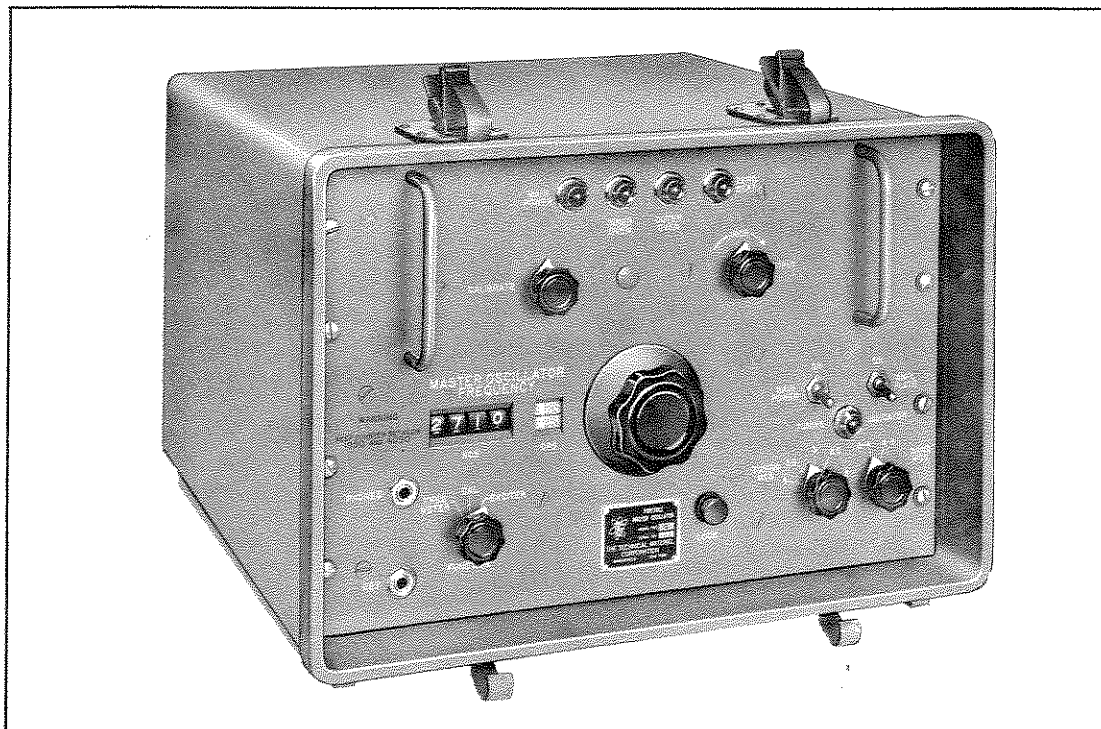


## SALES SERVICE BULLETIN NUMBER 173A

Portable Master Oscillator and  
Heterodyne Frequency Meter, Model PMO



Front View, Model PMO-1.

The TMC Portable Master Oscillator and Heterodyne Frequency Meter, Model PMO, is a precision, direct reading device which provides the user with a multi-purpose instrument in a convenient and compact form. The Model PMO may be used as a highly stable Transmitter Exciter, Frequency Meter, or Receiver Calibrator. The unit is packaged in a fibre-glass reinforced plastic case for portable field applications or as a rack mounted unit for fixed station and laboratory use.

The Model PMO is extremely simple to operate and maintain. Removable cover plates using snap fasteners provide complete accessibility to all component parts. Extreme reliability results from minimum use of vacuum tubes. The equipment in each of the above forms is completely self-contained and may be powered from a 110 or 220 volt AC source. Filament regulation insures highly stable operation in field applications where varying line voltages are encountered.

The Model PMO utilizes an accurate mechanical counter-dial system, over the basic range 2 - 4 Mc, similar to that used in the TMC Variable Frequency Oscillator, Model VOX. The first four significant figures (kilocycles) are shown as large, easily read numerals on the counter face and the last three figures (cycles) are clearly read on an engraved dial. The high stability variable oscillator is contained in a cast aluminum, temperature-controlled oven. The oven assembly contains a large mass of metal and insulating material distributed through its cross section, which produces a high heat inertia with extremely stable oven temperature.

The direct reading calibration of the unit enables the operator to set the output fre-

quency or make measurements with great accuracy. An oven-controlled crystal oscillator, resettable to a standard or WWV, provides visual 50 Kc check points for calibration accuracy. Aural check points, at more frequent intervals, provide additional accuracy.

A simple, vernier control enables the operator to calibrate the Model PMO to Zero Beat at any crystal check point. Once calibrated, the instrument is readable and resettable to a tolerance of 30 cycles per megacycle.

In view of existing regulations governing the use of point-to-point transmitters, particular attention was paid to the long term stability of the Model PMO. Once set on a frequency the Model PMO will remain within its stability tolerances for days at a time.

