RIGblaster Advantage

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Introduction To The RIGblaster Advantage

We understand you have a choice when buying Amateur Radio products and we would like to take a moment to thank you for choosing West Mountain Radio. The RIGblaster Advantage has been designed with you, the digital-mode operator in mind. It has many outstanding features which will at the same time enhance and simplify your operating.

Some of the features of the RIGblaster Advantage which put it ahead of the competition include;
- COM port push-to-talk (PTT) keying.
- A high-quality built-in USB sound card with level controls (both RX & TX) on the front panel.
- Pre-wired Instant Setup Connectors – no more complex jumper wiring!
- Rig-control (CAT/CI-V).*
- FSK jack for operating FSK RTTY.**
- CW keying jack for operating Morse Code.
- Digital VOX with adjustable delay.
- Separate audio jacks for received and transmitted audio.
- Foot-switch PTT input.
- USB virtual serial port with real RS-232C DB9.
- TX inhibit switch.

Connection to your computer is made very simple with the supplied USB cable. We will go into connecting up your RIGblaster Advantage in the first chapter so **do not** hook it up right away. Please read through this manual first (especially the driver installation section) and you will find the RIGblaster Advantage will provide you with many years of reliable service and enjoyment.

* *Rig control is only available on certain transceivers.*
** *FSK requires the transceiver to have a dedicated*
   RTTY mode with FSK input and the software must
   support COM port FSK.

Introduction To Digital-Mode Operating

The DVD is a collection of various digital-mode software programs for use with the RIGblaster Advantage. The software is all Third-Party software programs, however, we have tested our products on the majority of them. Amateur radio software is constantly evolving and we encourage you to visit the author's website to check for updates for software you wish to use.

Most modern digital-modes can be operated on the RIGblaster Advantage. Some of these may be familiar to you. For instance PSK31, JT65 & RTTY are very commonly heard on the bands.

Try tuning to 14.070MHz (usb) and chances are you will hear multiple PSK31 QSOs taking place. Tune to 14.076MHz and you will often hear JT65 signals. Going up another 10KHz lands you right in a very popular RTTY segment. Other modes that will work with the RIGblaster Advantage include, but not limited to, Olivia, Hellschreiber, WinMOR, DominoEX, SSTV, Packet and ALE.

It is worth noting there are some modes in use which cannot be used with the RIGblaster Advantage in Windows (nor any sound-card based interface). These are the ARQ modes Pactor-I/II/III and Amtor. These modes require very precise timing cycles which Windows is unable to deliver. Amtor is very rarely used these days but Pactor is commonly employed for mail messaging using the Winlink 2000 system. In practice this is not much of a limitation as the RMS Express software (WinMOR) makes mail/e-mail messaging simple using the RIGblaster Advantage.

Many digital-modes (such as PSK31) will work far down into the noise level. It is not uncommon to see copy on your screen even when you have difficulty hearing the signal on your speaker.

This also implies you do not need to run high power levels during normal conditions and for most digital-modes you will find 20-40W ample. In fact, running close to maximum output on your radio is self-defeating. In this case you stand a very good chance of having a spread-out badly distorted signal (think QRM!) and you may even damage your rig on long overs as many transceivers are not designed to run high duty-cycle transmissions for extended periods.

At the back of this manual you will find a simple chart of digital-modes, software and frequencies to try. These are just suggestions but will help you get started navigating the world of HF digital-modes.

Package Contents

The following is a list of the contents for the RIGblaster Advantage.
Verify that all the following items were included:

   1 — RIGblaster Advantage Unit
        Note: Cover is loose so you may easily remove it to
        install jumpers)
   1 — Accessory ZipLock® bag. Contains the following:
        8 — Single pin jumper wires
        5 — Mini blue shunts
        4 — #6 black sheet metal screws (for cover)
        4 — Adhesive pads and Rubber Feet
   1 — Baggie of Instant Setup Connectors
   1 — Microphone cable (RJ-45 to 8 pin screw-on)
   1 — 1/8 inch stereo mini plug cable
   1 — USB A-B cable
   1 — RIGblaster & RIGtalk DVD
   1 — Owner's manual

Controls, Connections And Features

Receive audio level (Use in conjunction with computer audio level

Transmit audio level (Use in conjunction with computer volume level

Microphone input for 8 pin round mic (Mic output with RJ45 connector radio)

If VOX enabled, controls length of time transmit is active

PTT LED (lights when software activates transmits)

FSK/CW LED (lights when software accesses serial DTR line for FSK/CW keying. Also lights in VOX mode and indicates signal level)

USB LED (lights when unit is powered. Will blink when software is receiving or transmitting audio

PTT Software Config **COM:** RTS Control PTT DTGR Controls CW/FSK off: computer can never activate PTT or CW/ FSK **VOX:** PTT and CW/FSK activated automatically by audio.

USB to interface (Read driver install before connecting.

CAT/CI-V rig control (Connects to radio with accessory cable)

CAT RIG Control at RS232 Levels

CW/FSK keying output (connects to radio keying input

PTT in/out RCA Connector (used with foot-switch or other PTT switch or connection.

Computer transmitted audio allows you to monitor transit audio from PC

Microphone output for 8 pin round mic:used with cable (Mic input with RJ45 connector radio

Audio line input (outgoing audio from your radio connects here

Radio transmitted audio (allows you to monitor audio received by radio)

Software Driver Installation

The RIGblaster Advantage when properly installed in Windows, Linux or Macintosh operating systems will provide two new hardware devices; a serial COM port and a sound-device.

Linux Installation
The RIGblaster Advantage was sucessfully tested with Ubuntu. Drivers and instructions are available online:
http://www.westmountainradio.com/adv/drv/linux

Macintosh OS X Installation
The RIGblaster Advantage will work with OS X 10.5 and above. Drivers and instructions are available online:
http://www.westmountainradio.com/adv/drv/macosx

Windows Installation
The RIGblaster Advantage has been tested on Windows 2000/XP/Vista and Win 7. Drivers and instructions for Windows 2000 are available on our website at the following location:
    http://www.westmountainradio.com/adv/drv/win2k

Drivers for Windows XP and above are supplied on the DVD. They are also available via Windows Update as they are digitally signed with Microsoft.

To install the Advantage in Windows XP and above, connect the supplied USB cable from the PC to the RIGblaster Advantage. This will notify Windows that new hardware has been connected and the "Found New Hardware" wizard will start.

Follow the prompts on the screen. When Windows asks for the location of the drivers, point it to search the supplied DVD and/or retrieve them from the Internet if PC is online. The online drivers are digitally signed with Microsoft and will always be the latest version.

After the drivers installation has finished, the green PWR LED on the front of the RIGblaster Advantage will be illuminated. During installation, the red XMIT LED may flicker a few times. This is normal and does not indicate a problem.

Note: The green PWR LED will blink when incoming or outgoing audio is detected and remain solid when idle. This LED will only be illuminated if the driver installation was successful.

After successful installation a good idea is to check Windows Device Manager and verify there is a new COM port and audio device (see Figure 1).

How to verify in Windows XP:
1. Open the Windows Control Panel (Start->Settings->Control Panel)
2. Look for the System icon and double-click it.
3. Choose the "Hardware" tab at the top and click the button marked "Device Manager".

How to verify in Windows 7:
1. Open the Windows Control Panel (Start->Settings->Control Panel)
2. Change Control Panel to "View By Small Icons"
3. Click on the icon labeled "System"
4. Click on the icon labeled "Device Manager"

A window similar to the one shown in Figure 1 should appear. There will be a section called "Ports (COM & LPT)" which can be expanded to view by clicking on the + symbol to the left.
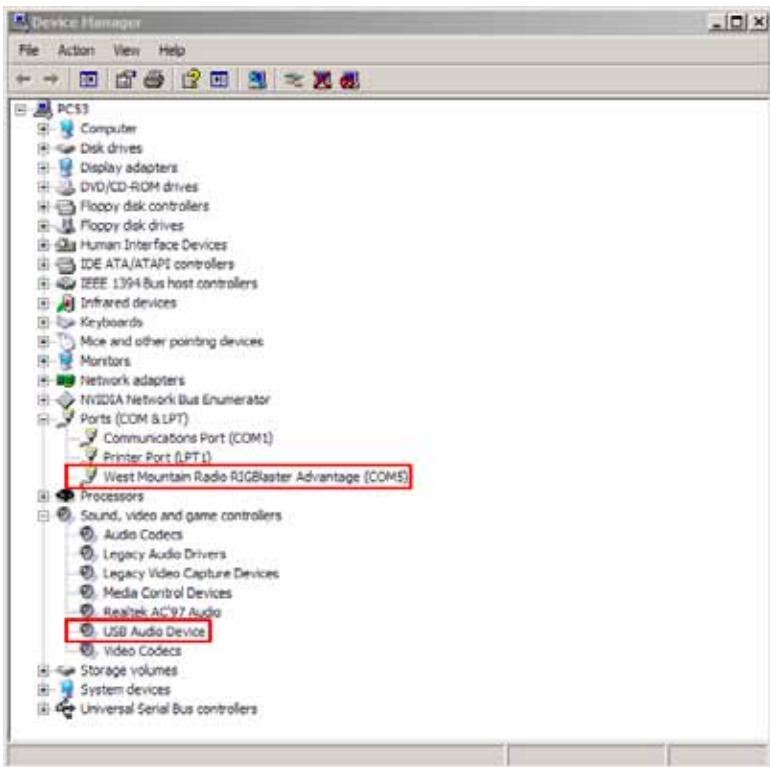

Fig 1 - Windows XP Device Manager

Look for the entry West Mountain Radio RIGblaster Advantage. Immediately after this text, look for the COM port number in parenthesis (e.g. COM5). Make a note of this as it will be needed to configure digital mode software to use this COM port later.

When expanding the section marked "Sound, video and game controllers", notice the new entry labeled USB Audio Device (or RIGblaster Advantage Audio in Win 7).

Note: *Windows may assign any number for the COM port. Windows typically treats COM1 to COM4 as special and does not normally use them for USB serial devices. Therefore, it is not recommended to re-number the RIGblaster Advantage COM port to a value lower than 5.*

Note: *Some digital mode software, especially older software, may not allow a COM port greater than 8. In which case, renumber the COM port to a value within the range 5-8.*

How to renumber the RIGblaster Advantage COM port.
If needing to renumber the RIGblaster Advantage COM port in Windows, refer to Figure 2.

Bring up the Windows Device Manager and highlight (single left-click of the mouse) on the West Mountain Radio RIGblaster Advantage entry under the Ports (COM & LPT) section.

Next, select the Action menu at the top of this window and select Properties. A new window titled West Mountain Radio RIGblaster Advantage Properties will appear.

Select the Port Settings tab and then click the Advanced button. A new window named Advanced Settings will appear. On the drop-down list near the bottom of this window with the current RIGblaster Advantage COM port selected, click on the little down-arrow to the right and select a new COM port.

After selecting the new COM port, click 'OK' on this window and on the Properties window. Continue running the Device Manager, disconnect and reconnect the RIGblaster Advantage USB cable. The Device Manager window will refresh with the new COM port setting.

Sometimes Windows may show that a COM port is in-use. It is safe to use this COM port number as long as the device to which it refers is not physically connected at the same time as the RIGblaster Advantage.
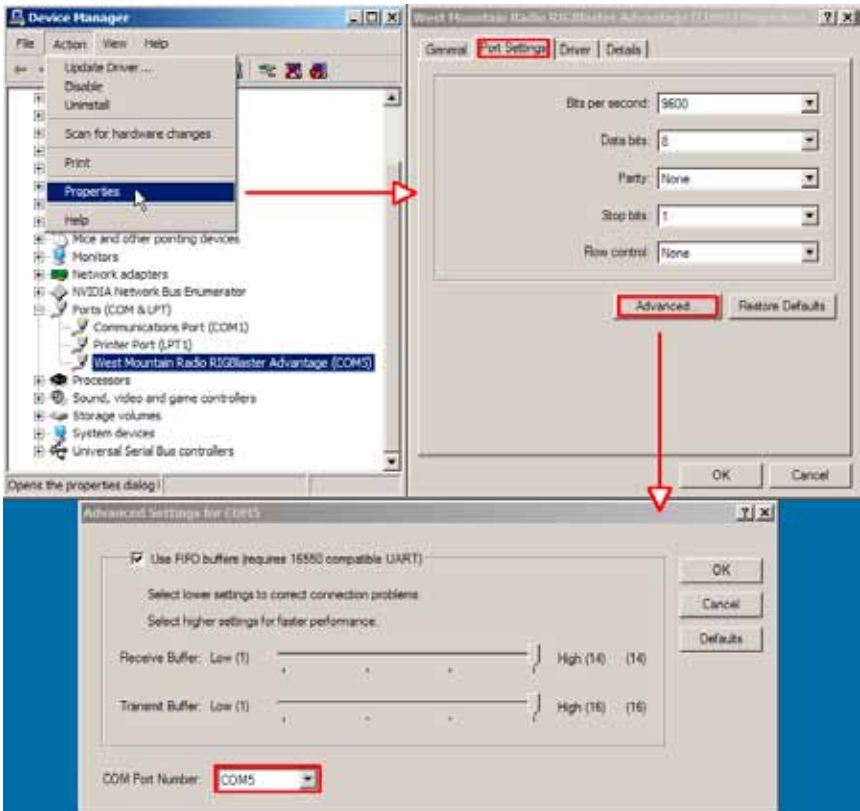
Fig 2 - Renumbering COM Port

Transceiver Connections

Configuring the RIGblaster Advantage with a transceiver is very simple by use of the *Instant Setup Connectors* (ISC).   The baggie included in the package contents has six small printed circuit boards. Each ISC is respectively identified: Icom Round Metal, Icom RJ45 Modular, Yaesu Round Metal, Yaesu RJ45 Modular, Kenwood Round Metal and Kenwood RJ45 Modular.

