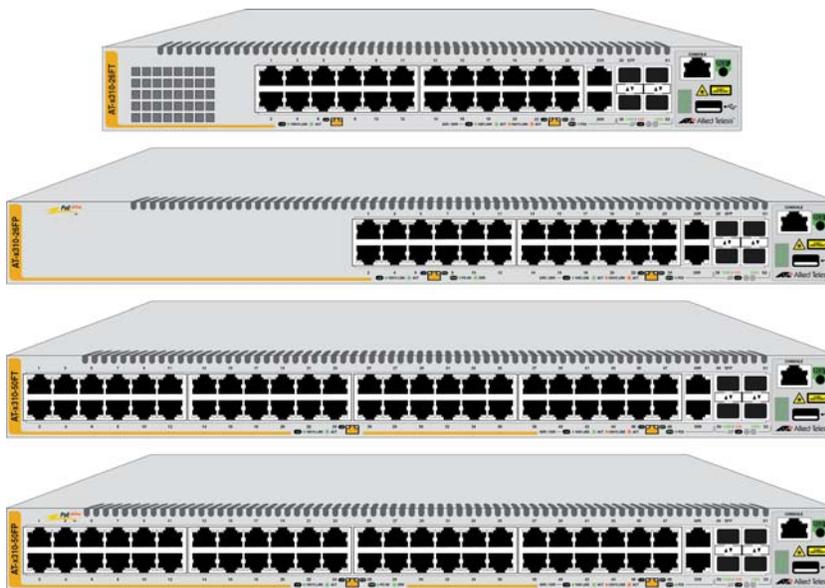


## x310 Series

Fast Ethernet Switches

- ❑ AT-x310-26FT
- ❑ AT-x310-26FP
- ❑ AT-x310-50FT
- ❑ AT-x310-50FP



# Installation Guide for Stand-alone Switches

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# Electrical Safety and Emissions Standards

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This product meets the following standards.

## U.S. Federal Communications Commission

### Radiated Energy

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

Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

## Industry Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

RFI Emissions: FCC Class A, EN55022 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, C-TICK, CE

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

EMC (Immunity): EN55024

Electrical Safety: EN60950-1 (TUV), UL 60950-1 (cUL<sub>US</sub>)



Laser Safety

EN60825

## Translated Safety Statements

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**Important:** Safety statements that have the  symbol are translated into multiple languages in the *Translated Safety Statements* document at [www.alliedtelesis.com/support](http://www.alliedtelesis.com/support).

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# Preface

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This guide contains the installation instructions for the x310 Series of Layer 2+ Fast Ethernet switches. This preface contains the following sections:

- “Document Conventions” on page 12
- “Contacting Allied Telesis” on page 13

---

**Note**

This guide explains how to install the switches as stand-alone units. For instructions on how to install them in a stack configuration with Virtual Chassis Stacking (VCStack™), refer to the *x310 Series Installation Guide for VCStack*.

---

## Document Conventions

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This document uses the following conventions:

---

**Note**

Notes provide additional information.

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---

**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

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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](http://www.alliedtelesis.com/support)**. You can find links for the following services on this page:

- ❑ 24/7 Online Support — Enter our interactive support center to search for answers to your product questions in our knowledge database, to check support tickets, to learn about RMAs, and to contact Allied Telesis technical experts.
- ❑ USA and EMEA phone support — Select the phone number that best fits your location and customer type.
- ❑ Hardware warranty information — Learn about Allied Telesis warranties and register your product online.
- ❑ Replacement Services — Submit a Return Merchandise Authorization (RMA) request via our interactive support center.
- ❑ Documentation — View the most recent installation and user guides, software release notes, white papers, and data sheets for your products.
- ❑ Software Downloads — Download the latest software releases for your managed products.

For sales or corporate information, go to **[www.alliedtelesis.com/purchase](http://www.alliedtelesis.com/purchase)** and select your region.



# Chapter 1

# Overview

---

This chapter contains the following sections:

- “Features” on page 16
- “Front and Back Panels” on page 19
- “Management Panel” on page 22
- “10/100Base-TX Twisted Pair Ports” on page 23
- “10/100/1000Base-T Twisted Pair Ports” on page 25
- “Power Over Ethernet” on page 27
- “SFP Slots” on page 31
- “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32
- “Stacking Slots” on page 33
- “eco-friendly Button” on page 34
- “LEDs” on page 35
- “USB Port” on page 43
- “Console Port” on page 44
- “Power Supply” on page 45

---

### **Note**

This guide explains how to install the switches as stand-alone units. For instructions on how to install them in a stack configuration with Virtual Chassis Stacking (VCStack™), refer to the *x310 Series Installation Guide for VCStack*.

---

## Features

---

The x310 Series Switches and their features are listed in this section:

### **x310 Models**

Here are model names of the x310 Series switches:

- AT-x310-26FT
- AT-x310-26FP
- AT-x310-50FT
- AT-x310-50FP

### **10/100 Mbps Twisted Pair Ports**

Here are the basic features of the 10/100 Mbps twisted pair ports:

- 24 or 48 ports per switch
- 10Base-T and 100Base-TX compliant
- IEEE 802.3u Auto-Negotiation compliant
- Auto-MDI/MDIX
- 100 meters (328 feet) maximum operating distance
- IEEE 802.3x flow control in full-duplex mode
- IEEE 802.3x backpressure in half-duplex mode
- Jumbo frames up to 13KB
- RJ-45 connectors

### **10/100/1000 Mbps Twisted Pair Ports**

Here are the basic features of the 10/100/1000 Mbps twisted pair ports:

- 2 ports per switch
- 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 10/100Base-TX full-duplex mode
- IEEE 802.3x backpressure in 10/100Base-TX half-duplex mode
- IEEE 802.3ab 1000Base-T
- Jumbo frames up to 13KB
- RJ-45 connectors

---

**Note**

The 10/100/1000Base-T ports are paired with the SFP slots to form combo ports. For information, refer to “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.

---

**Power Over Ethernet**

Here are the basic features of Power over Ethernet (PoE) on the twisted pair ports on the AT-x310-26FP and AT-x310-50FP Switches:

- Supported on ports 1 to 24 on the AT-x310-26FP Switch and ports 1 to 48 on the AT-x310-50FP Switch
- Supports PoE (15.4 watts maximum) and PoE+ (30 watts maximum) powered devices
- Supports powered device classes 0 to 4
- Maximum power budget of 370 watts
- Port prioritization
- Mode A wiring

**SFP Slots**

Here are the basic features of the two SFP slots on the switches:

- Supports 1000Base-SX/LX SFP transceivers
- Supports single-port BiDi 1000Base-LX SFP transceivers
- Supports 1000Base-ZX SFP transceivers

---

**Note**

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

---

---

**Note**

The SFP slots are paired with the 10/100/1000Base-T ports to form combo port pairs. For information, refer to “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.

---

**S1 and S2 Stacking Slots**

The S1 and S2 slots are stacking ports for the VCStack feature. You may use the slots to build a stack of up to four switches. The slots support the AT-StackXS/1.0 Twisted Pair Transceiver: For more information, refer to the “Stacking Slots” on page 33.

## **LEDs**

Here are the port LEDs:

- Link/activity and duplex mode LEDs for the twisted pair ports on non-PoE switches
- Link/activity and PoE status LEDs for the twisted pair ports on PoE switches
- Link/activity LEDs for SFP and SFP+ slots
- Switch ID number LED
- eco-friendly button turns off the LEDs to conserve electricity

## **Installation Options**

Here are the installation options for the switches:

- 19-inch equipment rack
- Desk or tabletop
- Wall

## **MAC Address Table**

Here are the basic features of the MAC address tables of the switches:

- Storage capacity of 16,000 dynamic MAC address entries
- Storage capacity of 256 static MAC address entries
- Automatic learning and aging

## **Management Software and Interfaces**

Here are the management software and interfaces:

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

## **Management Methods**

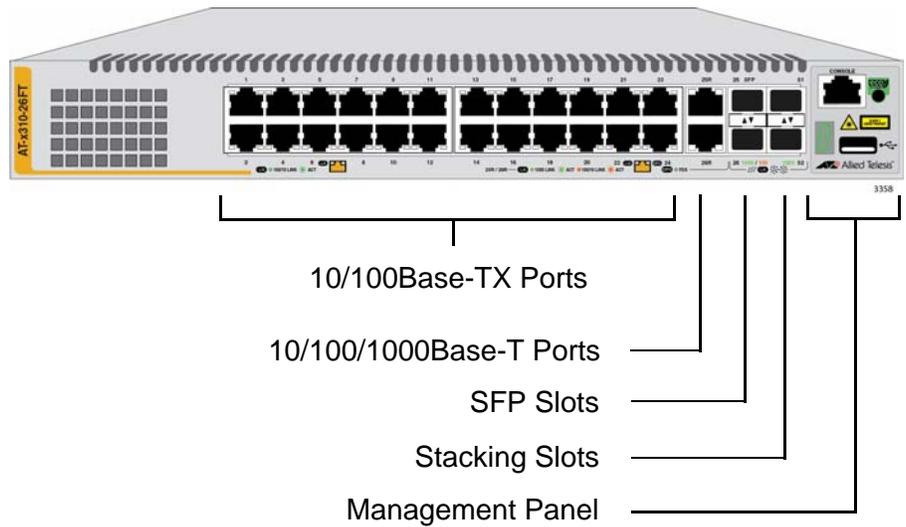
Here are the methods for managing the switches:

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

## Front and Back Panels

The front panels of the x310 Series switches are shown in Figure 1 here and Figure 2 on page 20.

AT-x310-26FT



AT-x310-26FP

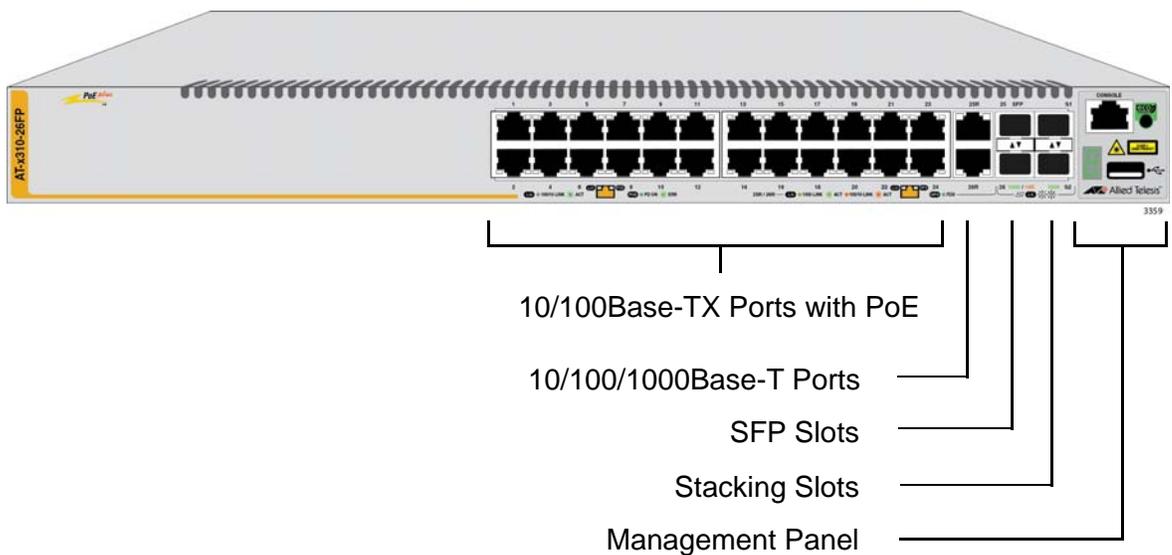
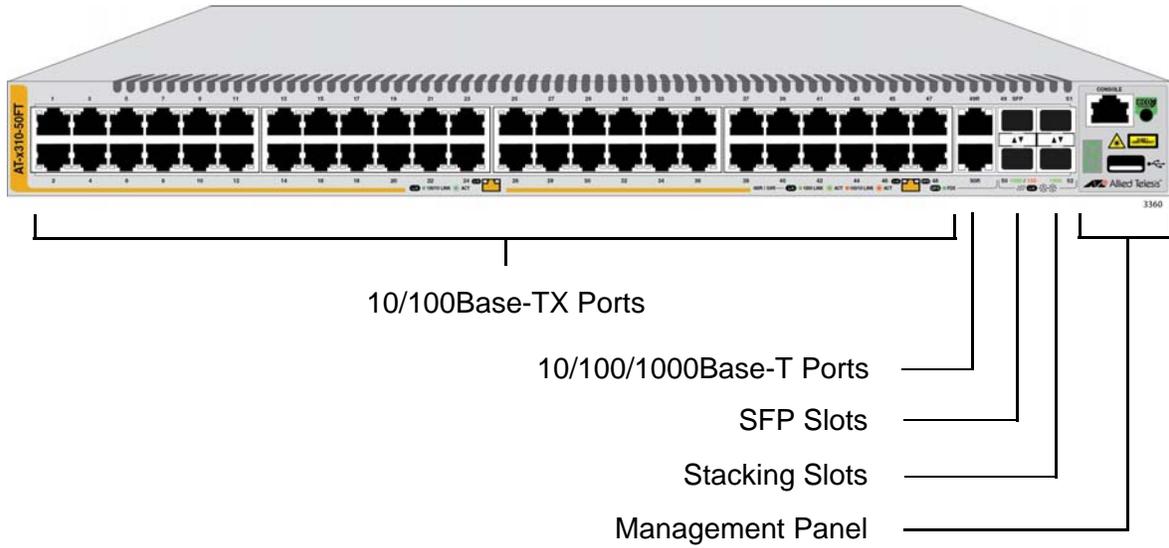


Figure 1. Front Panels of the AT-x310-26FT and AT-x310-26FP Switches

### AT-x310-50FT



### AT-x310-50FP

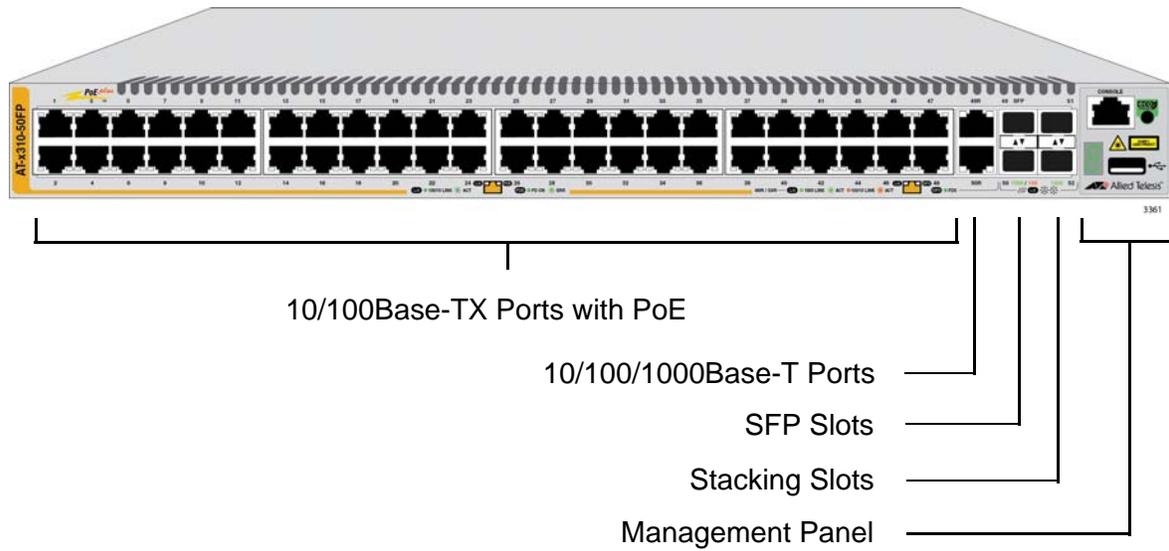


Figure 2. Front Panels of the AT-x310-50FT and AT-x310-50FP Switches

The back panel of the AT-x310-26FT Switch is shown in Figure 3.

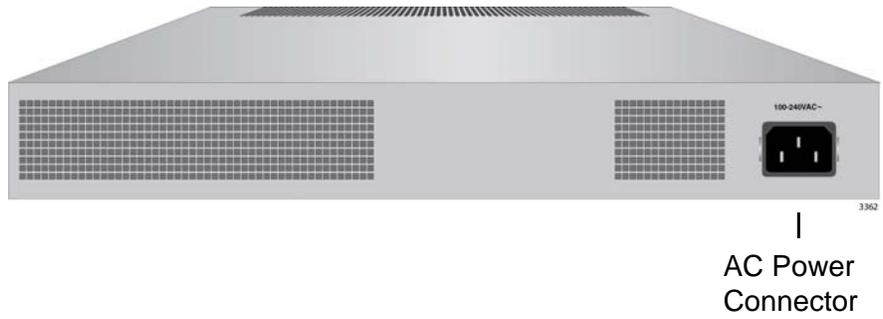


Figure 3. Back Panel of the AT-x310-26FT Switches

The back panel of the AT-x310-26FP and AT-x310-50FP Switches is shown in Figure 4.

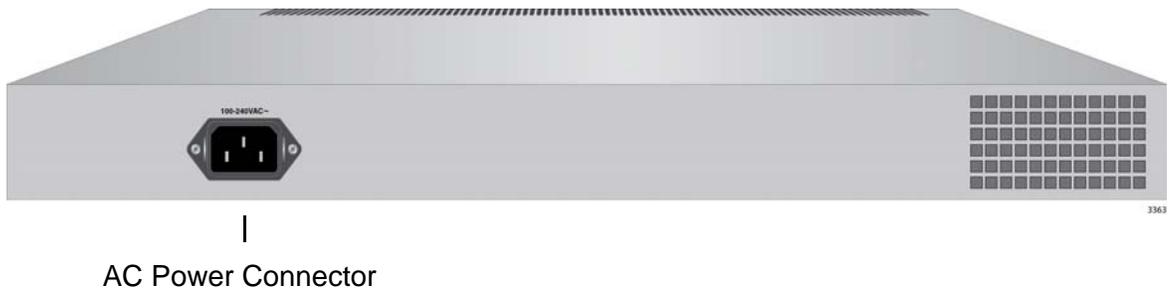


Figure 4. Back Panel of the AT-x310-26FP and AT-x310-50FP Switches

The back panel of the AT-x310-50FT Switch is shown in Figure 5.



