



# DRAKE TR-7

## solid state continuous coverage synthesized hf system

*Introducing a remarkable engineering breakthrough...*



Designed and  
manufactured  
in U.S.A.

Models shown  
are Drake  
TR-7/DR-7  
with RV-7  
and MS-7

# 0-30 MHz

continuous coverage reception capability

# 160-10 Meters

Amateur Band transmission, including capability for  
MARS, Embassy, Government, and future band expansions\*

In 1963 Drake led the way by producing the first commercially available transceiver that employed the now widely copied 9 MHz i-f frequency. Even today, 15 years later, many major competitive transceivers are still being introduced using i-f's in this range.

In 1978 Drake leads the way again by developing the first commercially available amateur transceiver that uses a 48 MHz i-f, through the technique of "Up-Conversion." This system greatly improves image and general coverage performance, and will be copied in the years to come. With Drake, you can join the new state of the art today!

# The Drake TR-7 significantly advances the technology of world-wide radio communications and unfolds an entirely new **state of the art.**

The design philosophy behind the new Drake "7 system" has created a most sophisticated system concept, extending from engineering to the visual appearance of the system and each of its parts.

The TR-7 System is the result of one of the most extensive engineering and development programs in the history of the R. L. Drake Company, and provides the user with many innovative design features.

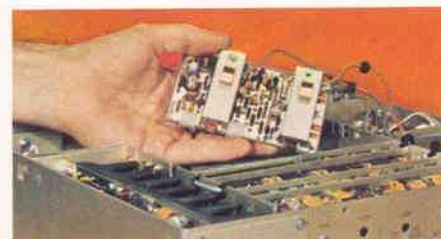
With the excellent design of its front panel and controls, the system is simple and straightforward to operate—makes state of the art performance a pleasure.

**Broadband, Solid State Design**—100% solid state throughout. All circuits are broadbanded so there is no need for preselection tuning or transmitter adjustments of any kind.

**Synthesized/PTO Frequency Control**—A Drake exclusive: Special high performance synthesizer, combined with the famous Drake PTO, provides smooth, linear tuning with 1 kHz dial and 100 Hz digital readout. 500 kHz up/down range switching is pushbutton controlled.



**Continuous, Wide Range Frequency Coverage**—The TR-7/DR-7 provides reception from 1.5 thru 30 MHz—continuously, and zero thru 30 MHz continuously with the optional Aux-7 Range Program Board. The highly advanced Drake Synthesizer makes this possible, and is an industry first. The TR-7/DR-7 provides transmit coverage for all Amateur Bands 160 thru 10 meters. With the optional Aux-7 Range Program Board, diode-programmable out-of-band



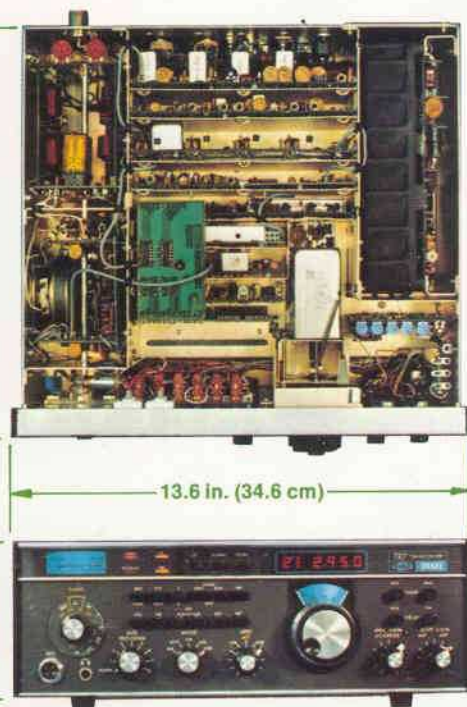
transmit coverage is available for MARS, Embassy, Government, and future band expansions in the range 1.5 thru 30 MHz.\* The Aux-7 Board provides 0 thru 1.5 MHz receive coverage and crystal-controlled fixed channel operation for Government, Amateur, or semi-commercial applications anywhere in the hf range. The TR-7 w/o DR-7 and Aux-7 provides coverage of the Amateur Bands 160 thru 15 meters and the 28.5-29.0 MHz range of 10 meters. The Aux-7 Range Program Board is also useable in the standard TR-7 for extra range coverage as noted.

**State of the Art Receiver Design**—The Drake TR-7 introduces another industry first for amateur transceivers: "Up-Conversion," in combination with a special uhf high level double balanced mixer for superior strong signal handling, spurious and image response performance. The first i-f of 48.05 MHz places images well outside the receiver passband, and provides for true general coverage operation without i-f gaps.

