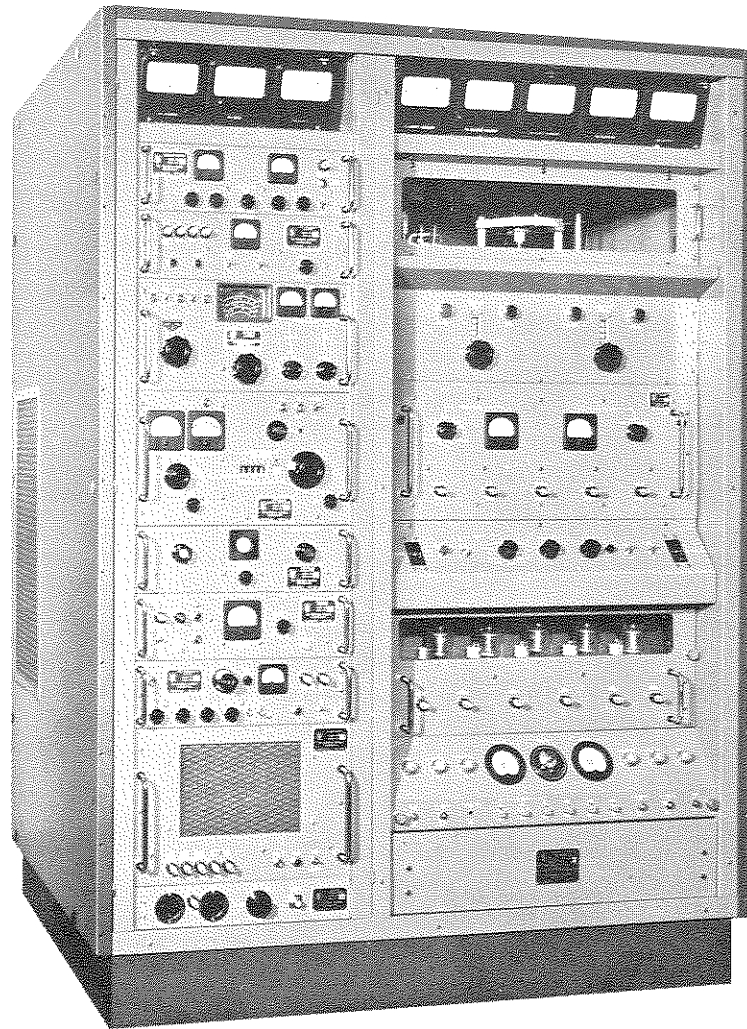


PRELIMINARY TECHNICAL BULLETIN NUMBER 1015

Low Frequency General Purpose Transmitter TMC Model GPT-10KLF



TMC Model GPT-10KLF is a low frequency general purpose transmitter providing CW, AM, AM equivalent, SSB, ISB, FSK, FAX and Pulse modes of operation in the frequency range of 5 to 500 kcs in 100 cps incremental tuning steps and with stability and accuracy of 1 part in 10^8 per day. Additionally, coverage up to 540 kcs is possible in all modes of operation with a slight reduction in output power. Wide band audio operation at the lower portion of the tuning band would be limited only by the antenna system employed.

Broadbanded tuning of Model GPT-10KLF from 5 kc to 500 kc provides many new advantages, such as:

1. A shipboard VLF-LF radio transmitter with military accepted shock mounting or, as an alternative, a driver for a sonar head. As a sonar head driver GPT-10KLF will provide 25 kw peak power with a 10% duty cycle.

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2. The extremely low frequency coverage and high power amplification makes this transmitter a very useful device for exciting a laboratory environmental "shaker" table.
3. Antenna load variations are compensated for by two front panel switches, providing ease in tuning in both ship and shore applications.

The design of this transmitter follows closely that of the widely accepted GPT-10K series which provides ease in operation and maintenance. Additionally, approximately 85% of the parts used in this transmitter are interchangeable with the widely accepted GPT-10K (AN/FRT-39()) transmitters.

Under conditions of tone voice frequency telegraphy operation, the GPT-10KLF has sufficient reserve power to faithfully pass the peaks of power generated as a result of the phasor addition of mixed tones.

