x320 Series
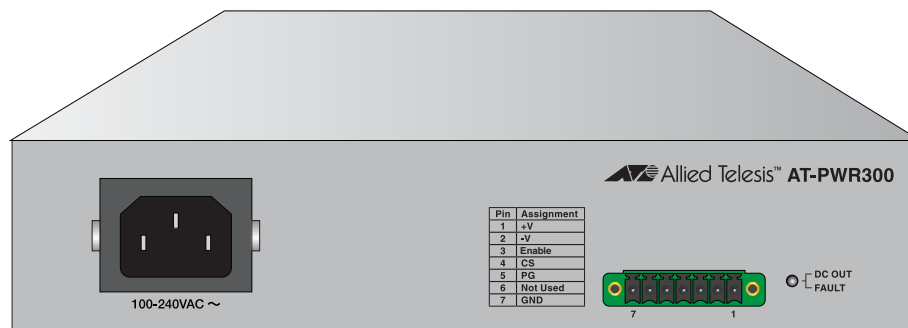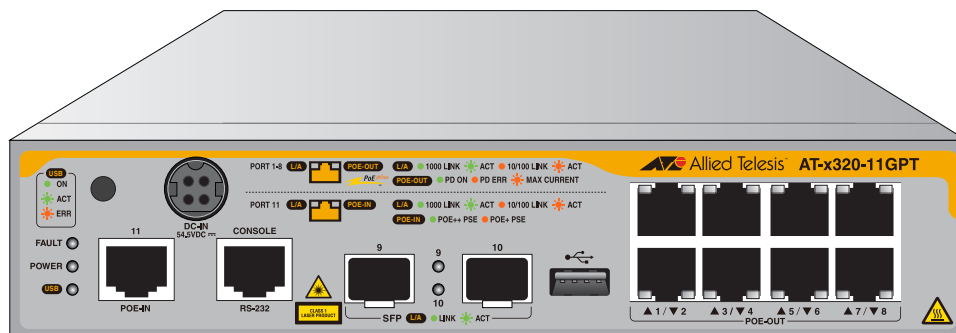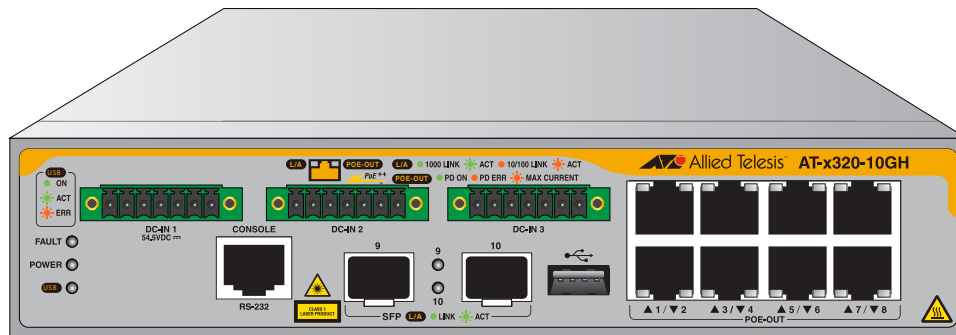
Gigabit Layer 3+ Ethernet Switches with External Power Supply Unit(s)

AlliedWare Plus™ v5.5.0

x320-10GH

x320-11GPT

PWR300

Installation Guide

Electrical Safety and Emissions Standards

This section contains the following:

❐ "US Federal Communications Commission"

❐ "Industry Canada"

❐ "Regulatory Approvals" on page 4

❐ "Translated Safety Statements" on page 5

US 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

Radiated Energy

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.

Regulatory Approvals

The regulatory approvals of the product are listed here:

Safety

UL/IEC/EN 62386-1
CAN/CSA-22.2: 62368-1

EMC

CE, FCC Part 15 Class A
EN55032 (CISPR32) Class A
EN61000-3-2
EN61000-3-3
EN55035
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11
2014/30/EU EMC Directive
2014/35/EU Low Voltage Directive

Allied Telesis approved SFP modules

EN60825-1
EN60825-2
UL/IEC/EN60950-1
FDA CDRH accession registration

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

Laser Safety   EN60825

Note
This product has an agency label on the bottom panel with the applicable international Compliance Marks, product model name and serial number, power ratings, manufacture date, country of origin, and name of importer. Refer there for all applicable international Compliance Marks.

Translated Safety Statements

Important: Safety statements that have the ➥ symbol are translated into multiple languages in the *Translated Safety Statements* document, which is available at **www.alliedtelesis.com/library**.

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/library**.

Contents

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Tables

Preface

This guide contains the hardware installation instructions for the x320 Series Gigabit L3 PoE++ Switches and the PWR300 power supply unit. The preface contains the following sections:

❒ "Safety Symbols Used in this Document" on page 16

❒ "Contacting Allied Telesis" on page 17

Safety Symbols Used in this Document

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.

Warning
Laser warnings inform you that an eye or skin hazard exists due to the presence of a Class 1 laser device.

Warning
"CAUTION", "HOT SURFACE" and "DO NOT TOUCH" Warnings inform you of hot surfaces.

Warning
This equipment is not suitable for use in locations where children are likely to be present. ☞ L126

Contacting Allied Telesis

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

❏ 24/7 Online Support — Enter our interactive support center to search for answers to your product questions in our knowledge database, to check support tickets, to learn about Return Merchandise Authorizations (RMAs), and to contact Allied Telesis technical experts.

❏ USA and EMEA phone support — Select the phone number that best fits your location and customer type.

❏ Hardware warranty information — Learn about Allied Telesis warranties and register your product online.

❏ Replacement Services — Submit a RMA request via our interactive support center.

❏ Documentation — View the most recent installation and user guides, software release notes, white papers, and data sheets for your products.

❏ Software Downloads — Download the latest software releases for your managed products.

For sales or corporate contact information, select your region and country and then go to **www.alliedtelesis.com/contact**.

Chapter 1

Overview of the x320-10GH Switch

This chapter describes the hardware features of the x320-10GH Switch. The sections in the chapter are listed here:

Front Panel

The front panel of the x320-10GH Switch is shown in Figure 1.
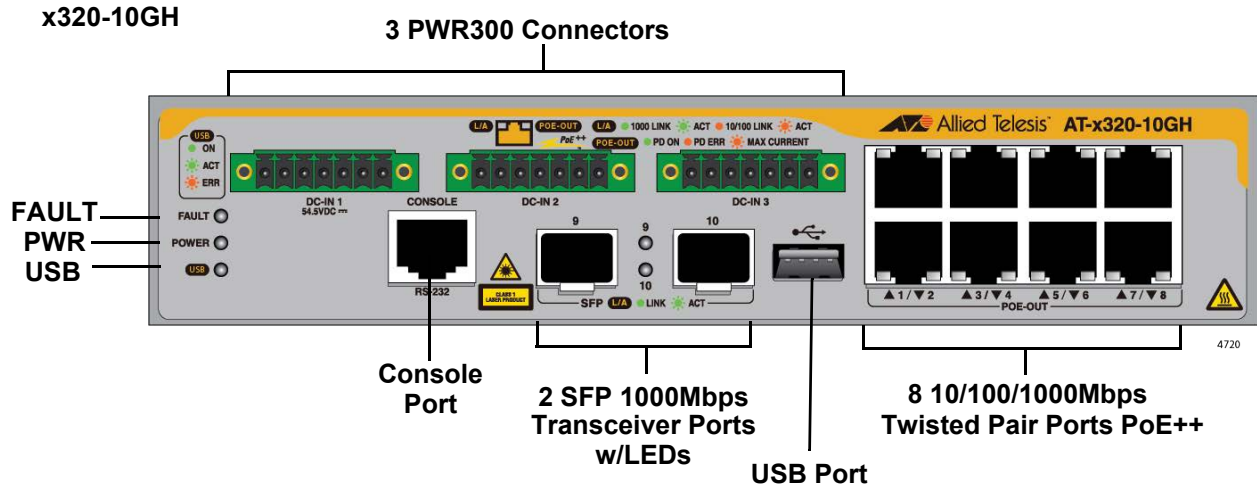
Figure 1. Front Panel of the x320-10GH Switch

Features

Here are the basic hardware features of the x320-10GH Switch.

Ports 1 to 8 Basic features of ports 1 to 8 are listed here:

- ❐ 10/100/1000Mbps
- ❐ PoE++
- ❐ 90W maximum per port
- ❐ Powered device Classes 0 to 8
- ❐ IEEE802.3bt-compliant (future support)
- ❐ Half- and full-duplex mode
- ❐ PSE Type 4
- ❐ 100 meters (328 feet) maximum distance
- ❐ LEDs for link/activity and PoE+ status

PoE+ Budgets PoE+ budgets for ports 1 to 8 are listed here:

- ❐ 240W with one PWR300 Power Supply
- ❐ 480W with two PWR300 Power Supplies
- ❐ 720W with three PWR300 Power Supplies

Refer to Table 1 for maximum PoE ports supported.

Table 1. Maximum PoE Ports Supported on the x320-10GH Switch

Available PoE Power	7W	15.4W	30W	60W	90W
240W	8	8	8	4	2
480W	8	8	8	8	5
720W	8	8	8	8	8

Ports 9 and 10 Ports 9 and 10 support the following types of SFP transceivers:

- ❐ 1000Mbps multimode or single-mode fiber optic transceivers
- ❐ Single-port, BiDi fiber optic transceivers

Additional Features Additional features are listed here:

- ❐ Port and system LEDs
- ❐ Connectors for three PWR300 power supplies

Installation Options

Installation options are listed here:

❏ Table or desktop

❏ Standard 19-inch equipment rack

❏ Wall

❏ DIN rail

Management Methods

Here are the methods for managing the switch:

❏ Local management through the Console Port

❏ Remote Telnet or Secure Shell management

❏ Remote HTTP or HTTPS web browser management

❏ SNMPv1, v2c, and v3

USB Port

You can use the USB port with a flash drive to perform the following management functions:

❏ Provide a centralized network backup location for Autonomous Management Framework (AMF).

❏ Store backup copies of configuration files.

❏ Transfer configuration files between switches that are to have similar configurations.

❏ Store or transfer log files.

❏ Store or transfer debug files (for example, the output of the SHOW TECH-SUPPORT command).

❏ Boot the AlliedWare Plus operating system and master configuration file from flash drive.

Using a flash drive with the switch is optional.

Ports 1 to 8

The following sections describe twisted pair ports 1 to 8 on the x320-10GH Switch.

Specifications The basic specifications are listed in Table 2.

Table 2. Specifications for Ports 1 to 8 on the x320-10GH Switch

Specification	Description
Port Speed	10/100/1000Mbps You can set port speed with Auto-Negotiation or manually. The default port setting is Auto-Negotiation.
Duplex Mode	Half- or full-duplex
Maximum Distance	100 meters (328 feet)
Power over Ethernet	PoE++ (IEEE 802.3bt) with 90 watts maximum per port
Power Budgets	Possible budgets are listed here: - 240W with one PWR300 power supply - 480W with two PWR300 power supplies - 720W with three PWR300 power supplies
PoE Wiring Mode	Type 4
Connector	8-pin RJ-45

Powered Device Classes

Ports 1 to 8 support the powered device classes listed in Table 3.

Table 3. Supported Powered Device Classes on Ports 1 to 8 of the x320-10GH Switch

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
7	75.0W	62.0W
8	90.0W	71.3W

Ports 1 to 8 LEDs

Ports 1 to 8 have two LEDs. Refer to Figure 2.
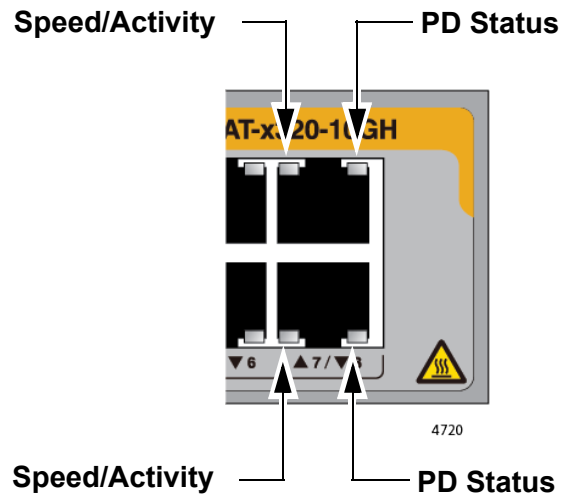
Figure 2. LEDs for Ports 1 to 8 on the x320-10GH Switch.

The LEDs are described in Table 4 on page 25.

Table 4. LEDs for Ports 1 to 8 on the x320-10GH Switch

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 1000Mbps link to a network device.
	Flashing Green	A port is transmitting or receiving data at 1000Mbps.
	Solid Amber	A port has established a 10Mbps or 100Mbps link to a network device.
	Flashing Amber	A port is transmitting or receiving data at 10Mbps or 100Mbps.
	Off	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly command in the management software.
PoE	Green	The switch is detecting a powered device on the port and is delivering power to it.
	Solid Amber	The switch has shutdown PoE+ on the port because of a fault condition.
	Flashing Amber	The switch is detecting a powered device on the port, but is not delivering power to it because it has reached its maximum power budget.
	Off	This LED state can result from the following conditions: - The port is connected to a non-PoE device. - The port is connected to a PoE device that is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs on the Ethernet line cards are turned off. To turn on the LEDs, use the eco-friendly command in the management software.

Cable Requirements

The minimum cable requirements for the ports 1 to 8 are listed here.

❐ 10Mbps or 100Mbps: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.

❐ 1000Mbps: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.

PWR300 Power Supply

The x320-10GH Switch is powered with the PWR300 power supply. Refer to Figure 3. The power supply provides both system power for the switch as well as PoE power on ports 1 to 8 for powered devices.
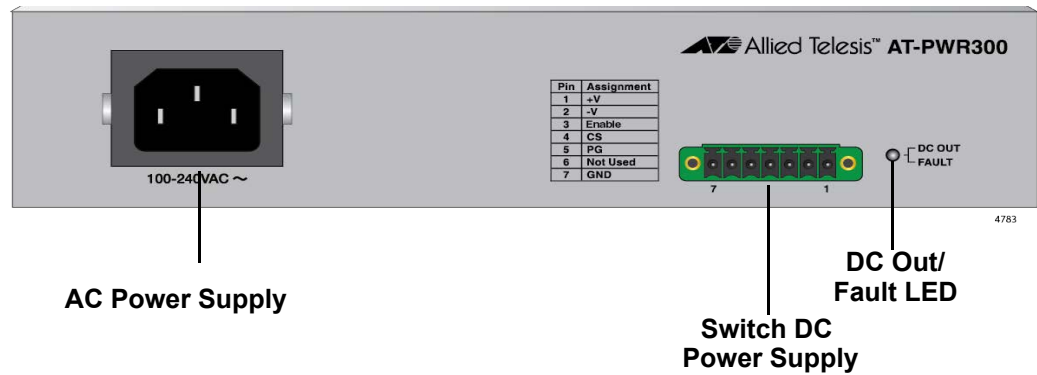
Figure 3. PWR300 Power Supply

The switch supports up to three power supplies. A single power supply can provide full system power for the switch as well as 240W for powered devices. Each additional power supply provides 240W more of power for powered devices.

Use the SHOW SYSTEM ENVIRONMENT command to display the status of each PWR300 power supply. For example, to determine if one isn't powered on.

Power Supply Unit LED
The power supply has one LED, labeled DC OUT/FAULT. The states of the power supply unit PWR300 LEDs are described in Table 5.

Table 5. Fault and Power LEDS

State	Description
DC Out/Fault LEDs	
Solid Green	The power supply and switch are operating normally.
Solid Red	The power supply or switch is experiencing a problem, such as overheating or low voltage. To troubleshoot the problem, view the log messages by displaying the system log file.
Off	The switch is powered off or the input power is outside the normal operating range.

PoE Port Priorities

If the switch determines that the power requirements of the powered devices exceed its power budget, it will deny power to some ports based on a system called port priorities. You can use this mechanism to ensure that powered devices critical to the operations of your network are given preferential treatment by the switch in the distribution of power should the demands of the devices exceed the available capacity.

There are three port 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 should 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. If 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.

The x320-10GH switch can be operated in two ways; with redundant power or using all available power. The switch can have up to three separate external power supplies.

The x320-10GH switch does not use Dynamic Power Management (DPM). Therefore, the software cannot detect a failure of the PSU and decide which ports to deny power to. As a result, more ports may be powered than the unit can restart due to lack of power. In this case, the switch will deny Low priority ports and to attempt to repower once the CPU has determined the new power budget. The hardware is connected to provide the signal based on the number of Power Good indications and configuration for the software about how many PSUs are required.

The user must designate the ports that should not be reset on the PSUs failure as High or Critical, because Low priority ports will be shutdown (either immediately or as a result of rebudgeting). The default PoE priority for the ports is Low. See "PoE Port Priorities" on page 28 for more information.

The switch will deny Low priority ports when:

❒   A PSU fails.

❒   A PSU fails and the maximum power used for budgeting is equal to or less than the new number of PSUs connected.

Both modes allow redundant operation. In both, the ports should be configured to higher priorities to ensure they do not lose power on subsequent PSU failures. The difference between the two is that in the second mode the user is prevented from powering too many ports in the first place by the Max Budget, which leaves a PSU as a spare.

The software will operate in a mode of operation where the denial of ports depends upon how many PSUs are connected as shown in Table 6. The user must configure ports to Critical and High priority and the total wattage for either should be no more than 240W.

Table 6.   Denial of Ports by Priority

Original Number of PSUs Powered	Changing from PSUs Powered	Priority of Ports Denied
3	3 > 2	Low
2	2 >1	High and Low
1	1 > 0	System will shut down

This behavior is not configurable beyond the user configuring Critical, High and Low priorities. By configuring the port priorities or making full use of all the available power, the user gets a constant mode of operation that enables redundant configuration. The software changes the ports that shut down at each stage of PSU failure.

Example 1:

The x320-10GH switch has three PWR300 units. All ports are Low priority. The total PD load is 600W. One PSU fails, leaving two PSUs. The following steps occur:

1. The switch stops providing power to all ports because they are all Low priority.

2. The software takes a few seconds to recalculate the new power budget based on the two remaining PSUs.

3. After recalculating the new budget, the switch provides power again to some of the ports, up to 480W.

Example 2:

The x320-10GH switch has three PWR300 units.

❑ Critical priority PDs - 200W
❑ High priority PDs - 200W
❑ Low priority PDs - 200W

One PSU fails, leaving two PSUs:

1. The switch stops providing power to the Low priority PDs.

2. The software takes a few seconds to recalculate the new power budget based on the two remaining PSUs.

3. After recalculating the new budget, the switch provides power again to Low priority ports if the budget allows.

In this example, the new budget would be 480W (two remaining PSUs). So there would be 80W available for Low priority PDs.

SFP Transceiver Ports

The x320-10GH switch has two SFP ports.

SFP Transceivers   The transceiver ports support 1000Mbps optics on the front panel.

❒   1000Mbps single-mode or multi-mode fiber optic transceivers

❒   1000Mbps bi-directional (BiDi) fiber optic transceivers

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

LEDs   Each transceiver port has one LED. Refer to Figure 4.
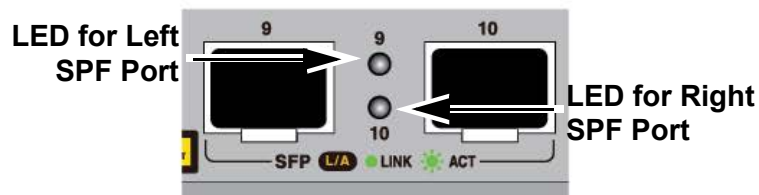
Figure 4. SFP Transceiver Ports LEDs

The LED states are described in Table 7 on page 31.

Table 7. LEDS for the SFP Transceiver Ports

LED State	Status Description	Quantity/ Placement
Solid green	The port has established a 1000Mbps link to a network device.	2 ports for x320-10GH Front (SFP)
Flashing green	The port is transmitting or receiving packets at 1000Mbps.	
Off	Possible causes of this state are listed here: - The SFP transceiver port is empty. - The SFP transceiver has not established a link with another network device.	

USB Port

You can use the USB port on the management panel for the following functions:

❑ Store configuration files on flash drives.

❑ Restore configuration files to switches whose settings have been lost or corrupted.

❑ Configure replacement units by downloading configuration files from a flash drive.

❑ Update the AlliedWare Plus management software.

USB Port LED The USB port has one LED, shown in Figure 5 on the x320-10GH switch.

USB Port LED   **USB Port**
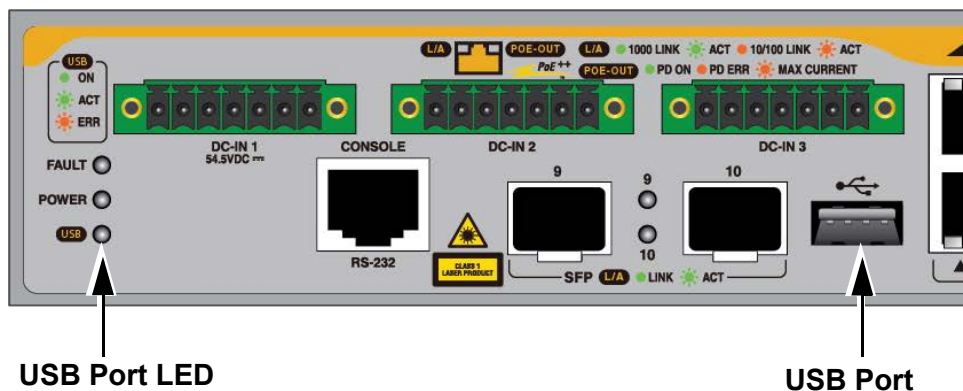
Figure 5. x320-10GH USB Port and LED

The states of the LEDs are described in Table 8.

Table 8. USB LED

State	Description
Off	The USB slot is empty.
Solid green	A USB drive is inserted in the slot.
Flashing green	The switch is writing data to or reading data from the USB drive.

Console Port

The Console port is an RS232 serial management port. 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 uses the management cable included with the unit. It requires that you be at the physical location of the switch. 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 personal 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: 9600 bps (The baud rates of the port are 9600, 19200, 38400, 57600, and 115200 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.

Fault and Power LEDs

Switch LEDs   The Fault and Power LEDs are shown in Figure 6.

Fault, Power and USB LEDs

Figure 6. Fault and Power LEDs

Note
The USB LED is described in "USB Port" on page 32.

The states of the LEDs are described in Table 9.

Table 9. Fault and Power LEDS

State	Description
Fault LED	
Off	The switch is operating normally or is not powered on.
Flashing Red	The power supply or switch is experiencing a problem, such as overheating. To troubleshoot the problem, view the log messages by displaying the system log file.
Power LED	
Solid Green	The power supply and switch are operating normally.
Off	The switch is powered off or the input power is outside the normal operating range.

eco-friendly Command

The eco-friendly command 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 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 issuing the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode in the command line interface.

Planning the Installation

Here are questions to consider before connecting devices to ports 1 to 8:

❑ Which ports will be connected to PoE devices?

