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 4, “Installation in a Hazardous Environment,” for instructions.

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

- Preparing for Installation, page 3-2
- Applying the Switch Protective Liner, page 3-10
- Verifying Switch Operation, page 3-11
- Connecting the Switch to the Power Converter, page 3-29
- Wiring the External Alarm Device Relays, page 3-48
- Installing the Switch on a DIN Rail, page 3-52
- Installing the Switch in a Rack, page 3-57
- Removing the Switch from a DIN Rail or a Rack, page 3-59
- Connecting to 10/100 and 10/100/1000 Ports, page 3-62
- Connecting to 100BASE-FX MM Ports, page 3-65
- Connecting to 100BASE-LX SM Ports, page 3-67
- Where to Go Next, page 3-69
Preparing for Installation

This section provides information about these topics:

- **Warnings**, page 3-2
- **EMC Regulatory Statements**, page 3-6
- **Installation Guidelines**, page 3-8
- **Verifying Package Contents**, page 3-9

**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. Statement 88

---

**Warning**

Only trained and qualified personnel should be allowed to install or replace this equipment. Statement 49

---

**Warning**

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. Statement 1017

---

**Warning**

Read the installation instructions before you connect the system to its power source. Statement 1004

---

**Warning**

Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage. Statement 88
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. Statement 1068

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. Statement 1063

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. Statement 1033

Warning
Use twisted-pair supply wires suitable for 86°F (30°C) above surrounding ambient temperature outside the enclosure. Statement 1067

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. Statement 17C

Warning
When installing the unit, always make the ground connection first and disconnect it last. Statement 42
Warning This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use. Statement 39

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. Statement 1064

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. Statement 43

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. Statement 1006

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. Statement 140
**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. Statement 122

**Warning** Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001

**Warning** When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method, for all power, input and output wiring, that complies with the governing electrical codes and in accordance with the authority having jurisdiction over Class I, Division 2 installations. Statement 1066

**Warning** Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 180

**Warning** Class 1 laser product. Statement 1008

**Warning** Class 1 LED product. Statement 1027

**Warning** Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

**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. Statement 282
Warning Avoid direct exposure to the laser beam. Statement 1012

Caution This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only.

EMC Regulatory Statements

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

U.S.A.

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

Class A Notice for Taiwan and Other Traditional Chinese Markets

Warning This is a Class A Information Product, when used in residential environment, it may cause radio frequency interference, under such circumstances, the user may be requested to take appropriate countermeasures. Statement 257

警告 這是甲類資訊產品，在居住環境中使用時，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。
VCCI Class A Notice for Japan

Warning
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. Statement 191

警告 これは、情報処理装置等電波障害自主規制協議会（VCCI）の規定に基づくクラスA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取るように要求されることがあります。

Class A Warning for 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. Statement 294

주의 A급 기기 이 기기는 업무용으로 전자파 적합 등록을 한 기기이 오너 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.
Class A Warning for Hungary

Warning
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. Statement 256

Figyelem
Figyelmeztetés a felhasználói kézikönyv számára: Ez a berendezés "A" osztályú termék, felhasználására és üzembe helyezésére a magyar EMC "A" osztályú követelményeknek (MSZ EN 55022) megfeleloen kerühet sor, illetve ezen "A" osztályú berendezések csak megfelelő kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo 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 3-13.
- 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 power source.
• 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
• Switch installation protective liner
• One ferrite
• One RJ-45-to-DB-9 console port adapter cable

---

**Note**

To connect the switch functional ground, you need a ring terminal lug (such as Thomas & Bett part number RC10-14 or equivalent).

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-3. 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-4. Use the Cisco part numbers in Table B-2 to order the patch cables that you need.

---

**Applying the Switch Protective Liner**

The switch ships with a protective liner that prevents debris from falling into the switch ventilation holes during installation. Before installing the switch on a DIN rail or in a 19-inch rack, connecting the switch to a power source, or wiring the external alarm device relays, you must first apply the protective liner.

