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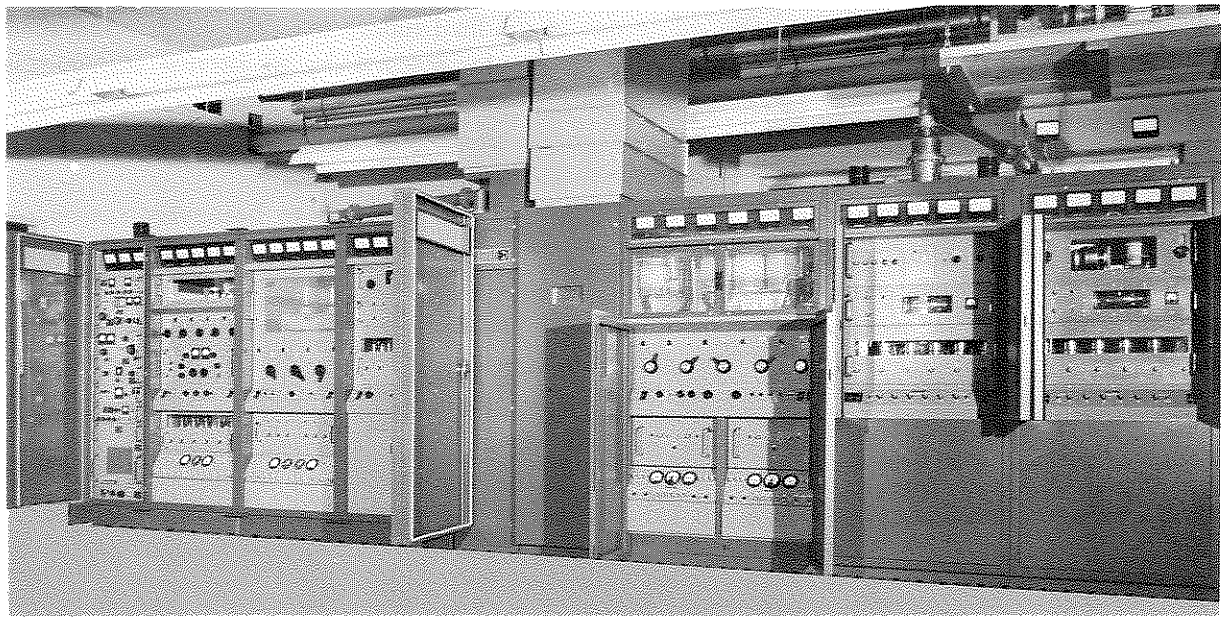
General Purpose Transmitter
TMC Model GPT-200K
AN/FRT-62



- 2-28 mc
- Front panel maintainable
- Meets CCIR recommendations
- Completely air cooled
- Fully protected against mismatch overload
- Compact and completely self-contained
- Completely bandswitched from front panel
- Positive switching action (no rolling contacts)

The Technical Materiel Corporation's Model GPT-200K (AN/FRT-62) is a General Purpose Transmitter featuring 260,000 synthesized channels from 2 to 28 megacycles at 200 kw PEP output in SSB, ISB, AM, AM equivalent, CW, FSK, and FAX operating modes. Under conditions of 64 tone modulation, this transmitter will deliver approximately 500,000 watts peak power at 20% duty cycle, with better than 35 db signal to distortion ratio, or 1,000,000 watts PEP at 10% duty cycle.

GPT-200K is housed in an attractive and compact assembly that is constructed on a modular basis for ease in installation and contains all elements, including blowers and transformers, required to operate the equipment. The transmitter is completely air cooled and the semi-pressurized cabinets may be exhausted to the outside when operating in closed or air conditioned spaces.

Installation supervision, checkout of equipment after installation, and operator and maintenance instruction on the transmitter by a factory representative is provided for a period up to thirty (30) days at each installation site.

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The power amplifier is designed with two tubes operating in parallel and powered by two independent power supplies. A 100 kw PEP output is available should failure occur to one of the final tubes or its associated power supply, without otherwise affecting the technical characteristics of the equipment. Also, 40 kw, 10 kw and 1 kw emergency outputs are available. The change to emergency output can be accomplised in a matter of minutes. This transmitter meets or exceeds CCIR recommendations in all operating modes.

The design of this transmitter on a modular basis provides ease in maintenance and rapid accessibility to tubes and components (including one of the final tubes) from the front of the unit. In fact, most of the drawers are on tiltable slide mounts for ready access to internal voltage test points and components.

This transmitter is controlled from its front panels throughout the frequency range. Bandswitching provides positive RF connection with no rolling contacts.

Transportable configurations of the GPT-200K, van mounted, have been very successful. Modular Construction permits the entire transmitter to be installed in a single container with associated dummy load or divided into smaller shelters with interconnect provisions.

Installation of van-mounted transmitters is accomplished at the factory and the time required for operation after arrival at the site depends only upon the speed with which signal, power and antenna connections are made. Installation of a transmitter shipped in normal packing cases is accomplished within a few days.

The final amplifier and 40 kw driver are protected aginst mismatch overload by VSWR protect circuitry, which can be preset to be given value. Units used in the driver section are directly interchangeable with Model GPT-40K (AN/FRT-40B) transmitter.