❑ Which ports will be connected to non-PoE devices?

❑ What are the PoE Classes of the powered devices?

❑ What is the total power requirements (watts) of the powered devices?

❑ What will be the priority levels (Low, High, or Critical) of the ports?

Managing the switch will be easier if you take the time to fill-out the worksheets in Table 10 and Table 12 on page 38.

Table 10. Port 1 to 8 Worksheet for the x320-10GH Switch

Port	Device/Location	PoE Device - Yes/No	PoE Class 0 to 8	Maximum Watts of PoE Class	Priority (Low, High, or Critical)
1					
2					
3					
4					
5					
6					
7					

Table 10. Port 1 to 8 Worksheet for the x320-10GH Switch (Continued)

Port	Device/Location	PoE Device - Yes/No	PoE Class 0 to 8	Maximum Watts of PoE Class	Priority (Low, High, or Critical)
8					
			Total PoE Watts		

The columns in the table are described in Table 11.

Table 11. Worksheet Column Descriptions

Column	Description
Port	This is the physical ports on the switch.
Device/Location	Enter the product name of the network device connected to the port, and its physical location.
PoE Device - Yes/No	Indicate whether the network device is a powered device by entering Yes or No.
PoE Class 0 to 8	For a powered device, enter its PoE Class. This can be found in its installation or user documentation.
Maximum Watts of PoE Class	Enter the maximum power output (watts) from a switch port for the Class of the device. For example, if a port is connected to a Class 2 powered device, you enter 7W in this column. Refer to Table 3 on page 24.
Priority (Low, High, or Critical)	Enter the priority level to be assigned the port. The default is Low.

Table 11. Worksheet Column Descriptions (Continued)

Column	Description
Total PoE Watts	Add up the numbers in the Maximum Watts of PoE Class column and enter it here. This number must be equal to or less than the PoE budget of the PWR300 power supplies connected to the switch. Refer to Table 3 on page 24.

Table 12 can be used as a record of how the switch is powered.

Table 12. Power Worksheet for the x320-10GH Switch

Number of PWR300 Power Supplies	Installed (Yes/No)	PoE Budget for Ports 1 to 8
1		240W
2		480W
3		720W

Chapter 2

Overview of the x320-11GPT Switch

This chapter describes the hardware features of the x320-11GPT Switch. The sections in the chapter are listed here:

Front Panel

The front panel of the x320-11GPT Switch is shown in Figure 7.
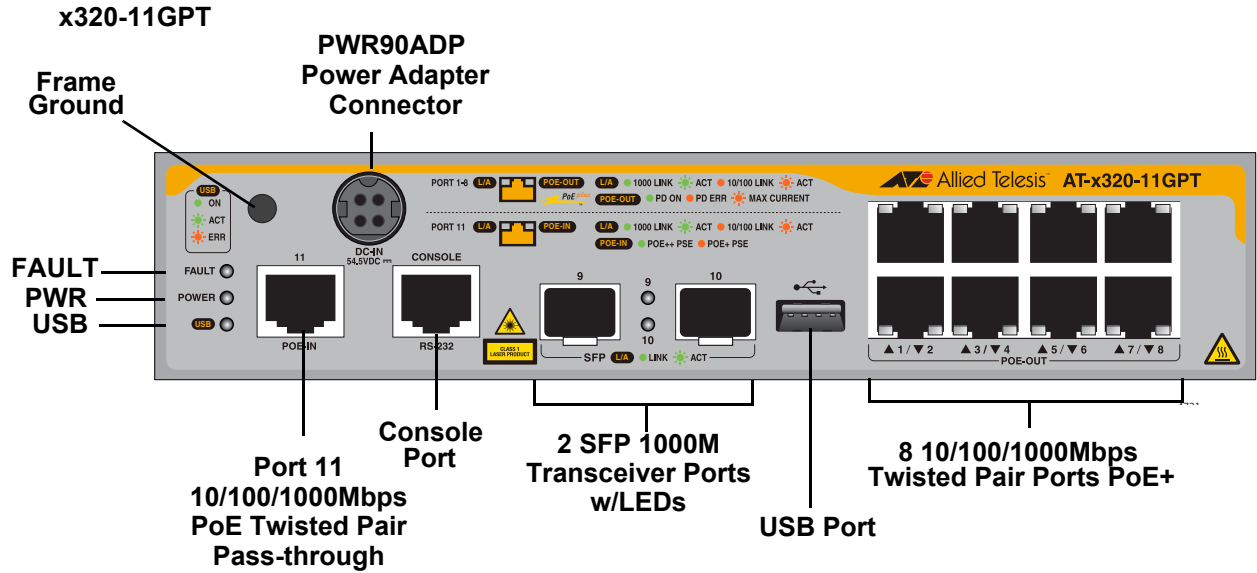
Figure 7. Front Panel of the x320-11GPT Switch

Features

Here are the basic hardware features of the x320-11GPT Switch.

Ports 1 to 8 The basic features of ports 1 to 8 are listed here:

❒ 10/100/1000Mbps

❒ PoE+

❒ Support powered device Classes 0 to 4

❒ IEEE802.3af and IEEE802.3at-compliant

❒ Half- and full-duplex mode

❒ PoE+ mode A wiring

❒ 100 meters (328 feet) maximum distance

❒ LEDs for link/activity and PoE+ status

Port 11 The basic features of port 11 are listed here:

❒ 10/100/1000Mbps

❒ PoE++ pass-through

❒ Supports power source Classes 4, 6, and 8

❒ IEEE802.3bt-compliant (future support)

❒ Half- and full-duplex mode

❒ 100 meters (328 feet) maximum distance

❒ LEDs for link/activity and PoE++ status

PoE+ Budgets PoE+ budgets for ports 1 to 8 are listed here:

❒ 62W with the PWR90ADP AC/DC adapter

❒ 21W or 46W with a Class 6 or Class 8 power source on port 11, respectively

Ports 9 and 10 Ports 9 and 10 support the following types of SFP transceivers:

❒ 1000Mbps multimode or single-mode fiber optic transceivers

❒ Single-port, BiDi fiber optic transceivers

Additional Features Additional features are listed here:

❒ Port and system LEDs

❒ PWR90ADP AC/DC adapter

Installation Options

Installation options are listed here:

❒ Table or desktop

❒ Standard 19-inch equipment rack

❒ Wall

❒ DIN rail

Management Methods

Here are the methods for managing the switch:

❒ Local management through the Console Port

❒ Remote Telnet or Secure Shell management

❒ Remote HTTP or HTTPS web browser management

❒ SNMPv1, v2c, and v3

USB Port

You can use the USB port with a flash drive to perform the following management functions:

❒ Provide a centralized network backup location for Autonomous Management Framework (AMF).

❒ Store backup copies of configuration files.

❒ Transfer configuration files between switches that are to have similar configurations.

❒ Store or transfer log files.

❒ Store or transfer debug files (for example, the output of the SHOW TECH-SUPPORT command).

❒ Boot the AlliedWare Plus operating system and master configuration file from flash drive.

Using a flash drive with the switch is optional.

Ports 1 to 8

The following sections describe twisted pair ports 1 to 8 on the x320-11GPT Switch.

Specifications The basic specifications are listed in Table 13.

Table 13. Specifications for Ports 1 to 8 on the x320-11GPT Switch

Specification	Description
Port Speed	10/100/1000Mbps You can set port speed with Auto-Negotiation or manually. The default port setting is Auto-Negotiation.
Duplex Mode	Half- or full-duplex
Maximum Distance	100 meters (328 feet)
Power over Ethernet	PoE (15.4 watts maximum) and PoE+ (30 watts maximum) per port
Power Budgets	Possible budgets are listed here: - 62W with the PWR90ADP AC/DC adapter. - 21W or 46W with a Class 6 or Class 8 power source on port 11. Refer to x320-10GH and "Port 11 - PoE IN Pass-through" on page 47.
PoE Wiring Mode	Mode A
Connector	8-pin RJ-45

Powered Device Classes   Ports 1 to 8 support the powered device classes listed in Table 14.

Table 14. Supported Powered Device Classes on Ports 1 to 8 of the x320-11GPT Switch

Class	Maximum Power Output from a Switch Port	PD Power Range
0	15.4W	0.44W to 12.95W
1	4.0W	0.44W to 3.84W
2	7.0W	3.84W to 6.49W
3	15.4W	6.49W to 12.95W
4	30.0W	12.95W to 25.5W

Ports 1 to 8 LEDs   Ports 1 to 8 have two LEDs. Refer to Figure 8.
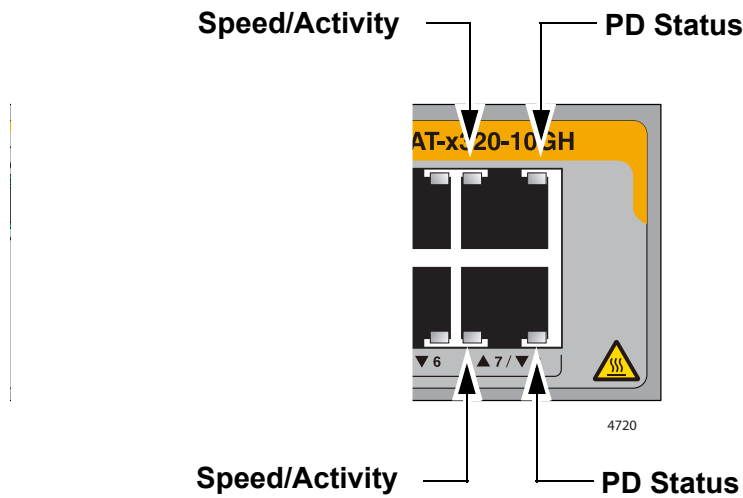
Figure 8. LEDs for Ports 1 to 8 on the x320-11GPT Switch.

The LEDs are described in Table 15 on page 45.

Table 15. LEDs for Ports 1 to 8 on the x320-11GPT Switch

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 1000Mbps link to a network device.
	Flashing Green	A port is transmitting or receiving data at 1000Mbps.
	Solid Amber	A port has established a 10Mbps or 100Mbps link to a network device.
	Flashing Amber	A port is transmitting or receiving data at 10Mbps or 100Mbps.
	Off	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly command in the management software.
PoE	Green	The switch is detecting a powered device on the port and is delivering power to it.
	Solid Amber	The switch has shutdown PoE+ on the port because of a fault condition.
	Flashing Amber	The switch is detecting a powered device on the port but is not delivering power to it because it has reached its maximum power budget.
	Off	This LED state can result from the following conditions: - The port is connected to a non-PoE device. - The port is connected to a PoE device that is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs on the Ethernet line cards are turned off. To turn on the LEDs, use the eco-friendly command in the management software.

Cable Requirements

The minimum cable requirements for the ports 1 to 8 are listed here.

□ 10Mbps or 100Mbps: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.

□ 1000Mbps: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.

Port 11 - PoE IN Pass-through

Port 11 has two functions. First, it can function as a standard Ethernet port, with all the same Ethernet features and functions as ports 1 to 8. Second, when connected to a PoE power source, such as a PoE switch or router, it can also function as a PoE pass-through port. The switch uses the power from the PoE power source on the port to operate its own switching functions, and passes remaining power to ports 1 to 8 for powered devices.

Powered Device Classes

To use port 11 as a pass-through port, the powered device connected to it must be from one of the following IEEE 802.3 classes:

❒ IEEE802.3af Class 4

❒ IEEE803.3at Class 6

❒ IEEE803.3bt Class 8

> **Note**
> Connecting port 11 to an unsupported class of powered device might result in unpredictable switch behavior.

Port 11 cannot power the switch or function as a PoE pass-through port if connected to a Class 3 or lower powered device.

PoE Budget

When using port 11 as a pass-through port, the PoE budget of the switch for ports 1 to 8 depends on the class of the power source connected to it. The possible budgets are shown in Table 16. For instance, customers who want the maximum possible PoE budget of 46W for ports 1 to 8 will connect port 11 to a Class 8 power source.

Table 16. PoE Budget from Port 11 for Ports 1 to 8 on the x320-11GPT Switch

Power Source Class on Port 11	PoE Budget for Ports 1 to 8
IEEE802.3af Class 4	0W
IEEE803.3at Class 6	21W
IEEE803.3bt Class 8	46W

When port 11 is connected to a Class 4 powered device, the device will have enough power to function as a switch, but no power for powered devices on ports 1 to 8.

The switch can also be powered with the PWR90ADP AC/DC adapter. However, port 11 and the adapter are not load-sharing. If the switch is connected to a PoE power source on port 11 and also to the AC/DC adapter, the adapter automatically becomes the primary power source. PoE on port 11 is placed in a backup state, but the Ethernet function of port 11 continues to work. If the adapter loses power, the switch will reboot and the PoE power on port 11 becomes the power source.

Port 11 LEDs   The LEDs for port 11 are identified in Figure 9.
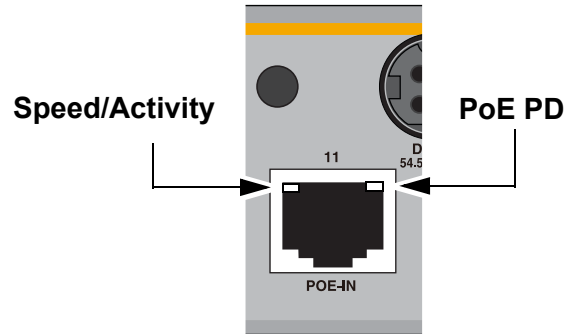
Figure 9. LEDs for Port 11 on the x320-11GPT Switch

The LEDs are defined in Table 17.

Table 17. LEDs for Port 11 on the x320-11GPT Switch

LED	State	Description
Link/ Activity LED	Solid Green	The port has established a 1000Mbps link to a network device.
	Flashing Green	The port is transmitting or receiving data at 1000Mbps.
	Solid Amber	The port has established a 10Mbps or 100Mbps link to a network device.
	Flashing Amber	The port is transmitting or receiving data at 10Mbps or 100Mbps.
	Off	The port has not established a link with another network device.

Table 17. LEDs for Port 11 on the x320-11GPT Switch (Continued)

LED	State	Description
PoE Powered Device	Solid Green	The port is receiving power from a IEEE803.3bt Class 8 or 6 PoE++ power source. The maximum power budget for powered devices on ports 1 to 8 is 46W or 30W.
	Solid Amber	The port is receiving power from a IEEE803.3at Class 6 to 4 PoE+ power source.
	Off	Possible causes of this state are listed here: - The port is not connected to a PoE power source. - The port is connected to an IEEE802.3af Class 4 PoE power source. It has enough power to function as a switch, but not enough power for any PoE devices on ports 1 to 8. - The port is connected to a Class 3 or lower PoE power source.

Cable Requirements

The minimum cable requirements for the ports are listed here.

❒ 10Mbps or 100Mbps: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.

❒ 1000Mbps: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.

PWR90ADP AC/DC Power Adapter

The x320-11GPT Switch can be powered two ways. One way is by connecting a Class 4, 6, or 8 PoE power source to port 11. This is described in "Port 11 - PoE IN Pass-through" on page 47. The second way is with the PWR90ADP AC/DC power adapter, shown in Figure 10.

Figure 10. PWR90ADP AC/DC Power Adapter

The PoE budget of the switch for powered devices on ports 1 to 8 differs depending on how the unit is powered, as explained here:

❒ The switch has a PoE budget of 21W or 46W when port 11 is connected to a Class 6 or 8 power source device, respectively. (The switch has no PoE budget when port 11 is connected to a Class 4 power source.)

❒ The switch has a PoE budget of 62W when powered by the PWR90ADP AC/DC power adapter.

PoE Port Priorities

If the switch determines that the power requirements of the powered devices exceed its power budget, it will deny power to some ports based on a system called port priorities. You can use this mechanism to ensure that powered devices critical to the operations of your network are given preferential treatment by the switch in the distribution of power should the demands of the devices exceed the available capacity.

There are three port 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 should 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. If 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 on the x320-11GPT switch is dynamic. The switch automatically ceases power transmissions on ports if its power budget is at maximum usage and new powered devices, connected to ports with higher priorities, become active. Additionally, the switch ceases power transmissions on lower priority ports if for any reason its PoE budget decreases and the power requirements of the powered devices exceeds the new, reduced budget.

SFP Transceiver Ports

The x320-11GPT Switch has two SFP ports.

SFP Transceivers   The transceiver ports support 1000Mbps optics on the front panel.

❒   1000Mbps single-mode or multi-mode fiber optic transceivers

❒   1000Mbps bi-directional (BiDi) fiber optic transceivers

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

LEDs   Each transceiver port has one LED. Refer to Figure 11.
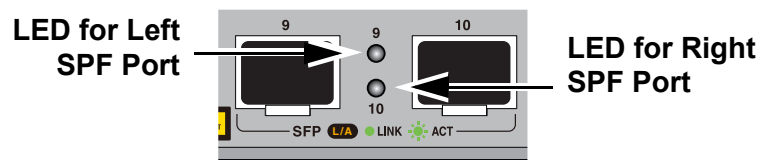
Figure 11. SFP Transceiver Ports LEDs

The LED states are described in Table 18 on page 52.

Table 18. LEDS for the SFP Transceiver Ports

LED State	Status Description	Quantity/ Placement
Solid green	The port has established a 1000Mbps link to a network device.	2 ports for x320-10GH
Flashing green	The port is transmitting or receiving packets at 1000Mbps.	2 ports for x320-11GPT Front (SFP)
Off	Possible causes of this state are listed here: - The SFP transceiver port is empty. - The SFP transceiver has not established a link with another network device.	

USB Port

You can use the USB port on the management panel for the following functions:

❒ Store configuration files on flash drives.

❒ Restore configuration files to switches whose settings have been lost or corrupted.

❒ Configure replacement units by downloading configuration files from a flash drive.

❒ Update the AlliedWare Plus management software.

USB Port LED The USB port has one LED, shown in Figure 12 on the x320-11GPT switch.

USB Port LED   **USB Port**
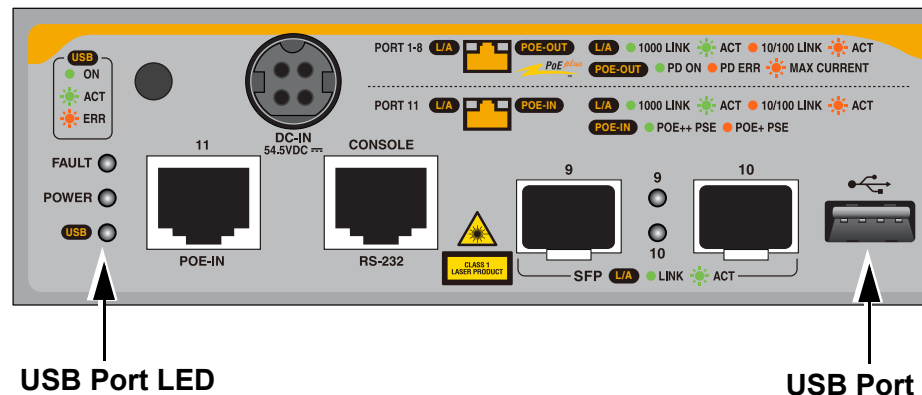
Figure 12. x320-11GPT USB Port and LED

The states of the LEDs are described in Table 19.

Table 19. USB LED

State	Description
Off	The USB slot is empty.
Solid green	A USB drive is inserted in the slot.
Flashing green	The switch is writing data to or reading data from the USB drive.

Console Port

The Console port is an RS232 serial management port. 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 uses the management cable included with the unit. It requires that you be at the physical location of the switch. 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 personal 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: 9600 bps (The baud rates of the port are 9600, 19200, 38400, 57600, and 115200 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.

Fault and Power LEDs

The Fault and Power LEDs are shown in Figure 13.
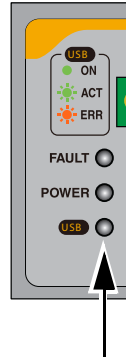
Fault, Power and USB LEDs

Figure 13. Fault and Power LEDs

Note
The USB LED is described in "USB Port" on page 53.

The states of the LEDs are described in Table 20.

Table 20. Fault and Power LEDS

State	Description
Fault LED	
Off	The switch is operating normally or is not powered on.
Flashing Red	The power supply or switch is experiencing a problem, such as overheating. To troubleshoot the problem, view the log messages by displaying the system log file.
Power LED	
Solid Green	The power supply and switch are operating normally.
Off	The switch is powered off or the input power is outside the normal operating range.

eco-friendly Command

The eco-friendly command 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 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 issuing the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode in the command line interface.

Switch Markings

There are various labels on the bottom of the switch. If applicable, these may include:

❐ Manufacture identification

❐ Model identification

❐ Equipment rating

❐ Voltage supply

❐ Warranty seal

❐ Manufacture date

❐ Importer's name and address

❐ Rating label

❐ KC label

Planning the Installation

Here are questions to consider before connecting devices to ports 1 to 8:

❑ Which ports will be connected to PoE or PoE+ devices?

❑ Which ports will be connected to non-PoE devices?

❑ What are the PoE Classes of the powered devices?

❑ What is the total power requirements (watts) of the powered devices?

❑ What will be the priority levels (Low, High, or Critical) of the ports?

Managing the switch will be easier if you take the time to fill-out the worksheets in Table 21 and Table 23 on page 60.

Table 21. Port 1 to 8 Worksheet for the x320-11GPT Switch

Port	Device/Location	PoE Device - Yes/No	PoE Class 0 to 4	Maximum Watts of PoE Class	Priority (Low, High, or Critical)
1					
2					
3					
4					
5					
6					
7					

Table 21. Port 1 to 8 Worksheet for the x320-11GPT Switch (Continued)

Port	Device/Location	PoE Device - Yes/No	PoE Class 0 to 4	Maximum Watts of PoE Class	Priority (Low, High, or Critical)
8					
			Total PoE Watts		

The columns in the table are described in Table 22.

Table 22. Worksheet Column Descriptions

Column	Description
Port	This is the physical ports on the switch.
Device/Location	Enter the product name of the network device connected to the port, and its physical location.
PoE Device - Yes/No	Indicate whether the network device is a powered device by entering Yes or No.
PoE Class 0 to 8	For a powered device, enter its PoE Class. This can be found in its installation or user documentation.
Maximum Watts of PoE Class	Enter the maximum power output (watts) from a switch port for the Class of the device. For example, if a port is connected to a Class 2 powered device, you enter 7W in this column. Refer to Table 14 on page 44.
Priority (Low, High, or Critical)	Enter the priority level to be assigned the port. The default is Low.

Table 22. Worksheet Column Descriptions (Continued)

Column	Description
Total PoE Watt	Add up the numbers in the Maximum Watts of PoE Class column and enter it here. This number must be equal to or less than the PoE budget of the power source for the switch. The possible power budgets are listed here: - Port 11 with Class 6 device: 21W - Port 11 with Class 8 device: 46W - PWR90ADP Adapter: 62W

Here are questions about powering the switch:

❑ Will port 11 be connected to a PoE power source device?

❑ If so, is the device a Class 4, 6, or 8?

❑ Will the switch also be powered with the PWR90ADP AC/DC adapter?

