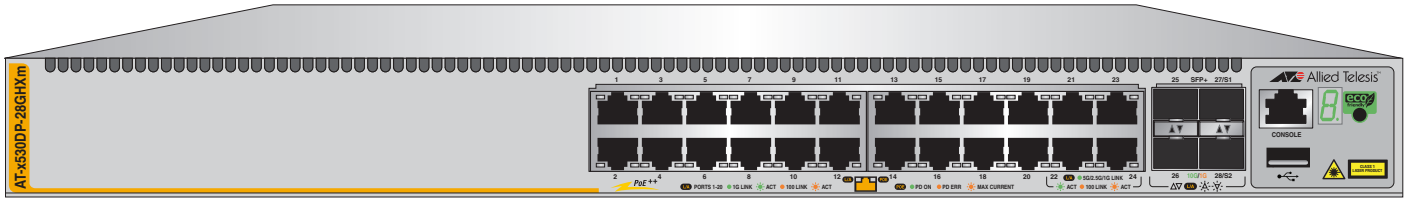
x530DP Series

Stackable Gigabit Layer 3 Ethernet Switches
AlliedWare Plus™ v5.5.1-2.1

x530DP-28GHXm

x530DP-52GHXm



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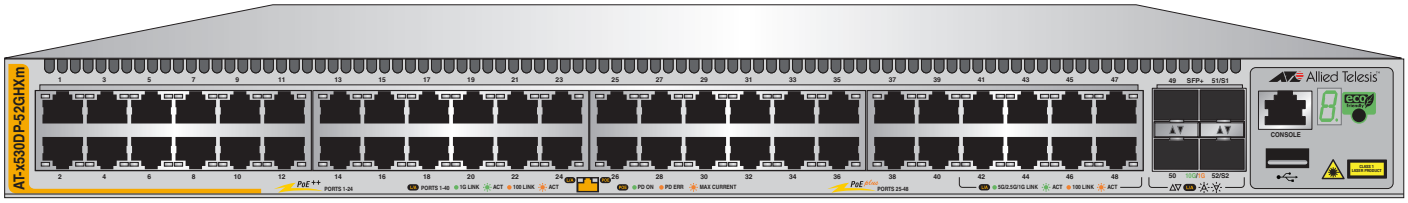

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Installation Guide for Standalone Switches

613-002691 Rev. C

Electrical Safety and Emissions Standards

This product meets the following standards.

U.S. Federal Communications Commission
Radiated Energy Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Industry Canada
This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

RFI Emissions: FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, C-TICK, CE

> **Warning:** In a domestic environment this product can cause radio interference in which case the user may be required to take adequate measures.

EMC (Immunity): EN55024

Electrical Safety: EN60950-1 (TUV), UL 60950-1 ($_{C}UL_{US}$)

 Laser Safety EN60825

Translated Safety Statements

Important: Safety statements that have the ⚠ symbol are translated into multiple languages in the *Translated Safety Statements* document at **www.alliedtelesis.com/en/documents/translated-safety-statements**.

Remarque: Les consignes de sécurité portant le symbole ⚠ sont traduites dans plusieurs langues dans le document *Translated Safety Statements,* disponible à l'adresse **www.alliedtelesis.com/en/documents/translated-safety-statements**.

Contents

Figures

Tables

Preface

This guide contains the installation instructions for the x530DP Series of stackable Gigabit, Layer 3 Ethernet switches. This preface contains the following sections:

Note

This guide explains how to install the switches as standalone units. For instructions on how to build a stack with Virtual Chassis Stacking (VCStack™), refer to the *x530DP Series Installation Guide for Virtual Chassis Stacking*.

Document Conventions

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Contacting Allied Telesis

If you need assistance with this product, you may contact Allied Telesis technical support by going to the Services & Support section of the Allied Telesis web site at **www.alliedtelesis.com/support**. You can find links for the following services on this page:

- Helpdesk (Support Portal) - Log onto Allied Telesis interactive support center to search for answers to your questions in our knowledge database, check support tickets, learn about Return Merchandise Authorizations (RMAs), and contact Allied Telesis technical experts.
- Software Downloads - Download the latest software releases for your product.
- Licensing - Register and obtain your License key to activate your product.
- Product Documents - View the most recent installation guides, user guides, software release notes, white papers and data sheets for your product.
- Warranty - View a list of products to see if Allied Telesis warranty applies to the product you purchased and register your warranty.
- Allied Telesis Helpdesk - Contact a support representative.

To contact a sales representative or find Allied Telesis office locations, go to **www.alliedtelesis.com/contact**.

Chapter 1
Overview

This chapter contains the following sections:

Note
This guide explains how to install the switches as standalone units. For instructions on how to build a stack with Virtual Chassis Stacking (VCStack™), refer to the *x530DP Series Installation Guide for Virtual Chassis Stacking*.

Front and Rear Panels

The front panels of the x530DP Series switches are shown in Figure 1 and Figure 2.

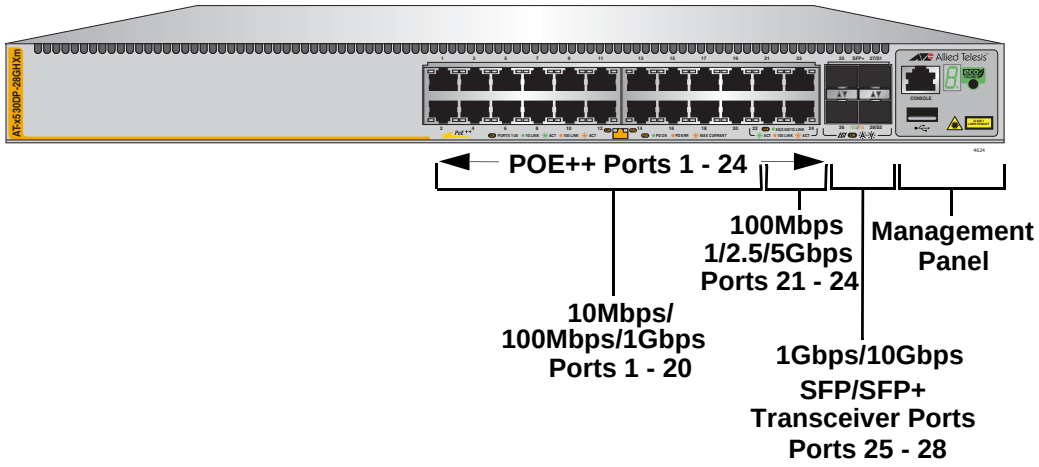


Figure 1. Front Panel of the x530DP-28GHXm Switch

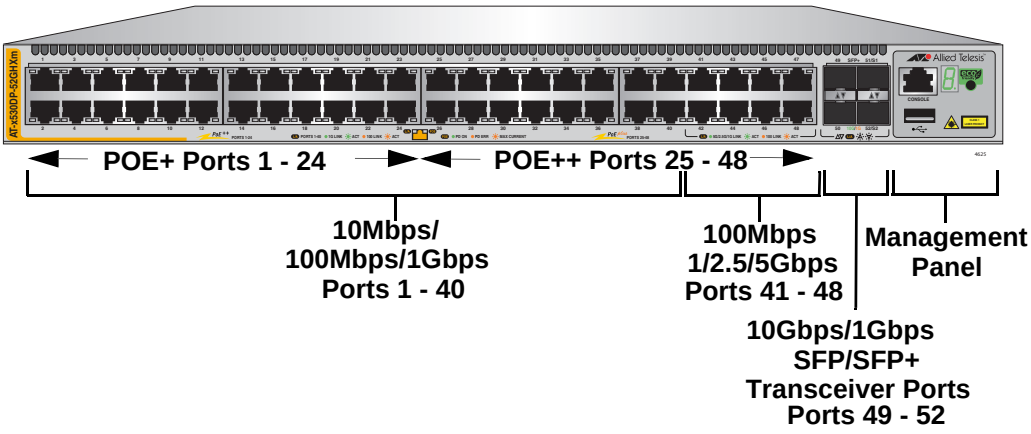


Figure 2. Front Panel of the x530DP-52GHXm Switch

The back panel of the x530DP Series switch is shown in Figure 3.

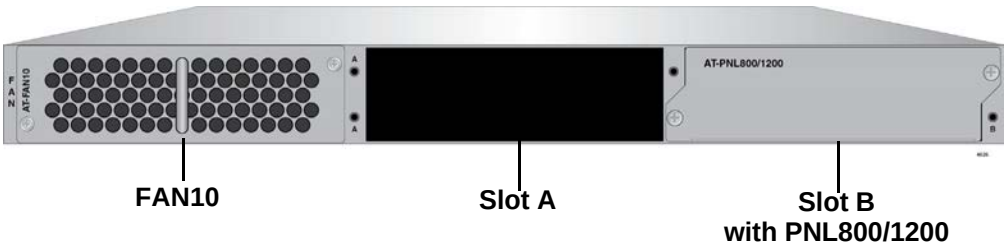


Figure 3. Back Panel of the x530DP Series Switch

Management Panel

Figure 4 identifies the components on the management panel.

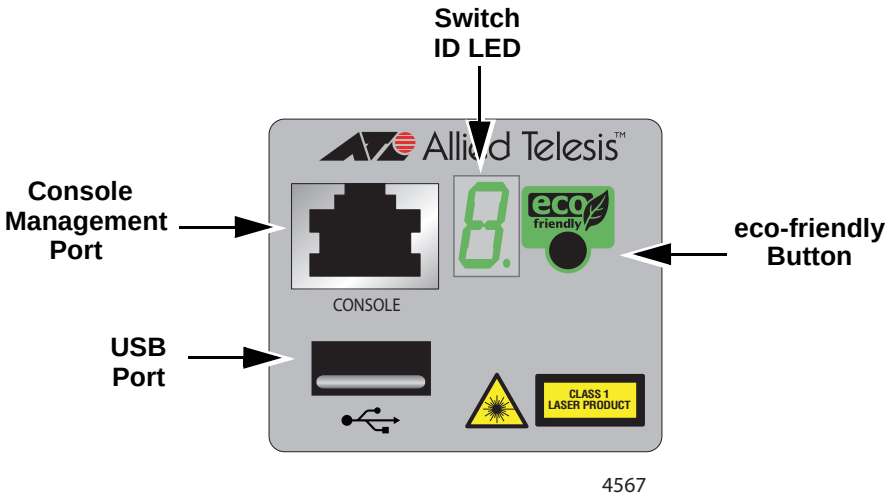


Figure 4. Management Panel

Features

The Allied Telesis x530DP Series switches are stackable Gigabit, Layer 3 Ethernet switches. The following sections list the features:

x530DP Models

Table 1 lists the basic features for the switch models.

Table 1. Basic Features

Model	10/100/1000T PoE+ Copper Ports	10/100/1000T PoE++ Copper Ports	100/1G/2.5G/5G PoE++ Copper Ports	SFP+ Ports
x530DP-28GHXm	-	20	4	4
x530DP-52GHXm	24	16	8	4

Each switch model comes with one pre-installed fan (FAN10). The FAN10R is an option and does not come pre-installed. The power supplies (PWR150-AC, PWR150R-AC, PWR250-AC, PWR250-80(DC), PWR800-AC or PWR1200-AC) and FAN10R must be purchased separately.

The x530DP Switches support the following PoE devices:

- All copper ports on the switches support PoE+ IEEE 802.3at Classes 0 to 4 devices (maximum 30.0W at the switch ports).
- All copper ports on the x530DP-28GHXm Switch and ports 25 to 48 on the x530DP-52GHXm Switch support PoE++ IEEE 802.3bt Classes 5 and 6 devices (maximum 60.0W at the switch ports).

Note
The maximum number of powered devices that the switches can support simultaneously will depend on the power requirements of the devices.

Twisted Pair Ports

The 48 twisted pair ports on the x530DP-52GHXm switch have these features:

- Ports 1 to 40 support 10/100/1000Mbps operation
- Ports 41 to 48 support 1/2.5/5Gbps operation
- 100 meters (328 feet) maximum operating distance per port
- Auto-negotiation for speed
- Half- and Full-duplex mode at 10/100Mbps
- Full-duplex only at 1Gbps and higher speeds
- MDI/MDI-X at 10/100Mbps

- PoE+ supported on ports 1 to 24
- PoE++ supported on ports 25 to 48
- Port Link/Activity (L/A) and PoE LEDs

The 24 twisted pair ports on the x530DP-28GHXm switch have these features:

- Ports 1 to 20 support 10Mbps/100Mbps/1Gbps operation
- Ports 21 to 24 support 100Mbps/1/2.5/5Gbps operation
- 100 meters (328 feet) maximum operating distance per port
- Auto-negotiation for speed
- Half- and Full-duplex mode at 10/100Mbps
- Full-duplex only at 1Gbps and higher speeds
- MDI/MDI-X at 10/100Mbps
- Power over Ethernet (PoE++) supported on all 24 ports
- Port Link/Activity (L/A) and PoE LEDs

Power Over Ethernet

The basic features of PoE of the twisted pair ports on the switches are:

- Supports PoE (15.4W maximum), PoE+ (30W maximum), and PoE++ (60W maximum) powered devices
- When using the PWR1200 power supply, the power budget per power supply is 740W, up to 1480W maximum per switch
- When using the PWR800 power supply, the power budget per power supply is 370W, up to 740W maximum per switch
- Supports powered device classes 0 to 6
- Port prioritization
- Classes 0-4 (Types 1 and 2 up to 30W) Mode A (MDI-x)
- Classes 5-6 (Type 3 up to 45W/60W) Mode A (MDI-x) plus Mode B (MDI-x, MDI)
- IEEE802.3af/at/bt compliant

SFP+ Transceiver Ports

The SFP/SFP+ transceiver ports support the following types of transceivers:

- x530DP-28GHXm: ports 25 to 28
- x530DP-52GHXm: ports 49 to 52

Examples of SFP 1Gbps transceivers include:

- AT-SPSX and LR short and long distance transceivers using multi-mode or single mode fiber optic cable.

- AT-SPBT series of bidirectional transceivers with maximum distances of 10 and 40 kilometers.
- AT-SPEX transceivers with a maximum distance of two kilometers with multi-mode fiber optic cable.

Examples of SFP+ 10Gbps transceivers include:

- AT-SP10SR, LR, ER and ZR series of short or long distance transceivers using multi-mode or single mode fiber optic cable.
- AT-SP10TW series of direct attach cables in lengths of 1 meter and 3 meters.
- AT-SP10BD series of bidirectional transceivers for single mode fiber optic cable with maximum distances of 10 to 40 kilometers.
- AT-SP10TM 1/2.5/5/10G transceiver with RJ-45 connector for a copper link of up to 30m with Category 6a or 7 cable, or 100m with Category 5e cable up to 5G.

Note
Industrial (-40 to 85° C) and extended (-40 to 105° C) temperature transceivers are available.

Note
For a current list of supported transceiver modules refer to the *x530DP Series Data Sheet.*

Note
The switches do not support the 7-meter AT-SP10TW7 direct attach cable.

The following restrictions on SFP+ transceivers apply:

- 100Mbps transceivers are not supported
- Supports full-duplex mode only

SFP and SFP+ transceivers must be purchased separately.

LEDs

The port LEDs are:

- Link/speed/activity LEDs for the twisted pair ports
- Link/speed/activity LEDs for the SFP and SFP+ transceiver ports
- PoE PD On/PD Err/PD Max Current LEDs for the twisted pair ports
- Switch ID number LED

Installation Options

The installation options are:

- Desk or tabletop
- 19-inch equipment rack
- Wooden or concrete wall

Management Software and Interfaces

The management software and interfaces are:

- AlliedWare Plus Management Software
- Command line interface (CLI)

Management Methods

The following methods are used for managing the switches:

- Local management through the Console port
- Remote Telnet or Secure Shell management
- Vista Manager mini
- Autonomous Management Framework (AMF) with Vista Manager EX
- Autonomous Wave Control for wireless networks
- SNMPv1, v2c, and v3
- SNMPv6, Telnetv6, and SSHv6 for IPv6 networks

Power Supplies

This section describes the two types of power supplies for the x530DP switches:

- “Non-PoE Power Supplies,” next
- “System and PoE Power Supplies” on page 25:

Non-PoE Power Supplies

Here are the non-PoE power supplies:

- PWR150
- PWR150R
- PWR250
- PWR250-80

Here are the guidelines:

- Non-PoE power supplies provide system power for the switch, but no power for PoE devices.
- One non-PoE power supply can provide full system power for the switch. Installing a second power supply provides system power redundancy.
- Non-PoE power supplies should only be used in x530DP switches connected to non-PoE devices.
- The airflow direction of the fans in the PWR150, PWR250, and PWR250-80 power supplies is from the front panel to rear panel of the switch. The fans draw air out of the switch.
- The airflow direction of the fans in the PWR150R power supply is from the rear panel to the front panel. The fans force air into the device.
- The PWR150, PWR250, and PWR250-80 power supplies must be used with the FAN10 module, which comes pre-installed in the switch.
- The PWR150R power supply must be used with the FAN10R module. The FAN10R module is sold separately.

Caution

The airflow directions of the power supplies and fan module must be the same to ensure adequate ventilation and cooling inside the switch.

- The PWR150, PWR150R, and PWR250 power supplies have AC power connectors as shown in Figure 5.

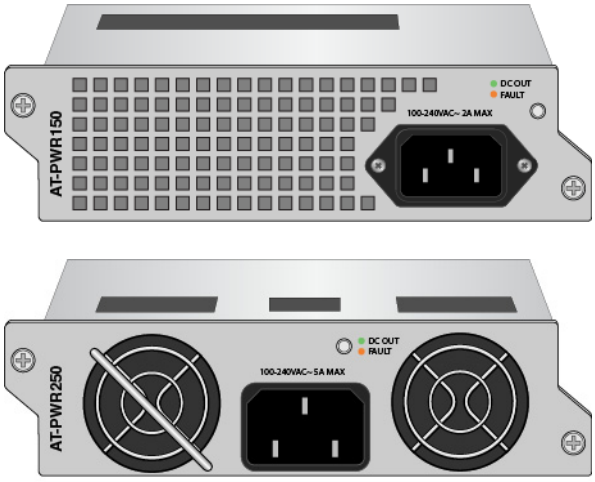


Figure 5. Non-PoE AC Power Supplies

The PWR250-80 power supply has a DC connector for DC wiring environments, as shown in Figure 6..

Figure 6. Non-PoE DC Power Supply

System and PoE Power Supplies

Here are the system and PoE power supplies:

- PWR800
- PWR1200

Here are the guidelines for the PWR800 power supply:

- A single PWR800 power supply can provide both full system power for the switch and up to 370W of power for PoE devices on the ports.
- Installing a second PWR800 power supply adds system power redundancy and an additional 370W of power for PoE devices, for a total of 740W.

Here are the guidelines for the PWR1200 power supply:

- A single PWR1200 power supply can provide both full system power and up to 740W of power for PoE devices on the ports.
- Installing a second PWR1200 power supply adds system power redundancy as well as an additional 740W of power for PoE devices, for a total of 1480W.

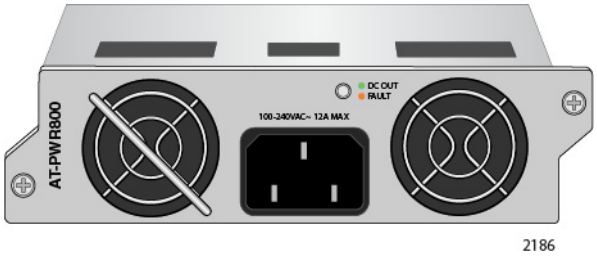


Figure 7. System and PoE Power Supplies

The PoE power budgets and the maximum number of supported ports are summarized in Table 2.

Table 2. System and PoE Power Supply Summary

System and PoE Power Supply	Number of Power Supplies	PoE Budget	Maximum Supported PoE Ports		
			15.4W	30W	60W
PWR800	1	370W	24	‘12	6
PWR800	2	740W	24	24	12
PWR1200	1	740W	24	24	12
PWR1200	2	1480W	24	48	24

General Guidelines

Here are additional power supply guidelines:

- Power supplies are sold separately.
- If you are installing two power supplies in the switch, both power supplies must be the same model. Do not install different power supplies in the switch.
- All power supplies, except for the PWR150R power supply, must be used together with the FAN10 module, which comes pre-installed in the switch.
- The PWR150R power supply must be used with the FAN10R fan module. The FAN10R module is sold separately.

Caution
The airflow directions of the power supplies and fan module must be the same to ensure adequate ventilation and cooling inside the switch.

Warning
Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. E3

Warning
This unit might have more than one power cord. To reduce the risk of electric shock, disconnect all power cords before servicing the unit. E30

Note
The PWR150, PWR150R, PWR250, PWR800, and PWR1200 power supplies are powered on and off by connecting and disconnecting the power cords. The PWR250-80 power supply is powered on and off by deactivating the DC circuit.

FAN10 and FAN10R Cooling Fans

The cooling units for the chassis are the FAN10 and FAN10R fan modules. Refer to Figure 8.

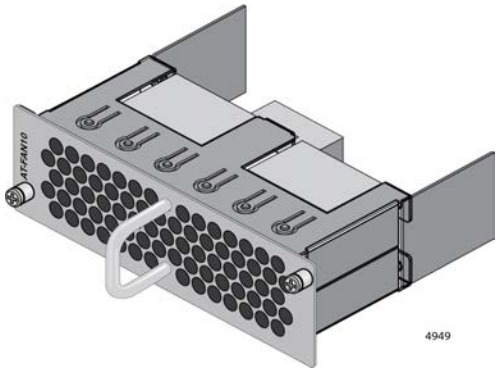


Figure 8. FAN10 and FAN10R Fan Modules

Here are the fan module guidelines:

- The fan modules have different airflow directions. The FAN10 airflow direction is from front to back.
- The FAN10R airflow direction is from back to front.
- The switch comes with the FAN10 module pre-installed on the rear panel.
- The FAN10R module is sold separately.

Caution

The FAN10R module must be used with the PWR150R power supply. Using the FAN10R module with any other power supply may result in inadequate ventilation and cooling inside the switch, which may cause the device to overheat and fail.

- The fan modules contain two fans. If a single fan fails, the switch may be able to continue operating for up to 24 hours without overheating, depending on the ambient temperature and ventilation.
- The fan module is field-replaceable and hot-swappable. You do not have to power off the switch to replace it.
- The switch automatically adjusts the fan speeds according to the ambient temperature.

Twisted Pair Ports

The specifications of the twisted pair ports are listed in Table 3 and Table 4 on page 30.

Table 3. x530DP-28GHXm Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 20: 10/100Mbps or 1Gbps. Ports 21 - 24: 100Mbps or 1/2.5/5Gbps. Ports 1 - 20: Set the port speed manually at 10/100Mbps or with Auto-Negotiation at all speeds. 1Gbps requires Auto-Negotiation. Ports 21 - 24: Set with Auto-Negotiation only, at 1Gbps and higher. The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 20: Full- or half-duplex mode at 10/100Mbps. Full-duplex only at 1Gbps. Supports Auto-Negotiation at all speeds. Ports 21- 24: Full-duplex only at all speeds.
Maximum Distance	100 meters (328 feet).
Power over Ethernet	PoE (15.4W maximum per port), PoE+ (30W maximum per port) and PoE++ (60W maximum per port).
Connector	8-pin RJ-45.

Table 4. x530DP-52GHXm Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 40: 10/100Mbps or 1Gbps. Ports 41 - 48: 1000Mbps or 1/2.5/5Gbps Ports 1 - 40: Set the port speed manually or with Auto-Negotiation at 10/100Mbps. Ports 41 - 48: The port speed is set with Auto-Negotiation only, at 1Gbps and higher. The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 40: Full- or half-duplex mode at 10/100Mbps. Full-duplex only at 1Gbps. Supports Auto-Negotiation at 100Mbps. Ports 41- 48: Full-duplex only at all speeds.
Maximum Distance	100 meters (328 feet).
Power over Ethernet	PoE (15.4W maximum per port), PoE+ (30W maximum per port) and PoE++ (60W maximum per port).
Connector	8-pin RJ-45.

Speed

The speed characteristics of the switch follows:

- On x530DP-28GHXm ports 1 to 20 operate at 10/100Mbps or 1Gbps and ports 21 to 24 operate at 100 Mbps or 1/2.5/5Gbps.
- On x530DP-52GHXm ports 1 to 40 operate at 10/100Mbps or 1Gbps and ports 41 to 48 operate at 1000Mbps or 1/2.5/5Gbps.
- All speeds, with the exception of 100Mbps, require Auto-Negotiation (IEE 802.3u), which automatically sets port speeds based on the highest common speeds of ports and the connected network devices. 100Mbps can be set with Auto-Negotiation or manually. Auto-Negotiation is the default setting.

Note
The ports must be set to Auto-Negotiation to function at 1/2.5/5Gbps speeds and are not compatible with devices that are not IEEE 802.3u-compliant.

Duplex Mode

The twisted pair ports can operate in either half- or full-duplex mode at 10/100Mbps and full-duplex mode only at higher speeds.

The duplex mode of a port operating at 10/100Mbps, like port speed, can be set manually using the management software or automatically with Auto-Negotiation (IEEE 802.3u), the default setting.

The speed and duplex mode settings of a port can be set independently of each other. For example in the case of a 100Mbps port, it can be configured such that its speed is set manually while its duplex mode is established through Auto-Negotiation.

Note
Switch ports default to half-duplex mode when connected to 10 Mbps/100 Mbps network devices that do not support Auto-Negotiation. If a network device supports full-duplex only, a duplex mode mismatch can occur, resulting in poor network performance. To prevent this, disable Auto-Negotiation and set the duplex mode manually on ports connected to 100Mbps devices that support full-duplex only.

Wiring Configuration

The wiring configuration of a port operating at 10/100Mbps can be MDI or MDI-X. The wiring configurations of a switch port and a network device connected with straight-through twisted pair cabling must be opposite, such that one device is using MDI and the other MDI-X. For example, a switch port must be set to MDI-X if it is connected to a network device set to MDI.

The wiring configurations of the ports can be set manually or automatically by the switch with auto-MDI/MDI-X (IEEE 802.3ab-compliant). This feature enables the switch to automatically negotiate with network devices to establish their proper settings.

The MDI and MDI-X settings do not apply when ports are operating at a speed of 1Gbps or higher.

Maximum Distance

The ports have a maximum operating distance of 100 meters (328 feet).

Cable Requirements

The minimum category of twisted pair cable requirements are as follows:

- 10/100Mbps ports: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.
- 1000Mbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.
- 1/2.5/5Gbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.

Port Pinouts

Refer to Table 13 on page 135 for the port pinouts of the 100Mbps and 1/2.5/5Gbps twisted pair ports.

LEDs

Each twisted pair port has two LEDs that display the port status.

x530DP-28GHXm

The x530DP-28GHXm LEDs indicate Link/Activity (L/A) and PoE (PD ON/PD ERR/MAX CURRENT) information. These LEDs are shown in Figure 9.

