Occupancy Sensing WRZ Series Wireless Room Sensors

Installation Instructions

WRZ-MHN0100-0, WRZ-MNN0100-0,
WRZ-MTB0100-0, WRZ-MTJ0100-0, WRZ-MTN0100-0

Refer to the QuickLIT website for the most up-to-date version of this document.

Application

The occupancy sensing WRZ Series Wireless Room Sensors are designed to sense room or zone temperature and transmit wireless temperature control data. One model also senses and transmits relative humidity (RH).

All models include an onboard passive infrared (PIR) occupancy sensor that detects motion to determine if a space is occupied. This feature can help provide up to 30% in energy savings in high-energy usage environments such as schools, residence halls, 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, VMA16 Series, and VMA1832 Series Controllers by means of 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 occupancy sensing WRZ Series Sensor reports to one WRZ-7860 Receiver, but up to five occupancy sensing WRZ Series Sensors can be associated with a single WRZ-7860 Receiver for multi-sensor averaging or high/low temperature selection.

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

The occupancy sensing 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.

IMPORTANT: The WRZ Series Sensors are intended 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 : Le WRZ Series Sensors est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du sensor risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du sensor.

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

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.

Installation

Follow these guidelines when installing the occupancy sensing WRZ Series Sensors:

- Transport the sensor in the original container to minimize vibration and shock damage.

- Verify that all the parts shipped with the sensor.

- Do not drop the sensor or subject it to physical shock.

- Do not attempt to remove or repair the circuit board from the sensor housing. Other than battery replacement, the sensor is not user-serviceable.

Parts Included

- one occupancy sensing WRZ Series Sensor with strips of double-sided adhesive foam tape installed

- one DIP switch overlay for a mesh network application using a ZFR18xx Series Router

- one DIP switch overlay for a One-to-One application using a WRZ-7860 Receiver

- one installation instructions sheet

- two AA alkaline batteries

Dimensions

See Figure 1 and Figure 2 for dimensions and physical features of the occupancy sensing WRZ Series Sensors.

**Figure 1: Occupancy Sensing WRZ Series Sensor with Setpoint Adjustment Buttons
Physical Features and Dimensions, in. (mm)**
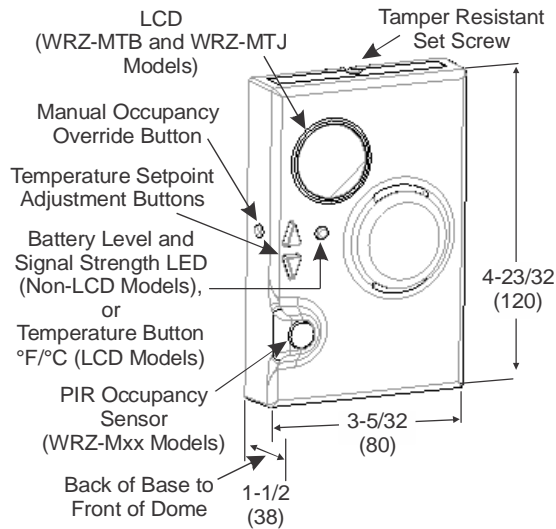
**Figure 2: Occupancy Sensing WRZ Series Sensor with Setpoint Adjustment Dial
Physical Features and Dimensions, in. (mm)**
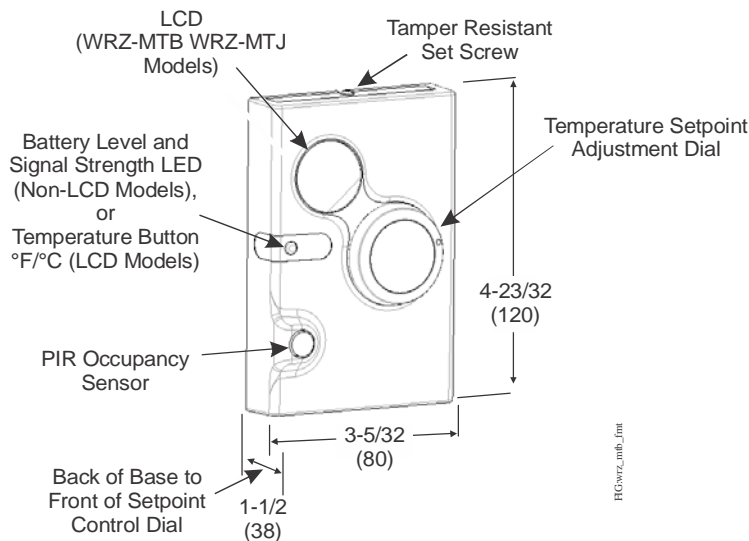
Note: Not all features shown on Figure 1 and Figure 2 are available on all models.

