Cisco Smart+Connected Controller 800 Reference Guide

This document provides information about the available ports, technical specifications and features of the Cisco Smart+Connected Controller 800 (SCH-CONTROL-800).

Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Overview

The Cisco Smart+Connected Controller 800 (Cisco Controller 800) provides intelligent control for Cisco Smart+Connected Residential Solution, allowing residents to manage lighting, security, temperature, and multimedia, while also providing a portal into the community from the residence. The Cisco Controller 800 integrates a broad range of devices using a variety of protocols (Internet Protocol [IP], ZigBee Pro, infrared [IR], serial, and more). By combining wired and wireless technologies, the Cisco Controller 800 provides flexibility in extending the capabilities of the Cisco Smart+Connected Residential Solution to any device located anywhere in the residence. All these services can be controlled through simple and intuitive touchscreen displays or on-screen TV navigators managed through a remote control.

Figure 1 Cisco Controller 800

The Cisco Controller 800 provides exceptional processing power and expansive I/O options to connect and control everything in a typical or large residence. The Cisco Controller 800 features a dual-core 1.8-GHz processor that maximizes the power of the Cisco Smart+Connected Residential Solution.

While individual Cisco Controllers can support a single room or small residence, additional Cisco Controllers can be added to provide on-screen TV navigation in other rooms, or in groups, to provide coordinated control throughout a large residence or building. These compact devices are easy to mount behind a TV, on a wall, or in a rack so that residents can enjoy the power of on-screen control virtually anywhere.

The Cisco Controller 800 provides the following features:

- Sleek, one-rack-unit (1RU) design allows for installation flexibility in a rack, a cabinet, or on a shelf.
- Instantaneous, intuitive control from a display touchscreen or on-screen TV navigator managed through one of the Cisco Smart+Connected Universal Remotes.
- Next-generation core and ZigBee processors deliver a new level of speed and system responsiveness to control lighting scenes, security and automation functions, or to interact with large music or video libraries.
- Expansive I/O to control devices through IR, RS-232 serial, IP, ZigBee Pro, contacts, and relays.
- Three dedicated audio outputs—two analog and one digital—and one analog audio input.
- Integrated Wireless-N and ZigBee Pro with external antennas provide superior wireless performance, especially in rack-mounted installations.
- Certified HDMI with audio and video capability.
- eSATA and USB ports enable connections to external storage with music or video content.

Package Contents

The following items are included in your Cisco Controller 800 box:

- Cisco Controller 800
- AC to DC power adapter with power cord
- 6 IR emitters
- 3 antennas: One (1) for ZigBee and two (2) dipole antennas for wireless (Wi-Fi)
- 2 pluggable Contact/Relay connectors
- Warranty card

Requirements

Prior to installing the Cisco Controller 800, ensure that Ethernet network wiring is in place. If you're using Wi-Fi, see the "Antenna Considerations" section on page 11.

Installation Instructions

Procedure

Step 1 Prepare the dwelling network. When connected, the Cisco Controller can communicate with other IP devices in the residence, and access system updates.

See the Cisco Smart+Connected Residential Installation and Configuration Guidefor more information.

Step 2 Mount options—The Cisco Controller 800 is designed to be stackable with other A/V equipment or mounted in a rack or on a shelf using the optional rack ear kit (sold separately).

Step 3 Connect the Cisco Controller 800 to the network.

- Ethernet—To connect using an Ethernet connection, plug the data cable from the residential network connection into the Cisco Controller's RJ-45 port (labeled "Ethernet") and the network port on the wall or at the network switch.
- Wi-Fi—To connect using Wi-Fi, first connect the unit to Ethernet, and then use Composer Pro's System Manager to reconfigure the unit for Wi-Fi. See also the "Antenna Considerations" section on page 11

Step 4 Power up the Cisco Controller. Plug the power cord into the Cisco Controller's power plug port and then into an electrical outlet.

