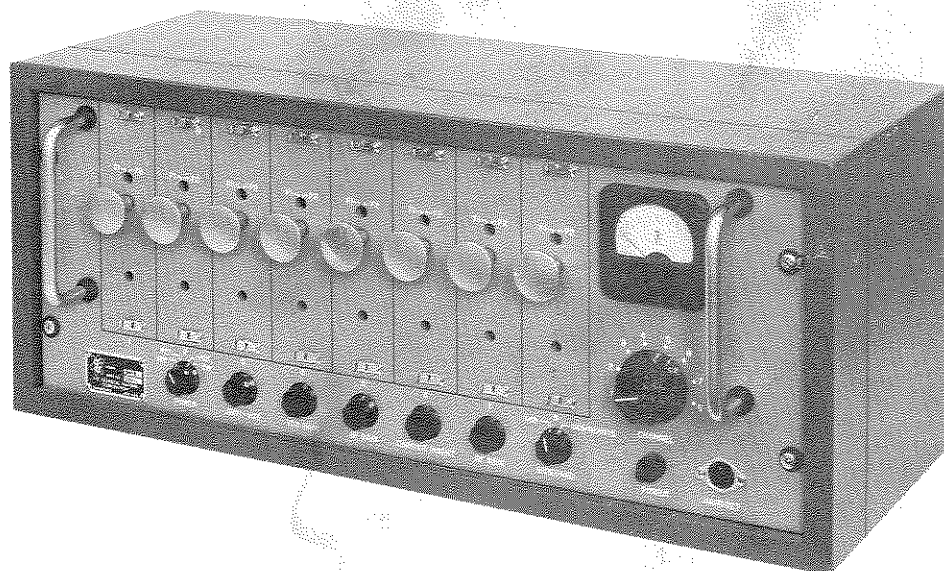




OCT 28 1963

## TECHNICAL BULLETIN NUMBER 2030

Solid State Exciter  
TMC Model SME-1



The Technical Materiel Corporation's Model SME-1, Solid State Exciter, provides rapid selection of any one of eight crystal controlled channels in the 2-32 mc range for SSB, compatible AM, CW and MCW operating modes. Automatic compensation for power distribution between carrier and sideband intelligence prevents overload. A unique voice processing circuit provides a much higher average level power in the speech envelope and prevents overdriving the associated linear RF amplifier.

Each of the eight plug-in modules has two operating crystals selected by front panel switch to provide:

- 1.) on frequency CW operation
- 2.) shift of operating frequency within .5% of the assigned frequency
- 3.) sidestepping of frequency to avoid radio circuit interference.

These sixteen crystals with upper and lower sideband selection, provide 32 operating channels in the 2-32 mc range. Crystal oven assemblies are available, on special order, to provide operating stabilities of 1 part in  $10^9$  per day or better.

Remote control is accomplished by an accessory telephone desk set that allows pushbutton selection of operating channels and of upper or lower sideband transmission. This remote unit may be used to control the SME-1 and the companion multi-channel receiver, Model SMR-1, described in Bulletin 3010.

Each of the tuning modules has a separate RF output adjustment for maintaining uniform RF drive to associated linear amplifiers. Voice operated relay control and a wide variety of microphone inputs are added features that make this unit convenient to operate.

A functional block diagram is included on the back page.