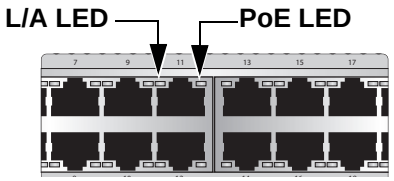


Figure 9. x530DP-28GHXm Twisted Pair Ports1-24 LEDs

The states of the x530DP-28GHXm LEDs are described in Table 5 on page 33.

Table 5. x530DP-28GHXm Twisted Pair Ports 1 - 24 LED Functions

LED	Ports	State	Description
L/A	1 - 20	Solid Green	The port has established a 1Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1Gbps.
	21 - 24	Solid Green	The port has established a 1/2.5/5Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1/2.5/5Gbps.
	1 - 24	Solid Amber	The port has established a 10/100Mbps link to a network device.
		Flashing Amber	The port is transmitting or receiving data at 10/100Mbps.
		Off	Possible causes of this state are: - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
PoE	1 - 24	Solid Green	PD On - The switch is delivering power to a powered device connected to the port.
		Solid Amber	PD Error - The switch has shut down PoE on the port because of a fault condition.
		Flashing Amber	PD Max Current - The switch has detected a powered device on the port but is not delivering power to it because doing so would exceed its available power budget.
		Off	No PD - This LED state can result from the following conditions: - The port is not connected to a non-PoE device or the device is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

x530DP-52GHXm

The x530DP-52GHXm LEDs indicate Link/Activity (L/A) and PoE (PD ON/PD ERR/MAX CURRENT) information. These LEDs are shown in Figure 10.

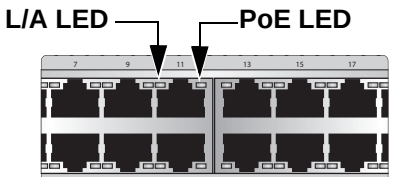


Figure 10. x530DP-52GHXm Twisted Pair Ports 1-48 LEDs

The states of the x530DP-52GHXm LEDs are described in Table 6.

Table 6. x530DP-52GHXm Twisted Pair Ports 1 - 48 LED Functions

LED	Ports	State	Description
L/A	1 - 40	Solid Green	The port has established a 1Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1Gbps.
	41 - 48	Solid Green	The port has established a 1/2.5/5Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1/2.5/5Gbps.
	1 - 48	Solid Amber	The port has established a 10/100Mbps link to a network device.
		Flashing Amber	The port is transmitting or receiving data at 10/100Mbps.
		Off	Possible causes of this state are: - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 6. x530DP-52GHXm Twisted Pair Ports 1 - 48 LED Functions (Continued)

LED	Ports	State	Description
PoE	1 - 48	Solid Green	PD On - The switch is delivering power to a powered device connected to the port.
		Solid Amber	PD Error - The switch has shut down PoE on the port because of a fault condition.
		Flashing Amber	PD Max Current - The switch has detected a powered device on the port but is not delivering power to it because doing so would exceed its available power budget.
		OFF	No PD - This LED state can result from the following conditions: - The port is not connected to a powered device or the device is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Power Over Ethernet

The x530DP-28GHXm switch features PoE++ on twisted pair ports 1 - 24. The x530DP-52GHXm switch features PoE+/PoE++ on twisted pair ports 1 - 48. With PoE, the switch supplies DC power to network devices over the same twisted pair cables that carry the network traffic.

PoE can make it easier to install networks. The selection of a location for a network device can be limited by whether there is a power source nearby. This often limits equipment placement or requires the added time and cost of having additional electrical sources installed. With PoE, you can install PoE-compatible devices wherever they are needed without having to worry about whether there are power sources nearby.

A device that provides PoE to network devices is referred to as *power sourcing equipment* (PSE). It functions as a central power source for other network devices.

Devices that receive their power from a PSE are called *powered devices* (PD). Examples include wireless access points, IP telephones, webcams, and even other Ethernet switches.

The x530DP-28GHXm switch automatically determines whether devices connected to its ports are powered devices. Ports that are connected to network nodes that are not powered devices (that is, devices that receive their power from another power source) function as regular Ethernet ports, without PoE. The PoE feature remains activated on the ports but no power is delivered to the devices.

PoE Standards

The x530DP Series switch supports these PoE standards:

- PoE (IEEE 802.3af): This standard provides up to 15.4 watts at the switch port for powered devices that require up to 13.0 watts.
- PoE+ (IEEE 802.3at): This standard provides up to 30.0 watts at the switch port for powered devices that require up to 25.5 watts.
- PoE++ (IEEE 802.3bt): This standard provides up to 60 watts at the switch port for powered devices that require up to 50 watts.

Powered Device Classes

Powered devices are grouped into the seven classes listed in Table 7. The classes are based on the amount of power the devices require. The switch supports all seven classes.

Table 7. IEEE Powered Device Classes

Class	Maximum Power at Switch Port	Maximum Power at Powered Device
0	15.4W	12.95W
1	4.0W	3.84W
2	7.0W	6.49W
3	15.4W	12.95W
4	30.0W	25.5W
5	45.0W	40.0W
6	60.0W	51.0W

Power Budget

The power budget is the maximum amount of power the switch can supply to the powered devices on its ports. The higher the budget, the more PoE devices the switch can support at one time.

The power budget of the switch depends on several factors. The first is the power supply model. The power budgets of the four power supplies are listed in Table 8.

Table 8. Power Supply Budgets of the Power Supplies

Power Supply	Power Budget for PoE Devices
PWR150 / PWR150R	0 watts
PWR250	0 watts
PWR250-80	0 watts
PWR800	370 watts
PWR1200	740 watts

Note
The switch supports only non-PoE devices when powered with the PWR150, PWR150R, PWR250, or PWR250-80 power supply.

Another factor that determines the power budget of the switch is the number of PoE power supplies in the device. The power budget of a PoE switch that has only one PoE power supply is equal to the budget of the power supply. For example, a switch that has one PWR1200 Power Supply has a power budget of 740W for powered devices.

Table 9 lists the power budgets for the switch with one or two PWR800 Power Supplies.

Table 9. Power Budgets of the PWR800 Power Supply

Number of Power Supplies in the Switch	Power Budget of the Switch
One	370 watts
Two	740 watts

Table 10 lists the power budgets for the switch with one or two PWR1200 Power Supplies.

Table 10. Power Budgets of the PWR1200 Power Supply

Number of Power Supplies in the Switch	Power Budget of the Switch
One	740 watts
Two	1480 watts

The maximum number of PoE devices the switch can support at one time is determined by its power budget and the power requirements of the devices. The switch can supply power to all of the devices as long as the their total power requirements is less than its power budget. If the switch determines that the power requirements of the devices exceed its power budget, it denies power to one or more ports using a mechanism referred to as port prioritization.

To determine whether the power requirements of the PoE devices you plan to connect to the switch exceed its power budget, refer to their documentation for their power requirements and add the requirements together. The switch should be able to power all of the devices simultaneously as long as the total is below its power budget. If the total exceeds the available power budget, you should consider reducing the number of PoE devices so that all of the devices receive power. Otherwise, the switch powers a subset of the devices, based on port prioritization.

The switch can handle different power requirements on different ports. This enables you to connect different classes of PoE equipment to the ports on the switch.

Port Prioritization

If the power requirements of the powered devices exceed the switch power budget, the switch denies power to some ports based on a system called port prioritization. Use this mechanism in the distribution of power if the demands of the devices exceed the available capacity. This ensures that powered devices critical to the operation of your network are given preferential treatment by the switch.

There are three priority levels:

- Critical
- High
- Low

Ports set to the Critical level, the highest priority level, are guaranteed power before any of the ports assigned to the other two priority levels. Ports assigned to the other priority levels receive power only if all the Critical ports are receiving power. Ports that are connected to your most critical powered devices must be assigned to this level. If there is not enough power to support all the ports set to the Critical priority level, power is provided to the ports based on port number, in ascending order.

The High level is the second highest level. Ports set to this level receive power only if all the ports set to the Critical level are already receiving power. It there is not enough power to support all of the ports set to the High priority level, power is provided to the ports based on port number, in ascending order.

The lowest priority level is Low. This is the default setting. Ports set to this level only receive power if all of the ports assigned to the other two levels are already receiving power. As with the other levels, if there is not enough power to support all of the ports set to the Low priority level, power is provided to the ports based on port number, in ascending order.

Power allocation is dynamic. Ports supplying power to powered devices can cease power transmission if the switch power budget is at maximum usage and new powered devices, connected to ports with higher priorities become active.

Wiring Implementation

The IEEE 802.3af standard defines two methods for delivering DC power over twisted pair cable by a switch to powered devices. These methods are known as Modes A and B, and identify the individual wires that carry the DC power within the cable from the switch to powered devices.

Twisted pair cabling typically consists of eight wires. With 100Base-TX devices, the wires connected to pins 1, 2, 3, and 6 on the RJ-45 connectors carry the network traffic while the wires connected to pins 4, 5, 7, and 8 are unused. At higher speeds, all eight wires are used to carry network data.

It takes four wires to deliver DC power to a powered device. With Mode A, power is delivered on pins 1, 2, 3, and 6. These are the same pins in 10Base-T and 100Base-TX devices that carry the network data. With Mode B, power is provided over the spare wires.

The PoE wiring modes of the twisted pair ports on the x530DP Switches are as follows:

- Classes 0-4 (Types 1 and 2 up to 30W) Mode A (MDI-x)
- Classes 5-6 (Type 3 up to 45W/60W) Mode A (MDI-x) plus Mode B (MDI-x, MDI)

Powered devices of classes 0 to 4 that comply with the IEEE 802.3af standard are required to support both Modes A and B. Legacy devices that do not comply with the standard will work with the switch if they are powered on pins 1, 2, 3, and 6.

SFP+ Transceiver Ports

The x530DP-28GHXm Switch has four ports (ports 25 - 28) and the x530DP-52GHXm Switch has four ports (ports 49 - 52) for 1Gbps SFP and 10Gbps SFP+ transceivers.

SFP and SFP+ Transceivers

See “SFP+ Transceiver Ports” on page 21 for a description and guidelines of the SFP+ transceivers.

SFP or SFP+ transceivers must be purchased separately. For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

LEDs

This section applies to the 1Gbps SFP and 10Gbps SFP+ transceiver ports on the x530DP-28GHXm and x530DP-52GHXm switches. Each transceiver port has one LED. The LEDs are located between the ports. Refer to Figure 11.

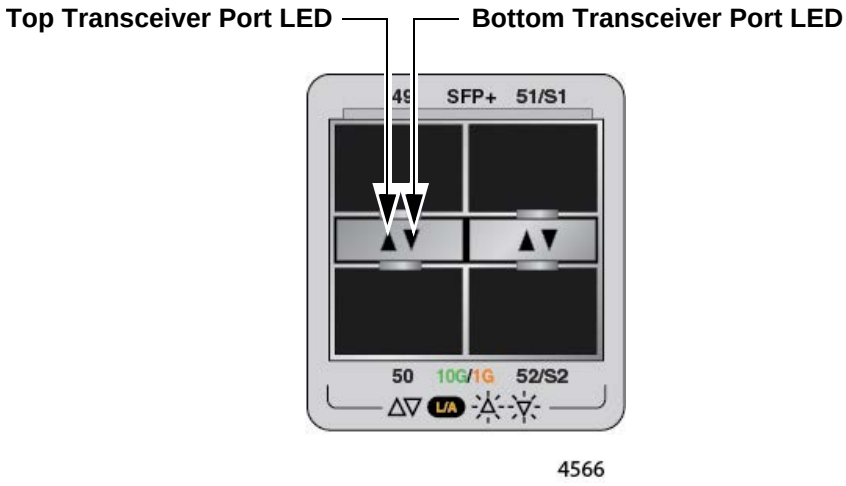


Figure 11. Link and Activity LEDs for the 1Gbps SFP/10Gbps SFP+ Ports

The LEDs display link status and activity. The possible LED states are described in Table 11.

Table 11. Link and Activity Status LEDs for the 1Gbps and 10Gbps Ports

State	Description
Solid Green	The transceiver has established a 10Gbps link to a network device.
Flashing Green	The transceiver is transmitting or receiving data in 10Gbps.
Solid Amber	The transceiver has established a 1Gbps link to a network device.
Flashing Amber	The transceiver is transmitting or receiving data in 1Gbps.
Off	Possible causes of this state are: - The port is empty. - The transceiver has not established a link to a network device. - A non-supported module is installed. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

eco-friendly Button

The eco-friendly button on the front panel of the switch is used to toggle the port LEDs on or off. You can turn off the LEDs to conserve electricity when you are not monitoring the device. You can also toggle the LEDs with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode of the command line interface of the AlliedWare Plus management software.

The switch is operating in a low power mode when the LEDs are turned off. Operating the switch in the low power mode does not interfere with the network operations of the device.

The management software on the switch has a command that blinks the LEDs so that you can quickly and easily identify a specific unit among the devices in an equipment rack. It is the FINDME command. The command works on the switch even if you turned off the LEDs with the eco-friendly button or NO ECOFRIENDLY LED command.

Note
Before checking or troubleshooting the network connections to the ports on the switch, you must always check to be sure that the LEDs are on by either pressing the eco-friendly button or issuing the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode in the command line interface.

VCStack Feature

You can use the switches as standalone units or join up to eight units with the VCStack feature. The switches of a VCStack act as a single virtual unit. They synchronize their actions so that switching operations (such as spanning tree protocols, virtual LANs, and static port trunks) span across all of the units and ports. Two advantages of stacks are:

- You can manage multiple units simultaneously, which can simplify network management.
- You can add redundancy to your network topology by distributing functions across multiple switches. For instance, a static port trunk on a standalone switch can consist of ports from the same switch. In contrast, a static trunk on a stack can have ports from different switches in the same stack.

Note
This guide explains how to install the devices as standalone units. For instructions on VCStack, refer to the *x530DP Series Installation Guide for Virtual Chassis Stacking*.

Switch ID LED

The switch ID LED, shown in Figure 12, displays the ID number of the switch. A standalone switch has the ID number 0. Switches in a VCStack have the numbers 1 to 8. Chapter 7, “Powering On the Switch” on page 91 has the procedure for verifying and, if necessary, changing the ID number of the switch.

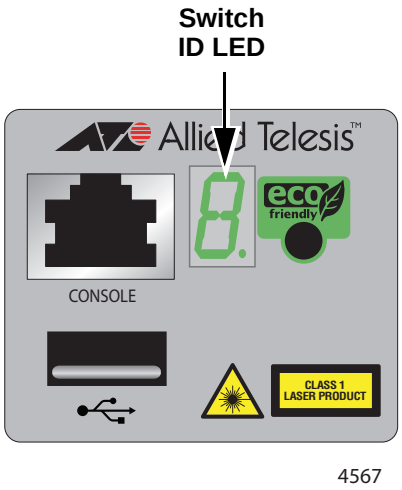


Figure 12. Switch ID LED

The states of the LED when the switch is not operating in the low power mode are shown in Figure 13.

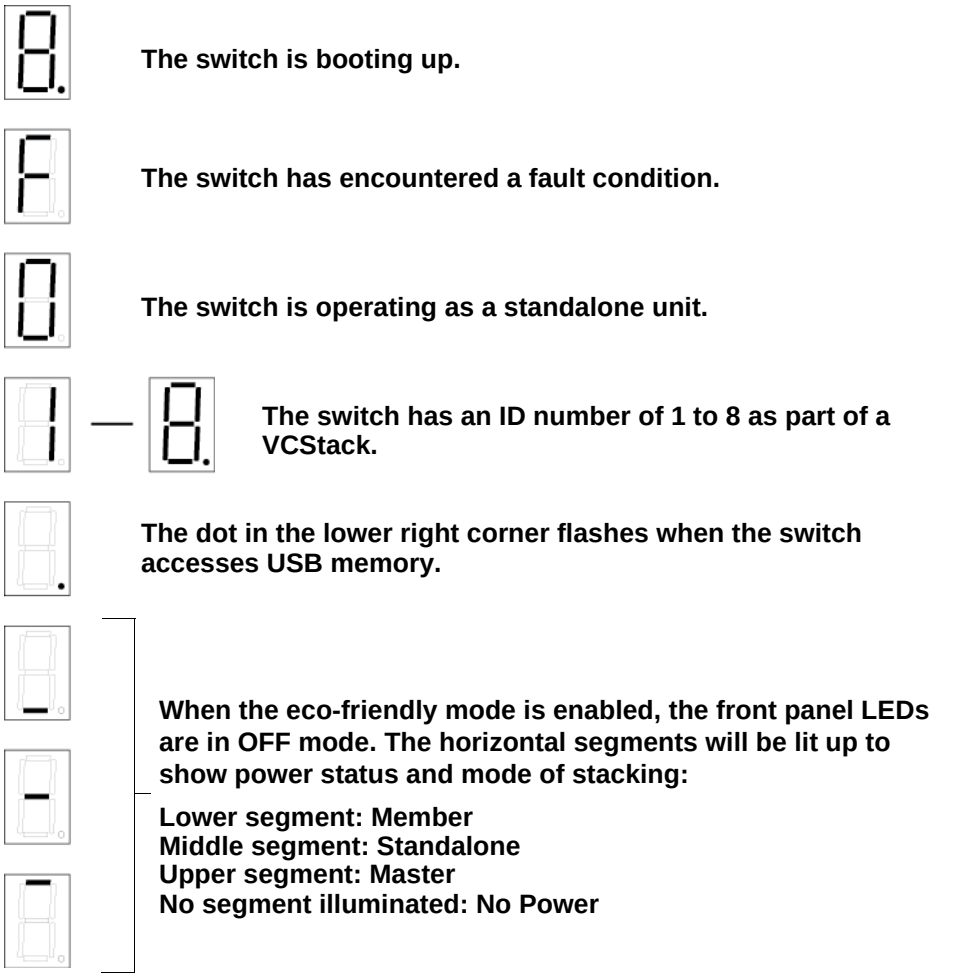


Figure 13. Switch ID LED Description

The switch displays the letter “F” for fault on the ID LED if it detects one of the following problems:

- A cooling fan has failed.
- The internal temperature of the switch has exceeded the normal operating range and the switch may shut down.
- Redundant PSU failure (a second PSU is present, but not supplied with power).

Note
You can use the SNMP or the CLI management interface to determine the type of fault or faults.

USB Port

The USB port on the management panel is used for the following functions:

- Store configuration files on flash drives.
- Restore configuration files to switches that have lost or corrupted settings.
- Configure replacement units by downloading configuration files from a flash drive.
- Update the management firmware.

The port is USB 2.0-compatible.

Console Port

The Console port is an RS232 serial management port. You use the port to access the AlliedWare Plus management software on the switch to configure the feature settings or monitor status or statistics. This type of management is commonly referred to as local management because you have to be at the physical location of the switch and use the management cable included with the unit. The switch does not have to have an IP address for local management.

To establish a local management session with the switch, use the provided management cable to connect a terminal or a computer with a terminal emulation program to the Console port, which has an RJ-45 style (8P8C) connector. The cable has RJ-45 style (8P8C) and DB-9 (D-sub 9-pin) connectors.

The Console port has the following settings:

- Default baud rate: 9,600 bps (range is 9,600 to 115,200 bps)
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Note
These settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulation program.

Chapter 2

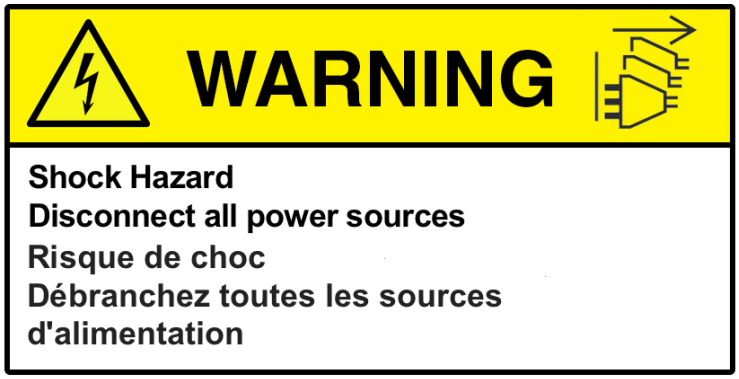
Beginning the Installation

The chapter contains the following sections:

Reviewing Safety Precautions

Important: Safety statements that have the ☞ symbol are translated into multiple languages in the *Translated Safety Statements* document at **https://www.alliedtelesis.com/en/documents/translated-safety-statements**.

Remarque: Les consignes de sécurité portant le symbole ☞ sont traduites dans plusieurs langues dans le document *Translated Safety Statements,* disponible à l'adresse **https://www.alliedtelesis.com/en/documents/translated-safety-statements**.



Warning
Class 1 Laser product. ☞ L1

Warning
Laser Radiation.
Class 1M Laser product.

Warning
Do not stare into the laser beam. ☞ L2

Warning
Do not look directly at the fiber optic ends or inspect the cable ends with an optical lens. ☞ L6

Warning
To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the LAN cables. E1

Warning
Do not work on equipment or cables during periods of lightning activity. E2

Warning
Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. E3

Warning
Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts. E4

Note
Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. E5

Caution
Air vents must not be blocked and must have free access to the room ambient air for cooling. E6

Warning
Operating Temperatures. This product is designed for a maximum ambient temperature of 50° C. E52

Note
All Countries: Install product in accordance with local and National Electrical Codes. E8

Warning
Only trained and qualified personnel are allowed to install or replace this equipment. E14

Caution
Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. E21

Caution
Risk of explosion if battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Attention: Le remplacement de la batterie par une batterie de type incorrect peut provoquer un danger d'explosion. La remplacer uniquement par une batterie du même type ou de type équivalent recommandée par le constructeur. Les batteries doivent être éliminées conformément aux instructions du constructeur. E22

Warning
Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading. E25

Warning
The chassis may be heavy and awkward to lift. Allied Telesis recommends that you get assistance when mounting the chassis in an equipment rack. E28

Note
Use dedicated power circuits or power conditioners to supply reliable electrical power to the device. E27

Warning
This unit might have more than one power cord. To reduce the risk of electric shock, disconnect all power cords before servicing the unit. E30

Note
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra). E35

Caution
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. E36

Warning
Reliable earthing of rack-mounted equipment must be maintained. Particular attention must be given to supply connections other than direct connections to the branch circuits (e.g., use of power strips). E37

Warning
To reduce the risk of electric shock, the PoE ports on this product must not connect to cabling that is routed outside the building where this device is located. E40

Warning
This product may have multiple AC power cords installed. To de-energize this equipment, disconnect all power cords from the device. E41

Caution
An Energy Hazard exists inside this equipment. Do not insert hands or tools into open chassis ports or plugs. E44

Warning
This equipment must be installed in a Restricted Access location. E45

Caution
The unit does not contain serviceable components. Please return damaged units for servicing. E42

Warning
The temperature of an operational SFP or SFP+ transceiver may exceed 70° C (158° F). Exercise caution when removing or handling a transceiver with unprotected hands. E43

Choosing a Site for the Switch

Observe these requirements when planning the installation of the switch.

- ❒ Before installing the switch in an equipment rack, check that the rack is safely secured so that it will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.
- ❒ Before installing the switch on a table, check that the table is level and stable.
- ❒ The power outlets should be located near the switch and be easily accessible.
- ❒ The site should allow for easy access to the ports on the front of the switch, so that you can easily connect and disconnect cables, and view the port LEDs.
- ❒ The site should allow for adequate air flow around the unit and through the cooling vents on the front and rear panels. (The ventilation direction is from front to back.)
- ❒ The site must not expose the switch to moisture or water.
- ❒ The site must be a dust-free environment.
- ❒ The site must have dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- ❒ Do not install the switch in a wiring or utility box because it might overheat and fail from inadequate air flow.

Warning
Switches should not be stacked on a table or desktop. They could present a physical safety hazard if you need to move or replace switches. E91

Installation Options

Figure 14 illustrates the four installation options.

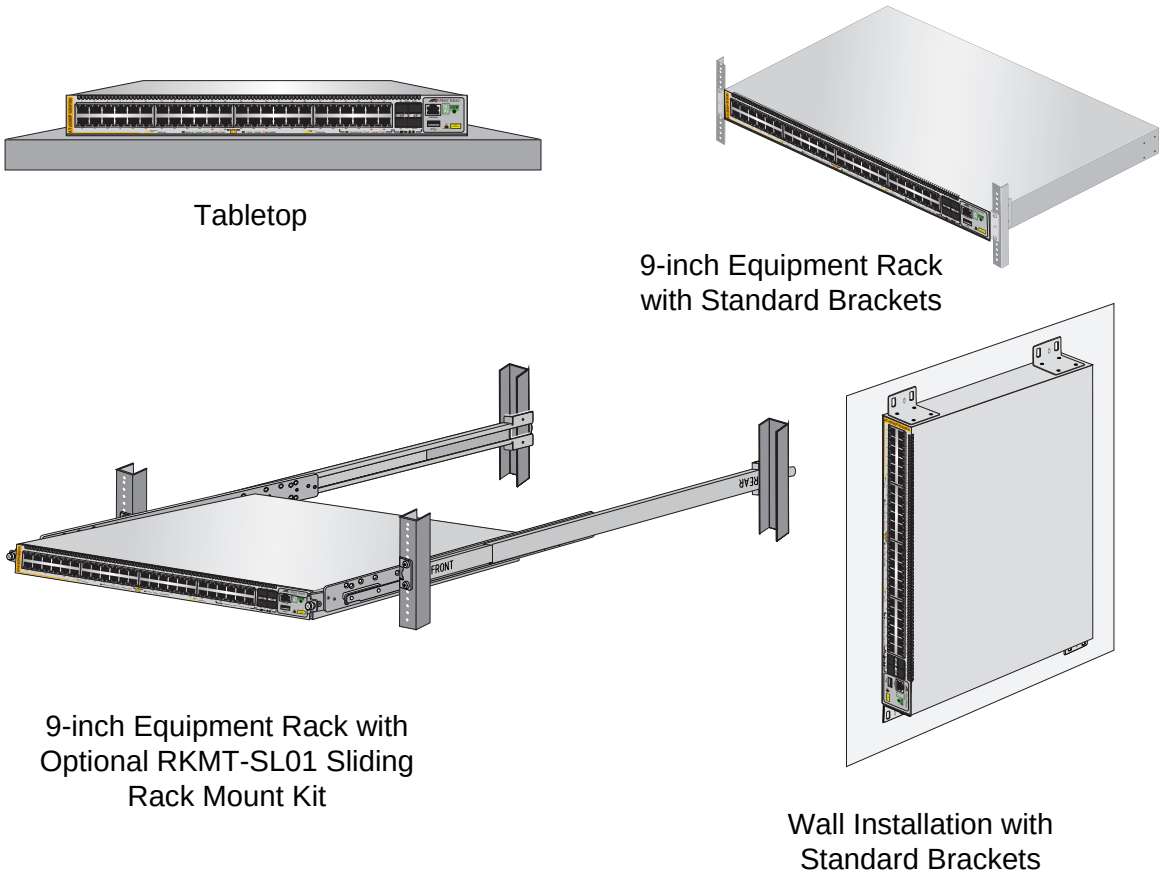


Figure 14. Installation Options

Note
The standard brackets are included with the switch, The optional RKMT-SL01 Sliding Shelf is purchased separately.