TECHNICAL SPECIFICATIONS TMC MODEL GPT-10KLF

FREQUENCY RANGE:	5 to 500 kcs in 100 cycle steps (Additional coverage up to 540 kcs is available in all operating modes with a slight reduction in output power.
MODES OF OPERATION:	CW, AM, AM equivalent, SSB, ISB, FSK, FAX and pulse. (Restrictions of the antenna system and band-pass requirements will limit the modes of operation from approximately 30 kc down).
POWER OUTPUT:	Up to 10KW PEP on standard two tone test. Under conditions of up to 64 channel multi-tone teletype input, transmitter will deliver up to 25 KW peak power. Under pulsed operation transmitter will deliver up to 25KW PEP power with 10% duty cycle.
OUTPUT IMPEDANCE:	50 ohms unbalanced. Will match an antenna with a resistance of 25 to 100 ohms, which will result in a VSWR of not more than 2:1.
FREQUENCY STABILITY:	1 part in 10^8 per day for ambient temperature change of 15°C within the range of $0-50^{\circ}\text{C}$.
FREQUENCY CONTROL:	All frequency determining elements referenced to a built-in 1 mc source at 1 part in 10^8 . Standby crystal will provide 1 part in 10^6 stability.
TUNING SYSTEM:	Plate circuit of the transmitter is coupled into a broadband network requiring no tuning over the complete frequency range of the transmitter. Variations in output load are compensated for by 2 switches in the output loading circuit.
SIGNAL/DISTORTION RATIO:	Distortion products are at least 35 db below PEP.

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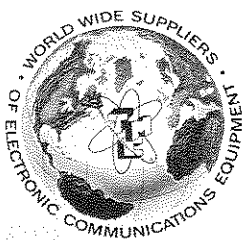
UNWANTED SIDEBAND REJECTION:	A signal at 500 cps is at least 60 db down from full PEP in the unwanted sideband.
SPURIOUS SIGNALS:	Spurious signals greater than 60 cps removed from the carrier are at least 60 db below full PEP output.
NOISE LEVEL:	Noise level is at least 70 db down from either tone of a two tone test.
CARRIER INSERTION:	-55 db to full output.
HARMONIC SUPPRESSION:	All harmonics including second and third are at least 50 db below full PEP output when the transmitter is loaded into a proper antenna system.
AUDIO RESPONSE:	Flat within ± 1.5 db, 250-3300 cps, crystal lattice filters, both upper and lower sidebands. NOTE: Crystal lattice filters to meet other band-pass requirements, such as CCIR etc., available on special order.
AUDIO INPUT:	Two independent 600 ohm channels balanced or unbalanced, -20 to +15 db. -20 db input will provide full RF output.
HUM LEVEL:	At least -60 db below full PEP output.
HEAT DISSIPATION:	Approximately 15 kilowatts.
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.
VOICE OPERATED RELAY:	Voice operated relay control which includes antitrip, adjustable gain and squelch is provided as an optional item.
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%.
STORAGE CONDITIONS:	Equipment will not be materially affected under storage of -65°C to +50°C and humidity of 0 to 95%.
COOLING:	Air cooled. Exhaust ducting should be designed for approximately 2500 cfm.

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SAFETY FEATURES:	Overload and bias protection with alarm. Safety interlocks are provided on all high voltage points.
KEYING INFORMATION:	Connections on rear panel of exciter unit for keying inputs.
INSTALLATION DATA:	Weight: Approx. 2800 lbs. Size: 84" h X 56" w X 43 1/2" d.
PRIMARY POWER:	208-230v AC, three phase, 50/60 cycles. Under steady state conditions with full PEP output, the transmitter requires approximately 20 kw. Power transformer may be connected either Delta or "Y" input.
SHIPPING DATA:	1. Size of largest container: 36 1/4" X 43 1/4" X 81 1/2". 2. 4300 lbs., approximately 270 cu. ft.
LOOSE ITEMS:	Two instruction books and mating signal connectors are provided.
COMPONENTS AND CONSTRUCTION:	All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

THE TECHNICAL MATERIEL CORP.

We reserve the right to make engineering changes.



THE TECHNICAL MATERIEL CORPORATION

700 FENIMORE ROAD • MAMARONECK, NEW YORK 10543

SPRINGFIELD, VIRGINIA • OTTAWA, CANADA • LUZERN, SWITZERLAND • TEMPE, ARIZONA

(914) 698-4800 • (613) 822-0244 • twx 710-566-1100 • telex 013-446

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