AT-x220-28GS

Gigabit Ethernet Switch

Installation Guide

613-02546-00 REV A

Electrical Safety and Emissions Standards

This product meets the following standards.

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

Industry Canada
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EMC	EN 55024 EN 55032 Class A EN 61000-3-2 EN 61000-3-3 FCC Part 15 (CFR 47) Class A VCCI Class A CISPR 22 Class A ICES-003

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

Environmental Compliance	RoHS WEEE
Electrical Safety	EN 60950-1 (edition 2) IEC 60950-1 (edition 2) UL 60950-1 (edition 2)
Laser Safety	EN 60825
Regulatory Compliance	RCM CE

Translated Safety Statements

Important: The ☞ indicates that a translation of the safety statement is available in a PDF document titled *Translated Safety Statements* posted on the Allied Telesis website at **www.alliedtelesis.com**.

Contents

Figures

Tables

Preface

This guide contains the installation instructions for the AT-x220-28GS Gigabit Ethernet Switch. This preface contains the following sections:

Symbol 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.

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

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 questions in our knowledge database, check support tickets, learn about RMAs, and 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 guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates - Download the latest software releases for your product.

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

User documentation

For full AlliedWare Plus documentation and product information, see our **Resource** Library at:

http://www.alliedtelesis.com/support

From the **Resource** Library the following documents are available:

- **Datasheets**

  Click on the link above and search for the product series.

- **Installation guides**

  Click on the link above and search for the product series.

- **Getting Started with AlliedWare Plus Feature Overview and Configuration Guide**

  Click on the link above and search for 'Getting started with AlliedWare Plus'.

- **Feature Overview and Configuration Guides**

  Click on the link above and search for the feature name.

- **Command References**

  Click on the link above and search for the product series.

You can also find a range of helpful case studies, solution guides, whitepapers and videos.

Chapter 1
Overview

This chapter provides descriptions of the AT-x220-28GS Gigabit Ethernet Switch and contains the following sections:

Features

This section describes the hardware features on the front panel of the AT-x220-28GS switch.This model is a Gigabit Advanced Smart-Managed switch with a total of 28 1 Gbps SFP ports.

SFP slots

- Ports 1-24 are 100BASE-FX or 1000BASE-X Ethernet LAN ports.
- Ports 25-28 are 100BASE-FX or 1000BASE-X Ethernet Uplink ports.

Transceivers

- Available for 100Mbps or 1000Mbps of fiber, and 1000Mbps of copper.
- Support 100BASE-FX and 1000BASE-SX/LX SFP transceivers.

SFP transceivers must be purchased separately. For a list of supported transceivers, contact your Allied Telesis distributor or reseller.

Note

See the product Datasheet for the specific ATI SFP modules supported by the x220-28GS switch.

USB slot

The Management Panel has a USB 2.0 compatible host port, see “USB LED” on page 13. 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.

Console port

The Management Panel has a RS-232 serial management port with an RJ-45 connector. You use the port to access the AlliedWare Plus management software on the switch to configure the feature settings or monitor status or statistics. See “Starting a local management session” on page 34.

LEDs

Here is a brief description of the LEDs:

- Power and Fault LEDs; refer to “Power and Fault LEDs” on page 10.
- Link/Activity LEDs for the SFP slots; see “SFP LEDs” on page 11.
- USB LED; refer to “USB LED” on page 13.

Note

The ecofriendly button on the Management Panel turns off the port LEDs to conserve electricity (excluding the Fault, Power and USB LEDs). See “Ecofriendly button” on page 14.

Power conservation

These switches have the following power conservation features:

- Ecofriendly button to turn off the port LEDs when the system is not being monitored
- High efficiency power supply

MAC address table

Here are the basic features of the MAC address table:

- Storage capacity up to 16K MAC address entries
- Automatic learning and aging

Installation options

The switches can be installed in the following ways:

- Mounted on a desk or tabletop
- Rack mounted in a 19-inch equipment rack
- Wall mounted

Management software and interfaces

Here are the management software and interfaces:

- AlliedWare Plus Management Software
- Command Line Interface
- Web browser interface

Management methods

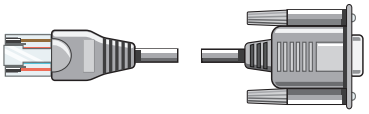
Here are the methods for managing the switches:

- Local management through the console port
- Remote Telnet or Secure Shell management
- Remote HTTP and HTTPS web browser management

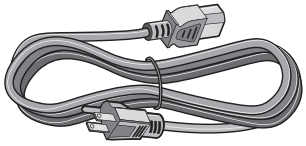
Package contents for the AT-x220-28GS Switch

Figure 1 illustrates the package components that come with the AT-x220-28GS Gigabit Ethernet Switch.

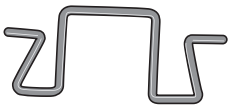
Figure 1. AT-x220-28GS packaging



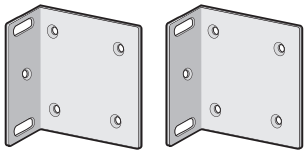
One 2 m (6.6ft) local management cable with RJ-45 (8P8C) and DB-9 (D-sub 9-pin)



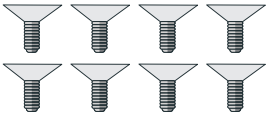
One regional AC power cord



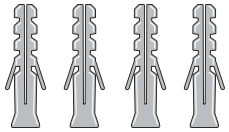
Power cord retaining clip



Two rack/wall mounting brackets

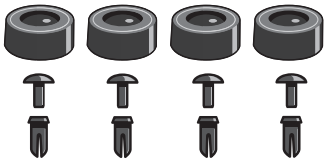


Eight bracket screws



Four anchors for concrete walls:
Length: 29.6 mm (1 1/8 in)
Diameter: 6.0 mm (0.25 in)

Four screws for wood or concrete walls:
Length: 31 mm (1/14 in)
Width: 4.3 mm (1/8 in)



Four rubber feet with push-in snap rivets

Front and back panels on the AT-x220-28GS Switch

Figure 2 illustrates the front panel of the AT-x220-28GS Gigabit Ethernet Switch.

