

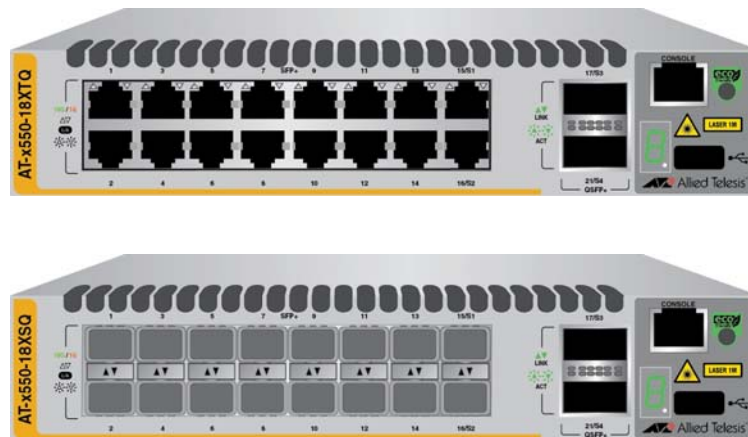
x550 Series

Stackable 10Gigabit Intelligent Access Ethernet Switches

AlliedWare Plus™ v5.4.7A-0

AT-x550-18XTQ

AT-x550-18XSQ



Installation Guide for Stand-alone Switches

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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

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EMC (Immunity): EN55024

Electrical Safety: EN60950-1 (TUV), UL 60950-1 (CUL_{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/support.

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Preface

This guide contains the installation instructions for the x550 Series of stackable 10 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 the switches as stand-alone units. For instructions on how to build a stack of switches with the Virtual Chassis Stacking (VCStack™) feature, refer to the *x550 Series Installation Guide for Virtual Chassis Stacking*.

Document Conventions

This document uses the following conventions:

Note

Notes provide additional information.



Caution

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



Warning

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

Contacting Allied Telesis

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

- ❑ 24/7 Online Support — Enter our interactive support center to search for answers to your product questions in our knowledge database, to check support tickets, to learn about RMAs, and to contact Allied Telesis technical experts.
- ❑ USA and EMEA phone support — Select the phone number that best fits your location and customer type.
- ❑ Hardware warranty information — Learn about Allied Telesis warranties and register your product online.
- ❑ Replacement Services — Submit a Return Merchandise Authorization (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:

- “Front and Rear Panels” on page 16
- “Management Panel” on page 18
- “Features” on page 19
- “1Gbps/10Gbps Twisted Pair Ports” on page 22
- “SFP+ Transceiver Slots” on page 23
- “QSFP+ Transceiver Slots” on page 24
- “eco-friendly Button” on page 26
- “VCStack Feature” on page 27
- “LEDs” on page 28
- “USB Port” on page 34
- “Console Port” on page 35
- “Power Supply” on page 36

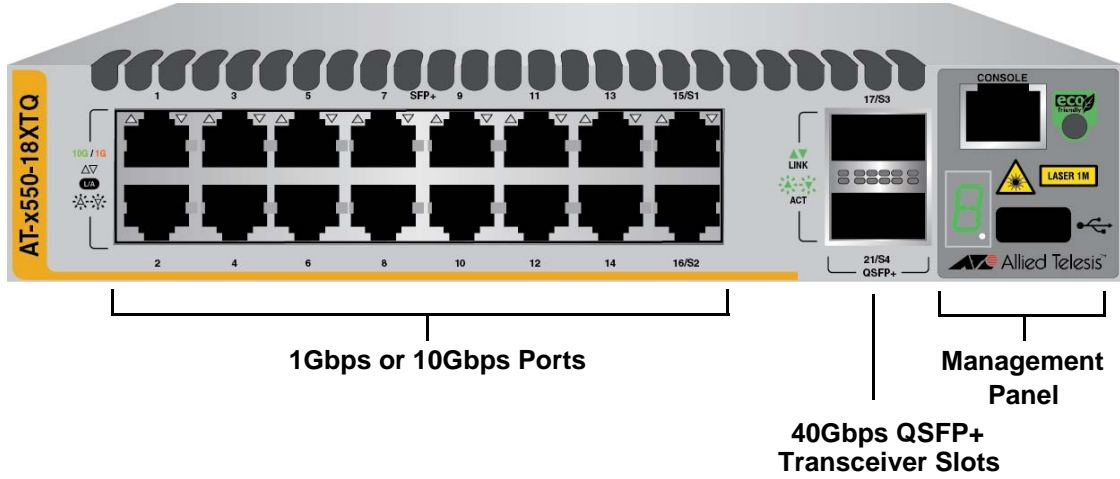
Note

This guide explains how to install the switches as stand-alone units. For instructions on how to build a stack of switches with the Virtual Chassis Stacking (VCStack™) feature, refer to the *x550 Series Installation Guide for Virtual Chassis Stacking*.

Front and Rear Panels

The front panels of the x550 Series switches are shown in Figure 1.

AT-x550-18XTQ



AT-x550-18XSQ

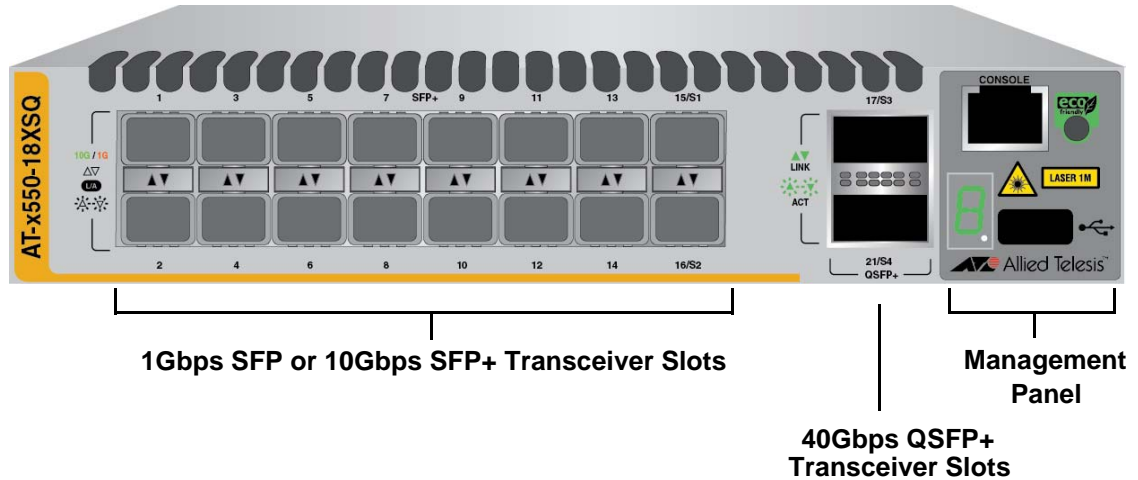
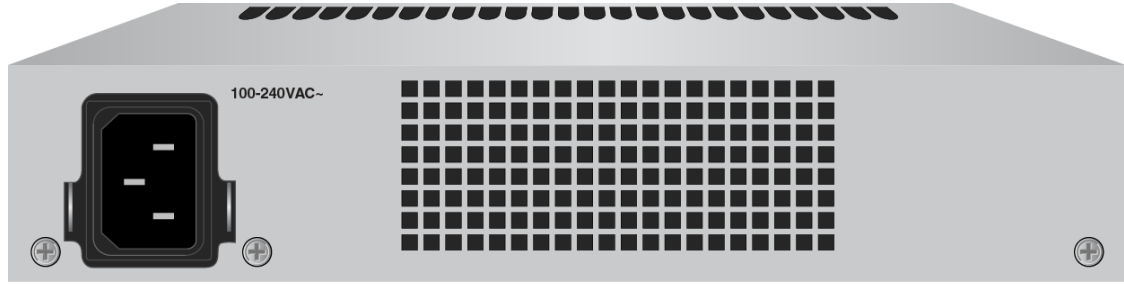


Figure 1. Front Panels of the AT-x550-18XTQ and AT-x550-18XSQ Switches

The rear panel of the switches is shown in Figure 2 on page 17.



|
AC Power Supply Connector

Figure 2. Back Panel

Management Panel

Figure 3 identifies the components on the management panel.

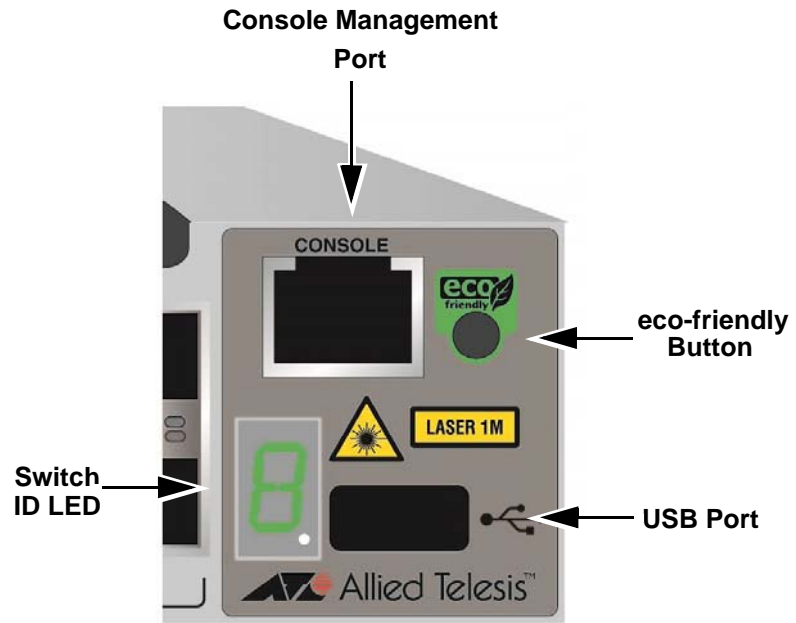


Figure 3. Management Panel

Features

The Allied Telesis x550 Series switches are stackable 10 Gigabit, Layer 3 Ethernet switches. The following sections lists the features of the switches:

x550 Models Table 1 lists the basic features of the x550 Switches.

Table 1. Basic Features

Model	1Gbps and 10Gbps Twisted Pair Ports	1Gbps SFP and 10Gbps SFP+ Transceiver Slots	40Gbps QSFP+ Transceiver Slots	VCStack
AT-x550-18XTQ	16	0	2	Yes
AT-x550-18XSQ	0	16	2	Yes

Additional information is listed here:

- The 40Gbps QSFP+ slots can be used as either regular networking ports or stacking ports with the VCStack feature.
- When used as regular networking ports the 40Gbps QSFP+ slots support 40Gbps transceivers or breakout cables, which convert the slots into four 10Gbps ports.
- The switches come with one pre-installed power supply. It is not field-replaceable.

1Gbps/10Gbps Twisted Pair Ports

The sixteen twisted pair ports on the AT-x550-18XTQ Switch have these features:

- 1Gbps or 10Gbps operation
- 100 meters (328 feet) maximum operating distance per port
- Auto-Negotiation for speed
- Full-duplex mode only
- Port Link/Activity (L/A) LEDs

1Gbps SFP or 10Gbps SFP+ Transceiver Slots

The sixteen 1Gbps/10Gbps transceiver slots in the AT-x550-18XSQ Switch support the following types of transceivers:

- 1Gbps SX/LX SFP transceivers
- 10Gbps SR/LR SFP+ fiber optic transceivers
- 10Gbps AT-SP10TW direct connect twinax cables with SFP+ transceiver-style connectors

Additional information about the transceiver slots is given here:

- ❑ They do not support 100Mbps transceivers.
- ❑ They support full-duplex mode only.

SFP or SFP+ transceivers must be purchased separately. For a list of supported transceivers, refer to the AT-x550-18XSQ data sheet on the Allied Telesis web site.

40Gbps QSFP+ Transceiver Slots

The two QSFP+ transceiver slots support the following types of transceivers:

- ❑ AT-QSFPSR4 transceiver - 150m using multi-mode fiber optic cable
- ❑ AT-QSFPLR4 transceiver - 10k with single-mode fiber optic cable
- ❑ AT-QSFP1CU and AT-QSFP3CU direct connect cables in lengths of 1 and 3 meters, respectively
- ❑ AT-QSFP-4SFP10G-3CU and AT-QSFP-4SFP10G-5CU breakout cables in lengths of 3 and 5 meters, respectively

Note

The QSFP+ slots are initially configured as stacking slots for the VCStack feature. If you plan to use the switch as a stand-alone unit, you can use the slots with transceivers as regular networking ports by disabling the VCStack feature. The instructions are provided in Chapter 6, “Configuring the Switch for Stand-alone Operations” on page 85.

QSFP+ transceivers must be purchased separately. For a list of supported transceivers, refer to the x550 product sheet on the Allied Telesis web site.

For instructions on the VCStack feature, refer to the *x550 Series Installation Guide for Virtual Chassis Stacking*.

LEDs

Here are the port LEDs:

- ❑ Link/activity LEDs for the twisted pair ports on the AT-x550-18XTQ Switch
- ❑ Link/activity LEDs for the SFP and SFP+ transceiver slots on the AT-x550-18XSQ Switch
- ❑ Link/activity LEDs for the QSFP+ transceiver slots
- ❑ Stack ID number LED
- ❑ eco-friendly button turns off the LEDs to conserve electricity

Installation Options

Here are the installation options for the switches:

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

Management Software and Interfaces

Here are the management software and interfaces:

- AlliedWare Plus Management Software
- Command line interface
- Web browser interface

Management Methods

Here are the methods 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

1Gbps/10Gbps Twisted Pair Ports

The specifications of the sixteen twisted pair ports on the AT-x550-18XTQ Switch are listed in Table 2.

Table 2. Twisted Pair Ports on the AT-x550-18XTQ Switch

State	Description
Port Speed	1Gbps or 10Gbps You can set port speed with Auto-Negotiation or manually. The default is Auto-Negotiation.
Duplex Mode	Full-duplex only
Cabling	1Gbps - Standard TIA/EIA 568-B-compliant Category 6 shielded cabling or better. 10Gbps -Standard TIA/EIA 568-C-compliant Category 6a shielded cabling or better.
Maximum Distance	100 meters (328 feet)
Connector	8-pin RJ-45

Note

The ports must be set to Auto-Negotiation to function at 1000 Mbps and are not compatible with devices that are not IEEE 802.3u compliant.

Refer to Table 16 on page 116 for the port pinouts of the twisted pair ports.

SFP+ Transceiver Slots

The sixteen SFP+ transceiver slots on the AT-x550-18XSQ Switch support the following types of 1Gbps SFP or 10Gbps SFP+ transceivers:

- ❑ 1Gbps SX/LX SFP transceivers
- ❑ 10Gbps SR/LR fiber optic transceivers
- ❑ 10Gbps AT-SP10TW direct connect twinax cables with SFP+ transceiver-style connectors

Additional information about the SFP+ transceiver slots is listed here:

- ❑ They do not support 100Mbps-FX transceivers.
- ❑ They support full-duplex mode only.
- ❑ You can set the port speeds with Auto-Negotiation or manually. The default is Auto-Negotiation.

SFP or SFP+ transceivers must be purchased separately. For a list of supported transceivers, refer to the x550 Series product sheet on the Allied Telesis web site.

QSFP+ Transceiver Slots

The switches have two QSFP+ transceiver slots that support the following types of 40Gbps transceivers:

- ❑ AT-QSFPSR4 transceiver - requires 12-strand OM4 fiber optic cable and has a maximum operating distance of 150m (492 ft).
- ❑ AT-QSFPLR4 transceiver - requires single-mode fiber optic cable and has an operating range of 2m (6.6 ft) to 10km (6.2 mi).
- ❑ AT-QSFP1CU and AT-QSFP3CU direct connect cables in lengths of 1 and 3 meters, respectively
- ❑ AT-QSFP-4SFP10G-3CU and AT-QSFP-4SFP10G-5CU breakout cables in lengths of 3 and 5 meters, respectively

You can use QSFP+ transceivers as standard networking ports or as stacking ports for the VCStack feature.

Note

The QSFP+ transceiver slots are initially configured as stacking slots for the VCStack feature. You have to disable the VCStack feature to use the transceiver slots as regular networking ports. For instructions, refer to Chapter 6, “Configuring the Switch for Stand-alone Operations” on page 85. For instructions on how to install the switches in a VCStack, refer to the *x550 Series Installation Guide for Virtual Chassis Stacking*.

For a list of supported QSFP+ transceivers, refer to the x550 Series data sheet on the Allied Telesis web site.

When the switch is operating as a stand-alone device and the VCStack feature is disabled, the QSFP+ transceiver slots support the AT-QSFP-4SFP10G-3CU and AT-QSFP-4SFP10G-5CU breakout cables. Refer to Figure 4. A breakout cable converts a QSFP+ transceiver slot from one 40Gbps port to four 10Gbps ports. You have to disable the VCStack feature on the switch to use the QSFP+ transceiver slots with breakout cables.



