x530L Series

Stackable Gigabit Layer 3+ Ethernet Switches
AlliedWare Plus™ v5.4.9-2

AT-x530L-52GPX
AT-x530L-52GTX
AT-x530L-28GPX
AT-x530L-28GTX

Installation Guide for Virtual Chassis Stacking

Electrical Safety and Emissions Standards

This product meets the following standards.

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

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

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

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

EMC (Immunity): EN55024

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

Laser Safety   EN60825

Translated Safety Statements

Important: Safety statements that have the �⌐ symbol are translated into multiple languages in the *Translated Safety Statements* document at **www.alliedtelesis.com/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**.

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Preface

This guide contains the installation instructions for the x530L Series of stackable Gigabit, Layer 3+ Ethernet switches. This preface contains the following sections:

❐ "Document Conventions" on page 12

❐ "Contacting Allied Telesis" on page 13

> **Note**
> This guide explains how to install switches as a stack with Virtual Chassis Stacking (VCStack^{TM}). For instructions on how to install the devices as stand-alone switches, refer to the *x530L Series Installation Guide for Stand-alone Switches*.

Document Conventions

This document uses the following conventions:

Note
Notes provide additional information.

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

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

Contacting Allied Telesis

If you need assistance with this product, 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 site:

❒ 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 an 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 information, go to **www.alliedtelesis.com/ purchase** and select your region.

Chapter 1
Overview

This chapter contains the following sections:

Note
This guide explains how to install switches as a stack with Virtual Chassis Stacking (VCStack^{TM}). For instructions on how to install the devices as stand-alone switches, refer to the *x530L Series Installation Guide for Stand-alone Switches*.

Front and Rear Panels

The front panels on the x530L Series switches are shown in Figure 1 through Figure 4 on page 17.

Figure 1. AT-x530L-52GPX Front Panel

Figure 2. AT-x530L-52GTX Front Panel

Figure 3. AT-x530L-28GPX Front Panel

10 Mbps/100 Mbps/1 Gbps
Ports 1 - 24

1 Gbps SFP/10 Gbps SFP+
Transceiver Ports 25-28

Management
Panel
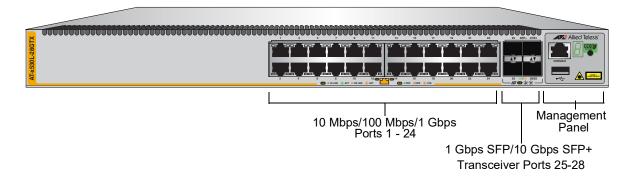
Figure 4. AT-x530L-28GTX Front Panel

The back panels on the x530L Series switches are shown in Figure 5 and
Figure 6.

AC Power
Supply
Connector

AC Power
Supply
Connector
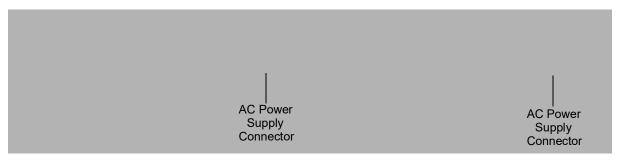
Figure 5. AT-x530L-52GPX and AT-x530L-28GPX Back Panel

AC Power
Supply
Connector

AC Power
Supply
Connector
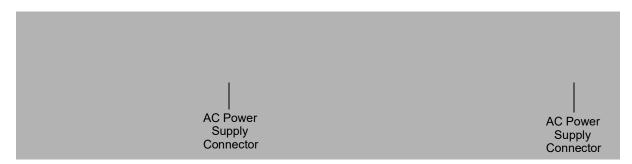
Figure 6. AT-x530L-52GTX and AT-x530L-28GTX and Back Panels

Management Panel
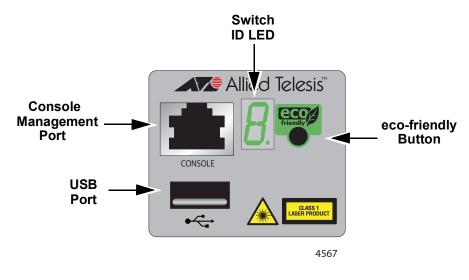
Figure 7 identifies the components on the management panel.

Figure 7. Management Panel

Features

The Allied Telesis x530L Series switches are stackable Gigabit, Layer 3+ Ethernet switches. The following sections list the features.

x530L Models   Table 1 lists the basic features for the switch model.

Table 1. Basic Features

Feature	AT-x530L-28GTX	AT-x530L-28GPX (PoE+)	AT-x530L-52GTX	AT-x530L-52GPX (PoE+)
10 Mbps, 100 Mbps and 1 Gbps Twisted Pair Ports	24	-	48	-
10 Mbps, 100 Mbps and 1 Gbps PoE+ Twisted Pair Ports	-	24	-	48
1 Gbps SFP and 10 Gbps SFP+ Transceiver Ports	4	4	4	4
VCStack	Yes	Yes	Yes	Yes

Each switch model comes with two pre-installed power supplies. They are not field-replaceable.

Twisted Pair Ports   The twisted pair ports on the AT-x530L-28GTX and AT-x530L-28GPX (1 to 24) and AT-x530L-52GTX and AT-x530L-52GPX (1 to 48) switches have the following features:

❒ Supports 10 Mbps, 100 Mbps and 1 Gbps operation

❒ 100 meters (328 feet) maximum operating distance per port

❒ Auto-Negotiation for speed

❒ Half-duplex mode at 10/100 Mbps

❒ Full-duplex mode at 10/100/1000 Mbps

❒ Auto-MDI/MDI-X at 10/100/1000 Mbps

❒ Port Link/Activity (L/A) and Duplex/Collision (D/C) LEDs

Power Over Ethernet

The basic features of PoE+ on the twisted pair ports on the AT-x530L-28GPX and AT-x530L-52GPX switches are:

❏ Supported on all ports

❏ Supports PoE (15.4 watts maximum) and PoE+ (30 watts maximum) powered devices

❏ 740W maximum power budget (37W per power supply)

❏ Supports powered device classes 0 to 4

❏ Port prioritization

❏ Mode A wiring

❏ IEEE802.3af/at compliant

SFP+ Transceiver Slots

The four SFP+ transceiver slots in the AT-x530L-28GTX and AT-x530L-28GPX switches (ports 25-28), and AT-x530L-52GTX and AT-x530L-52GPX (49-52) support the following types of transceivers:

❏ 1 Gbps SX/LX SFP transceivers

❏ 10 Gbps SR/LR SFP+ fiber optic transceivers

❏ 10 Gbps AT-SP10TW direct connect twinax cables with SFP+ transceiver-style connectors

Note
For a current list of supported transceiver modules refer to the *x530 Series Data Sheet*

The following restrictions on SFP+ transceivers apply:

❏ 100 Mbps transceivers are not supported

❏ Supports full-duplex mode only

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

LEDs

The port LEDs are:

❏ Link/activity LEDs for the twisted pair ports

❏ Link/activity LEDs for the SFP and SFP+ transceiver ports

❏ PoE+ LEDs for the twisted pair ports on the AT-x530L-28GPX and AT-x530L-52GPX switches

❏ Full/Half/Collision LEDs for the twisted pair ports on the AT-x530L-28GTX and AT-x530L-52GTX switches

❏ Switch ID number LED

Installation Options

The installation options are:

- ❒ Desk or tabletop
- ❒ 19-inch equipment rack
- ❒ Wood or concrete wall

Management Software and Interfaces

The management software and interfaces are:

- ❒ AlliedWare Plus Management Software
- ❒ Command line interface (CLI)
- ❒ Web browser interface

Management Methods

The following methods are used for managing the switches:

- ❒ Local management through the Console port
- ❒ Remote Telnet or Secure Shell management
- ❒ Remote HTTP or HTTPS web browser management
- ❒ SNMPv1, v2c, and v3

Twisted Pair Ports

The specifications of the twisted pair ports are listed in Table 2 through Table 5.

Table 2. AT-x530L-28GTX Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 24: 10 Mbps, 100 Mbps or 1 Gbps. 10 Mbps/100 Mbps: Set the port speed manually or with Auto-Negotiation. 1 Gbps: The port speed is set with Auto-Negotiation only. The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 24: 10 Mbps/100 Mbps: Full- or half-duplex mode. 1 Gbps: Full-duplex mode only. Supports Auto-Negotiation at 10 Mbps and 100 Mbps.
Maximum Distance	100 meters (328 feet).
Connector	8-pin RJ-45.

Table 3. AT-x530L-28GPX Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 24: 10 Mbps, 100 Mbps or 1 Gbps.
	10 Mbps/100 Mbps: Set the port speed manually or with Auto-Negotiation.
	1 Gbps: The port speed is set with Auto-Negotiation only.
	The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 24:
	10 Mbps/100 Mbps: Full- or half-duplex mode.
	1 Gbps: Full-duplex mode only.
	Supports Auto-Negotiation at 10 Mbps and 100 Mbps.
Maximum Distance	100 meters (328 feet).
Power over Ethernet	PoE (15.4W maximum per port) and PoE+ (30W maximum per port).
Maximum Power Budget	740W (370W per power supply).
PoE Mode	Mode A.
Connector	8-pin RJ-45.

Table 4. AT-x530L-52GTX Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 48: 10 Mbps, 100 Mbps or 1 Gbps.
	10 Mbps/100 Mbps: Set the port speed manually or with Auto-Negotiation.
	1 Gbps: The port speed is set with Auto-Negotiation only.
	The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 48:
	10 Mbps/100 Mbps: Full- or half-duplex mode.
	100 Mbps: Full- or half-duplex mode.
	1 Gbps: Full-duplex mode only.
	Supports Auto-Negotiation at 10 Mbps and 100 Mbps.
Maximum Distance	100 meters (328 feet).
Connector	8-pin RJ-45.

Table 5. AT-x530L-52GPX Switch Twisted Pair Port Specifications

Specification	Description
Port Speed	Ports 1 - 48: 10 Mbps, 100 Mbps or 1 Gbps.
	10 Mbps/100 Mbps: Set the port speed manually or with Auto-Negotiation.
	1 Gbps: The port speed is set with Auto-Negotiation only.
	The default is Auto-Negotiation for all ports.
Duplex Mode	Ports 1 - 48:
	10 Mbps/100 Mbps: Full- or half-duplex mode.
	1 Gbps: Full-duplex mode only.
	Supports Auto-Negotiation at 10 Mbps and 100 Mbps.
Maximum Distance	100 meters (328 feet).
Power over Ethernet	PoE (15.4W maximum per port) and PoE+ (30W maximum per port).
Maximum Power Budget	740W (370W per power supply).
PoE Mode	Mode A.
Connector	8-pin RJ-45.

Speed   On AT-x530L-28GTX and AT-x530L-28GPX switches, ports 1 to 24 operate at 10 Mbps, 100 Mbps or 1 Gbps. On AT-x530L-52GTX and AT-x530L-52GPX switches, ports 1 to 48 operate at 10 Mbps, 100 Mbps or 1 Gbps. The ports must be set to Auto-Negotiation to operate at 1 Gbps. 10 Mbps and 100 Mbps can be set with Auto-Negotiation or manually. Auto-Negotiation is the default setting.

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

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

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

The speed and duplex mode settings of a port can be set independently of each other. For example in the case of a 10 Mbps or 100 Mbps port, it can be configured such that its speed is set manually while its duplex mode is established through Auto-Negotiation.

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

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

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

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

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

Cable Requirements Minimum twisted pair cable requirements are as follows:

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

❏ 1 Gbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling

Port Pinouts Refer to Table 25 on page 141 for the port pinouts of the 10 Mbps, 100 Mbps and 1 Gbps twisted pair ports.

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

AT-x530L-28GTX

The LEDs indicate Link/Activity (L/A) and Duplex/Collision (FDX/HDX/COL) information. These LEDs are shown in Figure 8.
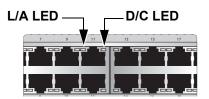
Figure 8. AT-x530L-28GTX Twisted Pair Port LEDs

The states of the AT-x530L-28GTX LEDs are described in Table 6.

