Author and Copyright Information

This program has been written by Nick Bailey and is his sole Copyright.

This document may mention HF150, HF150 Program or HF150 Control Program. They are the one and the same and are to be read, understood and respected as being so and thus covered by the Copyright, Warranty, Liability and License Agreements detailed here and in Section/Chapter 6.0 of this document.

Any reference to HF-150 and IF-150 are to be read as being associated and belonging to Lowe Electronics and their relevant products. If any confusion between HF150 and HF-150 exists it is not intentional and the author apologises.

As far as I'm aware this program's **Memory Match** function is unique and the implementation in code and presentation of information is Copyrighted World Wide.

My website can be found at http://www.nick-bailey.co.uk

My contact Email address is hf150 AT nick-bailey DOT co DOT uk (replace AT with @ and DOTs with . and remove blank spaces).

I apologise for munging my Email address but as we all know SPAM is a major problem and keeping my hf150 email address free of spam will help us all.

Preface

Welcome to the HF150 Control Program specifically designed for controlling the Lowe HF-150 Communications Receiver and any other interface compatible receiver.

The Lowe HF-150 is a remarkable little HF receiver that is sadly no longer manufactured. Design and production of all Lowe receivers ceased back in 1999 when Lowe Electronics was sold.

Needless to say the HF-150 remains a popular choice for many reasons like its compact and portable size supported by both internal battery and external 12V power systems and its ability to be computer controlled. Lowe's official control program, RADIO was a simple DOS program that was supplied with the IF-150 Serial Interface and although functional was lacking in just about every other respect. Later alternative commercial programs appeared but not everybody was interested in computer control and thus not willing to spend money on these quality commercial programs.

The Lowe HF-150 is still supported by some commercial programs and the only other dedicated, cheap (cost effective) and widely used program was Smart Lowe Control 32 by FineWare. This program is no longer sold or supported. I'm also led to believe that it will not work on Windows 7 64 Bit machines.

All the above reasons is why I have written the HF150 Control Program. Initially written for my own private use back in 2009 I then decided in 2011 to make the program available to others. Needless to

say moving the program from a private use and undocumented toy to a more robust program that others can use has been challenging and enjoyable.

1.0 Lowe HF-150 Receiver Serial Interface

Before getting into the details of the HF150 Control Program I think it is best to give a brief overview of the HF-150 receiver's functions and capability. If you already know these then you can skip over this section.

Before we look at the HF-150's basic functions we must state that although the receiver has the ability to be controlled via the IF-150 Serial Interface the receiver itself is not natively an RS-232 compliant device. The IF-150 interface does some real time manipulations of program commands into a more HF-150 hardware specific format. For those that do not have and can not obtain an original Lowe IF-150 interface then you will find on my website my own IF150 Interface Project that you can use instead.

Like all HF receivers the HF-150 receiver has two basic tuning functions. The ability to tune to a given Frequency and switch to a reception Mode. It also has the ability to store and recall from internal memory tuning settings.

The receiver has sixty internal memory locations which you can store to and recall from. During a Store the currently tuned Frequency and Mode are saved to the chosen memory location. Likewise a Recall with cause the receiver to tune the stored Frequency and switch to the stored Mode. It is **important to note** that that is in **not** possible to retrieve or read the contents of the receiver memory locations or the current tuning state of the receiver. Data can only be sent to the receiver.

Apart from the power On/Off/Volume switch there are only FOUR manual controls on the receiver. A large rotary tuning knob and three push button switches. The three push buttons work together in prime function and secondary function roles to achieve all the possible control functions supported by the receiver. There is also a single LCD display consisting of five 8 segment digits (with decimal points) which has to display the appropriate data as and when required.

Clearly the manual control and information feedback of the receiver is limited and although experienced operators quickly get used to working with the receiver the Serial Interface actually allows so much more additional function and display feedback to be added to the receiver thus making it a really great overall package.

This is where any external control device or program can unleash the receiver! To this end Lowe designed a serial interface into the HF-150, primarily to support the optional external KPAD-1 keypad but also to allow more fuller control via their IF-150 serial interface.

With the ability to externally control the Frequency, Mode and Memory functions not only can one create a program to do these simple steps but in addition provide visual feedback, easy control and enhanced functions such a memory or frequency scanning, offset tuning/nudging, etc..

These ease of control and enhanced function is what the HF150 Control Program (and any other suitably written program) try to provide from just the three base functions supported by the Lowe

HF-150 receiver.

1.1 Serial Interface and Command Execution Times

The HF-150 receiver takes time to execute commands sent to it over the serial interface. This means that depending on the command being processed the **HF150 Control Program** will experience some latency whilst commands are being processed. In addition it takes time to send data through the serial port which must/can only operate at 1200 baud.

The quoted **minimum** HF-150 command execution times and times allowed by the program are:

Command	**HF-150 Execution Time ms**	**Program Allows**
Set Frequency	700	735
Set Mode	80	84
Recall from Memory	230	242
Store to Memory	150	157

Times will be cumulative depending on what you request the control program to do. e.g. To tune by recalling from local program memory will involve sending two sets of command data, the Set Frequency and Set Mode commands. The effective program time will thus be approximately 820ms.

1.2 Serial Timeout Delay Factor

By default the program allows a +5% increase in the timeout over the minimum HF-150 receiver command execution times. This factor can be changed by an entry in the **hf150-ini.ini** file.

If you experience problems with the HF-150 receiver not responding to commands then you can change the percentage increase by editing the **hf150-ini.ini** file **BEFORE** starting the program. The entry is:

ini_serial_timeout_factor=105

This dictates a 105% (default value) increase over the minimum HF-150 receiver specification times. Try increasing the value to 110 or more to see if this resolves your problem. **NOTE!** Values less than 100 are not recommended!

