
I/O Zone Installation Guide





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Important changes are listed in **Document revision history** at the end of this document.

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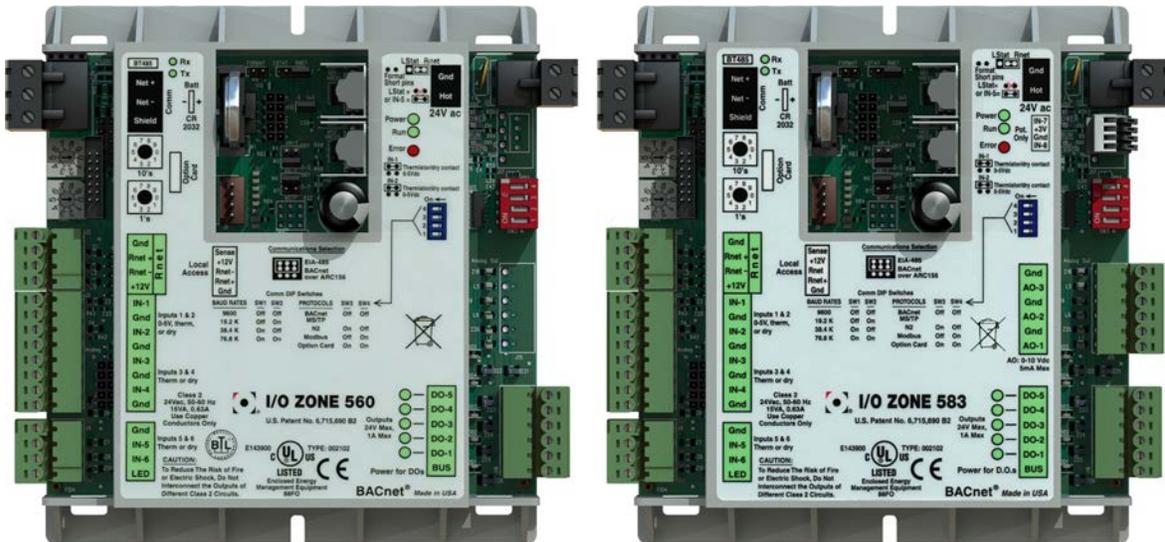
Introduction

What is this document about?

Use this document to install and configure the I/O Zone 560 or 583 for your specific application. All of the information contained within applies to both controllers, unless specifically noted.

What is the I/O Zone controller?

The I/O Zone 560 and 583 are general purpose controllers. They provide the communications circuitry, non-volatile memory, and removable screw terminals for I/O connections.

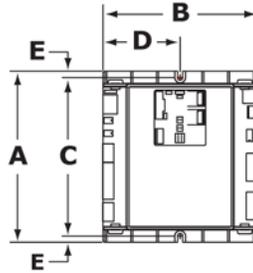


Specifications

Driver	drv_iozone
Maximum number of control programs	10
Maximum number of BACnet objects*	1000
* Depends on available memory	
Power	24 Vac \pm 10%, 50–60 Hz 18 VA power consumption (24 VA with BACview® device attached) 26 Vdc (25 V min, 30 V max) Single Class 2 source only, 100 VA or less
Comm Port	For ARC156 networks or EIA-485 communications (2-wire or 4-wire). Network protocol selectable for: <ul style="list-style-type: none"> • BACnet (MS/TP) • Modbus • N2
Rnet port	<p>You can connect zone sensors, the BACview® device, or an Equipment Touch to the Rnet port, as follows:</p> <p>RS sensors</p> <ul style="list-style-type: none"> • 1 RS Plus, RS Pro, or RS Pro-F • 1 – 4 RS Standards • 1 – 4 RS Standards, and 1 RS Plus, RS Pro, or RS Pro-F <p>Connect any of the above combinations to the Rnet port, plus up to 2 BACview® devices, but no more than 6 RS and BACview® devices total. You cannot have an Equipment Touch on the Rnet with an RS Sensor.</p> <p>ZS sensors</p> <ul style="list-style-type: none"> • 1 -15 ZS Sensors • NOTE You cannot have more than 5 sensors per control program • Up to 15 ZS sensors and 2 BACview® devices • Up to 5 ZS sensors and 1 Equipment Touch device <p> CAUTIONS</p> <ul style="list-style-type: none"> • You cannot have RS sensors and ZS sensors on the same Rnet. • You cannot have an Equipment Touch and a BACview® device on the same Rnet. • Power requirements differ for the various ZS sensor models. See the <i>ZS Sensor Installation Guide</i> for details.

Local Access port	For local communication with a laptop computer running the WebCTRL® for OEMs application or for communication with an Equipment Touch or a BACview® 6 device.
Option Card port	For LonWorks Option Card
Inputs	Inputs 1 - 6 configurable for thermistor or dry contact. Inputs 1 and 2 are also configurable for 0–5 Vdc sensors. Inputs 5 and 6 are used when a LogiStat sensor is connected, but are available if an RS room sensor is connected.
I/O Zone 583	
Inputs 7 and 8	For potentiometer only
Input resolution	10 bit A/D
Input pulse frequency	Maximum of 10 pulses per second. Minimum pulse width required for each pulse: <ul style="list-style-type: none"> • ON to OFF time (half cycle) is 50 msec • ON to OFF to ON time (full cycle) is 100 msec
Binary outputs	5 binary outputs, relay contacts rated at 1 A max. @ 24 Vac/Vdc. Configured normally open.
I/O Zone 583	
Analog outputs	3 analog outputs, 0–10 Vdc (5 mA max)
Analog output resolution	8 bit D/A
Memory	1 MB non-volatile battery-backed RAM, 4 MB Flash memory, 16-bit memory bus
Real-time clock	Battery-backed real-time clock keeps track of time in event of power failure
Battery	10-year Lithium CR2032 battery ensures the following data is retained for a maximum of 10,000 hours during power outages: <ul style="list-style-type: none"> • Time • Graphics • Control programs • Editable properties • Schedules • Trends <p>A low battery is indicated by a low battery alarm in the WebCTRL® for OEMs application, Equipment Touch, BACview® device, and Field Assistant.</p>
Data Archive	Control programs, graphics, touchscreen, or BACview® files, editable properties, and schedules are archived to non-volatile Flash memory after every download or manual archive. If memory is corrupt or a power outage occurs and the battery backup fails or is turned off, the data is automatically restored from this archive, or you can manually restore from archived memory.

