Application

- **Important:** Use the FX-ZFR1810 Wireless Field Bus Coordinator only to provide an input to equipment under normal operating conditions. Where failure or malfunction of the FX-ZFR1810 Coordinator 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 FX-ZFR1810 Coordinator.

- **Important:** The FX-ZFR Series Wireless Field Bus System is not designed or intended for use in mission-critical or life/safety applications.

An FX-ZFR1810 Wireless Field Bus Coordinator provides a wireless interface between Facility Explorer Programmable Controllers (FX-PCs) equipped with an FX-ZFR1811 Router and an FX Supervisory Controller (FX20/FX60/FX70/FX80). Each wireless mesh network requires one FX-ZFR1810 Coordinator, which initiates the formation of the network.

An FX-ZFR1810 Coordinator can operate from either of two power sources:

- 24 VAC, Class 2 power source
- 15 VDC power provided from the FC Bus Jack on most FX-PC Controllers that are connected directly to the FC Bus

The FX-ZFR1810 Coordinator features a remote-mount antenna and cable to allow transmission when the FX-ZFR1810 Coordinator is mounted inside a metal panel.

Refer to the *FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660)* for information on commissioning and configuring an FX-ZFR Series Wireless Field Bus System for operation.

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. This device has been designed to operate with an antenna having a maximum gain of 2 dB. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the Equivalent Isotropically Radiated Power (EIRP) is not more than that required for successful communication.

Le terme **IC** précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada. Cet appareil a été conçu pour fonctionner avec une antenne d'un gain maximum de 2 dBi. En application des réglementations d'Industry Canada, l'utilisation d'une antenne de gain supérieur est strictement interdite. L'impédance d'antenne requise est de 50 ohms. Pour réduire les interférences radio potentielles avec les dispositifs d'autres utilisateurs, le type d'antenne et son gain doivent être choisis de façon à ce que la Puissance Isotrope Rayonnée Équivalente (PIRE) ne soit pas supérieure à la puissance nécessaire pour une bonne communication.

**Installation**

**Important:** Before installing the FX-ZFR1810 Coordinator in plenum applications, verify acceptance of exposed plastic materials in plenum areas with the local building authority. Building codes for plenum requirements vary by location. Some local building authorities accept compliance to UL 1995, Heating and Cooling Equipment, while others use different acceptance criteria.

Follow these guidelines when installing an FX-ZFR1810 Coordinator:

- Transport the FX-ZFR1810 Coordinator in the original container to minimize vibration and shock damage.
- Verify that all the parts shown in Parts included shipped with the FX-ZFR1810 Coordinator.
- Do not drop the FX-ZFR1810 Coordinator or subject it to physical shock.

**Parts included**

Verify that the following parts shipped with the FX-ZFR1810 Coordinator:

- One FX-ZFR1810 Coordinator and the following parts:
  - One three-position screw terminal pluggable block for 24 V~ power
  - One four-position screw terminal pluggable block for FC/SA Bus In
  - Four No. 6 pan-head, sheet-metal screws
- Adjustable antenna with 1.2 m (4 ft) cable and the following parts:
  - Galvanized steel mounting bracket
  - Two No. 6 Trade Size pan-head, sheet-metal screws
  - Round bushing
  - Hexagonal bushing
ZFR dimensions

See the following figure for the physical features and dimensions of the FX-ZFR1810 Coordinator.

**Figure 1: FX-ZFR1810 coordinator physical features and dimensions, mm (in.)**

Mounting

Location considerations

Follow these guidelines when locating an FX-ZFR1810 Coordinator within an FX-ZFR1800 Series system:

- Locate the FX-ZFR1810 Coordinator so that it is easily accessible.
- For best signal transmission, vertically orient the FX-ZFR1810 Coordinator’s antenna with at least 50 mm (2 in.) exposed below (and clear of) any pipes, duct work, or other metal obstructions. Do not mount the antenna in a horizontal orientation.
- Due to the nature of the radio frequency waves, a wireless device may have significantly different signal strengths if its position changes relative to another wireless device or if its environment changes. If an FX-ZFR1810 Coordinator shows poor signal strength, you can improve the signal strength by moving the device’s antenna a couple of inches in either horizontal direction.
- Locate the FX-ZFR1810 Coordinator’s antenna inline-of-sight with as many FX-ZFR1811 Routers as possible.
• Do not mount the FX-ZFR1810 Coordinator’s antenna in recessed areas, metal enclosures, or shelving units.