Depending on the transceiver in use, one of these ISCs will need to be installed inside the RIGblaster Advantage before use. They take care of all the microphone connection wiring that previously was done by installing jumper wires and shunts. If using a non-standard microphone wiring, jumper wires and and blue shunts have been provided in the package contents. The ISCs cover most popular brands and models of radios.

Choosing the Correct ISC

Observe the microphone connector on the radio. Typically it will be one of two types – either an 8-pin round metal connector or an RJ-45 "square" modular jack. The RIGblaster Advantage is designed to interface the transceiver through the microphone jack. Be sure to select the ISC that matches the connector on the radio. If unsure which ISC to use,refer to the back of this manual and for a chart of common radios and the correct ISC to use.

> Example: The Icom 706MKIIG uses an *Icom RJ45 Modular* jack. A Yaesu FT-897D uses a *Yaesu RJ45 Modular* jack. A Kenwood TS-590S uses a *Kenwood 8 Pin Round Metal* jack.

Note: Some radios use a 4-pin round microphone connector, these include some Kenwood and Ten-Tec radios. An adapter will be needed to use the RIGblaster Advantage with these radios. The correct adapter is sku #58136-1000 and available online for purchase.

Locate the correct ISC for the radio and install it on the ISC header (2 rows of 13 pins) located inside the RIGblaster Advantage ensuring pin 1 on the ISC matches pin 1 on the header. Refer to Figure 3 for correct installation.
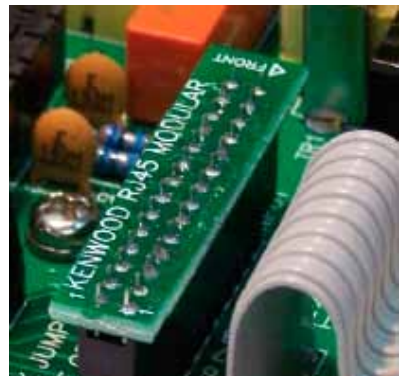

Fig 3 – Installation of a Kenwood RJ45 Modular ISC inside the RIGblaster Advantage. Notice the orientation of the ISC and the location of pin 1.

Now hook up the RIGblaster Advantage to the radio. Follow the steps in the next section and refer to the connection diagram at the back of this manual.

<u>Required Connections</u>

1. Disconnect the microphone from the transceiver.

2. Reconnect the microphone to the RIGblaster Advantage.
   Note: There will be only one connector on the Advantage that will mate with the microphone plug; either the 8-pin round metal socket mating to the front panel or the square RJ-45 connector mating to the rear panel.

3. Connect the 8-pin (round) to RJ-45 (square) microphone cable, included in the package contents, to the transceiver's microphone input socket. *There will be only one end that will mate with the transceiver's microphone socket.*

4. Connect the other end of the microphone cable to the RIGblaster Advantage.

5. Take the 1/8" inch stereo patch cable and connect one end to the transceiver's speaker out (or headphone) jack.
   Note: If the transceiver uses a 1/4" jack, it will require use of 1/8" inch to 1/4" stereo adapter.

6. The other end of the patch cable should be connected to the jack labeled **LINE IN** on the rear of the RIGblaster Advantage.

<u>Optional Connections</u>

Additional jacks are provided on the rear of the RIGblaster Advantage for operation enhancement:

1. **Serial DB-9**. This connector can be used to interface some transceivers that require RS-232C level CAT.
   Note: This serial connector is a hardware extension of the USB virtual serial port. All lines are connected but take note that some control lines are used by the RIGblaster Advantage for PTT & CW/FSK. See page 14 for details.

2. **CTL IN/OUT**. This is a TTL level jack providing CI-V/CAT rig control. Many radios can be interfaced to this jack with a low-cost cable for complete rig control with suitable software (e.g. Ham Radio Deluxe, OmniRig, DX Labs Commander etc.)

3. **CW/FSK**. This jack can be used for serial port CW keying or FSK shift if your transceiver supports it. See page 14 for details.

4. **AUDIO OUT**. This jack provides a transmitted audio output. Connect an external speaker here for transmit monitoring.

5. **SPKR OUT**. This jack provides a rig receive audio output. Connect an external speaker here to hear receive audio.

6. **PTT IN/OUT**. This RCA phono jack is primarily used for connection to a foot-switch for PTT. The contacts are in parallel with the Advantage PTT relay (rated 30 VDC 2A max.) and in parallel with the transceiver's microphone PTT line, and will float at the same voltage.

Hints About PTT & CW/FSK Keying

On the front-panel of the RIGblaster Advantage there is a three position switch labeled TX. This controls how PTT is activated (*the method by which the transceiver goes into transmit*).

Postion 1 – COM.
The Advantage is under computer control and switches the transceiver between transmit and receive depending on the state of the serial port RTS control signal.

Position 2 – OFF.
The Advantage is prevented from activating transmit on the transceiver. Note the RCA foot-switch input is still active.

Position 3 – VOX.
The Advantage contains circuitry which detects the presence of an audio transmit signal and automatically switches the transceiver into transmit. When the signal ends the transceiver is returned to receive mode.

The VOX method of operation is suitable for many digital-modes and often simplifies software configuration. An example of this would be running a logging program (which requires exclusive use of the serial port to read frequency and mode) but having the ability to run a preferred PSK31 software simultaneously. Using VOX mode allows the PSK31 software to key the rig without conflicting with the logging program.

Note that this method of VOX operation applies only to the RIGblaster Advantage – there is no need to use the transceiver VOX setting.

Morse (CW) Operation

The RIGblaster Advantage has two methods of sending Morse Code (CW). One method is using MCW (Modulated or Tone CW) in SSB or FM modes. Some computer software will only produce this type of CW.

The second, and preferred, method is to use serial port keying. Connect a stereo patch cable from the RIGBlaster Advantage's CW/FSK jack to the transceiver's CW keying jack. This will permit Morse operation when using the radio's CW mode with suitable software.

This hardware CW keying can be realized by use of the DTR control line on the USB virtual COM port. In practice, needing to configure the CW software to use RTS for PTT and DTR for keying. Refer to page 28 of this manual for an example of setting up CW keying using the MRP40 software.

It is also possible to operate MCW in VOX mode, in which case the DTR circuit is logically OR'ed with PTT - the result is hardware keying from software which only uses the MCW method. Further, by disconnecting the microphone cable, but leave the CW keying cable connected, allowing to operate QSK (break-in CW) from most CW software.

By using a dual 1/8th inch stereo adaptor plug (or 'Y' splitter cable), connect the Morse Key in parallel with the CW jack. The output is open collector so is safe to use with contact-closure Morse Keys and modern "pull to ground" electronic keyers. This will allow to send computer Morse or use the key for maximum flexibility.
Warning: Do not attempt this if your radio uses grid-block keying or cathode keying - you will destroy your Advantage!

RTTY Operation

Similar to CW, there are two methods used to generate RTTY signals. Method one is AFSK RTTY being used in SSB mode. This relies on the software to generate the RTTY tones. Most digital-mode software will use this method.

The other method, FSK RTTY, may also be used by some PC software. Only transceivers that have an RTTY mode and FSK shift input will work in this method.

Often times a special cable is required to interface from the CW/FSK jack on the RIGblaster Advantage to the FSK input on the transceiver. FSK shift input is controlled by the serial DTR line. Refer to page 25 of this manual for an examle of configuring MMTTY to use FSK.

In summary, the serial control lines used by the RIGblaster Advantage are shown in the table below:

Serial Line	Function
RTS	Transceiver PTT
DTR	CW Keying (with CW software)
DTR	FSK Keying (with RTTY software)

Setting Audio Levels

Proper audio level setting is crucial to successful digital-mode transmission. The RIGblaster Advantage transmit audio level can be set by use of the Windows volume slider and the front-panel XMIT LEVEL control. Receive level can be set by the Windows recording volume slider and the front-panel RCV LEVEL control.

It is recommended to set the RIGblaster Advantage audio device levels to 50% for both "recording" and "playback" within Windows. Fine tuning can then be made using the XMIT & RCV level controls on the front of the Advantage.

Note: It is important not to set the RIGblaster Advantage as the default Windows audio device. This will prevent any unintentional transmissions if operating in VOX mode (Windows audio-alerts, music etc).

Note: Some older digital-mode software only uses the default sound-card in Windows for output. If using older software be careful when changing the default Windows sound-card to the Advantage. In this case, it is recommended to change the Windows sound scheme to silent.

Windows XP Audio Levels

Windows XP and earlier used a simple mixer control which can be accessed from the volume control in the system tray. Access with a double-click on this speaker icon which will bring up the audio mixer window for the *default windows device*.

From the menu at the top, choose "Options" and then "Properties". Select RIGblaster Advantage Audio from the mixer device drop-down menu. Select either "playback" or "recording" and click on "OK". This will bring up the Windows mixer and allow for setting audio levels. Refer to Figure 4 for assistance.
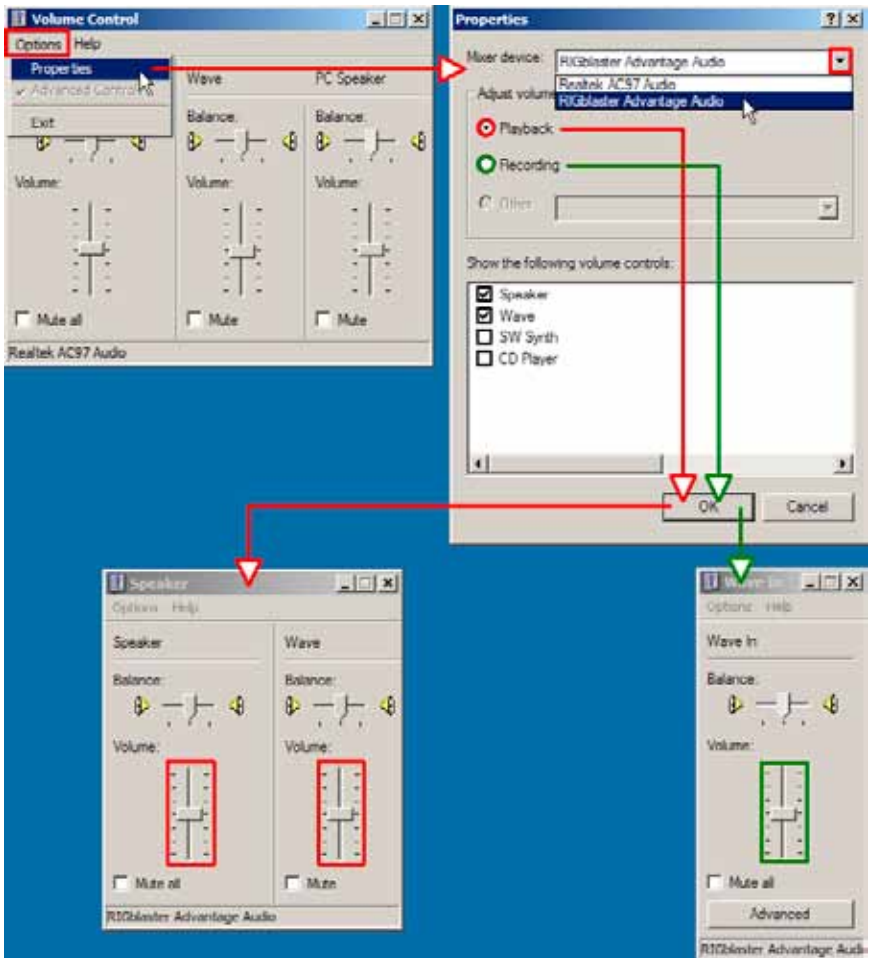

Fig 4 – Setting Windows XP volume levels to
50% for both playback (red) and recording (green)

Windows 7 Audio Levels

Windows 7 sound level settings are found in Windows Control Panel. Refer to Figure 5 below. Be sure to set both Playback and Recording audio levels for the RIGblaster Advantage Audio device.
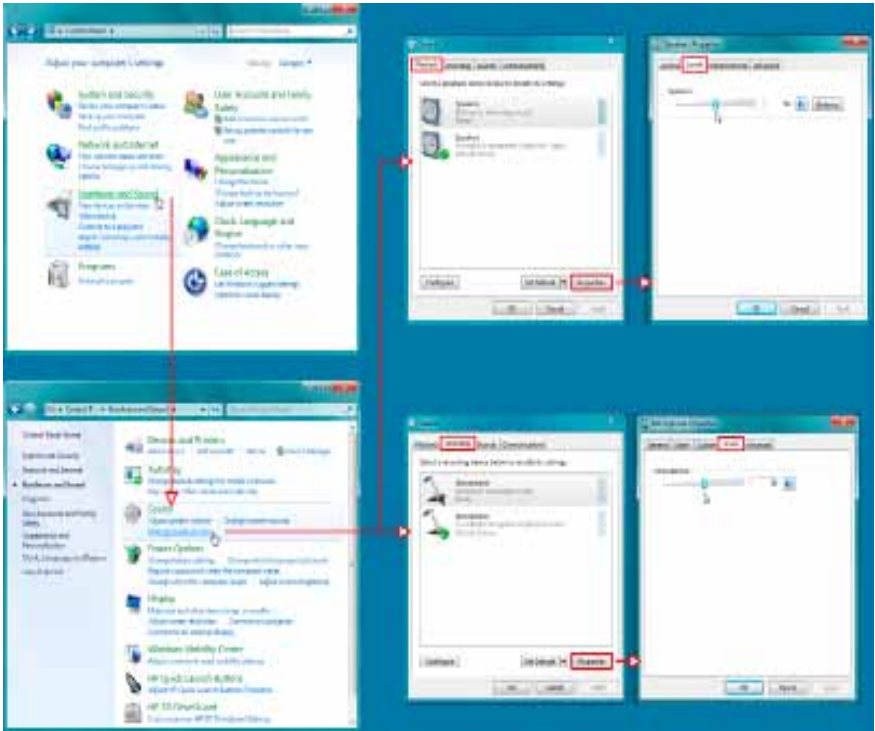

Fig 5 – Setting Windows 7 volume levels to 50% for both playback and recording.

