Product Overview

The Catalyst 3850 family of switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

The Catalyst 3850 switches support stacking through Cisco StackWise-480 technology and power management through StackPower. The StackWise technology for the Catalyst 3850 switches is called StackWise-480.

Unless otherwise noted, the term switch refers to a standalone switch and to a switch stack.

This chapter contains these topics:

Switch Models

Table 1: Catalyst 3850 Switch Models and Descriptions

Switch Model	Supported Software Image	Description
WS-C3850-24T-L	LAN Base	Stackable 24 10/100/1000 Ethernet ports, 1 network module power supply
WS-C3850-48T-L	LAN Base	Stackable 48 10/100/1000 Ethernet ports, 1 network module power supply
WS-C3850-24P-L	LAN Base	Stackable 24 10/100/1000 PoE+[2] ports, 1 network module s power supply
WS-C3850-48P-L	LAN Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, supply
WS-C3850-48F-L	LAN Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module sl power supply

Switch Model	Supported Software Image	Description
WS-C3850-24U-L	LAN Base	Stackable 24 10/100/1000 Cisco UPOE[3] ports, 1 network module W power supply
WS-C3850-48U-L	LAN Base	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network module W power supply
WS-C3850-12X48U-L	LAN Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1G UPoE ports, 1 module slot, 1100 W power supply
WS-C3850-24XU-L	LAN Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network m 1100-W power supply
WS-C3850-24T-S	IP Base	Stackable 24 10/100/1000 Ethernet ports, 1 network module slo power supply
WS-C3850-48T-S	IP Base	Stackable 48 10/100/1000 Ethernet ports, 1 network module slo power supply
WS-C3850-24P-S	IP Base	Stackable 24 10/100/1000 PoE+ ports, 1 network module slot, 71 supply
WS-C3850-48P-S	IP Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 71 supply
WS-C3850-48F-S	IP Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 1 power supply
WS-C3850-24U-S	IP Base	Stackable 24 10/100/1000 Cisco UPOE ports, 1 network module W power supply
WS-C3850-48U-S	IP Base	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network module W power supply
WS-C3850-24PW-S	IP Base	Catalyst 3850 24-port PoE IP Base with 5 access points license
WS-C3850-48PW-S	IP Base	Catalyst 3850 48-port PoE IP Base with 5 access points license
WS-C3850-12S-S	IP Base	Stackable 12 SFP module slots, 1 network module slot, 350 W pov
WS-C3850-24S-S	IP Base	Stackable 24 SFP module slots, 1 network module slot, 350 W pov
WS-C3850-12XS-S	IP Base	Catalyst 3850 12-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 350 W power supply
WS-C3850-16XS-S	IP Base	Catalyst 3850 16-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 350 W power supply. 16 ports are available when the C3850-NM-4-10G network mod plugged into the WS-C3850-12XS-S switch.
WS-C3850-24XS-S	IP Base	Catalyst 3850 24-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 715 W power supply.

Switch Model	Supported Software Image	Description
WS-C3850-32XS-S	IP Base	Catalyst 3850 32-port SFP+ transceiver, 1 network module s for up to 10 G SFP+, 715 W power supply. 32 ports are available when the C3850-NM-8-10G network plugged into the WS-C3850-24XS-S switch.
WS-C3850-48XS-S	IP Base	Catalyst 3850 switch with SFP+ transceivers, 48 ports that s 10 G, and 4 QSFP ports that support up to 40 G. 750 W pow The airflow direction for this switch is from the front panel to
WS-C3850-48XS-F-S	IP Base	Catalyst 3850 switch with SFP+ transceivers, 48 ports that s 10 G, and 4 QSFP ports that support up to 40 G. 750 W pow The airflow direction for this switch is from the rear panel to t
WS-C3850-12X48U-S	IP Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE por module slot, 1100 W power supply
WS-C3850-12X48UW-S	IP Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE por module slot, 1100 W power supply
WS-C3850-24XU-S	IP Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 networ 1100-W power supply
WS-C3850-24XUW-S	IP Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 networ 1100-W power supply
WS-C3850-24T-E	IP Services	Stackable 24 10/100/1000 Ethernet ports, 1 network module power supply
WS-C3850-48T-E	IP Services	Stackable 48 10/100/1000 Ethernet ports, 1 network module power supply
WS-C3850-24P-E	IP Services	Stackable 24 10/100/1000 PoE+ ports, 1 network module slot, supply
WS-C3850-48P-E	IP Services	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, supply
WS-C3850-48F-E	IP Services	Stackable 48 10/100/1000 PoE+ ports, 1 network module sl power supply
WS-C3850-24U-E	IP Services	Stackable 24 10/100/1000 Cisco UPOE ports, 1 network mod W power supply
WS-C3850-48U-E	IP Services	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network mod W power supply
WS-C3850-12S-E	IP Services	Stackable 12 SFP module slots, 1 network module slot, 350 W
WS-C3850-24S-E	IP Services	Stackable 24 SFP module slots, 1 network module slot, 350 W

Switch Model	Supported Software Image	Description
WS-C3850-12XS-E	IP Services	Catalyst 3850 12-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 350 -W power supply.
WS-C3850-16XS-E	IP Services	Catalyst 3850 16-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 350 W power supply. 16 ports are available when the C3850-NM-4-10G network mod plugged into the WS-C3850-12XS-E switch.
WS-C3850-24XS-E	IP Services	Catalyst 3850 24-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 715 W power supply.
WS-C3850-32XS-E	IP Services	Catalyst 3850 32-port SFP+ transceiver, 1 network module slot, for up to 10 G SFP+, 715 W power supply. 32 ports are available when the C3850-NM-8-10G network mod plugged into the WS-C3850-24XS-E switch.
WS-C3850-48XS-E	IP Services	Catalyst 3850 switch with SFP+ transceivers, 48 ports that supp 10 G, and 4 QSFP ports that support up to 40 G. 750 W power s The airflow direction for this switch is from the front panel to the
WS-C3850-48XS-F-E	IP Services	Catalyst 3850 switch with SFP+ transceivers, 48 ports that supp 10 G, and 4 QSFP ports that support up to 40 G. 750 W power s The airflow direction for this switch is from the rear panel to the f
WS-C3850-12X48U-E	IP Services	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE ports, 1 module slot, 1100 W power supply
WS-C3850-24XU-E	IP Services	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network m 1100-W power supply

[1] For supported network modules, see Network Modules, on page 9 .
[2] PoE+ = Power over Ethernet plus (provides up to 30 W per port).
[3] UPOE = Universal Power Over Ethernet (provides up to 60 W Cisco UPOE per port)
[4] The WS-C3850-48XS switches do not support StackWise-480

Front Panel

This section describes the front panel components:

- 24 or 48 downlink ports of one of these types:

    - 10/100/1000
    - 10/100/1000 PoE+
    - 10/100/1000 Cisco UPoE
    - 10 G SFP+

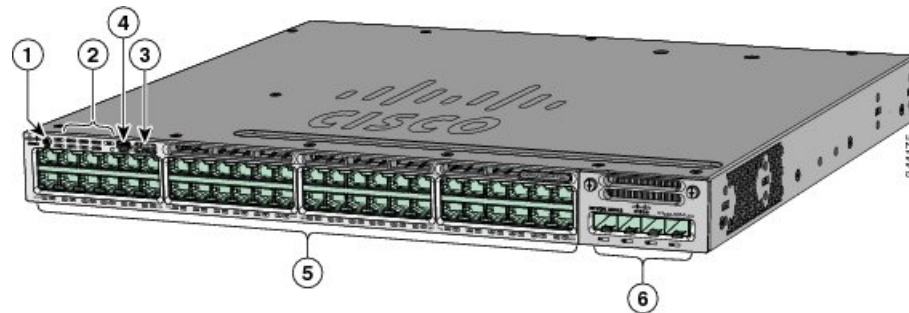- 12 or 24 SFP or SFP+ module downlink slots

• Uplink network modules slot
• USB Type A connector
• USB mini-Type B (console) port
• LEDs
• Mode button

All of the switches have similar components. See the following illustrations for examples.

Note The Catalyst 3850 switches might have slight cosmetic differences on the bezels.

Figure 1: WS-C3850-48P-L Switch Front Panel

1	Mode button	4	USB mini-Type B (console) port
2	Status LEDs	5	10/100/1000 PoE+ ports
3	USB Type A storage port	6	Network module

Figure 2: WS-C3850-24S Switch Front Panel
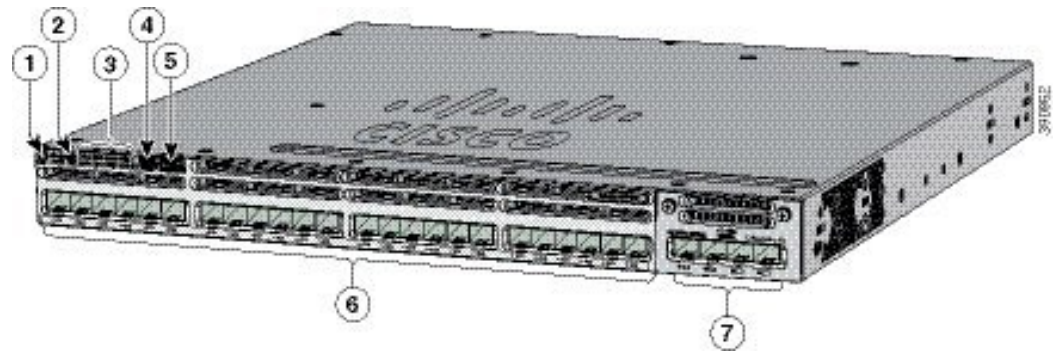
Note The WS-C3850-12S switches have similar front panels.

1	UID button	5	USB Type A storage port
2	Mode button	6	SFP module slots (downlink)

3	Status LEDs	7	Network module
4	USB mini-Type B (console) port		

Figure 3: WS-C3850-24XS-E Switch Front Panel
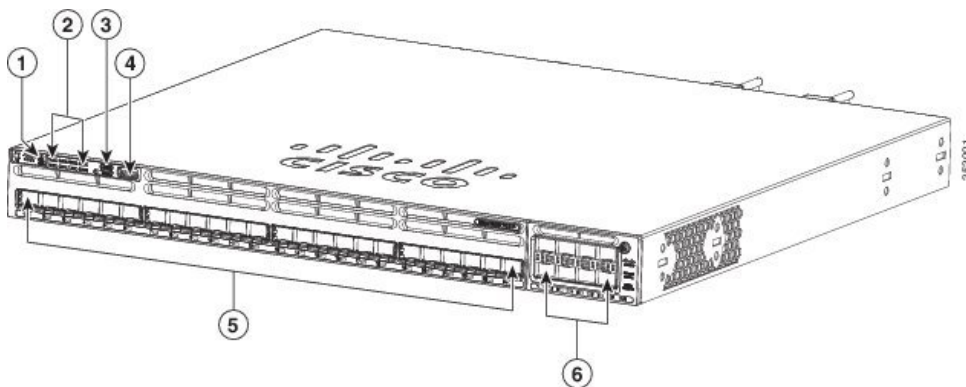
Note The WS-C3850-24XS-E switches have the following components.

1	Mode button	4	USB mini-Type B (console) port
2	Status LEDs	5	10 G SFP+ ports
3	USB Type A storage port	6	Network module

10/100/1000 Ports

The 10/100/1000 ports use RJ-45 connectors with Ethernet pinouts. The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5 or Category 5e twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

PoE, PoE+, and Cisco UPoE Ports

The PoE+ and Cisco Universal Power Over Ethernet (Cisco UPoE) ports use the same connectors as described in 10/100/1000/Multigigabit Ethernet Port Connections. They provide:

- PoE+ ports: Support for IEEE 802.3af-compliant powered devices (up to 15.4 W PoE per port) and support for IEEE 802.3at-compliant powered devices (up to 30 W PoE+ per port). The maximum total PoE power in a 1RU switch is 1800 W.

- Support for Cisco-enhanced PoE.
- Support for prestandard Cisco powered devices.
- Configuration for StackPower. When the switch internal power supply module(s) cannot support the total load, StackPower configurations allow the switch to leverage power available from other switches.
- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing.

Depending on the installed power supply modules, each port can deliver up to 60 W of Cisco UPOE. See the Power Supply Modules, on page 23 for the power supply matrix that defines the available PoE, PoE+, and Cisco UPOE power per port. The output of the PoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

Note   Restrictions for the WS-C3850-12X48U-L, WS-C3850-12X48U-S and WS-C3850-12X48U-E switch models:

- A maximum of 28 ports are available for UPoE connections. This is because some power from the power supplies is diverted to the switch, and only the remaining power is transmitted to the ports.

SFP and QSFP Module Slots

The uplink and downlink ports for the Catalyst WS-C3850 switch models are as follows.

- The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S switch models support standard SFP modules.

- The downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.

- The 10G downlink ports on the Catalyst WS-C3850-48XS-S, WS-C3850-48XS-F-S, WS-C3850-48XS-E and WS-C3850-48XS-F-E switch models support standard SFP+ modules.

- The 40G downlink ports on the Catalyst WS-C3850-48XS-S, WS-C3850-48XS-F-S, WS-C3850-48XS-E and WS-C3850-48XS-F-E switch models support standard QSFP modules.

