

IO Extender Installation Guide



Supported Model

- C4-IOX-E-B IO Extender

Introduction

The Control4® IO Extender opens up a whole world of options in the Control4 system to control home theaters, video devices, motion sensors, and other devices that use infrared (IR), serial, contact, and relay connections. The IO Extender serves well as the companion to the Home Controller HC-1000 to expand output capability; in addition, the IO Extender provides flexible options for mounting in an equipment rack (1U) or on a wall.

To mount the unit on the wall, remove the optional feet to use the keyholes on the bottom of the unit. These keyholes are designed to fit the screw spacing found on a standard U.S. double-gang box.

To mount the unit in a rack, install the included rack mount ears and install the device in the rack. The device can be mounted with the front facing outward, or optionally, it can be mounted on the equipment rack's rear rails with the rear of the device facing outward for easier access to the input and output connectors. The rack mount ears can be mounted to the bottom of the device with the ears at the front (for front rack mounts), or alternatively, with the ears at the back (for rear rack mounts).

Box Contents

- IO Extender
- Power Cord
- 6 IR Emitters
- 4 Pluggable Contact/Relay Connectors
- 1U Rack Mount Ears
- Warranty Card

Warnings

! **WARNING!** To reduce the risk of electrical shock, do not expose this apparatus to rain or moisture.
AVERTISSEMENT! Pour réduire le risque de choc électrique, n'exposez pas cet appareil à la pluie ou à l'humidité.

! **WARNING!** This CLASS I apparatus must be connected to an AC mains socket outlet that has a protective earthing connection (i.e., third-prong ground conductor). **DO NOT DEFEAT THE PROTECTIVE EARTHING CONNECTION!**

Requirements and Specifications

Prior to installing this product, ensure that: Ethernet network wiring is installed and functioning.

The IO Extender specifications include:

Model Number	C4-IOX-E-B
Network	10/100 BaseT Ethernet
Display	LED indicators front and back
Power Requirements	100-240 VAC, 50/60 Hz, 30 W, 0.55 A
Power Consumption	Max: 102 BTUs/hour
Operating Temperature	32° - 104° F (0° - 40° C)
Storage Temperature	-4° - 149° F (-20° - 65° C)
IR Out	5V, 27mA max/output
IR Capture	0-60KHz
Contacts	DC - 36V maximum operation (low voltage) The available current for 12V contact outputs is 1.25A maximum, shared across all outputs.
Relays	AC - 36V, 2A DC - 24V, 2A Maximum operation (low voltage)

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Dimensions	H x W x D: 1.59" (40.4 mm) x 16.84" (427.7 mm) x 6.44" (163.4 mm, including connectors)
Weight	4.8 pounds/2.18 kgs
Shipping Weight	6.8 pounds/3.084 kgs

Accessories Available for Purchase

- C4-CBLIR-BULK, IR Emitters, 5 pack
- C4-CBLIRF-BULK, IR Emitters with optical feedback, 5 pack

Additional Resources

The following resources are available to provide you with additional support.

- Your Control4 Reseller or Control4 Dealer
- Control4 Knowledgebase (kb.control4.com)
- Composer documentation in online help or PDF format available in the 'Software Updates' page (<http://www.control4.com>)

Front View

Figure 1. Front View



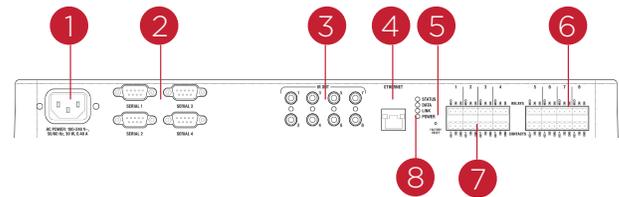
- 1 Status LED**—Red, Orange, and Blue blinking lights indicate the status during startup.
- 2 Data LED**—Blue LED light indicates activity.
- 3 Link/Identification LED**—Blue LED light indicates that the IO Extender has been identified in a Control4 Composer project. Use this button also

to identify the device.

- 4 Power LED**—Blue light indicates AC power is present. The device turns on immediately after power is applied to the device.

