Product Review & Short Takes Columns from *QST* Magazine

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Product Reviews

Short Takes

The Grundig Satellit 800 Millennium Receiver

Reviewed by Steve Ford, WB8IMY
QST *Managing Editor*

The Grundig Satellit 800 Millennium receiver is the product of a combined engineering effort between Lextronix Corporation and the Drake Company, a name familiar to many amateurs. The radio itself is assembled in China.

If you've seen the advertisements for the Satellit 800 in the pages of *QST*, you might think that this is a portable receiver. Well, unless your idea of "portable" is toting a 15-pound box, the Satellit 800 is better described as a tabletop radio, despite the portable appearance.

Its substantial size—about $9^1/_2 \times 8^1/_2 \times 21$ inches—allows the Satellit 800 to accommodate quite a large speaker, which provides some of the best audio that I've heard from a radio in some time. Separate bass and treble controls allow you to tailor the sound to match your tastes. In addition, the 800's girth incorporates large, widely spaced pushbutton controls and a large LCD display that you won't need a magnifying glass to read. One nit to pick about the display: USB is displayed by adding an "I" immediately following the "L" in LSB. The result looks like "LISB" and it annoyed me every time I saw it.

You won't find an S meter incorporated into the LCD display. Instead, the Satellit 800 opts for a traditional analog S meter separate from the main display. As with the LCD display, you can backlight the S meter for easy viewing.

Although the Satellit 800 comes with a long telescoping antenna, you'll find several handy antenna connectors on the rear panel to accommodate just about any feed line you're likely to use. There are traditional longwire connectors, an SO-239 coaxial connector and even an F connector for 75-Ω coax (this is for FM broadcast and airband reception only).

Grundig also supplies a set of quality headphones (no, not the spindly Walkman-style headsets—these are large, full-ear-coverage cans), a hefty 120/230 V ac power supply module (the Satellit 800 will also operate on six D cells or another external dc source) and a convenient copy of *Passport to World Band Radio*, the Bible of shortwave listening.

Navigating the Radio

The Satellit 800 spans a wide frequency range: 100 kHz to 30 MHz, 87 to 108 MHz (FM broadcast) and 118 to 137 MHz (aviation). Modes include AM (including synchronous AM tuning), LSB, USB and FM (including FM stereo). FM reception is only available in the FM broadcast range.

When it comes to tuning, you have your choice of direct frequency entry via the keypad or manual tuning with the front panel knob or ∧/∨ buttons. Both methods work very well, but I wish the knob had variable-rate tuning—where the tuning step rate increases the faster you rotate the knob. As it is, the Satellit 800 steps through the frequencies at the same maximum rate regardless of how rapidly you spin the control.

You can easily program your favorite frequencies into any of the 70 memory slots provided, and then step through them using the ∧/∨ buttons or punch them up with the keypad. It's worth noting that the frequency display includes two independent clocks and two timer functions. For our tests I set one clock to local time and another to UTC, a configuration common with most users. The timers are convenient but,

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Bottom Line

Impressive audio fidelity and admirable performance—along with a very nice selection of features—makes the Grundig Satellit 800 tabletop receiver a great choice for shortwave and domestic broadcast listening.

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unfortunately, the Satellit 800 does not provide a switching output that would allow the timers to turn on an external recorder.

Audio outputs include a $1/_8$-inch stereo headphone jack on the front panel, and line-level audio left and right channel phono jacks on the rear. The rear panel also includes a $1/_4$-inch stereo jack for connecting an external speaker (or speakers).

Reception features of note are an adjustable squelch for use on the aviation band and pushbuttons to select the 20-dB RF attenuator, automatic gain control (fast or slow), IF bandwidth (2.3, 4 and 6 kHz), AM sync, SSB (LSB and USB) and band (AIR, FM, SW and AM). Conspicuously absent are a noise blanker and passband tuning.

Memories and Scanning

As I've already mentioned, the Satellit 800 offers 70 memory channels. These are extremely convenient when you have a long list of favorite stations and frequencies that you wish to revisit in the future. The memories are divided into seven blocks of ten channels (00-09, 10-19, 20-29, etc). Each memory channel will retain frequency, mode, bandwidth, AGC and sync detector settings.

The scanning function allows you to scan the 10 channels within a specific block of memories very quickly. You can not scan through all 70 memories or select more than one block to be covered in a single scan operation. It is possible to "mask" any of

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Joe Bottiglieri, AA1GW ♦ Assistant Technical Editor

Table 1
Grundig Satellit 800, serial number 58005002965

Manufacturer's Claimed Specifications	*Measured in the ARRL Lab*

Frequency coverage:
  0.1-30 MHz (SSB/AM),
  87-108 MHz (FM), 118-137 MHz (AM).
	As specified.

