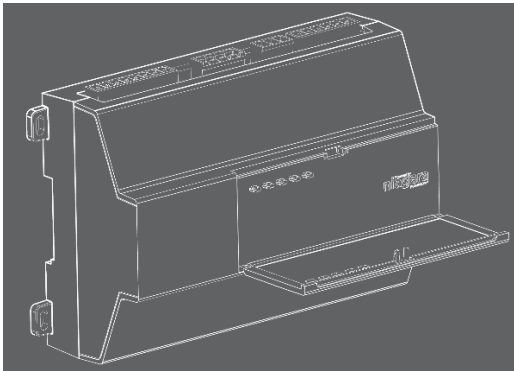# Honeywell

CIPer MODEL 10 CONTROLLER

INSTALLATION AND MOUNTING INSTRUCTIONS

Description

CIPer Model 10 Controller

DIN-mount, 24Vac/dc (50/60Hz) powered, WEBs Niagara® controller with 10 I/O points including:

- Five Universal Inputs (UIs) compatible with 0-10Vdc, 0-20mA, dry contacts, 0-100K ohm resistive, or Type 3 thermistor temperature sensors.
- Three digital triac outputs (non-powered) for on/off control of 24Vac loads up to 1/2 Amp.
- Two 0-10Vdc Analog Outputs (AOs) for 0-10Vdc analog control of loads up to 2.5K ohm minimum or 4mA drain maximum.

See "*CIPer Model 10 Product Data 31-00248*" and "*Niagara Edge 10 Installation and Startup Guide*" for complete specifications and product details.

Included in this Package

- CIPer Model 10 controller
- Three-position RS485 connector plug
- Six-position connector for triac output
- Four-position connector for analog outputs
- Eight-position connector for Universal inputs
- Two-position power connector, and a grounding wire
- 499 Ohm resistors (Qty. 5) for universal input use
- This CIPer Model 10 Controller Installation Guide

Material & Tools Required

- One of the following:
  - UL listed, Class 2, 24Vac transformer, rated at minimum of 7VA. A dedicated transformer is required (cannot power additional equipment), or
  - User supplied UL Listed Class 2 or LPS AC power adapter: 24Vdc, capable of supplying at least 7W (24Vdc at 292mA).
- DIN rail, type NS35/7.5 (35mm x 7.5mm) and DIN rail end-clips (stop clips), recommended for installation. Controller is also panel-mountable.
- Suitable tools and fasteners for mounting the unit and any accessories.

Default Login Credentials

Platform login requires Admin-level platform credentials. Factory default username and password for platform and station are listed below.

Platform credentials: username: "tridium", password: "niagara", passphrase: "niagara".

Station credentials: username: "admin". password: "Admin12345"

NOTE: When you initially commission the controller you will have to change all default credentials (username, password, passphrase).

Warnings

⚠ Disconnect power before installation or servicing to prevent electrical shock or equipment damage.

⚠ To reduce the risk of fire or electrical shock, install in a controlled environment relatively free of contaminants.

Caution

⚠ Removal of the controller's cover is not required. No configurable or user-serviceable items require cover removal.

⚠ A single, dedicated power source for each CIPer Model 10 is recommended. If you power multiple CIPer Model 10 controllers from a single power source, you must match the power and grounding polarity on each controller or the controller will be damaged.

Mounting

Mount the controller in a location that allows clearance for wiring, servicing, and removal.

## Environmental Requirements

NOTE: This product is for indoor use only.

Ambient conditions must be within the range of:

- Operating Temperature: -20°C to 60°C (-4°F to 140°F)
- Storage Temperature: -40°C to 85°C (-40°F to 185°F)
- Relative humidity: 5% to 95% non- condensing
- Supply voltage fluctuation and brownout tolerance:
  - Allowable voltage fluctuation to +/-10%
  - 0-69% input voltage - 40ms
  - 70-79% input voltage - 1 second
  - 80 - 89% input voltage - 20 seconds
  - 90% - 100% input voltage - indefinitely

NOTE: Horizontal mounting is strongly recommended, to achieve maximum heat dissipation and meet the operating temperature upper limit. Any other mounting orientation reduces this upper limit.