Figure 5. Back Panel of the AT-x310-50FT Switch

# Management Panel

---

Figure 6 identifies the components in the management panels on the x310 Series switches.

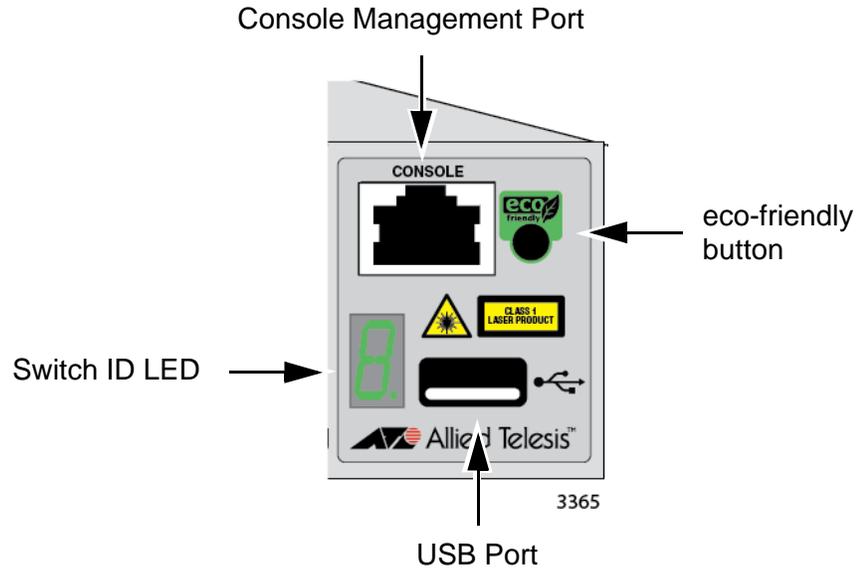


Figure 6. x310 Series Management Panel

## 10/100Base-TX Twisted Pair Ports

---

The x310 Series switches have 24 or 48 10/100Base-TX ports, depending on the model.

**Speed** The ports can operate at either 10 or 100 Mbps. The speeds may be set manually using the management software or automatically with Auto-Negotiation (IEEE 802.3u), the default setting.

**Duplex Mode** The twisted pair ports can operate in either half- or full-duplex mode. The duplex mode determines the manner in which a port transmits data. A port set to half-duplex can either transmit or receive data at one time, while a port operating in full-duplex can transmit and receive data at the same time. The best network performance is achieved with the full-duplex setting, but not all network equipment is designed to support that duplex mode.

The duplex modes, like port speeds, may be set manually using the management software or automatically with Auto-Negotiation (IEEE 802.3u), the default setting.

The switch allows you to set the speed and duplex mode settings of a port independently of each other. For example, you might set the speed manually and the duplex mode with Auto-Negotiation.

---

**Note**

A switch port that is connected to a network device that does not support Auto-Negotiation and has a fixed duplex mode of full-duplex should not set its duplex mode with Auto-Negotiation. A duplex-mode mismatch in which a switch port and network device operate at different duplex modes, may occur. The duplex modes of switch ports that are connected to network devices that do not support Auto-Negotiation should be set manually with the management software.

---

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

You may set the wiring configurations of the ports manually or let the switch configure them automatically with auto-MDI/MDI-X (IEEE 802.3ab-compliant). This feature enables the switch to negotiate with network devices to establish the proper settings, so that the ports on the devices are using different wiring configurations.

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

**Power Over Ethernet** The 10/100Base-TX ports on the AT-x310-26FP and AT-x310-50FP Switches support Power over Ethernet (PoE). The ports supply DC power to network devices over the network twisted pair cables. The switches support PoE (IEEE 802.3af) and PoE+ (IEEE 802.3at). For background information, refer to “Power Over Ethernet” on page 27.

**Cable Requirements** The cable requirements of the ports are given in Table 1.

Table 1. Twisted Pair Cable Requirements for the 10/100Base-TX Ports

Cable Type	10Mbps			100Mbps		
	Non-PoE	PoE	PoE+	Non-PoE	PoE	PoE+
Standard TIA/EIA 568-B-compliant Category 3 shielded or unshielded cabling with 100 ohm impedance and a frequency of 16 MHz.	Yes	No	No	Yes	No	No
Standard TIA/EIA 568-A-compliant Category 5 shielded or unshielded cabling with 100 ohm impedance and a frequency of 100 MHz.	Yes	Yes	No	Yes	Yes	No
Standard TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) shielded or unshielded cabling with 100 ohm impedance and a frequency of 100 MHz.	Yes	Yes	Yes	Yes	Yes	Yes
Standard TIA/EIA 568-B-compliant Category 6 or 6a shielded cabling.	Yes	Yes	Yes	Yes	Yes	Yes

## 10/100/1000Base-T Twisted Pair Ports

---

The switches have two 10/100/1000Base-T ports.

---

### Note

The 10/100/1000Base-T ports are paired with the SFP slots to form combo ports. For information, refer to “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.

---

**Speed** The ports can operate at 10, 100, or 1000 Mbps. The speeds may be set manually using the management software or automatically with Auto-Negotiation (IEEE 802.3u), the default setting.

---

### Note

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

---

**Duplex Mode** The 10/100/1000Base-T ports twisted pair ports support full-duplex mode. They do not support half-duplex mode.

**Wiring Configuration** The wiring configuration of a port operating at 10 or 100 Mbps can be MDI or MDI-X. The wiring configurations of a switch port and a network device connected with straight-through twisted pair cabling have to be opposite, such that one device is using MDI and the other MDI-X. For instance, a switch port has to be set to MDI-X if it is connected to a network device set to MDI.

You may set the wiring configurations of the ports manually or let the switch configure them automatically with auto-MDI/MDI-X (IEEE 802.3ab-compliant). This feature enables the switch to automatically negotiate with network devices to establish their proper settings.

The MDI and MDI-X settings do not apply when ports are operating at 1000 Mbps.

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

**Power Over Ethernet** The 10/100/1000Base-T ports on the switches do not support PoE.

**Cable Requirements** The cable requirements of the ports are given in Table 2 on page 26.

Table 2. Twisted Pair Cable for the 10/100/1000Base-T Ports

Cable Type	10Mbps	100Mbps	1000Mbps
Standard TIA/EIA 568-B-compliant Category 3 shielded or unshielded cabling with 100 ohm impedance and a frequency of 16 MHz.	Yes	Yes	No
Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) shielded or unshielded cabling with 100 ohm impedance and a frequency of 100 MHz.	Yes	Yes	Yes
Standard TIA/EIA 568-B-compliant Category 6 or 6a shielded cabling.	Yes	Yes	Yes

**Port Pinouts**

Refer to Table 18 on page 114 and Table 19 on page 114 for the port pinouts of the 10/100/1000Base-T twisted pair ports.

## Power Over Ethernet

---

The AT-x310-26FP and AT-x310-50FP Switches feature Power over Ethernet (PoE) on the 10/100Base-TX ports. PoE is used to supply power to network devices over the same twisted pair cables that carry the network traffic.

---

**Note**

PoE is not available on the two 10/10/10000Base-T ports.

---

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

A device that provides PoE to other network devices is referred to as *power sourcing equipment* (PSE). The AT-x310-26FP and AT-x310-50FP Switches act as PSE units by adding DC power to the network cable, 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 switch automatically determines 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.

### PoE Standards

The AT-x310-26FP and AT-x310-50FP 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 the five classes listed in Table 3. The classes are based on the amount of power the devices require. The switches support all five classes.

Table 3. IEEE Powered Device Classes

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

**Cable Requirements**

The cable requirements for ports operating at 10 or 100Mbps are given in Table 1 on page 24.

**Power Budget**

The AT-x310-26FP and AT-x310-50FP Switches have a power budget of 370 watts. This is the maximum amount of power the switches can provide at one time to the powered devices.

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

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

The switch can handle different power requirements on different ports. This enables you to connect different classes of PoE equipment to the ports on the switch.

## Port Prioritization

If the power requirements of the powered devices exceed the switch's power budget, the switch denies power to some ports based on a system called port prioritization. You may use this mechanism to ensure that powered devices critical to the operations of your network are given preferential treatment by the switch in the distribution of power should the demands of the devices exceed the available capacity.

There are three priority levels:

- Critical
- High
- Low

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

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

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

Power allocation is dynamic. Ports supplying power to powered devices may 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.

You can use port prioritization on dual power supply PoE switches to protect your important networking devices from loss of power should one of the power supplies fail or lose power. If you limit the power requirements of the critical devices connected to a switch to less than 185 watts, the PoE power provided by a single power supply, a switch will have sufficient power to support the critical devices even if it has only one functional power supply.

## **Wiring Implementation**

The IEEE 802.3af standard defines two methods for delivering DC power over twisted pair cable by a PSE, such as a switch, to PDs. These methods, known as Alternatives A and B, identify which of the wires within the cables are to carry the DC power from the switches to the PDs.

Twisted pair cabling typically consists of eight wires. With 10Base-T and 100Base-TX devices, the wires connected to pins 1, 2, 3, and 6 on the RJ-45 connectors carry the network traffic while the wires connected to pins 4, 5, 7, and 8 are unused. With 1000Base-T devices, all eight wires are used to carry network data.

It takes four wires to deliver DC power to a PD. With Alternative A, the power is delivered on pins 1, 2, 3, and 6. These are the same pins in 10Base-T and 100Base-TX devices that carry the network data. With Alternative B, the power is provided over 4, 5, 7, and 8, which are spare wires.

The ports on the AT-x310-26FP and AT-x310-50FP Switches deliver the power using pins 4, 5, 7, and 8, which corresponds to Alternative B in the IEEE 802.3af standard. Therefore, the switches can support PDs that use Alternative B to receive power.

PDs that comply with the IEEE 802.3af and 802.3at standards are required to support both Alternative A and B. However, non-standard PDs and PDs that were manufactured before the completion of the IEEE 802.3af and 802.3at standards and that support only Alternative A will not work with the switches.

## SFP Slots

---

The switches have two SFP slots that support the following types of SFP 1000Mbps transceivers:

- ❑ 1000Base-SX/LX SFP transceivers
- ❑ Single-port BiDi 1000Base-LX SFP transceivers
- ❑ 1000Base-ZX SFP transceivers

You may use the transceivers to connect switches to other network devices over large distances, build high-speed backbone networks between network devices, or connect high-speed devices, such as servers, to your network.

The switches support a variety of short and long distance SFP modules. For a list of supported SFP modules, contact your Allied Telesis representative or visit our web site.

---

**Note**

The SFP slots and 10/100/1000Base-T ports are paired together to form combo port pairs. For information, refer to “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.

---

## Combo 10/100/1000Base-T Ports and SFP Slots

---

The two 10/100/1000Base-T ports and SFP slots are paired together to form combo port pairs. Each pair contains one 10/100/1000Base-T port and one SFP slot. The combo port pairs for the switches are listed in Table 4.

**Table 4** Combo Port Pairs

Model	10/100/1000 Base-T Port	SFP Slot
AT-x310-26FT and AT-x310-26FP	25R	25
	26R	26
AT-x310-50FT and AT-x310-50FP	49R	49
	50R	50

The rule to follow when using the combo port pairs is to use only one device in a pair at a time. For example, if you decide to use twisted pair port 25R on the AT-x310-26FT or AT-x310-26FP Switch, then you cannot use SFP slot 25. Or, if you choose to use SFP slot 49 on the AT-x310-50FT or AT-x310-50FP Switch, then you cannot use the twisted pair port 49R.

The rules for using the combo port pairs are listed here:

- ❑ You may use either the twisted pair port or SFP slot of a combo port pair, but not both at the same time.
- ❑ If you connect both the twisted pair port and SFP slot of a combo port pair to network devices, the SFP slot takes priority and the twisted pair port is blocked.
- ❑ The SFP slot becomes active when the SFP transceiver establishes a link to a network device.
- ❑ The twisted pair port and SFP slot of a combo port pair share the same settings, such as VLAN assignments, access control lists, and spanning tree.

## Stacking Slots

---

The S1 and S2 slots on the front panel of the switch are used with special stacking transceivers to create a VCStack of up to four switches. The switches of a VCStack act as a single virtual unit. They synchronize their actions so that switching operations, like spanning tree protocols, virtual LANs, and static port trunks, span across all the units and ports. The two main advantages of stacks are:

- ❑ You can manage multiple units simultaneously, which can simplify network management.
- ❑ You have more flexibility with some of the features. For instance, a static port trunk on a stand-alone switch has to consist of ports from the same switch. In contrast, a static trunk on a stack may consist of ports from different switches in the same stack.

The stacking transceiver is called the AT-StackXS/1.0 transceiver. It has two SFP transceiver-style connectors and one meter of twinax cable. Refer to Figure 7.



Figure 7. AT-StackXS/1.0 Stacking Transceiver

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**Note**

This guide explains how to install the devices as stand-alone units. For instructions on how to install the switches in a stack with Virtual Chassis Stacking (VCStack), refer to the *x310 Series Installation Guide for VCStack*.

---

---

**Note**

The stacking slots may only be used with the stacking transceivers. They may not be used as regular networking ports.

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## eco-friendly Button

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The eco-friendly button on the front panel of the switch is used to toggle the port LEDs on or off. You might turn off the LEDs to conserve electricity when you are not monitoring the device. You can also toggle the LEDs with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode of the command line interface. The switch is said to be operating in a low power mode when the LEDs are turned off.

Operating the switch in the low power mode with the LEDs turned off does not interfere with the network operations of the device.

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

The Switch ID LED is always on, but it displays different information depending on whether the LEDs are on or off. When the LEDs are on, the ID LED displays the ID number of the switch. When the switch is operating in the low power mode with the LEDs off, the ID LED indicates whether the switch is a stand-alone unit or the master or member switch of a VCStack, as detailed in Figure 14 on page 42.

---

### **Note**

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

---

## LEDs

This section describes the functions of the LEDs.

### LEDs for the 10/ 100Mbps Twisted Pair Ports

The 10/100Mbps ports on the AT-x310-26FT and AT-x310-50FT Switches have two LEDs that display link, activity and duplex mode information. The LEDs are shown in Figure 8.

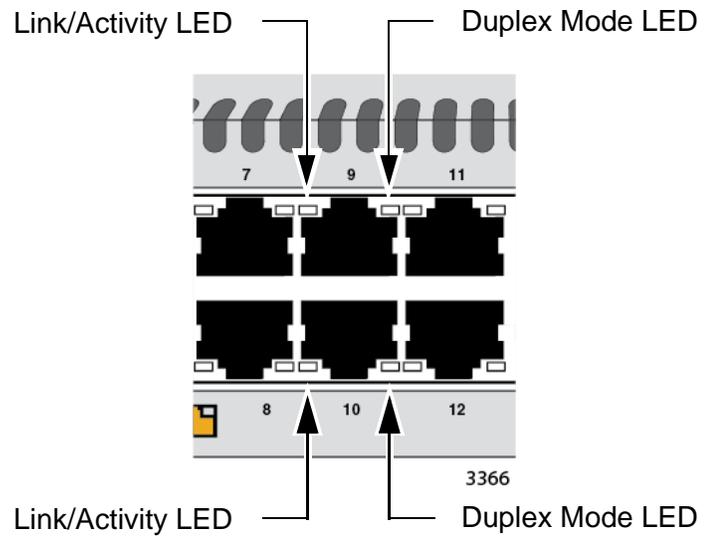


Figure 8. LEDs for the 10/100Mbps Ports on the AT-x310-26FT and AT-x310-50FT Switches

The LEDs are described in Table 5 on page 36.

Table 5. LEDs on the 10/100Base-TX Ports on the AT-x310-26FT and AT-x310-50FT Switches

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 100 Mbps link to a network device.
	Flashing Green	A port is transmitting or receiving data at 100 Mbps.
	Solid Amber	A port has established a 10 Mbps link to a network device.
	Flashing Amber	A port is transmitting or receiving data at 10 Mbps.
	Off	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
Duplex Mode LED	Solid Green	A port is operating in full duplex mode.
	Solid Amber	A port is operating in half-duplex mode.
	Flashing Amber	Collisions are occurring on a port.

**LEDs for the PoE  
10/100Mbps  
Twisted Pair  
Ports**

The PoE 10/100Mbps twisted pair ports on the AT-x310-26FP and AT-x310-50FP Switches have two LEDs that display link, activity and PoE information. The LEDs are shown in Figure 9 on page 37.

---

**Note**  
The duplex mode information for the ports on the AT-x310-26FP and AT-x310-50FP Switches is available from the management software.

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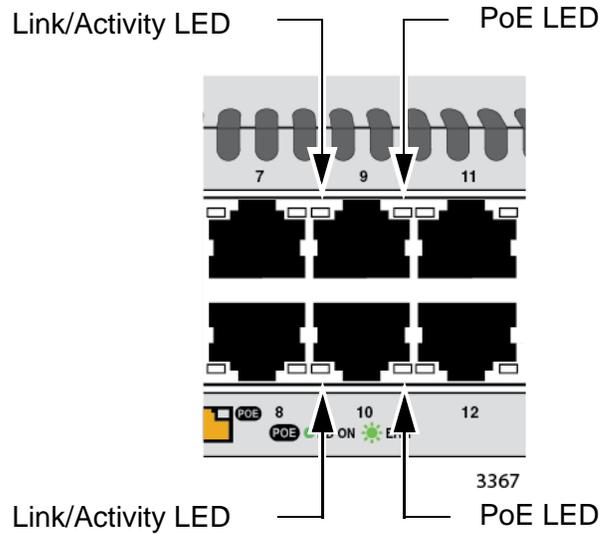


Figure 9. LEDs for the PoE 10/100Base-TX Ports on the AT-x310-26FP and AT-x310-50FP Switches

The LEDs are described in Table 6.

