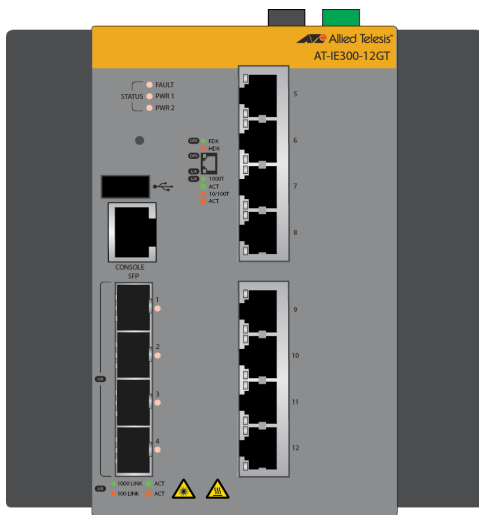


IE300 Series

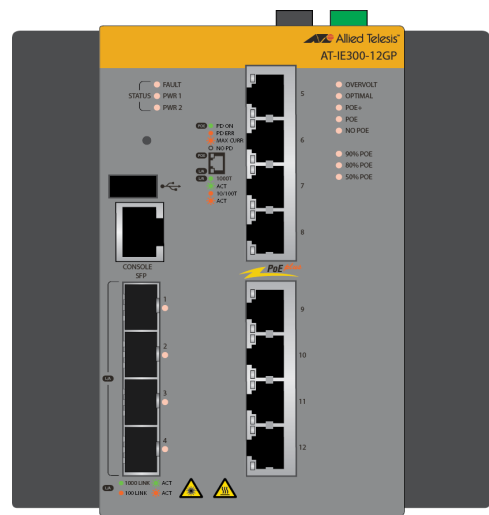
Industrial Ethernet Switches

AT-IE300-12GT

AT-IE300-12GP



4156



4157

Installation Guide

Copyright © 2018 Allied Telesis, Inc.

All rights reserved. No part of this publication may be reproduced without prior written permission from Allied Telesis, Inc.

Allied Telesis and the Allied Telesis logo are trademarks of Allied Telesis, Incorporated. All other product names, company names, logos or other designations mentioned herein are trademarks or registered trademarks of their respective owners.

Allied Telesis, Inc. reserves the right to make changes in specifications and other information contained in this document without prior written notice. The information provided herein is subject to change without notice. In no event shall Allied Telesis, Inc. be liable for any incidental, special, indirect, or consequential damages whatsoever, including but not limited to lost profits, arising out of or related to this manual or the information contained herein, even if Allied Telesis, Inc. has been advised of, known, or should have known, the possibility of such damages.

Electrical Safety and Emissions Standards

The electrical safety and emissions standards are contained in this section.

Standards

This product meets the following standards:

U.S. Federal Communications Commission

Interference Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.

Industry Canada

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

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

This equipment complies with radio frequency exposure limits set forth by Industry Canada for a controlled environment.

Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par Industrie Canada pour un environnement contrôlé.

European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment

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.

Regulatory Approvals

The regulatory approvals of the product are listed here:

Safety

UL/IEC/EN 60950-1
UL/IEC/EN 60950-22
CAN/CSA-22.2: 60950-1
CAN/CSA-22.2: 60950-22

EMC

CE, FCC Part 15 Class A
EN55032 (CISPR32) Class A
EN61000-3-2
EN61000-3-3
EN55024
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11
2004/108/EC EMC Directive
2006/95/EC Low Voltage Directive

Shock

EN60068-2-27
EN60068-2-31

Vibration

EN60068-2-6

Allied Telesis approved SFP modules

EN60825-1
EN60825-2
UL/IEC/EN60950-1
FDA CDRH accession registration


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

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 www.alliedtelesis.com/support.

Contents

Preface	13
Safety Symbols Used in this Document	14
Contacting Allied Telesis	15
Overview	17
Hardware Components	18
Features	21
Twisted Pair Ports	21
Power Over Ethernet	21
SFP Slots	21
LEDs	22
Alarm Connectors	22
MAC Address Tables	22
Management Software	22
Management Methods	22
Installation Options	22
Additional Features	22
10/100/1000Base-T Twisted Pair Ports	24
Connector Type	24
Speed	24
Duplex Mode	24
Maximum Distance	24
Cable Requirements	24
Automatic MDIX Detection	25
Port Pinouts	25
Power over Ethernet	26
PoE Versions	26
Ethernet Cabling for PoE devices	26
Powered Device Classes for PoE and PoE+	27
Power Delivery with Alternatives A and B	28
PoE Budget	30
Port Prioritization	30
SFP Slots	32
Console Port	33
USB Port	34
Reset Button	34
Ground Screw	35
PWR 1 and PWR 2 DC Power Connectors	35
Alarm In Connector	36
Alarm Out Connector	39
DIN Rail Bracket	40
Screw Holes for Wall Brackets	40
LEDs	41
Status LEDs	41
Twisted Pair Port LEDs	42
SFP Slot LEDs	44
PoE Status LEDs	45
Power Supplies	48
Optional Drip Guard	49
Beginning the Installation	51
Reviewing Safety Precautions	52
Safety Precautions When Working with Electricity	56
Reviewing Site Requirements	57
Verifying the Package Contents	59

Installing the Switch	63
Installing the Switch on a DIN Rail.....	64
Installing the Switch on a Wooden Wall.....	67
Tools and Material.....	68
Installing the Plywood Base	68
Installing the Switch on the Plywood Base.....	69
Installing the Switch on a Concrete Wall	71
Cabling the Ports	75
Cabling the Twisted Pair Ports	76
Installing SFP Transceivers.....	78
Powering On the Switch	83
Connecting the Grounding Wire	84
Wiring the ALM IN and ALM OUT Connectors	87
Preparing the DC Power Cables.....	92
Powering On the Switch	96
Verifying Switch Operations	97
Monitoring the Initialization Process	98
Starting a Local Management Session	100
Verifying the AT-IE300-12GP Switch.....	102
Verifying the PoE Budget	102
Configuring Alternatives A and B	103
Configuring the Provisioned PoE Budget.....	104
Installing the Optional Drip Guard.....	107
Troubleshooting	109
PWR 1 and PWR 2 LEDs	110
Twisted Pair Ports	111
SFP Slots.....	113
Power Over Ethernet	114
Technical Specifications	117
Physical Specifications	118
Environmental Specifications.....	120
Power Specifications	121
Certifications	122
RJ-45 Twisted Pair Port Pinouts.....	123
RJ-45 Style Serial Console Port Pinouts	125
PWR 1 and PWR 2 DC Power Connectors	126

Figures

Figure 1: Front Panel of the AT-IE300-12GT Switch	18
Figure 2: Front Panel of the AT-IE300-12GP Switch	19
Figure 3: Top Panel	19
Figure 4: Back Panel Features	20
Figure 5: Example 1 of the Alarm In (ALM IN) Connector	37
Figure 6: Example 2 of the Alarm In (ALM IN) Connector	38
Figure 7: Example of the Alarm Out Port	40
Figure 8: Twisted Pair Port LEDs on the AT-IE300-12GT Switch	42
Figure 9: Twisted Pair Ports on the AT-IE300-12GP Switch	43
Figure 10: Optional Drip Guard	49
Figure 11: Pre-installed Components on the Front Panel	59
Figure 12: Pre-installed Components on the Top Panel	60
Figure 13: Pre-installed Component on the Back Panel	61
Figure 14: Components in the Accessory Kit	62
Figure 15: Orientation of the Switch on a DIN Rail	64
Figure 16: Installing the Switch on a DIN Rail - 1	65
Figure 17: Installing the Switch on a DIN Rail - 2	65
Figure 18: Verifying the DIN Rail Installation	66
Figure 19: Switch on the Wall with a Plywood Base	67
Figure 20: Steps to Installing the Switch with a Plywood Base	68
Figure 21: Installing the Wall Brackets on the Switch	69
Figure 22: Attaching the Switch to the Plywood Base	70
Figure 23: Marking the Locations of the Bracket Holes on a Concrete Wall	72
Figure 24: Installing the Switch on a Concrete Wall	73
Figure 25: Removing the Dust Plug from an SFP Slot	79
Figure 26: Installing an SFP Transceiver	79
Figure 27: Removing the Dust Cover from an SFP Transceiver	80
Figure 28: Verifying the Position of the SFP Handle	80
Figure 29: Connecting a Fiber Optic Cable to an SFP Transceiver	81
Figure 30: Stripping the Grounding Wire	84
Figure 31: Loosening the Grounding Screw	85
Figure 32: Wrapping the Grounding Wire Around the Grounding Screw	85
Figure 33: Securing the Grounding Wire to the Switch	86
Figure 34: Polarity Legend for the Alarm Connectors	88
Figure 35: Stripping an Alarm Wire	88
Figure 36: Wrapping the Wire Strands	89
Figure 37: Removing an Alarm Connector	89
Figure 38: Loosening the Wire Retaining Screws on an Alarm Connector	89
Figure 39: Inserting the Wires into the DC Cable Connector	90
Figure 40: Inserting the DC Connector into the Alarm Connector	91
Figure 41: Pin Signals Legends for the PWR 1 and PWR 2 Connectors	92
Figure 42: Stripping a Power Cable Wire	93
Figure 43: Removing the PWR 1 - PWR 2 Cable Connector	93
Figure 44: Loosening the Wire Retaining Screws on the PWR 1 - PWR 2 Cable Connector	94
Figure 45: Inserting the Wires into the PWR 1 - PWR 2 Cable Connector	94
Figure 46: Verifying the Wire Installation	95
Figure 47: Connecting the Power Cable to the PWR 1 - PWR 2 Connector	96
Figure 48: Initialization Messages	98
Figure 49: Initialization Messages (Continued)	99

