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Chapter 1: Overview

Features and Benefits

Remote User Interface/Gateway (RUI/GTW)

- Uses one RUI for multiple zones
- The RUI without a gateway card utilizes minimal panel depth allowing it to fit in small spaces
- Eliminates the costs and complexity of having to bring all controller related wires to the front panel
- Enables the use of multiple RUIs to improve the system's usability and flexibility

Agency approvals: UL Listed, cULus, CSA, CE, RoHS,

- Assures prompt product acceptance
- Reduces end product documentation costs

Short Case

- CSA C22.2 #14 Approved File 158031
- cULus UL 508 Listed approval File E102269
- UL® 50 Type 4X, NEMA 4X indoor locations, IP65 front panel seal (indoor use only)

Long Case

- UL® Listed to UL 61010-1 File E185611
- UL® Reviewed to CSA C22.2 No.61010-1-04
- UL® 50 Type 4X, NEMA 4X indoor locations, IP66 front panel seal (indoor use only)
- ODVA-EtherNet/IP™ and DeviceNet Compliance
- CSA C22.2 No. 24 File 158031 Class 4813-02
- Profibus DP

P3T Armor Sealing System

- NEMA 4X and IP65, indoor use only
- Offers water and dust resistance, can be cleaned and washed down

Three-year warranty

- Demonstrates Watlow's reliability and product support

EZ-Key

- Programmable EZ-Key enables simple one-touch operation of repetitive user activities

Using the RUI/GTW as a Gateway

The addition of a gateway card allows information to be passed from the Standard Bus side of the gateway (EZ-ZONE®-family controllers) to one or more of the following popular field bus networks:

- EtherNet/IP™
- DeviceNet™
- Modbus TCP
- Modbus RTU
- Profibus DP

The networks see the gateway and RUI as separate devices. Both sides (1 port on each side) of the gateway will require unique addresses based on the protocol specifications.
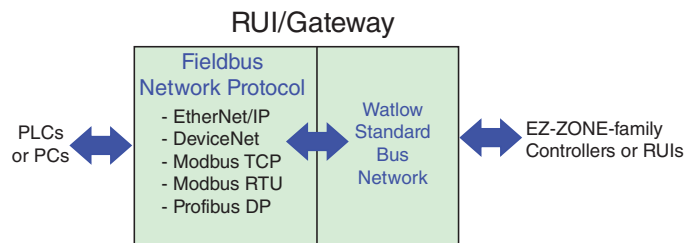
RUI/Gateway

Note:

Excessive writes through the gateway to other EZ-ZONE® family controllers may cause premature EE-PROM failure. For more detail see the section entitled "Saving Settings to Nonvolatile Memory."
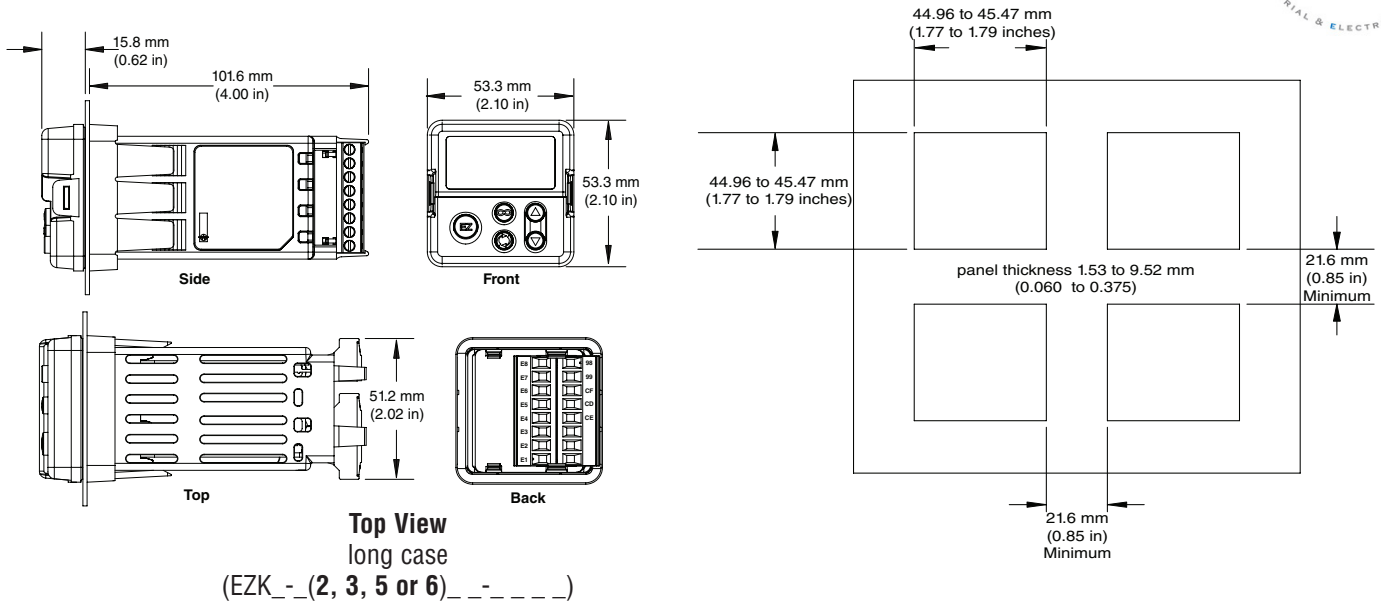
Note:

