



# Cisco IE 3010 Switch Hardware Installation Guide

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*Cisco IE 3010 Switch Hardware Installation Guide*

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# Preface

This guide describes the hardware features of the Cisco Industrial Ethernet (IE) 3010 switch. It describes the physical and performance characteristics of the switch, explains how to install it, and provides troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch. See the switch software configuration guide, the switch command reference, and the switch system message guide on Cisco.com:

[http://www.cisco.com/go/IE3010\\_docs](http://www.cisco.com/go/IE3010_docs)

## Conventions

This document uses the following conventions.

Conventions	Indication
<b>bold font</b>	Commands and keywords and user-entered text appear in <b>bold font</b> .
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[ ]	Elements in square brackets are optional.
{ x   y   z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

**Note:** Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

**Caution:** Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

**Warning:** IMPORTANT SAFETY INSTRUCTIONS

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

**SAVE THESE INSTRUCTIONS**

**Regulatory:** Provided for additional information and to comply with regulatory and customer requirements.

The safety warnings for this product are translated into several languages in the *Regulatory Compliance and Safety Information for the Cisco IE 3010 Switch* that ships with the product on the documentation CD. The EMC regulatory statements are also included in that guide.

## Related Publications

[http://www.cisco.com/go/IE3010\\_docs](http://www.cisco.com/go/IE3010_docs)

**Note:** Before installing, configuring, or upgrading the switch, see the release notes on Cisco.com for the latest information.

- *Release Notes for the Cisco IE 3010 Switch*
- *Cisco IE 3010 Switch Getting Started Guide*
- *Regulatory Compliance and Safety Information for the Cisco IE 3010 Switch*
- *Cisco IE 3010 Switch Software Configuration Guide*
- *Cisco IE 3010 Switch Command Reference*
- *Cisco IE 3010 Switch System Message Guide*

Cisco SFP documents:

[http://www.cisco.com/en/US/products/hw/modules/ps5455/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html)

SFP compatibility matrix documents:

[http://www.cisco.com/en/US/products/hw/modules/ps5455/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html)

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# Product Overview

The Cisco IE 3010 switch provides a rugged and secure switching infrastructure for harsh environments. It is suitable for industrial Ethernet applications, including process manufacturing, intelligent transportation systems (ITSs), rail transportation, and other similar deployments.

In industrial environments, you can connect the switch to any Ethernet-enabled industrial communication devices, including programmable logic controllers (PLCs), human-machine interfaces (HMIs), drives, sensors, and input and output (IO) devices.

This section provides overviews of the following topics:

- [Switch Models, page 5](#)
- [Cable Side, page 5](#)
- [Power-Supply Side, page 14](#)
- [Management Options, page 16](#)

## Switch Models

**Table 1**    **Switch Models**

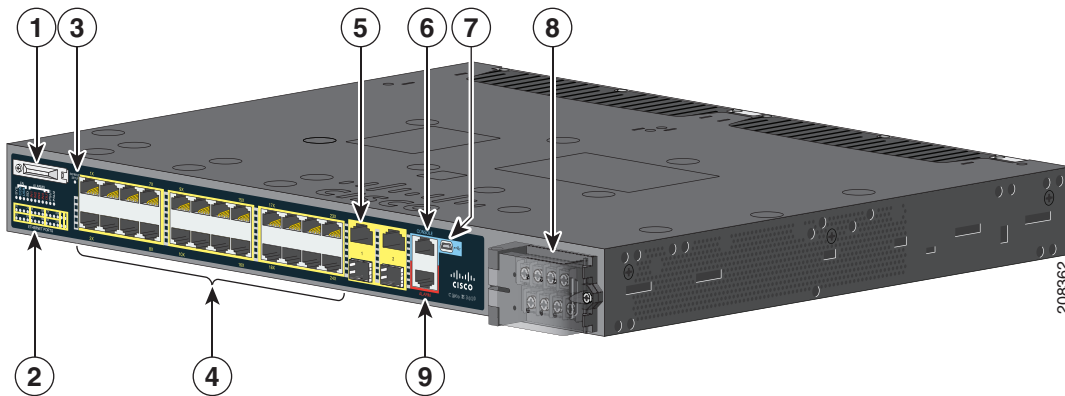
Model	Description
Cisco IE-3010-24TC	24 10/100 FastEthernet ports, 2 dual-purpose ports (2 10/100/1000BASE-T copper ports and 2 SFP <sup>1</sup> module slots), and 2 AC and DC power-supply module slots.
Cisco IE-3010-16S-8PC	16 100BASE-FX SFP-module slots; 8 10/100 FastEthernet PoE <sup>2</sup> ports, 2 dual-purpose ports (2 10/100/1000BASE-T copper ports and 2 SFP module slots), and 2 AC and DC power-supply module slots.

1. SFP = small form-factor pluggable.
2. PoE = Power over Ethernet.

## Cable Side

The 10/100 Fast Ethernet downlink ports in [Figure 1 on page 6](#) are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left. Port 3 is above port 4, and so on. The dual-purpose ports are numbered 1 and 2.

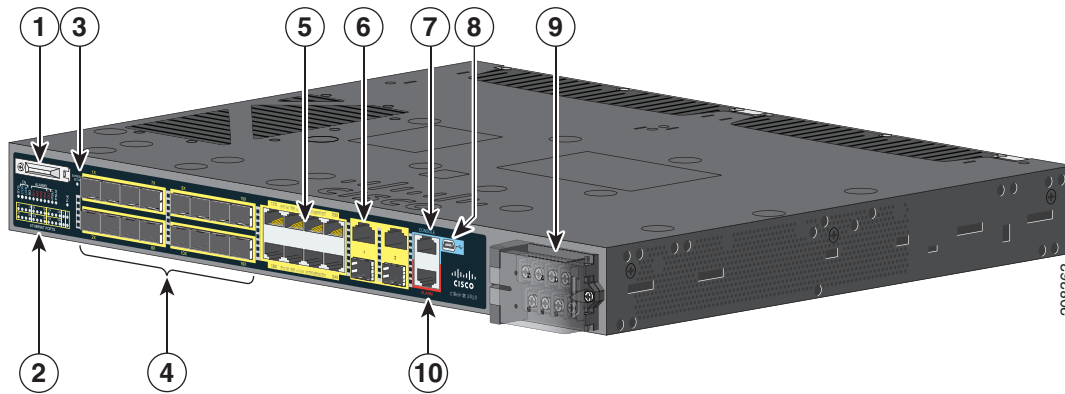
**Figure 1 Cisco IE-3010-24TC Cable-Side View**



- |  |                                  |
|--|----------------------------------|
| 1 SD <sup>1</sup> flash memory card slot | 6 RJ-45 console port             |
| 2 LEDs                                   | 7 USB (mini-Type B) console port |
| 3 Express Setup button                   | 8 Power-input terminal           |
| 4 10/100 ports                           | 9 Alarm port                     |
| 5 Dual purpose ports                     |                                  |
| 1. SD = Secure Digital                   |                                  |

The 100BASE-FX SFP ports and the 10/100 PoE ports are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left. Port 3 is above port 4, and so on. The dual-purpose ports are numbered 1 and 2.

**Figure 2 Cisco IE-3010-16S-8PC Cable-Side View**



- |                             |                                  |
|-----------------------------|----------------------------------|
| 1 SD flash memory card slot | 6 Dual purpose ports             |
| 2 LEDs                      | 7 RJ-45 console port             |
| 3 Express Setup button      | 8 USB (mini-Type B) console port |
| 4 100BASE-FX SFP ports      | 9 Power-input terminal           |
| 5 10/100 PoE ports          | 10 Alarm port                    |

## 10/100 Fast Ethernet Ports

You can set the 10/100 ports on the switch to operate in any combination of half duplex, full duplex, or 10 or 100 Mb/s. You can set the ports for speed and duplex autonegotiation. The default setting is autonegotiate.

When set for autonegotiation, the switch determines the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch negotiates the best connection (the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly. In all cases, the attached device must be within 328 feet (100 meters).

## 10/100/1000BASE-T Copper SFP Module Uplink Slots

The IEEE 802.3 1000BASE-T SFP module slots provide full-duplex 1000BASE-T connectivity over copper wire. These ports use a copper SFP transceiver module that accepts an RJ-45 connector. See [SFP Module Cables, page 74](#) for cable type and length. See [SFP Modules, page 8](#) for model information.

## PoE Ports

**Warning: Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072**

The 10/100 PoE ports on the Cisco IE-3010-16S-8PC switches provide PoE support for devices that are compliant with IEEE 802.3af. The Cisco prestandard PoE is also supported for Cisco IP Phones and Cisco Aironet Access Points. The PoE ports on the switch deliver up to 15.4 W of PoE. Any four of the eight ports are designated as high priority PoE ports, while the other four ports are designated as low priority PoE ports. When both the power-supply modules are installed, the system has enough power to support all eight ports as PoE ports. In case one of the power-supply modules fails, the power to the low priority PoE ports is dropped, while power to the high priority PoE ports remains uninterrupted.

On a per-port basis, you control whether or not a port automatically provides power when an IP phone or an access point is connected.

The 10/100 PoE ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires CA5, CAT5e, or CAT6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use CAT3 or CAT4 UTP cable.

For information about configuring and monitoring PoE ports, see the switch software configuration guide on Cisco.com.

For information about port connections and port specifications, see [Connecting Devices to the Ethernet Ports, page 44](#) and [Connector and Cable Specifications, page 71](#).

**Note:** The output of the PoE circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

## Dual-Purpose Ports

You can configure the dual-purpose ports on the switch as either 10/100/1000 ports or as SFP-module ports. You can set the 10/100/1000 ports to autonegotiate, or you can configure them as fixed 10, 100, or 1000 Mb/s (Gigabit) Ethernet ports.

By default, the switch selects the medium for each dual-purpose port (10/100/1000BASE-T or SFP). When a link is achieved on one media type, the switch disables the other media type until the active link goes down. If links are active on both media, the SFP-module port has priority, but you can use the **media-type** interface configuration command to manually designate the port as an RJ-45 port or an SFP port.

You can configure the speed and duplex settings consistent with the selected media type. For information on configuring interfaces, see the switch software configuration guide.

## SFP Modules

The switch Ethernet SFP modules provide connections to other devices. These field-replaceable transceiver modules provide the uplink interfaces. SFP modules have local connectors (LCs) for fiber-optic connections or RJ-45 connectors for copper connections. You can use any combination of the supported SFP modules listed in [Table 2 on page 8](#).

**Table 2 SFP Modules Maximum Operating Temperature**

Type of SFP Module	Model
Rugged and Industrial SFPs -40 to 185° F (-40 to 85° C)	<ul style="list-style-type: none"> <li>■ GLC-SX-MM-RGD</li> <li>■ GLC-LX-SM-RGD</li> <li>■ GLC-FE-100LX-RGD</li> <li>■ GLC-FE-100FX-RGD</li> <li>■ GLC-FE-T-I</li> <li>■ GLC-ZX-SM-RGD</li> <li>■ GLC-BX40-D-I with digital optical monitoring (DOM) support</li> <li>■ GLC-BX40-DA-I with DOM support</li> <li>■ GLC-BX80-D-I with DOM support</li> <li>■ GLC-BX40-U-I with DOM support</li> <li>■ GLC-BX80-U-I with DOM support</li> </ul>
Commercial SFPs 32 to 158° F (0 to 70° C)	<ul style="list-style-type: none"> <li>■ GLC-BX-D with DOM support</li> <li>■ GLC-BX-U with DOM support</li> <li>■ GLC-FE-100LX</li> <li>■ GLC-FE-100BX-D</li> <li>■ GLC-FE-100BX-U</li> <li>■ GLC-FE-100FX</li> <li>■ GLC-FE-100EX</li> <li>■ GLC-FE-100ZX</li> <li>■ GLC-T</li> <li>■ CWDM SFP with DOM support</li> </ul>

**Table 2 SFP Modules Maximum Operating Temperature (continued)**

Type of SFP Module	Model
Extended temperature SFPs 23 to 185°F (-5°C to 85°C)	■ SFP-GE-L with DOM support
	■ SFP-GE-S with DOM support
	■ SFP-GE-T
	■ SFP-GE-Z with DOM support
	■ GLC-LH-SMD with DOM support
	■ GLC-EX-SMD with DOM support
	■ GLC-TE
	■ GLC-ZX-SMD with DOM support

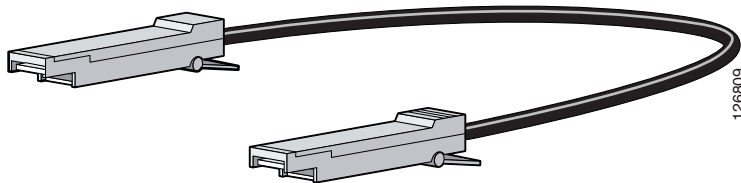
For minimum software requirements, refer to the Release Notes for your platform.

For the most up-to-date list of supported SFP models for Cisco Industrial Ethernet switches, see [http://www.cisco.com/en/US/docs/interfaces\\_modules/transceiver\\_modules/compatibility/matrix/OL\\_6981.html#wp138176](http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6981.html#wp138176)

For information about SFP modules, see your SFP module documentation and the [Installing and Removing SFP Modules, page 35](#). For cable specifications, see the [SFP Module Cables, page 74](#).

## SFP Module Patch Cable

The switch uses an SFP-module patch cable, a 0.5-meter, copper, passive cable with SFP module connectors at each end (see [Figure 3 on page 9](#)). The patch cable connects two switches in a cascaded configuration.

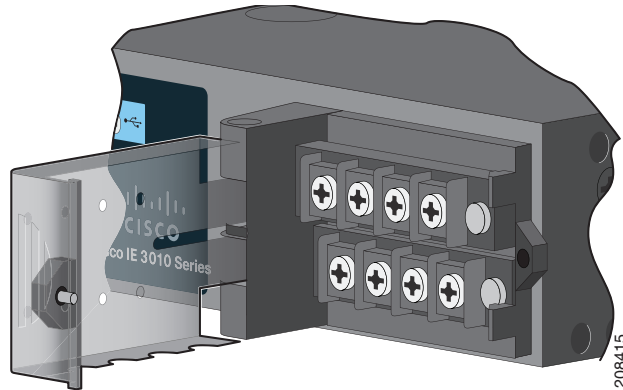
**Figure 3 SFP-Module Patch Cable**

See the [Inserting and Removing the SFP Module Patch Cable, page 40](#) for information about using the SFP module patch cable.

You can order this cable (part number CAB-SFP-50CM=).

## Power-Input Terminal

The power-input terminal provides screw terminals for the AC and DC power connections. The switch can operate with one or two power supplies. If one of the power sources fail, the other continues to power the switch. See [Power Supply Installation, page 47](#) for information.

**Figure 4 Power-Input Terminal**

## Alarm Ports

The switch has four alarm inputs and one alarm output. The alarm setting is open or closed.

- Open means that the normal condition has current flowing through the contact (referred to as a *normally closed* contact). The alarm is generated when the current stops.
- Closed means that no current flows through the contact (referred to as a *normally open* contact). The alarm is generated when the current flows.

## Alarm Input

The alarm input is a dry-contact alarm port. You can connect up to four alarm inputs from devices, such as a door, a temperature gauge, or a fire alarm, to the alarm port. You can use the CLI to set the alarm severity to minor, major, or critical. An alarm generates a system message and turns on an LED. See the [Alarm LEDs, page 12](#) for the LED descriptions.

## Alarm Output

The alarm output can be configured as a minor or major alarm. Output alarms often control an external alarm, such as a bell or a light. To connect an external alarm device to the relay, you connect two relay contact wires to complete the electrical circuit. See for information on the alarm pinouts. see the [Alarm Port, page 73](#).

## Management Ports

You can connect the switch to a PC running Microsoft Windows or to a terminal server through either the RJ-45 console port or the USB console port.

- RJ-45 console port. The RJ-45 connection uses an RJ-45-to-DB-9 female cable.
- USB mini-Type B console port (5-pin connector). The USB connection uses a USB Type A-to-5-pin mini-Type B cable.

The USB console interface speeds are the same as the RJ-45 console interface speeds.

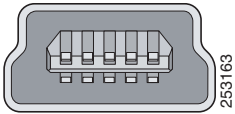
To use the USB console port, you must install the Cisco Windows USB device driver on the device that is connected to the USB console port (device running with Microsoft Windows).

**Note:** For information about downloading the Cisco USB device driver, see the [Installing the Cisco Microsoft Windows USB Device Drivers, page 84](#).

With the Cisco Windows USB device driver, connecting and disconnecting the USB cable from the console port does not affect Windows HyperTerminal operations. Mac OS X or Linux require no special drivers.

**Note:** The 5-pin mini-Type B connectors resemble the 4-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B. See [Figure 5 on page 11](#).

**Figure 5 USB Mini-Type B Port**



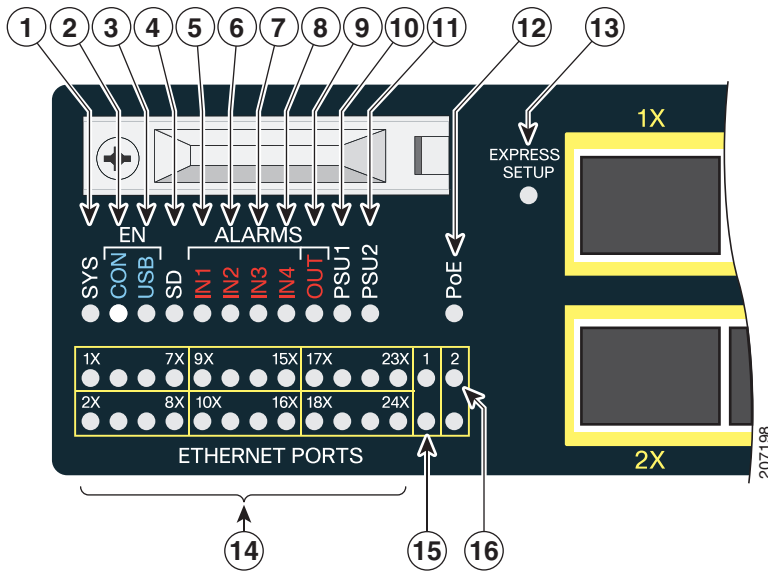
The configurable inactivity timeout reactivates the RJ-45 console port if the USB console port is activated, but no input activity occurs on it for a specified time period. When the USB console port deactivates due to a timeout, you can restore its operation by disconnecting and reconnecting the USB cable. For information on using the CLI to configure the USB console interface, see the switch software guide.

## LEDs

You can use the switch system and port LEDs to monitor switch activity and performance.

## Switch Panel LEDs

**Figure 6 Switch LEDs (Cable Side)**



- |                             |                          |
|-----------------------------|--------------------------|
| 1 SYS (system)              | 9 OUT (alarm output)     |
| 2 CON (RJ-45 console)       | 10 PSU1 (power supply 1) |
| 3 USB (mini-USB console)    | 11 PSU2 (power supply 2) |
| 4 SD (SD flash memory card) | 12 PoE <sup>1</sup>      |
| 5 IN1 (alarm input 1)       | 13 Express Setup button  |
| 6 IN2 (alarm input 2)       | 14 Ethernet ports        |

- |   |                     |    |                  |
|---|---------------------|----|------------------|
| 7 | IN3 (alarm input 3) | 15 | SFP module port  |
| 8 | IN4 (alarm input 4) | 16 | 10/100/1000 port |
1. Only on the Cisco IE-3010-16S-8PC switch.

## System LED

**Table 3 System LED**

Color	System Status
Off	System is not powered on.
Blinking green	POST <sup>1</sup> is in progress.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

1. POST = power-on self-test.

## Power-Supply Module LEDs

The switch power-supply module LEDs are labeled PSU1 and PSU2 (on the switch) and PSU OK (on the power-supply module). They show whether power-supply modules 1 and 2 are receiving power. See [Figure 6 on page 11](#) and [Figure 9 on page 15](#).

**Table 4 Power-Supply Module LEDs**

Color	System Status
Off	Power-supply module (1 or 2) is not installed.
Green	Valid input is present, and the output is within the operating range.
Red	Valid input is present, and the output is outside the operating range or is not present.
Blinking red	Valid input is not present.

## Alarm LEDs

**Table 5 Alarm Input LEDs**

Color	System Status
Off	No alarm
Amber	Minor alarm
Red	Major alarm
Blinking red	Critical alarm

**Table 6 Alarm Output LED**

Color	System Status
Green	No alarm
Red	Relay closed, alarm present



## Console LEDs

The console LEDs show which console port is in use. See [Figure 6 on page 11](#) and [Figure 9 on page 15](#) for the LED locations.

If you connect a cable to a console port, the switch automatically uses that port for console communication. If you connect two console cables, the USB console port has priority.

**Table 7 RJ-45 and USB Console Port LEDs**

LED	Color	Description
RJ-45 console port	Green	RJ-45 console port is active. USB console port LED is off.
	Off	Port is not active. USB console port is active.
USB console port	Green	USB console port is active. RJ-45 console port LED is off.
	Off	Port is not active. RJ-45 console port is active.

