

VOICE FREQUENCY MULTIPLEXER

MODEL TMXI-2

TITLE

MODEL

USED ON SECTION

QTY

LIST SECTIONS

- 1.SUPPORTING NOTES
- 2.SUPPORTING LISTS
- 3.ELECTRICAL/MECHANICAL
- 4.SUPP ASSY/REF DWGS
- 5.SPECIFICATIONS
- 6.LOOSE ITEMS
- 7.PARTS PECULIAR

SHEET NO.

- SEE BELOW
- 1
- 1
- NONE
- 1
- NONE
- NONE

LAST SYMBOLS

NONE

COMPILED L. GABEL

CHECKED L. GABEL

APPROVED O. POSE

FNL APPR *L. Gabel*

ISS DATE 3-5-65

MISSING SYMBOLS

NONE

NOTE 1. THE FOLLOWING SYMBOL, #, IN THE REMARKS COLUMN INDICATES THAT THE PART NUMBER IMMEDIATELY FOLLOWING IT IS THE TMC PROPRIETARY MANUFACTURING DRAWING FOR THE CORRESPONDING NUMBER IN THE PART NUMBER COLUMN.

**MATERIAL LIST /  
NUMERICAL PARTS LIST**

REV.

A

MODEL:

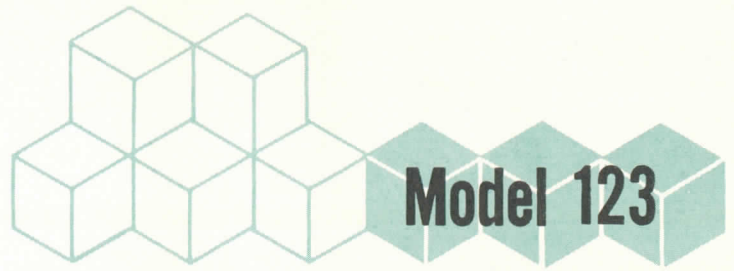
TMXI-2

SHEET 1 OF 1

PART NO.	DESCRIPTION SUPPORTING LISTS	ITEM LOCATION			QTY. PER UNIT	REFERENCE SYMBOLS	REMARKS
		USED ON ASSEMBLY	USED TO MOUNT	QTY. PER USED TO MOUNT			
TMXI-1	MULTIPLEXER	TMXI-2			2		
MOD-139	ELECTRICAL/MECHANICAL SHELF,EQUIP	TMXI-2			1		
MS3451	PNL,FR,SHELF	TMXI-2			2		
S797	SPECIFICATIONS EQUIP INSTRUCT.	TMXI-2			1		



# Tele-Signal



## Model 123

TD410/UGC\*

### MULTIPLEXER



*...self-contained, completely transistorized voice frequency multiplexer unit primarily designed for use with single sideband or independent sideband HF radio circuits. The multiplexer derives two independent 3KC voice frequency (VF) channels from a nominal 6KC bandwidth sideband which can be utilized for voice, facsimile FSK teletypewriter or general data transmission.*

*Functionally the Model 123 Multiplexer splits the 6KC baseband into two 3KC VF channels thereby doubling its channel capability. When used with independent sideband equipment, two multiplexers and two demultiplexers (Model 124) provide four independent VF channels. One standard 5 1/4" shelf accommodates two such units.*

### FEATURES

- Completely self-contained including power supply and crystal controlled oscillators
- Controls, Meters and Monitoring provisions at the front panel

- Toroidal filters ensure minimum ringing and differential phase shift
- Ease of maintenance, "tilt out" printed circuitry exposes all parts without disturbing wiring