Table 6. AT-x530L-28GTX Twisted Pair Ports 1 - 24 LED Functions

LED	Ports	State	Description
L/A	1 - 24	Solid Green	The port has established a 1 Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1 Gbps.
		Solid Amber	The port has established a 10 Mbps or 100 Mbps link to a network device.
		Flashing Amber	The port is transmitting or receiving data at 10 Mbps or 100 Mbps.
		Off	Possible causes of this state are: - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 6. AT-x530L-28GTX Twisted Pair Ports 1 - 24 LED Functions (Continued)

LED	Ports	State	Description
D/C	1 - 24	Solid Green	The port is operating in full-duplex mode.
		Solid Amber	The port is operating in half-duplex mode.
		Flashing Amber	The port is operating in half-duplex mode with collisions.

AT-x530L-52GTX

The LEDs indicate Link/Activity (L/A) and Duplex/Collision (FDX/HDX/ COL) information. These LEDs are shown in Figure 9.

L/A LED ——————   ——————D/C LED

Figure 9. AT-x530L-52GTX Twisted Pair Port LEDs

The states of the AT-x530L-52GTX LEDs are described in Table 7.

Table 7. AT-x530L-52GTX Twisted Pair Ports 1 - 48 LED Functions

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

Table 7. AT-x530L-52GTX Twisted Pair Ports 1 - 48 LED Functions (Continued)

LED	Ports	State	Description
D/C	1 - 24	Solid Green	The port is operating in full-duplex mode.
		Solid Amber	The port is operating in half-duplex mode.
		Flashing Amber	The port is operating in half-duplex mode with collisions.

AT-x530L-28GPX

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

L/A LED ——| |—— PoE LED

Figure 10. AT-x530L-28GPX Twisted Pair Ports

The states of the AT-x530L-28GPX LEDs are described in Table 8.

Table 8. AT-x530L-28GPX Twisted Pair Ports 1 - 24 LED Functions

LED	Ports	State	Description
L/A	1 - 24	Solid Green	The port has established a 1 Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1 Gbps.
		Solid Amber	The port has established a 10 Mbps or 100 Mbps link to a network device.
		Flashing Amber	The port is transmitting or receiving data at 10 Mbps or 100 Mbps.
		Off	Possible causes of this state are: - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 8. AT-x530L-28GPX Twisted Pair Ports 1 - 24 LED Functions (Continued)

LED	Ports	State	Description
PoE	1 - 24	Solid Green	PD On - The switch is delivering power to a powered device connected to the port.
		Solid Amber	PD Error - The switch has shut down PoE on the port because of a fault condition.
		Flashing Amber	PD Max Current - The switch has detected a powered device on the port but is not delivering power to it because doing so would exceed its available power budget.
		Off	No PD - This LED state can result from the following conditions: - The port is not connected to a powered device or the device is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

AT-x530L-52GPX

The LEDs indicate Link/Activity (L/A) and PoE (PD ON/PD ERR/MAX CURRENT) information. These LEDs are shown in Figure 11.
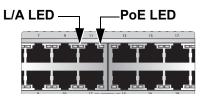
Figure 11. AT-x530L-52GPX Twisted Pair Ports

The states of the AT-x530L-52GPX LEDs are described in Table 9 on page 31.

Table 9. AT-x530L-52GPX Twisted Pair Ports 1 - 48 LED Functions

LED	Ports	State	Description
L/A	1 - 48	Solid Green	The port has established a 1 Gbps link to a network device.
		Flashing Green	The port is transmitting or receiving data at 1 Gbps.
		Solid Amber	The port has established a 10 Mbps or 100 Mbps link to a network device.
		Flashing Amber	The port is transmitting or receiving data at 10 Mbps or 100 Mbps.
		Off	Possible causes of this state are: - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
PoE	1 - 48	Solid Green	PD On - The switch is delivering power to a powered device connected to the port.
		Solid Amber	PD Error - The switch has shut down PoE on the port because of a fault condition.
		Flashing Amber	PD Max Current - The switch has detected a powered device on the port but is not delivering power to it because doing so would exceed its available power budget.
		OFF	No PD - This LED state can result from the following conditions: - The port is not connected to a powered device or the device is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Power Over Ethernet

The AT-x530L-28GPX and AT-x530L-52GPX switches feature PoE on twisted pair ports. With PoE, the switch supplies DC power to network devices over the same twisted pair cables that carry the network traffic.

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

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

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

The AT-x530L-28GPX and AT-x530L-52GPX switches automatically determine whether devices connected to their ports are powered devices. Ports that are connected to network nodes that are not powered devices (that is, devices that receive their power from another power source) function as regular Ethernet ports, without PoE. The PoE feature remains activated on the ports but no power is delivered to the devices.

PoE Standards

The AT-x530L-28GPX and AT-x530L-52GPX switches support these PoE standards:

❑ PoE (IEEE 802.3af): This standard provides up to 15.4 watts at the switch port for powered devices that require up to 13.0 watts.

❑ PoE+ (IEEE 802.3at): This standard provides up to 30.0 watts at the switch port for powered devices that require up to 25.5 watts.

Powered Device Classes

Powered devices are grouped into the five classes listed in Table 10. The classes are based on the amount of power the devices require. The switch supports all five classes.

Table 10. IEEE Powered Device Classes

Class	Maximum Power Output from a Switch Port	PD Power Range
0	15.4W	0.44W to 13.0W
1	4.0W	0.44W to 3.84W
2	7.0W	3.84W to 6.49W
3	15.4W	6.49W to 13.0W
4	30.0W	13.0W to 25.5W

Power Budget

The AT-x530L-28GPX and AT-x530L-52GPX switches have two power supplies. Each power supply provides 370W for a total PoE of 740W. This is the total maximum amount of power that the switch can supply to powered devices on the 24/48 PoE+ twisted pair ports. The number of powered devices that the switches can support at one time will depend on their power requirements. For instance, under normal operating conditions, the switches can support up to 12 Class 4 powered devices with the maximum 25.5W.

Port Prioritization

The power requirements of the PoE devices determine the maximum number of devices the switch can support at one time. So long as the total power requirements of the power devices is less than the power budget of the switch, the switch can supply power to all the devices. But if the total power requirements exceed the power budget, the switch denies power to one or more ports using a mechanism referred to as port prioritization.

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

There are three priority levels:

❏ Critical

❏ High

❏ Low

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

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

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

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

Wiring Implementation

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

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

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

The ports on the AT-x530L-28GPX and AT-x530L-52GPX switch deliver power using Mode A.

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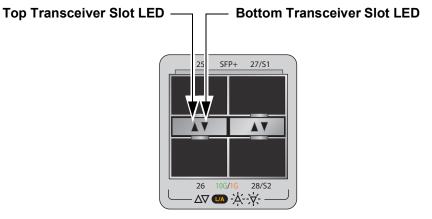
SFP+ Transceiver Slots

The Switches AT-x530L-28GPX and AT-x530L-28GTX have four slots (ports 25 - 28) and switches AT-x530L-52GPX and AT-x530L-52GTX have four slots (ports 49 - 52) for 1 Gbps/10 Gbps SFP or SFP+ transceivers.

SFP and SFP+ Transceivers

See "SFP+ Transceiver Slots" on page 20 for a description and guidelines of the SFP+ transceivers.

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

LEDs

Each transceiver slot has one LED. The LEDs are located between the slots. Refer to Figure 12.

Figure 12. Link and Activity LEDs for the 1 Gbps/10 Gbps SFP+ Slots

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

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

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

eco-friendly Button

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

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

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

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

VCStack Feature

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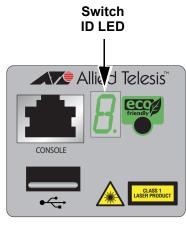
❒ You can manage multiple units simultaneously, which can simplify network management.

❒ You have more flexibility in how you configure some of the features. For instance, a static port trunk on a stand-alone switch can consist of ports from the same switch. In contrast, a static trunk on a stack can have ports from different switches in the same stack.

Note
This guide explains how to install switches as a stack with Virtual Chassis Stacking (VCStack™). For instructions on how to install the devices as stand-alone switches, refer to the *x530L Series Installation Guide for Stand-alone Switches*.

Switch ID LED
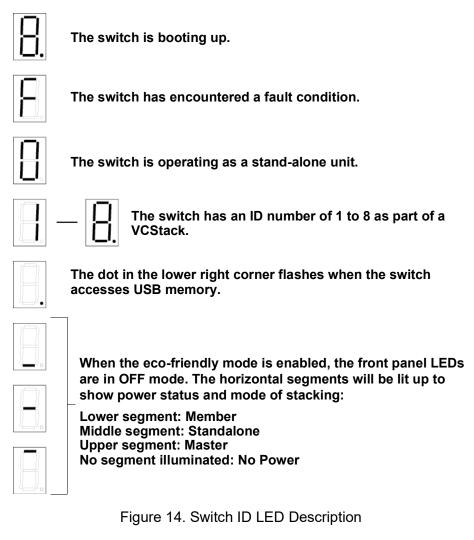
The switch ID LED, shown in Figure 13, displays the ID number of the switch. A stand-alone switch has the ID number 0. Switches in a VCStack have the numbers 1 to 8. Chapter 7, "Powering On the Stack" on page 101 has the procedure for setting the ID numbers of the switches in a stack.

Figure 13. Switch ID LED

The states of the LED when the switch is not operating in the low power mode are shown in Figure 14.

The switch is booting up.

The switch has encountered a fault condition.

The switch is operating as a stand-alone unit.

The switch has an ID number of 1 to 8 as part of a VCStack.

The dot in the lower right corner flashes when the switch accesses USB memory.

When the eco-friendly mode is enabled, the front panel LEDs are in OFF mode. The horizontal segments will be lit up to show power status and mode of stacking:

Lower segment: Member
Middle segment: Standalone
Upper segment: Master
No segment illuminated: No Power

Figure 14. Switch ID LED Description

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

❏ A cooling fan has failed.

❏ The internal temperature of the switch has exceeded the normal operating range and the switch may shut down.

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

USB Port

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

❒ Store configuration files on flash drives.

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

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

❒ Update the management firmware.

The port is USB 2.0-compatible.

Console Port

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

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

The Console port has the following settings:

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

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

Power Supply

All x530L Series switches come with dual pre-installed AC power supplies. Refer to "Power Specifications" on page 138 for the input voltage ranges.

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

Note
Power supplies are not field-replaceable.

Software and Hardware Releases

Software and hardware releases for the AlliedWare Plus operating software and AT-x530L Series switches are listed in Table 12.

Table 12. Software and Hardware Releases

Software Version	Hardware	VCStack
v5.4.8-2	AT-x530L-28GPX switch AT-x530L-28GTX switch	Allows stacks of up to four switches using the SFP/SFP+ transceiver slots for the stack trunk.
v5.4.9-2	Adds the following switches: AT-x530L-52GPX switch AT-x530L-52GTX switch	Allows stacks of up to eight switches using the SFP/SFP+ transceiver slots or the 1/2.5/5 Gbps ports for the stack trunk.

Chapter 2
Virtual Chassis Stacking

The following sections are discussed in this chapter:

Note
For more information on VCStack, refer to the *Stacking Introduction and Stacking Commands* chapters in the *Software Reference for* x530L *Series Switches, AlliedWare Operating System* from **www.alliedtelesis.com**.

Overview

The VCStack feature is used to connect multiple x530L Series switches into a single, virtual networking unit. Some of the benefits of the VCStack feature are listed here:

❒ Simplifies management - You can manage the devices of the stack as a single unit, rather than individually. Your local and remote management sessions give you management access to all the switches in the stack.

❒ Reduces IP addresses - A stack requires only one IP address for remote management access, thereby reducing the number of IP addresses you have to assign to network devices.

❒ Adds feature flexibility and resiliency - A stack gives you flexibility in the available configurations of features. For example, you can create port aggregators of ports from different switches in a stack, rather than from only one switch. Distributing the ports of an aggregator across two or more switches in a stack increases its resiliency because it can continue to function, though at a reduced bandwidth, even if one of the switches stops functioning.

❒ Reduces protocol requirements - Building a stack might eliminate the need to configure some protocols, such as the Virtual Router Redundancy Protocol or Spanning Tree Protocol.

Stacking Guidelines

This section lists the general guidelines to building a VCStack of x530L switches.

❐ A stack can have up to eight x530L Series switches.

❐ Stacking is enabled by default on x530L Series switches.

❐ The switches of a stack must be connected with a stack trunk, consisting of a minimum of two ports per switch.

❐ The default stacking ports of:

– AT-x530L-28GPX and AT-x530L-28GTX are ports 27 and 28.

