

WRS Series

Many-to-One Wireless Room Temperature Sensing System

Description

The Many-to-One Wireless Room Temperature Sensing System is designed to gather temperature and zone data from multiple wireless room temperature sensors, and distribute that data to multiple field controllers on a Metasys® network. The Many-to-One system replaces hardwired temperature sensors, reducing installed costs by allowing easy installation of wireless sensors in applications where hardwired temperature sensors are impractical or costly to install.

A Many-to-One system consists of multiple WRS-TTx Series Wireless Room Temperature Sensors communicating with one or more WRS-RTN Series Receivers. The receivers collect wireless temperature, zone, and battery-condition data messages and route that data over Ethernet to a Network Automation Engine (NAE) or a Network Control Engine (NCE). The NAE or NCE distributes the temperature and zone data to supported BACnet®, N2, and LONWORKS® controllers on a Metasys network.

The Many-to-One system operates at 2.4 GHz and uses a multiple-frequency Direct-Sequence, Spread-Spectrum (DSSS) technology to virtually eliminate accidental and unauthorized Radio Frequency (RF) interference with other wireless applications. The Many-to-One design meets the IEEE 802.15.4 standard for low power, low duty cycle wireless RF systems.

Refer to the *WRS Series Many-to-One Wireless Room Temperature Sensing System Product Bulletin (LIT-12011094)* for important product application information.

Features

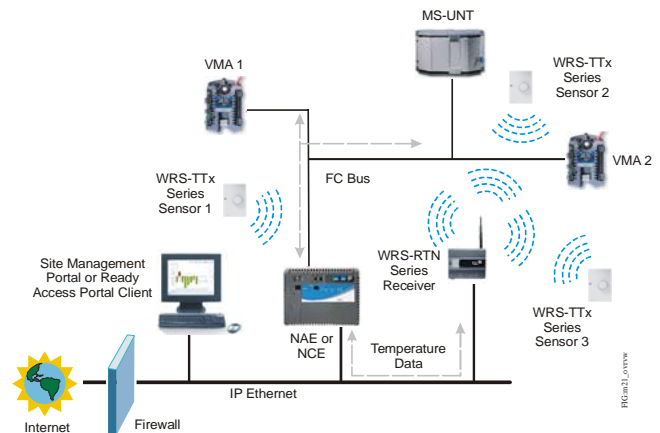
- Many-to-One wireless RF design — enables quick, economical, and low-maintenance installations, which reduce installation costs
- Metasys system design — leverages the Metasys system Web-based platform to provide wireless temperature control to multiple field devices across the network
- stylish, lightweight, wireless room temperature sensors with manual occupancy override button and 60-second transmission intervals — install easily and provide room temperature, setpoint temperature, occupancy status, and low battery conditions to Metasys system NAEs, NCEs, and field controllers
- integral, wireless signal strength testing built into sensors and receivers — provides quick and easy visual indication of the wireless RF signal strength between a sensor and associated receiver, helps locate optimum device positions during installation, and aids in troubleshooting the application
- compact, easy-to-install WRS-RTN Series Receiver — receives the sensed temperature, setpoint, and low battery conditions from multiple WRS-TTx Series Wireless Room Temperature Sensors, and interfaces with the Metasys NAEs and NCEs to provide temperature control data to multiple Metasys field controllers
- optional, battery-powered WRS-SST Series wireless sensing system tools — connect to a laptop computer and allow you to quickly and easily determine the RF signal strength, system temperature values, and optimum device locations for a specific application



WRS-TTx Series Wireless Room Temperature Sensors and WRS-RTN Series Receiver for Many-to-One Wireless Room Temperature Sensing Systems

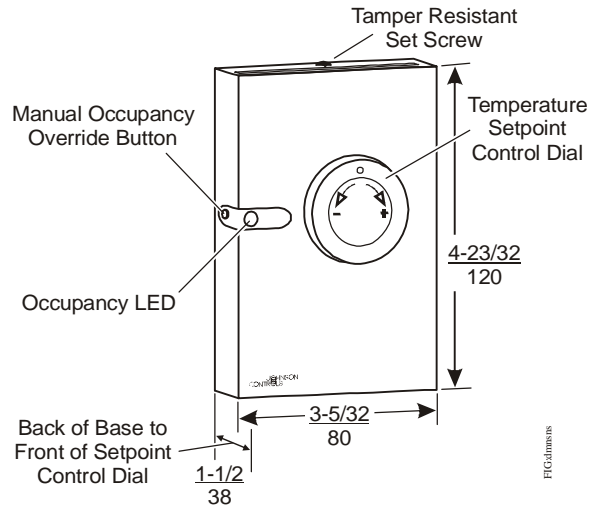
Repair Information

If the WRS Series Many-to-One Wireless Room Temperature Sensing System fails to operate within its specifications, replace the components. For a replacement system, contact the nearest Johnson Controls® representative.

