

GENERAL PURPOSE TRANSMITTER

10,000-Watt High Frequency Series

TMC Model HFT-10K



TMC
TECHNICAL
BULLETIN

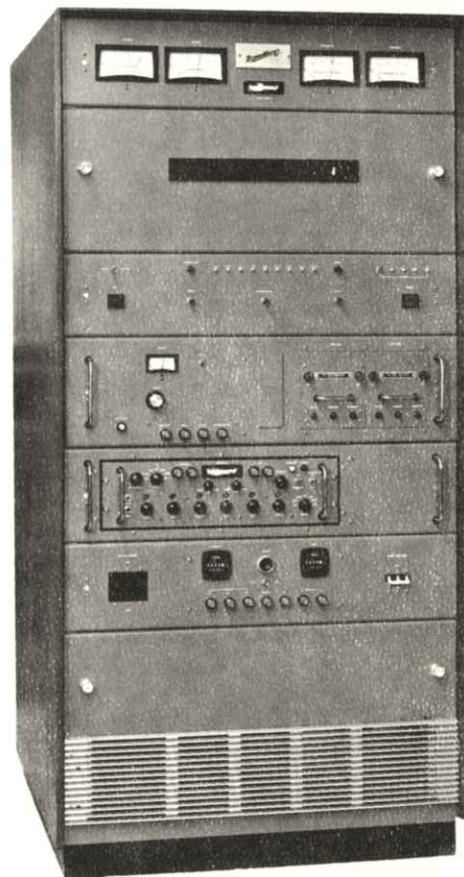
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The new HFT-10K(*) Transmitter, part of the Universal High Power Group, is the smallest, lightest, and most efficient ten-kilowatt transmitter T.M.C. has ever produced. Nominally rated at ten kilowatts PEP and AVERAGE, it will in fact deliver substantially higher power without overload. This transmitter represents the latest in the "State of the Art".

The transmitter will accept the RF output of an exciter providing 100 milliwatts of drive. However, recommended are the following exciters:

- 1) the MMX synthesized exciter providing one part in 10^8 stability and adjustable in 100 Hz increments throughout the frequency range;
- 2) the SME ten-channel exciter providing nearly instantaneous frequency change; and
- 3) the SBG synthesized four-channel ISB exciter adjustable in 100 Hz increments over the range.

The transmitter will also accept the output of the earlier SBE and SBG-3 exciters.



Model HFTA-10KJ

All components are available from the front as required for transportable and air-borne communications. The output tube is the new RCA 8794, specially designed for sideband work, with plate dissipation of 12 KW as against previous models using tubes with a plate dissipation of only 6 KW. The transmitter is much quieter in operation because of a reduced airflow requirement and much lighter - 1200 pounds in 9 square feet - as a result of modern technology applied to the design.

The transmitter will tune automatically in less than five seconds to all previously selected in-band frequencies and less than 10 seconds for full frequency excursion. Four variable output levels are available by push-button and may be remotely programmed when in an overload condition. Peak reading devices reading true peak power under multi-tone conditions are available as OPTIONS.

Hum and noise are at a new low since DC filaments are used in the driver. In addition, both fixed low-pass filters and switchable harmonic filters are available for additional harmonic rejection.

* U.S. Military Nomenclature AN/URT-37(v)1



TECHNICAL SPECIFICATIONS

Frequency Information

Range	2 to 30 MHz Standard; 1.6 to 30 MHz Optional.
Stability	
Synthesized	One part in 10^8 per day is Standard One part in 10^9 using TMC Model CSS-2 External Standard is Optional
Fixed Channel	+50 Hz maximum deviation from 0 to +50°C is Standard <u>±</u> 10 Hz maximum deviation from -30 to +50°C is Optional

