot shows a web form titled "Add Log Entry" with the following fields:

Continent:	EU	
IOTA:	EU	666
Address:	Ramsey	
Age:	88	
URL:	www.hb9drv.ch	
Contest:	Cocker Spaniels	
A index:	2	
K index:	2	
Solar flux:	73	

At the bottom of the form are four buttons: "Add", "More", "My Station", and "Help".

This page contains less frequently used fields.

Continent

Select from the dropdown list.

IOTA

Islands On The Air reference – the IOTA homepage is: <http://www.rsgbiota.org/> .

Age

The other station's age.

URL

The other station's homepage.

Contest

If the contact is made during a contest, enter the name of the contest here.

A index, K index, Solar flux

The current space weather information available from NOAA via WWV.

My Station

This page contains information about your station. As you may have many configurations up to ten different station profiles are supported.

After you have entered values press *Save*.

Use the *Copy To* option to save the current values to a different profile.

Add Log Entry ⌵

Callsign:	<input type="text" value="HB9DRV"/>	SIG:	<input type="text"/>	
Owner call:	<input type="text" value="HB9DRV"/>	SIG info:	<input type="text"/>	
Operator call:	<input type="text" value="HB9DRV"/>	Locator:	<input type="text" value="JN46pt"/>	↑ ↓
Name:	<input type="text" value="Simon"/>	Lat/Lon:	<input type="text" value="46.812500"/>	<input type="text" value="9.291667"/>
Street:	<input type="text" value="Via Plauna 431B"/>	CQ zone:	<input type="text"/>	
City:	<input type="text" value="Laax"/>	IOTA:	<input type="text"/>	
County:	<input type="text" value="Kreis Ilanz"/>	ITU zone:	<input type="text"/>	
State:	<input type="text" value="GR"/>	Power:	<input type="text" value="40W"/>	
ZIP:	<input type="text" value="7031"/>	Country:	<input type="text" value="Switzerland"/>	
Equipment:	<input type="text" value="IC-703, TS-480SAT, TS-2000"/>			
Antennas:	<input type="text" value="Diamond CP-6"/>			
Profile:	<input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="10"/>			
	<input type="button" value="Save"/>		<input type="button" value="Copy To"/> <input type="text" value="1"/> <input type="button" value="v"/>	

Note: these fields are not used in macros, instead use the Tags pane.

Add
More
My Station
Help

Advanced QSO Options

Squelch

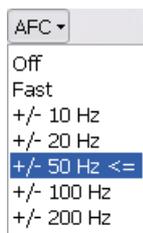
The Squelch control operates in a similar way to the squelch on your FM receiver; the signal is only decoded when the strength is equal to or greater than the squelch setting.



In the above example the squelch threshold is set to 25 (the available range is 0 to 100), the actual signal level is significantly higher.

AFC

Automatic Frequency Control ensures that you track a signal which may be drifting, also that your receive frequency is in the center of the signal.



The normal value is +/- 50 Hz, this tracks within 50 Hz of the signal.

If the value is set too high there is the risk of being moved from a weak signal to a stronger near-by signal.

Signal Quality

The quality of the received signal is shown in the vector data display.

-  Vertical lines like this indicate a good PSK signal.
-  Random lines like this indicate a bad PSK signal.

Multi-Channel Support

The standard QSO window supports 1, 2 or 3 receive channels.

-  One channel (Main).
-  Two channels, Main and Sub-A.
-  Three channels, Main, Sub-A and Sub-B.

You can only transmit using the Main channel, Sub-A and Sub-B are receive only.

Use the  button to swap the contents of Sub-A or Sub-B with the Main channel.

An alternative to multi-channels is the SuperBrowser.

Split Mode

To enable split mode operation just press the split mode button . Instead the main channel marker  is replaced with a transmit  and receive  marker.

To change either frequency click on the marker, then drag over a signal trace.

Repeats

To send text at a regular interval use the repeat option. Typically you use this option to send a CQ text on a normally quiet band such as 50 MHz.

There are two buttons associated with repeats:

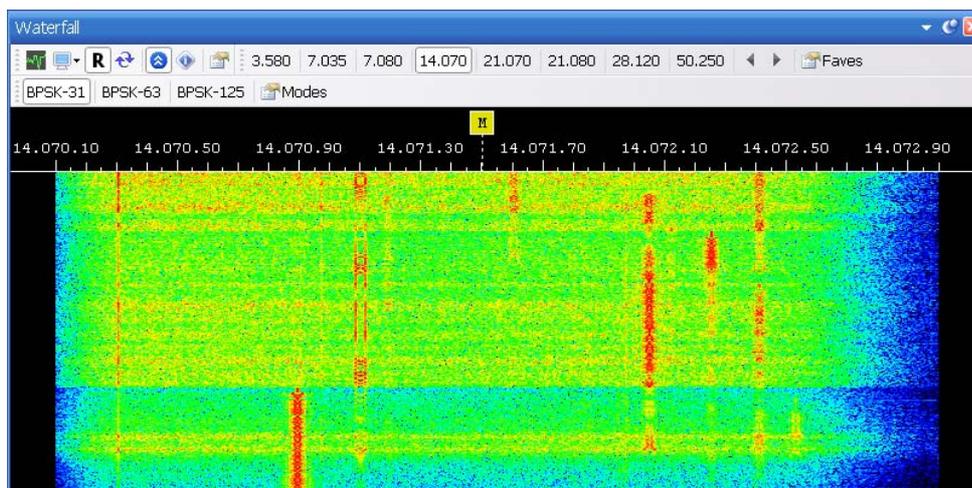
-  Select the repeat interval.
-  Repeat Enable repeats.

When a repeat interval is selected a progress bar is displayed at the bottom of the transmit window (on the window's status bar).

For example, with an 8 second interval:  

Waterfall

The waterfall is your tuning dial; you select the signal to decode and if in split mode your transmit frequency.



The waterfall display consists of:

- Main toolbar,



- Favourites toolbar,



- Modes toolbar,



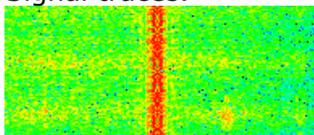
- Markers,



- Frequency,



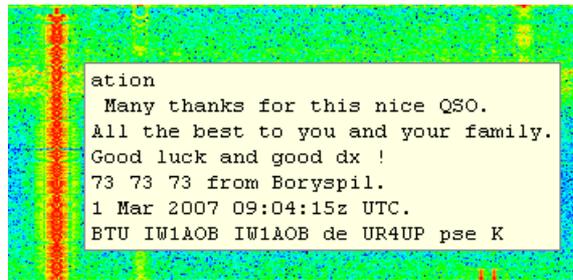
- Signal traces.



Main Toolbar

The main toolbar options are:

-  Show frequency spectrum
-  Display mode – various algorithms to pull the signal trace out of the background noise. This does not affect the signal decoding.
- R** Show radio frequency (frequency of radio + audio offset).
-  Rewind the display – replays the stored audio.
-  Maximise the contrast (this does not affect the signal decoding).
-  Enable info popups – the trace under the cursor is decoded, the result displayed in a small popup window.



Waterfall options.

Favourites Toolbar

The favourites toolbar contains the frequencies you commonly use, it is provided to make switching between these frequencies as painless as possible.

-  A favourite frequency (not selected).
-  The currently selected favourite frequency.
-  Adjust frequency by +/- 500Hz.
-  Start the favourites manager.

Modes Toolbar

The modes toolbar contains the modes you commonly use.

-  A favourite mode (not selected).
-  The currently selected mode.
-  Start the modes manager.

Markers

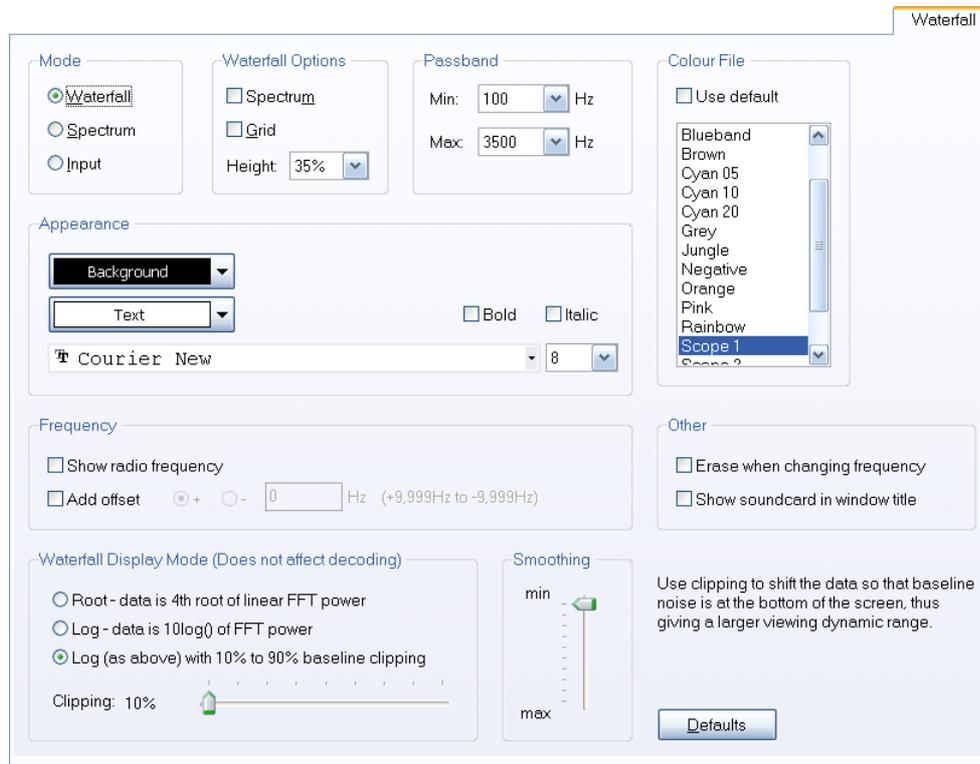
The various markers you will see in the waterfall are shown below. To change a frequency click on, then drag the marker over a signal. The cursor indicates the marker you are dragging.

To change the main channel frequency just click in the waterfall.

-  A current Main channel frequency. Split mode  must be off.
-  The current channel Sub-A (VFO-A) frequency.
-  The current channel Sub-B (VFO-B) frequency.
-  If split mode is enabled this is the receive (RX) frequency.
-  If split mode is enabled this is the transmit (TX) frequency.
-  Center frequency – see Center Frequency on page 64.

Appearance

The waterfall appearance is configured with the Waterfall page of the Program Options (selected from the Tools menu).



The most commonly used options are *Colour File* and the *Display Mode* settings.

Select the colour file that is best for you, (I prefer *Scope 1*).

The display mode settings adjust the data to make the signal traces more prominent; this has no effect on the decoding. The default setting is shown in the above screenshot.

Options

There are three panes in the Program Options (page 61) used by the QSO window:

- QSO:General,
- QSO:Receive and
- QSO:Transmit.

Familiarise yourself with the options on these panes.

Logbook

Every modern program has a built-in logbook; DM780 is no exception. The database engine is taken from Ham Radio Deluxe; the operation will be familiar to anyone who has used Ham Radio Deluxe.

