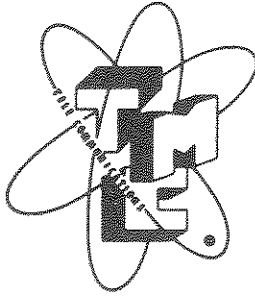


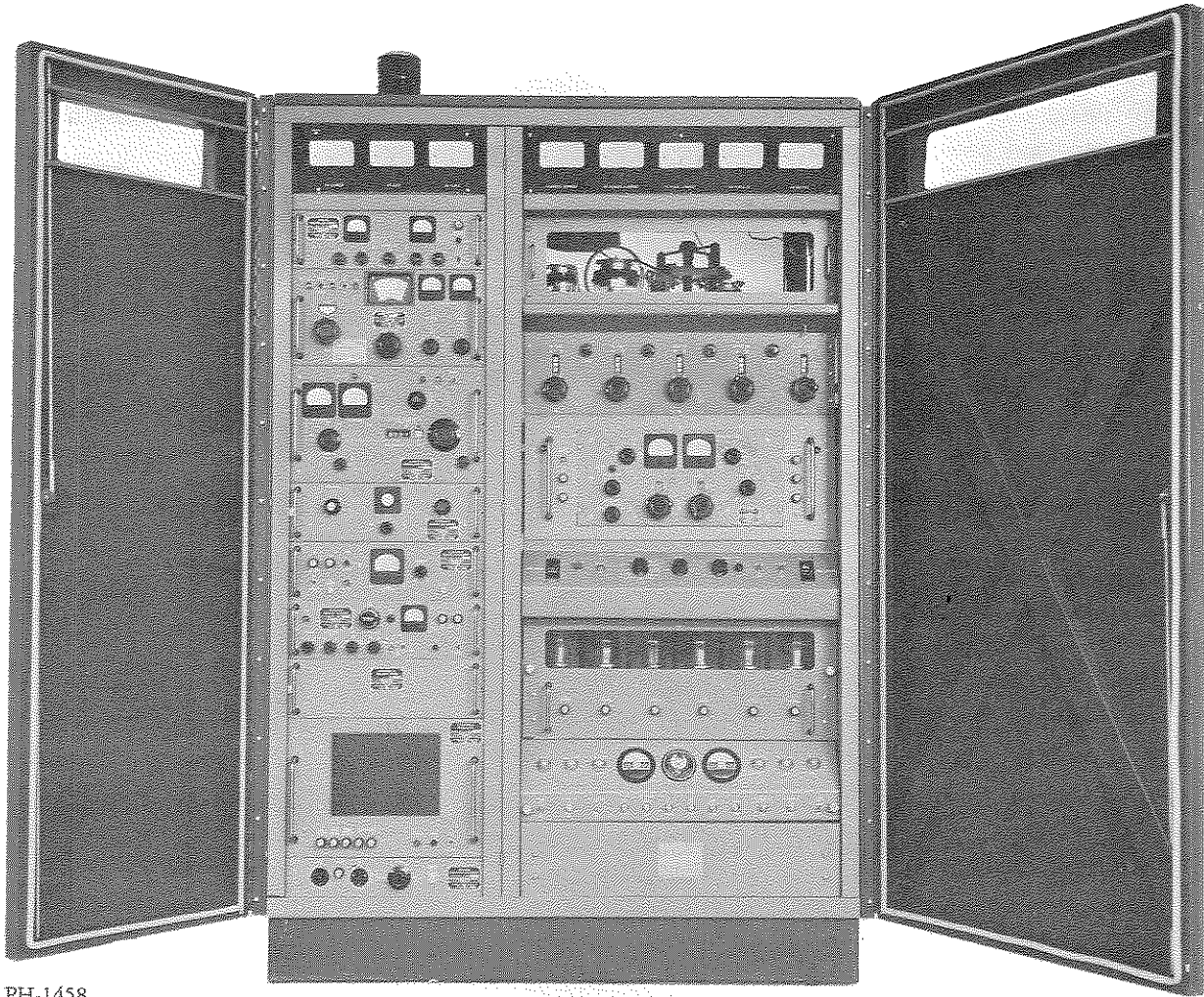
JAN-20-1962



TECHNICAL BULLETIN NUMBER 1005

Synthesized General Purpose Transmitter
TMC Models GPT-10K-R and GPT-10K-AC
AN/FRT-39B
AN/FRT-39C

1962



PH-1458

Models GPT-10K-R

TMC Models GPT-10K-R (AN/FRT-39B) and GPT-10K-AC (AN/FRT-39C) are general purpose synthesized transmitters that provide SSB, ISB, AM, CW, FSK and FAX modes of operation in the frequency range of 2 to 28 mc.

Models GPT-10K-R and GPT-10K-AC are conservatively rated at 10,000 watts PEP, 5000 watts average power outputs. Under conditions of a 64 tone voice frequency modulation, these GPT-10K synthesized transmitters will deliver approximately 50 kw PEP on a 10% duty cycle with better than 35 db signal to distortion ratio.

Synthesized General Purpose Transmitter

GPT-10K-R and GPT-10K-AC feature synthesized frequency control with 100 cps incremental tuning throughout the tuning range, with stability and accuracy of 1 part in 10^8 for a 24 hour period. The synthesizer may be operated from a station standard if desired. In the event of failure of the standard, the exciter provides an emergency frequency stability of 1 part in 10^6 per day. Also, should low power transmission be required or for emergency conditions, a 1 kw transmission capability is readily available from the IPA section. All amplifier stages are linear. The over-all minimum bandwidth of the final linear amplifier is at least 20 kc between 3 db voltage points over the entire frequency range.

