



# Cisco Smart+Connected Controller 250 Reference Guide

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This document provides information about the available ports, technical specifications and features of the Cisco Smart+Connected Controller 250 (SCH-CONTROL-250).

- [Overview, page 2](#)
- [Package Contents, page 3](#)
- [Requirements , page 3](#)
- [Installation Instructions, page 3](#)
- [Front View \(LEDs and Other Features\), page 4](#)
- [Rear View \(Input and Output Ports\), page 5](#)
- [Connecting the IR Ports/Serial Ports \(Optional\), page 6](#)
- [Wall Mount Options, page 7](#)
- [Setting Up External Storage Devices, page 8](#)
- [Configuring the Cisco Controller 250, page 8](#)
- [Restoring the Device to the Factory Settings, page 9](#)
- [Resetting the Device Network Settings, page 9](#)
- [Specifications, page 10](#)
- [Regulatory/Safety Information, page 11](#)
- [Related Documentation, page 11](#)
- [Warranty, page 12](#)
- [Service and Support, page 12](#)



# Overview

The Cisco Smart+Connected Controller 250 (Cisco Controller 250) 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 250 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 250 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 250



The Cisco Controller 250 provides superior performance and instantaneous control for single-room systems requiring built-in digital High-Definition Multimedia Interface (HDMI) output to the TV.

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 250 provides the following features:

- Elegant, low-profile design features an integrated power supply for flexible, simple installation behind televisions or on a shelf.
- Instantaneous, intuitive control from touchscreen displays or on-screen TV navigators managed through one of the Cisco Smart+Connected Universal Remotes.
- Power over Ethernet (PoE) capability provides the option of power and network connectivity over a single CAT5/CAT6 cable.



**Note**

Do not use a grounded PoE switch or injector to power the Cisco Controller 250. Use the included power cord or a PoE switch or injector with a two-prong AC power cord. Grounded power cords can damage the device, the switch port, or both.

- Next-generation core processor and ZigBee processors deliver a new level of speed and performance for instantaneous, interactive on-screen control and access to lighting, security, music, and video libraries.
- Certified HDMI with audio and video capability.
- Integrated Wireless-N and ZigBee simplify installation and provide high-performance network connectivity.
- One dedicated audio output with one analog audio input for one-line-level audio out.

- USB port enables connection to external storage for easy access to music content.

## Package Contents

The following items are included in your Cisco Controller 250 box:

- Cisco Controller 250
- AC power cord
- 4 IR emitters
- Universal Television Mounting Plate
- 4 Screws
- Contact/Relay Terminal Block
- 4 Ferrite clamps

## Requirements

- We recommend using Ethernet rather than Wi-Fi for the best network connectivity.
- The Ethernet or Wi-Fi network should be installed prior to starting the Cisco Controller 250 installation.
- Do not use a grounded PoE switch or injector to power the Controller 250.
  - We recommend using the included power cord (instead of PoE).
  - The Cisco Controller 250 is only compatible with ungrounded injectors or switches that have DC ground isolated from AC ground.
  - The easiest way to determine this is to use a PoE switch or injector that has a two-prong AC power cord.
- (Ferrite clamp installation) When installing a Cisco Controller 250, also install the enclosed ferrite clamps in the following manner:
  - Ethernet cable—Install two (2) ferrite clamps on the Ethernet cable no farther than 6 inches from the Cisco Controller 250 Ethernet jack.
  - Video cable— Install two (2) ferrite clamps on each end of the HDMI or Component video cable no farther than 6 inches from the Cisco Controller 250 and the TV.

