



Product Review and Short Takes from *QST* Magazine

February 2009

Product Reviews:

TelePost LP-PAN Software Defined IQ Panadapter

Short Takes:

Weather Direct

PRODUCT REVIEW

TelePost LP-PAN Software Defined IQ Panadapter

Reviewed by Joel R. Hallas, W1ZR
Technical Editor, QST

The Elecraft K3/100, reviewed in January 2009 *QST*, includes the performance and most features hams think a modern top-shelf transceiver needs — except, perhaps, for a spectrum display.¹ Fortunately the K3, with the optional KXV3 transverter module, provides a wideband 8.215 MHz IF output suitable for panadapter or spectrum display use.

Larry Phipps, N8LP, principal of TelePost, has developed the LP-PAN, a dedicated software defined radio (SDR) receiver centered at 8.215 MHz. The LP-PAN is designed to plug into the K3 IF OUTPUT port and put I and Q quadrature audio signals into your PC sound system. This information is required to generate a panoramic display of the spectrum seen by the K3. The small LP-PAN box need not be accessed during operation, so it can be automatically powered on and off by the K3 AUX 12V connector and located out of the way.

Although all of our testing was done with a K3, TelePost can configure the LP-PAN to work with some Kenwood (8.83 MHz IF) and Ten-Tec (9 MHz IF) radios. See the TelePost Web site for more information about supported radios.

¹J. Hallas, W1ZR, "Elecraft K3/100 HF/6 Meter Transceiver," Product Review, *QST*, Jan 2009, pp 43-49. *QST* Product Reviews are available on the Web at www.arrl.org/members-only/prodrev/.



LP-PAN and PowerSDR-IF

The LP-PAN runs on a freely available version of *PowerSDR*, the open source software designed to drive the FlexRadio series of SDRs. This particular version (called *PowerSDR-IF*) was adapted by Scott McClements, WU2X, and is available without cost from the TelePost Web site. It's especially designed for use with software defined receivers used as IF processors. The software exchanges data with the K3 serial

port through an intermediate program, either *LP-Bridge* (described below) or the popular *Ham Radio Deluxe*.² Either intermediate program needs to be running and exchanging data with the K3 for *PowerSDR* to know what frequency you are on. The intermediate program can run in the background and does not need to appear on the display, leaving room for other software to be displayed concurrently.

The TelePost Web site indicates that LP-PAN can be operated using other SDR software such as *Rocky*, *SpectraVue*, *Spectrum Lab* or other similar systems. We only tested the LP-PAN using *PowerSDR*.

Bottom Line

The LP-PAN and associated software add a high performance panadapter and interactive computer control to the Elecraft K3 at a reasonable cost for those with a radio connected PC and quality sound interface.

A Panadapter and More

The *PowerSDR* display system offers a

²Available at no cost from Simon Brown, HB9DRV, its developer, at www.ham-radio-deluxe.com.



Figure 1 — Wideband panoramic view of the CW portion of 20 meters during the 2008 ARRL CW Sweepstakes.



Figure 2 — Lower 40 kHz of 20 meters as a waterfall display.

number of display choices including, as you would expect, a classic panoramic display as shown in Figure 1. In addition, you can click to change to a colorful *waterfall* display as shown in Figure 2, or a number of other choices including an oscilloscope display. The width of the display can extend to 192 kHz, depending on sound interface sample rate — plenty wide enough for most band segments of interest. With most built-in PC sound systems, the performance is such that they only can sample fast enough to get to 48 kHz width. That width is okay for most operations, but built-in sound systems typically also have reduced dynamic range compared with high performance aftermarket devices.

The display width can be quickly reduced to a narrower region of interest using the ZOOM slider just below the display as shown in Figure 3. If reduced below the maximum, the PAN slider can be used to slide the display back and forth within the maximum display width.

In addition to its very capable panadapter display features, the LP-PAN system goes a step further with interactive control of the K3. Using either swept frequency display, the center frequency will follow your radio tuning, as you would expect. It can work the other way, too. You can change bands or modes with a click of the appropriate on-screen button. You also can move within a band by dragging the display scale wherever you want it. If you see a signal of interest, right-click the mouse to get a cursor, place it on the desired signal on the display, and one click tunes in that signal on your radio — pretty nifty.

There are a few mental adjustments required. If you are used to looking at the slow scan and high persistence display of the band scan functions in many radios, this *real time* display looks a bit different. In addition, the *PowerSDR* display system has many options and controls designed for use with the FlexRadio SDRs that are not applicable to IF panadapter use. Fortunately, most can be set up per Larry's instructions and then forgotten. I could imagine, one day, a dedicated version just for the LP-PAN and K3 that was a bit more specific. One feature that would be particularly useful is the ability to shrink the *PowerSDR* display while running other applications. In the current version you can only crop it, which offers some relief from the extra controls and allows for other applications to take up more of the screen.

