WRZ Series Wireless Room Sensors Product Bulletin

LIT-12011653

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Applications

Use the WRZ Series Wireless Room Sensors 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. Use this feature to adjust the temperature of the space based on the occupancy status and maximize up to 30% energy savings in high-energy usage environments such as schools, dormitories, offices, and hospitals. In addition, use the PIR occupancy sensor to facilitate trends 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 wired field bus applications, the sensors communicate with a WRZ-7860 Wireless Receiver. The WRZ-7860 Receiver transfers data to the controller through the Sensor Actuator (SA) communication bus. In each application, one WRZ Series Sensor reports to one WRZ-7860 Receiver, but you can associate up to five WRZ Series Sensors with a single WRZ-7860 Receiver for multi-sensor averaging or high or low temperature selection.

The WRZ Series Wireless Room Sensors include models with either a temperature setpoint dial or setpoint adjustment buttons and LCD that enables occupants to view the zone temperature, RH, and view and adjust the zone temperature setpoint. Some temperature and humidity models include a % RH 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/°C button, which provides a choice between degrees Fahrenheit (F) and degrees Celsius (C).

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. Use the WRZ Series Sensors 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



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.

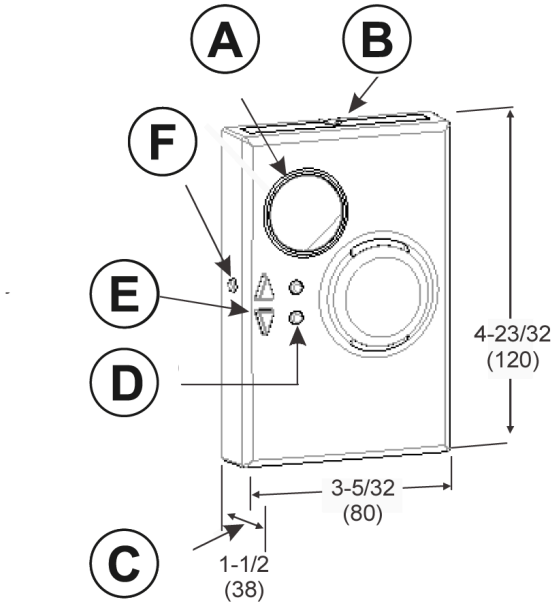
Le terme « IC » précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada.

Dimensions

See the following figures for dimensions and features of the WRZ Series Sensors.

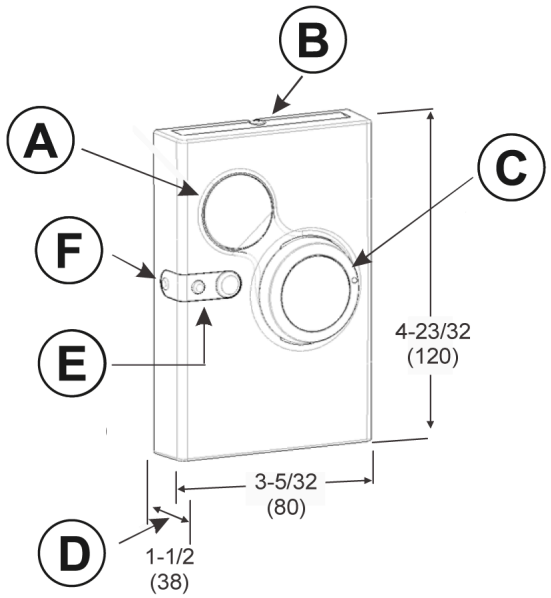
Note: Not all features shown are available on all models. See Table 1 for sensor model specifications.

Figure 2: WRZ Series Sensor LCD model with setpoint adjustment buttons, in. (mm)



Callout	Description
A	LCD
B	Tamper-resistant set screw
C	Back of base to front of dome
D	Battery level and signal strength LED in non-LCD models or temperature button (°F/°C) in LCD models
E	Temperature setpoint adjustment buttons
F	Manual occupancy override button

Figure 3: WRZ Series Sensor LCD model with setpoint adjustment dial, in. (mm)



Callout	Description
A	LCD
B	Tamper-resistant set screw
C	Temperature setpoint adjustment dial
D	Back of base to front of dome
E	Battery level and signal strength LED in non-LCD models or temperature button (°F/°C) in LCD models
F	Manual occupancy override button

