

# IE200 Series

## Industrial Ethernet Switches

AT-IE200-6FT

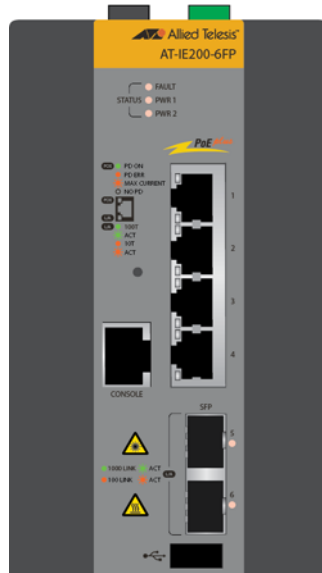
AT-IE200-6FP

AT-IE200-6GT

AT-IE200-6GP



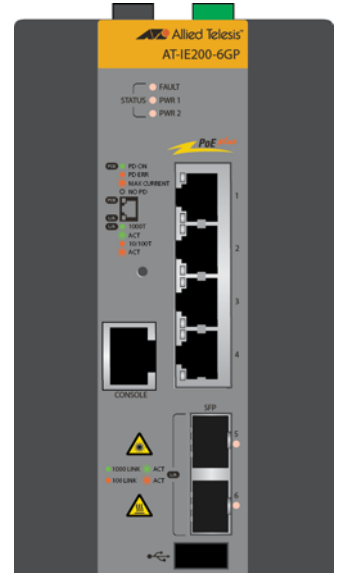
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4208



4209



4210

# Installation Guide

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# Electrical Safety and Emissions Standards

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This product meets the following standards:

<b>U.S. Federal Communications Commission</b>
<p><b>Interference Statement</b></p> <p>This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:</p> <p>(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.</p> <p>This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a controlled environment, such as a cabinet, hut or telecom closet. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:</p> <ul style="list-style-type: none"><li>- Reorient or relocate the receiving antenna.</li><li>- Increase the separation between the equipment and receiver.</li><li>- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.</li><li>- Consult the dealer or an experienced radio/TV technician for help.</li></ul> <p>The Federal Communications Commission warns that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment and any assurances of safety or performance, and could result in violation of part 15 of the FCC Rules.</p>

<b>Industry Canada</b>
<p>This Class A digital apparatus complies with Canadian ICES-003.</p> <p>Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.</p> <p>This equipment complies with radio frequency exposure limits set forth by Industry Canada for a controlled environment.</p> <p>Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par Industrie Canada pour un environnement contrôlé.</p>

<b>European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment</b>
<p>This Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.</p>

The regulatory approvals of the product are listed here:

## **RFI Emissions**

FCC Part 15B Class A  
EN55032 Class A  
EN61000-3-2  
EN61000-3-3  
VCCI-CISPR32:2016 Class A  
ICES-003:Issue 6

## **RFI Immunity**

EN55024  
EN61000-4-2  
EN61000-4-3  
EN61000-4-4  
EN61000-4-5  
EN61000-4-6  
EN61000-4-8  
EN61000-4-11

## **Electrical and Laser Safety**

UL/E/IEC60950-1  
CSA 22.2:60950-1  
2014/35/EU Low Voltage Directive

## **Shock**

EN60068-2-27

## **Free Fall**

EN60068-2-31

## **Vibration**

EN60068-2-6

## **Outdoor Enclosure Safety**

UL/IEC/EN60950-22

## **Allied Telesis approved SFP modules**

EN60825-1  
EN60825-2  
EN/IEC/UL60950-1  
FCC CDRH registered

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




Laser Safety

EN60825

## Translated Safety Statements

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**Important:** The  indicates that a translation of the safety statement is available in a PDF document titled “Translated Safety Statements” on our web site at <http://www.alliedtelesis.com/support>.



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# Preface

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This guide contains the hardware installation instructions for the IE200 Series of industrial managed switches. The preface contains the following sections:

- “Safety Symbols Used in this Document” on page 14
- “Contacting Allied Telesis” on page 15

## Safety Symbols Used in this Document

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This document uses the following conventions.

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**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.

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**Warning**

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

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**Warning**

Laser warnings inform you that an eye or skin hazard exists due to the presence of a Class 1 laser device.

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**Warning**

Warnings inform you of hot surfaces.

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## 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

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This chapter describes the hardware features of the IE200 Series of managed industrial switches. The sections in the chapter are listed here:

- ❑ “Hardware Components” on page 18
- ❑ “Features” on page 23
- ❑ “Twisted Pair Ports” on page 26
- ❑ “Power over Ethernet” on page 28
- ❑ “SFP Slots” on page 32
- ❑ “Console Port” on page 33
- ❑ “USB Port” on page 34
- ❑ “Reset Button” on page 34
- ❑ “Ground Screw” on page 35
- ❑ “PWR 1 and PWR 2 DC Power Connectors” on page 35
- ❑ “Alarm In Connector” on page 36
- ❑ “Alarm Out Connector” on page 39
- ❑ “DIN Rail Bracket” on page 40
- ❑ “Screw Holes for Wall Brackets” on page 40
- ❑ “LEDs” on page 41
- ❑ “Power Supplies” on page 47
- ❑ “Optional Drip Guard” on page 48

## Hardware Components

The switches in the IE200 Series are listed here:

- ❑ AT-IE200-6FT
- ❑ AT-IE200-6FP
- ❑ AT-IE200-6GT
- ❑ AT-IE200-6GP

The front panel of the AT-IE200-6FT Switch is shown in Figure 1.

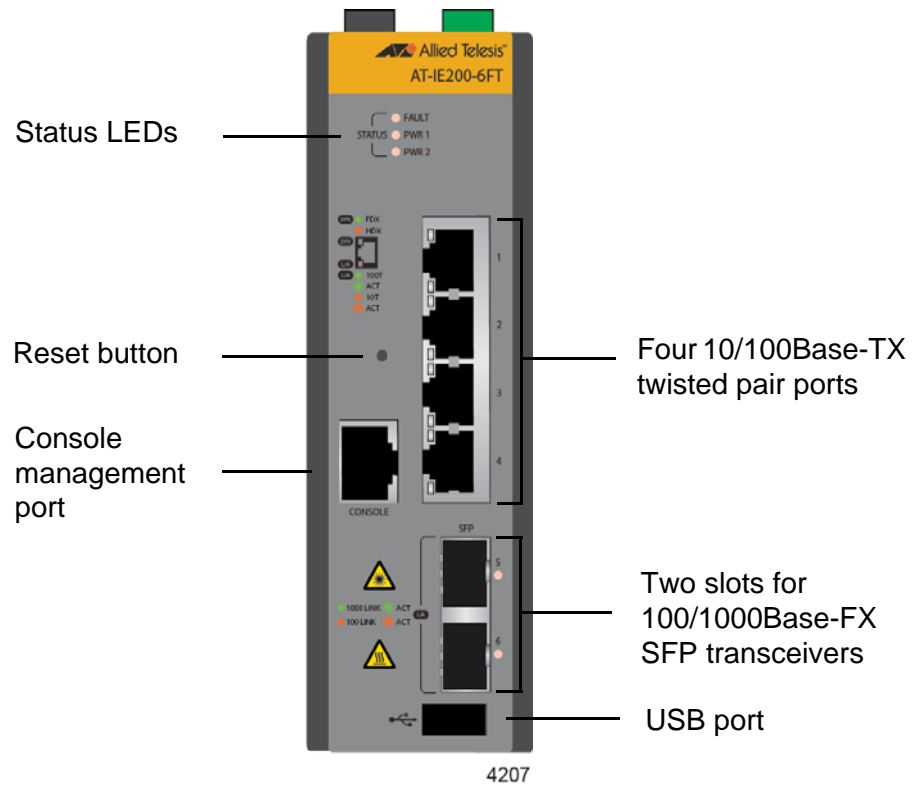


Figure 1. Front Panel of the AT-IE200-6FT Switch

The front panel of the AT-IE200-6FP Switch is shown in Figure 2.

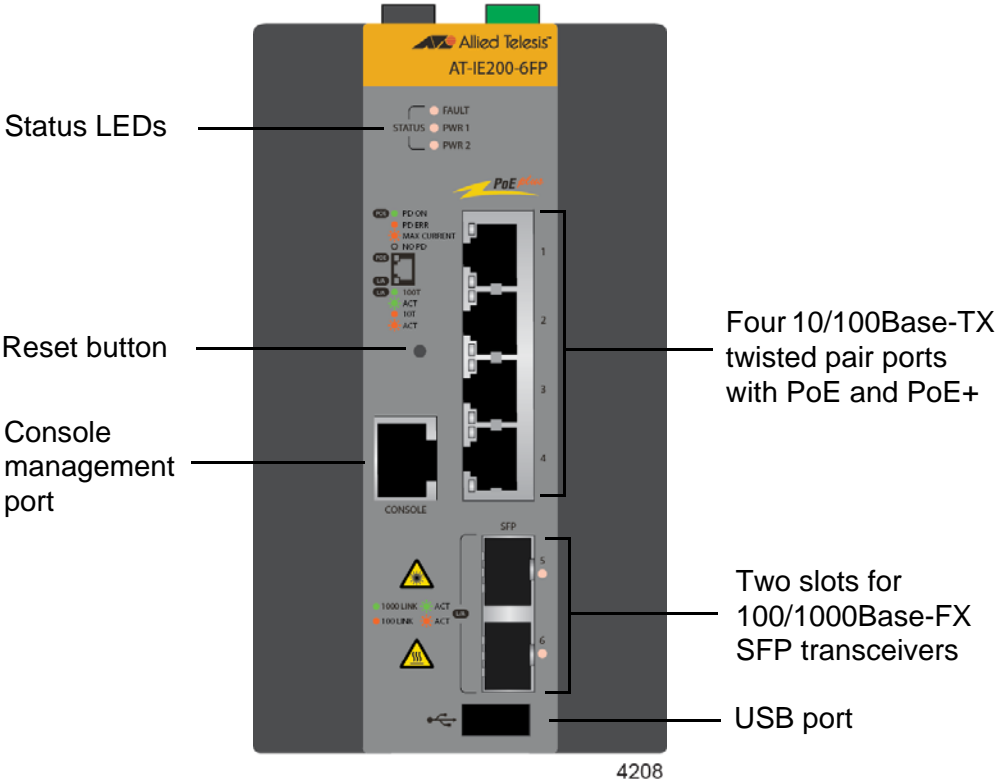


Figure 2. Front Panel of the AT-IE200-6FP Switch

The front panel of the AT-IE200-6GT Switch is shown in Figure 3.

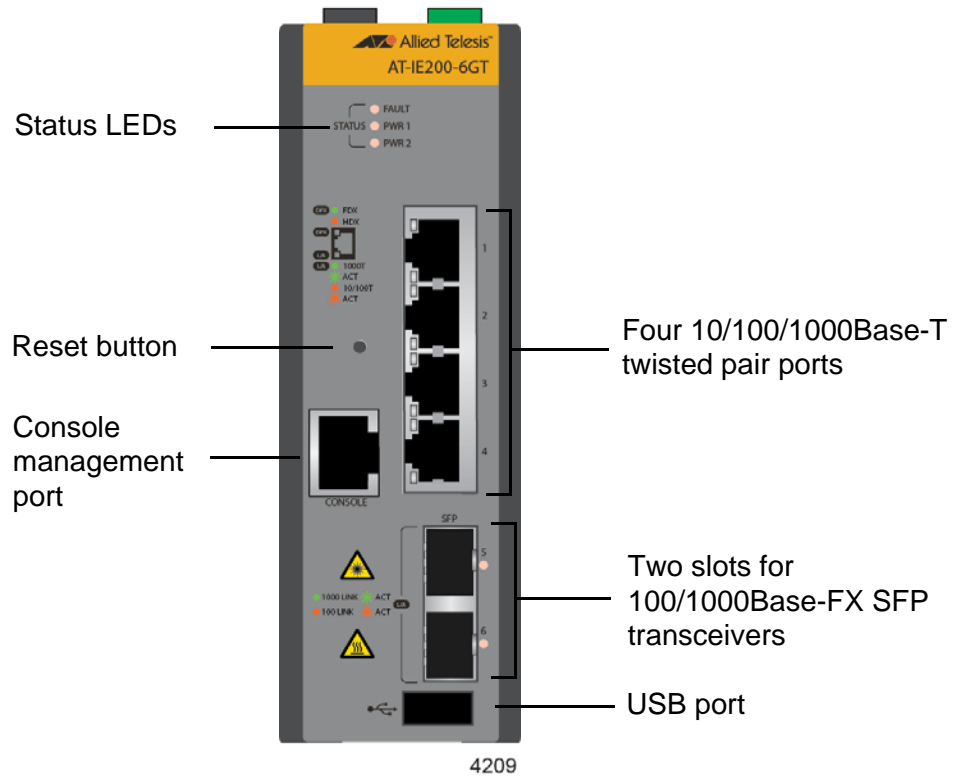


Figure 3. Front Panel of the AT-IE200-6GT Switch

The front panel of the AT-IE200-6GP Switch is shown in Figure 4.

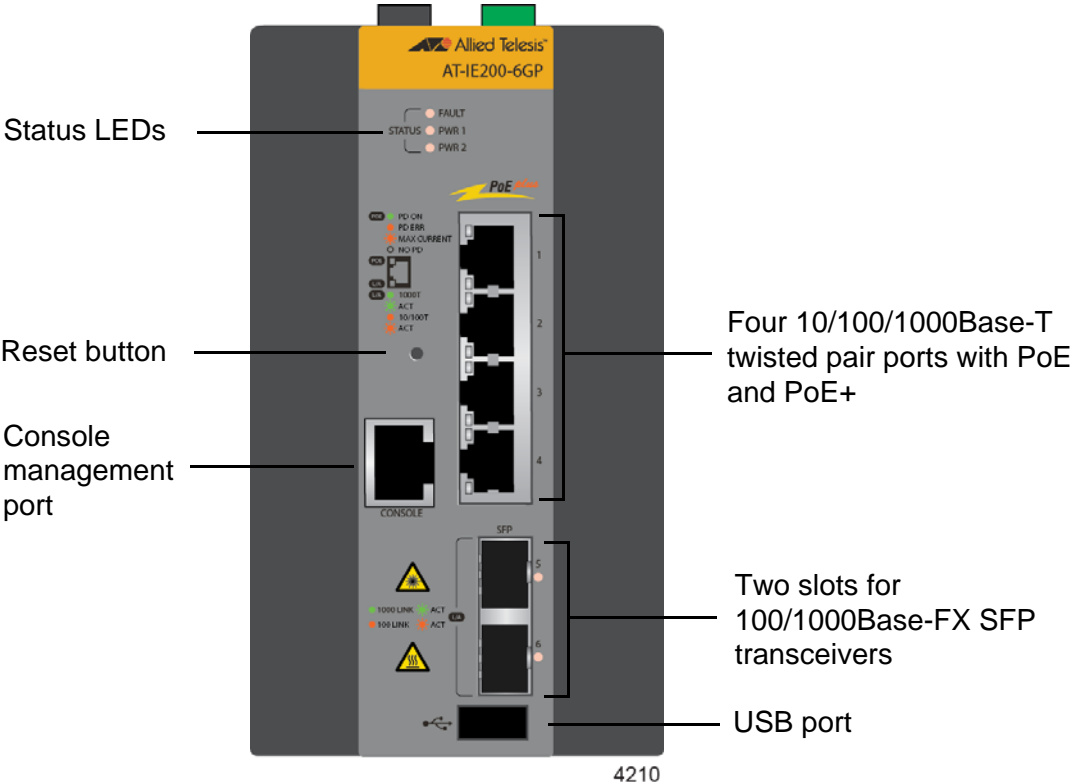


Figure 4. Front Panel of the AT-IE200-6GP Switch

Figure 5 identifies the components on the top panel.

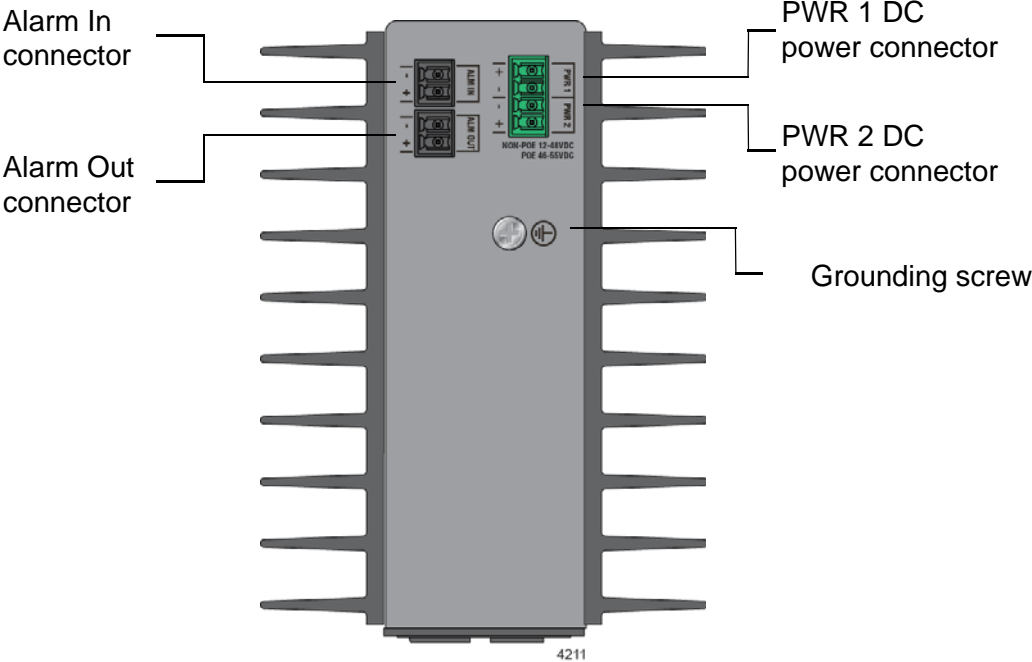


Figure 5. Top Panel

Figure 6 identifies the components on the back panel.