The Sound System

As with many sound card applications, the performance of the LP-PAN and *PowerSDR* is drastically impacted by the performance of the computer sound system. While I was waiting to receive a sound inter-

Table 1
TelePost LP-PAN serial number 0206

Manufacturer's Specifications			Measured in ARRL Lab*		
Noise floor: -130 dBm with K3 preamp on.			-126 dBm preamp on, -115 dBm preamp off.		
Maximum input: +5 dBm with K3 attenuator on.			+2 dBm.		
Dynamic range: 115 dB, from noise floor to point of clipping.			108 dB preamp on, 109 dB preamp off.		
Image rejection: 60 dB typical with <i>PowerSDR</i> .			58 dB.		
Third order IMD: IP3 +23 dBm					
ARRL Lab Two-Tone IMD Testing					
<i>Band/Pream</i>	<i>Spacing</i>	<i>Input Level</i>	<i>Measured IMD Level</i>	<i>Measured IMD DR</i>	<i>Calculated IP3</i>
14 MHz/Off	20 kHz	-21 dBm	-115 dBm	94 dB	+26 dBm
		-15 dBm	-97 dBm		+26 dBm
14 MHz/On	20 kHz	-32 dBm	-126 dBm	94 dB	+15 dBm
		-27 dBm	-97 dBm		+16 dBm
14 MHz/Off	5 kHz	-32 dBm	-115 dBm	83 dB	+10 dBm
		-15 dBm	-97 dBm		+26 dBm
14 MHz/Off	2 kHz	-38 dBm	-115 dBm	77 dB	0 dBm
		-26 dBm	-97 dBm		+10 dBm
Total harmonic distortion (THD): ~0.005%.			As specified.		
Local oscillator leakage: -110 dBm to -140 dBm at 8215 kHz.			< -120 dBm.		
Output level: +2 dBV (1.27 V _{RMS} , 3.6 V _{PP}) nominal at maximum RF input, 600 Ω balanced or unbalanced.			As specified.		
Power requirements: 11-16 V dc at 55 mA			50 mA at 13.8 V dc.		
Price: LP-PAN kit with installed SMD components and enclosure, \$175; fully assembled and tested, \$225.					

*Measurements are a composite of K3, LP-PAN and sound card performance. Performance of an LP-PAN by itself would be higher. All measurements were made using *PowerSDR-IF* software and the TelePost recommended Creative Laboratories E-MU 0202 USB 2.0 external audio interface.

face from Larry's recommended list, I used the default on-board sound connections on my old PC. They did function, and I had a usable display, but my maximum display width was 48 kHz with limited dynamic range. In addition, I could not get proper image rejection with the old PC — a snap on a newer laptop loaned by my wife Nancy, WINCY. The LP-PAN was still useful even with these limitations, and if I had to decide whether to get the LP-PAN first, or upgrade the sound card first, I'd go for the LP-PAN in a heartbeat and give it a try.

The TelePost Web site offers a list of suggested sound interfaces that will support full LP-PAN performance. As Larry notes, there are others that may work as well, so if you have an advanced sound card give it a try. If not, you should probably plan on upgrading at some point. We purchased the Creative Labs E-MU 0202 USB 2.0 Audio Interface, one on Larry's list, for about \$100. It is a USB connected external device, designed for USB-2 operation. For some reason, even though it showed improved dynamic range on my old PC with a USB-1 interface, I could not obtain proper image rejection

across the band. It worked fine on Nancy's USB-2 equipped laptop, as well as on the ARRL Lab's USB-2 desktop. I tried one of the recommended internal PCI sound cards, and that solved the problem with my old (Pentium III, 850 MHz) PC. An additional benefit of the internal sound interface is that they don't have manual gain controls that, on the E-MU can be easily bumped and throw off the calibration and image rejection.

For a thorough discussion of PC sound system performance issues, see the *QST* Product Review on the topic.³

A Problem — and a Solution

The K3 is designed to interface with your PC via a serial port. An optional USB-to-serial converter is also available from Elecraft or electronic retailers. Serial connections are designed to exchange data between the radio and a single application on the PC. If you want to run your contest logger and a PC based panadapter, and have the display

³J. Taylor, K1RFD, "Computer Sound Cards for Amateur Radio," Product Review, *QST*, May 2007, pp 63-70.



Figure 3 — Display of Figure 1 narrowed to show lower 40 kHz of the band.

keep track of both, you will have an address conflict. Generally the PC will throw up its many hands and either crash or not allow one of the applications to start. Larry has developed a software solution, available on the TelePost Web site, that cleverly works around this — *LP Bridge*.

LP Bridge acts like a packet router for serial data. In addition to the panadapter function, up to three virtual serial communication ports can be assigned to different programs running on your PC. *LP Bridge* will route the data from the single K3 port independently to each application — very clever!

One thing to keep in mind is that each added application increases the PC processing load. I didn't have a major problem, other than noted above, with my elderly 850 MHz Pentium III PC running the panadapter and N1MM logging software or *Ham Radio Deluxe*. During a logging operation, I did notice that the panadapter stuttered a bit on its updates. This is not a major concern and it caught up in less than a second, but if I planned to run all four possible applications at once I'd consider a faster PC. Figure 4 shows *PowerSDR* and the N1MM contest logging program running during the 2008 ARRL CW Sweepstakes contest. There is lots of activity on the band and the logging program is playing well with the panadapter such that both act as if the other program weren't there — at least while using WINCY's more modern laptop PC.

Hooking it Up

The LP-PAN has a BNC connector for the IF input connection, so you will need a BNC-to-BNC jumper cable to connect with the K3 IF output. That connector is on the K3's optional KXV3 interface, so you need to get that first (\$100 from Elecraft). In addition, the LP-PAN has two audio outputs, one each 1/8 inch jack for the I and Q channels. Those, and the coaxial power connector for a 12 V dc supply, make up the back panel.

