ETC Installation Guide

EchoDIN Power Control Processor

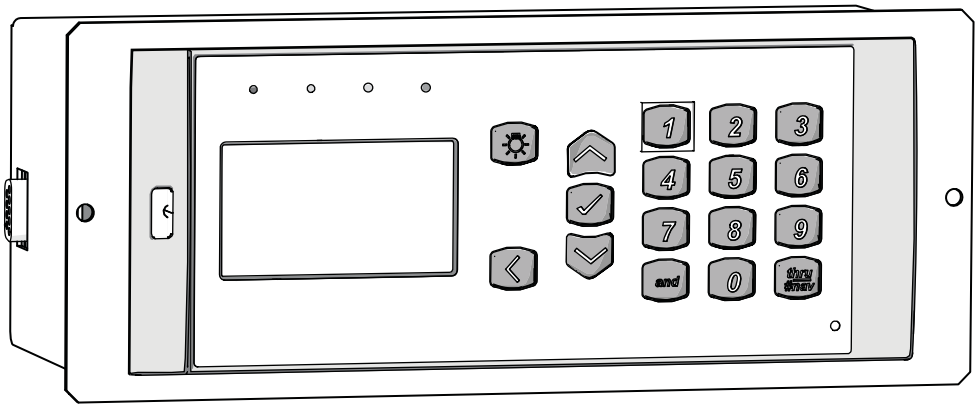
Overview

The EchoDIN Power Control Processor (EchoDIN-Control), part of the Unison Echo family, is the DIN rail mounted user interface for an EchoDIN system. It features up and down arrows for menu navigation, a numeric keypad for direct selection, an easy to read graphical LCD and connections for relay control, ethernet option, and control option cards. Additionally a USB port is provided on the left hand side of the controller for storage of configurations to a flash drive.

Note: *For installation by skilled personnel only.*

Note: *For indoor installation only. The EchoDIN-PCP can be installed in any grounded NEMA style box. ETC recommends using a box with a locking door to reduce electrostatic interference.*

For additional information on programming the EchoDIN-PCP, see the *Power Control Processor Configuration Manual*. All ETC documentation is available for free download at etcconnect.com.

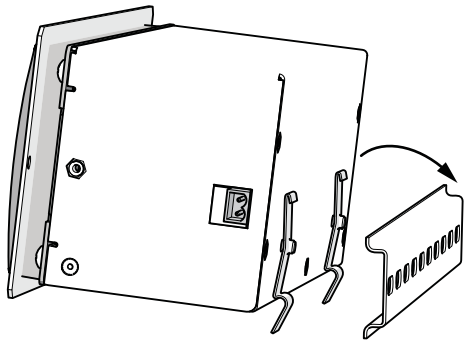


Note: *It is best to install the Power Control Processor after rough-in, load, and control terminations are complete to reduce the likelihood of damage to the controller.*

Installing the Controller

1: Hook top lip of DIN rail mounting clips over the top edge of the DIN rail in the relay panel.

2: Rock the Power Control Processor downward and push firmly until the lower portion of the clips are secured behind the lower edge of the DIN rail.



Corporate Headquarters Middleton, WI, USA +1 608 831 4116 **London, UK** +44 (0)20 8896 1000
Holzkirchen, DE +49 (80 24) 47 00-0 **Rome, IT** +39 (06) 32 111 683 **Hong Kong** +852 2799 1220 **Paris, FR** +33 1 4243 3535
Web etcconnect.com **Support** support.etcconnect.com **Contact** etcconnect.com/contactETC

