

# Echoflex Installation Guide

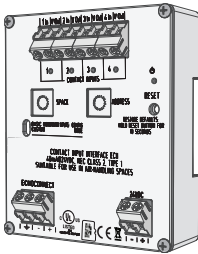
## Elaho Contact and Demand Response

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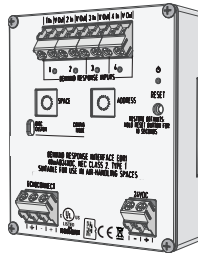
### Overview

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

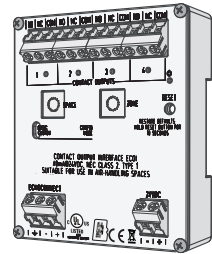
- Contact Input Interface - accepts four momentary or maintained closures to trigger control actions within an Elaho control system.
- Demand Response Interface - accepts four maintained closures to trigger demand response within an Elaho control system.
- Contact Output Interface - provides four normally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



Contact Input



Demand Response



Contact Output

### Custom Configuration

This document guides you through the installation and basic local configuration settings of the interface devices. Information about custom configuration options available using ElahoAccess are available in the app integrated help system.



**Note:** To use the configuration settings applied using ElahoAccess, the unit must be placed in Custom configuration mode. See [Set Configuration Mode on page 5](#).

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### Accessory Kits

Echoflex offers a Low Voltage DIN rail Cover Kit (part number 8186A1218) that allows installation of the Contact and Demand Response Interface to a 10.16 cm (4 in) junction box (provided by others). Contact Echoflex for ordering details.



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## Contact and Demand Response Interface

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### Prepare for Installation

#### Ambient Environment

For indoor, commercial controls use only. Supports plenum rating.  
Operating temperature 0°C–50°C, 0%–95% non-condensing humidity.

#### Compliance

- cULus Listed
- CE Compliant
- WEEE marked
- RoHS Compliance

For use with Echoflex Elaho Control Systems, powered by an Elaho station power supply.

### Control Requirements

#### EchoConnect

Elaho interface devices require an EchoConnect bus connection and an ESD ground connection. EchoConnect supports the control signal between the device and the connected Elaho control system.

EchoConnect is a bi-directional protocol that uses one pair of wires (data + and data -) for both data and power. Echoflex recommends using Belden 8471 Class 2 wire (or approved equal – see the Echoflex cable cross database [echoflexsolutions.com/files/Elaho\\_Data\\_Cable\\_Wire\\_Specs](https://echoflexsolutions.com/files/Elaho_Data_Cable_Wire_Specs) for equal alternatives). The total combined length of an EchoConnect wire run using Belden 8471 may not exceed 500 m (1,640 ft), with a maximum distance of 400 m (1,312 ft) between any two devices. EchoConnect and ESD ground terminations are made to the three-position terminal (labeled EchoConnect) on the interface, and accepts 0.2–4 mm<sup>2</sup> (24–12 AWG) wires.

### Electrical Requirements

Elaho interface devices require 24 VDC (Class 2) external power in addition to EchoConnect and ESD ground terminations. The interface draws a maximum of 40 mA during normal operation. This auxiliary power must be provided to the interface by an external supply. This connection is provided on a two position terminal (labeled 24 VDC) and accepts 0.2–4 mm<sup>2</sup> (24–12 AWG) 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.*

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### Contact Input and Demand Response Wire Terminations

The Contact Input and Demand Response Interfaces provide four sets of terminals (“In” and “V out”) for connection to a momentary (Contact Input Interface only) or maintained contact input. Terminals accept 0.2 mm<sup>2</sup>–4 mm<sup>2</sup>(24–12 AWG) wire. Each input supports wet or dry contact closures and includes a related on board LED to indicate contact status.