There are two logbook windows:

- Quick log - a docking pane that shows the most recent entries, designed as a quick reference window.
- Main logbook - this is the option you select for general logbook maintenance.



Whichever window you use – TAKE REGULAR BACKUPS!

Quick Log

Select *Display Quick Log* from the *Logbook* menu or *Quick Log* from the *View* menu to display this window.

Much simpler than the main logbook window, this is a docking pane with only the most basic options available, selected from the toolbar.

Date	Start	End	Station	Band	Mode	Sent	Recv	Locator	Name
31/01/2007	08:09	08:29	LAØHK	40m	LSB	59	59		Gerald Markesc
26/01/2007	21:33	21:38	LAØBX	80m	PSK31	599	599		Jonsson
06/01/2007	08:08	08:19	LAØHK	40m	LSB	59	59		Gerald Markesc
02/01/2007	08:08	08:16	LAØHK	40m	LSB	59	59		Gerald Markesc
18/11/2006	08:11	08:18	LAØHK	40m	LSB	59	59		Gerald Markesc
15/11/2006	08:17	08:19	LAØHK	40m	LSB	59	59		Gerald Markesc
09/11/2006	08:06	08:19	LAØHK	40m	LSB	59	59		Gerald Markesc

- ◀▶ Fit to Text
- ↻ Refresh
- ✂ Modify
- ✖ Delete
- 🌐 Max Entries

-  Plot
-  Backup
-  Enable Filter (find by callsign)
-  Apply Filter
-  Options

If the  *Find* option is enabled then any callsign entered in the *Add Log Entry* window is automatically applied here.

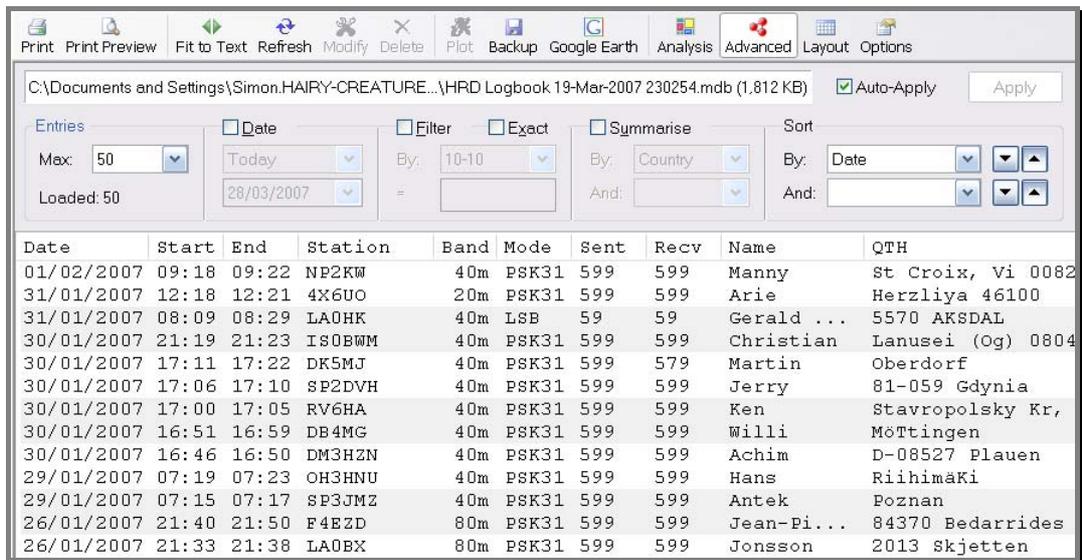
To try this:

1. Make sure the *Quick Log* window is displayed.
2.  *Find* must be selected.
3. In the *Add Log Entry* window enter a callsign in the *Callsign* field.

All previous QSO's with this station are now shown.

Main Logbook

Select *Display Main Logbook* from the *Logbook* menu or press the *Logbook* button on the main toolbar.



The screenshot shows the HRD Logbook software interface. At the top, there is a toolbar with various icons including Print, Print Preview, Fit to Text, Refresh, Modify, Delete, Plot, Backup, Google Earth, Analysis, Advanced, Layout, and Options. Below the toolbar, there is a window title bar and a menu bar. The main area contains a list of log entries with the following columns: Date, Start, End, Station, Band, Mode, Sent, Recv, Name, and QTH. The entries are sorted by Date, and the filter is set to '10-10'.

Date	Start	End	Station	Band	Mode	Sent	Recv	Name	QTH
01/02/2007	09:18	09:22	NP2KW	40m	PSK31	599	599	Manny	St Croix, Vi 0082
31/01/2007	12:18	12:21	4X6UO	20m	PSK31	599	599	Arie	Herzliya 46100
31/01/2007	08:09	08:29	LA0HK	40m	LSB	59	59	Gerald ...	5570 AKSDAL
30/01/2007	21:19	21:23	I80BWM	40m	PSK31	599	599	Christian	Lanusei (Og) 0804
30/01/2007	17:11	17:22	DK5MJ	40m	PSK31	599	579	Martin	Oberdorf
30/01/2007	17:06	17:10	SP2DVH	40m	PSK31	599	599	Jerry	81-059 Gdynia
30/01/2007	17:00	17:05	RV6HA	40m	PSK31	599	599	Ken	Stavropolsky Kr,
30/01/2007	16:51	16:59	DB4MG	40m	PSK31	599	599	Willi	Möttingen
30/01/2007	16:46	16:50	DM3HZN	40m	PSK31	599	599	Achim	D-08527 Plauen
29/01/2007	07:19	07:23	OH3HNU	40m	PSK31	599	599	Hans	Riihimäki
29/01/2007	07:15	07:17	SP3JMZ	40m	PSK31	599	599	Antek	Poznan
26/01/2007	21:40	21:50	F4E2D	80m	PSK31	599	599	Jean-Pi...	84370 Bedarrides
26/01/2007	21:33	21:38	LA0BX	80m	PSK31	599	599	Jonsson	2013 Skjetten

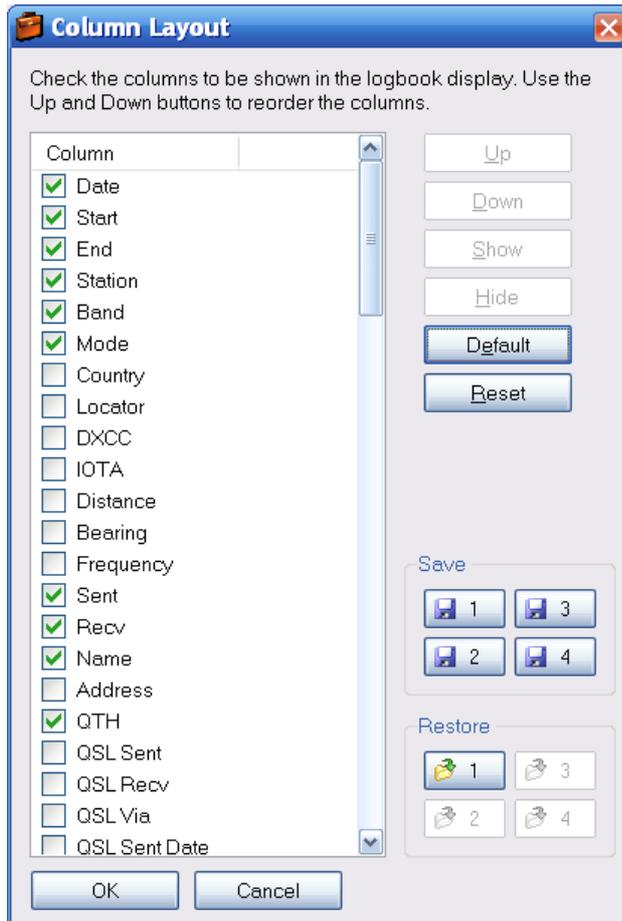
Note: The selection fields at the top of the window are enabled when the *Advanced* button is pressed.

All options are selected from either the Logbook menu, the context (right-click) menu or the toolbar.

Layout

The column layout is user-definable. Select the columns and the order in which they are displayed.

Save up to four custom layouts.



ADIF

Amateur Data Interchange Format (ADIF) files are used to exchange QSO information between logging programs. In DM780 you can save (export) the logbook to an ADIF file and load (import) an ADIF file into the logbook.

Export

Create an ADIF file to send your records to another logging program, Logbook of The World (LoTW) or eQSL.cc.



After selecting the output file you select the fields to be included in the file.

- ADIF / LoTW: the fields supported by ADIF 2.0 (also required by LoTW).
- ADIF + Ham Radio Deluxe: all fields.
- EQSL: only the fields required by eQSL – this makes the ADIF file smaller and the eQSL upload faster.

An example of an ADIF file containing a single record is shown below:

```

###
#
#   Digital Master 780 version 1.0 build 1431
#   http://www.hb9drv.ch
#
#   Free software for ever!
#
#   Created:   28-Mar-2007 20:54:55
#   Database:  C:\Documents and Settings\...\HRD Logbook 19-
Mar-2007 230254.mdb
#   Exported: 1 record
#
#--
<ADIF_VERS:3>2.0
<PROGRAMID:14>HamRadioDeluxe
<PROGRAMVERSION:22>Version 1.0 build 1431
<EOH>

<call:5>NP2KW <qso_date:8:d>20070201 <time_on:6>091822
<band:3>40m <mode:5>PSK31 <rst_sent:4>599 <a_index:2>18
<cont:2>NA <dxcc:3>285 <freq:8>7.034500
<gridsquare:6>FK77np <iota:6>NA-106 <k_index:1>4

```

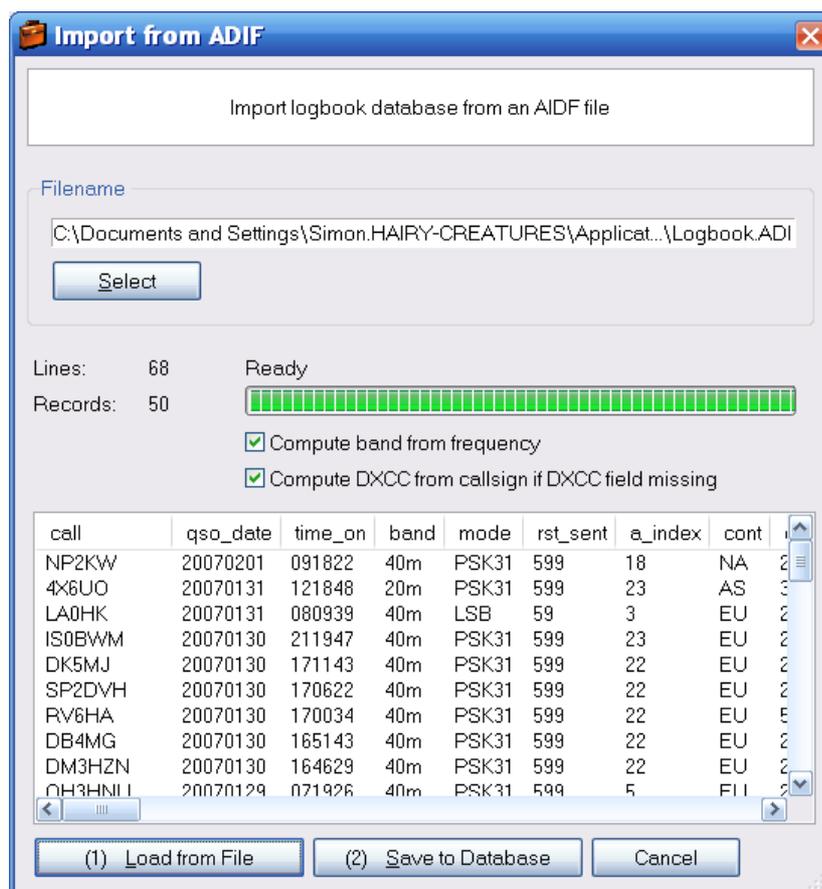
```

<my_city:8>Wickford <my_cnty:5>Essex
<my_country:7>England <my_cq_zone:2>14
<my_gridsquare:6>JO01go <my_iota:6>EU-005
<my_itu_zone:2>27 <my_lat:8>51.60545 <my_lon:7>0.54845
<my_name:5>Terry <my_postal_code:8>SS11 8XN
<my_rig:33>Yaesu FT1000 MkV + Balanced tuner
<my_street:18>2 Coltishall Close <name:5>Manny
<operator:5>G6CNQ <owner_callsign:5>G6CNQ <qth:18>St
Croix, Vi 00821 <rst_rcvd:4>599 <sfi:2>89
<station_callsign:5>G6CNQ <time_off:6>092252 <tx_pwr:8>40
watts <EOR>

```

Import

Use this option to load and ADIF file into your logbook database.