Because the protective liner covers ventilation holes on the switch, the liner must be removed from the switch before power is applied to allow proper airflow through the switch chassis.
Follow these steps to apply the protective liner:

**Step 1** Peel the protective liner from the backing.

**Step 2** Apply the protective liner to the switch:
- If you are installing the switch in a parallel mounting position, apply the protective liner to the switch top panel.
- If you are installing the switch in a face-down mounting position, apply the protective liner to the switch rear panel.

---

**Caution**

Remove the protective liner before applying power to the switch.

Failure to remove the protective liner could result in thermal damage to the switch.

---

**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 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 3-11
- Powering On the Switch and Running POST, page 3-13

---

**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-5.
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 data 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. See the switch software configuration guide for instructions.

**Step 3**  
Insert the adapter cable in the console port, as shown in Figure 3-1. (See the “Cable and Adapter Pinouts” section on page B-9 for pinout descriptions.)
Verifying Switch Operation

Figure 3-1 Connecting to the Console Port

1 Console cable

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 3-15
Wiring the DC Power Source, page 3-17
Add the Ferrite to the Power and Relay Connector Wiring, page 3-24
Attach the Power and Relay Connector to the Switch, page 3-25
Power On the Switch, page 3-27
Running POST, page 3-27
The Catalyst 2955 switch can be used with an optional AC/DC power converter (PWR-2955-AC=) in a nonhazardous location installation.

For instructions on how to connect the power converter to the switch, see the “Connecting the Switch to the Power Converter” section on page 3-29.

Locate the power and relay connector, the ferrite, and the switch installation protective liner in the switch kit.

You can order replacement power-and-relay connectors in packages of ten from Cisco by using part number PWR-2955-CONNECT=.

Obtain these necessary tools and equipment:

- Ratcheting torque flathead screwdriver that exerts up to 15 inch pounds (in-lbs.) of pressure
- Ring terminal lug (such as Thomas & Bett part number RC10-14 or equivalent)
- Crimping tool (such as Thomas & Bett part number WT2000, ERG-2001, or equivalent)
- 10- to 12-gauge copper ground wire (such as Belden part number 9912 or equivalent)
- Wire for power connections:
  - For input AC power connections to the power converter, use a standard 18-gauge AC power cord. See the “Preparing the AC Power Cord” section on page 3-35 for instructions on how to prepare an AC power cord for use with the power converter.
  - For DC power connections, use UL and CSA rated, style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire (such as Belden part number 9318).
- Wire-stripping tools for stripping 10- to 12- and 18-gauge wires
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. Statement 1064

**Warning** When installing the unit, always make the ground connection first and disconnect it last. Statement 42

**Caution** To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed ring terminal lug suitable for number-10 to 12 AWG wire, such as Thomas & Betts part number RC10-14 or equivalent.

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** Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head to remove the ground screw from the front panel of the switch. Store the ground screw 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 3-2.
Step 3 Insert the ground wire into the ring terminal lug, and using a crimping tool, crimp the ring terminal to the wire.

Figure 3-3 Crimping the Ring Terminal

Step 4 Slide the ground screw through the ring terminal.

Step 5 Insert the ground screw into the functional ground screw opening on the front panel.
Step 6  Using a ratcheting torque screwdriver, tighten the ground screw and ring terminal lug to the switch front panel to 15 in-lbs. (240 ounce-force inches [ozf-in.]), as shown in Figure 3-4.

![Figure 3-4 Torquing Ground-Lug Screws](image)

1 Grounding cable

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. Statement 49
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. Statement 140

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. Statement 1033

Caution You must connect the switch only to a DC-input power source that has an input supply voltage from 18 to 32 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.

Note For wire connections to the power and relay connector, you must use UL and CSA rated, style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire (such as Belden part number 9318).

You must also use the ferrite that ships with the switch.

To wire the switch to the optional AC/DC converter, go to the “Connecting the Switch to the Power Converter” section on page 3-29.
To wire the switch to a DC-input power source, follow these steps:

**Step 1** Locate the power and relay connector (see Figure 3-5).

**Figure 3-5  Power and Relay Connector**

**Step 2** Identify the positive and return feed positions for the power and relay connector. The positive DC power connection from power supply A is labeled VA, and the return is the adjacent connection labeled RT. The positive DC power connection from power supply B (the redundant power supply) is labeled VB, and the return is the adjacent connection labeled RT.