Table 6. LEDs for the PoE 10/100Base-TX Ports on the AT-x310-26FP and AT-x310-50FP Switches

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 100 Mbps link to a network device.
	Flashing Green	A port is transmitting or receiving data at 100 Mbps.
	Solid Amber	A port has established a 10 Mbps link to a network device.
	Flashing Amber	A port is transmitting or receiving data at 10 Mbps.
	Off	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 6. LEDs for the PoE 10/100Base-TX Ports on the AT-x310-26FP and AT-x310-50FP Switches (Continued)

LED	State	Description
PoE	Green	The switch is detecting a powered device (PD) on the port and is delivering power to it.
	Solid Amber	The switch has shutdown PoE+ on the port because of a fault condition.
	Flashing Amber	The switch is detecting a PD on the port but is not delivering power to it because the maximum power budget has been reached.
	Off	This LED state can result from the following conditions: <ul style="list-style-type: none"> <li><input type="checkbox"/> The port is not connected to a PD.</li> <li><input type="checkbox"/> The PD is powered off.</li> <li><input type="checkbox"/> The port is disabled in the management software.</li> <li><input type="checkbox"/> PoE is disabled on the port.</li> <li><input type="checkbox"/> The LEDs on the Ethernet line cards are turned off. To turn on the LEDs, use the eco-friendly button.</li> </ul>

**LEDs for the 10/100/1000Mbps Twisted Pair Ports**

Ports 25R and 26R on the AT-x310-26FT and AT-x310-26FP Switches and ports 49R and 50R on the AT-x310-50FT and AT-x310-50FP Switches are 10/100/1000Base-T ports. The ports have two LEDs that display link, activity and duplex mode information. The LEDs are shown in Figure 10 on page 39.

**Note**

The 10/100/1000Base-T ports are paired with the SFP slots to form combo ports. For information, “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.

**Note**

The ports support full-duplex mode, but not half-duplex mode.

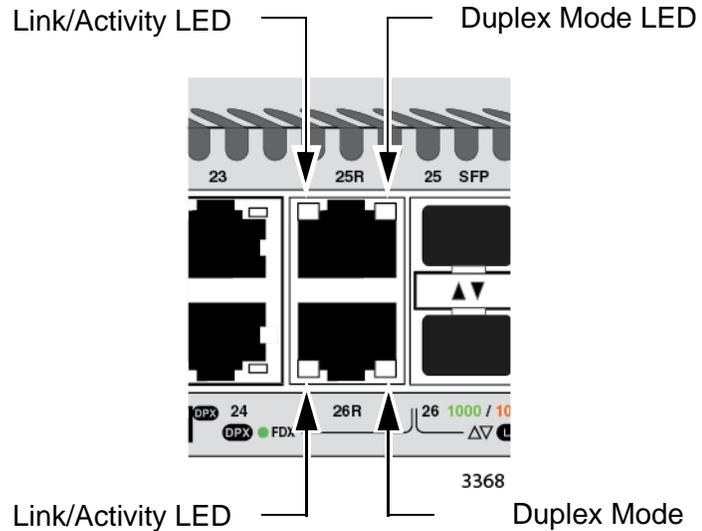


Figure 10. LEDs for the 10/100/1000Base-T Ports

The LEDs are described in Table 7.

Table 7. LEDs on the 10/100/1000Base-T Ports

LED	State	Description
Link/ Activity LED	Solid Green	A port has established a 1000 Mbps link to a network device.
	Flashing Green	A port is transmitting or receiving data at 1000 Mbps.
	Solid Amber	A port has established a 10 or 100 Mbps link to a network device.
	Flashing Amber	A port is transmitting or receiving data at 10 or 100 Mbps.
	Off	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
Duplex Mode LED	Solid Green	A port is operating in full duplex mode. (The ports do not support half-duplex mode.)
	Solid Amber	A port has not established a link with another network device or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

## LEDs for the SFP Slots

The LEDs for the SFP slots are located between the slots, as shown in Figure 11. Each SFP slot has one LED. The left-hand LED is for the top slot and the right-hand LED is for the bottom slot.

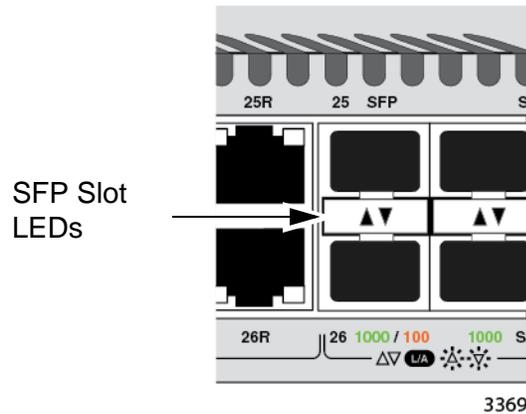


Figure 11. SFP Slot LEDs

The LEDs are described in Table 8.

Table 8. SFP Slot LEDs

LED	State	Description
Link/Activity	Off	The slot is empty, the SFP transceiver has not established a link to a network device, or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
	Solid green	The SFP transceiver has established a 100 or 1000 Mbps link to a network device.
	Flashing green	The SFP transceiver is receiving or transmitting packets to a network device.

## LEDs for the Stacking Slots

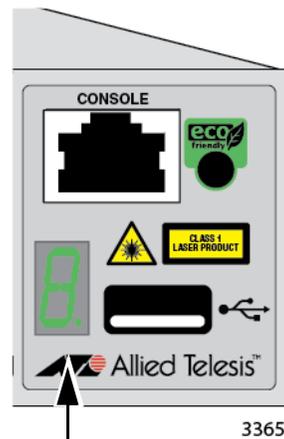
Slots S1 and S2 are stacking slots for the VCStack feature. You can use the slots to build a virtual switch of up to four switches. For background information, refer to the *x310 Series Installation Guide for VCStack*. Table 9 on page 41 defines the LED states when the slots contain stacking transceivers.

Table 9. S1 and S2 Slot LEDs

LED	State	Description
Link/Activity	Off	The slot is empty, the stacking transceiver has not established a link to a network device, or the LEDs are turned off. To turn on the LEDs, use the eco-friendly button.
	Solid green	The stacking transceiver has established a link to another switch in the stack.
	Flashing green	The stacking transceiver is receiving or transmitting packets.

### Switch ID LED

The Switch ID LED, shown in Figure 12, displays the ID number of the switch. A stand-alone switch has the ID number 0. Switches in a VCStack have the numbers 1 to 4. Chapter 6, “Powering On the Switch” on page 93 has the procedure for verifying and, if necessary, changing the ID number of the switch.



Switch ID LED

Figure 12. Switch ID LED

The states of the LED when the switch is not operating in the low power mode are shown in Figure 13 on page 42.

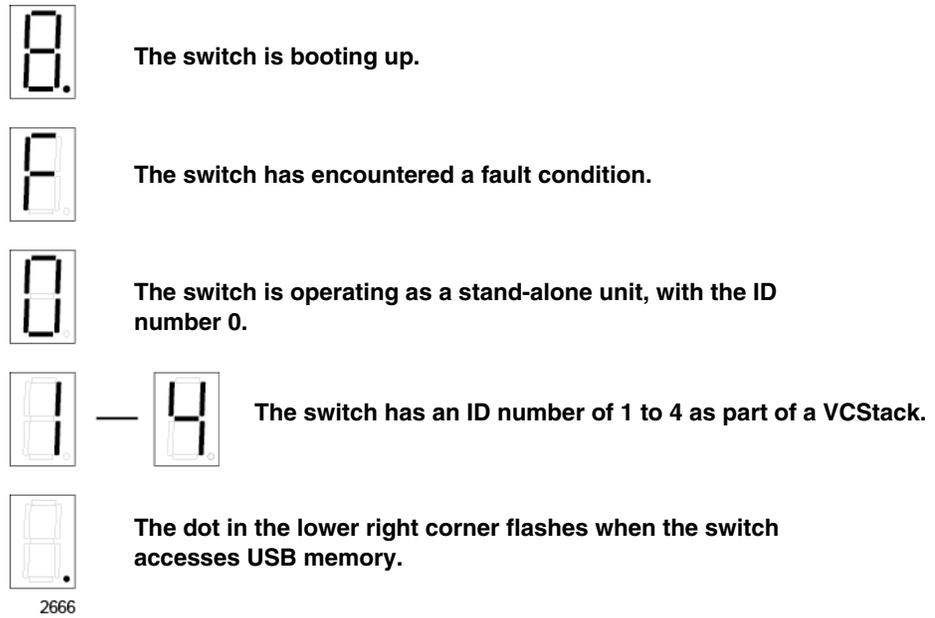


Figure 13. Switch ID LED

The switch displays the letter “F” for fault on the ID LED if it encounters one of the following problems:

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

---

**Note**

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

---

The states of the LED when the switch is operating in the low power mode are shown in Figure 14.

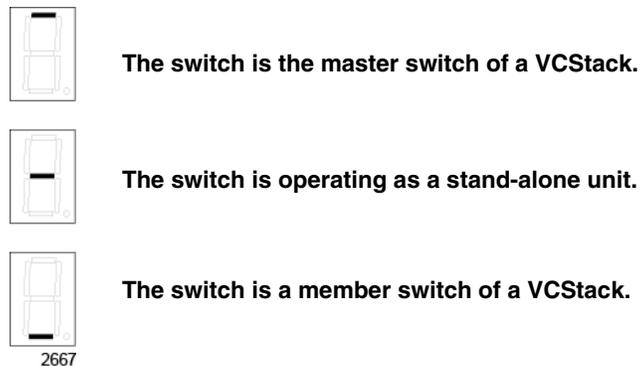


Figure 14. Switch ID LEDs in the Low Power Mode

## USB Port

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The management panel has a USB port. You may use the port to store configuration files on flash drives and 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 switches.

The port is USB2.0 compatible.

## Console Port

---

The Console port is used to conduct management sessions with the switch to configure its features and parameter settings. This type of management uses serial RS-232 and is commonly referred to as local or out-of-band management because it is not conducted over your network. To perform local management, you must be at the location of the switch and must use the management cable included with the switch.

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

The Console port is set to the following specifications:

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

---

**Note**

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

---

## Power Supply

---

The x310 Series switches come with one AC power supply. The back panels have one AC connector. The power supply is not field-replaceable. Refer to “Technical Specifications” on page 111 for the input voltage range.



### Warning

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

---

### Note

The switches are powered on or off by connecting or disconnecting the power cords.

---



## Chapter 2

# Beginning the Installation

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The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 48
- “Choosing a Site for the Switch” on page 52
- “Unpacking the Switch” on page 53

## Reviewing Safety Precautions

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

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### Note

Safety statements that have the  symbol are translated into multiple languages in the *Translated Safety Statements* document at [www.alliedtelesis.com/support](http://www.alliedtelesis.com/support).

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### Warning

Class 1 Laser product.  L1

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### Warning

Do not stare into the laser beam.  L2

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---

### Warning

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

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### Warning

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

---



---

### Warning

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

---



---

### Warning

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

---



**Warning**

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

---

**Note**

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

---



**Caution**

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

---



**Warning**

Operating Temperatures. All the switches are designed for a maximum ambient temperature of 45° degrees C.

---

**Note**

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

---



**Warning**

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

---



**Caution**

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

---



**Caution**

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

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

---



**Warning**

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

---

**Note**

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

---



**Warning**

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

---

**Note**

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T<sub>mra</sub>). *↪* 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 must not connect to cabling that is routed outside the building where this device is located. *⌘* E40

---



**Caution**

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

---



**Warning**

When you remove an SFP module from this product, the case temperature of the SFP may exceed 40° C (158° F). Exercise caution when handling with unprotected hands. *⌘* E43

---

## Choosing a Site for the Switch

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Observe these requirements when planning the installation of the switch.

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



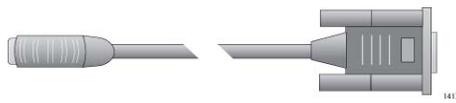
### **Warning**

Switches should not be stacked on top of one another on a table or desktop because that could present a personal safety hazard if you need to move or replace switches.

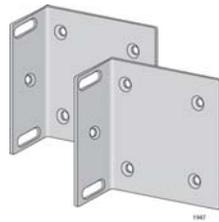
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## Unpacking the Switch

All switches, except the AT-x310-26FT Switch, come with the components listed in Figure 15. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.



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



Two rack mounting brackets



One regional AC power cord



Eight bracket screws



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



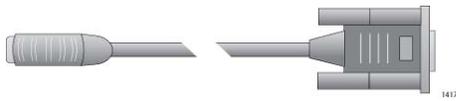
Two screws for wood or concrete walls:  
Length: 31 mm (1 1/4 in.)  
Width: 4.3 mm (1/8 in.)



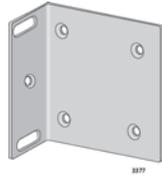
Power cord retaining clip

Figure 15. Components of the Switches

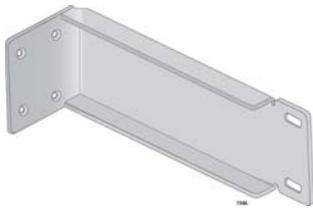
The AT-x310-26FT Switch comes with the components shown in Figure 16 on page 54.



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



One wall or equipment rack mounting bracket



One long wall or equipment rack mounting bracket



One regional AC power cord



Eight bracket screws



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



Two screws for wood or concrete walls:  
Length: 31 mm (1 1/4 in.)  
Width: 4.3 mm (1/8 in.)



Power cord retaining clip

Figure 16. Components of the AT-x310-26FT Switch

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**Note**

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

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## Chapter 3

# Installing the Switch on a Table or in an Equipment Rack

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The procedures in this chapter are:

- “Selecting a Site for the Switch” on page 58
- “Installing the Switch on a Table” on page 59
- “Installing the Switch in an Equipment Rack” on page 60

## Selecting a Site for the Switch

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Here are the site guidelines for the switch:

- ❑ The power outlet should be located near the switch and be easily accessible.
- ❑ The site should allow for easy access to the ports on the front of the switch, so that you can easily connect and disconnect cables, and view the port LEDs.
- ❑ The site should allow for adequate air flow around the unit and through the cooling vents on the front and rear panels. (The ventilation direction in a unit with a cooling fan is from front to back, with the fan on the back panel drawing the air out of the unit.)
- ❑ If you are installing the switch in an equipment rack, you should verify that the rack is safely secured so that it will not tip over. You should install devices starting at the bottom of the rack, with the heavier devices near the bottom.
- ❑ If you are installing the switch on a table or desk, you should verify that the table or desk is level and secure.
- ❑ 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.
- ❑ The site should not expose the twisted pair cabling to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, and fluorescent fixtures.
- ❑ Switch ports are suitable for intra-building connections, or where non-exposed cabling is required.
- ❑ Do not place objects on top of the switch.

## Installing the Switch on a Table

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

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**Note**

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

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**Warning**

Do not stack switches on top of one another on a table or desktop. That could result in a safety hazard. The switches could be damaged or you might be injured if they tip over.

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

1. Review “Selecting a Site for the Switch” on page 58 to verify the suitability of the site for the switch.
2. Check to be sure that the table is strong enough to support the weight of the switch.
3. Lift the switch onto the table.
4. Go to Chapter 5, “Cabling the Networking Ports” on page 85 to connect the network cables.

## Installing the Switch in an Equipment Rack

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This procedure requires the following items:

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

Installation guidelines may be found in “Choosing a Site for the Switch” on page 52. Here is the procedure for installing the switch in a 19-inch equipment rack.



### Caution

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

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1. Place the unit upside down on a level, secure surface. Refer to Figure 17.

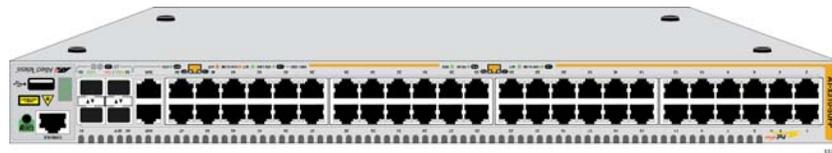


Figure 17. Turning the Switch Upside Down

2. Using a flat-head screwdriver, pry the rubber feet from the bottom of the switch. Refer to Figure 18.

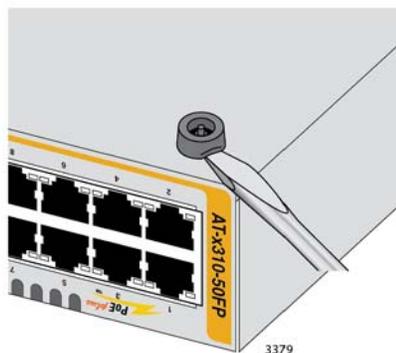


Figure 18. Removing the Rubber Feet

3. Turn the switch over.
4. Attach the two rack mount brackets to the sides of the switch with the eight bracket screws that come with the unit.

The AT-x310-26FT Switch comes with one short bracket and one long bracket. When installing the device in an equipment rack, Allied Telesis recommends installing the short bracket on the right side and the long bracket on the left side, as you face the front of the unit, so that the stacking ports on the unit align with the same ports on other x310 Series switches in the equipment rack. The possible positions of the brackets are shown in Figure 19.