Follow these additional guidelines when installing an FX-ZFR1810 Coordinator:

• Locate the FX-ZFR1810 Coordinator near the center of the associated array of FX-ZFR1811 Routers.

• At a minimum, position an FX-ZFR1810 Coordinator within 15.2 m (50 ft) of at least two FX-ZFR1811 Routers.

• At a minimum, position all FX-ZFR1811 Routers within 15.2 m (50 ft) of at least two other FX-ZFR1811 Routers or one FX-ZFR1811 Router and the FX-ZFR1810 Coordinator.

• Locate the FX-ZFR1810 Coordinator on the same floor as the associated FX-ZFR1811 Router and FX-WRZ Series Sensors.

• Test the transmission signal strength between the FX-ZFR1810 Coordinator and the associated FX-ZFR1811 Router and FX-WRZ Series Sensors to ensure a reliable mesh network is in place. For more information, see the FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660).

• Avoid metal obstructions and concrete or brick walls between the FX-ZFR1810 Coordinator and the associated FX-ZFR1811 Router and FX-WRZ Series Sensors.

• Avoid configurations where a microwave oven is located between two wireless devices. At a minimum, ensure no microwave ovens are within 6 m (20 ft) of an FX-ZFR1810 Coordinator.

Note: For detailed information on location guidelines for an FX-ZFR Series system, and for estimating the number of FX-ZFR1811 Routers needed as repeaters for extending wireless transmission range, refer to the FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660).

Wireless signal transmission considerations

Line-of-sight transmission ranges between an FX-ZFR1810 Coordinator, FX-ZFR1811 Router, and/or an FX-WRZ Series Sensor can be less than the maximum distances shown in Table 1. The effective transmission range for indoor applications varies because of wireless signal absorption and reflection due to metal obstructions, walls (or floors), and furniture found in typical building interiors. The effective transmission range for outdoor applications varies based on environmental conditions.

Indoor line-of-sight transmission ranges

Table 1: Indoor line-of-sight transmission ranges

<table>
<thead>
<tr>
<th>Range type</th>
<th>Transmission distance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FX-ZFR1810 Coordinator, FX-ZFR1811 Router</td>
</tr>
<tr>
<td>Recommended</td>
<td>15.2 m (50 ft)</td>
</tr>
<tr>
<td>Maximum</td>
<td>76.2 m (250 ft)</td>
</tr>
</tbody>
</table>

Mounting the base

The FX-ZFR1810 Coordinator can be surface mounted using the four No. 6 trade size self-tapping, pan-head screws supplied.

To mount the FX-ZFR1810 Coordinator base with screws:
1. Remove the receiver housing by pressing the locking tabs in at the slots in the mounting base to release the FX-ZFR1810 Coordinator from the mounting base (Figure 2).

2. Use the mounting base as a template, and place the mounting base against the mounting surface.

3. Drill pilot holes at the marked locations and secure the mounting base evenly to the surface with the four No. 6 trade size screws supplied.
   - **Important:** Do not overtighten the mounting screws. Overtightening the mounting screws may damage the mounting base or mounting surface.

4. Mount the antenna and connect the antenna cable to the FX-ZFR1810 Coordinator. See Assembling the antenna for further information.

5. Reinstall the FX-ZFR1810 Coordinator housing by aligning the locking tabs with the slots on the mounting base and pressing the housing until it locks to the mounted base.

   **Figure 2: Mounting the FX-ZFR1810 Coordinator**

---

**Assembling the antenna**

- **Important:** Use the antenna provided. Do not alter the antenna in any way or use another antenna. Do not modify the antenna cable in any way.