For supported SFP modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

Note   For information about the (uplink) SFP module slots on the network modules, see Network Modules, on page 9.

Management Ports

The management ports connect the switch to a PC running Microsoft Windows or to a terminal server.

- Ethernet management port. See Ethernet Management Port, on page 28.

- RJ-45 console port (EIA/TIA-232). See RJ-45 Console Port, on page 29.

- USB mini-Type B console port (5-pin connector).

The 10/100/1000 Ethernet management port connection uses a standard RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port 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.

If you use the USB mini-Type B console port, the Cisco Windows USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers.

The 4-pin mini-Type B connector resembles the 5-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B.

Figure 4: USB Mini-Type B Port
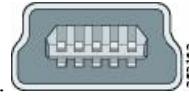
This illustration shows a 5-pin mini-Type B USB port.

With the Cisco Windows USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

The console output always goes to both the RJ-45 and the USB console connectors, but the console input is active on only one of the console connectors at any one time. The USB console takes precedence over the RJ-45 console. When a cable is connected into the USB console port, the RJ-45 console port becomes inactive. Conversely, when the USB cable is disconnected from the USB console port, the RJ-45 port becomes active.

You can use the command-line interface (CLI) to configure an inactivity timeout which reactivates the RJ-45 console if the USB console has been activated and no input activity has occurred on the USB console for a specified time.

After the USB console deactivates due to inactivity, you cannot use the CLI to reactivate it. Disconnect and reconnect the USB cable to reactivate the USB console. For information on using the CLI to configure the USB console interface, see the software guide.

USB Type A Port

The USB Type A port provides access to external USB flash devices (also known as thumb drives or USB keys) and to specific Cisco USB Bluetooth devices.

The port supports Cisco USB flash drives with capacities from 128 MB to 8 GB (USB devices with port densities of 128 MB, 256 MB, 1 GB, 4 GB, and 8 GB are supported). When combined with stacking, you can upgrade other switches in the stack from an USB key inserted in any switch within the stack. Cisco IOS software provides standard file system access to the flash device: read, write, erase, and copy, as well as the ability to format the flash device with a FAT file system.

It provides you with the ability to automatically upgrade the internal flash with the USB drive's configuration and image for emergency switch recovery using USB auto-upgrade. This feature checks the internal flash for a bootable image and configuration and if either image or the configuration is not available, then the USB drive is checked for boot images and configuration. If the boot image and configuration are available, these are copied to flash for the reboot.

The port supports Cisco USB Bluetooth devices. The USB Bluetooth device acts as a Bluetooth host and serves as either a serial port or a management port connection. You can pair it with your Bluetooth smart phone, laptop, or tablet. If you configure the serial profile on the Bluetooth device, the switch turns the USB port into a serial port. If you configure the Personal Area Network (PAN) profile on the Bluetooth device, the switch turns the USB port into a management interface.

Figure 5: Cisco USB Bluetooth
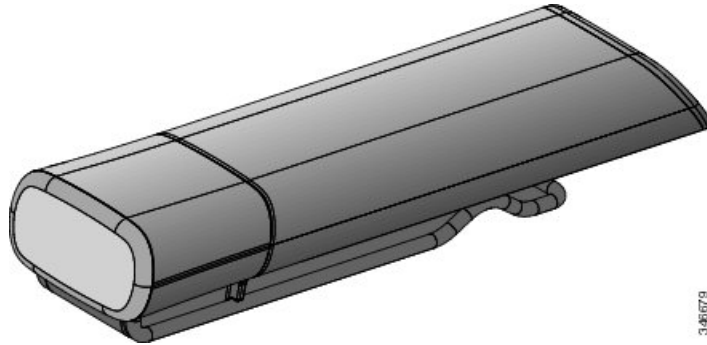
Network Modules

The switch supports one hot-swappable network module that provides uplink ports to connect to other devices. The switch should only be operated with either a network module or a blank module installed.

The switch generates logs when you insert or remove a network module with SFP ports.

Table 2: Network Modules

Network Module[5]	Description
C3850-NM-4-1G	This module has four 1 G SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported.
	If you insert an SFP+ module in the 1 G network module, the SFP+ module does not operate, and the switch logs an error message.
	Note This is supported on the following switch models: • WS-C3850-24T/P/U • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12S • WS-C3850-24S

Network Module[5]	Description

C3850-NM-2-10G	This module has four slots:
	
	Two slots (left side) support only 1 G SFP modules and two slots (right side) support either 1 G SFP or 10 G SFP modules.
	
	Note This is supported on the following switch models:
	
	       • WS-C3850-24T/P/U
	       • WS-C3850-48T/F/P/U
	       • WS-C3850-12X48U
	       • WS-C3850-24XU
	       • WS-C3850-12S
	       • WS-C3850-24S

C3850-NM-4-10G	This module has four 10 G slots or four 1 G slots.
	
	Note This is supported on the following switch models:
	
	       • WS-C3850-48T/F/P/U
	       • WS-C3850-12X48U
	       • WS-C3850-24XU
	       • WS-C3850-12XS
	       • WS-C3850-24XS

C3850-NM-8-10G	This module has eight 10 G slots with an SFP+ port in each slot. Each port supports a 1 G or 10 G connection
	
	Note This is supported on the following switch models:
	
	       • WS-C3850-12X48U
	       • WS-C3850-24XU
	       • WS-C3850-24XS

C3850-NM-2-40G	This module has two 40 G slots with a QSFP+ connector in each slot.
	
	Note This is supported on the following switch models:
	
	       • WS-C3850-12X48U
	       • WS-C3850-24XU
	       • WS-C3850-24XS

C3850-NM-BLANK	Insert this blank module when the switch has no uplink ports (this is required for sufficient air flow).

[5] All network modules are hot-swappable.

For information about the network modules, see the Installing Network Modules. For cable specifications, see Cables and Adapters.

SFP and SFP+ Modules

The SFP and SFP+ modules provide copper or fiber-optic connections to other devices. These transceiver modules are field-replaceable, and they provide the uplink interfaces (expect in the fixed SFP slots in the WS-C3850-12S and WS-C3850-24S switches) when installed in an SFP module slot. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections.

Note The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S switch models support standard SFP modules, and the downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.

Use only Cisco SFP and SFP+ modules on the switch. For the latest information about supported SFP and SFP+ modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

For information about SFP modules, see the documentation at Installing SFP and SFP+ Modules.

The Catalyst 3850 switch supports the SFP module patch cable (CAB-SFP-50CM), a 0.5-meter, copper, passive cable with SFP module connectors at each end. This cable is only used with 1-Gigabit Ethernet SFP ports to connect two Catalyst 3850 switches in a cascaded configuration.

