WRZ-7860-0 Receiver for One-to-One Wireless Room Sensing Systems

Product Bulletin
WRZ-7860-0

The WRZ-7860-0 Receiver for One-to-One Wireless Room Sensing Systems is designed to receive wireless Radio Frequency (RF) temperature and humidity data from WRZ Series Wireless Room Sensors, and provide single zone temperature and humidity control data to specified *Metasys*® system digital controllers in building HVAC systems. The WRZ Series Wireless Room Sensor and WRZ-7860-0 Receiver combination is a functional equivalent to a network sensor, such as an NS-BTP7001-0, but eliminates communications wiring (which is usually placed inside the wall) between the room sensor and receiver.

Like a network sensor, the WRZ-7860-0 Receiver is designed to communicate over a Sensor Actuator (SA) Bus interface through the Master-Slave/Token-Passing (MS/TP) BACnet® protocol with Johnson Controls® Variable Air Volume (VAV) Modular Assembly (VMA) 16 Series Controllers and Field Equipment Controllers (FECs). The receiver supplies the sensed zone temperature and humidity, temperature setpoint, and occupancy override data.

In a typical application, one WRZ Series Wireless Room Sensor reports to one WRZ-7860-0 Receiver; however, up to five WRZ Series Wireless Room Sensors can be associated with a single WRZ-7860-0 Receiver. In multi-sensor applications, the receiver passes all the room sensors' data to the controller. The VMA16 Series Controller or FEC can be configured to either average the room sensors' temperature and humidity input, or select the highest or lowest sensed temperature and humidity for control of the target zone.

Figure 1: WRZ-7860-0 Receiver for One-to-One Wireless Room Sensing Systems

The WRZ-7860-0 Receiver uses direct-sequence, spread-spectrum RF technology, and operates 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. A WRZ-7860-0 Receiver operates as a transceiver, to create a bidirectional association with a WRZ Series Wireless Room Sensor.

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

Features	Benefits
Metasys System Design	Leverages the *Metasys* system's web-based platform to provide wireless temperature and humidity control to multiple field devices across the network.
One-to-One Wireless RF Design	Enables quick, economical, and low-maintenance installations, which reduce installation and wiring costs.
Integral Wireless Signal Strength Testing Built into the Receiver	Provides quick and easy visual indication of the wireless RF signal strength between the receiver and its associated sensor, helps locate optimum device positions during installation, and aids in troubleshooting.

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

| Features	Benefits
Multiple Sensor Temperature or Humidity Averaging or High/Low Selection	Enhances zone temperature or humidity control by enabling up to five sensors to report to a single receiver, which allows the controller to average the sensors' temperature or humidity input, or select the highest or lowest sensed temperature or humidity for control of the target zone.
Compact and Easy to Install Design	Receives the sensed zone temperature and humidity, temperature setpoint, and low battery condition from the WRZ Series Wireless Room Sensor, and interfaces directly with a *Metasys* field controller.
Simple, Field-Adjustable DIP Switches	Provide easy commissioning, with up to 4,096 unique RF addresses.
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.
Optional FX-ZFR18xx Series Wireless Field Bus Router	Acts like a repeater to extend the operating range between the receiver and its associated sensors.
Blinking Red LED Light to Indicate Firmware Version	Flashes 5 seconds after the power is applied 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 accessories available for use with the WRZ-7860-0 Receiver in One-to-One Wireless Room Sensing Systems.

IMPORTANT: Use the WRZ-7860-0 Receiver only to provide an input to equipment under normal operating conditions. Where failure or malfunction of the receiver 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 receiver.

IMPORTANT: The WRZ-7860-0 Receiver, used in conjunction with a WRZ Series Wireless Room Sensor in a One-to-One Wireless Room Sensing System, is not designed or intended for use in mission-critical or life/safety applications.

Dimensions

Figure 2: WRZ-7860-0 Receiver Dimensions and Physical Features, in./mm
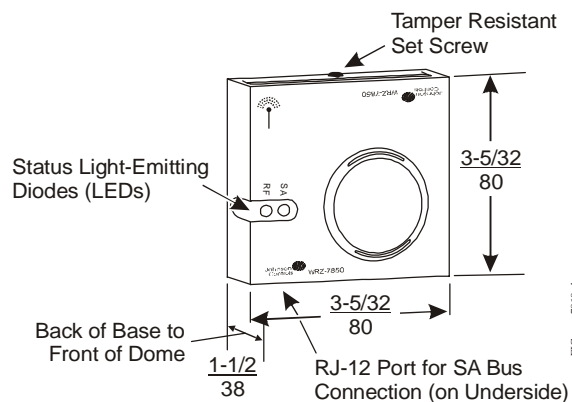
Repair Information

If The WRZ-7860-0 Receiver fails to operate within its specifications, replace the unit. For a replacement receiver, contact the nearest Johnson Controls representative.