- **Important:** Minimum bend radius for the antenna cable is 25 mm (1 in.). Any bend with a smaller radius may damage the cable.

If mounting the FX-ZFR810 Coordinator in a control panel, choose a location on the top side of the control panel for placement of the antenna. Ensure that the selected location has line-of-sight to two or more FX-ZFR1811 Routers.

Use Figure 3 and the following steps to assemble the remote-mount antenna:

1. Remove the knock-out tab on the enclosure/panel box or drill a 22 mm (7/8 in.) diameter hole in the desired location on the top of the enclosure.

2. Insert the round bushing into the hole in the enclosure.

3. Insert the hexagonal bushing into the antenna mounting bracket.

4. Thread the antenna cable through the hexagonal bushing.

5. Insert the base of the antenna into the hexagonal bushing and press until it snaps securely in place.

6. Thread the antenna cable through the round bushing at the top of the panel.
Mounting the antenna using screws

To mount the antenna using screws:

1. Center the antenna mounting bracket over the 22 mm (7/8 in.) round bushing.
2. Using the bracket as a template, drill two 2 mm (3/32 in.) pilot holes into the enclosure.
3. Screw the bracket into place using the supplied self-tapping mounting screws.

Mounting the antenna using recloseable fastener tape (RFT)

When the unit is part of a panel assembly, the package includes six pieces of RFT. Use this tape between the antenna bracket and the enclosure. To mount the antenna using RFT:

1. Ensure all mounting surfaces are clean and free of dust, oils, and debris before applying the RFT.
2. Remove the adhesive backing on two pieces of RFT and place one piece on the bottom of each antenna bracket mounting foot.
3. Affix a mating piece of RFT onto each piece of RFT on the mounting bracket so that the fasteners mesh together. Remove the adhesive backing on the mating pieces.
4. Center the bracket over the 22 mm (7/8 in.) round bushing and apply the bracket to the top of the panel. Push down on the feet of the bracket until you feel the fasteners lock into position and the adhesive bonding to the panel is completely attached.

   □  Note: Extra pieces of RFT are provided so that you can change the mounting location on the top of the panel at a later date if necessary.

Attaching the antenna to the FX-ZFR1810 Wireless Field Bus Coordinator

To attach the antenna to the FX-ZFR1810 Coordinator:
1. Remove the top cover of the FX-ZFR1810 Coordinator by simultaneously pushing in both flexible tabs on one side of the unit, followed by pushing in the tabs on the other side of the unit.

2. Remove the top portion of the unit.

3. Apply the antenna wire firmly to the connection point (see Figure 1) until it locks into place.
   - **Important:** The connection from the antenna cable to the FX-ZFR1810 Coordinator is intended to be made only once. Do not remove it once you have inserted it into the jack. If you must remove the antenna, disassemble the case of the FX-ZFR1810 Coordinator and remove the antenna from the jack by pulling on the knurled end of the antenna’s connector only. Pulling on the antenna cable from anywhere else can result in damage to the antenna. Avoid any repeat removals and re-insertions as this may impact wireless connection integrity and unit performance.

4. Replace the top portion and cover of the FX-ZFR1810 Coordinator.

**Wiring**

**Wiring considerations and guidelines**

- **Important:** Do not connect supply power to the FX-ZFR1810 Coordinator before finishing wiring and checking all wiring connections. Short circuits or improperly connected wires may result in permanent damage to the FX-ZFR1810 Coordinator.

- **Important:** Use copper conductors only. Make all wiring in accordance with local, national, and regional regulations. The FX-ZFR1810 Coordinator is a low-voltage (less than 30 VAC) device. Do not exceed the FX-ZFR1810 Coordinator’s electrical ratings.

- **Important:** Prevent any static electric discharge to the FX-ZFR1810 Coordinator. Static electric discharge can damage the FX-ZFR1810 Coordinator and void any warranties.

- **Important:** Do not connect the FX-ZFR1810 Coordinator to the power supply before setting the PAN OFFSET switches.