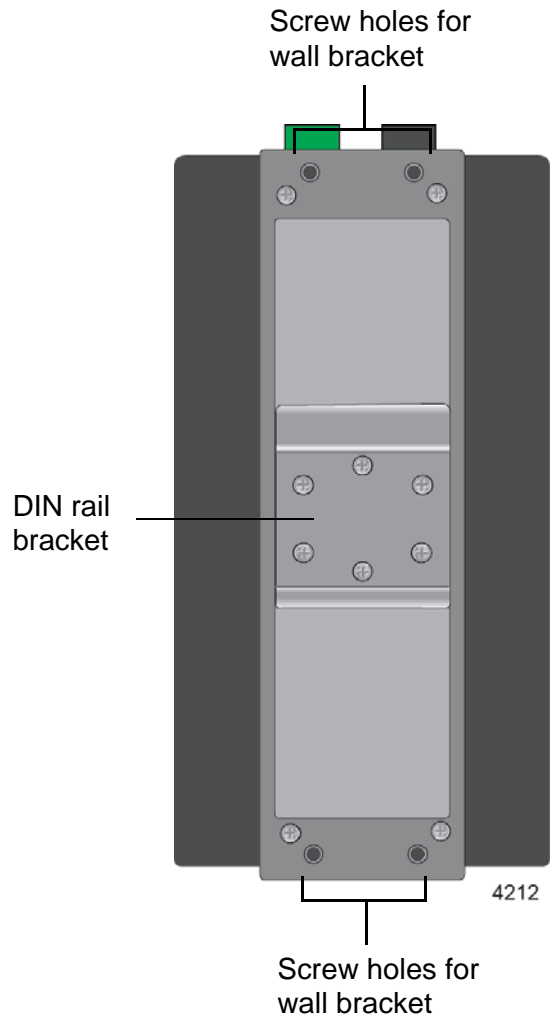


Figure 6. Back Panel Features

## Features

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Here are the basic features of the switches.

### Twisted Pair Ports

Here are the basic features of the twisted pair ports:

- 4 ports per switch
- 10Base-T and 100Base-TX compliant on the AT-IE200-6FT and AT-IE200-6FP Switches
- 10Base-T, 100Base-TX, and 1000Base-T compliant on the AT-IE200-6GT and AT-IE200-6GP Switches
- 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 802.3ab 1000Base-T
- Jumbo frames up to 9KB
- RJ-45 connectors

### Power Over Ethernet

Ports 1 to 4 on the AT-IE200-6FP and AT-IE200-6GP Switches have these Power over Ethernet features:

- Support PoE (15 watts) and PoE+ (30 watts)
- Powered device classes 0 to 4
- Maximum PoE budget of 120 watts with one or two power supplies
- Port prioritization
- Alternative A wiring

### SFP Slots

The two SFP slots support the following types of transceivers:

- 100Base-FX transceivers
- 1000Base-SX/LX transceivers
- Single-port Bi-directional (BiDi) 1000Base-LX transceivers
- 1000Base-ZX transceivers
- 1000Base-T twisted pair transceivers

SFP transceivers must be purchased separately. Refer to the product datasheet for a list of supported transceivers.

- LEDs** The switches have the following LEDs:
- Link/activity and duplex mode LEDs for the twisted pair ports on the AT-IE200-6FT and AT-IE200-6GT Switches.
  - Link/activity and PoE status LEDs for the twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches.
  - Link/activity LEDs for the SFP ports.
  - Fault and power supply status LEDs

- Alarm Connectors** The switches have two alarm connectors:
- Alarm In connector for an external sensor, such as a motion detector or door relay, to monitor the wiring closet or cabinet.
  - Alarm Out connector for an external alert device, such as a buzzer or LED, for switch alarms.

- MAC Address Tables** Here are the basic features of the MAC address tables:
- Storage capacity of 2,000 MAC address entries
  - Automatic learning and aging

- Management Software** The switches support the following management software and interfaces:
- AlliedWare Plus management software
  - Command line interface
  - Web browser interface

- Management Methods** You can manage the switches in the following ways:
- Local management through the Console port
  - Remote Telnet or secure shell management
  - Remote HTTP or HTTPS web browser management
  - SNMPv1, v2c, or v3

- Installation Options** The switches support the following installation options:
- DIN rail installation (compatible with DIN 35x7.5mm rails)
  - Concrete or wood wall

- Additional Features** Here are additional features:
- Slot for USB flash memory
  - Reset button
  - Two DC power supply connectors



- ❑ Extended environmental range
- ❑ IP30-compliant without optional drip guard
- ❑ IP31-compliant with optional drip guard
- ❑ RJ-45 style Console port for local management

## Twisted Pair Ports

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This section describes the four twisted pair ports.

**Connector Type** The twisted-pair ports have 8-pin RJ-45 connectors. The ports use four pins at 10 or 100 Mbps and all eight pins at 1000 Mbps. The pin assignments are listed in Table 25 on page 114 and Table 26 on page 114.

**Speed** The port speeds of the twisted pair ports are listed here:

- ❑ AT-IE200-6FT and AT-IE200-6FP Switches - 10 or 100Mbps
- ❑ AT-IE200-6GT and AT-IE200-6GP Switches - 10, 100, or 1000Mbps

The switches can set the speeds automatically with Auto-Negotiation, the default setting, or you can manually set the speeds with the AlliedWare Plus operating system.

**Duplex Mode** The twisted-pair ports can operate in either half- or full-duplex mode at 10 or 100 Mbps. Ports operating at 1000 Mbps can only operate in full-duplex mode. The twisted-pair ports are IEEE 802.3u Auto-Negotiation compliant. The switch can set the duplex modes automatically or you can disable Auto-Negotiation and set the duplex modes manually.

Speed and duplex mode settings can be set independently of each other on the ports. For example, the speed of a port can be configured manually while its duplex mode is established through Auto-Negotiation.

---

**Note**

Switch ports connected to 10 or 100 Mbps end nodes that do not support Auto-Negotiation should not use Auto-Negotiation to set their speed and duplex mode settings, because duplex mode mismatches might occur. You should disable Auto-Negotiation and set the speed and duplex mode settings manually with the AlliedWare Plus operating system.

---

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

## Cable Requirements

The cable requirements for the twisted pair ports are listed in Table 1.

Table 1. Twisted Pair Cables

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

## Automatic MDIX Detection

The twisted-pair ports are IEEE 802.3ab compliant, with automatic MDIX detection at 10 or 100 Mbps. (Automatic MDIX detection does not apply to 1000 Mbps.) This feature automatically configures the ports to MDI or MDI-X depending on the wiring configurations of the end nodes.

Switch ports connected to network devices that do not support automatic MDIX detection default to MDIX.

You may disable automatic MDIX detection on the individual ports and configure the MDI/MDI-X settings manually.

## Port Pinouts

Refer to Table 25 on page 114 for the pinouts of the twisted-pair ports at 10 or 100 Mbps and to Table 26 on page 114 for the port pinouts at 1000 Mbps.

## Power over Ethernet

---

Ports 1 to 4 on the AT-IE200-6FP and AT-IE200-6GP Switches support Power over Ethernet (PoE). With PoE, the switch can supply electrical power to network devices over the same twisted pair cables that carry network traffic. The feature can simplify network installation and maintenance because it allows you to use the switch as a central power source for other network devices.

Devices that receive their power over Ethernet cables are called powered devices (PD). Examples of PDs include wireless access points, IP telephones, web cams, and even other Ethernet switches. A PD connected to a port on the switch receives both network traffic and power over the same twisted-pair cable.

### PoE Versions

The AT-IE200-6FP and AT-IE200-6GP Switches support the following versions of Power over Ethernet:

- PoE (IEEE 802.3af)
- PoE+ (802.3at)

Table 2 lists the switch ports that support PoE and the maximum power levels.

Table 2. Maximum Power Levels

PoE Version	Switch Ports	Maximum Power Output at Switch Port	Maximum Power at PD
PoE	1 to 4	15.4W	12.95W
PoE+	1 to 4	30.0W	25.9W

### Ethernet Cabling for PoE devices

The cable requirements for the twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches for powered devices are given in Table 3 on page 29. The cable requirements for ports connected to non-PoE devices are given in Table 1 on page 27.

Table 3. Twisted Pair Cable for Powered Devices on the AT-IE200-6FP and AT-IE200-6GP Switches

Cable Type	10Mbps		100Mbps		1000Mbps	
	PoE	PoE+	PoE	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.	No	No	No	No	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	No	Yes	No	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

### Powered Device Classes for PoE and PoE+

The PoE and PoE+ standards define five powered device classes. The classes are defined by the power requirements of the powered devices. The classes are shown in Table 4. The AT-IE200-6FP and AT-IE200-6GP Switches support all five classes.

Table 4. PoE and PoE+ Powered Device Classes

Class	Usage	Maximum Power Output at the Switch Port	PD Power Range
0	Default	15.4W	.044W to 12.95W
1	Optional	4.0W	0.44W to 3.84W
2	Optional	7.0W	3.84W to 6.49W

Table 4. PoE and PoE+ Powered Device Classes (Continued)

Class	Usage	Maximum Power Output at the Switch Port	PD Power Range
3	Optional	15.4W	6.49W to 12.95W
4	Optional	30.0W	12.95W to 25.9W

## PoE Wiring

The IEEE 802.3af and 802.3at standards define two methods for delivering power to powered devices over the four pairs of strands in standard Ethernet twisted-pair cable. The methods are called Alternatives A and B. In Alternative A, power is supplied to powered devices on strands 1, 2, 3, and 6, which are the same strands that carry the 10/100Base-TX network traffic. In Alternative B, power is delivered on strands 4, 5, 7, and 8. These are the unused strands.

---

### Note

1000BASE-T cables carry the network traffic on all eight strands of the Ethernet cable.

---

The twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches support Alternative A. They transmit power on strands 1, 2, 3, and 6. Consequently, they can support PDs that also support Alternative A.

PDs that comply with the IEEE 802.3af and 802.3at standards are required to support both power delivery methods. 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 B will not work with the switches.

## Power Budget

The power budget is the total amount of DC power the AT-IE200-6FP or AT-IE200-6GP Switch can supply to the powered devices on its ports. These switches have a maximum power budget of 120W.

The number of powered devices the switch can support at one time will depend on the switch's power budget and the power requirements of the powered devices. As 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. 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 of 120W. If the total exceeds the available power budget, you should consider reducing the number of PoE devices so that all 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 allows 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.

## SFP Slots

---

The two SFP slots support Ethernet 100/1000Base fiber optic, MSA-compliant SFP transceivers. You can use transceivers to connect switches to other network devices over large distances, build a high-speed backbone network between network devices, or connect high-speed devices, such as servers, to your network.

Refer to the product datasheet for a list of supported Ethernet transceivers.

To protect SFP transceivers from heat-related damage, you should select transceivers whose maximum operating temperatures exceed the anticipated maximum ambient temperature at the switch installation site. Table 5 provides recommendations for SFP maximum operating temperatures for several ambient site temperatures.

Table 5. Maximum Installation Site Temperatures Versus SFP Temperature Ratings

<b>Maximum Ambient Installation Site Temperature</b>	<b>Recommended Maximum SFP Operating Temperature</b>
75° C (167° F)	85° C (185° F)
65° C (149° F)	75° C (167° F)
55° C (131° F)	65° C (148° F)
<=40° C (<=104° F)	50° C (122° F)



## Console Port

---

The Console port is a serial RS-232 port. You use it to access the AlliedWare Plus management software and configure the features. Management sessions conducted through the Console port are called local management sessions because you have to be at the location of the switch. Local management sessions do not interfere with the network operations of the switch and are not performed over the network. Consequently, the switch does not have to have an IP address for this type of management.

Local management sessions require the following items:

- Terminal or a personal computer with a terminal emulation program
- Management cable

The switch does come with a management cable.

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, with the management cable.

The Console port has the following settings:

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

---

**Note**

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

---

## USB Port

---

The USB port supports a flash drive for the following management functions:

- ❑ Use Allied Telesis Management Framework to provide a centralized network backup location.
- ❑ Store backup copies of configuration files.
- ❑ Transfer configuration files between switches.
- ❑ Store or transfer log files.
- ❑ Store or transfer debug files (for example, the output of the SHOW TECH-SUPPORT command).
- ❑ Boot the AlliedWare Plus management software and master configuration file from flash drive.

The port is compatible with USB v1.0 and v2.0 flash drives. Operating the switch with a flash drive is optional.

## Reset Button

---

The Reset button resets the switch. The switch reinitializes its AlliedWare Plus operating system. You might reset the switch if it is experiencing a problem. The reset button is recessed in the chassis. To press it, use a straightened paperclip or similar object.



---

### Caution

The switch does not forward network traffic for approximately one minute while it initializes its management operating system. Some network traffic may be lost.

---

---

### Note

Unsaved changes to the configuration settings of the switch are discarded when you reset the device.

---

## Ground Screw

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The ground screw is used to connect the chassis to the earth ground at the installation site. The instructions for connecting the post are provided in “Connecting the Grounding Wire” on page 80.

---

**Note**

The switch must be connected to an earth ground. Do not operate the device without an earth ground.

---

## PWR 1 and PWR 2 DC Power Connectors

---

The PWR 1 and PWR 2 connectors are for DC power supplies. You can power the unit with one power supply or two power supplies for power redundancy. Power redundancy protects the device from power loss in the event a DC power unit fails or loses power.

The switches support the following types of power sources:

- AC/DC rectifiers
- Un-interruptible power supplies

The power supply requirements are described in “Power Supplies” on page 47.

Allied Telesis does not sell power supplies for this product. They must be purchased from another equipment manufacturer.

---

**Note**

The AT-iMG008 Power Supply and Backup Unit from Allied Telesis is not compatible with the IE200 Series product.

---

## Alarm In Connector

---

The top panel of the switch has a 2-pin Alarm In (ALM IN) connector for an external sensor. The switch can use an external sensor to monitor the wiring room or cabinet for unauthorized access or changes in the room's environment, such as to temperature or humidity. Here are examples of external sensors:

- Door
- Temperature
- Motion detector
- Light
- Humidity

The two pins of the connector, referred to as contact alarm 1 in the operating system, act as a electrical circuit. The switch places a 3.3VDC voltage on the circuit and monitors its status, which can be either closed or open. A closed circuit is on, meaning that voltage flows through the circuit, while an open circuit is off, preventing the flow of voltage through the circuit.

The switch performs one or more of the following functions when the state of the external sensor changes to open or closed.

- Transmits an SNMP trap.
- Flashes the Fault LED.
- Activates the device on the Alarm Out (ALM OUT) connector.

You use the ALARM FACILITY INPUT-ALARM command in the AlliedWare Plus operating system to specify the state of the external sensor that signals an alarm. Alarms remain active until their causes are resolved. For instructions on the command, refer to the *Software Reference for IE200 Series Switches*.

Here are the requirements for the external sensor:

- It must be a dry contact.
- It must not place any current on the circuit.
- It must not use the voltage or current for its own operations.
- It must be able to handle a minimum of 3.3VDC and 320uA.

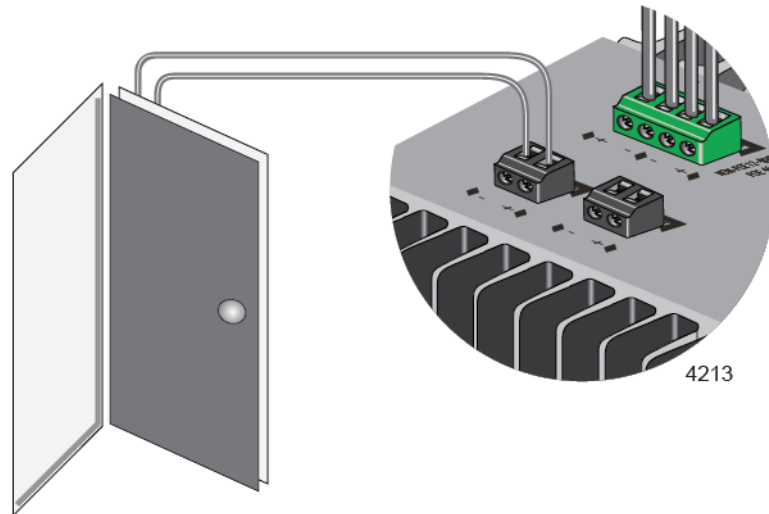


### Caution

The external sensor might damage the Alarm In connector if it places a voltage on the circuit.

---

The example in Figure 7 shows the Alarm In connector attached to a door sensor. The sensor is installed such that it is closed (on) when the door is closed and open (off) when the door is open.



Door Sensor:  
 Door closed - circuit closed  
 Door open - circuit open

Alarm In connector:  
 Alarm triggered when circuit  
 changes to open.

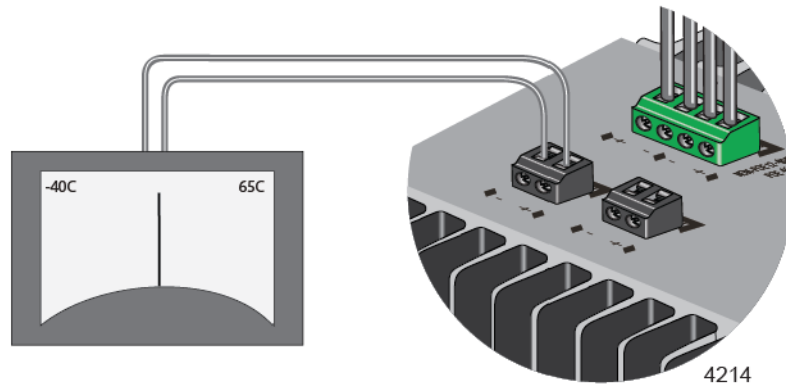
Figure 7. Example 1 of the Alarm In (ALM IN) Connector

To have the switch generate an alarm when someone opens the door, you enter the following ALARM FACILITY INPUT-ALARM command. The command configures the switch to generate an alarm when the state of the sensor changes from closed to open.

```
awplus(config)#alarm facility input-alarm 1 alarm-  
position open
```

The alarm remains active until the door is closed again.