**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 3-6  Stripping the Power Connection Wire**

1. 0.25 in. (6.3 mm) ± 0.02 in. (0.5 mm)

**Step 5** Insert the exposed DC-input power source wires into the power and relay connector, as shown in Figure 3-7. 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. Statement 122

**Figure 3-7  Inserting Wires in the Power and Relay Connector**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply A positive connection</td>
</tr>
<tr>
<td>2</td>
<td>Power supply A return connection</td>
</tr>
<tr>
<td>3</td>
<td>External device 1, relay wire A connection</td>
</tr>
<tr>
<td>4</td>
<td>External device 2, relay wire A connection</td>
</tr>
<tr>
<td>5</td>
<td>External device 2, relay wire B connection</td>
</tr>
<tr>
<td>6</td>
<td>External device 1, relay wire B connection</td>
</tr>
<tr>
<td>7</td>
<td>Power supply B return connection</td>
</tr>
<tr>
<td>8</td>
<td>Power supply B positive connection</td>
</tr>
</tbody>
</table>
Step 6
Use a ratcheting torque flathead screwdriver to torque the power and relay connector captive screws (above the installed wire leads) to 4.5 in-lbs. (72 ozf-in.). (See Figure 3-8.)

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

Figure 3-8  Torquing the Power and Relay Connector Captive Screws

1 Power and relay connector captive screws
Step 7  Connect the other end of the wire connected to VA to the positive pole on the DC power source, and connect the other end of the wire connected to RT to the return pole on the DC power source.

Note  If you are connecting a second power supply, repeat Step 4 through Step 7 for the DC-input (VB) and return (RT) for power supply B.

Figure 3-9 shows the completed DC-input wiring on a power and relay connector for a primary power supply and an optional secondary power supply.
Figure 3-9  Completed DC Power Connections on the Power and Relay Connector

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply A positive connection</td>
</tr>
<tr>
<td>2</td>
<td>Power supply A return connection</td>
</tr>
<tr>
<td>3</td>
<td>External device 1, relay wire A connection</td>
</tr>
<tr>
<td>4</td>
<td>External device 2, relay wire A connection</td>
</tr>
<tr>
<td>5</td>
<td>External device 2, relay wire B connection</td>
</tr>
<tr>
<td>6</td>
<td>External device 1, relay wire B connection</td>
</tr>
<tr>
<td>7</td>
<td>Power supply B return connection</td>
</tr>
<tr>
<td>8</td>
<td>Power supply B positive connection</td>
</tr>
</tbody>
</table>
Note
If you plan to connect external alarm devices to the alarm relays, go to the “Wiring the External Alarm Device Relays” section on page 3-48. Otherwise, go to the next section.

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.

Step 1
Position the opened ferrite around the wiring within 3 inches of the power and relay connector.

Step 2
Loop the wiring around the ferrite (see Figure 3-10).

Step 3
Press the ferrite closed until the clasp snaps shut (see Figure 3-11).
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 3-12).

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

Caution

Remove the protective liner before applying power to the switch.

Failure to remove the protective liner could result in thermal damage to the switch.

To apply power to a switch that is directly connected to a DC power source, locate the circuit breaker on the panel board that services the DC circuit, and switch the circuit breaker to the ON position.

Note

For instructions on how to apply power to a switch that is connected to a power converter, see the “Applying Power to the Power Converter” section on page 3-46.

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 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 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 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 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.

While the switch powers on, the power status LEDs are green or red, showing the presence or absence of power supplies (see Table 2-1 on page 2-13 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 in single-power mode and only power supply A is present and functioning, the LED for power supply B is green, and the LED for power supply A shows its status. If the switch is in single-power mode and only power supply B is present and functioning, the LED for power supply A is green, and the LED for power supply B shows its status.

