

# The R. L. Drake TR270 2 Meter-Plus FM Transceiver

BY DAVE INGRAM\*, K4TWJ

**R**ight from the first view, you get the impression that R. L. Drake's new TR270 is more than an average 2 meter FM transceiver. The assumption is correct in a dozen different ways. Indeed, the TR270 is a full-blown FM communications system with every support item and asset imaginable in a neat desktop package. If you are serious about VHF and FM or appreciate going first class, you will love this multipurpose unit!

The TR270 contains an elaborate 2 meter FM transceiver plus a second independently-operating VHF/UHF FM receiver—each with separate volume and squelch controls, memory set, and antenna sockets. It also contains a continuous-duty AC power supply (with DC input capability), a hefty front-facing speaker; 400 memories; CTCSS encoder, decoder, and audio filter; a vast setup menu for configuring to personal needs; and much more. The TR270 is also a 2 meter or a 70cm-to-2 meter repeater, a packet system, a satellite rig, a WEather FAX receiver, and an ACARS monitor, and the unit can be computer controlled.

## Overview

The TR270 is enclosed in a matte black cabinet measuring 4.75"H x 11.0"W x 13.5"D, and it weighs 13 pounds. The rig is well-ventilated and fitted with a large rear heatsink for cooling. A large and backlit multifunction display, full-size knobs, and hefty speaker grill grace the front panel. Inside is a 2 meter FM transceiver, a separate VHF/UHF FM receiver, a heavy-duty AC power supply, plus slots for adding Drake's optional TNC270 module for packeting and DEMOD270 for copying WEather FAX, RTTY, Morse, ACARS, etc. Rear sockets are provided for AC power or an external 13 volt DC source; an external TNC; audio from an HF shortwave receiver for copying RTTY, CW, FAX, etc.; and an RS-232 port for computer control of the TR270.

The unit's 2 meter transceiver covers 144.0 to 148.0 MHz (142 to 150 MHz for authorized MARS/CAP use), with output power selections of 1, 10, and 25 watts.

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Front view of R.L. Drake's TR270 gives only a hint of its special features. Unit is comparable to a six foot rack of communications gear.

The second receiver covers 136 to 174 MHz and 420 to 470 MHz. Separate antenna sockets for the transceiver and second receiver are included on the rear panel. Since both rigs operate simultaneously, volume and squelch controls on the front panel set their levels on the "double duty" speaker.

The TR270 is equipped with 400 memories which are assigned as follows: 100 to transceiver VFO A, 100 to transceiver VFO B, 100 to "second receiver" VFO A, and 100 to "second receiver" VFO B. All memories can store any frequency, repeater offset, CTCSS tone, and scan-related action. Additional features include CTCSS decoding, a CTCSS filter to eliminate low-frequency "rumble" when copying signals with tones, automatic or manual repeater offsetting, programmable "splits," several scan modes, and 10 DTMF autodialers, plus more. All of the TR270 features and functions are accessed via the front keypad, up/down buttons, and tuning control. Keypad buttons are also used to direct-enter frequencies, select DTMF tones, and select menu options. My explanation may seem complex, but the TR270 is actually quite user-friendly. In fact, I tried the "bozo test" of

operating it before reading the manual and was quite successful. It's a neat rig!

## Special Features and Functions

Defining where one group of features ends and another begins is nigh impossible in a "do everything" rig such as the TR270, as numerous functions are inter-related. An internal set of 60 menu-selectable operating parameters, for example, allows each owner to customize a TR270 according to personal preferences. The menu set includes everything from VFO steps, scan modes, satellite band scan ranges, and DTMF autodialer delays to precise low/medium/high power outputs, transmit time-outs, antenna/rig selections, activation of coax voltage for a pre-amp, and much more. For scanning, an operator can specify frequency ranges for VFO A and B, assemble special memory lists, and/or specify memories to be scanned or skipped as desired. Scanning can also be set to pause and continue, pause until a carrier drops, or pause and stop/cancel scanning. Other menu-selectable features of interest include using the TR270 as a crossband or inband repeater, specifying time between LOS of a satel-



