



# Installation Note for the Cisco ME 3800X and ME 3600X Switch Power Supply and Fan Modules

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This document provides the installation and removal instructions for the AC and DC input power supply and fan modules for the Cisco Metro Ethernet (ME) 3800X and ME 3600X switches. Your switch ships with at least one power supply module installed, either AC or DC, depending on your order. The power supply and fan modules are field-replaceable units (FRUs).



## Note

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The power supplies and fan modules are hot-swappable devices.

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For translations of the safety warnings in this chapter, see the *Regulatory Compliance and Safety Information for the Cisco ME 3800X and ME 3600X Switch* on Cisco.com.

- [Power Supply Module Description, page 2](#)
- [Fan Module Description, page 4](#)
- [Connector-Side Description, page 5](#)
- [Power Supply and Fan Module Installation, page 5](#)
- [Finding the Power Supply and Fan Module Serial Number, page 14](#)
- [Technical Specifications, page 15](#)
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# Power Supply Module Description

**Table 1** Power Supply Module Model Numbers and Descriptions

Model number	Description
PWR-ME3KX-AC	AC input power supply
PWR-ME3KX-DC	DC input power supply

The AC input power supply module is an autoranging unit that supports input voltages between 100 and 240 VAC. The AC power supply modules ship with a power cord to connect to an AC power outlet.

The DC input power supply module has a single input feed and supports input voltages from 18 to 32 VDC or 36 to 72 VDC. The DC power supply module ships with a terminal block to be wired for DC power outlet connections. The terminal block is covered by a clear plastic block cover that snaps onto the terminal block. You must remove the block cover before you work with the wires. The block cover is slotted so that the wires can exit only one end. If you want the wires to exit in a different direction, remove the block cover, rotate it, and snap it back on.

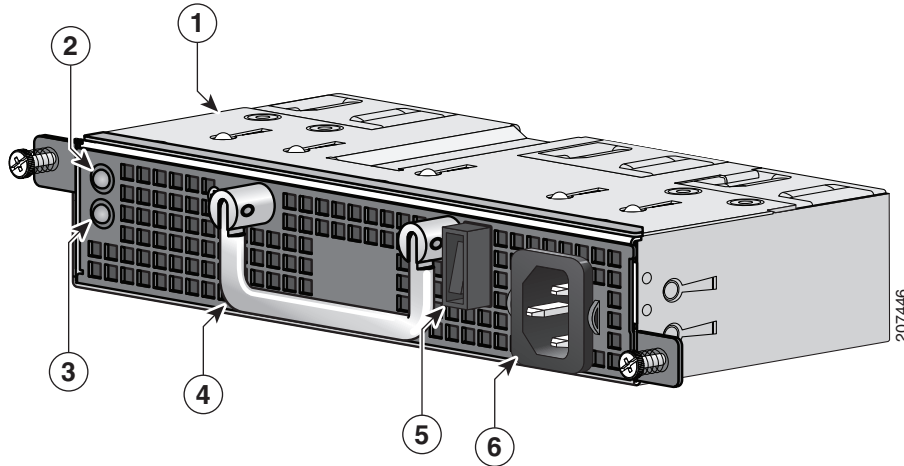
Each power supply is cooled by three internal fans. A fan failure triggers an alarm. When a fan fails, replace the power supply immediately.