Figure 4. QSFP+ to SFP+ Breakout Cable

The QSFP+ slots are numbered 17 and 21 on the front panel. Here are the guidelines to port numbering:

- ❑ A QSFP+ transceiver in slot 17 has the port number 17.
- ❑ A QSFP+ transceiver in slot 21 has the port number 21.
- ❑ The four 10Gbps transceivers on a breakout cable in slot 17 have the port numbers 17, 18, 19, and 20.
- ❑ The four 10Gbps transceivers on a breakout cable in slot 21 have the port numbers 21, 22, 23, and 24.

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 might 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 said to be operating in a low power mode when the LEDs are turned off.

Operating the switch in the low power mode with the LEDs turned off 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.

The Switch ID LED is always on, but it displays different information depending on whether the LEDs are on or off. When the LEDs are on, the ID LED displays the ID number of the switch. When the switch is operating in the low power mode with the LEDs off, the ID LED indicates whether the switch is a stand-alone unit or the master or member switch of a VCStack, as detailed in Figure 10 on page 33.

Note

Before checking or troubleshooting the network connections to the ports on the switch, you should 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 of the command line interface.

VCStack Feature

You can use the switches as stand-alone units or join multiple units together with the QSFP+ transceiver slots and the VCStack feature. The switches of a VCStack act as a single virtual unit. They synchronize their actions so that switching operations, like spanning tree protocols, virtual LANs, and static port trunks, span across all of the units and ports. Two advantages of stacks are listed here:

- ❑ 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 the devices as stand-alone units. For instructions on how to install the switches in a VCStack, refer to the *x550 Series Installation Guide for Virtual Chassis Stacking*.

LEDs

LEDs for the 1Gbps/10Gbps Twisted Pair Ports

The LEDs are described in the following sections.

The 1Gbps/10Gbps twisted pair ports on the AT-x550-18XTQ Switch have one LED that displays link and activity information. The LED is shown in Figure 5.

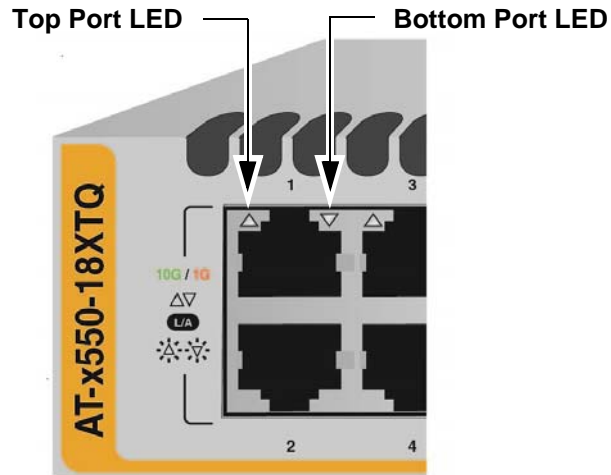


Figure 5. Link and Activity LEDs for the 1Gbps/10Gbps Ports on the AT-x550-18XTQ, Switch

The states of the link and activity LEDs are described in Table 3.

Table 3. Link and Activity LEDs on the 1Gbps/10Gbps Ports on the AT-x550-18XTQ Switch

State	Description
Solid Green	The port has established a 10Gbps link to a network device.
Flashing Green	The port is transmitting or receiving data at 10Gbps.
Solid Amber	The port has established a 1Gbps link to a network device.
Flashing Amber	The port is transmitting or receiving data at 1Gbps.

Table 3. Link and Activity LEDs on the 1Gbps/10Gbps Ports on the AT-x550-18XTQ Switch (Continued)

State	Description
Off	<p>Possible causes of this state are listed here:</p> <ul style="list-style-type: none"> - 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.

LEDs for the 1Gbps SFP and 10Gbps SFP+ Transceiver Slots

The 1Gbps SFP and 10Gbps SFP+ transceiver slots on the AT-x550-18XSQ Switch have one LED. The LEDs are located between the slots. Refer to Figure 6.

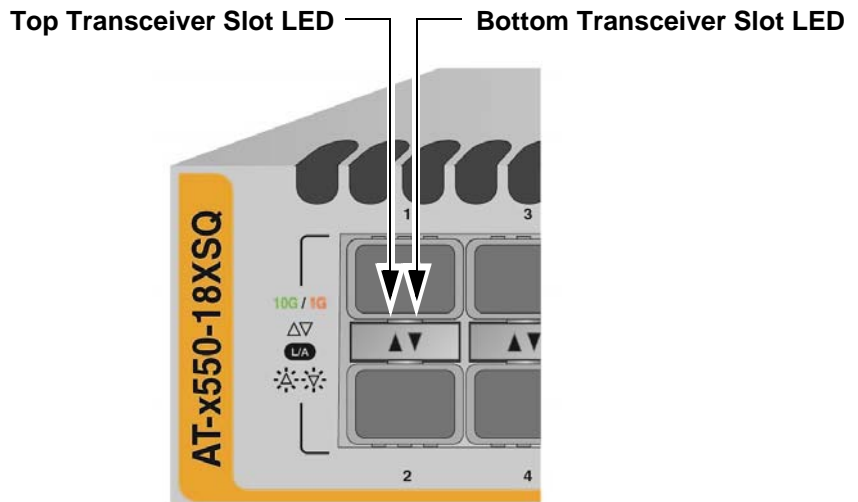


Figure 6. Link and Activity LEDs for the 1Gbps SFP and 10Gbps Slot+ Slots on the AT-x550-18XSQ Switch

The LED displays link status and activity. The possible LED states are described in Table 4.

Table 4. Link and Activity Status LEDs on the 1Gbps and 10Gbps Ports on the AT-x550-18XTQ Switch

State	Description
Solid Green	The transceiver has established a 10Gbps link to a network device.
Flashing Green	The transceiver is transmitting or receiving data in 10Gbps.

Table 4. Link and Activity Status LEDs on the 1Gbps and 10Gbps Ports on the AT-x550-18XTQ Switch (Continued)

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

LEDs for the 40Gbps QSFP+ Transceiver Slots

The 40Gbps QSFP+ transceiver slots on the switch have one LED. The LEDs are located between the slots. Refer to Figure 7.

Top Transceiver Slot LED Bottom Transceiver Slot LED

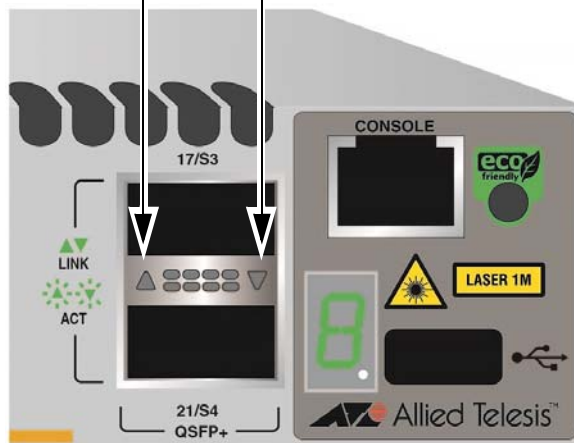


Figure 7. LEDs for the 40Gbps QSFP+ Slots

The LED displays link and activity status. The LED states when the slots have QSFP+ transceivers are described in Table 5 on page 31.

Table 5. Link and Activity Status LEDs for the 40Gbps QSFP+ Transceiver Slots with QSFP+ Transceivers

State	Description
Solid Green	The transceiver has established a 40Gbps link to a network device.
Flashing Green	The transceiver is transmitting or receiving data.
Off	Possible causes of this state are listed here: <ul style="list-style-type: none"> - The slot is empty. - The transceiver has not established a link to a network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

The L:ED states when the QSFP+ slots contain breakout cables are described in Table 6.

Table 6. Link and Activity Status LEDs for the 40Gbps QSFP+ Transceiver Slots with Breakout Cables

State	Description
Solid Green	At least one of the four ports on the breakout cable has established a 10Gbps link to a network device.
Flashing Green	At least one of the four ports on the breakout cable is sending or receiving data.
Off	Possible causes of this state are listed here: <ul style="list-style-type: none"> - The slot is empty. - None of the ports on the breakout cable have established a link to a network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Switch ID LED

The Switch ID LED, shown in Figure 8, 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 4. Chapter 5, “Powering On the Switch” on page 77 has the procedure for verifying and, if necessary, changing the ID number of the switch.

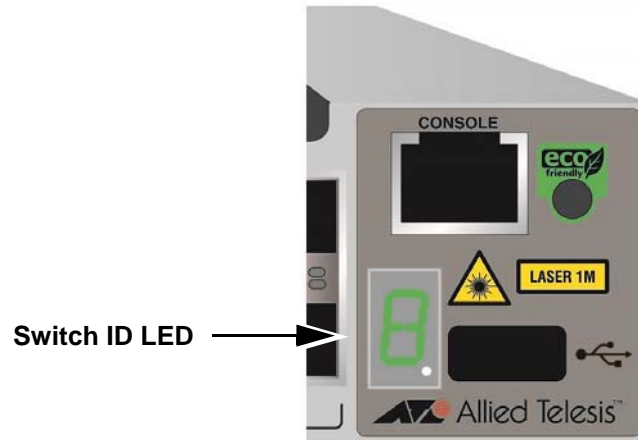


Figure 8. Switch ID LED

The states of the LED when the switch is not operating in the low power mode are shown in Figure 9.



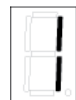
The switch is booting up.



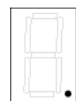
The switch has encountered a fault condition.



The switch is operating as a stand-alone unit, with the ID number 0.



The switch has an ID number of 1 to 4 as part of a VCStack.



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

Figure 9. Switch ID LED

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 `SHOW SYSTEM ENVIRONMENT` command in the command line interface to identify the source of the problem.

The states of the LED when the switch is operating in the low power mode are shown in Figure 10.



The switch is the master switch of a VCStack.



The switch is operating as a stand-alone unit.



The switch is a member switch of a VCStack.

2667

Figure 10. Switch ID LEDs in Low Power Mode

USB Port

The management panel has a USB port. You may use the port to store configuration files on flash drives or to restore configuration files to switches whose settings have been lost or corrupted, or to quickly configure replacement units. You may also use the port and flash drives to update the management firmware on the switch.

The port is USB2.0 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, you use the provided management cable to connect a terminal or a personal computer with a terminal emulation program to the Console port, which has an RJ-45 style (8P8C) connector. The cable has RJ-45 style (8P8C) and DB-9 (D-sub 9-pin) connectors.

The Console port has the following settings:

- Default baud rate: 9600 bps (Range is 9600 to 115200 bps)
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Note

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

Power Supply

The switch comes with a pre-installed power supply. Refer to “Technical Specifications” on page 111 for the input voltage ranges.



Warning

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

Note

The power supply is not field-replaceable.

Chapter 2

Beginning the Installation


The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 38
- “Choosing a Site for the Switch” on page 42
- “Unpacking the Switch” on page 43

Reviewing Safety Precautions


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

Note

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



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 45° degrees 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 (T_{mra}).  E35


**Caution**

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


**Warning**

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


**Warning**

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 shall be installed in a Restricted Access location.  E45

**Caution**

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

**Warning**

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

Choosing a Site for the Switch

Observe these requirements when planning the installation of the switch.

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



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

Figure 11 shows the shipping box for the switch.

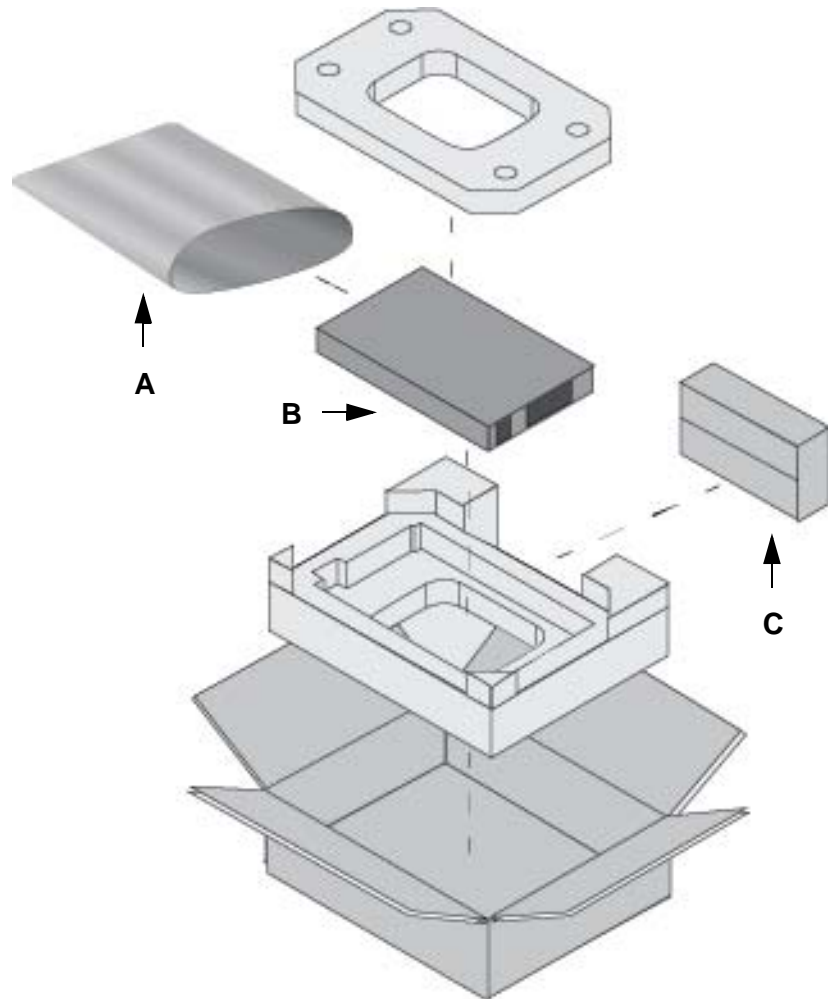


Figure 11. AT-x550-18XTQ or AT-x550-18XSQ Switch Shipping Box

The items in the box are listed here:

- A - Protective bag
- B - AT-x550 Switch
- C - Accessory kit

Note

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

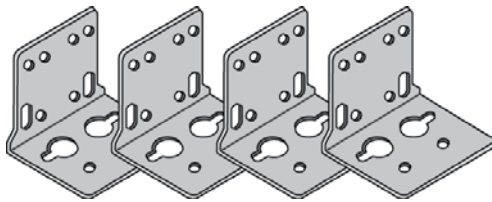
Figure 12 here and Figure 13 on page 45 list the items in the accessory kit included with the switch. Contact your Allied Telesis sales representative for assistance if any item is missing or damaged.



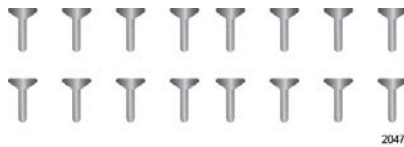
One 2m (6.6 ft) local management cable with RJ-45 (8P8C) and DB-9 (D-sub 9-pin) connectors.



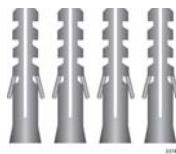
One regional AC power cord



Four AT-RKMT-J24 wall-mounting brackets



Sixteen screws for attaching the AT-RKMT-J24 wall brackets to the switch.
Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)



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

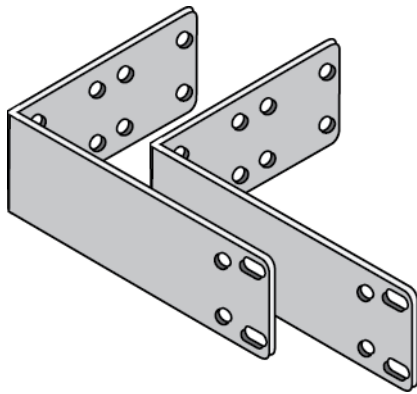


Four screws for wood or concrete walls:
Length: 32mm (1.3 in.)
Diameter: 4mm (0.2 in.)

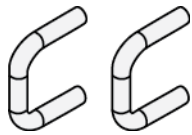


Power cord retaining clip

Figure 12. Accessory Kit



Two AT-RKMT-J14 equipment rack brackets



Two handles for the AT-RKMT-J14 equipment rack brackets



Four screws for attaching the handles to the AT-RKMT-J14 equipment rack brackets:
Length: 6.0mm (0.2 in.)
Diameter: 3.0mm (0.1 in.)

Figure 13. Accessory Kit (Continued)

Chapter 3

Installing the Switch on a Table or in an Equipment Rack

This chapter contains the instructions for installing the switch on a table or in an equipment rack. The procedures in this chapter are listed here:

- ❑ “Installing the Switch on a Table or Desktop” on page 48
- ❑ “Overview of Installing the Switch in an Equipment Rack” on page 49
- ❑ “Installing the Switch in an Equipment Rack with the AT-RKMT-J14 Brackets” on page 51
- ❑ “Installing the Switch in an Equipment Rack with the AT-RKMT-J15 Bracket” on page 56

Installing the Switch on a Table or Desktop

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

Note

The rubber feet on the bottom of the chassis should be left on for table installation.