## Port LEDs

RJ-45 ports and SFP-module slots have port LEDs. Port LEDs, as a group or individually, provide information about the switch and about the individual ports.

**Table 8 Meaning of Port LED Colors**

LED Color	Meaning
Off	No link or port was administratively shut down.
Green	Link present but not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for link faults.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops.

## PoE LED

**Table 9 PoE LED**

Color	Meaning
Off	PoE is not enabled.
Green	PoE is enabled. Ports are functioning correctly.
Amber	PoE is enabled, but an error is present.

## Dual-Purpose Port LEDs

The dual-purpose port LEDs identify the connection as either a copper-based connector or an SFP module. The ports can autonegotiate, or you can manually configure each dual-purpose port as either 10/100/1000 with copper connectors or as an SFP-module port, but not as both types at the same time. See [Table 8 on page 13](#) for LED descriptions.

## SD Flash Memory Card LED

**Table 10 SD Flash Memory Card LED**

Color	System Status
Off / blinking green	SD flash memory card transfer in progress.
Blinking amber	SD flash memory card is not present (slow blinking). Unsupported SD flash memory card is detected (fast blinking).
Amber	Error accessing the SD flash memory card. Cisco IOS boot image cannot be found.
Green	SD flash memory card is functioning.

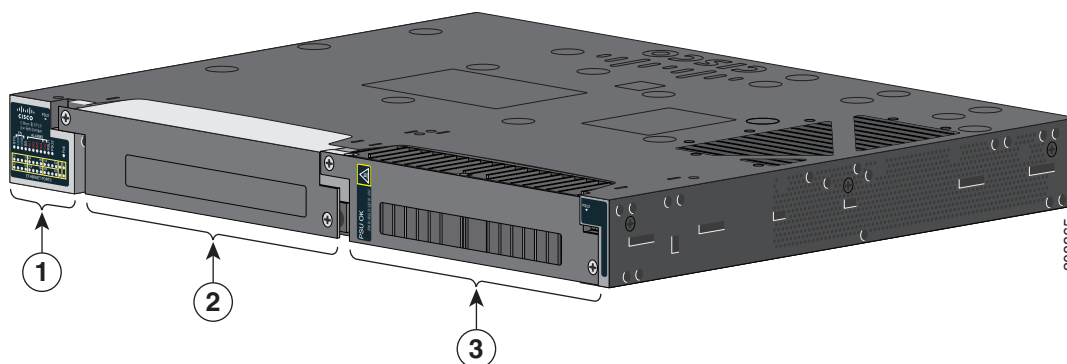
## SD Flash Memory Card

The switch ships with the Secure Digital (SD) flash memory card installed. See [Figure 1 on page 6](#) and [Figure 2 on page 6](#). The switch stores the Cisco IOS software images and the switch configuration on the card. You should not remove the card unless you want to use it in a replacement switch. You then do not have to reconfigure the new switch. See the [Replacing the SD Flash Memory Card, page 41](#) for information.

## Power-Supply Side

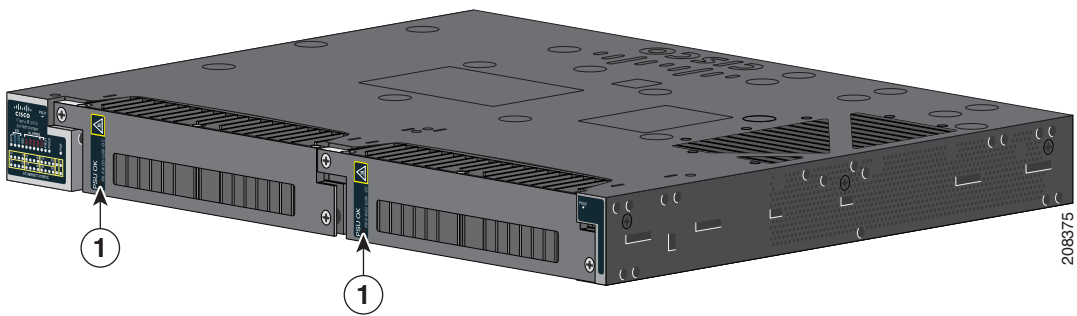
The power-supply side has the LED panel and two power-supply slots for the removable power supplies. See [Figure 7 on page 14](#) and [Figure 8 on page 15](#).

**Figure 7 Switch with One Power-Supply Module**



- |   |                     |   |                     |
|---|---------------------|---|---------------------|
| 1 | LED panel           | 3 | Power-supply slot 2 |
| 2 | Power-supply slot 1 |   |                     |

**Figure 8 Switch with Both Power-Supply Modules**

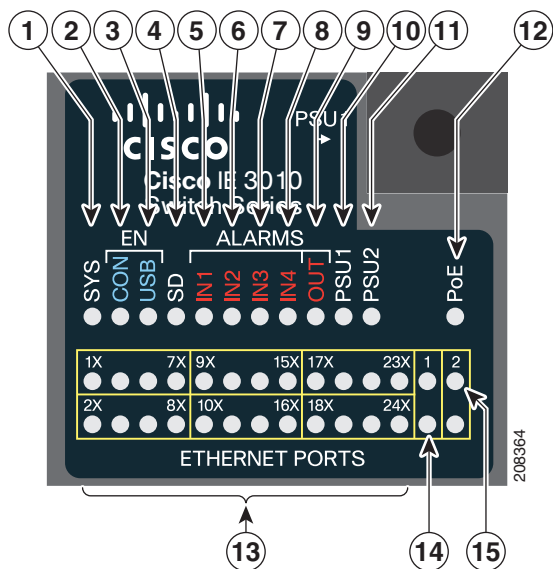


1 PSU OK LED

For a description of the PSU OK LED, see [Table 4 on page 12](#).

## Power-Supply Side LEDs

**Figure 9 Switch LEDs**



- |                             |                          |
|-----------------------------|--------------------------|
| 1 SYS (system)              | 9 OUT (alarm output)     |
| 2 CON (console)             | 10 PSU1 (power supply 1) |
| 3 USB LED                   | 11 PSU2 (power supply 2) |
| 4 SD (SD flash memory card) | 12 PoE <sup>1</sup>      |
| 5 IN1 (alarm input 1)       | 13 Ethernet ports        |
| 6 IN2 (alarm input 2)       | 14 10/100/1000 port      |
| 7 IN3 (alarm input 3)       | 15 SFP port              |
| 8 IN4 (alarm input 4)       |                          |

## Management Options

1. Only on the Cisco IE-3010-16S-8PC switch.

For a description of the LEDs, see the [LEDs, page 11](#).

## Power Supply Features

The switch has two slots for power-supply modules:

- PWR-RGD-LOW-DC/IA: low-voltage DC (for voltage information, see [Table 18 on page 69](#))
- PWR-RGD-AC-DC/IA: high-voltage AC or DC (for voltage information, see [Table 17 on page 69](#))

The switch supports these power-supply module combinations:

- Single low-voltage DC
- Single high-voltage AC or DC
- Two high-voltage AC or DC
- Two low-voltage DC
- One high-voltage AC or DC and one low-voltage DC

For information on installing the power-supply modules, see [Power Supply Installation, page 47](#)

See [Table 4 on page 12](#) for information on the power supply LEDs.

## Management Options

- Cisco IOS CLI

You can configure and monitor the switch from the CLI. Connect your management station to the switch console port or use Telnet from a remote management station. See the switch command reference on Cisco.com for information.

- SNMP network management

You can manage switches from a Simple Network Management Protocol (SNMP)-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for information.

## Network Configurations

See the switch software configuration guide on Cisco.com for an explanation of network configuration concepts. The software configuration guide also provides network configuration examples for creating dedicated network segments that are interconnected through Ethernet connections.



# Switch Installation

Read the topics and perform the procedures in this order:

- [Warnings, page 17](#)
- [Installation Guidelines, page 18](#)
- [Verifying Switch Operation, page 18](#)
- [Installing the Switch, page 19](#)
- [Installing and Removing SFP Modules, page 35](#)
- [Inserting and Removing the SFP Module Patch Cable, page 40](#)
- [Replacing the SD Flash Memory Card, page 41](#)
- [Connecting Devices to the Ethernet Ports, page 44](#)
- [Where to Go Next, page 46](#)

## Warnings

These warnings are translated into several languages in the *Regulatory Compliance and Safety Information for the Cisco IE 3010 Switch* document that ships on the documentation CD.

These warning statements apply to all the switches:

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

**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:** This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

**Warning:** This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

**Warning:** Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

**Warning:** Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040

**Warning:** For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection.  
**10/100/1000 Ethernet Statement 1044**

**Warning:** To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of:  
**140° F (60° C) Statement 1047**

**Warning:** Installation of the equipment must comply with local and national electrical codes. **Statement 1074**

**Note:** For U.S. installations, refer to national electrical code ANSI/NFPA 70.

**Warning:** To prevent airflow restriction, allow clearance around the ventilation openings to be at least:  
**1.75 in. (4.4 cm). Statement 1076**

**Warning:** Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. **Statement 1088**

## Installation Guidelines

Before installing the switch, verify that these guidelines are met:

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is away from other devices that might damage the cables.
- Operating environment is within the ranges listed in
- Relative humidity around the switch does not exceed 95 percent (noncondensing).
- Altitude at the installation site is not higher than 10,000 feet.
- For 10/100 and 10/100/1000 fixed ports, cable lengths from the switch to connected devices are not more than 328 feet (100 meters).
- For cable lengths for small form-factor pluggable (SFP)-module connections, see the [SFP Module Cables, page 74](#) and the module documentation.
- Airflow around the switch and through the vents is unrestricted. To prevent overheating, the switch must meet the minimum clearance of 1.75 inches (4.4 cm) at the top and bottom.

**Note:** If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

## Verifying Switch Operation

Before installing the switch in a rack or on a wall, you should power the switch and verify that the switch passes the power-on self-test (POST).

To wire the switch to the power source, see [Power Supply Installation, page 47](#)

When the switch begins POST, the SYS LED blinks green, and the other LEDs stay green. When the switch passes POST, the SYS LED turns green. The other LEDs turn off and return to their operating status. If the switch fails POST, the SYS LED is amber.

**Note:** Contact Cisco Systems immediately if your switch fails POST.

After a successful POST, disconnect the power from the switch. For more information, see [Power Supply Installation, page 47](#) See the [Installing the Switch, page 19](#) to install the switch in a rack or on a wall.

## Installing the Switch

- [Rack-Mounting, page 19](#)
- [Wall-Mounting, page 30](#)

If the switch is wall-mounted in an enclosure, follow these minimum clearances:

- Sides of switch (facing up and facing down): 3.75 in. (9.52 cm)
- Port side 3.0 in. (7.62 cm)
- Power supply side: 5.25 in. (13.33 cm)
- Cover side (side not facing wall): 1.75 in. (4.44 cm)
- Base side (facing wall): 0 in. (0 cm)

## Rack-Mounting

To rack-mount the switch, select the rack size and follow the steps in these sections:

- [Attaching Brackets for 19-Inch Racks, page 19](#)
- [Attaching Brackets for 19-Inch Racks for IP-30 Compliance \(Optional\), page 21](#)
- [Attaching Brackets for 23-Inch Racks, page 27](#)
- [Attaching Brackets for ETSI Racks, page 28](#)
- [Rack-Mounting the Switch, page 28](#)

### 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:**

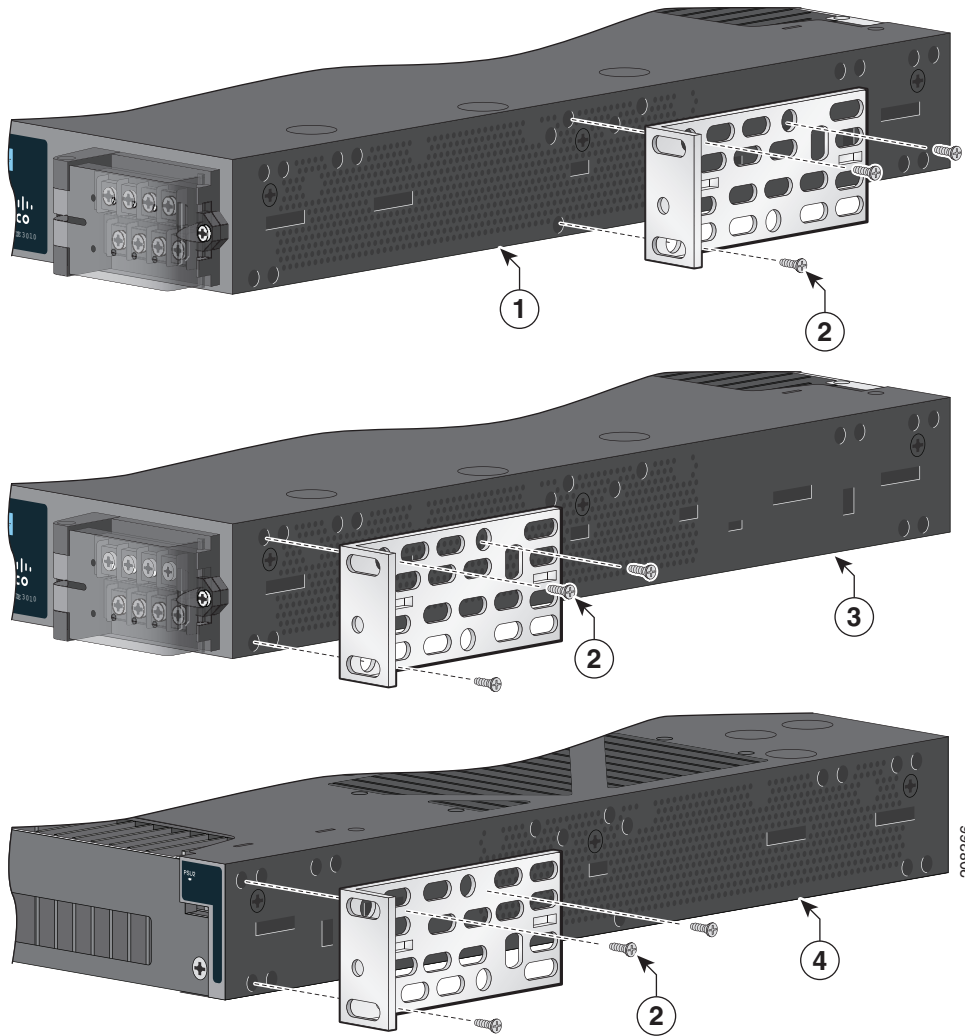
- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006**

**Warning:** For mounting railway-application equipment and for EN50155 standard compliance, the switch must be installed only in a rack mid-mounting position. If you install the switch in a front rack-mounting (cable side or power supply side) position or in a wall-mounting position, a mechanical failure can occur that results in the switch becoming detached from the rack. Statement 403

## Attaching Brackets for 19-Inch Racks

[Figure 10 on page 20](#) and [Figure 11 on page 21](#) show how to attach brackets to the switches.

Figure 10 Attaching Brackets for 19-Inch Racks

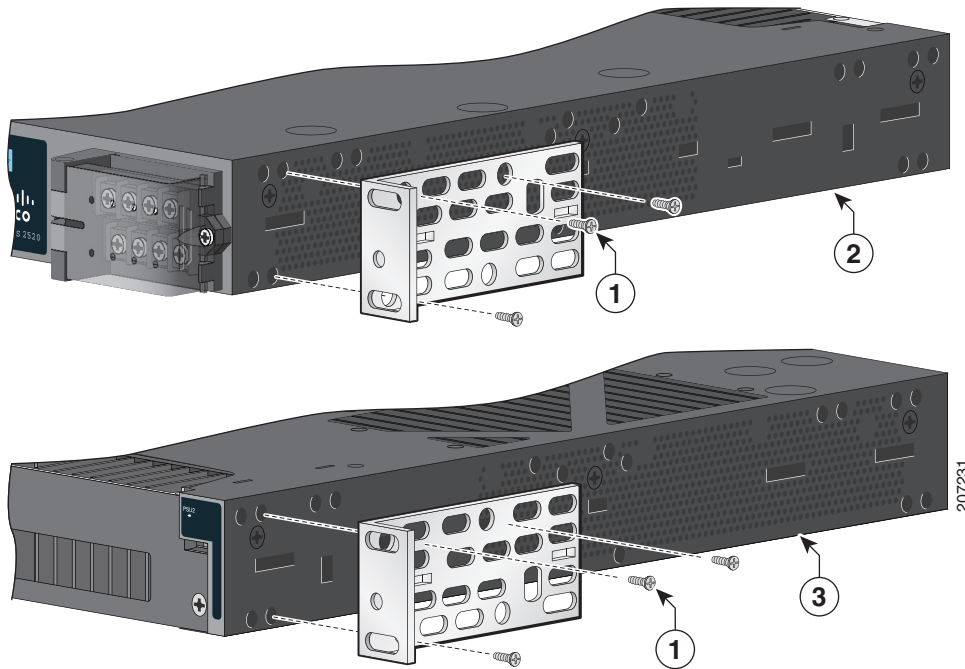


- 1 Mid-mounting position
- 2 Phillips flat-head screws
- 3 Cable-side mounting position
- 4 Power-supply-side mounting position

208366



**Figure 11 Attaching Brackets for 19-Inch Racks**



- 1 Phillips flat-head screws
- 2 Cable-side-mounting position
- 3 Power-supply-side mounting position

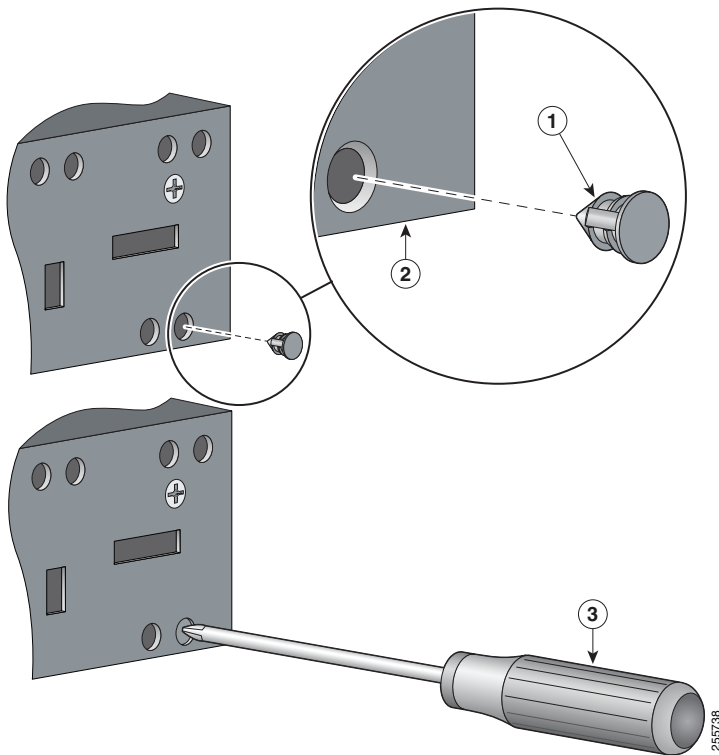
### Attaching Brackets for 19-Inch Racks for IP-30 Compliance (Optional)

Before installing the mounting brackets, you need to install the rubber plugs in the unused mounting holes. The rubber plugs are not supplied with the switch. You can order a kit (part number IE-3010-IP30KIT) containing the rubber plugs.

You can order a kit (part number IE-3010-IP30KIT) that contains the rubber plugs.

[Figure 12 on page 22](#) shows a close-up of the rubber plug. You can install the rubber plugs in the holes as shown in [Figure 13 on page 23](#) and [Figure 14 on page 24](#).