Unpacking the Switch

The main items provided in the shipping box for the switch are:

- The switch

Note
The switch comes with the FAN10 fan module, a PNL800/1200 blank panel pre-installed in slot B, and a Styrofoam block in power supply slot A.

- Accessory kit (refer to Figure 16 on page 58)

Note
Retain the original packaging material in case you need to return the unit to Allied Telesis.

Figure 15 shows the items provided in the shipping box for the switch.

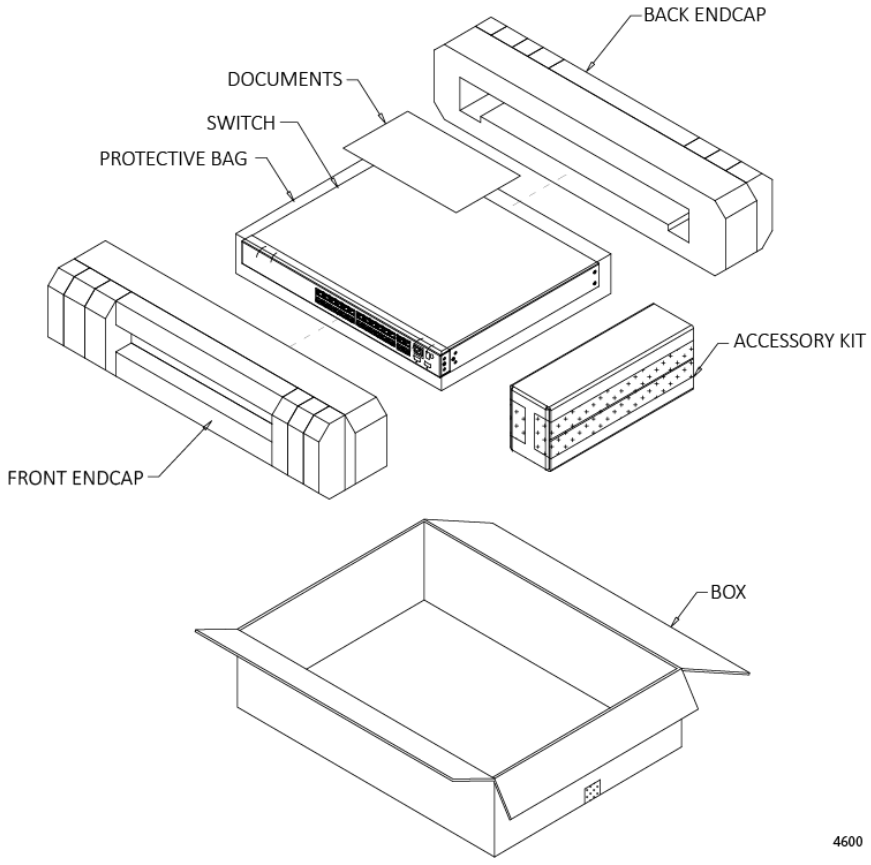
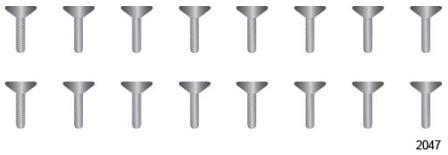


Figure 15. Removing Accessories

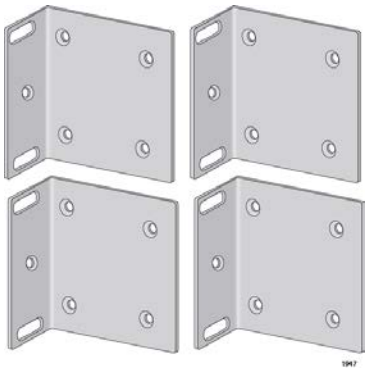
Verifying the Accessory Kit

Figure 16 lists the accessory items that are included with the switch.

One 2 m (6.6 ft) local management cable with RJ-45 (8P8C) and DB-9 (D-sub 9-pin) connectors.



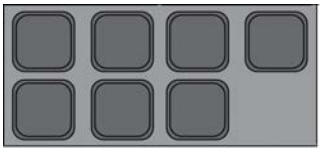
Sixteen bracket screws



Four standard equipment rack or wall mounting brackets

Four anchors for concrete walls:
Length: 29.6mm (1.2 in.)
Diameter: 4mm (0.2 in.)

Four screws for wood or concrete walls:
Length: 32.6mm (1.3 in.)
Diameter: 4mm (0.2 in.)



Seven rubber feet

One PNL800/1200 blank panel

Figure 16. Accessory Kit

Note
If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Unpacking the Power Supply

To unpack the power supply, perform the following procedure:

1. Remove the power cord and any documents from the accessory partition.

Warning
The power supply is heavy. Ask for assistance lifting the device out of the shipping box. You might injure yourself or damage the device if you lift it without assistance.

2. Remove the power supply from the shipping end-caps and protective shipping bag.

Note
Retain the original packaging material in case you need to return the unit to Allied Telesis.

3. Visually inspect the product for damage.

Note
If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

4. After unpacking the switch and power supplies, go to Chapter 3, “Installing the Power Supplies” on page 61.

Chapter 3

Installing the Power Supplies

The sections in this chapter are listed here:

Installing the Power Supplies

This section contains the procedure for installing the power supplies in the switch. If you are planning to install the switch in an equipment rack, you may install the power supplies either before or after installing the device in the rack.

Caution
The device can be damaged by electrostatic discharge (ESD). Be sure to follow standard ESD protections procedures, such as wearing a wrist or foot strap, when installing the device. E106

Caution
The switch is heavy. Always ask for assistance before moving or lifting the device so as to avoid injuring yourself or damaging the equipment.

Note
If you are installing the PWR150R Power Supply, you must replace the pre-installed FAN10 module with the FAN10R module. The FAN10R module is sold separately. For instructions, refer to Appendix C, “Removing and Replacing Modules” on page 163.

To install the power supplies, perform the following procedure:

1. Place the switch on a level, secure table or desk.
2. Use a cross-head screwdriver to loosen the two captive screws on the PNL800/1200 blank panel covering power supply slot B on the back panel and remove it from the switch. Refer to Figure 17 on page 63.

Note
You may skip this step and leave the blank panel on the switch if you are installing only one PWR800 or PWR1200 Power Supply. The panel is not compatible with the PWR150, PWR150R, PWR250, PWR250-80 and PWR300 Power Supplies and must be removed even if you are installing only one of those power supplies.

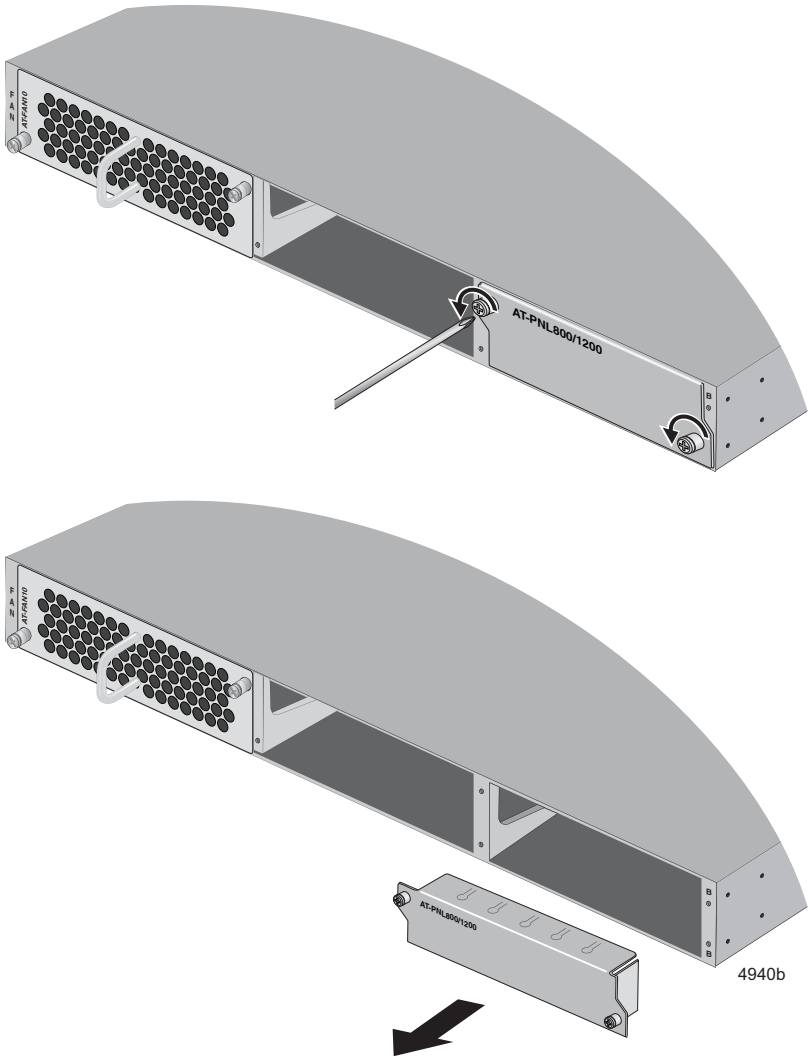


Figure 17. Removing the PNL800/1200 Blank Panel

3. Unpack the power supply from its shipping container.

Caution
The device is heavy. Use both hands to lift it. You might injure yourself or damage the device if you drop it. E94

4. Check the shipping container for the accessory items.

   Refer to Table 12 on page 64 to determine the accessory items that come with your power supply. The items are shown in Figure 18 on page 64.

Table 12. Accessory Items Included with the Power Supplies

Power Supply	One Power Cord Retaining Clip	One Power Cord
PWR150 / PWR150R	Yes	Yes
PWR250	Yes	Yes
PWR250-80	No	No
PWR800	Yes	Yes
PWR1200	No	Yes

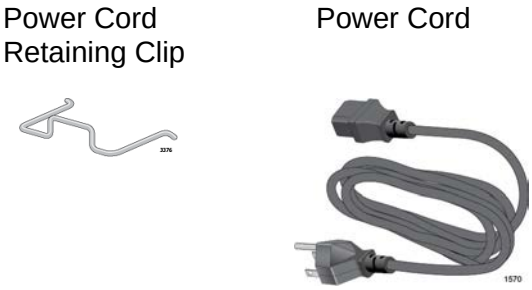


Figure 18. Power Supply Accessory Items

Note
The power cord that comes with the PWR1200 Power Supply for installations in North America has a 20 Amp, 125 V NEMA 5-20P plug that is only compatible with an NEMA 5-20R receptacle.

5. Slide the new power supply into slot A or B in the back panel of the switch. Refer to Figure 19 on page 65.

   Please review the following guidelines before installing the module:

   - ❒ If you are installing only one power supply, you may install it in either slot A or B.
   - ❒ The handle on the power supply should be on the left as you install the module in the switch. Refer to Figure 19 on page 65.
   - ❒ When installed, the PWR1200 Power Supply extends 5.6 cm (2.2 in.) from the back panel of the chassis.
   - ❒ The power supply is fully installed in the slot when the tabs with the captive screws are flush with the back panel of the switch. Light pressure may be required to properly seat the module on the power connector inside the chassis.

- The power supply unit is field-replaceable and hot-swappable. Refer to Figure 19.

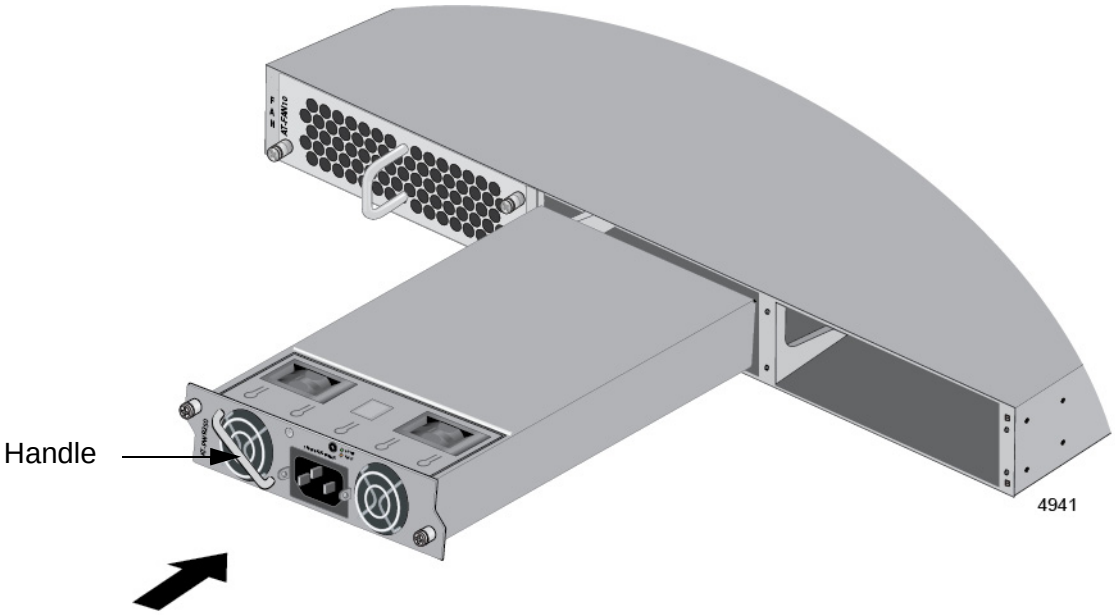


Figure 19. Installing a Power Supply

Caution

Do not use excessive force when seating the module, because this may damage the system or the module. If the module resists seating, remove it from the system, realign it, and try again. E47

Caution

Do not connect the power cord to the power supply until after the power supply is installed in the switch. Installing a power supply while it is powered on might damage the switch. Refer to Figure 20 on page 66.

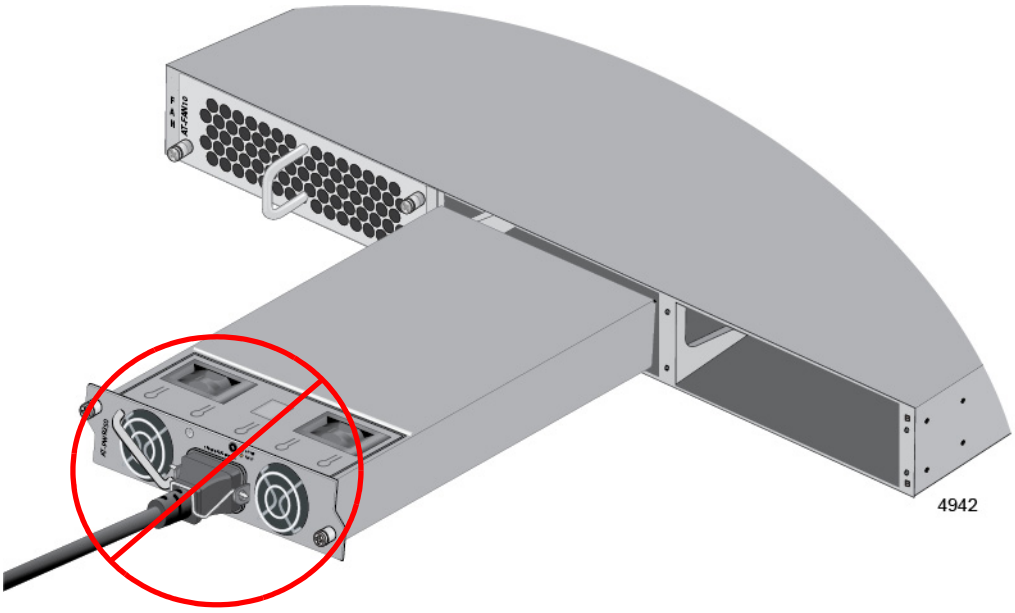


Figure 20. Improper Installation of Power Supply

6. Secure the power supply to the switch by tightening the two captive screws with a cross-head screwdriver. Refer to Figure 21.

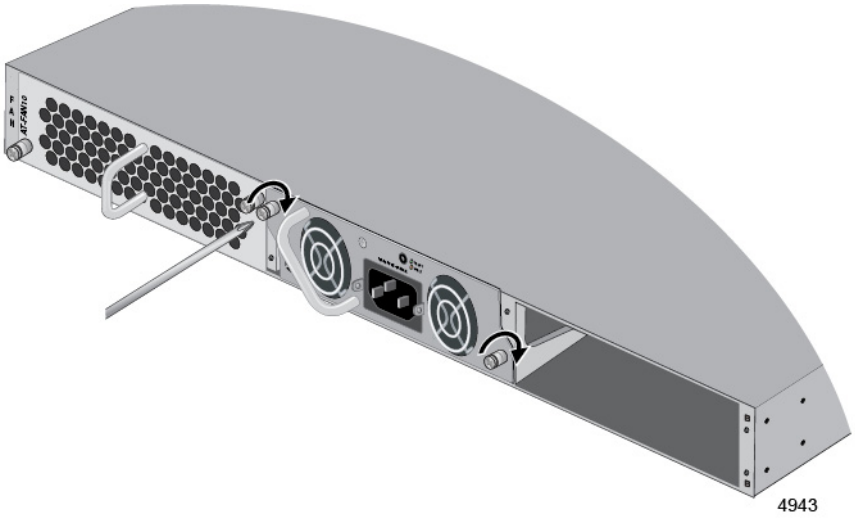


Figure 21. Tightening the Captive Screws on the Power Supply

7. If you installed the PWR150, PWR150R, PWR250, PWR250-80, or PWR800 Power Supply, install the power cord retaining clip on the AC plug. Press the sides of the clip inward and insert the two ends into the holes on the AC socket. Refer to Figure 22 on page 67.

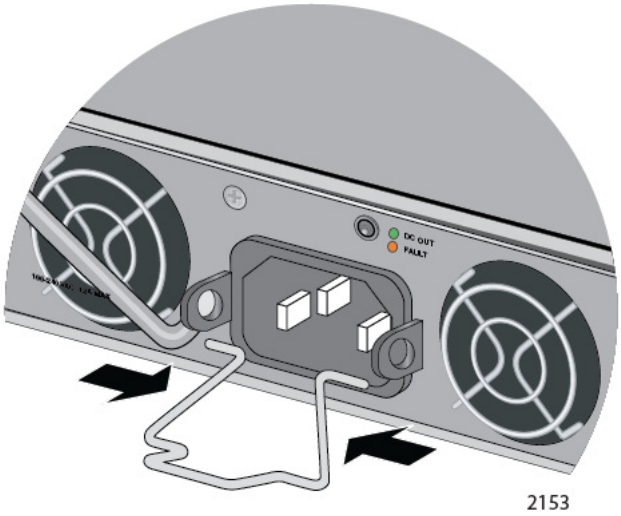


Figure 22. Installing the Power Cord Retaining Clip

Note
The PWR250-80 and PWR1200 Power Supplies do not come with a retaining clip.

8. To install a second power supply, repeat this procedure, starting with step 3.

9. If you installed only one power supply in the switch, perform the procedure in “Installing a Blank Power Supply Slot Cover” on page 68.

10. Do one of the following:

    - ❒ To install the switch on a table, go to Chapter 4, “Installing the Switch on a Table” on page 71.
    - ❒ To install the switch in an equipment rack, refer to Chapter 5, “Installing the Switch in an Equipment Rack” on page 73.
    - ❒ To install the switch on a wall, refer to Chapter 6, “Installing the Switch on a Wall” on page 79.
    - ❒ To install the switch in the RKMT-SL01 sliding rack, go to Appendix B, “Installing the Switch in the RKMT-SL01 Sliding Rack” on page 139.

Installing a Blank Power Supply Slot Cover

If you installed only one power supply in the switch, perform this procedure to install a blank panel over the empty power supply slot:

1. Position the appropriate blank panel over the empty power supply slot. Use the PNL800/1200 Blank Panel included in the accessory kit if the switch has only one PWR800 or PWR1200 Power Supply. Use the PNL250 Blank Panel if the switch has one PWR150, PWR150R, PWR250, or PWR250-80 Power Supply. Refer to Figure 23.

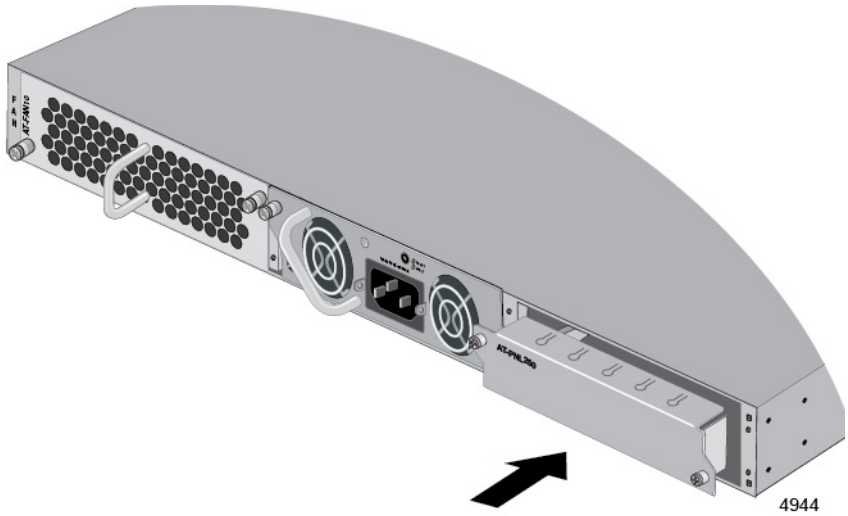


Figure 23. Installing a Blank Panel on a Power Supply Slot

2. Tighten the two captive screws with a cross-head screwdriver to secure the panel to the switch. Refer to Figure 24 on page 69.

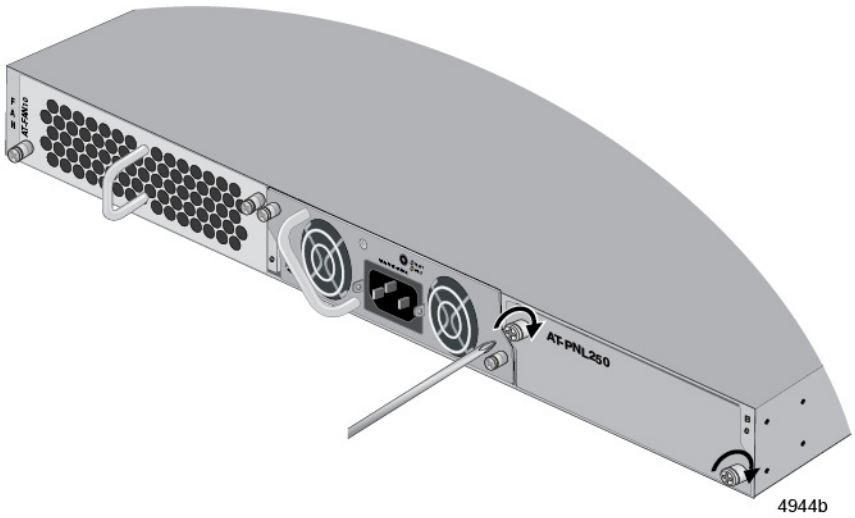


Figure 24. Tightening the Captive Screws on the Power Supply Blank Panel

3. Do one of the following:

   - To install the switch on a table, go to Chapter 4, “Installing the Switch on a Table” on page 71.
   - To install the switch in an equipment rack, refer to Chapter 5, “Installing the Switch in an Equipment Rack” on page 73.
   - To install the switch on a wall, refer to Chapter 6, “Installing the Switch on a Wall” on page 79.
   - To install the switch in the RKMT-SL01 sliding rack, go to Appendix B, “Installing the Switch in the RKMT-SL01 Sliding Rack” on page 139.

Chapter 4

Installing the Switch on a Table

This chapter contains the instructions for installing the switch on a table or desktop. The section in this chapter is listed here:

Warning
Switches should not be stacked on a table or desktop. They could present a physical safety hazard if you need to move or replace switches. E91

Installing the Rubber Feet on the Switch

The switch comes with seven rubber feet in the accessory kit. The feet, which are reusable, are used when installing the switch on a table.

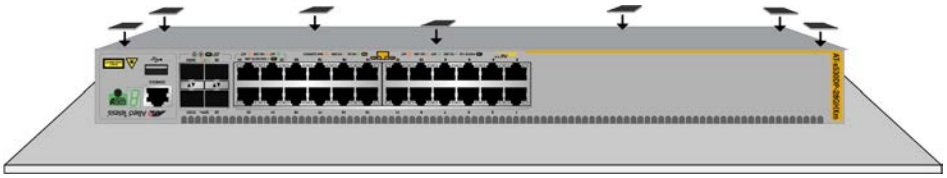
Note
Although you cannot stack the switches on top of each other, they can be placed next to each other.

Note
The following procedure assumes that you have already reviewed the information and performed the procedures in Chapter 2, “Beginning the Installation” on page 49.

Warning
The switch is heavy. Always ask for assistance when moving or lifting the device so as to avoid injuring yourself or damaging the equipment.

To install the bumper feet on the underside of the switch, perform the following procedure:

1. Place the switch upside down on a table.
2. Affix the seven bumper feet to the square indentations on the bottom panel of the switch



3. Turn the switch over.
4. If the switch has a PWR250-80 DC Power Supply, go to Chapter 9, “Wiring the DC Connector on the PWR250-80 Power Supply” on page 109.
5. After placing the switch on the table or desktop, go to Chapter 7, “Powering On the Switch” on page 91.

Chapter 5

Installing the Switch in an Equipment Rack

This chapter provides instructions for installing the switch in an equipment rack. This chapter contains the following sections:

Installing the Switch in an Equipment Rack

This section contains the procedure for installing the switch in a standard 19-inch equipment rack using the brackets supplied with the unit.

Note
For sliding rack mount installation instructions see Appendix B on page 139.

Required Items

The following items are required to install the switch in an equipment rack:

- ❒ Two equipment rack brackets (included with the switch)
- ❒ Eight M4x6mm bracket screws (included with the switch)
- ❒ Cross-head screwdriver (not provided)
- ❒ Four standard equipment rack screws (not provided)

Switch Orientations in the Equipment Rack

The switch has two sets of four screw holes on the left and right sides, for attaching the brackets. Refer to Figure 1.

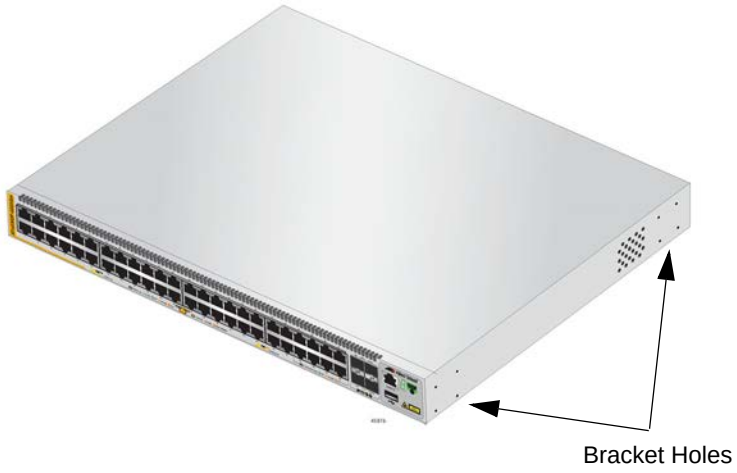


Figure 1. Bracket Holes on the Switch

You can use the different sets of holes on the switch to install the switch in the equipment rack in a variety of orientations. You can install it with the front panel flush with, extending in front of, or recessed behind the front of the equipment rack. The illustrations in Figure 2 shows the switch orientation with the front panel even with the front of the equipment rack.