Digital-Mode Operating

This section provides a quick overview of some of the most popular and current ham radio software that has been tested with the Advantage. Keeping in mind that these are Third-Party software programs, West Mountain Radio cannot guarantee it will work with every particular PC & radio. Most of this software is under constant development so some features referred to in this manual may not be exactly as described in future versions released by the respective authors. Also included are screen captures to aid in configuring the software with the RIGblaster Advantage.

Multi-Mode Software: FLDigi

Modes covered: CW, Contestia, DominoEX, Hell, MFSK, MT63, Olivia, PSK, QPSK, PSKR, RTTY, THOR, Throb, WEFAX, NBEMS modes.

W1HKJ's FLdigi is a very capable, cost-free, and easy to use digital-mode program. It has all of the most popular modes in use today (including PSK31) and its decode performance is highly regarded. It is used by HF operators, *ragchewers*, contesters, experimenters and EMCOMM users alike. Many of its EMCOMM modes (NBEMS) are used on HF & VHF under control of other software which provides error-checking and automatic repeat request (ARQ). It also supports logging-integrated rig-control (CAT/CI-V) by a variety of methods.

Note: *The CW mode in FLdigi is tone modulated Morse Code (MCW). Normally operated in SSB mode on HF and FM mode on VHF/UHF.*

Configure FLdigi to Use the RIGblaster Advantage Sound-device
Steps:
1. Choose "Configure" from the main menu.
2. Choose "Sound Card" from the popup menu.
3. Choose "Audio" from the first row of tabs.
4. Choose "Devices" from the second row of tabs.
5. Select the "Port Audio" checkbox.
6. Assign "RIGblaster Advantage Audio" to both of the "Capture" and "Playback" drop-down boxes.
7. Click on "Save" to make the changes permanent.
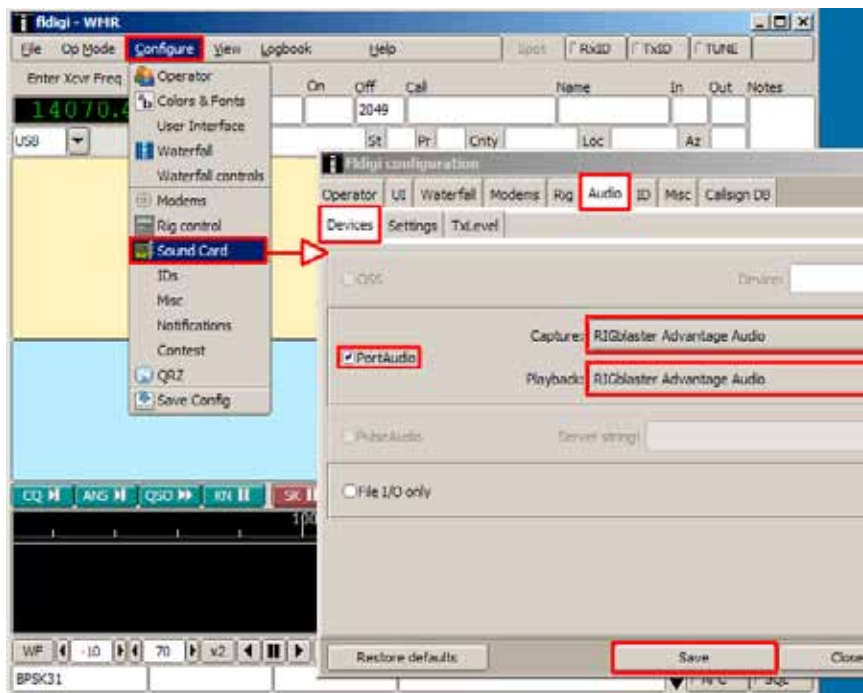
Refer to Figure 6 for assistance.

Fig 6 – Configuring FLdigi to use the RIGblaster Advantage sound-device.

Setting Up FLdigi For Hardware PTT
Steps:

1. Choose "Configure" from the main menu.
2. Choose "Rig control" from the popup menu.
3. Choose "Rig" from the first row of tabs.
4. Choose "Hardware PTT" from the second row of tabs.
6. Select the "Use separate serial port PTT" checkbox.
7. Assign the Advantage COM port in the "Device" drop-down.
8. Select the "Use RTS" checkbox.
9. Ensure "Use DTR" is NOT SELECTED.
10. Ensure "RTS=+V" is NOT SELECTED.
11. Ensure "DTR=+V" is NOT SELECTED.
12. Click on "Initialize".
13. Click on "Save" to make the changes permanent.
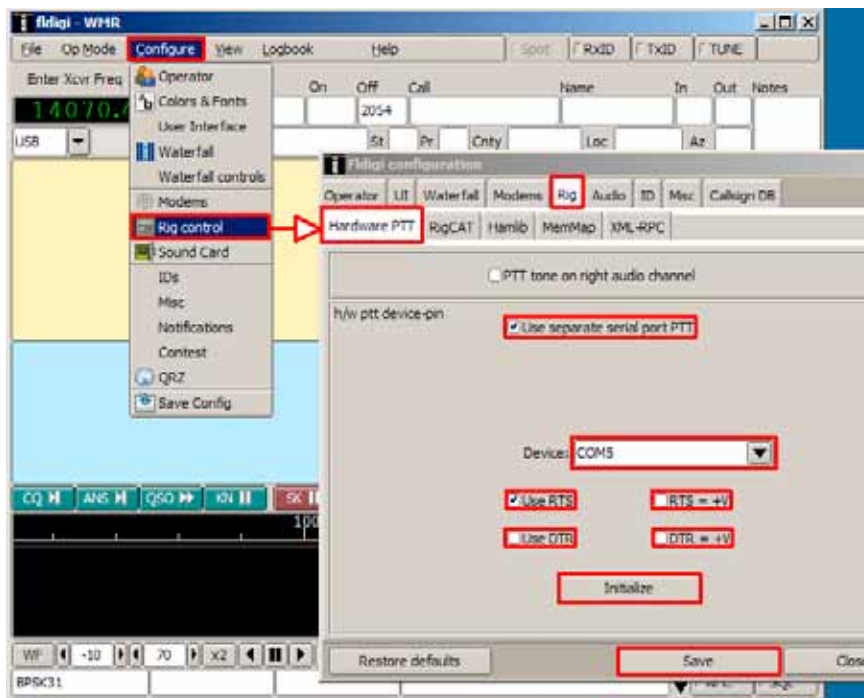
Refer to figure 7.

Fig 7 – Configuring PTT in FLdigi.

Setting Up FLdigi For Rig-control

FLdigi offers a number of methods of rig-control; beyond the scope of this manual to detail them all. Hamlib (on the rig-control tab) may be the simplest method, as FLdigi comes with rig description files for this library.

RigCAT is another good method. Download a rig description file for a specific radio by going to: http://www.w1hkj.com/xmlarchives.html.

Typical Configuration:

1. Specify the Advantage COM port as the rig-control "device".
   Note: Do not set RTS or DTR high, otherwise, the transceiver may go into transmit when the program first loads!

2. Match the transceiver's communication settings – check CAT baud rate and CI-V address (Icom).

3. Flow control is not usually needed, but if needed, use XON/XOFF as the method. Never choose hardware CTS/RTS.

Some transceivers will not allow hardware PTT (toggling the serial RTS line) at the same time as performing CAT control. If the radio in use falls into this category, an option is to use VOX mode PTT or take a look at the West Mountain Radio RIGtalk product which will allow CAT control on a separate serial port, freeing the RIGblaster Advantage for PTT.

<u>Rig Control: Ham Radio Deluxe</u>

One of the best known rig-control programs is Ham Radio Deluxe (HRD). When installed and configured it allows for cruising the radio spectrum using nothing more than a keyboard and mouse.

HRD maps many of the transceiver's functions onto simple-to-access buttons on the main screen. If struggling to change some hard-to-find setting buried in the transceiver's menu system, then Ham Radio Deluxe is the program to use!

Configuring HRD:

Upon the first run, a window similar to the one shown in Figure 8 will appear. (*Important settings are highlighted in red*.) This is the new connection dialog and some settings must be specified here to get HRD to communicate with the RIGblaster Advantage and the transceiver.

Steps:
1. Choose the "New" tab.
2. Select the transceiver's manufacturer in the "Company" drop-down.
3. Select the transceiver's model in the "Radio" drop-down.
4. Assign the RIGblaster Advantage COM port in the "COM Port" drop-down.
5. Select the transceiver's CAT baud rate in the "Speed" drop-down.
6. If using an Icom radio, assign its CI-V address in the "CI-V" text-box. HRD will provide a default value here which will work unless this setting has been altered in the specific radio in use.
7. Ensure that CTS,DTR or RTS are NOT SELECTED.
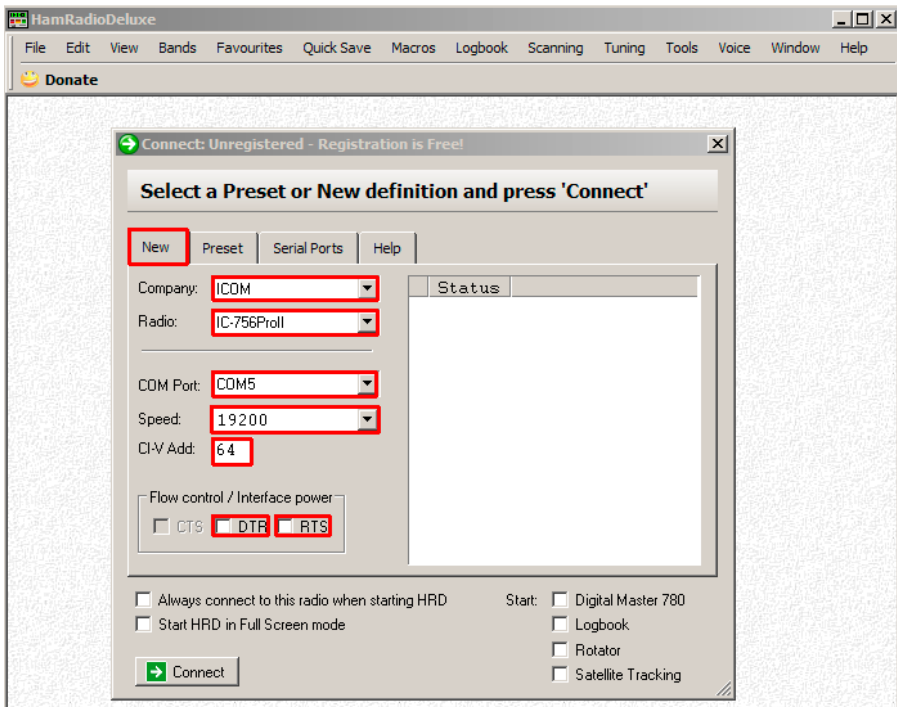8. Click on "Connect" to save this connection and start HRD.

Fig 8 – Configuring a new connection in HRD.

After clicking on "Connect" the main HRD window should appear. Check that the frequency displayed is the same as your transceiver's dial.