Power requirement: 7-10 V dc, 1.0 A[1].	0.53 A. tested at 9.0 V dc.
Modes of operation: SSB, AM, WFM.	As specified.
SSB sensitivity, bandwidth not specified, 10 dB S/N: 0.1-30 MHz, <0.5 µV.	Noise floor (MDS), 2.3 kHz filter: 1.0 MHz –126 dBm 3.5 MHz –124 dBm 14 MHz –125 dBm
AM sensitivity, 10 dB S/N: 0.1-30 MHz, <2.0 µV; 118-137 MHz, <4.0 µV.	10 dB (S+N)/N, 1-kHz tone, 30% modulation: 1.0 MHz 1.3 µV 3.8 MHz 3.2 µV 120 MHz 3.4 µV
FM sensitivity, 20 dB S/N: 87-108 MHz, <4.0 µV.	For 12 dB SINAD (15 kHz bandwidth): 100 MHz 1.2 µV
Blocking dynamic range: Not specified.	Blocking dynamic range, 2.3 kHz filter: 3.5 MHz 103 dB* 14 MHz 110 dB*

Two-tone, third-order IMD dynamic range:
  Not specified.
	Two-tone, third-order IMD dynamic range,
	  2.3 kHz filter:
	3.5 MHz 84 dB*
	14 MHz 89 dB*

Third-order intercept: 5-kHz spacing, –20 dBm; 100-kHz spacing, +10 dBm.	3.5 MHz +2.0 dBm 14 MHz +8.4 dBm
Second-order intercept: Not specified.	+90.7 dBm.
S-meter sensitivity: Not specified.	S9 signal at 1.0 MHz: 81.2 µV; 14.2 MHz, 108 µV.
Squelch sensitivity: Not specified.	At threshold: AM, 120 MHz, 0.84 µV.
Receiver audio output: 1.0 W into 4 Ω (THD not specified).	1.4 W at 10% THD into 8 Ω.

IF/audio response: Not specified.	Range at –6 dB points, (bandwidth):
	  USB-W: 442-2307 Hz (1865 Hz);
	  LSB-W: 436-2235 Hz (1799 Hz);
	  AM: 360-2442 Hz (2082 Hz).

IF rejection: 80 dB; image rejection,
  0.1-30 MHz, 118-137 MHz, 60 dB;
  87-108 MHz, 50 dB.
	First IF rejection, HF, 67 dB;
	  AM aircraft, 69 dB;
	  FM broadcast, 89 dB; image rejection,
	  HF, 48 dB; AM aircraft, 97 dB;
	  FM broadcast, 62 dB.

Size (hwd): 9.3×20.9×8.5 inches; weight, 14.6 pounds.
Note: Unless otherwise noted, all dynamic range measurements are taken at the ARRL Lab
  standard spacing of 20 kHz.
*Measurement was noise-limited at the value indicated.
Third-order intercept points were determined using noise-floor reference.
[1]A 120/230 V ac 60/50 Hz power supply is included.

Figure 1—The Grundig Satellit 800 comes complete with a very nice set of headphones, a dual voltage (120/230 V ac) power supply, a multi-language *Use and Care Guide* and the 2000 Edition of *Passport to World Band Radio*.

the memories to effectively lock them out of the scan, however.

Too bad Grundig didn't add the ability to tag each memory slot with an alphanumeric label ("BBC-1," for instance).

On the Air

The Satellit 800's audio is a wonder to the ears—either in headphones or with the forward-firing speaker. No complaints whatsoever in that department. There is plenty of audio power as well. The Satellit 800 was loud with the audio gain control at only the 9 o'clock position. Anything beyond that constituted various definitions of "earsplitting."

AM listening on the domestic broadcast or shortwave bands was a pleasure. Even with the whip antenna, the Satellit 800 is more than sensitive enough to provide a broad variety of signals. The AM synchronous detector makes a substantial difference in signal quality. Once you properly tune a signal and activate the AM sync, the distortion caused by selective fading is kept to a minimum, if not absent altogether. The effect is especially pronounced when listening to music on the shortwave bands. (I could finally listen to music without cringing each time the signal faded.) If SSB is your pleasure, the Satellit 800 is sufficiently sensitive in the SSB modes to allow reception of both amateur and commercial phone traffic. Overall, the Satellit 800 seemed to be better than

or equal to Drake's own SW-8 receiver and it approaches the quality of the R8A.

From an audio standpoint, the radio really shines on the FM broadcast band. You're treated to excellent FM audio fidelity and, when wearing headphones or when connecting the receiver to the line-in connectors on your home entertainment equipment, outstanding stereo separation.

Two Flies in the Ointment

There are only two significant performance blemishes on an otherwise fine receiver. While testing the Satellit 800 on various WWV frequencies, I uncovered a very strong (about S5) pulsating signal on 20 MHz. It was so strong, in fact, that it almost obliterated WWV. Testing the radio at various locations in my home and office produced no difference in the strength of the interfering signal. Further investigation revealed that the signal appeared every 2 MHz from 20 to 30 MHz. It was also audible on 124 and 130 MHz. Switching in the attenuator reduced the signal substantially, suggesting that the pulse was being radiated by the Satellit 800 itself and picked up on the whip antenna. Using my ICOM IC-706 as a test receiver with a short piece of wire, I discovered that it received the signal from the Satellit 800 at a distance of about 6 feet. When I switched off the Satellit 800, the signal vanished.

