



Installation

This chapter describes how to install your switch, interpret the power-on self-test (POST), and connect the switch to other devices.



Note

If your installation is in a hazardous environment, see [Chapter 3, “Installation in a Hazardous Environment,”](#) for instructions.

Read these topics, and perform the procedures in this order:

- [Preparing for Installation, page 2-2](#)
- [Verifying Switch Operation, page 2-9](#)
- [Installing the Switch on a DIN Rail, page 2-29](#)
- [Installing the Switch in a Rack, page 2-32](#)
- [Removing the Switch from a DIN Rail or a Rack, page 2-35](#)
- [Connecting to 10/100 and 10/100/1000 Ports, page 2-38](#)
- [Connecting to 100BASE-FX MM Ports, page 2-41](#)
- [Connecting to 100BASE-LX SM Ports, page 2-43](#)
- [Where to Go Next, page 2-45](#)

Preparing for Installation

This section provides information about these topics:

- [Warnings, page 2-2](#)
- [EMC Regulatory Statements, page 2-5](#)
- [Installation Guidelines, page 2-7](#)
- [Verifying Package Contents, page 2-8](#)

Warnings

These warnings are translated into several languages in [Appendix C, “Translated Safety Warnings.”](#)



Warning

This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.



Warning

Read the installation instructions before you connect the system to its power source.



Warning

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), and at altitudes up to 2000 meters without derating.



Warning

This equipment is supplied as “open type” equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool.

The enclosure must meet IP 54 or NEMA type 4 minimum enclosure rating standards.



Warning

Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards.



Warning

Use twisted-pair supply wires suitable for 86°F (30°C) above surrounding ambient temperature outside the enclosure.



Warning

To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 140°F (60°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.



Warning

Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.



Warning

The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.



Warning

When installing the unit, always make the ground connection first and disconnect it last.



Warning

This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.



Warning

This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.



Warning

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity.



Warning

Ultimate disposal of this product should be handled according to all national laws and regulations.



Warning

Class 1 laser product



Warning

Class 1 LED product



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



Warning

For diverging beams, viewing the laser output with certain optical instruments within a distance of 100 mm may harm your eyes. For collimated beams, viewing the laser output with certain optical instruments designed for use at a distance may harm your eyes.



Warning

Laser radiation is present when the system is open.



Warning

LED radiation is present when the system is open.

**Warning****Avoid exposure to the laser beam.**

EMC Regulatory Statements

This section includes specific regulatory statements about the Catalyst 2955 switches.

U.S.A.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

Group 1 contains all Industrial, Scientific and Medical (ISM) equipment in which there is intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class A equipment is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

Additional U.S. regulatory information for this product is in the front matter of this manual.

Taiwan

This is a Class A Information product. When used in a residential environment, it may cause radio frequency interference. Under such circumstances, the user may be requested to take appropriate countermeasures.

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

46764

Korea



Warning

This is a Class A Device and is registered for EMC requirements for industrial use. The seller or buyer should be aware of this. If this type was sold or purchased by mistake, it should be replaced with a residential-use type.

주의

A급 기기 이 기기는 업무용으로 전자파 적합 등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Hungary

This equipment is a Class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022). Class A equipment is designed for typical commercial establishments for which special conditions of installation and protection distance are used.

Figyelmeztetés a felhasználói kézikönyv számára:

Ez a berendezés "A" osztályú termék, felhasználására és üzembe helyezésére a magyar EMC "A" osztályú követelményeknek (MSZ EN 55022) megfelelően kerülhet sor, illetve ezen "A" osztályú berendezések csak megfelelő kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelő speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.

Installation Guidelines

When determining where to place the switch, observe these guidelines.

- Before installing the switch, first verify that the switch is operational by powering it on and running POST. Follow the procedures in the ["Powering On the Switch and Running POST"](#) section on page 2-11.
- For 10/100 ports and 10/100/1000 ports, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).
- For 100BASE-FX multimode fiber-optic (MM) ports, the cable length from a switch to an attached device cannot exceed 6562 feet (2 kilometers).
- For 100BASE-LX single-mode fiber-optic (SM) ports, the cable length from a switch to an attached device cannot exceed 9.375 miles (15 kilometers).
- Operating environment is within the ranges listed in [Appendix A, "Technical Specifications."](#)
- Clearance to front and rear panels meet these conditions:
 - Front-panel LEDs can be easily read.
 - Access to ports is sufficient for unrestricted cabling.
 - Front-panel direct current (DC) power and relay connector is within reach of the connection to the DC circuit breaker.

- Airflow around the switch and through the vents is unrestricted. To prevent the switch from overheating, there must be a minimum of 3 inches between any other device and the top, bottom, or sides of the switch.
- Temperature surrounding the unit does not exceed 140°F (60°C).

**Note**

When the switch is installed in an industrial enclosure, the temperature within the enclosure is greater than normal room temperature outside the enclosure.

The temperature inside the enclosure cannot exceed 140°F (60°C), the maximum ambient enclosure temperature of the switch.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.

Verifying Package Contents

**Note**

Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing materials to the shipping container and save them.

The switch is shipped with these items:

- *Catalyst 2955 Hardware Installation Guide* (Cisco part number DOC-7814944=)
- Power and relay connector
- One ring terminal lug (Cisco part number 27-1183-01)
- One single-block ferrite
- One RJ-45-to-DB-9 console port adapter cable

If you want to connect a terminal to the switch console port, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco.

For multimode (MM) connections, you can connect a 100BASE-FX port to a port on a target device by using one of the MT-RJ fiber-optic patch cables listed in [Table B-1 on page B-5](#). Use the Cisco part numbers in [Table B-1](#) to order the patch cables that you need.

For single-mode (SM) connections, you can connect a 100BASE-LX port to a port on a target device by using one of the connectors listed in [Table B-2 on page B-6](#). Use the Cisco part numbers in [Table B-2](#) to order the patch cables that you need.

Verifying Switch Operation

Before installing the switch on a DIN rail or in a 19-inch rack, you should power on the switch and verify that the switch passes power-on self-test (POST). These sections describe the steps required to connect a PC to the switch console port, to power on the switch, and to observe POST:

[Connecting a PC or a Terminal to the Console Port, page 2-9](#)

[Powering On the Switch and Running POST, page 2-11](#)

Connecting a PC or a Terminal to the Console Port

To connect a PC to the console port, use the supplied RJ-45-to-DB-9 adapter cable. To connect a terminal to the console port, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco. For console-port and adapter-pinout information, see the [“Cable and Adapter Specifications” section on page B-7](#).

The PC or terminal must support VT100 terminal emulation. The terminal-emulation software—frequently a PC application such as HyperTerminal or Procomm Plus—makes communication between the switch and your PC or terminal possible during the setup program.

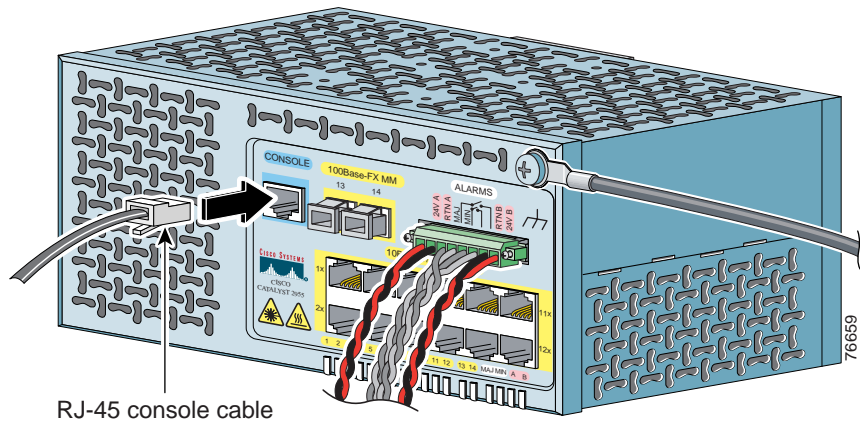
Follow these steps to connect the PC or terminal to the switch:

- Step 1** Make sure that your terminal-emulation software is configured to communicate with the switch through hardware flow control.
- Step 2** Configure the baud rate and character format of the PC or terminal to match these console-port default characteristics:
- 9600 baud
 - Eight data bits
 - One stop bit
 - No parity

After gaining access to the switch, you can change the port baud rate. Refer to the switch software configuration guide for instructions.