From this point on, the transceiver is under the control of the PC and use of the frequency sliders and "push buttons" displayed in HRD will affect changes to the rig.
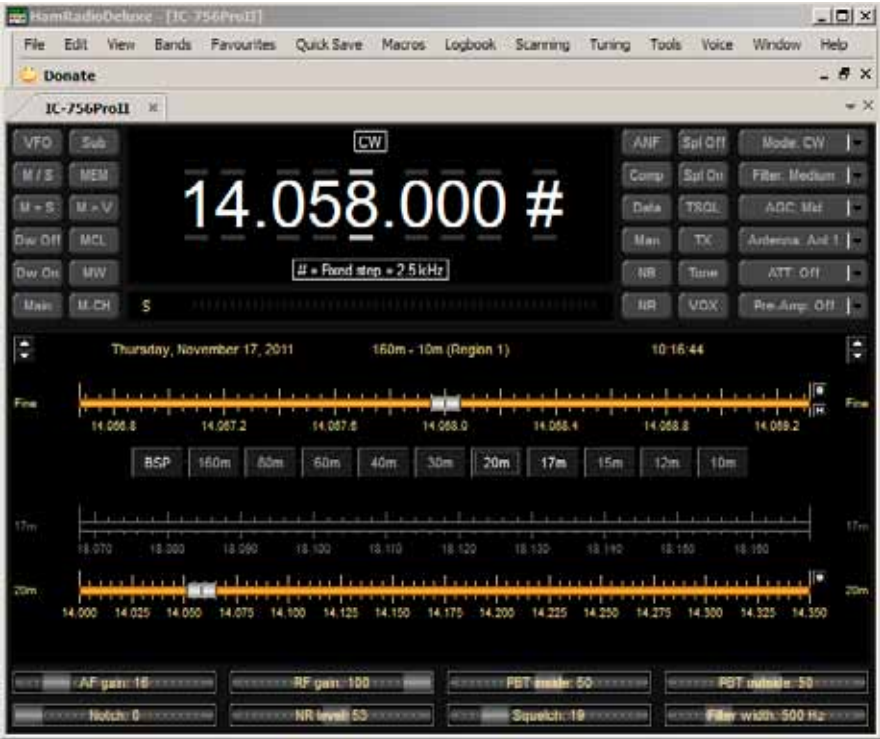
Fig 9 – The main tuning window in Ham Radio Deluxe. Note that some of the 756ProII's Menu functions are mapped onto "push-buttons" and "sliders". These are customizable to suit operating preferences.

HRD has many advanced features which are useful. The following is a list and short description of some of the more interesting features.

Bandscope
Captures audio from the RIGblaster Advantage while scanning between defined frequencies. The displays is shown on a constantly updating graph. A great way to visually see the activity on any band.

Rotator
HRD provides a nice interface to many antenna rotors for automatic control.

Satellite Tracking
HRD will automatically compensate for doppler-shift while tracking satellites.

DM780
Digital Master 780 is a very feature-rich digital-Mode program. Operate PSK31 and many other modes while integrating logging with Ham Radio Deluxe. Consider trying the "Super Browser" which will decode multiple PSK31 transmissions simultaneously.

IP Server
Provides a TCP/IP interface for remote station control. Use HRD to control your radio from anywhere with an internet connection.

RTTY: Configuring MMTTY For FSK
MMTTY by Makoto Mori (JE3HHT) is used worldwide for RTTY and for good reason – its decode performance is excellent, makes tuning RTTY signals very simple, and integrates into popular contest logging software. The latest version of MMTTY can be downloaded from Mako's website at: http://hamsoft.ca

One of the features that make MMTTY (almost) unique is that it supports FSK RTTY which is often the preferred way to generate RTTY tones if the transceiver supports it.

How to tell if the transceiver supports FSK RTTY?

If the transceiver has a dedicated RTTY mode, chances are it will support FSK RTTY. A special cable is needed to go from the RIGblaster Advantage to the transceiver's accessory jack. Look on www.westmountainradio.com for a suitable cable for a specific radio.

The trick to getting MMTTY to work in FSK is to download an external library called "EXTFSK.dll". The latest version is available on Mako's website at the following location:
   http://hamsoft.ca/pages/mmtty/ext-fsk.php

Scroll down to the bottom of the page and look for a hyperlink to a zip file named "ExtFSK106.zip".

Download this file, unzip it and copy the contents to the MMTTY working folder, usually C:\Program Files\MMTTY.

Then follow the steps below and refer to figure 10 to configure MMTTY with the RIGblaster Advantage.

1. *Select the "Option" menu from MMTTY.*
2. *Choose "Setup MMTTY".*
3. *From the setup window choose "SoundCard" from the tabs at the top of the window.*
4. *Select RIGblaster Advantage Audio for both "Reception" and "Transmission". Although we are not actually using the Advantage sound-card for RTTY transmission (using FSK) setting it this way will allow for monitoring the signals on the AUDIO OUT jack in addition to keying the FSK line of the transceiver.*
5. *Choose the "MISC" tab from the tabs at the top of the window.*
6. *Select "Sound + COM-TxD (FSK)" in the "TX Port" frame.*
7. *Choose the "TX" tab from the tabs at the top of the window.*
8. *Select EXTFSK from the "Port" drop-down.*
9. *A new window will appear titled "EXTFSK 1.06". On this window, assign the RIGblaster Advantage COM port and choose DTR for "FSK output" and RTS for "PTT output". Notice the "Status: OK" message near the top. If it is showing red and "NG" then MMTTY is reporting it was unable to open the COM port. Make sure no other software is running which has already claimed the COM port (e.g. HRD).*
10. *Verify that the optional RTTY FSK cable is connected to the transceiver from the Advantage CW/FSK jack.*
11. *Put the transceiver into its RTTY mode.*

Hints About Operating FSK RTTY

Check the FSK settings on the radio – for 45 baud RTTY, the shift shoud be set to 170Hz. Many radios also offer a choice of MARK tones (e.g. 2125Hz, 1275Hz). There will be no difference in operating when choosing either setting.

FSK polarity varies from rig to rig, so attempt to tune in some RTTY to check that it is not "Upside Down". A friendly station can help check your transmissions for correct polarity.

(cont'd)

The transmit power level in FSK RTTY is simply determined by the transceiver's RF POWER control. The RIGblaster Advantage XMIT LEVEL control will have NO EFFECT on transmit power.

RTTY is a 100% duty-cycle mode. Check the transceiver manufacturer's recommendation for a safe power level in RTTY. Good advice is to run half-power or less on solid state radios. Quarter- power or less for hybrid tube-final rigs.

If the transceiver is equipped with narrow filters, they are usually available in RTTY mode. These can really help in crowded band conditions and will improve copy.

When properly configured for FSK RTTY the RIGblaster Advantage will pulse the FSK/CW Yellow LED in sympathy with the RTTY signal. This is a good method to determine if everything is configured correctly.
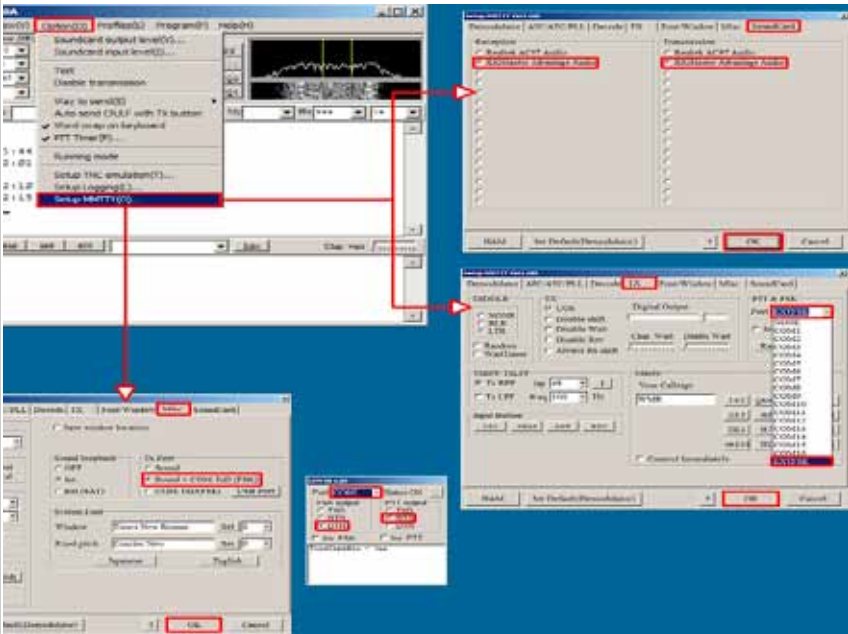

Fig 10 – Configuring MMTTY for FSK operation.

CW: Configuring MRP40 For CW Operation

Although there are free CW (Morse Code) decoding programs the performance of many leave a lot to be desired. *MRP40* by Norbert Pieper is an excellent CW decoder, even under weak signal conditions & QSB. It supports transmission of Morse Code from the PC keyboard using the CW/FSK jack on the RIGblaster Advantage.

A 30 day trial version of the software is available to download from:
   http://www.polar-electric.com/

Configuration is simple. It will require the optional CW keying cable (or use a stereo 3.5mm to stereo 3.5mm patch cable) to be connected between the RIGblaster Advantage CW/FSK jack and the transceiver's CW keying jack. Select CW mode on the transceiver. Refer to Figure 11.

Complete the following steps to configure MRP40 with the RIGblaster Advantage:

1. Choose "Options" on the MRP40 window.
2. Move the mouse cursor to "Show..." and then choose Soundcard..."
3. Assign "RIGBlaster Advantage Audio" in each of the RX and TX drop-down boxes.
4. Enter the preferred sidetone frequency. *In most cases this should match the transceiver's sidetone frequency (or narrow filter center frequency). If this is neglected, someone calling close to your transmission frequency may appear far away on the MRP40 "waterfall" display.*
5. Close the "Soundcard" window.
6. Choose "Options" on the MRP40 window again.
7. Move the mouse cursor to "TX Settings" and choose "Send via Com (x) Port" from the menu.
8. Enter the RIGblaster Advantage COM port number in the text box. Ensure that "Send Pin" is set to DTR, and "PTT Pin" is set to RTS.
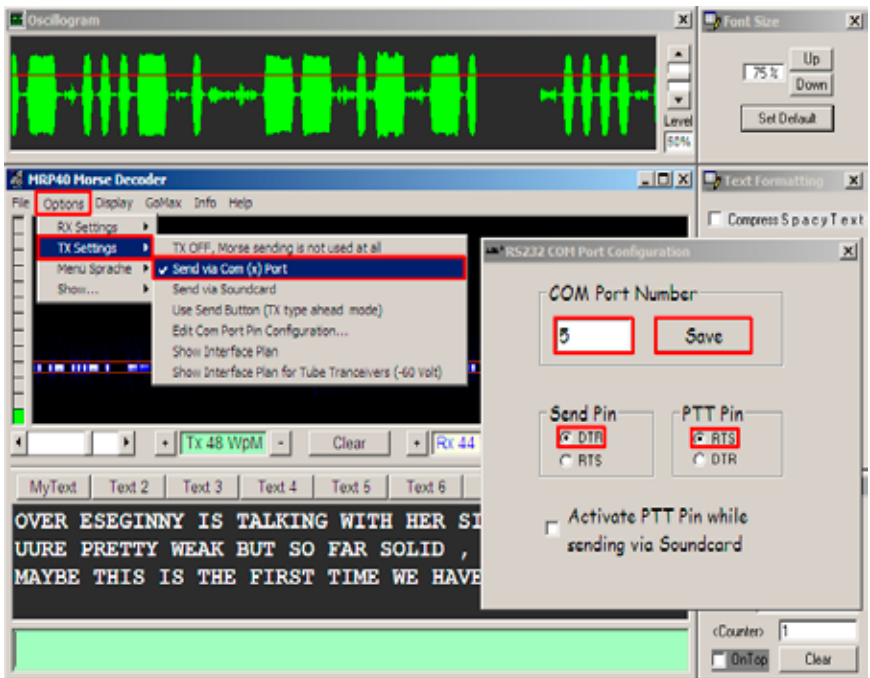9. Click on "Save".

Fig 11 – Setting up MRP40 to use hardware keying with the RIGblaster Advantage.

Other Ideas For CW (Morse Code)

- If you want to try a freeware CW decoder then take a look at FLdigi as it's CW performance, while not as good as MRP40, is certainly good enough to copy the stronger stations that send well-formed Morse Code.

- CWType is a freeware CW keyboard terminal (no decoding) but this software will let you transmit Morse Code using the CW/FSK jack.
  See http://www.dxsoft.com/en/products/cwtype/

- MultiPSK also has a good CW decoder and is free for this purpose. Check out http://f6cte.free.fr/

- Learn Morse Code, purchase our TOUCHkeyer and have some hands-on CW fun!

JT65: Configuring JT65-HF.

The "JT" series of modes were originally developed by Joe Taylor, K1JT to be very weak signal VHF modes suitable for EME, Troposcatter & Meteor trail methods of ionospheric propagation.   Since that time, one mode JT65(A) has become very popular on HF for long-distance low-power contacts. Contacts may be a better term than QSO as the transmission rate is very slow with each "over" taking a little less than 1 minute in each direction.

Signal-to-noise ratios are often well below hearing threshold and it is not uncommon to perfectly decode a transmission at levels around -25dB S/N. Originally JT65 operation was only possible using WSJT software produced by K1JT and shortly after the MultiPSK program (F6CTE). While both of these programs are technically excellent they are not necessarily the easiest to use.

JT65-HF is a recent addition developed by Joe Large, W6CQZ. For straightforward HF operation in JT65 this is the easiest software to configure and simplest to use.

Follow the steps below to configure JT65-HF. Refer to Figure 12 for assistance.

