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Description

The Verasys Pro (ZFR) Series Wireless Field Bus System provides a wireless platform for the TEC3000 Thermostat Controllers (TEC). The TEC family of controllers use BACnet® protocol over a 2.4 GHz wireless ISM band.

A ZFR Pro Series system can consist of the following:

- ZFR 1825 BACnet MSTP coordinators
- TEC3000 Wireless Thermostat Controllers
- ZFR1821 or ZFR1822 Pro Routers acting as repeaters

Note: Repeaters extend the wireless transmission distance of the BACnet data communications, fill in any gaps within the wireless mesh network, and provide alternate wireless data transmission pathways.

Together, these components create a wireless mesh network that allows the exchange of data between the collection of coordinators, TEC3000s within the ZFR Pro Series system's wireless network, and the smart building hub.

The wireless mesh network enhances reliability by providing redundant transmission paths for the data through other routers in the mesh network. The result is a resilient, self-healing network.

Features

- wireless Communications for a Verasys System wireless mesh network
- improved application mobility and flexibility
- multiple diagnostic light-emitting diodes (LEDs) and display icons
- easy-to-install, and integrate wireless hardware

Applications

The wireless Verasys products within a Verasys system are ideal for any location where it is cost-prohibitive, difficult, or aesthetically unappealing to hardwire between Verasys products. Examples of these locations include the following:

- Office buildings, retail stores, and other commercial real estate where tenant turnover is frequent and temporary walls and ceilings are common
- Museums, historical buildings, atriums, and other sites where building aesthetics and historical preservation are important
- Arenas, gymnasiums and other locations with large, open spaces wood veneer, or other decorative surfaces that present challenges to hardwiring
- Buildings with asbestos or other hazardous materials that must not be disturbed
- Buildings with occupants sensitive to business disruptions
- Regions with high labor costs

The ZFR Pro Series System is approved by national compliance agencies for use in the United States and Canada. See the _Technical Specifications_ table in this document.

Locations or applications that prohibit cellular telephones or Wi-Fi systems are unsuitable for the wireless Verasys products.
Do not use the wireless Verasys products in applications that cannot tolerate intermittent interference or where the following may occur:

- critical control features affect life safety or result in large monetary loss, including secondary backup life-safety applications

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- data centers, production lines, or critical areas would be shut down
- loss of critical control would result from loss of data from humidity or temperature sensor communications
- operation of exhaust fans or Air Handling Units (AHUs) would impair a purge or pressurization mode
- missing data would invalidate reporting required by the customer
- Monitored security points

Repair Information

If a Verasys Pro Series Wireless Field Bus System component fails to operate within its specifications, replace the unit.
For a replacement Verasys Pro Series Wireless Field Bus System component, contact the nearest Johnson Controls® representative.
For ordering information on the Wireless TEC3000s, refer to the _TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet® MS/TP or N2 Networked Thermostat Controllers Product Bulletin (LIT-12011954)._