7123M2141 Rev D Released 2020-06

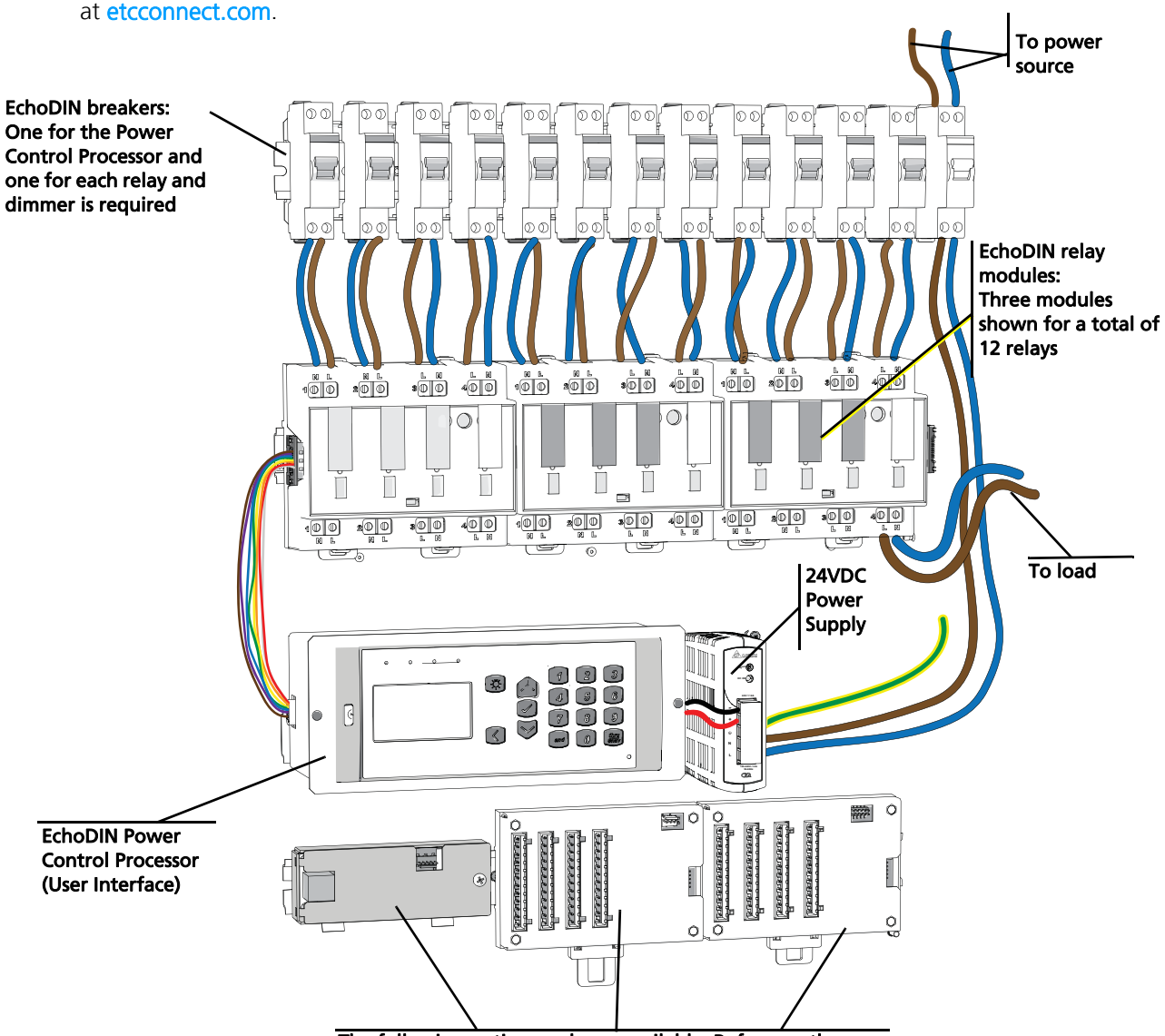
ETC Installation Guide

Power Control Processor

System Overview

The following graphic shows the available components for an EchoDIN system. Not all components need be installed in a single DIN rail enclosure, but harness lengths and maximum data transmission distance should be taken into consideration when laying out a system.

Each component is shipped with an installation manual. ETC manuals are also available for free download at etcconnect.com.



The following option cards are available. Reference the individual install guide for more information.

- Network Option Card (shown)
- Contact Input Option Card (shown)
- 0-10V Option Card (shown)
- DALI Option Card (not shown)

System Component	ETC Model Number	Wire Specification
DALI Option	EchoDIN-DALI	Harness included with kit
Ethernet Interface	EchoDIN-ETHERNET	Harness included with kit
Contact Input Option	EchoDIN-CI	Harness included with kit
0-10 V Dimming Control	EchoDIN-LVD	Harness included with kit
Ride Thru Option	ERP-RTO	N/A
4x16 A Relay	EchoDIN-4iRELAY	One ribbon cable (not included) is required between the controller and the first power block. For use with 230 V systems only.
2x600 W Dimmer	EchoDIN-RPCDIMMER	One ribbon cable (not included) is required between the controller and the first power block.
24 V Power Supply	EchoDIN-POWER	DIN rail mounted power supply only
Relay and Dimmer Control Cables	EchoDIN-CC	27.94 cm (custom lengths up to 20 m can be built upon request)
Accessory Control Cables	EchoDIN-OC	60.96 cm (custom lengths up to 20 m can be built upon request)