Figures

Figure 50: Installing the Optional Drip Guard.....	107
Figure 51: Securing the Drip Guard.....	108
Figure 52: RJ-45 Port Pin Layout (Front View).....	123
Figure 53: Console Port Pin Layout (Front View)	125

Tables

Table 1: Twisted Pair Cable for the AT-IE300-12GT Switch	25
Table 2: Maximum Power Levels	26
Table 3: Twisted Pair Cable for Powered Devices on the AT-IE300-12GP Switch	27
Table 4: PoE and PoE+ Powered Device Classes	27
Table 5: Maximum Installation Site Temperatures Versus SFP Temperature Ratings	32
Table 6: Status LEDs	41
Table 7: Twisted Pair Port LEDs on the AT-IE300-12GT Switch	43
Table 8: Twisted Pair Port LEDs on the AT-IE300-12GP Switch	44
Table 9: SFP Slot LED	44
Table 10: PoE Status LEDs	45
Table 11: Ground Resistivity Recommendations	58
Table 12: Product Dimensions	118
Table 13: Product Weights	118
Table 14: Ventilation Requirements for Cabinet Installation	118
Table 15: Minimum Cabinet Dimensions	119
Table 16: Environmental Specifications	120
Table 17: Ingress Protection	120
Table 18: Maximum Power Consumptions	121
Table 19: Input Power Specifications	121
Table 20: Heat Dissipation (British Thermal Units/Hour)	121
Table 21: Regulatory Approvals	122
Table 22: Pin Signals for 10 and 100 Mbps	123
Table 23: Pin Signals for 1000 Mbps	123
Table 24: RJ-45 Style Console Port Pin Signals	125
Table 25: PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE300-12GT Switch	126
Table 26: PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE300-12GP Switch	126

Preface

This guide contains the hardware installation instructions for the IE300 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

This document uses the following conventions.

Note

Notes provide additional information.



Caution

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



Warning

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



Warning

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



Warning

Warnings inform you of hot surfaces.

Contacting Allied Telesis

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

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

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

Chapter 1

Overview

This chapter describes the hardware features of the IE300 Series of managed industrial switches. The sections in the chapter are listed here:

- ❑ “Hardware Components” on page 18
- ❑ “Features” on page 21
- ❑ “10/100/1000Base-T Twisted Pair Ports” on page 24
- ❑ “Power over Ethernet” on page 26
- ❑ “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 48
- ❑ “Optional Drip Guard” on page 49

Hardware Components

The switches in the IE300 Series are listed here:

- ❑ AT-IE300-12GT
- ❑ AT-IE300-12GP

The front panel of the AT-IE300-12GT Switch is shown in Figure 1.

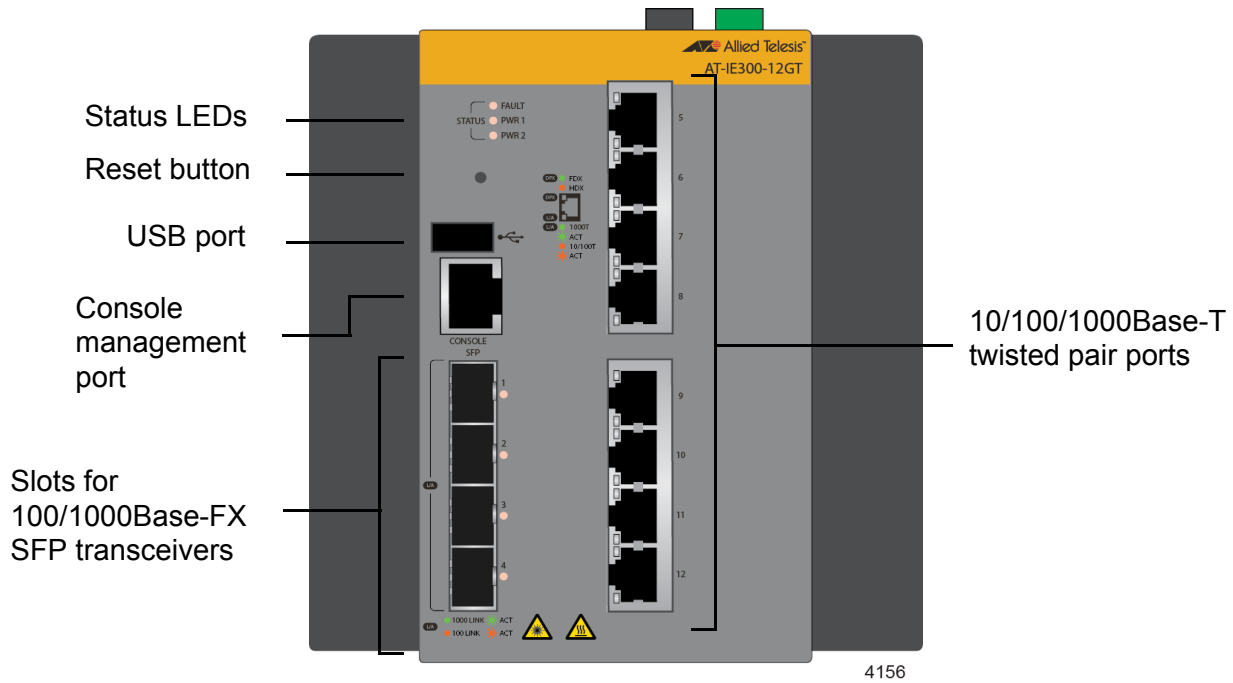


Figure 1. Front Panel of the AT-IE300-12GT Switch

The front panel of the AT-IE300-12GP Switch is shown in Figure 2 on page 19.

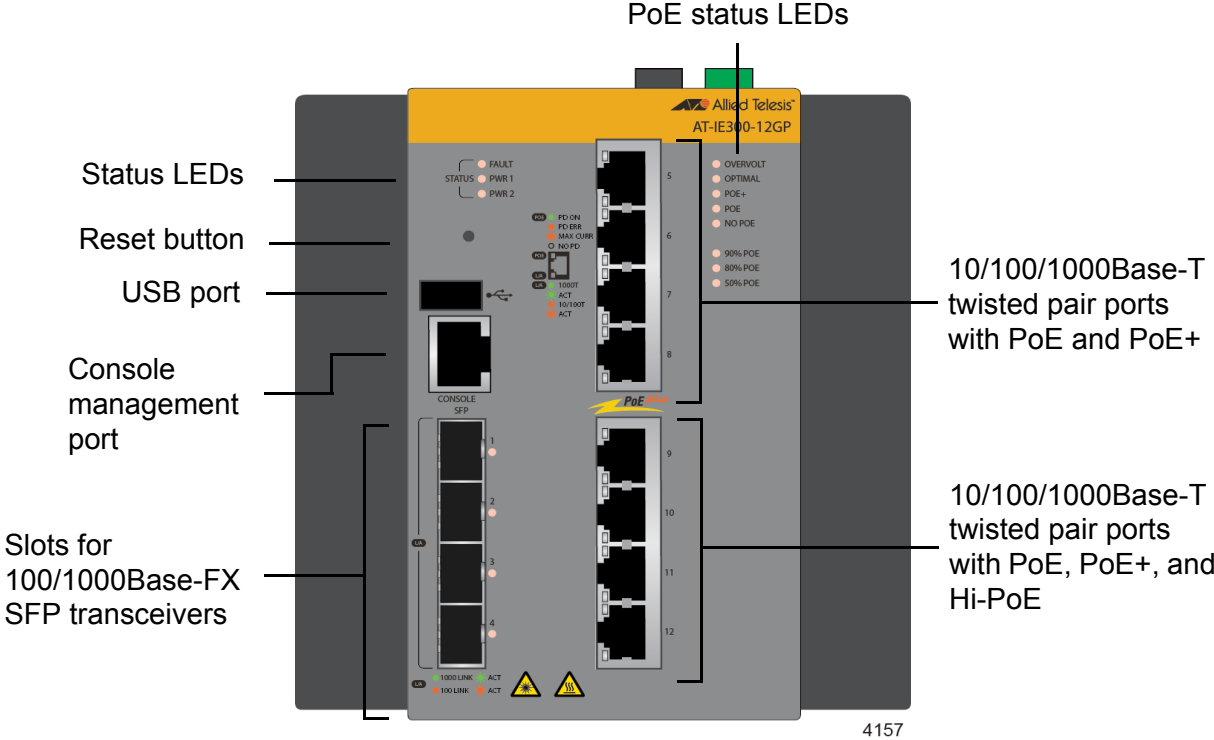


Figure 2. Front Panel of the AT-IE300-12GP Switch

Figure 3 identifies the components on the top panel.

