

Echoflex Installation Guide

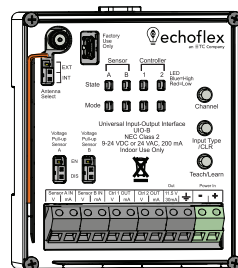
Universal Input-Output Interface

UIO

Overview

The Universal Input-Output Interface (UIO) facilitates the creation of hybrid solutions by integrating Echoflex wireless devices into existing panels, wired control systems, or building energy management systems. It provides functionality to support hospitality applications and timeclocks, connect shared occupancy spaces, and recognize presets.

The UIO's two hardware input channels support 0–10 V or 4–20 mA signals and have wireless outputs assigned to translate analog or digital signals into a number of wireless message types. In addition to gateways or controllers, another UIO can be linked to reproduce a sensor's analog or digital value.



Two output channels deliver 0–10 V or 4–20 mA signals driven by wireless devices linked to the channel. Combining the channels can replicate an Echoflex ELED1 controller with dimming (CH1) and relay control (CH2). Each output channel interprets a wireless message and outputs an analog value on the selected channel.

This document covers installation, testing, and settings that apply to all UIO models. Garibaldi Pro software, Echoflex's in-field commissioning tool, is required to configure additional settings. The software is available for download at echoflexsolutions.com.

The product package includes the interface and two 3-pole WAGO connectors.

Prepare for Installation

To ensure optimal function, consider the installation environment and the following guidelines:

- Avoid spaces with high density construction materials and large metal appliances or fixtures as they may disrupt wireless reception.
- For optimal performance, switches and sensors should be installed within a 24 m (80 ft) unobstructed view of the interface. Consider adding a repeater to extend the wireless signal, if required.
- Mount the interface to an electrical junction box (preferably non-metallic) or a panel in a location and at a height where it is not subject to tampering by unauthorized personnel.



Corporate Headquarters ■ Middleton, WI, USA | +1 608 831 4116

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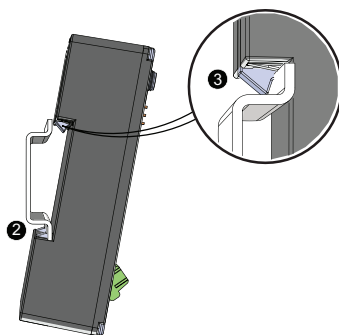
Use hand tools when installing. Review these instructions completely before installing the interface. See [Accessories on page 10](#) for more installation options.



Note: *Follow applicable NEC and local electrical code requirements when installing and powering the interface.*

To mount on DIN Rail:

1. Ensure the section of DIN rail (not provided) is mounted securely according to the manufacturer's requirements.
2. Hook the bottom of the UIO under the lower DIN rail edge as shown in the cutaway diagram.
3. Pivot the UIO up and press until the top clip is seated on the DIN rail.



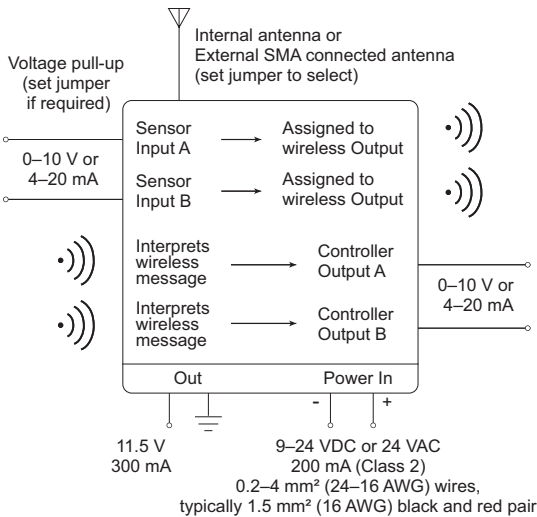
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Wiring Diagram

The UIO requires 9–24 VDC or 24 VAC (Class 2) 200 mA external power. The two-position terminal labeled *Power In* accepts 0.2–4 mm² (24–16 AWG) wires.