- Step 3** Insert the adapter cable in the console port, as shown in [Figure 2-1](#). (See the “Cable and Adapter Pinouts” section on page B-10 for pinout descriptions.)

Figure 2-1 Connecting to the Console Port



- Step 4** Attach the appropriate adapter to the terminal, if needed.
- Step 5** Insert the other adapter cable end in the PC or terminal adapter.
- Step 6** Start the terminal-emulation software.

Powering On the Switch and Running POST

These sections describe the steps required to power on the switch and to observe POST:

[Grounding the Switch, page 2-12](#)

[Wiring the DC Power Source, page 2-14](#)

[Connecting the Switch to the AC/DC Converter, page 2-19](#)

[Add the Ferrite to the Power and Relay Connector Wiring, page 2-21](#)

[Attach the Power and Relay Connector to the Switch, page 2-22](#)

[Power On the Switch, page 2-23](#)

[Running POST, page 2-23](#)

Locate the power and relay connector, the ground screw, and the ring terminal lug in the switch kit.

Obtain these necessary tools and equipment:

- Ratcheting torque flathead screwdriver that exerts up to 15 inch pounds (in-lbs.) of pressure
- Panduit crimping tool with optional controlled cycle mechanism (model CT-700, CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)
- 10- to 12-gauge copper ground wire (insulated or noninsulated)
- Four leads of 18-gauge twisted copper wire
- Wire-stripping tools for stripping 10- to 12- and 18-gauge wires
- Single-block ferrite

Grounding the Switch



Warning

This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.



Warning

When installing the unit, always make the ground connection first and disconnect it last.



Warning

Use twisted-pair supply wires suitable for 86°F (30°C) above surrounding ambient temperature outside the enclosure.



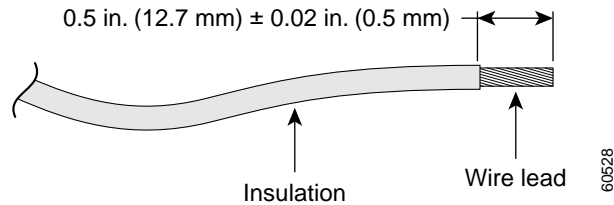
Caution

To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed lug suitable for number-10 to 12 AWG wire and an M-5 thread ground screw.

To ground the switch to earth ground by using the functional ground screw, follow these steps. Make sure to follow any grounding requirements at your site.

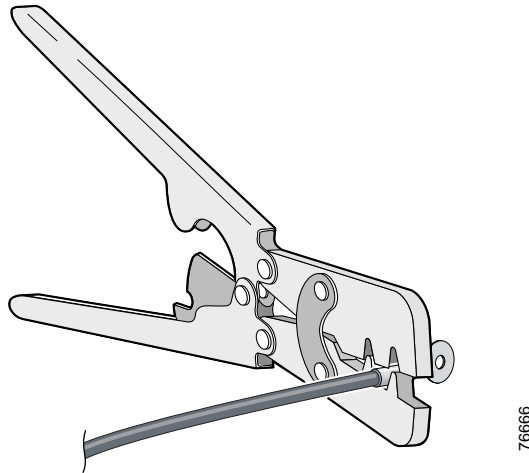
-
- Step 1** Locate the functional ground screw on the front panel of the switch and the ring terminal from the switch kit. Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head to remove the screw. Store the ground screw and the ring terminal for later use.
- Step 2** If your ground wire is insulated, use a wire stripping tool to strip the 10- to 12-gauge ground wire to 0.5 inch (12.7 millimeter [mm]) 0.02 inch (0.5 mm) as shown in [Figure 2-2](#).

Figure 2-2 Stripping the Ground Wire



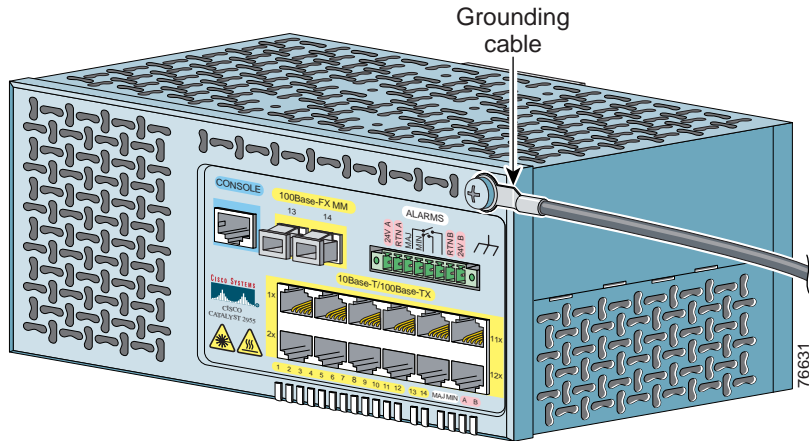
- Step 3** Slide the ground wire and the ring terminal around the ground screw.
- Step 4** Insert the ground screw into the functional ground screw opening on the front panel.
- Step 5** Using a Panduit crimping tool, crimp the ring terminal to the 10- to 12-gauge wire.

Figure 2-3 Crimping the Ring Terminal



- Step 6** Using a ratcheting torque screwdriver, tighten the ground screw and ground wire to the switch front panel to 15 in-lbs. (240 ounce-force inches [ozf-in.]), as shown in [Figure 2-4](#).

Figure 2-4 Torquing Ground-Lug Screws



- Step 7** Attach the other end of the ground wire to a grounded bare metal surface, such as a ground bus, a grounded DIN rail, or a grounded bare rack.

Wiring the DC Power Source



Warning

Only trained and qualified personnel should be allowed to install or replace this equipment.



Warning

Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.



Warning

Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards.

**Caution**

You must connect the switch only to a DC-input power source that has an input supply voltage from 18 to 30 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

**Caution**

The switch must be installed with 2 A-branch-circuit protection.

**Caution**

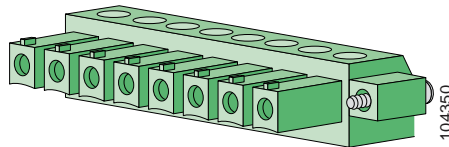
This installation must comply with all applicable codes.

To wire the switch to the optional AC/DC converter, proceed to the [“Connecting the Switch to the AC/DC Converter”](#) section on page 2-19.

To wire the switch to a DC-input power source, follow these steps:

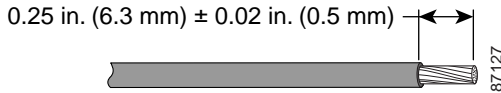
- Step 1** Locate the power and relay connector (see [Figure 2-5](#)).

Figure 2-5 Power and Relay Connector



- Step 2** Identify the positive and return feed positions for the power and relay connector. The positive DC power input for power supply A is labeled 24V A, and the return for power supply A is labeled RTN A. For power supply B (the redundant power supply), the positive DC power input is labeled 24V B, and the return is labeled RTN B.
- Step 3** Measure two strands of twisted-pair copper wire (18 to 20 AWG) long enough to connect to the DC power source.
- Step 4** Using an 18-gauge wire-stripping tool, strip each of the two twisted pair wires coming from each DC-input power source to 0.25 inch (6.3 mm) ± 0.02 inch (0.5 mm). Do not strip more than 0.27 inch (6.8 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the power and relay connector after installation.

