R. L. DRAKE

MODEL **TR-4C**

SIDE BAND TRANSCEIVER



Drake has made The Best better!

more performance at lower cost thru engineering

The Drake TR-4C is a product of years of transceiver experience and design improvements. The resulting performance makes it one of the finest transceivers available. Its operating handiness is not only evident in circuit design, but also in packaging. Compact and lightweight, it is ideal for mobile use, portable excursions, and vacations. USB, LSB, CW, or AM operation is at your finger tips with 300 watts P.E.P. of communication power.

INCLUDED FEATURES:

- **300 Watts PEP** input on SSB, 260 watts input on CW.
- **Complete Amateur Band Coverage:** 80 through 15 meter bands complete and 28.5-29.1 MHz of 10 meters. Rest of 10 meter band obtained with accessory crystals.
- **Separate Sideband Filters:** separate USB and LSB filters eliminate oscillator shifting and insure long term carrier vs filter alignment.
- **Nominal 1.7:1 Filter Shape Factor:** These filters stand among the industry's finest with 6dB bandwidth of 2.1 kHz (chosen to slice thru QRM), 60 dB bandwidth of only 3.6 kHz and 100 dB ultimate rejection.
- **Provision For Highly Effective Accessory Noise Blanker.**
- **Heavy Irridited Cadmium Plated Chassis**
- **CW Side Tone Oscillator** for monitoring your CW transmission.
- **Finish:** scratch resistant epoxy paint.
- **Crystal Calibrator** built-in.
- **VFO Indicator Light** eliminates confusion of which main tuning knob controls the frequency when using an RV-4C remote VFO.
- **Automatic CW Transmit Receive Switching** sometimes called "semi" break-in.
- **Full AGC** with Drake dual time constant system confines a 60 dB signal change to a 3 dB audio change.
- **Effective Transmitting AGC** insures clean SSB output.
- **Solid State Permeability Tuned VFO** for low drift and accurate 1 kHz divisions on all bands. New easy to read dual concentric dials.
- **VOX or PTT** for use on AM or SSB.
- **Receiver S-Meter** automatically switches to indicate transmitting AGC on transmit.
- **Transmitter Plate Ammeter** indicates **Relative RF Output** by depressing load control shaft.
- **Adjustable Pi-Network** output circuit.

MODEL TR-4C SPECIFICATIONS

FREQUENCY COVERAGE: Full coverage on all amateur bands 10 thru 80 meters, in seven 600 kHz ranges, with crystals supplied: 3.5 to 4.1 MHz, 7.0 to 7.6 MHz, 13.9 to 14.5 MHz, 21.6 MHz, 28.5 to 29.1 MHz. Accessory crystals available for 28-28.6 and 29.1-29.7 ranges.

SOLID STATE VFO: Has linear permeability tuning. Tunes 4.9 to 5.5 MHz for all ranges.

DIAL CALIBRATION: New concentric dials. 100 kHz markings on one dial, 1 kHz division on second dial.

FREQUENCY STABILITY: High stability solid state VFO tunes same range on all bands. Drift is less than 100 Hz after warm-up, and less than 100 Hz for plus or minus 10% line voltage change.

MODES OF OPERATION: SSB Upper and Lower Sideband, CW and AM.

FRONT PANEL CONTROLS:

"Main Tuning" has spinner knob with adjustable skirt for calibrating main dial. Tunes VFO and rotates main dial.

"RF Tune" tunes the RF circuits common to receiver RF amplifier and transmitter driver stages. 0-10 scale.

"Plate" and "Load" tuning adjust pi-network capacitors in transmitter for proper resonance and loading on each band. Load control also converts ammeter to relative output when pushed in.

"Band" switch selects desired ham band (see frequency coverage).

"Function" switch has four positions "CAL, SSB, CW, AM." "CAL" operates built-in 100 kHz crystal calibrator for accurate setting of main tuning hair line indicator and knob skirt. "SSB" provides SSB operation, either VOX or PTT. "CW" provides for CW operation with automatic transmit receive switching and CW sidetone, and is used for tune up. "AM" provides for AM operation with VOX or PTT, and with diode detector for receiving.

"Xmtr Gain" functions as mike audio gain on SSB and AM, and as carrier injection control on CW for tune and CW.

"Rcvr Gain" knob controls receiver AF gain and power ON-OFF switch. Lever behind knob controls setting of RF gain.

"Sideband" switch in conjunction with indicator lights marked **"Upper"** and **"Lower"** selects desired sideband by connecting into the circuit either the upper or lower sideband filter.

RIGHT SIDE SCREWDRIVER ADJUST CONTROLS: Vox Gain, Anti-Vox Gain, S-Meter Zero.

RIGHT SIDE JACKS: Headphone (disconnects speaker circuit), Microphone (3-circuit for PTT), Key (normally closed).

REAR CONTROLS: Sidetone gain, Dial light dimmer.

REAR JACKS: Power (connects TR-4C to power supply and speaker), MUTE (for muting an external receiver), EXT RCV (for connecting an external receiver to the antenna), Antenna (for connecting the TR-4 to the antenna).

LEFT SIDE CONTROLS – Transceive/External receive switch (for selecting between the use of the TR-4C or an external receiver.)

INSIDE CONTROLS: Carrier balance.

METERS: Receiver S-meter/transmitting AGC indicator and plate ammeter/relative RF output indicator.

MISC: 20 tubes including voltage regulator; two transistors; 8 diodes; 100 kHz crystal calibrator built in; Dimensions: $5\frac{1}{2}$" high $10\frac{3}{4}$" wide, $14\frac{3}{8}$" deep (13.9 x 27.3 x 36.5 cm). Weight: 16 lbs. (35.2 kg). **Shipping:** Dimensions; 18 x 9 x 15" (45.7 x 22.9 x 38.1 cm). Weight; 21 lbs. (46.2 kg).