Figure 2. Switch Orientations in an Equipment Rack

Installing the Switch

If you have not chosen an orientation for the switch in the equipment rack, review “Switch Orientations in the Equipment Rack” on page 74.

Please review the installation guidelines in “Choosing a Site for the Switch” on page 55 before installing the switch in an equipment rack.

Caution

The chassis can be heavy and awkward to lift. Allied Telesis recommends that you get assistance when mounting the chassis in an equipment rack. E28

To install the switch in a 19-inch equipment rack, perform the following procedure:

1. Place the switch on a level, secure surface.

2. Attach the two brackets to the sides of the switch in the selected position, using the eight M4x6mm screws supplied with the unit. The illustration in Figure 3 shows the installation of the brackets such that the front panel of the switch is even with the front of the equipment rack.

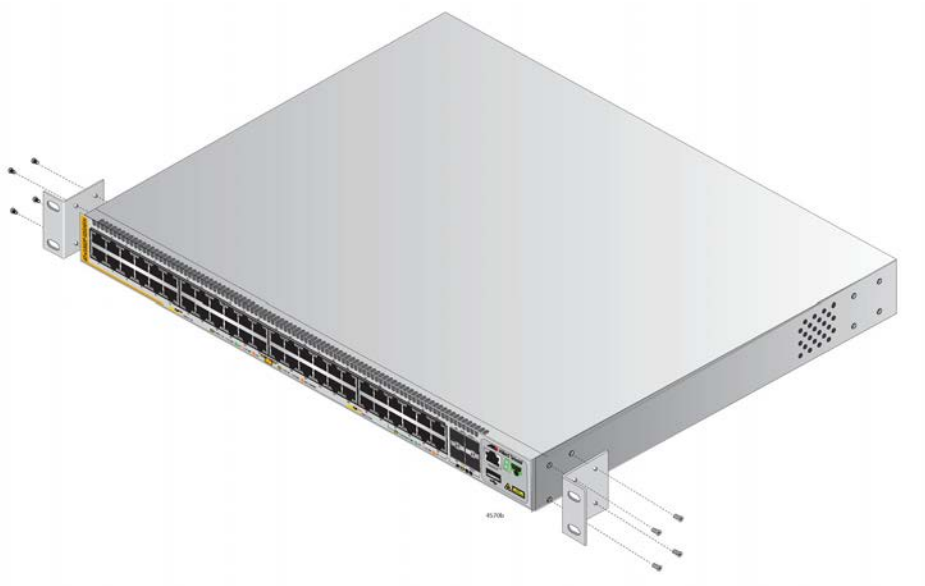


Figure 3. Example of Attaching the Brackets to the Switch

3. Have another person hold the switch at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 4.

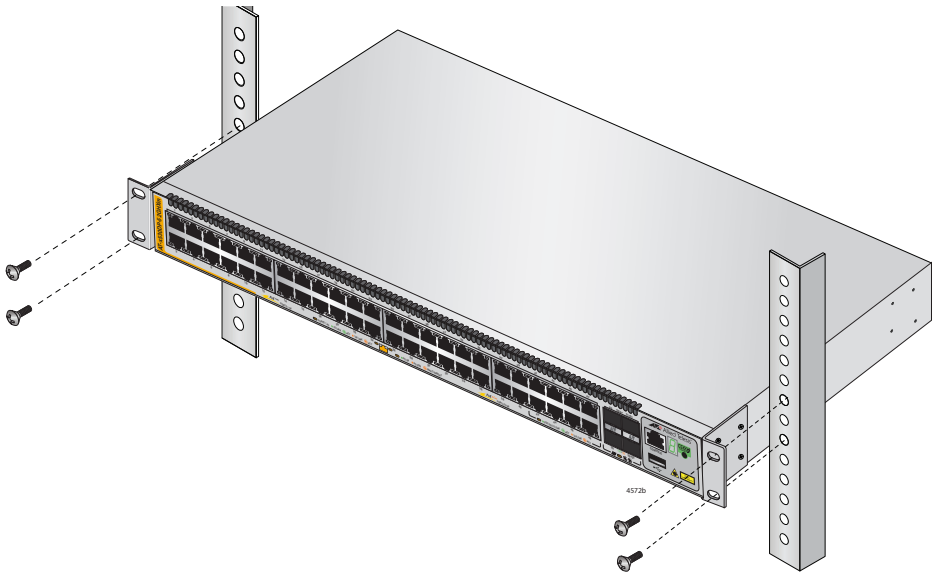


Figure 4. Installing the Switch in an Equipment Rack

4. Do one of the following:

   - If you have not installed the power supplies yet, go to Chapter 3, “Installing the Power Supplies” on page 61.
   - If any of the switches contain the PWR250-80 DC Power Supply, go to Chapter 9, “Wiring the DC Connector on the PWR250-80 Power Supply” on page 109.
   - Otherwise, go to Chapter 7, “Powering On the Switch” on page 91.

Chapter 6

Installing the Switch on a Wall

The procedures in this chapter are listed here:

Switch Orientations on a Wall

Install the switch on a wall with the front panel facing left or right, as shown in Figure 5. Do not install the switch with the front panel facing up or down.

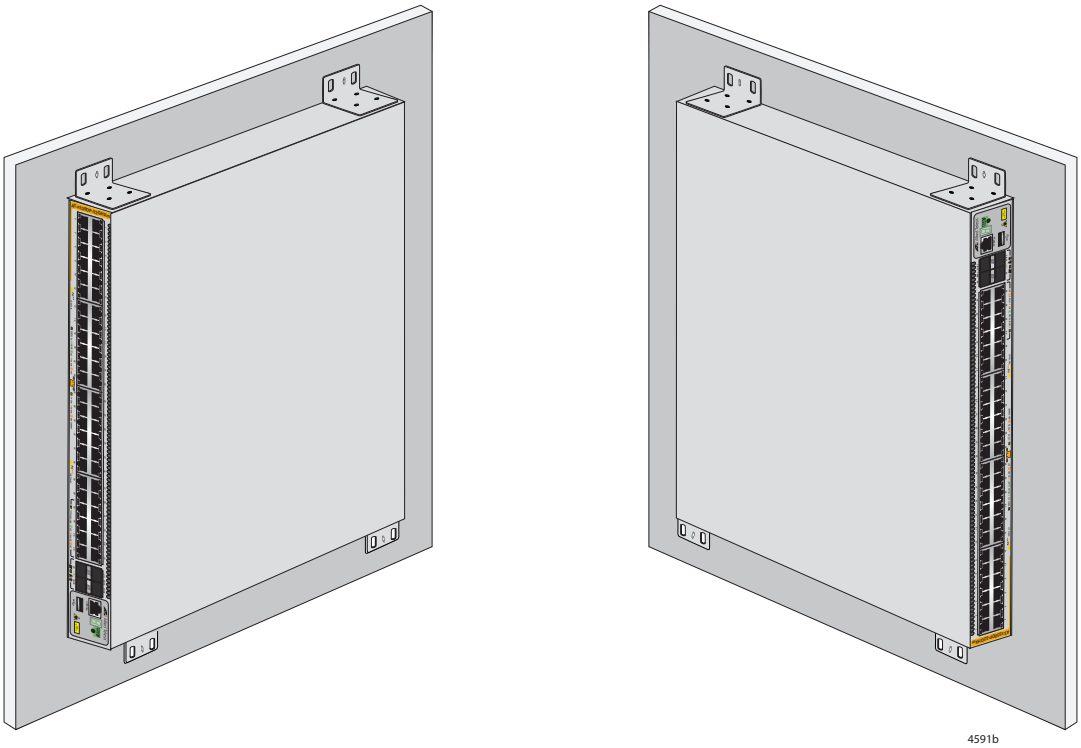


Figure 5. Positioning the Switch on the Wall

Installation Guidelines

Here are the guidelines for installing the switch on a wall:

- Install the switch on a wall that has wooden studs or on a concrete wall.
- If you are installing the switch on a wall with wooden studs, use a plywood base to support the switch. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 83. A plywood base is not required for a concrete wall.
- Do not install the switch on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.
- Do not install the switch on sheetrock or similar material. Sheetrock is not strong enough to safely support the device.

Warning
The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.

Warning
The device should be installed on a wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. E105

Tools and Material

The following tools and material are required for installing the switch on a wall.

Included with switch:

- Four wall/equipment rack brackets for the x530DP-28GHXm switch.
- Sixteen screws for attaching the wall/equipment rack brackets to the switch: Length: 6.0mm (0.2 in.) Diameter: 4.0mm (0.2 in.).
- Four anchors for concrete walls for the switch: Length: 29.6mm (1.2 in.) Diameter: 6.0mm (0.2 in.).
- Four screws for wood or concrete walls for the switch: Length: 32mm (1.3 in.) Diameter: 4mm (0.2 in.).
- Two power cord retaining clips.

Not included with switch:

- Cross-head screwdriver.
- Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring.
- Drill and 1/4-inch carbide drill bit (for a concrete wall). Refer to “Installing the Switch on a Concrete Wall” on page 87.
- Plywood base (if you are installing the switch on a wall with wooden studs). Refer to “Plywood Base for a Wall with Wooden Studs” on page 83 for illustrations.
- Four screws for attaching the plywood base to the wall.

Caution

The supplied screws and anchors might not be appropriate for all walls. A qualified building contractor can determine the hardware requirements for your wall prior to installing the switch. E88

Plywood Base for a Wall with Wooden Studs

If you are installing the switch on a wall that has wooden studs, use plywood base for the device. (A plywood base is not required for a concrete wall.) Refer to Figure 6.

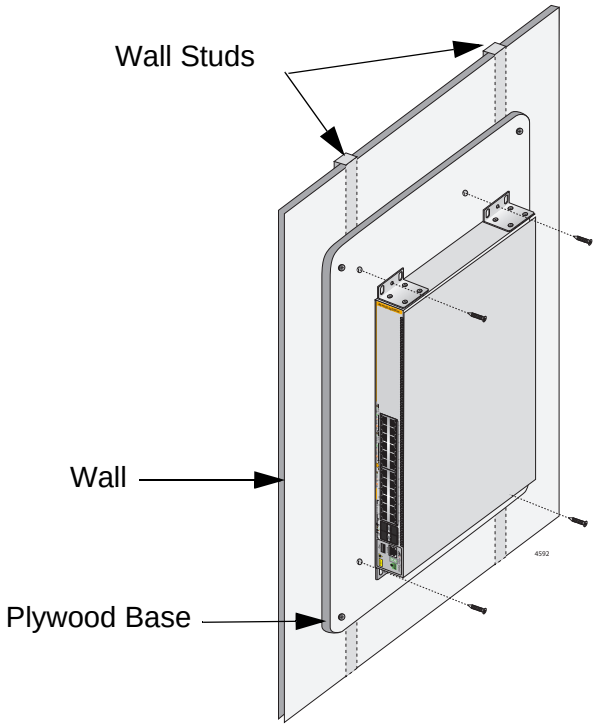


Figure 6. Switch on the Wall with a Plywood Base

Mount the plywood base to two studs in the wall. The recommended minimum dimensions of the plywood base for the switch are:

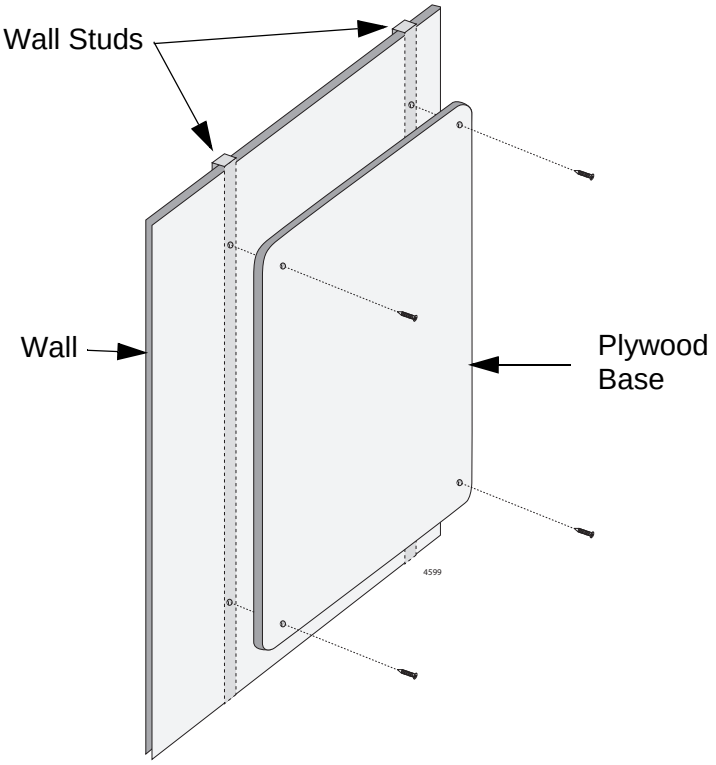
- Width: 55.9 centimeters (22 inches)
- Height: 61.0 centimeters (24 inches)
- Thickness: 2.5 centimeters (1 inch)

The dimensions assume the wall studs are 41 centimeters (16 inches) apart. You might need to adjust the width of the base if the distance between the studs in your wall is different than the industry standard.

Installing a Plywood Base on the Wall

A plywood base is recommended when installing the switch on a wall that has wooden studs. Refer to “Plywood Base for a Wall with Wooden Studs” on page 83. Consult a qualified building contractor for installation instructions for the plywood base. Refer to r The installation guidelines are listed here:

- Use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- Attach the base to two wall studs with a minimum of four screws.
- The selected wall location for the base must provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation.



- Installing the Plywood Base to the Wall

Installing the Switch on a Plywood Base

After the plywood base for the switch has been installed on the wall, install the switch. See “Reviewing Safety Precautions” on page 50 and “Choosing a Site for the Switch” on page 55 before performing this procedure. Allied Telesis recommends a minimum of two people for this procedure.

Warning
The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.

Warning
The device should be installed on the wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. E105

To install the switch on the plywood base, perform the following procedure:

1. Place the switch on a table.
2. Install four wall/equipment rack brackets to the sides of the unit with the sixteen M4x6mm screws included with the switch.

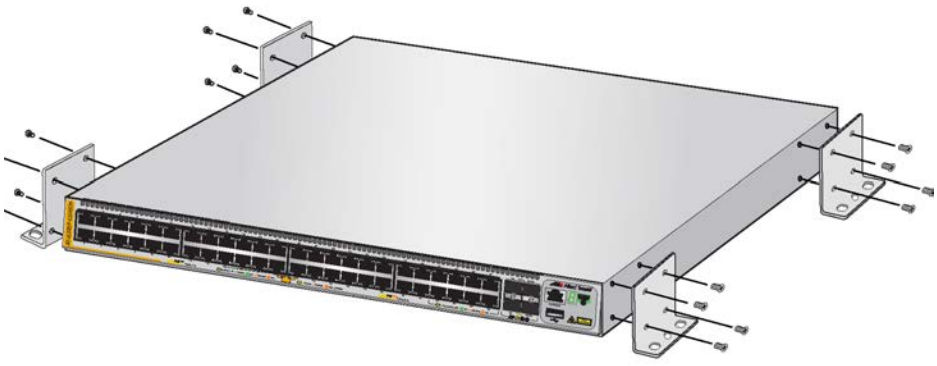


Figure 7. Installing Brackets on the Switch

3. After attaching the brackets, have another person hold the switch on the plywood base on the wall while you secure it with the M4x32.3mm screws included with the switch. Refer to Figure 7 for the switch.

4. Follow these guidelines as you position the switch on the wall:

   - ❒ Position it so that the front panel is facing left or right. Refer to Figure 8. Do not install it with the front panel facing up or down.
   - ❒ Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation.

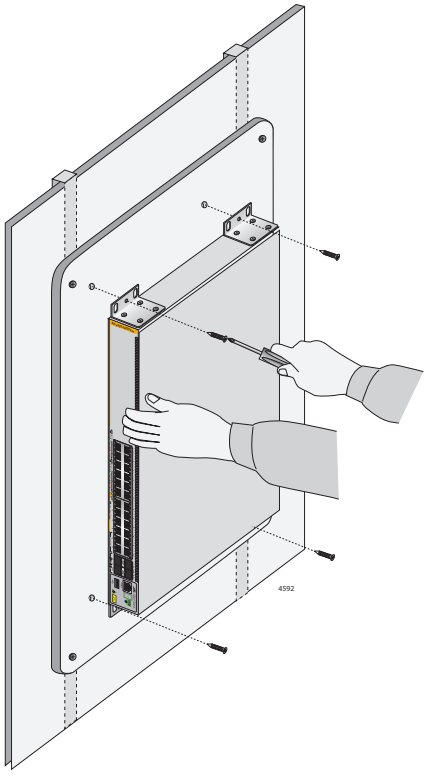


Figure 8. Securing the Switch to the Plywood Base

5. Do one of the following:

   - ❒ If you have not installed the power supplies yet, go to Chapter 3, “Installing the Power Supplies” on page 61.
   - ❒ If any of the switches contain the PWR250-80 DC Power Supply, go to Chapter 9, “Wiring the DC Connector on the PWR250-80 Power Supply” on page 109.
   - ❒ Otherwise, go to Chapter 7, “Powering On the Switch” on page 91

Installing the Switch on a Concrete Wall

This section contains the instructions for installing the switch on a concrete wall. Please review the information in the following sections before performing the procedure:

- “Switch Orientations on a Wall” on page 80
- “Installation Guidelines” on page 81

Warning
The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.

Warning
The device should be installed on the wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. E105

To install the switch on a concrete wall, perform the following procedure:

1. Place the switch on a table.
2. Install four wall/equipment rack brackets to the sides of the unit with the sixteen M4x6mm screws included with the switch. Refer to Figure 7 on page 85.
3. After attaching the brackets, have another person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the four screw holes in the four brackets (one screw per bracket). Refer to Figure 9 on page 88.

   Please follow these guidelines as you position the switch on the wall:

   - Position it so that the front panel is facing left or right. Refer to Figure 5 on page 80. Do not install the switch with the front panel facing up or down.
   - Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow and ventilation.

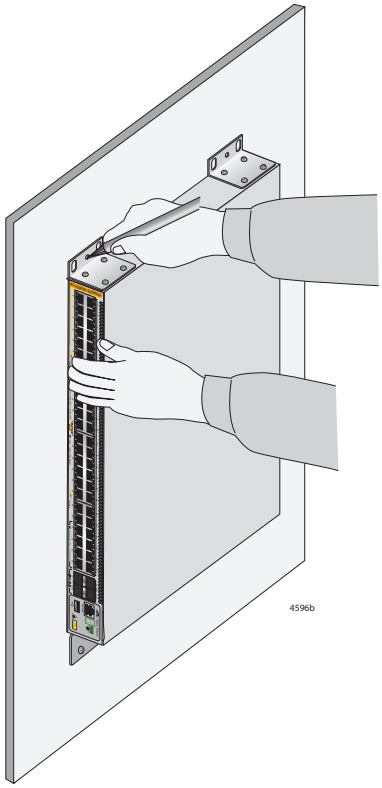


Figure 9. Marking the Locations of the Bracket Holes on a Concrete Wall

4. Place the switch on a table.
5. Use a drill and a 1/4-inch carbide drill bit to pre-drill the holes you marked in step 3. Please review the following guidelines:
   - ❒ Prior to drilling, set the drill to hammer and rotation mode. The modes breaks up the concrete and cleans out the hole.
   - ❒ Clean out the holes with a brush or compressed air.
6. Insert the anchors into the holes.

7. Have another person hold the switch at the selected wall location while you secure it to the wall with the M4x32mm screws provided. Refer to Figure 10.

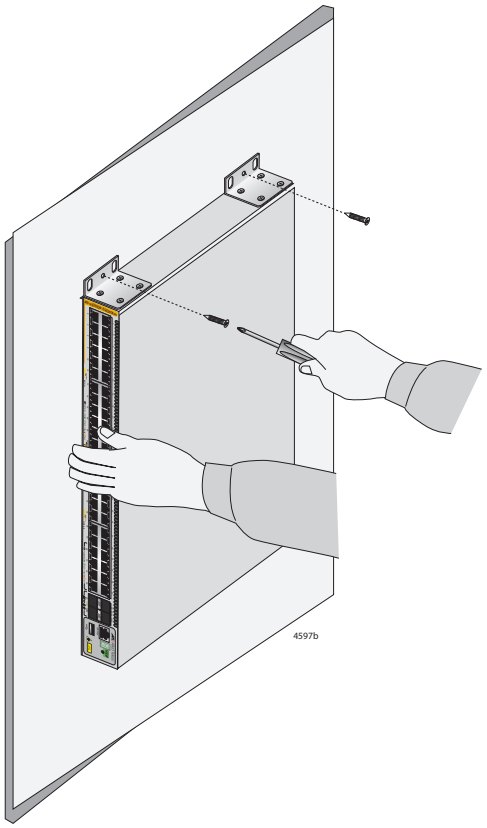


Figure 10. Installing the Switch on a Concrete Wall

8. Do one of the following:

   - ❒ If you have not installed the power supplies yet, go to Chapter 3, “Installing the Power Supplies” on page 61.
   - ❒ If any of the switches contain the PWR250-80 DC Power Supply, go to Chapter 9, “Wiring the DC Connector on the PWR250-80 Power Supply” on page 109.
   - ❒ Otherwise, go to Chapter 7, “Powering On the Switch” on page 91.

Chapter 7

Powering On the Switch

This chapter contains the following procedures:

Powering On the Switch

Before powering on the switch, review the information in “Power Specifications” on page 132 for the power specifications of the switches. See power on instructions for the power supply unit you are using:

- “PWR150, PWR150R, PWR250, or PWR800 Power Supply” on page 92
- “PWR1200 Power Supply” on page 94
- “What to Do Next” on page 96

Warning
The power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. E3

Note
Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. E5

PWR150, PWR150R, PWR250, or PWR800 Power Supply

To power on a switch, perform the following procedure for PWR150, PWR150R, PWR250, or PWR800:

Note
PWR1200 power supply does not use a power cord retaining clip. To view the procedure for PWR1200, see “PWR1200 Power Supply” on page 94.

1. Install the power cord retaining clip on the AC power connector of the power supply on the rear panel of the switch. Refer to Figure 11 on page 93.

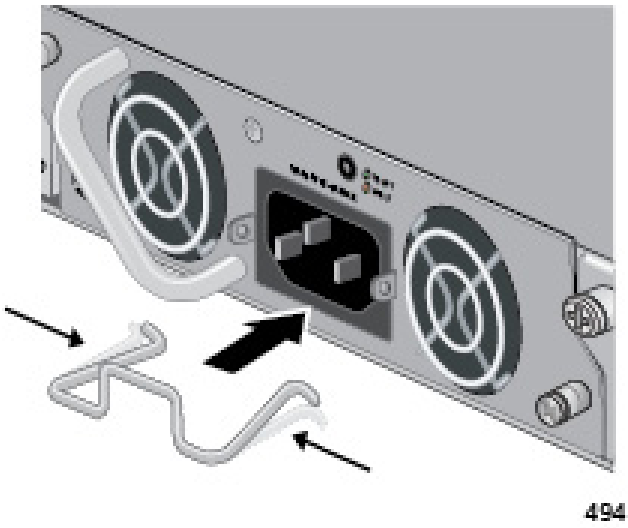


Figure 11. Installing the Power Cord Retaining Clip

2. Connect the AC power cord to the AC power connector on the rear panel of the switch. Refer to Figure 12.

Figure 12. Connecting the AC Power Cord to the Switch

3. Lower the power cord retaining clips to secure the cord to the switch. Refer to Figure 13 on page 94.

Figure 13. Plugging in the AC Power Cord to the Switch

4. Connect the power cord to an appropriate AC power source. Refer to Figure 14 on page 94.
5. Repeat this procedure to connect the second power cord to the switch.

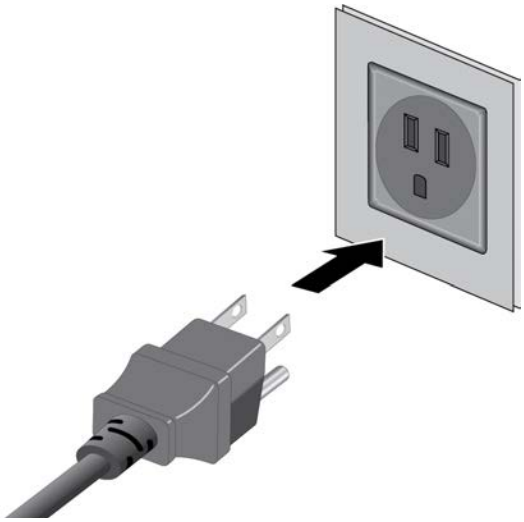


Figure 14. Plugging in the AC Power Cord to an AC Source

PWR1200 Power Supply

To power on a switch, perform the following procedure for PWR1200 power supply:

1. Connect the AC power cord to the AC power connector on the rear panel of the switch. Refer to Figure 12.

Figure 15. Connecting the AC Power Cord to the Switch

Note
When installed, the PWR1200 Power Supply extends 5.6 cm (2.2 in.) from the back panel of the chassis as shown in Figure 15.

2. Connect the power cord to an appropriate AC power source. Refer to Figure 16 on page 95.
3. Repeat this procedure to connect the second power cord to the switch.

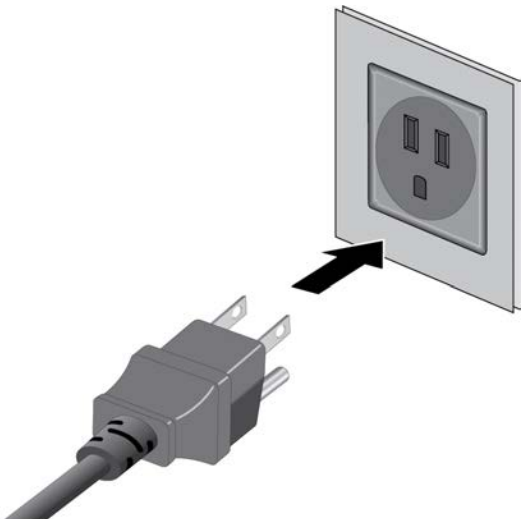


Figure 16. Plugging in the AC Power Cord to an AC Source

What to Do Next

Do one of the following:

- If the switch has the PWR250-80 DC Power Supply, power on the DC circuit and the On/Off switch on the power supply. If you have not wired the DC connector yet, perform the procedure in Chapter 9, “Wiring the DC Connector on the PWR250-80 Power Supply” on page 109.
- To monitor the switch as it initializes the management software, go to “Monitoring the Initialization Processes” on page 97.
- Wait two minutes for the switch to initialize its management software and then go to Chapter 8, “Configuring the Switch for Standalone Operations” on page 101.