Figure 2-6 Stripping the DC-Input Power Source Wire



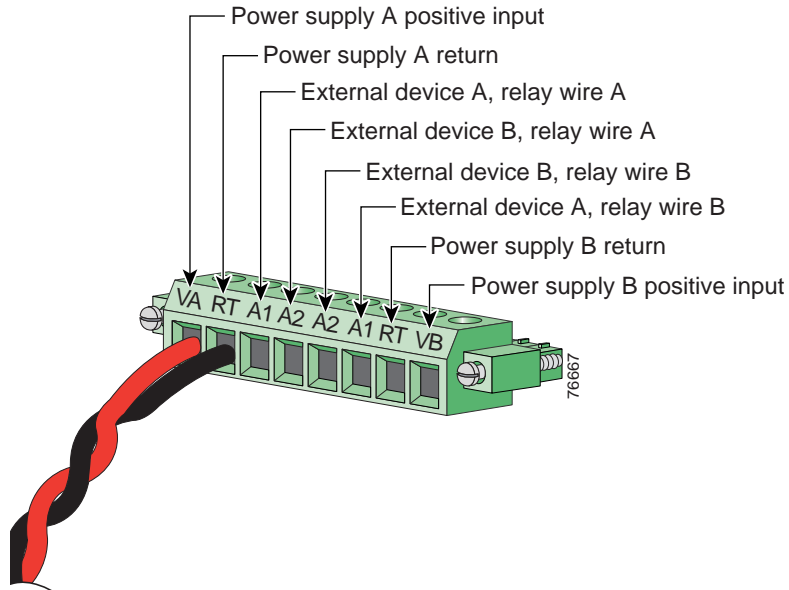
- Step 5** Insert the exposed DC-input power source wires into the power and relay connector, as shown in [Figure 2-7](#). Make sure that you cannot see any wire lead. Only wire *with insulation* should extend from the connector.



Warning

An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the power and relay connector.

Figure 2-7 Inserting Wires in the Power and Relay Connector

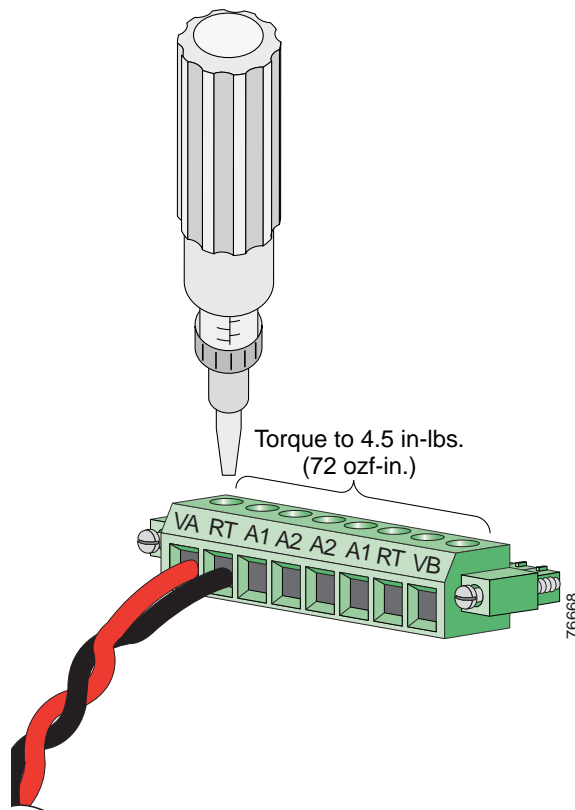


- Step 6** Use a ratcheting torque flathead screwdriver to torque the power and relay connector captive screw (above the installed wire lead) to 4.5 in-lbs. (72 ozf-in.). (See [Figure 2-8](#).)

**Caution**

Do not overtorque the power and relay connector captive screws. The recommended maximum torque is 4.5 in-lbs.

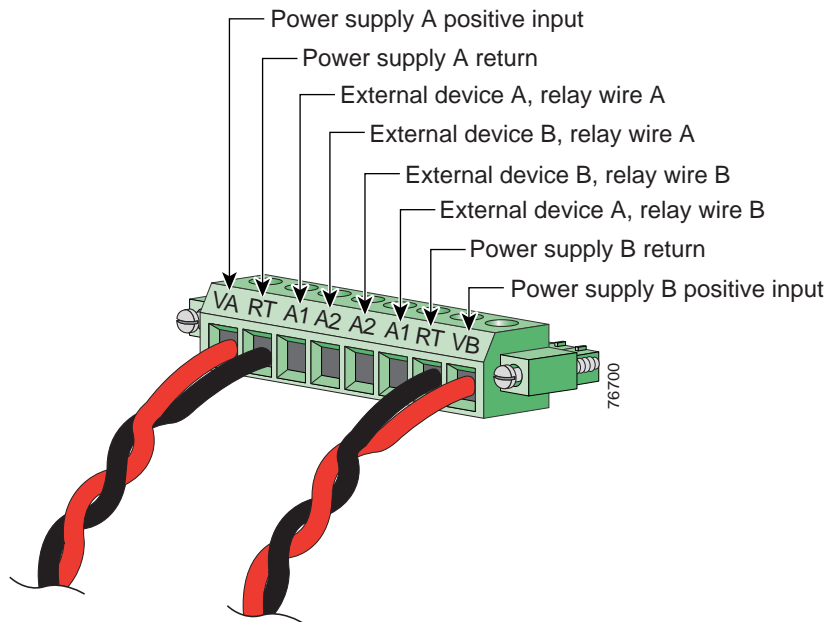
Figure 2-8 Torquing the Power and Relay Connector Captive Screws

**Note**

If you are connecting a second power supply, repeat [Step 4](#) through [Step 6](#) for the DC-input (24V B) and return (RTN B) for power supply B.

Figure 2-9 shows the completed DC-input wiring for two power supplies on a power and relay connector.

Figure 2-9 Completed DC Power Connections on the Power and Relay Connector



Note If you plan to connect external alarm devices to the alarm relays, proceed to the [“Wiring the External Alarm Device Relays”](#) section on page 2-25. Otherwise, proceed to the next step.

Step 7 Proceed to the [“Add the Ferrite to the Power and Relay Connector Wiring”](#) section on page 2-21 for instructions on how to attach the ferrite to the power and relay connector wiring.

Connecting the Switch to the AC/DC Converter

The Catalyst 2955 switch can be used with an optional AC/DC power converter (PWR-2955-AC) in a nonhazardous location installation.

**Caution**

The AC/DC power converter (PWR-2955-AC) can only be used in a nonhazardous location installation.

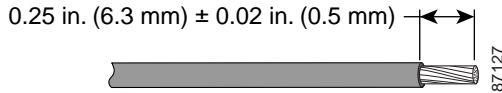
For instructions on how to install the AC/DC power converter on a DIN rail, refer to the instructions that came with the device.

**Caution**

To prevent the switch from overheating, there must be a minimum of 3 inches between any other device and the top, bottom, or sides of the Catalyst 2955 switch.

Follow these steps to connect your switch to an AC/DC power converter.

-
- Step 1** Install the AC/DC power converter on the DIN rail.
 - Step 2** Locate the power and relay connector (see [Figure 2-5](#)).
 - Step 3** Identify the positive and return feed positions for the power and relay connector. The positive DC power input for power supply A is labeled 24V A, and the return for power supply A is labeled RTN A. For power supply B (the redundant power supply), the positive DC power input is labeled 24V B, and the return is labeled RTN B.
 - Step 4** Measure two strands of twisted-pair copper wire (18 to 20 AWG) long enough to connect to the AC/DC power converter.
 - Step 5** Using an 18-gauge wire-stripping tool, strip both ends of each of the two twisted pair wires coming from the power source to 0.25 inch (6.3 mm) 0.02 inch (0.5 mm). Do not strip more than 0.27 inch (6.8 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the power and relay connector after installation.

Figure 2-10 Stripping the Power Source Wire

- Step 6** Insert the exposed power source wires into the power and relay connector, as shown in [Figure 2-7](#). Make sure that you cannot see any wire lead. Only wire *with insulation* should extend from the connector.

**Warning**

An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the power and relay connector.

- Step 7** Use a ratcheting torque flathead screwdriver to torque the power and relay connector captive screw (above the installed wire lead) to 4.5 in-lbs. (72 ozf-in.). (See [Figure 2-8](#).)

**Caution**

Do not overtorque the power and relay connector captive screws. The recommended maximum torque is 4.5 in-lbs.

- Step 8** Connect the other end of the twisted-pair wire to the AC/DC converter terminal block. For instructions on how to wire the AC/DC converter terminal block, refer to the documentation that accompanied the device.

**Note**

If you are connecting a second power supply, repeat [Step 3](#) through [Step 8](#) for the input (24 V B) and return (RTN B) for power supply B.