Follow these guidelines when wiring an FX-ZFR1810 Coordinator:

- Route the wires at least 50 mm (2 in.) away from the vent slots on the sides of the FX-ZFR1810 Coordinator housing.
- Provide slack in the wires. Keep wires routed neatly around the FX-ZFR1810 Coordinator to promote good ventilation, Light-Emitting Diode (LED) visibility, and ease of service.

**Power input and communication**

Wiring for power input and communication uses one of two methods: terminal blocks or the FC Bus jack.

**Terminal Blocks - Power**

Use a 24 VAC nominal, 50/60 Hz, Class 2 power supply to power the FX-ZFR1810 Coordinator. See Table 4 for recommended Johnson Controls® transformers.

Connect the 24 VAC supply power wires from the transformer to the HOT and COM terminals of the 24 V~ three-position screw terminal pluggable block as shown in Figure 4 and Figure 1. The middle terminal is not used.

- **Note:** Transformers not manufactured by Johnson Controls may have different color wires. Follow the manufacturer’s instructions when mounting and wiring transformers.
Terminal Blocks - Communication
Connect the communication wires from the FX Supervisory Controller to the four-position screw terminal pluggable block, as shown in Figure 5 and Figure 1.

**Figure 5: FX-ZFR1810 Coordinator communication connection**

FC Bus Jack - Power and Communication
Use a six conductor SA Bus RS-485 cable with RJ12 connectors to connect the FX-ZFR1810 Coordinator to the FC Bus connector on an FX-PC Controller. This connection provides both power and communication to the FX-ZFR1810 Coordinator.

**Power Supply Output**

**Important:** Do not exceed the power supply output of the FX-ZFR1810 Coordinator. The FX-ZFR1810 Coordinator’s power supply input must be able to source the FX-ZFR1810 Coordinator and the connected external devices. Exceeding the power supply input limits may cause the FX-ZFR1810 Coordinator to shut down.

Use a six conductor SA Bus RS-485 cable with RJ45 connectors to connect an external FX-PC Controller to the FC BUS OUT jack as shown in Figure 1.

**Setup and adjustments**

**PAN Offset**
Set the PAN Offset value of the FX-ZFR1810 Coordinator using the DIP switches to configure the FX-ZFR1810 Coordinator to communicate with the FX-ZFR1811 Routers assigned to it. See Figure 1 and Figure 6.

**Important:** Ensure that the PAN Offset switches are set to the same value for the FX-ZFR1810 Coordinator and each associated FX-ZFR1811 Router, and FX-WRZ Series Sensor in a mesh network.

**Important:** To avoid MS/TP address conflicts, **do not** connect the FX-ZFR1810 Coordinator to the power supply before setting the PAN Offset switches.

The PAN Offset value equals the sum of the numbers set to ON. For example, if the DIP switches labelled 1, 4, and 8 are set to ON, the PAN Offset value is 13 (1 + 4 + 8 = 13).

When selecting a PAN Offset value for a wireless system:

- Use a unique PAN Offset value for each wireless mesh network at a job site.
- Use the same PAN Offset value for each wireless device in a wireless mesh network - the FX-ZFR1810 Coordinator and each associated FX-ZFR1811 Router and FX-WRZ Series Sensor.

### PAN Offset and MS/TP Address Interaction

The MS/TP address is **120 plus the sum of the first three values** of the PAN Offset that are set to the ON position, giving an MS/TP address range of 120 to 127.

**Note:** Only the values associated with the first three switches (right to left) set to the ON position count towards the MS/TP address of the FX-ZFR1810 Coordinator. See the top of Figure 6.
Note: On some date code labels, the switch position numbers on the bottom of the DIP switch are reversed. In either case, the switch positions are always read right to left.

In Figure 6, the PAN Offset of the FX-ZFR1810 Coordinator is configured by adding the values associated with the first seven switch positions (right to left). The eighth switch is not used. In Figure 6 the PAN Offset is configured to 13 (values 1, 4, and 8 are set to the ON position). The MS/TP address of the FX-ZFR1810 Coordinator is configured by adding the values associated with the first three switch positions (right to left). The sum of the first three values of the PAN offset DIP switch is 5, so the MS/TP address of the FX-ZFR1810 Coordinator is 120 + 5, which equals 125.