Features and benefits

- Wireless RF design
- Integral wireless signal strength testing built into the sensor
- Easy installation and relocation
- Easily applicable data types
- Simple, field-adjustable DIP switches
- Wireless signal strength and low battery condition mapping
- Optional, battery-powered ZFR-HPSST-0 Wireless Sensing System Tool
- High resistance to RF interference from other radio devices or RF noise sources
- Onboard PIR Occupancy Sensor available on some models
- User-selectable default display for humidity models
- Display models
- Three temperature setpoint range options
- Blinking red LED light to indicate firmware version

Ordering information

To order a WRZ Series Wireless Room Sensor, contact the nearest Johnson Controls representative. Specify the preferred product code number from the following tables. See Table 3 for a WRZ Series Sensor model comparison.

Table 1: Selection charts

Product code	Description
WRZ-MHN0100-2	Wireless Room Temperature and Humidity Sensor with 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

Table 2: Accessories

Product code	Description
WRZ-SST-120	Wireless Sensing System Tool for use with a WRZ Series sensor to function as a Site Survey Tool for the WRZ-7860-0 One-to-One Room Temperature Sensing System, or for the ZFR1800 Wireless Field Bus System.
ZFR-HPSST-0	Wireless Sensing System Tool for use with ZFR wireless systems. Supports all low or high power configurations
T-4000-119	Allen-head adjustment tool: 1.6 mm (1/16 in.), 30 tools in each bag.

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.

Table 3: 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	Setpoint adjustment
Non-display temp.	No dial	WRZ-TTS0000-2	x						x		NO DIAL
	Encoder dial	WRZ-TTR0000-2	x						x		DIAL, SCALED
	Potentiometer dial	WRZ-TTP0000-2	x	x					x		DIAL, W/C
Display temp.	Buttons	WRZ-TTK0000-2	x		x	x	x		x		BUTTONS, CONFIG
		WRZ-TTJ0000-2	x		x	x			x		BUTTONS, CONFIG
RH sensors	No dial	WRZ-THN0000-2	x	x					x		NO DIAL
	Buttons	WRZ-THJ0000-2	x	x	x	x		x	x		BUTTONS, CONFIG
Remote probe sensors	No dial	WRZ-STR0000-2	x		x	x			x		NO DIAL
		WRZ-RMT10K-2	x		x	x			x		NO DIAL
Occupancy sensors	No dial	WRZ-MHN0100-2	x	x					x	x	NO DIAL
	Buttons	WRZ-MTJ0100-2	x	x	x	x		x	x	x	DIAL, CONFIG

Note: Warmer/Cooler (W/C) temperature offset, 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).

Version compatibility

See the following table for information on the compatibility of the WRZ Series Sensors with wireless field bus systems.

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.

Technical specifications

Table 5: WRZ Series Wireless Room Sensors technical specifications

Specification	Description
Power requirements	Two 1.5 VDC AA alkaline batteries included with the sensor supply 3 VDC Battery life: 60 to 120 months, depending on the model and application.
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	30 m (100 ft) maximum line of sight 15 m (50 ft)
Transmissions	Every 60 s ±20 s
Temperature system accuracy	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	Internal 10k ohm Negative Temperature Coefficient (NTC) thermistor
Humidity calibrated range	10% RH to 90% RH at 73°F (23°C)
Humidity accuracy	±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 in the temperature range of 55°F to 85°F (13°C to 29°C)
Materials	NEMA 1 white plastic housing
Mounting	Screw mount or double-sided adhesive foam tape mount, double-sided adhesive foam tape included
Dimensions	4.7 in. x 3.1 in. x 1.5 in. (120 mm x 80 mm x 38 mm)
Shipping weight	0.14 kg (0.3 lb)
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.
CE	Europe: CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the RED, EMC, LVD, and RoHS Directives.
	Australia and New Zealand: Regulatory Compliance Mark (RCM), Australia/NZ Emissions Compliant.
ANATEL	Brasil: Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. ANATEL: 05194-22-06174.
NOM UL	México: La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada. IFT, Número: RCPJOWR22-4254.

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 shall not be liable for damages resulting from misapplication or misuse of its products.

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

Patents: https://jcipat.com

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Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations
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