Electrical Specifications

Note: *Short circuit protection is required. EN curve "C" circuit breaker rated 16 A or less.*

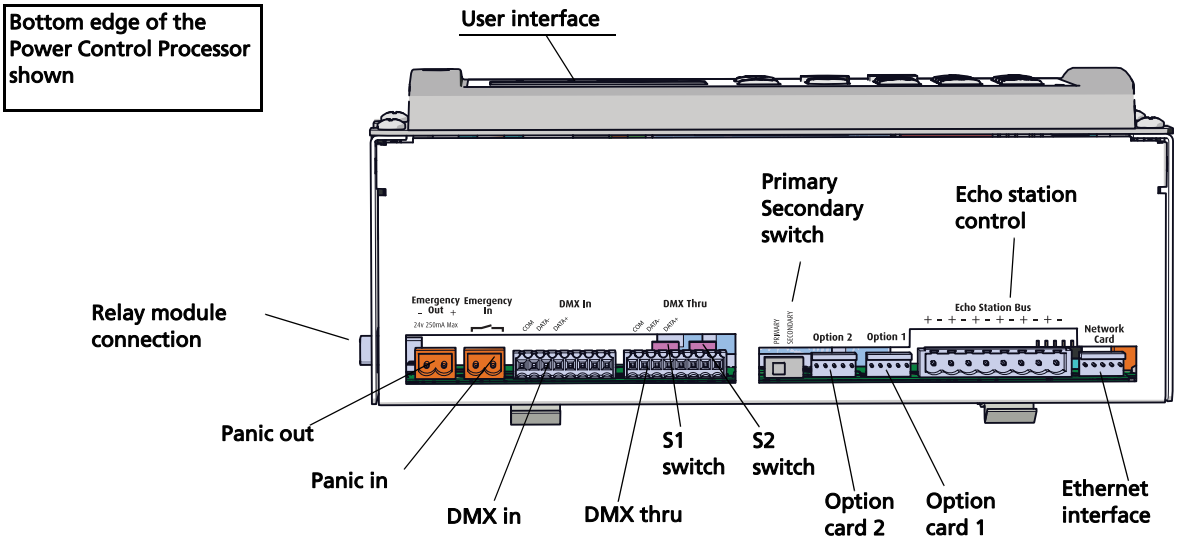
Electrical Specifications

Rated voltage (U_n)	230 VAC L-N, 400 VAC L-L
Rated operational voltage (U_e)	230/400 VAC
Rated insulation voltage (U_i)	500 VAC
Rated impulse withstand voltage (U_{imp})	2.5 kV
Rated current of the assembly (I_{nA})	4 x 15 A (4x15 A relay module) 2 x 2.6 A (Dimmer module)
Rated current of a circuit (I_{nc})	15 A (relay module) 2.6 A (dimmer module)
Rated peak withstand current (I_{pk})	6 kA
Rated short-time withstand current (I_{cw})	6 kA
Rated conditional short circuit current of the assembly (I_{cc})	6 kA
Rated diversity factor (RDF)	0.8
Frequency	50/60 Hz
Pollution degree	2
Earthing system	TN-S, TN-C, TN-C-S
Degree of protection	IP10
EMC classification	Environment "B"
Construction	Open-type assembly

Connect Control Wiring

Data and Control Wire Specification

Purpose	Recommended Cable	Notes
DMX In and DMX Thru	Belden 9729	Contact ETC for list of equivalents. DMX is RS485 serial and can be installed in series (i.e. daisy-chain) topology.
Ethernet Interface Option Card	Belden 1583A (Category 5e or better)	Install per EIA/TIA 568B. Test to TSB 67 standards.
Emergency In and Out UL 924 emergency	2–1.5 mm^2 (16 AWG), twisted pair	Contact input for UL 924 emergency lighting loads
EchoConnect station bus	Belden 8471 (or equivalent) plus one 2.5 mm^2 (14 AWG) ESD ground wire	Topology-free The total length of all signal wiring cannot exceed 500 m (1,640 ft).
Contact Input Option Card	4–0.5 mm^2 (12–18 AWG) wire	Maximum of 24 individual dry contact inputs.
0-10V Dimming Control Option Card	4–0.25 mm^2 (12–24 AWG) wire	Maximum of 50 ballasts (400 mA) per channel
DALI Option Card	4–0.25 mm^2 (12–24 AWG) wire	Maximum of 64 ballasts per loop

