West Mountain Radio

The Beacon

QUARTERLY NEWSLETTER

Summer Edition 2014

INSIDE THIS ISSUE:

How to do a VHF SOTA Activation

Bob Witte
K0NR

The Summits On The Air (SOTA) program has really taken off in North America. SOTA originated in the UK in 2002, so it took a little while for it to make it across the Atlantic to this continent. The basic idea of SOTA is to operate from a designated list of summits or to work other radio operators when they activate the summits. The list of designated summits are assigned scoring points based on elevation and there are scoring systems for both activators (radio operators on a summit) and chasers (radio operators working someone on a summit).

Most of the operating is on the HF bands but there are quite a few VHF contacts on SOTA. Obviously, HF has the advantage of being able to work longer distances without too much trouble. Typically, the HF station is your classic portable QRP rig, portable antenna and battery power. (A portable power source is required and the use of fossil fuels is prohibited.) Being a VHF enthusiast, I prefer the challenge of making contacts above 50 MHz, so my SOTA contacts are usually on 2 Meters or 70 cm.

SOTA ACTIVATION

My basic VHF SOTA station is a hand-held FM transceiver with a ½-wave telescoping antenna. The standard rubber duck on a hand-held transceiver (HT) is generally a poor radiator so using a ½-wave antenna is a huge improvement. This simple station is an easy addition to my normal hiking routine… just stuff the HT and antenna in my backpack along with the usual hiking essentials and head for the summit.

To count as a SOTA activation, you need to make a minimum of 4 contacts from the summit. If I am hiking a summit within range of a major city, I can usually just make some random contacts by calling CQ on the National Simplex Calling Frequency, 146.52 MHz. However, operating in more remote areas requires a little more planning. I'd hate to hike all that way and come up short on the required contacts, so I use a few tactics to rustle up some VHF contacts. Of course, I will post my planned activation on the SOTA watch site in advance, to let people know that I'll be on the air. While this goes out worldwide, it may not reach the right radio amateurs within VHF range. The next thing I do is send an email to some of VHF-equipped hams I know will be within range. Many people respond to such a request to work a summit, even if they are active in SOTA. When on the summit, my first call is on 146.52 MHz or some other popular simplex frequency. If I don't raise anyone there, I will make a call on a few of the 2M repeaters in the area to see if someone will come over to "five two" to make a contact. SOTA does not recognize repeater contacts but it is OK to solicit simplex contacts using a repeater. These techniques and a little patience have always gotten me at least four contacts, and usually quite a few more.

The omnidirectional antenna of the basic VHF SOTA station will make some contacts, adding some antenna gain can really help your signal. There are a number of compact directional antennas that are easy to take hiking. Elk Antennas makes a log-periodic antenna that covers 2 Meters and 70 cm. Another popular antenna is the 2 Meter / 70 cm Yagi antenna made by Arrow Antenna. These antennas are lightweight and assemble/dissemble easily, which is important to hiking radio operators.

So far, most of the SOTA VHF activity in North America is on 2m FM, the utility mode. Everyone seems to have a 2m HT, so tossing it in a backpack and heading out is a natural thing to do. Using my FT-817, I have made some VHF contacts on CW and SSB. See this posting about a recent SSB activation. These modes are much efficient than FM and the station on the other end is likely to be a big weak-signal station. Nothing like a big gun station with huge antennas to help pull your QRP signal out of the noise! I expect the use of CW and SSB to increase on VHF as SOTA becomes more popular. While FM activity uses vertical polarization (antenna elements are vertical), most SSB/CW activity uses horizontal polarization (antenna elements are horizontal).

Summits On The Air is a great way to take ham radio outdoors. So get off the couch, find a summit and have some fun with ham radio.

For more information on SOTA in North America visit:
http://na-sota.org/

WHAT'S NEW

TARGETuner
#58425-1473
$234.95

Introducing the Updated TARGETuner!

Sholto Fisher, K7TMG

West Mountain Radio is very excited to launch our updated TARGETuner mobile antenna controller this month! Completely revamped, the TARGETuner is a very flexible and unique screwdriver antenna controller which could become the heart of your mobile HF operations.