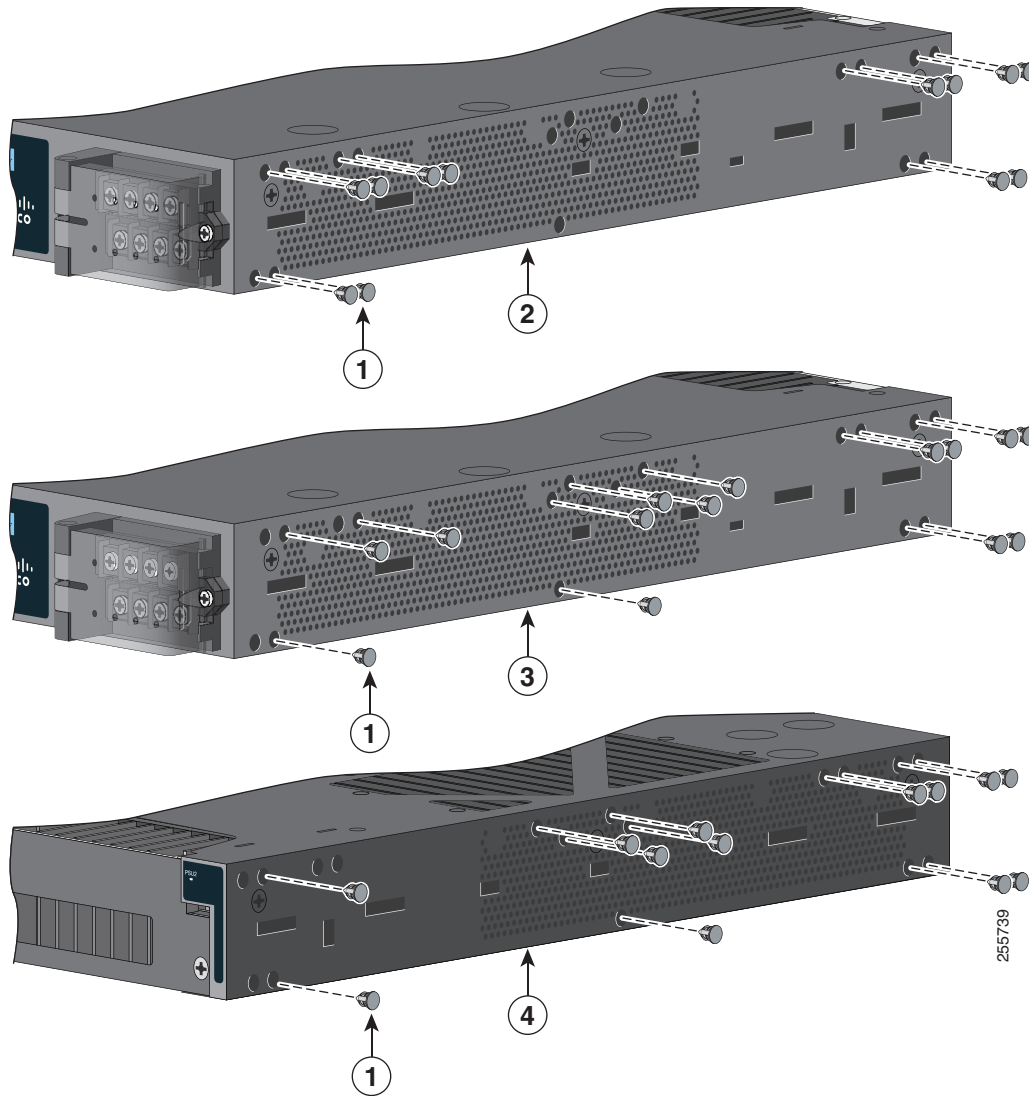
**Figure 12** Inserting the Rubber Plug



- 1 Rubber plug
- 2 Switch
- 3 Screwdriver

1. Identify your bracket mounting position. See [Figure 15 on page 25](#) or [Figure 16 on page 26](#).
2. Insert the rubber plugs in the appropriate holes on both sides of the switch. See [Figure 13 on page 23](#) or [Figure 14 on page 24](#).
3. Use a screwdriver or pen to completely push in the rubber plugs. See [Figure 12 on page 22](#).
4. Install the brackets on both sides of the switch. See [Figure 15 on page 25](#) or [Figure 16 on page 26](#).

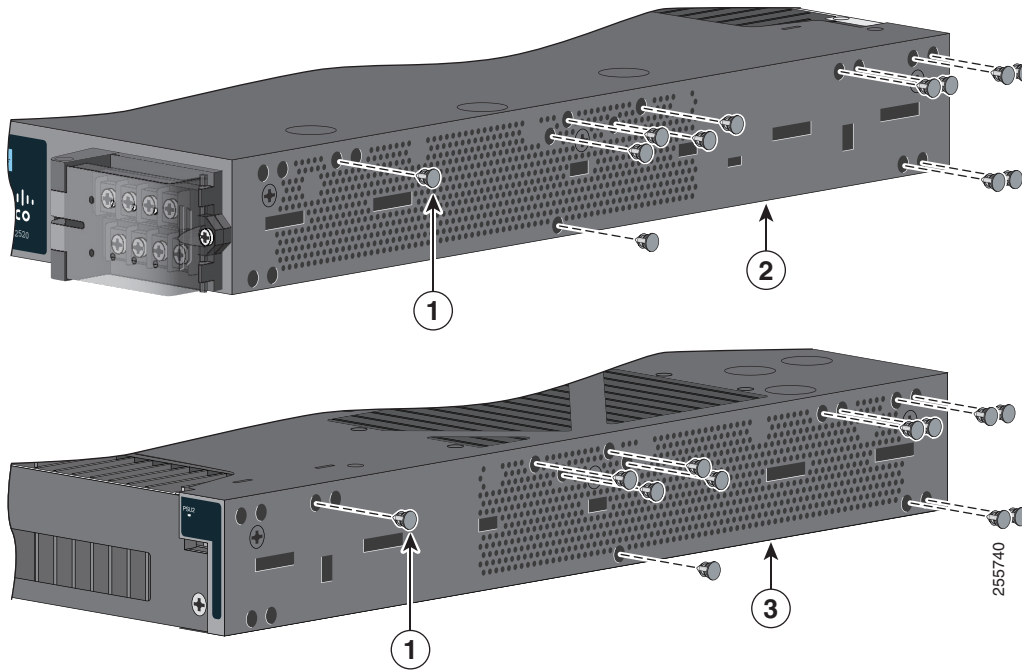
Figure 13 Inserting the Rubber Plugs



- 1 Rubber plug
- 2 Mid-mounting position

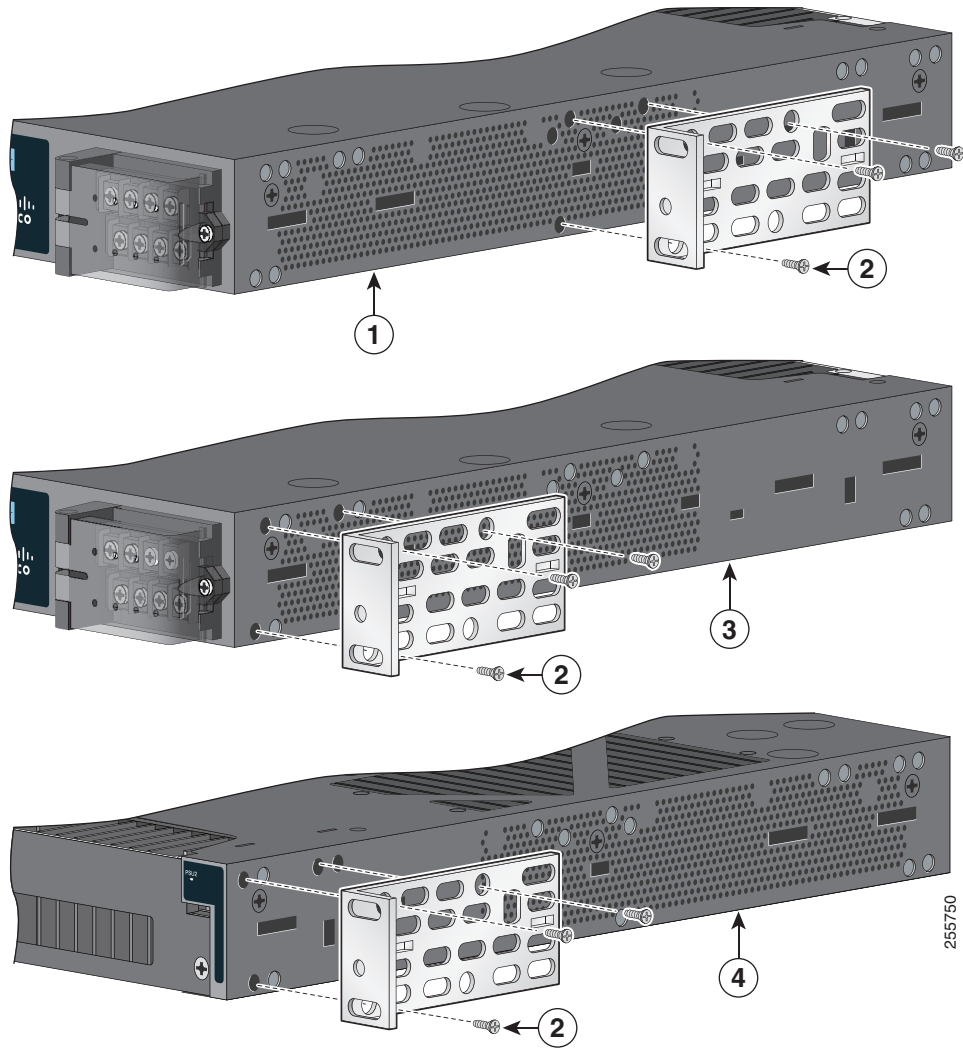
- 3 Cable-side mounting position
- 4 Power-supply-side mounting position

**Figure 14** Inserting the Rubber Plugs



- 1 Rubber plug
- 2 Cable-side-mounting position
- 3 Power-supply-side mounting position

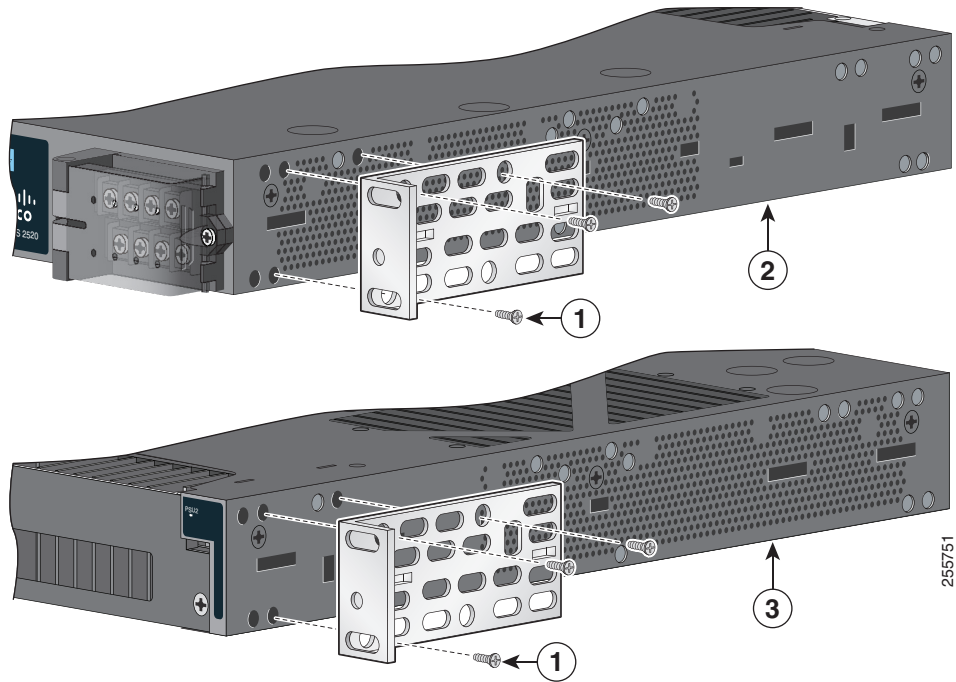
Figure 15 Attaching Brackets for 19-Inch Racks



- 1 Mid-mounting position
- 2 Phillips flat-head screws

- 3 Cable-side mounting position
- 4 Power-supply-side mounting position

Figure 16 Attaching Brackets for 19-Inch Racks

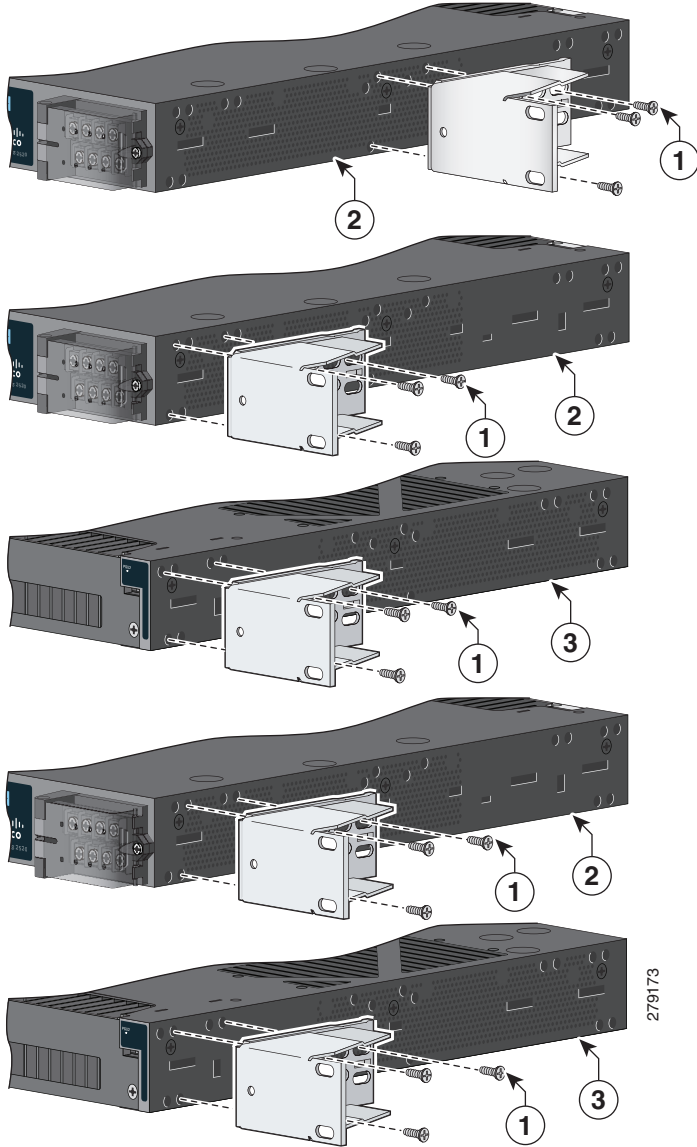


- 1 Phillips flat-head screws
- 2 Cable-side-mounting position
- 3 Power-supply-side mounting position

**Note:** For IP-30 compliance: If you use 23-inch brackets or ETSI brackets, you can insert the rubber plugs in the same holes as shown in [Figure 13 on page 23](#) or [Figure 14 on page 24](#) before installing the brackets.

## Attaching Brackets for 23-Inch Racks

Figure 17 Attaching 23-Inch Brackets

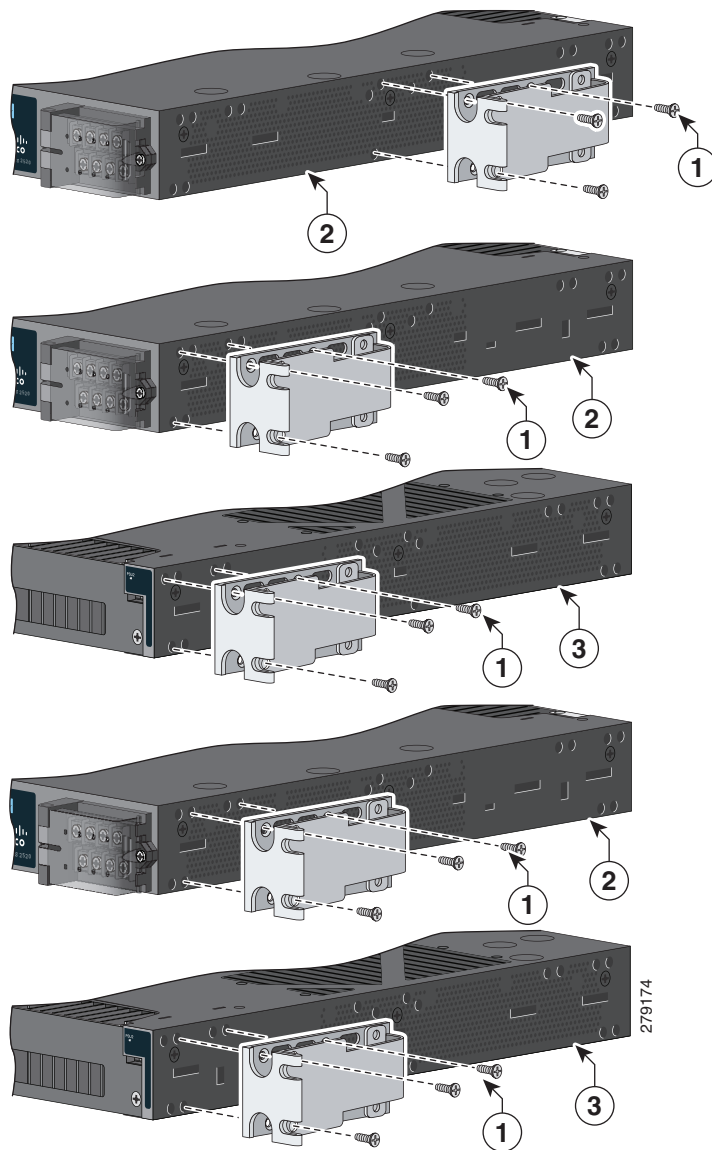


- 1 Phillips flat-head screws
- 2 Cable-side-mounting position
- 3 Power-supply-side mounting position

**Note:** For IP-30 compliance: If you use 23-inch brackets, you can insert the rubber plugs in the same holes as shown in [Figure 13 on page 23](#) or [Figure 14 on page 24](#) before installing the brackets.

## Attaching Brackets for ETSI Racks

**Figure 18 Attaching Brackets for ETSI Racks**



- |                                |                                       |
|--------------------------------|---------------------------------------|
| 1 Phillips flat-head screws    | 3 Power-supply-side mounting position |
| 2 Cable-side-mounting position |                                       |

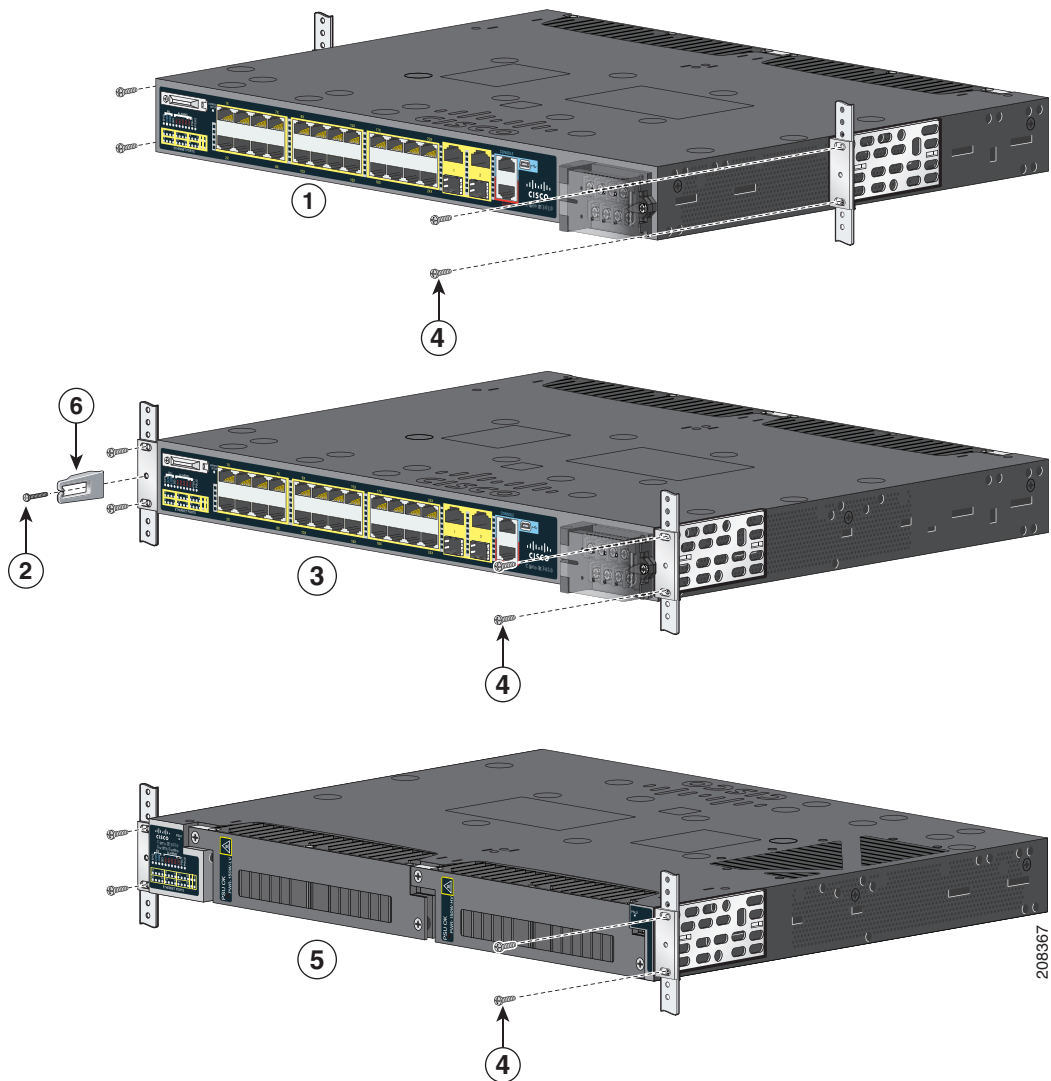
**Note:** For IP-30 compliance: If you use ETSI brackets, you can insert the rubber plugs in the same holes as shown in [Figure 13 on page 23](#) or [Figure 14 on page 24](#) before installing the brackets.

## Rack-Mounting the Switch

After you attach the brackets on the switch, use the four supplied number-12 Phillips machine screws to attach the brackets to the rack. See [Figure 19 on page 29](#).