Figure 19. Installing Brackets on the AT-x310-26FT Switch

The bracket positions for the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches are shown in Figure 20 on page 62 and Figure 21 on page 63.

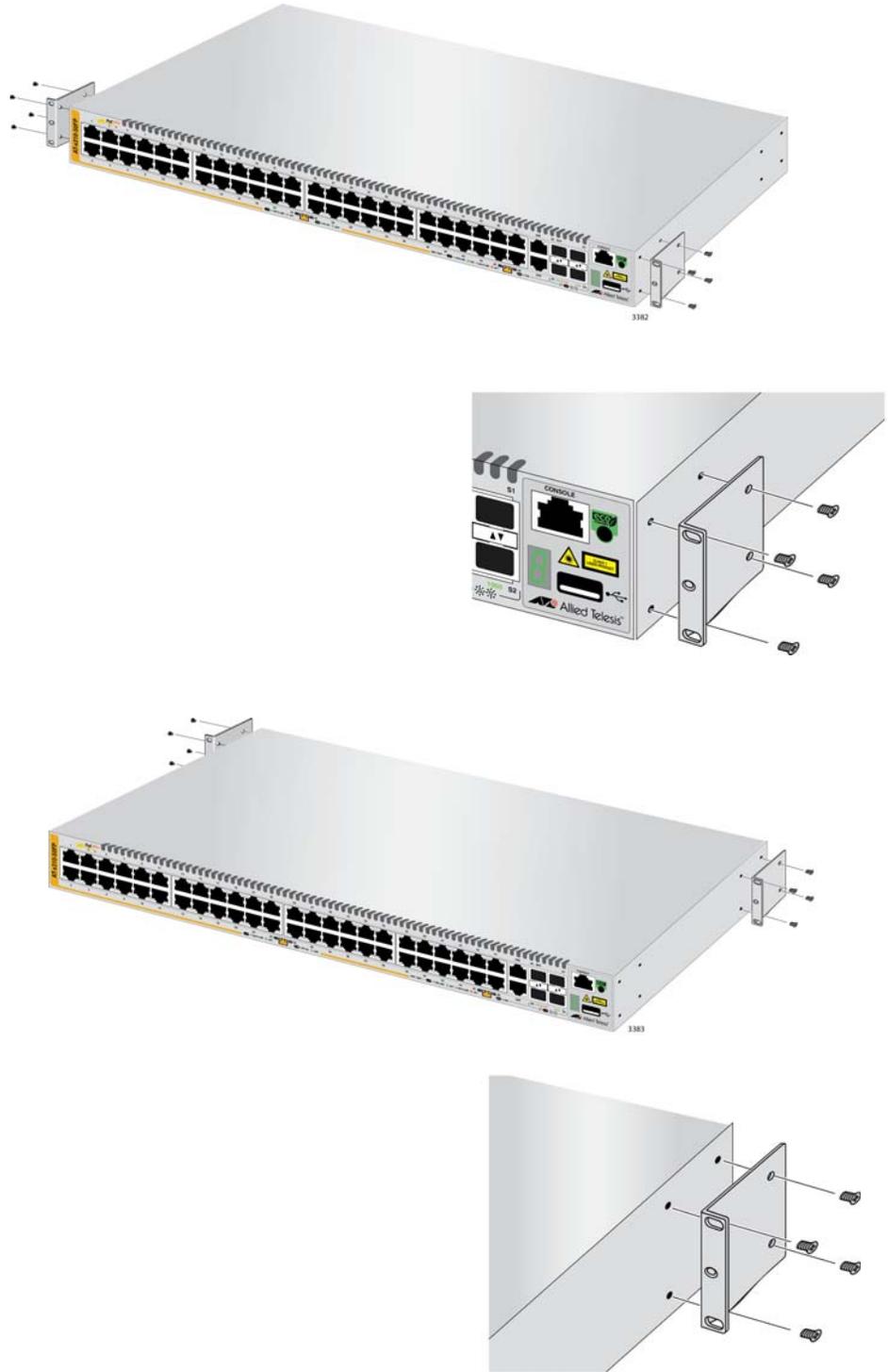


Figure 20. Attaching Brackets to the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches

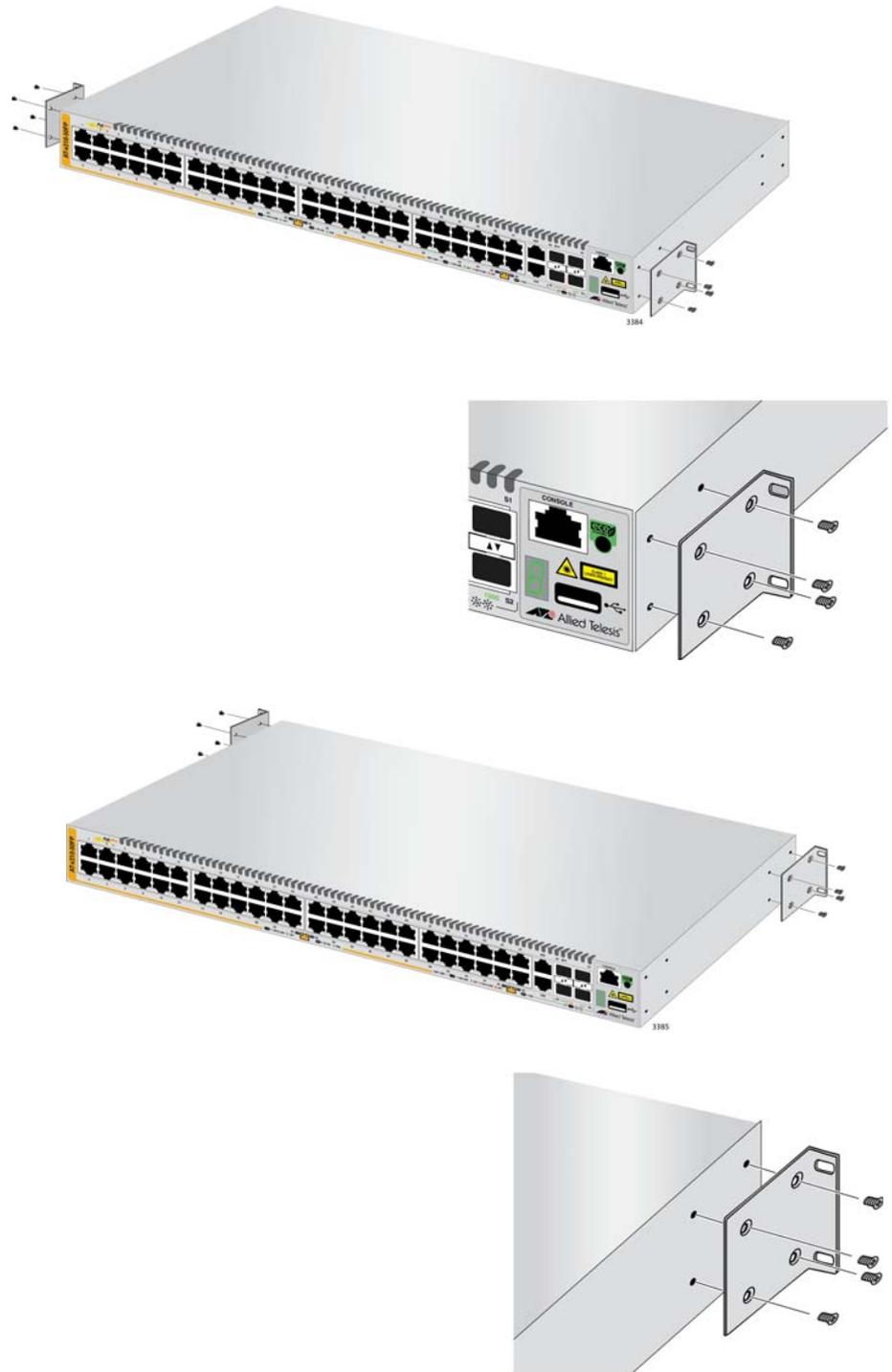


Figure 21. Attaching Brackets to the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches (Continued)

5. While another person holds the switch in the equipment rack, secure it with standard equipment rack screws (not provided), as shown in Figure 22.



Figure 22. Mounting the Switch in an Equipment Rack

6. Go to Chapter 5, “Cabling the Networking Ports” on page 85, to connect the network cables to the ports on the switch.

## Chapter 4

# Installing the Switch on a Wall

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The procedures in this chapter are:

- “Installing the AT-x310-26FT Switch on a Wall” on page 66
- “Installing the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches on a Wall” on page 73

## Installing the AT-x310-26FT Switch on a Wall

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This section contains the tools, guidelines, and procedures for installing the AT-x310-26FT Switch on a wall.

### Positions of the Switch on a Wall

You may install the switch on the wall with the front panel on the left or right, as shown in Figure 23. You may not install it with the front panel on the top or bottom.

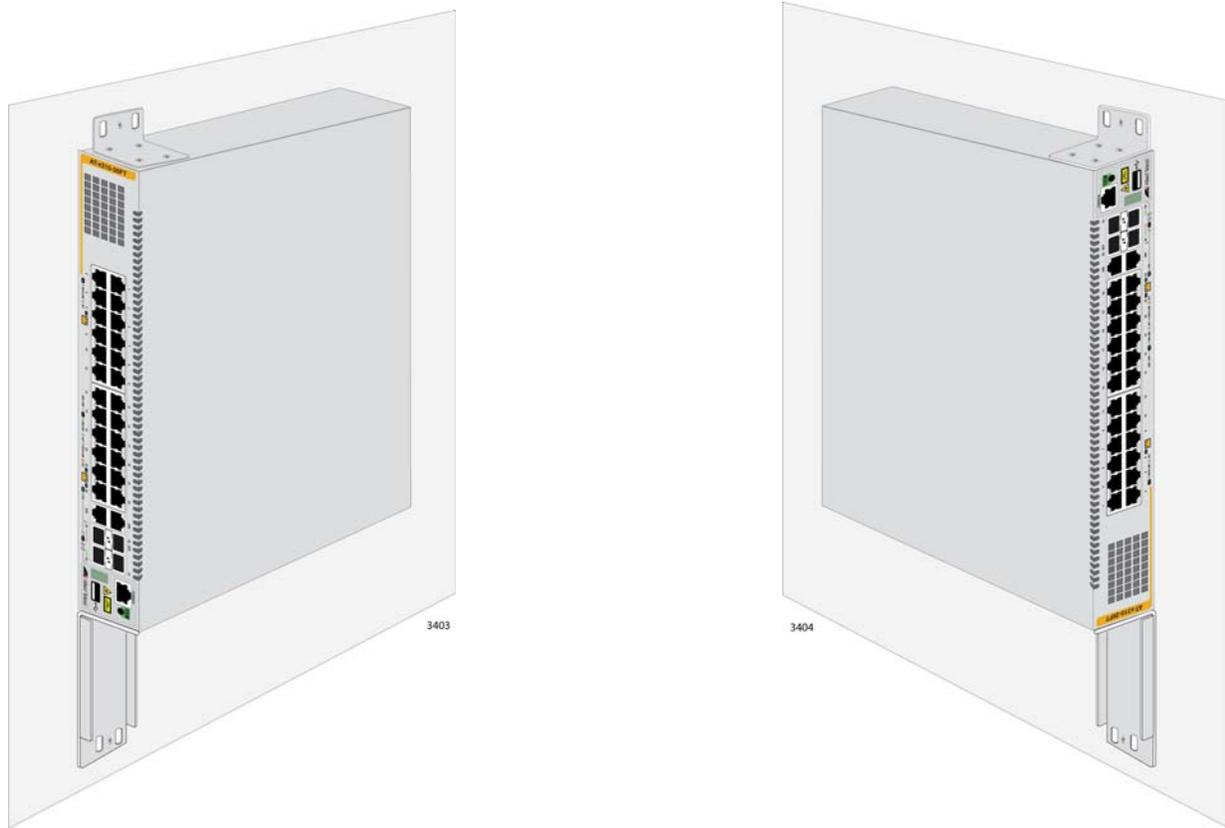


Figure 23. Positions of the AT-x310-26FT Switch on a Wall

### Recommended Minimum Wall Area Dimensions

The wall location for the AT-x310-26FT Switch must provide adequate space to the front and back panels so that you can service the unit, and for ventilation. The recommended minimum dimensions for the reserved wall area are listed here:

- ❑ Width: 54.0 centimeters (21 1/4 inches)
- ❑ Height: 43.2 centimeters (17 inches)

You should position the switch in the reserved wall area such that the front panel has more space than the rear panel. This may make it easier for you

to service and maintain the unit. Figure 24 and Figure 25 illustrate the recommended positions of the switch in the reserved area when the front panel is on the left and right, respectively.

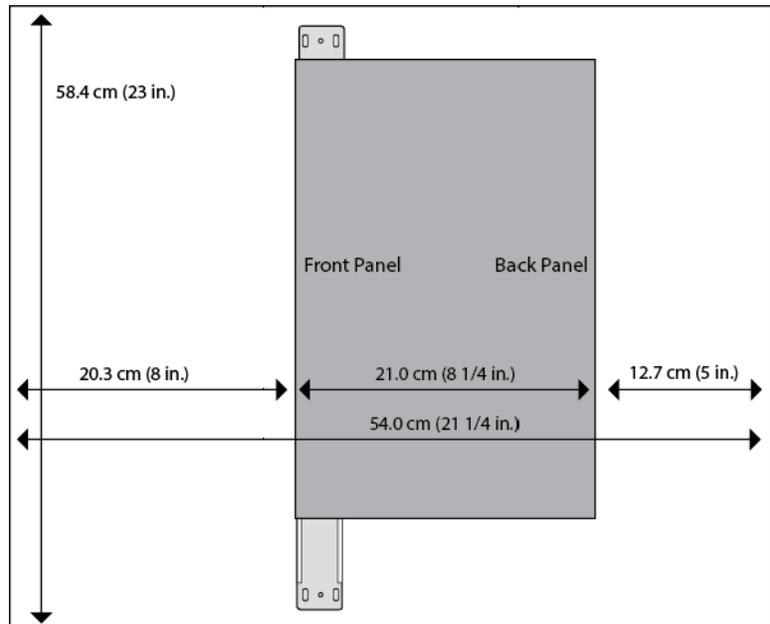


Figure 24. Minimum Wall Area Dimensions for the AT-x310-26FT Switch with the Front Panel on the Left

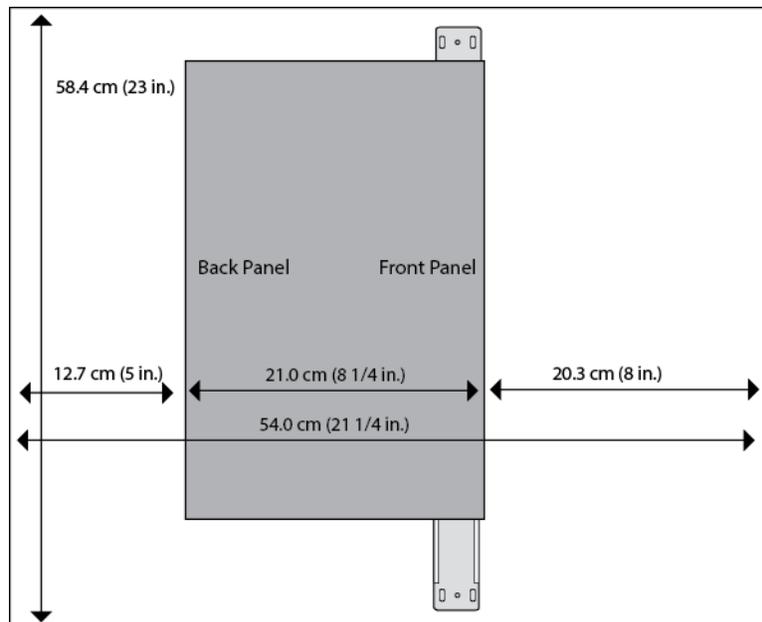


Figure 25. Minimum Wall Area Dimensions for the AT-x310-26FT Switch with the Front Panel on the Right

## Wall Guidelines

Here are the guidelines to installing the AT-x310-26FT 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 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 a similar material. Sheetrock is not strong enough to safely support the device.

## Tools and Material

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

- Eight bracket screws (included with the switch)
- Two wall or equipment rack brackets (included with the switch)
- Two wall screws (included with the switch)
- Two anchors for a concrete wall (included 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 wall studs and hot electrical wiring (not provided)
- Drill and a 1/4" carbide drill bit 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 chassis.

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## Installing the AT-x310-26FT Switch

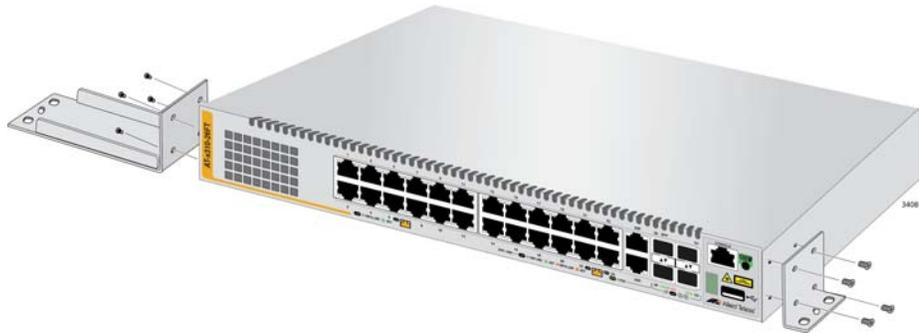
Please review “Reviewing Safety Precautions” on page 48 and “Selecting a Site for the Switch” on page 58 before performing this procedure.

To install the AT-x310-26FT Switch on a wall, perform the following procedure:

1. Place the switch on a table or desk.
2. Perform steps 1 to 3 in “Installing the Switch in an Equipment Rack” on page 60 to remove the rubber feet from the bottom of the switch.
3. Position the two short brackets that come with the switch against the sides of the unit as shown in Figure 26 on page 69, and secure them with eight screws, also included with the switch.