\*U. S. Military Nomenclature

TRANSISTORIZED COMMUNICATIONS EQUIPMENT

Distributed by

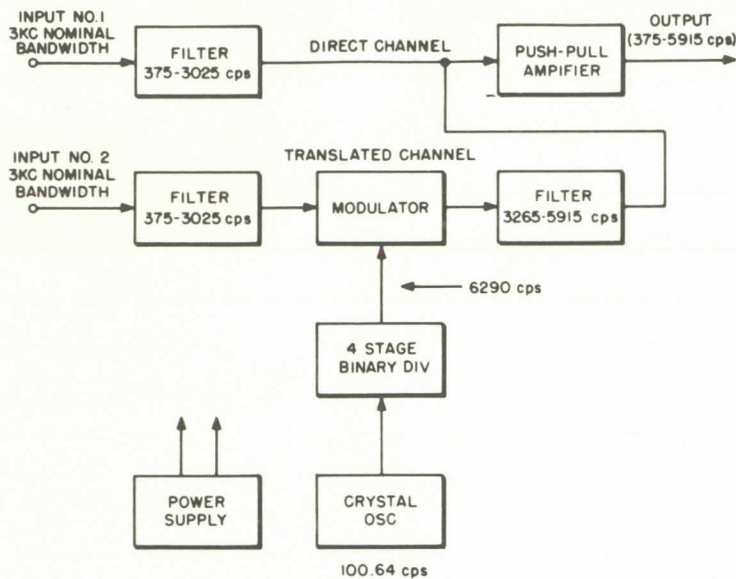


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### MULTIPLEXER MODEL 123

Two nominal 3Kc channels are applied to the inputs of the multiplexer.

The direct channel is fed through a bandpass filter (375-3025 cps) to the common output amplifier stages which provide amplification of the signals to a suitable level for transmission.

The translated channel is fed through an identical bandpass filter to a ring modulator stage where it is shifted, to the higher spectrum position, between 3265 and 5915 cps. The output is filtered to eliminate all other frequencies, and is then applied to the common output amplifier stage.

The internal carrier for the modulator is produced by an AT-cut 100.64 Kc crystal. The desired 6290 cps conversion is obtained by dividing the crystal frequency by 16 by means of a four stage binary divider. Power is supplied by a self-contained 15V DC power supply.

## TECHNICAL CHARACTERISTICS

### OPERATING CHARACTERISTICS

- Operating Temperature:**  $-20^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$
- Storage Temperature:**  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Internal Carrier Accuracy:**  $\pm 0.1$  cps at 6290 cps
- Internal Carrier Stability:** 1 part per  $10^7$

### INPUT CHARACTERISTICS

- Number of Inputs:** 2
- Input Bandpass (each input):** 375 to 3025 cps
- Input Level:**
  - Telephone:  $-15$  dbm to  $+4$  dbm
  - Facsimile:  $-15$  dbm to  $+4$  dbm
  - Telegraph (16 Channels):  $-25$  dbm to  $+4$  dbm, (each input)
- Input Impedance (each):** 600 Ohms balanced.

### OUTPUT CHARACTERISTICS

- Number of Outputs:** 1
- Output Bandpass:** 375 to 5915 cps
- Maximum Output Level:**  $+16$  dbm (single frequency)
- Normal Output Level:**
  - Telephone:  $-4$  dbm
  - Facsimile: 0 dbm
  - Telegraph (16 Channels):  $-10$  dbm

### POWER REQUIREMENTS

- Power:** 4 watts (approx.)
- Voltage:** 115/230 volts
- Frequency:** 50 to 400 cps

### PHYSICAL CHARACTERISTICS

- Control Settings:** Common output control. Each channel can be independently monitored.
- Monitoring:** VU Meter; Six front panel test points; Neon pilot lamp.
- Dimensions:**  $5\frac{1}{4}$ " high by 8" wide by  $10\frac{3}{4}$ " deep.
- Weight:** 10 lbs (approximately)

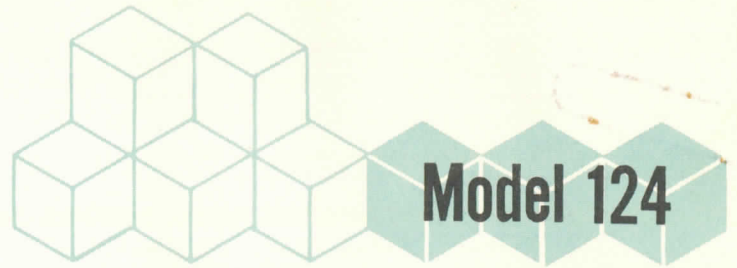
Other characteristics available on special order.