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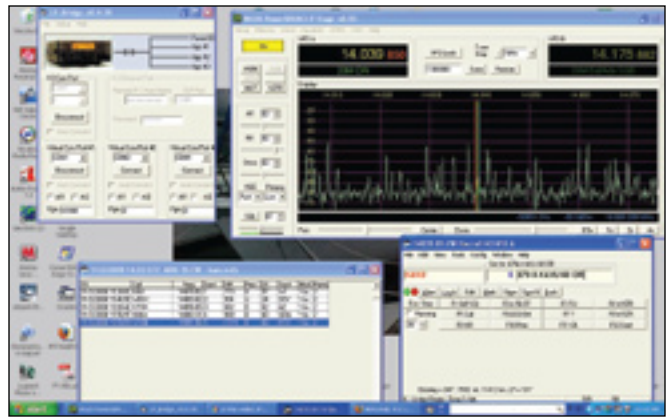


Figure 4 — Demonstration of *LP-Bridge* providing simultaneous serial access to both *PowerSDR* and the N1MM contest logging program. Two other applications can also share the data from the K3 serial port without interfering with each other.

Unfortunately, many sound cards have a single 1/8 inch stereo input, so I needed to fabricate a dual mono-to-stereo adapter to connect to the cable going to my audio card (that took \$7 of RadioShack parts). Note that the usual "Y adapter" that provides two plugs and a single socket has both sides in parallel and needs to be modified to have one channel connected to each side of the jack.

The E-MU 0202 has separate right and left line-level inputs using 1/4 inch phone jacks, so I needed two more adapters to step up from my 1/8 inch cable plugs. If you have the I and Q backward (just switch the plugs), when you make the image rejection adjustment the real signal will disappear instead of the image — been there, done that!

A few caveats are worth mentioning. To operate properly, a stereo LINE or MIC input is required on your PC sound system. Otherwise there will be no image rejection and each signal will appear on both sides of the center.

While Larry's clever *LP-Bridge*, described above, solves the problem of running multiple applications that want connectivity to the K3 serial port, there is no provision for sharing the PC sound inputs. If you want to run sound card digital modes or signal processing software, you will need to run two sound interfaces to do them at the same time. One good thing is that most sound card processes don't require the sample rate or dynamic range that you will want for optimum panadapter operation, so if you spring for a new one for LP-PAN use, the chances are you can use the old one for your digital modes — most PCs can support multiple sound devices. Some of Larry's recommended sound interface devices provide for two audio streams, another possible solution.

Performance

Once you have the PC, sound system and

software set up, you will have a very proficient system, as shown in Table 1. These measurements were taken using the usual ARRL Lab Product Review testing suite for receivers and includes the K3, not just the LP-PAN. I didn't use the audio output at my station. Note that the dynamic performance, while not quite up to the top performing (and much more expensive) software defined radio systems, is better than many current mid-priced transceivers. Of course the LP-PAN performance takes advantage of the K3's front end up to, but not including, the roofing filters that contribute significantly to the K3's excellent dynamic range.

The minimum discernable signal (MDS) *is*, however, comparable with that of the K3, so a signal that you can *hear* with the K3 is likely *visible* on the LP-PAN — just what you'd want, as long as your sound system has the required dynamic range. In fact, if you want to be sure to see everything, Larry offers instructions for a simple modification to the K3 IF buffer amplifier that increases the LP-PAN MDS another 6 to 8 dB. We elected not to modify our K3, but many have done so successfully.

Not to make excuses, but while this is indeed an SDR, the performance required to be a good panadapter is nowhere near that required by a primary receiver. Although you can listen to the audio output of the LP-PAN through the sound system, and some use it in place of a sub-receiver, for synchronous AM reception or to make use of the SDR's noise blanker. With the wide-as-a-barn-door input bandwidth needed for panadapter use, you will not be surprised to see the dynamic performance is not up to a receiver such as the K3 with its narrow roofing filters. If you see a cluster of strong signals on the PC display, you will likely want to use the super sharp K3 to sort them out, not the panadapter.