When importing an ADIF file the band information may be missing, if you check the option:

Compute band from frequency

the band is recomputed.

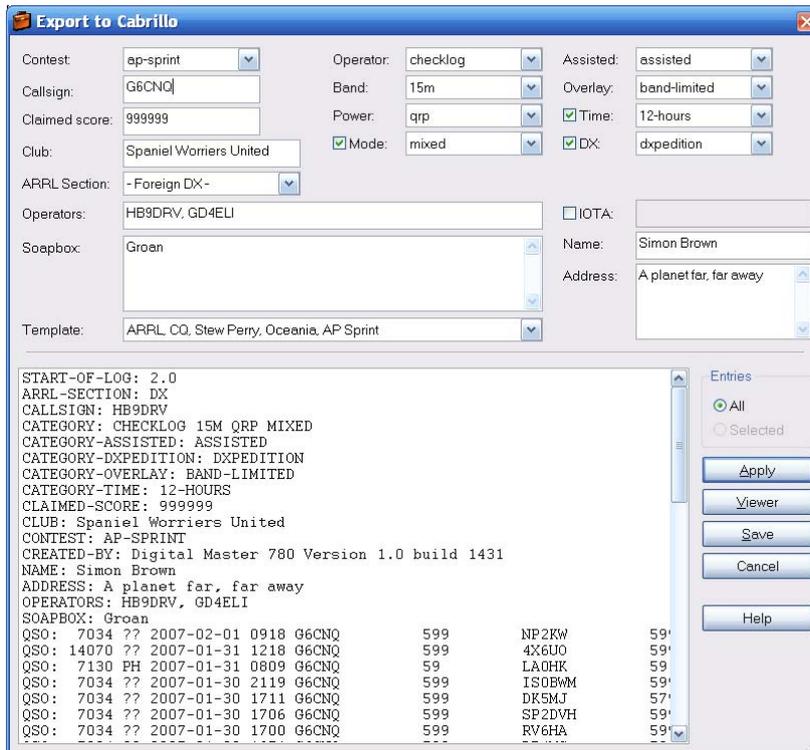
If the DXCC information is missing you can generate this by checking:

Compute DXCC from callsign if DXCC field missing

The first step is to load the file; the records are shown in the bottom half of the window. If you are satisfied that the information shown is correct you save this information to your database.

Cabrillo

Many contests require the log in Cabrillo format (why they can't just load an ADIF file is a mystery).



Export to Cabrillo

Contest: ap-sprint Operator: checklog Assisted: assisted
Callsign: G6CNO Band: 15m Overlay: band-limited
Claimed score: 999999 Power: qrp Time: 12-hours
Club: Spaniel Worriers United Mode: mixed DX: dxpedition
ARRL Section: -Foreign DX-
Operators: HB9DRV, GD4ELI IOTA:
Soapbox: Groan Name: Simon Brown
Address: A planet far, far away
Template: ARRL, CQ, Stew Perry, Oceania, AP Sprint

START-OF-LOG: 2.0
ARRL-SECTION: DX
CALLSIGN: HB9DRV
CATEGORY: CHECKLOG 15M QRP MIXED
CATEGORY-ASSISTED: ASSISTED
CATEGORY-DXPEDITION: DXPEDITION
CATEGORY-OVERLAY: BAND-LIMITED
CATEGORY-TIME: 12-HOURS
CLAIMED-SCORE: 999999
CLUB: Spaniel Worriers United
CONTEST: AP-SPRINT
CREATED-BY: Digital Master 780 Version 1.0 build 1431
NAME: Simon Brown
ADDRESS: A planet far, far away
OPERATORS: HB9DRV, GD4ELI
SOAPBOX: Groan

QSO:	7034	??	2007-02-01	0918	G6CNO	599	NP2KW	59
QSO:	14070	??	2007-01-31	1218	G6CNO	599	4X6UO	59
QSO:	7130	PH	2007-01-31	0809	G6CNO	59	LA0HR	59
QSO:	7034	??	2007-01-30	2119	G6CNO	599	IS0BWM	59
QSO:	7034	??	2007-01-30	1711	G6CNO	599	DR5MJ	57
QSO:	7034	??	2007-01-30	1706	G6CNO	599	SP2DVH	59
QSO:	7034	??	2007-01-30	1700	G6CNO	599	RV6HA	59

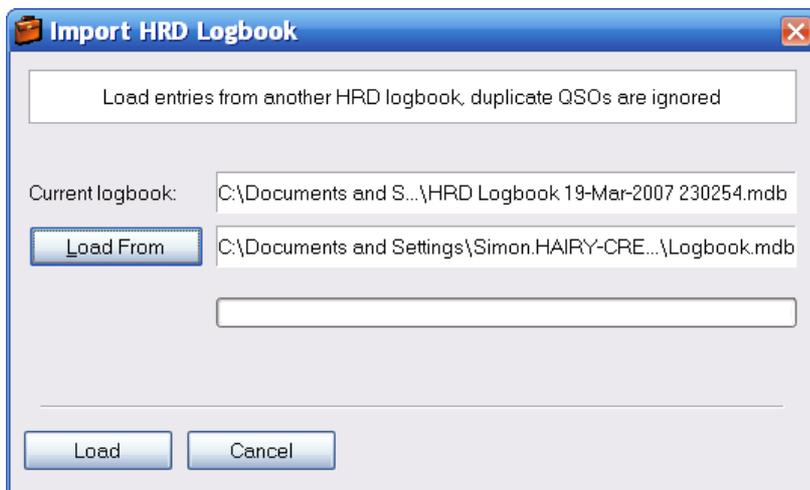
Entries: All Selected
Apply
Viewer
Save
Cancel
Help

Not all Cabrillo templates are supported - these are added as required.

Merge HRD

You can load (import) records from another logbook providing it is already in the HRD format.

Typical use would be to import a database created during a contest of an expedition to an exotic location or while using your laptop from a portable site.



Import HRD Logbook

Load entries from another HRD logbook, duplicate QSOs are ignored

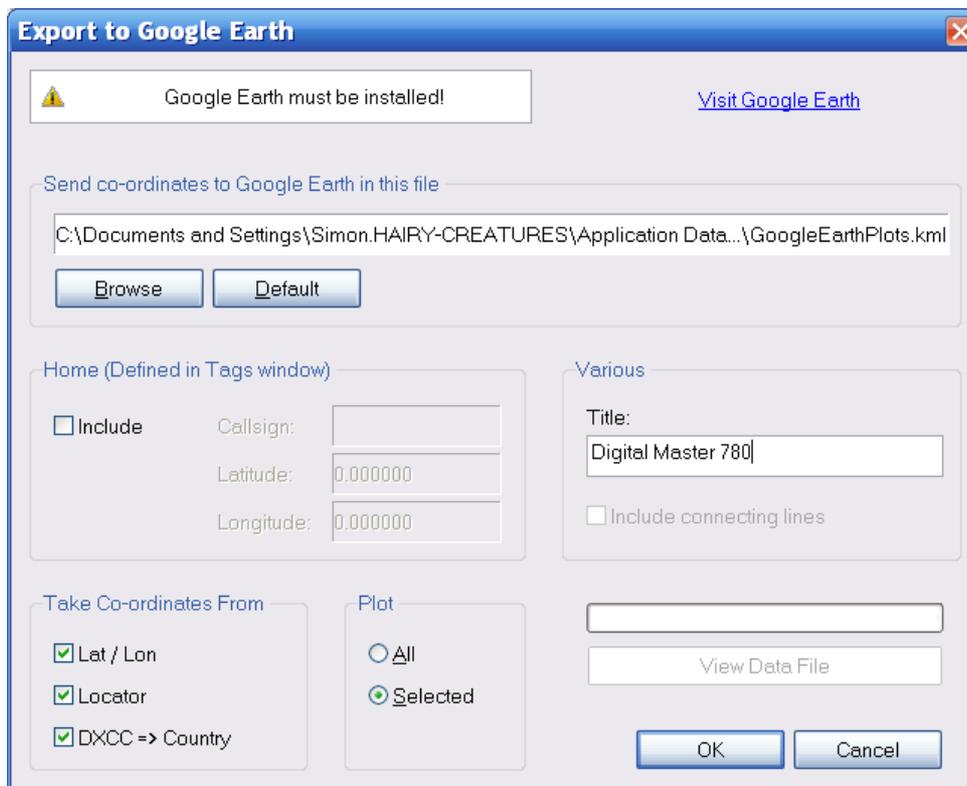
Current logbook: C:\Documents and S...\HRD Logbook 19-Mar-2007 230254.mdb
Load From: C:\Documents and Settings\Simon.HAIRY-CRE...\Logbook.mdb

Load Cancel

Duplicate QSO's are ignored when you press *Load*.

Google Earth

Selected entries can be sent to Google Earth, a fantastic program available for free download.



The interface to Google Earth is a Keyhole Markup Language (kml) file.

Note: Home information is taken from the *Tags* window shown in the QSO Windows.