Special Tools Needed

- 1/16 in. (1.5 mm) Allen-Head Adjustment Tool (Johnson Controls® T-4000-119; order separately) for the tamper-resistant set screw that secures the sensor to the mounting base

- coin for unlocking the sensor housing from the mounting base locking tab

Mounting

The occupancy sensing WRZ Series Sensors can be surface mounted using the adhesive tape pieces affixed to the back of the sensors.

Location Considerations

Temperature Sensor Considerations

When locating an occupancy sensing WRZ Series Sensor, follow the same best practices used to locate a hard-wired temperature control, sensor, or thermostat:

- Mount the sensor on an interior wall where it is easily accessible, at least 55 in. (1.4 m) above the floor, in an area where the temperature is representative of the entire controlled space.

- Avoid enclosed or recessed locations and locations behind curtains, doors, or other obstructions to the controlled space.

- Avoid locations near entry foyers, doors, windows, supply air ducts, and pipes.

- Avoid locations that are exposed to drafts, direct sunlight, and other sources of heat or cooling.

- Avoid locations where the sensor could be exposed to excessive vibration.

Wireless Transmission Considerations

In addition to the typical thermostat and temperature control location considerations, follow these guidelines for locating a sensor in wireless applications:

- Locate the sensor on the same building level as the nearest ZFR18xx Series Router or WRZ-7860 Receiver.

- For best signal transmission, locate the sensor at least 2 in. (51 mm) away from any metal obstructions.

- Wherever possible, locate the sensor in the direct line of sight to the ZFR18xx Series Router or WRZ-7860 Receiver. Signal transmission is best if the path between the sensor and the router or receiver is as direct as possible. Line of sight is desirable but not required, as long as the path is not blocked by large metal objects.

- Avoid metal obstructions (including equipment rooms and elevator shafts) and concrete or brick walls between the sensor and the ZFR18xx Series Router or WRZ-7860 Receiver.

- Locate the sensor in a clear path between the PIR occupancy sensor and the space being monitored.

- Do not locate the sensor in recessed areas or metal enclosures.

- In mesh network applications, install the sensors within range of two or more ZFR18xx Series Routers. Redundancy in the layout provides the best reliability in wireless installations.

- Do not mount the sensor closer than 2 ft (0.61 m) or farther than 100 ft (30 m) from the ZFR18xx Series Router or 150 ft (45 m) from the WRZ-7860 Receiver.

- The recommended indoor line-of-sight transmission range between the sensor and the ZFR18xx Series Router is 50 ft (15 m).

