

# NETWORK & WIRELESS



Kele Has Doubled the Offering of Network and Wireless Solutions, and Continues to Add to Our Options to Meet Your Needs.

## Babel Buster | p. 719 Series

 CONTROL SOLUTIONS, INC.



## L-VIS Series | p. 721

 LOYTEC



## BASRT-B | p. 727

 CONTEMPORARY CONTROLS



## 110A | p. 733



## ValuPoint VP4-23 | p. 744 Series

 CONTROL SOLUTIONS, INC.



## EKI Series | p. 738

 ADVANTECH





Products manufactured  
in the United States



Products that are  
new to the catalog



NETWORK & WIRELESS

WebOP Series | p. 725

ADVANTECH



L-IP Series | p. 728

LOYTEC



MPM-GW | p. 813  
Series

Schneider  
Electric



kele.com

## MODEL/SERIES

## PAGE

### Network Display and Control Panels

<b>L-VIS Series</b> — BACnet and LON Touch Panel	721
<b>BBC-SD</b> — BACnet Graphic Display	724
<b>WebOP Series</b> — Touchscreen Operator Display Panel	725

### Network Gateways

<b>ETH-1000</b> — Provides connectivity between Ethernet and RS-485 based networks	713
<b>XLTR-1000</b> — Provides Connectivity Between Two RS-485 Based Networks	714
<b>Raptor Protocol Converter</b> — RLE Technologies Protocol Converter	715
<b>LGATE-9xx Series</b> — Lonworks/Bacnet And Universal Gateways	717
<b>Babel Buster Series</b> — BACnet - Modbus - SNMP Gateways	719
<b>AddMe® Series</b> — BACnet - Modbus Network I/O	743

### Network I/O Modules

<b>L-IOB Series</b> — BACnet and LON I/O Module	739
<b>i.CanDolt Series</b> — Embedded Network Servers	742
<b>AddMe® Series</b> — BACnet - Modbus Network I/O	743
<b>ValuPoint VP4-23 Series</b> — BACnet MS/TP Programmable I/O	744
<b>BAS-3000BC Series</b> — BACnet Remote I/O Modules	745

### Network Monitoring and Control Devices and Zone Systems

<b>FGD Web Series</b> — Remote Web-Based Monitoring System	748
<b>DL-125C</b> — Auto Dialer	750
<b>KTEC Zoning System</b> — Kele Constant Volume Zoning System	752
<b>FlexStat</b> — Flexible BACnet Thermostat	756

### Network Routers, Repeaters, Switches and Terminators

<b>BASRT-B</b> — BACnet Multi-Network Router	727
<b>L-IP Series</b> — BACnet/IP and LON/IP Router	728
<b>L-Switch Series</b> — LON Switch Router	731
<b>110A</b> — FTT-10 LonWorks Repeater	733
<b>L-Term Series</b> — BACnet, LON, Modbus Terminator	734
<b>852 Ethernet Switch</b> — Industrial Ethernet Switch	736
<b>EIBA Switches</b> — BAS Ethernet Switches	737
<b>EKI Series</b> — Unmanaged Ethernet Switches	738

### Wireless EnOcean and ZigBee Devices and Systems

<b>SmartStruxure Lite MPM-GW Series</b> — EnOcean and Zigbee Wireless Manager and Gateway	813
<b>SmartStruxure Lite MPM-UN Series</b> — Multi-purpose Manager and Gateway	814
<b>SmartStruxure Lite MPM-VA Series</b> — Multi-purpose VAV Manager and Gateway	815
<b>SmartStruxure Lite SEC Series</b> — Zigbee Wireless I/O Module	816
<b>E3X-MRCFP Series</b> — EnOcean Wireless Room Controller	817
<b>E3X-DxxFP Series</b> — EnOcean Wireless Dimmer/Controller	819
<b>E3X-Rxx-3HOTP Series</b> — 3 Wire EnOcean Wireless Relay Receiver	820
<b>E3X-Rxx-5IBTP Series</b> — 5 Wire EnOcean Wireless Relay Receiver and Repeater	821
<b>E3R-R04FP Series</b> — EnOcean Wireless Low Voltage Relay Receiver	822
<b>E3X-x12GP Series</b> — EnOcean Wireless Plug-in Relay Receiver and Dimmer	818
<b>E3X-Rxx-REPTP Series</b> — EnOcean Wireless Repeater	824
<b>E3T-Rxx-2INTP Series</b> — EnOcean Wireless Switch Leg Transmitter	823
<b>E3T-SLICP</b> — EnOcean Wireless Light Sensor	826
<b>E3T-MDCCP</b> — EnOcean Wireless Window/Door Sensor	829
<b>E3X-Txx Series</b> — EnOcean Wireless Thermostat	825
<b>E3T-C2AWH</b> — EnOcean Wireless Key Card Reader	827
<b>E3T-SxA Series</b> — EnOcean Wireless Switches	828

### Wireless EnOcean and ZigBee Devices and Systems (cont.)

<b>E3T-SxE Series</b> — EnOcean Wireless European Light Switches	826
<b>E3T-S2H Series</b> — EnOcean Wireless Handheld Remote	827
<b>EasySens Thanos</b> — EnOcean Room Operating Panel	830
<b>EasySens Receiver Gateways</b> — EnOcean Receiver Gateways	831
<b>EasySens SRC Receiver Controllers</b> — EnOcean Receiver Controllers	832
<b>EasySens Repeater</b> — EnOcean Wireless Repeater	833
<b>EasySens Switches</b> — EnOcean Lighting, Blinds and Shutters Switches	834
<b>EasySens Specialty Wireless Transmitters</b> — EnOcean Remote Control, Key Card Switch, Window/Door Contact	835
<b>EasySens Room Sensors</b> — EnOcean Temperature, Humidity and CO2 Sensors	836
<b>EasySens Temperature Sensors</b> — EnOcean Surface, Duct, Remote and Outdoor Temperature Sensors	837
<b>EasySens Input Modules</b> — EnOcean Input Modules	838

### Wireless Long Range Transceivers

<b>AIC900E</b> — Wireless Ethernet transceiver	759
<b>WBT900, WBT900-IP</b> — Wireless BACnet MSTP And BACnet Ip Transceivers	761
<b>WLT900</b> — Wireless LonWorks Transceiver	763

### Wireless Sensing and Control Devices and Systems

<b>Viconics Wireless</b> — Wireless Thermostat System	766
<b>RF-RXS Wireless Network Receiver</b> — SonNet Wireless Network Receiver	770
<b>RF-RX Series</b> — SonNet Wireless Receivers	770
<b>RF-RR Series</b> — SonNet Wireless Router-Sensors	772
<b>RF-RS Series</b> — SonNet Wireless Temperature, Humidity and CO <sub>2</sub> Sensors	773
<b>MOD9200</b> — Frontier 2.0 Gateway transceivers	774
<b>RM2402D and RM2432D</b> — Frontier 2.0 Wireless Analog And Digital Receivers	776
<b>RR2552</b> — Frontier 2.0 Spread Spectrum Repeater	778
<b>RT2602, RT2620</b> — Frontier 2.0 Wireless Digital Input Modules	780
<b>RT2630 Series</b> — Frontier 2.0 Wireless Universal input transmitter module	782
<b>SST2630</b> — Frontier 2.0 Wireless Remote Temperature System	784
<b>DT2630</b> — Frontier 2.0 Wireless Duct Temperature Sensor	786
<b>WH2630</b> — Frontier 2.0 Wireless Humidity And Temperature Wall Sensor	788
<b>WT2630</b> — Frontier 2.0 Wireless Temperature Wall Sensor	790
<b>Wi-MGR</b> — Wireless Sensor Gateway	792
<b>BA/RCV-EZ and BA/RPT-EZ</b> — BAPI Wireless Receiver and Repeater	794
<b>BA/WAI Series, BA/WDI, BA/WTS</b> — BAPI Wireless Universal Transmitters	796
<b>BA/WT(H)-D</b> — BAPI Wireless Duct Temperature & Humidity Transmitters	798
<b>BA/WT-I</b> — BAPI Wireless Immersion Temperature Transmitter	800
<b>BA/WT-RPP</b> — BAPI Wireless Remote Probe Temperature Transmitter	802
<b>BA/BS2-WT(H)</b> — BAPI Wireless Room Temperature & Humidity Transmitters	799
<b>BA/WT-O, BA/WTH-O</b> — BAPI Wireless OSA Temperature & Humidity Transmitters	806
<b>BA/COM, BA/ROM, BA/RYOM, BA/RYOL, BA/SOM, BA/VOM</b> — BAPI Wireless System Output Modules	808
<b>EE240 Series</b> — E+E Wireless Humidity/Temperature/CO2 Sensors	810
<b>58-G1 and 58-N-1101 Series</b> — Ideal Wireless Sensor System	812

# NETWORK & WIRELESS

## PROVIDES CONNECTIVITY BETWEEN ETHERNET AND RS-485 BASED NETWORKS ETH-1000



**ICC**  
INDUSTRIAL CONTROL COMMUNICATIONS, INC.



### 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.

### 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**



ETH-1000

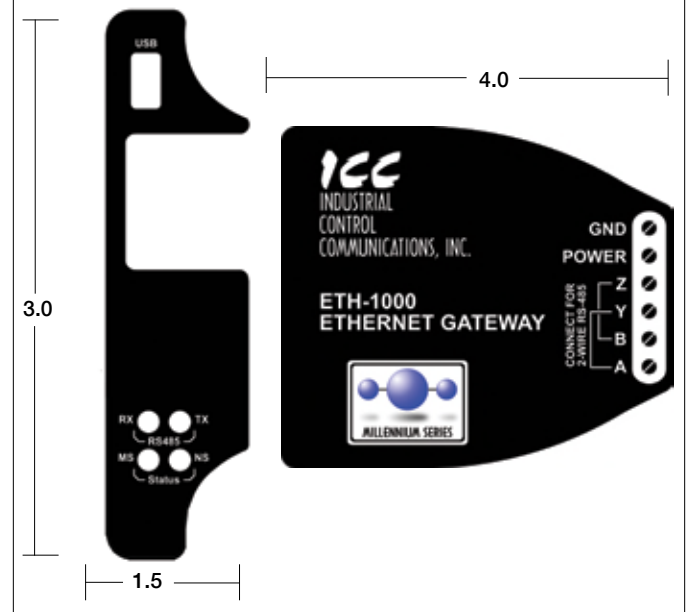
### SPECIFICATIONS

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

### 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)**

### WIRING



13

NETWORK & WIRELESS

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>ETH-1000</b>	Provides protocol translation between Ethernet and RS-485 based networks
RELATED PRODUCTS	
<b>XLTR-1000</b>	Provides protocol translation between RS485 based networks
<b>PAGE 714</b>	



# NETWORK & WIRELESS

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.

### FEATURES

- **USB connectivity**
- **Can be powered via USB**
- **32 bit processor**
- **Baud rates up to 115.2K**
- **Mounting options: Desktop, DIN-Rail, Panel/Wall**

### 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 Green (TX) = Transmitting data
RS485	
	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



XLTR-1000

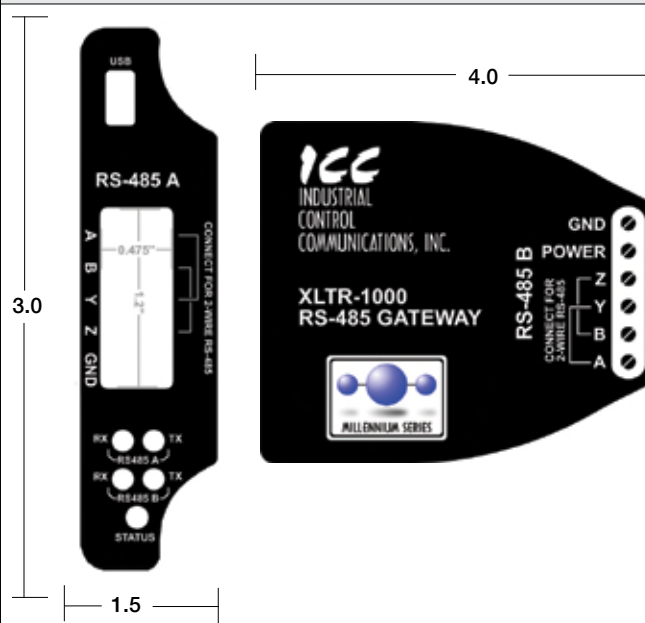
icc  
INDUSTRIAL CONTROL COMMUNICATIONS, INC.



### 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)**

### DIMENSIONS



### ORDERING INFORMATION

**MODEL**  
**XLTR-1000**

**DESCRIPTION**  
Provides protocol translation between RS485 based networks

**ETH-1000**

**RELATED PRODUCTS**  
Provides protocol translation between Ethernet and RS-485 based networks

**PAGE**  
**713**



### DESCRIPTION

The **Raptor Protocol Converter** connects directly to equipment and converts the SNMP, BACnet, and Modbus protocols to one or more of these same protocols for integration into a building management system (BMS) or network management system (NMS). The **Protocol Converter** is ideal for situations where data from monitored equipment is incompatible with the protocols used by the BMS or NMS, such as in cases where legacy monitoring systems are present. The ability of the **Protocol Converter** to accept up to 1,024 inputs over 32 modules means flexible integration with multiple alarm and management systems with the use of one simple device. In addition, the Dual Port Protocol Converter provides a cost-effective means to connect to multiple trunk lines with two additional Modbus EIA-485 ports.



FDS-PC



FDS-PC-DP



### FEATURES

- **Multiple input and output protocols**
- **Monitor up to 1,024 Modbus registers, OIDs, or instances**
- **Connect up to 32 units/modules/nodes**
- **Connect to multiple trunk lines with Dual Port Protocol Converter**
- **Alarm notification through email, SNMP**
- **Web configuration**

### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC @ 600mA max, 50/60 Hz	<b>EIA-485 Status</b>	2 Green Transmit and Receive LEDs (additional LEDs for Dual Port Protocol Converter)
<b>Communication Ports</b>		<b>Security Login</b>	
<b>Ethernet</b>	10/100BaseT, RJ45 connector; 500VAC RMS isolation	<b>Web Browser Access (Ethernet)</b>	1 Web password Read Only; 1 Web password Read/Write
<b>EIA-232</b>	DB9 female connector; 9600 baud; No parity, 8 data bits, 1 stop bit	<b>Terminal Emulation Access</b>	None
<b>EIA-485</b>	1200, 2400, 9600 or 19200 baud (selectable); Parity: none, even or odd, 8 data bits, 1 stop bit	<b>Protocols In</b>	SNMP, Modbus EIA-485, Modbus TCP/IP, BACnet/IP
<b>Protocol</b>		<b>Protocols Out</b>	SNMP, Modbus EIA-485, Modbus TCP/IP, BACnet/IP; BACnet MS/TP (Port 3 of Dual Port Protocol Converter only)
<b>TCP/IP; HTML, TFTP</b>		<b>Maximum Number of units/modules/nodes</b>	32
<b>SNMP</b>	V1: V2C MIB-2 compliant; NMS Manageable with Get	<b>Maximum Number of registers/OIDs/instances</b>	1024
<b>Modbus (EIA-485)</b>	Modbus Master/Slave; RTU mode; Supports Master codes 01, 02, 03, 04; Slave code 03	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Modbus TCP/IP</b>	Modbus Master/Slave; TCP/IP transmission protocol	<b>Storage Temperature</b>	-4° to 185°F (-20° to 85°C)
<b>BACnet/IP</b>	ASHRAE STD 135-2004 Annex J; Port 3 on Dual Port Protocol Converter is BACnet MS/TP capable (Slave only)	<b>Operating Humidity</b>	5-95% RH non-condensing
<b>SMTP (email)</b>	Supports Client Authentication (plain and login); compatible with ESMTP Servers	<b>Mounting</b>	Desktop or rack mount (brackets included)
<b>Terminal Emulation (EIA-232)</b>	VT100 compatible (for configuration and diagnostics only)	<b>Dimensions</b>	9.8"W x 5.3"D x 1.8"H (248 x 135 x 46 mm)
<b>Indicator</b>		<b>Weight</b>	2.32 lb. (1.05kg)
<b>Network</b>	1 Green/Red LED: Link/No Link; 1 Green Active (additional LEDs for Dual Port Protocol Converter)	<b>Approvals</b>	CE; ETL listed: conforms to UL 61010-1, EN 61010-1; certified to CSA C22.2 NO. 61010-1; RoHS compliant

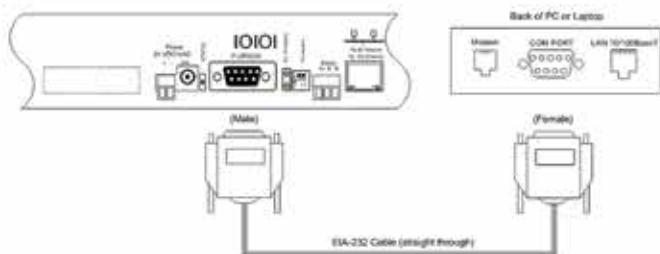
# NETWORK & WIRELESS

## RLE TECHNOLOGIES PROTOCOL CONVERTER RAPTOR PROTOCOL CONVERTER

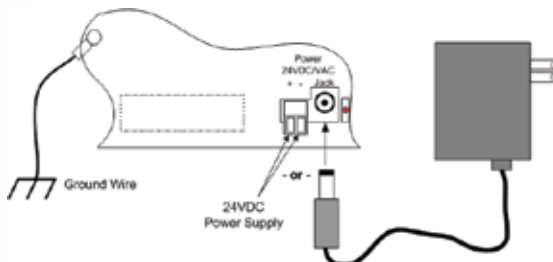
### WIRING

#### EIA-232 COM Connection

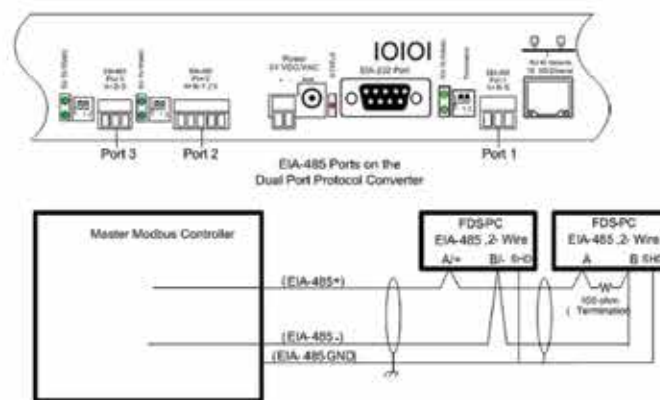
Connect the straight through, 9-pin, serial cable:



#### Power Supply and Ground Connections



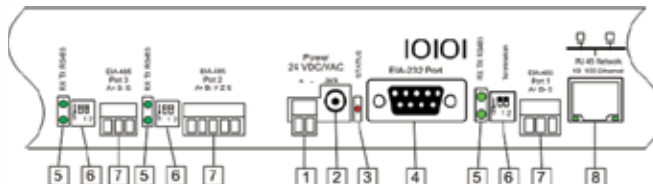
#### Modbus EIA-485 Connections



#### RJ45 Ethernet Connection



#### Terminal Block Designation



### Terminal Block Designation

Item No.	Item	Description
1	Power 24 VDC/VAC	Power Terminal Block
2	Jack	Power connector for wall wart adapter
3	Status	Status LED
4	EIA-232 Port	DB9 Female connector
5	RX TX EIA-485 LED	Receive/Transmit status LED. Dual Port Protocol Converter contains two additional sets of LEDs.
6	EIA-485 Termination Switch	Dual Port Protocol Converter contains two additional sets of switches; EIA-485 Port 2, the 5-pin port, can be configured as a 2-wire (half-duplex) or 4-wire (full-duplex) connection. Ports 1 and 3: Switch 1 - unused; Switch 2 - On = 100 Ohm terminationPort 2: Switch 1 -Duplex (On = 4-wire; Off = 2-wire); Switch 2 - On = 100 Ohm termination
7	EIA-485 Port	Dual Port Protocol Converter contains two additional EIA-485 ports. Port2 (the middle port) can be configured as a 2-wire or 4-wire connection. In addition to all other supported protocols, Port 3 (the left most port) of the Dual Port Protocol Converter is BACnet MS/TP capable (Slave only).
8	RJ45 Ethernet Port	10/100 BaseT connector

### ORDERING INFORMATION

**MODEL**  
**FDS-PC**  
**FDS-PC-DP**

#### DESCRIPTION

Protocol converter for BMS and NMS integration, Single port  
Protocol converter for BMS and NMS integration, Dual port



**LOYTEC**

### DESCRIPTION

LGATE-900 is a CEA-709/BACnet gateway which allows seamless integration of systems using both communication standards by mapping CEA-709 network variables (NVs) to standard BACnet server objects. LGATE-900 is fully compliant with the standards CEA-709, CEA-852, and EN 14908 (LonMark system) as well as ASHRAE 135-2008 and ISO 16484-5. Analog, binary, and multistate BACnet objects (input/output) are mapped to NVs based on the CEN/TS 15231:2005 standard. BACnet properties are automatically configured with default values from the SNVT self-description. Scalar NVs are mapped to one BACnet object each. Structured NVs are mapped to several BACnet object, one for each member (members can be selected individually). Each LGATE-900 can handle up to 750 BACnet Objects. Several devices can be installed in a network at the same time.

LGATE-95x allows a smooth integration between LonMark Systems, BACnet networks, KNX networks, Modbus devices, M-Bus devices as well as ZigBee PRO wireless devices. Network variables are mapped to binary, analog, or multi-state objects (input, output, value) according to the CEN/TS 15231:2005 standard. Data points can be manually or automatically generated across multiple protocols. In addition to analog, binary and multistate objects LGATE-95x supports alarming, scheduling and trending. They can be either connected through their Ethernet/IP ports to LonMark IP-852, BACnet/IP, KNXnet/IP and Modbus TCP simultaneously or to TP/FT-10, BACnet MS/TP channels, Modbus RTU and KNX TP1 respectively.

### FEATURES

- **Fully compliant with ANSI/ASHRAE 135-2008 and ISO 16484-5 (BACnet)**
- **Fully compliant with CEA-709, CEA-852 and EN 14908 (LON)**
- **Built-in Web server for device configuration**
- **Support alarming, scheduling and trending**
- **Network diagnostic LEDs (LGATE-900)**
- **128x64 display with backlight (LGATE-95x)**
- **Local and remote access to information about device status and data points (LGATE-95x)**
- **DIN rail mountable**

**NEW!**

**LGATE 900**

**LGATE 95x**



### SPECIFICATIONS

<b>Supply Voltage</b>	
<b>LGATE-900</b>	12 to 24 VAC / 50-60 Hz, 12-35 VDC
<b>LGATE-95x</b>	24 VAC / 50-60 Hz, 24 VDC
<b>Supply Watts</b>	
<b>LGATE-900</b>	3 Watts
<b>LGATE-95x</b>	2.5 Watts
<b>Communication</b>	
<b>LGATE-900</b>	Type CEA-709, BACnet, OPC XML-DA
<b>LGATE-95x</b>	Type CEA-709, BACnet, Modbus, OPC XML-DA, KNX, M-Bus
<b>Channels</b>	
<b>LGATE-900</b>	1x Ethernet (100Base-T) Lonmark IP-852, BACnet/IP, HTTP, FTP, 1x TP/FT-10, 1x BACnet MS/TP
<b>LGATE-95x</b>	2x Ethernet (100Base-T), Lonmark IP-852, BACnet/IP, HTTP, FTP, KNXnet/IP, Modbus TCP (Master or Slave); 1x TP/FT-10 (Lonmark System); 1x BACnet MS/TP; 1x Modbus RTU (Master or Slave); 1x EXT (alternatively for M-Bus Master EN13757-3 with L-MBUS20/80, KNX TP1 with LKNX-300)
<b>Dimensions</b>	
<b>LGATE-900</b>	4.21"W x 3.94"H x 2.36"D (10.7 x 10.0 x 6.0 cm)
<b>LGATE-95x</b>	6.26"W x 3.94"H x 2.95"D (15.9 x 10.0 x 7.5 cm)
<b>Operating Temperature</b>	32° to 112°F (0° to 50°C)
<b>Operating Humidity</b>	0-90% RH non-condensing
<b>Weight</b>	
<b>LGATE-900</b>	0.55 lbs (0.25 kg)
<b>LGATE-95x</b>	0.77 lbs (0.35 kg)
<b>Approvals</b>	CE, FCC
<b>Warranty</b>	2 years

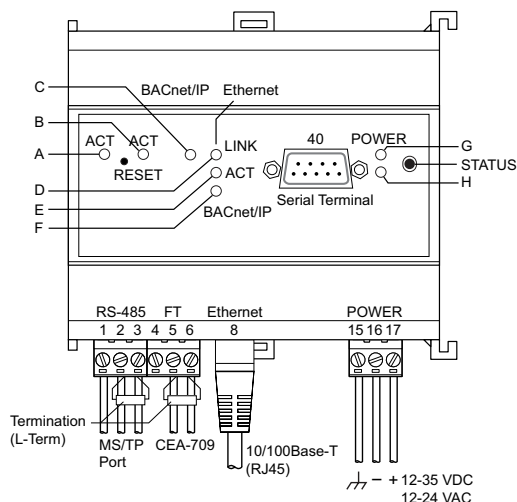
**13**

**NETWORK & WIRELESS**

**NEW!**

#### WIRING

##### LGATE 900



##### Connectors

MS/TP	1	Input GND
	2	Input + (B) non-inverting input
	3	Input - (A) inverting input
CEA-709	4	Input EARTH GND
	5	Input B
	6	Input A
Ethernet	8	10/100Base-T (RJ45)
POWER	15	Power supply input EARTH GND
	16	Power supply input MINUS
	17	Power supply input PLUS
		Do NOT connect to EARTH GND
SERIAL	40	EIA-232 (DB9 male)

##### Buttons

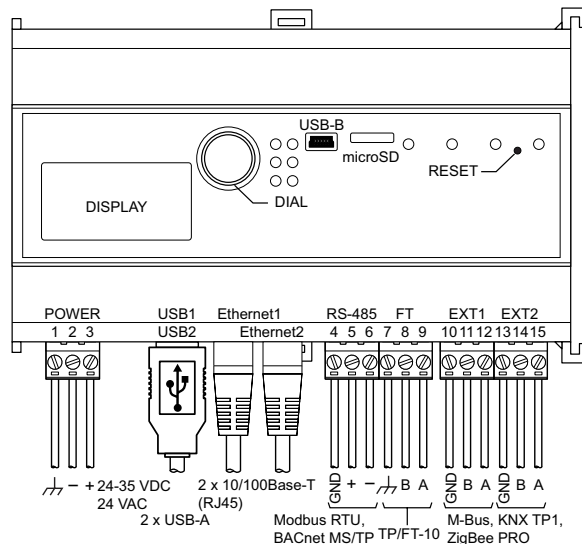
RESET	Reset
STATUS	Send "I AM" message

##### Status LEDs

A	Green flashing fast	Traffic on MS/TP port
B	Green flashing fast	Traffic on CEA-709 port
	Green flashing at 1 Hz	Port not commissioned
	Red permanent	CEA-709 port damaged
	Red flashing fast	Traffic overload on port
C	Green	IP port is fully functional
	Yellow	IP port functional but config. is not up-to-date
	Red	IP port is non-functional
	Flashing at 1 Hz	IP port is not commissioned
	OFF	IP port is not active
D	Green	Ethernet link
E	Green flashing	Ethernet traffic
F	Green	BACnet IP enabled
G	Green	Power
H	OFF	Normal operation

**NOTE:** If terminal 1 is not connected make a short between terminal 15 and 16, and connect to EARTH GND.

##### LGATE 95x



##### Connectors

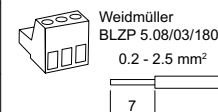
POWER	1	Power supply input EARTH GND
	2	Power supply input MINUS
	3	Power supply input PLUS
		Can be connected to EARTH GND
		Do NOT connect to EARTH GND
Modbus BACnet MS/TP	4	Input GND
	5	Input +
	6	Input -
TP/FT-10	7	Input EARTH GND
	8	Input B
	9	Input A
EXT1	10	Input GND
M-Bus, KNX TP1	11	Input B
ZigBee	12	Input A
EXT2	13	Input GND
M-Bus, KNX TP1	14	Input B
ZigBee	15	Input A

##### Connectors

USB1	USB-A	USB Host
USB2	USB-A	USB Host
USB-B	USB-B	PC
Ethernet1	RJ45	10/100Base-T
Ethernet2	RJ45	10/100Base-T
microSD	slot	microSD card max. 2 GB

##### Buttons

RESET	Reset
DIAL	Turn-and-Push Dial



#### ORDERING INFORMATION

**MODEL**  
**LGATE-900**  
**LGATE-950**  
**LGATE-951**

**DESCRIPTION**  
 Lonworks to BACNET LGATE Gateway  
 Universal LGATE Gateway with one ext. port  
 Universal LGATE Gateway with two ext. ports



### DESCRIPTION

Control Solutions' Babel Buster Series gateways are to put devices having a common building automation protocol on a network having a different protocol than the device was made for. They provide support for building automation with BACnet and Modbus. Support for data centers and IT infrastructure with SNMP. The gateways are easy to use and cost effective for building automation applications.

### FEATURES

- *Easy to use and cost effective*
- *Models support all major building automation protocols*
- *SNMP to Modbus and Modbus to SNMP translation*
- *Modbus to BACnet and BACnet to Modbus translation*

NEW!



CONTROL SOLUTIONS, INC.



BB2-3010



BB2-6010



### SPECIFICATIONS

<b>Supply Voltage</b>	10-30 VDC or 12-24 VAC, 50/60 Hz	<b>Operating Humidity</b>	5-95% RH non-condensing
<b>Supply Current</b>		<b>Mounting</b>	DIN rail
BB2-3010/6010/7010	0.1 A @ 24 VDC	<b>Dimensions</b>	3.94"H x 2.76"W x 2.36"D (100 x 70 x 60 mm)
BB2-7030	0.15 A @ 24 VDC	<b>Weight</b>	2 lbs (0.91 kg)
<b>Communication Ports</b>		<b>Approvals</b>	
BB2-3010	2 RS-485 ports	BB2-3010	FCC, CE, UL916 Listed, BTL Listed
BB2-6010/7010/7030	1 RS-485 and 1 RJ-45 port	BB2-6010/7010/7030	FCC Class A, CE
<b>Baud Rate</b>	MS/TP baud rates: 9600, 19200, 38400, 76800; Modbus RTU baud rates: 4800, 9600, 19200, 38400	<b>Warranty</b>	1 year
<b>Signal LEDs</b>			
BB2-3010/7030	4; device data/status, BUS data/status		
BB2-6010/7010	2; device data/status		
<b>Operating Temperature</b>	-40° to 185°F (-40° to 85°C)		

### BABEL BUSTER GATEWAYS SUPPORTED PROTOCOLS

Gateways	Web Server	BACnet MS/TP Server & Client	BACnet IP Server & Client	Modbus RTU Master & Slave	Modbus TPC Server & Client	SNMP Server & Client	HTTP Client
BB2-3010		Yes		Yes			
BB2-6010	Yes			Yes	Yes	Yes	
BB2-7010-01	Yes		Yes	Yes	Yes		
BB2-7010-02	Yes		Yes	Yes	Yes	Yes	
BB2-7030-01	Yes	Yes	Yes		Yes		
BB2-7030-02	Yes	Yes	Yes			Yes	
BB2-7030-03	Yes	Yes	Yes				Yes

13

NETWORK & WIRELESS

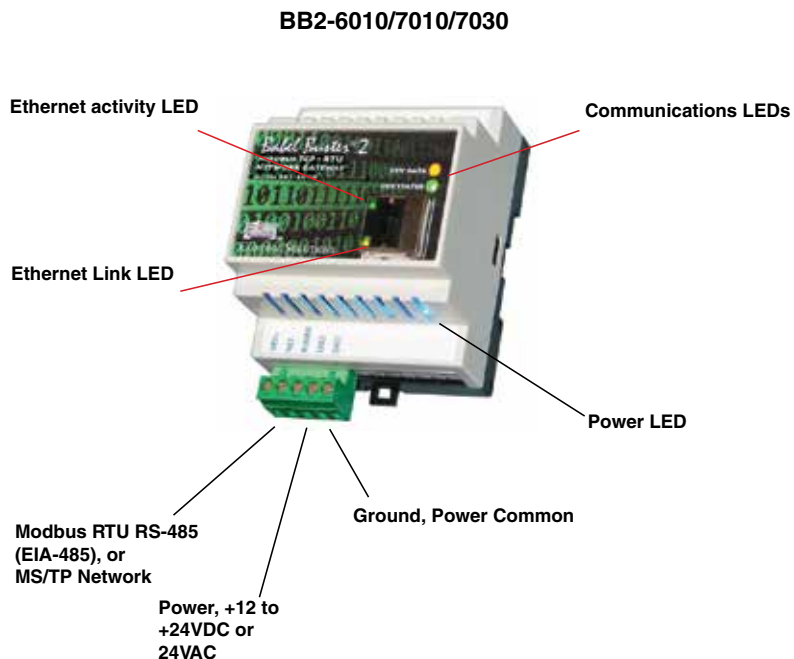
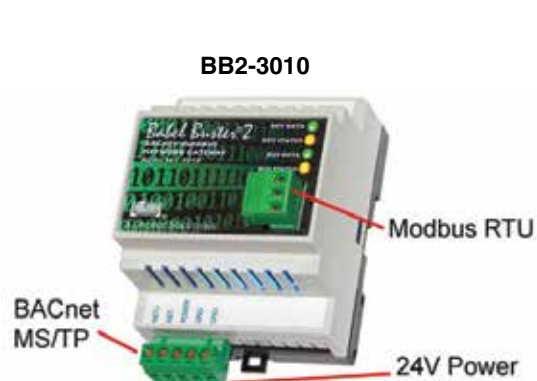
NEW!



# NETWORK & WIRELESS

**BACNET - LONWORKS - MODBUS - SNMP - WIRELESS GATEWAYS**  
**BABEL BUSTER SERIES**

## WIRING



13

NETWORK & WIRELESS

## ORDERING INFORMATION

MODEL	DESCRIPTION
<b>BB2-3010</b>	Modbus RTU to BACnet MS/TP
<b>BB2-6010</b>	Modbus to SNMP and Modbus to Modbus
<b>BB2-7010-01</b>	Modbus to BACnet IP
<b>BB2-7010-02</b>	Modbus to BACnet IP to SNMP
<b>BB2-7030-01</b>	BACnet Gateway and Router with Modbus TCP
<b>BB2-7030-02</b>	BACnet Gateway and Router with SNMP
<b>BB2-7030-03</b>	BACnet Gateway and Router with HTTP Client

	ACCESSORIES
<b>0SUP12INT</b>	12VDC International power supply
<b>0SUP24VP</b>	24VDC Power Supply
<b>MTX002</b>	USB to MS/TP Port Adapter

NEW!

720

888-397-5353 USA | [kele.com](http://kele.com)

WHEN YOU NEED IT RIGHT, RIGHT NOW, CALL KELE.

March 2014



**LOYTEC**

### DESCRIPTION

L-VIS Series Touch Panel is an extremely flexible graphical user interface with an unprecedented range of functions. Any data point can be displayed on or controlled by the high-resolution touch display, surrounded by an anodized frame. Three different models support BACnet MS/TP or BACnet/IP and three different models support LonMark TP/FT-10 or IP-852 Ethernet (CEA-852) are available. Touch display sizes are available in 5.7", 12.1" or 15". The L-VIS Touch Panels are designed for extremely low power consumption. They save energy and can be wall mounted without fear of overheating. All L-VIS Touch Panels are configured using the same configuration tool - the L-VIS Configurator and it is free to download from Loytec.

### FEATURES

- **High resolution TFT touch display with dimmable backlight**
- **Anodized aluminum front frame**
- **Flush-mounting in combination with the mounting frame**
- **External temperature sensor L-TEMP1 (optional, up to 4 sensors) and 2 inputs for external light switches**
- **Models support routing connectivity to BACnet MS/TP or BACnet/IP channel**
- **Models support connectivity to LonMark TP/FT-10 or IP-852 Ethernet (CEA-852) channel**
- **Simple graphical programming with L-VIS configuration software included**

**NEW!**



LVIS-3E100/LVIS-ME200



LVIS-3E115/LVIS-ME215



LVIS-3E112/LVIS-ME212



### SPECIFICATIONS

<b>Supply Voltage</b>		<b>Dimensions</b>	
LVIS-3E100/LVIS-ME200	20 to 35 VDC, 24 VAC ± 10%	LVIS-3E100/LVIS-ME200	8.27"W x 6.46"H x 2.48"D (21.0 x 16.4 x 6.3 cm)
LVIS-3E112/LVIS-ME212	24 VDC ± 10% or 85 to 240 VAC	LVIS-3E112/LVIS-ME212	12.93"W x 10.56"H x 2.56"D (32.9 x 26.83 x 6.5 cm)
LVIS-3E115/LVIS-ME215	24 VDC ± 10% or 85 to 240 VAC	LVIS-3E115/LVIS-ME215	15.51"W x 12.52"H x 2.56"D (39.4 x 31.8 x 6.5 cm)
<b>Supply Watts</b>		LVIS-FRAME1	6.93"W x 5.83"H x 2.24"D (17.6 x 14.8 x 5.7 cm)
LVIS-3E100/LVIS-ME200	3 Watts/8 Watts with backlight	LVIS-FRAME12	11.77"W x 9.80"H x 2.40"D (35.3 x 29.37 x 6.1 cm)
LVIS-3E112/LVIS-ME212	2.5 Watts/13 Watts with backlight	LVIS-FRAME15	13.89"W x 11.56"H x 2.40"D (35.3 x 29.37 x 6.1 cm)
LVIS-3E115/LVIS-ME215	2.5 Watts/16 Watts with backlight	<b>Operating Humidity</b>	10-90% RH @ 122°F (50°C) (non-condensing)
<b>Channels</b>		<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)
LVIS-3E100	1x Ethernet (100Base-T) LonMark IP-852, 1x TP/FT-10	<b>Weight</b>	
LVIS-3E112/LVIS-3E115	2x Ethernet (100Base-T) LonMark IP-852, 1x TP/FT-10	LVIS-3E100/LVIS-ME200	3.04 lb (1.38 kg)
LVIS-ME200	1x Ethernet (100Base-T) BACnet/IP, 1x BACnet MS/TP	LVIS-3E112/LVIS-ME212	5.51 lb (2.50 kg)
LVIS-ME212/LVIS-ME215	2x Ethernet (100Base-T) BACnet/IP, 1x BACnet MS/TP	LVIS-3E115/LVIS-ME215	7.72 lb (3.50 kg)
<b>Communication</b>		LVIS-FRAME1	1.08 lb (0.49 kg)
LVIS-3Exxx	CEA-709 (LON)	LVIS-FRAME12	2.31 lb (1.05 kg)
LVIS-MExxx	BACnet	LVIS-FRAME15	3.19 lb (1.45 kg)
<b>Display Type</b>	TFT Touch Display	<b>Approvals</b>	CE, FCC
<b>Display</b>		<b>Warranty</b>	2 years
LVIS-3E100/LVIS-ME200	5.7" (14.48 cm)		
LVIS-3E112/LVIS-ME212	12.1" (30.73 cm)		
LVIS-3E115/LVIS-ME215	15" (38.1 cm)		

13

NETWORK & WIRELESS

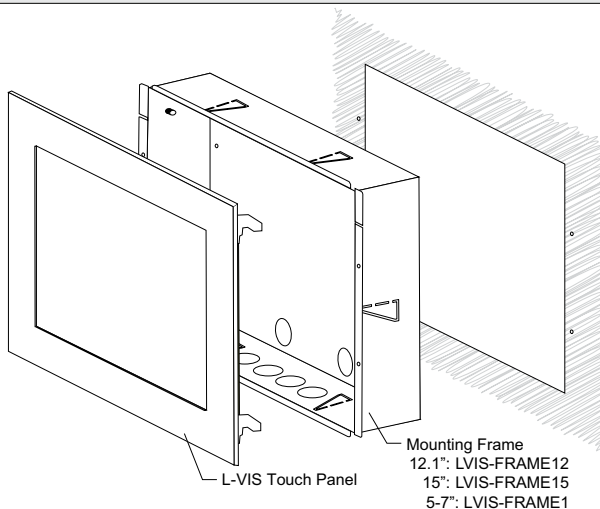
**NEW!**



# NETWORK & WIRELESS

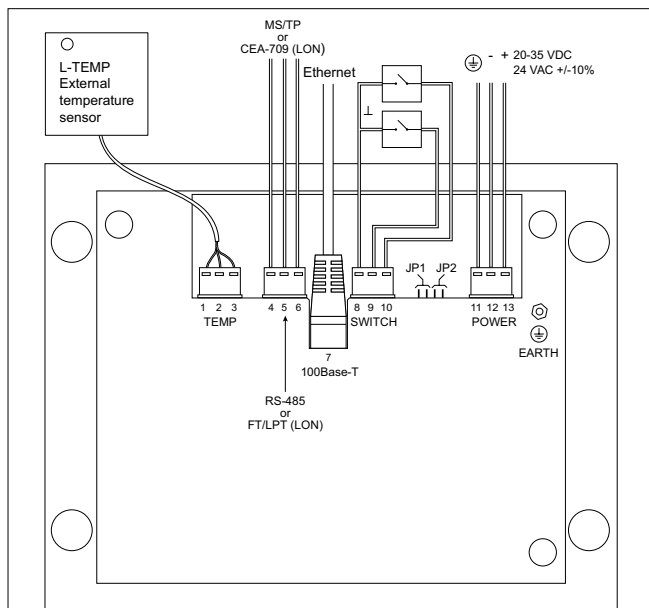
## BACNET AND LON TOUCH PANEL L-VIS SERIES

### INSTALLATION



### WIRING

#### L-VIS 5.7" PANEL



#### Connectors

1	Temperatur sensor data
2	Temperatur sensor GND
3	Temperatur sensor +3V
4	MS/TP input GND/CEA-709 input EARTH GND
5	MS/TP +/CEA-709 input B
6	MS/TP -/CEA-709 input A
7	Ethernet 10/100 Base-T (RJ45)
8	Digital input GND
9	Digital input 1
10	Digital input 0
11	Power supply input earth ground
12	Power supply input MINUS
13	Power supply input PLUS
⚠ Do not connect PLUS to GND	

#### Jumpers

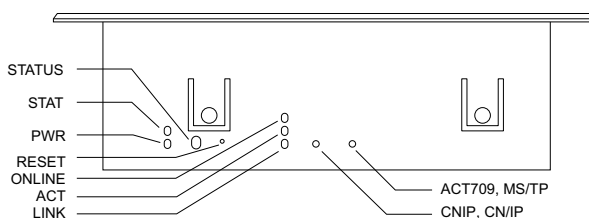
JP1	<input type="checkbox"/> Normal operation
JP2	<input type="checkbox"/> Clear configuration
	<input type="checkbox"/> MS/TP channel active/FT-10/LPT-10 channel active
	<input type="checkbox"/> BiP channel active/CEA-852 (IP-10) channel active



Weidmüller BLZP 5.08/03/180

0.2 - 2.5 mm<sup>2</sup>

7



#### Status LEDs

ACT709	GREEN flashing fast	Traffic on CEA-709 port
	GREEN flashing at 1 Hz	CEA-709 port not commissioned
	RED permanent	CEA-709 port is damaged
	RED flashing fast	Traffic overload on CEA-709 port
CNIP	GREEN	IP port is fully functional
	YELLOW	IP port functional but config. is not up-to-date
	RED	IP port is non-functional
	Flashing at 1Hz	IP port not commissioned
	OFF	IP port not active
MS/TP	GREEN flashing	Traffic on BACnet MS/TP port
CN/IP	GREEN flashing	Traffic on BACnet IP port
LINK	GREEN	Ethernet link
ACT	GREEN flashing	Ethernet traffic
ONLINE	GREEN	Node is in configured online state
PWR	GREEN	Power
STAT	OFF	Normal operation

#### LVIS-ME Buttons

RESET	Reset
STATUS	Send "I AM" message

#### LVIS-3E100 Buttons

RESET	Reset
STATUS	Send service pin message

13

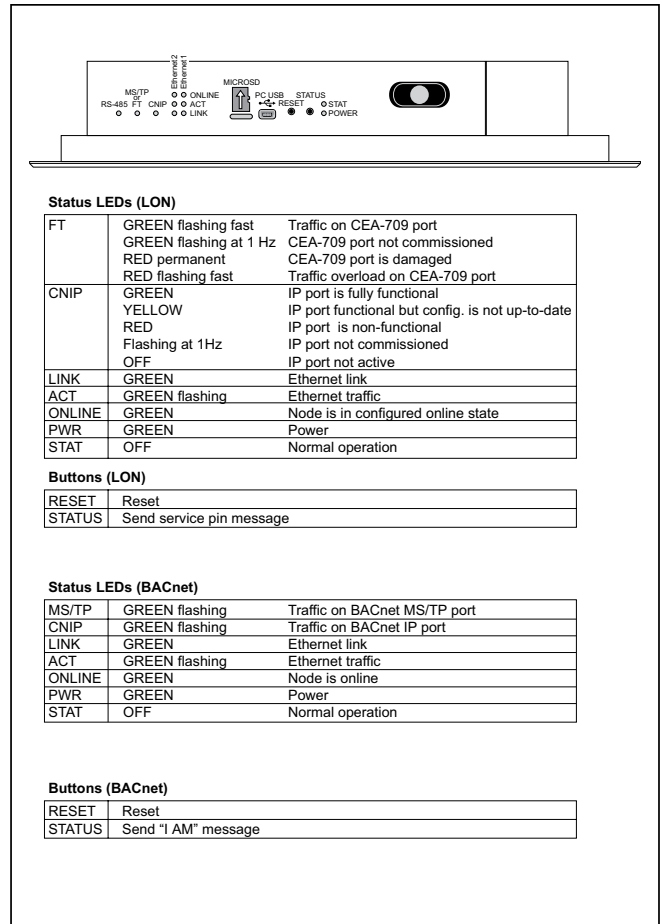
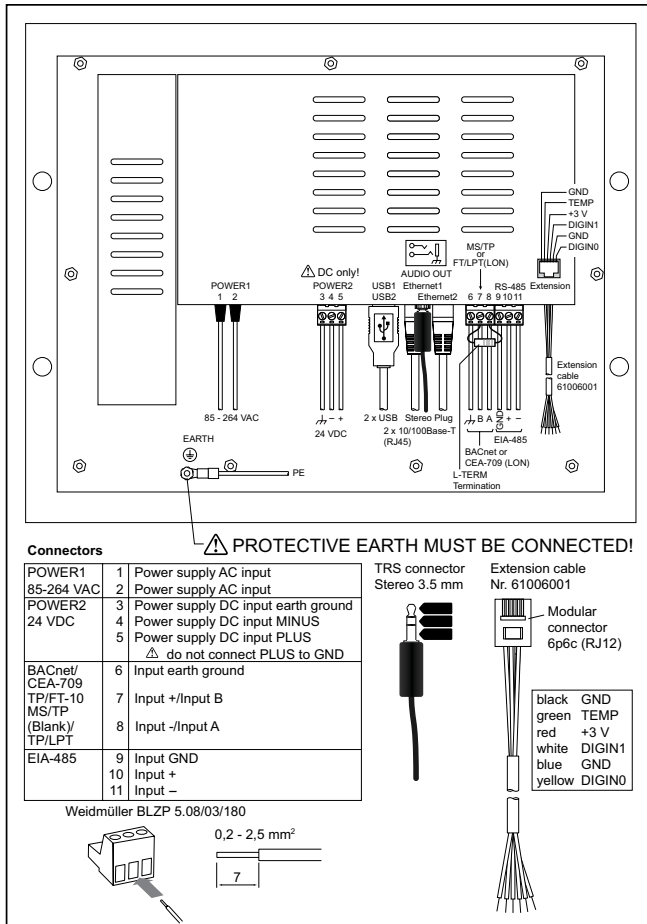
NETWORK & WIRELESS

NEW!



