



Cisco Smart+Connected I/O Extender Reference Guide

This document provides additional information about the available ports, technical specifications and features of the Cisco Smart+Connected I/O Extender (SCH-IO-EXT-8).

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Overview

The Cisco Smart+Connected I/O Extender provides additional ports for controlling home theaters, video devices, motion sensors, and other devices that use infrared (IR), serial, contact, and relay connections. When paired with a Cisco Smart+Connected Residential Controller, the Cisco I/O Extender is ideal for expanding control in large, multiroom residences or for residences with numerous devices.

Figure 1 *Cisco I/O Extender*



The Cisco I/O Extender provides the following features:

- Includes eight IR and four serial outputs.
- Eight contacts and eight relays for expanded control in large residences.
- Makes it possible to easily add control capability to new or existing systems.
- Flexible rack or wall mounting options.
- Provides expanded control options for exceptional value.

Package Contents

The following items are included in your Cisco I/O Extender box:

- Cisco I/O Extender
- Power cord
- 6 IR Emitters
- 4 Pluggable Contact/Relay Connectors
- 1U Rack Mount Ears
- Warranty Card

Requirements

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

Mounting Options

Before installing the Cisco I/O Extender, mount the device using one of the following options.

- 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 wall box.

- Mount the 2-gang wall box.
- 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

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

Back of Rack

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

Installation Instructions

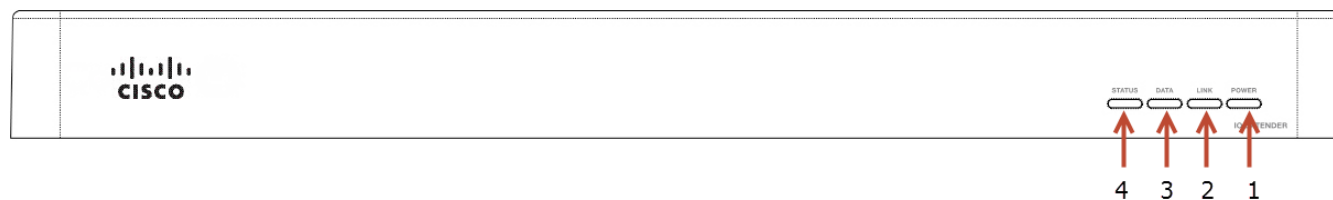
To install the Cisco I/O Extender, follow these general steps:

Procedure

-
- Step 1** Ensure that your residential network is in place before starting your system setup, including your Cisco Controller: The Cisco I/O Extender requires a network connection to use all output ports as designed. When connected, the Cisco I/O Extender can access web-based media databases and the Cisco Controller.
- Step 2** Connect the Cisco I/O Extender to the network: To connect using an Ethernet connection, plug the data cable from the network connection into the Cisco I/O Extender RJ-45 port (labeled “Ethernet”).
- Step 3** Power up the Cisco I/O Extender: Plug the Cisco I/O Extender power cord (provided) into the Cisco I/O Extender power plug port and then to an electrical outlet.
- Step 4** Connect the system devices: Follow the steps described in the [“Connecting the Devices”](#) on page 6 .
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Front View (LEDs and Other Features)