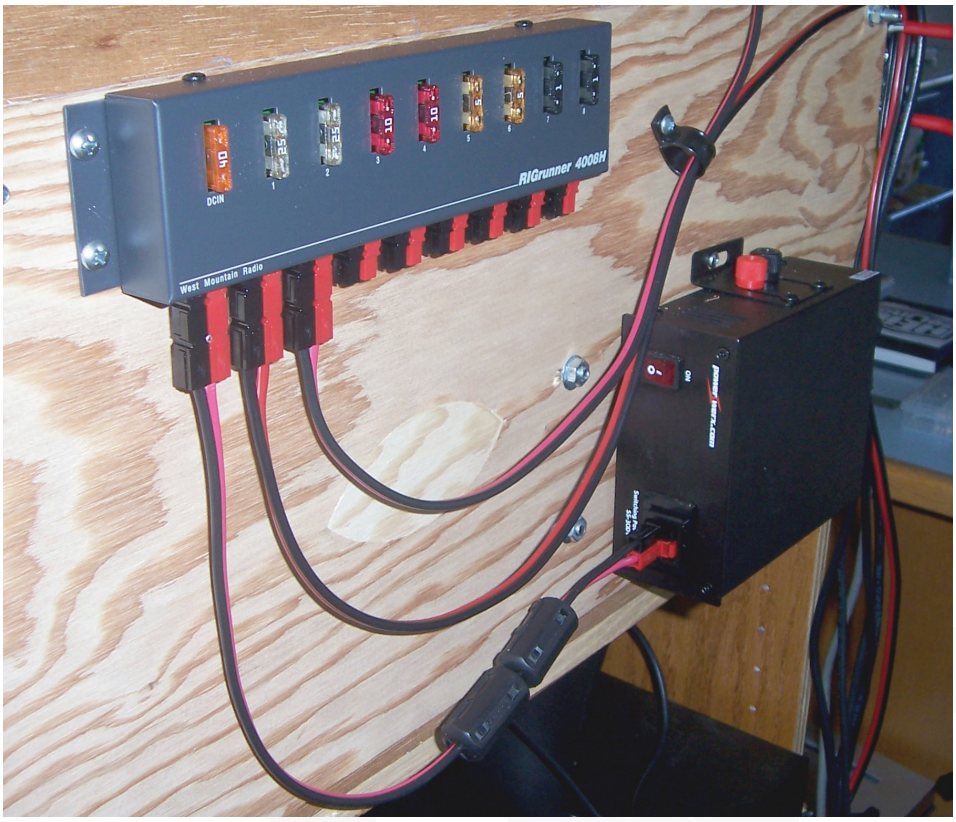
Advantages:

- Automatic SWR tuning: Simply transmit a low power carrier for fully automatic tuning.
- Automatic Memory Tuning*: Adjusts antenna to track your receive frequency!
- User selectable stall current trip: Helps prevents damage to your antenna motor.
- Motor direction "sense": Up/Down buttons can correspond to frequency or wavelength.

*Auto Memory Tuning requires CAT connection.

Features:

- 35 user memory pre-sets for fast and accurate antenna positioning.
- Operates with both encoded (turns count) and non encoded antennas (pre-sets unavailable).
- Supports Icom CI-V and Yaesu FT-817/857/897 CAT with optional cable.
- Manual mode for fine tuning or memory recall.
- Independent motor speeds for automatic and manual operation.
- User selectable audible beep on high SWR.
- Backlit LCD with adjustable off delay.
- Tactile switches allow positive selection of functions.
- Integrated USB port permits firmware updating.



Review of West Mountain Radio's RIGrunner 4008H

Dave Cole
NK7Z

This review of West Mountain Radio's RIGrunner 4008H was prompted by a total shack rebuild because I bought an Elecraft K3 and could not bring myself to just drop such a fine radio into the existing shack environment. I decided to totally rebuild everything, from the station ground system, to both the 12 VDC, and 110 VAC, power distribution systems, before I would even think about letting the K3 on to the operating desk. That's where West Mountain Radio's RIGrunner product came into the picture. West Mountain Radio sells a product called a "RIGrunner", which is basically a 12 volt, fused, power distribution system that uses Anderson Powerpole® technology for connections. West Mountain Radio sells several versions of this product, ranging from one with four DC outputs, to one with twelve DC outputs. Some models have voltage indicators on them and some models do not. I opted for the eight output version and for the one that's called a RIGrunner 4008H (H standing for the horizontal version).

4008H

What this means is that the device has the Powerpole connectors pointing horizontally out of the side, as opposed to pointing up out of the device. I was going to mount my RIGrunner 4008H on the side of a vertical desk support, and I wanted the power cables pointing downwards, and not out towards the wall behind the desk, so the H model was the model of choice for me. As can be seen from the photo at the left, the H version did exactly what I needed. I wanted to move the desk as close to the wall as possible. I also wanted a pigtail so I could add ferrite snap on cores for RFI suppression to each of the 12 VDC leads. All of this just screamed downward pointing cables. Hence the choice of the H version, so I ordered it and it arrived a few days later.

