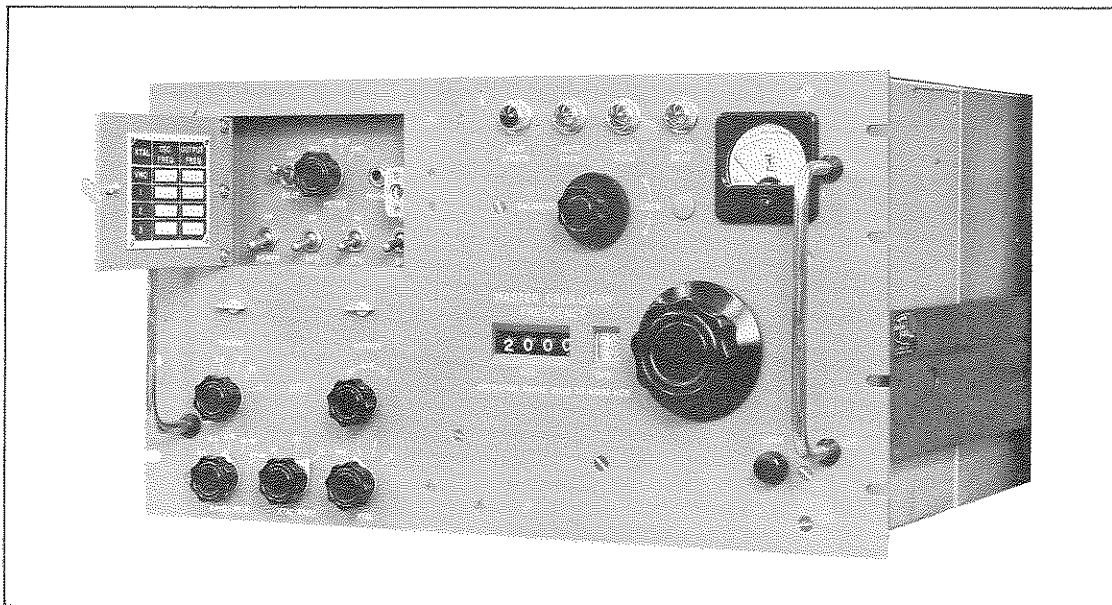


SALES SERVICE BULLETIN NUMBER 134C

TMC Variable Frequency Oscillators,
Model VOX-5
Oscillator, Radio Frequency
0-330()/FR



The TMC Model VOX-5, Variable Frequency Oscillator is a direct reading variable frequency device designed to replace the crystal oscillator of a diversity receiver or of a transmitter. Inasmuch as the instability in most receivers comes from the various oscillators used in the conversion processes, the VOX has been designed to replace these receiver oscillators with stable inputs in the high frequency oscillator from 2 to 64 megacycles. It also provides intermediate frequency oscillator input from 3.2 to 3.9 megacycles and two BFO inputs in the frequency range of 300 to 1000 kilocycles. The two BFO inputs can be used for such modes of reception as Facsimile, inverted and normal; and TTY, or any combination requiring 2 separate BFO frequencies. Also, the VOX may be used as a substitute for the master oscillator of a transmitter, or as a secondary frequency standard.

The Model VOX incorporates a highly stable direct reading oscillator with a large, accurate counter type dial. The first four significant figures (Kcs) are shown as large, easily read numerals on the counter face and the last three figures (cps) are read on a clearly engraved dial. This feature completely eliminates use of charts or interpolations and means that the most inexperienced operator can simply dial the correct frequency without extensive instruction.

Check points against the 100 Kcs built-in reference are available every 50 Kcs, plus other sub-harmonics, both aurally (phone jacks in front and rear panels) and visually (neon indicator on front panel). This crystal reference is contained within the double oven assembly with the oscillator itself. Use of this oven assembly with its large mass of metal and insulating material distributed through its cross section produces a high heat inertia with extremely stable oven temperature.

The vernier calibrate control has been incorporated in this series, providing a broad, smooth operating adjustment enabling the operator to calibrate the oscillator to a precise frequency. Once calibrated, the oscillator can be set to output frequency, the dial locked and the operator may be sure of long term extremely stable output.

In the Model VOX, the following features are incorporated:

- A. A large easily read counter, TMC Part CY-104 showing the first four significant figures of the oscillator output.
- B. The Beat Frequency Oscillator (BFO) has circuitry to permit (a) the use of a wider range of crystal frequencies, i.e., 300 to 1,000 kcs., and (b) permit the paralleling of many receiver BFO's from the single oscillator.
- C. A visual Zero Beat Indicator in the form of a flashing neon lamp compliments the aural indication used.
- D. The IFO Crystal Unit Sym. Y2-1, is a plug-in type CR-18/U so that the user may select intermediate oscillator frequency.
- E. A phone jack on the rear panel permits monitoring of the check points from the rear of the equipment.

