

## TECHNICAL BULLETIN NUMBER 3010A

Solid State Multichannel Receivers  
TMC Models SMR-1  
SMR-2



- 2 to 32 mcs
- up to 8 channels
- solid state
- compact, 7" × 19" × 16"
- squelch
- provides audio to line & speaker

The Technical Materiel Corporation's SMR series of solid state, multichannel receivers are specifically designed to provide the latest techniques in modern day communication facilities in a very compact package. The low heat dissipation and light weight of these units make them very useful for wide applications as follows:

- Ship-to-Shore
- Ship-to-Ship
- Shore-to-Ship
  - Harbor control circuits
  - Command post tactical circuits
  - Air traffic control circuits
  - Circuit monitor applications

Because of the small size and light weight of these receivers, multiple installation in equipment racks without special cooling facilities is possible. Additionally, these units may be installed in out-of-the-way places, and controls extended to an operational position by use of a telephone-type control set as discussed under accessory equipment.

Eight separately tuned RF heads, with two crystal positions per head, provide selection of any one of 16 operating frequencies plus upper and lower sideband. A front panel speech clarifier control allows the operator to compensate for transmitter frequency variations.

## Solid State Multichannel Receivers

Each plug-in tuning head is fitted with two crystals which are selectable by a front panel switch allowing side step operation, within 0.5% of the operating frequency without the need for alignment.

The addition of Model CDN-3, Codan Operated Device, explained in bulletin 4013A, will greatly enhance the operation of the SMR-2. Positive control of the audio output is accomplished within the Model CDN to allow only acceptable signals to pass to the speaker or extended telephone line.

Signal inputs and outputs are monitored by front panel selection switch. Individual control of line and monitor audio outputs as well as variable threshold squelch are added features of this receiver.

### TECHNICAL SPECIFICATIONS, TMC MODELS SMR

FREQUENCY RANGE:	2 to 32 mcs by eight crystal controlled, pre-tuned channels in the ranges of 2 to 4 mcs 4 to 8 mcs, 8 to 16 mcs and 6 to 32 mcs.
MODES OF RECEPTION:	SMR-1: LSB, USB, CW SMR-2B: AM, MCW
FREQUENCY STABILITY:	Crystal controlled.
SPEECH CLARIFIER:	Manually controlled front panel adjustments allow "rubbering" of the HFO crystal in each tuning module.
INPUT IMPEDANCE:	50 ohms unbalanced.
SENSITIVITY:	SMR-1: 1 microvolt with a signal + noise to noise ratio of at least 15 db. SMR-2B: 3 uv, modulated 30% for 10 db signal + noise to noise ratio.
TUNING:	Eight pre-set crystal controlled channels over the 2 to 32 mc range with two operating crystals per channel. The second crystal frequency allows side-stepping the receiver for CW operation to avoid QRM and shifting receive frequency up to 0.5%.
INTERMODULATION:	Intermodulation products are down a minimum of 40 db from PEP of a two tone test with 100 microvolts at the antenna.
IMAGE REJECTION:	Minimum 50 db from 2 to 28 mcs: minimum of 40 db 28-32 mcs.
IF SELECTIVITY:	SMR-1: 3 kc $\pm$ 2 db, or 350 to 3350 cps (SSB) SMR-2B: 6 kc $\pm$ 2 db, symmetrical. (AM)
AGC:	With 100 db change in input signal from 1 microvolt (3 microvolts for SMR-2B), the output will not vary more than 10 db. AGC time constant has fast attack and slow decay characteristics.