Figure 2. AT-x220-28GS front panel

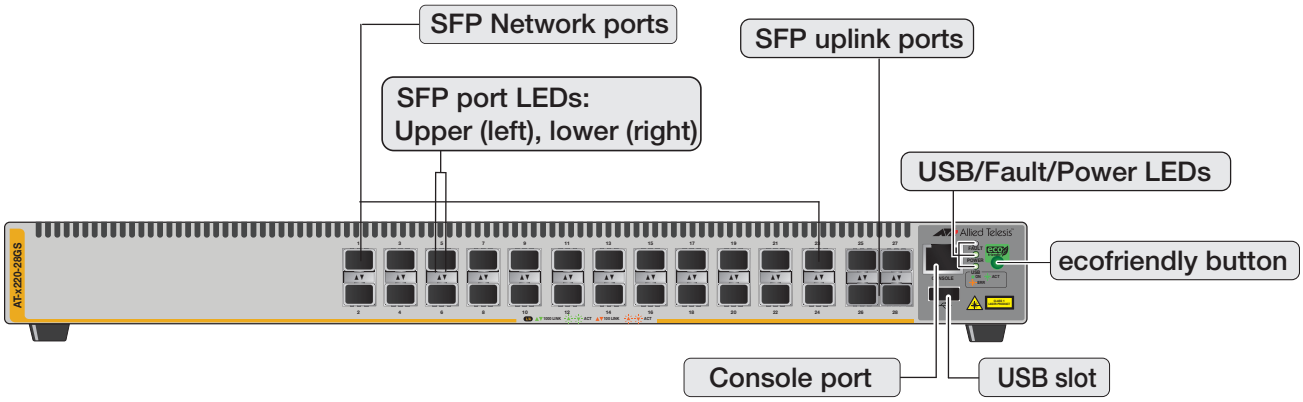
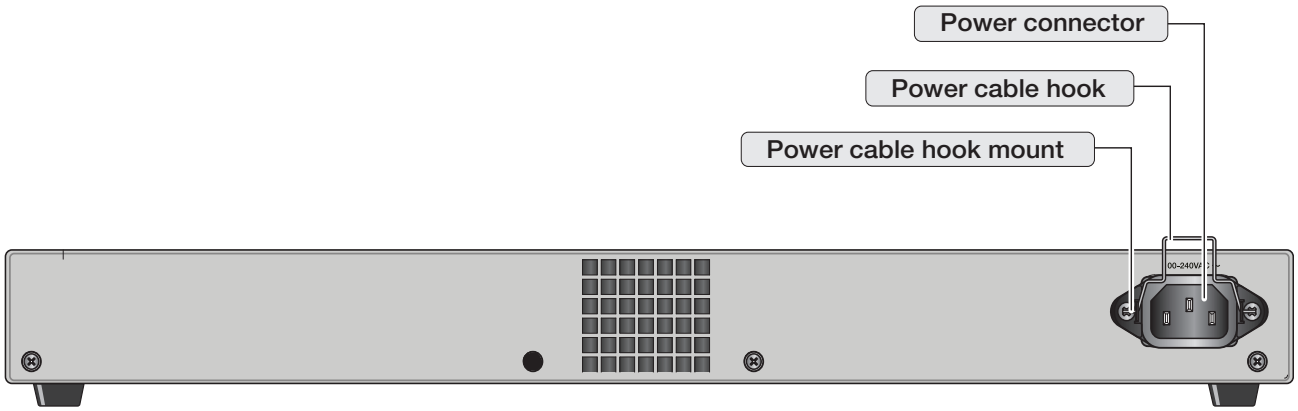


Figure 3 illustrates the back panel of the AT-x220-28GS Gigabit Ethernet Switch.

Figure 3. AT-x220-28GS back panel



LEDs

This section describes the four types of LEDs on the AT-x220-28GS switch:

- “Power and Fault LEDs” on page 10
- “SFP LEDs” on page 11
- “USB LED” on page 13

Power and Fault LEDs

The Power LED reports the status of AC power and is located on the Management Panel of the switches beside the console port. See Figure 4.

Note

All port LEDs are OFF when the switch is operating in the low power mode. To toggle on the LEDs, use the ecofriendly button. See “Ecofriendly button” on page 14 for more information.

Figure 4. Power LED on the AT-x220-28GS Switch

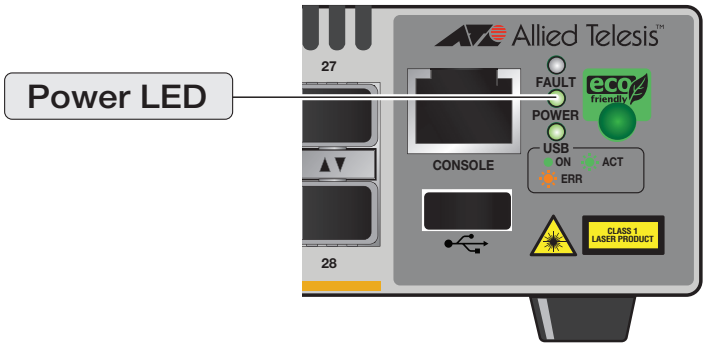


Table 1 describes the Power LED for the AT-x220-28GS switch.

Table 1. Power LED functional descriptions

LED	State	Description
Power	Off	Indicates either the switch is not receiving AC power or the AC input power is operating outside the normal range
	Steady green	The switch is receiving AC input power

Figure 5 shows the location of the Fault LED.

Figure 5. Fault LED on the AT-x220-28GS Switch

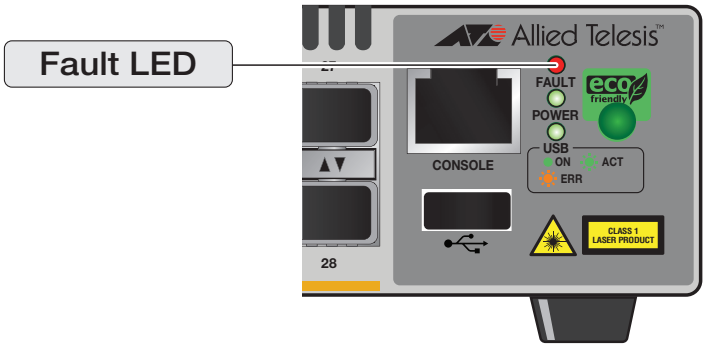


Table 2 describes the functions of the Fault LED.

Table 2. Fault LED functional descriptions

LED	State	Description
Fault	Off	If the POWER LED is on, the switch is receiving AC input power and is operating normally
	Red flashing	Indicates system warning such as a high temperature alarm

SFP LEDs

The AT-x220-28GS switch has a total of 28 SFP ports. Each SFP port has an SFP Link/Speed/Activity LED on the front panel. See Figure 6.

The SFP Link/Speed/Activity LEDs indicate the activity status for each SFP slot. Each SFP slot has ONE bi-color LED:

- The **left** LED corresponds to the **upper SFP** port
- The **right** LED corresponds to the **lower SFP** port

Note

All of the port LEDs are OFF when the switch is operating in ecofriendly mode. See “Ecofriendly button” on page 14 for more information.

Figure 6. SFP Link/Speed/Activity LEDs on the AT-x220-28GS Switch

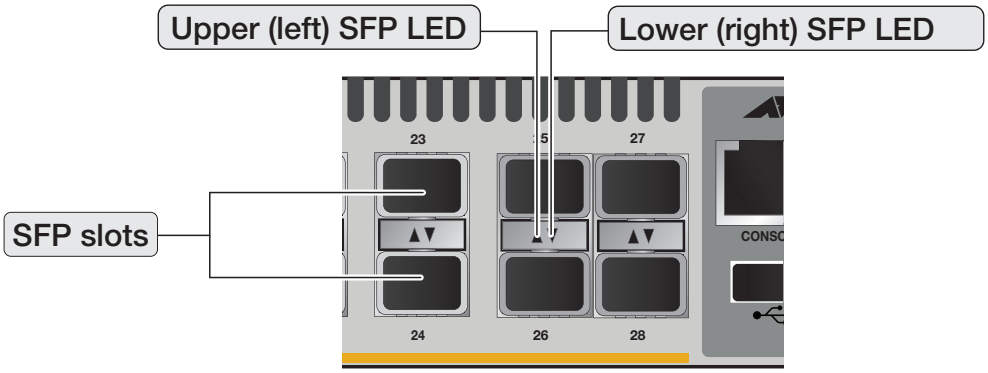


Table 3 describes the functions of the SFP Link/Speed/Activity LEDs:

Table 3. SFP Link/Activity LED functional descriptions

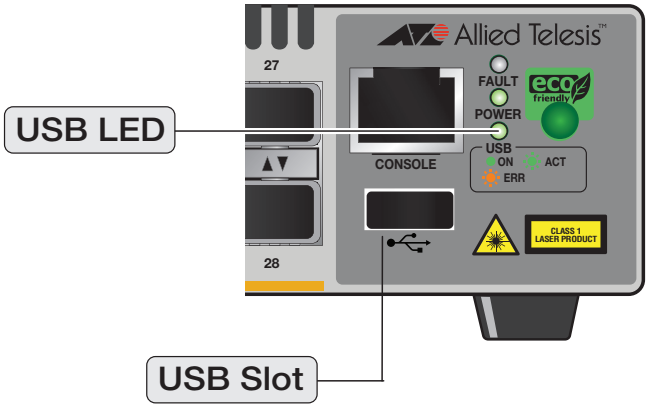
LED	State	Description
SFP	Off	The port on the SFP transceiver has not established a link with an end node, **or** the ecofriendly feature is enabled
	Flashing green	Rx or Tx activities at 1000M
	Steady green	The SFP transceiver has established a 1000M link with a network device
	Flashing amber	Rx or Tx activities at 100M
	Steady amber	The SFP transceiver has established a 100M Link with a network device

USB LED

The AT-x220-28GS switch has a single bi-color USB LED on the Management Panel (see Figure 7)

> **Note**
> All of the port LEDs are **off** when the switch is operating in ecofriendly mode. See “Ecofriendly button” on page 14 for more information.