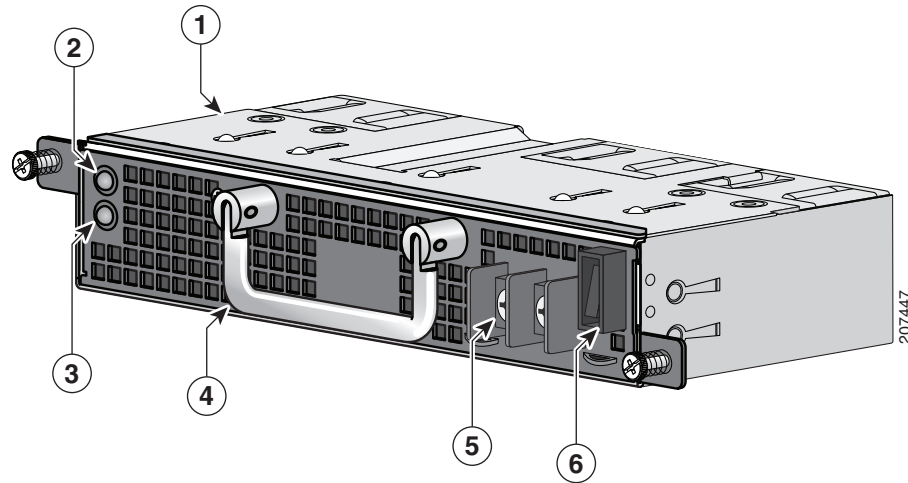
**Caution**

Both slots must be occupied either by two power supplies or a power supply and a fan module. Do not run the switch with an empty slot unless you are replacing a faulty power supply or fan module. Running the switch with an empty slot triggers an alarm.

**Figure 1** AC Input Power Supply Module Handle Side



1	AC input power supply module	4	Extraction handle
2	Power supply module status LED	5	Power switch
3	Power input LED	6	AC power connector

**Figure 2** DC Input Power Supply Module Handle Side

<b>1</b>	DC input power supply module	<b>4</b>	Extraction handle
<b>2</b>	Power supply module status LED	<b>5</b>	DC input power terminal block
<b>3</b>	Power input LED	<b>6</b>	Power switch

**Table 2** Power Supply Module Status LED

Color	System Status
Green	The power supply module is installed, output is OK, all internal fans OK, and power switch is ON.
Red	The power supply module is installed, output has failed or one of the internal fans has failed, power switch is ON.
Off	The power supply module is installed, power switch is OFF, no input power, or invalid input power.

**Table 3** Power Supply Input LED

Color	System Status
Green	The power supply module is installed, AC or DC input power is OK, power switch is ON or OFF.
Amber	The power supply module is installed, AC or DC input power is insufficient or not present and a redundant power supply is functioning properly.
Off	The power supply module is installed, no input power present at both power supplies.

# Fan Module Description

**Table 4** Fan Module Model Number and Description

Model number	Description
ME-FANTRAY	Fan module

The fan module provides cooling and proper airflow when only one power supply is installed.

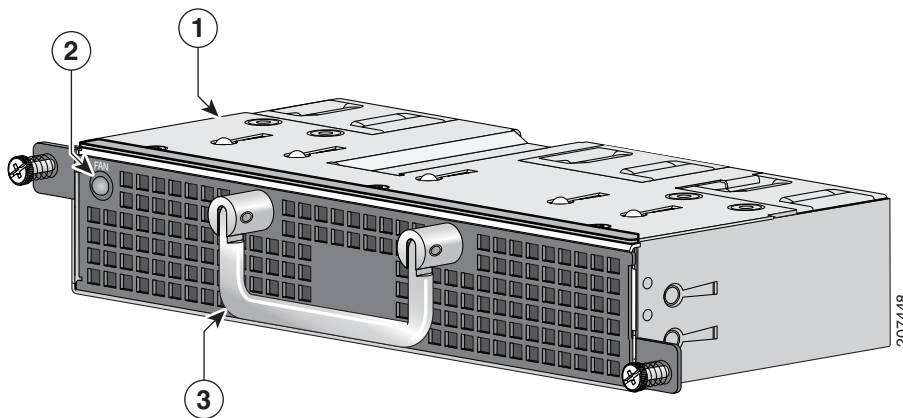


**Caution**

Both slots must be occupied either by two power supplies or a power supply and a fan module. Do not run the switch with an empty slot unless you are replacing a faulty power supply or fan module. Running the switch with an empty slot triggers an alarm.

Each fan module contains three fans. The switch can operate safely if one fan fails. A fan failure triggers an alarm. When a fan fails, replace the fan module immediately.