### WIRING

#### L-VIS 12.1" AND 15" PANEL



### ORDERING INFORMATION

MODEL	DESCRIPTION
LVIS-3E100	5.7 inch L-VIS Touch Panel with LON
LVIS-3E112	12.1 inch L-VIS Touch Panel with LON
LVIS-3E115	15 inch L-VIS Touch Panel with LON
LVIS-ME200	5.7 inch L-VIS Touch Panel with BACnet
LVIS-ME212	12.1 inch L-VIS Touch Panel with BACnet
LVIS-ME215	15 inch L-VIS Touch Panel with BACnet
LVIS-FRAME1	Mounting frame for 5.7 inch L-VIS Touch Panel
LVIS-FRAME12	Mounting frame for 12.1 inch L-VIS Touch Panel
LVIS-FRAME15	Mounting frame for 15 inch L-VIS Touch Panel

## BACNET GRAPHIC DISPLAY

### BBC-SD

#### 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.

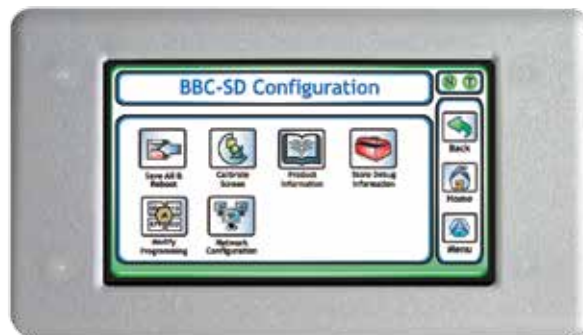
#### FEATURES

- **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

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

AMERICAN  
AUTO-MATRIX®



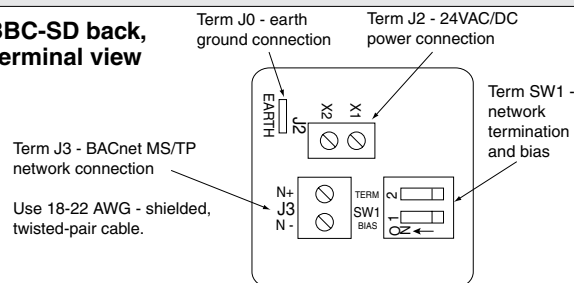
BBC-SD

BACnet

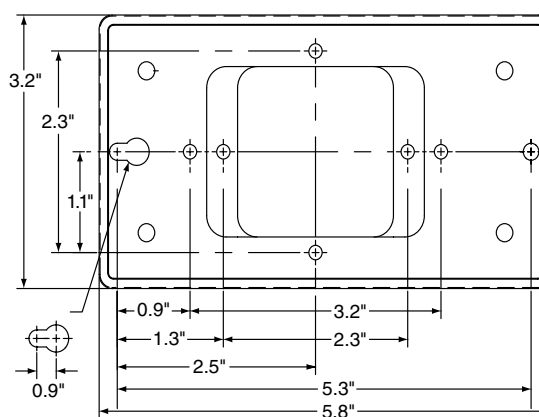


#### WIRING

##### BBC-SD back, terminal view



#### DIMENSIONS



#### ORDERING INFORMATION

MODEL	DESCRIPTION
BBC-SD	BACnet Graphic Display

ACCESSORIES
BBC-SD-PRO Configuration Software (required)



### DESCRIPTION

The WebOP Series of touchscreen operator panels are designed to satisfy the stringent standards required in the automation market for both commercial and industrial applications. This series of operator panels are designed with ARM-based RISC platform. It provides Real-Time OS which bundles WebOP Designer software and lets the Operator Panel become a control HMI for flexible system integration. WebOP Designer 2.0 is a free software development tool which runs on a standard PC and helps create application screens. This series of operator panels also support a variety of LCD sizes from 4.3" to 10.1" and are suitable for any HMI applications, and will interface to different DDCs, motion/thermal controllers, inverters and sensors. It has variety of communication interface connections make it very flexible for many applications. It supports BACnet MSTP, BACnet IP, Modbus RTU, Modbus TCP/IP, Rockwell and Siemens PLCs and many others.

### FEATURES

- Various touchscreen LCD sizes (4.3" to 12")
- Supports BACnet MS/TP, BACnet IP, Modbus RTU, Modbus TCP/IP, and other PLC protocols
- Supports ARM9-based CPUs with 200MHz and 128MB flash memory
- Supports RTC, battery backup RAM, and Ethernet-based operator panels
- Supports runtime data downloads through Serial, Ethernet, USB
- Supports adjustable brightness controls via touch panel
- Reliable firmware for 24/7 operation
- Supports Windows XP/ Vista-based WebOP Designer development tool
- Supports vertical and horizontal application screen rotation
- Communicates with up to four types of devices
- Panel mounting for machinery
- IP65 approved front panel

SPECIFICATIONS	
Supply Voltage	24 VDC $\pm$ 10%
Supply Watts	5W, 10W
Protocol	BACnet, Modbus, and other PLC Protocols
Processor	32 bit RISC, 200MHz
Operating System	HMI RTOS
LED Indication	Power on LED
Mounting	Panel
Housing Type	Plastic
Operating Temperature	32° to 122°F (0° to 50°C)
Operating Humidity	10-90% RH, non-condensing
Storage Temperature	-4° to 140°F (-20° to 60°C)
Approvals	CE, BSMI, CCC, UL, FCC Class A
Warranty	2 years

ADVANTECH

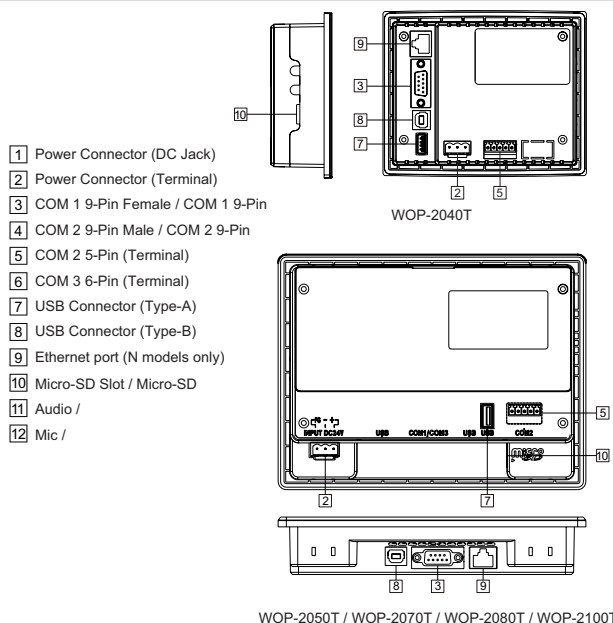


WOP-2100T

NEW!



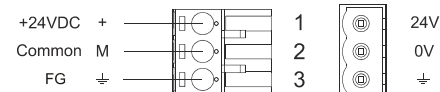
### WIRING



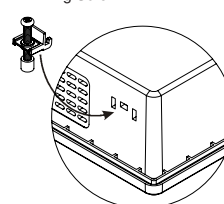
### Power supply



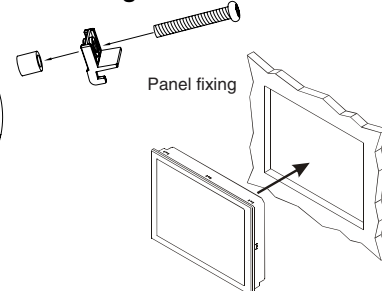
Powered by a Low Voltage / Limited Energy power source.



### Fixing Screw



### Mounting



13

NETWORK & WIRELESS

NEW!

# NETWORK & WIRELESS

## TOUCHSCREEN OPERATOR DISPLAY PANEL WEBOP SERIES

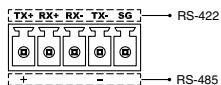
### PINOUTS

#### WOP-2000T Series

##### COM 1 DB-9 Female

Pin	Description
1	RS-422 TXD+ / RS-485+
2	RS-232 RXD
3	RS-232 TXD
4	RS-422 RXD+
5	GND
6	RS-422 TXD- / RS-485-
7	RS-232 TXD (COM 3)
8	RS-232 RXD (COM 3)
9	RS-422 RXD-

##### COM 2 (5 Pins)



##### COM 3 (6 Pins)

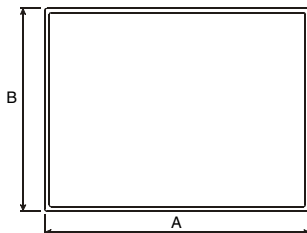


#### Download Cable

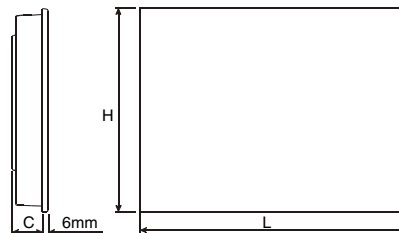
COM 1					
COM 1 Connector 9-Pin Female			PC Connector 9-Pin Male		
RXD	2	3	TXD		
TXD	3	2	RXD		
SG	5	5	SG		
COM 2					
COM 2 Connector 9-Pin Male			PC Connector 9-Pin Male		
RXD	2	3	TXD		
TXD	3	2	RXD		
SG	5	5	SG		
COM 3 DB-9 (T series only)					
COM 3 Connector 9-Pin Female			PC Connector 9-Pin Male		
RXD	8	3	TXD		
TXD	7	2	RXD		
SG	5	5	SG		

### DIMENSIONS

#### Outlet



#### Cut-out



Model	A	B	C	L	H
WOP-2040T	130 mm / 5.11"	106.2 mm / 4.18"	36.4 mm / 1.43"	118.5 mm / 4.66"	92.5 mm / 3.64"
WOP-2050T	188 mm / 7.4"	143.3 mm / 5.64"	30 mm / 1.18"	175 mm / 6.89"	132.5 mm / 5.21"
WOP-2070T	188 mm / 7.4"	143.3 mm / 5.64"	30 mm / 1.18"	175 mm / 6.89"	132.5 mm / 5.21"
WOP-2080T	231.5 mm / 9.11"	174.6 mm / 6.87"	37 mm / 1.46"	221 mm / 8.7"	164 mm / 6.46"
WOP-2100T	269.8 mm / 10.62"	212 mm / 8.35"	37.4 mm / 1.47"	259.5 mm / 10.22"	201.5 mm / 7.93"

### ORDERING INFORMATION

MODEL	COMMUNICATION PORTS	DATA LOGGING	WEIGHT	DISPLAY	WIRING TERMINATIONS
WOP-2040T-N1AE	RS-232/422/485, USB, Ethernet	Internal + MicroSD	0.66 lbs (0.3 kg)	4.3" WQVGA LCD	1 x RJ-45, 1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2040T-S1AE	RS-232/422/485, USB	Internal	0.66 lbs (0.3 kg)	4.3" WQVGA LCD	1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2050T-S1AE	RS-232/422/485, USB	Internal + MicroSD	1.12 lbs (0.51 kg)	5.6" QVGA LCD	1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2070T-N2AE	RS-232/422/485, USB, Ethernet	Internal + MicroSD	1.32 lbs (0.6 kg)	7" WVGA LCD	1 x RJ-45, 1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2070T-S2AE	RS-232/422/485, USB	Internal	1.32 lbs (0.6 kg)	7" WVGA LCD	1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2080T-N2AE	RS-232/422/485, USB, Ethernet	Internal + MicroSD	2.05 lbs (0.93 kg)	8" SVGA LCD	1 x RJ-45, 1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2080T-S2AE	RS-232/422/485, USB	Internal	2.05 lbs (0.93 kg)	8" SVGA LCD	1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2100T-N2AE	RS-232/422/485, USB, Ethernet	Internal + MicroSD	2.64 lbs (1.2 kg)	10.1" WSVGA LCD	1 x RJ-45, 1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)
WOP-2100T-S2AE	RS-232/422/485, USB	Internal	2.64 lbs (1.2 kg)	10.1" WSVGA LCD	1 x USB, 1 x DB-9, 2 x plug-in terminal block (#16 ~ 24 AWG)

### ACCESSORIES

1702002600  
CWOP-P2HAB-ADU2E  
CWOP-P2HFM-AD12E  
PWR-247-AE

Power Cable US Plug 1.8 M  
PC to HMI program download cable, USB/2m  
PC to HMI program download cable, DB9/2m  
24 V 50 W AC-DC Power Adapter

## BACNET MULTI-NETWORK ROUTER BASRT-B



### 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*

### SPECIFICATIONS

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

### ORDERING INFORMATION

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



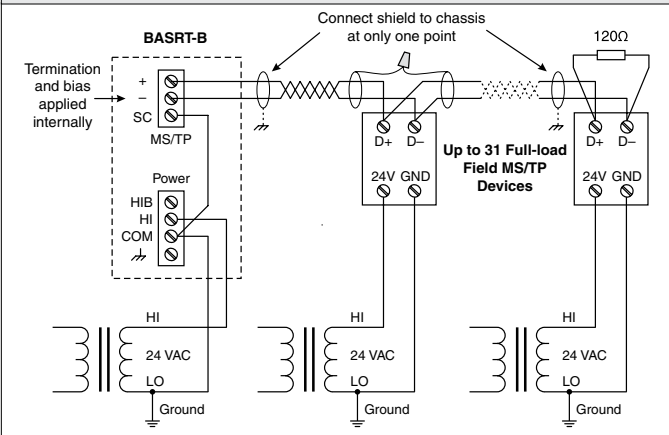
BASRT-B



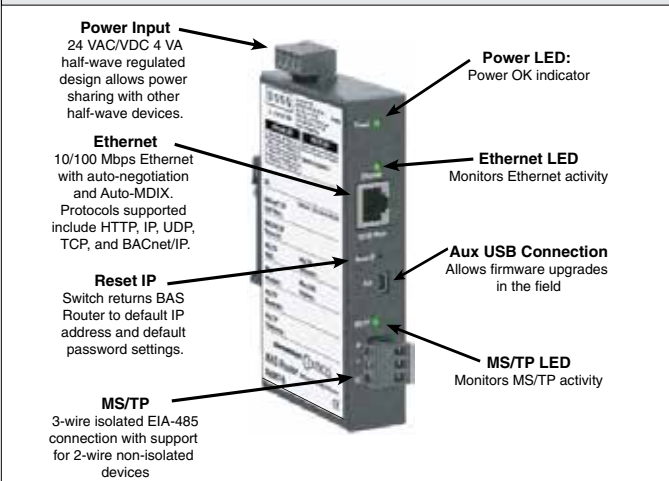
BASRTP-B



### WIRING



### DIAGRAM



# NETWORK & WIRELESS

## BACNET/IP AND LON/IP ROUTER L-IP SERIES

### DESCRIPTION

The L-IP LON models connects CEA-709 channels (e.g. TP/FT-10 or TP/XF-1250) through IP networks. The BACnet model connects BACnet MS/TP to a BACnet/IP network. It routes data packets back and forth through an IP based network, such as a LAN (Ethernet), an Intranet, or even the Internet. They also connect to the IP network via a 100Base-T Ethernet channel. Every CEA-709 (LON) L-IP router supports the operating modes "Smart Switch Mode" and "Configured Router Mode".

### FEATURES

- **BACnet and LON models**
- **Configuration via built-in Web server or serial port**
- **Status and activity LED**
- **100baseT connection**
- **DIN-rail mountable**

NEW!

LOYTEC



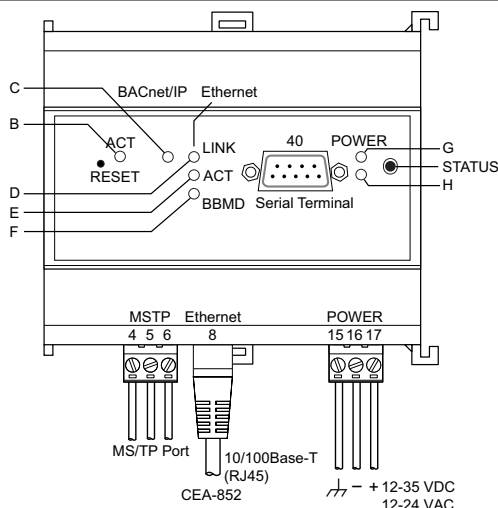
LIP-ME201



### SPECIFICATIONS

<b>Supply Voltage</b>	12 to 35 VDC, 12 to 24 VAC $\pm$ 10%	<b>LIP-3ECTB</b>	1x TP/FT-10, 1x Ethernet (100Base-T) Lonmark IP-852, HTTP, FTP
<b>Supply Watts</b>	3 Watts	<b>LIP-ME201</b>	1x BACnet MS/TP, 1x Ethernet (100Base-T) BACnet/IP, HTTP, FTP
<b>Communication</b>		<b>Operating Temperature</b>	0° to 122°F (0° to 50°C)
<b>LIP-1ECTB</b>	Type CEA-709, IP (10/100Base-T + TP/XF-1250)	<b>Operating Humidity</b>	10-90% RH @ 122°F (50°C) non-condensing
<b>LIP-3xxxx</b>	Type CEA-709, IP (10/100Base-T + TP/FT-10)	<b>Mounting</b>	DIN rail
<b>LIP-ME201</b>	Type BACnet, IP (10/100Base-T + BACnet MS/TP)	<b>Dimensions</b>	
<b>Channels</b>		<b>All other models</b>	4.21"W x 3.94"H x 2.36"D (10.7 x 10.0 x 6.0 cm)
<b>LIP-1ECTB</b>	1x TP/XF-1250, 1x Ethernet (100Base-T) Lonmark IP-852, HTTP, FTP	<b>LIP-3333ECTB</b>	6.26"W x 3.94"H x 2.36"D (15.9 x 10.0 x 6.0 cm)
<b>LIP-3333ECTB</b>	4x TP/FT-10, 1x Ethernet (100Base-T) Lonmark IP-852, HTTP, FTP	<b>Weight</b>	
<b>LIP-33ECRB/LIP-33ECTB</b>	2x TP/FT-10, 1x Ethernet (100Base-T) Lonmark IP-852, HTTP, FTP	<b>LIP-3333ECTB</b>	0.68 lbs (0.31 kg)
		<b>All other models</b>	0.49 lbs (0.22 kg)
		<b>Approvals</b>	CE, FCC
		<b>Warranty</b>	2 years

### WIRING



LIP-ME201

Connectors	
MS/TP	4 Input GND 5 Input + 6 Input -
Ethernet	8 10/100Base-T (RJ45)
POWER	15 Power supply input EARTH GND 16 Power supply input MINUS Can be connected to EARTH GND 17 Power supply input PLUS Do NOT be connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)
Buttons	
RESET	Reset
STATUS	Send "I AM" pin message

Status LEDs	
B	Green flashing fast Orange flashing Red
C	Green flashing
D	Green
E	Green flashing
F	Green
G	Green
H	OFF

Traffic on MS/TP port
Sole master
Communication error
Traffic on BACnet IP port
Ethernet link
Ethernet traffic
BBMD enabled
Power
Normal operation

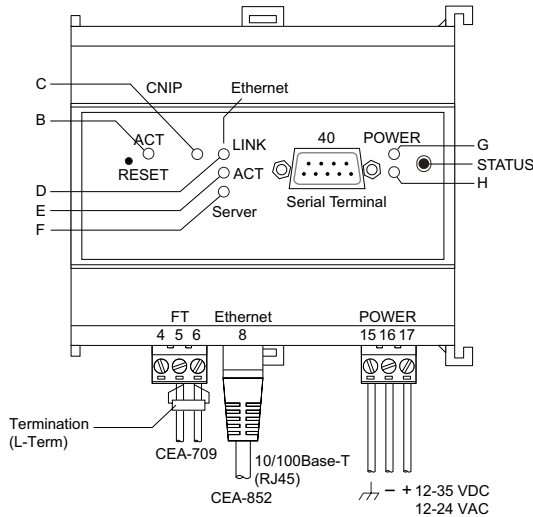
13

NETWORK & WIRELESS

NEW!



### WIRING

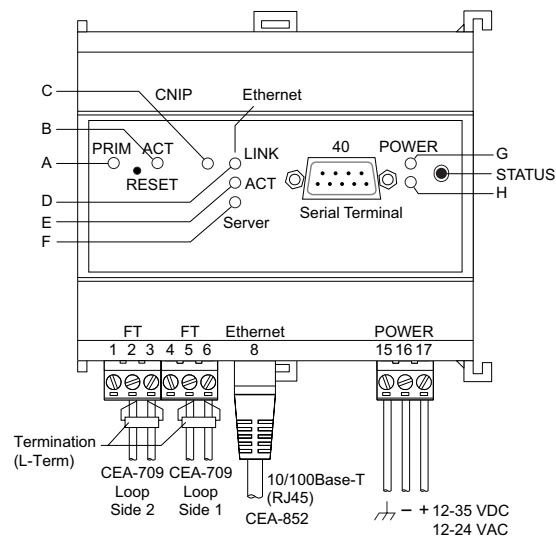


#### LIP-xECTB

Connectors	
CEA-709	4 Input EARTH GND port 1
	5 Input B port 1
	6 Input A port 1
Ethernet	8 10/100Base-T (RJ45)
POWER	15 Power supply input EARTH GND
	16 Power supply input MINUS
	17 Power supply input PLUS
	⚠ Do NOT connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)

Buttons	
RESET	Reset
STATUS	Send service pin message

Status LEDs	
B Green flashing fast	Traffic on port 1
Green flashing at 1 Hz	Port not commissioned
Red permanent	CEA-709 port damaged
Red flashing fast	Traffic overload on port 1
C Green	IP port is fully functional
Yellow	IP port functional but config. is not up-to-date
Red	IP port in non-functional
Flashing at 1 Hz	IP port is not commissioned
OFF	IP port is not active
D Green	Ethernet link
E Green flashing	Ethernet traffic
F Green	BBMD enabled
G Green	Power
H OFF	Normal operation

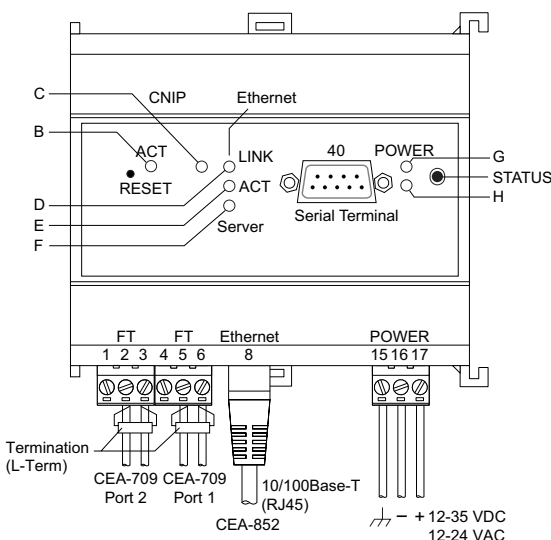


#### LIP-xxECRB

Connectors	
CEA-709	1 Do not connect
	2 Input B loop side 2
	3 Input A loop side 2
CEA-709	4 Input EARTH GND port 2
	5 Input B loop side 1
	6 Input A loop side 1
Ethernet	8 10/100Base-T (RJ45)
POWER	15 Power supply input EARTH GND
	16 Power supply input MINUS
	17 Power supply input PLUS
	⚠ Do NOT connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)

Buttons	
RESET	Reset
STATUS	Send service pin message

Status LEDs	
A Green	Device is active
Off	Device is inactive (standby)
Orange	Problem with twin router
Red	Device is inactive due to error
B Green flashing fast	Traffic on CEA-709 loop
Green flashing at 1 Hz	Port not commissioned
Red permanent	CEA-709 port damaged
Red flashing fast	Loop open/Traffic overload
C Green	IP port is fully functional
Yellow	IP port functional but config. is not up-to-date
Red	IP port in non-functional
Flashing at 1 Hz	IP port is not commissioned
OFF	IP port is not active
D Green	Ethernet link
E Green flashing	Ethernet traffic
F Green	BBMD enabled
G Green	Power
H OFF	Normal operation



#### LIP-xxECTB

Connectors	
CEA-709	1 Input EARTH GND port 2
	2 Input B port 2
	3 Input A port 2
CEA-709	4 Input EARTH GND port 1
	5 Input B port 1
	6 Input A port 1
Ethernet	8 10/100Base-T (RJ45)
POWER	15 Power supply input EARTH GND
	16 Power supply input MINUS
	17 Power supply input PLUS
	⚠ Do NOT connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)

Buttons	
RESET	Reset
STATUS	Send service pin message

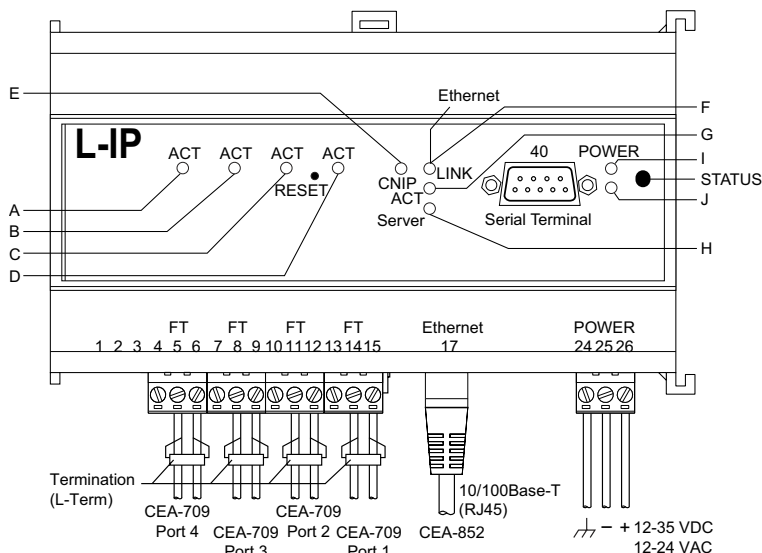
Status LEDs	
A Green flashing fast	Traffic on port 2
Green flashing at 1 Hz	Port not commissioned
Red permanent	CEA-709 port damaged
Red flashing fast	Traffic overload on port 2
B Green flashing fast	Traffic on port 1
Green flashing at 1 Hz	Port not commissioned
Red permanent	CEA-709 port damaged
Red flashing fast	Traffic overload on port 1
C Green	IP port is fully functional
Yellow	IP port functional but config. is not up-to-date
Red	IP port in non-functional
Flashing at 1 Hz	IP port is not commissioned
OFF	IP port is not active
D Green	Ethernet link
E Green flashing	Ethernet traffic
F Green	BBMD enabled
G Green	Power
H OFF	Normal operation

# NETWORK & WIRELESS

## BACNET/IP AND LON/IP ROUTER L-IP SERIES

### WIRING

LIP-xxxECTB



Connectors	
CEA-709	4 Input EARTH GND port 4 5 Input B port 4 6 Input A port 4
CEA-709	7 Input EARTH GND port 3 8 Input B port 3 9 Input A port 3
CEA-709	10 Input EARTH GND port 2 11 Input B port 2 12 Input A port 2
CEA-709	13 Input EARTH GND port 1 14 Input B port 1 15 Input A port 1
Ethernet	17 10/100Base-T (RJ45)
POWER	24 Power supply input EARTH GND 25 Power supply input MINUS 26 Power supply input PLUS Do NOT connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)

Buttons	
RESET	Reset
STATUS	Send service pin message

Status LEDs		
A	Green flashing fast Green flashing at 1 Hz Red permanent Red flashing fast	Traffic on port 4 Port not commissioned CEA-709 port damaged Traffic overload on port 4
B	Green flashing fast Green flashing at 1 Hz Red permanent Red flashing fast	Traffic on port 3 Port not commissioned CEA-709 port damaged Traffic overload on port 3
C	Green flashing fast Green flashing at 1 Hz Red permanent Red flashing fast	Traffic on port 2 Port not commissioned CEA-709 port damaged Traffic overload on port 2
D	Green flashing fast Green flashing at 1 Hz Red permanent Red flashing fast	Traffic on port 1 Port not commissioned CEA-709 port damaged Traffic overload on port 1
E	Green Yellow  Red Flashing at 1 Hz OFF	IP port is fully functional IP port functional but config. is not up-to-date IP port in non-functional IP port is not commissioned IP port is not active
F	Green	Ethernet link
G	Green flashing	Ethernet traffic
H	Green	BBMD enabled
I	Green	Power
J	OFF	Normal operation

### ORDERING INFORMATION

**MODEL**  
**LIP-1ECTB**  
**LIP-3333ECTB**  
**LIP-33ECRB**  
**LIP-33ECTB**  
**LIP-3ECTB**  
**LIP-ME201**

**DESCRIPTION**  
L-IP Lon Router, 1 TP/XF-1250, 1 ethernet port (IP-852)  
L-IP Lon Router, 4 TP/FT-10, 1 ethernet port (IP-852)  
L-IP Lon Router with redundancy, 2 TP/FT-10, 1 ethernet port (IP-852)  
L-IP Lon Router, 2TP/FT-10, 1 ethernet port (IP-852)  
L-IP Lon Router, 1TP/FT-10, 1 ethernet port (IP-852)  
BACnet/IP Router, MS/TP to BACnet/IP

13

NETWORK & WIRELESS

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730

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March 2014



### DESCRIPTION

The L-Switch is the solution for interconnecting multiple CEA-709 channels. It provides up to five ports and routes packets between these ports. In spite of its small size, the L-Switch router delivers first class performance and flexibility in use. In order to provide the optimal router configuration, the L-Switch comes with 2 to 5 ports as well as the two operating modes "Smart Switch Mode" and "Configured Router Mode".

**NEW!**



**LS-11CB**



**LS-11333CB**

### FEATURES

- For physical separation and logical connection of up to 5 CEA-709 network segments
- Can be used as configured router
- Can be used as learning switch or repeater in Smart Switch Mode
- Plug & Play installation in Smart Switch Mode
- Forwards packets of up to 256 bytes length
- Supports up to four domains in Smart Switch Mode
- DIN-rail mountable

### SPECIFICATIONS

<b>Supply Voltage</b>	12 to 35 VDC, 12 to 24 VAC $\pm$ 10%	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Supply Watts</b>	3 Watts	<b>Operating Humidity</b>	10-90% RH @ 122°F (50°C) non-condensing
<b>Communication Channels</b>	Type CEA-709 (LON)	<b>Dimensions</b>	
<b>LS-11333CB</b>	LonMark System 2x TP/XF-1250, 3x TP/FT-10	<b>LS-xxxxxvCB</b>	6.26"W x 3.94"H x 2.36"D (15.9 x 10.0 x 6.0 cm)
<b>LS-11CB</b>	LonMark System 2x TP/XF-1250	<b>LS-xxvCB</b>	4.21"W x 3.94"H x 2.36"D (10.7 x 10.0 x 6.0 cm)
<b>LS-13300CB</b>	LonMark System 1x TP/XF-1250, 2x TP/FT-10	<b>Weight</b>	
<b>LS-13333CB</b>	LonMark System 1x TP/XF-1250, 4x TP/FT-10	<b>LS-xxxxxvCB</b>	0.66 lb (0.30 kg)
<b>LS-13CB</b>	LonMark System 1x TP/XF-1250, 1x TP/FT-10	<b>LS-xxvCB</b>	0.49 lb (0.22 kg)
<b>LS-33300CB</b>	LonMark System 3x TP/FT-10	<b>Approvals</b>	CE, FCC
<b>LS-33CB</b>	LonMark System 2x TP/FT-10	<b>Warranty</b>	2 years

### DIP SWITCH SETTINGS

**LS-xxvCB†**

1 2 3 4 5 6 7

OFF ON

DIP1	DIP2	Function
ON	ON	Smart switch mode
ON	OFF	Repeater mode
OFF	ON	Smart switch mode/ subnet learning
OFF	OFF	Configured CEA-709 router†
		Configured EIA-709 router†

DIP3	Function (RS-485 version only)
ON	Bit-rate auto detection on
OFF	Bit-rate auto detection off

DIP4	Must be OFF
DIP5	Must be OFF
DIP6	Must be OFF
DIP7	Must be OFF

**LS-xxxxxvCB†**

1 2 3 4 5 6 7

OFF ON

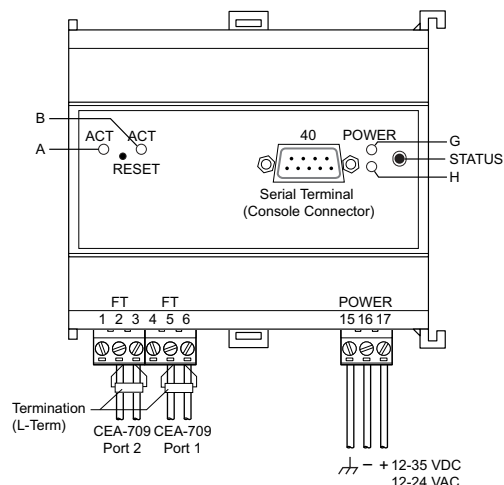


# NETWORK & WIRELESS

## LON SWITCH ROUTER L-SWITCH SERIES

### WIRING

LS-xxCB

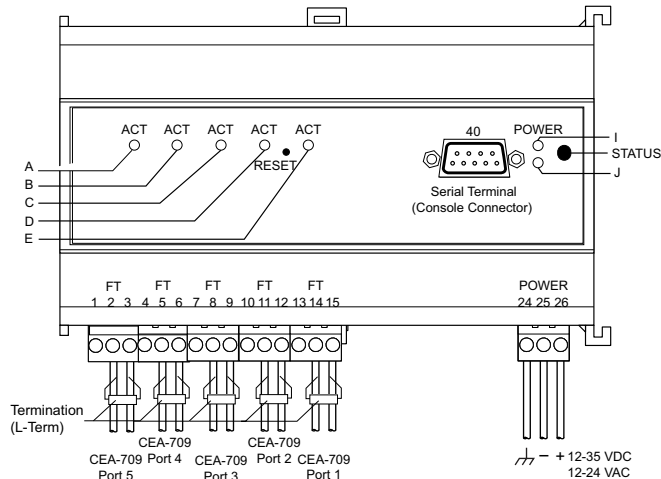


Connectors	
CEA-709	1 Input EARTH GND port 2
CEA-709	2 Input B port 2
CEA-709	3 Input A port 2
CEA-709	4 Input EARTH GND port 1
CEA-709	5 Input B port 1
CEA-709	6 Input A port 1
POWER	15 Power supply input EARTH GND
POWER	16 Power supply input MINUS
POWER	17 Power supply input PLUS
POWER	Do NOT connect to EARTH GND
SERIAL	40 RS-232 Interface (DB9 male)

Status LEDs	
A	Green flashing fast Traffic port 2
A	Green flashing at 1 Hz Port not commissioned
B	Red permanent CEA-709 port damaged
B	Red flashing fast Traffic overload on port 2
B	Green flashing fast Traffic on port 1
B	Green flashing at 1 Hz Port not commissioned
B	Red permanent CEA-709 port damaged
B	Red flashing fast Traffic overload on port 1
G	Green Power
H	OFF Normal operation

Buttons	
RESET	Reset
STATUS	Send service pin message

LS-xxxxxvCB



Connectors	
CEA-709	1 Input EARTH GND port 5
CEA-709	2 Input B port 5
CEA-709	3 Input A port 5
CEA-709	4 Input EARTH GND port 4
CEA-709	5 Input B port 4
CEA-709	6 Input A port 4
CEA-709	7 Input EARTH GND port 3
CEA-709	8 Input B port 3
CEA-709	9 Input A port 3
CEA-709	10 Input EARTH GND port 2
CEA-709	11 Input B port 2
CEA-709	12 Input A port 2
CEA-709	13 Input EARTH GND port 1
CEA-709	14 Input B port 1
CEA-709	15 Input A port 1
POWER	24 Power supply input EARTH GND
POWER	25 Power supply input MINUS
POWER	26 Power supply input PLUS
POWER	Do NOT connect to EARTH GND
SERIAL	40 EIA-232 (DB9 male)

Buttons	
RESET	Reset
STATUS	Send service pin message

Status LEDs	
A	Green flashing fast Traffic port 5
A	Green flashing at 1 Hz Port not commissioned
B	Red permanent CEA-709 port damaged
B	Red flashing fast Traffic overload on port 5
B	Green flashing fast Traffic on port 4
B	Green flashing at 1 Hz Port not commissioned
B	Red permanent CEA-709 port damaged
B	Red flashing fast Traffic overload on port 4
C	Green flashing fast Traffic on port 3
C	Green flashing at 1 Hz Port not commissioned
C	Red permanent CEA-709 port damaged
C	Red flashing fast Traffic overload on port 3
D	Green flashing fast Traffic on port 2
D	Green flashing at 1 Hz Port not commissioned
D	Red permanent CEA-709 port damaged
D	Red flashing fast Traffic overload on port 2
E	Green flashing fast Traffic on port 1
E	Green flashing at 1 Hz Port not commissioned
E	Red permanent CEA-709 port damaged
E	Red flashing fast Traffic overload on port 1
I	Green Power
J	OFF Normal operation

### ORDERING INFORMATION

MODEL	DESCRIPTION
LS-11333CB	L-Switch 2 x TP/XF-1250, 3 x TP/FT-10
LS-11CB	L-Switch 2 x TP/XF-1250
LS-13300CB	L-Switch 1 x TP/XF-1250, 2 x TP/FT-10
LS-13333CB	L-Switch 1 x TP/XF-1250, 4 x TP/FT-10
LS-13CB	L-Switch 1 x TP/XF-1250, 1 x TP/FT-10
LS-33300CB	L-Switch 3 x TP/FT-10
LS-33CB	L-Switch 2 x TP/FT-10

13

NETWORK & WIRELESS

NEW!



### DESCRIPTION

Model 110A is a two-channel physical layer repeater for FTT-10 LonWorks networks. Data received on one channel is reconditioned and re-transmitted on the other channel. Each Model 110A effectively doubles the wiring distance and the number of nodes that can be placed on the network. On-board jumpers allow each channel to be terminated independently for bus or free topology.

A local 3.5 mm network jack allows a convenient way to connect an installation or diagnostic tool to the network without disconnecting any wires.

Three LEDs provide diagnostic information for troubleshooting. A green LED indicates when power is applied. Two red LEDs indicate when data is being received on each of the two local channels.

### FEATURES

- **Extends wiring distance of FTT-10 LonWorks Networks**
- **Up to 5 repeaters can be daisy chained together to create a multi-segment repeater of up to 10 channels**
- **Low cost alternative to routers configured as repeaters**
- **All wiring is to removable terminal blocks for ease of service**
- **Polarity insensitive AC/DC wide input voltage range**
- **Input power has over current and transient voltage suppression**
- **Termination for bus and free topology**
- **3.5 mm network jack for local installation tool connection**
- **Communication and power indicators to assist in field diagnostics**
- **DIN Rail mount enclosure**

### SPECIFICATIONS

<b>Input Power</b>	12-36 VDC or 9-26 VAC @ 30 mA typical. Polarity insensitive wiring.
<b>Network Transceiver Type</b>	Two Echelon FTT-10A transceivers at 78 kbps. DC blocking capacitors for Link Power network are installed.
<b>Network Termination</b>	Separate jumpers for each channel support free and bus topology termination.
<b>Multi-Segment Operation</b>	Max of 5 repeaters can be daisy chained to construct a 10-channel repeater hub.
<b>Protection</b>	Input power is fused and transient voltage protected. Fuse automatically resets when fault is removed.
<b>Enclosure</b>	Material Grey frame retardant Noryl UL94_V0
<b>Operating Temperature</b>	32° to 176°F (0° to 80°C)
<b>Operating Humidity</b>	0-90% RH non-condensing
<b>Dimensions</b>	3.54"H x 1.42"W x 2.28"D (90 x 36 x 58 mm)
<b>Enclosure Type</b>	DIN rail mount to 35 mm rail
<b>Weight</b>	0.3 lb (0.14kg)
<b>Warranty</b>	1 year

NEW!



110A

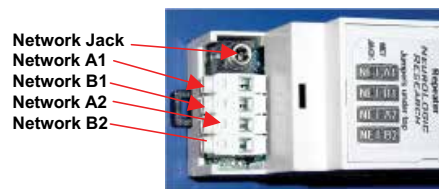
### WIRING

#### WIRING AND INSTALLATION

All wiring is done via two sets of removable terminal blocks. The top terminal block has two positions and supplies power to the unit. 12-36 VDC or 926 VAC can be used. The terminals are polarity insensitive.



The bottom terminal block has four positions. Two terminals for each network. The terminals for the first network are labeled Network A1 and Network B1. The second network channel is labeled Network A2 and Network B2. The network wiring is polarity insensitive. The network jack provides an access point for a network



### ORDERING INFORMATION

MODEL	DESCRIPTION
110A	Model 110A FTT-10 Physical Layer Repeater

# NETWORK & WIRELESS

## BACNET, LON, MODBUS TERMINATOR L-TERM SERIES

### DESCRIPTION

The LON TP/FT-10, TP/LPT-10, TP/XF-1250 and BACnet MS/TP networks need to be terminated using a defined network terminator.

L-Term LT-03 offers one standard network terminator for a TP/FT-10 or TP/LPT-10 channel. In addition, LT-03 comes with a network access connector for a simple and reliable connection to the CEA-709 network e.g. for maintenance or analyzing the network locally.

L-Term LT-13 and LT-33 offer two standard network terminators in a slim housing which makes them a perfect solution for LOYTEC active network infrastructure products (e.g. L-IP, L-Switch, L-Proxy etc.) at a very competitive price.

L-Term LT-04 and LT-B4 offer one standard network terminator for a EIA-485 channel such as BACnet MS/TP, Modbus or TP/RS-485 (CEA-709). LT-04 comes with a network access connector for a simple and reliable connection to the network e.g. for maintenance or analyzing the network locally. The LT-B4 is a bus termination with biasing circuit (failsafe biasing) and needs a power supply. This biasing circuit draws the level of the bus in standby mode (idle) to a safe value (logic "1").

### FEATURES

- BACnet, Modbus and LON models available
- Supports bus and free topology termination (LT-03, LT-13, LT-33)
- TP/FT-10 side can also be used to terminate link power channels
- Pluggable screw terminals (0.5 - 2.5 mm<sup>2</sup>)
- DIN-rail mountable

NEW!

