WRG1830/ZFR183x Pro Series Wireless Field Bus System Catalog Page

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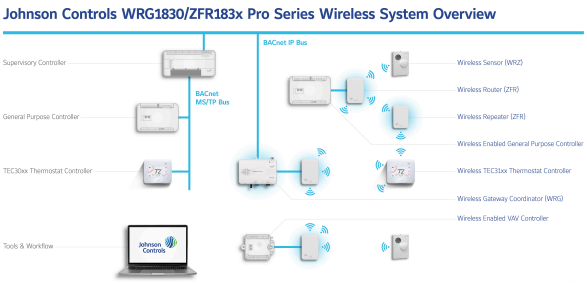

Description

The WRG1830/ZFR183x Pro Series Wireless Field Bus System provides a wireless platform for all compatible Johnson Controls® MS/TP equipment controllers and TEC31xx Thermostat Controllers (TEC) using BACnet® protocol over the 2.4 GHz wireless ISM band.

A ZFR183x Pro Series system can consist of the following devices:

- Wireless Router Gateway (WRG1830) with a connected ZFR1831 Router acting as the wireless Personal Area Network (PAN) coordinator
- TEC31xx Wireless Thermostat Controllers
- ZFR1831 router connected to compatible equipment controllers
- ZFR1831 router stand-alone devices acting as a signal repeater
- WRZ Series Wireless Room Sensors

When you use these components together, they form a wireless mesh network. The following devices can exchange data through standard BACnet IP communication: WRG Gateways, compatible equipment controllers, TEC31xxs, and WRZs within the ZFR183x Pro Series system's wireless network and a network engine using standard BACnet/IP communications.

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

Refer to the applicable *WRG1830/ZFR183x Pro Series Wireless Field Bus System Technical Bulletins (LIT-12013553, LIT-12013554)* for important product application information.

Figure 1: WRG1830/ZFR183x Pro Series Wireless Field Bus System components

ZFR Pro Series platform features

- Wireless communications for a BAS system wireless mesh network.
- Improved application mobility and flexibility.
- Support of up to nine WRZ Series Wireless Room Sensors for each Wirelessly Enabled Field Controller (WEFC).
- Compact, easy to install, and to integrate wireless hardware.

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WRG1830/ZFR183x Pro Series enhancements

- Longer range with fewer repeaters due to higher power radios.
- Higher security for wireless networks and devices.
- Longer sensor battery life.
- Common router hardware simplifies the ordering and stocking process.
- No external power supplies required for repeaters because it supports direct 24VAC.
- More flexible mounting and wiring options.
- Multi-color LEDs provide clear network status during installation and operation.
- Embedded commissioning, diagnostic, and reporting features within the WRG.

Applications

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

- Office buildings, university campuses, educational facilities, correctional facilities, and other commercial structures with brick or solid concrete walls or ceilings, that impede hardwired applications.
- 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.
- Stadiums, arenas, gymnasiums, convention centers, airports, zoos, and other locations with large, open spaces with 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 WRG1830/ZFR183x Pro Series Wireless Field Bus System is approved by national compliance agencies for use in the United States and Canada. See the Technical specifications section for more information.

Do not use the wireless BAS products in applications that cannot tolerate intermittent interference or where the following conditions apply:

- Locations or applications that prohibit cellular telephones or Wi-Fi systems.
- Critical control features would affect life safety or result in large monetary loss, including secondary (backup) life-safety applications.
- 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.
- Security points are monitored.

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Selection charts

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)*. For ordering information on the WRZ Series sensors, refer to the *WRZ Series Wireless Room Sensors Product Bulletin (LIT-12011653)*. For more information on supported controllers, refer to the *WRG1830/ZFR183x Pro Series Wireless Field Bus System Technical Bulletin (LIT-12013553)*.

Table 1: WRG1830/ZFR183x Pro Series Wireless Field Bus System components

Product code	Description
JC-WRGKIT-0	The JC-WRGKIT-0 kit includes the following components: • JC-WRG1830-0: Wireless Router Gateway (WRG) • JC-ZFR1831-0: ZFR1831Pro Wireless Router • ACC-WIFIKIT-0DU: USB Wi-Fi Dongle Order one for each wireless network.
JC-ZFR1831-0	The JC-ZFR1831-0 kit includes the following: • One ZFR1831 Pro Wireless Router Order one for each field controller or one for each repeater that you require.