The other problem is most likely related. I found that the Satellit 800 would produce an audible "click" in the speaker while rotating the tuning control. This noise was only heard above about 20 MHz and was mildly annoying. In the aircraft band, however, it was noticeable to the point of being objectionable at times. The clicking was particularly strong when tuning through elevated noise levels.

I did discover, however, that connecting an external antenna to the SO-239 jack and selecting the **50-Ω** position on the antenna

selector switch virtually eliminated the noises in the shortwave frequency range. Connecting an external airband antenna to the provided F connector also substantially reduced the tuning racket on the airband frequencies. You will need to locate these antennas far enough away from the set to keep them from picking up the radiated interference.

While external antennas obviously are not as convenient as the built-in whip antenna for portable applications, serious shortwave (and airband) listeners are already familiar with the significant improvements in reception that result from their use. Most aficionados consider external antennas a necessity.

Grundig reports that these problems do not exist on all units.

Conclusion

The unusual noise problems notwithstanding, the Grundig Satellit 800 Millennium is an excellent consumer-grade receiver. If you don't mind the massive size, you'll love the audio and the overall signal performance. With its fidelity, sensitivity and convenient features, the Satellit 800 brings back the *pleasure* of shortwave and domestic broadcast listening.

Manufacturer: Grundig/Lextronix, PO Box 2307, Menlo Park, CA 94026; 650-361-1611; fax 650-361-1724; **grundig@ix.netcom.com**; **http://www.grundigradio.com**.

Manufacturer's suggested price, $699.95. Typical current street price, $500.

RadioShack HTX-245 Dual-Band FM Handheld Transceiver

Reviewed by Joe Bottiglieri, AA1GW
Assistant Technical Editor

RadioShack's Amateur Radio Products department has been busy lately.

A cruise through the company's Web site—**http://www.radioshack.com**—reveals that, in addition to their popular house-brand transceivers, they now offer an expanded selection of ham radio equipment. This includes gear by Alinco, Vectronics, Cushcraft, Rohn, Glen Martin and Alpha Delta.

Information on the site indicates that most of these products are only available on line or through telephone catalog sales. Individual outlets stock just a small portion of these listings—their RadioShack-labeled amateur transceivers.

I've got to admit that the appearance of their latest offering, the HTX-245 dual-band FM handheld, caught me completely off guard. While most Amateur Radio manufacturers seem more than anxious to share information on soon-to-be-released equipment, lately RadioShack has been playing their cards very close to their chest. I first sighted this transceiver in the pages of a RadioShack flyer that recently showed up in my mailbox—the '245 was available in area stores just a few days later.

The 'Shack's Latest Surprise

The HTX-245 is a compact "one-band-at-a-time" 2-meter/70-cm dual bander. Highlights include 50 regular memory channels; two call channel memories; NOAA Weather Broadcast receive; independent CTCSS encode and decode tones; six DTMF autodial memories; and scan capabilities. Full duplex, dual receive and cross band operation are not supported.

As delivered, the HTX-245 transmits and receives from 144 to 148 MHz on VHF and from 438 to 450 MHz on UHF. The call channel frequencies are preprogrammed with the National FM simplex calling frequencies—146.52 and 440 MHz—but can be reprogrammed to another simplex or repeater frequency if desired.

The frequency range is slightly expandable. A special reset procedure, described in an included *Addendum* sheet, extends the coverage for MARS/CAPS or FM satellite operation to 142 to 149.88 MHz on VHF and 420 to 450 MHz on UHF. Scanner listeners may be disappointed though—this radio will not receive communications in the commercial or public service bands. Weather band receive is limited to seven preprogrammed channels.

The enclosure is dark gray with an easy-to-grip matte finish. The front panel controls include a 16-button keypad, a **PWR** button and a **DTMF/M**onitor button. **PTT** and **F**unction keys are located on the left side. All of the keys are rubberized. The size, spacing and position of the controls and the compact dimensions of the transceiver make for comfortable left or right hand operation.

The buttons on the keypad are used to directly enter frequency digits while in the VFO mode or for sending DTMF tones

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Bottom Line

With compact dimensions, simple operation and a good selection of features, the HTX-245 dual-band handheld transceiver should be a popular choice among newcomers and experienced operators alike.

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while transmitting. Labels on the surface of the keys identify their primary assignment. The right-most column of keys provides one-touch access to the VFO, memory, scan function and call channels.

Legends above the keys—**SET**, **+/–**, **STEP** and **BAND** for example—identify each key's secondary function. These are accessed by pressing the corresponding key while holding the **F**unction button.

A single menu (entered by holding the **F**unction button and pressing the **SET/2** key) offers just five selections—the squelch setting, the CTCSS transmit tone, the CTCSS receive tone, the UHF offset frequency and the VHF offset frequency. Checking the menu settings for the VFO or for a specific memory channel is easy, just press and hold the **DTMF/M** button. The squelch will open and each of the settings will appear sequentially.