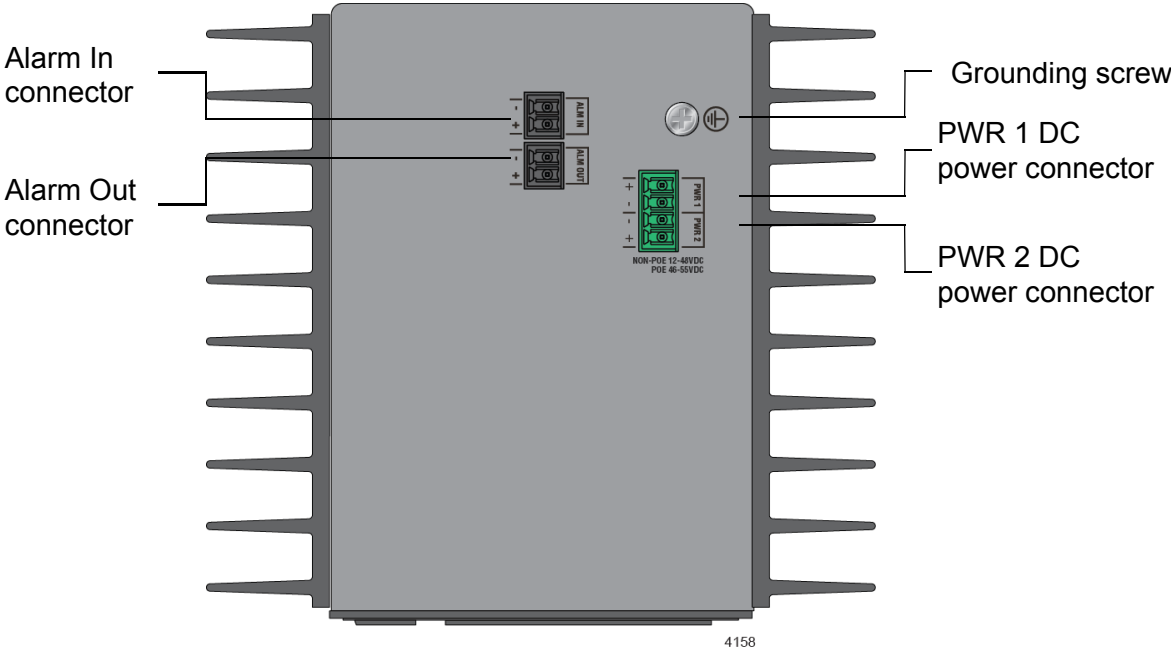


Figure 3. Top Panel

Figure 4 on page 20 identifies the components on the back panel.

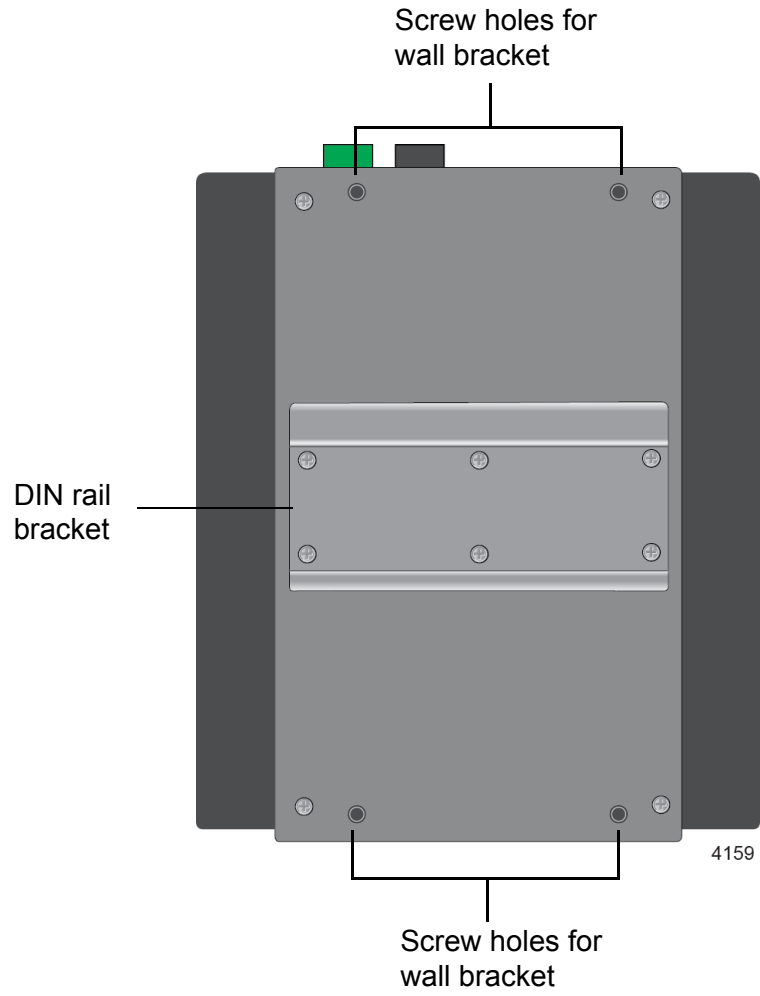


Figure 4. Back Panel Features

Features

Here are the basic features of the switches.

Twisted Pair Ports

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

- 8 ports per switch
- 10Base-T, 100Base-TX, and 1000Base-T compliant
- IEEE 802.3u Auto-Negotiation compliant
- Auto-MDI/MDIX
- 100 meters (328 feet) maximum operating distance
- IEEE 802.3x flow control in 10/100Base-TX full-duplex mode
- IEEE 802.3x back pressure in 10/100Base-TX half-duplex mode
- IEEE 802.3ab 1000Base-T
- Jumbo frames up to 9KB
- RJ-45 connectors

Power Over Ethernet

Ports 5 to 12 on the AT-IE300-12GP Switch have these Power over Ethernet features:

- Ports 5 to 8 support PoE (15 watts) and PoE+ (30 watts)
- Ports 9 to 12 support PoE, PoE+, and Hi-PoE (60 watts)
- Powered device classes 0 to 4
- Maximum PoE budget of 240 watts with one or two power supplies
- Port prioritization
- Alternative A wiring for PoE or PoE+ devices
- Combined Alternatives A and B wiring for Hi-PoE devices

SFP Slots

The four 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 data sheet 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-IE300-12GT Switch.
- Link/activity and PoE status LEDs for the twisted pair ports on the AT-IE300-12GP Switch.
- Link/activity LEDs for the SFP ports.
- Fault and power supply status LEDs
- PoE LEDs on the AT-IE300-12GP Switch

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, to indicate switch alarms.

MAC Address Tables

Here are the basic features of the MAC address tables:

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

Management Software

The switches support the following management software and interfaces:

- AlliedWare Plus management software, version 5.4.6 or later
- 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 rail)
- 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

10/100/1000Base-T Twisted Pair Ports

This section describes the 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 22 on page 123 and Table 23 on page 123.

Speed

The ports can operate at 10, 100, or 1000 Mbps. The switch can set the speeds automatically with Auto-Negotiation, the default setting, or you can manually set the speeds with the AlliedWare Plus operating system.

Note

Twisted-pair ports must be set to Auto-Negotiation to operate at 1000 Mbps. You cannot manually set twisted-pair ports to 1000 Mbps.

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 ports on the AT-IE300-12GT Switch are listed in Table 1.