2.0 Program Overview

The program is a standalone portable application that only requires Microsoft Windows and the Microsoft .NET platform to be installed. The program will function for testing and trial purposes without the IF-150 Serial Interface. The interface will be required if you wish to actually control the

HF-150 receiver.

As it is only possible to send data to the receiver then in order to avoid user confusion then the direct Recall of HF-150 Memory Locations is not supported as there is no way for the program to display the associated information. It is however possible to load all the Receiver Memory Locations with tuning data from the program thus allowing the receiver to be prepared for standalone manual operation.

The User Interface design has been created to give maximum and easy control from a single main control panel. Use of multiple panels has been limited to confirmation dialogs, error messages and file management.

HELP - All control groups, keys, buttons and displays have "Mouse Over" help prompts. The **Menu Help** function will display the **HF150-Manual.html** in your default Web Browser

Controls are grouped together into five logical function groups:

1. **Mode Control**
2. **Frequency Control**
3. **Memory Control**
4. **Tuning Control**
5. **Com Port Control**

These are supported by information displays:

- **Mode Display**
- **Tuning Display**
- **Memory Display**
- **Tuning Control Display**
- **Com Port Display**

Additional features include:

- **Frequency Bar Display**
- **Memory Match Display**
- **Clock Display**
- **Scratch Pad Function**
- **Notepad Function**

Finally there is the **Menu Bar**. Here besides the typical **About** and **Help** menu items you will find the following addition receiver tuning functions:

- **User File Tune**
- **User Timed Tune**
- **Local Memory Tune**

3.0 Program Installation

The program is written as a portable application requiring no installation program. As long as you have Windows and the .NET framework installed then getting the program up and running is simple

3.1 Obtaining and Delivery

The program can be obtained from my web site http://www.nick-bailey.co.uk/hf150. Here you will find program information, download link and MD5 checksum information so you can validate the integrity of your download.

The download will usually consist of a single ZIP file.

3.2 Installation

To install the HF150 Program is very straight forward. You will have received HF150 in either a ZIP file or as separate files. The program has no specific install program and does not make registry changes.

Just follow these simple steps.

1. Create a directory of your own choice on your PC. It is suggested to give this directory a name like 'HF150 Control Program' for easy recognition
2. Un-ZIP / copy the program files to the directory you have just created
3. Read the **HF150-ReadMe.txt** and **HF150-History.txt** files. They have important information
4. It is suggested to create a short cut to the **HF150.exe** file on your desktop or elsewhere
5. Optional - backup the original distribution file(s) to a safe location
6. Read the **HF150-Manual.html** file to familiarise yourself with the program

3.3 Removal

The HF150 Program can be simply and fully un-installed at any time.

CAUTION! The following steps will completely remove HF150 Program and all your associated data.

1. Delete the folder you created and all the files therein

2. Delete the short cut you created (if any)

3.4 Upgrade Process

Upgrading to a later version of HF150 is simple and straight forward. Upgrading will retain your important configuration files. Following all the steps of this procedure will also give you a backup version(s) of the program to revert to should you wish or need to.

Warning! Apart from the sample user tuning file called **HF150-Sample-Tuning.txt** the program will either create or use any existing configuration files it needs. These files are:

- **hf150-ini.ini**
- **hf150-mem.ini**
- **hf150-note.ini**

Of these three files **hf150-mem.ini** and **hf150-note.ini**are **important** files that contain all the memory data **you have stored** and all the **notes you have made** with the **Notepad** function. If they exist they will not be overwritten by the installation process as they are not shipped with the HF150 Control Program. You are however strongly advised to back these files up for your own protection, together with any of your own user files you have created.

To upgrade follow these simple steps:

1. Locate your current installation folder
2. Create a new sub folder named Vn.n.n.n corresponding to the version number of your currently installed version, e.g. V1.0.0.9
3. Copy ALL the contents of the current installation folder into the new backup Vn.n.n.n sub folder you just created
4. Un-ZIP / copy the new program release files to the current installation folder and OVERWRITE/REPLACE the existing files
5. Read the **HF150-ReadMe.txt** and **HF150-History.txt** files. They contain important information
6. Read the **HF150-Manual.html** for help or details on any new functions that may have been added

If there are any release specific files or instructions then you will be notified of these on the web site prior to downloading the program.

4.0 Controls and Functions

4.1 Menu Bar

The menu bar is similar to any Windows menu bar. Here you will find:

4.1.1 About

Here you will find program Name, Version, Copyright and Author information together with Warranty, Liability and License Terms and Conditions and other information.

4.1.2 Help

This will open the HF150 User Manual file **HF150-Manual.html** in your default Web Browser. Besides this help file you will also find that all control groups, keys, buttons and displays have "Mouse Over" help prompts.

4.1.3 User File Tune

This function opens a file dialog box where you can select a file you or others have created that contains tuning data. The selected file will be loaded into a small pop-up window where you can view the tuning data. Selecting / left mouse button clicking on any entry will cause that selected Frequency and Mode to be tuned to.

On the Menu Bar of this list of tuning data you will find a **Print** button. This will send a **Quick Print** of the data to the currently selected default Windows printer. Please ensure you have the correct printer selected in Windows.

The pop-up window can be used in conjunction with the other **Local Memory Tune** pop-up tuning window allowing one to flip tune between the two.

The file has a specific format which must be adhered to. Also the first line of the file must be a comment and contain the string **#HF150#**. This is required so the program does not attempt to validate any file you may open in error which could result in many error messages as each line of the file is validated.