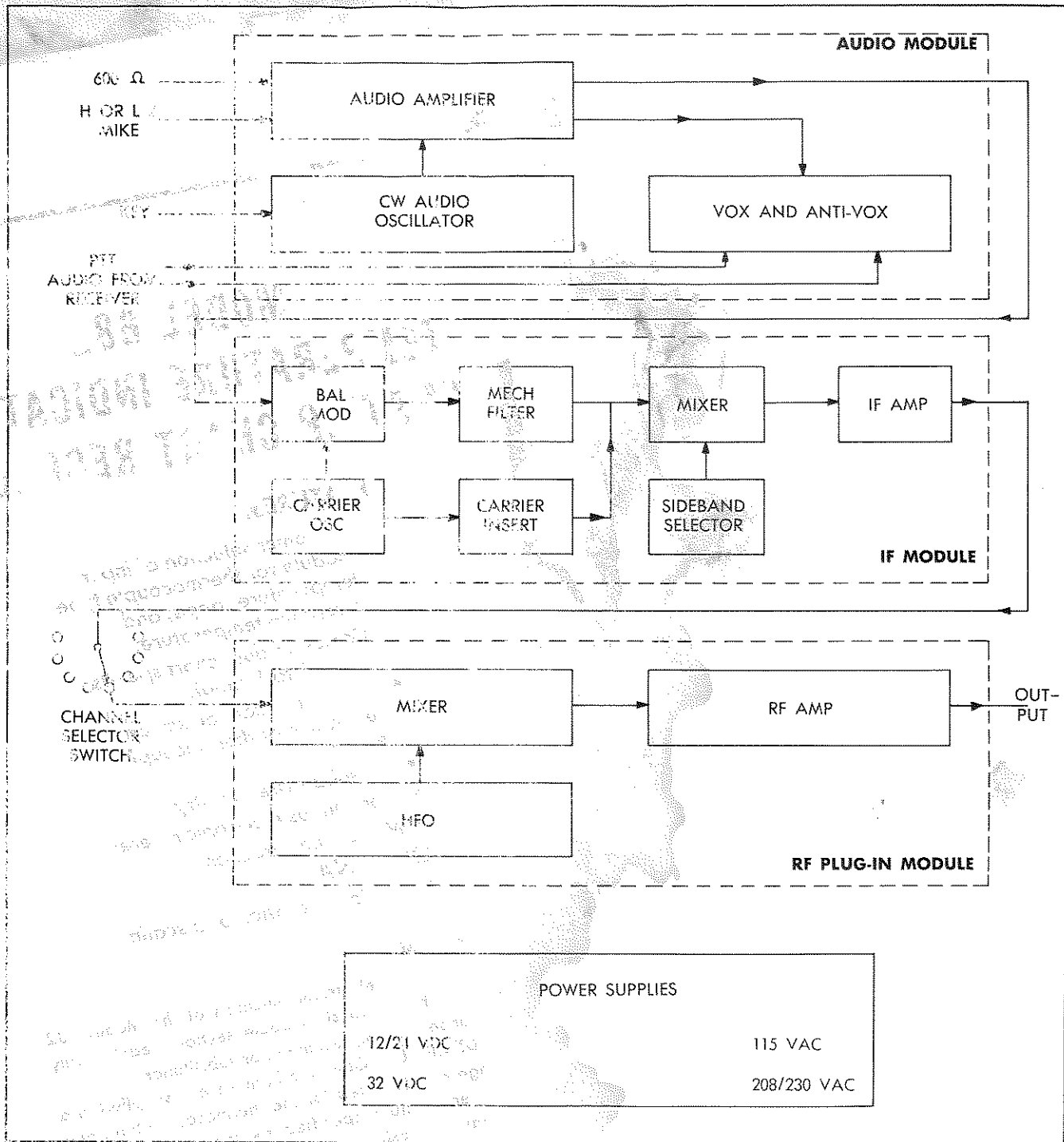
## Solid State Exciter

### TECHNICAL SPECIFICATIONS, TMC MODEL SME-1

FREQUENCY RANGE:	2-32 mcs on eight preset channels. Individual modules are available in the 2-4, 4-8, 8-16, 16-32 mc ranges.
MODES OF OPERATION:	SSB, compatible AM, CW, MCW.
POWER OUTPUT:	250 milliwatts PEP.
OUTPUT IMPEDANCE:	Nominal 50 ohms unbalanced.
FREQUENCY STABILITY:	Crystal controlled, 1 part in $10^5$ per day. 1 part in $10^6$ per day or better with optional crystal ovens.
TUNING:	Eight preset crystal controlled channels over the 2-32 mc range with two operating crystals per channel. The second crystal frequency allows sidestepping the receiver for CW operation to avoid QRM and shifting transmit frequency up to 0.5%.
SIGNAL/DISTORTION RATIO:	<ol style="list-style-type: none"><li>1. Distortion products are at least 45 db down from PEP output at 100 milliwatts.</li><li>2. Distortion products are at least 35 db down at full PEP output.</li></ol>
UNWANTED SIDEBAND REJECTION:	Better than 50 db down at full PEP output.
SPURIOUS SIGNALS:	Better than 50 db down at full PEP output.
NOISE LEVEL:	Better than 60 db down at full PEP output.
CARRIER SUPPRESSION:	Automatically preset at -50, -20 and -6 db from sideband envelope power.
AUDIO RESPONSE:	$\pm 2$ db 300 to 3300 cps.
AUDIO INPUT:	-20 dbm at 600 ohm balanced, telephone handset, carbon mike and hi or lo impedance mike with push-to-talk or VOX control.
CRYSTAL TYPE:	TMC CR-110
OVERLOAD LIMIT:	Special built-in circuit prevents transmitter overloading.
VOICE OPERATED RELAY:	Voice controlled switch includes an anti-trip feature with an adjustable threshold and gain adjustment.

## Solid State Exciter

- METERING:** Front panel meter monitors RF output.
- ENVIRONMENTAL CONDITIONS:** Designed to operate in an ambient temperature range of 0° C to 50° and any value of humidity of up to 90%.
- STORAGE CONDITIONS:** Equipment is not materially affected under storage at -40° C to +85° C and humidity of up to 95%.
- SAFETY FEATURES:**
1. All DC operating voltages fused.
  2. AC power supply input fused.
  3. Oven supply lines fused.
- INSTALLATION DATA:**
- Weight: Approximately 50 lbs. rack mounted  
Approximately 70 lbs. cabinet mounted
- Size: 7" h x 19" w x 16" d.
- PRIMARY POWER:** 115/208/230v AC, 50 to 400 cps or 12/24/32v DC. 20 watts, key down. Crystal ovens require 6 watts per oven.
- COMPONENTS AND CONSTRUCTION:** All equipment is manufactured in accordance with JAN/MIL specifications wherever practicable.
- ACCESSORY EQUIPMENT:**
- TMC MODEL TCO(\*)-1/F<sub>o</sub>
- Dual Crystal Oven. Oven operating voltages are designated as follows:
- |        |              |
|--------|--------------|
| TCOA-1 | 115 volts AC |
| TCOE-1 | 208 volts AC |
| TCOF-1 | 230 volts AC |
| TCOG-1 | 12 volts DC  |
| TCOD-1 | 24 volts DC  |
| TCOH-1 | 32 volts DC  |
- To order, specify operating frequency and voltage as per the following sample: TCOA-1/12.095 mcs \*
- \* Designates the operating frequency.
- 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 SME-1 and SMR-1 on simplex or duplex circuits.



SME-1 SIMPLIFIED BLOCK DIAGRAM

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