## Installation Instructions

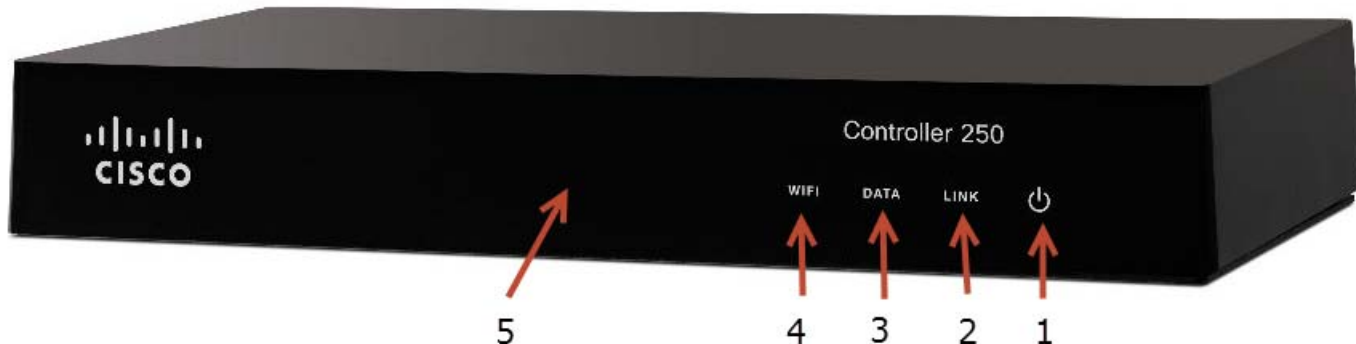
### Procedure

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- 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 Guide](#) for more information.

- Step 2** Mount options—The Cisco Controller 250 can be mounted or placed behind a TV, mounted on a wall, placed in a rack, or stacked on a shelf. See [“Wall Mount Options” section on page 7](#) for more information.
- Step 3** Connect the Cisco Controller 250 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 the Composer Pro System Manager to reconfigure the unit for Wi-Fi.
- 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. If you are powering the Cisco Controller using PoE, you can skip this step.
- 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 8](#).

## Front View (LEDs and Other Features)

Figure 2 Front View

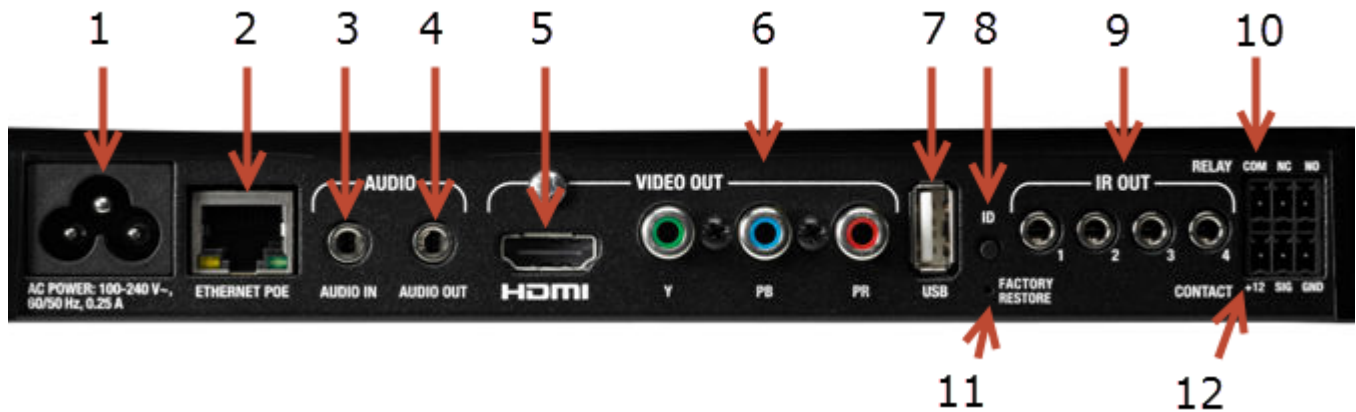


1	<b>Power LED</b> —The blue LED light indicates AC power is present. The Cisco Controller turns on immediately after the power is applied to the device.
2	<b>Link LED</b> —The blue LED light indicates that the Cisco Controller 250 has been identified in a Composer Pro project and is communicating with Director.

3	<b>Data LED</b> —The blue LED indicates that the Cisco Controller is streaming audio.
4	<b>Wi-Fi LED</b> —This LED blinks Red, then Orange, and finally Blue during the boot process. When the operating system is running, the Wi-Fi driver changes the LED color depending on the signal strength of its connection to its associated access point. the color/signal strength indicators are: <ul style="list-style-type: none"> <li>• Orange=Fair to Good</li> <li>• Blue=Excellent</li> <li>• No Light=No connection.</li> </ul>
5	<b>IR Window / IR Blaster</b> —For capturing third-party IR codes from hand-held devices (such as remote controls) or blasting IR codes.

