

Power Monitors



INTEGRATED THERMOCOUPLE AND DIODE POWER MONITORS

- **Broadband Frequency Coverage**
- **High Level Outputs**
- **Simplifies System Designs**
- **Excellent Stability, Accuracy**
- **Low Cost**

DESCRIPTION

Narda integrated power monitors are complete, integrated power measurement subsystems which provide an output signal proportional to their RF input level. A system designer need only supply DC power to the RF power monitor for it to measure RMS average, or peak (Model 481B) power levels. Measurements can be made over the designer's choice of 20 or 30 dB (10 dB, Model 481B) dynamic range with repeatable, accurate performance. All units are designed to operate in hostile RF environments and are sealed to reduce emissions of, and susceptibility to, stray RF signals. Input connectors are precision type "N" or 3.5mm connectors that comply with MIL-C-39012, and output connections are through a MIL-C-26284 type connector for environmental and EMC considerations. This design feature allows these units to be mounted close to high power output stages while maintaining accurate output readings. These power monitors operate from a wide range of supply voltages. Single ended supplies of either ± 24 to 36 VDC unregulated, or dual supply voltages of ± 12 to ± 18 VDC regulated are acceptable

for all thermocouple monitors. The Model 481B requires ± 18 VDC, however special versions are available to match system supply voltages. These devices may be used as either constant current or constant voltage devices. In a system where variations of the resistance of the DC wiring may be encountered (such as through the slip rings of a rotating antenna system), or where the length of wire would cause a voltage reduction, a constant current source is desirable since any resistance, or resistance fluctuation would not affect the accuracy of the remote readout. In a system where the remote readout might be a high impedance device, such as a PC based data acquisition card the most desirable configuration is a constant voltage source. The choice of either a constant current or constant voltage configuration does not require any change or modification of the internal circuitry of the power monitor. Either configuration is obtained by proper wiring of the external circuitry. The supplied operation and maintenance manual contains numerous examples of external wiring configurations that may be employed.

SPECIFICATIONS

MODEL NUMBER	460B	461B	462B	466B	481B	491	492	4491
FREQUENCY RANGE	10 MHz to 12.4 GHz				0.1 to 12.4 GHz	50 MHz to 18 GHz		0.1 to 26.5 GHz
DETECTION	TRUE RMS AVERAGE				PEAK	TRUE RMS AVERAGE		
DYNAMIC ¹ RANGE	30 dB			20 dB	30 dB			
MEASUREMENT ² RANGE	1.0 μ W to 1.0 mW	10 μ W to 10 mW	100 μ W to 100 mW	1 mW to 100 mW	10 μ W to 10 mW	10 μ W to 10 mW	100 μ W to 100 mW	10 μ W to 10 mW
OVERLOAD CW PEAK	3.0 mW 0.1 W	30 mW 3.0 W	300 mW 30 W	300 mW 30 W	200 mW	30 mW 5.0 W	300 mW 10 W	30 mW 5.0 W
REPLACEMENT ELEMENT	818A	819A	820A	820A	—	813	814	4813

¹ Units can be configured for two or three 10 dB ranges or for a single 20 dB or 30 dB range

² Model 481B can only be configured for three 10 dB ranges

COMMON SPECIFICATIONS (All Units)

INPUT CONNECTOR	Type N male (Except 4491 - 3.5 male)
OUTPUT CONNECTOR	18 pin MS3116A-14-18P (mates with MS3116A-14-18S, Narda P/N 30931301)
INPUT VSWR (max)	1.5:1 (except 4491*, 2.0:1)
ZERO OFFSET (typ)	.005%/C° on least sensitive range, 10dB higher on each lower range
FREQUENCY SENSITIVITY	(Model 481B only) ± 0.5 dB (0.2 dB typ.)
LINEARITY	2% of full scale (Model 481B ± 0.25 dB $f < 10$ GHz, ± 0.65 dB $f > 10$ GHz)
THERMAL DRIFT	± 1.0 dB (Model 481B only)
PULSE CHARACTERISTICS (Model 481B only)	PW = 2 msec to CW, 0.5 μ sec to CW (+20 to +50°C), Repetition Rate 100 Hz, min.