Tags	
About Me	
Callsign	HB9DRV
Name	Simon
Age	95
Locator	JN46pt
QTH	Laax
E-Mail	simon@hb9drv.ch
HomePage	www.hb9drv.ch
Clubs	RSGB, G-QRP, ARRL

Analysis

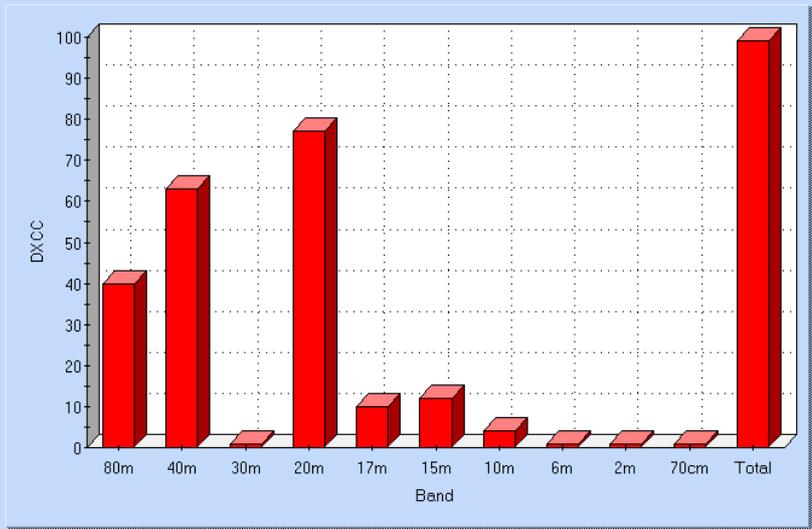
The current analysis shows DXCC, IOTA, QSO and Grid squares by band and mode.

Printing is supported!

Selection

- DXCC**
 - By Band
 - By Mode
- IOTA**
 - By Band
 - By Mode
- QSO**
 - By Band
 - By Mode
- Grid - Major**
 - By Band
 - By Mode
- Grid - Minor**
 - By Band
 - By Mode

DXCC by Band



SuperBrowser

The aim of the SuperBrowser is to display as many PSK QSO's as possible.

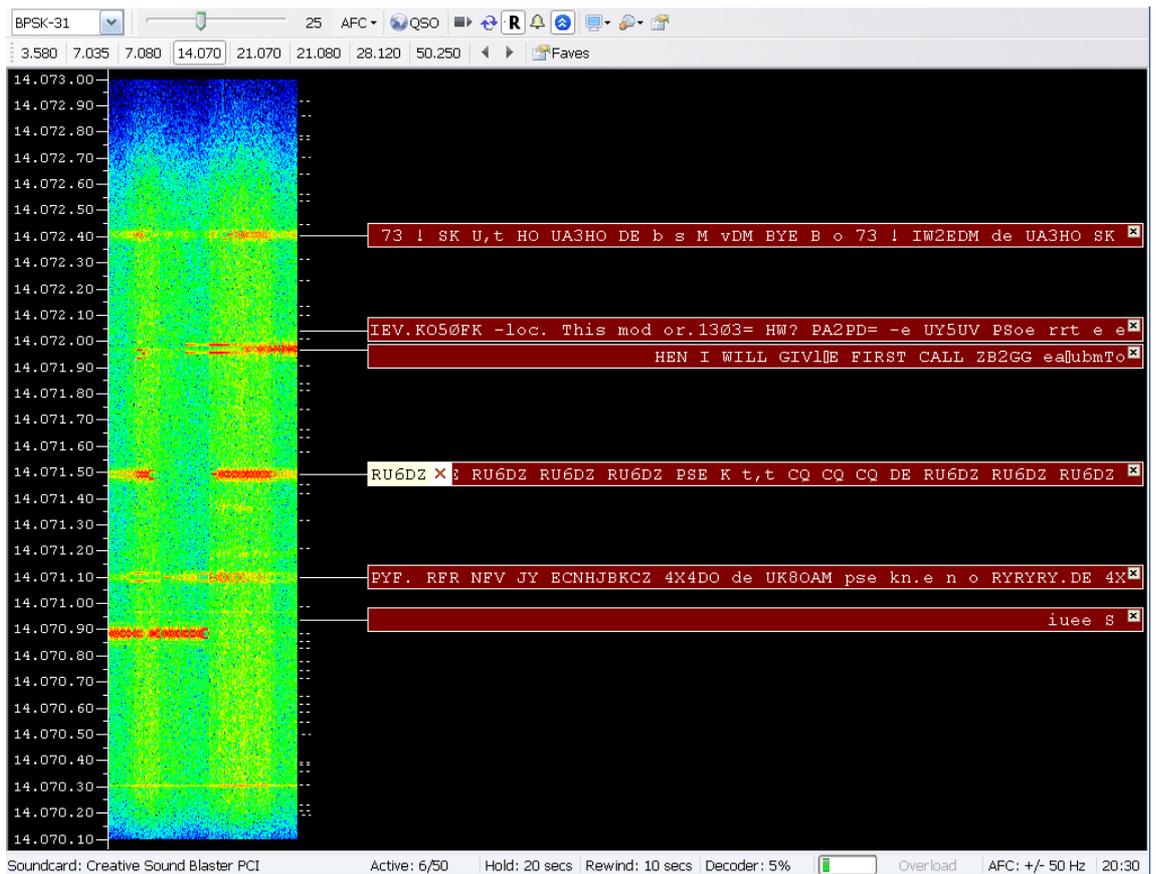
Not only display – you can have a QSO using the SuperBrowser!

A standard display is shown below. From left to right:

- Frequency,
- Waterfall,
- Active channels.

At the bottom you see the status bar, containing:

- Current soundcard selection,
- Active channel count / total channels,
- Hold time before a channel is no longer shown,
- Audio rewind when a new signal is detected,
- CPU used by the background SuperBrowser processing,
- Overload status (incoming signal level is too high),
- Current AFC setting.



In this example the callsign RU6DZ has been reliably identified, so is shown at the beginning of the channel.

The **X** icon indicates that you have not worked RU6DZ on this band. If you have worked RU6DZ the **✓** icon is displayed.

Options

Main Toolbar

The main toolbar options are:

-  Mode selection
-  Squelch level
-  Squelch value
-  AFC
-  Max Entries
-  Plot
-  Backup
-  Enable Filter (find by callsign)
-  Apply Filter

-  Options
-  Waterfall display mode
-  Number of channels
-  Options

Favourites Toolbar

The favourites toolbar contains the frequencies you commonly use, it is provided to make switching between these frequencies as painless as possible.

-  A favourite frequency, not selected.
-  The currently selected favourite frequency.
-  Adjust frequency by +/- 500Hz.
-  Start the favourites manager.

Transfer To QSO Windows

Double-click on a channel to transfer the settings and data to a main QSO window (not the built-in QSO window).

Press shift and click on a channel to open the SuperBrowser QSO window (if not already open) and select the channel.

QSO Window

Press the  button to display the SuperBrowser QSO windows:

- Add Log Entry,
- QSO: RX,
- QSO: TX.

These windows are the same as those in the main QSO window (page 13).

Click anywhere in the channel text (not the callsign or icons) to select a different channel.

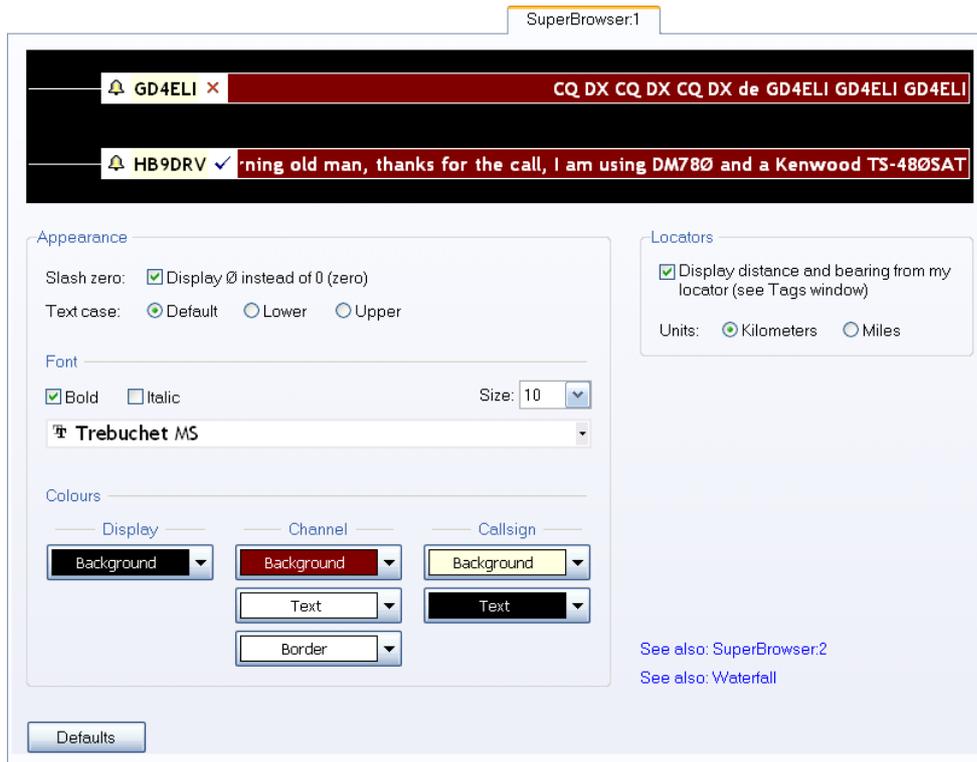
Click anywhere in the waterfall to change the frequency of the current channel.

Options

Press *F8* to display the *Program Options* (or select *Program Options* from the *Tools* menu), then select the *SuperBrowser:1* or *SuperBrowser:2* page to view the available options.

Visual

The SuperBrowser:1 page concentrates on the appearance of the SuperBrowser.



Operation

The SuperBrowser:2 page concentrates on the way the SuperBrowser operates.

SuperBrowser.2

Show Channel

Show the channel when characters received containing a word of at least characters.

Rewind received audio:

None 5 secs 10 secs 15 secs
 20 secs 25 secs 30 secs All

Hide Channel

Hide an inactive channel after:

10 secs 15 secs 20 secs 25 secs
 30 secs 40 secs 50 secs 60 secs

And if less than characters are received in the last seconds.

Search

Free space algorithm: Basic Advanced

Channel min separation: Hz.

[See also: SuperBrowser.1](#)
[See also: Waterfall](#)

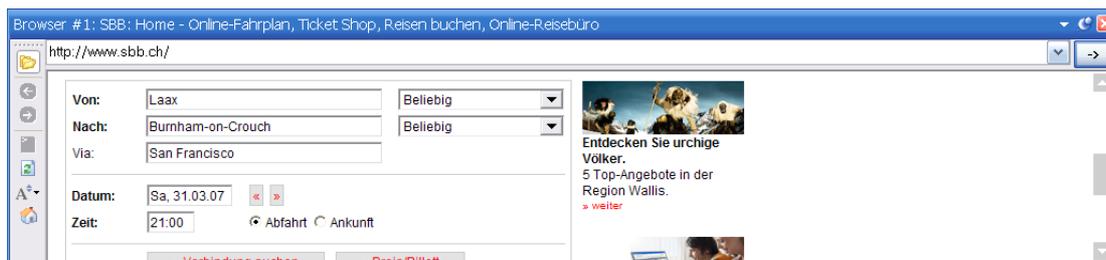
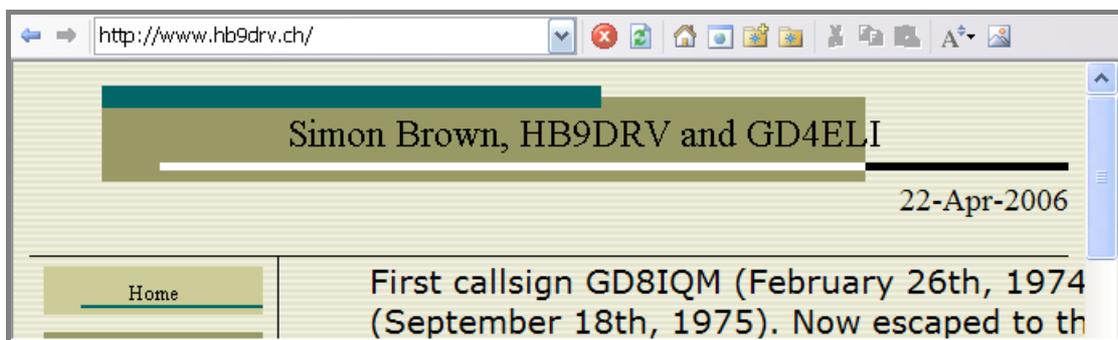
Defaults

Web Browsers

DM780 offers two styles of web browser:

- A fully featured full-sized browser, and
- A small docking mini-browser.