See 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 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**

POST failures are usually fatal. Call Cisco Systems immediately if your switch does not pass POST. See the “Obtaining Technical Assistance” section on page xxx.

---

**Note**

See 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.

---

**Connecting the Switch to the Power Converter**

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

---

**Caution**

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

The power converter requires 1 inch of thermal spacing to prevent overheating. Therefore, there must be a minimum of 4 inches between the power converter and the Catalyst 2955 switch to prevent each device from overheating.
These sections describe the steps required to connect the switch to a power converter:

- Installing the Power Converter on a DIN Rail, page 3-30
- Connecting the Power Converter to the Power and Relay Connector, page 3-32

After you connect the switch to the power converter, you must connect the power converter to an AC or a DC power source.

For instructions on connecting the power converter to an AC power source, see Connecting the Power Converter to an AC Power Source, page 3-35. For instructions on connecting the power converter to a DC power source, see Connecting the Power Converter to a DC Power Source, page 3-41.

## Installing the Power Converter on a DIN Rail

Follow these steps to install the power converter on a DIN rail.

---

**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. Statement 1063

---

**Caution**

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

The power converter requires 1 inch of thermal spacing to prevent overheating. Therefore, there must be a minimum of 4 inches between the power converter and the Catalyst 2955 switch to prevent each device from overheating.
Step 1  Position the power converter directly in front of the DIN rail, making sure that the top of the DIN rail clip meets the top of the DIN rail, as shown in Figure 3-13.

Figure 3-13  Mounting the Power Converter on a DIN Rail

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN rail clip</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>DIN rail</td>
<td></td>
</tr>
</tbody>
</table>

Step 2  Rotate the power converter down toward the DIN rail until the release tab on the rear panel clicks.

Step 3  Press down lightly on the top of the power converter to ensure that it is firmly locked in place.
Connecting the Power Converter to the Power and Relay Connector

Follow these steps to connect your switch to the power converter.

⚠️ **Warning**
Use twisted-pair supply wires suitable for 86°F (30°C) above surrounding ambient temperature outside the enclosure. Statement 1067

⚠️ **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. Statement 1064

⚠️ **Caution**
To make sure that the switch is reliably connected to earth ground, follow the grounding procedure instructions in the “Grounding the Switch” section on page 3-15, and use a UL-listed lug suitable for number-10 to 12 AWG wire and an M-5 thread ground screw.

📝 **Note**
For wire connections to the power and relay connector, you must use UL and CSA rated, style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire (such as Belden part number 9318).

You must also use the ferrite that ships with the switch.

---

**Step 1**
Locate the Catalyst 2955 switch power and relay connector (see Figure 3-5).

**Step 2**
Identify the positive and return feed positions for the power and relay connector. The positive DC power connection from power supply A is labeled VA, and the return is the adjacent connection labeled RT. The positive DC power connection from power supply B (the secondary power supply) is labeled VB, and the return is the adjacent connection labeled RT.
Step 3  Measure a strand of twisted-pair copper wire (18 AWG) long enough to connect the power converter to the switch. Ensure that the wire is long enough to loop through the ferrite and still maintain 4 inches of thermal spacing between the switch and the power converter.

Step 4  Using an 18-gauge wire-stripping tool, strip both ends of the twisted pair wires 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. (See Figure 3-6.)

Step 5  Insert the exposed wires into the power and relay connector, as shown in Figure 3-7. Make sure that you cannot see any exposed wire. Only wire with insulation should extend from the connection.

⚠️ **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. Statement 122

Step 6  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 3-8.)

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

Step 7  Connect the other end of the positive wire (connected to VA) to the far-left power converter DC positive-output connection, and connect the other end of the return wire (connected to RT) to the far-left power converter return-output connection.

Step 8  Tighten the terminal block screws. (See Figure 3-14.)
Figure 3-14 Connecting Wires to the Power Converter DC Output Terminal Block

If you are connecting a second power supply, repeat Step 2 through Step 7, using the positive connection (VB) and return connection (RT) on the power and relay connector for power supply B.

Note
If you plan to connect external alarm devices to the alarm relays, go to the “Wiring the External Alarm Device Relays” section on page 3-48.

