



TECHNICAL BULLETIN NUMBER 3017A

VLF Communications Receiver
TMC Model VLRC-1



- 10 to 40 kcs continuous tuned
- Synthesized or unsynthesized
- Solid state, low circuit drain
- 0.3 microvolt for 30 db $\frac{S + N}{N}$
- Electronically switched battery supply available
- RF, IF and audio outputs

In today's era of atomic weapons, frequencies at the lower portion of the RF spectrum (below 600 kcs) appear to be least affected by atomic detonation and are therefore very important for communication purposes. These frequencies have proven to be very reliable radio communications media during periods of high sunspot activity.

To fulfill communication requirements in the VLF and LF/MF frequency ranges, The Technic Materiel Corporation has developed two continuously tuned and optimized solid state receivers, Model VLRC-1 for 10 to 40 kc coverage and Model VLRB-1 (described in Bulletin 3015) for 30 to 600 kc coverage. Each of these receivers occupies only 7" of standard rack space and provides reception capabilities of MCW, CW, FSK and FAX signals. Reception of some of these modes, particularly in the VLF range, will depend on the capability of the transmission system. IF and RF outputs are available to facilitate the use of ancillary devices.

VLF Communications Receiver

A synthesizer that is locked to a 1 mc frequency standard of 1 part in 10^9 per day is available as an option at extra cost. The synthesizer provides 1 cycle step tuning over the range of the receiver and 1" illuminated nixie lights display the frequency to which the receiver is tuned.

TECHNICAL SPECIFICATIONS, TMC MODEL VLRC-1

FREQUENCY RANGE:	10 to 40 kcs continuously tuned in three bands.
MODES OF RECEPTION:	MCW, CW, FSK and FAX over the entire frequency range of 10 to 40 kcs.
FREQUENCY STABILITY:	0.01% of the operating frequency after warm-up.
INPUT IMPEDANCE:	50 ohms nominal.
SENSITIVITY:	With a bandwidth of 100 cycles, a 0.3 microvolt signal at the antenna terminals will produce a 30 db signal to noise ratio at the output of the audio amplifier.
TUNING:	Continuous tuned with magnetic cores to give stable smooth tuning.
RF BANDWIDTH:	The RF bandwidth is a maximum of 1000 cps.
RF OUTPUT:	.001 volt across 50 ohms for accessory use.
IF NOISE SILENCER:	A highly effective IF type noise silencer is included to remove impulse noise.
IF FREQUENCY:	1st 6.4 mc, 2nd 100 kc.
IF OUTPUT:	.002 volt across 50 ohms, 100 kcs.
IMAGE RATIO: (in accordance with CCIR specifications)	HFO image is at least 80 db down when referenced to 0.3 microvolt input signal.
AGC CHARACTERISTICS:	With a 100 db variation in the input signal, the output remains constant within +1 db.
IF BANDPASS:	0.1 and 0.5 kc at 3 db points selectable from the front panel.
AUDIO DISTORTION:	On standard two tone test audio distortion will be at least 40 db down.

TMC Model VLRC-1

- AUDIO OUTPUT:
1. 0 dbm output into a 600 ohm balanced center tapped line.
 2. 4 ohm output to drive a speaker, $\frac{1}{2}$ watt average power output.
 3. Headphone monitor.
- HUM LEVEL: Power supply hum at least 50 db below full audio output.
- ENVIRONMENTAL CONDITIONS: Designed to operate in any ambient temperature of 0° C to 50° C, and any value of humidity up to 90%.
- INSTALLATION DATA: The unit is 7" high \times 19" wide \times 15" deep, and weighs approximately 15 lbs.
- POWER SUPPLY: 115/230 v, 50/60 cycle, single phase primary power, approximately 15 watts.
- COMPONENTS AND CONSTRUCTION: All equipment is manufactured in accordance with JAN/MIL specifications wherever practicable.
- OPTIONS/ACCESSORIES: (Priced separately).
- Synthesizer control providing 1 cycle tuning, TMC Model LFSA-1, with TMC Model CSS-2 for 1 part in 10^9 stability per day.
- An electronically switched battery supply is available for operation of the receiver by itself or to provide power to the receiver, synthesizer and frequency standard in the event of main power failure. This unit may be ordered as TMC Model BPSA-1 for the receiver alone or BPSB-1 for receiver/synthesizer combination.



THE TECHNICAL MATERIEL CORPORATION

CABLE "TEPEI"

TWX 914-835-3782

MAMARONECK, N. Y. 10544

THE WORLD WIDE SYSTEM OF REMOTE CONTROLLED COMMUNICATIONS

and Subsidiaries ALEXANDRIA, VIRGINIA • GARLAND, TEXAS • SAN LUIS OBISPO, CALIFORNIA
OXNARD, CALIFORNIA • POMPANO BEACH, FLORIDA • OTTAWA, CANADA • LUZERN, SWITZERLAND