The options available in the mini-browser are a subset of those available in the full-sized browser.



Both browsers use on the Internet Explorer engine, any settings you make with Internet Explorer are automatically applied here.

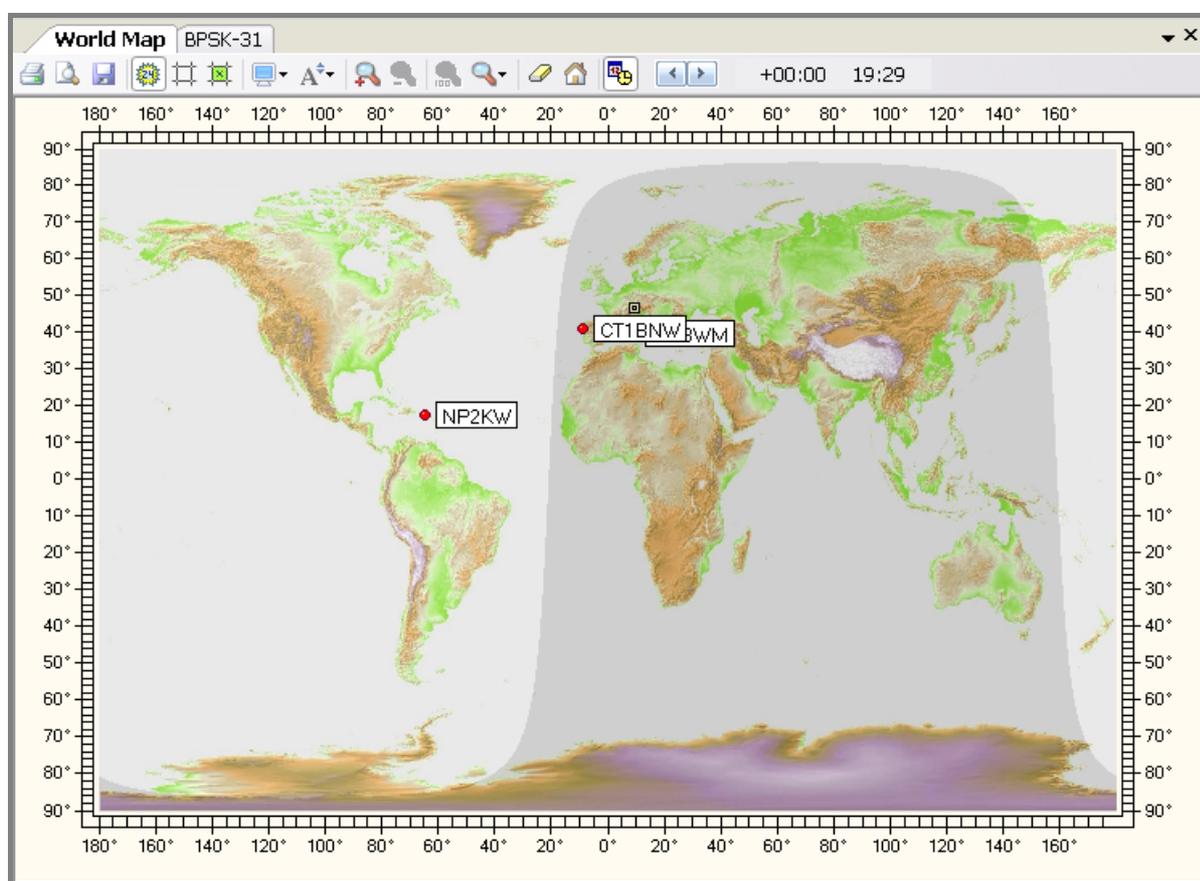
Options are selected from the toolbars and the *Browser* menu. As an experienced Internet user you will already be familiar with the operation of a web browser.

Note: when viewing QRZ.com information an auto-close option is enabled as QRZ.com makes very heavy use of flash animations, flash chews up CPU!

World Map

The world map is used to:

1. Plot the greyscale line,
2. Show a locator square overlay,
3. Plot stations as you work them,
4. Plot locators as they are detected in the SuperBrowser.



The options are:

-  Print the map
-  Print preview
-  Save to a file
-  Show greyscale
-  Show gridlines
-  Show locator overlay

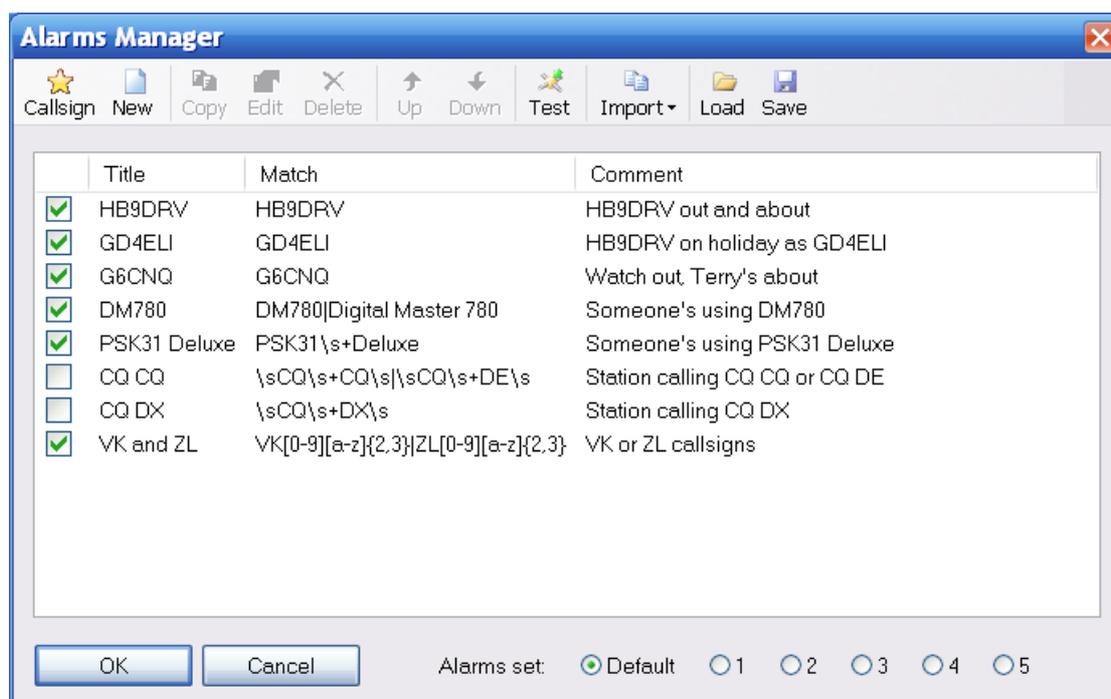
-  Select aspect ratio
-  Set text size
-  Zoom In (+)
-  Zoom Out (-)
-  Zoom 100%
-  Select zoom factor
-  Erase plots
-  Show home location (as defined in Tags window)
-  Select time offset, +/- 24 hours

Alarms

In the QSO windows you use alarms to monitor received text for special callsigns, locators or any string you want.

Manager

To define alarms select *Alarms Manager* from the *Tools* menu.



The options are selected from the toolbar.

-  **Callsign** Create a 'quick' alarm definition from a callsign.
-  **New** Create a new alarm definition.
-  **Copy** Copy the currently selected definition.
-  **Edit** Edit the currently selected definition.
-  **Delete** Delete the currently selected definitions.
-  **Up** Move the currently selected definition up.
-  **Down** Move the currently selected definition down.
-  **Test** Text the enabled definitions.

-  Import Import from another Alarms set.
-  Load Load from a file.
-  Save Save to a file.

Editor

The alarms editor is very simple to use, however you must pay attention to the regular expression syntax.



Match Text

The value in the Match field is a regular expression, examples are shown below. In the table * represents any character, <spaces> matches one or more spaces.

Match Text	Description
HB9DRV	*HB9DRV*
\sGD[0-9][a-z]{2,3}\s	Any callsign following a space (\s) starting with GD, then a digit (0 to 9), then 2 or 3 letters (a to z).
DM780 Digital Master 780	*DM780* or () *Digital Master 780*
PSK31\s+Deluxe	*PSK31<spaces>Deluxe*
\sCQ\s+CQ\s \sCQ\s+DE\s	<space>CQ<spaces>CQ<space> or

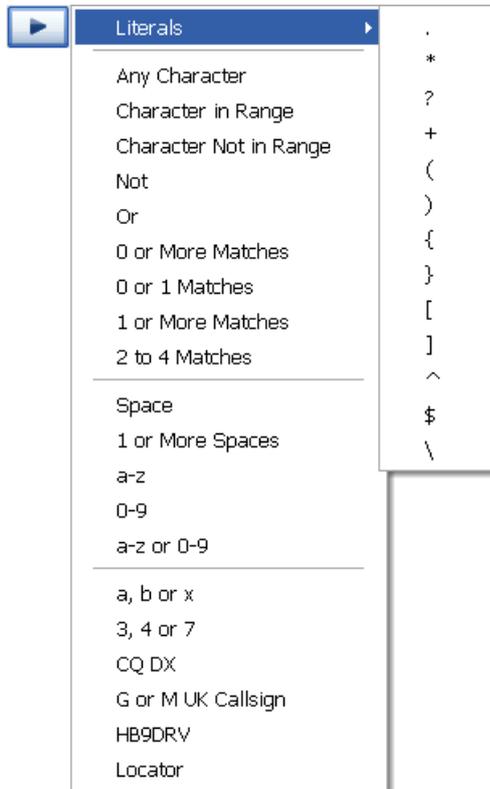
	<space>CQ<spaces>DE<space>
\sCQ\s+DX\s	<space>CQ<spaces>DX<space>
VK[0-9][a-z]{2,3} ZL[0-9][a-z]{2,3}	Any VK or ZL callsign

The most commonly used regular expression syntax is:

Expression	Matches
.	Any Character
[]	Character in Range
[^]	Character Not in Range
^	Not
	Or
*	0 or More Matches
?	0 or 1 Matches
+	1 or More Matches
{2,4}	2 to 4 Matches