**True Passband Tuning**—The TR-7 employs the famous Drake Full Passband Tuning instead of the limited



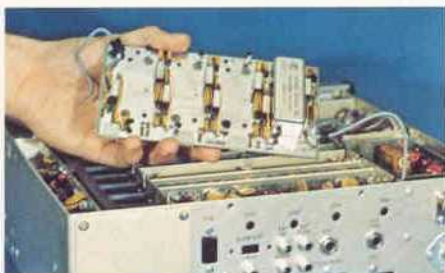
range "i-f shift" found in some other units. The Drake System tunes from the top edge of one sideband, through center, to the bottom edge of the other sideband. In fact, the range is even wider to accommodate RTTY. Full passband tuning greatly improves receiving performance in heavy QRM.



\*Note: Out-of-band transmitter coverage for MARS, Government, etc. is available only in ranges authorized by the FCC, Military, or other government agency for a specific service. Proof of license for that service must be submitted to the R. L. Drake Company, including the 500 kHz

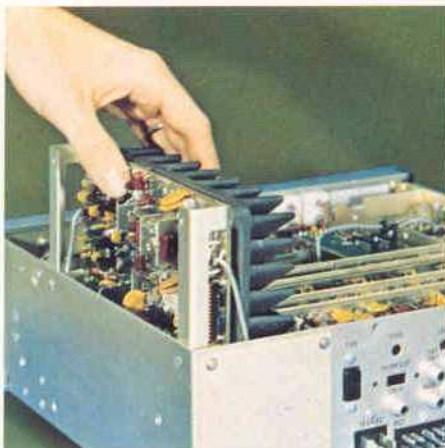
range to be covered. Upon approval, and at the discretion of the R. L. Drake Company, a special range IC will be supplied for use with the Aux-7 Range Program Board. Prices quoted from the factory. See operator's manual for details.

**Unique Independent Receive Selectivity**—Optional receiving selectivity filters can be installed internally and pushbutton-selected from the front panel. These may be selected independently of transmit mode and provide optimum response for various conditions of ssb, cw, RTTY, and a-m. You may also transmit cw while receiving ssb, or vice versa, or even transmit one sideband while receiving the other. The standard filter is 2.3 kHz for ssb. You may choose from optional 300 Hz, 500 Hz, a special 1.8 kHz for crowded ssb, or 6 kHz filter for a-m.



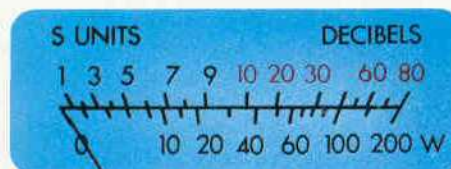
**Effective Noise Blanker**—This accessory is custom engineered to provide true blanking performance.

**Special High Power Solid State PA**—A Drake custom-designed diagonal heat sink provides for an internally mounted power amplifier with nothing mounted outboard subject to physical damage. The unique air ducting effect of this amplifier allows an optional rear-mounted fan to provide continuous duty on SSTV/RTTY. Continuous ssb/cw operation is available without the fan, due to the excellent heat sink design. The optional Drake PS-7 Ac Supply is rugged,



rated for continuous duty, and will easily handle power requirements. The System is rated 250 watts input—in any of its modes. Fully VSWR protected.

**TR-7 Internal Test Facilities**—As well as the standard "S" meter function, the TR-7 metering includes a built-in rf Wattmeter/VSWR Bridge. Also, the DR-7 digital counter reads frequencies to 150 MHz for test purposes. Access to the counter is from the rear panel.



**Receiver Incremental Tuning (RIT)**—Complete RIT flexibility is provided for both the TR-7 and RV-7 remote VFO for maximum convenience. The RV-7 also includes a special "spot" function for easy zero beating.

- Model 1337** Drake TR-7 Transceiver
- Model 1530** Drake DR-7 General Coverage/Digital Readout Board
- Model 1336** Drake TR-7/DR-7 General Coverage Digital R/O Transceiver
- Model 1338** Drake RV-7 Remote VFO



- Model 1502** Drake PS-7 120/240V Ac Supply includes special wide range voltage and frequency capability. Operates from any nominal line voltage (90-132 V/180-264 V; 50-60 Hz) ideal for overseas
- Model 1536** Drake Aux-7 Range Program Board
- Model 1531** Drake MS-7 Matching Speaker
- Model 1537** Drake NB-7 Noise Blanker
- Model 1529** Drake FA-7 Fan
- Model 7021** Drake SL-300 Cw Filter, 300 Hz
- Model 7022** Drake SL-500 Cw Filter, 500 Hz
- Model 7023** Drake SL-1800 Ssb/RTTY Filter, 1.8 kHz
- Model 7024** Drake SL-6000 A-m Filter, 6.0 kHz
- Model 1335** Drake MMK-7 Mobile Mounting Kit
- Model 1538** Drake MN-7 250 Watt 160-10 Meter Antenna Tuner with Rf Wattmeter and complete switching functions
- Model 1514** Drake WH-7 Hf Wattmeter/VSWR Bridge