Before you connect the power and relay connector to the switch front panel, follow the steps in the “Add the Ferrite to the Power and Relay Connector Wiring” section on page 3-24 to add a ferrite to the power and relay connector wiring. Follow the steps in the “Attach the Power and Relay Connector to the Switch” section on page 3-25 to attach the power and relay connector to the front panel of the switch.
Connecting the Power Converter to an AC Power Source

These sections describe the steps required to connect the power converter to an AC power source:

- Preparing the AC Power Cord, page 3-35
- Connecting the AC Power Cord to the Power Converter, page 3-37

Preparing the AC Power Cord

To connect the power converter to an AC power source, you need a standard AC power cord. Power cord connector types vary by country. Check with your electrical equipment supplier to obtain a cord that meets your site electrical requirements. Power cord color codes also vary by country, as shown in Table 3-1.

<table>
<thead>
<tr>
<th>Table 3-1</th>
<th>AC Power Cord Color Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europe (International)</strong></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Meaning</td>
</tr>
<tr>
<td>Brown</td>
<td>Line</td>
</tr>
<tr>
<td>Blue</td>
<td>Neutral</td>
</tr>
<tr>
<td>Green/yellow</td>
<td>Earth ground</td>
</tr>
<tr>
<td><strong>United States</strong></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Meaning</td>
</tr>
<tr>
<td>Black</td>
<td>Line</td>
</tr>
<tr>
<td>White</td>
<td>Neutral</td>
</tr>
<tr>
<td>Green</td>
<td>Earth ground</td>
</tr>
</tbody>
</table>
Follow these steps to prepare an AC power cord to connect to the power converter.

**Warning**
When installing the unit, always make the ground connection first and disconnect it last. Statement 42

**Step 1** Cut off the female connector on the cord.

**Step 2** Using a wire-stripping tool, strip the outer insulation layer 1 inch (2.54 cm).

**Step 3** Strip the inner wire insulation to 0.25 inch (6.3 mm) ± 0.02 inch (0.5 mm), as shown in **Figure 3-15**.

**Figure 3-15** Preparing the AC Power Cord

<table>
<thead>
<tr>
<th></th>
<th>0.25 inch (6.35 mm)</th>
<th>2</th>
<th>0.75 inch (19.05 mm)</th>
</tr>
</thead>
</table>
Connecting the AC Power Cord to the Power Converter

Follow these steps to connect the AC power cord to the power converter.

⚠️ **Caution**
AC power sources must be dedicated AC branch circuits. Each branch circuit must be protected by a dedicated two-pole circuit breaker.

**Step 1**
Insert the exposed ground wire lead into the power converter ground wire connection. Ensure that only wire with insulation extends from the connector.

**Step 2**
Tighten the ground wire terminal block screw.

⚠️ **Caution**
Do not insert the cord into the AC outlet until you have completed wiring the line, neutral, and ground connections.

---

**Figure 3-16**   AC/DC Power Input Terminal Block and Input Voltage Selector

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input voltage selector</td>
</tr>
<tr>
<td>2</td>
<td>Neutral wire connection</td>
</tr>
<tr>
<td>3</td>
<td>Line wire connection</td>
</tr>
<tr>
<td>4</td>
<td>Earth ground wire connection</td>
</tr>
</tbody>
</table>
Step 3  Insert the line and neutral wire leads into the terminal block line and neutral connections (see Figure 3-17). Make sure that you cannot see any wire lead. Ensure that only wire with insulation extends from the connectors.

Step 4  Tighten the line and neutral terminal block screws.

**Figure 3-17  Connecting AC Power to the Power Converter**

Step 5  Set the input voltage selector on the power converter to 115 or 230 V, depending on your country voltage settings or the requirements for the AC receptacle that you are using. (See Table 3-2.)

Step 6  Connect the other end of the AC power cord to the AC outlet.