The device also has four mounting holes on ears on each side, for mounting. The RIGrunner is solid, it is built well, and if you shake it nothing rattles! Each output is rated at full output, so you can just add, or change, a fuse and plug your device in. Be sure to not exceed the total device rating, which is 37 amps at 12 volts. Enough of what I have to say about the RIGrunner, lets see what West Mountain Radio has to say about it:

*Powerpole® is a registered trademark of Anderson Power Products

4008H REVIEW

West Mountain Radio sales blurb:

The RIGrunner product line offers the most convenient and safest way to connect all your 12 VDC equipment to a power source. RIGrunner utilizes a 13.8 VDC power panel with simple-to-use Anderson Powerpole® connectors. Standardize all of your 12 VDC connections using the amateur radio ARES & RACES, RSGB, ARRL Powerpole® system. Contact us for alternate voltage versions up to 55 VDC or for your custom RIGrunner requirements. West Mountain Radio also offers network DC power controllers in the 4005i product line.
West Mountain Radio offers RIGrunners for every station and every budget. Here are the Specifications from West Mountain Radio's page:

Specifications

Overall Dimensions:
1.4" H x 9.75" W x 3.0" D
Weight:
11 1/4 oz.
Maximum total current:
40 amps
Maximum single individual outlet current:
40 amps (fuse protected)
ICAS current rating: 37 amps

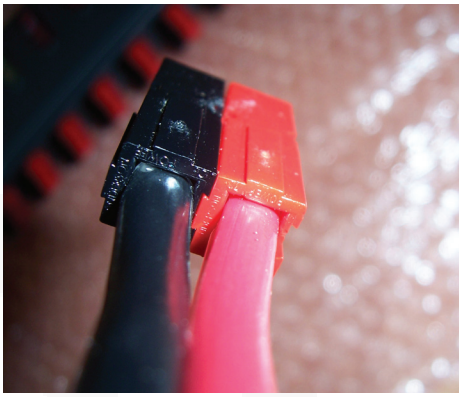
Pros & Cons

The previous two items are direct cuts from the West Mountain Radio RIGrunner sales/specifications pages on the web. Now lets look at some Pros and Cons for the RIGrunner.

Let's look at the Cons first:
The H version does not have voltage monitoring indicators built in. I wish the H version had some of the voltage monitoring features of the non H version. I suspect that the voltage monitoring was left out due to size constraints. On the bright side, West Mountain Radio reduced the cost of the device by $10 because of this! The H version is slightly smaller than the non H version as well. That's really about all, well– it could be cheaper, but as any good self respecting Amateur Radio Operator knows, Hams are the cheapest people alive today, so that is really a criticism I'd level at this device no matter what it cost. But for $89 it's not a bad deal.

Now lets look at the Pros:
Safety; Uses Anderson Powerpoles; Easy to mount; Easy to connect to; Small footprint; Keeps wiring neat; RFI Suppression

Safety:
I like using Powerpoles®, I truly detest using screw terminals for power connections. It is too easy to have a errant strand of wire get into someplace it shouldn't be, with the inevitable smokey result. Speaking of which, if something were to happen like that, the RIGrunner has every output fused, and the fuses are easy to change out if need be, so this gives me great peace of mind knowing this. The fuses are also on the top, or in my case, the wall facing side of the device, so it could not have worked out better.



Uses Anderson Powerpoles®:
I can't say enough for what Anderson's Powerpoles have done for the Amateur Radio EMCOMM community. They provide a standard, which for the most part, if followed, keeps one form reverse powering a radio. Also, if one follows that standard, you can take your radio over to a friend's house, (assuming he/she also followed the standard), and just plug your radio into it. It also makes for a clean and fast power make and break. Now my IC-706 MK2G, and my K3, can be moved from the house to the car, or the trailer, and/or back again, and I have to do nothing beyond unplugging the power, moving the radio, then plugging the power back in at the new location. It takes all of about fifteen seconds. This lets me make the existing wiring in the trailer, and car more permanent, and thus neater. All in all, the use of this device, actually makes one WANT to make neat installations. Note the Powerpole connection on the left, this is how it came from the factory, a very tightly made connection.

4008H REVIEW

Mounting:
With four screws holding the RIGrunner in place, it is not going anyplace. I mounted mine on a vertical rear section of the desk I keep the shack on. It's good that West Mountain Radio decided to make an H version!

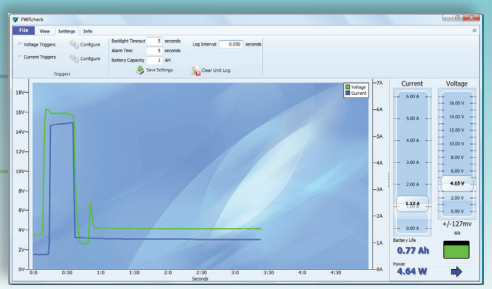
Small Footprint:
The RIGrunner is 1.4" H x 9" W, and 3" D. This is a rather convenient size, as the 12 VDC power pole mounts spread out just far enough so you can insert a connector pair and not run into the next one. I suspect West Mountain Radio did a lot of thinking about the layout of the RIGrunner before they started selling them. If you mount it high, then you can let the power cables fall downwards and then run them through feed-through holes in the desk.