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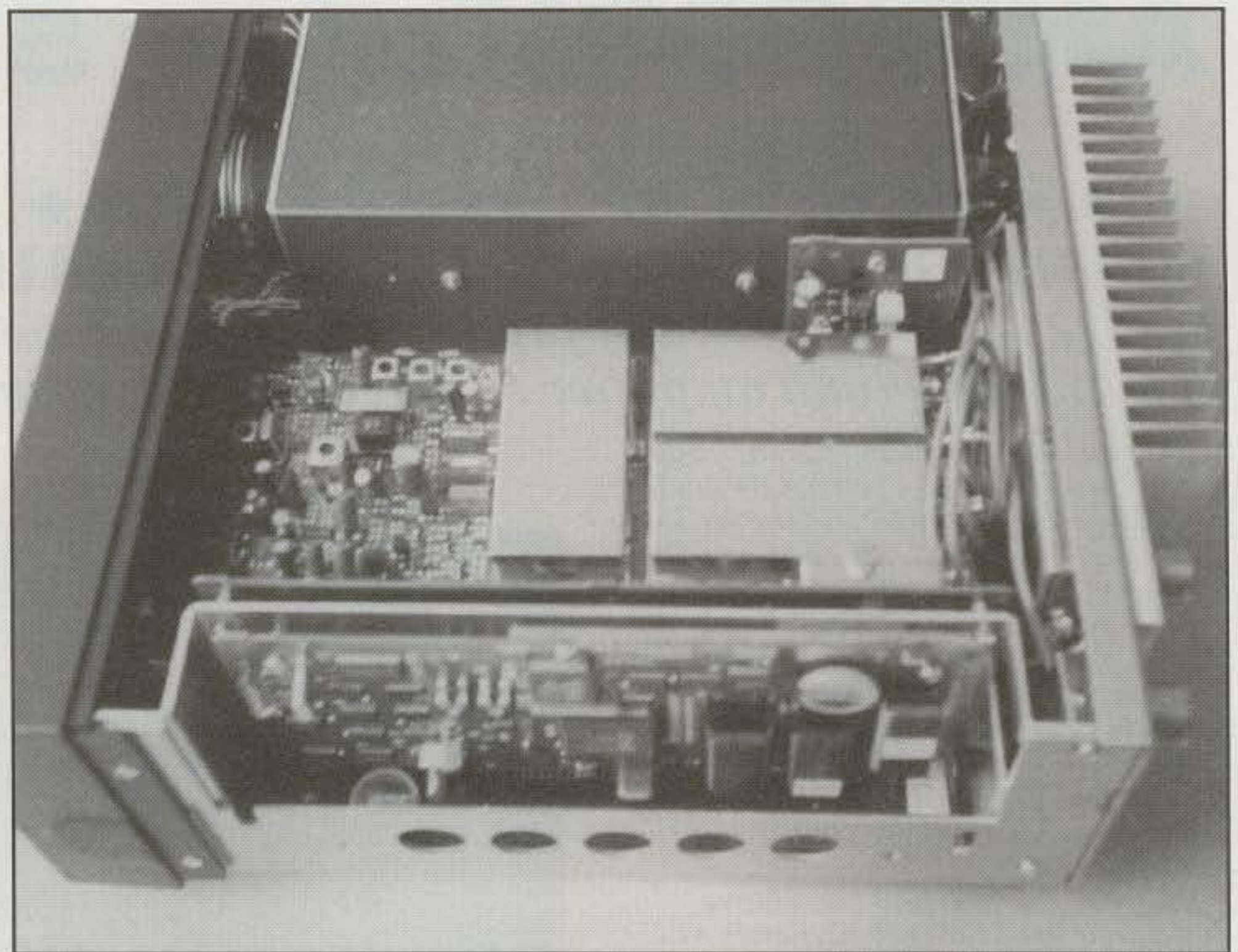
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Interior view of the TR270 showing speaker (left top), power supply (behind it), and main circuit boards. Optional TNC and DEMOD/FAX cards plug into slots on main board.

lite signal and rescanning for another satellite, and data flow for computer control. The only thing the TR270 will not do is operate CW or SSB. It is a dedicated FM rig for the dedicated FM enthusiast who enjoys "having it all!"

**It's Also A Repeater!**

Several dualband FM transceivers include a light-duty crossband repeat function. The TR270, however, goes several steps beyond that point. In addition to relaying signals from a 70 cm input frequency to 2 meters, this gem is also a 2 meter repeater. You simply select a desired 2 meter input frequency on the "second receiver," set a 2 meter output frequency on the transceiver, and menu-activate the inband repeat function. Needless to say, you should check with local area coordinators before blindly "setting up shop" on an assumed quiet channel! This is when some of the TR270's special features really shine.

First it can be set to recognize any CTCSS tone and use its CTCSS filter, plus even transmit a different CTCSS tone for security measures. Second, output power can be reduced to any level for limiting coverage range. Third, the internal power supply is rated at 140 watts, which, combined with the large heatsink, ensures cool, reliable operation on an unlimited basis. Taking a TR270 into a disaster area or emergency situation (and using it conscientiously!) could be a blessing.

**It's Also A Packet System**

If you like a neat, clean station for packeting, Drake's TR270 is the answer. Just plug in its optional TNC and connect the output to an IBM-compatible computer, and you're ready for 1200 or 9600 baud packeting in high style. The TNC270 is supplied with two software packs: PC PACKRATT for DOS and PC PACKRATT for Windows. The TNC contains 18K of battery-backed RAM for mailboxing, and operates in Command, Host, and KISS modes. It has an enhanced MHEARD function that identifies TCP/IP, NET/ROM, and <THE NET> stations. Also included is an easy-learn command set for starting and an "expert" command set for advanced packeting. Status indicators for the TNC are built right into the TR270's front display. If desired, an external TNC can also be connected to the TR270 via a rear socket.

