



INSTRUCTION SHEET

**RF DIRECTIONAL THRULINE<sup>®</sup>  
POWER SENSORS  
4020 SERIES**

## Specifications

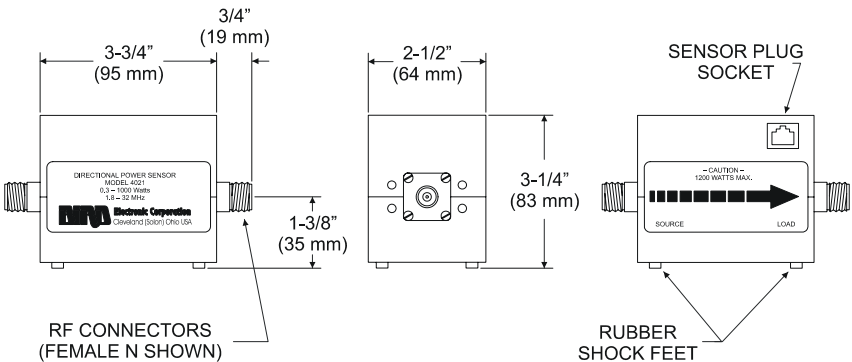
### CAUTION

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

Frequency Range	
4021	1.8 – 32 MHz
4022	25 MHz – 1 GHz
4024	1.5 – 32 MHz
4025	100 kHz – 2.5 MHz
RF Power Range	
4021, 4022	300 mW – 1 kW
4024, 4025	3 W – 10 kW
Accuracy, Fwd, Best Case*	± 3% (1σ)
Accuracy, Reflected	Calculated from Fwd accuracy and power $\text{RFL Accuracy} = \text{FWD Accuracy} + \frac{\text{FWD Power}}{10^{\text{Directivity}/10}}$
Accuracy, VSWR	Calculated from FWD and RFL power $\text{VSWR} = \left( 1 + \sqrt{\frac{P_R}{P_F}} \right) / \left( 1 - \sqrt{\frac{P_R}{P_F}} \right)$
Impedance, Nominal	50 ohms
VSWR, Max.	
4021, 4024, 4025	1.05:1
4022	1.05:1, 25 – 512 MHz 1.10:1, 512 MHz – 1 GHz
Insertion Loss, Max. (with female “N” connectors)	
4021, 4024, 4025	0.05 dB
4022	0.05 dB, 25 – 512 MHz 0.13 dB, 512 MHz – 1 GHz
Directivity, Min.	
4021, 4022	30 dB
4024	28 dB, 1.5 – 2.5 and 25 – 32 MHz 30 dB, 2.5 – 25 MHz
4025	28 dB, 100 – 125 kHz 30 dB, 125 – 2500 kHz

Max. Allowable Terminating VSWR	2.00:1
VSWR Range	1.00 to 2.00 (40.0 to 9.5 dB Return Loss)
Calibration Technique	Frequency-specific calibration factors stored in nonvolatile memory in each sensor. Sensor output corrected for frequency and temperature within specified ranges.
Cal. Cycle, Nominal	1 year
Connectors	Customer specified from QC list, appropriate for frequency and power.
Sampling Rate, Nominal	2 readings/second
Operating Power	Supplied by power meter via sensor cable
Humidity, Max.	95% (Non-condensing)
Altitude, Max.	10,000 feet (3,000 m)
CE	CE Compliant. Refer to Declaration of Conformity for specific standards.
Temperature Range	
Operating	0 to 50 °C (32 to 122 °F)
Storage	-20 to +70 °C (-4 to +158 °F)
Dimensions	5.2”L x 2.5”W x 3.25”H (137 x 64 x 83 mm)
Weight, Nominal	1 lb. 13 oz. (0.8 kg)

\* For rated accuracy, no more than 1% AM; Harmonics -50 dBc or less  
Derate accuracy by 3.0% (1σ) below 15 °C and above 35 °C



## **Special Lifetime Warranty – Series 4020 Power Sensor Head**

In addition to its standard warranty, the Bird Electronic Corporation warrants its Series 4020 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.