Figure 19 Rack-Mounting



- |   |                              |   |                                     |
|---|------------------------------|---|-------------------------------------|
| 1 | Mid-mounting position        | 4 | Phillips machine screws             |
| 2 | Cable screw                  | 5 | Power-supply-side mounting position |
| 3 | Cable-side mounting position | 6 | Cable guide                         |

After the switch is mounted in the rack:

1. Wire the switch to a power source. See [Power Supply Installation, page 47](#)
2. Connect the ports. See the [Connecting Devices to the Ethernet Ports, page 44](#).
3. Attach the cable guide to prevent the cables from obscuring the LED panels on the devices in the rack. Use the supplied black screw shown in [Figure 19 on page 29](#) to attach the cable guide to the left or right bracket.

For configuration instructions about the CLI setup program, go to [Configuring the Switch with the CLI Setup Program, page 81](#)

## Wall-Mounting

To wall-mount the switch, follow the steps in these sections:

- [Attaching Brackets, page 31](#)
- [Attaching Brackets for IP-30 Compliance \(Optional\), page 31](#)
- [Wall-Mounting the Switch, page 32](#)

**Warning:** Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. **Statement 378**

**Warning:** For mounting railway-application equipment and for EN50155 standard compliance, the switch must be installed only in a rack mid-mounting position. If you install the switch in a front rack-mounting (cable side or power supply side) position or in a wall-mounting position, a mechanical failure can occur that results in the switch becoming detached from the rack. **Statement 403**

If the switch is wall-mounted in an enclosure, follow these minimum clearances:

- Sides of switch (facing up and facing down): 3.75 in. (9.52 cm)
- Port side 3.0 in. (7.62 cm)
- Power supply side: 5.25 in. (13.33 cm)
- Cover side (side not facing wall): 1.75 in. (4.44 cm)
- Base side (facing wall): 0 in. (0 cm)

## Attaching Brackets

**Figure 20 Attaching 19-inch Rack Brackets**



- 1 Phillips truss-head screws

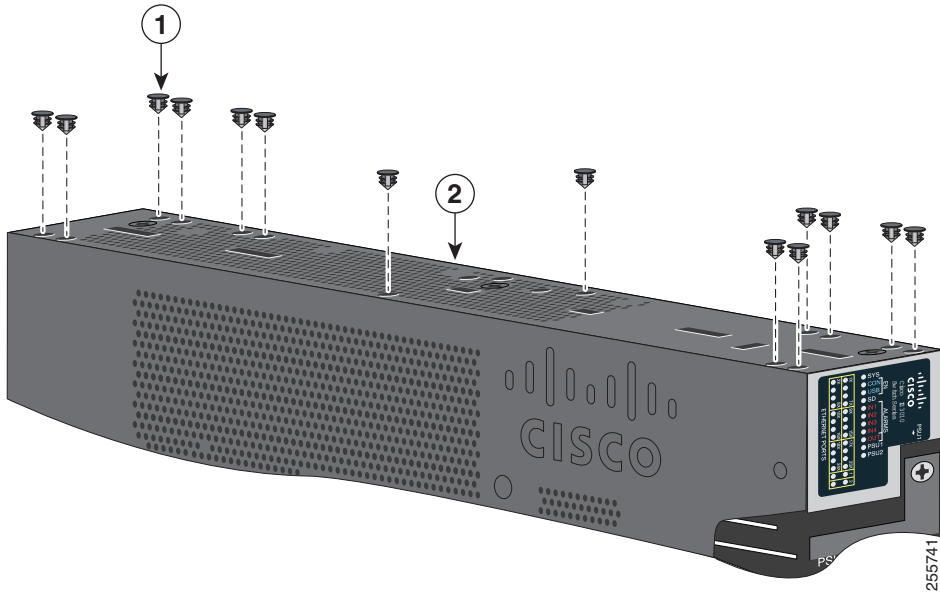
### Attaching Brackets for IP-30 Compliance (Optional)

1. Insert the rubber plugs in the appropriate holes on both sides of the switch. See [Figure 21 on page 32](#).

**Note:** The rubber plugs are not supplied with the switch. You can order a kit (part number IE-3010-IP30KIT) containing the rubber plugs.

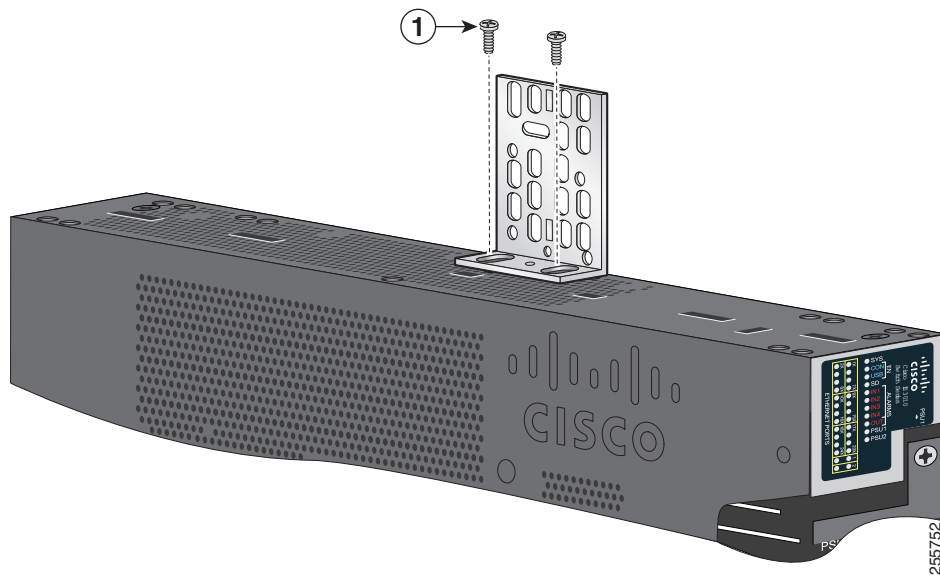
2. Use a screwdriver or pen to completely push in the rubber plugs. See [Figure 12 on page 22](#).
3. Install the brackets on both sides of the switch. See [Figure 22 on page 32](#).

**Figure 21** Inserting the Rubber Plugs in the Switch Holes



- 1 Rubber plug
- 2 Switch-side

**Figure 22** Attaching 19-inch Rack Brackets



- 1 Phillips truss-head screws

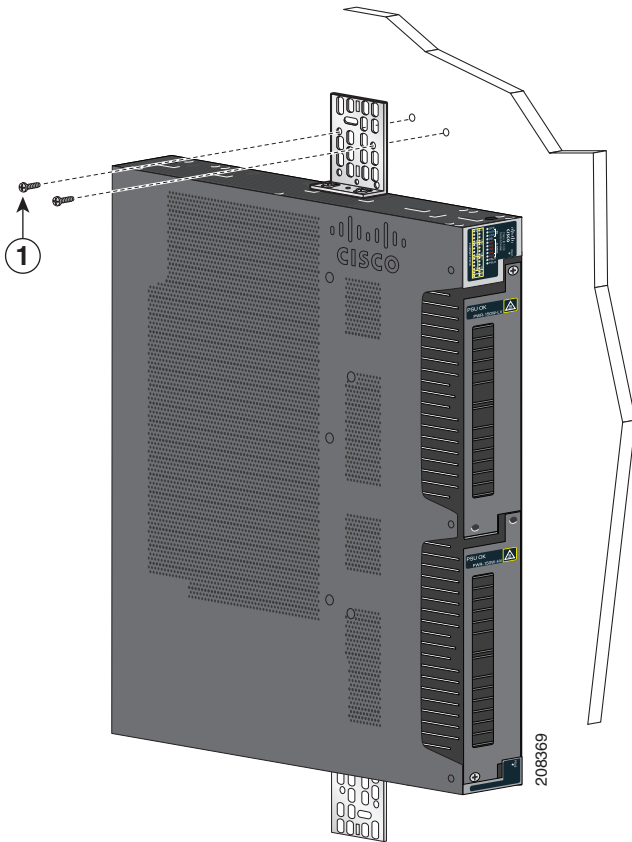
## Wall-Mounting the Switch

For the best support of the switch and cables, ensure that the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard.

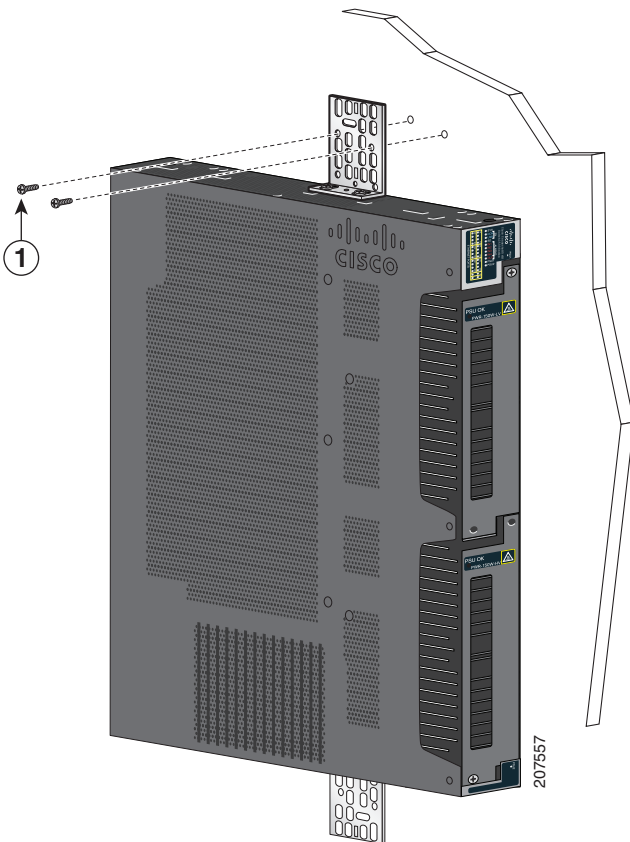
## Installing the Switch

Mount the switch with the side panel facing up. Ensure that the Cisco logo is at the top of the switch. See [Figure 23 on page 34](#) and [Figure 24 on page 35](#).

**Figure 23 Wall-Mounting the Cisco IE-3010-24TC**



- 1 User-supplied screws

**Figure 24 Wall-Mounting the Cisco IE-3010-16S-8PC**

After the switch is mounted on the wall:

- Wire the switch to a power source. See [Power Supply Installation, page 47](#)
- For configuration instructions about using the CLI setup program, go to [Configuring the Switch with the CLI Setup Program, page 81](#)
- Connect the switch ports. See the [Connecting Devices to the Ethernet Ports, page 44](#).

## Installing and Removing SFP Modules

This section presents procedures to install and remove fiber-optic and 1000BASE-T SFP transceiver modules.

### Installing SFP Modules

These sections describe how to install and remove SFP modules. SFP modules are inserted into SFP module slots on the front of the switch. Field-replaceable SFP modules provide the uplink interfaces, send (TX) and receive (RX).

You can use any combination of rugged SFP modules. See [Table 2 on page 8](#) for a list of supported modules. Each SFP module must be of the same type as the SFP module on the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communications. See [Table 20 on page 74](#) for cable stipulations for SFP module connections.

**Caution:** When you use commercial SFP modules such as CWDM and 1000BX-U/D, reduce the maximum operating temperature by 59° F (15° C). The minimum operating temperature is 32° F (0° C).

**Caution:** To prevent electrostatic-discharge (ESD) damage, follow standard board and component handling procedures.

**Warning:** Do not insert and remove SFP modules while power is on; an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding. **Statement 1087**

**Note:** Removing and installing an SFP module can shorten its useful life. Do not remove and insert any module more often than is absolutely necessary.

Figure 28 on page 40 shows an LC SFP module with a bale-clasp latch.

**Caution:** Do not install or remove the LC SFP module with fiber-optic cables attached because of potential damage to the cables, the cable connector, or the optical interfaces in the SFP module. Disconnect all cables before removing or installing an SFP module. Removing and installing an SFP module can shorten its useful life. Do not remove and insert SFP modules more often than is absolutely necessary.

## Installing Fiber Optic SFP Modules

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

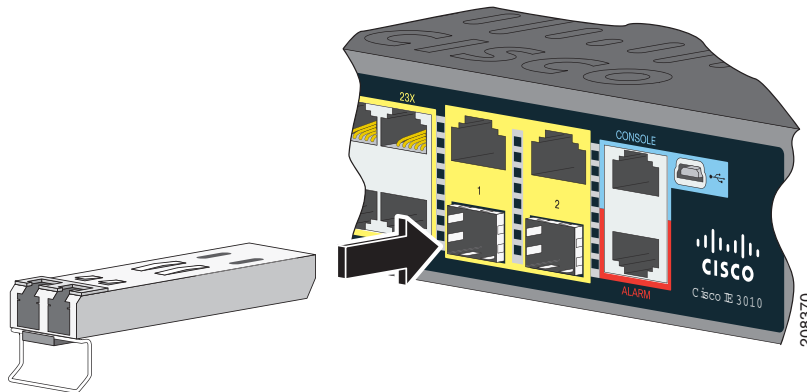
To install and cable an optical SFP transceiver uplink port:

1. Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.
2. Find the send (TX) and receive (RX) markings on the module top.

On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection, either send or receive (TX or RX).

3. If the module has a bale-clasp latch, move it to the open, unlocked position.
4. Align the module in front of the slot opening, and push until you feel the connector snap into place.
5. If the module has a bale-clasp latch, close it.
6. For fiber-optic SFP modules, remove the dust plugs and save.
7. Connect the SFP cables.

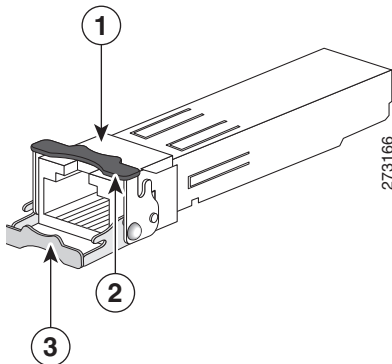


**Figure 25** Installing an SFP Module

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

### Installing 1000BASE-T SFP Modules

The 1000BASE-T (copper) SFP transceiver, see [Figure 26 on page 37](#), has a bale-clasp locking mechanism that secures the transceiver in the module socket. The SFP network interface is an RJ-45 connector.

**Figure 26** 1000BASE-T SFP Transceiver

**1** RJ-45 connector

**2** Bale-clasp latching mechanism in the closed (locked) position.

**3** Bale-clasp latching mechanism in the open (unlocked) position.

**Caution:** To comply with GR-1089 intrabuilding lightning immunity requirements, you must use grounded, shielded, twisted-pair, CAT5 cabling.

**Note:** When connecting to a 1000BASE-T-compatible server, workstation, or router, use four twisted-pair, straight-through CAT5 cabling for the SFP transceiver port. When connecting to a 1000BASE-T-compatible switch or repeater, use four twisted-pair, crossover CAT5 cabling.

To install a 1000BASE-T SFP transceiver:

1. Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector on the chassis or to a properly grounded bare metal surface.

**Caution:** To avoid ESD damage, handle the SFP by its sides; do not touch the connector pins.

2. Remove the new 1000BASE-T SFP module from its protective packaging.
3. Check the markings on the SFP transceiver to verify that you have the correct model for your network.
4. Position the SFP transceiver in front of the port socket opening.

**Note:** Different Cisco devices have different SFP transceiver socket configurations. Your Cisco device might require that the SFP transceiver be installed with the bale-clasp either in a latch-up or a latch-down orientation. Verify that you have the SFP transceiver oriented correctly when you position it in front of the port socket.

5. With the bale-clasp closed (locked), slide the SFP transceiver into the socket until you feel it snap in place in the socket. You may hear an audible click as the SFP transceiver latch engages in the socket ([Figure 25 on page 37](#)).
6. Connect the network interface cable RJ-45 plug to the SFP RJ-45 connector.
7. Observe the port status LED:
  - Green indicates that the SFP transceiver and the target device established a link.
  - Amber indicates that the port is discovering the network topology and searching for loops. This process takes about 30 seconds, and then the LED turns green.
  - Off indicates that 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. Refer to [Troubleshooting, page 59](#) for solutions to cabling problems.

## Connecting to SFP Modules

This section describes how to connect to a fiber-optic or 1000BASE-T SFP port. To connect to an RJ-45 Gigabit Ethernet port, see [Connecting to a Dual-Purpose Port, page 43](#). For instructions on how to install or remove an SFP module, see [Connecting Devices to the Ethernet Ports, page 44](#).

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

**Warning:** Do not connect or disconnect cables to the ports while power is applied to the switch or any device on the network because an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed from the switch and cannot be accidentally be turned on, or verify that the area is nonhazardous before proceeding. Statement 1070

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

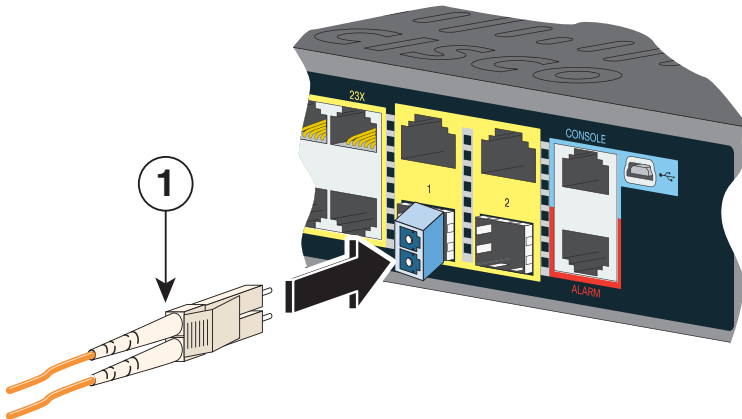
Before connecting to the SFP module, ensure that you understand the port and cabling guidelines in the [SFP Module Connectors, page 72](#). See [Connector and Cable Specifications, page 71](#) for information about the LC on the SFP module.

**Caution:** To prevent ESD damage, follow standard board and component handling procedures.

## Connecting to a Fiber Optic SFP Module

To connect a fiber-optic cable to an SFP module:

1. Remove the rubber plugs from the module port and fiber-optic cable, and store them for future use.
2. Insert one end of the fiber-optic cable into the SFP module port. See [Figure 27 on page 39](#).

**Figure 27 Connecting to a Fiber-Optic SFP Module Port**

1 LC connector

3. Insert the other cable end into a fiber-optic receptacle on a target device.

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 the 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 [Troubleshooting, page 59](#) for solutions to cabling problems.

5. If necessary, reconfigure and restart the switch or the target device.

## Connecting to a 1000BASE-T SFP Module

To connect a CAT5 cable to a 1000BASE-T SFP module:

**Caution:** To prevent ESD damage, follow standard board and component handling procedures.

1. When connecting to servers, workstations, and routers, insert a four twisted-pair, straight-through cable in the RJ-45 connector. When connecting to switches or repeaters, insert a four twisted-pair, crossover cable.

**Note:** When connecting to a 1000BASE-T device, use a four twisted-pair CAT5 cable.

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

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

## Inserting and Removing the SFP Module Patch Cable

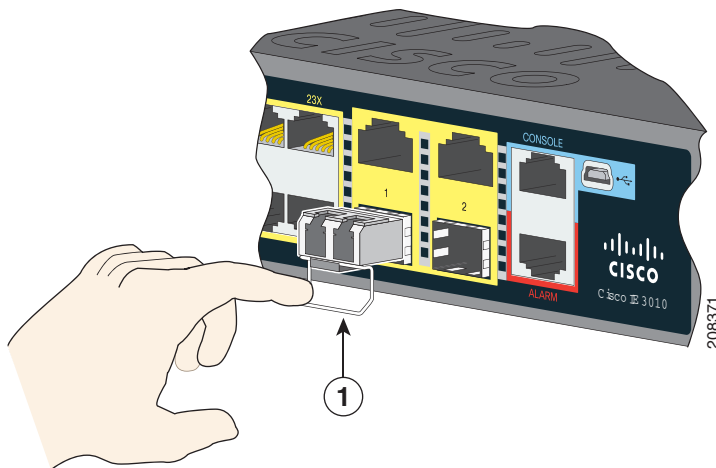
- If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See [Troubleshooting, page 59](#) for solutions to cabling problems.

4. If necessary, reconfigure and restart the switch or target device.

## Removing SFP Modules

1. Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.
2. Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).
3. Insert a dust plug into the optical ports of the SFP module.
4. If the module has a bale-clasp latch, pull the bale out and down to eject it. If the latch is obstructed and you cannot use your finger, use a small, flat-blade screwdriver or other long, narrow instrument.
5. Grasp the SFP module, and carefully remove it from the slot.
6. Place the module in an antistatic bag or other protective environment.