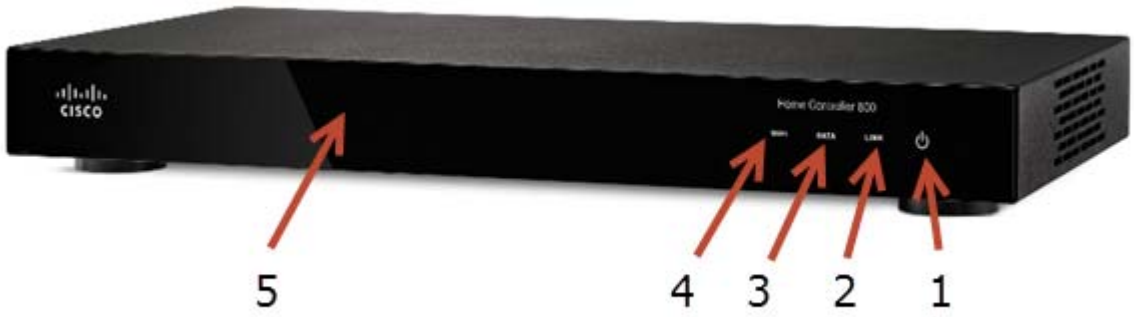
- Only use the power supply included in this box.
- The Cisco Controller 800 may take several minutes to boot up and become operational. Please allow sufficient time for bootup.

Step 5 Connect system devices. Attach the devices as described in the Cisco Smart+Connected Residential Installation and Configuration Guide.

Step 6 Set up any external storage devices as described in the "Setting Up External Storage Devices" section on page 12.

Front View (LEDs and Other Features)

Figure 1-2 Front View

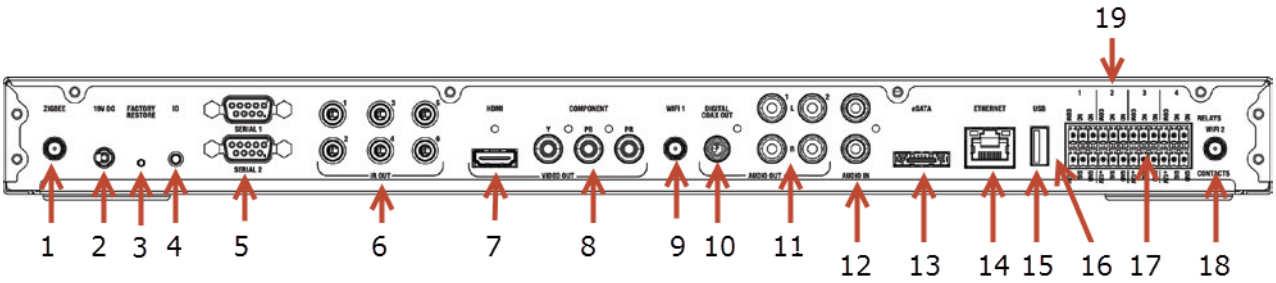


1	**Power LED**—The blue LED indicates that AC power is present. The LED blinks during the boot process.
2	**Link LED**—The blue LED indicates that the Cisco Controller has been identified into a project.
3	**Data LED**—The blue LED indicates that streaming audio is received.
4	**Wi-Fi LED**—This LED blinks Orange and then Blue during the boot process. When the operating system starts running, the Wi-Fi driver changes the LED color depending on the signal strength of its connection to its associated access point. Colors for signal strength: • Orange=Fair to Good • Blue=Excellent • No Light=No connection or not enabled
5	**IR Window / IR Blaster**—Captures third-party IR codes from hand-held devices (such as remote controls) or blasting IR codes.

Rear View (Input and Output Ports)

Connect all applicable devices to the Cisco Controller 800 using the connection options described in the following figure.

Figure 1-3 Rear View



1	**ZigBee**—The antenna for the ZigBee radio. **Note** If you run ZigBee, use the external antenna (provided).
2	**Power Plug Port**—AC to DC power adapter for the power cord.
3	**Factory Restore Button**—A recessed button that restores or resets the Cisco Controller to the factory defaults. See the "Restoring the Device to the Factory Settings" section on page 12 for details.
4	**Identification Button**—An easily-pressed button used to identify this device in Composer Proto revert the device back to Ethernet with its default settings.
5	**RS-232 Serial**—DB9 connectors for two (2) serial devices, such as a receiver or disc changer. See the "Connecting the Devices" section on page 7 for information.
6	**IR Out**—3.5 mm jacks for up to six (6) IR output transmitters. See the "Setting Up IR Emitters or IR Blaster" section on page 10 for information.
7	**HDMI Out (Audio/Video)**—HDMI port for displaying navigation menus on a monitor or TV. **Note** HDMI and Component cords can be connected at the same time, but only one is active.
8	**Video Out (Component)**—Component jack used for displaying navigation menus on a monitor or TV.
9	**Wi-Fi**—Reverse SMA connector to attach a Wi-Fi antenna. Supports 802.11 b/g/n. **Notes** (1) Wi-Fi cannot be used for primary Cisco Controllers; use Wi-Fi for Secondary Cisco Controllers only. See the "Antenna Considerations" section on page 11. (2) For best results, we recommend that you use 802.11 n.
10	**Digital Audio Out**—Digital audio output jack for stereo line output for amplifiers or audio switches.
11	**Audio Out**—RCA jacks for stereo channel line output (line level) for amplifiers or audio switches.
12	**Audio In**—(One (1) pair). RCA jacks for stereo channel input (line level) for one (1) stereo analog source.
13	**eSATA**—External serial ATA port for connecting a hard drive on which to store media. See the "Setting Up External Storage Devices" section on page 12 for information.
14	**Ethernet**—RJ-45 jack for a 10/100/1000 BaseT Ethernet connection.
15	**USB**—For external storage device with USB support. See the "Setting Up External Storage Devices" section on page 12 for information.