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

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

1. Review the procedure in Chapter 2, “Choosing a Site for the Switch” on page 42 to verify that the selected site is suitable for the unit.
2. Check to be sure that the table is strong enough to support the weight of the switch.
3. Lift the chassis onto the table.
4. Check to be sure that all of the appropriate components are included in the shipping container. Refer to “Unpacking the Switch” on page 43.

After placing the switch on the table or desktop, go to Chapter 5, “Powering On the Switch” on page 77.

Overview of Installing the Switch in an Equipment Rack

You can install the switch in a 19-inch equipment rack two ways. One way is with the AT-RKMT-J14 brackets that come with the switch. Refer to Figure 14.



Figure 14. AT-RKMT-J14 Brackets and Switch

For installation instructions, refer to “Installing the Switch in an Equipment Rack with the AT-RKMT-J14 Brackets” on page 51.

You can also install the switch in an equipment rack with the optional AT-RKMT-J15 bracket. Refer to Figure 15.

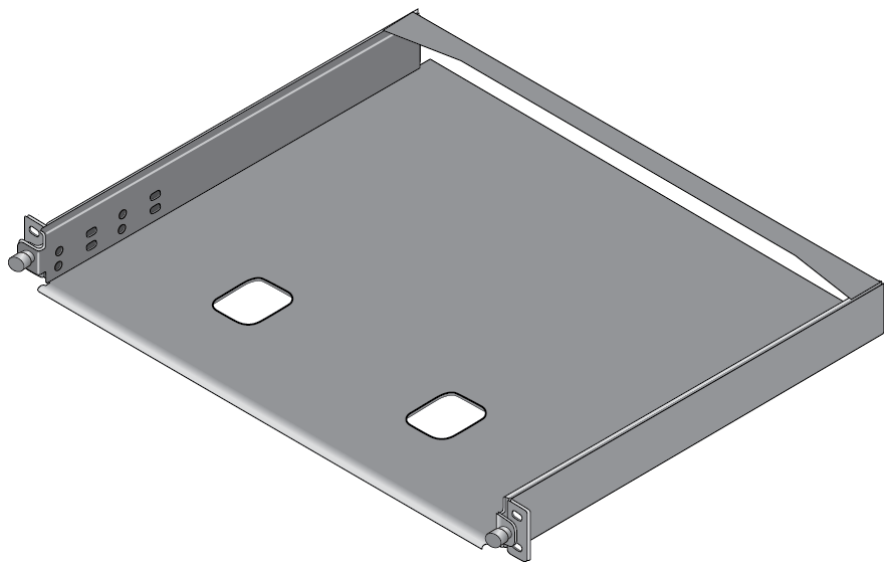


Figure 15. AT-RKMT-J15 Bracket

The bracket lets you install two switches side-by-side. Refer to Figure 16.

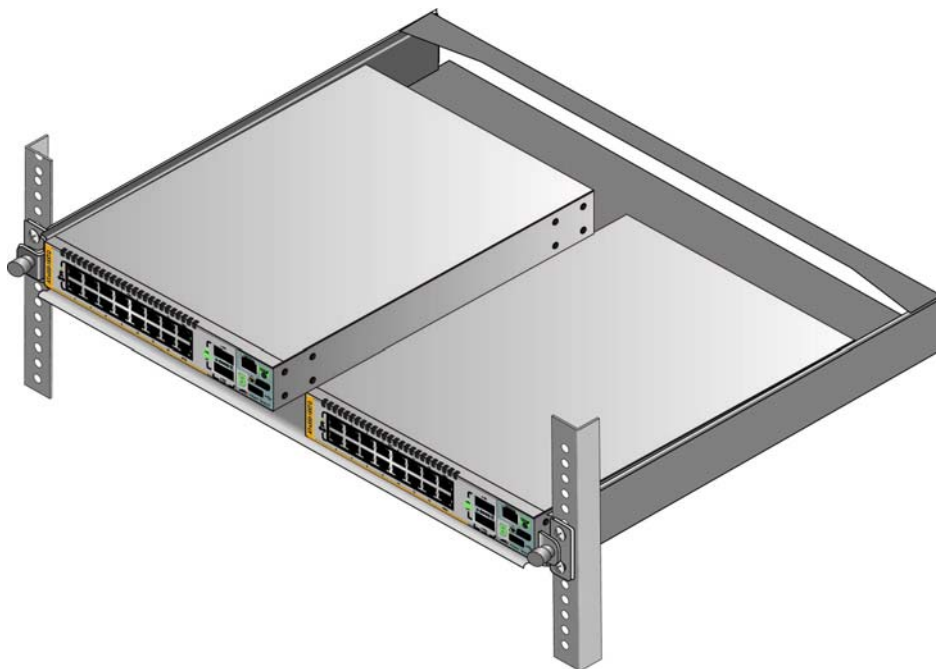


Figure 16. AT-RKMT-J15 Bracket with Switches

Note

The AT-RKMT-J15 Bracket is purchased separately.

For installation instructions refer to “Installing the Switch in an Equipment Rack with the AT-RKMT-J15 Bracket” on page 56

Installing the Switch in an Equipment Rack with the AT-RKMT-J14 Brackets

This section contains the procedure for installing the switch in a standard 19-inch equipment rack, with the AT-RKMT-J14 Brackets included with the switch.

Required Items for the AT- RKMT-J14 Brackets

The following items are required to install the switch in an equipment rack with the AT-RKMT-J14 Brackets:

- Two AT-RKMT-J14 equipment rack brackets (included with the switch)
- Eight M4x6mm bracket screws (included with the switch)
- Four M3x6mm screws (included with the switch)
- Two bracket handles (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 AT-RKMT-J14 Brackets. Refer to Figure 17.

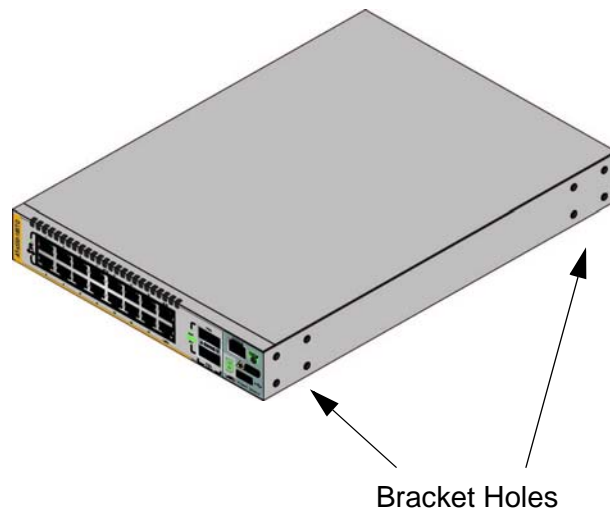


Figure 17. Bracket Holes

The brackets also have two sets of four holes. Refer to Figure 18 on page 52.

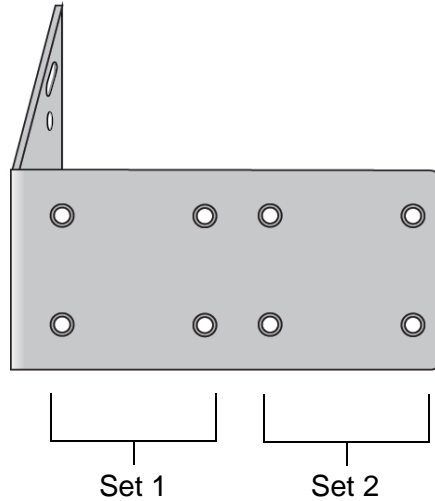


Figure 18. AT-RKMT-J14 Bracket Holes

You can use the different sets of holes on the switch and brackets to install the switch in the equipment rack in a variety of orientations. You can install it with the front panel flush with, extending in front of, or recessed behind the front of the equipment rack. The illustrations in Figure 19 show the switch orientations with the front panel facing the front of the equipment rack.

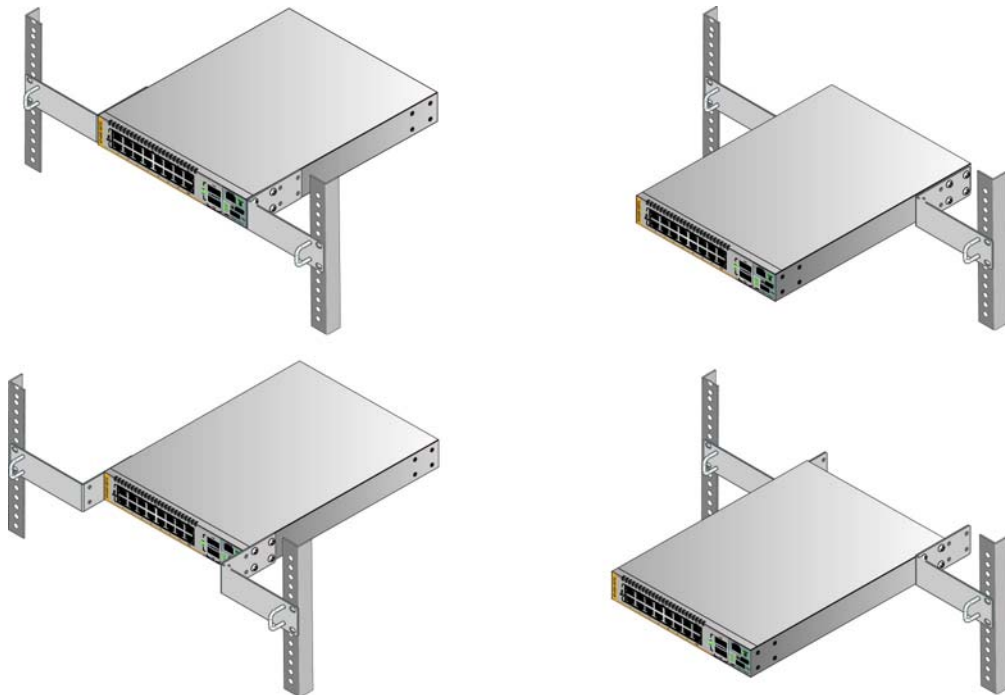


Figure 19. Switch Orientations with the Front Panel Facing the Front of the Equipment Rack

You can also orient the switch with the rear panel facing the front of the equipment rack. Refer to Figure 20 on page 53.

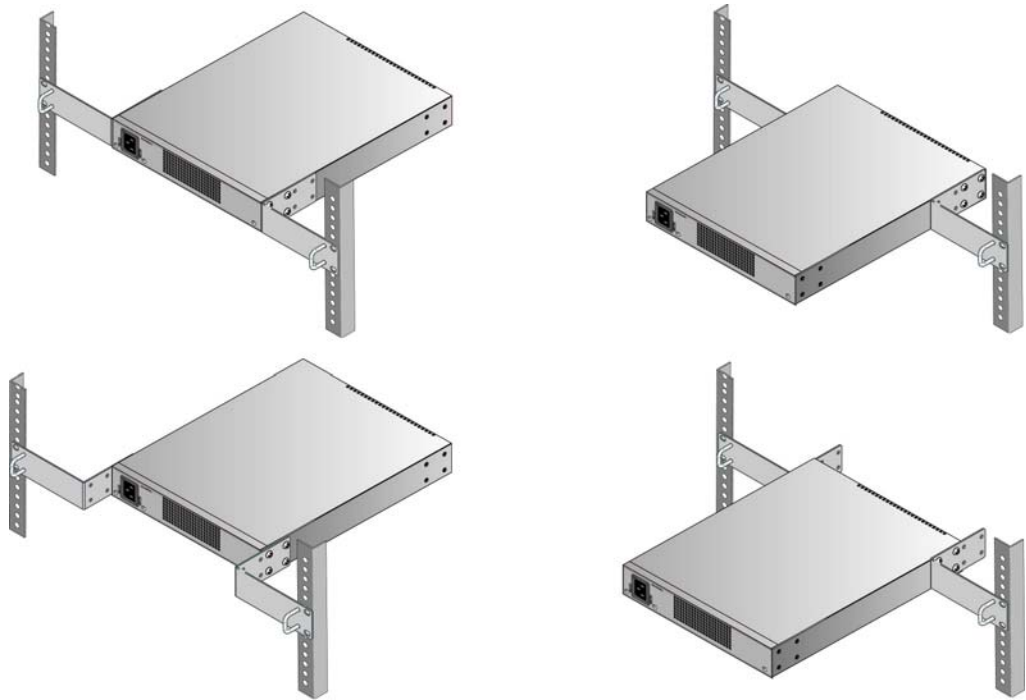


Figure 20. Switch Orientations with the Rear Panel Facing the Front of the Equipment Rack

Installing the Switch with the AT-RKMT-J14 Brackets

If you have not chosen an orientation for the switch in the equipment rack, review “Switch Orientations in the Equipment Rack” on page 51.

Please review the installation guidelines in “Choosing a Site for the Switch” on page 42 before installing the switch in an equipment rack.



Caution

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

To install the switch in a 19-inch equipment rack with the AT-RKMT-J14 Brackets, perform the following procedure:

1. Attach the two handles to the AT-RKMT-J14 Brackets using the four M3x6mm screws included with the switch. Refer to Figure 21 on page 54.

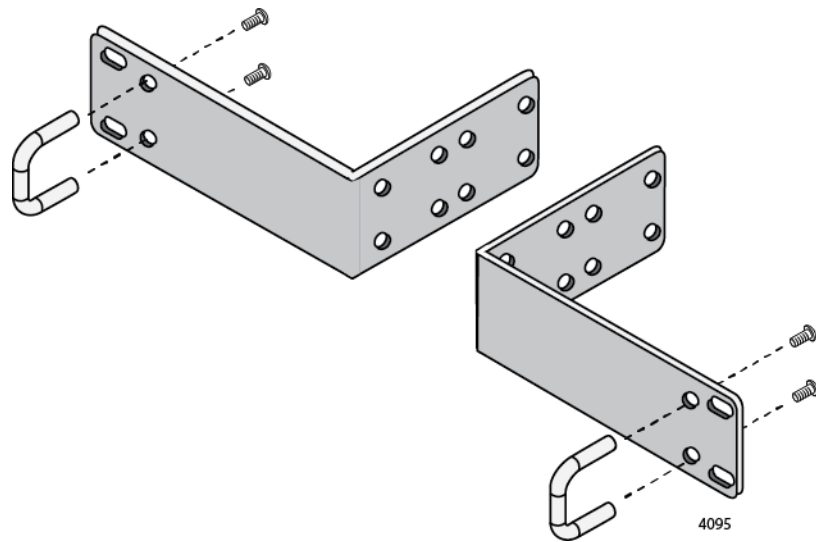


Figure 21. Attaching the Handles to the AT-RKMT-J14 Brackets

2. Place the switch on a level, secure surface.
3. Attach the two brackets to the sides of the switch in the selected position, using the eight M4x6mm screws included with the unit. The illustration in Figure 22 shows the installation of the brackets such that the front panel of the switch is even with the front of the equipment rack.

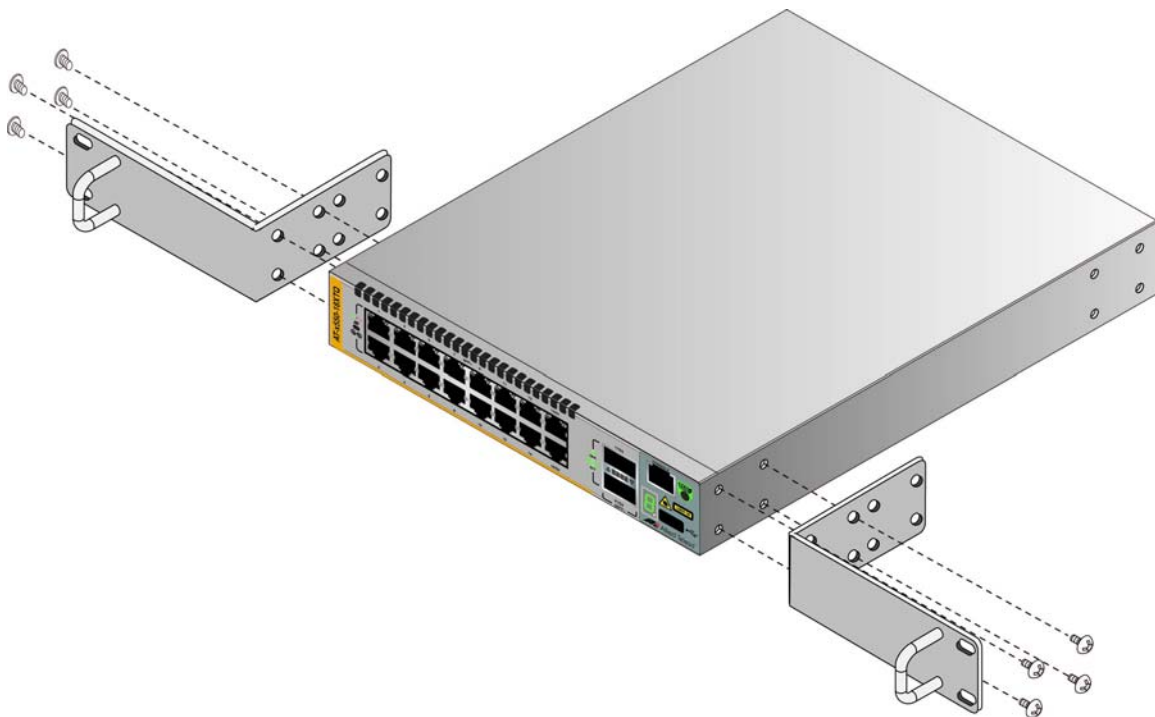


Figure 22. Attaching the AT-RKMT-J14 Brackets to the Switch

4. Have another person hold the switch in the equipment rack at the desired location while you secure it using four standard equipment rack screws (not provided). Refer to Figure 23.

