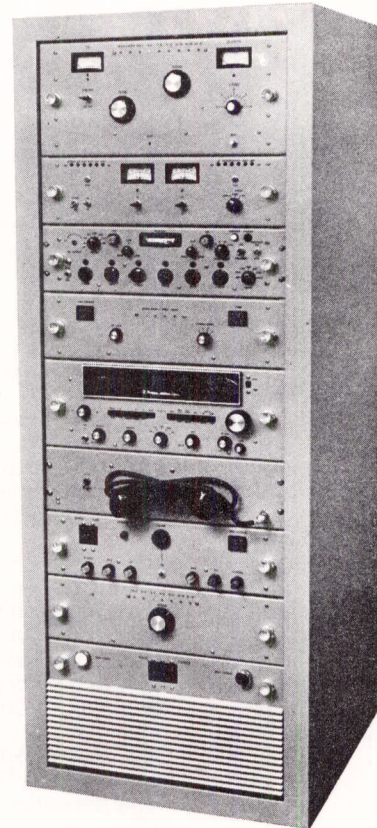




HIGH FREQUENCY TRANSMITTER-RECEIVER Model TRS-1K Series

TECHNICAL BULLETIN 201-1410

- Frequency range 2MHz to 30MHz
- Synthesized or multi-channel
- Automatic tuning with manual "override"
- Full protection against overload
- Reliable, solid-state design
- Precision frequency control
- CW, AM, AME, USB, LSB, ISB, FSK, FAX
- Rugged, modular construction



The TRS-1K transmitter-receiver is a complete communications station that requires only the application of primary power, audio lines and a suitable antenna system for proper operation. All standard modes of operation are available in this system including CW, AM, AM equivalent, single sideband (SSB), independent sideband (ISB), frequency-shift teletype and facsimile. Designed for operation in the 2-30MHz high frequency range, the synthesized TRS-1KJ is fully capable of receiving signals to 100kHz. The transmitter section delivers 1000 watts peak envelope power (PEP) and 1000 watts average power while the receiver section maintains an SSB sensitivity of better than one micro-volt over its range. This combined capability makes the TRS-1K an ideal system for establishing reliable circuits under the most adverse conditions.

Automated tuning of the transmitter section is standard on TRS-1K systems. However, all TMC transmitter-receivers are also supplied with a unique manual "override" feature which enables the operator to control all functions of the system at any time. In addition to complete automation, each TRS-1K contains the circuits needed to interface with many TMC accessories such as antenna tuners, remote control systems.

All circuits in the TRS-1K are solid state except those handling high power in the final RF amplifier stages. Maximum use is made of removeable assemblies securely fastened to the main chassis yet easily released for servicing. This type design simplifies troubleshooting and ensures the equipment is continuously available for operation.

THE TECHNICAL MATERIEL CORPORATION

TECHNICAL SPECIFICATIONS TRS-1K Series

STANDARD MODELS

TRS-1KE Multi-Channel 1KW HF Transmitter-Receiver
TRS-1KJ Synthesized 2KW HF Transmitter-Receiver

OPERATING PARAMETERS

Frequency Range
Frequency Selection
Frequency Stability
Frequency Display
Modes of Operation

TRS-1KE
2-30MHz
Eight pre-set channels
One part in 10⁻⁶/day
Front panel card
CW, AME, USB, LSB, ISB
Optional: Audio FSK

TRS-1KJ
2-29.9999MHz; Receive to 100KHz
Continuous in 100Hz steps
One part in 10⁻⁶/day
Direct-reading, digital display
CW, AME, USB, LSB, ISB
Optional: AM, FSK/FAX

Power Output
Input/Output Impedance
Tuning

1000 watts Peak Envelope Power (PEP); 1000 watts average
50 ohms nominal, unbalanced .2-to-1 VSWR adjustable to 3:1.
Transmit: Automated with manual, front-panel override 30 seconds nominal
Receive: Front-panel manual tuning (1KJ) or channel switch (1KE).

AUDIO PARAMETERS

Audio Sideband Response

250-3040Hz, ± 1.5 db CCIR
Optional: 250-6080Hz, 300-2700Hz. Others on request.

Audio Input

Two independent 600-ohm channels, balanced or unbalanced. -20 dmb to +5 dbm, rear apron terminals. Built-in microphone preamplifier for low-level dynamic input -55 db in to 47,000 ohms, front panel jack.