Figure 7. USB slot LED on the AT-x220-28GS Switch



The USB LED indicates whether the USB slot has a USB inserted, or is reading or writing to the USB device. Table 4 describes the functions of the USB LED.

Table 4. USB LED functional descriptions

LED	State	Description
USB	Off	No USB device detected
	Flashing green	Writing or reading
	Steady green	USB device inserted and recognized for use
	Flashing amber	Writing or reading error

Ecofriendly button

By pressing the ecofriendly button on the Management Panel, you can conserve energy.

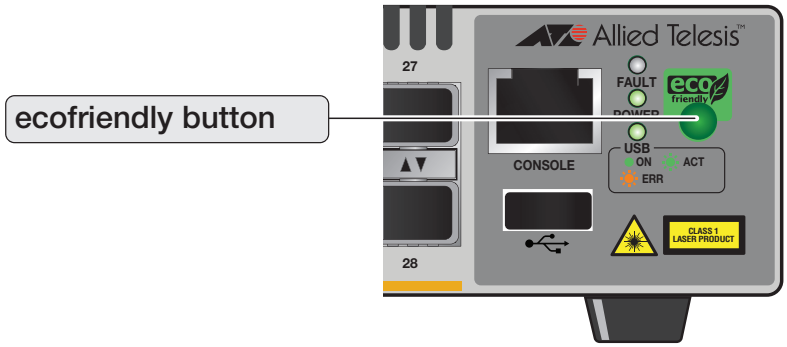
Using the button

When you press the ecofriendly button for 1 to 4 seconds, the front panel port LEDs are disabled. You may use the button to turn off the LEDs when you are not monitoring the switch. To turn the port LEDs on, press the ecofriendly button for 1 to 4 seconds again. Toggling the LEDs does not affect the network operations of the switch.

Using commands

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 ecofriendly button or by using the **no ecofriendly led** command.

Figure 8. ecofriendly button on the AT-x220-28GS switch .



Note

The ecofriendly button does not control the **Fault**, **Power** or **USB** LEDs.

Troubleshooting

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 ecofriendly button or issuing the **ecofriendly led** and **no ecofriendly led** commands in Global Configuration mode.

Power supply

Each switch has an internal power supply with a single AC power supply socket on the back panel. A power cord and a power cord retainer hook are supplied with the switch. The power supply is not field replaceable.

Warning

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

For the power requirements, see “Power specifications” on page 44.

Fans

Each switch has an internal fan.You cannot remove or replace these fans in the field. The fan status is indicated with the Fault LED. See “Power and Fault LEDs” on page 10 and Table 2 on page 11 for more information.

Chapter 2
Installation

This chapter contains the following sections:

Reviewing safety precautions

Please review the following safety precautions before you begin to install the chassis or any of its components.

Note
The ⚯ indicates that a translation of the safety statement is available in a PDF document titled **Translated Safety Statements**.

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 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

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

Operating temperature: This product is designed for a maximum ambient temperature of 50° degrees C. ⚯ E7

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

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

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

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

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

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

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

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

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

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

Selecting a site for the switch

You can install an AT-x220-28GS switch on a table or desktop, in a standard 19-inch equipment rack, or on a wall.

Observe the following requirements when choosing a site for your switch:

- If you are installing the switch on a table, verify that the table is level and secure.
- If you plan to install the switch in an equipment rack, verify that the rack is safely secured and 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 are installing the switch on a wall, ensure that the wall is sturdy enough to hold the switch's weight. You may need to position the switch so that it can be screwed into the wall's framing timber or an equivalent structural element.
- The power outlet for the switch should be located near the unit and should be easily accessible.
- The site should provide for easy access to the ports on the front of the switch. This will make it easier for you to connect and disconnect cables, as well as view the switch's 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.)
- Do not place objects on top of the switch.
- Do not expose the switch to moisture or water.
- Ensure that the site is in a dust-free environment.
- Do not install the switch in a wiring or utility box because it might overheat and fail from inadequate airflow.
- You should use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

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

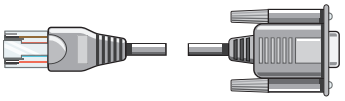
To unpack the switch, perform the following procedure:

1. Remove all of the components from the shipped package.

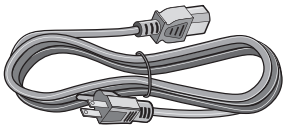
> **Note**
> Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

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

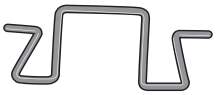
3. Verify that the shipped package includes the following items:



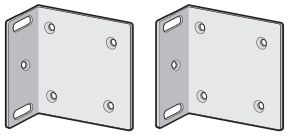
One 2 m (6.6ft) local management cable with RJ-45 (8P8C) and DB-9 (D-sub 9-pin)



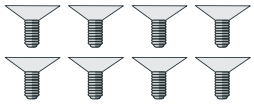
One regional AC power cord



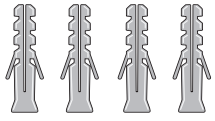
Power cord retaining clip



Two rack/wall mounting brackets

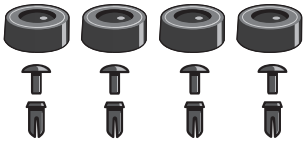


Eight bracket screws



Four anchors for concrete walls:
Length: 29.6 mm (1 1/8 in)
Diameter: 6.0 mm (0.25 in)

Four screws for wood or concrete walls:
Length: 31 mm (1/14 in)
Width: 4.3 mm (1/8 in)



Four rubber feet with push-in snap rivets

Installing the switch on a table or a desktop

Here are the guidelines to selecting a suitable site for desktop or table use:

- Review the procedure “Selecting a site for the switch” on page 21 to verify that the selected site is suitable for your switch.
- The rubber feet included in the packaging should be attached to the switch for table or desktop installation.

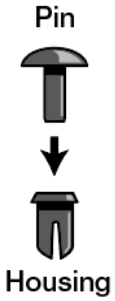
If your switch does not already have rubber feet fitted, fit these as follows:

1. Turn the switch over and place it on a table.
2. Remove the rubber feet, rivet pins and rivet housings from the packaging.

Note
The feet are reusable. If they have been used previously, they may be already assembled, with the rivet locked in place. To re-use them, first push the rivets out of the feet. Then separate the rivet pin and housing from each other, so that you can insert them as described below.

3. Assemble the rivets by inserting the **Pin** into the **Housing** as shown in Figure 9 on page 23.

Figure 9. Assembling the rivets

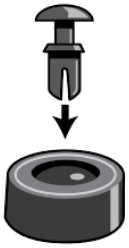


Insert all rivet pins into the rivet housings

Note
Do **not** press the pin all the way down to lock the rivet.If you do engage the rivet lock, prise the pin out of the housing, so you can re-assemble and re-use it.