– AT-x530L-52GPX and AT-x530L-52GTX are ports 51 and 52.

❐ You can increase the bandwidth and resiliency of the stack trunk by using the following as additional stacking ports:

– AT-x530L-28GPX and AT-x530L-28GTX ports 25 and 26.

– AT-x530L-52GPX and AT-x530L-52GTX ports 49 and 50.

❐ Although the ports support both 1 Gbps and 10 Gbps transceivers, stack trunks require 10 Gbps transceivers. Stack trunks are not supported with 1 Gbps transceivers.

❐ No additional software or licenses are required for stacking.

❐ The switches of a stack can be the same or different x530L Series models.

❐ A stack of x530L Series switches cannot contain other stacking switches, such as x600 or x610 Series switches.

❐ The switches of a stack must be connected with a stack trunk consisting of a minimum of two ports on each device.

❐ The links of a stack trunk must be direct connections between switches. You cannot install a networking device, such as a media converter or Ethernet switch, between two stacking ports.

❐ SFP+ transceivers and direct attach cables used for a stack trunk must be from Allied Telesis. Switches will not form a stack with transceivers from other network equipment providers. For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

10 Gbps Stack Trunks

You can build stack trunks with 10 Gbps SFP+ transceiver slots on the switches. The guidelines are described here:

❒ Stacks can have up to eight switches.

❒ For stacking ports, you can use:

– AT-x530L-28GPX and AT-x530L-28GTX ports 25 to 28 at 10 Gbps.

– AT-x530L-52GPX and AT-x530L-52GTX ports 49 to 52 at 10 Gbps.

❒ The following ports cannot be used in a stack trunk:

– AT-x530L-28GPX and AT-x530L-28GTX ports 1 to 24.

– AT-x530L-52GPX and AT-x530L-52GTX ports 1 and 48.

❒ SFP+ transceivers must be from Allied Telesis and be approved for use in the product. For a list of supported 10 Gbps SFP+ transceivers, refer to the product data sheet on the Allied Telesis web site.

Note
Transceivers are purchased separately.

❒ The 10 Gbps stacking ports and transceiver slots can be used as regular networking ports by disabling the stacking feature.

❒ A stack trunk can be either linear or ring. Ring is recommended because it adds redundancy. The stack can continue to function even if a trunk link fails. See Figure 15 on page 51.

❒ A stack trunk can have either fiber optic or AT-SP10TW direct connect cables, do not use both types in the same stack.

Figure 15 shows examples of stack trunks for two, three, and four switches, using the default stacking ports 27 and 28.

Stack of Two Switches

Stack of Three Switches

Stack of Four Switches
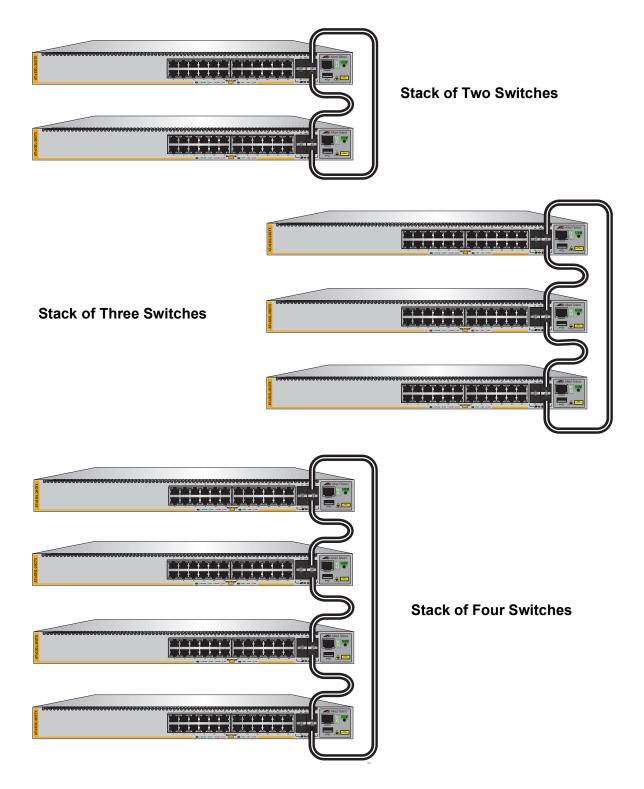
Figure 15. Valid Stack Trunk Using Default Stacking Ports 49 to 52
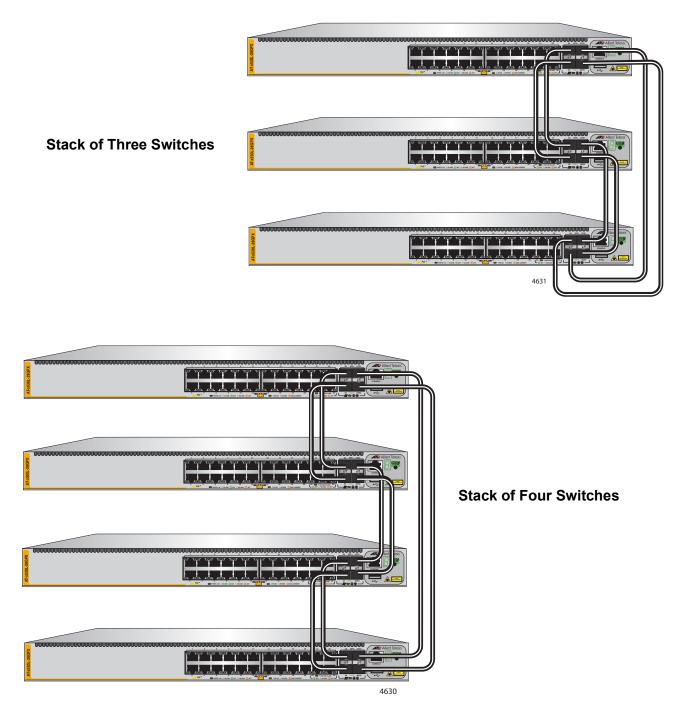
In stacks of three or more switches the amount of inter-switch network traffic might require a stacking trunk with greater bandwidth than that provided by the default ports of:
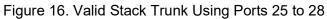
❑ AT-x530L-28GPX and AT-x530L-28GTX ports 27 and 28.

❑ AT-x530L-52GPX and AT-x530L-52GTX ports 51 and 52.

For such situations additional ports can be used:

❑ AT-x530L-28GPX and AT-x530L-28GTX ports 25 and 26.

❑ AT-x530L-52GPX and AT-x530L-52GTX ports 49 and 50.

Figure 16 shows examples of stacks of three and four switches using all four SFP+ ports for the stack trunk.

Stack of Three Switches

Stack of Four Switches

Figure 16. Valid Stack Trunk Using Ports 25 to 28

Invalid Stack Trunks

Figure 17 through Figure 20 on page 56 show examples of different types of invalid stack trunks.

Example 1 Stack trunks must be direct links between trunk ports. There cannot be any intermediary networking devices, such as media converters, Ethernet switches, or routers, between trunk ports. Figure 17 is an example of this type of invalid trunk.
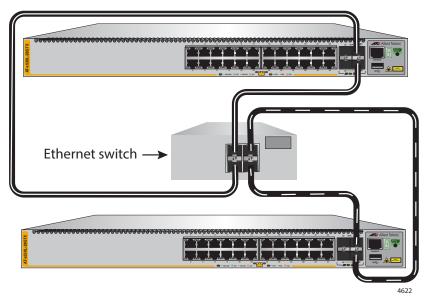
Figure 17. Invalid Stack Trunk with an Intermediary Networking Device

Example 2 Trunks must have a minimum of two ports used per switch. Figure 18 is an example of an invalid stack trunk with one port used per switch.
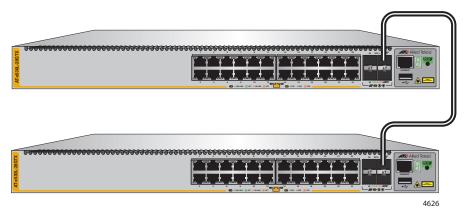
Figure 18. Invalid Stack Trunk with One Port Used Per Switch

Example 3   Trunks must have the same number of physical links between switches. Figure 19 is invalid because the top and middle switches are connected with two links while the top and middle switches are connected to the bottom switch with only one link each.

4628
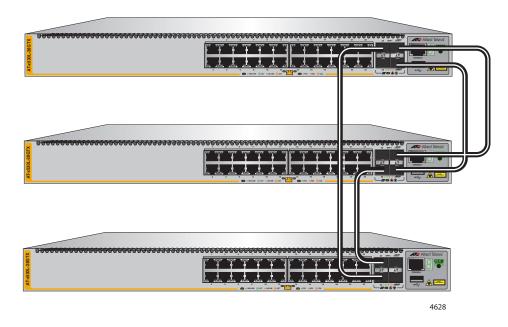
Figure 19. Invalid Stack Trunk with Different Numbers of Links

Example 4   Stack trunks can have either fiber optic transceivers or AT-SP10TW direct attach cables, but not both. Figure 20 shows an example of an invalid 10 Gbps stack trunk because it has both fiber optic and AT-SP10TW direct connect cables.
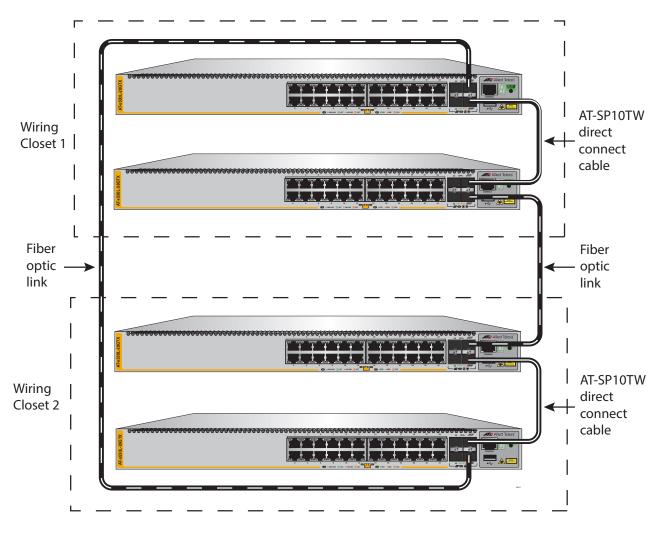
Figure 20. Invalid 10 Gbps Stack Trunk with Both Fiber Optic and AT-SP10TW Direct Connect Cables

Master and Member Switches

A stack has one master switch. The other switches are member switches. The main functions of the master switch are listed here:

❒ Coordinate and monitor stack operations.

❒ Configure the parameter settings of the switches using its configuration file in flash memory, whenever the stack is reset or powered on.

❒ Verify that the switches are using the same version of management software. It automatically downloads its management software to the member switch over the stacking cables if the member switch has a different version of the management software.

❒ Verify that the switches have different ID numbers. It automatically assigns new ID numbers to resolve situations where two or more switches have the same ID number.

❒ Verify that the stacking transceivers are from Allied Telesis and they are cabled correctly.

The parameter settings of the switches of the stack are stored in configuration files in the flash memories of the master and member switches. Each file contains all the settings for the switches in the stack. The switches update the files with the latest parameter settings whenever you issue the WRITE command to save your changes.

When you reset or power on the stack, the master switch uses the configuration file in its flash memory to restore its own parameter settings as well as the parameter settings of the member switches in the stack. A member switch uses its configuration file to restore parameter settings only if the master switch is removed or fails, and it becomes the new master switch of the stack.

Selection of the Master Switch

The switches of a stack select the master switch during the initialization process, which they perform whenever they are powered on or reset. The master switch is selected using the following parameters:

❒ Stack priority numbers

❒ MAC addresses

The stack priority number is an adjustable value of 0 to 255. The lower the number, the higher the priority. The switch with the lowest priority number (highest priority) becomes the master switch of a stack. The default priority value is 128.

When switches have the same priority values, they compare their MAC addresses to select the master switch. As with the priority value, the lower the MAC address, the higher the priority. The switch with the lowest MAC address becomes the master switch.

If you power on the stack for the first time without adjusting the priority values, the master switch is selected based on the MAC addresses if the units are powered on simultaneously. If you power on the switches one at a time, the master switch is the first switch to be powered on.

You can set the priority values of the switches either before or after you build the stack. Changing the values after the stack is operating does not change the parameter settings of the stack or the ID numbers of the devices.

