

Wireless Humidity (RH) Sensor

General Description

The Wireless Humidity (RH) Sensor allows you to accurately monitor the relative humidity of the air within a room or enclosure.

Features

- Measures relative humidity, temperature and dew point with high accuracy.



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 Wireless Humidity (RH) Sensor measures the relative humidity at the device. The sensor returns RH and temperature values to the iMonnit Online Sensor Monitoring and Notification System. The system calculates dew point from the data and stores all three data points in the online system where the data can be reviewed and exported as a data sheet or graph. Notifications can be set up through the online system to alert the user when defined thresholds have been met or exceeded.

Example Applications

- Greenhouse humidity monitoring.
- Agriculture environmental monitoring.
- Art gallery and museum environmental monitoring.
- Humidor monitoring.
- General weather and environmental monitoring.

And many more...

Monnit Sensor Core Specifications

- Wireless Range: 250 - 300 ft. (non-line-of-sight / indoors through walls, ceilings & floors) *
- RF Communication: 900, 920, 868 and 433 MHz
- Power: Replaceable batteries (optimized for long battery life, line-power and solar (Industrial only) options are available). Output power ERP is 5,7 mW
- Battery Life (at 1 hour heartbeat setting): **
 - Coin Cell > 2-3 years.
 - AA battery > 4-8 years
 - Industrial > 4-8 years
 - Wifi > Up to 5 years

* Actual range may vary depending on environment. (Wi-Fi sensors typical range is up to 100 ft.)

** Battery life is determined by sensor reporting frequency and other variables.

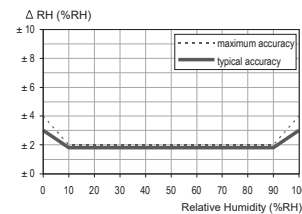


Figure 1. Typical and maximal tolerance at 25°C.

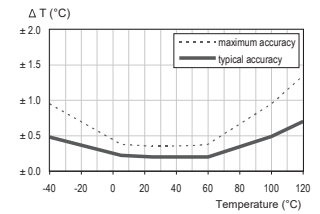


Figure 2. Maximal tolerance for temperature sensor in °C.

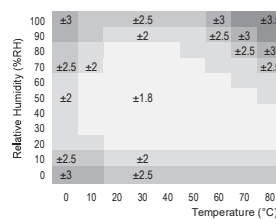


Figure 3. Typical accuracy of relative humidity measurements given in %RH for temperatures between 0 - 80°C.

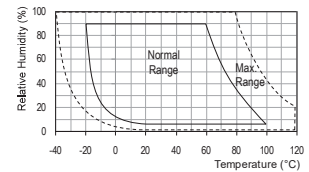
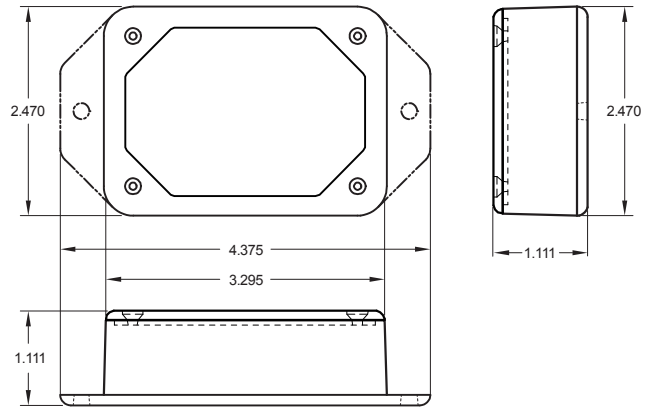


Figure 4. Operating Conditions


Sensor Types & Options

- Wireless Humidity Sensor (AA) 2
- Wireless Humidity Sensor (Coin Cell) 3
- Wireless Humidity Sensor (Industrial) 4
- MOWI Wireless Humidity Sensor (Wi-Fi) 5
- Notes 6

Wireless Humidity Sensor (AA)



Technical Specifications

Supply Voltage	2.0 - 3.6 VDC (3.0 - 3.6 VDC Using Power Supply) *
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 Batteries)	-18°C to 55°C (0°F to 130°F) using alkaline -40°C to 85°C (-40°F to 185°F) using lithium **
Optimal Battery Temperature Range (AA)	+10°C to +50°C (+50°F to +122°F)
Accuracy	\pm 3% under normal conditions (10% - 90% RH)
RH Operating Range	0 – 100% RH
RH Response Time	8 sec (tau 63%)
Weight	3.7 Ounces
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables
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.