Positions of the brackets if the switch is to be installed on the wall with the front panel on the left.



Position of the brackets if the switch is to be installed on the wall with the front panel on the right.

Figure 26. Attaching the Brackets to the AT-x310-26FT Switch for Wall Installation

4. If you are installing the switch on a wall with wooden studs, use a stud finder to locate and mark with a pencil or pen the middle of a stud in the wall where you plan to install the switch. Be sure that the selected location adheres to the recommendations in “Recommended Minimum Wall Area Dimensions” on page 66.

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**Note**

If you are installing the switch on a concrete wall, perform steps 5 to 8. If you are installing the device on a wooden stud, go to step 9.

---

5. Have another person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the two screw holes in the brackets. Refer to Figure 27. Be sure that the selected location adheres to the recommendations in “Recommended Minimum Wall Area Dimensions” on page 66.

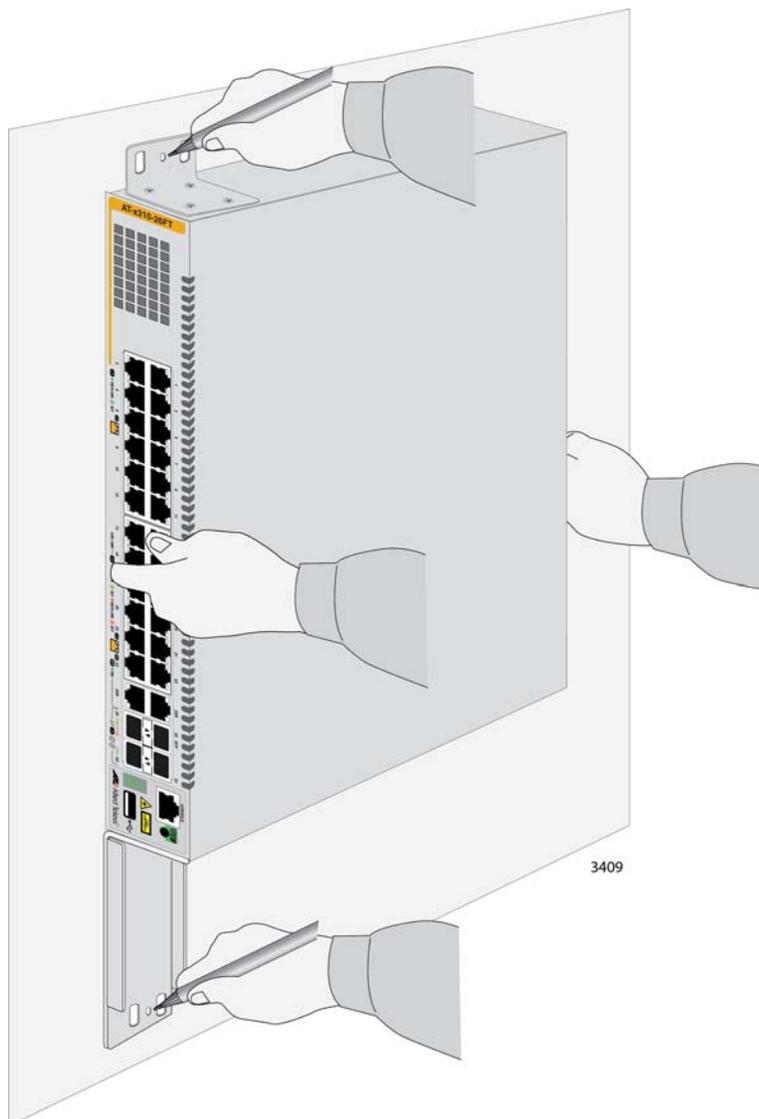


Figure 27. Marking the Locations of the Bracket Holes on a Concrete Wall

6. Place the switch on a table or desk.
7. Use a drill and a 1/4” carbide drill bit to pre-drill the two holes you marked in step 5. Please review the following guidelines:
  - Prior to drilling, set the drill to hammer and rotation mode. The modes break up the concrete and clean out the hole.

- ❑ Allied Telesis recommends cleaning out the holes with a brush or compressed air.
8. Insert the two anchors into the holes.
  9. Have another person hold the switch at the selected wall location while you secure it to the wall with the two provided screws. Refer to Figure 28. Be sure to observe the following guidelines as you install the switch on the wall:
    - ❑ If you are installing the switch on a wall with wooden studs, you must secure the switch to the middle of the stud you identified in step 4.
    - ❑ Be sure to leave sufficient space from other devices or walls so that you can access the front and back panels. Refer to “Recommended Minimum Wall Area Dimensions” on page 66.

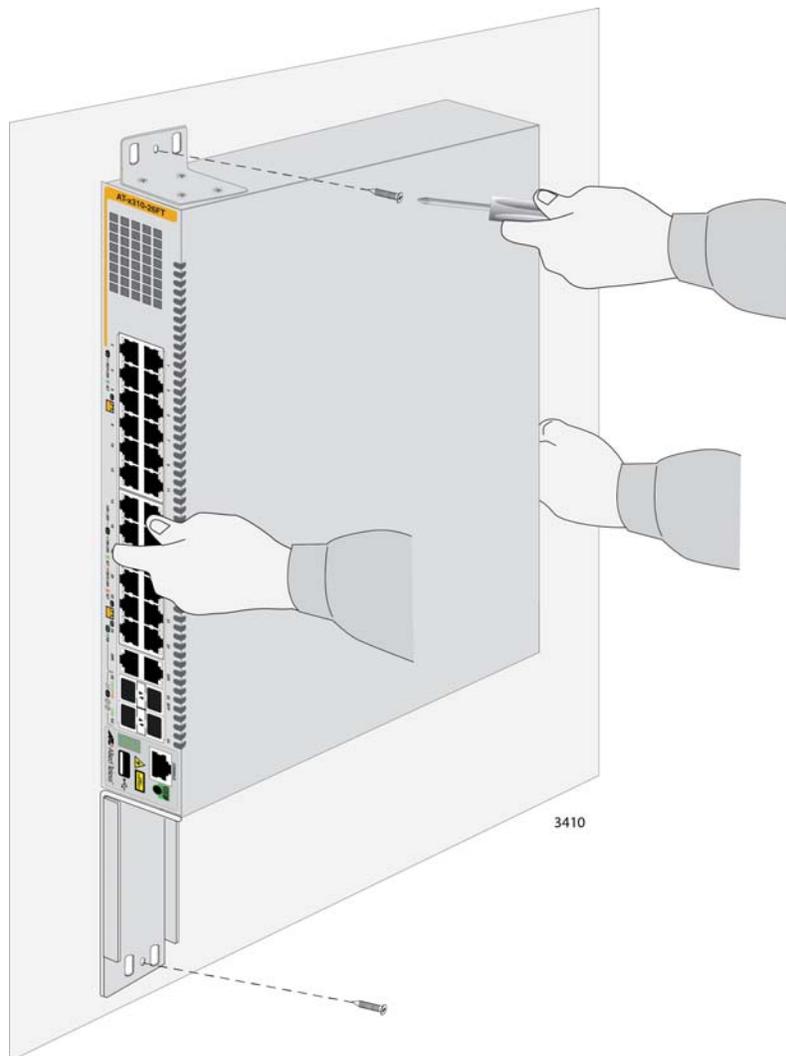


Figure 28. Installing the AT-x310-26FT Switch on a Wall

This completes the procedure for mounting the AT-x310-26FT Switch on a wall. Go to Chapter 5, “Cabling the Networking Ports” on page 85 for instructions on how to attach the network cables.

## Installing the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches on a Wall

This section contains the instructions for installing the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches on a wall.

### Position of the Switch on the Wall

The switch may be installed on the wall with the front panel on the left or right, as shown in Figure 29. You may not install the switch with the front panel on the top or bottom.

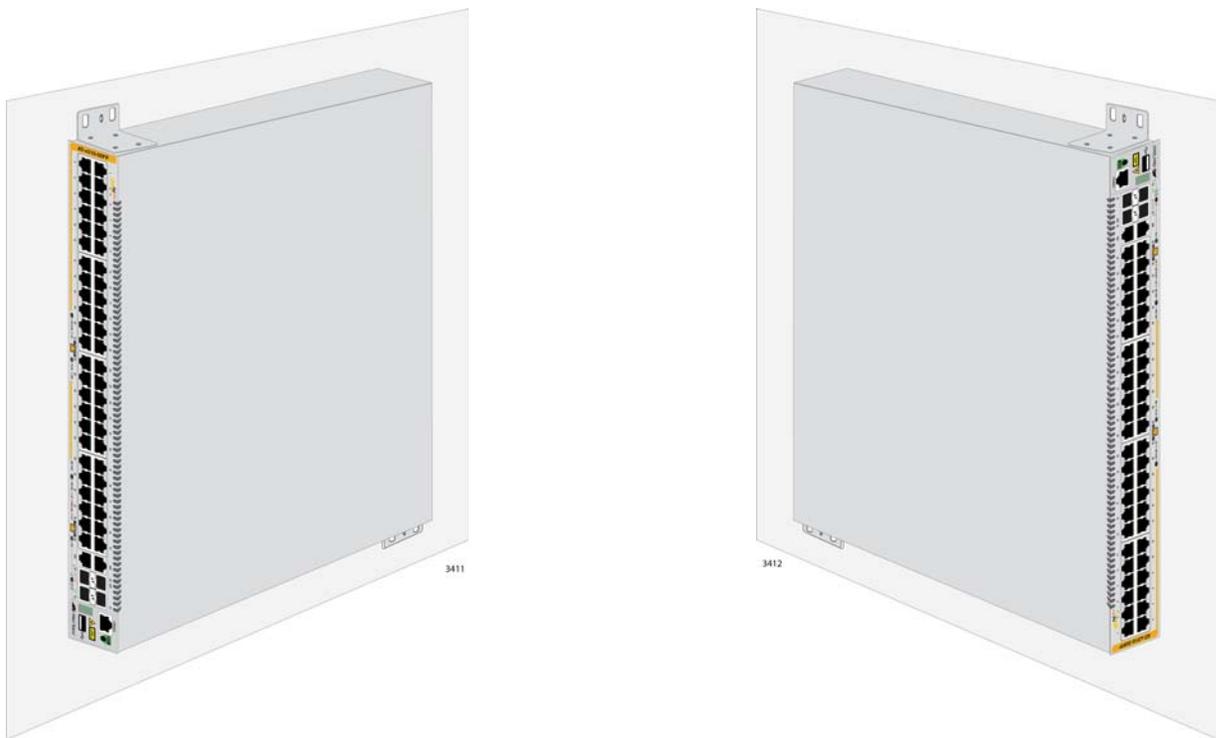


Figure 29. Positions of the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches on a Wall

### Recommended Minimum Wall Area Dimensions

The recommended minimum dimensions for the reserved wall area for the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches are listed here:

- ❑ Width: 68.0 centimeters (27 inches)
- ❑ Height: 58.4 centimeters (23 inches)

The placement of the switch in the reserved area should provide the front panel with more area than the back panel so that you can connect network cables, install SFP modules, and view port LEDs. Figure 30 on page 74 shows the recommended position of the switch in the reserved area when

the front panel is on the left. Figure 31 shows the recommended position of the device when the front panel is on the right.

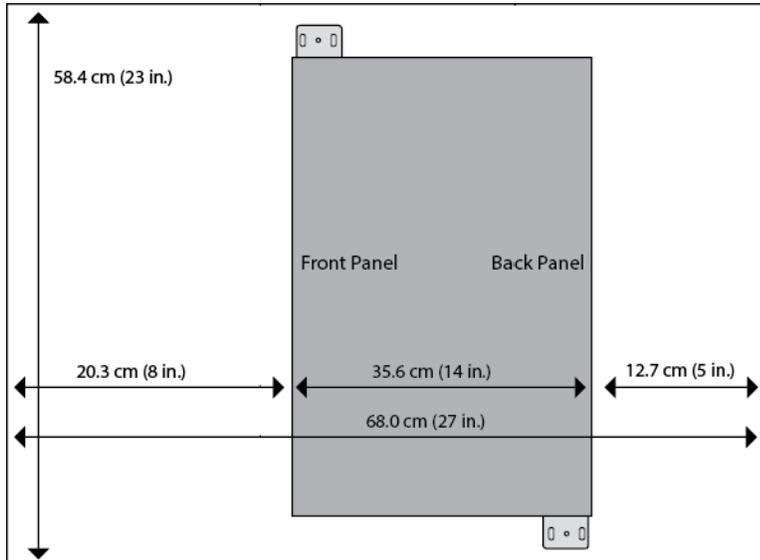


Figure 30. Minimum Wall Area Dimensions for the Switch When the Front Panel is on the Left

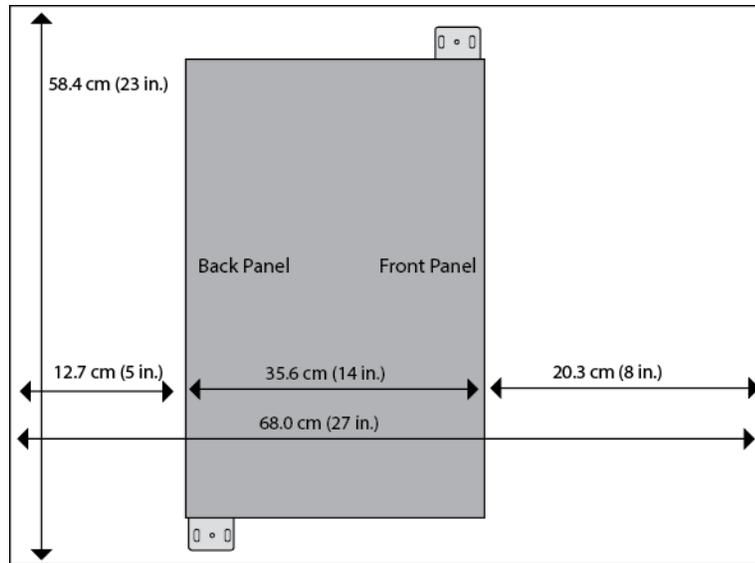


Figure 31. Minimum Wall Area Dimensions for the Switch When the Front Panel is on the Right

### Positions of the Brackets

You should install the two brackets diagonally across from each other on the sides of the switch. Allied Telesis recommends installing the bracket for the front panel above the chassis and the bracket for the back panel below the chassis. Refer to Figure 32.

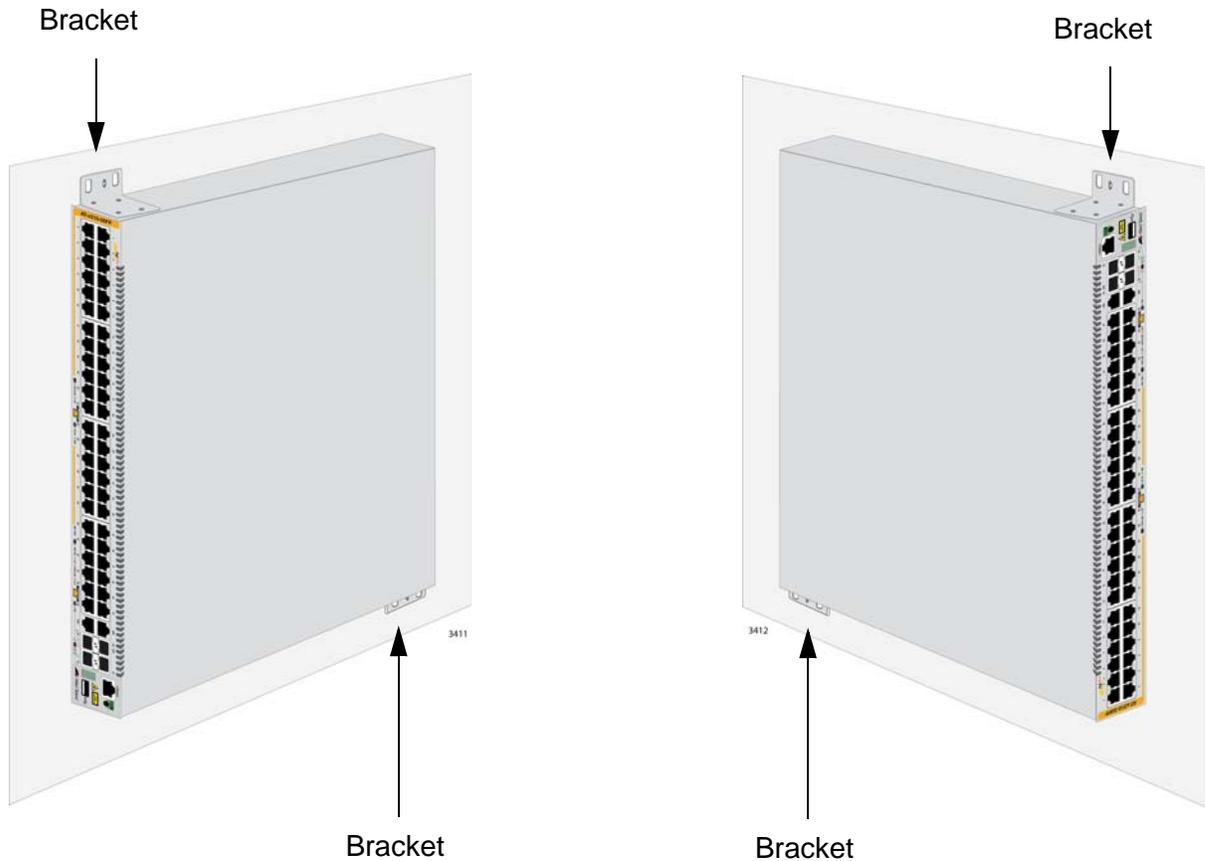


Figure 32. Bracket Positions on the Switch

### Plywood Base for a Wall with Wooden Studs

If you are installing the AT-x310-26FP, AT-x310-50FT, or AT-x310-50FP Switch on a wall that has wooden studs, Allied Telesis recommends using a plywood base to attach the device to the wall. (A plywood base is not required for a concrete wall.) Refer to Figure 33 on page 76.