Keeps Wiring Neat
The layout of the RIGrunner, allows one to actually make a reasonable cable layout, which lets you tie things down. This alone is worth the time it takes to put on the Powerpoles. The fact that it is so easy to remove and reattach a radio or other device makes this a pleasure to use.

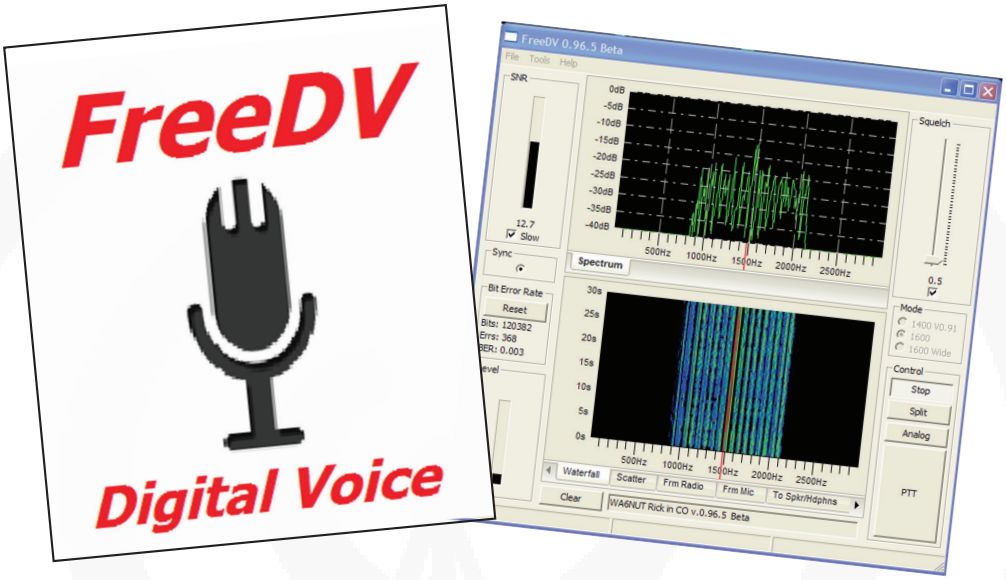
RFI Suppression:
The RIGrunner also has RFI suppression built right into the device… I still use the ferrite's, but it is good to see a company build in RFI suppression to any new device!

Conclusion

The RIGrunner series of power distribution systems is a plus for my station, and I am very glad it was here for me to use. I have never had a cleaner 12 VDC power distribution setup on any station I have ever had. I have added Powerpole connectors to just about everything that runs 12 VDC I own now, and made up cables for Car lighter plugs to Powerpole, battery pack to Powerpole, Powerpole to coax power jacks, etc., just about anything I can think of. The number of additional items one can get is also nice. The device comes with a nice supply of Powerpoles, and connectors, the little goodies that lock them together, all wrapped up in a nice box. The packaging is good, and the manual is actually useful! See the photo below for what it looks like as it is.



FreeDV DIGITAL VOICE



Setting up FreeDV HF Digital Voice with the RIGblaster Advantage

Mel Whitten
KØPFX

FreeDV is a digital voice mode intended for transmission and reception over the high-frequency (HF) bands.
It includes a robust frequency division multiplex (FDM) 15-17 carrier multi-tone modem with very low latency capable of SSB-like fast exchanges. Its low bit rate coder-decoder (CODEC2) provides natural sounding voice quality in only 1.2kHz BW. Setup and operation of this Windows compatible program was developed to make operation straightforward and easy to interface especially with the RIGblaster Advantage.

Sound Devices:

Digital voice, like other digital modes (i.e. EasyPal, PSK31 or RTTY) uses the Advantage's built-in USB sound device for the TX/RX data. For voice input/output, a second sound device such as a USB headset or the PC's sound card is used. The audio levels must be carefully adjusted to ensure optimum performance. The Advantage makes it easy to meet this requirement with the outboard TX/RX controls. The second sound device uses the Playback and Record mixer level controls for the Mic/speaker or USB headset.

Hardware

For this setup, an ICOM 706Mk2G, RIGblaster Advantage, Win XP OS, Intel Core2 Duo processor, internal sound card, PC Speakers and PC microphone are used. First, configure the Advantage as described in the operating manual under "Digital Mode Operating." An application such as "EasyPal" will provide a good starting point for the Advantage's TX/RX control levels. Turn off any DSP/EQ/ANF, compression and noise blanking in the 706. Set AGC to fast. If available, use narrow SSB TX/RX bandwidth filters.

Download FreeDV:

Go to http://freedv.org and download FreeDV for windows. FreeDV has been tested on XP, Win7 and 8/8.1 OS. FreeDV is available for the Mac and Linux also but this instruction targets the Window user. Review the "Quick Start Guide" and watch the instructional videos also found at freedv.org.