Table 23 can be used as a record of how the switch is powered.

Table 23. Power Worksheet for the x320-11GPT Switch

Power Source	Installed (Yes/No)	PoE Budget for Ports 1 to 8
Port 11 - Class 4		0W
Port 11 - Class 6		21W
Port 11 - Class 8		46W
PWR90ADP Adapter		62W

Chapter 3
Beginning the Installation

The chapter contains the following sections:

Reviewing Safety Precautions

Please review the following safety precautions before beginning the installation procedure.

Important: Safety statements that have the ↞ symbol are translated into multiple languages in the *Translated Safety Statements* document, which is available at **www.alliedtelesis.com/library**.

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/library**.

Warning
This equipment is not suitable for use in locations where children are likely to be present. ↞ L126

Warning
Class 1 Laser product. ↞ L1

Warning
Laser Radiation.
Class 1M Laser product. ↞ L10

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

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 55°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

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 should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuits (e.g., use of power strips). E37

Warning

An operational unit can be hot. Exercise caution when handling with unprotected hands. E125

Warning

To reduce the risk of electric shock, do not route network cables from PoE ports outside the building that houses this device. E40

Caution

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

Warning

This equipment shall 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

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

Warning
Leaving the power supply powered on while connecting the harness to the switch could cause an electrical short that can damage the equipment. ↩ E127

Choosing a Site for the Device

Observe these requirements when planning the installation of the switch.

❐ If you plan to install 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.

❐ If you plan to install the switch on a table, check that the table is level and stable.

❐ The switch can be installed in a standard 19-inch equipment rack, on a concrete or wooden wall, or on a 35x7mm DIN rail.

❐ The power outlet 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 site should not expose the switch to moisture or water.

❐ The site should be a dust-free environment.

❐ The site should include dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

❐ If you are installing the device in a wiring or utility box, verify that the enclosure has adequate airflow so that unit does not overheat.

❐ Do not place objects on top of the switch.

❐ The twisted pair cabling should not be exposed to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, and fluorescent lights.

❐ When installing the switch in an indoor or outdoor metal enclosure, be sure to review the manufacturer's installation guide for rules and restrictions on site requirements, and to follow all guidelines and safety warnings.

❐ When installing the switch in an indoor or outdoor metal enclosure, be sure to properly ground the enclosure to a protective earth ground following local electrical codes and the instructions in the manufacturer's installation guide.

❐ Powered devices connected to the LAN ports on the switch should be grounded to the same grounding conductor at the service entrance as the switch.

❐ LAN ports should have additional lightning protections as specified in 803.3at Section 33.4.1.1.2, Environment B Requirements, when connected to powered devices that are not grounded to the same grounding conductor at the service entrance as the switch.

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

Unpacking the Equipment

x320-10GH Switch   Figure 14 shows the shipping box for the switch.
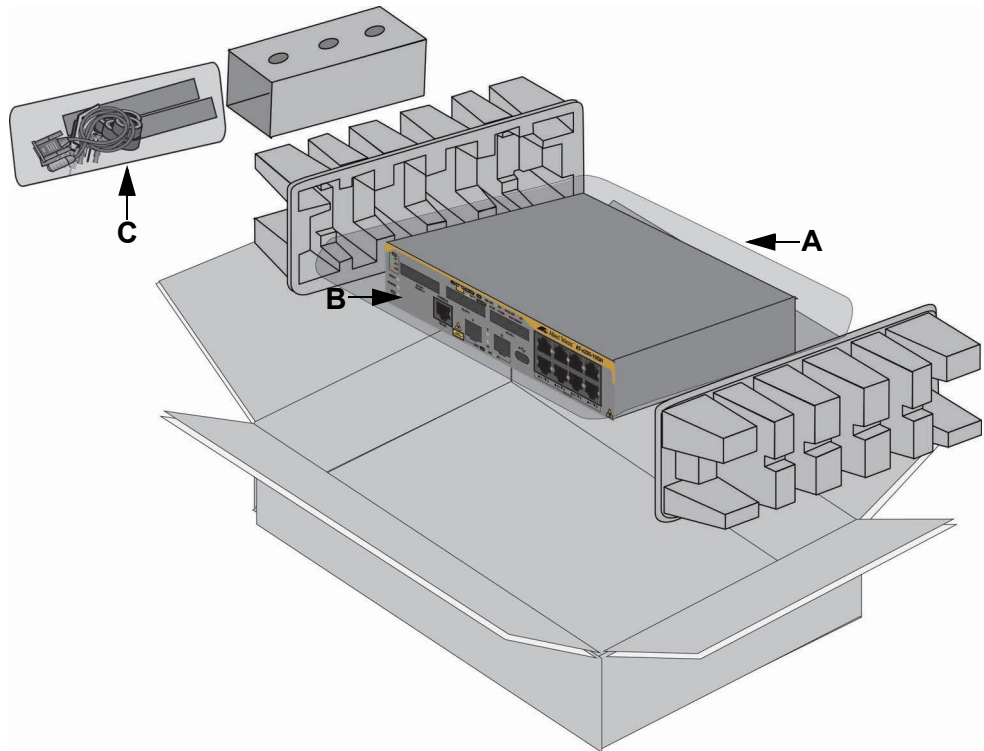
Figure 14. x320-10GH or Shipping Box

The items in the box are listed here:

- ❏ A - Protective bag
- ❏ B - Device
- ❏ C - Accessory kit

Note
You should retain the original packaging material in case you need to return the unit to Allied Telesis.

See "x320-10GH Switch Accessory Kit" on page 72 for the contents of the accessory kit.

x320-11GPT Switch

Figure 15 shows the shipping box for the switch.
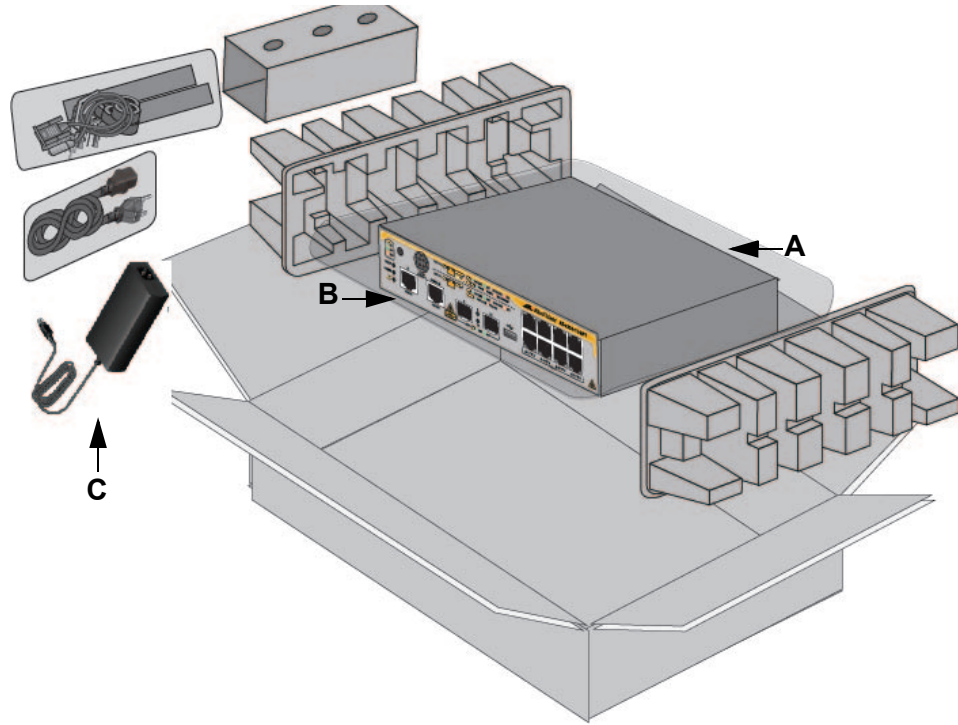
Figure 15. x320-11GPT Shipping Box

The items in the box are listed here:

- A - Protective bag
- B - Device
- C - Accessory kit

Note
You should retain the original packaging material in case you need to return the unit to Allied Telesis.

See "x320-11GPT Switch Accessory Kit" on page 73 for the contents of the accessory kit.

PWR300 Power Supply

Figure 16 shows the shipping box for the power adapter.
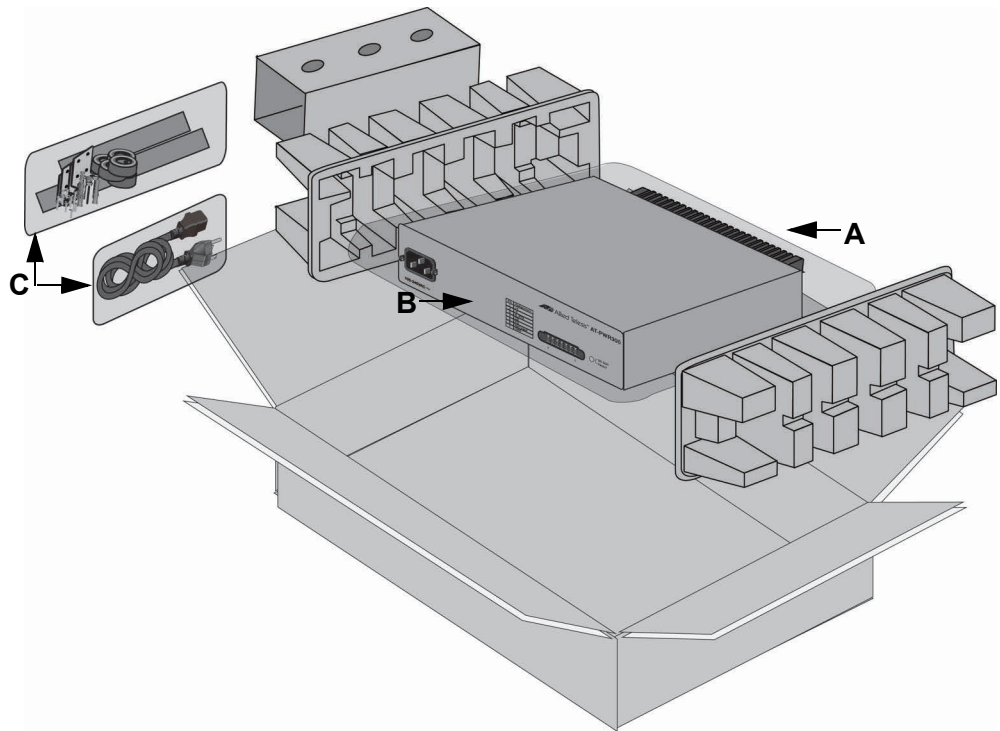
Figure 16. PWR300 Shipping Box

The items in the box are listed here:

- ❏ A - Protective bag
- ❏ B - Device
- ❏ C - Accessory kit

> **Note**
> You should retain the original packaging material in case you need to return the unit to Allied Telesis.

See "PWR300 Power Supply Accessory Kit" on page 75 for the contents of the accessory kit.

Accessory Kits

x320-10GH Switch Accessory Kit

Figure 17 lists the items in the accessory kit included with the x320-10GH switch. Contact your Allied Telesis sales representative for assistance if any item is missing or damaged.

> **Note**
> The x320-10GH switch is powered by up to three PWR300 power supplies. The PWR300 power supplies must be purchased separately. See "PWR300 Power Supply Accessory Kit" on page 75 for more information.

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

Four rubber feet (adhesive type)

One rack mount kit
See "19-Inch Rack Mount Kit" on page 74
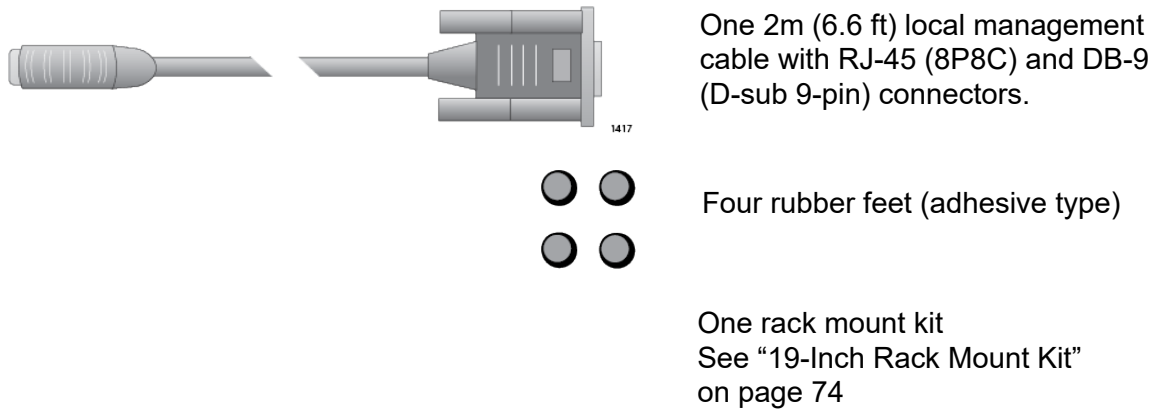
Figure 17. x320-10GH Switch Accessory Kit

x320-11GPT Switch Accessory Kit

Figure 18 list the items in the Accessory Kit included with the x320-11GPT switch.

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

One regional AC power cord

One PWR90ADP power adapter
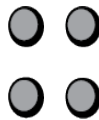
Four rubber feet (adhesive type)

One rack mount kit
See "19-Inch Rack Mount Kit"
on page 74

Figure 18. x320-11GPT Switch Accessory Kit

19-Inch Rack Mount Kit

Figure 19 lists the items in the 19-inch rack mount kit that are included with the x320-10GH and x320-11GPT switch and PWR300 power supply. The holes specified in Figure 19 depend on the size of the device you are installing.

One straight bracket

One long L-bracket

Use these holes for PWR300

Use these holes for 10GH and 11GPT

One short L-bracket

Ten screws for attaching brackets to the switch.
Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)
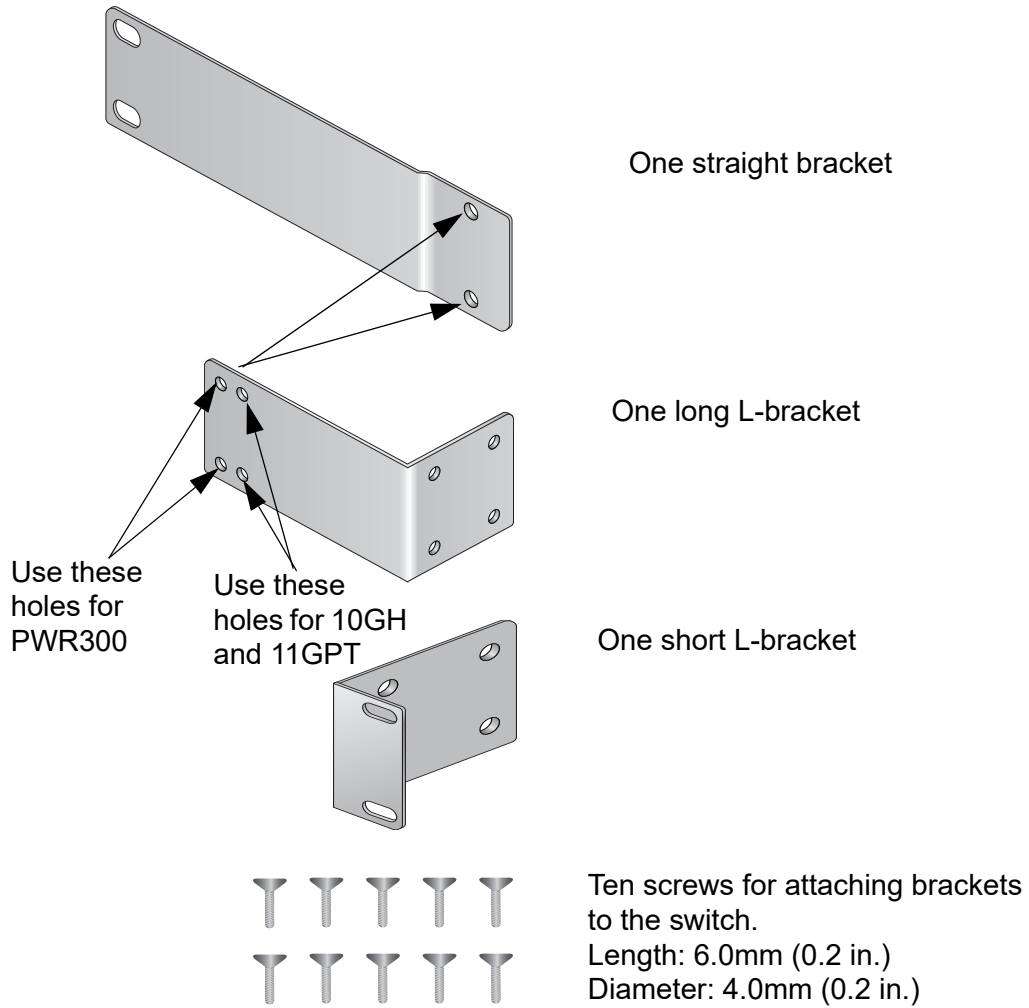
Figure 19. Rack Mount Kit

PWR300 Power Supply Accessory Kit

Figure 20 lists the items in the Accessory Kit that are included with the PWR300 power supply for the x320-10GH switch.

Note
The PWR300 power supply must be purchased separately.

One regional AC power cord

Retaining clip for power cord
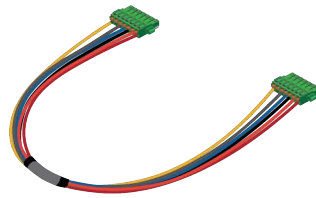
DC power cord (external harness)
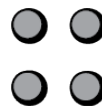
Four rubber feet (adhesive type)

One rack mount kit
See "19-Inch Rack Mount Kit" on page 74

Figure 20. PWR300 Power Supply Accessory Kit

RKMT-J24 Wall Mount Kit

Figure 21 lists the items in the optional wall mount kit.

Note
The Wall Mount Kit must be purchased separately.

Four anchors for concrete walls:
Length: 29.6mm (1.2 in.)
Diameter: 6.0mm (0.2 in.)

Four screws for wood or concrete walls:
Length: 32mm (1.3 in.)
Diameter: 4mm (0.2 in.)

Four RKMT-J24 wall-mounting brackets

16 screws for attaching brackets to the switch.
Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)
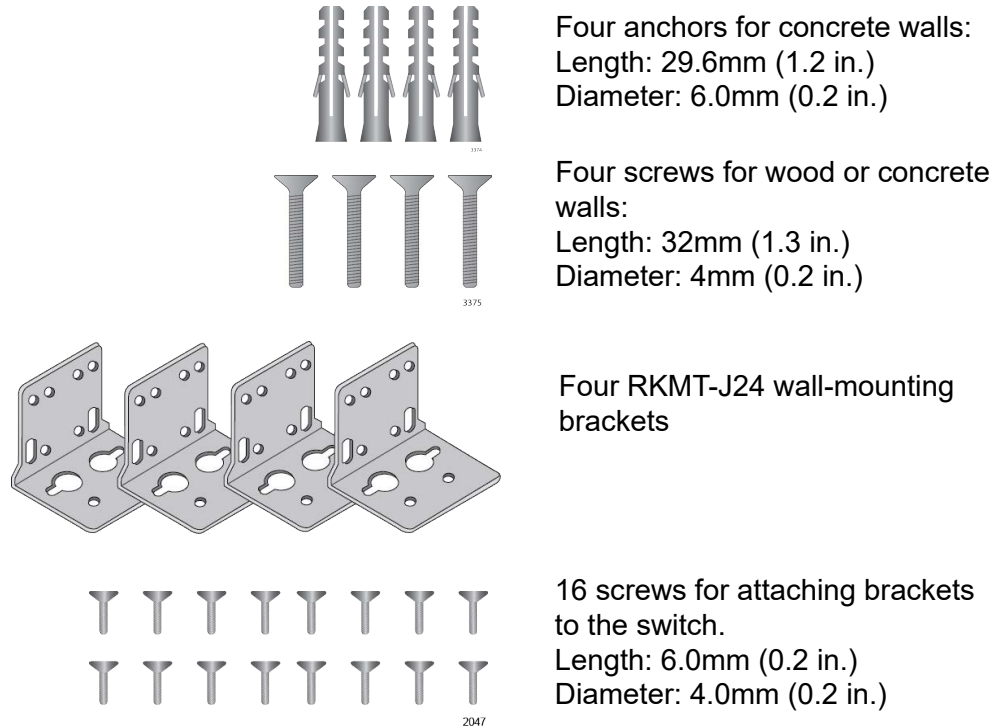
Figure 21. RKMT-J24 Wall Mount Kit

DRMT-J03 DIN Rail Mount Kit

Figure 22 lists the items in the optional DRMT-J03 DIN Rail Mount Kit.

Note
The DIN Rail Mount Kit must be purchased separately.
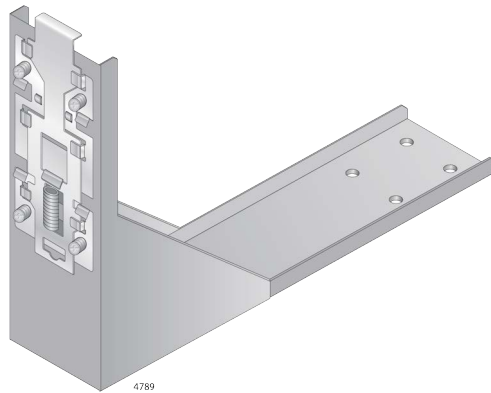
One bracket DRMT-J03

Four bracket screws (M4x6 mm)
(For assembling chassis and DIN rail brackets.)

Figure 22. DRMT-J03 DIN Rail Mount Kit

RKMT-J15 Tray Bracket Mount Kit

Figure 23 lists the items in the optional RKMT-J15 Tray Bracket Mount Kit.
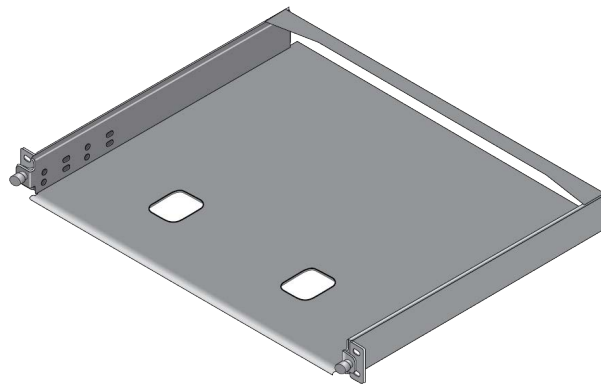
One equipment rack bracket RKMT-J15

Four bracket screws (M4x6 mm)
(Two for attaching a switch to one side of the bracket and two for attaching a power supply to the other side.)