Setting the FC Bus End-of-Line (EOL) Switch

The FC Bus End-of-Line termination switch allows you to designate the FX-ZFR1810 Coordinator as the end of the FC Bus. The default position is OFF. If the FX-ZFR1810 Coordinator is at the end of a daisy chain of devices on the FC Bus, set the EOL switch to the ON position. See Figure 1 and Figure 7.

Troubleshooting

Wireless Signal Strength

A wireless signal strength indication LED displays the reception strength of the transmissions between the FX-ZFR1810 Coordinators, FX-ZFR1811 Routers, and FX-WRZ Series Sensors. This LED helps determine the network connectivity status when selecting locations for the devices during system installation.

Approximately once every 10 seconds, the Signal Strength LED flashes to indicate the reception strength of the signal from neighboring devices. See Table 3 and Figure 1.

Refer to the FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660) for more information on determining the signal strength between FX-ZFR Series devices in your application.

FX-WRZSST-120 Wireless Sensing System Tool

Use the FX-WRZSST-120 Wireless Sensing System Tool with an FX-WRZ Series Sensor as a site survey tool to determine the wireless signal strength between an FX-ZFR1810 Coordinator and an FX-ZFR1811 Router or between two FX-ZFR1811 Routers. Refer to the FX-WRZSST-120 Wireless Sensing System Tool Installation Instructions (Part No. 24-10563-71) for more information on testing signal strength in your application.

Network Optimize/Reform Button

The Network Optimize/Reform Button allows the FX-ZFR1810 Coordinator to use any of three functions:

• Signal Strength
• Network Optimize
• Network Reform

Use the Signal Strength mode to aid in signal strength testing.
Use the Network Optimize mode to clear the mesh device routing tables of the FX-ZFR1811 Routers and attempt to find shorter and/or stronger signal paths to the FX-ZFR1810 Coordinator.

Note: The Network Optimize process can take up to 15 minutes to complete.

Refer to the FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660) for more information about the Network Reform function.

Table 2: Network optimize/Reform button

<table>
<thead>
<tr>
<th>Holding the Network Optimize/Reform Button for ___</th>
<th>Puts the FX-ZFR1810 Coordinator into the _____ Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 Seconds</td>
<td>Signal Strength</td>
</tr>
<tr>
<td>5-10(^1)</td>
<td>Network Optimize</td>
</tr>
<tr>
<td>more than 10(^2)</td>
<td>Network Reform</td>
</tr>
</tbody>
</table>

1. Once the Signal Strength LED begins blinking rapidly, release the button (between 5 to 10 seconds).
2. Once the Signal Strength LED stops blinking rapidly and stays ON, release the button (approximately 10 seconds).

Troubleshooting LEDs

The FX-ZFR1810 Coordinator has five LEDs that indicate power, fault status, FC Bus activity, wireless activity, and signal strength. See Figure 1. These status LEDs are described in Table 3.

Table 3: FX-ZFR1810 Coordinator Status LEDs

<table>
<thead>
<tr>
<th>Name</th>
<th>Color</th>
<th>Normal</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>Green</td>
<td>On</td>
<td><strong>Off Steady</strong> = No power. <strong>On Steady</strong> = Normal operation (power available from 24 VAC connector or FX-PCSensor Actuator [FC/SA] Bus IN jack).</td>
</tr>
<tr>
<td>Fault</td>
<td>Red</td>
<td>Off</td>
<td><strong>Off Steady</strong> = Normal. <strong>On Steady</strong> = Internal Errors detected.</td>
</tr>
<tr>
<td>FC Bus</td>
<td>Green</td>
<td>Blink</td>
<td><strong>Blink - 2 Hz</strong> = Normal operation (FX-ZFR1810 Coordinator is receiving BACnet® frames over the wire). <strong>Off Steady</strong> = Attempting to Auto Baud, or not connected to active MS/TP network. <strong>On Steady</strong> = Auto Baud complete and not receiving BACnet frames.</td>
</tr>
<tr>
<td>Wireless</td>
<td>Green</td>
<td>Blink</td>
<td><strong>Blink - 2 Hz</strong> = Normal operation (FX-ZFR1810 Coordinator is receiving BACnet frames over the wire). <strong>Off Steady</strong> = Not receiving BACnet frames. <strong>On Steady</strong> = Stopped receiving BACnet frames.</td>
</tr>
</tbody>
</table>
Table 3: FX-ZFR1810 Coordinator Status LEDs

