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The Kenwood TH-D7A Dual-band H-T

PacTerm 98 Kantronics Host Mode Terminal Program

Product Review

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The Kenwood TH-D7A Dual-band H-T

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"HELLO"

That's what the LCD of the TH-D7A read when I powered it on.

My mind hopped aboard its time machine, back to 1985, and I recalled the advertisements for the original Macintosh computer with its screen displaying "Hello" in a handwritten scrawl.

Immediately, a question came to mind, "Would I become infatuated with another technological marvel that greeted me with 'Hello' like the Macintosh did?"

What's in My Palm?

The Kenwood TH-D7A is a dual-band (144 and 440 MHz) FM handheld transceiver that has a built in packet-radio TNC (terminal node controller). The radio is capable of sending and receiving data at 1200 and 9600 baud, and also has internal software that allows it to act as a stand-alone APRS™ (Automatic Packet/Position Reporting System) station.

Besides the connectors that you typically find on a handheld transceiver (external speaker, microphone and power/battery charger), you'll find additional connectors on the TH-D7A. One allows you to connect the radio to the serial port of a computer device that permits the radio and TNC to be interfaced with external computer software. Another allows you to connect the radio to a GPS (global positioning system) receiver to automatically provide the APRS software with the location (latitude and longitude) of your APRS station.

The TH-D7A can simultaneously receive data and voice on different "bands." Bands is in quotations because I am not only talking about simultaneous 144 and 440 MHz operation (which is also possible), but simultaneous receive on two different VHF frequencies. For example, as I write this, I am keeping track of APRS activity on one "band" (144.39 MHz), while monitoring voice communications on the other "band" (146.52 MHz). Yes, that is correct, simultaneous data and voice reception within the 2-meter band!

In addition to that capability, the TH-D7A also features 200 memory channels with alphanumeric tagging, CTCSS encode and decode, 10 DTMF autodial memories, extended receive including the AM aircraft band, multiple scanning modes, SSTV operation with the Kenwood VC-H1 Interactive Visual Communicator, and lots more.

This radio does so much that I won't be able to cover everything in this review.

Amazingly, all these features are squeezed into a package that truly is handheld. It actually fits neatly in the palm of your hand! Even more amazing, half of its size and most of its weight are due to its battery.

A Handful of APRS Functionality

Since APRS is my main interest these days, I was anxious to check out the TH-D7A's APRS capabilities. It turns out there are two ways to operate APRS with this unit.

Bottom Line

The TH-D7A is a full-featured VHF/UHF FM handheld with a new twist—a built-in 1200/9600-baud TNC. Internal software provides powerful self-contained APRS position and text messaging capabilities. Optional interconnectivity adds impressive data and image communications capabilities.

One way is to connect a computer to the TH-D7A's PC connector and run APRS software on a computer—using the H-T for its TNC and radio capabilities. It was very simple to do and I successfully used this arrangement to run *WinAPRS* on a *Windows 95* computer, *MacAPRS* on a Macintosh computer, and *pocketAPRS* on a Palm III PDA (Personal Digital Assistant).

The other way to operate APRS with the 'D7A is to use its *built-in* APRS software. Before you can work APRS this way, however, you have to configure the radio's internal APRS software. Part of this software is based on the program used in the Mic Encoder (MIC-E), which was developed by Bob Bruninga, WB4APR, and Tucson Amateur Packet Radio (TAPR).

The purpose of a MIC-E is to permit mobile stations to transmit APRS "posits" (the station's location in an APRS-formatted packet) without the need for a TNC and/or computer in the vehicle. The MIC-E is inserted between the microphone and microphone connector of a mobile transceiver and is connected to a GPS receiver. It transmits APRS posits either after each voice transmission or automatically according to a selected timing value. (Note that the MIC-E, unlike the 'D7A, does not receive and decode APRS data.) Since the TH-D7A's APRS software is based on the MIC-E software, the TH-D7A can be configured to operate much like a MIC-E equipped transceiver.

APRS Set-Up

To set up for APRS operation, first you enable the built-in TNC by pressing the **TNC** key, then select which band you wish to use for data transmissions. Next you actually begin programming the APRS software.

You enter your call sign and SSID into the TH-D7A and tell it whether or not you will be using it with a GPS receiver. If not, you enter your latitude and longitude. You can enter a "status text" of 20 characters or less (for example, "TH-D7A@Compounce Mtn") and select a MIC-E-type position comment. There are eight canned comments—"In service," "Enroute," "Returning," "Off duty," for example—that are built into the TH-D7A (and the MIC-E).

