SYSTEM NOISE MONITORS

- Cost Effective Noise Figure Measurements
- Operational Simplicity
- Adaptable to Specific Applications

MT7370

Description

The Maury MT7300 series of System Noise Monitors (SNM) are single frequency noise meters designed to meet the needs of field and production applications that demand simplicity of operation and economy in the instrumentation.

The SNM offer simplified, uncluttered front panels with only those controls required for the basic measurement and calibration functions; an indicator that tells the operator when there is sufficient signal level for a valid measurement, and a thumbwheel switch that sets the calibration of the unit for the noise generator in use (ENR). All connections are via the rear panel. These units are available with either analog or digital noise figure indicators and in either bench or rack mountable configuration. The available units are shown in the chart below:

MT7310

Operating Frequency

The MT7300 series are fixed frequency units designed to operate at one of seven common intermediate frequencies designated by a model number suffix as shown below (special frequencies are available at an additional cost).

Model [1]	Readout Type	Mechanical Configuration
MT7310	Analog	Bench mount
MT7320	Analog	Rack mount
MT7360	Digital	Bench mount
MT7370 [2]	Digital	Rack mount

Model Suffix	Frequency	Model Suffix	Frequency
A	10.7 MHz	E	45.0 MHz
B	21.4 MHz	F	60.0 MHz
C	30.0 MHz	G	70.0 MHz
D	36.0 MHz		

[1] Add frequency designation letter to complete the model number.

[2] Includes GPIB (IEEE-488) interface.

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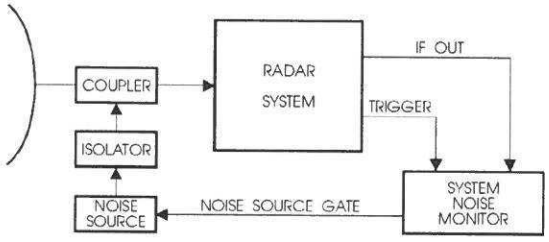
Radar Noise Monitors (MT7321 and MT7371)

The MT7321 and MT7371 are the same as the MT7320 (analog) and MT7370 (digital) SNM, respectively, except that they can also be used to monitor the noise figure of an operating radar. These units sample the IF noise output during the radar dead time. A noise generator connected to the system input (see diagram below) is energized on alternate radar pulse repetition periods to develop the measurement signal (Y-factor).

The radar SNM must operate synchronously with the radar so that it does not interfere with its operation. This requires a trigger derived from the system under test. If the trigger is available just preceding or during the dead time, the SNM can be used in the "non-delay" mode. The noise sample is taken immediately upon application of the trigger. In the "delay" mode, the trigger is usually derived from the main RF trigger or pre-trigger, and the sampling is delayed until the dead time occurs.



Typical Radar Noise Monitor Installation

In a typical installation (see the diagram above), high level noise (35 dB ENR, typical) is injected into the main antenna feed of the radar via a directional coupler, and the isolator is used to protect the noise source from the coupled transmitter power.

Extended Range Units

The noise figure measurement range of the MT7370 is 0 to 19.9 dB. The MT7372 is operationally identical except that a front panel switch shifts the range to 10 to 29.9 dB at reduced accuracy. The switch closure is also brought out to a rear panel connector.

Optional Features

Additional functions and enhanced performance can be provided by the options listed below.

03 **Noise Figure Alarm**: relay closure when the noise figure exceeds a variable, internally preset value.

04 **Frequency Converter**: fixed frequency, double sideband converter with LO frequency factory preset to a user-specified value between 180 and 225 MHz.

07 **High Sensitivity**: internally mounted preamplifier provides a nominal 20 dB sensitivity improvement.

12 **10 volt Recorder Output**: analog output provides 10 volts for full scale (MT7310/20) or 0 dB (MT7360/70) indication.

13 **Front Panel Connections**: IF input and noise source output connectors are on the front panel.

15 **Slide Mounting**: a kit which includes chassis slides and hardware for use with the MT7320/70.

SYSTEM NOISE MONITORS

Specifications

- Input Specifications

Input Frequency: 10.7, 21.4, 30, 36, 45, 60, or 70 MHz

Bandwidth: 10% of the center frequency (nominal)

Sensitivity: -70 dBm (minimum)

Input Signal Level Range: 40 dB (minimum)

Input Impedance: 50 ohm (nominal)

- Noise Measurement

Noise Figure Display Range:

MT7310/20/21: 0 and 6 dB full scale with extension to infinity in two ranges

MT7360/70/71: 0 to 19.9 dB

MT7372: 0 to 19.9 dB and 10 to 29.9 dB in two ranges

Noise Figure Instrumentation Uncertainty:

MT7310/20/21: ±0.25 dB, full to half-scale; ±0.5 dB, half to quarter-scale

MT7360/70/71/72: ±0.25 dB, 0 to 6 dB; ±0.5 dB, 6 to 12 dB; ±1.0 dB, 12 to 23 dB; ±2.0 dB, 23 to 29.9 dB

ENR Calibration Range: 6 to 15.9 dB in 0.1 dB steps

- Miscellaneous

Noise Generator Gate Output: +28 volts, "noise on"; <0.25 volts, "noise off"

Recorder Output (rear panel):

MT7310/20/21: 1.0 volt (nominal) across 1 kΩ at full-scale deflection

MT7360/70/71/72: 7.5 volts (nominal) across 1 kΩ at 0 dB indication

Connectors (rear panel):

IF Input: BNC female

Noise Source: BNC female

Auxiliary Outputs: Cinch 57-4024

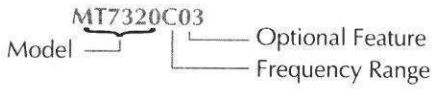
- Supplemental Characteristics

Operating Temperature: +5 to +50° C

Input Power: 115/230 VAC ±15%, 50 to 400 Hz, 10 watts

Ordering Information

When ordering a system noise monitor, please specify the basic model number (MT7310, MT7320, etc.), the letter suffix designating the operating frequency (i.e.: A-10.7 MHz, B-21.4 MHz, etc.) as detailed on the previous page, and any options, if applicable (options are also listed on page 87). For example: MT7320C03 designates an analog system noise monitor operating at 30 MHz with the noise figure alarm option. Your complete model number will look like this:



If you are ordering a radar system noise monitor, you will also need to specify the radar PRF or PRT, the measurement gate width (typically, the dead time interval), the trigger mode-delay or non-delay, and the trigger level and polarity – the standard units accept CMOS (+12 volts) positive trigger; however, TTL (+5 volts) positive triggers can also be accommodated.

Dimensions

Model	Height inches (cm)	Width inches (cm)	Depth inches (cm)	Weight lbs (kg)	Shipping Weight lbs (kg)
MT7310	5.25 (13.3)	7.4375 (18.9)	13.25 (33.7)	10 (4.5)	14 (6.3)
MT7320	5.25 (13.3)	17.125 (43.5)	13.25 (33.7)	15 (6.8)	19 (8.5)
MT7321	5.25 (13.3)	17.125 (43.5)	13.25 (33.7)	15 (6.8)	19 (8.5)
MT7360	5.25 (13.3)	7.4375 (18.9)	13.25 (33.7)	10 (4.5)	14 (6.3)
MT7370	5.25 (13.3)	17.125 (43.5)	13.25 (33.7)	15 (6.8)	19 (8.5)