**Figure 3** Fan Module Handle Side



<b>1</b>	Fan module	<b>3</b>	Extraction handle
<b>2</b>	Fan module status LED		

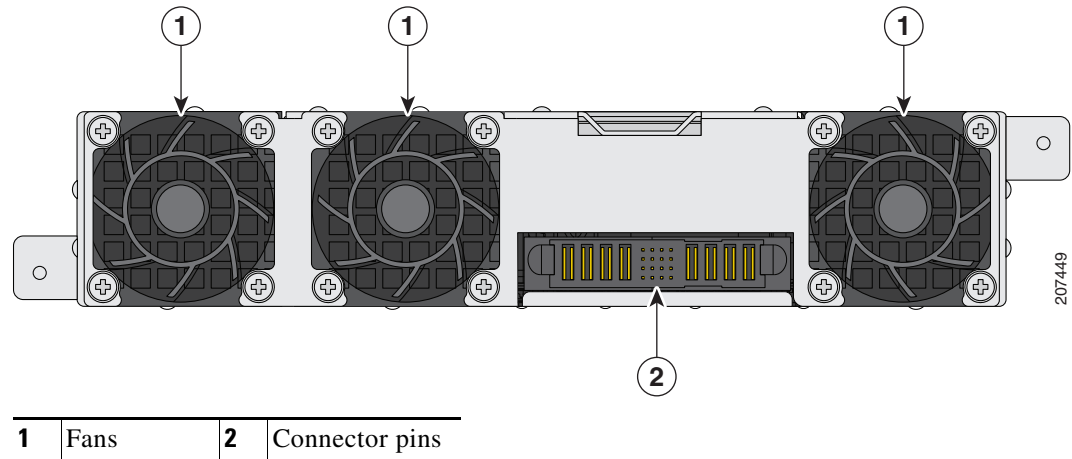
**Table 5** FAN LED

Color	System Status
Green	All internal fans are OK.
Red	One or more internal fans have failed.
Off	The fan module is not installed, or power is not present.

## Connector-Side Description

Figure 4 shows the connector side of the power supply and fan module that connects to the switch rear panel through its power supply module slot.

**Figure 4** Power Supply Module Connector Side



## Power Supply and Fan Module Installation

- [Equipment That You Supply](#), page 5
- [Installation Guidelines](#), page 6
- [Installing an AC Power Supply Module](#), page 6
- [Installing a DC Power Supply Module](#), page 8
- [Installing a Fan Module](#), page 13

## Equipment That You Supply

You need a ratcheting screwdriver with a Phillips head that exerts up to 15 inch-pounds (in-lb) of torque.

## Installation Guidelines

When you install a fan or power supply module:

- Do not force the fan or power supply module into the slot. This can damage the pins on the switch if they are not aligned with the unit.
- A fan or power supply module that is only partially connected to the switch can disrupt the system operation.
- Verify that you are using the correct power cord.



### Note

You can run both AC and DC power supplies on the same chassis.



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206



### Warning

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



### Warning

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



### Caution

To prevent overheating and to maintain proper air flow, either a power supply module or a fan module must be installed in each power supply module slot at all times. Never operate the switch for extended periods of time without either a power supply module or a fan module installed in each power supply module slot.

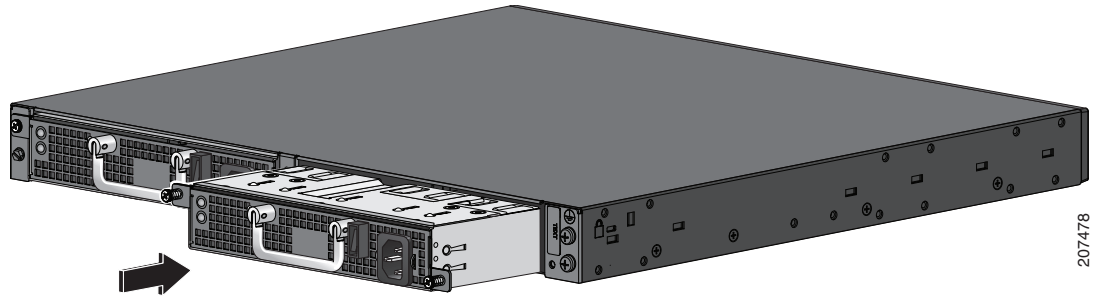
## Installing an AC Power Supply Module

This procedure is for installing an AC power supply module in the PSU 1 power supply module slot. Repeat these steps to install a power supply module in the PSU 2 power supply slot.