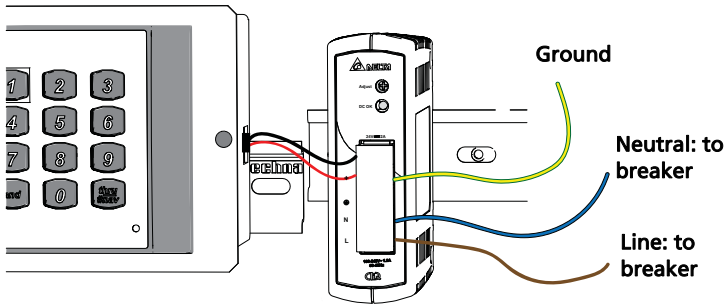


ETC Installation Guide

Power Control Processor

Power Supply

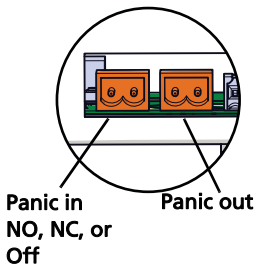
A red and black wire harness is included with the Power Control Processor to be connected to the power supply. One end of the harness has a connector and the other has bare wires. The wires are pre-stripped to the correct length for termination.



1: Pull gently to remove the clear cover on the face of the power supply.
2: Using a small Philips screw driver, loosen the screw terminals.
3: Insert the black wire into the terminal labeled "-". Tighten the screw to secure the wire in place.
4: Insert the red wire into the terminal labeled "+". Tighten the screw to secure the wire in place.
5: Insert the earth/ground wire into the terminal labeled ⏚. Tighten the screw to secure the wire in place.
6: Insert neutral wire (typically blue) into the terminal labeled "N". Tighten the screw to secure the wire in place.
7: Insert the Line wire (typically brown) into the terminal labeled "L". Tighten the screw to secure the wire in place.
8: Loosen the screw terminals on the dedicated breaker.
9: Insert the loose end of the neutral wire into the terminal labeled "N" and tighten the screw, securing the wire in place.
10: Insert the loose end of the line wire into the terminal labeled "L" and tighten the screw, securing the wire in place.

Connect Emergency Contact

The EchoDIN can be connected to an external emergency circuit. Emergency can be triggered by a normally open (NO) or normally closed (NC) contact input. In addition, the Processor offers a +24 VDC (maximum 25 mA) Emergency Out that provides a feed to a lamp or LED, indicating emergency activity.



Connect Emergency Input

1: Pull two 1.5 mm^2 (16 AWG) wires from your Emergency contact location to the Echo Panel Controller through conduit.
2: Strip 5 mm (3/16 in) of insulation from the ends of each wire.
3: Remove the two pin Emergency Input connector from J2 on the bottom edge of the Controller.
4: Loosen the terminal screws.
5: While maintaining the wire twist as close to the connection as possible, insert each wire into the terminals on the connector.
6: Tighten the screws firmly to secure the wires into the connector.
7: Replace the connector to the termination board.

Determine Emergency Switching

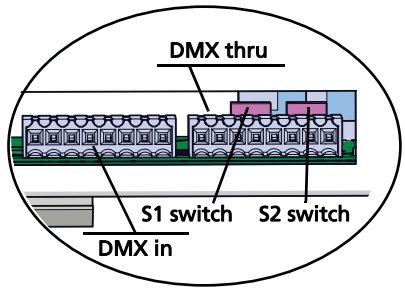
Set the Emergency switch, S2 on the termination I/O board, to indicate the Emergency Input contact closure type: Normally Open Closure (NO), Disabled (Dis), or Normally Closed Closure (NC). The default setting is NO. To change the setting, remove the front cover from the Processor and set the switch to the appropriate position.