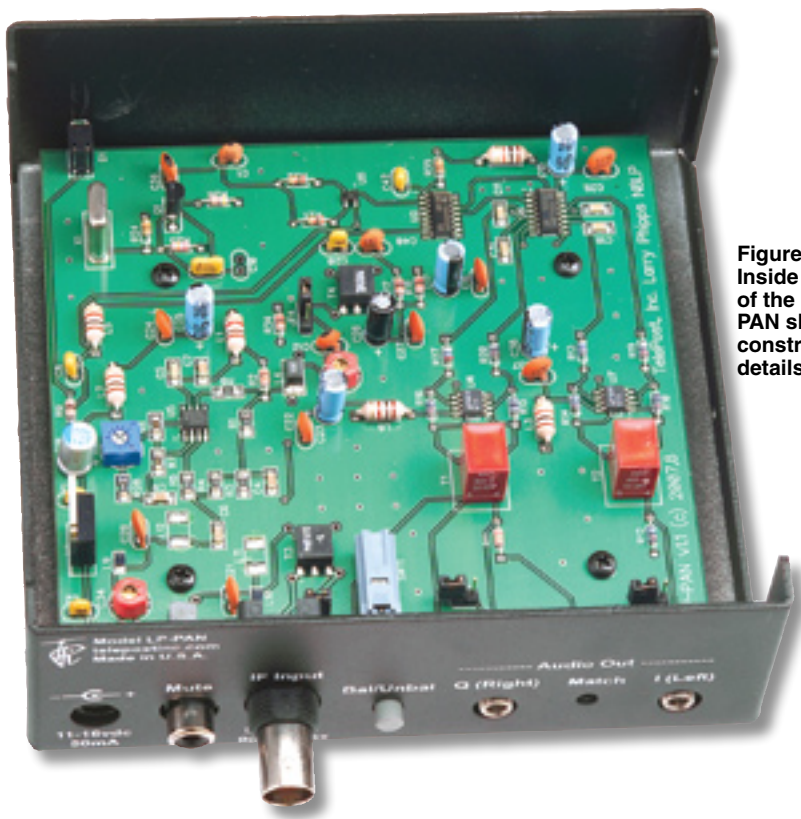


Figure 5 — Inside view of the LP-PAN showing construction details.

Yet to Come

As with all SDRs, the LP-PAN can take on a new flavor each time a new flavor of *IF PowerSDR* software is made available. A version in test as we speak includes an additional display indication showing the spectrum around the K3's second receiver frequency — if on the same band.

Documentation

Larry has provided a very good documentation suite — both for the construction of his kit version and for the setup and operation of the assembled unit. You can review them on the Web site and decide if you want to build the kit or buy an assembled LP-PAN. Note that while the LP-PAN includes some surface mount components, the kit version has them all preinstalled, so just standard parts need be assembled. See Figure 5 for an inside view of the unit. The TelePost Web site also provides direct links to download all the required software and a list of suggested sound interfaces.

Manufacturer: TelePost Inc, 49100 Pine Hill Dr, Plymouth, MI 48170; tel 734-455-3716; www.telepostinc.com.

DV Dongle D-STAR Adapter

Reviewed by Gary Pearce, KN4AQ
ARRL Contributing Author

Some hams just can't get enough D-STAR.

Do I have to say "D-STAR, the digital voice and data system for VHF/UHF"? At this point I probably do. D-STAR is growing fast, but it's not everywhere. And I'm pretty sure it's still a niche interest, even in the cities that have a D-STAR repeater or two.

In that niche are some pretty enthusiastic hams. Hams who want more D-STAR than they can get from their local repeater. Or maybe they don't even have a local repeater. Or if they do, maybe it doesn't have a gateway that opens the repeater up to worldwide connections. So if you're going a little nuts for D-STAR, but can't get enough over the air, what do you do?

Enter the DV Dongle, created by Robin Cutshaw, AA4RC, and Moe Wheatley, AE4JY.

D-STAR From Your Computer

The DV Dongle is a blue slab of plastic, smaller than a deck of cards that plugs into your computer's USB 2.0 port (Figure 6). Inside is an AMBE 2000 vocoder (voice encoder) that converts your voice into a D-STAR compatible data stream that lets you talk through D-STAR repeaters world-

wide via the Internet — without using a radio. You'll need a modern computer, 2 GHz or faster with *Windows*, *Linux* or *Mac OS*, and a high speed Internet connection. The Dongle is powered from the USB connection so you don't need another wall wart. More on the software later.

The obvious comparison is to EchoLink, the software program and networking system that links analog repeaters together via the Internet using VoIP (Voice over Internet Protocol). EchoLink also lets individual hams connect to repeaters, and to each other, using their computers and the Internet. The big difference is that EchoLink requires no new

hardware on the user end, assuming you already have a computer with a sound card and headset or a speaker and mic. The DV Dongle will cost you about \$200. It's selling well at that price. Some hams just can't get enough D-STAR. When *QST's* Product Review editor offered to send me one, I said I already had one.

There are no controls, knobs, buttons or switches on the Dongle itself. All operation is via the *DVTool* software. There

are some status lights in the box, so you might want to position it where you can see it.

Dongle operation has a lot in common with EchoLink.

DVTool gives you

a list of available repeaters. Select one, connect to it, and you can monitor activity. To transmit, use your mouse to click the on-screen PTT button. The stations you hear sound D-STARish. They have that slightly "robotic" sound of carefully encoded low data rate audio. To hams listening on their radios, you sound like just another station, although the variety of cheap mics for computers and your ability to (mal)adjust



Bottom Line

The DV Dongle allows licensed and registered radio amateurs to access and participate in the D-STAR digital voice network over the Internet (without a radio). It doesn't yet offer all of the functions of a D-STAR capable radio, but it does allow you to monitor and talk through distant D-STAR repeaters.

the audio level give you the opportunity to have poor audio. On the other hand, I've gotten compliments and requests to know what mic I'm using on my computer. (It's a Telex M-60. On my laptop, pictured here, I use a USB headset.)