The LCD display is reasonably large, and the frequency digits and the icons that show the settings of the various operating parameters are of adequate size to make them very legible. A 5-segment S/RF meter is located in the lower right portion of the window. Display backlighting is automatically activated when the encoder is turned or when any key, with the exception of the **F**unction or **PTT** buttons, is pressed. Backlighting will remain on for about 5 seconds. The keypad is not backlit and it is not possible to lock the display illumination on.

The top panel supports a concentric pair of knobs for the frequency encoder and the volume control. A pair of jacks for connecting an earphone or speaker/microphone and a female SMA antenna connector are also top-mounted. The provided antenna is slightly more than 5 inches long. A coaxial-style jack for charging or connecting external power is located on the right side.

A large, thick, plastic belt clip does an excellent job of securely holding the radio on a belt or in a pocket.

Power Particulars

As is the case with the recently reviewed HTX-200 2-meter H-T, power for handheld

operation is supplied by AA batteries. A 4-stage battery level indicator in the display window and a digital readout of the voltage that comes up briefly when you turn the unit on makes it easy to keep track of their charge state.

RF output power with three 1.5 V AA batteries is specified at 700 mW. When connected to an external 6 V dc, 600 mA power source, the power output increases to around 1.5 W. There are no provisions for varying the RF output manually—it's determined by the supplied voltage.

The HTX-245 offers a couple of features that can help maximize battery life. There's a "Power Save" system that will shut off power to the receive circuitry and then switch it on briefly every 8 seconds to check for activity. This works particularly well if you tend to monitor relatively inactive frequencies for extended periods of time.

The second feature is an "Automatic Power Off" system. When enabled, this will automatically shut off the radio after a 30-, 60-, 90- or 120-minute period of inactivity. Set this up and you won't be cursing yourself for accidentally leaving the transceiver on and needlessly depleting your batteries. Note, however, that the settings for these features—and a few of the others—can only be changed while the unit is in the VFO mode.

Field tests revealed very good battery life with disposable alkaline batteries—especially when using the features just described—but there are also several alternative methods for powering the '245. The transceiver does not come with a wall-transformer charging unit, but—unlike the HTX-200—there is built-in circuitry that will allow recharging of NiCd or NiMH AA-sized batteries in the unit. You will need to purchase the rechargable batteries and a wall transformer charger (273-1662) or a vehicle charger (273-1810).

Additional accessories are available for using external power for transceive operation. For fixed station use, RadioShack offers an ac-to-dc supply (273-1680). For vehicle operation there's a dc-to-dc power adapter (273-1815) that plugs into a vehicle cigarette lighter outlet.

Advanced Features

Although the HTX-245 isn't exactly bristling with cutting edge features, it does provide a good selection of the more desirable ones.

A "Time-Out-Timer" will limit the transmit duration to a preset time interval. The timer can be set to 5, 10, 15 or 20 minutes (or off). Unfortunately, the shortest time-out interval—5 minutes—is about 2 minutes longer than the period commonly programmed into most repeater controllers.

The HTX-245 also includes some basic

Table 2—RadioShack HTX-245, serial number 0002509

Manufacturer's Claimed Specifications	*Measured in the ARRL Lab*
Frequency Coverage: Receive and transmit, 144-148, 438-450 MHz[1].	Receive and transmit, as specified.
Power requirements: 4.5-6.0 V dc; receive, not specified; transmit, 0.6 A (maximum, high power).	Receive, 0.27 A (maximum volume, no signal); transmit, 0.62 A, tested at 6 V.
Receiver	*Receiver Dynamic Testing*
Sensitivity: 12 dB SINAD, 0.2 µV.	12 dB SINAD, VHF, 0.14 µV; UHF, 0.22 µV.
Two-tone, third-order IMD dynamic range: Not specified.	20 kHz offset from 146 MHz, 61 dB*, 10 MHz offset from 146 MHz, 79 dB. 20 kHz offset from 440 MHz, 55 dB*, 10 MHz offset from 440 MHz, 71 dB.
Adjacent-channel rejection: Not specified.	20 kHz offset from 146 MHz, 61 dB. 20 kHz offset from 440 MHz, 55 dB.
Spurious response: 50 dB.	IF rejection, VHF, 76 dB, UHF, 103 dB; image rejection, VHF, 69 dB; UHF, 31 dB.
Squelch sensitivity: Not specified.	At threshold, VHF, 0.08 µV; UHF, 0.16 µV.
Audio output: 300 mW at 10% THD into 8 Ω.	525 mW at 2% THD into 8 Ω[2].
Transmitter	*Transmitter Dynamic Testing*
Power output: w/ alkaline batteries, 0.7 W; with external dc (6 V), 1.5 W.	Batteries: 146 MHz, 1.1 W, 440 MHz, 0.62 W; external dc, 146 MHz, 1.4 W, 440 MHz, 0.89 W.
Spurious signal and harmonic suppression: Not specified.	VHF, 53 dB; UHF, 60 dB. Meets FCC requirements for spectral purity.
Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.	Squelch on, S9 signal, VHF and UHF, 150 ms.
Receive-transmit turnaround time ("tx delay"): Not specified.	VHF, 128 ms; UHF, 70 ms.
Size (hwd): 4.0×2.4×1.2 inches; weight, 5.1 ounces.	