A Standard Bus network can communicate with a maximum of eight RUIs with up to four of those being gateways. Valid Standard Bus addresses for RUIs equipped with the gateway option are 1, 2, 3 or 4. As is always the case each RUI must have a unique Standard Bus address.
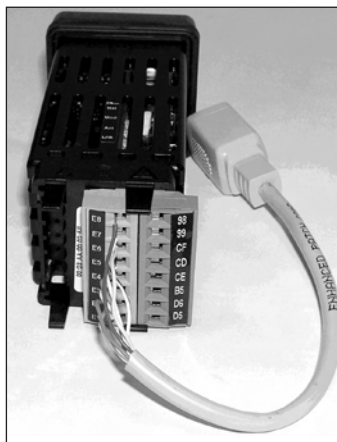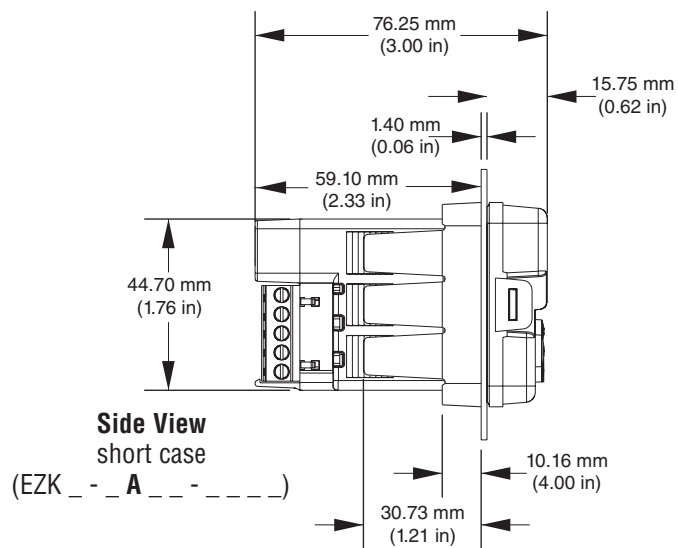
2 Chapter 2: Install, Wire and Set Address

RUI/GTW Panel Cutout Dimensions

Side

15.8 mm (0.62 in)
101.6 mm (4.00 in)

Front

53.3 mm (2.10 in)
53.3 mm (2.10 in)

Top

51.2 mm (2.02 in)

Back

Top View
long case
(EZK_-_(**2, 3, 5 or 6**)_ _-_ _ _ _)

44.96 to 45.47 mm (1.77 to 1.79 inches)

44.96 to 45.47 mm (1.77 to 1.79 inches)

panel thickness 1.53 to 9.52 mm (0.060 to 0.375)

