WRZ Series Wireless Room Sensors Installation Guide

Rev. X
Part No. 24-10332-2

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Application

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).

In a mesh application, the WRZ sensor is compatible with the ZFR18xx Wireless Field Bus Systems (ZFR181x, ZFR182x, ZFR183x). See Table 3. 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 by means of 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.

WRZ Series sensor 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 Sensors use direct-sequence, spread-spectrum radio frequency (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(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.

Installation

When you install the WRZ Series Sensors, follow these guidelines:

- 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

The WRZ Series Sensor ships with the following parts:

- One WRZ Series Sensor with strips of double-sided adhesive foam tape installed
- One DIP switch overlay for a mesh network application that uses a ZFR or ZFR Pro Series Router
- One DIP switch overlay for a one-to-one application that uses a WRZ-7860 Receiver
- One installation guide
- Two AA alkaline batteries

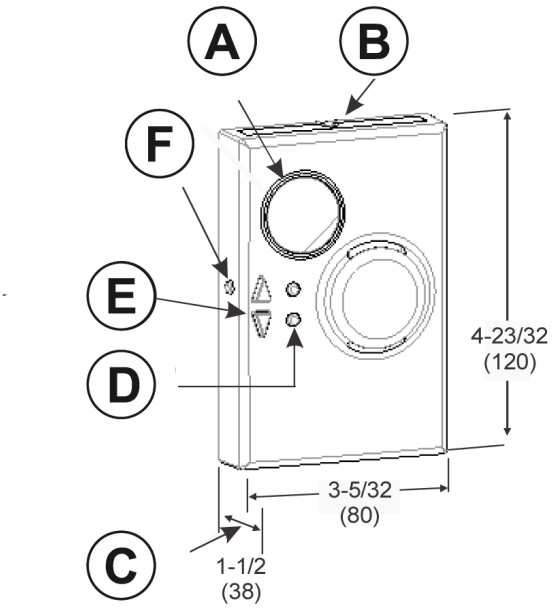
Special tools needed

- 1.6 mm (1/16 in.) 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
- Straight-blade screwdriver to unlock the sensor housing from the mounting base locking tab

Dimensions

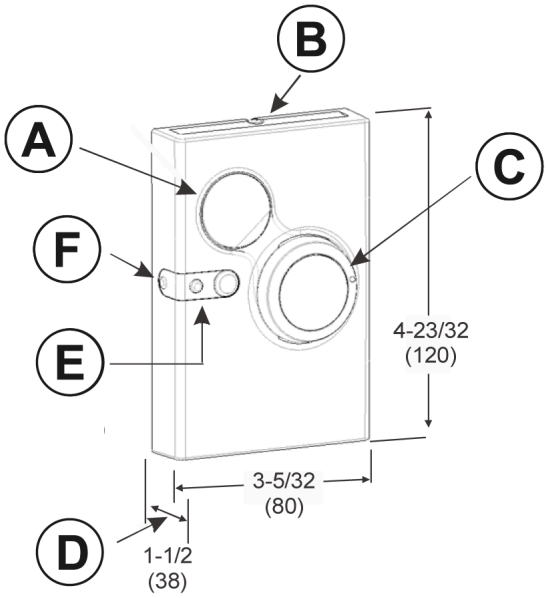
See the following figures for dimensions and physical features of the WRZ Series Sensors.

Figure 1: 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 2: 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

Note: Not all features shown are available on all models. See Table 5Table 5 for sensor model specifications.

Mounting

Use the adhesive tape pieces affixed to the back of the sensors to surface mount the WRZ Series Sensors.

Location considerations

See the following sections for information about temperature sensor and wireless transmission location considerations.

Temperature sensor considerations

When you locate a 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 1.4 m (55 in.) 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 is exposed to excessive vibration.

Wireless transmission considerations

To locate the sensor in wireless applications, follow these guidelines:

- Locate the sensor on the same building level as the nearest ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver.
- For best signal transmission, locate the sensor at least 51 mm (2 in.) away from any metal obstructions.
- Wherever possible, locate the sensor in the direct line of sight to the ZFR or ZFR Pro 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 preferred but not required, provided no large metal objects block the path.
- Avoid metal obstructions, including equipment rooms and elevator shafts, and concrete or brick walls between the sensor and the ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver.
- Do not locate the sensor in recessed areas or metal enclosures.
- In mesh network applications, install the sensors in range of two or more ZFR or ZFR Pro Series Routers. Redundancy in the layout provides the best reliability in wireless installations.
- Do not mount the sensor closer than 0.61 m (2 ft) or farther than 30 m (100 ft) from the ZFR or ZFR Pro Series Router, or 45 m (150 ft) from the WRZ-7860 Receiver.