You also select which APRS icon you want to represent your station on APRS maps. These include icons that resemble a house, a boat, a jogger and several different types of motor vehicles, just to name a few. The TH-D7A's LCD can display 15 of the

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Kenwood TH-D7A, serial number 00800197

Manufacturer's Specifications	*Measured in ARRL Lab*
Frequency Coverage: Receive and transmit, 144-148, 438-450 MHz.	Receive, 118-136 MHz (AM); 118-174 MHz and 400-480 MHz (FM); transmit, 144-148, 430-450 MHz.
Power requirements: 5.5-16.0 V dc; receive, 0.09 A; transmit, 1.7 A (max, high power).	Receive, 0.24 A (max volume, no signal); transmit, 1.6 A.
Size (HWD): 4.7x2.1x1.7 inches; weight, 13.4 ounces.	
Receiver	*Receiver Dynamic Testing*
FM Sensitivity: 12 dB SINAD, 0.18 μV.	For 12 dB SINAD, VHF, 0.16 μV; UHF, 0.14 μV.
AM Sensitivity: Not specified.	10 dB (S+N)/N, 1-kHz tone, 30% modulation: 0.68 μV.
Two-tone, third-order IMD dynamic range: Not specified.	20 kHz offset from 146 MHz, 59 dB*, 10 MHz offset from 146 MHz, 78 dB. 20 kHz offset from 440 MHz, 58 dB*, 10 MHz offset from 440 MHz, 72 dB.
Adjacent-channel rejection: Not specified.	20 kHz offset from 146 MHz, 59 dB. 20 kHz offset from 440 MHz, 58 dB.
Spurious response: Not specified.	IF rejection, VHF, 95 dB; UHF, 133 dB; image rejection, VHF, 91 dB; UHF, 81 dB.
Squelch sensitivity: 0.1 μV.	At threshold, VHF, 0.1 μV; UHF, 0.13 μV.
Audio output: 450 mW at 10% THD into 8 Ω.	600 mW at 10% THD into 8 Ω.
Transmitter	*Transmitter Dynamic Testing*
Power Output (H / L / EL): VHF and UHF, 5 / 0.5 / 0.05 W with PB-39, 9.6 V battery; VHF, 6 / 0.5 / 0.05 W; UHF, 5.5 / 0.5 / 0.05 W at 13.8 V.	VHF, 6.4 / 0.94 / 0.14 W; UHF, 6.1 / 0.98 / 0.12 W with PB-39, 9.6 V battery; VHF, 7.6 / 1.0 / 0.15 W; UHF, 7.2 / 0.97 / 0.15 W at 13.8 V.
Spurious signal and harmonic suppression: 60 dB.	VHF, 68 dB; UHF, 63 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, 140 ms; UHF, 140 ms.
Receive-transmit turnaround time ("tx delay"): Not specified.	VHF, 73 ms; UHF, 57 ms.

*Measurement was noise limited at the value indicated.

most commonly used APRS icons—it's a simple matter to select your desired symbol from these selections However, if you wish to be represented by an icon not among these 15 (APRS supports more than 350), you can refer to the icon tables in the optional *In-Depth Manual* to determine a character code to enter into the radio that corresponds to your preferred icon. Like any other APRS station, you also program your unprotocol path—the digipeaters your station will use to propagate its packets. Finally, you must select when APRS data will be transmitted. As with the MIC-E, you can program the H-T to transmit its position after each voice transmission or automatically (adjustable from once every 30 seconds to once every 30 minutes).

Where's The Keyboard?

"That's a lot of data to enter in the radio, so where's the external keyboard?" you may ask. The keyboard is included! You press the **MENU** key to get things started, then you press the up and down keys of the 4-way **jog/cursor** key to select the desired menu. After you choose a menu, you continue to use the cursor key to select each configurable parameter.

With some parameters, you use the cursor key to select from the available options, but others require you to also enter data. The TH-D7A provides three ways to enter the letters, numbers, punctuation and the special characters required for configuring those settings.

