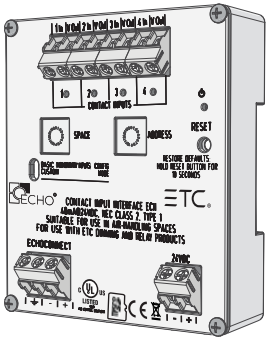
ETC Installation Guide
Contact and Demand Response Interfaces

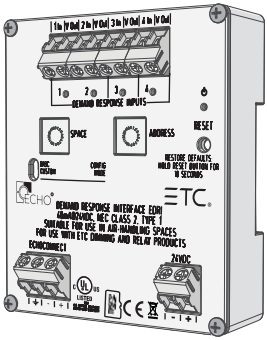
Overview

The Unison Echo® Contact and Demand Response Interfaces are DIN rail mounted devices that are available in the following configurations:

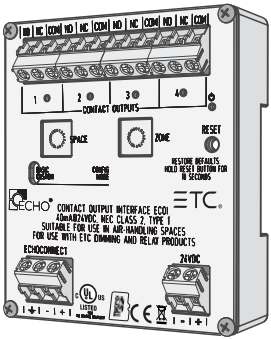
- Input Interface - accepts four momentary or maintained closures to trigger control actions within an Echo control system.
- Demand Response Interface - accepts four maintained closures to trigger demand response within an Echo control system.
- Output Interface - provides four normally open or normally closed output relays controlled by actions in the Echo control system.



Contact Input Interface



Demand Response Interface



Contact Output Interface

Custom Configuration

This document guides you through the installation and basic local configuration settings of the interface devices.

For more detailed information about custom configuration options available using EchoAccess®, reference the EchoAccess Mobile App integrated help system.

Note: *To use the configuration settings applied using EchoAccess, the unit must be placed in Custom configuration mode. Reference Set Configuration Mode.*

Accessory Kit

ETC offers a Low Voltage DIN rail Cover Kit (ETC part number 7186A1218) that allows installation of a Contact Interface to a 4" (10 cm) junction box (provided by others). Contact ETC for ordering details.

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Web: etcconnect.com ■ © 2018 Electronic Theatre Controls, Inc. ■ Product information and specifications subject to change. ■ ETC intends this document to be provided in its entirety.
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Prepare for Installation

Note: *Installation should follow all local codes and standard electrical practices.*

Ambient Environment

For indoor, commercial controls use only. Supports plenum rating.

- Operating temperature 0-50°C, 0-95% non-condensing humidity.

Compliance

- UL/cUL listed, supporting use in a plenum space
- CE compliant
- WEEE marked

For use with ETC dimming and relay products.

Control Requirements

EchoConnect

Echo interface devices require EchoConnect®, Belden 8471 (or equivalent) plus one ESD ground wire, supporting control signal between the device and the connected Echo control system.

EchoConnect is a bidirectional protocol that uses one pair of wires (data+ and data-). ETC recommends using Belden 8471 (or approved equal) Class 2 wire.

The total combined length of an EchoConnect wire run (using Belden 8471, or equal) may not exceed 1,640 feet (500 m).

Electrical Requirements

Echo interface devices require 24 VDC (Class 2) external power in addition to EchoConnect requirements. This auxiliary power is provided to the input connector by an external supply. The unit draws a maximum of 40mA during normal operation.

This connection is provided on a two position terminal, labeled 24 VDC, and accepts 24-12 AWG (0.2-4 mm^2) wires (typically black and red wire pair).

Note: *NEC Class 2 product are to be wired in accordance with NEC Article 725 and local jurisdiction requirements.*

All power and control wiring should be installed and terminated by a qualified installer and should follow standard wiring installation practices.

Input and Demand Response Interface Wire Terminations

The Input and Demand Response Interfaces provide four sets of terminals ("In" and "V out") for connection to a momentary (Input Interface only) or maintained contact input. Terminals accept 24-12 AWG (0.2 mm^2-4 mm^2) wire.

Each input supports wet or dry contact closures and includes a related onboard LED to indicate contact status.