## TMC Models SMR-1, SMR-2

IF FREQUENCY:	1.75 mc first IF; 250 kc second IF.
SQUELCH:	Threshold adjustable squelch. AGC activated relay has contacts brought to rear panel for remote indication of receiver signal activity.
FRONT PANEL CONTROLS:	F1/F2 switch (each RF module) Meter (indicates RF input level or 600 ohm audio output level as selected by meter switch). Channel switch Phone jack Volume control Line level control Meter switch LSB/USB Remote Simplex/duplex switch Power switch Squelch Power lamp Receiver clarifier control (Each RF module)
REAR CHASSIS CONNECTIONS:	Antenna Simplex connection Squelch alarm connection 600 ohm audio connection Remote sideband control connection 4 ohm speaker
AUDIO AMPLIFIER RESPONSE:	250 cps to 10,000 cps.
AF OUTPUTS:	1. 500 milliwatts for speaker or front panel phone jack. 2. 1 milliwatt into 600 ohm line available for extended service or telephone handset.
HUM AND NOISE LEVEL:	At least 40 db down from full output.
METERING:	Metered RF input calibrated decibels above 1 microvolt, or metered audio output selectable by front panel switch.
PRIMARY POWER:	104/115/208/230 volts AC $\pm$ 10%, 47 to 400 cps single phase, 8 watts.
INSTALLATION DATA:	7" h $\times$ 19" w $\times$ 16" d. Weight: 25 lbs. (40 lbs. cabinet mount).
ENVIRONMENTAL CONDITIONS:	Designed to operate in any ambient temperature from 0° to 50°C and any value of humidity up to 90%.
STORAGE CONDITIONS:	Equipment is not materially affected under storage at -40°C to + 85°C and humidity of up to 95%.

## Solid State Multichannel Receivers

### COMPONENTS AND CONSTRUCTION:

All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

### ACCESSORY EQUIPMENT:

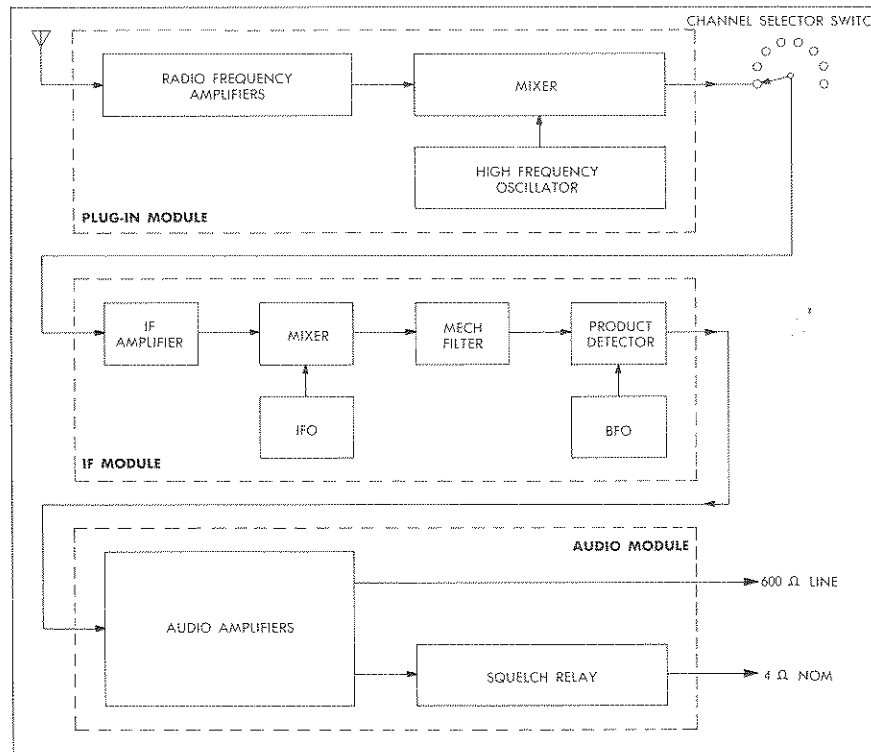
(Priced separately.)

#### STORAGE DRAWER:

Tuning Drawer Storage Panel, Model THRA-1, provides space for 3 tuning modules.  
Size: 1 $\frac{3}{4}$ " h  $\times$  19" w  $\times$  15" d.

#### TMC Model TPC-11:

Transmitter-Receiver Telephone Control. Provides for remote control channel selection of upper or lower sideband and contains volume control in the handset for receive system only. Provisions are included to operate SMR-1 and SME-1 on simplex or duplex circuits.



SMR-1 FUNCTIONAL BLOCK DIAGRAM

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