Monitoring the Initialization Processes

It takes about two minutes for the switch to initialize its management software programs and features, and load the default configuration. You can monitor the bootup sequence by connecting a terminal or computer with a terminal emulator program to the Console port. (The Console port settings are provided in “Starting a Local Management Session” on page 103.) The switch displays the messages in Figure 17 through Figure 19 on the Console port as it initializes the management software.

```
Bootloader 7.0.4 loaded
Press <Ctrl+B> for the Boot Menu
Reading flash:x530DP-5.5.0-1.2-rcl.rel...

Verifying release... OK
Booting...
Starting base/first...                                  [  OK  ]
Mounting virtual filesystems...                         [  OK  ]
          _______________   ____
        /\ \             / /______\
      /   \ \_       __/ /| ______ |
    /      \ |     |  /  | ______ |
  /         \ \   / /     \ ____ /
/______/\____\ \/ /_____________/

Allied Telesis Inc.
AlliedWare Plus (TM) v5.5.0-1.2
Current release filename: x530DP-5.5.0-1.2-rcl.rel...
Built: Mon Mar 29 01:57:50 UTC 2021
Mounting static filesystems...                          [  OK  ]
Attaching to /dev/mtd0...                               [  OK  ]
Mounting file system...                                 [  OK  ]
Checking for last gasp debug output...                  [  OK  ]
Checking NVS filesystem...                              [  OK  ]
Mounting NVS filesystem...                              [  OK  ]
Initializing random number generator...                 [  OK  ]
Starting base/hwrandom...                               [  OK  ]
Starting base/jitterentropy-rngd...                     [  OK  ]
Starting base/dbus...                                   [  OK  ]
Starting base/linux...                                  [  OK  ]
```

Figure 17. Switch Initialization Messages

```
Starting base/loopback...                                  [  OK  ]
Starting base/poe_done...                                  [  OK  ]
Starting base/portmapper...                                [  OK  ]
Received event syslog.done
Starting base/modules...                                   [  OK  ]
Received event modules.done
Starting base/reboot-stability...                          [  OK  ]
Checking system reboot stability...                        [  OK  ]
Starting base/apteryx...                                   [  OK  ]
Starting base/crond...                                     [  OK  ]
Starting base/appmond...                                   [  OK  ]
Starting base/clockcheck...                                [  OK  ]
Starting network/execd...                                  [  OK  ]
Starting base/inet...                                      [  OK  ]
Received event apteryx.done
Starting hardware/early_host_info...                       [  OK  ]
Starting base/alfred...                                    [  OK  ]
Starting base/kernond...                                   [  OK  ]
Starting base/apteryx-sync...                              [  OK  ]
Starting base/logconf...                                   [  OK  ]
Received event apteryx-sync.done
Starting hardware/platformd...                             [  OK  ]
Starting hardware/plugman...                               [  OK  ]
Starting hardware/timeout...                               [  OK  ]
Starting hardware/hardware-done...                         [  OK  ]
Received event board.inserted
Received event hardware.done
Starting base/external-media...                            [  OK  ]
Starting network/startup...                                [  OK  ]
Starting network/hostcfg...                                [  OK  ]
Received event hostcfg.done
Starting network/cmplplatformd...                          [  OK  ]
Starting base/eventwatch...                                [  OK  ]
Starting network/startup...                                [  OK  ]
Starting hardware platform_eventd...                       [  OK  ]
Starting network/licd...                                   [  OK  ]
Starting network/stackd...                                 [  OK  ]
Starting network/election.timeout...                       [  OK  ]
Starting network/corosync...                               [  OK  ]
Received event network.enabled
```

Figure 18. Switch Initialization Messages (Continued)

```
Initializing HA processes:
atmf_agentd, execd, exfx, hostd, atmfd, auth, epsr
hsl, imi, imiproxyd, lldpd, loopprot, mstp, nsm
pim6d, ripngd, rmon, sflowd, vrrpd, bgpd, irdpd
lacp, ospf6d, ospfd, pdmd, pimd, ripd, udldd

Received event network.initialized

Assigning Active Workload to HA processes:
hsl, irdpd, lacpd, loopprotd, mstpd, nsm, ospfd
ripd, rmond, sflowd, vrrpd, authd, epsrd, imi
imiproxyd, lldpd

Received event network.activated

Loading default configuration
..

done!
Received event network.configured
```

Figure 19. Switch Initialization Messages (Continued)

After the switch has initialized its management software, go to Chapter 8, “Configuring the Switch for Standalone Operations” on page 101.

Chapter 8

Configuring the Switch for Standalone Operations

This chapter contains the following procedures:

Determining the Standalone or Stacking Status of the Switch

After powering on the switch and waiting two minutes for it to initialize the management software, examine the switch ID LED on the front panel. If the LED is displaying the number “1” or higher, the VCStack feature is enabled on the unit. You need to disable it to use the switch in standalone mode. For instructions, start with “Starting a Local Management Session” on page 103. The VCStack feature is enabled by default.

If the LED is displaying “0”, the VCStack feature is already disabled and the switch is operating as a standalone unit. Go to Chapter 10, “Cabling the Networking Ports” on page 115.

Caution

You must reset the switch to disable the VCStack feature. Some network traffic can be lost if the device is already connected to a live network. E89

Note

The initial management session of the switch must be from the Console port.

Starting a Local Management Session

This procedure requires a VT100 terminal or a VT100 terminal emulator program and the management cable that comes with the switch. To start a local management session on the switch, perform the following procedure:

1. Connect the RJ-45 connector of the management cable to the console port on the front panel of the switch, as shown in Figure 20.

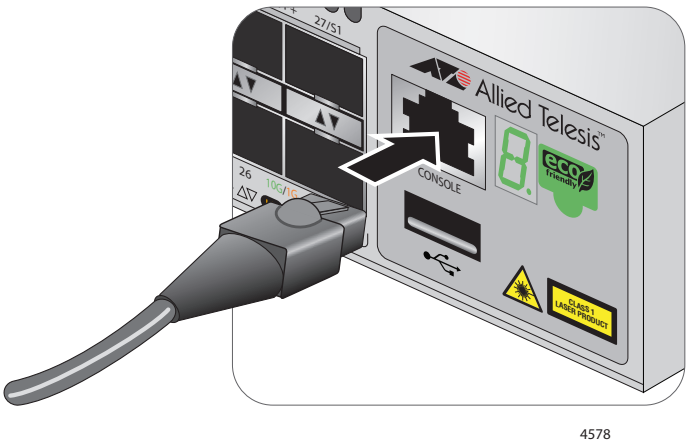


Figure 20. Connecting the Management Cable to the Console Port

Note
To manage switches from a laptop computer that does not have an RS-232 port, you can use the optional VT-Kit3 USB to Serial Console Management Cable.

2. Connect the other end of the cable to an RS-232 port on a terminal or computer with a terminal emulator program.
3. Configure the terminal or terminal emulator program as follows:
   - ❒ Default baud rate: 9,600 bps (range is 9,600 to 115,200 bps)
   - ❒ Data bits: 8
   - ❒ Parity: None
   - ❒ Stop bits: 1
   - ❒ Flow control: None

Note
The port settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulator program.

4. Press Enter.

   You are prompted for a user name and password.

5. When prompted, type a user name and password to log on the switch. If this is the initial management session, enter “manager” as the user name and “friend” as the password. The user name and password are case sensitive.

   The local management session starts when the User Exec mode prompts.

```
awplus>
```

> **Note**
> The User Exec mode is the first level in the command mode interface. For complete information on the modes and commands, refer to the *Command Reference: x530 Series Switches Running AlliedWare Plus Version 5.5.0* at **www.alliedtelesis.com/library**.

6. If you need to disable the VCStack feature, perform the procedure in “Disabling the VCStack Feature” on page 105.

Disabling the VCStack Feature

The following procedure explains how to disable the VCStack feature to use the switch as a standalone unit.

Caution
Disabling the VCStack feature requires resetting the switch. Some network traffic can be lost if the switch is connected to a live network. E89

To disable the VCStack feature, perform the following procedure:

1. Start a local management session on the switch. For instructions, refer to “Starting a Local Management Session” on page 103.

2. To display the status of the VCStack feature on the switch, at the User Exec mode prompt, type the command SHOW STACK.

```
awplus> show stack
Virtual Chassis Stacking summary information
ID    Pending ID   MAC address       Priority    Status    Role
1     -            eccd:6dd1:64a2    128         Ready     Active Master
Operational Status                   Standalone Unit
Stack MAC address                    eccd:6dd1:64a2
awplus>
```

Figure 21. SHOW STACK Command

3. If the Operational Status of the switch is “Stacking Hardware Disabled,” the VCStack feature is already disabled on the unit. If this is the case, go to Chapter 10, “Cabling the Networking Ports” on page 115.

   However, if the Operational Status is “Standalone Unit” as shown in Figure 21, the VCStack feature is active on the unit. (The “Standalone Unit” status means the switch is functioning as a stack of one switch.) You must disable the feature to use the switch as a standalone unit. Continue with the next step.

4. To move to the Global Configuration mode, type the commands ENABLE and CONFIGURE TERMINAL.

```
awplus> enable
awplus# configure terminal
Enter configuration commands, one per line. End with CNTL/Z
awplus(config)#
```

Figure 22. Moving to the Global Configuration Mode

5. To disable the VCStack feature, type the command NO STACK <*id*> ENABLE in the following format:

   no stack <*id*> enable

   The *id* parameter is the ID number of the switch, displayed on the ID LED. Replace the *id* parameter with the number on the ID LED. For example, if the ID number of the switch is 1, the default value, enter the command as follows:

   ```
   awplus(config)# no stack 1 enable
   ```

```
Warning; This will disable the stacking hardware on member-1.
Are you sure you want to continue? (y/n):
```

6. To disable VCStack on the switch type Y, or type N to cancel the procedure.

```
awplus(config)#18:04:12 awplus VCS[2119]: Deactivating
Stacking Ports on stack member 1.
```

Figure 23. Disabling VCStack

7. Press the Enter key to re-display the Global Configuration mode prompt.

8. Go to “Saving Your Changes and Rebooting the Switch” on page 107.

Saving Your Changes and Rebooting the Switch

After disabling the VCStack feature, save your configuration changes and reboot the switch. Changes to the status of the VCStack feature do not take affect until after you reboot the unit.

To save your configuration changes and reboot the switch, perform the following procedure:

1. To return to the Privileged Exec mode, from the Global Configuration mode, type the command EXIT.

```
awplus(config)# exit
awplus#
```

Figure 24. Returning to the Privileged Exec Mode

2. To save your change in the configuration file, type the command WRITE.

```
awplus# write
Building configuration ...
[OK]
awplus#
```

Figure 25. Saving the Changes with the WRITE Command

   This is the initial management session, the switch automatically creates the Default.cfg configuration file and stores the change in the file.

3. To reboot the switch, type the command REBOOT.

4. To confirm, type “Y” for yes.

5. Wait two minutes for the switch to initialize the management software and then examine the Switch ID LED again. The switch is ready for normal network operation as a standalone unit if its ID number is “0.” If the number is not “0,” repeat the procedures in this chapter, being sure to save your configuration changes with the WRITE command.

6. Go to Chapter 10, “Cabling the Networking Ports” on page 115.

Specifying Ports in the Command Line Interface for Standalone Switches

The individual ports on the switches are specified in the command line interface with the PORT parameter. The format of the parameter is shown in Figure 26.

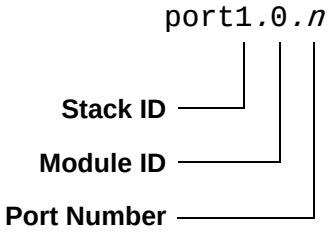


Figure 26. PORT Parameter in the Command Line Interface

The three parts of the PORT parameter are described in Table 1.

Table 1. PORT Parameter Format

Number	Description
Stack ID	Designates the switch's ID number. The correct value is "1" for a standalone switch. Do not enter 0, the value displayed on the Switch ID LED.
Module ID	Designates the module number of a port. The x530DP Series switches do not have modules, Consequently, this value is always 0 (zero).
Port Number	Designates a port number.

The following is an example of the PORT parameter on a standalone switch. It uses the INTERFACE command to enter the Port Interface mode for ports 15 and 17:

```
awplus> enable
awplus# configure terminal
awplus(config)# interface port1.0.15,port1.0.17
```

Figure 27. PORT Parameter on a Standalone Switch Example

For instructions on the command line interface and the PORT parameter, refer to the *Command Reference for x530 Series Switches, Running AlliedWare Plus* at **www.alliedtelesis.com**.

Chapter 9

Wiring the DC Connector on the PWR250-80 Power Supply

This chapter contains instructions on how to wire the DC connector on the PWR250-80 DC power supply.

Warning
As a safety precaution, install a circuit breaker with a minimum value of 15 Amps between the equipment and the DC power source. E9

Warning
Always connect the wires to the LAN equipment first before connecting them to the circuit breaker. Do not work with HOT feeds to avoid the danger of physical injury from electrical shock. Always verify that the circuit breaker is in the OFF position before connecting the wires to the circuit breaker. E9

Warning
For centralized DC power connection, install only in a restricted access area. E23

Warning
This equipment must be installed in a Restricted Access location. E45

Note
A tray cable is required to connect the power source if the unit is powered by centralized DC power. The tray cable must be a UL listed Type TC tray cable and rated at 600 V and 90 degrees C, with three conductors, minimum 14 AWG. E24

To wire the DC connector on the PWR250-80 DC Power Supply, perform the following procedure:

1. Power off the DC circuit to which the switch will be connected.

2. Verify that the On/Off switch on the power supply is in the Off position. Refer to Figure 28 on page 110.

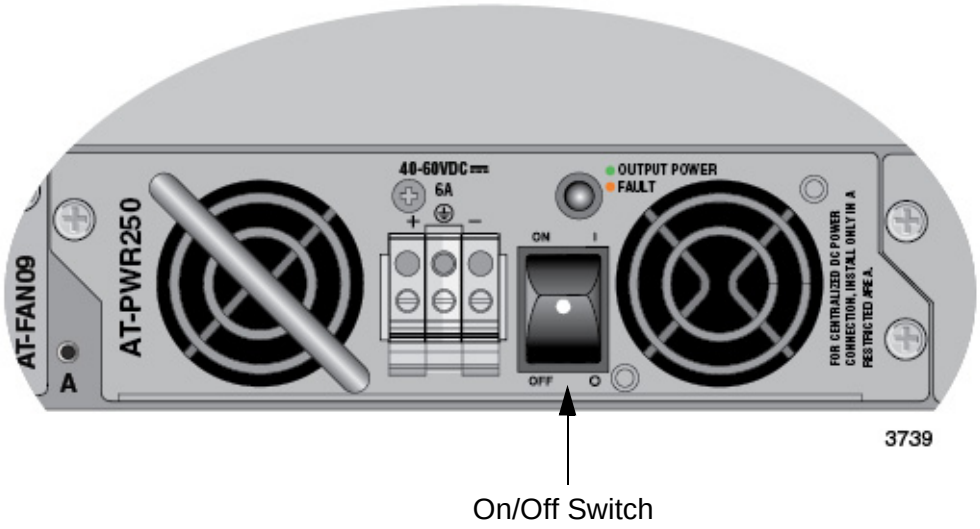


Figure 28. On/Off Switch on PWR250-80 Power Supply

3. Use the legend above the terminal block to identify the terminals. The terminals are **positive**, **power supply ground** and **negative**, from left to right, as shown in Figure 29.

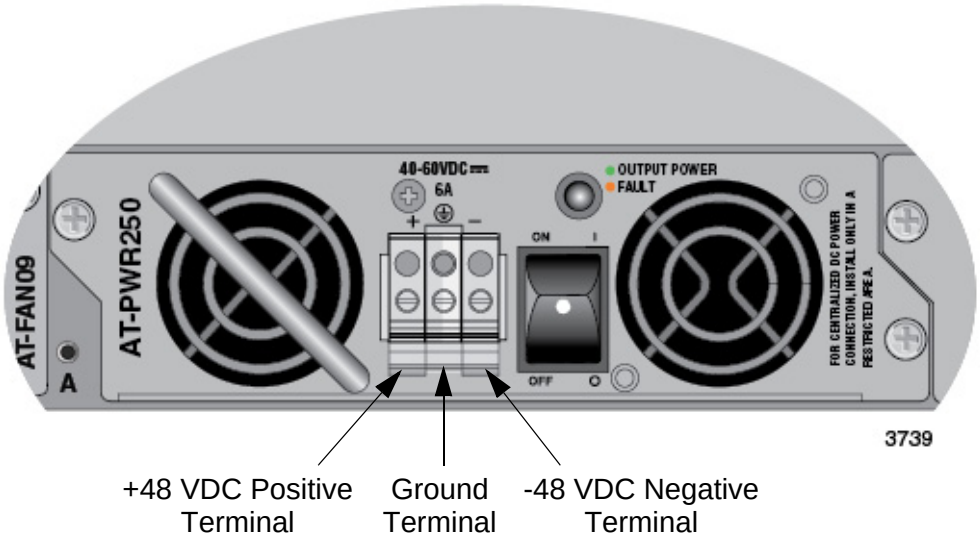


Figure 29. DC Terminal Block

4. With a 14-gauge wire-stripping tool, strip the three wires in the tray cable coming from the DC input power source to 8mm ± 1mm (0.31 in., ± 0.039 in.), as shown in Figure 30 on page 111.

Warning
Do not strip more than the recommended amount of wire. Stripping more than the recommended amount can create a safety hazard by leaving exposed wire on the terminal block after installation. E10

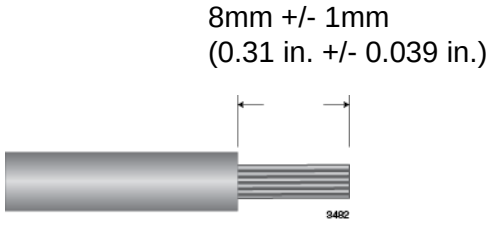


Figure 30. Stripped Wire

5. Insert the power supply ground wire into the middle connector of the DC terminal and tighten the connection with a flathead screwdriver. Refer to Figure 31.

Warning
When installing this equipment, always ensure that the power supply ground connection is installed first and disconnected last. E11

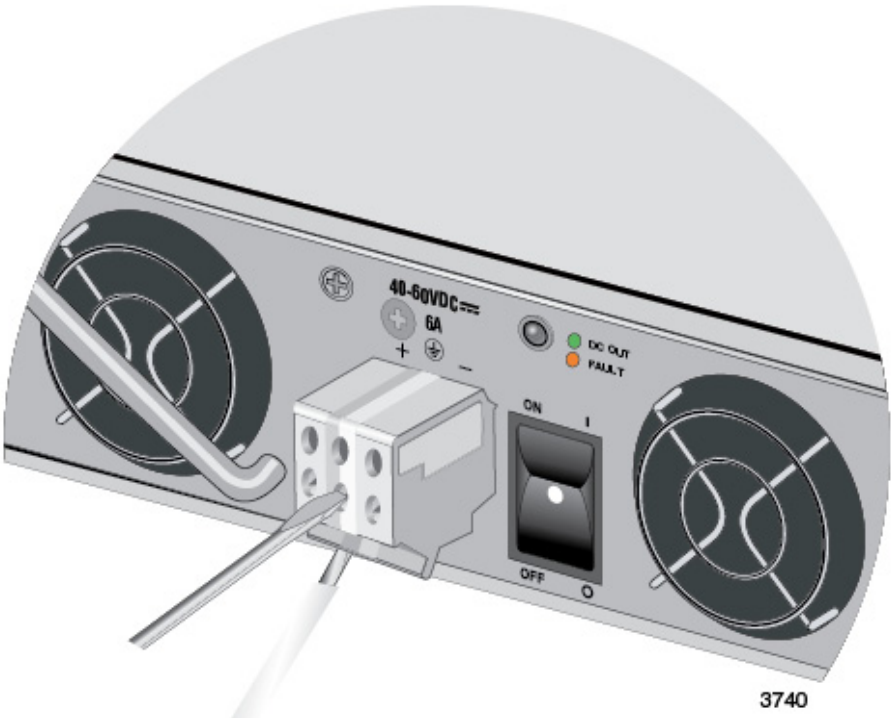


Figure 31. Connecting the Ground Wire to the DC Terminal Block

6. Connect the +48 VDC (RTN) feed wire to the terminal block marked + (plus).

7. Connect the -48 VDC feed wire to the terminal block marked - (minus).

Warning
Check to see if there are any exposed copper strands coming from the installed wires. When this installation is done correctly there should be no exposed copper wire strands extending from the terminal block. Any exposed wiring can conduct harmful levels of electricity to persons touching the wires. E12

8. Secure the tray cable near the rack framework using multiple cable ties to minimize the chance of the connections being disturbed by casual contact with the wiring. Use at least four cable ties, separated four inches apart. Locate the first one within six inches of the terminal block.

Note
This system will work with a positive grounded or negative grounded DC system. E13

9. Verify that the circuit breaker is in the OFF position.

10. Connect the supply-cable wires to the circuit breaker.

Note
Do not power on the switch at this time.

11. If the switch has two PWR250-80 Power Supplies, repeat this procedure to wire the second DC connector.

12. Repeat this procedure to wire the DC connectors on the PWR250-80 Power Supplies in the other switches of the stack.

13. After wiring all of the PWR250-80 Power Supplies, go to Chapter 10, “Cabling the Networking Ports” on page 115.

Warning
This unit might have more than one power source. To reduce the risk of electric shock, disconnect all power cords before servicing the unit. E30

Chapter 10

Cabling the Networking Ports

This chapter contains the following procedures:

Cabling Twisted Pair Ports

Here are the guidelines to cabling the twisted pair ports on switch:

- The category of twisted pair cable requirements are as follows:
  - 10/100Mbps ports: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.
  - 1000Mbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.
  - 1/2.5/5Gbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.
- PoE is enabled by default on the AT-x530DP-28GHXm and x530DP-52GHXm switch ports.
- The connectors on the cables must fit snugly into the ports, and the tabs must lock the connectors into place.
- The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- The ports must be set to the default setting of Auto-Negotiation to operate at 1Gbps and higher.
- The ports support full-duplex only when operating at 1Gbps and higher. The ports support half- and full-duplex when operating at 10/100Mbps.
- Do not attach cables to ports of static or Link Aggregation Control Protocol (LACP) port trunks until after you configure the trunks on the switch. Otherwise, the ports will form network loops that can adversely affect network performance.

Caution

Do not connect or disconnect copper cables from PoE++ devices (Class 5, 40W or higher) when the switch is powered on. It might damage the switch. Before cabling PoE++ devices, do one of the following:
- Power off the switch, or:
- Disable PoE on the ports with the NO POWER-INLINE ENABLE command. After cabling the ports, activate it again with the POWER-INLINE ENABLE command.

Guidelines to Handling SFP and SFP+ Transceivers

Review the following guidelines before installing SFP or SFP+ transceivers in the switches:

- The transceivers are hot-swappable. You can install them while the switch is powered on.
- For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.
- The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.
- Install a transceiver before connecting the fiber optic cable.
- Unnecessary removal and insertion of a transceiver can lead to premature failure.

Caution

Transceivers can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the devices. E92

Installing SFP or SFP+ Transceivers

This section contains installation instructions for SFP or SFP+ transceivers in the switch.

The following illustrations show a transceiver with a duplex LC connector. The connectors on your transceivers may be different.

To install transceivers, perform the following procedure:

1. Select a port for the transceiver.
   - ❒ Ports 25 to 28 on the x530DP-28GHXm switch
   - ❒ Ports 49 to 52 on the x530DP-52GHXm switch
2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. If you are installing the transceiver in a top port, position the transceiver with the Allied Telesis label facing up. If you are installing the transceiver in a bottom port, position the transceiver with the label facing down. Refer to Figure 32.

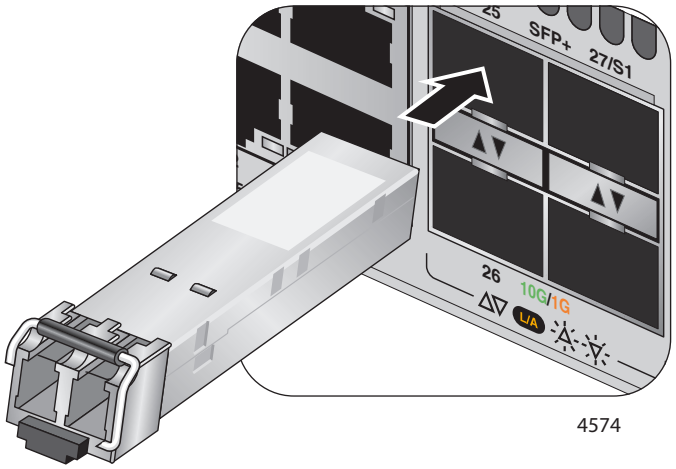


Figure 32. Installing an SFP Transceiver

4. Slide the transceiver into the port until it clicks into place.

Note
If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat steps 1 through 4 to install the remaining transceivers in the switch.

5. Verify the position of the handle on the transceiver. If the transceiver is in a top port, the handle must be in the up position, as shown in Figure 33. If the transceiver is in a bottom port, the handle must be in the down position.

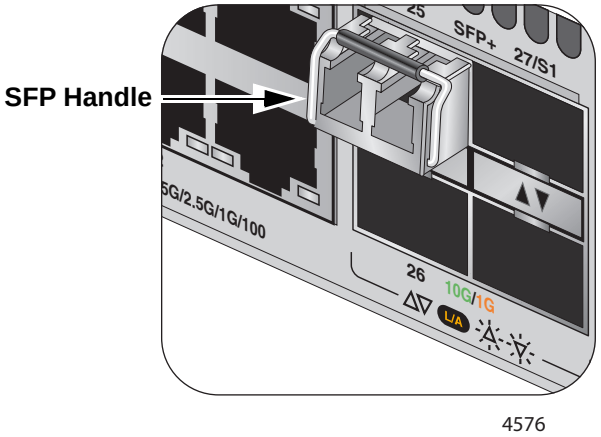


Figure 33. Positioning the SFP or SFP+ Handle in the Up Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 34. The connector on the cable must fit snugly into the port, and the tab must lock the connector into place.