<table>
<thead>
<tr>
<th>Name</th>
<th>Color</th>
<th>Normal</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Strength</td>
<td>Green</td>
<td>Signal Strength(^1)</td>
<td>OFF Steady = Not able to start a network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indication:</td>
<td>ON Steady with Signal Strength displayed once every 10 seconds = Normal operation(FX-ZFR1810 Coordinator is a member of a wireless network).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Flashes - Excellent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Flashes - Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Flash - Weak</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF for 3 seconds - None</td>
<td></td>
</tr>
</tbody>
</table>

1  Signal Strength appears once every 10 seconds or when the Network Optimize/Reform button on the FX-ZFR1810 Coordinator is depressed momentarily (less than 5 seconds).

Repair information

If the FX-ZFR1810 Wireless Field Bus Coordinator fails to operate within its specifications, replace the unit. For a replacement FX-ZFR1810 Coordinator, contact the nearest Johnson Controls representative.

\(\Box\)  **Note:** The firmware in the FX-ZFR1810 Coordinator can be upgraded using the Controller Configuration Tool (CCT).

Accessories

Table 4: Accessories (order separately)

<table>
<thead>
<tr>
<th>Product code number</th>
<th>Product description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP-2420</td>
<td>Transformer, Wall Plug Mount, 120 VAC to 24 VAC, 20 VA, Class 2</td>
</tr>
<tr>
<td>FX-WRZSST-120</td>
<td>Wireless Sensing System Tool: For Use with an FX-WRZ Series Sensor, to Function as a Site Survey Tool for the FX-WRZ7860 One-to-One Room Temperature Sensing System, or for the FX-ZFR1800 Series Wireless Field Bus System</td>
</tr>
<tr>
<td>Y6ST31-0(^1)</td>
<td>Transformer, 120/208/240 VAC to 24 VAC, 40 VA, Class 2, Foot Mount, 20 cm (8 in.) Primary Leads and Secondary Screw Terminals</td>
</tr>
<tr>
<td>ZFRUSBHA-0</td>
<td>USB Dongle with ZigBee® Driver provides a wireless connection through the CCT to allow wireless commissioning of the wireless enabled FX-PCA, FX-PCG, FX-PCX, and FX-PCV controllers. The USB ZigBee Dongle is also used with the FX-ZFR Checkout Tool used to troubleshoot and validate FX-ZFR wireless meshes using a laptop computer.</td>
</tr>
<tr>
<td>ZFR-1810ANT-700</td>
<td>Replacement antenna kit for FX-ZFR1810 Wireless Field Bus Coordinator. Includes antenna, coaxial cable, and mounting hardware</td>
</tr>
</tbody>
</table>