Protection	Incoming power and network connections are protected by non-replaceable internal solid-state polyswitches that reset themselves when the condition that causes a fault returns to normal. The power, network, input, and output connections are also protected against transient excess voltage/surge events lasting no more than 10 msec.
Status indicators	LED's indicate status of communications, running, errors, and power.
Electrostatic Discharge (ESD) Protection	<ul style="list-style-type: none"> • Level: 2 • Contact Discharge (kV): ±4 • Air-Gap Discharge (kV): ±4
Environmental operating range	0 to 130 °F (-17.8 to 54.4 °C), 10–90% relative humidity, non-condensing
Physical	Rugged GE C2950HF Cycloy plastic



Overall dimensions	A: 5-5/8 in. (14.3 cm) B: 5-1/8 in. (13 cm)
Mounting dimensions	C: 5-1/4 in. (13.3 cm) D: 2-9/16 in. (6.5 cm) E: 3/16 in. (.5 cm)
Depth	1-5/8 in. (4.1 cm)
Weight	0.44 lbs. (0.20 kg)
BACnet support	Conforms to the BACnet Advanced Application Controller (B-AAC) Standard Device Profile as defined in ANSI/ASHRAE Standard 135-2012 (BACnet) Annex L, Protocol Revision 9
Listed by	UL-916 (PAZX), cUL-916 (PAZX7), FCC Part 15-Subpart B-Class A, CE

Mounting and Wiring

To mount the I/O Zone

Screw the I/O Zone into an enclosed panel using the mounting slots on the coverplate. Leave about 2 in. (5 cm) on each side of the controller for wiring.

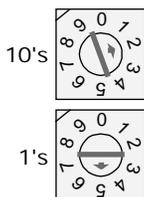
See mounting hole dimensions in *Specifications* (page 2).

To address the I/O Zone

The I/O Zone's two rotary switches determine the I/O Zone's MAC address when it is placed on a BACnet/ARC156 or BACnet MS/TP network. The rotary switches define the MAC address portion of the device's BACnet address, which is composed of the network address and the MAC address. They also set the slave address on a Modbus or N2 network, when less than 100.

- 1 If the I/O Zone has been wired for power, pull the screw terminal connector from its power terminals labeled **Gnd** and **Hot**. The controller reads the address each time you apply power to it.
- 2 Using the rotary switches, set the controller's address. Set the **Tens (10's)** switch to the tens digit of the address, and set the **Ones (1's)** switch to the ones digit.

EXAMPLE If the controller's address is 25, point the arrow on the **Tens (10's)** switch to 2 and the arrow on the **Ones (1's)** switch to 5.



NOTE The I/O Zone recognizes its address only after power has been cycled.

To wire for power



CAUTIONS

- The I/O Zone is powered by a Class 2 power source. Take appropriate isolation measures when mounting it in a control panel where non-Class 2 circuits are present.
- Do not power pilot relays from the same transformer that powers the I/O Zone.
- OEMCtrl controllers can share a power supply as long as you:
 - Maintain the same polarity
 - Use the power supply only for OEMCtrl controllers

- The I/O Zone has an operating range of 21.6 Vac to 26.4 Vac. If voltage measured at the I/O Zone's input terminals is outside this range, the I/O Zone may not work properly.
 - Avoid running communication wires or sensor input wires next to AC power wires or the controller's relay output wires. The resulting noise can affect signal quality. Common sources of noise are:
 - Spark igniters
 - Radio transmitters
 - Variable speed drives
 - Electric motors (> 1hp)
 - Generators
 - Relays
 - Transformers
 - Induction heaters
 - Large contactors (i.e., motor starters)
 - Video display devices
 - Lamp dimmers
 - Fluorescent lights
- 1 Remove power from the power supply.
 - 2 Pull the screw terminal connector from the controller's power terminals labeled **Gnd** and **24 Vac**.
 - 3 Connect the transformer wires to the screw terminal connector.
 - 4 Apply power to the power supply.
 - 5 Measure the voltage at the I/O Zone's power input terminals to verify that the voltage is within the operating range of 21.6 - 26.4 Vac.
 - 6 Insert the screw terminal connector into the I/O Zone's power terminals.
 - 7 Turn **on** the I/O Zone's power.
 - 8 Verify that the Power LED is on and the Run LED is blinking.

Wiring inputs and outputs

Input wiring specifications

Input	Maximum length	Minimum gauge	Shielding
0–5 Vdc	1000 feet (305 meters)	24 AWG	Shielded
Thermistor Dry contact Pulse counter TLO	1000 feet (305 meters)	22 AWG	Shielded
RS sensor	500 feet (152 meters)	18 AWG, 4 conductor if a BACview® device is connected to the Rnet 22 AWG, 4 conductor if only RS room sensors are connected to the Rnet	Shielded or unshielded
ZS sensor*	500 feet (152 meters)	22 AWG (7x0096) bare copper if only ZS sensors or an Equipment Touch are connected 18 AWG (7x0152) bare copper if a BACview® device is connected	Shielded or unshielded If shielded, Aluminum/Mylar shield (100% coverage) with TC drain wire, terminated at controller.

*For more details, see the *ZS Sensors Installation Guide*.

Inputs

These Inputs...	Support this signal type...	Description
All	Thermistor	Precon type 2 (10 kOhm at 77 °F/25 °C) Input voltage for IN-5: 1 to 2.52 Vdc Input voltage for all other inputs: 0.33 to 2.52 Vdc
All	Dry contact	A 3.3 Vdc wetting voltage detects contact position, resulting in a 0.3 mA maximum sense current when the contacts are closed.
IN-1, IN-2	0–5 Vdc	The output impedance of a 0–5 Vdc source must not exceed 100 Ohms. The input impedance of the I/O Zone is approximately 30 kOhm.

These inputs...	Support this signal type...	Description
All	Pulse counter	Maximum of 10 pulses per second. Minimum pulse width required for each pulse: <ul style="list-style-type: none"> • ON to OFF time (half cycle) is 50 msec • ON to OFF to ON time (full cycle) is 100 msec
IN-5, IN-6	LogiStat	IN-5 – See Thermistor. IN-6 – Setpoint adjust. Input voltages should be from 1.4–3.4 Vdc.
I/O Zone 583		
IN-7, IN-8	Potentiometer only	1k to 10k ohm

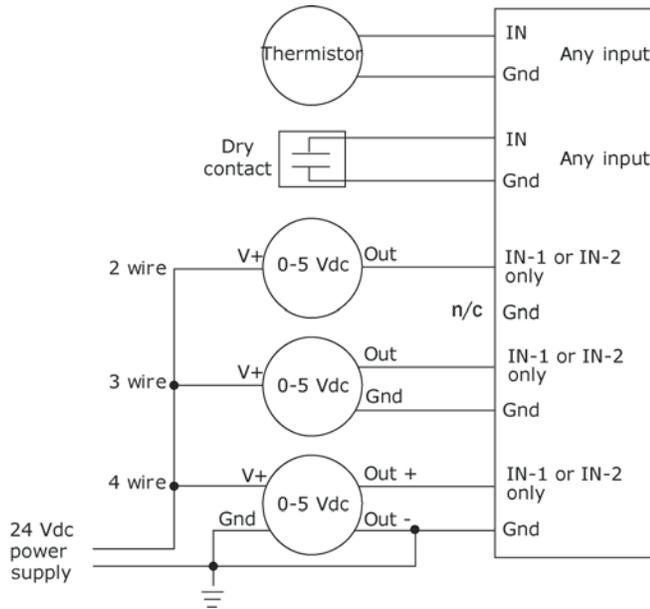
To wire inputs

- 1 Verify that the I/O Zone's power and communications connections work properly.
- 2 Pull the screw terminal connector from the controller's power terminals labeled **Gnd** and **Hot**.
- 3 Connect the input wiring to the screw terminals on the I/O Zone.

