

# Drake R-7 Synthesized, General Coverage Receiver

Model  
1240



**Full general coverage reception, 0-30 MHz, with no gaps or range crystals required.**

Continuous tuning all the way from vlf thru hf. Superb state-of-the-art performance on a-m, ssb, RTTY, and cw —and it transceives with the Drake TR-7.

**100% solid state broadband design**, fully synthesized with a permeability tuned oscillator (PTO) for smooth, continuous tuning.

**Covers the complete range 0 to 30 MHz** with no gaps in frequency coverage. Both digital and analog frequency readout.

**Special front-end circuitry** employing a high level double balanced mixer and 48 MHz "up-converted" 1st i-f for superior general coverage, image rejection and strong signal handling performance.

**Complete front-end bandpass filters** are included that operate from hf thru vlf. External vlf preselectors are not required.

**10 dB pushbutton-controlled broadband preamp** can be activated on all ranges above 1.5 MHz. Low noise design.

**Various optional selectivity filters** for cw, RTTY and a-m are switch-selected from the front panel. Ssb filter standard.

**Special new low distortion "synchro-phase" a-m detector** provides superior international shortwave broadcast reception. This new technique permits 3 kHz a-m sideband response with the use of a 4 kHz filter for better interference rejection.

**Tunable i-f notch filter** effectively reduces heterodyne interference from nearby stations.

**The famous Drake full electronic passband tuning system** is employed, permitting the passband position

to be adjusted for any selectivity filter. This is a great aid in interference rejection.

**Three agc time constants** plus "Off" are switch-selected from the front panel.

**Complete transceive/separate functions** when used with the Drake TR-7 transceiver are included, along with separate R-7 R.I.T. control.

**Special multi-function antenna selector/50 ohm splitter** is switch-selected from the front panel, and provides simultaneous dual receive with the TR-7. This makes possible the reception of two different frequencies at the same time. Main and alternate antennas and vhf/uhf converters may also be selected with this switching network.

**The digital readout** of the R-7 may be used as a 150 MHz counter, and is switched from the front panel. Access thru rear panel connector.

**The built-in power supply** operates from 100, 120, 200, 240 V-ac, 50/60 Hz, or nominal 13.8 V-dc.

**The R-7 includes a built-in speaker**, or an external Drake MS-7 speaker may be used.

**Built-in 25 kHz calibrator** for calibration of analog dial.

**Low level audio output** for tape recorder.

**Up to eight crystal controlled fixed channels** can be selected. (With Drake Aux-7 installed.)

**Optional Drake NB-7A Noise Blanker** available. Provides true impulse type noise blanking performance.

**R. L. DRAKE COMPANY**

## Optional accessories available

Model 1531 Drake MS-7 Speaker  
 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, 1800 Hz  
 Model 7024 Drake SL-6000 A-m Filter, 6.0 kHz  
 Model 7026 Drake SL-4000 A-m Filter, 4.0 kHz  
 Model 1532 Drake NB-7A Noise Blanker  
 Model 1536 Drake Aux-7 Range Program/Fixed-Frequency Board

### DRAKE R-7 SPECIFICATIONS

**Frequency Coverage, continuous tuning (With Drake DR-7 Digital R/O, General Coverage Board)**  
**0 to 30 MHz continuous** (With or without Aux-7 board) (No gaps in frequency coverage)

**Frequency Coverage, continuous tuning (Without DR-7 Board installed)**

0.01 to 0.5 MHz	Without Aux-7 Board	5.0 to 5.5 MHz
0.5 to 1.0 MHz		7.0 to 7.5 MHz
1.0 to 1.5 MHz		14.0 to 14.5 MHz
1.5 to 2.0 MHz		21.0 to 21.5 MHz
2.5 to 3.0 MHz		28.5 to 29.0 MHz
3.5 to 4.0 MHz		

**Plus any eight additional 500 kHz segments** between 0 and 30 MHz when programmed into Aux-7 Board.

**Crystal Controlled Fixed Frequencies:** Up to eight crystal-controlled fixed frequencies within the 0-30 MHz range with Aux-7 Accessory Board. Proper 500 kHz range for desired fixed frequency is also programmed into Aux-7.