[Figure 2-9](#) shows the completed wiring for two power supplies on a power and relay connector.

**Note**

If you plan to connect external alarm devices to the alarm relays, proceed to the [“Wiring the External Alarm Device Relays”](#) section on page 2-25. Otherwise, proceed to the next step.

- Step 9** Proceed to the next section, [“Add the Ferrite to the Power and Relay Connector Wiring”](#) for instructions on how to attach the ferrite to the power and relay connector wiring.
-

Add the Ferrite to the Power and Relay Connector Wiring

Before you connect the power and relay connector to the front panel, follow these steps to add a ferrite to the power and relay connector wiring.

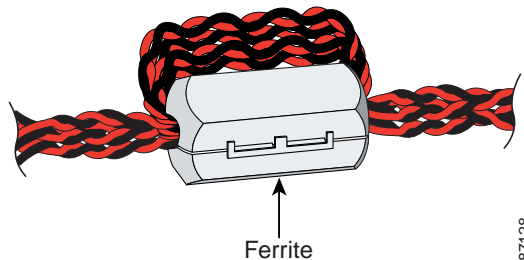


Note

If you plan to connect external alarm devices to the alarm relays, first proceed to the [“Wiring the External Alarm Device Relays”](#) section on page 2-25.

- Step 1** Grasp the power and relay connector wiring, and attach a ferrite close to the connector.
- Step 2** Loop the cable around the ferrite and back through the center to secure the ferrite. See [Figure 2-11](#) for details.

Figure 2-11 Loop the Wiring Through the Ferrite



- Step 3** Proceed to the [“Attach the Power and Relay Connector to the Switch”](#) section on page 2-22 for instructions on how to attach the power and relay connector to the front panel of the switch.
-

Attach the Power and Relay Connector to the Switch

Follow these steps to attach the power and relay connector to the front panel of the switch.

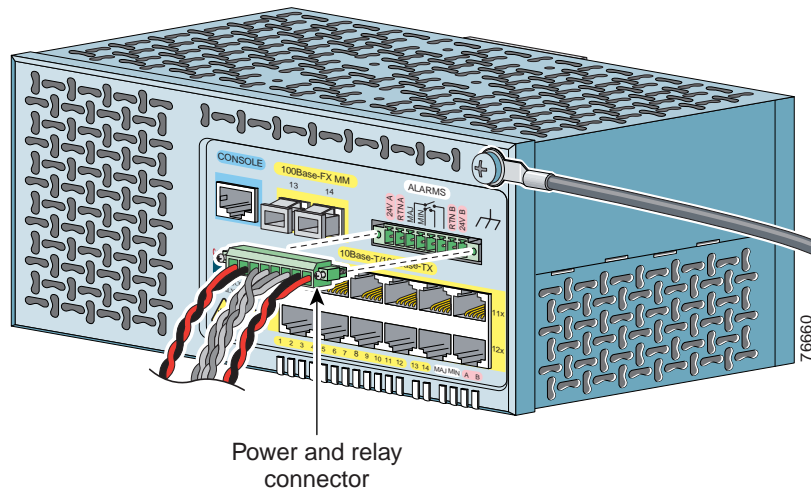
- Step 1** Insert the power and relay connector into the power and relay connector receptacle on the switch front panel (see [Figure 2-12](#)).



Caution

Secure the wires coming from the power and relay connector so that they cannot be disturbed by casual contact. For example, use tie wraps to secure the wires to the rack.

Figure 2-12 Connecting the Power and Relay Connector to the Switch



- Step 2** Use a flathead screwdriver to tighten the captive screws on the sides of the power and relay connector.

Power On the Switch

Follow these steps to power on the switch:

- If your switch is connected to a DC power source, remove the tape from the circuit-breaker switch handle on the DC-input power source, and move the circuit-breaker handle to the ON position.
- If your switch is connected to the AC/DC converter, apply power to the converter.

Running POST

After the power is connected, the switch automatically begins POST, a series of tests that verifies that the switch functions properly.



Note

The uplink port status LEDs provide system and status information during POST. On the Catalyst 2955C-12 and Catalyst 2955S-12, the uplink ports are labeled 13 and 14. On the Catalyst 2955T-12, the uplink ports are labeled 1 and 2.

When the Catalyst 2955C-12 and Catalyst 2955S-12 begin POST:

- Uplink port 13 LED is amber.
- Uplink port 14 LED blinks green.

When the Catalyst 2955T-12 begins POST:

- Uplink port 1 LED is amber.
- Uplink port 2 LED blinks green.

If POST completes successfully on the Catalyst 2955C-12 and Catalyst 2955S-12:

- Uplink port 13 LED turns green.
- Uplink port 14 LED goes off during the FLASH file system initialization.

If POST completes successfully on the Catalyst 2955T-12:

- Uplink port 1 LED turns green.
- Uplink port 2 LED goes off during the FLASH file system initialization.

If POST fails on the Catalyst 2955C-12 and Catalyst 2955S-12:

- Uplink port 13 LED blinks amber.
- Uplink port 14 LED turns green.

If POST fails on the Catalyst 2955T-12:

- Uplink port 1 LED blinks amber.
- Uplink port 2 LED turns green.

If your switch fails POST, see [Chapter 4, “Troubleshooting,”](#) to determine a corrective action.



Note

Call Cisco Systems immediately if your switch does not pass POST.

While the switch powers on, the power status LEDs are green or red, showing the presence or absence of power supplies (see [Table 1-1 on page 1-13](#) for details). During POST, the power status LEDs are green. After POST completes successfully, the power status LEDs are green if both power supplies are functioning normally and the switch has been configured to operate in dual power mode.

If the switch is configured to operate in single power mode operation, only the primary power status LED turns green. If the primary power supply is not functioning normally or is not present, the power status LED turns red. Refer to the switch configuration guide for details on single and dual power mode operation.

On a Catalyst 2950 switch, you can use the MODE button to recover the switch password. The Catalyst 2955 switch has no MODE button, so the boot loader compensates by using break key detection to stop the automatic boot sequence for password recovery.

On the Catalyst 2955C-12 and Catalyst 2955S-12 switches, during the initial appearance of the boot loader prompt on the console after POST, uplink port 13 LED blinks green, and uplink port 14 LED is off. On the Catalyst 2955T-12 switch, during the initial appearance of the boot loader prompt on the console after POST, uplink port 1 LED blinks green, and uplink port 2 LED is off.



Note

Refer to the switch software configuration guide for details on the Catalyst 2955 switch password recovery process.

After successfully running POST, follow these steps.

-
- Step 1** Turn off power to the switch.
 - Step 2** Disconnect the cables.
 - Step 3** Decide where you want to install the switch.
-

Wiring the External Alarm Device Relays

The alarm relays on the Catalyst 2955 switch are normally open (NO). To connect an external alarm device to the relays, you must connect two relay contact wires to complete an electrical circuit. Because each external alarm device requires two connections to a relay, the Catalyst 2955 switch supports a maximum of two external alarm devices.

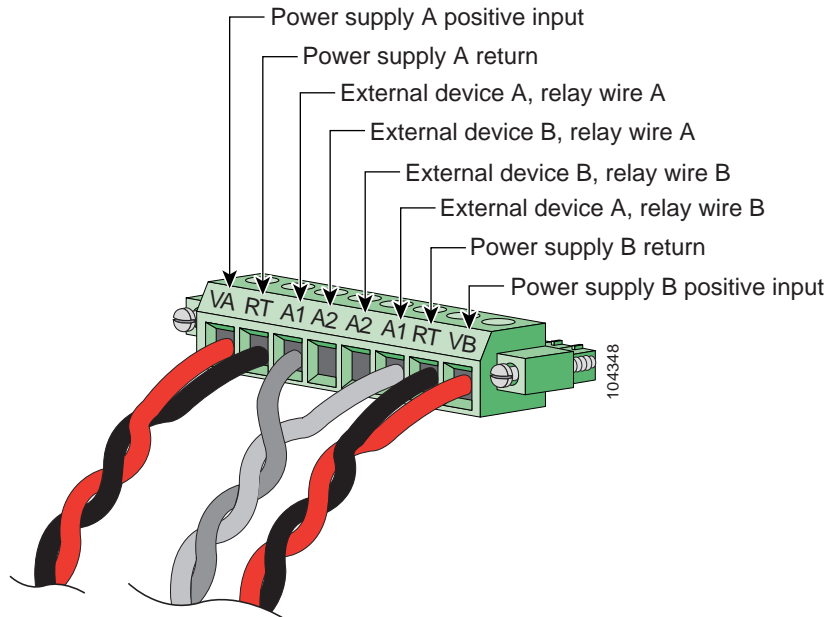
After you have completed the wiring for the DC power connections, follow these steps to wire the switch to an external alarm device:



Note This procedure is optional.