NOTES

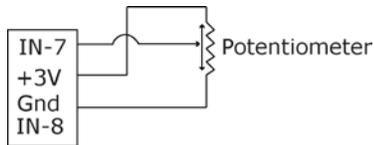
- Connect the shield wire to the **Gnd** terminal with the ground wire.

- IN-5 and IN-6 share the **Gnd** terminal above IN-5.



○ **I/O Zone 583**

Connect IN-7 and IN-8 to a potentiometer as follows:

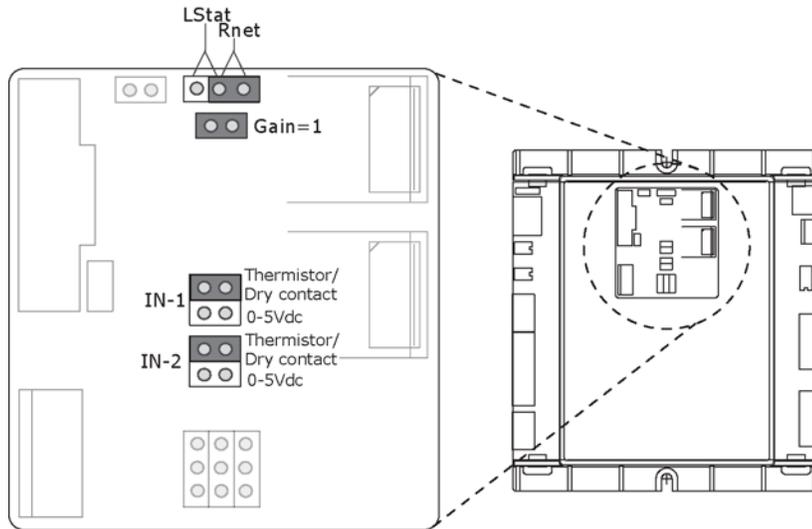


- 4** To wire a room sensor to the I/O Zone, wire the I/O Zone's terminals to the room sensor's terminals.
- For an RS room sensor, wire each terminal on the I/O Zone's **Rnet** port to the terminal of the same name on the RS room sensor.
 - NOTE** If wiring an RS room sensor with shielded wire, connect the shield wire to the **GND** terminal with the ground wire.
 - For a LogiStat room sensor, use the following table. For more information, see *To wire a LogiStat or LogiStat Plus to the I/O Zone* (page 10).

Wire this terminal on the LStat port...	To this terminal on the LogiStat sensor
Gnd	Gnd
IN-5	Temp
IN-6	Sw
LED	LS5v

- Set the appropriate jumpers on the I/O Zone.

To use...	For...	
IN-1 or IN-2	Thermistor Dry contact 0-5 Vdc	Set jumpers IN-1 or IN-2 to the type of signal the input will receive.
IN-5 or IN-6	Thermistor Dry contact	Verify the LStat/Rnet jumper is on.
IN-5 and IN-6	LogiStat	Set the LStat/Rnet jumper to LStat .
Rnet Port	RS sensor	Set the LStat/Rnet jumper to Rnet .



- Insert the power screw terminal connector into the I/O Zone's power terminals.

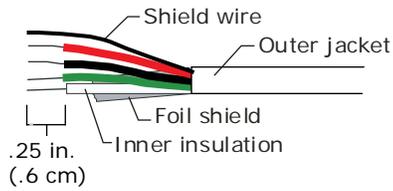
To wire a LogiStat or LogiStat Plus to the I/O Zone

The I/O Zone supports the LogiStat and LogiStat Plus on IN-5 and 6. The LogiStat and LogiStat Plus are thermistor-based temperature sensors.

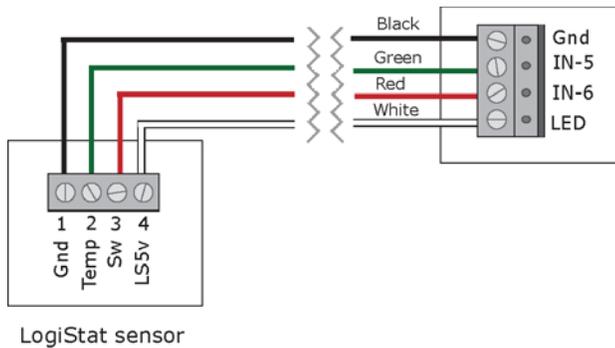
The I/O Zone does not support the LogiStat Pro.

NOTE Use 22 AWG, unshielded wire, maximum length 100 feet (30 meters).

- Turn off the controller's power.
- Remove the back cover of the LogiStat to expose the screw terminals.
- Partially cut, then bend and pull off the outer jacket of the Rnet cable(s). Do not nick the inner insulation.



- 4 Strip about .25 inch (.6 cm) of the inner insulation from each wire.
- 5 Wire each terminal on I/O Zone to the correct terminal on the controller.



- 6 Turn on the controller's power.

Output wiring specifications

To size output wiring, consider the following:

- Total loop distance from the power supply to the controller, and then to the controlled device
NOTE Include the total distance of actual wire. For 2-conductor wires, this is twice the cable length.
- Acceptable voltage drop in the wire from the controller to the controlled device
- Resistance (Ohms) of the chosen wire gauge
- Maximum current (Amps) the controlled device requires to operate

Binary outputs

The I/O Zone controllers have 5 binary outputs. You can connect each output to a maximum of 24 Vac/Vdc. Each output is a dry contact rated at 1 A, 24 V maximum and is normally open.

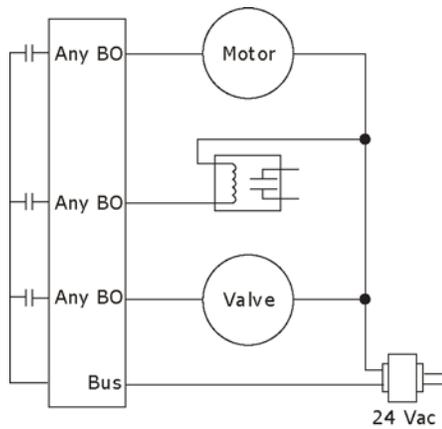
Analog outputs

The **I/O Zone 583** has 3 analog outputs that support voltage or current devices. The controlled device must share the same ground as the controller and have the following input impedance:

0-10 Vdc min 500 Ohms, max 5 mA

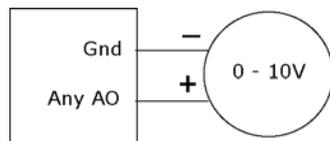
To wire outputs

- 1 Verify that the I/O Zone's power and communications connections work properly.
- 2 Pull the screw terminal connector from the controller's power terminals labeled **Gnd** and **Hot**.
- 3 Connect the binary output wiring to the screw terminals on the I/O Zone and to the controlled device.