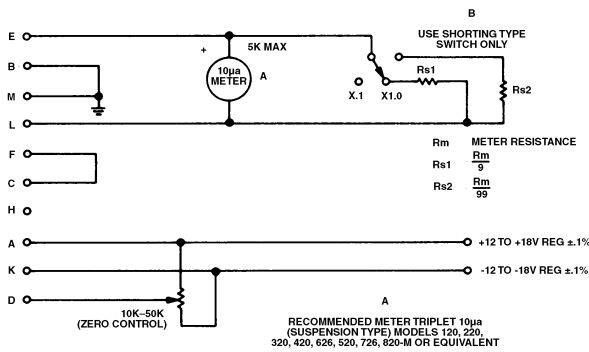
*(50 MHz to 22 GHz 1.5:1)(75 MHz to 20 GHz 1.3:1)

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE RANGE	Operating -55° to +85°C (Model 481B, 0 to +50°C) Non-operating -55° to +125°C (Model 481B, -25 to +85°C)
HUMIDITY	0 to 99% (Non-condensing)
ALTITUDE	0 to 30,000 ft.

Power Monitors

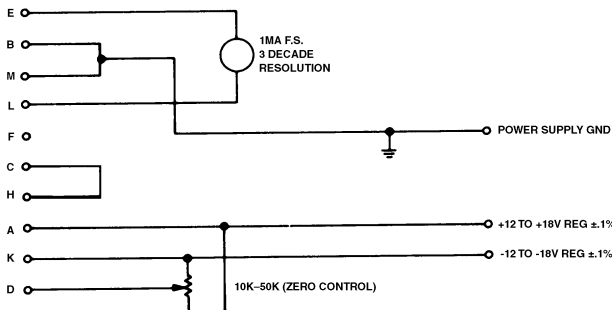
TYPICAL INTERCONNECTION DIAGRAMS



Constant Current Dual Supply, 3 Ranges

In this external wiring configuration, the RMS power monitors will generate a 0 to 100 mV output for each 10 dB range (x.1, x1, x10).

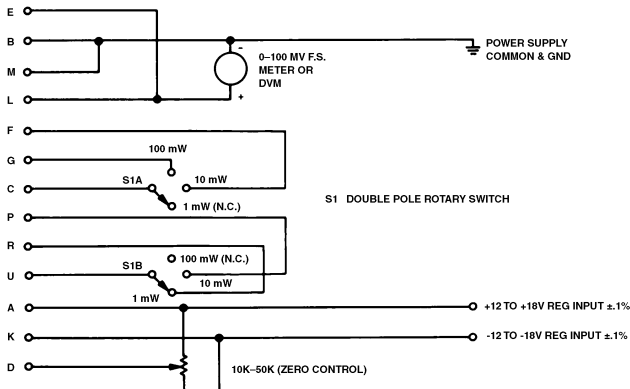
If the switch is left in the x.1 range, the RMS monitors will generate 0 to 1V and 0 to 10V if **operated** in the x1 and x10 power ranges, respectively.



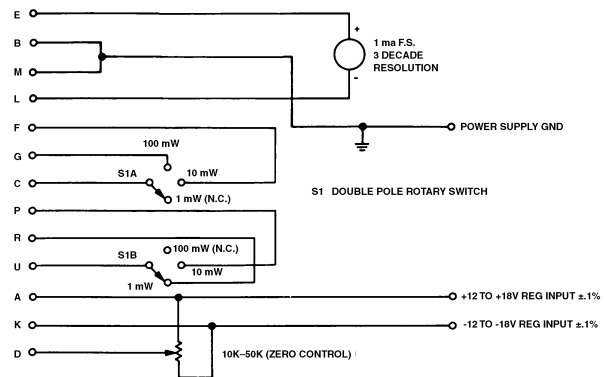
Constant Current Dual Supply Connection, Single Range

In this external wiring configuration, the RMS power monitor will generate up to 1 mA of current. When operated in the most sensitive range it will generate 0 to 10 µA, mid range and 0 to 100 µA and in the least sensitive range 0 to 1 mA.