1. Strip 9–10 mm (3/8 in) of insulation from the bare end of each wire, typically 1.5 mm² (16 AWG) black and red pair.
2. Loosen the two screws on the green terminals labeled Power In (– and +).
3. Insert the "negative –" wire (typically black) and the "positive +" wire (typically red) into their respective terminals.
4. Secure the screws firmly onto each wire.



Note: Use the WAGO connectors to integrate wired devices.

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Set the Jumpers

The UIO has an Antenna Select jumper and two Voltage Pull-up jumpers. Set the jumpers according to your installation requirement.

Antenna Select

The internal antenna for the UIO sits in a groove on the left side of the cover. Located beside the internal antenna is an SMA connector for an external antenna, and the jumper set to match your antenna selection.

- **Internal Antenna:** To use the internal antenna, the Antenna Select jumper position must be set on the lower two poles (default position).
- **External Antenna:** Installing the UIO in a metal back box reduces the radio range. Use an external antenna mounted outside the metal box to ensure good transmission.

To use an external antenna installed on the SMA connector, the jumper position must be moved to the top two poles. An external antenna is sold separately (see [Accessories on page 10](#)).



Note: *You must use the Antenna Select jumper in one of the two positions in order for wireless communication to work. Do not discard the jumper.*

Voltage Pull-up

There are two Voltage Pull-up jumpers, one for Sensor Input A and one for Sensor Input B.

If the sensor connected to the voltage input requires a pull-up, move the jumper to the two top posts to enable an 11.5 V pull-up. The pull-up is required when the connected sensor sinks current to ground or if a dry contact is used to trigger the input by pulling it to ground.

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User Interface

Three buttons on the right side of the UIO can be used to activate features and set specific configurations directly on the device. The State and Mode LEDs provide activity feedback.



Note: *The State LED indicates the analog value of the controller output: red=0 V, blue=10 V, and a range of blended color for voltages in between.*

Channel: Use this button both to unlock the interface and to select channels to configure.

All four channels are locked by default to secure configured settings. To unlock the channels, press and hold the **[Channel]** button until the channel's State LED changes from red to blue. Press and release the button to cycle through the channels and make a selection.

Input Type/CLR: Use this button to select a transmitter type on the input channels or to clear linked devices from the output channels.

Teach/Learn: Use this button to coordinate devices you want to associate with the UIO.

- Send a Teach message to link wireless sensors on the input channels to a controller.
- Activate Link mode to link wireless devices to the output channels.

Blink Indications

The following blink indications provide a visible report of UIO operations.

Normal Operating Mode: Locked I/O

	State LED	Mode LED
Input	Red = 0 V Blue = 10 V Blended color range = 1–9 V	Green blinks indicate EEPROM type
Output	No LED = virtual OFF Red = minimum output Blue = maximum output Blended color = medium output	Amber blinks indicate linked devices

Channel Select Mode

	State LED	Mode LED
Locked I/O	Blue solid	Same as normal operating mode
Unlocked I/O	Red solid	Same as normal operating mode

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Sensor Input Operations

The two input channels (Sensor A IN and Sensor B IN) can be assigned a wireless profile message type to manage. Profile types include:

- Switch station with ON/OFF and fade control
- Occupancy sensor (occupied, vacant)
- Analog value
- Demand response (active, inactive)
- Temperature set point

Set Profile Type

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle through the channels and make a selection.
3. Press and release the **[Input Type/CLR]** button until the number of green LED blinks corresponds to the profile type you want.

