



**RF DIRECTINONAL THRULINE®
PRECISION POWER SENSORS**

4028 SERIES

About This Manual

This manual covers information on the following models:

Model

4028XXXX - XXXX

Designation	Frequency Range	Power Range	Input Connectors	Output Connectors
A250K	250 - 400 kHz	1 kW - 20 kW	01 = 4240-062	N (f)
A400K	400 - 550 kHz	1 kW - 20 kW	02 = 4240-063	N (m)
A2M	1.5 - 2.5 MHz	1 kW - 25 kW	03 = 4240-090	SC (f)
A3M	2.5 - 3.5 MHz	1 kW - 25 kW	04 = 4240-100	C (f)
A4M	3.5 - 4.5 MHz	1 kW - 25 kW	05 = 4240-132	BNC (m)
A10M	10 - 15 MHz	1 kW - 25 kW	06 = 4240-125	BNC (f)
A25M	25 - 30 MHz	1 kW - 25 kW	07 = 4240-156	TNC (f)
A120M	110 - 130 MHz	0.1 kW - 8.0 kW	08 = 4240-160	TNC (m)
B2M	1.8 - 2.2 MHz	1 kW - 30kW	11 = 4240-096	1-5/8 Fixed
B3M	2.5 - 4.0 MHz	1 kW - 25 kW	12 = 4240-268	HN (f)
B10M	10 - 15 MHz	1 kW - 25 kW	13 = 4240-278	HN (m)
C10M	10 - 15 MHz	0.5 kW - 25 kW	14 = 4240-344	7/16 (f)
			15 = 4240-363	7/16 (m)
			16 = 4240-370	SQS (m)
			17 = 4240-371	SQS (f)
			18 = 4240-372	SQS (m-p)
			19 = 4240-376	QRM (f)
			20 = 4240-374	QDS-UL (m)
			21 = 4240-375	SQS (f-p)
			22 = 4240-373	QDS-UL (f)
			23 = 4240-377	QRM (m)
			24 = 4240-377-2	QRM (f-p)
			25 = 4240-378	QRM (m-p)
			26 = 4240-376-20	GQL (f)
			27 = 4240-377-20	GQL (m)
			28 = 4240-376-10	GQM (f)
			29 = 4240-377-10	GQM (m)
			30 = 4240-208	1-5/8 Swivel
			34 = 4240-031	LC (f)
			35 = 4240-025	LC (m)
			36 = 4240-002	7/8
			38 = 4240-110	C (m)
			39 = 4240-373-2	QDS (f)
			40 = 4240-374-2	QDS (m)

Example

4028A2M-0102, is a 4028A2M with a N(f) Input Connector and a N(m) Output Connector.

Specifications

CAUTION

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

Accuracy, Fwd At Calibration Frequencies and Power Levels† At Other Frequencies and Power Levels	$\pm 2.0\% (2\sigma)$ $\pm 3.0\% (2\sigma)$
Accuracy, Reflected	Calculated from FWD accuracy & FWD power $\text{RFL Accuracy} = \text{FWD Accuracy} + \frac{\text{FWD Power}}{10^{\text{Directivity}/10}}$
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 4028A400K 4028A2M 4028A3M 4028A4M 4028A10M 4028A25M 4028A120M 4028B2M 4028B3M 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, 28.48 110.0, 120.0, 130.0 1.8, 2.0, 2.2 2.5, 3.2, 3.5, 4.0 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, B3M, B2M	6.75"L x 3.5"W x 4.75"H (175 x 89 x 121 mm)
4028A250K, A400K, C400K	3.74"L x 2.51"W x 3.28"H (95 x 64 x 84 mm)
4028C3M, 6M, 10M, 25M, 40M, 60M1	8.0"L x 5.2"W x 6.4" H (203 x 131 x 162 mm)
4028B400K-1	8.25"L x 3.5"W x 4.75"H (210 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, B3M, B2M	5 lb. 2 oz. (2.4 kg)
4028A250K, A400K, C400K	3 lb. 5 oz. (1.5 kg)
4028C3M, 6M, 10M, 25M, 40M, 60M1	7 lb. 5 oz. (3.3 kg)
4028B400K-1	5 lb. 6.4 oz. (2.45 kg)
All other models	3 lb. 5 oz. (1.5 kg)