4. Insert the rivet through the hole in the feet as shown in Figure 10 on page 24.

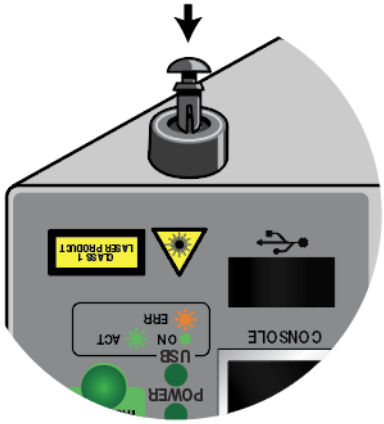
Figure 10. Inserting the assembled rivets into the hole in the foot



Insert all assembled rivets into the holes in the feet

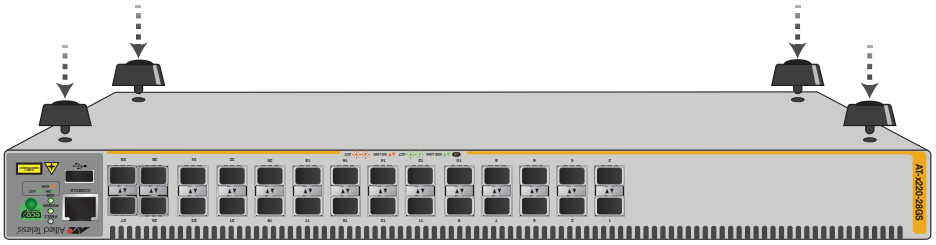
5. Place the feet with the rivet inserted into the base holes on the switch.

Figure 11. Placing the feet with rivets on the switch



6. Push the feet firmly into holes on the base of the switch so that the rivets lock the feet in place as shown in Figure 12 on page 24

Figure 12. Attaching the rubber feet to a switch



7. Turn the switch over again and place it on a flat, secure surface (such as a desk or table), leaving ample space around the unit for ventilation.

Removing the feet before installing the switch in an equipment rack or on a wall

Before you install the switch in a 19-inch equipment rack or on a wall, you need to remove the rubber feet, if they are attached to the base of the switch. To do this, follow these steps:

1. Place the unit upside down on a level, secure surface.
2. Use a small flat-head screwdriver to pry the four rubber feet and their rivets from the bottom of the switch. Figure 13 shows how to do this on an AT-x220-28GS switch.

Figure 13. Removing the rubber feet and rivets from a switch

3. Turn the switch back over.

Note
The feet are reusable. To re-use them, first push the rivets out of the feet. Then separate the rivet pin and housing from each other, so that you can insert them as described in “Installing the switch on a table or a desktop” on page 23.

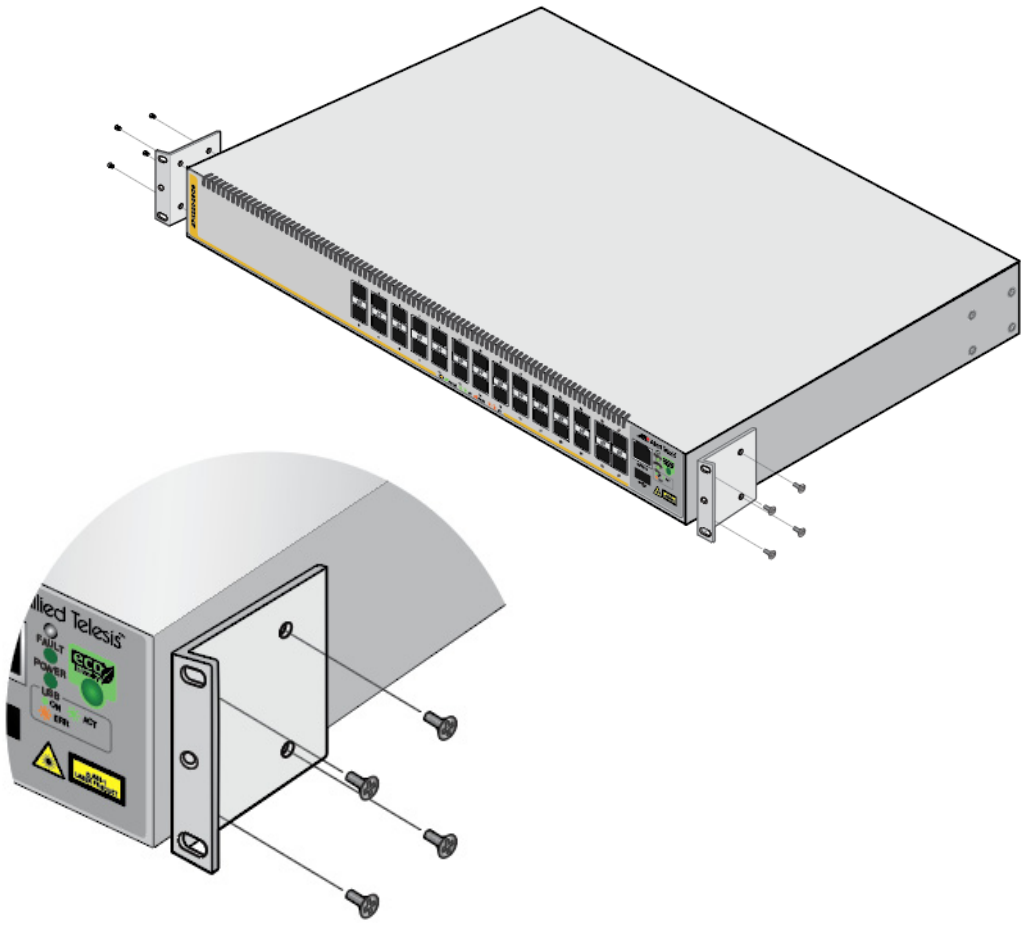
Installing the switch in an equipment rack

These instructions show you how to install the switch in an equipment rack. The rack mount kit is included in the packaging and includes two rack mount brackets and eight bracket screws.

To install one of these switches in a 19-inch equipment rack, follow these steps:

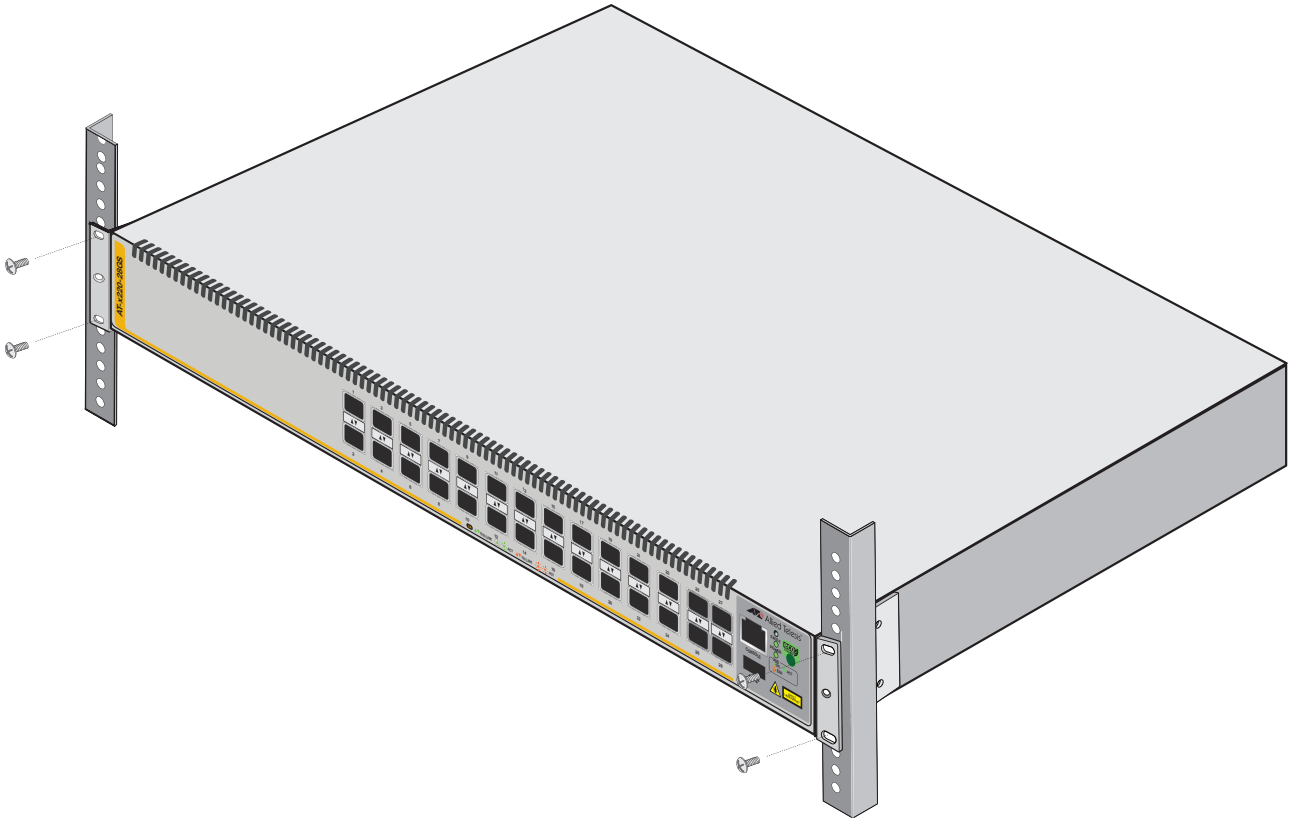
1. Review the procedure “Selecting a site for the switch” on page 21 to verify that the selected site is suitable for your switch.
2. If rubber feet are attached to the base of the switch, remove them (Figure 13 on page 25).
3. Attach the two rack mount brackets to the sides of the switch using the eight bracket screws that come with the rack mount kit provided. See “Unpacking the switch” on page 22.

Figure 14. Attaching rack mount brackets to the AT-x220-28GS switch



4. Mount the switch in a 19-inch equipment rack using four equipment rack screws (not supplied).

Figure 15. Mounting the AT-x220-28GS switch in an equipment rack



Installing the switch on a wall

These instructions show you how to install the switch on a wall. The rack/wall mount brackets and screws are provided along with the screws for securing the switch to a wall with wooden studs. Concrete anchors are also provided for concrete walls.

Review the procedure “Selecting a site for the switch” on page 21 to verify that the selected site is suitable for your switch.

Before you start, ensure that the wall is sturdy enough to hold the switch’s weight. You may need to position the switch so that it can be screwed into the wall’s framing timber or an equivalent structural element. The wall location for the switch must provide adequate space to the front and back panels so that you can service the unit, and for ventilation.

Wall guidelines

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

- You may install the switch on a wall that has wooden studs
- You may install the switch on a concrete wall
- You should not install the switch on a metal stud. Metal studs may not be strong enough to safely support the device.

Tools and materials

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

- Eight bracket screws (provided with the switch)
- Two wall or equipment rack brackets (provided with the switch)
- Four wall screws (provided with the switch for wood or concrete)
- Four concrete anchors (provided with the switch)
- Flat-head screwdriver (not provided)
- Cross-head screwdriver (not provided)
- Stud finder for a wooden wall, capable of identifying the middle of wooden studs and hot electrical wiring (not provided)
- Drill and a 1/4’’ carbide drill for a concrete wall (not provided)

Caution

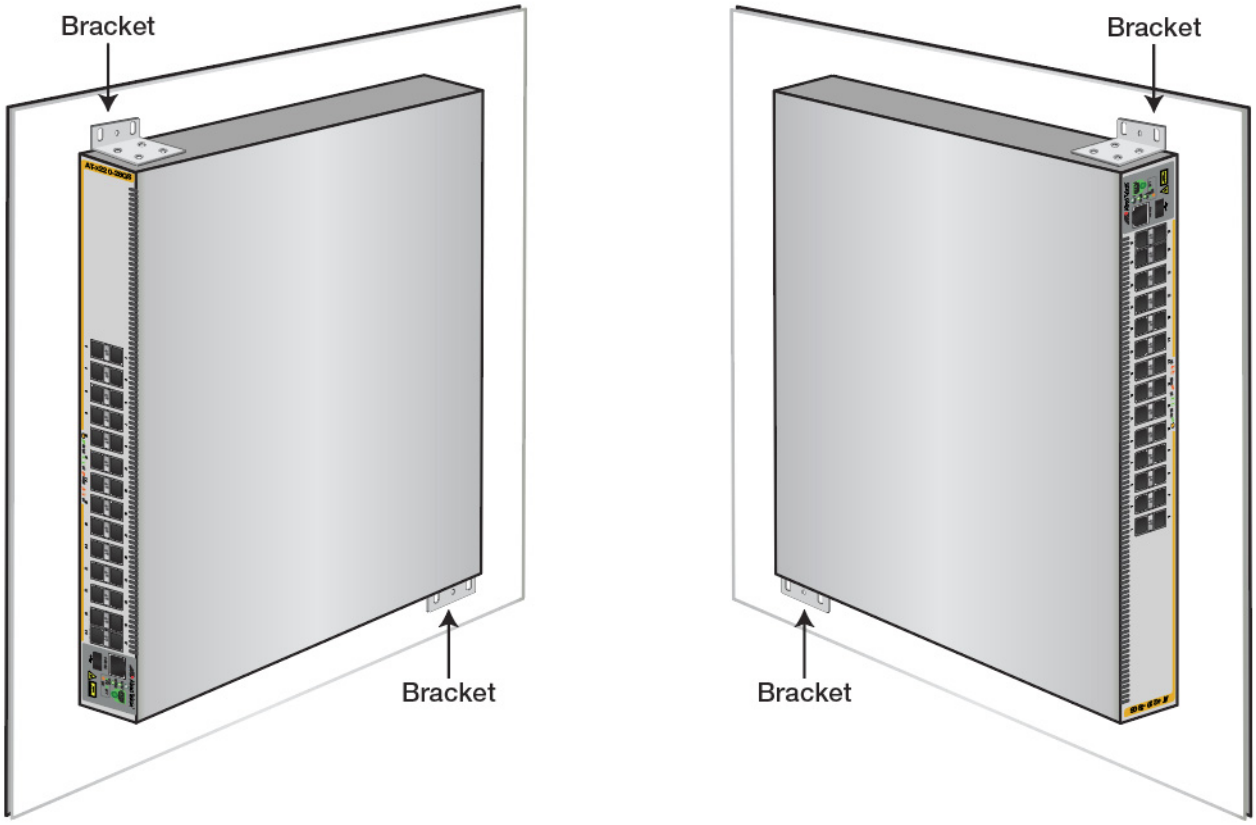
The supplied screws and anchors may not be appropriate for all walls. A qualified building contractor should determine the hardware requirements for your wall prior to installing the switch.

Positions of the switch on a wall

The switch may be installed on the wall with the front panel on the left or right with the brackets placed diagonally as shown in Figure 16.

Do not install the switch with the front panel on the top or the bottom.