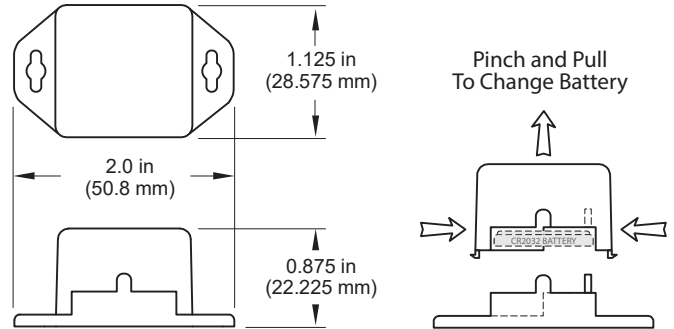
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Power Options

Two replaceable 1.5V AA sized batteries are included with the standard model. A line-power version with battery backup is also available - allowing it to be powered by a standard 3.0 - 3.6V power supply and use the internal batteries if there is a power interruption.

Power options must be selected at time of purchase as the internal hardware of the sensor must be changed to support the selected power requirements.

Wireless Humidity Sensor (Coin Cell)



Technical Specifications

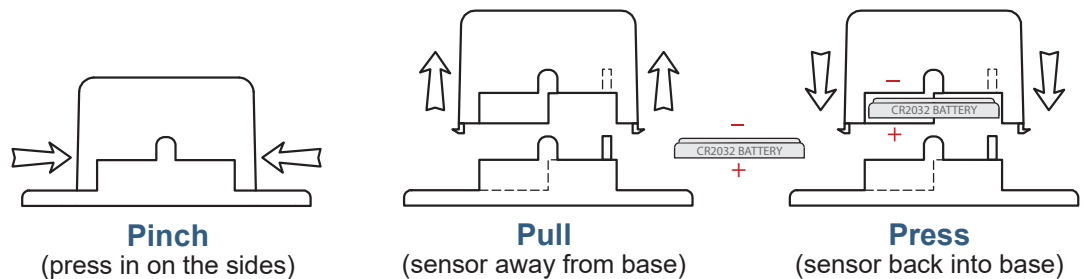
Supply Voltage	2.0 - 3.6 VDC *
Current Consumption	0.7 μ A (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Coin Cell)	-7°C to +60°C (20°F to +140°F)**
Optimal Battery Temperature Range (Coin Cell)	+10°C to +50°C (+50°F to +122°F)
Accuracy	\pm 3% under normal conditions (10% - 90% RH)
RH Operating Range	0 – 100% RH
RH Response Time	8 sec (tau 63%)
Weight	0.7 oz.
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.
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).



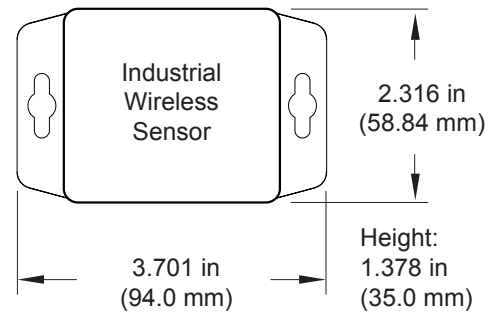
* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

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


PinchPower™ Enclosure



Wireless Humidity Sensor (Industrial)



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)		
Included Battery	Max Temperature Range:	-40°C to +85°C (-40°F to +185°F)**
	Capacity:	1800 mAh
Optional Solar Feature	Solar Panel:	5VDC / 30mA (53mm x 30mm)
	Charging Temperature Range:	0° to 45°C (32° to 113°F)
	Max Temperature Range:	-20° to 60°C (-4° to 140°F)
	Included Rechargeable Battery:	600 mAh / >2000 Charge Cycles (80% of initial capacity)
Accuracy	\pm 3% under normal conditions (10% - 90% RH)	
RH Operating Range	0 – 100% RH	
RH Response Time	8 sec (tau 63%)	
Enclosure Rating	NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed and weather proof	
UL Rating	UL Listed to UL508-4x specifications (File E194432)	
Weight	4.7 oz	
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.	
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.

