“Your website is so easy to maneuver through. Your selection is vast, and prices are exceptional. Always a pleasure doing business with Kele.”

NETWORK & WIRELESS

Products manufactured in the United States

MADE IN USA

NEW Products that are new to the catalog

Prestige Thermostat pg. 635

852 Ethernet Switch pg. 622

FDS-Wi pg. 674

Kele®

www.kele.com

MODEL/SERIES — PAGE

Network Devices

Wireless Devices

■ Indicates New Products

PROVIDES CONNECTIVITY BETWEEN ETHERNET AND RS-485 BASED NETWORKS

ETH-1000

DESCRIPTION

The **ETH-1000 Ethernet Gateway** allows information to be transferred seamlessly between Ethernet and RS-485 networks with minimal configuration requirements. The ETH-1000 provides a 10/100BaseT Ethernet port and an RS-485 port.

NEW!

ETH-1000

ETHERNET PROTOCOLS SUPPORT:

- ***Allen Bradley CSP (also known as "PCCC" and "AB Ethernet") (client and server)***
- ***BACnet/IP (client and server)***
- ***EtherNet/IP (client and server)***
- ***Mitsubishi MELSEC (also known as "MC") (client)***
- ***Modbus/TCP (client and server)***
- ***Profinet IO***

RS-485 PROTOCOLS SUPPORT:

- ***Modbus RTU (master, slave, and sniffer)***
- ***BACnet MS/TP (client and server)***
- ***Toshiba ASD (master)***
- ***Johnson Controls, Inc. Metasys N2 (slave)***
- ***Sullair Supervisor (master)***

SPECIFICATIONS

Supply Voltage	7 - 24 VDC
Supply Current	70 mA @ 24VDC
Communication	Ethernet Communications IEEE 802.3 10/100 Mbps data rate 10BASE-T, 100BASE-TX physical layer 100 m (max) CAT5 cable length
MS/TP Communications	ANSI/ASHRAE 135 (ISO 16484-5) 9600, 19200, 38400, 76800, 115.2k baud rate EIA-485 physical layer 1200 m (max) cable length
LED Indication	
Module Status	Off = No power Green = Power normal function Flashing Green = Gateway is connected via USB Flashing Red = Fatal error
Network Status	Off = No IP address Green = Has IP and connection Flashing Green = Has IP no Connection Red = Critical Fail / Duplicate IP Flashing Red = Connection time out Alternating Red/Green = Start up
RS485	Green (TX) = Transmitting data Red (RX) = Receiving data
Operating Temperature	14 to 122°F (-10 to 50°C)
Operating Humidity	20 to 90% (non-condensing)
Dimensions	4" x 3" x 1.5" (10.16 x 7.62 x 3.81 cm)
Weight	1 lb (0.45 kg)
RoHS Statement	Yes
Warranty	1 year

WIRING

ORDERING INFORMATION

MODEL	DESCRIPTION
ETH-1000	Provides protocol translation between Ethernet and RS-485 based networks

RELATED PRODUCTS		PAGE
XLTR-1000	Provides protocol translation between RS485 based networks	**618**

NEW!

PROVIDES CONNECTIVITY BETWEEN TWO RS-485 BASED NETWORKS.

XLTR-1000

DESCRIPTION

The **XLTR-1000** provides simultaneous support for many different communication protocols, allowing complex interchanges of data between otherwise incompatible networks. When properly configured, the gateway will become essentially "transparent" on the networks, and the various network devices can engage in seamless dialogs with each other.

NEW!

XLTR-1000

FEATURES

- ***USB connectivity***
- ***Can be powered via USB***
- ***32 bit processor***
- ***Baud rates up to 115.2K***
- ***Multiple mounting options***

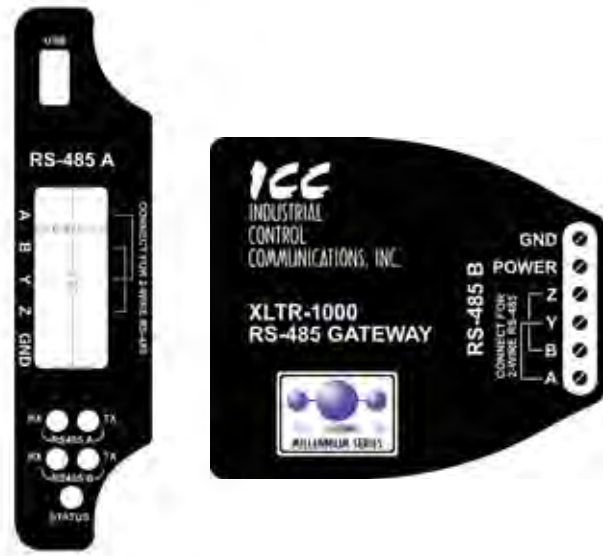
RS-485 PROTOCOLS SUPPORT:

- ***BACnet MS/TP (client and server)***
- ***Johnson Controls, Inc. Metasys N2 (master and slave)***
- ***Modbus RTU (master, slave, and sniffer)***
- ***MSA Chillgard (monitor)***
- ***Siemens FLN (slave)***
- ***Sullair Supervisor (master)***
- ***TCS Basys (master)***
- ***Toshiba ASD (master)***

SPECIFICATIONS

Supply Voltage	7 - 24 VDC
Supply Current	15 mA @ 24VDC
Communication	MS/TP ANSI/ASHRAE 135, (ISO 16484-5) 9600, 19200, 38400, 76800, 115.2k baud rate EIA-485 physical layer 1200 m (max) cable length
LED Indication	
Module Status	Off = No power Green = Power normal function Flashing Green = Gateway is connected via USB Flashing Red = Fatal error
RS485	Green (TX) = Transmitting data Red (RX) = Receiving data
Operating Temperature	14 to 122°F (-10 to 50°C)
Operating Humidity	20 to 90% (non-condensing)
Dimensions	4" x 3" x 1.5" (10.16 x 7.62 x 3.81 cm)
Weight	1.0 lb (0.45 kg)
RoHS Statement	Yes
Warranty	1 year

DIMENSIONS



ORDERING INFORMATION

MODEL	DESCRIPTION
XLTR-1000	Provides protocol translation between RS485 based networks

RELATED PRODUCTS		PAGE
ETH-1000	Provides protocol translation between Ethernet and RS-485 based networks	**617**

DESCRIPTION

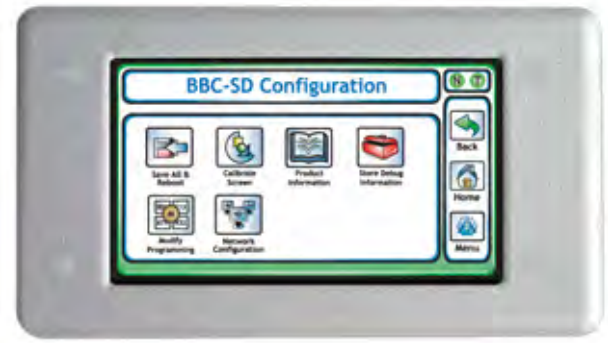
The **BACnet Building Controller Small Display (BBC-SD)** is a compact, addressable network display device for MS/TP based BACnet networks. It enables users to quickly monitor their system, and easily make changes to the way their building is controlled. The wall mounted **BBC-SD** has a touch-screen operator interface with permission based menu icons, allowing simple navigation to read and write BACnet values, view alarms, grouped data, and point descriptions. The **BBC-SD** is easily configured via the Windows-based BBC-SD-Pro™ Configuration Utility.

FEATURES

- ***Able to automatically display and modify up to 150 BACnet object properties***
- ***Can manually address, view and modify any primitive data points on the BACnet network***
- ***50 configurable data screens containing live BACnet network data and/or hyper links to other data screens allow unique point groupings***
- ***12-bit color, 480 x 272 pixel TFT-based touch screen allows local user interface for data display and modification***
- ***Conforms to BACnet MS/TP LAN Standard***
- ***Multi-tiered icon-driven screen navigation***
- ***Multi-level numeric password-based access protection***
- ***Able to "sniff" network traffic, store and display up to 128 notification or summary alarms***
- ***Flash program upgradeable through use of standard SD/MMC card port***
- ***Non-volatile memory stored on the BBC-SD for back-up and cloning over the network***
- ***Network time synchronization capabilities (requires interaction with a live time master)***
- ***Advanced MS/TP diagnostics utilities***
- ***Up to 16 linked BACnet schedules and calendars***
- ***AUTOPHOS® compatible***

SPECIFICATIONS

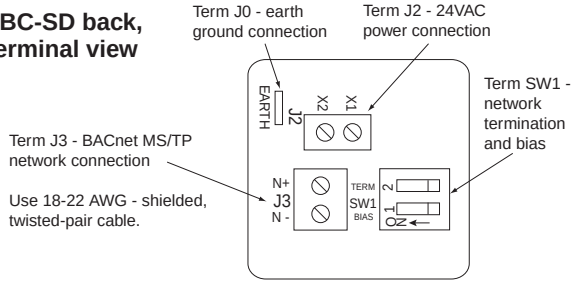
Supply Voltage	14 to 29 VAC/DC, 50/60 Hz;
Supply Watts	4 Watts
Communication	Type BACnet MS/TP Master Speed 9.6, 19.2, 38.4, 76.8 kbps, 57.6k, 115.2k SD/MMC Card Socket: Supports 2GB storage capacity
Supported Protocols	BACnet MS/TP
Memory	1 MB SRAM; 8MB Intel on board Flash
Processor	High-speed 32-bit processor running at 86 MHz
Display Type	Touch screen Backlit 16:9 widescreen TFT color LCD, 480 x 272 pixels
Operating Temperature	32° to 122°F (0° to 50°C)
Operating Humidity	0 to 80% (non-condensing)
Dimensions	6.0" x 3.4" x 1.0" (15.24 x 8.64 x 2.54 cm)
Weight	0.90 lb (0.41 kg)
Approvals	UL File E95642, E120096, CE
Warranty	{1 year (120 days on software)



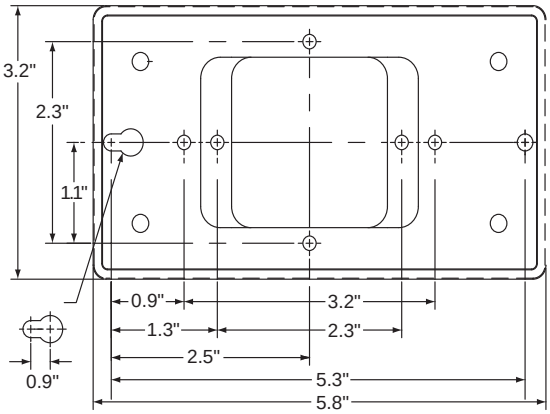
BBC-SD

WIRING

BBC-SD back, terminal view



DIMENSIONS



ORDERING INFORMATION

MODEL	DESCRIPTION
BBC-SD	BACnet Graphic Display
ACCESSORIES	
BBC-SD-PRO	Configuration Software (required)

BACNET HMI DISPLAY

BAC SERIES

DESCRIPTION

The **BAC Series** display are seven-inch wide-screen format LCD touch display units used for interfacing with a BACnet building automation system. The **BAC Series** uses BACnet over Ethernet, BACnet/IP and BACnet MS/TP to communicate with the controllers on a local area network using real-time graphics.

The **BAC Series** can be wall or panel mounted in mechanical rooms which allows for conveniently monitoring and setting schedules for air handlers, boilers, chillers and other mechanical equipment.

It is also designed to be mounted in public spaces. The **BAC Series** can be used as a small building interface making it easy for occupants to change occupancy schedules, adjust temperature set points and view floor layouts.

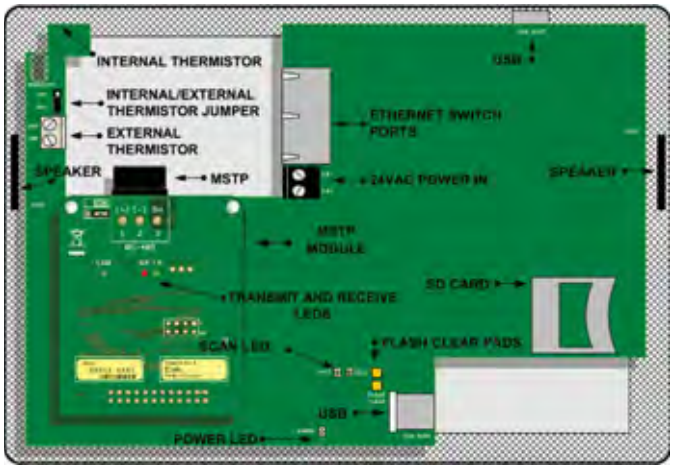
The **BAC-DIS-OD** is a basic operator display that allows the user to view points and graphics.

The **BAC-DIS-BAS** is a basic operator display that gives the user more functionality than a **-OD** by allowing schedules, alarms, and other control points.

The **BAC-DIS-ADV** has all the functionality of the first two displays and a built-in web server with BACnet IP.

NEW!

BAC-DIS-ADV



FEATURES

- ***High resolution, wide-screen display***
- ***Touch screen interface, no stylus required***
- ***Create custom graphics***
- ***Modify controller schedules and calendars***
- ***Display and acknowledge alarms***
- ***Change set points, monitor inputs and outputs***
- ***Multiple users and passwords for restricting access***
- ***Embedded web server (BAC-DIS-ADV only)***
- ***E-mail alarm notifications (BAC-DIS-ADV only)***

SPECIFICATIONS

Supply Voltage	24VAC 50/60 Hz
Supply Current	15 VA Maximum
Communication	
2x	10/100 Mbps BACnet IP (BAC-DIS-ADV only), BACnet Ethernet
1x	RS485 BACnet MS/TP
2x	USB USB 2.0 (flash drives)
Inputs	Internal thermistor (10K Type 3) External thermistor (10K Type 3)
Processor	32-bit RISC ARM9 processor @ 240 MHz
Memory	245MB flash memory (~195MB available for custom graphics and database) 128MB SDRAM
Clock Backup	Real Time Clock with 72 hour Super Capacitor backup
Operating Temperature	32° to 131°F (0° to 55°C)
Operating Humidity	10 to 90% RH (non-condensing)
Dimensions	5.6"H x 8.2"W x 1.4"D (14.2 x 20.8 x 3.5 cm)
Weight	1 lb (0.45 kg)
Approvals	UL Listed (for US and Canada) E208905
Warranty	1 year

ORDERING INFORMATION

MODEL	DESCRIPTION
BAC-DIS-OD	BACnet Operator display (point display only no schedules or events)
BAC-DIS-BAS	BACnet Operator display basic version
BAC-DIS-ADV	BACnet Operator display advanced version
BAC-DIS-ENC	BAC HMI Display flush mount bracket

NEW!

BACNET MULTI-NETWORK ROUTER

BASRT-B

NEW!

BACnet

CONTEMPORARY CONTROLS

DESCRIPTION

The BASRT-B provides stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MSTP. This allows the system integrator to mix BACnet network technologies within a single BACnet internetwork. There are two physical communication ports on the BAS Router. One is a 10/100 Mbps Ethernet port and the other an isolated MS/TP port. Configuration is accomplished via a web page.

FEATURES

- ***Versatile Routing***
- ***Flexible communications***
- ***IP network support***
- ***Easy installation***

BASRT-B

CE RoHS

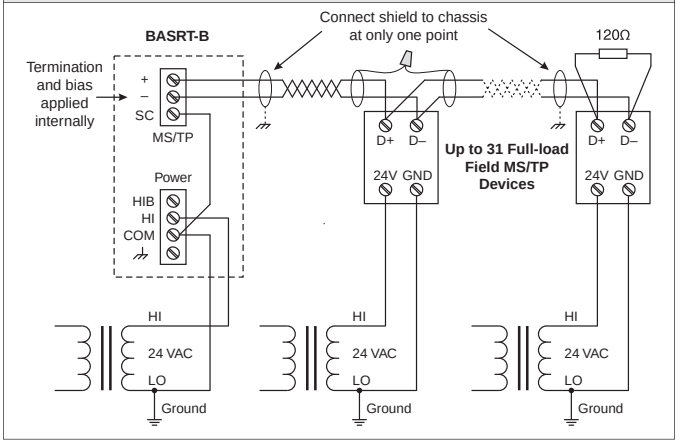
SPECIFICATIONS

Supply Voltage	24 VAC/VDC
Supply Current	4 VA
Communication	
Ethernet	BACnet IP, IEEE 802.3 10/100 Mbps data rate 10BASE-T, 100BASE-TX (100 m (max) CAT5 cable length)
MS/TP	BACnet MS/TP, ANSI/ASHRAE 135 (ISO 16484-5) 9600, 19200, 38400, 76800 bps data rate EIA-485 (1200 m (max) cable length)
LED Indication	
Power	Green = power OK
Ethernet	Green = 100 Mbps Yellow = 10 Mbps Flash = activity
MS/TP	Flashing green = receive activity
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	10 to 90% (non-condensing)
Dimensions	4.85"H x 2.74"W x 1.0"D (12.3 x 1.9 x 2.5 cm)
Weight	0.6 lbs (0.27 kg)
Approvals	CE Mark; CFR 47, Part 15 Class A;
RoHS Statement	Yes
Warranty	2 years

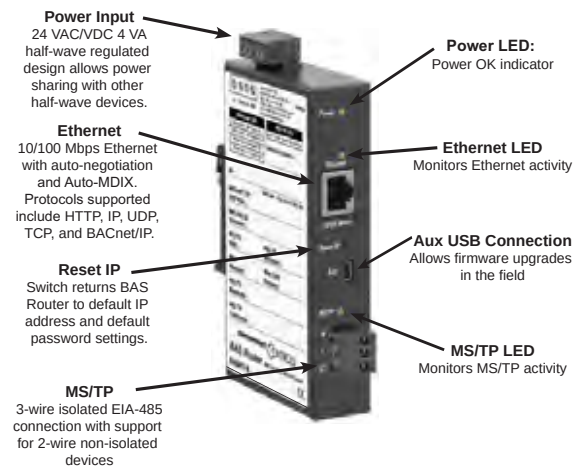
ORDERING INFORMATION

MODEL	DESCRIPTION
BASRT-B	BACnet multi-network router
BASRTP-B	Portable BACnet multi-network router (powered via usb port)

WIRING



DIAGRAM



INDUSTRIAL ETHERNET SWITCH

852 ETHERNET SWITCH

DESCRIPTION

The **852-111** has 5 ports with each port featuring auto-negotiation and auto MDI/MDI-X detection. Existing 10Mbps networks can now be upgraded effortlessly to higher speed 100Mbps Fast ETHERNET networks.

The **852-111** 5-port density can be used to create multiple segments to alleviate client congestion and provide dedicated bandwidth to each user node. The **852-111** is a cost-effective solution to keep up with the constant demands for emerging IP-based industry communication needs. The switch can be easily configured and installed and is also ideally suited for small to medium-sized networks.

NEW!

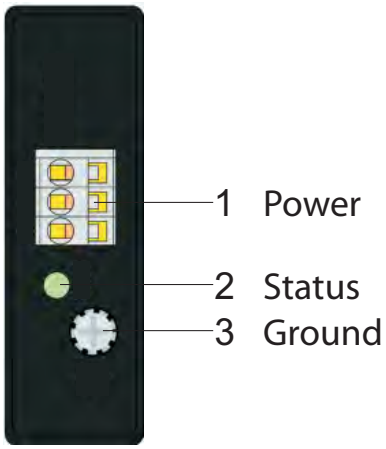
852-111

FEATURES

- ***5-port 10/100 Mbps Auto-negotiation ETHERNET ports***
- ***Comprehensive front-panel diagnostic LEDs***
- ***Supports Auto-MDI/MDI-X***
- ***Full/half-duplex transfer modes for each port***
- ***Wire speed reception and transmission***
- ***Store-and-forward switching method***
- ***Integrated address Look-Up Engine, supports 2K absolute MAC addresses***
- ***Supports surge protection***
- ***IEEE 802.3x flow control for fullduplex***
- ***Supports DIN 35 rail***

WIRING

TOP View



Top view of Industrial Eco Switch

SPECIFICATIONS

Supply Voltage	18 to 30 VDC
Supply Watts	3 W
Communication	Ethernet communications IEEE 802.3 10/100 Mbps data rate 10 BASE-T, 100 BASE-TX physical layer 100 m (max) CAT 5 cable length
LED Indication	
Power	Green
Speed	Green (100 Mbps)
Flash	Activity
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	95% RH (non-condensing)
Dimensions	0.92" x 2.9" x 4.29" (2.34 x 7.38 x 10.92 cm)
Weight	0.77 lb (0.35 kg)
Warranty	1 year

ORDERING INFORMATION

MODEL	DESCRIPTION
852-111	5 port industrial Ethernet switch

NEW!

DESCRIPTION

The Plug-and-Play (PnP) **EIBA** switches provide the needed functionality, mounting convenience, and ruggedness to fit most BAS applications. The popular **EIBA5-100T** which is designed for panel mounting is complemented by its DIN-rail cousin, the **EIBA5-100T/R**.

Utilizing switching technology, the compact and low-cost **EIBA** switches provide five 10/100 Mbps shielded RJ-45 ports. Each port is Auto-MDIX compliant and can operate as an uplink port, eliminating the need for crossover cables. All ports automatically negotiate data rate, duplex, and flow control.

NEW!

CONTEMPORARY CONTROLS

EIBA5-100T

EIBA5-100T/R

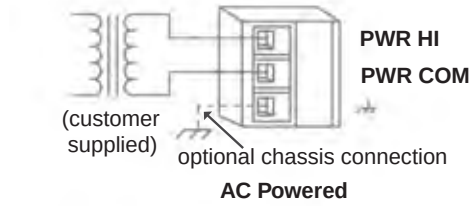
FEATURES

- ***Compact size***
- ***10BASE-T/100BASE-TX compliant***
- ***Auto-MDIX ports***
- ***Auto-negotiated data rate, duplex and flow control***
- ***Panel and DIN-rail mountable versions***
- ***Powered from an unregulated DC source (10-36 V) or an AC source (8-24 V, 47-63 Hz) via a quick-disconnect terminal strip***

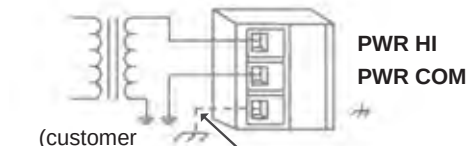
SPECIFICATIONS

Supply Voltage	24 VAC/VDC ±10%
Supply Current	4 VA
Communication	Ethernet communications IEEE 802.3 10/100 Mbps data rate 10 BASE-T, 100 BASE-TX physical layer 100 m (max) CAT 5 cable length
LED Indication	
Ethernet	Green = 100 Mbps Yellow = 10 Mbps Flash = activity
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	10 to 95% non-condensing
Dimensions	4.13"H x 3.5"W x 1.25"D (10.5 x 8.9 x 3.2 cm)
Weight	0.6 lbs (0.272 kg)
Approvals	CE Mark, UL 508, C-UL, File #E225652
RoHS Statement	Yes
Warranty	5 years

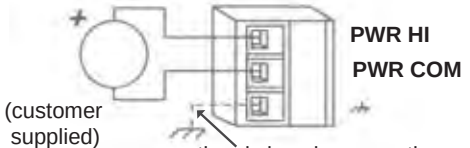
WIRING



AC Powered



AC Powered with Grounded Secondary



DC Powered

ORDERING INFORMATION

MODEL	DESCRIPTION
EIBA5-100T	Five-port 10BASE-T/100BASE-TX, panel mount
EIBA5-100T/R	Five-port 10BASE-T/100BASE-TX, DIN-rail mount

NEW!

AIC WIRELESS ANTENNAS

ANTENNAS: DIRECTIONAL

Line-of-sight: 2 miles*
Maximum Non Line-of-Sight: 1200 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 13.3 x 13.3 x 1.7 in (33.8 x 33.8 x 4.3 cm)

AIC10.5P

Line-of-sight: 20 miles*
Maximum Non Line-of-Sight: 1500 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 21.06 x 6.8 x 1.5 in (53.5 x 17.5 x 4.3 cm)

AIC11AW

Line-of-sight: 5 miles*
Maximum Non Line-of-Sight: 1300 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 15.4 x 15.4 x 1.7 in (39.1 x 39.1 x 4.3 cm)

AIC12.5P

Line-of-sight: 40 miles*
Maximum Non Line-of-Sight: 1500 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 39.5 x 12.6 x 6.8 in (100.5 x 32.0 x 17.5 cm)

AIC15AW

ANTENNAS: OMNI - DIRECTIONAL

Line-of-sight: .25 miles*
Maximum Non Line-of-Sight: 5 Walls/300 ft*
*Range may vary based on terrain and noise environment

Dimensions: 8.75 x .5 in (22.2 x 1.27 cm)

RD3DB

Line-of-sight: .5 miles*
Maximum Non Line-of-Sight: 6 Walls/500 ft*
*Range may vary based on terrain and noise environment

Dimensions: 17.0 in long x .5 in diameter (43.18 x 1.27 cm)

RD5DB

Line-of-sight: .5 miles*
Maximum Non Line-of-Sight: 6 Walls/500 ft*
*Range may vary based on terrain and noise environment

Dimensions: 4 in long x 1 in diameter (10.16 x 2.54 cm)

3dB Low Profile

Line-of-sight: 5 miles*
Maximum Non Line-of-Sight: 1500 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 23.12 in long x 1.31 in diameter (31.75 x 3.3 cm)

3dB Base

Line-of-sight: 20 miles*
Maximum Non Line-of-Sight: 2000 ft with trees*
*Range may vary based on terrain and noise environment

Dimensions: 61 in long x 1.31 in diameter (155 x 3.3 cm)

6db Base

AIC WIRELESS ETHERNET TRANSCEIVER

AIC900E

DESCRIPTION

The **AIC900E-K Series** of wireless ethernet devices are readily available for any building automation, control or monitoring application. The devices are a reliable lowcost alternative to long runs of communication cable to previously hard to reach locations, due to a lack of existing communications architecture. The **AIC900E-K Series** wireless devices are shipped ready to install, with a true plug-and-play set-up requiring no special programming or network management tools.

NEW!

AIC900E-K

FEATURES

- ***902-928 MHz frequency provides excellent non-line-of-sight performance to penetrate foliage, building walls, and floors***
- ***Highest Quality of Service (QoS) available-synchronous point-to-multipoint protocol enables extremely low data latency and jitter***
- ***128 bit encrypted payload protection provides secure data delivery***
- ***Simple plug-and-play setup with minimal configuration required***
- ***Flexible input power, 12-24 VAC/DC***
- ***Up to 40 mile range***

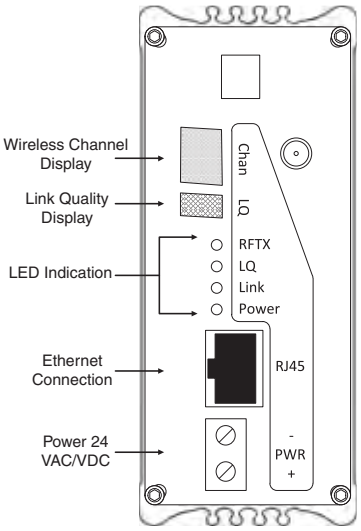
ANTENNA SELECTION CHARTS

Range vs. Antenna Used in System Design

Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet w/ trees
AIC12.5P	5 Miles	1300 feet w/trees
AIC11AW	20 miles	1200 feet w/ trees
AIC15AW	40 miles	1500 feet w/ trees

**Range may vary based on terrain and noise environment*
*** Used only with WLD900 model*
This information is based on limited testing and is to be used as a guide in antenna selection.

WIRING



SPECIFICATIONS

Supply Voltage	24 VAC/VDC (requires isolated power supply)
Supply Current	100 mA @ 24 VAC
Frequency	902-928 MHz
Connections	RPSMA female
Protocol	Ethernet
Tranmission Power	+21 dBm (4 Watts EIRP when used with 15 dBi antenna)
Range	Up to 40 miles (64 km)- Requires 15 dBi antenna
Receiver Sensitivity	-97 dBm at 10e-4 BER (-112 dBm with 15 dBi antenna)
Modulation	DSSS (Direct Sequence Spread Spectrum)
Channels	12 non-overlapping
Operating Temperature	-4° to 158°F (-20° to 70°C)
Operating Humidity	10 to 90% RH (non-condensing)
Dimensions	4.3"H x 1.75"W x 3.35"D (10.9 x 8.5 x 4.45 cm)
Weight	0.65 lb (0.28 kg)
Approvals	FCC ID: R4N-AW900M IC:5303A-AW900M
RoHS Statement	Yes
Warranty	1 year

NEW!

AIC WIRELESS ETHERNET TRANSCEIVER

AIC900E

CABLES

CC1 (Custom Cable 1)
Length: 1 ft

Use when connecting to another listed cable

CC2 (Custom Cable 2)
Length: 6 ft

Must be used with CC1

CC3 (Custom Cable 3)
Length: 1 ft

Used when connecting antenna directly to transceiver

LMR600-15
Length: 15 ft

Must be used with CC1

LMR600-30
Length: 30 ft

Must be used with CC1

ORDERING INFORMATION

MODEL	DESCRIPTION
AIC900E-K	Wireless Ethernet transceiver 900 MHz (Antenna not included)
AIC900-E-51	AIC900-E, CC3 cable, WPENCL100808 enclosure, 3dB low profile antenna

	ACCESSORIES	PAGE
3DB BASE	3dB Base Station, Omni-Directional Antenna	624
3DB LOW PROFILE	3dB Low Profile Omni-Directional Antenna	624
6DB BASE	6dB Base Station, Omni-Directional Antenna	624
AIC10.5P	10.5dBi Panel Antenna	624
AIC11AW	9dB Yagi Antenna	624
AIC12.5P	12.5dBi Panel Antenna	624
AIC15AW	13dB Yagi Antenna	624
CC1	Custom cable, RPSMA – N-female bulkhead	
CC2	Custom cable, N-male to N-male, 6' (LMR195)	
CC3	Custom cable, N-male to N-male, 6' (LMR195)	
COAX SURGE	Coax surge suppressor, in-line	
LMR600-15	LMR600 Cable, 15' with N-male connectors	
LMR600-30	LMR600 Cable, 30' with N-male connectors	
POLE CLAMP	Pole clamp assembly (for 3db and 6db base antenna)	
RD3DB	3 dBi Rubber Duck Style Antenna	624
RD5DB	5 dBi Rubber Duck Style Antenna	624
WPENCL100804	10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid	

AIC WIRELESS BACNET MSTP AND BACNET IP WIRELESS TRANSCEIVER.

WBT900, WBT900-IP

DESCRIPTION

The **WBT900-K** and **WBT900-IP-K** transceivers allow you to install a close or long range, non line-of-sight, point-to-multipoint, wireless BACnet MSTP or BACnet IP network, at a fraction of the cost of installation labor, conduit and cable.

