

Applications

The WRZ Series Wireless Room Sensors 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 the occupancy status of a space. This feature maximizes up to 30% energy savings in high-energy usage environments such as schools, dormitories, offices, and hospitals as it adjusts the temperature of the space based on the occupancy status. In addition, the PIR occupancy sensor facilitates analysis of floor space usage in these environments.

In a mesh application, the WRZ sensor is compatible with the ZFR18xx Wireless Field Bus Systems (ZFR181x, ZFR182x, ZFR183x). See Table 4. Depending on the system controller, the transmitter communicates through the ZFR18xx Router (ZFR or ZFR Pro Series Router). Up to nine WRZ Series Sensors can associate with a single Controller. In a ZFR1800 Series Wireless Field Bus System application, the sensors communicate with the Controller through the ZFR18xx Series 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 communicate with a single WRZ-7860 Receiver for multi-sensor averages or high and low temperature selection.

The WRZ Series Wireless Room Sensors include models with either a temperature setpoint dial or the setpoint adjustment push buttons and LCD. Occupants can view the zone temperature, RH, and view and adjust the zone temperature setpoint.

Some temperature and humidity models include an RH push button to toggle between temperature and RH on the display. These models also have the capability to set the preferred default display to either temperature or RH. Some models also include a °F and °C button, which provides a choice between degrees Fahrenheit (F) and degrees Celsius (C).

Models are available with or without an LCD. Different models of 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 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.

Figure 1: WRZ Series Wireless Room Sensors



⚠ CAUTION: 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, you must design additional precautions 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 ZFR18xx Series Router in a ZFR1800 Series Wireless Field Bus System, is not for use in mission-critical or life and safety applications.

North American emissions compliance

United States

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.

Canada

Industry Canada Statement(s)

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.

Dimensions

Figure 2: WRZ Series Sensor with occupancy sensor and setpoint adjustment buttons, in. (mm)

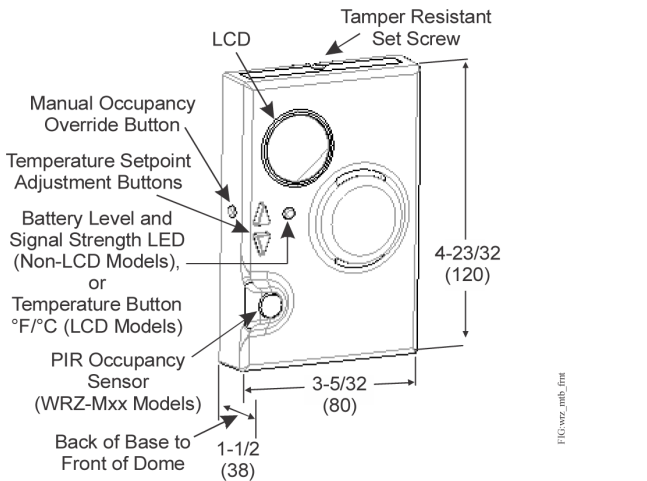
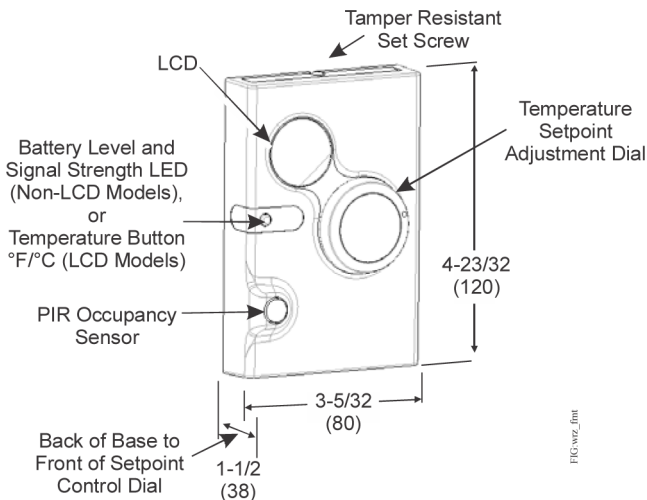


Figure 3: WRZ Series Sensor with occupancy sensor and setpoint adjustment dial, in. (mm)



Features and benefits

- Wireless RF design provides quick, economical, and low-maintenance installations that reduces 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. This helps to locate the optimum device positions during installation or relocation, and aids in troubleshooting.
- Easy installation and relocation with 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 Series 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 correct room sensor operation.
- Optional, battery-powered ZFR-HPSST-0 wireless sensing system 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. This automatically changes to a different channel to avoid RF interference and missed messages for WRZ-7860 applications.
- Onboard PIR occupancy sensor available on some models maximizes up to 30% energy savings in high-energy usage environments, and analyzes floor space usage.
- On the user-selectable display for humidity models, users can choose RH or temperature as the default display setting.
- Display models provide an intuitive user experience with a full range of WRZ temperature setpoint range options, RH or fan speed, and occupancy status.
- Three temperature setpoint range options for control with Warmer/Cooler (W/C), Scaled Value (SCALE), or System-Configured (CONFIG) adjustments.
- Blinking red LED light flashes 5 seconds after the application of power to indicate the firmware revision. For example, the LED flashes three times in the startup process to indicate firmware revision 3.