1. Click on "Setup" on the JT65-HF main window.
2. Select the "Station Setup" tab at the top of the configuration window.
3. Assign the RIGblaster Advantage Audio to the sound-card input & output device drop-down boxes.
4. Ensure "Enable Automatic RX/TX Sample Rate Correction" is checked.
5. Be sure to enter your callsign and Maidenhead grid locator.
6. Select the "Rig Control/PTT" tab at the top of the configuration window.
7. Type the RIGblaster Advantage COM port into the "PTT port".
8. Click on "Save Settings and Close Window".

Hints for JT65-HF

Receive Audio Level
It is very important to set the receive level correctly for optimum JT65 decoding. Notice the "Adjust Input Levels" box in Figure 12. The sliders are adjustable, but it is easier to adjust the RIGblaster Advantage RCV LEVEL control until L0 and R0 (on a quiet frequency) are achieved.
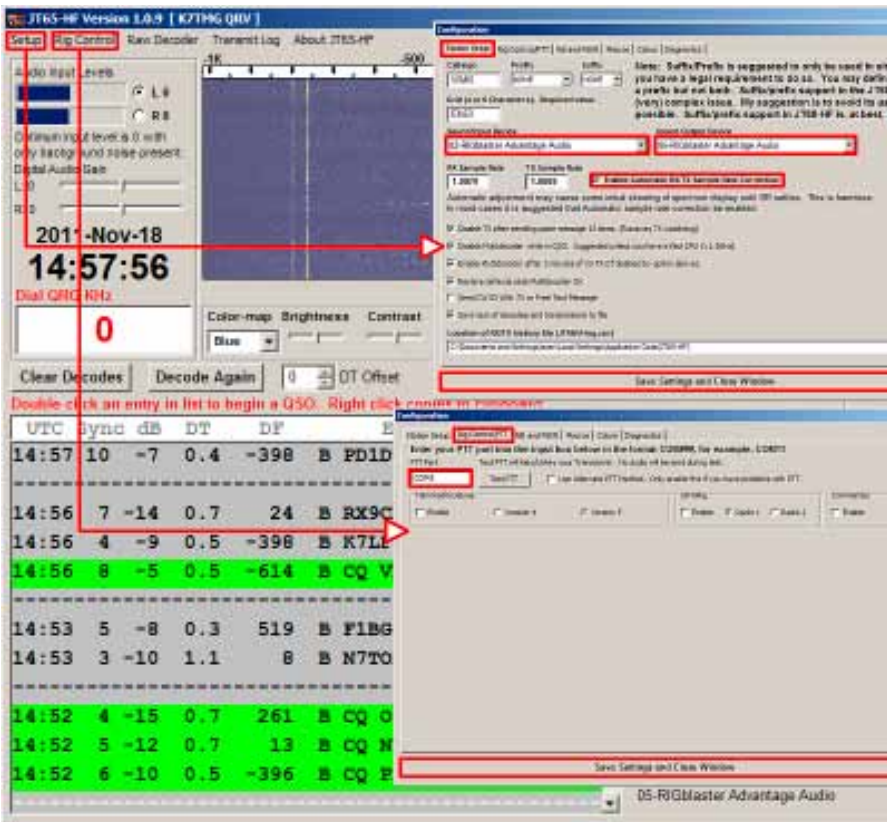

Fig 12 – Setting up JT65-HF with the RIGblaster Advantage.

Time Synchronization
The PC's clock must be synchronized to an accurate time source.
In practice, this is accomplished by using Third party software
which will update the clock with an Internet time server. It has been
reported that the synchronization utility in Windows does not have an
acceptable level of accuracy for JT65.

A well-regarded example is the "Dimension 4" time keeper software
available from: http://www.thinkman.com/dimension4/.

Power Level
Because JT65 works even at very low signal-to-noise ratios
there really no need to run QRO. In fact, running full power with
transmissions lasting nearly 1 minute at 100% duty-cycle could
stress the finals of many rigs. Powers of 10W and **lower** (often as
low as 500mW) will produce great DX contacts.

<u>WinMOR: Using RMS Express & Winlink 2000</u>

Until recently there wre few choices of sound-card software which could interface to the Winlink 2000 radio e-mail system. Most users bought expensive Pactor modems for HF and TNC's for VHF.

On VHF it was possible to use sound-card packet, but it was not easy to integrate with a mail client. On HF, the choices were even more limited and still did not integrate with a simple mail client.

Rick Muething, KN6KB recently developed the WinMOR sound-card modem which made the Winlink 2000 system available for anyone with an HF transceiver. The WinMOR software modem was integrated into a full mail client by the Winlink development team. This product is called RMS Express and is freely down-loadable from the Winlink 2000 website: <u>http://www.winlink.org/ClientSoftware</u>

Using RMS Express requires an understanding of the Winlink 2000 system. This manual only covers getting it working with the RIGblaster Advantage.

To learn more, we recommend starting at the Winlink 2000 website: <u>http://www.winlink.org/</u>, especially <u>http://www.winlink.org/GetStarted</u>.

<u>Configuring RMS Express</u>

Refer to Figure 13 and complete the steps that follow to configure RMS Express with the RIGblaster Advantage.

Steps:
1. Select Winmor WL2K from the drop-down box on the RMS Express main window.
2. Click on "Open Session" (to the left of the dropdown).
3. The "Winmor Winlink 2000 Session" window will appear.
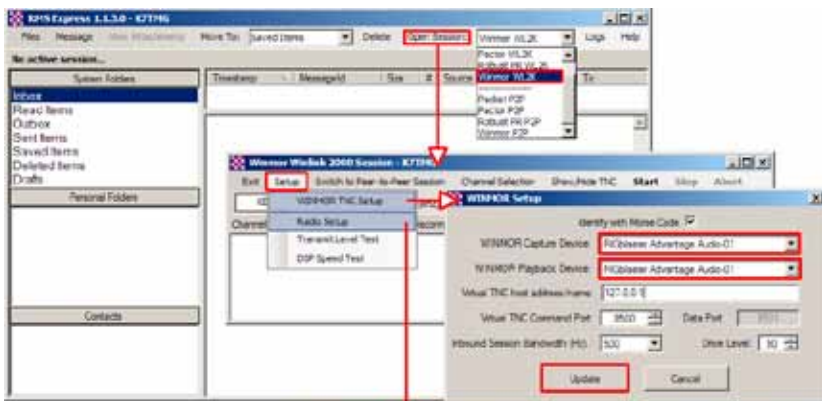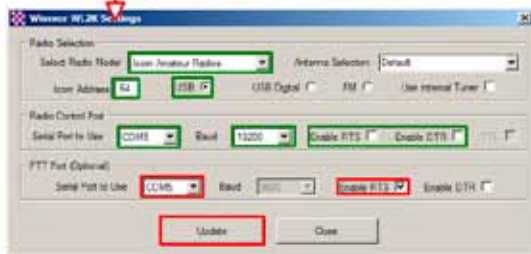4. Choose "Setup" from the menu at the top of this window.

Fig 13 - Configuring RMS Express. In this example rig-control & PTT are shared on the RIGblaster Advantage serial port. Areas highlighted in green apply specifically to CAT. Radio used was an Icom IC-756proII.

5. Select "WINMOR TNC Setup". A window titled "WINMOR Setup" should appear.
6. Assign the RIGblaster Advantage Audio device for both of the capture & playback drop-down boxes.
7. Click on "Update".
8. From the "Setup" menu choose "Radio Setup".
9. A window titled "Winmor WL2K Settings" should appear. This window deals with rig-control and PTT. Rig-control is highly recommended with RMS Express as the program ensures precise tuning with the remote station.
10. Choose the radio model and operating mode (usually USB).
11. If using an Icom transceiver, be sure to enter the CI-V address correctly.
12. Select the RIGblaster Advantage COM port for "Serial Port to Use". Enter the transceiver's CAT baud rate. Make sure "Enable RTS" and "Enable DTR" are NOT selected.
13. Optionally in the frame labeled "PTT Port (Optional)", also specify the Advantage COM port and this time "Enable RTS" * .

Packet/APRS: Configuring the AGW Packet Engine

Some areas of the US seem devoid of traditional VHF packet networks (nodes, digipeaters & BBS) that once were common. However, there is APRS activity on 144.390MHz and the chances are good there will be a Winlink 2000 Packet RMS within range.

APRS (Automatic Packet Reporting System)
By its nature, APRS uses non-connected packet radio (called "unproto" transmissions or beacons). If not familiar with APRS then visit: http://www.aprs.org/ which explains the system in detail. Vehicle tracking is only one facet, and there is much to gain from a better understanding of APRS. Operating sound-card APRS is a little more complex to set up than the other digital-modes but it is worthwhile and opens up another fascinating branch of the hobby.

Correct installation provides the ability to monitor local and distant APRS transmissions. These transmissions get decoded and converted by software to graphical positional information and displayed on a map.

Other information that is encapsulated in the transmission can include weather observations, real-time hazards, telemetry, messaging and local information for travelers. Look for a possible APRS transmissions that have been "digipeated" via the International Space Station (ISS).

Get Started with Packet Radio Example
This example will use the AGWPE software written by George Rossopoulos (SV2AGW).

Packet radio is a layered technology. One layer is the actual hardware, (in this case the radio and the RIGblaster Advantage), on top of that layer is a packet driver (the AGW program) and on top of that layer would be the APRS program itself.

1. Install the AGWPE software. The latest version may be down-loaded from: http://www.sv2agw.com/downloads/default.htm
2. Look for the file called AGWPE.zip. This is the freeware version. SV2AGW also has a "pro" version which has expanded features and may work better with Windows 7. The upgrade may be worth-while if planning to use Packet Radio often.
3. Unzip the file to a folder (suggested C:\AGW). There is no install program, so execute by double-clicking on the "AGW Packet Engine.exe" file.
4. A "splash" screen will first appear explaining AGWPE and a new icon will appear in the Windows system tray.
5. Refer to Figures 14 & 15 while performing the following steps:

   1) Left-click over the AGW icon in the system tray.
   2) Choose "Properties" from the pop-up menu.
   3) Click on "New Port" from the RadioPort Selection window.
   4) Click on "OK" on the pop-up dialog window informing of the new TNC port that has been created.
   5) A new window titled "Properties For Port1" should appear.
   6) Select the RIGblaster Advantage COM port in the "Select Port" drop-down box.
   8) **Ignore** the "SerialPort/Modem Baudrate" drop-down.
   9) Choose "SoundCard" from the "TNC Type" drop-down box. Then another window titled "SoundCard Modem/TNC Setup" will appear.
   10) Ensure that both left & right channels are set to 1200 baud.
   11) Assign "RIGblaster Advantage Audio" in the sound-card drop-down box.
   12) Click on "OK" to go back to the previous window.

13) Ensure "KISS Simple" is selected in the "Tnc Sub Type" drop-down box.
14) Ensure "SinglePort" is selected.
15) Type a description of the port. This is optional，but may help keep track when running multiple ports.
16) Click on "OK".
17) Then click on "OK" on the pop-up window regarding the need to restart the program.
18) Left-click over the AGW icon in the system-tray.
19) Choose "Exit".
20) Execute the AGW program again and now there should be two icons in the system-tray.
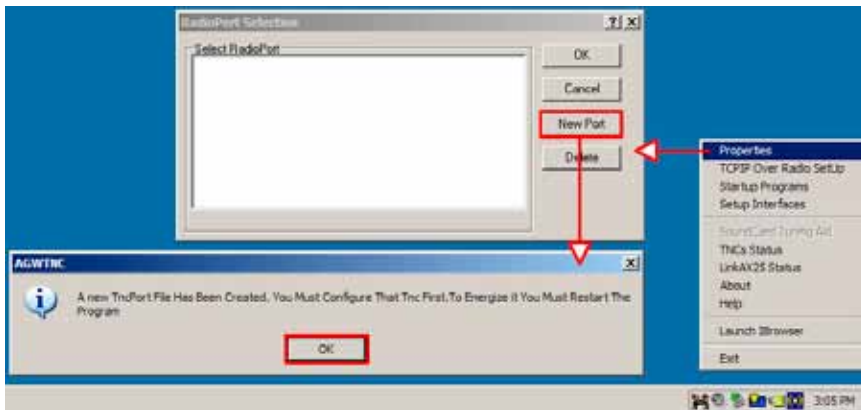

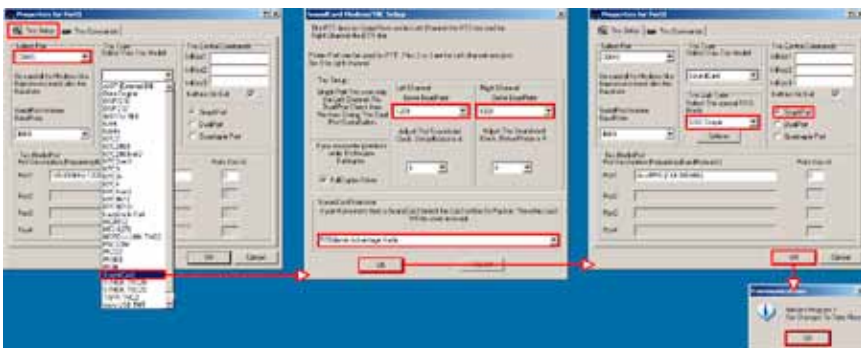*Fig 14 – Initializing a new port in AGW Packet Engine.*

Fig 15 – Defining AGW to use the RIGblaster Advantage's serial port (for PTT) and integrated sound-card.