The *DVTool* interface shown in Figure 7 emulates the functions of a D-STAR radio to some extent, though it doesn't try to look like a radio control panel. While you are monitoring, *DVTool* shows the call sign of the station you're listening to, along with the call signs that the other station has programmed in the YOUR, RPT1 and RPT2 fields. (If you suddenly find that I've shifted from English to Klingon and nothing is making sense, go back and read my article "Operating D-STAR."⁴)

Recent beta versions of the *Tool* added the ability to send and receive the additional text that users can program into their radios for display by those receiving them, and a history list of stations you've monitored (see Figure 8). To other users, I appear as KN4AQ/DNGL, then GARY - RALEIGH. A long wish list of new features is in the works for future software updates. Robin's goal is to have the Dongle imitate everything a radio can do on D-STAR, and do things a radio can't do.

There are some stations you won't hear, and sometimes you'll hear what sounds like a one-sided conversation. Dongle users can only hear stations who have their repeater's Gateway programmed into their RPT2 field (more Klingon... sorry). For that reason, the default recommendation for radio users is to *always* have the Gateway in RPT2. ICOM's manuals tell you to have NOT USED programmed there if you're not using the Gateway. And there may be some repeaters you can't reach, even though they have a Gateway. The repeater's administrator has to turn that function on. None of the Japanese repeaters can be reached with a Dongle.

Setting it Up

Getting the DV Dongle hardware and *DVTool* software going is generally simple. The instructions, along with the latest release software, are online at www.dvdongle.com. *DVTool* is a *Java* application that runs on *Windows XP* and *Vista*, *Mac OS X Leopard*, and "many flavors of *Linux*." I'm running it on *XP*.

The Dongle installs like most USB devices, with a "found new hardware" dialog series in *Windows* that runs the first time

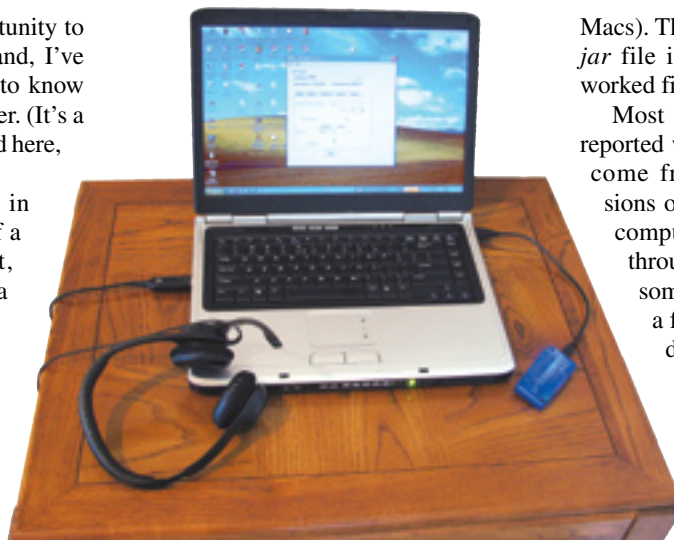


Figure 6 — The DV Dongle (lower right) and laptop computer with *DVTool* software and headset, connected to the D-STAR network over a high speed Internet connection.

you plug it in. The *DVTool* software doesn't "install" the way most programs do. After downloading and unzipping it, the *Tool* just sits in a folder, waiting to be launched. The file you launch is named *DVTool.jar*. A "dot jar" file is a *Java* archive file — many programs stuffed in one box. This was the first time I'd encountered such a file.

The instructions said to put the downloaded folder on my desktop. If I did that, I'd never find it again, so I put it with the rest of my applications in C:\Programs\DVTool (file placement seems to be more critical for

Macs). Then I put a shortcut to the *DVTool.jar* file in my START menu. Everything worked fine.

Most of the complications hams have reported while getting the Dongle to work come from not having the latest versions of *Java* and some drivers on their computer. The instructions guide you through updating them. There can be some port problems if you're inside a firewall. I had no such issues, and did nothing special to make it work through my D-Link router. And it's worked for me at several hotels, but not at some others.

If you have trouble, and a few Dongle users have, there are tips on www.dvdongle.com, and there's a Yahoo group (DVDongle at groups.yahoo.com) for discussion and help.

You do have to adjust your "transmit" audio level using your computer's audio software. There's no level meter in *DVTool*. Instead, you use the *Tool* to record yourself and listen to the playback. If the playback matches the level of the stations you're "receiving," you'll sound good on the repeaters. When you're connected to a repeater that's idle, you'll hear a soft hiss (called "comfort noise"), almost inaudible at normal listening levels. That's added to let you know the connection is working.

What Can I Do with the DV Dongle?

Even if you do have a radio and a local D-STAR repeater with a Gateway, there are some advantages to using a Dongle. You can monitor and talk through distant D-STAR repeaters without tying up the local machine. D-STAR now has a bunch of "reflec-

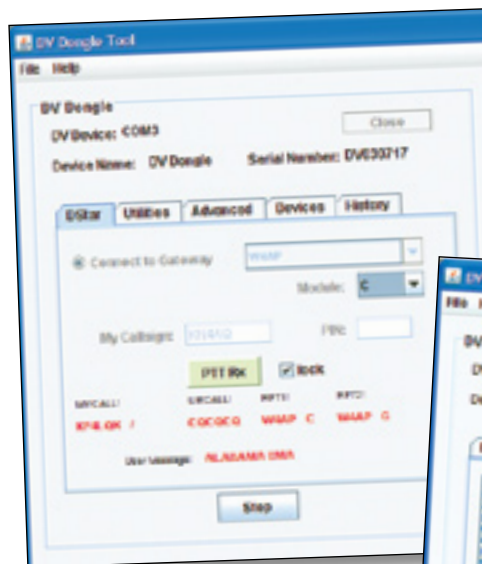


Figure 7— Here's the *DVTool* software main operating tab. I'm connected to the W4AP gateway.