Mode LED	Profile Type Description	Profile
On solid	None selected	
1 blink	Single Paddle Switch	F6-02-02
2 blinks	Occupancy Sensor	A5-07-01
3 blinks	Contact Input	A5-30-02
4 blinks	Central Command (analog, dimming - type 2)	A5-38-08
5 blinks	Keycard Activated Switch	F6-04-01
6 blinks	Demand Response (or custom 4BS)	A5-37-01
7 blinks	Temperature Set Point	A5-10-19
8 blinks	Echoflex Scene Station (configurable)	N/A
9 blinks	Telegram Single Input Contact	D5-00-01

4. Press and hold the **[Channel]** button for five seconds to exit and lock the interface.

Define a Custom 4BS Message

The input channels can be used to send staged central command messages, which you can combine for custom applications. Garibaldi Pro software is required to configure each input event (active and inactive) and combine channels.

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Link an Input Channel to a Controller

The compatible target controllers must be installed, powered, and within range of the UIO.



Note: *The linking process can be used to link a device to a controller or to unlink a linked device from a controller.*

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle through the channels and make a selection.
3. Press the **[Learn]** button on the target controller to activate Link mode. If necessary, refer to the related product documentation.
4. Press the **[Teach/Learn]** button on the UIO once. The Mode LED will blink once to confirm the sent message.
5. Press and hold the **[Channel]** button for five seconds to exit and lock the interface.

Clear an Input Channel

Use the **[Input Type/CLR]** button to restore the pre-commissioned settings or the factory default settings to an input channel. The pre-commissioned settings retain the linked devices, while the factory default settings remove all linked devices.

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle and select an input channel (CHA or CHB).
 - a. Factory pre-commissioned:
 - Press and hold the **[Input Type/CLR]** button until the Mode LED starts blinking.
 - b. Factory default:
 - Press and hold the **[Input Type/CLR]** button until the Mode LED is ON solid, about 15 seconds.
3. Release the button. Both input Mode LEDs will blink once to update common parameters, and then the selected channel's LEDs will stay ON.



Note: *To select and clear both of the input channels, press the **[Teach/Learn]** button once when the Mode LED starts blinking (or is ON solid), and then release the **[Input Type/CLR]** button.*

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Controller Output Operations

The two output channels (Ctrl 1 OUT and Ctrl 2 OUT) can be configured to behave like a lighting controller's dimming channel. Linked switches and sensors will drive the output value based on the output configuration settings. A linked photo sensor will drive the output up or down for daylighting control. Occupancy sensors can drive the output off (0 V) when vacancy is detected and timers have expired.

The output channel can be also used to accept a wireless analog command and output this value. This output strategy is useful in HVAC or Building Automation applications where the wireless signal is used to transmit a value when there is no easy method to run wire. The transmitting UIO would use a gateway command to transmit the analog value present on the input. This command would be linked to a receiving UIO output channel, which would reproduce the analog signal.

Mode LED	Profile Type Description	Profile
On solid	No devices linked	
1 blink	Switch Station	F6-02-(01/02)
2 blinks	Occupancy Sensor	A5-07-01
3 blinks	Photo Sensor	A5-06-(01/05)
4 blinks	Central Command or Gateway	A5-38-08
5 blinks	Demand Response	A5-37-01
6 blinks	Entry Door Sensor	A5-30-02
7 blinks	Window Sensor	A5-30-82
8 blinks	Keycard Switch	F6-04-01

Link a Device to an Output Channel

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle through the channels and make a selection.
3. Press the **[Teach/Learn]** button to activate Link mode, indicated by the blinking Mode LED.
4. Do one of the following:
 - To link a switch: triple-click the ON paddle or station button.
 - To link a sensor: press the **[Teach]** button on the sensor once.
5. Press the **[Teach/Learn]** button once to exit Link mode, or wait 30 seconds for it to time out.
6. Press and hold the **[Channel]** button for five seconds to exit and lock the interface.

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External Relay Drive Output

The channel two output (Cntrlr 2 OUT) can be remapped to be the relay signal of controller channel one (Cntrlr 1 OUT), thereby giving simultaneous access to both the dimming and relay signals of channel one. When used to drive an external relay, this permits the UIO to function as a dimming lighting controller where the load may be switched ON/OFF. Garibaldi Pro software is required to enable this feature.