The **WBT900-K** and **WBT900-IP-K** transceivers are plug and play, requiring no special programming tools or network management software.

FEATURES

- ***902-928 MHz frequency provides excellent non-line-of-sight performance to penetrate foliage, building walls, and floors***
- ***Highest Quality of Service (QoS) available-synchronous point-to-multipoint protocol enables extremely low data latency and jitter***
- ***128 bit encrypted payload protection provides secure data delivery***
- ***Simple plug-and-play setup with minimal configuration required***
- ***Flexible input power, 12-24 VAC/DC***
- ***Up to 50 mile range***

NEW!

WBT900-K

WBT900-IP-K

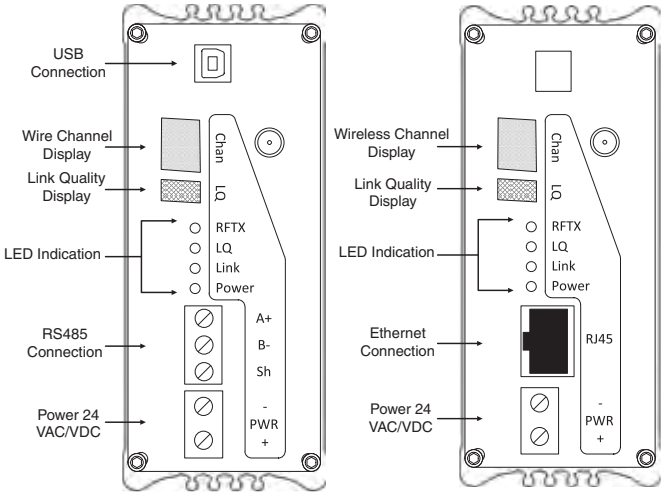
ANTENNA SELECTION CHARTS

Range vs. Antenna Used in System Design

Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet w/ trees
AIC12.5P	5 Miles	1300 feet w/trees
AIC11AW	20 miles	1200 feet w/ trees
AIC15AW	40 miles	1500 feet w/ trees

**Range may vary based on terrain and noise environment*
*** Used only with WLD900 model*
This information is based on limited testing and is to be used as a guide in antenna selection.

WIRING



SPECIFICATIONS

Supply Voltage	24 VAC/VDC (requires isolated power supply)
Supply Current	100 mA @ 24 VAC
Frequency	902-928 MHz
Connections	RPSMA female
Protocol	
WBT900-K	BACnet MS/TP
WBT900-IP-K	BACnet IP
Transmission Power	+21 dBm (4 Watts EIRP when used with 15 dBi antenna)
Range	Up to 40 miles (64 km)- Requires 15 dBi antenna
Receiver Sensitivity	-97 dBm at 10e-4 BER (-112 dBm with 15 dBi antenna)
Modulation	DSSS (Direct Sequence Spread Spectrum)
Channels	12 non-overlapping
Operating Temperature	-4° to 158°F (-20° to 70°C)
Operating Humidity	10 to 90% RH (non-condensing)
Dimensions	4.3"H x 1.75"W x 3.35"D (10.9 x 8.5 x 4.45 cm)
Weight	0.65 lb (0.28 kg)
Approvals	FCC ID: R4N-AW900M IC:5303A-AW900M
RoHS Statement	Yes
Warranty	1 year

NEW!

AIC WIRELESS BACNET MSTP AND BACNET IP WIRELESS TRANSCEIVER.

WBT900, WBT900-IP

CABLES

CC1 (Custom Cable 1)
Length: 1 ft

Use when connecting to another listed cable

CC2 (Custom Cable 2)
Length: 6 ft

Must be used with CC1

CC3 (Custom Cable 3)
Length: 1 ft

Used when connecting antenna directly to transceiver

LMR600-15
Length: 15 ft

Must be used with CC1

LMR600-30
Length: 30 ft

Must be used with CC1

ORDERING INFORMATION

MODEL	DESCRIPTION
WBT900-K	Wireless BACnet MSTP Transceiver 900m MHz (Antenna not included)
WBT900-51	WBT900, CC 3 cable, WPENCL100808 enclosure, 3DB LOW PROFILE antenna
WBT900-IP-K	Wireless BACnet IP Transceiver 900 MHz (Antenna not included)
WBT900-IP-51	WBT900-IP, CC 3 cable, WPENCL100808 enclosure, 3DB LOW PROFILE antenna

	ACCESSORIES	PAGE
3DB BASE	3dB Base Station, Omni-Directional Antenna	**624**
3DB LOW PROFILE	3dB Low Profile Omni-Directional Antenna	**624**
6DB BASE	6dB Base Station, Omni-Directional Antenna	**624**
AIC10.5P	10.5dBi Panel Antenna	**624**
AIC11AW	9dB Yagi Antenna	**624**
AIC12.5P	12.5dBi Panel Antenna	**624**
AIC15AW	13dB Yagi Antenna	**624**
CC1	Custom cable, RPSMA – N-female bulkhead	
CC2	Custom cable, N-male to N-male, 6' (LMR195)	
CC3	Custom cable, N-male to N-male, 6' (LMR195)	
COAX SURGE	Coax surge suppressor, in-line	
LMR600-15	LMR600 Cable, 15' with N-male connectors	
LMR600-30	LMR600 Cable, 30' with N-male connectors	
POLE CLAMP	Pole clamp assembly (for 3db and 6db base antenna)	
RD3DB	3 dBi Rubber Duck Style Antenna	**624**
RD5DB	5 dBi Rubber Duck Style Antenna	**624**
WPENCL100804	10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid	

WIRELESS LONWORKS TRANSCEIVER
WLT900

DESCRIPTION

The **WLT900-K** Wireless LonWorks Transceiver provides a reliable and cost effective solution for networking buildings and other remote sites without long runs of Lon cable. LonWorks communication can be established for close range of 100 feet or up to 40 miles with a higher gain antenna. The wireless protocol features a dynamic addressing scheme that simplifies node-to-node communication in point-to-point or point-to-multipoint applications. The **WLT900-K** Wireless LonWorks Transceiver offers true plug-and-play setup requiring no special programming or network management tools. A minimum of two transceivers is required for operation.

FEATURES

- ***True plug and play***
- ***Peer-to-peer protocol***
- ***Ultra-fast sync time***
- ***Variable output 5 mW to 1000 mW***
- ***No complex programming required***
- ***Ranges from 100 feet to several miles***

WLT900-K

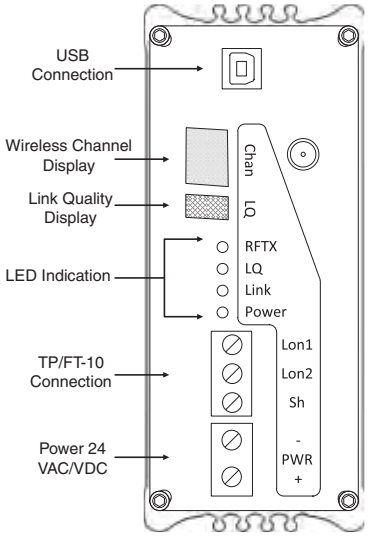
ANTENNA SELECTION CHARTS

Range vs. Antenna Used in System Design

Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet w/ trees
AIC12.5P	5 Miles	1300 feet w/trees
AIC11AW	20 miles	1200 feet w/ trees
AIC15AW	40 miles	1500 feet w/ trees

**Range may vary based on terrain and noise environment*
*** Used only with WLD900 model*
This information is based on limited testing and is to be used as a guide in antenna selection.

WIRING



SPECIFICATIONS

Supply Voltage	24 VAC/VDC (requires isolated power supply)
Supply Current	100 mA @ 24 VAC
Frequency	902-928 MHz
Connections	RPSMA female
Protocol	Lonworks
Transmission Power	+21 dBm (4 Watts EIRP when used with 15 dBi antenna)
Range	Up to 40 miles (64 km)- Requires 15 dBi antenna
Receiver Sensitivity	-97 dBm at 10e-4 BER (-112 dBm with 15 dBi antenna)
Modulation	DSSS (Direct Sequence Spread Spectrum)
Channels	12 non-overlapping
Operating Temperature	-4° to 158°F (-20° to 70°C)
Operating Humidity	10 to 90% RH (non-condensing)
Dimensions	4.3"H x 1.75"W x 3.35"D (10.9 x 8.5 x 4.45 cm)
Weight	0.65 lb (0.28 kg)
Approvals	FCC ID: R4N-AW900M IC:5303A-AW900M
RoHS Statement	Yes
Warranty	1 year

AIC WIRELESS LONWORKS TRANSCEIVER

WLT900

CABLES

CC1 (Custom Cable 1)
Length: 1 ft

Use when connecting to another listed cable

LMR600-15
Length: 15 ft

Must be used with CC1

CC3 (Custom Cable 3)
Length: 1 ft

Used when connecting antenna directly to transceiver

CC2 (Custom Cable 2)
Length: 6 ft

Must be used with CC1

LMR600-30
Length: 30 ft

Must be used with CC1

ORDERING INFORMATION

MODEL	DESCRIPTION
WLT900-K	Wireless LonWorks Transceiver 900 MHz (Antenna not included)
WLT900-51	WLT900-K, CC3 cable, WPENCL100808 enclosure, 3dB low profile antenna

	ACCESSORIES	PAGE
3DB BASE	3dB Base Station, Omni-Directional Antenna	**624**
3DB LOW PROFILE	3dB Low Profile Omni-Directional Antenna	**624**
6DB BASE	6dB Base Station, Omni-Directional Antenna	**624**
AIC10.5P	10.5dBi Panel Antenna	**624**
AIC11AW	9dB Yagi Antenna	**624**
AIC12.5P	12.5dBi Panel Antenna	**624**
AIC15AW	13dB Yagi Antenna	**624**
CC1	Custom cable, RPSMA – N-female bulkhead	
CC2	Custom cable, N-male to N-male, 6' (LMR195)	
CC3	Custom cable, N-male to N-male, 6' (LMR195)	
COAX SURGE	Coax surge suppressor, in-line	
LMR600-15	LMR600 Cable, 15' with N-male connectors	
LMR600-30	LMR600 Cable, 30' with N-male connectors	
POLE CLAMP	Pole clamp assembly (for 3db and 6db base antenna)	
RD3DB	3 dBi Rubber Duck Style Antenna	**624**
RD5DB	5 dBi Rubber Duck Style Antenna	**624**
WPENCL100804	10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid	

NETWORK & WIRELESS

REMOTE WEB-BASED MONITORING SYSTEM

FGD WEB SERIES

NEW!

SENSAPHONE® REMOTE MONITORING SOLUTIONS

DESCRIPTION

The **Sensaphone Web600** provides flexible web-based remote monitoring. It keeps track of critical temperatures and other conditions and users can be notified immediately when current values exceed the normal range.

Completely stand-alone and easy to use, the **Web600** can be used for monitoring cold food storage, medical cold storage, and other temperature-sensitive areas like computer rooms and data centers. In addition to temperature monitoring, the **Web600** can also read values from humidity sensors, air quality sensors, water leak detection sensors and much more.

FGD-W600

FEATURES

- ***Six sensor inputs to monitor environmental conditions and/or alarm contacts***
- ***10/100BASE-T Ethernet port***
- ***Optional battery backup for uninterrupted performance***
- ***Compact design allows wall-mount or tabletop installation***
- ***Embedded web page to program and manage your Web600 system***
- ***Notification via e-mail, SMS (text message) or SNMP trap***
- ***Connectable to up to six external sensors***

SPECIFICATIONS

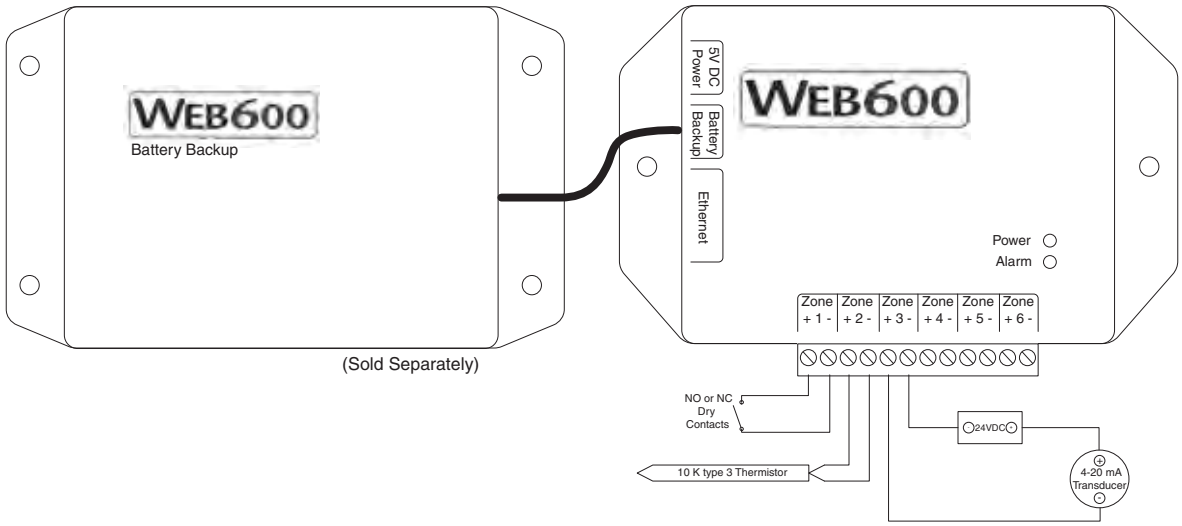
Supply Voltage	120 VAC/5 VDC 50/60Hz (plug-in transformer with 6' cord included)
Supply Current	6W
Communication	
E-mail – SMTP	
Text Messages	
Web Page – Supported formats HTTP, PDA, WAP, and XML	
SNMP – MIB with traps, GET, GETNEXT, and SET	
MODBUS®/TCP Slave Conformance Class 0 & 1	
Communication Ports	Ethernet 10/100Base-T
Inputs	
6 Universal Inputs	Normally closed/normally open dry contact 10K thermistor, Type 3 4-20 mA current loop (Requires 24 VDC power) (12 bit resolution)
Input Impedance	250 Ω
Supported Protocols	Modbus TCP
Signal LEDs	
Alarm status LED	
Power status LED	
Ethernet link and activity LEDs	
Data Logging	32,000 samples (all samples include data, date and time) 1 second to 1 month sampling rate. User programmable channel selection (Zones 1-6, battery, and input power)
Additional Specifications	
Optional Battery Backup	
	Module (FGD-W610) Provides 2 hours of backup (rechargable)
Operating Temperature	32° to 122°F (0° to 50°C)
Operating Humidity	0-90% RH, (non-condensing)
Dimensions	3.25"H x 5.5"W x 1.25"D (8.3 x 14 x 3.2 cm)
Weight	
FGD-W600	0.5 lb (0.23 kg)
FGD-W610	1 lb (0.45 kg)
Approvals	FCC Part 15-B compliant
RoHS Statement	Yes
Warranty	1 year

NEW!

REMOTE WEB-BASED MONITORING SYSTEM

FGD WEB SERIES

WIRING



BATTERY BACKUP (NOT INCLUDED)

FGD-W610

With the addition of the optional battery backup module, the Web600 can monitor for power failures and stay operational for two full hours while the power is out.

Dimensions	3.25"H x 5.5"W x 1.25"D (8.3 x 14 x 3.2 cm)
Weight	1 lb (0.45 kg)

ORDERING INFORMATION

MODEL	DESCRIPTION
FGD-W600	Sensaphone Web600
FGD-W610	Backup battery for Web600

	ACCESSORIES	PAGE
KHR3	3% Wall mount humidity transmitter, 4-20 mA output	**452**
KTR3	10k Type 3 wall sensor	**987**

VISONIC AUTO DIALER
DL-125C

DESCRIPTION

The **DL-125C** automatic programmable speech dialer is designed for twin contact closure input. It will automatically dial out and alert up to four numbers per alarm. The 20-second voice message is digitally stored in non-volatile memory and may be changed at any time. The unit is powered by 12 VDC and may be connected to any phone line with pulse or tone dialing. The **DL-125C** is ideal for panel mounting and alarming any contact input such as temperature high or low limits, water leak detection, efrigerant leak, CO2 limit alarm, control failure, and a host of other purposes.

OPERATION/APPLICATION

Upon alarm initiation, the **DL-125C** pauses for a programmable time (1-255 sec), then hangs up any device on the same phone line (line seizure) and dials out to the first of four possible phone numbers. If someone answers, the 20-second message is delivered. The **DL-125C** will attempt to dial each phone number between 1 and 15 times (decided at set-up) before abandoning any further attempts. Once a call is answered and the 20-second message is delivered, the unit waits three seconds for an acknowledgment (touch tone digit 1). The recipient can cancel further call-outs, or the device will continue to call the remainder of the phone numbers. If acknowledged, a "listen in" feature is enabled so the called party can audibly monitor the site for 10 seconds (this can be programmed for a longer time). After the call cycle is complete, the **DL-125C** moves on to the next phone number or stops (as programmed) after first acknowledgment.

Visonic
For a secure way of life

DL-125-C

CE

FEATURES

- ***Normally-open or normally-closed dual contact input***
- ***Screw terminal strip connection***
- ***20 seconds of digitally stored voice***
- ***Site monitor microphone***
- ***Line seizure capability***
- ***Compact design***
- ***Keypad interface***
- ***Phone line failure output***

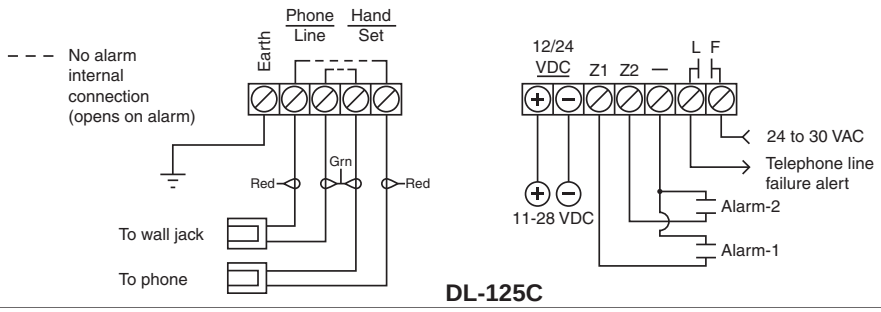
SPECIFICATIONS

Supply Voltage	11-28 VDC
Supply Current	20 mA standby, 105 mA maximum
Connection	Terminal strip
Phone	Tone (DTMF) or pulse
Impedance	600Ω
Alarm Input (AL)	2 alarm inputs
AL 1	Configurable NO or NC
AL 2	Configurable NO or NC
Alarm Out (LF)	Phone line fail, 30 Volt triac
Dial Alert	LED indication during use
Microphone	Built-in
Controls	12-key number pad 1 program and 1 stop button 2 alarm buttons (AL-1, AL-2)
Memory	EEPROM, non-volatile
No. of Calls	4 calls per alarm maximum or 2 pager calls maximum
Numbers / dial-out	20 numbers maximum
Messages	2, each using 2 segments Message 1, segment 1 & 2 Message 2, segment 1 & 3
Segment 1	14.5 seconds, activated for both alarms
Segment 2	2.5 seconds, identifies alarm AL-1
Segment 3	2.5 seconds, identifies alarm AL-1
Message Length	
Overall	20 seconds for all segments
Dialing Attempts	Adjustable, 1-15
Message Repeats	Adjustable, 1-255
Time Between Repeats	3 seconds
Dialer trigger delay	Adjustable, 1-255 seconds
Listen-in Function	Adjustable (enable/disable)
Listen-in Duration	Adjustable, 1-255 seconds
Acknowledge	First call or all calls (enable/disable)
Enclosure	NEMA 1
Operating Temperature	32° to 122°F (0° to 50°C)
Dimensions	4.25"H x 6.0"W x 1.4"D (10.5 x 15.0 x 3.5 cm)
Weight	0.5 lb (0.24 kg)
Approvals	CE
Warranty	1 year

VISONIC AUTO DIALER

DL-125C

WIRING



DL-125C

PROGRAM MEMORY LOCATION CHART

Memory Location	Description (code option)	Entry Limits	Program Format	Factory Default
1	1st phone number for Z1, (Alarm 1)	20 digits	[PR] [1] [#] [NUM] [#]	NONE
2	2nd phone number for Z1, (Alarm 1)	20 digits	[PR] [2] [#] [NUM] [#]	NONE
3	3rd phone number for Z1, (Alarm 1)	20 digits	[PR] [3] [#] [NUM] [#]	NONE
4	4th phone number for Z1, (Alarm 1)	20 digits	[PR] [4] [#] [NUM] [#]	NONE
5	1st phone number for Z2, (Alarm 2)	20 digits	[PR] [1] [#] [NUM] [#]	NONE
6	2nd phone number for Z2, (Alarm 2)	20 digits	[PR] [2] [#] [NUM] [#]	NONE
7	3rd phone number for Z2, (Alarm 2)	20 digits	[PR] [3] [#] [NUM] [#]	NONE
8	4th phone number for Z2, (Alarm 2)	20 digits	[PR] [4] [#] [NUM] [#]	NONE
9	Not used or accessible	N/A	N/A	N/A
10	0 = enable, 1 = disable listen-in	0 or 1	[PR] [10] [#] [CODE] [#]	1
11	Dialing method, 0 = DTMF, 1= Pulse	0 or 1	[PR] [11] [#] [CODE] [#]	0
12	Alarm Z1 dialing attempts	1 - 15	[PR] [12] [#] [NUM] [#]	4
13	Alarm Z2 dialing attempts	1 - 15	[PR] [13] [#] [NUM] [#]	4
14	Alarm delay before callout, (seconds)	1 - 255	[PR] [14] [#] [SEC] [#]	3
15	Order of segment messages 0 = Alarm segment first 1 = Location segment first	0 or 1	[PR] [15] [#] [CODE] [#]	1
16	LF output logic 0 = NC, 1 = NO	0 or 1	[PR] [16] [#] [NUM] [#]	1
17-19	Not used or accessible	N/A	N/A	N/A
20	Recorded message repeats	1 - 255	[PR] [20] [#] [NUM] [#]	4
21	Listen-in duration (seconds)	1 - 255	[PR] [21] [#] [SEC] [#]	60
22	Z1 input definition, 0 = NO, 1 = NC	0 or 1	[PR] [22] [#] [CODE] [#]	0
23	Z2 input definition, 0 = NO, 1 = NC	0 or 1	[PR] [23] [#] [CODE] [#]	0
24	Acknowledgement reset	0 or 1	[PR] [24] [#] [CODE] [#]	1
Backup = 1, All numbers are called regardless of acknowledgement. Non-backup = 0, after the first acknowledgement no other calls are made.				

CAUTION: Additional comments and/or requirements
This device is not a life safety device and should not be used for life safety applications.

ORDERING INFORMATION

MODEL	DESCRIPTION
DL-125C	Auto dialer for remote alarm voice indication

NETWORK & WIRELESS

INTERNET READY WIRELESS THERMOSTAT

PRESTIGE 2.0 / PRESTIGE IAQ 2.0

NEW!

Honeywell

DESCRIPTION

The **Prestige 2.0** High Definition (HD) Color Touchscreen Thermostat provides control of 24Vac of heating and cooling systems. RedLINK™ enabled to work with compatible wireless accessories. With the addition of the THM6000R1002 RedLINK internet gateway the Prestige 2.0 can be viewed and set over the internet.

FEATURES

- ***RedLINK™ Wireless built-in***
- ***Single Piece and 2-piece/2 wire models available***
- ***Universal outputs for humidification, dehumidification or ventilation control***
- ***Selectable Commercial or Residential functionality***
- ***Holiday & special event calendar (Commercial Configuration)***
- ***Override Time limits (Commercial Configuration)***
- ***Pre-Occupancy Purge (Commercial Configuration)***
- ***Title 24 Compliant (Commercial Configuration)***
- ***Economizer Enable / Occupancy Relay (Commercial Configuration)***
- ***Universal inputs - S1 and S2 (on 2 piece models, supply/return sensor or dry-contact)***
- ***Delta T predictive diagnostics (on 2 piece models with supply/return sensors)***
- ***Configurable user alerts, maintenance reminders and interaction logs***
- ***USB port for contractor configuration backup & restore***
- ***Optional wireless outdoor and space temperature + humidity sensors***
- ***Optional wireless table-top remote touch screen remote control with temperature sensor***

THM6000R1002

THX9321R5030

APPLICATION

1 piece	Up to 3 heat / 2 cool heat pump Up to 2 heat / 2 cool conventional
2 piece	Up to 4 heat / 2 cool heat pump Up to 3 heat / 2 cool conventional Up to 3 heat / 4 cool conventional (commercial using universal output terminals)

SPECIFICATIONS

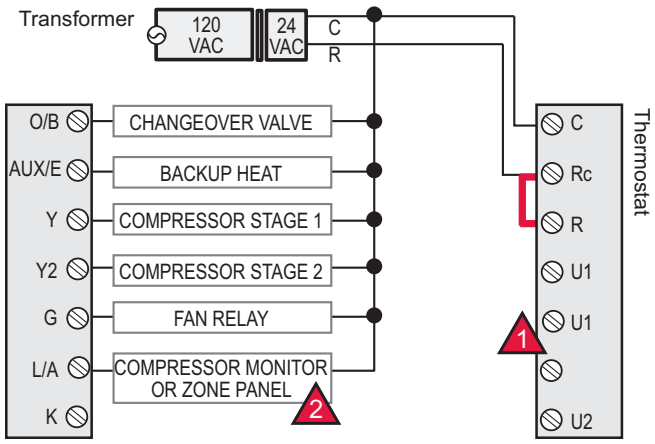
Supply Voltage	18-30VAC
Frequency	902-928 MHz
Range	Building material and content dependent
Modulation	Frequency Hopping Spread Spectrum
System Type	3H/2C conventional, 4H/2C heatpump, 4C/3H max conventional commerical using universal output terminals
Communication	Honeywell RedLINK
Analog Input	EIM 2 Universal inputs, temperature or dry-contact selectable (not available with single-piece thermostat)
Digital Output	
EIM	7
Standalone Thermostat	6
Auxiliary Contacts	
EIM	3
Standalone Thermostat	2
Contact Rating	
EIM terminals W-O/B, Y, W3-Aux2, A-L/A	Maximum Current 1.0A
EIM terminals G, U1, U2, U3	Maximum Current 0.5A
EIM terminals W2-Aux1, Y2	Maximum Current 0.6A
Accuracy	
Temperature	±1°F
Humidity	5% (1-100%)
Setpoint Range	
Temperature	40 to 90 Heat; 50 to 99 Cool
Humidity	10 to 60% Humidity; 40 to 80% for Dehumidification
Operating Temperature	
Thermostat	32° to 120°F (0° to 48.8°C)
EIM	-40° to 165°F (-40° to 73.8°C)
Operating Humidity	
Thermostat	5 to 90% (non-condensing)
EIM	5 to 95% (non-condensing)
Dimensions	
Thermostat	3.8"H x 6.81"W x 1.8"D (9.6 x 17.27 x 4.5 cm)
EIM	9.3"H x 4.18"W x 1.59"D (23.6 x10.6 x 4 cm)
Weight	2.5 lb (1.13 kg)
Approvals	This device complies with Part 15 of the FCC Rules.(15.19, 15.21, 15.105)
RoHS Statement	Yes
Warranty	5 year limited (excluding batteries)

INTERNET READY WIRELESS THERMOSTAT

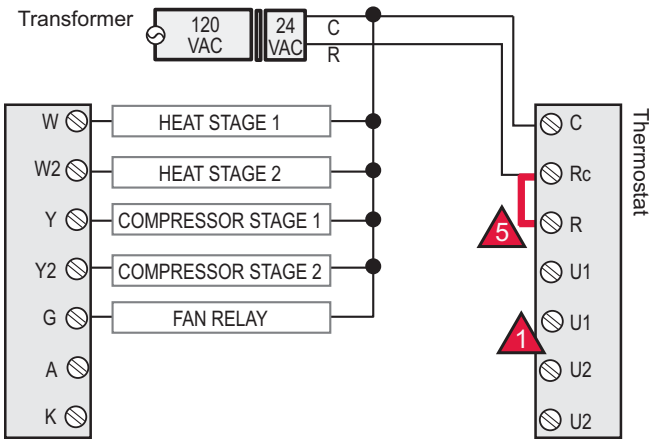
PRESTIGE 2.0

WIRING - PRESTIGE THX9321

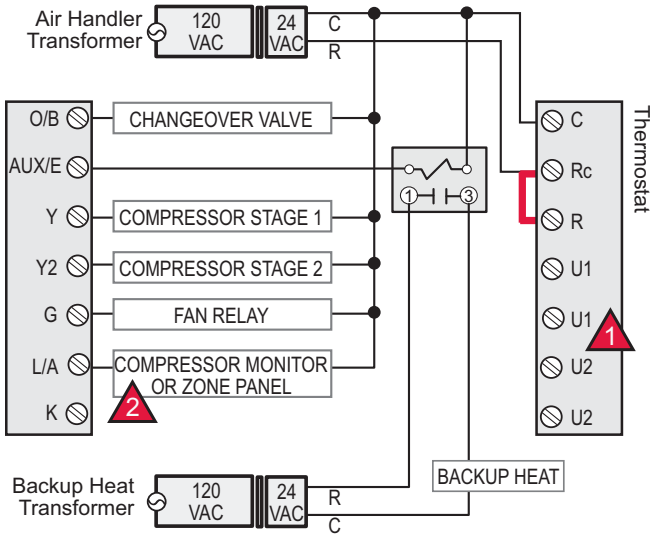
Typical wiring of a 3-heat / 2-cool heat pump system with one transformer



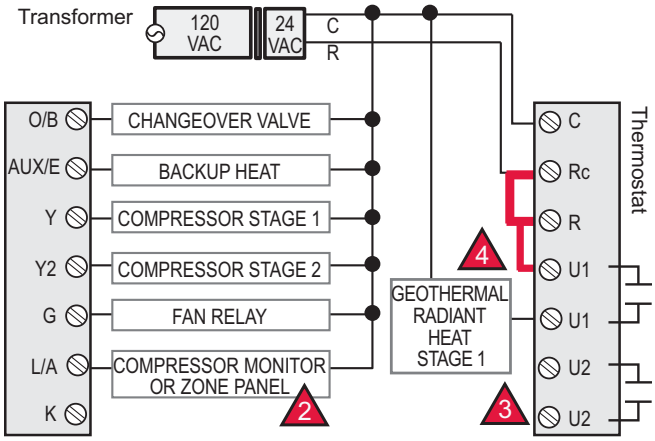
Typical wiring of a 2-heat / 2-cool conventional system with one transformer



Typical wiring of a 3-heat / 2-cool heat pump system with two transformers



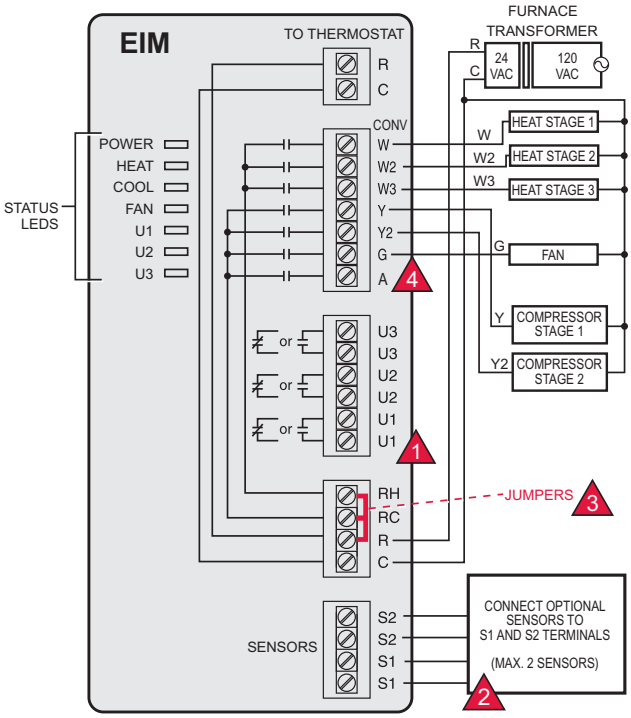
Typical wiring for geothermal radiant heat, geothermal forced-air and backup heat with one transformer



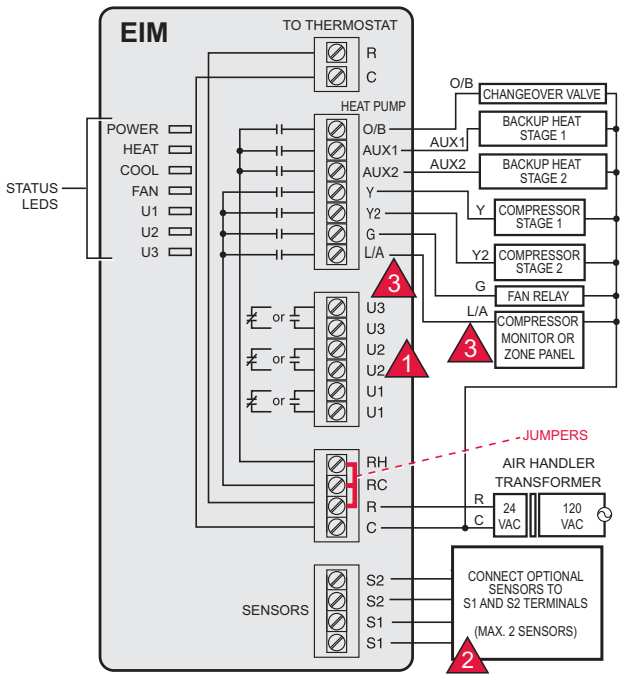
1. U1 and U2 terminals are dry contacts.
2. L/A terminal sends continuous output when thermostat is set to EM HEAT mode except when set up for Economizer or TOD. See Economizer wiring section.
3. U1 or U2 terminals must be used for geothermal radiant heat (ISU 2010). Thermostat allows 2 stages of radiant heat—geothermal (stage 1) and boiler (stage 2).
4. "U" terminals are normally open dry contacts when set up for geothermal radiant heat. You must install a field jumper if radiant heat is powered by transformer. Do NOT install a field jumper if radiant heat has its own transformer.
5. Remove jumper if using separate transformers.