31-00250ES-01

Mounting on DIN Rail
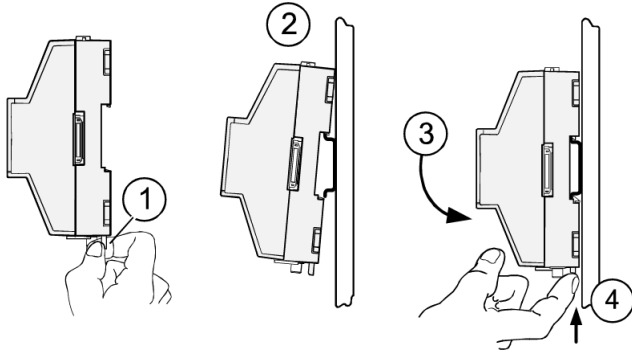
1) Pull the controller's locking clip down.
2) Tilt the controller to hook over the DIN rail.
3) Push down and in on the unit to fasten to the rail.
4) Push locking clip up and click into place to secure.
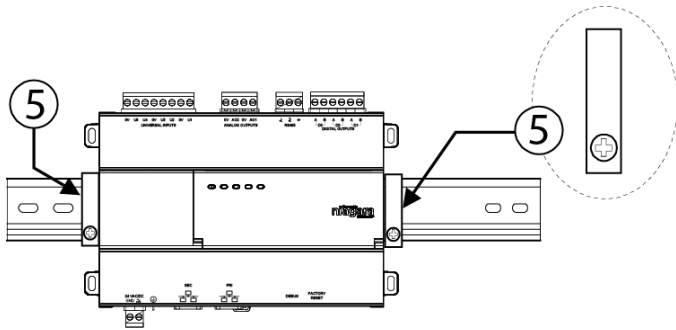
5) Carefully secure both ends of the final assembly with DIN rail end-clips provided by the DIN rail vendor.

Terminal Locations

The CIPer Model 10 provides 5 Universal Inputs compatible with 0–10Vdc, 0–20mA, dry contacts, 0–100K ohm resistive, or Type 3 thermistor temperature sensors. CIPer Model 10 includes five outputs as:

- Three digital, non-powered, triac outputs for on/off control of 24Vac loads up to 1/2 Amp.
- Two 0-10Vdc Analog Outputs for 0-10Vdc analog control of loads at 2.5K ohm minimum or 4mA drain maximum.

Wiring terminal positions are shown below, along with LED locations.

Connector Locations

Field communications ports and power connection are shown below:
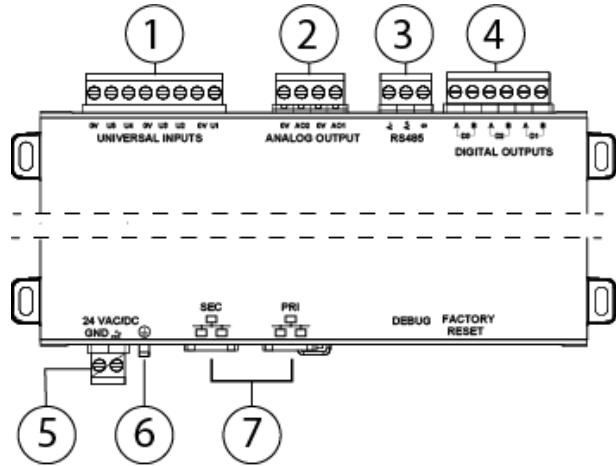
Item	Default Login Credentials
1	Universal inputs. Five inputs on 8-position connector.
2	Analog outputs. Two outputs on 4-position connector.
3	RS485 port. One port on 3-position connector.
4	Digital (triac) outputs. Three non-powered outputs on 6-position connector.
5	24Vac/dc input. One input on 2-position connector.
6	Earth ground. One tab for earth ground.
7	Ethernet ports. Two 10/100Mb, RJ-45 connectors with integrated LEDs.

Wiring

Refer to "Connector Locations" and the following images to locate connectors and other components. Descriptions are provided for wiring to ground, to power, RS-485, Ethernet, Inputs and Outputs.