To install an AC input power supply module, follow these steps:

- Step 1** Verify that the power from the power source is off.
- Step 2** Insert the new power supply module in the power supply module slot, and gently push it into the slot (see [Figure 5](#)). When correctly inserted, the power supply module is flush with the switch rear panel.

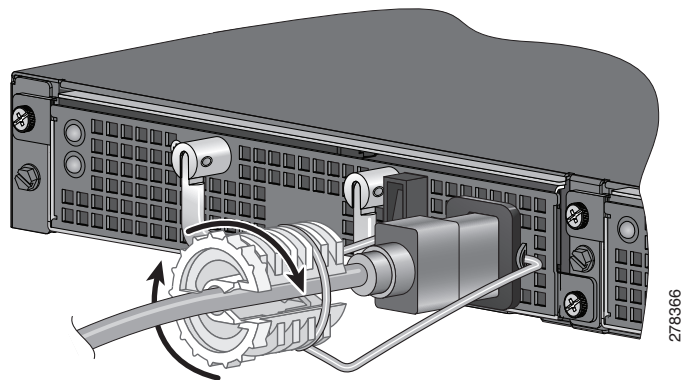
**Figure 5** Inserting an AC power supply Module in a Switch



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- Step 3** Align the two captive screws with the screw holes in the panel. Use a ratcheting torque screwdriver to torque each screw to 10 in-lb.
- Step 4** Connect the AC power cord to the power supply and to an AC power outlet.
- Step 5** (Optional) Attach the power-cord retainer clip to the power supply and thread the plastic bushing until it is snug against the plug (Figure 6).

**Figure 6** AC Power Supply Module and Power-Cord Retainer in a Switch



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- Step 6** Turn on the power at the power source and set the power supply switch ON.
- Step 7** From the front of the switch, confirm that both the PS IN and the PS/FAN LEDs are green. If you can access the switch rear panel, verify that the PSU and INPUT LEDs are green. See [Table 2](#) and [Table 2 on page 3](#) for a description of the power supply module LEDs.

## Removing AC Power Supply Modules

- Step 1** Turn off the power at its source and set the power supply switch to OFF.
- Step 2** Detach the power-cord retainer and the plastic bushing from the power cord.
- Step 3** Remove the power cord from the power connector.
- Step 4** Use a Phillips screwdriver to loosen the two captive screws that secure the power supply module to the chassis.

**Caution**

Do not leave the power supply slot open for more than:

- 5 minutes provided the ambient temperature is 25°C and at 5000 feet or lower elevation
- 90 seconds in all other conditions.

**Caution**

Wait 5 minutes prior to reopening a power supply slot.

**Step 5**

Remove the power supply module from the power slot by pulling on the extraction handle.

## Installing a DC Power Supply Module

This procedure is for installing an DC power supply module into the PSU 1 power supply slot. Repeat these steps to install a power supply module in the PSU 2 power supply slot.

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

1. [Preparing for Installation, page 9](#)
2. [Grounding the Switch, page 9](#)
3. [Installing the DC Power Supply Module in the Switch, page 10](#)
4. [Wiring the DC Input Power Source, page 11](#)

**Warning**

**An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.** Statement 122

**Warning**

**Before connecting or disconnecting ground or power wires to the chassis, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position. Use a voltmeter to test for 0 (zero) voltage at the power terminals on the chassis.** Statement 196

**Caution**

Installation of the equipment must comply with local and national electrical codes.

**Note**

We recommend that you use 14 or 16 AWG copper wiring for Network Equipment Building Systems (NEBS) installation, following the guidelines for DC power wiring in the central office.