Table 1. Twisted Pair Cable for the AT-IE300-12GT Switch

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 10/100/1000 Mbps 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 22 on page 123 for the pinouts of the twisted-pair ports at 10 or 100 Mbps and to Table 23 on page 123 for the port pinouts at 1000 Mbps.

Power over Ethernet

Ports 5 to 12 on the AT-IE300-12GP Switch 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-IE300-12GP Switch supports the following versions of Power over Ethernet:

- ❑ PoE (IEEE 802.3af)
- ❑ PoE+ (802.3at)
- ❑ Hi-PoE (proprietary implementation of 4-pair PoE)

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	5 to 12	15.4W	12.95W
PoE+	5 to 12	30.0W	25.9W
Hi-PoE	9 to 12	60.0W	51.8W

Ethernet Cabling for PoE devices

The cable requirements for the twisted pair ports on the AT-IE300-12GP Switch for powered devices are given in Table 3 on page 27. For cable requirements for ports connected to non-PoE devices, refer to Table 1 on page 25.

Table 3. Twisted Pair Cable for Powered Devices on the AT-IE300-12GP Switch

Cable Type	10Mbps		100Mbps		1000Mbps	
	PoE	PoE+ or Hi-PoE	PoE	PoE+ or Hi-PoE	PoE	PoE+ or Hi-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	No	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 on page 27. The AT-IE300-12GP Switch supports 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

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

Class	Usage	Maximum Power Output at the Switch Port	PD Power Range
1	Optional	4.0W	0.44W to 3.84W
2	Optional	7.0W	3.84W to 6.49W
3	Optional	15.4W	6.49W to 12.95W
4	Optional	30.0W	12.95W to 25.9W

Power Delivery with Alternatives A and B

The PoE standards define two methods for delivering power over twisted pair cables from power sources such as the Ethernet switch to powered devices. The methods, called Alternatives A and B, identify the wire strands that carry the electrical power over the Ethernet cables to the powered devices from the power source, which in this case is the IE300 Series switch.

Twisted pair cabling usually has eight strands. For 10Base-T and 100Base-TX devices, the wire strands connected to pins 1, 2, 3, and 6 carry the network traffic while the strands connected to pins 4, 5, 7, and 8 are unused. 1000Base-T devices use all eight strands to carry network traffic.

For PoE and PoE+ devices, power is delivered over four of the eight strands. In Alternative A, power is delivered 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.

For Hi-PoE devices, power is delivered on all eight strands in Ethernet cabling.

The AT-IE300-12GP Switch supports PoE and PoE+ powered devices that comply with the IEEE 802.3af and 802.3at standards. The standards require that powered devices support both Alternatives A and B. However, legacy PDs that are non-standard or were manufactured before the completion of the standards might support only one method.

The AT-IE300-12GP Switch supports Alternatives A and B on the twisted pair ports as follows:

- Port 5 to 8 - Alternative A only
- Ports 9 to 12 - Alternative A, Alternative B, or both

Here are the default settings for Alternatives A and B on the switch:

- ❑ For ports 5 to 8 the default setting for Alternative A is enabled.
- ❑ For ports 9 to 12 the default settings are enabled for Alternative A and disabled for Alternative B.

Here are guidelines to enabling or disabling Alternatives A and B on the switch ports for different types of powered devices:

- ❑ PoE or PoE+ devices that comply with the IEEE 802.3af and 802.3at standards and support both Alternatives A and B can be connected to any of the twisted pair ports. Since Alternative A is enabled by default on all the twisted pair ports, no extra steps are required to support these devices.
- ❑ PoE or PoE+ devices that do not comply with the standards and only support Alternative A can also be connected to any of the twisted pair ports. Again, no extra steps are required to support these devices because Alternative A is enabled by default on all the twisted pair ports.
- ❑ PoE or PoE+ devices that do not comply with the standards and only support Alternative B must be connected to ports 9 to 12. You must disable Alternative A and enable Alternative B on ports connected to these devices. The command in the AlliedWare Plus operating system for disabling Alternative A is shown here:

```
NO POWER-INLINE PAIR DATA ENABLE
```

The command for enabling Alternative B is shown here:

```
POWER-INLINE PAIR SPARE ENABLE
```

The commands are located in the Port Interface mode.

- ❑ Hi-PoE devices must be connected to ports 9 to 12. Ports connected to Hi-PoE devices must use both Alternatives A and B because Hi-PoE devices require power on all eight strands in Ethernet cabling. The switch only supports Hi-PoE devices that also support both Alternatives A and B, and that receive power on all eight strands. Since Alternative A is enabled by default, you do not have to enable it on ports connected to Hi-PoE devices. However, you do have to enable Alternative B, using the above POWER-INLINE command.

Note

To be compatible with Hi-PoE on the switch, 10-Base-T and 100Base-T devices must have transformers with center taps on pair 4 and 5 and pair 7 and 8 to extract power from center taps. Devices without the transformers and center taps will not work with the switch.

- ❑ Non-PoE devices can be connected to any of the twisted pair ports on the switch. Ports connected to network nodes that are not PDs (that is, devices that receive power from another power source) function as regular Ethernet ports, without PoE. The PoE feature remains enabled on the ports but no power is delivered to the devices.

PoE Budget

The AT-IE300-12GP Switch has a PoE budget. This is the total wattage the switch has available for the powered devices on its ports. The maximum possible budget is 240W. The PoE budget can never be more than that, but it can be less, depending on the DC power supply.

The number of powered devices the switch can support at one time will depend on the switch's PoE budget and the wattage requirements of the powered devices. As long as the total wattage requirements of the powered devices is less than the budget of the switch, the switch can supply power to all the devices. If the total wattage requirements exceed the PoE budget, the switch will deny power to one or more devices using a mechanism referred to as port prioritization.

To determine whether the wattage requirements of the PoE devices you plan to connect to the switch exceed its 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 PoE budget. 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 enables you to connect different classes of PoE equipment to the ports on the switch.

Port Prioritization

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

There are three priority levels:

- ❑ Critical
- ❑ High
- ❑ Low

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

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

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

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

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

SFP Slots

The four 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 data sheet 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

Maximum Ambient Installation Site Temperature	Recommended Maximum SFP Operating Temperature
75° C (167° F)	105° C (221° F)
65° C (149° F)	95° C (203° F)
55° C (131° F)	85° C (185° F)
<=40° C (<=104° F)	70° C (158° F)

Console Port

The Console port is a serial RS-232 port you use to access the AlliedWare Plus management software to 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 not come with a management cable. You must purchase one or build your own. Refer to Table 24 on page 125 for the pin assignments of the Console port.

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 a 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. 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

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 later in this guide.

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, which 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 48.

Allied Telesis does not sell or provide 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 IE300 Series product.

Alarm In Connector

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

- 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 can flow 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 IE300 Series Switches*.

Here are the requirements for the external sensor:

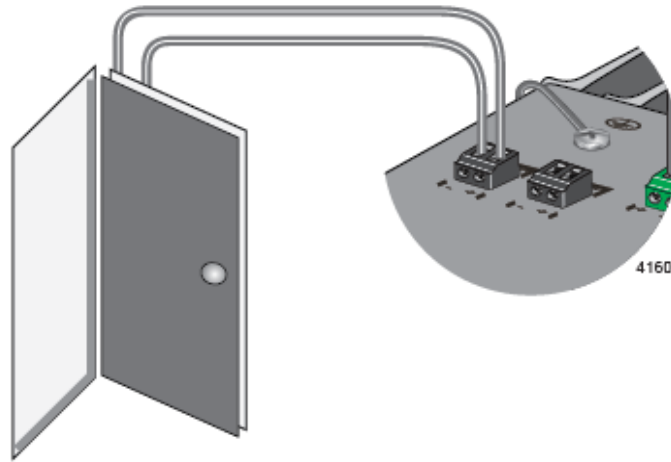
- It must be a dry contact.
- It must not place any current on the circuit.
- It must not use the voltage or current for its own operations.
- It must be able to handle a minimum of 3.3VDC and 320uA.



Caution

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

The example in Figure 5 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.

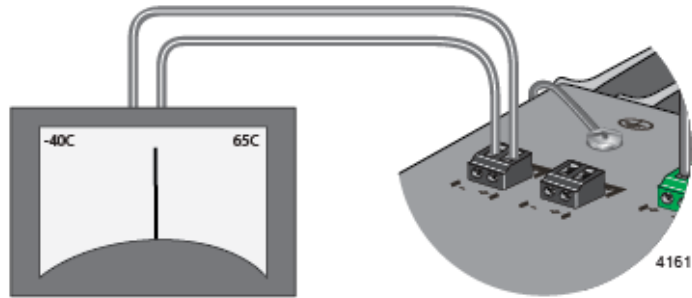
Figure 5. Example 1 of the Alarm In (ALM IN) Connector

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 6 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 6. 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 can use 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:

- ❑ LEDs
- ❑ Buzzers

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:

- ❑ 30VDC maximum
- ❑ 0.5A 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 IE300 Series Switches*.