It should be noted that the master switch of a stack does not have to have the ID number 1. It can have any ID number.

Switch ID Numbers

Each switch in a stack must have a unique ID number. The possible ID numbers depend on the version number of the AlliedWare Plus management software. The ID numbers 1 to 8 for up to eight switches in a stack with AlliedWare Plus v5.4.9-2 or later. The default is 1.

The ID numbers are displayed on the ID LEDs on the front panels of the units. You can assign the numbers yourself or let the master switch assign the numbers automatically when you initially power on the stack.

Use the ID numbers to identify the individual switches and ports when configuring the devices with the commands in the management software.

The ID numbers are also used to identify the parameter settings of the switches in the configuration files. When the stack is reset or power cycled, the master switch uses the ID numbers to identify the devices to which the parameter settings belong.

⚠️ **Caution**

Do not change the ID numbers of the switches after configuring the parameter settings of the stack. Otherwise, the parameter settings might be applied to the wrong devices when you reset or power cycle the stack. ↩ E79

The switches do not use the ID numbers to select the master switch. The selection of the master switch is based on their priority numbers and MAC addresses, as explained in "Selection of the Master Switch" on page 57.

Optional Feature Licenses

The x530L Series switches comes with the AlliedWare Plus operating system and a base set of features that are available as soon as you install the devices. Allied Telesis offers additional features and capabilities for the switches. They come with the AlliedWare Plus operating system, but have to be unlocked before you can use them. Unlocking optional features requires licenses from Allied Telesis. For a list of optional feature licenses for the product, refer to its product sheet on the Allied Telesis web site.

Here are the guidelines to feature licenses for a stack of x530L Series switches:

❒ The VCStack feature is part of the base features of the switch. It does not require an additional feature license.

❒ You can install feature licenses while the switches are operating as stand-alone units or a stack.

❒ When ordering feature licenses for the switches of a stack, you must order one license for each switch.

❒ The switches will form a stack even if they have different feature licenses. However, the additional features are only available on those switches that have the necessary licenses. The stack generates a warning message if it detects that the switches do not have the same feature licenses. To resolve the issue, you can use the REMOTE-LOGIN command to log onto the individual switches in a stack to install new licenses. For more information, refer to the *Software Reference for* x530L *Series Switches, AlliedWare Operating System* from **www.alliedtelesis.com**.

Planning the Stack

Here are factors to consider when planning a stack:

❒ How many x530L switches will be in the stack? The maximum is eight devices.

❒ Have you determined the required number of SFP+ transceivers or AT-SP10TW direct attach cables for the trunk? Refer to Figure 15 on page 51 and Figure 16 on page 53.

❒ Have you selected a master switch? This can be any switch. If the switches have different versions of the AlliedWare Plus management software, the master switch should have the most recent version. Refer to "Master and Member Switches" on page 57.

❒ Have you selected ID numbers, in the range of 1 to 8, for the switches? You can control the ID number assignments by the order in which you initially power on the switches, or you can have the switches assign the numbers automatically. Refer to "Switch ID Numbers" on page 59.

Stacking Worksheet

Configuring and maintaining a stack will be easier if you use the worksheet in Table 13.

Table 13. Stacking Worksheet

Switch	Switch Model/ Location	ID	Priority	AW+ Version Number	Trunk Ports
Master		1	1		
Member		2	2		
Member		3	3		
Member		4	4		

The table columns are described in Table 14.

Table 14. Stacking Worksheet Columns

Column	Description
Location	You use this column to write down the physical locations of the devices, such as their buildings or equipment rooms. The information can be useful in locating the switches of the stack if they are in different locations.
ID	Each switch in a stack has to have a unique ID number, in the range of 1 to 4. They display the numbers on the ID LEDs on the front panels and you use the numbers to configure the individual ports. Allied Telesis recommends assigning the ID 1, the default value, to the master switch. You should decide ahead of time, before beginning the configuration procedures, the ID assignments of the switches.

Table 14. Stacking Worksheet Columns (Continued)

Column	Description
Priority	When the switches of a stack are reset or powered on, they perform an initialization process that involves, in part, choosing the master switch. The selection is based on their priority numbers and MAC addresses. The former is an adjustable parameter with a range of 0 to 255 and a default value of 128. The lower the value, the higher the priority. Thus, the switch with the lowest value becomes the stack master. If switches have the same priority number, the master is selected based on their MAC addresses. Again, as with priority numbers, the lower the MAC address, the higher the priority. Allied Telesis recommends setting each switch's priority value to match its ID value. This is to ensure that the switch you have chosen to be the master unit will indeed function in that role. Additionally, it will make it possible for you to know the order in which the switches assume the master role if the primary master should fail or be powered off.
AW+ Version Number	This column is for writing down the version numbers of the AlliedWare Plus management software on the switches. The switches might not be able to form the stack if they have different versions. The configuration instructions explain how to view the version numbers. If they have different versions, you should update them to the most recent release before building the stack.
Trunk Ports	This column is for the ports of the trunk. This will be the default ports 17 and 21 or the optional trunk ports. If you have not yet chosen the ports yet, you should do so before beginning the configuration procedures.

Chapter 3
Beginning the Installation

This 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 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
Class 1 Laser product. ↶ L1

Warning
Laser Radiation.
Class 1M Laser product.

Warning
Do not stare into the laser beam. ↶ L2

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

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

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

Warning

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

Warning

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

Note

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

Caution

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

Warning

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

Note

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

Warning

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

Caution

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

Caution

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

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

Warning

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

Warning

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

Note

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

Warning

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

Note

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

Caution

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

Warning

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

Warning

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

Warning

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

Caution

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

Warning

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

Caution

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

Warning

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

Choosing a Site for the Switch

Observe these requirements when planning the installation of the switch.

❑ Before installing the switch in an equipment rack, check that the rack is safely secured so that it will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.

❑ Before installing the switch on a table, check that the table is level and stable.

❑ The power outlets should be located near the switch and be easily accessible.

❑ The site should allow for easy access to the ports on the front of the switch, so that you can easily connect and disconnect cables, and view the port LEDs.

❑ The site should allow for adequate air flow around the unit and through the cooling vents on the front and rear panels. (The ventilation direction is from front to back.)

❑ The site must not expose the switch to moisture or water.

❑ The site must be a dust-free environment.

❑ The site must have dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

❑ Do not install the switch in a wiring or utility box because it might overheat and fail from inadequate air flow.

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

Unpacking the Switch

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

❐ AT-x530L-28GTX, AT-x530L-28GPX, AT-x530L-52GTX, or AT-x530L-52GPX Switch

❐ Accessory kit (refer to Figure 22 on page 72)

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

Figure 21 shows the items provided in the shipping box for the switch.

4600
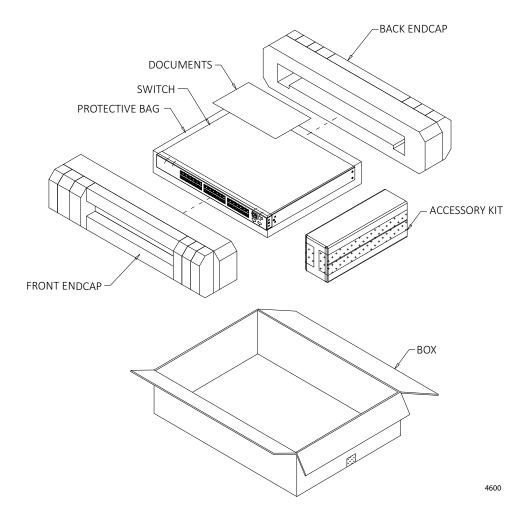
Figure 21. Switch Shipping Box Contents

Figure 22 lists the items that are included in the accessory kit. Contact your Allied Telesis sales representative for assistance if any item is missing or damaged.

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

Two regional AC power cords.

Wall/equipment rack brackets:
2 for AT-x530L-28GTX
2 for AT-x530L-52GTX
4 for AT-x530L-28GPX
4 for AT-x530L-52GPX

Screws to attach the wall/equipment rack brackets: 8 for AT-x530L-28GTX and AT-x530L-52GTX or 16 for AT-x530L-28GPX and AT-x530L-52GPX.
Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)

Anchors for concrete walls: 2 for AT-x530L-28GTX and AT-x530L-52GTX or 4 for AT-x530L-28GPX and AT-x530L-52GPX.
Length: 29.6mm (1.2 in.)
Diameter: 6.0mm (0.2 in.)

Screws for wood or concrete walls: 2 for AT-x530L-28GTX and AT-x530L-52GTX or 4 for AT-x530L-28GPX and AT-x530L-52GPX.
Length: 32mm (1.3 in.)
Diameter: 4mm (0.2 in.)

Two power cord retaining clips

Four rubber bumper feet

Figure 22. Accessory Kit Items

Chapter 4

Installing the Switch on a Table

This chapter contains the instructions for installing the switch on a table or desktop.

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

Installing the Bumper Feet

The switch comes with four bumper feet in the accessory kit. The feet, which are reusable, are used when installing the switch on a table. If they are already assembled, disassemble them by removing the rivets and rivet housings from the bumper feet. Refer to Figure 23.

Rivet

Rivet Housing

Bumper Foot
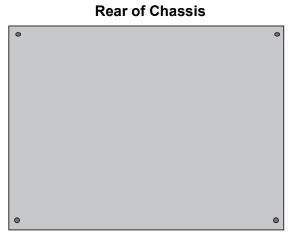
Figure 23. Parts of the Bumper Feet

The holes in the base of the switch for the bumper feet are shown in Figure 24 on page 74.

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

Rear of Chassis

Front of Chassis

Figure 24. Holes for Bumper Feet

Note
The following procedure assumes that you have already reviewed the information and performed the procedures in Chapter 3, "Beginning the Installation" on page 65.

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

1. Place the switch upside down on a table.

2. Insert a rivet housing into a bumper foot. Refer to Figure 25.
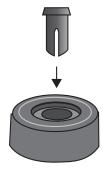
Figure 25. Inserting the Rivet Housing into the Bumper Foot

3. Place the bumper foot with rivet housing onto one of the holes in the base of the switch. Refer to Figure 26.
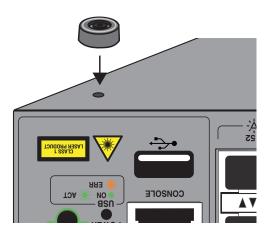
Figure 26. Placing the Bumper Foot on a Base Corner Hole

4. Insert the rivet to secure the bumper foot to the base. Refer to Figure 27 on page 76.
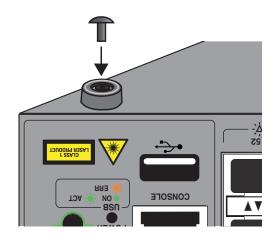
Figure 27. Inserting the Rivet into the Bumper Foot

5. Repeat steps 2 to 4 to install the remaining bumper feet.

6. Turn the switch over and place it on a flat, secure desk or table, leaving ample space around it for ventilation.

7. After placing the switch on the table or desktop, go to Chapter 7, "Powering On the Stack" on page 101.

Chapter 5
Installing the Switch in an Equipment Rack

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

❐ "Installing the Switch in an Equipment Rack" on page 78

Installing the Switch in an Equipment Rack

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

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

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

Switch Orientations in the Equipment Rack   The switch has two sets of four screw holes on the left and right sides, for attaching the brackets. Refer to Figure 28.

Bracket Holes
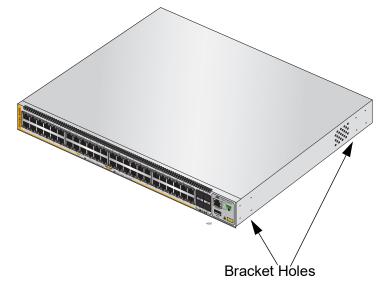
Figure 28. Bracket Holes on the Switch

You can use the different sets of holes on the switch to install the switch in the equipment rack in a variety of orientations. You can install it with the front panel flush with, extending in front of, or recessed behind the front of the equipment rack. The illustration in Figure 29 shows the switch orientation with the front panel even with the front of the equipment rack.
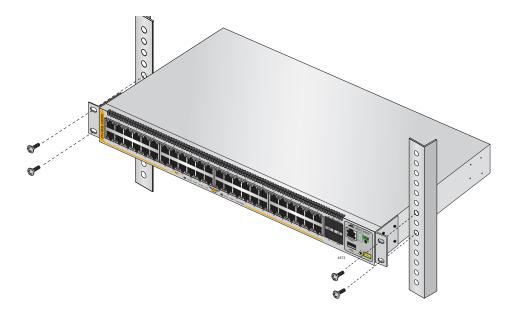
Figure 29. Switch Orientations in an Equipment Rack

Installing the Switch

If you have not chosen an orientation for the switch in the equipment rack, review "Switch Orientations in the Equipment Rack" on page 78.