WIRING - EIM

Typical wiring of a conventional system with up to 3-stage heat and 2-stage cool with one transformer.



Typical wiring of a heat pump system with up to four-stage heat and two-stage cool with one transformer.



See installation instructions for additional wiring options.

NOTES

The RedLINK Internet Gateway requires a physical Ethernet connection to an open port on a user-supplied router. The router must be connected to the internet via a user's Internet Provider for access to the Honeywell server. There is no need for a static IP address. To date, there have been no reported issues with port blocking or firewalls preventing access.

In order to guard against possible wireless signal overload, assure that all wireless RedLINK devices including the RedLINK Internet Gateway are spaced a minimum of 2 feet apart from each other for proper operation.

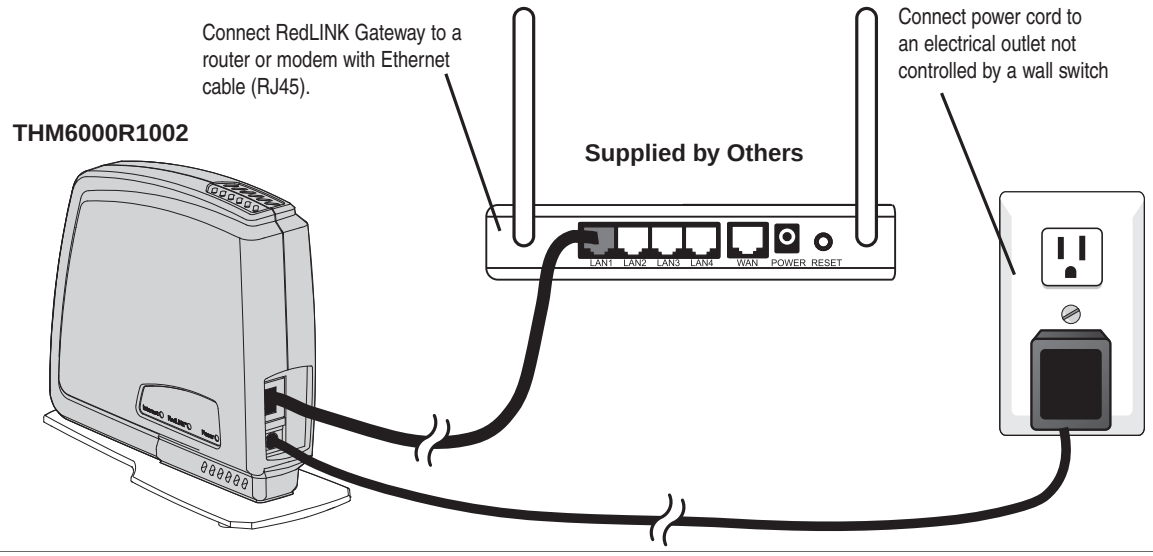
REDLINK WIRELESS GATEWAY (THM6000R1002) CONTRACTOR SETUP:

1. Connect power to the RedLINK Internet Gateway using the supplied 120VAC power supply wall module.
2. Connect the supplied Ethernet cable from the RedLINK Internet Gateway to an available port on a designated Router (router supplied by others).
3. Using the Prestige Thermostat Contractor Installation Options Menu select Wireless Device Manager, then select Add Device.
4. Press and release the Connect button located on the bottom of the RedLINK Internet Gateway. The device will appear on the Thermostat. Exit the menu.
5. Note the Device MAC ID and Device CRC information on the bottom of the device (required for account assignment).

INTERNET READY WIRELESS THERMOSTAT

PRESTIGE 2.0

GATEWAY SETUP



ACCOUNT SETUP

1. Visit www.mytotalconnectcomfort.com and click "Create an Account" There is no charge for this service.
2. Enter required account information including email, password and security questions/answers
3. Account verification email will be sent to account email - log into email and validate account to return to www.mytotalconnectcomfort.com
4. Enter New Location for RedLINK Internet Gateway including location type (commercial or residential) and alert email accounts
5. Assign RedLINK Internet Gateway to location by entering the unique device MAC ID and device CRC information (Found on bottom of THM6000R1002)

Account is now active and may be accessed via any supported web browser or smart phone application.

ORDERING INFORMATION

MODEL	DESCRIPTION
THX9321R5030	Prestige high definition color touchscreen thermostat. RedLINK enabled
YTHX9321R5079	One piece prestige high definition color touchscreen thermostat plus C7089R1013 wireless outdoor temperature and humidity sensor + batteries
YTHX9321R5061	One piece Prestige 2.0 high definition color touchscreen thermostat plus C7089R1013 wireless outdoor temperature and humidity sensor plus REM5000R1001 wireless portable comfort control table-top remote with temperature sensor + batteries
YTHX9421R5051	2 piece / 2 wire Prestige 2.0 high definition color touchscreen thermostat plus THM5421R1013 equipment interface module, plus 2 duct sensors
YTHX9421R5069	2 piece / 2 wire Prestige 2.0 high definition color touchscreen thermostat plus THM5421R1013 equipment interface module, plus 2 duct sensors plus C7089R1013 wireless outdoor temperature / humidity sensor plus batteries
YTHX9421R5077	2 piece / 2 wire Prestige 2.0 high definition color touchscreen thermostat plus THM5421R1013 equipment interface module, plus 2 duct sensors plus C7089R1013 wireless outdoor temperature / humidity sensor plus REM5000R1001 wireless portable comfort control table-top remote with temperature sensor + batteries
THM6000R1002	RedLINK enabled internet gateway.
C7189R1004	Wireless indoor sensor. RedLINK enabled. Senses indoor temperature and humidity to be used for control with Prestige 2.0 thermostats.
C7089R1013	Wireless outdoor temperature and humidity sensor. RedLINK enabled. Up to 5 year battery life (2 AA lithium batteries included)
REM5000R1001	Wireless portable comfort control table-top remote with temperature sensor. RedLINK enabled. (3 AA akaline batteries included)

FLEXIBLE BACNET THERMOSTAT
FLEXSTAT

NEW!

BACnet

KMC CONTROLS

DESCRIPTION

The **FlexStat Series** of intelligent thermostats can monitor temperature/humidity/motion-sensing, and are wall-mounted. In addition the FlexStat comes with BACnet MS/TP communications standard. The FlexStat simplifies networked zone control for common HVAC equipment. Example applications are packaged rooftop units, air handlers, fan coil units, and heat pumps. The on-board library of programs permits rapid configuration of a wide range of HVAC control applications via the FlexStat's display and buttons.

FEATURES

- ***User-friendly English-language menus on a 64 x 128 pixel, dot-matrix LCD display with 5 buttons for data selection and entry***
- ***Built-in, factory-tested libraries of configurable application control sequences***
- ***Schedules can easily be set by weekdays (Mon. - Fri.), weekend (Sat. - Sun.), entire week (Mon. -Sun.), individual days, and/or holidays***
- ***Six On/Off and independent heating and cooling set point periods are available per day***
- ***Three levels of password-protected access (user/operator/administrator)***

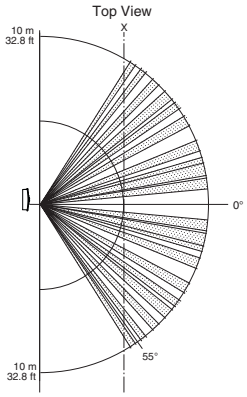
BACnet 120000 Series

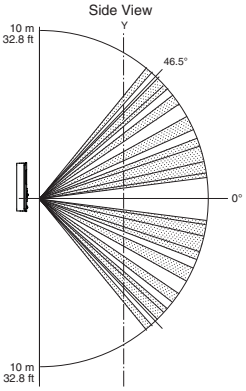
- ***Integral temperature and optional humidity and/or motion sensors***
- ***Multiple models available***
- ***72-hour power (capacitor) backup and a real time clock for network time synchronization or full stand alone operation***

SPECIFICATIONS

Supply Voltage	24VAC 50/60 Hz
Supply Current	13 VA
Display	64 x 128 pixel dot matrix LCD
Analog Input	0-12 VDC (Active/Passive) 10K thermistor (type 2 or 3)
Analog Output	0-12 VDC, 20 mA (maximum)
Digital Output	1 A maximum each or total of 1.5 A per bank of relays
Sensor Type	
Humidity (optional)	CMOS
Temperature (with humidity)	CMOS
Temperature (without humidity)	10K Type 2
Motion (optional)	Passive infrared with 33 feet (10 meter) range
Accuracy	
Humidity (optional)	±2% RH (10 to 90% RH)
Temperature (with humidity)	±0.9°F (±0.5°C)
Temperature (without humidity)	±0.36°F (±0.2°C)
Range	
Humidity (optional)	0 to 100% RH
Temperature (with humidity)	36° to 120°F (2.2 to 48.8°C)
Temperature (without humidity)	48° to 96°F (8.8 to 35.5°C)
Response Time	Humidity (optional) < 4 seconds
Operating Temperature	34° to 125°F (1.1 to 51.6°C)
Operating Humidity	0 to 90% RH (non-condensing)
Dimensions	4.1"H x 5.5"W x 1.1"D (10.6 x 14.1 x 1.1 cm)
Weight	0.48 lb (0.22 kg)
Approvals	cULus Listed File #E145832, FCC
Warranty	5 years

MOTION / OCCUPANCY SENSOR (OPTIONAL) PATTERN





FLEXIBLE BACNET THERMOSTAT

FLEXSTAT

APPLICATIONS

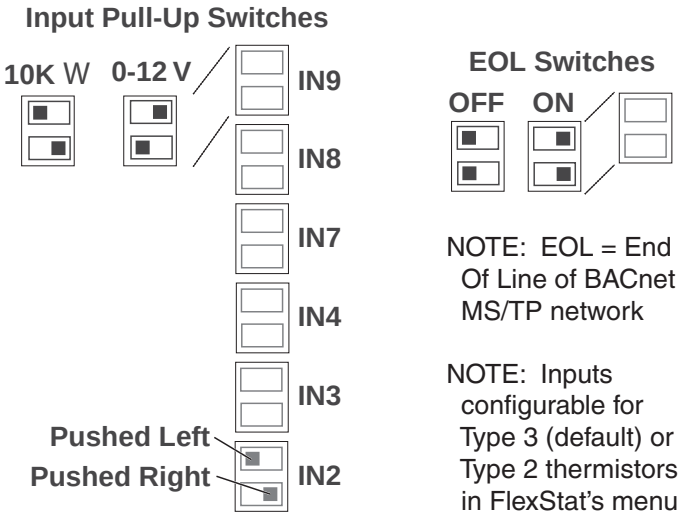
Applications and Options	FlexStat Models and Outputs							
	6 Relays & 3 Analog				*3 Relays & 6 Analog*			
	BAC-120063C	BAC-120163C (+ Humidity)	BAC-121063C (+ Motion)	BAC-121163C (+ Humidity/Motion)	BAC-120036C	BAC-120136C (+ Humidity)	BAC-121036C (+ Motion)	BAC-121136C (+ Humidity/Motion)
Packaged Unit (Air Handling Unit and Roof Top Unit) (See also Heating OR Cooling Unit)								
1 Heat and 1 Cool					X	X	X	X
1 or 2 Heat and 1 or 2 Cool (in RTU Menu Only)	RTU	RTU	RTU	RTU				
1 or 2 Heat and Modulating Cool					X	X	X	X
Modulating Heat and 1 or 2 Cool					X	X	X	X
Modulating Heat and Modulating Cool (in AHU Menu Only)	AHU	AHU	AHU	AHU	X	X	X	X
Opt. Outside Air Damper, Modulating	X	X	X	X	X	X	X	X
Opt. Outside Air Damper, 2 Position (in RTU Menu Only)	RTU	RTU	RTU	RTU	X	X	X	X
Opt. Mechanical Cooling								
Opt. Fan Speed Control					X	X	X	X
Opt. Dehumidification		X		X		X		X
Opt. Humidifier						X		X
Opt. Motion/Occupancy Sensor			X	X			X	X
FCU (Fan Coil Unit)	*With 3-speed fan*				*With 3-speed fan*			
2 Pipe, Modulating	X	X	X	X	X	X	X	X
2 Pipe, 2 Position	X	X	X	X				
4 Pipe, Modulating	X	X	X	X	X	X	X	X
4 Pipe, 2 Position	X	X	X	X				
Opt. Dehumidification (4 pipe only)		X		X		X		X
Opt. Humidifier (4 pipe only)						X		X
Opt. Motion/Occupancy Sensor			X	X			X	X
HPU (Heat Pump Unit)	*1 or 2 compressors with auxiliary and emergency heat*							
Opt. Outside Air Damper, Modulating	X	X	X	X	N/A			
Opt. Dehumidification		X		X				
Opt. Motion/Occupancy Sensor			X	X				
Heating OR Cooling Unit								
1 Heat (Only) **or** 1 Cool (Only)	N/A				N/A			
Opt. Motion/Occupancy Sensor								

All models have a real-time clock. They also have optional discharge air temperature monitoring/trending or fan status monitoring (but not both).

To order white instead of light almond, add W to the end of the model number (e.g., BAC-120036CW).

WIRING

6/3 & 3/6 Wiring

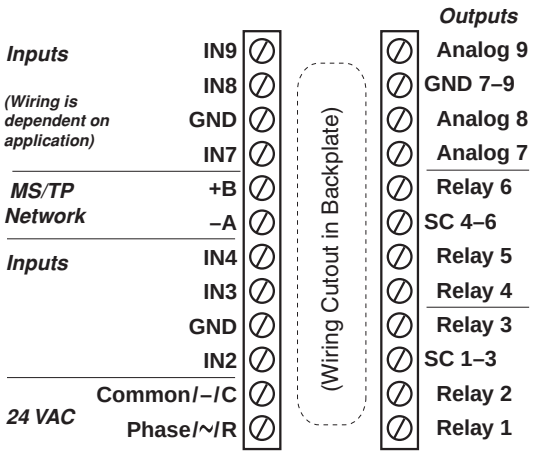


NOTE: EOL = End Of Line of BACnet MS/TP network

NOTE: Inputs configurable for Type 3 (default) or Type 2 thermistors in FlexStat's menu

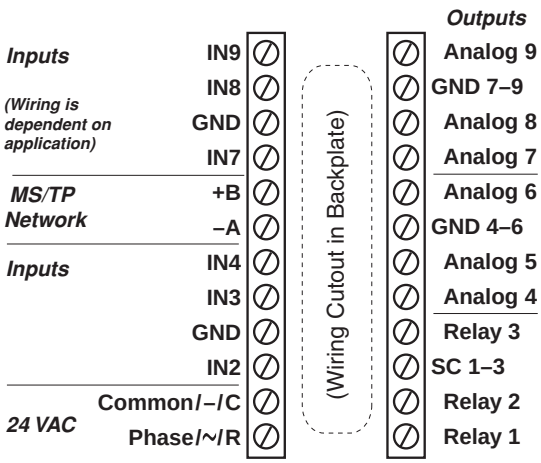
NOTE: IN1 and IN5–6 are reserved for internal sensors

NOTE: SC = Switched (Relay) Common



NOTE: IN1 and IN5–6 are reserved for internal sensors

NOTE: SC = Switched (Relay) Common



ORDERING INFORMATION

MODEL	DESCRIPTION
BAC-120036C	3 relays and 6 analog outputs almond
BAC-120063C	6 relays and 3 analog ouputs almond
BAC-120136C	3 relays and 6 analog outputs humidity almond
BAC-120163C	6 relays and 3 analog outputs humidity almond
BAC-121036C	3 relays and 6 analog outputs motion sensor almond
BAC-121063C	6 relays and 3 analog outputs motion sensor almond
BAC-121136C	3 relays and 6 analog outputs humidity motion sensor almond
BAC-121163C	6 relays and 3 analog outputs humidity motion sensor almond

WIRELESS THERMOSTAT SYSTEM

VICONICS WIRELESS

DESCRIPTION

The **Viconics Wireless** thermostat system provides wireless networked control of Heating, Ventilating, and Air Conditioning (HVAC) equipment on a Building Automation System (BAS).

The **Viconics Wireless** thermostats integrate into a supervisory controller using BACnet(R) Internet Protocol (IP) or BACnet Master- Slave/Token-Passing (MS/TP) communications. **VWG-40** Coordinators allow the supervisory controller to communicate with multiple Viconics wireless thermostats.

The wireless mesh network uses ZigBee(R) technology to enable remote monitoring and programming and to enhance reliability by providing redundant transmission paths through other Viconics wireless thermostats, creating a resilient, self healing mesh network.

VT7300A5031W Thermostat

VWG-40 Coordinator

VWG-RA-1000

FEATURES

- ***Wireless communication***
- ***Integral humidity sensing capability (dehumidification models)***
- ***On/off, floating, or proportional 0 to 10 VDC control***
- ***Three speeds of fan control (model-dependent)***
- ***Integral wireless signal strength testing built into wireless thermostats and coordinators***
- ***Backlit Liquid Crystal Display (LCD)***
- ***Two configurable binary inputs***
- ***Over 20 configurable parameters***

APPLICATION

- ***Commercial structures with brick or solid concrete walls and/or ceilings that impede hard-wired thermostat applications***
- ***Office buildings, retail stores, and other commercial real estate where tenant turnover is frequent***
- ***Museums, historical buildings, atriums, and other sites where building aesthetics and historical preservation are important***
- ***Buildings with marble, granite, glass, mirrored, wood veneer, or other decorative surfaces that present challenges to hard-wired applications***
- ***Buildings with asbestos or other hazardous materials that must not be penetrated or disturbed***
- ***Buildings with occupants sensitive to disruptions to business***
- ***College dorms, hotels, and condos***

SPECIFICATIONS

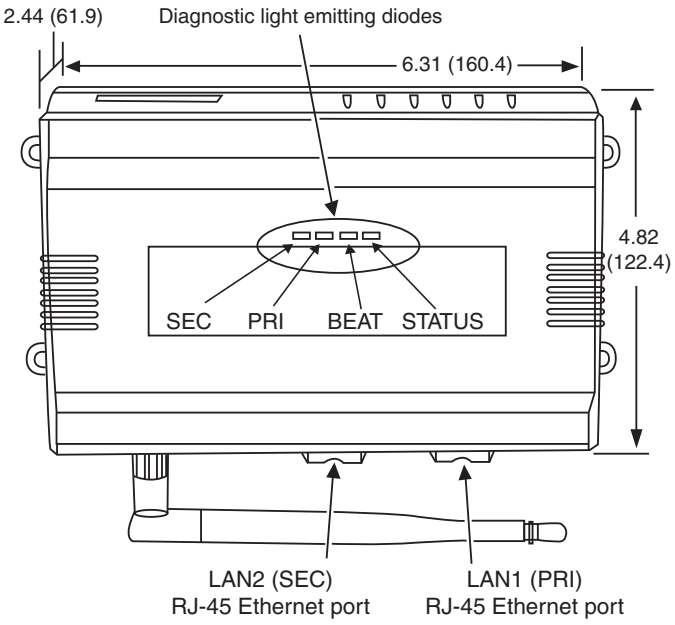
Supply Voltage	
Coordinator	15 VDC
Thermostats	19 to 30 VAC, 50/60 Hz
Supply Current	2 VA
Supply Watts	15 W maximum (coordinator)
Coordinator	
Operating System	NiagaraAX
Platform	IBM® PowerPC 405EP 250 MHz Processor 64 MB SDRAM & 64 MB Serial Flash Battery Backup - shutdown begins within 10 seconds Real-time clock - 3 month backup maximum with battery
Frequency	2.4Ghz
Modulation	DSSS (Direct-sequence spread-spectrum transmission)
Communication (coordinator)	
	Ethernet Two 10/100 Mbps Ports (RJ-45 Connection), BACnet IP (VWG-40-IP -1000) RS-232 9-Pin D-Shell Connection RS-485 3-Pin Non-Isolated Port, BACnet MS/TP (VWG-40-MSTP-1000)
Fan Switching	(VT7300) 30 VAC, 1.0 A maximum, 3.0 A inrush
Relay Output	(VT7300A, C, VT7600) 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush
Analog Output	(VT72xxF, VT73xxF) 0 to 10 VDC
Auxiliary Contacts	30 VAC, 1.0 A Maximum, 3.0 A inrush
Digital Inputs	Dry contacts
Accuracy	
Temperature	±0.9°F (±0.5°C) at 70°F (21°C
Models with Humidity	±5% RH from 20 to 80% RH at 50° to 90°F (10° to 32°C)
Sensor Type	
Thermostat	(local) 10K NTC

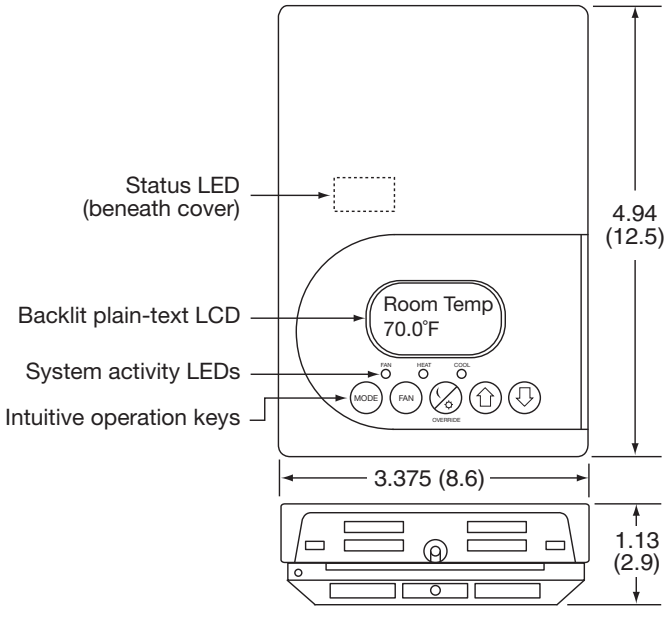
SPECIFICATIONS (CONTINUED)

Setpoint Range	Heating 40° to 90°F (4.5° to 32°C) in 0.5° increments Cooling 54° to 100°F (12° to 38°C) in 0.5° increments
Transmission Power	10 mW Maximum
Range	Through walls 30 ft (10 m) Line-of-sight 100 ft (30 m) Open space
Deadband	2°F (1°C) between heating and cooling
Number of Zones	30 Maximum
Operating Temperature	32° to 122°F (0° to 50°C)
Display	-40° to 122°F (-40° to 50°C)
Operating Humidity	95% RH maximum (non-condensing)
Weight	
Coordinator	1.10 lb (0.49 kg)
Thermostat	0.75 lb (0.34 kg)

Approvals	
Coordinator	UL916, C-UL listed to Canadian Standards Association, (CSA) C22.2 No. 205-m1983 "Signal Equipment", CE, FCC part 15 Class A, C-Tick,
Thermostat	United States UL Listed, CCN XAPX, Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to Part 15.247 Regulations for Low Power Unlicensed Transmitters, C-Tick Canada UL Listed, CCN XAPX7, Under CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment Industry Canada, ICES-003
RoHS Statement	Yes
Warranty	1 year

DIMENSIONS, CONTROLS, AND CONNECTIONS - in (cm)





WIRELESS THERMOSTAT SYSTEM
VICONICS WIRELESS

Viconics Wireless Thermostat Controller System Overview
A Viconics Wireless Thermostat Controller System consists of:
A supervisory controller
At least one VWG-40 Coordinator
Multiple Viconics Wireless Thermostat Controllers

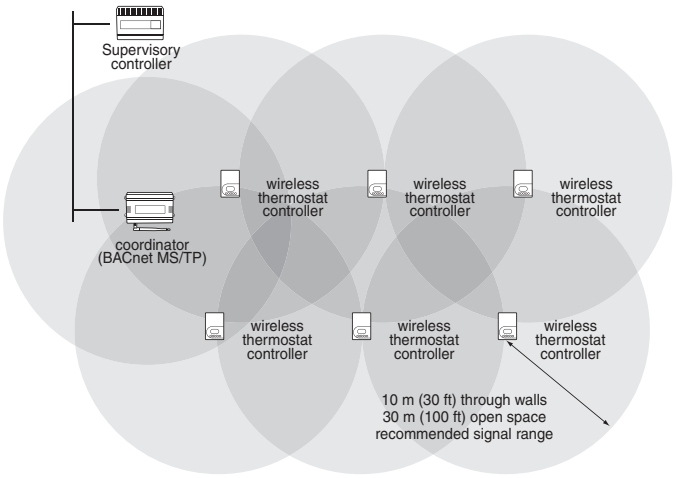


Figure 1

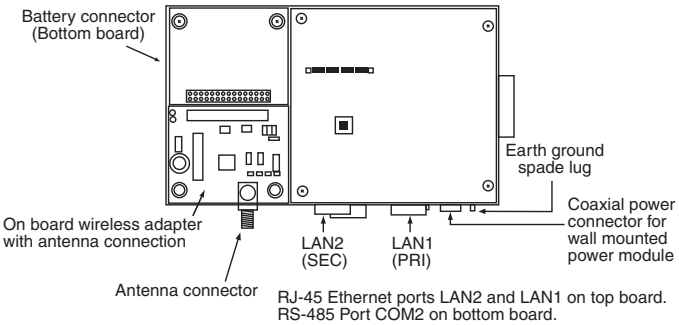
Component Descriptions
Supervisory Controllers (building automation system)
The Viconics Wireless Thermostat Controller System interfaces with Web-enabled, Ethernet-based, supervisory controllers that connect BAS networks to IP networks and the Web. Supervisory controllers provide scheduling, alarm and event management, trending, energy management, data exchange, dial-out capability, and password protection with a computer running Microsoft® Internet Explorer® Web browser.

VWG-40 Coordinators
A VWG-40 Coordinator provides a wireless interface between a supervisory controller and the Viconics Wireless Thermostat Controllers, allowing the exchange of BACnet IP (VWG-40-IP-1000 model) or BACnet MS/TP (VWG-40-MSTP-1000 model) messages. The VWG-40 Coordinator initiates the formation of the wireless mesh network - one is required per wireless mesh network. Each VWG-40 Coordinator and the Viconics Wireless Thermostat Controllers assigned to it share a "Personal Area Network Identification" (PAN ID). A VWG-40 Coordinator requires a 15 VDC power source. An optional remote-mount antenna and cable is available to allow transmission when the coordinator is mounted inside a metal panel.

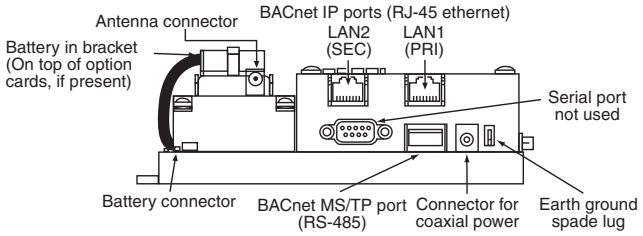
A VWG-40 Coordinator enables the Viconics Wireless Thermostat Controllers to communicate with the supervisory controller, which schedules zone occupancy of the wireless system, collects trend data, overrides points, and monitors alarms. The Viconics Wireless Thermostat Controller System confirms and synchronizes data transmissions between the Viconics Wireless Thermostat Controllers and VWG-40 Coordinators.

Together, these components provide wireless monitoring and temperature control of building Heating, Ventilating, and Air Conditioning (HVAC) equipment. Figure 1 illustrates a simple Viconics Wireless Thermostat Controller System using a BACnet MS/TP Version of the VWG-40 Coordinator

Viconics Wireless Thermostat Controllers
Depending on the model, the Viconics Wireless Thermostat Controllers can communicate sensed temperature, setpoint temperature, and other data with an associated supervisory controller and control a variety of fan coil and zoning equipment. The Viconics Wireless Thermostat Controllers are designed for indoor, intra-building applications only. The Viconics Wireless Thermostat Controllers can also serve as repeaters to extend the range of the BACnet data communications within the wireless mesh network.