Some Examples

\s	Single Space
\s+	1 or More Spaces
[a-z]	A to z
[a-z0-9]	A to z or 0 to 9
[abx]	a, b or x
[0-9]	0 to 9
[347]	3, 4 or 7
CQ\s*DX	CQ DX
[gm][a-z]?[0-9][a-z]{2,3}	A UK Callsign starting with G or M
hb9drv	HB9DRV
[a-z]{2}[0-9]{2}[a-z]{2}	Locator (e.g. JN46pt)

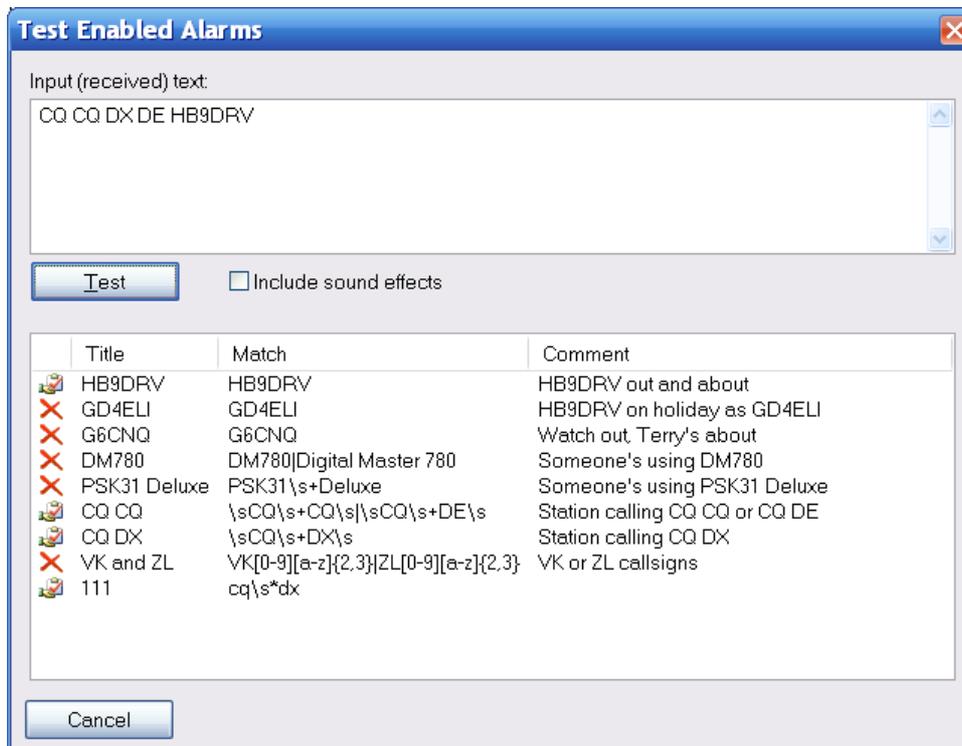


If you use the dropdown menu you can build your own regular expressions.

Use the *Test* option to check your definitions.

Testing Alarms

Use the *Test* option to compare a string with the enabled definitions.



Enter text in the top window, then press Test. The alarm definitions which match are flagged with , those which do not match with .

Check *[_]Include sound effects* if you want to hear the alarms.

Text-To-Speech

DM780 alarms use Microsoft's Text-to-Speech solution. This is usually installed by default on Windows XP and VISTA systems.

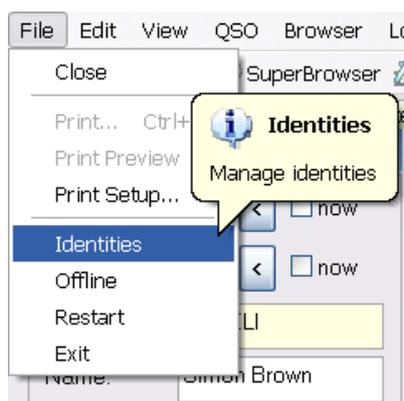
If your computer doesn't have Text-to-Speech installed you can download it from [Microsoft's website](#).

Identities

The concept of multiple identities used in DM780 is similar to that found in Outlook Express.

Typical use of multiple identities:

- At home,
- Portable,
- Contest.



All identities share the same logbook but are otherwise unique (macros, tags, layouts).

Identity support is selected from the File menu.

The Main Identity is used by default. To create / delete an identity use the *New* and *Remove* options.



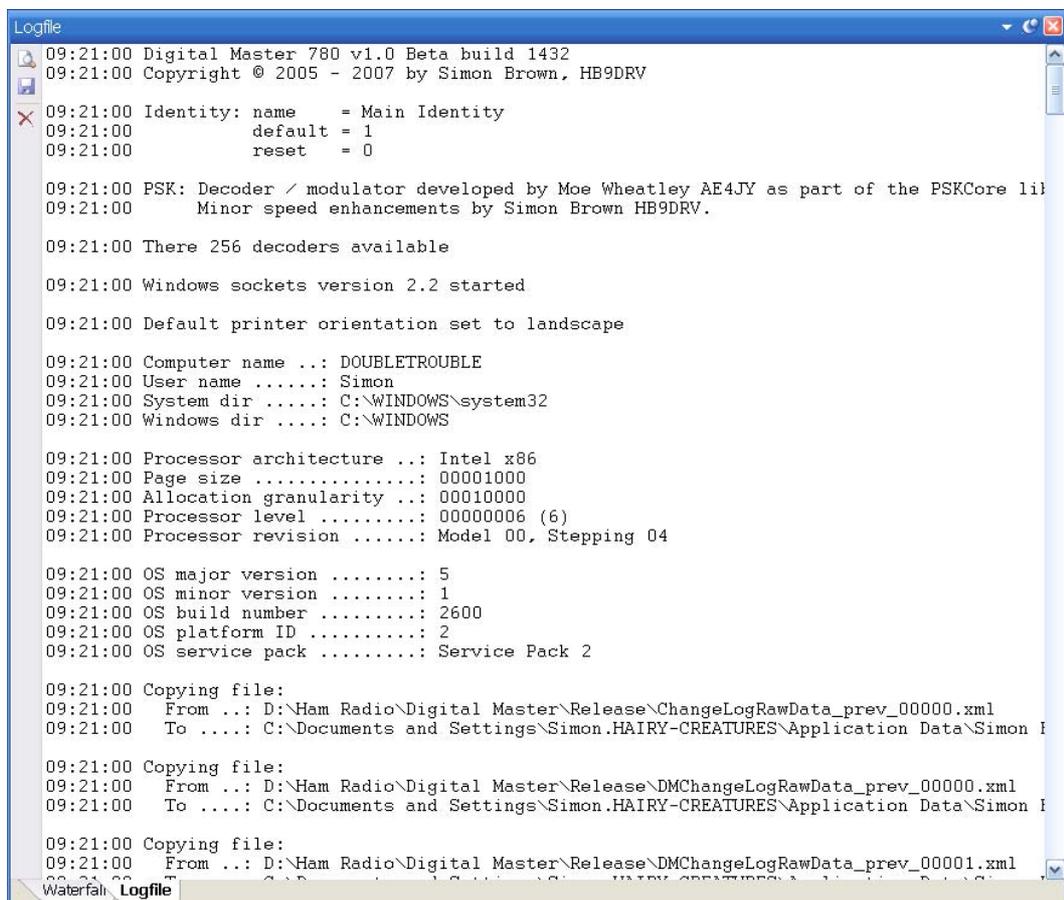
To reset an identity (remove all files and clear registry settings) press *Reset*. You cannot reset the Main Identity.

Note: The logbook database and registry settings are never removed.

When you press *Select* DM780 closes and starts using the selected identity.

Logfile

The logfile window contains diagnostic information used when there are problems with DM780. You will not normally display this window.



```

Logfile
09:21:00 Digital Master 780 v1.0 Beta build 1432
09:21:00 Copyright © 2005 - 2007 by Simon Brown, HB9DRV

09:21:00 Identity: name      = Main Identity
09:21:00                   default = 1
09:21:00                   reset  = 0

09:21:00 PSK: Decoder / modulator developed by Moe Wheatley AE4JY as part of the PSKCore lib
09:21:00           Minor speed enhancements by Simon Brown HB9DRV.

09:21:00 There 256 decoders available

09:21:00 Windows sockets version 2.2 started

09:21:00 Default printer orientation set to landscape

09:21:00 Computer name ...: DOUBLETROUBLE
09:21:00 User name .....: Simon
09:21:00 System dir .....: C:\WINDOWS\system32
09:21:00 Windows dir ....: C:\WINDOWS

09:21:00 Processor architecture ...: Intel x86
09:21:00 Page size .....: 00001000
09:21:00 Allocation granularity ...: 00010000
09:21:00 Processor level .....: 00000006 (6)
09:21:00 Processor revision .....: Model 00, Stepping 04

09:21:00 OS major version .....: 5
09:21:00 OS minor version .....: 1
09:21:00 OS build number .....: 2600
09:21:00 OS platform ID .....: 2
09:21:00 OS service pack .....: Service Pack 2

09:21:00 Copying file:
09:21:00   From ...: D:\Ham Radio\Digital Master\Release\ChangeLogRawData_prev_00000.xml
09:21:00   To .....: C:\Documents and Settings\Simon.HAIRY-CREATURES\Application Data\Simon I

09:21:00 Copying file:
09:21:00   From ...: D:\Ham Radio\Digital Master\Release\DMChangeLogRawData_prev_00000.xml
09:21:00   To .....: C:\Documents and Settings\Simon.HAIRY-CREATURES\Application Data\Simon I

09:21:00 Copying file:
09:21:00   From ...: D:\Ham Radio\Digital Master\Release\DMChangeLogRawData_prev_00001.xml
09:21:00   To .....: C:\Documents and Settings\Simon.HAIRY-CREATURES\Application Data\Simon I

Waterfall Logfile
  
```

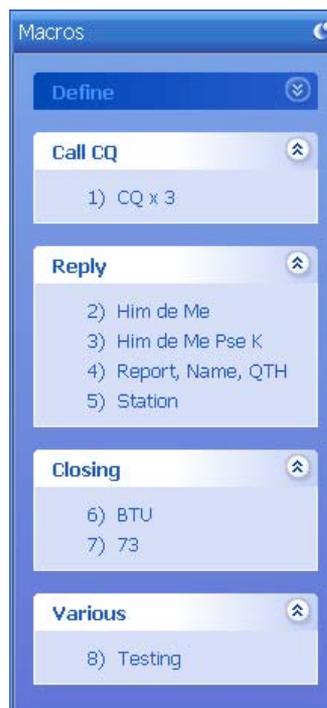

Macros

Macros are used when composing text to be sent during a QSO. Using macros avoids repetitive typing, thus ensuring fewer errors.

Typical uses for macros:

- Calling CQ,
- Information about your station,
- Starting a reply.

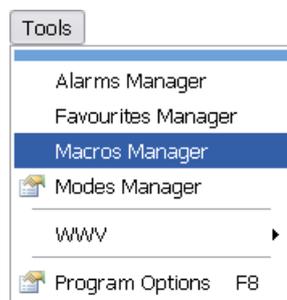
Macros are selected in the QSO windows from either the Macros window or the Macros toolbar.