Table 2: Optional accessories

Product code	Description
ZFR-CBLEXT-0	The optional ZFR-CBLEXT-0 includes: • One ZFR-CBLEXT-1. • One female to female RJ12 coupler to connect multiple cables. ⓘ **Note:** The ZFR1831 Router/Repeater physical cabling can be extended up to 100 ft maximum. ⓘ **Note:** The ZFR1831 Router/Repeater physical cabling termination can be either RJ12 or terminal block.
ZFR-CBLEXT-1	The optional ZFR-CBLEXT-1 includes: • One 10 ft RJ12 terminated cable to connect the ZFR1831 Pro Router/Repeater to the controller or the WRG1830.

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Table 2: Optional accessories

Product code	Description
ZFR-HPSST-0	The ZFR-HPSST-0 includes: • One ZFR1831 Router • One ZFR-SSTBAT-0 Battery Pack • Two magnets to temporarily mount devices The ZFR-HPSST-0 is a selectable 10 mW/100 mW wireless survey tool. Use this tool to verify the expected signal strength and performance of ZFR183x wireless devices after installation. ⓘ **Note:** Use any JC-ZFR1831-0 as an HPSST simply by connecting the battery case (ZFR-HPSST-0) and moving the battery jumper. ➤ **Important:** Two ZFR-HPSST-0 tools are required to perform signal strength testing. It is recommended that each installation team have a pair of ZFR-HPSST tools.
ZFR-SSTBAT-0	The ZFR-SSTBAT-0 is a replacement or spare battery case with connector for use with the ZFR1831 Router when used as a Survey tool. • Includes two 1.5VDC, AA Alkaline batteries
AA alkaline battery, 1.5 VDC	Replacement battery for WRZ Series Sensors, purchase locally. ⓘ **Note:** The WRZ Sensor ships with quantity two alkaline batteries. Longer battery life can be achieved if locally replaced with lithium batteries.
ACC-PWRKIT-1A24	The optional kit includes: • One WRG 110/220 VAC Power Supply for North America ⓘ **Note:** The Wireless Router Gateway (WRG) supports 24 VAC input by default
ACC-WIFIKIT-0DU	This ACC-WIFIKIT-0DU kit is a replacement or spare Wireless Router Gateway (WRG) Wi-Fi Dongle for North America
JC-WRG1830-0	The WRG1830-0 is a replacement or spare WRG Gateway. The kit includes: • One WRG1830-0 Gateway

Repair information

If a WRG1830/ZFR183x Pro Series Wireless Field Bus System component fails to operate within its specifications, replace the unit. For a replacement WRG1830/ZFR183x Pro Series Wireless Field Bus System component, contact the nearest Johnson Controls representative.

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Related documentation

The following table includes additional information concerning wireless information.

Document title	Documentation number
WRG1830/ZFR183x Wireless Best Practices	*LIT-12013552*
Wireless Router Gateway (WRG1830) Installation Guide	*Part No. 24-11460-00018*
ZFR1831 Wireless Bus Router Installation Guide	*Part No. 24-11461-00004*
WRG1830 Wireless Gateway Users Guide	*LIT-12013550*
WRG1830/ZFR183x Wireless Field Bus Technical Bulletin - Metasys	*LIT-12013550*
WRG1830/ZFR183x Wireless Field Bus Technical Bulletin - FX	*LIT-12013554*
ZFR-HPSST-0 High Power Wireless Sensing System Installation Guide	*Part No. 24-11461-00012*

Technical specifications

Table 3: ZFR1831 Router used as coordinator, controller, and repeater

Specification	Description
Product code number	JC-ZFR1831-0: Wireless Field Bus Router
Power supply input	15 VDC with cable connected to field controller, or 24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60 Hz, power supply Class 2.
Addressing	Rotary switches, field adjustable
Wireless band	Direct-Sequence Spread-Spectrum, 2.4 GHz ISM Bands
Transmission power	100 mW maximum (selectable)
Transmission range	75 m (250 ft) maximum at 100mW 304.8 m (1000 ft) maximum line-of-sight at 100 mW ⓘ **Note:** Site and installation conditions have an impact on the actual reliable range.
Ambient conditions	Operating: -40°C to 75°C (-40°F to 167°F), 5% to 95% RH, Noncondensing Storage: -40°C to 85°C (-40°F to 185°F), 5% to 95% RH, Noncondensing
Materials	Plastic housing with plenum rating per UL 2043.
Terminations	RJ-12 plug or 4-pin terminal
Dimensions, H x W x D	127 mm x 85.7 mm x 31.75 mm (5 in. x 3-3/8 in. x 3/4 in.)
Mounting	Conduit: 1/2 in. trade size Electrical Mechanical Tubing (EMT) connector Screw mounted: Wall or Gang Box Ceiling Grid: T-Track clip (Grainger Item #45DN38 or equivalent). See https://www.grainger.com/ for more information.
Shipping weight	0.387 kg (0.852 lbs)