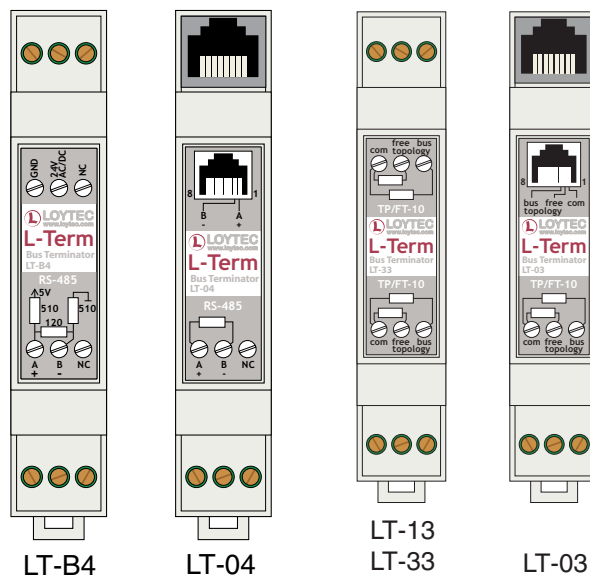
LOYTEC



L-Term Series



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC $\pm$ 10%	<b>Communication</b>	(BACnet MS/TP, Modbus RTU)
<b>Channels</b>		<b>Operating Humidity</b>	LON, BACnet MS/TP, Modbus RTU
<b>LT-03</b>	LonMark System 1x TP/FT-10 or TP/LPT-10		10-90% RH @ 122°F (50°C) non-condensing
<b>LT-04</b>	1 x EIA-485 (BACnet MS/TP, Modbus RTU)	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>LT-13</b>	LonMark System 1x TP/XF-1250, 1x TP/FT-10 or TP/LPT-10	<b>Dimensions</b>	0.71"W x 2.28"H x 3.54"L (18 x 58 x 90 mm)
<b>LT-33</b>	LonMark System 2x TP/FT-10 or TP/LPT-10	<b>Approvals</b>	CE
<b>LT-B4</b>	Active 1 x EIA-485 (BACnet MS/TP, Modbus RTU) Active 1 x EIA-485	<b>Weight</b>	0.15 lb (0.07 kg)
		<b>Warranty</b>	2 years

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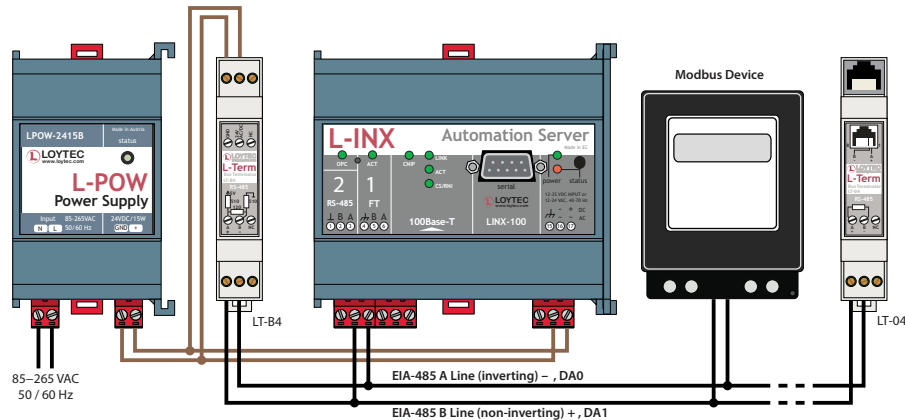
NETWORK & WIRELESS

NEW!



### RS-485 NETWORK TERMINATOR APPLICATION EXAMPLE

Modbus RTU: LINX-100 Automation Server and terminator LT-B4 with biasing circuit (failsave biasing)

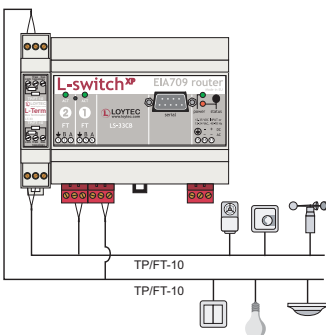


LT-04 Modular Plug RJ-45(8P8C)

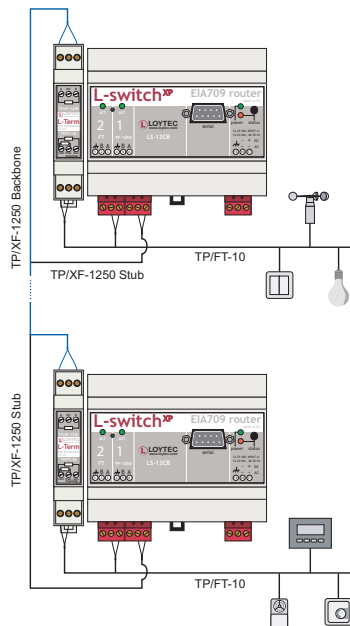
Pin	Marking	Description
1	A +	non-inverting pin, B (EIA-485)
2	B -	inverting pin, A (EIA-485)
3 ... 8	NC	not connected

### LON NETWORK TERMINATOR APPLICATION EXAMPLE

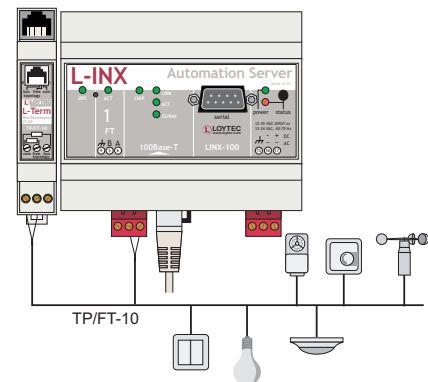
1) LT-33 in a typical free topology installation on two TP/FT-10 channels together with an LS-33CB 2-port L-Switch



2) LT-13 in a typical network with TP/XF-1250 backbone and free typology on TP/FT-10 together with two LS-13CB L-Switches



3) LT-03 in a free topology installation together with a LINX-100 Automation Server



LT-03 Modular Plug RJ-45(8P8C)

Pin	Marking	Description
1	com	tie point
2	free	free topology
3	bus	bus topology
4 ... 8	-	not connected

### ORDERING INFORMATION

#### MODEL

LT-03

LT-13

LT-33

LT-04

LT-B4

#### DESCRIPTION

L-Term LON Network Terminator, 1 x TP/FT-10 or TP/LPT-10, 1 x RJ45

L-Term LON Network Terminator, 1 x TP/FT-10, 1 x TP/XF-1250

L-Term LON Network Terminator, 2 x TP/FT-10 or TP/LPT-10

L-Term BACnet and Modbus Network Terminator, 1 x EIA-485, 1 x RJ45

L-Term BACnet and Modbus Network Terminator, 1 x EIA-485 w/ failsafe



# NETWORK & WIRELESS

## 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.



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 full duplex
- Supports DIN 35 rail

### WIRING

#### TOP View



- 1 Power
- 2 Status
- 3 Ground

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



### 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.

### 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**

CONTEMPORARY  
CONTROLS



EIBA5-100T



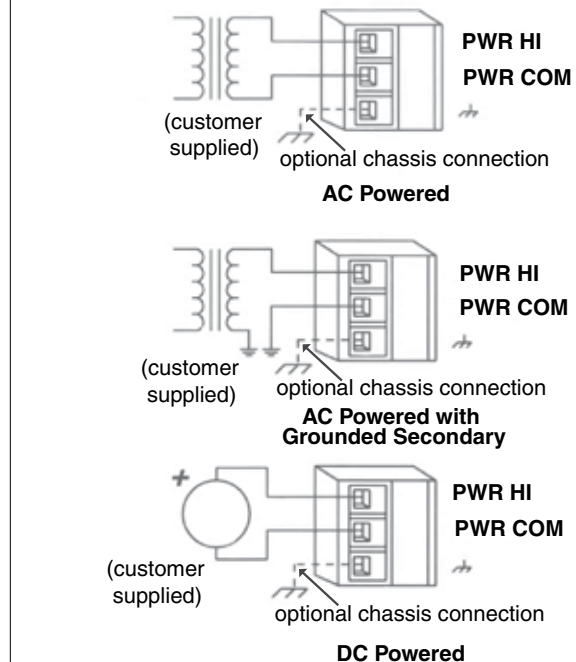
EIBA5-100T/R



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC $\pm 10\%$
<b>Supply Current</b>	4 VA
<b>Communication</b>	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
<b>LED Indication Ethernet</b>	Green = 100 Mbps Yellow = 10 Mbps Flash = activity
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	10 to 95% non-condensing
<b>Dimensions</b>	4.13"H x 3.5"W x 1.25"D (10.5 x 8.9 x 3.2 cm)
<b>Weight</b>	0.6 lbs (0.272 kg)
<b>Approvals</b>	CE Mark, UL 508, C-UL, File #E225652
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	5 years

### WIRING



### ORDERING INFORMATION

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

# NETWORK & WIRELESS

## UNMANAGED ETHERNET SWITCHES EKI SERIES

### DESCRIPTION

The **EKI Series** Unmanaged Industrial Ethernet Switches are designed for use in demanding industrial environments, offering unmatched performance, reliability, and value. With no setup required, they are truly plug-and-play. Models are available in standard 10/100Mbps with both copper wire and fiber optic connections.

### FEATURES

- **Slim size, DIN-rail mount**
- **Redundant 12-48Vdc power input**
- **Rugged extruded aluminum enclosure IP30 and IP40 rating**
- **Hardware status LED light**

NEW!



EKI-2525



EKI-3525

ADANTECH

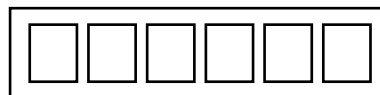


### WIRING

PWR2

P-Fail

PWR1



V2- V2+

V1- V1+ (+12 ~ 48 VDC)

Pin Assignment of the Power Connector

### SPECIFICATIONS

**Power Input** 12~48 VDC, redundant dual inputs

**Power Consumption**

EKI-2525-AE 3w

EKI-2525M/2528-AE 5w

EKI-3525/3528-AE 2.4W/ 2.5W

**Fault Output** 1 Relay Output

**Communication** Ethernet

**Communication Ports**

EKI-2525/3525-AE 5 - 10/100 Mbps ports

EKI-2525M-AE 4 - 10/100 Mbps ports and 1 - 100 M.M Fiber port

EKI-2528/3528-AE 8 - 10/100 Mbps ports

**Data Throughput** 100Mbps

**Protocol**

EKI-2525/2525M/2528-AE IEEE 802.3, 802.3u, 802.3x

EKI-3525/3528-AE IEEE 802.3, 802.3u, 802.3x, 802.1p, 802.3az

**LED Indication**

EKI-2525/2525M/2528-AE P1,P2,P-Fail, 10/100T(X):Link/Activity and Duplex/Collision,

**EKI-3525/3528-AE** P1, P2, P-Fail, Loop Detection, 10/100T (X): Link/Activity, Speed

**Operating Temperature** 14° to 140°F (-10° to 60°C)

**Operating Humidity** 5-95% RH non-condensing

**Enclosure** IP30, IP40

**Mounting** DIN/panel

**Flow Control** Yes

**Housing Type** Metal, Plastic+Metal

**Dimensions**

**EKI-2525/2525M/2528-AE** 1.46"H x 5.51"W x 3.74"D (37 x 140 x 95 mm)

**EKI-3525-AE** 1.02"H x 4.73"W x 3.35"D (28.5 x 120 x 85.3 mm)

**EKI-3528-AE** 1.75"H x 4.73"W x 3.35"D (44.5 x 120 x 85.3 mm)

**Approvals** CE/FCC/UL, C1D2 (EKI-2525/2528/2525M)

**Warranty** 5 years

### ORDERING INFORMATION

#### MODEL

**EKI-2525-AE**

**EKI-2525M-AE**

**EKI-2528-AE**

**EKI-3525-AE**

**EKI-3528-AE**

#### DESCRIPTION

5-port 10/100Mbps Unmanaged Ethernet Switch

4-port 10/100M +1 MM Fiber Unmanaged Ethernet Switch

8-port 10/100Mbps Unmanaged Ethernet Switch

5-port 10/100Mbps Unmanaged Industrial

8-port 10/100Mbps Unmanaged Industrial



**LOYTEC**

### DESCRIPTION

The L-IOB I/O Module family of products consists of smart I/O devices featuring different I/O setups. Based on LOYTEC's 32-bit L-CORE platform the L-IOB I/O Modules provide first class performance and extensive resources. The L-IOB I/O Modules contain a 128x64 display with backlight. The display shows device and data point information. A jog dial is used for local operation by navigating through detailed information on the display and for operating and overriding of data points. The configuration of the L-IOB I/O Modules is done with the L-INX Configuration Tool which is free to download from Loytec.

**NEW!**



LIOB-150



### FEATURES

- **Physical Inputs and Outputs**
- **Stackable I/O Modules supporting LIOB-Connect**
- **Models available for LonMark (TP/FT-10 and IP-852) and BACnet Networks (BACnet/IP)**
- **128x64 display with backlight**
- **Local access to information about device status and data points**
- **Manual operation using the jog dial**
- **Configuration through L-INX configuration tool**
- **Removable terminal with a clamping yoke connection to accomodate diameters from 0.2-2.5 mm<sup>2</sup> (26-12 AWG)**
- **Simple device replacement without software tool**

### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC $\pm$ 10 %	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Power Consumption</b>	1.7W, 2.5-2.7W with relays on	<b>Operating Humidity</b>	10-90% RH @ 122°F (50°C) non-condensing
<b>Channels</b>		<b>Dimensions</b>	4.21"W x 3.94"H x 2.95"D (10.7 x 10.0 x 7.5 cm)
<b>LIOB-1xx</b>	1x LIOB-FT or LonMark TP/FT-10	<b>Weight</b>	0.71 lbs (0.32 kg)
<b>LIOB-4xx</b>	2x Ethernet (100Base-T) LIOB-IP or LonMark IP-852	<b>Approvals</b>	CE, FCC, LonMark 3.4
<b>LIOB-5xx</b>	2x Ethernet (100Base-T) LIOB-IP or BACnet/IP, OPC XML-DA	<b>Warranty</b>	2 years
<b>Communication</b>			
<b>LIOB-1xx</b>	Type LIOB-FT, CEA-709 (LON)		
<b>LIOB-4xx</b>	Type LIOB-IP, LonMark IP-852		
<b>LIOB-5xx</b>	Type LIOB-BIP, BACnet/IP, LIOB-IP, OPC XML-DA		

**Note:** See next page for wiring and terminals layout.

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>LIOB-150</b>	LON TP/FT-10 I/O MODULES 8UI 2DI 2AO 8DO
<b>LIOB-151</b>	LON TP/FT-10 I/O MODULES 8UI 12DI
<b>LIOB-152</b>	LON TP/FT-10 I/O MODULES 6UI 6AO 8DO
<b>LIOB-153</b>	LON TP/FT-10 I/O MODULES 6UI 6AO 5DO
<b>LIOB-450</b>	LON IP-852 I/O MODULES 8UI 2DI 2AO 8DO
<b>LIOB-451</b>	LON IP-852 I/O MODULES 8UI 12DI
<b>LIOB-452</b>	LON IP-852 I/O MODULES 6UI 6AO 8DO
<b>LIOB-453</b>	LON IP-852 I/O MODULES 6UI 6AO 5DO
<b>LIOB-550</b>	BACNET/IP I/O MODULES 8UI 2DI 2AO 8DO
<b>LIOB-551</b>	BACNET/IP I/O MODULES 8UI 12DI
<b>LIOB-552</b>	BACNET/IP I/O MODULES 6UI 6AO 8DO
<b>LIOB-553</b>	BACNET/IP I/O MODULES 6UI 6AO 5DO

13

NETWORK & WIRELESS

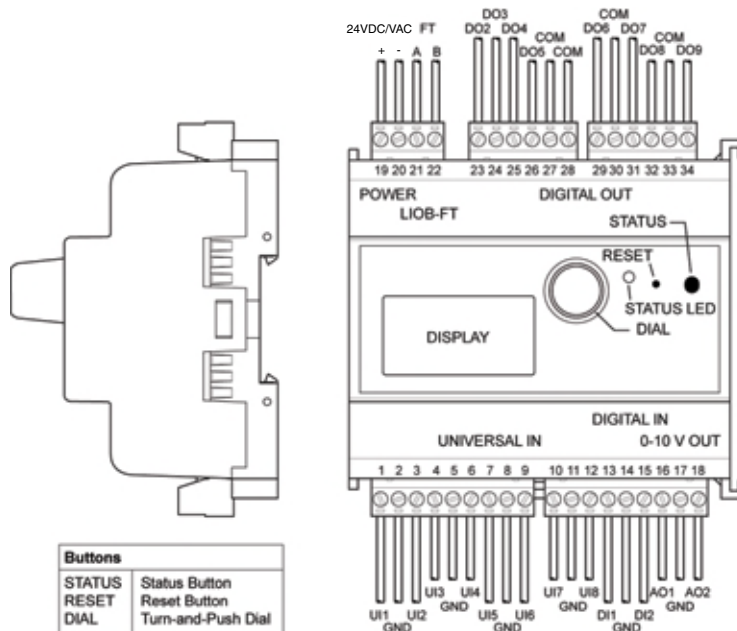
**NEW!**

# NETWORK & WIRELESS

## BACNET AND LON I/O MODULE L-IOB SERIES

### WIRING

LIOB-15X



LIOB-150

Connectors	
UNIVERSAL INPUT	1 Input UI1
	2 Input GND
	3 Input UI2
	4 Input UI3
	5 Input GND
	6 Input UI4
	7 Input UI5
	8 Input GND
	9 Input UI6
	10 Input UI7
	11 Input GND
	12 Input UI8
DIGITAL INPUT	13 Input DI1
	14 Input GND
	15 Input DI2
ANALOG OUTPUT 0-10 V	16 Output AO1
	17 Output GND
	18 Output AO2

Connectors	
POWER SUPPLY	19 Input 24 V PLUS or AC
	20 Input 24 V MINUS or AC
TP/FT-10 CEA-709	21 LIOB-FT Input A
	22 LIOB-FT Input B
DIGITAL OUTPUT RELAY 6 A	23 Output DO2
	24 Output DO3
	25 Output DO4
	26 Output DO5
	27 Output Common for DO2 to DO5
	28 Output Common for DO2 to DO5
DIGITAL OUTPUT TRIAC 1 A	29 Output DO6
	30 Output Common for DO6 & DO7
	31 Output DO7
	32 Output DO8
	33 Output Common for DO8 & DO9
	34 Output DO9

LIOB-151

Connectors	
UNIVERSAL INPUT	1 Input UI1
	2 Input GND
	3 Input UI2
	4 Input UI3
	5 Input GND
	6 Input UI4
	7 Input UI5
	8 Input GND
	9 Input UI6
	10 Input UI7
	11 Input GND
	12 Input UI8
DIGITAL INPUT	13 Input DI16
	14 Input GND
	15 Input DI15
	16 Input DI14
	17 Input GND
	18 Input DI13

Connectors	
POWER SUPPLY	19 Input 24 V PLUS or AC
	20 Input 24 V MINUS or AC
	Do NOT ground Input 19 (+24V)
TP/FT-10 CEA-709	21 LIOB FT Input A
	22 LIOB FT Input B
DIGITAL INPUT	23 Input DI5
	24 Input GND
	25 Input DI6
	26 Input DI7
	27 Input GND
	28 Input DI8
	29 Input DI9
	30 Input GND
	31 Input DI10
	32 Input DI11
	33 Input GND
	34 Input DI12

LIOB-152

Connectors	
UNIVERSAL INPUT	1 Input UI1
	2 Input GND
	3 Input UI2
	4 Input UI3
	5 Input GND
	6 Input UI4
	7 Input UI5
	8 Input GND
	9 Input UI6
ANALOG OUTPUT 0-10 V	10 Output AO1
	11 Output GND
	12 Output AO2
	13 Output AO3
	14 Output GND
	15 Output AO4
	16 Output AO5
	17 Output GND
	18 Output AO6

Connectors	
POWER SUPPLY	19 Input 24 V PLUS or AC
	20 Input 24 V MINUS or AC
	Do NOT ground Input 19 (+24V)
TP/FT-10 CEA-709	21 LIOB FT Input A
	22 LIOB FT Input B
DIGITAL OUTPUT RELAY 6 A	23 Output DO1
	24 Output Common for DO1 & DO2
	25 Output DO2
	26 Output DO3
	27 Output Common for DO3 & DO4
	28 Output DO4
	29 Output DO5
	30 Output Common for DO5 & DO6
	31 Output DO6
	32 Output DO7
	33 Output Common for DO7 & DO8
	34 Output DO8

LIOB-153

Connectors	
UNIVERSAL INPUT	1 Input UI1
	2 Input GND
	3 Input UI2
	4 Input UI3
	5 Input GND
	6 Input UI4
	7 Input UI5
	8 Input GND
	9 Input UI6
ANALOG OUTPUT 0-10 V	10 Output AO1
	11 Output GND
	12 Output AO2
	13 Output AO3
	14 Output GND
	15 Output AO4
	16 Output AO5
	17 Output GND
	18 Output AO6

Connectors	
POWER SUPPLY	19 Input 24 V PLUS or AC
	20 Input 24 V MINUS or AC
	Do NOT ground Input 19 (+24V)
TP/FT-10 CEA-709	21 LIOB FT Input A
	22 LIOB FT Input B
DIGITAL OUTPUT RELAY 16A	23 Output DO1
	24 Output DO1
	25 Output DO2
	26 Output DO2
	27 Output DO3
	28 Output DO3
	29 Output DO4
	30 Output DO4
DIGITAL OUTPUT RELAY 6A	31 Output DO5
	32 Output DO5

13

NETWORK & WIRELESS

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WHEN YOU NEED IT RIGHT, RIGHT NOW, CALL KELE.

March 2014

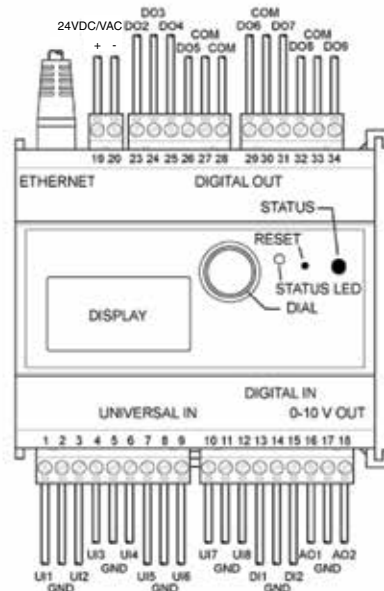


### WIRING

LIOB-45X/55X



Buttons	
STATUS	Status Button
RESET	Reset Button
DIAL	Turn-and-Push Dial



LIOB-450/550

Connectors		
UNIVERSAL INPUT	1	Input UI1
	2	Input GND
	3	Input UI2
	4	Input UI3
	5	Input GND
	6	Input UI4
	7	Input UI5
	8	Input GND
	9	Input UI6
	10	Input UI7
	11	Input GND
	12	Input UI8
DIGITAL INPUT	13	Input DI1
	14	Input GND
	15	Input DI2
ANALOG OUTPUT 0-10 V	16	Output AO1
	17	Output GND
	18	Output AO2

Connectors		
POWER SUPPLY	19	Input 24 V PLUS or AC
	20	Input 24 V MINUS or AC
	23	Output DO2
	24	Output DO3
	25	Output DO4
	26	Output DO5
DIGITAL OUTPUT RELAY 6 A	27	Output Common for DO2 to DO5
	28	Output Common for DO2 to DO5
	29	Output DO6
	30	Output Common for DO6 & DO7
	31	Output DO7
	32	Output DO8
DIGITAL OUTPUT TRIAC 1 A	33	Output Common for DO8 & DO9
	34	Output DO9

LIOB-451/551

Connectors		
UNIVERSAL INPUT	1	Input UI1
	2	Input GND
	3	Input UI2
	4	Input UI3
	5	Input GND
	6	Input UI4
	7	Input UI5
	8	Input GND
	9	Input UI6
	10	Input UI7
	11	Input GND
	12	Input UI8
DIGITAL INPUT	13	Input DI16
	14	Input GND
	15	Input DI15
	16	Input DI14
	17	Input GND
	18	Input DI13

Connectors		
POWER SUPPLY	19	Input 24 V PLUS or AC
	20	Input 24 V MINUS or AC Do NOT ground Input 19 (+24V)
DIGITAL INPUT	23	Input DI5
	24	Input GND
	25	Input DI6
	26	Input DI7
	27	Input GND
	28	Input DI8
	29	Input DI9
	30	Input GND
	31	Input DI10
	32	Input DI11
	33	Input GND
	34	Input DI12

LIOB-452/552

Connectors		
UNIVERSAL INPUT	1	Input UI1
	2	Input GND
	3	Input UI2
	4	Input UI3
	5	Input GND
	6	Input UI4
	7	Input UI5
	8	Input GND
	9	Input UI6
ANALOG OUTPUT 0-10 V	10	Output AO1
	11	Output GND
	12	Output AO2
	13	Output AO3
	14	Output GND
	15	Output AO4
	16	Output AO5
	17	Output GND
	18	Output AO6

Connectors		
POWER SUPPLY	19	Input 24 V PLUS or AC
	20	Input 24 V MINUS or AC Do NOT ground Input 19 (+24V)
DIGITAL OUTPUT RELAY 6 A	23	Output DO1
	24	Output Common for DO1 & DO2
	25	Output DO2
	26	Output DO3
	27	Output Common for DO3 & DO4
	28	Output DO4
	29	Output DO5
	30	Output Common for DO5 & DO6
	31	Output DO6
	32	Output DO7
	33	Output Common for DO7 & DO8
	34	Output DO8

LIOB-453/553

Connectors		
UNIVERSAL INPUT	1	Input UI1
	2	Input GND
	3	Input UI2
	4	Input UI3
	5	Input GND
	6	Input UI4
	7	Input UI5
	8	Input GND
	9	Input UI6
ANALOG OUTPUT 0-10 V	10	Output AO1
	11	Output GND
	12	Output AO2
	13	Output AO3
	14	Output GND
	15	Output AO4
	16	Output AO5
	17	Output GND
	18	Output AO6

Connectors		
POWER SUPPLY	19	Input 24 V PLUS or AC
	20	Input 24 V MINUS or AC Do NOT ground Input 19 (+24V)
DIGITAL OUTPUT RELAY 16A	23	Output DO1
	24	Output DO1
	25	Output DO2
	26	Output DO2
	27	Output DO3
	28	Output DO3
	29	Output DO4
	30	Output DO4
DIGITAL OUTPUT RELAY 6A	31	Output DO5
	32	Output DO5

13

NETWORK & WIRELESS

NEW!



# NETWORK & WIRELESS

## EMBEDDED NETWORK SERVERS I.CANDOIT SERIES

### DESCRIPTION

Control Solutions' i.CanDolt® Series provides a simple and cost effective facility management and remote monitoring solution suitable for use in small sites. It has no site licenses or installation fees. The only software tool needed is a web browser. Multi-protocol support for BACnet and Modbus. The i.CanDolt® is programmable, even though it is powerful without programming.

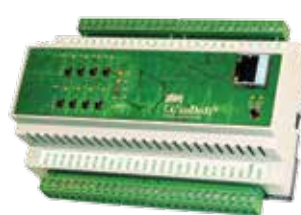
### FEATURES

- *Embedded Web Server*
- *Data Logging & Trending*
- *Time & Date Scheduling*
- *Astronomical Clock*
- *Email Event Notifications*
- *Fill-in-the-blank Alarm Templates*
- *Field Programmable*
- *User Web Pages*

### SPECIFICATIONS

<b>Supply Voltage</b>	
AM3x	18-30 VDC or 24 VAC 50/60 Hz
AMJRx	10-30 VDC or 24 VAC 50/60 Hz
<b>Communication Ports</b>	
Analog Input	
AM3x	18 (16 universal + 2 analog)
AMJRx	12 universal
<b>Discrete Inputs</b>	
TTL to 24VDC	
2, Pulse count frequency input	
Totalizing count input	
<b>Analog Output</b>	
AM3x	4, 4-20mA (0-20mA) 8-bit resolution
<b>Discrete Outputs</b>	
AM3x	8, Form A relay, 5A @ 120 VAC
AMJRx	2, Open drain FET, 1A @ 24VDC
<b>Processor</b>	
Signal LEDs	
AM3x	Power and communication
AMJRx	8
AMJRx	2
<b>Resolution</b>	
AM3x	0.1% reference up to 16-bit
AMJRx	10-bit
<b>Data Logging</b>	
Yes	
<b>Operating Temperature</b>	
-40° to 158°F (-40° to 70°C)	
<b>Operating Humidity</b>	
5-90% RH non-condensing	
<b>Mounting</b>	
DIN rail	
<b>Dimensions</b>	
AM3x	3.94"H x 6.1"W x 2.36"D (100 x 155 x 60 mm)
AMJRx	3.94"H x 2.76"W x 2.36"D (100 x 70 x 60 mm)
<b>Weight</b>	
AM3x	2.0 lbs (0.91kg)
AMJRx	1.5 lbs (0.68kg)
<b>Warranty</b>	
1 year	

NEW!



AM3-IPx

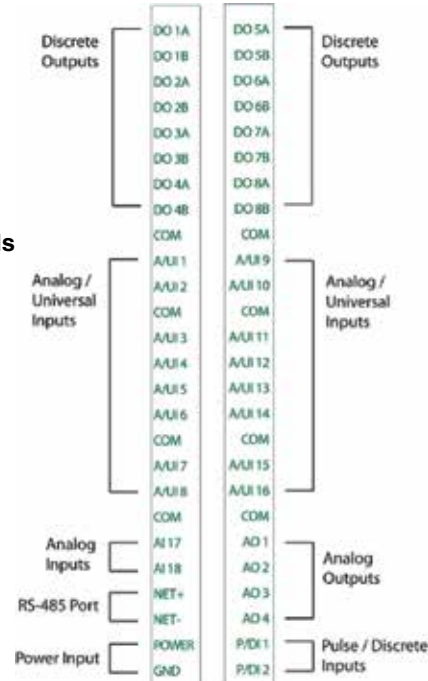


AMJR-14x

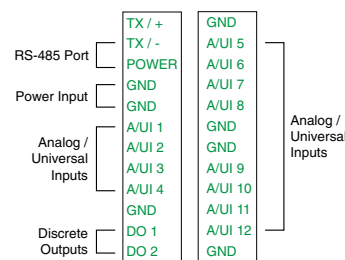


### WIRING

#### AM3x Wiring Terminals



#### AMJRx Wiring Terminals



### ORDERING INFORMATION

MODEL	DESCRIPTION
AM3-IP-BN	BACnet IP Client & Server
AM3-IP-MB	Modbus TCP Client & Server and SNMP Agent
AMJR-14-BN	BACnet IP Client/Server, Modbus RTU Master
AMJR-14-IP	Modbus RTU Master & TCP Client/Server, SNMP Agent

13

NETWORK & WIRELESS

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### DESCRIPTION

Control Solutions' AddMe® Series I/O devices are ideal for expansion of virtually any distributed building automation control system. These devices can be used as slave I/O or programmable controllers. The AddMe® series is Control Solutions' original line of general purpose programmable I/O devices that have a long history as work horses in the industry.

### FEATURES

- Easy to use slave I/O and programmable I/O
- Models for BACnet MS/TP
- Models for Modbus RTU

SPECIFICATIONS	
<b>Supply Voltage</b>	
AMJRx	10-30 VDC or 24 VAC, 50/60 Hz
AM3x	18-30 VDC or 24 VAC, 50/60 Hz
<b>Supply Current</b>	
AMJRx	0.15A @ 24VDC
AM3x	0.3A @ 24VDC
<b>Communication Ports</b>	RS-485 Port
<b>Baud Rate</b>	BACnet supports 9600, 19200, 38400, 76800 Modbus supports 4800, 9600, 19200, 38400
<b>Analog Input</b>	
AMJRx	12 universal
AM3x	18 (16 universal + 2 analog)
<b>Analog Output</b>	
AM3x	4, 4-20 mA (0-20 mA), 8-bit resolution
<b>Discrete Outputs</b>	
AMJRx	2, open drain FET, 1A @ 30 VDC
AM3x	8, form A relay, 5A @ 120VAC
<b>Supported Protocols</b>	
AMJR-14-SB/AM3-SB	BACnet MS/TP Slave
AMJR-14-SM/AM3-SM	Modbus RTU Slave
<b>Signal LEDs</b>	
AM3x	8, power and consumption
<b>Resolution</b>	
AMJRx	10-bit
AM3x	up to 16-bit
<b>Operating Temperature</b>	
AMJRx	-40° to 158°F (-40° to 70°C)
AM3x	-22° to 158°F (-30° to 70°C)
<b>Operating Humidity</b>	5-95% RH non-condensing
<b>Mounting</b>	DIN rail
<b>Dimensions</b>	
AM3x	3.94"H x 6.1"W x 2.36"D (100 x 155 x 60mm)
AMJRx	3.94"H x 2.76"W x 2.36"D (100x 70 x 60mm)
<b>Weight</b>	
AMJRx	1.5 lbs (0.68kg)
AM3x	2 lbs (0.91kg)
<b>Warranty</b>	1 year

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CONTROL SOLUTIONS, INC.



AM3-Sx

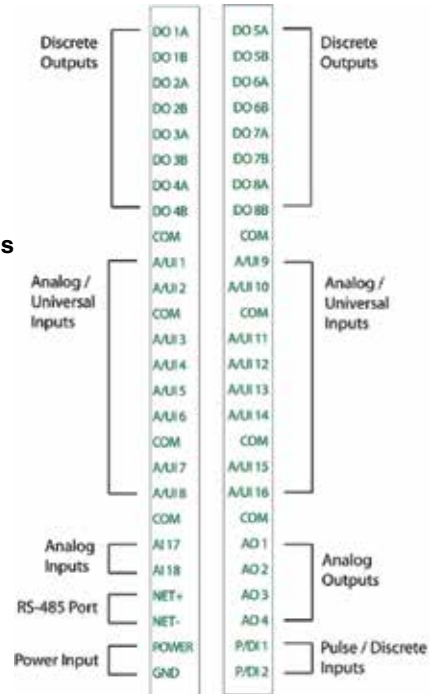


AMJR-14x

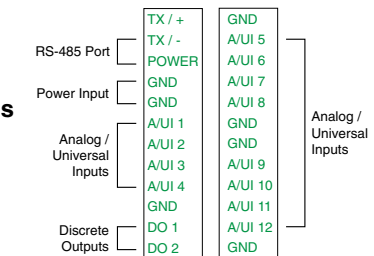


### WIRING

#### AM3x Wiring Terminals



#### AMJRx Wiring Terminals



### ORDERING INFORMATION

MODEL	DESCRIPTION
AMJR-14-SB	BACnet MS/TP Slave, 14 I/O
AM3-SB	BACnet MS/TP Slave, 32 I/O
AM3-SM	Modbus RTU Slave, 32 I/O
AMJR-14-SM	Modbus RTU Slave, 14 I/O

13

NETWORK & WIRELESS

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# NETWORK & WIRELESS

## BACNET MS/TP PROGRAMMABLE I/O VALUPOINT VP4-23 SERIES

### DESCRIPTION

Control Solutions' ValuPoint® Model VP4-2330 Programmable I/O for BACnet MS/TP is a BACnet Application Specific Controller (B-ASC) that includes user programmable control, 14 analog/universal inputs, 3 analog outputs, and 6 relay outputs. VP4-2330 also includes a BACnet client for interface with other MS/TP devices. It includes an enhanced processor and expanded memory capacity along with a robust feature set.

### FEATURES

- 14 Analog/Universal Inputs
- 3 Analog and 6 Discrete Outputs
- Implements B-ASC BACnet Standard Profile
- Freely programmable - i.CanDrawIt® graphical programming
- COV Subscription support
- BACnet client for interface to other slave devices
- Configurable object allocation, up to 200 objects

NEW!



CONTROL SOLUTIONS, INC.

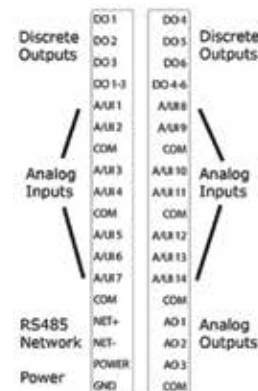


VP4-23 Series



### WIRING

#### Wiring Terminals



13

NETWORK & WIRELESS

### SPECIFICATIONS

<b>Supply Voltage</b>	18-30 VDC or 24 VAC, 50/60 Hz
<b>Supply Current</b>	0.3A @ 24 VDC
<b>Communication Ports</b>	RS-485
<b>Baud Rate</b>	BACnet MS/TP at 9600 to 76800 baud
<b>Analog Input</b>	14 Universal Inputs 0-10 VDC, thermistor, discrete, dry contact, pulse 0.1% reference, up to 16-bit resolution Continuously self-calibrating sigma-delta converter Non-volatile totalizing count inputs (10Hz on all channels, to 1kHz on 2 channels)
<b>Analog Output</b>	10-bit fast scan mode 3 Output 4-20mA (0-20mA), 8-bit resolution, 500 ohm load max.
<b>Discrete Outputs</b>	6 Outputs Form A relay 2A @ 120 VAC or 2A @ 30 VDC

<b>Protocol</b>	BACnet MS/TP
<b>VP4-2330 Processor</b>	ARM 32-bit 64K Flash for User Program Freely programmable i.CanDrawIt® graphical programming
<b>Data Logging</b>	Yes
<b>Operating Temperature</b>	-40° to 185°F (-40° to 85°C)
<b>Operating Humidity</b>	5-95% RH non-condensing
<b>Mounting</b>	DIN rail
<b>Dimensions</b>	3.94" H x 4.13" W x 2.36"D (100 x 105 x 60mm)
<b>Weight</b>	1.5 lbs (0.68 kg)
<b>Approvals</b>	FCC, CE, UL 916 Listed
<b>Warranty</b>	1 year

### ORDERING INFORMATION

MODEL	DESCRIPTION
VP4-2330	BACnet MS/TP, 14 universal / analog inputs, 9 outputs

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March 2014



### DESCRIPTION

The BAS-3000BC series are BACnet MS/TP remote IO modules with RS-485 interfaces that can be expanded as remote IO modules for 3rd party BACnet MS/TP DDC controllers. BAS-3000BC series provides IO models with predefined BACnet objects and services listed as PICS to ensure seamless communication with each other. Advantech's domain focused configuration tool is a BACnet utility specially designed for building automation systems, and is a powerful graphical configuration tool. After simple training, general engineering technicians will be able to easily configure their Advantech BACnet 3000BC IO modules.

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ADVANTECH



### FEATURES

- 24 VDC or 24 VAC input
- 3000 VDC isolation protection (DO)
- BACnet MS/TP Server
- Supports PWM output (BAS-3024BC and BAS-3050BC)

SPECIFICATIONS			
<b>Supply Voltage</b>	24 VDC/24 VAC	<b>Accuracy</b>	±0.1% of FSR (Voltage, Current)
<b>Supply Watts</b>		<b>Operating Temperature</b>	14° - 140°F (-10° - 60°C)
<b>BAS-3018BC-AE</b>	3 W @ 24 VDC	<b>Operating Humidity</b>	20 - 95% RH non-condensing
<b>BAS-3024BC-AE</b>	4 W @ 24 VDC	<b>Storage Temperature</b>	-4° - 176°F (-20° - 80°C)
<b>BAS-3050BC/3051BC</b>	3 W @ 24 VDC	<b>Storage Humidity</b>	0 - 95% RH non-condensing
<b>Communication</b>	Serial RS-485	<b>Enclosure</b>	ABS + PC
<b>Protocol</b>	BACnet MS/TP	<b>Wiring Terminations</b>	2 x plug-in terminal block (#16 - 24 AWG)
<b>Baud Rate</b>	1200-78K	<b>Mounting</b>	DIN/panel
<b>Universal Input</b>	supports 0 - 10V, 0 - 20 mA, 4 - 20 mA, RTD, Thermistor (3K, 10K), and digital input (dry contact)	<b>Dimensions</b>	4.7"H x 4.7"W x 1.7"D (120 x 120 x 44 mm)
<b>Analog Output</b>	supports 0 - 10V, 0 - 20 mA, and 4 - 20 mA	<b>Weight</b>	0.57 lbs (0.26 kg)
<b>Digital Output</b>	1A per channel, 10-35 VDC	<b>Approvals</b>	CE, RoHS
<b>PWM Output</b>	PWM period: 2 ms-3600 sec; Pulse Width: 0.2 ms minimum	<b>Warranty</b>	2 years

13

NETWORK & WIRELESS

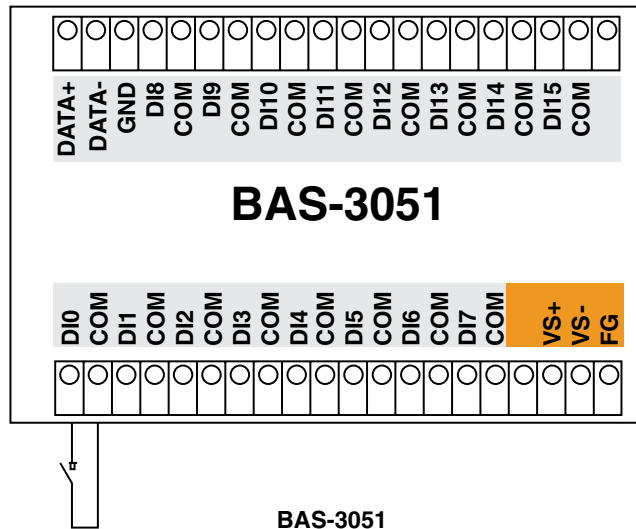
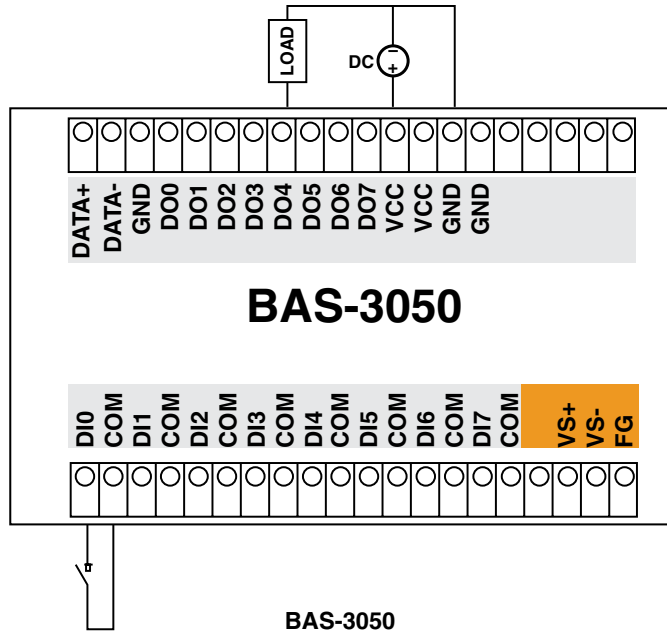
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# NETWORK & WIRELESS

## BACNET REMOTE I/O MODULES *BAS-3000BC SERIES*

### WIRING



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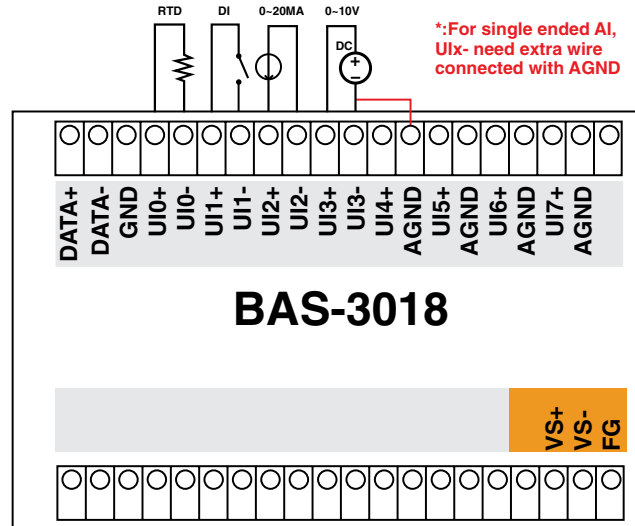
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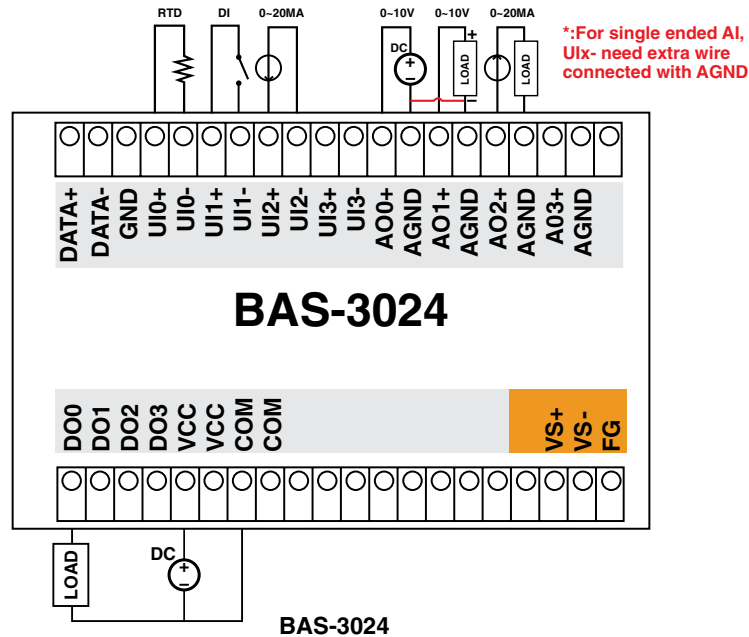
March 2014



### WIRING



**BAS-3018**



**BAS-3024**

### ORDERING INFORMATION

#### MODEL

**BAS-3018BC-AE**

**BAS-3024BC-AE**

**BAS-3050BC-AE**

**BAS-3051BC-AE**

#### DESCRIPTION

8-ch UI BACNet MS/TP Remote I/O Module

4-ch UI, 4-ch DO, 4-ch AO BACNet MS/TP Remote I/O module

8-ch DI, 8-ch DO BACNet MS/TP Remote I/O Module

16-ch DI BACNet MS/TP Remote I/O Module

# NETWORK & WIRELESS

## REMOTE WEB-BASED MONITORING SYSTEM FGD WEB SERIES

### 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.

### 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*
- *Includes Software*

**SENSAPHONE®**  
REMOTE MONITORING SOLUTIONS



FGD-W600



13

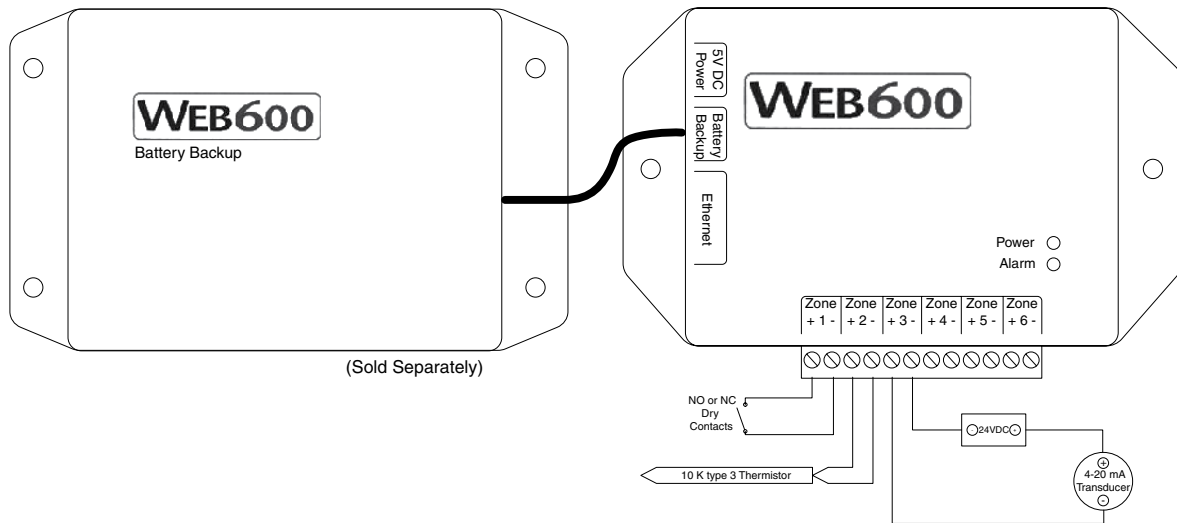
NETWORK & WIRELESS

### SPECIFICATIONS

<b>Supply Voltage</b>	120 VAC/5 VDC 50/60Hz (plug-in transformer with 6' cord included)	<b>Data Logging</b>	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)
<b>Supply Current</b>	6W	<b>Additional Specifications</b>	Optional Battery Backup Module (FGD-W610) Provides 2 hours of backup (rechargeable)
<b>Communication</b>	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	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Communication Ports</b>	Ethernet 10/100Base-T	<b>Operating Humidity</b>	0-90% RH, (non-condensing)
<b>Inputs</b>	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)	<b>Dimensions</b>	3.25"H x 5.5"W x 1.25"D (8.3 x 14 x 3.2 cm)
<b>Input Impedance</b>	250 Ω	<b>Weight</b>	
<b>Supported Protocols</b>	Modbus TCP	<b>FGD-W600</b>	0.5 lb (0.23 kg)
<b>Signal LEDs</b>	Alarm status LED Power status LED Ethernet link and activity LEDs	<b>FGD-W610</b>	1 lb (0.45 kg)
		<b>Approvals</b>	FCC Part 15-B compliant
		<b>RoHS Statement</b>	Yes
		<b>Warranty</b>	1 year



### 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)

13

NETWORK & WIRELESS

### 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	529
KTR3 10k Type 3 wall sensor	1170



# NETWORK & WIRELESS

## 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, refrigerant 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.