VWG-40 Coordinator (Cover Removed)



VWG-40 Coordinator Communications Port (Cover Removed)

Component Quantities
A Viconics Wireless Thermostat Controller System can support up to:
- 100 Viconics Wireless Thermostat Controllers per MS/TP trunk on the supervisory controller
- 254 Viconics Wireless Thermostat Controllers integrated through BACnet IP on a supervisory controller
- 30 Viconics Wireless Thermostat Controllers per VWG-40 Coordinator

Each increment of 30 Viconics Wireless Thermostat Controllers requires one additional VWG-40 Coordinator. Viconics Wireless Thermostat Controllers can be added as repeaters, as required, to extend range and provide redundant pathways. Viconics Wireless Thermostat Controllers serving only as repeaters do not count towards the totals shown in Table 1; however, indiscriminate use of Viconics Wireless Thermostat Controllers as repeaters can lead to reduced performance.

TABLE 1	
Number of Viconics wireless thermostats	**VWG-40 Coordinators Required**
1-30	1
31-60	2
61-90	3
91-100	4

Viconics Wireless Communication
The Viconics Wireless Thermostat System uses DSSS RF wireless technology and operates on the 2.4 GHz ISM band. The system meets the IEEE 802.15.4 standard for low power, low duty-cycle RF transmitting systems and is compatible with wireless mesh networks compliant with the ZigBee® standard. The Viconics Thermostats have a transmission power of 10 mW.

A successful Viconics Wireless Thermostat System requires that a minimum RF (wireless) signal strength be maintained between the VWG-40 Coordinators and Viconics Wireless Thermostats. VWG-40 Coordinator and Viconics Wireless Thermostat locations are important considerations in system design. Distance, metal objects, and other obstructions can reduce or completely block the RF signal transmission between a VWG-40 Coordinator and Viconics Wireless Thermostat.

CAUTION: APPLICATIONS TO AVOID
Locations or applications that prohibit cellular telephones or Wireless Fidelity (WiFi) systems are unsuitable for the wireless products. Examples include:
- **Operating rooms or radiation therapy rooms**
- **Critical environments**
- **Department of defense applications requiring Diacap certification (for example, military bases and military hospitals)**

Do not use the products in applications that cannot tolerate intermittent interference, or where:
- **Critical control features would impact life-safety or result in large monetary loss, including secondary (backup) lifesafety 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 being monitored**

ORDERING INFORMATION

MODEL	DESCRIPTION
VWG-40-IP-1000	Coordinator BACnet IP version
VWG-40-MSTP-1000	Coordinator BACnet MS/TP version
VWG-APP-1000	Wireless Niagara card
VT7200C5031W	2 Outputs-on/off / floating - no fan
VT7200F5031W	2 Outputs - 0 -10 VDC analog - no fan
VT7300A5031W	Commercial - 2 outputs-on/off
VT7300F5031W	Commercial - 2 outputs - 0-10 VDC
VT7305A5031W	Hotel - 2 outputs-on/off
VT7305F5031W	Hotel - 2 outputs - 0-10 VDC
VT7350C5031W	6 Commercial - 2 outputs-on/off / floating / RH
VT7350F5031W	Commercial - 2 outputs - 0-10 VDC / RH
VT7355C5031W	Hotel - 2 outputs - on/off / floating / RH
VT7355F5031W	Hotel - 2 outputs - 0 - 10 VDC / RH
VT7600A5031W	Single stage, non-programmable
VT7600B5031W	Multi-stage, non-programmable
VT7600H5031W	Heat pump, non-programmable
VT7605B5031W	Multi-stage economizer
VT7652H5031W	Commercial - 2 outputs-on/off / floating

* Hotel Version: Center button changes display from celsius to farenheight
Commercial Version: Center button is for occupancy override

ACCESSORIES	
VWGPSNAAC1201000	120 VAC to 15 VDC power supply
VWG-PS-AC24-1000	24 VAC to 15 VDC power supply for VWG-40
VWG-WA-1000	Relacement antenna for VWG-40 Coordinator
VWG-RA-1000	Remote antenna for VWG-40 Coordinator
VWG-BB-1000	Replacement battery pack for VWG-40 Coordinator

KELE CONSTANT VOLUME ZONING SYSTEM

KTEC ZONING SYSTEM

DESCRIPTION

The technologically advanced **KTEC Zoning Control System** provides efficient space temperature control for constant volume zoning systems in multi-zone heating and cooling applications. This cost-effective zoning control system can operate as a stand-alone system, or it can be mapped into a supervisory controller via a BACnet - Master-Slave/ Token-Passing (MS/TP) Bus to enable remote monitoring and programmability within a Building Automation System (BAS).

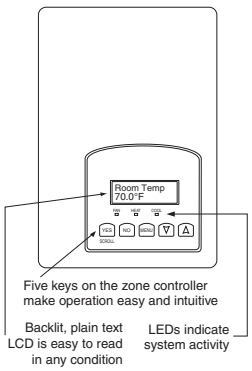
KTEC2664Z Rooftop Controller

KTEC2647Z Zone Controller

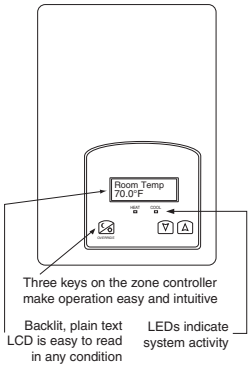
FEATURES

- ***Fully scalable zoning control system meets the requirements of small and large zoning control systems***
- ***BACnet MS/TP communication provides compatibility with a proven communication network***
- ***True stand-alone zoning control system offers additional application flexibility***
- ***Backlit Display offers real-time control status of the environment in easy-to-read, English plain text messages with constant backlight that brightens during user interaction***
- ***Simplified setpoint adjustment enables the user to change the setpoint by simply pressing the UP/DOWN arrow keys***
- ***Configurable binary inputs provide additional inputs for advanced functions such as remote night setback, service or filter alarms, motion detector, and window status***
- ***Over 20 configurable parameters enable the zoning control system to adapt to applications with varying requirements, allowing installer parameter access without opening the controller cover***

CONTROL LAYOUT



KTEC2664Z Rooftop Controller



KTEC2647Z Zone Controller

See installation instructions for wiring diagrams

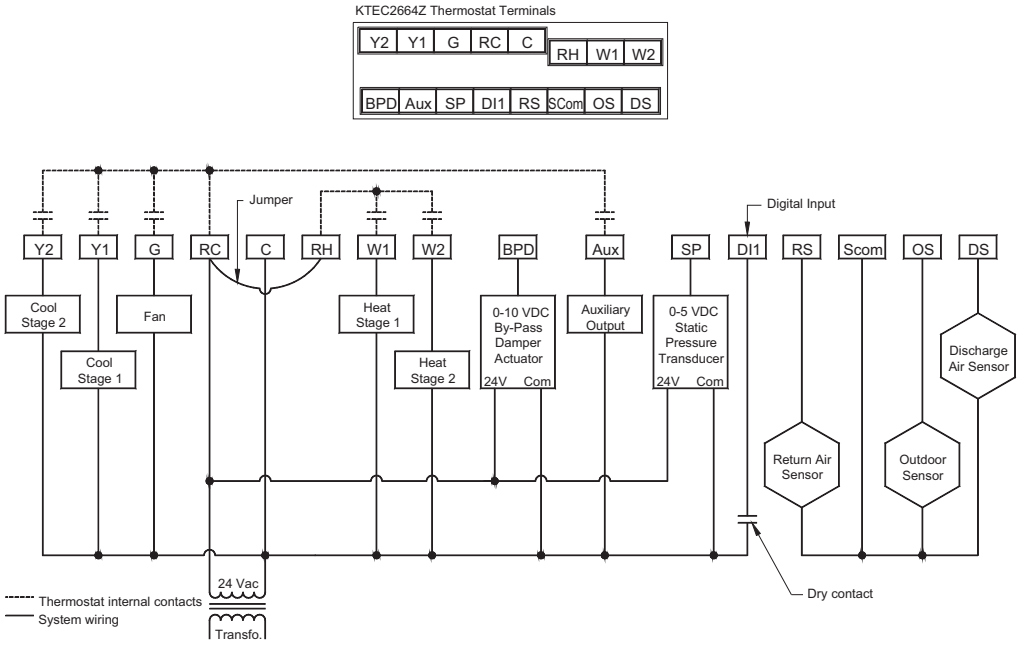
SPECIFICATIONS

Supply Voltage	19 to 30 VAC, 50/60 Hz
Supply Current	2 VA @ 24 VAC
Analog Input	
KTEC2647Z	Resistive inputs (RS and UI3) for 10KΩ Type II thermistor
KTEC2664Z	Resistive inputs (RS, OS, and DS) for 10KΩ Type II thermistor
Analog Output	0 to 10 VDC into 2kΩ resistance load (minimum)
Digital Inputs	
KTEC2647Z	Dry contacts across terminal scom to terminals BI1 and BI2
KTEC2664Z	Dry contact across terminal scom to terminal BI1
Auxiliary Contacts	Triac output 19 to 30 VAC, 15 mA to 1 A continuous current, 3A peak in-rush current
Static Pressure	0 to 5 VDC for full static pressure range selected
Accuracy	±0.9°F (±0.5°C) at 70°F (21°C)
Sensor Type	10k ohm NTC thermistor (Local)
Setpoint Range	Heating 40° to 90°F (4.5° to 32°C) Cooling 54° to 100°F (12° to 37.5°C)
Deadband	2°F (1°C)
Number of Zones	31 zones maximum per 1 rooftop controller
Operating Temperature	32° to 122°F (0° to 50°C)
Display	-40° to 122°F (-40° to 50°C) in 0.5° increments
Operating Humidity	0 to 95% RH (non-condensing)
Dimensions	4.9"H x 3.4"W x 1.1"D (12.5 x 8.6 x 2.9 cm)
Weight	0.75 lb (0.34 kg)
Approvals	
United States	UL Listed, CCN XAPX, Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to CFR 47, Part 15, Subpart B, Class A, RoHS
Canada	UL Listed, CCN XAPX7, Under CAN/ CSA C22.2 No. 24
RoHS Statement	Yes
Warranty	3 years

TERMINAL IDENTIFICATION - KTEC2664Z

Terminal Use	Terminal Identification	Description
1 – Cool2	**Y2**	Output for RTU cooling stage number 2.
2 – Cool1	**Y1**	Output for RTU cooling stage number 1.
3 - Fan	**G**	Output for the fan.
4 - 24 V ~ Hot	**RC**	Power supply of thermostat, hot side (Delivered from the RTU).
5 - 0 V ~ Com	**C**	Power supply of thermostat, common side. Also used as reference for the analog BPD output when used (Delivered from the RTU).
6 – Heat Switch Leg	**RH**	24 VAC switched leg for the heating stages. • If heating stages are part or RTU, install a jumper across RC & RH. • If heating stages are part of a separate equipment with a different power supply, feed external switched power leg through RH ***without*** installing a jumper across RC & RH.
7 – Heat1	**W1**	Output for heating stage number 1.
8 – Heat2	**W2**	Output for heating stage number 2.
9 – By-pass damper	**BPD**	Local analog 0 - 10 VDC by-pass damper output.
10 – Aux output	**AU**	Auxiliary output used to disable economizer damper minimum position or control lighting during unoccupied periods.
11 – Static pressure	**SP**	Local analog 0 – 5 VDC static pressure input.
12 - DI1	**DI1**	Configurable extra digital input. See parameter section for more information.
13 - RS	**RS**	Return air temperature sensor input. If sensor fails, thermostat will use the on-board thermistor sensor to control if the communication is lost.
14 - Scom	**Scom**	Reference input for DI 1, RS, OS & DS.
15 - OS	**BI2**	Outside air temperature sensor input.
16 - DS	**UI 3**	Discharge air temperature sensor input.
BACnet Network Connections		
BACnet Com	**Com +**	BACnet communication bus + connection.
BACnet Com	**Com -**	BACnet communication bus – connection.
Ref	**Ref**	Communication bus reference terminal. ○ ***DO NOT USE FOR OTHER THAN SERVICING ISSUES*** ○ ***DO NOT WIRE SHIELD TO THAT POSITION***

WIRING - KTEC2664Z



KELE CONSTANT VOLUME ZONING SYSTEM

KTEC ZONING SYSTEM

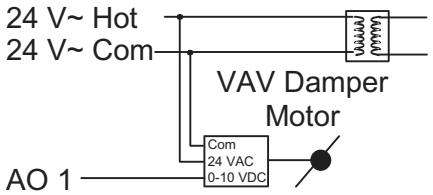
TERMINAL IDENTIFICATION - KTEC2647Z

Terminal Use	Terminal Identification	Description
4 - 24 V ~ Hot	**24 V~ Hot**	Power supply of thermostat, hot side.
5 - 0 V ~ Com	**0 V~ Com**	Power supply of thermostat, common side. Also used as reference for the analog outputs when used.
6 - On/Off Rht	**BO 5** →	Local isolated triac reheat output when used.
7 - On/Off Rht	**BO 5** →	Local isolated triac reheat output when used.
9 - Analog Rht	**AO 2**	Local analog 0 - 10 VDC reheat output when used.
10 - VAV Damper	**AO 1**	Local VAV analog 0 - 10 VDC output.
Not Used	***Blank***	*Blank unused terminal.*
12 - BI1	**BI 1**	Configurable extra digital input. See parameter section for more information.
13 - RS	**RS**	Remote room sensor input when used. Input auto-detects a remote sensor and will automatically by-pass the internal sensor when used.
14 - Scom	**Scom**	Reference input for BI 1, BI 2, UI3 and RS.
15 - BI2	**BI2**	Non-configurable extra digital input for monitoring local functions over the network.
16 - UI3 SS	**UI 3**	Non-configurable extra analog input for monitoring local discharge or supply temperatures over the network.

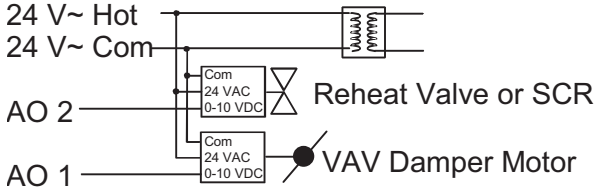
BACnet Network Connections		
BACnet Com	**Com +**	BACnet communication bus + connection.
BACnet Com	**Com -**	BACnet communication bus – connection.
Ref	**Ref**	Communication bus reference terminal. ○ ***DO NOT USE FOR OTHER THAN SERVICING ISSUES*** ○ ***DO NOT WIRE SHIELD TO THAT POSITION***

WIRING - KTEC2647Z

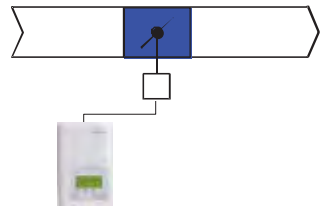
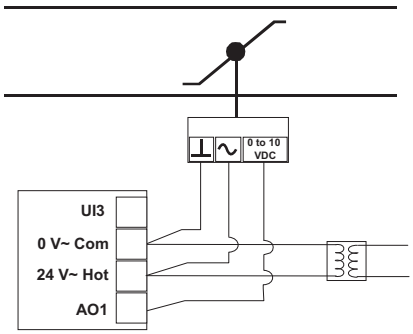
VAV Damper Wiring

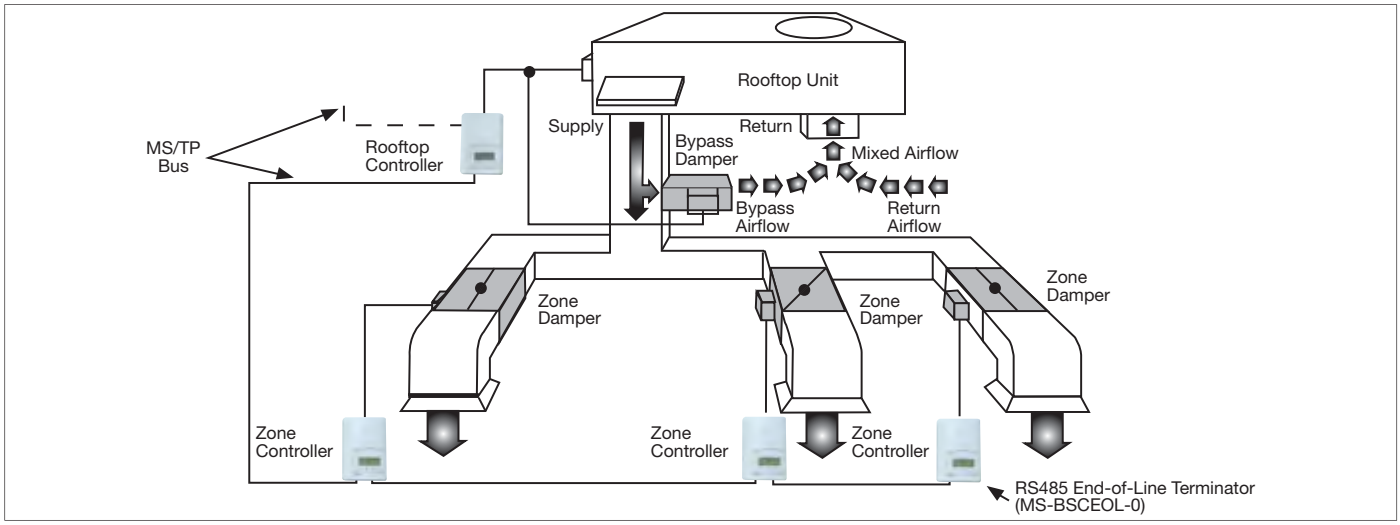


VAV Damper and Analog Reheat Wiring



APPLICATION - KTEC2647Z

Schematic	Wiring	Settings
Pressure dependent VAV cooling only system		
Analog VAV Actuator  Room Temperature Control Minimum & Maximum Position Adjusted at Thermostat		**Mandatory** • RehtConf = 0 None



Typical Zoning Control System Installed on a Single MS/TP Bus

This installation consists of multiple KTEC2647 Zone Controllers, each controlling a single zone damper; and a KTEC2664Z Rooftop Controller controlling a rooftop unit. Optionally, the MS/TP Bus can be wired to a supervisory controller to provide centralized monitoring and control of the system. Refer to the Installation Instructions document under "Related Documents" at www.Kele.com for complete wiring and setup details.

* See installation instructions for wiring diagrams

KTEC2664Z ROOFTOP CONTROLLER CONFIGURATION

Parameters that must be configured locally at start of initial commissioning...

RTC Mac
- RTC network address
- Default - 4
- Address must be unique on the network
- Valid range - 4 to 127

RTC Baud Rate
- One controller per bus
- Default - Auto
- Sets the network baud rate, 38400 recommended
- Baud rates - 9600,19200, 38400, 76800, Auto

KTEC2647Z ZONE CONTROLLER CONFIGURATION

Parameters that must be configured locally at start of initial commissioning...

ZONE Mac
- ZONE network address
- Default - 255
- Address must be unique on the network
- Valid range - 1 to 127

RTC MAC
- Network address must be specified to RTC
- Default - 4
- Rooftop controller to which this zone controller is tied
- Valid range - 1 to 127

ORDERING INFORMATION

MODEL	DESCRIPTION
KTEC2647Z-2	Zone Controller for Proportional Zone Damper, On/Off, or Proportional Reheat Control
KTEC2664Z-2	Rooftop Controller for Control of Up to Two Stages of Heating and Two Stages of Cooling in Rooftop

	ACCESSORIES
M230-005PD-V5	Differential pressure transducer, 0-5" WC, 0-5 VDC
MS-BACEOL-0	EOL BACnet R485 terminator

WAVE WIRELESS THERMOSTATS AND RECEIVERS

WAVE SERIES

DESCRIPTION

The **Wave Series** offers an alternative to rewiring retrofit projects. Unlike built in controls, the wireless units can be removed and reinstalled as the building floor plan changes without having to run wire or conduit.

The **TW205** wireless thermostat is a base level unit with basic features such as 1 heat/1 cool, 3-speed fan, and manual or auto changeover.

The **TW206** wireless thermostat offers full 7 day, 4 event programmability. Additional energy saving features includes range limit adjustment, occupancy setback, and setback control.

The **RW205** receiver module receives input from the TW series thermostats as well as any occupancy sensing accessory installed to drive the functions of the PTAC, PTHP, and certain fan coil applications.

NEW!

PECO AUTOMATION AND CONTROLS

RW205-001 TW205-001

FEATURES

- ***Frequency Hopping Spread Spectrum wireless***
- ***7 day programmable (TW206)***
- ***ASHRAE 90.1 and Title 24 Compliant (requires TW206 & RW205)***
- ***Occupancy input***
- ***Key pad lockout - partial or full***
- ***Local or remote sensing***
- ***LCD display with backlight***
- ***Fahrenheit or Celsius display***

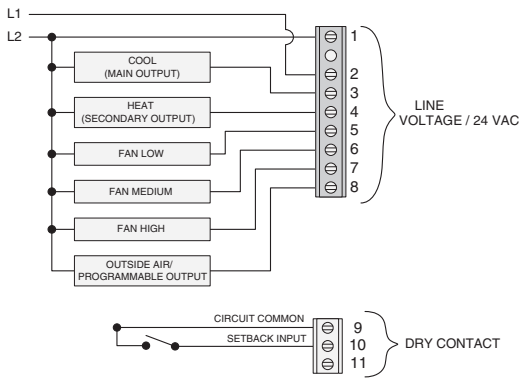
SPECIFICATIONS

Supply Voltage	
TW205/TW206	24 VAC or 2 AA batteries (included)
RW205	24 VAC or 100-277 VAC 50/60 Hz
Frequency	902 to 928 MHz
Temperature Range	50° to 90°F (10° to 32°C)
Range	100 ft
Modulation	FHSS (Frequency Hopping Spread Spectrum)
Operating Temperature	0° to 120°F (-17° to 48°C)
Operating Humidity	5 to 90% RH (non-condensing)
Dimensions	
TW205/TW206	4.5"H x 5.75"W x 1.1"D (11.43 x 14.6 x 2.79 cm)
RW205	4.8"H x 3.8"W x 1.3"D (12.19 x 9.65 x 3.3 cm)
Weight	0.82 lb (0.37 kg)
Approvals	CE, C-ULus, File #E50023, FCC ID: XDTTW205206; IC: 8438ATW205206; FCC ID: XDTRW205; IC: 843A-RW205
Warranty	5 years

RATINGS

VOLTAGE	FLA	LRA	RES AMPS	PILOT DUTY	HP
24 VAC	NA	NA	NA	24 VA	NA
120 VAC	5.8	34.8	6.0	125 VA	1/4
240 VAC	2.9	17.4	5.0	125 VA	1/4
277 VAC	2.4	14.4	4.2	125 VA	1/4
COMBINED LOAD CURRENT NOT TO EXCEED 20 AMPS					

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
TW205-001	Non-programmable wireless thermostat
TW206-001	Programmable wireless thermostat
RW205-001	Wireless thermostat receiver module

	RELATED PRODUCTS	PAGE
K2500WAVEPRO	WavePRO wireless thermostat (thermostat and receiver not sold seperately)	**651**

WIRELESS THERMOSTAT SYSTEM
WAVEPRO

NEW!

PECO AUTOMATION AND CONTROLS

DESCRIPTION

The **WavePRO™** Wireless System **K2500** is a wireless thermostat transmitter and receiver. It is designed for use with conventional (gas, oil, electric) or heat-pump systems. It can support up to 2-HEAT / 2-COOL configurations in conventional systems and 3-HEAT / 2-COOL configurations in heat pump applications. The WavePRO Wireless System is comprised of the wireless T2500 thermostat paired with the wireless R2500 receiver.

K2500WavePRO

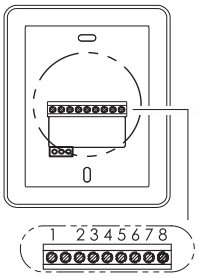
FEATURES

- ***Frequency Hopping Spread Spectrum wireless***
- ***7 day programmable***
- ***Temporary or permanent holds***
- ***Heat/Cool/Off/Auto changeover system settings***
- ***Local or remote sensing***
- ***LCD display with backlight***
- ***Pre-occupancy purge***

SPECIFICATIONS

Supply Voltage	
T2500	24 VAC or 2 AA batteries (included)
R2500	24 VAC
Frequency	902 to 928 MHz,
Temperature Range	50° to 90°F (10° to 32°C)
Range	100 ft
Modulation	FHSS (Frequency Hopping Spread Spectrum)
Operating Temperature	0° to 120°F (-17° to 48°C)
Operating Humidity	5 to 90% RH (non-condensing)
Dimensions	
T2500	4.5"H x 5.75"W x 1.1 "D (11.43 x 14.6 x 2.79 cm)
R2500	4.8"H x 3.8"W x 1.3"D (12.19 x 9.65 x 3.3 cm)
Weight	2.7 lb (1.22 kg)
Approvals	FCC, FCC ID: XDTTW205206; IC: 8438A-TW205206
Warranty	5 years

WIRING



R2500 Terminal Block

2 Heat / 2 Cool Conventional

Term.	Name	Function
1	C	24VAC -
2	R	24VAC +
3	Y1	Cooling stage 1
4	Y2	Cooling stage 2
5	W1	Heating stage 1
6	W2	Heating stage 2
7	A	N/A
8	G	Fan

3 Heat / 2 Cool Heat Pump

Term.	Name	Function
1	C	24VAC 2
2	R	24VAC 1
3	Y1	Compressor 1
4	Y2	Compressor 2
5	O/B	Reversing valve
6	AU	Aux Heat/Emerg.
7	A	Emergency
8	G	Fan

ORDERING INFORMATION

MODEL	DESCRIPTION
K2500WAVEPRO	WavePRO wireless thermostat kit (thermostat and receiver not sold seperately)

	RELATED PRODUCTS	PAGE
RW205-001	Wireless thermostat receiver module	**650**
TW205-001	Non-programmable wireless thermostat	**650**
TW206-001	Programmable wireless thermostat	**650**

NEW!

WIRELESS SENSOR FOR HUMIDITY / TEMPERATURE / CO2

EE240 SERIES

NEW!

EE245 EE244* EE241

*Temperature sensor sold separately

DESCRIPTION

The **EE240 Series** feature advanced sensor technology and ease of installation. An extendable assortment of sensing probes allows for usage in many applications. The **EE240 Series** is capable of point to point or complex networking.

Wireless Transmitter EE244

Every transmitter can be equipped with up to three sensing probes. An optional display is available to provide local indication. As a standard, batteries provide for the power supply. For more power demanding applications the device can be powered through an external adapter.

Wireless Transmitter EE245

The elegant housing combines the measurement of temperature, humidity and CO2. An optional display is available to provide local indication. As a standard, batteries provide for the power supply. For more power demanding applications the device can be powered through an external adapter.

Base Station EE241 and EE242

The point-to-point connection can be accomplished with the **EE241**. The configuration at the factory of the up to four transmitted measurement values is done in accordance with your specifications, meaning that the values are available as analog outputs (0 - 5 / 10 V or 4 - 20 mA) immediately after installation.

For more complex networks (up to 500 transmitters or up to 2000 measurement values) the user-configurable **EE242** is available. Independent of the topology of the network, the integrated Webserver and the Ethernet interface warrants highest flexibility in the configuration of the network with a computer.

A simple integration of the measurement system in the customer's network and the easy remote access and diagnostic of the measurement data are additional helpful features. The output values can be transferred as an analog signal, as well as in digital form via Ethernet. For network integration, Modbus is supported.

Router Series EE244-R, EE245-R

The radio range depends greatly on local circumstances. With the router series **EE244-R** obstacles can be bypassed or the transmission distance expanded.

FEATURES

- ***Interchangeable Sensing Probes***
- ***Remote Probes up to 33 ft (10 m)***
- ***Battery Operating Life up to 1 Year***
- ***Webserver***
- ***Ethernet***
- ***Long Rangeability***

SPECIFICATIONS

Supply Voltage	
EE241/EE242	24V AC/DC ±20%
EE244	24 VDC
EE245/-R	8-28 VDC / 12 VAC
Battery	
EE244, EE245	4 x 1.5V AA
Supply Current	
EE241	70mA at 24 VDC
EE242	150mA at 24 VDC
EE244	20mA at 24 VDC
Frequency	2.4 GHz
Communication	
EE242	Webserver, Modbus RTU, Modbus TCP
Outputs	
EE241/EE242-	
2	4 x 0-5 VDC
3	4 x 0-10 VDC
6	4 x 4-20mA
Measurement Range	
EE07-PFT1/-MFT9	0 to 100% RH / -40° to 176°F (-40° to 80°C)
EE03-FT9	0 to 95% RH / -40° to 185°F (-40° to 85°C)
EE07-PT1/MT	-40° to 176°F (-40° to 80°C)
EE871	0 to 2000ppm 0 to 5000ppm 0 to 10000ppm
Accuracy	
EE07-PFT1/-MFT9	±2% RH (0 to 90% RH); ±3% RH (90 to 100% RH); ±0.18°F (±0.1°C) at 68°F (20°C)
EE03-FT9	±3% RH (10 to 100% RH) at 69.8°F (21°C); ±0.54°F (±0.3°C) at 68°F (20°C)
EE07-PT1/MT	±0.18°F (±0.1°C) at 68°F (20°C)
EE871	±(50ppm+2% of m.v.) ±(50ppm+3% of m.v.) ±(100ppm+5% of m.v.)
EE245	
Temperature	± 0,3 °C (at 20 °C) / ± 0,4 °C (20...55 °C)
RH	± 3 % (30...70 %) / ± 5 % (70...90 %)
CO2	2000ppm (± 50ppm +2 % of m.v.) 5000ppm (± 50ppm +3 % of mv.v)
Transmission Power	10mW
Range	Up to 330 ft (100 m) indoors Up to 3300 ft (1000 m) line of sight
Operating Temperature	
EE241/EE242	Without display -22° to 122°F (-30° to 50°C) With display -4° to 122°F (-20° to 50°C)
EE244	Without display -40° to 122°F (-40° to 50°C) With display -4° to 122°F (-20° to 50°C)
EE245/-R	23° to 131°F (-5° to 55°C)
Materials Of Construction	
EE241/EE242	Polycarbonate (PC), IP20
EE244	Polycarbonate (PC), IP65
EE245	Polycarbonate (PC), IP30
Dimensions	
EE241/EE242	4.3" x 3.5" x 2.4"(10.8 x 9.0 x 6.2 cm)
EE244	5.3" x 3.5" x 2.4"(13.5 x 9.0 x 6.2 cm)
EE245	1.25" x 3.34" x 5.35" (3.2 x 8.5 x 13.6 cm)
Weight	1.94 lbs (0.88 kg)
Approvals	ETSI / FCC Part 15.247 / IC
RoHS Statement	Yes
Warranty	1 year

WIRELESS SENSOR FOR HUMIDITY / TEMPERATURE / CO2

EE240 SERIES

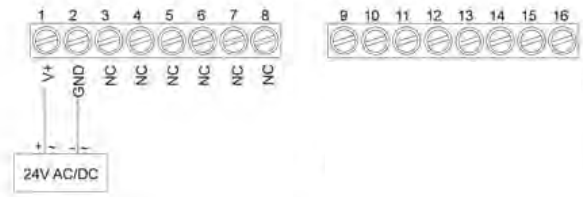
OPERATION

The data transmission is based on the IEEE 802.15.4 protocol with a transmission frequency of 2.4 GHz, which can be used worldwide without any additional cost. A special identification address, checksums, handshakes, and bidirectional communication provide the highest transmission reliability.