The Model 48B1 Peak Power Monitor generates 0 to 10V, or 0 to 1 mA for each 10 dB range. Below are the external wiring diagrams of this model.

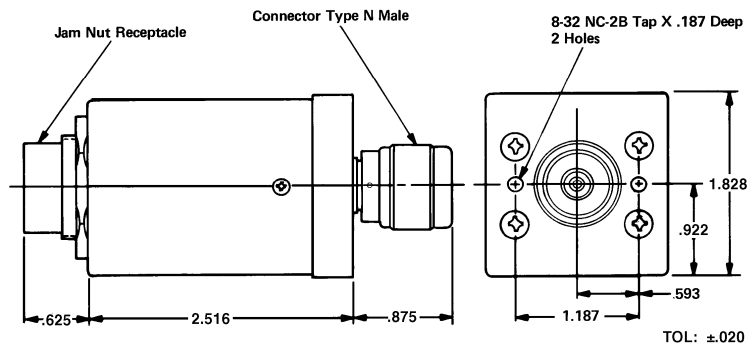


Constant Voltage Dual Supply Multiple Range

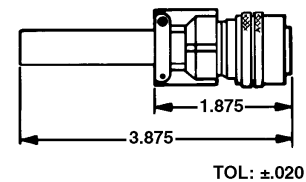


Constant Current Dual Supply Connection

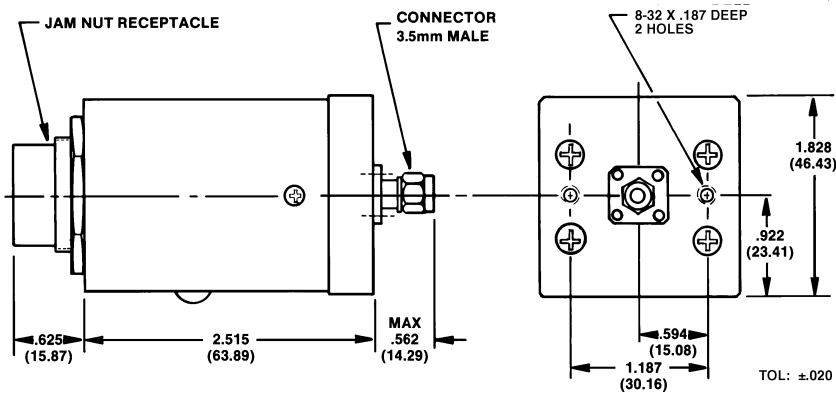
OUTLINE DRAWINGS



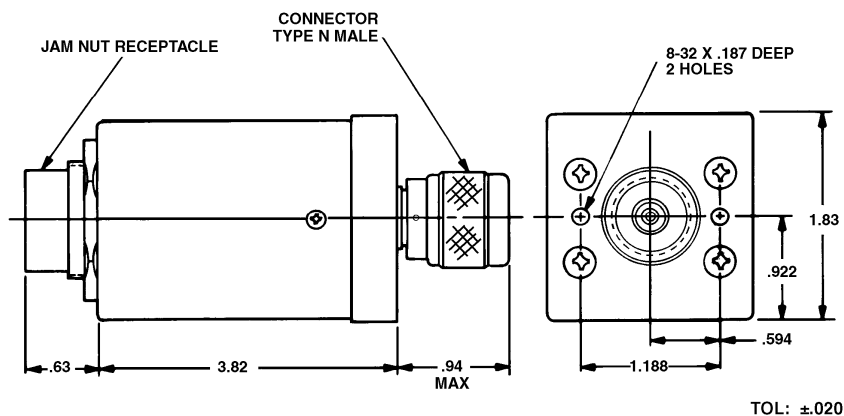
MODEL 460B SERIES AND MODELS 491, 492



MATING CONNECTOR
PART NO. 309313 (Accessory)



MODEL 4491



MODEL 481B