DL-125-C



### FEATURES

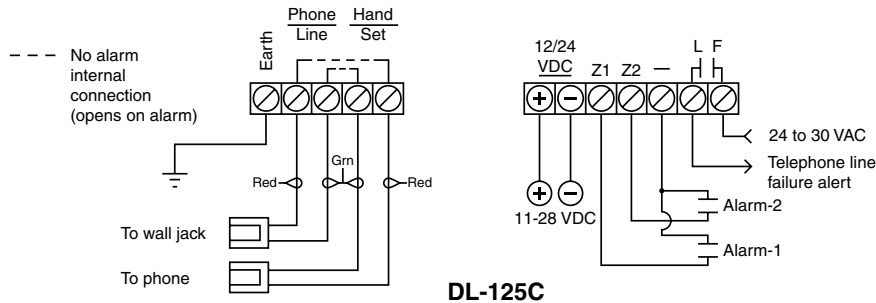
- **Normally-open or normally-closed dual contact input**
- **Screw terminal strip connection**
- **20 seconds of digitally stored voice**
- **Site monitor microphone**
- **Line seizure capability**
- **Compact design**
- **Keypad interface**
- **Phone line failure output**

### SPECIFICATIONS

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



### WIRING



### 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**  
**DL-125C**

**DESCRIPTION**  
Auto dialer for remote alarm voice indication

## 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).

### 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*



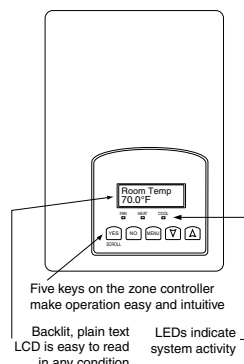
**KTEC2664Z Rooftop Controller**



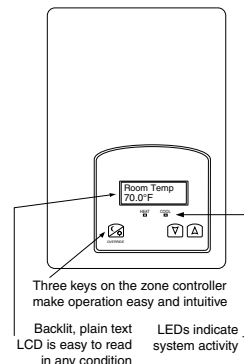
**KTEC2647Z Zone Controller**



### CONTROL LAYOUT



**KTEC2664Z Rooftop Controller**



**KTEC2647Z Zone Controller**

See installation instructions for wiring diagrams

### SPECIFICATIONS

<b>Supply Voltage</b>	19 to 30 VAC, 50/60 Hz	<b>Setpoint Range</b>	Heating 40° to 90°F (4.5° to 32°C) Cooling 54° to 100°F (12° to 37.5°C)
<b>Supply Current</b>	2 VA @ 24 VAC	<b>Deadband</b>	2°F (1°C)
<b>Analog Input</b>		<b>Number of Zones</b>	31 zones maximum per 1 rooftop controller
<b>KTEC2647Z</b>	Resistive inputs (RS and UI3) for 10KΩ Type II thermistor	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>KTEC2664Z</b>	Resistive inputs (RS, OS, and DS) for 10KΩ Type II thermistor	<b>Display</b>	-40° to 122°F (-40° to 50°C) in 0.5° increments
<b>Analog Output</b>	0 to 10 VDC into 2kΩ resistance load (minimum)	<b>Operating Humidity</b>	0 to 95% RH (non-condensing)
<b>Digital Inputs</b>		<b>Dimensions</b>	4.9"H x 3.4"W x 1.1"D (12.5 x 8.6 x 2.9 cm)
<b>KTEC2647Z</b>	Dry contacts across terminal scom to terminals BI1 and BI2	<b>Weight</b>	0.75 lb (0.34 kg)
<b>KTEC2664Z</b>	Dry contact across terminal scom to terminal BI1	<b>Approvals</b>	
<b>Auxiliary Contacts</b>	Triac output 19 to 30 VAC, 15 mA to 1 A continuous current, 3A peak in-rush current	<b>United States</b>	UL Listed, CCN XAPX, Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to CFR 47, Part 15, Subpart B, Class A, RoHS
<b>Static Pressure</b>	0 to 5 VDC for full static pressure range selected	<b>Canada</b>	UL Listed, CCN XAPX7, Under CAN/CSA C22.2 No. 24
<b>Accuracy</b>	±0.9°F (±0.5°C) at 70°F (21°C)	<b>RoHS Statement</b>	Yes
<b>Sensor Type</b>	10k ohm NTC thermistor (Local)	<b>Warranty</b>	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. <ul style="list-style-type: none"> <li>If heating stages are part of RTU, install a jumper across RC &amp; RH.</li> <li>If heating stages are part of a separate equipment with a different power supply, feed external switched power leg through RH <b>without</b> installing a jumper across RC &amp; RH.</li> </ul>
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.

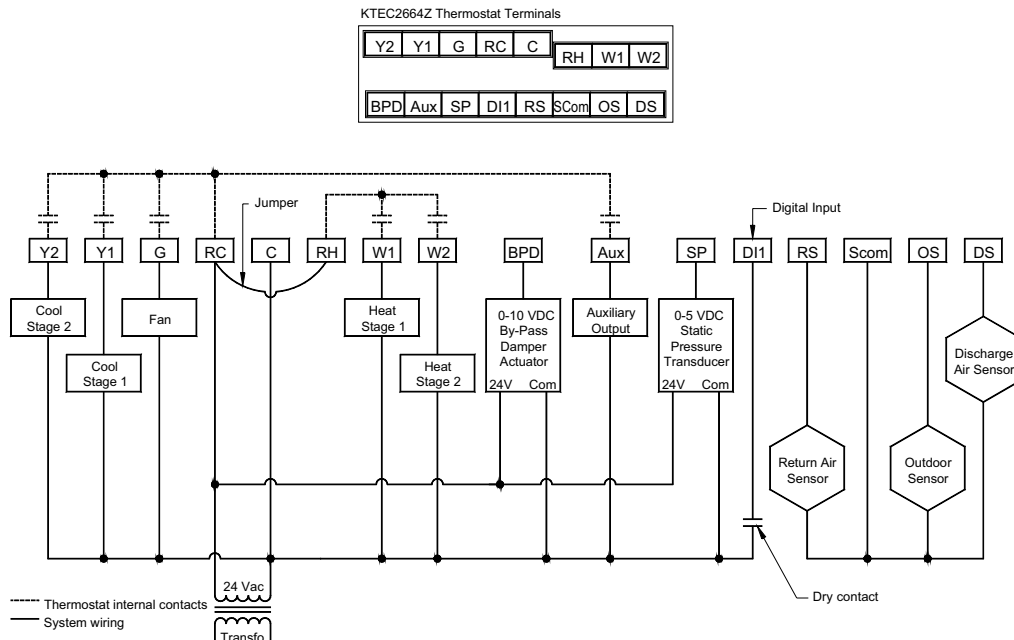
### BACnet Network Connections

BACnet Com	Com +	BACnet communication bus + connection.
BACnet Com	Com -	BACnet communication bus – connection.
Ref	Ref	Communication bus reference terminal. <ul style="list-style-type: none"> <li><b>DO NOT USE FOR OTHER THAN SERVICING ISSUES</b></li> <li><b>DO NOT WIRE SHIELD TO THAT POSITION</b></li> </ul>

13

NETWORK & WIRELESS

### WIRING - KTEC2664Z






# NETWORK & WIRELESS

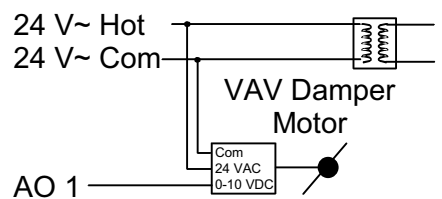
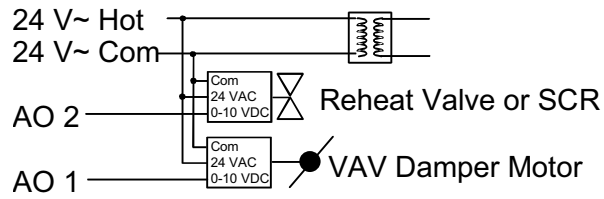
## KELE CONSTANT VOLUME ZONING SYSTEM KTEC ZONING SYSTEM

### TERMINAL IDENTIFICATION - KTEC2647Z

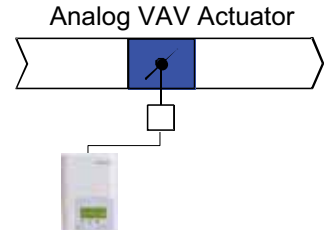
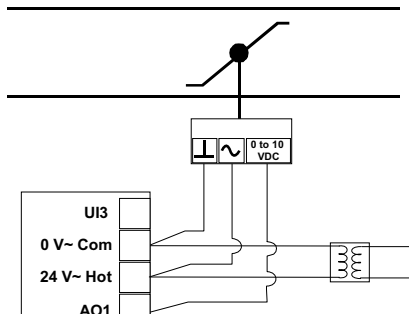
Terminal Use	Terminal Identification	Description
4 - 24 V ~ Hot	<b>24 V~ Hot</b>	Power supply of thermostat, hot side.
5 - 0 V ~ Com	<b>0 V~ Com</b>	Power supply of thermostat, common side. Also used as reference for the analog outputs when used.
6 - On/Off Rht	<b>BO 5</b> 	Local isolated triac reheat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

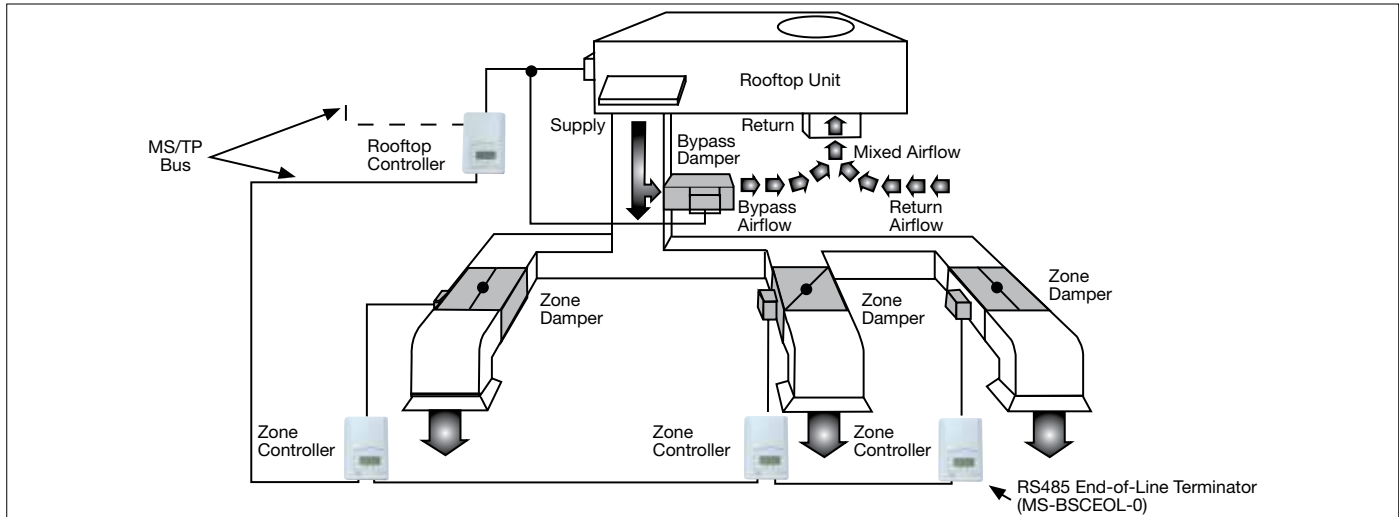
BACnet Network Connections		
BACnet Com	<b>Com +</b>	BACnet communication bus + connection.
BACnet Com	<b>Com -</b>	BACnet communication bus – connection.
Ref	<b>Ref</b>	Communication bus reference terminal. <ul style="list-style-type: none"><li>○ <b>DO NOT USE FOR OTHER THAN SERVICING ISSUES</b></li><li>○ <b>DO NOT WIRE SHIELD TO THAT POSITION</b></li></ul>

### WIRING - KTEC2647Z

VAV Damper Wiring	VAV Damper and Analog Reheat Wiring
	

### APPLICATION - KTEC2647Z



Schematic	Wiring	Settings
<b>Pressure dependent VAV cooling only system</b>		
 <p>Room Temperature Control Minimum &amp; Maximum Position Adjusted at Thermostat</p>		<b>Mandatory</b> <ul style="list-style-type: none"><li>• RehtConf = 0 None</li></ul>



### 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](http://www.Kele.com) for complete wiring and setup details.

\* See installation instructions for wiring diagrams

KTEC2664Z ROOFTOP CONTROLLER CONFIGURATION	KTEC2647Z ZONE CONTROLLER CONFIGURATION
 <p>Parameters that must be configured locally at start of initial commissioning...</p> <p><b>RTC Mac</b></p> <ul style="list-style-type: none"> <li>• RTC network address</li> <li>• Default - 4</li> <li>• Address must be unique on the network</li> <li>• Valid range - 4 to 127</li> </ul> <p><b>RTC Baud Rate</b></p> <ul style="list-style-type: none"> <li>• One controller per bus</li> <li>• Default - Auto</li> <li>• Sets the network baud rate, 38400 recommended</li> <li>• Baud rates - 9600, 19200, 38400, 76800, Auto</li> </ul>	 <p>Parameters that must be configured locally at start of initial commissioning...</p> <p><b>ZONE Mac</b></p> <ul style="list-style-type: none"> <li>• ZONE network address</li> <li>• Default - 255</li> <li>• Address must be unique on the network</li> <li>• Valid range - 1 to 127</li> </ul> <p><b>RTC MAC</b></p> <ul style="list-style-type: none"> <li>• Network address must be specified to RTC</li> <li>• Default - 4</li> <li>• Rooftop controller to which this zone controller is tied</li> <li>• Valid range - 1 to 127</li> </ul>

### 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	PAGE
M230-005PD-V5	Differential pressure transducer, 0-5" WC, 0-5 VDC	1041
MS-BACEOL-0	EOL BACnet R485 terminator	
ST-D24	10K Type 2 duct temperature themistor	1197



# NETWORK & WIRELESS

## FLEXIBLE BACNET THERMOSTAT FLEXSTAT

### 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



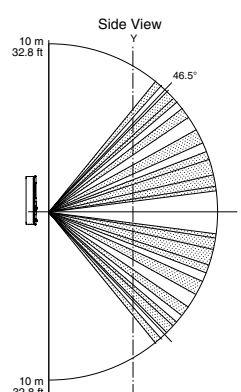
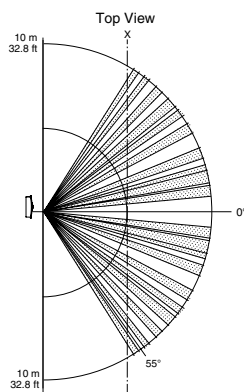
- *Integral temperature and optional humidity and/or motion sensors*
- *Multiple models available*
- *72-hour power (capacitor) backup and a real time clock for network time synchronization or full stand alone operation*

### 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





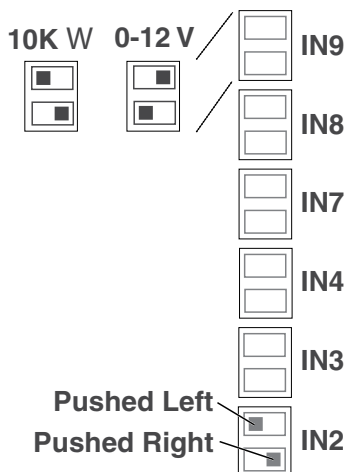
### APPLICATIONS

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

#### Input Pull-Up Switches



#### EOL Switches



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

Inputs		Outputs	
	IN9		Analog 9
	IN8		GND 7-9
(Wiring is dependent on application)	GND		Analog 8
	IN7		Analog 7
MS/TP Network	+B		Relay 6
	-A		SC 4-6
Inputs	IN4		Relay 5
	IN3		Relay 4
	GND		Relay 3
	IN2		SC 1-3
24 VAC	Common/-/C		Relay 2
	Phase/~R		Relay 1

Inputs		Outputs	
	IN9		Analog 9
	IN8		GND 7-9
	GND		Analog 8
	IN7		Analog 7
MS/TP Network	+B		Analog 6
	-A		GND 4-6
Inputs	IN4		Analog 5
	IN3		Analog 4
	GND		Relay 3
	IN2		SC 1-3
24 VAC	Common/-/C		Relay 2
	Phase/~R		Relay 1

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

NOTE: SC = Switched (Relay) Common

Inputs		Outputs	
	IN9		Analog 9
	IN8		GND 7-9
(Wiring is dependent on application)	GND		Analog 8
	IN7		Analog 7
MS/TP Network	+B		Analog 6
	-A		GND 4-6
Inputs	IN4		Analog 5
	IN3		Analog 4
	GND		Relay 3
	IN2		SC 1-3
24 VAC	Common/-/C		Relay 2
	Phase/~R		Relay 1

### ORDERING INFORMATION

MODEL	DESCRIPTION
BAC-120036C	3 relays and 6 analog outputs almond
BAC-120063C	6 relays and 3 analog outputs 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

# NETWORK & WIRELESS

## 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.

### 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**



AIC900E-K



### ANTENNA SELECTION CHARTS

#### Range vs. Antenna Used in System Design

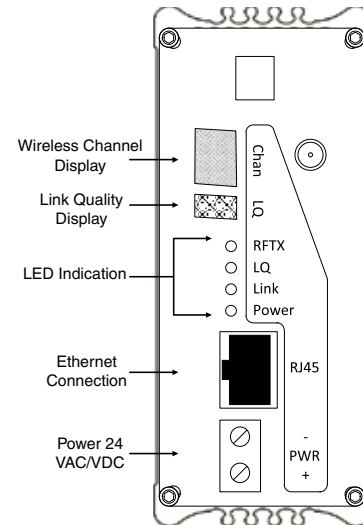
Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet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



13

NETWORK & WIRELESS

### SPECIFICATIONS

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



# NETWORK & WIRELESS

## 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

13

NETWORK & WIRELESS

### ORDERING INFORMATION

**MODEL**  
**AIC900E-K**  
**AIC900-E-51**

**DESCRIPTION**  
Wireless Ethernet transceiver 900 MHz (Antenna not included)  
AIC900-E, CC3 cable, WPENCL100808 NEMA 4X enclosure, 3dB low profile antenna

**3DB BASE**  
**3DB LOW PROFILE**  
**6DB BASE**  
**AIC10.5P**  
**AIC11AW**  
**AIC12.5P**  
**AIC15AW**  
**CC1**  
**CC2**  
**CC3**  
**COAX SURGE**  
**LMR600-15**  
**LMR600-30**  
**POLE CLAMP**  
**RD3DB**  
**RD5DB**  
**WPENCL100804**

#### ACCESSORIES

3dB Base Station, Omni-Directional Antenna  
3dB Low Profile Omni-Directional Antenna  
6dB Base Station, Omni-Directional Antenna  
10.5dBi Panel Antenna  
9dB Yagi Antenna  
12.5dBi Panel Antenna  
13dB Yagi Antenna  
Custom cable, RPSMA – N-female bulkhead  
Custom cable, N-male to N-male, 6' (LMR195)  
Custom cable, N-male to N-male, 6' (LMR195)  
Coax surge suppressor, in-line  
LMR600 Cable, 15' with N-male connectors  
LMR600 Cable, 30' with N-male connectors  
Pole clamp assembly (for 3db and 6db base antenna)  
3 dBi Rubber Duck Style Antenna  
5 dBi Rubber Duck Style Antenna  
10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid

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# NETWORK & WIRELESS

## 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**



WBT900-K



WBT900-IP-K



### ANTENNA SELECTION CHARTS

#### Range vs. Antenna Used in System Design

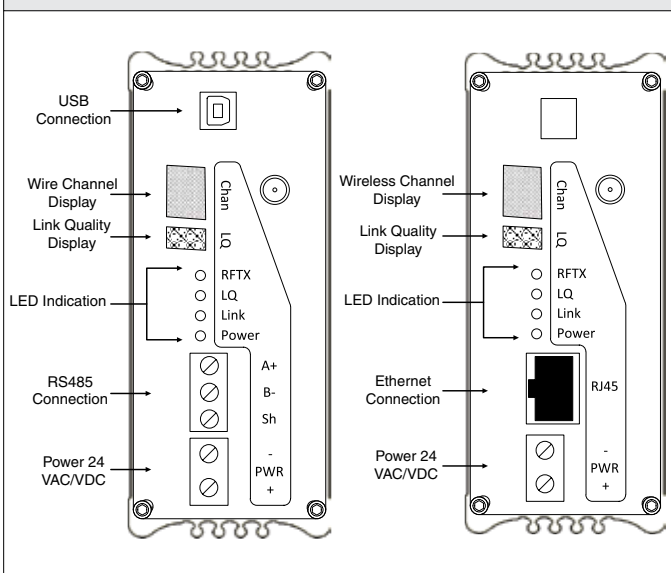
Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet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



13

NETWORK & WIRELESS

### SPECIFICATIONS

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



# NETWORK & WIRELESS

## 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



**CC3 (Custom Cable 3)**  
Length: 1 ft

Used when connecting antenna  
directly to transceiver



**LMR600-15**  
Length: 15 ft

Must be used with CC1



**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

**WBT900-K**  
**WBT900-51**  
**WBT900-IP-K**  
**WBT900-IP-51**

#### DESCRIPTION

Wireless BACnet MSTP Transceiver 900m MHz (Antenna not included)  
WBT900, CC 3 cable, WPENCL100808 NEMA 4X enclosure, 3DB LOW PROFILE antenna  
Wireless BACnet IP Transceiver 900 MHz (Antenna not included)  
WBT900-IP, CC 3 cable, WPENCL100808 NEMA 4X enclosure, 3DB LOW PROFILE antenna

#### ACCESSORIES

**3DB BASE**  
**3DB LOW PROFILE**  
**6DB BASE**  
**AIC10.5P**  
**AIC11AW**  
**AIC12.5P**  
**AIC15AW**  
**CC1**  
**CC2**  
**CC3**  
**COAX SURGE**  
**LMR600-15**  
**LMR600-30**  
**POLE CLAMP**  
**RD3DB**  
**RD5DB**  
**WPENCL100804**

3dB Base Station, Omni-Directional Antenna  
3dB Low Profile Omni-Directional Antenna  
6dB Base Station, Omni-Directional Antenna  
10.5dBi Panel Antenna  
9dB Yagi Antenna  
12.5dBi Panel Antenna  
13dB Yagi Antenna  
Custom cable, RPSMA – N-female bulkhead  
Custom cable, N-male to N-male, 6' (LMR195)  
Custom cable, N-male to N-male, 6' (LMR195)  
Coax surge suppressor, in-line  
LMR600 Cable, 15' with N-male connectors  
LMR600 Cable, 30' with N-male connectors  
Pole clamp assembly (for 3db and 6db base antenna)  
3 dBi Rubber Duck Style Antenna  
5 dBi Rubber Duck Style Antenna  
10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid

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WLT900-K



### 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

- **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**

### ANTENNA SELECTION CHARTS

#### Range vs. Antenna Used in System Design

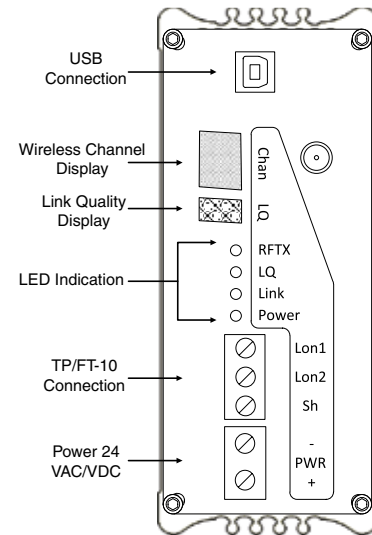
Antenna	Maximum Line-of-Sight*	Maximum Non-Line-of-Sight*
RD3DB	.25 mile	5 walls/300 feet
RD5DB	.5 mile	6 walls/500 feet
3dB Low Profile	.5 mile	6 walls/500 feet
3dB Base	5 miles	1500 feet w/ trees
6dB Base	20 miles	2000 feet w/ trees
6dB Yagi**	20 miles	1500 feet w/ trees
AIC10.5P	2 miles	1200 feet 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 WLT900 model

This information is based on limited testing and is to be used as a guide in antenna selection.

### WIRING



13

NETWORK & WIRELESS

### SPECIFICATIONS

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



# NETWORK & WIRELESS

## AIC WIRELESS LONWORKS TRANSCEIVER WLT900

### CABLES



**CC1 (Custom Cable 1)**  
Length: 1 ft

Use when connecting to another listed cable



**CC3 (Custom Cable 3)**  
Length: 1 ft

Used when connecting antenna directly to transceiver



**LMR600-15**  
Length: 15 ft

Must be used with CC1



**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**  
**WLT900-K**  
**WLT900-51**

**DESCRIPTION**  
Wireless LonWorks Transceiver 900 MHz (Antenna not included)  
WLT900-K, CC3 cable, WPENCL100808 NEMA 4X enclosure, 3dB low profile antenna

**3DB BASE**  
**3DB LOW PROFILE**  
**6DB BASE**  
**AIC10.5P**  
**AIC11AW**  
**AIC12.5P**  
**AIC15AW**  
**CC1**  
**CC2**  
**CC3**  
**COAX SURGE**  
**LMR600-15**  
**LMR600-30**  
**POLE CLAMP**  
**RD3DB**  
**RD5DB**  
**WPENCL100804**

#### ACCESSORIES

3dB Base Station, Omni-Directional Antenna  
3dB Low Profile Omni-Directional Antenna  
6dB Base Station, Omni-Directional Antenna  
10.5dBi Panel Antenna  
9dB Yagi Antenna  
12.5dBi Panel Antenna  
13dB Yagi Antenna  
Custom cable, RPSMA – N-female bulkhead  
Custom cable, N-male to N-male, 6' (LMR195)  
Custom cable, N-male to N-male, 6' (LMR195)  
Coax surge suppressor, in-line  
LMR600 Cable, 15' with N-male connectors  
LMR600 Cable, 30' with N-male connectors  
Pole clamp assembly (for 3db and 6db base antenna)  
3 dBi Rubber Duck Style Antenna  
5 dBi Rubber Duck Style Antenna  
10X8X4 NEMA 4X, Weatherproof enclosure with hinged clear lid

**PAGE**  
**765**  
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### 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**



# NETWORK & WIRELESS

## 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.

### 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

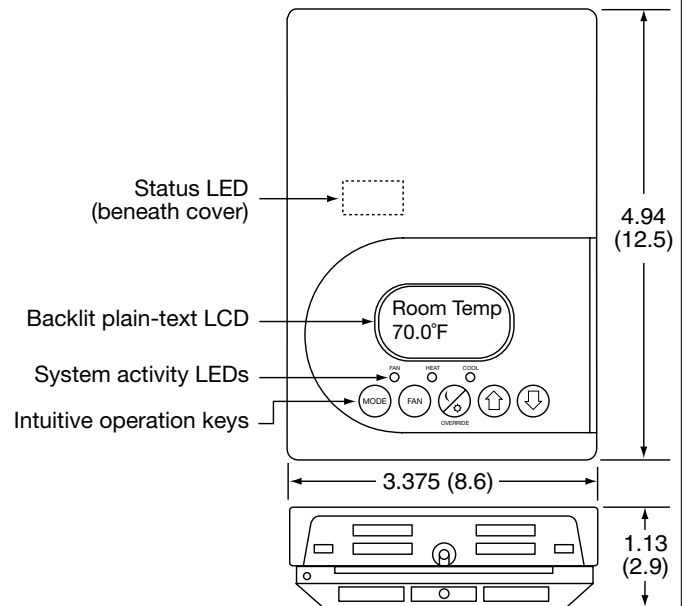
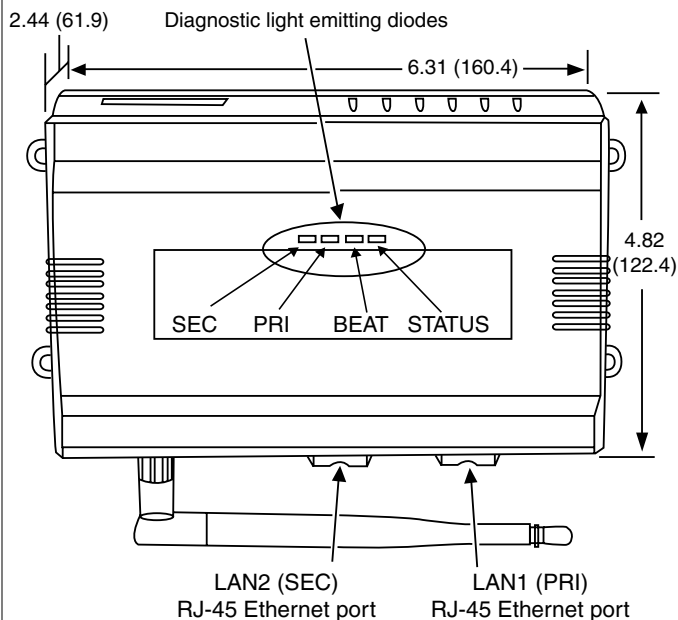
<b>Supply Voltage</b>			
<b>Coordinator</b>	15 VDC		
<b>Thermostats</b>	19 to 30 VAC, 50/60 Hz		
<b>Supply Current</b>			
	2 VA		
<b>Supply Watts</b>			
	15 W maximum (coordinator)		
<b>Coordinator</b>			
<b>Operating System</b>	NiagaraAX		
<b>Platform</b>	IBM® PowerPC 405EP 250 MHz Processor 64 MB SDRAM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



### SPECIFICATIONS (CONTINUED)

<b>Setpoint Range</b>	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	<b>Approvals</b>	
<b>Transmission Power</b>	10 mW Maximum	<b>Coordinator</b>	UL916, C-UL listed to Canadian Standards Association, (CSA) C22.2 No. 205-m1983 "Signal Equipment", CE, FCC part 15 Class A, C-Tick, 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
<b>Range</b>	Through walls 30 ft (10 m) Line-of-sight 100 ft (30 m) Open space	<b>Thermostat</b>	
<b>Deadband</b>	2°F (1°C) between heating and cooling		
<b>Number of Zones</b>	30 Maximum		
<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)		
<b>Display</b>	-40° to 122°F (-40° to 50°C)		
<b>Operating Humidity</b>	95% RH maximum (non-condensing)		
<b>Weight</b>		<b>RoHS Statement</b>	Yes
<b>Coordinator</b>	1.10 lb (0.49 kg)	<b>Warranty</b>	1 year
<b>Thermostat</b>	0.75 lb (0.34 kg)		

### 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

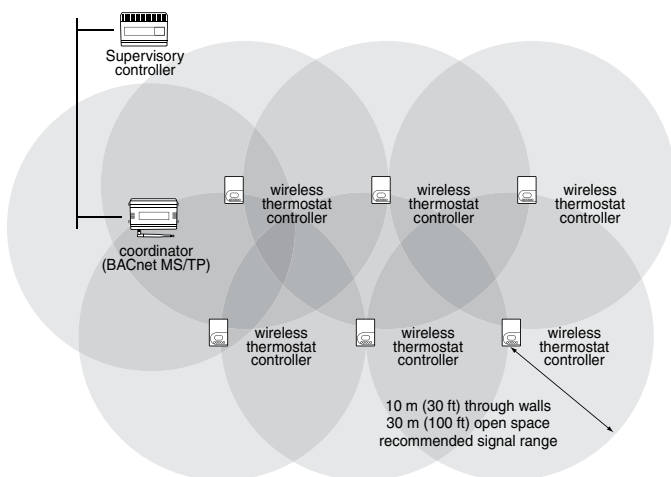


Figure 1

### 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

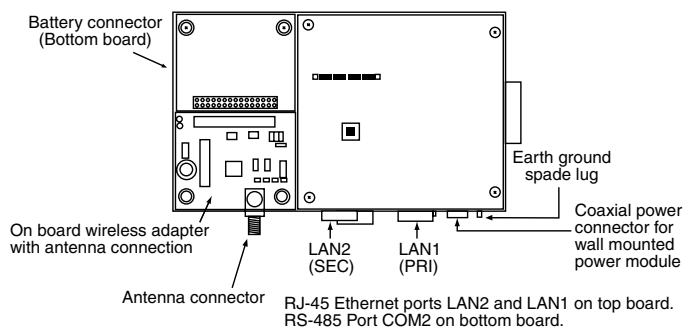
A VWG-40 Coordinator provides a wireless interface between a supervisory controller and the Viconics Wireless Thermostat Controllers, allowing the exchange of BACnet IP (VWG-40-IP-1000 model) or BACnet MS/TP (VWG-40-MSTP-1000 model) messages. The VWG-40 Coordinator initiates the formation of the wireless 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.

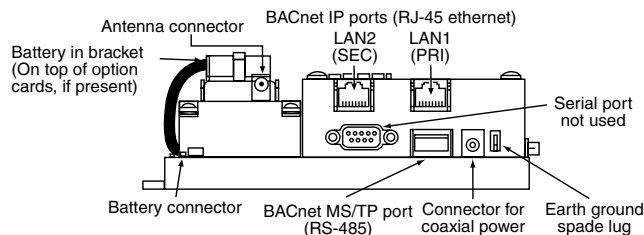
Together, these components provide wireless monitoring and temperature control of building Heating, Ventilating, and Air Conditioning (HVAC) equipment. Figure 1 illustrates a simple Viconics Wireless Thermostat Controller System using a BACnet MS/TP Version of the VWG-40 Coordinator

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

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



# NETWORK & WIRELESS

## SONNET WIRELESS NETWORK RECEIVER RF-RXS WIRELESS NETWORK RECEIVER

### DESCRIPTION

The RF-RXS Wireless Network Receivers allow quick and seamless integration with Tridium's range of JACE controllers, with all supported building automation system protocols, such as BACnet, LonTalk and ModBus. The integral web interface allows an engineer to not only gather measurement data from SonNet wireless devices but perform radio network management services such as auto-commissioning of SonNet wireless devices and setting device configuration parameters.

### FEATURES

- DIN rail mounted housing
- Serial connection to COM1 or COM2 of JACE

### SPECIFICATIONS

Power Supply	24 VAC/VDC, 50/60 Hz
Radio Output	Frequency 2.4 GHz, 16 channels, direct-sequence spread spectrum + 10 dBm
Power Output	+ 10 dBm
Aerial Characteristics	Gain 3.0 dBi, VSWR < 2:1
Data Encryption	AES 128
Serial Communications	USB 2.0, serial 9-pin RS-232
Operating Temperature	-14° to 122°F (10° to 50°C)
Operating Humidity	0-90% RH non-condensing
Dimensions	3.94"H x 2.76"W x 2.28"D (10.0 x 7.0 x 5.8 cm)
Weight	0.84 lbs (0.38 kg)
Warranty	3 years



RF-RXS



### ORDERING INFORMATION

MODEL	DESCRIPTION
RF-RXS	Serial receiver for Niagara, supports CMS/USB
RF-RXS-N	Option card for Tridium Jace, with JAR file

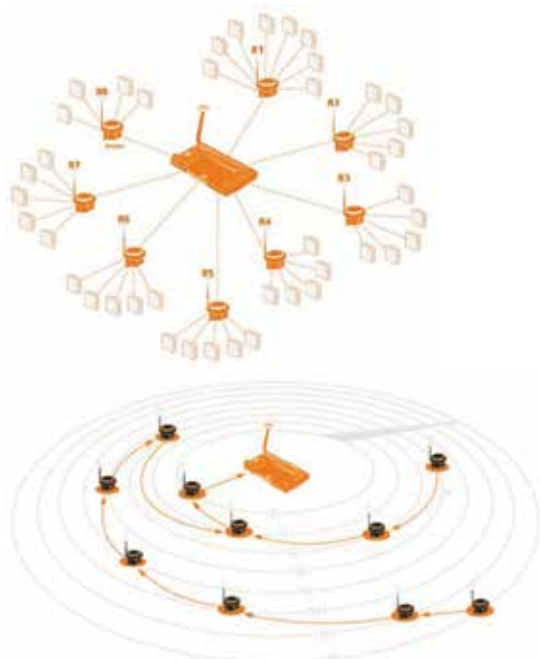
## SONNET WIRELESS RECEIVERS

### RF-RX SERIES

#### SonNet Wireless System Deployment

A SonNet Wireless system is comprised of a receiver, battery powered sensors and permanently powered routers.

Routers, though permanently powered, can also have sensing elements, accomplishing both router and sensors functions. Routers and sensors can either communicate directly with the receiver or via other routers. Routers are required to be permanently powered as they need to stay "awake" at all times to allow signals from "child" nodes to be instantly forwarded to their "parent" nodes. Battery powered sensors only "wake" for very short periods to send data.



In the schematic to the left, routers **R2 to R7** have 5 children each, all battery powered sensors. Their parent is the receiver. Router **R1** has 8 children and **R8** has 4 children, giving a total number of network devices of 51, including the receiver.

The receiver can support a **maximum** of 16 directly connected "child" devices, of which only 12 can be battery powered nodes, plus up to 4 routers.

Routers can support a **maximum** of 16 directly connected "child" devices, of which only 8 can be battery powered nodes, plus up to 8 routers.

There can be a maximum depth of 8 layers of routers in a network and a maximum of 50 nodes per network with the **RF-RX** series of receivers.

13

NETWORK & WIRELESS

NEW!

Note that battery powered devices can only route their signals to the receiver directly or through routers, and **not through other battery powered devices**.



### DESCRIPTION

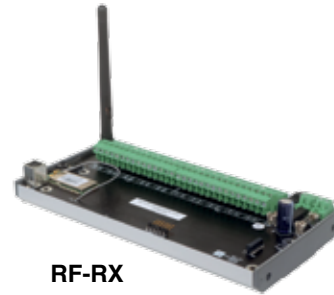
The RF-RX Series of SonNet Wireless Receivers collect data from all other devices on the wireless network, including measurements from sensors, link quality for all links formed in the network, battery levels for all battery powered devices, hours run for all devices and the current status of all devices.

Note: Each receiver can support a maximum of 16 'children', which can consist of a maximum of 12 battery powered nodes and 4 routers, or up to 16 routers if there are no battery powered nodes.

A USB socket is provided for connection to a PC or laptop running the Sontay SonNet CMS software.

### FEATURES

- **Proven 802.15.4 low power network**
- **Encrypted data transmission**
- **20 or 40 output models**
- **Short-circuit protected analogue outputs**
- **Overtoltage protected analogue outputs to +36V**
- **Self-healing tree topology**
- **Lower installation costs**
- **Easy to install and commission**



RF-RX

NEW!

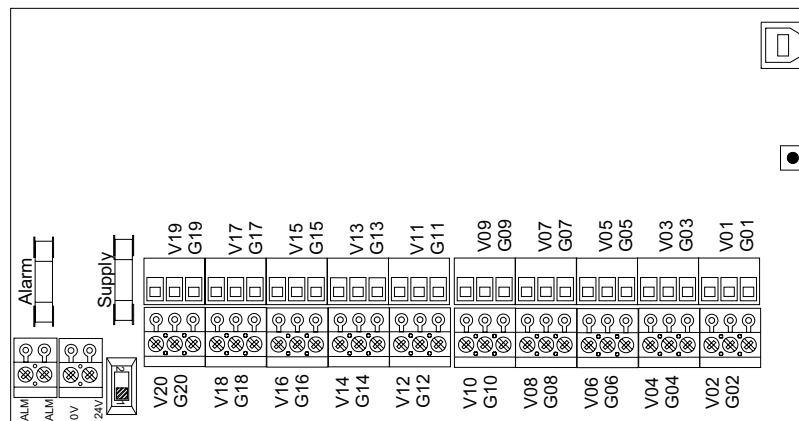


### SPECIFICATIONS

<b>Power Supply</b>	24 VAC / VDC
<b>Radio Output</b>	Frequency 2.4GHz, 16 channels, direct-sequence spread spectrum, Compliance IEEE 802.15.4-2006
<b>Range</b>	328 ft (100 m)
<b>Aerial Characteristics</b>	Gain 1.2dBi, VSWR 2:1
<b>Data Encryption</b>	AES 128
<b>Power Output</b>	+10dBm
<b>Analogue Outputs</b>	RF-RX20 20 x 0-10Vdc analogue outputs @10mA max. each, RF-RX40 40 x 0-10Vdc analogue outputs @10mA max. each
<b>Housing</b>	4.09"H x 8"W x 1.5" D, DIN-rail (104mm)H x (203mm)W x (38mm) D (excluding aerial)
<b>Operating Conitions</b>	14° to 122°F (-10° to 50°C) 0 to 90% RH non-condensing
<b>Weight</b>	1.21 lb (0.55kg)
<b>Warranty</b>	3 years

### WIRING

RF-RX20 Wiring Terminals



Terminal Assignments:

- G = Common 0V
- V = 0-10Vdc output

Example: Output 2, G02 = 0V, V02 = 0-10Vdc

### ORDERING INFORMATION

**MODEL**  
**RF-RX20**  
**RF-RX40**

**DESCRIPTION**  
Receiver with 20 x 0-10VDC outputs  
Receiver with 40 x 0-10VDC outputs

**RF-AERIAL-PM2**  
**RF-AERIAL-PM5**

**ACCESSORIES**  
Aerial extension with bulk head fitting, 2M  
Aerial extension with bulk head fitting, 5M

13

NETWORK & WIRELESS

NEW!

## SONNET WIRELESS ROUTER-SENSORS RF-RR SERIES

### DESCRIPTION

The RF-RR Series of SonNet Wireless Routers-Sensors are used in conjunction with the SonNet RF-RX20 or RF-RX40 receiver units, and RF-RS series of battery powered wireless sensors, and are used to route signals from battery powered nodes and other routers to the receiver module, where the signal strength of a direct path is not sufficient for reliable communications.

Note: Each router can support a maximum of 16 'children', which can consist of a maximum of 8 battery powered nodes and 8 routers, or up to 16 routers if there are no battery powered nodes. Consideration should be given to network planning for redundancy in case of router failure or damage. Routers automatically find the best path back to the receiver, which may be directly to the receiver or via other 'parent' routers.

