



**RF DIRECTIONAL THRULINE[®]
PRECISION POWER SENSORS**

4028 SERIES

OPERATIONS MANUAL

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 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 10 – 15 MHz 10 – 15 MHz
RF Power Range 4028A250K 4028A400K 4028C10M All other models	1 kW – 20 kW 1 kW – 20 kW 500W – 50 kW 1 kW – 25 kW
Accuracy, Fwd* At Calibration Frequencies and Power Levels At Other Frequencies and Power Levels	± 2.0% (2s) ± 3.0% (2s)
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

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

Calibration Frequencies, Typical (MHz)* 4028A250K 4028A400K 4028A2M 4028A3M 4028A4M 4028A10M 4028A25M 4028B10M 4028C10M	0.25, 0.40 0.40 1.8, 2.0, 2.17 2.5, 3.2, 3.5 3.5, 4.0 10.0, 13.56, 15.0 25.76, 27.12, 28.48 10.0, 13.56, 15.0 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 4028C10M All other models	1-5/8" EIA Flanged 3-1/8" EIA Flanged 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 Storage	0 to 50 °C (32 to 122 °F) -20 to +70 °C (-4 to +158 °F)
Dimensions 4028B10M, 4028C10M All other models	6.75"L x 3.5"W x 4.75"H (175 x 89 x 121 mm) 4.7"L x 3.2"W x 3.8"H (120 x 82 x 97mm)
Weight, Nominal 4028B10M, 4028C10M 4028A250K, 400K All other models	5 lb. 2 oz. (2.33 kg) 1 lb. 13 oz. (0.8 kg) 3 lb. 9 oz. (1.6 kg)

*. Other calibration frequencies available upon request

Figure 1 4028A Outline

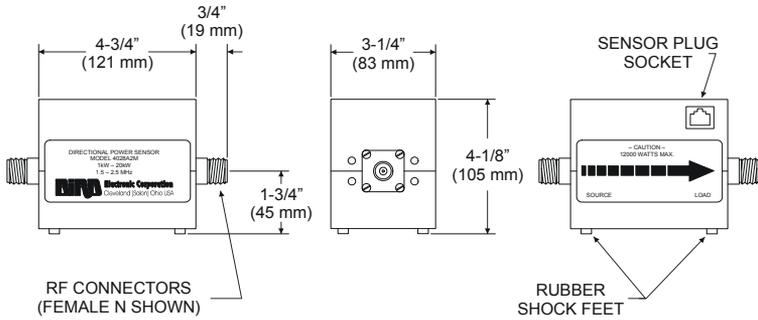


Figure 2 4028B Outline

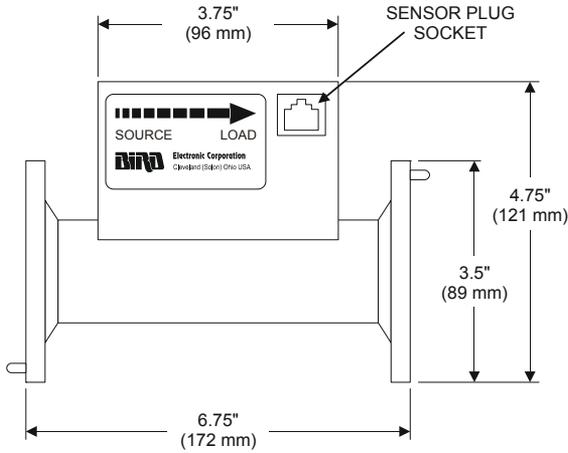
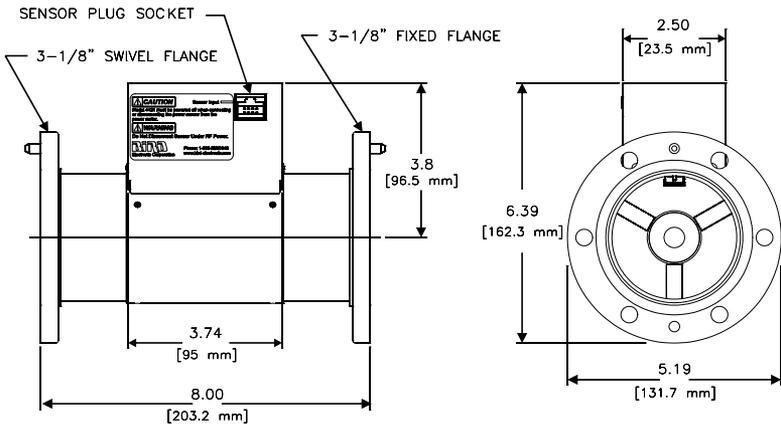


Figure 3 4028C Outline



Special Lifetime Warranty

Series 4028 Power Sensor Head

In addition to its standard warranty, the Bird Electronic Corporation warrants its Series 4028 ThruLine® Power Sensor Heads for lifetime to original purchaser. This extended warranty is against burnout. For the warranty to apply, the Sensor Head must be used with the correct Bird Electronic Corporation Display Unit, the maximum power rating of the Sensor must not be exceeded, the Sensor RF circuit must be properly terminated and the Sensor not subjected to physical abuse.

Bird Electronic Corporation, at its option, will repair or replace the defective Sensor at its world Headquarters at 30303 Aurora Road, Solon, Ohio 44139.

The customer is responsible to pay transportation charges to return the defective sensor to Bird.