Back View

Figure 2. Back View



- 1 Power plug port**—AC power receptacle for an IEC 320 power cord.
- 2 Serial Out**—Four (4) serial output ports for DB9 (receivers, disc changers, etc.).
- 3 IR Output**—Eight (8) IR output ports, 3.5 mm.
- 4 Ethernet**—One (1) RJ-45 port for a 10/100 BaseT Ethernet connection.
- 5 Reset Button**—Recessed Reset button.
- 6 Relays (8 sets, Top Row)**—Pluggable terminal block connector for eight (8) normally closed or normally opened switchable connections.
- 7 Contacts (8 sets, Bottom Row)**—Pluggable terminal block connectors for eight (8) dry contact closures, logic input connections, Door Contact Sensors, or Motion Sensors.
- 8 LED Indicators**—Status, Data, Link, Power. See the previous section "Front View" in this document for details.

NOTES:

- For your mounting convenience, the LEDs on the front and back of the device are the same.
- Always use the ID button on the front of the device for identification.

Mounting Options

Before you install the IO Extender, figure out how you want to install it.

You can:

- Place it on a flat surface
- Mount it on the wall
- Mount it on a rack—front facing or back facing

Flat Surface

Place the device on a flat surface, and connect the devices.

Mount on a Wall - New Construction

The device can mount to a 2-gang backbox.

- Mount the 2-gang backbox.
- Hang the device on the two (2) screws in the wall box front side up.
- Connect the devices at the bottom of the device.

Mount in a Rack

Front of Rack

- 1 Screw the rack mount ears to the front of the device.
- 2 Screw the device to the front of the rack.

Figure 3. Rack Mount - Front



Back of Rack

- 1 Screw the rack mount ears to the back of the device.
- 2 Screw the device to the rails on the rack. If your rack has rear rails, this may be your best option.

Figure 4. Rack Mount - Back



Install the IO Extender

To install the IO Extender, follow these general steps:

- 1 **Ensure that your home network is in place before starting your system setup, including your Controller:** The IO Extender requires a

network connection to use all output ports as designed. When connected, the IO Extender can access web-based media databases and the Controller.

- 2 **Connect the IO Extender to the network:** To connect using an Ethernet connection, plug the data cable from the home network connection into the IO Extender RJ-45 port (labeled “Ethernet”).
- 3 **Power up the IO Extender:** Plug the IO Extender power cord (provided) into the IO Extender power plug port and then to an electrical outlet.
- 4 **Connect the system devices:** Follow the steps described in the “Connect Devices” section that follows.

Configure the IO Extender in Composer

Configure for Static IP

- **Static IP address**—If you prefer to set up a static IP address for this device, refer to Appendix A “Setting Up a Wired and Wireless Network” (info is available only up to OS 2.0) and the section, “Set Up Network Configuration” in the *Composer Pro User Guide* or the *Composer Pro* online help.

Add and Identify the Device

- 1 In the *Composer Pro* System Design view, select the room in which the device resides. Double-click IO Extender in the Items pane to copy it to the project tree.
- 2 Refer to Chapter 5, “Make and Verify Connections” in the *Composer Pro User Guide* (prior to OS 2.0) or in the *Composer Pro* online help for details about how to identify the device.

Connect the Devices



NOTE: You can use the *Composer* software to step through the connection process before or after the physical connections are completed.

Connect all applicable devices to the IO Extender using one of the connection options described in the following table.

Use Pluggable Terminal Block Connectors

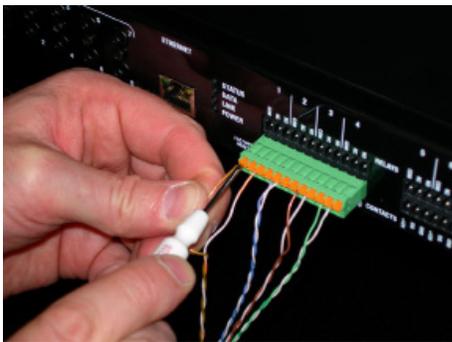
For the Contact and Relay ports, the IO Extender

makes use of Pluggable Terminal Block connectors—removable slot retention tabs to lock in individual wires.