4.1.3.1 User File Tune File Format

```
! HF150 Program Tuning File - #HF150#
!
! WARNING! - The first line of ANY file you create must be a comment
!          containing the string #HF150# !
! This is a sample user tuning file.  You can create/have as many
! of these files as you like.  One for Broadcast stations, or for
! weather fax stations, etc. etc.
!
! File contents will not be altered by the HF150 Program
! File contents will be validated by the HF150 Program before loading
! File name can be whatever you like but an extension of .txt is preferred and is the default
!     filter for showing files in the File Open dialog
!
! All file entries must conform to the following:
!
! Comments:  all comment lines must start with either and ! or * or ' character
!
! Field Formats: all fields are comma separated with no spaces
```

```
!     Field 1: frequency - 9 characters - format nnnnn.nnn where n is a numeric digit
!     Field 2: mode      - 3 characters - format xxx      where xxx must be a valid mode
!                          valid modes are: LSB USB AMW AMN ASD ASF ASL ASU
!     Field 3: time 1    - 5 characters - format hh:mm     where hh is a valid 24 hour time
!                                         where mm is a valid 60 minute time
!     Field 3: time 2    - 5 characters - format hh:mm     where hh is a valid 24 hour time
!                                         where mm is a valid 60 minute time
!     Field 4: comment   - anything you like but ensure you end the comment
!                  with the "enter" key or a semi-colon
!
!     The time 1, time 2 and comment fields are for your use.  The HF150 program will display
!     their values but that is all.
!
05450.000,USB,00:00,00:00,RAF Volmet
11253.000,USB,00:00,00:00,RAF Volmet
01008.000,USB,00:00,00:00,GrootNieuwsRadio - Dutch broadcast
```

4.1.4 User Timed Tune

This function opens a file dialog box where you can select a file you or others have created that contains tuning data. The selected file will be loaded into a small pop-up window where you can view the tuning data.

Unlike the **User File Tune** function you can not select an entry to tune to. Instead the entries in the file have been sorted into ascending **Time1** and **Time2** order and the entries will be automatically tuned to when the current GTM/UTC time is greater than or equal to a **Time1** time. This frequency and mode will remain tuned until the next **Time1** time comes into effect. The **Time2** value is ignored.

When an entry has been tuned to then the entry displayed will change

from: 05450.000 USB 11:14 23:45 RAF Volmet

to : 05450.000 USB 11:14 23:45 ==>>RAF Volmet

The **User Timed Tune** function is only in effect as long as the window is open. When the window is closed timed tuning will cease.

On the Menu Bar of this list of tuning data you will find a **Print** button. This will send a **Quick Print** of the data to the currently selected default Windows printer. Please ensure you have the correct printer selected in Windows.

The pop-up window can be used in conjunction with the other **User File Tune** and **Local Memory Tune** pop-up tuning windows allowing one to flip tune between them.

The file has a specific format which must be adhered to. Also the first line of the file must be a comment and contain the string **#HF150#**. This is required so the program does not attempt to validate any file you may open in error which could result in many error messages as each line of the

file is validated.

4.1.4.1 User Timed Tune File Format

The file format is identical to that of the **User File Tune** file format. This allows for these files to be created and managed in the same way.

4.1.5 Local Memory Tune

This function opens the **hf150-mem.ini** file in a pop-up window where you can see and access the memory data in a more accessible way than using the program's **Memory Control** interface on the main panel. Selecting / left mouse button clicking on any entry will cause that selected Memory to be tuned to.

On the Menu Bar of this list of memory data you will find a **Print** button. This will send a **Quick Print** of the data to the currently selected default Windows printer. Please ensure you have the correct printer selected in Windows.

The pop-up window can be used in conjunction with the other **User File Tune** and **User Timed Tune** pop-up tuning windows allowing one to flip tune between them.

Note! The **hf150-mem.ini** file can only be written to by using the main panel **Memory Control Local Store** function.

This file can be edited outside of the program and has a specific format which must be adhered to. That format is similar to that of the **User File Tune** file format except that every data line starts with **mem=nn**.

Caution! This file is under the control of the HF150 Program. Every time you close the program then the file will be rewritten from scratch using the data currently stored in the programs local memory locations.

By manually creating/editing this file you can fast load the HF150 program with all your memory tuning data.

4.1.5.1 Local Memory Tune File Format

```
! HF150 Program Local Memory Ini File
! comments added to this file will be removed!
mem=01,01000.000,AMW,00:00,00:00,this is comment 01
mem=02,00450.000,AMW,00:00,00:00,this is comment 02
mem=03,01000.000,AMW,00:00,00:00,this is comment 03
mem=04,00400.000,AMW,00:00,00:00,this is comment 04
mem=05,01000.000,AMW,00:00,00:00,memory 5
......
......
mem=60,06000.000,AMW,00:00,00:00,this is comment 60
```

4.2 Frequency Bar

The **Frequency Bar** gives a linear readout of the currently tuned frequency within a lower and upper frequency range.

The frequency ranges displayed are:

- 30kHz to 100kHz
- 100kHz to 1MHz
- 1MHz to 5MHz
- 5MHz to 10MHz
- 10MHz to 30MHz

4.3 Scratch Pad

The **Scratch Pad** is an instant Save and Recall facility. Whatever Frequency and Mode the receiver is tuned to when the **Save Key** is pressed will result in them being saved to the **Scratch Pad Memory**. This memory is a single location only. When the **Recall Key** is pressed whatever Frequency and Mode is currently stored in the **Scratch Pad Memory** will be recalled and the receiver set to that Frequency and Mode. If there is any data stored in the **Scratch Pad Memory** then it will be displayed on the left of the **Save and Recall Keys**.

The **Scratch Pad Memory** is temporary data that is retained only while the program is running.

4.4 Clock Display

The **Clock Display** shows the current Local and GMT/UTC date and time. These are taken from your PC's Time Zone and Date and Time Settings.

It is not possible to adjust these times with the HF150 Program.