For information about QSFP modules, see the documentation at

- QSFP Port Cabling Specifications
- Cisco S-Class 40GBASE QSFP Modules Data Sheet
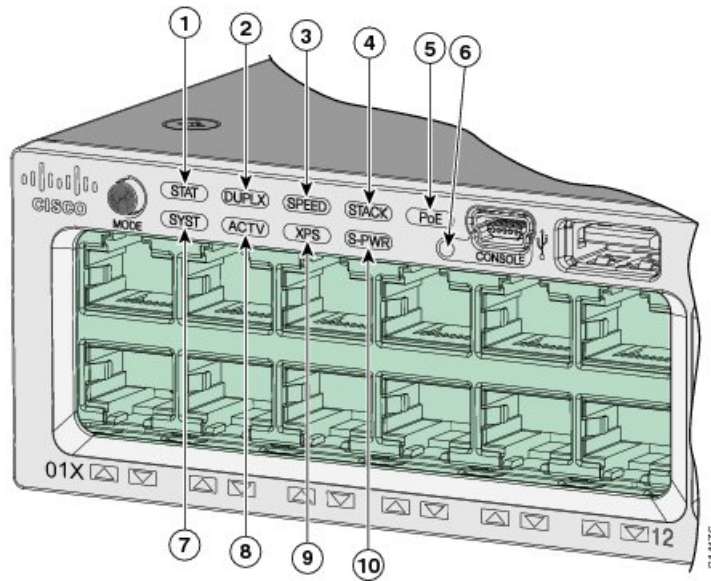
LEDs

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

Note Catalyst 3850 switches might have slight cosmetic differences on the bezels.

Figure 6: Switch Front Panel LEDs

This figure shows the switch LEDs and the Mode button that you use to select a port mode.

1	STAT (status)	6	USB mini-Type B console port LED
2	DUPLX (duplex)	7	SYST (system)
3	SPEED	8	ACTV (active)
4	STACK	9	XPS [6]
5	PoE	10	S-PWR (StackPower)

[6] XPS = expandable power system.
[7] Only on switch models that support PoE.

Figure 7: Switch Front Panel LEDs for the WS-C3850-12S, WS-C3850-24S, WS-C3850-12XS, and WS-C3850-24XS Switches
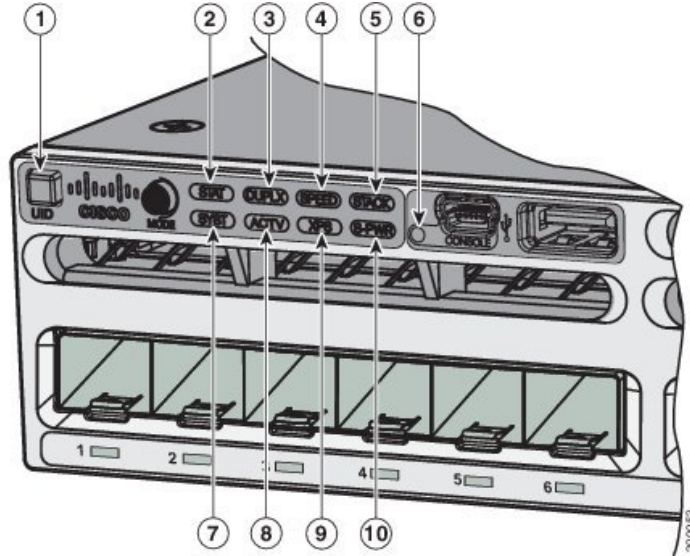
1	UID (blue beacon)	6	USB mini-Type B console port LED
2	STAT (status)	7	SYST (system)
3	DUPLX (duplex)	8	ACTV (active)
4	SPEED	9	XPS [8]
5	STACK	10	S-PWR (StackPower)

[8] XPS = expandable power system.

Figure 8: Switch Front Panel LEDs for the WS-C3850-48XS Switches
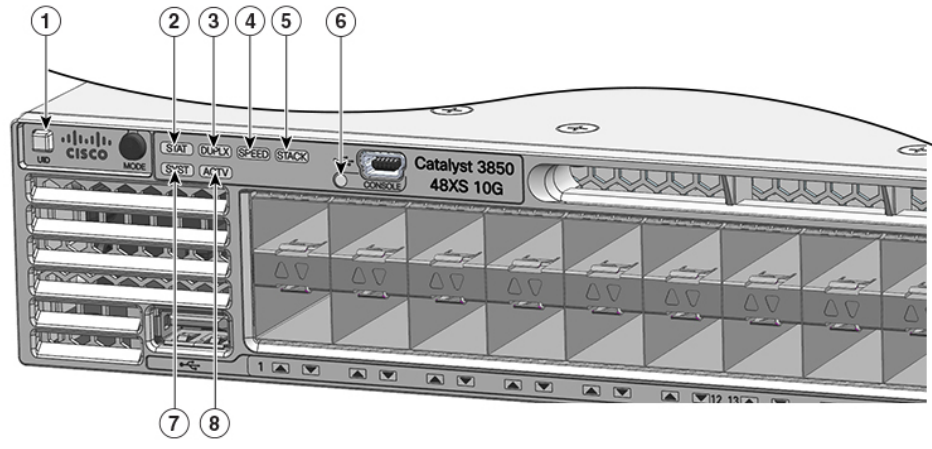
1	UID (blue beacon)	5	STACK
2	STAT (status)	6	USB mini-Type B console port LED
3	DUPLX (duplex)	7	SYST (system)
4	SPEED	8	ACTV (active)

SYST LED

Table 3: SYST LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking green	POST in progress.
Amber	System is receiving power but is not functioning properly.
Blinking amber	There is a fault with one of the following: • Network module (non traffic-related) • Power supply • Fan module

XPS LED

Table 4: XPS LED

Color	Description
Off	XPS cable is not installed. Switch is in StackPower mode.
Green	XPS is connected and ready to provide back-up power.
Blinking green	XPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Amber	The XPS is in standby mode or in a fault condition. See the XPS 2200 documentation for information about the standby mode and fault conditions.
Blinking amber	The power supply in a switch has failed, and the XPS is providing power to that switch (redundancy has been allocated to this device).

For information about the XPS 2200, see the *Cisco eXpandable Power System 2200 Hardware Installation Guide* on Cisco.com:

http://www.cisco.com/go/xps2200_hw

Port LEDs and Modes

Each Ethernet port, 1-Gigabit Ethernet module slot, and 10-Gigabit Ethernet module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port mode determines the type of information shown by the port LEDs.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change.

When you press the Mode button on any switch in the switch stack, all the stack switches change to show the same selected mode. For example, if you press the Mode button on the active switch to show the SPEED LED, all the other switches in the stack also show the SPEED LED.