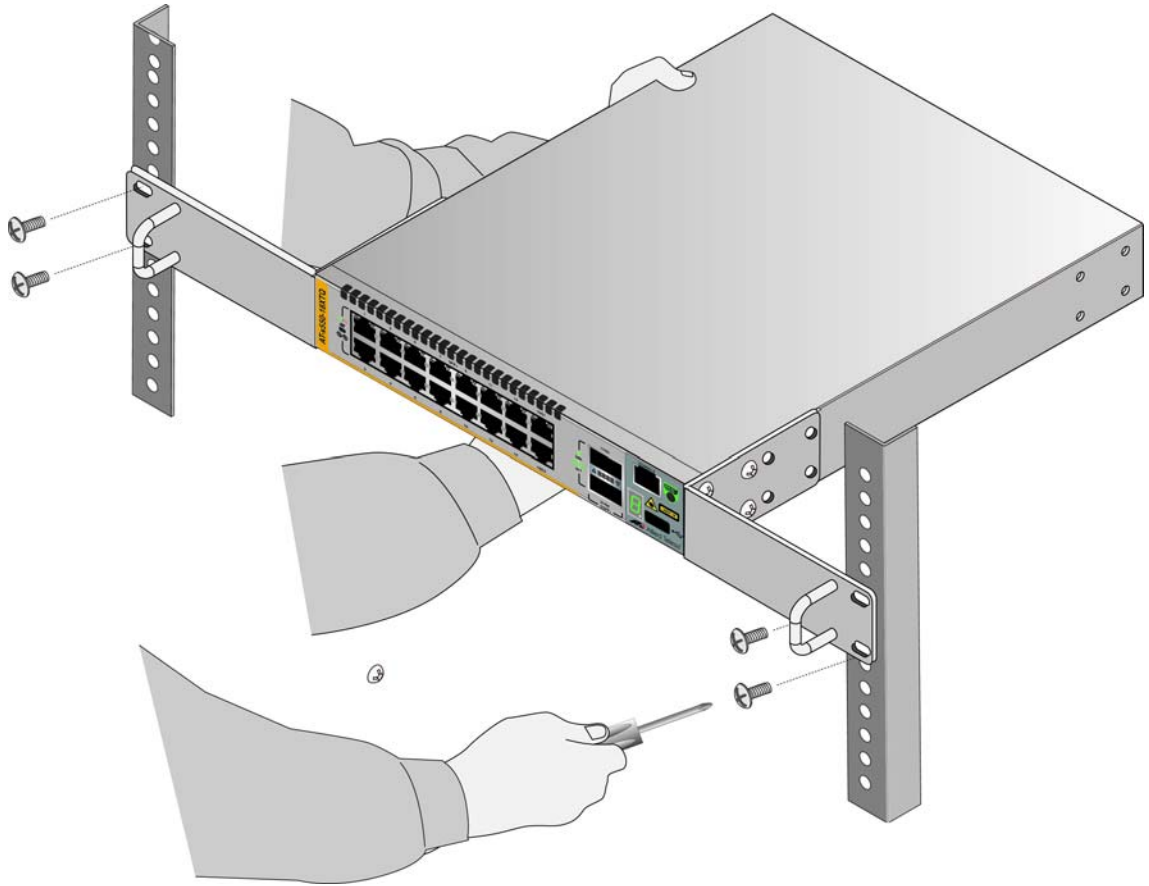


Figure 23. Installing the Switch in an Equipment Rack

5. Go to Chapter 5, “Powering On the Switch” on page 77.

Installing the Switch in an Equipment Rack with the AT-RKMT-J15 Bracket

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

Required Items for the AT-RKMT-J15 Bracket

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

- ❑ One AT-RKMT-J15 equipment rack bracket (sold separately)
- ❑ Four M4x6mm bracket screws (included with the switch)
- ❑ Cross-head screwdriver (not provided)
- ❑ Flat-head screwdriver (not provided)
- ❑ Four standard equipment rack screws (not provided)

Installing the Switch with the AT-RKMT-J15 Bracket

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

1. Have another person hold the AT-RKMT-J15 Bracket at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 24.

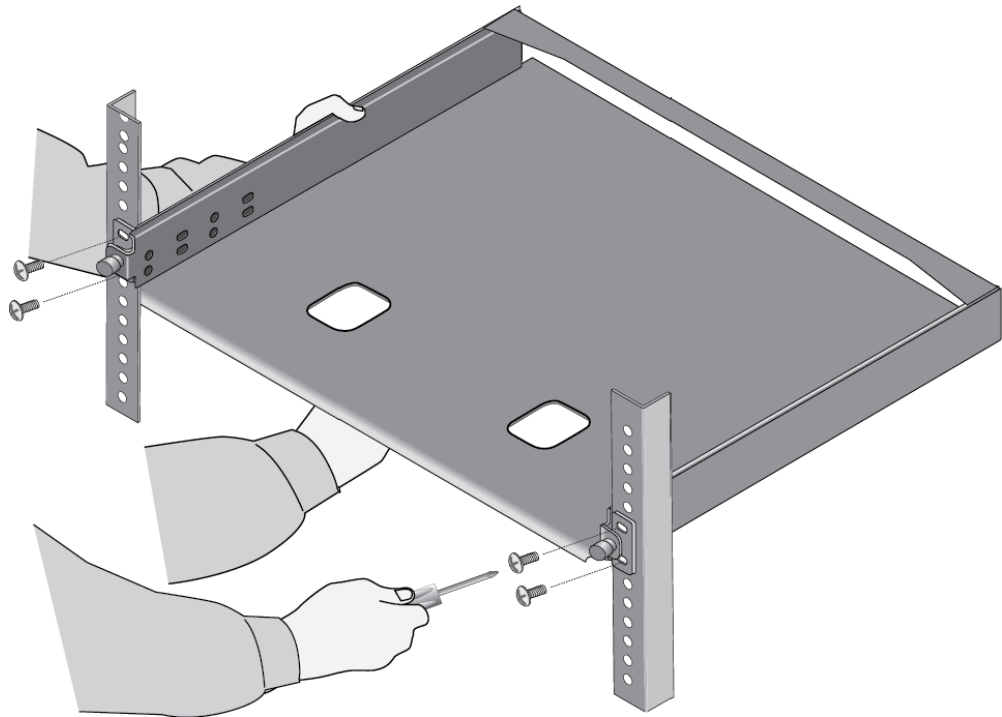


Figure 24. Installing the AT-RKMT-J15 Bracket in the Equipment Rack

2. Loosen the two thumbscrews on the front of the bracket. Refer to Figure 25.

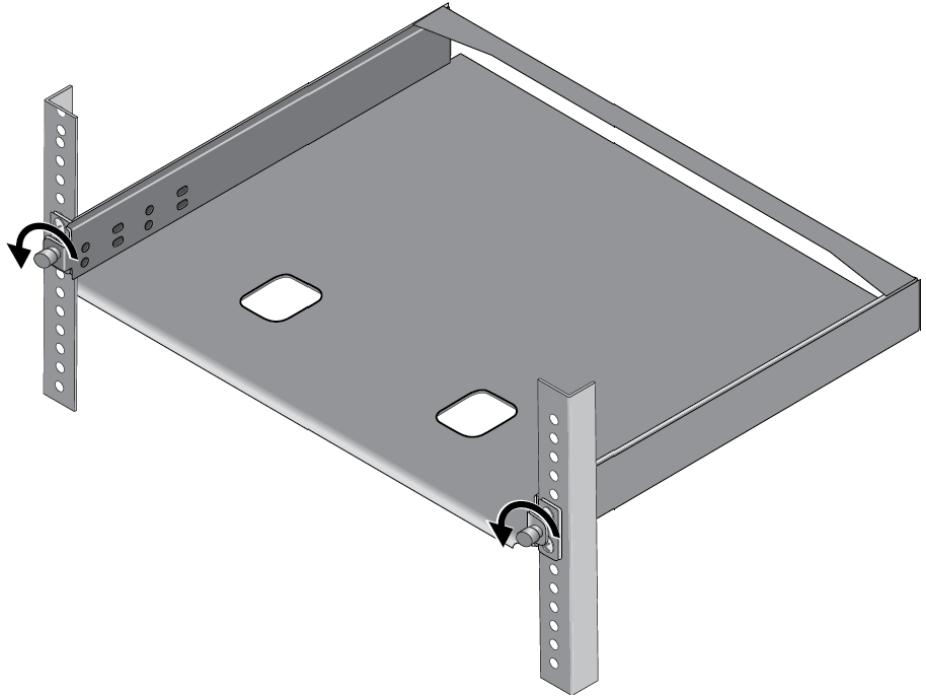


Figure 25. Loosening the Two Thumbscrews on the Front of the AT-RKMT-J15 Bracket

3. Slide out the bracket tray. Refer to Figure 26.

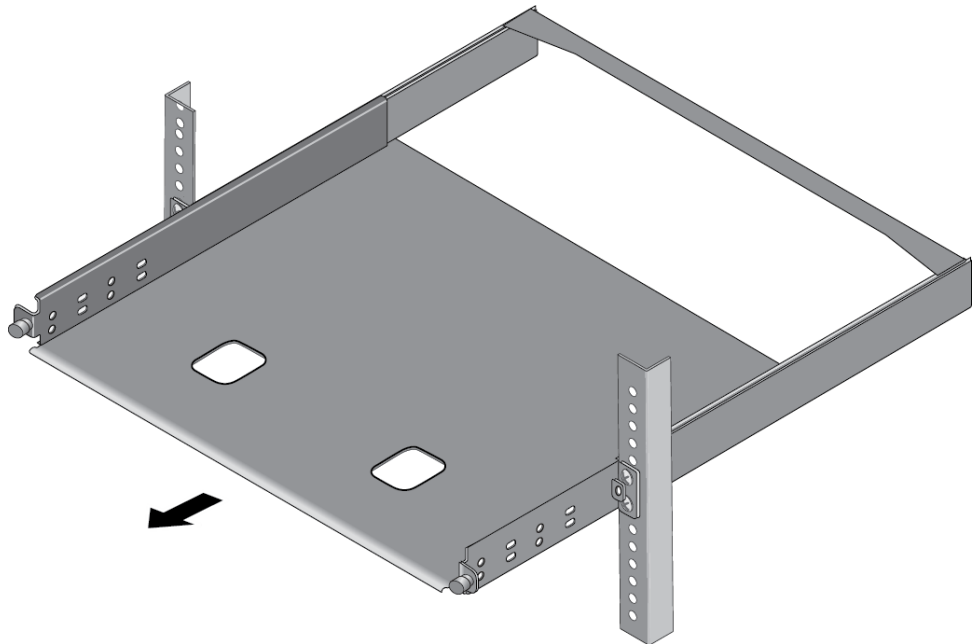


Figure 26. Sliding Out the Tray from the AT-RKMT-J15

Note

Steps 4 to 6 remove the plastic feet from the bottom of the switch. You must remove the plastic feet to install the switch in the AT-RKMT-J15 Bracket.

4. Place the switch upside-down on a table.
5. Use a small flat-head screwdriver to pry the four plastic feet from the bottom of the switch. Refer to Figure 27.

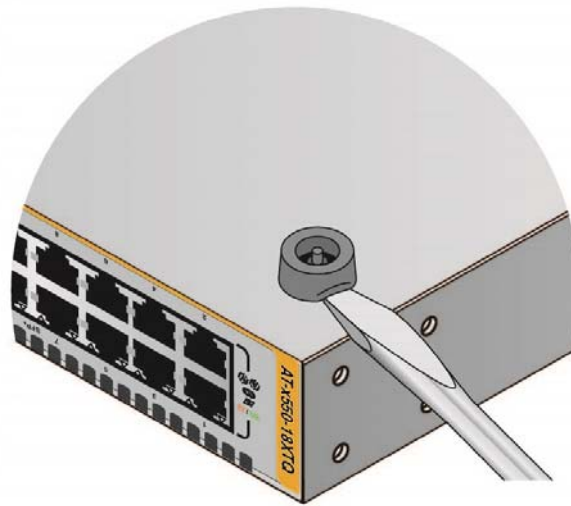


Figure 27. Removing the Plastic Feet from the Bottom Panel of the Switch

6. Turn the switch over so that it is right-side up.
7. Place the switch in the left or right side of the bracket, with its front panel facing the front of the bracket. If you are installing only one switch, you may install it on either the left or right side. Refer to Figure 28 on page 59.