Figure 2 Front View

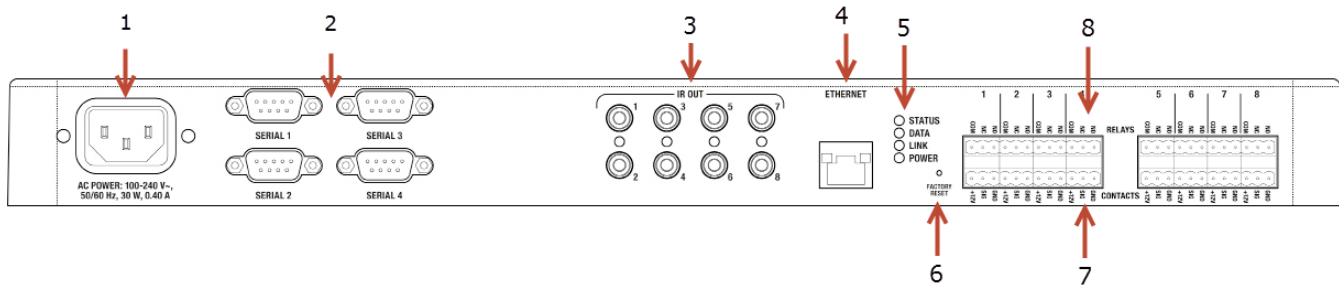


1	Power LED —Blue light indicates AC power is present. The device turns on immediately after power is applied to the device.
2	Link/Identification LED — Blue LED light indicates that the Cisco I/O Extender has been identified in a Composer Pro project. Use this button also to identify the device.
3	Data LED —Blue LED light indicates activity.
4	Status LED —Red, Orange, and Blue blinking lights indicate the status during startup.

Rear View (Input and Output Ports)

Connect all applicable devices to the Cisco I/O Extender using the connection options described in the following figure.

Figure 3 *Rear 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.). See the “Connect the Serial Ports” section on page 9 for more information.
3	IR Output —Eight (8) IR output 3.5 mm ports for up to eight (8) IR output transmitters. See the “Setting Up IR Emitters or IR Blaster” section on page 9 for more information.
4	Ethernet —One (1) RJ-45 port for a 10/100 BaseT Ethernet connection.
5	LED Indicators —Status, Data, Link, Power. The LEDs on the front and back of the device are the same. See the “Front View (LEDs and Other Features)” section on page 4 for details.
6	Reset Button —Recessed Reset button. Use the end of a paper clip to press and reset the device.
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. Provides power for small devices (12 V), signal input (SIG), return path (GND). The current, 1250 mA, is shared across all eight (8) sets of contacts.
8	Relays (8 sets, Top Row)—Pluggable terminal block connector for eight (8) normally closed or normally opened switchable connections, such as a blind, a fireplace, or a projector screen. The set contains a connection for Normally Opened (NO), Normally Closed (NC), and Common (COM). Relays are rated for 24 V 6 A maximum operation.

Connecting the Devices


Tip

Use Composer Pro to step through the connection process before or after the Cisco Controller is physically connected.

Connect all applicable devices to the Cisco I/O Extender using one of the connection options described in the [“Rear View \(Input and Output Ports\)”](#) section on page 5.

Pluggable Terminal Block Connectors

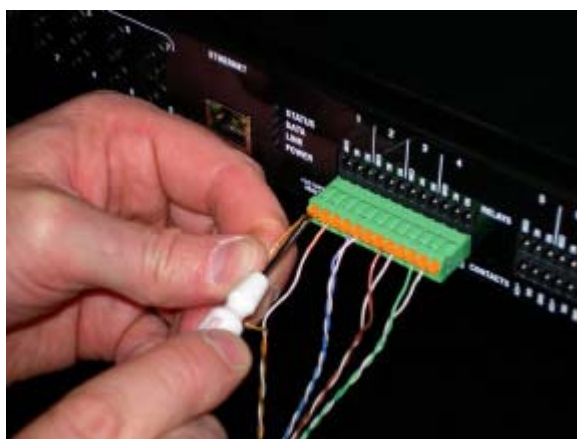
For the contact and relay ports, the Cisco I/O Extender makes use of a pluggable terminal block connector—a removable plastic part that locks in individual wires (included).

To connect a device to the pluggable terminal block:

Procedure

- Step 1** Insert one of the wires required for your device into the appropriate opening in the pluggable terminal block you reserved for that device ([Figure 4](#)).
- Step 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 ([Figure 4](#)).

Figure 4 *Insert Wires into the Connectors*



For 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 the [“Connect to the Contact Port”](#) on page 7 or the [“Connect to the Relay Port”](#) on page 8 to learn how to connect the devices.