Table 5: Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
ACTV	Active	The active switch status.
STACK	Stack member status StackWise port status	Stack member status. The StackWise port status. See STACK LED, on page 18.
PoE[9]	The PoE+ port status.	The PoE+ port status.

[9] Only switches with PoE+ ports.

Table 6: Meaning of Switch LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present, no activity.
	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 a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops.
	Blinking amber	Port is blocked by STP and is only receiving control frames.
SPEED	**10/100/1000/SFP ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Single green flash (on for 100 ms, off for 1900 ms)	Port is operating at 1000 Mb/s.
	Blinking twice	Port is operating at 2500, 5000 or 10000 Mb/s
	Network module slots	
	Off	Port is not operating.
	Blinking green	Port is operating at up to 10 Gb/s.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
ACTV (data active switch)	Off	The switch is not the active switch. **Note** For a standalone switch, this LED is off.
	Green	The switch is the active switch.
	Amber	Error during active switch election.
	Blinking green	Switch is a standby member of a data stack and assumes active responsibilities if the current active switch fails.

Port Mode	Port LED Color	Meaning
STACK (stack member)	Off	No stack member corresponding to that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.
PoE+[10]	Off	PoE+ is off. If the powered device is receiving power from an AC power source, the port LED is off even if the device is connected to the switch port.
	Green	PoE+ is on. The port LED is green when the switch port is providing power.
	Alternating green-amber	PoE+ is denied because providing power to the powered device will exceed the switch power capacity.
	Blinking amber	PoE+ is off due to a fault or because it has exceeded a limit set in the switch software. Caution PoE+ faults occur when noncompliant cabling or powered devices are connected to a PoE+ port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices to PoE+ ports. You must remove from the network any cable or device that causes a PoE+ fault.
	Amber	PoE+ for the port has been disabled. Note PoE+ is enabled by default.

[10]   Only switches with PoE or PoE+ ports.

USB Console LED

The USB console LED shows whether there is an active USB connection to the port.

Table 7: USB Console LED

LED	Color	Description
USB console port	Green	USB console port is active.
	Off	The USB is disabled.

S-PWR LED

Table 8: S-PWR LED

Color	Description
Off	StackPower cable is not connected, or the switch is in standalone mode.
Green	Each StackPower port is connected to another switch.
Blinking green	This appears on the switch in a StackPower ring configuration that detects an open ring or has only one StackPower cable connected.
Amber	There is a fault: load shedding is occurring, a StackPower cable is defective, or an administrative action is required. See the switch software configuration guide for information about configuring StackPower.
Blinking amber	The StackPower budget is not sufficient to meet current power demands.

ACTV LED

Table 9: ACTV LED

| Color	Description
Off	Switch is not the active switch.
Green	Switch is the active switch or a standalone switch.
Slow blinking green	Switch is in stack standby mode.
Amber	An error occurred when the switch was selecting the active switch, or another type of stack error occurred.

STACK LED

The STACK LED shows the sequence of member switches in a stack. Up to nine switches can be members of a stack. The first nine port LEDs show the member number of a switch in a stack.

Figure 9: STACK LED

This figure shows the LEDs on for each switch. When you press the Mode button to select the STACK LED, the corresponding port LEDs will blink green for each switch. For example, for switch 1, port 1 will blink green and the rest of the LEDs will be off. On switch 2, port 2 will blink green and the rest of the LEDs will

be off. The same behavior will be seen with the remaining switches in the
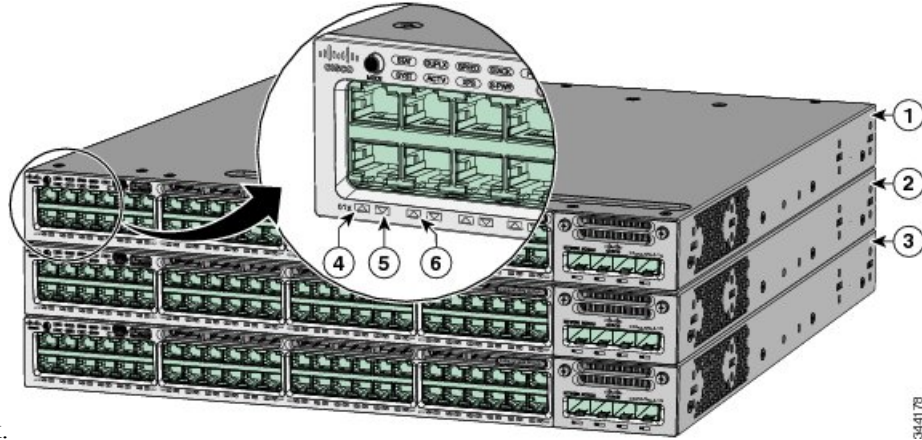
stack.

1	Stack member 1	4	LED blinks green to show that this is switch 1 in the stack.
2	Stack member 2	5	LED blinks green to show that this is switch 2 in the stack.
3	Stack member 3	6	LED blinks green to show that this is switch 3 in the stack.

PoE LED

The PoE LED indicates the status of the PoE mode: either PoE, PoE+, or Cisco UPOE.

Table 10: PoE LED

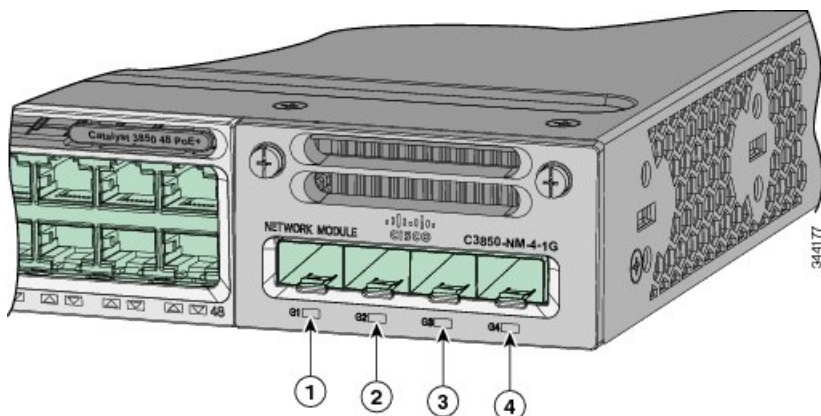| Color	Description
Off	PoE mode is not selected. None of the 10/100/1000 ports have been denied power or are in a fault condition.
Green	PoE mode is selected, and the port LEDs show the PoE mode status.
Blinking amber	PoE mode is not selected. At least one of the 10/100/1000 ports has been denied power, or at least one of the 10/100/1000 ports has a PoE mode fault.

UID/Beacon LED

The UID and the Beacon LED can be turned on by the administrator to indicate that the switch needs attention. It helps the administrator identify the switch. The beacon can be turned on by either pressing the UID button on the switch front panel, or by using the CLI. There is a blue beacon on the front and rear panel of the switch. The blue beacon on the front panel is a button labeled UID, and on the back panel it is a LED labeled BEACON.