- The optimal indoor line-of-sight transmission range between the sensor and the ZFR or ZFR Pro Series Router is 15 m (50 ft).

Installing the WRZ Series Sensor

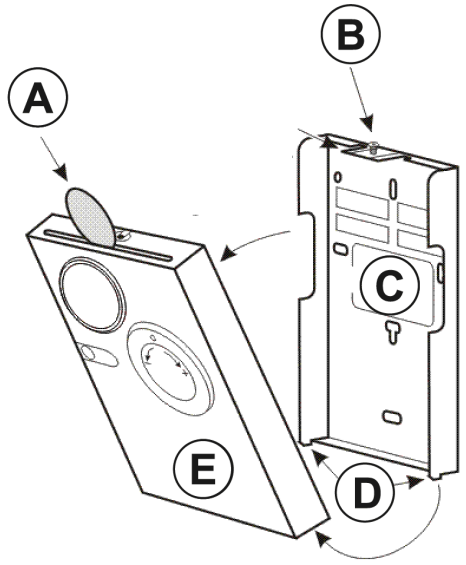
Use the double-sided adhesive foam tape factory installed on the back of the device to surface mount the WRZ Series Sensor. To mount the sensor base with adhesive foam tape, complete the following steps::

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 10°C (50°F) when you mount the sensor base with adhesive foam tape.

2. Remove the sensor housing from its mounting base as shown in the following figure.

Figure 3: Removing the sensor housing from its mounting base



Callout	Description
A	Slot
B	Tamper-resistant set screw
C	Mounting base
D	Tabs
E	Sensor housing

a. Loosen but do not remove the tamper-resistant set screw on the locking tab on the mounting base.
b. Insert a coin into the slot in the top of the sensor housing and depress the locking tab on the mounting base to release the housing.
c. Swing the sensor housing off the mounting base
d. Pull the bottom of the sensor housing down and off the tabs at the bottom of the mounting base.
e. Reverse these steps to install the housing.

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

   During normal operation, the WRZ Series Sensor is in a suspended sleep mode to conserve battery life. The sensor periodically wakes up, reads its sensor values, and sends the sensor data to the associated controller. The wake-up time varies, and depends on the sensor type and changes in value. When you adjust the setpoint dial or press the manual occupancy override button, the sensor wakes up immediately and send its data. See *Preparing the WRZ Series Sensor for Operation*.

   - **Important:** Do not power up the WRZ Series Sensor until an installed receiver or controller operates 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, which results in reduced battery life.
   - **Important:** During start up and commissioning or in a power-outage situation, the associated controller may be shut down for extended periods of time. To further conserve battery life, the WRZ Series Sensor adjusts its rejoin attempt time to much longer periods, 6 times every 2 min for the first 10 min, then once every 30 min for 72 hours, and then once per day thereafter. This may cause the sensor to be offline to the system until it rejoins. When you adjust the setpoint dial or press the manual occupancy override button, the sensor wakes up and begin its normal update sequence.

Removing a mounting base installed with double-sided adhesive foam tape

To remove or relocate a sensor mounted with double-sided adhesive foam tape, complete the following steps:

1. Remove the sensor housing from its mounting base. See Figure 3.
2. To remove the mounting base from the mounting surface, carefully twist 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 WRZ Series Sensor for operation

To prepare the WRZ Series Sensor for operation, and to reinstall the sensor housing on its mounting base, complete the following steps:

1. Based on the application, place the appropriate DIP switch overlay over the DIP switches. See the following figures.

Figure 4: Mesh network application DIP switch overlay

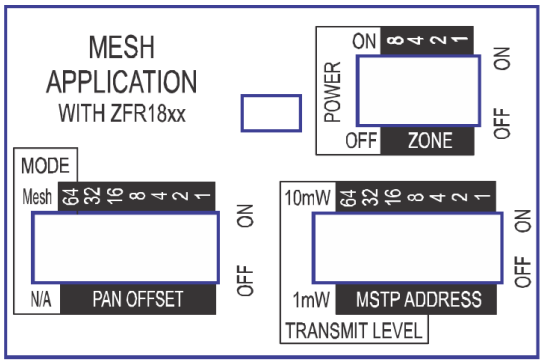


Figure 5: One-to-one network application DIP switch overlay

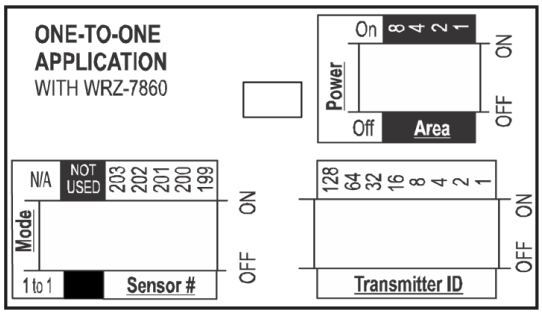
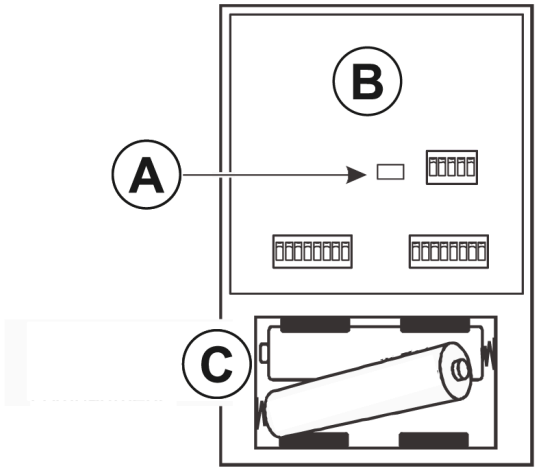


Figure 6: Back of WRZ Series Sensor



Callout	Description
A	Ensure jumper is in place
B	Place DIP switch overlay here
C	Insert two AA alkaline batteries in the battery compartment

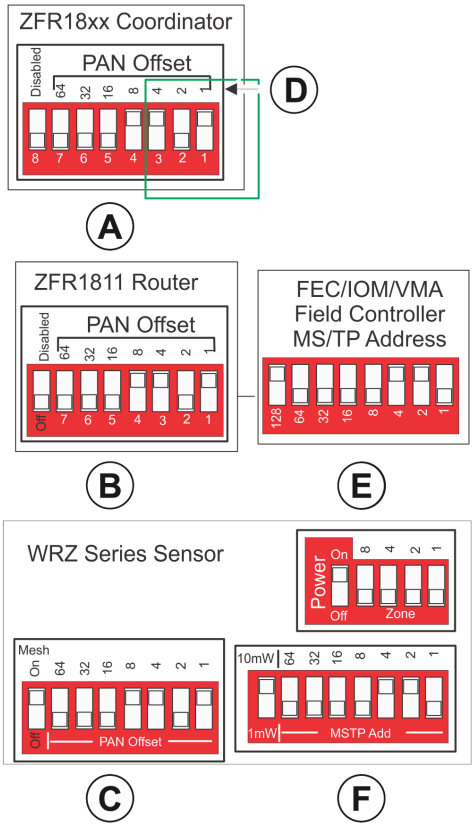
2. Set the DIP switches located on the back of the sensor.
   Mesh network application

For a mesh network application that uses a ZFR and ZFR Pro Series Router, set the DIP switches as shown in Figure 7. See Commissioning Multiple WRZ Sensors for information on how to commission multiple WRZ Series Sensors in a ZFR1800 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.

Important: Ensure that the PAN OFFSET is the same for each ZFR or ZFR Pro Series Coordinator, ZFR and ZFR Pro Series Router, and WRZ Series Sensor in a mesh network. See the following figure.

Figure 7: Sample DIP switch settings



Callout	Description
A	Pan offset = 13 MS/TP address = 125 (ZFR only)
B	Pan offset = 13
C	Mesh is ON for use with ZFR Series System. Pan offset = 13
D	Values

Callout	Description
E	MS/TP address = 6 Switch 128 is ON for wireless mode with ZFR18xx Series System.
F	Power = On Zone = SA bus address 199 (Zone 0). Set according to application. Transmit level = 10 mW MS/TP address = 6

ⓘ **Note:** MS/TP address of ZFR1810 Coordinator = 120 + the sum of the values of the first three bits of the PAN offset set to ON.

Switch 1 = ON

Switch 2 - OFF

Switch 3 = ON

For example, for D in Figure 7, the MS/TP address = 120 + 1 + 4 = 125. This information only applies to the ZFR1810.

d. Set the ZONE DIP switches according to the job or system plans.Set the ZONE DIP switches according to the job or system plans.
e. Set the MS/TP address DIP switches to match the MS/TP address of the controller with which the sensor communicates.
f. Set the TRANSMIT LEVEL switch to 10 mW.