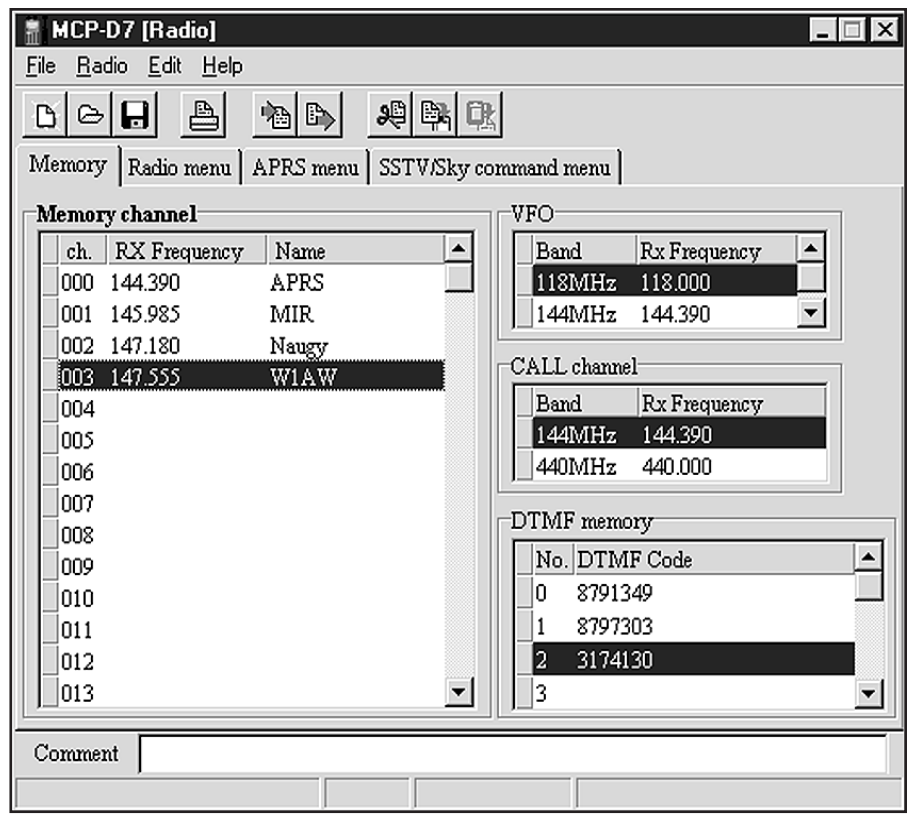

Figure 1—The optional *MCP-D7* software and the PG-4W PC Connection Cable allows you to use your PC to program the radio and configure various settings for internal APRS software. You can also use the software to program settings for SSTV operation when using the VC-H1 Visual Communicator. While all of these settings are accessible from the keypad of the radio, the software makes entering data considerably easier.

You can use the up and down cursor keys to scroll through all the alphanumerical characters. When you find the one you want, use the **right/OK** cursor key to enter the character. This is a slow process and is usually abandoned after you learn the second method.

The ten number keys (0 through 9) are also labeled with two or three letters. You use these keys to enter the number or one of the letters in upper or lower case. For example, each time you press the key labeled **2/ABC**, you are offered the following selections in sequential order: A, B, C, a, b, c and 2. Again, when you find the character you want, use the **right/OK** cursor key to enter the desired character. The most often used punctuation and special characters are available by pressing the **#** key. To insert a space, press the **0** key—to erase mistakes, press the **DEL** key.

This method is a lot quicker than the first method and is preferred by most TH-D7A owners. The third method involves programming the TH-D7A parameters by using Kenwood's *MCP-D7* software running externally on a computer. I will discuss that method later when I describe the software.

Transmitting APRS

After setting all the APRS parameters, it's time to get on the air. If you are using a GPS receiver with the TH-D7A, press the **POS** key and the H-T's display prepares to show your station coordinates as determined by your GPS receiver. When the minute units and decimal points start blinking, this indicates that the radio is receiving data from the GPS receiver—in a second or two, the coordinates are displayed.

By the way, to use a GPS receiver with the TH-D7A, it must be able to output NMEA 0183 2.0 data at 4800 baud. Kenwood provides a cable to connect a GPS receiver to the GPS jack on the radio. One end of the cable has the 2.5 mm stereo connector required for mating to the TH-D7A. You must provide the correct connector for your GPS receiver and wire it to the other end. (An inexpensive source for Garmin GPS receiver connectors is **http://pfranc.com/projects/g45contr/g45_idx.htm**.)

Next, tune the TH-D7A to the local APRS frequency (144.39 MHz in 50 states and 10 provinces) and press the **BCON** key. This causes the radio to transmit its first APRS packet and to automatically send posits every 0.5 to 30 minutes depending on how you set the transmission interval parameter.

After transmitting a packet, the TH-D7A's LCD displays "MY PACKET" if it successfully receives your packet when it is retransmitted by the digipeater(s) you programmed in the unprotocol path.

Receiving APRS

When you receive a packet from another APRS station, the TH-D7A beeps and displays the call sign and status text of the other station for approximately 10 seconds. If the TH-D7A later receives a packet from the same station containing the same status text, the LCD only displays the call sign prefixed with an acronym indicating the duplication.

The 'D7A can store information for a maximum of 40 APRS stations. When the radio receives a packet from APRS station number 41, the data of the oldest station is erased from the radio's memory.

You access this stored data by pressing the **LIST** key. This causes the TH-D7A to display the call signs of the three most recently received stations. Use the up and down cursor keys to select the call sign of the station that transmitted the data you wish to view. The information is stored in four columns to the right of the call sign, so use the right and left cursor keys to view the data stored for that station.

The first column displays the status text received from the selected station.

The second column displays the station's grid square, its APRS icon, its distance from your station, and an arrow indicating the direction of the received station relative to your station in 45 degree increments (north, northeast, east, southeast, south, etc). If the icon received is not one of the 15 that the TH-D7A can display, then it displays two or three characters that correspond to an icon that you can look up in the icon tables of the optional *TH-D7 In-Depth Manual*.

The third column displays the latitude and longitude of the received station.