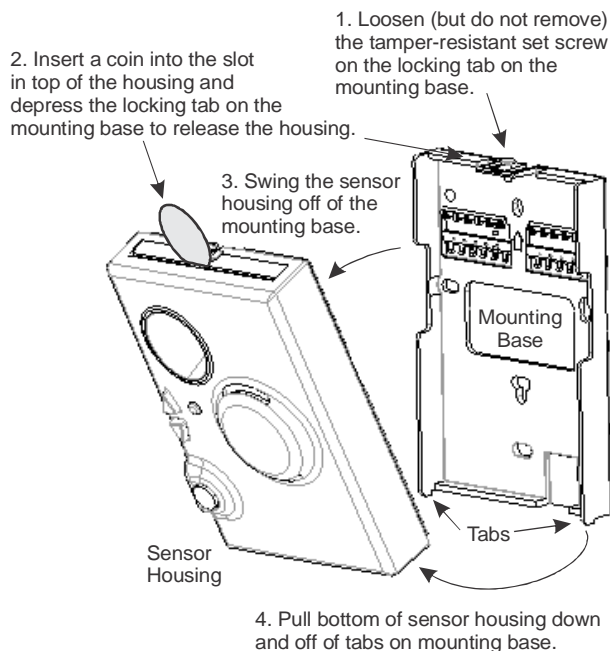### *Installing the Occupancy Sensing WRZ Series Sensor*

The occupancy sensing WRZ Series Sensor can be surface mounted using the double-sided adhesive foam tape factory installed on the back of the device. To mount the sensor base with adhesive foam tape:

1. Clean the mounting surface to ensure that the adhesive foam tape sticks to the surface.

Note: The mounting surface, mounting base, and ambient temperature must be at least 50°F (10°C) when mounting the sensor base with adhesive foam tape.

2. Remove the sensor housing from its mounting base (Figure 3).

3. Peel off the protective paper from one side of the factory-installed strips of adhesive foam tape on the back of the mounting base.

**Figure 3: Removing the Sensor Housing from Its
Mounting Base; LCD Model Shown
(Reverse the Steps to Install the Housing)**

1. Loosen (but do not remove) the tamper-resistant set screw on the locking tab on the mounting base.

2. Insert a coin into the slot in top of the housing and depress the locking tab on the mounting base to release the housing.

3. Swing the sensor housing off of the mounting base.

Mounting Base

Sensor Housing

Tabs

4. Pull bottom of sensor housing down and off of tabs on mounting base.

4. When positioned correctly, the arrow between the terminal slots on the inside of the mounting base should point up. Ensure that the mounting base is upright (tamper-resistant set screw on top) and press the base firmly onto the clean mounting surface.

5. See *Preparing the Occupancy Sensing WRZ Series Sensor for Operation*.

> **IMPORTANT:** Do not power up the occupancy sensing WRZ Series Sensor until a receiver or controller is installed and operating within the same RF range. If this condition is not met, the sensor uses a higher-than-normal battery current as it attempts to find a receiver or controller within range, resulting in reduced battery life.

Removing a Mounting Base Installed with Double-Sided Adhesive Foam Tape

To remove or relocate a sensor mounted with double-sided adhesive foam tape:

1. Remove the sensor housing from its mounting base (Figure 3).

2. Remove the mounting base from the mounting surface by carefully twisting the base off of the surface.

3. Remove the adhesive foam tape from the mounting base and clean the mounting base to remove any leftover adhesive.

Note: New double-sided adhesive foam tape is required to remount the base on the surface; use Can-Do National Tape (Code No. 99116) adhesive foam tape or its equivalent.

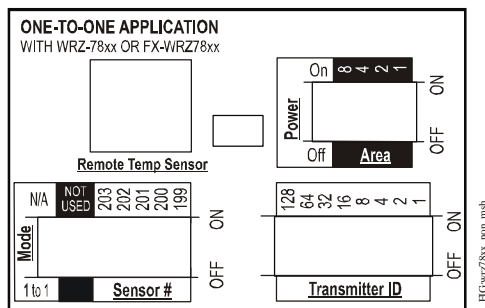## Preparing the Occupancy Sensing WRZ Series Sensor for Operation

To prepare the occupancy sensing WRZ Series Sensor for operation and to reinstall the sensor housing on its mounting base:

1. Place the appropriate DIP switch overlay (based on the application) over the DIP switches. See Figure 4 through Figure 6.
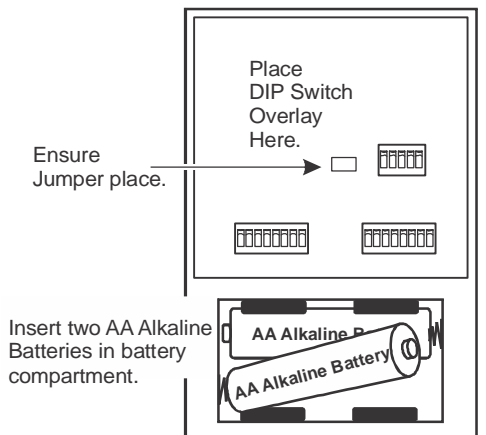
Figure 4: Mesh Network Application DIP Switch Overlay
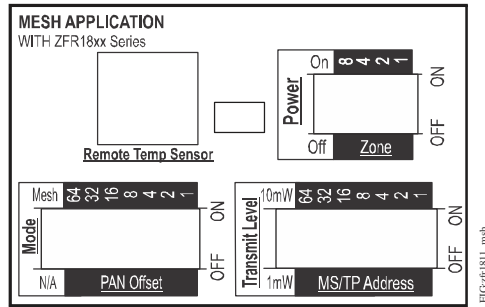
Figure 5: One-to-One Network Application DIP Switch Overlay

Figure 6: Back of Occupancy Sensing WRZ Series Sensor Showing DIP Switches and Batteries
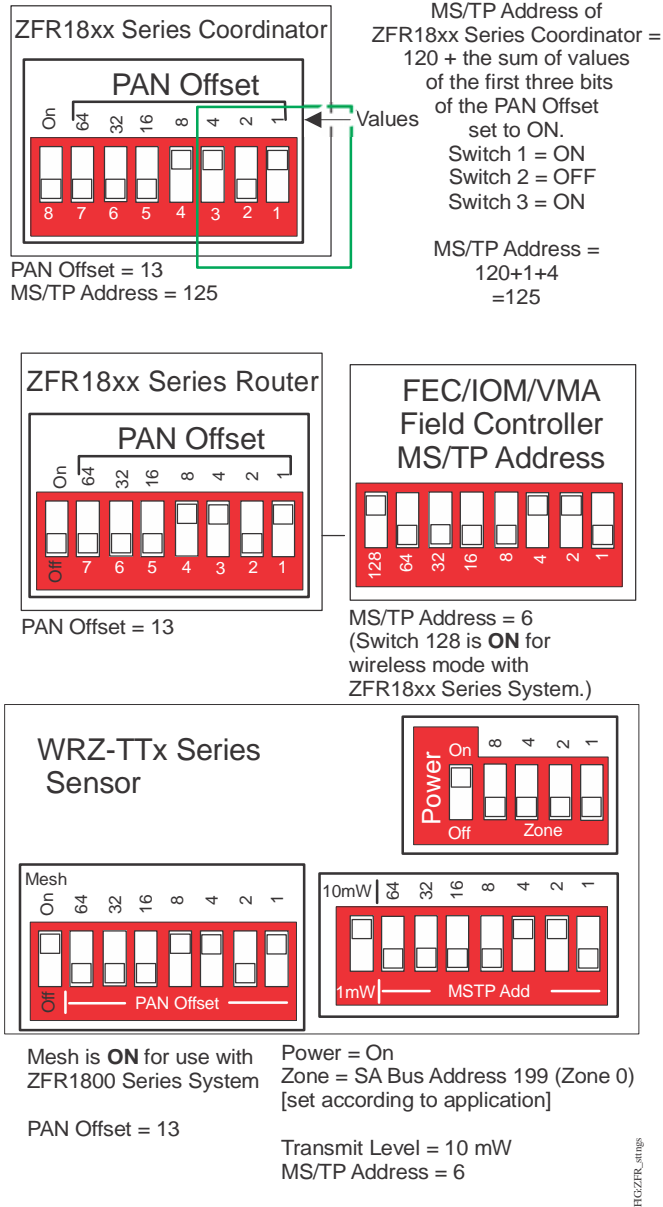