-
- Step 1** Measure two strands of twisted-pair wire (18 to 20 AWG) long enough to connect to the external alarm device.
 - Step 2** Use a wire stripper to remove the casing from both ends of each wire to 0.25 inch (6.3 mm) 0.02 inch (0.5 mm). Do not strip more than 0.27 inch (6.8 mm) of insulation from the wires. Stripping more than the recommended amount of wire can leave exposed wire from the power and relay connector after installation.
 - Step 3** Insert the exposed wires for the external alarm device into the wire entry holes for the alarm relay contacts, as shown in [Figure 2-13](#).

Figure 2-13 Inserting Relay Wires into the Power and Relay Connector



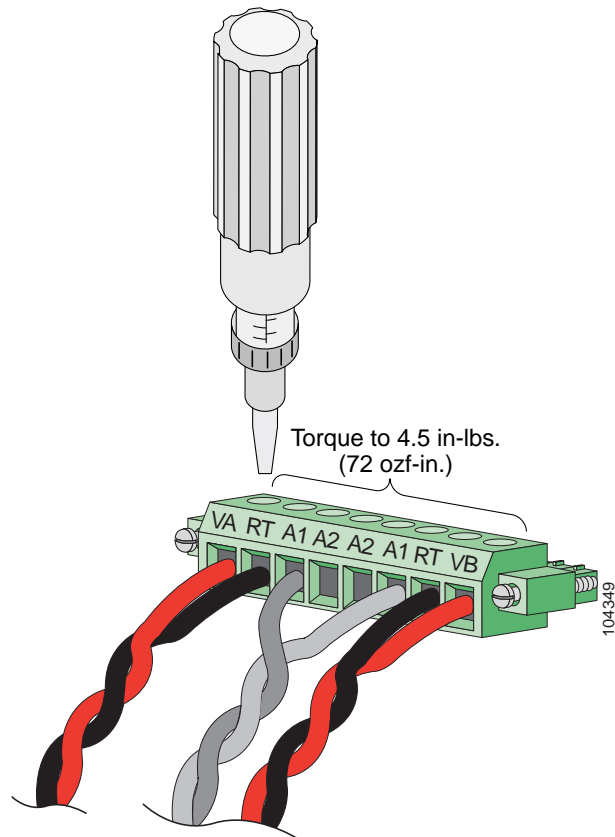
- Step 4** Use a ratcheting torque flathead screwdriver to torque the power and relay connector captive screw (above the installed wire leads) to 4.5 in-lbs. (72 ozf-in.). (See [Figure 2-14](#) for details.)



Caution

Do not overtorque the power and relay connector captive screws. The recommended maximum torque is 4.5 in-lbs.

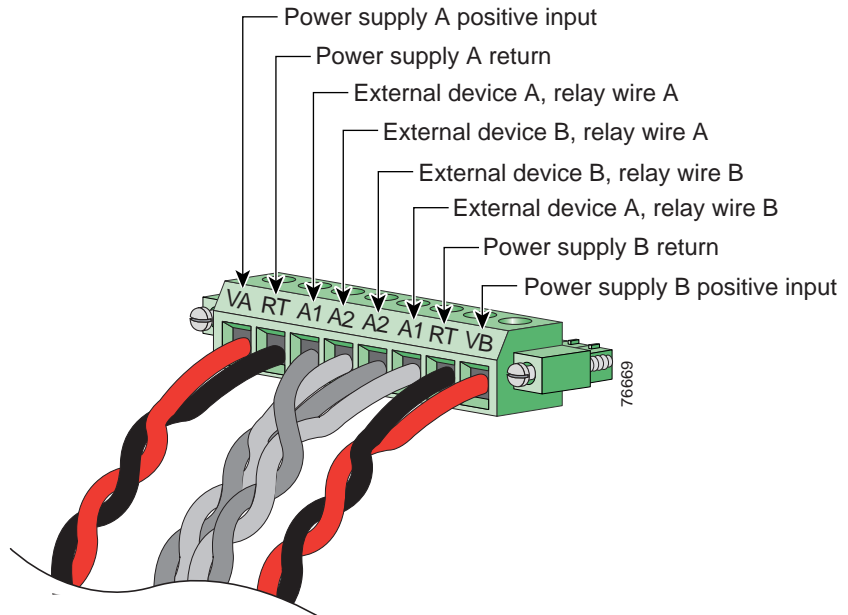
Figure 2-14 Torquing the Power and Relay Connector Captive Screws



- Step 5** Repeat [Step 1](#) through [Step 4](#) to connect the input and output wires of an additional external alarm device.

Figure 2-15 shows the completed wiring for two power supplies and two external alarm devices on a power and relay connector.

Figure 2-15 Completed Connections for Two External Alarm Devices on the Power and Relay Connector



**Note**

See the “[Add the Ferrite to the Power and Relay Connector Wiring](#)” section on [page 2-21](#) for instructions on how to attach the ferrite to the power and relay connector wiring.

See the “[Attach the Power and Relay Connector to the Switch](#)” section on [page 2-22](#) for instructions on how to connect the power and relay connector to the front panel.

Installing the Switch on a DIN Rail

You can mount the Catalyst 2955 switch on a DIN rail in a parallel or a face-down configuration.

**Warning**

This equipment is supplied as “open type” equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool.

The enclosure must meet IP 54 or NEMA type 4 minimum enclosure rating standards.

**Caution**

To prevent the switch from overheating, there must be a minimum of 3 inches between any other device and the top, bottom, or sides of the switch.

**Note**

The Catalyst 2955 switch ships with the clip assembly installed on the rear panel of the switch for a parallel mounting configuration.

To mount the switch in a face-down configuration, use a screwdriver to remove the clip assembly from the rear panel and then install it on the top of the switch.

To attach the switch to a DIN rail, follow the procedures in this section.

- Step 1** Position the rear panel of the switch directly in front of the DIN rail, making sure that the DIN rail meets the mounting clip assembly, as shown in [Figure 2-16](#) and [Figure 2-17](#).