I/O Zone 583

- 4 Connect the analog output wiring to the screw terminals on the I/O Zone 583 and to the controlled device.



- 5 Insert the power screw terminal connector into the I/O Zone's power terminals.

Local Access

To communicate through the local access port

Using a computer and a USB Link Kit, you can communicate locally with the I/O Zone to download or to troubleshoot.

PREREQUISITES

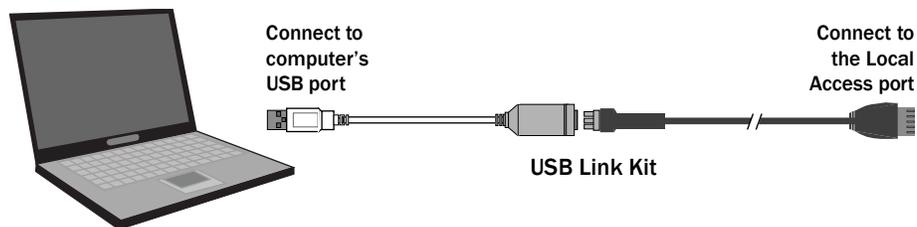
- A computer with a USB port
- A USB Link Kit

⚠ CAUTION If multiple controllers share power but polarity was not maintained when they were wired, the difference between the controller's ground and the computer's AC power ground could damage the USB Link Kit and the controller. If you are not sure of the wiring polarity, use a USB isolator between the computer and the USB Link Kit. Purchase a USB isolator online from a third-party manufacturer.

- 1 If your computer does not already have the USB Link Kit driver installed, install it before you connect the USB Link to your computer.

NOTE The driver is installed with WebCTRL® for OEMs v5 or later system. But if needed, you can get the latest driver from <http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx>.

- 2 Connect the USB Link Kit to the computer and to the controller's Local Access port.



NOTE If using a USB isolator, plug the isolator into your computer's USB port, and then plug the USB Link Kit cable into the isolator.

Wiring zone sensors to the I/O Zone

You can connect zone sensors, the BACview® device, or an Equipment Touch to the Rnet port, as follows:

RS sensors

- 1 RS Plus, RS Pro, or RS Pro-F
- 1 - 4 RS Standards
- 1 - 4 RS Standards, and 1 RS Plus, RS Pro, or RS Pro-F

Connect any of the above combinations to the Rnet port, plus up to 2 BACview® devices, but no more than 6 RS and BACview® devices total. You cannot have an Equipment Touch on the Rnet with an RS Sensor.

ZS sensors

- 1 -15 ZS Sensors

NOTE You cannot have more than 5 sensors per control program

- Up to 15 ZS sensors and 2 BACview[®] devices
- Up to 5 ZS sensors and 1 Equipment Touch device



CAUTIONS

- You cannot have RS sensors and ZS sensors on the same Rnet.
- You cannot have an Equipment Touch and a BACview[®] device on the same Rnet.
- Power requirements differ for the various ZS sensor models. See the *ZS Sensor Installation Guide* for details.
- The RS Pro is a thermistor-based temperature sensor

Specifications for ZS sensors

Sensing element range and accuracy	Temperature only	
	Range:	32 to 122 °F (0 to 50 °C)
	Accuracy:	±0.35 °F (0.2 °C)
	Temperature if humidity is included	
	Range:	50 to 104 °F (10 to 40 °C)
	Accuracy:	0.5 °F (0.3 °C)
	Options:	
	Humidity	
	Range:	10 to 90%
	Accuracy:	2% typical
	CO ₂	
	Range:	0 to 2000 PPM
	Accuracy:	±75 PPM typical
	VOC	
	Range:	0 to 2000 ppm
	Accuracy:	1 PPM
Power requirements	Temperature only	
	ZS Standard or ZS Plus:	12 Vdc @ 6 mA
	ZS Pro or Pro-F:	12 Vdc @ 7 mA
	Temperature with humidity	
	ZS Standard or ZS Plus:	12 Vdc @ 7 mA
	ZS Pro or Pro-F:	12 Vdc @ 8 mA
Temperature with humidity and VOC - All models	12 Vdc @ 60 mA	
Temperature with humidity and CO ₂ - All models	12 Vdc @ 15 mA (idle) to 190 mA (CO ₂ measurement cycle)	
Temperature and CO ₂ - All models	12 Vdc @ 14 mA (idle) to 189 mA (CO ₂ measurement cycle)	

Power supply	The 4-conductor Rnet cable from a controller supplies +12 Vdc @ 210 mA. For additional power, use an external power supply. Use the above power requirements to calculate the size of the external power supply.		
Communication	115 kbps		
Local access port	For local access to start up and troubleshoot the system		
Environmental operating range	-4 to 122 °F (-20 to 50 °C), 10 to 90% relative humidity, non-condensing		
Mounting	Standard 4x2-in. electrical box using the 6-32 x 1/2" mounting screws provided		
Overall dimensions	Temperature sensor or temperature with humidity sensor	Width:	3 in. (7.62 cm)
		Height:	4-13/16 in. (12.22 cm)
		Depth:	13/16 in. (2.01 cm)
Overall dimensions	Sensor with CO ₂ or VOC	Width:	2-7/8 in. (7.3 cm)
		Height:	4-13/16 in. (12.22 cm)
		Depth:	1-1/4 in. (3.18 cm)
Listed by	FCC Part 15-Subpart B-Class A, CE		

See the *ZS Installation and Start-up Guide* to configure the control program for the desired user interaction with the sensor.

See the *ZS Sensor Application Guide* to configure the control program for the desired user interaction with the sensor.

See the *ZS Sensor User Guide* to use the sensor.

