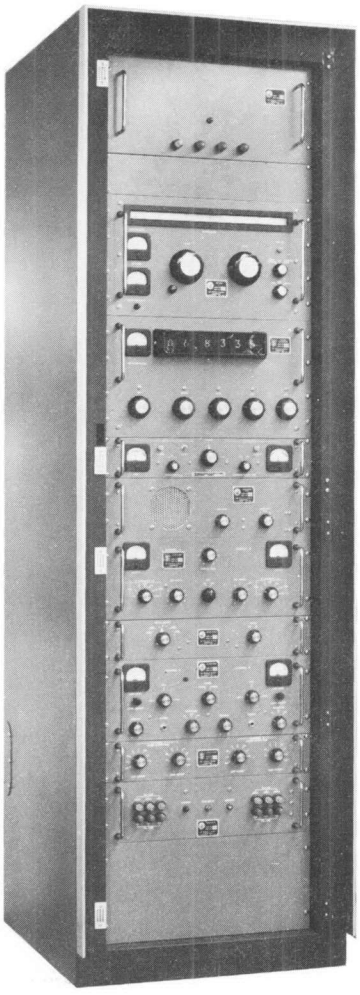
TECHNICAL BULLETIN NUMBER 3027

Remote Control Receiver
TMC Model DDR-5BR



- 2 to 32 mcs, 100 cycle steps
- 1 part in 10^8 stability per day
- AM, SSB, ISB, FSK, FAX, CW and MCW
- Direct reading frequency
- AFC for pilot carrier reception
- TechniMatiC* remote tuning
- Tuning time 1 to 19 seconds

The Technical Materiel Corporation's Model DDR-5BR is a TechniMatiC* tuned receiving system that can be tuned from any remote point, via a radio circuit or land-line to any of its operating frequencies and operating modes automatically by means of pre-cut tape, by manual selection, or by card.

Incorporated within Model DDR-5BR is a memory system that accepts 7.42 or 7.0 baudot teletypewriter code from the remote console, stores the information and provides it to the receiver's tuning mechanism on command. The receiver is changed from one operating frequency and mode to another in a minimum of 1 to a maximum of 19 seconds, depending on prior settings of the receiver.

*Trademark applied for.

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Remote Control Receiver

The receiver system features a very sensitive RF amplifier that is capable of accepting RF variations of at least 100 db without affecting the technical characteristics of the unit, a synthesizer tunable in 100 cycle steps that maintains the receiver's accuracy at 1 part in 10^8 per day and an automatic frequency control unit that allows the receiver to "lock" on an unsynthesized sideband signal with carrier suppression as great as 30 db.

Human engineering in the positioning of front panel controls as well as the position of the modules within the receiver rack provides the operator with ease in the location and positive indication of the settings of all tuning controls. The filtered forced air cooled cabinet contains AC line filters and RF filters on all signal lines to reduce all radiation well below the maximum limits spelled out by MIL-I-16910.

TECHNICAL SPECIFICATIONS, TMC MODEL DDR-5BR

FREQUENCY RANGE:	2 to 32 mcs, 100 cycle steps.
MODES OF RECEPTION	AM, SSB, ISB, FSK, FAX, CW and MCW.
FREQUENCY STABILITY:	Synthesized stability of 1 part in 10^8 for 24 hours for a change in ambient temperature of 15 degrees C with the limits of 0 to 50 degrees C.
INPUT IMPEDANCE:	Nominal 50 ohms, unbalanced.
NOISE FIGURE AND SENSITIVITY:	6 db or better over the band, i.e., with a 1 microvolt signal and a 7.5 kc bandwidth, the signal + noise-to-noise ratio is 15 db or better.
TUNING:	1. Automatic The TechniMatiC* remote tuning system accepts standard 7.42 or 7.0 baudot teletypewriter code to completely tune the receiver. The tuning cycle is completed in a minimum of 1 second to a maximum of 19 seconds, depending on prior settings of the receiver. Manual override of the receiver setting is possible. 2. Manual Synthesized tuning is accomplished by means of 5 detented switches. The RF frequency is displayed on the front panel of the receiver by means of digital illuminated numerals, 1" high and a 14" slide rule dial.
CALIBRATION:	The signal frequency is displayed on a large 14" slide rule dial to give minimum resetable error and maximum tuning ease. An internally generated alignment signal is provided for routine receiver sensitivity checks and field alignment.
INTERMODULATION:	Intermodulation products are down 60 db from the maximum tone in the desired sideband as a result of two signals in the unwanted sideband.