Typical radio ranges are 330 ft (100 m) for indoor applications and 3300 ft (1000 m) in the open field. Greater radio ranges are easily obtainable with routers. The self-configuring, scalable, and self-healing mesh network - even when a connection fails - is another component contributing to the improvement of the transmission reliability and security. The highest possible data security level is accomplished with a preset encryption key according to AES-128.

WIRING CONNECTION

Connection Diagram EE2401 / EE242



ORDERING INFORMATION

MODEL	DESCRIPTION
EE242-A2	Base station "wireless network" 0-5V without display
EE242-A2D	Base station "wireless network" 0-5V without display
EE242-A3	Base station "wireless net work" 0-10V without display
EE242-A3D	Base station "wireless net work" 0-10V with display
EE242-A6	Base station "wireless net work" 4-20mA without display
EE242-A6D	Base station "wireless net work" 4-20mA wtih display
EE241-A2	Base station "point-to-point" 0-5V without display
EE241-A2D	Base station "point-to-point" 0-5V with display
EE241-A3	Base station "point-to-point" 0-10V without display
EE241-A3D	Base station "point-to-point" 0-10V with display
EE241-A6	Base station "point-to-point" 4-20mA without display
EE241-A6D	Base station "point-to-point" 4-20mA with display
EE244-RA	Router 2.4 GHz
EE244-AA1	Transmitter with 1 probe option without display
EE244-AA1D	Transmitter with 1 probe option with display
EE244-AA2	Transmitter with 2 probe option without display
EE244-AA2D	Transmitter with 2 probe option with display
EE244-AA3	Transmitter with 3 probe option without display
EE244-AA3D	Transmitter with 3 probe option with display
EE245	RH/CO2/Temperature wall sensor transmitter
EE245-R	Router 2.4 GHz wall mount
EE07-PFT1	RH/T probe for standard applications
EE07-MFT9	RH/T probe for clean room applications, food and pharmaceutical industry
EE03-FT9	RH/T module for installation in small spaces or obtrusive mounting applications
EE07-PT1	T probe for standard applications
EE07-MT	T probe for clean room applications, food and pharmaceutical industry
EE871-2C95	C02 probe for standard applications 0-2000ppm
EE871-5C95	C02 probe for standard applications 0-5000ppm
EE871-10C95	C02 probe for standard applications 0-10000ppm
HA010801	Probe cable for EE07 6.5 ft (2 m)
HA010802	Probe cable for EE07 16.4 ft (5 m)
HA010803	Probe cable for EE07 32.8 ft (10 m)
HA010328	Connection cable for EE03 6.5 ft (2 m)
HA010329	Connection cable for EE03 16.4 ft (5 m)
HA010330	Antenna cable 6.5 ft (2 m)
HA010203	Bracket for rail installation
HA010403	Reference probes
HA010209	Duct mounting kit for EE07
HA010333	Crossover cable (PC to base station)

POWERCAST WIRELESS SENSOR SYSTEM

LIFETIME POWER® SERIES

DESCRIPTION

The **Lifetime® Power Wireless Sensors System** enables wireless and networked measurement of environmental conditions for building and industrial automation without running wires or replacing batteries. The system includes a growing list of wireless sensor devices for measuring temperature, humidity, light, pressure, CO2, and other parameters. All sensor devices communicate wirelessly to a common gateway which supports a wide range of commonly used BAS protocols including BACnet, Modbus, LonWorks, Metasys N2, and XML.

NEW!

WSN-1101

RoHS

FEATURES

- ***No batteries, no wiring - sensors are power wirelessly by radio waves***
- ***Automated sensor configuration and maintenance-free operation***
- ***No interference with or from Wi-Fi***
- ***Multiple sensors can be powered from one or more power transmitters***
- ***Wide range of sensor types***
- ***Integrates easily into existing BAS systems including BACnet, Modbus, LonWorks, Metasys N2, and XML.***
- ***Gateway supports up to 100 sensors and 800 sensor points***
- ***Gateway can be configured for redundancy in critical applications***
- ***All devices approved for use in the US and Canada***

INSTALLATION

The **WSN-1000** series sensors have integrated flanges for wall mounting, no wiring is needed. The sensors need to be configured to a gateway prior to installation.

The **WSG-101** wireless gateway can be wall mounted using the integrated mounting flanges or set on a tabletop. 24V AC/DC power is required.

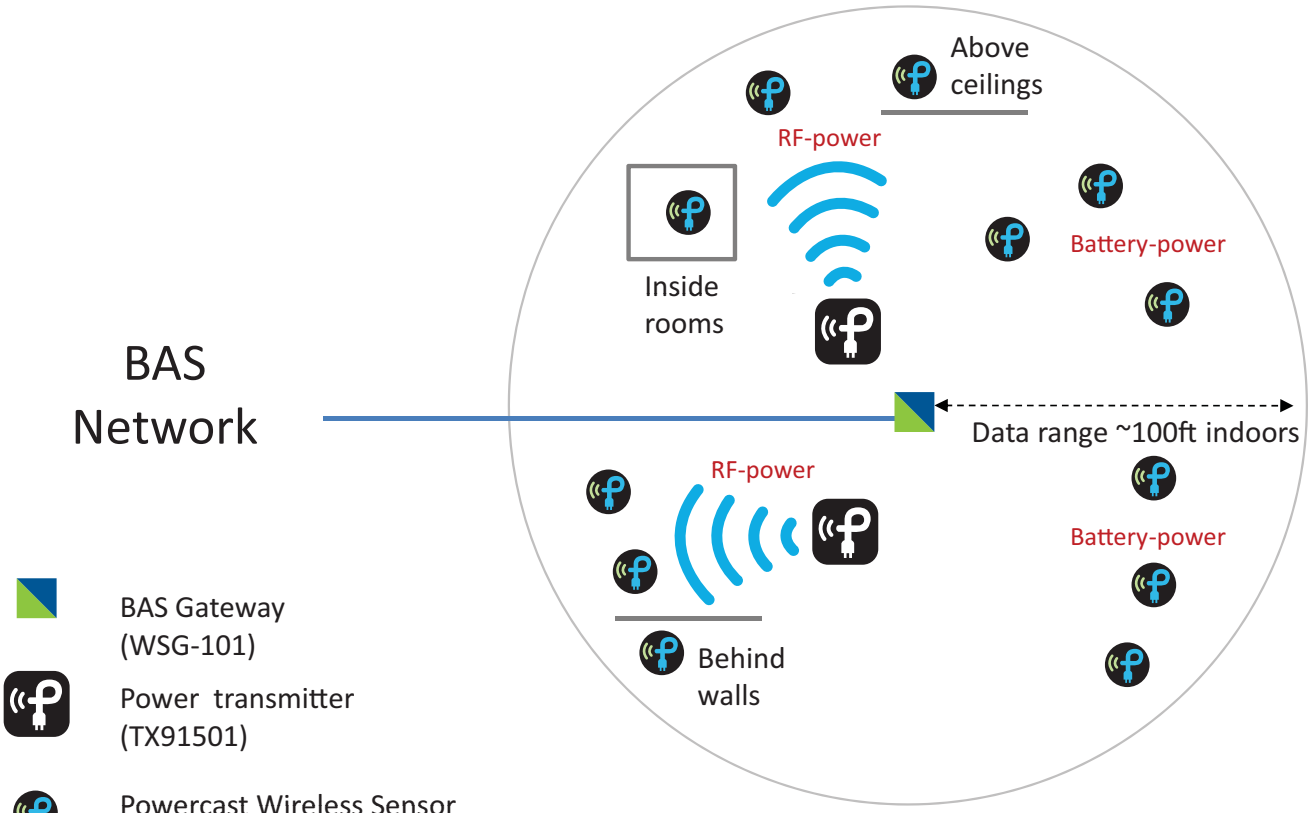
The **TX91501** Powercaster transmitter is designed to be wall-mounted and has holes to support multiple types of mounting brackets. A 110V AC to 5V DC converter is included. Mounting height should be at least 7 feet from the floor.

SPECIFICATIONS

Supply Voltage	
WSN-1001, WSN-1002	RF energy (915MHz) from Powercaster transmitter
WSN-1101-x-N	Non-Replaceable +25 year battery
WSG-101	24 VAC/VDC
TX91501	5 VDC (120 VAC power supply included)
Supply Current	1A
Frequency	
WSN-1001	Rx – 915MHz Tx – 2.4GHz
WSG-101, WSN-1101	2.4 GHz
TX91501	915 MHz center
Protocol	
WSG-101-	Serial BACnet IP BACnet Ethernet BACnet MSTP Modbus TCP Modbus RTU SNMP N2 LonWorks
Accuracy	
Temperature	+/- 1°F (50-100°F)
Humidity	+/- 3% (10-90%)
Transmission Power	
TX91501-3W-ID	3 watts EIRP
TX91501-1W-ID	1 watt EIRP

Range	
WSN-1001, WSN-1002, WSN-1101	Data - 100 ft typically
Operating Temperature	-4° to 122°F(-20° to 50°C) indoor use only
Operating Humidity	0 to 95% RH (non-condensing)
Materials Of Construction	ABS plastic, UL94-5VA rating
Dimensions	
WSN-1001, WSN-1002	6.50" x 2.88" x 1.13" (15.5 x 7.3 x 2.8 cm)
WSN-1101-x-N	4.2" x 2.1" x 1.1" (10.6 x 5.3 x 2.7 cm)
WSG-101	6.6" x 4.4" x 1.75" (16.7 x 11.1 x 4.4 cm)
TX91501	6.75" x 6.25" x 1.63" (17.1 x 15.8 x 4.1 cm)
Weight	
WSN-1001, WSN-1002	0.5 lbs (.22 kg)
WSG-101	1.0 lbs (.45 kg)
TX91501	1.5 lbs (.68 kg)
Approvals	FCC Part 15 and Industry Canada Contains FCC ID: OA3MRF24J0MA Contains IC: 7693A-24J40MA
RoHS Statement	Yes
Warranty	2 year

SYSTEM DEPLOYMENT



ORDERING INFORMATION

MODEL	DESCRIPTION
WSN-1001	Lifetime Power® Wireless Temperature and Humidity Sensor
WSN-1002	Wireless temp/humidity sensor, omni-directional (RF-powered)
WSN-1101-T-N	Wireless temperature sensor (Non-replaceable 25+ year battery)*
WSN-1101-TH-N	Wireless temperature and humidity sensor (Non-replaceable 25+ year battery)*
WSN-1101-TT-N	Wireless temperature sensor – internal and external 10K RTD (Non-replaceable 25+ year battery)*
WSN-1101-L-N	Wireless light sensor (Non-replaceable 25+ year battery)*
WSG-101-SERIAL	BAS Gateway - Serial output to PC via USB
WSG-101-BACNET-IP	BAS Gateway - BACNET/IP via Ethernet interface and serial output via USB
WSG-101-BACNET-ETH	BAS Gateway - BACNET/Ethernet via Ethernet interface and serial output via USB
WSG-101-BACNET-MSTP	BAS Gateway - BACNET/MSTP via RS-485 interface and serial output via USB
WSG-101-MODBUS-TCP	BAS Gateway - MODBUS TCP via Ethernet interface and serial output via USB
WSG-101-MODBUS-RTU	BAS Gateway - MODBUS RTU via Ethernet interface and serial output via USB
WSG-101-SNMP	BAS Gateway - SNMP via Ethernet interface and serial output via USB
WSN-101-METASYS-N2	BAS Gateway - METASYS N2 via RS-485 interface and serial output via USB
WSG-101-LON	BAS Gateway - LonWorks via FTT-10 interface and serial output via USB
TX91501-3W-ID	Powercaster® Transmitter - 915MHz, 3 watts
TX91501-1W-ID	Powercaster® Transmitter - 915MHz, 1 watt
WSN-KIT-01	Wireless Sensor Starter Kit: (1) TX91501-3W-ID, (2) WSN-1001, (1) WSG-101-SERIAL w/ 24VDC supply
WSN-KIT-02	Wireless Sensor Starter Kit: (1) TX91501-3W-ID, (2) WSN-1001, (1) WSG-101-BACNET-IP w/ 24VDC supply

FRONTIER 2.0 GATEWAY TRANSCEIVERS

MOD9200

DESCRIPTION

The Frontier 2.0 network transceiver utilizes reliable Spread Spectrum Mesh Network Radio technology. Together with other Frontier 2.0 sensors and controls, the system can be used to wirelessly transmit remote sensor readings, status/alarm indications, control signals and outputs. It is compatible with any control panels or Automation systems that utilize BACnet MSTP (**MOD9200BNT**) or LonWorks® (**MOD9200LON**).

Up to 50 separate physical wireless sensor transmitters and/or wireless remote output (analog & digital) modules can be used with (1) **MOD9200** transceiver. Up to 100 data points can be monitored and controlled.

The maximum radio transmission distance is dependent on building type. The maximum open-air transmission distance is one mile. In a typical commercial building with steel I-beam construction, concrete floors with reinforcing rod, and metal stud walls, it can be expected that transmissions will penetrate vertically through floors and horizontally through 200 to 500 feet of walls, furniture and air.

Generally a wireless system will cover about three floors - one floor above and one floor below the transceiver location. In some buildings with favorable transmission characteristics the system may cover more floors.

NEW!

MOD9200

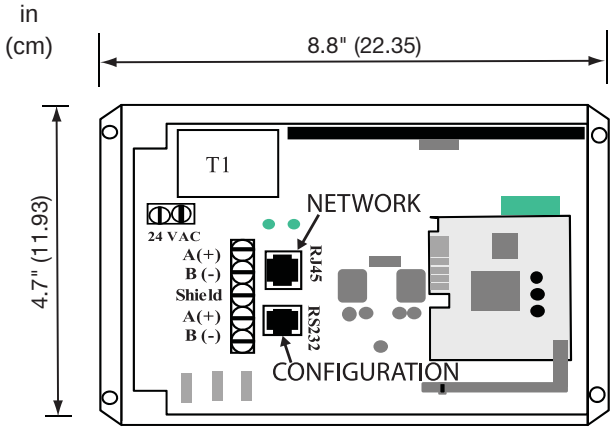
FEATURES

- ***Monitor up to 100 data points; control up to 50 wireless digital output points and 50 wireless analog output points***
- ***Multiple MOD9200 Transceivers can be used for large systems***
- ***MOD9200LON requires standard Lon network management tool such as LonMaker®, Tridium® software or equivalent***
- ***MOD9200BNT requires standard BACnet networking tools***
- ***Simple PC Windows® based wireless sensor setup tool***
- ***Low battery and lost sensor alarm indications per wireless sensor***
- ***Supports LonWorks® Protocol (MOD9200LON)***
- ***Supports BACnet MSTP Protocol (MOD9200BNT)***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Supply Voltage	24 VAC 60 Hz
Supply Current	500 mA
Frequency	902-928 MHz
Protocol	BACnet MS/TP, Modbus, LonWorks (model dependent)
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Receiver Sensitivity	-110 dBm
Operating Temperature	32° to 150°F (0° to 66°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	8.8"H x 4.7"W x 2.25"D (22.35 x 11.93 x 5.58 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS



NEW!

INSTALLATION

CAUTION:
Sensors, Repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Refer to the configuration setup instruction manual for configuration of the **MOD9200BNT** registers and BACnet variables setup. A PC is required for the setup of the Transceiver.

Refer to the configuration setup instruction manual for configuration of the **MOD9200LON** registers and SNVT variables setup. A PC is required for the setup of the Transceiver.

Choose a location close to the Gateway network connection and away from the ground.

Mount the gateway on the wall using four #8 screws.

24 VAC Input - Connect 24VAC 60 Hz to the input terminals using 18-20 AWG wire.

MSTP (RS485) - Use 20 or 22 gauge shielded twisted pair wire to connect the Transceiver (Terminals A+ & B-) to the MSTP network.

FTT-10 (LonWorks) - Use 20 or 22 gauge shielded twisted pair wire to connect the Transceiver (Terminals A+ & B-) to the LON network. Must be Echelon approved cable.

ORDERING INFORMATION

MODEL	DESCRIPTION
MOD9200BNT	BACnet MSTP network transceiver
MOD9200D	Modbus network transceiver
MOD9200LON-A	Up to 30 wireless wall temp sensors with setpoint adjustments and/or push button override switches, up to 6 humidity sensors, up to 50 wireless digital outputs & up to 50 wireless analog out.
MOD9200LON-B	Up to 50 wireless temperature only sensors (50 wall, duct or immersion types), up to 50 wireless digital outputs & up to 50 wireless analog out.
MOD9200LON-C	Up to 50 wireless sensors (up to 50 temperature points and up to 50 humidity points), up to 50 wireless digital outputs & up to 50 wireless analog out.
MOD9200LON-D	Up to 50 wireless devices (40 0-10VDC point types, 40 discrete inputs, 10 temperature,10 humidity point types), up to 50 wireless digital outputs & up to 50 wireless analog out.
MOD9200LON-E	Up to 50 wireless sensors/transmitters (26 temperature points, 26 setpoint adjustments, 26 push button override switches, 12 CO2 PPM inputs, 6 humidity points, 4 digital status inputs), up to 50 wireless digital outputs & up to 50 wireless analog out.
MOD9200LON-F	Up to 50 wireless sensors (up 40 temperature points, up to 20 humidity points & 40 discrete inputs), up to 50 wireless digital outputs & up to 50 wireless analog out.

FRONTIER 2.0 WIRELESS ANALOG AND DIGITAL RECEIVERS

MODELS RM2402D AND RM2432D

NEW!

Trs Systems
Wireless Sensors & Controls

RM2432D

RM2432D

DESCRIPTION

The **RM2402D** and **RM2432D** paired with other Frontier 2.0 sensors and controls can be used to transmit remote sensor readings, status/alarm indications and control signals wirelessly. It is compatible with any control systems or DDC panels that accept 0-10 VDC, 0-5 VDC inputs and dry contact inputs. Up to eight (8) separate wireless sensor transmitters can be used with one **RM2432D**. Two digital transmitters can be used with one **RM2402D**.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

FEATURES

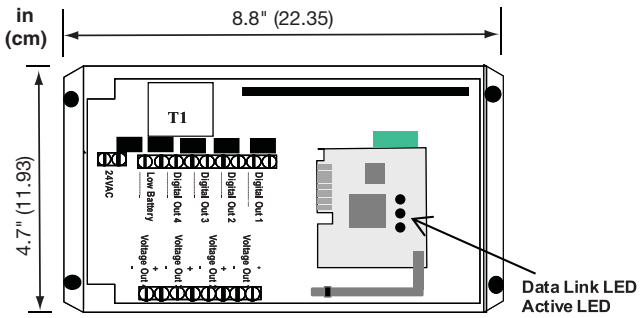
- ***Up to 4 analog outputs (0-10 VDC or 0-5 VDC field selectable) and 4 digital outputs (relay contact) (RM2432D only)***
- ***Up to 2 digital outputs (RM2402 only)***
- ***Mesh Network***
- ***Real time sensor status indications***
- ***Individual low battery and lost sensor alarm indications (RM2432D only)***
- ***Common alarm relay output for external indication***
- ***Adjustable digital capture time (up to 4 hours) for application such as temporary occupancy***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Supply Voltage	24 VAC 60 HZ or 24 VDC
Supply Current	300 mA maximum
Frequency	902-928 MHz
Analog Output	
RM2432	4x - 0-10 VDC or 0-5 VDC Minimum controller input resistance should be greater than 20KΩ
Digital Output	
RM2402	2x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum 2x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
RM2432	4x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
Low Battery	1x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
Receiver Sensitivity	-110 dBm
Operating Temperature	-40° to 160°F (-40° to 71°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	8.8"H x 4.7"W x 2.25"D (22.35 x 11.93 x 5.58 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

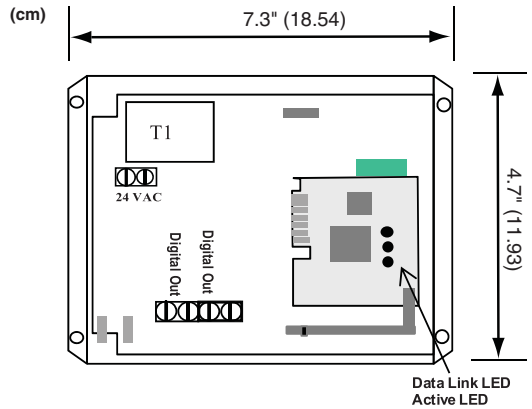
DIMENSIONS

RM2432



DIMENSIONS

RM2402



NEW!

INSTALLATION

CAUTION:
Sensors, Repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

CAUTION:
Observe polarity when connecting analog outputs to the controller inputs.

Configuration

The **RM2432** Receiver can be configured to accept inputs from up to 8 wireless sensors. Refer to the RM2432D Configuration Manual for instruction.

Installation

Mount the **RM2402/RM2432** Receiver as close to the controller as possible using four #8 screws.

Select 0-10VDC or 0-5VDC output by moving the J4 jumper **(RM2432 only)**.

Using the **RM2402/RM2432** configuration information, connect the analog and digital outputs to the appropriate control input terminals on the controller using 20 AWG wire. The controller input connecting to the RM2432 should have a minimum analog input resistance of 20K Ω.

Note: Always connect the Low Battery (or Lost Sensor) relay contact output to the appropriate alarm input on the controller. (RM2432D)
Connect 24 VAC 60 Hz or 24 VDC to the input terminals using 20 AWG wire. Check all connections before applying power to the unit.

Wireless Sensor Status Indications

The status of the sensors assigned to the outputs of the **RM2402/RM2432D** are displayed by 8 for (**RM2432)** 2 for (**RM2402**) LEDs on the top of the plug-in status module board as shown:

- Sensor Out (Lost) = Off
- Sensor In (Normal) = On
- Battery Low (Alarm) = Blink

ORDERING INFORMATION

MODEL	DESCRIPTION
RM2402D	Output receiver with two (2) digital outputs (relay contacts)
RM2402D-24DC	Same as RM2402D except 24 VDC power
RM2402DE	Same as RM2402D except in NEMA4 enclosure
RM2402DE-24DC	Same as RM2402DE except 24 VDC power
RM2432D	Output receiver with four (4) analog output (0-10 VDC or 0-5 VDC selectable) and four (4) digital outputs (relay contacts)
RM2432D-24DC	Same as RM2432D except 24 VDC power
RM2432DE	Same as RM2432D except in NEMA4 enclosure
RM2432DE-24DC	Same as RM2432DE except 24 VDC power

FRONTIER 2.0 SPREAD SPECTRUM REPEATER

RR2552

DESCRIPTION

The Frontier 2.0 **RR2552** signal repeater utilizes reliable Spread Spectrum Radio technology. It can be easily installed in minutes to increase the transmission distance between wireless sensors and the receivers. Multiple repeaters can be used to extend the transmission distance to thousands of feet inside any commercial and industrial buildings.

NEW!

Trs Systems
Wireless Sensors & Controls

RR2552

FEATURES

- ***For wireless sensor and wireless control applications***
- ***Receives wireless sensor/relay information and outputs a corresponding signal to any DDC controller/ panel***
- ***Real time sensor status indications***

SETTING THE REPEATER NETWORK ID

The repeater must have the same Network ID as the receiver (1 to 64). The repeater Network ID is field programmable using the Network ID Selector Switch to add numbers to the Base Network ID of "1."

When all (6) switches are set to the top "OFF" the Network ID is set to "1." To set a different Network ID depress the appropriate DIP Switch. Each switch adds a number to the Base Network ID of 1.

For example, to set the Network ID to "2", depress the "+1" switch to "ON" which adds "1" to the Base ID of "1."

To set the Network ID to "3", set the "+1" switch to "OFF" and the "+2" switch to "ON" which adds "2" to the Base ID of "1" equaling "3." See table below for switch positions.

SPECIFICATIONS

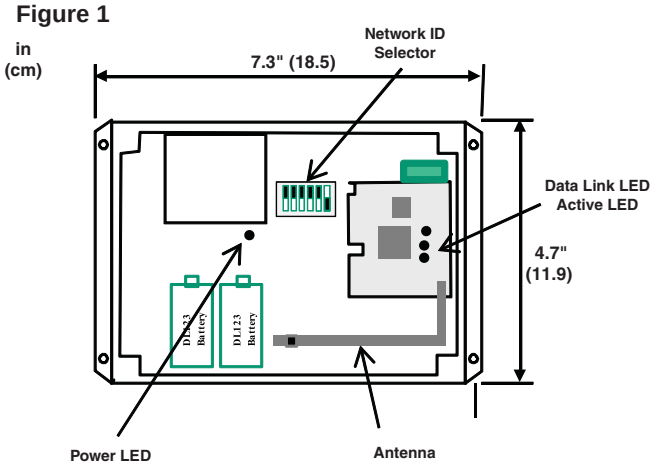
Supply Voltage	24 VAC 60 Hz
Battery	Lithium 3.0V 1400 mAh (Duracell DL123A) *Use only for testing
Frequency	902-928 MHz
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Receiver Sensitivity	-110 dBm
Operating Temperature	-30° to 160°F (-34° to 71°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	7.3"H x 4.7"W x 2.25"D (18.5 x 11.9 x 5.7 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

REPEATER NETWORK ID DIP SWITCH SETTING

Switch +32	Switch +16	Switch +8	Switch +4	Switch +2	Switch +1	Network Address
OFF	OFF	OFF	OFF	OFF	OFF	1
OFF	OFF	OFF	OFF	OFF	ON	2
OFF	OFF	OFF	OFF	ON	OFF	3
OFF	OFF	OFF	OFF	ON	ON	4
OFF	OFF	OFF	ON	OFF	OFF	5
OFF	OFF	OFF	ON	OFF	ON	6
OFF	OFF	OFF	ON	ON	OFF	7
OFF	OFF	OFF	ON	ON	ON	8
OFF	OFF	ON	OFF	OFF	OFF	9
OFF	OFF	ON	OFF	OFF	ON	10
OFF	OFF	ON	OFF	ON	OFF	11
OFF	OFF	ON	OFF	ON	ON	12
OFF	OFF	ON	ON	OFF	OFF	13
OFF	OFF	ON	ON	OFF	ON	14
OFF	OFF	ON	ON	ON	OFF	15
OFF	OFF	ON	ON	ON	OFF	16
:	:	:	:	:	:	:
:	:	:	:	:	:	:
ON	ON	ON	ON	OFF	OFF	61
ON	ON	ON	ON	OFF	ON	62
ON	ON	ON	ON	ON	OFF	63
ON	ON	ON	ON	ON	ON	64

DIMENSIONS

Figure 1



FRONTIER 2.0 SPREAD SPECTRUM REPEATER
RR2552

INSTALLATION

CAUTION:
Sensors, Repeaters and receivers should NOT be installed in the following areas:

- **Inside metal enclosure or panel**
- **Inside or immediately next to elevator shaft or elevator banks**
- **In front of or immediately next to large trees or a large body of water**

Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

CAUTION:
For long term operation the repeater requires 24 VAC. The repeater will function for only 4 to 6 hours in "Test Mode" on a set of batteries. Observe polarity when connecting analog outputs to the controller inputs.

Determining Repeater Location:
To select the proper repeater location, first install and power the receiver or transceiver. The receiver will have a Network ID assigned to it during initial programming. The repeater must have the same Network ID as the receiver or transceiver. Set the Network ID on the repeater using the Network ID DIP Switch.

The battery operated Test Mode is intended to be used only during the initial installation to determine the optimum location for a repeater in the system prior to wiring 24 VAC to the repeater. To operate the unit in Test Mode, move the jumper (J1 located near the battery terminals on the PWB) from 24 VAC to Battery. Install (2) batteries - Type 3.0V LiMNO2 1400 mAH (Duracell DL123A). The repeater is now functional and can be moved to different locations to determine optimal system performance.

While the repeater is attempting to connect to the receiver, the Data LED will blink rapidly. Once a connection has been established, the Data-Link LED will blink once to indicate the data transmission has been received and transmitted successfully. The Active LED will blink once every second to indicate that the repeater is functional.

A signal repeater can be installed 200 to 500 feet from a receiver as needed to improve transmission distance/reliability between sensors and the receiver.

Performance of the device is generally better when the repeater is installed elevated from the ground as much as possible.

Mount the **RR2552** to the wall using four #10 screws.

Check to see that the Test Mode Jumper (J1) has been moved from " Battery" to "24 VAC."

Connect 24 V 60 Hz to the power input terminals using 16-20 AWG wire.

ORDERING INFORMATION

MODEL	DESCRIPTION
RR2552B	Two way repeater
RR2552BE	Two way reapeater in NEMA4 enclosure

NEW!

FRONTIER 2.0 WIRELESS DIGITAL INPUT MODULES

MODELS RT2602, RT2620

NEW!

Trs Systems
Wireless Sensors & Controls

DESCRIPTION

The Frontier 2.0 **RT2602** and **RT2620** wireless remote digital input modules accept a variety of digital sensor/control inputs and transmits wirelessly to Frontier 2.0 receivers. They can be used for remote alarm/status indications and wireless on/off control applications. Up to 4 dry contact inputs can be monitored.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

RT2620

FEATURES

- ***Battery powered or 24 VAC powered remote wireless sensor input modules***
- ***Up to 4 digital inputs (relay contact)***
- ***No calibration required***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approximately 4 to 5 years)***
- ***Low battery LED + remote low battery alarm notification***
- ***Optional 24VAC power (RT2620A)***
- ***Reliable Spread Spectrum technology***

FC

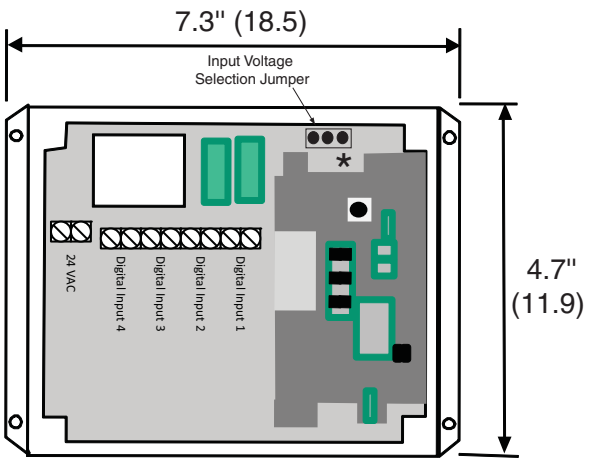
SPECIFICATIONS

Supply Voltage	24 VAC 60 Hz (A model only)
Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Supply Current	500mA
Frequency	923.58 MHz
Digital Inputs	
RT2602	2 dry contacts
RT2620	4 dry contacts
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	15° to 125°F (9° to 51°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	7.3"H x 4.7"W x 2.25"D (18.5 x 11.9 x 5.7 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS

RT2620A

in (cm)



NEW!