The fourth column displays different information depending on the type of APRS station received. A conventional mobile APRS station displays its course and speed. A mobile APRS station using a TH-D7A or a MIC-E also displays its status text. A fixed APRS station displays its transmitting power, height above average terrain (HAAT), antenna gain and antenna directivity or "OMNI" for an omni-directional antenna. An APRS weather station displays its wind direction, wind speed, temperature and recent rainfall amount. An APRS object displays its course, speed, and the call sign of the station that placed the object in the APRS network.

Sending Messages and Bulletins

The TH-D7A can originate and receive APRS messages and bulletins up to 45 characters in length. Pressing the **MSG** key accesses the APRS message menu. From this menu, you use the cursor keys to list received messages or bulletins, input a new message or bulletin, and transmit a message or bulletin.

To originate a new message or bulletin, select the INPUT function from the message menu. In the "TO:" field, enter the call sign of the station you wish to send the message to or "BLN#" to originate a bulletin, where # is a number (0, 1, 2, etc.) representing the line of the bulletin. Then, enter the contents of the message or bulletin up to 45 characters. Pressing the **right/OK** key twice after entering the last character causes the TH-D7A to transmit the message/bulletin.

If the TH-D7A receives a message intended for you, it beeps, and its LCD displays the mail icon, the call sign of the sending station, and the first 20 characters of the message. Messages received, but not intended for you, just cause the LCD to display the mail icon.

To read a message, select the LIST function from the message menu, then use the up and down cursor keys to select the message you wish to read. After selecting the desired message, use the **right/OK** and **left/ESC** keys to switch between the first 24 characters of the message and the second 21 characters of the message.

On-the-Air in Dayton

I took the TH-D7A to the Dayton Hamvention. During the 718-mile trip to and from Dayton, I had it mated to my Garmin GPS II+ receiver. The two performed flawlessly together. The GPS receiver determined my position and relayed that data to the radio, which transmitted the information in APRS posit format once per minute. Meanwhile, the TH-D7A received the transmissions of APRS stations encountered during the trip and shared its data with the GPS receiver, which displayed the information as waypoints on its Map Page display.

The Garmin GPS II+ receiver's Map Page displays the real-time position of the GPS receiver in the center of the map and also displays waypoints on the map in their location relative to the GPS receiver's position. So, as I drove up the interstate, when I passed an APRS digipeater off to my left, a waypoint labeled with that digipeater's call sign was displayed on the GPS receiver's LCD to the left of the icon representing my GPS receiver's position. This provides a bare-bones APRS map function that allows you to see where other APRS stations are located relative to your location on the Map Page. (Note that your GPS receiver must support $GPWPL sentence data input to accomplish this.)

When the TH-D7A relays the waypoint data to your GPS receiver, it only sends the last six characters of the station, so some of the waypoint call signs displayed are truncated (for example, WA1LOU-15 becomes LOU-15). This is not significant because while you are traveling, you want to know where an APRS station is located on the map; you really don't need its call sign. If you really do have to know the full call sign, you can always find it by pressing the TH-D7A's **LIST** key and scrolling through the station list.

Lacking a good way to carry the GPS receiver and TH-D7A around the Hamvention, I decided to leave the GPS in the car and set the TH-D7A's position manually. Friday morning, I was in a conference room attending and speaking at the TAPR Digital Forum. The rest of the weekend I was at the TAPR booth (when I wasn't looking for and buying goodies elsewhere). I referred to the Hara Arena map in the Hamvention program (that this year in-

cluded latitude and longitude lines courtesy of WB4APR and yours truly) and determined the coordinates for the conference room and TAPR booth, and entered those coordinates in the TH-D7A as appropriate.

The TH-D7A locked-up a number of times at the Hamvention. The radio did not respond when pressing any of the buttons. To bring it back to life, I slipped the battery pack off briefly, reattached it, and then powered the unit back up. Operation then returned to normal.

I was unable to definitively determine the cause of the lock-ups, but some educated guesses include someone sending bad packets. On one occurrence, I was standing next to WD5IVD and both our TH-D7As locked up at the same time. I understand that one of the computers running APRS in the arena also locked-up. I don't know how a bad packet can lock up APRS. I have been running a highly visible APRS digipeater for over three years, which sees thousands of packets each day, and I have not encountered any lock-ups.

Another possibility is that perhaps the high level of RF at the Hamvention caused the problem. (It is so thick at times that you can practically smell it—I've seen other radio equipment fail under such conditions.) Maybe the overabundance of RF is the reason for the lock-up.

Whatever the cause, it definitely seemed related to the radio activity at the Hamvention. It hasn't happened again since I left the vicinity of the Hara Arena.

The TH-D7A's APRS messaging function proved to be very handy during the Hamvention. I used it a number of times, once to find out who had my ticket for the Hamvention and a number of times to locate other stations. ("ARE YOU IN THE FLEA MARKET?") The TH-D7A proved to be a very useful tool for Hamventioning.