IMAGE RATIO:

80 db referenced to 1 microvolt input signal.

SPURIOUS RESPONSE:
(As defined by CCIR)

Better than 120 db referenced to 1 uv. (For synthesized operation, all spurious response will be no greater than .01 uv when referenced to the antenna.)

IF REJECTION:

Better than 80 db average.

NOISE LIMITER:

The noise limiter is an improved "Lamb" type which mutes the receiver during impulse types of noise.

AFC CHARACTERISTICS:

The AFC will automatically synchronize to a received signal within ± 50 cps and suppressed up to 30 db and will remain synchronized for ± 750 cps at a maximum drift rate of 10 cps/per second. Memory circuit will maintain tuning position during signal fades and momentary outages.

IF SELECTIVITY:

Seven optional bandwidths selected from the following:

1. 250 to 7500 cps USB ± 1.5 db
2. 250 to 7500 cps LSB ± 1.5 db
3. 250 to 3500 cps USB ± 1.5 db
4. 250 to 3500 cps LSB ± 1.5 db
5. 250 to 6000 cps USB ± 1.5 db
6. 250 to 6000 cps LSB ± 1.5 db
7. 1 kc symmetrical ± 1.5 db
8. 6 kc symmetrical ± 1.5 db
9. 15 kc symmetrical ± 1.5 db

AGC CHARACTERISTICS:

Output remains within ± 1.5 db for 100 db change in input within the input voltage range of 1 microvolt to 0.1 volt. The AGC circuit has a fast attack time and a front panel adjustable decay time from 1 to 10 seconds.

AUDIO RESPONSE:
(Per channel)

± 1.5 db, 50 cps to 20,000 cps. Total receiver bandpass dependent on IF filter selected.

AF DISTORTION:

Intermodulation products are at least 40 db below full output through the audio channel.

ADJUSTABLE AUDIO FILTERS:

Passive audio filters provide adjustable low pass and high pass cut-off points at:

100 cycles
250 cycles
500 cycles
1000 cycles
2.5 kc
5 kc
10 kc
Off

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AUDIO OUTPUTS:	1. Rear panel selection of any one of the following outputs from each channel. a. 0-1 milliwatt, 600 ohm. b. 0-1 watt, 600 ohm. c. 4, 8 or 16 ohm 1 watt. Note: Each channel of the audio amplifier is capable of providing 1 watt output at the rated distortion measurement. Any increase above 1 watt will increase the distortion from the audio amplifier. 2. Two 250 kc IF outputs (50 ohms).
HUM LEVEL:	Minus 50 db below 1 watt audio output.
METERING:	Input signal to the receiver and all audio outputs are metered. Other meters are: AFC drift, carrier level, IF output and sync locks.
RF FILTERS:	RF filters are provided for all AC and audio lines to eliminate RF interference.
PRIMARY POWER:	115/230 volts at 48 to 62 cps, single phase; maximum power at 115 v approximately 1000 watts.
VOLTAGE REGULATION:	1. B+ and B— maintained within 1% from no load to full load and with ± 10% line voltage variation. 2. B+ ripple does not exceed 100 millivolts. B— ripple does not exceed 5 millivolts.
FUSING:	All voltage outputs separately fused using blown fuse indicator type holders.
ENVIRONMENTAL CONDITIONS:	The equipment is designed to operate in any ambient temperature of 0 to 50 degrees C and any value of humidity up to 90%.
INSTALLATION DATA:	Weight: Approximately 800 lbs. Size: 83" h × 24-1/4" w × 30" d.
LOOSE ITEMS:	Mating plugs and hardware for signal inputs and outputs, power connections, etc., and instruction books are furnished.
COMPONENTS & CONSTRUCTION:	All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

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