Figure 23. RKMT-J15 Tray Bracket Mount Kit

Chapter 4

Installing the Device on a Table or Desktop

This chapter contains the following sections:

❐ "Planning the Installation" on page 80

❐ "Installing the Switch on a Table or Desktop" on page 81

Planning the Installation

Figure 24 shows the minimum distances required between devices to ensure adequate cooling.
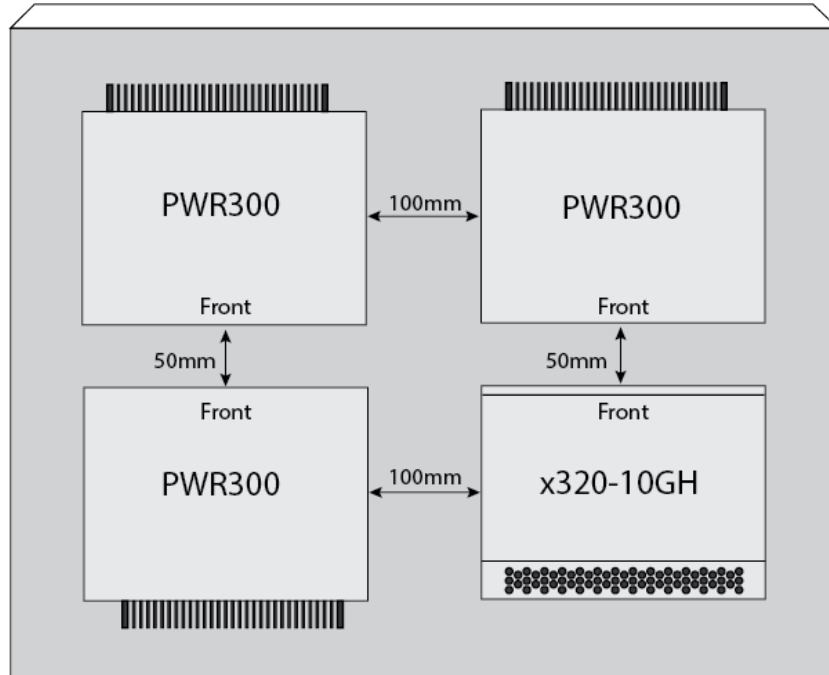
Figure 24. Required Minimum Distances Between Devices for a Desk or Table Installation

Installing the Switch on a Table or Desktop

This section contains the procedure for installing the switch on a table.

⚠️ **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. ᠔ E91

To install the chassis on a table, perform the following procedure:

1. Review the procedure in Chapter 3, "Choosing a Site for the Device" on page 67 to verify that the selected site is suitable for the unit.

2. Check to be sure that the table is strong enough to support the weight of the switch.

3. Lift the device from the shipping box and place it upside down on the table or desk.

4. Affix the four adhesive feet to the four corners of the bottom of the switch, as shown in Figure 25.
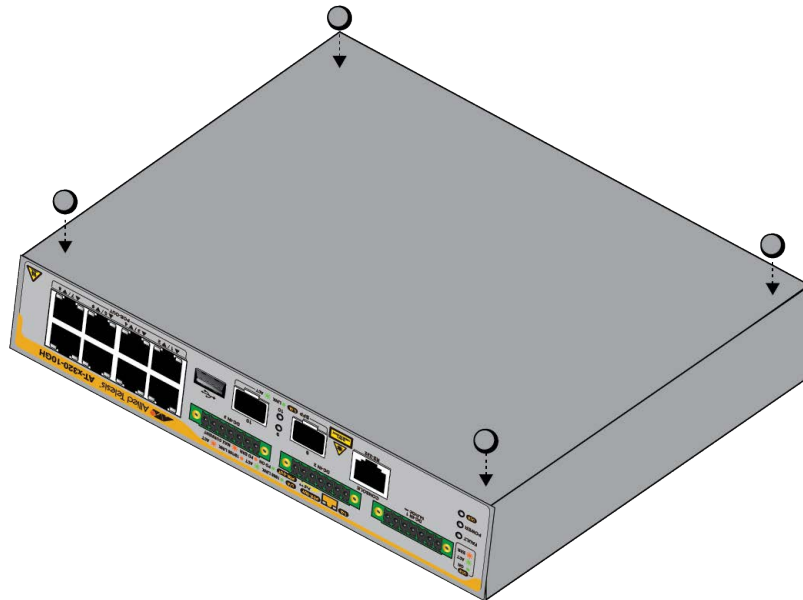
Figure 25. Affixing the Adhesive Feet

> **Note**
> The bumper feet are only to be used if you are installing the switch on a table. Do not install the bumper feet if you are installing the switch in an equipment rack or on a wall.

5. Turn the device over and place it on the table or desk. See "Required Minimum Distances Between Devices for a Desk or Table Installation" on page 80.

6. After placing the switch on the table or desktop, go to Chapter 8, "Cabling the Networking Ports" on page 117.

Chapter 5

Installing the Device in an Equipment Rack

This chapter contains the instructions for installing the device in an equipment rack. The procedures in this chapter are listed here:

❒ "Overview of Installing the Device in an Equipment Rack" on page 84

❒ "Installing the Device in an Equipment Rack with the Rack Mount Kit Brackets" on page 86

❒ "Installing the Device in an Equipment Rack with the RKMT-J15 Bracket" on page 92

Overview of Installing the Device in an Equipment Rack

You can install the device in a 19-inch equipment rack two ways. One way is with the Rack Mount Kit that comes standard with the device. It includes three connecting brackets; straight bracket, short L bracket, and long L bracket and 10 screws (M4x6mm) that come with the switch. See Figure 26. Refer to "19-Inch Rack Mount Kit" on page 74 to for the correct set of holes to use for the device you are mounting.
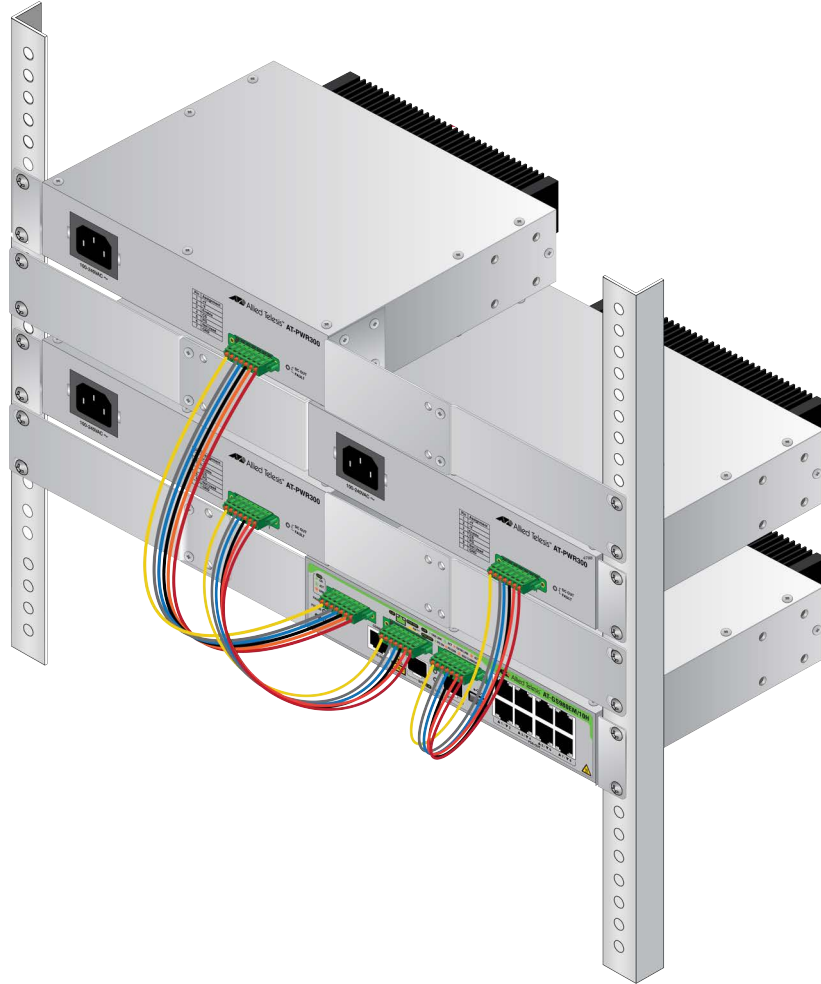
Figure 26. Rack Mount Kit Brackets and Device

For installation instructions, refer to "Installing the Device in an Equipment Rack with the Rack Mount Kit Brackets" on page 86.

You can also install the device in an equipment rack with the optional RKMT-J15 bracket. The bracket lets you install two devices side-by-side. Refer to Figure 27 on page 85.

Note
When mounting using the RKMT-J15 Bracket, you must leave 1 rack unit (1U) of space between brackets.
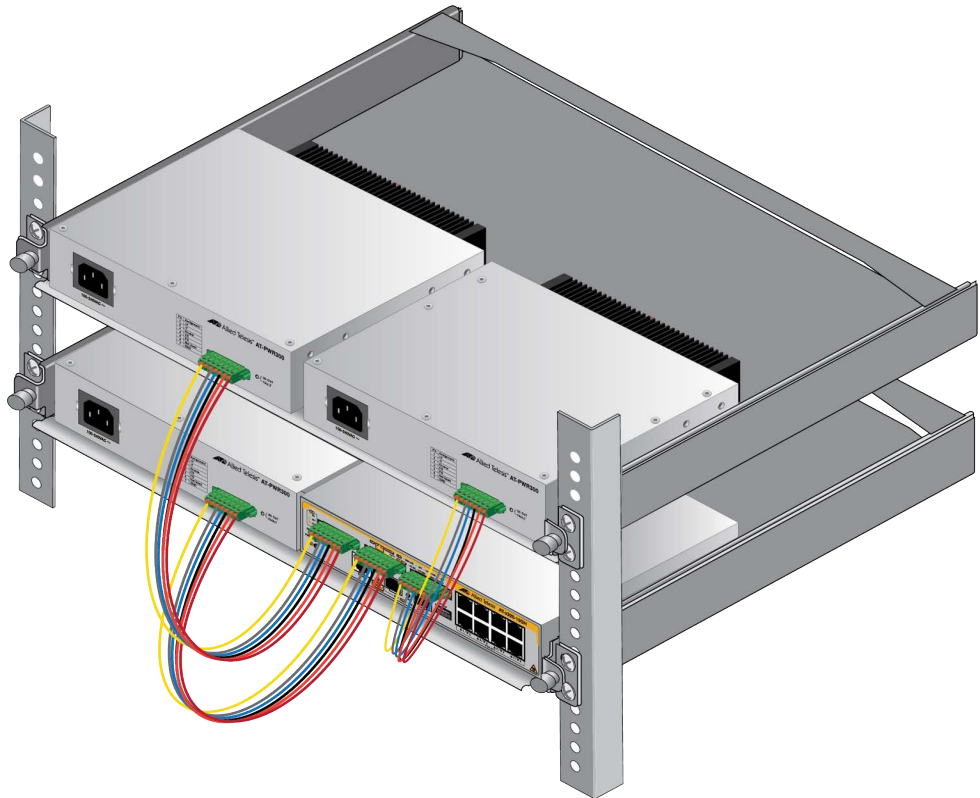
Figure 27. x320-10GH Switch and PWR300 Power Supplies in the RKMT-J15 Bracket

Note
The RKMT-J15 Bracket is purchased separately.

For installation instructions refer to "Installing the Device in an Equipment Rack with the RKMT-J15 Bracket" on page 92.

Installing the Device in an Equipment Rack with the Rack Mount Kit Brackets

This section contains the procedure for installing the device in a standard 19-inch equipment rack, with the Rack Mount Kit brackets that are included with the device.

Required Items for the Rack Mount Kit Brackets

The following items are required to install the device in an equipment rack.

❑ One 19" rack mount kit (3 brackets, 10 screws) (included with the device) (see Figure 19 on page 74)

❑ Four standard equipment rack screws (not provided)

❑ Cross-head screwdriver (not provided)

Device Orientations in the Equipment Rack

The switches have two sets of four screw holes on the front left and right sides, for attaching the Rack Mount Kit brackets. The PWR300 power supply has four sets of four screw holes on the left and right sides, for attaching the Rack Mount Kit brackets. Refer to Figure 28 on page 87.

x320-10GH

x320-11GPT

PWR300

Bracket Holes
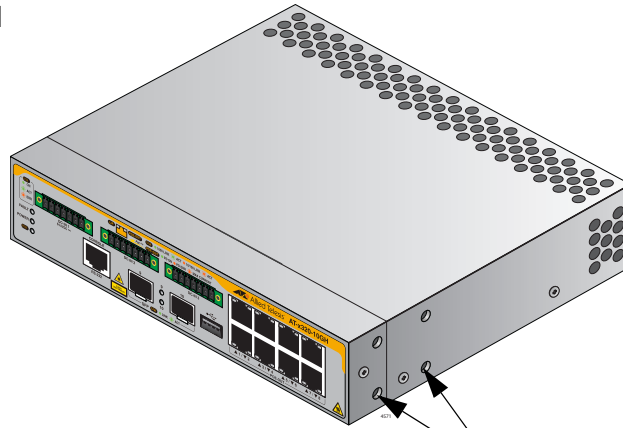
Bracket Holes
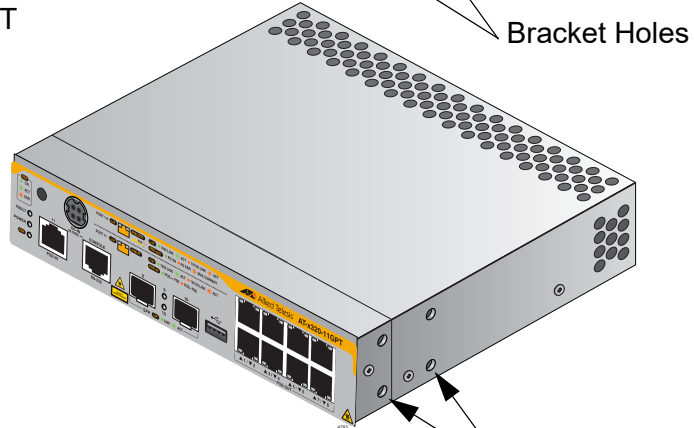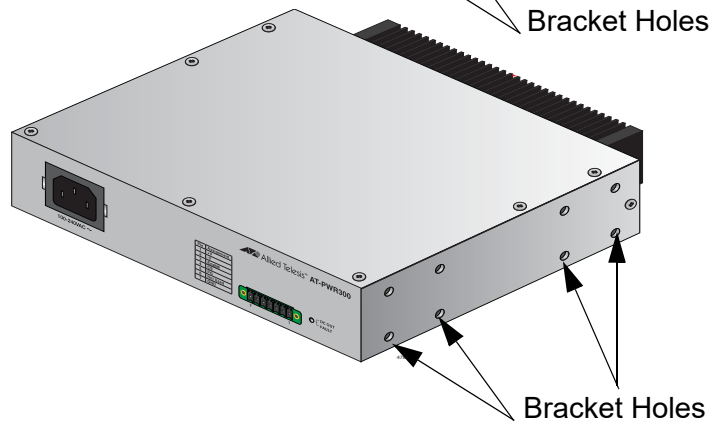
Bracket Holes

Figure 28. Bracket Holes

The Rack Mount Kit brackets are shown in Figure 19 on page 74.

You can install the device in one orientation, with the front panel flush with front of the equipment rack. The illustration in Figure 29 shows the device orientation with the front panel facing the front of the equipment rack. Refer to "19-Inch Rack Mount Kit" on page 74 to for the correct set of holes to use for the device you are mounting.

Figure 29. Device Orientation with the Front Panel Facing the Front of the Equipment Rack

Installing the Device with the Brackets

If you have not chosen an orientation for the device in the equipment rack, review "Device Orientations in the Equipment Rack" on page 86.

Please review the installation guidelines in Chapter 3, "Choosing a Site for the Device" on page 67 before installing the device in an equipment rack.

⚠️ **Caution**

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

To install the device in a 19-inch equipment rack with the brackets, perform the following procedure:

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

2. Attach the short L bracket to one side of the device and the long L bracket on the other side of the device using the eight M4x6 mm screws included with the unit. Refer to Figure 30
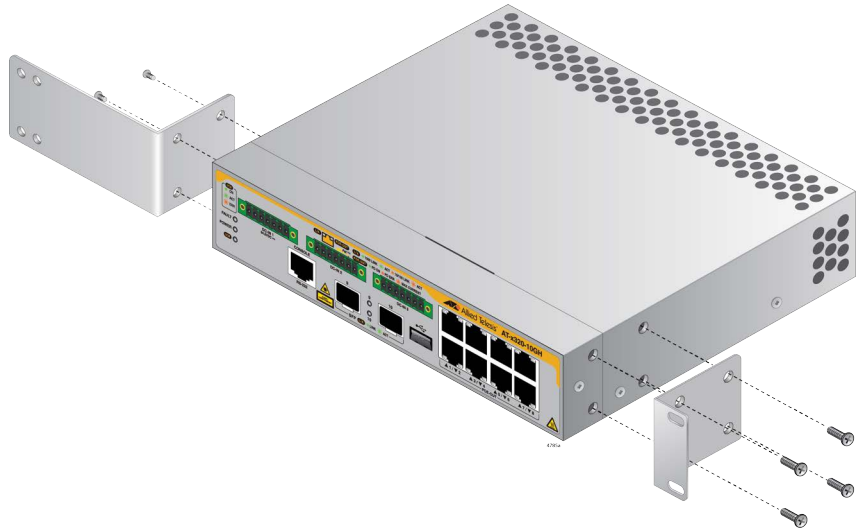
Figure 30. Attaching the Brackets to the Device

3. Attach the long L bracket to the straight bracket. The illustration in Figure 31 shows the installation of the brackets such that the front panel of the device is even with the front of the equipment rack. Refer to "19-Inch Rack Mount Kit" on page 74 to for the correct set of holes to use for the device you are mounting.
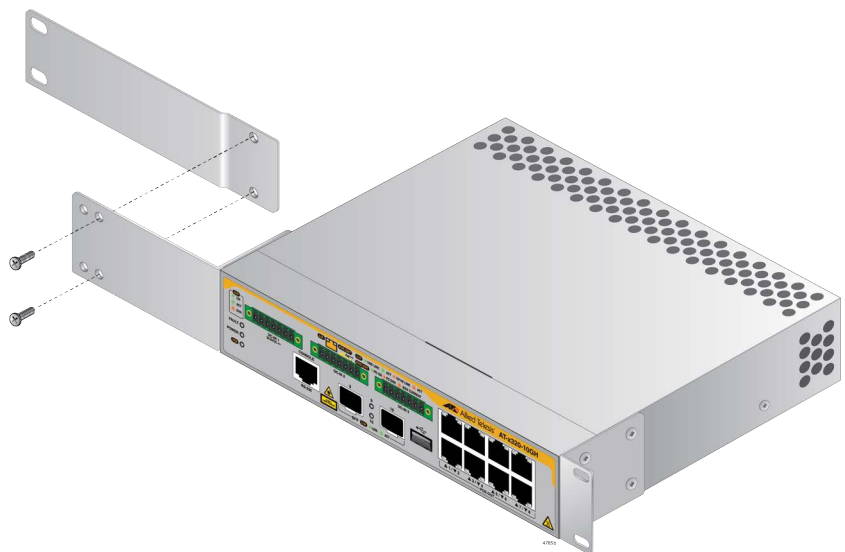
Figure 31. Attaching the Bracket Extension to the Device

4. Have another person hold the device in the equipment rack at the desired location while you secure it using four standard equipment rack screws (not provided). Refer to Figure 32.
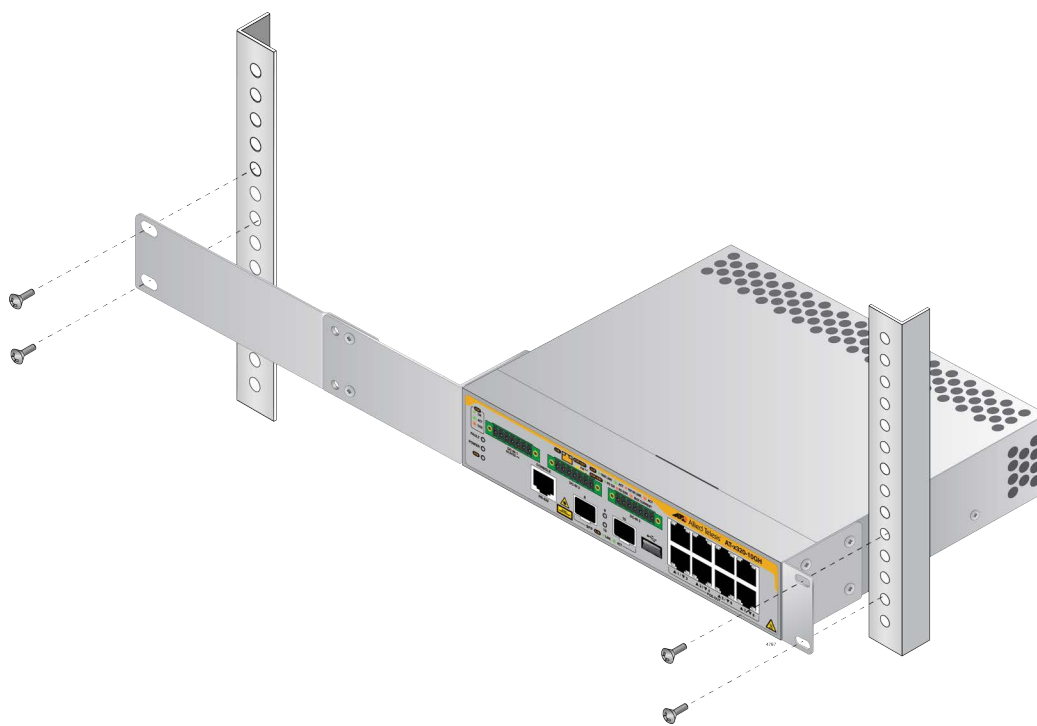
Figure 32. Installing the Device in an Equipment Rack

Figure 33 shows the device secured in an equipment rack.

Figure 33. Device Secured in an Equipment Rack

5. Go to Chapter 8, "Cabling the Networking Ports" on page 117.

Installing the Device in an Equipment Rack with the RKMT-J15 Bracket

This section contains the procedure for installing the device in a standard 19-inch equipment rack, with the optional RKMT-J15 Bracket.

Required Items for the RKMT-J15 Bracket

The following items are required to install the device in an equipment rack with the RKMT-J15 Bracket:

❏ One RKMT-J15 equipment rack bracket (sold separately)

❏ Four M4x6mm bracket screws (included with the RKMT-J15)

❏ Cross-head screwdriver (not provided)

❏ Four standard equipment rack screws (not provided)

Note
If the rubber feet have been attached to the device, remove them. They are attached with double-sided tape.