In the example in Figure 8 on page 38, the Alarm In connector is connected to a temperature sensor. The sensor is configured to be open (off) at temperatures of 30° C or below and closed (on) at temperatures above 30° C.



Temperature Sensor:  
Temperature <30C - circuit open  
Temperature >30C - circuit closed

Alarm In connector:  
Alarm triggered when circuit  
changes to closed.

Figure 8. Example 2 of the Alarm In (ALM IN) Connector

To have the switch trigger an alarm when the temperature exceeds 30° C, you enter the following ALARM FACILITY INPUT-ALARM command:

```
awplus(config)#alarm facility input-alarm 1 alarm-  
position close
```

The command configures the switch to signal the alarm when the sensor changes to closed above 30° C. When the temperature falls below 30° C, and the temperature sensor changes from closed to open, the switch automatically cancels the alarm.

External sensors are not available from Allied Telesis.

## Alarm Out Connector

---

The 2-pin Alarm Out connector on the top panel of the switch is for an external alert device. The switch uses the device to alert you to alarm conditions, such as power supply failures or ports without links. Here are two examples of alert devices for the Alarm Out connector:

- ❑ LED
- ❑ Buzzer

The switch does not supply power on the Alarm Out circuit. Instead, the circuit is an on or off dry contact relay. When an alarm occurs, the switch changes the circuit from closed (on) to open (off). The circuit remains open until the alarm is resolved, at which point the switch automatically closes it again. The processes to resolving alarms can vary.

The external alert device has to provide the necessary power for the circuit and be able to monitor the circuit for when it is closed or open. Here are the power specifications for the circuit:

- ❑ 48VDC maximum
- ❑ 10mA maximum



### Caution

The external alert device must not exceed the above specifications. The Alarm Out connector can be damaged by devices that exceed the specifications.

---

You use the ALARM FACILITY RELAY command to specify the alarm condition that opens the Alarm Out circuit. Examples of alarm conditions are power supply failures, ports without links, and loop detections. For instructions on the command, refer to the *Software Reference for IE200 Series Switches*.

An example of the feature is illustrated in Figure 9 on page 40. The Alarm Out connector is attached to a blue LED alert device. The alert device is configured such that its LED is off when the circuit is closed and on when the circuit is open.

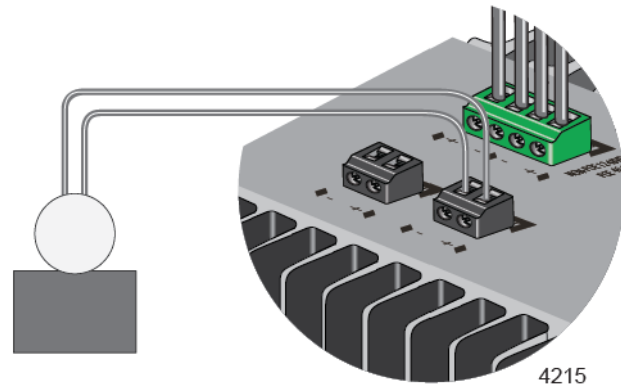
Now assume you want the switch to open the circuit and activate the LED on the alert device if a port on the switch does not have a link to a network device. Here is the ALARM FACILITY RELAY command:

```
awpl us(config)#alarm facility link-down port1.0.1-  
port1.0.6 relay
```

If the switch detects that a port does not have a link, it changes the circuit

from closed to open. The alert device, detecting the change to the circuit, turns on the LED. When the switch detects that all its ports have links again, it closes the circuit, which turns off the LED.

Alarm devices are not available from Allied Telesis.



Blue LED  
Circuit closed - LED off  
Circuit open - LED on

Figure 9. Example of the Alarm Out Port

## DIN Rail Bracket

---

The switch comes with one DIN rail bracket pre-installed on the back panel. The bracket is compatible with DIN 35x7.5mm rails.

## Screw Holes for Wall Brackets

---

The back panel has four holes for securing the two wall brackets included in the accessory kit.



## LEDs

---

The following sections describe the LEDs on the switches:

- “Status LEDs” on page 41
- “Twisted Pair Port LEDs” on page 42
- “SFP Slot LEDs” on page 46

### Status LEDs

The status LEDs are defined in Table 6.

Table 6. Status LEDs

LED	State	Description
Fault	Off	The switch is operating normally or powered off.
	Solid Amber	The switch is booting up.
	Five flashes followed by a pause	The switch is experiencing an alarm condition. Use the SHOW FACILITY-ALARM STATUS command to view active alarms. The ALARM FACILITY command in the Global Configuration mode is the command for programming the Fault LED to flash in response to an alarm condition. The following example of the command configures the switch to flash the Fault LED if port 1 does not have a link to a network device:  alarm facility link-down port1.0.1 led  For more information, refer to the <i>Software Reference for IE200 Series Switches</i> or <i>Command Reference for IE200 Series Switches</i> .
	Six flashes in two seconds	The switch is overheating and might shut down.
PWR1	Off	The switch is not receiving power on the PWR 1 connector or the input power from the DC power supply is outside the normal operating range of the unit.

Table 6. Status LEDs (Continued)

LED	State	Description
	Solid Green	The switch is receiving power on the PWR 1 connector and is operating normally.
PWR2	Off	The switch is not receiving power on the PWR 2 connector or the input power from the DC power supply is outside the normal operating range of the unit.
	Solid Green	The switch is receiving power on the PWR 2 connector and is operating normally.

### Twisted Pair Port LEDs

The twisted pair ports on the AT-IE200-6FT and AT-IE200-6GT Switches have two LEDs each. The LEDs are identified in Figure 10.

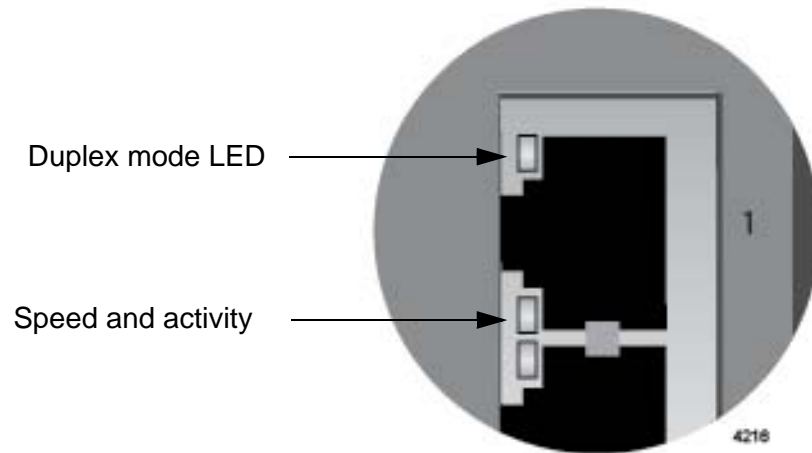


Figure 10. Twisted Pair Port LEDs on the AT-IE200-6FT and AT-IE200-6GT Switches

The states of the LEDs on the twisted pair ports on the AT-IE200-6FT Switch are defined in Table 7.

Table 7. Twisted Pair Port LEDs on the AT-IE200-6FT Switch

LED	State	Description
Duplex Mode	Solid Green	The port is operating in full duplex mode.
	Solid Amber	The port is operating in half duplex mode.
	Off	The port has not established a link with a network device.

Table 7. Twisted Pair Port LEDs on the AT-IE200-6FT Switch

LED	State	Description
L/A	Solid Green	The port has established a 100 Mbps link to a network device.
	Flashing Green	The port is transmitting or receiving data at 100 Mbps.
	Solid Amber	The port has established a 10 Mbps link to a network device.
	Flashing Amber	The port is transmitting or receiving data at 10 Mbps.
	Off	The port has not established a link with a network device.

The states of the LEDs on the twisted pair ports on the AT-IE200-6GT Switch are defined in Table 8.

Table 8. Twisted Pair Port LEDs on the AT-IE200-6GT Switch

LED	State	Description
Duplex Mode	Solid Green	The port is operating in full duplex mode.
	Solid Amber	The port is operating in half duplex mode.
	Off	The port has not established a link with a network device.
L/A	Solid Green	The port has established a 1000 Mbps link to a network device.
	Flashing Green	The port is transmitting or receiving data at 1000 Mbps.
	Solid Amber	The port has established a 10 or 100 Mbps link to a network device.
	Flashing Amber	The port is transmitting or receiving data at 10 or 100 Mbps.
	Off	The port has not established a link with a network device.

The twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches have two LEDs each. The LEDs are identified in Figure 11 on page 44.

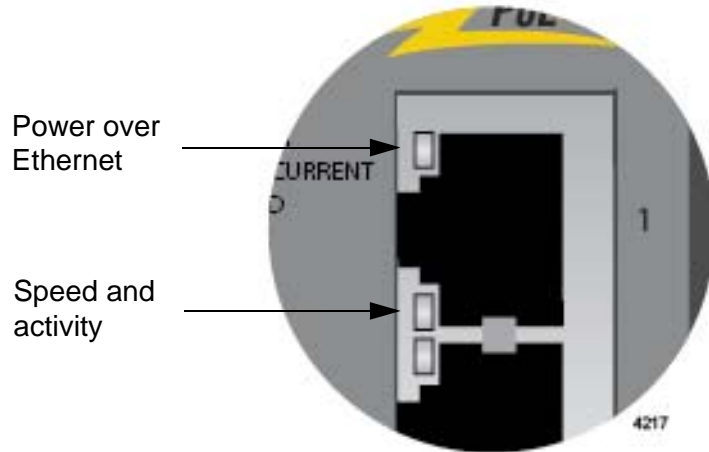


Figure 11. Twisted Pair Ports on the AT-IE200-6FP and AT-IE200-6GP Switches

The states of the LEDs on the twisted pair ports on the AT-IE200-6FP Switch are defined in Table 10.

Table 9. Twisted Pair Port LEDs on the AT-IE200-6FP Switch

LED	State	Description
PoE	Solid Green	The port is delivering power to a powered device.
	Solid Amber	The port is connected to a powered device but the switch has shut down PoE on the port because of a fault condition.
	Flashing Amber	The port is connected to a powered device but is not delivering power to it because the switch does not have sufficient free power.
	Off	This LED state can result from the following conditions: <ul style="list-style-type: none"> <li>- The port is connected to a non-PoE device.</li> <li>- The PD is powered off.</li> <li>- The port is disabled in the management software.</li> <li>- PoE is disabled on the port.</li> </ul>

Table 9. Twisted Pair Port LEDs on the AT-IE200-6FP Switch

LED	State	Description
L/A	Solid Green	The port has established a 100 Mbps link to a network device.
	Flashing Green	The port is transmitting or receiving data at 100 Mbps.
	Solid Amber	The port has established a 10 Mbps link to a network device.
	Flashing Amber	The port is transmitting or receiving data at 10 Mbps.
	Off	The port has not established a link with another network device.

The states of the LEDs on the twisted pair ports on the AT-IE200-6GP Switch are defined in Table 10.

Table 10. Twisted Pair Port LEDs on the AT-IE200-6GP Switch

LED	State	Description
PoE	Solid Green	The port is delivering power to a powered device.
	Solid Amber	The port is connected to a powered device but the switch has shut down PoE on the port because of a fault condition.
	Flashing Amber	The port is connected to a powered device but is not delivering power to it because the switch does not have sufficient free power.
	Off	This LED state can result from the following conditions: <ul style="list-style-type: none"> <li>- The port is connected to a non-PoE device.</li> <li>- The PD is powered off.</li> <li>- The port is disabled in the management software.</li> <li>- PoE is disabled on the port.</li> </ul>

Table 10. Twisted Pair Port LEDs on the AT-IE200-6GP Switch

LED	State	Description
L/A	Solid Green	The port has established a 1000 Mbps link to a network device.
	Flashing Green	The port is transmitting or receiving data at 1000 Mbps.
	Solid Amber	The port has established a 10 or 100 Mbps link to a network device.
	Flashing Amber	The port is transmitting or receiving data at 10 or 100 Mbps.
	Off	The port has not established a link with another network device.

**SFP Slot LEDs**

Each SFP slot has one LED. The states of the LEDs are defined in Table 11.

Table 11. SFP Slot LED

State	Description
Solid Green	The port has established a 1000 Mbps link to a network device.
Flashing Green	The port is transmitting or receiving network packet traffic at 1000 Mbps.
Solid Amber	The port has established a 100 Mbps link to a network device.
Flashing Amber	The port is transmitting or receiving network packet traffic at 100 Mbps.
Off	The port has not established a link to a network device.

## Power Supplies

---

Allied Telesis does not sell power supplies for these products. Power supplies can be purchased from power supply manufacturers.

The AT-IE200-6FT and AT-IE200-6GT Switches have the following power supply requirements:

- ❑ DC voltage between 12 and 48VDC.
- ❑ DC voltage must not exceed 50VDC.
- ❑ The DC power supply must be capable of supplying 32 watts continuously over the operating temperature range of -40° C to 75° C (-40° F to 167° F).

The AT-IE200-6FT and AT-IE200-6GT Switches can be powered by one or two power supplies. A single power supply that meets the above requirements can fully power the switch. Adding a second power supply adds power redundancy.

The AT-IE200-6FP and AT-IE200-6GP Switches have these power supply requirements:

- ❑ DC voltage between 24 and 48VDC. A DC voltage of 48V provides the maximum power budget of 120W for powered devices.
- ❑ DC voltage must not exceed 50VDC.
- ❑ The DC power supply must be capable of supplying 155 watts continuously over the operating temperature range of -40° C to 75° C (-40° F to 167° F).

The AT-IE200-6FP and AT-IE200-6GP Switches can be powered by one or two power supplies. A single power supply that meets the above requirements can fully power the switch and provide the maximum 120W of power for powered devices. Adding a second power supply adds system and PoE power redundancy.

---

### Note

A 24VDC power supply for the AT-IE200-6FP and AT-IE200-6GP Switches must have an absolute maximum tolerance of -3% when adjusted to 23.25VDC at the input to the switch. A 48VDC power supply must have an absolute maximum tolerance of +2.5% when adjusted to 49.25VDC at the input to the switch.

---

## Optional Drip Guard

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Allied Telesis offers an optional drip guard for the switch. Refer to Figure 12. The switch with the drip guard has an ingress protection (IP) code of IP31.

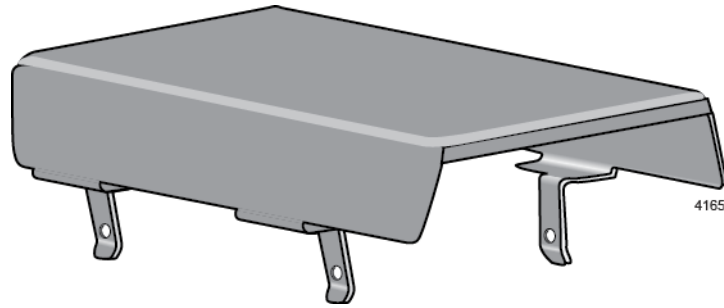


Figure 12. Optional Drip Guard

---

**Note**

Be sure to specify the IE200 Series switches when ordering the drip guard. The IE300 Series switches also have a drip guard, but that guard does not fit on IE200 Series switches.

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## Chapter 2

# Beginning the Installation

---

The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 50
- “Safety Precautions When Working with Electricity” on page 54
- “Reviewing Site Requirements” on page 55
- “Verifying the Package Contents” on page 57


## Reviewing Safety Precautions

---

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

---

### 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


Laser Radiation.  
Class 1M Laser product.

---



---

### Warning

Do not stare into the laser beam.  L2

---



---

### Warning


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

---



---

### Warning


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

---



---

### Warning

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

---

**Warning**

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

---

**Warning**

This equipment must be earthed. The ground screw on the unit must be connected to a properly earthed bonding point.

---

**Note**

Ground resistance from the building primary bonding point to earth should be less than 5 ohms.

---

**Caution**

Air flow around the unit and through the cooling fins must not be restricted. ⚡ E20

---

**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

---

**Warning**

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

---



**Warning**

To reduce the risk of electric shock, do not route network cables from PoE ports outside the building that houses this device. ⚡ E40

---



**Caution**

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

---



**Warning**

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

---



**Caution**

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

---



**Warning**

This equipment shall be installed in a Restricted Access location. ⚡ E45

---



**Warning**

An operational unit can be hot. Exercise caution when handling with unprotected hands.

---



**Warning**

Per NEC section 800.90 all exposed cables, service wires, or drops entering a building must have primary over-voltage protection if they are classified as exposed plants.

---

---

**Note**

The equipment meets EN61000-4-5 Class 3 on the DC inputs and Ethernet ports.

---



**Warning**

Allied Telesis does not warrant against lightning or power surges causing damage the device. Such damage will be the responsibility of the equipment owner.

---

## Safety Precautions When Working with Electricity

---

Please review the following additional safety guidelines before beginning the installation procedure.

- Disconnect all power by turning off the circuit breakers before installing or removing the device or when working with the power supplies.
- Do not work alone if potential hazards exist.
- Never assume that the power is disconnected from a circuit; always check the circuit.
- Inspect the work area carefully for possible hazards, such as moist floors, ungrounded power extension cables, frayed power cord, or missing safety grounds.

If an electrical accident occurs, proceed as follows:

- Use caution; do not become a victim yourself.
- Turn off power to the system.
- If possible, send another person to get medical aid. Otherwise, access the condition of the victim and then call for help.
- Determine if the person needs rescue breathing or external cardiac compressions and take appropriate action.

