



TECHNICAL BULLETIN NUMBER 1004

Transistorized SSB Transmitter/Receiver

TMC Model TTR-10

TMC Model TTR-40



TMC Models TTR-10 and TTR-40 are four channel transistorized SSB transmitter/receivers that may be used on separate frequencies in duplex operation or on one frequency on simplex circuits. Front panel switch control provides for the selection of any combination of pretuned transmit and receive modules in the 2-4, 4-8, 8-16, and 16-32 mc ranges. SSB (upper or lower), AM Equivalent, and CW modes of operation are available with Tone FSK and Tone FAX modes possible by means of an external tone keyer, such as TMC Model TIS-3. Remote channel selection is possible by means of the remote control units listed under "Accessory Equipment". Model TTR-10 transmitter has 100 watts PEP output from 2 to 32 mcs with a vacuum tube final linear amplifier; whereas Model TTR-40 is completely transistorized for 35 watts PEP output.

Models TTR are compact, completely self-contained, with voice-operated relay control.

Models TTR contain a unique input circuit that creates a much higher average level of power in the speech envelope, making the transmitter considerably more efficient than others with higher PEP ratings. This circuit also prevents overload of the final amplifier. Carrier control is provided for compatible AM mode of operation.

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The small size and light weight of Models TTR, combined with the wide choice of power supplies, makes this transmitter/receiver particularly suitable for mobile, personnel transportable, or fixed station use in tactical command applications, civil defense, pipe line operations, harbor circuits, telephone extension service, anywhere where rapid dependable communications are required.

Ordering information for TMC Models TTR is set forth below to allow customer selection of models, power supplies, and frequency range of transmit and receive modules.

TTR-10	A	1234	ABCD.
	<i>Power Supply</i>	<i>Receive Modules</i>	<i>Transmit Modules and Amplifiers</i>
TTR-10 is the basic 100 watt unit.	A. AC supply (TTR-10) B. DC supply (TTR-10)	1. 2-4 mcs 2. 4-8 mcs 3. 8-16 mcs 4. 16-32 mcs	A. 2-4 mcs B. 4-8 mcs C. 8-16 mcs D. 16-32 mcs
TTR-40 is the basic 35 watt unit.	C. AC supply (TTR-40) D. DC supply (TTR-40)		

It is possible, by using the above method, to select any transmitter/receiver combination. As an example, to order a 100 watt unit with DC supply having two modules in the 2-4 mc range, 1 module in the 4-8 mc range, and 1 module in the 8-16 mc range, you would order a TTR-10-B-1123-AABC.

Oven crystals to provide high stability are featured as optional equipment and are priced separately. These oven crystals, when ordered, will be supplied to operate from the same primary source used for the power supply unless other voltages are specified.

COMMON SPECIFICATIONS FOR TMC MODELS TTR-10 and TTR-40

FREQUENCY RANGE:	2-32 mcs. Four fixed tuned channels in any combination of the following bands. 2-4, 4-8, 8-16, 16-32 mcs.
FREQUENCY CONTROL:	1. The transmitter and receiver modules are crystal controlled as standard equipment. 2. Oven control stability of 1 part in 10^6 or better can be provided at slightly additional cost.
TUNING:	Front panel switch provides selection of any one of four transmit and receive channels.
MODES OF OPERATION:	Front panel selectable SSB (upper or lower), Compatible AM, and CW. Simplex operation by use of coaxial antenna transfer relay, or duplex operation can be accommodated with separate antennas.

TMC Models TTR-10 and TTR-40

FREQUENCY RESPONSE:	± 2 db 300 to 3300 cps (mechanical filter).
NOISE LEVEL:	Better than 40 db below full PEP.
METERING:	Front panel meter monitors audio input to transmitter, audio output to receiver, RF output, IPA drive, and supply voltage.
MECHANICAL:	Standard 19" relay rack mount for cabinet or portable case.
POWER SUPPLIES: (Plug-in)	1. AC power supply for operation on 105, 115, 125, or 210, 220, 230, 240, or 250 volts AC $\pm 10\%$, 50 to 400 cps or 2. 12/24 volts DC.
DIMENSIONS:	8 $\frac{3}{4}$ " high x 19" wide x 15" deep.
WEIGHT:	TTR-10 Approximately 40 lbs. TTR-40 Approximately 25 lbs.

RECEIVER SPECIFICATIONS

INPUT IMPEDANCE:	Nominal 50 ohms unbalanced.
SENSITIVITY:	1 uv for 15 db, signal + noise to noise ratio.
SELECTIVITY:	Nominal 3.0 kc USB or LSB.
IMAGE REJECTION:	Minimum 50 db from 2-28 mcs; minimum of 40 db 28-32 mcs.
INTERMODULATION:	Intermodulation products are down a minimum of 40 db from PEP of a two tone test with 100 microvolts at the antenna.
SQUELCH:	Threshold adjustable squelch. AGC activated relay has contacts brought to rear panel for remote indication of receiver signal activity.
AF OUTPUT:	1 milliwatt into 600 ohm line available for headset, extended service or telephone handset. 500 milliwatts into built-in 4 ohm speaker with gain control.
AGC:	Delayed AGC.
SPEECH CLARIFIER:	Manually controlled frequency adjustment.

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TRANSMITTER SPECIFICATIONS

OUTPUT IMPEDANCE:	Nominal 50 ohms unbalanced with VSWR of 2:1 maximum.
POWER OUTPUT:	TTR-10 A minimum of 100 watts PEP. TTR-40 A minimum of 35 watts PEP from 2-12 mcs, reduced power from 12-32 mcs.
CARRIER SUPPRESSION:	0 to 50 db below full PEP output.
SPURIOUS & HARMONIC OUTPUT:	50 db minimum below full PEP output.
UNWANTED SIDEBAND REJECTION:	At least 60 db below full PEP output.
DISTORTION PRODUCTS:	35 db minimum below full PEP output.
AUDIO INPUT:	600 ohm, -20 dbm, balanced and center tapped telephone handset.
AF RESPONSE:	Nominal 3 kc at 3 db points. \pm 2 db 300 to 3300 cps.
OVERLOAD LIMIT:	Special built-in circuitry minimizes overloading of transmitter.
VOICE OPERATED RELAY:	Voice operated relay with adjustable VOX and anti-VOX controls available behind front panel door.
ACCESSORY EQUIPMENT: (Priced Separately)	
DC REMOTE CONTROL	Telephone-type desk set with 4 push-buttons. Allows selection of any one of four send/receive channels.
TMC MODEL SMC - 1	Provides for remote operation of the TTR-10 and TTR-40 over standard telephone cables.

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