1  Additional Y60 Series Transformers are available from Johnson Controls.
## Technical specifications

### Table 5: FX-ZFR1810 Wireless Field Bus Coordinator

<table>
<thead>
<tr>
<th>Product Code Number</th>
<th>FX-ZFR1810-x</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Supply Input</strong></td>
<td>One of the following:</td>
</tr>
<tr>
<td></td>
<td>• 24 VAC +10%/-15%, 50/60 Hz, Class 2. Transformer allowance should be 2.5 VA maximum, 2 VA typical. Provided through the 3-Position 24 V~ screw terminal pluggable block.</td>
</tr>
<tr>
<td></td>
<td>• 15 VDC, 180 mA (7 to 18 VDC, 185 mA maximum current draw) on the FC Bus provided through the FC/SA BUS IN RJ-12 jack from the FC Bus Jack on an FX-PC Controller.</td>
</tr>
<tr>
<td><strong>Power Supply Output</strong></td>
<td>15 VDC; Provided through the FC/SA BUS, FC/SA BUS OUT RJ-12 jack for external devices.</td>
</tr>
<tr>
<td><strong>Addressing</strong></td>
<td>DIP Switches, Field Adjustable</td>
</tr>
<tr>
<td><strong>Wireless Band</strong></td>
<td>Direct-Sequence Spread-Spectrum, 2.4 GHz ISM Bands</td>
</tr>
<tr>
<td><strong>Transmission Power</strong></td>
<td>10 mW Maximum</td>
</tr>
<tr>
<td><strong>Transmission Range</strong></td>
<td>76.2 m (250 ft) Maximum Line-of-Sight 15 m (50 ft) Practical Average</td>
</tr>
<tr>
<td><strong>Ambient Conditions</strong></td>
<td>Operating: 0°C to 50°C (32°F to 122°F), 5% to 95% RH, Noncondensing</td>
</tr>
<tr>
<td></td>
<td>Storage: -20°C to 70°C (-4°F to 158°F), 5% to 90% RH, Noncondensing</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td>White Plastic Housing with Plenum rating per UL1995 UL94-5VB Flammability Rating</td>
</tr>
<tr>
<td><strong>Terminations</strong></td>
<td>Two spade terminals with three-position screw terminal pluggable block for 24 VAC power supply input.</td>
</tr>
<tr>
<td></td>
<td>Four spade terminals with four-position screw terminal pluggable block for RS-485 communications.</td>
</tr>
<tr>
<td></td>
<td>RJ-12 IN jack for 15 VDC power supply and communications connection from an FC Bus jack.</td>
</tr>
<tr>
<td></td>
<td>RJ-12 OUT jack supplies 15 VDC and communications to FX-BTCVT Wireless Commissioning Converter.</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>146 mm x 122 mm x 52 mm (5-3/4 in. x 4-13/16 in. x 2-1/16 in.)</td>
</tr>
<tr>
<td><strong>Mounting Hardware</strong></td>
<td>Four No. 6 Trade Size Sheet Metal Screws</td>
</tr>
<tr>
<td><strong>Shipping Weights</strong></td>
<td>0.45 kg (1.0 lb)</td>
</tr>
<tr>
<td><strong>Compliance</strong></td>
<td>United States: Intended for Connection to an NEC Class 2 Power Source; UL 916 Energy Management</td>
</tr>
<tr>
<td></td>
<td>Plenum rated per UL1995 UL94-5VB Flammability Rating</td>
</tr>
<tr>
<td></td>
<td>FCC Compliant to CFR47, Part 15, Subpart B, Class A</td>
</tr>
<tr>
<td></td>
<td>Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters</td>
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<td>Transmitter Identification ZFR1810-0: FCC: TFB-MATRIXL</td>
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<td>Transmitter Identification ZFR1810-1: FCC: OEJ-WRZRADIO</td>
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</table>
Table 5: FX-ZFR1810 Wireless Field Bus Coordinator

**Canada:**
CAN/CSA C22.2 No. 205, Signal Equipment
Industry Canada (IC) Compliant to Canadian ICES-003, Class B Limits

**Industry Canada (IC) RSS-210:**
Transmitter Identification ZFR1810-0: IC: 5969A-MATRIXLP
Transmitter Identification ZFR1810-1: IC: 279A-WRZ RADIO

**Australia and New Zealand:** RCM Mark, Australia/NZ Emissions Compliant

**Europe:**
CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.

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

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Points of single contact

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<thead>
<tr>
<th>APAC</th>
<th>Europe</th>
<th>NA/SA</th>
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</thead>
<tbody>
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<td>JOHNSON CONTROLS</td>
<td>JOHNSON CONTROLS</td>
</tr>
<tr>
<td>C/O CONTROLS PRODUCT MANAGEMENT</td>
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<td>MILWAUKEE WI 53202</td>
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<td>GERMANY</td>
<td>USA</td>
</tr>
<tr>
<td>CHINA</td>
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