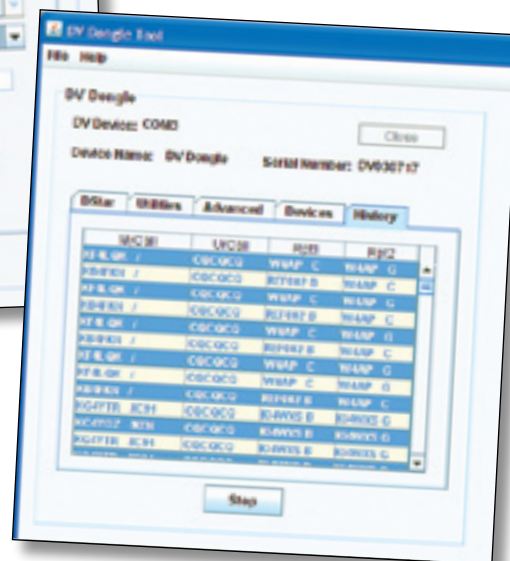


Figure 8 — Another *DVTool* tab displays the history of stations heard.

⁴G. Pearce, KN4AQ, "Operating D-STAR," *QST*, Sep 2007, pp 30-33.

tors” — high-bandwidth servers that tie repeaters together in a conference-call arrangement — and with a Dongle, you can tap directly into the reflectors. And it’s easier to bounce from one repeater or reflector to another using a Dongle than it is using a radio. Doing that over the air would probably irritate others listening to the repeater. You can get a lot more D-STAR in with a Dongle than you can with a radio!

Since most Dongle users are sitting at their computer with an Internet connection, it’s helpful to look at www.dstarusers.org. The Web site presents a real-time look at who’s using what on every repeater on the network (except the Japanese repeaters — their activity is still not reported).

Missing so far are the ability to monitor and use the 1200 bit/s data stream that rides along with D-STAR digital voice transmis-

sions (although the manufacturer indicates that will be added by presstime), and there’s no provision for connection to the 128 kbit/s data available on the 1200 MHz digital data side of D-STAR.

The “selective calling” features of D-STAR radios aren’t there yet, either. For example, you don’t have a YOUR field to enter a call sign into, so you can’t call stations who are using call sign squelch to keep their radios silent. There’s no support for BREAK-IN, EMERGENCY modes or for GPS, but most of that is coming. And some stuff that radios can’t do, such as the ability to monitor multiple repeaters or reflectors at the same time. As Robin wrote to me, “The exciting thing is that we are mostly limited by our imaginations. With the current generation radio and Dongle hardware, it’s just a matter of thinking of something new and coding for it.”

Registration Required

One final note — before you can use a DV Dongle to transmit, you must be registered on the D-STAR Gateway system. Registration is done over the Web, by the administrator of your local D-STAR repeater. You can find them at www.dstarusers.org. If you have a radio and already use the Gateways, your call sign is already registered, and that call sign will work with the Dongle, too. If the Dongle is going to be your only access to D-STAR, try contacting the administrator of the nearest repeater in your state or region. Of course, you’ll need a ham license and call sign to be registered.

The DV Dongle is available from Amateur Radio dealers. For more information, see www.dvdongle.com. Price: \$199.95.

Three More Battery Powered Soldering Tools

Reviewed by Geoff Haines, N1GY
Technical Coordinator, ARRL West
Central Florida Section

After my 2007 review of battery powered soldering irons, readers suggested taking a look at some additional tools.⁵ This time I tested the Hakko FX-901 powered by four AA cells (one more battery than any of the previously tested tools); the Solder-It SolderPro 35, which can be configured as a soldering tool or a flashlight; and the rechargeable Wahl Iso-Tip Power Pro. The Hakko and Iso-Tip tools are available from vendors catering to electronics hobbyists and professionals (prices will vary), while the Solder-It tool is available directly from the manufacturer’s Web site.

HAKKO FX-901

The Hakko FX-901 (Figure 9) is powered by four standard AA size alkaline cells. It’s

⁵G. Haines, N1GY, “A Look at Battery Powered Soldering Tools,” Product Review, *QST*, Jun 2007, pp 69-71.

Bottom Line

All three of the reviewed tools do a good job with light duty soldering jobs such as PC boards, component leads and thin gauge wire. The Iso-Pro, stored in its charging stand, is always ready to go with a full charge.



Figure 9
— The Hakko FX-901. The yellow part of the handle is a detachable battery holder.

similar to the units reviewed previously that used two or three AA cells. The FX-901 can also be powered from four rechargeable AA cells (user supplied charger and batteries), even though the total battery voltage may be a bit lower. Soldering time is about 1 hour with a fresh set of alkaline cells. The package included the tool, a conical tip and protective cap.

Changing batteries is quite easy since the battery compartment easily slides out of the tool handle once the latch is opened. The tool has no heat adjustment and only one control, an ON/OFF slide switch. Just in front of the switch is a small red LED that illuminates when the switch is turned on.