An example of the feature is illustrated in Figure 7 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.

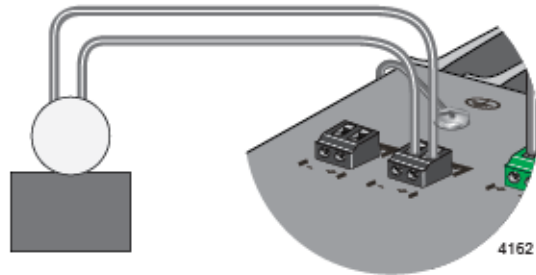
Now assume you want the switch to open the circuit and activate the LED on the alert device whenever any port on the switch does not have a link to a network device. Here is the ALARM FACILITY RELAY command:

```
awplus(config)#alarm facility link-down port1.0.1-
port1.0.12 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 7. 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 44
- “PoE Status LEDs” on page 45

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	<p>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:</p> <pre>alarm facility link-down port1.0.1 led</pre> <p>For more information about the command, refer to the <i>Software Reference for IE300 Series Switches</i> or <i>Command Reference for IE300 Series Switches</i>.</p>
	Six flashes in two seconds	The switch is overheating and might shutdown.
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-IE300-12GT Switch have two LEDs each. The LEDs are identified in Figure 8.

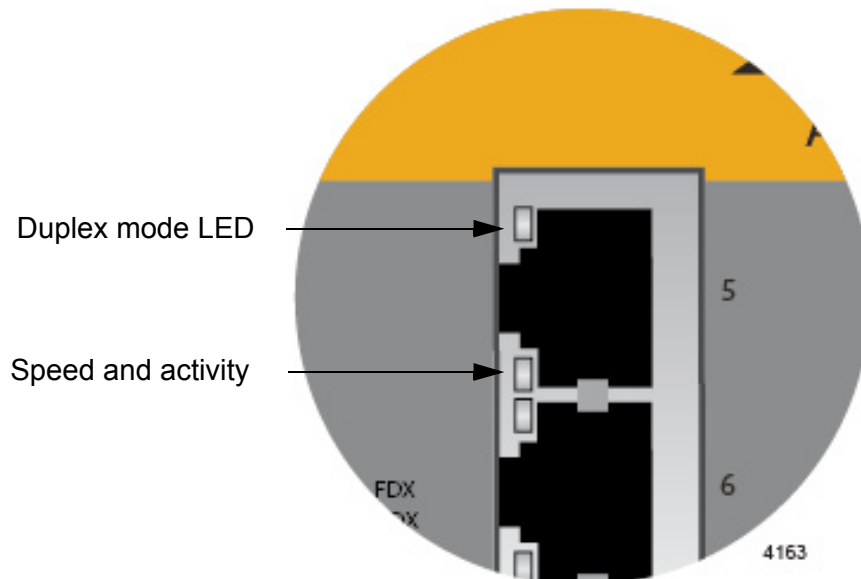


Figure 8. Twisted Pair Port LEDs on the AT-IE300-12GT Switch

The states of the LEDs on the twisted pair ports on the AT-IE300-12GT Switch are defined in Table 7 on page 43.

Table 7. Twisted Pair Port LEDs on the AT-IE300-12GT 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.
	Off	The port has not established a link with a network device.

The twisted pair ports on the AT-IE300-12GP Switch have two LEDs each. The LEDs are identified in Figure 9.

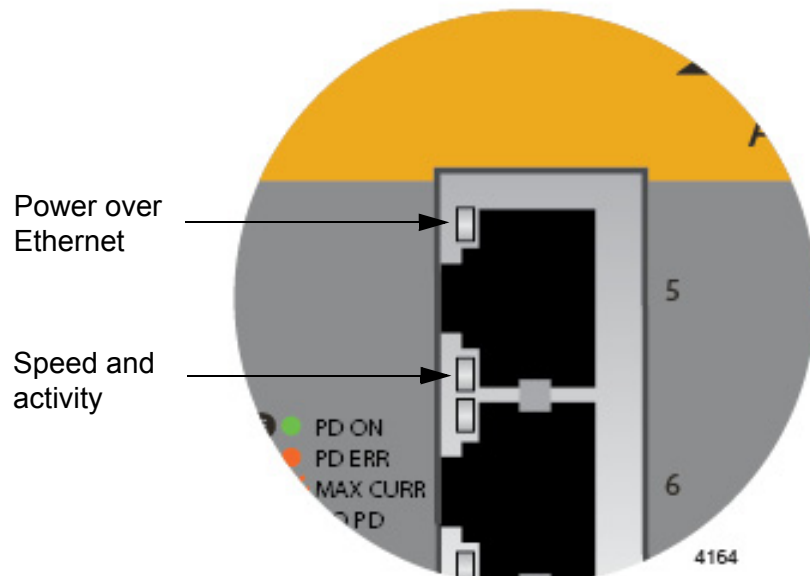


Figure 9. Twisted Pair Ports on the AT-IE300-12GP Switch

The states of the LEDs on the twisted pair ports on the AT-IE300-12GP Switch are defined in Table 8 on page 44.

Table 8. Twisted Pair Port LEDs on the AT-IE300-12GP 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 shutdown PoE on it 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 unused power.
	Off	This LED state can result from the following conditions: <ul style="list-style-type: none"> - The port is connected to a non-PoE device. - The PD is powered off. - The port is disabled in the management software. - PoE is disabled on the port.
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 9.

Table 9. SFP Slot LED

State	Description
Solid Green	The port has established a 1Gbps link to a network device.
Flashing Green	The port is transmitting or receiving network packet traffic at 1Gbps.
Solid Amber	The port has established a 100Mbps link to a network device.

Table 9. SFP Slot LED (Continued)

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

PoE Status LEDs

The following notes apply to the PoE Status LEDs:

- ❑ The switch uses 240W as the default nominal PoE budget for the Optimal, 50%, 80%, and 90% PoE Status LEDs. The LEDs might not reflect the true wattage usage of the powered devices if the actual PoE budget from the power supply is different. You can adjust the nominal budget with the `POWER-INLINE WATTAGE MAX` command in the Global Configuration mode of the operating system. For instructions, refer to “Configuring the Provisioned PoE Budget” on page 104.