**The Drake State of the Art  
unfolds an entirely NEW  
Art of the States!**

**GENERAL**

**Frequency Coverage**

(with DR-7 Digital R/O Gen. Cov. Board)

**Receive**

Without Aux-7 ... 1.5 to 30 MHz, continuous  
 With Aux-7 ... Same, plus 0 to 1.5 MHz at reduced performance in this range

**Transmit**

Without Aux-7 ... 1.5-2.0, 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-30.0 MHz  
 With Aux-7 \* ... Above ranges, plus any eight 500 kHz segments from 1.5 to 30 MHz

**Frequency Coverage**

(without DR-7 Digital R/O Gen. Cov. Board)

**Receive/Transmit**

Without Aux-7 ... 1.5-2.0, 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.5-29.0 MHz, plus Receive only on 2.5-3.0 MHz and 5.0-5.5 MHz  
 With Aux-7 \* ... Above ranges, plus any eight 500 kHz segments from 0 to 30 MHz, (0 to 1.5 MHz Receive only)

**Modes of Operation**

Usb, Lsb, Cw, RTTY, A-m equiv. (A-3H)

**Frequency Stability**

Total drift is less than 100 Hz after warm up. Total frequency change is less than 100 Hz over the 11-16 V-dc input supply range

**Frequency Readout Accuracy**

Analog ... Better than  $\pm 1$  kHz when calibrated at the nearest marker point  
 Digital ... 15 ppm  $\pm$  100 Hz

**External Counter Mode**

Maximum Input Frequency ... 150 MHz  
 Input Level Range ... 50 mV to 2 V, rms

**Power Supply**

Requirements ... 11-16 V-dc (13.6 V-dc nominal), 3A receive, 25A transmit

**Dimensions**

Depth ... 12.5 in. (31.75 cm), excluding knobs and connectors.  
 Width ... 13.6 in. (34.6 cm)  
 Height ... 4.6 in. (11.6 cm), excluding feet  
 Weight ... 17.1 lb. (7.75 kg)

**RECEIVER**

**Sensitivity (1.8-30.0 MHz)**

Ssb, Cw ... Less than 0.5  $\mu$ V for 10 dB (S+N)  $\div$  N  
 A-m (30% Mod.) ... Less than 2.0  $\mu$ V for 10 dB (S+N)  $\div$  N

Selectivity ... 2.3 kHz at -6 dB and 4.1 kHz at -60 dB (1.8:1 shape factor)

Ultimate Selectivity ... Greater than 100 dB

Agc ... Less than 4 dB output variation for 100 dB input signal change, referenced to agc threshold

Intermodulation ... Intercept Point, +20 dBm  
 Two-tone Dynamic Range, 95 dB

I-f Frequency ... First I-f ... 48.05 MHz  
 Second I-f ... 5.645 MHz

Image and I-f Rejection ... Greater than 80 dB

Spurious Response ... Greater than 60 dB down

**Internally Generated**

Spurious ... Less than 1  $\mu$ V equivalent, except 3  $\mu$ V equivalent from 5 to 6 MHz

Audio Output ... 2.0 watts @ less than 10% THD (4 ohm load)

**TRANSMITTER**

**Power Input (Nominal)**

Ssb ... 250 watts PEP  
 Cw ... 250 watts  
 A-m equiv. ... 80 watts (carrier), plus upper sideband

Load Impedance ... 50 ohms, nominal

Spurious Output ... Greater than 50 dB down

Harmonic Output ... Greater than 45 dB down

**Intermodulation**

Distortion ... 30 dB below PEP (24 dB below one of two tones)

**Duty Cycle**

Ssb, Cw, A-m ... 100%  
 Tune, SSTV, RTTY ... w/o 1529 FA-7 Fan: 33%, 5 min. transmit, max.  
 with 1529 FA-7 Fan: 100%

Wattmeter Accuracy ...  $\pm 5\%$  @ 100 watts (50 ohm load)

Carrier Suppression ... Greater than 50 dB

**Undesired Sideband**

Suppression ... Greater than 60 dB @ 1 kHz

Microphone Input ... High impedance

**VSWR Turndown (Nominal)**

@ 1:1 ... 0%  
 @ 2:1 ... 10%  
 @ 3:1 ... 25%  
 @ 4:1 ... 50%  
 @ 5:1 and above ... 90%

Known 'round the world for world wide radio communications.

**R. L. DRAKE COMPANY**



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