Ordering information

See Table 1 for a list of available models and accessories for use with the WRZ Series Wireless Room Sensor. See Table 2 for a comparison of available models of the WRZ Series Wireless Room Sensor.

Table 1: Selection charts

Product code number	Description
WRZ-MHN0100-2	Wireless Room Temperature and Humidity Sensor with Passive Infrared (PIR) occupancy sensor, battery level and signal strength LED, manual occupancy override button, without display, ZFR183x compatible
WRZ-MTJ0100-2	Wireless Room Temperature Sensor with PIR occupancy sensor, display, setpoint button adjustment for Warmer/Cooler (+/-) setpoint adjustment or scaled setpoint adjustment: 55°F to 85°F (13°C to 29°C), and manual occupancy override button, ZFR183x compatible
WRZ-RMT10K-2	Wireless Room Temperature Sensor for Remote 10K Temperature Probes, display, °F/°C button, and manual occupancy override button, ZFR183x compatible
WRZ-STR0000-2	Wireless Room Temperature Sensor with Remote 3K Refrigerator or Freezer Temperature Probe, display, °F/°C button, and manual occupancy override button, ZFR183x compatible
WRZ-THJ0000-2	Wireless Room Temperature or Humidity Sensor with display, setpoint adjustment buttons for Warmer/Cooler (+/-) setpoint adjustment or scaled setpoint adjustment: 55°F to 85°F (13°C to 29°C), °F/°C button, RH button, and manual occupancy override button, ZFR183x compatible
WRZ-THN0000-2	Wireless Room Temperature and Humidity Sensor with battery level or signal strength LED and manual occupancy override button, ZFR183x compatible
WRZ-TTJ0000-2	Wireless Room Temperature Sensor with display, setpoint adjustment buttons for Warmer/Cooler (+/-) setpoint adjustment or scaled setpoint adjustment: 55°F to 85°F (13°C to 29°C), °F/°C button, and manual occupancy override button, ZFR183x compatible
WRZ-TTK0000-2	Wireless Room Temperature Sensor with display, setpoint adjustment buttons for Warmer/Cooler (+/-) setpoint adjustment or scaled setpoint adjustment: 55°F to 85°F (13°C to 29°C), °F/°C button, fan speed control button, and manual occupancy override button, ZFR183x compatible
WRZ-TTP0000-2	Wireless Room Temperature Sensor with Warmer/Cooler (+/-) setpoint dial adjustment, battery level or signal strength LED, and manual occupancy override button, ZFR183x compatible
WRZ-TTR0000-2	Wireless Room Temperature Sensor with battery level or signal strength LED, manual occupancy override button, and no setpoint dial adjustment, ZFR183x compatible
WRZ-TTS0000-2	Wireless Room Temperature Sensor with setpoint dial adjustment scale: 55°F to 85°F (13°C to 29°C), battery level or signal strength LED, and manual occupancy override button, ZFR183x compatible
ZFR-HPSST-0	Wireless Sensing System Tool is a lightweight, portable, wireless transmitter/receiver designed to serve as an RF signal tester or site survey tool prior to installation of a ZFR18xx Series Wireless Field Bus System
T-4000-119	Allen-head adjustment tool: 1/16 in. (1.6 mm), 30 tools per bag

① **Note:** All sensors with both a dial and a display can have either a W/C or a SCALE setpoint adjustment configuration. Sensors with a W/C configuration show the incremental temperature change from the previous setpoint value. Sensors with a SCALE configuration show the current setpoint value.