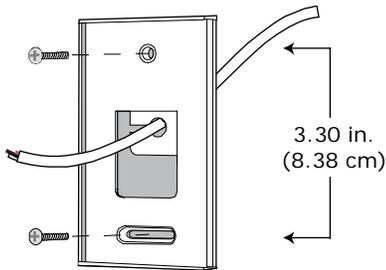
Specifications for RS sensors

Sensor	Thermistor. Accuracy ± 0.45 °F (0.25 °C). Less than ± 0.18 °F (0.1 °C) drift over a 10 year period.		
Sensor range	50 °F to 95 °F (10 °C to 35 °C)		
Power	Supplied by the 4-conductor cable (+12 Vdc @ 210 mA) from the controller.		
Communication	115 kbps		
Local access port	For local access to start up and troubleshoot system		
Environmental operating range	32–122 °F (0–50 °C), 10–90% relative humidity, non-condensing		
Mounting	Standard 4x2-in. electrical box using provided 6-32 by 1/2 in. mounting screws.		
Overall dimensions:	Width:	2-3/4 in. (6.9 cm)	
	Height:	4-3/4 in. (12.1 cm)	
	Depth:	5/8 in. (1.6 cm)	

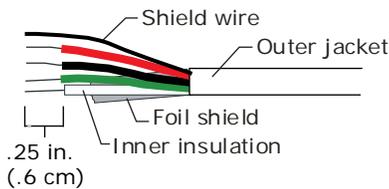
To wire and mount an RS or ZS sensor

PREREQUISITE The Rnet cable is wired to the controller. The shield wire and the ground wire should be inserted into the controller's GND terminal.

- 1 Turn off the controller's power.
- 2 Pull the backplate off the I/O Zone. You may need to turn the setscrew in the bottom of the sensor clockwise until you can remove the backplate.
- 3 Pull the Rnet communication cable through the wire guide in the backplate.



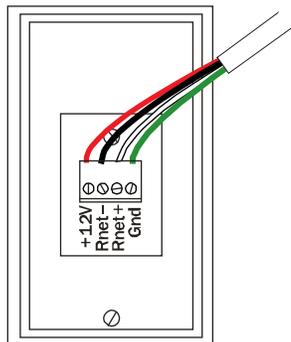
- 4 Use 2 screws to mount the backplate to the wall or outlet box.
- 5 Partially cut, then bend and pull off the outer jacket of the Rnet cable(s). Do not nick the inner insulation.



- 6 Strip about .25 inch (.6 cm) of the inner insulation from each wire.
- 7 If wiring 1 cable to the I/O Zone, cut the shield wire off at the outer jacket, then wrap the cable with tape at the outer jacket to cover the end of the shield wire.

If wiring 2 cables in a daisy-chain configuration, twist together the shield wires, then wrap the shield wires with tape.

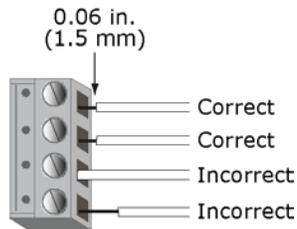
- 8 Insert the other 4 wires into the I/O Zone's screw terminal connector. If wiring 2 cables, insert like-colored wires into each terminal.



OEMCtrl recommends that you use the following Rnet wiring scheme:

Connect this wire...	To this terminal...
	+12V
Red	Rnet-
Black	Rnet+
White	Gnd
Green	

CAUTION Allow no more than 0.06 inch (1.5 mm) bare communication wire to protrude. If bare communication wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, the device may not communicate correctly.



- 9 Attach the sensor's cover and circuit board to the mounted backplate, inserting the top first.
- 10 Turn the setscrew one full turn counterclockwise so that the cover cannot be removed.
- 11 Turn on the controller's power.

NOTE Use the same polarity throughout the Rnet.

What is the Equipment Touch?

The Equipment Touch is a touchscreen device with a 4.3 in. color LCD display that you connect to one of the following controllers to view or change its property values, schedule equipment, view trends and alarms, and more, without having to access the system's server.

- I/O Zone 560, 583, or 8112
- I/O Flex 6126
- I/O Pro 812u
- OEMPrtl Pro
- UPC
- XPC

NOTE Requires controller driver v6-00-082 or later.



You wire the Equipment Touch to the controller's Rnet port. The Rnet can have one Equipment Touch device and up to 5 ZS sensors.

NOTE The Equipment Touch Rnet does not support RS Sensors.

You can install and run the Equipment Touch with only its built-in system screens, or you can create a customized touchscreen file in ViewBuilder. This requires that you:

- 1 Create custom screens in ViewBuilder, and then save the touchscreen (.touch) file. See "Working with touchscreens" in ViewBuilder Help.
- 2 Enter the touchscreen file name in the target controller's **Properties** box in SiteBuilder.
- 3 Download **All Content** to the controller. See "Downloading to controllers" in WebCTRL® for OEMs Help.

Specifications

Power	24 Vac ($\pm 15\%$), 5 VA, 50–60 Hz, Class 2.	
Display	4.3 in. resistive touchscreen color LCD display with backlighting (Wide Quarter VGA, 480x272 pixels)	
Enclosure	ABS plastic with polycarbonate bezel	
Ports	<ul style="list-style-type: none"> • EIA-485 based serial port for Rnet communication • USB host port 	
Microcontroller	32-bit	
Memory	<ul style="list-style-type: none"> • 16 MB Flash memory to store program code and screen file. • 1.5 MB RAM to store variable data and LCD data. • 4 KB Serial EEPROM to store non-volatile configuration data. 	
Real-time clock	A 365-day real time clock/calendar chip. The time and date will be maintained for a minimum of 72 hours after loss of power (at room temperature).	
Audible alarm notification	A piezoelectric sounder	
Temperature sensor	Range: Accuracy over 30.0 °F to 100 °F: Accuracy over full range: Resolution:	-4.0 °F to 140 °F (-20 °C to 60 °C) ± 1.0 °F (± 0.55 °C) ± 2.0 °F (± 1.1 °C) 0.2 °F (0.1 °C)
Humidity sensor	Range: Accuracy over 20 to 80% RH: Accuracy over full range: Resolution:	0 to 100% RH ± 3.0 % RH ± 5.0 % RH 0.05% RH
Environmental operating range	-4°F to 140°F (-20°C to 60°C), 10–90% RH, non-condensing	
Mounting	Wall or panel mounting within the building interior.	
Overall dimensions	Width: Height: Depth:	5.44 in. (13.82 cm) 4.55 in. (11.56 cm) 1.24 in. (3.15 cm)
Backplate dimensions	Width: Height:	4.79 in. (12.2 cm) 3.94 in. (10 cm)

What is the Equipment Touch?

Weight	8 oz. (0.23 kg)
Listed by	UL-916 (PAZX), CE, FCC Part 15-Subpart B-Class A
Device identification	The I/O Zone's box contains a label with the product name and the serial number that begins with EQB . Remove the front of the I/O Zone and turn it over to see the serial number on a label attached to the control board.

Wiring and mounting the Equipment Touch

 **CAUTION** If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Mounting

The Equipment Touch must be mounted within the building interior. You can mount the Equipment Touch:

- In a panel with the controller or on the panel door
- On a wall up to 500 feet from the controller

Wiring

- The Equipment Touch requires a 24 Vac power supply. It is not powered by the Rnet.

 **CAUTION** The Equipment Touch can share a power supply with the OEMCtrl controller as long as you:

- Maintain the same polarity.
 - Use the power supply only for OEMCtrl controllers.
- You can also wire an external 10 kOhm, Type II thermistor to the Equipment Touch.