Installing the Device with the RKMT-J15 Bracket

To install the device in a 19-inch equipment rack with the RKMT-J15 Bracket, perform the following procedure:

1. Have another person hold the RKMT-J15 Bracket at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 34 on page 93.
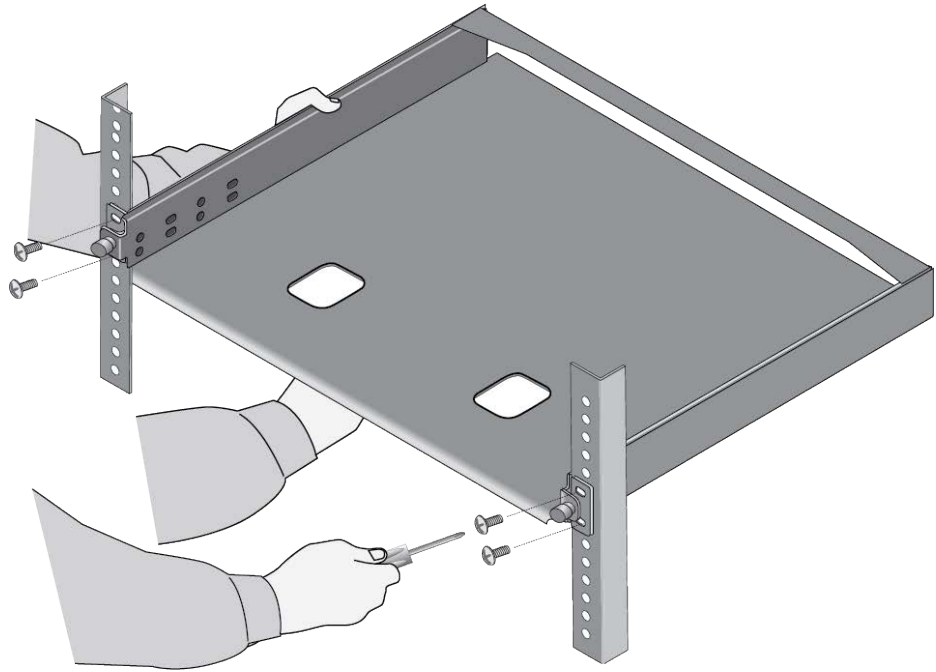
Figure 34. Installing the RKMT-J15 Bracket in the Equipment Rack

2. Loosen the two thumbscrews on the front of the bracket. Refer to Figure 35.
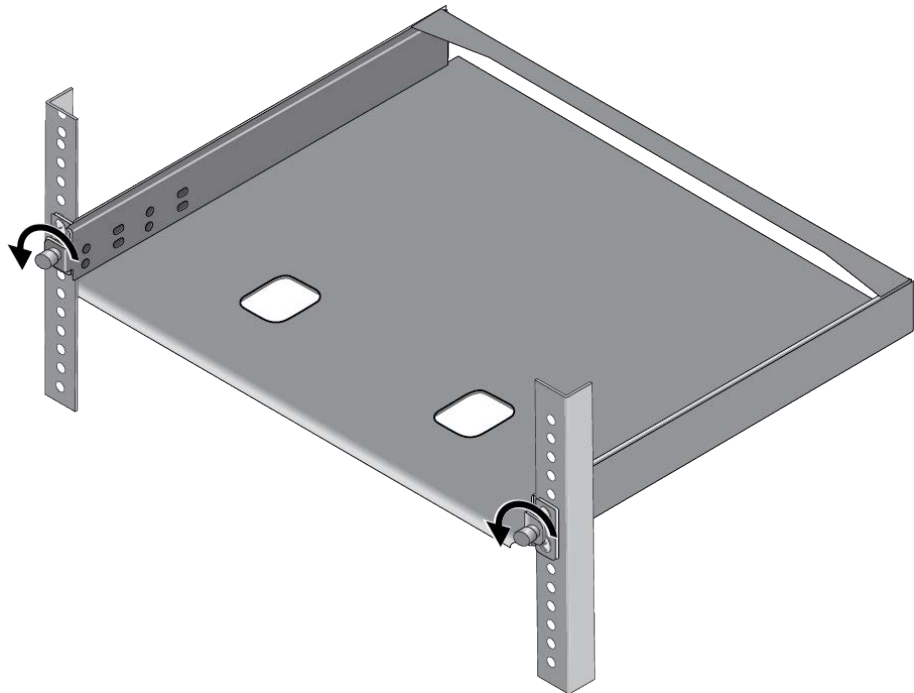
Figure 35. Loosening the Two Thumbscrews on the Front of the RKMT-J15 Bracket

3. Slide out the bracket tray. Refer to Figure 36.
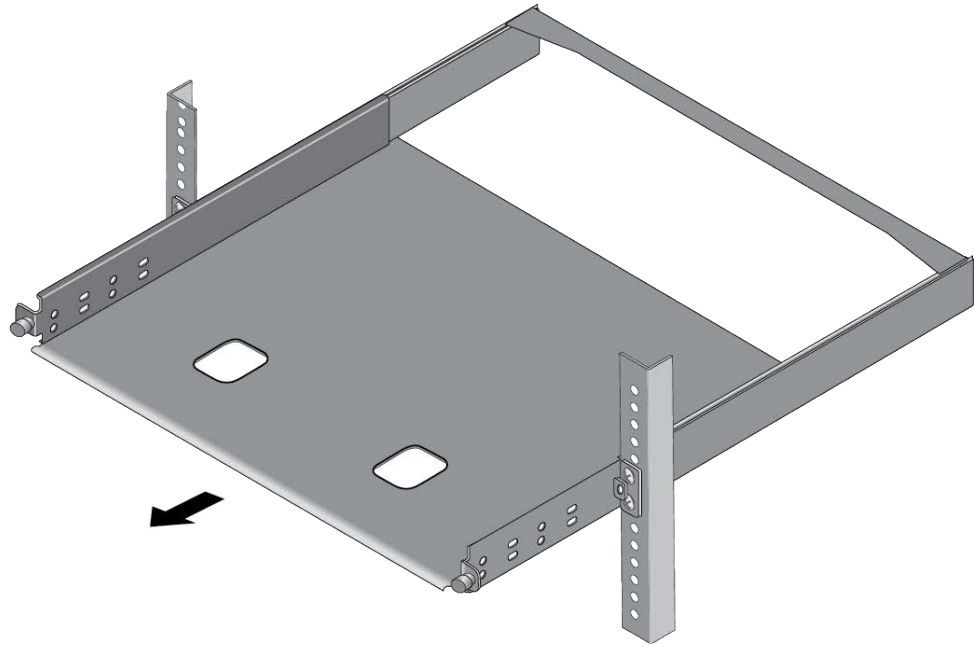
Figure 36. Sliding Out the Tray of the RKMT-J15

4. Place the device in the left or right side of the bracket, with its front panel facing the front of the bracket. If you are installing only one device, you may install it on either the left or right side. Refer to Figure 37.
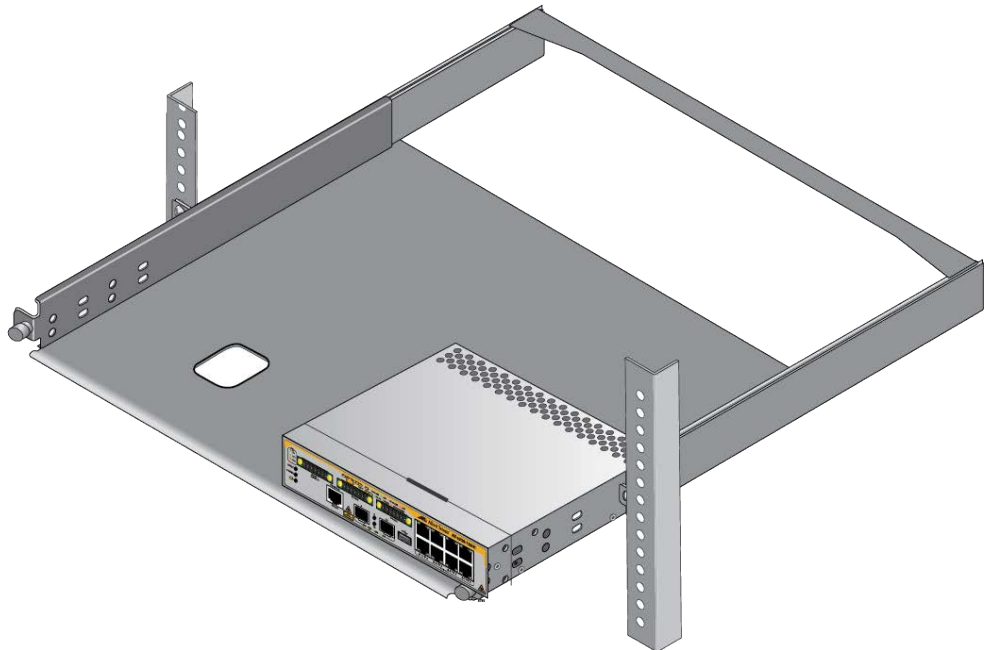
Figure 37. Placing a Device in the RKMT-J15 Bracket

5. Install two M4x6mm screws included with the RKMT-J15 to secure the device to the bracket. Refer to Figure 38.
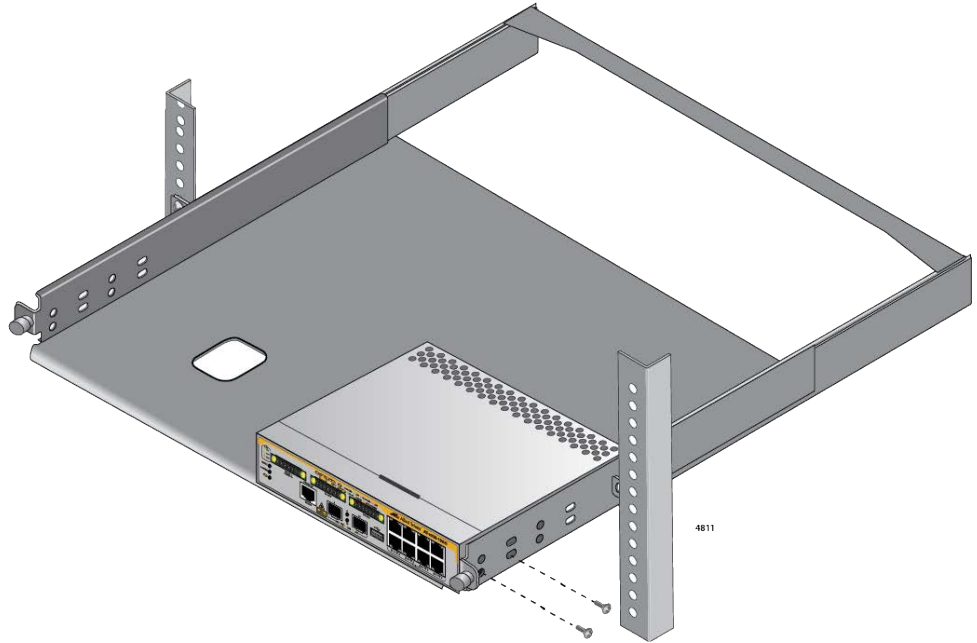
Figure 38. Securing the Device to the RKMT-J15 Bracket

6. To install a second device in the bracket, repeat steps 4 to 5.

7. Slide in the bracket tray. Refer to Figure 39.
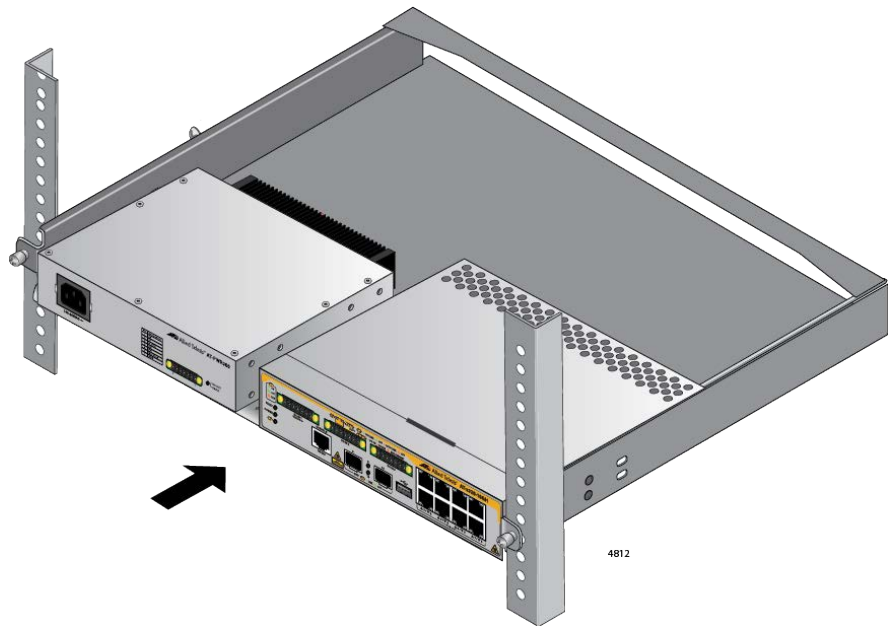
Figure 39. Sliding in the Bracket Tray

8. Tighten the two thumbscrews to secure the tray to the bracket. Refer to Figure 40.
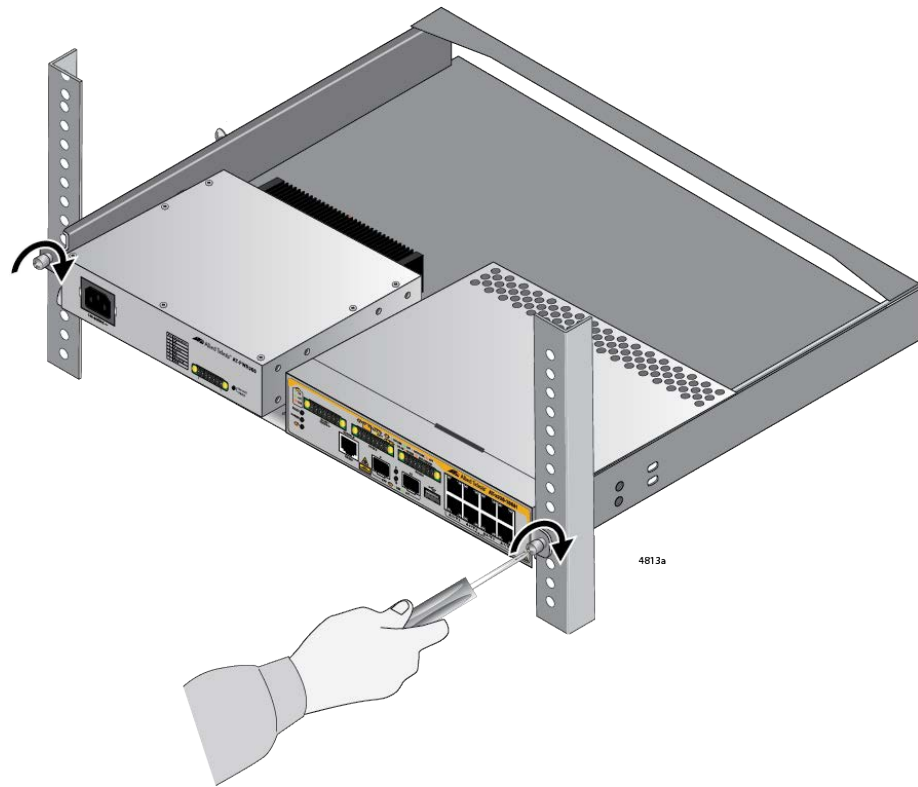
Figure 40. Tightening the Two Thumbscrews on the RKMT-J15 Bracket

9. Go to Chapter 8, "Cabling the Networking Ports" on page 117.

Chapter 6

Installing the Device on the DRMT-J03 DIN Rail

The procedures in this chapter are listed here:

❒ "Installing the Device on the DRMT-J03 DIN Chassis Bracket" on page 98

❒ "Installing the Device on a DIN Rail" on page 100

Installing the Device on the DRMT-J03 DIN Chassis Bracket

The DRMT-J03 DIN chassis bracket is shown in Figure 41. The bracket is compatible with DIN 35x7.5mm rails.
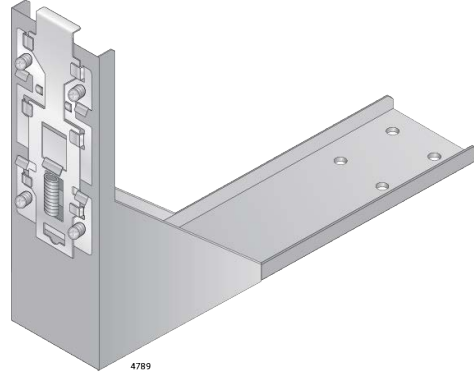
Figure 41. DRMT-J03 DIN Chassis Bracket

To install the device on the bracket:

1. Place the device on its side with the front facing out into the DRMT-J03 DIN chassis bracket.
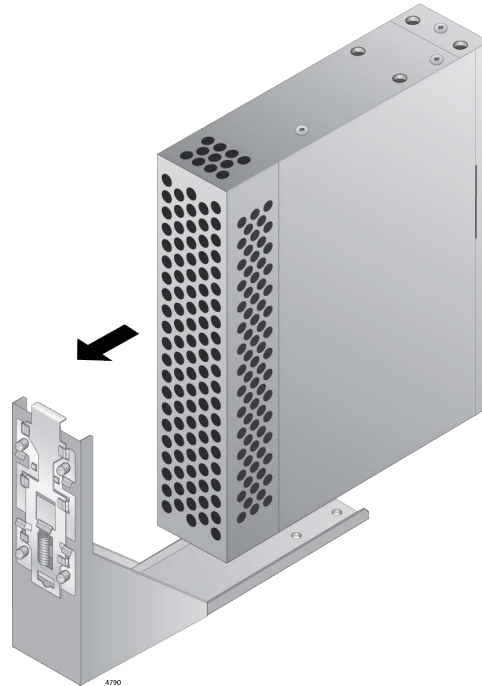
Figure 42. Placing the Device on the DRMT-J03 DIN Chassis Bracket

2. Screw the DRMT-J03 DIN chassis bracket to the device.

Figure 43. Screwing the Device to the DRMT-J03 DIN Chassis Bracket

Installing the Device on a DIN Rail

Figure 44 shows the proper orientation of the device on a DIN rail. Do not install the device horizontally or upside-down.

Figure 44. Orientation of the Device on a DIN Rail

To install the device on a DIN rail, perform the following procedure:

1. Press down the spring-loaded lever. Refer to Figure 45.

Figure 45. Pressing Down on the Spring-Loaded Lever

2. With the spring-loaded lever in the down position, place the mounting tabs on the DIN rail as shown in Figure 46.

Top edge of DIN rail

Spring-loaded lever

Mounting tabs

4792
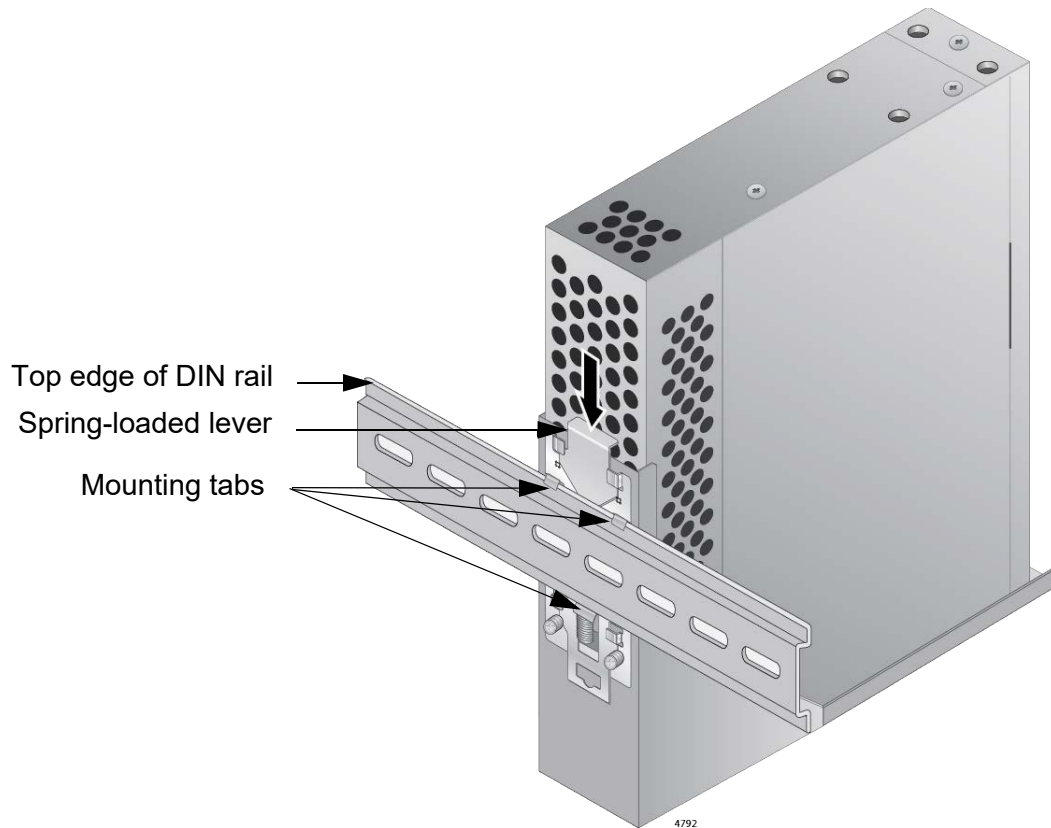
Figure 46. Installing the Device on a DIN Rail

3. Release the spring-loaded lever.

4. Visually inspect the bracket to verify that the DIN rail is now fitted into the top and bottom mounting tabs. Refer to Figure 47 on page 102.

Figure 47. Verifying the DIN Rail Installation

Note
Allied Telesis recommends installing DIN rail end clamps to the sides of the switch to prevent damage or network traffic loss from vibration or shock. End clamps are not available from Allied Telesis.