Front panel bandswitching and tuning reduces frequency changeover time to a minimum (no plug-in components or mechanical adjustments). Bandswitches are of the self-cleaning type. The modular design lends itself to ease of installation, maintenance and repairs, such as: drawers on tilting slides, front panel interlock circuit continuity indicators, blown fuse indicators, and bias and overload protection with automatic recycling and audio alarm.

The GPT-10K-R has proven itself at military and commercial shore installations, mobile vans and in air transportable communication systems throughout the world. The GPT-10K-AC is provided with Robinson mounts for high environmental shock installations, such as shipboard. Balanced or unbalanced operation is provided at the option of the customer. For unbalanced output, an adapter plate is provided to attach appropriate RF coaxial fittings, listed under "Accessory Equipment". All accessory items are sold separately.

TECHNICAL SPECIFICATIONS Models GPT-10K-R — GPT-10K-AC:

FREQUENCY RANGE:	2 to 28 megacycles, Bandswitched.
OPERATING MODES:	SSB, ISB, CW, AM, FSK and FAX.
POWER OUTPUT:	10,000 watts 2 tone PEP signal to distortion ratio at least 35 db. 5,000 watts 2 tone PEP signal to distortion ratio at least 40 db. 5,000 watts average CW or FS.
OUTPUT IMPEDANCE:	50 or 70 ohms unbalanced. 600 ohms balanced. Pi-L network will match a load with VSWR of 2:1 maximum.
STABILITY AND FREQUENCY CONTROL:	1. All radio frequency determining elements referenced to a built-in 1 mc standard. 2. Stability of 1 part in 10^8 per day for ambient temperature change of 15° C within the range of $0-50^{\circ}$ C.
TUNING:	All tuning and bandswitching controls are on the front panel (no plug-in components or mechanical adjustments). Self-cleaning contacts on RF bandswitches.

TMC Models GPT-10K-R and GPT-10K-AC

DISTORTION PRODUCTS:	See Power Output.
UNWANTED SIDEBAND REJECTION:	500 cps single tone 60 db down from full PEP output.
SPURIOUS SIGNALS:	At least 60 db below full PEP output.
CARRIER INSERTION:	-55 db to full PEP output.
HARMONIC SUPPRESSION:	Second harmonic at least 50 db down from PEP output. Third harmonic at least 65 db down from PEP output.
AUDIO RESPONSE:	CBE-1 Crystal lattice filters flat within ± 1.5 db 250 to 7500 cps. CBE-2 Crystal lattice filters flat within ± 1.5 db 250 to 3300 cps.
AUDIO INPUTS:	600 ohm balanced -20 to +10 dbm continuously adjustable to full PEP output. An unbalanced input can also be applied.
HEAT DISSIPATION:	Maximum 15 kw.
SPECIAL FEATURES:	ALDC (automatic load and drive control) is provided to improve linearity, limit distortion, and deliver a relatively constant RF output level during high modulation peaks or load changes. Front panel control allows adjustment of the level at which the ALDC takes effect, or switching off the ALDC, if desired.
METERING:	Large scale meters are mounted on tilted panels at the top of the units to accurately indicate operation of all critical circuits. These meters are externally illuminated for ease in reading.
ENVIRONMENTAL:	Designed to operate in any ambient temperature between the limits of 0 and 50° C. for any value of humidity up to 90%.
COOLING:	Filtered forced air cooling, semi-pressurized cabinet.
SAFETY FEATURES:	Overload and bias protection with automatic recycling and alarm. Safety interlocks are provided on all high voltage points.
NOISE:	Power supply ripple 55 db down from full PEP output. Other, 70 db down from full PEP output.

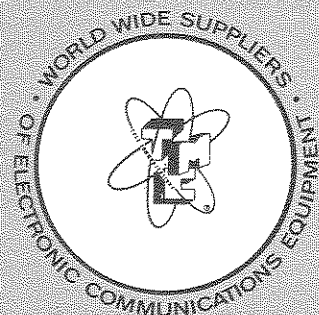
Synthesized General Purpose Transmitter

TIS-3 KEYING INFORMATION:	See TB* 2025 (Old SSB 245B)
PRIMARY POWER REQUIREMENTS:	208-250 volts 50/60 cps, 3 phase Maximum 20,000 watts.
INSTALLED WEIGHT:	Approximately 2800 lbs.
SIZE OF LARGEST CONTAINER:	36¼" x 43¼" x 81½"
SHIPPING WEIGHT & CUBE:	4243 lbs. Cube 260.6 cu. ft.
FEDERAL STOCK NUMBER:	F 5820-448-0468 w/o spares
INSTRUCTION BOOK:	TMC IN-234, MIL _____
COMPONENTS AND CONSTRUCTION:	All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

ACCESSORY EQUIPMENT:

TMC KIT 113 (For unbalanced operation)	Provides capability of computing VSWR on unbalanced operation. Internally installed in the transmitter.
TMC MODEL TMA (For 600 operation)	Provides 2 RF ammeters 0-5 amps each for indicating the RF current in each side of a 600 ohm balanced line. The meters are mounted on a bakelite panel and installed in a metal case that is mounted on top of the transmitter at the 600 ohm feeders.
RF COAX FITTINGS:	AX-271 — 1½" 70 ohm EIA flange. AX-272 — 1½" 50 ohm EIA flange. AX-273 — QDL Connector for RG-17, 18, 35 and 164/U coax. AX-287 — LC Connector for RG-17/U and RG-18/U coax. Additional information on mating cable fittings may be obtained from TMC's Connector Products Catalog.

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TECHNICAL MATERIEL CORPORATION



The TECHNICAL MATERIEL CORPORATION

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