GS950 PS V2 Series

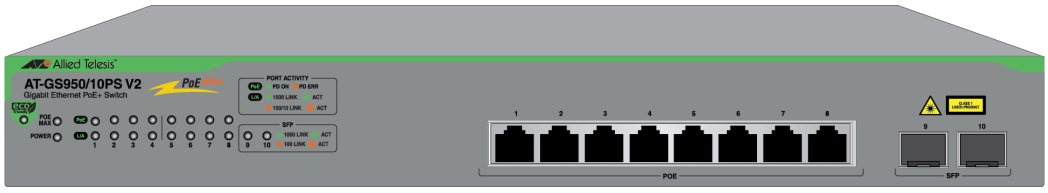
Gigabit Ethernet PoE+ Switches

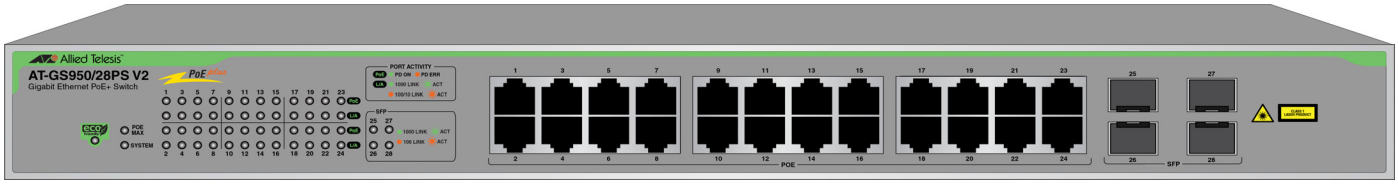
GS950/10PS V2

GS950/18PS V2

GS950/28PS V2

GS950/52PS V2





Installation Guide

613-002861 Rev. B

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Electrical Safety and Emissions Standards

This product meets the following standards.

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

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

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

Laser Safety IEC/EN 60825-1:2014 & IEC/EN 60825-2:2004/A2:2010

. Safety Certificates

Euro Zone	CE
North America	FCC/ICES/UL
Australia/New Zealand	RCM
Japan	VCCI
Mexico	NOM
India	TEC
Brazil	ANATEL

. Safety Certificates (Continued)

Safety	UL 62368-1 EN 62368-1 (TUV), CE IEC 60950-1 + IEC 62368-1 AEL Class I, US FDA/CDRH EN(IEC) 60825-1 EN(IEC) 60825-2 EN(IEC) 60950-1 CAN/CSA-C22.2 No 62368-1

Electromagnetic Certificates

Electromagnetic Interference (EMI)	FCC Part 15 Subpart B Class A EN 55032 Class A CISPR 32 VCCI Class A RCM
Electromagnetic Susceptibility (EMS)	IEC 61000-4-2: 2008 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 (IEC 61000-4-8) IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3
RoHS	EU RoHS Directove (2011/65/EU) (2015/863) China RoHS
Additional	JGPSSI/JIG Level A

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Translated Safety Statements

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

Remarque: Les consignes de sécurité portant le symbole ☞ sont traduites dans plusieurs langues dans le document *Translated Safety Statements,* disponible à l'adresse **www.alliedtelesis.com/library**.

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Preface

This guide contains the hardware installation instructions for the GS950 PS V2 Series of Gigabit Ethernet switches, with Power over Ethernet Plus (PoE+). The preface contains the following sections:

- ❒ “Document Conventions” on page 14
- ❒ “Contacting Allied Telesis” on page 15

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 can find technical support on the Services & Support section of the Allied Telesis web site at **www.alliedtelesis.com/support**. There are links to the following services on the page:

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

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

Chapter 1
Overview

This chapter describes the hardware features of the GS950 PS V2 Series of Gigabit Ethernet PoE+ switches in the following sections:

- ❒ “Front and Back Panels” on page 18
- ❒ “Features” on page 21
- ❒ “Management Software” on page 23
- ❒ “Copper Ports” on page 24
- ❒ “Power over Ethernet (PoE)” on page 26
- ❒ “SFP Ports” on page 29
- ❒ “LEDs” on page 30
- ❒ “eco-Friendly Button” on page 36
- ❒ “Power Supply and Fans” on page 38

Front and Back Panels

Figure 1 illustrates the front panel of the GS950/10PS V2 Switch.

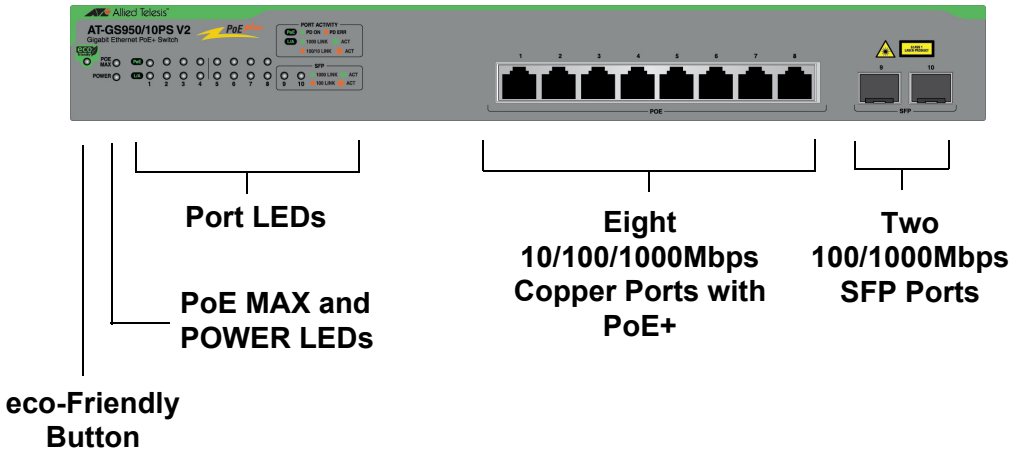


Figure 1. Front Panel of the GS950/10PS V2 Switch

Figure 2 illustrates the front panel of the GS950/18PS V2 Switch.

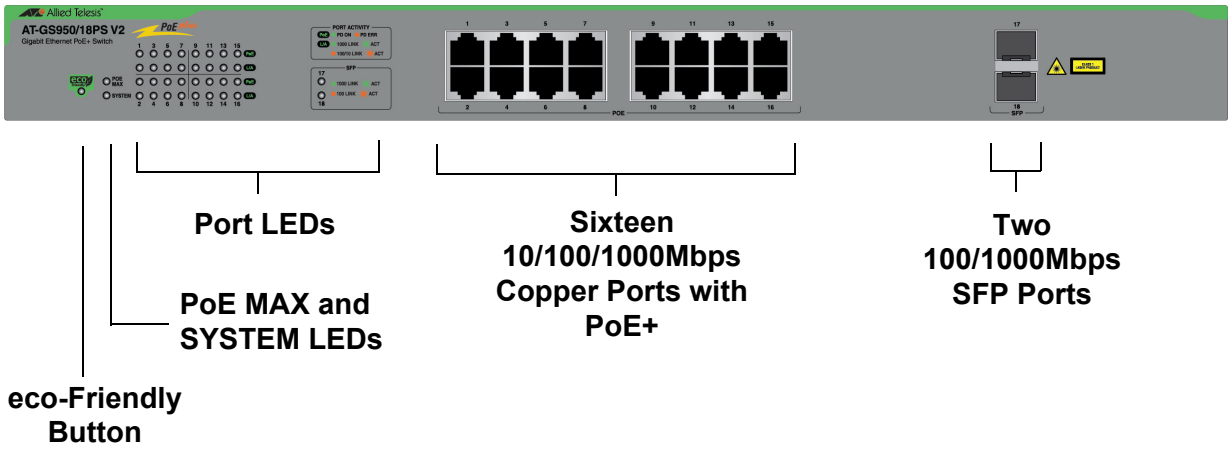


Figure 2. Front Panel of the GS950/18PS V2 Switch

Figure 3 illustrates the front panel of the GS950/28PS V2 Switch.

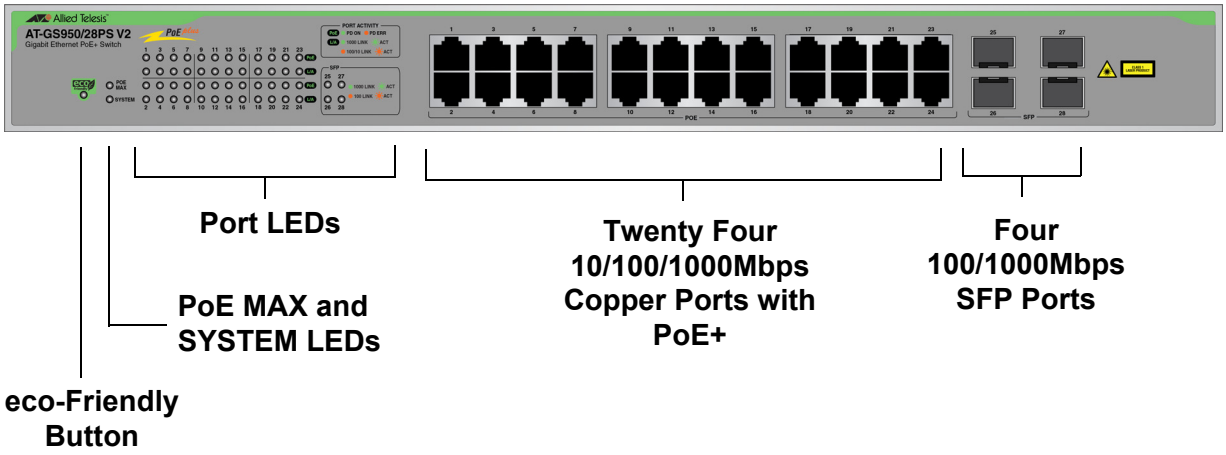


Figure 3. Front Panel of the GS950/28PS V2 Switch

Figure 4 illustrates the front panel of the GS950/52PS V2 Switch.

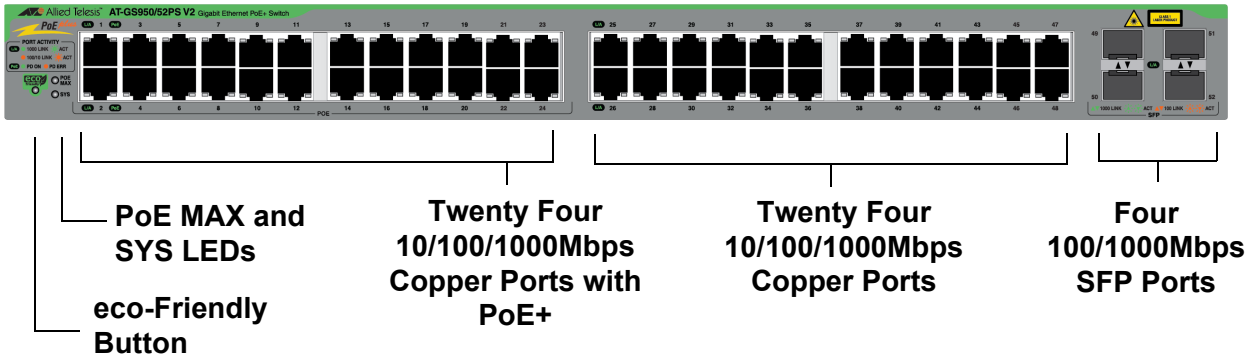


Figure 4. Front Panel of the GS950/52PS V2 Switch

Figure 5 illustrates the back panel of the GS950/10PS V2 Switch.

Figure 5. Back Panel of the GS950/10PS V2 Switch

Figure 6 illustrates the back panel of the GS950/18PS V2 and GS950/28PS V2 Switches.

Figure 6. Back Panel of the GS950/18PS V2 and GS950/28PS V2 Switches

Figure 7 illustrates the back panel of the GS950/52PS V2 Switch.

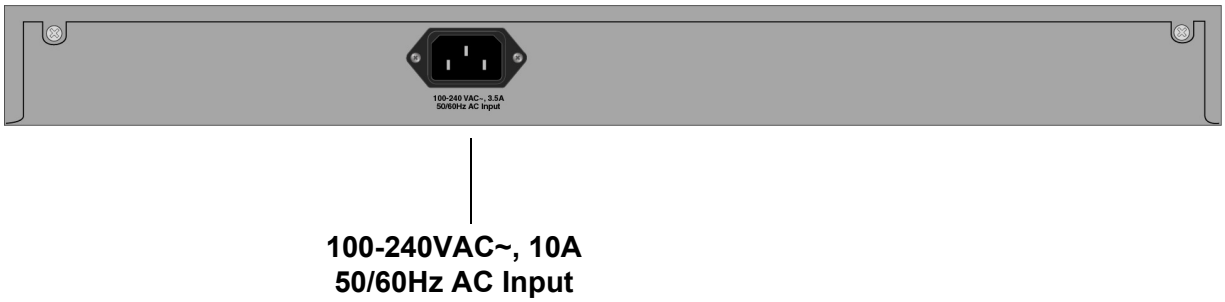


Figure 7. Back Panel of the GS950/52PS V2 Switch

Features

Here are the hardware features of the switches.

Copper Ports

Here are the basic features of the copper ports:

- ❒ 10/100/1000Mbps
- ❒ 10Base-T, 100Base-TX and 1000Base-T compliant
- ❒ IEEE 802.3u Auto-Negotiation compliant
- ❒ Auto-MDI/MDIX
- ❒ 100 meters (328 feet) maximum operating distance
- ❒ IEEE 802.3x Flow Control in 10/100Mbps full-duplex mode
- ❒ IEEE 802.3x Back Pressure in 10/100Mbps half-duplex mode
- ❒ IEEE803.3z 1000Base-T Flow Control
- ❒ Support for Jumbo frames up to 10KB
- ❒ RJ-45 connectors

Power Over Ethernet Plus

Here are the basic features of PoE+:

- ❒ Supported on all copper ports on the GS950/10PS V2, GS950/18PS V2, and GS950/28PS V2 Switches
- ❒ Supported on copper ports 1 to 24 on the GS950/52PS V2 Switch
- ❒ Maximum power budgets:
  - — GS950/10PS V2: 75W
  - — GS950/18PS V2: 185W
  - — GS950/28PS V2: 185W
  - — GS950/52PS V2: 370W
- ❒ PoE (15.4W at port) and PoE+ (30W at port)
- ❒ Powered device classes 0 to 4
- ❒ Per port power control
- ❒ Port priority assignments to control power distribution
- ❒ Link Layer Discovery Protocol (LLDP) for Class 4 PoE+ devices
- ❒ Alternative A mode wiring (pins 1, 2, 3, and 6)

SFP Slots

The SFP ports support the following types of transceivers:

- ❒ 100Mbps SFP 100Base-FX fiber optic transceivers
- ❒ 1000Mbps SFP 1000Base-SX/LX fiber optic transceivers

- Single-port bidirectional 1000Mbps SFP 1000Base-SX/LX fiber optic transceivers
- 1000Mbps 1000Base-T copper transceiver

Note

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

System LEDs

The port LEDs are briefly described here:

- Power SYS LED
- Maximum PoE+ LED

The system LEDs are described in "SYSTEM LED" on page 30.

Port LEDs

The port LEDs are briefly described here:

- Link/activity and PoE+ LEDs for the copper ports. Refer to "Link/ Activity and PoE LEDs" on page 31.
- Link/activity LEDs for the SFP ports. Refer to "SFP LEDs" on page 34.
- eco-Friendly button for turning off the LEDs to conserve electricity. Refer to "eco-Friendly Button" on page 36.

Installation Options

The switch supports the following installation options:

- Standard 19-inch equipment rack
- Desk or table
- Wall

Power Conservation

The switch has the following power conservation features:

- eco-Friendly button to turn off the port LEDs when the system is not being monitored
- IEEE 802.3az Energy-Efficient Ethernet (EEE) reduces power during periods of no data activity
- 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

Management Software

The switch comes with the management software pre-installed. The software has a web-browser interface for in-band, over-the-network management from your management workstations and a web browser. The web-based interface lets you manage all of the functions and features of the switch as well as view status information and traffic statistics.

Allied Telesis may periodically release updates to the management software and provide them on our public web site for customers to download. For instructions, see the product's user guide.

Copper Ports

Table 1 lists the features of the copper ports.

Table 1. Features of the Copper Ports

Feature	Description
Speeds	Port speeds are listed here: - 10Mbps (IEEE802.3 10Base-T) - 100Mbps (IEEE802.3u 100Base-TX) - 1Gbps (IEEE802.3ab 10Base-T) Speeds are set manually or with Auto-Negotiation.
Duplex modes	Duplex modes are listed here: - Half duplex mode at 10/100Mbps - Full duplex mode at 10/100/1000Mbps Duplex mode set manually or with IEEE 802.3u Auto-Negotiation.
Power over Ethernet	PoE features are listed here: - IEEE 802.3af/at-compliant - PoE (15.4W at port) and PoE+ (30W at port) - Powered device classes 0 to 4 - Per port power control - Port priority assignments to control power distribution - Link Layer Discovery Protocol (LLDP) for PoE+ Class 4 devices - Alternative A mode wiring (pins 1, 2, 3, and 6)
Wiring	Auto-MDI/MDIX at 10/100Mbps
Distance	100 meters (328 feet)
Cable	Cable requirements are listed here: - 10/100Mbps - Standard TIA/EIA 568-B-compliant Category 3 unshielded cable. - 1Gbps - Standard TIA/EIA 568-B-compliant Category 5 or Category 5e unshielded cable.