## Reviewing Site Requirements

---

Please observe the following requirements and guidelines when choosing a site for the switch:

- ❑ You can install the switch on a concrete wall, wooden wall, or DIN 35x7.5mm rail.
- ❑ You should not install the switch on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.
- ❑ You should not install the switch only on sheetrock or similar material. Sheetrock is not strong enough to safely support the device.
- ❑ The DC power source should be located near the device and be easily accessible.
- ❑ The site should allow for easy access to the ports on the front of the device, so that you can easily connect and disconnect cables, and view the port LEDs.
- ❑ The site should allow for adequate air flow around and through the cooling fins on the sides of the switch.
- ❑ The site should not expose the device 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.
- ❑ If you are installing the device in an enclosure, verify that there is adequate airflow so that unit does not overheat.
- ❑ Do not place objects on top of the switch.
- ❑ The twisted pair cabling should not be exposed to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, and fluorescent lights.
- ❑ The site should allow for the following minimum open spaces around the switch:
  - Four inches under the switch.
  - Eight inches above the switch.
  - Four inches in front of the switch.
  - One inch on the left and right sides of the switch.
- ❑ Before installing the DC power supply, be sure to review the manufacturer's installation guide for rules and restrictions on site requirements, and to follow all guidelines and safety warnings.
- ❑ When installing the switch in an indoor or outdoor metal enclosure, be sure to review the manufacturer's installation guide for rules and

restrictions on site requirements, and to follow all guidelines and safety warnings.

- ❑ The switch and DC power source should be installed close to each other so that the DC power cables are kept as short as possible to minimize voltage loss.
- ❑ When installing the switch in an indoor or outdoor metal enclosure, select an enclosure that is large enough for both the switch and DC power supply so that the DC power cables are kept short.
- ❑ The switch and power supply should be properly connected to a protective earth ground.
- ❑ The switch and power supply should be individually grounded to the grounding conductor. Do not daisy-chain the ground wires.
- ❑ When installing the switch in an indoor or outdoor metal enclosure, be sure to properly ground the enclosure to a protective earth ground following local electrical codes and the instructions in the manufacturer's installation guide.
- ❑ Powered devices connected to the LAN ports on the switch should be grounded to the same grounding conductor at the service entrance as the switch.
- ❑ LAN ports should have additional lightning protections as specified in 803.3at Section 33.4.1.1.2, Environment B Requirements, when connected to powered devices that are not grounded to the same grounding conductor at the service entrance as the switch.
- ❑ Electromagnetic interference might occur between switches and other devices when multiple switches are powered by a single DC power supply. This can be addressed by installing clamp-on ferrite beads on the DC power cables, between the DC power supply and switches.
- ❑ Recommendations for ground resistivity are given in Table 12.

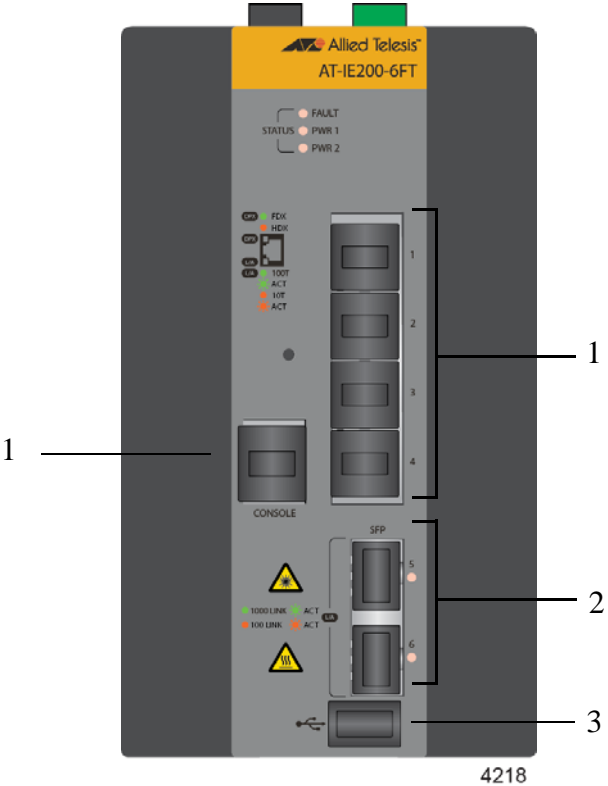
Table 12. Ground Resistivity Recommendations

Level	Recommendation
Best Practice	<5 ohms
Acceptable	5 to 15 ohms
Marginal	15 to 25 ohms
Non-compliant	>25 ohms



# Verifying the Package Contents

Figure 13 identifies the pre-installed components on the front panel of the switch.





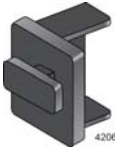
- 1  Five dust covers on the twisted pair ports and Console port
- 2  Two dust covers on the SFP slots
- 3  One dust cover on the USB port

Figure 13. Pre-installed Components on the Front Panel

Figure 14 identifies the pre-installed components on the top panel.

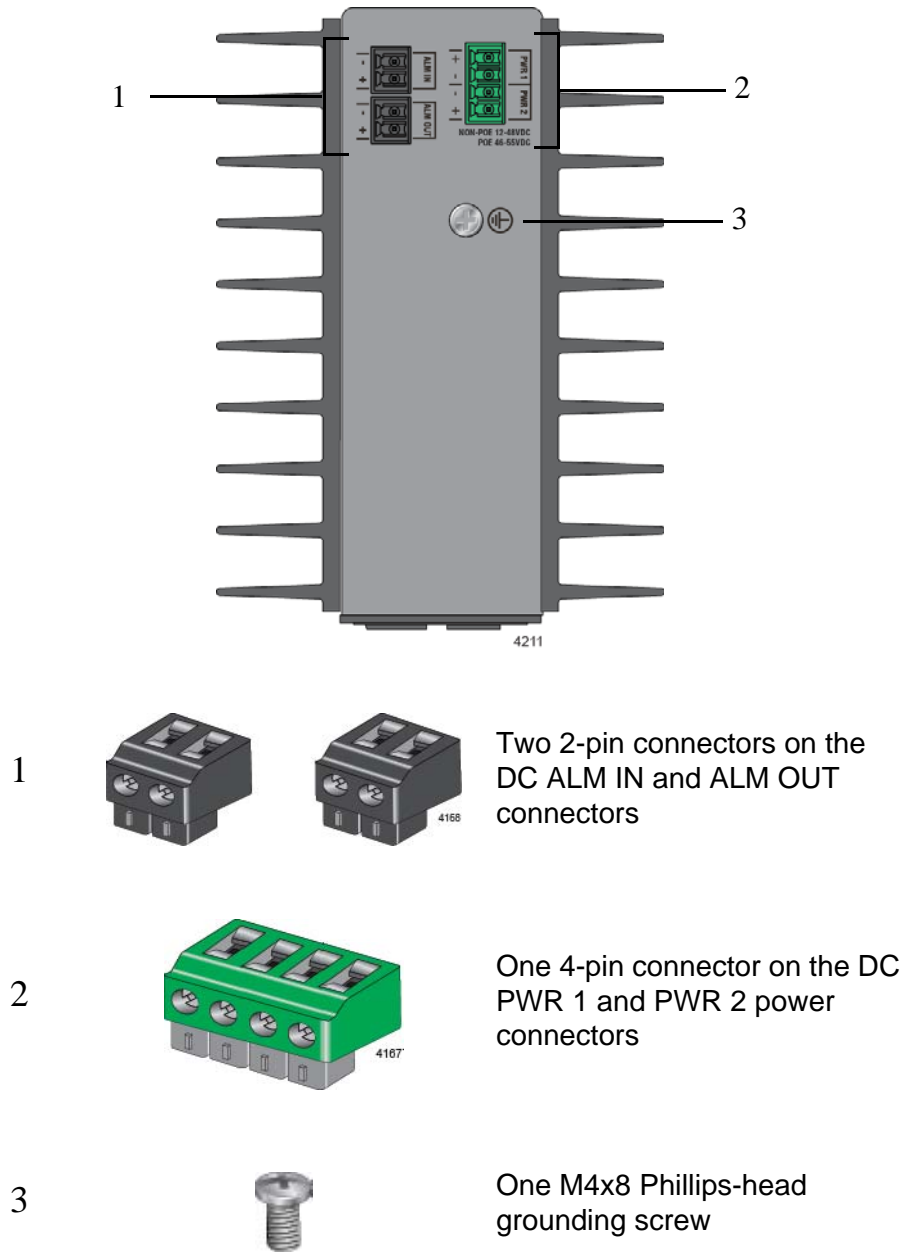


Figure 14. Pre-installed Components on the Top Panel

Figure 15 identifies the pre-installed component on the back panel.

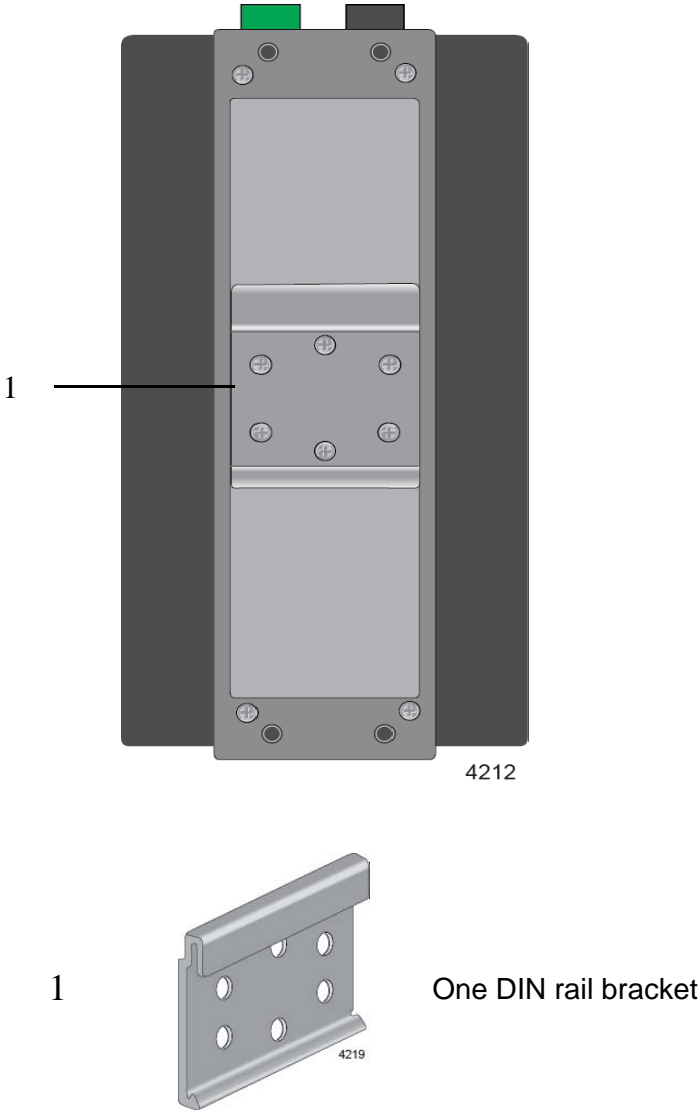


Figure 15. Pre-installed Component on the Back Panel

Figure 16 lists the items in the accessory kit included with the switch.

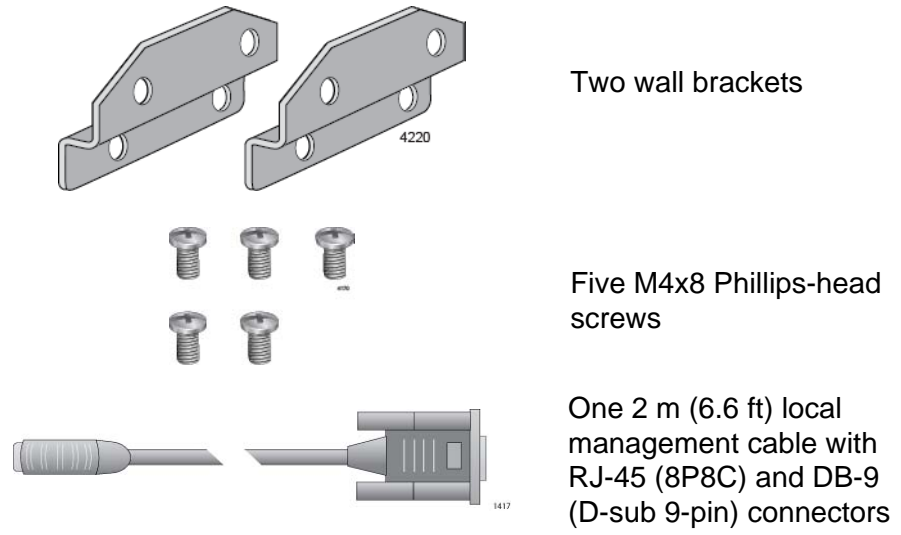


Figure 16. Components in the Accessory Kit

## Chapter 3

# Installing the Switch

---

The procedures in this chapter are listed here:

- “Installing the Switch on a DIN Rail” on page 62
- “Installing the Switch on a Wood Wall” on page 65
- “Installing the Switch on a Concrete Wall” on page 67

## Installing the Switch on a DIN Rail

---

The switch comes with a DIN rail bracket pre-installed on the back panel. The bracket is compatible with DIN 35x7.5mm rails. Figure 17 shows the proper orientation of the switch on a DIN rail. Do not install the switch horizontally or upside-down.

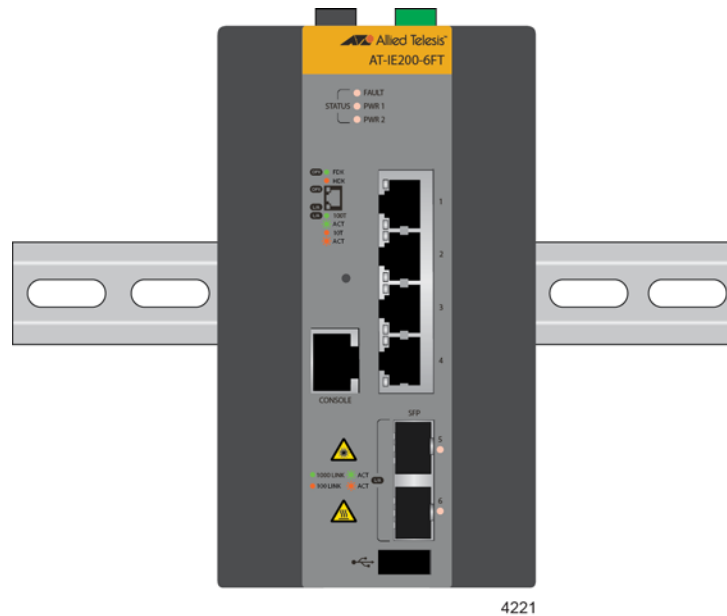


Figure 17. Orientation of the Switch on a DIN Rail

To install the switch on a DIN rail, perform the following procedure:

1. Slide the slot on the top of the DIN rail bracket onto the top edge of the DIN rail. Refer to Figure 18 on page 63.

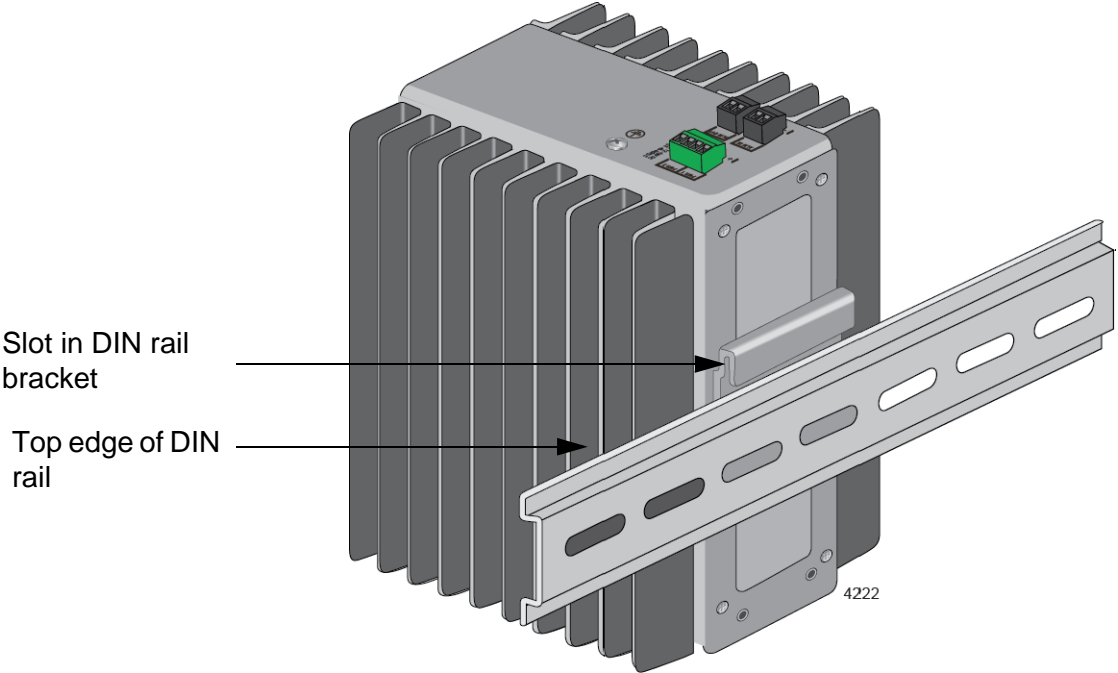


Figure 18. Installing the Switch on a DIN Rail - 1

- 2. Press on the bottom edge of the front faceplate of the switch until the bottom edge of the DIN rail snaps into the bottom slot of the bracket. Refer to Figure 19.