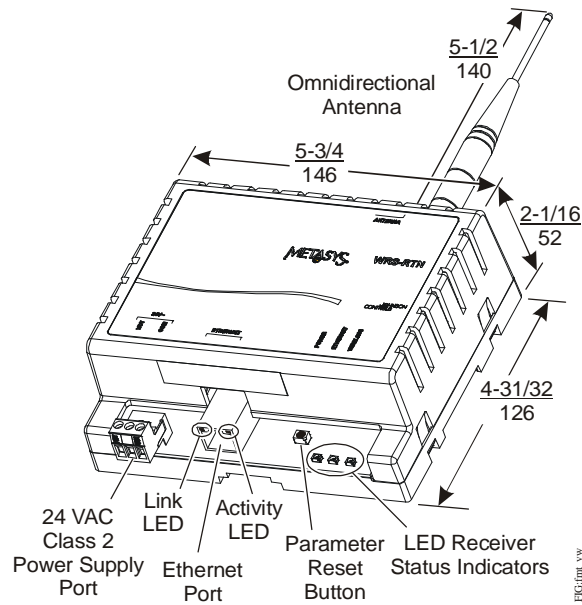


Many-to One Wireless Room Temperature Sensing System on a Simple Metasys Network

WRS Series Many-to-One Wireless Room Temperature Sensing System (Continued)



WRS-TTx Series Sensor Physical Features and Dimensions, in./mm



WRS-RTN Series Receiver Physical Features and Dimensions, in./mm



WRS Series Many-to-One Wireless Room Temperature Sensing System (Continued)

Selection Chart

Product Code Number	Product Description
WRS-RTN0000-0	Receiver for Many-to-One Wireless Room Temperature Sensing System, Includes Omnidirectional Antenna, 15 dBm Transmission Power
WRS-RTN0000-1	Receiver for Many-to-One Wireless Room Temperature Sensing System, Includes Omnidirectional Antenna, 10 dBm Transmission Power (CE Mark)
WRS-TTP0000-0	Wireless Room Temperature Sensor, Warmer/Cooler (+/-) Setpoint Adjustment, 15 dBm Transmission Power
WRS-TTP0000-1	Wireless Room Temperature Sensor, Warmer/Cooler (+/-) Setpoint Adjustment, 10 dBm Transmission Power (CE Mark)
WRS-TTR0000-0	Wireless Room Temperature Sensor, No Setpoint Adjustment, 15 dBm Transmission Power
WRS-TTR0000-1	Wireless Room Temperature Sensor, No Setpoint Adjustment, 10 dBm Transmission Power (CE Mark)
WRS-TTS0000-0	Wireless Room Temperature Sensor, Setpoint Adjustment Scale: 55 to 85°F/13 to 29°C, 15 dBm Transmission Power
WRS-TTS0000-1	Wireless Room Temperature Sensor, Setpoint Adjustment Scale: 55 to 85°F/13 to 29°C, 10 dBm Transmission Power (CE Mark)

Accessories

Product Code Number	Product Description
WRS-SST-100	Wireless Sensing System Tool (Monitors RF Signal Strength and Temperature Data between a WRS-TTx0000-0 Series Sensor and the Associated WRS-RTN0000-0 Series or TE-7800 Series Receiver), 15 dBm Transmission Power
WRS-SST-101	Wireless Sensing System Tool (Monitors RF Signal Strength and Temperature Data between a WRS-TTx0000-1 Series Sensor and the Associated WRS-RTN0000-1 Series or TE-7800 Series Receiver), 10 dBm Transmission Power (CE Mark)
TP-2420	Transformer, Wall Plug Mount, 120 VAC to 24 VAC, 20 VA, Class 2
Y65T31-0 ¹	Transformer, 120/208/240 VAC to 24 VAC, 40 VA, Class 2, Foot Mount, 8 in. (20 cm) Primary Leads and Secondary Screw Terminals
T-4000-119	1/16 in. (1.6 mm) Allen-Head Adjustment Tool (30 per Bag) for Accessing and Securing WRS-TTx Series Wireless Room Temperature Sensors



