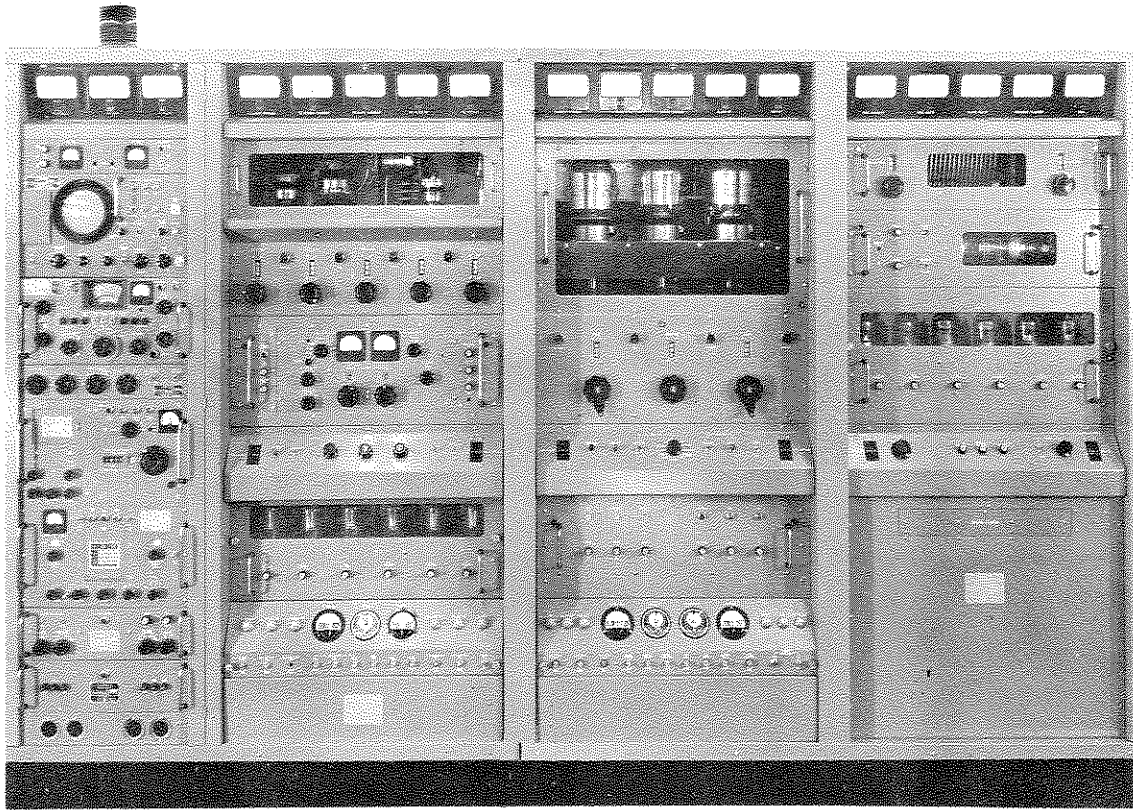




General Purpose Transmitter  
 TMC Model GPT-40K-A  
 TMC Model GPT-40K-F  
 AN/FRT-40 ( )  
 AN/FRT-54 ( )



TMC MODEL GPT-40K

TMC Models GPT-40K-A (AN/FRT-40 ( )) and GPT-40K-F (AN/FRT-54 ( )) are general purpose high powered transmitters that provide SSB, ISB, AM, and CW modes of operation in the frequency range of 2 to 28 megacycles. FSK and FAX operation is also supplied by Model GPT-40K-A, which contains a built-in Frequency Shift Keyer (XFK). Models GPT-40K are conservatively rated at 40,000 watts PEP, 20,000 watts average power outputs. Under conditions of a 64 tone voice frequency modulation, the GPT-40Ks will deliver approximately 100 kw PEP on a 20% duty cycle with better than 35 db signal to distortion ratio, or 200 kw PEP on a 10% duty cycle.

The 10 kw IPA driver stage uses a grounded grid ceramic type tube for higher efficiency, while the final GPT-40K tube is a 6697 protected by a hydrogen thyratron crowbar. The overall minimum bandwidth of the final linear amplifier produces greater than 20 kc between 3 db voltage points over the entire frequency range. All amplifier stages are linear.

