



INSTRUCTION SHEET

RF DIRECTIONAL THRULINE[®] PRECISION POWER SENSORS 4028 SERIES

Bird® Electronic Corporation
30303 Aurora Road
Cleveland (Solon), Ohio 44139

Sales & Technical Support:	440-248-1200 866-695-4569 toll free
Sales email:	sales@bird-technologies.com
Technical Support email:	atechapp@bird-technologies.com

Specifications

CAUTION

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

Frequency Range	
4028A250K	250 – 400 kHz
4028A400K	400 – 550 kHz
4028A2M	1.5 – 2.5 MHz
4028A3M	2.5 – 3.5 MHz
4028A4M	3.5 – 4.5 MHz
4028A10M	10 – 15 MHz
4028A25M	25 – 30 MHz
4028B10M	10 – 15 MHz
4028C10M	10 – 15 MHz
RF Power Range	
4028A250K	1 kW – 20 kW
4028A400K	1 kW – 20 kW
4028C10M	500W – 50 kW
All other models	1 kW – 25 kW
Accuracy, Fwd, Best Case *	± 2.0% (2σ)
Accuracy, Reflected	Calculated from FWD accuracy and 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.	0.05 dB (with female 7-16 DIN connectors)
4028C10M	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
Operating Temperature	15 °C to 35 °C

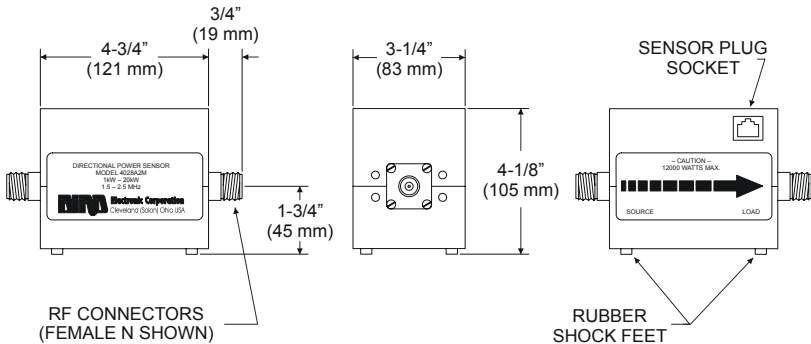
* For rated accuracy, no more than 1% AM; Harmonics –50 dBc or less
Derate accuracy by ±4% at frequencies and power other than the calibration point frequencies.

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
4028B10M	10.0, 13.56, 15.0
4028C10M	10.0, 13.56, 15.0
Calibration Power, Typical	3.5 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.

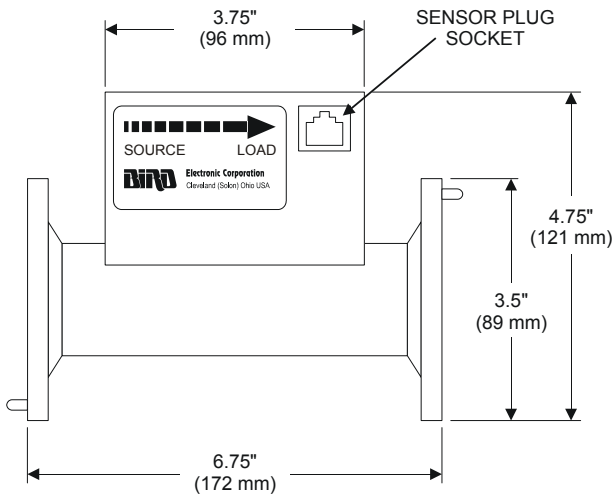
* Other calibration frequencies available upon request

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. 5 oz. (1.5 kg)

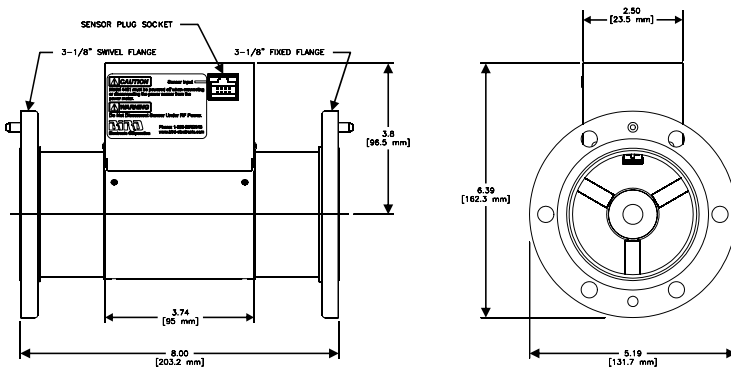
4028A Outline



4028B and 4028C Outline



4028C Outline



DECLARATION OF CONFORMITY

Manufacturer: Bird Electronic Corporation
30303 Aurora Road
Cleveland, Ohio 44139-2794

Product: 4421 Power Meter and 402X Directional Power

Models: Power Meter: 4421

Directional Power Sensors:

4021	4027A800K	4027A35M	4027F60M	4028A10M
4022	4027A2M	4027A60M	4028A250K	4028A25M
4024	4027A4M	4027A100M	4028A400K	4028B10M
4025	4027A10M	4027A150M	4028A2M	4028C10M
4027A250K	4027A12M	4027F2M	4028A3M	
4027A400K	4027A25M	4027F10M	4028A4M	

The undersigned hereby declares, on behalf of Bird Electronic Corporation of Cleveland, Ohio, that the above referenced products, to which this declaration relates, are in conformance with the provisions of the following standards.

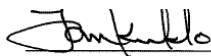
In accordance with EMC Directive (89/336/EEC)

- European Standard EN 61326-1:1997 (Addendums A1:1998 and A2:2001) - Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use
- European Standard EN 55011:1988 - Emissions, Class A
- European Standard EN 61000-6-2 - Generic Immunity Standard

In accordance with Low Voltage Directive (73/23/EEC), 1973 including Amendment (93/68/EEC), 1993

- European Standard EN 61010-1:2001 - Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use

The technical documentation supporting compliance with these directives is maintained at Bird Electronic Corporation, 30303 Aurora Road, Cleveland, Ohio 44139.



Tom Kuklo
VP of Business Development
Bird Technologies Group

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.