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

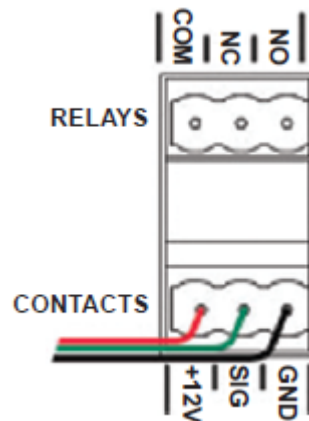
**Note**

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

Connect to the Contact Port

The Cisco I/O Extender provides four (4) contact ports for the pluggable terminal block provided. See [Figure 5](#) through [Figure 7](#) to learn how to connect the device to a contact port.

Figure 5 *Contact Port 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 6 *Contact for Dry Contact (e.g., Door Contact Sensor)*

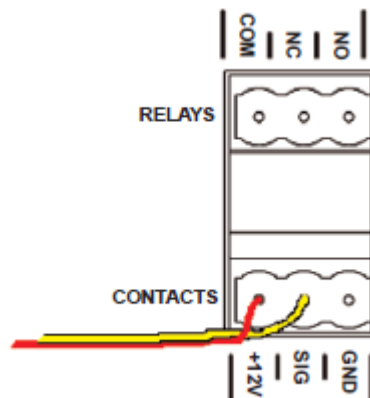
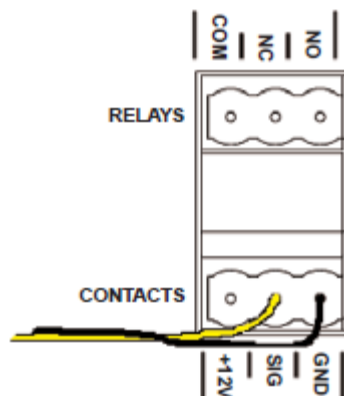


Figure 7 *Contact for Self-Powered Voltage Source Device*



Connect to the Relay Port

The Cisco I/O 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 Cisco I/O Extender can support applications that require a normally closed Contact.

Figure 8 *Relay Port, Normally Open*

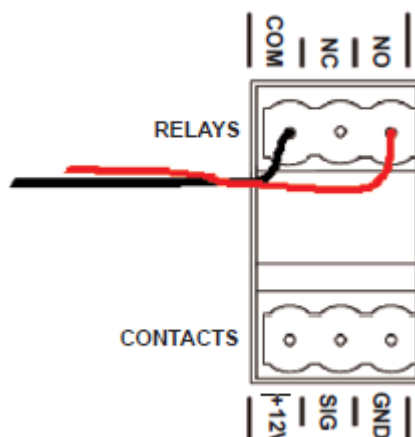
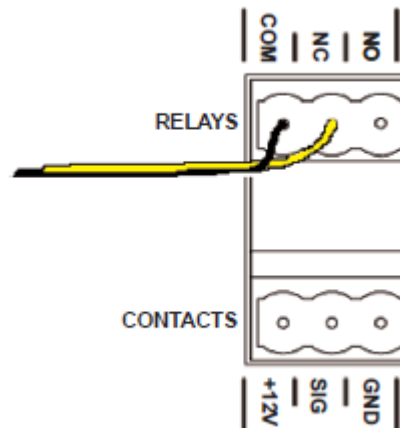


Figure 9 *Relay Port, Normally Closed*



Connect the Serial Ports

The Cisco I/O Extender provides four (4) DB9-style serial ports that use the RS-232 protocol. Connect a device to the Cisco I/O 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.