**It's Also A Satellite Rig**

The TR270 may be an FM-only transceiver, but so are many of our presently active OSCAR satellites such as AO-27 plus MIR and the space shuttle. Furthermore, AO-27 and another upcoming satellite are FM units—orbiting FM repeaters with 2 meter uplinks/70cm downlinks and packet capabilities. These satellites are in low orbits and are often accessible with simple turnstile antennas. Additionally, commercial satellites such as NOAA APT transmit weather pictures/

maps that can be received directly on the TR270 and displayed or printed on a connected computer.

One of the TR270's special features for satellite operation is automatic doppler shift correction, which "locks on" a satellite's frequency at AOS and continuously corrects the receiver's frequency until LOS. The TR270 also incorporates a scan search for automatic acquisition of a downlink frequency, a scan pause setting to adjust its tuning rate, and a scan resume setting to restart scanning if or when a downlink signal is lost. Once the TR270 latches onto a signal, it holds onto it like a bulldog!

The TR270 is also preprogrammed with most of the popular uplink and downlink frequencies used by presently active OSCAR satellites.

## WEFAX and ACARS, Too

Assuming Drake's optional DEMOD270 is installed in the TR270, the rig is ready to copy WEATHER FAX pictures transmitted in the 137.0 to 137.500 MHz range. NOAA's APT weather satellite emits a relatively strong signal, and reception is often good when using a 45 degree-tilted 3-element 2 meter beam. Yes, and copying weather pictures is only one piece of the pie. Additional capabilities of the DEMOD270 include decoding facsimile, Morse code, RTTY and NAVTEX transmission on HF bands, plus monitoring ACARS (Aircraft Communications and Reporting Systems) within air bands. Each of those operations involves adding a cable between the TR270 and the ear-phone socket of an all-mode HF receiver and/or an AM aircraft-band receiver.

A complete package of PC software for FAX and ACARS is supplied with the DEMOD270, and it makes getting up and running quite easy.

## On The Air

Getting behind the controls of a TR270 is like turning a kid loose in a candy store. It's difficult to choose what to pursue first! Let's scan some of the public-service and marine channels and try the orbiting 2 meter FM repeater satellite. Wait—let's set the TR270 scanning the 137 MHz range and cable its DEMOD out to our computer for viewing weather pictures. Shall we use the rig to chat with the local repeater gang, or set it up to be a repeater? How about packeting via OSCAR today and copying some HF fax tonight? Whoa, Dave—slow down! Okay, the TR270 is very easy to use and everyone complimented its terrific audio. Using the rig for local repeater chats, however, seems like driving a Rolls Royce to the corner store. There are enough features, frills, and special assets in this gem to captivate your interest for many years.



Rear view of the TR270 reveals massive heatsink, dual antenna sockets, and ports for computer interfaces.

## Conclusion

Are Drake's TR270, optional TNC270, and DEMOD270 worthy of their listed retail prices (\$999, \$249, and \$99, respectively)? You bet! The combined setup is a killer! The TR270 is first class throughout, backed with a full one-year warranty, and knowing Drake, will not be

upstaged or lose value due to introduction of another model in the near future. Check out the TR270, gang. It's an FMer's dream rig.

For more information on the TR270, contact the R. L. Drake Company, 230 Industrial Dr., Franklin, OH 45005 (515-746-4556). ■

## TELETEC RF POWER AMPLIFIERS



Models shown have meter option installed

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MODEL #	FREQ.	PWR RATING (IN/OUT)	RETAIL PRICE
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DXP-V175	2 meter	50W/175W	\$329.00
DXP-V220	220 MHz	20W/150W	\$369.00
DXP-U150	70 cm	30W/150W	\$429.00

### DXR SERIES

MODEL #	FREQ.	PWR RATING (IN/OUT)	RETAIL PRICE
DXR-L180 <sub>R</sub>	6 meter	15W/180W	\$639.00
DXR-V175 <sub>R</sub>	2 meter	50W/175W	\$629.00
DXR-V220 <sub>R</sub>	220 MHz	20W/150W	\$659.00
DXR-U150 <sub>R</sub>	70 cm	70W/150W	\$789.00

Teletec's DXP Series linear amplifiers clearly outperform the competition. The die cast aluminum heatsink provides an attractive low profile, but powerful package. These amplifiers operate in all modes: FM, SSB, CW, and AM. Transmit/Receive switching is automatic - RF sensed. Over/Reverse Voltage, Over-Temp, and VSWR protection are provided. Available options include: ATV tuning, Repeater tuning, Preamp disable and keying wire kit. "N" connectors are also available (std on DXP-U150).

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