5. Go to Chapter 8, "Cabling the Networking Ports" on page 117.

Chapter 7

Installing the Device on a Wall

The procedures in this chapter are listed here:

Device Orientations on a Wall

You can install the device on a wall with the front panel facing left, right, or down as shown in Figure 48 and Figure 49. Do not install the device facing up.
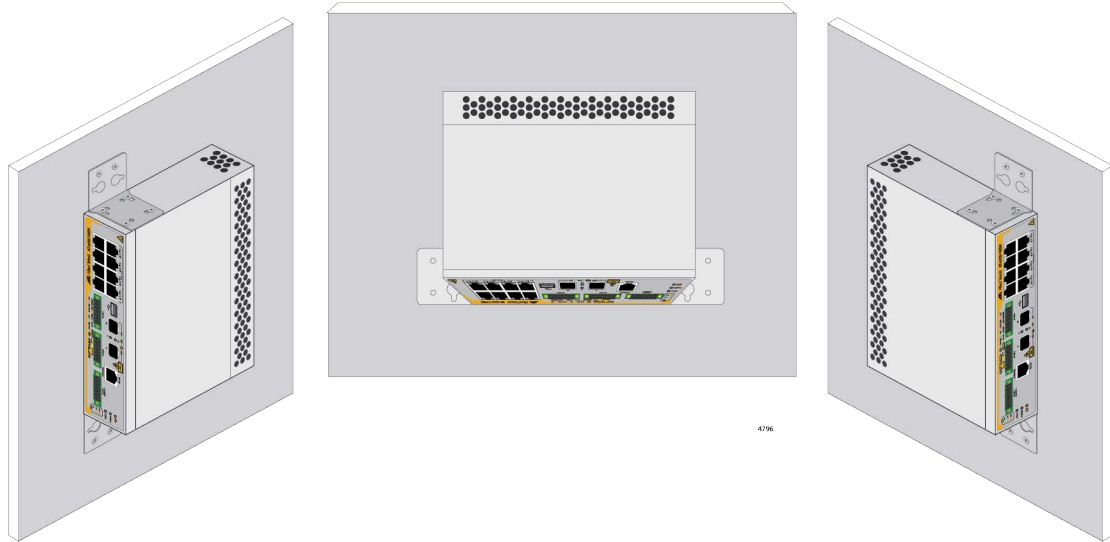
Figure 48. Positioning the x320-10GH Switch or x320-11GPT Switch on the Wall
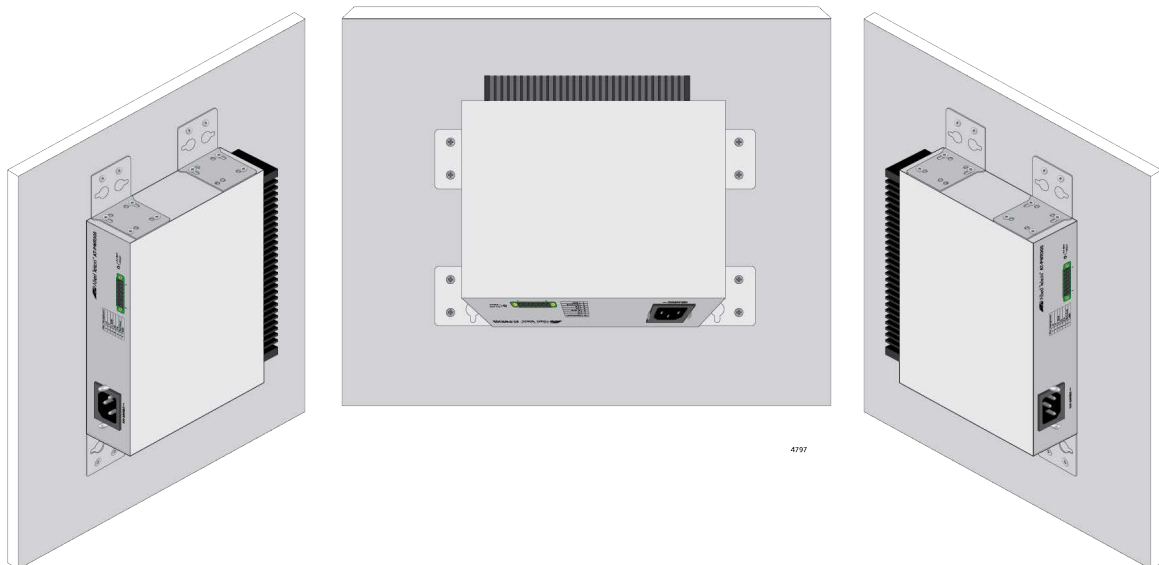
Figure 49. Positioning the PWR300 Power Supply on the Wall

Installation Guidelines

Here are the guidelines to installing the x320-10GH or x320-11GPT switch and PWR300 power supply on a wall:

❒ Wall installation requires the optional BRKT-J24 brackets.

❒ Install the device on a wall that has wooden studs or on a concrete wall.

❒ If you are installing the device on a wall with wooden studs, use a plywood base to support the device. For more information, refer to "Plywood Base for a Wall with Wooden Studs" on page 107. A plywood base is not required for a concrete wall.

❒ Do not install the device on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.

❒ Do not install the device on sheetrock or similar material. Sheetrock is not strong enough to safely support the device.

⚠ **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 may result if it is not properly fastened to the wall. ✍ E105

Tools and Material

Here are the required tools and material for installing the x320-10GH or x320-11GPT switch and PWR300 power supply on a wall:

❒ x320-10GH and x320-11GPT switches:

– Two BRKT-J24 wall brackets and eight M4x6mm screws (included with the RKMT-J24).

❒ PWR300 power supply:

– Four BRKT-J24 wall brackets and sixteen M4x6mm screws (included with the RKMT-J24).

❒ Four wall anchors and four 4x32mm screws for attaching the plywood base to the wall (included with the device).

❒ Cross-head screwdriver (not provided).

❒ Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring (not provided).

❒ Drill and 1/4" carbide drill bit for a concrete wall (not provided).

❒ Plywood base if you are installing the device on a wall with wooden studs (not provided.) Refer to "Plywood Base for a Wall with Wooden Studs" on page 107 for illustrations.

Caution

The supplied screws and anchors might not be appropriate for all walls. A qualified building contractor should 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 device on a wall that has wooden studs, Allied Telesis recommends using a plywood base for the device. (A plywood base is not required for a concrete wall.) Refer to Figure 50.
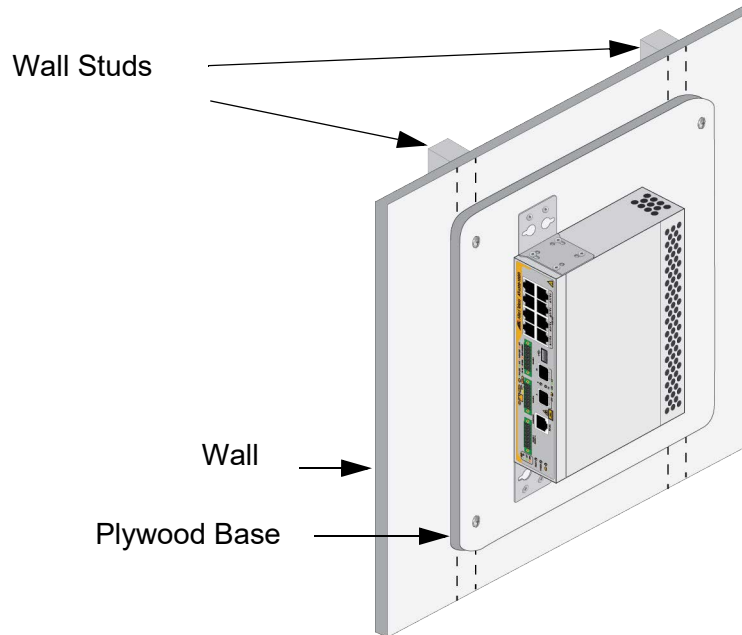
Figure 50. Device on the Wall with a Plywood Base

The plywood base should be mounted to two studs in the wall. The recommended minimum dimensions of the plywood base for the x320-10GH or x320-11GPT switch and PWR300 power supply are listed here:

- ❒ Width: 55.9 centimeters (22 inches)
- ❒ Height: 35.6 centimeters (14 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.

Install the plywood base on the wall and then install the device on the base. Refer to Figure 51 on page 108.

Wall Studs

Wall

Plywood
Base

Step 1: Install the
plywood base on
the wall.

Step 2: Install the
device on the
plywood base.
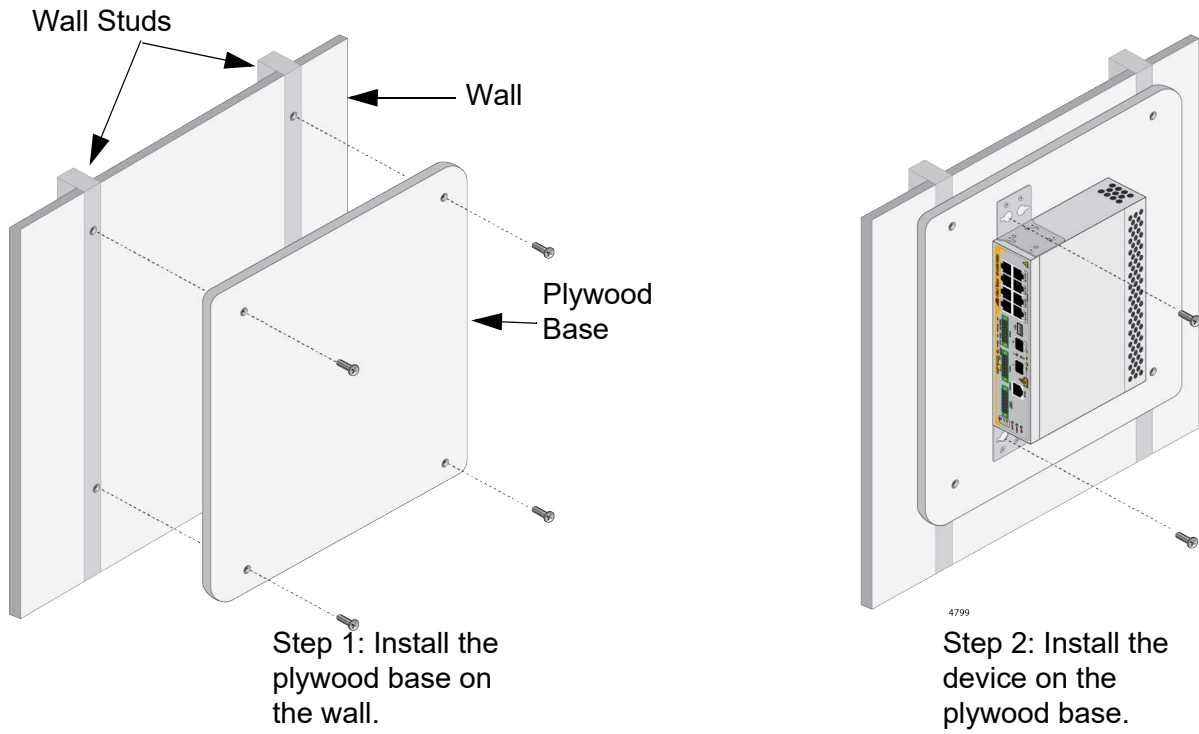
Figure 51. Steps to Installing the Device with a Plywood Base

Installing a Plywood Base

A plywood base is recommended when installing the device on a wall that has wooden studs. Refer to "Plywood Base for a Wall with Wooden Studs" on page 107. Consult a qualified building contractor for installation instructions for the plywood base. 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 should 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 Device on a Plywood Base

This procedure assumes that the plywood base for the device is already installed on the wall. Please review "Reviewing Safety Precautions" on page 62 and "Choosing a Site for the Device" on page 67 before performing this procedure. Allied Telesis recommends a minimum of two people for this procedure.

⚠️ **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 may result if it is not properly fastened to the wall. ☞ E105

Follow these guidelines as you position the device on the wall:

❑ Position the device so that the front panel is facing left. right, or down. Refer to Figure 54 on page 112. Do not install it with the front panel up down.

❑ Leave sufficient space from other devices or walls so that you can access the front panel, and for adequate air ventilation. Refer to "Planning the Installation" on page 80.

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

1. Place the device on a table.

2. For the x320-10GH or x320-11GPT switch, install two BRKT-J24 wall brackets, one on each side of the front panel of the unit, with the eight M4x6mm screws included with the device. Refer to Figure 52 on page 111. For the PWR300 power supply, install four BRKT-J24 wall brackets, two on each side of the of the unit, with the 16 M4x6mm screws included with the device. Refer to Figure 53 on page 111.
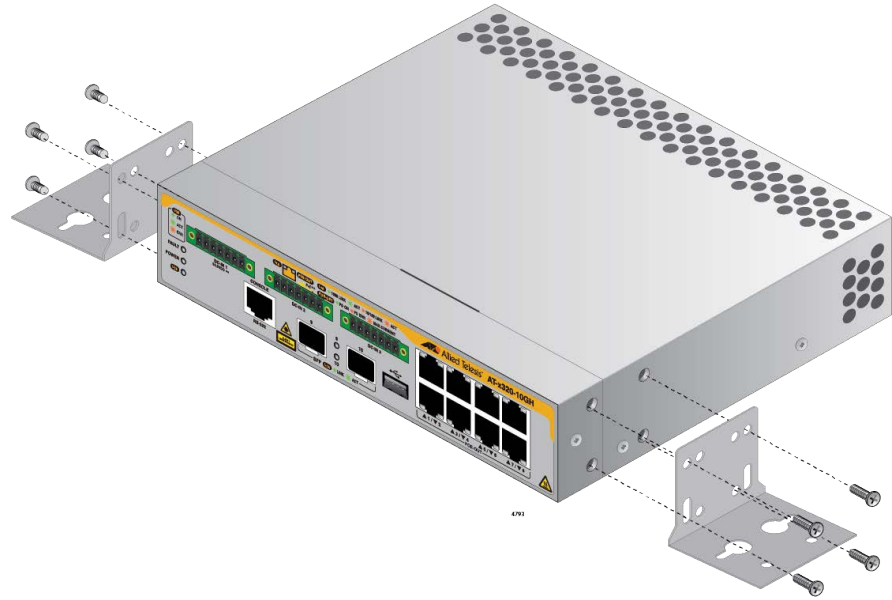
Figure 52. Installing the Wall Brackets on a Switch
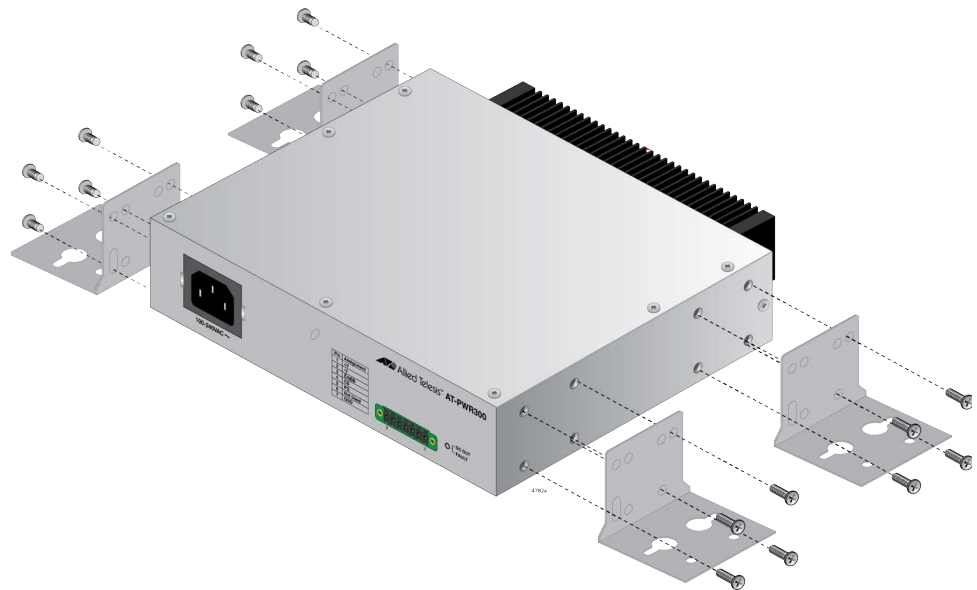
Figure 53. Installing the Wall Brackets on a Power Supply

3. After attaching the brackets, have another person hold the device on the plywood base on the wall while you secure it with the four M4x32mm screws included with the device. Refer to Figure 54.

x320-10GH
(or x320-11GPT)

4800

PWR300

4801
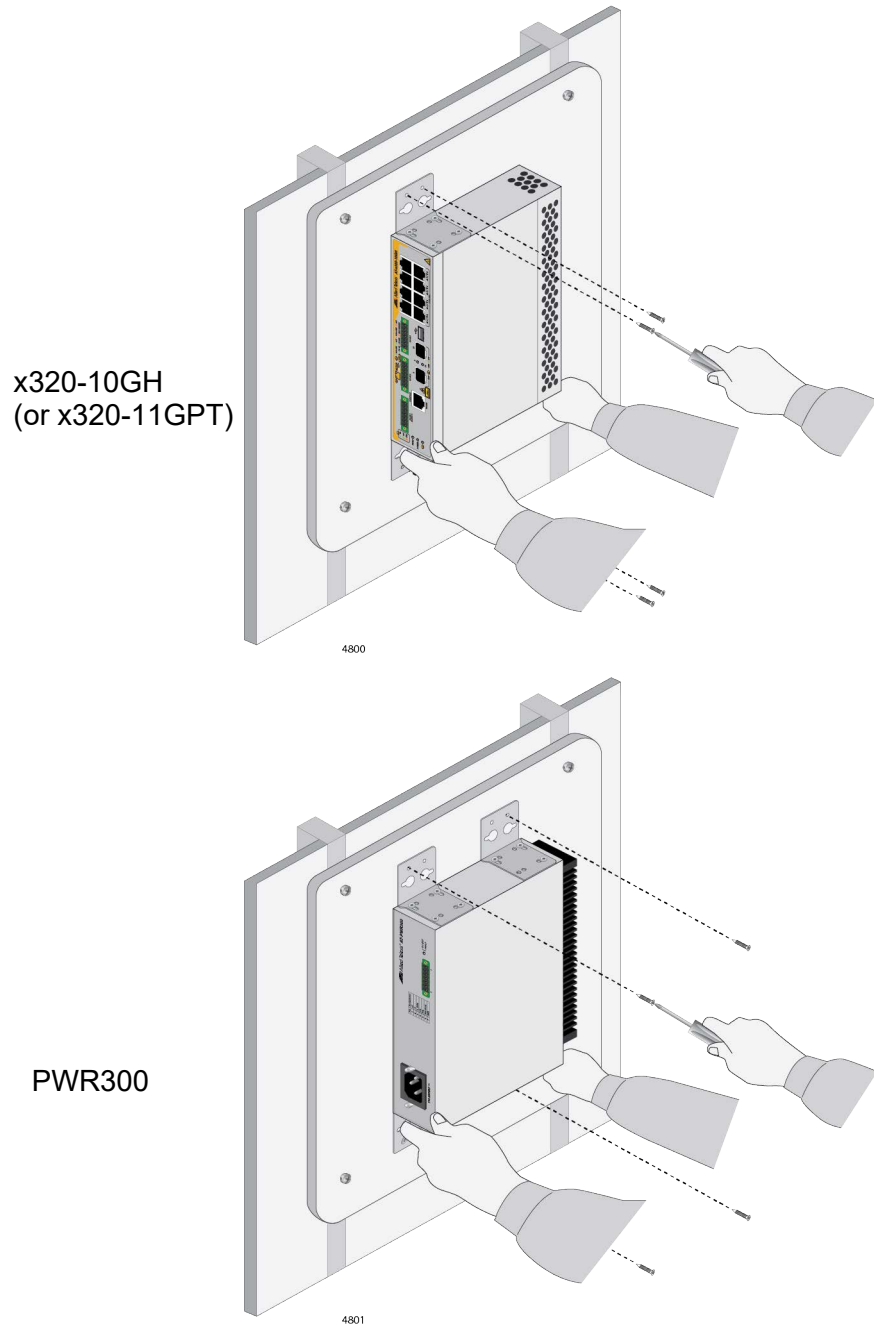
Figure 54. Securing the Device to the Plywood Base

4. Go to Chapter 8, "Cabling the Networking Ports" on page 117.

Installing the Device on a Concrete Wall

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

❒ "Device Orientations on a Wall" on page 104

❒ "Installation Guidelines" on page 105

> ⚠️ **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 may result if it is not properly fastened to the wall. ⬿ E105

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

1. Place the device on a table.

2. For the x320-10GH or x320-11GPT switch, install two BRKT-J24 wall brackets, one on each side of the front panel of the unit, with the eight M4x6mm screws included with the device. Refer to Figure 52 on page 111. For the PWR300 device, install four BRKT-J24 wall brackets, two on each side of the of the unit, with the 16 M4x6mm screws included with the device. Refer to Figure 53 on page 111.

3. Have another person hold the device 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 screw holes in each bracket (one screw per bracket). Refer to Figure 55 on page 114.
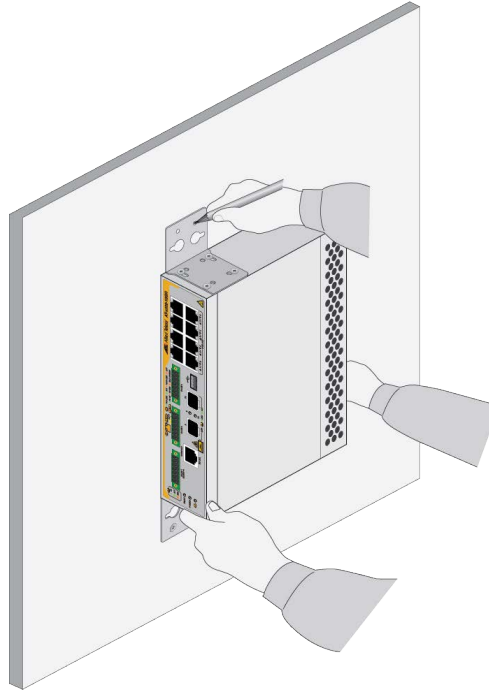
Figure 55. Marking the Locations of the Bracket Holes on a Concrete Wall

4. 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 break up the concrete and clean out the hole.

    ❐   Clean out the holes with a brush or compressed air.

5. Insert the anchors into the holes.

6. Have another person hold the device at the selected wall location while you secure it to the wall with the M4x32mm screws provided. Refer to Figure 56 on page 115.

4803
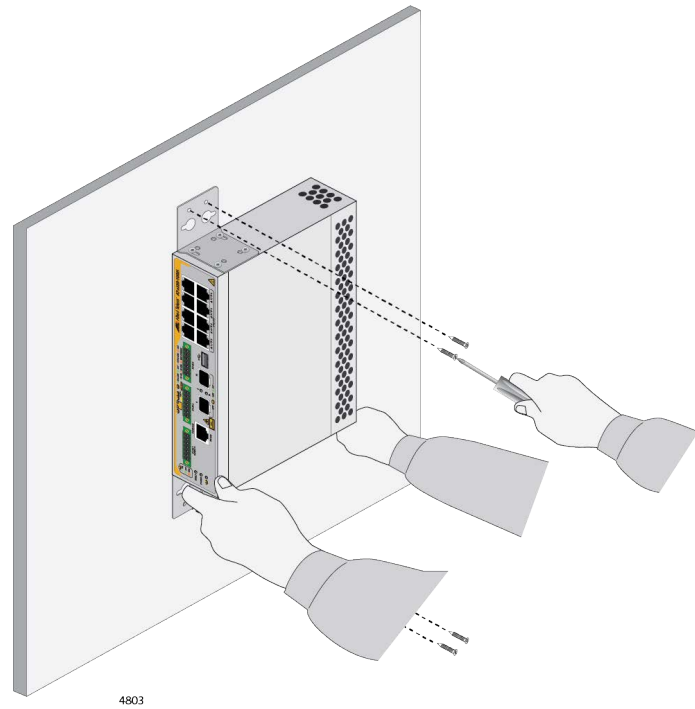
Figure 56. Installing the Device on a Concrete Wall

7.   Go to Chapter 8, "Cabling the Networking Ports" on page 117.

Chapter 8

Cabling the Networking Ports

This chapter contains the following procedures:

❒ "Cabling Twisted Pair Ports" on page 118

❒ "Guidelines to Handling SFP Transceivers" on page 119

❒ "Installing SFP Transceivers" on page 120

Cabling Twisted Pair Ports

Here are the guidelines to cabling the twisted pair ports:

❒ The cable specifications for the twisted pair ports are listed in "Cable Requirements" on page 26.

❒ PoE is enabled by default on the ports of the x320-10GH and x320-11GPT switch.