Please review the installation guidelines in "Choosing a Site for the Switch" on page 70 before installing the switch in an equipment rack.

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

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

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

2. Attach the two brackets to the sides of the switch in the selected position, using the eight M4x6mm screws supplied with the unit. The illustration in Figure 30 shows the installation of the brackets such that the front panel of the switch is even with the front of the equipment rack.
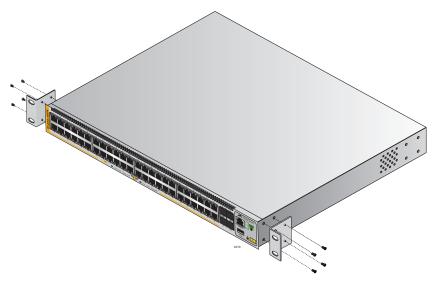
Figure 30. Example of Attaching the Brackets to the Switch

3. Have another person hold the switch at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 31.
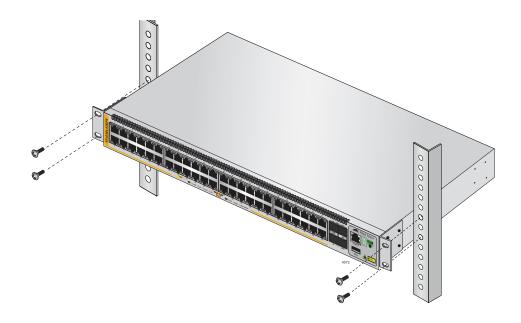
Figure 31. Installing the Switch in an Equipment Rack

4. Go to Chapter 7, "Powering On the Stack" on page 101.

Chapter 6
Installing the Switch on a Wall

The procedures in this chapter are listed here:

Switch Orientations on a Wall

Install the switch on a wall with the front panel on the up, left or right as shown in Figure 33. Do not install the switch with the front panel facing down.

Figure 32. Positioning the AT-x530L-28GTX or AT-x530L-52GTX Switch on the Wall

Note
The AT-x530L-28GTX and AT-x530L-52GTX switches require two brackets to mount. The AT-x530L-28GPX and AT-x530L-52GPX switches are heavier and require four brackets.
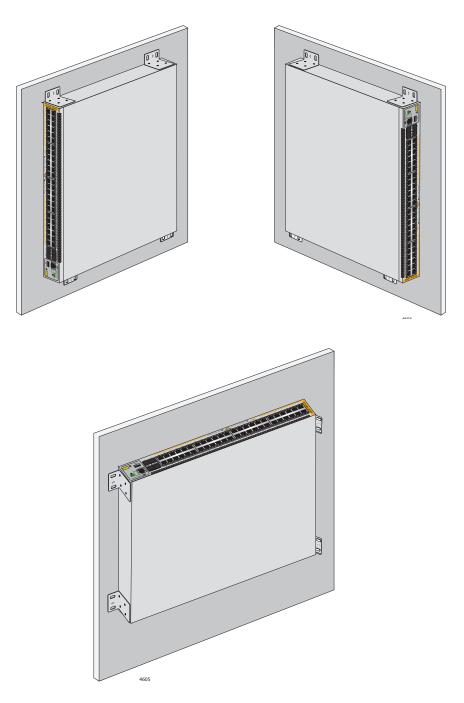
Figure 33. Positioning the AT-x530L-28GPX or AT-x530L-52GPX Switch on the Wall

Installation Guidelines

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

❑ Install the switch on a wall that has wooden studs or on a concrete wall.

❑ If you are installing the switch on a wall with wooden studs, use a plywood base to support the switch. For more information, refer to "Plywood Base for a Wall with Wooden Studs" on page 89. A plywood base is not required for a concrete wall.

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

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

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

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

Tools and Material

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

Included with switch:

- ❐ Wall/equipment rack brackets:
    - – Two for AT-x530L-28GTX and AT-x530L-52GTX
    - – Four for AT-x530L-28GPX and AT-x530L-52GPX
- ❐ Screws for attaching wall/equipment rack brackets:
    - – Eight for AT-x530L-28GTX and AT-x530L-52GTX
    - – Sixteen for AT-x530L-28GPX and AT-x530L-52GPX

    Length: 6.0mm (0.2 in.) Diameter: 4.0mm (0.2 in.)
- ❐ Anchors for concrete walls:
    - – Two for AT-x530L-28GTX and AT-x530L-52GTX
    - – Four for AT-x530L-28GPX and AT-x530L-52GPX

    Length: 29.6mm (1.2 in.) Diameter: 6.0mm (0.2 in.).
- ❐ Screws for wood or concrete walls
    - – Two for AT-x530L-28GTX and AT-x530L-52GTX
    - – Four for AT-x530L-28GPX and AT-x530L-52GPX

    Length: 32mm (1.3 in.) Diameter: 4mm (0.2 in.)
- ❐ Two power cord retaining clips
- ❐ Four rubber bumper feet

Not included with switch:

- ❐ Cross-head screwdriver.
- ❐ Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring.
- ❐ Drill and 1/4-inch carbide drill bit (for a concrete wall). Refer to "Installing the Switch on a Concrete Wall" on page 98.
- ❐ Plywood base (if you are installing the switch on a wall with wooden studs). Refer to "Plywood Base for a Wall with Wooden Studs" on page 89 for illustrations.
- ❐ Four screws for attaching the plywood base to the wall.
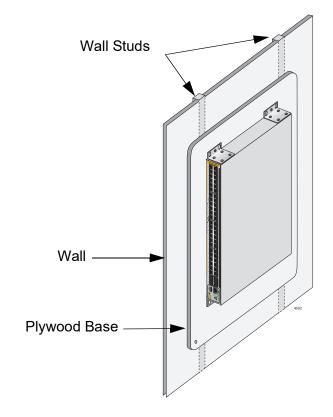
⚠️ **Caution**
The supplied screws and anchors might not be appropriate for all walls. A qualified building contractor can determine the hardware requirements for your wall prior to installing the switch. ➥ E88

Plywood Base for a Wall with Wooden Studs

If you are installing the switch on a wall that has wooden studs, use plywood base for the device. (A plywood base is not required for a concrete wall.) Refer to Figure 34.

Figure 34. Switch on the Wall with a Plywood Base
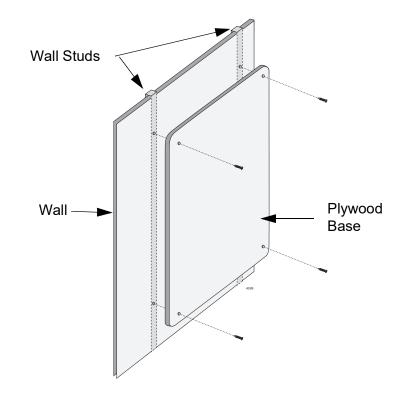
Mount the plywood base to two studs in the wall. The recommended minimum dimensions of the plywood base for the switch are:

❑ Width: 55.9 centimeters (22 inches)

❑ Height: 61.0 centimeters (24 inches)

❑ Thickness: 2.5 centimeters (1 inch)

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

To install the switch on the wall:

1. Install the plywood base on the wall and then install the switch on the base. Refer to Figure 35.

Figure 35. Installing the Plywood Base to the Wall

2. Install the switch on the plywood base. Refer to Figure 36.
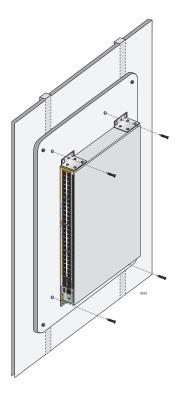
Figure 36. Installing the Switch on the Plywood Base

Installing a Plywood Base

A plywood base is recommended when installing the switch on a wall that has wooden studs. Refer to "Plywood Base for a Wall with Wooden Studs" on page 89. 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 must provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation.

Installing the Switch on a Plywood Base

After the plywood base for the switch has been installed on the wall, install the switch. See "Reviewing Safety Precautions" on page 66 and "Choosing a Site for the Switch" on page 70 before performing this procedure. Allied Telesis recommends a minimum of two people for this procedure.

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

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

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

1. Place the switch on a table.

2. For the AT-x530L-28GTX and AT-x530L-52GTX switches, install two wall/equipment rack brackets to the sides of the unit with the eight M4x6mm screws included with the switch. Install the brackets diagonally across from each other on opposite corners of the switch. Refer to Figure 37 on page 94. For the AT-x530L-28GPX and AT-x530L-52GPX switches, install four wall/equipment rack brackets to the sides of the unit with the 16 M4x6mm screws included with the switch. Refer to Figure 38 on page 95.

   Note
   The AT-x530L-28GPX and AT-x530L-52GPX require four brackets to be installed due to its weight. Whereas, the AT-x530L-28GTX and AT-x530L-52GTX only requires two brackets because it is lighter.

Brackets positions
to install the switch with
the front panel on the left.

Brackets positions
to install the switch with
the front panel on the right.
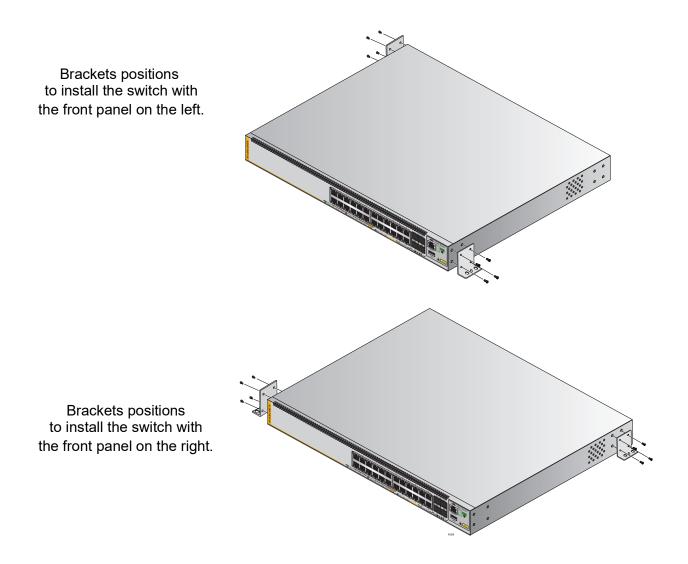
Figure 37. Installing Two Brackets on the AT-x530L-28GTX and AT-x530L-52GTX Switches
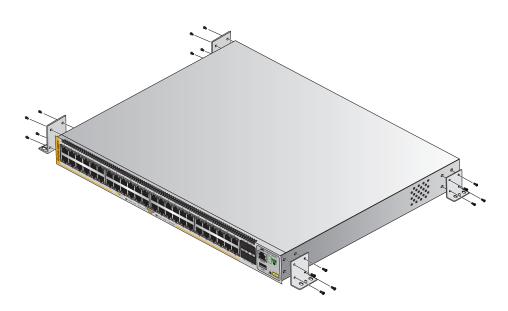
Figure 38. Installing Four Brackets on the AT-x530L-28GPX and AT-x530L-52GPX Switches

3. After attaching the brackets, have another person hold the switch on the plywood base on the wall while you secure it with the M4x32.3mm screws included with the switch. Refer to Figure 39 on page 96 for the AT-x530L-28GTX and AT-x530L-52GTX switches or Figure 40 on page 97 for the AT-x530L-28GPX and AT-x530L-52GPX switches.

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

❒   Position it so that the front panel is facing up, left or right. Refer to Figure 40. Do not install it with the front panel facing down.