**Figure 28** Removing a Bale-Clasp Latch SFP Module

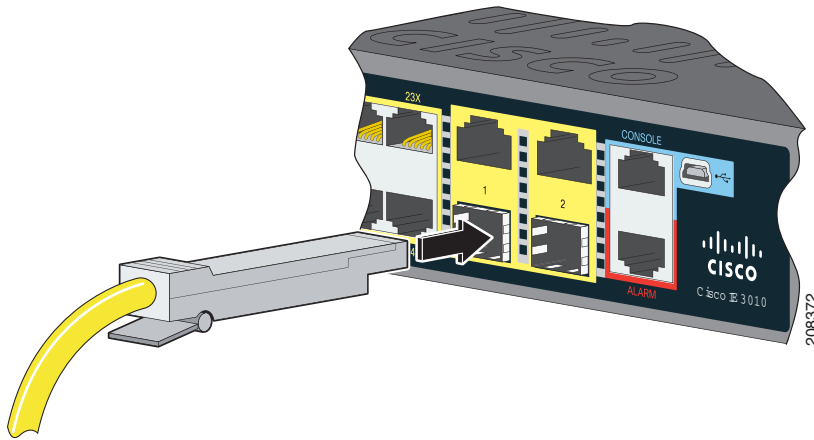


1 Bale clasp

## Inserting and Removing the SFP Module Patch Cable

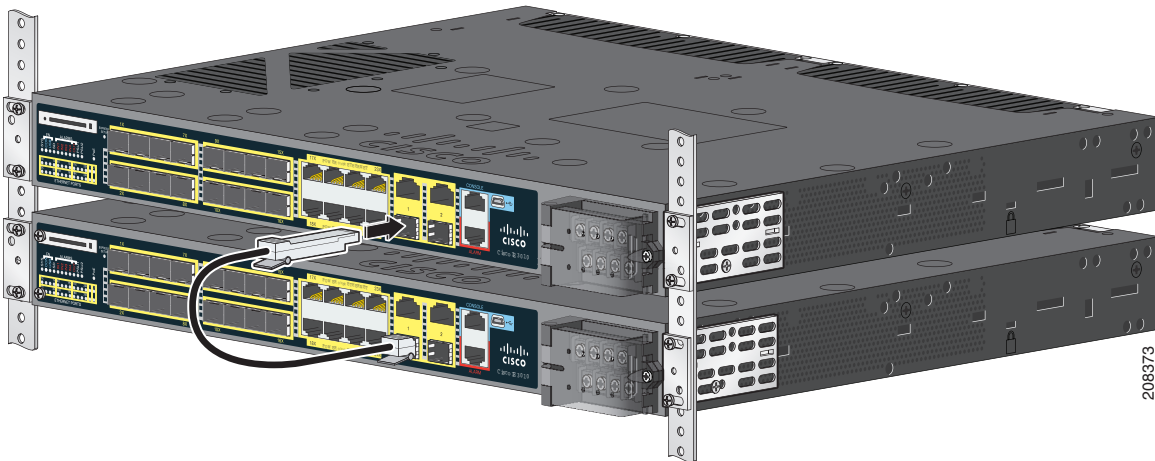
1. Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.
2. Insert the SFP module patch cable in the slot until you feel the connector on the cable snap into place at the rear of the slot (see [Figure 29 on page 41](#)).

**Figure 29** Inserting an SFP Module Patch Cable



3. Repeat these steps for the second switch that you want to connect to the first switch.

**Figure 30** Connecting Two Switches with an SFP Module Patch Cable



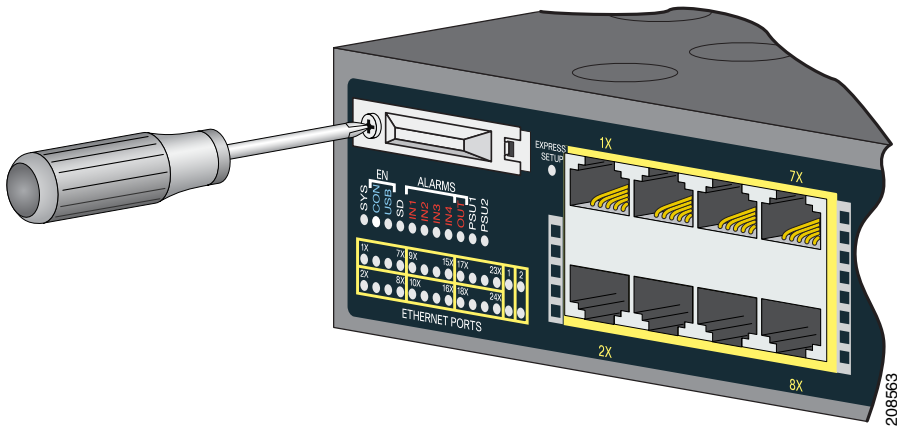
## Removing the SFP Module Patch Cable

To remove an SFP module patch cable from the SFP module slot, release the connector, and pull it from the slot.

## Replacing the SD Flash Memory Card

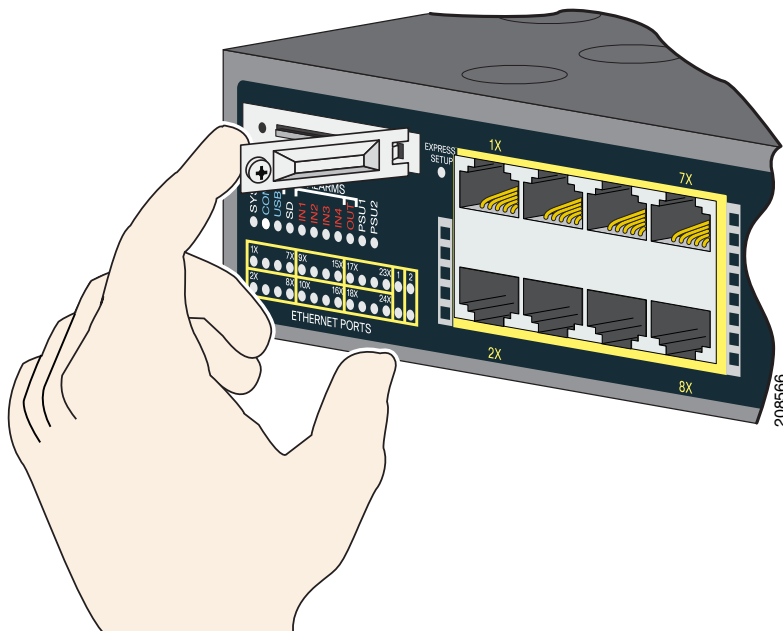
1. Locate the SD flash memory card slot on the cable-side of the switch.
2. Use a number-1 Phillips screwdriver to loosen the captive screw. See [Figure 31 on page 42](#).

**Figure 31** Loosening the Captive Screw

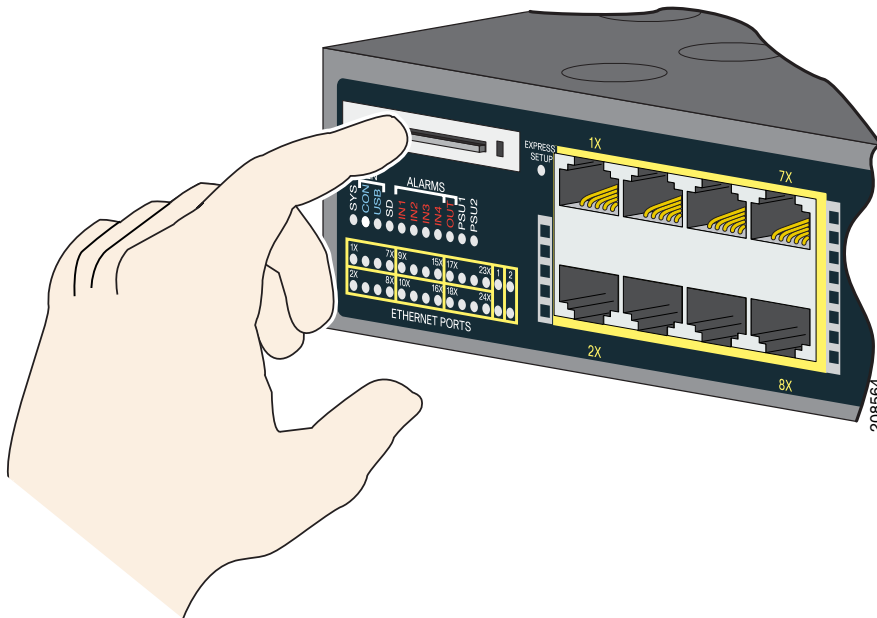


3. Pull the cover open, and pull the cover tab from the hinge. See [Figure 32 on page 42](#).

**Figure 32** Removing the SD Slot Cover



4. Gently push the SD flash memory card to eject it. See [Figure 33 on page 43](#). Place it in an antistatic bag to protect it from static discharge.

**Figure 33** Removing the SD Flash Memory Card.

5. Push the replacement card (upside down) into the slot, and press it firmly in place. The card is keyed so that you cannot insert it the wrong way.
6. Place the SD slot cover tabs into the hinge.
7. Close the cover, and use a ratcheting torque number-1 Phillips screwdriver to torque the screw to 4.5 in-lb.

## Connecting to a Dual-Purpose Port

The dual-purpose port is a single port with two interfaces, one for an RJ-45 cable and another for an SFP module. Only one interface can be active at a time. If both interfaces are connected, the SFP module has priority. For more information about dual-purpose ports, see the [Dual-Purpose Ports, page 7](#).

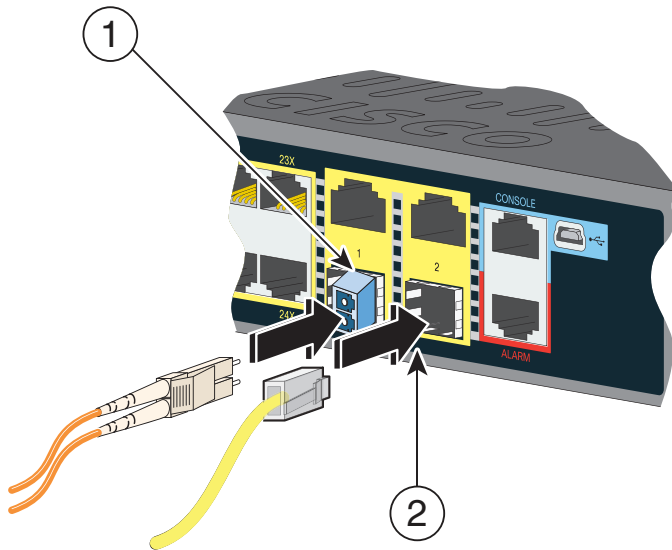
**Warning: Class 1 laser product. Statement 1008**

**Caution: Do not remove the rubber plugs from the SFP module port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light. Before connecting to the SFP module, ensure that you understand the port and cabling stipulations in the [Installation Guidelines, page 18](#). See [Connector and Cable Specifications, page 71](#) for information about the LC on the SFP module.**

To connect to a dual-purpose port, follow these steps:

1. Connect an RJ-45 connector to the 10/100/1000 port, or install an SFP module into the SFP module slot, and connect a cable to the SFP module port. See [Figure 34 on page 44](#).

For more information about RJ-45 connections, SFP modules, and optical connections, see the [Connecting Devices to the Ethernet Ports, page 44](#), the [Connecting Devices to the Ethernet Ports, page 44](#), and the [Connecting to SFP Modules, page 38](#).

**Figure 34 Connecting to a Dual-Purpose Port**

- 1 LC connector (optical)      2 RJ-45 connector (copper)

2. Connect the other end of the cable to the other device.

By default, the switch detects whether an RJ-45 connector or SFP module is connected to a dual-purpose port and configures the port accordingly. You can change this setting and configure the port to recognize only an RJ-45 connector or only an SFP module by using the **media type** interface configuration command. For more information, see the *Cisco IE 3010 Switch Command Reference*.

## Connecting Devices to the Ethernet Ports

- [Connecting to the 10/100 and 10/100/1000 Ports, page 44](#)
- [Connecting to the 10/100 PoE Ports, page 45](#)

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

The 10/100 and 10/100/1000 Ethernet ports use standard RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires CAT5, CAT5e, or CAT6 UTP cable. The 10BASE-T traffic uses Category 3 or Category 4 cable.

The autonegotiation feature is enabled by default on the switch. At this setting, the switch ports configure themselves to operate at the speed of the attached device. If the device does not support autonegotiation, you can set the switch port speed and duplex parameters. To maximize performance, either let the ports autonegotiate both speed and duplex, or set the port speed and duplex parameters on both ends of the connection.

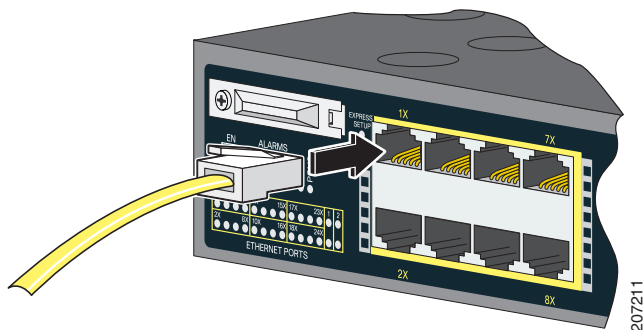
For simplified cabling, the automatic medium-dependent interface crossover (auto-MDIX) feature is enabled by default. With auto-MDIX enabled, the switch detects the required cable type for copper Ethernet connections and configures the interface accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a 10/100/1000 Ethernet port, regardless of the type of connected device.

See the switch software configuration guide or the switch command reference on Cisco.com for more information about autonegotiation and auto-MDIX.



If auto-MDIX is disabled, use the guidelines in [Table 11 on page 45](#) to select the cable for connecting the 10/100/1000 Ethernet ports to other devices. See the [Connector and Cable Specifications, page 71](#) appendix for cable-pinout descriptions. See [Figure 35 on page 45](#).

**Figure 35 Connecting to an Ethernet Port**



**Table 11 Ethernet Cables (Auto-MDIX Disabled)**

Device	Crossover Cable <sup>1</sup>	Straight-Through Cable <sup>1</sup>
Switch to switch	Yes	No
Switch to hub	Yes	No
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

1. 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, CAT5, CAT5e, or CAT6 cable. 10BASE-T traffic uses Category 3 or Category 4 cable.

## Connecting to the 10/100 PoE Ports

The Cisco IE-3010-16S-8PC switch 10/100 PoE ports have the same autonegotiation settings and cabling requirements as those in the [Connecting to the 10/100 and 10/100/1000 Ports, page 44](#). These ports provide PoE power.

See the [PoE Ports, page 7](#) for information on the cables and connectors.

The ports provide PoE support for devices compliant with IEEE 802.3af and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

On a per-port basis, you can control whether or not a port automatically provides power to a connected IP phone or an access point.

To access an advanced PoE planning tool, use the Cisco Power Calculator on Cisco.com:

<http://tools.cisco.com/cpc/launch.jsp>

You can use this application to calculate the power supply requirements for a specific PoE configuration. The results show output current, output power, and heat dissipation.

**Warning:** Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service

**people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072**

**Caution:** Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

## Where to Go Next

You can use the default configuration or use any of the management options described in the [Management Options, page 16](#) to change the switch settings.



# Power Supply Installation

This chapter describes how to remove and install a new or replacement power supply. Your switch ships with at least one installed power-supply module (AC or DC, depending on your order). The power-supply modules are field-replaceable units (FRUs) and are hot-swappable.

For translations of the safety warnings in this chapter, see the *Regulatory Compliance and Safety Information for the Cisco IE 3010 Switch* on the documentation CD and also on Cisco.com.

- [Power-Supply Modules, page 47](#)
- [Installation Guidelines, page 49](#)
- [Grounding the Switch, page 50](#)
- [Installing the Power-Supply Module in the Switch, page 51](#)
- [Wiring the Power Source, page 52](#)
- [Removing the Power-Supply Module, page 57](#)

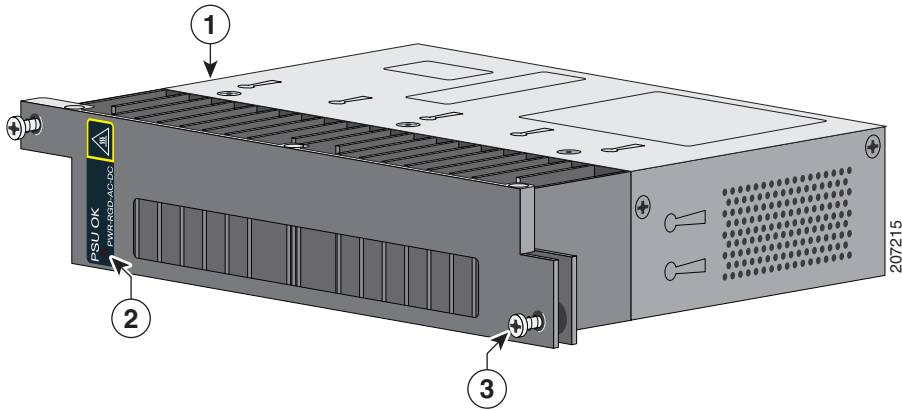
## Power-Supply Modules

For information on the power-supply modules, see [Power Supply Features, page 16](#).

**Table 12 Power-Supply Modules**

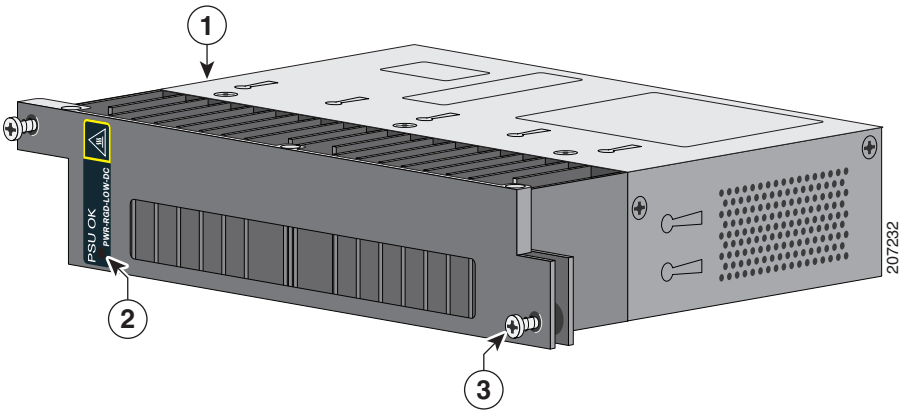
Model	Description
PWR-RGD-LOW-DC/IA	Low-voltage DC. For voltage information, see <a href="#">Table 18 on page 69</a> .
PWR-RGD-AC-DC/IA	High-voltage AC or DC. For voltage information, see <a href="#">Table 17 on page 69</a> .

**Figure 36 PWR-RGD-AC-DC/IA Power-Supply Module**



- 1 Power-supply module
- 2 PSU OK LED
- 3 Captive screw

**Figure 37 PWR-RGD-LOW-DC/IA Power-Supply Module**



- 1 Power-supply module
- 2 PSU OK LED
- 3 Captive screw

For a description of the PSU OK LEDs, see [Power-Supply Module LEDs](#), page 12.

## Power-Supply Module Installation

- [Installation Guidelines](#), page 49
- [Installing a Power-Supply Module](#), page 49
- [Wiring the Power Source](#), page 52
- [Removing the Power-Supply Module](#), page 57

## Installation Guidelines

Observe these guidelines when removing or installing a power-supply module:

A power-supply module that is only partially connected to the switch disrupts the system operation.

**Warning:** Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029

**Note:** You can order the blank cover (part number RPS-CG-COVER=).

**Warning:** Do not reach into a vacant slot while installing or removing a module. Exposed circuitry is an energy hazard. Statement 206

**Warning:** Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

**Warning:** Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. Statement 1088

## Installing a Power-Supply Module

This procedure is for installing a power-supply module in the PSU1 or PSU2 slot.

**Warning:** The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed. Statement 1077

**Warning:** This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

**Caution:** Equipment installation must comply with local and national electrical codes.

## Equipment That You Need

- Ratcheting torque flathead screwdriver that exerts up to 15-inch pound (in-lb) of torque
- Ring, spade, or flanged spade terminal (terminals should be insulated)
  - Ring terminal (such as Tyco part number 2-34158-1 for 16-14 AWG or 2-34852-1 for 12-10 AWG wire)
  - Spade terminal (such as Tyco part number 54367-2 for 16-14 AWG wire)
  - Flanged spade terminal (such as Tyco part number 2-324165-1 for 16-14 AWG wire or 1-324581-1 for 12-10 AWG wire)

For IP-30 compliance:

- Use the 16-14 AWG wire and appropriate terminals for the AC or high-voltage DC power supply
- Use the 12-10 AWG wire and appropriate terminals for the low-voltage DC power supply
- Crimping tool (such as Thomas & Bett part number WT2000, ERG-2001)
- 6-gauge copper ground wire (such as Belden part number 9906)
- 12-AWG wire (minimum) for the low-voltage power-supply module and 16-AWG (minimum) wire for the high-voltage power-supply module

- For power source connections, use wires rated for at least 194°F (90°C).
- UL- and CSA-rated style 1007 or 1569 twisted-pair copper wire (such as Belden part number 9318)
- Wire-stripping tools for stripping 6-, 10-, 12-, 14-, and 16-gauge wires.
- Number-2 Phillips screwdriver
- Flat-blade screwdriver

## Grounding the Switch

Follow the grounding procedures at your site and observe these warnings:

**Warning:** This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

**Warning:** When installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046

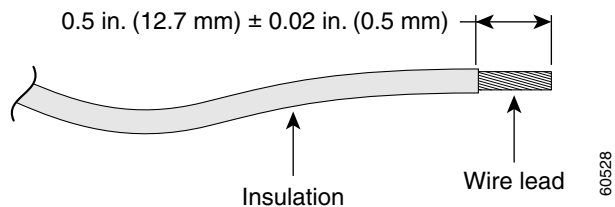
**Caution:** Follow the grounding procedure instructions, and use a UL-listed lug (included with the switch) for number-6 AWG wire and 10-32 ground-lug screws.

