



RF DIRECTIONAL THRULINE[®]
PRECISION POWER SENSORS

4028 SERIES

OPERATION MANUAL

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INSTRUCTION BOOK PART NUMBER 920-4028S REV. H

Specifications

CAUTION

Changing the sensor's connectors will invalidate calibration data, and may reduce the maximum power rating of the unit.

Frequency Range 4028A250K 4028A400K 4028A2M 4028A3M 4028A4M 4028A10M 4028A25M 4028A120M 4028B2M 4028B3M 4028B10M 4028C10M	250 – 400 kHz 400 – 550 kHz 1.5 – 2.5 MHz 2.5 – 3.5 MHz 3.5 – 4.5 MHz 10 – 15 MHz 25 – 30 MHz 110 – 130 MHz 1.8 – 2.2 MHz 2.5 – 4.0 MHz 10 – 15 MHz 10 – 15 MHz
RF Power Range 4028A250K 4028A400K 4028A120M 4028B2M 4028C10M All other models	1 kW – 20 kW 1 kW – 20 kW 0.1 kW– 8.0 kW 1 kW – 30 kW 500 W – 50 kW 1 kW – 25 kW
Accuracy, Fwd At Calibration Frequencies and Power Levels† At Other Frequencies and Power Levels	± 2.0% (2σ) ± 3.0% (2σ)
Accuracy, Reflected	Calculated from FWD accuracy & FWD power $\text{Accuracy} = \text{FWD Accuracy} + \frac{\text{FWD Power}}{10 \text{ Directivity}/10}$
Accuracy, VSWR	Calculated from FWD and RFL power $\text{VSWR} = \left(1 + \sqrt{\frac{P_R}{P_F}} \right) / \left(1 - \sqrt{\frac{P_R}{P_F}} \right)$
VSWR, Max.	1.05:1
Insertion Loss, Max. 4028C10M	0.05 dB (with female 7-16 DIN connectors) 0.05 dB (with 3-1/8 in EIA connector)
Directivity, Min.	28 dB

Impedance, Nominal	50 ohms
Max. Allowable Terminating VSWR	2.00:1
Calibration Frequencies, Typical (MHz)^{††}	
4028A250K	0.25, 0.40
4028A400K	0.40
4028A2M	1.8, 2.0, 2.17
4028A3M	2.5, 3.2, 3.5
4028A4M	3.5, 4.0
4028A10M	10.0, 13.56, 15.0
4028A25M	25.76, 27.12, 28.48
4028A120M	110.0, 120.0, 130.0
4028B2M	1.8, 2.0, 2.2
4028B3M	2.5, 3.2, 3.5, 4.0
4028B10M	10.0, 13.56, 15.0
4028C10M	10.0, 13.56, 15.0
Calibration Power, Typical	1.7 kW
Calibration Technique	Frequency-specific calibration factors stored in nonvolatile memory in each sensor. Sensor output corrected for frequency and temperature within specified ranges.
Calibration Cycle, Nominal	1 year
Sampling Rate, Nominal	2 readings/second
Operating Power	Supplied by power meter via sensor cable
Connectors	
4028B10M	1-5/8" EIA Flanged
4028C10M	3-1/8" EIA Flanged
All other models	Customer specified from 7-16 DIN, LC, HN, and 7/8" flanged, appropriate for frequency and power.
CE	CE Compliant. Refer to Declaration of Conformity for specific standards.
Humidity, Max.	95% (Non-condensing)
Altitude, Max.	10,000 feet (3,000 m)
Temperature Range	
Operating	0 to 50 °C (32 to 122 °F)
Storage	-20 to +70 °C (-4 to +158 °F)
Dimensions	
4028B10M, 4028C10M	6.75"L x 3.5"W x 4.75"H (175 x 89 x 121 mm)
All other models	4.7"L x 3.2"W x 3.8"H (120 x 82 x 97mm)

Weight, Nominal	
4028B10M, 4028C10M	5 lb. 2 oz. (2.33 kg)
4028A250K, 400K	1 lb. 13 oz. (0.8 kg)
All other models	3 lb. 9 oz. (1.6 kg)

†. For rated accuracy, no more than 1% AM; Harmonics –50 dBc or less. Derate accuracy by 2% for temperatures outside 25 ± 10°C

††. Other calibration frequencies available upon request

Figure 1 4028A Outline

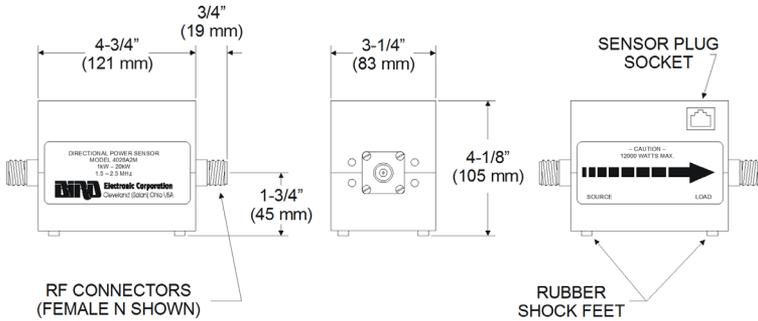


Figure 2 4028B Outline