One-to-one network application

For a one-to-one network application with a WRZ-7860 Receiver, set the DIP switches as shown in Figure 7 . Ensure that the AREA and TRANSMITTER ID switches on the WRZ-7860 Receiver and the WRZ Series Sensors are set to the same value. See Figure 5.

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 that performs temperature averaging or high or low selection within a zone. Refer to the *WRZ Series One-to-One Wireless Room Sensing System Technical Bulletin (LIT-12011641)* for information on how to commission multiple WRZ Series Sensors in a WRZ Series 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 the two supplied AA alkaline batteries into the battery compartment on the back of the sensor. Ensure to install the batteries in the correct polarity. See 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. See Figure 4 or Figure 5. 5 s after the application of power, the red LED flashes to indicate the firmware revision. For example, three flashes of the red LED during the startup process indicates firmware revision 3.
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 1.6 mm (1/16 in.) 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. See Figure 3.

Testing signal strength

When the WRZ sensor communicates with the ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver, press and release the manual occupancy override button to display signal strength.

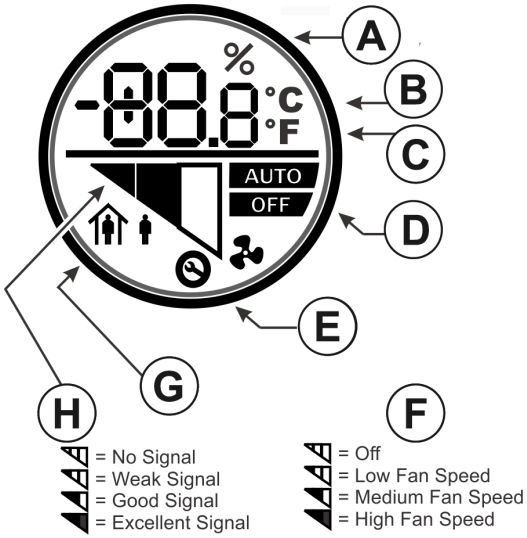
Press and hold the manual occupancy override button on the WRZ Series Sensor for 5 s or more to place the sensor into Rapid Transmit Mode and initiate a signal strength test with the associated ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver. See Figure 1 and *Rapid Transmit Mode*.

Table 1: WRZ Sensor to ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver wireless signal strength

Flashes	Signal strength
3	Excellent. Sensor joined the network.
2	Good. Sensor joined the network.
1	Weak. Sensor joined the network.
0	None. Sensor has not joined the network.
Fast flash rate (8)	Unable to locate associated wireless enabled field controller

On LCD models, the signal strength shows on the display on the face of the sensor as shown in the following figure.

Figure 8: Sensor LCD



Callout	Description
A	Relative humidity
B	Celsius temperature
C	Fahrenheit temperature
D	Fan Mode. AUTO-OFF, low, medium, high.
E	When symbol is present, indicates loss of network connection.
F	Fan speed indication graph
G	Occupied or unoccupied mode
H	Signal strength

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

Before installation, use an optional WRZ-SST-120 Wireless Sensing System Tool with any WRZ Series Sensor 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. Alternatively, use a ZFR-HPSST-0 survey tool to perform wireless site surveys for hardware installations.

Refer to the *WRZ-SST-120 Wireless Sensing System Tool Installation Guide (Part No. 24-10563-55)* for more information on how to test signal strength. For additional location consideration details, refer to the following documents:

- *WRG1830/ZFR183x Pro Series Wireless Best Practices (LIT-12013552)*
- *WNC1800/ZFR182x Pro Series Wireless Field Bus System Technical Bulletin (LIT-12012356)*
- *WRZ Series One-to-One Wireless Room Sensing System Technical Bulletin (LIT-12011641)*

Refer to the *ZFR-HPSST-0 Wireless Sensing System Tool Installation Guide (Part No. Part No. 24-11461-00012)* for use with the WRG1830/ZFR183x Pro Series Wireless Field Bus System. Use the Wireless Survey Tool to determine signal strength between the wireless controllers.

Rapid transmit mode

Rapid transmit mode forces wireless transmissions between the sensor and the parent ZFR or ZFR Pro Series Router, or WRZ-7860 Receiver, and indicates wireless signal strength between the devices. To force the WRZ Series Sensor into rapid transmit mode, complete the following steps:

1. Press and hold the manual occupancy override (Occ) button on a WRZ Series Sensor for 5 s or more. In rapid transmit mode, the sensor transmits once every 10 s for 5 min, for a total of 30 update messages. After each transmission, the occupancy LED of the sensor flashes to indicate the wireless signal strength between the sensor and the associated parent ZFR or ZFR Pro Series Router.
2. In addition, when a sensor is in rapid transmit mode, the target ZFR or ZFR Pro Series Router's LED blinks to indicate the received signal strength.
3. 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.
4. If there is a good or average signal, the sensor and router communicate.