Note: *Input terminals accept 3 - 24 VDC, and support 2,000 feet (610 m) of 18 AWG (1 mm^2) wire (round trip wire to the device) when using 24 VDC.*

Output Interface Wire Terminations

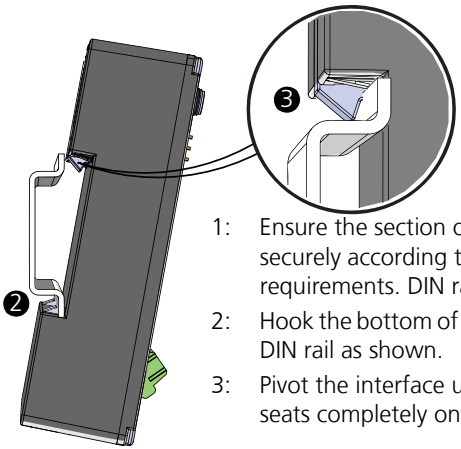
The Contact Output Interface provides four sets of terminals (normally open "N.O.", normally closed "N.C.", and common "COM") for connection of output relays. Terminals accept 24-12 AWG (0.2 mm^2 - 4 mm^2) wire.

Note: *Each output is rated for 2A at 30 VAC or 30 VDC.*

Each output includes a corresponding onboard LED to indicate the normally open status of the relay.

Installation

Install to DIN rail



1: Ensure the section of DIN rail to be used is mounted securely according to the manufacturer's requirements. DIN rail is provided by others.

2: Hook the bottom of the Echo interface under the lower DIN rail as shown.

3: Pivot the interface up and depress until the top clip seats completely onto the DIN rail.

Terminate Wiring

Connect Auxiliary 24 VDC

An external 24 VDC (Class 2) auxiliary power supply is required to power the interface. Terminate to the interface terminals labeled 24 VDC. Terminals accept 24-12 AWG (0.2-4 mm^2) wires (typically a 16 AWG black and red wire pair).

1: Strip 3/8" (9-10 mm) of insulation from the end of each wire.
2: Loosen the two 24 VDC screw terminals.
3: Insert the negative voltage wire (black wire typical) into the terminal labeled "-" and insert the positive voltage wire (red wire typical) into terminal labeled "+".
4: Secure the screws firmly onto each wire.

Connect EchoConnect

EchoConnect terminations accept 24-12 AWG (0.2-4 mm^2) wires for Belden 8471 (or equivalent) between the EchoConnect bus and the Echo interface, plus one ESD ground wire.

1: Strip 3/8" (9-10 mm) of insulation from the bare end of the Belden 8471 (or equivalent) wires and the ESD ground wire.
2: Loosen the three screw terminals (ground, -, +) on the EchoConnect terminals.
3: Insert the data + wire (white is typical) into the terminal labeled "+", insert the data - wire (black is typical) into the terminal labeled "-", and insert the ground wire (green/yellow is typical) into the terminal labeled ⏚.
4: Secure the screws firmly onto each wire.

Connect Input Wiring (Input Interface and Demand Response)

Terminals accept 24-12 AWG (0.2-4 mm^2).

Dry Contact Input

1: Strip 3/8" (9-10 mm) of insulation from each wire.
2: Loosen the two terminals ("In" and "V out") for the contact input.
3: Insert one wire into each terminal then secure the screws firmly onto each wire.

Wet Contact Input

For a wet contact input into the Input Interface, you must terminate to both the "In" and the negative "-" terminal of the 24 VDC Auxiliary input. The "V out" terminal will not be used for this termination.

1: Strip 3/8" (9-10 mm) of insulation from each wire.

2: Loosen the "In" terminal for the contact input and insert the positive contact voltage wire.

3: Terminate the contact return wire into the negative "-" terminal of the
24 VDC input. Alternative wiring termination methods may be required to accommodate multiple terminations.

4: Secure the screws firmly onto each wire for all terminals.

Connect Output Wiring (Output Interface only)

Terminals accept 24-12 AWG (0.2-4 mm^2)

1: Strip 3/8" (9-10 mm) of insulation from each wire.

2: Determine the type of output required, normally open (NO) or normally closed (NC), then loosen the respective output and COM terminals.

3: Insert the common wire into the "COM" terminal and the output wire into the respective "NO" or "NC" terminal.

4: Secure the screws firmly onto each wire.

Set Configuration Mode

The configuration mode switch allows selection between Basic and Custom configurations of the interface. Basic is the factory default setting.

Basic

Basic configuration mode applies the following default behaviors:

Input Interface:

Inputs control Presets 1-4 respectively, using momentary input mode where the closure behaves similar to an Echo Inspire station.