*Measurement was noise limited at the value indicated.
[1]See text.
[2]Maximum volume.

memory and VFO scanning capabilities. The transceiver can scan the memory channels, the entire frequency range of the selected band or the preprogrammed frequencies in the weather broadcast band. There are no provisions for scanning between an upper and lower frequency limit in the VFO mode.

While there is no specific setting for locking a particular channel out of a memory scan, you could temporarily assign a bogus CTCSS tone squelch frequency to the memory channel you wish to avoid. The scan will still pause on the channel if there is activity there though—you just won't hear it. The scan will remain on any busy frequency—tone squelched or not—for 8 seconds before resuming.

The DTMF autodial memory system is set up very nicely, but it works a little differently than most I've encountered. I spent several minutes unsuccessfully trying to transmit the DTMF number string while it appeared in the display. The key is to select the DTMF memory that you wish to transmit first and then touch the **PPT** to return to the normal frequency display *before* you press the **PPT** and **DTMF/M** buttons to send the sequence. This setup is actually

very convenient. If you exit the autodial memory menu with a often-used audiodial string showing—your home phone number for example—transmitting the sequence at a later time is a two-button operation—press and hold the **PPT** and then punch the **DTMF/M** button. There is no need to reenter the autodial memory menu first.

Documentation

The 48-page 7 × 5-inch *Owner's Manual* is well organized and generally easy to follow. In several places in the manual the */▲ and the #/▼ key are mysteriously referred to as the "*s*" and "*t*" keys—once I broke that code though, it was smooth sailing.

The manual includes clearly worded warnings concerning unlicensed operation and even provides ARRL contact information for further information. There's a brief, but reasonably complete, section on basic repeater operation titled "Understanding Repeaters" that should prove very valuable to first-timers.

You'll also find a handy 4-page *Quick Look at the Controls* table. This would be nice to have had on a separate card for easy reference in the field. (A few minutes spent with a

copy machine could satisfy that desire).

A schematic diagram is not included.

Operational Observations

The HTX-245 is simply a pleasure to operate. If you're not particularly fond of trying to grope your way through a maze of seldom-used high-tech features found in some of the "more sophisticated" transceivers, blindly searching for a basic setting like the duplex direction, perhaps RadioShack's got your dual bander.

Even greenhorns shouldn't run into too much difficulty getting up and running with nary a peek at the *Owner's Manual*. With most common operations accessed directly from the keypad and the logically titled legends that are provided on and above the keys, a few minutes spent poking the buttons and snooping around in the 5-item menu should suffice. Those needing a little more help can refer to the *Quick Look* table. Rank amateurs might even consider actually reading the manual!

Requests for critiques of unit's transmit audio quality consistently resulted in very favorable reports. Receive audio is good for a handheld radio this size and is even adequate for mobile operation.

The transceiver's 700 mW of RF power output and stock antenna does the trick for short-range simplex and nearby repeater applications, but if you are looking to increase your coverage area for handheld operations, a good place to start would be a longer antenna. Though the compact size of the included antenna may be conducive to carry convenience, performance-wise it leaves a lot to be desired—especially for 2-meter operation. (Weather broadcast reception also suffers.) Temporarily substituting a longer aftermarket antenna made a world of difference.

ARRL Lab test data—presented in Table 2—shows an overall level of receiver performance that's on par with what we've seen in similar transceivers from the other manufacturers. The two-tone third-order

IMD dynamic range numbers at 10 MHz offset are above the running average. This measurement is generally a good indicator of a receiver's ability to reject interference from strong nearby commercial and paging radio operations. Receive sensitivity in the VHF band, at 0.14 µV, is right up there with the best of them. The UHF sensitivity, at 0.22 µV, is a bit below average.

The RadioShack HTX-245 is a very compact, simple to use dual-band handheld with a good variety of the most important features. Try one on for size at a 'Shack near you.

Manufacturer: RadioShack Corp, Fort Worth, TX 76102; 800-842-7422; fax 718-415-2303; **http://www.radioshack.com**.

Manufacturer's suggested retail price, $229.95. Typical current street price $200.

Vehicle Charging Adapter (273-1810), $12.99; Ac Charging Adapter (273-1662), $12.99; High-Current Vehicle Power Adapter (273-1815), $16.99; Ac Power Supply (273-1680), $39.95.

West Mountain Radio RIGblaster Rig-to-Sound-Card Interface

Reviewed By Rick Lindquist, N1RL
Senior News Editor

The back side of your transceiver can be a very scary place. Typically, it's filled with jacks of various types. Not all of these connectors will necessarily be immediately recognizable without reference to the owner's manual—and just where *did* you put that sucker anyway?