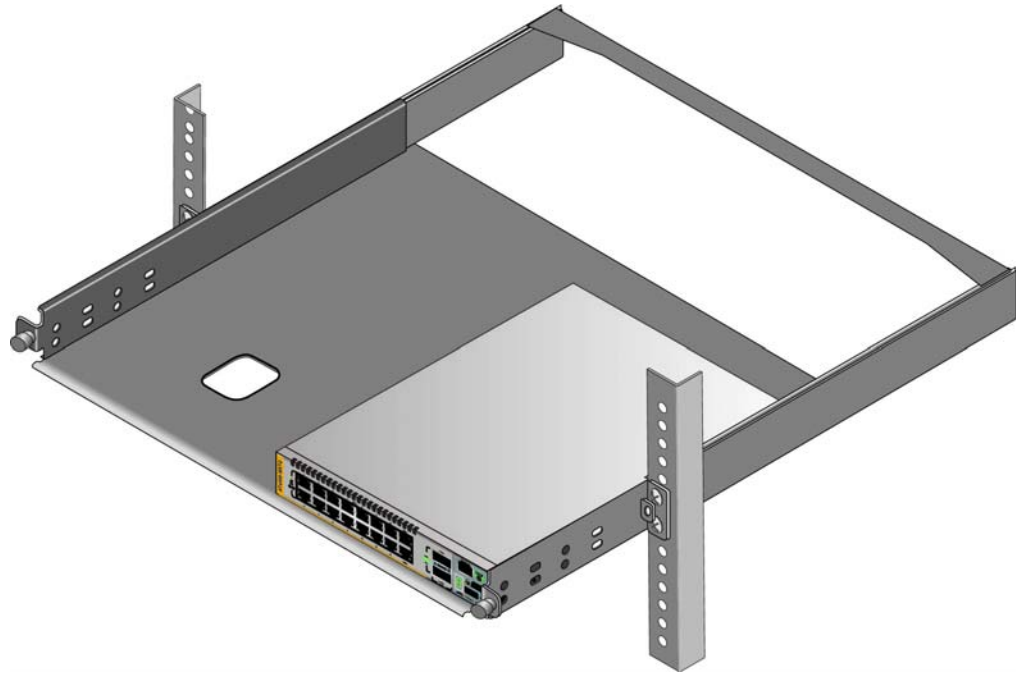


Figure 28. Placing a Switch in the AT-RKMT-J15 Bracket

8. Install two M4x6mm screws included with the switch to secure the switch to the bracket. Refer to Figure 29.

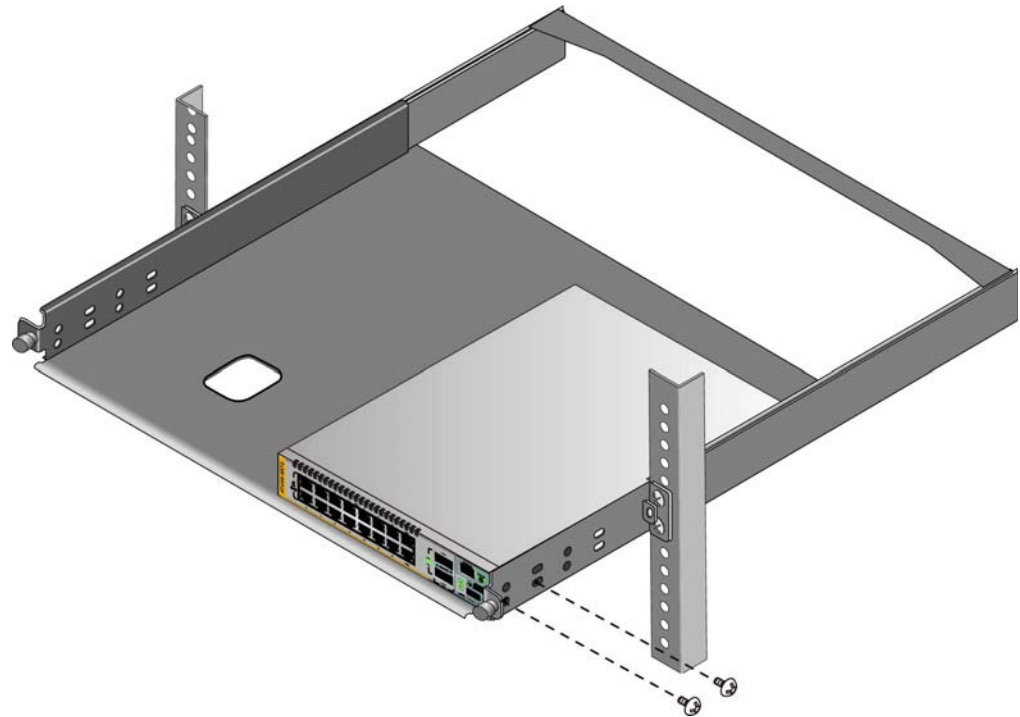


Figure 29. Securing the Switch to the AT-RKMT-J15 Bracket

9. To install a second switch in the bracket, repeat steps 4 to 8.
10. Slide in the bracket tray. Refer to Figure 30.

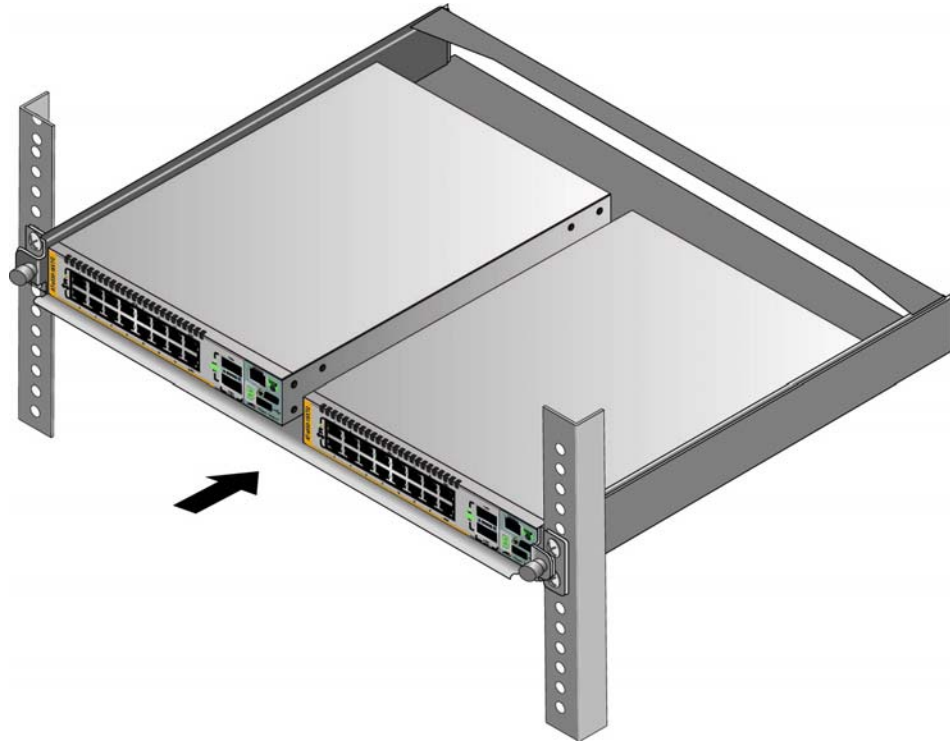


Figure 30. Sliding in the Bracket Tray

11. Tighten the two thumbscrews to secure the tray to the bracket. Refer to Figure 31 on page 61.

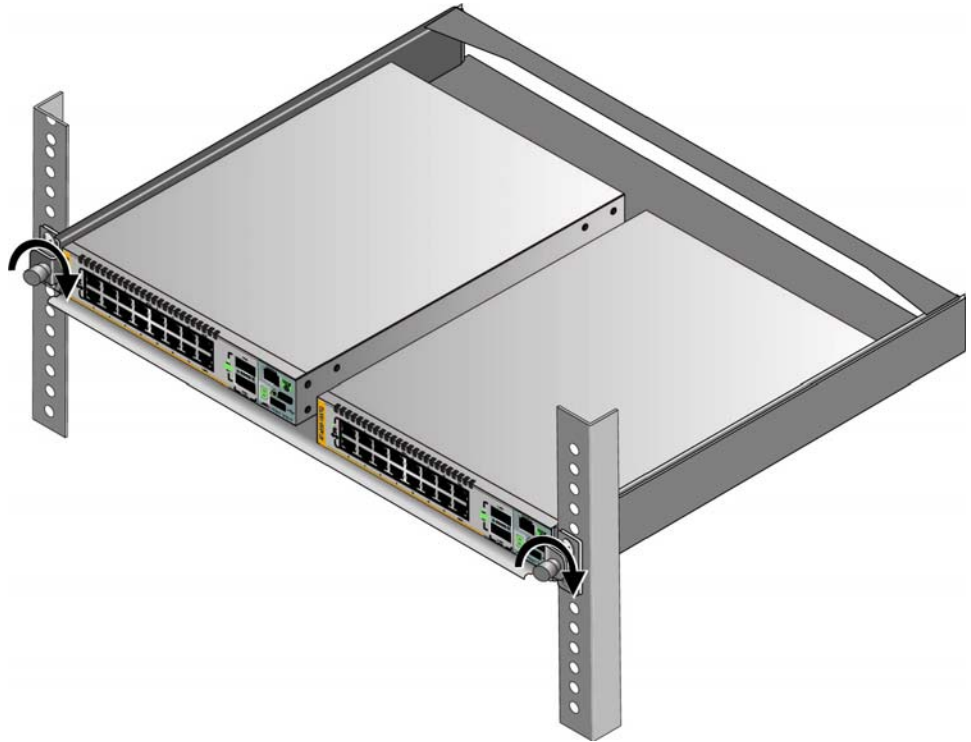


Figure 31. Tightening the Two Thumbscrews on the AT-RKMT-J15 Bracket

12. Go to Chapter 5, “Powering On the Switch” on page 77.

Chapter 4

Installing the Switch on a Wall

The procedures in this chapter are listed here:

- “Switch Orientations on a Wall” on page 64
- “Installation Guidelines” on page 65
- “Plywood Base for a Wall with Wooden Studs” on page 67
- “Installing a Plywood Base” on page 69
- “Installing the Switch on a Plywood Base” on page 70
- “Installing the Switch on a Concrete Wall” on page 73

Switch Orientations on a Wall

You can install the switch on a wall with the front panel on the left or right, as shown in Figure 32. Do not install it with the front panel on the top or bottom.

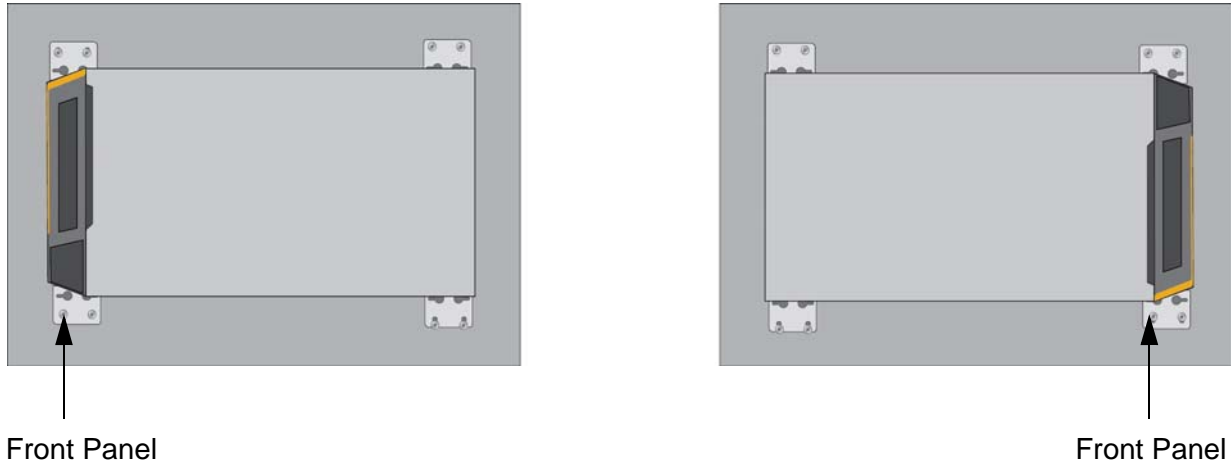


Figure 32. Positions of the Switch on the Wall

Installation Guidelines

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

- ❑ You may 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, you should use a plywood base to support the switch. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 67. A plywood base is not required for a concrete wall.
- ❑ You should not install the switch on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.
- ❑ You should not install the switch only 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 the wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment may result if it is not properly fastened to the wall. *ER*
E105

Tools and Material


Here are the required tools and material for installing the switch on a wall:

- ❑ Four AT-BRKT-J24 wall brackets (included with the switch)
- ❑ Sixteen screws (included with the switch) to attach the AT-BRKT-J24 brackets to the switch.
- ❑ Four wall screws (included with the switch)
- ❑ Four anchors for a concrete wall (included with the switch)
- ❑ Cross-head screwdriver (not provided)
- ❑ Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring (not provided)
- ❑ Drill and 1/4” carbide drill bit for a concrete wall (not provided)
- ❑ Plywood base if you are installing the switch on a wall with wooden studs (not provided.) Refer to “Plywood Base for a Wall with Wooden Studs” on page 67 for illustrations.
- ❑ Four screws for attaching the plywood base to the wall (not

provided)



Caution

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

Plywood Base for a Wall with Wooden Studs

If you are installing the switch on a wall that has wooden studs, Allied Telesis recommends using a plywood base to attach the device to it. (A plywood base is not required for a concrete wall.) Refer to Figure 33.

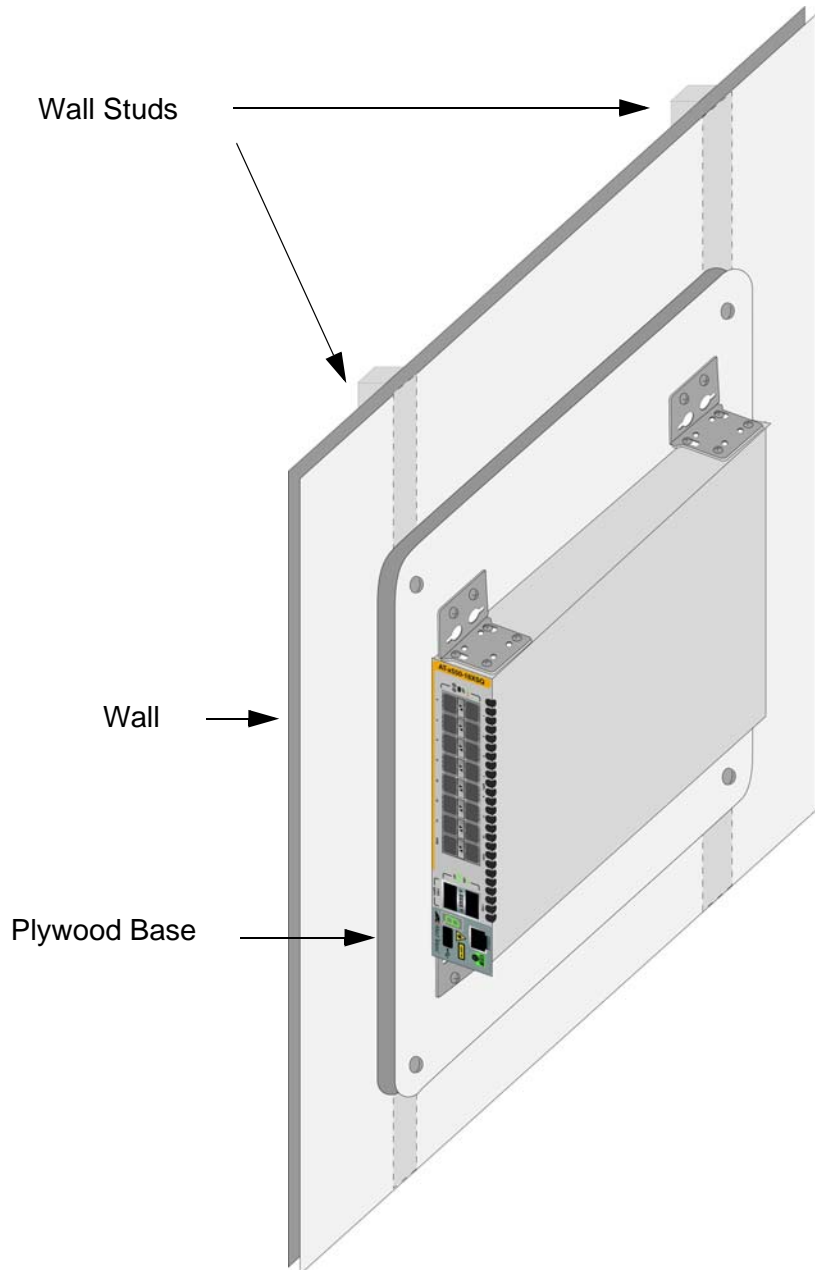


Figure 33. Switch on the Wall with a Plywood Base

The plywood base allows you to mount the switch on two wall studs. The standard distance between two studs in a wall is 41 centimeters (16

inches) while the distance between the front and rear brackets on the switch is 34.4 centimeters (13.6 inches). If you install the switch without the base, only two brackets on the switch would be on a wall stud.

The recommended minimum dimensions of the plywood base are listed here:

- ❑ Width: 55.9 centimeters (22 inches)
- ❑ Height: 35.6 centimeters (14 inches)
- ❑ Thickness: 5.1 centimeters (2 inches)

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.

You should install the plywood base on the wall and then install the switch on the base. Refer to Figure 34.

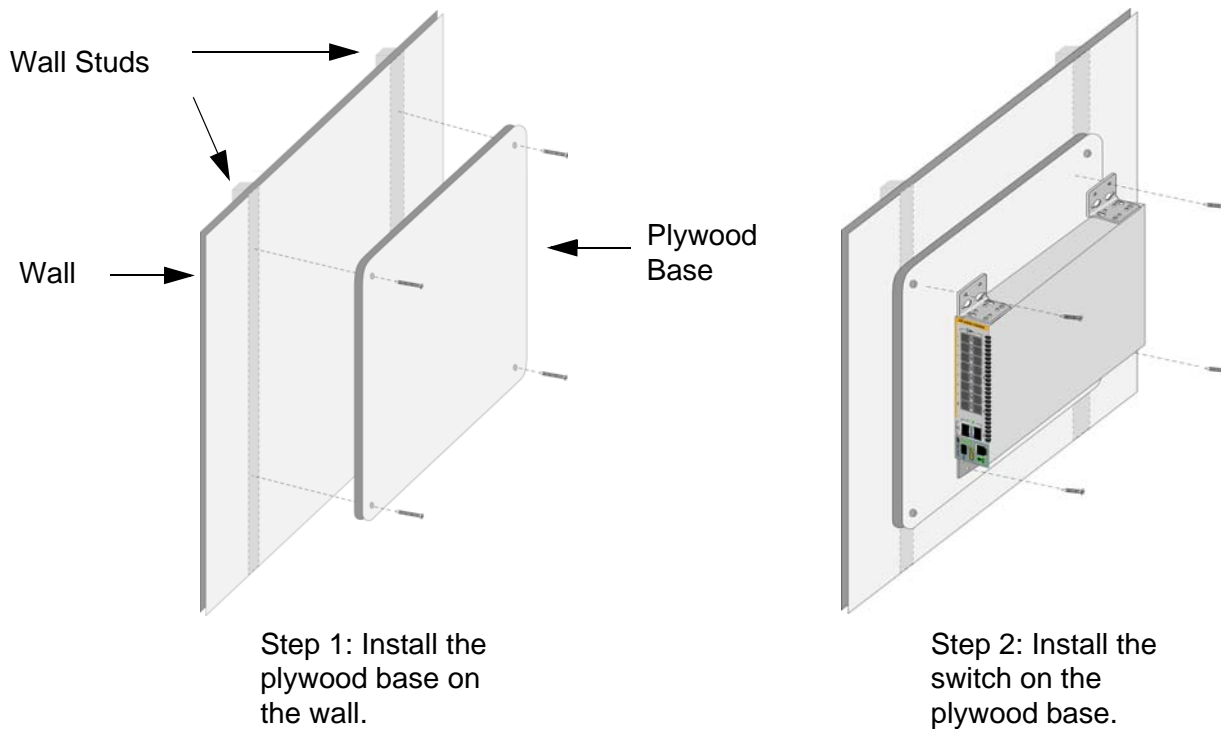


Figure 34. Steps to Installing the Switch with a Plywood Base

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 67. Consult a qualified building contractor for installation instructions for the plywood base. The installation guidelines are listed here:

- ❑ You should use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- ❑ You should attach the base to two wall studs with a minimum of four screws.
- ❑ The selected wall location for the base should provide sufficient space from other devices or walls so that you can access the front and back panels.