4.5 Mode Control Group

This group of controls manages the receiver's reception Mode.

4.5.1 Mode Keys

There are eight **Mode Keys** controlling the receiver's tuning Modes. When a **Mode Key** is selected the key will become highlighted/illuminated and the receiver will be set to that reception Mode. In addition to the individual **Mode Keys** there are two additional ones providing **Up** and **Down** scrolling through the available Modes.

When a **Mode Key** is selected the key will become highlighted/illuminated and the modes and filter bandwidths are as follows:

Key	Reception Mode	Filter Bandwidth
LSB	Lower Sideband	2.5kHz
USB	Upper Sideband	2.5kHz
AMN	AM Narrow	2.5kHz
AM	AM Wide	7.0kHz
ASD	AM Synchronous Double Sideband	7.0kHz
ASF	AM Synchronous "hi-fi" Mode	7.0kHz
ASL	AM Synchronous Lower Sideband	2.5kHz
ASU	AM Synchronous Upper Sideband	2.5kHz

4.5.2 Up / Down Keys

These **Up Key** and **Down Key** will cycle the tuning Mode up and down the Modes defined in the **Mode Keys** table. The order/sequence of Modes selected is identical to that were you to use the receiver's keys.

Note! In my HF-150 owner's manual the documented sequence of **LSb <-> USb <-> A <-> An <-> ASd <-> ASF <-> ASL <-> ASu <-> LSb** is not the same sequence as in the above table. I have documented and implemented the sequence I have on my HF-150 receiver. You may find that the sequence implemented on your HF-150 is different. Regardless of what is implemented on your receiver's hardware the HF150 Program will follow the above table sequence.

4.5.3 Mode Display

The **Mode Display** shows the full form of the currently set tuning mode.

4.6 Tuning Display

The **Tuning Display** shows the currently set Frequency, Mode and Band information.

4.6.1 Frequency Display

The **Frequency Display** is a dual display. One shows the Frequency in kHz and the other in MHz. Unlike the HF-150's own LCD display which is limited to five digits you will notice that these displays support a full eight digits. This is because the HF-150 receiver is able to be tuned in 8Hz tuning steps. So if you enter a Frequency of 28724.324kHz the receiver will actually tune to the nearest 8Hz tuning step. Consideration was given to having only a seven digit display but then the program would not be able to send the full eight digits of data that the receiver can receive and

process.

4.6.2 Mode Display

The **Mode Display** shows the currently set tuning mode

4.6.3 Band Display

The **Band Display** shows the frequency band that the currently set frequency corresponds to. The information is program derived and not a function of the HF-150 receiver. The applicable band table is:

Band	**Frequency Range**
VLW	30kHz to 148kHz
LW	148kHz to 526kHz
MW	526kHz to 1800kHz
160m	1800kHz to 3500kHz
80m	3500kHz to 5258kHz
60m	5258kHz to 7000kHz
40m	7000kHz to 10100kHz
30m	10100kHz to 14000kHz
20m	14000kHz to 18068kHz
17m	18068kHz to 21000kHz
15m	21000kHz to 24890kHz
12m	24890 to 28000kHz
10m	28000kHz to 30000kHz

4.7 Frequency Control Group

The **Frequency Control Group** of controls is for setting the tuning frequency. When entering frequency data either the PC's keys or the program's keys can be used. You can also use both

methods at the same time. Please bear this in mind when reading the following information.

4.7.1 Frequency Input Field

The **Frequency Input Field** is white and if you select this input field then you can use your computer keyboard to enter a frequency in kHz. As you type the frequency number in it is dynamically validated to ensure it is not greater than 29999.999kHz. Exceeding this value will cause the **Error Message Display** dialog to be displayed. After closing this error dialog the input field will be cleared ready for you to try again.

Values not exceeding 29999.999kHz will be validated when the PC's ENTER key is pressed or the **Set Frequency Key** is selected/clicked on the **Frequency Input Keyboard**. If the value is less then 30kHz then the **Error Message Display** dialog will be displayed.

Once the frequency data has been entered and validated the receiver will be tuned to that frequency. This will update the **Frequency Display**, **Memory Display** and **Memory Match Display**, and the **Frequency Input Field** will be cleared.

If you make an error using this input method then you can edit the field with the PC's keyboard or you can use the **Clear Key** (CLR) on the **Frequency Input Keyboard**.

Using the programs **Frequency Input Keyboard** will result in this input field displaying the key values as you press them.

4.7.2 Frequency Input Keyboard

The **Frequency Input Keyboard** can be used instead of selecting and typing directly into the **Frequency Input Field** with you computer's keyboard. When doing this the **Frequency Input Field** will display the key values as you press them. There is no need to select the **Frequency Input Field** first! If you make an error then you can use the **Clear Key** (CLR) and start your input again.

The input and validation of data is the same as that for data input via the **Frequency Input Field**.

When your input is complete you can the click the **Set Frequency Key** or press the PC's ENTER key.

4.7.3 Set Frequency / Reset Frequency Key

The **Set Frequency / Reset Frequency Key** will change its legend/label name and function depending on current status. If you are currently entering frequency data then the key will be labeled **Set Frequency**. If you are not currently entering data and the **Frequency Input Field** is blank/cleared then the key will be labeled **Reset Frequency**.

When labeled **Reset Frequency** then clicking this key or pressing the PC's ENTER key will result in the receiver being set to the same frequency again as displayed in the **Frequency Display**. This is a very useful function as it allows one to manually tune the HF-150 receiver away from the current set frequency and quickly reset it back again.

In all cases this key results in the receiver being sent tuning data.

4.7.4 Band Tune List Box

The **Band Tune List Box** control when selected gives a drop down list of all the available frequency bands. Selecting a band will result in the receiver being immediately tuned to the starting frequency of the selected band. See the Band Table for starting frequency details.