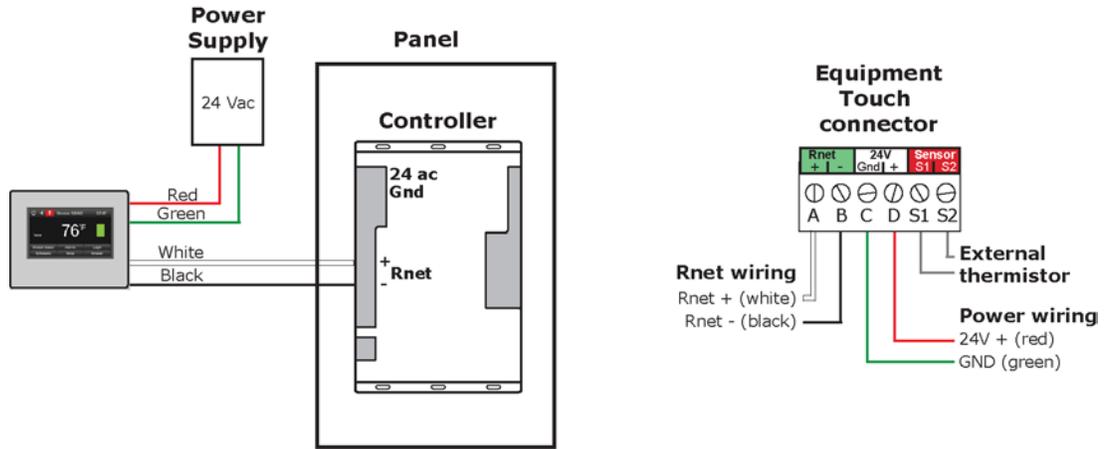
See:

Wiring specifications (page 21)

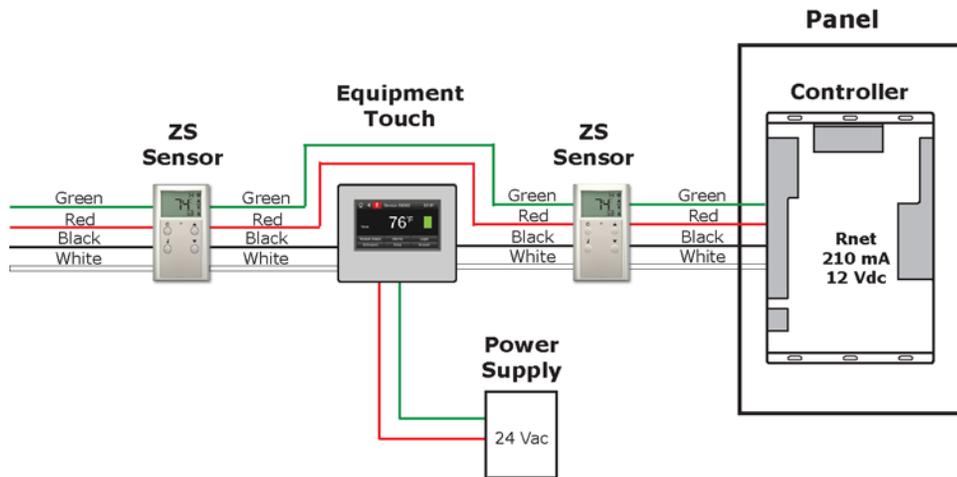
To wire and mount the Equipment Touch (page 22)

Wire the Equipment Touch in one of the following ways:

- Wire the Equipment Touch directly to the controller's Rnet port as shown below.



- Wire the Equipment Touch in a daisy-chain configuration with up to 5 ZS zone sensors as shown below.



NOTE You do not need to set an address for the Equipment Touch.

Wiring specifications

Power wiring

2-conductor wire 18 AWG for distances up to 100 feet. All transformer secondaries must be grounded. Wiring connections must be in accordance with NEC and local codes.

Rnet wiring

NOTE If you wire the Equipment Touch directly to the controller's Rnet port, you can use a 2-conductor cable instead of the standard 4-conductor Rnet cable.

Description	4-conductor, shielded or unshielded, CMP, plenum rated cable
Conductor	22 AWG (7x0096) bare copper
Maximum length	500 feet (152 meters)
Insulation	Low-smoke PVC (or equivalent)
Color Code	Black, white, green, red
Shielding	If shielded, Aluminum/Mylar shield (100% coverage) with TC drain wire
UL temperature rating	32–167 °F (0–75 °C)
Voltage	300 Vac, power limited
Listing	UL: NEC CL2P, or better

To wire and mount the Equipment Touch

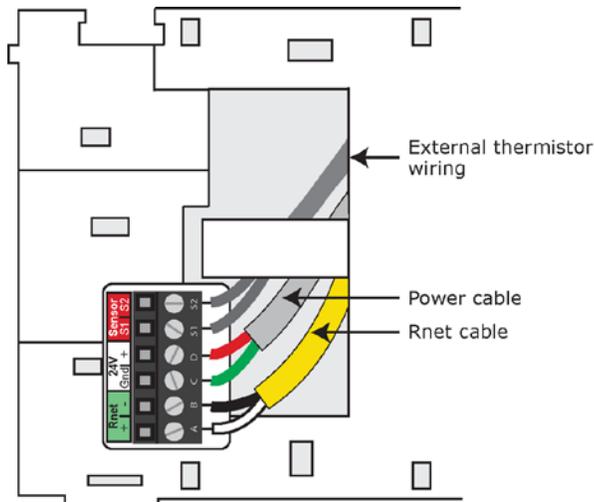
- 1 Remove the backplate from the Equipment Touch:

- a) Hold the Equipment Touch as shown in the picture below.

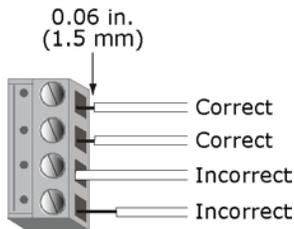


- b) While firmly pressing the 2 tabs on top of the Equipment Touch, pull on the backplate with your index finger until the backplate releases from the Equipment Touch.
- 2** Pull the communication cable, power cable, and external thermistor wiring (if applicable) through the large hole in the center of the backplate. See figure in step 5.
 - 3** Partially cut, then bend and pull off the outer jacket of the Rnet cable(s). Do not nick the individual wire insulation.
 - 4** If wiring 1 cable to the I/O Zone, cut the shield wire off at the outer jacket, then wrap the cable with tape at the outer jacket to cover the end of the shield wire.
If wiring 2 cables in a daisy-chain configuration, twist together the shield wires, then wrap the shield wires with tape.
 - 5** Strip about 0.25 inch (0.6 cm) insulation from the end of each wire.
 - 6** Connect wiring to the Equipment Touch as shown below:

What is the Equipment Touch?