Operational

Modes	CW(A1), AM(A3), AME(A3H), USB(A3A, A3J), LSB, two- or four-channel ISB(A3B) depending on exciter used. FSK(F1, A7J) and FAX (F4, A7J) capability is available. See MODELS/ACCESSORIES.
Carrier Suppression	Adjustable -55db up to full PEP output by front panel control.
Power Output	10,000 watts two-tone PEP 12 to 15 KW PEP with slight distortion 10 to 12 KW AVERAGE depending on the frequency
Output Impedance	50 or 70 ohms unbalanced; EIA flange for 1-5/8" coax.
VSWR	Maximum of 2:1 without degrading performance. Continuous monitor with automatic protection of transmitter if VSWR exceeds 3:1.
Tuning	Manual or Automated with Local or Remote Control. Manual override of all functions. Tuning time is nominally less than five seconds.
Metering	Illuminated meters with special overload protection.
Safety Features	Adjustable power output levels with overload and bias protection. Automatic re-cycling and alarm. Controlled and adjustable ALDC. Safety interlocks at all high voltage points.
Reliability and Construction	Manufactured in accordance with JAN/MIL specifications wherever practicable. The exciter and lower power supply modules are solid state. Ceramic-type tubes are used in the final RF output stages.
Service	Kits are available for a variety of special purposes. Factory engineers are available on contract for maintenance and installation. Complete training programs are available on request.
Loose Items	Two (2) copies of the Instruction Manual (IN1012) Standard cabinet on base mounts. Shock mounts are optional. All interconnect cables.

Power Distortion and Noise Ratings

Spurious Signals	At least 60db below full PEP output
Noise Level	Power supply ripple 55db down from full PEP output Other noise 70db down using special "white noise" protection.
Harmonic Suppression	At least 50db down for seconds harmonics when referenced to full PEP output. At least 65db down for third harmonics and higher. Fixed, low-pass and switchable harmonic filters are available as OPTIONS to provide a minimum of 23db additional suppression of harmonics.
Unwanted Sideband Rejection	500 Hz single tone is 60db down from full PEP output.
Intermodulation Distortion	Distortion products are at least 40db below either tone of a standard two tone test at full rated PEP. At 12 and 15 KW PEP, ratio is typically 35db.

Audio

Sideband Response	250 to 3040 Hz, +1.5db 250 to 6080 Hz, +1.5db Other filter passbands are available as OPTIONS.
Input	Standard 600 ohm balanced, -20 to +10dbm continuously adjustable to full PEP output. Unbalanced input can also be applied.

Installation and Environmental

Environmental	Designed to operate in any ambient temperature within the range 0 to +50°C for any value of relative humidity up to 90%.
Cooling	Filtered, forced air; semi-pressurized cabinet.
Primary Power	210/220/230/240/250 VAC, 50 or 60 Hz, Three phase. 370/380/390 VAC with external auto-transformer OPTIONAL. Maximum 27,000 Watts. All solid state power supply.
Size	69" High X 33-1/2" Wide X 38" Deep Approximately 1200 lbs. installed.
Shipping Data	Largest container: 81" High X 43" Wide X 38" Deep Approximately 1600 lbs.

TRANSMITTER MODELS

Model HFT()-10KA # Synthesized, 4-Channel ISB, 10 KW Transmitter

Type HFTM	Manual Tuning Only
Type HFTA	Automated Tuning with Manual Override
Type HFTR	Automated Tuning with Remote Control Capability

Model HFT()-10KJ * Synthesized, 2-channel ISB, 10 KW Transmitter in types listed.

Model HFT()-10KE * Ten-Channel, 10 KW Transmitter in types listed.

* Operating modes include FSK(F1) and FAX(F4). For audio FSK(A7J), see TIS-3D below.

Operating modes do not include FSK or FAX. See TIS-3D below.

ACCESSORIES

Model LSC-2 Remote Control System for Type HFTR multi-channel transmitters.
Model LSC-2(T) Enables remote selection of channel, power output level, mode, and other related functions. Multi-tone (T) or multi-wire models.

Model COPC-2 Remote Control System for Type HFTR synthesized transmitters.
Enables remote programming of frequency, power output level, mode, and other related functions.

Model TIS-3D Audio Tone Keyer enabling FSK(A7J) and FAX operation for all models of transmitters. Eliminates use of carrier normally suppressed in sideband transmitters.

Model TFP-10K Switchable Harmonic Filter providing at least 23db additional rejection of out-of-band harmonics. Automatically switched in HFTA transmitters according to active band.

Model LPF-10K-f₀ Low Pass Filter providing an additional 23db (minimum) rejection of unwanted RF energy. Cutoff frequency (f₀) is fixed in one MHz increments between 2 and 32 MHz.

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