❒   Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation.
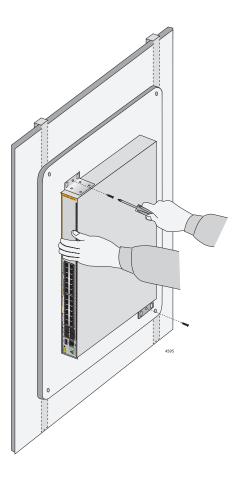
Figure 39. Securing the AT-x530L-28GTX and AT-x530L-52GTX Switches
to the Plywood Base
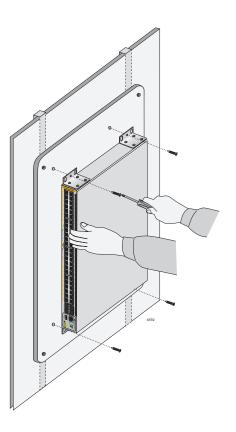
Figure 40. Securing the AT-x530L-28GPX and AT-x530L-52GPX Switches to the Plywood Base

4.   Go to Chapter 7, "Powering On the Stack" on page 101.

Installing the Switch on a Concrete Wall

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

❒ "Switch Orientations on a Wall" on page 84

❒ "Installation Guidelines" on page 86

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

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

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

1. Place the switch on a table.

2. For the AT-x530L-28GTX and AT-x530L-52GTX switches, install two wall/equipment rack brackets to the sides of the unit with the eight M4x6mm screws included with the switch. Install the brackets diagonally across from each other on opposite corners of the switch. Refer to Figure 37 on page 94. For the AT-x530L-28GPX and AT-x530L-52GPX switches, install four wall/equipment rack brackets to the sides of the unit with the 16 M4x6mm screws included with the switch. Refer to Figure 38 on page 95.

3. After attaching the brackets, have another person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the four screw holes in the four brackets (one screw per bracket). Refer to Figure 41 on page 99.

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

   ❒ Position it so that the front panel is facing up, left or right. Refer to Figure 40 on page 97. Do not install the switch with the front panel facing down.

   ❒ Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow and ventilation.
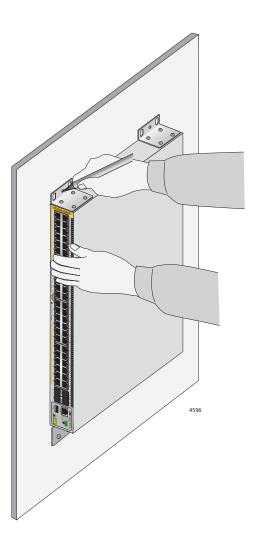
Figure 41. Marking the Locations of the Bracket Holes on a Concrete Wall

4. Place the switch on a table.

5. Use a drill and a 1/4-inch carbide drill bit to pre-drill the holes you marked in step 3. Please review the following guidelines:

    ❒ Prior to drilling, set the drill to hammer and rotation mode. The modes break up the concrete and clean out the hole.

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

6. Insert the anchors into the holes.

7. Have another person hold the switch at the selected wall location while you secure it to the wall with the M4x32mm screws provided. Refer to Figure 42.
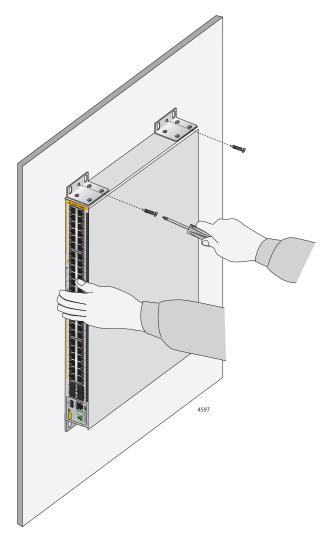
Figure 42. Installing the Switch on a Concrete Wall

8. Go to Chapter 7, "Powering On the Stack" on page 101.

Chapter 7

Powering On the Stack

This chapter contains the following procedures:

Introduction

This chapter contains instructions for powering on the stack for the first time. There are two procedures:

❒ Perform "Powering On the Switches Individually" on page 104 if you want to control the assignment of the ID numbers to the switches of the stack. The numbers are assigned in the order in which you power on the units.

❒ Perform "Powering On the Switches Simultaneously" on page 108 to have the switches assign the numbers automatically. After the ID numbers are assigned, you may change them with the STACK RENUMBER command, described in the *Software Reference for x530L Series Switches, AlliedWare Plus Operating System*.

⚠️ **Caution**
You should not change the ID numbers of the switches after beginning to configure the parameter settings. Otherwise, the stack might assign configuration settings to the wrong units.

Installing the Power Cord Retaining Clips

The power cord retaining clips that come with the switch protect the power cords from being accidentally unplugged from the unit.

1. To install a power cord retaining clip, position it the "u" part facing down, press in the sides, and insert the ends of the clip into the holes in the retaining bracket on the AC connector on the switch. Refer to Figure 43.
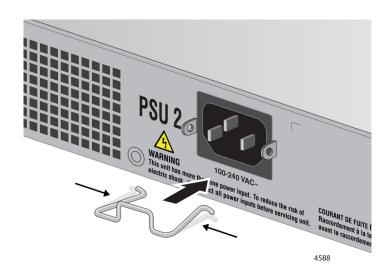
Figure 43. Installing the Retaining Clip

2. Go to either "Powering On the Switches Individually" on page 104 or "Powering On the Switches Simultaneously" on page 108.

Powering On the Switches Individually

This procedure explains how you can control the assignment of the ID numbers of the switches by powering on the units one at a time during the initial power-on sequence. The first switch is assigned ID number 1, the next unit is assigned ID number 2, and so on. This procedure is useful when the switches are installed in the same equipment rack and you want to number them in sequence, such as from top to bottom, to make them easier to identify. After the ID numbers are assigned, the switches retain their assignments even if you power off or reset the stack.

During the first power on sequence, the first switch to be powered on becomes the master switch of the stack. However, if you do not change the priority values of the units, the next time you reset or power cycle the stack the units use their MAC addresses to select the master switch. This might result in a different switch being assigned that role. However, this does not affect their ID number assignments, the configuration of the switches, or the manner in which you manage the stack.

This procedure assumes the following:
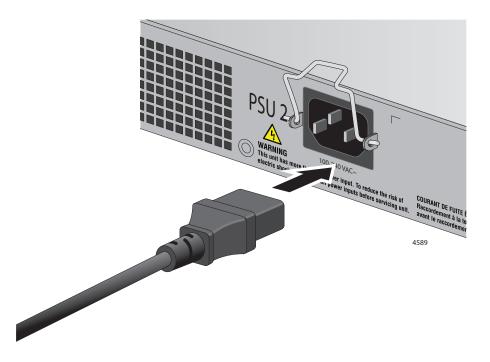
- This is the initial power-on sequence of the stack.
- You cabled ports 27 and 28 on the switches to form the stack trunk.
- The ID numbers are set to the default 1.
- All the switches are powered off.

If you want to monitor the power on sequence, you can connect a terminal or computer with a terminal emulator program to the Console port on the switch you intend to power on first. The messages are found in "Adding Ports 49 and 50 to the Stack Trunk" on page 115.

Before powering on the switch, refer to "Power Specifications" on page 138 for the power specifications.To install the power cord retaining clip and power on the switch, perform the following procedure:

To power on the switches, perform the following procedure:

1. Power on the switch you want to be assigned ID number 1 by connecting its power cord to the AC connector on the back panel. Refer to Figure 44 on page 105.

2. Lower the power cord retaining clips to secure the cords to the switch. Refer to Figure 44.
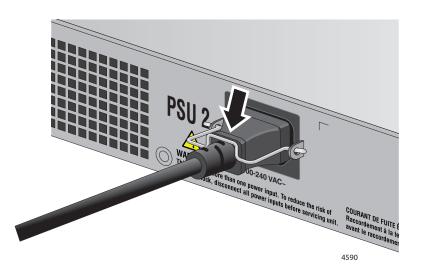
Figure 44. Plugging in the AC Power Cord to the Switch

3. Connect the power cord to an appropriate power source. Refer to "Power Specifications" on page 138 for the power specifications of the switches.
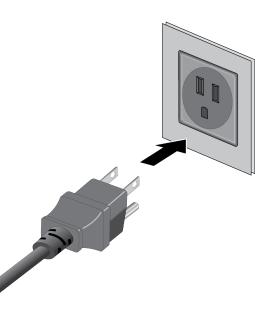
Figure 45. Plugging in the AC Power Cord to an AC Source

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

4. Wait one minute for the switch to initialize its management software.

   The switch should be displaying the number 1 on its ID LED.

5. Repeat step 1 through 4 to power on the switch to be assigned ID number 2.

6. Wait two minutes for the new switch to join the stack as a member.

   As the new switch boots up, the first switch, which has the ID number 1 and at this point is the master switch of the stack, notifies the new switch that its current ID number is already being used and that it should change its number to the next available number, which is 2. The new switch responses by automatically changing its ID number to 2 and reboots. So the new switch is booting up twice, once with the ID number 1 and again with its new ID number 2, which is why it takes two minutes before the device becomes a full member of the stack.

7. If there is a third switch, power it on and wait another two minutes for it to join the stack as a member with the ID number 3.

8. If there are additional switches, continue to power each one at a time and wait two minutes for it to join the stack as a member with the next ID number.

   At this point, the stack is operational.

   The ID numbers are automatically stored in special files in the flash memories of the switches and are retained by the devices even if you reset or power cycle the stack.

9. To continue with the installation, go to "Starting a Local Management Session" on page 110 and "Verifying the Stack" on page 112.

Powering On the Switches Simultaneously

If you want the switches of the stack to use their MAC addresses to automatically assign the ID numbers during the initial power on sequence, all you have to do is power them on simultaneously, rather than one at a time as in the previous procedure. Here are the steps the switches perform:

❑ They initialize their management software and compare their MAC addresses.

❑ The switch with the lowest address is designated as the master switch of the stack.

❑ The master switch assigns itself the ID number 1.

❑ The master switch assigns ID numbers to the other switches.

❑ The other switches reset and initialize their management software again, with their new ID numbers.

This procedure assumes the following:

❑ This is the first power on sequence of the stack.

❑ You cabled ports 27 and 28 or 51 and 52.

❑ All the switches are powered off.

If you want to monitor the power on sequence, you can connect a terminal or computer with a terminal emulator program to the Console port on any of the switches. The messages are found in "Adding Ports 49 and 50 to the Stack Trunk" on page 115.

To have the switches automatically assign the ID numbers, perform the following procedure:

1. Power on all the switches in the stack at the same time.

   Connect the power cords to the connectors on the back panels and to the appropriate power sources, as shown in Figure 44 on page 105. and Figure 45 on page 106. Refer to "Power Specifications" on page 138 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

---

2. Wait three minutes for the switches to select a master switch and assign the ID numbers.

   At this point, the stack is operational. The ID numbers are automatically stored in special files in the flash memories of the switches and are retained by the devices even if you reset or power cycle the stack.

3. To continue with the installation, go to "Starting a Local Management Session" on page 110 and "Verifying the Stack" on page 112.

Starting a Local Management Session

This procedure explains how to start a local management session on a stack. You can establish the session using any switch in the stack. After establishing the session, go to "Verifying the Stack" on page 112. The procedure requires a VT100 terminal or a VT100 terminal emulator that comes with the switch.

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

1. Connect the RJ-45 connector of the management cable to the console port on the front panel of any switch in the stack. Refer to Figure 46.
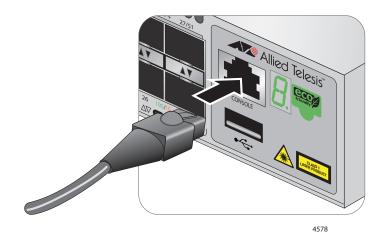
Figure 46. Connecting the Management Cable to the Console Port

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

3. Configure the terminal or terminal emulator program as follows:

   ☐ Default baud rate: 9,600 bps (range is 9,600 to 115,200 bps)

   ☐ Data bits: 8

   ☐ Parity: None

   ☐ Stop bits: 1

   ☐ Flow control: None

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

4. Press Enter.

   You are prompted for a user name and password.

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

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

   ```
   awplus>
   ```

   > **Note**
   > The User Exec mode is the first level in the command mode interface. For complete information on the modes and commands, refer to the *Software Reference for* x530L *Series Switches, AlliedWare Plus Operating System* at **www.alliedtelesis.com**.

6. Go to "Verifying the Stack" on page 112.

Verifying the Stack

To verify the stack, perform the following procedure:

1. Start a local management session on any switch in the stack. Refer to "Starting a Local Management Session" on page 110.