POWER SUPPLY REQUIREMENTS: Due to the 300 watt, P.E.P. input rating, the TR-4C requires a power supply capable of low voltage at high current with very good dynamic regulation. The voltage and current requirements are as follows:

1. 650 volts at 300 mA average and 500 mA maximum with 10% regulation from 100 mA to 500 mA and maximum ripple of less than 1%.
2. 250 volts at 175 mA with 10% regulation from 150 mA to 180 mA. This includes the effect of the 650 volt supply change if both voltages are obtained from the same transformer. Maximum ripple must be less than ¼%.
3. -45 to -65 VDC adjustable filtered bias into 33K ohm load.
4. 12.6 Volt AC or DC at 5.5 amps.

TRANSMITTER SPECIFICATIONS:

SINGLE SIDEBAND. 300 watts P.E.P. input power, VOX or PTT. Two special 9 MHz crystal filters provide upper or lower sideband selection on any band, without the necessity of shifting oscillators. Unwanted sideband suppression of more than 60 dB and carrier suppression of 60 dB. Overall audio frequency response 400 to 2500 hertz at 6 dB down. Distortion products 30 dB down from maximum output.

CW: Power input 260 watts. Carrier is shifted approximately 1000 hertz into one sideband, and mixer and driver are keyed. Grid block keying is free from chirps and clicks. Automatic transmit/receive switching when key is operated. CW sidetone oscillator for monitoring.

AM: Controlled carrier AM screen modulator is built-in. 260 watts P.E.P. input. Low carrier power increases 6 times to 50 watts output at maximum modulation. This system is compatible with SSB linears. VOX or PTT. A diode envelope detector is used in this mode. Product Detector can be used by switching manually.

OUTPUT IMPEDANCE: Nominal 50 ohms, adjustable with pi-network.

MICROPHONE INPUT: High-impedance.

RECEIVER SPECIFICATIONS:

SENSITIVITY: Less than ½ microvolt for 10 dB S/N.

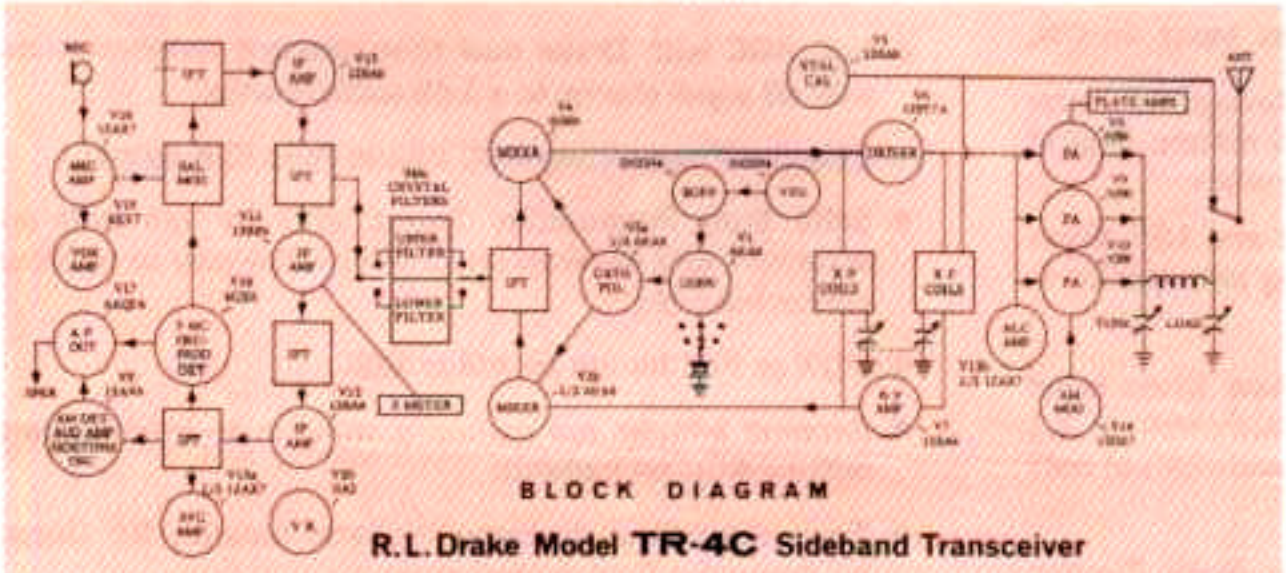
I.F. SELECTIVITY: 2.1 kHz at 6 dB, 3.6 kHz at 60 dB.

AGC: Full AGC on received modes—audio output varies less than 3 dB for 60 dB change in signal level. Any amount of AGC from zero to full can be obtained by adjustment of RF gain control. Time proven Drake AGC system provides fast attack and slow release with noise pulse suppression, no pumping or popping evident.

ANTENNA INPUT: Nominal 50 ohms.

AUDIO RESPONSE: 400 to 2500 Hz at 6 dB.

AUDIO OUTPUT POWER: 3 watts. **IMPEDANCE:** 4 ohms.



BLOCK DIAGRAM

R.L. Drake Model **TR-4C** Sideband Transceiver

TR-4C ACCESSORIES

34PNB Plug-in Noise Blanker
AC-4 120V 50/60 Hertz Power Supply
DC-4 12 VDC Solid State Power Supply
MS-4 Matching Speaker
RV-4C Remote VFO allows separating Receive and Transmit frequencies on same ham band
FF-1 Allows crystal control operation on Receive or Transmit or both with up to two channels
MMK-3 Mobile Mounting Kit
MC-4 Mobile Console

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