ALDC (automatic load and drive control) is incorporated to improve linearity, limit distortion, and maintain a relatively constant RF output level during high peaks of modulation or load changes. Front panel bandswitching and tuning reduces frequency changeover time to a minimum (no plug-in components or mechanical adjustments). Bandswitches are of the self-

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cleaning type. A built-in spectrum analyzer permits immediate monitoring of Exciter, IPA, and P.A. outputs. Should future high stability operation of 1 part in  $10^8$  be desired, it is only necessary to replace the components in the auxiliary frame, with TMC Model SBG-1 for 250-7500 cps operation, or the SBG-2 for 250-3300 cps operation.

The GPT-40K contains all power supplies and ventilation equipment. 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.

10 kw and 1 kw transmission is available should low power be required or for emergency use. The conservative rating of the GPT-40K transmitters give exceptionally linear characteristics at the rated output. Thoroughly field proven, the GPT-40Ks are operating at military and commercial installations afloat, ashore, and in mobile vans and shelters, with adequate shock mounting for such an environment. Balanced or unbalanced operation is provided at the option of the customer. For unbalanced output a 3 1/8" EIA flange is provided.

### TECHNICAL SPECIFICATIONS: Models GPT-40K-A—GPT-40K-F

FREQUENCY RANGE:	2 to 28 megacycles bandswitched.
MODES OF OPERATION:	
GPT-40KA	SSB, ISB, AM, CW, FSK and FAX.
GPT-40KF	SSB, ISB, AM, CW. (This model has 2 VOX-5 and no XFK.)
POWER OUTPUT:	40,000 watts PEP signal to distortion ratio at least 35 db.
	20,000 watts PEP signal to distortion ratio at least 40 db.
	25,000 watts average, CW or FS.
OUTPUT IMPEDANCE:	50 or 70 ohm unbalanced 3 1/8" EIA Flange, or 600 ohm balanced, porcelain bowls with 1/2" bolts on 12" centers.
	Pi-L network will match a load with VSWR of 2:1 maximum.
STABILITY AND FREQUENCY CONTROL:	1 part in $10^6$ per 24 hour period from 10 oven controlled crystal positions in the SBE.
TUNING:	All tuning and bandswitching controls are on the front panel. (no plug-in components or mechanical adjustments) Self-cleaning contacts on RF band-switches.

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DISTORTION PRODUCTS:	See Power Output.
DISTORTION MEASURING:	Built-in spectrum analyzer.
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 full PEP output. Third harmonic at least 65 db down from full PEP output.
AUDIO RESPONSE:	SBE-3 Crystal lattice filters flat within $\pm 1.5$ db, 250-7500 cps. SBE-4 Crystal lattice filters flat within $\pm 1.5$ db, 250-6000 cps.
AUDIO INPUTS:	600 ohms balanced -20 to +20 dbm. Continuously adjustable for full RF output. An unbalanced input can also be applied.
HEAT DISSIPATION:	40 kw (Approx.)
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. Voice Operated Relay — Voice control with anti-trip features. Adjustable gain and squelch.
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.

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SAFETY FEATURES:	Overload and bias protection with automatic recycling and alarm. Safety interlocks are provided on all high voltage points.
NOISE LEVEL:	Power supply ripple -55 db from full PEP output. Other, -70 db from full PEP output.
XFK KEYING INFORMATION: (For GPT-40KA only)	Frequency Shift linear to 1000 cycles Keying source: <ol style="list-style-type: none"><li>1. Polar or neutral positive.</li><li>2. Linear Input 30,000 ohms impedance.</li></ol> Keying speed: 750 bauds (1000 wpm) maximum. Keying Bias: Not greater than 10% at 750 bauds.
INSTALLATION DATA:	SIZE: 10 1/2 feet wide × 3 feet deep × 7 feet high. WEIGHT: 7000 lbs approximately.
PRIMARY POWER:	190 to 250 volts AC 50/60 cps., 3 phase, 60 kw (approx.) Primary of transformer may be DELTA or "Y" connected.
FEDERAL STOCK NUMBER:	
INSTRUCTION BOOK:	TMC IN-252 MIL

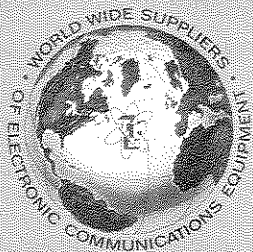
For further information on auxiliary rack components, refer to TB 2009 (SSB 239) for SBE-3; TB 6001 for PTE-3 Spectrum Analyzer; TB 2018 (SSB 134C) for VOX; and TB 2020 (SSB 118) for XFK.

COMPONENTS AND CONSTRUCTION: All equipment is manufactured in accordance with JAN/MIL specifications wherever practicable.

### ACCESSORY EQUIPMENT:

TMC Model TMA 40K:  
(For 600 ohm balanced operation) Provides 2 RF ammeters 0-10 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.

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