### FEATURES

- **Proven 802.15.4 low power network**
- **Complete range of sensor types**
- **Allows networks to be expanded**
- **Self-healing tree topology**
- **Lower installation costs**
- **Easy to install and commission**

**NEW!**



**Plant Housing  
Router-Sensor**



**Space Housing  
Router-Sensor**



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC / VDC
<b>Transmission Power</b>	+10 dBm
<b>Baud Rate</b>	250Kbps
<b>Transmit Frequency</b>	2.4 GHz
<b>Beam Pattern</b>	Isotropic
<b>Range</b>	328 ft (100 m)
<b>Communication</b>	SonNet
<b>Channels</b>	16
<b>Sensor Accuracy</b>	Temperature: $\pm 0.3^{\circ}\text{C}$ , RH $\pm 3\%$ , CO <sub>2</sub> : $\pm 75$ ppm
<b>Operating Temperature</b>	-4° to 158°F (-20° to 70°C)
<b>Operating Humidity</b>	90% RH non-condensing
<b>Wiring Terminations</b>	22 AWG

<b>Dimensions</b>	
<b>Space Housing</b>	4.53"H x 3.35"W x 1.10"D (115 x 85 x 28 mm)
<b>Plant Housing</b>	4.57"H x 4.17"W x 2.05"D (116 x 106 x 52 mm)
<b>Approvals</b>	CE, FCC
<b>Weight</b>	
<b>RF-RR-R-6xx</b>	0.79 lb (0.36 kg)
<b>RF-RR-T-3xx</b>	0.46 lb (0.21 kg)
<b>RF-RR-T-5xx</b>	0.55 lb (0.25 kg)
<b>RF-RR-1000/CO2/RH</b>	0.26 lb (0.12 kg)
<b>Warranty</b>	3 years

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>RF-RR-R-622</b>	Duct humidity and temperature sensor/router, 24 VAC
<b>RF-RR-R-631</b>	Wall humidity and temperature sensor/router, 24 VAC
<b>RF-RR-R-632</b>	Outside humidity and temperature sensor/router, 24 VAC
<b>RF-RR-T-322</b>	Duct temperature sensor/router, 150 MM probe, 24 VAC
<b>RF-RR-T-331</b>	Outside air temperature sensor/router, 24 VAC
<b>RF-RR-T-332</b>	Outside air temperature sensor/router, with rad. Shield, 24 VAC
<b>RF-RR-T-341</b>	Immersion temperature sensor/router, 150 MM probe, 24 VAC
<b>RF-RR-T-351</b>	Clamp-on temperature sensor/router, 24 VAC
<b>RF-RR-T-555-2</b>	Flying lead temperature sensor/router, 2M, 24 VAC
<b>RF-RR-T-555-5</b>	Flying lead temperature sensor/router, 5M, 24 VAC
<b>RF-RR-1000</b>	Room temperature sensor/router, 24VAC
<b>RF-RR-1000-MS</b>	Room temperature sensor/router, 24VAC, override button
<b>RF-RR-1000-SP</b>	Room temperature sensor/router, 24VAC, set point
<b>RF-RR-1000-MS-SP</b>	Room temperature sensor/router, 24VAC, override button, set point
<b>RF-RR-RH-1000</b>	Room humidity/temperature sensor/router, 24VAC
<b>RF-RR-RH-1000-MS</b>	Room humidity/temperature sensor/router, 24VAC, override button
<b>RF-RR-RH-1000-SP</b>	Room humidity/temperature sensor/router, 24VAC, set point
<b>RF-RR-RH-1000-MS-SP</b>	Room humidity/temperature sensor/router, 24VAC, override button, set point
<b>RF-RR-CO2-1000</b>	Room CO2 sensor/router, 24VAC
<b>RF-RR-CO2-RH-1000</b>	Room CO2/humidity/temperature sensor/router, 24VAC

### RELATED PRODUCTS

<b>RF-RX20</b>	Receiver with 20 x 0-10VDC outputs
<b>RF-RX40</b>	Receiver with 40 x 0-10VDC outputs

<b>PAGE</b>
<b>771</b>
<b>771</b>

## SONNET WIRELESS TEMPERATURE, HUMIDITY AND CO<sub>2</sub> SENSORS RF-RS SERIES



### DESCRIPTION

The RF-RS Series of SonNet Wireless Temperature and Humidity, CO<sub>2</sub> Sensors are used in conjunction with the SonNet RF-RX20 or RF-RX40 receiver units, and if required (depending on installation topography), SonNet RF-RR series of routers. Data is transmitted back to the receiver at configurable time intervals, or on a configurable change in measured value. Each sensor retains these configurations if the battery becomes discharged or requires replacement. The sensors automatically find the best path back to the receiver, which may be directly to the receiver or via 'parent' routers.

### FEATURES

- Up to 5 years battery life
- Encrypted data transmission
- Configurable parameters
- Self-healing tree topology
- Lower installation costs
- Easy to install and commission

NEW!



Plant Housing  
Sensor



Space Housing  
Sensor



### SPECIFICATIONS

<b>Radio Output</b>	Frequency 2.4GHz, 16 channels, direct-sequencespread spectrum, Compliance IEEE 802.15.4-2006	<b>Operating Temperature</b>	14° to 122°F (-10° to 50°C)
<b>Range</b>	328 ft (100 m)	<b>Operating Humidity</b>	0-90% RH non-condensing
<b>Aerial Characteristics</b>	Space Gain 1.2dBi, VSWR 1.5:1, Plant Gain 2.0dBi, VSWR 2:1	<b>Dimensions</b>	
<b>Data Encryption</b>	AES 128	<b>Space Housing</b>	4.53"H x 3.35"W x 1.10"D (115 x 85 x 28 mm)
<b>Power Output</b>	+10 dBm	<b>Plant Housing</b>	4.57"H x 4.17"W x 2.05"D (116 x 106 x 52 mm)
<b>Accuracy</b>	Temperature ±0.3°C, RH ±3% RH, CO <sub>2</sub> ±75ppm	<b>Weight</b>	
<b>Battery Type</b>	Space 3.6V AA 2.4Ah Li-SOCl <sub>2</sub> , non-rechargeable, Plant 3.6V 2.1Ah 2/3 A Li-SOCl <sub>2</sub> , non-rechargeable	<b>RF-RS-R-6xx</b>	0.79 lb (0.36 kg)
<b>Battery Life</b>	>3 years (depending on configuration)	<b>RF-RS-T-3xx</b>	0.46 lb (0.21 kg)
<b>Plant Sensor Types</b>	Duct, outside air, outside air with solar radiation shield, immersion, strap-on and flying lead	<b>RF-RS-T-5xx</b>	0.55 lb (0.25 kg)
		<b>RF-RS-1000/CO<sub>2</sub>/RH</b>	0.26 lb (0.12 kg)
		<b>Approval</b>	CE, FCC
		<b>Warranty</b>	3 years

### ORDERING INFORMATION

MODEL	DESCRIPTION
RF-RS-R-622	Duct humidity and temperature sensor
RF-RS-R-631	Wall humidity and temperature sensor
RF-RS-R-632	Outside humidity temperature sensor
RF-RS-T-322	Duct temperature sensor, 150MM probe
RF-RS-T-331	Outside air temperature sensor
RF-RS-T-332	Outside air temperature sensor with rad. Shield
RF-RS-T-341	Immersion temperature sensor, 150MM probe
RF-RS-T-351	Clamp-on temperature sensor
RF-RS-T-555-2	Flying lead temperature sensor, 2M
RF-RS-T-555-5	Flying lead temperature sensor, 5M
RF-RS-1000	Room temperature sensor, end device, with battery
RF-RS-1000-MS	Room temperature sensor, end device, with battery, override button
RF-RS-1000-SP	Room temperature sensor, end device, with battery, set point
RF-RS-1000-MS-SP	Room temperature sensor, end device, with battery, override button and set point
RF-RS-RH-1000	Room humidity temperature sensor, end device, with battery
RF-RS-RH-1000-SP	Room humidity temperature sensor, end device, with battery, set point
RF-RS-RH-1000-MS	Room humidity temperature sensor, end device, with battery, override button
RF-RS-RH-1000-MS-SP	Room humidity temperature sensor, end device, with battery, override button and set point
RF-RS-CO <sub>2</sub> -1000	Room CO <sub>2</sub> sensor, end device, with battery
RF-RS-CO <sub>2</sub> -RH-1000	Room CO <sub>2</sub> /Humidity temperature sensor, end device, with battery

### ACCESSORIES

RF-RP	Battery for plant sensors
RF-RS	Battery for space sensors

13

NETWORK & WIRELESS

NEW!

# NETWORK & WIRELESS

## 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.



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**

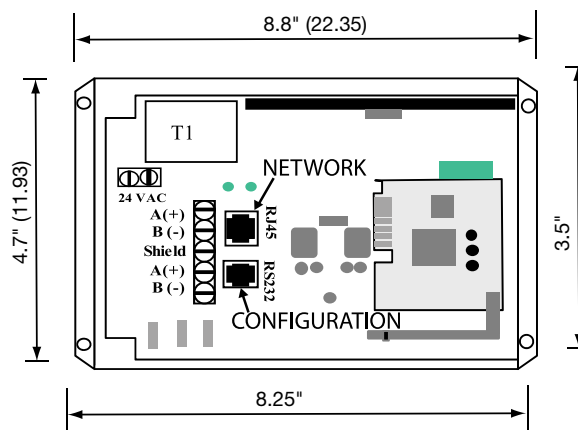
13

NETWORK & WIRELESS

### SPECIFICATIONS

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

### DIMENSIONS





### 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
<b>MOD9200BNT</b>	BACnet MSTP network transceiver
<b>MOD9200D</b>	Modbus network transceiver
<b>MOD9200LON-A</b>	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.
<b>MOD9200LON-B</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.
<b>MOD9200LON-C</b>	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.
<b>MOD9200LON-D</b>	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.
<b>MOD9200LON-E</b>	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.
<b>MOD9200LON-F</b>	Up to 50 wireless sensors (up to 40 temperature points, up to 20 humidity points & 40 discrete inputs), up to 50 wireless digital outputs & up to 50 wireless analog out.



# NETWORK & WIRELESS

## FRONTIER 2.0 WIRELESS ANALOG AND DIGITAL RECEIVERS

### RM2402D AND 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



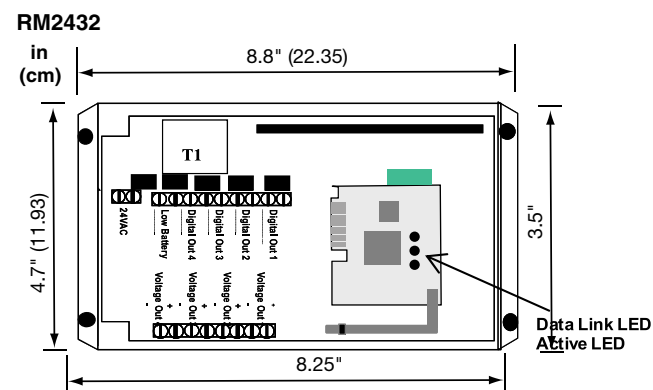
RM2432D



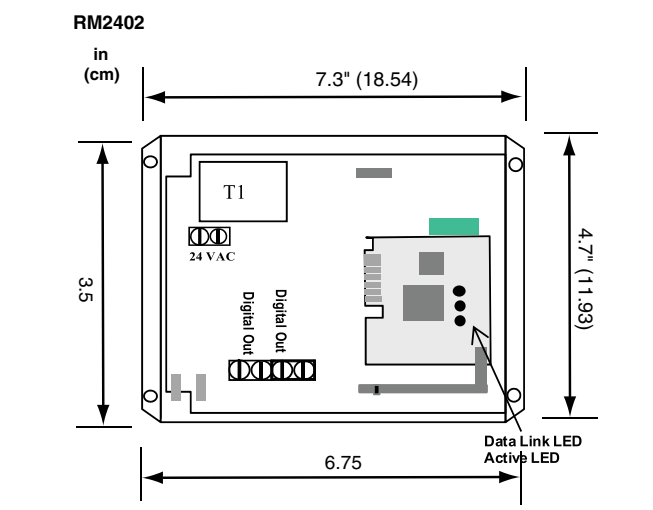
RM2432D



#### DIMENSIONS



#### DIMENSIONS



#### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC 60 HZ or 24 VDC
<b>Supply Current</b>	300 mA maximum
<b>Frequency</b>	902-928 MHz
<b>Analog Output</b>	
<b>RM2432</b>	4x - 0-10 VDC or 0-5 VDC Minimum controller input resistance should be greater than 20KΩ
<b>Digital Output</b>	
<b>RM2402</b>	2x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
<b>RM2432</b>	2x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
<b>Low Battery</b>	4x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
<b>Receiver Sensitivity</b>	1x - Pilot duty relay contact closure Contact rating - 1 A at 24VAC maximum
<b>Operating Temperature</b>	-110 dBm
<b>Operating Humidity</b>	-40° to 160°F (-40° to 71°C)
<b>Dimensions (2432)</b>	5 to 95% RH (non-condensing)
	8.8"H x 4.7"W x 2.25"D (22.35 x 11.93 x 5.58 cm)
<b>Weight</b>	1.2 lb (0.54 kg)
<b>Approvals</b>	FCC certified
<b>Warranty</b>	1 year



### 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  $\Omega$ .

**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
<b>RM2402D</b>	Output receiver with two (2) digital outputs (relay contacts)
<b>RM2402D-24DC</b>	Same as RM2402D except 24 VDC power
<b>RM2402DE</b>	Same as RM2402D except in NEMA4 enclosure
<b>RM2402DE-24DC</b>	Same as RM2402DE except 24 VDC power
<b>RM2432D</b>	Output receiver with four (4) analog output (0-10 VDC or 0-5 VDC selectable) and four (4) digital outputs (relay contacts)
<b>RM2432D-24DC</b>	Same as RM2432D except 24 VDC power
<b>RM2432DE</b>	Same as RM2432D except in NEMA4 enclosure
<b>RM2432DE-24DC</b>	Same as RM2432DE except 24 VDC power
<b>CK2432-K</b>	Programming Set-Up Cable

# NETWORK & WIRELESS

## 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.

### 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.

### 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	ON	OFF	6
OFF	OFF	OFF	ON	ON	ON	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	ON	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



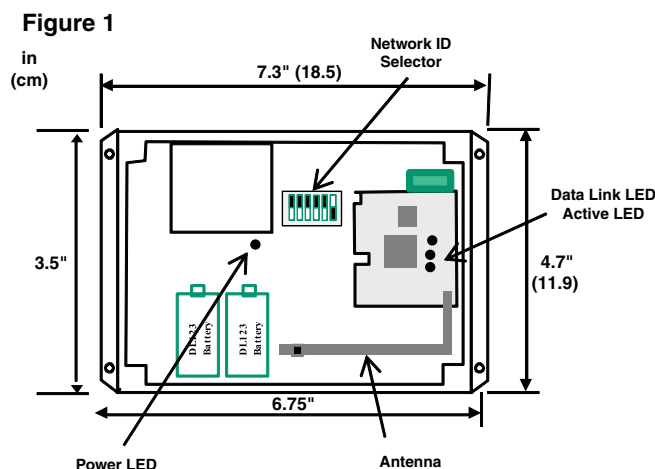
RR2552



### SPECIFICATIONS

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

### DIMENSIONS





### 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 repeater in NEMA4 enclosure



# NETWORK & WIRELESS

## FRONTIER 2.0 WIRELESS DIGITAL INPUT MODULES

### RT2602, RT2620

#### 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.

#### 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**



RT2620



13

NETWORK & WIRELESS

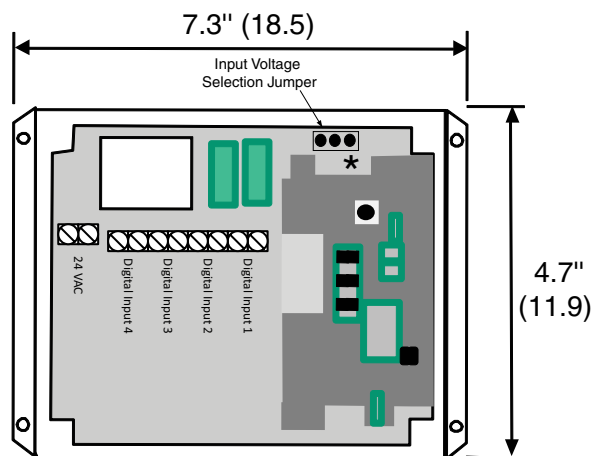
#### SPECIFICATIONS

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

#### DIMENSIONS

##### RT2620A

in  
(cm)





### 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

# NETWORK & WIRELESS

## FRONTIER 2.0 WIRELESS UNIVERSAL INPUT TRANSMITTER MODULE RT2630 SERIES

### 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.

### FEATURES

- **Battery powered (battery included) or 24 VAC powered remote wireless sensor input modules**
- **Up to 4 analog inputs (20K $\Omega$ , 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 (approximately 4 to 5 years)**
- **Low battery LED + remote low battery alarm notification**
- **Optional 24VAC or 24VDC power**
- **Reliable Spread Spectrum technology**



RT2630



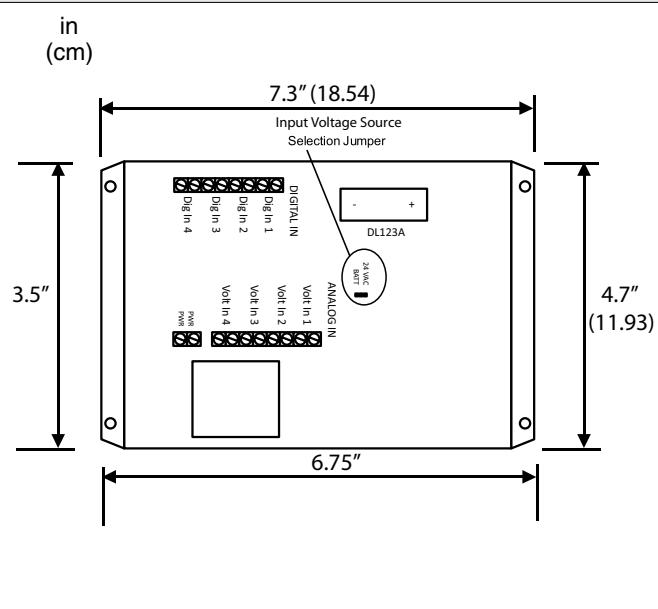
13

NETWORK & WIRELESS

### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC 60 Hz or 24 VDC
<b>Supply Current</b>	300 mA
<b>Battery</b>	Lithium 3.0V 1400 mAh (Duracell DL123A)
<b>Frequency</b>	923.58 MHz
<b>Analog Input</b>	12 bit resolution
<b>RT2630A</b>	4x - resistance inputs (20K $\Omega$ )
<b>RT2630B</b>	4x - voltage inputs (0-10VDC)
<b>RT2630C</b>	4x - current inputs (0-20 mA)
<b>Digital Inputs</b>	4x - dry contacts
<b>Transmission Power</b>	11 dBm
<b>Range</b>	1 mile (line-of-sight) Indoor 200 to 500 ft
<b>Operating Temperature</b>	15° to 125°F (-9° to 51°C)
<b>Operating Humidity</b>	5 to 95% RH (non-condensing)
<b>Dimensions</b>	7.3"H x 4.7"W x 2.25"D (18.5 x 11.9 x 5.7 cm)
<b>Weight</b>	1.2 lb (0.54 kg)
<b>Approvals</b>	FCC certified
<b>Warranty</b>	1 year

### DIMENSIONS





### 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)
<b>Power options</b>	
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.



# NETWORK & WIRELESS

## 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**



**SST2630**  
(Battery Included)



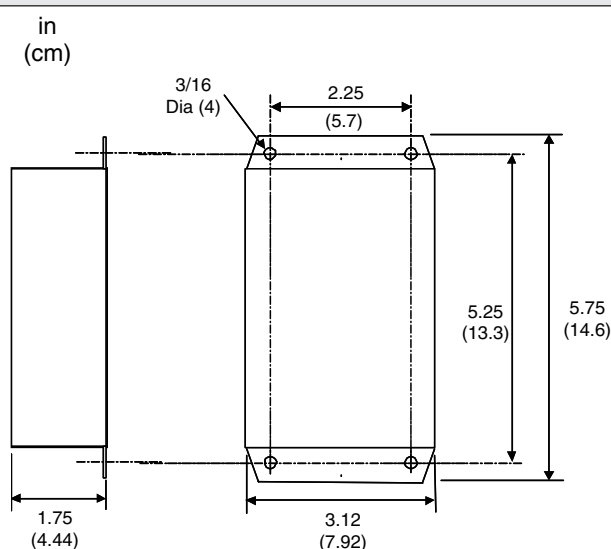
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NETWORK & WIRELESS

### SPECIFICATIONS

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

### DIMENSIONS





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

**SST2630** - **A** - **E**

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



# NETWORK & WIRELESS

## FRONTIER 2.0 WIRELESS DUCT TEMPERATURE SENSOR DT2630

### 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.

### FEATURES

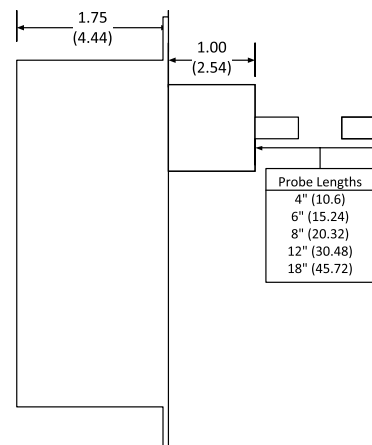
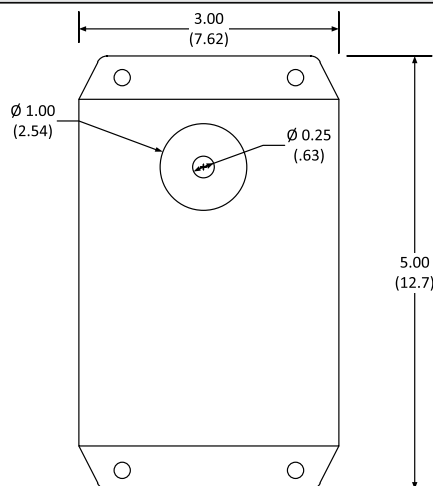
- **Battery included**
- **No calibration required**
- **No wiring needed**
- **Easy to install**
- **Various probe lengths**
- **Battery powered sensors**
- **Mesh Network - easy to install and relocate sensors without additional wireless installation tools**
- **Sensor Data-Link LED confirms connection 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**



DT2630



### DIMENSIONS



### SPECIFICATIONS

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



### 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
	<b>Temperature ranges</b>
<b>A</b>	25° to 150°F
<b>B</b>	-40° to 160°F
	<b>Enclosure</b>
	Standard black case
<b>E</b>	NEMA4 enclosure
	<b>Probe lengths</b>
<b>-04</b>	4" probe
<b>-06</b>	6" probe
<b>-08</b>	8" probe
<b>-12</b>	12" probe
<b>-18</b>	18" probe

DT2630 - A - -04

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



# NETWORK & WIRELESS

## 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 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.

### 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**



**WH2630**

(Battery Included)



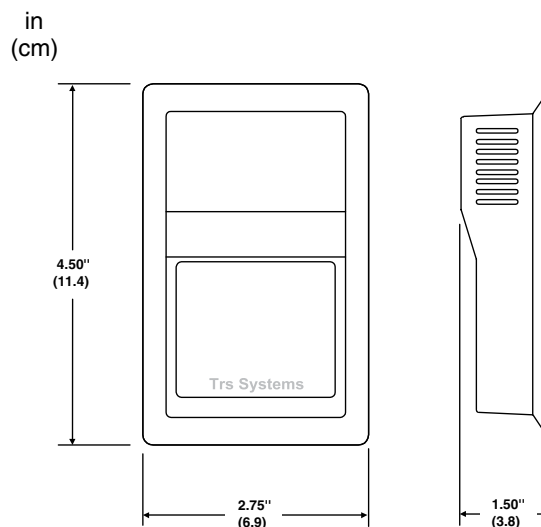
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NETWORK & WIRELESS

### SPECIFICATIONS

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

### DIMENSIONS





### 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**  
**WH2630A**  
**WH2630B**

#### DESCRIPTION

Wireless wall humidity (3%) sensor  
Wireless wall humidity (3%) and temperature sensor



# NETWORK & WIRELESS

## 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.

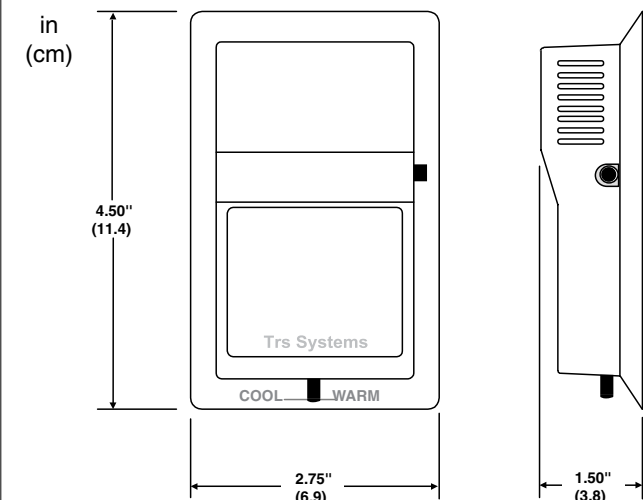
### FEATURES

- **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

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

### DIMENSIONS



**WT2630**  
(Battery Included)





### 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



# NETWORK & WIRELESS

## WIRELESS SENSOR GATEWAY

### WI-MGR

#### DESCRIPTION

The **Wi-MGR** 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 **Wi-MGR** 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), 0-5 VDC, and 0-10 VDC signals. Also included is a 900 megahertz receiver capable of receiving signals from sensors and point repeaters. The **Wi-MGR** integrates these signals to facilities monitoring systems in the form of SNMP, Modbus TCP/IP, Modbus RTU, and BACnet/IP.

The **Wi-MGR** can receive signals within 100 feet (30.5m) in open air space with the 418 MHz frequency and up to 1300 feet (396m) of open air space with the 900 MHz frequency. Repeaters are used to add additional distance between the **Wi-MGR** and the wireless sensors (transmitters).

#### FEATURES

- *Wireless design*
- *Includes applicable receiver & antennas for indoor open air transmission*
- *418MHz antenna - receives transmissions up to 100 feet (30.5m)*
- *900MHz antenna - receives transmissions up to 1300 feet (396m)*
- *Additional wired inputs and outputs provides expanded functionality*
- *Ability to output to Modbus, BACnet, and SNMP*

NEW!

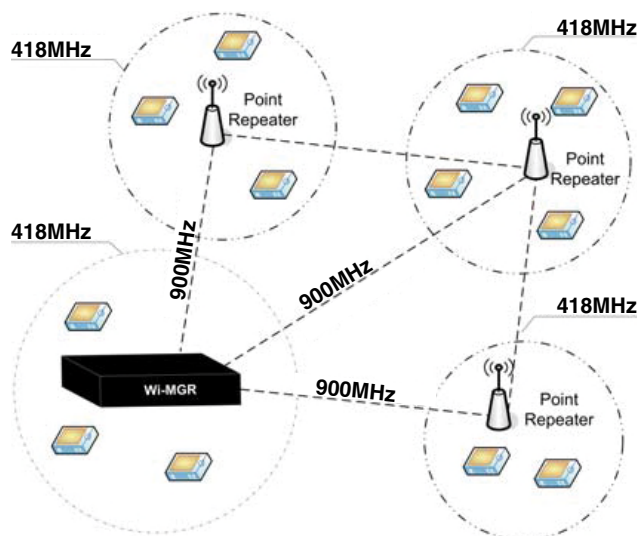
**RLE**  
Technologies



Wi-MGR

#### APPLICATION

The **Wi-MGR** operates as part of a wireless mesh network.



#### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC. 50/60Hz
<b>Supply Current</b>	600mA @ 24VAC/VDC Maximum
<b>Frequency</b>	900MHz and 418MHz
<b>Maximum Number of Wireless Modules</b>	400 with repeaters; 150 without repeaters
<b>LED Indication</b>	
<b>Network</b>	2 Green Active & Speed
<b>Status</b>	1 Red LED
<b>EIA-485 Status</b>	2 Green Transmit & Receive
<b>Communication Ports</b>	
<b>Ethernet</b>	10/100 BASE-T, RJ45 connector; 500VAC RMS isolation
<b>EIA-232</b>	DB9 female connector; 9600 baud; No parity, 8 data bits, 1 stop bit

<b>EIA-485</b>	1200, 2400, 9600 or 19200 baud (selectable); Parity: none, even or odd, 8 data bits, 1 stop bit
<b>Protocol</b>	TCP/IP, HTML, TFTP, SNMP Modbus (EIA-485), Modbus TCP/IP UDP/IP, BACnet/IP, BACnet/MSTP, Terminal Emulation (EIA-232)
<b>Operating Temperature</b>	32° to 122°F(0° to 50°C)
<b>Operating Humidity</b>	5 to 95% RH (non-condensing)
<b>Mounting</b>	Desktop or rack (brackets included)
<b>Dimensions</b>	9.7"W x 4.8"D x 1.6"H (24.6 x 12.2 x 4.1 cm)
<b>Weight</b>	2.3 lbs(1.04 kg)
<b>Warranty</b>	1 year

13

NETWORK & WIRELESS

NEW!



### WIRING

#### Wi-MGR Physical connections



#### Wi-MGR Physical connection Descriptions

Item	Description
Antenna 418MHz	RP-SMA connector
Antenna 900MHz	RP-SMA connector
Relay 1	Relay output 1 terminal block (NC/NO/C)
Relay 2	Relay output 2 terminal block (NC/NO/C)
DI #1	Digital input 1 (+ -)
DI #2	Digital input 2 (+ -)
DI #3	Digital input 3 (+ -)
DI #4	Digital input 4 (+ -)
Power 24 VDC/VAC	Power terminal block
Jack	Wall adapter connector
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	EIA-485 circuit connector
RJ45 Ethernet port	10/100 BASE-T connector

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>WI-MGR</b>	Wireless Gateway, 418/900 MHz receiver, includes 24VDC power adapter
<b>WI-TS</b>	Temperature sensor; 418 MHz wireless transmitter
<b>WI-DIT</b>	Temperature sensor and digital input; 418 MHz wireless transmitter
<b>WI-TH2</b>	Temp/Humidity sensor; 418 MHz wireless transmitter
<b>WI-LD</b>	Water Sensor; 418MHz wireless transmitter (requires Wi-LD-SPOT or Wi-LD-25)
<b>WI-LD-SPOT</b>	Spot detector for use with Wi-LD
<b>WI-AS420</b>	Analog input (0-20mA); 418 MHz wireless transmitter
<b>WI-AS5</b>	Analog input (0-5v); 418 MHz wireless transmitter
<b>WI-AS10</b>	Analog input (0-10v); 418 MHz wireless transmitter
<b>WI-TS9</b>	Temperature sensor; 900 MHz wireless transmitter
<b>WI-THS9</b>	Temp/Humidity sensor; 900 MHz wireless transmitter
<b>WI-PR</b>	Point repeater, 418MHz Receiver, 900 MHz transmitter

	RELATED PRODUCTS	PAGE
<b>BA/BS2-WT</b>	Room temperature battery transmitter, 418 MHz at 1 mW, (batteries included)	<b>804</b>
<b>BA/BS2-WTH</b>	Room temperature and humidity battery transmitter, 418 MHz @ 1 mW, (batteries included)	<b>804</b>
<b>BA/RPT49-EZ</b>	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	<b>794</b>
<b>BA/WAI-05</b>	0-5VDC Analog Input Transmitter, 418 MHz	<b>796</b>
<b>BA/WAI-10</b>	0-10VDC Analog Input Transmitter, 418 MHz	<b>796</b>
<b>BA/WAI-420</b>	4-20 mA Analog Input Transmitter, 418 MHz	<b>796</b>
<b>BA/WDI</b>	Digital Input Transmitter, 418 MHz	<b>796</b>
<b>BA/WT-D-4</b>	Duct temperature probe, 418 MHz transmitter, 4" insertion probe, batteries included	<b>798</b>
<b>BA/WT-D-8</b>	Duct temperature probe, 418 MHz transmitter, 8" insertion probe, batteries included	<b>798</b>
<b>BA/WT-I-4</b>	Four-inch immersion temperature probe, 418 MHz transmitter, (batteries included)	<b>800</b>
<b>BA/WT-O-BB</b>	OSA temperature probe, 418 MHz transmitter, batteries included	<b>806</b>
<b>BA/WT-RPP-10-BB</b>	Remote stainless steel temperature probe, with 418 MHz transmitter and 10 feet of plenum cable, batteries included	<b>802</b>
<b>BA/WT-RPP-25-BB</b>	Remote stainless steel temperature probe, with 418 MHz transmitter and 25 feet of plenum cable, batteries included	<b>802</b>
<b>BA/WTH-D</b>	Duct temperature and humidity probe, 418 MHz transmitter, 6" insertion probe, batteries included	<b>798</b>
<b>BA/WTH-O-BB</b>	OSA temperature and humidity probe, 418 MHz transmitter, batteries included	<b>806</b>

# NETWORK & WIRELESS

## 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  $\Omega$  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.

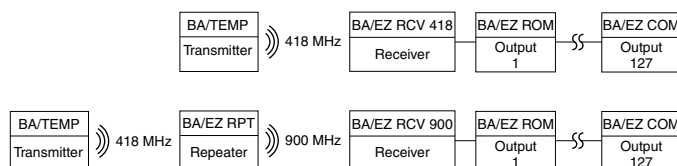
#### OPERATION/APPLICATION

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.

#### 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**

#### WIRING

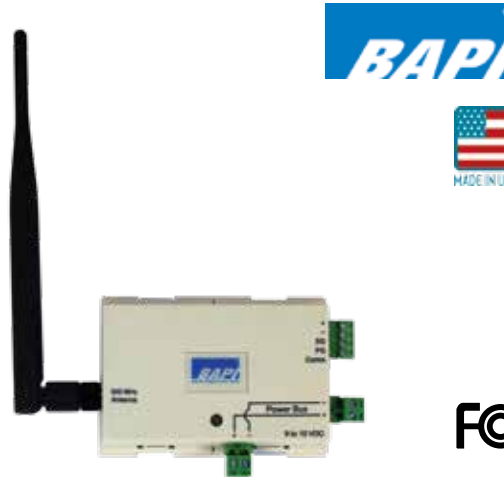


\* The transmission range from repeater to receiver is 1000 feet.

#### SPECIFICATIONS

<b>Supply Voltage</b>	
RCV-418	17-30 VAC/VDC
RCV-900, RPT	9-15 VDC,
<b>Supply Current</b>	
RCV-418	20 mA
RCV-900, RPT	150 mA
<b>Frequency</b>	
RCV-418	418 MHz
RCV-900, RPT	900 MHz
<b>Transmission Power</b>	
Range	100 mW (repeater)
RCV-418	100 ft
RCV-900, RPT	1000 ft
<b>Receiver Sensitivity</b>	
RCV-418, RPT	-106 dBm
RCV-900	-110 dBm

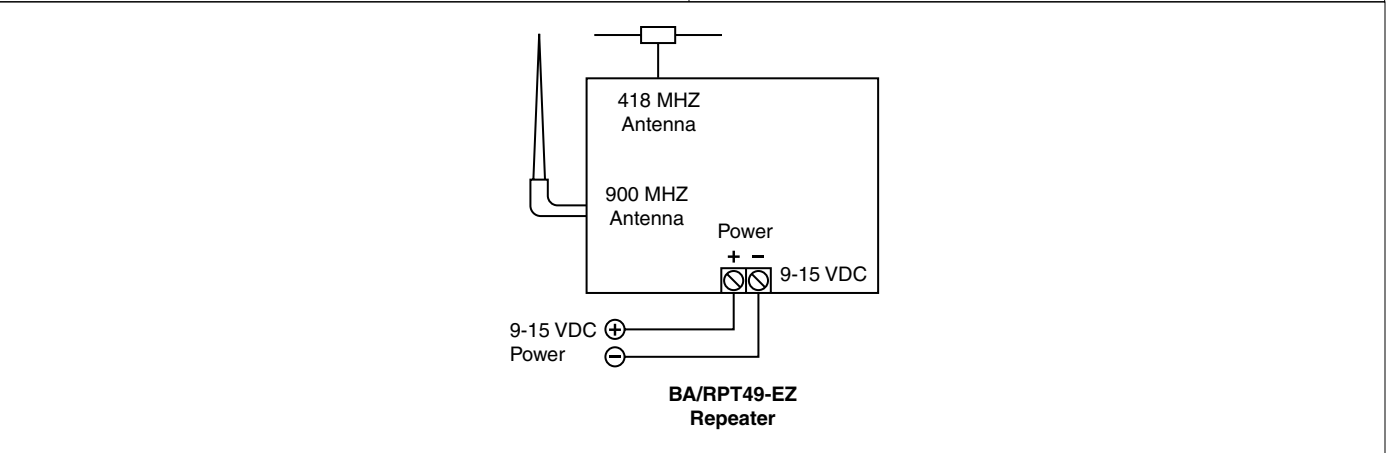
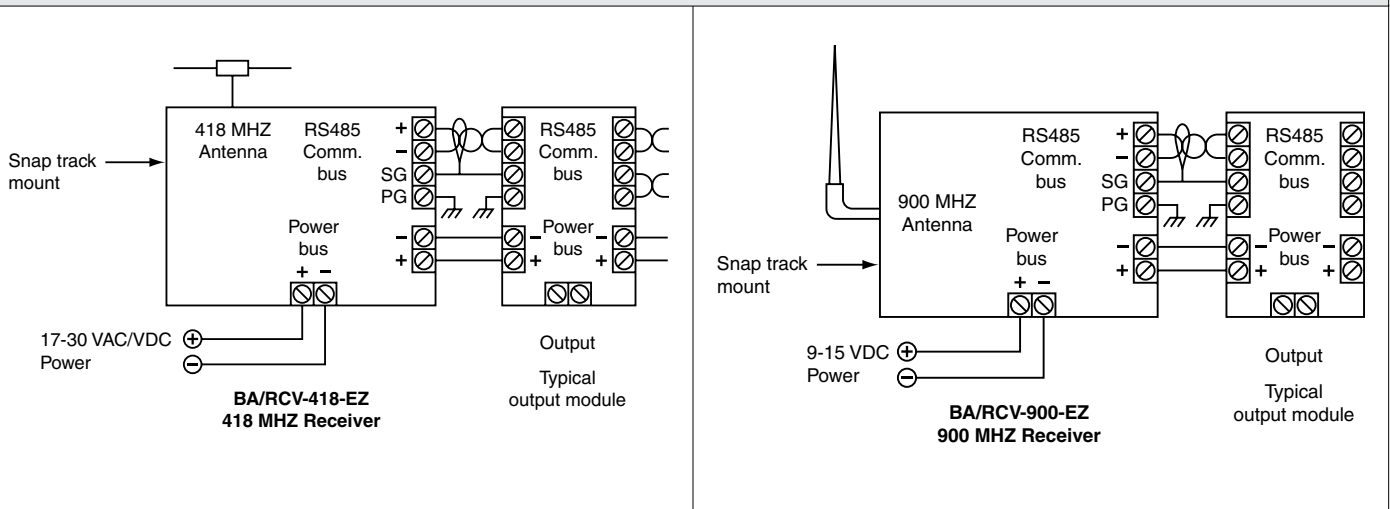
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	5% to 95% RH (non-condensing)
<b>Materials of Construction</b>	
ABS Plastic, UL94V-0	
<b>Dimensions</b>	2.75"H x 4.8"W x 1.2"D (7.0 x 12.0 x 3.0 cm)
<b>Weight</b>	0.5 lb (0.2 kg)
<b>Approvals</b>	FCC ID#T4F16963N16964 (418 MHz models only) FCC CFR part 15.247 (900 MHz models)
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	2 years



BA/RCV900-EZ



### WIRING



### 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 than 4000 feet. Each PG terminal should be earth grounded. Shield is continuous through the Twisted Shielded Pair and each module.

### ORDERING INFORMATION

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

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



# NETWORK & WIRELESS

## BAPI WIRELESS UNIVERSAL TRANSMITTERS

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

### DESCRIPTION

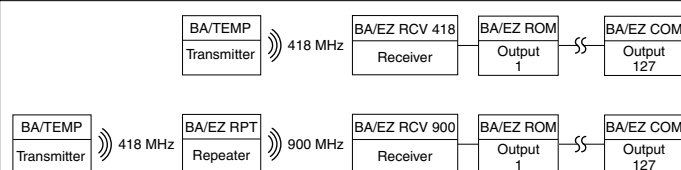
The BA/W Series Wireless Universal Input Transmitters are designed to monitor 0-5VDC, 0-10VDC or 4-20 mA signals and transmit that analog value to a receiver. The Digital Input version monitors any dry contact status input and transmits that On/Off status to the receiver. The Thermistor Temperature Input 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.



### 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**

### WIRING



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

### SPECIFICATIONS

<b>Battery</b>	Two AA 3.6V lithium batteries (included)
<b>Frequency</b>	418 MHz
<b>Transmission Power</b>	1 mW
<b>Range</b>	100 ft
<b>Update Interval</b>	10-17 seconds (fixed)
<b>Analog Input</b>	
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)

<b>Digital Inputs</b>	
BA/WDI	Dry contact, > 20 seconds (< 10Ω closed, >250Ω open)
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	5 to 95% RH, (non-condensing)
<b>Enclosure</b>	NEMA 4 (IP66)
<b>Dimensions</b>	5.0"H x 4.1"W x 2.5"D (12.7 x 10.4 x 5.4 cm)
<b>Weight</b>	0.5 lb (0.22 kg)
<b>Approvals</b>	FCC ID# T4F16963N16964 (418 MHz only)
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	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)

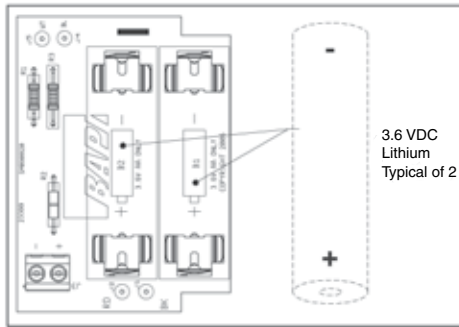
(Figure 5) Wire the other lead to the - terminal of the battery board. (Non-Polar)

**Contact Input:** Wire either lead to the + terminal of the battery board. (Non-Polar)

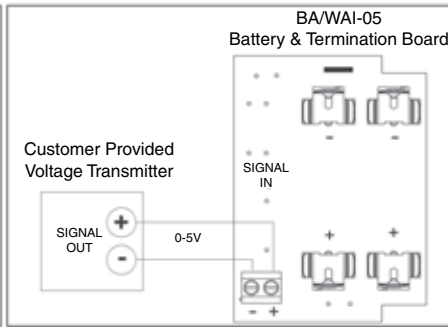
(Figure 6) Wire the other lead to the - terminal of the battery board. (Non-Polar)



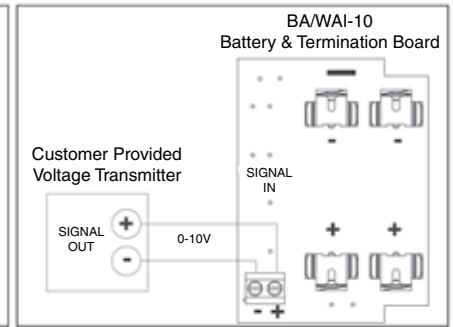
### APPLICATION



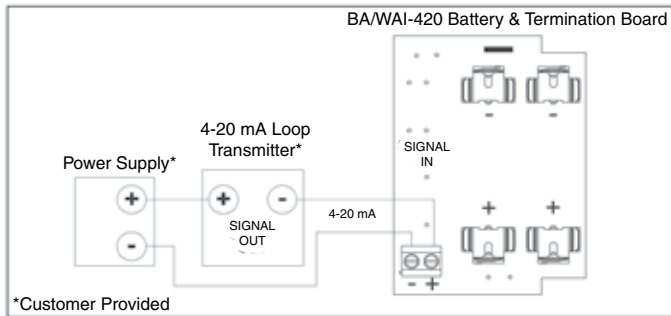
**Fig. 1: Battery Installation**



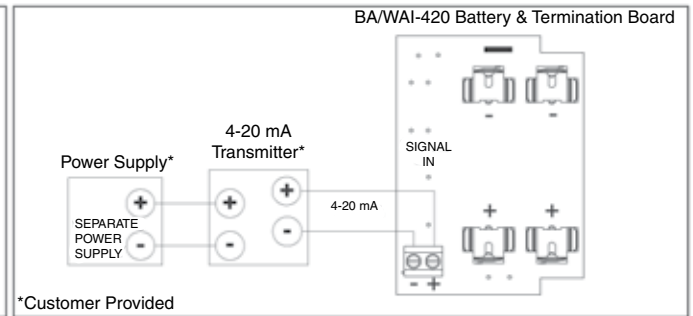
**Fig. 2a: 0-5V Transmitter Termination**



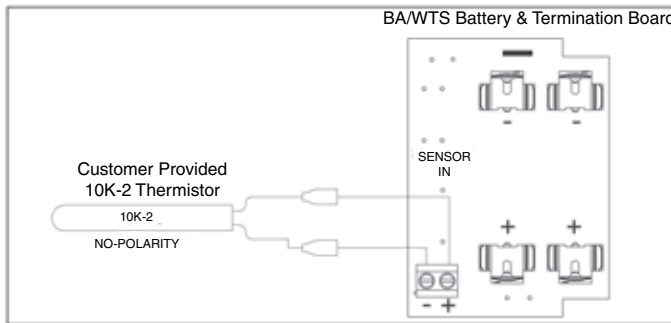
**Fig. 2b: 0-10V Transmitter Termination**



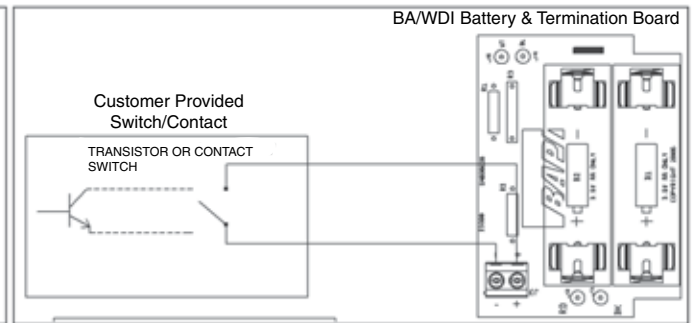
**Fig. 3: 4-20 mA Loop Powered Transmitter Termination**



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



**Fig. 5: 10K-2 Thermistor Termination**



**Fig. 6: Digital Input (DI) Termination**

### ORDERING INFORMATION

**MODEL**  
**BA/WAI-05**  
**BA/WAI-10**  
**BA/WAI-420**  
**BA/WDI**  
**BA/WTS**

**DESCRIPTION**  
0-5VDC Analog Input Transmitter, 418 MHz  
0-10VDC Analog Input Transmitter, 418 MHz  
4-20 mA Analog Input Transmitter, 418 MHz  
Digital Input Transmitter, 418 MHz  
Thermistor Sensor Transmitter, 418 MHz

## 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.

### 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.

### 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**



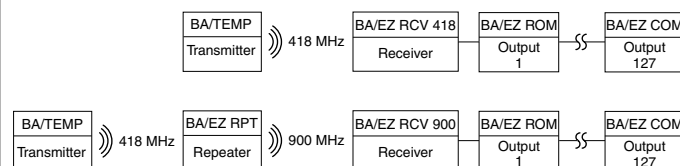
**BA/WT-D-4**



**BA/WTH-D-4**



### WIRING



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

### SPECIFICATIONS

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

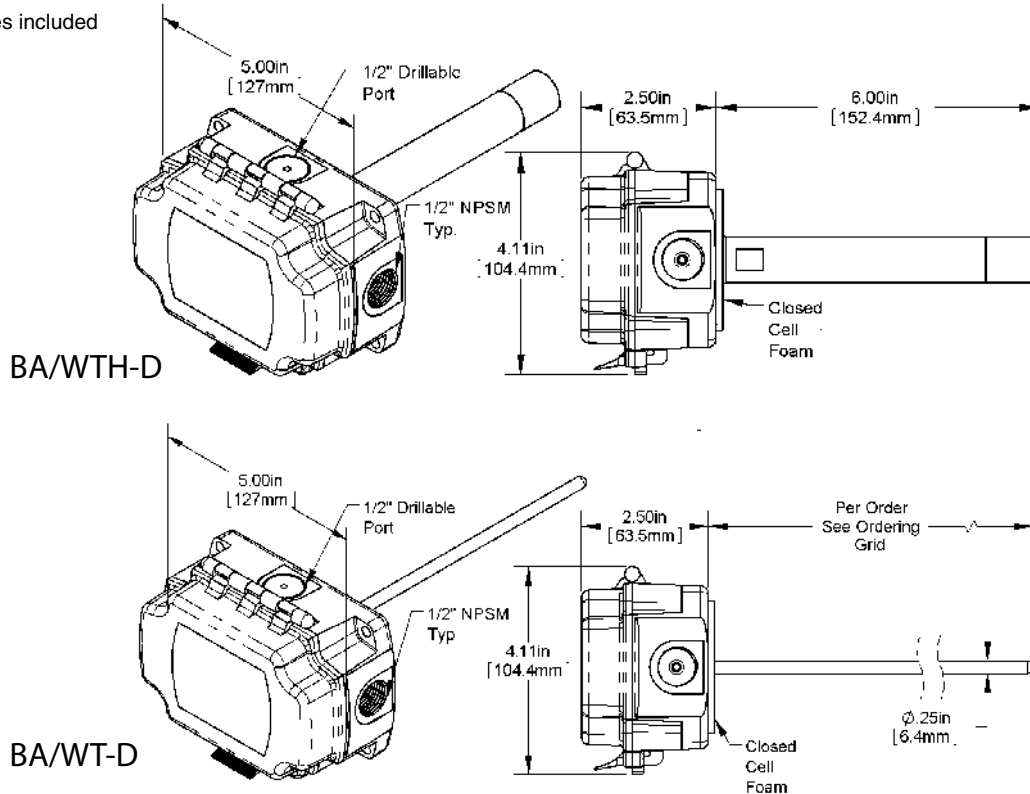
<b>Enclosure</b>	NEMA 4 (IP66)
<b>Dimensions</b>	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
<b>Weight</b>	1.0 lb (0.45 kg)
<b>Approvals</b>	FCC ID# T4F16963N16964
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	2 years

## BAPI WIRELESS DUCT TEMPERATURE & HUMIDITY TRANSMITTERS BA/WT(H)-D



### DIMENSIONS

**Note:** Batteries included



13

NETWORK & WIRELESS

### 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/WT-H-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	794
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	794
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	794

## BAPI WIRELESS IMMERSION TEMPERATURE TRANSMITTER

**BA/WT-I**

### DESCRIPTION

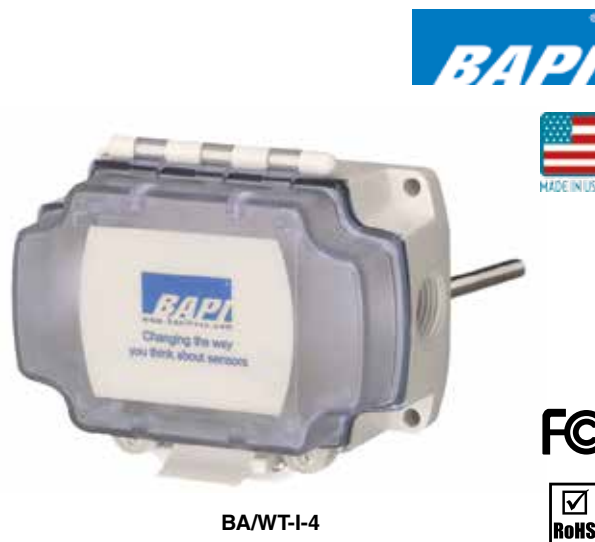
The BAPI wireless immersion temperature transmitters sense in-pipe conditions and send data with a battery operated 418 MHz transmitter. The sensor / transmitter is mounted in a NEMA 4 (IP66) enclosure with a 2", 4" or 8" stainless steel temperature immersion probe suited for four inch well insertion. 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.

