

# RF DIRECTIONAL THRULINE PRECISION POWER SENSORS

4028 SERIES

OPERATION MANUAL

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## **Specifications**

#### CAUTION

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

Frequency Range	
400040501/	250 400 1.1.1-
	250 – 400 kHz
	100 – 550 kHz
	1.5 – 2.5 MHz
	2.5 – 3.5 MHz
	3.5 – 4.5 MHz
	I0 – 15 MHz
I I	25 – 30 MHz
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	I10 – 130 MHz
4028B2M   1	I.8 – 2.2 MHz
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.5 – 4.0 MHz
	10 – 15 MHz
4028C10M 1	I0 – 15 MHz
RF Power Range	
	I kW – 20 kW
	l kW – 20 kW
	).1 kW– 8.0 kW
4028B2M 1	I kW – 30 kW
	500 W – 50 kW
All other models 1	l kW – 25 kW
Accuracy, Fwd	
At Calibration Frequencies	
and Power Levels <sup>†</sup> ±	± 2.0% (2 <sub>0</sub> )
At Other Frequencies and	
	± 3.0% (2 <sub>0</sub> )
Accuracy, Reflected	Calculated from FWD accuracy & FWD power
	Accuracy = FWD Accuracy + $\frac{\text{FWD Power}}{10^{\text{Directivity}/10}}$
Accuracy, VSWR	Calculated from FWD and RFL power
	$VSWR = \left(1 + \sqrt{\frac{P_R}{P_F}}\right) / \left(1 - \sqrt{\frac{P_R}{P_F}}\right)$
VSWR, Max. 1	1.05:1
Insertion Loss, Max.	
	0.05 dB (with female 7-16 DIN connectors)
0	0.05 dB (with 3-1/8 in EIA connector)
Directivity, Min. 2	28 dB

Impedance, Nominal	50 ohms
Max. Allowable Terminating VSWR	2.00:1
Calibration Frequencies, Typical (MHz) <sup>††</sup>	2 2 2 4 2
4028A250K	0.25, 0.40
4028A400K 4028A2M	0.40 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 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	0 to 50 °C (32 to 122 °F) -20 to +70 °C (-4 to +158 °F)
Storage	-20 10 +70 C (-4 10 +130 F)
Dimensions 4028B10M, 4028C10M	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
, air outlet models	(120 x 82 x 97mm)

5 lb. 2 oz. (2.33 kg)
1 lb. 13 oz. (0.8 kg)
3 lb. 9 oz. (1.6 kg)

<sup>†.</sup> For rated accuracy, no more than 1% AM; Harmonics –50 dBc or less. Derate accuracy by 2% for temperatures outside 25  $\pm$  10°C

Figure 1 4028A Outline

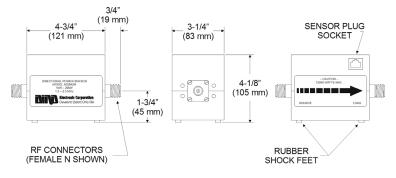
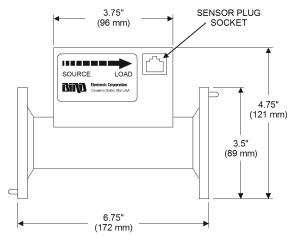
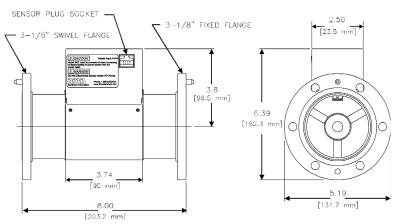


Figure 2 4028B Outline



<sup>††.</sup>Other calibration frequencies available upon request

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.