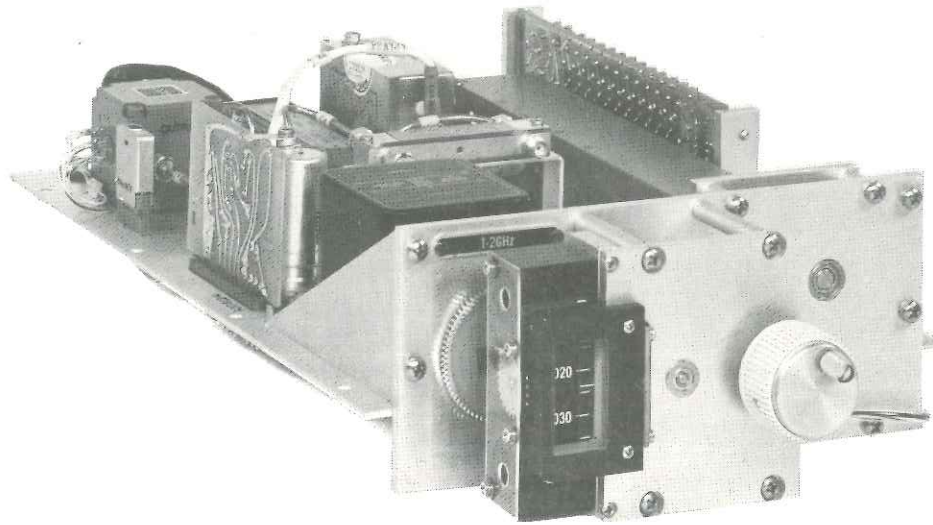




# TH-5 WIDE BANDWIDTH TUNING HEAD



TH-120R-5

## FEATURES

- 1 to 18 GHz Frequency Coverage
- 50 MHz Bandwidth
- RFI Shielded

## DESCRIPTION

The TH-5 Wide Bandwidth Tuning Heads are modular units for use with the 112 Microwave Receiver and MTF-Series Microwave Tuning Frames. A series of five tuning heads provide a frequency coverage from 1 to 18 GHz for the units and has a minimum bandwidth of 50 MHz. Changing tuning heads is a fast, simple operation, requiring only hand tools. No electrical alignment is necessary after changing heads.

The design of the tuning heads includes an electronically tuned, dual two-stage YIG preselector for high image rejection and low oscillator radiation. To maximize stability, a solid state LO in a mechanically tuned cavity is used as the local oscillator. A solid-state preamplifier is used in the TH-120R-5

which results in a typical noise figure of 8 dB over the 1 to 2 GHz tuning range. The TH-5 Series provides a minimum of 50 MHz BW at 3 dB points. Provision is made on all other tuning heads to connect an external RF preamplifier such as a solid state amplifier. Each of the TH-5 Series heads provides a 160 MHz IF output. Operating power for the heads is provided by the 112 Receiver or MTF-Series Microwave Tuning Frame.

The tuning heads are tuned by a single control knob via an internal gear train. The tuned frequency is indicated on a tape dial which has an accuracy of  $\pm 1\%$ . Fine tuning of the heads is accomplished by applying an external voltage to a varactor in the LO circuit. Provision is also made for applying voltages to control the AGC and AFC functions. Each of the tuning heads in the series also has an analog tuning voltage output which provides -10 V at the low band edge, and +10 V at the high band edge. Linearity (volts vs. frequency) is maintained to within 1% over the entire tuning range.

## SPECIFICATIONS

Tuning Range:

TH-120R-5	1 - 2 GHz
TH-245R-5	2 - 4.5 GHz
TH-480R-5	4 - 8 GHz
TH-812R-5	8 - 12 GHz
TH-1218-5	12 - 18 GHz

For Further Information Please Contact:

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Specifications subject to change without notice.

SPECIFICATIONS (continued)

Input Impedance . . . . .	50 ohms, nominal
Noise Figure†:	
TH-120R-5 . . . . .	9 dB, typical; 11 dB, maximum
TH-245R-5, TH-480R-5, TH-812R-5, TH-1218-5 . . . . .	18 dB, typical; 20 dB, maximum
Tuner Gain:	
TH-120R-5 . . . . .	17 dB, minimum
TH-245R-5, TH-480R-5, TH-812R-5, TH-1218-5 . . . . .	12 dB, minimum
Overall Bandwidth . . . . .	50 MHz, minimum at the 3 dB points
IF Output . . . . .	160 MHz
IF Rejection . . . . .	80 dB, minimum
Image Rejection . . . . .	60 dB, minimum
Input VSWR . . . . .	3:1, maximum
Local Oscillator Output Frequency:	
TH-120R-5 . . . . .	$F_{LO} = F_{\text{tuned}} + 160 \text{ MHz}$
TH-245R-5, TH-480R-5 . . . . .	$F_{LO} = \frac{F_{\text{tuned}} + 160 \text{ MHz}}{2}$
TH-812R-5 . . . . .	$F_{LO} = \frac{F_{\text{tuned}} + 160 \text{ MHz}}{3}$
TH-1218-5 . . . . .	$F_{LO} = \frac{F_{\text{tuned}} + 160 \text{ MHz}}{4}$
1 dB Compression Point:	
TH-120R-5 . . . . .	-25 dBm at input
TH-245R-5, TH-480R-5, TH-812R-5, TH-1218-5 . . . . .	-15 dBm at input
Antenna Conducted LO Radiation:	
TH-120R-5 . . . . .	-73 dB, maximum
TH-245R-5, TH-480R-5, TH-812R-5, TH-1218-5 . . . . .	-70 dB, maximum
LO Output Level . . . . .	-5 dBm, minimum into 50 ohms
Analog Output Level . . . . .	-10 V to +10 V, linear to within 1%
External AFC Tuning Range . . . . .	1 MHz, minimum
AFC Input Voltage . . . . .	±1V, maximum
Fine Tuning Range . . . . .	500 kHz, minimum
AGC Control . . . . .	10 dB, minimum
AGC Input Voltage . . . . .	+10 V, maximum gain, to +1 V, minimum gain
Dial Calibration . . . . .	±1%
Dial Resetability . . . . .	±0.5%
Operating Temperature Range* . . . . .	0°C to 50°C
Power Supply Voltages Required for Operation . . . . .	+12 to +28 V dc, regulated; +15 V dc, regulated; -15 V dc, regulated; 20 to 24 V ac or dc (heaters)
Power Consumption . . . . .	16 Watts, approximately
Mechanical:	
Size . . . . .	3.15 inches high, 7.75 inches wide, and 14.9 inches deep
Weight . . . . .	8 lbs, approximately

† As measured per WJ/CEI Standard Test Method 402.

\* Operation within specifications guaranteed at 25°C ±5°C.