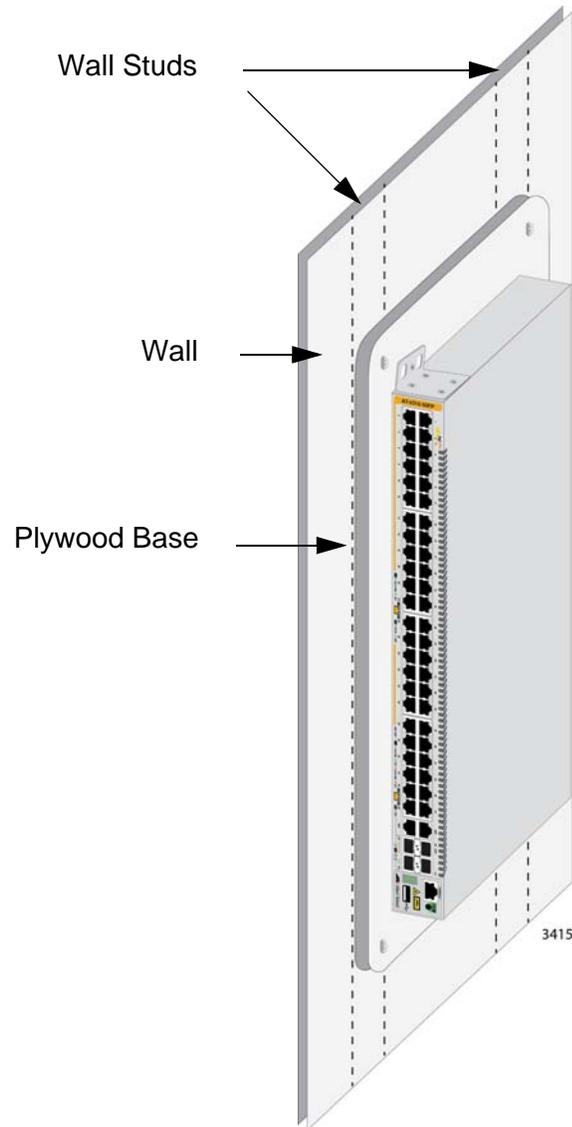


Figure 33. Switch on a Plywood Base

The plywood base allows you to mount the switch on two wall studs. Without the base, only one bracket could be attached to a stud. This is because the standard distance between two studs in a wall is 41 centimeters (16 inches) while the distances between the two brackets on the switches are 26.7 centimeters (10 1/2 inches) for the AT-x310-50FT Switch and 31.8 centimeters (12 1/2 inches) for the AT-x310-26FP and AT-x310-50FP Switches. Refer to Figure 34 on page 77.

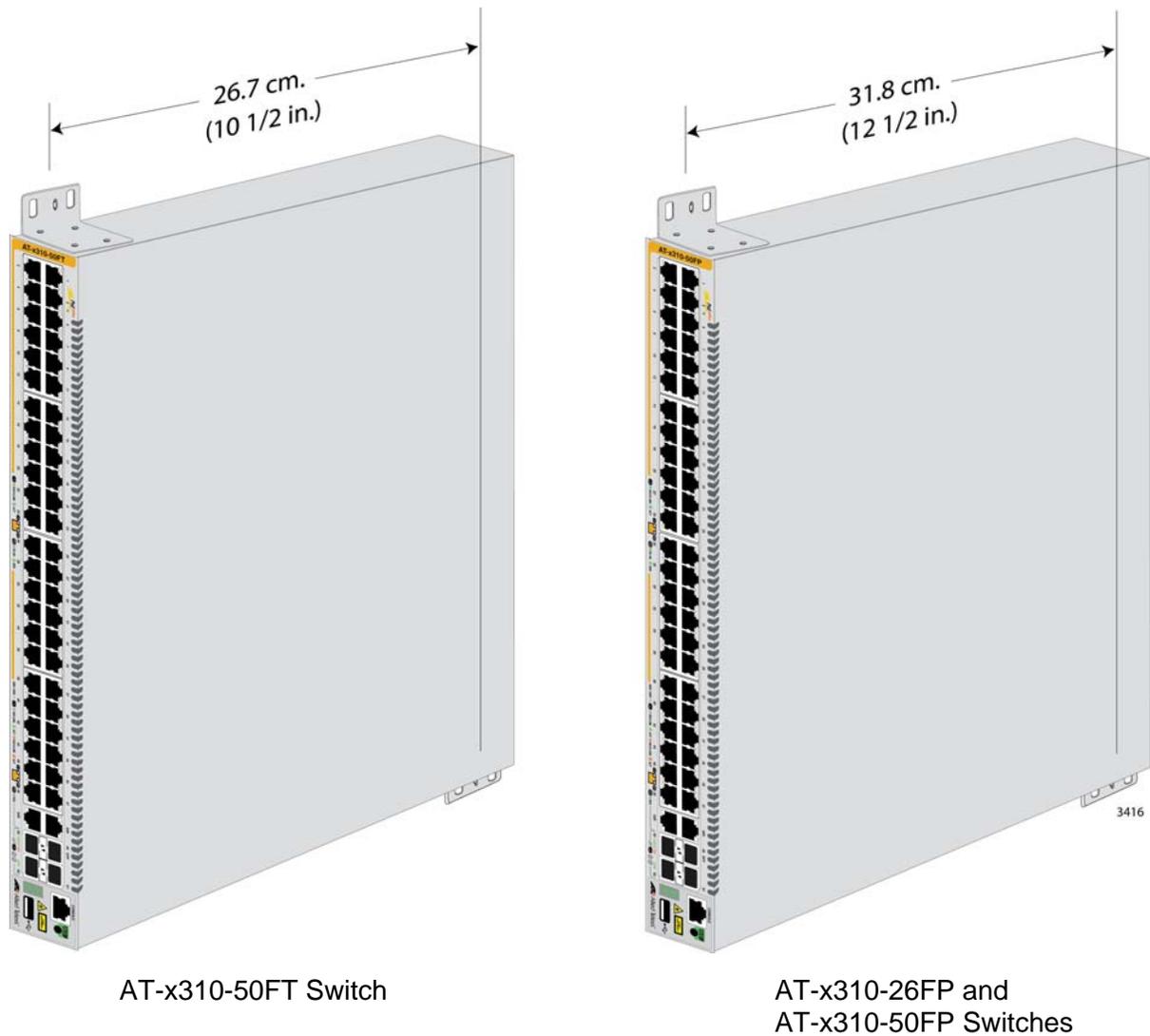


Figure 34. Distances Between the Brackets on the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches

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

- ❑ Width: 50.8 centimeters (20 inches)
- ❑ Height: 55.9 centimeters (22 inches)
- ❑ Thickness: 5.1 centimeters (2 inches)

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

You should install the plywood base to the wall and then install the switch on the base. Refer to Figure 35.

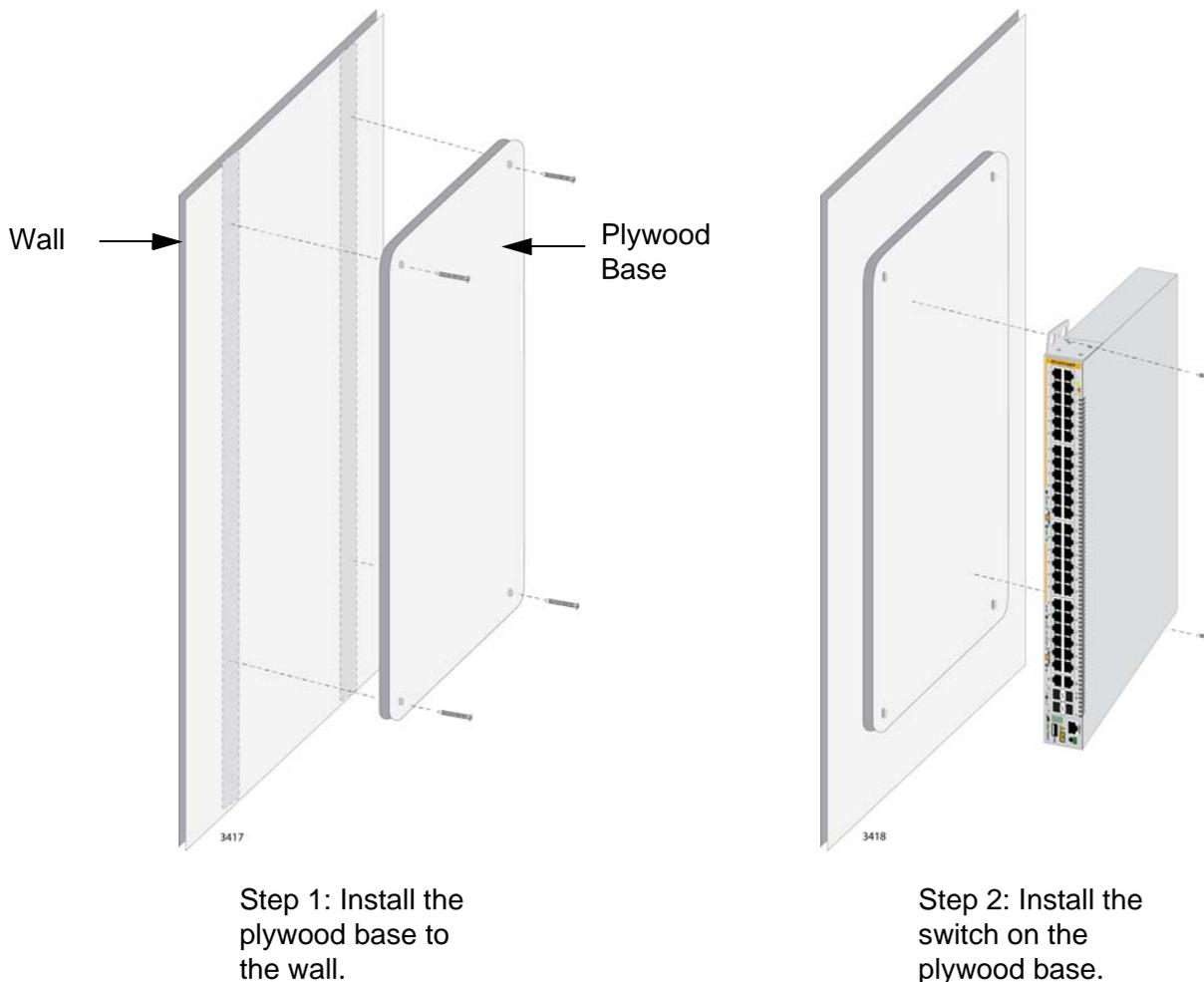


Figure 35. Steps to Installing the Switch with a Plywood Base

### Wall Guidelines

Here are the guidelines to installing the AT-x310-26FP, AT-x310-50FT, and AT-x310-50FP Switches on a wall.

- You may install the switch on a wall that has wooden studs.
- You may install the switch on a concrete wall.
- If you are installing the switch on a wall with wooden studs, you should use a plywood base to support the switch. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 75. A plywood base is not required for a concrete wall.
- You should not install the switch only on sheetrock or similar material. Sheetrock is not strong enough to safely support the device.

- ❑ You should not install the switch on a metal stud. Metal studs may not be strong enough to safely support the device.

## Tools and Material

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

- ❑ Eight bracket screws (included with the switch)
- ❑ Two wall or equipment rack brackets (included with the switch)
- ❑ Two wall screws (included with the switch)
- ❑ Two anchors for a concrete wall (included 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 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 75 for the dimensions.
- ❑ 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 walls. A qualified building contractor should determine the hardware requirements for your wall prior to installing the chassis.

## Installing the Plywood Base

A plywood base is recommended when installing the switch on a wall that has wooden studs. Refer to "Plywood Base for a Wall with Wooden Studs" on page 75. Consult a qualified building contractor for installation instructions for the plywood base: Here are the installation guidelines:

- ❑ You should use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- ❑ You should attach the base to two wall studs with a minimum of four screws.
- ❑ The selected wall location for the base should adhere to the recommendations in "Choosing a Site for the Switch" on page 52 and "Recommended Minimum Wall Area Dimensions" on page 73.

## Installing the Switch on the Plywood Base

Please review "Reviewing Safety Precautions" on page 48 and "Selecting a Site for the Switch" on page 58 before performing this procedure.

To install the AT-x310-26FP, AT-x310-50FT, or AT-x310-50FP Switch on the plywood base, perform the following procedure:

1. Perform steps 1 to 3 in “Installing the Switch in an Equipment Rack” on page 60 to remove the rubber feet from the bottom of the switch.
2. Install the two brackets diagonally across from each other on the sides of the switch, with the eight bracket screws included with the device. Refer to Figure 36.



Positions of the brackets if the switch is to be installed on the wall with the front panel on the left.



Position of the brackets if the switch is to be installed on the wall with the front panel on the right.

Figure 36. Attaching the Brackets for Wall Installation for All Switches Except the AT-x310-26FT Switch

3. Have another person hold the switch on the plywood base on the wall while you secure it with the two provided screws. Refer to Figure 37 on page 81.

As you position the switch on the wall, be sure to leave sufficient space from other devices or walls so that you can access the front and back panels. Refer to “Recommended Minimum Wall Area Dimensions” on page 73.

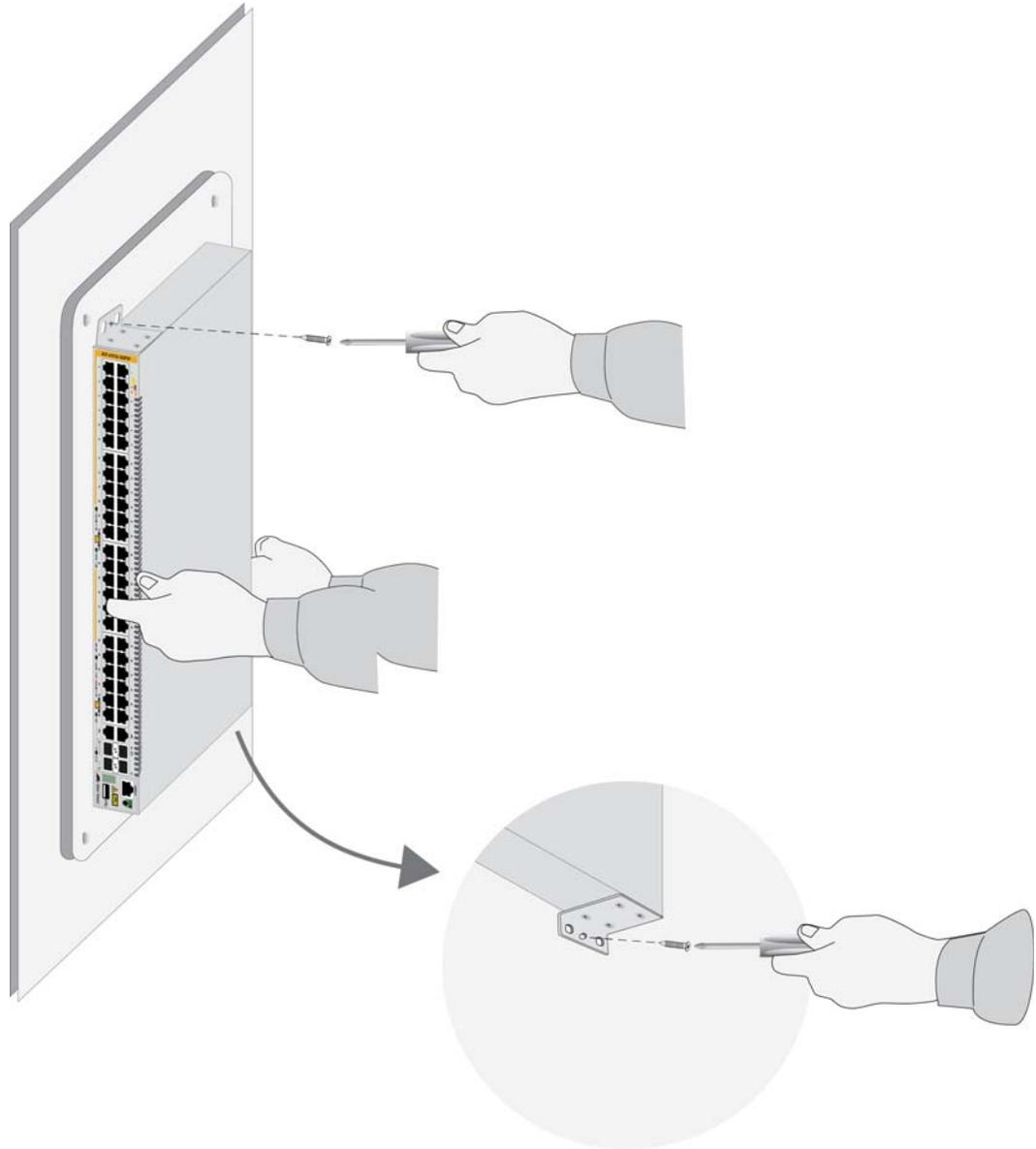


Figure 37. Securing the Switch to the Plywood Base

This completes the procedure for mounting the switch on the wall. Go to Chapter 5, “Cabling the Networking Ports” on page 85, for instructions on how to connect the network cables to the ports on the switch.