SSTV for Dummies

One cable (the optional PG-4V cable) is all it takes to mate the Kenwood VC-H1 Interactive Visual Communicator (reviewed in December 1998 *QST*) to the TH-D7A. The result is a completely portable SSTV system. The TH-D7A supports all of the VC-H1's SSTV formats—Robot C36 and C72, AVT90, AVT94, Scottie S1 and S2, Martin M1 and M2 and Kenwood's own Fast FM mode.

Fast FM is similar to Robot C36 except that it can send a picture in about half the time (17 seconds instead of 36 seconds). This mode operates at 9600 bps using FM, so it can only be used in the VHF or UHF bands. Since the TH-D7A is a VHF and UHF transceiver, Fast FM was the obvious choice for me.

Before I tried transmitting SSTV, I configured some of the VC-H1's parameters using the TH-D7A's SSTV menu. I entered my call sign and selected red as the color of the text (black, cyan, green, magenta, white and yellow are also available). You can also enter an RSV (Readability, Strength, Video) report (10 characters maximum) and a message (up to 9 characters long). You can choose the text color for these as well. By selecting SUPERIMPOSE from the SSTV menu, your call sign can be displayed in the lower portion of your transmitted images. From the SSTV menu, I set the unit for the Fast FM mode.

With the VC-H1, I captured an image (Q-T Pie, our dog, was a willing model) and with my call sign superimposed over the image, I pressed the **TX** key of the VC-H1. The red transmit LED of the TH-D7A lit. A horizontal line moved slowly VC-H1's screen, indicating the progress of the transmission. The length of the transmission seemed surprisingly short, so I guess they don't call it the "Fast FM" mode for nothing!

I am an SSTV novice, so in addition to its compactness and portability, I was very impressed with the simple plug and play operation of the TH-D7A/VC-H1 SSTV system. This is SSTV for dummies!

An Additional Useful Capability

With the wide variety of digital and image communications abilities I've described so far, by now you are probably wondering just how well the Kenwood TH-D7A works for good old-fashioned voice communications.

Transmit audio reports were excellent. When compared to another one of my H-Ts, stations reported that the Kenwood had a bit more audio punch.

I had the transceiver sitting on the passenger seat of my car during my trip out to Dayton. The unit's receive audio is very good. I had no trouble at all clearly hearing voice transmissions over 146.52 MHz using only the radio's built-in speaker.

While at the Hamvention, I picked up an accessory speaker-mike. Although this didn't significantly affect the intelligibility of received audio, clipping it to my shirt pocket made it much easier to hear voice communications over the din in the crowded convention areas. The speaker-mike also made mobile operation more convenient. With the dc power cord, GPS cabling and the external mobile antenna coax connected to the transceiver, using the unit's built-in microphone resulted in a bit of a "tug of war."

I don't know about you, but with most of the handhelds I've used, I worry that I'll inadvertently change the squelch setting while handling the radio or adjusting something else. (Since I am an A-type person, I was constantly checking the squelch setting of my previous handhelds.)

The TH-D7A eliminates this worry. There is no external mechanical control—you program in the squelch setting. Simply press the **F** and **MONI** keys simultaneously and use the up and down cursor keys to select one of six levels of squelch. For dual band operation, you can set the squelch for each band independently. Anytime you want to unsquelch the radio momentarily (to set the volume or check for weak signals), simply press the **MONI** key.

The functionality of the TH-D7A's dual band capability is augmented by the radio's balance control. If you are monitoring a packet channel and a voice channel simultaneously, you probably don't want to monitor both at the same volume level. Pressing the TH-D7A's **BAL** key allows you to adjust the balance between them. Pressing the up and down cursor keys now lets you attenuate or mute the volume of one, while the other remains at your desired volume setting. Typically, I balance the volume so the voice channel is set near maximum, while the packet channel is attenuated. In this way, I am aware that packets are being received, but am able to hear any voice transmissions—they are not drowned out by the packet bursts.

PG-4W PC Connection Cable (and CD-ROM)

Kenwood's optional PG-4W PC Connection Cable kit includes a cable and a CD-ROM. The cable allows you to connect the TH-D7A to the serial port of a computer. It has a 2.5 mm stereo plug on one end to mate with the TH-D7A and a female DB-9 connector on the other end to attach to the computer.

With this cable, you can run APRS or packet software on a computer while using the TH-D7A as a TNC and a radio.

The *MCP-D7* is *Windows 95/98* software that allows you to read and write to the TH-D7A in order to program the H-T's numerous parameters. With *MCP-D7*, you can program memory channels, calling channels, DTMF memories and other general operating settings, and even set the various parameters for APRS and SSTV operation (see Figure 1).

Reading and writing these parameters with *MCP-D7* and your computer is a lot quicker and easier than programming the H-T using its keypad and display. Some of the other advantages of *MCP-D7* are a feature that lets you sort memory channels by frequency or name and the ability to save (and reload) configuration templates that you have previously set up using the *MCP-D7* software.