**Note**

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



## Preparing for Installation

You need these tools and equipment:

- Ratcheting torque Phillips-head screwdriver that exerts up to 36 inch-pounds (in-lb).
- Crimping tool.
- Wire-stripping tools.
- Copper ground wire (6 AWG, insulated or noninsulated) for the ground connection.
- Two leads of 14 or 16 AWG copper wire.

## Grounding the Switch

Follow the grounding procedure instructions 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



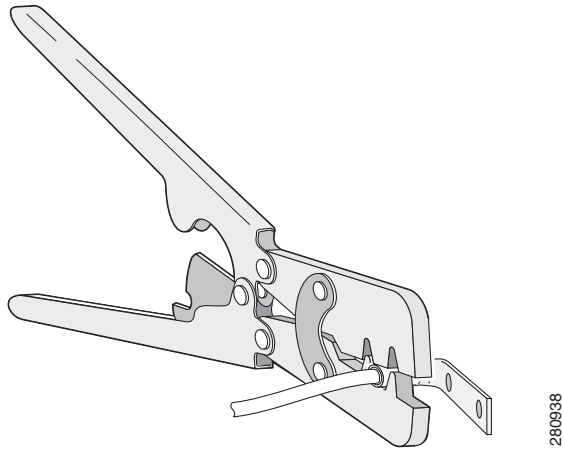
**Caution**

To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed lug suitable for number-6 AWG wire and two number-10-32 ground-lug screws.

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

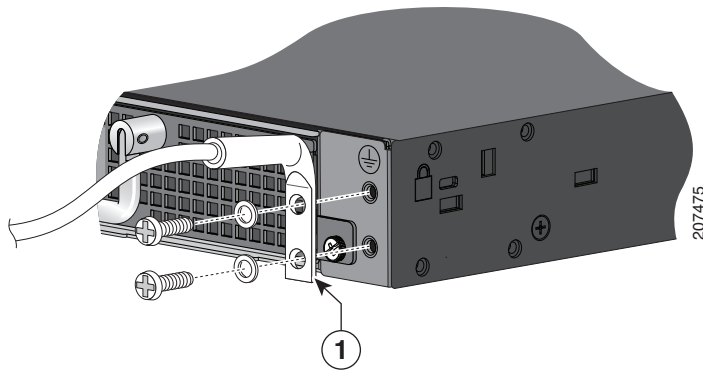
- Step 1** Locate the dual-hole lug that ships with the switch.
- Step 2** If your ground wire is insulated, use a wire stripping tool to strip the 6 AWG ground wire to 0.875 inch (12.7 mm) ± 0.02 inch (0.5 mm).
- Step 3** Slide the open end of the ground lug over the exposed area of the wire.
- Step 4** Crimp the ground lug to the wire (see [Figure 7](#)).

**Figure 7** *Crimping the Ground Lug*



**Step 5** Attach the dual-hole lug and the wire assembly to the chassis ground connection with the supplied screws ([Figure 8](#)).

**Figure 8** *Attaching the Ground Lug and Wire Assembly*



<b>1</b>	Dual-hole ground lug
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**Step 6** Use a ratcheting torque Phillips-head screwdriver to torque the ground-lug screws to 32 in-lb.

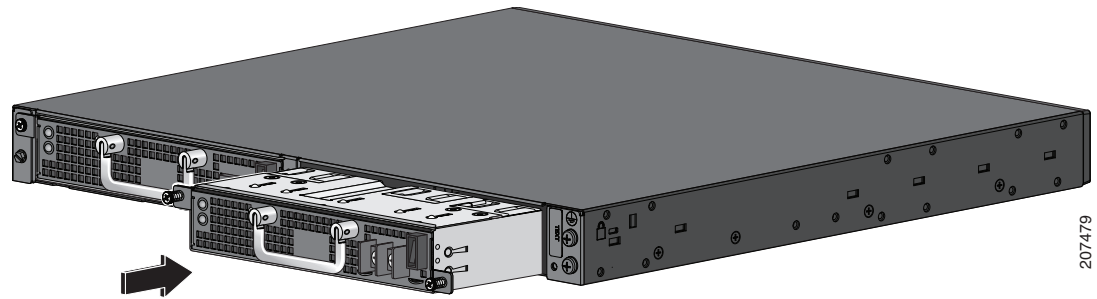
**Step 7** Connect the other end of the grounding wire to an appropriate grounding point at your site or to the rack.