INSTALLATION

CAUTION:
Sensors, Repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Wireless digital transmitters should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers.

Sensor Location:
To select the proper sensor location, first install and power the receiver. Observing polarity, insert the battery into the sensor to activate it (for RT2620A, move the voltage selection jumper to battery operation before inserting the battery). The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission. The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission, press the push button switch located by the negative terminal of the battery.

Installation:
Once the location has been determined, mount the **RT2602/RT2620** remote transmitter on a wall using four #8 screws. Determine if the **RT2602/RT2620** remote transmitter will be powered by 24 VAC or by batteries on a permanent basis.

For 24 VAC Operation (RT2620A only):
If the device is to be powered by 24 VAC, move the voltage selection jumper to 24 VAC position and connect 24 V 60 Hz to the input terminals using 18-20 AWG wire.

For Battery Operation:
If the device is to be powered using the 3.0 volt batteries – remove the voltage selection jumper and reposition it for battery operation (RT2620A only).

NOTE:
For RT2620A, the device is shipped with the voltage selection jumper installed in the 24 VAC position.
For proper operation it is important to use the correct type of battery. Lithium 3.0V 1400 mAh (Duracell DL123A) batteries. Installing the battery or applying 24 VAC (**RT2620A** only) will activate the transmitter again.

Sensor Inputs:
Wire the sensor inputs to the appropriate terminals using 18 AWG wire. Record the sensor location on the wiring label located inside the cover.

ORDERING INFORMATION

MODEL	DESCRIPTION
RT2602B	Battery powered device with 2 digital inputs
RT2620A	Battery powered or 24 VAC powered (field selectable) device with four (4) digital sensor inputs
RT2620B	Battery powered only device with (4) digital sensor inputs

FRONTIER 2.0 WIRELESS UNIVERSAL INPUT TRANSMITTER MODULE

RT2630 SERIES

NEW!

Trs Systems
Wireless Sensors & Controls

DESCRIPTION

The Frontier 2.0 **RT2630** wireless remote analog and digital input module accepts a variety of analog and digital sensor/ control inputs and transmits wirelessly to Frontier 2.0 receivers. It can be used for remote alarm/status indications and wireless on/off control applications. Up to 4 analog input and 4 dry contact inputs can be monitored.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

RT2630

FEATURES

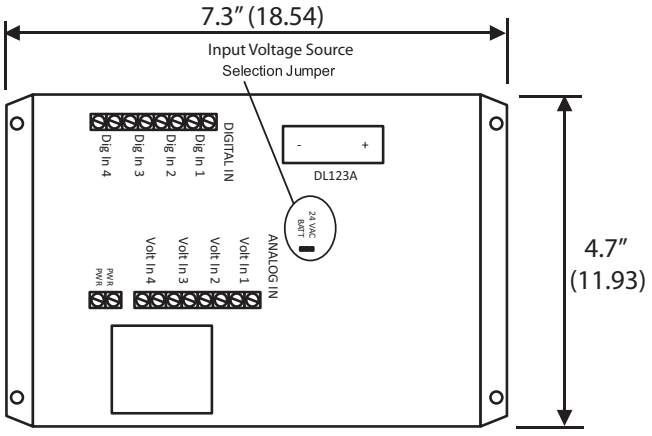
- ***Battery powered (battery included) or 24 VAC powered remote wireless sensor input modules***
- ***Up to 4 analog inputs (20K , 0-10VDC and 0-20mA types) and 4 digital inputs (relay contact)***
- ***No calibration required***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approxiamately 4 to 5 years)***
- ***Low battery LED + remote low battery alarm notification***
- ***Optional 24VAC or 24VDC power***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Supply Voltage	24 VAC 60 Hz or 24 VDC
Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Supply Current	300 mA
Frequency	923.58 MHz
Analog Input	
RT2630A	4x - resistance inputs (20KΩ)
RT2630B	4x - voltage inputs (0-10VDC)
RT2630C	4x - current inputs (0-20 mA)
Digital Inputs	4x - dry contacts
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	15° to 125°F (-9° to 51°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	7.3"H x 4.7"W x 2.25"D (18.5 x 11.9 x 5.7 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS

in
(cm)



NEW!

FRONTIER 2.0 WIRELESS UNIVERSAL INPUT TRANSMITTER MODULE

RT2630 SERIES

INSTALLATION

CAUTION: Sensors, repeaters and receivers should NOT be installed in the following areas:

- Inside metal enclosure or panel

- Inside or immediately next to elevator shaft or elevator banks

- In front of or immediately next to large trees or a large body of water

Transmission distance and performance will be drastically reduced.

CAUTION:

Do not use this product in any safety related applications where human life may be affected.

CAUTION:

Observe polarity when connecting analog outputs to controller inputs

Wireless digital transmitters should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers.

Sensor Location:

To select the proper sensor location, first install and power the receiver. Observing polarity, insert the battery into the sensor to activate it (for battery operation, move the voltage selection jumper to battery mode before inserting the battery). The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission. The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission, press the push button switch located by the negative terminal of the battery. Once the location has been determined, mount the RT2630 remote transmitter on a wall using four #8 screws.

Determine if the RT2630 transmitter will be powered by 24 VAC/VDC or by batteries on a permanent basis.

For 24 V Operation:

If the device is to be powered by 24 V (AC or DC), connect 24 V to the input terminals using 18-20 AWG wire.

For Battery Operation:

If the device is to be powered using the optional DL123A batteries (included) – remove the voltage selection jumper and reposition it for battery operation.

NOTE:

The device is shipped with the voltage selection jumper installed in the 24 V position. For proper operation it is important to use the correct type of battery. Lithium 3.0V 1400 mAh (Duracell DL123A) batteries. Installing the battery or applying 24 VAC will activate the transmitter.

Sensor Inputs:

Wire the sensor inputs to the appropriate terminals using 18 AWG wire. Record the sensor location on the wiring label located inside the cover. Attach the cover using the four screws.

ORDERING INFORMATION

MODEL	DESCRIPTION
RT2630	**Input Module with 4 Digital Inputs and 4 Analog Inputs**
A	4 Resistance inputs (20KΩ)
B	4 Voltage inputs (0-10VDC)
C	4 Current inputs (0-20 mA)
	Power options
DC	24VDC or battery
AC	24VAC or battery

RT2630 - A - AC

Example: RT2630-A-AC Input module with 4 digital inputs and 4 resistance inputs (20KΩ), 24VAC or battery.

FRONTIER 2.0 WIRELESS DUCT TEMPERATURE SENSOR

DT2630

NEW!

Trs Systems
Wireless Sensors & Controls

DESCRIPTION

The **DT2630** is a battery operated spread spectrum wireless duct temperature sensor. The sensor is encapsulated in a 0.25" OD 304 stainless steel probe with various probe lengths (4", 6", 8", 12" & 18") available. Each sensor is configured from the factory with a unique transmitter ID. Frontier 2.0 wireless sensors utilize Spread Spectrum Radio technology.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

DT2630

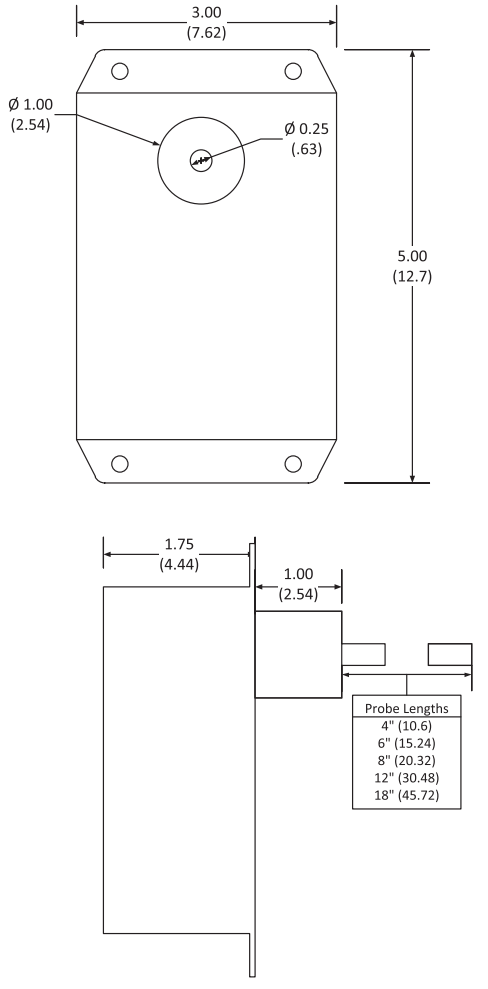
FEATURES

- ***Battery included***
- ***No calibration required***
- ***No wiring needed***
- ***Easy to install***
- ***Various probe lengths***
- ***Battery powered sensors***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approximately 4 to 5 years) with standard models***
- ***Low battery LED + remote low battery alarm notification***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Frequency	923.58 MHz
Probe Length	4", 6", 8", 12", 18" (10.6, 15.24, 20.32, 30.48 cm)
Temperature Range	
DT2630A	25° to 150°F, (-3° to 65°C)
DT2630B	-40° to 160°F (-40° to 71°C)
Accuracy	±1°F
Resolution	12 Bit
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	-40° to 160°F (-40° to 71°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	1.75"H x 3"W x 5"D, Probe Ø 0.25" (4.44 x 7.92 x 14.6 cm), (Ø 0.63 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS



FRONTIER 2.0 WIRELESS DUCT TEMPERATURE SENSOR

DT2630

INSTALLATION

CAUTION:
Sensors, repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Wireless duct sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as to increase transmission distance between sensors and receivers.

To select the proper sensor location, first install and power the receiver. Observing polarity, insert the battery into the sensor to activate it. The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established, the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission. The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission press the push button switch located by the negative terminal of the battery.

Install the duct sensor through a 1" opening in the side of the duct. Since the sensor is located at the tip of the probe, consideration should be made to place the tip of the probe in the middle of the airflow. Mount the plastic housing of the sensor onto the ductwork using four (4) sheet metal screws. Locate the sensor at a straight section of the duct and away from heating, cooling or humidifying elements.

Locate and record the duct sensor TXID numbers located on a label on the inside of the enclosure cover. This information will be needed when setting up the receiver.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver. Attach the cover of the duct sensor by installing the four screws to complete the installation.

ORDERING INFORMATION

MODEL	DESCRIPTION
DT2630	**Wireless Duct Temperature Sensor**
	Temperature ranges
A	25° to 150°F
B	-40° to 160°F
	Enclosure
	Standard black case
E	NEMA4 enclosure
	Probe lengths
-04	4" probe
-06	6" probe
-08	8" probe
-12	12" probe
-18	18" probe

DT2630 - A - [ ] - -04

Example: DT2630A-04 Duct temperature sensor with 4" probe 25° to 150°F.

FRONTIER 2.0 WIRELESS REMOTE TEMPERATURE SYSTEM

SST2630

DESCRIPTION

The Frontier 2.0 **SST2630** wireless remote sensor is encapsulated in a 0.25" OD 304 stainless steel probe. The sensor is used typically for a single point of temperature measurement in piping or ductwork.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

FEATURES

- ***Battery included***
- ***No calibration required***
- ***No wiring needed***
- ***Easy to install***
- ***Battery powered sensors***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approximately 4 to 5 years)***
- ***Low battery LED plus remote low battery alarm notification***
- ***Reliable Spread Spectrum technology***

NEW!

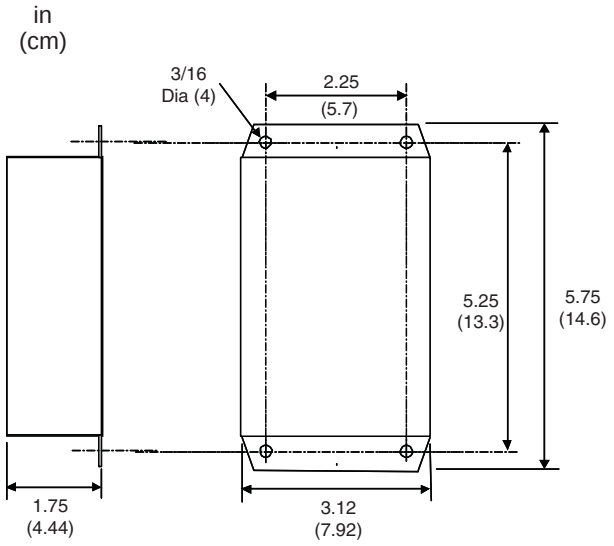
SST2630

(Battery Included)

SPECIFICATIONS

Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Frequency	923.58 MHz
Probe Length	2" (5 cm) , cable length 15 ft. (4.5 meters)
Temperature Range	
SST2630A	25° to 125°F (-3 to 51°C)
SST2630B	0° to 200°F (-17 to 93°C)
SST2630C	-40° to 160°F (-40 to 71°C)
Accuracy	±1°F
Resolution	12 Bit
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	0° to 125°F (-17 to 51°C)
Operating Humidity	5 to 95% RH (non-condensing)
Dimensions	1.75"H x 3.12"W x 5.75"D (4.4 x 7.9 x 14.6 cm)
Weight	1.2 lb (0.54 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS



NEW!

FRONTIER 2.0 WIRELESS REMOTE TEMPERATURE SYSTEM

SST2630

INSTALLATION

CAUTION:
Sensors, repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Wireless **SST2630** sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers.

To select the proper sensor location, first install and power the receiver. Observing polarity, insert the battery into the sensor to activate it. The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established, the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission. The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission press the push button switch located by the negative terminal of the battery.

The sensor probe should be mounted under any insulation in direct contact with the pipe using metal pipe straps. For proper measurement of temperature, thermal conductive compound should be used in between the sensor probe and the pipe. The installation should be wrapped with insulation to reduce the effect of ambient air.

The plastic housing of the sensor can either be mounted on the pipe with metal pipe strap or wall mounted.

Locate and record the sensor TXID numbers located on a label on the inside of the enclosure cover. This information will be needed later to set up the receiver.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver.

Then attach the cover of the sensor by installing the four screws.

ORDERING INFORMATION

MODEL	DESCRIPTION
SST2630	**Wireless Remote/Strap-on Temperature Sensor**
	Temperature ranges
	A 25° to 125°F
	B 0° to 200°F
	C - 40° to 160°F
	Enclosure
	E NEMA4 enclosure (Optional)

SST2630 - A - E

Example: SST2630AE Sensors in NEMA4 enclosure with 25°F to 125°F range.

FRONTIER 2.0 WIRELESS TEMPERATURE WALL SENSOR

WT2630

DESCRIPTION

The Frontier 2.0 **WT2630** wireless temperature sensors are programmed with unique transmitter IDs so that individual room information can be identified. No field programming required.

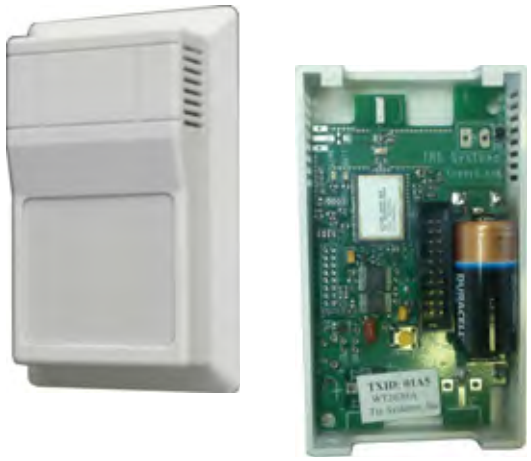
The override button (B & C models only) located on the side of the sensor housing can be assigned to a digital output in the Frontier 2.0 family of receivers for occupancy override or similar applications.

The setpoint adjustment (B Model only) can be assigned to an analog output in a Frontier 2.0 receiver. The output will then be used by a controller for a variety of control setpoint ranges (user defined) and other applications such as dimming of light and window blinds control.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

NEW!

Trs Systems
Wireless Sensors & Controls



WT2630

(Battery Included)

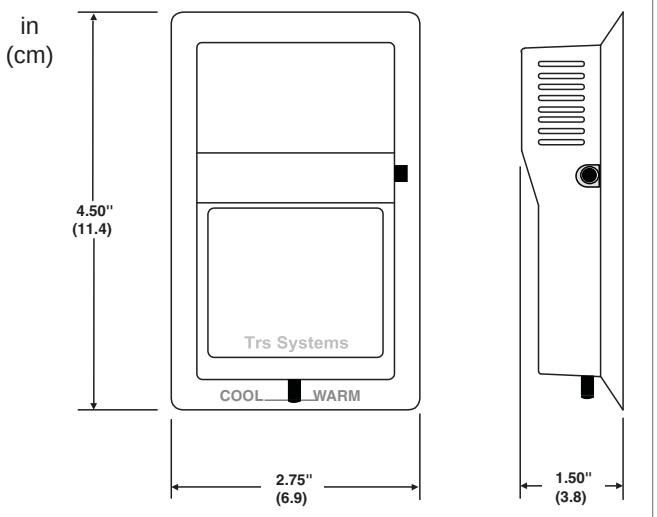
FEATURES

- ***Battery included***
- ***No calibration required***
- ***No wiring needed***
- ***Flexible user defined set point range***
- ***Set point slider can be used for a variety of other applications***
- ***Battery powered sensors***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approximately 4 to 5 years)***
- ***Low battery LED + remote low battery alarm notification***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Frequency	923.58 MHz
Temperature Range	32° to 104°F (0° to 40°C)
Setpoint Label	Warm - cool or 65° to 85°F
Accuracy	±1°F
Resolution	12 Bit
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	32° to 104°F (0° to 40°C)
Operating Humidity	0 to 100% RH (non-condensing)
Dimensions	4.50"H x 2.75"W x 1.50"D (11.4 x 6.9 x 3.8 cm)
Weight	0.2 lb (0.09 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS



FRONTIER 2.0 WIRELESS TEMPERATURE WALL SENSOR

WT2630

INSTALLATION

CAUTION:
Sensors, repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Wireless wall sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as to increase transmission distance between sensors and receivers.

To select the proper sensor location, first install and power the receiver. Observing polarity insert the battery into the sensor to activate it. The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received successfully.

The Data-Link LED will continue to blink once for every data transmission The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission, press the push button switch located by the negative terminal of the battery.

Once the sensor location has been determined, mount the sub base on an inside wall approximately 4.5 ft. from the floor (or in the specified location) to allow exposure to the average zone temperature using two #8 screws, Velcro™ or double sided tape.

Locate and record the wall sensor ID Number located on a label on the back of the sub base prior to mounting.

Do not mount the sensors on an outside wall, on a wall containing water pipes or near air ducts. Avoid locations that are exposed to discharge air from registers or radiation from lights, appliances, or the sun.

Attach the wall sensor to the sub base by tightening the two locking screws at the bottom of the sub base. This information will be needed later to set up the receiver.

NOTE: The locking screw must be installed for a secure installation. The screws are turned counter-clockwise to secure the cover.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver.

ORDERING INFORMATION

MODEL	DESCRIPTION
WT2630A	Wall sensor only
WT2630B	Wall sensor with set point adjustment and override push button
WT2630C	Wall sensor with override push button

FRONTIER 2.0 WIRELESS HUMIDITY AND TEMPERATURE WALL SENSOR

WH2630

DESCRIPTION

The Frontier 2.0 **WH2630** wireless humidity and temperature sensors are programmed with unique transmitter IDs so that individual room information can be identified. No field programming is required. The sensors are available with 2% or 3% accuracy.

A Data-Link LED is used to confirm the receiver has received the data transmission. This eliminates the need for special wireless installation equipment or tools and allows for quick installation.

NEW!

WH2630

(Battery Included)

FEATURES

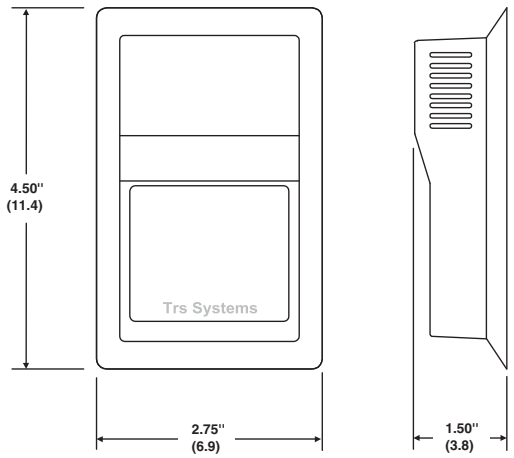
- ***Battery included***
- ***Advanced RH sensor technology***
- ***No calibration required***
- ***Excellent long term stability, response time and reset rate***
- ***Battery powered sensors***
- ***Mesh Network - easy to install and relocate sensors without additional wireless installation tools***
- ***Sensor Data-Link LED confirms connection with Frontier 2.0 receivers***
- ***Long battery life (approximately 3 years with one battery)***
- ***Low battery LED plus remote low battery alarm notification***
- ***Reliable Spread Spectrum technology***

SPECIFICATIONS

Battery	Lithium 3.0V 1400 mAh (Duracell DL123A)
Frequency	923.58 MHz
Accuracy	
WH2630A	Humidity ±3% RH (10 to 90% RH)
WH2630B	Temperature ±1°F, Humidity ±3% RH (10 to 90% RH)
WH2630C	Humidity ±2% RH (30 to 80% RH)
WH2630D	Temperature ±1°F, Humidity 2% RH (30 to 80% RH)
Humidity Range	0 to 100% RH
Temperature Range	32° to 104°F (0° to 40°C)
Transmission Power	11 dBm
Range	1 mile (line-of-sight)
Indoor	200 to 500 ft
Operating Temperature	32° to 104°F (0° to 40°C)
Operating Humidity	0 to 100% RH (non-condensing)
Dimensions	4.50"H x 2.75"W x 1.50"D (11.4 x 6.9 x 3.8 cm)
Weight	0.2 lb (0.09 kg)
Approvals	FCC certified
Warranty	1 year

DIMENSIONS

in
(cm)



NEW!

FRONTIER 2.0 WIRELESS HUMIDITY AND TEMPERATURE WALL SENSOR

WH2630

INSTALLATION

CAUTION:
Sensors, repeaters and receivers should NOT be installed in the following areas:
- Inside metal enclosure or panel
- Inside or immediately next to elevator shaft or elevator banks
- In front of or immediately next to large trees or a large body of water
Transmission distance and performance will be drastically reduced.

CAUTION:
Do not use this product in any safety related applications where human life may be affected.

Wireless wall sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers.

To select the proper sensor location, first install and power the receiver. Observing polarity, insert the battery into the sensor to activate it. The mesh networked Frontier 2.0 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver, the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established, the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission. The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission press the push button switch located by the negative terminal of the battery.

Once the sensor location has been determined, mount the sub base on an inside wall approximately 4.5 ft. from the floor (or in the specified location) to allow exposure to the average zone temperature using two #8 screws, Velcro™ or double-sided tape.

Locate and record the wall sensor ID Number located on a label on the back of the sub base prior to mounting.

Do not mount the sensors on an outside wall, on a wall containing water pipes or near air ducts. Avoid locations that are exposed to discharge air from registers or radiation from lights, appliances, or the sun.

Attach the wall sensor to the sub base by tightening the two locking screws at the bottom of the sub base. This information will be needed later to set up the receiver.

NOTE: The locking screw must be installed for a secure installation. The screws are turned counter-clockwise to secure the cover.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver.

ORDERING INFORMATION

MODEL	DESCRIPTION
WH2630A	Wireless wall humidity (3%) sensor
WH2630B	Wireless wall humidity (3%) and temperature sensor
WH2630C	Wireless wall humidity (2%) sensor
WH2630D	Wireless wall humidity (2%) and temperature sensor

WIRELESS SENSOR GATEWAY

FDS-Wi

NEW!

RLE Technologies

DESCRIPTION

The **FDS-Wi** is a wireless gateway designed for easy integration with facility monitoring and management systems. The convenient wireless design helps reduce installation costs associated with hard-wired sensors and systems.

The **FDS-Wi** comes equipped with a 418 megahertz radio receiver capable of receiving signals from select transmitters sensing temperature, humidity, motion, power transmitters, dry contact, analog (0-20mA), 0-5VDC, and 0-10VDC signals and a 900 megahertz receiver capable of receiving signals from sensors and point repeaters. The **FDS-Wi** integrates these signals to facilities monitoring systems in the form of SNMP, Modbus TCP/IP, Modbus RTU, and BACnet/IP.

The **FDS-Wi** can receive signals within 100 feet (30.48m) in open air space with the 418 MHz frequency and up to a quarter mile (402.34m) of open air space with the 900 MHz frequency. Repeaters are used to add additional distance between the **FDS-Wi** and the wireless sensors (transmitters).

FDS-Wi

BACnet

FEATURES

- ***Wireless design***
- ***900MHz & 418MHz receivers***
- ***Optional 418MHz only***
- ***Operates on a mesh network***
- ***Receives transmissions up to 100 feet (30.48m) in open air with the 418MHz antenna and up to a quarter mile (402.34m) in open air with the 900MHz antenna***
- ***Provides direct alarm notification***
- ***Ability to output to Modbus, BACnet, and SNMP***

TERMINAL BLOCK DESIGNATIONS

Item	Description
Antenna 916 MHz	RP-SMA connector
Antenna 418 MHz	RP-SMA connector
Power 24 VDC/VAC	Power terminal block
Jack	Connector for wall wart adapter
Status	Status LED
RS232 Port	DB9 female connector
RX TX RS485 LED	Receive/Transmit status LED
RS485 Termination switch	1 (unused); 2 100 ohm termination
RS485 port	Connector for EIA485 circuit
RJ45 Ethernet port	10/100 BASE-T connector

SPECIFICATIONS

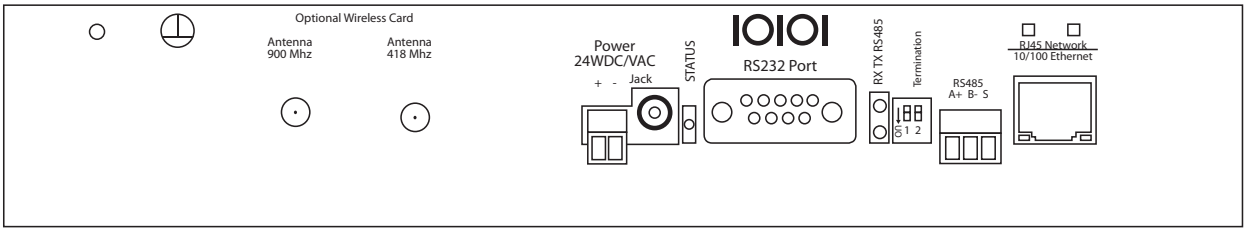
Supply Voltage	24 VAC/VDC. 50/60Hz
Supply Current	600mA @ 24VAC/VDC Maximum
Frequency	900MHz and 418MHz
Maximum Number of Wireless Modules	400 with repeaters; 100 without repeaters
LED Indication	
Network	2 Green Active & Speed
Status	1 Red LED
EIA-485 Status	2 Green Transmit & Receive
Communication Ports	
Ethernet	10/100 BASE-T, RJ45 connector; 500VAC RMS isolation
EIA-232	DB9 female connector; 9600 baud; No parity, 8 data bits, 1 stop bit
EIA-485	1200, 2400, 9600 or 19200 baud (selectable); Parity: none, even or odd, 8 data bits, 1 stop bit
Protocol	TCP/IP, HTML, TFTP, SNMP Modbus (EIA-485) Modbus TCP/IP UDP/IP BACnet/IP BACnet/MSTP Terminal Emulation (EIA-232)
Operating Temperature	32° to 122°F(0° to 50°C)
Operating Humidity	5 to 95% RH (non-condensing)
Mounting	Desktop or rack (brackets included)
Dimensions	9.8"W x 5.3"D x 1.8"H (24.8 x 13.5 x 4.6 cm)
Weight	4.25 lbs(1.92 kg)
Warranty	1 year

NEW!

WIRELESS SENSOR GATEWAY

FDS-Wi

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
FDS-Wi	Wireless Gateway, 418/900 MHz receiver, includes 24VDC power adapter
Wi-TS	Temperature sensor; 418 MHz wireless transmitter
Wi-DIT	Temperature sensor and digital input; 418 MHz wireless transmitter
Wi-THS	Temp/Humidity sensor; 418 MHz wireless transmitter
Wi-LD	Water Sensor; 418MHZ wireless transmitter (requires Wi-LD-SPOT or Wi-LD-25)
Wi-LD-SPOT	Spot detector for use with Wi-LD
Wi-LD-25	Sensing Cable; 25ft/7.62m for use with Wi-LD
Wi-AS1	Analog input (0-20mA); 418 MHz wireless transmitter
Wi-AS2	Analog input (0-5v); 418 MHz wireless transmitter
Wi-AS3	Analog input (0-10v); 418 MHz wireless transmitter
Wi-TS9	Temperature sensor; 900 MHz wireless transmitter
Wi-THS9	Temp/Humidity sensor; 900 MHz wireless transmitter
Wi-TC9	Temperature/Counter sensor - 900MHz

	RELATED PRODUCTS	PAGE
BA/BS2-WT	Room temperature battery transmitter, 418 MHz at 1 mW, (batteries included)	**683**
BA/BS2-WTH	Room temperature and humidity battery transmitter, 418 MHz @ 1 mW, (batteries included)	**683**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**677**
BA/WAI-05	0-5VDC Analog Input Transmitter, 418 MHz	**681**
BA/WAI-10	0-10VDC Analog Input Transmitter, 418 MHz	**681**
BA/WAI-420	4-20 mA Analog Input Transmitter, 418 MHz	**681**
BA/WDI	Digital Input Transmitter, 418 MHz	**681**
BA/WT-D-4	Duct temperature probe, 418 MHz transmitter, 4" insertion probe, batteries included	**685**
BA/WT-D-8	Duct temperature probe, 418 MHz transmitter, 8" insertion probe, batteries included	**685**
BA/WT-I-4	Four-inch immersion temperature probe, 418 MHz transmitter, (batteries included)	**687**
BA/WT-O-BB	OSA temperature probe, 418 MHz transmitter, batteries included	**691**
BA/WT-RPP-10-BB	Remote stainless steel temperature probe, with 418 MHz transmitter and 10 feet of plenum cable, batteries included	**691**
BA/WT-RPP-25-BB	Remote stainless steel temperature probe, with 418 MHz transmitter and 25 feet of plenum cable, batteries included	**691**
BA/WTH-D	Duct temperature and humidity probe, 418 MHz transmitter, 6" insertion probe, batteries included	**685**
BA/WTH-O-BB	OSA temperature and humidity probe, 418 MHz transmitter, batteries included	**691**

BAPI WIRELESS RECEIVER AND REPEATER

BA/RCV-EZ AND BA/RPT-EZ

DESCRIPTION

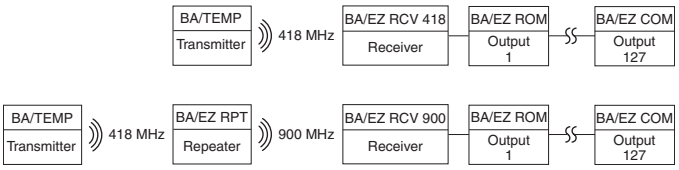
The BAPI **BA/RCV Wireless Receivers** detect the radio signals from sensor transmitters or **BA/RPT** repeaters and send the value through a hard-wired RS485 bus to dedicated output modules. Each receiver can accommodate 127 output modules, which come in a variety of output types including thermistor simulation (10K Ω type 2 or 3), 4-20 mA, 0-5 VDC, 0-10 VDC, and solid-state switch. The **BA/RCV418** receives signals directly from sensor transmitters at 418 MHz. The **BA/RCV900** receives signals only from repeaters at 900 MHz.