A Keying Circuit for ON/OFF keying is provided in the Model PMO is available through a front panel jack, and a terminal board for rear connection.

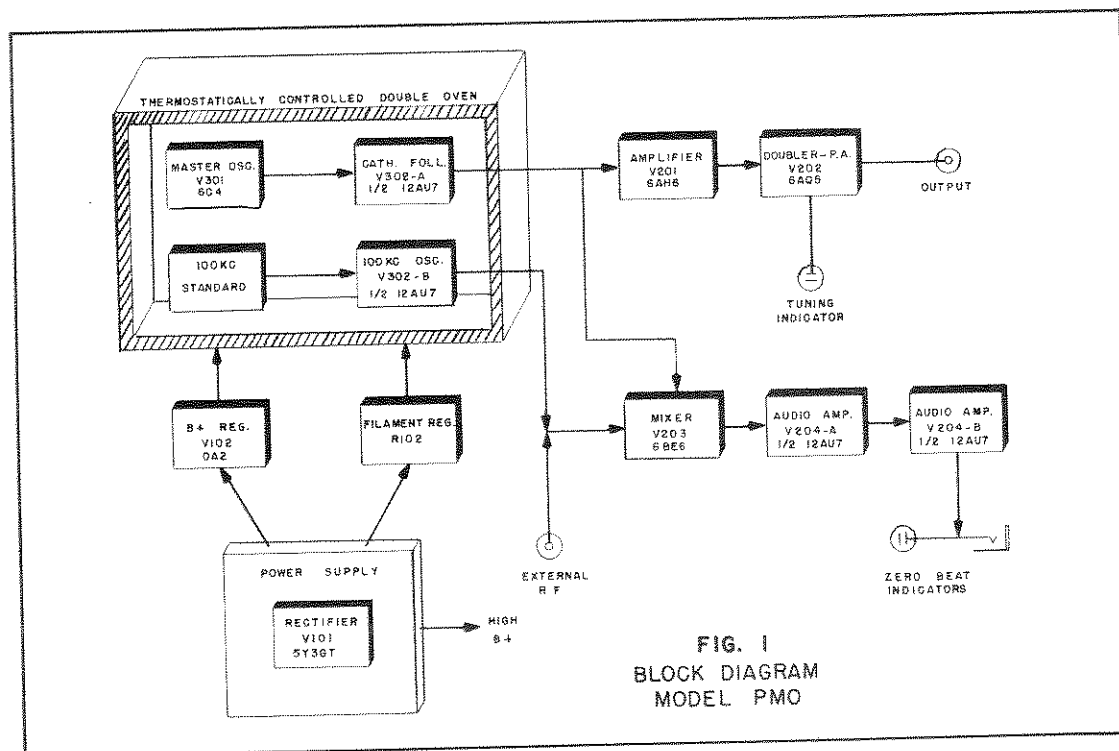
The case of the Model PMO-1 includes a built-in antenna for measurement work.

In order to simplify the logistics problem of the user in the field, the Model PMO uses JAN type components and parts common to other TMC equipments wherever possible. The user of the Model VOX, TMC Variable Frequency Oscillator, for instance, will find that many of the components in the Models VOX and PMO are directly interchangeable, the entire oven assembly as an example.

The Model PMO is electrically and operationally manufactured as a single item, but is provided in two forms to suit the portable and base station requirements, as follows:

- A. Model PMO-1, 16" wide, self-contained in a fibre-glass reinforced plastic case as shown in the photograph above.
- B. Model PMO-2, for standard 19" rack mounting.

NOTE: The Model PMO-1 may be adapted for rack mounting with an adaptor kit, TMC Part No. A-804.



Block Diagram

## TECHNICAL SPECIFICATIONS

### A. WHEN USED AS A TRANSMITTER EXCITER:

FREQUENCY RANGE: 2 - 8 megacycles, continuously variable in two bands.

OUTPUT POWER: At least 3 watts, adjustable.

OUTPUT CONNECTIONS: BNC (RG-58,59/U) coaxial connectors.

OUTPUT VOLTAGE: Sinusoidal.

### B. WHEN USED AS A FREQUENCY METER:

FREQUENCY RANGE:-

1. Transmitter Measurements: 2 - 30 mcs, and usable beyond this range.
2. Receiver Measurements: 2 to approximately 100 Mcs.

ANTENNA Built-in Antenna contained in the case of the Model PMO-1 connected by cable to a BNC receptacle.

INPUT IMPEDANCE: 70 ohms.