Table 3-2 lists power converter input voltages and the corresponding input voltage selector settings.
Table 3-2  Input Voltage Selector Settings

<table>
<thead>
<tr>
<th>AC/DC in</th>
<th>Input voltage selector setting</th>
<th>Output Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>176 to 264 VAC</td>
<td>230 V</td>
<td>2.5 A</td>
</tr>
<tr>
<td>95 to 176 VAC</td>
<td>230 V</td>
<td>1.5 A</td>
</tr>
<tr>
<td>85 to 132 VAC</td>
<td>115 V</td>
<td>2.5 A</td>
</tr>
<tr>
<td>160 to 375 VDC</td>
<td>230 V</td>
<td>2.5 A</td>
</tr>
<tr>
<td>120 to 160 VDC</td>
<td>230 V</td>
<td>2 A</td>
</tr>
<tr>
<td>80 to 120 VDC</td>
<td>230 V</td>
<td>1.5 A</td>
</tr>
</tbody>
</table>

Figure 3-18 shows the completed wiring for the power converter and a Catalyst 2955 switch.
Connecting the Switch to the Power Converter

Figure 3-18 The Power Converter Connected to the Catalyst 2955 Switch and an AC Power Source

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power and relay connector</td>
</tr>
<tr>
<td>2</td>
<td>4 inches of thermal spacing</td>
</tr>
<tr>
<td>3</td>
<td>DC output wires</td>
</tr>
<tr>
<td>4</td>
<td>To AC power source</td>
</tr>
<tr>
<td>5</td>
<td>Switch functional ground connection</td>
</tr>
</tbody>
</table>
Connecting the Power Converter to a DC Power Source

You can also connect the power converter to a DC power source. The power converter derates the power source voltage to provide 24 VDC to the switch.

Note

To power on the switch, the input voltage to the power converter must be at least 95 VDC. To ensure proper operation after the Catalyst 2955 switch has powered on, the input voltage to the power converter cannot drop below 80 VDC.

To guarantee 24 VDC at 2.5 A to the Catalyst 2955 switch, the input power to the power converter must remain between 160 and 375 VDC.

Figure 3-19 shows a basic wiring diagram for connecting a power converter to a DC power source.
Follow these steps to connect the power converter to a DC power source.

**Warning**

Use twisted-pair supply wires suitable for 86°F (30°C) above surrounding ambient temperature outside the enclosure. Statement 1067

**Warning**

When installing the unit, always make the ground connection first and disconnect it last. Statement 42
Step 1  Measure a single length of green, stranded copper wire long enough to connect the power converter to the earth ground.

Note  For connections from the power converter to earth ground, use shielded 12 AWG stranded copper wire, such as Belden part number 9912 or the equivalent.

Step 2  Measure a length of twisted-pair copper wire long enough to connect the power converter to the DC power source.

Note  For DC connections from the power converter to the DC source, use 12 AWG twisted-pair copper wire, such as Belden part number 9344 or the equivalent.

Step 3  Using a 12-gauge wire-stripping tool, strip the ground wire and both ends of the twisted pair wires 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. (See Figure 3-2.)

Step 4  Connect one end of the green, stranded copper wire to a grounded bare metal surface, such as a ground bus, a grounded DIN rail, or a grounded bare rack.

Step 5  Insert the other end of the exposed ground wire lead into the Earth ground wire connection on the power converter terminal block. Only wire with insulation should extend from the connection. (See Figure 3-20.)

Step 6  Tighten the earth ground wire connection terminal block screw.
Figure 3-20 AC/DC Power Input Terminal Block Wire Connections to a DC Source

| 1 | Input voltage selector |
| 2 | Return wire connection (to DC return) |
| 3 | Positive wire connection |
| 4 | Earth ground wire connection |

**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. Statement 122

**Step 7**

Insert the twisted-pair wire leads into the terminal block line and neutral connections. Insert the black wire lead into the neutral wire connection and the red wire lead into the line wire connection. Ensure that only wire with insulation extends from the connectors. (See Figure 3-20.)

**Step 8**

Tighten the line and neutral terminal block screws.
Step 9  Connect the red wire to the positive pole of the DC power source, and connect the black wire to the return pole. Ensure that each pole has a current-limiting-type fuse rated to at least 600 V AC/DC (such as the KLKD Midget fuse).