   Before you install the devices, use rapid transmit mode 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, and adjust ZFR or ZFR Pro Series device locations. For more information about how to use the rapid transmit mode of the sensor with the tool, refer to the *WRZ-SST-120 Wireless Sensing System Tool Installation Instructions (Part No. 24-10563-55)*.

Temperature setpoint adjustment or occupancy override

Depending on the model, you can use either the large setpoint adjustment dial or the 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 use the dial to change the occupancy, rotate the dial slightly, so the backlight on the LCD lights up. If you rotate the dial slightly again, and the controller is in unoccupied mode, the controller changes from the after-normal-working-hours setback mode to the normal-working-hours comfort mode. Alternatively, use the buttons to change the controller mode from unoccupied to occupied.

To use the dial to adjust the setpointl, continue to rotate the dial until the current setpoint displays and flashes. Turn the dial clockwise to increase the setpoint and counter-clockwise to decrease the setpoint. Stop turning the dial when you reach the preferred setpoint. The new setpoint stops flashing and becomes fixed after a few

seconds. To use the buttons instead, press the up arrow button to increase the setpoint or the down arrow to decrease it.

Selecting the °F/°C temperature mode

All LCD models include a °F/°C button on the face of the network sensor to provide temperature scale options for display. Use the **Menu** button to toggle the temperature mode between Fahrenheit and Celsius on the LCD. See to change the units.

Manual occupancy override

Press any button on any NSW8000 Series sensor model to activate the manual occupancy override operation, which serves two main functions. First, it temporarily sets the space to an occupied state. Second, it displays the wireless signal strength on non-display models.

- 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, several 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.

ⓘ **Note:** For non-display models, the manual occupancy override button is located on the right side of the sensor.

Commissioning multiple WRZ sensors

See the following sections for information on how to commission multiple WRZ sensors in mesh mode or one-to-one mode.

Mesh mode

In mesh mode, you can add up to nine WRZ Series sensors to each controller.

The Zone DIP switches on the 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 with DIP switch 1 andDIP switch 2 set to ON, you must use Zone Netsensor address 202 in the CCT. You can add up to nine WRZ sensors to each field controller. You can use any nine of the sixteen available Zone Netsensor address settings at a time.

The mesh mode of operation is for use with the ZFR or ZFR Pro Series Coordinator and ZFR or ZFR Pro Series Router. The following talbe describes the Zone DIP switch settings for the wireless applications in mesh mode.

Table 2: Zone switch and SA bus settings when you use multiple WRZ sensors

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

Table 2: Zone switch and SA bus settings when you use multiple WRZ sensors

Zone DIP Switch ON	Zone Netsensor (SA bus device) address setting
8	207
1 and 8	208
2 and 8	209
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

Note:

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 Table 2 refer to the numbers on the overlays.

One-to-one mode

You can add up to five WRZ Series sensors for each WRZ-7860 receiver in one-to-one mode.

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

Version compatibility

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

Table 3: 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 NSW8000 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 WRZ Series sensor have a life of 5 to 10 years or more. For longer battery life, use the WRZ-2 sensor with the ZFR183x wireless solution. The sensor reports a low battery condition to the receiver or controller, which relays the low battery condition to the system.

To check the battery strength at the WRZ Series sensor, press and hold the manual occupancy override button. See Figure 1. If the battery level and signal strength LED at the sensor is on while you press and hold the button, the battery power is acceptable. If the LED is off while you press and hold the button, the battery power is low and the you need to replace the batteries.

On LCD models, **Lo bAt** flashes in the display on the face of the sensor to show a low battery condition.

Note: When you replace the batteries, replace both batteries at the same time. Recycle or dispose of batteries removed from this device 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 V to extend the period between battery replacement. Do not mix lithium and alkaline batteries in this device.

Accessories

See the following table for information on accessories for the WRZ Series sensors.

Table 4: Accessories ordering information

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.

Technical specifications

Table 5: WRZ Series Wireless Room Sensors technical specifications

Specification	Description
Product codes	**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.
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

Table 5: WRZ Series Wireless Room Sensors technical specifications

Specification	Description
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)
PIR occupancy sensor motion detection	Minimum 94 angular degrees up to a distance of 26 ft (8 m), approximately 47 degrees from center in horizontal and vertical directions. Based on 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
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.

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Patents

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