Figure 2-16 Mounting the Switch on a DIN Rail in a Parallel Configuration

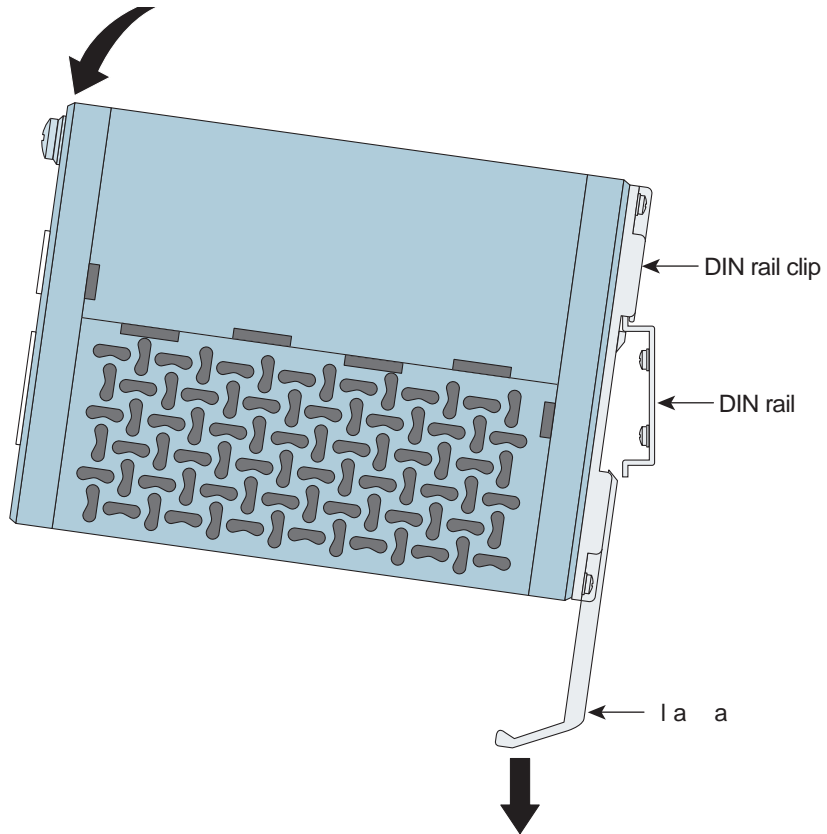
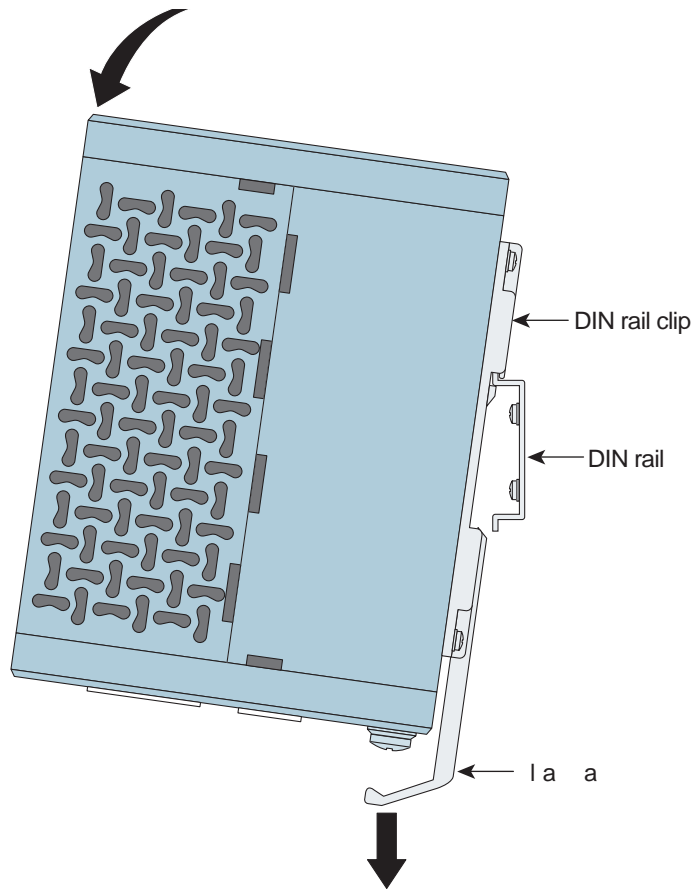


Figure 2-17 Mounting the Switch on a DIN Rail in a Face-Down Configuration



- Step 2** Pull down on the clip release tab as you press the switch toward the DIN rail.
- Step 3** When the switch makes contact with the top and bottom of the DIN rail, let go of the clip release tab.
- Step 4** Push down lightly on the switch to ensure that it is firmly locked in place.

After the switch is mounted on the DIN rail, power on the switch as described in [“Powering On the Switch and Running POST”](#) section on page 2-11.

**Note**

For instructions on how to remove the switch from a DIN rail, see the [“Removing the Switch from a DIN Rail or a Rack”](#) section on page 2-35.

Installing the Switch in a Rack

**Warning**

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
 - When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
 - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
-

**Caution**

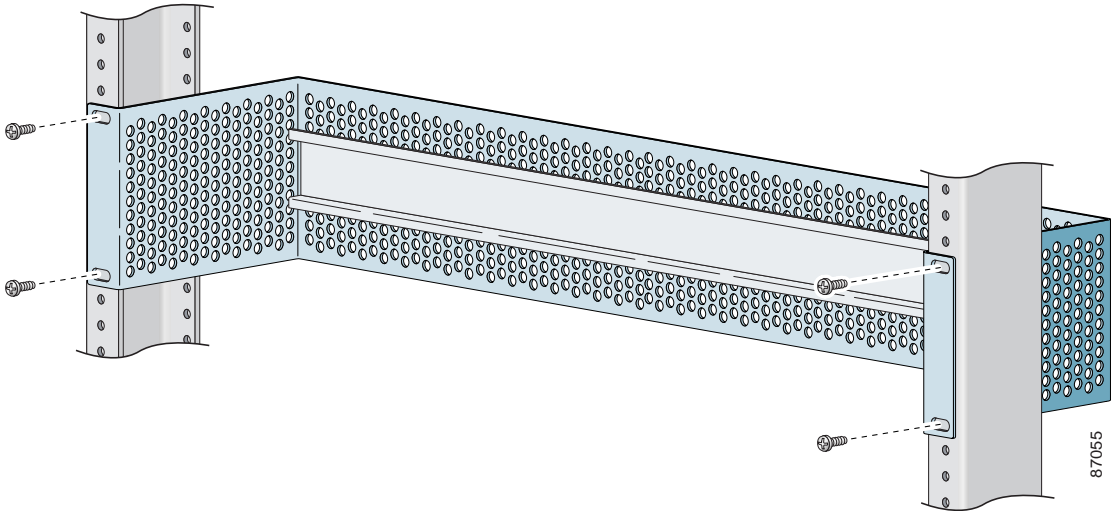
To prevent the switch from overheating, there must be a minimum of 3 inches between any other device and the top, bottom, or sides of the switch.

You can use an optional DIN rail adapter kit (available through Cisco, part number STK-RACKMNT-2955=) to mount the Catalyst 2955 switch in a 19-inch rack. The rack mounting kit comes with a DIN rail adapter and screws to attach the adapter to the rack. Ask your Cisco representative for details.

To install the switch in a rack, follow these steps:

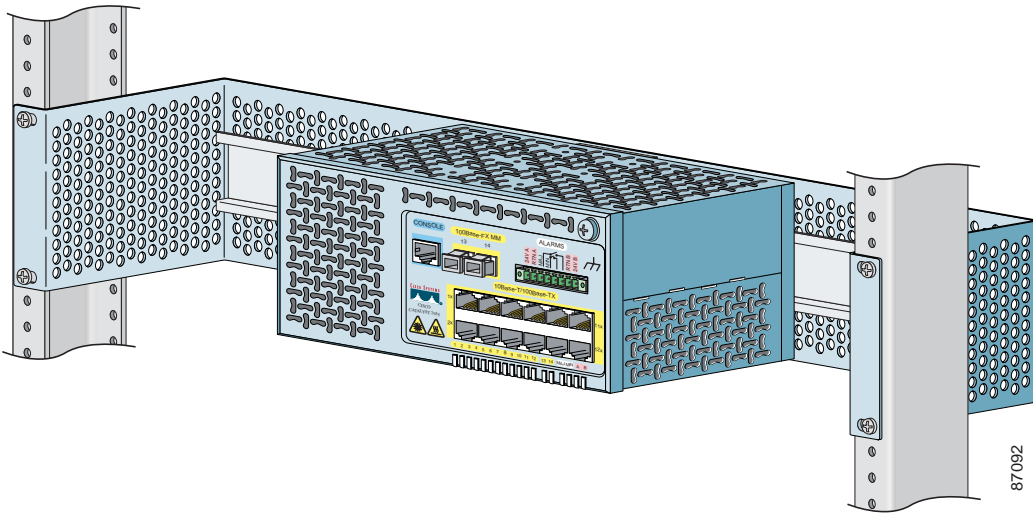
- Step 1** Use the four Phillips machine screws to securely attach the brackets to the rack, as shown in [Figure 2-18](#).

Figure 2-18 Installing the DIN Rail Adapter



- Step 2** Position the rear panel of the switch directly in front of the DIN rail, making sure that the DIN rail meets the mounting clip assembly, as shown in [Figure 2-16](#) and [Figure 2-17](#).
- Step 3** Pull down on the clip release tab as you press the switch toward the DIN rail.
- Step 4** When the switch makes contact with the top and bottom of the DIN rail, let go of the clip release tab. See [Figure 2-16](#) for details.
- Step 5** Push down lightly on the switch to ensure that it is firmly locked in place. See [Figure 2-19](#) for details.