21.6 mm (0.85 in) Minimum

21.6 mm (0.85 in) Minimum

Back View
short case

76.25 mm (3.00 in)
15.75 mm (0.62 in)
1.40 mm (0.06 in)
59.10 mm (2.33 in)
44.70 mm (1.76 in)

Side View
short case
(EZK _ - _ **A** _ _ - _ _ _ _)

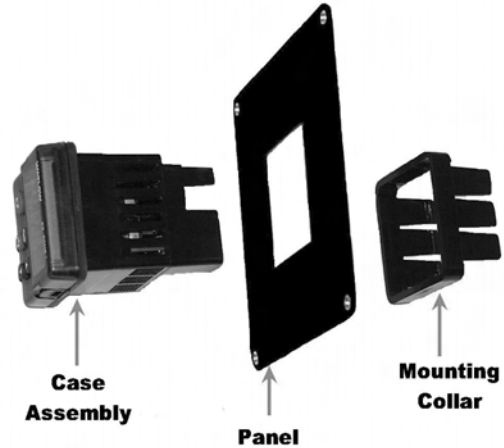10.16 mm (4.00 in)
30.73 mm (1.21 in)

EtherNet/IP™ and Modbus TCP gateway in slot B. Shown with supplied cable.
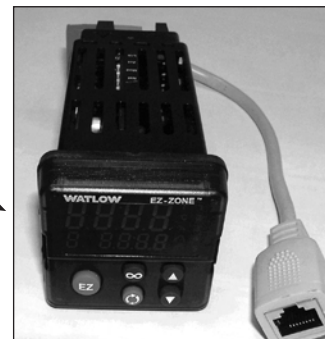
Mounting the Remote User Interface (RUI)
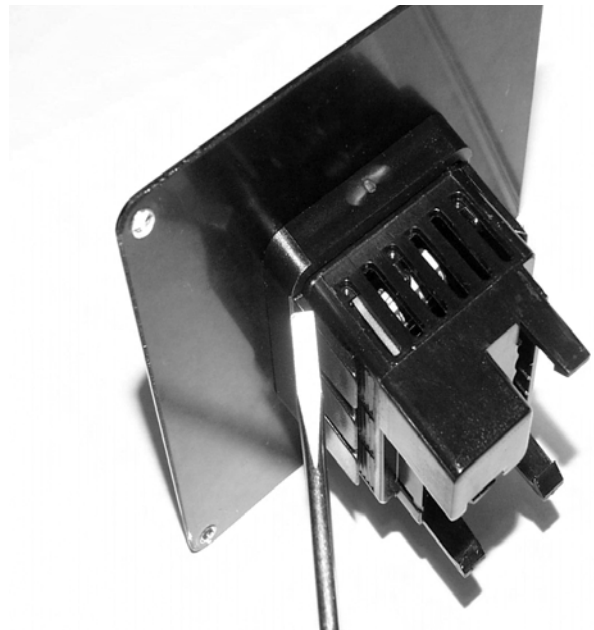
1. Make the panel cutout using the mounting template dimensions in this chapter. Insert the case assembly into the panel cutout.

Case Assembly
Panel
Mounting Collar

2. While pressing the case assembly firmly against the panel, slide the mounting collar over the back of the RUI. If the installation does not require an IP66/NEMA 4X seal, slide the mounting collar up to the back of the panel tight enough to eliminate the spacing between the gasket and the panel.
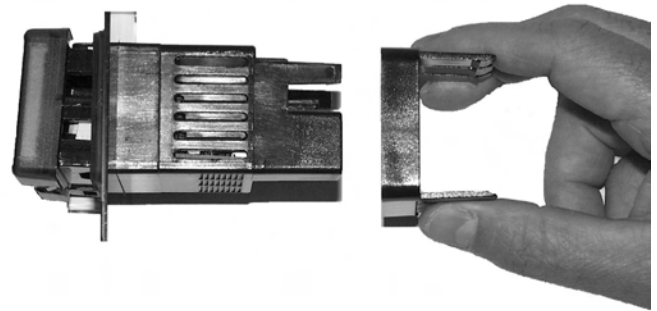