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

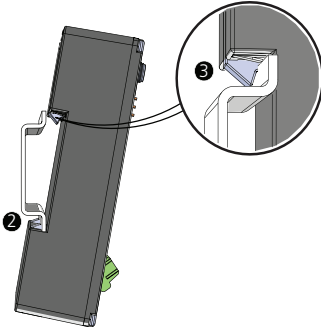
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### Contact Output Wire Terminations

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 0.2 mm<sup>2</sup>–4 mm<sup>2</sup> (24–12 AWG) wire. Each output includes a corresponding on board LED to indicate the normally open status of the relay.

## Installation

### Install to DIN rail



1. Ensure that 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 device under the lower DIN rail edge as shown.
3. Pivot the device up and depress until the top clip seats completely onto the DIN rail.

## Terminate Wiring

### Connect Auxiliary 24 VDC

1. Strip 9–10 mm (3/8 in) of insulation from the end of each wire.
2. Loosen the two 24 VDC screw terminals.

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3. Insert the negative voltage wire (typically black) into the terminal labeled “-”, and insert the positive voltage wire (typically red) into the terminal labeled “+”.
4. Secure the screws firmly onto each wire.

### Connect EchoConnect

1. Strip 9–10 mm (3/8 in) 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 (typically white) into the terminal labeled “+”, insert the data - wire (typically black) into the terminal labeled “-”, and insert the ground wire (typically green/yellow) into the terminal labeled  $\frac{\perp}{\perp}$ .
4. Secure the screws firmly onto each wire.

### Connect Input Wiring (Input and Demand Response Only)

#### *Dry Contact Input*

1. Strip 9–10 mm (3/8 in) of insulation from each wire.
2. Loosen the two terminals (“In” and “V out”).
3. Insert one wire into each terminal, and then secure the screws firmly onto each wire.

#### *Wet Contact Input*

For a wet contact input into the Contact 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 9–10 mm (3/8 in) 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)

1. Strip 9–10 mm (3/8 in) of insulation from each wire.
2. Determine the type of output required, normally open (NO) or normally closed (NC), and 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.

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### Set Configuration Mode

The configuration mode switch allows selection between Custom and Basic configurations of the interface. The interface ships in Custom mode by default.

#### Custom

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

##### *Contact Input Interface*

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

- closing the contact activates the preset
- opening the contact deactivates the preset

##### *Demand Response Interface*

Inputs control in spaces as determined by settings applied in the ElahoAccess App.



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

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##### *Contact 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 ElahoAccess App. For detailed information about custom configuration options available, reference the ElahoAccess App integrated help system.

#### Basic

Basic configuration mode applies the following default behaviors:

##### *Contact Input Interface*

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

- close/open event (push) executes a preset toggle
- holding the contact closed (hold) performs a space raise

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- closing the closure twice (in rapid succession) performs a preset toggle with 1/2 second override timing
- 



**Note:** Use Custom mode and ElahoAccess to assign a different Preset for the contact.

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

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### **Demand Response Interface:**

Activates Demand Response, affecting up four consecutive Elaho 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 greater than 13 will result in control of only Spaces 14, 15, and 16.

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

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### 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 [page 7](#) regarding zone ranges.

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**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.

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- 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.
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- 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 recorded with the new values.

### Set Space and Address/Zone Start

Interface devices participate in an Elaho 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 (Custom or Basic).



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

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2. Set the Address/Zone:

- For a Contact 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.*

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- For a Contact 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 zones 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 interface will be assigned to and respond as Zone 16.*

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### 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

#### Contact Input and Demand Response Interface

When a contact is closed, the related status LED illuminates.

#### Contact Output Interface

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

### 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 flashes to indicate the device has been restored to its factory defaults.

### Remove Device from DIN rail

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

1. Shut power off from the unit and station power supplies on connected EchoConnect segments.
2. Label and then disconnect all wiring and cap off as necessary.
3. Insert a flatblade screwdriver into the clip on top of the enclosure, slide it straight up, and then pivot the top of the unit off of the DIN rail.