Clear an Output Channel

Use the **[Input Type/CLR]** button to restore the pre-commissioned settings or the factory default settings to an output channel. The pre-commissioned settings retain the linked devices, while the factory default settings remove all linked devices.

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle and select an output channel (CH1 or CH1).
 - a. Factory pre-commissioned:
 - Press and hold the **[Input Type/CLR]** button until the Mode LED starts blinking.
 - b. Factory default:
 - Press and hold the **[Input Type/CLR]** button until the Mode LED is ON solid, about 15 seconds.
3. Release the button. Both input Mode LEDs will blink once to update common parameters, and then the selected channel's LEDs will stay ON.



Note: *To select and clear both of the output channels, press the **[Teach/Learn]** button once when the Mode LED starts blinking (or is ON solid), and then release the **[Input Type/CLR]** button.*

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Status Messaging

When enabled, the UIO transmits a status message that includes the channel voltage level. Each channel has its own status message, which can be enabled or disabled separately. The default setting is disabled.

1. Press and hold the **[Channel]** button until the State LED changes from red to blue, indicating the interface is unlocked.
2. Press and release the **[Channel]** button again to cycle through the channels and make a selection.
3. Press and hold the **[Teach/Learn]** button, and then press the **[Input Type/CLR]** button twice.
 - Release the **[Teach/Learn]** button to enable status messaging.
 - Press the **[Input Type/CLR]** button once to disable status messaging.

Repeater Feature

The UIO can be used as a single-hop or dual-hop repeater. The feature is disabled by default. To change the repeater setting:

1. Press and hold the **[Input Type/CLR]** button.
2. Press the **[Teach/Learn]** button:
 - Once to disable the repeater.
 - Twice to enable single-hop.
 - Three times to enable dual-hop.
3. Release the **[Input Type/CLR]** button.

Accessories

The following accessories are sold separately. See the Universal Input-Output Interface datasheet at echoflexsolutions.com for ordering information.

- Low voltage DIN rail cover kit provides the option of installing the UIO to a 10 cm (4 in) square junction box.
- External antenna kit extends the wireless range, part number 8186K1001.
- Extension cables for antennas:
 - 21.6 cm (8.5 in), part number N1124
 - 10.7 m (35 ft), part number N1125
- DIN rail enclosures offer housing options in three wall-mount formats. The voltage divider is adjustable to suite any installation configuration.
 - 35.5x20 cm (14x8 in), part number 7180A1030
 - 35.5x35.5 cm (14x14 in), part number 7180A1019
 - 35.5x71 cm (14x28 in), part number 7180A1018

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Compliance

For complete regulatory compliance information, see the Echoflex Universal Input-Output Interface datasheet at [echoflexsolutions.com](https://www.echoflexsolutions.com).

FCC Compliance

Echoflex Universal Input-Output Interface

(For any FCC matters):

Echoflex Solutions, Inc.

3031 Pleasant View Road

Middleton, WI 53562

+1 (608) 831-4116

[echoflexsolutions.com](https://www.echoflexsolutions.com)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Any modifications or changes to this product not expressly approved by Electronic Theatre Controls, Inc. could void the user's authority to operate the product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

Contains FCC ID: SZV-STM300U

ISED Compliance

This device contains a license-exempt transmitter/receiver that complies with Innovation, Science, and Economic Development Canada's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Contains IC ID: 5713A-STM300U

Conformité ISDE

Cet appareil contient un émetteur/récepteur conforme aux CNR d'Innovation, Sciences et Développement économique Canada (ISDE) applicables aux appareils radio exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes:

1. L'appareil ne doit pas produire d'interférences.
2. L'utilisateur de l'appareil doit accepter toute interférence, même si l'interférence est susceptible d'en compromettre le fonctionnement.

Contient ID IC: 5713A-STM300U

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