3. For an IP66/NEMA 4X seal, place the blade of a screwdriver in the notch of the mounting collar assembly an push to ward the panel while applying pressure to the face of the RUI. Don't be afraid to apply enough pressure to properly install the RUI. If you can move the case assembly back and forth in the cutout, you do not have a proper seal. The tabs on each side of the bracket have teeth that latch into the ridges. Each tooth is staggered at a different depth from the front so that only one of the tabs one each side is locked onto the ridges at a time. The seal is good if the distance from the panel and the top half of the assembly is 16 mm (0.630 in.) or less, and the distance bottom half and the panel is 13.3 mm (0.525 in.) or less
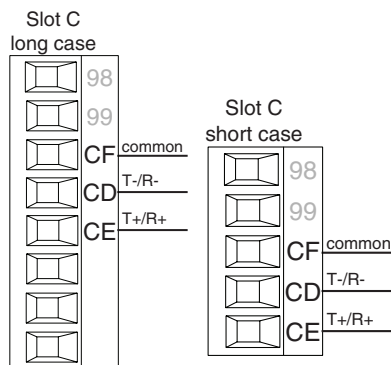
Power

Slot C long case

Slot C short case

98 — power — fuse
99 — power
CF
CD
CE
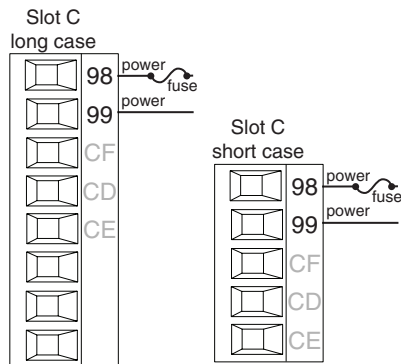
- Minimum/Maximum Ratings
- 85 to 264V~ (ac)
- 20.4 to 26.4 V≈ (ac/dc)
- 47 to 63Hz
- 6VA maximum

Standard Bus EIA-485 Communications

Slot C long case

98
99
CF — common
CD — T-/R-
CE — T+/R+

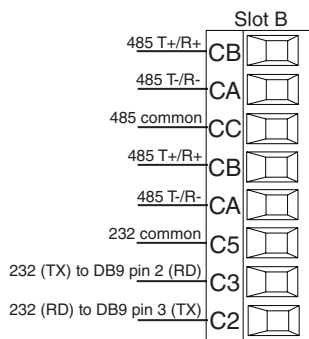Slot C short case

98
99
CF — common
CD — T-/R-
CE — T+/R+

- Wire T-/R- to the A terminal of the EIA-485 port.
- Wire T+/R+ to the B terminal of the EIA-485 port.
- Wire common to the common terminal of the EIA-485 port.
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.
- Do not connect more than 16 controllers on a network.
- maximum network length: 1,200 meters (4,000 feet)
- 1/8th unit load on EIA-485 bus

Note:
Disconnect any USB to EIA-485 converter when not connected to a PC (without power). Failure to do so may cause communications errors.

EIA-232/485 Modbus RTU Communications

Slot B

485 T+/R+ — CB
485 T-/R- — CA
485 common — CC
485 T+/R+ — CB
485 T-/R- — CA
232 common — C5
232 (TX) to DB9 pin 2 (RD) — C3
232 (RD) to DB9 pin 3 (TX) — C2

- Wire T-/R- to the A terminal of the EIA-485 port.
- Wire T+/R+ to the B terminal of the EIA-485 port.
- Wire common to the common terminal of the EIA-485 port.
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.
- A termination resistor may be required. Place a 120 Ω resistor across T+/R+ and T-/R- of last controller on network.
- Do not wire to both the EIA-485 and the EIA-232 pins at the same time.
- Two EIA-485 terminals of T/R are provided to assist in daisy-chain wiring.
- Do not connect more than one EZ-ZONE® RUI on a EIA-232 network.
- Maximum number of EZ-ZONE® RUI on a Modbus® RTU EIA-485 network: 247
- Maximum EIA-232 network length: 15 meters (50 feet)
- Maximum EIA-485 network length: 1,200 meters (4,000 feet)
- 1/8th unit load on EIA-485 bus.