Installing the Switch on a Plywood Base

This procedure assumes that the plywood base for the switch is already installed on the wall. Please review “Reviewing Safety Precautions” on page 38 and “Choosing a Site for the Switch” on page 42 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 may result if it is not properly fastened to the wall. *aw*
E105

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

1. Place the switch in a table.
2. Install the four wall brackets to the sides of the unit, with the sixteen M4x6mm screws included with the switch. Refer to Figure 35 on page 71.

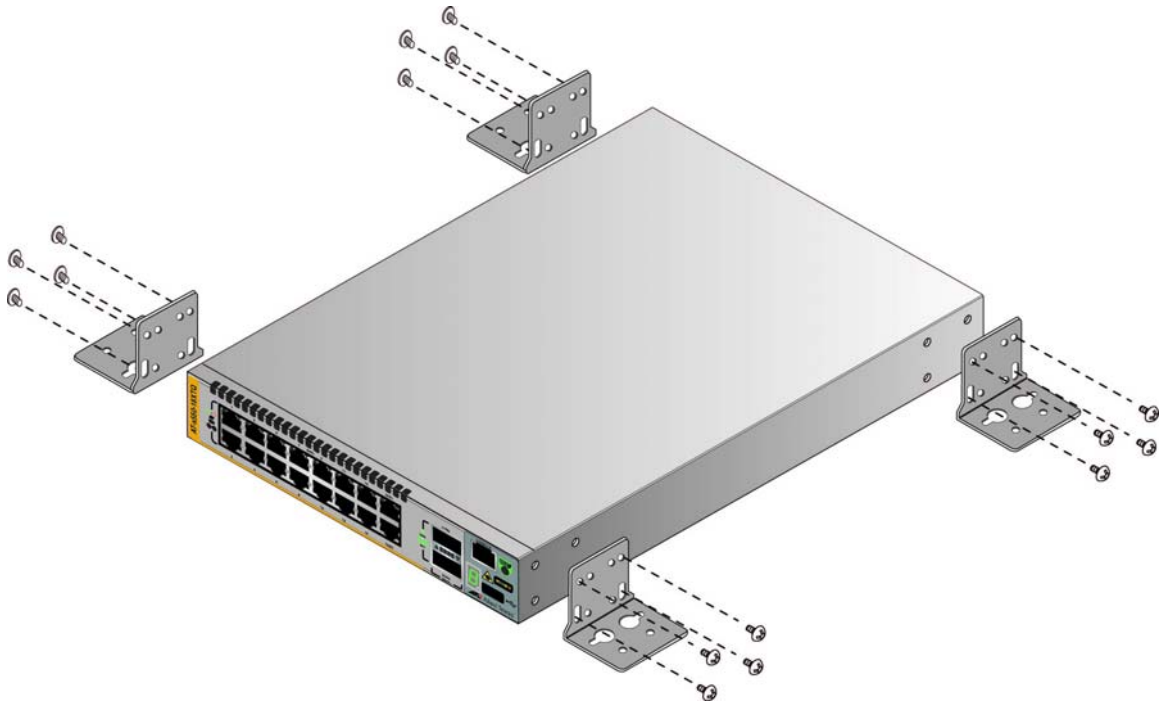


Figure 35. Installing the Wall Brackets

3. After attaching the brackets to the side of the switch, have another person hold the switch on the plywood base on the wall while you secure it with the four M4x32.3mm screws included with the switch. Refer to Figure 36 on page 72.

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

- Position the switch so that the front panel is either on the left or right. Refer to Figure 35. You may not install the switch with the front panel facing up or down.
- Leave sufficient space from other devices or walls so that you can access the front and back panels.

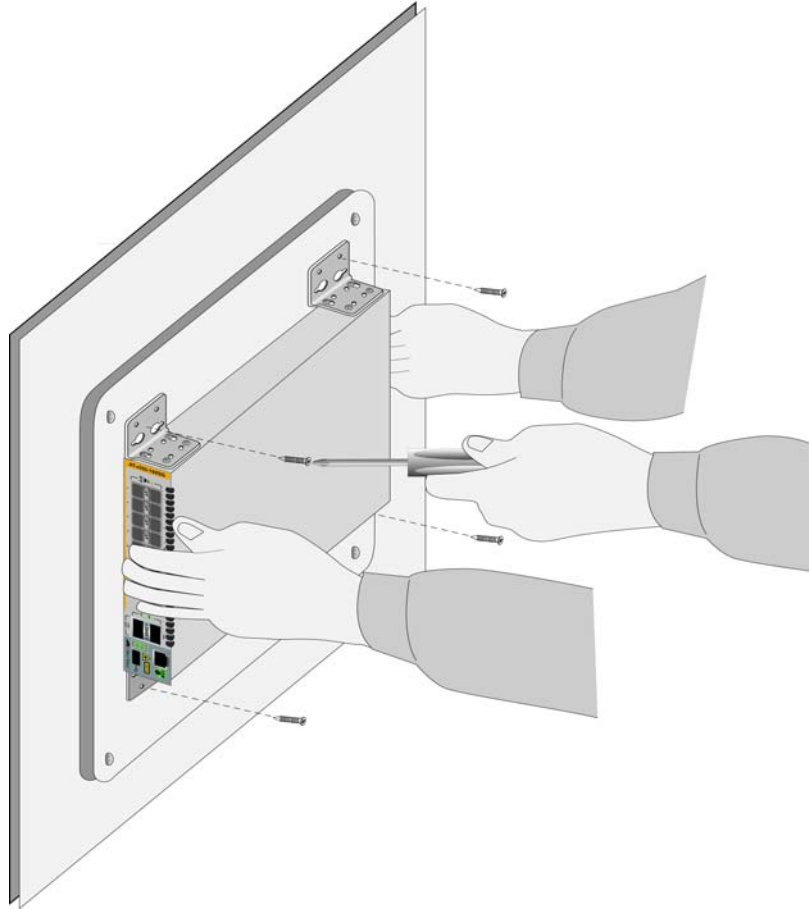


Figure 36. Securing the Switch to the Plywood Base

4. Go to Chapter 5, "Powering On the Switch" on page 77.

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 64
- “Installation Guidelines” on page 65

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

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

1. Place the switch in a table.
2. Install the four AT-BRKT-J24 wall brackets to the sides of the unit with the sixteen M4x6mm screws that come with the switch.
3. Have another people 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 37 on page 74.

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

- Position the switch so that the front panel is either on the left or the right. Refer to Figure 32 on page 64. You may not install the switch with the front panel facing up or down.
- Leave sufficient space from other devices or walls so that you can access the front and back panels.

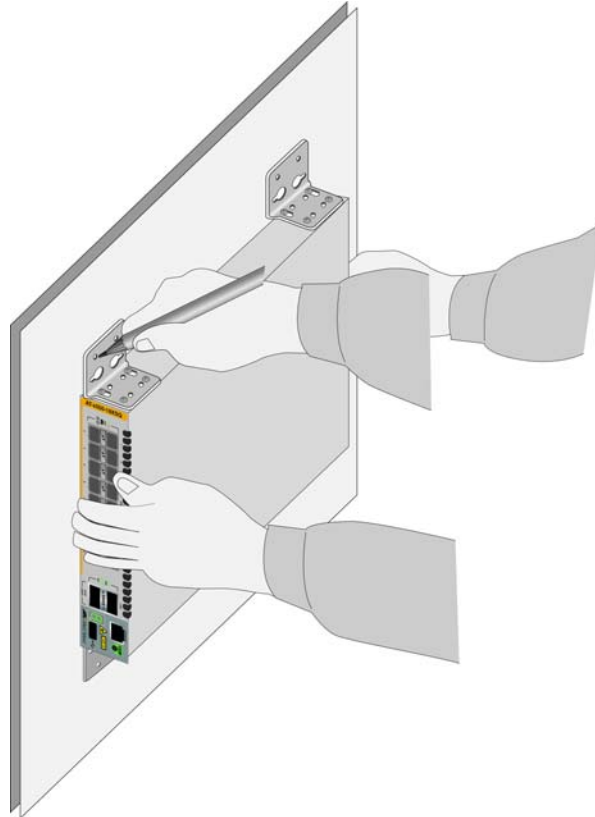


Figure 37. Marking the Locations of the Bracket Holes on a Concrete Wall

4. Place the switch on a table or desk.
5. Use a drill and 1/4" carbide drill bit to pre-drill the four 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.
 - ❑ Allied Telesis recommends cleaning out the holes with a brush or compressed air.
6. Insert the four 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 four M4x32mm provided screws. Refer to Figure 38 on page 75.

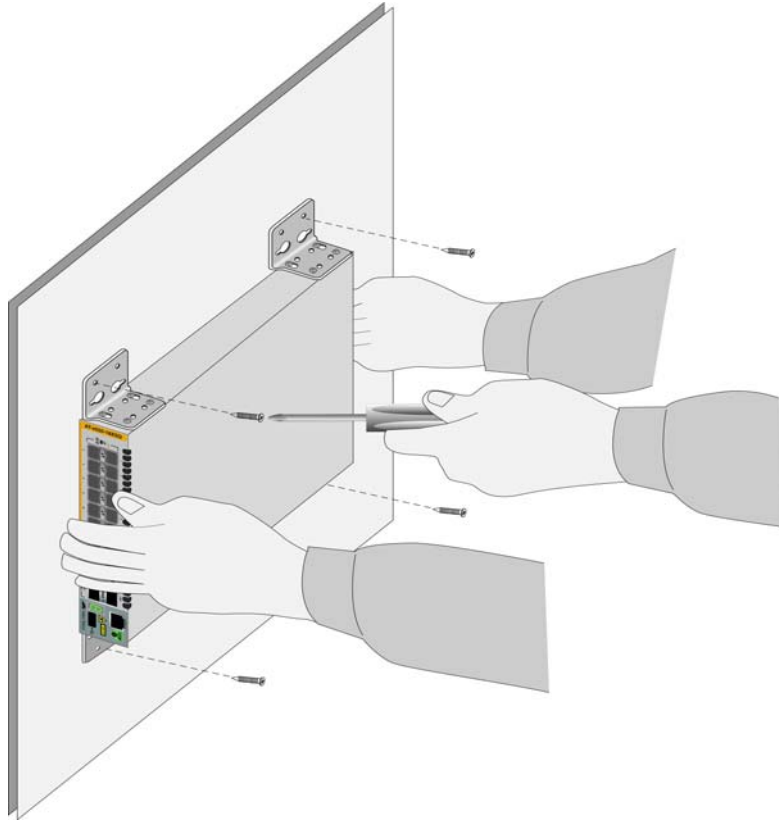


Figure 38. Installing the Switch on a Concrete Wall

8. Go to Chapter 5, "Powering On the Switch" on page 77.

Chapter 5

Powering On the Switch

This chapter contains the following procedures:

- ❑ “Powering On the Switch” on page 78
- ❑ “Monitoring the Initialization Processes” on page 81

Powering On the Switch

Before powering on the switch, review the information in “Power Specifications” on page 114 for the power specifications of the switches.



Warning

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

Note

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

To power on the switch, perform the following procedure:

1. Install the power cord retaining clip on the AC power connector on the rear panel of the switch. Refer to Figure 39.

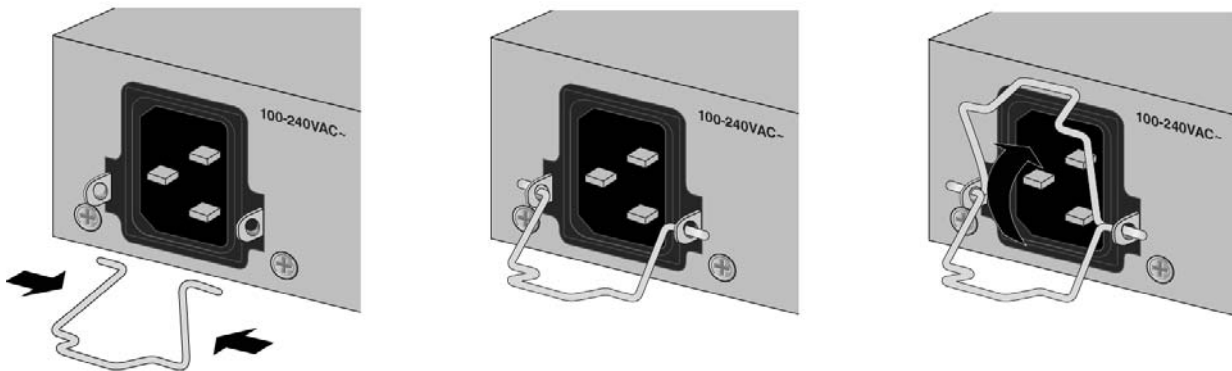


Figure 39. Installing the Power Cord Retaining Clip

2. Connect the AC power cord to the AC power connector on the rear panel of the switch. Refer to Figure 40 on page 79.

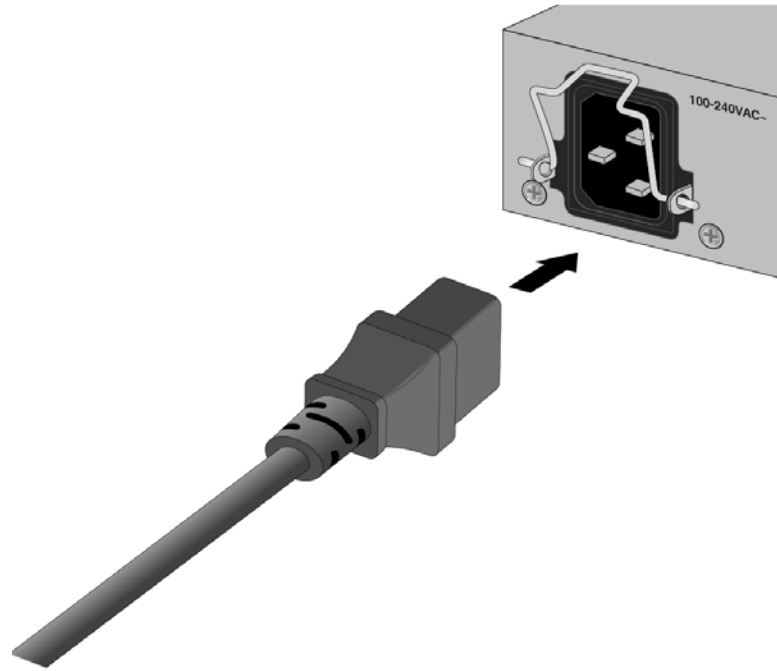


Figure 40. Connecting the AC Power Cord

3. Lower the power cord retaining clip to secure the cord to the switch. Refer to Figure 41.

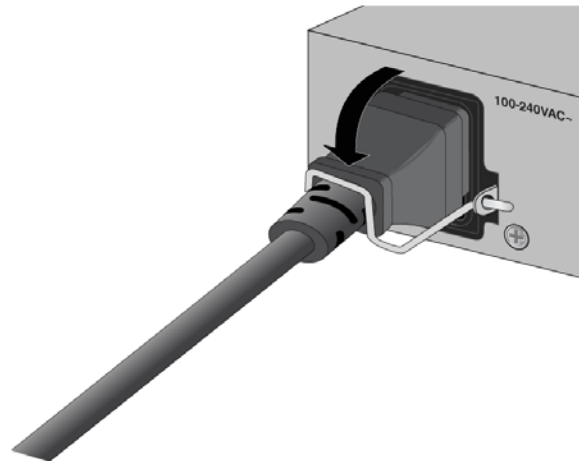


Figure 41. Lowering the Power Cord Retaining Clip

4. Connect the power cord to an appropriate AC power source. Refer to Figure 42 on page 80.

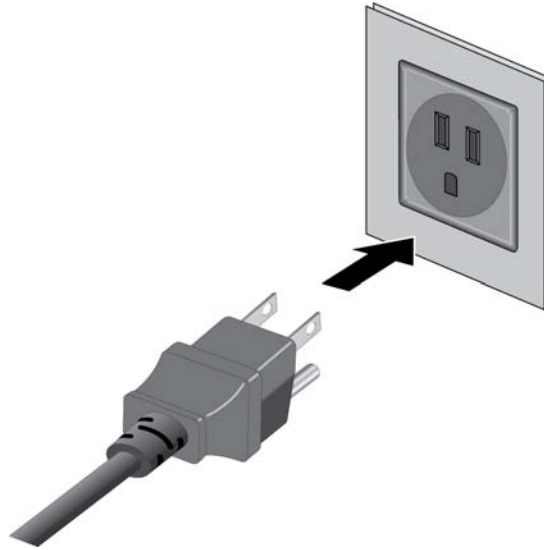


Figure 42. Connecting the Power Cord to an AC Power Source

Note

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

5. Do one of the following:
 - To monitor the switch as it initializes the management software, go to “Monitoring the Initialization Processes” on page 81.
 - Wait two minutes for the switch to initialize its management software and then go to Chapter 6, “Configuring the Switch for Stand-alone Operations” on page 85.