FreeDV DIGITAL VOICE

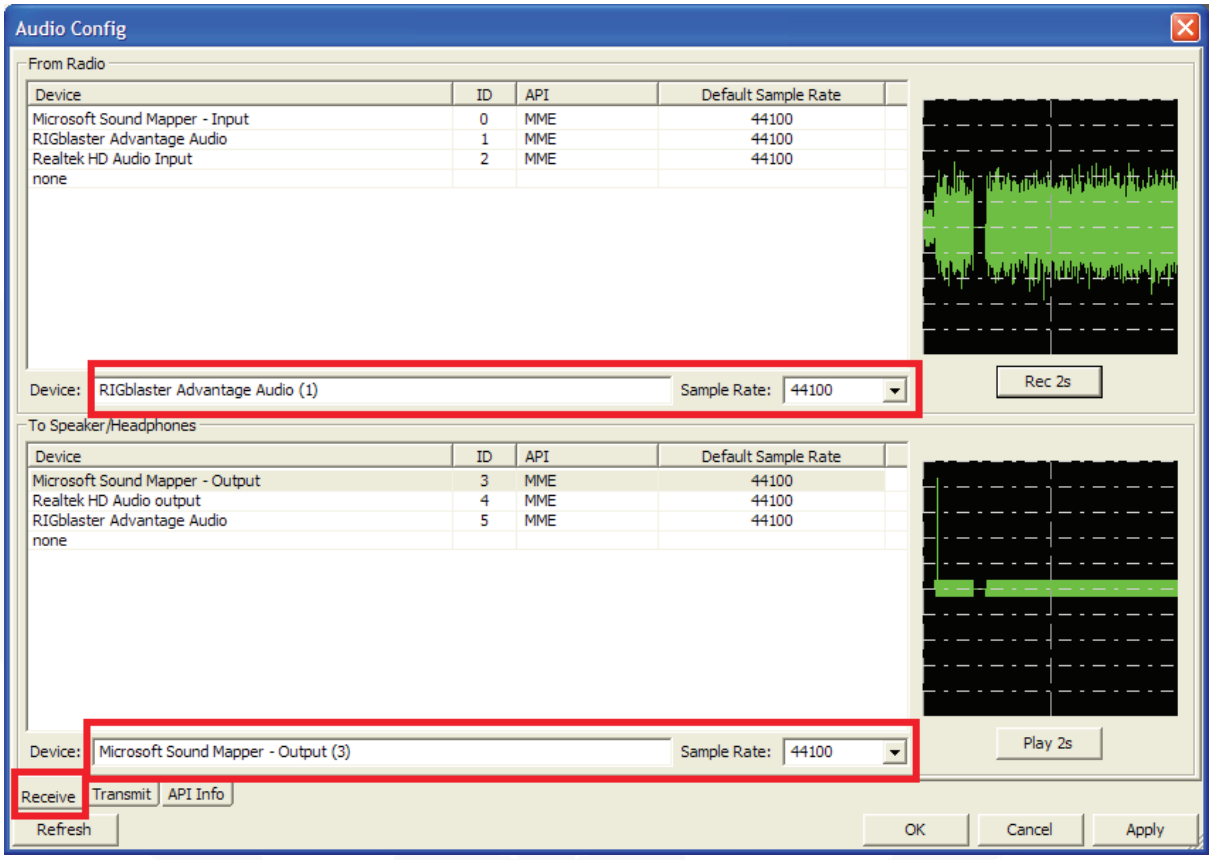


Fig-1

SETUP Tools for Audio Configuration: (See Fig-1 & 2)

1. Execute FreeDV and go to Tools>Audio Config. This window assigns the sound devices to FreeDV.

2. Select the Advantage for RECEIVE From Radio (Device: RIGblaster Advantage Audio (1)).

3. Select the Advantage for TRANSMIT To Radio (Device: RIGblaster Advantage Audio (5)).

4. Select the PC's sound card for RECEIVE To Speaker (Microsoft Sound Mapper – Output (3)).

5. Select the PC's sound card for TRANSMIT From Mic (Microsoft Sound Mapper – Input (0)).
(Note: In this setup, "Realtek" is the name of the driver – either Input may be selected)

Each sound device can be tested to ensure the correct one has been selected and is working properly. If the sound device does not appear to be working at the default 44100 sample rate, try 48000. Each sound device must be set to the same sample rate. No change is required in the "API Info" window.

• For "From Radio," bring up the speaker audio on the transceiver to normal listening level and then click on the "Rec 2sec" tab. Analog "band noise" will be recorded as shown in the display.
• For "To Speaker/Headphones," an 800 Hz tone will be heard and displayed.
• For "From Microphone," speak in a normal voice while clicking on the "Rec 2sec." An analog envelope of your voice will be shown.
• For "To Radio," an 800Hz tone is sent to the transmitter MIC input. If PTT is set up for VOX, the transmitter should be keyed.