❒ The connectors on the cables should fit snugly into the ports, and the tabs should 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 Auto-Negotiation, the default setting, to operate at 1000Mbps.

❒ The ports support half- and full-duplex at 10Mbps or 100Mbps.

❒ The ports support only full-duplex at 1000Mbps.

❒ Do not attach cables to ports of static or LACP trunks until you have configured the trunks of the switch. Otherwise, the ports will form network loops that can adversely affect network performance.

Guidelines to Handling SFP Transceivers

Please review the following guidelines before installing 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.

- ❐ You should install a transceiver before connecting its 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 Transceivers

This section contains installation instructions for SFP transceivers. These illustrations show SFP ports 9 and 10 on the x320-10GH switch, but the x320-11GPT is similar and installs in the same manner.

The illustrations show a transceiver with a duplex LC connector. The connectors on your transceivers may be different. Please review "Guidelines to Handling SFP Transceivers" on page 119 before performing this procedure.

To install transceivers, perform the following procedure:

1. Select a port for the transceiver.

Figure 57. SFP Ports 9 and 10

2. Remove the transceiver from its shipping container and store the packaging material in a safe location.

3. To install the transceiver, position the transceiver with the Allied Telesis label facing up. Refer to Figure 58 on page 121.
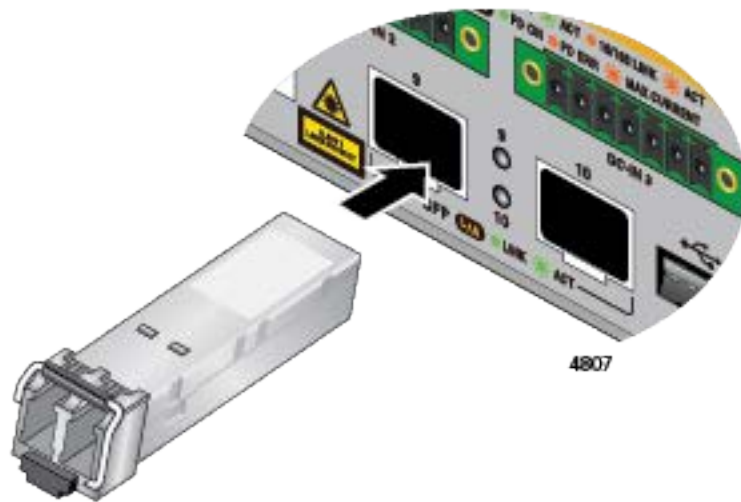
Figure 58. Installing an SFP Transceiver

4. Slide the transceiver into the port until it clicks into place. Refer to Figure 59.
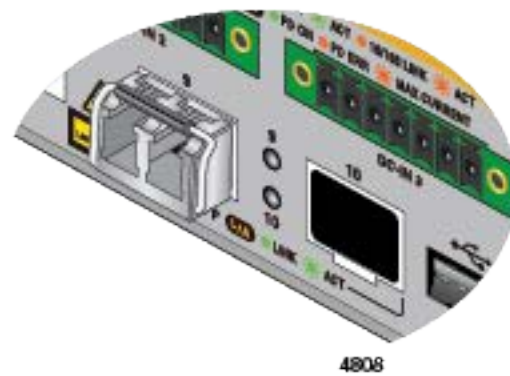
Figure 59. SFP Transceiver Clicking into Place

5. Verify the position of the handle on the transceiver. the handle should be in the upright position, as shown in Figure 60.

SFP Handle

4809
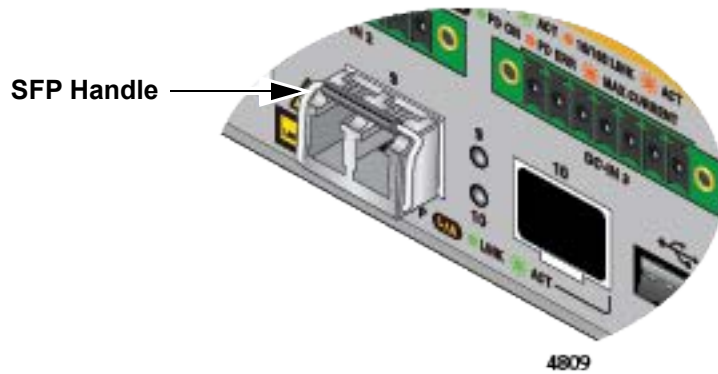
Figure 60. Positioning the SFP Handle in the Upright Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 61. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

4810
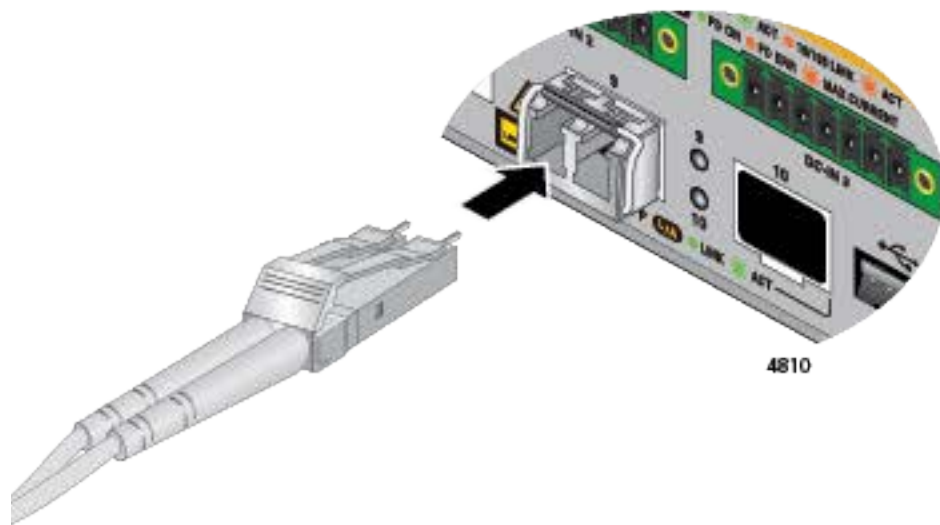
Figure 61. Connecting a Fiber Optic Cable to an SFP Transceiver

7. Repeat this procedure to install an additional transceiver.

Chapter 9

Powering On the Switch

This chapter contains the following procedures:

Powering on the x320-10GH Switch

Connecting the PWR300 Power Supply

The x320-10GH switch requires an external harness to connect to the external PWR300 power supply. The x320-10GH switch can support up to three PWR300 power supplies. Each PWR300 power supply provides 240W PoE power.

To connect the PWR300 power supply to the x320-10GH switch:

1. Verify that the PWR300 power supply is powered off.

⚠️ **Warning**
Leaving the power supply powered on while connecting the harness to the switch could cause an electrical short that can damage the equipment. ☞ E127

2. Connect one end of the external harness to the x320-10GH switch. Refer to Figure 62.
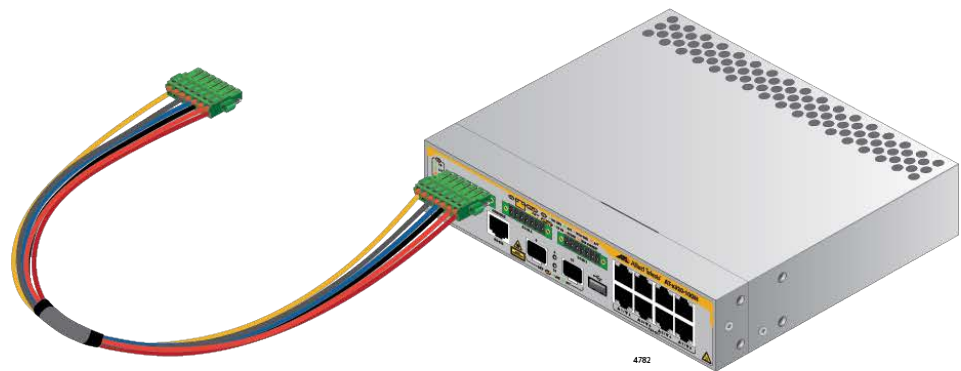
Figure 62. Connecting the External Harness to the x320-10GH Switch

⚠️ **Caution**
Do not install the connector at an angle, doing so can bend the connector pins. ☞ E128

3. Connect the other end of the external harness to the PWR300 power supply. Refer to Figure 63.
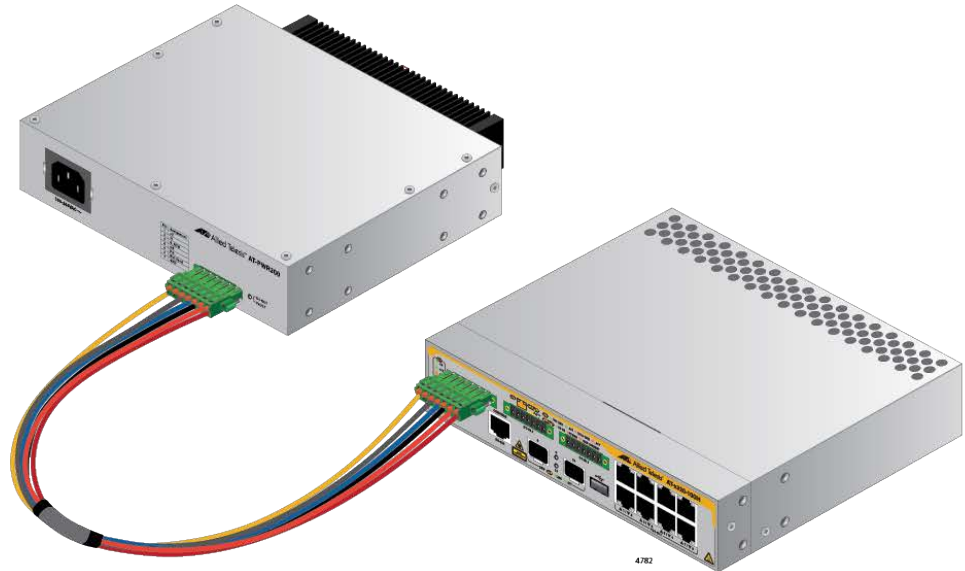
Figure 63. Connecting the PWR300 Power Supply to the x320-10GH Switch

4. Repeat this procedure to connect the switch to additional PWR300 power supplies.

Powering on the PWR300 Power Supply

Before powering on the switch, review the information in "Power Specifications" on page 153 for the power specifications of the switches.

⚠️ **Warning**
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

To power on the switch, perform the following procedure:

1. Install the power cord retaining clip on the AC power connector on the front panel of the PWR300 power supply. Refer to Figure 64 on page 126.
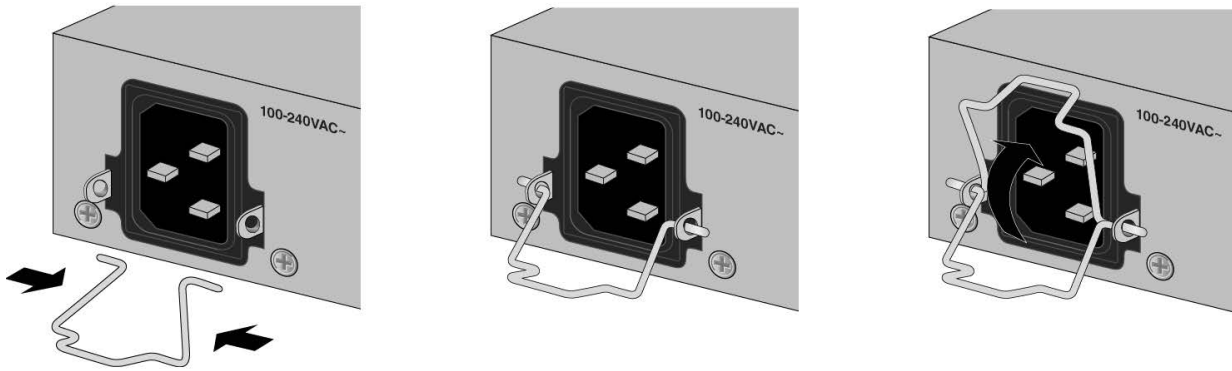
Figure 64. Installing the Power Cord Retaining Clip on the PWR300 Power Supply

2. Connect the AC power cord to the AC power connector on the front panel of the PWR300 power supply. Refer to Figure 65.
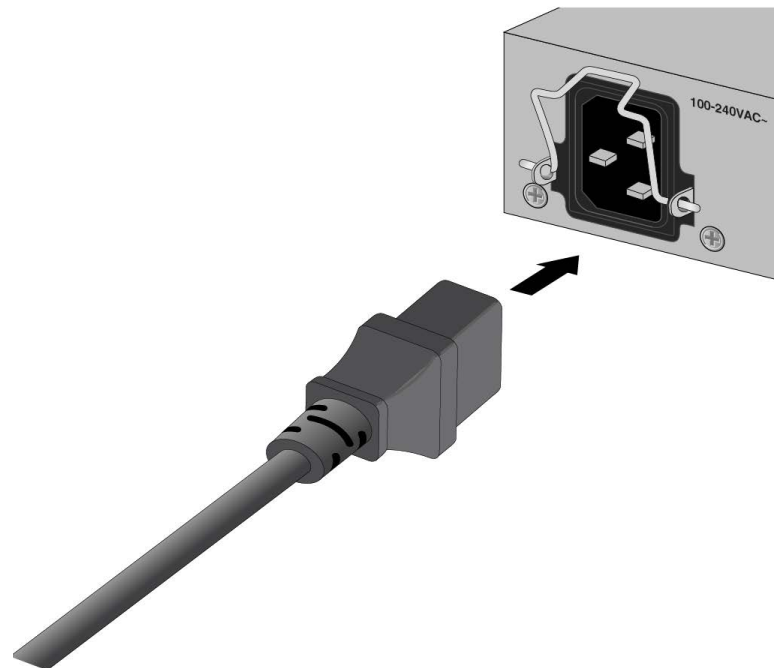
Figure 65. Connecting the AC Power Cord

3. Lower the power cord retaining clip to secure the cord to the x320-10GH switch. Refer to Figure 66 on page 127.
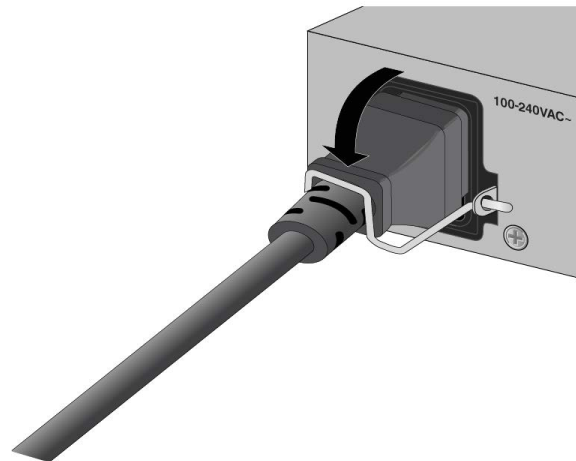
Figure 66. Lowering the Power Cord Retaining Clip

4. Connect the power cord to an appropriate AC power source. Refer to Figure 67.
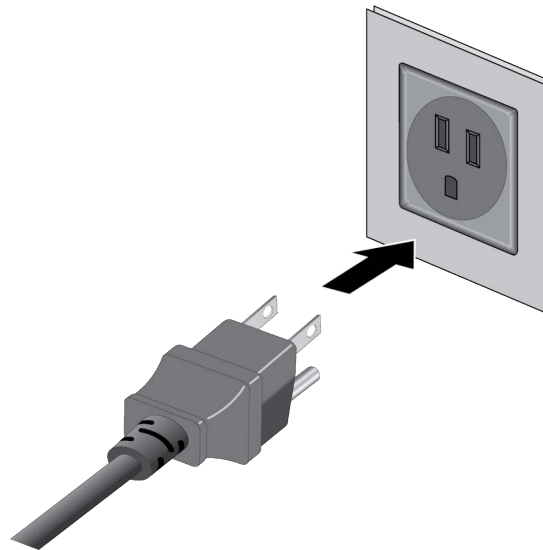
Figure 67. Connecting the Power Cord to an AC Power Source

Note
The illustration shows a North American power cord. Your power cord may be different.

5. Repeat this procedure to power on additional power supplies.

6. To monitor the switch as it initializes the management software, go to "Monitoring the Initialization Processes" on page 132. Otherwise, go to "Starting a Local Management Session" on page 133.

Powering on the x320-11GPT Switch

Connecting Port 11 to a PoE Power Source

The x320-11GPT switch can get its power from a Class 4 (30W), Class 6 (60W), or Class 8 (90W) PoE power source on port 11. If the switch is powered at class 4 (30W), switching is still possible and the unit will operate normally, but without any budget for PoE. Refer to "Port 11 - PoE IN Pass-through" on page 47 for more information regarding port 11.

To power the switch using port 11, perform the following procedure:

1. Connect a twisted pair cable to port 11. For guidelines, refer to "Cabling Twisted Pair Ports" on page 118.

2. Connect the other end of the cable to a port on a Class 4, 6, or 8 PoE power source.

   If the power source is powered on, the x320-11GPT switch begins to power on.

3. To monitor the switch as it initializes the management software, go to "Monitoring the Initialization Processes" on page 132. Otherwise, go to "Starting a Local Management Session" on page 133.

Connecting the PWR90ADP Power Adapter

The x320-11GPT switch can also get its power from a PWR90ADP AC power adapter, which can supply 46W PoE power. Refer to "PWR90ADP AC/DC Power Adapter" on page 50 for more information.

To connect the PWR90ADP power adapter to the x320-11GPT switch:

1. Connect the DC plug on the PWR90ADP power adapter into the DC-IN power adapter on the front panel of the x320-11GPT switch. Refer to Figure 68.

Figure 68. Connecting the PWR90ADP Power Adapter to the x320-11GPT Switch

2. Connect the AC power cord to the PWR90ADP power adapter. Refer to Figure 69

Figure 69. Connecting the Power Cord to the Power Adapter

On the x320-11GPT switch is a PoE pass-through device that can be powered via PoE on the PD port. It is set to be class 8 by default. It is compatible with older PSEs as long as the unit does not try to draw more power than the PSE can provide. The current PoE budget is set depending upon what class the PD is classified as.

To confirm the PoE budget, perform the following procedure:

1. Enter the ENABLE command at the User Exec mode to move to the Privileged Exec mode, as shown here:

   ```
   awplus> enable
   awplus#
   ```

2. Enter the SHOW POWER-INLINE command at the Privileged Exec mode prompt, as shown here:

   ```
   awplus# show power-inline
   ```

The PD port status is not displayed in the environment monitoring and if there is no power provided it does not display a fault status. There are no SNMP trap or notifications sent if the PD port changes power provided state.

Powering on the PWR90ADP AC/DC Adapter

Before powering on the switch, review the information in "Power Specifications" on page 153 for the power specifications of the switches.

⚠️ **Warning**
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

To power on the switch, perform the following procedure:

1. Connect the power cord to the power adapter.

Figure 70. Connecting the Power Cord to the Power Adapter

2. Connect the power cord to an appropriate AC power source. Refer to Figure 71 on page 131.
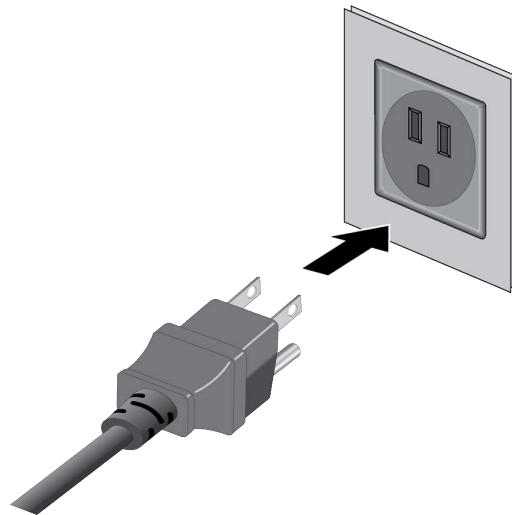
Figure 71. Connecting the Power Cord to an AC Power Source

> **Note**
> The illustration shows a North American power cord. Your power cord may be different.

3. To monitor the switch as it initializes the management software, go to "Monitoring the Initialization Processes" on page 132.

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 that has a terminal emulator program to the Console port on the switch. After the switch has initialized its management software, go to "Starting a Local Management Session" on page 133.

Starting a Local Management Session

This section contains the procedure for starting a local management session on the switch. Please review the following information before performing the procedure:

- ❑ The initial management session with the switch must be a local session.
- ❑ Local management sessions are conducted through the Console port on the front panel.
- ❑ Local management sessions do not interfere with the network operations of the switch.
- ❑ The switch comes with one 2 m (6.6 ft) management cable, with RJ-45 and DB-9 connectors, for local management sessions. Refer to Figure 17 on page 72.
- ❑ The switch does not need an IP address for local management sessions.
- ❑ You cannot initially manage the switch remotely with Telnet, SSH, or web browser because the switch does not have a default IP address and the DHCP client is disabled.

To start a local management session, perform the following procedure:

1. Connect the RJ-45 connector on your management cable to the Console port on the switch.

2. Connect the other end of the cable to an RS-232 port on a terminal or personal computer with a terminal emulation program.

3. Configure the VT-100 terminal or terminal emulation program as follows:

    - ❑ Baud rate: 9600 bps (The baud rate of the Console port is adjustable from 1200 to 115200 bps. The default is 9600 bps.)
    - ❑ Data bits: 8
    - ❑ Parity: None
    - ❑ Stop bits: 1
    - ❑ Flow controller: None

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

Note
The baud rate must be set to the default 9600 bps to configure the boot loader.

---

4. Press Enter. You are prompted for the name and password of the manager account.

5. Enter the user name and password. The default values are "manager" and "friend" (without the quotes), respectively.

Note
User names and passwords are case sensitive.

The switch starts the local management session and displays the following prompt:

awplus>

This prompt represents the User Exec mode in the command line interface in the switch.

6. Go to "Verifying the PoE Budget" on page 135.

Verifying the PoE Budget

x320-10GH
This procedure explains how to verify the PoE budget on the x320-10GH switch. The budget is the maximum wattage the switch has available for the powered devices on its twisted pair ports. The budget for x320-10GH should be 240W for each power supply that meets the specifications in "PWR300 Power Supply" on page 27.

The procedure assumes you have already started a local management session on the device. For instructions, refer to "Starting a Local Management Session" on page 133.

To confirm the PoE budget, perform the following procedure:

1. Enter the ENABLE command at the User Exec mode to move to the Privileged Exec mode, as shown here:

   ```
   awplus> enable
   awplus#
   ```

2. Enter the SHOW POWER-INLINE command at the Privileged Exec mode prompt, as shown here:

   ```
   awplus# show power-inline
   ```

3. Examine the Nominal Power field in the command output.

   It should be 240W, 480W, or 720W depending on the number of power supplies that are connected. This is the maximum PoE budget for the powered devices on the ports of the x320-10GHswitch.

To display the status of each PWR300 power supply, use the SHOW SYSTEM ENVIRONMENT command.

x320-11GPT
This procedure explains how to verify the PoE budget on the x320-11GPT switch. The budget is the maximum wattage the switch has available for the powered devices on its twisted pair ports. The budget for x320-11GPT should be 62W for power supplies that meet the specifications in "PWR90ADP AC/DC Power Adapter" on page 50.