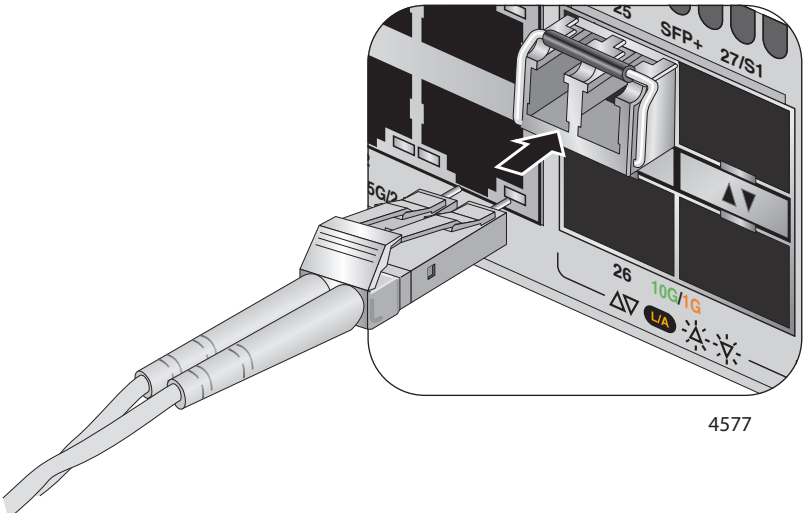


Figure 34. Connecting a Fiber Optic Cable to an SFP or SFP+ Transceiver

7. Repeat this procedure to install additional transceivers.

Installing SP10TW Direct Connect Twinax Cables

The SFP and SFP+ transceiver ports on the switch support SP10TW direct connect twinax cables. The cables are an economical way to add 10Gbps connections over short distances. They have SFP+ transceivers on both ends and come in lengths of 1, 3, and 7 meters.

To install SP10TW cables, perform the following procedure:

1. Select a port for the transceiver.
   - ❒ Ports 25 to 28 on the x530DP-28GHXm switch
   - ❒ Ports 49 to 52 on the x530DP-52GHXm switch
2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. To install the transceiver in a port in the top row, position the transceiver with the Allied Telesis label facing up. To install the transceiver in a port in the bottom row, position the transceiver with the label facing down. Refer to Figure 35 on page 121.

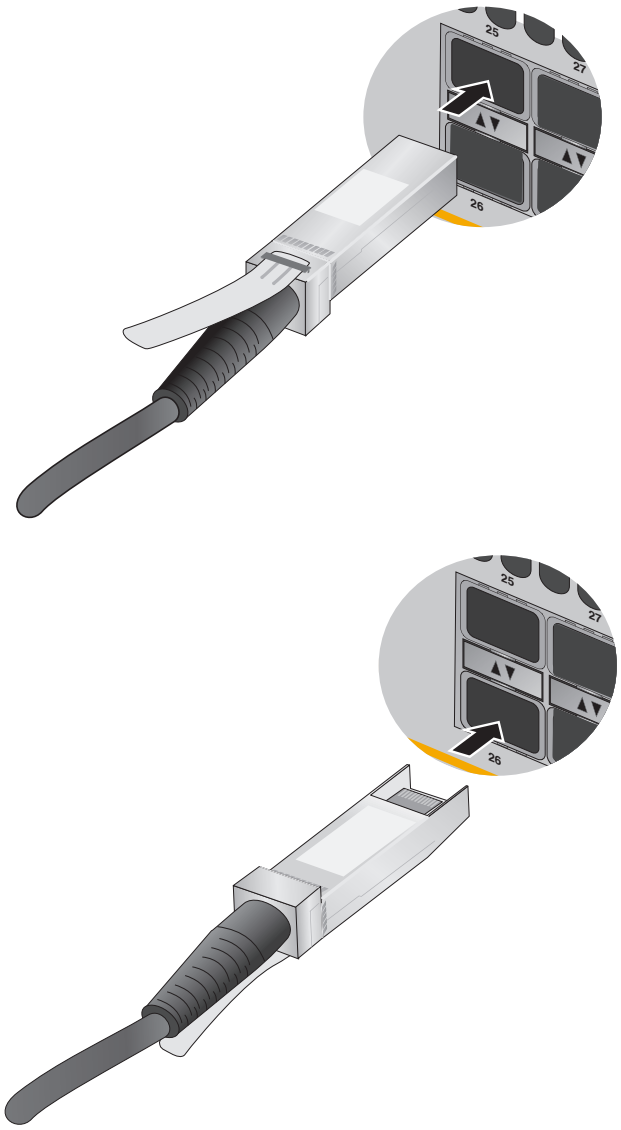


Figure 35. Installing SP10TW Cables

4. Slide the transceiver into the port until it clicks into place.
5. Connect the other end of the cable into an SFP+ port on another network device.
6. Repeat this procedure to install additional transceivers.

Note
To remove the connector and cable from the port, gently push on the connector, pull on the release tab, and slide the connector from the port.

Chapter 11
Troubleshooting

This chapter contains suggestions on how to troubleshoot problems with the switch.

> **Note**
> For further assistance, please contact Allied Telesis Technical Support at **www.alliedtelesis.com/support**.

Problem 1: All the port LEDs and Switch ID LED are off, and the fans are not operating.

Solutions: The unit is not receiving power. Try the following:

- Verify that the power cord is securely connected to the power source and the AC connector on the back panel of the switch.
- Verify that the power outlet has power by connecting another device to it.
- Try connecting the unit to another power source.
- Try a different power cord.
- Verify that the voltage from the power source is within the required levels for your region. The power requirements for the switch are listed in “Power Specifications” on page 132.

Problem 2: All of the port LEDs are off even though the ports are connected to active network devices.

Solution: The switch might be operating in the low power mode. To toggle on the LEDs, press the eco-friendly button on the front panel of the switch. You can also toggle the LEDs off and on with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the command line interface.

Problem 3: A twisted pair port on the switch is connected to an active network device but the port LINK/ACT LED is off.

Solutions: The port is unable to establish a link to a network device. Try the following:

- Verify that the network device connected to the twisted pair port is powered on and is operating properly.

- ❒ Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.
- ❒ Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- ❒ Verify that you are using the appropriate category of twisted pair cable. Refer to “Cable Requirements” on page 32.
- ❒ Verify that the port is connected to the correct twisted pair cable.

Note
Twisted pair ports may require five to ten seconds to establish a link.

Problem 4: The LINK/ACT LED for an SFP or SFP+ transceiver is off.

Solutions: The fiber optic port on the transceiver is unable to establish a link to a network device. Try the following:

- ❒ Verify that the remote network device connected to the fiber optic port is operating properly.
- ❒ Verify that the fiber optic cable is securely connected to the port on the transceiver and to the port on the remote network device.
- ❒ Check that the transceiver is fully inserted in the port.
- ❒ Verify that the operating specifications of the fiber optic ports on the transceiver and remote network device are compatible.
- ❒ Verify that the correct type of fiber optic cabling is being used.
- ❒ Verify that the port is connected to the correct fiber optic cable.
- ❒ Try connecting another network device to the fiber optic port using a different cable. If the port is able to establish a link, then the problem is with the cable or with the other network device.
- ❒ Use the switch management software to verify that the port is enabled.
- ❒ If the remote network device is a managed device, use the management firmware to determine whether the port is enabled.
- ❒ Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power).

Problem 5: The switch functions intermittently.

Solutions: Check the system hardware status through the management software:

- Use the SHOW SYSTEM ENVIRONMENT command in the Privileged Exec mode to verify that the input voltage from the power source to the switch is stable and within the approved operating range. The unit will shut down if the input voltage fluctuates above or below the approved operating range.
- Use the SHOW SYSTEM ENVIRONMENT command in the Privileged Exec mode to verify that the fan is operating correctly.
- Verify that the location of the switch allows for adequate airflow. The unit will shut down if it is overheating.

Problem 6: The Switch ID LED on the front of the switch is flashing the letter “F.”

Solutions: One or more of the following problems has occurred:

- A cooling fan has failed.
- The switch could be overheating and has to shut down.

Contact your Allied Telesis sales representative for assistance.

Appendix A
Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions

Table 2 lists the dimensions of the switches.

Table 2. Product Dimensions

Model	Dimension (W x D x H)
x530DP-28GHXm	44.05 cm x 41.91 cm x 4.37 cm (17.34 in. x 16.50 in. x 1.72 in.)
x530DP-52GHXm	44.05 cm x 41.91 cm x 4.37 cm (17.34 in. x 16.50 in. x 1.72 in.)
FAN10 / FAN10R	40 mm x 40 mm x 28 mm (1.575 in. x 1.575 in. x 1.1 in.)
PWR150 / PWR150R	14.8 cm x 25.2 cm x 4.2 cm (5.8 in. x 9.8 in. x 1.7 in.)
PWR250	14.8 cm x 25.2 cm x 4.2 cm (5.8 in. x 9.8 in. x 1.7 in.)
PWR250-80	14.8 cm x 25.2 cm x 4.2 cm (5.8 in. x 9.8 in. x 1.7 in.)
PWR800	14.8 cm x 25.2 cm x 4.2 cm (5.8 in. x 9.8 in. x 1.7 in.)
PWR1200	14.8 cm x 30.7 cm x 4.2 cm (5.8 in. x 12.1 in. x 1.7 in.)

Figure 36 illustrates the dimensions of the x530DP-28GHXm and x530DP-52GHXm switch.

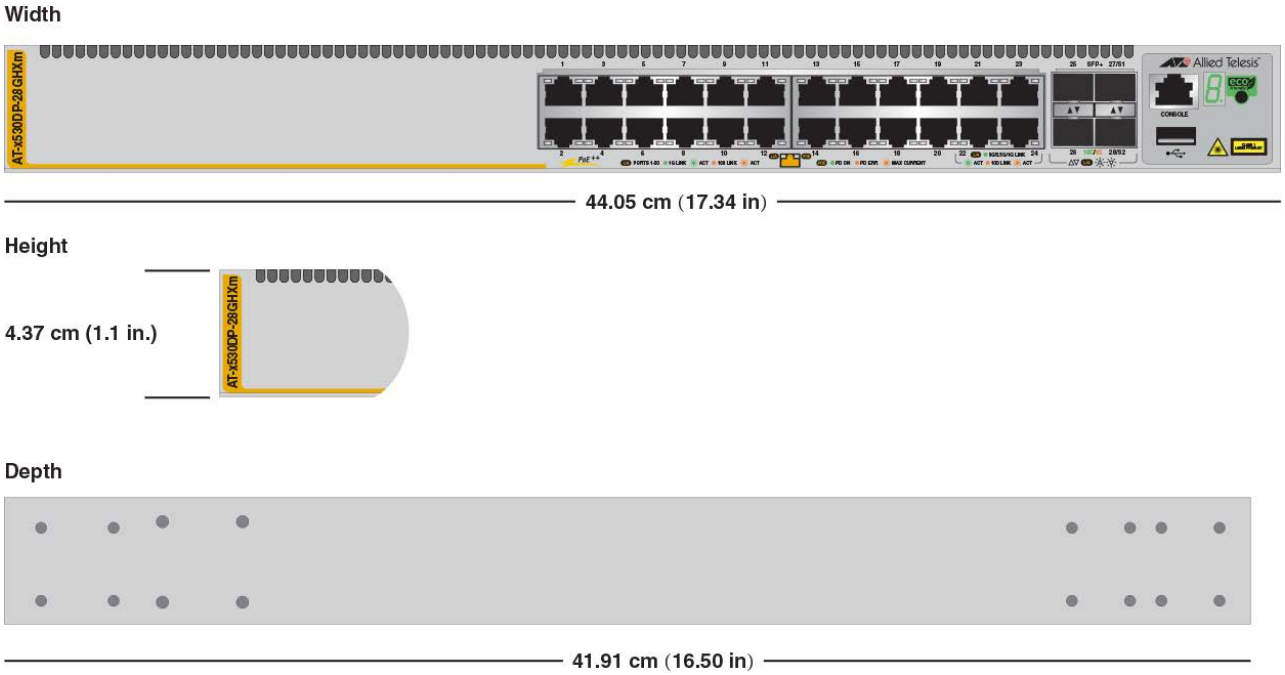


Figure 36. x530DP-28GHXm and x530DP-52GHXm Switch. Dimensions

Figure 37 illustrates the dimensions of the FAN10 and FAN10R modules.

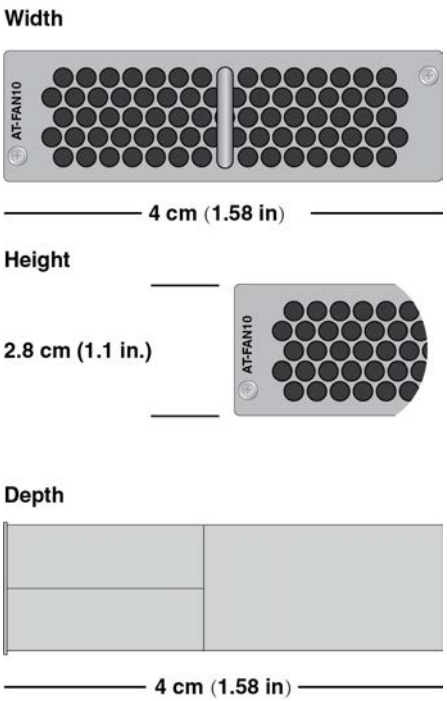


Figure 37. FAN10 and FAN10R Dimensions

Weights

Table 3 lists the weights of the switches.

Table 3. Product Weights

x530DP-28GHXm	5.36 kg (11.82 lb.)
x530DP-52GHXm	5.56 kg (12.26 lb.)
PWR150 / PWR150R	1.28 kg (2.80 lb)
PWR250	1.50 kg (3.30 lb.)
PWR250-80	1.50 kg (3.30 lb.)
PWR800	1.77 kg (3.90 lb.)
PWR1200	2.23 kg (4.90 lb.)

Ventilation

Table 4 lists the ventilation requirements.

Table 4. Ventilation Requirements

Recommended Minimum Ventilation on All Sides	10 cm (4.0 in)

Environmental Specifications

Table 5 lists the environmental specifications of the switches.

Table 5. Environmental Specifications

Storage Temperature	-25° C to 85° C (-13° F to 185° F)
Operating Humidity	5% to 90% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	3,048 m (10,000 ft)
Maximum Nonoperating Altitude	4,000 m (3,00 ft)
Product Noise Level	More than 42 dB @ 30C or less
Installation Requirement	Tabletop, wall or rack mount

Table 6 lists the maximum operating temperature of the power supply units.

Table 6. Maximum Operating Temperature

PWR150 / PWR150R PWR250 PWR250-80	0° C to 65° C (32° F to 149° F)
PWR800 (1 or 2 units)	0° C to 55° C (32° F to 131° F)
PWR1200 (1 unit) and 670W PWR1200 (2 units) and 1,340W	45° C to 50° C (113° F to 122° F)
PWR1200 (1 unit) and 740W PWR1200 (2 units) and 1,480W	0° C to 45° C (32° F to 113° F)

Power Specifications

This section contains the maximum power consumption values, input voltages, and heat dissipation values.

Maximum Power Consumption

Table 7 and Table 8 list the maximum power consumptions of the switches with the different power supplies.

Table 7. Maximum Power Consumptions with the PWR150, PWR150R, PWR250, or PWR250-80 Power Supply

x530DP-28GHXm	110 watts
x530DP-52GHXm	150 watts

Table 8. Maximum Power Consumptions with the PWR800 or PWR1200 Power Supply

x530DP-28GHXm	1840 watts
x530DP-52GHXm	1930 watts

Input Voltages

Table 9 lists the input voltages for the switches.

Table 9. Input Voltages

PWR150 / PWR150R	100-240 VAC, 2.0A maximum, 50/60 Hz
PWR250	100-240 VAC, 5.0A maximum, 50/60 Hz
PWR250-80	40-60 VDC, 6.0A maximum
PWR800	100-240 VAC, 10.0A maximum, 50/60 Hz
PWR1200	100-240 VAC, 15.0-7A maximum, 50/60 Hz

Heat Dissipation

Table 10 and Table 11 list the heat dissipation for the switches.

Table 10. Maximum Heat Dissipation with the PWR150, PWR250, or PWR250-80 Power Supply

x530DP-28GHXm	375 BTU/h
x530DP-52GHXm	512 BTU/h

Table 11. Maximum Heat Dissipation with the PWR800 or PWR1200 Power Supply

x530DP-28GHXm	6279 BTU/h
x530DP-52GHXm	6586 BTU/h

Certifications

Table 12 lists the product certificates.

Table 12. Product Certifications

EMI (RFI Emissions)	FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, EN55024, EN62368-1, VCCI Class A, RCM
EMC (Immunity)	EN55024
Electrical and Laser Safety	EN60950-1 (TUV), UL 60950-1 ($_{C}UL_{US}$), CSA-C22-2 No. 60950-1 ($_{C}UL_{US}$), EN60825-1 (TUV)
Compliance Marks	CE, $_{C}UL_{US}$, TUV
RoHS and WEEE	Complies with RoHS 6 Complies with China RoHS
Common Criteria	ISO/IEC 15408

RJ-45 Twisted Pair Port Pinouts

Figure 38 illustrates the pin layout of the RJ-45 connectors on the front panel of the switch.

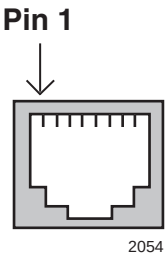


Figure 38. RJ-45 Socket Pin Layout (Front View)

Table 13 lists the pin signals.

Table 13. Pin Signals for 10/100M and 2.5G/5G Base-T Connectors

Pin	10/100Mbps MDI Signal	10/100Mbps MDI-X Signal	1G/2.5G/5G Signal
1	TX+	RX+	Bi-directional pair A+
2	TX-	RX-	Bi-directional pair A-
3	RX+	TX+	Bi-directional pair B+
4	Not used	Not used	Bi-directional pair C+
5	Not used	Not used	Bi-directional pair C-
6	RX-	TX-	Bi-directional pair B-
7	Not used	Not used	Bi-directional pair D+
8	Not used	Not used	Bi-directional pair D-

RJ-45 Style Serial Console Port Pinouts

Table 14 lists the pin signals of the RJ-45 style serial console port.

Table 14. RJ-45 Style Serial Console Port Pin Signals

Pin	Signal
1	RTS#
2	Not used
3	Transmit Data
4	Ground
5	Ground
6	Receive Data
7	Not used
8	CTS

USB Port

Table 15 lists the pin signals of the USB port.

Table 15. USB Port Pin Signals

Pin	Signal
1	+5V
2	DATA-
3	DATA+
4	NC
5	GND

Appendix B
Installing the Switch in the RKMT-SL01 Sliding Rack

This appendix contains the following sections:

Introduction

The RKMT-SL01 Rack Mount Kit is a slide-rail type rack-mount kit for Allied Telesis switches in EIA standard 19-inch equipment racks. The kit makes installation and maintenance of network equipment easier by letting you slide switches into or out of equipment racks, including server racks with deep dimensions.

Note
The RKMT-SL01 Kit should only be used with approved Allied Telesis products.

Rack Mount Kit Components

Note
The illustrations in this chapter show a generic switch, but the installation procedures are the same for similar switches.

The kit has three main components.

Adjustable Outer Rails

Two adjustable outer rails attach to the equipment rack. They are suitable for racks with depths of 600 mm (23.6 in) to 900 mm (35.4 in). Refer to Figure 39.

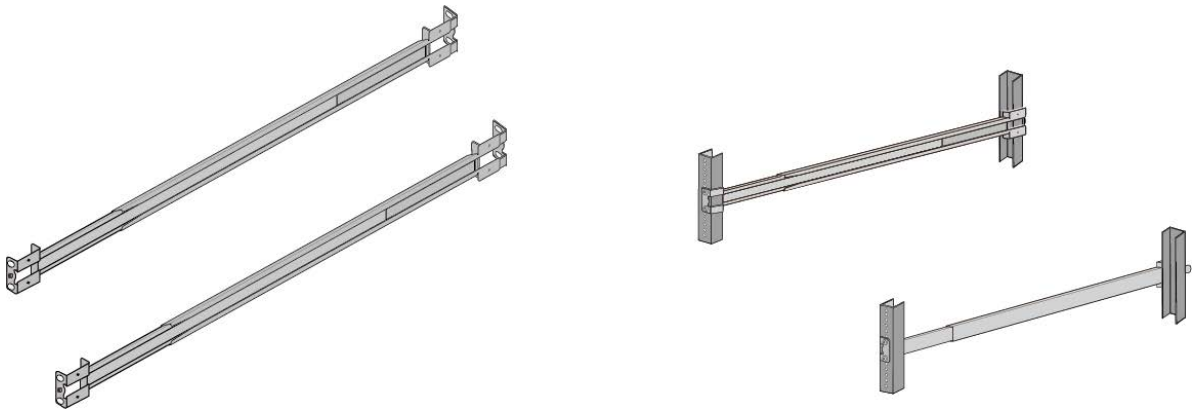


Figure 39. Outer Rails

Inner Rails

Two Inner rails attach to the sides of the switch. Refer to Figure 40.

Figure 40. Inner Rails

Extension Brackets

Two extension brackets attach to the front of the inner rails and control the amount the switch is recessed in the equipment rack. The brackets also have a captive screw for securing the switch in the equipment rack. Refer to Figure 41 on page 142.

Figure 41. Extension Brackets

Equipment Rack Requirements

The Rack Mount Kit is designed for equipment racks that meet the following requirements:

- The depth can be from 600 mm (23.6 in) to 900 mm (35.4 in).
- The width should be a minimum of 452 mm (17.8 in).
- There should be 35 mm (1.4 in) depth within the rack post for the outer rail mounting.
- The distance between the left and right wall (for the outer rail mounting) should be a minimum of 10 mm (0.4 in) from the screw hole in the center of the rack posts.

Reviewing Safety Precautions

Review these safety precautions before installing the RKMT-SL01 Kit.

Note
The ⍾ indicates that a translation of the safety statement is available in a PDF document titled ***Translated Safety Statements*** posted on the Allied Telesis website at **www.alliedtelesis.com/en/documents/translated-safety-statements**.

Warning
Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading. ⍾ E25

Warning
Do not pull the rear of the switch out past the front rack posts. If you need to position the rear of the switch out past the front of the rack, you should remove it completely from the rack. ⍾ E58

Warning
Pull the switch out slowly if you must remove it from the rack for maintenance. If you pull the switch out past the front of the rack posts, or if you pull it out too quickly, there is a risk that the weight of the switch will cause the sliding rail assemblies to fail and cause the switch to fall out. ⍾ E59

Caution
Avoid applying excessive force to the cables. ⍾ E60

Caution
If using long extension bracket(s), secure between the fixed bracket and short extension bracket - the long extension bracket(s) cannot be attached directly to the inner rail. ⍾ E61

Caution
Use the adjustment bracket screws supplied with the inner rail. Using screws other than those supplied may result in equipment damage. E62

Warning
When installing the outer and inner rails, and adjustment bracket, ensure the components are securely attached with the appropriate screws. If not securely attached, a serious accident may occur due to falling equipment. E63

Warning
When installing and removing the switch from the rack, disconnect the media and power cables. E64

Warning
A built-in stopper prevents the outer rail from extending beyond its maximum length of 960 mm (37.8 in). Do not extend the rail by force beyond this point, otherwise, the outer bracket will be weakened, and the switch may fall from the rack; equipment could be damaged. E65

Warning
Ensure the front and rear of both outer rails are attached at the same distance from the floor, otherwise the switch may fall from the rack. E66

Warning
Be careful to not drop the switch when lifting and not to pinch your fingers when inserting the switch into the rack. E67

Warning
Other than maintenance work, secure the switch to the outer rail (via the adjustment bracket): If the switch is not secured properly, there is a risk of the switch falling out during movement caused by an earthquake. E68

Warning
Do not pull the switch out past the front rack posts. E69

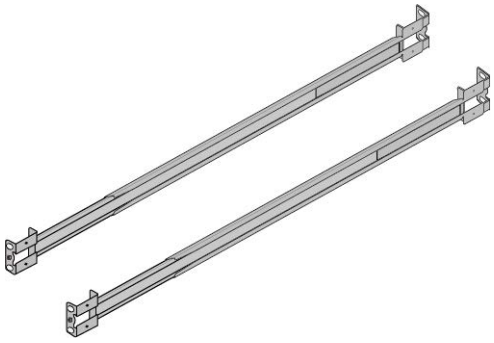
Installation Overview

The following steps summarize the installation procedure for the RKMT-SL01 Rack Mount Kit:

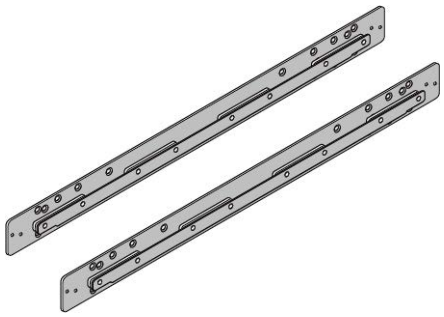
1. Verify the contents of the shipping box. Refer to “Unpacking the Shipping Container” on page 148.
2. Attach the outer rails to the equipment rack. Refer to “Installing the Outer Rails on the Equipment Rack” on page 150.
3. Determine the lengths of the extension brackets and install the brackets on the inner rails. Refer to “Installing the Extension Brackets on the Inner Rails” on page 152.
4. Attach the inner rails to the switch. Refer to “Installing the Inner Rails on the Switch” on page 158.
5. Slide the switch into the outer rails. Refer to “Installing the Switch in the Equipment Rack” on page 159.

Unpacking the Shipping Container

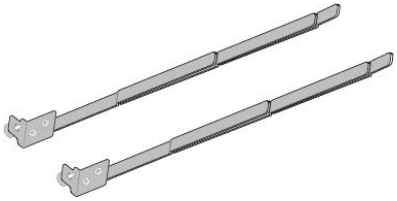
The contents of the shipping container are shown in Figure 42.



Two outer rails - They attach to the equipment rack. Their lengths are adjustable from 600 to 960 mm (23.6 - 37.8 in).

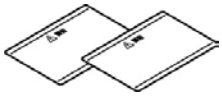


Two inner rails - They attach to the sides of the switch.



Two extension brackets - They set the distance the switch is recessed in the equipment rack and secure the switch to the rack.

- 16 inner rail screws (M4 x 8 countersunk) - They attach the inner rails to the switch. Screw holes and number of screws vary depending on the switch.
- Four extension bracket screws (M3 x 4 countersunk) - They attach the extension brackets to the inner rails.



Two warning labels - They are affixed to the top and bottom of the switch and warn against pulling the switch out past the equipment rack posts.

Figure 42. Shipping Container Contents

Note
Store the packaging material in a safe location. You should use the original shipping material if you need to return the kit to Allied Telesis.

Warning
When installing the outer and inner rails, and extension brackets, ensure the components are securely attached with the appropriate screws. If not securely attached, a serious accident may occur due to falling equipment. E63

Installing the Outer Rails on the Equipment Rack

To install the outer rails to the equipment rack, perform the following procedure.

1. Locate the FRONT and REAR labels on the sides of the rails. You have to install the rails with the FRONT labels at the front of the equipment rack and the REAR Labels at the back. Refer to Figure 43.

Figure 43. FRONT and REAR Labels on the Outer Rails

2. Attach the outer rails to the equipment rack using the supplied screws. Use four screws per rail. Refer to Figure 44 on page 151. Installing the switch can be easier if you leave the screws slightly loosened now and fully tightened them after the switch is installed.