EZK _-_ **2** _ _-A _ A A

Note:
Disconnect any USB to EIA-485 converter when not connected to a PC (without power). Failure to do so may cause communications errors.
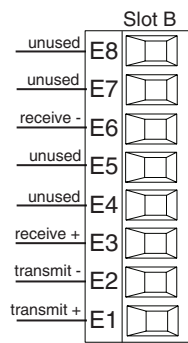
Modbus-IDA Terminal	EIA/TIA-485 Name	Watlow Terminal Label	Function
DO	A	CA or CD	T-/R-
D1	B	CB or CE	T+/R+
common	common	CC or CF	common

EtherNet/IP™ and Modbus TCP Communications

Slot B

unused	E8
unused	E7
receive -	E6
unused	E5
unused	E4
receive +	E3
transmit -	E2
transmit +	E1

RJ-45 pin	T568B wire color	Signal	Slot B
8	brown	unused	E8
7	brown & white	unused	E7
6	green	receive -	E6
5	white & blue	unused	E5
4	blue	unused	E4
3	white & green	receive +	E3
2	orange	transmit -	E2
1	white & orange	transmit +	E1

- Do not route network wires with power wires.
- Connect one Ethernet cable per device to a 10/100 mbps Ethernet switch. Both Modbus® TCP and EtherNet/IP™ are available on the network.
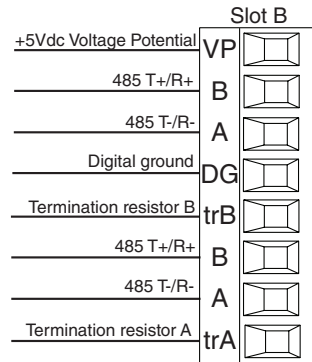
Note:
When changing the fixed IP address on the RUI cycle module power for new address to take effect.

DeviceNet™ Communications

Slot B

V+	V+
CAN_H	CH
shield	SH
CAN_L	CL
V-	V-
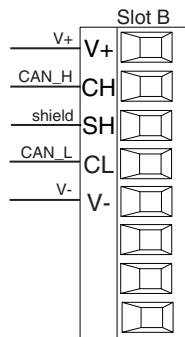
Terminal	Signal	Function
V+	V+	DeviceNet™ power
CH	CAN_H	positive side of DeviceNet™ bus
SH	shield	shield interconnect
CL	CAN_L	negative side of DeviceNet™ bus
V-	V-	DeviceNet™ power return

Profibus DP Communications

Slot B

+5Vdc Voltage Potential	VP
485 T+/R+	B
485 T-/R-	A
Digital ground	DG
Termination resistor B	trB
485 T+/R+	B
485 T-/R-	A
Termination resistor A	trA

- Wire T-/R- to the A terminal of the EIA-485 port.
- Wire T+/R+ to the B terminal of the EIA-485 port.
- Wire Digital Ground to the common terminal of the EIA-485 port.
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.
- A termination resistor should be used if this controller is the last one on the network.
- If using a 150 Ω cable Watlow provides internal termination. Place a jumper across pins trB and B and trA and A.
- If external termination is to be used with a 150 Ω cable place a 390 Ω resistor across pins VP and B, a 220 Ω resistor across pins B and A, and lastly, place a 390 Ω resistor across pins DG and A.
- Do not connect more than 32 EZ-ZONE devices on any given segment.
- Maximum EIA-485 network length: 1,200 meters (4,000 feet)
- 1/8th unit load on EIA-485 bus.

Note:
Excessive writes through the gateway to other EZ-ZONE family controllers may cause premature EEPROM failure. For more detail see the section entitled "Saving Settings to Non-volatile Memory."

Wiring a Serial EIA-485 Network

Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.

