WAVEGUIDE CRYOGENIC TERMINATION (COLD LOAD)

WR10 – 75.0 TO 110.0 GHZ

Features

- *Accurate Noise Temperature At Specified Calibration Frequencies*
- *Low VSWR Across The Full Frequency Range*
- *Liquid Nitrogen Cooled*
- *Metrology Grade Calibration For Solid State Noise Generators*
- *Low Noise Figure/Temperature Measurements*

Model MT7027J with power supply and foam-lined wood carrying case.

Description

The MT7027J cryogenic termination is a liquid-nitrogen-cooled noise source which provides accurately known noise temperatures at its calibration frequencies[1] and low VSWR over its full frequency range. This precision instrument is ideal for performing accurate noise temperature measurements in WR10 waveguide for applications such as radiometric type measurements, antenna systems calibration and parametric amplifier performance evaluation.

The MT7027J is extremely compact, rugged and easy to operate; it is equally suitable for laboratory or field applications. The instrument requires external helium gas pressurization of 2 psi and AC power for the heater circuit. It is provided with operating instructions and a calibration report which includes noise temperature calibration and VSWR performance data. Options for additional user-selected frequencies are available (see Maury data sheet 4E-020[1]).

[1] Maury data sheet 4E-020 provides specifics for the MT7250 series Noise Calibration Swept Data Module, a software tool that allows users to work with non-standard data points in addition to, or in place of the factory standards.

Accessories

The Maury MT152A pressurizing system is an important accessory, which provides the necessary valves, gages, and hardware required to connect an external helium gas supply to Maury cryogenic terminations (helium gas supply is not provided).

Maury produces an extensive line of calibrated precision adapters for connection to devices with other waveguide or coaxial connector types. See Maury data sheet 4A-008A for a list of available calibrated adapter sets. These may be purchased with the MT7027J (in which case they can be calibrated in assembly with the unit for an additional charge) or may be purchased separately (with factory standard calibration).

Maury also offers other waveguide or coaxial cryogenic terminations, thermal terminations (hot loads), and ambient terminations in various waveguide or coaxial configurations.

Please contact the factory for application assistance and the solution that best fits your requirements.

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Specifications

Frequency Range. ..... 75.0 to 110 GHz

Input VSWR ..... 1.12 maximum (1.07 typical)

Operating Temperature
(Load) ..... 77.36°K (liquid nitrogen cooled)

Noise Temperature (T') ... 82° K nominal (approximate) [2]

Accuracy of Calibration (T') ..... ±2.6° K [3]

Standard Calibration (T' & VSWR)....75, 92.5, 110 GHz [4]

Waveguide Size ..... WR10 (.100 x .050 I.D.)

Flange ..... Precision flange MPF10
(has indexing holes, equivalent to UG387/U)

Operating Orientation ..... Horizontal

Operating Life ..... 1.5 hours minimum (one fill)

Dewar Capacity ..... 1 liter

Weight ..... 7 lbs. approximate (empty)

Pressurization ..... 2 psi helium gas (external supply)

AC Power ..... 100 to 240 VAC, 47 to 63Hz
6.0 amps maximum

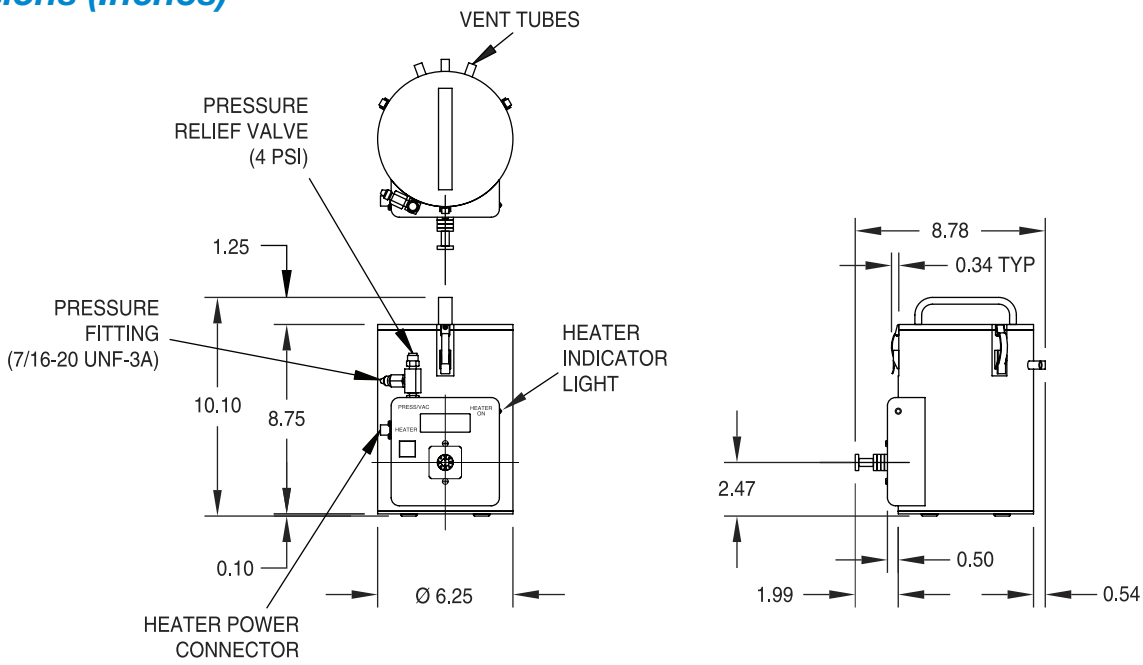
Provided Accessories:

Power Supply ..... One (1) linear power supply (operates on 120 VAC/60 Hz or 240 VAC/50 Hz, providing 48 VDC to the device)

Carrying Case ..... One (1) foam-lined wooden instrument case

The MT7027J can be optimized for VSWR and input noise temperature over other bandwidths, additional calibration points or with calibrated bends for other operating orientations. Please contact the factory for application assistance.

Dimensions (Inches)



[2] The noise temperature in itself is not important (other than it should be close to the temperature of the cryogen); it is the accuracy to which it is known that is important.

[3] Each unit is supplied individually calibrated at frequencies noted; equations are provided so that the noise temperature can be adjusted for actual atmospheric pressure and ambient temperature which will be experienced during operation. The accuracy specified is conservative based on the theory and calibration formulas utilized.

[4] Units can be provided calibrated at other frequencies on request. Also, they can be optimized for narrow band or single frequency use, generally exhibiting ±0.5 K accuracy and 1.05 maximum VSWR (1.03 or better typical).

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