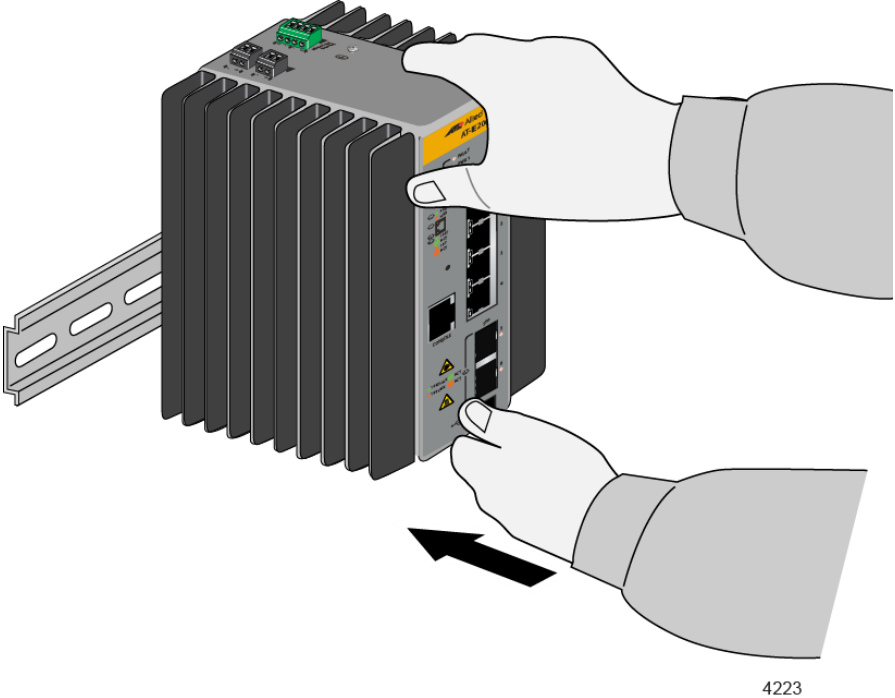


Figure 19. Installing the Switch on a DIN Rail - 2

3. Visually inspect the bracket to verify that the DIN rail is now fitted into the top and bottom slots. Refer to Figure 20.

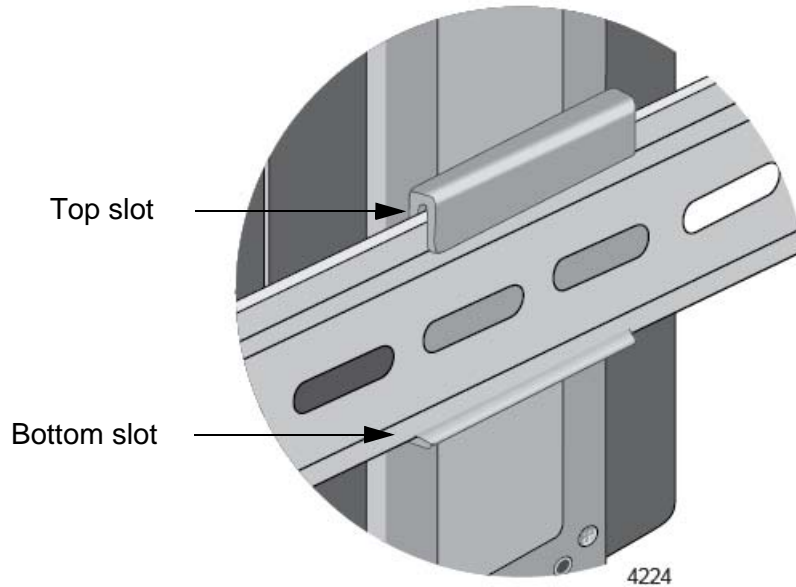


Figure 20. Verifying the DIN Rail Installation

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**Note**

Allied Telesis recommends installing DIN rail end clamps to the sides of the switch to prevent damage or network traffic loss from vibration or shock. End clamps are not available from Allied Telesis.

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4. Go to Chapter 4, “Cabling the Ports” on page 71.



## Installing the Switch on a Wood Wall

This section contains instructions on how to install the switch on a wood stud in a wall.

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

- ❑ Two wall brackets (included with the switch)
- ❑ Four bracket screws (included with the switch)
- ❑ Cross-head screwdriver (not provided)
- ❑ Stud finder capable of identifying the middle of wood wall studs and hot electrical wiring (not provided)
- ❑ Four wall screws for attaching the switch to the wall. The diameter of the screw holes in the wall brackets is 4.5 mm (0.17 in.).

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

1. Install the two wall brackets to the back panel of the switch, with the four screws included with the unit. Refer to Figure 21.

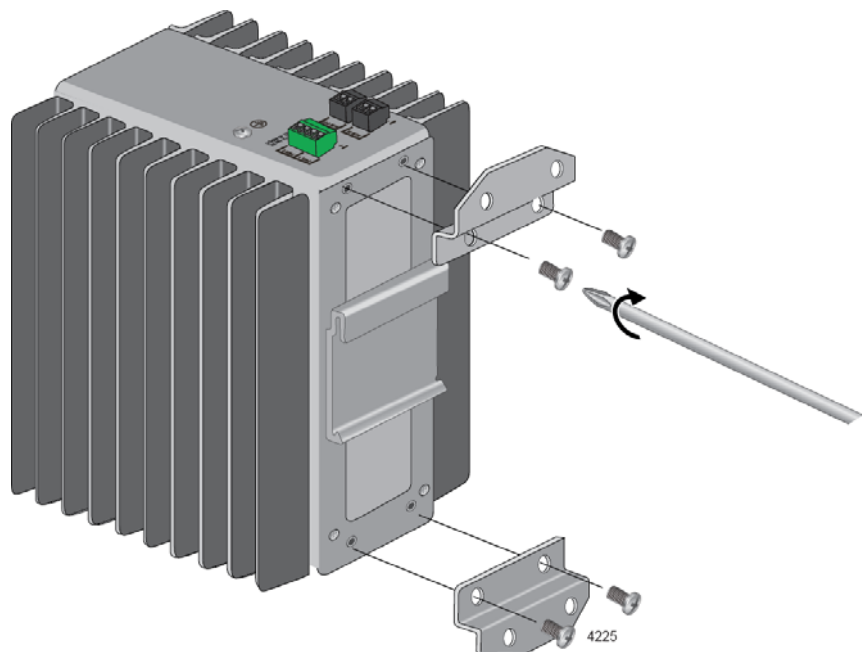


Figure 21. Installing the Wall Brackets on the Switch

2. Use a stud finder to identify and mark the middle of a wood stud in the wall at the location where you want to install the switch.

The selected wall location for the base should adhere to the recommendations in “Reviewing Site Requirements” on page 55.

3. Hold the switch on the wall and secure it with four screws (not provided). Refer to Figure 22.

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

- ❑ You should secure the switch to the middle of the wood stud identified in step 2.
- ❑ The switch must be oriented as shown in Figure 22. Do not install the switch horizontally or upside-down.
- ❑ Be sure to leave sufficient space from other devices or walls to allow for adequate air circulation around and through the cooling fins. Refer to “Reviewing Site Requirements” on page 55 for further information.

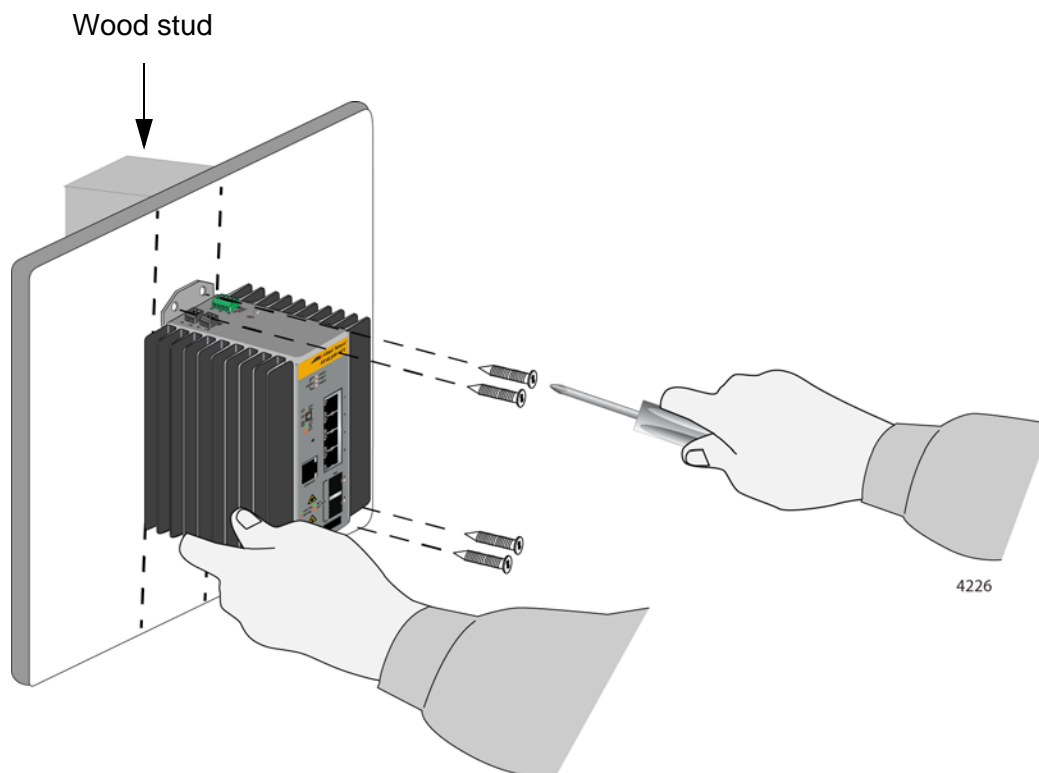


Figure 22. Attaching the Switch to the Wall

4. Go to Chapter 4, “Cabling the Ports” on page 71.

## Installing the Switch on a Concrete Wall

---

This section contains instructions on how to install the switch on a concrete wall.

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

- Two wall brackets (included with the switch)
- Four bracket screws (included with the switch)
- Four wall screws (not provided)
- Cross-head screwdriver (not provided)
- Drill and 1/4" carbide drill bit (not provided)
- Four anchors and screws for attaching the switch to the wall (not provided). The diameter of the screw holes in the wall brackets is 4.5 mm (0.17 in.).

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

1. Place the switch in a table.
2. Install the two brackets that come with the switch to the back panel of the unit. Refer to Figure 21 on page 65.
3. Hold the switch on the concrete wall at the selected location for the device and use a pencil or pen to mark the wall with the locations of the four screw holes in the wall brackets. Refer to Figure 23 on page 68.

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

- The switch must be oriented as shown in Figure 23 on page 68. You may not install the switch horizontally or upside-down.
- Be sure to leave sufficient space from other devices or walls to allow for adequate air circulation around and through the cooling fins. Refer to "Reviewing Site Requirements" on page 55 for further information.

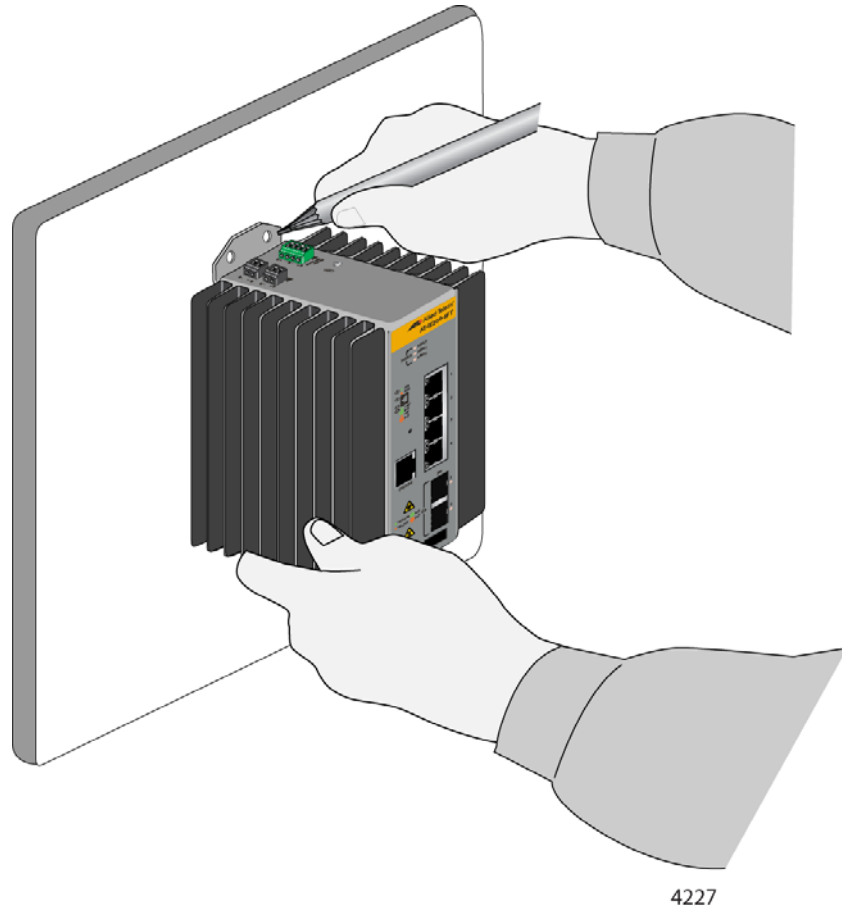


Figure 23. Marking the Locations of the Bracket Holes on a Concrete Wall

4. Place the switch on a table or desk.
5. Use a drill and 1/4" carbide drill bit to pre-drill the four holes you marked in step 3. Please review the following guidelines:
  - ❑ Prior to drilling, set the drill to hammer and rotation mode. The modes break up the concrete and clean out the hole.
  - ❑ Allied Telesis recommends cleaning out the holes with a brush or compressed air.
6. Insert four anchors (not provided) into the holes.
7. Hold the switch at the selected wall location and secure it with four screws (not provided). Refer to Figure 24 on page 69.

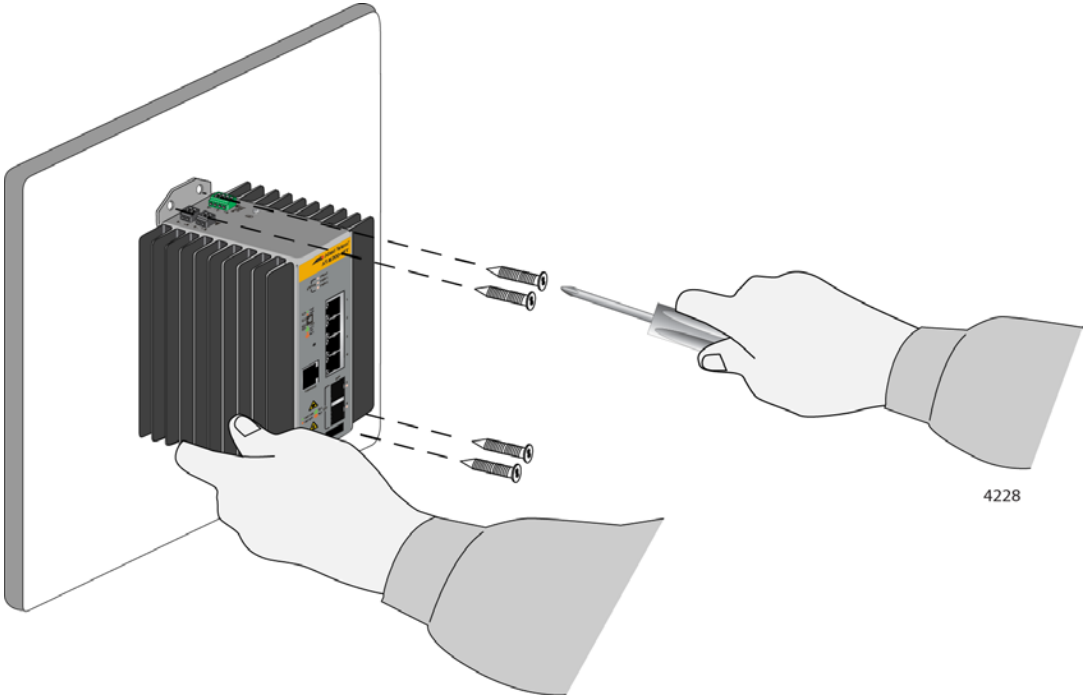


Figure 24. Installing the Switch on a Concrete Wall

8. Go to Chapter 4, “Cabling the Ports” on page 71.



## Chapter 4

# Cabling the Ports

---

This chapter contains the following procedures:

- “Cabling the Twisted Pair Ports” on page 72
- “Installing SFP Transceivers” on page 74

## Cabling the Twisted Pair Ports

---

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

- ❑ The ports have 8-pin RJ45 connectors.
- ❑ The cable specifications for the twisted pair ports on the AT-IE200-6FT and AT-IE200-6GT Switches are listed in Table 1 on page 27.
- ❑ The cable specifications for the twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches when connected to PoE or PoE+ devices are listed in Table 3 on page 29.
- ❑ The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- ❑ The default setting for PoE and PoE+ on twisted pair ports on the AT-IE200-6FP and AT-IE200-6GP Switches is enabled.
- ❑ 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 network devices that do not support Auto-Negotiation and have fixed speeds of 10 or 100 Mbps. For those switch ports, 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. Disable Auto-Negotiation on those ports and set their duplex modes manually to avoid the possibility of duplex mode mismatches. A switch port using Auto-Negotiation defaults to half-duplex if it detects that the end node is not using Auto-Negotiation. This can result in a mismatch if the end node is operating at a fixed duplex mode of full-duplex.
- ❑ The default wiring configuration of the ports is automatic MDIX detection, which configures the MDI/MDIX setting automatically. This setting is appropriate for switch ports that are connected to network devices that also support the feature.
- ❑ The default wiring configuration of automatic MDIX detection is not appropriate for ports that are connected to network devices that do not support the feature. On those ports, you should disable



automatic MDIX detection and set the wiring configuration manually with the POLARITY command.

- ❑ The appropriate MDI/MDI-X setting for a switch port connected to a 10/100Base-T 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.
- ❑ Ethernet cables that are connected to outdoor equipment, such as CCTVs mounted on poles, might be subjected to surges from lightning or power cross events. Properly rated primary protection devices must be installed on the cables before connecting them to the switch.

## Installing SFP Transceivers

---

Please review the following guidelines before installing SFP transceivers:

- ❑ SFP transceivers are hot-swappable. You may install them while the device is powered on.
- ❑ For a list of supported transceivers, refer to the product datasheet.
- ❑ 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 in the switch before connecting its fiber optic cable.
- ❑ Fiber optic transceivers are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed, or when you store the transceiver. When you do remove the plug, keep it for future use.
- ❑ Unnecessary removal and insertion of a transceiver can lead to premature failure.
- ❑ Installing or removing a transceiver from a slot in the switch might require slightly more force than typically required with other network equipment. This is because of the design of the SFP cages.