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Selection Charts

Verasys Pro Series Wireless Field Bus System Components

Code Number	Description
LC-ZFR1825-0	The LC-ZFR1825-0 kit is comprised of the following components: • ZFR1825 coordinator and mounting base with 110/220 VAC power supply • ZFR1825 antenna with mounting bracket
LC-ZFR1821-0B	The LC-ZFR1821-0B kit is comprised of the following components: • ZFR1821 Pro Router, electrical mechanical tubing (EMT) mount, with 3-ft RJ-12 connecting cable • 24 VAC to 15 VDC power supply for the router • Box mount for ZFR1821 Pro Router • Use the ZFR1821 EMT mount repeater for above the ceiling mounting. • Use the alternative ZFR1822 Pro Router for flush wall-mount or below the ceiling-mount applications. **Note:** A field-provided ceiling clip is required to mount the ZFR1822 Pro Router below grid ceilings.
LC-ZFR1822-0B	The LC-ZFR1822-0B kit is comprised of the following components: • ZFR1822 Pro Router, wall-mount, with 10 ft RJ-12 connecting cable • 24 VAC to 15 VDC power supply for the router • Drywall-mounting hardware- ceiling clips not provided due to variety of ceiling types **Note:** Use the ZFR1822 Pro Router for flush wall-mount or below the ceiling-mount applications. A field-provided ceiling clip is required to mount the ZFR1822 Pro Router below grid ceilings. Use the alternative ZFR1821 Pro Router, EMT mount, for above the ceiling mounting.
LC-ZFR1821-0	The LC-ZFR1821-0 kit is comprised of the following components: • ZFR1821 Pro Router, EMT mount, functions with *Metasys* BACnet WEFCs and WRZ Series Sensors • Box mount for ZFR1821 **Note:** Use the ZFR1821 EMT mount repeater for above the ceiling mounting. Use the alternative ZFR1822 Pro Router for flush wall-mount or below the ceiling-mount applications. A field-provided ceiling clip is required to mount the ZFR1822 Pro Router below grid ceilings.
LC-ZFR1822-0	The LC-ZFR1822-0 kit is comprised of the following components: • ZFR1822 Pro Router and wall-mount • Drywall-mounting hardware- ceiling clips not provided due to variety of ceiling types **Note:** Use the ZFR1822 Pro Router for flush wall-mount or below the ceiling-mount applications. A field-provided ceiling clip is required to mount the ZFR1822 Pro Router below grid ceilings. Use the alternative ZFR1821 EMT mount repeater for above the ceiling mounting.

Accessories

Code Number	Description
ZFR-CBLEXT-0	The ZFR-CBLEXT-0 extends where you can install wireless conduit-mount or wall-mount Pro Routers and Pro Coordinator Radios. • ZFR1820/ZFR1821 router / repeater comes with a 3 ft cable terminated with male RJ12 • ZFR1822/ZFR1823 router repeater comes with a 10 ft cable terminated with male RJ12 • The length of the cable in the ZFR-CBLEXT-0 is 10 ft
ZFR-WallCover	The ZFR-Wall Cover is an optional accessory of the WNC1800/ZFR1820 Series System. Use the ZFR wall cover to mount the ZFR1822 or ZFR1823 wall-mount wireless radio to an existing double-gang electrical box.
WRZ-SST-120	Use the Optional Wireless Sensing System Tool with a WRZ Series Sensor to indicate wireless signal strength between potential locations of ZFR1800 System devices.
1.5 VDC, AA Alkaline Battery	Replacement battery for WRZ Series Sensors - purchase locally.

Technical Specifications

ZFR1825 Wireless Field Bus Coordinator (Part 1 of 2)

Product Code Number	MS-ZFR1825-x
Power Supply Input	**Select one of the following power supply inputs:** • 24 VAC +10%/-15%, 50/60 Hz, Class 2. Transformer allowance 2.5 VA maximum, 2 VA typical. Provided through the three-position 24 V~ screw terminal pluggable block. • 15 VDC, 180 mA (7 to 18 VDC, 185 maximum current draw) on the FC Bus provided through the FC/SA BUS IN RJ-12 jack from the FC Bus Jack on a Field Controller or NxE supervisory engine.
Power Supply Output	15 VDC provides power through the FC/SA BUS, FC/SA BUS OUT RJ-12 jack for external devices.
Addressing	DIP Switches, field adjustable.
Wireless Band	Direct-Sequence Spread-Spectrum, 2.4 GHz ISM bands
Transmission Power	10 mW maximum
Transmission Range	76.2 m (250 ft) maximum Line-of-Sight 15 m (50 ft) - is best practice

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Technical Specifications

ZFR1825 Wireless Field Bus Coordinator (Part 2 of 2)