Table 1. Features of the Copper Ports (Continued)

Feature	Description
Additional	Additional features are listed here: - 8-pin RJ-45 connectors - Backpressure flow control supported at half-duplex mode - Non-blocking, wire speed supported at all speeds. - Supports up to 10K jumbo frames - 1.5MB packet buffer

For port pinouts, see “RJ-45 Copper Port Pinouts” on page 106.

Note

Copper ports should not use Auto-Negotiation to set speed and duplex mode when connected to devices that do not support Auto-Negotiation. A speed or duplex mode mismatch may occur between the devices, resulting in reduced performance. For ports connected to devices that do not support Auto-Negotiation, you should set speed and duplex mode manually.

Power over Ethernet (PoE)

The GS950 PS V2 Switches feature PoE on the copper ports. This feature enables the switch to supply power to network devices over the same cables that carry the network traffic. The value of PoE is that it can make installing a network easier. Selecting locations for network devices are often limited by whether there are power sources nearby. This often limits equipment placement or requires the added time and cost of having additional electrical sources installed. But with PoE, you can install PoE-compatible devices wherever they are needed without having to worry about whether there are adjacent power sources.

A device that provides PoE to other network devices is referred to as *power sourcing equipment* (PSE). The GS950 PS V2 Switches act as PSE units by adding DC power on the network cables connected to its ports, thus functioning as a central power source for other network devices.

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

The switches automatically determine whether or not a device connected to a port is a powered device. Ports that are connected to network nodes that are not powered devices (that is, devices that receive their power from another power source) function as regular Ethernet ports, without PoE. The PoE feature remains activated on the ports but no power is delivered to the devices.

Maximum PoE Budgets

The maximum PoE budgets are the total amounts of power the switches can supply to powered devices on their ports. The maximum PoE budgets of the switches are listed in Table 2.

Table 2. PoE Maximum Power Budgets and Ports

Switch	PoE Budget	PoE Ports
GS950/10PS V2	75W	1 to 8
GS950/18PS V2	185W	1 to 16
GS950/28PS V2	185W	1 to 24
GS950/52PS V2	370W	1 to 24[1]

1. Copper ports 25 to 48 on the GS950/52PS V2 Switch do not support PoE.

PoE Standards

The GS950 PS V2 Switches support these PoE standards:

- PoE (IEEE 802.3af): This standard provides up to 15.4 watts at the switch port to support powered devices that require up to 12.95 watts.
- PoE+ (IEEE 802.3at): This standard provides up to 30.0 watts at the switch port to support powered devices that require up to 25.5 watts.

Powered Device Classes

Powered devices are grouped into classes, based on their power requirements. The GS950 PS V2 Switches support the five classes listed in Table 3.

Table 3. IEEE Powered Device Classes

Class	Maximum Power Output at the Switch Port	Powered Device Power Range
0	15.4W	0.44W to 12.95W
1	4.0W	0.44W to 3.84W
2	7.0W	3.84W to 6.49W
3	15.4W	6.49W to 12.95W
4	30.0W	12.95W to 25.5W

Note

The switches can support any combination of PoE class devices up to their maximum PoE power budgets.

PoE Port Priorities

If the power requirements of the powered devices exceed the switch's power budget, the switch will deny power to some ports based on a system called PoE port priorities. You can use this feature to ensure that powered devices critical to the operations of your network are given preferential treatment by the switch in the allocation of power should the demands of the devices exceed the available power budget.

There are three priority levels:

- Critical
- High
- Low

Ports set to the Critical level, the highest priority level, are guaranteed power before any of the ports assigned to the other two priority levels. Ports assigned to the other priority levels receive power only if all the

Critical ports are receiving power. Ports that are connected to your most critical powered devices should be assigned to this level. If there is not enough power to support all the ports set to the Critical priority level, power is allocated to ports based on port number, in ascending order.

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

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

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

SFP Ports

The SFP ports support the following types of transceivers:

- SFP 100Mbps (100Base-FX) fiber optic transceivers
- SFP 1000Mbps (1000Base-SX/LX) fiber optic transceivers
- Single-port bidirectional SFP 1000Mbps (1000Base-SX/LX) fiber optic transceivers
- 1000Mbps (1000Base-T) copper transceiver

Note

Transceivers are purchased separately. For a list of supported transceivers, refer to the product's data sheet on the Allied Telesis web site at **www.alliedtelesis.com**.

Additional information include:

- Transceivers are hot-swappable. You can install or remove them while the switch is powered on.
- To ensure compatibility, you should only use transceivers that have been approved by Allied Telesis for use in this product.

LEDs

The switch LEDs are described in the following sections:

- “SYSTEM LED” next
- “POWER LED” on page 31
- “PoE MAX LED” on page 31
- “Link/Activity and PoE LEDs” on page 31
- “SFP LEDs” on page 34

Note

If all the port LEDs are off, the switch may be operating in the low power mode. Use the eco-Friendly button to toggle on the LEDs. See “eco-Friendly Button” on page 36 for more information.

SYSTEM LED

The GS950/18PS V2, GS950/28PS V2, and GS950/52PS V2 Switches have a SYSTEM LED on the left side of the faceplate. Refer to Figure 8.

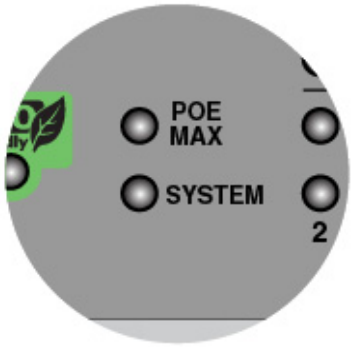


Figure 8. PoE MAX LED

Table 4 defines the LED states.

Table 4. SYSTEM LED

State	Description
Off	The switch is not receiving AC power.
Green	The switch is operating normally.
Red	A cooling fan has failed.

POWER LED

The GS950/10PS V2 Switch has a POWER LED on the left side of the faceplate. Refer to Figure 9.

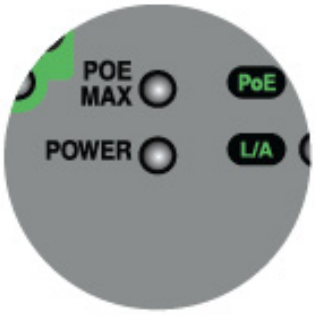


Figure 9. POWER LED

Table 5 defines the LED states.

Table 5. POWER LED

State	Description
Off	The switch is not receiving AC power or has experienced a system failure.
Green	The switch is operating normally.

PoE MAX LED

The switches have a PoE MAX LED on the left side of the faceplate. Refer to Figure 8 on page 30. Table 6 defines the states of the PoE MAX LED.

Table 6. PoE MAX LED

State	Description
Off	The total power requirements of the powered devices connected to the ports are below the switch's maximum power budget. The switch is providing power to all powered devices on its ports.
Red	The total power requirements of the powered devices meet or exceed the switch's maximum power budget. The switch cannot support additional powered devices and may be denying power to some ports.

Link/Activity and PoE LEDs

The copper ports have link/activity and PoE LEDs.The LEDs on the GS950/10PS V2, GS950/28PS V2, and GS950/52PS V2 Switches are located on the left side of the faceplate. The LEDs in the example in Figure 10 on page 32 are from the GS950/28PS V2 Switch.

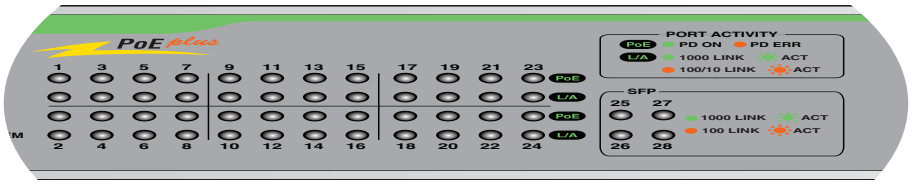


Figure 10. Link/Activity and PoE LEDS for the Copper Ports on the GS950/28PS V2 Switch

Copper ports 1 to 24 on the GS950/52PS V2 Switch have link/activity and PoE LEDs directly above and below the ports. Refer to the Figure 11.

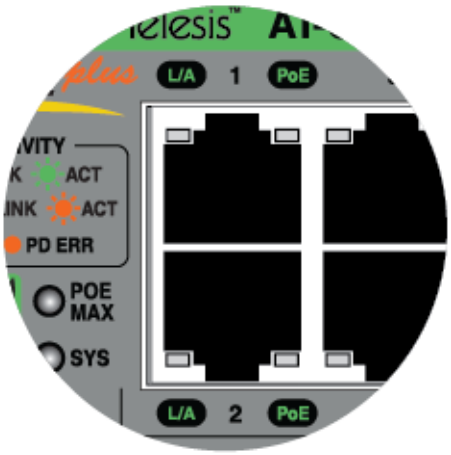


Figure 11. Link/Activity and PoE LEDS for Copper Ports 1 to 24 on the GS950/52PS V2 Switch

Copper Ports 25 to 48 on the GS950/52PS V2 Switch have link/activity LEDs. The second port LED is not supported. Refer to Figure 12 on page 33

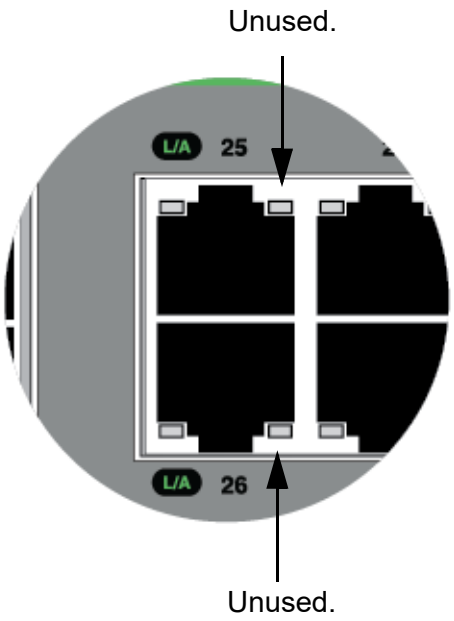


Figure 12. Link/Activity LEDS for Copper Ports 25 to 48 on the GS950/ 52PS V2 Switch

Table 7 defines the states of the port LEDs.

Table 7. Link/Activity and PoE LEDs for the Copper Ports

LED	State	Description
L/A (Link/Activity)	Off	The port has not established a link to a network device.
	Steady Green	The port has established a 1000Mbps link to a network device.
	Blinking Green	The port is receiving or transmitting network traffic at 1000Mbps,
	Steady Amber	The port has established a 10 or 100Mbps link to a network device
	Blinking Amber	The port is receiving or transmitting network traffic at 10 or 100Mbps,

Table 7. Link/Activity and PoE LEDs for the Copper Ports (Continued)

LED	State	Description
PoE	Off	This state has the following possible causes: - The port is not connected to a network device. - The port is connected to a non-PoE device. - The port is connected to a powered device, but the switch is denying power to it because it has reached its maximum power budget.
	Green	The port is transmitting power to a powered device.
	Amber	The switch has detected an error condition on the port. Examples include the following: - The powered device is requiring more power than its device class. - There is a terminal short in the network cable or connector.

SFP LEDs

The LEDs for the two SFP ports on the GS950/10PS V2 and the four SFP ports on the GS950/18PS V2 and GS950/28PS V2 Switches are located on the left side of the front panel. The example in Figure 13 is from the GS950/28PS V2 Switch.

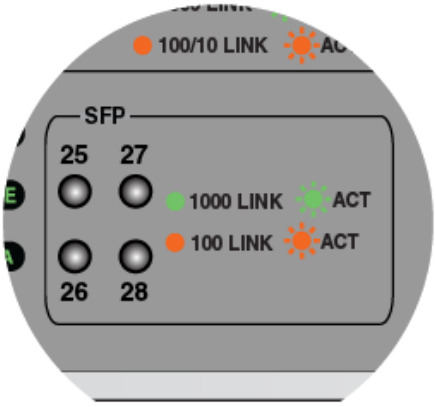


Figure 13. LEDs for the SFP Ports on the GS950/28PS V2 Switch

The LEDs for the four SFP ports on the GS950/52PS V2 Switch are located between the ports. Refer to Figure 14.

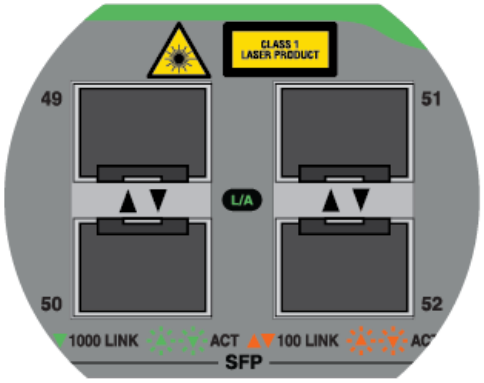


Figure 14. LEDs for the SFP Ports on the GS950/52PS V2 Switch

The states of the SFP port LEDs are defined in Table 8.

Table 8. LEDs for the SFP Ports

State	Description
Off	The port is empty or the transceiver has not established a link with a network device.
Steady Green	The port has established a 1000Mbps link to a network device.
Blinking Green	The port is receiving and transmitting network traffic at 1000Mbps,
Steady Amber	The port has established a 100Mbps link to a network device.
Blinking Amber	The port is transmitting or receiving network packets at 100Mbps.

eco-Friendly Button

You can use the eco-Friendly button, shown in Figure 15, to perform the following functions:

- Toggling the eco-Friendly mode: Pressing the button for less than five seconds toggles the front panel LEDs on and off. You might turn off the LEDs to conserve electricity when you are not using them to monitor the switch. (The SYS LED is not controlled by the eco-Friendly button.)
- Rebooting the switch: Pressing and holding the button for five to nine seconds reboots the switch. You might perform this action if the switch is experiencing a problem.
- Restoring the default settings: Pressing and holding the button for more than 10 seconds restores the factory default values to the switch's configuration. You might perform this action to discard the switch's current configuration or if you have forgotten the management login password.

Note

Restoring the default settings returns the management IP address to 192.168.1.1. You may need to change the IP address on your workstation before you can connect to the switch again. Refer to "Starting the First Management Session" on page 85.

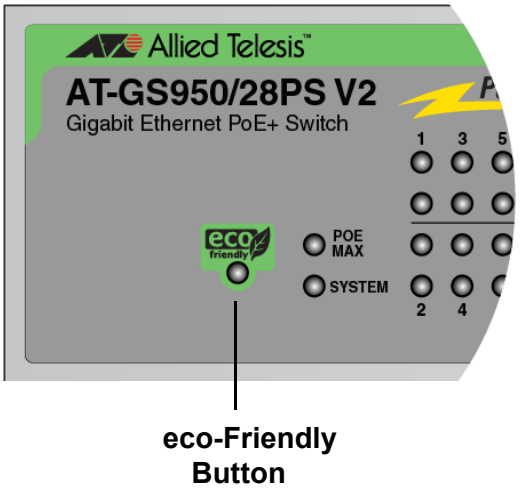


Figure 15. eco-Friendly Button

Caution

The switch temporarily stops forwarding network traffic when you reboot it or restore the default settings. Some network traffic may be lost. E113

Note

You can disable both the reboot and factory default reset functions of the eco-Friendly button In the management software. Refer to the *GS950 PS V2 Gigabit Ethernet PoE+ Switch User Guide.*

Rebooting or Restoring the Switch

To reboot the switch or restore the default settings, do one of the following:

Caution

The switch temporarily stops forwarding network traffic when you reboot it or restore the default settings. Some network traffic may be lost. E113

- To reset the switch, press the eco-Friendly button for 5 to 9 seconds. The switch takes approximately 1 to 2 minutes to initialize its management software, before resuming network operations.
- To reboot the switch and reset the switch to its factory default settings, press the eco-Friendly button for more than 10 seconds.

Power Supply and Fans

The switches have one internal power supply with a single AC power supply socket on the back panel. You can power the switch on or off either by powering on or off the AC power source or by connecting or disconnecting the power cord. The power cord is supplied with the switch.

Note

For power requirements, refer to “Power Specifications” on page 102.

The GS950/18PS V2, GS950/28PS V2, and GS950/52PS V2 Switches are cooled by internal ventilation fans that are not field replaceable. Fan status is indicated with the SYSTEM LED. Refer to “SYSTEM LED” on page 30. Airflow in the switch is from left to right, when facing the front of the device. Refer to Figure 16.

Figure 16. Airflow

Note

The GS950/10PS V2 Switch does not have internal ventilation fans. Be sure the installation site provides adequate airflow so as to prevent overheating and system failure.

Chapter 2

Beginning the Installation

The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 40
- “Installation Options” on page 45
- “Choosing a Site for the Switch” on page 46
- “Unpacking the Switch” on page 47

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
Laser Radiation.
Class 1 Laser product. ⁂ L9

Note
The optical transceiver ports should use UL listed optical transceiver products, rated Laser Class I, 3.3Vdc.

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

This Warning applies only to the GS950/10PS V2 Switch.

Warning
Operating Temperatures. This product is designed for a maximum ambient temperature of 40°C. E7

This Warning applies to all GS950 PS V2 Switches except the GS950/10PS V2 Switch.