Wiring Earth Ground & Power
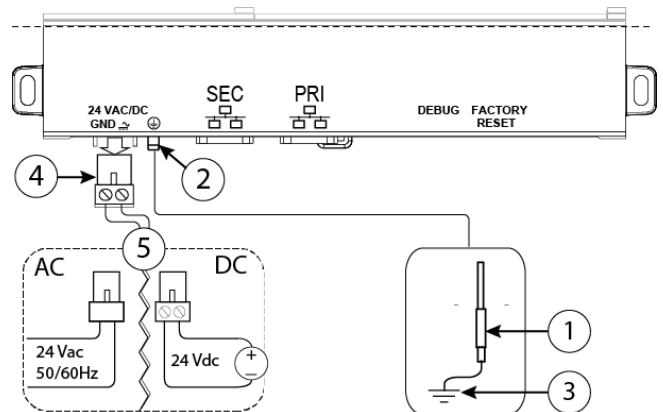
Caution: Because the CIPer Model 10 uses a half-wave rectified power supply, it should not share a transformer with the WEB-8000, IO-R-34, or any legacy WEBs controller.
Caution: Use earth grounding to provide protection from electrostatic discharge or other forms of EMI.

31-00250ES-01

NOTE: Pay attention to the following, depending on the type of power source that you use:

AC: Dedicated 24V transformer required, with neither side of the transformer secondary tied to ground.

DC: Polarity is critical (uses onboard half wave diode). Connect - to ground and + to the other terminal.

⚠ **Warning:** Before making power terminations, de-energize the 24V power source. Do not restore power until completing all other mounting and wiring. See "Power up and Initial Checkout".

**Prerequisite:** A nearby earth grounding point.

1. Install the included earth ground wire (1) to the controller's earth ground spade lug (2) and terminate the other end to a nearby earth ground (3).

2. Unplug the controller's 2-position power connector (4) and terminate a 24V supply source (5) to the connector. Leave connector unplugged for now.

RS 485 Wiring

On the controller's top side, a single, non-isolated, RS485 port provides connection to IO-R-34 module or to other RS-485 devices (NRIO, MSTP, MODBUS). Do not use this port to connect to other Honeywell controllers.

Use shielded, twisted-pair, 18-22 AWG cabling to wire in a continuous multidrop fashion to other RS485 devices: "minus to minus", "plus to plus," and "shield to shield". 10K bias resistors are permanently connected. Note that there is no built-in termination resistor. Maximum total cable length is 1,000 feet (304.8 meters).

Connect the shield wire to earth ground at CIPer Model 10 end only. The following image shows example wiring.
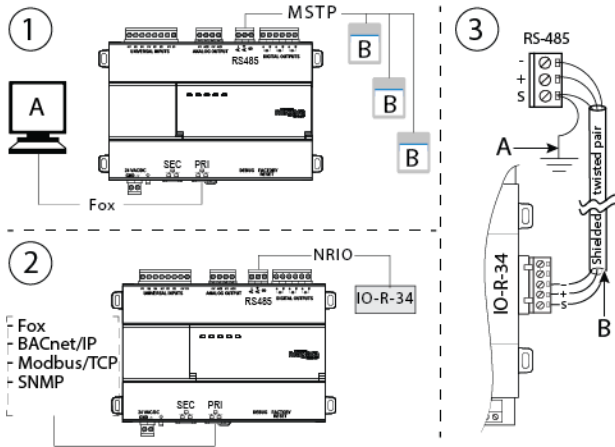
1) RS485 port supporting a trunk of MSTP devices (3 maximum).
   A. Supervisor
   B. Devices
2) RS485 port connected to a single IO-R-34 module.
3) Example wire terminations to IO-R-34 using RS-485.
   A. Ground at one point on CIPer-10 end only.
   B. Use shielded twisted pair wiring

**NOTE:** Do not mix an IO-R-34 with other types of RS485 devices on the same RS485 trunk.

NOTE: RS485 devices on the same network should use the same protocol and baud rate. Up to 50 total external points across 3 external devices are supported.

Ethernet Wiring

Two RJ-45 10/100Mb Ethernet connectors are labeled PRI for primary, and SEC for secondary. Use a standard Ethernet patch cable to an Ethernet switch. These ports are suitable for daisy-chaining CIPer Model 10 controllers (see image below) or for connection to either a WEB-8000 or directly to a network. Maximum distance between nodes (network switch or controller) is 100 meters.