16	**Power**—For troubleshooting purposes only. If the Cisco Controller does not power on after being plugged in, insert a paper clip into the pinhole to power on the device.
17	**Contacts**—Pluggable terminal block connector for four (4) Normally Closed or Normally Opened switchable connections. Provides power for small devices (12V), signal input (SIG), and return path (GND).
18	**Wi-Fi 2**—Reverse SMA Connector to attach a Wi-Fi antenna. **Notes** • Wi-Fi cannot be used for primary Cisco Controllers; use Wi-Fi for secondary Cisco Controllers only. See the "Antenna Considerations" section on page 11. • For best results, we recommend that you use 802.11 n.
19	**Relays**—Pluggable terminal block connector for four (4) switchable connections, such as a blind, a fireplace, or a projector screen. The connectors are for Normally Opened (NO), Normally Closed (NC), and Common (COM).

Connecting the Devices

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

The following section provides more information about other connection options.

Pluggable Terminal Block Connectors

For the Contact and Relay ports, the Cisco Controller 800 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:

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 (refer toFigure 4 through Figure 8).

For example, if you add a motion sensor (Figure 4), connect its wires to the following Contact openings:

a. Power input to +12V

b. Output signal to SIG

c. Ground connector to GND

See the following sections for instructions about connecting the various protocols.

Step 2 Repeat Step 1 for all wires required for your device.

Note When 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 Controller 800 provides four (4) contact ports for the pluggable terminal block provided. See Figure 4 through Figure 6 to learn how to connect the device to a contact port.

Figure 4 Contact Port for Voltage Source (e.g., Motion Sensor)

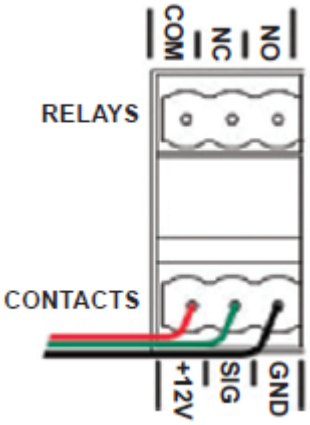


Figure 5 Contact for Dry Contact (e.g., Door Contact Sensor)

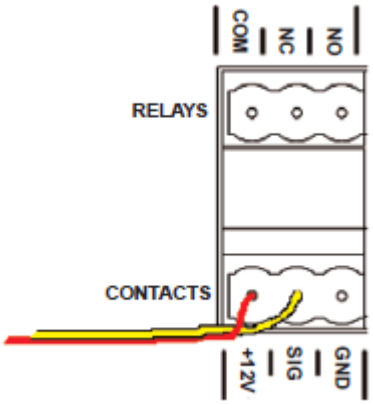
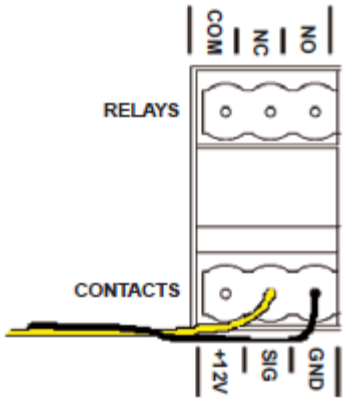


Figure 6 Contact for Self-Powered Voltage Source Device



Connect to the Relay Port

The Cisco Controller 800 provides four (4) relay ports for the pluggable terminal block provided. With most applications, attach one (1) wire to the common terminal and the other to the Normally Opened terminal. The relay switches close when the relay is activated.

The Cisco Controller 800 can support applications that require a Normally Closed contact.