Warning
Operating Temperatures. This product is designed for a maximum ambient temperature of 45°C. E52

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

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

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

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

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

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

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

Warning
SFP 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 transceivers. E40

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

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
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

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

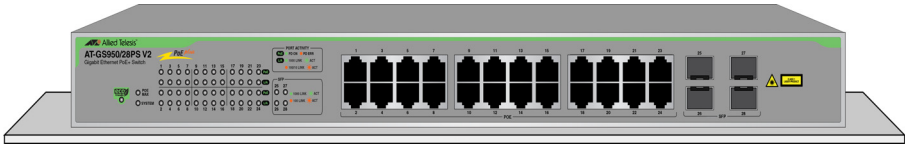
Caution
The unit does not contain serviceable components. Please return damaged units for servicing. E42

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

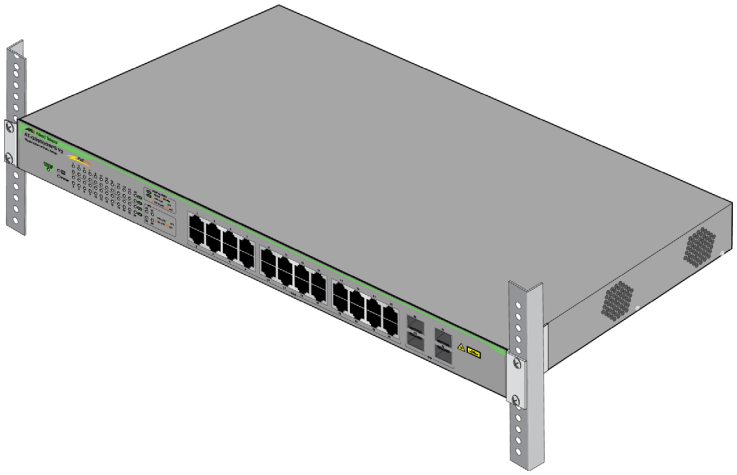
Installation Options

Figure 17 illustrates the installation options.

Desk or Table



19-inch Equipment Rack



Wall

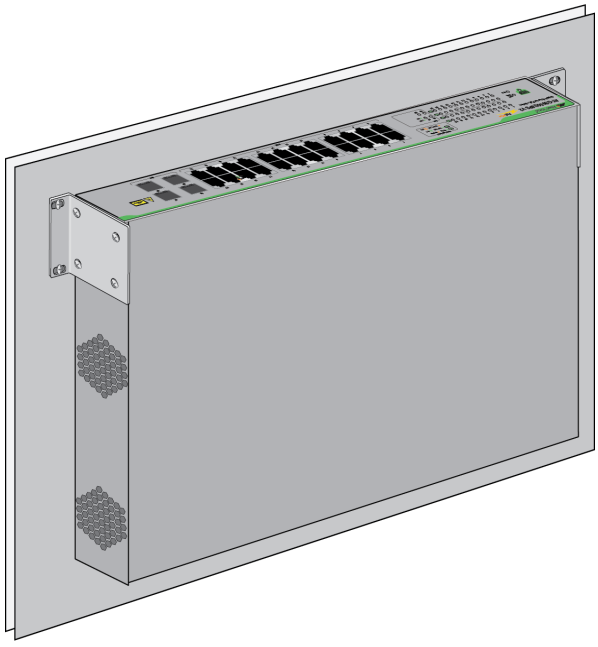


Figure 17. Installation Options

Choosing a Site for the Switch

Observe these site requirements.

- ❒ If you are installing the device in an equipment rack, check that the rack is safely secured so that it will not tip over. Devices should be installed in the rack starting at the bottom, with the heavier devices near the bottom of the rack.
- ❒ If installing the device on a table, verify that the table is level and secure.
- ❒ The power outlet should be located near the chassis 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 side panels.
- ❒ Do not place objects on top of the switch.
- ❒ 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.
- ❒ Copper cabling should not be exposed to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, or fluorescent fixtures.
- ❒ Switch ports are suitable for intra-building connections, or where non-exposed cabling is required.
- ❒ If installing the device in a wiring or utility box, verify that the enclosure has adequate airflow to prevent overheating.

Caution

The GS950/10PS V2 Switch does not have internal ventilation fans. The installation site has to provide adequate airflow to prevent overheating and system failure.

Unpacking the Switch

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

After unpacking the switch from the shipping box, visually inspect it for damage and verify the contents. The switch should include the items in Figure 18. Contact your Allied Telesis sales representative for assistance if any items are missing or damaged.

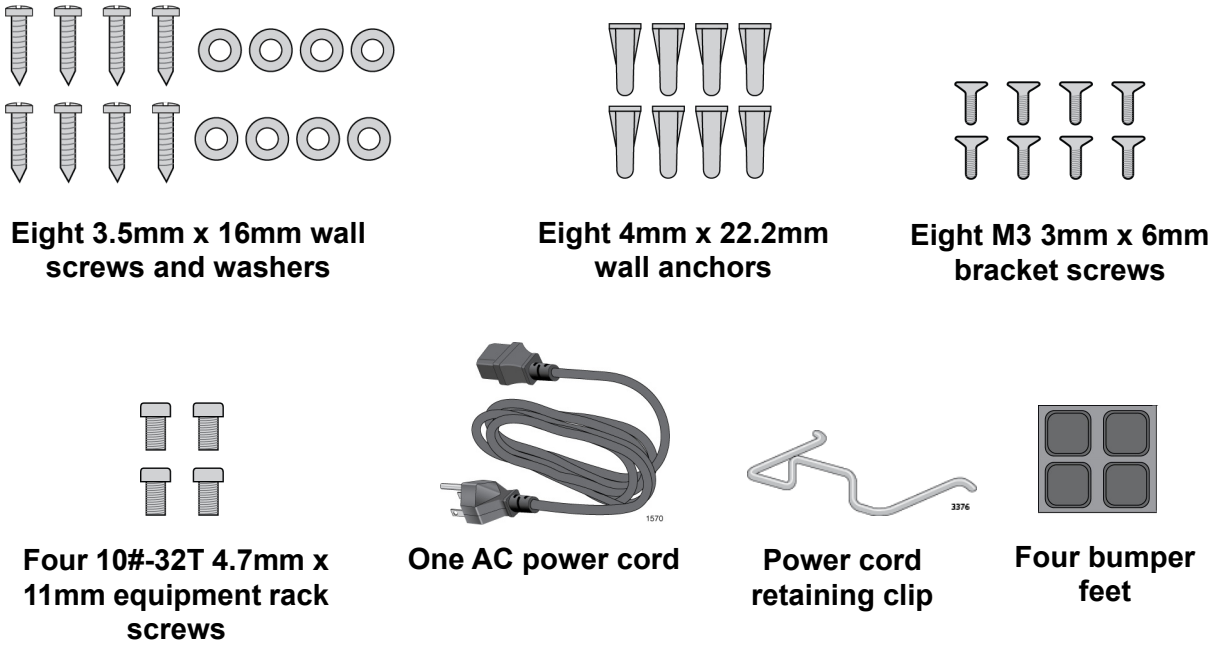
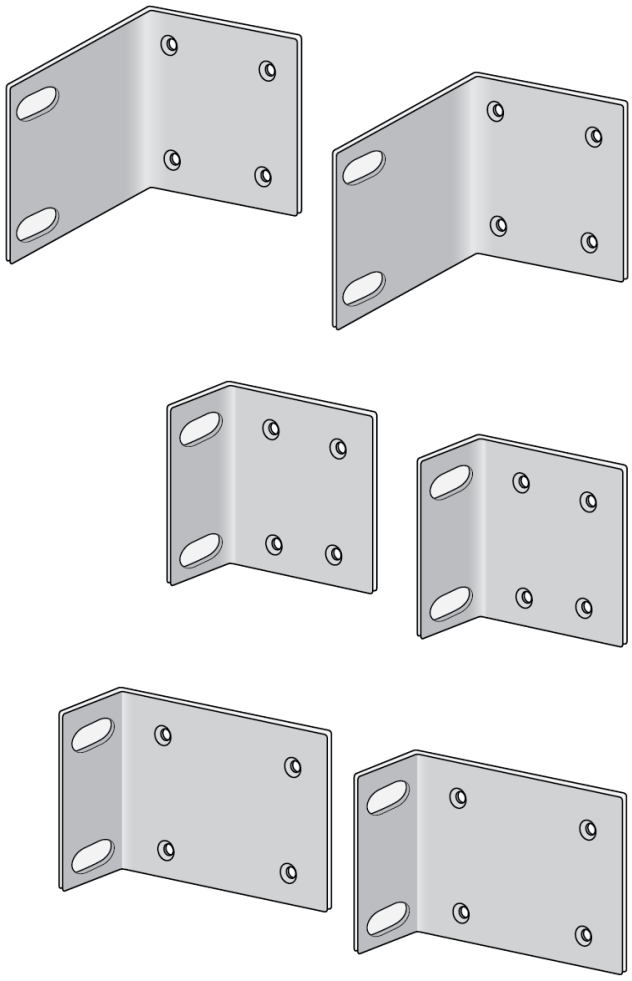


Figure 18. Package Contents

The switch also comes with two equipment rack/wall brackets. Refer to Figure 19 on page 48.



Equipment rack/wall brackets for the GS950/10PS V2 Switch

Equipment rack/wall brackets for the GS950/18PS V2 and GS950/28PS V2 Switches

Equipment rack brackets for the GS950/52PS V2 Switch

Figure 19. Equipment Rack/Wall Brackets

Note
Installing the GS950/52PS V2 Switch on a wall requires the optional BRKT-J22 brackets.

Chapter 3

Installing the Switch on a Table or Desktop

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

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

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

Note
Airflow in the switch is from left to right, when facing the front of the device.

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

1. Review “Reviewing Safety Precautions” on page 40 and “Choosing a Site for the Switch” on page 46 to verify that the selected site is suitable for the unit.
2. Verify that the table is strong enough to support the weight of the switch.
3. Verify that the accessory kit came with all the appropriate items. Refer to “Unpacking the Switch” on page 47.
4. Lift the chassis from the shipping box and place it upside down on a table.
5. Affix the bumper feet to the four corners on the bottom panel of the switch. Refer to Figure 20 on page 50.

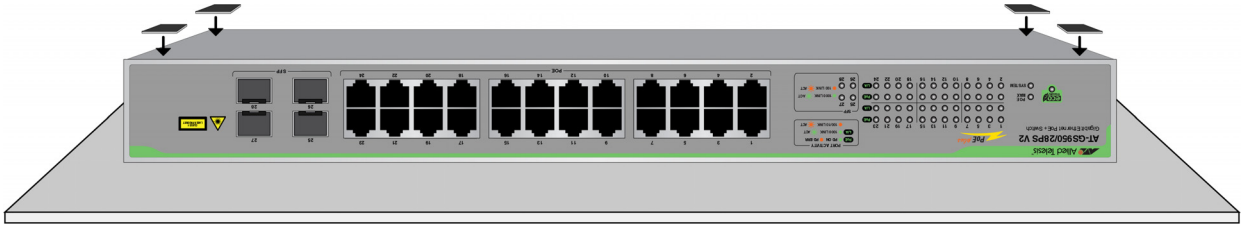


Figure 20. Affixing the Bumper Feet

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

7. Go to Chapter 6, “Cabling the Networking Ports” on page 75.

Chapter 4

Installing the Switch in an Equipment Rack

This chapter contains instructions for installing the switch in a standard 19-inch equipment rack. The procedures are listed here:

- “Beginning the Installation” on page 52
- “Installing the Switch” on page 53

Beginning the Installation

This chapter contains the procedure for installing the switch in a standard 19-inch equipment rack, with the brackets included with the unit.

Required Items

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

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

Switch Orientations in the Equipment Rack

You can install the switch with its front panel flush with or extending in front of the equipment rack. The illustrations in Figure 21 on page 52 show the two switch orientations in the equipment rack.

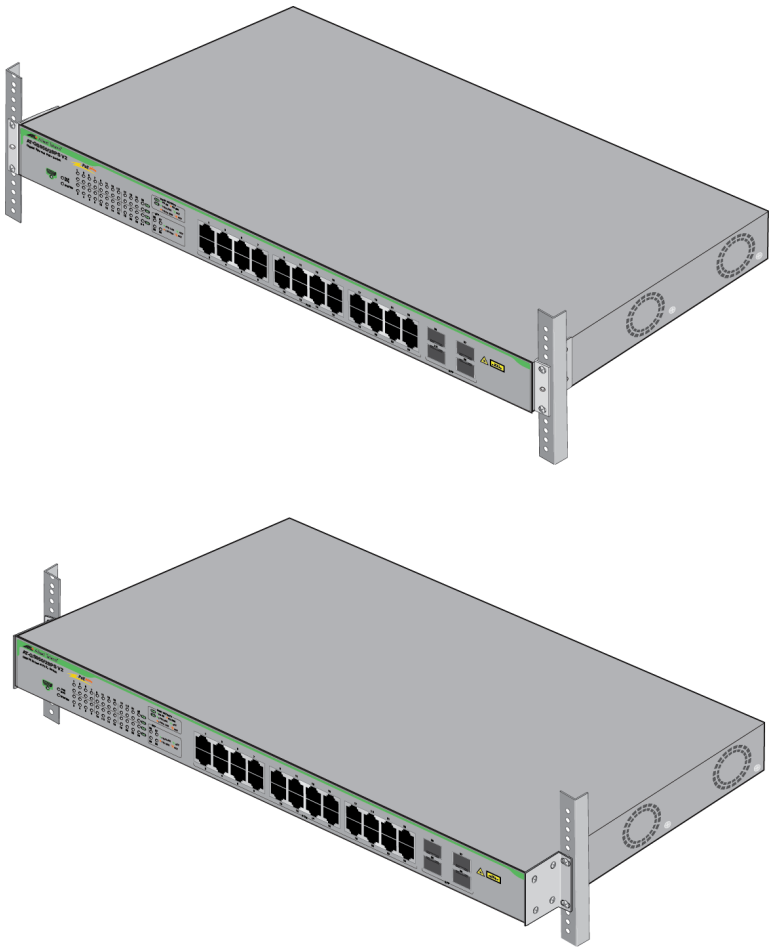


Figure 21. Switch Orientations in an Equipment Rack

Installing the Switch

Please review the information and perform the procedures in Chapter 2, “Beginning the Installation” on page 39 before installing the switch.

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

Note
The bumper feet included with the switch should not be used when installing the device in an equipment rack. If they are already installed, remove them before performing the installation procedure:

Note
Airflow in the switch is from left to right, when facing the front of the device.

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

1. Place the unit on a level, secure surface.
2. If you have not chosen an orientation for the switch in the equipment rack, review “Switch Orientations in the Equipment Rack” on page 52.
3. Attach the two rack mount brackets to the sides of the switch in the selected positions, with the eight M4x6mm screws included with the unit. Figure 22 on page 54 shows the brackets positioned so that the front panel is even with the front of the equipment rack.

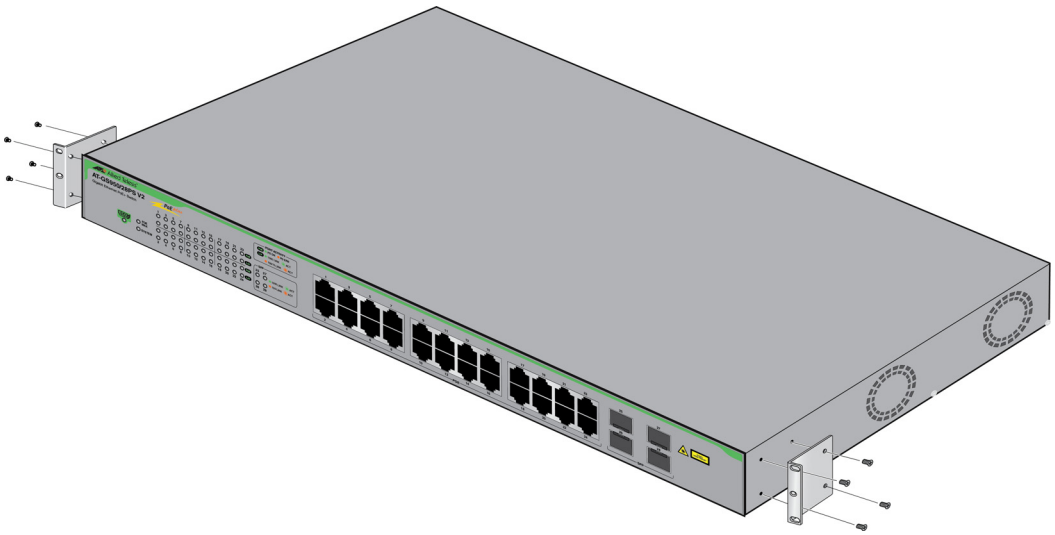


Figure 22. Attaching the Equipment Rack Brackets

4. Have another person hold the switch in the equipment rack while you secure it using the four equipment rack screws provided with the switch. Refer to Figure 23.