Connect Emergency Output (optional)

1: Pull two 1.5 mm^2 (16 AWG) wires from your external emergency indication lamp to the Echo Relay Panel through conduit.
2: Strip 5 mm (3/16 in) of insulation from the ends of each wire.
3: Remove the two pin Emergency Output connector from J3 on the termination I/O board.
4: Loosen the terminal screws.
5: Insert the and insert the negative wire into pin 1 and insert the positive wire (this carries 24 VDC, maximum current draw of 25 mA, to the lamp) into pin 2 of the terminals on the connector.
6: Tighten the screws firmly to secure the wires into the connector.
7: Replace the connector to the termination board

DMX

DMX termination instructions are included with the DMX termination kit that is included with the Processor. The default setting for the DMX termination switch, S1 on the termination I/O board, is Off. When you complete the DMX data connections, you must set the S1 switch to On to properly terminate the DMX line.

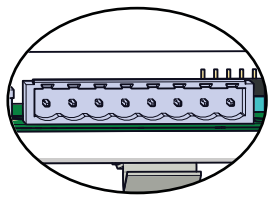


Note: *The RDM position on the S1 switch is not used.*

Stations

Connect EchoConnect

EchoConnect is the communication bus that connects the Power Control Processor to other Echo native products for configuration of presets, sequence, and level control between devices such as the Echo Preset Stations.Inspire stations connect to the EchoConnect station communication bus. Reference the Unison *Echo Inspire Station Installation Guide* for station installation information.



EchoConnect is a bidirectional protocol that uses one pair of wires (data+ and data-) for both data and power. The total combined length of any EchoConnect wire run may not exceed 500 m (1,640 ft).

Using Belden 8471

Termination is available for up to four separate EchoConnect data runs and is topology-free. EchoConnect includes one pair of wires (data + and data -) plus a separate ESD ground wire. The total combined length of a EchoConnect wire run cannot exceed 500 m (1,640 ft), with a maximum distance of 400 m (1,313 ft) between any two devices.

For systems utilizing Echo Preset stations, ETC recommends terminating the station data run to the Echo host product with the station power supply enabled.

CAUTION: *Enable only one EchoConnect power supply per system. Reference the Power Control Processor Configuration Manual, Station Power menu, for instructions to enable or disable the power supply. Enabling more than one power supply may interrupt communication and cause undesirable results.*

Note: *If you are using Cat5 (or Cat5e) wiring, an external Echo Cat5 Termination Box is required. Contact ETC for ordering details. Control wiring instructions between the termination box and this Echo Relay Panel will be provided with the Cat5 Termination Box installation instructions.*

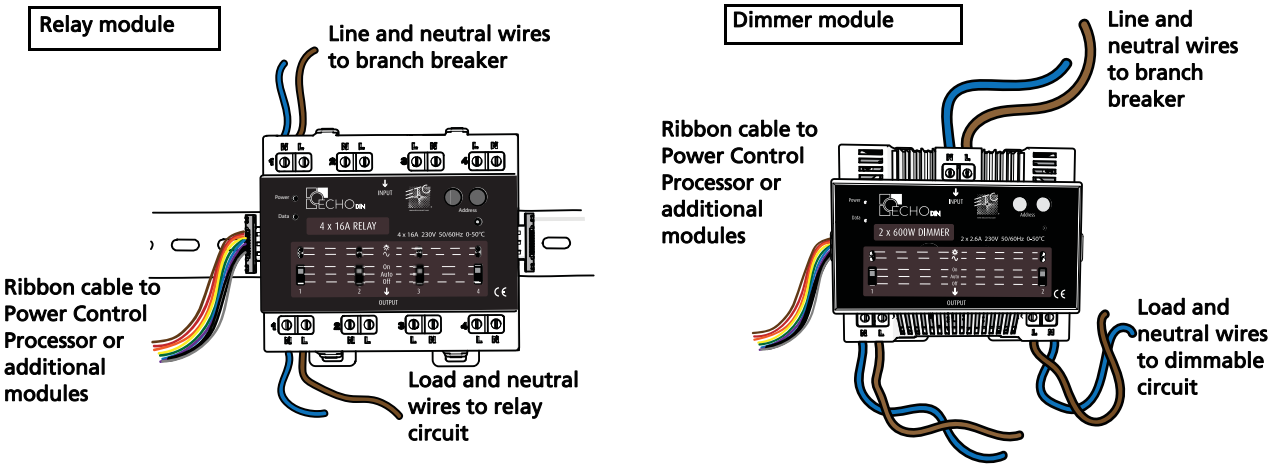
1: Pull Belden 8471 (or an equal type) control wiring and a 2.5 mm^2 (14 AWG) ground to the Power Controller through conduit.
2: Strip 8 mm (5/16 in) of insulation from the ends of each wire pair.
3: Remove the EchoConnect connector from the termination I/O board.
4: Loosen the terminal screws for as many wire pairs as you are terminating.
5: Insert each white wire (typical) from the pairs into the "+" terminal on the connector and tighten the screws firmly to secure the wire into the connector.
6: Insert each black wire (typical) from the pairs into the "-" terminal on the connector and tighten the screws firmly to secure the wire into the connector.
7: The 2.5 mm^2 (14 AWG) ground wire can terminate in one of three ways:
   - Connected between stations using WAGO Lever-Lock connectors (ETC part number J4629).
   - Grounded to metal conduit.
   - If grounded metal conduit is not installed, connect the ground wire to the Echo Relay Panel ground bus (same as the loads are grounded) and to the green/yellow striped wire connected to the Echo Station using a WAGO Lever-Lock connector. Reference the related station installation instructions for details.
8: Replace the EchoConnect connector to J6 on the termination I/O board.