For further information or Applications Engineering contact

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MAMARONECK, NEW YORK

# Tele-Signal



## Model 124

TD411/UGC\*

### DEMULTIPLEXER



*...self-contained completely transistorized voice frequency demultiplexer unit primarily designed for use in single sideband and independent sideband HF radio circuits.*

*The Model 124 is a companion unit to the Model 123 Multiplexer and is used to recover the two separate 3 KC voice frequency channels previously combined by the Model 123 multiplexer to form the 6 KC composite transmitter sideband. The 6 KC composite sideband is normally that of a single-sideband or independent-sideband HF radio transmitter.*

*One standard 5¼" shelf will accommodate two such units, or one demultiplexer and one multiplexer.*

## FEATURES

- Completely self-contained including power supply and crystal controlled oscillators
- Controls, Meters, and monitoring provisions at the front panel
- Toroidal filters ensure minimum ringing and differential phase shift
- Ease of maintenance; "tilt out" printed circuitry exposes all parts without disturbing wiring

\*U. S. Military Nomenclature

TRANSISTORIZED COMMUNICATIONS EQUIPMENT

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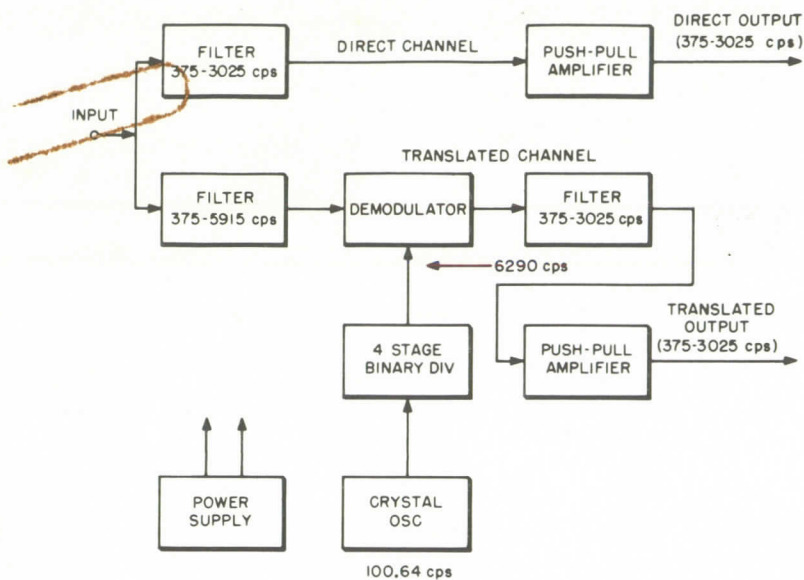


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**DEMULTIPLXER MODEL 124**

The nominal 6Kc channel of single sideband receiver is applied through isolation circuitry and buffer amplifiers to two input bandpass filters which separate the direct (375-3025 cps) and translated (3265-5915 cps) channel. The direct channel is amplified to the desired output level by a push-pull amplifier level.

The translated channel is applied to a ring demodulator where it is heterodyned with an internal carrier of 6290 cps to produce the desired 375-3025 cps V.F. output. The demodulator signal is passed through a bandpass filter and then amplified to the desired output level.

The internal carrier for the demodulator is produced by an AT-cut 100.64 Kc crystal. The desired 6290 cps conversion is obtained by dividing the crystal frequency by 16 by means of a four stage binary counter. Power is supplied by a self-contained 15V DC power supply.

## TECHNICAL CHARACTERISTICS

### OPERATING CHARACTERISTICS

**Operating Temperature:**  $-20^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$   
**Storage Temperature:**  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
**Internal Carrier Accuracy:**  $\pm 0.1$  cps at 6290 cps  
**Internal Carrier Stability:** 1 part per  $10^5$

### INPUT CHARACTERISTICS

**Number of Inputs:** 1  
**Input Bandpass (each input):** 375 to 3025 cps  
**Input Level:**  
 Telephone:  $-15$  dbm to  $+4$ dbm  
 Facsimile:  $-15$  dbm to  $+4$ dbm  
 Telegraph (16 Channels):  $-25$  dbm to  $+4$ dbm  
**Input Impedance :** 600 Ohms balanced

### OUTPUT CHARACTERISTICS

**Number of Outputs:** 2  
**Output Bandpass: (each output)** 375 to 5915 cps  
**Maximum Output Level:**  $+16$  dbm (single frequency)  
**Normal Output Level:**  
 Telephone:  $-4$  dbm  
 Facsimile: 0 dbm  
 Telegraph (16 Channels):  $-10$  dbm

### POWER REQUIREMENTS

**Power:** 4 watts (approx.)  
**Voltage:** 115/230 volts  
**Frequency:** 50 to 400 cps

### PHYSICAL CHARACTERISTICS

**Control Settings:** Common output control. Each channel can be independently monitored.  
**Monitoring:** VU Meter; Six front panel test points; Neon pilot lamp.  
**Dimensions:**  $5\frac{1}{4}$ " high by 8" wide by  $10\frac{3}{4}$ " deep.  
**Weight:** 10 lbs (approximately)