Figure 16. Positioning the switch on the wall



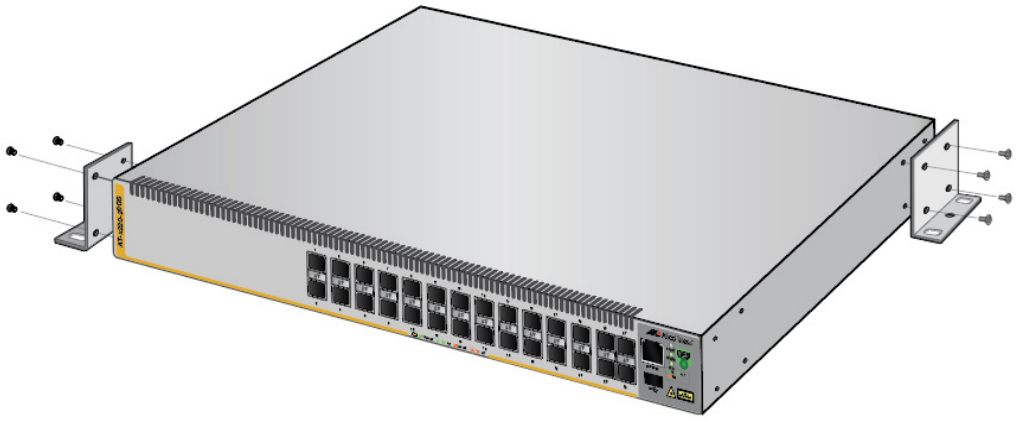
Install the switch on the wall

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

1. If the rubber feet are attached to the bottom of the switch, remove them with a screwdriver (Figure 13 on page 25), then turn the switch back over.
2. Orient the brackets against the sides of the switch and secure them to the unit with the 8 bracket screws included in the rack/wall mount kit. You can either attach the brackets facing left or right as shown in Figure 17 and Figure 18.

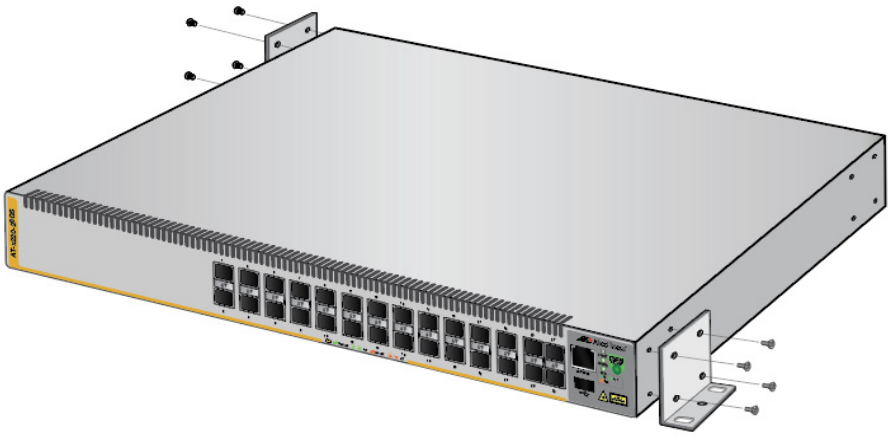
Left facing

Figure 17. Attaching wall mount brackets so that the switch is left facing



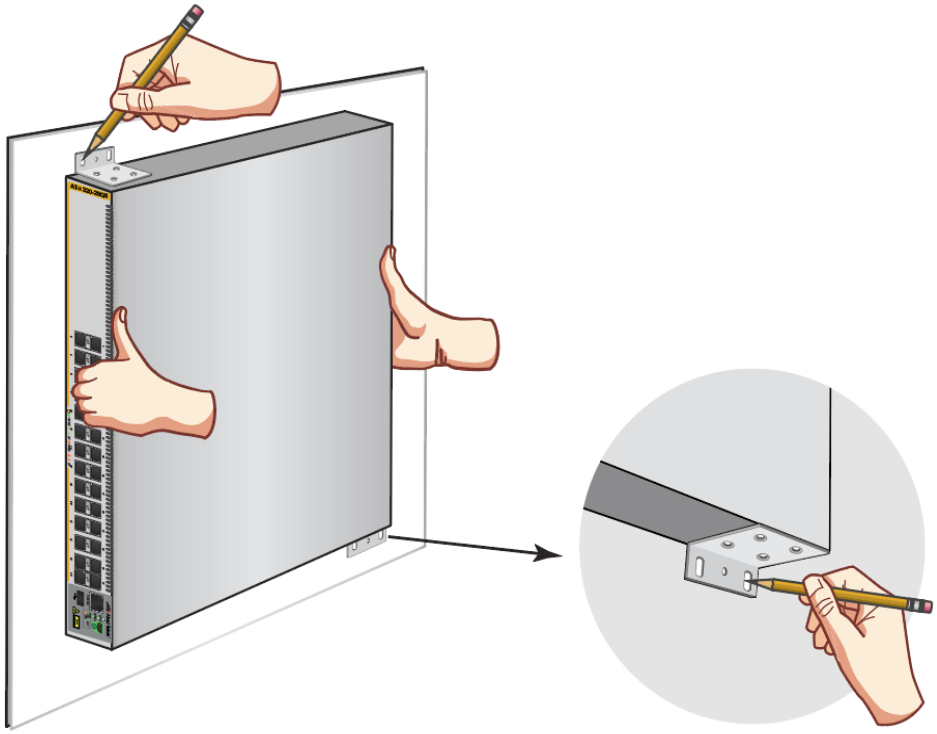
Right facing

Figure 18. Attaching wall mount brackets so that the switch right facing



3. While another person holds the switch at the wall location, use a pencil to mark the wall with the locations of the two screw holes for each bracket. (Figure 19).

Figure 19. Marking the screw holes from the brackets to the wall

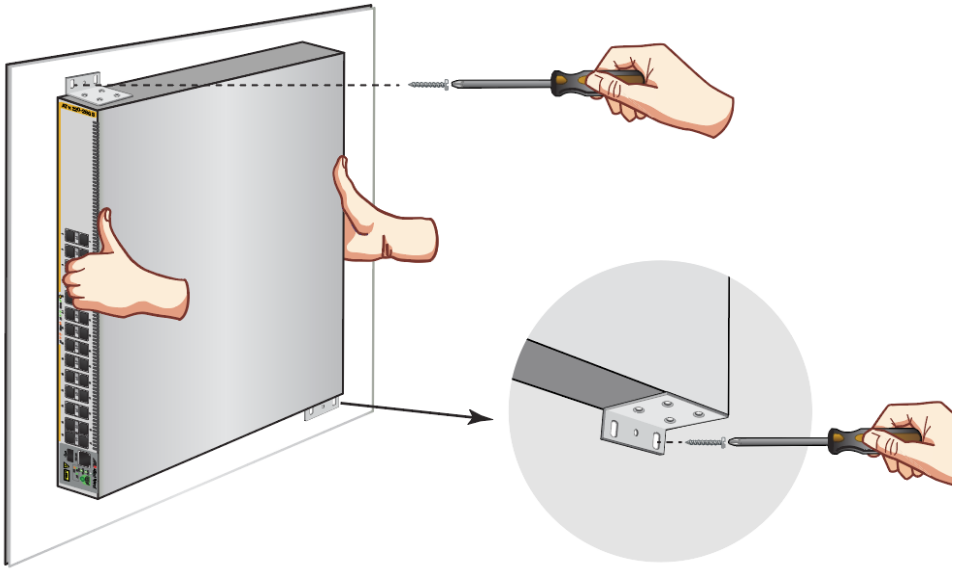


4. While another person holds the switch at the marked wall location, use a drill to make the holes for the two screws for each bracket. (Figure 20).