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Table 3: ZFR1831 Router used as coordinator, controller, and repeater

Specification	Description
Purpose of control	Operating control
Construction of control and whether the control is electronic	Independently mounted
TYPE 1 or TYPE 2 action	TYPE 1
External pollution situation	Pollution degree 2
Rated impulse voltage	330 V
15 VDC External power supply	Intended for connection to Johnson Controls field controllers that support the standard Johnson Controls FC Bus implementation
Product model	ZFR18
Compliance	**United States:** UL 60730-1, Energy Management Equipment. Suitable for Use in Other Environmental Air Space (Plenums) in Accordance with Section 300.22, (C) of the National Electrical Code. 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 ZFR1831: FCC ID: OEJ-ZFRRADIO
	Canada: CAN/CSA E60730-1, Energy Management Equipment. Industry Canada (IC) Compliant to Canadian ICES-003, Class B Limits Industry Canada (IC) RSS-210 Transmitter Identification ZFR1831: 279A-ZFRRADIO
ANATEL	Brasil: Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. ANATEL: 09243-21-06174.
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: RCPJOZF22-4335.

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Table 4: Technical specifications WRG1830 Gateway

Specification	Description
Power consumption	38 W maximum
Ambient temperature conditions	Operating: 0°C to 50°C (32°F to 122°F) Operating survival: -30°C to 60°C (-22°F to 140°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Ambient humidity conditions	Storage: 5% RH to 95% RH 30°C (86°F) maximum dew point conditions Operating: 10% RH to 90% RH, 30°C (86°F) maximum dew point conditions
Transmission speeds	Ethernet communication: 10 Mbps, 100 Mbps, 1 Gbps
Transmission Power Wi-Fi Access Point dongle, maximum	100mW
Transmission Range Wi-Fi Access Point dongle	WiFi communication: 30 m (100 ft) line-of-sight indoors
Transmission Power ZFR183x Mesh through connected ZFR1831 Router	User selectable: 100mW (default) 50mW 25mW 10mW
Transmission Range ZFR1831 Mesh through connected ZFR1831 Router	75 m (250 ft) Maximum at 100mW304.8 m (1000 ft) Maximum Line-of-Sight at 100 mW ⓘ **Note:** Site and installation conditions have an impact on the actual reliable range.
Serial interfaces	• One ZFR Radio port (one 6-pin RJ12 jack and one 4-pin screw terminal) • One FC Bus port (one 4-pin screw terminal)[not used] • Three USB ports (one Micro-B port, and two USB A ports). All support USB 2.0 and Open Host Controller Interface [Open HCI] specification.
Dimensions, H x W x D	190 mm x 125 mm x 44.5 mm (7.48 in. x 4.92 in. x 1.75 in.)
Housing	White Polycarbonate and Acrylonitrile butadiene styrene (ABS) blend
Weight	.387kg (.852 lbs)
Web browser requirements for computers and handheld devices	Computer: Windows Internet Explorer® 10 and Windows Internet Explorer 11, or Google® Chrome™ Handheld device: The handheld device must run either Internet Explorer Mobile for Windows® Mobile version 5 or version 6 operating system (OS); Android™ or Google Chrome. Other web browsers may display the UI, but the functionality is not guaranteed.

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Table 4: Technical specifications WRG1830 Gateway

Specification	Description
Compliance	**United States:** UL Listed File E107041, CCN PAZX, UL 916, Energy Management Equipment, FCC Compliant to CFR47, Part 15, Subpart B, Class A.
	Canada: UL listed file E107041, CCN PAZX7, CAN/CSA C22.2 No.205, Signal Equipment; Industry Canada Compliant.

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.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: https://jcipat.com

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Contact information

Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations
Contact Johnson Controls: www.johnsoncontrols.com/contact-us

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