### 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.

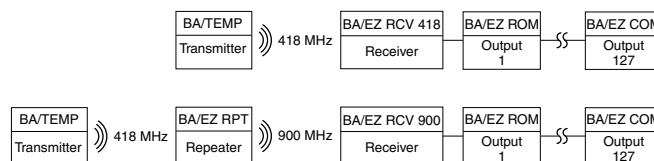
### FEATURES

- **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**



BA/WT-I-4

### WIRING



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

### SPECIFICATIONS

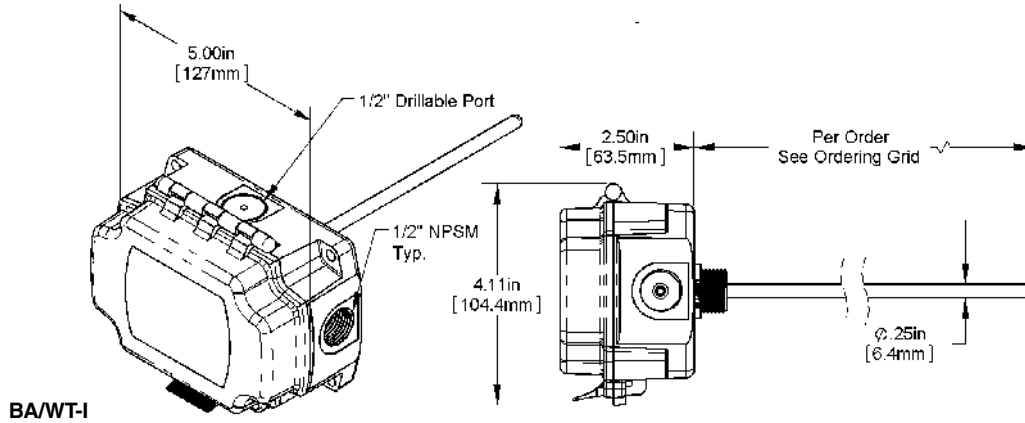
<b>Battery</b>	Two AA 3.6 VDC lithium batteries (included)
<b>Frequency</b>	418 MHz
<b>Transmission Power</b>	1 mW
<b>Range</b>	100 ft
<b>Update Interval</b>	10 seconds (fixed)
<b>Sensor Type</b>	Temperature: 10 kΩ Type 2 thermistor
<b>Temperature Range</b>	-40° to 185°F (-40° to 85°C)
<b>Temperature Accuracy</b>	±0.36°F (±0.2°C)
<b>Operating Temperature</b>	-40° to 212°F (-40° to 100°C)
<b>Operating Humidity</b>	5 to 95% RH (non-condensing)
<b>Enclosure</b>	NEMA 4 (IP66)
<b>Mounting</b>	1/2" NPT, 1/4" probe

<b>Dimensions</b>	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
<b>Probe Length</b>	
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
<b>Weight</b>	1.0 lb (0.45 kg)
<b>Approvals</b>	FCC ID# T4F16963N16964
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	2 year



### 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.

13

### ORDERING INFORMATION

MODEL	DESCRIPTION
BA/WT-I-2	Two-inch immersion 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	794
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	794
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	794

NETWORK & WIRELESS



# NETWORK & WIRELESS

## BAPI WIRELESS REMOTE PROBE TEMPERATURE TRANSMITTER

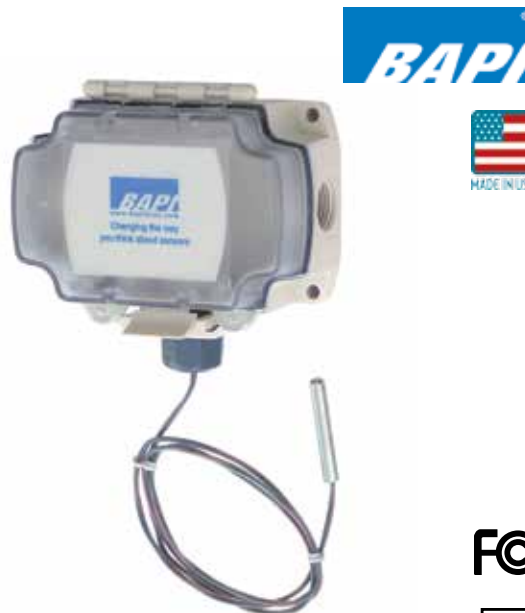
**BA/WT-RPP**

### 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.

### 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.



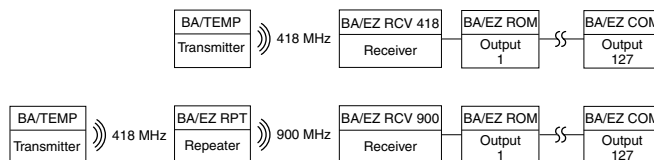
**BA/WT-RPP-10-BB**



### 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**

### WIRING



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

### SPECIFICATIONS

<b>Battery</b>	AA 3.6 VDC lithium batteries (included)
<b>Frequency</b>	418 MHz
<b>Transmission Power</b>	1 mW
<b>Range</b>	100 ft
<b>Update Interval</b>	10 seconds
<b>Sensor Type</b>	Temperature: 10K type 2
<b>Temperature Range</b>	-40° to 185°F (-40° to 85°C)
<b>Temperature Accuracy</b>	±0.36°F (±0.2°C)
<b>Operating Temperature</b>	-40° to 212°F (-40° to 100°C)
<b>Operating Humidity</b>	5-95% RH non-condensing
<b>Enclosure</b>	NEMA 4 (IP66)

<b>Dimensions</b>	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
<b>Weight</b>	1 lb (0.45 kg)
<b>Approvals</b>	FCC ID# T4F16963N16964
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	2 years

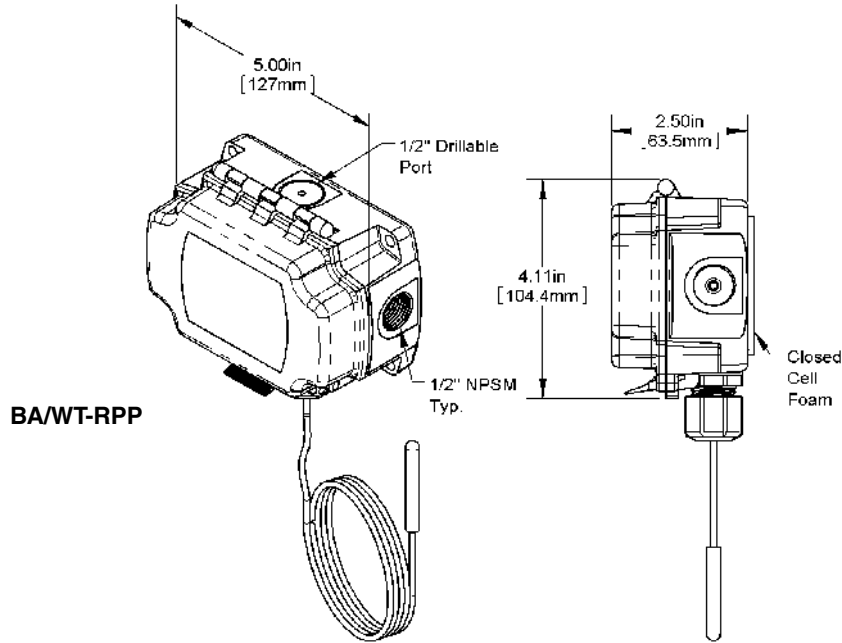
13

NETWORK & WIRELESS



### 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	794
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	794
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	794



# NETWORK & WIRELESS

## 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.

#### FEATURES

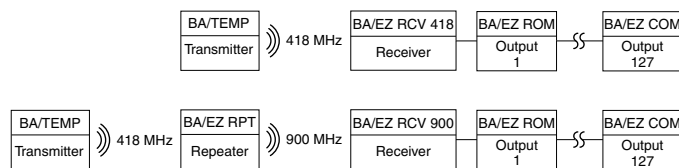
- *Wireless temperature and humidity sensing*
- *Eight-year battery life*
- *Built-in error detection*
- *Repeater available for 1000-foot range*
- *Output modules available with signal outputs of voltage, current, or resistance*
- *BAPI-Stat 2 enclosure*
- *Two-year warranty*



BA/BS2-WT



#### WIRING



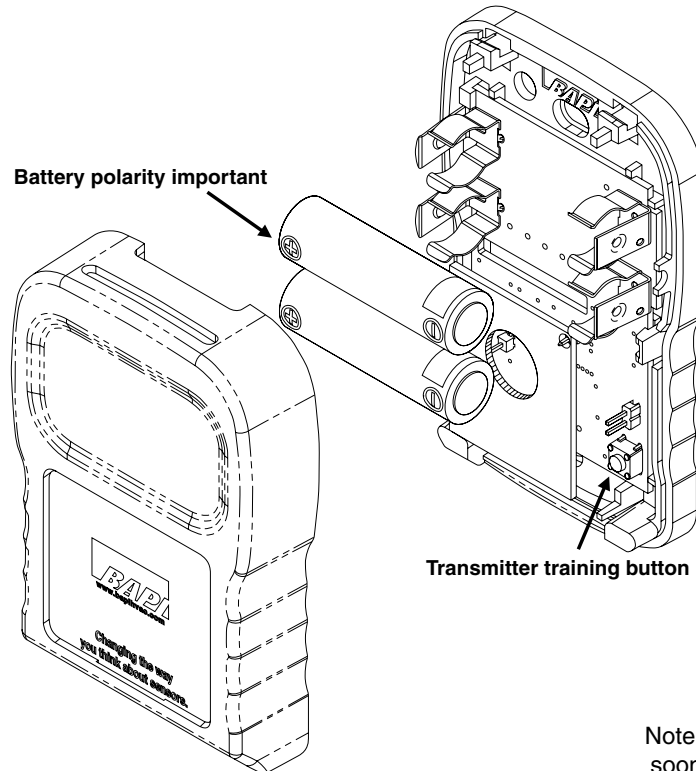
\* The transmission range from repeater to receiver is 1000 feet.

#### SPECIFICATIONS

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



### 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	794
BA/RCV900-EZ	BAPI receiver for RPT repeater 900 MHz signals to RS485	794
BA/RPT49-EZ	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	794

# NETWORK & WIRELESS

## 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.

### OPERATION/APPLICATION

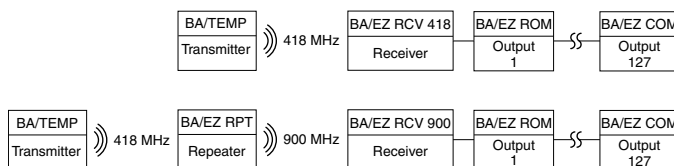
Temperature and humidity data is transmitted via 418 MHz to a receiver. Minimum in-building range is 100 feet and battery life is estimated to be eight years with high-capacity 3.6 VDC lithium batteries (at a 10-second transmit interval). Each transmitter has a unique address and includes built-in error 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.



### 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**

### WIRING



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

### SPECIFICATIONS

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

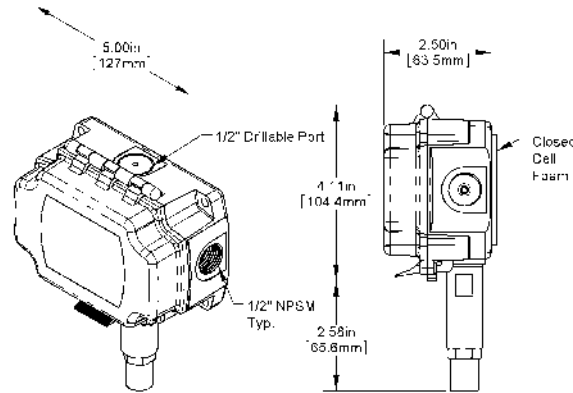
<b>Operating Humidity</b>	5-95% RH non-condensing
<b>Enclosure</b>	NEMA 4 (IP66)
<b>Dimensions</b>	4.1"H x 5.0"W x 2.5"D (10.4 x 12.7 x 6.4 cm)
<b>Probe</b>	
BA/WT-O	1.58" (4.02 cm)
BA/WTH-O	2.58" (6.56 cm)
<b>Weight</b>	1.0 lb (0.45 kg)
<b>Approvals</b>	FCC ID#T4F16963N16964
<b>RoHS Statement</b>	Yes
<b>Warranty</b>	2 years



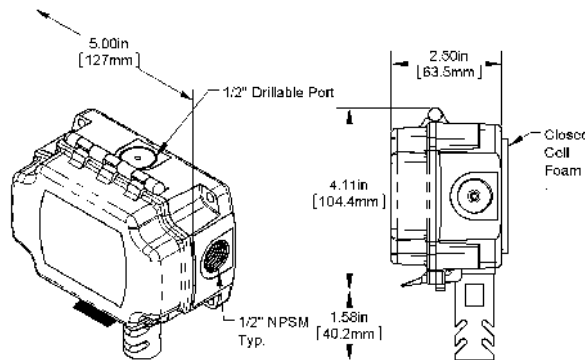
### DIMENSIONS

**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
<b>BA/WT-O-BB</b>	OSA temperature probe, 418 MHz transmitter, batteries included
<b>BA/WTH-O-BB</b>	OSA temperature and humidity probe, 418 MHz transmitter, batteries included

	RELATED PRODUCTS	PAGE
<b>BA/LI3620</b>	AA lithium 3.6V battery, two required for each transmitter	
<b>BA/RCV418-EZ</b>	BAPI receiver for 418 MHz transmitter signals to RS485	<b>794</b>
<b>BA/RCV900-EZ</b>	BAPI receiver for RPT repeater 900 MHz signals to RS485	<b>794</b>
<b>BA/RPT49-EZ</b>	9-15 VDC power BAPI repeater for 418 MHz signals with repeat at 900 MHz	<b>794</b>

# NETWORK & WIRELESS

## 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 K $\Omega$  Type 3 and a 10 K $\Omega$  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 transmitter 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

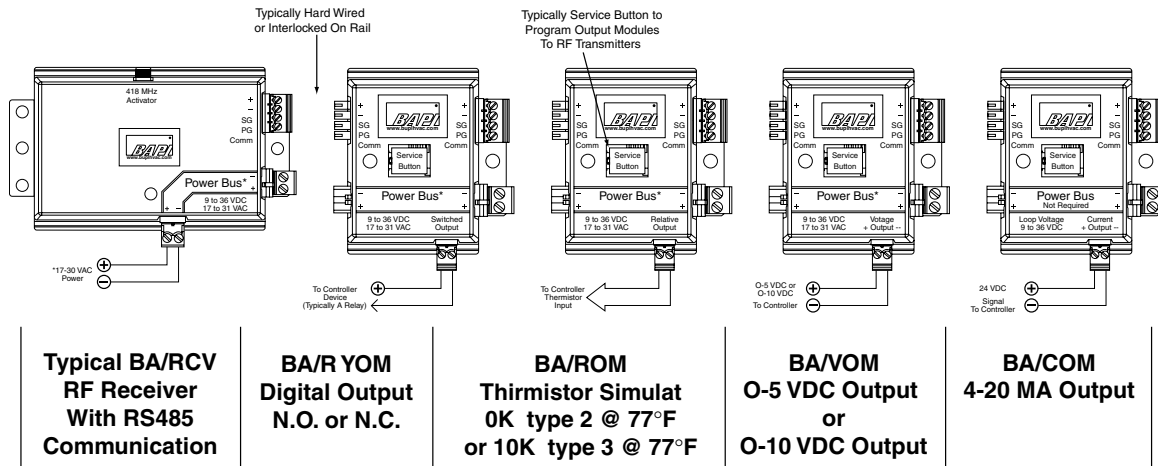
- Provide BAS point wiring
- 127 modules per system include:
- Thermistor simulation for temperature
- 0-10 VDC or 0-5 VDC signals
- 4-20 mA signals
- Solid-state contacts
- FCC license pre-approved
- Built-in error detection
- Built-in fail-safe positions
- Snap-track mounting

### SPECIFICATIONS

<b>Supply Voltage</b>		<b>SOM-84</b>	10 to 30 k $\Omega$ , linear
<b>COM</b>	Externally (loop) powered 9-36 VDC, 20 mA	<b>SOM-102</b>	10 k Type 2 thermistor 50° to 90°F (10° to 32°C)
<b>ROM, VOM</b>	9-30 VDC at 3 mA, or 17 to 30 VAC at 0.1 VA	<b>VOM-10</b>	0-10 VDC, 10 k $\Omega$ maximum
<b>RyOM/RyOL</b>	9-30 VDC at 15 mA, or 17 to 30 VAC at 0.5 VA	<b>Digital Outputs</b>	Solid state dual FETs, NO or NC 40 VAC/VDC, 150 mA maximum 1 $\mu$ A leakage in off state 15 $\Omega$ on-state resistance
<b>SOM</b>	See SOM data sheet located under "Related Documents" at <a href="http://www.Kele.com">www.Kele.com</a>	<b>Connections</b>	Terminal strip (inter-lockable)
<b>Analog Output</b>		<b>Update Interval</b>	10 seconds
<b>COM</b>	4-20 mA, 9-36 VDC, loop powered Impedance 750 $\Omega$ at 24 VDC	<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>ROM-102</b>	10 k $\Omega$ type 2 thermistor curve, 5 VDC excitation maximum	<b>Operating Humidity</b>	5-95% RH non-condensing
<b>ROM-103</b>	10 k $\Omega$ type 3 thermistor curve, 5 VDC excitation maximum	<b>Materials Of Construction</b>	ABS Plastic, UL94V-0
<b>SOM-10</b>	0 to 10 VDC, 10 k $\Omega$ maximum	<b>Dimensions</b>	2.75"H x 2.34"W x 1.2"D (7.0 x 5.9 x 3.0 cm)
<b>SOM-60</b>	0 to 10 k $\Omega$ , linear	<b>Weight</b>	0.3 lb (0.14 kg)
<b>SOM-80</b>	0 to 20 k $\Omega$ , linear	<b>RoHS Statement</b>	Yes
		<b>Warranty</b>	1 year

## BAPI WIRELESS SYSTEM OUTPUT MODULES *BA/COM, BA/ROM, BA/RVOM, BA/RVOL, BA/SOM, BA/VOM*

### WIRING



\*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.

### 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/RVOM-NC-EZ	Relay output momentary, normally open output
BA/RVOM-NO-EZ	Relay output momentary, normally closed output
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
BA/SOM-80-EZ	0 to 20K output
BA/SOM-84-EZ	10 to 30K output
BA/SOM-102-C-EZ	10 k -2 thermistor, 50°F to 90°F
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/RVOL-NC-EZ	Relay output latching, normally closed default
BA/RVOL-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

# NETWORK & WIRELESS

## WIRELESS SENSOR FOR HUMIDITY / TEMPERATURE / CO2 EE240 SERIES

### 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



\*Temperature sensor sold separately



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**

13

NETWORK & WIRELESS

### SPECIFICATIONS

<b>Supply Voltage</b>		<b>EE871</b>	
<b>EE241/EE242</b>	24V AC/DC $\pm 20\%$	$\pm(50\text{ppm}+2\%$ of m.v.)	
<b>EE244</b>	24 VDC	$\pm(50\text{ppm}+3\%$ of m.v.)	
<b>EE245/-R</b>	8-28 VDC / 12 VAC	$\pm(100\text{ppm}+5\%$ of m.v.)	
<b>Battery</b>		<b>EE245</b>	
<b>EE244, EE245</b>	4 x 1.5V AA	<b>Temperature</b>	
<b>Supply Current</b>		<b>RH</b>	
<b>EE241</b>	70mA at 24 VDC	$\pm 0,3^\circ\text{C}$ (at $20^\circ\text{C}$ ) / $\pm 0,4^\circ\text{C}$ ( $20\ldots 55^\circ\text{C}$ )	
<b>EE242</b>	150mA at 24 VDC	<b>CO2</b>	
<b>EE244</b>	20mA at 24 VDC	$\pm 3\%$ ( $30\ldots 70\%$ ) / $\pm 5\%$ ( $70\ldots 90\%$ )	
<b>Frequency</b>		2000ppm ( $\pm 50\text{ppm} + 2\%$ of m.v.)	
<b>Communication</b>	2.4 GHz	5000ppm ( $\pm 50\text{ppm} + 3\%$ of m.v.)	
<b>EE242</b>	Webserver, Modbus RTU, Modbus TCP	<b>Transmission Power</b>	
<b>Outputs</b>		<b>Range</b>	
<b>EE241/EE242-</b>		10mW	
<b>2</b>	4 x 0-5 VDC	<b>Operating Temperature</b>	
<b>3</b>	4 x 0-10 VDC	<b>EE241/EE242</b>	
<b>6</b>	4 x 4-20mA	Without display $-22^\circ$ to $122^\circ\text{F}$	
<b>Measurement Range</b>		$(-30^\circ$ to $50^\circ\text{C})$	
<b>EE07-PFT1/-MFT9</b>	0-100% RH / $-40^\circ$ to $176^\circ\text{F}$	With display $-4^\circ$ to $122^\circ\text{F}$ ( $-20^\circ$ to $50^\circ\text{C}$ )	
<b>EE03-FT9</b>	0-95% RH / $-40^\circ$ to $185^\circ\text{F}$	<b>EE244</b>	
<b>EE07-PT1/MT</b>	$-40^\circ$ to $85^\circ\text{C}$	Without display $-40^\circ$ to $122^\circ\text{F}$	
<b>EE871</b>	$-40^\circ$ to $176^\circ\text{F}$ ( $-40^\circ$ to $80^\circ\text{C}$ )	$(-40^\circ$ to $50^\circ\text{C})$	
<b>Accuracy</b>		With display $-4^\circ$ to $122^\circ\text{F}$ ( $-20^\circ$ to $50^\circ\text{C}$ )	
<b>EE07-PFT1/-MFT9</b>	$\pm 2\%$ RH (0 to 90% RH); $\pm 3\%$ RH (90 to 100% RH); $\pm 0.18^\circ\text{F}$ ( $\pm 0.1^\circ\text{C}$ ) at $68^\circ\text{F}$ ( $20^\circ\text{C}$ )	23° to 131°F ( $-5^\circ$ to $55^\circ\text{C}$ )	
<b>EE03-FT9</b>	$\pm 3\%$ RH (10 to 100% RH) at $69.8^\circ\text{F}$ ( $21^\circ\text{C}$ ); $\pm 0.54^\circ\text{F}$ ( $\pm 0.3^\circ\text{C}$ ) at $68^\circ\text{F}$ ( $20^\circ\text{C}$ )	<b>EE245/-R</b>	
<b>EE07-PT1/MT</b>	$\pm 0.18^\circ\text{F}$ ( $\pm 0.1^\circ\text{C}$ ) at $68^\circ\text{F}$ ( $20^\circ\text{C}$ )	<b>Materials Of Construction</b>	
		<b>EE241/EE242</b>	
		<b>EE244</b>	
		<b>EE245</b>	
		<b>Dimensions</b>	
		<b>EE241/EE242</b>	
		<b>EE244</b>	
		<b>EE245</b>	
		<b>Weight</b>	
		<b>Approvals</b>	
		<b>RoHS Statement</b>	
		<b>Warranty</b>	



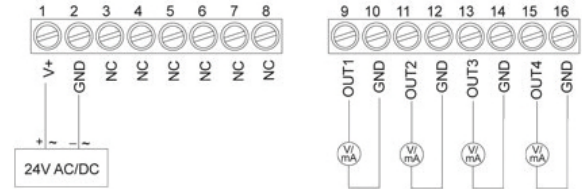
### OPERATION

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 with 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	CO2 probe for standard applications 0-2000ppm
EE871-5C95	CO2 probe for standard applications 0-5000ppm
EE871-10C95	CO2 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)

# NETWORK & WIRELESS

## IDEAL WIRELESS SENSOR SYSTEM 58-G1 AND 58-N-1101 SERIES

### DESCRIPTION

The **IDEAL Wireless Sensor System** enables wireless monitoring of environmental conditions for building automation, HVAC control, and energy management. The system includes a growing list of wireless sensor devices for measuring temperature, humidity, light, pressure, CO<sub>2</sub>, and other parameters. All sensor devices communicate wirelessly to a common gateway which supports a wide range of industry standard BAS protocols.

### FEATURES

- *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*

### SPECIFICATIONS

<b>Supply Voltage</b>	
58-N-1101-x-N	Non-Replaceable +25 year battery
58-G1	24 VAC/VDC
<b>Supply Current</b>	
Frequency	1A
58-G1, 58-N-1101	2.4 GHz
<b>Protocol</b>	
58-G1	Serial ,BACnet IP,BACnet Ethernet BACnet MSTP, Modbus TCP,Modbus RTU SNMP, N2,LonWorks
<b>Accuracy</b>	
Temperature	+/- 1°F (50-100°F )
Humidity	+/- 3% (10-90%)
<b>Range</b>	
58-N-1101	Data - 100 ft typically
<b>Operating Temperature</b>	
	-4° to 122°F(-20° to 50°C) indoor use only
<b>Operating Humidity</b>	
	0-95% RH non-condensing
<b>Materials Of Construction</b>	
	ABS plastic, UL94-5VA rating
<b>Dimensions</b>	
58-N-1101-x-N	4.2"W x 2.1"H x 1.1"D (10.6 x 5.3 x 2.7 cm)
58-G1	6.6"W x 4.4"H x 1.75"D (16.7 x 11.1 x 4.4 cm)
<b>Weight</b>	
58-N-110	0.5 lbs (0.22 kg)
58-G1	1.0 lbs (.45 kg)
<b>Approvals</b>	
	FCC Part 15 and Industry Canada Contains FCC ID: OA3MRF24J0MA Contains IC: 7693A-24J40MA
<b>RoHS Statement</b>	
	Yes
<b>Warranty</b>	
	2 year



58-N-1101



58-G1



### INSTALLATION

The 58-N-1101 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 58-G1 wireless gateway can be wall mounted using the integrated mounting flanges or set on a tabletop. 24V AC/DC power is required and connects through a removable terminal block. It has a USB Type A port for sensor interface and a USB Type B port for PC interface configuration. It also has a network port for ethernet, RS-485, or FTT-10 (model dependant).

### ORDERING INFORMATION

MODEL	DESCRIPTION
58-N-1101-T-N	Wireless temperature sensor (Non-replaceable 25+ year battery)
58-N-1101-TH-N	Wireless temperature and humidity sensor (Non-replaceable 25+ year battery)
58-N-1101-TT-N	Wireless temperature sensor – internal and external 10K RTD (Non-replaceable 25+ year battery)
58-N-1101-L-N	Wireless light sensor (Non-replaceable 25+ year battery)
58-G1-101-SERIAL	BAS Gateway - Serial output to PC via USB
58-G1-101-BACNET-IP	BAS Gateway - BACNET/IP via Ethernet interface and serial output via USB
58-G1-101-BACNET-ETH	BAS Gateway - BACNET/Ethernet via Ethernet interface and serial output via USB
58-G1-101-BACNET-MSTP	BAS Gateway - BACNET/MSTP via RS-485 interface and serial output via USB
58-G1-101-MODBUS-TCP	BAS Gateway - MODBUS TCP via Ethernet interface and serial output via USB
58-G1-101-MODBUS-RTU	BAS Gateway - MODBUS RTU via Ethernet interface and serial output via USB
58-G1-101-SNMP	BAS Gateway - SNMP via Ethernet interface and serial output via USB
58-G1-101-METASYS-N2	BAS Gateway - METASYS N2 via RS-485 interface and serial output via USB
58-G1-101-LON	BAS Gateway - LonWorks via FTT-10 interface and serial output via USB

## ENOCEAN AND ZIGBEE WIRELESS MANAGER AND GATEWAY SMARTSTRUXURE LITE MPM-GW SERIES



### DESCRIPTION

The MPM-GW Series multi-purpose wireless manager and gateway enable the control, monitoring and management of entire sites via StruxureWare™ Building Expert. It has an aesthetic look, similar to a router, allowing for in-room deployment. It supports control and gateway functionalities for wireless peripherals for variety of applications. All models have an embedded web server hosting Building Expert, a web-based intelligent building management system that allows complete configuration and management of small sites.

### FEATURES

- **Wireless control of EnOcean end-devices (128 points per MPM)**
- **Wireless control of ZigBee end-devices (30 peripherals per MPM)**
- **Programmable via StruxureWare™ Building Expert**
- **Points visible through BACnet, EcoStruxure Web Services (EWS) & oBIX**
- **Real-time response to scripting/graphical programming**

**NEW!**

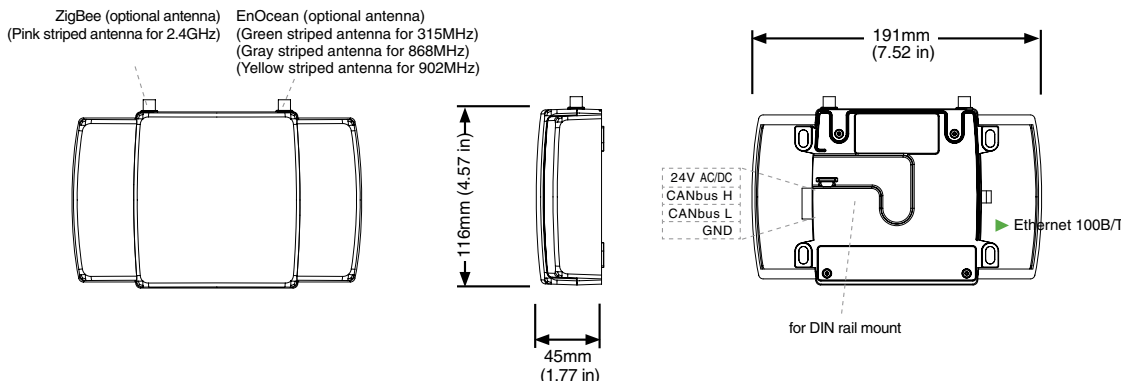
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MPM-GW



### DIMENSIONS



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC, 50/60Hz
<b>Frequency</b>	EnOcean: 315MHz, 868MHz or 902MHz; ZigBee: 2.4GHz, 16RF Channels
<b>Receiver Sensitivity</b>	EnOcean -95dBm; ZigBee -101dBm/-105dBm (amplified)
<b>Range</b>	Line of sight: EnOcean 100ft/30m; ZigBee peripherals 100ft/30m, ZigBee MPM 300ft/100m
<b>Communication</b>	ZigBee Pro, EnOcean, BACnet/IP, CANbus (125-500Kbps), Ethernet(10/100Mbps)
<b>Supported Protocols</b>	BACnet, EWS, oBIX, FTP, EnOcean, ZigBee, CANbus
<b>Memory</b>	64MB Flash
<b>Antenna</b>	External whip, RP SMA Connector
<b>Clock Backup</b>	Real-time clock, Battery backed (10,000 hrs)
<b>Processor</b>	ARM9 32-bit, 400MHz
<b>Enclosure</b>	Rigid ABS, UL94V0-5VB
<b>Maximum Number Of Wireless Modules</b>	EnOcean (wireless): 128 points; ZigBee (wireless): 30 peripherals
<b>Data Storage</b>	2GB flash for local storage
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	0-90% RH non-codensing
<b>Storage Temperature</b>	-4° to 140°F (-20° to 60°C)
<b>Mounting</b>	Din-rail, wall or ceiling mount
<b>Dimensions</b>	7.52"H x 4.57"W x 1.77"D (191 x 116 x 45 mm)
<b>Weight</b>	0.7 lbs (0.32 kg)
<b>Approvals</b>	UL916, CSA, FCC, ICES-003, CE, Japanese Radio Law, RoHS
<b>Warranty</b>	1.5 year

### ORDERING INFORMATION

Part numbers	Manager		EnOcean			ZigBee
	Building Expert	StruxureWare Integration	315 MHz	868 MHz	902 MHz	
MPM-NW-000-5045	x	x				
MPM-GW-C00-5045	x	x	x			
MPM-GW-D00-5045	x	x		x		
MPM-GW-E00-5045	x	x			x	
MPM-GW-C10-5045	x	x	x			x
MPM-GW-D10-5045	x	x		x		x
MPM-GW-E10-5045	x	x			x	x
MPM-GW-O10-5045	x	x				x

**Note:** • Certification training through Schneider Electric is required before ordering. Call Kele for details.  
• USA uses 902 MHz and 315 MHz frequencies for EnOcean.  
Europe uses 868 MHz frequency.

13

NETWORK & WIRELESS

NEW!

# NETWORK & WIRELESS

## UNIVERSAL NETWORK AND WIRELESS CONTROLLERS SMARTSTRUXURE LITE MPM-UN SERIES

### DESCRIPTION

The MPM-UN Series multi-purpose manager and controllers enable the control, monitoring and management of entire sites via StruxureWare™ Building Expert. They can also be used for wired and wireless zone control in larger buildings. They support a variety of HVAC, lighting and metering applications. All models have an embedded web server hosting Building Expert, a web-based intelligent building management system that allows complete configuration and management of small sites.

### FEATURES

- Control of wired end-devices (6 inputs, 6 outputs)
- Wireless control of EnOcean end-devices (optional, 128 points per MPM)
- Wireless control of ZigBee end-devices (optional, 30 peripherals per MPM)
- Modbus (optional).
- Programmable via StruxureWare™ Building Expert
- Points visible through BACnet, EcoStruxure Web Services (EWS) & oBIX
- Real-time response to scripting/graphical programming

**Schneider**  
Electric

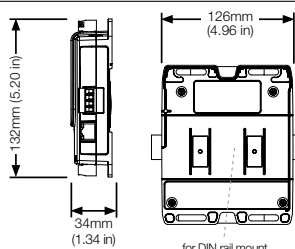


MPMUN

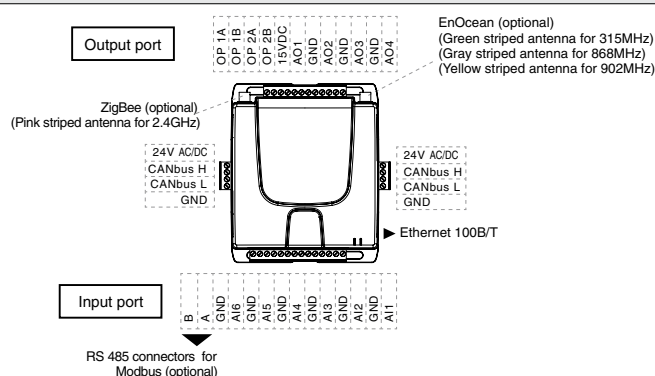
NEW!



### DIMENSIONS



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC, 50/60Hz
<b>Frequency</b>	EnOcean: 315MHz, 868MHz or 902MHz; ZigBee: 2.4GHz, 16RF Channels
<b>Receiver Sensitivity</b>	EnOcean -95dBm; ZigBee -101dBm/-105dBm (amplified)
<b>Range</b>	Line of sight: EnOcean 100ft/30m; ZigBee peripherals 100ft/30m, ZigBee MPM 300ft/100m
<b>Communication</b>	ZigBee Pro, EnOcean, BACnet, CANbus (125-500Kbps), Ethernet(10/100Mbps), Modbus
<b>Supported Protocols</b>	BACnet, EWS, oBIX, FTP, EnOcean, ZigBee, CANbus, Modbus
<b>Memory</b>	64MB Flash
<b>Processor</b>	ARM9 32-bit, 400MHz
<b>Data Storage</b>	2GB flash for local storage
<b>Antenna</b>	External whip, RP SMA Connector
<b>Clock Backup</b>	Real-time clock, Battery backed (10,000 hrs)
<b>Input</b>	6 universal, configurable, 14-bit resolution (analog: 4-20mA, 0-10V; digital: dry contact, thermistor: 1-100K)
<b>Maximum Number Of Wireless Modules</b>	EnOcean (wireless): 128 points; ZigBee (wireless): 30 peripherals
<b>Outputs</b>	2 relay (24V, 1.1A each), 4 analog (0-12V, 50mA max, 12-bit resolution)
<b>Storage Temperature</b>	-4° to 140°F (-20° to 60°C)
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	0-90% RH non-condensing
<b>Enclosure</b>	Rigid ABS, UL94V0-5VB
<b>Mounting</b>	Din-rail, wall or ceiling mount
<b>Dimensions</b>	4.96"H x 5.20"W x 1.34"D (126 x 132 x 34 mm)
<b>Weight</b>	0.5lbs (0.23 kg)
<b>Approvals</b>	UL916, CSA, FCC, ICES-003, CE, Japanese Radio Law, RoHS
<b>Warranty</b>	1.5 years

### ORDERING INFORMATION

Part numbers	Manager		EnOcean			ZigBee	I/O		Modbus
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	
MPM-UN-004-5045	x	x					x	x	x
MPM-UN-014-5045	x	x				x	x	x	x
MPM-UN-C00-5045	x	x	x				x	x	
MPM-UN-C04-5045	x	x	x				x	x	x
MPM-UN-C14-5045	x	x	x			x	x	x	x
MPM-UN-D04-5045	x	x		x			x	x	x
MPM-UN-D14-5045	x	x		x		x	x	x	x
MPM-UN-E00-5045	x	x			x		x	x	
MPM-UN-E04-5045	x	x			x		x	x	x
MPM-UN-E14-5045	x	x			x	x	x	x	x

Note: • Certification training through Schneider Electric is required before ordering. Call Kele for details.  
• USA uses 902 MHz and 315 MHz frequencies for EnOcean.  
Europe uses 868 MHz frequency.

13

NETWORK & WIRELESS

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March 2014

## NETWORK AND WIRELESS VARIABLE AIR VOLUME CONTROLLER AND MANAGER SMARTSTRUXURE LITE MPM-VA SERIES



### DESCRIPTION

The MPM-VA Series VAV controllers and managers enable the control, monitoring and management of entire sites via StruxureWare™ Building Expert. They can also be used for wired and wireless zone control in larger buildings. This series of controllers support variety of variable-air-volume, HVAC, lighting and metering applications. All models have an embedded web server hosting Building Expert, a web-based intelligent building management system that allows complete configuration and management of small sites.

### FEATURES

- **Pressure sensor with actuator as an option**
- **Supports VAV functionalities and applications**
- **Control of wired end-devices (6 inputs, 6 outputs).**
- **Wireless control of EnOcean end-devices (optional, 128 points per MPM)**
- **Wireless control of ZigBee end-devices (optional, 30 peripherals per MPM)**
- **Supports Modbus**
- **Programmable via StruxureWare™ Building Expert**
- **Points visible through BACnet, EcoStruxure Web Services (EWS) & oBIX**
- **Real-time response to scripting/graphical programming**

**Schneider**  
Electric

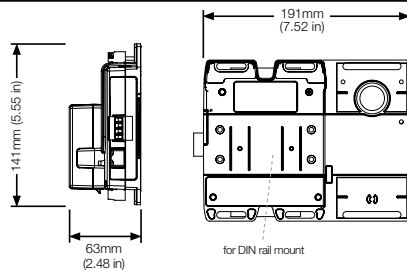


MPMVA

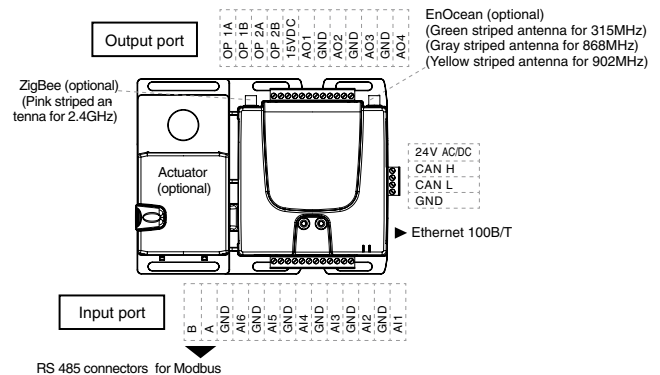
NEW!