Daisy Chain and Network Device Limits

The maximum number of CIPer Model 10 controllers that are supported in daisy chain configuration is 16. IT departments may limit the number of devices or network switches connected to a network port and may disable a port if limits are exceeded. CIPer Model 10 controllers installed in daisy chain configuration off of a single port count against the limit and may trigger the switch to disable the port. See below for an example Ethernet daisy chain layout.
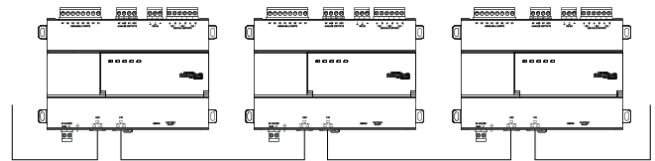
Using DHCP

Upon first startup when IP connectivity is detected, the CIPer Model 10 initially requests an IP address via DHCP. If a DHCP address is not found, the controller reverts to a static IP address based on its serial number. The fallback IP address is 192.168.1xx.xx, where xx.xx is the last 4 digits of the serial number. For example, if the serial number is 123456789, the fallback IP address would be 192.168.167.89.
The default subnet mask is 255.255.0.0.

For default platform and station login credentials, see *Default Login Credentials,* page 1.

When CIPer Model 10 controllers are daisy chained from a WEB-8000, you must configure the WEB-8000 port for DHCP as described in *WEB-8000 Startup Guide.*

Using Rapid Spanning Tree Protocol (RSTP)

By default, CIPer Model 10 controllers are configured for loop-free daisy chain installations. In some circumstances it may be desirable to create intentional loops in the physical network to increase fault-tolerance of the network. This requires enabling RSTP on all CIPer Model 10 controllers in the chain. In addition, the controllers must be connected to a network switch that also supports RSTP and has that feature enabled. RSTP allows the CIPer Model 10 controllers to detect the physical layer loops and disable redundant connections until required (cable unplugged, wire cut, etc).

⚠ **Caution:** When using RSTP, always communicate with local Network IT personnel for specific guidance.

Types of Input Wiring

Each of the 5 UI inputs supports any of the following:

- Type-3 10K ohm Thermistor (see Caution, page 4)
- Resistive 0-100K ohms
- 0–10 Vdc
- 4–20 mA
- Binary Input

Thermistor UI Wiring

The inputs support 10K Thermistor temperature sensors. Input accuracy is in the range of ±1% of span. By default, conversion is for a standard Type 3 thermistor sensor with a sensor range of -10° to 135°F (-23.3° to 57.2°C). Using a conversion type of "Tabular Thermistor," you can specify a different thermistor response curve by importing a thermistor curve .xml file. The Honeywell kitlo module contains an xml folder with thermistor curves for various thermistor temperature sensors. You can also edit and export (for reuse) customized thermistor curve xml files. See the *NRIO Driver Guide* for details.
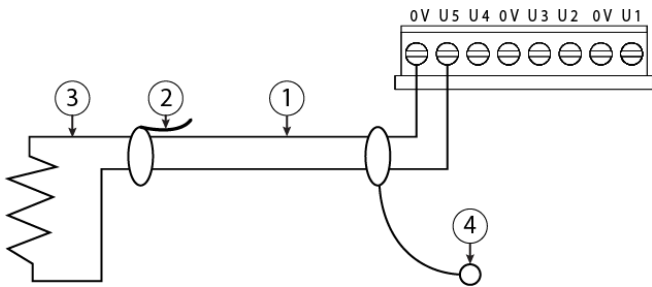
1. Use shielded, twisted cable (1) 61m (200 ft) max.
2. Cut and tape back shield wire (2) thermistor (3) end.
3. Connect the other end of shield wire to ground (4) (for example, use a stud in an enclosure).

Resistive 0-100K ohms UI Wiring

The inputs can read a resistive signal within a range from 0 to 100,000 ohms. Wiring is the same as shown for a Thermistor temperature sensor, above.

Caution: UI inputs provide optimum resistive – to - temperature resolution in the 10K ohm range. For a sensor with a range far from 10K ohms (such as a 100-ohm or 1000-ohm sensor), resolution is so poor as to be unusable! To successfully use such a sensor, install a transmitter that produces a Vdc or mA signal, and then wire the transmitter to the UI according to the 0–10 Vdc or 4–20 mA instructions.