**Frequency Stability:** Less than 100 Hz drift after temperature stabilization including  $\pm 10\%$  line voltage variation.

**Digital Readout Accuracy:** (DR-7 installed) 15 PPM  $\pm$  100 Hz

**Analog Dial Accuracy:** Better than  $\pm 1$  kHz when calibrated to nearest calibrator marker.

**Modes of Operation:** Ssb, cw, RTTY, SSTV, a-m.

**Sensitivity (ssb):** 1.8-30 MHz Less than  $.20\mu\text{V}$  for 10dB S+N/N with preamp on (typically  $.15\mu\text{V}$ ) (Noise floor typically -134 dBm) Less than  $.50\mu\text{V}$  for 10 dB S+N/N without preamp (typically  $.30\mu\text{V}$ ) (Noise floor typically -128 dBm). .01-1.5 MHz Less than  $1.0\mu\text{V}$  for 10 dB S+N/N

**Sensitivity (a-m):** 1.8-30 MHz Less than  $1.2\mu\text{V}$  for 10dB S+N/N @ 30% modulation, preamp on. Less than  $2.0\mu\text{V}$  for 10 dB S+N/N @ 30% modulation, preamp off. .01-1.5 MHz Less than  $4.0\mu\text{V}$  for 10 dB S+N/N @ 30% modulation.

**Selectivity** (2.3 kHz filter supplied): 2.3 kHz at -6 dB, 4.2 kHz at -60 dB (1.8:1) shape factor. Optional 300 Hz, 500 Hz, 1800 Hz and 4 kHz filters are available as follows:

#### Accessory Crystal Filters

SL-300 cw filter: 300 Hz @ 6 dB, 700 Hz @ 60 dB  
 SL-500 cw, RTTY Filter: 500 Hz @ 6 dB, 1100 Hz @ 60 dB  
 SL-1800 ssb/RTTY Filter: 1800 Hz @ 6 dB, 3600 Hz @ 60 dB  
 SL-4000 a-m Filter: 4 kHz @ 6 dB, 8.0 kHz @ 60 dB

**Ultimate Selectivity:** Greater than 100 dB

#### Strong Signal Handling

Two-tone dynamic range: 99 dB 1.8-30 MHz  
 Third order intercept point: +20 dBm preamp off  
 Two-tone dynamic range: 95 dB 1.8-30 MHz  
 Third order intercept point: +10 dBm preamp on  
 Blocking: >145 dB above noise floor

**I-f and Image Rejection:** Greater than 80 dB (48.05 MHz 1st i-f) (5.645 MHz 2nd i-f) (50 kHz 3rd i-f)

**Agc Performance;** Less than 4 dB audio output variation for 100 dB input signal change above agc threshold. Agc threshold is typical  $.8\mu\text{V}$  with preamp off and  $.25\mu\text{V}$  with preamp on.

**Attack time:** 1 millisecond. Three selectable release times: Slow—2 seconds; Med—400 m sec; Fast—75 m sec. Also, "Off" position is provided.

**Antenna Input Impedance:** Nominal 50 ohms

**Audio Output:** 2.5 watts with less than 10% T.H.D. into nominal 4 ohm load.

**Power Requirements:** 100/120/200/240 V-ac  $\pm 10\%$ , 50/60 Hz, 60 watts or 11.0 to 16.0 V-dc (13.8 V-dc nominal), 3 amps

**External Counter Mode (DR-7 installed):** Readout: to 100 Hz. Accuracy: 15 PPM  $\pm 100$  Hz. Maximum input frequency: 150 MHz. Input level range: 50 mV to 2 V rms.

#### Dimensions/Weight:

Depth— 13.0 in (33.0 cm) excluding knobs and connectors.  
 Width— 13.6 in (34.6 cm)  
 Height— 4.6 in (11.6 cm) excluding feet  
 Weight— 18.4 lbs (8.34 kg)