### 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. *ES* E86

---

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

To install SFP transceivers in the chassis, perform the following procedure:

1. Remove the dust plug from a transceiver slot. Figure 25 on page 75 shows the dust plug removed from slot 5.

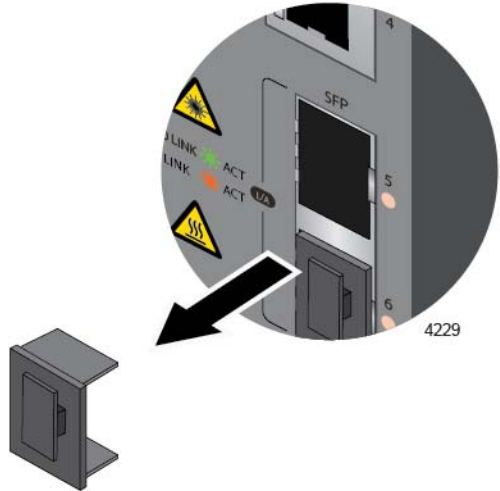


Figure 25. Removing the Dust Plug from an SFP Slot

- 2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
- 3. Position the transceiver with its handle on the right and slide it into the slot until it clicks into place. Refer to Figure 26.

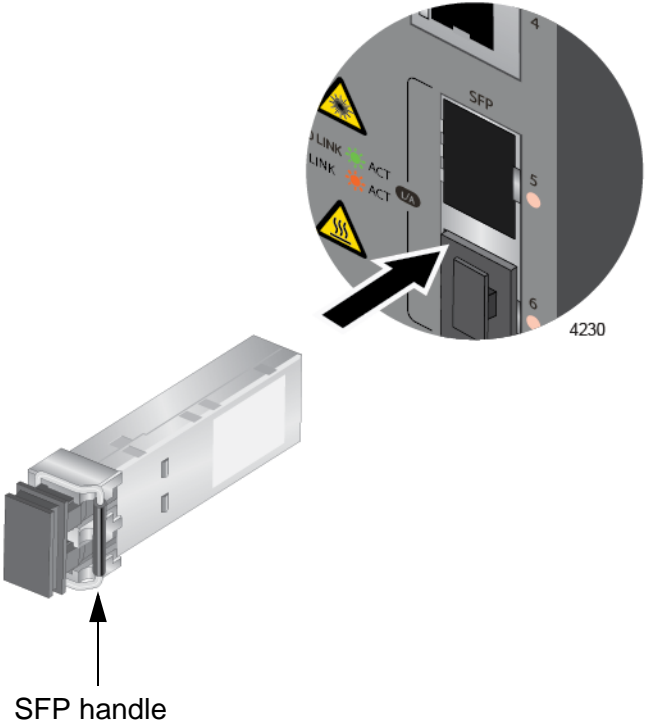


Figure 26. Installing an SFP Transceiver

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**Note**

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

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4. Remove the dust cover from the transceiver. Refer to Figure 27.

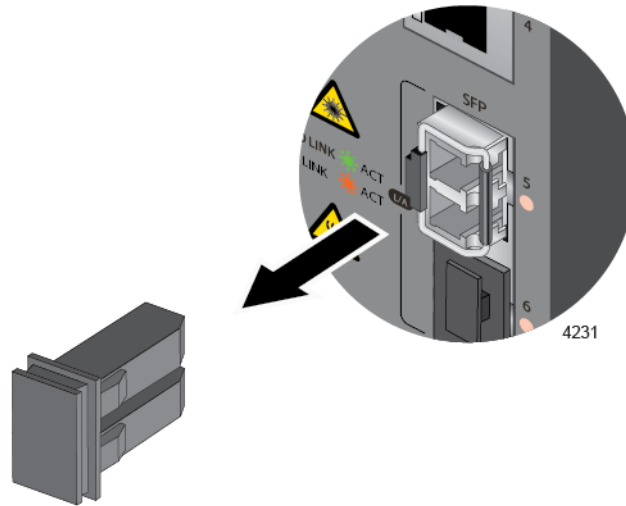


Figure 27. Removing the Dust Cover from an SFP Transceiver

5. Verify the handle on the transceiver is turned to the right. Refer to Figure 28.

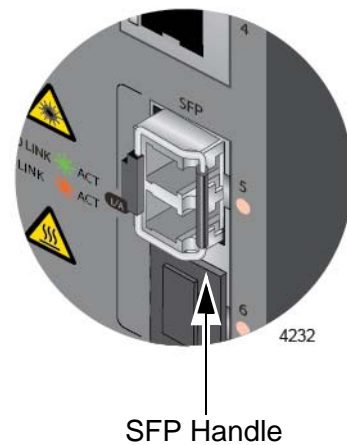


Figure 28. Verifying the Position of the SFP Handle

6. Connect the fiber optic cable to the transceiver. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place. Refer to Figure 29 on page 77.

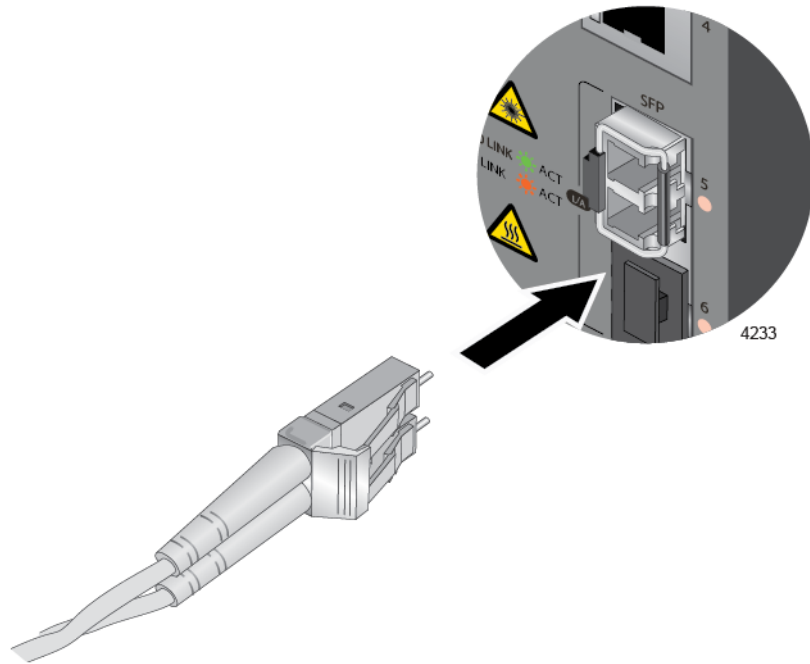


Figure 29. Connecting a Fiber Optic Cable to an SFP Transceiver

7. Repeat this procedure to install and cable another transceiver.
8. Go to Chapter 5, "Powering On the Switch" on page 79.



## Chapter 5

# Powering On the Switch

---

This chapter contains the following procedures:

- ❑ “Connecting the Grounding Wire” on page 80
- ❑ “Wiring the ALM IN and ALM OUT Connectors” on page 83
- ❑ “Preparing the DC Power Cables” on page 88
- ❑ “Powering On the Switch” on page 92
- ❑ “Monitoring the Initialization Process” on page 94
- ❑ “Starting a Local Management Session” on page 96
- ❑ “Installing the Optional Drip Guard” on page 99

## Connecting the Grounding Wire

---

Here are the guidelines for the grounding wire:

- ❑ The wire should be minimum #16 AWG solid wire.
- ❑ The wire length should be as short as possible.
- ❑ Continuity from the grounding screw to the earth ground must be less than 0.05 ohms.
- ❑ If a terminal is used, it should be double crimped.



### Warning

This equipment must be earthed. The ground screw on the unit must be connected to a properly earthed bonding point.

---

To connect the grounding wire with bare wire, perform the following procedure:

1. Strip 2.54cm (1.0 in.) of insulation from the end of the solid grounding wire with a wire insulator stripper. Refer to Figure 30.

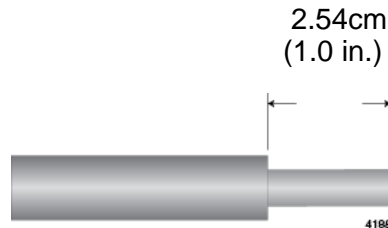


Figure 30. Stripping the Grounding Wire



### Warning

Do not strip more than the recommended amount of wire. Stripping more than the recommended amount can create a safety hazard by leaving exposed wire on the terminal block after installation. *GE* E10

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2. Loosen the grounding screw several turns with a #2 Phillips-head screwdriver. Refer to Figure 31 on page 81.



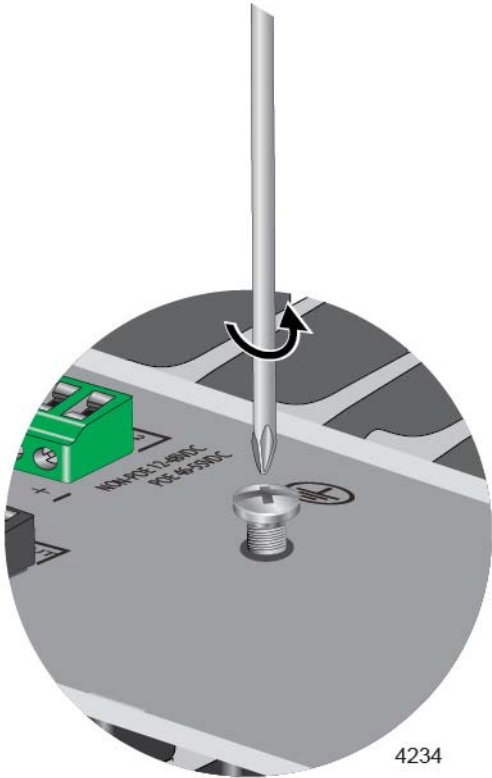


Figure 31. Loosening the Grounding Screw

- 3. Wrap the grounding wire clockwise around the base of the grounding screw. Refer to Figure 32.

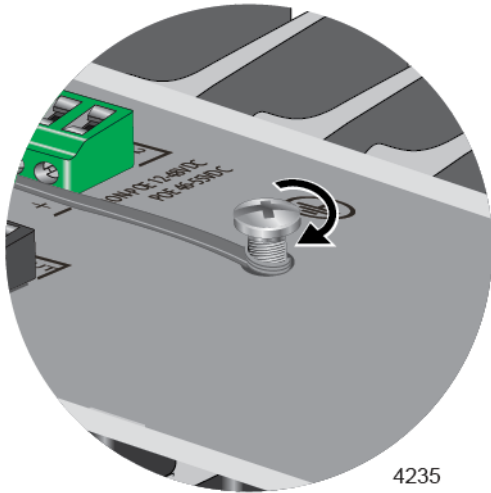


Figure 32. Wrapping the Grounding Wire Around the Grounding Screw

- 4. Tighten the screw to secure the grounding wire to the switch. Refer to Figure 33 on page 82.

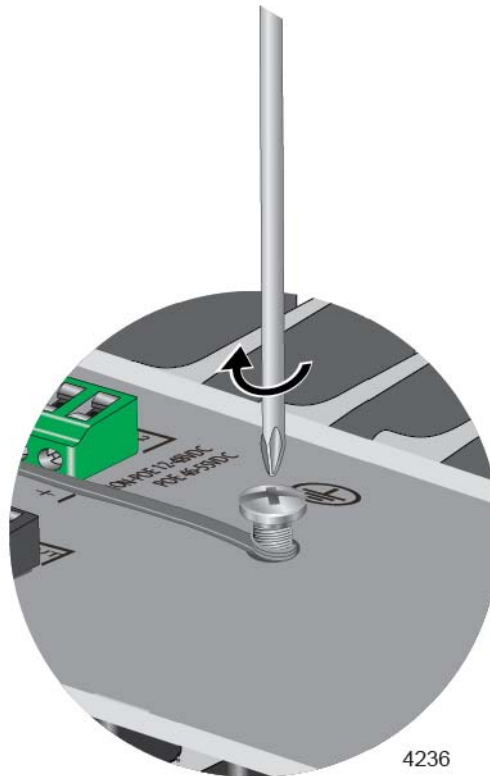


Figure 33. Securing the Grounding Wire to the Switch

5. Connect the other end of the ground wire to a ground point at the installation site.
6. Do one of the following:
  - To wire the alarm connectors, go to “Wiring the ALM IN and ALM OUT Connectors” on page 83.
  - Otherwise, go to “Preparing the DC Power Cables” on page 88.

## Wiring the ALM IN and ALM OUT Connectors

---

For background information on the alarm connectors, refer to “Alarm In Connector” on page 36 and “Alarm Out Connector” on page 39. Here are general guidelines to the alarm connectors:

- ❑ Use 24 to 18 AWG stranded wire properly rated for the installation site.
- ❑ The maximum length of an alarm cable is two meters.
- ❑ Alarm cables must be contained within the cabinet or building. Do not expose alarm cables to the outside environment.

The switch provides the voltage for the ALM IN circuit. Here are the requirements for the external sensor for the ALM IN connector:

- ❑ It must be a dry contact.
- ❑ It must not place any current on the circuit.
- ❑ It must not use the voltage or current from the switch on the circuit for its own operations.
- ❑ It must be able to handle a minimum of 3.3VDC and 320uA.



### Caution

The external sensor might damage the Alarm In connector if it places a voltage on the circuit.

---

The switch does not provide voltage on the ALM OUT connector circuit. The external alert device has to provide the necessary power. Here are the power requirements for the ALM OUT connector:

- ❑ 48VDC maximum
- ❑ 10mA maximum



### Caution

The power from the external alert device must not exceed the above specifications. Otherwise, the Alarm Out connector circuit might be damaged.

---



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### Note

The ALM OUT connector can sync 0.5A at 30VDC maximum. You must provide a series resistance to limit current, if necessary.

---

Before wiring an alarm connector, familiarize yourself with the negative

and positive polarities of its two pins by examining the legends on the top panel. Refer to Figure 34.

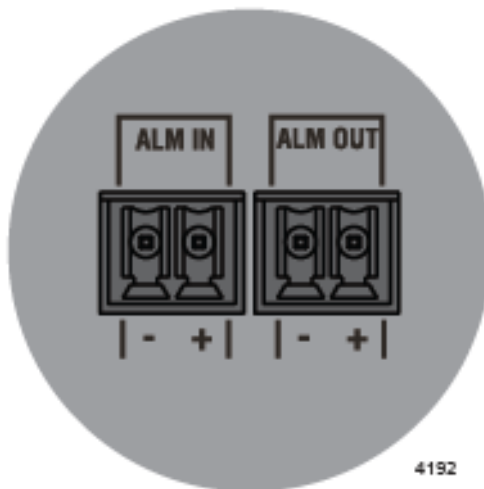


Figure 34. Polarity Legend for the Alarm Connectors

The following procedure shows the ALM OUT connector. The procedure is the same for the ALM IN connector. To wire an alarm connector, perform the following procedure:

1. Strip 6.5mm (0.25 in.) of insulation from the ends of the wires with a wire insulator stripper. Refer to Figure 35.

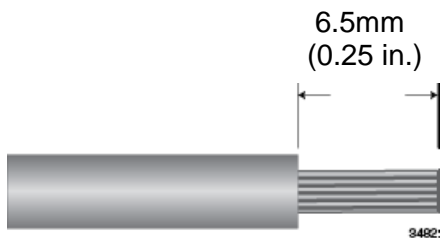


Figure 35. Stripping an Alarm Wire



**Warning**

Do not strip more than the recommended amount of wire. Stripping more than the recommended amount can create a safety hazard by leaving exposed wire on the terminal block after installation. *GE* E10

2. Tightly wrap the wire strands with your finger tips. Refer to Figure 36 on page 85.

This step is to prevent loose strands from touching other wires and causing an electrical short.

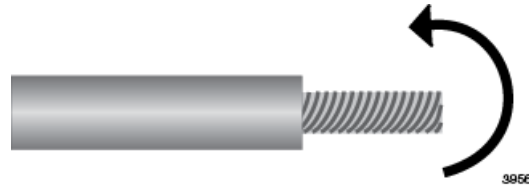


Figure 36. Wrapping the Wire Strands

---

**Note**

Allied Telesis recommends that you also tin the wires with solder as added protection against loose strands. This guide does not provide instructions on how to tin wires.

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3. Remove the alarm connector from the top panel. Figure 37 shows the removal of the ALM OUT connector.

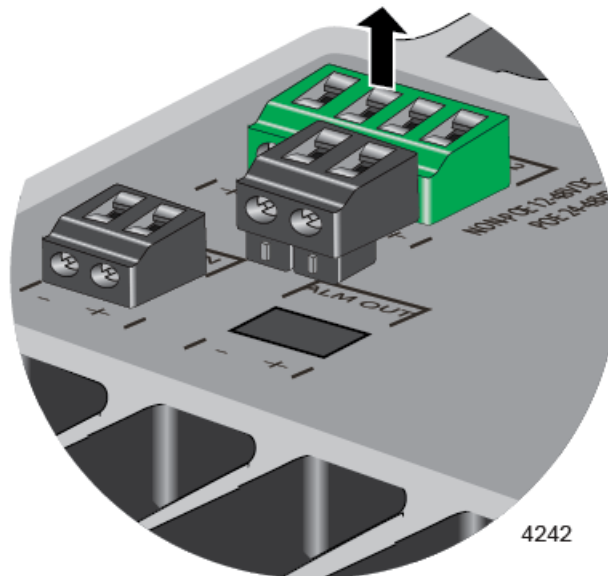


Figure 37. Removing an Alarm Connector

4. Loosen the wire retaining screws in the connector with a #1 screwdriver. Refer to Figure 38 on page 86.



Figure 38. Loosening the Wire Retaining Screws on an Alarm Connector

5. Insert the wires into the connector and tighten the retaining screws to secure the wires. Refer to Figure 39.

Allied Telesis recommends tightening the screws to 2 to 3 in.-lbs.