## Installing the DC Power Supply Module in the Switch

**Step 1** To ensure that power is removed from the DC circuits, locate the circuit breakers for the DC circuits, switch the circuit breakers to the OFF position, and tape the circuit-breaker switches in the OFF position.

**Step 2** Insert the new power supply module into the power supply slot, and gently push it into the slot ([Figure 9](#)). When correctly inserted, the power supply is flush with the switch rear panel.

**Figure 9** Inserting a DC Power Supply Module



- Step 3** Align the two captive screws with the screw holes. Use a ratcheting torque Phillips-head screwdriver to torque each screw to 10 in-lb.
- Step 4** Connect the input power as described in the “[Wiring the DC Input Power Source](#)” section.

## Wiring the DC Input Power Source

Before you wire the DC input power source, review these warnings and information:



**Warning**

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

**24VDC – 30A**

**48VDC – 15A** 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, replace, or service this equipment.**

Statement 1030



**Caution**

The DC power supply voltage should be within 18 to 32 VDC or 36 to 72 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

- Step 1** To ensure that all power is OFF, locate the circuit breaker that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

- Step 2** Remove the terminal block cover.

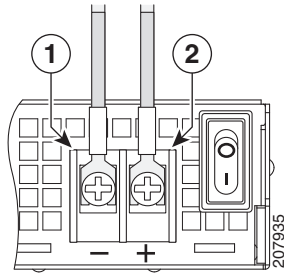


**Note**

The terminal block is covered by a clear plastic block cover that snaps onto the terminal block. You must remove the block cover before you work with the wires. The block cover is slotted so that the wires can exit only one end. If you want the wires to exit in a different direction, remove the block cover, rotate it, and snap it back on.

- Step 3** Using a wire-stripping tool, strip each of the wires coming from the DC input power source to 0.350 inch (8.9 mm) ± 0.02 inch (0.5 mm).
- Step 4** Crimp the fork-type terminals to the 14 or 16 AWG DC power input wires.
- Step 5** Connect the wires to the DC input power terminals as shown in [Figure 10](#). Make sure to match the polarity (negative to negative, positive to positive) when connecting the wires to the terminal.

**Figure 10** Connecting the DC Input Power Terminals to the Terminal Blocks



<b>1</b>	Negative	<b>2</b>	Positive
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- Step 6** Use a ratcheting torque Phillips-head screwdriver to torque the terminal-block screw to 14 in-lb.

  
**Caution**

Do not overtorque the terminal-block screws. The recommended maximum torque is 14 in-lb.

  
**Caution**

Secure the wires coming from the terminal block so that they cannot be disturbed. For example, use tie wraps to secure the wires to the rack.

- Step 7** After ensuring that all wire connections are secure, reinstall the terminal block cover.
- Step 8** Remove the tape from the circuit-breaker switch handle, and move the circuit-breaker handle to ON.
- Step 9** Move the DC power supply switch to ON.
- Step 10** From the front of the switch, confirm that the PS IN and the PS/FAN LEDs are green. If you can access the switch rear panel, verify that the power supply module PSU and INPUT LEDs are green. See [Table 2](#) and [Table 3 on page 3](#) for a description of the power supply module LEDs.

