

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

## Product Bulletin

WRZ-7860-0

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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
<b>Metasys System Design</b>	Leverages the <i>Metasys</i> system's web-based platform to provide wireless temperature and humidity control to multiple field devices across the network.
<b>One-to-One Wireless RF Design</b>	Enables quick, economical, and low-maintenance installations, which reduce installation and wiring costs.
<b>Integral Wireless Signal Strength Testing Built into the Receiver</b>	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
<b>Multiple Sensor Temperature or Humidity Averaging or High/Low Selection</b>	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.
<b>Compact and Easy to Install Design</b>	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 <i>Metasys</i> field controller.
<b>Simple, Field-Adjustable DIP Switches</b>	Provide easy commissioning, with up to 4,096 unique RF addresses.
<b>Optional, Battery-Powered WRZ-SST-120 Wireless System Survey Tool</b>	Provides wireless mobility to check for the best RF link, and to determine the optimum receiver mounting locations.
<b>High Resistance to RF Interference from Other Radio Devices or RF Noise Sources</b>	Results from application-based frequency agility, which allows for automatically changing to a different channel to avoid RF interference and missed messages.
<b>Optional FX-ZFR18xx Series Wireless Field Bus Router</b>	Acts like a repeater to extend the operating range between the receiver and its associated sensors.
<b>Blinking Red LED Light to Indicate Firmware Version</b>	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

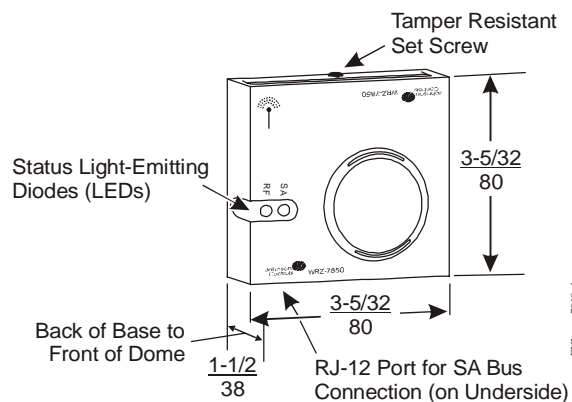
See Table 2 for a list of accessories available for use with the WRZ-7860-0 Receiver in One-to-One Wireless Room Sensing Systems.

**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)**

<b>Product Code Number</b>	<b>Product Description</b>
<b>WRZ-MHN0100-0</b>	Wireless Room Temperature and Humidity Sensor with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
<b>WRZ-MNN0100-0</b>	Wireless Room Sensor (No Temperature or Humidity Sensing) with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
<b>WRZ-MTB0100-0</b>	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
<b>WRZ-MTJ0100-0</b>	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
<b>WRZ-MTN0100-0</b>	Wireless Room Temperature Sensor with PIR Occupancy Sensor, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
<b>WRZ-RMT10K-0</b>	Wireless Room Temperature Sensor for Remote 10K Temperature Probes, Display, °F/°C Button, and Manual Occupancy Override Button
<b>WRZ-STR0000-0 (Non-NIST Certified Model)</b>	Wireless Room Temperature Sensor with Remote 3K Refrigerator/Freezer Temperature Probe, Display, °F/°C Button, and Manual Occupancy Override Button
<b>WRZ-STRNIST-0</b>	Wireless Room Temperature Sensor with NIST Certified Remote 3K Refrigerator/Freezer Temperature Probe, Display, °F/°C Button, and Manual Occupancy Override Button
<b>WRZ-THB0000-0</b>	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
<b>WRZ-THJ0000-0</b>	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
<b>WRZ-THN0000-0</b>	Wireless Room Temperature and Humidity Sensor with Battery Level/Signal Strength LED and Manual Occupancy Override Button
<b>WRZ-THP0000-0</b>	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
<b>WRZ-TTB0000-0</b>	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
<b>WRZ-TTB0000-5</b>	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
<b>WRZ-TTD0000-0</b>	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
<b>WRZ-TTJ0000-0</b>	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
<b>WRZ-TTK0000-0</b>	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
<b>WRZ-TTP0000-0</b>	Wireless Room Temperature Sensor with Warmer/Cooler (+/-) Setpoint Dial Adjustment, Battery Level/Signal Strength LED, and Manual Occupancy Override Button
<b>WRZ-TTR0000-0</b>	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
<b>WRZ-TTS0000-0</b>	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
<b>WRZ-SST-120</b>	Wireless System Survey Tool
<b>CBL-NETWORK6-0</b>	6 ft (1.8 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
<b>CBL-NETWORK25</b>	25 ft (7.6 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
<b>CBL-NETWORK50</b>	50 ft (15.2 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
<b>CBL-NETWORK75</b>	75 ft (22.9 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
<b>CBL-NETWORK100</b>	100 ft (30.5 m) SA Bus Interface Cable to Connect WRZ-7860-0 Receiver to VMA16 Series Controller or FEC
<b>MS-ZFR1811-0</b>	Wireless Field Bus Router
<b>MS-ZFRRPT-0</b>	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)***