Table 2: Accessories (Part 1 of 2)

Product Code Number	Product 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 Dial Adjustment Scale: 55 to 85°F (13 to 29°C), °F/°C Button, and Manual Occupancy Override Button
WRZ-MTJ0100-0	Wireless Room Sensor with PIR Occupancy, Display, Setpoint Adjustment Buttons for Warmer/Cooler (+/-) Setpoint Adjustment or Scaled Setpoint Adjustment: 55 to 85°F (13 to 29°C), 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-RMT10K-0	Wireless Room Temperature Sensor for Remote 10K Temperature Probes, Display, °F/°C Button, and Manual Occupancy Override Button
WRZ-STR0000-0 (Non-NIST Certified Model)	Wireless Room Temperature Sensor with Remote 3K Refrigerator/Freezer Temperature Probe, Display, °F/°C Button, and Manual Occupancy Override Button
WRZ-STRNIST-0	Wireless Room Temperature Sensor with NIST Certified Remote 3K Refrigerator/Freezer Temperature Probe, Display, °F/°C Button, and Manual Occupancy Override Button
WRZ-THB0000-0	Wireless Room Temperature and Humidity Sensor with Display, Warmer/Cooler (+/-) Setpoint Dial Adjustment or Scaled Setpoint Dial Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, Relative Humidity (RH) Button, and Manual Occupancy Override Button
WRZ-THJ0000-0	Wireless Room Temperature/Humidity Sensor with Display, Setpoint Adjustment Buttons for Warmer/Cooler (+/-) Setpoint Adjustment or Scaled Setpoint Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, Relative Humidity (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, Warmer/Cooler (+/-) Setpoint Dial Adjustment, °F/°C Button, Relative Humidity (RH) Button, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-TTB0000-0	Wireless Room Temperature Sensor with Display, Warmer/Cooler (+/-) Setpoint Dial Adjustment or Scaled Setpoint Dial Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, and Manual Occupancy Override Button
WRZ-TTB0000-5	Wireless Room Temperature Sensor with Display, Setpoint Adjustment Buttons for Warmer/Cooler (+/-) Setpoint Dial Adjustment or Scaled Setpoint Dial Adjustment: 55 to 85°F (13 to 29°C), Manual Occupancy Override Button, Sealed for Sanitary Hospital Use
WRZ-TTD0000-0	Wireless Room Temperature Sensor with Display, Warmer/Cooler (+/-) Setpoint Dial Adjustment or Scaled Setpoint Dial Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, Fan Speed Control, and Manual Occupancy Override Button
WRZ-TTJ0000-0	Wireless Room Temperature Sensor with Display, Setpoint Adjustment Buttons for Warmer/Cooler (+/-) Setpoint Adjustment or Scaled Setpoint Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, and Manual Occupancy Override Button
WRZ-TTK0000-0	Wireless Room Temperature Sensor with Display, Setpoint Adjustment Buttons for Warmer/Cooler (+/-) Setpoint Adjustment or Scaled Setpoint Adjustment: 55 to 85°F (13 to 29°C), °F/°C Button, Fan Speed Control Button, and Manual Occupancy Override Button
WRZ-TTP0000-0	Wireless Room Temperature Sensor with Warmer/Cooler (+/-) Setpoint Dial 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

Table 2: Accessories (Part 2 of 2)

Product Code Number	Product Description
WRZ-TTS0000-0	Wireless Room Temperature Sensor with Setpoint Dial Adjustment Scale: 55 to 80°F (13 to 27°C), Battery Level/Signal Strength LED, and Manual Occupancy Override Button
WRZ-SST-120	Wireless System Survey Tool
CBL-NETWORK6-0	6 ft (1.8 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
CBL-NETWORK25	25 ft (7.6 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
CBL-NETWORK50	50 ft (15.2 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
CBL-NETWORK75	75 ft (22.9 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
CBL-NETWORK100	100 ft (30.5 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
MS-ZFR1811-0	Wireless Field Bus Router
MS-ZFRRPT-0	Power Supply for Optional MS-ZFR1811-0 Wireless Field Bus Router

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.

Technical Specifications

WRZ-7860-0 Receiver for One-to-One Wireless Room Sensing Systems (Part 1 of 2)

Field Controller Interface	Power and SA Bus Interface between WRZ-7860-0 Receiver and VMA16 Series Controller or FEC
Supply Voltage	Nominal 15 VDC through the SA Bus; 6.7 to 16.5 VDC Required
Current Consumption	10 mA Maximum
Addressing	DIP Switches, Field Adjustable for up to 4,096 Unique RF Addresses
Ambient Limits	**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 90% RH, Noncondensing
RF Band	Direct-Sequence, Spread-Spectrum, 2.4 GHz ISM Bands
Transmission Power	10 mW Maximum
Transmission Range	150 ft (45 m) Maximum Indoor Line of Sight; 100 ft (30 m) Practical Average Indoor
Receiver Outputs	One RJ-12 Port for SA Communication Bus Output (Sensed Zone Temperature and Humidity, Temperature Setpoint, and Occupancy Override Data)
Temperature Sensor Accuracy	**WRZ Series Wireless Room Sensor:** 1.0F° (0.6C°) over the Range of 55 to 85°F (13 to 29°C); 1.5F° (0.9C°) over the Range of 32 to 55°F (0 to 13°C) and 85 to 110°F (29 to 43°C)
Temperature Sensor Type	**WRZ Series Wireless Room Sensor:** Internal 10k ohm Negative Temperature Coefficient (NTC) Thermistor
Humidity Measurement Range	**WRZ Series Wireless Room Sensor:** Full Range 0 to 100% RH; Calibrated Range 10 to 90% RH at 74°F (23°C)
Humidity Sensor Accuracy	**WRZ Series Wireless Room Sensor:** ±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)
Humidity Sensor Type	**WRZ Series Wireless Room Sensor:** Planar Capacitive Polymer Sensor
Materials	NEMA 1 White Plastic Housing; UL94-5VB and V-0 Plenum Flammability Rated

Compliance	United States:
	Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters; Transmitter FCC Identification: TBF-MATRIXL or OEJ-WRZRADIO
	Canada: Industry Canada IC:5969A-MATRIXL or 279A-WRZRADIO
	Europe: CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive.
	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
Shipping Weight	0.2 lb (0.09 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.

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.

Canadian Emissions Compliance

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.

Building Technologies & Solutions
507 E. Michigan Street, Milwaukee, WI 53202

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