0-10Vdc UI Wiring

The inputs support self-powered 0–10 Vdc sensors. Input impedance is greater than 5K ohms.
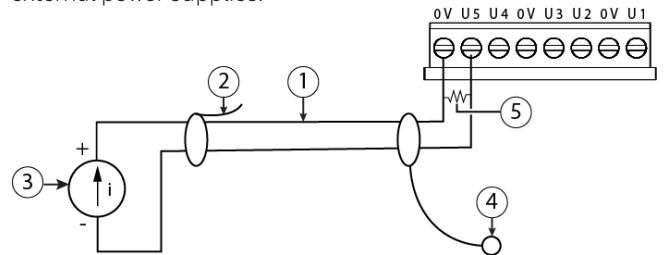0–10 volt accuracy is ±2% of span, without user calibration.
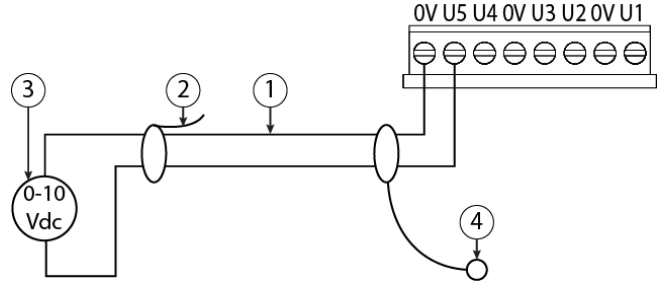
1. Use shielded, twisted cable (1) 61m (200 ft) max.
2. Cut and tape back shield wire (2) at sensor (3) end.
3. Connect the other end of shield wire to ground (4) (for example, use a stud in an enclosure).

4-20mA UI Wiring

The inputs support self-powered 4–20 mA sensors. Input accuracy is ±2% of span, without user calibration. Use a 499 ohm resistor wired across the input terminals.

Caution: When using an externally powered 4–20mA sensor, be sure to de-energize its power supply before making or changing any wiring connections to the CIPer Model 10. This is in addition to removing power from the CIPer Model 10. DO NOT apply external power to the UI inputs without the 499 ohm resistor in place. Otherwise, even a momentary application of power (for example, 24Vdc) to the UI terminals without the resistor may damage circuitry on the CIPer Model 10. Only after completing all input wiring should you restore power to such external power supplies.

1. De-energize the 4-20mA sensor (3) and remove any power from CIPer Model 10. See Caution, above.
2. Use shielded, twisted cable (1) 61m (200 ft) max.
3. Cut and tape back shield wire (2) at sensor (3) end.
4. Connect the other end of shield wire to ground (4) (for example, use a stud in an enclosure).
5. Wire the supplied 499 Ohm resistor (5) across input terminals. See Caution, above.

Binary Input UI Wiring

The universal inputs support normal dry (equipment status) contacts. Standard dry contacts must have a 1 Hz (or less) COS frequency, with minimum dwell time > 500ms (contacts must remain open at least 500ms and be closed at least 500ms). Dry contacts support 11 Vdc open circuits or 733 µA short-circuit current.

31-00250ES-01

0V U5 U4 0V U3 U2 0V U1
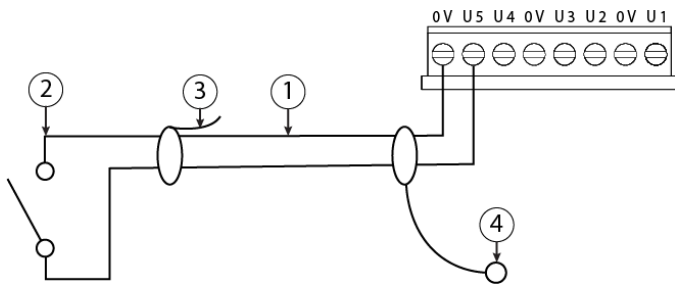
1. Wire the shielded, twisted cable (1), 61m (200 ft) max, to Binary Input, dry contacts (2).

2. Cut and tape back shield wire (3) at sensor end (2).

3. Connect the other end of shield wire to ground (4) (for example, use a stud in an enclosure).

Types of Output Wiring
CIPer Model 10 provides 3 triac digital outputs and two 0-10Vdc analog outputs. Triacs are not powered by the controller.

Binary Triac Output Wiring

NOTE: Triac outputs are suitable for AC only. DC loads and dry contacts require an intermediate relay.