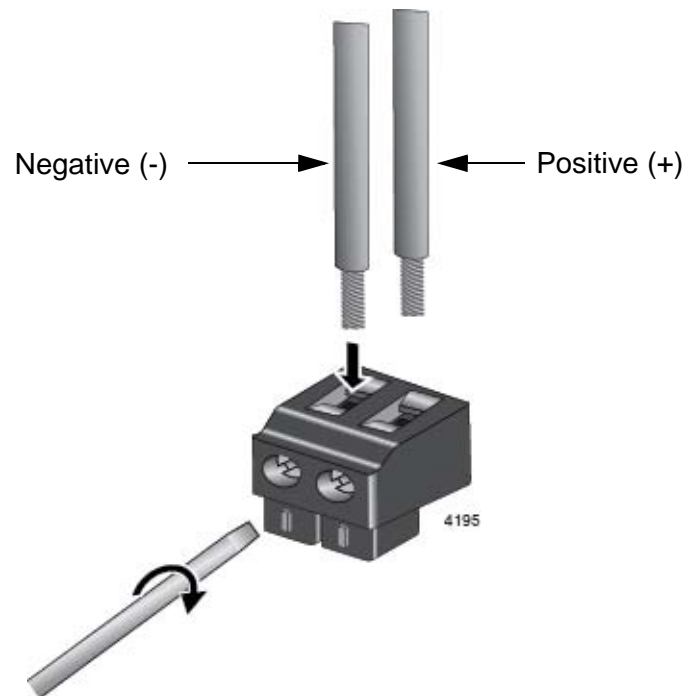


Figure 39. Inserting the Wires into the DC Cable Connector

6. After attaching the wires to the connector, verify that there are no exposed wires or loose wire strands. Refer to Figure 46 on page 91.

**Warning**

Check to see if there are any exposed copper strands coming from the installed wires. When this installation is done correctly there should be no exposed copper wire strands extending from the terminal block. Any exposed wiring can conduct harmful levels of electricity to persons touching the wires. ⚡ E12

7. Insert the alarm connector back into its connector on the switch. Refer to Figure 40.

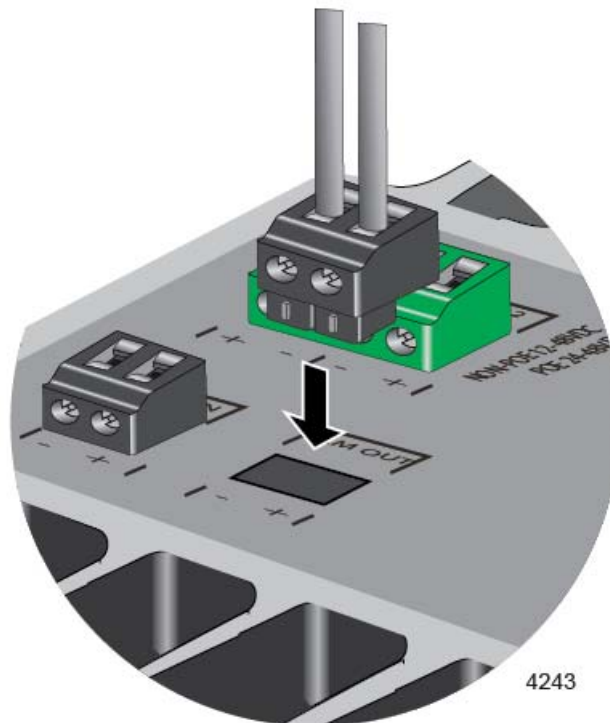


Figure 40. Inserting the DC Connector into the Alarm Connector

8. Connect the other end of the wires to an external sensor for the Alarm In connector or an alert device for the Alarm Out connector.
9. If necessary, repeat this procedure to wire the other alarm connector.
10. Go to “Preparing the DC Power Cables” on page 88.

## Preparing the DC Power Cables

---

You can power the switch with either one or two DC power supplies. For power supply specifications, refer to “Power Supplies” on page 47.

Power supplies are connected to the 4-wire, DC power connector on the top panel of the switch. Refer to Figure 41. A power supply is connected to the switch with two wires, one positive (+) and one negative (-). If you are installing only one power supply to the switch, you may connect it to either the PWR 1 or PWR 2 connector.

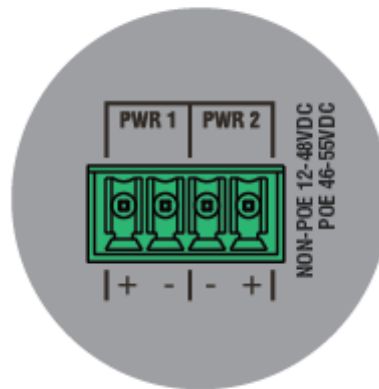


Figure 41. Pin Signals Legends for the PWR 1 and PWR 2 Connectors

Here are the materials and tools needed to build the DC power cables:

- ❑ 18 AWG stranded wires. Do not use wire heavier than 16 AWG.
- ❑ 2-wire connectors to connect the power cables to the AC/DC rectifiers or UPS units.
- ❑ #1 flat-head screwdriver
- ❑ Wire insulation stripper

To build DC power cables for the unit, perform the following procedure:

1. Strip 6.5mm (0.25 in.) of insulation from the ends of the stranded power wires with a wire insulator stripper. Refer to Figure 42 on page 89.



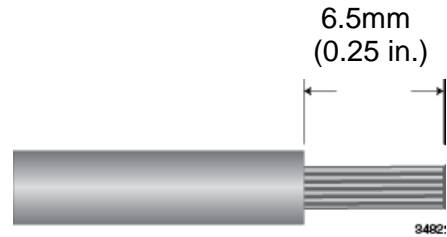


Figure 42. Stripping a Power Cable Wire

**Warning**

Do not strip more than the recommended amount of wire. Stripping more than the recommended amount can create a safety hazard by leaving exposed wire on the terminal block after installation. ⚡ E10

2. Tightly wrap the wire strands with your finger tips. Refer to Figure 36 on page 85.

This step is to prevent loose strands from touching other wires and causing an electrical short.

**Note**

Allied Telesis recommends that you also tin the wires with solder as added protection against loose strands. This guide does not provide instructions on how to tin wires.

3. Remove the PWR 1 - PWR 2 connector from the top panel. Refer to Figure 43.

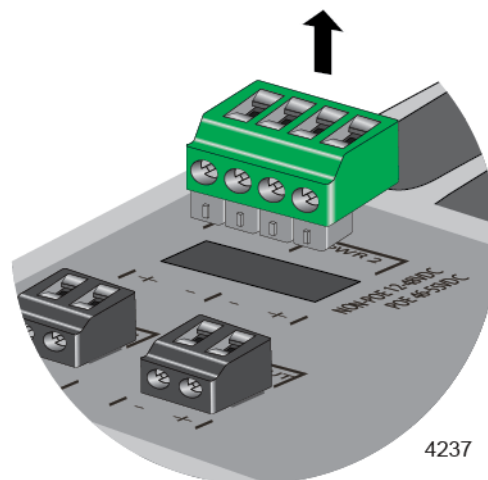


Figure 43. Removing the PWR 1 - PWR 2 Cable Connector

4. Loosen the wire retaining screws in the connector with a #1 screwdriver. Refer to Figure 44.



Figure 44. Loosening the Wire Retaining Screws on the PWR 1 - PWR 2 Cable Connector

5. Insert the wires into the connector and tighten the retaining screws to secure the wires. Refer to Figure 45.

Allied Telesis recommends tightening the screws to 2 to 3 in.-lbs.

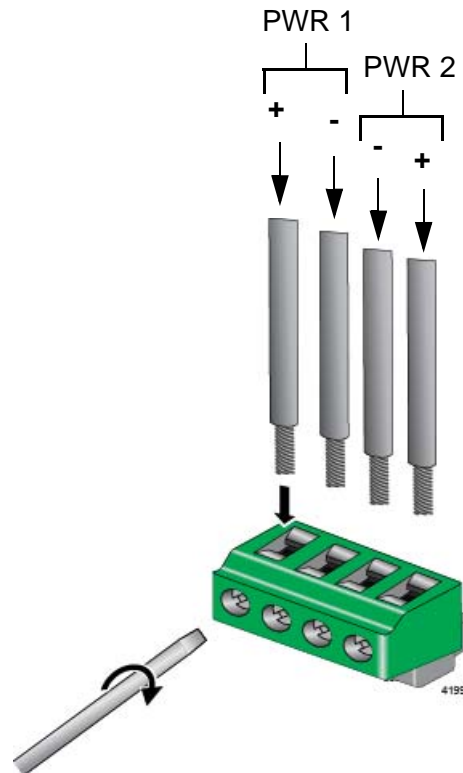


Figure 45. Inserting the Wires into the PWR 1 - PWR 2 Cable Connector

6. After attaching the wires to the connector, verify that there are no exposed wires or loose wire strands. Refer to Figure 46 on page 91.

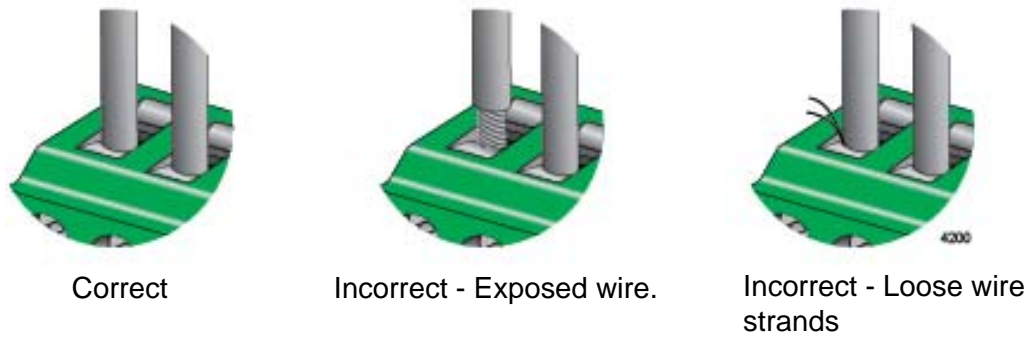


Figure 46. Verifying the Wire Installation

**Warning**

Check to see if there are any exposed copper strands coming from the installed wires. When this installation is done correctly there should be no exposed copper wire strands extending from the terminal block. Any exposed wiring can conduct harmful levels of electricity to persons touching the wires. ⚡ E12

7. After building the power cables, go to “Powering On the Switch” on page 92.

## Powering On the Switch

---

For power supply requirements, refer to “Power Supplies” on page 47. To power on the chassis, perform the following procedure:

1. Verify that the DC power supply is powered off. If there are two DC power supplies, verify that both units are powered off.
2. Connect the power cable to the PWR 1 - PWR 2 connector on the top panel. Refer to Figure 47.

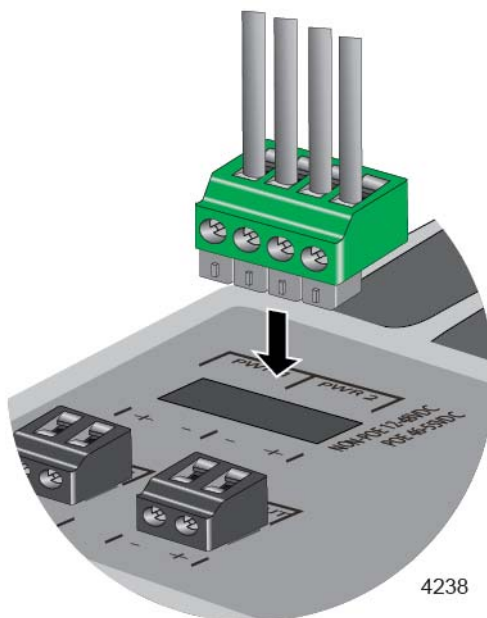


Figure 47. Connecting the Power Cable to the PWR 1 - PWR 2 Connector



### Warning

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

---

3. Connect the other end of the power cable to the DC power supply. Refer to the documentation included with the unit for instructions.
4. Power on the DC power supplies.

---

### Note

The switch does not have an On/Off switch.

---

5. Wait a minimum of one minute for the switch to initialize its operating system.

To monitor the console messages as the device initializes the management software, go to “Monitoring the Initialization Process” on page 94.

## **Verifying Switch Operations**

Here are several items to check to verify that the switch is operating normally. If there is a problem, refer to Chapter 6, “Troubleshooting” on page 101 for suggestions on how to resolve it.

- The Fault LED should be off.
- One or both PWR 1 and PWR 2 LEDs should be solid green, depending on the number of DC power supplies connected to the unit.
- The LEDs on SFP slots with transceivers connected to active network devices should be solid or flashing green.
- The Link LEDs on twisted pair ports connected to active network devices should be solid or flashing green or amber. The Link LEDs are identified in Figure 10 on page 42 and Figure 11 on page 44.
- The PoE LEDs on the AT-IE200-6FP and AT-IE200-6GP Switches should be solid green on ports connected to PoE or PoE+ devices. The PoE LEDs are identified in Figure 11 on page 44.

After verifying the operations of the switch, go to “Starting a Local Management Session” on page 96.

## Monitoring the Initialization Process

It takes one minute for the switch to initialize its operating system and load the default configuration. You can monitor the bootup sequence by connecting a terminal or computer with a terminal emulator program to the Console port on the front panel. The parameter settings for the Console port are found in “Starting a Local Management Session” on page 96. Figure 48 here and Figure 49 on page 95 contain the initialization messages.

After monitoring the initialization process, go to “Starting a Local Management Session” on page 96.

```

Bootloader loaded
Press <Ctrl+B> for the Boot Menu

Reading filesystem...
Loading flash: IE200
Verifying release... OK
Booting...
Starting base/first... [ OK ]
Mounting virtual filesystems... [ OK ]



Allied Telesis Inc.
AlliedWare Plus (TM)
Current release filename: IE200
Built: Tue Mar 29 03:50:20 UTC 2016
Mounting static filesystems... [ OK ]
Checking flash filesystem... [ OK ]
Mounting flash filesystem... [ OK ]
Checking for last gasp debug output... [ 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 ]

```

Figure 48. Initialization Messages

```

Starting base/apteryx... [ OK ]
starting base/appmond... [ OK ]
Starting base/clockcheck... [ 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 apteryx.done
Starting network/kermond... [ OK ]
Starting hardware/plugman... [ OK ]
Starting base/apteryx-sync... [ OK ]
Received event apteryx-sync.done
Starting hardware/hardware-done... [ OK ]
Received event hardware.done
Starting network/startup... [ OK ]
Starting network/poefw... [ OK ]
Starting base/external-media... [ OK ]
Received event poefw.done
Starting network/stackd... [ OK ]
Starting network/election.timeout... [ OK ]
Received event network.enabled

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

Received event network.initialized

Assigning Active Workload to HA processes:
15:10:42 awplus Plugable[394]: Plugable AT-SPTX inserted into port1.0.5
15:10:42 awplus Plugable[394]: Plugable AT-SPTX inserted into port1.0.6
sl, nsm, lacpd, loopprotd, pdmd, pim6d, ripd
ripngd, rmond, sflowd, vrrpd, authd, epsrd, irdpd

Received event network.activated

Loading configuration file flash:/test1.cfg, please wait.
...

done!
Received event network.activated

awplus login:

```

Figure 49. Initialization Messages (Continued)

## Starting a Local Management Session

---

This section contains the procedure for starting a local management session on the switch. It also explains how to verify the PoE power budget on the AT-IE200-6FP or AT-IE200-6GP Switch. Please review the following information before performing the procedure:

- The initial management session with the switch must be a local session.
- Local management sessions are conducted through the Console port on the front panel.
- Local management sessions do not interfere with the network operations of the switch.
- The switch comes with one 2 m (6.6 ft) management cable, with RJ-45 and DB-9 connectors, for local management sessions. Refer to Figure 16 on page 60.
- The switch does not need an IP address for local management sessions.
- You cannot initially manage the switch remotely with Telnet, SSH, or web browser because the switch does not have a default IP address and the DHCP client is disabled.

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

1. Connect the RJ-45 connector on your management cable to the Console port on the switch.
2. Connect the other end of the cable to an RS-232 port on a terminal or personal computer with a terminal emulation program.
3. Configure the VT-100 terminal or terminal emulation 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 controller: None

---

### **Note**

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

---



---

**Note**

The baud rate must be set to the default 9600 bps to configure the bootloader.

---

4. Press Enter. You are prompted for the name and password of the manager account.
5. Enter the user name and password. The default values are “manager” and “friend” (without the quotes), respectively.

---

**Note**

User names and passwords are case sensitive.

---

The switch starts the local management session and displays the following prompt:

```
awpl us>
```

This prompt represents the User Exec mode in the command line interface in the switch.

6. Do one of the following:
  - If you are installing the AT-IE200-6FT or AT-IE200-6GT Switch, no further installation steps are required. For instructions on how to configure the features, refer to the *Software Reference for the IE200 Series Switches*.
  - If you are installing the AT-IE200-6FP or AT-IE200-6GP Switch, continue with the next step to confirm its power budget for PoE devices.
7. Enter the ENABLE command at the User Exec mode to move to the Privileged Exec mode, as shown here:

```
awpl us> enabl e  
awpl us#
```

8. Enter the SHOW POWER-INLINE command at the Privileged Exec mode prompt, as shown here:

```
awpl us# show power-i n l i n e
```

9. Examine the command output for the Power Allocated field. It should be 120W. This is the maximum PoE power budget for the switch. The maximum power budget should be the same regardless of whether the switch has one or two power supplies.

If the power budget is 120W, no further installation steps are required. Refer to the *Software Reference for the IE200 Series Switches* for instructions on how to configure the features of the switch.

If the power budget is less than 120W, either the power supply does not meet the specifications in “Power Supplies” on page 47 or it has a problem. Refer to Chapter 6, “Troubleshooting” on page 101 for troubleshooting suggestions.