TECHNICAL SPECIFICATIONS:

A. HF OSCILLATOR

FREQUENCY RANGE:	2 to 4 megacycles continuous, with multipliers up to 64 megacycles.
OUTPUT IMPEDANCE:	75 ohms coaxial.
OUTPUT LEVEL:	2 watts throughout basic range of 2 to 4 megacycles and 0.5 watts 4 to 64 megacycles adjustable.
OUTPUT CONNECTIONS:	Three BNC RF Connectors.
CRYSTAL FREQUENCIES:	2 to 4 megacycles for output frequencies of 2 to 64 megacycles.
CRYSTAL:	CR-18/U.
CRYSTAL POSITION:	3 each, available on front panel switch.
OUTPUT VOLTAGE:	Sinusoidal with harmonics and related spurious averaging between 20 and 30 db down.
MINIMUM STABILITY:	20 cycles per megacycle for any fixed temperature within the range 0 to 50 degree C.
CALIBRATION:	Direct reading calibration in cycles per second from 2 to 4 megacycles.
RESETTABILITY:	20 cycles per megacycle to a calibrated frequency.
LINE VOLTAGE CHANGE EFFECT:	5 cycles per mc/s for $\pm 10\%$ change in line voltage.
HUMIDITY EFFECTS:	Average change of 135 cycles at 3 mcs for 50 to 95% humidity.
HIGH FREQUENCY OSCILLATOR CALIBRATION:	Against 100 kc crystal oscillator at 50 kc points.

B. BEAT FREQUENCY OSCILLATOR

FREQUENCY RANGE: 300 to 1,000 kcs.
OUTPUT LEVEL: 6 volts across 1000 ohms w/output level control.
OUTPUT CONNECTIONS: Three BNC RF Connectors.
CRYSTAL TYPE: CR-46/U or equivalent.
CRYSTAL POSITION: Two, on rear panel, selectable.

C. INTERMEDIATE FREQUENCY OSCILLATOR

FREQUENCY RANGE: 3.2 to 3.9 Mcs.
(SP-600J uses 3.5 Mcs.)
OUTPUT LEVEL: 2 volts into 75 ohms coaxial.
CRYSTAL TYPE: CR-18/U.
OUTPUT CONNECTIONS: Three BNC RF Connectors.

D. GENERAL

FRONT PANEL CONTROLS AND FACILITIES: POWER ON/off switch
HFO ON/off switch
IFO ON/off switch
BFO ON/off switch
BEAT ON/off switch
METER HFO/IFO/BFO/VMO switch
CALIBRATE control
MASTER OSCILLATOR FREQUENCY control
TUNING switch
BAND MCS switch
XTAL FREQ control
XTAL selector switch
PHONE jack
MAIN POWER indicator lamp
INNER OVEN indicator lamp
OUTER OVEN indicator lamp
ZERO BEAT indicator lamp
Output Meter
HFO output
BFO output
IFO output
VMO output

REAR PANEL CONTROLS AND FACILITIES: BFO XTAL switch
OVEN fuse
POWER fuse
J106 Phone input

3 ea. BFO connectors, type BNC
3 ea. HFO connectors, type BNC
3 ea. IFO connectors, type BNC

ZERO BEAT INDICATOR: Flashing Neon at check points.

PRIMARY POWER: 115/230 volts, 50/60 cps, approximately 100 watts average or 250 watts peak depending upon cycling of oven heating element.

SIZE: 19" x 16" x 10 $\frac{1}{2}$ " high. 29" x 30" x 20" packed for Export.

WEIGHT: 67 lbs. Net. 157 lbs. Packed for Export.

MOUNTING:

Standard 19" Relay Rack Mounting.
Available with or without slides.

TUBE COMPLEMENT:

SYMBOL	TYPE	CIRCUIT
V101	5V4G	High Voltage Rectifier.
V102	OA2	Voltage Regulator.
V103	6BE6	Mixer.
V104	12AU7	Audio Amplifier.
V105	6AQ5	BFO.
V201	12AU7	IFO and Amplifier.
V202	6C4	Crystal HFO or RF Amplifier.
V203	6AQ5	R F Amplifier.
V204	6AQ5	Multiplier.
V205	6AQ5	Multiplier.
V206	5AQ5	Multiplier.
V207	6AQ5	Multiplier.
V301	6AB4	VMO.
V302	12AU7	Crystal Oscillator and Cathode Follower.
R119	RR-109	Ballast Tube

CABLES:

Three 6 ft. long service cables, TMC numbers CA-108, CA-109 and CA-502, are supplied with each Model VOX.

COMPONENTS AND CONSTRUCTION:

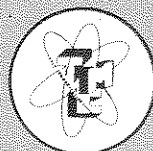
Equipment is manufactured in accordance with JAN specifications, wherever practicable.

THE TECHNICAL MATERIEL CORPORATION

700 FENIMORE ROAD

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