2. Set the DIP switches located on the back of the sensor.

For a **mesh network application using a ZFR18xx Series Router** (Figure 4 and Figure 7), set the DIP switches as indicated. See _Commissioning Multiple Occupancy Sensing WRZ Series Sensors_ for information on commissioning multiple occupancy sensing WRZ Series Sensors in a ZFR18xx Series Wireless Field Bus System.

a. Set the POWER switch to OFF.

b. Set the MODE switch to MESH.

c. Set the PAN OFFSET switches according to the job or system plans (PAN represents personal area network).

IMPORTANT: Ensure that the PAN OFFSET is the same for each ZFR18xx Series Coordinator, ZFR18xx Series Router, and occupancy sensing WRZ Series Sensor in a mesh network. See Figure 7.

Figure 7: Sample DIP Switch Settings

ZFR18xx Series Coordinator

PAN Offset

MS/TP Address of ZFR18xx Series Coordinator = 120 + the sum of values of the first three bits of the PAN Offset set to ON.
Switch 1 = ON
Switch 2 = OFF
Switch 3 = ON

MS/TP Address =
120+1+4
=125

PAN Offset = 13
MS/TP Address = 125

ZFR18xx Series Router

PAN Offset

PAN Offset = 13

FEC/IOM/VMA Field Controller MS/TP Address

MS/TP Address = 6
(Switch 128 is **ON** for wireless mode with ZFR18xx Series System.)

WRZ-TTx Series Sensor

Power / Zone

Mesh / PAN Offset

10mW / MSTP Add / 1mW

Mesh is **ON** for use with ZFR1800 Series System

PAN Offset = 13

Power = On
Zone = SA Bus Address 199 (Zone 0) [set according to application]

Transmit Level = 10 mW
MS/TP Address = 6

FIG:ZFR_sttngs

d.   Set the ZONE DIP switches according to the job or system plans.

e.   Set the Master-Slave/Token-Passing (MS/TP) ADDRESS DIP switches to match the MS/TP address of the controller with which the sensor is intended to communicate.

f.   Set the TRANSMIT LEVEL switch to 10 mW.

For a **One-to-One network application with a WRZ-7860 Receiver** (Figure 5), set the DIP switches as indicated, ensuring that the AREA and TRANSMITTER ID switches on the WRZ-7860 Receiver and the occupancy sensing WRZ Series Sensors are set to the same value.

   a. Set the POWER switch to OFF.

   b. Set the MODE switch to 1-to-1.

   c. Set the SENSOR# to 199 for applications with only one sensor per controller. Use the other settings for additional sensors in applications with a single controller performing temperature averaging or high/low selection within a zone. Refer to the *WRZ Series One-to-One Wireless Room Sensing System Technical Bulletin (LIT-12011641)* for information on commissioning multiple occupancy sensing WRZ Series Sensors in a One-to-One wireless room sensing system.

   d. Set the AREA switches to match the AREA switch on the WRZ-7860 Receiver.

   e. Set the Transmitter ID switches to match the Transmitter ID on the WRZ-7860 Receiver.

3. Install two AA alkaline batteries (supplied) into the battery compartment on the back of the sensor. Ensure that the batteries are installed in the proper polarity (Figure 6).

4. If the address DIP switches are set to the correct positions and the temperature sensing system is ready for operation or testing, set the POWER DIP switch to the ON position (Figure 4 or Figure 5).

5. Align the tabs on the bottom edge of the mounting base with the slots on the bottom edge of the sensor housing, and rotate the sensor assembly onto its mounting base. (Reverse the procedure shown in Figure 3.)

6. Use a 1/16 in. (1.6 mm) Allen wrench or Johnson Controls T-4000-119 Allen-Head Adjustment Tool to tighten the tamper-resistant set screw and secure the sensor assembly onto its mounting base (Figure 3).