Replacement conical and chisel tips are available. The instructions, printed on the back of the blister packaging, are simple and brief. Price: \$40.95. For more information, see www.hakko.com.

SOLDER-IT SOLDERPRO 35

The Solder-It company is best known for its extensive line of butane powered soldering tools, enthusiastically demonstrated by company principal Fred Doob, K8PP, at the annual Dayton Hamvention. Fred offers other tools as well.

The SolderPro 35 (Figure 10) is powered by three standard AA size alkaline cells. Changing batteries is easy; a latched compartment door at the back of the unit opens easily. Like the Hakko unit, there’s no heat adjustment. You must slide the ON/OFF switch to ON and press and hold the red pushbutton before it will heat up.

A small red LED just forward of the switch lights up



Figure 10 — The SolderPro 35’s soldering tip can be replaced with a flashlight bulb and lens.

From February 2009 QST © ARRL

when the iron is activated. Unlike the other units we've tested, the Solderpro 35 also includes a flashlight function. To use the flashlight, unscrew the soldering tip (which turns out to have a flashlight bulb-like screw base). Then screw in the supplied light bulb and slide on the flashlight lens. As a flashlight, it appears to be bright enough, although no scientific testing was done in this mode.

The blister packaging had extensive operating instructions, specifications and safety information on the back and inside. The package included the tool, a conical tip and protective cap in addition to the flashlight components. Part numbers are listed for three different soldering tips.

The SolderPro 35 was the only one of the three to include specifications on the packaging. Soldering time is specified to be about 50 minutes of continuous use with a fresh set of alkaline cells, or 160 solder joints with intermittent use. According to the specifications the unit is equivalent to a 9 W iron with a maximum temperature of 900°F. Warm-up time is listed as 12 seconds to get the iron to 385°F. This appeared to be in line with my experience using this unit. Price: \$39.95. For more information, see www.solder-it.com.

WAHL ISO-TIP POWER PRO

The Wahl Iso-Tip Power Pro cordless soldering iron (Figure 11) is powered by rechargeable NiCd batteries that are semi-sealed within the body of the tool. Recharging is done through a supplied stand into which the tool fits, reminding me of a cordless razor. The charging stand includes an LED that changes color to indicate the level of charge. A complete charge takes about 4 hours. Upon completion, the circuit enters a float charge mode to keep the battery topped off safely. According to the manufacturer, the iron can be left in the charger indefinitely without harm.

Figure 11 — The Wahl Iso-Tip Power Pro and its charging stand.



The Power Pro uses replaceable tips that plug into the nose of the device without the need for tools. Alternatively, the instructions indicate that the tip can be semi-permanently attached by a slight modification, easily done by the user. The unit we evaluated came with a conical tip and a chisel tip.

To use the tool, press the red button to power the device, and keep it pressed as long as you are soldering. As soon as the button is released, the unit shuts off. A light provides good working illumination around the area of the tip when the unit is on. An instruction pamphlet is included inside the packaging. Price: \$71.95. For more information, see www.iso-tip.com.

Using the Tools

So, how do they compare in performance? All three of these tools are suited to light duty soldering jobs on thin conductors. They all had trouble with joining together two pieces of 10 gauge wire, but all were able to make acceptable solder joints on 16 gauge wire. They also had no trouble soldering thick or thin component leads. The Iso-Tip unit appeared to be slightly more powerful

than the Hakko and Solder-It units, but they all made adequate solder connections as long as the temperature drain of the material being soldered was not overwhelming to the tool.

Once turned on and locked, the power switch on the Hakko FX-901 did not have to be held down or otherwise managed at all. This means the iron works, in that respect, just like a regular corded soldering iron. Both the Iso-Tip and the SolderPro 35 require you to hold a pushbutton down to activate the tool, and this button must be held down as long as you are actively soldering. That feature makes an accidental burn to the work surface or user less likely than with an iron that's always on, but balance that against the need to wait for the tip to heat to operating temperature every time you put the tool down.

The Iso-Tip Power Pro was well built and appeared to reach working temperature faster than the other two units powered by conventional AA batteries. The Power Pro always has a full charge at initial use because it is meant to be stored in its float charger when not in use. In initial cost, the Iso-Tip Power Pro is more expensive than any of the other battery operated tools we've tried. If you use the tool a lot, the cost of replacing batteries may make the long-term operating costs a dead heat (no pun intended).

All three tools do the job quite well as long as the material to be soldered is of the correct size. Battery powered tools are not intended for heavy gauge wire or other heavy material, but they do a fine job for light assembly work with small wire sizes, component leads, circuit boards and such. If your cordless work involves soldering heavier material, consider a butane powered solution. QST

CORRECTIONS TO PERSEUS SDR REVIEW

◇In the Product Review of the Microtelecom Perseus Software Defined Receiver [Dec 2008, pp 40-44], Blocking Gain Compression was incorrectly reported in Table 1 and the Key Measurements Summary. In addition, the Reciprocal Mixing data was not reported. The corrected measurements are shown in Table 1.

Note: No increase in reciprocal mixing noise was observed at input levels up to the analog-to-digital converter (ADC) clipping threshold of the Perseus. The receiver

exhibits a gain compression that is less than 1 dB within the dynamic range of its ADC (125 dB in a 500 Hz bandwidth). To measure the Blocking Gain Compression using nor-

mal ARRL Lab test procedures, the receiver must be driven beyond its input clipping level by an interfering signal level 129 dB higher than the receiver noise floor.