Figure 7 Relay Port, Normally Open

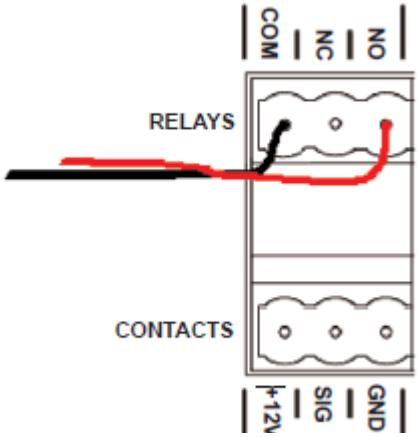
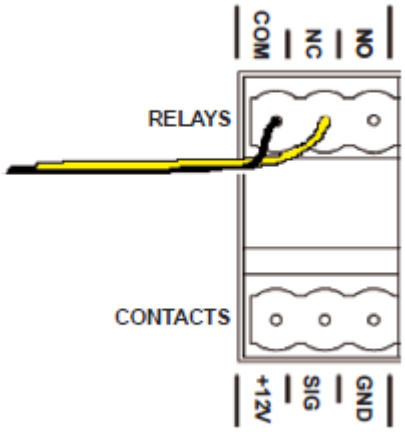


Figure 8 Relay Port, Normally Closed



Connect the Serial Ports

The Cisco Controller 800 has two (2) DB9-style serial ports. Connect a device, for example, a receiver or disc changer, to the Cisco Controller 800 by aligning the pins and tightening the screws.

See the next table for serial communication values.

Table 1 IR/Serial Ports

	Hardware Flow Control	Odd Parity	Even Parity	No Parity
Serial Port 1	X	X	X	X
Serial Port 2	X	X	X	X

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 800 to control a device that only recognizes IR commands, complete one of the following setups:

- IR Emitters
- IR Blaster

IR Emitter 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 Controller.

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 Controller to the target.

IR Blaster Procedure

The Cisco Controller 800 is also equipped with an IR blaster which is located just left of the front LEDs. To use the blaster rather than an IR emitter:

Step 1 In Composer Pro, connect the IR Blaster of the Cisco Controller to the IR In for the device you want to control.

Step 2 Test and verify that the Cisco Controller is positioned in such a way that the blaster can reach the device you want to control.

Antenna Considerations

Depending on the location of the Cisco Controller 800 and the network setup, you'll need to consider which, if any, antennas to connect to the Cisco Controller 800.

Not Using the Cisco Controller 800 as a ZigBee Access Point (ZAP)

In this case, the standard CAT5 Ethernet cable works well with the Cisco Controller installed on a rack. No ZigBee antenna is required.

Using the Cisco Controller 800 as a ZigBee Access Point (ZAP)

Attach one (1) of the antennas provided to the Cisco Controller RSMA connector labeled "ZigBee" as needed.

Using the Cisco Controller 800 with a Wi-Fi Connection

- This option is not recommended if the Cisco Controller is mounted in a rack.
- Wi-Fi is not supported on a Cisco Controller 800 that is the *primary* Cisco Controllers.
- Use Wi-Fi only if you don't have an Ethernet connection and if you're using the Cisco Controller 800 as a *secondary* Cisco Controller.
- For best results, we recommend that you use 802.11 n.

Install in a Rack (Optional)

To install the Cisco Controller 800 in a rack, do the following.

Procedure

To mount the device on a wall:

Step 1 Turn the Cisco Controller over and remove the four (4) screws that secure the feet (each corner on the Cisco Controller).

Step 2 Remove the rubber feet.

Step 3 Use the same screws to attach the rack ears into the screw holes.

Step 4 Attach the Cisco Controller to the rack.

Setting Up External Storage Devices

You can store and access media from an external storage device, for example, a NAS or eSATA drive, or USB memory device by plugging the USB drive into the USB port and then configuring and scanning the media (if required) in Composer Pro.

Note When using eSATA or USB storage devices on a Cisco Controller 800, you can only use one (1) partition with a 2TB maximum size. This same limitation applies to the USB storage on all Cisco Controllers.

Configuring the Controller 800

After you install and connect the hardware (such as a touchscreen, TV, lights, etc.), 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.