Transmitting Specifications, TMC Model GPT-200K

FREQUENCY RANGE:	2 to 28 mcs.
MODES OF OPERATION:	AM, AM equivalent, SSB, ISB, CW, FSK and FAX.
POWER OUTPUT:	200,000 watts two tone PEP. Distortion at least 35 db down from PEP on standard two tone test. 100,000 watts two tone PEP. Distortion at least 40 db down from PEP standard two tone test. 125,000 watts average CW or FSK.
OUTPUT IMPEDANCE:	50 ohms nominal unbalanced 6⅛" EIA Flange or 600 ohms balanced. Double-Pi network will match a load with VSWR of 2:1 or less.
STABILITY AND FREQUENCY CONTROL:	1. All radio frequency determining elements referenced to a built-in 1 mc standard. (This standard may be phase locked to a station standard of very high stability, if desired.) 2. Stability of 1 part in 10^8 per day for ambient temperature change of 15° C within the range of 0° to 50° C. 3. In the event of failure of the built-in standard, the exciter provides an emergency frequency stability of 1 part of 10^6 per day.

TUNING SYSTEM:	All tuning and bandswitching controls are on the front panel (no plug-in components or mechanical adjustments).
SIGNAL/DISTORTION RATIO:	See Power Output.
UNWANTED SIDEBAND REJECTION:	A signal at 500 cps is at least 60 db down from full PEP in the unwanted sideband.
SPURIOUS SIGNALS: (as defined by CCIR)	At least 60 db below full PEP output.
VSWR PROTECT CIRCUITS:	The 40 kw driver and 200 kw final amplifiers are provided with VSWR meters that may be preset to disable the transmitter when VSWR of 2:1 is reached.
NOISE LEVEL:	Noise level is at least 70 db down from either tone of a two tone test.
CARRIER INSERTION:	−55 db to full PEP output.
HARMONIC SUPPRESSION:	All harmonics are at least 65 db below full PEP output. Not to exceed 50 milliwatts.
AUDIO RESPONSE:	1. Crystal lattice filters flat within ± 1.5 db from 250 to 7500 cps ± 25 cps. 2. Crystal lattice filters flat within ± 1.5 db from 250 to 6000 cps ± 25 cps.
AUDIO INPUTS:	600 ohms balanced. −20 to +10 dbm, adjustable. −20 dbm input will provide full RF output. An unbalanced input can also be applied.
HUM LEVEL:	At least 55 db below full PEP output.
ALDC:	The automatic load and drive control improves linearity, limits distortion and maintains a relatively constant output level during high peaks of modulation or load changes. The front panel control allows adjustment of the level at which the ALDC takes effect or switching off the ALDC as desired.
METERING:	Front panel meters provide indications of the operation of all critical circuits.
ENVIRONMENTAL CONDITIONS:	Designed to operate in any ambient temperature between 0° C and 50° C, and any value of humidity up to 95%.
COOLING:	Filtered forced air cooling, semi-pressurized cabinet. Transmitter air intake and exhaust duct sections are provided to facilitate installation.
SAFETY FEATURES:	Overload protection with audio alarm. Safety interlocks are provided on all high voltage points.
TIS-3 KEYING INFORMATION:	See TB 2025 (SSB 245B).

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INSTALLATION DATA:	Weight: Approximately 26,000 lbs. Size: 23'6" w × 84" h × 40" d.
PRIMARY POWER:	Transformer Primary tapped for 190/208/230/250v, AC, 50/60 cycles 3 phase. Approximately 400 kw. Primary of transformer may be connected to either DELTA or WYE input.
POWER REQUIREMENT:	1. For 200,000 watt final: 1000 amps per leg @ 208v, 3 phase. Power factor: .97. 2. For 40,000 watt driver: 200 amps per leg @ 208v, 3 phase. Power factor: .97. 3. 115/208v, 50/60 cycles, 1000 watts.
SHIPPING DATA:	1. Size of largest container: 83¼" × 45¼" × 55¼" Weight: 2,275 lbs. 2. Total Shipment: 69 boxes, 36,000 lbs., 2600 cu. ft.
FEDERAL STOCK NUMBER:	F5820-970-6457
INSTRUCTION BOOKS:	Operation Manual IN 322 Installation Manual IN 304 Maintenance Manual IN 321
MILITARY NOMENCLATURE:	Transmitting Set, Radio, AN/FRT-62
LOOSE ITEMS:	Emergency output cables, interconnection cables, supplemental hardware, special tools and electrical plugs are provided.
COMPONENTS AND CONSTRUCTION:	All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.
ACCESSORY EQUIPMENT:	(All priced separately) 1. TER-100K/50U, Dummy Load, described in Bulletin 8016, can be provided as an accessory item at the option of the customer. When the TER-100K/50U is purchased in conjunction with the GPT-200K transmitter, two 6⅛" EIA vacuum switches are provided to control the output of this transmitter to either the dummy load or the antenna. The control to operate these switches is built into the GPT-200K transmitter. 2. Solid state high voltage power supplies (described in Field Engineering Bulletin #23) 3. Stability of 1 part in 10^9 per day. 4. Vapor cooling of 10 kw driver, 40 kw IPA and 200 kw final amplifier.

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