Step 10  Set the input voltage selector on the power converter to 230 V.

Figure 3-21 shows the completed wiring for the power converter and a Catalyst 2955 switch.

**Figure 3-21  The Power Converter Connected to the Catalyst 2955 Switch and a DC Power Source**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power and relay connector</td>
</tr>
<tr>
<td>2</td>
<td>4 inches of thermal spacing</td>
</tr>
<tr>
<td>3</td>
<td>DC output wires</td>
</tr>
<tr>
<td>4</td>
<td>To earth ground</td>
</tr>
<tr>
<td>5</td>
<td>DC input wires</td>
</tr>
<tr>
<td>6</td>
<td>Switch functional ground connection</td>
</tr>
</tbody>
</table>
Applying Power to the Power Converter

Caution

Remove the protective liner before applying power to the switch.

Failure to remove the protective liner could result in thermal damage to the switch.

Move the circuit breaker for the AC outlet or the DC control circuit to the on position.

The LED on the power converter front panel is green when the unit is operating normally. The LED is off when the unit is not operating normally.

After the power is connected, the switch automatically begins the power-on self test (POST), a series of tests that verifies that the switch functions properly. For instructions on how to interpret POST results, see the “Running POST” section on page 3-27.

Removing the Power Converter from a DIN Rail

Follow these steps to remove the power converter from a DIN rail.

Step 1  Ensure that power to the power converter is off, and disconnect all cables connecting the power converter to the switch.

Step 2  Insert a long flathead screwdriver into the tab slot at the bottom of the power converter, and pull down the clip release tab. As the clip releases, lift the bottom of the power converter, as shown in Figure 3-22.
Figure 3-22  Removing the Power Converter from a DIN Rail

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN rail clip</td>
</tr>
<tr>
<td>2</td>
<td>DIN rail</td>
</tr>
<tr>
<td>3</td>
<td>Clip release tab</td>
</tr>
</tbody>
</table>
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.

**Note**

For wire connections to the power and relay connector, you must use UL and CSA rated, style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire (such as Belden part number 9318).

You must also use the ferrite that ships with the switch.

After you have completed the wiring for the 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 two connections labeled A1, as shown in Figure 3-23.
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 3-24 for details.)
Caution

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

Figure 3-24  Torquing the Power and Relay Connector Captive Screws

| 1 | Power and relay connector captive screws |

Step 5  Repeat Step 1 through Step 4 to insert the input and output wires of an additional external alarm device into the two connections labeled A2.
Figure 3-25 shows the completed wiring for two power supplies and two external alarm devices on a power and relay connector.

**Figure 3-25** Completed Connections for Two External Alarm Devices on the Power and Relay Connector

<table>
<thead>
<tr>
<th></th>
<th>Power supply A positive connection</th>
<th></th>
<th>External device 2, relay wire B connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply A return connection</td>
<td>2</td>
<td>External device 1, relay wire B connection</td>
</tr>
<tr>
<td>3</td>
<td>External device 1, relay wire A connection</td>
<td>4</td>
<td>External device 2, relay wire A connection</td>
</tr>
<tr>
<td>5</td>
<td>Power supply B return connection</td>
<td>6</td>
<td>Power supply B positive connection</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
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 position.

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. Statement 1063

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.

The switch ships with the clip assembly installed on the rear panel for a parallel mounting position, as shown in Figure 3-26. To mount the switch in a face-down position, remove the clip assembly from the rear panel, and install it on the top of the switch, as shown in Figure 3-27.
**Figure 3-26 Catalyst 2955 Switch Rear Panel**

1. Catalyst 2955 switch rear panel
2. DIN rail clip assembly
3. DIN rail clip mounting screws
To attach the switch to a DIN rail, follow these steps.