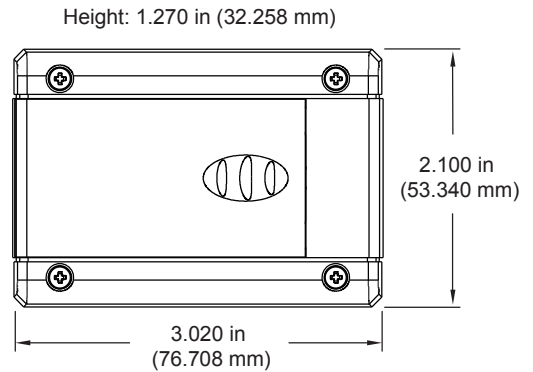
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.




Solar Power Option

Monnit Industrial Sensors are powered by a replaceable 3.6V Lithium 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 to extend battery life.

MOWI Wireless Humidity Sensor (Wi-Fi)



Technical Specifications

Networking Standards	IEEE 802.11 b/g
Frequency Band	2.412 - 2.484 GHz
Wi-Fi Security Standards	Open, WEP, WPA, WPA2
Wi-Fi Security Programming	Via PC software using USB cable. (Can be changed through iMonnit online software.)
Network Settings	Auto DHCP/DNS or Static
Data Logging	Standard - On Wi-Fi disruption, unit will log the first 50 readings and transmit when Wi-Fi connection is re-established. Premiere - Unit can record up to 50,000 readings and transmit when Wi-Fi is available.
Power consumption	4uA sleep, 35mA active RX, 180mA TX (at +12dBm)
Battery Life	Up to 5 years depending on sensor type, Wi-Fi security, distance from Wi-Fi router, reporting frequency and other variables. (Testing surpassed 90,000 transmissions until battery depletion.)
Wi-Fi Data Rate	Auto configures to best rate for maximum range.
Wireless Range	Up to 100 ft. device range (typical to standard Wi-Fi devices).
Electronics Operating Temperature	Using Alkaline Batteries: -18°C to +55°C (0°F to +130°F) Using Lithium Batteries: -40°C to +85°C (-40°F to +185°F)
Accuracy	± 3% under normal conditions (10% - 90% RH)
RH Operating Range	0 – 100% RH
RH Response Time	8 sec (tau 63%)
LED Light	Status / activity
Weight	3.8 oz.
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.
Certifications	 FCC ID: T9J-RN171. IC: RSS-210 low-power communication device. CE ID: 0681.

* 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.



High Gain Antenna Option

Monnit Wi-Fi sensors are also available with a detachable high gain antenna to provide a 20-30% increase in range over the standard Wi-Fi sensor. Option uses a different hardware configuration and must be chosen at time of purchase.

Notes

Humidity Operating Range

The sensor works stable within recommended Normal Range – see Figure 4 on first page. Long term exposure to conditions outside Normal Range, especially at humidity >80%RH, may temporarily offset the RH signal (+3%RH after 60h). After return into the Normal Range it will slowly return towards calibration state by itself. Prolonged exposure to extreme conditions may accelerate aging.

Commercial Grade Sensors

Monnit commercial grade sensors are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not use these sensors under the following conditions as these factors can deteriorate the product characteristics and cause failures and burn-out.

- Corrosive gas or deoxidizing gas - chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxides gas, etc.).
- Volatile or flammable gas.
- Dusty conditions.
- Under low or high pressure.
- Wet or excessively humid locations.
- Places with salt water, oils chemical liquids or organic solvents.
- Where there are excessively strong vibrations.
- Other places where similar hazardous conditions exist.

Use these products within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

Industrial Grade Sensors - 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



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.

Monnit Corporation
3400 South West Temple
Salt Lake City, UT 84115
801-561-5555
www.monnit.com