### DIMENSIONS



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC /VDC, 50/60Hz
<b>Frequency</b>	EnOcean: 315MHz, 868MHz or 902MHz; ZigBee: 2.4GHz, 16RF Channels
<b>Receiver Sensitivity</b>	EnOcean -95dBm; ZigBee -101dBm/-105dBm (amplified)
<b>Range</b>	Line of sight: EnOcean 100ft/30m; ZigBee peripherals 100ft/30m, ZigBee MPM 300ft/100m
<b>Communication</b>	ZigBee Pro, EnOcean, BACnet, CANbus (125-500Kbps), Ethernet(10/100Mbps), Modbus
<b>Supported Protocols</b>	BACnet, EWS, oBIX, FTP, EnOcean, ZigBee, CANbus, Modbus
<b>Memory</b>	64MB Flash
<b>Processor</b>	ARM9 32-bit, 400MHz
<b>Sensor Type</b>	Flow Sensor
<b>Range</b>	-2 to 2 in WC, Accuracy: 3% m.v.
<b>Data Storage</b>	2GB flash for local storage
<b>Actuation Type</b>	Damper Actuator
<b>Torque</b>	45in-lb (5Nm), Rotation: 0 to 95°, Shaft Diameter: 1/4" to 3/4"
<b>Antenna</b>	External whip, RP SMA Connector
<b>Clock Backup</b>	Real-time clock, Battery backed (10,000 hrs)
<b>Enclosure</b>	Rigid ABS, UL94V0-5VB
<b>Input</b>	6 universal, configurable, 14-bit resolution (analog: 4-20mA, 0-10V; digital: dry contact, thermistor: 1-100K)
<b>Maximum Number Of Wireless Modules</b>	EnOcean (wireless): 128 points; ZigBee (wireless): 30 peripherals
<b>Output</b>	2 relay (24V, 1.1A each), 4 analog (0-12V, 50mA max, 12-bit resolution)
<b>Storage Temperature</b>	-4° to 140°F (-20° to 60°C)
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Operating Humidity</b>	00 to 90% non-condensing 90% RH non-condensing
<b>Mounting</b>	Din-rail, wall or ceiling mount
<b>Dimensions</b>	7.52"H x 5.55"W x 2.48"D (191 x 141 x 63 mm)
<b>Weight</b>	1.5 lbs (0.68 kg)
<b>Approvals</b>	UL916, CSA, FCC, ICES-003, CE, Japanese Radio Law, RoHS
<b>Warranty</b>	1.5 years

### ORDERING INFORMATION

Part numbers	Manager		EnOcean		ZigBee		I/O		VAV	
	Building Expert	StruxureWare integration	315 MHz	868 MHz	902 MHz	High power	6 inputs	6 outputs	Modbus	Flow sensor
MPM-VA-004-5045	x	x					x	x	x	x
MPM-VA-014-5045	x	x				x	x	x	x	x
MPM-VA-C04-5045	x	x	x				x	x	x	x
MPM-VA-C14-5045	x	x	x			x	x	x	x	x
MPM-VA-D04-5045	x	x		x			x	x	x	x
MPM-VA-D14-5045	x	x		x		x	x	x	x	x
MPM-VA-E04-5045	x	x		x			x	x	x	x
MPM-VA-E14-5045	x	x		x		x	x	x	x	x
MPM-VS-004-5045	x	x					x	x	x	x
MPM-VS-014-5045	x	x				x	x	x	x	x
MPM-VS-C04-5045	x	x	x				x	x	x	x
MPM-VS-C14-5045	x	x	x			x	x	x	x	x
MPM-VS-D04-5045	x	x		x			x	x	x	x
MPM-VS-D14-5045	x	x		x		x	x	x	x	x
MPM-VS-E04-5045	x	x		x			x	x	x	x
MPM-VS-E14-5045	x	x		x		x	x	x	x	x

Note: • Certification training through Schneider Electric is required before ordering.  
Call Kele for details.  
• USA uses 902 MHz and 315 MHz frequencies for EnOcean.  
Europe uses 868 MHz frequency.

13

NETWORK & WIRELESS

NEW!

# NETWORK & WIRELESS

## ZIGBEE WIRELESS I/O MODULE SMARTSTRUXURE LITE SEC SERIES

### DESCRIPTION

The SEC Series Smart Terminal Controllers enable the wireless control of a wide variety of equipment to optimize use, comfort and power consumption. They are the control arm of MPM series devices, all part of the SmartStruxure™ Lite line of products. The SEC-TE is equipped with the smallest control engine in the industry. It supports local scripting/programmability, providing distributed intelligence and enabling redundant control solutions.

### FEATURES

- **Programmable**
- **Real-time response to scripting**
- **802.15.4 Wireless Zigbee protocol**

NEW!

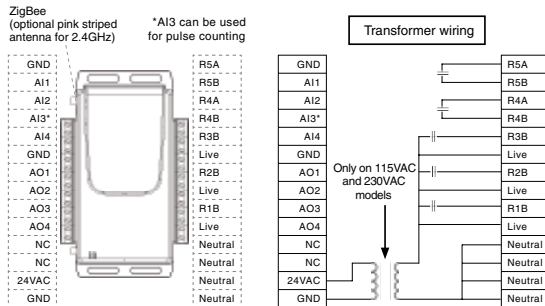
**Schneider**  
Electric



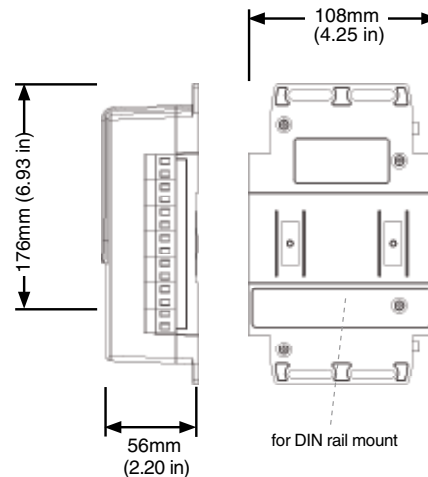
SEC-TE



### WIRING



### DIMENSIONS



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC, 115 VAC, 230 VAC, 50/60Hz
<b>Frequency</b>	ZigBee: 2.4GHz, 16RF Channels
<b>Receiver Sensitivity</b>	-101dBm/-105dBm (amplified)
<b>Range</b>	Line of sight: 100ft/30m
<b>Communication</b>	802.15.4 ZigBee
<b>Supported Protocols</b>	ZigBee
<b>Antenna</b>	Internal, Optional external whip, RP SMA Connector
<b>Enclosure</b>	Rigid ABS, UL94V0-5VB
<b>Input</b>	4 universal, configurable, 14-bit resolution (analog: 4-20mA, 0-10V; digital: dry contact, thermistor: 1-100K)
<b>Output</b>	5 line-power relays (230VAC max, 5A each), 4 analog (0-12V, 50mA max, 12-bit resolution) -4° to 140°F (-20° to 60°C)
<b>Storage Temperature</b>	0° to 140°F (0° to 60°C)
<b>Operating Temperature</b>	00 to 90% non-condensing 90% RH non-condensing
<b>Operating Humidity</b>	
<b>Mounting</b>	Din-rail, wall or ceiling mount
<b>Dimensions</b>	4.25"H x 6.93"W x 2.20"D (108 x 176 x 56 mm)
<b>Weight</b>	1.3 lbs (0.59 kg)
<b>Approvals</b>	UL916, CSA, FCC, ICES-003, CE, Japanese Radio Law, RoHS
<b>Warranty</b>	1.5 years

### ORDERING INFORMATION

Part numbers	ZigBee		I/O			Power		
	High power	External antenna	4 universal inputs	4 analog outputs	5 digital outputs	110-120 VAC	220-240 VAC	24 VAC
SEC-TEA-115-5045	x		x	x	x			
SEC-TEA-230-5045	x		x	x	x		x	
SEC-TEA-24-5045	x		x	x	x			x
SEC-TEA-R-115-5045	x	x	x	x	x	x		
SEC-TEA-R-230-5045	x	x	x	x	x		x	
SEC-TEA-R-24-5045	x	x	x	x	x			x
SEC-TEB-115-5045	x		x	x		x		
SEC-TEB-230-5045	x		x	x			x	
SEC-TEB-24-5045	x		x	x				x
SEC-TEB-R-115-5045	x	x	x	x		x		
SEC-TEB-R-230-5045	x	x	x	x			x	
SEC-TEB-R-24-5045	x	x	x	x				x

Note: • Certification training through Schneider Electric is required before ordering. Call Kele for details.

13

NETWORK & WIRELESS

NEW!



E3X-MRCFP-04

### DESCRIPTION

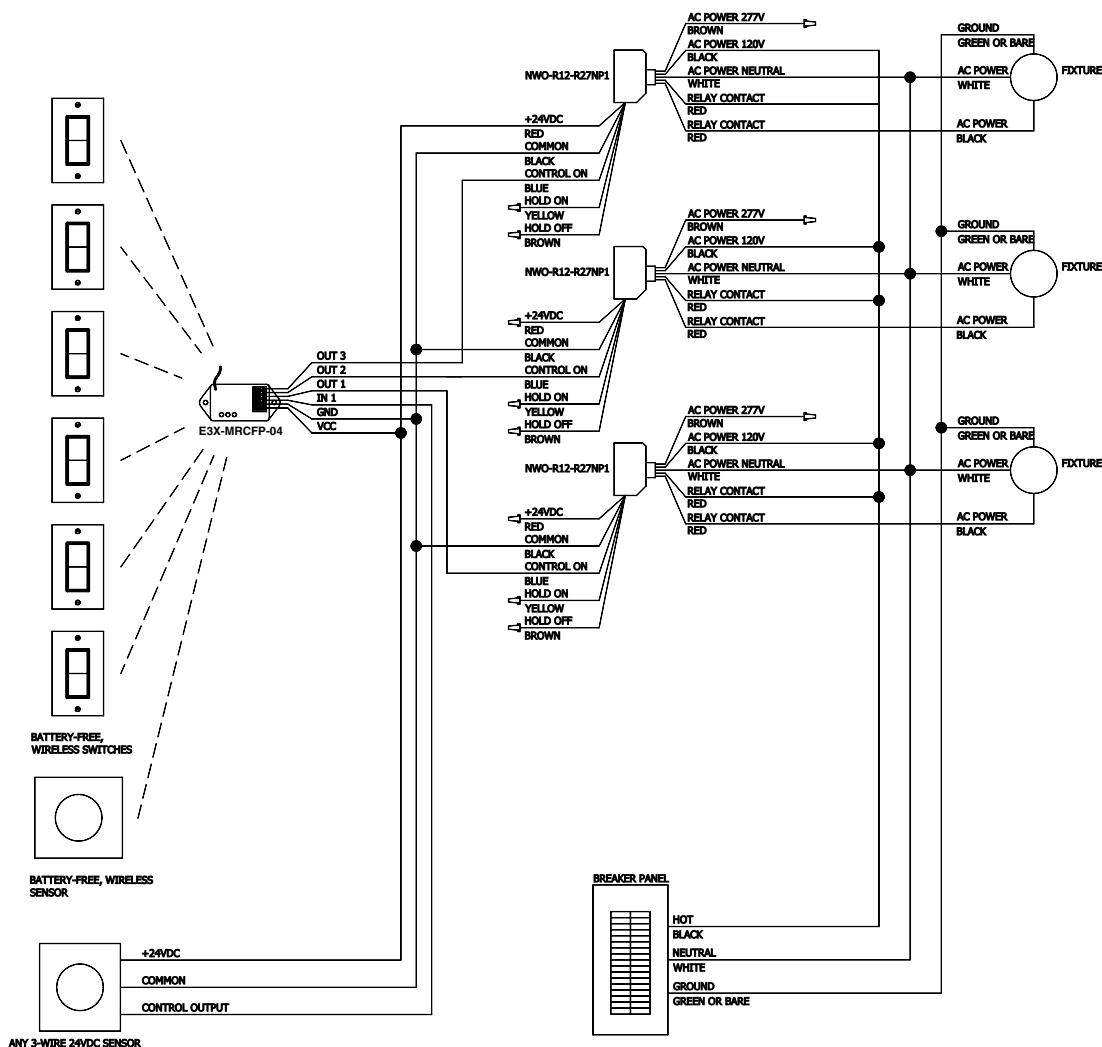
These small transceivers respond to self-powered wireless occupancy sensors and light switches and other ILLUMRA RF transmitters. The Room Controllers may receive input from wired occupancy sensors to automatically turn off lights when no one is in a room. Additionally, the room controllers can extend the reach of wired sensors by wirelessly transmitting sensor status to other ILLUMRA receivers.

### FEATURES

- *Installs in minutes*
- *Easy configuration*
- *Requires no switch leg wires*
- *Communicates with ILLUMRA switches, sensors and transmitters*
- *Error checking ensures response only to appropriate wireless switches*
- *One transmitter can control unlimited receivers within range*
- *Can act as a repeater to extend range*

### WIRING

#### Single Pole or Multi-way Wireless Switch (1 or more wireless light switches)





# NETWORK & WIRELESS

## ENOCEAN WIRELESS ROOM CONTROLLER E3X-MRCFP SERIES

### SPECIFICATIONS

<b>Supply Voltage</b>	8-30VDC	<b>Operating Temperature</b>	-13° to 140°F (-25° to 60°C)
<b>Channels</b>		<b>Operating Humidity</b>	0-95% RH non-condensing
<b>E3X-MRCFP-04</b>	4 outputs	<b>Dimensions</b>	1.30"W x 2.88"H x 0.67"L (3.30 x 7.32 x 1.70 cm)
<b>E3X-MRCFP-13</b>	3 outputs, 1 input	<b>Weight</b>	0.1 lbs (0.05 kg)
<b>ESX-MRCFP-22</b>	2 outputs, 2 inputs	<b>Approvals</b>	FCC, IC
<b>Communication</b>	EnOcean wireless	<b>Warranty</b>	3 years
<b>Output Rating</b>	100mA max. per channel		
<b>Transmit Frequency</b>	315 MHz		
<b>Transmit Range</b>	50-150 feet		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-MRCFP-04</b>	Room controller, 0 inputs, 4 outputs, 8-28VDC, 315MHz
<b>E3X-MRCFP-13</b>	Room controller, 1 input, 3 outputs, 8-28VDC, 315 MHz
<b>E3X-MRCFP-22</b>	Room controller, 2 inputs, 2 outputs, 8-28VDC, 315 MHz

## ENOCEAN WIRELESS PLUG-IN RELAY RECEIVER AND DIMMER E3X-X12GP SERIES

13

### DESCRIPTION

The wirelessly controlled ILLUMRA Plug-in Relay Receiver responds to self-powered wireless light switches and other ILLUMRA transmitters to provide ON/OFF control of lights and other plug-in devices. The receiver may also respond to signals from wireless occupancy sensors to provide automatic control of electrical loads. The easy-to-install Plug-in Dimmer/Relay Receiver provides dimming and relay (on/off) control of lamps and other devices.

### FEATURES

- **Plugs into any 120V outlet**
- **Fast, simple programming**
- **Requires no switch-leg wires**
- **DIM or ON/OFF control of lights**

NEW!



E3X-R12GP



### SPECIFICATIONS

<b>Supply Voltage</b>	120VAC	<b>Operating Humidity</b>	0-95% RH non-condensing
<b>Supply Watts</b>	1W	<b>Enclosure</b>	Plastic
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Mounting</b>	Plug in
<b>Transmit Range</b>	50-150 feet	<b>Dimensions</b>	2.07"W x 3.26"H x 1.42"D (8.2 x 5.3 x 3.6 cm)
<b>Contact Rating</b>		<b>Weight</b>	0.5 lbs (0.23 kg)
<b>E3X-D12GP</b>	2.5A	<b>Approvals</b>	ETL: UL244A (USA), CSAc22.2#14-05 (Canada); FCC, IC
<b>E3X/E9X-R12GP</b>	6A	<b>Warranty</b>	3 years
<b>Connections</b>	110V plug & receptacle		
<b>Communication</b>	EnOcean wireless		
<b>Operating Temperature</b>	-13° to 122°F (-25° to 50°C)		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-D12GP</b>	Plug-in dimmer/relay, 120 VAC, 300W, 50/60 Hz, 315 MHz
<b>E3X-R12GP</b>	Plug-in relay, 120 VAC, 500W, 3A ballast, 6A general 50/60 Hz, 315 MHz
<b>E9X-R12GP</b>	Plug-in relay, 120 VAC, 500W, 3A ballast, 6A general 50/60 Hz, 902 MHz

NEW!

# NETWORK & WIRELESS

## ENOCEAN WIRELESS DIMMER/CONTROLLER E3X-DXXFP SERIES



### DESCRIPTION

The ILLUMRA Dimmers respond to wireless light switches and transmitters to control dimmable LED power supplies or dimmable fluorescent ballasts. The dimmer can also turn off or dim lights based on signals from wireless or wired sensors detecting occupancy or available natural light. The wirelessly controlled LED dimmer is perfect for energy-saving applications such as architectural dimming, daylighting, load shedding, and manual ON / automatic OFF control. The dimmer may also be used for custom lighting applications.

### FEATURES

- **Installs in minutes**
- **Easy configuration**
- **Requires no switch leg wires**
- **Variable or ON/OFF control of LEDs, fluorescent lights, or actuators**
- **A single transmitter can control unlimited dimmers in range**
- **Can function as a repeater**

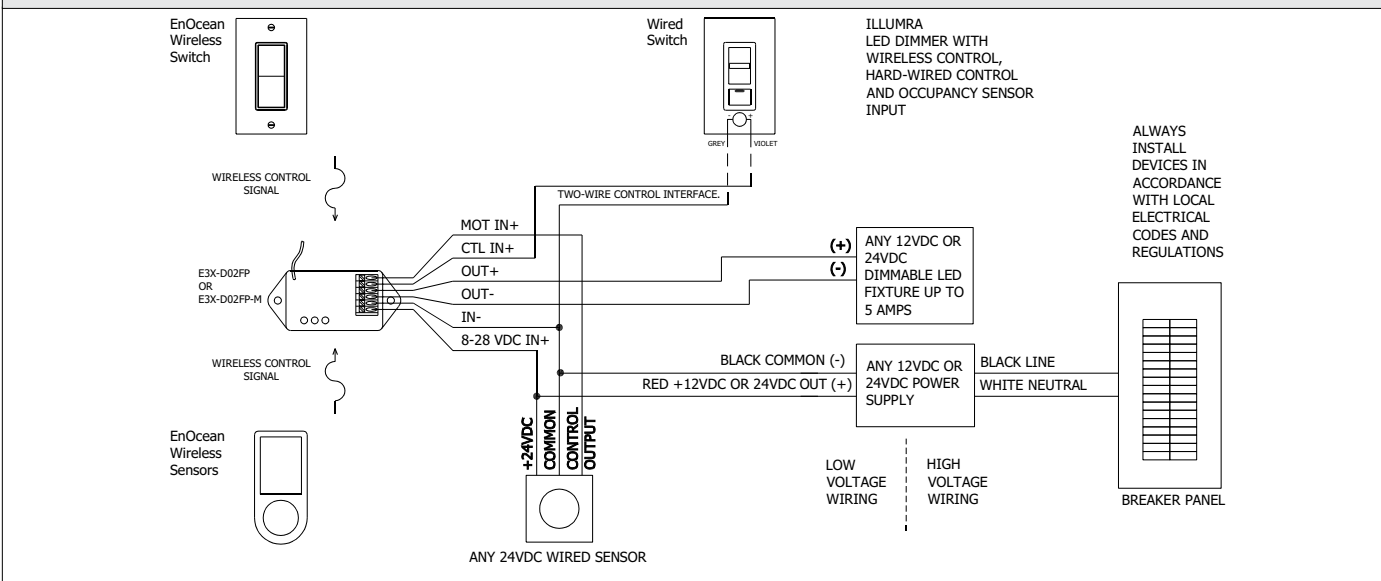
**NEW!**



E3X-DxxFP



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>	8-30VDC	<b>Operating Humidity</b>	0-95% RH non-condensing
<b>Communication</b>	EnOcean wireless	<b>Enclosure</b>	Plastic
<b>Output Rating</b>	5A	<b>Dimensions</b>	1.30"W x 2.88"H x 0.67"D (3.30 x 7.32 x 1.70 cm)
<b>Connections</b>		<b>Weight</b>	0.1 lbs (0.05 kg)
<b>E3X-D01FP</b>	Power, 0-10V output, relay control output	<b>Approvals</b>	FCC, IC
<b>E3X-D02FP</b>	Power, PWM dimming output	<b>Warranty</b>	3 years
<b>E3X-D02FP-M</b>	Power, PWM dimming output, 0-10V input		
<b>Transmit Frequency</b>	315 MHz		
<b>Transmit Range</b>	50-150 feet		
<b>Operating Temperature</b>	-13° to 140°F (-25° to 60°C)		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-D01FP</b>	Wireless 0-10V controller, on/off control, 12-30VDC, 315 MHz
<b>E3X-D02FP</b>	Wireless constant voltage LED dimmer, PWM, 8-30VDC, 315 MHz
<b>E3X-D02FP-M</b>	Wireless constant voltage LED dimmer, master, 315 MHz

# NETWORK & WIRELESS

## 3 WIRE ENOCEAN WIRELESS RELAY RECEIVER E3X-RXX-3HOTP SERIES

### DESCRIPTION

ILLUMRA single channel relay receivers allow lights to be controlled by ILLUMRA self-powered switches, remotes, and sensors. The line-voltage relays help simplify advanced wireless lighting control.

### FEATURES

- Installs in minutes, programs in seconds
- Requires no switch leg or traveler wires
- Compatible with ILLUMRA transmitters
- Each unit stores up to 25 light switch IDs
- Error checking on all packet transfers

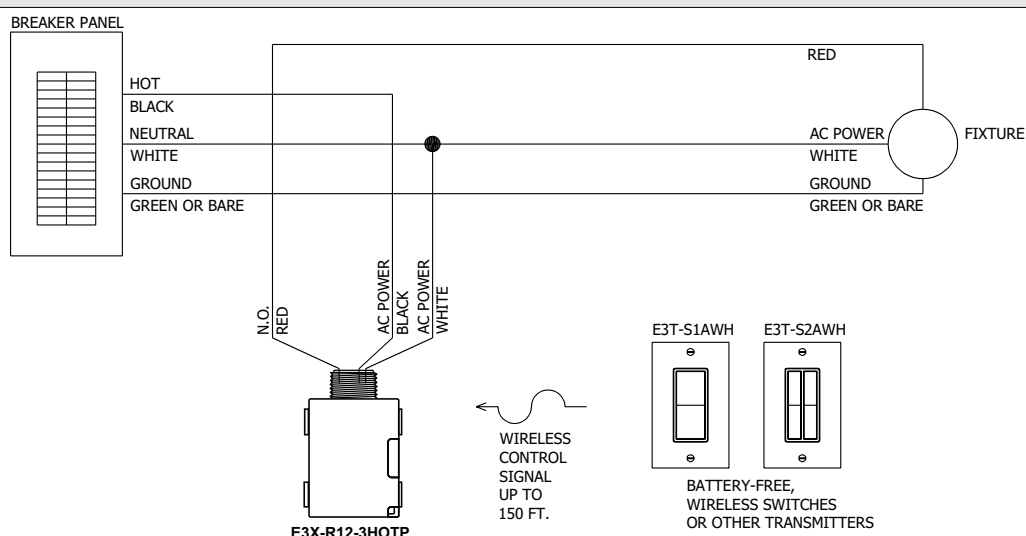
NEW!



E3X-R12-3HOTP



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>		<b>Communication</b>	EnOcean wireless
<b>ExR-R12-3HOTP</b>	120 VAC	<b>Mounting</b>	Threaded nipple
<b>ExR-R24-3HOTP</b>	240 VAC	<b>Enclosure</b>	Plastic
<b>ExR-R27-3HOTP</b>	277 VAC	<b>Color</b>	White
<b>Supply Watts</b>	1W	<b>Dimensions</b>	1.73"W x 2.11"H x 1.09"D (4.39 x 5.36 x 2.77 cm)
<b>Contact Rating</b>	3A, 8A	<b>Weight</b>	0.3 lbs (0.14 kg)
<b>Relay Type</b>	A	<b>Approvals</b>	ETL: UL244A (USA), CSAc22.2#14-05 (Canada); FCC, IC
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Warranty</b>	3 years
<b>Transmit Range</b>	50-150 feet		
<b>Operating Temperature</b>	14° to 122°F (-10° to 50°C)		
<b>Operating Humidity</b>	0-95% RH non-condensing		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-R12-3HOTP</b>	3 wire relay receiver, nipple mounted, 120 VAC, 500W, 315 MHz
<b>E3X-R24-3HOTP</b>	3 wire relay receiver, nipple mounted, 240 VAC, 1000W, 315 MHz
<b>E3X-R27-3HOTP</b>	3 wire relay receiver, nipple mounted, 277 VAC, 1150W, 315 MHz
<b>E9X-R12-3HOTP</b>	3 wire relay receiver, nipple mounted, 120 VAC, 1500W, 902 MHz
<b>E9X-R24-3HOTP</b>	3 wire relay receiver, nipple mounted, 240 VAC, 3000W, 902 MHz
<b>E9X-R27-3HOTP</b>	3 wire relay receiver, nipple mounted, 277 VAC, 3400W, 902 MHz

# NETWORK & WIRELESS

## 5 WIRE ENOCEAN WIRELESS RELAY RECEIVER AND REPEATER E3X-RXX-5IBTP SERIES



### DESCRIPTION

ILLUMRA single channel relay receivers and repeaters allow lights and fans to be controlled by ILLUMRA self-powered wireless switches and sensors. The line-voltage relays help simplify advanced wireless lighting control.

### FEATURES

- **Installs in minutes, programs in seconds**
- **Requires no switch leg or traveler wires**
- **Compatible with all ILLUMRA transmitters**
- **50-150 foot range (typical)**
- **Each unit stores up to 25 light switch IDs**
- **Error checking ensures receiver only responds to appropriate wireless transmitters**

NEW!

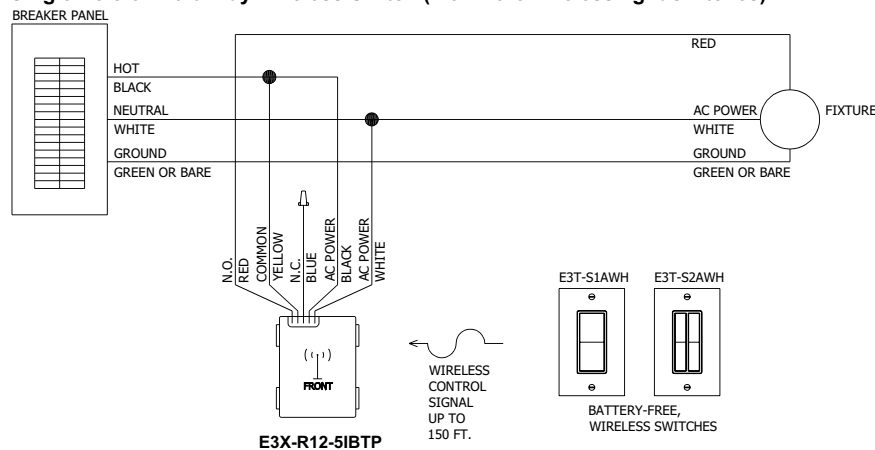


E3X-Rxx-5IBTP

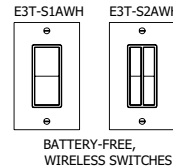


### WIRING

#### Single Pole or Multi-way Wireless Switch (1 or more wireless light switches)\*



E3X-R12-5IBTP



BATTERY-FREE,  
WIRELESS SWITCHES

13

NETWORK & WIRELESS

### SPECIFICATIONS

<b>Supply Voltage</b>		<b>Operating Temperature</b>	14° to 122°F (-10° to 50°C)
E3X-R02-5IBTP	24 VAC	<b>Operating Humidity</b>	0-95% RH non-condensing
E3X-R12-5IBTP	120 VAC	<b>Mounting</b>	Threaded nipple
E3X-R24-5IBTP	240 VAC	<b>Enclosure</b>	Plastic
E3X-R27-5IBTP	277 VAC	<b>Dimensions</b>	1.73"W x 2.11"H x 1.09"D (4.39 x 5.36 x 2.77 cm)
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Weight</b>	0.3 lbs (0.14 kg)
<b>Transmit Range</b>	50-150 feet	<b>Approvals</b>	ETL: UL244A (USA), CSAc22.2#14-05 (Canada); FCC, IC
<b>Contact Rating</b>	8A	<b>Warranty</b>	3 years
<b>Relay Type</b>	C		
<b>Communication</b>	EnOcean wireless		

### ORDERING INFORMATION

MODEL	DESCRIPTION
E3X-R02-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 24 VAC, 315 MHz
E3X-R12-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 120 VAC, 315 MHz
E3X-R24-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 240 VAC, 315 MHz
E3X-R27-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 277 VAC, 315 MHz
E9X-R02-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 24 VAC, 902 MHz
E9X-R12-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 120 VAC, 902 MHz
E9X-R24-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 240 VAC, 902 MHz
E9X-R27-5IBTP	5 wire relay receiver w/repeater, nipple mounted, 277 VAC, 902 MHz

NEW!

# NETWORK & WIRELESS

## ENOCEAN WIRELESS LOW VOLTAGE RELAY RECEIVER E3R-R04FP SERIES

### DESCRIPTION

The Low Voltage Relay Receiver connects wireless light switches and sensors to new or existing control systems. The low voltage receiver responds to up to 80 different transmitters and provides 4 or 8 output channels (dry contact or 8-30V for relay and contactor applications). The outputs can be programmed as either momentary or maintained contacts.

### FEATURES

- Control up to 4 or 8 separate devices or groups of devices
- Responds to up to 80 transmitters
- Dry contact output channels for relay/contactor applications
- Outputs can be programmed as either momentary or maintained contacts.

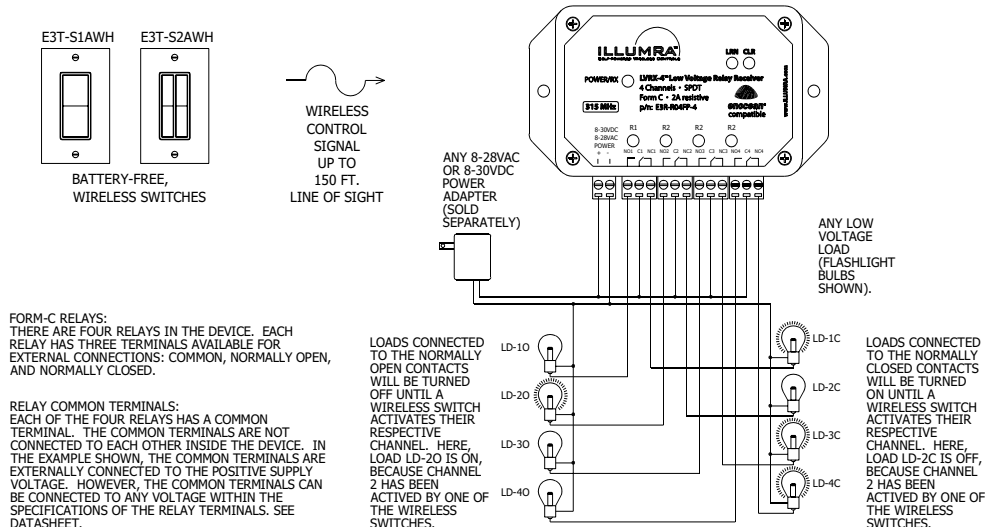
NEW!



E3R-R04FP



### WIRING



### SPECIFICATIONS

Supply Voltage	8-30VAC, 8-28VDC
Supply Watts	2W max.
Transmit Frequency	315 MHz, 902 MHz
Transmit Range	50-150 feet
Relay Type	C, A
Communication	EnOcean wireless
Digital Outputs	4, 8 relay outputs
Contact Rating	2A
Operating Temperature	-13° to 140°F (-25° to 60°C)

Operating Humidity	0-95% RH non-condensing
Enclosure	Plastic
Mounting	Panel
Dimensions	3.2"W x 5.1"H x 1.13"D (8.13 x 12.95 x 2.87 cm)
Weight	0.3 lbs (0.14 kg)
Approvals	FCC, IC
Warranty	3 years

### ORDERING INFORMATION

MODEL	DESCRIPTION
E3R-R04FP-4	4 channel low voltage relay receiver, 8-28VAC/VDC, 315 MHz
E3R-R04FP-8	8 channel low voltage relay receiver, 8-28VAC/VDC, 315 MHz
E9R-R04FP-4	4 channel low voltage relay receiver, 8-28VAC/VDC, 902 MHz
E9R-R04FP-8	8 channel low voltage relay receiver, 8-28VAC/VDC, 902 MHz

## ENOCEAN WIRELESS SWITCH LEG TRANSMITTER E3T-RXX-2INTP SERIES



### DESCRIPTION

The ILLUMRA Single Channel Switch Leg Transmitter (SLT) replaces wire between an electrical device and a control switch. The SLT senses status of photocell, timer, or manual switch master circuit to control wireless slave receiver(s).

These transmitters communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).

### FEATURES

- **Installs in minutes**
- **Easy-to-configure**
- **Eliminates need for switch-leg wires**
- **Unique ID of each SLT activates only the intended receiver(s)**

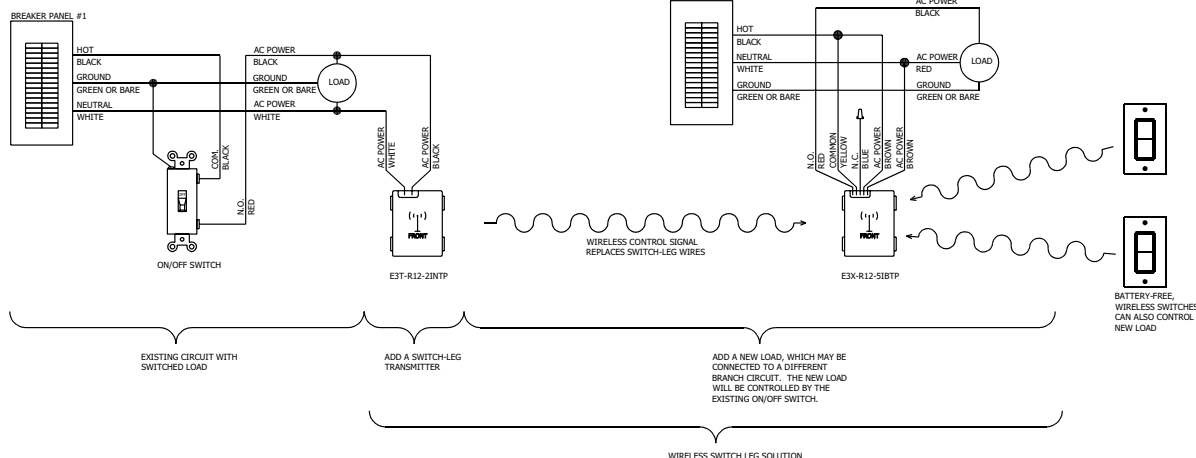
**NEW!**



E3T-Rxx-2INTP

### WIRING

Basic Installation of Switch Leg Transmitter



### SPECIFICATIONS

<b>Supply Voltage</b>		<b>Mounting</b>	Threaded nipple
<b>E3T-R02-2INTP</b>	24VAC, 50/60Hz	<b>Enclosure</b>	Plastic
<b>E3T-R12-2INTP</b>	120VAC, 50/60Hz	<b>Dimensions</b>	1.73"W x 2.11"H x 1.09"D (4.39 x 5.36 x 2.77 cm)
<b>E3T-R24-2INTP</b>	240VAC, 50/60Hz	<b>Weight</b>	0.15 lbs (0.07kg)
<b>E3T-R27-2INTP</b>	277VAC, 50/60Hz	<b>Approvals</b>	ETL: UL244A (USA), CSAc22.2 #14-05 (Canada); FCC, IC
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Warranty</b>	3 years
<b>Transmit Range</b>	50-150 feet		
<b>Operating Temperature</b>	14° to 122°F (-10° to 50°C)		
<b>Operating Humidity</b>	0-95% RH non-condensing		
<b>Communication</b>	EnOcean Wireless		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3T-R02-2INTP</b>	Wireless SLT circuit interlock transmitter, 24V, 315 MHz
<b>E3T-R12-2INTP</b>	Wireless SLT circuit interlock transmitter, 120V, 315 MHz
<b>E3T-R24-2INTP</b>	Wireless SLT circuit interlock transmitter, 240V, 315 MHz
<b>E3T-R27-2INTP</b>	Wireless SLT circuit interlock transmitter, 277V, 315 MHz
<b>E9T-R02-2INTP</b>	Wireless SLT circuit interlock transmitter, 24V, 902 MHz
<b>E9T-R12-2INTP</b>	Wireless SLT circuit interlock transmitter, 120V, 902 MHz
<b>E9T-R24-2INTP</b>	Wireless SLT circuit interlock transmitter, 240V, 902 MHz
<b>E9T-R27-2INTP</b>	Wireless SLT circuit interlock transmitter, 277V, 902 MHz

13

NETWORK & WIRELESS

**NEW!**

# NETWORK & WIRELESS

## ENOCEAN WIRELESS REPEATER E3X-RXX-REPTP SERIES

### DESCRIPTION

The ILLUMRA Repeater works to extend the wireless coverage area of ILLUMRA wireless networks. It receives wireless control signals and retransmits them to distant receivers or other repeaters. The device is capable of one-level and two-level repeating, effectively tripling the coverage distance otherwise achievable without using repeaters. It is easy to install and requires no setup or commissioning.

These repeaters communicate with ILLUMRA's E3T-x series of transmitters, E3R-x series of receivers and E3X-x series of transceiver controllers.

### FEATURES

- *One-level and two-level repeating*
- *Fast, easy installation*
- *No setup required*
- *No commissioning required*

NEW!



E3X-Rxx-REPTP



### WIRING

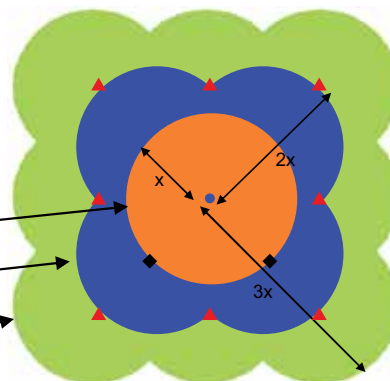
### APPLICATION DIAGRAM

- Transmitter
- ◆ Level 1 repeater
- ▲ Level 2 repeater

Coverage area without repeaters

Coverage area with Level-1 repeaters

Coverage area with Level-2 repeaters



\*Using two levels of repeaters achieves up to triple the distance achievable without repeaters. Results will vary, depending on site-specific conditions.

### SPECIFICATIONS

<b>Supply Voltage</b>		<b>Communication</b>	EnOcean wireless
<b>E3X-R02-REPTP</b>	24 VAC, 50/60 Hz	<b>Mounting</b>	Threaded Nipple
<b>E3X-R12-REPTP</b>	120 VAC, 50/60 Hz	<b>Enclosure</b>	Plastic
<b>E3X-R24-REPTP</b>	240 VAC, 50/60 Hz	<b>Dimensions</b>	2.11"H x 1.73"W x 1.09"D (5.36 x 4.39 x 2.77 cm)
<b>E3X-R27-REPTP</b>	277 VAC, 50/60 Hz	<b>Weight</b>	0.15 lbs (0.07 kg)
<b>Transmit Frequency</b>	315 MHz	<b>Approvals</b>	ETL: UL244A (USA), CSAc22.2 #14-05 (Canada); FCC, IC
<b>Transmit Range</b>	50-150 feet	<b>Warranty</b>	3 yrs
<b>Operating Temperature</b>	14° to 122°F (-10° to 50°C)		
<b>Operating Humidity</b>	0-95% RH non-condensing		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-R02-REPTP</b>	Repeater, 24 VAC, 315 MHz
<b>E3X-R12-REPTP</b>	Repeater, 120 VAC, 315 MHz
<b>E3X-R24-REPTP</b>	Repeater, 240 VAC, 315 MHz
<b>E3X-R27-REPTP</b>	Repeater, 277 VAC, 315 MHz

13

NETWORK & WIRELESS



**NEW!**



**E3X-T02-U2W**



### DESCRIPTION

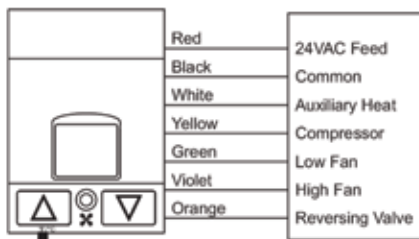
The ILLUMRA Thermostat uses wireless communication to provide quick and easy implementation of energy-saving HVAC controls. When the thermostat receives an “occupied” signal from an ILLUMRA wireless switch or sensor, it adjusts temperature set point to a narrow preset range (i.e. 70°-72°F). When the thermostat receives an “unoccupied” signal, it adjusts temperature set points to a wider range (i.e. 62°-80°F).

This thermostat communicates with ILLUMRA's E3T-x series of transmitters, E3R-x series of receivers and E3X-x series of transceiver controllers.

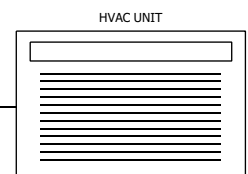
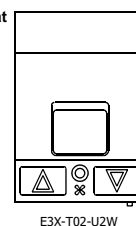
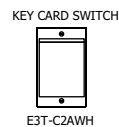
### FEATURES

- **Installs in minutes**
- **Easy configuration**
- **Requires no switch leg wires**
- **Responds automatically to occupancy or vacancy**

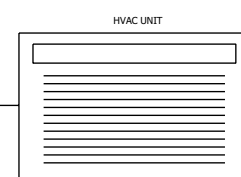
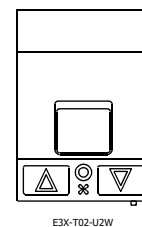
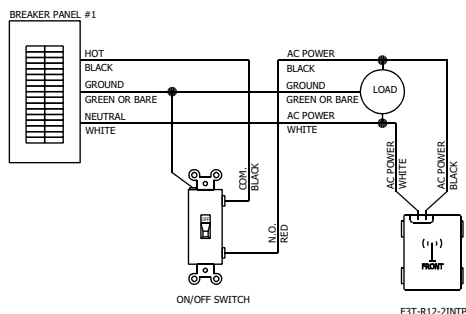
### WIRING



#### Key Card Switch Control of Thermostat



#### Disable HVAC Unit When Existing Light Circuit is Turned Off



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC	<b>Communication</b>	EnOcean wireless
<b>Transmit Frequency</b>	315 MHz	<b>Display Type</b>	LCD
<b>Transmit Range</b>	50-150 feet	<b>Operating Temperature</b>	14° to 131°F (10° to 55°C)
<b>Temp. Monitor Range</b>	32.0° to 99.9°F (0.0° to 37.7°C)	<b>Operating Humidity</b>	0-95% RH non-condensing
<b>Temp. Set Point Range</b>	60° to 85°F (15.5° to 29.5°C)	<b>Enclosure</b>	Plastic
<b>Accuracy</b>	± 1°F (0.5°C)	<b>Dimensions</b>	3.5"W x 5.0"H x 1.5"D (8.9 x 12.7 x 3.8 cm)
<b>Max Loads</b>	1.5 amp/circuit	<b>Weight</b>	0.5 lbs (0.23 kg)
<b>Fan Control</b>	Selectable: Auto cycle, low, medium, high, economy, off	<b>Approvals</b>	FCC, IC
<b>Heat/Cool Control</b>	1 heat and cool circuit, heat pump reversing valve circuit	<b>Warranty</b>	3 years

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>E3X-T02-U2W</b>	24VAC thermostat, 315 MHz



# NETWORK & WIRELESS

## ENOCEAN WIRELESS LIGHT SENSOR E3T-SLICP

### DESCRIPTION

ILLUMRA Wireless Battery-Free Light Sensor saves time, energy, and money by avoiding costly and time-consuming installation of hardwired daylighting controls. The light sensor saves energy by lowering the output of artificial light when daylight is present in a room, saving up to 60 percent of the energy. The sensor can be used in open-loop and closed-loop daylight-harvesting applications.

This light sensor communicates with ILLUMRA's E3R-x series of receivers and E3X-x series of transceiver controllers.

### FEATURES

- *Installs in minutes*
- *Easy configuration*
- *Compatible with a wide variety of ILLUMRA dimmers and relays*
- *Open-loop or closed-loop applications*
- *Turn off or dim lights to save energy*

### ORDERING INFORMATION

MODEL	DESCRIPTION
E3T-SLICP	Wireless light sensor, 315 MHz

NEW!



E3T-SLICP



### SPECIFICATIONS

Supply Voltage	Self-powered with solar cell
Battery	Optional 1/2 AA Lithium (#14250)
Transmit Frequency	315 MHz
Transmit Range	50-150 feet
Communication	EnOcean wireless
LED Indication	TX
Illuminance Range	0-1024 lux $\pm$ 10%
Operating Temperature	-13° to 140°F (-25° to 60°C)
Operating Humidity	0-95% RH non-condensing
Enclosure	Plastic
Mounting	Screws / 2 sided tape
Dimensions	3.7"W x 3.5"H x 1.1"D (9.39 x 8.89 x 2.79 cm)
Weight	0.2 lbs (0.09 kg)
Approvals	FCC, IC, RoHS
Warranty	3 years

## ENOCEAN WIRELESS EUROPEAN LIGHT SWITCHES

### E3T-SXE SERIES

### DESCRIPTION

ILLUMRA European style light switches are wireless and battery-free, delivering a no maintenance solution. Pressing the switch provides the energy needed to transmit a wireless signal that controls lights or other devices connected to ILLUMRA receivers.

These switches communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).

### FEATURES

- *Mount switches anywhere*
- *Create 3-way and 4-way switches*
- *Control lights, motors, or other electrical loads*
- *Reconfigure or relocate as needed*
- *Unique (theft) tamper-resistant design*



E3T-S1Exx

NEW!