To connect a device to the Pluggable Terminal Block:

- 1 Insert one (1) of the wires required for your device into the appropriate opening in the Pluggable Terminal Block you reserved for that device (see Figure 5).
- 2 Insert the wire as follows:
 - If using solid core wire, push the wire into the hole below the slotted retention tab, and ensure that it's tightly secured.
 - If using stranded wire, push the slotted retention tab in using a small flat-blade screwdriver. Insert the wire into the hole below the tab, and then release the tab to secure the wire (see Figure 5).

Figure 5. Connect to Terminal Block



EXAMPLE: If you add a Motion Sensor, connect its wires to the following Contact openings—power input to +12V output signal to SIG, and ground connector to GND. See “Connect to a Contact Port” or “Connect to the Relay Ports” in the next sections to learn how to connect the devices.

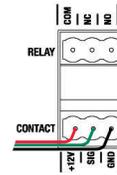
- 3 Repeat Steps 1 and 2 for all wires required for your device.

NOTE: If you connect dry contact closure devices, such as doorbells, connect the switch between +12V (Power) and SIG (Signal).

Connect to a Contact Port

The IO Extender provides eight (8) Contact ports. See the following figures to determine how to connect the device to a contact port.

Figure 6. Contact for Voltage Source (e.g., Motion Sensor)



NOTE: +12V and GND are used to power the Motion Sensor. SIG and GND are used to detect the state of the Contact in the Motion Sensor.

Figure 7. Contact for Dry Contact (e.g., Door Contact Sensor)

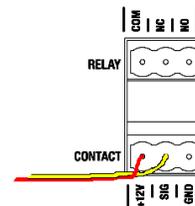
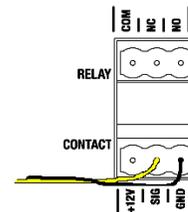


Figure 8. Contact for Self-Powered Voltage Device



Connect to the Relay Ports

The IO Extender provides eight (8) Relay ports.

For most applications, attach one (1) wire to the common terminal, and the other to the normally open terminal. The Relay switches close when the Relay is activated. The IO Extender can support applications that require a normally closed Contact.

Figure 9. Relay Port: Normally Open

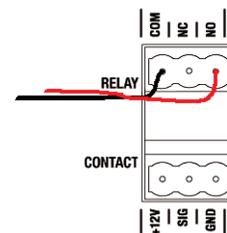
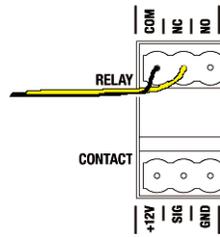


Figure 10. Relay Port: Normally Closed



Connect to the Serial Ports

The IO Extender provides four (4) DB9-style serial ports that use the RS-232 protocol. Connect a device to the IO Extender—for example, a receiver or disc changer—by aligning the pins, inserting the plug and tightening the screws. Serial ports support many different baud rates. All ports support Odd, Even and No Parity and hardware flow control.

Set Up IR Emitters

Your system may contain third-party products that are controlled with IR commands.

To control a device that only recognizes IR commands, complete the following setup:

IR Emitters

- 1 Plug the 3.5 mm connector end of one of the IR stick-on emitters provided into an IR Out port on the IO Extender.
- 2 Place the stick-on IR emitter end over the IR receiver on the DVD or Blu-ray player, TV, or other target device to drive IR signals from the IO Extender to the target.

Troubleshooting

Reset Button

- 1 To reset the IO Extender for system recovery, on the back of the device insert the end of a paper clip into the small hole (to the right of the Ethernet connector).
- 2 Power cycle the device by pressing and holding the Reset button for about 5-7 seconds and the Status LED blinks orange. This action starts the recovery process.

Identification Button

- 1 To reset to the network defaults, on the front of the device power cycle the IO Extender and hold the Identification button until the Data, Link, and Power LEDs are solid blue; immediately release the button.
- 2 If during the boot sequence, the Status LED stays Orange, press and hold the Identification button until the LED blinks Blue, and then release it.

Regulatory/Safety Information

To review regulatory information for your particular Control4 products, see the information located on the Control4 website at: <http://www.control4.com/regulatory/>.

Warranty

Go to <http://www.control4.com/warranty> for details.

About This Document

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