

Monnit Industrial Wireless Resistance Sensor

Technical Overview

General Description

Monnit's industrial wireless resistance sensor outputs the resistance across a load. It can be connected to any kind of variable resistance device, such as a transducer or sensor that outputs voltage. If the device to be measured is passive, the user must supply their own excitation voltage to the device. To reduce error, a variable resistor configuration is implemented on the ADC to cover specific resistance ranges.

Features

- Measures up to 145 KOhms.
- Accurate to $\pm 1.5\%$ (FS) with user calibration.
- Interfaces with any variable resistance device.
- Free iMonnit basic online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email.

Principle of Operation

The Monnit Industrial Wireless Resistance Sensor outputs the resistance across a load. It is programmed to sleep for a user-given time interval (heartbeat) and then wakeup, send power to the load resistor, wait for it to stabilize, and convert the analog data, mathematically compute the resistance and transmit the data to the gateway, where it is then logged into a cloud service. The user can configure defined thresholds and have the system alert on threshold breaches. Data is recorded in Ohms.

Solar Power Option

Monnit Industrial Sensors are powered by a replaceable 3.6 V battery (included).

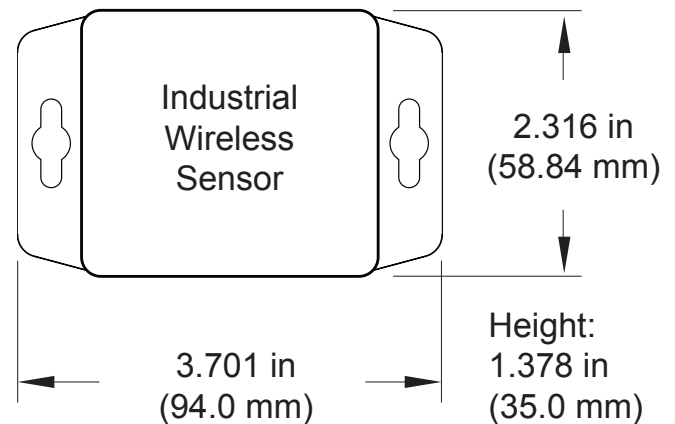
An optional solar powered version is also available. The solar powered sensor uses a Lithium Iron Phosphate rechargeable battery in conjunction with a solar power cell, extending the life of the battery.



Monnit Industrial Sensor Electronics Specifications

- Power: replaceable 3.6V battery (included)
- Communication: RF 900, 920, 868 and 433 MHz
- Dimensions: 3.7" x 2.23" x 1.38"
- Antenna: 3dBi RP SMA antenna
- Operating Temperature: -40° to 85°C (-40° to 185°F)
- Transmission Range: 300 - 350 ft. non-line-of-sight*
- Battery Life: at 1 hour heartbeat setting, battery will last ~ 4-5 years.**


* Actual range may vary depending on environment.
** Battery life is determined by sensor reporting frequency and other variables.



Example Applications

- Resistance Monitoring
- Battery Monitoring
- Transducer Interfacing

The Leader in Low Cost Wireless Sensors

Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC *
Current Consumption	0.7 μ A (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Battery)	-40°C to +85°C (-40°F to +185°F) **
Optimal Battery Temperature Range (Battery)	+10°C to +60°C (+50°F to +140°F)
Resistive Range (in Ohms)	0 – 145000***
Specific Resistive Ranges (in Ohms)	0 – 530, 530 – 3500, 3500 – 27200, 27200 - 145000
Resolution (in Ohms)	2047 Unique Values Per Specific Range (11 bit): ~.25, ~1.71, ~13.3, ~70.8.
Accuracy	+/- 3% FS of Specific Range
User Calibrated Accuracy	+/- 1.5% FS of Specific Range****
Lead Wire Length	1 ft. (12 in.)
Enclosure Rating	NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed and weather proof
Certifications	 900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 868 and 433 MHz product tested and found to comply with: CISPR 22:2008-09 / EN 55022:2010 - Class B and ETSI EN 300 220-2 V2.4.1 (2012-05).

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

*** The sensor is capable of measuring above 145000 Ohms but may not meet the specified accuracy above this value.

**** For a valid calibration, the resistance under measurement must be maintained in circuit for 1 data transmission before calibration and 1 data transmission after calibration. Calibration is only applied to the specific resistive range, for best results calibrate at a resistance between 10% and 90% of the specific range. In general, calibrating between the 50% and 90% points of the specific range will yield better calibration results for the entire range.

Type 1, 2, 4, 4X, 12 and 13 NEMA Rated Enclosure:

Monnit's Industrial sensors are enclosed in reliable, weatherproof NEMA rated enclosures. Our NEMA rated enclosures are constructed for both indoor or outdoor use and protect the sensor circuitry against the ingress of solid foreign objects like dust as well as the damaging effects of water (rain, sleet, snow, splashing water, and hose directed water).

- Safe from falling dirt.
- Protects against wind blown dust.
- Protects against rain, sleet, snow, splashing water, and hose directed water
- Increased level of corrosion resistance
- Will remain undamaged by ice formation on the enclosure

MONNIT®

For more information about our products or to place an order, please contact our sales department at 801-561-5555.

Visit us on the web at www.monnit.com.

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