7. Before use, clean the lens of the PIR occupancy sensor with a soft, dry cloth.

Note: Do not use water or other solvents to clean the lens.

Temperature Setpoint Adjustment/Occupancy Override

Depending on the model, you can use either the large temperature setpoint adjustment dial or the temperature setpoint adjustment buttons on the face of the network sensor to change the controller mode from unoccupied to occupied, or to adjust the temperature setpoint.

To change the occupancy mode using the dial, rotate the dial slightly. If you rotate the dial slightly again and the controller is in the unoccupied mode, the controller changes from the after-normal-working-hours setback mode to the normal-working-hours comfort mode. Alternatively, you can use the pushbuttons to change the controller mode from unoccupied to occupied.

To adjust the setpoint using the dial, continue rotating the dial until the current setpoint is displayed and flashing. Turn the dial clockwise to increase the setpoint and counterclockwise to decrease the setpoint. Stop turning the dial once the preferred setpoint is reached. The new setpoint stops flashing and becomes fixed after a few seconds. To use the pushbuttons instead, press the up arrow button to increase the setpoint or the down arrow to decrease it.

°F/°C Temperature Mode Selection

All models include a °F/°C pushbutton on the face of the network sensor to provide temperature scale options for display. Pressing the pushbutton toggles the temperature mode between Fahrenheit and Celsius on the LCD.

Manual Occupancy Override Button

Pressing the manual occupancy override button, located on the left side of the sensor, serves two main functions. First, it temporarily sets the space to an occupied state. Second, it checks the wireless signal strength of the sensor. The LED on the sensor flashes 3 times to indicate a strong signal, 2 times to indicate a good signal, or 1 time to indicate a marginal signal. For sensors with an LCD display, a number of bars on the display indicates wireless signal strength (3 bars for a strong signal, 2 bars for a good signal, or 1 bar for a marginal signal).

Testing Signal Strength

Once the occupancy sensing WRZ Series Sensor is communicating with the ZFR18xx Series Router or WRZ-7860 Receiver, press and release the manual occupancy override button to display the signal strength
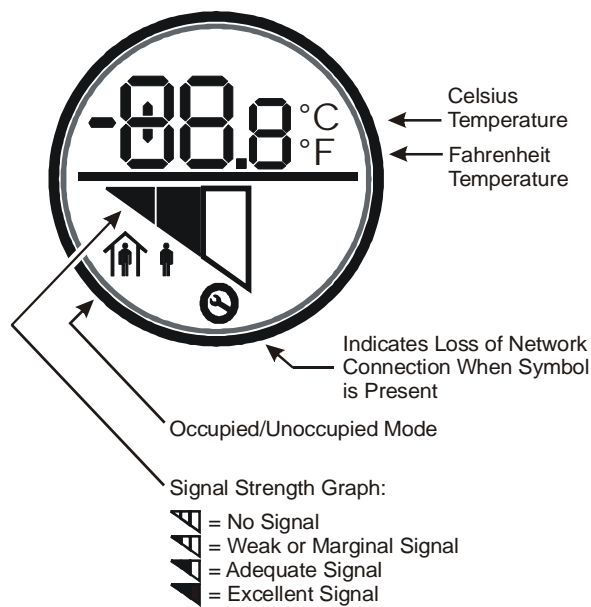
Press and hold the manual occupancy override button on the occupancy sensing WRZ Series Sensor (Figure 1) for 5 seconds or more to place the sensor into rapid transmit mode and initiate a signal strength test with the associated ZFR18xx Series Router or WRZ-7860 Receiver. See *Rapid Transmit Mode*.