Table 1 — Microtelecom Perseus, serial number 00501

Manufacturer's Specifications

Blocking gain compression: Not specified.

Measured in the ARRL Lab

	Gain compression, 500 Hz bandwidth:	
	20 kHz offset	5/2 kHz offset
3.5 MHz	129/129 dB	129/129 dB
14 MHz	129/129 dB	129/129 dB

Reciprocal mixing (500 Hz BW): Not specified.

20/5/2 kHz offset: better than -126 dBc.

SHORT TAKES

Weather Direct

One of things we like to do in “Short Takes” is look at new products that are not directly related to Amateur Radio, but still have functionality that hams can put to good use. In this instance the product under the microscope is Weather Direct by La Crosse Technology.

Weather monitoring is a popular pastime among Amateur Radio operators. Some do it for the sake of curiosity while others have more pragmatic reasons (hams involved in SKYWARN come to mind). A number of us own home weather stations that monitor local conditions, and many make their weather station data available over amateur networks such as the Automatic Packet/Position Reporting System (APRS).

Weather Direct is a consumer-grade weather monitor rather than a fully tricked-out weather station. Like many you’ve probably seen, it uses a wireless remote sensor to provide outdoor temperature readings. It also displays the indoor temperature, time, date and so on.

What makes Weather Direct unique is its ability to tap the Internet for detailed forecasts for distant locations, or for your own hometown, if you wish. It can even alert you of changing weather when you are away from home.

Setting Up Weather Direct

The Weather Direct system consists of three components: the wireless 5 x 2 x 5 inch LCD display unit, the “Secure Weather Gateway” module (about the size of a small TV remote) and a single outdoor wireless sensor.

Strictly speaking, you don’t need a broadband Internet connection to enjoy the use of Weather Direct, but without it you’ll lose most of what makes Weather Direct worthwhile. Assuming that you have broadband Internet with a wired or wireless router, the setup process is straightforward and rather clever. You simply plug the Gateway into one of your router ports using the Ethernet cable provided. There is no software to install. The Gateway communicates with the display unit at 915 MHz.

The next step is to get on the Internet and go to the La Crosse Weather Direct Web site. There you “register” your Weather Direct display and configure your options. You are allowed to select one remote location in the US or Canada from a list of more than

40,000. These are mostly cities, or specific locations in and around various cities. If you purchase the optional packages, you can expand your monitoring capability by up to five locations.

On this page you can also configure your alerts. This allows Weather Direct to send an e-mail or cell phone text message if certain data limits are exceeded, such as temperature or humidity, or if a severe weather alert is issued. For my test I asked Weather Direct to let me know whenever the humidity in my designated remote location went above 80%. That turned out to be a mistake, as you’ll see in a moment.

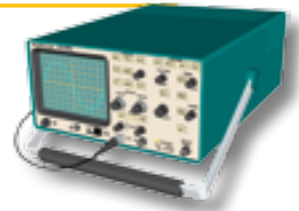


Once you have everything set the way you like, the Weather Direct Web site uses the Gateway to communicate with, and automatically configure, your Weather Direct display.

Portable Weather

The display is battery powered, so you can take it anywhere — at least within the 300 foot range of the Gateway and remote sensor. You can even place it next to your bed since the unit includes an alarm clock as well.

During my tests I set up the outdoor sensor and also configured the display to monitor



my hometown of Dayton, Ohio. The Dayton forecasts, continuously updated, appeared on the display along with sunrise/sunset information and more.

The 915 MHz Gateway link appeared to be highly reliable, although I was curious to see what happened if the connection failed (if you lost your Internet connection, for example). I unplugged the Gateway and waited. Nothing happened, at least nothing out of the ordinary. The display continued to show the last report it received. Presumably it will keep looping that information until the Internet link is re-established.

The e-mail/text message alert is a neat feature, but be careful how you set it up. I assumed that the humidity in Dayton, Ohio wouldn’t exceed 80% all that often in October. Wrong! The humidity bobbed above 80% with daily regularity and Weather Direct annoyingly notified my cell phone with a text message each time — several times during the day. When you configure a Weather Direct alert function, make sure you choose wisely. It’s easy to reconfigure regardless.

Speaking of text messages, it is worth noting that Weather Direct can also send severe weather alerts to an e-mail or cell address. This would be particularly convenient for ARES® and SKYWARN members.

The Weather Direct Advantage

The Weather Direct advantage is its ability to use the Internet as a means to monitor conditions in remote locations. The fact that it does this wirelessly with a conveniently portable display is a strong selling factor. Of course, most hams have Internet access at their station computers and already monitor weather from a plethora of services such as Weather Underground (www.wunderground.com). However, the Weather Direct remote-alert features are promising for public service applications. Weather Direct e-mail alerts could be distributed via the APRS network and Winlink2000, for example. That’s not bad for a unit that keeps track of your backyard weather as well!

Manufacturer: La Crosse Technology, 2817 Losey Blvd South, La Crosse, WI 54601; www.lacrossetechnology.com. Available at retailers throughout the US and Canada. Suggested list price: \$109.99.