## Rear View (Input and Output Ports)

Figure 3 Rear View



1	<b>Power Plug Port</b> —AC power receptacle for an IEC 320 power cord.
2	<b>Ethernet/PoE</b> —RJ-45 jack for a 10/100 BaseT Ethernet connection. Supports PoE (802.3af). <b>Note</b> Do not use a grounded PoE switch or injector to power the Cisco Controller 250. Use the included power cord or a PoE switch or injector with a two-prong AC power cord. Grounded power cords can damage the device, the switch port, or both.
3	<b>Audio In (1)</b> —3.5 mm jack for stereo channel input (line level) for one (1) stereo analog source.
4	<b>Audio Out (1)</b> —3.5 mm jack for stereo channel line output (line level) for amplifiers or audio switches.
5	<b>Video Out</b> —An HDMI port to display navigation menus on a monitor or TV. Also an Audio Out over HDMI.
6	<b>Video Out</b> —Component port. <b>Note</b> Use either a HDMI or Component <i>Video Out</i> cable (not both).
7	<b>USB</b> —One port for an external storage device or a USB drive (such as a FAT32-formatted device). See the “ <a href="#">Setting Up External Storage Devices</a> ” section on page 8 for more information.
8	<b>Identification Button</b> —Press this button to identify the device when configuring the project in Composer Pro.

<b>9</b>	<b>IR and Serial Outs (4)</b> —3.5 mm jacks for up to four (4) IR emitters or for a combination of IR emitters and serial devices. Ports 1 and 2 can be configured independently for serial control of devices such as receivers or disc changers, or for IR control. See the <a href="#">“Setting Up IR Emitters or IR Blaster”</a> section on page 6 for more information.
<b>10</b>	<b>Relay</b> —Pluggable terminal block connector for one (1) Normally Closed or Normally Opened switchable connection, 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).
<b>11</b>	<b>Factory Restore Button</b> —Restores the Cisco Controller to its factory defaults. This also reboots the Cisco Controller. See the <a href="#">“Restoring the Device to the Factory Settings”</a> section on page 9.
<b>12</b>	<b>Contact (1)</b> —Pluggable terminal block connector for one (1) dry contact closure, logic input connection, e.g., door contact sensor, or motion sensor. Provides power for small devices (12V), signal input (SIG), and return path (GND).

## Connecting the IR Ports/Serial Ports (Optional)

The Cisco Controller 250 provides four (4) IR ports; Ports 1 and 2 can be reconfigured independently for serial communication. If not used for serial, they can be used for IR. Connect a device to the Cisco Controller 250 (such as a receiver or disc changer) using the special serial cable (not included). Serial ports support many different baud rates (the acceptable range is 1200 to 115200 baud for odd and even parity).

The following table shows the serial communication values.

**Table 1** IR/Serial Ports

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

To configure a port for serial or IR, make the appropriate connections in your project using Composer Pro.

## Setting Up IR Emitters or IR Blaster

Your system may contain third-party products that are controlled through IR commands (such as devices that use remote controls). To enable the Cisco Controller to control a device that only recognizes IR commands, complete one of the following setups:

### 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 250.
  - 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 250 to the target.
-

**IR Blaster Procedure**

The Cisco Controller 250 is also equipped with an IR blaster located 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 250 is positioned in such a way that the blaster can reach the device you want to control.
- 

## Wall Mount Options

You can mount the Cisco Controller 250 on a wall, or place it on a horizontal surface, such as a shelf.

**Procedure**

To mount the device on a wall:

- 
- Step 1** Select one of the following mounting options:
- Mount the Controller 250 horizontally using one (1) standard single-gang wall box: The wall mounting plate has four (4) horizontal sets of slots. Install a single-gang wall box allowing the screws to protrude .08” from the wall.
  - Mount the Controller 250 horizontally or vertically using one (1) standard double-gang box: Install a standard double-gang box allowing the screws to protrude .08” from the wall.
  - Mount the Controller 250 horizontally or vertically using four (4) screws (not provided) placed directly into a wall stud or studs: Using the mounting plate as a template, screw four (4) screws into a stud to align with the four (4) center slots for vertical positioning or into two (2) studs to align with the four (4) corner slots for horizontal positioning. Leave the screws protruding .08” from the wall.