2. From the User Exec mode, type the SHOW STACK command:

```
awplus> show stack
```

The following example is from a stack of three switches:

```
awplus> show stack
Virtual Chassis Stacking summary information

ID      Pending ID      MAC address      Priority   Status   Role
1       -               e01a:ea20:8011   1          Ready    Active Master
2       -               e01a:ea20:8012   2          Ready    Member
3       -               e01a:ea20:8902   3          Ready    Member

Operational Status                       Normal operations
```

Review the following items:

□ The command should list all switches. If the list is incomplete, refer to Chapter 9, "Troubleshooting" on page 129.

□ The Operational Status field should be "Normal operations" to indicate that all of the stacking ports are operating normally.

□ If the Operational Status field is displaying "Not all stack ports are up," one or more stacking ports are not being used or cannot establish links with their counterparts. For more information, refer to Chapter 9, "Troubleshooting" on page 129.

3. If you want to add ports 25 and 26 or 49 and 50 to the stack trunk, perform "Adding Ports 25 and 26 to the Stack Trunk" on page 113 or "Adding Ports 49 and 50 to the Stack Trunk" on page 115 depending on the switch. Otherwise, go to Chapter 8, "Cabling the Networking Ports" on page 121, to complete the installation.

Adding Ports 25 and 26 to the Stack Trunk

This procedure explains how to add ports 25 and 26 to the stack trunk. The procedure assumes the following:

❐ You performed the procedures earlier in this chapter to power on and verify the stack with ports 27 and 28 as the stack trunk.

❐ Ports 25 and 26 are not cabled. If there are cables connected to the ports, remove them before performing the procedure.

To add ports 25 and 26 to the stack trunk, perform the following procedure:

Table 15. Adding Ports 25 and 26 to the Stack Trunk

Step	Description and Command
1	Start a local management session on any switch in the stack. Refer to "Starting a Local Management Session" on page 110.
2	Move to the Privileged Exec mode with the ENABLE command. `awplus> enable`

3	Move to the Global Configuration mode with the CONFIGURE TERMINAL command.
	
	`awplus# configure terminal`
	`Enter configuration commands, one per line. End with CNTL/Z.`

4	Enter the port Interface mode for ports 25 and 26 on all the switches in the stack. This example assumes the stack has four switches:
	
	`awplus(config)# interface port1.0.25-1.0.26,port2.0.25-`
	`2.0.26,port3.0.25-3.0.26,port4.0.25-4.0.26`

5	Designate the ports as stacking ports with the STACKPORT command.
	
	`awplus(config-if)# stackport`
	`% Save the config and restart the system for this change to take effect.`

6	Return to the Global Configuration mode. `awplus(config-if)# exit`
7	Return to the Privileged Exec mode. `awplus(config)# exit`

Table 15. Adding Ports 25 and 26 to the Stack Trunk (Continued)

Step	Description and Command

8	Enter the WRITE command to save your change. If this is the first management session, the switch adds the configuration file DEFAULT.CFG to flash memory, for storing your configuration changes. If you do not save your changes, they will be discarded and you will have to reenter them when you reboot the switch in the next step.
	
	`awplus# write`
	`Building configuration ...`
	`[OK]`

9	Power off the switches of the stack.
10	Cable ports 25 and 26.
11	Power on the switches.
12	Wait three minutes for the switches to initialize their management software and form the stack.
13	Repeat "Verifying the Stack" on page 112.

Adding Ports 49 and 50 to the Stack Trunk

This procedure explains how to add ports 49 and 50 to the stack trunk. The procedure assumes the following:

❑ You performed the procedures earlier in this chapter to power on and verify the stack with ports 51 and 52 as the stack trunk.

❑ Ports 49 and 50 are not cabled. If there are cables connected to the ports, remove them before performing the procedure.

To add ports 49 and 50 to the stack trunk, perform the following procedure:

Table 16. Adding Ports 49 and 50 to the Stack Trunk

Step	Description and Command
1	Start a local management session on any switch in the stack. Refer to "Starting a Local Management Session" on page 110.
2	Move to the Privileged Exec mode with the ENABLE command. `awplus> enable`

3	Move to the Global Configuration mode with the CONFIGURE TERMINAL command.
	
	`awplus# configure terminal`
	`Enter configuration commands, one per line. End with CNTL/Z.`

4	Enter the port Interface mode for ports 49 and 50 on all the switches in the stack. This example assumes the stack has four switches:
	
	`awplus(config)# interface port1.0.49-1.0.50,port2.0.49-`
	`2.0.50,port3.0.49-3.0.50,port4.0.49-4.0.50`

5	Designate the ports as stacking ports with the STACKPORT command.
	
	`awplus(config-if)# stackport`
	`% Save the config and restart the system for this change to take`
	`effect.`

6	Return to the Global Configuration mode. `awplus(config-if)# exit`
7	Return to the Privileged Exec mode. `awplus(config)# exit`

Table 16. Adding Ports 49 and 50 to the Stack Trunk (Continued)

Step	Description and Command

8	Enter the WRITE command to save your change. If this is the first management session, the switch adds the configuration file DEFAULT.CFG to flash memory, for storing your configuration changes. If you do not save your changes, they will be discarded and you will have to reenter them when you reboot the switch in the next step.
	
	`awplus# write`
	`Building configuration ...`
	`[OK]`

9	Power off the switches of the stack.
10	Cable ports 49 and 50.
11	Power on the switches.
12	Wait three minutes for the switches to initialize their management software and form the stack.
13	Repeat "Verifying the Stack" on page 112.

Monitoring the Initialization Processes

It takes about two minutes for the switch to initialize its management software programs and features, and load the default configuration. You can monitor the bootup sequence by connecting a terminal or computer with a terminal emulator program to the Console port. (The Console port settings are provided in "Starting a Local Management Session" on page 110.) The switch displays the messages in Figure 47 through Figure 49 on the Console port as it initializes the management software.

```
Bootloader 6.2.12 loaded
Press <Ctrl+B> for the Boot Menu
Reading flash:x530L-5.4.9-2-rcl.rel...
Verifying release... OK
Booting...
Starting base/first...                                   [  OK  ]
Mounting virtual filesystems...                          [  OK  ]

          _____   ____
       /\ \            / /_____\
      /   \ \_      __/ /|  _____  |
     /      \ |     |  /  |  _____  |
    /        \ \   / /     \ ___  /
  /_____/\____\ \/ /_____/


Allied Telesis Inc.
AlliedWare Plus (TM) v5.4.8
Current release filename: x530L-5.4.9-2-rcl.rel...
Built: Mon Nov 26 01:57:50 UTC 2018
Mounting static filesystems...                           [  OK  ]
Attaching to /dev/mtd0...                                [  OK  ]
Mounting file system...                                  [  OK  ]
Checking for last gasp debug output...                   [  OK  ]
Checking NVS filesystem...                               [  OK  ]
Mounting NVS filesystem...                               [  OK  ]
Initializing random number generator...                  [  OK  ]
Starting base/hwrandom...                                [  OK  ]
Starting base/jitterentropy-rngd...                      [  OK  ]
Starting base/dbus...                                    [  OK  ]
Starting base/linux...                                   [  OK  ]
Starting base/syslog...                                  [  OK  ]
```

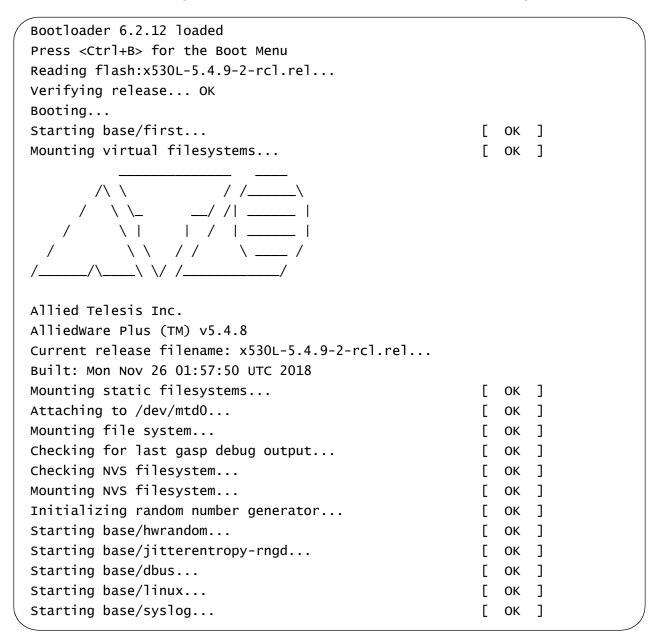Figure 47. Switch Initialization Messages

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

Figure 48. Switch Initialization Messages (Continued)

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

Received event network.initialized

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

Received event network.activated

Loading default configuration
..