A termination resistor may be required. Place a 120 Ω resistor across T+/R+ and T-/R- of the last controller on a network.
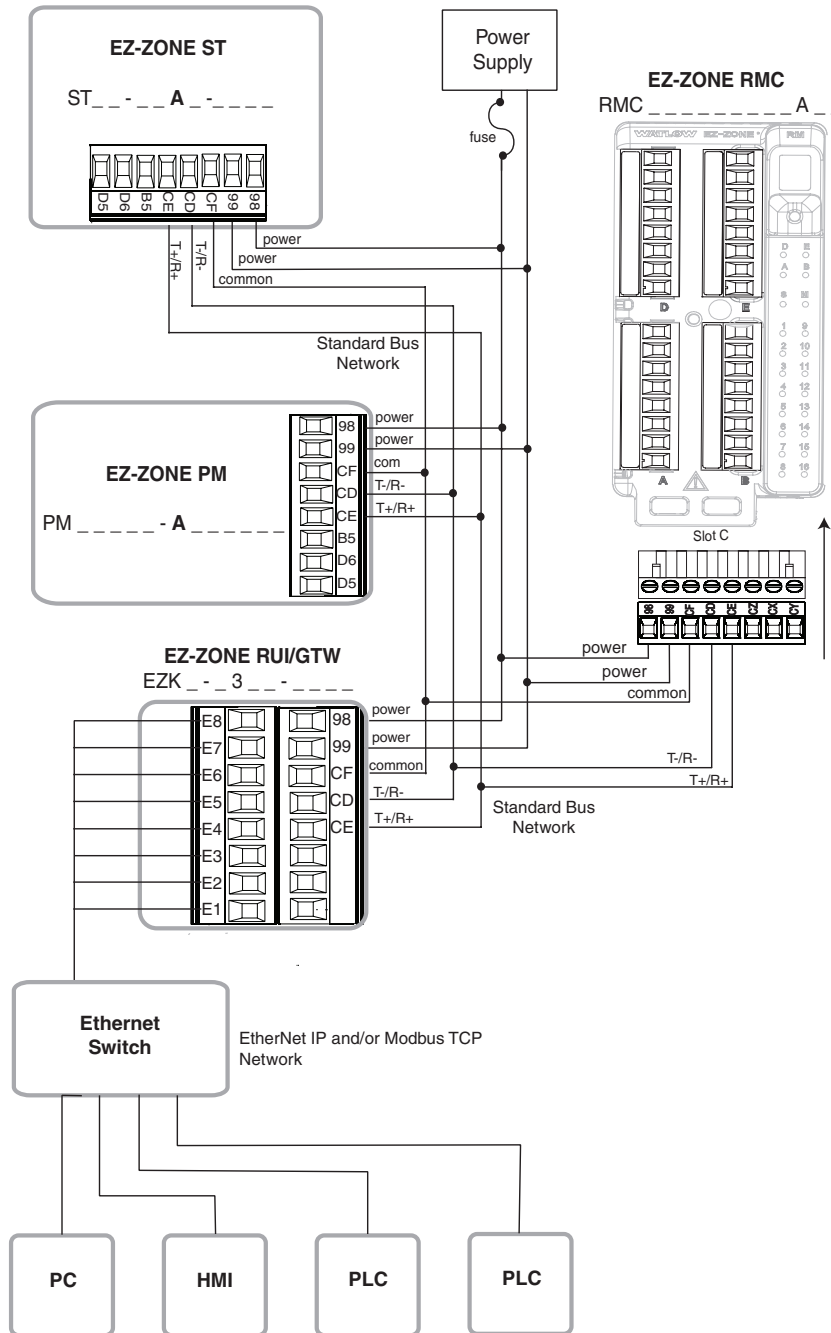
An RUI/Gateway allows for connectivity between dissimilar networks. In this case, Ethernet on one side and Standard Bus on the other.

Note:
The RUI without a gateway installed, can communicate using Watlows' Standard Bus only.

Note:
Do not route network wires with power wires.

Warning:
⚡
Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.