WRZ Series Wireless Room Sensors

Product Bulletin

WRZ-MHN0100-0, WRZ-MNN0100-0, WRZ-MTB0100-0, WRZ-MTN0100-0, WRZ-THx0000-0, WRZ-TTx0000-0

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The WRZ Series Wireless Room Sensors are designed to sense room or zone temperature and transmit wireless temperature control data. Some models also sense and transmit relative humidity (RH).

Several models include an onboard passive infrared (PIR) occupancy sensor that detects motion to determine if a space is occupied. This feature maximizes up to 30% energy savings in high-energy usage environments such as schools, dormitories, offices, and hospitals by adjusting the temperature of the space based on the occupancy status. In addition, the PIR occupancy sensor facilitates trending of floor space usage in these environments.

In a ZFR1800 Series Wireless Field Bus System application, the sensors communicate with FAC26 Series, FEC16 Series, FEC26 Series, and VMA16 Series Controllers by means of the ZFR1811 Router.

In wired field bus applications, the sensors communicate with a WRZ-7860 Wireless Receiver. The WRZ-7860 Receiver transfers data to the controller by means of the Sensor Actuator (SA) communication bus. In a typical application, one WRZ Series Sensor reports to one WRZ-7860 Receiver, but up to five WRZ Series Sensors can be associated with a single WRZ-7860 Receiver for multi-sensor averaging or high/low temperature selection.

Figure 1: WRZ Series Wireless Room Sensors

Models are available with or without an LCD. Depending on the sensor model, the WRZ Series Sensor can transmit sensed temperature, setpoint temperature, sensed humidity, occupancy status, and low battery conditions to an associated router or receiver. The WRZ Series Sensors are designed for indoor, intra-building applications only.

The WRZ Series Sensors use direct-sequence, spread-spectrum RF technology, and operate on the 2.4 GHz Industrial, Scientific, and Medical (ISM) band. The receiver meets the IEEE 802.15.4 standard for low power, low duty cycle RF transmitting systems.

Table 1: Features and Benefits (Part 1 of 2)

Features	Benefits
Wireless RF Design	Enables quick, economical, and low-maintenance installations, which reduce installation and wiring costs.
Integral Wireless Signal Strength Testing Built into the Sensor	Provides quick and easy visual indication of the wireless RF signal strength between the sensor and its associated receiver, helps locate optimum device positions during installation/relocation, and aids in troubleshooting.
Easy Installation and Relocation	Provided by two mounting options (tape or screws).
Easily Applicable Data Types	Transmit the sensed zone temperature and humidity, temperature setpoint, and low battery condition to a WRZ-7860 Receiver or ZFR1800 Router.
Simple, Field-Adjustable DIP Switches	Provide all of the necessary configuration settings for the sensor, simplifying commissioning.
Wireless Signal Strength and Low Battery Condition Mapping	Provides real-time status for proper room sensor operation.

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Table 1: Features and Benefits (Part 2 of 2)

Features	Benefits
Optional, Battery-Powered WRZ-SST-120 Wireless System Survey Tool	Provides wireless mobility to check for the best RF link, and to determine the optimum receiver mounting locations.
High Resistance to RF Interference from Other Radio Devices or RF Noise Sources	Results from application-based frequency agility, which allows for automatically changing to a different channel to avoid RF interference and missed messages (WRZ-7860 applications).
Onboard PIR Occupancy Sensor Available on Some Models	Maximizes up to 30% energy savings in high-energy usage environments, and facilitates trending of floor space.
User-Selectable Default Display for Humidity Models	Allows users to choose if they want RH or temperature as the default display.
Display Models	Provide intuitive user experience with full range of WRZ temperature setpoint range options, RH or fan speed, and occupancy status.
Three Temperature Setpoint Range Options	Allow control by Warmer/Cooler (W/C), Scaled Value (SCALE), or System-Configured (CONFIG) adjustments.
Blinking LED Light to Indicate Firmware Version	Five seconds after the power is applied, the red LED flashes to indicate the firmware revision. For example, firmware revision 3 is indicated by the LED flashing three times during the startup process.

Ordering Information

See Table 2 for a list of models available and accessories designed for use with the WRZ Series Wireless Room Sensor.

IMPORTANT: Use the WRZ Series Wireless Room Sensor only to provide an input to equipment under normal operating conditions. Where failure or malfunction of the sensor could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the sensor.