4.7.5 Step << >> List Box

The **Step <<>> List Box** control when selected gives a drop down list of all the available large frequency step sizes that can be assigned to the **Step << >> Key**. The selected step size will also be displayed on the **Step << >> Keys**.

4.7.6 Step < > List Box

The **Step < > List Box** control when selected gives a drop down list of all the available small frequency step sizes that can be assigned to the **Step < > Key**. The selected step size will also be displayed on the **Step < > Keys**.

4.7.7 Step << < > >> Keys

The **Step << < > >> Keys** when clicked will immediately tune the receiver up or down in frequency by the amount labeled on each key. To change the frequency step sizes use the **Step <<>>** and **Step <> List Boxes**.

4.8 Memory Control Group

The **Memory Control Group** is for managing both the program's 60 memories and the HF-150 receiver's 60 memories. These two groups of memory are referred to by the program as **Local Memory** and **HF-150 Memory**. Which memory is to be controlled is selected via the **Local and HF-150 Control Groups**.

4.8.1 Local Group

The **Local Group** has two keys. A **Green Recall** (RCL) and **Yellow Store** (STO) key. Clicking one of these keys will do three things:

1. Select the program's **Local** memory as the target for all memory functions.
2. Select **Recall Mode** or **Store Mode**.
3. Turn the **Memory Control Enter Key** to either a matching Green Key labeled **Local Recall** or a matching Yellow Key labeled **Local Store**. The PC's ENTER key will function according to the program key designations.

4.8.1.1 Recall Key

The **Recall Key** recalls and tunes the receiver according to the program's stored Frequency and Mode in the selected **Local Memory** number.

4.8.1.2 Store Key

The **Store Key** stores the program's currently tuned Frequency and Mode to the program's selected **Local Memory** number. In addition to storing Frequency and Mode you can enter two times, **Time1** and **Time2**, and **Comments** in the **Memory Display** area.

The **Time1** and **Time2** input fields will auto format. If you enter no data in these fields then a time of **00:00** will be inserted for you. If you enter **1324** then this will be changed to **13:24**. This allows for rapid time entry. Alternatively you can enter the times in full e.g. **23:19**. In all cases the times must be entered as full four digit 24 hour times, including a leading zero for hours less that 10.

The **Comments** input field is a free form entry field. If no data is entered then an ***** will inserted for you.

There is a confirmation dialog prompt which displays the currently stored data together with the data you are wanting to store.

Data stored in the **Local Memory** is written to the **hf150-mem.ini**file on program closure. This data will be reloaded when the program starts.

4.8.2 HF-150 Group

The **HF-150 Group** has just the one **Purple Load** (LOAD) key. Clicking this key will do the following:

1. Select the HF-150 Receiver memory as the target.
2. Select **Load HF-150 Memory Mode**.
3. Turn the **Memory Control Enter Key** to a matching Purple Key labeled **HF-150 Load**. The PC's ENTER key will function according to the program key designation.

4.8.2.1 Load Key

Warning! The **Load Key** will cause all sixty of the receiver's **HF-150 Memory** locations to be loaded with the Frequency and Mode information from the program's sixty **Local Memory** locations. A dialog prompt will be issued and **if you accept/OK the Load then the load process will begin and it can not be halted**. Once completed any data that was stored in the **HF-150 Memory** will have been replaced.

The **Load** process consists of sequentially recalling and tuning the receiver to the Frequency and Mode stored in each of the program's **Local Memory** locations. The receiver is then commanded to **HF-150 Store** to the equivalent **HF-150 Memory** location.

Caution! During the **Load** process care should to taken to not touch any of the HF-150's controls as this will change the information being stored.

4.8.3 Load Progress Indicator

The **Load Progress Indicator** is a moving bar indicator showing the progress and how much longer the **HF-150 Load** process will take.

4.8.4 Memory Input Field

The **Memory Input Field** is white and if you select this input field then you can use your computer keyboard to enter a memory number. As you type the memory number in it is dynamically validated to ensure it is not greater than 60. Exceeding this value will cause the **Error Message Display Dialog** to be displayed. After closing this error dialog the input field will be cleared ready for you to try again.

Values not exceeding 60 will be validated when the PC's ENTER key is pressed or the **Memory Enter Key** is selected/clicked on the **Memory Input Keyboard**.

Once the memory data has been entered and validated the chosen memory action will be executed. This could be a **Recall** or **Store** action. This will update the **Memory Display**, **Frequency Display**, and **Memory Match Display**, and the **Memory Input Field** will be cleared.

If you make an error using this input method then you can edit the field with the PC's keyboard or you can use the **Clear Key** (CLR) on the **Memory Input Keyboard**.

Using the programs **Memory Input Keyboard** will result in this input field displaying the key values as you press them.

4.8.5 Memory Input Keyboard

The **Memory Input Keyboard** can be used instead of selecting and typing directly into the **Memory Input Field** with your computer's keyboard. When doing this the **Memory Input Field** will display the key values as you press them. There is no need to select the **Memory Input Field** first! If you make an error then you can use the **Clear Key** (CLR) and start your input again.

The input and validation of data is the same as that for data input via the **Memory Input Field**.

When your input is complete you can the click the **Memory Enter Key** or press the PC's ENTER key.

4.8.6 Step < > Keys

The **Step < > Keys** will cause the **last** stored/recalled memory number to be increased or decreased by one location. If you last used memory location 5 then **Step < Key** will select memory 4 and **Step > Key** will select memory 5. The chosen memory action will not be taken until the **Memory Enter Key** is clicked or the PC's ENTER key is pressed.

These **Step < > Keys** can be used to quickly scroll through the memory locations.