Monitoring the Initialization Processes

It takes about two minutes for the switch to initialize its management software programs and features, and load the default configuration. You can monitor the bootup sequence by connecting a terminal or computer that has a terminal emulator program to the Console port on the switch. (The settings of the Console port are provided in “Starting a Local Management Session” on page 87.) The switch displays the messages in Figure 43 here to Figure 45 on page 83 on the Console port as it initializes the management software.

```

Boot loader 6.2.1 loaded
Press <Ctrl+B> for the Boot Menu
Loading flash: x550-cap_x550-20170315-1.rel...
Verifying release... OK
Booting...
Uncompressing Linux... done, booting the kernel
Starting base/first... [ OK ]
Mounting virtual filesystems... [ OK ]

      _____  _____
     / \           / /  _____ \
    /  \         / /  | |  _____ |
   /    \       / /  | |  | |  _____ |
  /      \     / /  | |  | |  | |  _____ /
 /        \   / /  | |  | |  | |  | |  _____ /
/          \ / /  | |  | |  | |  | |  | |  _____ /

Allied Telesis Inc.
AlliedWare Plus (TM) v0.0.0
Current release filename: x550-cap_20170315-1.rel
Built: Tue Mar 14 23:31:58 UTC 2017
Mounting static filesystems... [ OK ]
Attaching to /dev/mtd0... [ OK ]
Checking flash filesystem... [ 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/arm_sysctl... [ OK ]
Starting base/dbus... [ OK ]

```

Figure 43. Switch Initialization Messages

```

Starting base/syslog... [ OK ]
Starting base/loopback... [ OK ]
Starting base/poe_done... [ OK ]
Starting base/sysctl... [ OK ]
Received event poefw.done
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 hardware/timeout... [ OK ]
Starting base/inet... [ OK ]
Received event apteryx.done
Starting base/alfred... [ OK ]
Starting base/kernond... [ OK ]
Starting base/plugman... [ OK ]
Starting base/apteryx-sync... [ OK ]
Starting base/openhpi... [ OK ]
Received event apteryx-sync.done
Received event board.inserted
Starting hardware/hardware-done... [ OK ]
Received event hardware.done
Starting network/startup... [ OK ]
Starting base/external-media... [ OK ]
Received event hostcfg.done
Starting network/stackd... [ OK ]
Starting network/election.timeout... [ OK ]
Received event network.enabled

Initializing HA processes:
atmfd_agentd, atmfd, hostd, auth, cntrd, epsr, hsl
imi, imiproxyd, irdpd, lacp, lldpd, loopprot, mstp
nsm, ospf6d, pdmd, pim6d, pimd, ripd, ripngd
rmon, sflowd, udlld, vrrpd, bgpd, ospfd

```

Figure 44. Switch Initialization Messages (Continued)

```
Received event network.initialized

00:50:36 awplus-1 VCS[596]: No neighboring members found, unit may be in a
standalone configuration
Received event vcs.elected-master
Assigning Active Workload to HA processes:
00:50:36 awplus-1 VCS[596]: Startup speed can be improved by adding 'no stack
1 enable' to configuration
00:50:36 awplus-1 VCS[596]: Member 1 (e01a.ea20.80dd) has become the Active
Master
hsl, authd, epsrd, irpd, lacpd, loopprotd
mstpd, nsm, rmond, sflowd, vrrpd, imi, imiproxyd

Received event network.activated

Loading default configuration
Warning: flash:/default.cfg does not exist, loading factory defaults.
..
done!
Received event network.configured

awplus login:
```

Figure 45. Switch Initialization Messages (Continued)

After the switch has initialized its management software, go to Chapter 6, “Configuring the Switch for Stand-alone Operations” on page 85.

Chapter 6

Configuring the Switch for Stand-alone Operations

This chapter contains the following procedures:

- ❑ “Determining the Stand-alone or Stacking Status of the Switch” on page 86
- ❑ “Starting a Local Management Session” on page 87
- ❑ “Disabling the VCStack Feature” on page 89
- ❑ “Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables” on page 91
- ❑ “Saving Your Changes and Rebooting the Switch” on page 92
- ❑ “Specifying Ports in the Command Line Interface for Stand-alone Switches” on page 93

Determining the Stand-alone or Stacking Status of the Switch

After powering on the switch and waiting two minutes for it to initialize its management software, examine the switch ID LED on the front panel. If the LED is displaying the number “1” or higher, the VcStack feature is enabled on the unit. You need to disable it to use the switch in stand-alone mode. For instructions, start with “Starting a Local Management Session” on page 87.

If the LED is displaying “0”, the VcStack feature is already disabled and the switch is operating as a stand-alone unit. Do one of the following:

- ❑ If you plan to use breakout cables in the QSFP+ transceiver slots, perform “Starting a Local Management Session” on page 87 and “Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables” on page 91.
- ❑ Otherwise, go to Chapter 7, “Cabling the Networking Ports” on page 95.



Caution

You have to reset the switch to disable the VcStack feature. Some network traffic may be lost if the device is already connected to a live network. ⚡ E89

Note

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

Starting a Local Management Session

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

1. Connect the RJ-45 connector on the management cable to the Console port on the front panel of the switch, as shown in Figure 46.

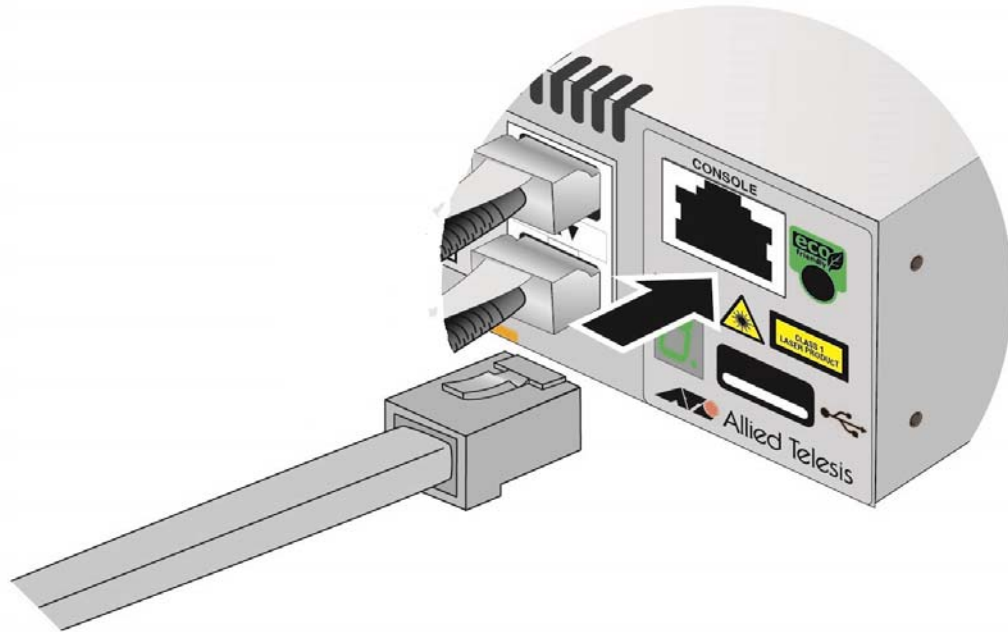


Figure 46. Connecting the Management Cable to the Console Port

2. Connect the other end of the cable to an RS-232 port on a terminal or PC with a terminal emulator program.
3. Configure the terminal or terminal emulator program as follows:
 - Baud rate: 9600 bps (The baud rate of the Console Port is adjustable from 1200 to 115200 bps. The default is 9600 bps.)
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow 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, enter 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 prompt, shown in Figure 47. is displayed.



Figure 47. User Exec Mode Prompt

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 x550 Series Switches, AlliedWare Plus Operating System* at www.alliedtelesis.com.

6. Do one of the following:

- If you need to disable the VCStack feature, perform the procedure in “Disabling the VCStack Feature” on page 89.
- If the VCStack feature is already disabled, but you plan to use breakout cables in the QSFP+ slots, go to “Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables” on page 91.

Disabling the VCStack Feature

The following procedures explain how to disable the VCStack feature to use the switch as a stand-alone unit.



Caution

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

To disable the VCStack feature, perform the following procedure:

1. Start a local management session on the switch. For instructions, refer to “Starting a Local Management Session” on page 87.
2. At the User Exec mode prompt, enter the `SHOW STACK` command to display the status of the VCStack feature on the switch. Figure 48 is an example of the command.

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

Figure 48. SHOW STACK Command

3. If the Operational Status of the switch is “Stacking Hardware Disabled,” the VCStack feature is already disabled on the unit. You can use the transceiver slots 17 and 21 with QSFP+ transceivers as regular networking ports. To use the slots with breakout cables, go to “Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables” on page 91. Otherwise, go to Chapter 7, “Cabling the Networking Ports” on page 95.
4. If the Operational Status is “Standalone Unit,” the VCStack feature is active on the unit. (The “standalone” status means the switch is functioning as a stack of one switch.) You must disable the feature to use the switch as a stand-alone unit. Continue with the next step.
1. Move to the Global Configuration mode by entering the `ENABLE` and `CONFIGURE TERMINAL` commands, as shown in Figure 49 on page 90.

```
awpl us> enable
awpl us# configure terminal
Enter configuration commands, one per line. End with CNTL/Z
awpl us#
```

Figure 49. Moving to the Global Configuration Mode

2. To disable the VCStack feature, enter the NO STACK ENABLE command in this format:

```
no stack id enable
```

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

```
awpl us(config)# no stack 1 enable
```

The confirmation prompt in Figure 50 is displayed.

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

Figure 50. Confirmation Prompt for the NO STACK ENABLE Command

3. Type Y to disable VCStack on the switch or N to cancel the procedure.

The switch displays the message in Figure 51.

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

Figure 51. Disabling VCStack

4. Press the Return key to re-display the Global Configuration mode prompt.
5. Do one of the following:
 - ❑ To configure P17 and P21 transceiver slots for breakout cables, go to “Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables” on page 91 and start with step 3.
 - ❑ Otherwise, go to “Saving Your Changes and Rebooting the Switch” on page 92.

Configuring QSFP+ Transceiver Slots 17 and 21 for Breakout Cables

To configure the QSFP+ transceiver slots 17 and 21 for breakout cables, perform the following procedure:

1. Start a local management session on the switch. For instructions, refer to “Starting a Local Management Session” on page 87.
2. Move to the Global Configuration mode by entering the `ENABLE` and `CONFIGURE TERMINAL` commands, as shown in Figure 49 on page 90.
3. Enter the `PLATFORM PORTMODE INTERFACE` command to configure one or both QSFP+ transceiver slots for breakout cables. The format of the command is shown here:

```
pl atform portmode i nterface ports 10gx4 | 40g
```

The `PORTS` variable specifies the QSFP+ transceiver slots for the breakout cables, which are 1.0.17 and 1.0.21 on the x550 Ethernet Switch Series. The 10gx4 parameter configures the slots for breakout cables while the 40g parameter configures the slots for regular QSFP+ transceivers, which is the default.

This example of the command configures QSFP+ transceiver slot 17 for a breakout cable:

```
awpl us(confi g)# pl atform portmode i nterface port1.0.17
10gx4
```

4. After configuring the transceiver slots, go to “Saving Your Changes and Rebooting the Switch” on page 92.

Saving Your Changes and Rebooting the Switch

After disabling the VCStack feature or configuring the 1.0.17 and 1.0.21 transceiver slots for breakout cables, you have to save your configuration changes and reboot the switch. Changes to the status of the VCStack feature and QSFP+ transceiver slots do not take affect until after you reboot the unit.

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

1. From the Global Configuration mode, enter the EXIT command to return to the Privileged Exec mode, as shown in Figure 52.

```
awpl us(confi g)# exi t
awpl us#
```

Figure 52. Returning to the Privileged Exec Mode

2. Enter the WRITE command to save your change in the configuration file. The switch displays the confirmation prompt in Figure 53.

```
awpl us# wri te
Bui lding confi gurati on . . .
[OK]
awpl us#
```

Figure 53. Saving the Changes with the WRITE Command

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

3. Enter the REBOOT command to reboot the switch.
4. At the confirmation prompt, type “Y” for yes.
5. Wait two minutes for the switch to initialize its management software and afterwards examine the Switch ID LED again. The switch is ready for normal network operations as a stand-alone unit if its ID number is “0.” If the number is not “0,” repeat the procedures in this chapter, being sure to save your configuration changes with the WRITE command.
6. Go to Chapter 7, “Cabling the Networking Ports” on page 95.

Specifying Ports in the Command Line Interface for Stand-alone Switches

The individual ports on the switches are specified in the command line interface with the PORT parameter. The format of the parameter is shown in Figure 54.

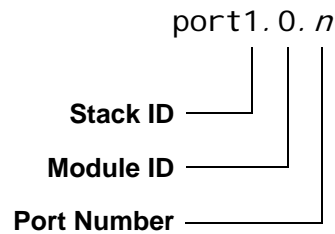


Figure 54. PORT Parameter in the Command Line Interface

The three parts of the PORT parameter are described in Table 7.

Table 7. PORT Parameter Format

Number	Description
Stack ID	Designates the switch's ID number. You must always enter 1 for this value for a stand-alone switch. Do not enter 0 for the stack ID of a stand-alone switch even though that is the value on the Switch ID LED.
Module ID	Designates the module number of a port. The x550 Series switches do not have modules, Consequently, this value is always 0 (zero).
Port Number	Designates a port number.

Here is an example of the PORT parameter on a stand-alone switch. It uses the INTERFACE command to enter the Port Interface mode for ports 15 and 17 on the front panel of the switch:

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

For instructions on the command line interface and the PORT parameter, refer to the *Software Reference for x550 Series Switches, AlliedWare Plus Operating System*.

Chapter 7

Cabling the Networking Ports

This chapter contains the following procedures:

- ❑ “Cabling the 1Gbps/10Gbps Ports in the AT-x550-18XTQ Switch” on page 96
- ❑ “Guidelines to Handling SFP, SFP+, and QSFP+ Transceivers” on page 97
- ❑ “Installing 1Gbps SFP or 10Gbps SFP+ Transceivers in the AT-x550-18XSQ Switch” on page 98
- ❑ “Installing AT-SP10TW Direct Connect Twinax Cables in the AT-x550-18XSQ Switch” on page 101
- ❑ “Installing AT-QSFPSR4 or AT-QSFPLR4 Transceivers in QSFP+ Slots” on page 103
- ❑ “Installing AT-QSFPCU Cables in QSFP+ Slots” on page 104

Cabling the 1Gbps/10Gbps Ports in the AT-x550-18XTQ Switch

Here are the guidelines to cabling the 1Gbps/10Gbps twisted pair ports on the AT-x550-18XTQ Switch:

- ❑ The cable specifications for the ports are listed in Table 2 on page 22.
- ❑ The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- ❑ The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Aut-Negotiation.
- ❑ The ports must be set to Auto-Negotiation, the default setting, to operate at 1000Mbps.
- ❑ The ports support full-duplex only.
- ❑ Do not attach cables to ports of static or 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, SFP+, and QSFP+ Transceivers

Please review the following guidelines before installing SFP, SFP+, or QSFP+ transceivers in the switches:

- ❑ The transceivers are hot-swappable. You can install them while the switch is powered on.
- ❑ For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.
- ❑ The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.
- ❑ You should install a transceiver before connecting its fiber optic cable.
- ❑ Fiber optic transceivers are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed, or when you store the transceiver. When you do remove the plug, keep it for future use.
- ❑ 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

Note

QSFP+ transceiver slots 17 and 21 are initially configured as stacking slots for the VCStack feature. If you are using the switch as a stand-alone unit, you can use the slots and QSP+ transceivers as regular networking ports by disabling the VCStack feature. For instructions, refer to “Disabling the VCStack Feature” on page 89.

Installing 1Gbps SFP or 10Gbps SFP+ Transceivers in the AT-x550-18XSQ Switch

This section contains installation instructions for SFP or SFP+ transceivers in slots 1 to 16 in the AT-x550-18XSQ Switch.

The 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. Remove the dust plug from a transceiver slot on the switch. Refer to Figure 55.



Figure 55. Removing the Dust Plug from an SFP Slot

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.
4. Slide the transceiver into the slot until it clicks into place. Refer to Figure 56 on page 99.