- close / open event (push) executes a preset toggle
- holding the contact closed (hold) performs a space raise
- closing the closure twice (in rapid succession) performs a preset toggle with 1/2 second override timing

Note: *Particularly when considering machine driven applications, ETC recommends a minimum of 500 ms between any input changes to ensure transitions are reliably applied.*

Demand Response Interface:

Activates Demand Response, affecting up four consecutive Echo Spaces, starting with the interface Space rotary switch setting.

Example: Setting the Space switch to 3 results in control of Spaces 3, 4, 5, and 6. A value higher than 13 will result in control of only Spaces 14, 15, and 16.

Note: *Each Echo space can only have one assigned demand response input.*

Functionality:

- a closed contact means the designated space is in active Demand Response state
- an open contact means Demand Response is inactive

Output Interface:

Relay outputs are controlled by Zones 1-4 respectively (when the Zone dial is set to its default setting of 1). Changing the Zone dial will alter the starting Zone. Reference the related Note on the bottom of page 7.

Note: *Functionality varies depending on whether the normally open or normally closed contact terminal is utilized. The default behaviors listed below are assuming a normally open installation. The normally closed contact provides inverted behavior, its status always the opposite of the normally open contact.*

- When the intensity of an assigned zone is non-zero the corresponding relay output will be closed.
- When the intensity of an assigned zone is equal to zero the corresponding relay will be open.
- By default, all odd numbered presets, when activated, will close all relay outputs and all even numbered presets, when activated, will open all relay outputs. This is true until the preset is re-recorded with new values.

Custom

Custom configuration mode applies the following default behaviors until changed using the EchoAccess Mobile App:

Input Interface

Inputs control Presets 1-4 respectively, using maintained input mode where:

- closing contact activates a preset
- opening a contact deactivates a preset

Demand Response Interface

Inputs control Spaces determined by settings applied in the EchoAccess Mobile App.

Note: *Each Echo space can only have one assigned demand response input.*

Output Interface

Relay outputs are controlled by the status of Presets 1-4 respectively.

- When the status of an assigned preset is active, the corresponding relay output will be closed.
- When the status of an assigned preset is inactive, the corresponding relay will be open.

Aside from the default behaviors when the configuration mode switch set to Custom, complete configuration of the Output Interface is supported by the EchoAccess Mobile App. For detailed information about custom configuration options available using EchoAccess, reference the EchoAccess Mobile App integrated help system.

Set Space and Address / Zone Start

Interface devices participate in an Echo control system using the configured Space and Address / Zone which are selectable using the rotary switches on the front of the unit.

By default, these switches are set to Space 1, Address / Zone 1.

1: Set the Space for this device (1 through 16 available). All control inputs from the connected stations, sensors, and other controls are shared by all devices within the selected space. This setting applies regardless of the selected configuration mode (Basic or Custom).

Note: *For the Demand Response Interface, setting the Space address determines the four consecutive spaces that will be controlled. A value higher than 13 will result in control of only Spaces 14, 15, and 16.*

2: Set the Address / Zone:

- For an Input Interface, set the Address (1 through 16 available) which identifies the device in the selected space. This setting always applies.

Note: *Do not duplicate a device address within the same space.*

- For an Output Interface, set the Zone number (1 through 16 available) for the first output on the interface. The remaining outputs will be assigned consecutive zone numbers. The zone number does not apply while in Custom configuration mode.

Note: *When setting the first zone number, be careful to allow enough in the range for all outputs in the interface. For example, if you set the first zone to address 15, the remaining output contacts on the controller will be assigned to and respond as Zone 16.*

Power Up

All EchoConnect terminations in the system must be made before applying power to the system and interface. When the interface is powered up, the power LED will indicate in blue.

LED States

Input and Demand Response Interface

When a contact is closed, the related status LED will illuminate.

Output Interface

When the normally open contact is closed, the corresponding status LED will illuminate.

Reset Device

Using a ball point pen, press the **[Reset]** button to reset the interface, cycling power and restoring the device to normal operation.

Reset to Factory Defaults

Using a ball point pen, press the **[Reset]** button for ten seconds to reset the interface to factory defaults. The power LED will flash when the device has been restored to its factory defaults.

Remove the Interface from DIN rail

If for any reason you need to remove the interface from the DIN rail, follow these instructions:

1: Shut off power from the unit.
2: Label, then disconnect all wiring and cap off as necessary.
3: Insert a flat blade screwdriver into the clip on top of the interface, slide the unit straight up, then pivot the top edge off the DIN rail.