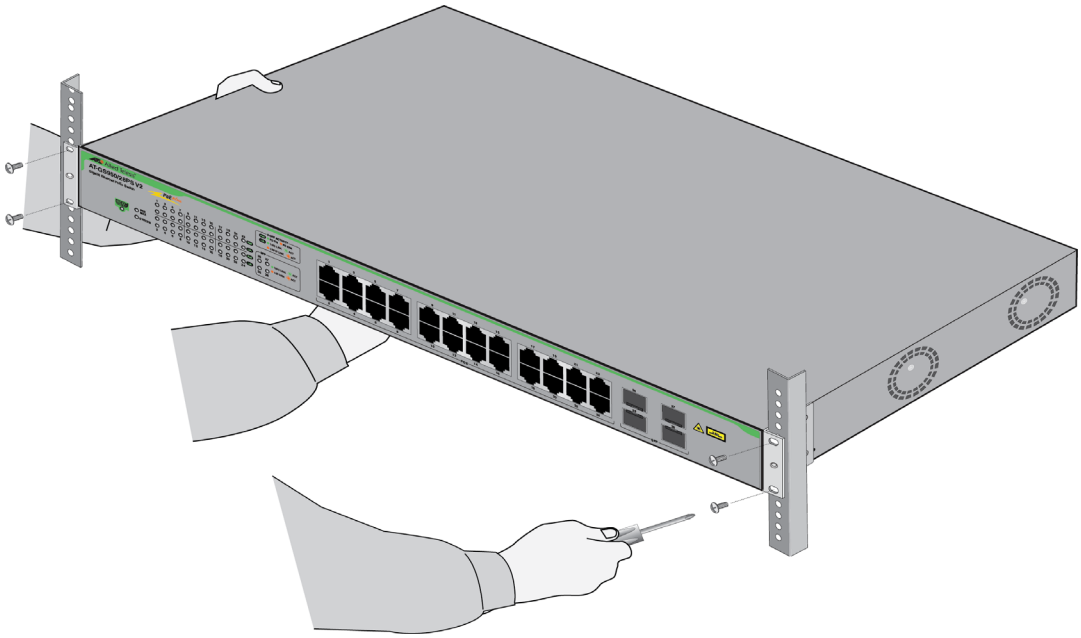


Figure 23. Installing the Switch in an Equipment Rack

5. Go to Chapter 6, “Cabling the Networking Ports” on page 75.

Chapter 5

Installing the Switch on a Wall

The procedures in this chapter are listed here:

- ❒ “Switch Orientations on a Wall” on page 56
- ❒ “Installation Guidelines” on page 58
- ❒ “Recommended Minimum Reserved Wall Area” on page 59
- ❒ “Plywood Base for a Wall with Wooden Studs” on page 61
- ❒ “Tools and Material” on page 63
- ❒ “Installing the Plywood Base” on page 64
- ❒ “Installing the Switch on the Plywood Base” on page 65
- ❒ “Installing the Switch on a Concrete Wall” on page 68
- ❒ “Installing the GS950/52PS V2 Switch on a Wall” on page 71

Switch Orientations on a Wall

You can install the switch on a wall with the front panel facing up or down. Figure 24 shows the correct wall installations.

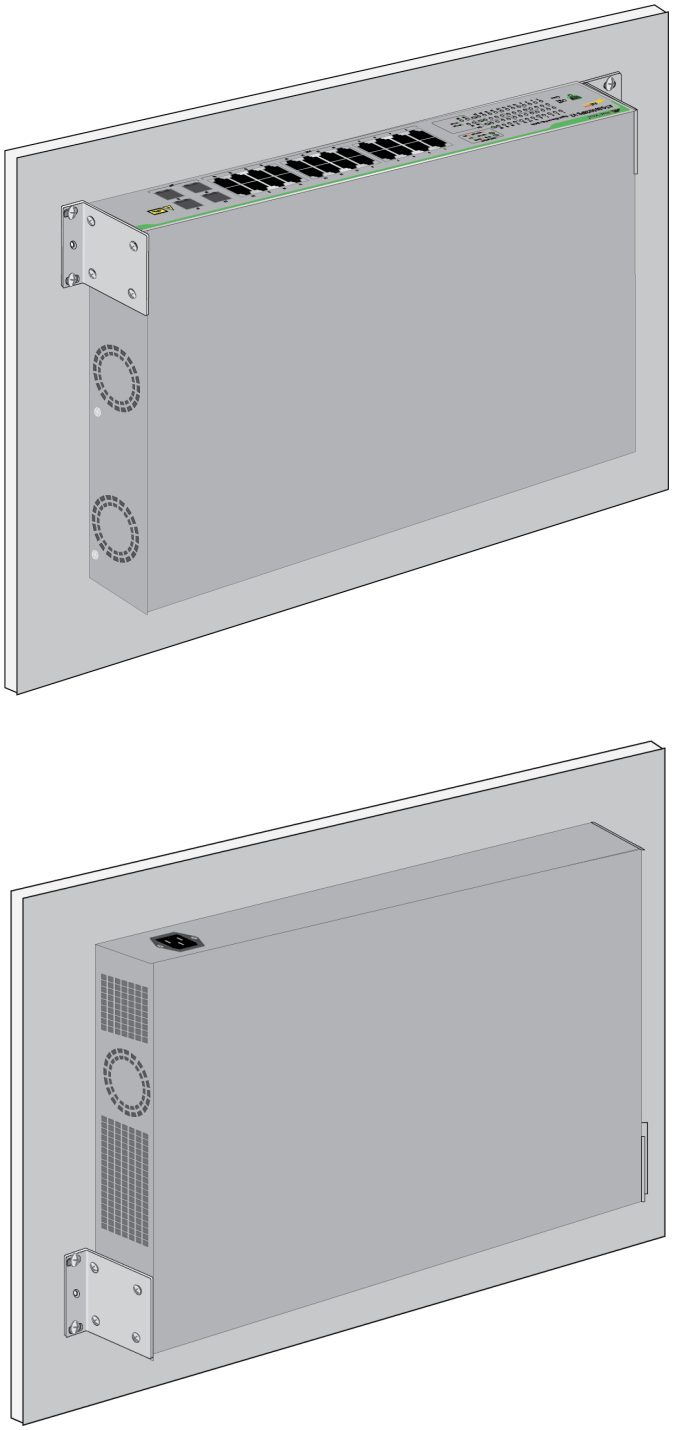


Figure 24. Wall Installations

Do not install the switch on a wall with the front panel facing left or right. These orientations may reduce airflow though the device, which can cause it to overheat. Refer to Figure 25.

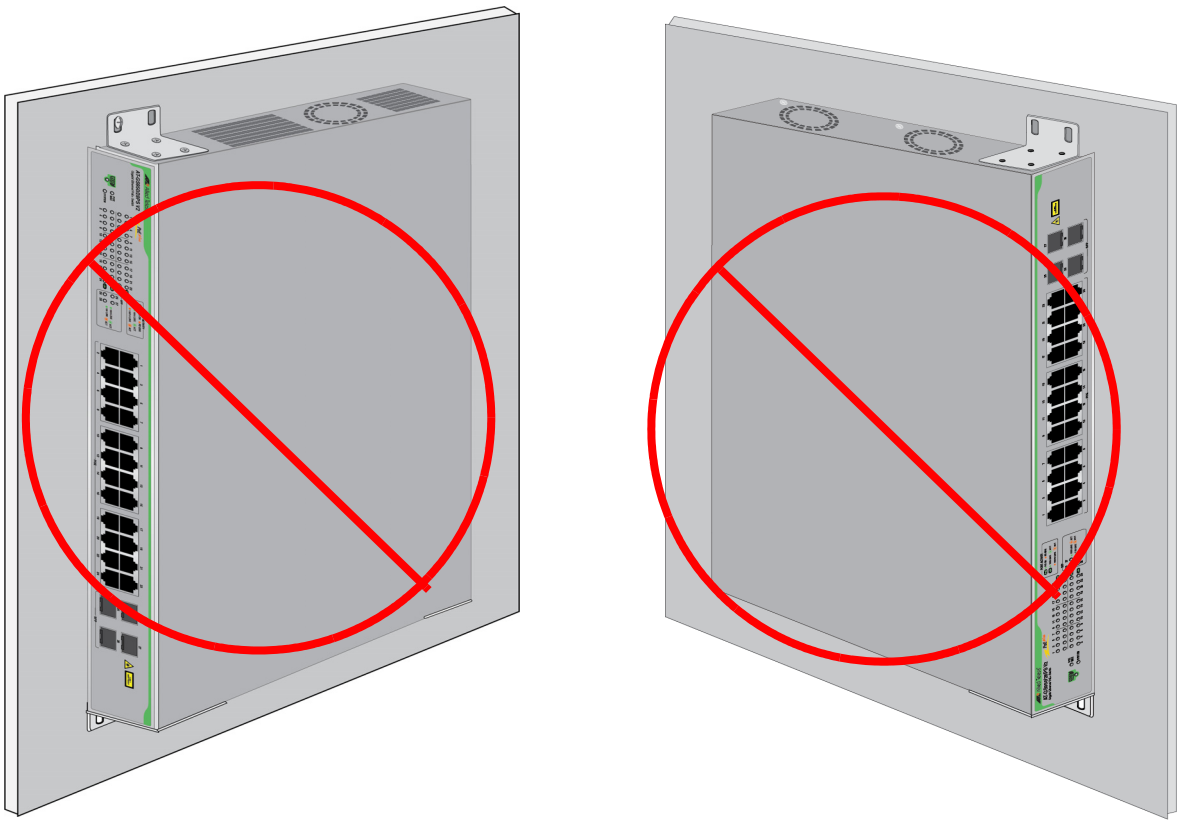


Figure 25. Unsupported Switch Orientations on a Wall

Installation Guidelines

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

- ❒ You can install the switch on a wooden or concrete wall.
- ❒ If you are installing the switch on a wall with wooden studs with the standard brackets, you should use a plywood base to support the device. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 61.
- ❒ 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 might not be strong enough to safely support the device.

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

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

Note
Airflow in the switch is from left to right, when facing the front of the device.

Recommended Minimum Reserved Wall Area

Figure 26 and Figure 27 on page 60 illustrate the recommended minimum reserved wall area around the switch, with the front panel facing up or down, respectively.

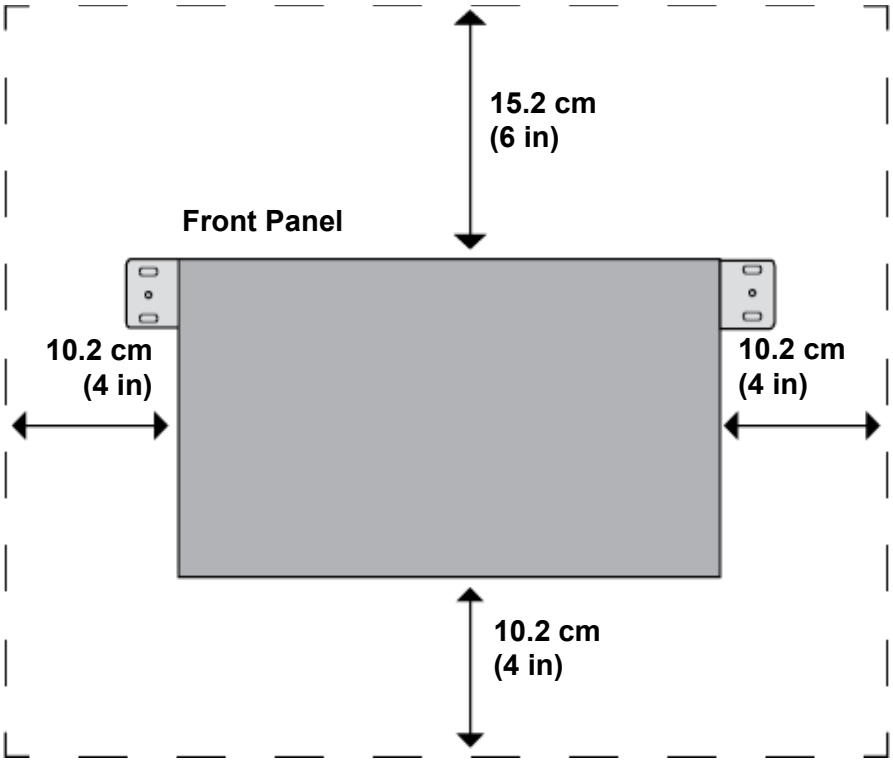


Figure 26. Recommended Minimum Reserved Wall Area with the Front Panel Facing Up

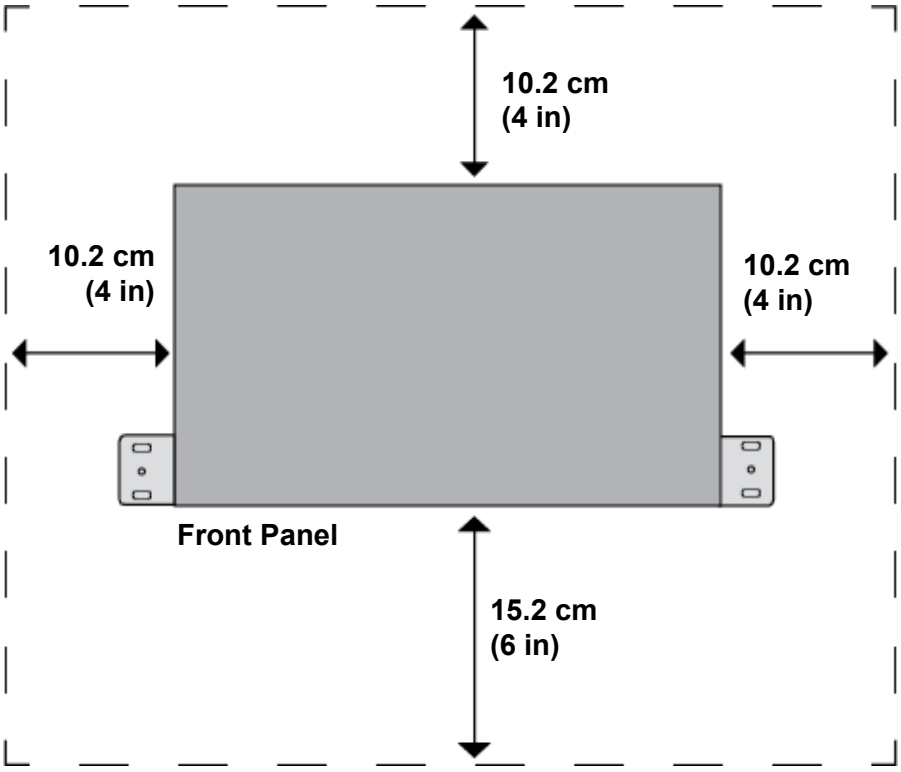


Figure 27. Recommended Minimum Reserved Wall Area with the Front Panel Facing Down

Plywood Base for a Wall with Wooden Studs

Allied Telesis recommends using a plywood base to install the switch on a wall that has wooden studs. Refer to Figure 28.

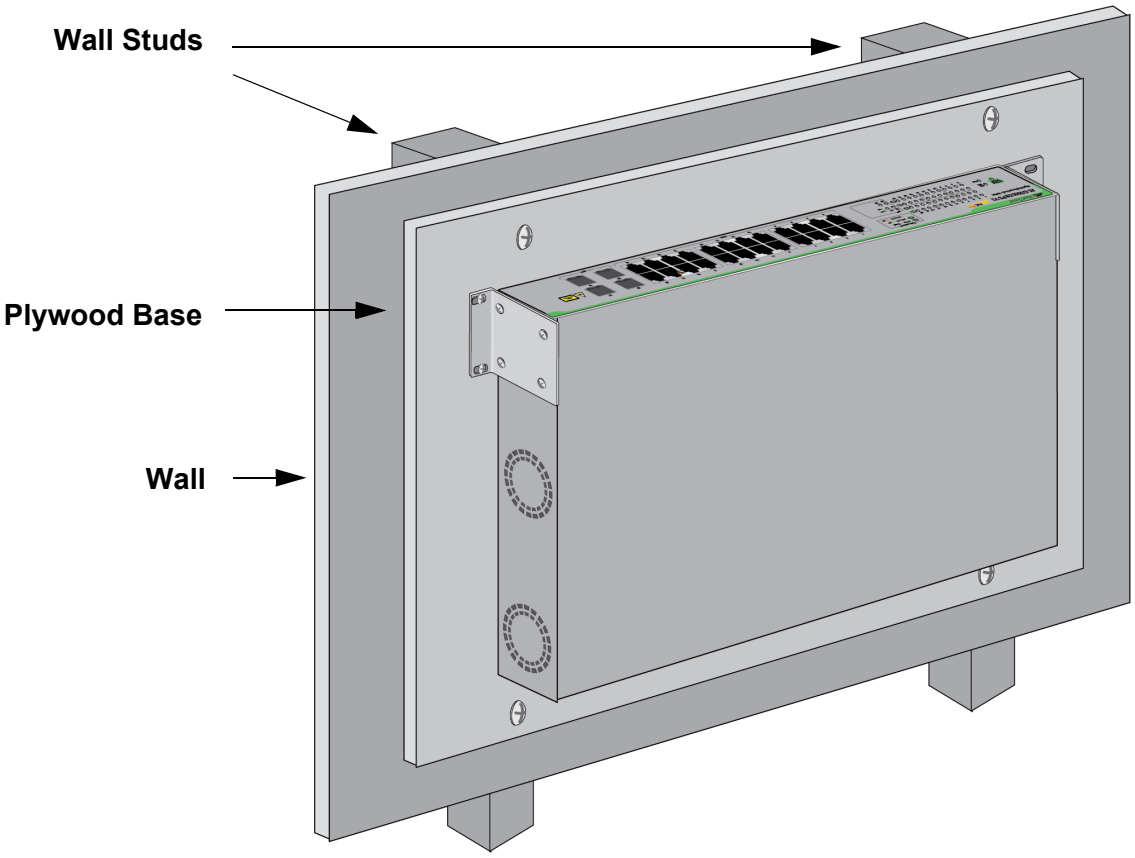


Figure 28. Switch on a Wall with a Plywood Base

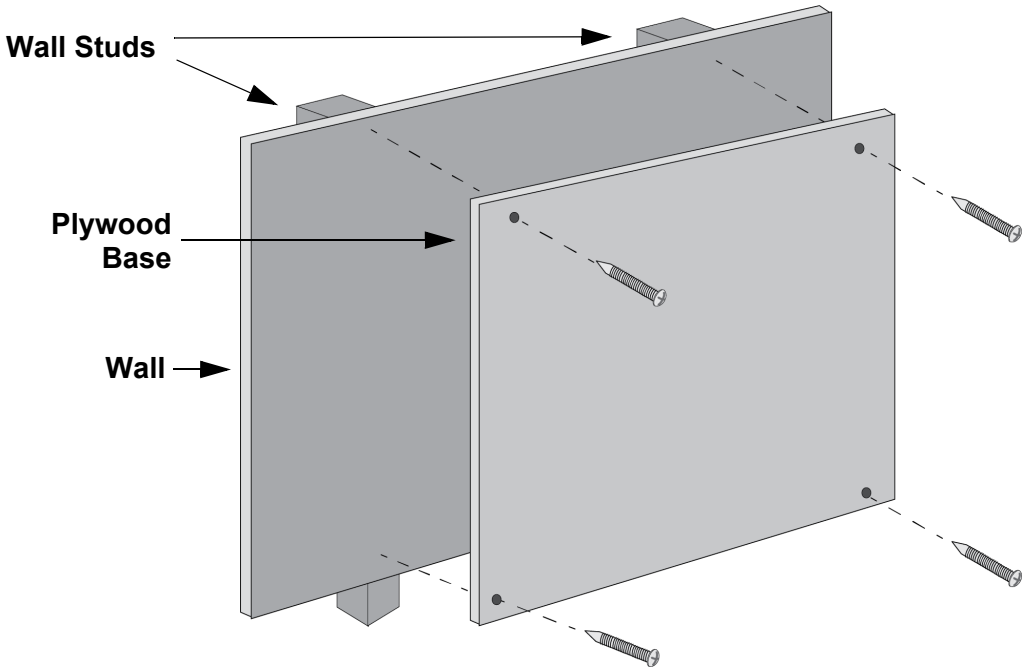
A plywood base allows you to attach the switch on two wall studs for a more secure installation. The recommended minimum dimensions of the plywood base are listed here:

- Width: 60 centimeters (24 inches)
- Height: 30 centimeters (12 inches)
- Thickness: 2.5 centimeters (1 inch)

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

You should install the plywood base to the wall and then install the switch on the base. Refer to Figure 29.

Step 1: Install the plywood base on the wall.



Step 2: Install the switch on the plywood base.

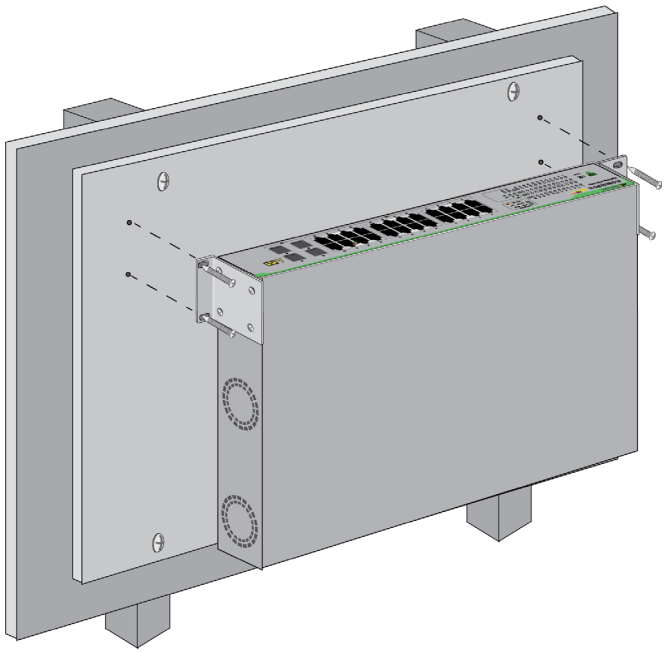


Figure 29. Steps to Installing the Switch with a Plywood Base

Tools and Material

Here are the required tools and material for installing the switch on a wooden wall with the standard brackets that come with the device:

- ❒ Two standard brackets
- ❒ Eight screws to secure the brackets to the switch (included with the switch)
- ❒ Four wood or concrete wall screws (included with the switch)
- ❒ Four concrete wall anchors (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 61 for illustrations.
- ❒ Four screws and anchors for attaching the plywood base to the wall (not provided)

Caution

The supplied screws and anchors may not be appropriate for all wall material. A qualified building contractor should determine the appropriate hardware requirements for your wall before installing the switch. E88

Installing the Plywood Base

A plywood base is recommended when installing the switch on a wall that has wooden studs, with the standard brackets. Consult a qualified building contractor for installation instructions for the base. The installation guidelines are listed here:

- The recommendations dimensions of the base are provided in “Plywood Base for a Wall with Wooden Studs” on page 61.
- Use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- Attach the base to two wall studs with a minimum of four screws.
- The selected wall location for the base should adhere to the recommendations in “Choosing a Site for the Switch” on page 46 and “Recommended Minimum Reserved Wall Area” on page 59.

Installing the Switch on the Plywood Base

This procedure assumes that the plywood base for the switch is installed on the wall. Please review “Reviewing Safety Precautions” on page 40 and “Choosing a Site for the Switch” on page 46 before performing this procedure. Allied Telesis recommends two people for this procedure, one person to hold the switch on the wall while the other person secures it by installing the screws.

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

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

Caution
The supplied screws and anchors may not be appropriate for all wall material. A qualified building contractor should determine the appropriate hardware requirements for your wall before installing the switch. E88

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

1. Place the switch on a table.
2. Install the two brackets to the sides of the unit with the eight screws that come with the switch. Refer to Figure 30 on page 66.

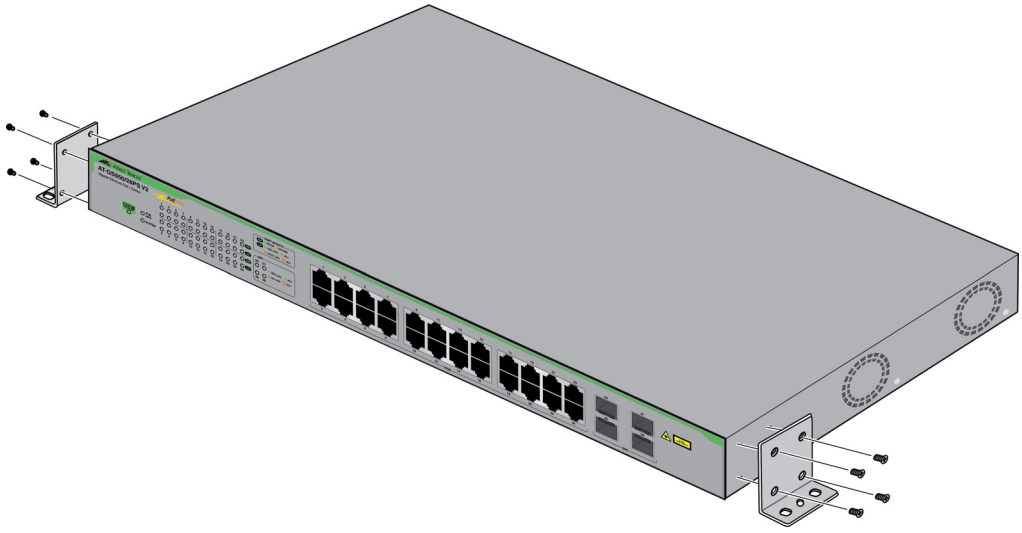


Figure 30. Installing the Brackets to the Switch for Wall Installation

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 provided screws. Refer to Figure 31 on page 67.

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

   - ❒ Position the switch so that the front panel is facing up or down. Refer to Figure 24 on page 56. Do not install the switch with the front panel facing right or left.
   - ❒ Leave sufficient space from other devices or walls so that you can access the front and back panels. Refer to “Recommended Minimum Reserved Wall Area” on page 59.

4. Go to Chapter 6, “Cabling the Networking Ports” on page 75.

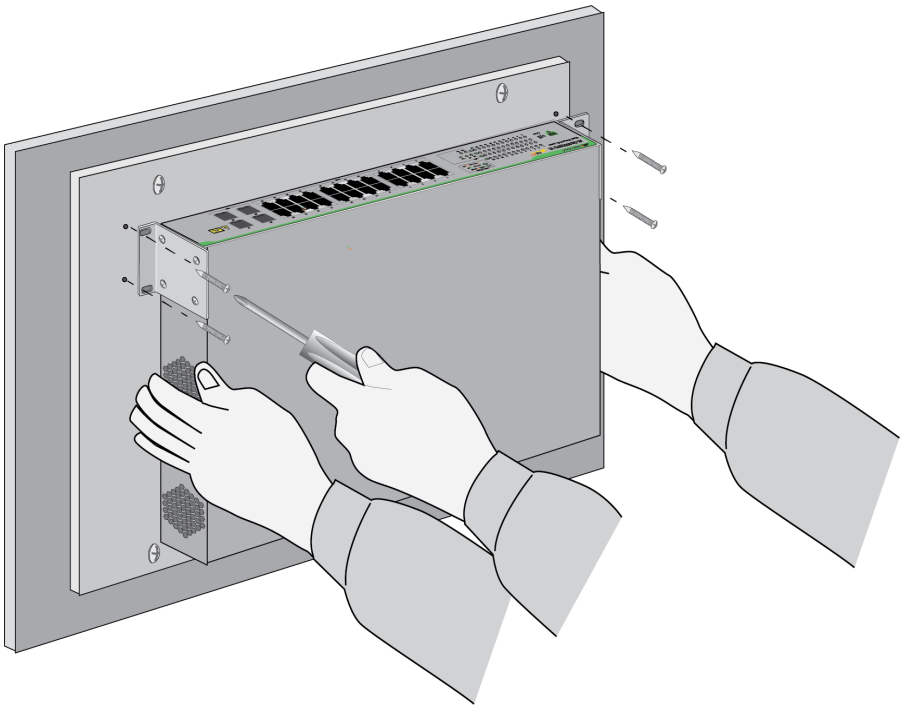


Figure 31. Attaching the Switch to the Plywood Base

Installing the Switch on a Concrete Wall

Allied Telesis recommends a minimum of two people for this procedure.

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

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

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

1. Place the switch on a table.
2. Install the two brackets to the sides of the unit with the eight screws that come with the switch. Refer to Figure 30 on page 66.
3. After attaching the brackets to the side of the switch, have another person hold the switch on the concrete wall at the selected location for the switch while you use a pencil or pen to mark the wall with the locations of the four screw holes in the two brackets. Refer to Figure 32 on page 69.

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

   - Position the switch so that the front panel is facing up or down. Refer to Figure 24 on page 56. Do not install the switch with the front panel facing right or left.
   - Leave sufficient space from other devices or walls so that you can access the front and back panels. Refer to “Recommended Minimum Reserved Wall Area” on page 59.

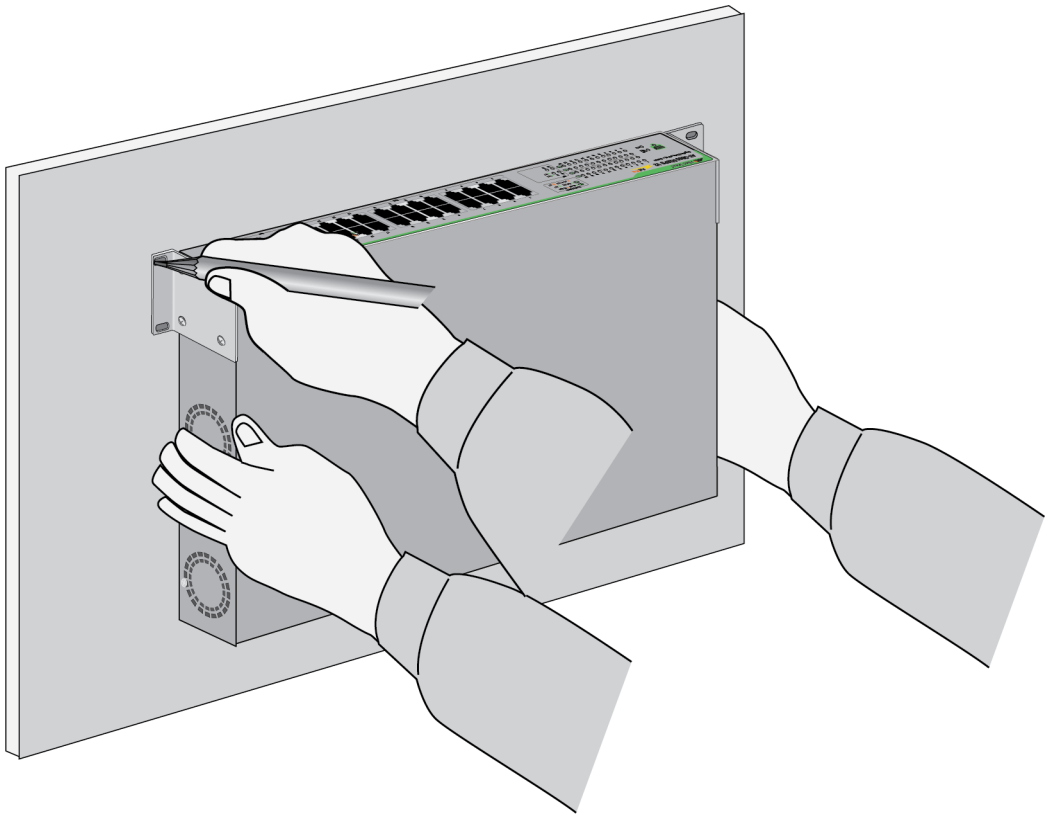


Figure 32. Marking the Locations of the Bracket Holes on a Concrete Wall

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.
   - ❒ Clean 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 provided screws. Refer to Figure 33 on page 70.

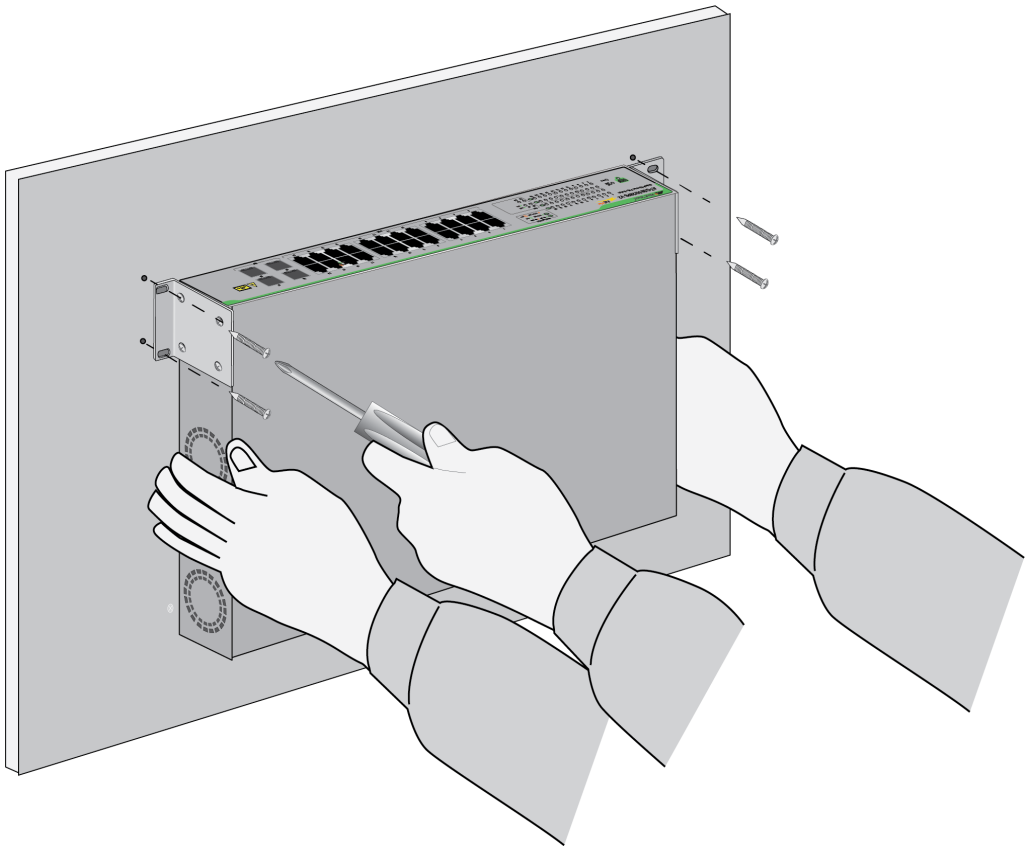


Figure 33. Installing the Switch on a Concrete Wall

8. Go to Chapter 6, “Cabling the Networking Ports” on page 75.

Installing the GS950/52PS V2 Switch on a Wall

For wall installations of the GS950/52PS V2 Switch, Allied Telesis recommends the optional BRKT-J22 Brackets kit. The kit consists of four identical brackets, shown in Figure 34.