Figure 2-19 Installing the Switch in a Rack



After mounting the switch in the rack, start the terminal-emulation software, and provide power to the switch. See the [“Powering On the Switch and Running POST”](#) section on page 2-11 for instructions.



Note

For instructions on how to remove the switch from a rack, see the [“Removing the Switch from a DIN Rail or a Rack”](#) section on page 2-35.

Removing the Switch from a DIN Rail or a Rack

To remove the switch from a DIN rail or a rack, follow these steps:

Step 1 Ensure that power is removed from the switch (if applicable), and disconnect all cables and connectors from the front panel of the switch.

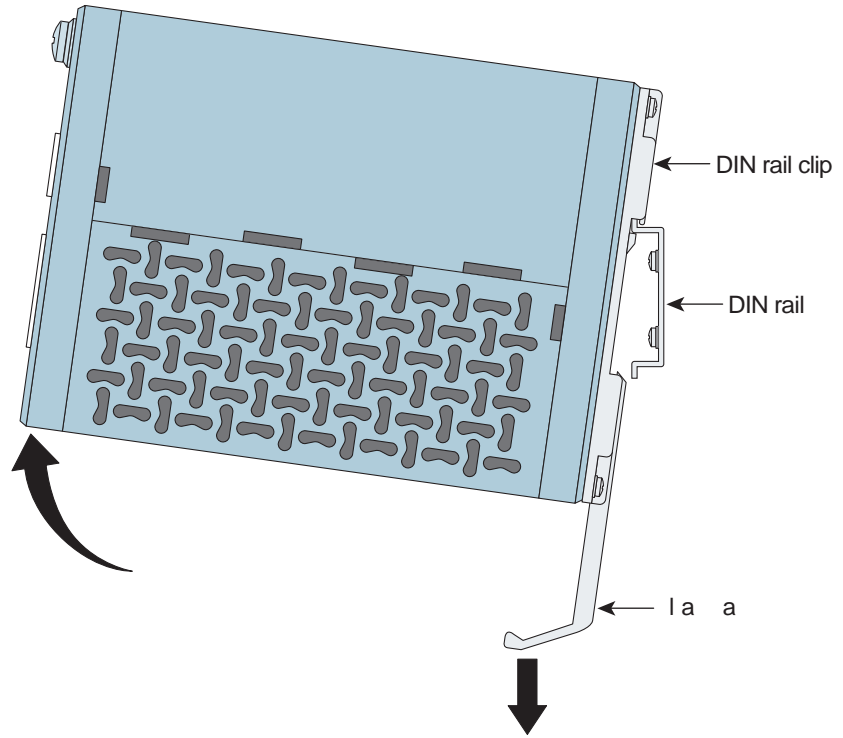
Step 2 Detach the switch from the DIN rail or rack:



Note The DIN rail clip release tab might not be easily accessible in some mounting configurations. If you cannot reach the tab, insert a long flathead screwdriver into the tab slot and pull down to release the clip.

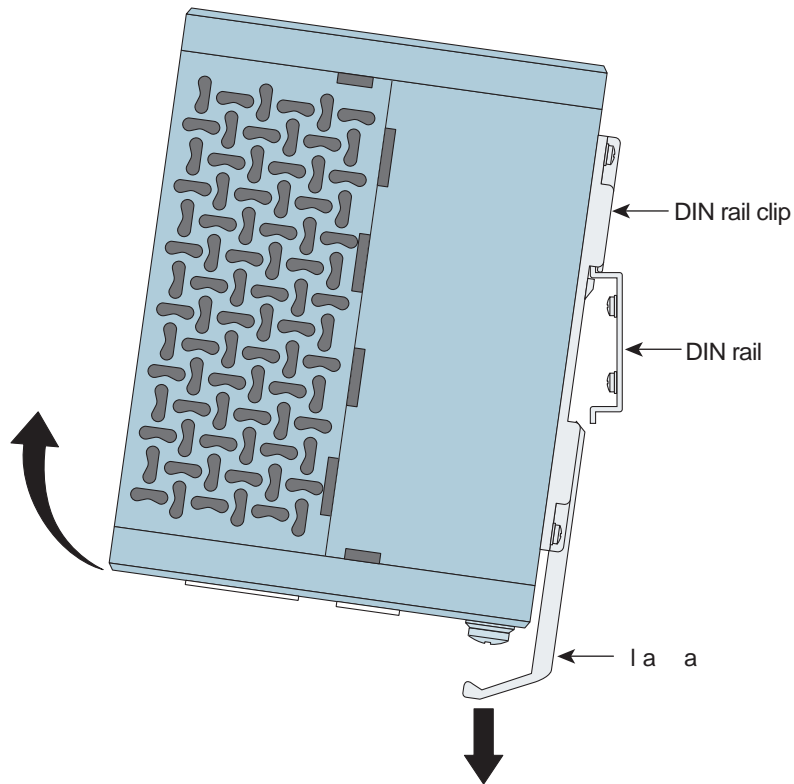
- For a parallel mounting configuration, pull down on the clip release tab on the rear of the switch as you lift the switch front panel, as shown in [Figure 2-20](#).

Figure 2-20 Removing the Switch in a Parallel Configuration from a DIN Rail or a Rack



- For a face-down mounting configuration, pull down on the release tab on the top panel of the switch as you lift the switch front panel, as shown in [Figure 2-21](#).

Figure 2-21 *Removing the Switch in a Face-Down Configuration from a DIN Rail or a Rack*



Connecting to 10/100 and 10/100/1000 Ports

The 10/100 ports on the Catalyst 2955 configure themselves to operate at the speed and duplex settings of attached devices. They operate at 10 or 100 Mbps in half- or full-duplex mode. If the attached devices do not support autonegotiation, you can explicitly set the speed and duplex parameters.

The 10/100/1000 ports configure themselves to operate at the speed setting of attached devices. These ports on the Catalyst 2955T-12 operate at either 10 or 100 Mbps in either full- or half-duplex mode or at 1000 Mbps in full- duplex mode. If the attached devices do not support autonegotiation, you can explicitly set the speed parameter.

Connecting devices that do not autonegotiate or devices with manually set speed and duplex parameters can reduce performance or result in link failures between the devices. To maximize performance, choose one of these methods for configuring the ports:

- Let the ports autonegotiate both speed and duplex for 10/100 ports and speed for 10/100/1000 ports.
- Set the speed and duplex parameters on both ends of the connection.



Caution

Proper ESD protection is required whenever you handle Cisco equipment. Installation and maintenance personnel should be properly grounded using ground straps to eliminate the risk of ESD damage to the switch.

Do not touch connectors or pins on component boards. Do not touch circuit components inside the switch. When not in use, store the equipment in appropriate static-safe packaging.

Follow these steps to connect the switch to 10BASE-T, 100BASE-TX, or 1000BASE-T devices:

- Step 1** When connecting to servers, workstations, and routers, insert a twisted-pair straight-through cable in a front-panel RJ-45 connector, as shown in [Figure 2-22](#) and [Figure 2-23](#). When connecting to switches or repeaters, insert a twisted-pair crossover cable. (See the “[Cable and Adapter Specifications](#)” section on page B-7 for cable-pinout descriptions.)



- Note** When connecting to 1000BASE-T devices, be sure to use a four twisted-pair, Category 5 cable.