1. Additional Y60 Series Transformers are available from Johnson Controls.

Technical Specifications

WRS-TTx Series Wireless Room Temperature Sensors (Part 1 of 2)	
Product Codes	WRS-TTP0000-x Series Sensors: Warmer/Cooler (+/-) Setpoint Adjustment WRS-TTR0000-x Series Sensors: No Setpoint Adjustment WRS-TTS0000-x Series Sensors: Setpoint Adjustment Scale 55 to 85°F/13 to 29°C
Power Requirements	3 VDC Supplied by Two 1.5 VDC AA Alkaline Batteries (Included with Sensor); Typical Battery Life: 60 Months (48 Months Minimum)
Addressing	DIP Switches, Field Adjustable for up to 511 Unique Transmitter ID Addresses and for Up to 31 Unique Property Code Addresses
Ambient Operating Temperature Limits	-0 to 122°F (18 to 50°C)
Ambient Operating Humidity Limits	5 to 95% RH, Noncondensing
Ambient Storage Temperature Limits	-40 to 160°F (-40 to 71°C)
Ambient Storage Humidity Limits	5 to 95% RH, Noncondensing
RF Band	Direct-Sequence, Spread-Spectrum, 2.4 GHz ISM Bands
Transmission Power	WRS-TTx0000-0 Series Sensors: 15 dBm Maximum WRS-TTx0000-1 Series Sensors: 10 dBm Maximum
Transmission Range	WRS-TTx0000-0 Series Sensors: 500 ft (152 m) Maximum Indoor Line-of-Sight; 200 ft (61 m) Practical Average Indoor WRS-TTx0000-1 Series Sensors: 375 ft (114 m) Maximum Indoor Line-of-Sight; 165 ft (50 m) Practical Average Indoor
Transmissions	Every 60 Seconds (±20 Seconds); Every 10 Seconds (±2 Seconds) in Rapid Transmit Mode
Temperature System Accuracy	1F° (0.6C°) Over the Range of 55 to 85°F (13 to 29°C); 1.5F° (0.9C°) Over a Range of 32 to 55°F (0 to 13°C) and 85 to 110°F (29 to 43°C)
Temperature Sensor Type	Local 10k ohm Negative Temperature Coefficient (NTC) Thermistor
Materials	NEMA 1 White Plastic Housing
Mounting	Double-Sided Adhesive Foam Tape Mount; Double-Sided Adhesive Foam Tape Included with Sensor
Compliance (WRS-TTx0000-0 Series Sensors)	United States: Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters Transmitter FCC Identification: CB2-TMPSENS2400A Canada: Industry Canada IC: 279A-TSENS24A Australia and New Zealand: Australia/NZ Emissions Compliant (C-Tick Mark)

The performance specifications are nominal and conform to acceptable industry standards. For applications 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. © 2012 Johnson Controls, Inc. www.johnsoncontrols.com

WRS Series Many-to-One Wireless Room Temperature Sensing System (Continued)

WRS-TTx Series Wireless Room Temperature Sensors (Part 2 of 2)	
Compliance (WRS-TTx0000-1 Series Sensors) 	Europe: CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/05/EC. South Africa: Accepts Directives for Europe
Shipping Weight	0.3 lb (0.14 kg)
WRS-RTN Series Receivers for Many-to-One Wireless Room Temperature Sensing Systems	
Power Requirements	24 VAC (+10%/-15%), 50/60 Hz, 4.5 VA (Minimum) Class 2 Power Supply
Addressing	Configurable via the NAE or NCE for up to 511 Unique Transmitter ID Addresses and up to 31 Property Code Addresses
Ambient Operating Temperature Limits	32 to 122°F (0 to 50°C)
Ambient Operating Humidity Limits	5 to 95% RH, Noncondensing
Ambient Storage Temperature Limits	-40 to 160°F (-40 to 71°C)
Ambient Storage Humidity Limits	5 to 90% RH, Noncondensing
RF Band	Direct-Sequence, Spread-Spectrum, 2.4 GHz ISM Bands
Transmission Power	WRS-RTN0000-0 Receiver: 15 dBm Maximum WRS-RTN0000-1 Receiver: 10 dBm Maximum
Transmission Range	WRS-RTN0000-0 Receiver: 500 ft (152 m) Maximum Indoor Line-of-Sight; 200 ft (61 m) Practical Average Indoor WRS-RTN0000-1 Receiver: 375 ft (114 m) Maximum Indoor Line-of-Sight; 165 ft (50 m) Practical Average Indoor
Receiver Outputs	One Ethernet Connection for Communicating Temperature, Setpoint, Occupancy Status, Field Strength Measurements, and Low Battery Conditions
Temperature System Accuracy	1F° (0.6C°) Over the Range of 55 to 85°F (13 to 29°C); 1.5F° (0.9C°) Over a Range of 32 to 55°F (0 to 13°C) and 85 to 110°F (29 to 43°C)
Wiring Terminations and Network Interfaces	One Three-Position Terminal Block with Removable Terminal Plug for 24 VAC Supply Power; One 10/100 Mbps, Eight-Pin, RJ-45 Ethernet Port
Network Bandwidth Requirement	Less than 0.02% on a 10 Mbps Ethernet Connection
Materials	Gray Plastic Housing with UL94-5VB Flammability Rating
Mounting	Screw Mount; Four No. 6 Pan-Head, Sheet-Metal Screws Included
Compliance (WRS-RTN0000-0 Receiver)	United States: Intended for NEC Class 2 Connection UL Listed, File E107041, CCN PAZX UL 94-5VB Flammability Rating FCC Compliant to CFR 47, Part 15, Subpart B, Class A Transmission Complies with FCC Part 15.247 Regulations for Low Power Unlicensed Transmitters Transmitter FCC Identification: CB2-TMPSENS2400A Canada: Intended for CEC Class 2 Connection UL Listed, File E107041, CCN PAZX7 UL 94-5VB Flammability Rating Industry Canada IC: 279A-TSENS24A Australia and New Zealand: Australia/NZ Emissions Compliant (C-Tick Mark)
Compliance (WRS-RTN0000-1 Receiver) 	Europe: CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/05/EC. South Africa: Accepts Directives for Europe
Shipping Weight	1.0 lb (0.45 kg)