## Removing the DC Power Supply Module

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- Step 1** Move the DC power supply switch to OFF.
  - Step 2** Turn off power at the DC circuits. To ensure that power is removed from the DC circuits, locate the circuit breakers for the DC circuits, switch the circuit breakers to OFF, and tape the circuit-breaker switches.
  - Step 3** Remove the terminal block cover from the power supply terminal blocks.
  - Step 4** Use a Phillips screwdriver to remove the DC input power wires from the power terminals.
  - Step 5** Use a Phillips screwdriver to loosen the two captive screws that secure the power supply module to the switch chassis.
  - Step 6** Remove the power supply module from the power slot by pulling on the extraction handle.
- 



### Caution

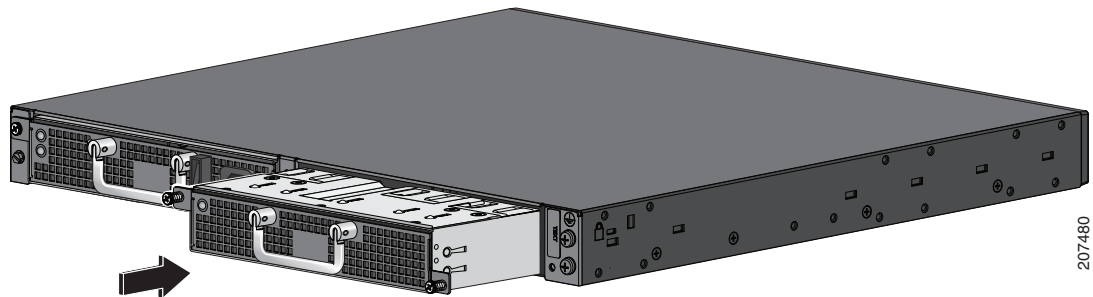
To prevent overheating and to maintain proper air flow, either a power supply module or a fan module must be installed in each power supply module slot at all times.

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## Installing a Fan Module

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- Step 1** Insert the new fan module in the power supply slot, and gently push it into the slot ([Figure 11](#)). When correctly inserted, the fan module is flush with the switch rear panel.