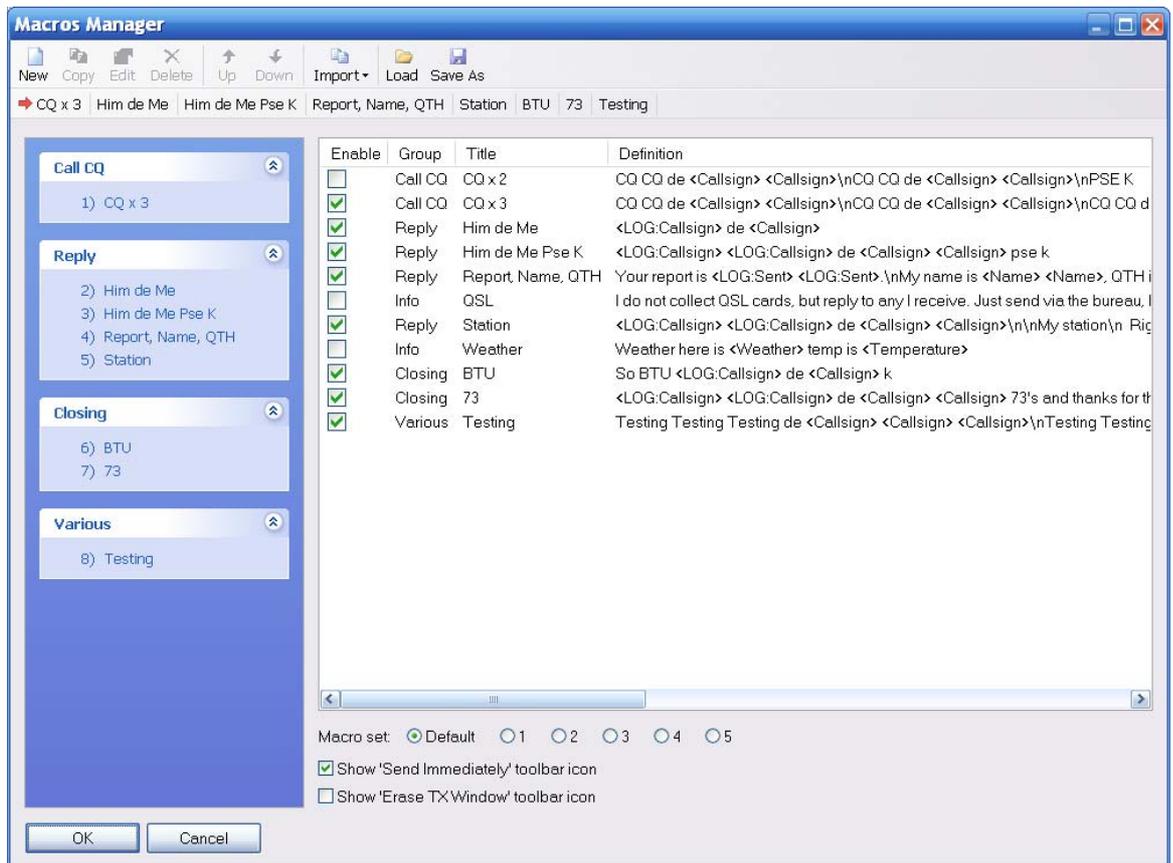


Manager

To define Macros start the Macros Manager:

- Select *Macros Manager* from the *Tools* menu,
- Press Define in the Macros window, or
- Press Define in the toolbar (right-most button).





Here you define the macros shown in the macros window *and* the macros toolbar.

The top toolbar contains the Manager options:



- New – create a new macro,
- Copy – copy the selected macro,
- Edit – edit the selected macro,
- Delete – delete the selected macro,
- Up, down – move the selected macro,
- Import – load definitions from another macro set,
- Load – load definitions from a file,
- Save – save definitions to a file.

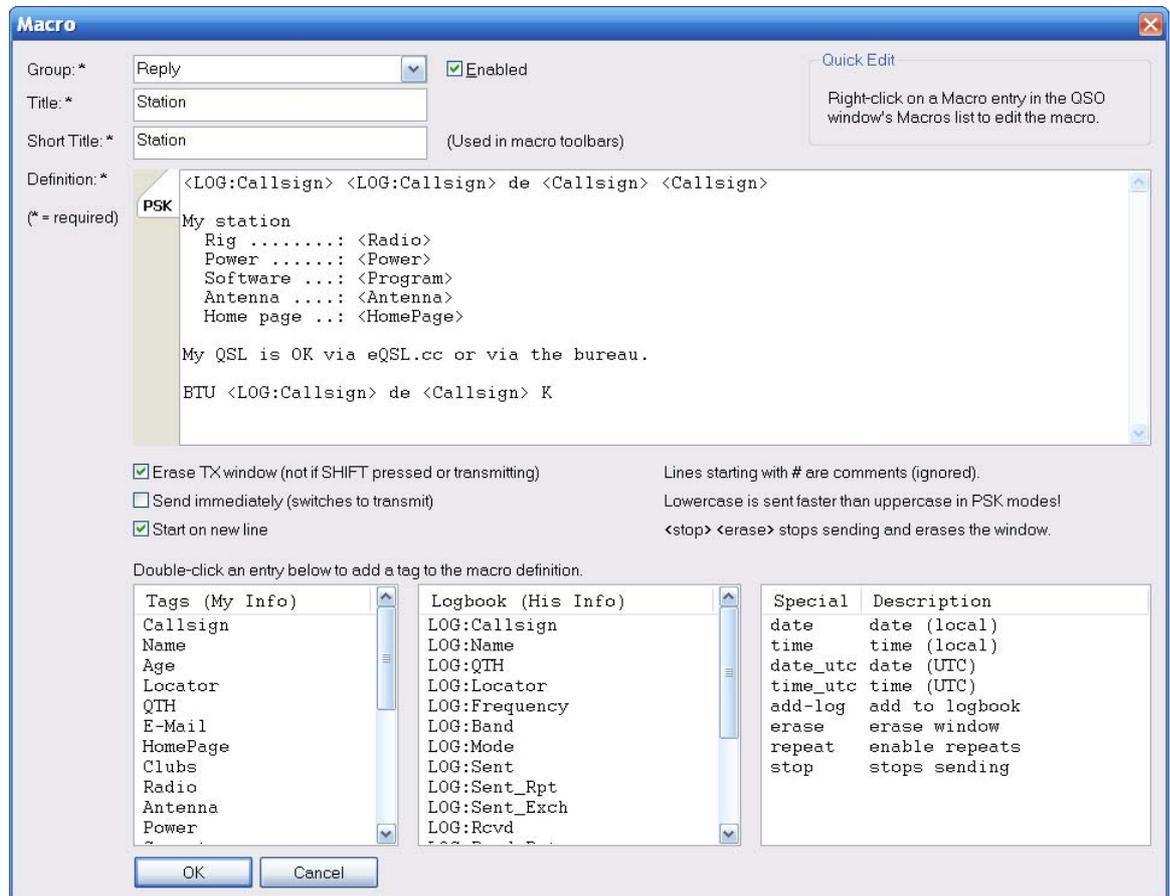
The next toolbar shows the enabled definitions as they are shown in the QSO windows.



Editor

The Macro editor window is shown below.

Note: Right-click on an entry in the macros window or macros toolbar to launch the editor without starting the Macros Manager.



The components of a macro are:

Group

Macros are grouped together in the Macros window (shown in QSO windows).

Title

As shown in the Macros window.

Short Title

As shown in the Macros toolbar.

[X] Enabled

Only enabled macros are shown in the Macros window and toolbar.

Definition

See below.

[X] Erase TX window...

If enabled the contents of the transmit window are erase unless *either* Shift is pressed *or* you are transmitting.

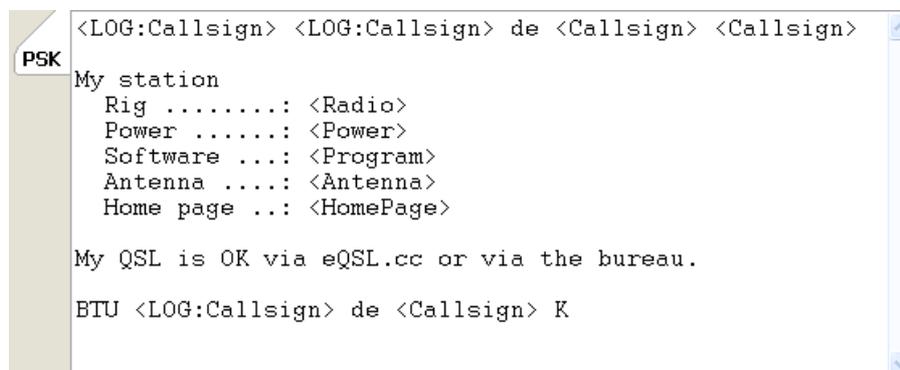
[X] Send immediately

If enabled the macro is sent as soon as it is applied, typically used in a CQ macro.

[X] Start on new line

If enabled the macro always starts on a new line when added to the transmit window.

Definition



```
<LOG:Callsign> <LOG:Callsign> de <Callsign> <Callsign>
PSK
My station
Rig .....: <Radio>
Power .....: <Power>
Software ....: <Program>
Antenna .....: <Antenna>
Home page ...: <HomePage>

My QSL is OK via eQSL.cc or via the bureau.

BTU <LOG:Callsign> de <Callsign> K
```

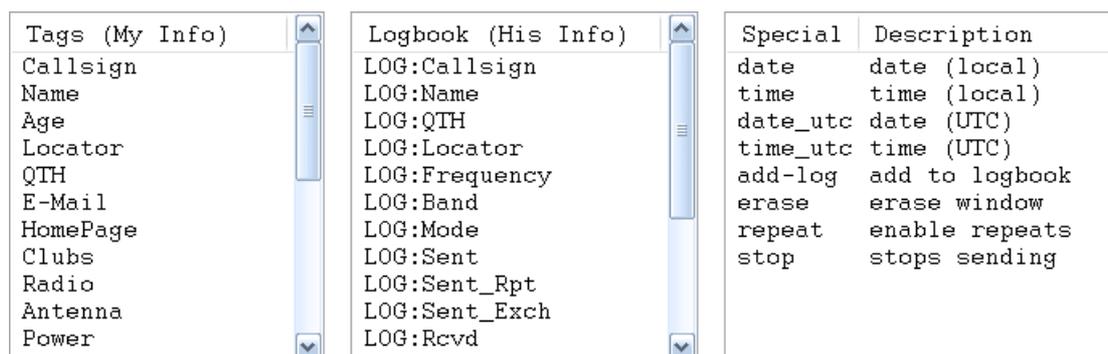
A macro contains free-format text and optional tags. A tag is an item of information, for example *his callsign* or your output *power*.

To insert a tag just double-click on an entry on one of the tag lists.

The currently supported tags are shown at the bottom of the editor window. There are three lists:

1. *Tags (My Info)*
These fields come from the *Tags* window in the QSO windows.
2. *Logbook (His Info)*
These fields come from the *Add Log Entry* window.
3. *Special*
These are pre-defined.

A tag is enclosed in <>. The actual substitution is made when the macro is selected into the transmit window.