Setting Up IR Emitters or IR Blaster

Your system may contain third-party products that are controlled through IR commands (usually using remote controls). To provide a way for the Cisco Controller to control a device that only recognizes IR commands, complete the following:

Procedure

-
- Step 1** Plug the 3.5 mm connector end of one of the 4 IR stick-on emitters provided into an IR Out port on the Cisco I/O Extender.
 - Step 2** Place the stick-on emitter end over the IR receiver on the Media Player, TV, or other target device to drive IR signals from the Cisco I/O Extender to the target.
-

Configuring the Cisco I/O Extender

After you install and connect the hardware, use the Composer Pro software to configure the devices and customize the system.

See the [Cisco Smart+Connected Residential Installation and Configuration Guide](#) for more information.

Resetting the Device

Procedure

To reset the Cisco I/O Extender for system recovery, perform the following steps:

-
- Step 1** On the back of the device insert the end of a paper clip into the small hole (to the right of the Ethernet connector).
- Step 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.
-

Using the Identification Button

- To reset the device to the network defaults, power cycle the Cisco I/O Extender (using the power button on the front of the device) and hold the Identification button until the Data, Link, and Power LEDs are solid blue; immediately release the button.
- 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.

Specifications

Table 1 *Cisco I/O Extender Specifications*

Basic Specifications	Description
Status LEDs	4
Serial Ports (Male DB9 RS232)	4
IR Outputs	8
Contacts	8
Relays	8
Network Connectivity	10/100 BaseT Ethernet
Power Supply	100–240 VAC
Amps	0.55 A
Hertz	50–60 Hz
Wattage	30W
Dimensions (H x W x D)	1.59 in. × 16.84 in. × 6.34 in. (40.39 mm × 427.74 mm × 161.04 mm)
Weight	4.8 lb. (2.18 kg)
Power Cord	1
IR Emitter Cables	6
Rack Ears	Included

Table 1 Cisco I/O Extender Specifications (continued)

Normal operating temperature	32°F to 104°F (0°C to 40°C)
Storage temperature	–4°F to 149°F (–20°C to 65°C)

Regulatory/Safety Information

To review regulatory information, go to www.cisco.com/go/smartconnectedresidential/docs.

Related Documentation

For more information about the Cisco Smart+Connected Residential products, see the following documents and websites:

Subject / Document Title	Location
General	
Product Information and Home Page	www.cisco.com/go/smartconnectedresidential
Cisco 1-Year Limited Hardware Warranty Terms	www.cisco.com/go/smartconnectedresidential/warranty
Regulatory Compliance and Safety Information for Cisco Smart+Connected Residential Products	www.cisco.com/go/smartconnectedresidential/docs
Cisco Support	www.cisco.com/cisco/web/support/
Technical Documentaion	
Installation and Configuration	www.cisco.com/go/smartconnectedresidential/docs
Cisco Smart+Connected Residential Installation and Configuration Guide	
Cisco RMS Installation and Administration	
Cisco Smart+Connected Remote Management Console Administration Guide	
Cisco Smart+Connected Remote Management Server Installation Guide	
Reference Guides	
Cisco Smart+Connected Controller 200 Reference Guide	
Cisco Smart+Connected Controller 250 Reference Guide	
Cisco Smart+Connected Controller 800 Reference Guide	
Cisco Smart+Connected 7" In-wall Display Reference Guide	
Cisco Smart+Connected Portable Tablet Reference Guide	
Cisco Smart+Connected I/O Extender Reference Guide	
Cisco Smart+Connected Universal Remote 150 Reference Guide	
Cisco Smart+Connected Universal Remote 250 Reference Guide	
Cisco Smart+Connected Video Door Station Reference Guide	

Cisco Smart+Connected Residential Licensing Guide	See your Cisco representative or partner for more information.
Smart Device Compatibility and other information: Cisco Smart+Connected Smart Device License for Real Estate Developers	www.cisco.com/go/smartconnectedresidential
Composer Pro User Guide	http://www.control4.com/documentation/Composer_Pro_User_Guide/index.htm

Warranty

A Cisco 1-year warranty applies. Go to the following URL for more information:

www.cisco.com/go/smartconnectedresidentialwarranty

Service and Support

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