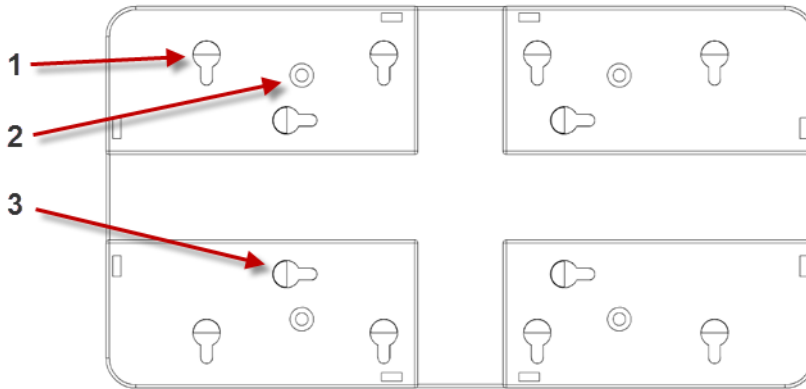


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**Tip** To check the fit of the screws, place the wall mounting plate over the screws before attaching it to the bottom of the device.

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**Figure 4** *Mounting the Cisco Controller 250*



<b>1</b>	Slots for mounting the Controller 250 horizontally
<b>2</b>	Holes for attaching plate to the Controller 250
<b>3</b>	Slots for mounting the Controller 250 vertically

- Step 2** Use the four (4) screws (provided) to attach the mounting plate to the bottom of the Controller 250. Ensure that the narrow end of the slots will be on top when the device is installed.
- Step 3** Arrange the wires to fit in the wire channels on the mounting plate.
- Step 4** Line the slots on the mounting plate up with the screws.
- Step 5** Press the device onto the screws and slide down until the screws are in the narrow end of the slots.
- Step 6** Connect all applicable devices to the Controller 250 using the connection options.

## Setting Up External Storage Devices

You can store and access media from an external storage device, for example, a network hard drive or USB memory device, by plugging the USB drive into the USB port and configure or scan the media in Composer Pro.



**Note**

- Only externally powered USB drives or USB sticks (solid state) are supported. Self-powered USB drives are not supported.
- When using USB storage devices on a Cisco Controller 250, you can only use one (1) partition with a 2TB maximum size. This limitation also applies to the USB storage on all Controller 250s.

## Configuring the Cisco Controller 250

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.

## Restoring the Device to the Factory Settings



### Caution

This action deletes the Composer Pro project.

### Procedure

To restore the Cisco Controller 250 for system recovery to the factory default image, perform the following steps:

- 
- Step 1** Disconnect power to the Controller 250.
  - Step 2** Insert one end of a paper clip into the small hole on the back of the Controller 250 that is labeled 'Factory Restore.'
  - Step 3** While pressing and holding the Factory Restore button, power on the Controller 250.
  - Step 4** Hold the button until the Wi-Fi Status LED blinks Orange. This should take 5 to 7 seconds. The Status LED will blink Orange while the restore process is running.
- 

## Resetting the Device Network Settings

Complete the following procedure to reset the Cisco Controller 250 to the network defaults:

### Procedure

- 
- Step 1** Disconnect power to the Controller 250.
  - Step 2** While pressing and holding the ID button on the back of the Controller 250, power on the device.
  - Step 3** Hold the ID button until the Data, Link and Power LEDs are solid Blue, then immediately release the button.



### Tip

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

- 
- Step 4** 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.
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# Specifications

**Table 2 Cisco Controller 250 Specifications**

Basic Specifications	Description
<b>Audio/Video</b>	
HDMI Out (Digital Audio and On-screen Navigator)	1
Component Video Out	1
Analog Audio Out	1 (3.5 mm connector)
Analog Audio Input to Convert to Digital	1 (3.5 mm connector)
Digital Audio Out - Coax (RCA)	N/A
Total number of Dedicated Audio Outputs	1
<b>Network</b>	
Ethernet ports × speed	1 × 10/100/1000 (802.3u)
Power over Ethernet/power consumption	802.3af/12.95W
Wireless	Wireless-N, (2.4GHz, 802.11n/g)
Wireless security	Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA), WPA2
Wireless antenna	Internal
ZigBee Pro	802.15.4
ZigBee antenna	Internal
USB 2.0	1
External SATA	0
<b>Control</b>	
Contacts	1
Relays	1
IR Outputs for Individual Device Control (3.5 mm)	4
IR Blaster for Multiple Device Control (front)	Yes
IR Input (Used for IR Learning)	Yes
RS-232 for Serial Controlled Devices	2 (3-wire, using IR ports 1 and/or 2)
<b>Mounting Options</b>	
Rack Ear Kit	N/A
Shelf (with A/V gear)	Yes
Wall/TV mount	Yes
Dimensions (H×W×D)	1.23" x 8.59" x 4.92" (31.19 mm x 218.13 mm x 125.01 mm)
Weight	1.8 lbs (0.82 kg)
Environmental	