- ❑ Do not operate the switch if the Overvolt LED is solid amber. Either the power supply is generating too much power or it is not compatible with the switch. Turn off and replace the power supply.
- ❑ The LEDs do not indicate the presence of Hi-PoE devices. To check for Hi-PoE devices, use the `SHOW POWER-INLINE` command in the User Exec or Privileged Exec mode. Devices using more than 25.9W are considered Hi-PoE devices.

The PoE status LEDs on the AT-IE300-12GP Switch are defined in Table 10.

Table 10. PoE Status LEDs

LED	State	Description
Overvolt	Solid Amber	The DC power from the power supply exceeds the maximum limit for the switch. The power supply should be replaced.
	Off	The DC power from the power supply is within the normal operating range of the switch.

Table 10. PoE Status LEDs (Continued)

LED	State	Description
Optimal	Green	The switch has the maximum amount of power for powered devices. The default value is 240W. You can adjust this value with the POWER-INLINE WATTAGE MAX command in the User Exec or Privileged Exec mode. The value cannot be greater than 240W.
	Off	The switch has less than the maximum amount of power for powered devices. The default value is 240W.
PoE+	Solid green	PoE/PoE+ is enabled on the switch and the switch is delivering between 12.95W to 25.9W to one or more PoE+ devices.
	Off	This LED state can be caused by the following conditions: - PoE/PoE+ is enabled on the switch but there are no PoE+ devices. - PoE/PoE+ is disabled on the switch.
PoE	Solid green	PoE/PoE+ is enabled on the switch and the switch is delivering less than 12.95W to one or more PoE devices.
	Off	This LED state can be caused by the following conditions: - PoE/PoE+ is enabled on the switch but there are no PoE devices. - PoE/PoE+ is disabled on the switch.

Table 10. PoE Status LEDs (Continued)

LED	State	Description
No PoE	Solid amber	<p>The switch cannot support any powered devices on its ports because it is not receiving sufficient power from the power supply. Possible causes of this condition are listed here:</p> <ul style="list-style-type: none"> - The power supply is experiencing a problem. - The power supply is operating normally but its maximum power rating is not adequate for the switch and the powered devices. For power supply specifications, refer to “Power Supplies” on page 48
	Off	The switch is receiving sufficient power from the power supply to supply power to powered devices.
90%	Solid green	The powered devices are using more than 90% of the switch’s power budget. The default power budget is 240W.
	Off	The powered devices are using less than 90% of the switch’s maximum power budget or there are no powered devices.
80%	Solid green	The powered devices are using more than 80% of the switch’s maximum power budget.
	Off	The powered devices are using less than 80% of the switch’s maximum power budget or there are no powered devices.
50%	Solid green	The powered devices are using more than 50% of the switch’s maximum power budget.