†. For rated accuracy, no more than 1% AM; Harmonics –50 dBc or less. Derate accuracy by 2% for temperatures outside $25 \pm 10^{\circ}\text{C}$
††. Other calibration frequencies available upon request

Figure 1 4028AxxxM Outline

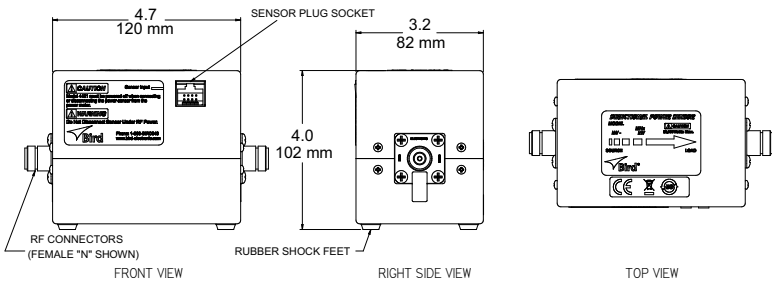


Figure 2 4028AxxxK Outline

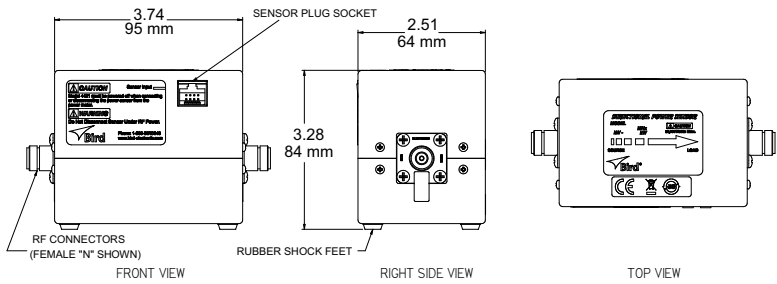


Figure 3 4028BxxxM Outline

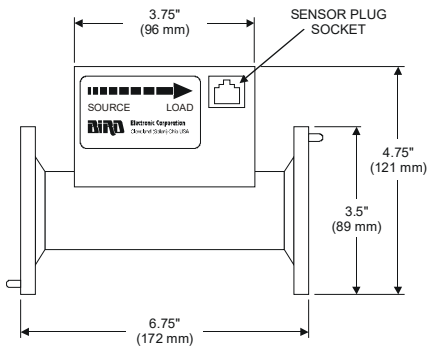


Figure 4 4028BxxxK Outline

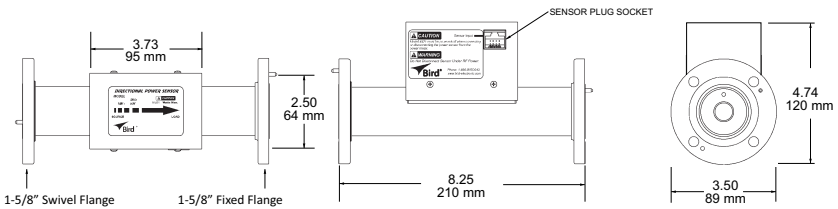
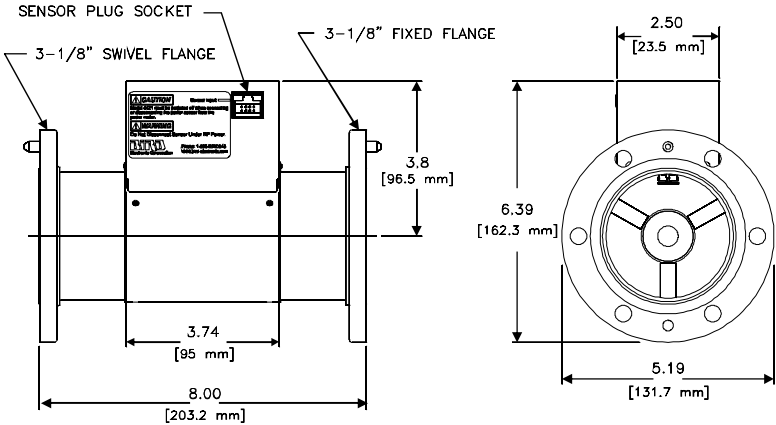


Figure 5 4028C Outline



SPECIAL LIFETIME WARRANTY —

SERIES 4027F POWER SENSOR HEAD

In addition to its standard warranty, the Bird Electronic Corporation warrants its Series 4027F 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.