**Note:** You can use the grounding lug to attach a wrist strap for ESD protection during servicing.

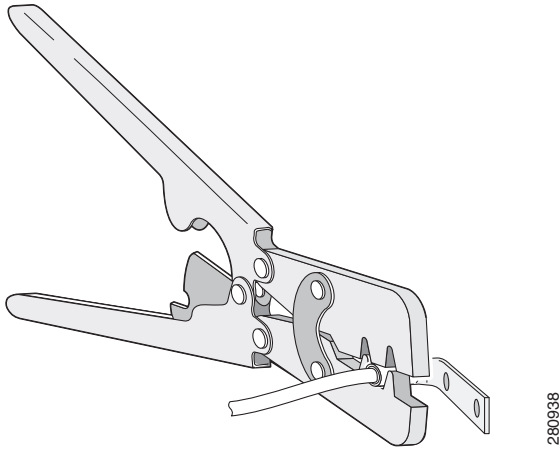
Follow these steps to install a dual-hole lug on the switch. Be sure to follow any grounding requirements at your site.

1. Use a Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head to remove the ground screw from the cable side of the switch. You need the screw in Step 4.
2. Strip the 6-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm). See [Figure 38 on page 50](#). Stripping more than the recommended amount of wire can leave exposed wire from the connector.

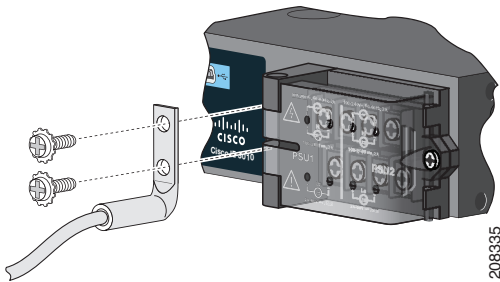
**Figure 38** Stripping the Ground Wire



3. Insert the ground wire into the terminal lug, and crimp the terminal to the wire. (see [Figure 39 on page 51](#)).

**Figure 39 Crimping the Terminal Lug**

4. Slide the ground screw from Step 1 through the terminal lug. Insert the ground screws into the opening on the cable side.

**Figure 40 Attaching the Terminal Lug**

- 1 Dual-hole terminal lug

5. Use a ratcheting torque screwdriver to tighten the ground screws to 30 in-lb ( $\pm 2$  in-lb).
6. Attach the other end of the ground wire to a grounded bare metal surface, such as a ground bus or a grounded bare rack.

## Installing the Power-Supply Module in the Switch

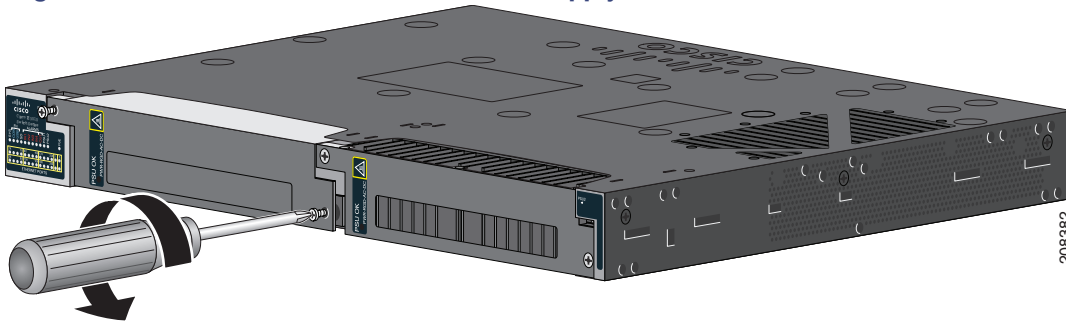
1. Ensure that the power is off at the AC or DC circuits.

Locate the circuit breakers, turn them OFF, and tape them in the OFF position.

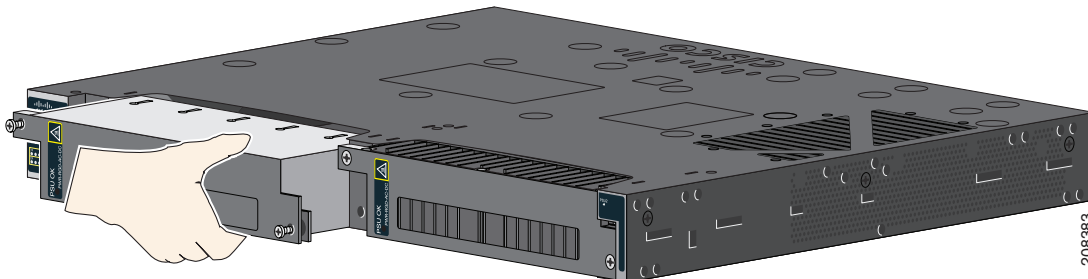
**Warning: If the power is not off at the AC or DC circuit breaker, do not touch the power-input terminal.**

2. Use a Phillips screwdriver to loosen the two captive screws of the blank power-supply module and gently pull it out. See [Figure 41 on page 52](#) and [Figure 42 on page 52](#).

**Figure 41** Loosen the Screws on the Power Supply Blank



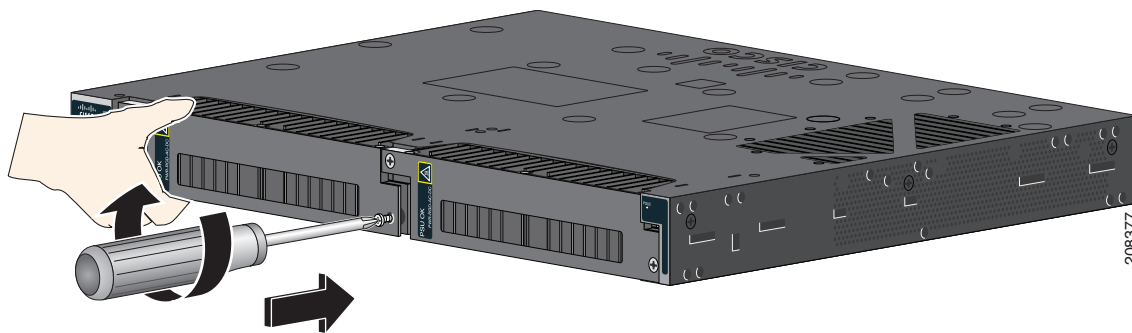
**Figure 42** Remove the Power Supply Blank



3. Insert the power-supply module into the slot, and gently push it in. See [Figure 43 on page 52](#).

**Note:** Ensure that the power supply module is flush with the switch.

**Figure 43** Insert the Power-Supply Module



4. Use a ratcheting torque screwdriver to torque each screw to 8-10 in-lb.

## Wiring the Power Source

Before you wire the power source, review these warnings:

**Warning:** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:

- AC: 5 A, DC: 15 A Statement 1005

**Warning:** A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022



**Warning:** Only trained and qualified personnel should be allowed to install or replace this equipment.  
**Statement 1030**

**Warning:** Hazardous voltage or energy may be present on power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place. **Statement 1086**

1. Ensure that the power is off at the AC or DC circuits.

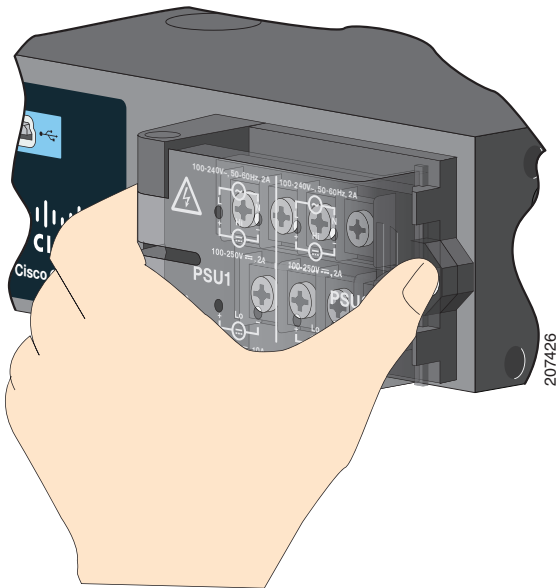
Locate the circuit breakers, turn them OFF, and tape them in the OFF position.

**Warning:** If the power is not off at the AC or DC circuit breaker, do not touch the power-input terminal.

**Note:** Do not connect the switch to a power source that has an ON/OFF switch.

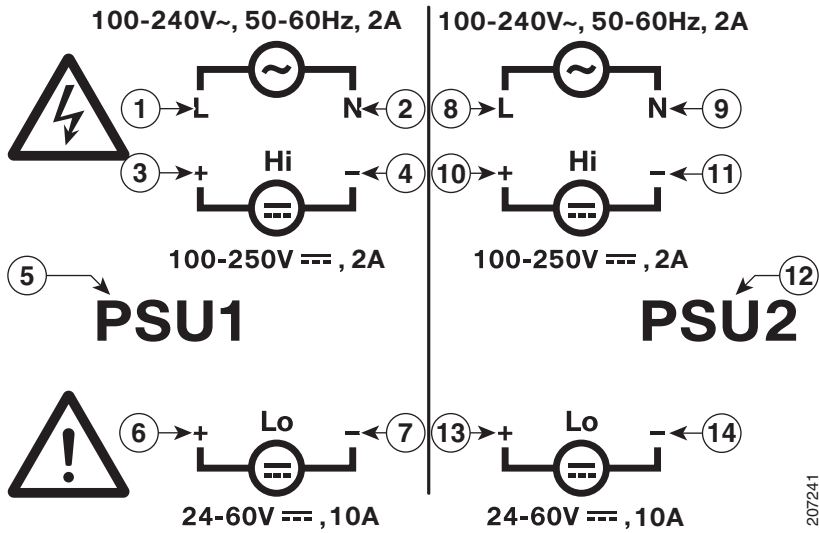
2. Use a Phillips screwdriver to loosen the captive screw on the power-input terminal, and open the cover.

**Figure 44** Opening the Power-Input Terminal Cover



The terminal screws labels are on the power-input terminal cover. See [Figure 45](#) on page 54.

Figure 45 Power-Input Terminal



- |   |  |    |  |
|---|--|----|--|
| 1 | Line connection for high-voltage AC (PSU1)     | 8  | Line connection for high-voltage AC (for PSU2) |
| 2 | Neutral connection for high-voltage AC (PSU1)  | 9  | Neutral connection for high-voltage AC (PSU2)  |
| 3 | Positive connection for high-voltage DC (PSU1) | 10 | Positive connection for high-voltage DC (PSU2) |
| 4 | Negative connection for high-voltage DC (PSU1) | 11 | Negative connection for high-voltage DC (PSU2) |
| 5 | PSU1 (power-supply module 1)                   | 12 | PSU2 (power-supply module 2)                   |
| 6 | Positive connection for low-voltage DC (PSU1)  | 13 | Positive connection for low-voltage DC (PSU2)  |
| 7 | Negative connection for low-voltage DC (PSU1)  | 14 | Negative connection for low-voltage DC (PSU2)  |

**Note:** The power-supply module 1 connection is labeled PSU1, and the power-supply module 2 connection is labeled PSU2. Make sure that you connect the wires to the correct terminal screws.

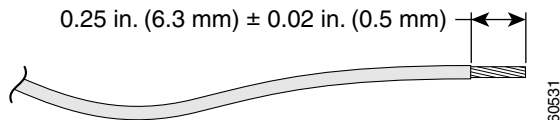
- Use twisted-pair copper wire (14- to 18-AWG) to connect from the power-input terminal to the power source.

**Note:** Use 12-AWG (minimum) for the low-voltage DC power supply module. Use 16-AWG (minimum) for the high-voltage AC or DC power supply module.

- Strip each of the two wires to 0.25 inch (6.3 mm) ± 0.02 inch (0.5 mm).

**Note:** 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 connector after installation.

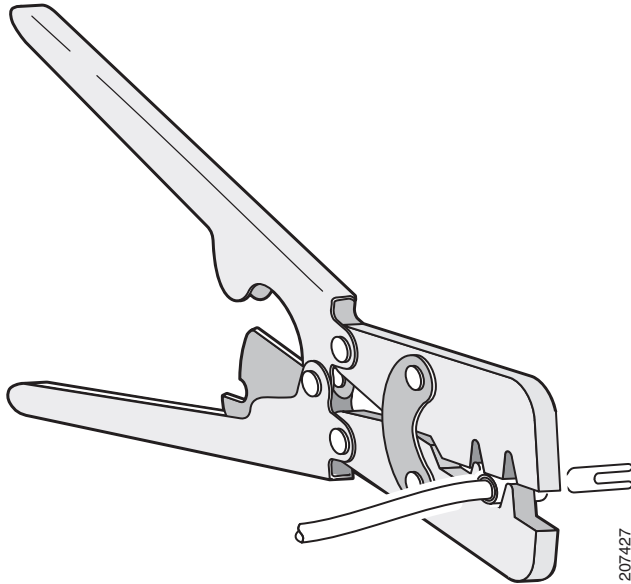
Figure 46 Stripping the Input Power Source Wire



- Insert the wire into a spade terminal, and crimp it to the wire.

You can also use a ring or flanged spade terminal as listed in the [Equipment That You Need, page 49](#).

**Figure 47 Crimping the Spade Terminal Lug**



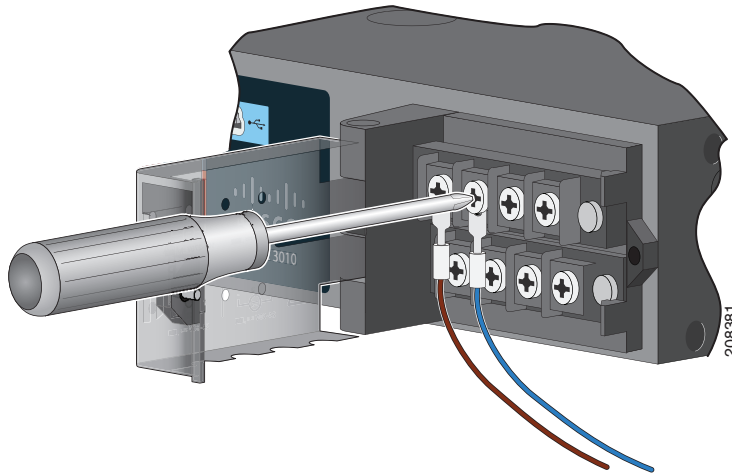
6. Loosen the terminal screw, and slide the terminal under the screw and washer. See [Figure 49 on page 56](#).

**Note:** Use the appropriate terminal screws based on power supply type: high-voltage (AC or DC) or low-voltage (DC).

7. Make the power connection:

**AC Power Connection**

- Connect the line wire into the terminal screw labeled *L* and the neutral wire into the terminal screw labeled *N* to complete the AC connection.

**Figure 48 Connecting the Wires to the High-Voltage AC Power (PSU1)****DC Power Connection**

- Connect the positive wire into the terminal screw labeled “+”, and the negative wire into the terminal screw labeled “-”.

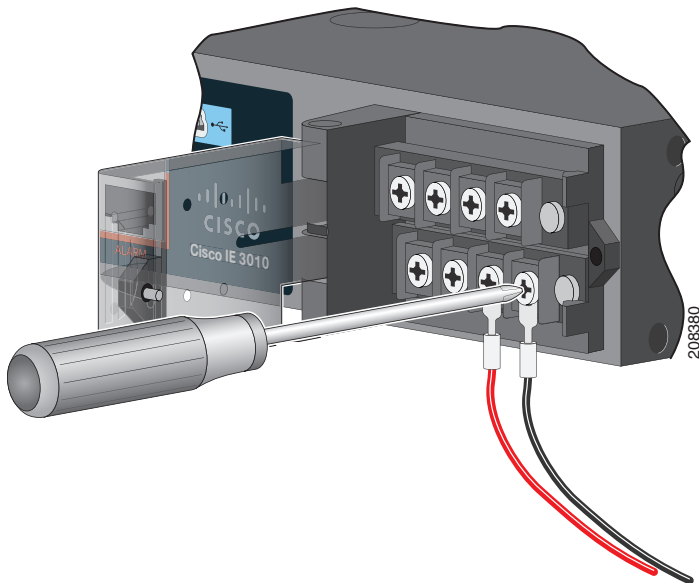
**Low-voltage DC Power-Supply Module**

- Connect the wires to the terminals labeled *Lo*.

**High-voltage DC Power-Supply Module**

- Connect the wires to the terminals labeled *Hi*.

**Note:** Ensure that you cannot see any wire lead. Only wire *with insulation* should extend from the terminal screw.

**Figure 49 Connecting the Wires to the Low-Voltage DC Power (PSU2)**

8. Torque the captive screws (above the wires) to 8.5 in-lb ( $\pm 0.5$  in-lb).
9. Complete the power connection:

## Removing the Power-Supply Module

**AC Power Connection**

- Connect the other end of the line wire (the one connected to *L*) to the line terminal on the AC-power source, and connect the other end of the neutral wire (the one connected to *N*) to the neutral terminal on the AC power source.

**DC Power Connection**

- Connect the other end of the positive wire (the one connected to “+”) to the positive terminal on the DC-power source, and connect the other end of the negative wire (the one connected to “-”) to the negative terminal on the DC power source.

**Note:** Ensure that you cannot see any wire lead. Only wire *with insulation* should extend from the terminal screw.

If you have two power supplies, repeat steps 1 through 10.

10. Close the power-input terminal cover.
11. Use a ratcheting torque screwdriver to torque the screw to 6–8 in-lb.
12. Turn on the power at the AC or DC circuit.
13. Verify that the *PSU1* or *PSU2* LED on the switch and *PSU OK* LED on the power-supply module are green.

See the switch software guide for information on how to configure the power supply settings.

## Removing the Power-Supply Module

The power-supply modules are hot-swappable. By removing the power-supply modules, you can power off the switch without disconnecting the wiring from the power-input terminal.

1. Ensure that the power is off at the AC or DC circuits.

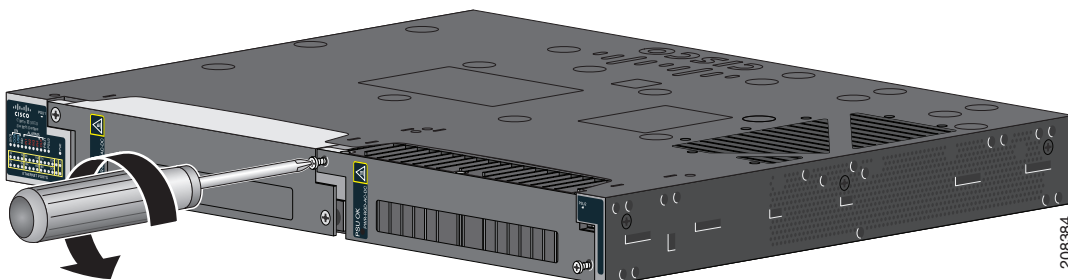
Locate the circuit breakers, turn them OFF, and tape them in the OFF position.

**Warning: If the power is not off at the AC or DC circuit breaker, do not touch the power-input terminal.**

2. Verify that the PSU LED and PSU OK LED is blinking red or is off.
3. Use a Phillips screwdriver to loosen the captive screws that secure the power-supply module to the switch. See [Figure 50 on page 57](#).

**Warning: Hot surface. Statement 1079**

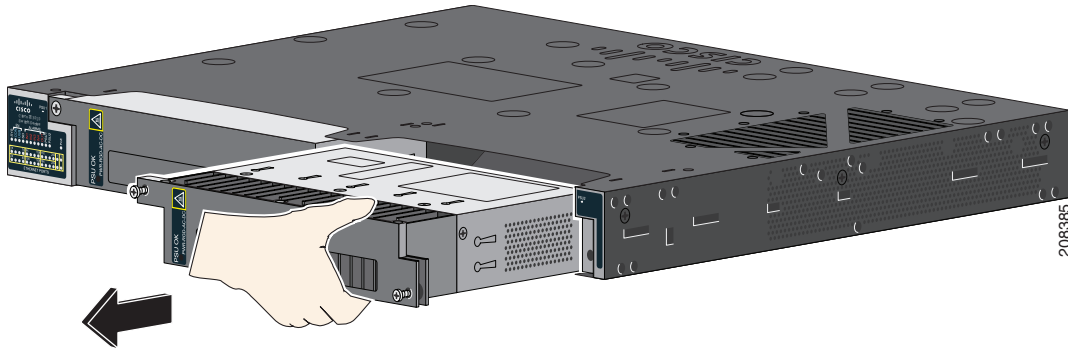
**Figure 50** Removing the Screws



4. Remove the power-supply module from the power slot. The power-supply module might be hot. See [Figure 51 on page 58](#).

