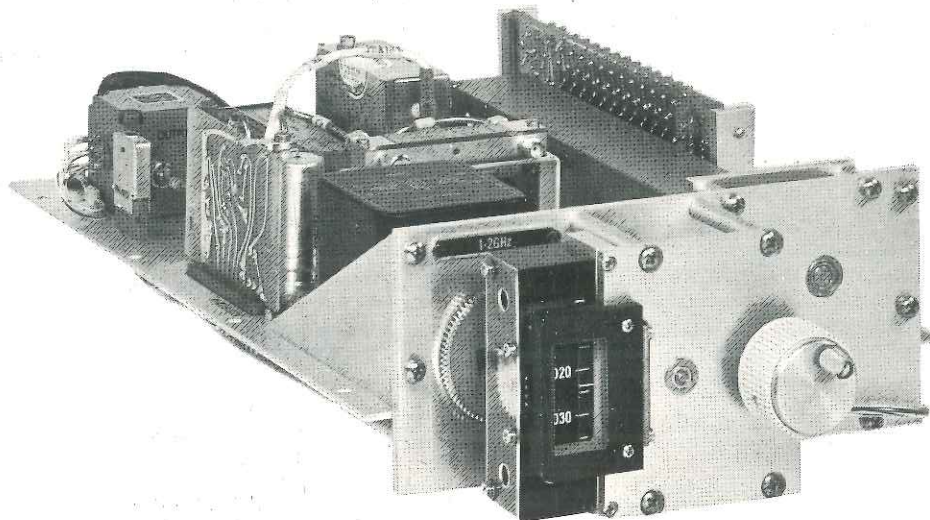




# TH-SERIES TUNING HEAD



## DESCRIPTION

The TH-Series Tuning Heads are modular units for use with the 112 Microwave Receiver and MTF-Series Microwave Tuning Frames. A series of five tuning heads provides a frequency coverage from 1 to 18 GHz for the units. 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, four-section 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 which results in a typical noise figure of 8 dB over the 1 to 2 GHz tuning range. Provision is made on all other tuning heads to connect an external RF preamplifier such as a

TWT. Each of the TH-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 -10V at the low band edge, and +10V at the high band edge. Linearity (volts vs. frequency) is maintained to within 1% over the entire tuning range.

## SPECIFICATIONS

### Tuning Range:

TH-120R.....	1-2 GHz
TH-245R.....	2-4.5 GHz
TH-480R.....	4-8 GHz
TH-812R.....	8-12 GHz
TH-1218R.....	12-18 GHz
Input Impedance.....	50 ohms, nominal

For Further Information Please Contact:

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**SPECIFICATIONS (Continued)**

Noise Figure: †	
TH-120R . . . . .	8 dB, typical; 11 dB, maximum
TH-245R, TH-480R, TH-812R, TH-1218R . . . . .	16 dB, typical; 20 dB, maximum
Tuner Gain:	
TH-120R . . . . .	17 dB, minimum
TH-245R, TH-480R, TH-812R, TH-1218R . . . . .	10 dB, minimum
Overall Bandwidth . . . . .	22 MHz, minimum at the 3 dB points (50 MHz for TH-1218R)
IF Output . . . . .	160 MHz
IF Rejection . . . . .	80 dB, minimum
Image Rejection . . . . .	60 dB, minimum – 50 dB for TH-1218R
Input VSWR . . . . .	3:1, maximum
Local Oscillator Output Frequency:	
TH-120R . . . . .	$F_{LO} = F_{\text{tuned}} + 160 \text{ MHz}$
TH-245R, TH-480R . . . . .	$F_{LO} = \frac{F_{\text{tuned}}}{2} + 80 \text{ MHz}$
TH-812R . . . . .	$F_{LO} = \frac{F_{\text{tuned}} + 160 \text{ MHz}}{2}$
TH-1218R . . . . .	$F_{LO} = \frac{F_{\text{tuned}} + 160 \text{ MHz}}{4}$
1 dB Compression Point . . . . .	(TH-120R) – 25 dBm at input; (TH-245R, 480R, 812R) (TH-1218R) – 15 dBm at input
Antenna Conducted LO Radiation:	
TH-120R . . . . .	-73 dB, maximum
TH-245R, TH-480R, TH-812R, TH-1218R . . . . .	-70 dB, maximum
LO Output Level . . . . .	-5 dBm, minimum into 50 ohms
Analog Output Level . . . . .	-10V to +10V, linear to within 1%
External AFC Tuning Range . . . . .	1 MHz, minimum
AFC Input Voltage . . . . .	±1V, maximum
AGC Control . . . . .	10 dB, minimum
AGC Input Voltage . . . . .	+10V, maximum gain, to +1V, 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 Vdc, regulated; +15 vdc, regulated; -15 Vdc, regulated; 20 to 24 Vac or dc (heaters)
Power Consumption . . . . .	16 Watts, approximately
Mechanical:	
Size . . . . .	3.15 inches high; 7.75 inches wide; 14.9 inches deep
Weight . . . . .	8 lbs., approximately

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

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