	Off	The powered devices are using less than 50% of the switch’s maximum power budget or there are no powered devices.

Power Supplies

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

Here are the power supply requirements for the AT-IE300-12GT Switch:

- ❑ DC voltage between 12 and 55VDC.
- ❑ DC voltage must not exceed 55VDC.
- ❑ The DC power supply must be capable of supplying 30 watts continuously over the operating temperature range of -40° C to 75° C (-40° F to 167° F).

The AT-IE300-12GT Switch 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.

Here are the power supply requirements for the AT-IE300-12GP Switch:

- ❑ DC voltage between 46 and 55VDC. A DC voltage of 53.5V provides the maximum power budget of 240W for powered devices.
- ❑ DC voltage must not exceed 55VDC.
- ❑ The DC power supply must be capable of supplying 320 watts continuously over the operating temperature range of -40° C to 75° C (-40° F to 167° F).

Like the AT-IE300-12GT Switch, the AT-IE300-12GP Switch 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 240W of power for powered devices. Adding a second power supply adds system and PoE power redundancy.

Note

A 48VDC power supply for the AT-IE300-12GP Switch must have an absolute maximum tolerance of +2.5% when adjusted to 53.5VDC at the input to the switch, to provide full Hi-PoE power.

Optional Drip Guard

Allied Telesis offers an optional drip guard for the switch. Refer to Figure 10. The switch with the drip guard has an ingress protection (IP) code of IP31.

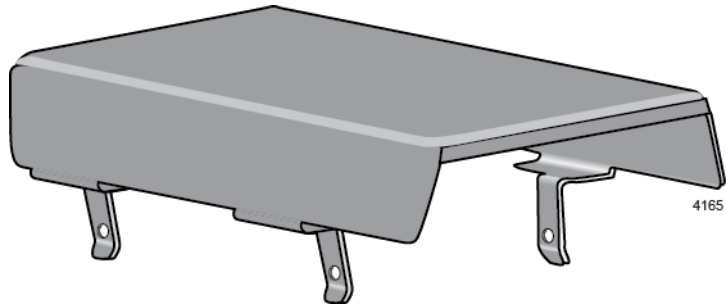


Figure 10. Optional Drip Guard

Note

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

Chapter 2

Beginning the Installation


The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 52
- “Safety Precautions When Working with Electricity” on page 56
- “Reviewing Site Requirements” on page 57
- “Verifying the Package Contents” on page 59

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.



Warning

Class 1 Laser product.  L1




Warning

Laser Radiation.
Class 1M Laser product.



Warning

Do not stare into the laser beam.  L2




Warning

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




Warning

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



Warning

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

**Warning**

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

**Warning**

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 a wiring or utility box, verify that the enclosure has 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.

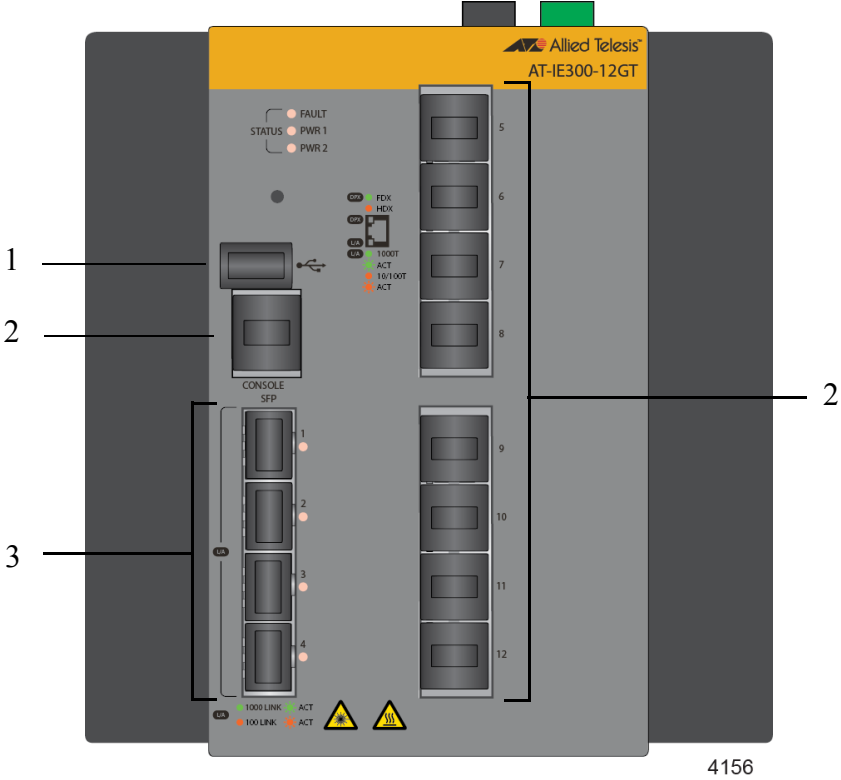
- ❑ The switch and DC power source should be installed close to each other so that the DC power cables are kept as short as possible to minimize voltage loss.
- ❑ When installing the switch in an indoor or outdoor metal enclosure, select an enclosure that is large enough for both the switch and DC power 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 11.

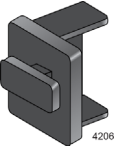
Table 11. Ground Resistivity Recommendations

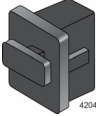
Level	Recommendation
Best Practice	<5 ohms
Acceptable	5 to 15 ohms