FreeDV DIGITAL VOICE

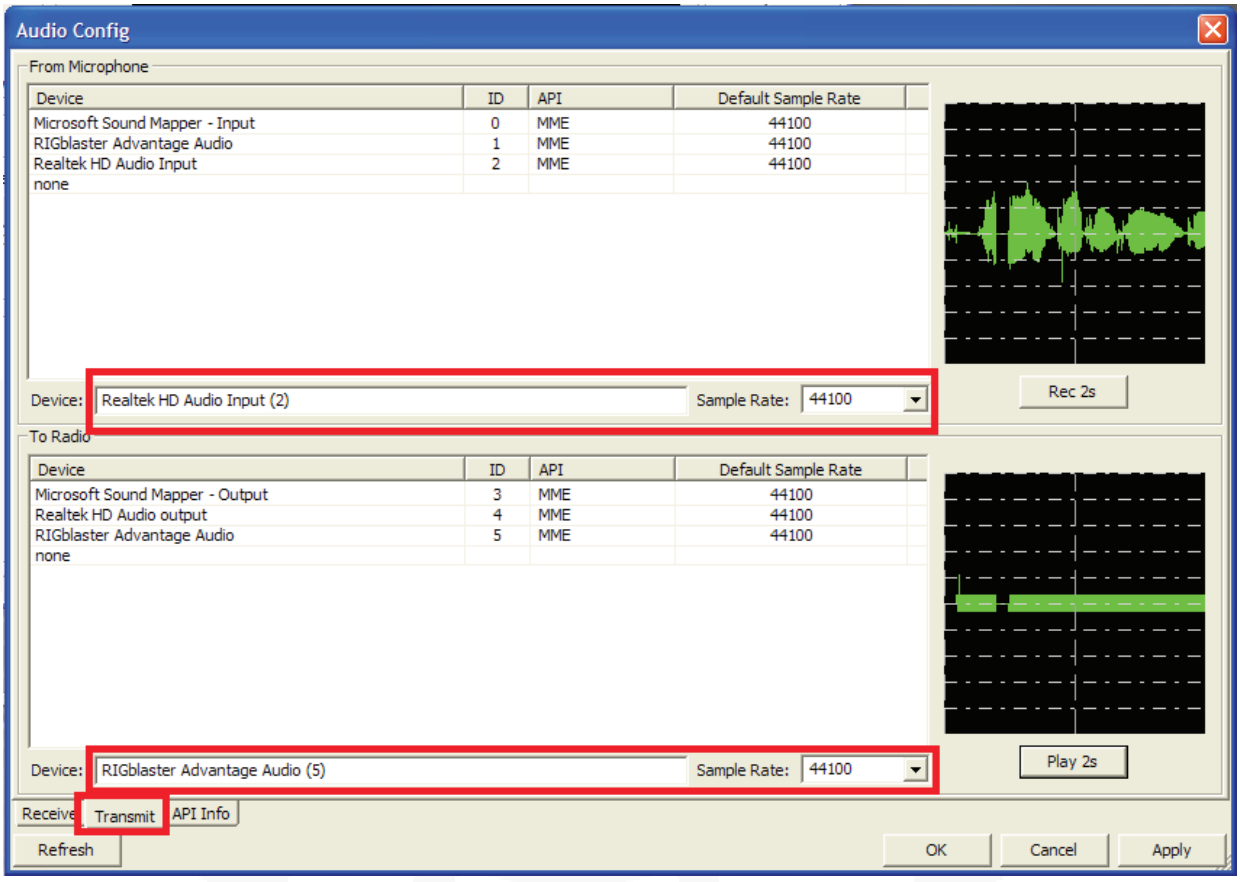


Fig-2

ADJUSTING the audio level for receive:

1. Set the audio level from the transceiver for the FreeDV waterfall using the Advantage's "RCV LEVEL" control. Set at approximately at 10 O'clock (Fig-2.2). The ICOM 706Mk2G AF level should be set very low, around 8 o'clock (Fig-2.1). Adjust the Advantage control until a light to dark blue color is shown displaying band noise. Since there is no "mute" on the 706, keep AF level low to minimize listening to the off air data. The PC's speaker/USB headset will be adjusted later for the decoded voice level. When receiving a FreeDV signal, its waterfall appearance will be displayed as shown in the opening GUI above.

2. Locate the Window's Mixer "Playback" audio level control/slider for the internal sound card's speaker or if using a USB headset, look for it in the sound properties/devices. Click on FreeDV's "Analog" button and adjust the speaker level for a comfortable level on band noise if a FreeDV signal is not available. As noted in the docs, a 2-3dB SNR (signal to noise ratio) is needed to start decoding the FreeDV signal. Higher SNRs will ensure error free decoding with good voice quality even in the presence of deep fades, QRM and QRN.