Ambient Conditions	Operating: 0°C to 50°C (32 to 122°F), 5% to 95% RH, noncondensing Storage: -20°C to 70°C (-4 to 158°F), 5% to 90% RH, noncondensing
Materials	Product complies with Plenum Rating per UL2043. Suitable for use in other environmental air space (Plenums) in accordance with section 300.22 © of the National Electric Code.
Terminations	Two spade terminals with three-position screw terminal pluggable block for 24 VAC power supply input Four spade terminals with four-position screw terminal pluggable block for RS-485 communications RJ-12 IN jack for 15 VDC power supply and communications connection from an NxE or FEC FC Bus jack RJ-12 OUT jack supplies 15 VDC and communications to BTCVT Wireless Commissioning Converter
Dimensions	146 mm x 122 mm x 52 mm (5.8 x 4.8 x 2.1 in.)
Mounting Hardware	Four No. 6 trade size sheet metal screws
Shipping Weights	0.45 kg (1.0 lb)
Compliance	**United States**: Intended for connection to an NEC Class 2 power Source; UL 916 Energy Management Plenum rating per UL 2043 FCC Compliant to CFR47, Part 15, Subpart B, Class A Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters Transmitter Identification ZFR1825-0: FCC: TFB-MATRIXL Transmitter Identification ZFR1825-1: FCC: OEJ-WRZRADIO **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 ZFR1825-0: 5969A-MATRIXLP Transmitter Identification ZFR1825-1: 279A-WRZRADIO **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. CE

ZFR1821 and ZFR1822 Pro Wireless Field Bus Router-Repeater (Part 1 of 2)	
Product Code Number	LC-ZFR1821-0: Wireless Field Bus Router, Conduit-Mount, for Field Controller Router Applications LC-ZFR1822-0: Wireless Field Bus Router, Wall-Mount, for Field Controller Router Applications LC-ZFR1821-0B: Wireless Field Bus Router, Conduit-Mount, with 24 VAC Power Supply for Field Controller Router Applications LC-ZFR1822-0B: Wireless Field Bus Router, Wall-Mount, with 24 VAC Power Supply for Field Controller Router Applications
Power Supply Input	15 VDC nominal. Provided through the RJ-12 cable connected from a field controller or repeater power supply.
Addressing	DIP Switches, field Adjustable
Wireless Band	Direct-Sequence Spread-Spectrum, 2.4 GHz ISM bands
Transmission Power	10 mW maximum
Transmission Range	76.2 m (250 ft) maximum Line-of-Sight 15 m (50 ft) - is best practice
Ambient Conditions	**Operating:** 0°C to 50°C (32 to 122°F), 5% to 95% RH, Noncondensing **Storage:** -20°C to 70°C (-4 to 158°F), 5% to 90% RH, Noncondensing
Materials	ZFR1821: White plastic housing with Plenum rating per UL1995 UL94-5VB flammability rating ZFR1822: White PC/ABS Cycoloy
Terminations	RJ-12 plug for connection to field controllers or Repeater Kit power supply
Dimensions	ZFR1821: 136 mm x 100 mm x 18 mm (5-3/8 in. x 3-15/16 in. x 3/4 in.) ZFR1822: 61 mm x 100 mm x 20.5 mm (5-3/8 in. x 3-15/16 in. x 3/4 in.)
Mounting Hardware	ZFR1821: 1/2 in. trade size EMT connector ZFR1822: Screw mounted

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ZFR1821 and ZFR1822 Pro Wireless Field Bus Router-Repeater (Part 2 of 2)	
Shipping Weights	ZFR1821: 0.095 kg (0.21 lb) ZFR1822: 0.113 kg (.25 lb) Repeater Power Supply: 227 kg (.50 lb)
Compliance	**United States:** UL 916 Energy Management Plenum-rated per UL1995 UL94-5VB Flammability Rating FCC Compliant to CFR47, Part 15, Subpart B, Class A Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters Transmitter Identification ZFR1821/ZFR1822: FCC: OEJ-WRZRADIO **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 ZFR1821/ZFR1822: 279A-WRZRADIO **Australia and New Zealand:** RCM Mark, Australia/NZ Emissions Compliant **Europe:** CE Mark – Johnson Controls declares that this product in compliance with the essential requirements and other relevant provisions of the EMC Directive.

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