The procedure assumes you have already started a local management session on the device. For instructions, refer to "Starting a Local Management Session" on page 133.

To confirm the PoE budget, perform the following procedure:

1. Enter the ENABLE command at the User Exec mode to move to the Privileged Exec mode, as shown here:

   ```
   awplus> enable
   awplus#
   ```

2. Enter the SHOW POWER-INLINE command at the Privileged Exec mode prompt, as shown here:

   ```
   awplus# show power-inline
   ```

3. Examine the Nominal Power field in the command output.

   If powered by the power adapter, it should be 62W. This is the maximum PoE budget for the powered devices on the ports of the x320-11GPT switch.

   The PoE budget provided by port 11 for the switch will be 30W for a Class 6 device or 46W for a Class 8 device.

Chapter 10

Troubleshooting

This chapter has the following sections:

❒ "x320-10GH Switch" on page 138

❒ "x320-11GPT Switch" on page 142

❒ "Twisted Pair Ports 1 to 8" on page 144

❒ "SFP Ports" on page 145

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

x320-10GH Switch

Here are the troubleshooting suggestions in this section:

❒ "PWR300 Power Supply," next

❒ "PoE++ on Ports 1 to 8" on page 141

PWR300 Power Supply

Problem 1: The switch is not forwarding network traffic and all the port and system LEDs are off.

Solutions: The switch is not receiving power.

If the switch has only one PWR300 power supply, try the following:

❒ Examine the DC OUT/FAULT LED on the front panel of the power supply. If the LED is off, go to Problem 2.

❒ If the DC OUT/FAULT LED on the power supply is amber, go to Problem 3.

If the switch has only one PWR300 power supply and the DC OUT/FAULT LED is green, try the following.

❒ Verify that the DC wire harness is securely connected to the connector on the switch and PWR300 power supply.

❒ Verify that the AC power cable is securely connected to the connector on the PWR300 power supply and the AC power source.

❒ Try connecting the PWR300 power supply to a different AC power source.

❒ Try connecting another device to the AC power source to verify that it has power.

❒ Try replacing the PWR300 power supply.

❒ Try replacing the DC wire harness.

If the switch has two or three PWR300 power supplies and the DC OUT/ FAULT LEDs on all their front panels are off, they are not are receiving power from the AC power sources: Try connecting the power supplies to other AC power sources.

If the switch has two or three PWR300 power supplies and the DC OUT/
FAULT LEDs are all green, try the following:

❐ Verify that the DC wire harnesses are securely connected to the
connectors on the switch and power supplies.

❐ Verify that the AC power cables are securely connected to the
connectors on the PWR300 power supply and the AC power
source.

❐ Try replacing the switch.

If all the port LEDs are off, the switch might be operating in the low power
mode. To toggle on the LEDs, use the ECOFRIENDLY LED and NO
ECOFRIENDLY LED commands in the command line interface.

Problem 2: The DC OUTPUT/FAULT LED on the PWR300 power supply
is off.

Solutions: The power supply is not receiving power or has failed. Try the
following:

❐ Verify that the AC power cable is securely connected to the
connector on the PWR300 power supply and the AC power source.

❐ Try connecting the PWR300 power supply to a different AC power
source.

❐ Try connecting another device to the AC power source to verify
that it has power.

❐ Try replacing the PWR300 power supply.

Problem 3: The DC OUTPUT/FAULT LED on the PWR300 power supply
is amber.

Solutions: The power supply has encountered a fault condition. It might
be overheating or failing, or the input AC voltage might be outside the
normal operating range. Try the following:

❐ Verify that there is adequate airflow around the power supply.

❐ Verify that there is adequate distance for ventilation between the
power supply and other network devices.

❐ Try connecting the PWR300 power supply to a different AC power
source.

❐ Try replacing the PWR300 power supply.

Problem 4: The PoE budget displayed by the SHOW POWER-INLINE command is 240W below the correct value for the number of PWR300 power supplies connected to the switch. For example, the command displays a budget of only 480W, instead of 720W, for a switch with three power supplies, or 240W, instead of 480W, for a switch with two power supplies.

Solutions: One PWR300 power supply is not working.

Examine the DC OUT/FAULT LEDs on the front panels of the PWR300 power supplies. If an LED is off on a power supply, go to Problem 2. If an LED is amber on a power supply, go to Problem 3.

If the LEDs are green on all the power supplies, try using the SHOW SYSTEM ENVIRONMENT command to identify the power supply that is not providing power to the switch. Then try the following on the identified power supply:

- ☐ Verify that the DC wire harness is securely connected to the connector on the switch and power supply.
- ☐ Verify that the AC power cable is securely connected to the connector on the power supply and the AC power source.
- ☐ Try replacing the DC wire harness.
- ☐ Try replacing the power supply.

Problem 5: The PoE budget displayed by the SHOW POWER-INLINE command is below the correct value for the number of PWR300 power supplies connected to the switch. For example, the switch has three power supplies, but the command displays a budget of only 680W, instead of 720W.

Solutions: The DC output from one or more of the PWR300 power supplies is below operating norms.

This is usually caused by a failing or overheating power supply. (DC outputs decrease as power supplies overheat.) Try the following:

- ☐ Verify that there is adequate airflow around the power supplies.
- ☐ Verify that there is adequate distance for ventilation between the power supplies and between the power supplies and other network devices.

Examine the DC OUT/FAULT LEDs on the front panels of the PWR300 power supplies. If the LED is amber on a power supply, signaling a fault condition, replace that unit.

Problem 6: The switch stopped supplying power to one or more powered devices on ports 1 to 8.

Solutions: The DC output from one or more of the PWR300 power supplies has fallen below operating norms, causing the switch to deny power to one or more devices, or a power supply has failed. Perform the SHOW SYSTEM ENVIRONMENT command and refer to Problems 4 and 5.

PoE++ on Ports 1 to 8

Problem 1: The x320-10GH switch is providing power to some but not all powered device on ports 1 to 8.

Solutions: Try the following:

❐ Examine the LINK/ACT LED on the port. If it is off, go to "Twisted Pair Ports 1 to 8" on page 144.

❐ Check the port PoE LEDs. If an LED is flashing amber, the switch cannot support the device because doing so would exceed its PoE budget. If this is the case, use the SHOW SYSTEM ENVIRONMENT command to display the switch's PoE budget and compare that value with the total requirements of the PoE devices in the worksheet in "Planning the Installation" on page 36.

❐ If the powered device is Class 8, confirm that it uses Type 3 wiring to receive power, by referring to its documentation.

❐ Verify that you are using the appropriate category of twisted-pair cable. Cable requirements for the switch are listed in "Cable Requirements" on page 26.

❐ Use the management software on the switch to determine whether PoE is enabled on the port. The default setting for PoE is enabled.

❐ Use the management software on the switch to determine whether the PoE power setting for the port has been reduced to a value below the power requirements of the device.

❐ Try connecting the device to a different port on the switch.

Problem 2: The x320-10GH switch stopped providing PoE power to devices on Low or High priority ports.

Solutions: One of the PWR300 power supplies might have lost power of failed. Refer to Problems 2 and 3 in "PWR300 Power Supply" on page 138:

Problem 3: A pre-802.3bt-compliant device is not working with the switch.

Solutions: Use the POWER-INLINE ALLOW-PRE-BT command in the Global Configuration mode of the command line interface of the AlliedWare Plus management software.

x320-11GPT Switch

Here are the troubleshooting suggestions in this section:

❑ "Port 11 PoE-IN," next

❑ "PWR90ADP AC/DC Adapter" on page 142

❑ "PoE+ on Ports 1 to 8" on page 143

Port 11 PoE-IN   **Problem 1:** Port 11 is connected to a Class 4, 6, or 8 power source and its Link/Activity LED is on, but its PoE Powered Device LED is off.

Solutions: Port 11 has established a link to a network device, but is not receiving any PoE power. Consequently, the switch is powered by the PWR90ADP adapter. Try the following:

❑ Verify that the PoE power source is Class 4, 6, or 8. This information can be found in the device's installation guide. Port 11 is not compatible as a PoE pass-through port with other PoE classes.

❑ Verify that the PoE power source is operating properly. Refer to its user documentation.

❑ Verify that PoE is enabled on the port on the power source. Refer to the device's user documentation.

❑ Verify that the PoE power source has not exceeded its PoE power budget. Refer to the device's user documentation.

❑ Try connecting port 11 to another PoE power source.

❑ Try replacing the twisted pair cable.

PWR90ADP AC/DC Adapter   **Problem 1:** The switch is not receiving power from the PWR90ADP adapter.

Solutions: Try the following:

❑ Verify that the AC power cord is securely connected to the AC connector on the adapter and to the AC power source.

❑ Verify that the DC cable from the adapter is securely connected to the connector on the front panel of the switch.

❑ Try connecting the PWR90ADP adapter to another AC power source.

❑ Try connecting another device to the AC power source to verify that the source has power.

❑ Try replacing the adapter.

PoE+ on Ports 1 to 8

Problem 1: The x320-11GPT switch is not providing power to any PoE+ devices on ports 1 to 8.

Solutions: Port 11 might be connected to a Class 4 power source. A Class 4 power source can provide the switch with enough power to operate as a switch, but not enough for a PoE budget. If you want to use port 11 to power the switch and to support powered devices, you must connect it to a Class 6 or 8 device.

Problem 2: The x320-11GPT switch is providing power to some but not all PoE+ devices on ports 1 to 8.

Solutions: Try the following:

- ❐ Examine the LINK/ACT LED on the port. If it is off, go to "Twisted Pair Ports 1 to 8" on page 144.

- ❐ Check the port's PoE LED. If the LED is flashing amber, the switch cannot support the device because doing so would exceed its PoE budget. If this is the case, use the SHOW SYSTEM ENVIRONMENT command to display the switch's PoE budget and compare that value with the total requirements of the PoE devices in the worksheet in TBD.

- ❐ Review the powered device's documentation to confirm that the device supports Mode A of the IEEE 802.3at standard and that it uses pins 1, 2, 3, and 6 on the RJ-45 port to receive power. Refer to "RJ-45 Twisted Pair Port Pinouts" on page 155.

- ❐ Check that the device's power requirements do not exceed 30W by reviewing the device's documentation or data sheet.

- ❐ Verify that you are using the appropriate category of twisted-pair cable. Cable requirements for the switch are listed in TBD.

- ❐ Use the management software on the switch to determine whether PoE is enabled on the port. The default setting for PoE is enabled.

- ❐ Use the management software on the switch to determine whether the PoE power setting for the port has been reduced to a value below the power requirements of the device.

- ❐ Try connecting the device to a different port on the switch.

Twisted Pair Ports 1 to 8

Problem 1: The LINK/ACT LED for a twisted pair port connected to a network device is off.

Solutions: The port cannot establish a link with 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 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 26.

❒ Verify that the port is connected to the correct twisted pair cable.

❒ If all the port LEDs are off, the switch might be operating in the low power mode. To toggle on the LEDs, use the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the command line interface.

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

SFP Ports

Problem: The LINK/ACT LED is off for an SFP port with a transceiver that is connected to an active network device.

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

❒ Verify that the remote network device is operating properly.

❒ Verify that the fiber optic cable is securely connected to the port on the transceiver and 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's management software to verify that the port is enabled.

❒ If the remote network device is a managed device, use its management firmware to determine whether its port is enabled.

❒ If the problem is with two BiDi (bi-directional) transceivers, refer to their data sheets to verify that their transmission and reception frequencies are opposite each other. For instance, a BiDi transceiver that transmits and receives at 1310nm and 1550nm, respectively, has to be connected to a transceiver that transmits and receives at 1550nm and 1310nm, respectively. Two BiDi transceivers cannot establish a link if they transmit and receive at the same frequencies.

❒ 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 strong (maximum input power).

Appendix A
Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions (H x W x D)

Table 24 lists the dimensions of the switches and power supply. Figure 72 and Figure 73 on page 149 illustrate the dimensions.

Table 24.   Product Dimensions

PWR300	4.25 cm x 20.0 cm x 17.1 cm (1.7 in. x 7.9 in. x 6.7 in.)
x320-10GH	4.25 cm x 21.0 cm x 18.0 cm (1.7 in. x 8.3 in. x 7.1 in.)
x320-11GPT	4.25 cm x 21.0 cm x 18.0 cm (1.7 in. x 8.3 in. x 7.1 in.)
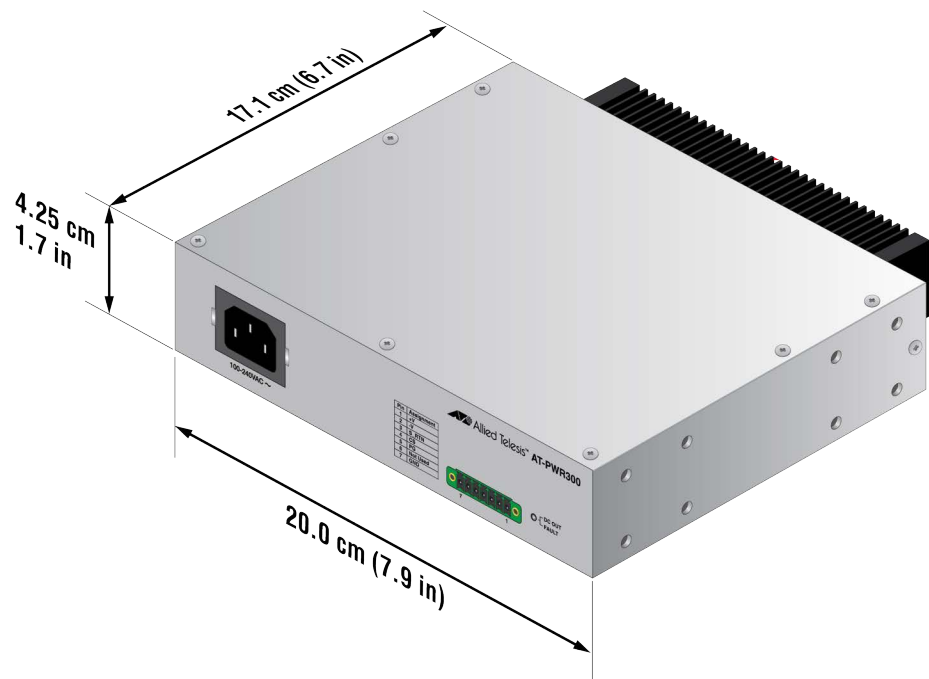
Figure 72. PWR300 Dimensions
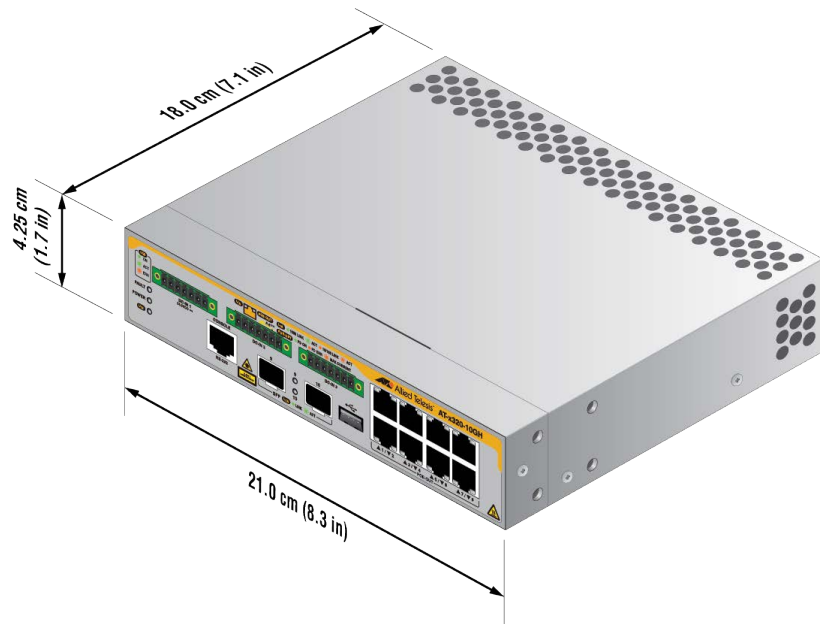
Figure 73. x320-10GH Dimensions
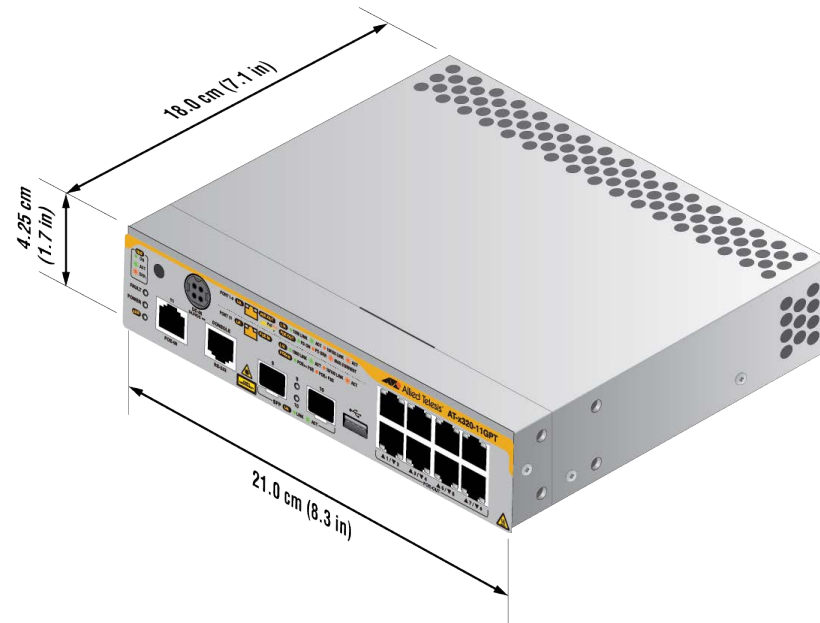
Figure 74. x320-11GPT Dimensions

Weights

Table 25 lists the weights of the switches and power supplies.

Table 25.   Product Weights

PWR300	1.6 kg (3.53 lb)
x320-10GH	1.6 kg (3.53 lb)
x320-11GPT	1.6 kg (3.53 lb)

Ventilation

Table 26 lists the ventilation requirements.

Table 26.   Ventilation Requirements

Recommended Minimum Ventilation on All Sides	>5 cm (>2 in)

Environmental Specifications

Table 27 lists the environmental specifications of the switches.

Table 27.   Environmental Specifications

Operating Temperature	-10° C to +55° C (14° F to 131° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)
Operating Humidity	5% to 90% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	3,000 m (9,842 ft)
Maximum Nonoperating Altitude	4,000 m (13,100 ft)

Warning
HOT SURFACE. Do not touch when operational temperature is 40°F or more. ⤙ **E124**

Figure 28 shows the temperature derating for the PoE budget.

Table 28.   Operating Temperature Derating

| Placement | PoE Budget Derating | |
	Operating Temperature	PoE Budget
x320-10GH Stand-alone	55° C	200W (/PWR300) x 3
	50° C	210W (/PWR300) x 3
	45° C	220W (/PWR300) x 3
	40° C	240W (/PWR300) x 3
x320-11GPT Stand-alone	55° C	25W
	50° C	47W
	40° C	62W
Rackmount in the packing	Same as above.	
RKMT-J15	Same as above.	

Table 28.   Operating Temperature Derating (Continued)

Placement	PoE Budget Derating	
	Operating Temperature	PoE Budget
BRKT-J24	55° C	200W (/PWR300) x 1
	50° C	210W (/PWR300) x 1
	45° C	220W (/PWR300) x 1
	40° C	240W (/PWR300) x 1
AT-BRKT-DIN	Same as above.	

Power Specifications

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

Maximum Power Consumption

Table 29 lists the maximum power consumptions for the switches.

Table 29.   Maximum Power Consumptions

x320-10GH	880 watts
x320-11GPT	98 watts

Input Voltages

Table 30 lists the input voltages for the switches.

Table 30.   Input Voltages

x320-10GH with PWR300	100-240 VAC~, 4.5A maximum, 50/60 Hz
x320-11GPT with PWR90ADP	100-240 VAC~, 3.0A maximum, 50/60 Hz

Heat Dissipation

Maximum power consumption is used to calculate a BTU/h. For example, [Max Power Consumption] x 0.86 x 3.968.

Table 31 lists the heat dissipation for the switches.

Table 31.   Heat Dissipation

x320-10GH w/PoE:720W => 880W	3,000BTU/hr
x320-10GH w/PoE:480W => 600W	2000BTU/h
x320-10GH w/PoE:240W => 320W	1100BTU/h
x320-10GH wo/PoE => 21W	71BTU/h
x320-11GPT	340BTU/h

Certifications

Table 32 lists the product certificates.

Table 32.   Product Certifications

EMI (Emissions)	FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, CISPR Class A, CE
EMC (Immunity)	EN55035
Electrical and Laser Safety	EN62368-3 (UL-EU), UL62368-3 ($_C$UL$_{US}$)
Compliance Marks	CE, $_C$UL$_{US}$, UL-EU, C-Tick

Note
This product has an agency label on the bottom panel with the applicable international Compliance Marks, product model name and serial number, power ratings, manufacture date, country of origin, and name of importer. Refer there for all applicable international Compliance Marks.

RJ-45 Twisted Pair Port Pinouts

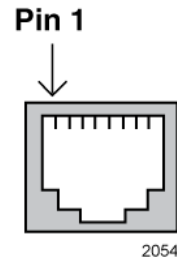Figure 75 illustrates the pin layout of the RJ-45 connectors on the front panel of the switch.

Figure 75. RJ-45 Socket Pin Layout (Front View)

Table 33 lists the pin signals for a port when it is operating at 10 or 100 Mbps.

Table 33. Pin Signals for 10 and 100 Mbps

Pin	MDI Signal	MDI-X Signal
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
4	Not used	Not used
5	Not used	Not used
6	RX-	TX-
7	Not used	Not used
8	Not used	Not used

Table 34 lists the pin signals when the port is operating at 1Gbps.

Table 34.   Pin Signals for 1Gbps

Pinout	Pair
1	Pair 1 +
2	Pair 1 -
3	Pair 2 +
4	Pair 3 +
5	Pair 3 -
6	Pair 2 -
7	Pair 4 +
8	Pair 4 -

RJ-45 Style Serial Console Port Pinouts

Table 35 lists the pin signals of the RJ-45 style serial Console port.

Table 35.   RJ-45 Style Serial Console Port Pin Signals

Pin	Signal
1	Looped to pin 8
2	Looped to pin 7
3	Transmit Data
4	Ground
5	Ground
6	Receive Data
7	Looped to pin 2
8	Looped to pin 1

Table 36 lists the pin signals of the DC-IN x320-10GH switch.

Table 36.   x320-10GH DC-IN Pin Signals

Pin	Name	Function
1	+54V	+54.5V
2	54V_return	+54.5V return
3	SG_54V	Signal GND of 54.5V
4	CurrentShare_54V	Current share pin for 54.5V
5	PG_54V	Power good pin for 54V
6	NC	Required for isolation between FG and others
7	FG	Earth GND

Appendix A: Technical Specifications