Clicking on "Analog" will route the Mic directly to input of the transceiver for normal SSB operation.

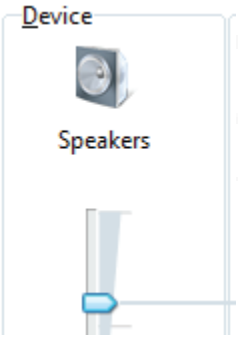


Fig-2.1

Fig-2.2

FreeDV DIGITAL VOICE

ADJUSTING the audio level for transmit:

1. Verify the transceiver is set for SSB and adjusted for full output power. The Advantage's "XMIT LEVEL" control will then be used to set the power output for FreeDV. For an ICOM 706, this is about 9 O'clock. Tweak the control so the RF power does not exceed 20% of the rated output of the transmitter. This is around 3-4 "bars" on the ICOM display. NO ALC action should be observed. Due to the high PAPR (peak-to-average-power-ratio) this will easily provide 100 watts of "SSB talk power." Attempting to adjust for higher power can cause distortion in the transmitted and received audio. To check the output, click on "Start" then "PTT." Because the multi-tone carriers are constantly changing in amplitude, the output will fluctuate up and down. Adjust for an "average" 20w output. The Advantage's USB LED will only blink when FreeDV is "started."

2. While transmitting, adjust the Mic level for a deflection on FreeDV's "Frm Mic" display. The envelope peaks should be between 0.4 and 0.8 while speaking in a normal voice within (2-3 inches) of the element. Locate the Window's Mixer "Recording" control/slider to make this adjustment. Over driving the sound card/USB headset Mic input will cause distortion. FreeDV is susceptible to high ambient shack noise (such as fans). CODEC2 is a "voice" only encoder/decoder. Any other input will be sent and received as noise. Sound cards are notorious for RFI pickup. When "not speaking" into the microphone, the Frm Mic display's center base line should remain thin. Any deflection indicates unwanted noise or RFI. If in doubt, refer to the FreeDV docs transmit displays.