Table 1: Occupancy Sensing WRZ Sensor to ZFR18xx Series Router or WRZ-7860 Receiver Wireless Signal Strength

Flashes	Signal Strength
3	Excellent/Sensor has joined network
2	Good/Sensor has joined network
1	Weak/Sensor has joined network
0	None/Sensor has not joined network
Fast Flash Rate (8)	Unable to locate associated wireless enabled field controller

On LCD models, the signal strength is shown on the display on the face of the sensor (Figure 8).

Figure 8: Sensor LCD
(WRZ-MTB/MTJ0100-0 Model)

Celsius Temperature

Fahrenheit Temperature

Indicates Loss of Network Connection When Symbol is Present

Occupied/Unoccupied Mode

Signal Strength Graph:
= No Signal
= Weak or Marginal Signal
= Adequate Signal
= Excellent Signal

FIG:lcd_dsply

Note: For WRZ Series Sensors with an LCD display, the humidity value may appear as 0.0% when the sensor is joining a network. This condition is transitory and does not transfer to the Building Automation System (BAS).

An optional WRZ-SST-120 Wireless Sensing System Tool can also be used with any occupancy sensing WRZ Series Sensor prior to installation as a site survey tool, to determine potential locations for system devices and to determine the wireless signal strength between the system devices in the application.

Refer to the *WRZ-SST-120 Wireless Sensing System Tool Installation Instructions (Part No. 24-10563-71)* for more information on testing signal strength. For additional location consideration details, also refer to the following documents:

• *ZFR1800 Series Wireless Field Bus System Technical Bulletin (LIT-12011295)*

• *WRZ Series One-to-One Wireless Room Sensing System Technical Bulletin (LIT-12011641)*

Rapid Transmit Mode

Rapid transmit mode forces wireless transmissions between the sensor and the parent ZFR18xx Series Router or WRZ-7860 Receiver, and indicates wireless signal strength between the devices.

To force the occupancy sensing WRZ Series Sensor into rapid transmit mode:

1. Press and hold the manual occupancy override button on the sensor for 5 or more seconds. In rapid transmit mode, the sensor transmits once every 10 seconds for 5 minutes, for a total of 30 update messages. On sensor models with an occupancy LED, the LED flashes after each transmission to indicate the wireless signal strength between the sensor and the associated parent ZFR18xx Series Router. On sensor models with an LCD, the signal strength is indicated on the display.

2. In addition, when a sensor is in rapid transmit mode, the LED on the target ZFR18xx Series Router blinks to indicate the received signal strength:

    a. If there is a poor signal or no signal, determine why the signal strength between the sensor and router is not adequate for your application.

    b. If there is a good or average signal, the sensor and router are communicating.

Use the rapid transmit mode on the sensor in conjunction with the WRZ-SST-120 Wireless Sensing System Tool to perform a site survey and test the wireless signal strength between potential device locations. Adjust ZFR18xx Series device locations before installing the devices. For more information on using the rapid transmit mode with the tool, refer to the *WRZ-SST-120 Wireless Sensing System Tool Installation Instructions (Part No. 24-10563-71).*

Commissioning Multiple Occupancy Sensing WRZ Series Sensors

Mesh Mode

You can add up to nine occupancy sensing WRZ Series Sensors per FAC, FEC, or VMA16 Controller in the mesh mode.

The Zone DIP switches on the occupancy sensing WRZ Sensor relate to the Zone Netsensor (SA Bus device) address configured for the sensor in the Controller Configuration Tool (CCT). For example, if you set the Zone DIP switches to a value of 3 (that is, DIP switch 1 and 2 are set to ON), you must use Zone Netsensor address 202 in the CCT. You can add up to nine occupancy sensing WRZ Sensors per field controller. You can use any nine of the sixteen available Zone Netsensor address settings at a time.

The mesh mode of operation is intended for use with the ZFR18xx Series Coordinator and ZFR18xx Series Router. Table 2 describes the Zone DIP switch settings for the wireless applications in mesh mode.