The packet "port" created is a single, 1200 baud (VHF) channel with KISS emulation.
AGW makes this available to other software via tcp/ip (port 8000)

That takes care of the first and second "layer" of packet-radio. This defined a packet port (with KISS emulation) which can now be used by other software.

The AGWTracker software will now be used for an APRS example, again written by George Rossopoulos (SV2AGW).

Check for the latest version to install:
  http://www.sv2agw.com/downloads/default.htm

Configuring AGWTracker is relatively straightforward. Begin by specifying callsign, station information and if planning on transmitting; a beacon interval and beacon text. If applicable, specify a digipeater path. Before entering a generic "WIDE" it is recommended to take a look at http://wa8lmf.net/DigiPaths/ for current "best practice" for a particular circumstance.

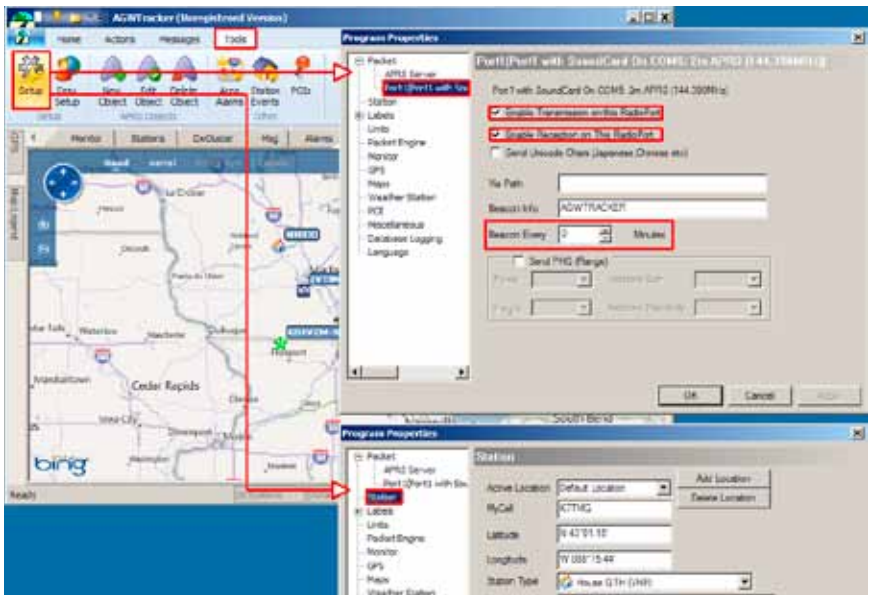Refer to Figure 16 for help with configuring AGWTracker.

Fig 16 – AGWTracker station configuration.

AGWTracker is a very advanced APRS program and there are many features that may be useful. The software may be configured to relay monitored beacons to the Internet, add and manipulate APRS *objects*, define zone alarms and much more. There is a support group for AGWTracker at http://groups.yahoo.com/group/AGWTracker/ which is well worth joining if you have an interest in APRS.

Refer to Figure 17 to learn how to display monitored stations on a Google® or Bing® map.
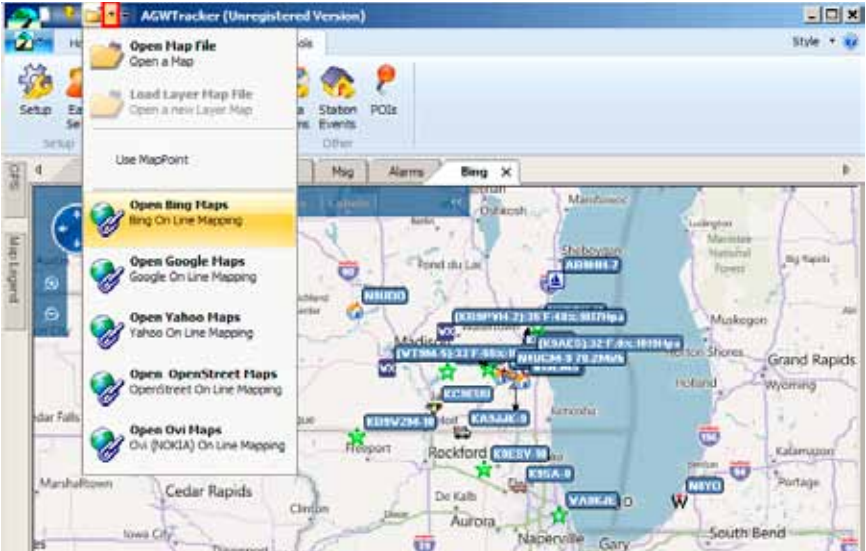
Fig 17 – Opening an online map within AGWTracker.
Click on the down-arrow highlighted in RED.

The other method of operating packet radio is the *connected mode* which is really beyond the scope of this manual but it is possible to use the RIGblaster Advantage in this manner and even access a Winlink 2000 RMS using a combination of the AGW packet engine and the Outpost PM software.

See http://www.outpostpm.org/ for more information.

There are other programs which include sound-card based packet-radio which are worth trying. Examples are MixW and MultiPSK.

SSTV: Using MMSSTV For Analog SSTV

SSTV – Slow Scan Television has been in use on the ham bands since the late 1960s. It has come a long way since the early black and white transmissions using all analog equipment. Since the advent of the personal computer with color graphics, there has been much improvement in quality and resolution.

The RIGblaster Advantage can operate all the common SSTV modes in use today by using the highly regarded (and free) MMSSTV software written by Makoto Mori (JE3HHT).

Find latest software version by visiting Mako's website:
  http://hamsoft.ca/pages/mmsstv.php.

Before configuring MMSSTV, a little discussion about sample rates is needed. The RIGblaster Advantage uses a modern sound-card chipset which is based on a 48KHz sample rate. If the MMSSTV software goes uncalibrated, the received images are slanted and may be impossible to view properly. When first installed, MMSSTV defaults to a sample rate of 11025Hz which may not work properly with the RIGblaster Advantage in some earlier Windows operating systems. (Windows Vista and Windows 7 will use the 11025Hz rate properly.) IT is necessary to specify MMSSTV to use a sample rate compatible with a modern sound-card. A good choice is 12000Hz.

Configuring MMSSTV
Refer to Figures 18 and 19 for calibrating MMSSTV.

1. Select the "Option" menu from the main MMSSTV window.
2. Choose "Setup MMSSTV(O)".
3. Select the "TX" tab from the top of the options window.
4. Assign the RIGblaster Advantage COM port to the "PTT Port" drop-down box.
5. Be sure to enter your callsign in this screen!
6. Click the "MISC" tab from the top of the options window.
7. Assign the RIGblaster Advantage Audio for both "In" & "Out" in the Sound-card section.
8. Select "12000" in the "Clock" drop-down.
9. Click on "OK" and an alert will show indicating MMSSTV needs to be restarted.
10. Exit and re-run the MMSSTV software.
11. Bring up the configuration options once again.
12. Select the "MISC" tab.

13. Tune the radio to a WWV frequency. The WWV transmitters are precisely controlled and a suitable signal source to accurately calibrate MMSSTV.
Note: Set your radio to AM mode and tune to the loudest and clearest WWV transmitter that can be heard on either 5.00MHz, 10.00MHz, 15.00MHz or 20.00MHz.

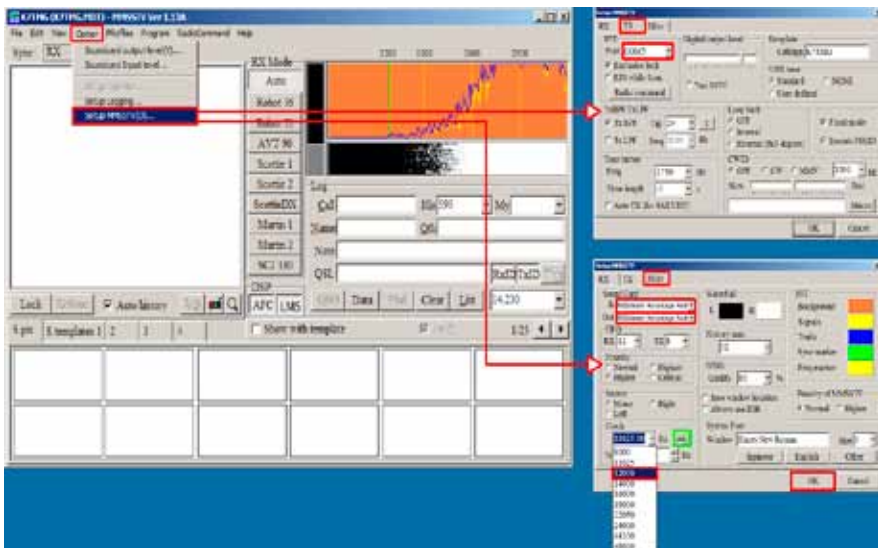14. Press the "ADJ" button (highlighted in green in Fig.18).

Fig 18 – Configuring MMSSTV to use the RIGblaster

15. A window titled "Calibrating the Sound Card with a Time Standard Broadcast Station" will open. See Figure 19A.
16. Leave this window open for a few minutes and look for a semi-vertical line to appear. Click the lower edge of the line and then click the upper edge of the line.
17. Notice the "Clock" value change slightly.
18. Click on "OK" and the new clock value will be shown in the configuration window. Save these changes.
19. To confirm this calibration, bring up the calibration window again and observe the WWV station. A perfectly vertical line should appear this time (shown in Fig. 19B).
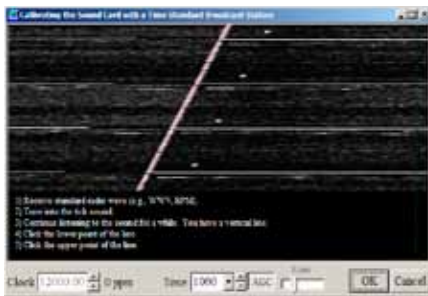
*Fig 19A – Calibrating the MMSSTV
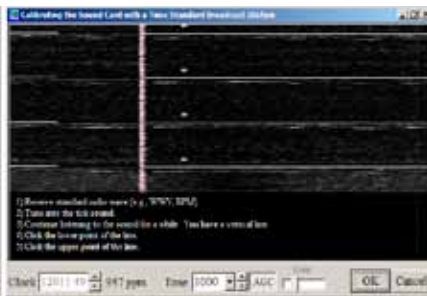program with a WWV station.*

*Fig 19B – After calibration notice a
perfectly vertical line when tuned to a
WWV NIST time station on 5Mhz, 10MHz,
15MHz or 20MHz.*

SSTV is now ready to operate. Most operation is on the 20m band
(14.230usb). Tune there now to test the MMSSTV program on reception.

Before transmitting, it is recommended to check out the "SSTV Primer"
by W4HIJ & W0EB available on Mako's website if it is the first-time
operating SSTV. See http://hamsoft.ca/pages/mmsstv/sstv-primer.php

Keep in mind transmitting SSTV images will mean long transmissions at
full duty-cycle, so limit the output power to safe levels recommended by
the radio manufacturer.

SSTV: Using EasyPal For Digital SSTV

A recent development is digital SSTV. The current mode used is based
on DRM encoding (Digital Radio Mondiale) and provides fast image
transmission with the ability to request missing data. Images received
are very high-quality and do not suffer from typical analog SSTV noise.

The RIGblaster Advantage is capable of operating digital SSTV in
conjunction with the "EasyPal" software created by Erik Sundstrup
(VK4AES). The latest version of EasyPal is available to download from:
   http://www.kc1cs.com/

In many ways EasyPal is simpler to set up than MMSSTV. Because it is
a "digital" signal there is less worry about precise sound-card calibration.

Configuring EasyPal For the RIGblaster Advantage
Refer to figure 20.

1. Open the "Setup" menu from the EasyPal main window.
2. Open the "Setup c/s-Soundcard-PTT" menu item.
3. Choose "Soundcard".
4. A window titled "Soundcard" will appear. Assign RIGblaster
    Advantage Audio to both RX & TX boxes.
5. Click "Assign".
6. Re-open the "Setup"/"Setup c/s-Soundcard-PTT" menu and this
    time choose "Use CommPort (PTT rts/dtr)".
7. A window titled "PTT COMMPORT SETUP" will appear.
8. Enter the RIGblaster Advantage COM port.
9. Select the TX option "RTS ON DTR OFF".
10. Select the RX option "RTS DTR (OFF always)".
11. Click on "OK".
12. Be sure to enter your callsign!