Warning
Built-in stoppers prevent the outer rails from extending beyond their maximum length of 960 mm (37.8 in). Do not force the rails beyond the maximum length. Otherwise, the brackets will be weakened, and the switch may fall from the rack and be damaged. E65

Warning
Verify that the front and rear of both outer rails are attached at the same distance from the floor, otherwise the switch may fall from the rack. E66

3. Go to “Installing the Extension Brackets on the Inner Rails” on page 152.

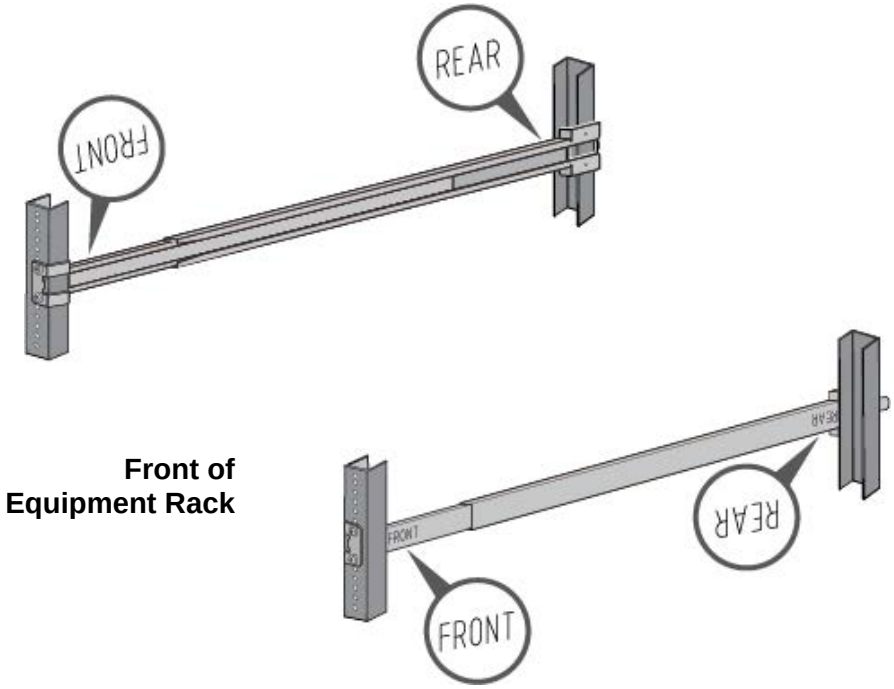


Figure 44. Installing the Outer Rails on the Equipment Rack

Installing the Extension Brackets on the Inner Rails

The kit comes with two extension brackets. Refer to Figure 45.

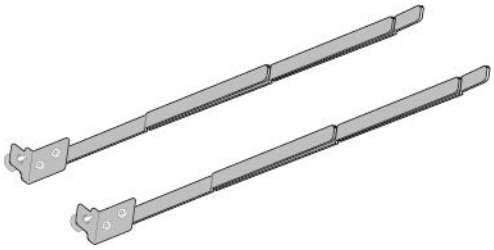


Figure 45. Extension Brackets

You use the brackets to recess the switch in the equipment rack. The maximum distance will depend on the depth of the equipment rack. The deeper the equipment rack, the more the switch can be recessed. The range is approximately 40mm (1.6 in.) to 453mm (17.8 in.). Figure 46 is an example.

Figure 46. Example of a Switch Recessed in an Equipment Rack

Measuring the Extension Bracket Lengths

The first step is to decide how much you want to recess the front panel of the switch in the rack and then measure the distance. That will tell you the approximate lengths of the extension brackets. Perform the following procedure:

1. Slide one of the inner rails into an outer rail. Be sure that the UP arrow on the inner rail is pointing up. Refer to Figure 47 on page 153.

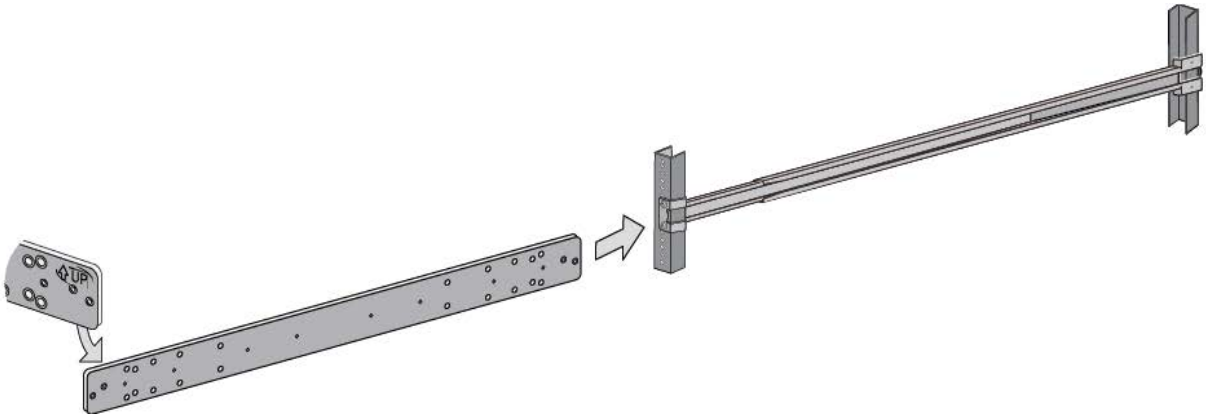


Figure 47. Inserting an Inner Rail into an Outer Rail

2. Position the inner rail at the planned location for the front panel of switch in the sliding rack. Refer to Figure 48.

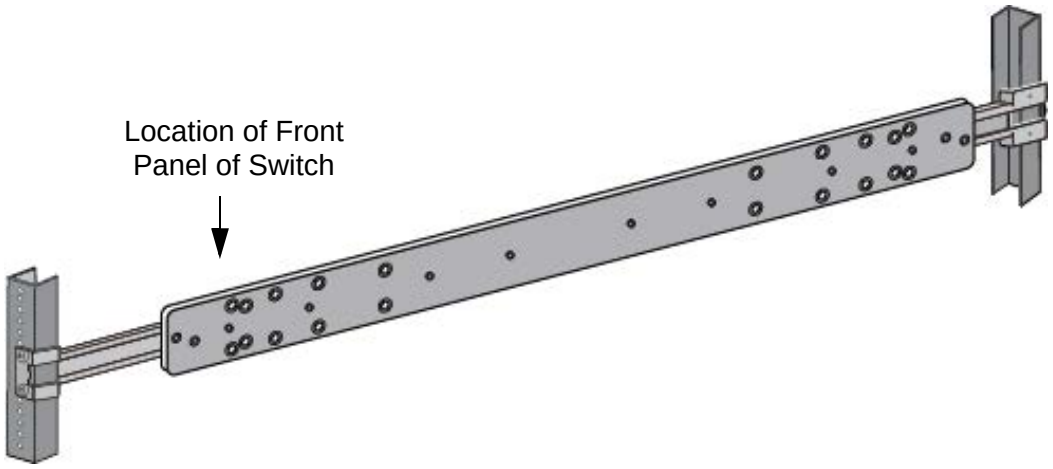


Figure 48. Example of Positioning the Inner Rail

3. Measure the distance from the front of the equipment rack to the front of the inner rail. This will be the approximate length of the extension brackets. Refer to Figure 49.

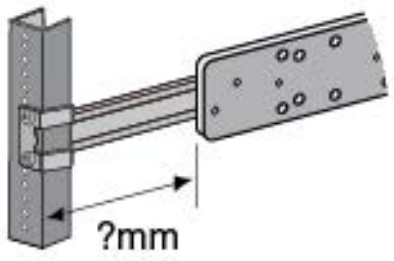


Figure 49. Measuring for the Extension Brackets

4. Remove the inner rail from the outer rail. Refer to Figure 50.

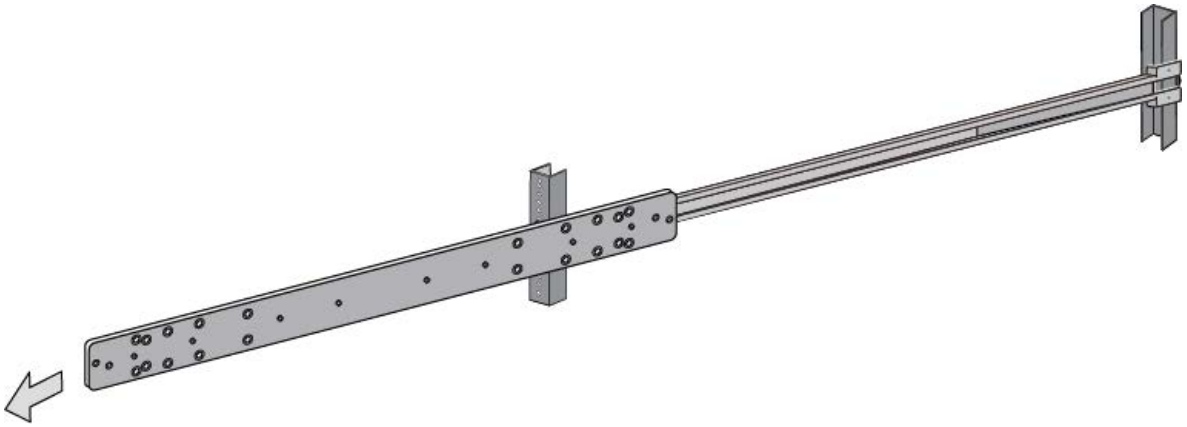


Figure 50. Removing the Inner Rail

5. Go to “Assembling the Extension Brackets,” next.

Assembling the Extension Brackets

Now that you know the approximate length for the extension brackets, you are ready to assemble them. The brackets consist of four parts. Refer to Table 16 and Figure 51.

Table 16. Extension Bracket Parts

A	Fixed Bracket	1 ea
B	Long Extension Brackets	2 ea
C	Short Extension Bracket	1 ea

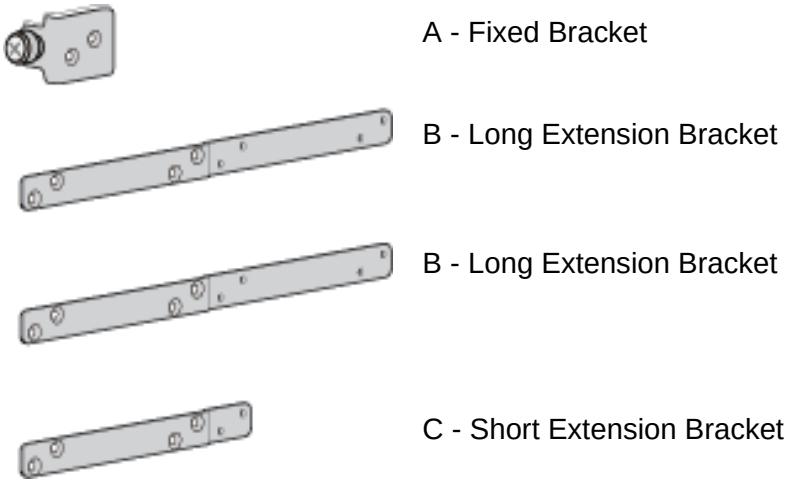


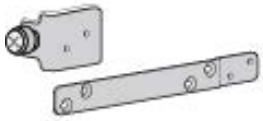
Figure 51. Extension Bracket Parts

You adjust the lengths of the brackets by connecting them in different combinations. There are seven possible configurations. Refer to Figure 52. The default configuration is number 5. To adjust the extension brackets, perform the following procedure:

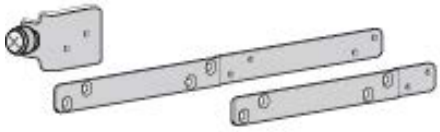
1. Review Figure 52 to find the bracket length that most closely matches the measurement taken in step 3 in the previous procedure.

#1

#2
Length:101mm (3.8 in.)

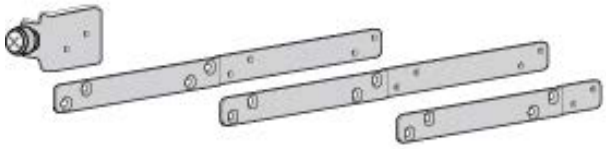


#3
Length:202mm (8.0 in.)



#4
Length:277mm (10.9 in.)

#5
Length:303mm (11.9 in.)
(Factory default)



#6
Length:378mm (14.9 in.)

#7
Length:453mm (17.8 in.)

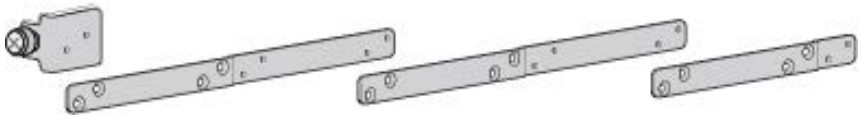


Figure 52. Extension Bracket Configurations

Note
The long brackets have to be used between the fixed and short brackets. You cannot connect them directly to the inner rails.

2. Assemble the extension brackets to match the selected length in the table.

3. Attach the extension brackets to the inner rails. Observe the following:

   - ❒ Attach the brackets to the sides of the inner rails with the UP arrows.
   - ❒ Attach the screws through the holes on the sides opposite the sides with the UP arrows.

Caution
Use the extension bracket screws supplied with the inner rail. Using screws other than those supplied may result in equipment damage. E62

Figure 53 on page 156 shows an example.

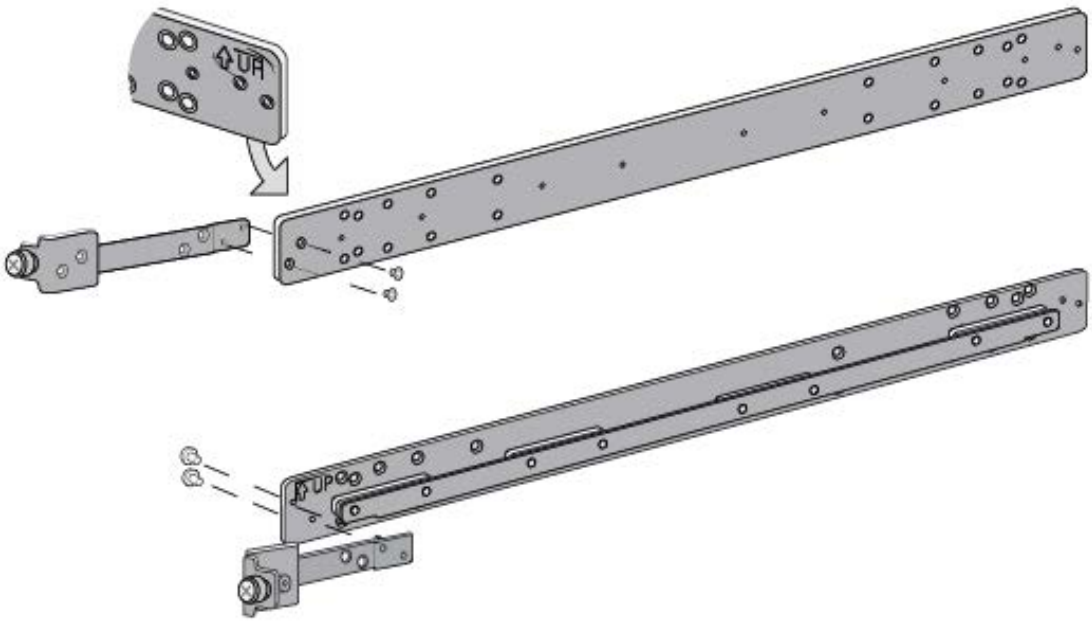


Figure 53. Example of Attaching the Extension Brackets to the Inner Rails

4. To test the lengths of the extension brackets, slide the inner rails into the outer rails in the equipment rack. Refer to Figure 54.

Figure 54. Testing the Inner Rails with the Extension Brackets

5. Measure the distance from the front of the equipment rack to the front of the inner rail. Refer to Figure 55. This should approximately match the value you measured in “Measuring the Extension Bracket Lengths” on page 152.

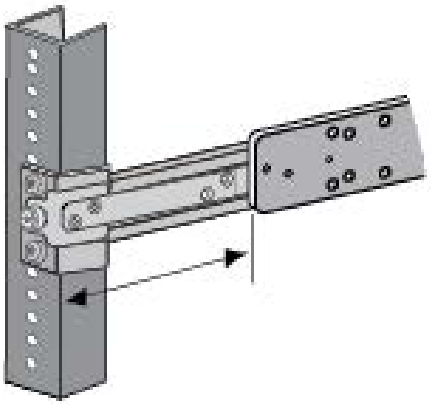


Figure 55. Verifying the Length of the Extension Bracket

6. If the extension brackets are the correct length, remove the inner brackets from the outer brackets and go to “Installing the Inner Rails on the Switch” on page 158.

7. If the brackets are not the correct length, repeat this procedure.

Installing the Inner Rails on the Switch

The sides of the x530DP-28GHXm switch have two sets of bracket screw holes. The smaller M3 holes are for the standard brackets that come with the switch and the larger M4 screw holes are for the inner rails of the RKMT-SL01 sliding rack.

The inner rails are attached to the switch with four M4 screws on each side. Figure 56 identifies the respective screw holes on the inner rails and sides of the switch.

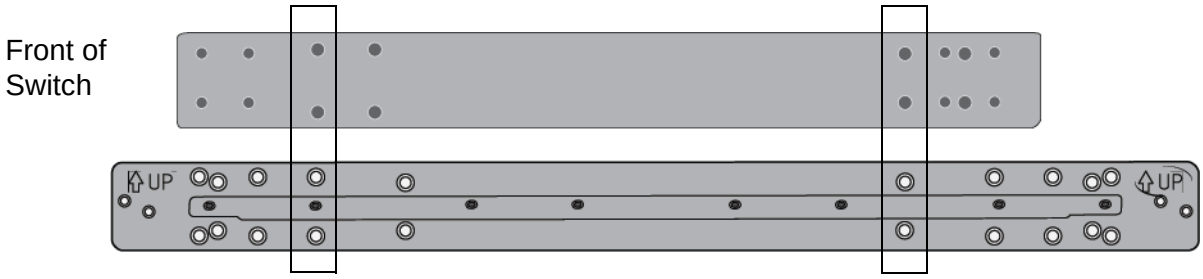


Figure 56. Inner Rail Screw Holes for the x530DP-28GHXm Switch

Attach the inner rails to the switch using eight M4 screws included with the sliding rack. Be sure that the UP arrows on the rails are pointing up and that the extension brackets extend in front of the switch. Refer to Figure 57.

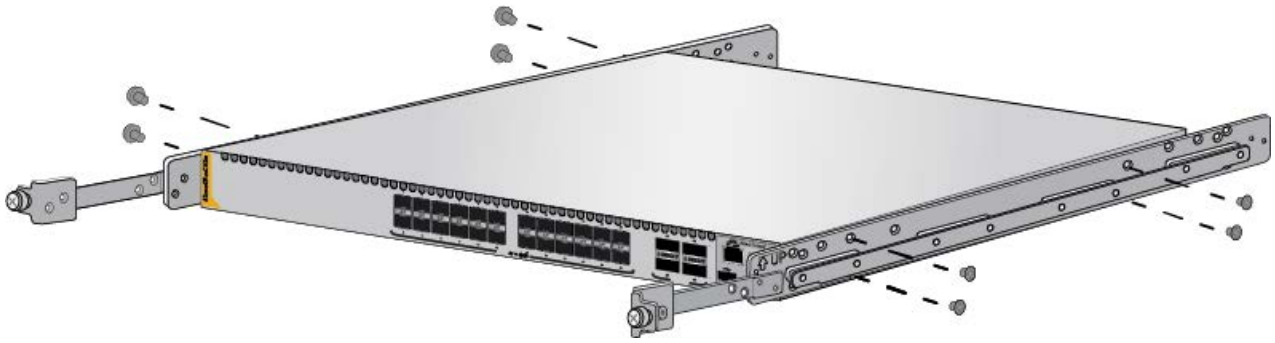


Figure 57. Attaching the Inner Rails to the x530DP-28GHXm Switch

Go to “Installing the Switch in the Equipment Rack” on page 159.

Installing the Switch in the Equipment Rack

After attaching the inner rails and extension brackets to the switch, perform the following procedure to install the switch in the sliding rack:

Warning
When installing or removing the switch from the rack, disconnect the media and power cables. E64

1. Install the switch in the sliding rack by sliding the inner rails into the outer rail grooves. Refer to Figure 58.

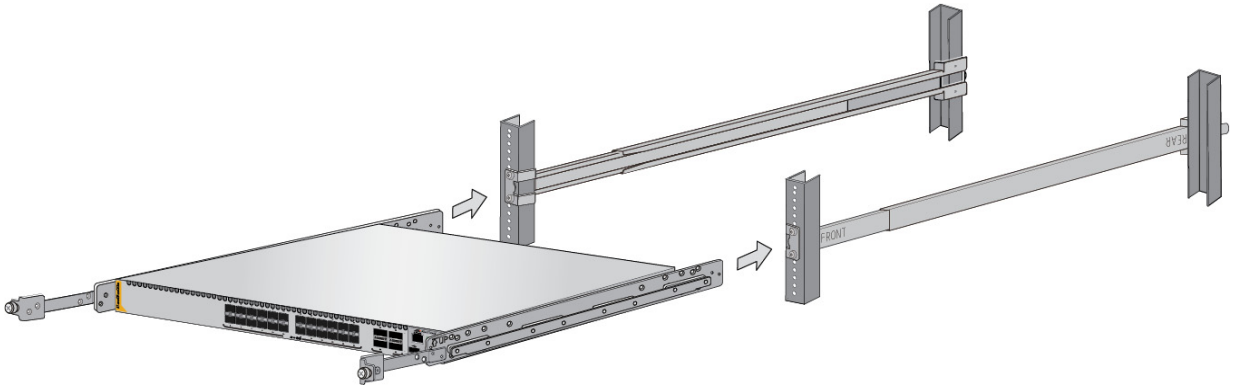


Figure 58. Sliding the Inner Rails on the Switch into the Outer Rails

Warning
Be careful to not drop the switch or pinch your fingers when inserting it into the sliding rack. E67

2. Affix the provided warning labels to the top and bottom of the switch, in locations immediately visible when removing the device from the rack. Refer to Figure 59 on page 160.

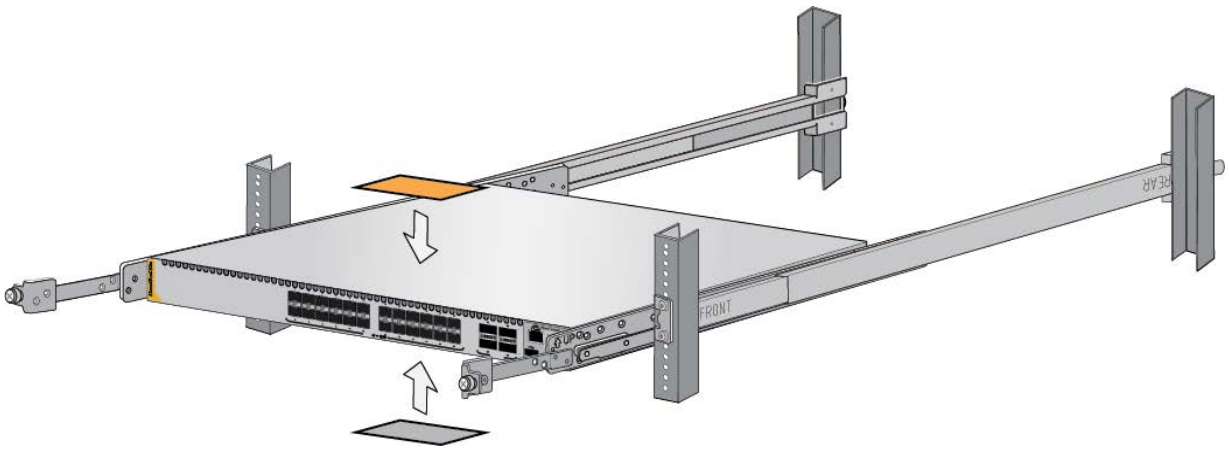


Figure 59. Affixing the Warning Labels

3. Slide the switch fully into the rack.

4. Tighten the two screws on the fixed brackets to secure the switch to the equipment rack. Refer to Figure 60.

Figure 60. Tightening the Two Screws on the Fixed Brackets

Warning
Always be sure to secure the switch to the outer rail (via the adjustment bracket). If the switch is not secured properly, there is a risk of it falling out during an earthquake. E68

Warning
Do not pull the switch out past the front rack posts. E69

Warning
Pull the switch out slowly if you must remove it from the rack for maintenance. If you pull the switch out past the front of the rack posts, or if you pull it out too quickly, there is a risk that the weight of the switch will cause the sliding rail assemblies to fail and cause the switch to fall out. E59

5. Finish tightening the eight screws on the outer rails to secure the rails to the equipment rack. See Figure 61.

Figure 61. Tightening the Screws on the Outer Rails

This completes the installation procedure.

Appendix C

Removing and Replacing Modules

This chapter contains the following procedures:

Removing AC Power Supplies

This section contains the procedure for removing the following power supplies:

- PWR150 / PWR150R
- PWR250
- PWR800
- PWR1200

The illustrations show the removal of a power supply from slot PSU A. The procedure is the same for removing a power supply in slot PSU B.

Note
Allied Telesis recommends saving a backup copy of the configuration file in the switch before removing or replacing power supplies. For instructions, refer to the *Command Reference for* x530 *Series Switches Running AlliedWare Plus at* **www.alliedtelesis.com.**

To remove a power supply from the switch, perform the following procedure:

1. Lift the power cord retaining clip on the power supply. Refer to Figure 62. The PWR1200 power supply does not have a retaining clip.