Tags (My Info)	Logbook (His Info)	Special	Description
Callsign	LOG:Callsign	date	date (local)
Name	LOG:Name	time	time (local)
Age	LOG:QTH	date_utc	date (UTC)
Locator	LOG:Locator	time_utc	time (UTC)
QTH	LOG:Frequency	add-log	add to logbook
E-Mail	LOG:Band	erase	erase window
HomePage	LOG:Mode	repeat	enable repeats
Clubs	LOG:Sent	stop	stops sending
Radio	LOG:Sent_Rpt		
Antenna	LOG:Sent_Exch		
Power	LOG:Rcvd		

Special Tags

More information about the special tags.

- | | |
|------|--|
| date | Inserts the current date using local time and the user's Windows settings for short dates. |
| time | Inserts the current time using local time in ISO 8601 format (HH:MM:SS). |

date_utc	Inserts the current date using UTC (GMT) time and the user's Windows settings for short dates.
time_utc	Inserts the current time using UTC (GMT) time in ISO 8601 format (HH:MM:SS).
add-log	The same as pressing the <i>Add</i> button in the <i>Add Log Entry</i> window – the QSO is added to the logbook.
erase	Erases the transmit window.
repeat	The same as pressing the Repeat button.
stop	Stops sending.

Preview

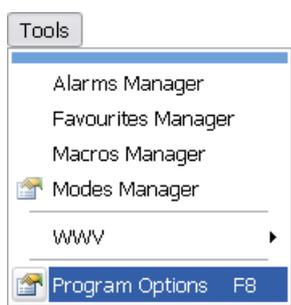
The macro is displayed *as it will be sent* when the cursor is placed over an entry in the macros window or macros toolbar.

In the example below the cursor is over the Station button. Text derived from tags is shown in italics.

```
Him de Me Pse K | Report, Name, QTH | Station | 73 | 73-Xmas | [Icons]
GD4ELI de hb9drv
Simon Brown, my station
Radio      : TS-480SAT, 40W
Software   : DM780 v1.0 Beta
Antenna    : Diamond CP-6
Home       : www.hb9drv.ch
Other      : Created 1957, licenced 1974, RSGB, ARRL, G-QRP
My QSL is OK via eQSL.cc or via the bureau.
BTU GD4ELI de hb9drv K
Ctrl+7, Erase TX window
```


Program Options

DM780 is a fully featured program with many displays; as a result the level of user customization is very extensive.



You can customize almost every part of DM780 by selecting Program Options from the Tools menu.

The Programs Options window is modeless – while it is displayed you can still use DM780, also any changes you make are applied immediately.

eQSL.cc

The integrated logbook will automatically upload new contacts to eQSL.cc if enabled here.

 A screenshot of the 'eQSL.cc' settings window. The window has a title bar with 'eQSL.cc'. Inside, there is a section titled 'eQSL.cc' with a checked checkbox for 'Upload when an entry is added to the logbook. Results are shown in the logfile.' To the right of this section is a blue link 'Visit eQSL.cc'. Below this are three input fields: 'Username: *' with the value 'HB9DRV', 'Password: *' with masked characters, and 'QSL message:' with the value '73, thanks for all the fish'. At the bottom, there is a legend '* = required' and a checkbox for 'Use eQSL.cc test account' which is currently unchecked.

Themes And Skins

The Theme and Skinning panes define the appearance of DM780. Although the defaults should be acceptable there is no harm in selecting an appearance you find more appealing.

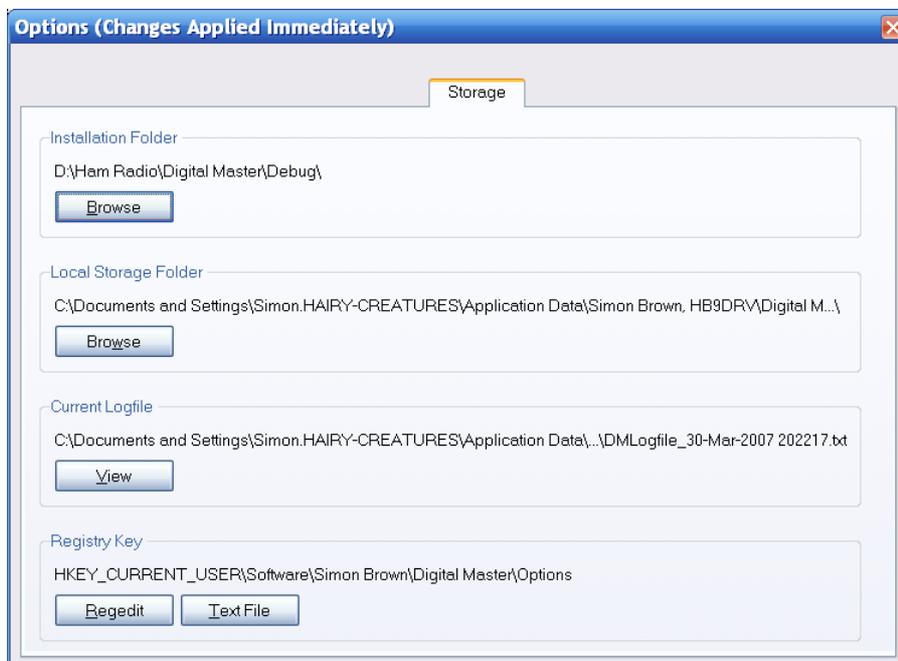
Skins add an extra load on your CPU and graphics card, so if you are using an older PC (less than 1 GHz CPU) you may consider disabling skins.

Storage

This pane provides easy access to the file and registry storage used by DM780. The folder names depend on the currently selected identity (page 51).



Don't mess around with the registry – if you don't know what you are doing leave it alone!



Radio Interface

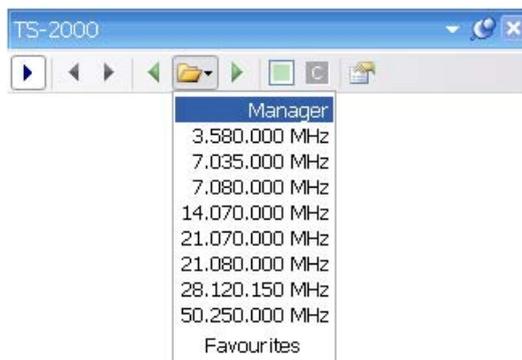
The radio interface configuration is described in the section Radio Control on page 10.

Favourites

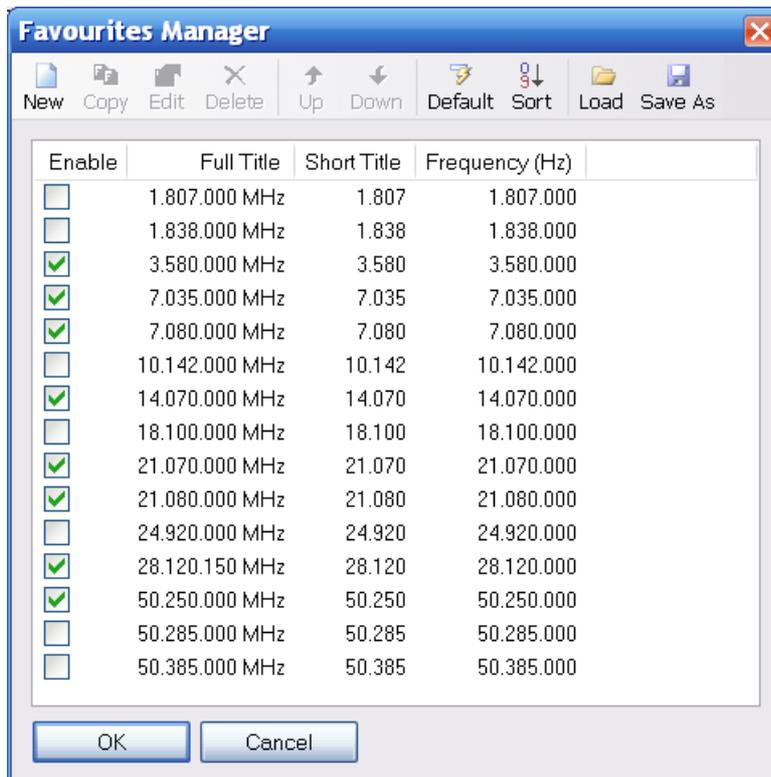
Use favourite frequencies to switch between commonly used digital mode frequencies.

Manager

From the toolbar select *Manager* from the *Favourites* menu:



The favourites manager is a simple list of frequencies that are displayed in the dropdown menu and in the favourites toolbar in the QSO transmit windows.



Options are selected from the toolbar.

Center Frequency

If you have a radio with a narrow filter you use this option to position the selected signal in the center of your filter.

In the toolbar there are two buttons associated with this option:

- Enables center frequency operation.
- Click to apply center frequency.

When enabled, the marker is displayed in the waterfall. Click and drag this to the center of your narrow filter.

To move the selected signal to the center frequency, click the button on the toolbar or double-click the marker in the waterfall.

Change Log

The change log is selected from the *Help* menu. It shows my to-do notes and current development status.

I generally record changes and outstanding issues here.

It is provided for your information, there is no guarantee that everything recorded in the change log will be implemented.

?	Version	Created	Status	Category	Title	Description
X	1.0 b1434	31/03/2007 17:46:17	To-Do	Radio Pane	ALC	Show ALC / all TX meters.
X	1.0 b1434	31/03/2007 11:03:59	To-Do	Logbook	Worked Status	Hi all...I noticed that when I worked a station
X	1.0 b1434	31/03/2007 09:52:36	To-Do	Logbook	Split Frequency	I suggested this before, but dont recall any f
X	1.0 b1433	30/03/2007 20:32:06	To-Do	Logbook	Columns	This may have been requested by someone e
X	1.0 b1432	29/03/2007 23:08:44	To-Do	SuperBrowser	Colours	Different colour for active QSO channel
X	1.0 b1432	29/03/2007 20:42:01	To-Do	Mini-Browser	Combo	Make combo work just like the main browser
X	1.0 b1431	28/03/2007 21:47:23	To-Do	Web Crash	Unknown	Look at:BOOL CGetWebPage::Get()Some bad
X	1.0 b1429	26/03/2007 09:10:53	To-Do	SuperBrowser	'R' Button	Please provide an ""*R"" button to the SB To
X	1.0 b1429	26/03/2007 09:10:32	To-Do	SuperBrowser	Status Bar	The Status Bar is still lost from SuperBrowse
X	1.0 b1429	26/03/2007 09:10:13	To-Do	Identities	Request	Woud the Identities concept support changed
X	1.0 b1429	26/03/2007 09:09:48	To-Do	Favourites	Add Mode	Could the favourites be amended so that the
X	1.0 b1427	24/03/2007 19:33:10	To-Do	Identities	Copying	Also another repeated request which I think
X	1.0 b1427	24/03/2007 19:32:52	To-Do	Fonts	Request	I'll repeat my request for super browser and
X	1.0 b1423	20/03/2007 14:02:26	To-Do	Logbook	Frequency	Sorry if this is a known issue but I couldn't fi
X	1.0 b1423	20/03/2007 09:45:03	To-Do	Framework	CommandBars	Add common code to set the CommandBars
X	1.0 b1423	20/03/2007 09:45:03	To-Do	Framework	PaneManager	Add common code to set the PaneManager c

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