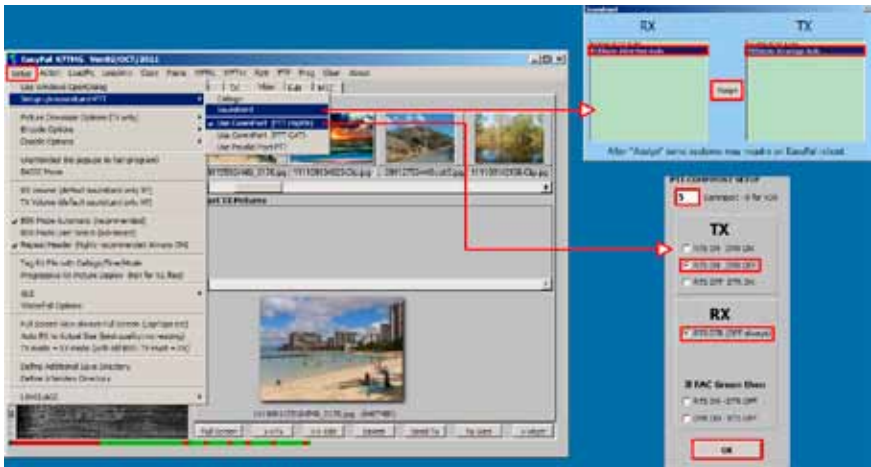*Fig 20 – Configuring EasyPal With The RIGBlaster Advantage.*

At this point it should be able to receive digital SSTV images. Try tuning
to 14.233(usb) which is the main 20m frequency in use.
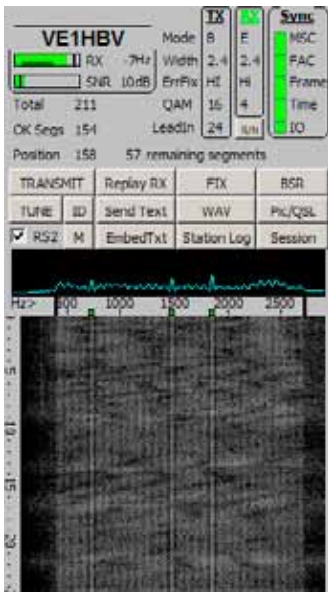
Fig 21 – A correctly tuned digital SSTV station

Looking at the EasyPal waterfall while receiving a transmission, notice that the three "green markers" line up with the three "transmitted carriers". This indicates correct tuning.

RIGblaster Advantage Connection Diagram

Typical RIGblaster Advantage Station Hook-Up
For Radios With RJ-45 Microphones

RJ-45 MICROPHONE

EXTERNAL SPEAKER
(FOR RX AUDIO)

'COMPUTER SPEAKERS'
(FOR TX AUDIO MONITORING)

PERSONAL COMPUTER

FOOTSWITCH

USB CABLE

RCA PTT
IN & OUT

RS-232 DB9

RJ-45 (MIC/RADIO)

LINE-IN   SPK OUT   AUDIO OUT   CW/FSK   CTL IN/OUT

USB

RIGblaster Advantage

8 PIN ROUND (MIC/RADIO)

RIGblaster MIC CABLE

EXT SPK   CAT/CI-V   CW KEY

RJ-45 MIC

HF/VHF Transceiver

Typical RIGblaster Advantage Station Hook-Up
For Radios With '8 Pin Round Metal' Microphones

EXTERNAL SPEAKER
(FOR RX AUDIO)

'COMPUTER SPEAKERS'
(FOR TX AUDIO MONITORING)

PERSONAL COMPUTER

FOOTSWITCH

USB CABLE

RCA PTT
IN & OUT

LINE-IN   SPK OUT AUDIO OUT CW/FSK   CTL IN/OUT

RS-232 DB9

RJ-45 (MIC/RADIO)

USB

RIGblaster Advantage

8 PIN ROUND (MIC/RADIO)

MICROPHONE

EXT SPK   CAT/CI-V   CW KEY

HF/VHF Transceiver

8 PIN MICROPHONE JACK

RIGblaster MIC CABLE
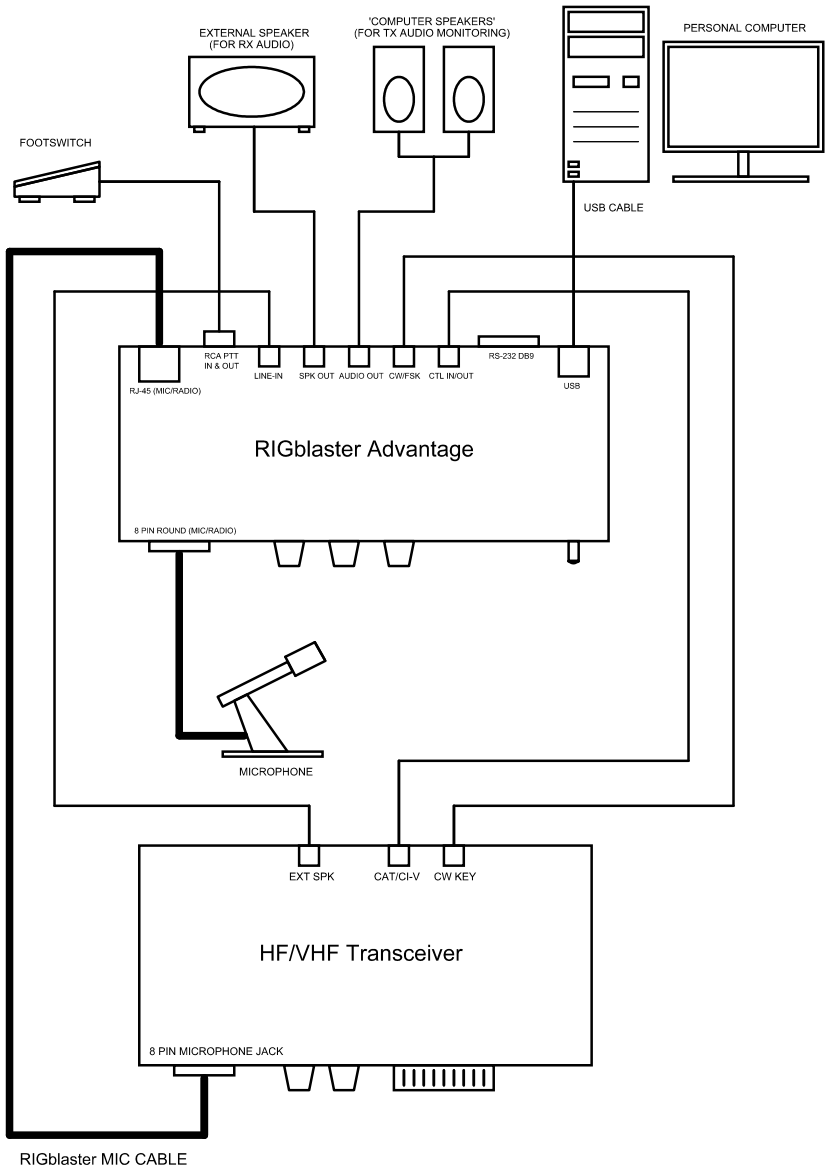
ISC & Jumper Wiring

Alinco, Kenwood, SGC and Elecraft
with 8-pin Screw-on Microphone Connectors

INPUT Side
Pin #
1	White Jumper to	MIC - INPUT Side
2	White Jumper to	PTT - INPUT Side
3	Blue Shunt Jumper to	Pin 3 - OUTPUT side
4	Blue Shunt Jumper to	Pin 4 - OUTPUT side
5	Blue Shunt Jumper to	Pin 5 - OUTPUT side
6	Blue Shunt Jumper to	Pin 6 - OUTPUT side
7	White Jumper to	MIC GND - INPUT side
8	White Jumper to	PTT GND - INPUT side

OUTPUT Side
Pin #
1	White Jumper to	MIC - OUTPUT Side
2	White Jumper to	PTT - OUTPUT Side
7	White Jumper to	MIC GND - OUTPUT side
8	White Jumper to	PTT GND - OUTPUT side
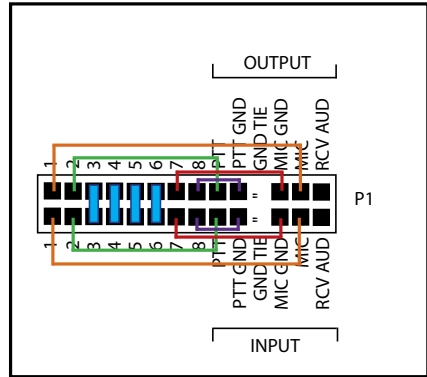
ICOM with 8-pin Screw-on Microphone Connectors

INPUT Side
Pin #
1	White Jumper to	MIC - INPUT Side
2	Blue Shunt Jumper to	Pin 2 - OUTPUT Side
3	Blue Shunt Jumper to	Pin 3 - OUTPUT Side
4	Blue Shunt Jumper to	Pin 4 - OUTPUT Side
5	White Jumper to	PTT - INPUT Side
6	White Jumper to	PTT GND - INPUT Side
7	White Jumper to	MIC GND - INPUT Side
8	Blue Shunt Jumper to	Pin 8 - OUTPUT Side

OUTPUT Side
Pin #
1	White Jumper to	MIC - OUTPUT Side
5	White Jumper to	PTT - OUTPUT Side
6	White Jumper to	PTT GND - OUTPUT Side
7	White Jumper to	MIC GND - OUTPUT Side

RIGblaster Pro
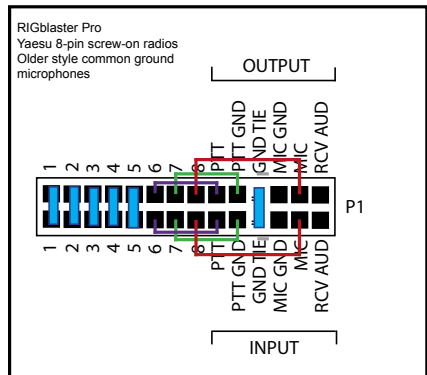ICOM 8-pin Screw-on Radios
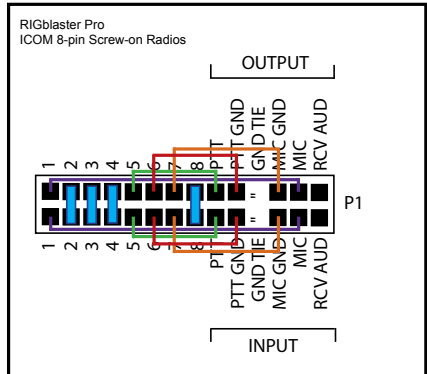
YAESU with 8-pin Screw-on Microphone Connectors (This jumpering is for older Yaesu radios with microphones that have common PTT & audio ground and older hand mics, desk mics, desk mics and Heil mics)

INPUT Side
Pin #
1	Blue Shunt Jumper to	Pin 1 - OUTPUT Side
2	Blue Shunt Jumper to	Pin 2 - OUTPUT Side
3	Blue Shunt Jumper to	Pin 3 - OUTPUT Side
4	Blue Shunt Jumper to	Pin 4 - OUTPUT Side
5	Blue Shunt Jumper to	Pin 5 - OUTPUT Side
6	White Jumper to	PTT - INPUT Side
7	White Jumper to	PTT GND - INPUT Side
8	White Jumper to	MIC - INPUT Side
GND TIE	Blue Shunt Jumper	GND TIE

OUTPUT Side
Pin #
6	White Jumper to	PTT - OUTPUT Side
7	White Jumper to	PTT GND - OUTPUT Side
8	White Jumper to	MIC - OUTPUT Side

RIGblaster Pro
Yaesu 8-pin screw-on radios
Older style common ground
microphones

YAESU with 8-pin Screw-on Microphone
Connectors (This jumpering is for newer Yaesu radios that
have Microphones with isolated PTT & audio grounds.)
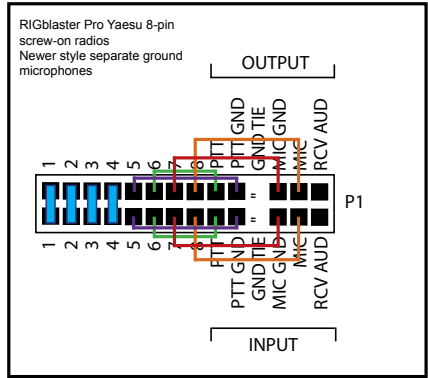**JRC** **JST245** with 8 Pin Screw on Microphone Connectors

INPUT Side
Pin #
1	Blue Shunt Jumper to	Pin 1 - OUTPUT Side
2	Blue Shunt Jumper to	Pin 2 - OUTPUT Side
3	Blue Shunt Jumper to	Pin 3 - OUTPUT Side
4	Blue Shunt Jumper to	Pin 4 - OUTPUT Side
5	White Jumper to	PTT GND - INPUT Side
6	White Jumper to	PTT - INPUT Side
7	White Jumper to	MIC GND - INPUT Side
8	White Jumper to	MIC - INPUT Side

OUTPUT Side
Pin #
5	White Jumper to	PTT GND-OUTPUT Side
6	White Jumper to	PTT - OUTPUT Side
7	White Jumper to	MIC GND - OUTPUT Side
8	White Jumper to	MIC - OUTPUT Side

RIGblaster Pro Yaesu 8-pin
screw-on radios
Newer style separate ground
microphones