**Figure 11**      *Inserting a Fan Module in a Switch*

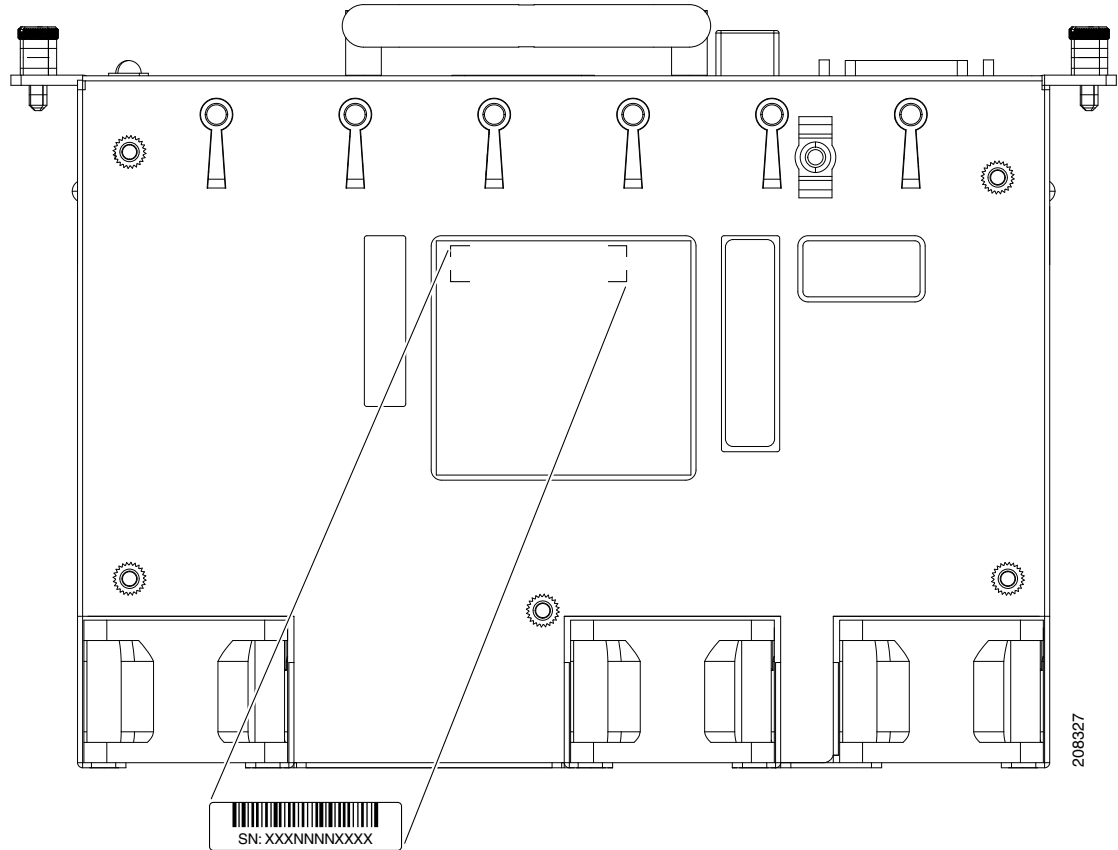


- Step 2** Align the two captive screws with the screw holes in the panel. Use a ratcheting torque screwdriver to torque each screw to 10 in-lb.
  - Step 3** From the front of the switch, confirm that the PS/FAN LED is green. If you can access the switch rear panel, verify that the FAN LED is green. See the [Table 5 on page 4](#) for a description of the fan module LED.
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# Finding the Power Supply and Fan Module Serial Number

If you contact Cisco Technical Assistance regarding a power supply or fan module, you need to know the serial number. See [Figure 12](#) to find the serial number.

**Figure 12** Power Supply and Fan Module Serial Number Location



# Technical Specifications

**Table 6** *Environmental and Physical Specifications for the AC and DC Input Power Supply and Fan Modules*

<b>Environmental Ranges</b>	
Operating temperature	−40 to 122°F (−40 to 50°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)
<b>Physical Specifications</b>	
Weight	AC: 2.9 lb (1.32 kg) DC: 3.1 lb (1.41 kg) Fan: 1.65 lb (0.75 kg)
Dimensions (H x W x D)	1.64 x 8.55 x 5.94 in. (4.16 x 21.72 x 15.09 cm)

**Table 7** *Technical Specifications for the AC Power Supply Module*

<b>Power Specifications</b>	
Maximum output power	390 W
Input voltage range and frequency	100 to 240 VAC ± 10% (auto ranging), 50 to 60 Hz
Input current	5 to 2.5 A
Maximum output ratings	12 V @ 32.5 A
Total input BTU	1705 BTUs per hour

**Table 8** *Technical Specifications for the DC Power Supply Module*

<b>Power Specifications</b>	
Maximum output power	390 W
Input voltage range	18 to 32 VDC and 36 to 72 VDC
Input current	30 A maximum at minimum input 18 VDC 15 A maximum at maximum input voltage 72 VDC
Maximum output ratings	12 V @ 32.5 A
Total input BTU	1840 BTUs per hour

## Related Publications

These documents provide information about the switches and are available on Cisco.com:

[http://www.cisco.com/go/me3800x\\_docs](http://www.cisco.com/go/me3800x_docs)

- *Release Notes for the Cisco ME 3800X and ME 3600X Switch*



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

- *Cisco ME 3800X and ME 3600X Switch Hardware Installation Guide*
- *Cisco ME 3800X and ME 3600X Switch Getting Started Guide*
- *Regulatory Compliance and Safety Information for the Cisco ME 3800X and ME 3600X Switches*
- *Cisco ME 3800X and ME 3600X Switch Software Configuration Guide*
- *Cisco ME 3800X and ME 3600X Switch Command Reference*
- *Cisco ME 3800X and ME 3600X System Message Guide*
- *Cisco Small Form-Factor Pluggable Modules Installation Notes*
- *Cisco CWDM GBIC and CWDM SFP Installation Notes*

These compatibility matrix documents are available on Cisco.com:

[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)

- *Cisco Gigabit Ethernet Transceiver Modules Compatibility Matrix*
- *Cisco 100-Megabit Ethernet SFP Modules Compatibility Matrix*
- *Cisco CWDM SFP Transceiver Compatibility Matrix*
- *Cisco Small Form-Factor Pluggable Modules Compatibility Matrix*
- *Compatibility Matrix for 1000BASE-T Small Form-Factor Pluggable Modules*

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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