## Installing the Switch on a Concrete Wall

To install the AT-x310-26FP, AT-x310-50FT, or AT-x310-50FP Switch on a concrete wall, perform the following procedure:

1. Perform steps 1 to 3 in “Installing the Switch in an Equipment Rack” on page 60 to remove the rubber feet from the bottom of the switch.
2. Install the two brackets diagonally across from each other on the sides of the switch, with the eight bracket screws included with the device. Refer to Figure 36 on page 80.
3. Have another person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the two screw holes in the brackets. Refer to Figure 38. The selected wall location should adhere to the recommendations in “Choosing a Site for the Switch” on page 52 and “Recommended Minimum Wall Area Dimensions” on page 73.

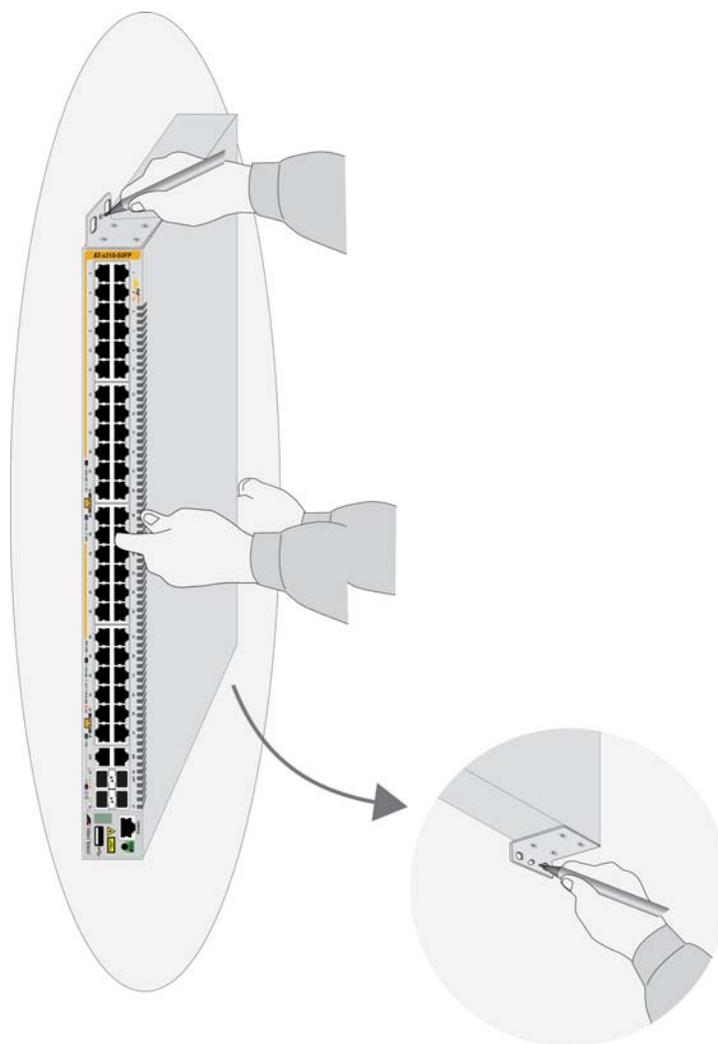


Figure 38. Marking the Locations of the Bracket Holes on a Concrete Wall

4. Place the switch on a table or desk.
5. Use a drill and a 1/4" carbide drill bit to pre-drill the two holes you marked in step 3. Please review the following guidelines:
  - ❑ Prior to drilling, set the drill to hammer and rotation mode. The modes break up the concrete and clean out the hole.
  - ❑ Allied Telesis recommends cleaning out the holes with a brush or compressed air.
6. Insert the two 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 two provided screws. Refer to Figure 39.

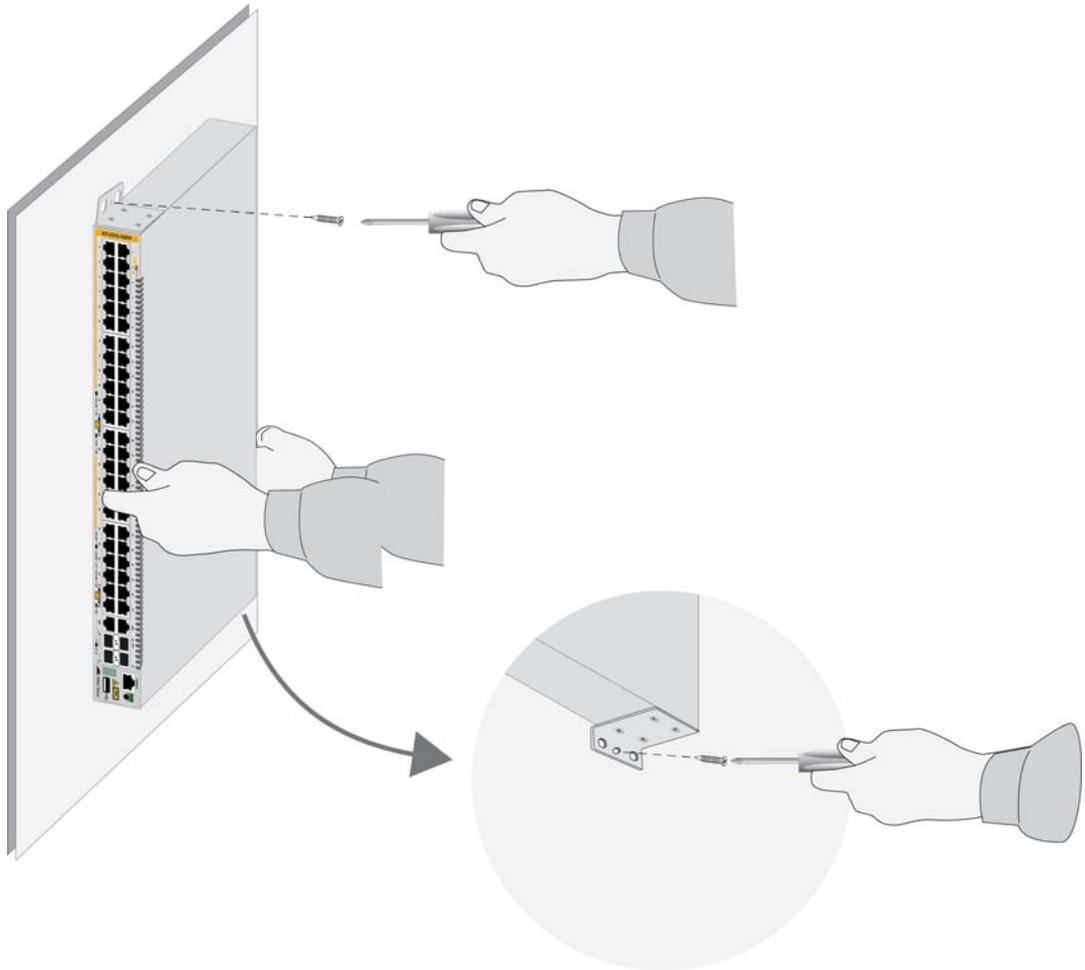


Figure 39. Installing the AT-x310-26FP, AT-x310-50FT, or AT-x310-50FP Switch on a Wall

This completes the procedure for mounting the switch on the wall. Go to Chapter 5, “Cabling the Networking Ports” on page 85, for instructions on how to connect the network cables to the ports on the switch.

## Chapter 5

# Cabling the Networking Ports

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This chapter contains the following procedures:

- ❑ “Cabling the Twisted Pair Ports” on page 86
- ❑ “Installing SFP Transceivers” on page 88

## Cabling the Twisted Pair Ports

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Here are the guidelines to cabling the 10/100Base-TX and 10/100/1000Base-T twisted pair ports:

- ❑ The cable specifications for the 10/100Base-TX and 10/100/1000Base-T twisted pair ports are listed in Table 1 on page 24 and Table 2 on page 26, respectively.
- ❑ The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- ❑ The default setting for the wiring configurations of the ports is auto-MDI/MDI-X. The default setting is appropriate for switch ports that are connected to 10/100Base-TX 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 10/100Base-TX network devices that do not support auto-MDI/MDI-X and have a fixed wiring configuration. For switch ports connected to those types of network devices, you should disable auto-MDI/MDI-X and set the wiring configurations manually.
- ❑ The appropriate MDI/MDI-X setting for a switch port connected to a 10/100Base-TX network device 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 must 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 must be the same.
- ❑ The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- ❑ The default speed setting of Auto-Negotiation is not appropriate for ports connected to 10/100Base-TX 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 10/100/1000Base-T 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.
- ❑ Do not attach cables to ports of static or LACP port trunks until after you have configured the trunks on the switch. Otherwise, the ports will form network loops that can adversely affect network performance.

## Installing SFP Transceivers

---

This section contains guidelines and procedures for installing SFP transceivers. The installation procedures are listed here:

Here are general installation guidelines for SFP transceivers:

- ❑ SFP transceivers are hot-swappable. You may install them while the chassis is powered on.
- ❑ The SFP slots are paired with the 10/100/1000Base-T ports to form combo pair ports. You may use either the SFP slot or twisted pair port of a combo pair, but not both at the same time. For more information, refer to “Combo 10/100/1000Base-T Ports and SFP Slots” on page 32.
- ❑ Your Allied Telesis sales representative can provide you with a list of supported transceivers for the units.
- ❑ 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 the fiber optic cable.
- ❑ Fiber optic transceivers are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed, or when you store the transceiver. When you do remove the plug, keep it for future use.
- ❑ Unnecessary removal and insertion of a transceiver can lead to premature failure.
- ❑ Do not install SFP transceivers in the S1 and S2 slots. These slots are for stacking transceivers and are not used when the switch is used as a stand-alone unit.



### Warning

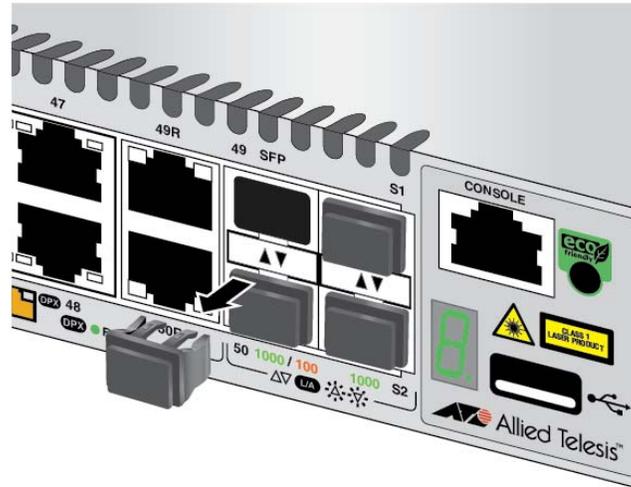
A transceiver can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device.

---

## Installing SFP Modules

To install SFP transceivers in slots 25 and 26 of the 26-port switches or slots 49 and 50 of the 50-port switches, perform the following procedure:

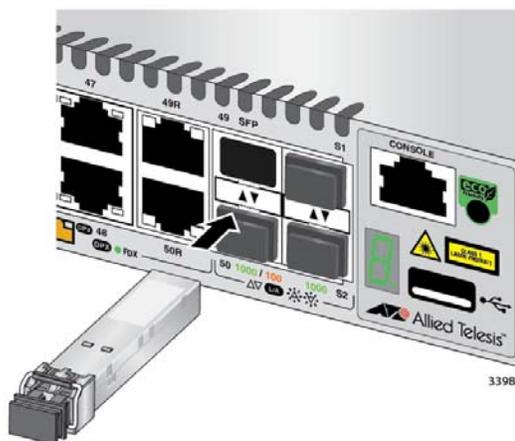
1. Remove the dust plug from a transceiver slot on the switch. Refer to Figure 40.



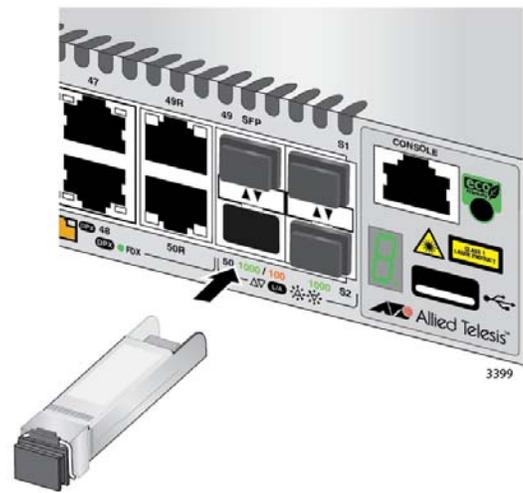
3397

Figure 40. Removing the Dust Plug from an SFP Slot

2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. If you are installing the transceiver in a top slot, position the transceiver with the handle on top. If you are installing the transceiver in a bottom slot, position the transceiver with the handle beneath the module.
4. Slide the transceiver into the slot until it clicks into place. Refer to Figure 41.



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Figure 41. Installing an SFP Transceiver

**Note**

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

5. Remove the dust cover from the transceiver, as shown in Figure 42.

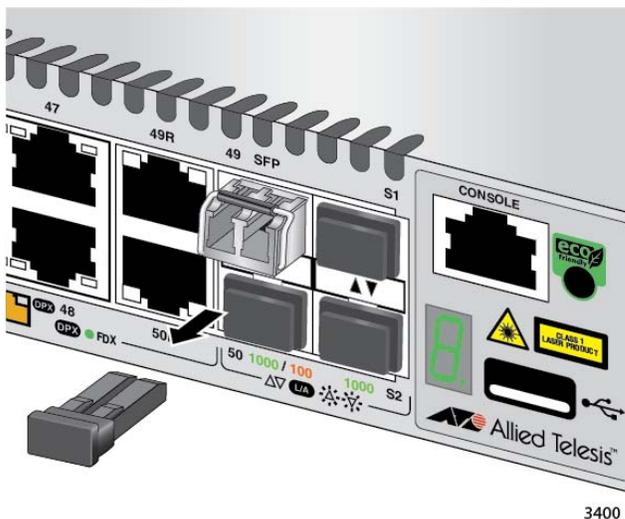


Figure 42. Removing the Dust Cover from an SFP Transceiver

6. 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 43. If the transceiver is in a bottom slot, the handle should be in the down position.

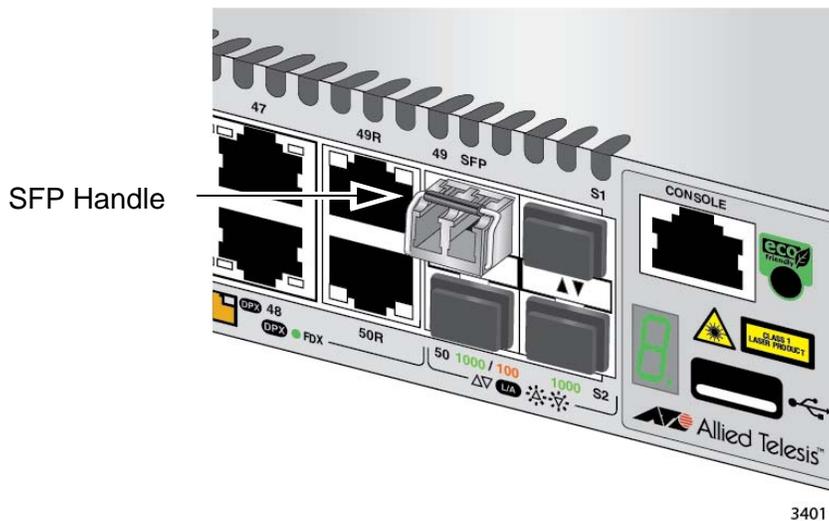


Figure 43. Positioning the SFP Handle in the Upright Position

7. Connect the fiber optic cable to the transceiver, as shown in Figure 44. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

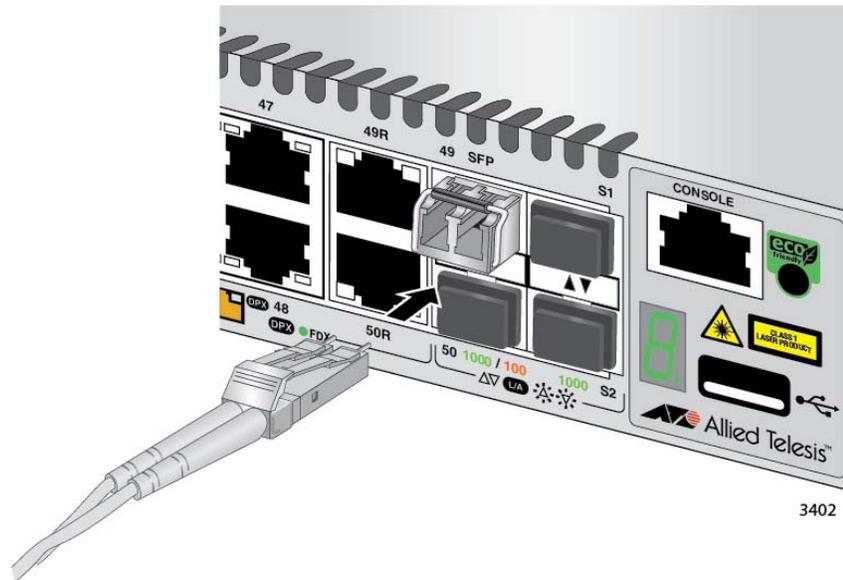


Figure 44. Connecting a Fiber Optic Cable to an SFP Transceiver

8. Repeat this procedure to install a second transceiver.
9. After installing the transceivers, go to Chapter 6, “Powering On the Switch” on page 93.



## Chapter 6

# Powering On the Switch

---

This chapter contains the following procedures:

- ❑ “Powering On the Switch” on page 94
- ❑ “Monitoring the Initialization Processes” on page 97
- ❑ “Configuring the Switch for Stand-alone Operations” on page 100
- ❑ “Specifying Ports in the Command Line Interface for Stand-alone Switches” on page 105

## Powering On the Switch

---

Before powering on the switch, refer to “Power Specifications” on page 112 for the power specifications. To install the power cord retaining clip and 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 45.