The **BAPI BA/RPT Wireless Repeater** detects all 418 MHz sensor transmitter signals, and re-transmits the signal at 900 MHz to extend useable wireless distance to as far as 1000 feet. These signals are received with a **BA/RCV900** for RS485 communication distribution to the output modules.

BA/RCV900-EZ

OPERATION/APPLICATION

The receiver detects the wireless signal from one or more transmitters, then outputs the value through an RS485 communication line to attached output modules selected specifically for the input requirements. Module addressing is made simple by pushing a button on the output module and transmitter at the same time, thus completing a permanent wireless address link between transmitter and output module.



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Eliminates point wiring***
- ***FCC license pre-approved***
- ***Receivers accommodate 127 output modules each***
- ***Receiver sensitivity -106 dBm minimum***
- ***Built In error detection***
- ***Repeater transmit power 100 mW***
- ***1000-foot repeater range (open air)***
- ***Snap-track mounting***

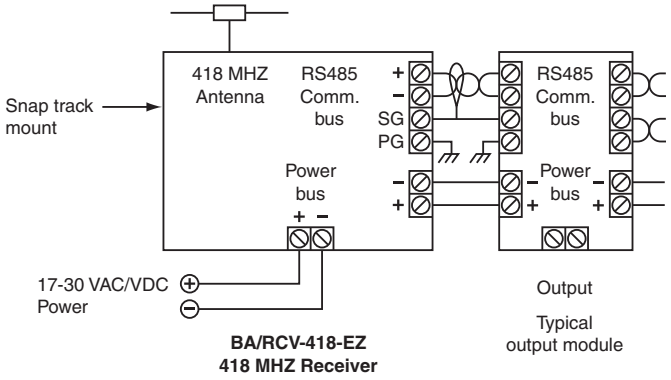
SPECIFICATIONS

Supply Voltage	
RCV-418	17-30 VAC/VDC
RCV-900, RPT	9-15 VDC,
Supply Current	
RCV-418	20 mA
RCV-900, RPT	150 mA
Frequency	
RCV-418	418 MHz
RCV-900, RPT	900 MHz
Transmission Power	100 mW (repeater)
Range	
RCV-418	100 ft
RCV-900, RPT	1000 ft
Receiver Sensitivity	
RCV-418, RPT	-106 dBm
RCV-900	-110 dBm
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	5% to 95% RH (non-condensing)
Materials of Construction	ABS Plastic, UL94V-0
Dimensions	2.75"H x 4.8"W x 1.2"D (7.0 x 12.0 x 3.0 cm)
Weight	0.5 lb (0.2 kg)
Approvals	FCC ID#T4F16963N16964 (418 MHz models only) FCC CFR part 15.247 (900 MHz models)
RoHS Statement	Yes
Warranty	2 years

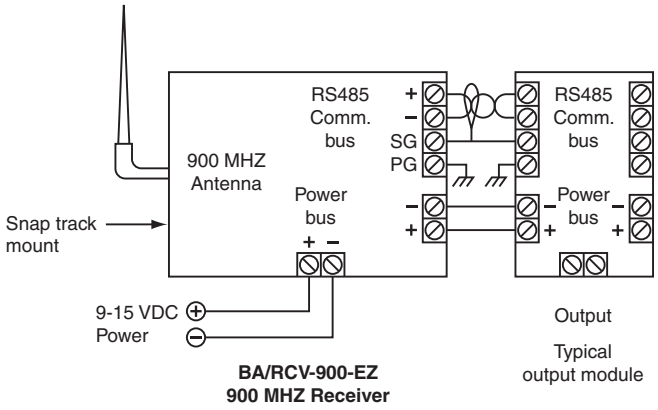
BAPI WIRELESS RECEIVER AND REPEATER

BA/RCV-EZ AND BA/RPT-EZ

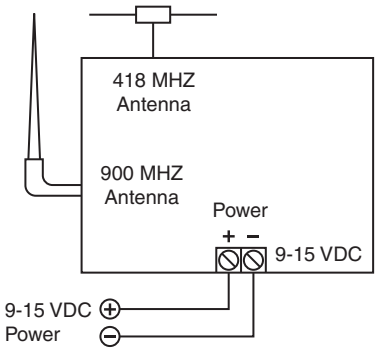
WIRING



BA/RCV-418-EZ
418 MHZ Receiver



BA/RCV-900-EZ
900 MHZ Receiver



BA/RPT49-EZ
Repeater

INSTALLATION / MOUNTING

Install horizontally at highest practical elevation. If installed in a metal enclosure, be sure the antenna is mounted outside enclosure, preferably on the top. A plastic enclosure will enable the antenna to be located within. Keep the RS485 bus as short as possible but definitely less then 4000 feet. Each PG terminal should be earth grounded. Shield is continuous through the Twisted Shielded Pair and each module.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485
BA/RCV900-EA-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485 with extendable antenna
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz

RELATED PRODUCTS	
BA/AOM-CONN	Pluggable terminal block kit
VC350-12	Power supply 24 VAC to 12 VDC, 350 mA

BAPI WIRELESS SYSTEM OUTPUT MODULES

BA/COM, BA/ROM, BA/RYOM, BA/RYOL, BA/SOM, BA/VOM

DESCRIPTION

The **BAPI BA/ROM, VOM, COM,** and **RYOM Wireless System Output Modules** are specifically designed to connect to any BA/RCV receiver and communicate over an RS485 communication trunk to generate standard output signals for any BAS system. A total of 127 modules may be interspersed on the RS485 trunk. Each will output a signal representative of its assigned wireless transmitter located remotely. Each module may be powered from the receiver power bus, or individually, based on overall system power requirements.

The **BAPI BA/ROM Thermistor Simulation Output Module** converts a wireless transmitter temperature signal according to a standard thermistor curve. The two standard curves are 10 KΩ Type 3 and a 10 KΩ Type 2, with a resistance temperature response of 35° to 120°F (1° to 50°C).

The **BAPI BA/VOM Voltage Output Module** converts a wireless transmitter temperature signal to a standard voltage signal. The two standard voltage outputs are 0-5 VDC and 0-10 VDC, with voltage temperature responses based on individual models.

The **BAPI BA/COM Current Output Module** converts a wireless transmitter temperature signal to a standard 4-20 mA current signal. The 4-20 mA current is typical of a loop powered (9-36 VDC) device with current temperature responses based on individual models.

The **BAPI BA/RYOM Digital Output Module** converts the pushbutton on a wireless room temperature transmitter to a solid-state relay closure for AC or DC voltages (5 second momentary actuation). NO or NC solid-state contacts are available, based on individual models.

The **BAPI BA/RYOL Digital Output Module** converts the BA/WDI digital input tranmitter signal to a latching relay output. NO or NC contacts are available, based on individual models.

The **BAPI BA/SOM Setpoint Output Module** converts the setpoint data from a wireless receiver to a resistance or voltage output.

BA/SOM-16-EZ, BA/VOM-05-C-EZ, BA/ROM-102-EZ

FEATURES

- ***Provide BAS point wiring***
- ***127 modules per system include:***
- ***Thermistor simulation for temperature***
- ***0-10 VDC or 0-5 VDC signals***
- ***4-20 mA signals***
- ***Solid-state contacts***
- ***FCC license pre-approved***
- ***Built-in error detection***
- ***Built-in fail-safe positions***
- ***Snap-track mounting***

SPECIFICATIONS

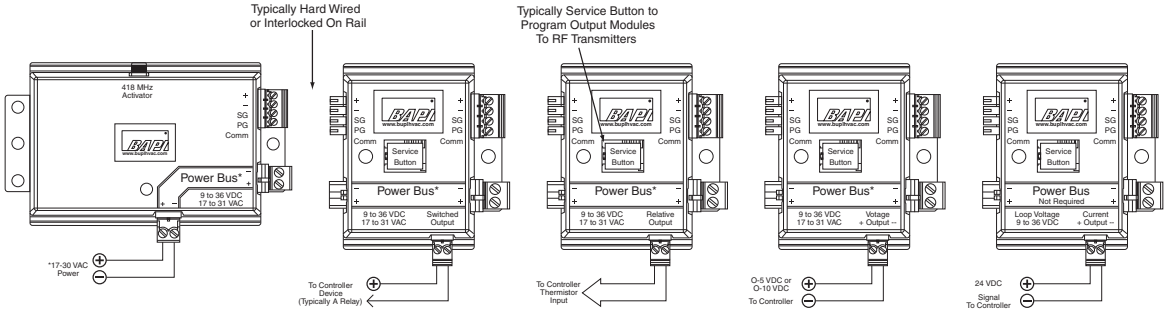
Supply Voltage	
COM	Externally (loop) powered 9-36 VDC, 20 mA
ROM, VOM	9-30 VDC at 3 mA, or 17 to 30 VAC at 0.1 VA
RYOM/RYOL	9-30 VDC at 15 mA, or 17 to 30 VAC at 0.5 VA
SOM	See SOM data sheet located under "Related Documents" at www.Kele.com
Analog Output	
COM	4-20 mA, 9-36 VDC, loop powered Impedance 750Ω at 24 VDC
ROM-102	10 kΩ type 2 thermistor curve, 5 VDC excitation maximum
ROM-103	10 kΩ type 3 thermistor curve, 5 VDC excitation maximum
SOM-10	0 to 10 VDC, 10 kΩ maximum
SOM-60	0 to 10 kΩ, linear
VOM-10	0-10 VDC, 10 kΩ maximum

Digital Outputs	Solid state dual FETs, NO or NC 40 VAC/VDC, 150 mA maximum 1µA leakage in off state 15Ω on-state resistance
Connections	Terminal strip (inter-lockable)
Update Interval	10 seconds
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	5% to 95% RH (non-condensing)
Materials Of Construction	ABS Plastic, UL94V-0
Dimensions	2.75"H x 2.34"W x 1.2"D (7.0 x 5.9 x 3.0 cm)
Weight	0.3 lb (0.14 kg)
RoHS Statement	Yes
Warranty	1 year

BAPI WIRELESS SYSTEM OUTPUT MODULES

BA/COM, BA/ROM, BA/RYOM, BA/RYOL, BA/SOM, BA/VOM

WIRING



Typical BA/RCV RF Receiver With RS485 Communication	BA/R YOM Digital Output N.O. or N.C.	BA/ROM Thirmistor Simulat 0K type 2 @ 77°F or 10K type 3 @ 77°F	BA/VOM O-5 VDC Output or O-10 VDC Output	BA/COM 4-20 MA Output

*The power bus maybe split when needed and is required when module current draw exceeds the system power supply. If the power bus is split re-established with an indendently power source. Do not parallel power sources.

INSTALLATION / MOUNTING

Install horizontally at highest practical elevation. If installed in a metal enclosure, be sure the BA/RCV antenna is mounted outside the enclosure, preferably on the top. A plastic enclosure will enable the antenna to be located within. Keep the RS485 bus as short as possible, but definitely less then 4000 feet. Each PG terminal should be earth grounded. Shield is continuous through the Twisted Shielded Pair and each module.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/COM-C-EZ	BAPI wireless current output module, 4-20 mA = 50°F to 90°F
BA/COM-E-EZ	BAPI wireless current output module, 4-20 mA = 60°F to 80°F
BA/COM-H-EZ	BAPI wireless current output module, 4-20 mA = -20°F to 120°F
BA/COM-M-EZ	BAPI wireless current output module, 4-20 mA = 0 to 100% RH
BA/ROM-102-EZ	BAPI wireless thermistor simulation output module, 10K type 24 (35°F to 120°F)
BA/ROM-103-EZ	BAPI wireless thermistor simulation output module, 10K type 3 (32°F to 120°F)
BA/RYOM-NC-EZ	BAPI wireless digital output module, N.C. solid-state switch
BA/RYOM-NO-EZ	BAPI wireless digital output module, N.O. solid-state switch
BA/SOM-10-EZ	BAPI wireless setpoint output module, 0 to 10 VDC
BA/SOM-60-EZ	BAPI wireless setpoint output module, 0 to 10K Ω
BA/VOM-10-C-EZ	BAPI wireless voltage output module, 0-10 VDC = 50°F to 90°F
BA/VOM-10-E-EZ	BAPI wireless voltage output module, 0-10 VDC = 60°F to 80°F
BA/VOM-10-H-EZ	BAPI wireless voltage output module, 0-10 VDC = -20°F to 120°F
BA/VOM-10-M-EZ	BAPI wireless voltage output module, 0-10 VDC = 0 to 100% RH
BA/RYOL-NC-EZ	Relay output latching, normally closed default
BA/RYOL-NO-EZ	Relay output latching, normally open default

RELATED PRODUCTS

BA/AOM-CONN	Pluggable terminal block kit
VC350-12	Power supply 24 VAC to 12 VDC, 350 mA

BAPI WIRELESS UNIVERSAL TRANSMITTERS

BA/WAI SERIES, BA/WDI, BA/WTS

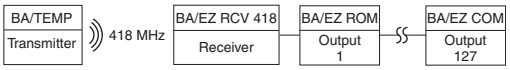
DESCRIPTION

The BA/W Series Wireless Universal Input Transmitters are designed to monitor 0-5VDC, 0-10VDC or 4-20 mA signals and transmit that analog value to a receiver. The Digital Input version monitors any dry contact status input and transmits that On/Off status to the receiver. The Thermistor Temperature Input version takes any 10K Type 2 thermistor sensor and transmits it to any BAPI receiver. All models transmit their data every 10-17 seconds. The units are battery operated and only require wiring from the remote input sensor.

NEW!

FEATURES

- ***Two Year Battery Powered with Replaceable Battery***
- ***0-5, 0-10 and 4-20mA Analog Input Models***
- ***Digital Input (dry contact) Model***
- ***Thermistor Temperature Input Model***
- ***100' open air range, 1,000' range with a Repeater***
- ***Transmission Interval from 10-17 seconds***
- ***Easy Two-Wire Termination and Easy Setup Mode***



* The transmission range from repeater to receiver is 1000 feet.

SPECIFICATIONS

Battery	Two AA 3.6V lithium batteries (included)
Frequency	418 MHz
Transmission Power	1 mW
Range	100 ft
Update Interval	10-17 seconds (fixed)
Analog Input	
BA/WAI-05	0-5VDC, Impedance > 30KΩ
BA/WAI-10	0-10VDC, Impedance > 50KΩ
BA/WAI-420	4-20 mA, Impedance = 100Ω
BA/WTS	Any 10K Type 2 Thermistor, range -40 to 185°F (-40 to 85°C)
Digital Inputs	
BA/WDI	Dry contact, > 20 seconds (< 10Ω closed, >250Ω open)
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	5 to 95% RH, (non-condensing)
Enclosure	NEMA 4 (IP66)
Dimensions	5.0"H x 4.1"W x 2.5"D (12.7 x 10.4 x 5.4 cm)
Weight	0.5 lb (0.22 kg)
Approvals	FCC ID# T4F16963N16964 (418 MHz only)
RoHS Statement	Yes
Warranty	2 year

WIRING - FIGURES ARE ON NEXT PAGE

Battery Installation:
Battery supplied: Two-3.6 VDC Lithium batteries
(Figure 1) Install both batteries per the +/- indication on the battery holder board.
Note: Both batteries face the same way. (Unit will run on one battery if needed)
Input Sensor Wiring Description:
Voltage: Wire the + signal to the + terminal on the battery board.
(Figure 2) Wire the – signal to the – terminal on the battery board.
Current (sync): Wire the 4-20 mA current signal (-) from the sensor to + terminal on the battery board.
(Figure 3) Wire the – of the power supply feeding the sensor to the sensor to the – terminal on the battery board.
Wire the + of the power supply feeding the sensor to the + of the sensor.
Current (source): Wire the + signal to the + terminal on the battery board.
(Figure 4) Wire the – signal to the – terminal on the battery board.
Provide + power to sensor
Provide – power to sensor
Thermistor Sensor: Wire either lead to the + terminal of the battery board. (Non-Polar)
(Figure 5) Wire the other lead to the – terminal of the battery board. (Non-Polar)
Contact Input: Wire either lead to the + terminal of the battery board. (Non-Polar)
(Figure 6) Wire the other lead to the – terminal of the battery board. (Non-Polar)

APPLICATION

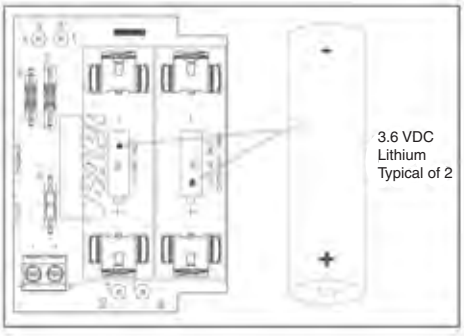


Fig. 1: Battery Installation

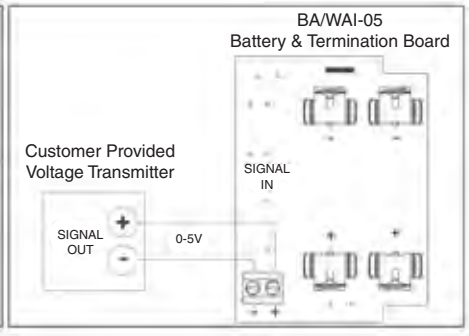


Fig. 2a: 0-5V Transmitter Termination

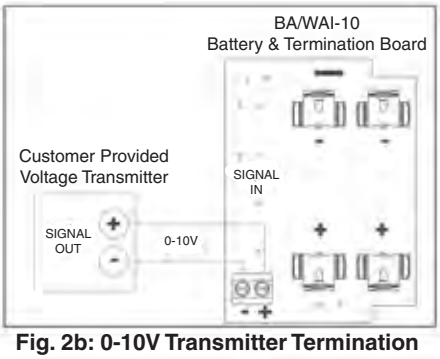


Fig. 2b: 0-10V Transmitter Termination

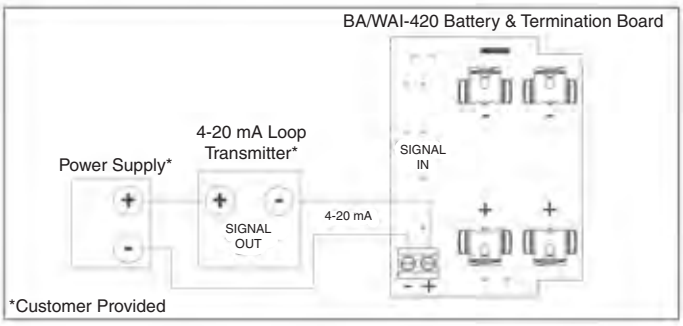


Fig. 3: 4-20 mA Loop Powered Transmitter Termination

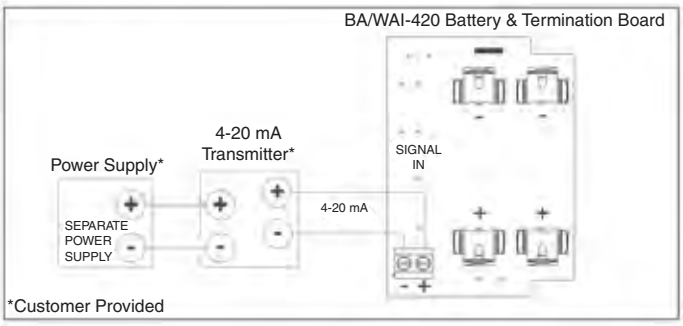


Fig. 4: 4-20 mA 4-wire Transmitter Termination

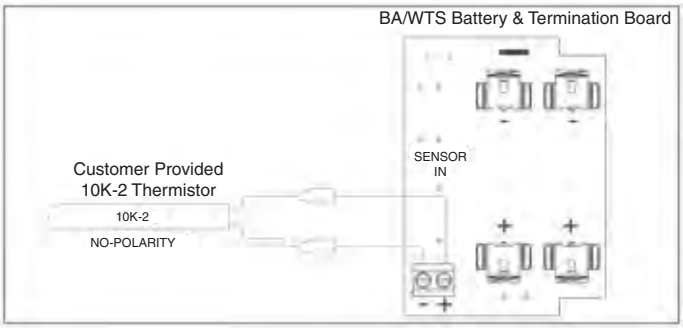


Fig. 5: 10K-2 Thermistor Termination

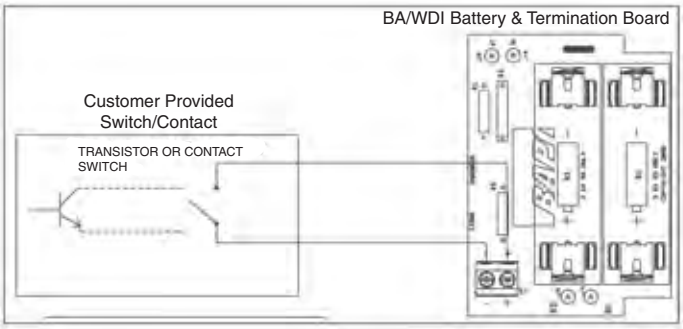


Fig. 6: Digital Input (DI) Termination

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WAI-05	0-5VDC Analog Input Transmitter, 418 MHz
BA/WAI-10	0-10VDC Analog Input Transmitter, 418 MHz
BA/WAI-420	4-20 mA Analog Input Transmitter, 418 MHz
BA/WDI	Digital Input Transmitter, 418 MHz
BA/WTS	Thermistor Sensor Transmitter, 418 MHz

BAPI WIRELESS ROOM TEMPERATURE & HUMIDITY TRANSMITTERS

BA/BS2-WT(H)

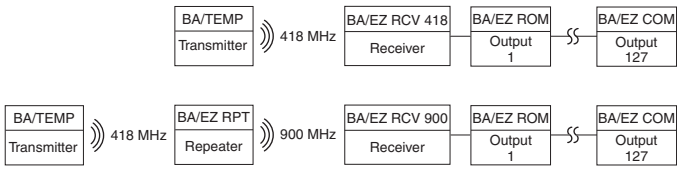
DESCRIPTION

The BAPI wireless room temperature and humidity transmitters measure in-room conditions with a battery operated 418 MHz transmitter. The sensor / transmitter is mounted in a BAPI-Stat 2 style enclosure and has an in-building range of 100 feet. The battery has an estimated eight-year life with transmission updates approximately every ten seconds.

OPERATION/APPLICATION

Temperature and humidity data is transmitted via 418 MHz RF to a receiver. Minimum in-building range is 100 feet, and battery life is estimated to be eight years with high-capacity 3.6V lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error detection. Each variable sent by the transmitter is converted by a BAPI Analog Output Module to a voltage, current, or resistance signal for input to a controller or monitor. They can also be set up to include low-battery information to the controller.

BA/BS2-WT



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Wireless temperature and humidity sensing***
- ***Eight-year battery life***
- ***Built-in error detection***
- ***Repeater available for 1000-foot range***
- ***Output modules available with signal outputs of voltage, current, or resistance***
- ***BAPI-Stat 2 enclosure***
- ***Two-year warranty***

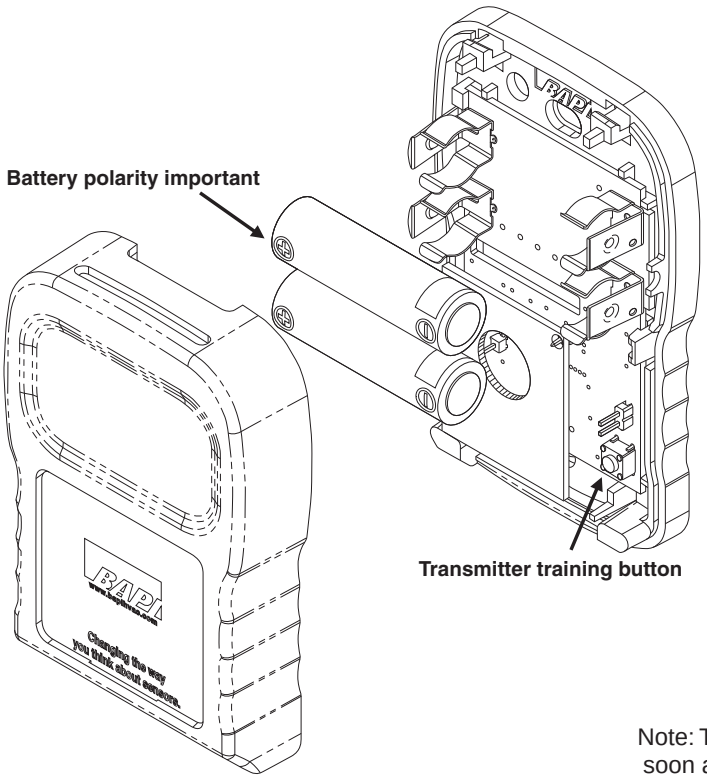
SPECIFICATIONS

Battery	Two AA 3.6V lithium batteries (included)
Frequency	418 MHz
Transmission Power	1 mW
Range	100 ft
Update Interval	10 seconds (fixed)
Humidity Accuracy	±2%, (5% to 95%)
Humidity Range	0% to 100% RH
Sensor Type	
BA/BS2-WT	Temperature: 10K type 2
BA/BS2-WTH	Temperature: 10K type 2 Humidity: Capacitive
Temperature Range	-40° to 185°F (-40° to 85°C)
Temperature Accuracy	±0.36°F (±0.2°C)
Operating Temperature	32° to 140°F (0° to 60°C)
Operating Humidity	5% to 95% RH (non-condensing)
Dimensions	4.5"H x 2.75"W x 1.1"D (11.4 x 7.0 x 2.7 cm)
Weight	0.25 lb (0.11 kg)
Approvals	FCC ID# T4F16963N16964 (418 MHz only)
RoHS Statement	Yes
Warranty	2 year

BAPI WIRELESS ROOM TEMPERATURE & HUMIDITY TRANSMITTERS

BA/BS2-WT(H)

WIRING



Note Batteries included

Note: The unit starts transmitting as soon as the batteries are installed.

INSTALLATION / MOUNTING

Install as you would any wall sensor, about 4' to 5' from the floor. The box should not be installed inside a metal box. Installing the batteries starts the RF transmission immediately. Pushing the training button of the transmitter and the button of the associated output module simultaneously will confirm the address link between the correct units. This should be done one at a time to avoid cross-addressing.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/BS2-WT	Room temperature battery transmitter, 418 MHz at 1 mW, (batteries included)
BA/BS2-WT-S	Room temperature with setpoint adjust, 418 MHz 1mW, (batteries included)
BA/BS2-WT-O	Room temperature with push button, 418 MHz 1mW, (batteries included)
BA/BS2-WT-SO	Room temperature with push button and set point adjust, 418 MHz 1mW, (batteries included)
BA/BS2-WTH	Room temperature and humidity battery transmitter, 418 MHz @ 1 mW, (batteries included)

	RELATED PRODUCTS	PAGE
BA/LI3620	AA lithium 3.6V battery, two required for each transmitter	
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485	**676**
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	**676**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**676**

BAPI WIRELESS DUCT TEMPERATURE & HUMIDITY TRANSMITTERS

BA/WT(H)-D

DESCRIPTION

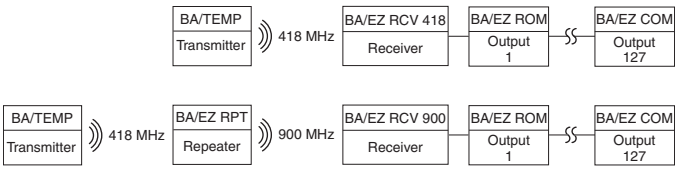
The BAPI wireless duct temperature and humidity transmitters sense in-duct conditions with a battery operated 418 MHz RF transmitter. The sensor/transmitter is mounted in a NEMA 4, (IP66) enclosure with 4" or 8", stainless steel temperature duct probe or 6" temperature/RH probe and has an in-building range of 100' (30.5m). The battery has an estimated eight-year life with transmission updates approximately every 10 seconds. Other duct insertion probe lengths are available.

BA/WT-D-4

BA/WTH-D-4

OPERATION/APPLICATION

Temperature and humidity data is transmitted via 418 MHz RF to a receiver. Minimum in-building range is 100 feet and battery life is estimated to be eight years with high-capacity 3.6V lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error detection. Each variable sent by the transmitter is converted by a BAPI Analog Output Module to a voltage, current, or resistance signal for input to a controller or monitor. The unit can also be set up to send low-battery information to the controller.