IMPORTANT: The WRZ Series Wireless Room Sensor, used in conjunction with a WRZ-7860 Receiver in a One-to-One wireless room sensing system or a ZFR1811 Router in a ZFR1800 Series Wireless Field Bus System, is not designed or intended for use in mission-critical or life/safety applications.

Dimensions

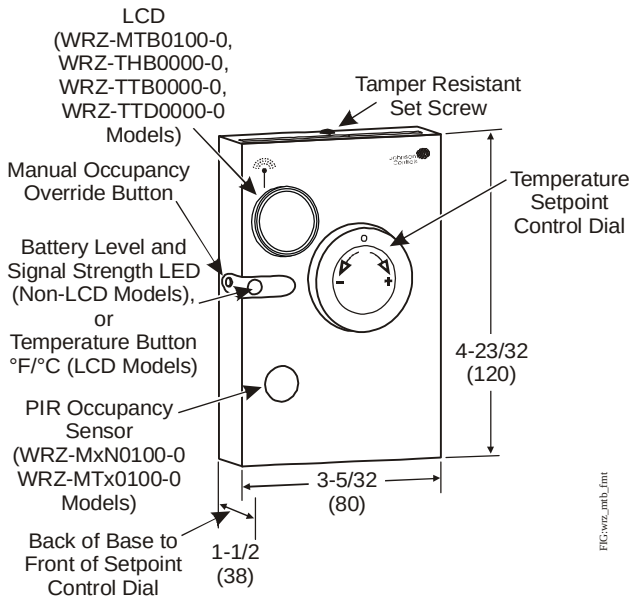

Figure 2: WRZ Series Sensor Physical Features and Dimensions, in. (mm)

Repair Information

If the WRZ Series Wireless Room Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact the nearest Johnson Controls® representative.

Batteries

The two 1.5 VDC AA alkaline batteries supplied with the WRZ Series Sensor typically have a life of 48 months. When replacing batteries, replace both batteries at the same time. Batteries removed from this device must be recycled or disposed of in accordance with local, national, and regional regulations. Only certified technicians or qualified building maintenance personnel should service Johnson Controls products. Lithium batteries with a maximum cell voltage of 1.5 volts can be substituted to extend the period between battery replacement. Do not mix lithium and alkaline batteries in this device.

Table 2: Ordering Information

Product Code Number	Description
WRZ-MHN0100-0	Wireless Room Temperature and Humidity Sensor with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-MNN0100-0	Wireless Room Sensor (No Temperature or Humidity Sensing) with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-MTB0100-0	Wireless Room Temperature Sensor with PIR Occupancy Sensor, Display, Setpoint Adjustment Scale: 55 to 80°F (13 to 27°C), F/C Button, and Manual Occupancy Override Button
WRZ-MTN0100-0	Wireless Room Temperature Sensor with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-THB0000-0	Wireless Room Temperature and Humidity Sensor with Display, Warmer/Cooler (+/-) Setpoint Adjustment or Setpoint Adjustment Scale: 55 to 85°F (13 to 27°C), F/C Button, RH Button, and Manual Occupancy Override Button
WRZ-THN0000-0	Wireless Room Temperature and Humidity Sensor with Battery Level/Signal Strength LED and Manual Occupancy Override Button
WRZ-THP0000-0	Wireless Room Temperature and Humidity Sensor with Warmer/Cooler (+/-) Setpoint Adjustment and Manual Occupancy Override Button
WRZ-TTB0000-0	Wireless Room Temperature Sensor with Display, F/C Button, and Manual Occupancy Override Button
WRZ-TTD0000-0	Wireless Room Temperature Sensor with Display, F/C Button, Fan Speed Control, and Manual Occupancy Override Button
WRZ-TTP0000-0	Wireless Room Temperature Sensor with Warmer/Cooler (+/-) Setpoint Adjustment, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-TTR0000-0	Wireless Room Temperature Sensor with Battery Level/Signal Strength LED, Manual Occupancy Override Button, and No Setpoint Adjustment
WRZ-TTS0000-0	Wireless Room Temperature Sensor with Setpoint Adjustment Scale: 55 to 80°F (13 to 27°C), Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-SST-120	Wireless Sensing System Tool: For Use with a WRZ Series Sensor, to Function as a Site Survey Tool for the WRZ-7860 One-to-One Room Temperature Sensing System, or for the ZFR1800 Series Wireless Field Bus System
T-4000-119	Allen-Head Adjustment Tool: 1/16 in. (1.6 mm), 30 Tools per Bag