5. If you are installing the switch on a concrete wall, use the four concrete anchors provided in the drill holes.

6. Use the four screws provided to secure the switch to the wall.

Figure 20. Securing the switch to the wall

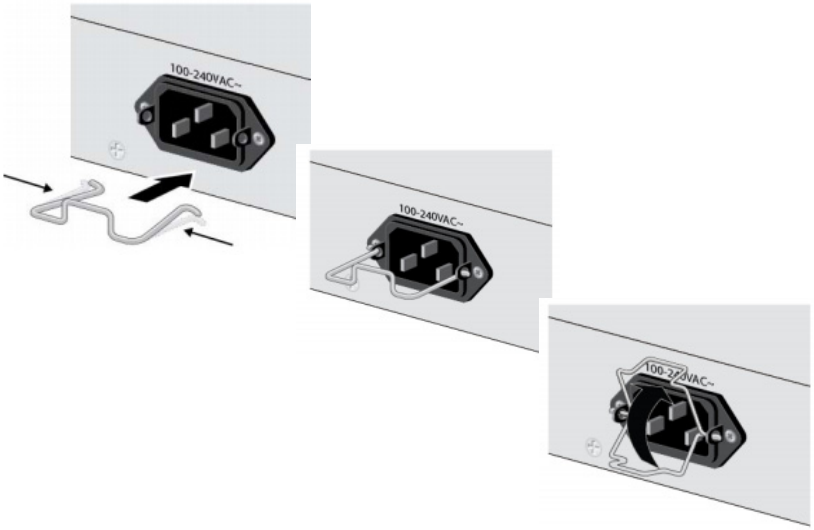


Powering on the switch

To power on the switch, perform the following procedure:

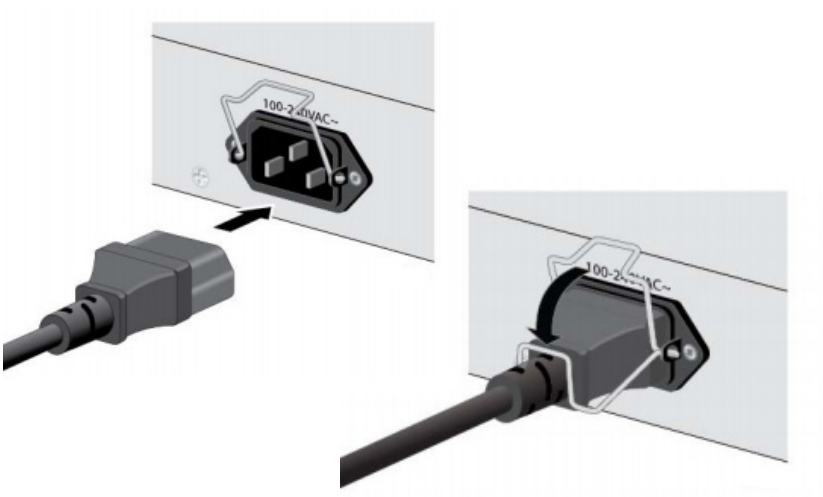
1. Attach the power cable hook and lift to the up position ready for the AC power plug to be inserted, as shown in Figure 21, on the back of the switch.

Figure 21. Attaching the AC power cable hook on the switch



2. Plug the power cord into the AC power connector, as shown in Figure 22, on the back of the switch.

Figure 22. Plugging in the AC power cord on the Switch



3. Plug the other end of the power cord into a wall outlet.

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

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

4. Verify that the power LED is green. If the LED is **off**, see Chapter 3, “Troubleshooting” on page 45.

The switch is now powered on and ready for network operations.

Management software

The switches are shipped with the management software pre-installed. The software provides a command line interface and a GUI (Graphical User Interface) for in-band, over-the-network management.

In the unlikely event that the management software becomes corrupted or damaged on the switch, you can download the software from the Allied Telesis corporate web site and reinstall it on the switch. For instructions on how to install new management software, see our **Software** Library at:

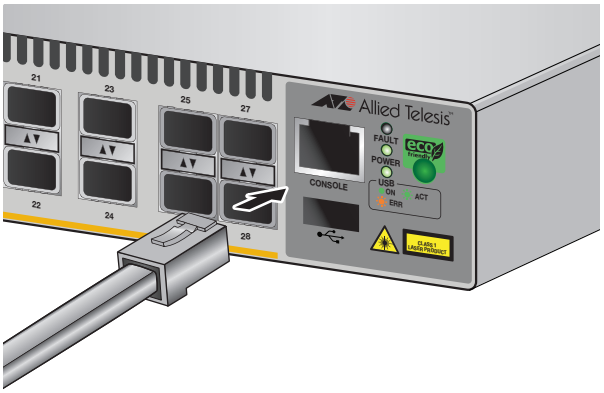
http://www.alliedtelesis.com/support

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 RJ45 connector on the management cable to the console port on the front panel of the switch, as shown below.

Figure 23. Connecting the management cable to the console port of the x220 Series Switch



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. If you have not already done so, power up the switch as described in the previous steps.

Monitoring the initialization processes

It takes about thirty seconds for the switch to initialize its management software programs and features, and load the default configuration.

You may also monitor the bootup sequence by connecting a terminal or computer that has a terminal emulator program, to the console port on the master switch. You will see the messages from Figure 24 below to Figure 26 on page 40.

Figure 24. Switch initialization messages

```
Verifying release... OK
Booting...
Starting base/first...                                    [  OK  ]
Mounting virtual filesystems...                           [  OK  ]


          _______________   ____
        /\ \             / /______\
      /   \ \_       __/ /| ______ |
    /       \ |      |  /  | ______ |
  /          \ \    / /     \ ____ /
/_______/\____\ \/ /_____________/

Allied Telesis Inc.
AlliedWare Plus (TM) v0.0.0
Current release filename:x220-5.4.8.rel
Built: Fri Mar 23 07:06:12 UTC 2018
Mounting static filesystems...                            [  OK  ]
Attaching to /dev/mtd0...                                 [  OK  ]
Mounting file system...                                   [  OK  ]
Checking for last gasp debug output...                    [  OK  ]
Checking NVS filesystem...                                [  OK  ]
Mounting NVS filesystem...                                [  OK  ]
Initializing random number generator...                   [  OK  ]
Starting base/hwrandom...                                 [  OK  ]
Starting base/dbus...                                     [  OK  ]
Starting base/linux...                                    [  OK  ]
Starting base/syslog...                                   [  OK  ]
Starting base/loopback...                                 [  OK  ]
Starting base/poe_done...                                 [  OK  ]
Starting base/portmapper...                               [  OK  ]
Received event syslog.done
Starting base/modules...                                  [  OK  ]
```

Figure 25. Switch initialization messages (continued)

```
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 base/inet...                                      [  OK  ]
Received event apteryx.done
Starting hardware/early_host_info...                       [  OK  ]
Starting base/eventwatch...                                [  OK  ]
Starting base/alfred...                                    [  OK  ]
Starting network/kermond...                                [  OK  ]
Starting base/apteryx-sync...                              [  OK  ]
Starting base/logconf...                                   [  OK  ]
Received event apteryx-sync.done
Starting hardware/plugman...                               [  OK  ]
Starting hardware/openhpi...                               [  OK  ]
Starting hardware/timeout...                               [  OK  ]
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/licd...                                   [  OK  ]
Starting network/stackd...                                 [  OK  ]
Starting network/election.timeout...                       [  OK  ]
Starting network/corosync...                               [  OK  ]
Received event network.enabled

Initializing HA processes:
atmf_agentd, exfx, hostd, auth, imiproxyd, lldpd, nsm
sflowd, hsl, irdpd, lacp, mstp, ripd, rmon
atmfd, cntrd, epsr, imi, loopprot, ripngd, udldd

Received event network.initialized
```

Figure 26. Switch initialization messages (continued)

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

Cabling the Network Ports

Observe the following guidelines before installing SFP transceivers on the switch.