Using Category 5 Cable

When using EchoConnect over Cat5 cable, the bus uses all pairs in the Cat5 cable plus a separate ESD ground wire. the combined length of an EchoConnect wire run using Cat5 cable cannot exceed 300 m (1000 ft).

To terminate Category 5 cable to the Power Control Processor you will need to use a Unison EchoConnect Cat5 ERP Termination Kit, ETC part #7186A1208. For instructions on installing this kit, please reference the Echo Relay Panel Cat5 Termination Kit Installation Guide. ETC manuals can be downloaded at etcconnect.com.

Relay and Dimmer Modules



Relay Modules

Note: *Relay control cabling can be run from any mounting location with a total distance not exceeding 20 m (65 ft).*

Each EchoDIN relay module contains four, 16 A relays. Relay specifications and instructions on installing and wiring relay modules can be found in the *EchoDIN Relay Module Kit Installation Guide.*

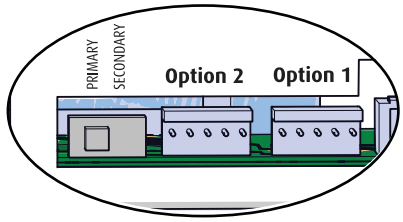
600 W Dimmer Modules

Each EchoDIN 600 W dimmer module contains two circuits of control for dimmable loads. Instructions on installation and wiring of the dimmer can be found in the *EchoDIN 600W Dimmer Installation Guide*.

Option Cards

Each option card in the system includes a wire harness for connecting to the Power Control Processor. For specific wiring instructions between each option card and the controller, reference the applicable option card installation guide. All ETC documentation is available for download at etcconnect.com.

Primary/Secondary Switch



When using two of either the 0-10V or DALI control option cards in an EchoDIN controller, you will need to set the primary/ secondary switch prior to startup. The primary secondary switch allows two option cards of the same type to be installed for support of 48 controlled circuits.

- When using two different option cards, move the switch to position 1. With the switch in position one, each option card will control the circuits assigned to it, up to 24 circuits.
- When using two of the same option cards, move the switch to position 2. With the switch in position two, the card connected to the "option 1" connector will control circuits 1–24. The card connected to "option 2" connector will control circuits 25–48.S

Option Card 1	Option Card 2	Primary/Secondary Switch Position
0-10V (outputs 1–24	0-10V (outputs 25–48)	Secondary
DALI (outputs 1–24	DALI (outputs 25–48)	Secondary
0-10V (outputs 1–24)	Contact Input	Primary
DALI (outputs 1–24)	Contact Input	Primary

Echo System Configuration

Reference the *Power Control Processor Configuration Manual* for information on programming and operation.

All ETC documentation is available for free download at etcconnect.com.

Removing the Controller

Grip the Panel Controller with both hands. Using both thumbs, firmly pull the DIN rail clips towards you. This will release the controller from the DIN rail.

You are now able to rock the bottom of the controller towards you and off of the DIN rail.