done!
Received event network.configured
```

Figure 49. Switch Initialization Messages (Continued)

Chapter 8

Cabling the Networking Ports

This chapter contains the following procedures:

❒ "Cabling Twisted Pair Ports" on page 122

❒ "Guidelines to Handling SFP and SFP+ Transceivers" on page 123

❒ "Installing SFP or SFP+ Transceivers in the Switches" on page 124

❒ "Installing AT-SP10TW Direct Connect Twinax Cables in the Switches" on page 126

Cabling Twisted Pair Ports

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

❒ Minimum twisted pair cable requirements are as follows:

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

– 1 Gbps ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling

❒ PoE is enabled by default on the AT-x530L-28GPX and AT-x530L-52GPX switch ports.

❒ The connectors on the cables must fit snugly into the ports, and the tabs must lock the connectors into place.

❒ The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.

❒ The ports must be set to the default setting of Auto-Negotiation to operate at 1000 Mbps.

❒ The twisted pair ports can operate in either half- or full-duplex mode when operating at 10/100 Mbps. However, if any of the twisted pair ports operate at 1 Gbps or higher, then the duplex mode is always full-duplex.

❒ Do not attach cables to ports of static or Link Aggregation Control Protocol (LACP) port trunks until after you configure the trunks on the switch. Otherwise, the ports will form network loops that can adversely affect network performance.

Guidelines to Handling SFP and SFP+ Transceivers

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

❒ The transceivers are hot-swappable. You can install them while the switch is powered on.

❒ For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

❒ The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.

❒ Install a transceiver before connecting the fiber optic cable.

❒ Unnecessary removal and insertion of a transceiver can lead to premature failure.

⚠ **Caution**

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

Installing SFP or SFP+ Transceivers in the Switches

This section contains installation instructions for SFP or SFP+ transceivers in slots 25 to 28 in the AT-x530L-28GTX and AT-x530L-28GPX or slots 49 to 52 in the AT-x530L-52GTX and AT-x530L-52GPX switches.

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

To install transceivers, perform the following procedure:

1. Select a slot for the transceiver.

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

3. If you are installing the transceiver in a top slot, position the transceiver with the Allied Telesis label facing up. If you are installing the transceiver in a bottom slot, position the transceiver with the label facing down. Refer to Figure 50.
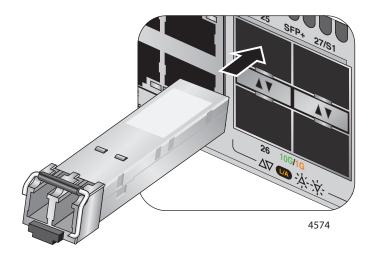

Figure 50. Installing an SFP Transceiver

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

> **Note**
> If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat steps 1 through 5 to install the remaining transceivers in the switch.

5. Verify the position of the handle on the transceiver. If the transceiver is in a top slot, the handle must be in the upright position, as shown in Figure 51. If the transceiver is in a bottom slot, the handle must be in the down position.

4576

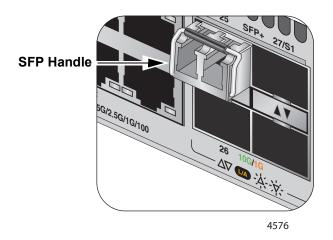Figure 51. Positioning the SFP or SFP+ Handle in the Upright Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 52. The connector on the cable must fit snugly into the port, and the tab must lock the connector into place.

4577
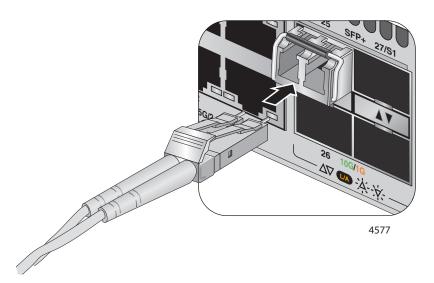
Figure 52. Connecting a Fiber Optic Cable to an SFP or SFP+ Transceiver

7. Repeat this procedure to install additional transceivers.

Installing AT-SP10TW Direct Connect Twinax Cables in the Switches

The SFP/SFP+ transceiver ports of the switches support AT-SP10TW1 and AT-SP10TW3 direct connect twinax cables. They come in lengths of 1 and 3 meters, respectively, and have SFP+ transceivers on both ends. The cables are an economical way to add 10 Gbps connections over short distances.

> **Note**
> The AT-x530L-52GPX switch does not support the AT-SP10TW direct connect cable.

To install AT-SP10TW cables in the switches, perform the following procedure:

1. Select a slot for the transceiver.

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

3. To install the transceiver in a slot in the top row, position the transceiver with the Allied Telesis label facing up. To install the transceiver in a slot in the bottom row, position the transceiver with the label facing down. Refer to Figure 53.

Figure 53. Installing AT-SP10TW Cables

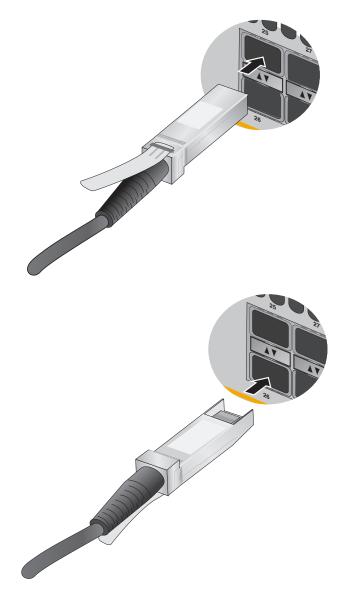4. Slide the transceiver into the slot until it clicks into place.

5. Connect the other end of the cable into an SFP+ slot on another network device.

6. Repeat this procedure to install additional transceivers.

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

Chapter 9

Troubleshooting

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

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

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

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

❏ Verify that the power cord is securely connected to the power source and the AC connector on the back panel of the switch.

❏ Verify that the power outlet has power by connecting another device to it.

❏ Try connecting the unit to another power source.

❏ Try a different power cord.

❏ Verify that the voltage from the power source is within the required levels for your region. The power requirements for the switch are listed in Chapter 7, "Powering On the Stack" on page 101.

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

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

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

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

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

❏ Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.

❏ Verify that the twisted pair cable does not exceed 100 meters (328 feet).

❏ Verify that you are using the appropriate category of twisted pair cable. Refer to "Cable Requirements" on page 27.

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

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

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

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

❏ Verify that the remote network device connected to the fiber optic port is operating properly.

❏ Verify that the fiber optic cable is securely connected to the port on the transceiver and to the port on the remote network device.

❏ Check that the transceiver is fully inserted in the slot.

❏ Verify that the operating specifications of the fiber optic ports on the transceiver and remote network device are compatible.

❏ Verify that the correct type of fiber optic cabling is being used.

❏ Verify that the port is connected to the correct fiber optic cable.

❏ Try connecting another network device to the fiber optic port using a different cable. If the port is able to establish a link, then the problem is with the cable or with the other network device.

❏ Use the switch management software to verify that the port is enabled.

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

❏ Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power).

Problem 5: The SHOW STACK command is not displaying all the switches in the stack.

Solutions: If you are using 10 Gbps ports for the stack trunk, try the following:

- ❐ Verify that the stacking ports are properly cabled. Refer to Chapter 8, "Cabling the Networking Ports" on page 121.

- ❐ If you are using SFP+ transceivers for the stack trunk, verify that they are fully inserted into the transceiver slots.

- ❐ If you are using AT-SP10TW direct connect twinax cables, verify that they are from Allied Telesis. The trunk will not work with cables from other network equipment manufacturers.

- ❐ Verify that the VCStack is activated on the switches. For instructions refer to "Verifying the Stack" on page 112.

Problem 6: The AT-x530L-28GPX or AT-x530L-52GPX switch is not providing power to a PoE or PoE+ device.

Solutions: Try the following:

- ❐ Review the powered device documentation to confirm that the device supports Mode A of the IEEE 802.3at standard. Mode A is one of two modes that define the connector pins that deliver the power from the port in the switch to the powered device. In Mode A, the power is carried on pins 1, 2, 3, and 6 on the RJ-45 port, the same pins that carry the network traffic. The second mode, Mode B, defines pins 4, 5, 7, and 8 as the power carriers. The AT-x530L-28GPX and AT-x530L-52GPX switches do not support Mode B. Most powered devices are designed to accept power by either mode, but some legacy devices may only support one mode. This can be verified by reviewing the device's documentation or data sheet. Legacy devices that only support Mode B will not work with the switch.

- ❐ Use the SHOW SYSTEM ENVIRONMENT command to confirm that both power supplies are operating normally.

- ❐ If the problem is with a powered device connected to the AT-x530L-52GPX switch, use the management software to determine whether the switch has reached its maximum power budget of 370W with one power supply or 740 with two power supplies, and so cannot support any further powered devices.

❏ Check that the power device power requirements do not exceed 30W. This can be verified by reviewing the device documentation or data sheet.

❏ Verify that you are using the appropriate category of twisted-pair cable.

❏ 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 7: The switch functions intermittently.

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

❏ Use the SHOW SYSTEM ENVIRONMENT command in the Privileged Exec mode to verify that the input voltage from the power source to the switch is stable and within the approved operating range. The unit will shut down if the input voltage fluctuates above or below the approved operating range.

❏ Use the SHOW SYSTEM ENVIRONMENT command in the Privileged Exec mode to verify that the fan is operating correctly.

❏ Verify that the location of the switch allows for adequate airflow. The unit will shut down if it is overheating.

Problem 8: The Switch ID LED on the front of the switch is flashing the letter "F."

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

❏ A cooling fan has failed.

❏ The switch might be overheating and may have to shut down.

Contact your Allied Telesis sales representative for assistance.

Appendix A
Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions

Table 17 lists the dimensions of the switches. Figure 54 through Figure 57 on page 135 illustrate the dimensions of the switches.

Table 17. Product Dimensions

Model	Dimension (L x H x D)
AT-x530L-28GTX	44.05 cm x 4.37 cm x 32.26 cm (17.344 in. x 1.72 in. x 12.7 in.)
AT-x530L-28GPX	44.05 cm x 4.37 cm x 42.06cm (17.344 in. x 1.72 in. x 16.56 in.)
AT-x530L-52GTX	44.05 cm x 4.37 cm x 32.26 cm (17.344 in. x 1.72 in. x 12.7 in.)
AT-x530L-52GPX	44.05 cm x 4.37 cm x 42.06cm (17.344 in. x 1.72 in. x 16.56 in.)
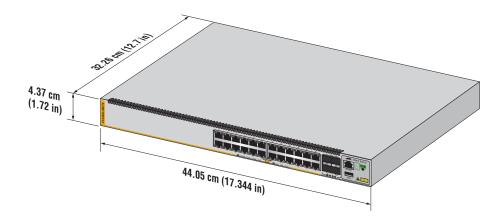
Figure 54. AT-x530L-28GTX

Figure 55. AT-x530L-28GPX

Figure 56. AT-x530L-52GTX
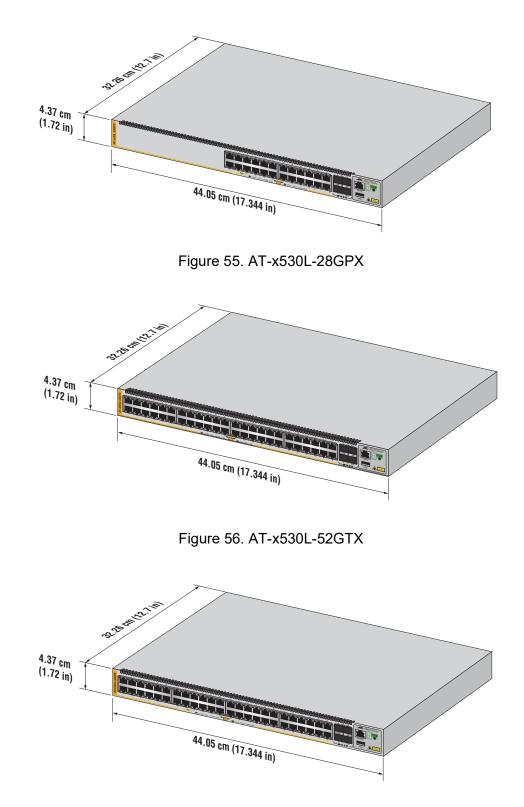
Figure 57. AT-x530L-52GPX

Weights

Table 18 lists the weights of the switches.

Table 18. Product Weights

AT-x530L-28GTX with ATKK60W PSU	4.36 kg (9.60 lb)
AT-x530L-28GPX	5.44 kg (12.00 lb)
AT-x530L-52GTX with ADP150W PSU	5.19 kg (11.45 lb)
AT-x530L-52GPX	6.71 kg (14.8 lb)

Ventilation

Table 19 lists the ventilation requirements.

Table 19. Ventilation Requirements

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

Environmental Specifications

Table 20 lists the environmental specifications of the switches.

Table 20. Environmental Specifications

Operating Temperature	0° C to 50° C (32° F to 122° 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)
Product Noise Level	More than 42 dB @ 30C or less
Installation Requirement	Tabletop, wall or rack mount

Power Specifications

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

Maximum Power Consumption

Table 21 lists the maximum power consumption for the switches.

Table 21. Maximum Power Consumption

AT-x530L-28GTX	39 W (APD65W PSU) 39 W (ATKK60W PSU
AT-x530L-28GPX	470 W (1 PSU) 890 W (2 PSU)
AT-x530L-52GTX	59 W (APD65W PSU) 60 W (ATKK60W PSU
AT-x530L-52GPX	520 W (1 PSU) 950 W (2 PSU)

Input Voltages

Table 22 lists the input voltage for the switches.

Table 22. Input Voltage

AT-x530L-28GTX	100-240 VAC, 50/60 Hz, 1 A
AT-x530L-28GPX	100-240 VAC, 50/60 Hz, 6 A (per input) (x2)
AT-x530L-52GTX	100-240 VAC, 50/60 Hz, 1 A
AT-x530L-52GPX	100-240 VAC, 50/60 Hz, 6 A (per input) (x2)

Heat Dissipation

Table 23 lists the heat dissipation for the switches.

Table 23. Heat Dissipation

AT-x530L-28GTX	133.09 BTU/hr (APD150W PSU) 133.09 BTU/hr (ATKK120W PSU)
AT-x530L-28GPX	1603 BTU/hr (1 PSU) 3037 BTU/hr (2 PSU)
AT-x530L-52GTX	201.34 BTU/hr (APD150W PSU) 204.75 BTU/hr (ATKK120W PSU)
AT-x530L-52GPX	1774.49 BTU/hr (1 PSU) 3241.86 BTU/hr (2 PSU)

Certifications

Table 24 lists the product certificates.

Table 24. Product Certifications

EMI (RFI Emissions)	FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, RCM
EMC (Immunity)	EN55024
Electrical and Laser Safety	EN60950-1 (TUV), UL 60950-1 (CULUS), CSA-C22-2 No. 60950-1 (CULUS), EN60825-1 (TUV), UL 62368-1
Compliance Marks	CE, $_C$UL$_{US}$, TUV
RoHS and WEEE	Complies with RoHS 6 Complies with China RoHS

RJ-45 Twisted Pair Port Pinouts

Figure 58 illustrates the pin layout of the RJ-45 connectors on the front panel of the switch.
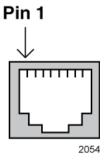
Pin 1

Figure 58. RJ-45 Socket Pin Layout (Front View)

Table 25 and Table 26 on page 142 list the pin signals.

Table 25. Pin Signals at 10M/100M

Pin	10 Mbps/ 100 Mbps MDI Signal	10 Mbps/ 100 Mbps 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 26. Pin Signals at 1 Gbps

Pin	1 Gbps MDI Signal	1 Gbps MDI-X Signal
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

RJ-45 Style Serial Console Port Pinouts

Table 27 lists the pin signals of the RJ-45 style serial console port.

Table 27. RJ-45 Style Serial Console Port Pin Signals

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

USB Port

Table 28 lists the pin signals of the USB port.

Table 28. USB Port Pin Signals

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