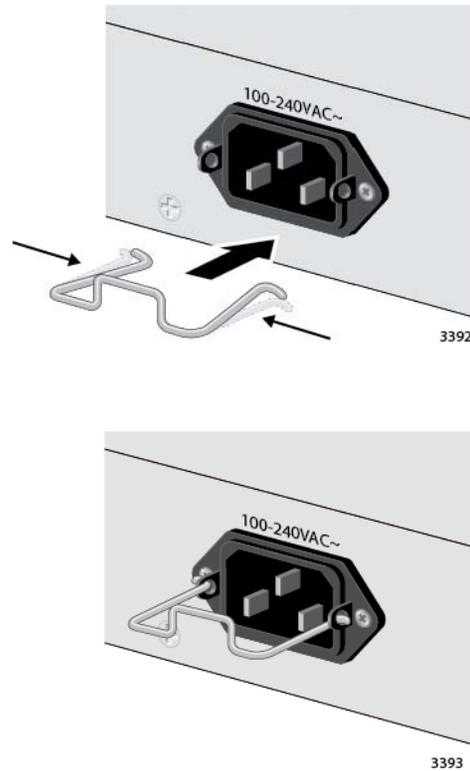


Figure 45. Installing the Retaining Clip

2. Raise the retaining clip. Refer to Figure 46 on page 95.

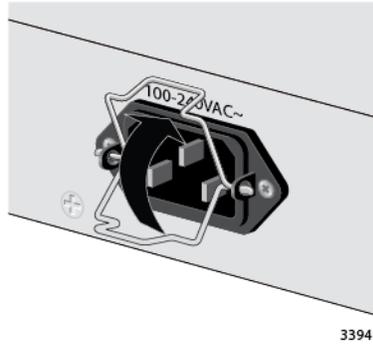


Figure 46. Raising the Retaining Clip

3. Connect the power cord to the connector. Refer to Figure 47.

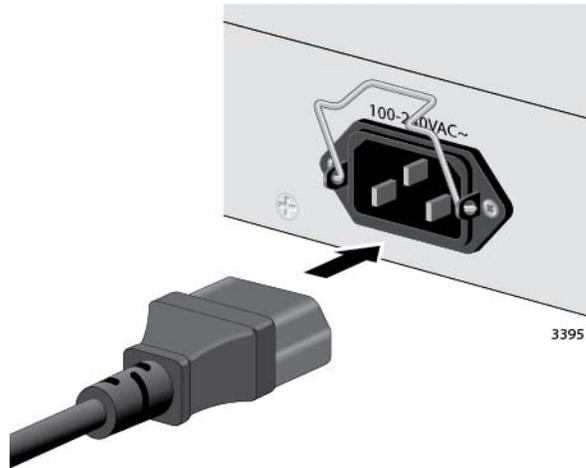


Figure 47. Plugging in the AC Power Cord

4. Lower the retaining clip to secure the power cord to the switch. Refer to Figure 48.

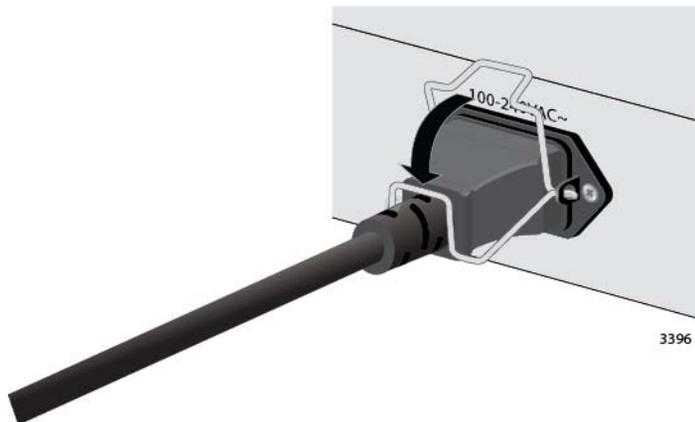


Figure 48. Lowering the Retaining Clip

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



**Warning**

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

---

---

**Note**

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

---

6. Go to “Monitoring the Initialization Processes” on page 97 or “Configuring the Switch for Stand-alone Operations” on page 100.



```

Mounting static filesystems... [ OK ]
Checking flash filesystem... [ OK ]
Mounting flash filesystem... [ OK ]
Checking for last gasp debug output... [ OK ]
Checking NVS filesystem... [ OK ]
Mounting NVS filesystem... [ OK ]
Starting base/dbus... [ OK ]
Starting base/syslog... [ OK ]
Starting base/loopback... [ OK ]
Starting base/poe_done... [ OK ]
Starting base/sysctl... [ OK ]
Received event poefw.done
Starting base/portmapper... [ OK ]
Received event syslog.done
Starting base/reboot-stability... [ OK ]
Checking system reboot stability... [ OK ]
Starting base/cron... [ OK ]
Starting base/appmond... [ OK ]
Starting hardware/openhpi... [ OK ]
Starting hardware/timeout... [ OK ]
Starting base/inet... [ OK ]
Starting base/modules... [ OK ]
Received event modules.done
Received event board.inserted
Received event hardware.done
Starting network/startup... [ OK ]
Starting base/external-media... [ OK ]
Starting network/stackd... [ OK ]
Starting network/election.timeout... [ OK ]
Received event network.enabled

Initializing HA processes:
hostd, auth, cntrd, epsr, hsl, imiproxyd, mstp
nsm, rmon, sflowd, udlld, atmfd, imi, irdpd
lcp, lldp, loopprot

Received event network.initialized
00:00:58 awplus-1 VCS[897]: No neighboring members found, unit may be in a
stand alone configuration

```

Figure 50. Switch Initialization Messages (Continued)

```
Received event vcs.elected-master
00:00:58 awplus-1 VCS[897]: Startup speed can be improved by adding 'no stack
1' to configuration
00:00:58 awplus-1 VCS[897]: Member 1 (eccd.6dc1.19ff) has become the Active
Master

Assigning Active Workload to HA processes:
hsl, nsm, irdpd, lacpd, loprotd, mstpd, 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:
```

Figure 51. Switch Initialization Messages (Continued)

## Configuring the Switch for Stand-alone Operations

---

After the switch has initialized its management software, examine the switch ID LED on the front panel and do one of the following:

- ❑ If the LED is displaying “0,” the installation procedure is complete. The switch is now ready for network operations as a stand-alone unit. Refer to the *Software Reference for x310 Series Switches, AlliedWare Plus Operating System*, for instructions on how to configure the operating parameters.
- ❑ If the LED is not displaying “0” (for example, if is displaying the default number “1”), perform the following procedures to disable the VCStack feature.

You can disable the VCStack feature from a local management session of the switch using the Console port. To start a local management session, go to “Starting a Local Management Session,” next.



### Caution

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

---

### Note

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

---

### Starting a Local Management Session

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

1. Connect the RJ-45 connector on the management cable to the Console port on the front panel of the switch, as shown in Figure 52 on page 101.



Figure 52. Connecting the Management Cable to the Console Port

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

---

**Note**

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

---

4. Press Enter.  
You are prompted for a user name and password.
5. When prompted for a user name, go to “Disabling VCStack” on page 102.

## Disabling VCStack

To disable the VCStack feature to use the switch as stand-alone unit, perform the following procedure:



### Caution

Disabling the VCStack feature requires resetting the switch. If the switch is already connected to a live network, some network traffic may be lost.

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

The local management session starts when the User Exec mode prompt, shown in Figure 53, is displayed.

```
awpl us>
```

Figure 53. User Exec Mode Prompt

### Note

The User Exec mode is the first level in the command mode interface. For complete information on the modes and commands, refer to the *Software Reference for x310 Series Switches, AlliedWare Plus Operating System* from [www.alliedtelesis.com](http://www.alliedtelesis.com).

2. Enter the SHOW STACK command to display the status of the VCStack feature. Figure 54 is an example of the command.

```
awplus> show stack
Virtual Chassis Stacking summary information
ID      Pending ID  MAC address      Priority  Status  Role
1       -             0015:774f:ed30  128     Ready  Active Master
Operational Status          Standalone Unit
Stack MAC address 0015:774f:ed30
awpl us(config)#
```

Figure 54. SHOW STACK Command

3. Review the following items:
  - If the Operational Status is “Stacking Hardware Disabled,” the VCStack feature is already disabled on the switch. The switch is ready for operations as a stand-alone switch in your network. No further installation steps are required.

- ❑ If the Operational Status is “Standalone Unit,” as shown in Figure 54 on page 102, the VCStack feature is active on the unit. You must disable it by performing the steps in the rest of this procedure before you can use the SFP+ stacking slots with regular SFP or SFP+ transceivers. The reason the status says “standalone” is because the switch considers itself a stack of one switch.
4. Move to the Global Configuration mode by entering the ENABLE and CONFIGURE TERMINAL commands, as shown in Figure 55.

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

Figure 55. Moving to the Global Configuration Mode

5. To disable the VCStack feature on the switch, enter the NO STACK ENABLE command, which has this format:

```
no stack id enable
```

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

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

This confirmation prompt in Figure 56 is displayed.

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

Figure 56. Confirmation Prompt for the NO STACK ENABLE Command

6. Type Y to disable VCStack on the switch or N to cancel the procedure.
7. Enter the EXIT command to return to the Privileged Exec mode, as shown in Figure 57.

```
awpl us(config)# exit
awpl us#
```

Figure 57. Returning to the Privileged Exec Mode

8. Enter the WRITE command to save your change in the configuration file. The switch displays the confirmation prompt in Figure 58 on page 104.

```
awplus# write
Building configuration ...
[OK]
awplus#
```

Figure 58. Saving the Changes with the WRITE Command

9. Enter the REBOOT command to reboot the switch.
10. At the confirmation prompt, type “Y” for yes.
11. Wait for the switch to initialize its management software and afterwards examine the Switch ID LED. If the ID number is “0,” the switch is ready for normal network operations as a stand-alone unit. Refer to the *Software Reference for x310 Series Switches, AlliedWare Plus Operating System*, for instructions on how to configure the operating parameters. If the number is not “0,” repeat this procedure.

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

---

The command line interface in the management software on the switch has a parameter that you use to specify the individual ports. The parameter is the PORT parameter and Figure 59 shows its format.

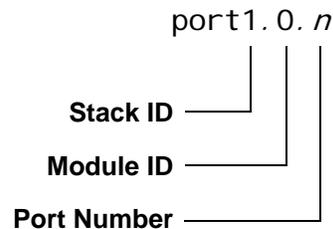


Figure 59. PORT Parameter in the Command Line Interface

The first number is the switch's ID number. The ID number for stand-alone switches is not the value 0 displayed on the Switch ID LEDs. Rather, it is 1. Be sure to enter 1, not 0, as the ID number in the PORT parameter when configuring ports on stand-alone switches.

The module ID value is used with multi-module products. This value does not apply to the x310 Series switches and should always be 0.

The third value is a port number on the switch. You may specify only one port number in a PORT parameter, but you may specify more than one PORT parameter in many commands where the parameter is supported.

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

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

For instructions on the command line interface and the PORT parameter, refer to the *Software Reference for x310 Series Switches, AlliedWare Plus Operating System*.



## Chapter 7

# Troubleshooting

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This chapter contains suggestions 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](http://www.alliedtelesis.com/support).

---

**Problem 1:** The Switch ID 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 may be operating in the low power mode. To toggle on the LEDs, press the eco-friendly button on the front panel of the switch. You may also toggle the LEDs off and on with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the command line interface.

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

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

- Verify that the port is connected to the correct twisted pair cable. This is to eliminate the possibility that the port is connected to the wrong network device.
- Verify that the network device connected to the twisted pair port is powered on and is operating properly.

- ❑ Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.
- ❑ Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- ❑ Verify that you are using the appropriate category of twisted pair cable. The cable types are listed in Table 2 on page 26 for the 10/100/1000Base-T ports.

---

**Note**

A 1000Base connection may require five to ten seconds to establish a link.

---

**Problem 4:** The LINK/ACT 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 SFP module and to the port on the remote network device.
- ❑ Check that the transceiver is fully inserted in the slot.
- ❑ Check to be sure that the transceiver is not installed in slot S1 or S2 in the switch. These slots are for AT-Stack transceivers only.
- ❑ Verify that the operating specifications of the fiber optic ports on the transceiver and remote network device are compatible.
- ❑ Verify that the correct type of fiber optic cabling is being used.
- ❑ Verify that the port is connected to the correct fiber optic cable. This is to eliminate the possibility that the port is connected to the wrong remote network 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 managed device, use its management firmware to determine whether its port is enabled.
- ❑ Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power).

**Problem 5:** Network performance between a twisted pair port on the switch and a network device is slow.

**Solution:** There might be a duplex mode mismatch between the port and the network device. This can occur when a twisted pair port using Auto-Negotiation is connected to a remote device that has a fixed speed of 10 or 100 Mbps and a fixed duplex mode of full duplex. If this is the cause of the problem, adjust the duplex mode of the port on the network device or switch so that both ports are using the same duplex mode. You can use either the LEDs or management software on the switch to determine the duplex mode settings of the ports. The LEDs are described in Table 5 on page 36.

**Problem 6:** 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 shutdown 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 shutdown if it is in danger of overheating.

**Problem 7:** The Switch ID LED on the front of the switch is flashing the letter “F.”

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

- ❑ A cooling fan has failed.
- ❑ The input voltage on the power supply is outside the normal operating range.
- ❑ The internal temperature of the switch has exceeded the normal operating range and the switch may shut down.

Contact your Allied Telesis sales representative for assistance.

**Problem 8:** The AT-x310-26FP or AT-3510-50FP Switch is not providing power to a PoE device.

**Solutions:** Try the following:

- ❑ Review the PD's documentation to confirm that the device supports Alternative B of the IEEE 802.3at standard. Alternative B is one of two modes that define the connector pins that deliver the power from the port on the line card to the PD. In Alternative B, the power

is carried on pins 4, 5, 7, and 8 on the RJ-45 port, the same pins that carry the network traffic. The other mode, Alternative A, defines pins 1, 2, 3, and 6 as the power carriers. The AT-x310-26FP and AT-3510-50FP Switches do not support Alternative A. 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 Alternative A will not work with the switches.

- ❑ Check that the device's power requirements do not exceed 30 W. This can be verified by reviewing the device's documentation or data sheet.
- ❑ Verify that you are using the appropriate category of twisted-pair cable by referring 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

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## Physical Specifications

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### Dimensions (H x W x D)

Table 10. Product Dimensions

AT-x310-26FT	4.4 cm x 34.0 cm x 21.3 cm (1.7 in. x 13.4 in. x 8.4 in.)
AT-x310-26FP	4.4 cm x 44.0 cm x 35.9 cm (1.7 in. x 17.3 in. x 14.1 in.)
AT-x310-50FT	4.4 cm x 44.0 cm x 30.8 cm (1.7 in. x 17.3 in. x 12.1 in.)
AT-x310-50FP	4.4 cm x 44.0 cm x 35.9 cm (1.7 in. x 17.3 in. x 14.1 in.)

### Weights

Table 11. Product Weights

AT-x310-26FT	2.39 kg (5.25 lb.)
AT-x310-26FP	5.22 kg (11.5 lb.)
AT-x310-50FT	4.48 kg (9.85 lb.)
AT-x310-50FP	5.75 kg (12.65 lb.)

### Ventilation

Table 12. Ventilation Requirements

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

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Table 13. Environmental Specifications

Operating Temperature	0° C to 45° C (32° F to 113° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)
Operating Humidity	5% to 90% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	3,000 m (9,842 ft)
Maximum Nonoperating Altitude	4,000 m (13,100 ft)

## Power Specifications

---

### Input Voltages

Table 14. Input Voltages

AT-x310-26FT	AC model: 100-240 VAC, 1.0A maximum, 50/60 Hz per input
AT-x310-26FP	AC model: 100-240 VAC, 3.0A maximum, 50/60 Hz per input
AT-x310-50FT	AC model: 100-240 VAC, 1.0A maximum, 50/60 Hz per input
AT-x310-50FP	AC model: 100-240 VAC, 1.0A maximum, 50/60 Hz per input

### Maximum Power Consumption

Table 15. Maximum Power Consumption

AT-x310-26FT	23.70 watts
AT-x310-26FP	460.31 watts
AT-x310-50FT	47.81 watts
AT-x310-50FP	472.17 watts

## Heat Dissipation (British Thermal Units/hour)

Table 16. Heat Dissipation

AT-x310-26FT	80.86 BTU/h
AT-x310-26FP	308.14 BTU/h
AT-x310-50FT	163.13 BTU/h
AT-x310-50FP	348.60 BTU/h

## Certifications

Table 17. Product Certifications

EMI (Emissions)	FCC Class A, EN55022 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, CISPR Class A, C-TICK, CE
EMC (Immunity)	EN55024
Electrical and Laser Safety	EN60950-1 (TUV), UL 60950-1 (cULUS), EN60825
Compliance Marks	CE, cULUS, TUV, C-Tick

## RJ-45 Twisted Pair Port Pinouts

Figure 60 illustrates the pin layout of the RJ-45 connectors and ports.

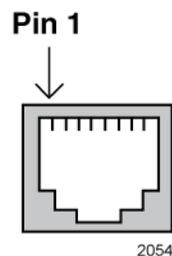


Figure 60. RJ-45 Socket Pin Layout (Front View)

Table 18 on page 114 lists the pin signals for 10 and 100 Mbps.

Table 18. Pin Signals for 10 and 100 Mbps

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

The pin signals for a port operating at 1000 Mbps are shown in Table 19.

Table 19. Pin Signals for 1000 Mbps

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

## RJ-45 Style Serial Console Port Pinouts

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The pin signals of the RJ-45 style serial Console port are listed in Table 20.

Table 20. RJ-45 Style Serial Console Port Pin Signals

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

