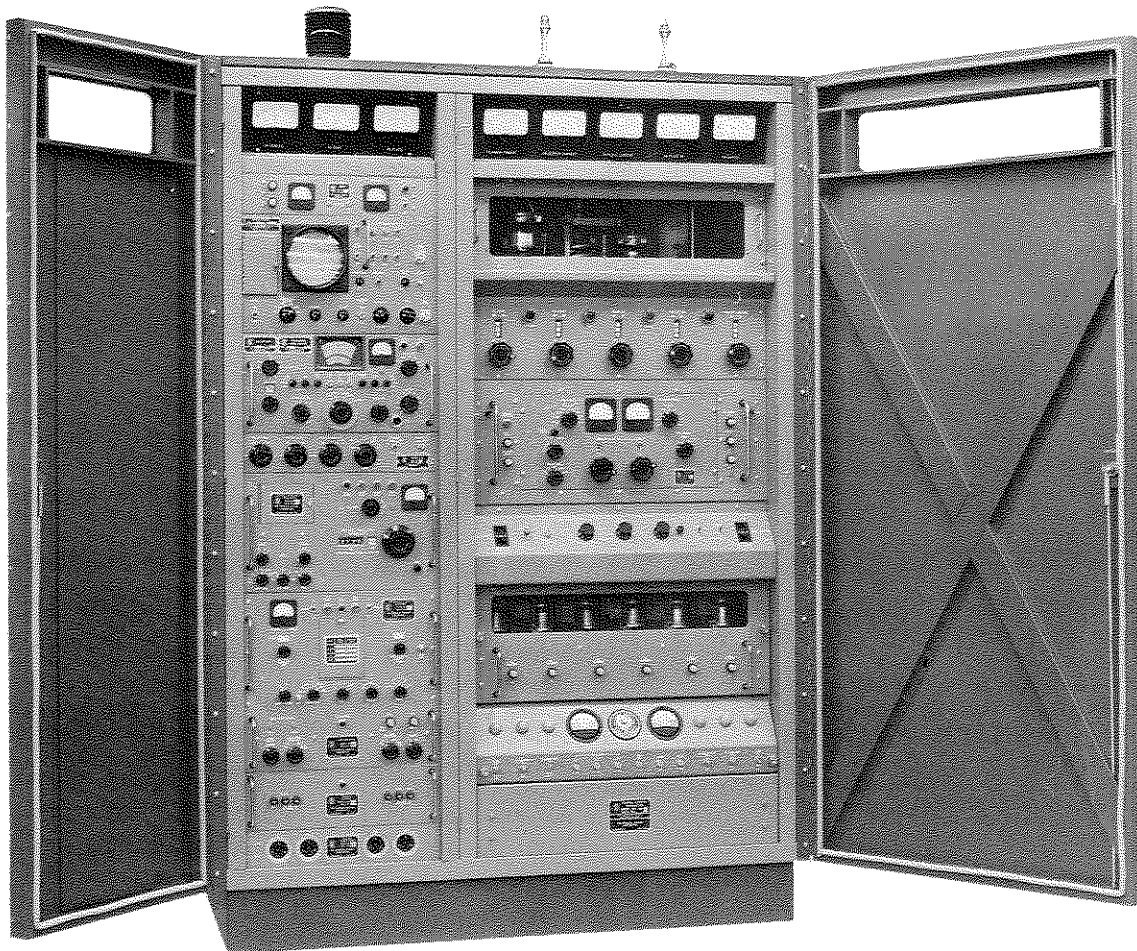


MAR 16 1962

TECHNICAL BULLETIN NUMBER 1008

General Purpose Transmitters  
TMC Models GPT-10K  
AN/FRT-39A  
AN/FRT-52



TMC MODEL GPT-10K

TMC's Models GPT-10K series of transmitters provide SSB, ISB, AM, CW, FSK, and FAX modes of operation with continuous tuning from 2 to 28 megacycles. Models GPT-10K transmitters are conservatively rated at 10 kw PEP, 5 kw average.

Under conditions of a 64 tone voice frequency modulation, the GPT-10K transmitters will deliver approximately 25 kw PEP on a 20% duty cycle with better than 35 db signal to distortion ratio, or 50 kw PEP on a 10% duty cycle.

The over-all minimum bandwidth of the final amplifier is at least 20 kc between 3 db voltage points over the entire frequency range.

Models GPT feature many customer options as to capabilities and types of output (un-balanced 50 or 70 ohm or balanced 600 ohm). Two of these units have been nomenclatured: GPT-10K-A (AN/FRT-39A) and GPT-10K-T (AN/FRT-52).