Okay, here's the thing. You have heard all about PSK31 or your buddy across town just introduced you to the wonders of slow-scan TV or you're just dying to try your hand …uh, fingers… at RTTY because you've found out that's where there's often the least competition to work the major DXpeditions. Or maybe you'd like to try out a software-based voice keyer program to save your golden throat during the next SSB contest.

So, all you need is your sound-card-equipped PC, a few quick connections for audio between your radio and the computer, and *voilá!*

Then you encountered the DIN connector on the rear apron of your rig!

To the rescue comes RIGblaster by West Mountain Radio. This is a sort of enhanced break-out box that lets you quickly and easily access the audio and push-to-talk lines of your transceiver so that you can interface your radio and PC sound card and take advantage of all those sound card-based aps without ever having to even *look* at an odd connector with nonsensical pin number-

ing—much less try to solder wires to it.

The RIGblaster goes between your radio's front-panel microphone connector and your mike, so there's no need to go over to the "dark side," Luke Skywalker—except, perhaps, to pick off transceiver audio from the external speaker jack, although on some radios, even that is right there on the front. The whole point is to simplify the interconnection process and let you get on with the business of enjoying Amateur Radio digital modes.

Another big advantage of the RIGblaster concept is that you can, in essence, move the connections from one radio to another—although this might require some reconfiguration if the transceivers are by different manufacturers.

What You Get

The RIGblaster itself is a little dark-gray box with a mike connector, a couple of

switches and two LED indicators on the front panel and five connectors and a **LEVEL ADJ** control on the rear apron.

Allow me to interject here that the RIGblaster is a solid, well-made station accessory. The sturdy little shell is aluminum with a rugged finish and silk-screened labels. Inside, the PC board, connectors and components appear to be top quality. I considered this a good sign.

There are versions for different radios. The M8 is compatible with most Yaesu, ICOM, Kenwood, Kachina and Alinco transceivers. In addition, there's a RJ45 version that works with the popular ICOM IC-706, the Yaesu FT-900 and several of the FM mobile radios, and an M4 version for Ten-Tec and older Kenwood rigs.

The RIGblaster arrives with the top cover unsecured and the self-tapping screws still in their plastic bag. This is because you have to install the internal jump-

ers before you operate. More on that in a bit.

Also in the box is a 36-inch long microphone cable that goes between the RIGblaster and your transceiver. Depending on the model you ordered, the cable will have the appropriate front-panel mike plug on the end that attaches to your rig. The package also includes four adhesive pads or stick-on rubber feet—your call—for the bottom of the box. The adhesive pads come in handy if you plan to stick the box onto your radio or, perhaps, under an operating desk shelf, in which case they could go on the top of the box instead.

The RIGblaster comes with a little nine-page (counting the warranty) *Owner's Manual*. While mostly concise and to-the-point, the manual provided all of the necessary "get started" info as well as a fine troubleshooting page and great diagrams.

Finally, there's a 12-V wall cube power supply rated at 300 mA (the box does contain some active devices and a couple of relays). Personally, I can't stand "wall wart" power supplies, although they seem to be ubiquitous these days with amateur accessories. There's no reason why you shouldn't be able to power this unit from your station's power supply to keep down the clutter at the ac outlet.

Finally, West Mountain Radio supplies a CD-ROM software sampler. Most of the software on the disk appears to be of the demonstration variety, and, once installed, not all of it wanted to function on the laptop I was using. Thoughtfully, the manufacturer supplies discount coupons for $8 off *JVComm32* by DK8JV and 20% off *VoiceKey Express* to RIGblaster purchasers.

What You Need to Supply

The RIGblaster package is not complete—you'll need a few things to get started. Most important are audio cables to and from the box and your rig to the PC's sound card connectors. West Mountain Radio recommends high-quality, shielded stereo (ie, three-wire, tip, ring and sleeve) connecting cables (these are available from West Mountain as optional accessories). To go between the box and the PC, you'll need one with 3.5 mm mini phone plugs on each end. For the audio connection from your rig to the PC's sound card input—which does not pass through the RIGblaster—the connector requirements will vary. In my case, I was able to make use of the recorder output connection from the external Yaesu speaker that's connected to my Kenwood TS-850S/AT (yeah, I know, but the speaker was a gift, and it works great). It had a mono 3.5 mm plug on the other end, and the sound card on the older Dell laptop I was using seemed to have no problems with it. As the *Owner's Manual* points out, in some situa-

tions you might need a Y connector to keep your external speaker connected when using your transceiver's speaker jack to supply audio to the PC sound card. Some transceivers have line-level outputs, but this might require digging into your owner's manual and—horror of horrors—soldering to a DIN plug or some other connector. Best to play it safe and simple.

The other thing you'll need is a serial cable (also available from West Mountain Radio). The RIGblaster has a DB25 RS232 connector on the rear apron. To take advantage of serial port PTT control, you'll need a cable with a male DB25 on one end and the appropriate connector to mate with your computer's serial port on the other.