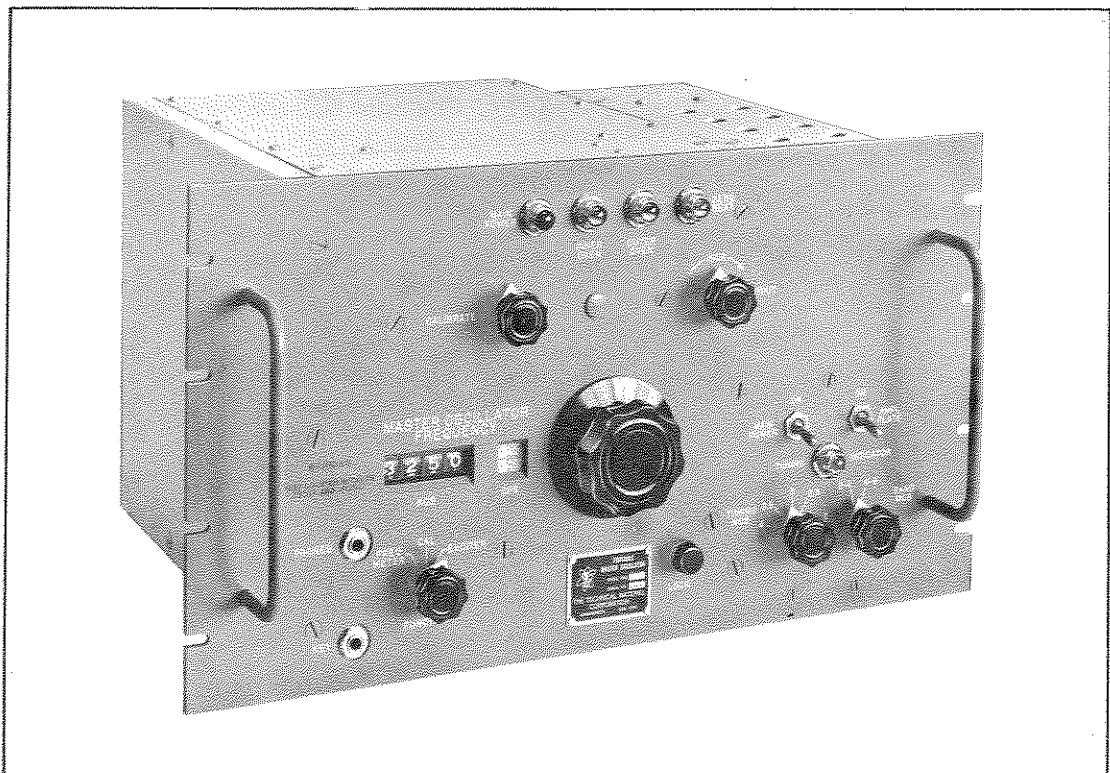
INPUT CONNECTIONS: BNC Connector.

### C. GENERAL CALIBRATION:

Direct reading in CPS over basic range of 2 to 4 MC.

STABILITY:

Better than 20 CPS per MC for a 30° change in ambient.



**LINE VOLTAGE CHANGE:** Not more than 10 CPS for  $\pm 10\%$  over the basic range of the unit.

**READABILITY RESET-ABILITY:** 30 CPS per megacycle to a previously calibrated frequency.

**CALIBRATE ADJUSTMENT:** 50 KC check points against a self-contained oven controlled crystal oscillator.

**OUTPUT IMPEDANCE:** 70 ohms coaxial

**ZERO BEAT INDICATION:** Neon Light null each 50 Kcs  
Aural headphone each 50 Kcs

**KEYING INPUT:** Provision for ON/OFF through front panel jack and rear terminal board

**CONTROLS:** Primary Power Switch  
Output Control  
PA Tuning Control  
Calibrate Control, w/stops  
Function Switch  
Dial Lock  
Amplifier Plate Switch

**POWER REQUIREMENTS:** 110/220 volts, 50/60 cps, 80 watts average, 220 watts at momentary intervals as ovens cycle.

**TUBE COMPLEMENT:** 2 - 12AU7, Cathode Follower and Audio Amplifier  
1 - 6C4, Oscillator  
1 - 6BE6, Mixer  
1 - 6AH6, RF Amplifier  
1 - 6AQ5, RF Amplifier  
1 - 5Y3GT, HV Rectifier  
1 - OA2, Voltage Regulator  
1 - 4HTF4, Filament Ballast

**SIZE:** PMO-1: 18'' wide, 16'' deep, 12'' high  
PMO-2: 19'' wide, 13'' deep, 10 $\frac{1}{2}$ '' high

**WEIGHT:** PMO-1: 58 lbs  
PMO-2: 48 lbs

**PACKED FOR EXPORT SHIPMENT:** 27'' x 21'' x 27''  
120 lbs Gross

**COMPONENTS AND CONSTRUCTION:** Equipment is manufactured in accordance with JAN/MIL specifications wherever practicable.

L0755/1M

# THE TECHNICAL MATERIEL CORPORATION

700 FENIMORE ROAD

MAMARONECK, NEW YORK

CABLE  
TEPEI  
NEW YORK, N.Y.



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