Table 11: UID/Beacon LED Indicator (Applies Only to the WS-C3850-12S, WS-C3850-24S , WS-C3850-12XS, and WS-C3850-24XS Switches)

Color/State	Description
Solid blue	The operator has indicated that the system needs attention.

Network Module LEDs

Figure 10: Network Module LEDs

| 1	G1 LED	3	G3 LED
2	G2 LED	4	G4 LED

| Color	Network Module Link Status
Off	Link is off.
Green	Link is on; no activity.
Blinking green	Activity on a link; no faults. **Note** The LED will blink green even when there is very little control traffic.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** Link faults occur when noncompliant cabling is connected to an SFP/SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP/SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP/SFP+ has been disabled.

Rear Panel

The switch rear panel includes StackWise connectors, StackPower or XPS 2200 connectors, ports, fan modules, and power supply modules.

Figure 11: Catalyst 3850 Switch Rear Panel
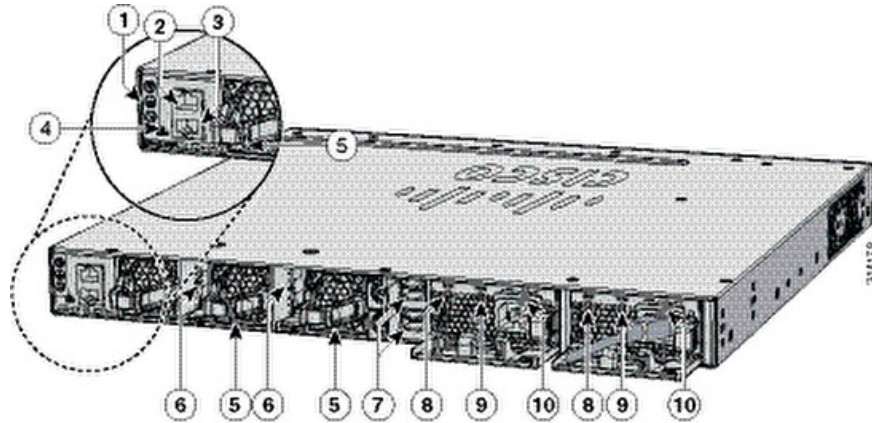
| 1	Ground connector	6	StackWise port connector
2	CONSOLE (RJ-45 console port)	7	StackPower connector
3	MGMT (RJ-45 10/100/1000 management port)	8	AC OK (input) status LED
4	RESET button	9	PS OK (output) status LED
5	Fan module	10	Power supply modules (AC power supply modules shown)

Figure 12: WS-C3850-12S and WS-C3850-24S Switches Switch Rear Panel
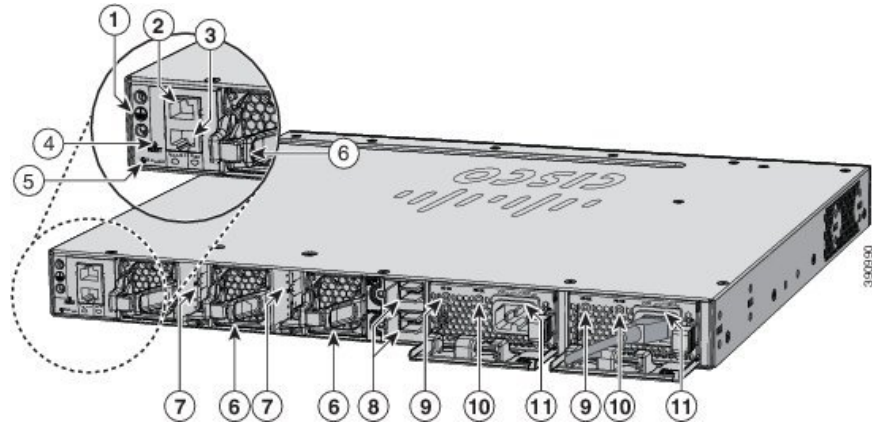
1	Ground connector	7	StackWise port connector
2	CONSOLE (RJ-45 console port)	8	StackPower connector
3	MGMT (RJ-45 10/100/1000 management port)	9	AC OK (input) status LED
4	RESET button	10	PS OK (output) status LED

5	BEACON LED	11	Power supply modules (AC power supply modules shown)
6	Fan module		

Figure 13: WS-C3850-48XS Switches Switch Rear Panel
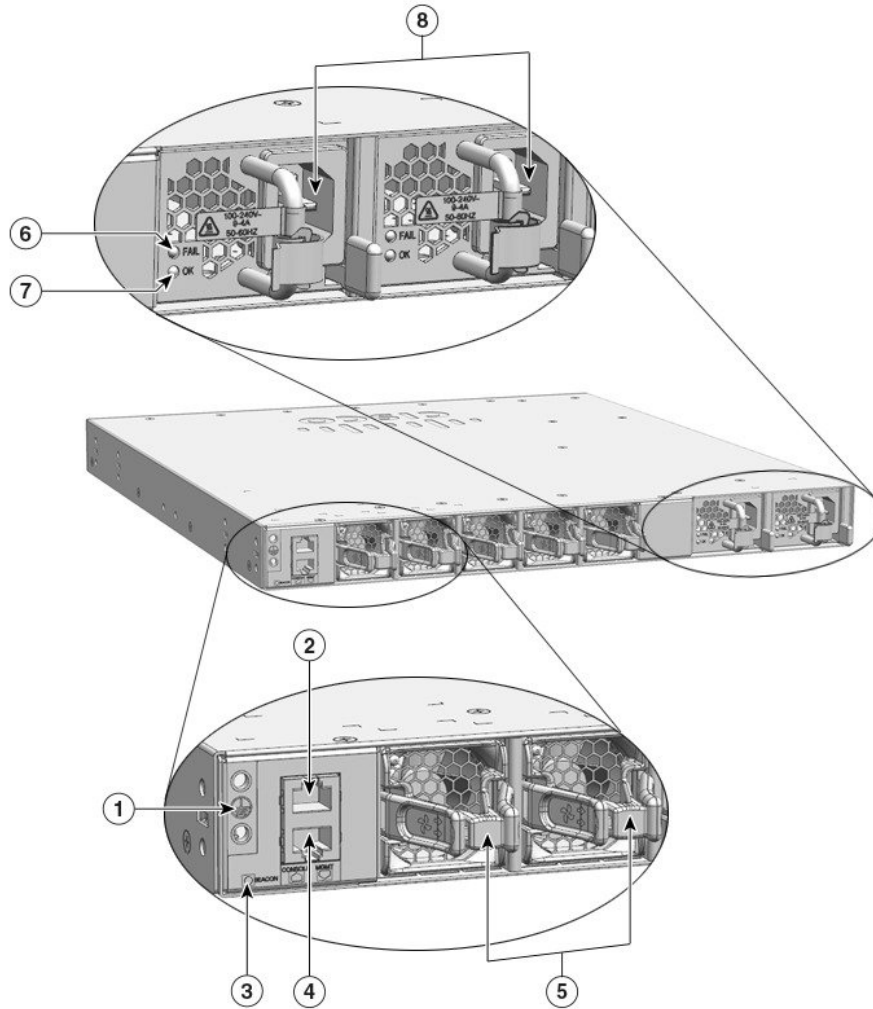
1	Ground connector	5	Fan module
2	CONSOLE (RJ-45 console port)	6	Power supply FAIL LED
3	BEACON LED	7	Power supply OK LED
4	MGMT (RJ-45 10/100/1000 management 9 AC OK (input) status LED port)	8	Power supply modules