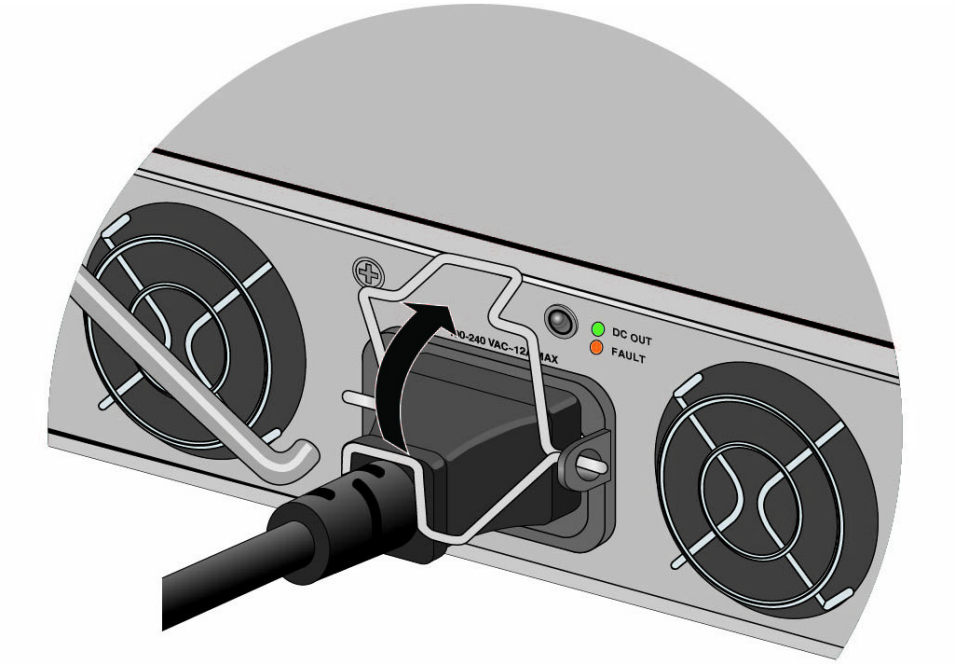


Figure 62. Lifting the Power Cord Restraining Clip

2. Disconnect the AC power cord from the AC power supply. Refer to Figure 63.

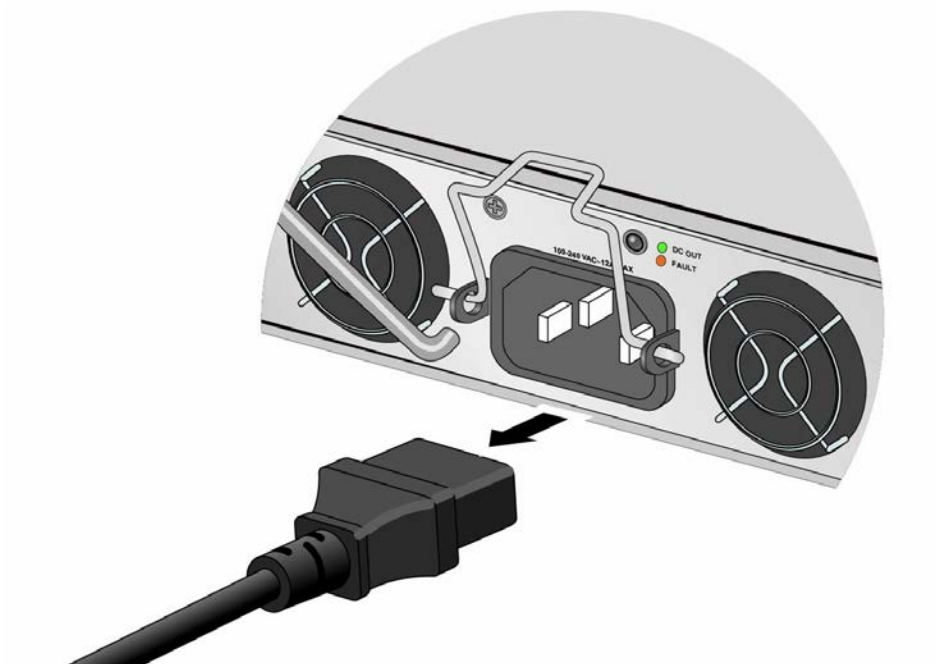


Figure 63. Disconnecting the Power Cord from the Power Supply

3. Loosen the two retaining screws on the power supply with a cross-head screwdriver. Refer to Figure 64.

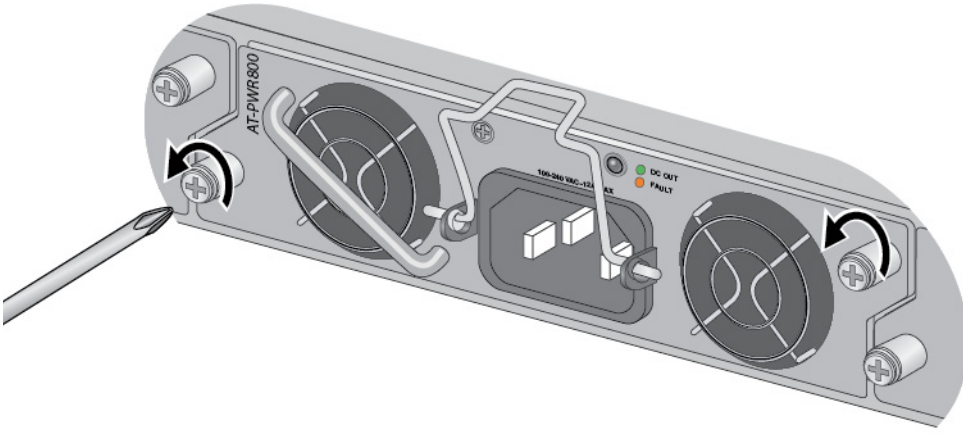


Figure 64. Loosening the Two Captive Screws

4. Carefully slide the power supply from the switch. Refer to Figure 65 on page 166.

Warning
The power supply is heavy. Use both hands to hold it when removing it from the switch.

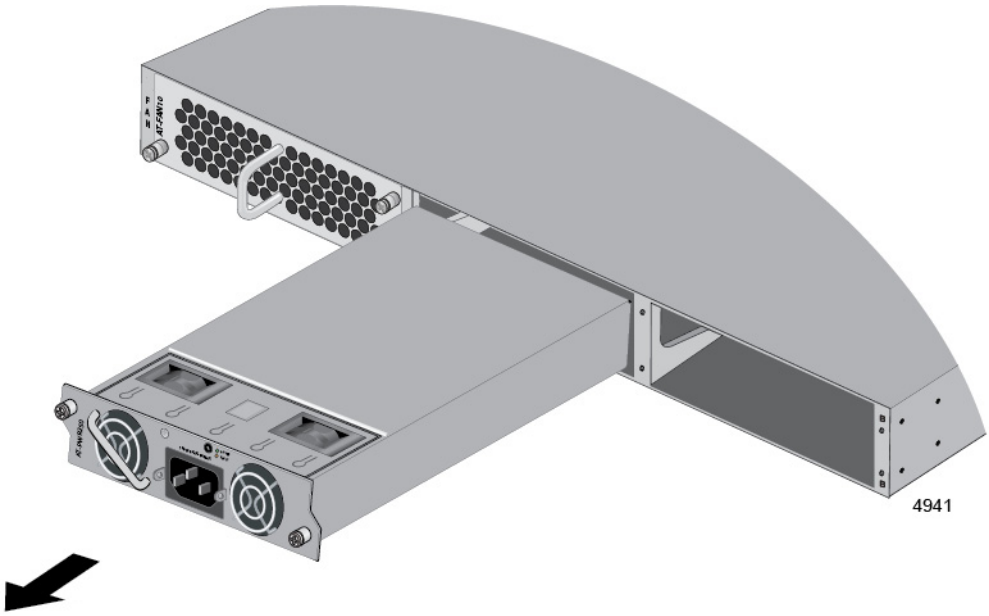


Figure 65. Removing a Power Supply

5. Do one of the following:

   - To install a new power supply, refer to Chapter 3, “Installing the Power Supplies” on page 61 for instructions.
   - If you are not installing a new power supply, install a blank panel. See “Installing a Blank Power Supply Slot Cover” on page 171 to install a blank panel.

Removing the PWR250-80 DC Power Supply

This section contains the procedure for removing the PWR250-80 DC power supply.

Warning
As a safety precaution, install a circuit breaker with a minimum value of 15 Amps between the equipment and the DC power source. E9

Warning
Always connect the wires to the LAN equipment first before connecting them to the circuit breaker. Do not work with HOT feeds to avoid the danger of physical injury from electrical shock. Always verify that the circuit breaker is in the OFF position before connecting the wires to the circuit breaker. E9

Warning
For centralized DC power connection, install only in a restricted access area. E23

Warning
This equipment must be installed in a Restricted Access location. E45

Note
A tray cable is required to connect the power source if the unit is powered by centralized DC power. The tray cable must be a UL listed Type TC tray cable and rated at 600 V and 90 degrees C, with three conductors, minimum 14 AWG. E24

Perform the following procedure to the PWR250-80 DC Power Supply.

1. Power off the DC circuit to which the switch is connected.
2. Verify that the On/Off switch on the power supply is in the Off position. Refer to Figure 66.

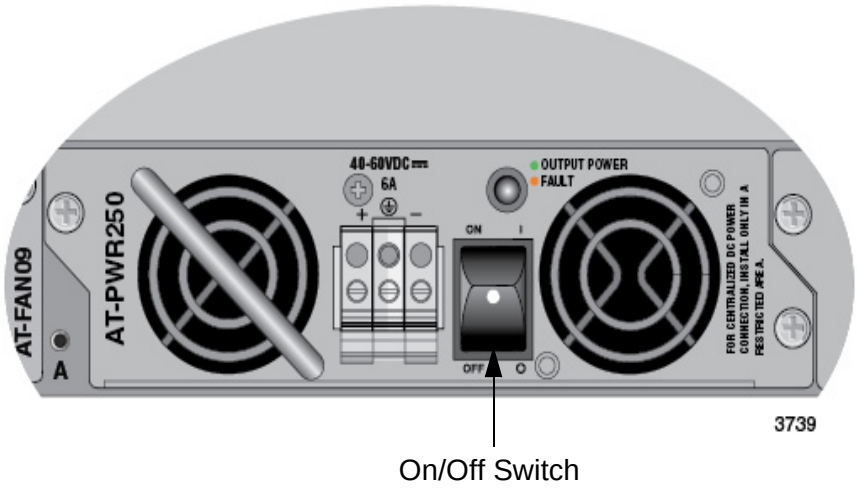


Figure 66. On/Off Switch on PWR250-80 Power Supply

3. Use the legend above the terminal block to identify the terminals. The terminals are **positive**, **power supply ground** and **negative**, from left to right, as shown in Figure 67.

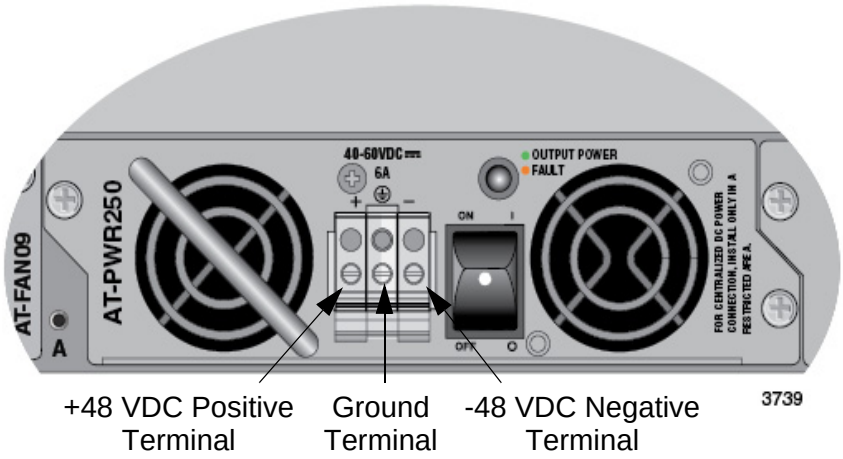


Figure 67. DC Terminal Block

4. Disconnect the supply-cable wires to the circuit breaker.
5. Disconnect the -48 VDC feed wire to the terminal block marked - (minus).
6. Disconnect the +48 VDC (RTN) feed wire to the terminal block marked + (plus).
7. Disconnect the ground wire. Refer to Figure 68.

Warning
When installing/removing this equipment, always ensure that the power supply ground connection is installed first and disconnected last. E11

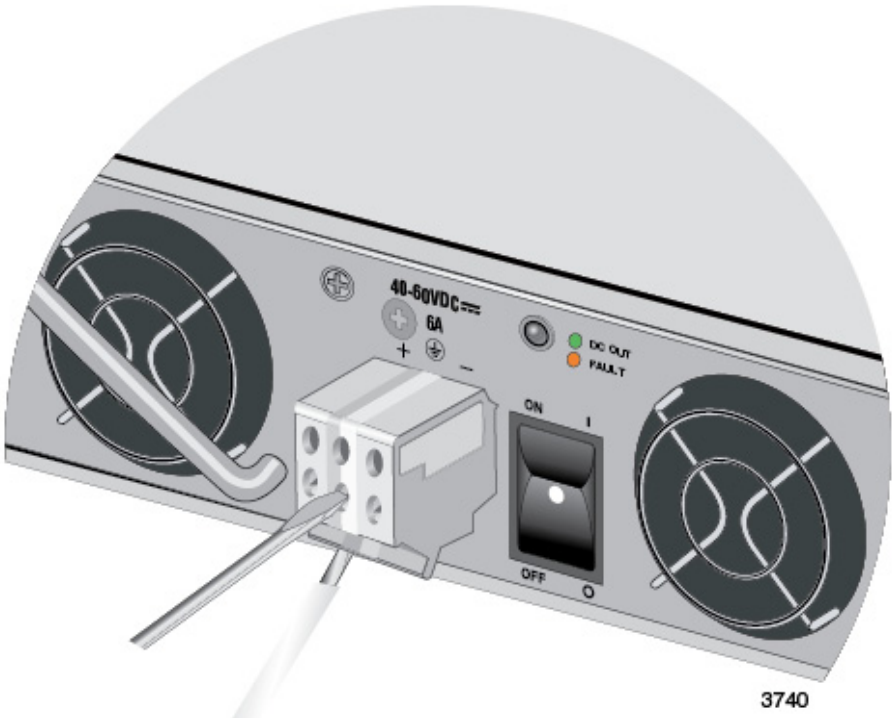


Figure 68. Disconnecting the Ground Wire to the DC Terminal Block

8. Loosen the two retaining screws on the power supply with a cross-head screwdriver. Refer to Figure 64.

Figure 69. Loosening the Two Captive Screws

9. Carefully slide the power supply from the switch. Refer to Figure 70 on page 170.

Warning
The power supply is heavy. Use both hands to hold it when removing it from the switch.

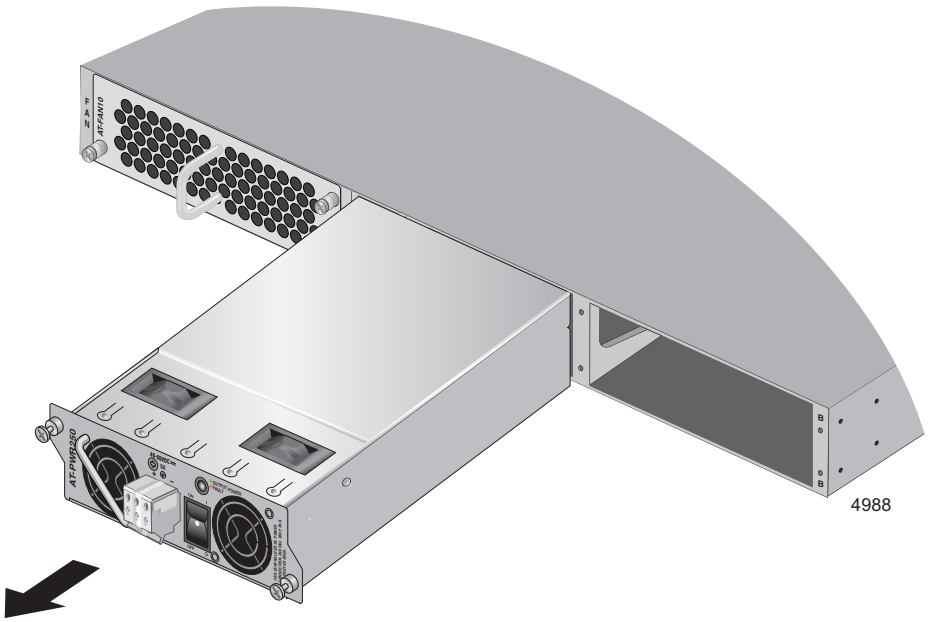


Figure 70. Removing a Power Supply

10. Do one of the following:

- To install a new power supply, refer to Chapter 3, “Installing the Power Supplies” on page 61 for instructions.
- If you are not installing a new power supply, go to “Installing a Blank Power Supply Slot Cover” on page 171 to install the blank panel.

Installing a Blank Power Supply Slot Cover

If you installed only one power supply in the switch, perform this procedure to install a blank panel over the empty power supply slot:

1. Position the appropriate blank panel over the empty power supply slot. Use the PNL800/1200 Blank Panel included in the accessory kit if the switch has only one PWR800 or PWR1200 Power Supply. Use the PNL250 Blank Panel if the switch has one PWR150, PWR150R, PWR250, or PWR250-80 Power Supply. Refer to Figure 71.

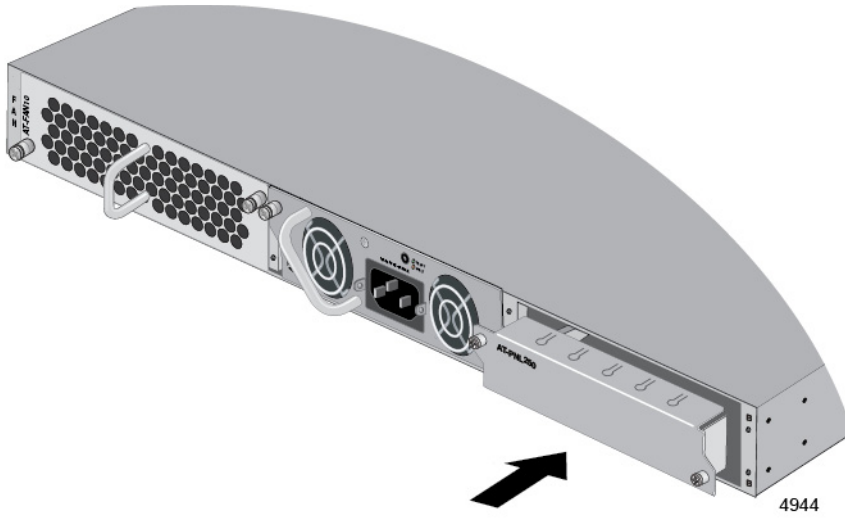


Figure 71. Installing a Blank Panel on a Power Supply Slot

2. Tighten the two captive screws with a cross-head screwdriver to secure the panel to the switch. Refer to Figure 72 on page 172.

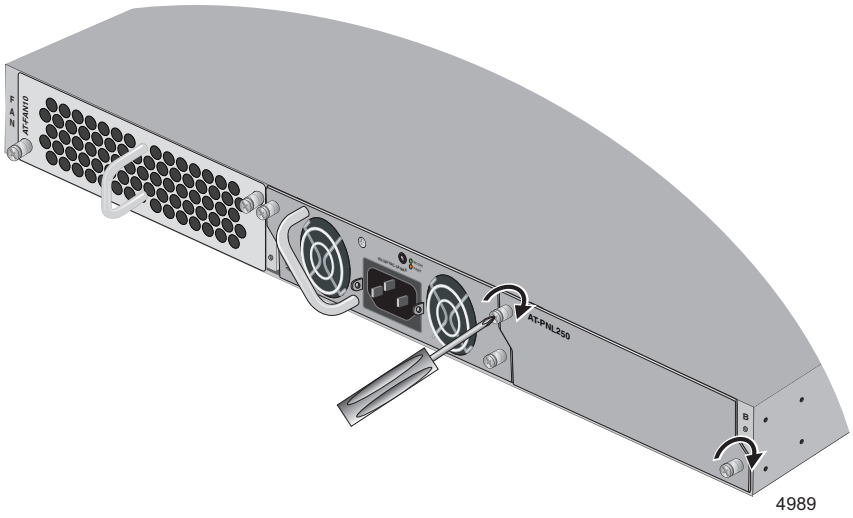


Figure 72. Tightening the Captive Screws on the Power Supply Blank Panel

3. Do one of the following:

   - To install the switch on a table, go to Chapter 4, “Installing the Switch on a Table” on page 71.
   - To install the switch in an equipment rack, refer to Chapter 5, “Installing the Switch in an Equipment Rack” on page 73.
   - To install the switch on a wall, refer to Chapter 6, “Installing the Switch on a Wall” on page 79.
   - To install the switch in the RKMT-SL01 Sliding Rack, refer to Appendix B, “Installing the Switch in the RKMT-SL01 Sliding Rack” on page 139.

Removing and Replacing the FAN10 / FAN10R Module

This section contains the procedure for replacing the FAN10 module. The FAN10 / FAN10R is hot swappable. You can replace it without having to power off the switch.

Note
Allied Telesis recommends saving a backup copy of the configuration file in the switch before replacing the fan module. For instructions, refer to the *Command Reference for x530 Series Switches Running AlliedWare Plus* at **www.alliedtelesis.com**.

Removing the Fan Module

This procedure requires the following tool:

- ❒ #2 Phillips-head screwdriver (not provided)

To remove a fan module from the switch, perform the following procedure:

1. Use a #2 Phillips-head screwdriver to loosen the two screws on the faceplate of the fan module. Refer to Figure 73.

Figure 73. Loosening the Screws on the FAN10 / FAN10R Module

2. Carefully pull on the handle to disconnect the module from the internal connector in the switch, and slide it from the switch. Refer to Figure 74 on page 174.

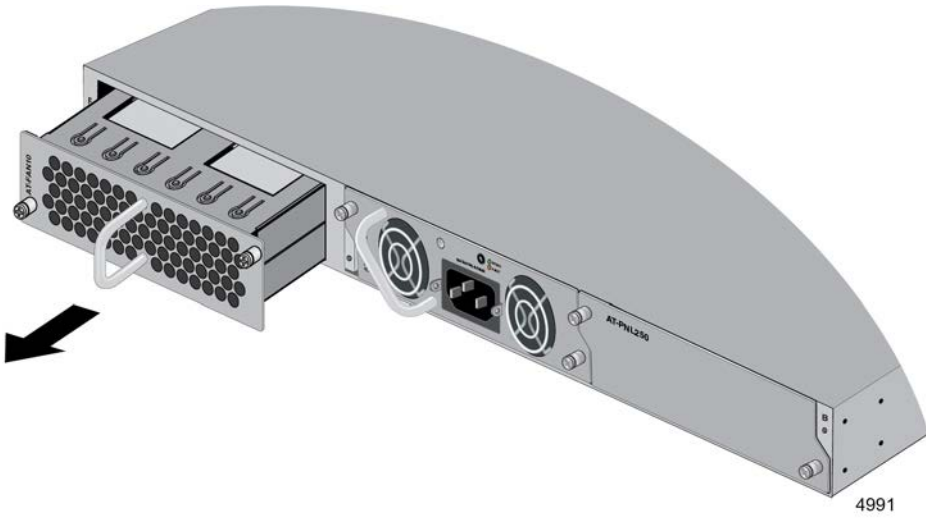


Figure 74. Removing the FAN10 / FAN10R Module from the Switch

3. Continue with the next procedure to install a new FAN10 / FAN10R module.

Installing the Fan Module

This procedure requires the following tool:

- ❒ #2 Phillips-head screwdriver (not provided)

To install a fan module, perform the following procedure:

1. Remove the new fan module form its shipping box. Align the fan module in the slot, with the module name on the left. Refer to Figure 75.

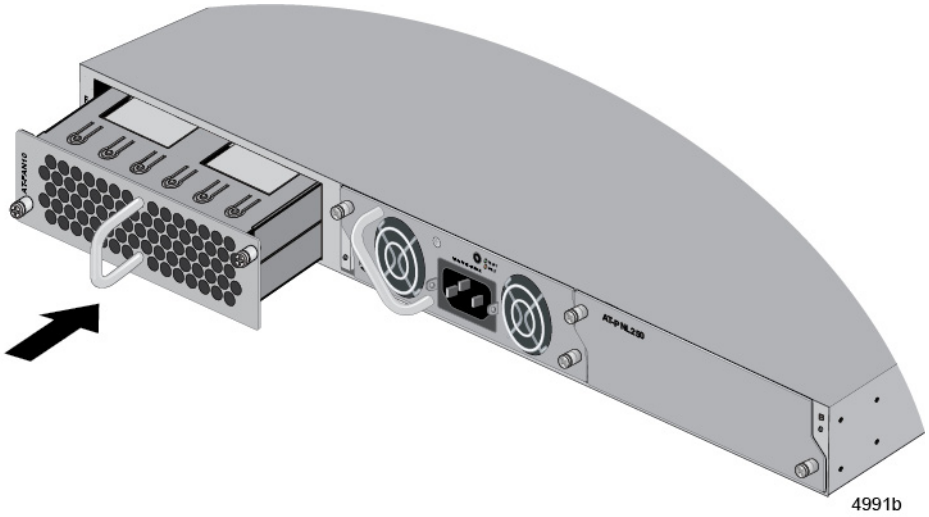


Figure 75. Aligning the FAN10 / FAN10R Module in the Switch Slot

2. When you feel the module make contact with the internal connector, gently press on both sides to seat the module on the connector. Refer to Figure 76.

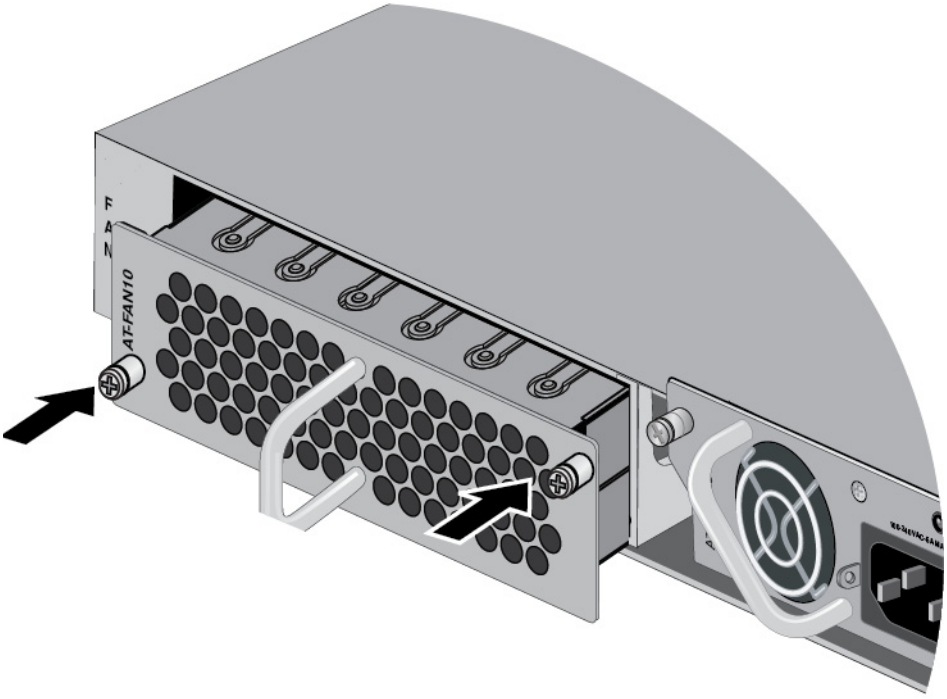


Figure 76. Seating the FAN10 / FAN10R Module on the Internal Connector

3. Tighten the two screws on the module to secure it to the switch. Refer to Figure 77.

Figure 77. Tightening the Two Captive Screws on the FAN10 / FAN10R Module

4. To confirm the operations of the new fan module, start a local or remote management session and enter the SHOW SYSTEM ENVIRONMENT command in the User Exec or Privileged Exec mode. For directions, refer to *Command Reference for x530 Series Switches Running AlliedWare Plus* at **www.alliedtelesis.com**.