### SPECIFICATIONS

Supply Voltage	Self-powered when switch is pressed	Mounting	Screws / 2 sided tape
Transmit Frequency	315 MHz, 902 MHz	Dimensions	3.16"W x 3.16"D x 0.40"D (8.03 x 8.03 x 1.02 cm)
Transmit Range	50-150 feet	Weight	0.15 lbs (0.07 kg)
Communication	EnOcean wireless	Approvals	FCC, IC
Operating Temperature	-13° to 149°F (-25° to 65°C)	Warranty	3 years
Operating Humidity	0-95% RH, non-condensing		
Enclosure	Plastic		

### ORDERING INFORMATION

MODEL	DESCRIPTION		
E3T-S1EBK	European single rocker, 315 MHz, black	E9T-S1EBK	European single rocker, 902 MHz, black
E3T-S1EWH	European single rocker, 315 MHz, white	E9T-S1EWH	European single rocker, 902 MHz, white
E3T-S2EBK	European dual rocker, 315 MHz, black	E9T-S2EBK	European dual rocker, 902 MHz, black
E3T-S2EWH	European dual rocker, 315 MHz, white	E9T-S2EWH	European dual rocker, 902 MHz, white

13

NETWORK & WIRELESS

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## ENOCAN WIRELESS KEY CARD READER E3T-C2AWH



NEW!



E3T-C2AWH



### DESCRIPTION

The ILLUMRA Key Card Switch needs no wires or batteries. Inserting a key card provides the energy to transmit a wireless signal that controls lights or other devices connected to ILLUMRA receivers.

These key card readers communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).

### FEATURES

- **Control all or only selected devices in a room**
- **Use with most room key cards**
- **Installs in minutes**

### SPECIFICATIONS

<b>Supply Voltage</b>	Self-powered when key card is inserted/ removed	<b>Enclosure</b>	Plastic
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Mounting</b>	Screws / 2 sided tape
<b>Transmit Range</b>	50-150 feet	<b>Dimensions</b>	3.05"W x 4.65"H x 1.04"D (7.75 x 11.81 x 2.64 cm)
<b>Communication</b>	EnOcean wireless	<b>Weight</b>	0.3 lbs (0.14 kg)
<b>Operating Temperature</b>	-13° to 149°F (-25° to 65°C)	<b>Approvals</b>	FCC, IC
<b>Operating Humidity</b>	0-95% RH non-condensing	<b>Warranty</b>	3 years

### ORDERING INFORMATION

MODEL	DESCRIPTION
E3T-C2AWH	Wireless key card reader, 315 MHz
E9T-C2AWH	Wireless key card reader, 902 MHz

## ENOCAN WIRELESS HANDHELD REMOTE

### E3T-S2H SERIES

### DESCRIPTION

ILLUMRA self-powered light switches use no wires or batteries. Pressing the switch provides the energy needed to transmit a wireless signal that controls lights or other devices connected to ILLUMRA receivers. The Handheld Self-Powered Wireless Light Switch is small enough to fit in the palm of your hand – keep it in your pocket, on a table, or leave it in your car to turn on lights as you pull up to a house or building.

These handheld remotes communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).

### FEATURES

- **Control lights, motors, or other electric loads**
- **Use in single pole, 3-way, or 4-way switch applications**
- **One switch can control unlimited receivers within range**
- **Experience wireless dimming control or rocker, toggle, or momentary switch functionality**

### SPECIFICATIONS

<b>Supply Voltage</b>	Self-powered when switch is pressed	<b>Mounting</b>	Screws / 2 sided tape
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Dimensions</b>	1.85"W x 3.15"H x 0.7"D (4.70 x 8.00 x 1.78 cm)
<b>Transmit Range</b>	50-150 feet	<b>Weight</b>	0.15 lbs (0.07 kg)
<b>Communication</b>	EnOcean wireless	<b>Approvals</b>	FCC, IC
<b>Operating Temperature</b>	-13° to 149°F (-25° to 65°C)	<b>Warranty</b>	3 years
<b>Operating Humidity</b>	0-95% RH non-condensing		
<b>Enclosure</b>	Plastic		

### ORDERING INFORMATION

MODEL	DESCRIPTION
E3T-S2HBK	Handheld remote wireless light switch, 315 MHz, black
E3T-S2HWH	Handheld remote wireless light switch, 315 MHz, white
E9T-S2HBK	Handheld remote wireless light switch, 902 MHz, black
E9T-S2HWH	Handheld remote wireless light switch, 902 MHz, white

NEW!



E3T-S2HWH



13

NETWORK & WIRELESS

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# NETWORK & WIRELESS

## ENOCEAN WIRELESS SWITCHES E3T-SXA SERIES

### DESCRIPTION

ILLUMRA Self-powered Wireless Light Switches are powered by EnOcean technology that converts the press of the switch into a small amount of electricity. This electricity is used to transmit a wireless signal that communicates with a wide variety of ILLUMRA Receivers. Battery-free wireless light switches are primarily used to control lights in homes or businesses but they can be used to control virtually any on/off device. Each Self-powered Wireless Light Switch can be placed anywhere within range of a receiver. Traditionally the wireless light switch is surface mounted on a wall with screws or industrial tape but can also be used in a standard switch box or as a wireless hand held remote.

These switches communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).

**NEW!**



**E3T-S1AWH**



**E3T-S2AWH**



### FEATURES

- **Installs in minutes**
- **Requires no wiring**
- **Easy to configure**
- **Unique ID of each switch activates only the intended receiver(s)**

### SPECIFICATIONS

<b>Supply Voltage</b>	Self-powered when switch is pressed	<b>Dimensions</b>	2.75"W x 4.5"H x 0.62"D (6.99 x 11.43 x 1.58 cm)
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Weight</b>	0.25 lbs (0.11 kg)
<b>Transmit Range</b>	50-150 feet	<b>Approvals</b>	FCC, IC
<b>Communication</b>	EnOcean wireless	<b>Warranty</b>	3 years
<b>Operating Temperature</b>	-13° to 149°F (-25° to 65°C)		
<b>Operating Humidity</b>	0-95% RH non-condensing		
<b>Enclosure</b>	Plastic		
<b>Mounting</b>	Standard switch box or surface mounted using screws or adhesive		

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>EST-S1ABK</b>	Single rocker wireless light switch, 315 MHz, black
<b>E3T-S1ABR</b>	Single rocker wireless light switch, 315 MHz, brown
<b>E3T-S1AGY</b>	Single rocker wireless light switch, 315 MHz, gray
<b>E3T-S1AIV</b>	Single rocker wireless light switch, 315 MHz, ivory
<b>E3T-S1ALA</b>	Single rocker wireless light switch, 315 MHz, It almond
<b>E3T-S1AWH</b>	Single rocker wireless light switch, 315 MHz, white
<b>E3T-S2ABK</b>	Dual rocker wireless light switch, 315 MHz, black
<b>E3T-S2ABR</b>	Dual rocker wireless light switch, 315 MHz, brown
<b>E3T-S2AGY</b>	Dual rocker wireless light switch, 315 MHz, gray
<b>E3T-S2AIV</b>	Dual rocker wireless light switch, 315 MHz, ivory
<b>E3T-S2ALA</b>	Dual rocker wireless light switch, 315 MHz, It almond
<b>E3T-S2AWH</b>	Dual rocker wireless light switch, 315 MHz, white
<b>E9T-S1ABK</b>	Single rocker wireless light switch, 902 MHz, black
<b>E9T-S1ABR</b>	Single rocker wireless light switch, 902 MHz, brown
<b>E9T-S1AGY</b>	Single rocker wireless light switch, 902 MHz, gray
<b>E9T-S1AIV</b>	Single rocker wireless light switch, 902 MHz, ivory
<b>E9T-S1ALA</b>	Single rocker wireless light switch, 902 MHz, It almond
<b>E9T-S1AWH</b>	Single rocker wireless light switch, 902 MHz, white
<b>E9T-S2ABK</b>	Dual rocker wireless light switch, 902 MHz, black
<b>E9T-S2ABR</b>	Dual rocker wireless light switch, 902 MHz, brown
<b>E9T-S2AGY</b>	Dual rocker wireless light switch, 902 MHz, gray
<b>E9T-S2AIV</b>	Dual rocker wireless light switch, 902 MHz, ivory
<b>E9T-S2ALA</b>	Dual rocker wireless light switch, 902 MHz, It almond
<b>E9T-S2AWH</b>	Dual rocker wireless light switch, 902 MHz, white

13

NETWORK & WIRELESS

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### DESCRIPTION

The ILLUMRA Wireless Door/Window Sensor maximizes the energy savings of heating and air conditioning systems by providing wireless status of windows and/or doors. The sensor uses a magnet contact switch that is powered by a solar cell and communicates with a wide variety of ILLUMRA products.

Energy waste can be reduced by 20 to 60 percent by disabling blowers and/or adjusting temperature setpoints in HVAC systems when windows and doors are left open. The wireless Door/Window Sensor is a key component to reducing energy waste in hotel, condominium and dormitory buildings.

These sensors communicate with ILLUMRA's E3R-x and E9R-x series of receivers and E3X-x and E9X-x series of transceiver controllers (model frequency dependent).



E3T-MDCCP



### FEATURES

- **Solar powered** — *when fully charged, can run in total darkness for several days*
- **No batteries - No Maintenance**
- **Install in minutes**
- **Eliminate the need to pull wires to sensors**

SPECIFICATIONS			
<b>Supply Voltage</b>	Self-powered, integrated solar cell	<b>Mounting</b>	Screws / 2 sided tape
<b>Transmit Frequency</b>	315 MHz, 902 MHz	<b>Dimensions</b>	0.62"W x 3.86"H x 0.81"L (1.57 x 9.80 x 2.06 cm)
<b>Transmit Range</b>	15-60 feet	<b>Weight</b>	0.11 lbs (0.05 kg)
<b>Communication</b>	EnOcean wireless	<b>Approvals</b>	FCC, IC
<b>Operating Temperature</b>	-4° to 140°F (-20° to 60°C)	<b>Warranty</b>	3 years
<b>Operating Humidity</b>	0-95% RH non-condensing		
<b>Enclosure</b>	Plastic		

ORDERING INFORMATION	
<b>MODEL</b>	<b>DESCRIPTION</b>
E3T-MDCCP	Window/door sensor with magnet contact, 315 MHz
E9T-MDCCP	Window/door sensor with magnet contact, 902 MHz



# NETWORK & WIRELESS

## ENOCEAN ROOM OPERATING PANEL EASYSSENS THANOS

### DESCRIPTION

The EasySens Thanos is a touchscreen room operating panel designed for temperature and humidity detection as well as for integrated operation of HVAC, lighting and blind for single room control. The device is ideal for design-oriented applications. The operating functions can be flexibly adapted to the most different room layouts.

### FEATURES

- Control of automatic HVAC applications by simple touch
- Integrated temperature detection
- Optional with integrated humidity detection
- Bi-directional EnOcean Wireless Communication
- Touch surface made of glass for intuitive operation

NEW!

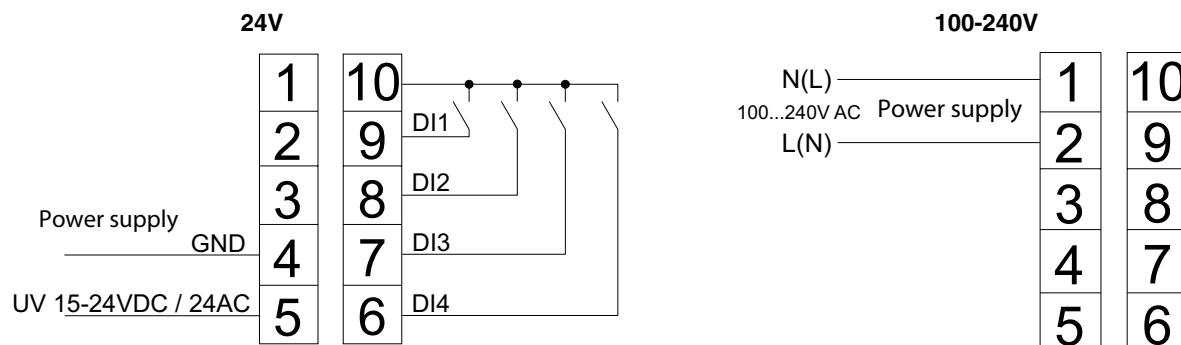


TH-SR-L-BL

**thermokon®**  
Sensortechnik GmbH



### WIRING



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC, $\pm 10\%$ ; 15-25 VDC, $\pm 10\%$	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Frequency</b>	315 MHz, 902 MHz	<b>Operating Humidity</b>	0 to 85% RH non condensing
<b>Range</b>	Typical 70-100 ft	<b>Color</b>	White, Black
<b>Communication</b>	EnOcean	<b>Antenna</b>	Internal
<b>Digital Inputs</b>	4	<b>Enclosure</b>	NEMA 1
<b>Display Type</b>	Capacitive Touch, 3.5" TFT, 320x240 pixels, 262 colors	<b>Dimensions</b>	
<b>Humidity Accuracy</b>	$\pm 3\%$ (20-80% RH)	<b>TH-SR-L</b>	7.76"W x 3.23"H x 0.73"D (19.7 x 8.2 x 1.9 cm)
<b>Humidity Range</b>	0-100% RH	<b>TH-SR-S</b>	4.96"W x 3.23"H x 0.73"D (12.6 x 8.2 x 1.9 cm)
<b>Setpoint Range</b>	Programmable	<b>Weight</b>	
<b>Temperature Range</b>	32° to 104°F (0° to 40°C)	<b>TH-SR-L</b>	1.16 lb (0.53 kg)
<b>Temperature Accuracy</b>	$\pm 0.5K$ (0.9°F)	<b>TH-SR-S</b>	0.83 lb (0.38 kg)
<b>Interface</b>	Touch screen, SD card, Anodised function clip, changeable function keypad	<b>Approvals</b>	CE, FCC, Canada RSS, MIC, RoHS
		<b>Warranty</b>	2 Years

### ORDERING INFORMATION

MODEL†	DESCRIPTION	MODEL†	DESCRIPTION
TH-SR-L-WH	Thanos Room, Large, White, 24V	TH-SR-RH-L-WH	Thanos Temp/RH, Large, White, 24V
TH-SR-L-BL	Thanos Room, Large, Black, 24V	TH-SR-RH-L-BL	Thanos Temp/RH, Large, Black, 24V
TH-SR-LQ-WH	Thanos Landscape, Large, White, 24V	TH-SR-RH-LQ-WH	Thanos, Temp/RH Landscape, White, 24V
TH-SR-LQ-BL	Thanos Landscape, Large, Black, 24V	TH-SR-RH-LQ-BL	Thanos, Temp/RH Landscape, Black, 24V
TH-SR-S-WH	Thanos Room, Small, White, 24V	TH-SR-RH-S-WH	Thanos Temp/RH, Small, White, 24V
TH-SR-S-BL	Thanos Room, Small, Black, 24V	TH-SR-RH-S-BL	Thanos Temp/RH, Small, Black, 24V

† Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.

13

NETWORK & WIRELESS

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March 2014



### DESCRIPTION

The EasySens Receivers and Gateways are receiver interface devices for EnOcean wireless sensors and switches to higher level control systems via BACnet MS/TP, Modbus or LON. The STC65-x models are bi-directional transceiver gateways and the SRC65 model is an uni-directional receiver gateway.

### FEATURES

- *EnOcean Wireless Technology*
- *Models Support Major Building Automation Communication Protocols*
- *Easy to Install and Setup*

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Sensortechnik GmbH



SRC65-BACNET-315



### SPECIFICATIONS

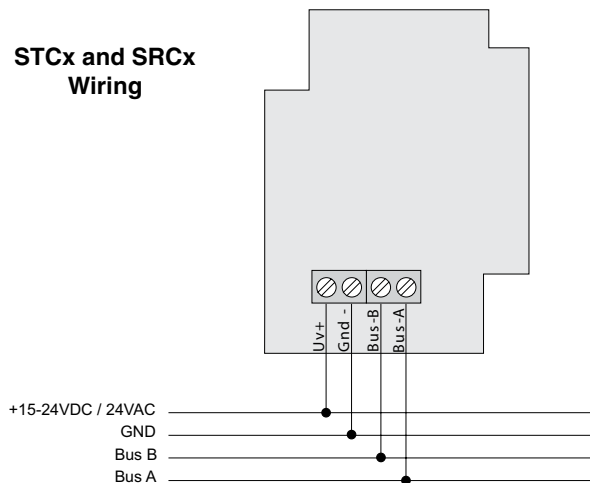
<b>Supply Voltage</b>	15-24 VDC/24VAC +/-10%	<b>STC65-FTT</b>	16 uni-directional / 11bi-directional
<b>Power Consumption</b>		<b>Enclosure</b>	Plastic
<b>SRC65-BACNET</b>	1 watt	<b>Mounting</b>	Surface mount with screw terminals
<b>STC65-RS485-MODBUS</b>	0.6 watt	<b>Operating Temperature</b>	-4 to 140°F (-20 to 60°C)
<b>STC65-FTT</b>	0.5 watt	<b>Operating Humidity</b>	0 to 70% RH, non-condensing
<b>Antenna</b>	External with magnetic stand	<b>Dimensions</b>	3.07" x 2.28" x 1.79" (78x 58 x 45.5mm)
<b>Communication</b>		<b>Weight</b>	0.62 lbs (0.28kg)
<b>SRC65-BACNET</b>	EnOcean Wireless/ BACNET	<b>Approval</b>	CE, FCC, RoHS
<b>STC65-RS485-MODBUS</b>	EnOcean Wireless/ MODBUS	<b>Warranty</b>	2 years
<b>STC65-FTT</b>	EnOcean Wireless/ LON		
<b>Frequency</b>	315MHZ, 902MHZ		
<b>Range</b>	70 -100 FT, typical in building		
<b>Max Number of Wireless Devices</b>			
<b>SRC65-BACNET</b>	32		
<b>STC65-RS485-MODBUS</b>	32		

13

NETWORK & WIRELESS

### WIRING

#### STCx and SRCx Wiring



### ORDERING INFORMATION

MODEL <sup>†</sup>	DESCRIPTION
<b>SRC65-BACNET</b>	EnOcean/BACnet Receiver Gateway
<b>STC65-FTT-LON</b>	EnOcean/LON Receiver and Transmitter Gateway
<b>STC65-RS485-MODBUS</b>	EnOcean/Modbus Receiver and Transmitter Gateway

<sup>†</sup> Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.

# NETWORK & WIRELESS

## ENOCEAN RECEIVER CONTROLLERS EASYSENS SRC RECEIVER CONTROLLERS

### DESCRIPTION

The EasySens SRC Receiver Controller is a simple wireless solution for room climate control. There are several model options for heating and cooling control and analog outputs for variety of applications.

### FEATURES

- *EnOcean Wireless Technology*
- *Easy to Setup with "Prog" and "Learn" buttons*
- *Model with Dimmer Capability Available*

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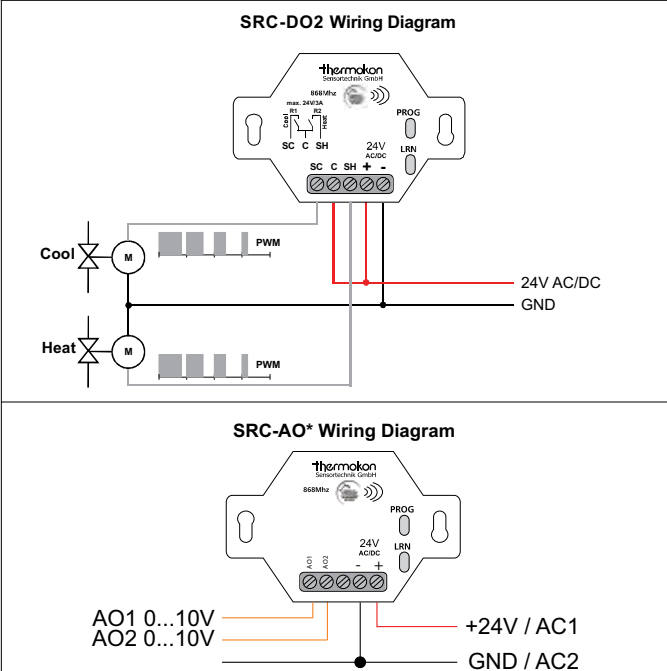
SRC-DO2



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC/VDC	<b>Enclosure</b>	ABS plastic, Red
<b>Power Consumption</b>		<b>Mounting</b>	Surface mount with screw terminal
<b>SRC-DO2-24V-1</b>	1.5 watts	<b>Operating Temperature</b>	-4° to 140°F (-20° to 60°C)
<b>SRC-AO-x</b>	1 watt	<b>Operating Humidity</b>	0-70% RH non-condensing
<b>Outputs</b>		<b>Dimensions</b>	1.89" x 2.76" x 1.77" (48 x 70 x 45 mm)
<b>SRC-DO2-24V-1</b>	2 Relay Outputs	<b>Weight</b>	0.13 lb (0.06 kg)
<b>SRC-AO-x-V</b>	1 analog 0-10V output, 20 mA max	<b>Approval</b>	CE, FCC, RoHS
<b>SRC-AO-x-VV</b>	2 analog 0-10V outputs, 20 mA max	<b>Warranty</b>	2 years
<b>Communication</b>	EnOcean Wireless		
<b>Antenna</b>	Internal		
<b>Frequency</b>	315MHz, 902MHz		
<b>Range</b>	70-100 ft, typical in building		
<b>Max Number of Wireless Devices</b>	Up to 32 EnOcean Transmitters		

### WIRING



### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>SRC-DO2-24V-1</b>	Thermostat-Actuator, 2xDO, 24V
<b>SRC-AO-MULTI-V</b>	Multi-Actuator, 1xAO, 0-10V, 24V
<b>SRC-AO-MULTI-VV</b>	Multi-Actuator, 2xAO, 0-10V, 24V
<b>SRC-AO-CLIMATE-VV</b>	Actuator for heating/cooling, 2xAO, 0-10V, 24V
<b>SRC-AO-DIM-V</b>	Dimming-Actuator, 1xAO, 0-10V, 24V
<b>SRC-AO-DIM-VV</b>	Dimming-Actuator, 2xAO, 0-10V, 24V

† Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.

13

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### DESCRIPTION

The EasySens Repeater is designed for low-level amplification of radio signals between EnOcean sensors and receivers. Typically, the repeater is used if the sensor location is outside the receiving range or if there are range problems between sender and receiver with existing installations such as walls and appliances interfering the radio signals.

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EasySens Repeater



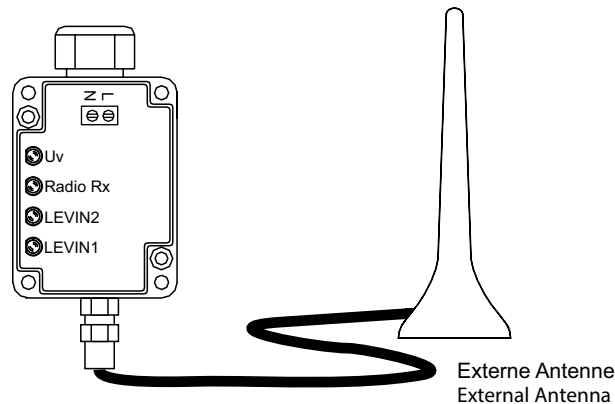
### FEATURES

- *EnOcean Wireless Technology*
- *Easy to Use and Setup*
- *Internal and External Antenna Options*
- *Upto 2 Levels Repeating*

### SPECIFICATIONS

<b>Power Supply</b>	24 VAC/VDC	<b>Operating Temperature</b>	-4° to 140°F (-20° to 60°C)
<b>Communication</b>	EnOcean Wireless	<b>Operating Humidity</b>	0 to 70% RH, non-condensing
<b>Antenna</b>	External	<b>Dimensions</b>	3.07"W x 1.79"H x 2.28"D (78 x 45.5 x 58 mm)
<b>Frequency</b>	315 MHz	<b>Approvals</b>	CE, FCC, RoHS
<b>Range</b>	70-100ft, typical in building	<b>Weight</b>	0.8 lb (0.36 kg)
<b>Enclosure</b>	Plastic	<b>Warranty</b>	2 years
<b>Mounting</b>	Surface mount with screw terminal		

### WIRING



13

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### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>SRE-Repet/B-ext</b>	Repeater with Antenna, 315 MHz

ACCESSORIES	
<b>ANT10</b>	Extension for external antenna, length 32ft
<b>ANT20</b>	Extension for external antenna, length 65ft

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# NETWORK & WIRELESS

## ENOCEAN LIGHTING, BLINDS AND SHUTTERS SWITCHES EASYSENS SWITCHES

### DESCRIPTION

The EasySens Switches are EnOcean wireless switches. They are maintenance-free and self-powered through electrodynamic energy generator inside the switch.

These switches communicate with the EasySens Thanos, SRCx and STCx series of receiver gateways, and SRCx series of receiver controllers (model frequency dependent).

### FEATURES

- *EnOcean Wireless, Maintenance Free*
- *Lighting, Dimmer and Blind Control Models Available*
- *Single or Dual Switches Models Available*
- *Multiple Decor Options*

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BBJ-2CH-WH



BBJ-4CH-WH



LBJ-2CH-CR



LBJ-4CH-ALU



### SPECIFICATIONS

<b>Power Supply</b>	Self-powered when switch pressed
<b>Communication</b>	EnOcean Wireless
<b>Antenna</b>	Internal
<b>Frequency</b>	315 MHz, 902 MHz
<b>Range</b>	70-100 ft, typical in building
<b>Enclosure</b>	Plastic
<b>Mounting</b>	Surface mount
<b>Operating Temperature</b>	-13° to 149°F (-25° to 65°C)
<b>Operating Humidity</b>	0 to 95% RH, non-condensing

<b>Dimensions</b>	
<b>LBJ-x/BBJ-x</b>	3.15"H x 3.15"W x 0.59"D (80 x 80 x 15 mm)
<b>LMI-x/BMI-x</b>	2.4"H x 2.4"W x 0.59"D (61 x 61 x 15 mm)
<b>Approvals</b>	CE, FCC, RoHS
<b>Weight</b>	
<b>LBJ-x/BBJ-x</b>	0.24 lb (0.11 kg)
<b>LMI-x/BMI-x</b>	0.15 lb (0.07 kg)
<b>Warranty</b>	2 years

### ORDERING INFORMATION

MODEL †	DESCRIPTION	MODEL †	DESCRIPTION
<b>LBJ-2CH-WH</b>	2-CH Switch, lighting, White	<b>BBJ-4CH-ALU</b>	4-CH Switch, blinds/shutters, Aluminium
<b>LBJ-2CH-CR</b>	2-CH Switch, lighting, Cream white	<b>BBJ-4CH-ANT</b>	4-CH Switch, blinds/shutters, Anthracite
<b>LBJ-2CH-ALU</b>	2-CH Switch, lighting, Aluminium	<b>LMI-2CH-WH</b>	2-CH switch for lighting, Mini, White
<b>LBJ-2CH-ANT</b>	2-CH Switch, lighting, Anthracite	<b>LMI-2CH-ALU</b>	2-CH Switch lighting, Mini, Aluminium
<b>BBJ-2CH-WH</b>	2-CH Switch, blinds/shutters, Davos White	<b>LMI-2CH-ANT</b>	2-CH Switch, lighting, Mini, Anthracite
<b>BBJ-2CH-CR</b>	2-CH Switch, blinds/shutters, Cream White	<b>BMI-2CH-WH</b>	2-CH Switch, blinds/shutters, Mini, pure white
<b>BBJ-2CH-ALU</b>	2-CH Switch, blinds/shutters, Aluminium	<b>BMI-2CH-ALU</b>	2-CH Switch, blinds/shutters, Mini, Aluminium
<b>BBJ-2CH-ANT</b>	2-CH Switch, blinds/shutters, Anthracite	<b>BMI-2CH-ANT</b>	2-CH Switch, blinds/shutters, Mini, Anthracite
<b>LBJ-4CH-PWH</b>	4-CH Switch, Lighting, Pure White	<b>LMI-4CH-WH</b>	4-CH Switch, lighting, Mini, pure white
<b>LBJ-4CH-CR</b>	4-CH Switch, lighting, Cream White	<b>LMI-4CH-ALU</b>	4-CH Switch, lighting, Mini, aluminium
<b>LBJ-4CH-ALU</b>	4-CH Switch, Lighting, Aluminium	<b>LMI-4CH-ANT</b>	4-CH Switch, lighting control, Mini, Anthracite
<b>LBJ-4CH-ANT</b>	4-CH Switch, lighting, Anthracite	<b>BMI-4CH-WH</b>	4-CH Switch blinds/shutters, Mini, pure white
<b>BBJ-4CH-WH</b>	4-CH Switch, blinds/shutters, Pure White	<b>BMI-4CH-ALU</b>	4-CH Switch, blinds/shutters, Mini, Aluminium
<b>BBJ-4CH-CR</b>	4-CH Switch, blinds/shutters, Cream White	<b>BMI-4CH-ANT</b>	4-CH Switch blinds/shutters, Mini, Anthracite

† Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.

13

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## ENOCEAN REMOTE CONTROL, KEY CARD SWITCH, WINDOW/DOOR CONTACT EASYSENS SPECIALTY WIRELESS TRANSMITTERS



### DESCRIPTION

The EasySens Specialty Transmitters are EnOcean wireless devices. They are energy harvesting, battery free wireless transmitters could be used for variety of applications.

Model 4-CH-EC is a four button remote control could be used for dimmer and roller blind control. SR-KCS model is wireless key card switches could be used for room or office lighting control when occupied. Model SRW01 is a wireless window or door contact for status monitoring in connection with receiver SRC-x and higher level control systems.

These transmitters communicate with the Easysens Thanos, SRCx and STCx series of receiver gateways, and SRCx series of receiver controllers (model frequency dependent).

### FEATURES

- *EnOcean Wireless, Energy Harvesting*
- *Batteryless, Maintenance Free*
- *Use in Variety of Applications*

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SR-KCS



4-CH-EC



SRW01



### SPECIFICATIONS

<b>Power Supply</b>	Self-powered	<b>SR-KCS</b>	4"H x 2.38"W x 0.75"D (102 x 60 x 19 mm)
<b>Communication</b>	EnOcean Wireless	<b>SRW01</b>	Sensor: 3.63"H x 0.81"W x 0.63"D (168 x 21 x 16 mm)
<b>Antenna</b>	Internal		Magnet: 0.81"H x 0.5"W x 0.38"D (21 x 13 x 10 mm)
<b>Frequency</b>	315 MHz, 902 MHz	<b>Approvals</b>	CE, FCC, RoHS
<b>Range</b>	70-100 ft, typical in building	<b>Weight</b>	
<b>Enclosure</b>	Plastic	<b>4-CH-EC</b>	0.18 lb (0.08 kg)
<b>Mounting</b>	Surface mount	<b>SR-KCS</b>	0.35 lb (0.16 kg)
<b>Operating Temperature</b>	-13° to 149°F (-25° to 65°C)	<b>SRW01</b>	0.13 lb (0.06 kg)
<b>Operating Humidity</b>	0 to 95% RH, non-condensing	<b>Warranty</b>	2 years
<b>Dimensions</b>			
<b>4-CH-EC</b>	3.27"H x 1.97"W x 0.98"D (83 x 50 x 25 mm)		

13

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### ORDERING INFORMATION

MODEL†	DESCRIPTION
4-CH-EC	4 Button Remote Control
SR-KCS	Key Card Switch
SRW01	Wireless window/door contact switch

† Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.



# NETWORK & WIRELESS

## ENOCEAN TEMPERATURE, HUMIDITY AND CO2 SENSORS EASYSENS ROOM SENSORS

### DESCRIPTION

The EasySens Room Sensors are EnOcean wireless sensors with variety of options in temperature, humidity, and CO2 sensing. Models with setpoint control, override, and occupancy detection are also available.

These sensors communicate with the EasySens Thanos, SRCx and STCx series of receiver gateways, and SRCx series of receiver controllers (model frequency dependent).

### FEATURES

- *EnOcean Wireless with Battery Backup*
- *Easy to Install with Learn Button*
- *Adjustable Transmission Interval*
- *Variety of Sensing and Control Model Options*

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SR04-CO2-RHLCDZ



SR04PST



### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC, ±10%; 15-25 VDC, ±10%	<b>Antenna</b>	Internal
<b>Battery Backup</b>	Optional LS14250	<b>Enclosure</b>	NEMA 1
<b>Frequency</b>	315 MHz, 902 MHz	<b>Housing Type</b>	Wall mount
<b>Range</b>	Typical 70-100 ft	<b>Response Time</b>	<10 mins CO2
<b>Communication</b>	EnOcean Wireless	<b>Storage Humidity</b>	70% RH, non-condensing
<b>Display Type</b>		<b>Storage Temperature</b>	0° to 140°F (-18° to 60°C)
SR04-CO2-Z,		<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
RHLCDDZ,LCD-Z	Transmission LED	<b>Operating Humidity</b>	0 to 85% RH, non-condensing
SR04-CO2-LCD,		<b>Color</b>	White
RH-LCD	LCD	<b>Dimensions</b>	0.98"H x 3.3"W x 3.3"D (25 x 84.5 x 84.5 mm)
<b>CO2 Accuracy</b>	±40 ppm +4% @21°C	<b>Approvals</b>	CE, FCC, Canada RSS, MIC
<b>Humidity Accuracy</b>	±3% (20-80% RH)	<b>Weight</b>	0.29 lb (0.13 kg)
<b>Humidity Range</b>	0-100% RH	<b>Warranty</b>	2 years
<b>Temperature Range</b>	32° to 104°F (0° to 40°C)		
<b>Temperature Accuracy</b>	±0.4K (0.72°F), 1% of measuring range		
<b>Resolution</b>	±0.15K / 0.27°F, 0.4% RH		

### ORDERING INFORMATION

MODEL †	DESCRIPTION
SR04	Room Temp Sensor
SR04P	Room Temp Sensor,Setpoint
SR04T	Room Temp, Occupancy
SR04P-MS	Room Temp, setpoint,Night mode
SR04PT	Room Temp,Setpoint,Occupancy
SR04PS	Room Temp,Setpoint,Fan speed
SR04PST	Room Temp,setpoint,Fan,Occupancy
SR04-RH	Room Temp/RH
SR04PT-RH	Room Temp/RH,Setpoint,Occupancy
SR04P-MS-RH	Temp/RH setpoint,Night mode
SR04-CO2	Room Temp/CO2
SR04-CO2-RH	Room Temp/RH/CO2
SR04-CO2-Z	Room Temp/CO2 LED
SR04-CO2-LCD	Room Temp/CO2 LCD
SR04-CO2-RHLCDDZ	Room Temp/RH/CO2 LCD/LED
SR04-CO2-RH-LCD	Room Temp/RH/CO2 LCD
SR04-CO2-LCD-Z	Room Temp/CO2 LCD/LED

† Add -315 for 315 MHz or -902 for 902 MHz at the end of the part number to order.

### ACCESSORIES

LS14250	Lithium batteries for external power supply
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## ENOCAN SURFACE, DUCT, REMOTE AND OUTDOOR TEMPERATURE SENSORS EASYSENS TEMPERATURE SENSORS



### DESCRIPTION

The EasySens Temperature Sensors are solar powered EnOcean wireless sensors. They provide wireless temperature sensing for a variety of applications; duct, immersion, surface contact and outdoor sensing.

These temperature sensors communicate with the EasySens Thanos, SRCx and STCx series of receiver gateways, and SRCx series of receiver controllers (models with 315MHz frequency only).

### FEATURES

- **EnOcean Wireless with Battery Backup**
- **Easy to Install with Learn Button**
- **Adjustable Transmission Interval**
- **Model Options for Variety of Applications**

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SPECIFICATIONS		
<b>Power Supply</b>	Solar cell	<b>Operating Temperature</b> -13° to 149°F (-25° to 65°C)
<b>Battery Backup</b>	Optional LS14250	
<b>Frequency</b>	315 mhz	<b>Operating Humidity</b> 0-85% RH non-condensing
<b>Range</b>	Typical 70-100ft	<b>Dimensions</b> 1.8"H x 2.3"W x 3.1"D (45.5 x 58 x 78 mm)
<b>Communication</b>	EnOcean Wireless	
<b>Temperature Range</b>		<b>Approvals</b> CE, FCC, Canada RSS, MIC
SR65/SR65-TF	-4° to 140°F (-20° to 60°C)	
SR65-AKF/SR65-VFG	10° to 194°F (-12° to 90°C)	<b>RoHS Statement</b> Yes
<b>Resolution</b>	± 0.55°F	
<b>Accuracy</b>	± 1.5°F	<b>Weight</b>
<b>Probe Length</b>		
SR65-AKF-135	5.3" (13.5 cm)	SR65/SR65-VFG 0.29 lb (0.13 kg)
SR65-TF	2" (5.1 cm) probe, cable 3.2" (8.1 cm)	SR65-AKF 0.33 lb (0.15 kg)
<b>Antenna</b>	Internal	SR65-TF 0.35 lb (0.16 kg)
<b>Enclosure</b>	NEMA 4/IP65	<b>Warranty</b> 2 years
<b>Housing Type</b>		
SR65	Outdoor	
SR65-AKF	Duct	
SR65-TF	Cable	
SR65-VFG	Clamp on Pipe	

13

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### ORDERING INFORMATION

MODEL	DESCRIPTION
SR65	Outdoor Air Temp
SR65-AKF-135	Duct Temp, 5.3" probe
SR65-TF	Cable Temp, 3.2ft
SR65-VFG	Pipe Contact Temp

### ACCESSORIES

LS14250	Lithium batteries for external power supply
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# NETWORK & WIRELESS

## ENOCEAN INPUT MODULES EASYSENS INPUT MODULES

### DESCRIPTION

The EasySens Input Modules are EnOcean wireless input modules provide information and status to a higher level controller. The module SR65 DI has one digital input for dry contacts by which the switch status can be evaluated. The status of the contact (opened/closed) is transmitted by radio signal to a receiver.

The module SR-MI-HS has three inputs for receiving pulses from water, gas, electric or BTU meters with S0 interfaces (DIN 43864). Pulses of every inputs are totaled independently and the total will be transmitted every 5, 10, 100 or 1000 seconds, depending on the settings. In addition, a signal can be generated and transmitted every 10th or every 100th pulse.

These input modules communicate with the Easysens Thanos, SRCx and STCx series of receiver gateways, and SRCx series of receiver controllers (model frequency dependent).

### FEATURES

- **EnOcean Wireless**
- **Adjustable Transmission Intervals**
- **Easy to Setup "Learn Button"**

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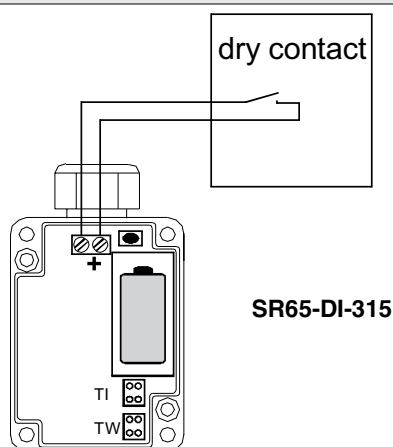
SR65-DI



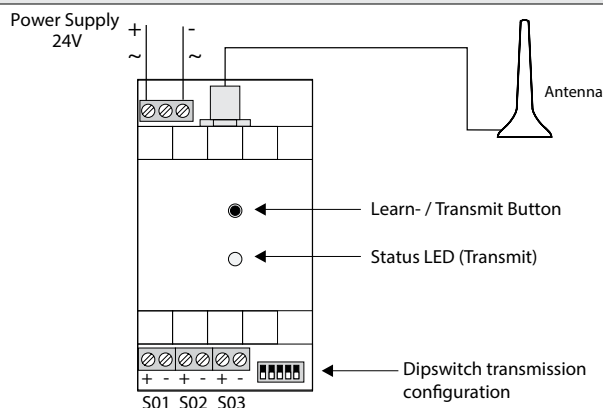
SR-MI



### WIRING



SR65-DI-315



SR-MI-HS-315

### SPECIFICATIONS

<b>Supply Voltage</b>	24 VAC, $\pm 10\%$ ; 15-24 VDC, $\pm 10\%$
<b>Frequency</b>	315 MHz, 902 MHz
<b>Range</b>	Typical building 70-100 ft
<b>Communication</b>	EnOcean
<b>Digital Inputs</b>	3 x Pulse inputs, ASK modulation
<b>Protocol</b>	EnOcean
<b>Color</b>	White
<b>Antenna</b>	External
<b>Enclosure</b>	NEMA 1
<b>Housing Type</b>	Din Rail

<b>Wiring Terminations</b>	Terminal block max 16 AWG
<b>Operating Temperature</b>	32° to 122°F (0° to 50°C)
<b>Operating Humidity</b>	0-85% RH non-condensing
<b>Dimensions</b>	2.4"H x 2.0"W x 3.6"D (60 x 51 x 91 mm)
<b>Approvals</b>	CE, FCC, Canada RSS, MIC
<b>RoHS Statement</b>	Yes
<b>Weight</b>	0.57 lb (0.26 kg)
<b>Warranty</b>	2 Years

### ORDERING INFORMATION

MODEL	DESCRIPTION
SR65-DI-315	Digital Input-module, 315 MHz
SR-MI-HS-315	Energy Meter 3x Pulse Inputs, 315 MHz
SR-MI-HS-902	Energy Meter 3x Pulse Inputs, 902 MHz

13

NETWORK & WIRELESS



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.

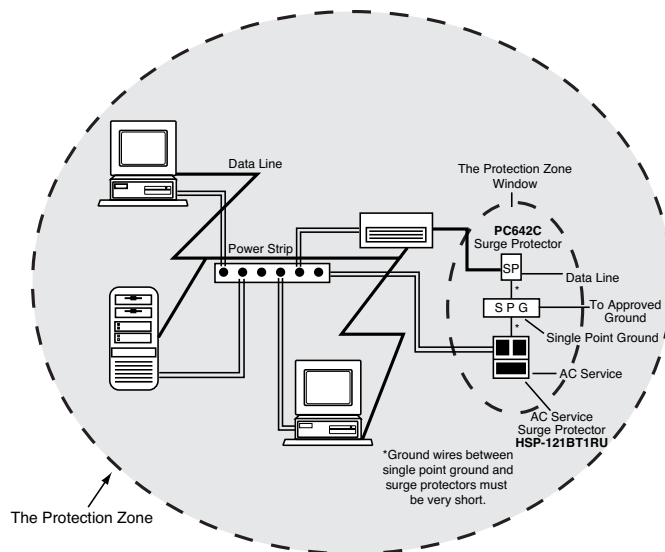
First, the operating voltage of the system is important. Surge protectors are voltage sensitive switches and must not clamp the normal system voltage. The surge protector clamp voltage must be higher than the system voltage. For example, a 24 VDC system voltage generally uses a 30 volt surge protector.

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.

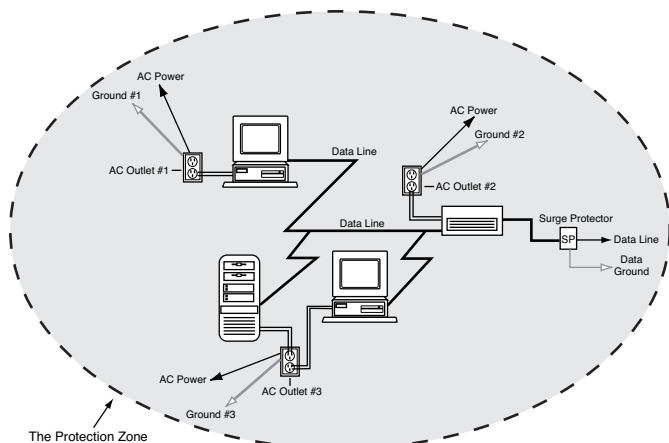
### Problem #3

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.

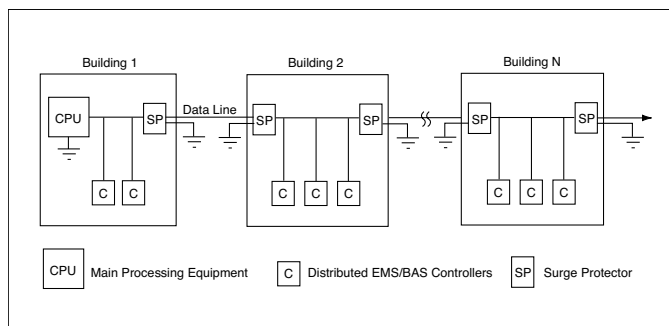
To properly configure surge protection on a multibuilding, multidrop system (see Figure 4), connect the surge protector on each controller drop so that the protector is not in series with the main data line. When connected in this manner, no more than two surge protectors are connected in series. Using 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.

### Summary

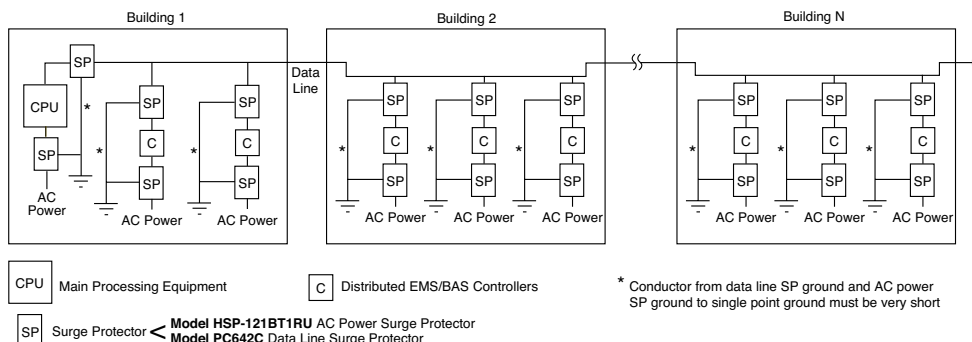
Remember the following when applying surge protection:

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