## Installing the Optional Drip Guard

---

To install the drip guard, perform the following procedure:

1. Slide the drip guard over the top of the switch. The front overhang on the drip guard should project over the front of the switch. Refer to Figure 50.

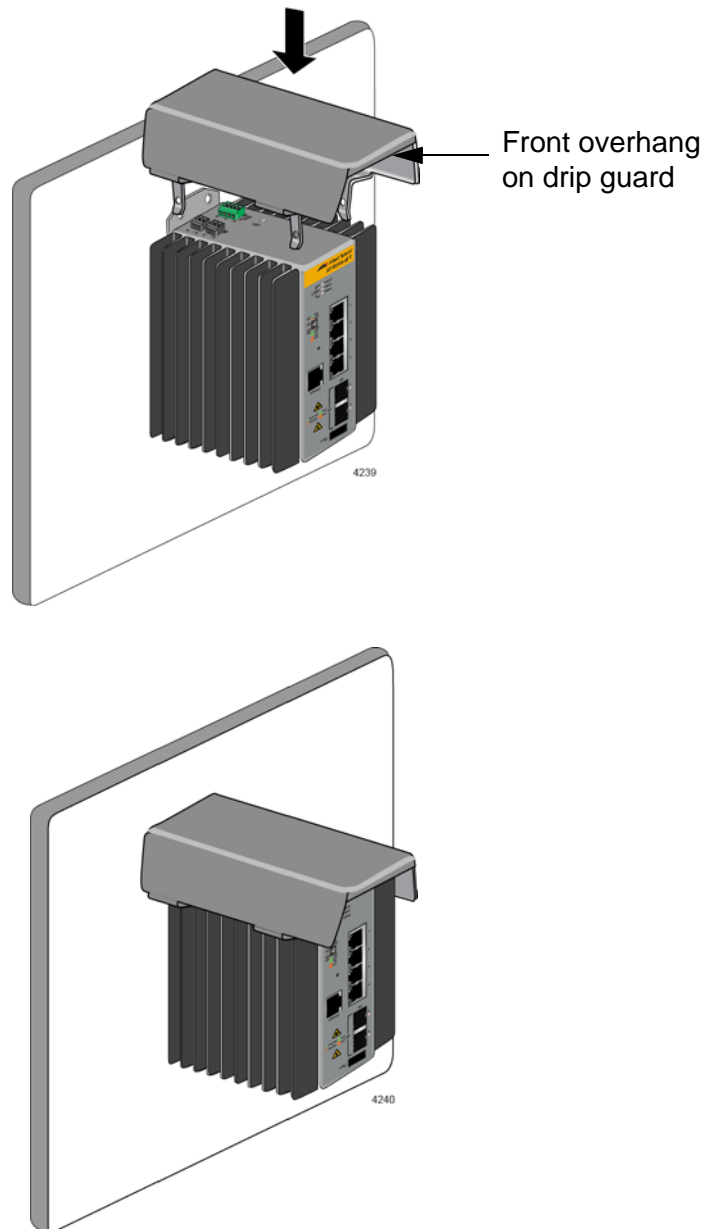


Figure 50. Installing the Optional Drip Guard

2. Install the four Phillips-head screws included with the drip guard to secure it to the switch. Refer to Figure 51.

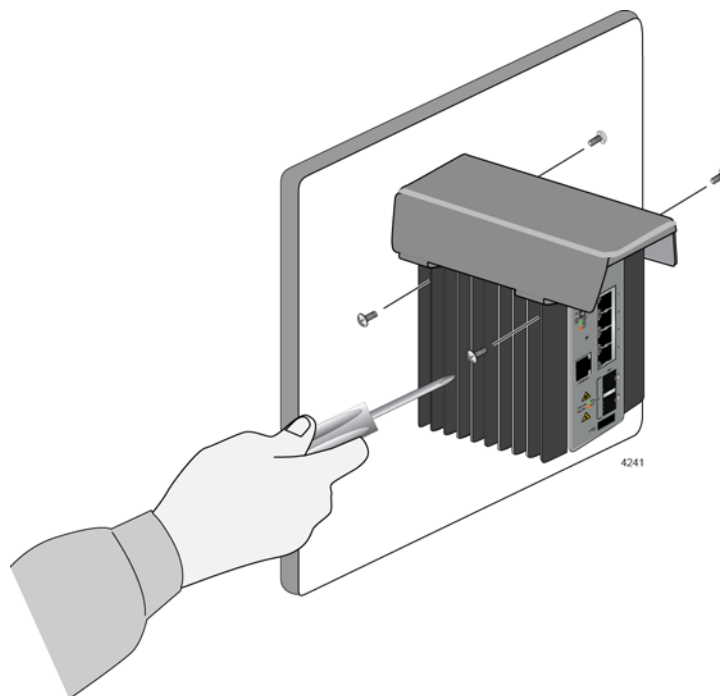


Figure 51. Securing the Drip Guard

## Chapter 6

# Troubleshooting

---

This chapter has suggestions on how to troubleshoot problems with the switch. The sections in the chapter are listed here:

- ❑ “PWR 1 and PWR 2 LEDs” on page 102
- ❑ “Twisted Pair Ports” on page 103
- ❑ “SFP Slots” on page 105
- ❑ “Power Over Ethernet” on page 106

---

**Note**

For further assistance, please contact Allied Telesis Technical Support at [www.alliedtelesis.com/support](http://www.alliedtelesis.com/support).

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## PWR 1 and PWR 2 LEDs

---

**Problem:** A DC power supply is connected to the switch but the corresponding PWR 1 or PWR 2 LED on the front panel is off.

**Solutions:** The unit is not receiving power from the power supply or the power is outside the operating range for the switch. Try the following:

- ❑ Verify that the DC power source is powered on and operating normally.
- ❑ Review the DC power source's documentation to verify that it is compatible with the switch. The power supply requirements for the switch are given in "Power Supplies" on page 47.
- ❑ Verify that the PWR 1 -PWR 2 connector is fully inserted into the slot in the top panel of the switch.
- ❑ Verify that the DC wires are securely connected to the PWR 1 - PWR 2 connector on the switch and to the DC power supply.
- ❑ Verify that the DC positive and negative wires from the power supplies are connected to the correct connectors on the DC PWR 1 - PWR 2 connectors on the switch.
- ❑ Verify that the DC power wires are connected to the PWR 1 - PWR 2 connector and not to the ALM IN or ALM OUT connector.
- ❑ Try using a different DC power source.
- ❑ Try replacing the DC power wires.
- ❑ Try connecting the DC power source to a different device.
- ❑ Test the output voltage from the power source to verify that it is within the operating range of the switch.

## Twisted Pair Ports

---

**Problem:** The switch is powered on and forwarding traffic, but all the port LEDs are off.

**Solutions:** The port LEDs may have been turned off with the ECOFRIENDLY LED command in the AlliedWare Plus operating system. To turn on the LEDs, establish a management session with the unit and issue the NO ECOFRIENDLY LED command in the Global Configuration mode. The default setting for the LEDs is on.

**Problem:** 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.
- ❑ Verify that the network cable is securely connected to the ports on the switch and remote network device.
- ❑ Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.
- ❑ Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- ❑ Verify that you are using the appropriate category of twisted pair cable. Refer to Table 1 on page 27 and Table 3 on page 29.
- ❑ 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 verify that its port is enabled.

---

**Note**

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

---

**Problem:** 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. For the AT-IE200-6FT and AT-IE200-6GT Switches, 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 7 on page 42. For the AT-IE200-6FP and AT-IE200-6GP Switches, you have to use the management software to determine the duplex mode settings of the ports.



## SFP Slots

---

**Problem:** The LINK/ACT LED for an SFP transceiver is off.

**Solutions:** The fiber optic port on the transceiver cannot 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 SFP transceiver is fully inserted in the slot in the switch.
- ❑ 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 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 verify that 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).

## Power Over Ethernet

---

**Problem:** The AT-IE200-6FP or AT-IE200-6GP Switch is not providing power to a PoE or PoE+ device.

**Solutions:** Try the following:

- ❑ Check that the device's power requirements do not exceed those listed in Table 2 on page 28. The power requirements should be included in the device's documentation or data sheet.
- ❑ Start a local or remote management session on the switch and enter the `SHOW POWER-INLINE` command. Subtract the Actual Power Consumption value from the Power Allocated value to determine the amount of unused power. The switch cannot support the powered device if this value is less than the device's power requirements.
- ❑ Verify that you are using the appropriate category of twisted-pair cable by referring to Table 3 on page 29.
- ❑ Try replacing the twisted pair cable.
- ❑ Use the management software on the switch to determine whether PoE/PoE+ is enabled on the port. The default setting is enabled.
- ❑ Use the `SHOW POWER-INLINE` command to determine whether the PoE power setting for the port was reduced to a value below the power requirements of the device.
- ❑ Try connecting the device to a different port on the switch.
- ❑ Refer to the device's documentation to verify that it supports Alternative A as the power delivery method on the Ethernet cabling. The switch cannot support legacy PoE devices that only support Alternative B. For more information, refer to "PoE Wiring" on page 30.

## Appendix A

# Technical Specifications

---

This appendix contains the following sections:

- “Physical Specifications” on page 108
- “Environmental Specifications” on page 110
- “Power Specifications” on page 112
- “Certifications” on page 113
- “RJ-45 Twisted Pair Port Pinouts” on page 114
- “RJ-45 Style Serial Console Port Pinouts” on page 116
- “PWR 1 and PWR 2 DC Power Connectors” on page 117

## Physical Specifications

---

### Dimensions

Table 13 lists the dimensions of the products.

Table 13. Product Dimensions

AT-IE200-6FT (WxHxD) AT-IE200-6GT	5.5 x 15.9 x 13.4 cm (2.17 x 6.25 ix 5.28 in.)
AT-IE200-6FP AT-IE200-6GP	9.5 x 15.9 x 13.4 cm (3.74 x 6.25 ix 5.28 in.)

### Weights

Table 14 lists the weights of the products.

Table 14. Product Weights

AT-IE200-6FT AT-IE200-6GT	0.9 kg (2.0 lb.)
AT-IE200-6FP AT-IE200-6GP	1.5 kg (3.2 lb.)

### Ventilation

Table 15 lists the ventilation requirements.

Table 15. Ventilation Requirements for Cabinet Installation

Minimum Open Space Below Switch	10.2 cm (4.0 in)
Minimum Open Space Above Switch	20.3 cm (8.0 in)
Minimum Open Space in Front of Switch	10.2 cm (4.0 in)
Minimum Open Space On Sides of Switch	2.5 cm (1.0 in)
Minimum Open Space Around Switch (below, above, front and sides)	61.0 cm (24.0 in)

**Cabinet Dimensions**

Table 16 provides the minimum cabinet dimensions.

Table 16. Minimum Cabinet Dimensions

Minimum Cabinet Dimensions (WxHxD)	50.8 x 50.8 x 30.5 cm (20.0 x 20.0 x 12.0 in)
---------------------------------------	--

## Environmental Specifications

Table 17 lists the environmental specifications of the switches.

Table 17. Environmental Specifications

Operating Temperature Range for Outdoor Installation in a Listed Type 4 or Better Metal Cabinet	-40° C to 75° C (-40° F to 167° F)
Operating Temperature Range for the Switch in a Metal Cabinet	-40° C to 75° C (-40° F to 167° F)
Operating Temperature Range for the Switch on a Wall	-40° C to 70° C (-40° F to 158° F)
Storage Temperature	-40° C to 85° C (-40° F to 185° F)
Operating Humidity	5% to 95% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	3,000 m (9,843 ft)
Maximum Nonoperating Altitude	4,000 m (13,100 ft)

Table 18 lists the ingress protection values.

Table 18. Ingress Protection

IE200 Series Switch Without Drip Guard	IP30
IE200 Series Switch With Drip Guard	IP31

Table 19 lists the vibration, shock, and rough handling specifications for the AT-IE200-6FT and AT-IE200-6GT Switches.

Table 19. Vibration, Shock, and Rough Handling Specifications for the AT-IE200-6FT and AT-IE200-6GT Switches

	Wall Installation	DIN Rail Installation
Vibration IEC60068-2-6	2g @ 10-150Hz 5g @ 1-35Hz	2g @ 10-150Hz 5g @ 1-35Hz
Shock IEC60068-2-27	50g @ 11m/sec	20g @ 11m/sec
Rough Handling IEC60068-2-31	1 meter drop	1 meter drop

Table 20 lists the vibration, shock, and rough handling specifications for the AT-IE200-6FP and AT-IE200-6GP Switches.

Table 20. Vibration, Shock, and Rough Handling Specifications for the AT-IE200-6FP and AT-IE200-6GP Switches

	Wall Installation	DIN Rail Installation
Vibration IEC60068-2-6	2g @ 10-150Hz 5g @ 1-35Hz	1g @ 10-150Hz 5g @ 1-35Hz
Shock IEC60068-2-27	50g @ 11m/sec	30g @ 11m/sec
Rough Handling IEC60068-2-31	1 meter drop	1 meter drop

---

**Note**

Resonance occurs in the 18-22Hz range.

---



---

**Note**

If the switch is installed on a DIN rail, Allied Telesis recommends installing DIN rail end clamps on both sides of the device to prevent damage or network traffic loss from vibration or shock.

---

## Power Specifications

---

Table 21 lists the maximum power consumption values.

Table 21. Maximum Power Consumptions

AT-IE200-6FT AT-IE200-6GT	32 watts
AT-IE200-6FP AT-IE200-6GP	155 watts (including PDs' consumption and margin) 35 watts (excluding PDs' consumption)

Table 22 lists the input power specifications.

Table 22. Input Power Specifications

AT-IE200-6FT AT-IE200-6GT	12-48 VDC 2.5A maximum
AT-IE200-6FP AT-IE200-6GP	24-48 VDC 7.0A maximum

---

**Note**

A 24V power supply must have an absolute maximum tolerance of -3% or 23.25V at the input to the switch. A 48V power supply must have an absolute maximum tolerance of +2.5% or 49.25V at the input to the switch.

---



---

**Note**

For power supply specifications, refer to "Power Supplies" on page 47.

---

Table 23 lists heat dissipation.

Table 23. Heat Dissipation (British Thermal Units/Hour)

AT-IE200-6FT AT-IE200-6GT	110 BTU/hr
AT-IE200-6FP AT-IE200-6GP	120 BTU/hr



## Certifications

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The regulatory approvals of the product are listed in Table 24.

Table 24. Regulatory Approvals

RFI Emissions	FCC Part 15B Class A EN55032 Class A EN61000-3-2 EN61000-3-3 VCCI-CISPR32:2016 Class A ICES-003:Issue 6
RFI Immunity	EN55024 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-8 EN61000-4-11
Electrical and Laser Safety	UL/E/IEC60950-1 CSA 22.2:60950-1 2014/35/EU Low Voltage Directive
Shock	EN60068-2-27
Free Fall	EN60068-2-31
Vibration	EN60068-2-6
Outdoor Enclosure Safety	UL/IEC/EN60950-22
Allied Telesis approved SFP modules	EN60825-1 EN60825-2 EN/IEC/UL60950-1 FCC CDRH registered

## RJ-45 Twisted Pair Port Pinouts

Figure 52 identifies pin 1 on an RJ-45 twisted pair port.

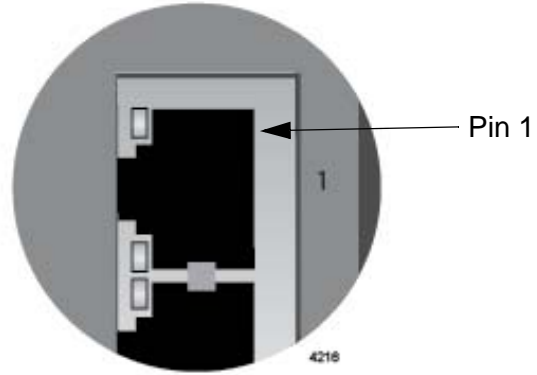


Figure 52. RJ-45 Port Pin Layout (Front View)

Table 25 lists the pin signals for a port operating at 10 or 100 Mbps.

Table 25. Pin Signals for RJ-45 Twisted Pair Ports at 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

Table 26 lists the pin signals for a port operating at 1000 Mbps.

Table 26. Pin Signals for RJ-45 Twisted Pair Ports at 1000 Mbps

Pinout	Pair
1	Pair 1 +
2	Pair 1 -

Table 26. Pin Signals for RJ-45 Twisted Pair Ports at 1000 Mbps

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

Figure 53 identifies pin 1 on the RJ-45 connector on the Console port.

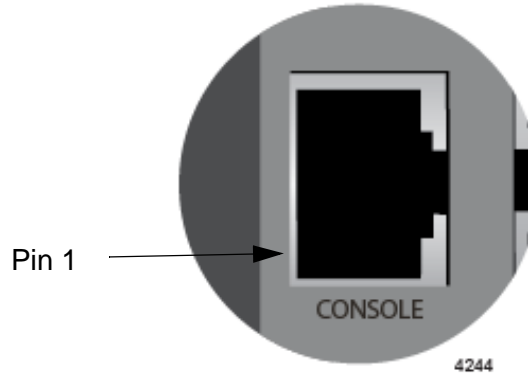


Figure 53. Console Port Pin Layout (Front View)

Table 27 lists the pin signals for the RJ-45 style serial Console port.

Table 27. RJ-45 Style Console Port Pin Signals

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

## PWR 1 and PWR 2 DC Power Connectors

---

Table 28 lists the pin signals for the PWR 1 and PWR 2 DC power connectors on the AT-IE200-6FT and AT-IE200-6GT Switch.

Table 28. PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE200-6FT and AT-IE200-6GT Switches

Pin	Signal
+	12/48VDC
-	12/48VDC Return

Table 29 lists the pin signals for the PWR 1 and PWR 2 DC power connectors on the AT-IE200-6FP and AT-IE200-6GP Switches.

Table 29. PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE200-6FP and AT-IE200-6GP Switches

Pin	Signal
+	24/48VDC
-	24/48VDC Return

For power supply specifications, refer to “Power Supplies” on page 47.