CAUTION Allow no more than 0.06 inch (1.5 mm) bare communication wire to protrude. If bare communication wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, the device may not communicate correctly.



- 7 Attach the backplate to the wall or panel. If mounting in or on a panel:
 - a) Drill two 3/16 inch (4.8 mm) pilot holes in the panel.
 - b) Attach backplate using pan head 6-32 x 3/8" to 1/2" long machine screws. Do not overtighten screws to prevent damage to plastic housing.

RECOMMENDATION Use Loctite 220 on screw threads if the Equipment Touch will be subject to vibration.
- 8 Attach the Equipment Touch to the backplate:
 - a) Place the bottom of the Equipment Touch onto the backplate by aligning the 2 slots on the Equipment Touch with the tabs on the backplate.
 - b) Push the Equipment Touch onto the backplate until the tabs at the top of the Equipment Touch snap onto the backplate.
- 9 Turn off the controller's power.
- 10 Connect the other end of the Rnet wiring to the controller's **Rnet** port or to a zone sensor.

NOTES

- o Insert the shield wire with the ground wire into the controller's **GND** terminal.
 - o Use the same polarity throughout the Rnet.
- 11 Connect power wiring to a 24 Vac power supply.
 - 12 Turn on the controller's power.

What is the BACview®6 device?

The BACview®6 device is a keypad/display unit that you connect to the I/O Zone controller to let you view or edit certain property values and the controller's real time clock.

You connect the BACview®6 device to the I/O Zone's 4-pin Rnet port. The I/O Zone can share the Rnet with zone sensors. Wire the devices in a daisy-chain or hybrid configuration.

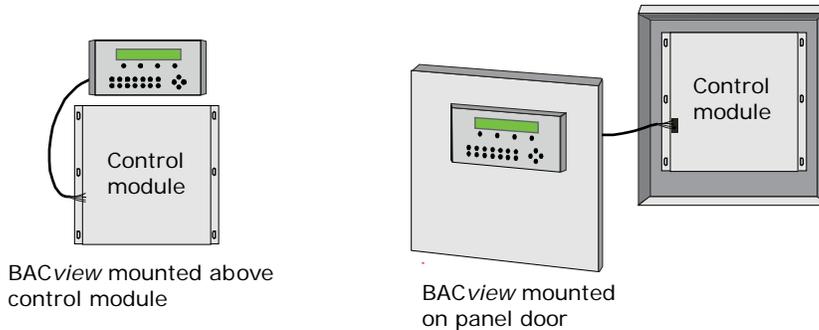
For instructions on using/programming the BACview®6 device, refer to BACview®6 technical documentation.

NOTE When using a permanent Equipment Touch or BACview®6 device, they must be externally powered.

Specifications for mounting the BACview®6 device

You can mount the BACview®6 device:

- In the panel above the controller
- On the panel door
- On a wall up to 500 feet from the controller

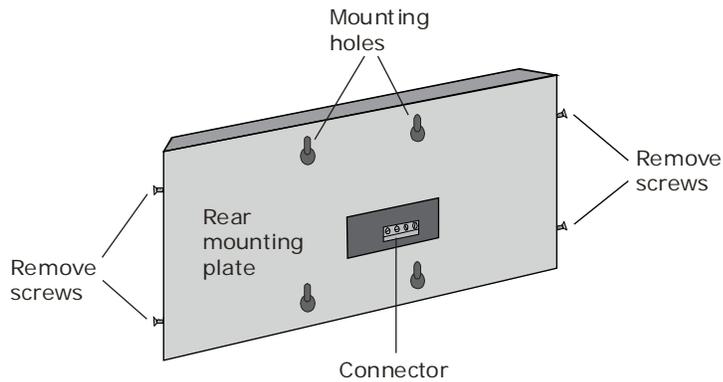


To mount the BACview®6 device

CAUTIONS

- The BACview®6 device is powered by a Class 2 power source. Properly isolate the BACview®6 device from non-Class 2 circuits in the same control panel.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

What is the BACview®6 device?



- 1 Remove the 4 screws on the sides of the BACview®6 device to remove the rear mounting plate.
- 2 Using the rear mounting plate as a template, drill 4 holes in the surface that you are mounting the BACview®6 device to, then insert 4 screws in the holes.
- 3 If mounting on a panel door, use the cutout in the rear mounting plate as a template to cut a hole in the panel door for the cable to pass through.
- 4 Reattach the BACview®6 device's rear mounting plate.
- 5 Wire the BACview®6 device to the I/O Zone.
- 6 Hang the BACview®6 device on the 4 mounting screws.

NOTE If mounting above the I/O Zone or on a wall, pull the cable out to the side of the BACview®6 device without bending or pinching the cable beneath the BACview®6 device.

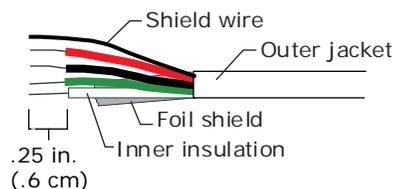
To wire the BACview®6 device

NOTE Use 18 gauge wire for the BACview®6 device to be up to 500 feet from the controller.

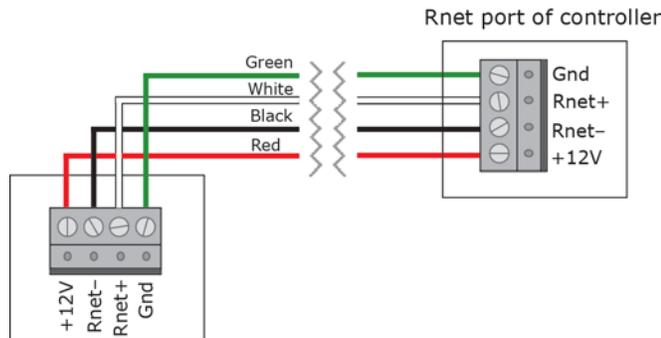
CAUTIONS

- Maintain the same polarity throughout the Rnet.
- Wiring the 12V power incorrectly can damage the components.

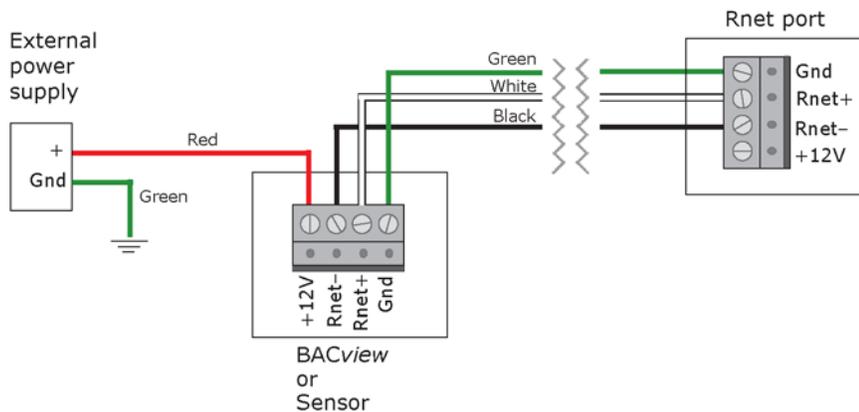
- 1 Pull the screw terminal connector from the controller's power terminals labeled **Gnd** and **Hot**.
- 2 Pull the screw terminal connector from the BACview®6 device.
- 3 Partially cut, then bend and pull off the outer jacket of the Rnet cable(s). Do not nick the inner insulation.