5. Install a new power-supply module or a blank cover.

**Figure 51** Removing the Power-Supply Module



**Caution:** To prevent exposure to hazardous voltages and to contain electromagnetic interference (EMI), either a power-supply module or a blank cover must be in each power-supply module slot at all times. You can order the blank cover (part number RPS-CG-COVER=).



# Troubleshooting

- [Diagnosing Problems, page 59](#)
- [Resetting the Switch to the Factory Default Settings, page 62](#)
- [Finding the Switch Serial Number, page 62](#)

## Diagnosing Problems

The switch LEDs provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from Device Manager, the CLI, or an SNMP workstation. See the software configuration guide, the switch command reference guide on Cisco.com, or the documentation that came with your SNMP application for details.

## Switch POST Results

See [Verifying Switch Operation, page 18](#) for information on POST.

**Note:** POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

## Switch LEDs

Look at the port LEDs information when troubleshooting the switch. See [LEDs, page 11](#) for a description of the LED colors and their meanings.

## Switch Connections

### Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this problem because the port has many packet errors or it constantly flaps (loses and regains link).

- Exchange the copper or fiber-optic cable with a known good cable.
- Look for broken or missing pins on cable connectors.
- Rule out any bad patch panel connections or media converters between the source and the destination. If possible, bypass the patch panel, or eliminate media converters (fiber-optic-to-copper).
- Try the cable in another port to see if the problem follows the cable.

### Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable:

## Diagnosing Problems

- For Ethernet, use CAT3 copper cable for 10 Mb/s UTP connections. Use either CAT5, CAT5e, or CAT6 UTP for 10/100 or 10/100/1000 Mb/s connections.
- Verify that you have the correct fiber-optic cable for the distance and port type. Make sure that the connected device ports match and use the same type encoding, optical frequency, and fiber type.
- Determine if a copper crossover cable was used when a straight-through was required or the reverse. Enable auto-MDIX on the switch, or replace the cable. See [Table 11 on page 45](#) for recommended Ethernet cables.

## Link Status

Verify that both sides have link. A broken wire or a shutdown port can cause one side to show link even though the other side does not have link.

A port LED that is on does not guarantee that the cable is functional. It might have encountered physical stress, causing it to function at a marginal level. If the port LED does not turn on:

- Connect the cable from the switch to a known good device.
- Make sure that both ends of the cable are connected to the correct ports.
- Verify that both devices have power.
- Verify that you are using the correct cable type. See [Connector and Cable Specifications, page 71](#) for information.
- Look for loose connections. Sometimes a cable appears to be seated but is not. Disconnect the cable, and then reconnect it.

## 10/100 and 10/100/1000 Port Connections

A port appears to malfunction:

- Verify the status of all ports. See [Table 8 on page 13](#) for descriptions of the LEDs and their meanings.
- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shut down. Re-enable the port if necessary.
- Verify the cable type. See [Connector and Cable Specifications, page 71](#)

## 10/100 PoE Port Connections

A powered device connected to a PoE port does not receive power:

- Verify the status of all the ports. See [Table 8 on page 13](#) for descriptions of the LEDs and their meanings.
- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shutdown. Re-enable the port if necessary.
- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.

**Caution: Non-compliant cabling or powered devices can cause a PoE port fault. Use only compliant cabling to connect Cisco prestandard IP Phones, and wireless access points, or IEEE 802.3af-compliant devices.**

## SFP Module

Use only Cisco SFP modules. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding verifies that the module meets the requirements for the switch.



---

## Diagnosing Problems

- Inspect the SFP module. Exchange the suspect module with a known good module.
- Verify that the module is supported on this platform. (The switch release notes on Cisco.com list the SFP modules that the switch supports.)
- Use the **show interfaces** privileged EXEC command to see if the port or module is error-disabled, disabled, or shutdown. Re-enable the port if needed.
- Ensure that all connections are clean and securely connected.

## Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you re-enable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shut down on either side of the connection. If needed, re-enable the interface.

## Ping End Device

Ping from the directly connected switch first, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

## Spanning Tree Loops

STP loops can cause serious performance issues that look like port or interface problems.

A unidirectional link can cause loops. It occurs when the traffic sent by the switch is received by the neighbor, but the traffic from the neighbor is not received by the switch. A broken cable, other cabling problems, or a port issue could cause this one-way communication.

You can enable UniDirectional Link Detection (UDLD) on the switch to help identify unidirectional link problems. For information about enabling UDLD on the switch, see the “Understanding UDLD” section in the switch software configuration guide on Cisco.com.

## Switch Performance

### Speed, Duplex, and Autonegotiation

Port statistics that show a large amount of alignment errors, frame check sequence (FCS), or late-collisions errors, might mean a speed or duplex mismatch.

A common issue occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

## Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on the NIC. You can resolve this by upgrading the NIC driver to the latest version.

## Cabling Distance

If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines. See [Cables and Adapters, page 73](#).

# Resetting the Switch to the Factory Default Settings

Follow these steps to return your switch to the factory default settings.

**Note:** Resetting the switch deletes the configuration and reboots the switch.

To reset the switch:

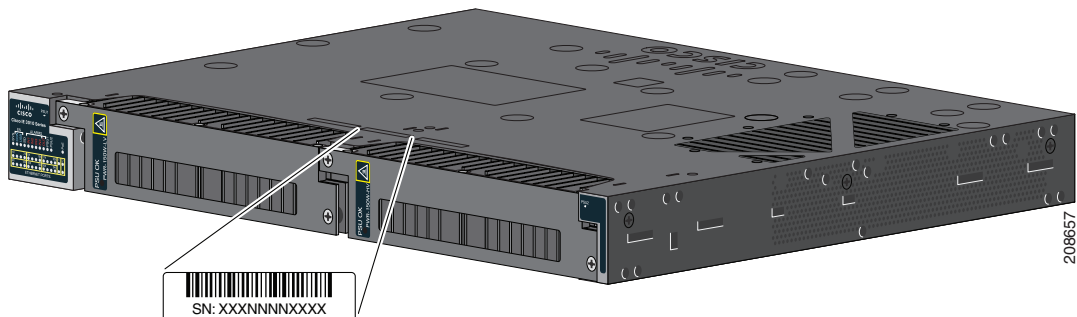
1. At the switch prompt, enter **enable**, and press **Return** or **Enter**.
2. At the Privileged EXEC prompt, `switch#`, enter **setup** and press **Return** or **Enter**.

The switch displays the prompt to run the initial configuration dialog. See [Configuring the Switch with the CLI Setup Program, page 81](#)

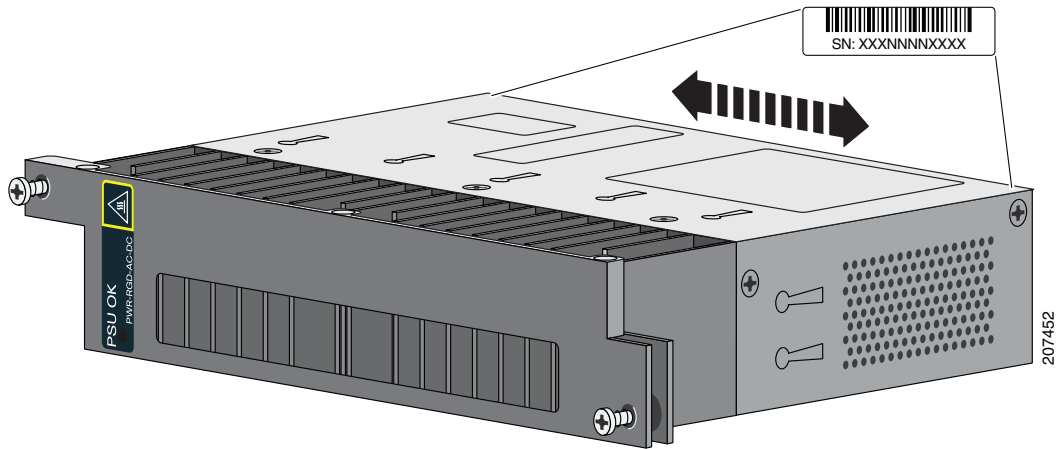
## Finding the Switch Serial Number

If you contact Cisco Technical Assistance, you need to know the switch serial number. [Figure 52 on page 62](#) and [Figure 53 on page 63](#) show the serial number locations. You can also use the **show version** privileged EXEC command to see the switch serial number.

**Figure 52** Serial Number Location for Cisco IE-3010-24TC and IE-3010-16S-8PC Switches



**Figure 53** Serial Number Location for the Power-Supply Modules







# Technical Specifications

- [Switch Specifications, page 65](#)
- [Power-Supply Module Specifications, page 68](#)
- [Alarm Ratings, page 69](#)

## Switch Specifications

**Table 13 Environmental and Physical Specifications**

Environmental Ranges	
Operating temperature <sup>1</sup>	-40C to +74C <ul style="list-style-type: none"> <li>■ -40C to +70C (Vented Enclosure Operating)</li> <li>■ -40C to +60C (Sealed Enclosure Operating)</li> <li>■ -34C to +74C (100LFM or more Fan or Blower equipped Enclosure Operating)</li> <li>■ -40C to +85C (Type Tested to +85C for 16 hours) <sup>2</sup></li> </ul>
Storage temperature	-40 to 185° F (-40 to 85° C)
Relative humidity	5 to 95% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4570 m)
Thermal spacing	1.75 in. (4.4 cm)
Operating shock	30 g at 11 ms
Physical Specifications	
Weight	
Cisco IE-3010-24TC	9.1 lb (4.1 kg) (no power-supply module)
Cisco IE-3010-16S-8PC	10 lb (4.5 kg) (no power-supply module)
Dimensions (H x W x D)	
Cisco IE-3010-24TC	1.75 x 17.5 x 14.0 in. (4.45 x 44.5 x 35.6 cm)
Cisco IE-3010-16S-8PC	1.75 x 17.5 x 14.0 in. (4.45 x 44.5 x 35.6 cm)

1. Operating temperatures exceeding 60C are not covered by the product safety certifications and approvals. However, the switch can function in the installations under the environmental conditions listed.
2. The maximum operating temperature of the switch varies depending on the type of SFP module that you use.

**Table 14 Technical Specifications for the Cisco IE 3010-16S-8PC Switch**

Power Requirements	
Nominal input voltage	<p>PWR-RGD-AC-DC/IA: 100 to 240 VAC, 50 to 60 Hz 100 to 250 VDC</p> <p>PWR-RGD-LOW-DC/IA: 24 to 60 VDC</p>
Absolute maximum (short term) input voltage	<p>PWR-RGD-AC-DC/IA: 85 to 265 VAC, 47 to 63 Hz 88 to 300 VDC</p> <p>PWR-RGD-LOW-DC/IA: 18 to 75 VDC</p>
Power consumption with one PWR-RGD-AC-DC/IA power-supply module	<p>AC: 147 BTUs per hour 43.2 W Power rating: 0.044 KVA@115 V</p>
	<p>DC: 137 BTUs per hour 40.3 W Power rating: 0.0403 KVA@125 VDC</p>
Power consumption with one PWR-RGD-AC-DC/IA power-supply module (with PoE on 4 ports)	<p>AC: 376 BTUs per hour 110.1 W Power rating 0.11 KVA@115 V</p>
	<p>DC: 375 BTUs per hour 109.8 W Power rating: 0.109 KVA@125 VDC</p>
Power consumption with two PWR-RGD-AC-DC/IA power-supply modules	<p>AC: 166 BTUs per hour 48.8 W Power rating: 0.051 KVA@115 V</p>
	<p>DC: 167 BTUs per hour 48.9 W Power rating: 0.0489 KVA@125 VDC</p>

**Table 14 Technical Specifications for the Cisco IE 3010-16S-8PC Switch (continued)**

Power consumption with two PWR-RGD-AC-DC/IA power-supply modules (with PoE on 8 ports)	AC: 628 BTUs per hour 184.1 W Power rating: 0.185 KVA@115 V
	DC: 622 BTUs per hour 182.2 W Power rating: 0.182 KVA@125 VDC
Power consumption with one PWR-RGD-LOW-DC/IA power-supply module	DC: 116 BTUs per hour 34.2 W Power rating: 0.034 KVA@24 VDC
Power consumption with one PWR-RGD-LOW-DC/IA power-supply module (with PoE on 4 ports)	DC: 363 BTUs per hour 106 W Power rating: 0.106 KVA@24 VDC
Power consumption with two PWR-RGD-LOW-DC/IA power-supply modules	DC: 127 BTUs per hour 37.1 W Power rating: 0.037 KVA@24 VDC
Power consumption with two PWR-RGD-LOW-DC/IA power-supply modules (with PoE on 8 ports)	DC: 622 BTUs per hour 181.9 W Power rating: 0.182 KVA@24 VDC

**Table 15 Technical Specifications for the Cisco IE-3010-24TC Switch**

<b>Power Requirements</b>	
Nominal input voltage	PWR-RGD-AC-DC/IA: 100 to 240 VAC, 50 to 60 Hz 100 to 250 VDC PWR-RGD-LOW-DC/IA: 24 to 60 VDC
Absolute maximum (short term) input voltage	PWR-RGD-AC-DC/IA: 85 to 265 VAC, 47 to 63 Hz 88 to 300 VDC PWR-RGD-LOW-DC/IA: 18 to 75 VDC

**Table 15 Technical Specifications for the Cisco IE-3010-24TC Switch (continued)**

Power consumption with one PWR-RGD-AC-DC/IA power-supply module	AC: 102 BTUs per hour 29.8 W Power rating: 0.031 KVA@115 V
	DC: 98 BTUs per hour 28.6 W Power rating: 0.0286 KVA@125 VDC
Power consumption with two PWR-RGD-AC-DC/IA power-supply modules	AC: 121 BTUs per hour 35.5 W Power rating: 0.0367 KVA@115 V
	DC: 117 BTUs per hour 34.4 W Power rating: 0.0344 KVA@ 125 VDC
Power consumption with one PWR-RGD-LOW-DC/IA power-supply module	DC: 92 BTUs per hour 26.8 W Power rating: 0.027 KVA@ 24 VDC
Power consumption with two PWR-RGD-LOW-DC/IA power-supply modules	DC: 105 BTUs per hour 30.7 W Power rating: 0.030 KVA@ 24 VDC

## Power-Supply Module Specifications

**Table 16 Environmental and Physical Specifications for the AC- and DC-Power-Supply Modules**

Environmental Ranges	
Operating temperature	-40 to 140°F (-40 to 60°C)
Storage temperature	-49 to 185°F (-45 to 85°C)
Relative humidity	5 to 95% (noncondensing)
Altitude	Up to 10,000 ft (3049 m)
Physical Specifications	
Weight	
PWR-RGD-AC-DC/IA	2.55 lb (1.15 kg)
PWR-RGD-LOW-DC/IA	2.5 lb (1.13 kg)
Dimensions (H x W x D)	
PWR-RGD-AC-DC/IA	1.58 x 7 x 5 in. (4 x 17.8 x 12.7 cm) (without mounting flanges)
PWR-RGD-LOW-DC/IA	1.58 x 8.15 x 5 in. (4 x 20.7 x 12.7 cm) (with mounting flanges)



**Table 17 Technical Specifications for the PWR-RGD-AC-DC/IA Power-Supply Module**

Power Specifications	
Maximum output power	150 W
Nominal input voltage	100 to 240 VAC, 50 to 60 Hz 100 to 250 VDC
Absolute maximum (short term) input voltage	85 to 265 VAC, 47 to 63 Hz 88 to 300 VDC
Input current	AC: 2.2 to 0.7 A, 85 to 265 VAC DC: 2.5 to 0.6 A, 88 to 300 VDC
Total input BTU	AC: 638 BTUs per hour DC: 750 BTUs per hour

**Table 18 Technical Specifications for the PWR-RGD-LOW-DC/IA Power-Supply Module**

Power Specifications	
Maximum output power	150 W
Nominal input voltage	24 to 60 VDC
Absolute maximum (short term) input voltage	18 to 75 VDC
Input current	12 to 2.5 A, 18 to 75 VDC
Total input BTU	737 BTUs per hour

## Alarm Ratings

**Table 19 Alarm Input and Output Ratings**

Alarm Ratings	
Alarm input electrical specification	8 V @ 1mA
Alarm output electrical specification	30 V @ 1A  <b>Note:</b> The alarm output does not support AC voltage because the RJ-45 connector pin spacing is too small.





# Connector and Cable Specifications

- [Connector Specifications, page 71](#)
- [Cables and Adapters, page 73](#)

## Connector Specifications

- [10/100, page 71](#)
- [SFP Module Connectors, page 72](#)
- [Dual-Purpose Ports, page 72](#)
- [Alarm Port, page 73](#)

### 10/100

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers. These ports have the send (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached.

**Figure 54 10/100 Port Pinouts**

Pin	Label	1	2	3	4	5	6	7	8
1	RD+								
2	RD-								
3	TD+								
4	NC								
5	NC								
6	TD-								
7	NC								
8	NC								

When connecting 10/100 ports to devices such as servers, workstations, and routers, you can use a two or four twisted-pair straight-through cable wired for 10BASE-T and 100BASE-TX. [Figure 59 on page 77](#) shows the two twisted-pair straight-through cable schematics. [Figure 61 on page 77](#) shows the four twisted-pair straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you can use a two or four twisted-pair crossover cable. [Figure 60 on page 77](#) shows the two twisted-pair crossover cable schematics. [Figure 62 on page 77](#) shows the four twisted-pair crossover cable schematics.

If auto-MDIX is disabled, use a straight-through cable to connect ports when only one port is labeled with an X. Use a crossover cable to connect ports when both ports are labeled with an X or when both ports are not labeled with an X.

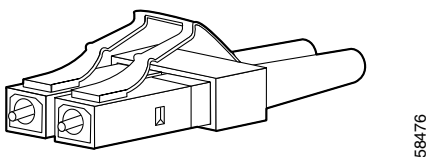
You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 (or higher) cabling when connecting to 100BASE-TX-compatible devices.

**Note:** You can use the `mdix auto` interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (auto-MDIX) feature. When the auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

## SFP Module Connectors

Figure 55 on page 72 shows the MT-RJ SFP module fiber-optic connector.

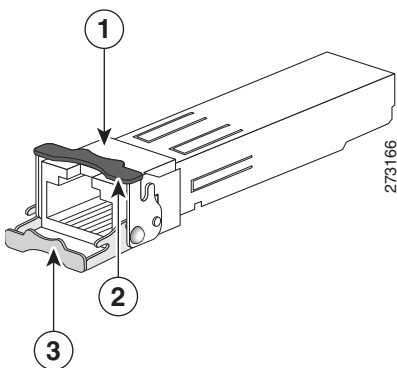
**Figure 55 Fiber-Optic SFP Module LC Connector**



**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

Figure 56 on page 72 shows the 1000BASE-T SFP module RJ-45 connector.

**Figure 56 1000BASE-T SFP Module Connector**



- |   |   |
|---|---|
| <p><b>1</b> RJ-45 connector</p> <p><b>2</b> Bale-clasp latching mechanism in the closed (locked) position</p> | <p><b>3</b> Bale-clasp latching mechanism in the open (unlocked) position</p> |
|---|---|

## Dual-Purpose Ports

The 10/100/1000 Ethernet ports on the dual-purpose ports use RJ-45 connectors.

**Figure 57 10/100/1000 Port Pinouts**

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

## Alarm Port

The alarm port uses an RJ-45 connector. See the [Alarm Ports, page 10](#) for more information. For information on alarm ratings, see the [Alarm Ratings, page 69](#).

**Figure 58 Alarm Port Pinouts**

Pin	Alarm connection	1 2 3 4 5 6 7 8
1	Alarm 1 input	
2	Alarm 2 input	
3	Normally closed	
4	Alarm 3 input	
5	Alarm 4 input	
6	Normally open	
7	Alarm output common	
8	Alarm input common	

## Cables and Adapters

- [SFP Module Cables, page 74](#)
- [Cable Pinouts, page 77](#)
- [Console Port Adapter Pinouts, page 78](#)

## SFP Module Cables

Each port must match the wave-length specifications on each end of the cable, and for reliable communications, the cable must not exceed the allowable length. Copper 1000BASE-T SFP transceivers use standard four twisted-pair, CAT5 (or greater) cable at lengths up to 328 feet (100 meters).

### Notes

- The maximum operating temperature of the switch varies depending on SFP module type. See [Table 2 on page 8](#) for information on the supported temperature ranges.
- Modal bandwidth applies only to multimode fiber (MMF).
- A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers.
- 1000BASE-LX/LH SFP modules connected with MMF over a short link distance require a mode-conditioning patch cord.

Ordinary patch cords can cause transceiver saturation, resulting in an elevated bit error rate (BER). Using the 1000BASE-LX/LH SFP module with 62.5-micron diameter multimode fiber (MMF) requires a mode-conditioning patch cord between the single mode fiber (SMF) SFP module and the MMF cable on both the send and receive link ends.