<b>Field Controller Interface</b>	Power and SA Bus Interface between WRZ-7860-0 Receiver and VMA16 Series Controller or FEC
<b>Supply Voltage</b>	Nominal 15 VDC through the SA Bus; 6.7 to 16.5 VDC Required
<b>Current Consumption</b>	10 mA Maximum
<b>Addressing</b>	DIP Switches, Field Adjustable for up to 4,096 Unique RF Addresses
<b>Ambient Limits</b>	<b>Operating:</b> 32 to 122°F (0 to 50°C), 5 to 95% RH, Noncondensing <b>Storage:</b> -40 to 160°F (-40 to 71°C), 5 to 90% RH, Noncondensing
<b>RF Band</b>	Direct-Sequence, Spread-Spectrum, 2.4 GHz ISM Bands
<b>Transmission Power</b>	10 mW Maximum
<b>Transmission Range</b>	150 ft (45 m) Maximum Indoor Line of Sight; 100 ft (30 m) Practical Average Indoor
<b>Receiver Outputs</b>	One RJ-12 Port for SA Communication Bus Output (Sensed Zone Temperature and Humidity, Temperature Setpoint, and Occupancy Override Data)
<b>Temperature Sensor Accuracy</b>	<b>WRZ Series Wireless Room Sensor:</b> 1.0°F (0.6°C) over the Range of 55 to 85°F (13 to 29°C); 1.5°F (0.9°C) over the Range of 32 to 55°F (0 to 13°C) and 85 to 110°F (29 to 43°C)
<b>Temperature Sensor Type</b>	<b>WRZ Series Wireless Room Sensor:</b> Internal 10k ohm Negative Temperature Coefficient (NTC) Thermistor
<b>Humidity Measurement Range</b>	<b>WRZ Series Wireless Room Sensor:</b> Full Range 0 to 100% RH; Calibrated Range 10 to 90% RH at 74°F (23°C)
<b>Humidity Sensor Accuracy</b>	<b>WRZ Series Wireless Room Sensor:</b> ±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)
<b>Humidity Sensor Type</b>	<b>WRZ Series Wireless Room Sensor:</b> Planar Capacitive Polymer Sensor
<b>Materials</b>	NEMA 1 White Plastic Housing; UL94-5VB and V-0 Plenum Flammability Rated

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

	<b>United States:</b> Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters; Transmitter FCC Identification: TBF-MATRIXL or OEJ-WRZRADIO
	<b>Canada:</b> Industry Canada IC:5969A-MATRIXL or 279A-WRZRADIO
	<b>Europe:</b> CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive.
	<b>Japan:</b> Transmission Complies with Article 38-24 Paragraph 1 of the Radio Law Certification Number: ATCB012834
	<b>Australia and New Zealand:</b> RCM Mark – Australia/NZ Emissions Compliant
<b>Shipping Weight</b>	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.



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