Keying Input

CW key jack and rear apron terminals, 200 baud, dry contact. FSK rear apron terminals, 75 baud. Optional 200 baud and higher. Shift ± 42.5Hz, ± 85 Hz, ± 170Hz, ± 425Hz. Input 20/60ma, 50 or 100 volts, dry contact, + to ground. FAX (TRS-1KJ) rear apron terminal. +1 to +10VDC produces 800Hz linear shift.

Audio Output

Internal monitor speaker; Headphone jack with speaker muting. External monitor speaker jack, 3 watts, max 5% THD at 1 watt: Two independent 600-ohm channels, balanced, adjustable to -10 db.

Automatic Gain Control

90 db RF dynamic range from 2uv (3KHz passband). Less than 10 db change in audio output for a 2uv to 500mv variation in input TRS-1KJ AGC partially independent for each SSB IF to minimize cross-channel interference.

TRANSMIT CHARACTERISTICS

Unwanted Sideband Rejection
Spurious Signals
Intermodulation Distortion
Residual Noise and Hum
Carrier Suppression
Harmonic Suppression

500Hz tone is minimum 50 db below PEP.
Minimum 50 db below PEP.
Minimum 35 db below either tone of a two-tone test at rated PEP.
Minimum 50 db below PEP. Power supply ripple 55 db below PEP.
Continuously variable to -55 db. Optional: selectable at 0, -3, -6, -20, -30, -55 db.
Minimum 45 db below PEP for second harmonics; 55 db for higher order. Optional RF filter available for added rejection.

RECEIVE CHARACTERISTICS

If Selectivity

SSB: 300-2700Hz at 3 db points. Optional: 250-3040Hz, 250-6080Hz. AM (TRS-1KE): 6KHz symmetrical at 3 db points; (TRS-1KJ): 12KHz symmetrical at 3 db points with selection to 6KHz and 3KHz. Optional selection to 1KHz and 0.4Hz.

If Ripple

Sensitivity 10 db (S + N)/N

Within 3 db absolute in SSB mode.

1.0uv SSB/3KHz passband

2-30MHz (400KHz-29.9999MHz TRS-1KJ)

4.0uv AM/6KHz passband

2-30MHz (400KHz-29.9999MHz TRS-1KJ)

1.0uv CW/1KHz passband

2-30MHz (400KHz-29.9999MHz TRS-1KJ)

Image Rejection

First -80 db minimum; second -60 db minimum.

If Rejection

Minimum -80 db.

Opposite Sideband Rejection

300Hz tone minimum 50 db down.

Hum and Noise

Minimum 40 db below full output.

ENVIRONMENTAL AND INSTALLATION

Cooling

Filtered, forced air in semi-pressurized cabinet. Intake air at bottom front (optional bottom rear); exhaust out top rear.

Operating Conditions

0°C to +50°C, up to 90% Relative Humidity at MSL.

Storage Conditions

-30°C to +80°C, up to 90% Relative Humidity at MSL.

Primary Power

230 volts AC ± 10%, 50/60Hz, single phase (three-phase optional). Taps provided for 210, 220, 240 or 250 volt operation. Optional 380 volt supply available on request. Consumption: Maximum 3.2KW Average of CW, 0.9pf. Solid state power supply. Optional voltage regulator on request.

Size and Weight

49" (124.5cm)* high x 23" (58.4cm) wide x 26" (66.0cm) deep. 654 lbs./297.3 kg installed. (*Rack space included for accessory equipment.)

Shipping Data

Commercial packing for domestic U.S. shipment. Five (5) containers. Largest: 65" x 27" x 35". Total weight and cube: 1060 lbs./74.4 cu. ft.

Loose Items

Two technical manuals (Operator/Installation/Service). Mating signals and RF connectors.

ORDERING INFORMATION

Models

TRS-M-1K/E: Multi-channel manually tuned 1 KW Transmitter
TRS-M-1K/J: Synthesized manually tuned 1 KW Transmitter
TRS-A-1K/E: Multi-channel automatically tuned 1 KW Transmitter
TRS-A-1K/J: Synthesized automatically tuned 1 KW Transmitter
TRS-R-1K/E: Multi-channel automatically tuned Transmitter with remote control interface.

Specifications Are Subject to Change Without Notice.

THE TECHNICAL MATERIEL CORPORATION

CABLE: TEPEI

700 FENIMORE ROAD, MAMARONECK, NY 10543 U.S.A.

TLX: 137-358

TEL.: 914-698-4800

TWX: 710 566 1100