Just to see if it would work, I tried running *MCP-D7* with a *Windows 95* emulator (*SoftWindows 95*) on a Power Macintosh. It worked as well on the Mac as it did in a real *Windows 95/98* environment.

One thing that the *MCP-D7* software lacks (and hopefully one that will be added in later releases of the program) is the ability to configure (and save) the TH-D7A's TNC parameters. *MCP-D7* does allow you to configure and save APRS parameters, but not plain vanilla TNC parameters like TXDELAY. The settings of the TNC parameters are lost when you power off the TH-D7A.

The CD-ROM also contains a copy of the *TH-D7 In-Depth Manual* in Adobe *.pdf* format (a copy of Acrobat Reader is included on the CD-ROM). This 182-page manual is an in-depth manual for the TH-D7A software, not its hardware.

The *In-Depth Manual* goes into greater

detail than the *Instruction Manual* that is bundled with the TH-D7A. It includes information not covered in the *Instruction Manual*. For example, there is a 67-page section describing in great detail the commands available for programming and controlling the TH-D7A from a computer connected to the radio. Using this information, a savvy user could write his own program to control the TH-D7A. Another example is the inclusion of the aforementioned APRS icon tables (for users who want to use APRS icons other than the 15 that the TH-D7A can display).

There is a lot of useful information contained in the *TH-D7 In-Depth Manual*—information that I think a serious user would want. On the other hand, the optional manual may not be that useful to the casual TH-D7A user. For them, the included *Instruction Manual* might be enough.

Comments

Remember the guy who liked an electric razor so much that he bought the company that made it, well I liked the TH-D7A so much that I now own one, too. (Just don't go telling me that there is a new car for sale that says, "Hello.")

The TH-D7A allows me to have APRS capability all the time. When I am mobile, I connect it to my GPS receiver and it becomes my APRS tracker. When I am at work where I am in front of a computer 8-hours a day, I connect it to the computer and run APRS in the background. When I am at home, but not in the shack, I carry it with me to keep tabs on local APRS activity.

Besides its APRS functionality, the TH-D7A is also a great tool for selling Amateur Radio. If you can't amaze your friends and relatives with a TH-D7A connected to a Palm III running *pocketAPRS*, there ain't no amazing them!

By the way, there is an email list devoted to the discussion of TH-D7A topics. It is the HTAPRS Special Interest Group (SIG) and is sponsored by TAPR. It is a good place to get answers to your questions concerning the operation of the TH-D7A and to find out how other owners are using the radio. You can subscribe by surfing to **http://www.tapr.org/tapr/html/sigf.html**.

Manufacturer: Kenwood Communications Corp, 2201 E Dominguez St, Long Beach, CA 90801; tel 310-639-5300, fax 310-537-8235; **http://www.kenwood.net**. Manufacturer's suggested retail price, TH-D7A, $520. Typical current street price, $440. PG-4W PC Connection Cable with *MCP-D7 Programming Software and TH-D7 In-Depth Manual* on CD-ROM, $55; PG-4V VC-H1 Connection Cable, $50.

PacTerm 98 Kantronics Host Mode Terminal Program

Reviewed by Larry Wolfgang, WR1B
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Creative Services Software has teamed up with Kantronics to offer a 32-bit *Windows 95* and *98* host-mode terminal program. *PacTerm 98* supports Kantronics TNCs with firmware 5.0 or higher and Kantronics KAM multimode communications processors with firmware 7.0 or higher.

A TNC's host mode allows the TNC and computer to communicate using more sophisticated software than is possible with standard terminal programs. Rather than having to learn the long list of TNC commands that are required when using terminal programs, pull-down menus and mouse clicks are the order of the day with host-mode software.

I have used a KAM with Kantronics *HostMaster* host-mode software to operate both HF digital modes and VHF packet simultaneously for years. *HostMaster* is a *DOS*-based program, though, and while it is still a powerful control program, it seemed to loose a bit of its appeal each time I updated my computer or operating system. When I heard about the *PacTerm 98* program, I was anxious to try it with my current *Windows 95* system.

How would you like to operate up to 26 streams per port, each with its own window? I don't know how you would keep track of all that activity and what was going on in each stream, but *PacTerm 98* can handle it if you can! You can connect to a DX Packet Cluster, a packet bulletin board *and* have live keyboard chats with several friends all at the same time.

If you like to operate the digital modes on HF, *PacTerm 98* supports G-TOR and G-TOR monitoring, all the AMTOR modes, PACTOR, NAVTEX, ASCII, RTTY and CW as well. *PacTerm 98* will transfer ASCII text files over packet radio, and you can also transfer binary files using the binary transfer protocol called YAPP.