RJ-45 Console Port LED

Table 12: RJ-45 Console Port LED

Color	RJ-45 Console Port Status
Off	RJ-45 console is disabled. USB console is active.
Green	RJ-45 console is enabled. USB console is disabled.

StackWise Ports

StackWise ports are used to connect switches in StackWise stacking configurations. The switch ships with a 0.5-meter StackWise cable that you can use to connect the StackWise ports. For more information on StackWise cables, see Connecting to the StackWise Ports.

Note The following switch models do not support StackWise-480:

- WS-C3850-48XS-S
- WS-C3850-48XS-E
- WS-C3850-48XS-F-S
- WS-C3850-48XS-F-E

Caution Use only approved cables, and connect only to similar Cisco equipment. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

Power Supply Modules

The switches are powered through one or two internal power supply modules.

Supported power supply modules:

- PWR-C1-350WAC
- PWR-C1-715WAC
- PWR-C1-1100WAC
- PWR-C1-440WDC

The following power supply modules are applicable to only the WS-C3850-48XS switches:

- PWR-C3-750WAC-R: This module has red handles to match fans with red handles. Airflow is from the front panel to the rear panel (warm air is 'pulled out of' the switch.)

- PWR-C3-750WAC-F: This module has blue handles to match fans with blue handles. Airflow is from the rear panel to the front panel (cool air is 'pushed into' the switch.)

- PWR-C3-750WDC-R: This module has red handles to match fans with red handles. Airflow is from the front panel to the rear panel (warm air is 'pulled out of' the switch.)

- PWR-C3-750WDC-F: This module has blue handles to match fans with blue handles. Airflow is from the rear panel to the front panel (cool air is 'pushed into' the switch.)

The switch has two internal power supply module slots. You can use two AC modules, two DC modules, a mixed configuration of one AC and one DC power supply module, or one power supply module and a blank module.

The switch can operate with either one or two active power supply modules or with power supplied by a stack. A Catalyst 3850 switch that is in a StackPower stack can operate with power supplied by other switches in the stack.

Switch Models, on page 1 shows the default power supply modules that ship with each switch model. All power supply modules (except the blank modules) have internal fans. All switches ship with a blank power supply module in the second power supply slot.

⚠️

Caution   Do not operate the switch with one power supply module slot empty. For proper chassis cooling, both power supply module slots must be populated with either a power supply or a blank module.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51 to 57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC-power supply module must be wired to a DC-power source.

The following tables show the PoE available and PoE requirements for Catalyst 3850 PoE switch models.

Table 13: Available PoE with AC Power Supply

Models	Default Power Supply	Available PoE
12-port data switch	PWR-C1-350WAC	—
24-port data switch		
48-port data switch		
24-port PoE+ switch	PWR-C1-715WAC	435 W
48-port PoE+ switch		
48-port full PoE+ switch	PWR-C1-1100WAC	800 W
24-port Cisco UPOE switch		
48-port Cisco UPOE switch		

Table 14: Available PoE with DC Power Supply

Models	Number of Power Supplies	Available PoE
24-port PoE+ switch	1	220 W
	2	660 W
48-port PoE+ switch	1	185 W
	2	625 W
24-port Cisco UPOE switch	1	220 W
	2	660 W
48-port Cisco UPOE switch	1	185 W
	2	625 W

Table 15: Switch Power Supply Requirements for PoE, PoE+, and Cisco UPoE

PoE Option	24-Port Switch	48-Port Switch[11]
PoE (up to 15.4 per port)	(1) 715 W	These are the combinations of power supplies: • (1) 1100 W • (1) 715 W + (1) 715 W
PoE+ (up to 30 W per ports)	These are the combinations of power supplies: • (1) 1100 W • (1) 715 W + (1) 715 W	These are the combinations of power supplies: • (1) 1100 W + (1) 715 W • (2) 1100 W
Cisco UPoE (up to 60 W per port)	(2) 1100 W	These are the combinations of power supplies: • (1) 1100 W + (1) 715 W • (2) 1100 W **Note** Up to 30 PoE ports can receive full Cisco UPoE.

[11] A 48-port switch with one 715-W power supply provides up to 8.7 W of PoE to all ports.

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Note Considerations for the WS-C3850-12X48U-L, WS-C3850-12X48U-S and WS-C3850-12X48U-E switch models:

- The primary power supply for these switch models should be a minimum of 470 W.

- 350 W or 440 W can be used only as secondary power supplies. If the switch draws power from these modules as the primary source, reboot the switch to restore these modules as secondary power supplies.

The power supply modules have two status LEDs.

Table 16: Switch Power Supply Module LEDs

AC OK DC OK	Description	PS OK	Description
Off	No AC input power. No DC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off). Output is disabled, or input is outside operating range (DC LED is off).
Green	AC input power present. DC input power present.	Green	Power output to switch active.
		Red	Output has failed.

For information about replacing a power supply module, wiring a DC power supply module, and module specifications, see the "Power Supply Installation" and "Technical Specifications" chapters.

Fan Module

Depending on the switch model, three or five internal hot-swappable 12-V fan modules (FAN-T1=) are available. The air circulation system consists of the fan modules and the power supply modules. The airflow patterns vary depending on the power supply configuration.

When the fan modules are operating properly, a green LED is on at the top left corner of the fan assembly (viewed from the rear). If the fan fails, the LED turns to amber. The switch can operate with two operational fans, but the failed fan should be replaced as soon as possible to avoid a service interruption due to a second fan fault.

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Note The WS-C3850 switches require three fans for proper cooling. The WS-C3850-48XS switches require five fans for proper cooling.