- 4 Strip about .25 inch (.6 cm) of the inner insulation from each wire.
- 5 Insert the wires into both of the screw terminal connectors.



- 6 If connecting more than one BACview®6 device, the first one on an Rnet is powered by the controller. You must provide an external power supply for a second BACview®6 device. When wiring two BACview®6 devices together on the same Rnet, set the J1 jumper to the down position on the first BACview®6 device.



- 7 Insert the screw terminal connector into the BACview®6 device with the screw heads facing out.
- 8 Insert the screw terminal connector into the I/O Zone's power terminals.

Troubleshooting

If you have problems mounting, wiring, or addressing the I/O Zone, contact OEMCtrl Technical Support.

Communication LED's

The LED's indicate if the controller is speaking to the devices on the network. The LED's should reflect communication traffic based on the baud rate set. The higher the baud rate the more solid the LED's become.

LEDs	Status
Power	Lights when power is being supplied to the controller. NOTE The I/O Zone is protected by internal solid state Polyswitches on the incoming power and network connections. These Polyswitches are not replaceable and will reset themselves if the condition that caused the fault returns to normal.
Rx	Lights when the controller receives data from the network segment; there is an Rx LED for Ports 1 and 2.
Tx	Lights when the controller transmits data to the network segment; there is an Rx LED for Ports 1 and 2.
Run	Lights based on controller health. See table below.
Error	Lights based on controller health. See table below.

The **Run** and **Error** LED's indicate controller and network status.

If Run LED shows...	And Error LED shows...	Status is...
1 flash per second	1 flash per second, alternating with the Run LED	The controller files are archiving. Archive is complete when Error LED stops flashing.
2 flashes per second	Off	Normal
2 flashes per second	2 flashes, alternating with Run LED	Five minute auto-restart delay after system error
2 flashes per second	3 flashes, then off	The controller has just been formatted
2 flashes per second	4 flashes, then pause	Two or more devices on this network have the same MS/TP network address
2 flashes per second	1 flash per second	The controller is alone on the network

If Run LED shows...	And Error LED shows...	Status Is...
2 flashes per second	On	Exec halted after frequent system errors, due to: <ul style="list-style-type: none"> • Controller halted • Program memory corrupted • One or more programs stopped
5 flashes per second	On	Exec start-up aborted, Boot is running
5 flashes per second	Off	Firmware transfer in progress, Boot is running
7 flashes per second	7 flashes per second, alternating with Run LED	Ten second recovery period after brownout
14 flashes per second	14 flashes per second, alternating with Run LED	Brownout
On	On	Failure. Try the following solutions: <ul style="list-style-type: none"> • Turn the I/O Zone off, then on. • Download memory to the I/O Zone. • Replace the I/O Zone.

Recovering from a power outage

The I/O Zone has a 10-year Lithium CR2032 battery that ensures the following data is retained for a maximum of 10,000 hours during power outages:

- Time
- Graphics
- Control programs
- Editable properties
- Trends
- Schedules

If the above data is lost after power returns, replace the battery and then restore memory from archive. See instructions below.

Archive function

Factoryies - After a memory download, the firmware stores the touchscreen, BACview® files, graphics, control programs, and database settings to flash memory. This archiving can take up to a minute, depending on the size of the files.

Site-specific - You can archive site-specific configurations to the I/O Zone by using the Equipment Touch, BACview® device, the control program, the WebCTRL® for OEMs application, or Field Assistant. We strongly recommend you archive whenever you change factory settings, such as schedules, devices instances, network addresses, etc..

Restore memory from archive

The I/O Zone checks the memory configuration during power up and, if it is identified as corrupt, it reconstructs memory from the last archive. In addition, if the battery fails to power the device during a power outage, memory could be lost, but will be reconstructed from the last archive. The device supports factory and site-specific archives, which can be manually restored in the field.

To restore the factory archive

- 1 Turn off the I/O Zone.
- 2 Address the rotary address switches to 0, 0 (zero, zero).
- 3 Put the **Format** jumper on the pins.
- 4 Turn on the I/O Zone.
- 5 **Run** and **Error** LED's cycle 3 times opposite of each other, then returning to normal operation once the process is complete.

NOTE The **Run** LED flashes once per second during normal operation.

To restore the site-specific archive

- 1 Turn off the I/O Zone.
- 2 Address the rotary address switches to any numbers greater than 0, 0 (zero, zero). Example (0, 1).
- 3 Put the **Format** jumper on the pins. For device with a format button, hold it down.
- 4 Turn on the I/O Zone.
- 5 **Run** and **Error** LEDs cycle 3 times opposite of each other, then returning to normal operation once the process is complete..

NOTE The **Run** LED flashes once per second during normal operation.

After restoring from archive

- 1 Run a module status and check the information message history to confirm the archive.
- 2 Set the time and date for schedules to operate properly.

NOTE The restore uses June 12, 2002 @ 10:00 AM as a place holder because the battery failure inhibits the real time clock. Use the Equipment Touch, BACview® local display, the WebCTRL® for OEMs application, or Field Assistant to set the correct time and date. If the device is integrated with a BACnet-speaking BAS, the time and date are set via the communication network.

Replacing the I/O Zone's battery

To determine when to replace the battery, remove power and measure the voltage. If the voltage is below 2.9 volts, you need to replace the battery.



CAUTION Power must be **ON** to the I/O Zone when replacing the battery, or your date, time, and trend data will be lost.

- 1 Remove the battery from the controller, making note of the battery's polarity.
- 2 Insert the new battery, matching the battery's polarity with the polarity indicated on the I/O Zone.

Serial number

If you need the I/O Zone's serial number when troubleshooting, the number is on:

- a sticker on the back of the main controller board
- a Module Status report (modstat) from the WebCTRL® for OEMs application

Compliance

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

 **CAUTION** Changes or modifications not expressly approved by the responsible party for compliance could void the user's authority to operate the equipment.

CE Compliance

 **WARNING** This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

BACnet Compliance

BACnet® is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to requirements of ASHRAE Standard 135 is the responsibility of the BACnet Manufacturers Association (BMA). BTL® is a registered trademark of the BMA.

Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
5/14/14	Equipment Touch specifications	Added backplate dimensions.	X-D

* For internal use only



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