Setting It Up

Probably the most difficult part of making the RIGblaster work is setting the *&%$# jumpers. Since this is a family publication, we have to say "*&%$#" instead of the real thing, just as Sarge does in the *Beetle Bailey* comic strip, when we're speaking about tiny jumpers and, of course, DIN connectors.

Really, though, I'm exaggerating—a little. If your eyes are young and bright, these jumpers won't present an obstacle to getting your RIGblaster up and running quickly. If you're on the "dark side" of middle age like me, you might want to borrow some of those binocular magnifiers that fit on your head like a card dealer's visor. The jumper wires aren't so bad, but the connecting pins on the RIGblaster's PC board are teeny tiny and closely spaced. Then there are the jumper plugs. These are so small, I missed them altogether initially. Each one is about the size of a fat grain of rice. If you're at all ham-fisted (no pun intended here, friends), you might want to let your wife or one of the kids install these. Better yet, use a pair of tweezers from the wife's manicure or makeup kit. By the way, for maximum effect, leave the borrowed tweezers somewhere in the shack—preferably where they're not easily found—after you're done using them.

The manual has individual diagrams and a list of pin connections for each radio, so it was pretty easy to determine which jumper wire or plug went on what set of teeny tiny pins. Thanks to West Mountain Radio for the clear directions in this regard. The only possible improvement might be to render the diagrams in color so it would be easier to trace the wires, making things less error-prone. On the other hand, I managed to do it (eventually), and a color manual probably would mean West Mountain Radio would have to jack up the price of the RIGblaster accordingly.

Making the other necessary connections is a breeze. You hook up your stereo audio output cable from your sound card's output jack to the **AUDIO IN** jack on the back of the RIGblaster. (There's an **AUDIO OUT** jack in parallel with the input jack, so you can listen to this audio with a pair of earphones if you wish.) You connect the RJ45 end of the mike cable to the box and the other end to your mike jack and, if needed, plug your microphone into the jack on the front panel of the RIGblaster. Finally, you plug in the power connector from the wall wart or other 12 V dc power source and you're almost ready to rock 'n' roll.

By the way, West Mountain Radio urges you to unplug the ac power to your computer and to your radio and the RIGblaster when you're setting things up. This is wise advice to avoid damaging your serial port by connecting units while they're powered up.

RIGblasting!

Once all the jumpers are in place, connections made and everything's checked over carefully, you can power things up and check it out with some real software. But first, you'll want to take all the connections back off the RIGblaster and install the cover with the four supplied self-threading screws, because we've been watching you and we know you left that cover in the box! Seriously, before actually using the RIGblaster, you should install the cover once you've determined all the jumpers are in place. This will help provide any necessary shielding to keep RF out of where it doesn't belong. Running the unit with the cover off also can lead to some ac hum pickup on the audio lines. I know, because I tried leaving the cover off too while testing the unit.

While the manufacturer has provided some sample software, we'd advise using a program you've already got installed and configured on your PC, if possible. In this case, we had *DigiPan* on the machine for PSK31, and we knew beforehand that it was working fine. (This PSK31 program, and several others, is included on the CD.) Knowing this helps to narrow down the search for solutions if problems arise.

One front-panel switch on the RIGblaster lets you select right or left-channel audio or both from your sound card. I left the unit in the "both" setting, but some applications let you process receive signals on one channel while transmitting. The **AUTO/VOX** switch determines how the RIGblaster will control your transceiver. In the **VOX** position, the computer's audio should trip the transceiver's VOX circuit—assuming it's properly set up. In the **AUTO** position, the software controls the PTT. Pushing the microphone's PTT button in either mode will put your transceiver into transmit mode, overriding the box setting.

The **DIGITAL** LED indicator tells when sound card audio is connected in either the VOX or auto mode, and it shows PTT con-

trol in the auto mode. This LED goes out when you press the PTT button on the mike. The **PWR** LED simply indicates the unit has 12 V dc applied to the **POWER** jack. There's no on/off switch.

Before getting down to serious operating, you have to get levels adjusted so that everything is hunky dory. The manual spends a full page on the subject of setting audio levels—from your computer's sound card to your rig and vice versa. The bottom line is to adjust the audio to the transceiver so that it does not overdrive the rig. We were able to check this out by running the software in transmit mode while the transceiver was connected to a dummy load (and at relatively low power). Likewise, especially if you're coming off a speaker jack and going into a mike-level sound card input, you need to take care to keep the level down on that side of things.

The RIGblaster has a screwdriver-type **LEVEL ADJ** control on the rear apron. Adjusting this control in combination with software level controls on your computer and your transceiver's mike gain control should yield an acceptable gain level with most PC sound cards. A good idea is to listen to the transceiver's audio monitor—if it has one—to determine that the audio from your PC is clean and distortion and hum-free. This is how I determined there was hum in the audio with the cover removed. It's also how I resolved a pesky feedback problem I was seeing. Using the software-based sound card controls, I was able to mute the sound card input while in the transmit mode. It had been set to feed through to the output.