Figure 14: 24- and 48-Port Switch Airflow Patterns

The following illustrations show the airflow patterns for the 24- and 48-port switches. The blue arrow shows cool airflow, and the red arrow shows warm airflow.
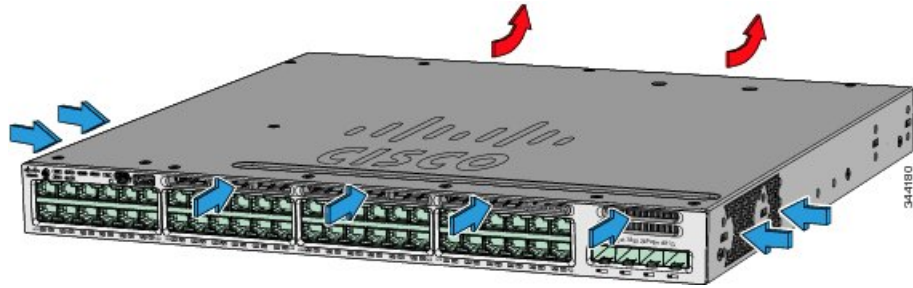
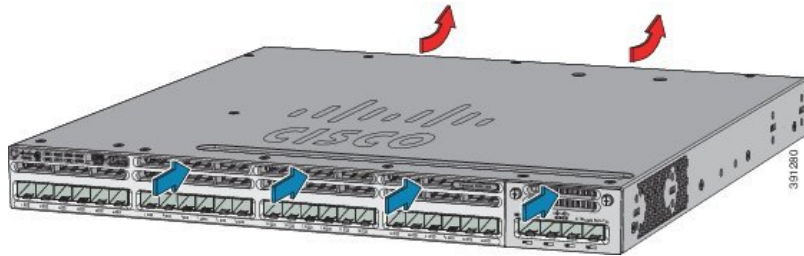*Figure 15: Airflow Patterns for the Catalyst 3850-24S-E and 3850-12S-E Switches*

Figure 16: Airflow Patterns for the Catalyst 3850-48XS Switches (using Power Supplies and Fans with Blue Handles)
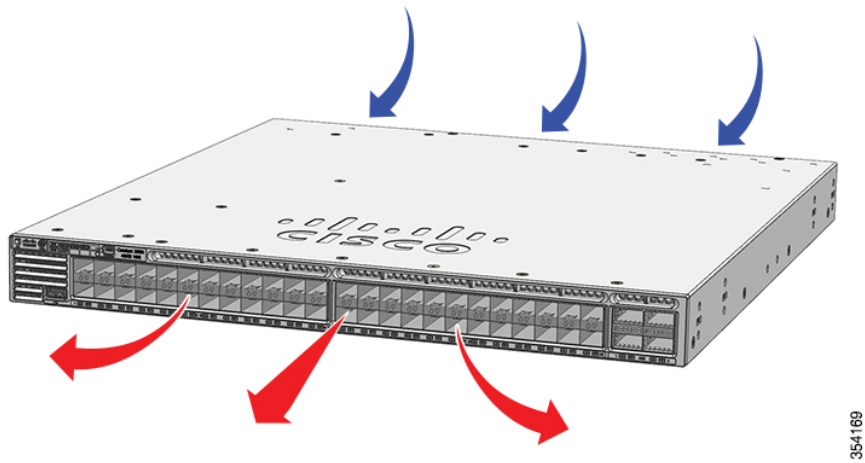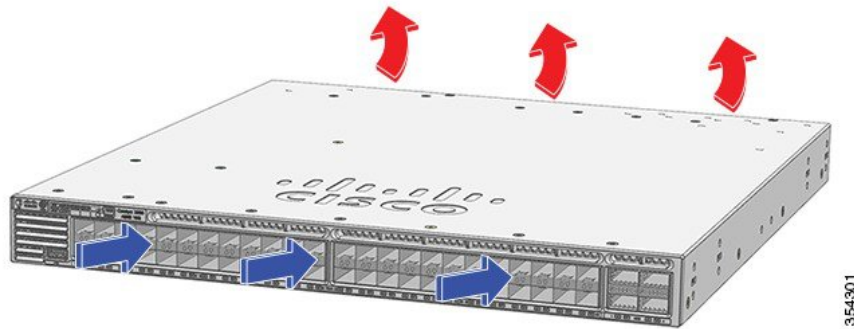
Figure 17: Airflow Patterns for the Catalyst 3850-48XS Switches (using Power Supplies and Fans with Red Handles)

For information about installing a fan module and fan specifications, see the "Technical Specifications" chapter.

StackPower Connector

The C9300 switches have a StackPower connector for use with Cisco StackPower cables to configure a switch power stack that includes up to nine switches. A switch power stack can be configured in redundant or power-sharing mode.

You can order these StackPower cables from your Cisco sales representative:

- CAB-SPWR-30CM (0.3-meter cable)
- CAB-SPWR-150CM (1.5-meter cable)

For details about connecting StackPower cables and StackPower guidelines, see Planning a StackPower Stack.

Note   Cisco Catalyst WS-C3850-48XS switch models do not have the StackPower connector.

Ethernet Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100/1000 Ethernet management port or one of the console ports. The 10/100/1000 Ethernet management port is a VPN routing/forwarding (VRF) interface and uses a RJ-45 crossover or straight-through cable.

Note   The 10/100/1000 Ethernet management port is an RJ-45 connector that should be connected to a Windows workstation or a terminal server. Do not connect this port to another port in the same switch or to any port within the same switch stack.

The following table shows the Ethernet management port LED colors and their meanings.

Table 17: Ethernet Management Port LED

Color	Description
Green	Link up but no activity.
Blinking green	Link up and activity.
Off	Link down.

RJ-45 Console Port

The RJ-45 console port connection uses the optional RJ-45-to-DB-9 female cable.

The following table shows the RJ-45 console port LED colors and their meanings.

Table 18: RJ-45 Console LED

Color	Description
Green	RJ-45 console port is active.
Off	The port is not active.

Management Options

- Cisco Network Assistant

  Cisco Network Assistant is a PC-based network management GUI application for LANs. You can use the GUI to configure and manage switch clusters or standalone switches. Cisco Network Assistant is available at no cost and can be downloaded from this URL: http://www.cisco.com/pcgi-bin/tablebuild.pl/NetworkAssistant

- Cisco IOS CLI

  You can configure and monitor the switch and switch cluster members from the CLI. You can access the CLI by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for more information.

- Cisco Prime Infrastructure

  Cisco Prime Infrastructure combines the wireless functionality of Cisco Prime Network Control System (NCS) and the wired functionality of Cisco Prime LAN Management Solution (LMS), with application performance monitoring and troubleshooting capabilities of Cisco Prime Assurance Manager. For more information, see the Cisco Prime Infrastructure documentation on Cisco.com: http://www.cisco.com/en/US/products/ps12239/index.html