**Table 2 Cisco Controller 250 Specifications (continued)**

Basic Specifications	Description
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)
<b>Power</b>	
Power supply	Internal
Power supply	Input: 100–240V, 50–60 Hz
<b>Other</b>	
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](http://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
<b>General</b>	
Product Information and Home Page	<a href="http://www.cisco.com/go/smartconnectedresidential">www.cisco.com/go/smartconnectedresidential</a>
Data Sheets	<a href="http://www.cisco.com/en/US/products/ps12445/products_feature_guides_list.html">http://www.cisco.com/en/US/products/ps12445/products_feature_guides_list.html</a>
<a href="#">Cisco 1-Year Limited Hardware Warranty Terms</a>	<a href="http://www.cisco.com/go/smartconnectedresidential/warranty">www.cisco.com/go/smartconnectedresidential/warranty</a>
Regulatory Compliance and Safety Information for Cisco Smart+Connected Residential Products	<a href="http://www.cisco.com/go/smartconnectedresidential/docs">www.cisco.com/go/smartconnectedresidential/docs</a>
Cisco Support	<a href="http://www.cisco.com/cisco/web/support/">www.cisco.com/cisco/web/support/</a>
<b>ReleaseNotes</b>	
<a href="#">Release Notes for the Cisco Smart+Connected Residential Solution</a>	<a href="http://www.cisco.com/go/smartconnectedresidential/docs">www.cisco.com/go/smartconnectedresidential/docs</a>
<b>Installation and Configuration</b>	
<a href="#">Cisco Smart+Connected Residential Installation and Configuration Guide</a>	<a href="http://www.cisco.com/go/smartconnectedresidential/docs">www.cisco.com/go/smartconnectedresidential/docs</a>

**Cisco RMS Installation and Administration**

Cisco Smart+Connected Remote Management Console Administration Guide	<a href="http://www.cisco.com/go/smartconnectedresidential/docs">www.cisco.com/go/smartconnectedresidential/docs</a>
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Cisco Smart+Connected Remote Management Server Installation Guide	
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**Hardware Reference Guides**

Cisco Smart+Connected Controller 200 Reference Guide	<a href="http://www.cisco.com/go/smartconnectedresidential/docs">www.cisco.com/go/smartconnectedresidential/docs</a>
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Cisco Smart+Connected Controller 250 Reference Guide	
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Cisco Smart+Connected Controller 800 Reference Guide	
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Cisco Smart+Connected 7" In-wall Display Reference Guide	
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Cisco Smart+Connected Portable Tablet Reference Guide	
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Cisco Smart+Connected I/O Extender Reference Guide	
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Cisco Smart+Connected Universal Remote 150 Reference Guide	
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Cisco Smart+Connected Universal Remote 250 Reference Guide	
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Cisco Smart+Connected Video Door Station Reference Guide	
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**Accounts and Licensing**

Cisco Smart+Connected Residential Licensing and Registration Guide	See your Cisco representative or partner for more information.
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**Other**

Smart Device Compatibility and other information:	<a href="http://www.cisco.com/go/smartconnectedresidential">www.cisco.com/go/smartconnectedresidential</a>
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Cisco Smart+Connected Smart Device License for Real Estate Developers	
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Composer Pro User Guide	<a href="http://www.control4.com/documentation/Composer_Pro_User_Guide/index.htm">http://www.control4.com/documentation/Composer_Pro_User_Guide/index.htm</a>
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**Note**

For information about third-party hardware and software, see the manufacturer's product documentation and/or website.

## Warranty

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

[www.cisco.com/go/smartconnectedresidentialwarranty](http://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](http://www.cisco.com/cisco/web/support/index.html)

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