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Wireless temperature and humidity sensing***
- ***Eight-year battery life***
- ***Built-in error detection***
- ***Repeater available for 1000-foot range***
- ***Available receiver with signal outputs of voltage, current, or resistance***
- ***NEMA 4 (IP66) enclosure***
- ***Stainless steel temperature probe***
- ***Sintered filter humidity probe***
- ***Two-year warranty***

SPECIFICATIONS

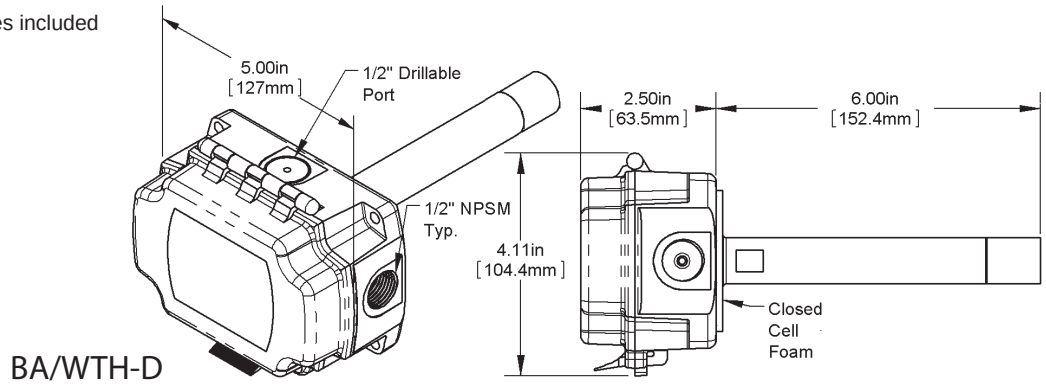
Battery	Two AA 3.6 VDC lithium batteries (included)
Frequency	418 MHz
Transmission Power	1 mW
Range	100 ft
Update Interval	10 seconds (fixed)
Humidity Accuracy	±2%, (5% to 95%)
Humidity Range	0 to 100% RH,
Sensor Type	
BA/WT	Temperature 10K type 2
BA/WTH	Temperature 10K type 2 Humidity Capacitive
Temperature Range	-40° to 185°F (-40° to 85°C)
Temperature Accuracy	±0.36°F (±0.2°C)
Operating Temperature	-40° to 212°F (-40° to 100°C)
Operating Humidity	5% to 95% RH (non-condensing)
Dimensions	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
Weight	1.0 lb (0.45 kg)
Approvals	FCC ID# T4F16963N16964 (418 MHz versions only)
RoHS Statement	Yes
Warranty	2 years

BAPI WIRELESS DUCT TEMPERATURE & HUMIDITY TRANSMITTERS

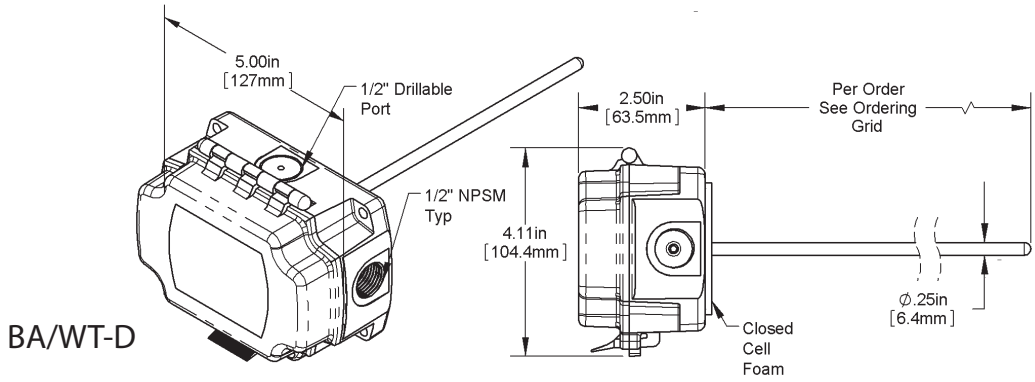
BA/WT(H)-D

DIMENSIONS

Note: Batteries included



BA/WTH-D



BA/WT-D

INSTALLATION / MOUNTING

Install the probe horizontally on the duct. The enclosure should not be installed inside a metal duct. Installing the batteries starts the wireless transmission immediately. Pushing the button on the transmitter and the button on the associated output module simultaneously will confirm that the address link between the units is correct. This should be done one at a time to avoid cross-addressing.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WT-D-4	Duct temperature probe, 418 MHz transmitter, 4" insertion probe, batteries included
BA/WT-D-8	Duct temperature probe, 418 MHz transmitter, 8" insertion probe, batteries included
BA/WTH-D	Duct temperature and humidity probe, 418 MHz transmitter, 6" insertion probe, batteries included

	RELATED PRODUCTS	PAGE
BA/LI3620	AA lithium 3.6V battery, two required for each transmitter	
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485	**676**
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	**676**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**676**

BAPI WIRELESS IMMERSION TEMPERATURE TRANSMITTER

BA/WT-I

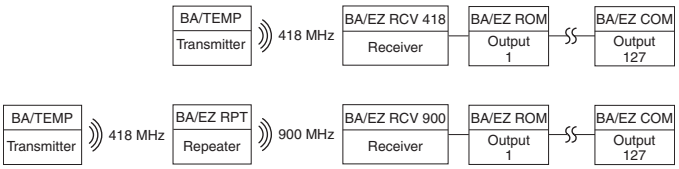
DESCRIPTION

The BAPI wireless immersion temperature transmitters sense in-pipe conditions and send data with a battery operated 418 MHz transmitter. The sensor / transmitter is mounted in a NEMA 4 (IP66) enclosure with a 2", 4" or 8" stainless steel temperature immersion probe suited for four inch well insertion. The transmitter has an in-building range of 100 feet. The battery has an estimated eight-year life with transmission updates approximately every 10 seconds. Other immersion probe lengths are available.

BA/WT-I-4

OPERATION/APPLICATION

Temperature data is transmitted via 418 MHz to a receiver. Minimum in-building range is 100 feet, and battery life is estimated to be eight years with high-capacity 3.6 VDC lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error detection. Each variable sent by the transmitter is converted by a BAPI analog output module to a voltage, current, or resistance signal for input to a controller or monitor. The unit can also be set up to send low-battery information to the controller.



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Wireless temperature sensing***
- ***Eight-year battery life***
- ***Built-in error detection***
- ***Repeater available for 1000-foot range***
- ***Output modules available with voltage, current, or resistance outputs***
- ***Stainless steel temperature probe***
- ***Standard 316-stainless steel wells available***
- ***Two-year warranty***

SPECIFICATIONS

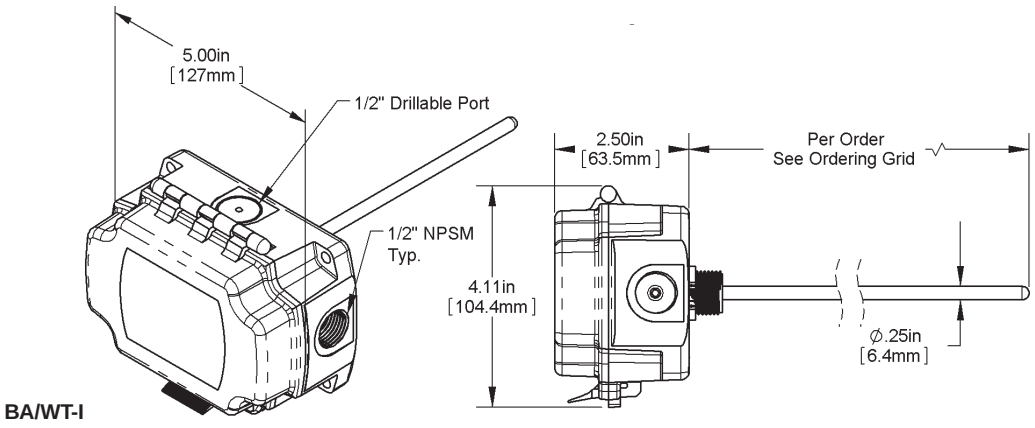
Battery	Two AA 3.6 VDC lithium batteries (included)
Frequency	418 MHz
Transmission Power	1 mW
Range	100 ft
Update Interval	10 seconds (fixed)
Sensor Type	Temperature: 10 kΩ Type 2 thermistor
Temperature Range	-40° to 185°F (-40° to 85°C)
Temperature Accuracy	±0.36°F (±0.2°C)
Operating Temperature	-40° to 212°F (-40° to 100°C)
Operating Humidity	5 to 95% RH (non-condensing)
Enclosure	NEMA 4 (IP66)
Mounting	1/2" NPT, 1/4" probe
Dimensions	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
Probe Length	
2"	1.5"L from tip to 1/2" NPT thread, 1/4" diameter
4"	3.5"L from tip to 1/2" NPT thread, 1/4" diameter
8"	7.5"L from tip to 1/2" NPT thread, 1/4" diameter
Weight	1.0 lb (0.45 kg)
Approvals	FCC ID# T4F16963N16964
RoHS Statement	Yes
Warranty	2 year

BAPI WIRELESS IMMERSION TEMPERATURE TRANSMITTER

BA/WT-I

DIMENSIONS

Note: Batteries included



BA/WT-I

INSTALLATION / MOUNTING

Install the probe horizontally or vertically at the highest practical elevation into the pipe. The enclosure should not be installed inside a metal box or inverted. Installing the batteries starts the wireless transmission immediately. Pushing the button of the transmitter and the button of the associated output module simultaneously will establish an address link between the two units. This should be done one at a time to avoid cross-addressing.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WT-I-2	Two-inch immmersion temperature probe, 418 MHz transmitter, (batteries included)
BA/WT-I-4	Four-inch immersion temperature probe, 418 MHz transmitter, (batteries included)
BA/WT-I-8	Eight-inch immersion temperature probe, 418 MHz, (batteries included)

	RELATED PRODUCTS	PAGE
BA/LI3620	AA lithium 3.6V battery, two required for each transmitter	
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485	**676**
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	**676**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**676**

BAPI WIRELESS OSA TEMPERATURE & HUMIDITY TRANSMITTERS

BA/WT-O, BA/WTH-O

DESCRIPTION

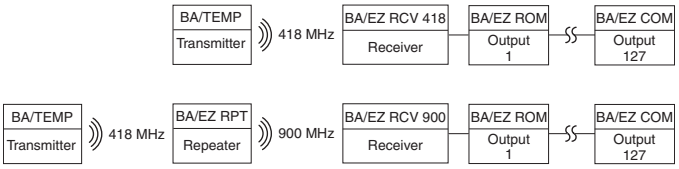
The BAPI wireless outside air temperature and humidity transmitters sense outside conditions and transmit them with a battery-operated 418 MHz transmitter. The sensor / transmitter is mounted in a NEMA 4 (IP66) enclosure with a 2.58" stainless steel temperature probe or a 1.58" temperature / humidity probe. The transmitter has a minimum in-building range of 100 feet. The battery has an estimated eight-year life with transmission updates approximately every 10 seconds. Other duct insertion probe lengths are available.

BA/WT-O

BA/WTH-O

OPERATION/APPLICATION

Temperature and humidity data is transmitted via 418 MHz to a receiver. Minimum in-building range is 100 feet and battery life is estimated to be eight years with high-capacity 3.6 VDC lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error detection. Each variable sent by the transmitter is converted by a BAPI analog output module to a voltage, current, or resistance signal for input to a controller or monitor. The unit can also be set up to send low-battery information to the controller.



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Wireless temperature and humidity sensing***
- ***Eight-year battery life***
- ***Built-in error detection***
- ***Repeater available for 1000-foot range***
- ***Output modules available with signal outputs of voltage, current, or resistance***
- ***Stainless steel temperature probe***
- ***PVC weather shield (temperature model)***
- ***Sintered filter (temperature / RH model)***
- ***Two-year warranty***

SPECIFICATIONS

Battery	Two AA 3.6 VDC lithium batteries
Frequency	418 MHz
Transmission Power	1 mW
Range	100 ft
Update Interval	10 seconds (fixed)
Humidity Accuracy	±2%, (5 to 95%)
Humidity Range	0 to 100% RH,
Sensor Type	
BA/WT	Temperature: 10K type 2
BA/WTH	Temperature: 10K type 2 Humidity: Capacitive
Temperature Range	-40° to 185°F (-40° to 85°C)
Temperature Accuracy	±0.36°F (±0.2°C)
Operating Temperature	-40° to 212°F (-40° to 100°C)
Operating Humidity	5 to 95% RH non-condensing

Enclosure	NEMA 4 (IP66)
Dimensions	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
Probe	
BA/WT	1.58" (4.02 cm)
BA/WTH	2.58" (6.56 cm)
Weight	1.0 lb (0.45 kg)
Approvals	FCC ID#T4F16963N16964 (418 MHz models only)
RoHS Statement	Yes
Warranty	2 years

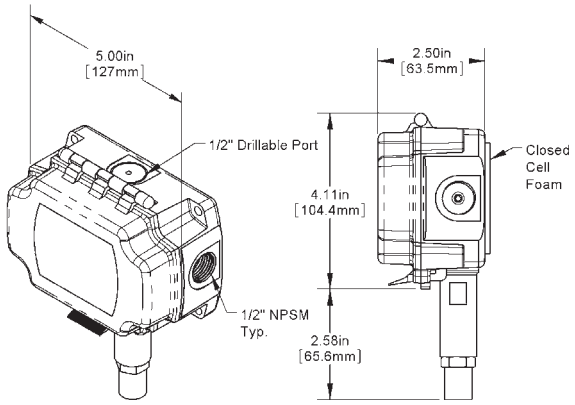
BAPI WIRELESS OSA TEMPERATURE & HUMIDITY TRANSMITTERS

BA/WT-O, BA/WTH-O

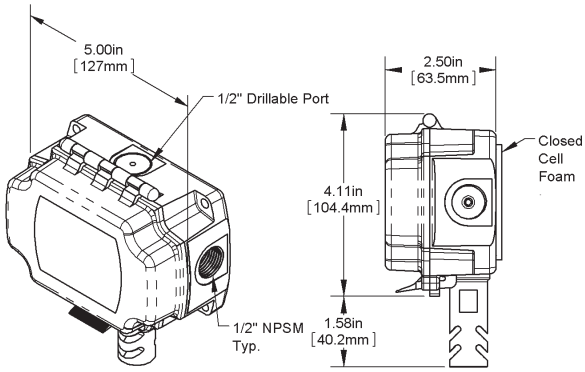
DIMENSIONS

Note: Batteries included

BA/WT-O-BB



BA/WTH-O-BB



INSTALLATION / MOUNTING

Install the enclosure horizontally (probe down) at the highest practical elevation on the north side of a building or in permanent shade. The transmitter should not be installed inside a metal enclosure. Installing the batteries starts the wireless transmission immediately. Pushing the button of the transmitter and the button of the associated output module simultaneously will establish an address link between the two units. This should be done one at a time to avoid cross-addressing.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WT-O-BB	OSA temperature probe, 418 MHz transmitter, batteries included
BA/WTH-O-BB	OSA temperature and humidity probe, 418 MHz transmitter, batteries included

	RELATED PRODUCTS	PAGE
BA/LI3620	AA lithium 3.6V battery, two required for each transmitter	
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485	**676**
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	**676**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**676**

BAPI WIRELESS REMOTE PROBE TEMPERATURE TRANSMITTER

BA/WT-RPP

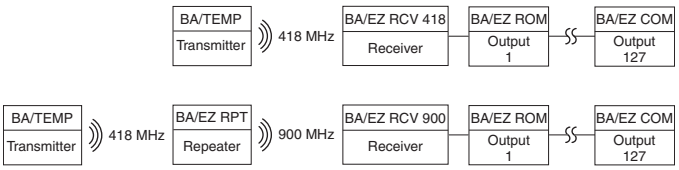
DESCRIPTION

BAPI wireless remote temperature probes feature a stainless steel probe with 5, 10 or 25 feet of plenum-rated cable. The watertight BAPI-Box enclosure houses a 418 MHz, battery-operated transmitter. Remote probes are commonly used in refrigerated case or strap-on applications. They are ideal for hard-to-access areas or for applications where the usual immersion or duct sensors do not fit well. Additional cable options, lead lengths, and probe styles are available upon request.

BA/WT-RPP-10-BB

OPERATION/APPLICATION

Temperature data is transmitted via 418 MHz to a receiver. Minimum in-building range is 100 feet, and battery life is estimated to be eight years with high-capacity 3.6 VDC lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error detection. Each variable sent by the transmitter is converted by a BAPI analog output module to a voltage, current, or resistance signal for input to a controller or monitor. They can also be set up to send low-battery information to the controller.



* The transmission range from repeater to receiver is 1000 feet.

FEATURES

- ***Wireless temperature sensing***
- ***Eight-year battery life***
- ***Built-in error detection***
- ***Repeater available for 1000-foot range***
- ***Output modules available with outputs of voltage, current, or resistance***
- ***Plenum rated cable***
- ***Stainless steel probe sensor***
- ***Two-year warranty***

SPECIFICATIONS

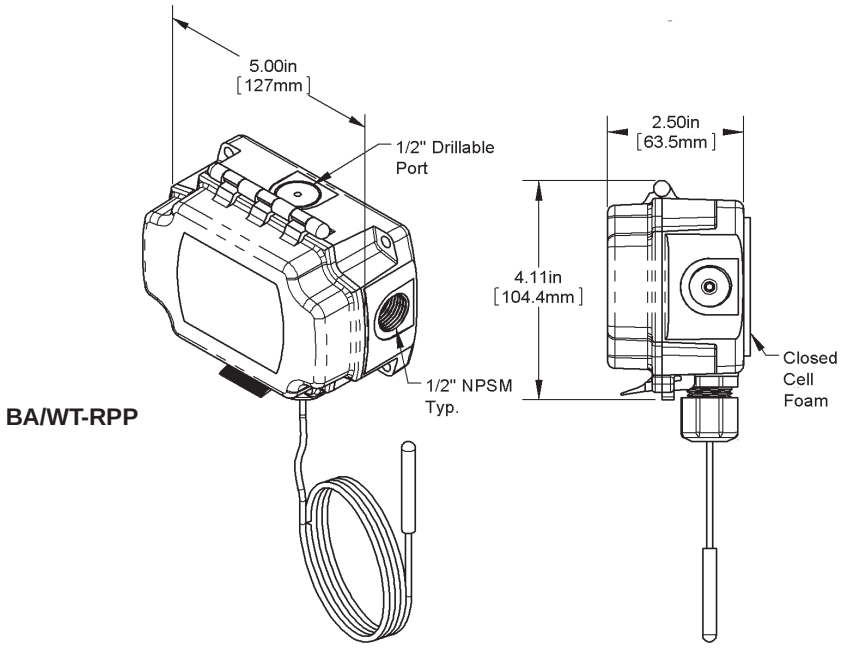
Battery	AA 3.6 VDC lithium batteries (included)	**Dimensions**	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
Frequency	418 MHz	**Weight**	1.0 lb (0.45 kg)
Transmission Power	1 mW	**Approvals**	FCC ID# T4F16963N16964 (418 MHz models only)
Range	100 ft		
Update Interval	10 seconds (fixed)	**RoHS Statement**	Yes
Sensor Type	Temperature: 10K type 2	**Warranty**	2 years
Temperature Range	-40° to 185°F (-40° to 85°C)		
Temperature Accuracy	±0.36°F (±0.2°C)		
Operating Temperature	-40° to 212°F (-40° to 100°C)		
Operating Humidity	5 to 95% RH (non-condensing)		
Enclosure	NEMA 4 (IP66)		

BAPI WIRELESS REMOTE PROBE TEMPERATURE TRANSMITTER

BA/WT-RPP

APPLICATION

Note: Batteries included



BA/WT-RPP

INSTALLATION / MOUNTING

Install the enclosure horizontally (probe down) at the highest practical elevation on the north side of a building or in permanent shade. The transmitter should not be installed inside a metal enclosure. Installing the batteries starts the wireless transmission immediately. Pushing the button of the transmitter and the button of the associated output module simultaneously will establish an address link between the two units. This should be done one at a time to avoid cross-addressing.

ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WT-RPP-5-BB	Remote stainless steel temperature probe, with 418 MHz transmitter and 5 feet of plenum cable, batteries included
BA/WT-RPP-10-BB	Remote stainless steel temperature probe, with 418 MHz transmitter and 10 feet of plenum cable, batteries included
BA/WT-RPP-25-BB	Remote stainless steel temperature probe, with 418 MHz transmitter and 25 feet of plenum cable, batteries included

	RELATED PRODUCTS	PAGE
BA/LI3620	AA lithium 3.6V battery, two required for each transmitter	
BA/RCV418-EZ	BAPI receiver for 418 MHz transmitter signals to RS485	**676**
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	**676**
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	**676**

KELE CATALOG NETWORKING DEVICES

BACNET, LON, N2 AND MODBUS DEVICES

The Kele **PT-NTx** is a PowerTrak communication module. The **PT-NTx** reads up to 23 different power parameters and formats it into the **LON, N2,** or **Modbus** protocol.

Details are in the **Power Monitoring** section of this catalog.

Page 763

BACnet

The Data Industrial **340** BTU meter has versions with LON or N2 protocol communication. The BTU value is formatted into **BACnet, LON** or **N2** protocol and transmitted.

Details are in the **Flow** section of this catalog.

Page 271

BACnet

LonMark

The **380 Series** BTU Meters provide an inexpensive solution to monitoring thermal energy consumption in cold or hot water systems. With on-board Modbus and BACnet communication and a compact design that will fit in a wall, the **380 Series** is perfect for networking and multi-tenant billing applications.

Details are in the **Flow** section of this catalog.

Page 275

BACnet

Viconics thermostats are non-programmable or programmable thermostats with BACnet and Lon versions. There are no visible logos on the thermostat and it comes in 1H/1C through 3H/3C conventional or heat pump applications.

Details are in the **Thermostats and Controllers** section of this catalog.

Page 642, 1101, 1127, 1131

BACnet

LonMark

The **Model HGM-MZ Multi Zone Refrigerant Gas Monitor** is designed for continuous multi-point monitoring of CFC, HFC, and HCFC refrigerants and halogen gases. Models available with **RS232**, **RS485**, and **Modbus RTU**.

Details are in the **Specialty & Gas Sensors** section of this catalog.

Page 347

AutoPhos Series BACnet/N2 native relay panel is built for integration with building automation systems to eliminate the problems experienced with standalone lighting control systems.

Details are in the **Lighting Controls** section of this catalog.

BACnet

Page 529

The **ILC-APII lighting controller** provides expandable lighting control circuits to any size building. The ILC-APII can operate stand-alone or with interface modules for Modbus, N2, LonWorks or BACnet protocols can be controlled from a central building automation control location.

Details are in the **Lighting Controls** section of this catalog.

BACnet

LonMark

Page 546

The **Honewell Smart VFDS** are available with Modbus, BACnet, and N2.

Details available int the **Motor Controls** section of the catalog

BACnet

Page 603

The Functional Devices **RIBTW** series is a **LonWorks,** 20A SPDT relay in a box. It receives **LonWorks** protocol direction over the FTT-10A network and positions the realy accordingly and then provides position feedback.

Details are in the **Relays & Contactors** section of this catalog.

LonMark

Page 905

APPLYING SURGE PROTECTORS

Surge protectors are relatively simple devices, yet they must be carefully selected and applied to function properly. When selecting and applying surge protectors, there are a few essentials to keep in mind.

First, the operating voltage of the system is important. Surge protectors are voltage sensitive switches and must not clamp the normal system voltage. The surge protector clamp voltage must be higher than the system voltage. For example, a 24 VDC system voltage generally uses a 30 volt surge protector.

Second, some surge protectors have an input side and an output side. If installed backwards, they will fail prematurely.

Lastly, grounding is often misunderstood when it comes to proper installation of surge suppressors. This can seriously affect the performance of protection systems and lead to electronics damage. Use the Protection Zone Concept to effectively apply surge protectors to EMS and BAS installations.

The Protection Zone
The protection zone is an imaginary circle drawn around and encompassing electronic equipment items that are located in close proximity to each other (see Figure 1). Everything passing through the imaginary circle should be commonly grounded and should have surge protection.

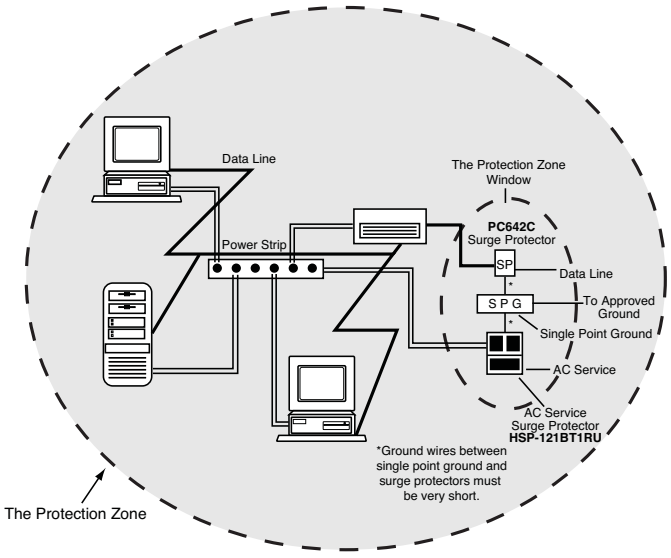


Figure 1. The Protection Zone, Window, and Single Point Ground

The single point ground is a common ground point or node used in the protection zone to bond together all ground references inside the zone. Surge currents passing through a ground conductor generate a voltage across the conductor. This is primarily due to inductance of the wire. Inductance is highly dependent on conductor length; therefore, it is very important to keep suppressor ground wires to the single point ground very short.

The protection zone window is a hypothetical small opening in the zone through which all electrical conductors enter or leave. The single point ground is located at the protection zone window. Figure 2 illustrates a typical installation of equipment within a small area; however, there are three problems associated with the installation depicted.

Problem #1
There are four ground references in Figure 2. AC outlet #1, AC outlet #2, AC outlet #3, and the data line all present separate ground references. The three AC outlet grounds are connected together at the power panel many feet away. The ground wire lengths offer enough inductance to effectively create separate grounds. In addition, the data line may run hundreds of feet to yet another ground reference in remote circuitry.

Problem #2
Notice in Figure 2 there is substantial distance between various conductors leaving the imaginary circle of the protection zone. Even if ground conductors were bonded together, destructive voltages would exist during a surge due to wire inductance.

Problem #3
While the data line shows a surge suppressor, the lack of suppressors in the power receptacles leaves an opening in the protection zone. Even the best data line suppressor cannot prevent damage under these conditions.

Solving the Problems
The problems listed for the installation in Figure 2 are solved using the Protection Zone Concept. Figure 1 illustrates the proper installation:

- All devices are powered from the same AC outlet.
- The AC service incorporates a Model HSP-121BT1RU surge suppressor.
- The single point ground is established in the protection zone window.
- Data line suppressor(s), Model PC642C, are added at the single point ground.
- A ground bus bar is located at the ground area to facilitate multiple ground connections.

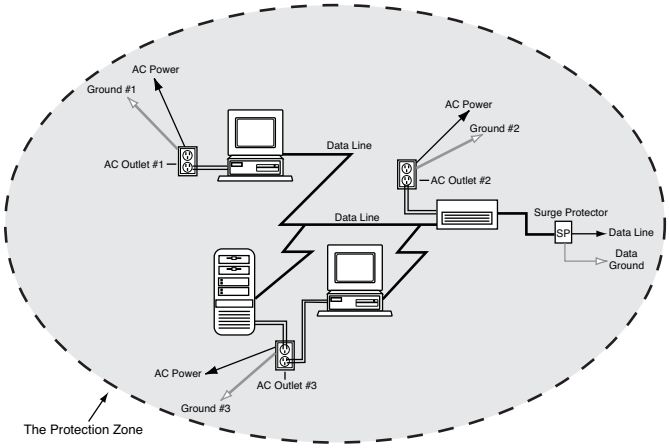


Figure 2. Typical Installation of Equipment within a Small Area

- Ground wires to the suppressors are very short.
- An optional (depending on code) ground conductor connects the ground bus to the main building power ground. This conductor may be quite long, but that does not create a problem now that the ground area has been established.

Protecting Multibuilding Data and Control Systems
The Protection Zone Concept can also be applied to multibuilding, multidrop data and control systems. In Figure 3, the surge protectors located at the building entrance are improperly positioned to protect the CPU and the controllers. During lightning activity, ground potentials at opposite ends of a building can be thousands of volts, causing damage to electronic equipment. Also, surge protectors for data lines that enter buildings have series resistance. The series resistance of the surge protectors is additive. The total series resistance often is too great and can cause communication or data line problems. The installation in Figure 3 shows five protectors in series over the length of the data line.

To properly configure surge protection on a multibuilding, multidrop system (see Figure 4), connect the surge protector on each controller drop so that the protector is not in series with the main data line. When connected in this manner, no more than two surge protectors are connected in series. Using the Protection Zone Concept, locate the data line surge protectors within the protection zone window along with an AC service outlet surge protector for each respective controller. Remember to keep the ground connections to the single point ground very short.

APPLYING SURGE PROTECTORS

Summary
Remember the following when applying surge protection:

1. Keep all grounds inside the protection zone at the same potential. If different ground potentials are present on electronic equipment, damage will occur regardless of the suppression used.

2. Protect all electrical and data circuits entering or leaving the protection zone at the protection zone ground window. Doing this keeps circuits at a safe voltage with respect to the ground window. This safe voltage is the clamp voltage (let-through voltage) of the respective suppressors.

The majority of surge protection installations are fairly simple and only involve bonding suppressor grounds to AC service grounds at the ground window. Existing sites may involve some rewiring to accomplish the best results. In order to keep the data line surge suppressor ground and AC service ground wires very short, wiring must sometimes be moved. When applying surge protectors, using the Protection Zone Concept will effectively protect EMS and BAS installations.

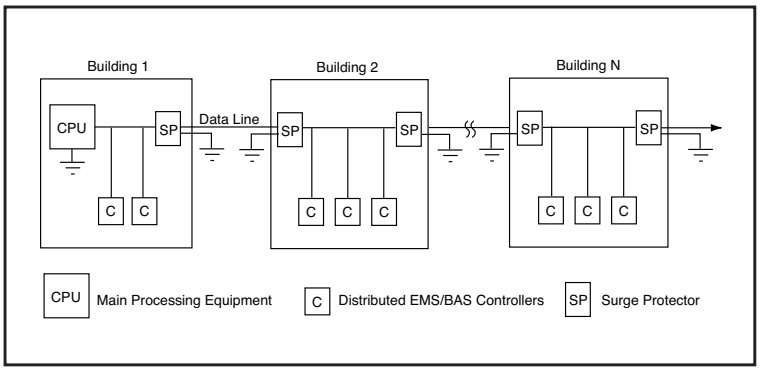


Figure 3. Improper Positioning of Surge Protectors

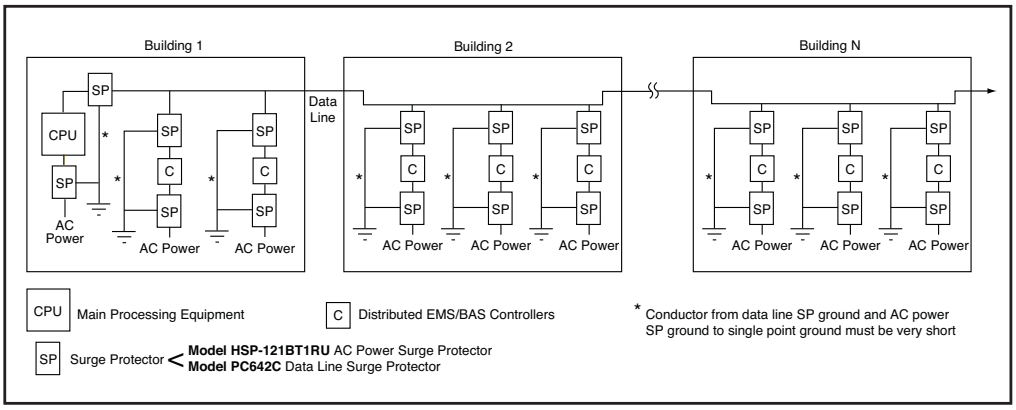


Figure 4. Proper Positioning of Surge Protectors