ICOM with RJ45 Microphone Connectors
(This jumpering is for ICOM 706 (all versions), IC-7000 and
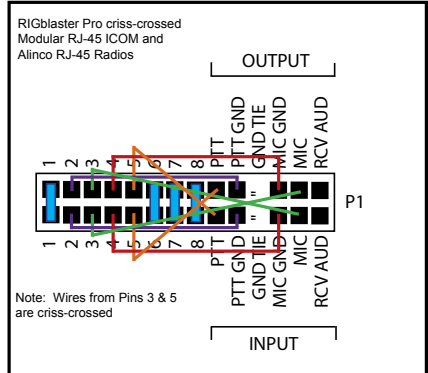most, but not all ICOM FM rigs)

INPUT Side
Pin #
1	Blue Shunt Jumper to	Pin 1 - OUTPUT Side
2	White Jumper to	PTT GND - INPUT Side
3	White Jumper to	MIC - OUTPUT Side *
4	White Jumper to	MIC GND -INPUT Side
5	White Jumper to	PTT - OUTPUT Side *
6	Blue Shunt Jumper to	Pin 6 - OUTPUT Side
7	Blue Shunt Jumper to	Pin 7 - OUTPUT Side
8	Blue Shunt Jumper to	Pin 8 - OUTPUT Side

OUTPUT Side
Pin #
2	White Jumper to	PTT GND - OUTPUT Side
3	White Jumper to	MIC - INPUT Side *
4	White Jumper to	MIC GND - OUTPUT Side
5	White Jumper to	PTT - INPUT Side *

* - Criss-crossed White Jumper

RIGblaster Pro criss-crossed
Modular RJ-45 ICOM and
Alinco RJ-45 Radios

Note: Wires from Pins 3 & 5
are criss-crossed

Kenwood with RJ45 Microphone Connectors and most, but
not all Kenwood FM rigs

INPUT Side
Pin #
1	Blue Shunt Jumper to	Pin 1 - OUTPUT Side
2	Blue Shunt Jumper to	Pin 2 - OUTPUT Side
3	White Jumper to	PTT GND- INPUT Side
4	White Jumper to	PTT -OUTPUT Side *
5	White Jumper to	MIC GND - INPUT Side
6	White Jumper to	MIC - OUTPUT Side *
7	Blue Shunt Jumper to	Pin 7 - OUTPUT Side
8	Blue Shunt Jumper to	Pin 8 - OUTPUT Side

OUTPUT Side
Pin #
3	White Jumper to	PTT GND-OUTPUT Side
4	White Jumper to	PTT - INPUT Side *
5	White Jumper to	MIC GND - OUTPUT Side
6	White Jumper to	MIC - INPUT Side *

* - Criss-crossed White Jumper

RIGblaster Pro Criss-
Cross Modular RJ-45
Kenwood RJ-45 Radios

Note: Wires from Pins 4 & 6
are criss-crossed
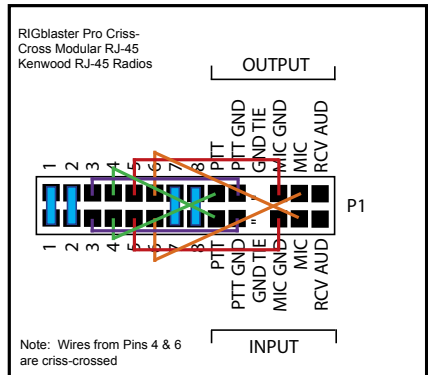
YAESU with RJ-45 Microphone Connectors and most, but not all Yaesu FM rigs.

INPUT Side
Pin #

|		
1	Blue Shunt Jumper to	Pin 1 - OUTPUT Side
2	White Jumper to	PTT GND - INPUT Side
3	White Jumper to	PTT - OUTPUT side *
4	White Jumper to	MIC - OUTPUT side *
5	White Jumper to	MIC GND - INPUT side
6	Blue Shunt Jumper to	Pin 6 - OUTPUT side
7	Blue Shunt Jumper to	Pin 7 - OUTPUT side
8	Blue Shunt Jumper to	Pin 8 - OUTPUT side

OUTPUT Side
Pin #

2	White Jumper to	PTT GND-OUTPUT side
3	White Jumper to	PTT - INPUT Side *
4	White Jumper to	MIC - INPUT side *
5	White Jumper to	MIC GND - OUTPUT side

* - Criss-crossed White Jumper

RIGblaster Pro criss-crossed
Modular RJ-45 Yaesu RJ-45
Radios

Note: Wires from Pins 3 & 4 are criss-crossed
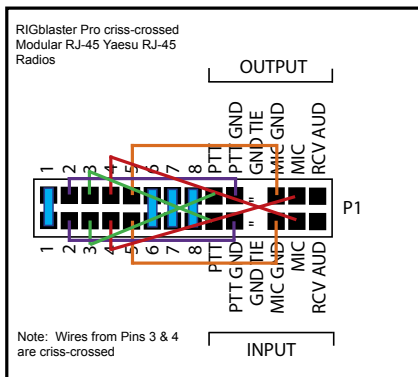
P2 Jumper
Placing a jumper on P2 (2 pin header pointed to below) will attenuate transmitted audio when finding the input to the transceiver is too "hot". The factory default position is open.
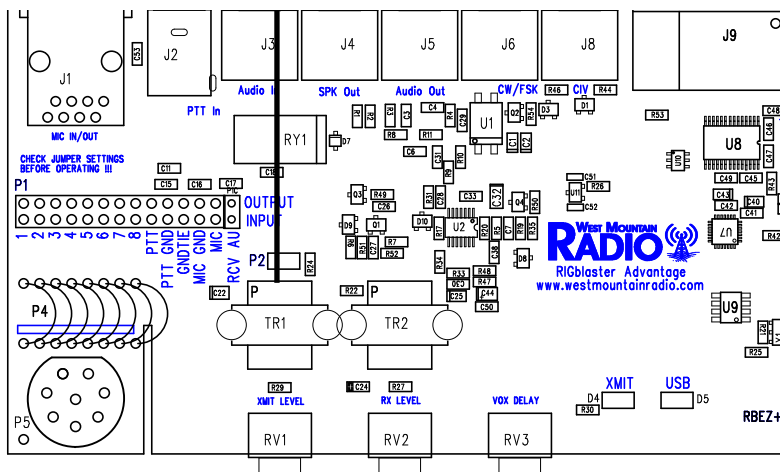
Digital-Modes, Software And Frequencies

A complete list of digital-modes, software and HF frequencies would be difficult to find, however, below is a a brief (non-exhaustive) compilation of suggested frequencies to help get oriented with the RIGblaster Advantage. Most frequencies given here reflect current North American practices. Many of these are shared internationally, but if in doubt, check with a national amateur radio organization for recommendations.

There are many Internet resources that provide further information on operating digital-Modes and a good place to start is K3UK's Digital Radio Yahoo!® forum: http://groups.yahoo.com/group/digitalradio/

Digital Mode	Software	Frequencies	Notes
PSK31	FLdigi, Hamscope, DM780, Digipan, MixW, MultiPSK, TruTTY, WinWarbler et al.	3.580MHz (usb) 7.035MHz (usb) 10.140MHz (usb) 14.070MHz (usb) 18.100MHz (usb) 21.070MHz (usb) 24.920MHz (usb) 28.120MHz (usb)	
Analog SSTV	MMSSTV, MultiPSK, MixW	7.171Mhz (lsb) 14.230Mhz (usb)	
Digital SSTV	EasyPal	3.713MHz (lsb) 7.173MHz (lsb) 14.233MHz (usb)	
RTTY	MMTTY, TruTTY,DM780, FLdigi, MultiPSK et al	14.080-14.090MHz	Traditional operating was in lsb but many today use usb
JT-65	WSJT, JT65-HF, MultiPSK	1.838MHz (usb) 3.576MHz (usb) 7.039MHz (usb) 7.076MHz (usb) 14.076MHz (usb) 21.076MHz (usb) 28.076MHz (usb)	
Hellsch-reiber	FLdigi, MultiPSK, MixW, DM780	14.063MHz (usb)	
Olivia	FLdigi, MixW, MultiPSK, DM780	14.074MHz (usb) 14.1065MHz (usb)	
APRS	AGW + AGWTracker	144.390Mhz (fm)	International APRS frequencies vary.

Troubleshooting

The RIGblaster Advantage should be easy to configure and operate. However, answers to some common problems are listed below. Please call the technical support department if unable to resolve a problem. Telephone 262-522-6503 or email: support@westmountainradio.com.

Problem	Cause	Fix
No power light showing (green LED)	1. USB cable is unplugged	1. Check USB cable is connected.
	2. Driver Issue	2. Check Windows device-manager for RIGblaster Advantage COM port conflicts and re-install drivers/change COM port if necessary.
Radio will not go into transmit	1. Incorrect ISC installed	1. Make sure the correct ISC (or jumper wiring) is installed for the transceiver in use.
	2. Software configuration	2. Ensure the digital-mode software is set for RTS=PTT and DTR=CW. **Note:** RTS/DTR should never be set to permanently "high" or "on".
Radio will enter transmit, but no power level showing	1. Incorrect ISC installed	1. Make sure the correct ISC (or jumper wiring) is installed for the transceiver in use.
	2. Windows mixer volume sliders set too low	2. Ensure the Windows mixer (RIGblaster Audio) is set appropriately and not muted.
	3. XMIT LEVEL control is too low	3. Rotate the XMIT LEVEL control slowly clockwise while transmitting and note if power out increases.
	4. Transceiver MIC GAIN/ RF POWER set too low	4. Check the transceiver's MIC GAN and RF POWER controls are not set too low.
	5. Wrong sound device selected	5. Make sure the digital mode program is using the RIGblaster Advantage Audio device and not the default sound-card.

Radio Control (CAT) not working	1. CAT cable unplugged	1. Connect the optional CAT cable.
	2. Software/Transceiver configuration	2. Ensure the RIGblaster Advantage COM port is selected and the serial settings (baud rate etc) in the software match the transceiver. Some Yaesu radios have a multi-function port which must be enabled for CAT.
	3. Noise	3. Some switching power supplies can cause problems with CAT control. Ensure that equipment is properly grounded.
Waterfall not showing	1. Audio cable not connected	1. Connect the audio cable from the radio to the RIGblaster Advantage.
	2. Windows recording mixer set too low	2. Ensure the recording level mixer for the Advantage is not muted and set appropriately.
	3. RCVE LEVEL control set too low	3. Rotate RCVE LEVEL control until waterfall starts displaying normally.
	4. Wrong sound-device selected	4. Make sure the digital mode program is using the RIGblaster Advantage Audio device and not the default sound-card.
CW keying not working	1. CW keying cable not connected	1. Connect the optional CW keying cable to the transceiver's CW input jack.
	2. Radio has wrong mode selected	2. Serial port CW keying will only work in the transceiver's CW mode.
	3. Software configuration.	3. Ensure the digital-mode software is set for RTS=PTT and DTR=CW. **Note:** RTS/DTR should never be set to permanently "high" or "on".

Radio transmits but FSK RTTY not working	1. FSK cable not connected	1. Connect the optional FSK cable to the transceiver's ACC/FSK jack.
	2. Transceiver does not support FSK RTTY	2. Only radios with a dedicated RTTY mode can support FSK RTTY.
	3. Software configuration	3. Ensure the software is set for RTS=PTT and DTR=FSK SHIFT.
	4. Transceiver settings	4. Ensure the transceiver is configured correctly for FSK RTTY.
Radio stays in transmit after PTT activated	1. RFI	1. This is usually caused by RFI. Try re-positioning the RIGblaster Advantage away from your radio and tuner and ensure the equipment is properly grounded.
Transmitted audio is distorted	1. XMIT LEVEL control set too high	1. Rotate XMIT LEVEL control counter-clockwise until audio output is clean. In general your transceiver ALC meter should indicate minimum or no ALC action.
	2. Windows mixer slider set too high	2. Reduce Windows volume sliders until audio in normal range. In general your transceiver ALC meter should indicate minimum or no ALC action.
	3. RFI	3. Try re-positioning the RIGblaster Advantage away from your radio and tuner and ensure the equipment is properly grounded.

RIGblaster Advantage Warranty

RIGblaster Advantage is warranted against failure due to defects in workmanship or materials for one year after the date of purchase from West Mountain Radio. Warranty does not cover damage caused by abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation, alteration, lightning, or other incidence of excessive voltage or current. If failure occurs within this period, return the *RIGblaster Advantage* or accessory to West Mountain Radio at your shipping expense. The device or accessory will be repaired or replaced, at our option, without charge, and returned to you at our shipping expense. Repaired or replaced items are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the *RIGblaster Advantage* or accessory made after the expiration of the warranty period.

The Compact Disc of Radio Amateur Software Collection is excluded from any and all warranties by West Mountain Radio. Note that the programs have been provided as shareware or freeware by the software authors to the amateur radio community for their use and enjoyment. The DVD is to be used at your own risk.

West Mountain Radio shall have no liability or responsibility to customer or any other person or entity with respect to any liability, loss, or damage caused directly or indirectly by use or performance of the products or arising out of any breach of this warranty, including, but not limited to, any damages resulting from inconvenience, loss of time, data, property, revenue, or profit, or any indirect, special incidental, or consequential damages, even if West Mountain Radio has been advised of such damages.

Except as provided herein, West Mountain Radio makes no express warranties and any implied warranties, including fitness for a particular purpose, are limited in duration to the stated duration provided herein.

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