⚠ **Warning:** Never use a controller's power transformer to power I/O loads. Using the controller's transformer introduces potentially damaging switching transients into the unit.

⚠ 24VAC

3   2   1

A B A B A B
D3   D2   D1
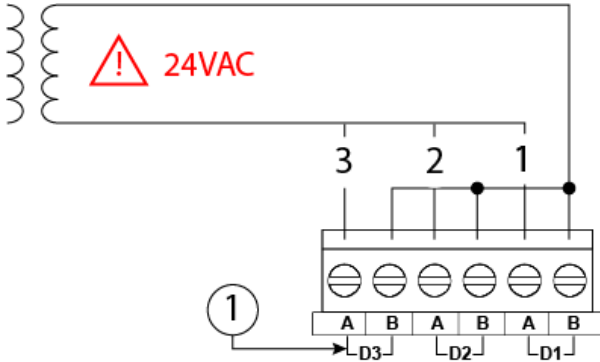
Each digital triac output (1) is rated at 24 Vac +/- 15%, 50/60Hz, at 0.5A max. Relays are not rated for AC mains (line level) powered loads (instead, 24V maximum). Outputs are normally open, floating and do not share a common pin.

Analog Output Wiring
Analog outputs (AO) are referenced by the terminals labeled A*On* and 0V (ground). Each AO can supply a maximum of 4 mA over the entire 0 to 10Vdc range. The minimum input Impedance of a device controlled by an AO must be greater than 2500 ohms.
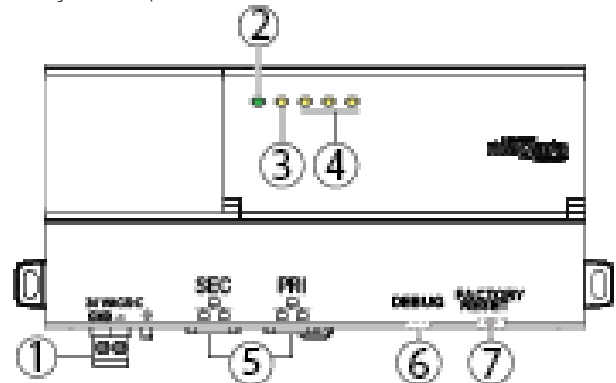
(-)
(+)

0V AO2 0V AO1
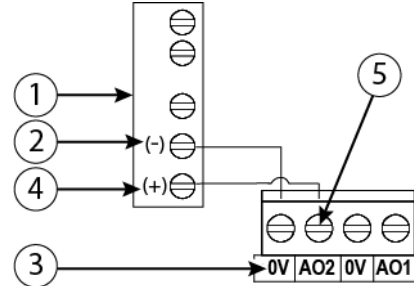
For analog output, wire 0-10Vdc device (1) to controller as follows.

1. Connect Device Common Ground (2) to 0V (3).
2. Connect Device Input (4) to analog output (5).

Power up and Checkout
Refer to the illustration and steps below to apply power and verify basic operation of the controller.

Item	Description
1	24VAC/DC power connector
2	STAT (Green) - Remains illuminated while controller is powered.
3	BEAT (Yellow) - "Heartbeat", normally 1Hz, 50% duty cycle.
4	D3, D2, D1 - Triac Status: Active (Yellow), Inactive: (Off).
5	SEC and PRI Ethernet , 2 LEDs for each port: • Green LED on left: Link (On) / Activity (Flicker) • Yellow LED on right: Speed; 100Mb(On) / 10 Mb(Off).
6	DEBUG - Micro-A USB for serial debug communications.
7	FACTORY RESET - Pushbutton switch to return the controller to factory default settings.

Power Up ans Initial Checkout

1. Apply power by inserting the 2-position 24V power connector plug (1).

2. Check that the green STAT (2) and yellow BEAT (3) LEDs are flashing, as described below.

31-00250ES-01

Status LED indications

When power is applied, the green "STAT" LED illuminates. This indicates the system is OK, with power applied. During bootup, the "BEAT" LED may blink at 5 Hz with a 50%/50% on/off duty cycle. When bootup completes, the platform daemon is started, and the normal 1 Hz flash at 50%/50% on/ off duty cycle of the "BEAT" LED returns. If the "BEAT" LED stays illuminated constantly, does not illuminate, or blinks very fast, contact System Engineering for technical support.