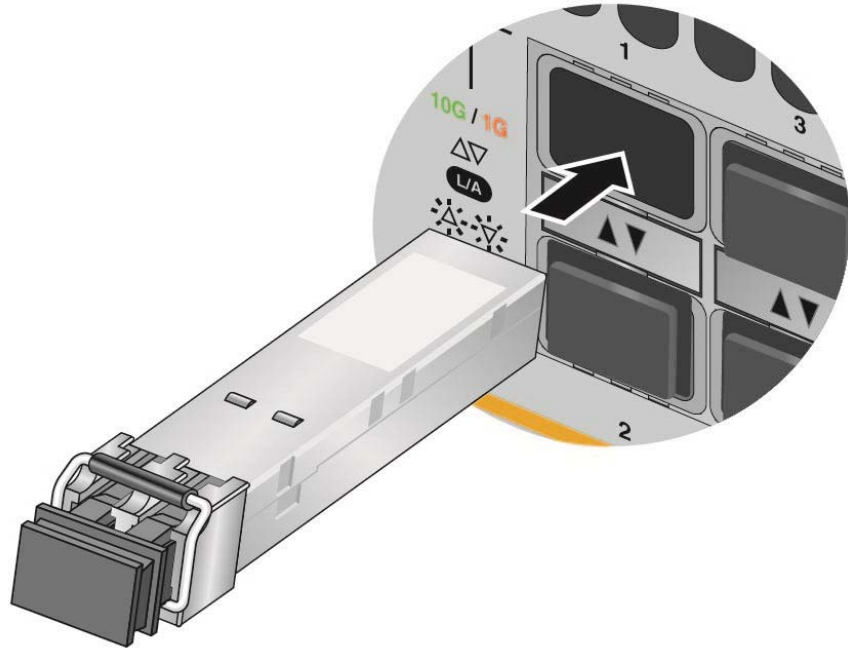


Figure 56. Installing an SFP Transceiver

Note

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

5. Remove the dust cover from the transceiver, as shown in Figure 57.

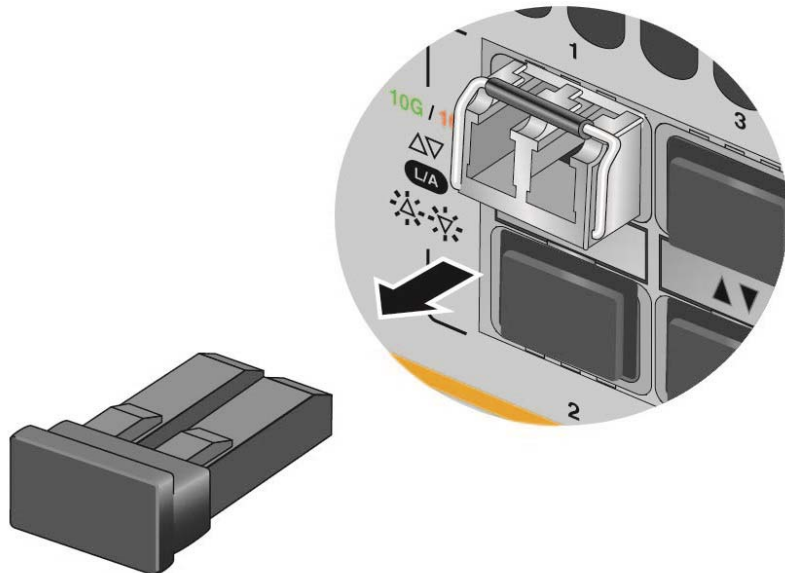


Figure 57. Removing the Dust Cover from an SFP or SFP+ Transceiver

6. Verify the position of the handle on the transceiver. If the transceiver is in a top slot, the handle should be in the upright position, as shown in Figure 58. If the transceiver is in a bottom slot, the handle should be in the down position.

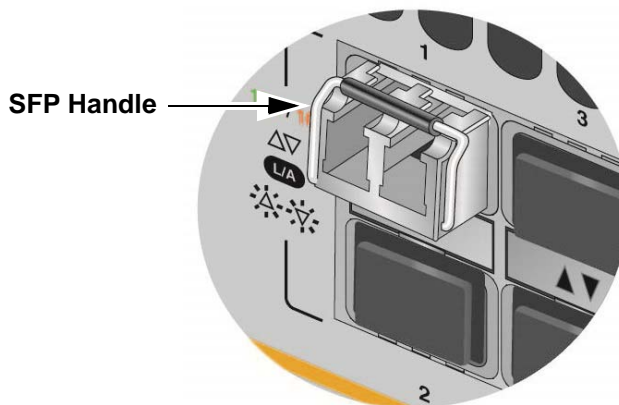


Figure 58. Positioning the SFP or SFP+ Handle in the Upright Position

7. Connect the fiber optic cable to the transceiver, as shown in Figure 59 on page 100. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

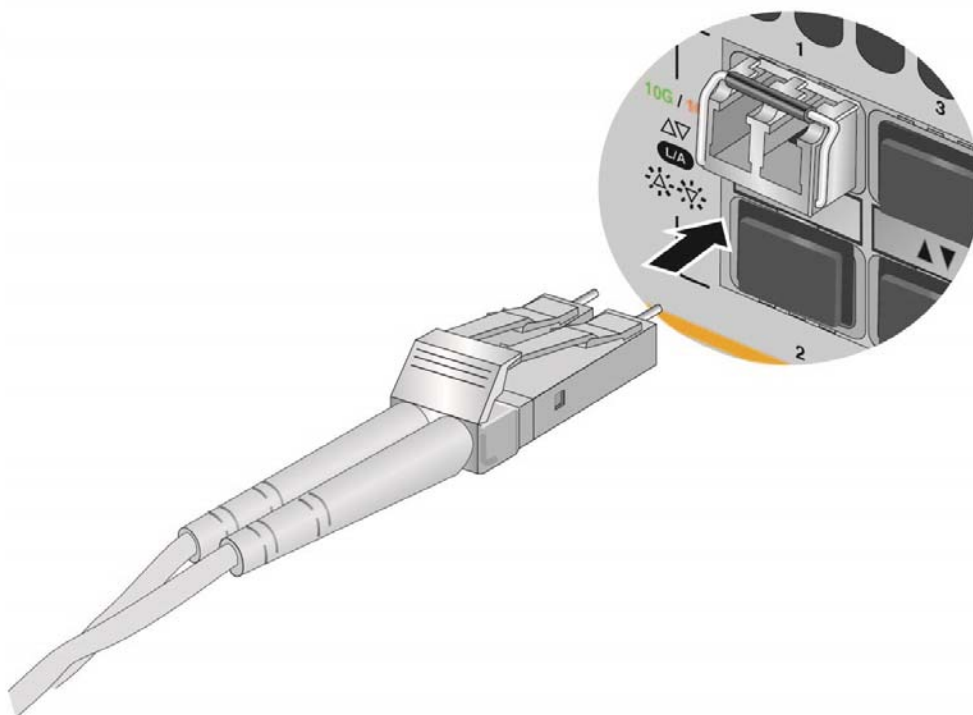


Figure 59. Connecting a Fiber Optic Cable to an SFP or SFP+ Transceiver

8. Repeat this procedure to install additional transceivers.

Installing AT-SP10TW Direct Connect Twinax Cables in the AT-x550-18XSQ Switch

The SFP and SFP+ transceiver slots 1 to 16 on the AT-x550-18XSQ Switch support AT-SP10TW direct connect twinax cables. The cables are an economical way to add 10Gbps connections over short distances. They have SFP+ transceivers on both ends and come in lengths of 1, 3, and 7 meters.

To install AT-SP10TW cables in the AT-x550-18XSQ Switch, perform the following procedure:

1. Remove the dust plug from a transceiver slot on the switch. Refer to Figure 55 on page 98.
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 60 on page 101.

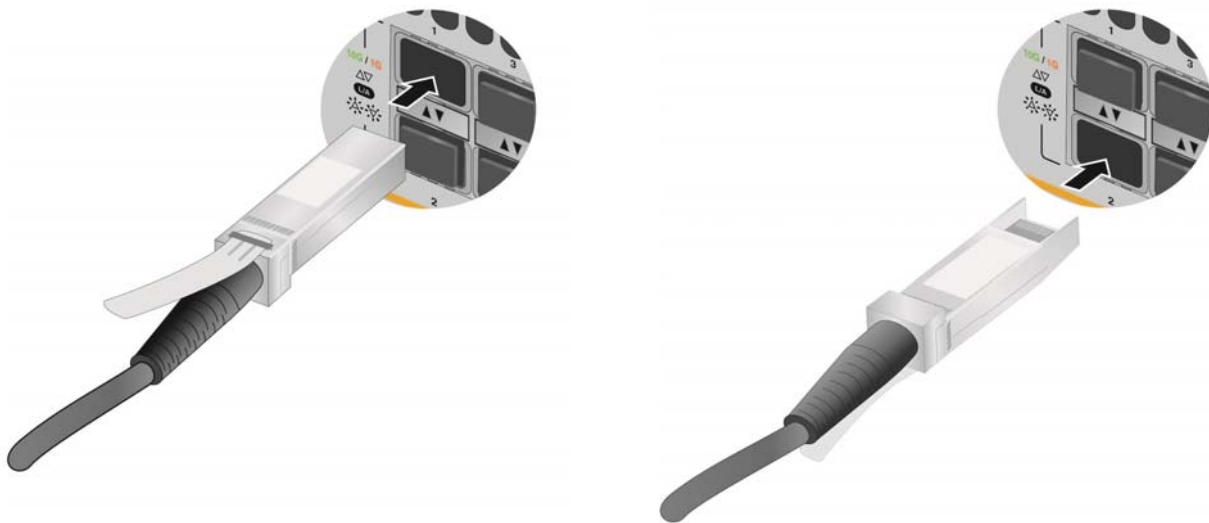


Figure 60. Installing AT-SP10TW Cables

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.

Installing AT-QSFPSR4 or AT-QSFPLR4 Transceivers in QSFP+ Slots

This section contains the procedure for installing AT-QSFPSR4 or AT-QSFPLR4 transceivers in the QSFP+ slots 17 and 21.

Please review “Guidelines to Handling SFP, SFP+, and QSFP+ Transceivers” on page 97 before performing this procedure.

To install AT-QSFPSR4 or AT-QSFPLR4 transceivers, perform the following procedure:

1. Remove the dust cover from QSFP+ slot 17 or 21. Refer to Figure 61 on page 104.
2. Slide a QSFP+ transceiver into the slot until it clicks into place.
3. Attach fiber optic cable to the transceiver.
4. Connect the other end of the cable to a compatible QSFP+ port in another network device.
5. Repeat this procedure to install a second QSFP+ transceiver.

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.

Installing AT-QSFPCU Cables in QSFP+ Slots

This section contains instructions on how to install AT-QSFPCU Cables in the QSFP+ slots 17 and 21. You can use the cables in place of fiber optic cables and transceivers for 40GbE links of up to 1 or 3 meters. The model names of the cables are listed here:

- ❑ AT-QSFP1CU - 1 meter
- ❑ AT-QSFP3CU - 3 meters

Please review “Guidelines to Handling SFP, SFP+, and QSFP+ Transceivers” on page 97 before performing this procedure.

To install AT-QSFPCU Cables, perform the following procedure:

1. Remove the dust cover from a QSFP+ slot in the switch. Figure 61 shows the removal of the dust cover from slot 17.

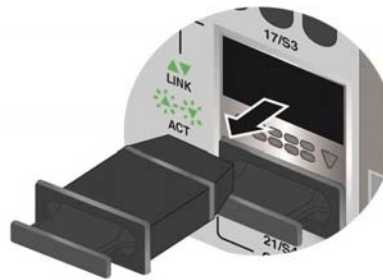


Figure 61. Removing the Dust Cover from a Slot on the AT-SBx81XLEM/Q2 Expansion Module

2. Orient the connector on the AT-QSFPCU Cable with the release tab on top and slide it into the slot until it clicks into place. Refer to Figure 62 on page 105.

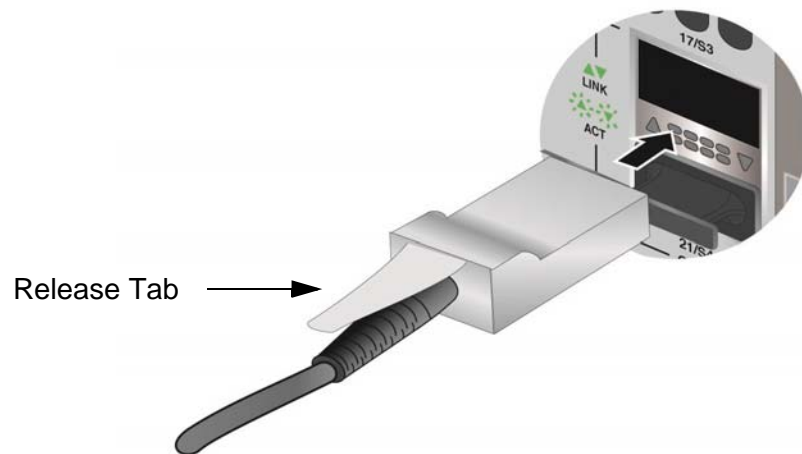


Figure 62. Sliding the AT-QSFPCU Cable into the Slot

3. Install the other end of the cable into a compatible QSFP+ slot on another network device.
4. Repeat this procedure to install additional AT-QSFPCU Cables.

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 8

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 of the port LEDs and the Switch ID LED are off, and the fans are not operating.

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

- Verify that the power cord is securely connected to the power source and the AC connector on the back panel of the switch.
- Verify that the power outlet has power by connecting another device to it.
- Try connecting the unit to another power source.
- Try a different power cord.
- Verify that the voltage from the power source is within the required levels for your region. The power requirements for the switch are listed in “Power Specifications” on page 114.

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

Solution: The switch may 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 may also toggle the LEDs off and on with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the command line interface.

Problem 3: A 1Gbps/10Gbps twisted pair port on the AT-x550-18XTQ switch is connected to a 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. Cable requirements are listed in Table 2 on page 22.
- ❑ Verify that the port is connected to the correct twisted pair cable.

Note

A 1Gbps/10Gbps connection may require five to ten seconds to establish a link.

Problem 4: The LINK/ACT LED for an SFP, SFP+, or QSFP+ 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's management software to verify that the port is enabled.
- ❑ If the remote network device is a managed device, use its management firmware to determine whether its port is enabled.
- ❑ Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power).

Problem 5: The switch functions intermittently.

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

- ❑ Use the SHOW SYSTEM ENVIRONMENT command in the

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

- ❑ Use the SHOW SYSTEM ENVIRONMENT command in the Privileged Exec mode to verify that the fan is operating correctly.
- ❑ Verify that the location of the switch allows for adequate airflow. The unit will shut down if it is overheating.

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

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

- ❑ A cooling fan has failed.
- ❑ The internal temperature of the switch has exceeded the normal operating range and the switch might have to shut down.

Contact your Allied Telesis sales representative for assistance.

Appendix A

Technical Specifications

This appendix contains the following sections:

- "Physical Specifications" on page 112
- "Environmental Specifications" on page 113
- "Power Specifications" on page 114
- "Certifications" on page 115
- "RJ-45 Twisted Pair Port Pinouts" on page 116
- "RJ-45 Style Serial Console Port Pinouts" on page 117

Physical Specifications

Dimensions (H x W x D)

Table 8 lists the dimensions of the switches.

Table 8. Product Dimensions

AT-x550-18XTQ	4.4 cm x 21.0 cm x 34.4 cm (1.7 in. x 8.3 in. x 13.6 in.)
AT-x550-18XSQ	4.4 cm x 21.0 cm x 34.4 cm (1.7 in. x 8.3 in. x 13.6 in.)

Weights

Table 9 lists the weights of the switches and power supplies.

Table 9. Product Weights

AT-x550-18XTQ	3.11 kg (6.85 lb.)
AT-x550-18XSQ	3.18 kg (7.00 lb.)

Ventilation

Table 10 lists the ventilation requirements.

Table 10. Ventilation Requirements

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

Table 11 lists the environmental specifications of the switches.

Table 11. Environmental Specifications

Operating Temperature	0° C to 45° C (32° F to 113° 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)

Power Specifications

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

Maximum Power Consumption

Table 12 lists the maximum power consumptions for the switches.

Table 12. Maximum Power Consumptions

AT-x550-18XTQ	128.0 watts
AT-x550-18XSQ	111.0 watts

Input Voltages

Table 13 lists the input voltages for the switches.

Table 13. Input Voltages

AT-x550-18XTQ	100-240 VAC~, 1.5A maximum, 50/60 Hz
AT-x550-18XSQ	100-240 VAC~, 1.5A maximum, 50/60 Hz

Heat Dissipation

Table 14 lists the heat dissipation for the switches.

Table 14. Heat Dissipation

AT-x550-18XTQ	436 BTU/hr
AT-x550-18XSQ	378 BTU/hr

Certifications

Table 15 lists the product certificates.

Table 15. Product Certifications

EMI (Emissions)	FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, CISPR Class A, C-TICK, CE
EMC (Immunity)	EN55024
Electrical and Laser Safety	EN60950-1 (TUV), UL 60950-1 (CULUS), EN60825
Compliance Marks	CE, CULUS, TUV, C-Tick

RJ-45 Twisted Pair Port Pinouts

Figure 63 illustrates the pin layout of the RJ-45 connectors on the front panel of the switch.

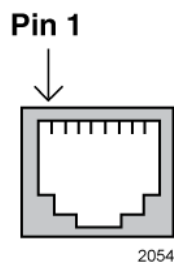


Figure 63. RJ-45 Socket Pin Layout (Front View)

Table 16 lists the pin signals when a port operating at 1Gbps or 10Gbps.

Table 16. Pin Signals for 1Gbps or 10Gbps

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

RJ-45 Style Serial Console Port Pinouts

Table 17 lists the pin signals of the RJ-45 style serial Console port.

Table 17. RJ-45 Style Serial Console Port Pin Signals

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