Available models

Table 2: WRZ Series Sensor model comparison

Sensor type	Adjustment type	Sensor model	Temp	3% humidity	Display	°F/°C button	Fan control	RH button	Occupancy override button	PIR occupancy sensor	¹ Setpoint adjustment
Non-display temp.	No dial	WRZ-TTS0000-0	x						x		NO DIAL
		WRZ-TTS0000-2	x						x		NO DIAL
	Encoder dial	WRZ-TTR0000-0	x						x		DIAL, SCALED
		WRZ-TTR0000-2	x						x		DIAL, SCALED
	Potentiometer dial	WRZ-TTP0000-0	x	x					x		DIAL, W/C
		WRZ-TTP0000-2	x	x					x		DIAL, W/C
Display temp.	Encoder dial	WRZ-TTB0000-0	x		x	x			x		DIAL, CONFIG
	Buttons	WRZ-TTB0000-5	x		x	x			x		BUTTONS, CONFIG
	Encoder dial	WRZ-TTD0000-0	x		x	x	x		x		DIAL, CONFIG
	Buttons	WRZ-TTK0000-0	x		x	x	x		x		BUTTONS, CONFIG
		WRZ-TTK0000-2	x		x	x	x		x		BUTTONS, CONFIG
	Buttons	WRZ-TTJ0000-0	x		x	x			x		BUTTONS, CONFIG
		WRZ-TTJ0000-2	x		x	x			x		BUTTONS, CONFIG
	RH sensors	Potentiometer dial	WRZ-THP0000-0	x	x					x	
WRZ-THN0000-0			x	x					x		NO DIAL
No dial		WRZ-THN0000-2	x	x					x		NO DIAL
Encoder dial		WRZ-THB0000-0	x	x	x	x		x	x		DIAL, CONFIG
Buttons		WRZ-THJ0000-0	x	x	x	x		x	x		BUTTONS, CONFIG
		WRZ-THJ0000-2	x	x	x	x		x	x		BUTTONS, CONFIG
Remote probe sensors	No dial	WRZ-STR0000-0	x		x	x			x		NO DIAL
		WRZ-STR0000-2	x		x	x			x		NO DIAL
		WRZ-RMT10K-0	x		x	x			x		NO DIAL
		WRZ-RMT10K-2	x		x	x			x		NO DIAL
Occupancy sensors	No dial	WRZ-MNN0100-0							x	x	NO DIAL
		WRZ-MTN0100-0	x						x	x	NO DIAL
		WRZ-MHN0100-0	x	x					x	x	NO DIAL
		WRZ-MHN0100-2	x	x					x	x	NO DIAL
	Encoder dial	WRZ-MTB0100-0	x		x	x			x	x	DIAL, CONFIG
	Buttons	WRZ-MTJ0100-0	x	x	x	x		x	x	x	DIAL, CONFIG
		WRZ-MTJ0100-2	x	x	x	x		x	x	x	DIAL, CONFIG

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

Technical specifications

Table 3: WRZ Series Wireless Room Sensors technical specifications

Specification	Description
Power requirements	3 VDC supplied by two 1.5 VDC AA alkaline batteries, included with sensor; battery life: 48 months, 36 months minimum
Addressing	DIP switches; field-adjustable MS/TP address, network number, and zone address
Ambient conditions	Operating: 32°F to 122°F (0°C to 50°C), 5% RH to 95% RH, noncondensing Storage: -40°F to 160°F (-40°C to 71°C), 5% RH 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)
Transmissions	Temperature: every 60 Seconds, ±20 Seconds Humidity: every 2 minutes, or 1 minute intervals if temperature or humidity changes
Temperature system accuracy, temperature-only models, and temperature and humidity models	1.0°F/0.6°C over the range of 55°F to 85°F (13°C to 29°C); 1.5°F/0.9°C over a range of 32°F to 55°F (0°C to 13°C) and 85°F to 110°F (29°C 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% RH to 90% RH at 73°F (23°C)
Humidity accuracy, temperature and humidity models	±3% RH across the range of 20% RH to 80% RH; ±6% RH across the range of 10% RH to 20% RH and 80% RH to 90% RH; within the temperature range of 55°F to 85°F (13°C 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
Mounting	Screw mount or double-sided adhesive foam tape mount; double-sided adhesive foam tape included
Compliance	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 Japan: Transmission complies with Article 38-24 Paragraph 1 of the Radio Law. Certification Number: ATCB012834. Australia and New Zealand: RCM Mark, Australia/NZ emissions compliant
CE	Europe: CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the RED, EMD, LVD, and RoHS Directives.
Shipping weight	0.3 lb (0.14 kg)

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

Version compatibility

Table 4: WRZ compatibility

Wireless Field Bus System	Compatibility	
	-0 models	-2 models
WRZ-7860	x	x
ZFR181x	x	x
ZFR182x	x	x
ZFR183x		x

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 that are supplied with the WRZ Series Sensor have an expected lifespan of 48 months. Replace both batteries at the same time. Batteries that are removed from this device must be recycled or disposed of in accordance with local, regional, and national regulations. Only certified technicians or qualified building maintenance personnel should service Johnson Controls products. You can substitute lithium batteries with a maximum cell voltage of 1.5 volts to extend the period between battery replacement. Do not mix lithium and alkaline batteries in this device.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

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Single point of contact

APAC	Europe	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY	JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA

Contact information

Contact your local branch office:

www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us