⚠ **Caution:** The 5Hz, 50%/50% on/off "BEAT" flash at bootup also occurs during other critical operations, such as a firmware upgrade to the controller. To be safe, do not remove power from the controller while its "BEAT" LED flashes with a rapid 5Hz rate. Wait for the normal (50%/50%) flash to return before removing power.

For more LED details, refer to Niagara Community Tech Tip article: *Edge 10 LEDs: Status and Heartbeat.*

Debug Port and Factory Reset

Along the bottom side of the controller is a debug port for serial debug communications and a Factory Reset button. See the Niagara Edge *10 Install and Startup Guide* for information on setting the controller to factory defaults.

The DEBUG port is a standard Micro-USB AB port for serial debug communications to the controller. Use a serial terminal program (for example: PuTTY) to access the controller "system shell" menu. This provides access to some basic platform settings.
Default DEBUG port settings are: 115200, 8, N, 1 (baud rate, data bits, parity, stop **bits**). For details on using a serial connection to the DEBUG port, see the Niagara Edge *10 Install and Startup Guide*.

Tab Mounting Option
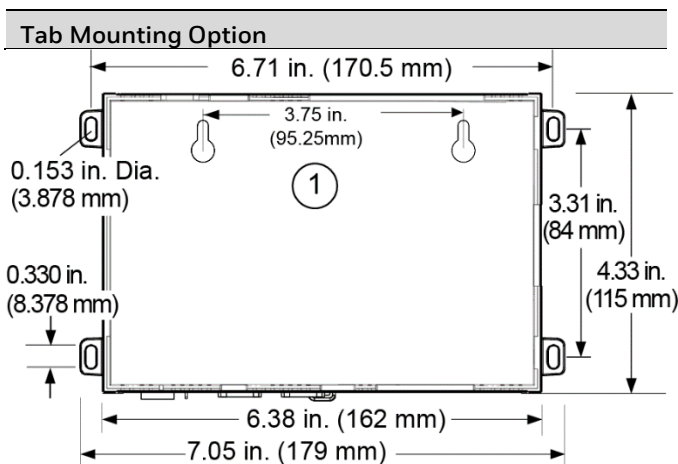
DIN rail mounting is recommended. Where tab mounting is required, use dimensions in the illustration to mount the controller.

⚠ **Caution:** Do not mount hardware on both a DIN Rail and with tab mounts to another surface. This causes physical stress on equipment.

1. CIPer Model 10. Allow at least 1.5" (38mm) clearance around all sides.

Article 33 Communication

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006

Concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

According to Article 33 "Duty to communicate information on substances in articles":

1. Any supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0,1 % weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

2. On request by a consumer any supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0,1 % weight by weight (w/w) shall provide the consumer with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

Our duty is to inform you that the substance(s) listed below may be contained in these products above the threshold level of 0.1% by weight of the listed article.

Product / Part Name	Substance Name
14039 / PWB Assemblies	Lead (Pb)

We confirm that our products do not use any other REACH restricted materials during the manufacturing, storage or handling process.

WEEE (Waste of Electrical and Electronic Equipment) 🗑

This symbol on our product shows a crossed-out "wheelie-bin" as required by law regarding the Waste of Electrical and Electronic Equipment (WEEE) disposal. This indicates your responsibility to contribute in saving the environment by proper disposal of this Waste i.e. Do not dispose of this product with your other wastes. To know the right disposal mechanism please check the applicable law.

31-00250ES-01

THIS PAGE INTENTIONALLY BLANK

中国电子电气产品中有害物质的名称及含量
China EEP Hazardous Substance Information
Restricted Materials Above Threshold

部件名称与型号 **Assembly Name and Model**		有害物质 **Hazardous Substances**					
型号 Model	部件名称 Assembly Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
14039	PWB 组件 PWB Assemblies	X	O	O	O	O	O
本表格依据 SJ/T 11364 的规定编制。 This table is prepared in accordance with the provisions of SJ/T 11364.							

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
 	
    Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.
 	
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
 	
    Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.							

"未列入表内的其他部件，皆不含任何超出限量要求的限制使用物质。 All other components, not listed in the table, do not contain restricted substances above the threshold level.							
电子电气产品的环保使用期限依据SJ/T11388 标准的规定确定。 The EPUP value of EEP is defined according to SJ/T 11388 standard.							