Selected memory data, where available, will be displayed in the **Memory Display**.

4.8.7 Fast Tune Key

The **Fast Tune Key** is used in conjunction with the **Memory Step < > Keys**. This **Fast Tune Key** toggles in action and turns Green when enabled.

If selected and highlighted Green then every time the **Memory Step Keys** are pressed the selected memory data will be immediately recalled and sent to the receiver thus making the receiver immediately tune to the new memory data settings.

The **Fast Tune Key** is only enabled in the **Local Memory Recall** mode.

4.8.8 Memory Local Recall / Local Store / HF-150 Load Key

This key will change its legend/label name and function depending on current status.

Key label, colour and action will reflect the settings selected in the **Local Memory Group** or **HF-150 Group** controls.

In all cases the the PC's ENTER key will perform the same function as this key.

4.9 Memory Display

The **Memory Display** area shows you what the **Local Memory** locations contain.

It is a multifunction display in that it will display memory location information for the following cases:

1. Memory information for the currently tuned memory location. In this case you will see the word MEM with a bright green background in the lower right of the display area.
2. Memory information during memory value input
3. Memory information for the current **Memory Match Display** value
4. Memory information during a **HF-150 Memory Load**

With **Local Memory Recall** and **Store** then then this display will display the specific memory data values. If no information is available then the display fields will be blank/cleared.

With **HF-150 Memory Load** then you will be shown the memory information as the information is loaded into the HF-150 Memory Locations.

When using the **Frequency Control Group** tuning controls then when you set a specific frequency then the **Memory Match Display** and **Memory Display** will show the nearest **Local Memory** information to the frequency you have just selected. The **Memory Match Display** will show how far your chosen frequency is below, above or exactly on the same frequency as the indicated memory. This is done via the left and right bars. There are 10 bar intervals and each bar interval represents 1kHz. If either the lower (left) or upper (right) bars are fully green then your current frequency is 10kHz off the indicated memory location frequency.

4.10 Memory Match Display

The **Memory Match Display** will show how far the current frequency is below, above or exactly on the same frequency as the indicated memory number in the center of the display. This is done via the left and right bars. There are 10 bar intervals and each bar interval represents 1kHz. If either the lower (left) or upper (right) bars are fully green then your current frequency is 10kHz off the indicated memory location frequency.

If the frequency exactly matches that of a memory location then the bars will disappear and the central number display will be Bright Green. As you move away from the exact memory frequency the appropriate lower or higher bar will grow in size and the central number display will change colours. When you are 10kHz off the memory frequency then the lower or higher bar will be at maximum size and the central number display will be Bright Red.

4.11 Tuning Control Group

The Tuning Control Group controls how the program tuning is to be done.

There are three possible tuning modes:

1. **Manual Control**
2. **Frequency Scan**
3. **Memory Scan**

To select a tuning mode you click a appropriate radio button.

4.11.1 Manual Control Mode

When the **Manual Control Mode** is selected then the **Frequency Scan Group** and **Memory Scan Group** controls are disabled. Receiver control is done via the **Frequency Control Group**, **Memory Control Group** and **Mode Control Group** keys.

4.11.2 Frequency Scan Mode

When the **Frequency Scan Mode** is selected then the Memory Scan Group controls are disabled. **Manual Control** is still available.

When the associated **Loop** check box is ticked then the frequency scan will continue looping back to the start frequency once the end frequency is reached.

4.11.3 Memory Scan Mode

When the **Memory Scan Mode** is selected then the Frequency Scan Group controls are disabled. **Manual Control** is still available.

When the associated **Loop** check box is ticked then the memory scan will continue looping back to

the start memory location once the end memory location is reached.

4.11.4 Tuning Control Status Display

The **Tuning Control Status Display** shows the current tuning control state. The possible states are:

- Manual Control
- Frequency Scan-Stopped
- Frequency Scan-Paused
- Frequency Scan-Running
- Memory Scan-Stopped
- Memory Scan-Paused
- Memory Scan-Running

4.11.5 Frequency Scan Group Controls

These control the **Frequency Scan Mode**. Unless **Frequency Scan Loop** is enabled then the frequency scan will be a single pass between the **Start Frequency** and **End Frequency**.

4.11.5.1 Start Frequency Field

The **Start Frequency Field** is where you enter the frequency in kHz at which you want the scan to start. The **Start Frequency** will be validated and must be less than the **End Frequency**.

If the **Frequency Scan Loop** is enabled/selected then when the **End Frequency** is reached the scan will restart from the **Start Frequency**.

4.11.5.2 End Frequency Field

The **End Frequency Field** is where you enter the frequency in kHz at which you want the scan to end. The **End Frequency** will be validated and must be greater than the **Start Frequency**.

If the **Frequency Scan Loop** is enabled/selected then when the **End Frequency** is reached the scan will restart from the **Start Frequency**.

4.11.5.3 Step Frequency List Box

The **Step Frequency List Box** gives a drop down list of frequency step sizes to select from. If the last scan step increment would result in a frequency exceeding the **End Frequency** then the scan will terminate before the End Frequency is reached.

4.11.5.4 Frequency Scan Delay List Box

The **Frequency Scan Delay List Box** gives a drop down list of delay times in milli seconds to select from. The selected time will result in each scan frequency remaining tuned for that time. After the time has expired the next frequency will be tuned.

Note! The times are approximate and are affected by other program constraints.

4.11.5.5 Frequency Scan Start Key

The **Frequency Scan Start Key** when clicked will start the scan running. The key will then be deactivated and the **Frequency Scan Pause Key** and **Frequency Scan Stop Key** will become enabled. The **Tuning Control Display** will show **Frequency Scan-Running**.

4.11.5.6 Frequency Scan Pause Key

The **Frequency Scan Pause Key** will Pause and Continue/Resume a running scan.