A grounded grid ceramic type tube is used in the final linear amplifier for high efficiency. The conservative rating of the GPT-10K transmitters gives exceptionally linear characteristics at the rated output.

## General Purpose Transmitters

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. A built-in spectrum analyzer permits immediate monitoring of Exciter, IPA, and P.A. outputs. (Refer to chart for models having an FSA component). GPT-10K models contain 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 indication, blown fuse indication, and bias and overload protection with automatic recycling and audio alarm. 1 kw transmission is available should low power be required or for emergency use.

TMC's GPT-10K series of transmitters have been field proven at military and commercial installations, afloat, ashore, and in mobile vans and shelters with adequate shock mounting for such an environment. Bowls on 12" centers are provided for balanced output, and 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, Model GPT 10 kw Unsynthesized

FREQUENCY RANGE:	2 to 28 megacycles Bandswitched.
MODES OF OPERATION:	See Chart.
POWER OUTPUT:	10,000 watts PEP signal to distortion ratio at least 35 db. 5,000 watts 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 or 2:1 maximum.
STABILITY AND FREQUENCY CONTROL:	1 part in $10^6$ per 24 hour period from 10 oven controlled crystal position 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 bandswitches.
DISTORTION PRODUCTS:	See Power Output.
DISTORTION MEASURING:	Built-in spectrum analyzer on Models with FSA. (See Chart).
UNWANTED SIDEBAND REJECTION:	500 cps single tone, 60 db down from full PEP output.
SPURIOUS SIGNALS:	At least 60 db below full PEP output when SBE-3 is used, 55 db when SBE-2 is used.
CARRIER INSERTION:	-55 db to full PEP output.
HARMONIC SUPPRESSION:	On 2 tone test, 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-2 flat within $\pm 1.5$ db, 350-3300 cycles. SBE-3 Crystal lattice filters flat within $\pm 1.5$ db, 250-7500 cycles.

TMC MODEL NUMBER	MILITARY NOMENCLATURE	STABILITY 1 Part In --- Per Day	CAPABILITIES						COMPONENTS											INSTALLATION DATA					Shipping Data (Approx.)		LOGISTICS DATA				TMC MODEL NUMBER										
			SSB	ISB	AM	CW	FSK	FAX	SLM-1 Sideband Level Monitor (350-3300 cps)	SLM-2 Sideband Level Monitor (250-7500 cps)	SBE-2 Transmitting Mode Selector (350-3300 cps)	SBE-3 Transmitting Mode Selector (250-7500 cps)	FSA Frequency Spectrum Analyzer	MCP Master Control Panel	VOX Variable Frequency Oscillator	XFK Frequency Shift Exciter	AK-100 Isolation Keyer (50V, 100V, 20ma, 60ma)	APP Auxiliary Power Panel	TTC Two Tone Generator (AF & RF)	TIS-3 Tone Intelligence Unit	HEIGHT (in.)	WIDTH (in.)	DEPTH (in.)	WEIGHT (lbs.)	APPROX. PRIMARY POWER (watts)	WEIGHT (lbs)	VOLUME (cu. ft.)	A. FSN w/spares	B. FSN w/o spares	C. TMC Inst. Book		D. MIL Inst. Book									
GPT-10K-A	AN/FRT-39A	10 <sup>6</sup>	•	•	•	•	•	•	X		X		X	X	X	X	X	X		84	56	43½	2800	15,000	4243	260.6	A B C D	F5820-666-2635			GPT-10K-A										
GPT-10K-B		10 <sup>6</sup>	•	•	•	•		X		X		X	X	X			X	X		"	"	"	2730	14,800	4050	248	A B C D	IN-202			GPT-10K-B										
GPT-10K-C		10 <sup>6</sup>	•	•	•	•			X		X	X	X	X			X	X		"	"	"	2740	"	4070	250	A B C D	IN-202			GPT-10K-C										
GPT-10K-G		20 Parts in 10 <sup>6</sup>											X	X	X	X	X			"	"	"	2584	14,575	3813	228	A B C D	IN-202			GPT-10K-G										
GPT-10K-H		10 <sup>6</sup>	•	•	•	•		X		X		X	X	XX			X	X		"	"	"	2780	15,000	4203	258.6	A B C D	IN-202			GPT-10K-H										
GPT-10K-L		10 <sup>6</sup>	•	•	•	•	•		X		X	X	X	X	X	X	X	X		"	"	"	2870	15,000	4243	260.6	A B C D	IN-202			GPT-10K-L										
GPT-10K-P		10 <sup>6</sup>	•	•	•	•		X		X										"	"	"	2550	14,225	3780	220	A B C D	IN-202			GPT-10K-P										
GPT-10K-T	AN/FRT-52	10 <sup>6</sup>	•	•	•	•			X		X	X	X	XX			X	X		"	"	"	2800	15,000	4243	260.6	A B C D	IN-202			GPT-10K-T										
GPT-10K-W		10 <sup>6</sup>	•	•	•	•	•	X		X		X	X	X			X	X	X	"	"	"	2780	15,000	4203	258.6	A B C D	IN-202			GPT-10K-W										
GPT-10K-AB(+)		10 <sup>6</sup>	•	•	•	•	•		X		X		X	X			X		X	"	"	"	2800	15,000	4243	260.6	A B C D	IN-202			GPT-10K-AB(+)										
FOR ADDITIONAL INFORMATION ON COMPONENTS REFER TO TECHNICAL BULLETIN NUMBER:														2008	2009	6001		2018	2020	9003		6002	2025																		