Table 3: WRZ Series Sensor Model Comparison

Sensor Model	Temperature	3% Humidity	Display	F/C Button	Fan Control	Occupancy Override Button	PIR Occupancy Sensor	Setpoint Adjustment Dial[1]
WRZ-MHN0100-0	x	x				x	x	NO DIAL
WRZ-MNN0100-0						x	x	NO DIAL
WRZ-MTB0100-0	x		x	x		x	x	CONFIG
WRZ-MTN0100-0	x					x	x	NO DIAL
WRZ-THB0000-0	x	x	x	x		x		CONFIG
WRZ-THN0000-0	x	x				x		NO DIAL
WRZ-THP0000-0	x	x				x		W/C
WRZ-TTB0000-0	x		x	x		x		CONFIG
WRZ-TTD0000-0	x		x	x	x	x		CONFIG
WRZ-TTP0000-0	x					x		W/C
WRZ-TTR0000-0	x					x		NO DIAL
WRZ-TTS0000-0	x					x		SCALED

1. Warmer/cooler temperature offset (W/C), single-value in 55 to 85°F (13 to 29°C) range (SCALED), system-configured - available on display models only (CONFIG), no setpoint dial (NO DIAL)

Technical Specifications

WRZ Series Wireless Room Sensors (Part 1 of 2)

Power Requirements	3 VDC Supplied by Two 1.5 VDC AA Alkaline Batteries (Included with Sensor); Typical Battery Life: 48 Months (36 Months Minimum)
Addressing	DIP Switches; Field Adjustable MS/TP Address, Network Number, and Zone Address
Ambient Conditions	**Operating:** 32 to 122°F (0 to 50°C), 5 to 95% RH, Noncondensing **Storage:** -40 to 160°F (-40 to 71°C), 5 to 95% RH, Noncondensing
Wireless Band	Direct-Sequence, Spread-Spectrum, 2.4 GHz ISM Band
Transmission Power	10 mW Maximum
Transmission Range	100 ft (30 m) Maximum Line of Sight; 50 ft (15 m) Recommended
Transmissions	**Temperature:** Every 60 Seconds (±20 Seconds) **Humidity:** Every 3 Minutes, or 1 Minute Intervals if Temperature or Humidity Changes
Temperature System Accuracy (Temperature Only Models, and Temperature and Humidity Models)	1.0F°/0.6C° Over the Range of 55 to 85°F (13 to 29°C); 1.5F°/0.9C° Over a Range of 32 to 55°F (0 to 13°C) and 85 to 110°F (29 to 43°C)
Temperature Sensor Type (Temperature Only Models, and Temperature and Humidity Models)	Internal 10k ohm Negative Temperature Coefficient (NTC) Thermistor
Humidity Calibrated Range (Temperature and Humidity Models)	10% to 90% RH at 73°F (23°C)
Humidity Accuracy (Temperature and Humidity Models)	±3% RH across the Range of 20% to 80% RH, ±6% RH across the Range of 10% to 20% RH and 80% to 90% RH; within the Temperature Range of 55 to 85°F (13 to 29°C)
PIR Occupancy Sensor Motion Detection (Models with PIR Occupancy Sensor)	Minimum 94 Angular Degrees up to a Distance of 15 ft (4.6 m); Based on a Clear Line of Sight
Materials	NEMA 1 White Plastic Housing

WRZ Series Wireless Room Sensors (Part 2 of 2)

Mounting	Screw Mount or Double-Sided Adhesive Foam Tape Mount; Double-Sided Adhesive Foam Tape Included
Compliance CE	**United States:** Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters Transmitter FCC Identification: TFB-MATRIXL or OEJ-WRZRADIO **Canada:** Industry Canada IC: 5969A-MATRIXL or 279A-WRZRADIO **Europe:** CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/05/EC. **Japan:** Transmission Complies with Article 38-24 Paragraph 1 of the Radio Law Certification Number: ATCB012834 **Australia and New Zealand:** C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	0.3 lb (0.14 kg)

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

United States Emissions Compliance

Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure (OET Bulletin 65) *To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20cm separation distance between the antenna and all persons.*

Canadian Emissions Compliance

Industry Canada Statement

The term **IC** *before the certification/registration number only signifies that the Industry Canada technical specifications were met.*

Le terme « IC » précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada.

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