Windows User Interface

If you are familiar with *Windows 95*, *98* or *NT*, you'll feel right at home with *PacTerm 98*. Drop down menus, keyboard shortcuts and tool bars allow you to navigate all aspects of the program (see Figure 2). You can establish your favorite color patterns and text formats for the various windows, and generally set the program screens to suit your tastes.

The user interface is designed for mouse navigation, but if you prefer you can also use keyboard commands to maneuver through the menus. The tool bars provide instant access to most functions. For example, in an HF non-packet session, you can select CW, RTTY, ASCII and any of the TOR modes by clicking the appropriate icon or by keying in a letter. Additional submenus let you easily

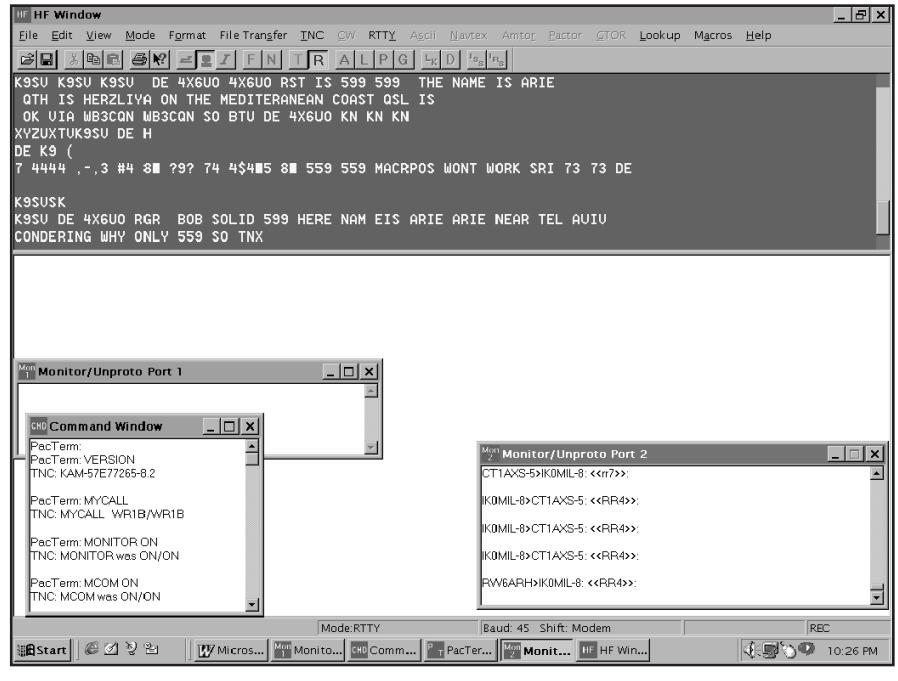

Figure 2—This screen shot shows the *PacTerm 98* screen, with several windows open, monitoring HF and VHF activity.

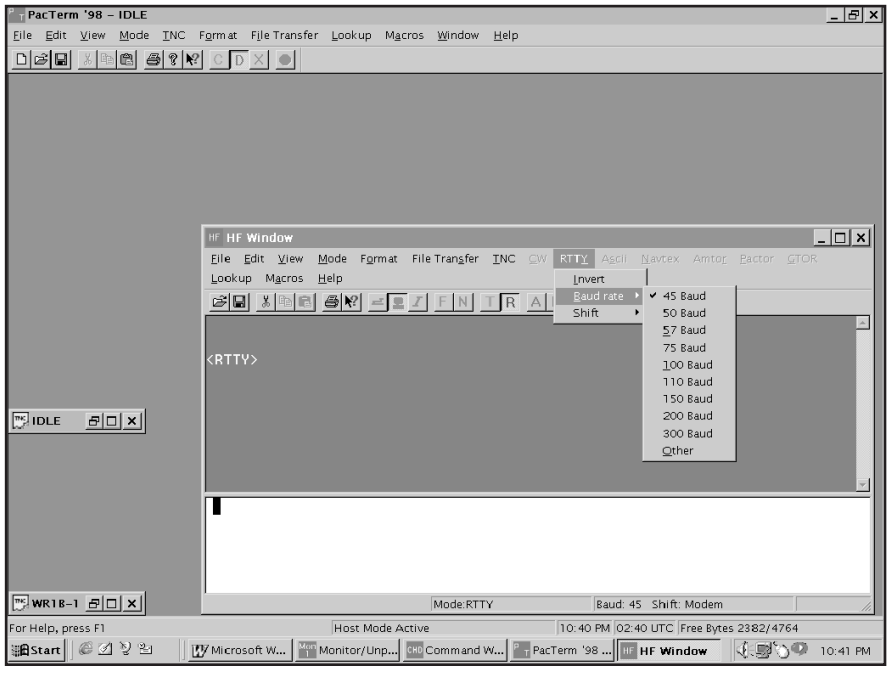

Figure 3—Setting various operating parameters for your chosen mode is easy with pull down menus.