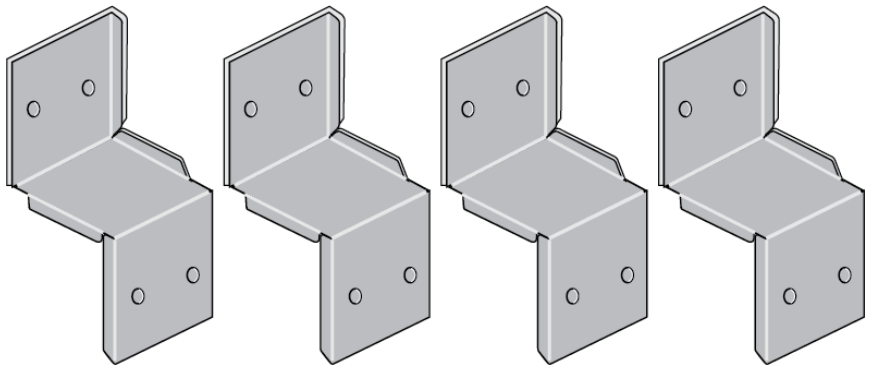


Figure 34. BRKT-J22 Brackets Kit

Figure 35 illustrates the correct orientation of the GS950/52PS V2 Switch and BRKT-J22 Brackets on a wall. The front panel has to face up and the bottom panel has to be against the wall.

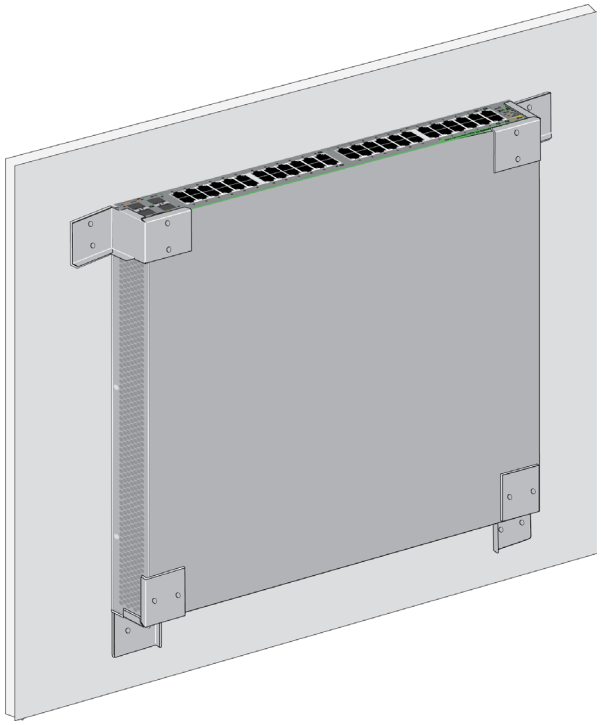


Figure 35. Wall Installation of the GS950/52PS V2 Switch with BRKT-J22 Brackets

Note
Wall anchors and screws are not provided with the brackets. The diameter of the bracket screw holes is 4mm.

To install the GS950/52PS V2 Switch on a wall with the BRKT-J22 Brackets, perform the following procedure:

1. Have one person hold the switch on the wall at the desired location.
2. Have another person position the brackets and mark the eight screw holes. Refer to Figure 36.

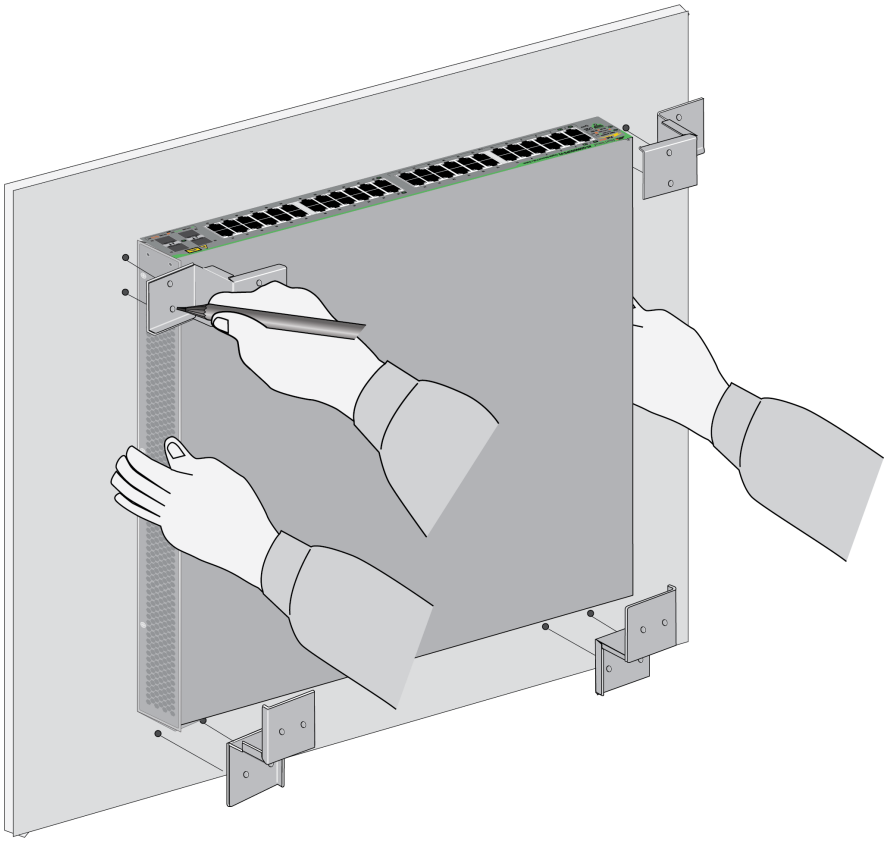


Figure 36. Marking the Screw Holes for the BRKT-J22 Brackets

3. Place the switch on a table.
4. Drill the screw holes.
5. Install wall anchors, if required.
6. Attach the bottom brackets to the wall with appropriate screws. Refer to Figure 37 on page 73. Be sure that the bracket flanges are on the outside.

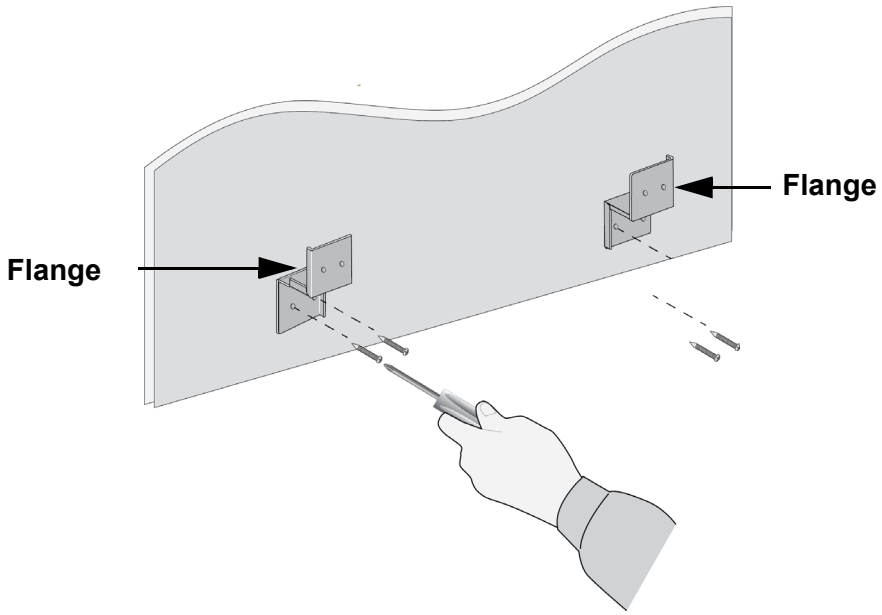


Figure 37. Attaching the Bottom BRKT-J22 Brackets to the Wall

7. Slide the bottom panel of the switch into the brackets. Refer to Figure 38.

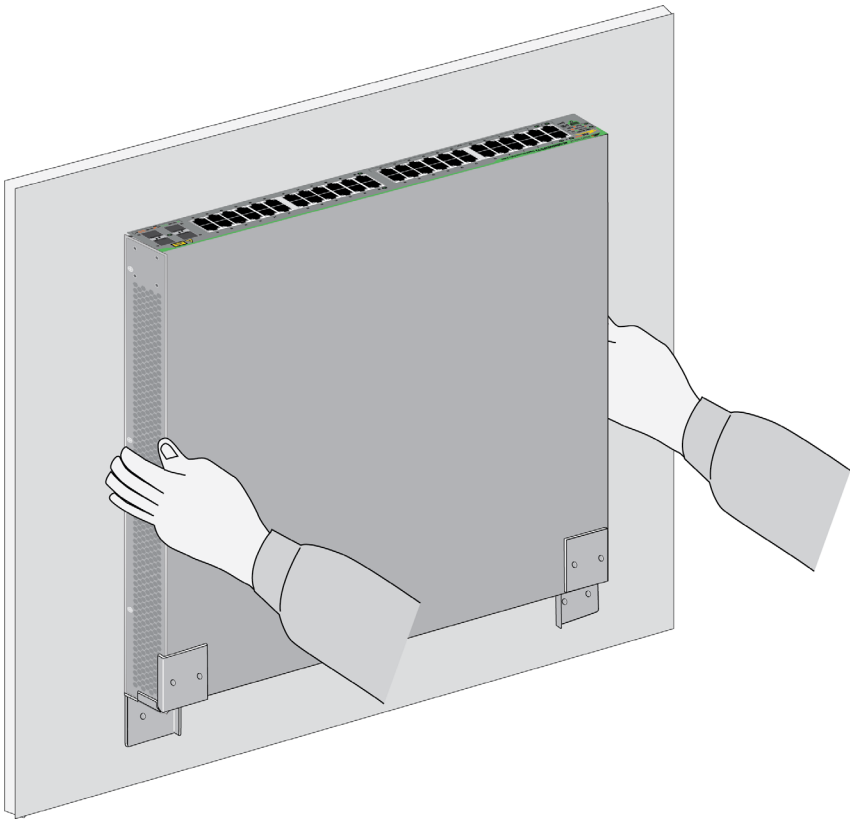


Figure 38. Sliding the Switch into the Bottom BRKT-J22 Brackets

Warning
Continue to hold the switch on the wall until after you complete the next step, which installs the top brackets. Otherwise, the switch may fall off the wall.

8. Attach the top brackets to the wall with appropriate screws. Refer to Figure 39.

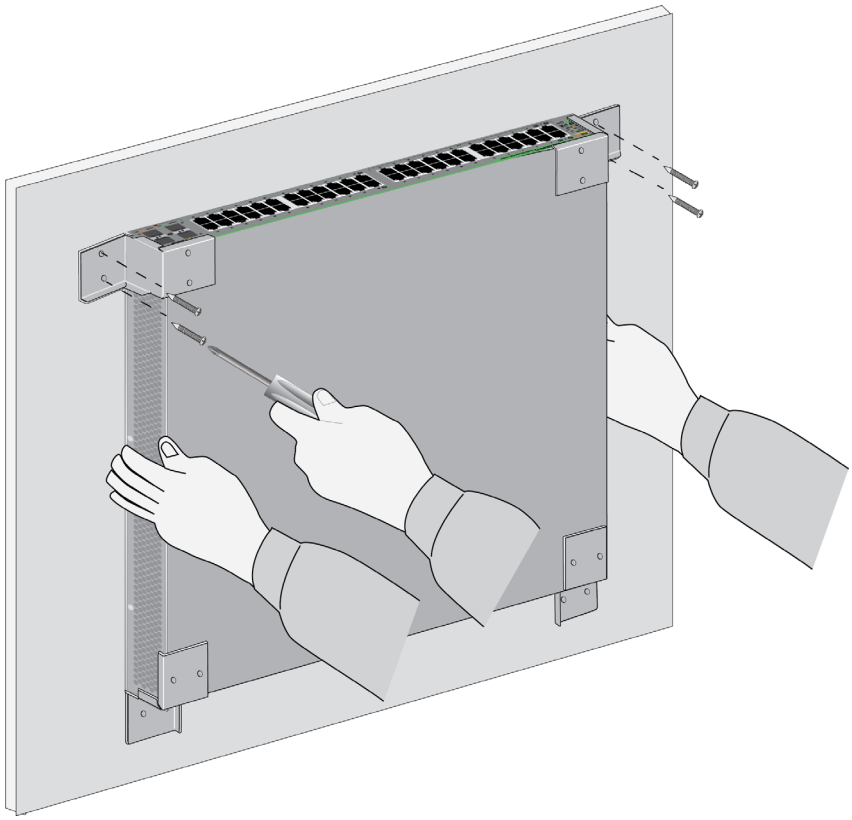


Figure 39. Attaching the Top BRKT-J22 Brackets to the Wall

9. Go to Chapter 6, “Cabling the Networking Ports” on page 75.

Chapter 6

Cabling the Networking Ports

This chapter contains the following procedures:

- “Cabling the Copper Ports” on page 76
- “Installing SFP Transceivers” on page 78

Cabling the Copper Ports

Here are the guidelines to cabling the 10/100/1000Mbps copper ports:

- The cable specifications are listed in Table 1 on page 24.
- The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- The default speed setting is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- The default speed setting of Auto-Negotiation is not appropriate for ports connected to 10/100Mpbs network devices that do not support Auto-Negotiation and have fixed speeds. For those switch ports, you should disable Auto-Negotiation and set the port's speed manually to match the speeds of the network devices.
- The 10/100/1000Mbps ports must be set to Auto-Negotiation, the default setting, to operate at 1000Mbps.
- The default duplex mode setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation for duplex modes.
- The default duplex mode setting of Auto-Negotiation is not appropriate for ports connected to network devices that do not support Auto-Negotiation and have a fixed duplex mode. You should disable Auto-Negotiation on those ports and set their duplex modes manually to avoid the possibility of duplex mode mismatches. A switch port using Auto-Negotiation defaults to half-duplex if it detects that the end node is not using Auto-Negotiation. This can result in a mismatch if the end node is operating at a fixed duplex mode of full-duplex.
- The default setting for wiring configurations for ports at 10/100Mbps is auto-MDI/MDI-X. The default setting is appropriate for network devices that also support auto-MDI/MDI-X.
- The default auto-MDI/MDI-X setting is not appropriate for switch ports that are connected to 10/100Mbps network devices that do not support auto-MDI/MDI-X and have a fixed wiring configuration. For switch ports connected to these types of network devices, you should disable auto-MDI/MDI-X and set the wiring configurations manually.
- The appropriate MDI/MDI-X setting for switch ports connected to 10/100Mbps devices with a fixed wiring configuration depends on the setting of the network device and whether the switch and network device are connected with straight-through or crossover cable. If you are using straight-through twisted pair cable, the wiring configurations of a port on the switch and a port on a network device must be opposite each other, such that one port

uses MDI and the other MDI-X. For example, if a network device has a fixed wiring configuration of MDI, you should disable auto-MDI/MDI-X on the corresponding switch port and manually set it to MDI-X. If you are using crossover twisted pair cable, the wiring configurations of a port on the switch and a port on a network device should be the same.

- Do not attach cables to ports of static port trunks until after you have configured the trunks on the switch. Otherwise, the ports will form loops in your network topology that can adversely affect network performance.

Installing SFP Transceivers

This section contains guidelines and procedures for installing SFP transceivers. Here are general installation guidelines:

- SFP transceivers are hot-swappable. You may install them while the chassis is powered on.
- For a list of supported transceivers, refer to the product's data sheet on the Allied Telesis web site at **www.alliedtelesis.com**.
- The operational specifications and fiber optic cable requirements are included with the transceivers.
- Install the transceivers before connecting their fiber optic cables.
- 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.

Warning
A transceiver 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 device. E86

Installing SFP Modules

This section contains the procedure for installing SFP transceivers in the four SFP slots. The illustrations show a transceiver with duplex-LC connectors. The connectors on your transceivers may be different. For a list of supported transceivers, refer to the product's data sheet on the Allied Telesis web site at **www.alliedtelesis.com**.

To install SFP transceivers, perform the following procedure:

1. Remove the transceiver from its shipping container and store the packaging material in a safe location.
2. If you are installing the transceiver in a top slot, position the transceiver with the handle on top. If you are installing the transceiver in a bottom slot, position the transceiver with the handle beneath the module.
3. Slide the transceiver into the slot until it clicks into place. Refer to Figure 40 on page 79.