(+) PVC-1 (Passive Volume Control)  
Included in components

\* These models have 2 VOX-5

## TMC Models GPT-10K

TMC MODEL		
GPT-10K	AUDIO INPUTS:	SBE-4 Crystal lattice filters flat within $\pm 1.5$ db, 250-6000 cps.
GPT-10K	HEAT DISSIPATION:	600 ohm balanced, -20 to +10 dbm continuously adjustable for full RF output.
GPT-10K	SPECIAL FEATURES:	10 kw approximately.
GPT-10K	VOICE OPERATED RELAY CONTROL:	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.
GPT-10K	METERING:	Voice control with anti-trip features Adjustable gain and squelch.
GPT-10K	ENVIRONMENTAL:	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 provided with illumination for ease in reading.
GPT-10K	COOLING:	Designed to operate in any ambient temperature between the limits of 0 and 50° C. for any value of humidity up to 90%.
GPT-10K	SAFETY FEATURES:	Filtered forced air cooling. Semi-pressurized cabinet.
GPT-10K	NOISE:	Overload and bias protection with automatic recycling and audible alarm. Safety interlocks at all high voltage points.
GPT-10K	XFK FREQUENCY SHIFT:	1. Power supply ripple -55 db from full PEP output. 2. Other, -70 db from full PEP output.
GPT-10K	XFK KEYING SOURCE:	Linear to 1000 cycles.
	XFK KEYING SPEED:	1. Polar or neutral positive. 2. Linear input 30,000 ohms.
	XFK KEYING IMPEDANCE:	750 bauds (1000 wpm) maximum.
	XFK KEYING BIAS:	Polar or neutral operation into 100,000 ohms. (May be bridged by external 1800 ohm resistor for operation from a TTY loop.)
	XFK STABILITY:	Not greater than 10% at 750 bauds.
		1. 10 cycles for ambient temperature change of 0-50° C. 2. 10 cps for line voltage change of 10%. 3. No drift for input signal variations of +25 to +150 volts (mark frequency)
FOR A REFER	XFK CRYSTAL FREQUENCY:	$FC = \frac{F_o}{n} - 200 \text{ kc}$ Where $F_o$ = transmitter output frequency $n$ = transmitter multiplication factor.

## TMC Models GPT-10K

PRIMARY POWER:	208/230 volts 50/60 cps 3 Phase Power consumption — See Chart 0.98 power factor approx. Primary of Transformer may be connected for either DELTA or "Y" input.
SIZE OF LARGEST CONTAINER:	36 1/4 × 43 1/4 × 81 1/2
FEDERAL STOCK NUMBER:	See Chart.
INSTRUCTION BOOK & MILITARY NOMENCLATURE:	See Chart.

For further information on auxiliary rack components, refer to TB\* 2008 (SSB 195C) for the SBE-2; TB 2009 (SSB 239) for the SBE-3; TB 6001 for spectrum analyzer; TB 2018 (SSB 134C) for VOX; TB 2020 (SSB 118) for XFK; TB 6002 (SSB 230) for TTG; and TB 2025 (SSB 245B) for TIS-3.

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

### OPTIONAL EQUIPMENT:

TMC Kit 113 (for 600 ohm unbalanced operation)	Provides capability of computing VSWR on unbalanced operation Internally installed in the transmitter.
TMC Model TMA (for 600 ohm balanced operation)	Provides 2 RF ammeters 0-5 amps 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.

\* Sales Service Bulletins have been redesignated Technical Bulletins.

FR Output Fittings	AX-271 — 1 5/8" 70 ohm EIA flange AX-272 — 1 5/8" 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.
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Additional information on matching cable fittings may be obtained from TMC's Connector Products Catalog.

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