The **Frequency Scan Pause Key** will only be enabled while a frequency scan is running. Whilst a scan is running the **Frequency Scan Pause Key** will flash Orange to indicate that a scan is running and it can be paused.

When the **Frequency Scan Pause Key** is labeled **Pause** and flashing Orange then clicking it will Pause the scan on the current frequency, the key label will change from **Pause** to **Cont.** (Continue), and the key will alternately flash Orange and Yellow. The **Tuning Control Display** will show **Frequency Scan-Paused**.

When the **Frequency Scan Pause Key** is labeled **Cont.** and flashing Orange and Yellow then clicking it will Continue/Resume the scan from the current frequency, the key label will change from **Cont.** to **Pause**, and the key will flash Orange. The **Tuning Control Display** will show **Frequency Scan-Running**.

4.11.5.7 Frequency Scan Stop Key

The **Frequency Scan Stop Key** when clicked will Stop a Running or Paused Frequency Scan. The **Tuning Control Display** will show **Frequency Scan-Stopped**.

4.11.6 Memory Scan Group Controls

These control the **Memory Scan Mode**. Unless **Memory Scan Loop** is enabled then the frequency scan will be a single pass between the **Start Memory** and **End Memory**.

4.11.6.1 Start Memory Field

The **Start Memory Field** is where you enter the memory number at which you want the scan to start. The **Start Memory** will be validated and must be less than the **End Memory**.

If the **Memory Scan Loop** is enabled/selected then when the **End Memory** is reached the scan will restart from the **Start Memory**.

4.11.6.2 End Memory Field

The **End Memory Field** is where you enter the number of the memory at which you want the scan to end. The **End Memory** will be validated and must be greater than the **Start Memory**.

If the **Memory Scan Loop** is enabled/selected then when the **End Memory** is reached the scan will restart from the **Start Memory**.

4.11.6.3 Memory Scan Delay List Box

The **Memory Scan Delay List Box** gives a drop down list of delay times in milli seconds to select from. The selected time will result in each scan memory remaining tuned for that time. After the time has expired the next memory will be tuned.

Note! The times are approximate and are affected by other program constraints.

4.11.6.4 Memory Scan Start Key

The **Memory Scan Start Key** when clicked will start the scan running. The key will then be deactivated and the **Memory Scan Pause Key** and **Memory Scan Stop Key** will become enabled. The **Tuning Control Display** will show **Memory Scan-Running**.

4.11.6.5 Memory Scan Pause Key

The **Memory Scan Pause Key** will Pause and Continue/Resume a running scan.

The **Memory Scan Pause Key** will only be enabled while a memory scan is running. Whilst a scan is running the **Memory Scan Pause Key** will flash Orange to indicate that a scan is running and it can be paused.

When the **Memory Scan Pause Key** is labeled **Pause** and flashing Orange then clicking it will Pause the scan on the current memory, the key label will change from **Pause** to **Cont.** (Continue), and the key will alternately flash Orange and Yellow. The **Tuning Control Display** will show **Memory Scan-Paused**.

When the **Memory Scan Pause Key** is labeled **Cont.** and flashing Orange and Yellow then clicking it will Continue/Resume the scan from the current memory, the key label will change from **Cont.** to **Pause**, and the key will flash Orange. The **Tuning Control Display** will show **Memory Scan-Running**.

4.11.6.6 Memory Scan Stop Key

The **Frequency Scan Stop Key** when clicked will Stop a Running or Paused Memory Scan. The **Tuning Control Display** will show **Memory Scan-Stopped**.

4.12 Com Port Control Group

The **Com Port Control Group** is for managing the communications port to which the receiver is connected via the IF-150 interface. It consists of a display on the left, a drop down selection box in the middle and a status indicator light on the right.

Note! Currently the program only supports and lists port names named **COMn** or **COMnn**, e.g. COM7 or COM13.

The HF150 Program and HF-150 receiver use 1200 baud, 8 data bits, no parity and 1 stop bit. The HF150 Program will try to configure any selected port to these settings. If you experience communication problems then it is suggested to try setting these values in **Windows - Control Panel - Device Manager - Ports - Port Settings** for the relevant port.

If there are no COM ports available or one is not selected then an error message will be displayed and the program will then function in "**Test Mode**".

4.12.1 Com Port Display

The **Com Port Display** shows the currently selected Communications Serial Port.

4.12.2 Com Port List Box

The **Com Port List Box** will contain a drop down list of all communication ports that are named COMn or COMnn and are available on your PC. You should select the appropriate port for your interface. The port you select will be saved when the HF150 Program closes and this port will be used the next time the program is started **if** it is still a valid listed port connection on your PC.

If you are unsure of which port to use then do the following:

1. Ensure your interface is connected to the PC
2. Open **Windows - Control Panel - Device Manager - Ports** and review the list of ports and most importantly check the names of devices against each listed port
3. If you are using a USB to Serial Adapter to drive your IF-150 interface then you need to look for a USB-to-Serial adapter
4. Note and use the appropriate port name

NOTE! If using a USB-to-Serial adapter then you should always try and use the same USB socket for your device. Using different USB sockets will result in a different COMn port being allocated by Windows and you will have to go through the port selection process again.

4.12.3 Com Status Light

The **Com Status Light** shows the status of communication as seen by the HF150 Program. The light colour indicates the following status:

- **RED** - There is no selected and valid COM port available on the system

- **GREEN** - A valid COM port on the system has been selected
- **GREEN/RED Flashing -** Data is being sent to the selected COM port

4.13 Notepad Group Control

The HF150 Program provides a very useful **Notepad Function** for your use. It is capable of storing 2048 MB of data. The data is stored to the file **hf150-note.ini** and the data will be loaded and saved when the program starts and ends.