Figure 2-22 Connecting to a 10/100 Port on the Catalyst 2955 Switch

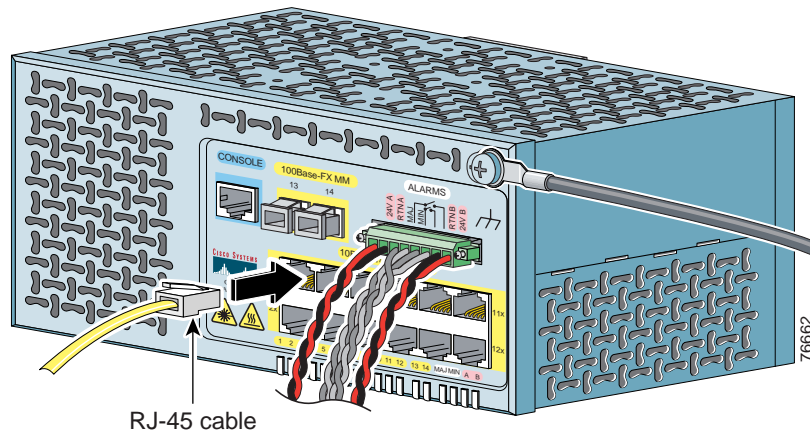
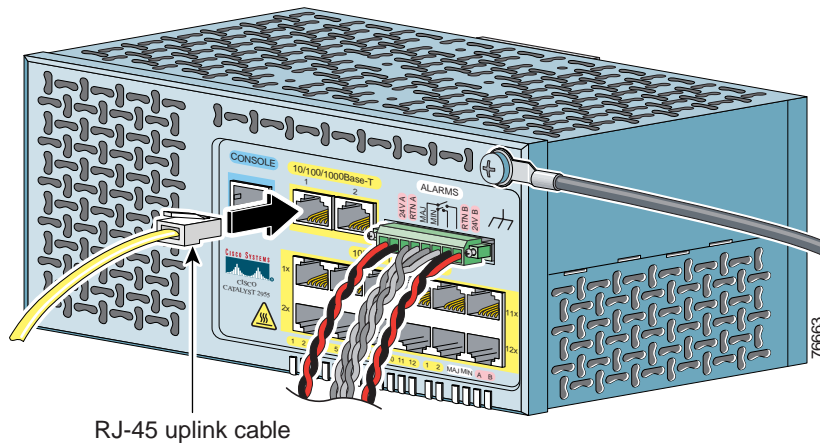


Figure 2-23 Connecting to a 10/100/1000 Port on the Catalyst 2955T-12 Switch



Step 2 Insert the other cable end in an RJ-45 connector on the target device.

Step 3 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while Spanning Tree Protocol (STP) discovers the network topology and searches for loops. This process takes about 30 seconds, and then the LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See [Chapter 4, “Troubleshooting,”](#) for solutions to cabling problems.

Step 4 Reconfigure and restart the target device if necessary.

Step 5 Repeat Steps 1 through 4 to connect each port.

Connecting to 100BASE-FX MM Ports



Warning

LED radiation is present when the system is open.



Warning

Class 1 LED product

The 100BASE-FX MM fiber-optic uplink ports operate in full-duplex mode.

You can connect a 100BASE-FX port to a port on a target device by using one of the MT-RJ fiber-optic patch cables listed in [Table B-1 on page B-5](#). Use the Cisco part numbers in [Table B-1](#) to order the patch cables that you need.



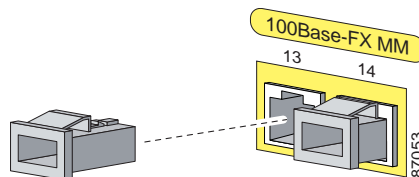
Caution

Do not remove the dust plugs from the fiber-optic ports or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic ports and cables from contamination and ambient light.

Follow these steps to connect the switch to a MM 100BASE-FX device:

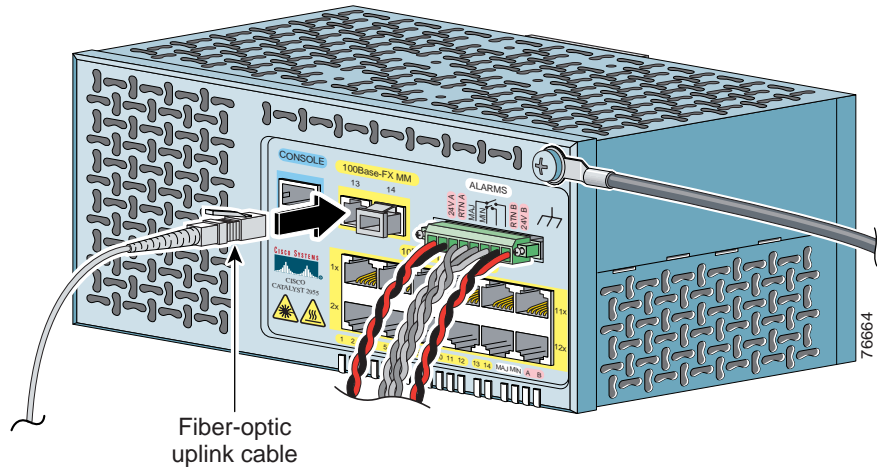
- Step 1** Remove the dust plugs from the 100BASE-FX port, as shown in [Figure 2-24](#), and store them for future use. Remove the rubber caps from the MT-RJ patch cable. Store them for future use.

Figure 2-24 Removing Dust Plugs from 100BASE-FX Ports



- Step 2** Insert the cable in a 100BASE-FX port. (See [Figure 2-25](#).)

Figure 2-25 Connecting to a 100BASE-FX MM Port



- Step 3** Insert the other cable end in an SC or ST port on the target device.
- Step 4** Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See [Chapter 4, “Troubleshooting,”](#) for solutions to cabling problems.

- Step 5** Reconfigure and restart the target device, if necessary.
- Step 6** Repeat Steps 1 through 5 to connect each port.

Connecting to 100BASE-LX SM Ports



Warning

Laser radiation is present when the system is open.



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



Warning

Avoid exposure to the laser beam.

You can connect a 100BASE-LX port to a port on a target device by using one of the LC fiber-optic patch cables listed in [Table B-2 on page B-6](#). Use the Cisco part numbers in [Table B-2](#) to order the patch cables that you need.

Follow these steps to connect the switch to a 100BASE-LX SM device:



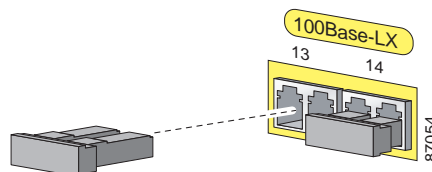
Caution

Do not remove the dust plugs from the fiber-optic ports or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic ports and cables from contamination and ambient light.

Step 1

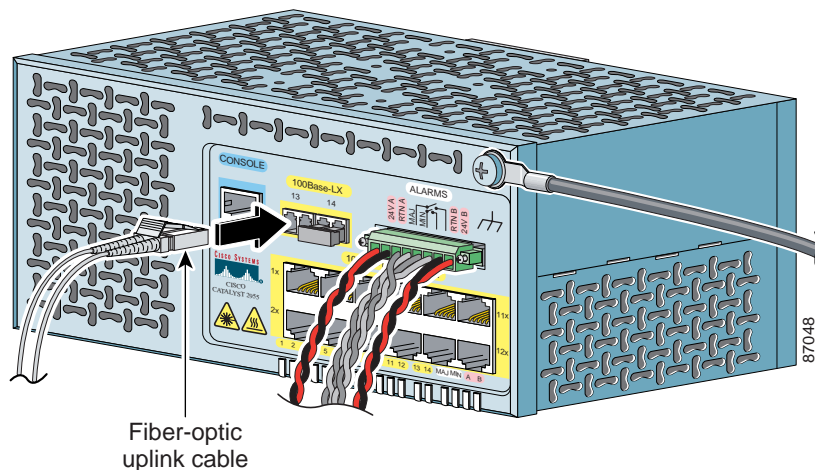
Remove the dust plugs from the 100BASE-LX port, as shown in [Figure 2-26](#), and store them for future use. Remove the rubber caps from the LC on the fiber-optic cable. Store them for future use.

Figure 2-26 Removing Dust Plugs from 100BASE-LX Ports



- Step 2** Insert the cable in a 100BASE-LX port. (See [Figure 2-27](#).)

Figure 2-27 Connecting to a 100BASE-LX SM Port



- Step 3** Insert the other cable end in an LC port on the target device.
- Step 4** Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See [Chapter 4, “Troubleshooting,”](#) for solutions to cabling problems.

- Step 5** Reconfigure and restart the target device, if necessary.
- Step 6** Repeat Steps 1 through 5 to connect each port.

Where to Go Next

For information about starting the switch, refer to the release notes for the Catalyst 2955 switch.

For information about configuring the switch, refer to the switch software configuration guide.