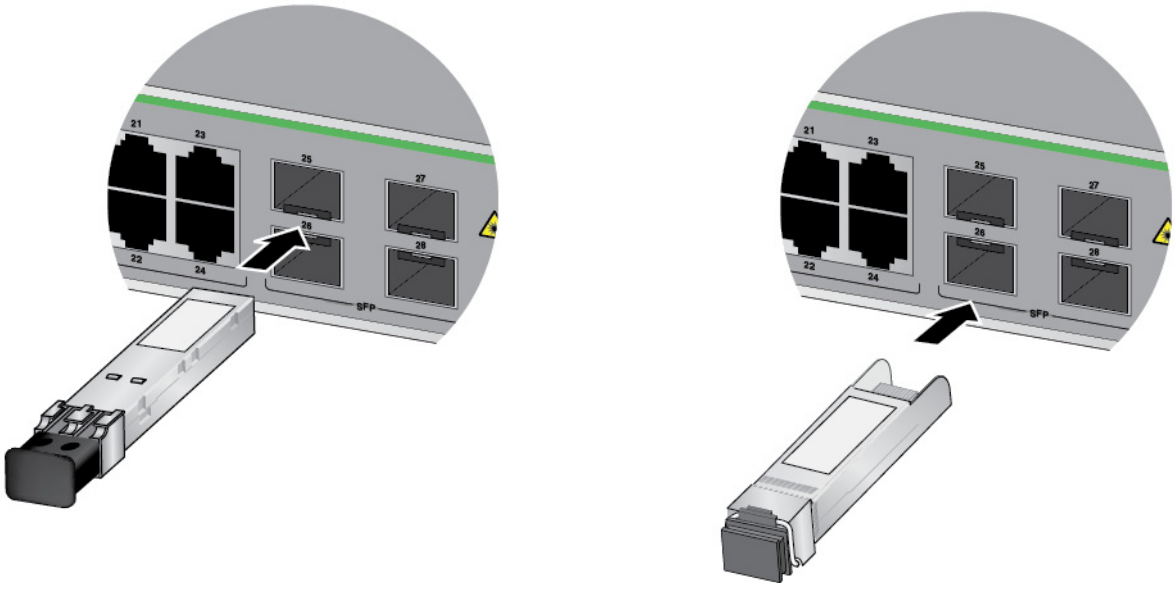


Figure 40. Installing an SFP Transceiver

Note
If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat steps 1 to 3 to install another SFP transceiver in the switch.

4. Remove the dust cover from the transceiver, as shown in Figure 41.

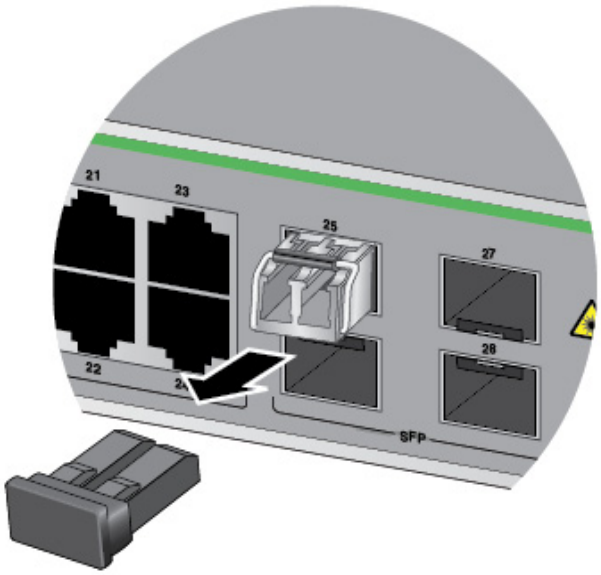


Figure 41. Removing the Dust Cover from an SFP Transceiver

5. Verify the position of the handle on the SFP transceiver. If the transceiver is in a top slot, the handle should be in the upright position, as shown in Figure 42. If the transceiver is in a bottom slot, the handle should be in the down position.

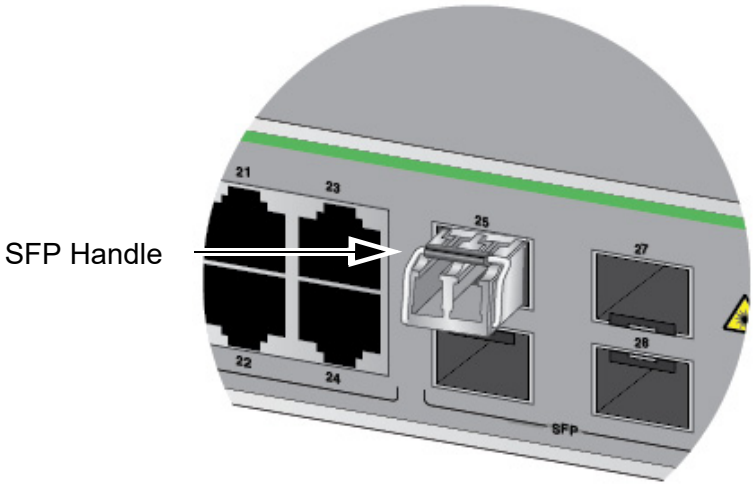


Figure 42. Positioning the SFP Handle in the Upright Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 43. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

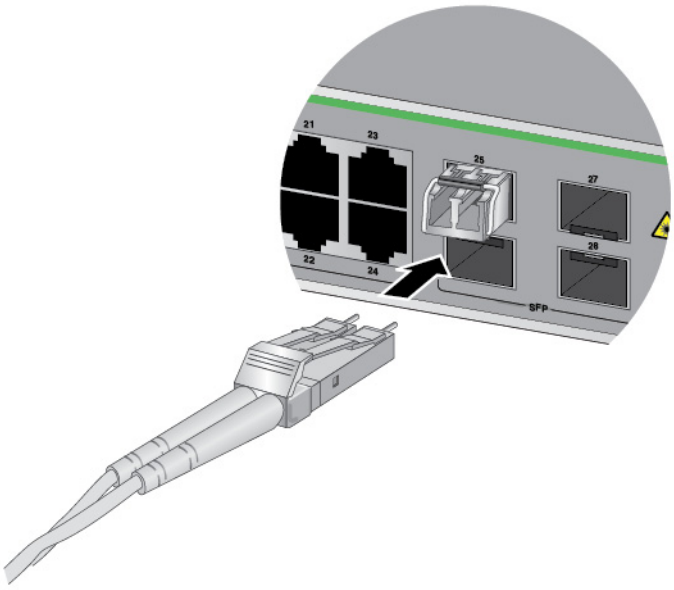


Figure 43. Connecting a Fiber Optic Cable to an SFP Transceiver

7. Repeat this procedure to install additional transceivers.

Chapter 7

Powering On the Switch

This chapter contains the following sections:

- “Powering On the Switch” on page 82
- “Starting the First Management Session” on page 85

Powering On the Switch

This section contains the procedure for powering on the switch. Please refer to “Power Specifications” on page 118 for the power specifications before performing the procedure.

Please review the following information before powering on the unit:

- The default setting for the DHCP client on the switch is enabled. When powered on, the switch queries your network on all ports for a DHCP server. If it receives a response, it assigns the IP address from the server to VLAN1, which contains all its ports.
- If the switch does not receive a response from a DHCP server, it assigns the default IP address 192.168.1.1 to VLAN1.
- If your network has a DHCP server, you might want to add the new switch to the server before powering it on, by adding its MAC address, located on a label on the back panel of the device, to the server database.
- If you are installing several switches and your network does not have a DHCP server, power them on one at a time. Change the IP address of each switch from the default before powering on the next one. Otherwise, multiple switches will have the same default IP address, which can make it difficult to configure them.

Note
The chassis should be supplied by a grounded three wire AC source through the power supply cord.

To power on the switch, perform the following procedure:

1. To install the power cord retaining clip, position it with the “u” part facing down, press in the sides, and insert the ends of the clip into the holes in the retaining bracket on the AC connector. Refer to Figure 44.

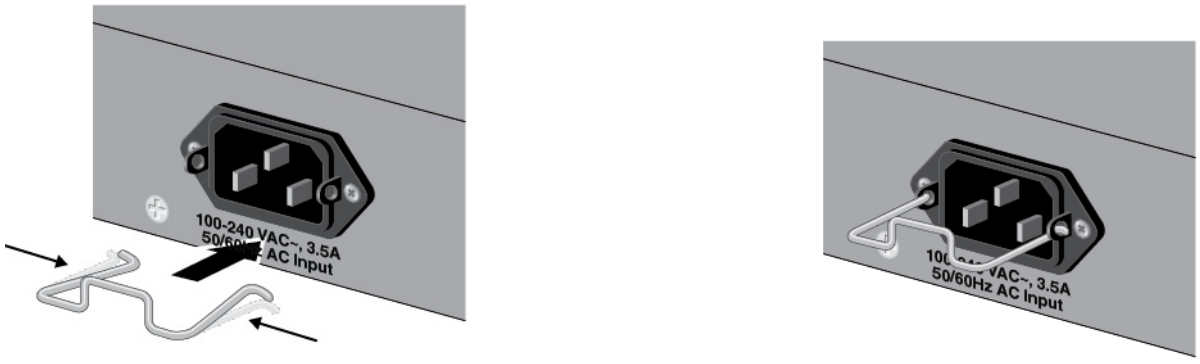


Figure 44. Installing the Retaining Clip

2. Raise the retaining clip. Refer to Figure 45.

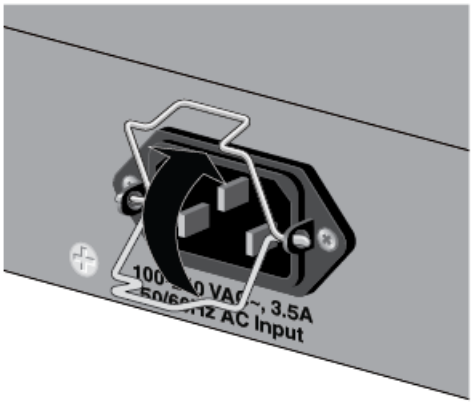


Figure 45. Raising the Retaining Clip

3. Connect the power cord to the connector. Refer to Figure 46.

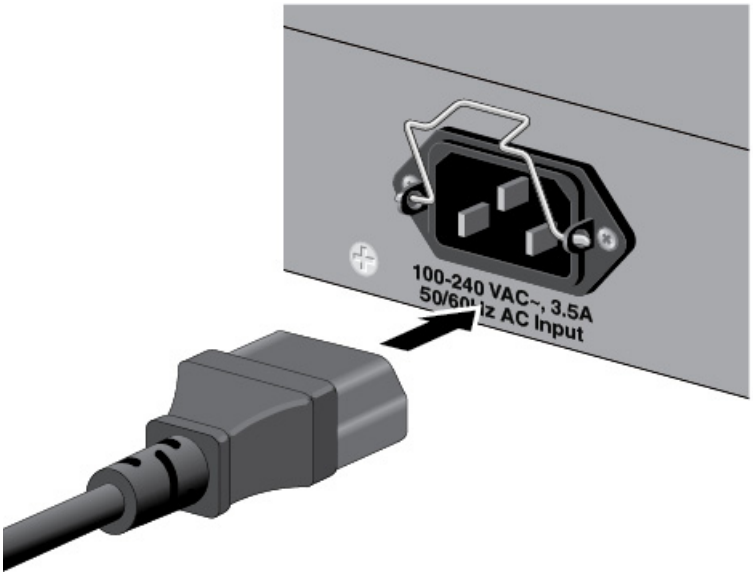


Figure 46. Plugging in the AC Power Cord

4. Lower the retaining clip to secure the power cord to the switch. Refer to Figure 47 on page 84.

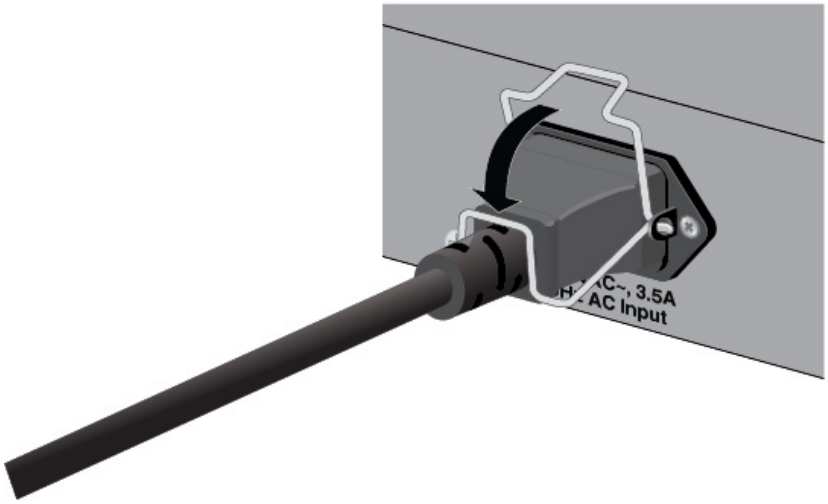


Figure 47. Lowering the Retaining Clip

5. Connect the other end of the power cord to an appropriate power source. Refer to Figure 48.

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

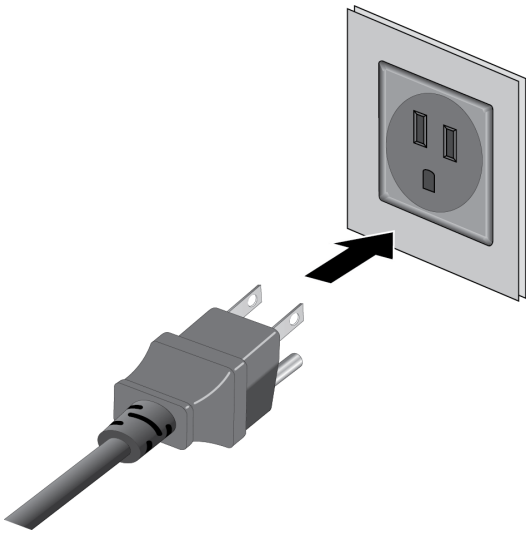


Figure 48. Connecting the Power Cord to an AC Power Source

Starting the First Management Session

When you power on the GS950/28PS V2 Switch for the first time, it transmits DHCP queries for a DHCP server on all its ports. If a DHCP server responds, the unit uses the IP address the server assigns to it. If there is no DHCP server, the switch uses the default IP address 192.168.1.1.

If your network has a DHCP server, use the IP address the server assigns it to start the management session. Refer to “Starting the First Management Session with a DHCP Server” on page 86.

If your network does not have a DHCP server, or if you want to configure the unit before connecting it to your network, you can start the first management session by creating a direct connection between your management workstation and the switch. This involves connecting an Ethernet cable to the Ethernet port on the computer and any port on the switch. This procedure requires changing the IP address on your computer to make it a member of the same subnet as the default IP address on the switch. Refer to “Starting the First Management Session with a Direct Connection” on page 86.

You can also start the first management session while the GS950/28PS V2 Switch is connected to your network. However, if your network does not have a DHCP server, you still have to change the IP address of your computer to match the subnet of the default address of the GS950/28PS V2 Switch. Furthermore, if your network contains virtual LANs (VLANs), you have to connect the switch and your computer to ports on an Ethernet switch that are members of the same VLAN. Refer to “Starting the First Management Session without a DHCP Server” on page 87.

The instructions for starting the first management session are found in the following sections:

- ❒ “Starting the First Management Session with a DHCP Server” on page 86
- ❒ “Starting the First Management Session with a Direct Connection” on page 86
- ❒ “Starting the First Management Session without a DHCP Server” on page 87

Starting the First Management Session with a DHCP Server

This procedure explains how to start the first management session on the GS950/28PS V2 Switch when the LAN port is connected to a network that has a DHCP server. To start the management session, perform the following procedure:

1. Add the GS950/28PS V2 Switch to the DHCP server. The MAC address for the switch can be found on a label on the back panel. The switch's configuration on the server should include an IPv4 address, subnet mask, and default gateway, if necessary.
2. Connect at least one port on the GS950/28PS V2 Switch to a network device, such as another Ethernet switch.
3. Power on the GS950/28PS V2 Switch.
4. Start the web browser on your computer.
5. Enter the IP address of the switch in the URL field of the browser. This is the IP address assigned to the unit by the DHCP server. If you do not know the address, refer to the DHCP server.

   You should see the login window in Figure 49.

Figure 49. Login Window

6. Enter "manager" for the user name and "friend" for the password. The user name and password are case-sensitive.
7. Click the Sign In button.

Starting the First Management Session with a Direct Connection

To start the management session with a direct Ethernet connection between your computer and the GS950/28PS V2 Switch, perform the following procedure:

1. Connect one end of a network cable to any port on the switch and the other end to the Ethernet network port on your computer.
2. Change the IP address on your computer to 192.168.1.*n*, where *n* is any number from 2 to 254. Refer to the documentation that accompanies your computer for instructions on how to set the IP address.

3. Set the subnet mask on your computer to 255.255.255.0.
4. Power on the switch.
5. Start the web browser on your computer.
6. Enter the IP address 192.168.1.1 in the URL field of the browser.

   You should see the logon window. Refer to Figure 49 on page 86.
7. Enter “manager” for the user name and “friend” for the password. The user name and password are case-sensitive.
8. Click the Sign In button.

Starting the First Management Session without a DHCP Server

This procedure explains how to start the first management session when the GS950/28PS V2 Switch is connected to a network that does not have a DHCP server. To start the management session, perform the following procedure:

1. If your network has VLANs, verify that your computer and the GS950/28PS V2 Switch are connected to ports on an Ethernet switch that are members of the same VLAN. This might require accessing the switch’s management software and listing the VLANs and their port assignments. For example, if the GS950/28PS V2 Switch is connected to a port that is a member of the Sales VLAN, your computer must be connected to a port that is also a member of the same VLAN. If your network is small and does not have VLANs or routers, you may connect your computer to any port on the Ethernet switch.
2. Change the IP address on your computer to 192.168.1.*n*, where *n* is any number from 2 to 254. Refer to the documentation that accompanies your computer for instructions on how to set the IP address.
3. Set the subnet mask on your computer to 255.255.255.0.
4. Power on the GS950/28PS V2 Switch.
5. Start the web browser on your computer.
6. Enter the IP address 192.168.1.1 in the URL field of the browser.