Table 2: Zone Switch and SA Bus Settings When Using Multiple Occupancy Sensing WRZ Series Sensors[1]

Zone DIP Switch ON	Zone Netsensor (SA Bus Device) Address Setting
None (All OFF)	199
1	200
2	201
1 and 2	202
4	203
1 and 4	204
2 and 4	205
1, 2, and 4	206
8	207
1 and 8	208
2 and 8	209

Table 2: Zone Switch and SA Bus Settings When Using Multiple Occupancy Sensing WRZ Series Sensors[1]

Zone DIP Switch ON	Zone Netsensor (SA Bus Device) Address Setting
1, 2, and 8	210
4 and 8	211
1, 4, and 8	212
2, 4, and 8	213
1, 2, 4, and 8	214

1. Use the One-to-One Application DIP switch overlay in the One-to-One mode of operation, or the Mesh Application DIP switch overlay in the mesh mode of operation. The switch numbers described in this table refer to the numbers on the overlays.

One-to-One Mode

You can add up to five occupancy sensing WRZ Series Sensors per WRZ-7860 Receiver in the One-to-One mode.

The One-to-One mode of operation is intended for use with the WRZ-7860 Receiver. For One-to-One mode, Figure 5 shows DIP switch settings.

Repair Information

If the occupancy sensing 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 AA alkaline batteries supplied with the occupancy sensing WRZ Series Sensor typically have a life of 4 years or more. The sensor reports a low battery condition to the receiver or controller, which relays the low battery condition to the *Metasys*® system.

Battery strength can also be checked at the occupancy sensing WRZ Series Sensor by pressing and holding the manual occupancy override button (Figure 1). If the battery level and signal strength LED at the sensor is on while pressing and holding the button, the battery power is acceptable. If the LED is off while pressing and holding the button, the battery power is low and the batteries need to be replaced.

On the LCD model, the low battery condition is shown by **Lo bAt** flashing in the display on the face of the sensor.

Note: 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.

Accessories

Table 3: Accessories Ordering Information

Code Number	Description
WRZ-SST-120	Wireless Sensing System Tool: For Use with an Occupancy Sensing 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 Wireless Field Bus System
T-4000-119	Allen-Head Adjustment Tool: 1/16 in. (1.6 mm), 30 Tools per Bag

Technical Specifications

Occupancy Sensing WRZ Series Wireless Room Sensors (Part 1 of 2)

Product Codes	**WRZ-MHN0100-0:** Wireless Room Temperature and Humidity Sensor with Passive Infrared (PIR) Occupancy Sensor, Battery Level/Signal Strength LED, Manual Occupancy Override Button, and No Display
	WRZ-MNN0100-0: Wireless Room Sensor (No Temperature or Humidity Sensing) with PIR Occupancy Sensor, Battery Level/Signal Strength LED, Manual Occupancy Override Button, and No Display
	WRZ-MTB0100-0: Wireless Room Temperature Sensor with PIR Occupancy Sensor, Display, Setpoint Dial Adjustment or 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 Temperature Sensor with PIR Occupancy Sensor, Display, Up/Down Setpoint Adjustment Buttons, °F/°C Button, and Manual Occupancy Override Button
	WRZ-MTN0100-0: Wireless Room Temperature Sensor with PIR Occupancy Sensor, Battery Level/Signal Strength LED, Manual Occupancy Override Button, and No Display
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	Every 60 Seconds (±20 Seconds)
Temperature System Accuracy	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	Internal 10k ohm Negative Temperature Coefficient (NTC) Thermistor
Humidity Calibrated Range (WRZ-MHN0100-0 Model)	10% to 90% RH at 73°F (23°C)
Humidity Accuracy (WRZ-MHN0100-0 Model)	±3% RH across the Range of 20% to 80% RH; ±6% RH across the Ranges 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	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:
CE	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 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:
	Regulatory Compliance Mark (RCM), 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 shall not be liable for damages resulting from misapplication or misuse of its products.

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Occupancy Sensing WRZ Series Wireless Room Sensors Installation Instructions