The RIGblaster opens up a world of digital operating pleasure for you without having to heat up the soldering iron—or even try to find it. While I used it primarily to work PSK31 and watch some SSTV transmissions, with the appropriate software installed on your PC, you can dive into RTTY, computerized Morse, PACTOR, AMTOR, packet and much more. Since I own two Kenwood transceivers (one in the house, one in the car), I could use the RIGblaster in either "shack" by simply switching connectors from one site to the other.

I was especially pleased that RIGblaster let me enjoy my first PSK31 QSO ever. While I realize that I'm one of only three or four hams in the US who has not jumped onto this mode with both feet, because of RIGblaster I intend to no longer be a stranger on the PSK31 frequencies.

Price: $89.95.

Manufacturer: West Mountain Radio, 18 Sheehan Ave, Norwalk, CT 06854; 203-853-8080; fax 203-299-0232; **k1uhf@ westmountainradio.com**; **http://www. westmountainradio.com**. ▫ᴏ̲ˢᵀ̲
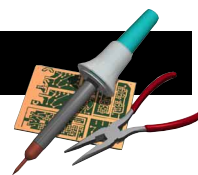
Portable Power Station

Even though it weighs only 7 lbs, the model 752 Portable Power Station packs a substantial punch. A sealed 12-V 7-Ah lead-acid battery makes up most of the weight. Charge the Portable Power Station's battery from the supplied ac unit (about 8 hours), or charge it from your car (about 3 hours, while driving) and you're good to go. The Portable Power Station can potentially power a QRP transceiver or an H-T continuously for at least 24 hours, potentially even for weeks, depending on how often you transmit.

Appearances are Deceiving

The Portable Power Station is deceptively small at just $7^1/_4 \times 4^1/_2 \times 8$ inches. It looks like a black lunch bucket with a dc voltmeter attached. There are two slide switches: one to select 3, 6 or 9 V for the $^1/_8$-inch in-line jack on the side of the unit, the other a power on/off switch. Below the switches are two cigarette-lighter jacks: one acting as a port for charging the Portable Power Station from your car or other 12-V source (a charging cable is supplied), and another functioning as a 12-V *output*.

A red LED above the master switch simply indicates whether the Power Station is on or off. Another red LED labeled **CHARGER** blinks or dims as the ac charger cycles on or off (it extinguishes when the battery is completely charged). As the battery is discharged, you'll notice that the dc voltmeter indicates a gradual drop in voltage. The **CHARGER** LED begins blinking when the Power Station is in need of a recharge. In my tests the LED began blinking when the voltage dropped below 12 V.

On the rear panel you find a door covering a small compartment. In this compartment are two 12-V screw bolts that serve as 12-V terminals. It's worth noting that these terminals are always hot, even when the front-panel master switch is in the **OFF** position. You can tap into the terminals using alligator clips or whatever, but don't attempt to loosen the nuts at the bases. These are *not* attachment nuts. If you wish to use nuts to attach your power leads to these terminals, you'll have to find your own. (They must be metric.)

In the rear compartment is a 10-A fuse. Despite the fuse location, it does not protect these terminals. The fuse protects only the front panel cigarette lighter jack and the side panel low-voltage jack. An independent fuse in the power line is a good idea if you intend to use the rear terminals.

On the Air

I spent a long Independence Day 2000 weekend putting the Portable Power Station to the test. In fact, I used it as the only power source for my ICOM IC-706MkII transceiver during that time. (Of course, I had the 706's output cranked down substantially to stay within the Power Station's current limit when transmitting.)

The Portable Power Station was as solid as a proverbial rock. I enjoyed quite a few PSK31, RTTY and CW contacts while keeping an eye on the dc voltmeter, but it barely budged with each transmission. According to the reports I received, my battery-powered signal was perfectly clean.

I deliberately left my radio in the receive mode for 5 hours just to see how long it would take to deplete the Portable Power Station. An IC-706 draws about 1.5 A continuously while receiving, so in terms of your typical QRP rig, this would be roughly the equivalent of a continuous key-down transmission. After 5 hours the voltage finally slipped below 12 V and the **CHARGER** LED began blinking. This corresponded pretty closely to the 7 Ah rating of the Power Station.

Front view of the Portable Power Station along with the mobile charging cable and home charger unit.

Rear view showing the 12-V terminals and 10-A fuse.

A Reliable Companion

The Portable Power Station would make an ideal power source for emergency operations and public service events. The fact that you can charge the Power Station from a running automobile in only 3 hours means that the unit can theoretically be used for days in areas where primary ac power has been lost. It makes sense to simply keep a Portable Power Station fully charged and ready whenever the need arises.

Beyond its serious applications, the Portable Power Station is perfect for casual portable operating. You can take it on trips, camping, hiking expeditions or wherever you'd care to operate. And when you aren't using it on the air, the Portable Power Station can power a TV, CD player, computer…

Manufacturer: The Ham Contact, PO Box 4025, Westminster, CA 92684; 714-901-0573 (information); 800-933-4264 (orders only); **http://www.hamcontact.com/**. *$49.94 plus $10.50 shipping and handling.*

Steve Ford, WB8IMY ♦ *QST* Managing Editor