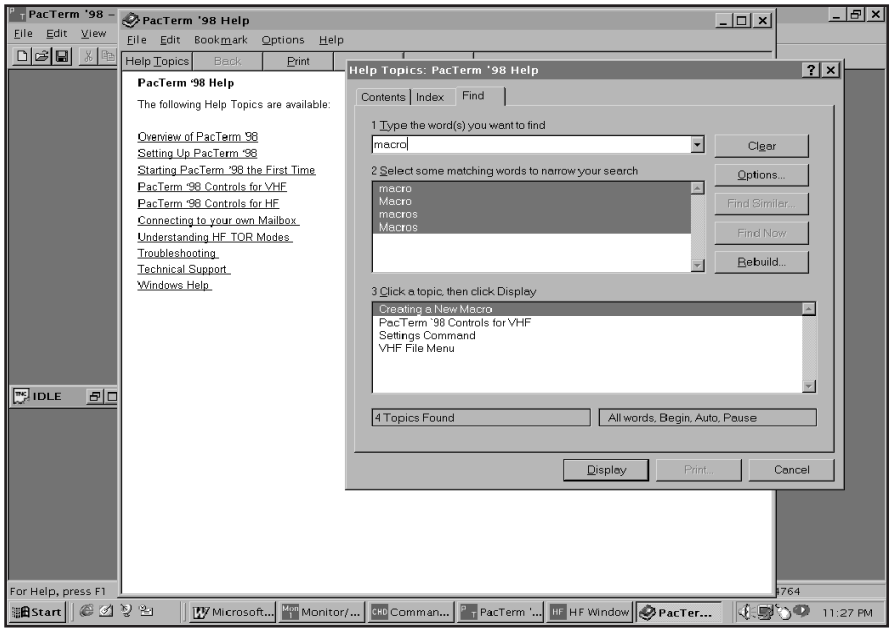

Figure 4—The Help Menu and Search screens assist you in quickly finding the answers to your operating questions.

configure various parameters for the selected mode (see Figure 3).

Getting on the Air

PacTerm 98 has many features designed to enhance your on-the-air enjoyment of the digital communications modes. You can define ten "macros" for HF and ten for VHF that each contain commonly transmitted text. For the VHF macros, you might want to define a series of commands that log you on to a bulletin board and check the latest messages. On HF, you will probably want to program several macros with things like a CQ message, your name, location and station details, for example. Once set up, you can automatically transmit this common information by simply pressing the Control Key and the appropriate macro number. You create these messages from the File/Settings menu selection. When you set up the macros you assign a simple name to each. Later, if you can't recall which number macro has the message you want to send, simply click on the Macros menu item and the list will drop down. Select the appropriate macro title, and you are ready to transmit the information.

You can also set a menu item for call sign exchange. When you first copy a station, highlight their call with the mouse, then select Edit/Copy and Call Exchange. Now when you are ready to transmit the call exchange, just select the Edit/Call Exchange menu item and the appropriate text will be inserted in the transmit section of the window. What could be simpler?

If you have one of the call sign CD-ROMs, you can use it in conjunction with *PacTerm 98*. Once you've copied a call sign, select the Lookup menu item—*PacTerm* will automatically access your CD and locate the listed information for that station. (Assuming you have remembered to load the CD in the drive, that is!)

With a program this sophisticated, plan on spending a bit of time in the various configuration and set up menus. For example, you will have to set SELCALs for AMTOR, GTOR and PACTOR operation. You will also want to enter a WRU—Who Are You—text for AMTOR, decide whether or not you wish to send a diddle character in RTTY, and set your normal CW speed, tone and bandwidth. Once everything's configured, you'll be ready to cruise the digital subbands—equipped to operate nearly any digital mode you encounter.

Documentation

I decided to print out a copy of the *Quick Start* guide and the complete *User Manual*. At over 100 pages, this documentation is extensive and detailed. In reality, I probably should have saved a tree and just relied on the software's Help files. Just click the Help button and type in a key word or phrase and you'll see a complete listing of related topics. The information displayed is usually enough to show you how to go about using that command or setting. Of course, you can also view the help screens by selecting a topic from the Contents or Index listing (see Figure 4).

What if I Don't Have a Kantronics TNC?

Creative Services Software recently announced the availability of *PKTerm 99*. This software will work with all Timewave/AEA TNCs that support host mode. In addition, CSS has acquired the rights to the *PC PakRatt* software for Timewave/AEA TNCs. They expect to also add software products for MFJ, HAL and SCS controllers to their lineup.

Minimum Computer Requirements

PacTerm 98 requires a computer running *Windows 95, 98* or *NT* with at least 8 megabytes of RAM and 6 megabytes of free hard drive space. The program will support COM ports 1 through 35. A limited capability demo version and the *User Manual* can be downloaded free of charge from CSS's Internet site.

Price: $79.95. For more information contact Creative Services Software, 503 West State St, Suite 4, Muscle Shoals, AL 35661; 256-381-6100; fax 256-381-6121; **http://www.cssincorp.com/**. QST