You will receive a program warning when the currently stored data in the file exceeds 5 MB. When you start to receive these warnings then you should ideally backup your data as soon as possible and then **Clear** the **Notepad Data Area**.

The current Notepad usage in MB is displayed at the top of the Notepad area. This is where the Warning message will be displayed in Red.

Load and saving data exceeding 5 MB will slow down the program start and shutdown performance.

4.13.1 Notepad Data Area

The **Notepad Data Area** is a totally free form input area for your use. In this area you can type, edit and delete whatever data you like. All data is saved to the **hf150-note.ini** when the HF150 Program closes. When the HF150 Program starts then the data in the **hf150-note.ini** file is reloaded.

4.13.1.1 Automated Data Entries

Currently the HF150 Program only makes two entries into the **Notepad Data Area**. These are:

- **Startup Date and Time** - e.g. 11/01/2012 16:27:34 Startup:
- **Shutdown Date and Time** - e.g. 11/01/2012 18:29:53 Shutdown:

These entries can be added to, edited or deleted. It is suggested you leave these entries in the log for your own reference.

4.13.1.2 Mouse Double Click Entries

Double left mouse button clicking anywhere in the **Notepad Data Area** will result in the creation of a new data entry containing the current date and time and the currently tuned frequency and tuning mode.

A typical entry would look like this:

11/01/2012 18:51:48 00041.000 AMW:

You can add your own comments and data to this entry.

4.13.2 Notepad Top Key

The **Notepad Top Key** when clicked will scroll the **Notepad Data Area** to the top of the file.

4.13.3 Notepad Bottom Key

The **Notepad Bottom Key** when clicked will scroll the **Notepad Data Area** to the bottom of the file.

4.13.4 Notepad Clear Key

The **Notepad Clear Key** when clicked will clear the **Notepad Data Area**. Although the visible data is cleared the **hf-150.ini** data file will not be updated until the program is closed. If you want to undo this operation the use the **Notepad Restore Key**.

4.13.5 Notepad Restore Key

The **Notepad Restore Key** when clicked will restore to the **Notepad Data Area** the data that you previously removed with the **Notepad Clear Key**. If you do this before closing the program then the **hf-150.ini** file data will be retained.

5.0 Test Mode

The program will enter and run in **Test Mode** whenever there are no COM ports available on the system or a port has not been selected.

When running in **Test Mode** the main window background colour will change to "Bisque" (a light soft pastel pink) and the Title Bar on the form will also contained the text "**WARNING - RUNNING IN TEST MODE!**"

In **Test Mode** you can fully use the program however no data will be sent to the receiver.

The program will automatically exit **Test Mode** as soon as a valid COM port has been selected.

6.0 Program Suggestions, Recommendations and Bug Reports

I welcome any suggestions, recommendations or bug reports. These should be sent to:

hf150 AT nick-bailey DOT co DOT uk (replace AT with @ and DOTs with . and remove blank spaces).

I apologise for munging my Email address but as we all know SPAM is a major problem and keeping my hf150 email address free of spam will help us all.

I can not guarantee to fix or implement what you report/suggest but what I can say is that this HF150 Program would not be what it is today without the feedback, suggestions and bug reports I have received from one Dutch user. To this person (he knows who he is) I say a very grateful THANK YOU!

7.0 Warranty, Liability and License Agreements

The HF150 Control Program is currently FREEWARE (http://en.wikipedia.org/wiki/Freeware) and has no time or functions limitations. The author reserves the right to change the program status and limitations on any future release. Existing releases will retain their status and your right to use them but support may not be available.

The HF150 Control Program is here into referred to as the 'Program'.

The Program is supplied 'as-is' and the author neither accepts, implies nor offers any warranty, liability or any other responsibility for any damages, loss or other claim of any type in respect of this Program, its usage or consequence of its usage.

You use it at your own risk.

The Program is the sole Copyright of the author and all rights are reserved. The author's Copyright is restricted to those files containing 'HF150' in their name and any other file clearly written by the author. The Copyright includes the intended operation, design and function of the Program. The Program requires other runtime files to function and the Copyright of these files belongs to their respective owners/authors.

You may not disassemble, reverse engineer or otherwise interfere with any of the Program executable files.

The preferred availability and distribution of the Program is from the authors website to which you and others should refer to.

You may freely distribute the Program but must do so entirely free of charge, save for any reasonable charge in respect of any physical media used in its distribution. All electronic or other non physical media distribution must be free of all charges. You may not alter, modify, remove, or in any way change any of the files that comprise the HF150 Program Control Package as released by the author. You may add your own text or other information files but these must be clearly identifiable as yours, added by you and in such a manner that they do not in any way form part of the HF150 Control Program or could easily be considered to be part of the HF150 Control Program. Neither must they infringe the Copyrights of any author, person or organisation and must not contain offensive, illegal or other illicit material.

Should you believe that your version of the Program package has been subject to any infringement of the above conditions then please contact the author immediately providing as much information as possible.

Prior to release, the author has to his satisfaction checked that the Program is free of any Virus or other potentially destructive software/code, but this is not guaranteed.
Before using the Program you are advised to Virus check the version of the Program you have prior to using it. The author's Website may also carry MD5 checksums for the critical files. You are advised to verify these as well.

You are requested to fully read this and any other documentation prior to installing and using the Program. In using the Program you are agreeing to accept all of the terms and conditions stated herein.

The author hopes that you find HF150 Control Program both easy to use, reliable and of assistance to you and your Lowe HF-150 receiver. He may be contacted at his Email address and would certainly like to hear of any bugs, criticism, suggestions etc. that you may have.

Please remember. The HF150 Control Program is supplied 'as-is' and you use it a your own risk.