**Step 1** Position the rear panel of the switch directly in front of the DIN rail, making sure that the top of the DIN rail clip hooks over the top of the DIN rail, as shown in Figure 3-28 and Figure 3-29.
Figure 3-28  Mounting the Switch on a DIN Rail in a Parallel Position

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN rail clip</td>
</tr>
<tr>
<td>2</td>
<td>DIN rail</td>
</tr>
<tr>
<td>3</td>
<td>DIN rail clip release tab</td>
</tr>
</tbody>
</table>

DIN rail clip placement on the switch, followed by securing it to the DIN rail using the DIN rail clip release tab.
Step 2  Rotate the switch down toward the DIN rail until the release tab on the rear panel clicks.

Step 3  Lift lightly on the bottom of 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 3-13.
Installing the Switch in a Rack

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.

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. Statement 1006

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.
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 3-30.

*Figure 3-30 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 top of the DIN rail clip hooks over the top of the DIN rail, as shown in Figure 3-28 and Figure 3-29.

**Step 3** Rotate the switch down toward the DIN rail until the release tab on the rear panel clicks.

**Step 4** Lift lightly on the bottom of the switch to ensure that it is firmly locked in place. See Figure 3-28 for details.
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 3-13 for instructions.

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 3-59.

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, and disconnect all cables and connectors from the front panel of the switch.

Step 2  Push down on the top of the DIN rail clip release tab with your finger. As the clip releases, lift the bottom of the switch, as shown in Figure 3-32 and Figure 3-33.
Figure 3-32  Removing the Switch from a Parallel Mounting Position

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN rail clip</td>
</tr>
<tr>
<td>2</td>
<td>DIN rail</td>
</tr>
<tr>
<td>3</td>
<td>DIN rail clip release tab</td>
</tr>
</tbody>
</table>
**Figure 3-33** Removing the Switch from a Face-Down Mounting Position

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN rail clip</td>
</tr>
<tr>
<td>2</td>
<td>DIN rail</td>
</tr>
<tr>
<td>3</td>
<td>DIN rail clip release tab</td>
</tr>
</tbody>
</table>
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 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 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 3-34 and Figure 3-35. When connecting to switches or repeaters, insert a twisted-pair crossover cable. (See the “Cable and Adapter Specifications” section on page B-5 for cable-pinout descriptions.)

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

*Figure 3-34  Connecting to a 10/100 Port on the Catalyst 2955 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 can take 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 5, “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

Class 1 LED product. Statement 1027

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-3. 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 3-36, and store them for future use. Remove the rubber caps from the MT-RJ patch cable. Store them for future use.

Figure 3-36 Removing Dust Plugs from 100BASE-FX Ports
Step 2  Insert the cable in a 100BASE-FX port. (See Figure 3-37.)

Figure 3-37  Connecting to a 100BASE-FX MM Port

Step 3  Insert the other cable end into the MT-RJ 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 can take 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 5, “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
Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Warning
Avoid direct exposure to the laser beam. Statement 1012

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-4. 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 3-38, and store them for future use. Remove the rubber caps from the LC on the fiber-optic cable. Store them for future use.

Figure 3-38 Removing Dust Plugs from 100BASE-LX Ports
Chapter 3  Installation

Connecting to 100BASE-LX SM Ports

Step 2  Insert the cable in a 100BASE-LX port. (See Figure 3-39.)

**Figure 3-39  Connecting to a 100BASE-LX SM Port**

1  Fiber-optic uplink cable

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 can take 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 5, “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

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start the device manager, which is in the switch memory, to manage individual and standalone switches. The device manager is an easy-to-use web interface that offers quick configuration and monitoring. You can access the device manager from anywhere in your network through a web browser. For more information, see the device manager online help.

- Start the Network Assistant application, which is described in the *Getting Started with Cisco Network Assistant* guide on Cisco.com. Through this GUI, you can configure and monitor a switch cluster or an individual switch.

- Use the CLI from the console to configure the switch as a member of a cluster or as an individual switch. See the *Catalyst 2950 and Catalyst 2955 Switch Software Configuration Guide* and the *Catalyst 2950 and Catalyst 2955 Switch Command Reference* on Cisco.com for information on using the CLI with a Catalyst 2955 switch.

- Start an SNMP application such as the CiscoView application.