Composer Pro Information

- **Driver**—Choose the Cisco Controller 800 driver in Composer Pro (OS 2.2 and later) and add it to your project. See the Cisco Smart+Connected Residential Installation and Configuration Guide.
- **Properties**—There is a special section for configuring the video resolution. Select the video output you are using from the Connections view (HDMI or Component), and then select the preferred video mode. The default is 720p @ 60 Hz for Component and HDMI. HDMI also uses auto configuration to select the best possible resolution for the display device. After making the selection, click **Set Resolution**. If the video resolution has to change, the Cisco Controller 800 will reboot; this is normal.

Restoring the Device to the Factory Settings

Caution This action deletes the Composer Pro project.

Procedure

To restore the Cisco Controller 800 for system recovery to the factory default image, perform the following steps:

Step 1 Pull out the power cord and push it back in.

Step 2 Press and hold the **Factory Restore** button until the user interface on the HDMI or component indicates that the recovery is in progress.

Step 3 Release the button.

Note

- During the recovery process, the Wi-Fi LED blinks Blue, and the LED bootup sequence starts.

- At the end of the restore, the Power LED is solid Blue, and the Wi-Fi LED blinks.

Resetting the Device

Press the Factory Restore button, but do not hold it down. The Cisco Controller 800 will reset but the Composer Pro project will *not* be deleted.

Using the Identification Button

- **Identify**—Press the Identification button to identify the device to the system.
- **Network and Password Resets**—To reset the Cisco Controller 800 to the network and password defaults, hold the ID button and apply power to the unit. Wait for either a prompt on the display/monitor or wait for the Power, Link, and Data LEDs to all turn on (solid) at the same time. Immediately release the button and the network and password will be reset.

Tip If the Cisco Controller is connected to a TV, a message will appear indicating when to let go of the button.

- **Boots/Reboots**—Press and hold the Identification button for five (5) seconds to initiate a Cisco Controller 800 reboot. This sequence of LEDs follows:
  - The Power LED blinks briefly, and then turns solid Blue.
  - The Link LED blinks Blue briefly, and then turns off.
  - The Data LED blinks once, and then turns off.
  - The Wi-Fi LED blinks Orange, blinks Blue until the system reboots, and then turns off.

If the device is configured for Wi-Fi, the Wi-Fi LED reports the status (Red=Bad; Orange=OK; Blue=Good).

Specifications

The Cisco Controller 800 (SCH-CONTROL-800) specifications are described in the following table:

Table 2 Cisco Controller 800 Specifications

Basic Specifications	Description
A/V Inputs and Outputs	
HDMI Out (Digital Audio and On-screen Navigator)	1
Component Video Out	1
Analog Audio Out	2 pairs (RCA)
Analog Audio Input to Convert to Digital	1 pair (RCA)
Digital Audio Out - Coax (RCA)	1
Total number of Dedicated Audio Outputs	3
Network	
Ethernet ports × speed	1 × 10/100/1000 (802.3ab)
Power over Ethernet/power consumption	N/A
Wireless	Wireless-N, (2.4GHz, 802.11n/g)
Wireless security	Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA), WPA2
Wireless antenna	2 external, reverse SMA connectors
ZigBee Pro	802.15.4
ZigBee antenna	1 external, reverse SMA connector
USB 2.0	1
External SATA	1
Control	
Contacts	4
Relays	4
IR Outputs for Individual Device Control (3.5 mm)	6
IR Blaster for Multiple Device Control (front)	Yes
IR Input (Used for IR Learning)	Yes
RS-232 for Serial Controlled Devices	2 DB9
Mounting Options	
Rack Ear Kit	Rack Mount kit for Cisco Controller 800: SCH-RCKMNT-HC800
Shelf (with A/V gear)	Yes
Wall/TV mount	No
Dimensions (H×W×D)	1.98" × 17.32" × 9.15" (50.2 mm x 439.9 mm x 232.4 mm)
Weight	Approx. 6.1 lbs (2.766 kg)

Table 2 Cisco Controller 800 Specifications (continued)

Environmental	
Normal operating temperature	32°F to 95°F (0°C to 35°C)
Storage temperature	–4° F to 149° F (–20°C to 65°C)
Power	
Power supply	External
Power supply	Input: 100–240 VAC, 50–60 Hz; Output: 19V, 3.43A (65W)
Other	
On-screen navigator supported resolutions	720p, 480p
Supported audio formats	MP3: 32 kbps to 320 kbps, CBR, VBR, AAC, and FLAC

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 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	www.cisco.com/go/smartconnectedresidential/docs
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

Cisco offers a wide range of support programs to accelerate customer success. These innovative programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. For more information, contact your Cisco sales representative or go to www.cisco.com/cisco/web/support/index.html

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.

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