   You should see the logon window, shown in Figure 49 on page 86.
7. Enter “manager” for the user name and “friend” for the password. The user name and password are case-sensitive.
8. Click the Sign In button.

Chapter 8
Troubleshooting

This chapter contains the following troubleshooting sections:

- “AC Power” on page 90
- “LEDs” on page 91
- “Copper Ports” on page 92
- “SFP Ports” on page 93
- “Power Over Ethernet” on page 94

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

AC Power

The switch is functioning intermittently or shut down and powered off. One possible cause is the unit may have overheated. Try the following:

- ❒ Verify that the location of the switch allows for adequate airflow.
- ❒ Verify that the ambient temperature is within the operating range of the switch. Refer to “Environmental Specifications” on page 101.
- ❒ Use the management software to verify that the fans are operating properly.

Another possible cause is the AC power. Try the following:

- ❒ Verify that the AC power cord is securely connected to the switch and power source.
- ❒ Connect another device to the AC power source to verify that the source has power.
- ❒ Try replacing the power cord.
- ❒ Verify that the AC power is within the operating range of the switch. Refer to Table 14 on page 102.

LEDs

The PWR LED on the front of the switch is off, indicating 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 range for your region. Refer to Table 14 on page 102.

All the port LEDs are off even though the ports are connected to active network devices. The switch might be operating in low power mode. To toggle on the LEDs, press the eco-Friendly button on the front panel.

Note

The eco-Friendly button is also used to reboot the switch and restore the default settings to the features. Refer to “eco-Friendly Button” on page 36.

Caution

The switch does not forward network traffic during the reboot process. Some network traffic may be lost. E113

Copper Ports

A copper port on the switch is connected to a network device, but its Link/Activity LED is off. This indicates the port is not able to establish a link to a network device. Try the following:

- ❒ Verify that the network device connected to the copper port is powered on and operating properly.
- ❒ Verify that the twisted pair cable is securely connected to the port on the media converter channel and to the port on the remote network device.
- ❒ Verify that the port is connected to the correct twisted pair cable. This is to confirm that the port is not connected to the wrong network device, such as a powered-off device.
- ❒ Try connecting another network device to the copper port with a different cable. If the copper port is able to establish a link, then the problem is with the cable or the other network device.
- ❒ Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- ❒ Verify that you are using the appropriate category of twisted pair cable. Refer to Table 1 on page 24.

Note

1000Mbps connections may require five to ten seconds to establish links.

Network performance between a copper port and a network device is slow:

- ❒ Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- ❒ Verify that you are using the appropriate category of twisted pair cable. Refer to Table 1 on page 24.
- ❒ Verify that the network device supports Auto-Negotiation for speed and duplex mode. If it does not, a speed or duplex mode mismatch between the switch port and the network device may have occurred. To resolve this, disable Auto-Negotiation on the switch port and manually adjust its settings to match the settings on the network device. Refer to the *GS950 PS V2 Gigabit PoE+ Ethernet Switch Series User Guide*.

SFP Ports

The Link/Activity LED for an SFP transceiver is off, signaling that the fiber optic port on the transceiver has not established a link to a remote network device. Try the following:

- ❒ Verify that the switch supports the transceiver. Refer to “SFP Ports” on page 29.
- ❒ Verify that the remote network device is operating properly.
- ❒ Verify that the fiber optic cable is securely connected to the ports on the switch and remote network device.
- ❒ Verify that the SFP transceiver is fully inserted in the slot in the switch.
- ❒ Verify that the operating specifications, including wavelength and operating distance, of the fiber optic ports on the SFP transceiver and remote network device are compatible. The operating specifications for the transceivers are included with the modules.
- ❒ 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 confirm that the port is not 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 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 verify that 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).
- ❒ Check the two strands of the fiber optic cable to be sure that the receive fiber connector is connected to the transmit connector on the remote end node, and that the transmit fiber connector is connected to the receive connector on the end node.
- ❒ If the problem is with bi-directional transceivers, refer to their data sheets to verify that their transmission and reception frequencies are opposite each other. For instance, a bi-directional transceiver that transmits and receives at 1310nm and 1550nm, respectively, has to be connected to a transceiver that transmits and receives at 1550nm and 1310nm, respectively. Two bi-directional transceivers will not be able to establish a link if they transmit and receive at the same frequencies.

Power Over Ethernet

A switch port is not supplying power to a PoE device. Try the following:

- ❒ Use the management software to determine whether the switch has already reached its maximum power budget of 185W and cannot support additional powered devices.
- ❒ Review the powered device's documentation to confirm that it supports Mode A of the IEEE 802.3at standard. Mode A is one of two modes that define the connector pins that deliver the power from the port in the switch to the powered device. In Mode A, the power is carried on pins 1, 2, 3, and 6 on the RJ-45 port, the same pins that carry the network traffic. The second mode, Mode B, defines pins 4, 5, 7, and 8 as the power carriers. The GS950 PS V2 Switches do not support Mode B. Most powered devices are designed to accept power by either mode, but some legacy devices may only support one mode. This can be verified by reviewing the device's documentation or data sheet. Legacy devices that only support Mode B will not work with the switches.
- ❒ Verify that the device's power requirements do not exceed 25.5 W. This can be confirmed by reviewing the device's documentation or data sheet.
- ❒ Verify that you are using the appropriate category of twisted-pair cable. Refer to Table 1 on page 24.
- ❒ Use the management software on the switch to determine whether PoE is enabled on the port. The default setting for PoE is enabled.
- ❒ Use the management software on the switch to determine whether the PoE power setting for the port has been reduced to a value below the power requirements of the device.
- ❒ Try connecting the device to a different port on the switch.

Appendix A
Technical Specifications

This appendix contains the following sections:

- ”Physical Specifications” on page 96
- ”Environmental Specifications” on page 101
- ”Power Specifications” on page 102
- ”Certifications” on page 104
- ”RJ-45 Copper Port Pinouts” on page 106

Physical Specifications

Dimensions (H x W x D)

Table 9 lists the dimensions of the switch.

Table 9. Product Dimensions

GS950/10PS V2	4.4 cm x 33.0 cm x 18.0 cm (1.7 in. x 13.0 in. x 7.1 in.)
GS950/18PS V2	4.4 cm x 44.0 cm x 25.0 cm (1.7 in. x 17.3 in. x 9.8 in.)
GS950/28PS V2	4.4 cm x 44.0 cm x 25.0 cm (1.7 in. x 17.3 in. x 9.8 in.)
GS950/52PS V2	4.4 cm x 44.0 cm x 43.1 cm (1.7 in. x 17.3 in. x 17.0 in.)

The dimensions of the GS950/10PS V2 Switch are shown in Figure 50.

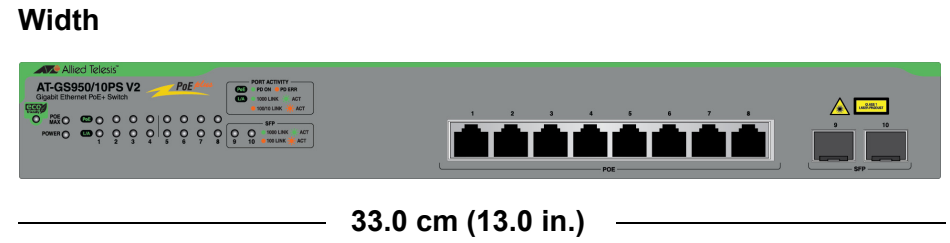


Figure 50. Dimensions of the GS950/10PS V2 Switch

The dimensions of the GS950/18PS V2 and GS950/28PS V2 Switches are shown in Figure 51.

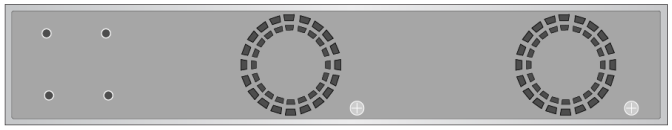
Width

44.0 cm (17.3 in.)

Height

4.4 cm (1.7 in.)

Depth



25 cm (9.8 in.)

Figure 51. Dimensions of the GS950/18PS V2 and GS950/28PS V2 Switches

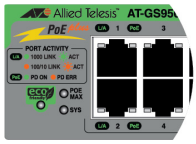
The dimensions of the GS950/52PS V2 Switch are shown in Figure 52.

Width

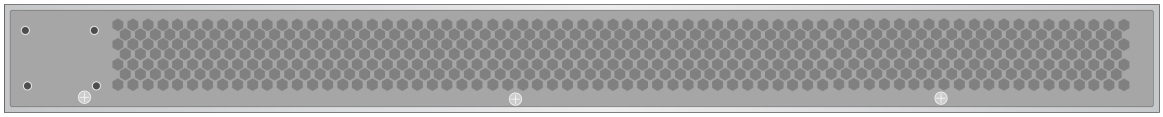
44.0 cm (17.3 in.)

Height

4.4 cm (1.7 in.)



Depth



43.1 cm (17.0 in.)

Figure 52. Dimensions of the GS950/52PS V2 Switch

Locations of the bracket holes on the GS950/10PS V2 Switch are shown in Figure 53.

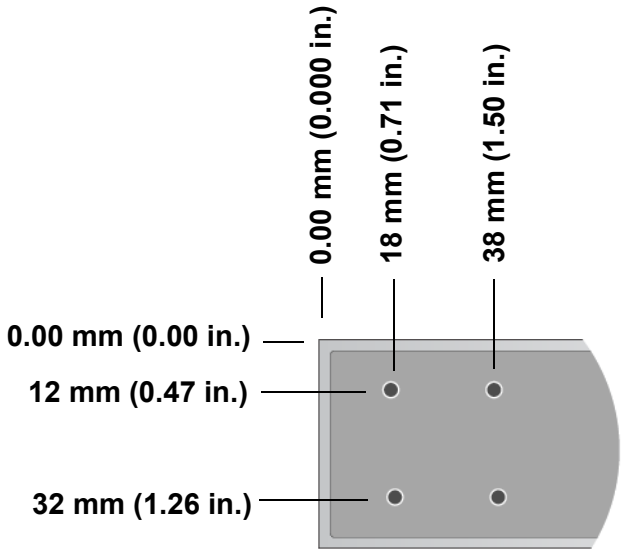


Figure 53. Locations of the Bracket Holes on the GS950/10PS V2 Switch

Locations of the bracket holes on the GS950/18PS V2 and GS950/28PS V2 Switches are shown in Figure 54.

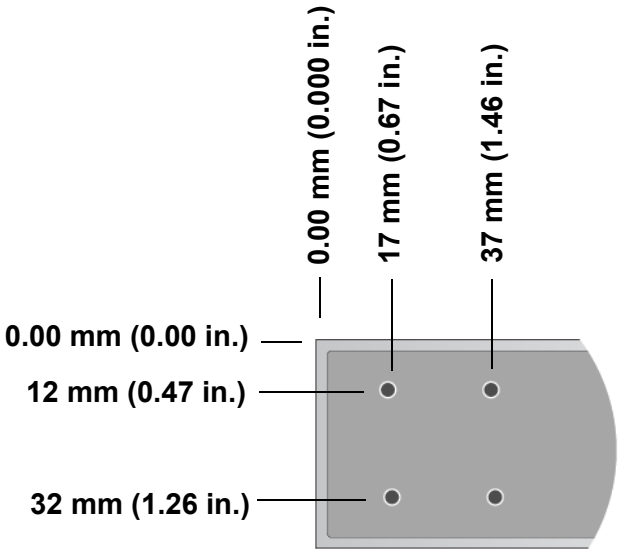


Figure 54. Locations of the Bracket Holes on the GS950/18PS V2 and GS950/28PS V2 Switches

Locations of the bracket holes on the GS950/52PS V2 Switch are shown in Figure 55.

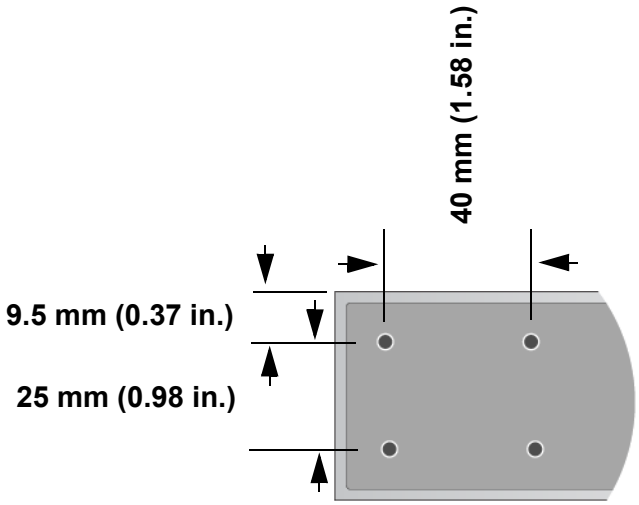


Figure 55. Locations of the Bracket Holes on the GS950/52PS V2 Switch

Weight

Table 10 lists the weight of the switches.

Table 10. Product Weights

GS950/10PS V2	1.9 kg (4.2 lb.)
GS950/18PS V2	3.7 kg (8.2 lb.)
GS950/28PS V2	3.8 kg (8.4lb.)
GS950/52PS V2	6.1 kg (13.4 lb.)

Ventilation

Table 11 lists the minimum ventilation requirements.

Table 11. Minimum Ventilation Requirements

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

Environmental Specifications

Table 12 lists the environmental specifications of the switch.

Table 12. Environmental Specifications

Operating Temperature: GS950/10PS V2	0° C to 40° C (32° F to 104° F)
Operating Temperature: GS950/18PS V2 GS950/28PS V2 GS950/52PS V2	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 (9,843 ft)

Power Specifications

This section contains maximum power consumption and input voltage.

Maximum Power Consumption

Table 13 lists the maximum power consumption for the switch.

Table 13. Maximum Power Consumptions

GS950/10PS V2	97.7 watts
GS950/18PS V2	239.7 watts
GS950/28PS V2	247.4 watts
GS950/52PS V2	475.3 watts

Input Voltage

Table 14 lists the input voltage for the switch.

Table 14. Input Voltage

GS950/10PS V2	100-240V~, 50/60Hz, 1.7A maximum
GS950/18PS V2	100-240V~, 50/60Hz, 3.5A maximum
GS950/28PS V2	100-240V~, 50/60Hz, 3.5A maximum
GS950/52PS V2	100-240V~, 50/60Hz, 10A maximum

Heat Dissipation

Table 15 lists the heat dissipation for the switch.

Table 15. Heat Dissipations

GS950/10PS V2	333.37 BTU/hr
GS950/18PS V2	817.89 BTU/hr
GS950/28PS V2	844.16 BTU/hr
GS950/52PS V2	1621.79 BTU/hr

Typical Power Savings in eco-friendly Mode

Table 16 lists the typical power savings in eco-friendly mode.

Table 16. Typical Power Savings in eco-friendly Mode

GS950/10PS V2	~0.4 watt
GS950/18PS V2	~0.6 watt
GS950/28PS V2	~1.0 watt
GS950/52PS V2	~0.9 watt

Maximum Power Supply Efficiency

Table 17 lists the maximum power supply efficiency.

Table 17. Maximum Power Supply Efficiency (Based on 100V Input Voltage)

GS950/10PS V2	Up to 80%
GS950/18PS V2	Up to 80%
GS950/28PS V2	Up to 80%
GS950/52PS V2	Up to 80%

Certifications

Table 18 lists the safety certificates.

Table 18. Safety Certificates

Euro Zone	CE
North America	FCC/ICES/UL
Australia/New Zealand	RCM
Japan	VCCI
Mexico	NOM
India	TEC
Brazil	ANATEL
Safety	UL 62368-1 EN 62368-1 (TUV), CE IEC 60950-1 + IEC 62368-1 AEL Class I, US FDA/CDRH EN(IEC) 60825-1 EN(IEC) 60825-2 EN(IEC) 60950-1 CAN/CSA-C22.2 No 62368-1

Table 19 lists the electromagnetic certificates.

Table 19. Electromagnetic Certificates

Electromagnetic Interference (EMI)	FCC Part 15 Subpart B Class A EN 55032 Class A CISPR 32 VCCI Class A RCM
Electromagnetic Susceptibility (EMS)	IEC 61000-4-2: 2008 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 (IEC 61000-4-8) IEC 61000-4-11 IEC 61000-3-2 IEC 61000-3-3

Table 19. Electromagnetic Certificates (Continued)

RoHS	EU RoHS Directove (2011/65/EU) (2015/863) China RoHS
Additional	JGPSSI/JIG Level A

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

RJ-45 Copper Port Pinouts

Figure 56 illustrates the pin layout of the RJ-45 connectors.

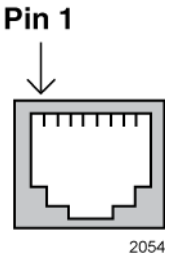


Figure 56. Pin Layout (Front View) of Copper Ports

Table 20 lists the pin signals at 10/100Mbps.

Table 20. Pin Signals on RJ-45 Copper Ports at 10/100Mbps

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

Table 21 lists the pin signals at 1Gbps.

Table 21. Pin Signals on Copper Ports at 1Gbps

Pin	Pair	Signal
1	1 +	TX and RX+
2	1 -	TX and RX-
3	2 +	TX and RX+
4	3 +	TX and RX+

Table 21. Pin Signals on Copper Ports at 1Gbps (Continued)

5	3 -	TX and RX-
6	2 -	TX and RX-
7	4 +	TX and RX+
8	4 -	TX and RX-