- Link distances greater than 984 feet (300 m) require a mode-conditioning patch cord.
- 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) by using dispersion-shifted SMF or low-attenuation SMF. The distance depends on fiber quality, the number of splices, and the connectors.
- When the fiber-optic cable span is less than 15.43 miles (25 km), insert a 5-decibel (dB) or 10-dB inline optical attenuator between the fiber-optic cable plant and the receiving port on the 1000BASE-ZX SFP module.

**Table 20 Fiber-Optic SFP Module Port Cabling Specifications**

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
<b>Industrial and Rugged SFPs</b>					
1000BASE-SX (GLC-SX-MM-RGD)	850	MMF	62.5/125	160	722 feet (220 m)
			62.5/125	200	902 feet (275 m)
			50/125	400	1640 feet (500 m)
			50/125	500	1804 feet (550 m)
1000BASE-LX/LH (GLC-LX-MM-RGD)	1310	SMF	G.652	–	32,810 feet (10 km)
100BASE-LX (GLC-FE-100LX-RGD)	1310	SMF	G.652	–	32,810 feet (10 km)
100BASE-FX (GLC-FE-100FX-RGD)	1310	MMF	50/125	500	6,562 feet (2 km)
			62.5/125	500	6,562 feet (2 km)
1000BASE-ZX (GLC-ZX-SM-RGD)	1550	SMF	G.652	–	43.4 to 62 miles (70 to 100 km)
1000BASE-BX-D (GLC-BX40-D-I GLC-BX40-DA-I GLC-BX80-D-I)	1550	SMF	G.652	–	24.9 miles (40 km)
	1490				24.9 miles (40 km)
	1570				49.8 miles (80 km)

**Table 20 Fiber-Optic SFP Module Port Cabling Specifications (continued)**

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
1000BASE-BX-U (GLC-BX40-U-I GLC-BX80-U-I)	1310	SMF	G.652	–	24.9 miles (40 km)
	1490				49.8 miles (80 km)
<b>Commercial SFPs</b>					
1000BASE-BX10-D (GLC-BX-D)	1490 TX 1310 RX	SMF	G.652	–	32,810 feet (10 km)
100BASE-LX (GLC-FE-100LX)	1310	SMF	G.652	–	32,810 feet (10 km)
100BASE-BX (GLC-FE-100BX-D GLC-FE-100BX-U)	1310 TX 1550 RX	SMF	G.652	–	32,810 feet (10 km)
100BASE-FX (GLC-FE-100FX)	1310	MMF	50/125	500	6,562 feet (2 km)
			62.5/125	500	6,562 feet (2 km)
100BASE-EX (GLC-FE-100EX)	1310	SMF	G.652	–	131,240 feet (40 km)
100BASE-ZX (GLC-FE-100ZX)	1550	SMF	G.652	–	262,480 feet (80 km)
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	G.652	–	62 miles (100 km)
<b>Extended temperature SFPs</b>					
1000BASE LX/LH (SFP-GE-L)	1300	MMF or SMF	62.2	500	1804 feet (550 m)
			50	400	1804 feet (550 m)
			50	500	1804 feet (550 m)
			9/10	–	6.2 miles (10 km)
1000BASE SX (SFP-GE-S)	850	MMF	62.5	160	722 feet (220 m)
			62.5	200	902 feet (275 m)
			50.0	400	1640 feet (500 m)
			50.0	500	1804 feet (550 m)
1000BASE ZX (SFP-GE-Z)	1550	SMF	9/10	–	43.5 miles (70 km)
		SMF	8	–	62.1 miles (100 km)

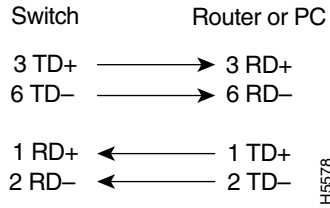
**Table 20 Fiber-Optic SFP Module Port Cabling Specifications (continued)**

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
1000BASE LX/LH GLC-LH-SMD	1310	MMF	62.5	500	1804 feet (550 m)
			50.0	400	1804 feet (550 m)
			50.0	500	1804 feet (550 m)
		SMF	G.652	–	6.2 miles (10 km)
1000BASE EX (GLC-EX-SMD)	1310	SMF	G.652	–	24.9 miles (40 km)
1000BASE ZX (GLC-ZX-SMD)	1550	SMF	–	–	43.5 miles (70 km)
					62.1 miles (100 km)

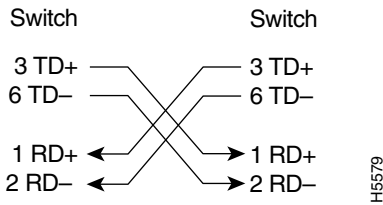


## Cable Pinouts

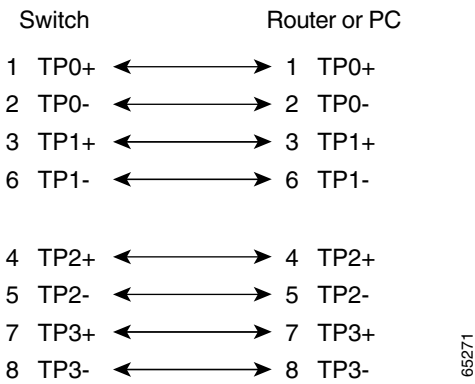
**Figure 59 Two Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports**



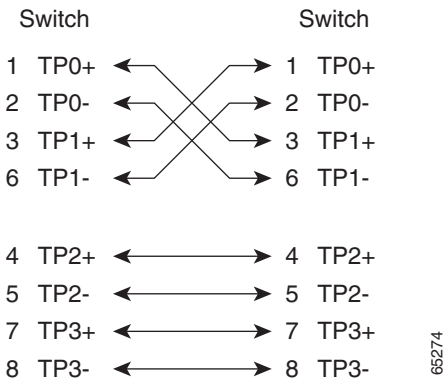
**Figure 60 Two Twisted-Pair Crossover Cable Schematic for 10/100 Ports**



**Figure 61 Four Twisted-Pair Straight-Through Cable Schematic for 1000BASE-T Ports**

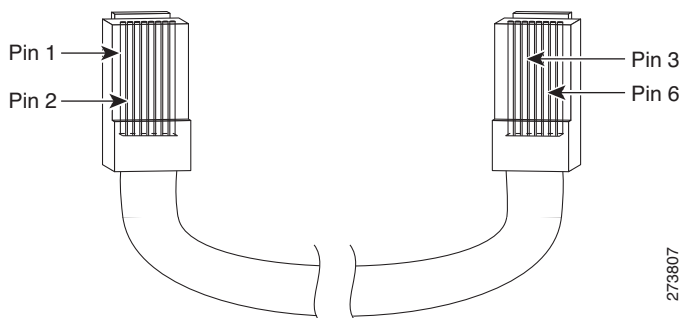


**Figure 62 Four Twisted-Pair Crossover Cable Schematics for 1000BASE-T Ports**



To identify a crossover cable, hold the cable ends side-by-side, with the tab at the back. The wire connected to pin 1 on the left end should be the same color as the wire connected to pin 3 on the right end. The wire connected to pin 2 on the left end should be the same color as the wire connected to pin 6 on the right end.

**Figure 63 Identifying a Crossover Cable**



## Console Port Adapter Pinouts

The console port uses an 8-pin RJ-45 connector, which is described in [Table 21 on page 78](#) and [Table 22 on page 79](#). If you did not order a console cable, you need to provide an RJ-45-to-DB-9 adapter cable to connect the switch console port to a PC console port. You need to provide an RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order an adapter (part number ACS-DSBUASYN=). For console port and adapter pinout information, see [Table 21 on page 78](#) and [Table 22 on page 79](#).

[Table 21 on page 78](#) lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

**Table 21 Console Port Signaling Using a DB-9 Adapter**

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

[Table 22 on page 79](#) lists the pinouts for the switch console port, RJ-45-to-DB-25 female DTE adapter, and the console device.

**Note:** The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order this adapter from Cisco (part number ACS-DSBUASYN=).

**Table 22 Console Port Signaling Using a DB-25 Adapter**

Switch Console Port (DTE)	RJ-45-to-DB-25 Adapter	Console Device
Signal	DB-25 Pin	Signal
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS





# Configuring the Switch with the CLI Setup Program

This appendix provides a command-line interface (CLI) setup procedure for a standalone switch. To set up the switch by using Express Setup, see the *Cisco IE 3010 Switch Getting Started Guide*. Before connecting the switch to a power source, review the safety warnings in [Switch Installation, page 17](#) and [Power Supply Installation, page 47](#)

## Accessing the CLI Through the Console Port

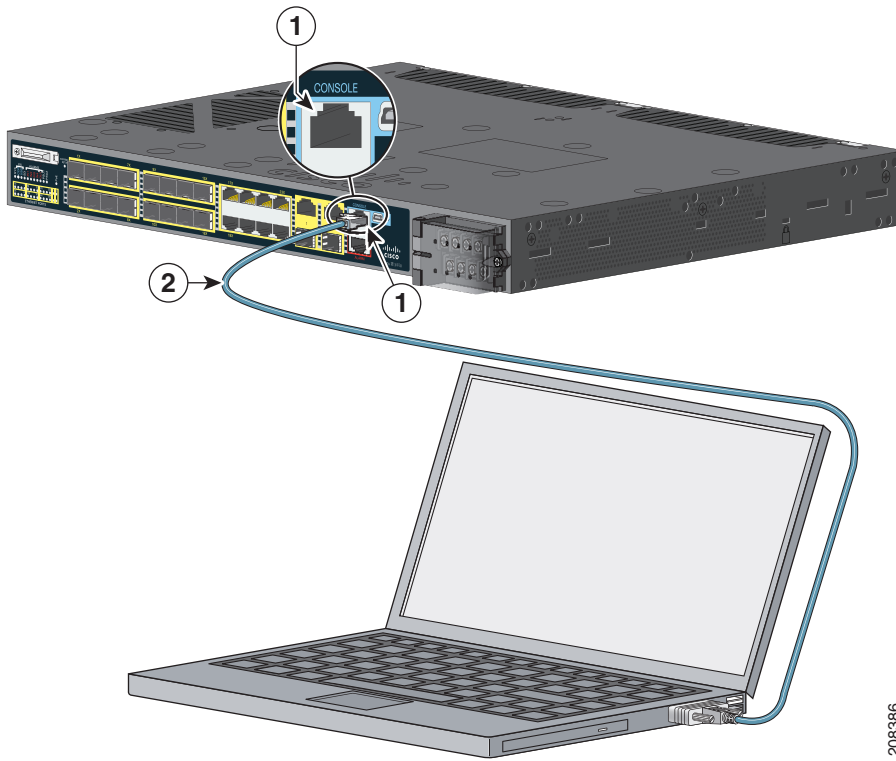
You can enter Cisco IOS commands and parameters through the CLI. Use one of these options to access the CLI:

- [RJ-45 Console Port, page 81](#)
- [USB Console Port, page 82](#)

### RJ-45 Console Port

1. Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.
2. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

**Figure 64** Connecting the Console Cable



- 1 RJ-45 console port
- 2 Console cable (RJ-45-to-DB-9 adapter cable)

3. Configure the baud rate and character format of the PC or terminal to match the console port characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

4. Connect power to the switch as described in [Power Supply Installation, page 47](#)

5. The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the [Completing the Setup Program, page 86](#).

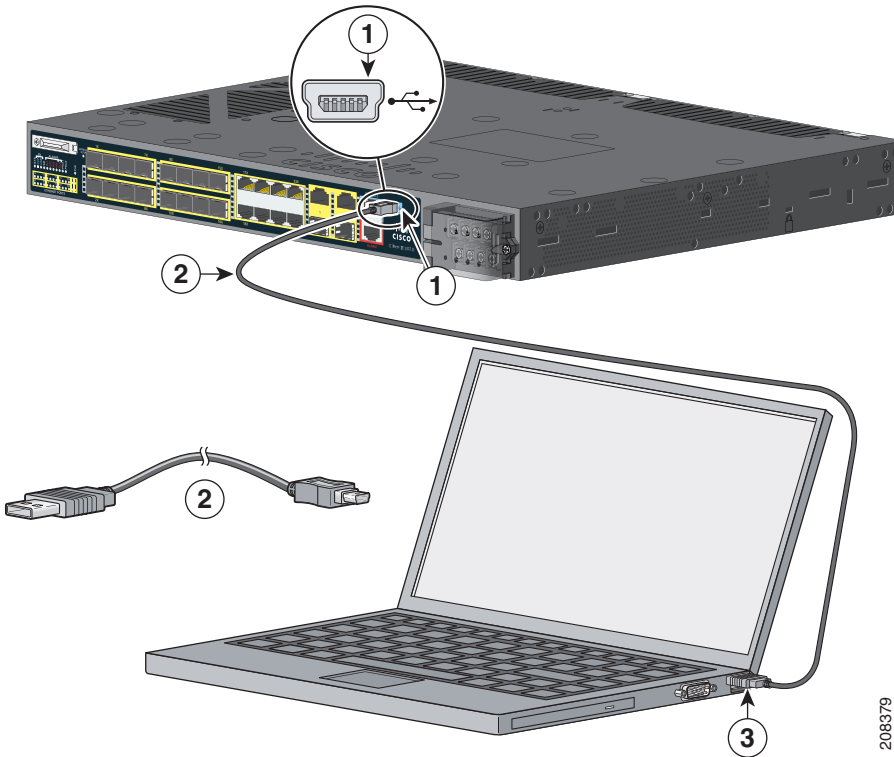
## USB Console Port

1. If you are connecting the switch USB console port to a Windows-based PC for the first time, install a USB driver. See [Figure 65 on page 83](#).

- [Installing the Cisco Microsoft Windows XP USB Driver, page 84](#)
- [Installing the Cisco Microsoft Windows 2000 USB Driver, page 84](#)

- [Installing the Cisco Microsoft Windows Vista USB Driver, page 85](#)

**Figure 65 Connecting the USB Console Cable**



- 1 USB console port
- 2 USB cable
- 3 USB port on the PC

2. Connect an USB cable to the PC USB port, and connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port. See [Figure 65 on page 83](#).

3. To identify the COM port assigned to the USB console port:

- a. Choose **Start > Control Panel > Systems**
- b. Click the **Hardware** tab and choose **Device Manager**.
- c. Expand the **Ports** section.

The assigned COM port appears in parenthesis at the end of the line with this entry: Cisco USB System Management Console.

4. Start the terminal-emulation program on the PC or the terminal.

The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication possible between the switch and your PC or terminal.

5. Configure the COM port.

6. Configure the baud rate and character format of the PC or terminal to match the console port characteristics:

## Accessing the CLI Through the Console Port

- 9600 baud
  - 8 data bits
  - 1 stop bit
  - No parity
  - None (flow control)
7. Connect power to the switch as described in [Power Supply Installation, page 47](#)  
The PC or terminal displays the bootloader sequence.
  8. Press **Enter** to display the setup prompt.
  9. Follow the steps in the [Completing the Setup Program, page 86](#).

## Installing the Cisco Microsoft Windows USB Device Drivers

### Installing the Cisco Microsoft Windows XP USB Driver

1. Obtain the file `Cisco_usbconsole_driver.zip` from Cisco.com, and unzip it.  
**Note:** You can download the driver file from the Cisco.com software download site.
  - If using 32-bit Windows XP, **double-click the setup.exe** file in the `Windows_32` folder.
  - If using 64-bit Windows XP, **double-click the setup(x64).exe file** in the `Windows_64` folder.The Cisco Virtual Com InstallShield Wizard begins.  
The Ready to Install the Program window appears.
2. Click **Install**.  
The InstallShield Wizard Completed window appears.
3. Click **Finish**.
4. Connect the USB cable to the PC and to the switch console port.  
The USB console port LED turns green, and the Found New Hardware Wizard appears.
5. Follow the instructions to complete the driver installation.

### Installing the Cisco Microsoft Windows 2000 USB Driver

1. Obtain the file `Cisco_usbconsole_driver.zip` from Cisco.com, and unzip it.  
**Note:** You can download the driver file from the Cisco.com software download site.
2. Double-click the `setup.exe` file.  
The Cisco Virtual Com InstallShield Wizard begins.
3. Click **Next**.  
The Ready to Install the Program window appears.



## Accessing the CLI Through the Console Port

**4. Click **Install**.**

The InstallShield Wizard Completed window appears.

**5. Click **Finish**.**

**6. Connect the USB cable to the PC and to the switch console port.**

The USB console port LED turns green, and the Found New Hardware Wizard appears.

**7. Follow the instructions to complete the driver installation.**

## Installing the Cisco Microsoft Windows Vista USB Driver

**1. Obtain the file Cisco\_usbconsole\_driver.zip from Cisco.com, and unzip it.**

**Note:** You can download the driver file from the Cisco.com software download site.

**2. Start the Cisco Virtual Com InstallShield Wizard:**

- If using 32-bit Windows Vista, **double-click the setup.exe** file in the Windows\_32 folder.
- If using 64-bit Windows Vista, **double-click the setup(x64).exe** file in the Windows\_64 folder.

The Cisco Virtual Com InstallShield Wizard begins.

**3. Click **Next**.**

The Ready to Install the Program window appears.

**4. Click **Install**.**

**Note:** If a User Account Control warning appears, click *Allow - I trust this program*.

The InstallShield Wizard Completed window appears.

**5. Click **Finish**.**

**6. Connect the USB cable to the PC and to the switch console port.**

The USB console port LED turns green, and the Found New Hardware Wizard appears.

**7. Follow the instructions to complete the driver installation.**

## Uninstalling the Cisco Microsoft Windows USB Drivers

### Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver

The driver can be removed with the Windows Add or Remove Programs utility or with the setup.exe file.

#### Using the Add or Remove Programs Utility

**Note:** Disconnect the switch console terminal before uninstalling the driver.

**1. Choose **Start > Control Panel > Add or Remove** Programs.**

**2. Scroll to Cisco Virtual Com, and click **Remove**.**

**3. When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.**

## Entering the Initial Configuration Information

### Using the Setup.exe Program

**Note:** Disconnect the switch console terminal before uninstalling the driver.

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64-bit. Click **Next**.
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next**.
3. When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.
4. When the Remove the Program window appears, click **Remove**.
5. When the InstallShield Wizard Completed window appears, click **Finish**.

### Uninstalling the Cisco Microsoft Windows Vista USB Driver

**Note:** Disconnect the switch console terminal before uninstalling the driver.

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next**.
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next**.
3. When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.
4. When the Remove the Program window appears, click **Remove**.

**Note:** If a User Account Control warning appears, click *Allow - I trust this program* to proceed.

5. When the InstallShield Wizard Completed window appears, click **Finish**.

## Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch powers on. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet.

### IP Settings

You need this information:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

### Completing the Setup Program

Follow these steps to complete the setup program and to create an initial configuration for the switch:

1. Enter **Yes** at the following prompts:

```
Would you like to enter the initial configuration dialog? [yes/no]: yes
```

## Entering the Initial Configuration Information

At any point you may enter a question mark '?' for help.  
Use ctrl-c to abort configuration dialog at any prompt.  
Default settings are in square brackets '['].

Basic management setup configures only enough connectivity  
for management of the system, extended setup will ask you  
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: **yes**

### 2. Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters and on a member switch to 31 characters. Do not use *-n*, where *n* is a number, as the last character in a host name for any switch.

Enter host name [Switch]: *host\_name*

### 3. Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted, and the enable password is in plain text.

Enter enable secret: *secret\_password*

### 4. Enter an enable password, and press **Return**.

Enter enable password: *enable\_password*

### 5. Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

Enter virtual terminal password: *terminal-password*

### 6. (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI. To configure SNMP later, enter **no**.

Configure SNMP Network Management? [no]: **no**

### 7. Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

Enter interface name used to connect to the  
management network from the above interface summary: **vlan1**

### 8. Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown below are examples.

```
Configuring interface vlan1:  
Configure IP on this interface? [yes]: yes  
IP address for this interface: 10.4.120.106  
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

- Enter **Y** to configure the switch as the cluster command switch.
- Enter **N** to configure it as a member switch or as a standalone switch.

You can enter **N** to configure the switch as a command switch later through the CLI. To configure it later, enter **no**.

Would you like to enable as a cluster command switch? [yes/no]: **no**

### Entering the Initial Configuration Information

You have completed the initial configuration of the switch, and the switch displays its configuration. This is an example of the configuration output:

The following configuration command script was created:

```
hostname switch1
enable secret 5 $1$U1q8$D1A/OiaEbl90WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface FastEthernet1/0/1
!
interface FastEthernet1/0/2

interface FastEthernet1/0/3
!
...<output abbreviated>
end
```

These choices appear:

- [0] Go to the IOS command prompt without saving this config.
- [1] Return back to the setup without saving this config.
- [2] Save this configuration to nvram and exit.

To save the configuration and use it the next time the switch reboots, select option 2 to save it in NVRAM.

Enter your selection [2]:**2**

#### 9. Make your selection, and press **Return**.

After you complete the setup program, the switch can run the default configuration that you created. To change this configuration or to perform other management tasks, enter commands at the `Switch>` *prompt*.