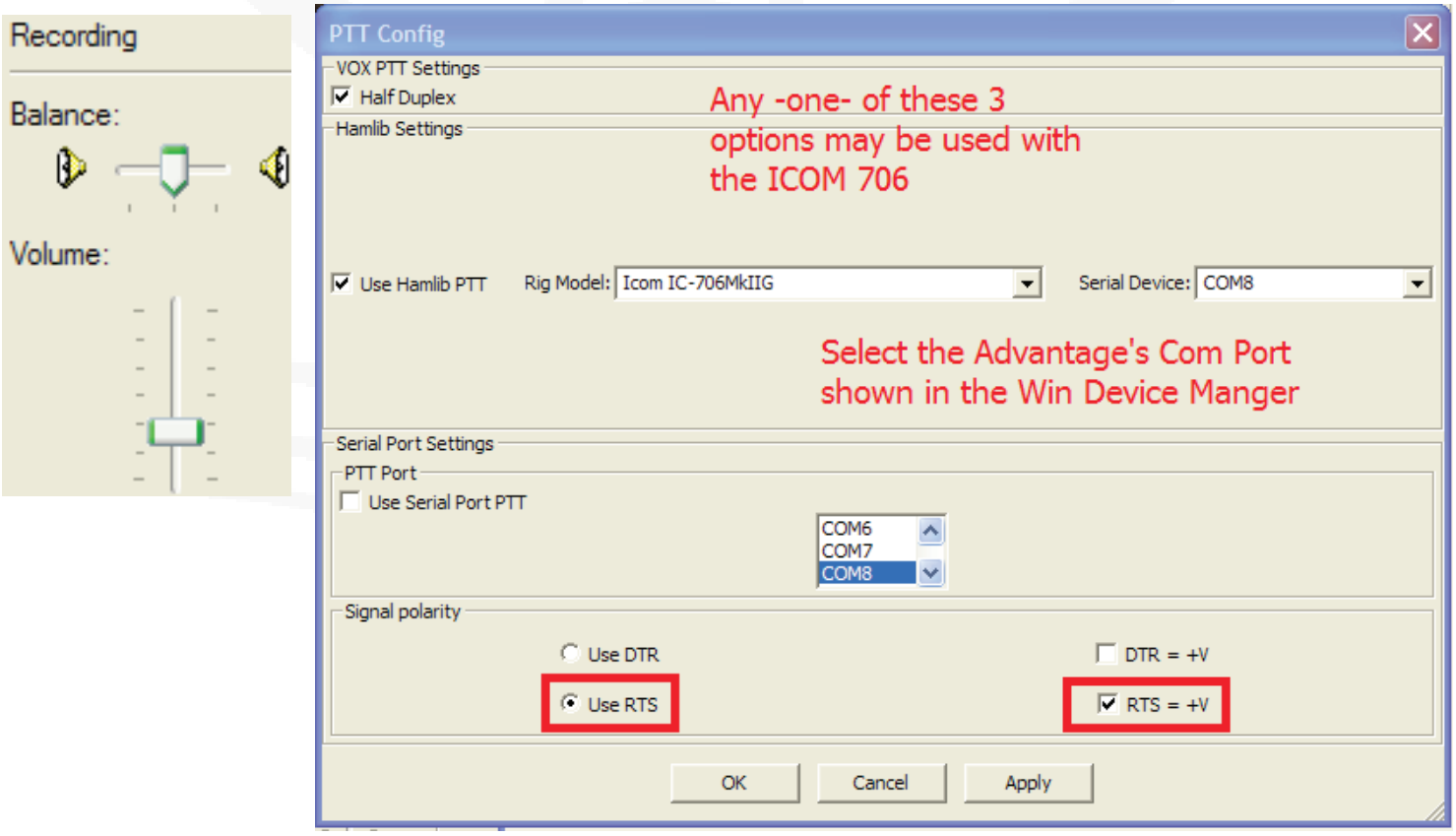


Fig-3

FreeDV DIGITAL VOICE

SETUP Tools for PTT: (Fig-3 previous page)
The Advantage can be used for controlling the transmitter's PTT line or VOX. Either Hamlib PTT or Serial Port PTT is recommended. Use the "PTT Config" window and select the com port associated with the Advantage's USB. In this setup, Com 8 was installed by the Advantage software for the USB. Verify RTS and +V is selected. If VOX is used, turn the Advantage control to fully CCW (off) flip the TX switch down.

SETUP Tools for Options: (Fig-4)
Add your call sign here and optionally, your name/location. This data is continuously being sent during the voice transmission. Keep the info added here short.

This completes the set up. To find a QSO, first check 14.236 or go to http://qso.k7ve.org and login with your call. Scroll to the bottom of the page and use a suggested frequency or enter a new one. Have a question? Ask someone on the QSO Finder chat line or join the "digital voice" Google group.

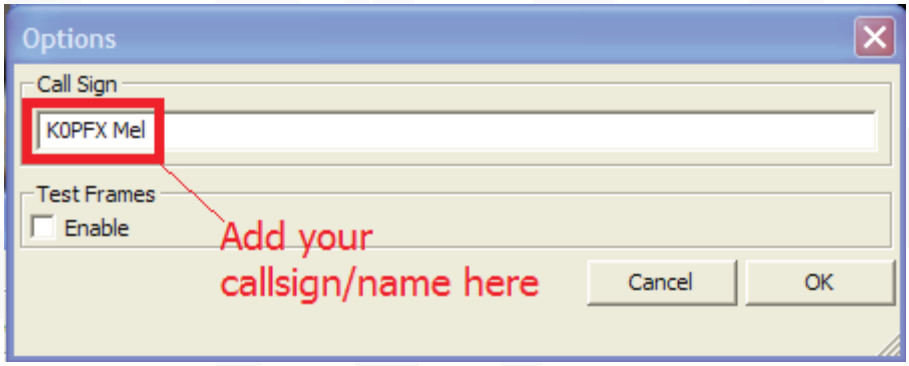


Fig-4

RIGblaster Advantage #58012-1288

UPCOMING EVENTS

Upcoming Hamfests

8/16/14	Huntsville Hamfest - Huntsville, AL
8/30/14	Shelby Hamfest - Shelby, NC
9/13/14	Chicago FM Club - Belvider, IL
9/20/14	Peoria Superfest - Peoria, IL
9/28/14	Cleveland Hamfest & Computer Show - Berea, Ohio
10/10/14	Pacificon - Santa Clara, CA

Customer Comments

"I have started using the RIGblaster Advantage with JT-65. The Advantage has a very simple setup that's so easy to use compared to other brands that were just too much of a hassle to set up. The tech support was able to answer all of my questions I needed help with!"

I want thank you guys for producing such a great product, RIGblaster Advantage. This piece of hardware for my station has opened up a whole new world to me for digital modes including keying my radio for CW, which I used to enjoy until my hearing started to go away.
-Curtis Elliott Jr, AB0UA

I recently purchased the ClearSpeech® DSP. The way your product works is incredible. I will be ordering more of your units in the near future. I rate this product a 10. Thank you you all for sharing this technology with the pubic. I will promote this product!
-John S Turlington, KJ4ZTV

Thanks for the fast service! We use your CBAIV- Battery Analyzer equipment in a course and tool kit I developed for the Light Electric Vehicle Association and Community Colleges. We have been getting a lot of orders and recently won an award using your equipment!
-Don Gerhardt

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