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

Caution

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

Installing SFP transceivers

To install an SFP transceiver, perform the following procedure:

Note
The transceiver can be hot-swapped; you do not need to power off the switch to install a transceiver. However, always remove the cables before removing the transceiver.

Note
You should always install the transceiver before connecting the fiber optic cables to it.

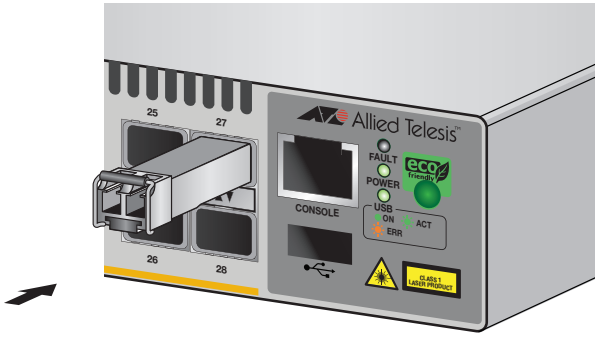
1. Remove the transceiver from its shipping container and store the packaging material in a safe location.

Warning
An SFP transceiver can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an anti-static wrist strap, to avoid damaging the transceiver.

2. Position the SFP transceiver with the Allied Telesis label facing up for the top SFP slots. Position the SFP transceiver with the Allied Telesis label facing down for the bottom SFP slots.

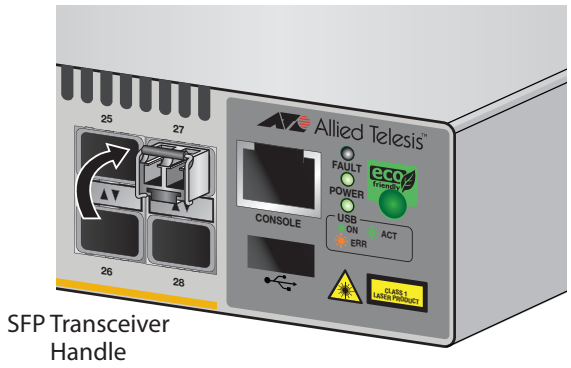
3. Gently slide the transceiver into the SFP slot until it clicks into place as shown in Figure 27.

Figure 27. Inserting an SFP transceiver into an SFP slot



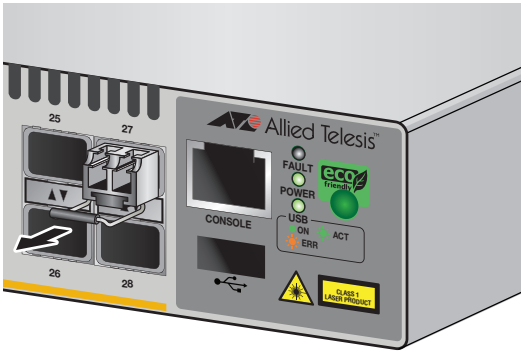
4. Verify that the handle on the transceiver is in the upright position, as shown in Figure 28. This secures the transceiver and prevents it from being dislodged from the slot. If the transceiver is in a bottom slot verify the handle is in the downright position.

Figure 28. Positioning the SFP handle in the upright position



5. Eject SFP transceivers, as shown in Figure 29. First lower the SFP transceiver handle, then gently remove the SFP transceiver. If the transceiver is in a bottom slot, then raise the handle.

Figure 29. Ejecting an SFP transceiver after lowering the SFP handle to the downwards position



6. Repeat steps 2 through 6 to install an additional SFP transceiver.

Note
Unnecessary removal and insertion of an SFP transceiver can lead to premature failure.

For information on the cable specifications of the SFP, consult the documentation shipped with the SFP.

Chapter 3
Troubleshooting

This chapter contains information on how to troubleshoot the switch if a problem occurs.

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

Problem 1: The power LED on the front of the switch is off.

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

- Verify that the power cord is securely connected to the power source and to 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.

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

Solution: The switch is probably operating in low power mode. To toggle on the LEDs, press the ecofriendly button on the front panel for 1 to 4 seconds.

Problem 3: The Link/Activity/Speed LED for an SFP transceiver is off.

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

- Verify that the remote network device connected to the fiber optic port is operating properly.
- Verify that the fiber optic cable is securely connected to the port on the media converter channel and to the port on the remote network device.
- Check that the SFP module is fully inserted in the slot.
- Verify that the operating specifications of the fiber optic ports on the SFP transceiver and the 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. This is to eliminate the possibility that the port is connected to the wrong remote network device, such as a powered off device.
- 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 management device, use its management firmware to determine whether its port is enabled.
- Test the attenuation 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 4: 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 in danger of overheating.

Problem 5: A port's Link/Activity/Speed LED is blinking.

Solutions: The link between the port and the network device is intermittent. Try the following:

- Connect another network device with a different cable to the port. If the Link LED remains steady on, then the problem is with the original cable or the network device.
- If the problem is with an SFP transceiver, check that the transceiver is fully inserted in the slot.

Appendix A
Technical specifications

This appendix describes the technical specifications of an x220 series switch.

Physical specifications

Dimensions

TABLE 5. CHASSIS DIMENSIONS

Model	W x D x H mm (in)
AT-x220-28GS	341 mm x 231mm x 44mm (13.42 in x 9.10 in x 1.73 in)

Weight

TABLE 6. CHASSIS WEIGHT

Model	Weight
AT-x220-28GS	4.3 kg (9.47 lb)

Environmental specifications

TABLE 7. ENVIRONMENTAL SPECIFICATIONS

Operating temperature	0° C to +50° C (32° F to 122° F)
Storage temperature	-25° C to 70° C (-4° F to 158° F)
Operating humidity	< 90% non-condensing
Storage humidity	< 95% non-condensing
Operating altitude range	Up to 3,000 m (9,842 ft)

Power specifications

TABLE 8. INPUT SUPPLY VOLTAGE

Model	Input supply voltage
AT-x220-28GS	100-240 VAC, 50 - 60 Hz, 0.60A maximum

TABLE 9. POWER SPECIFICATIONS

Model	Power budget	Maximum power consumption
AT-x220-28GS	N/A	75 W

Electrical safety and electromagnetic certifications

TABLE 10. SAFETY AND ELECTROMAGNETIC EMISSIONS CERTIFICATIONS

EMC	EN 55024 EN 55032 Class A EN 61000-3-2 EN 61000-3-3 FCC Part 15 (CFR 47) Class A VCCI Class A CISPR 22 Class A ICES-003
Environmental compliance	RoHS WEEE
Electrical safety	EN 60950-1 (edition 2) IEC 60950-1 (edition 2) UL 60950-1 (edition 2) C-UL-US TUV-T-Mark
Laser safety	EN 60825
Regulatory Compliance	RCM CE

Connectors and port pinouts for the console port

This section lists the connectors and connector pinouts for the management console port.

Figure 30 illustrates the pin layout for an RJ45 connector for the console port.

Figure 30. RJ45 connector and port pin layout

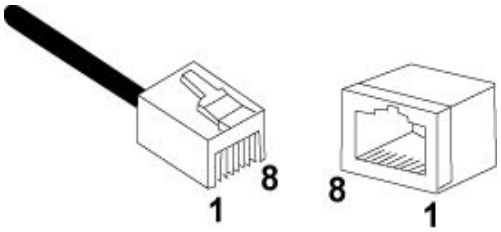


Table 11 lists the RJ-45 style serial consol port pin signals.

Table 11. RJ-45 Style Serial Consol Port Pin Signals

Pin	Signal
1	Looped to pin 8
2	Looped to pin 7
3	Transmit Data x220-28GS Tx Output pin
4	Ground
5	Ground
6	Receive Data x220-28GS Rx Input pin
7	Looped to pin 2
8	Looped to pin 1