Marginal	15 to 25 ohms
Non-compliant	>25 ohms

Verifying the Package Contents

Figure 11 identifies the pre-installed components on the front panel of the switch.



1  One dust cover on the USB port

2  Nine dust covers on the twisted pair ports and Console port

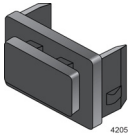
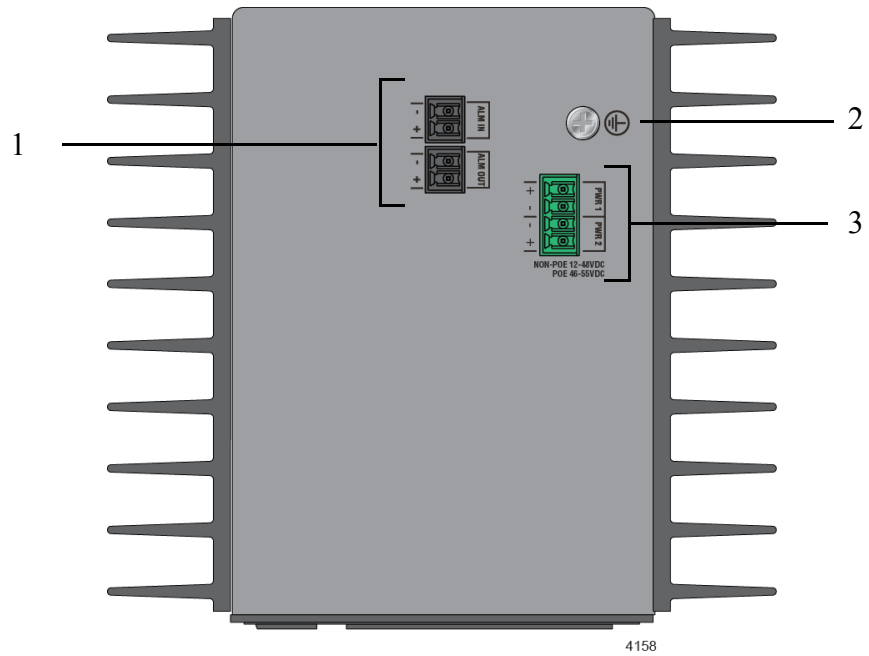
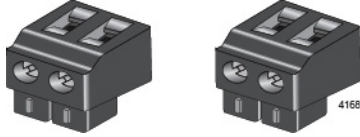

3  Four dust covers on the SFP slots

Figure 11. Pre-installed Components on the Front Panel

Figure 12 identifies the pre-installed components on the top panel.



- 1  Two 2-pin connectors on the DC ALM IN and ALM OUT connectors 4166

- 2  One M4x8 Phillips-head grounding screw

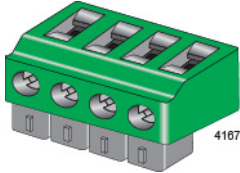
- 3  One 4-pin connector on the DC power PWR 1 and PWR 2 connector 4167

Figure 12. Pre-installed Components on the Top Panel

Figure 13 identifies the pre-installed component on the back panel.

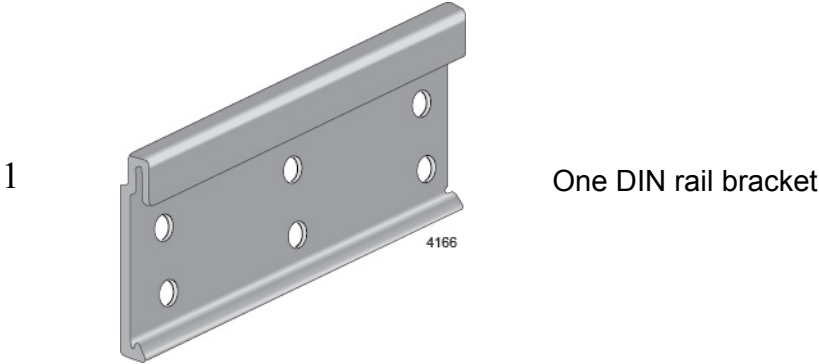
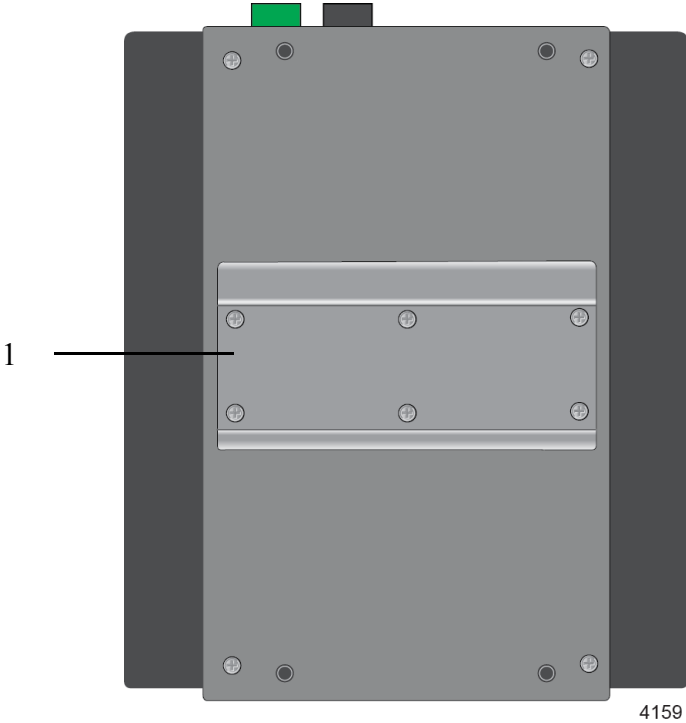


Figure 13. Pre-installed Component on the Back Panel

Figure 14 lists the items included in the accessory kit that comes with the switch.

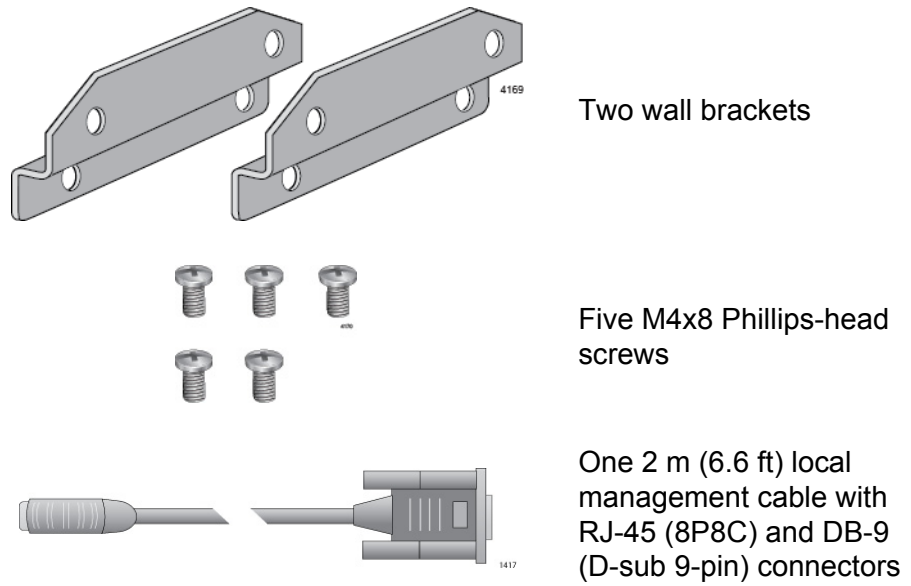


Figure 14. Components in the Accessory Kit

Chapter 3

Installing the Switch

The procedures in this chapter are listed here:

- “Installing the Switch on a DIN Rail” on page 64
- “Installing the Switch on a Wooden Wall” on page 67
- “Installing the Switch on a Concrete Wall” on page 71

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 15 shows the proper orientation of the switch on a DIN rail. Do not install the switch horizontally or upside-down.

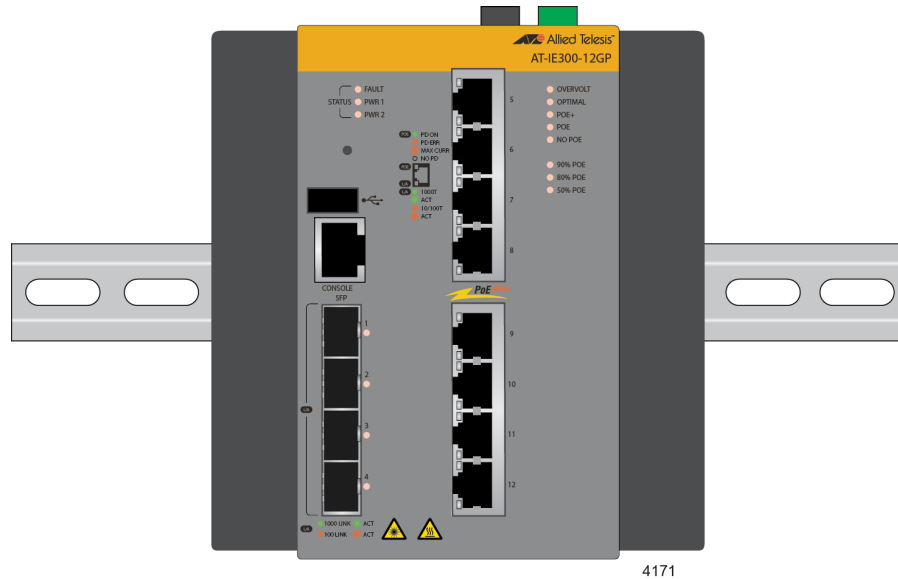


Figure 15. Orientation of the Switch on a DIN Rail

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 16 on page 65.

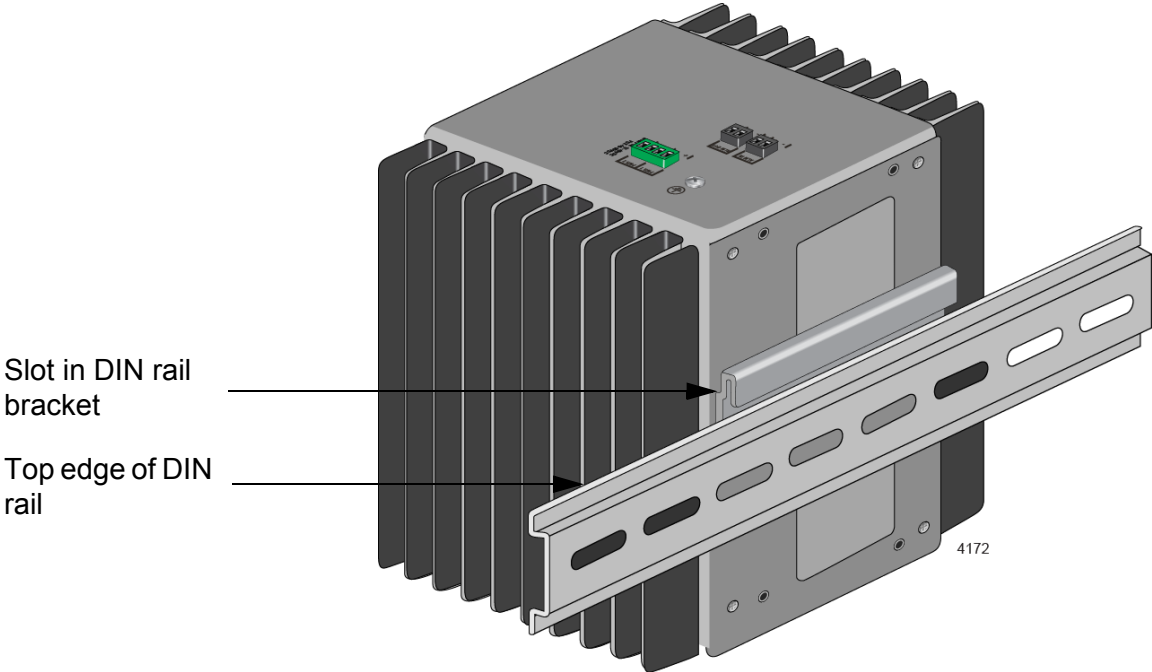


Figure 16. Installing the Switch on a DIN Rail - 1

- 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 in the bracket. Refer to Figure 17.

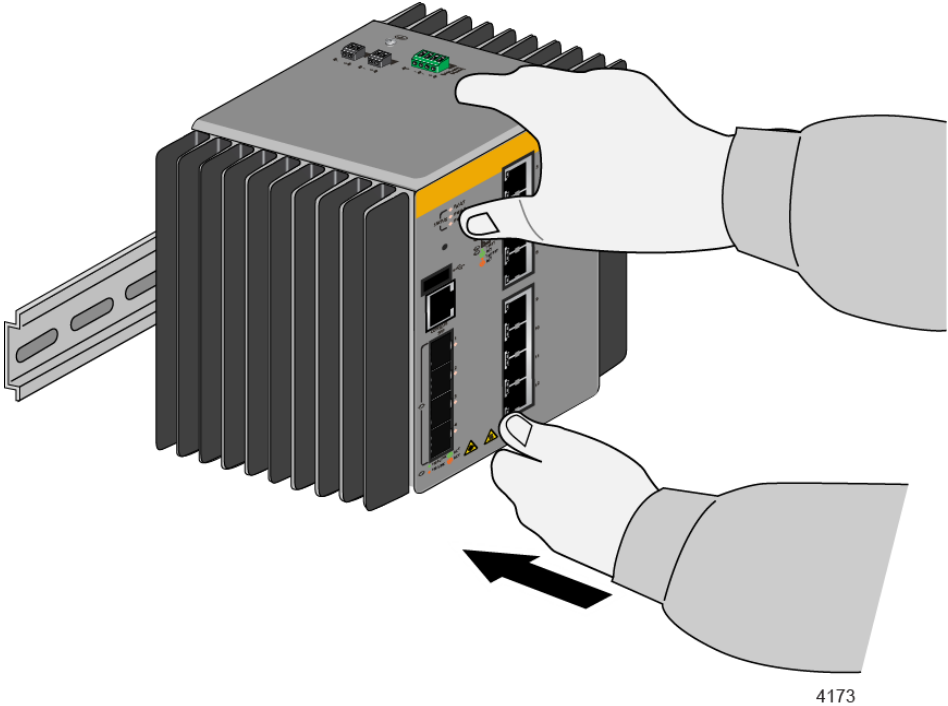


Figure 17. Installing the Switch on a DIN Rail - 2

3. Visually inspect the bracket to verify that the DIN rail is now fitted into the top and bottom slots. Refer to Figure 18.

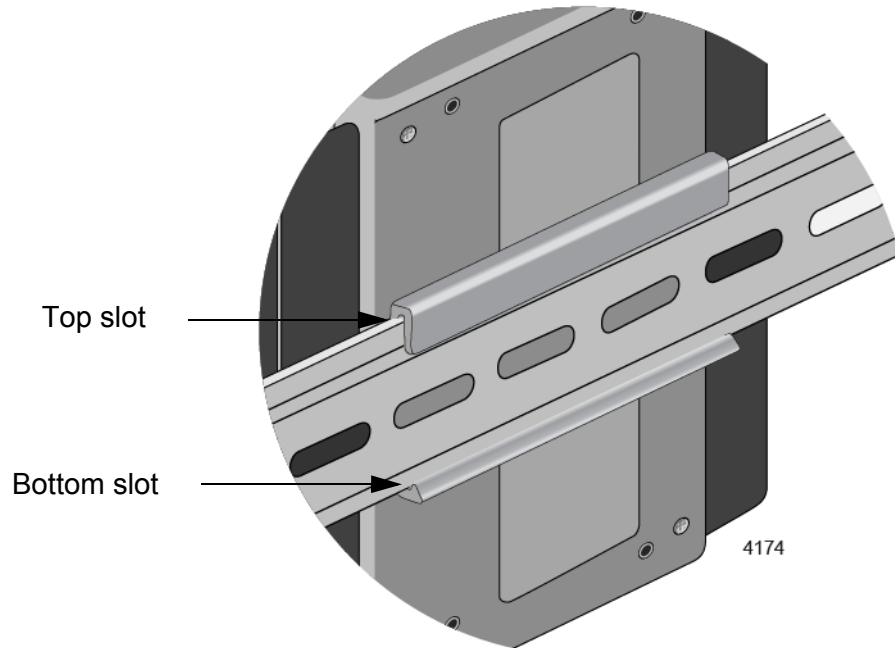


Figure 18. Verifying the DIN Rail Installation

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.

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

Installing the Switch on a Wooden Wall

Allied Telesis recommends using a plywood base when installing the switch on a wall with wooden studs. The base allows you to mount the device on two studs in the wall. (A plywood base is not required for a concrete wall.) Refer to Figure 19.

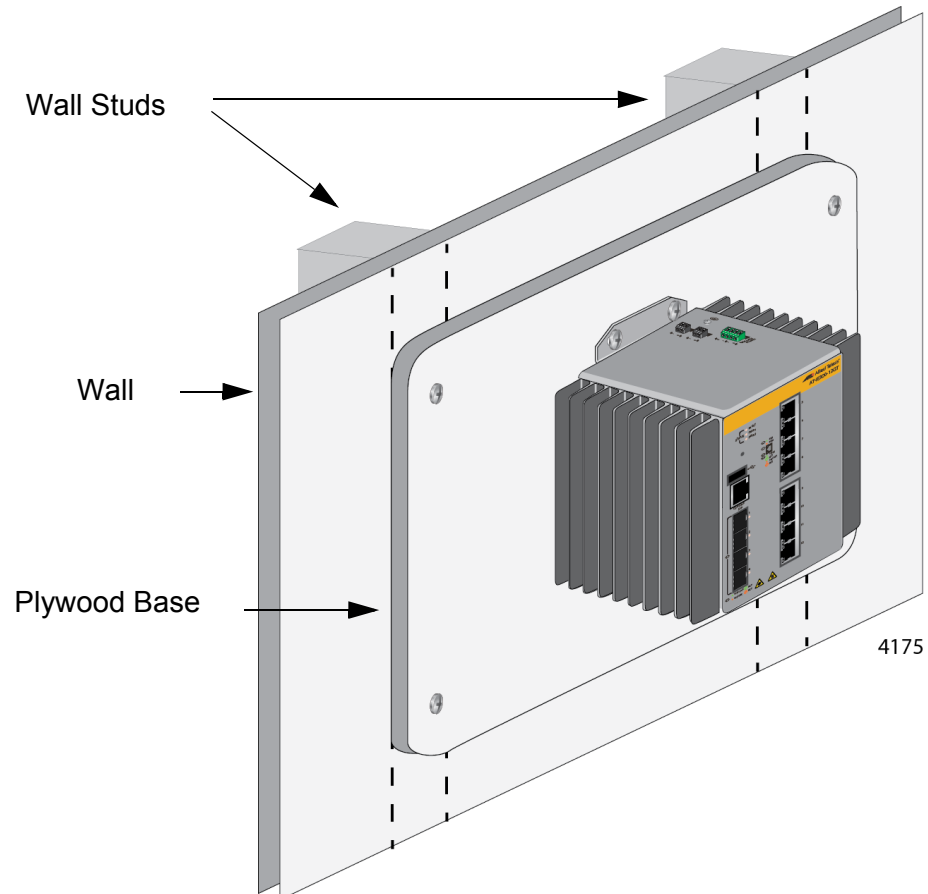


Figure 19. Switch on the Wall with a Plywood Base

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

- ❑ Width: 58.4 centimeters (23 inches)
- ❑ Height: 28.0 centimeters (11 inches)
- ❑ Thickness: 2.6 centimeters (1 inch)

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

You should install the plywood base to the wall first and then install the switch on the base. Refer to Figure 20.

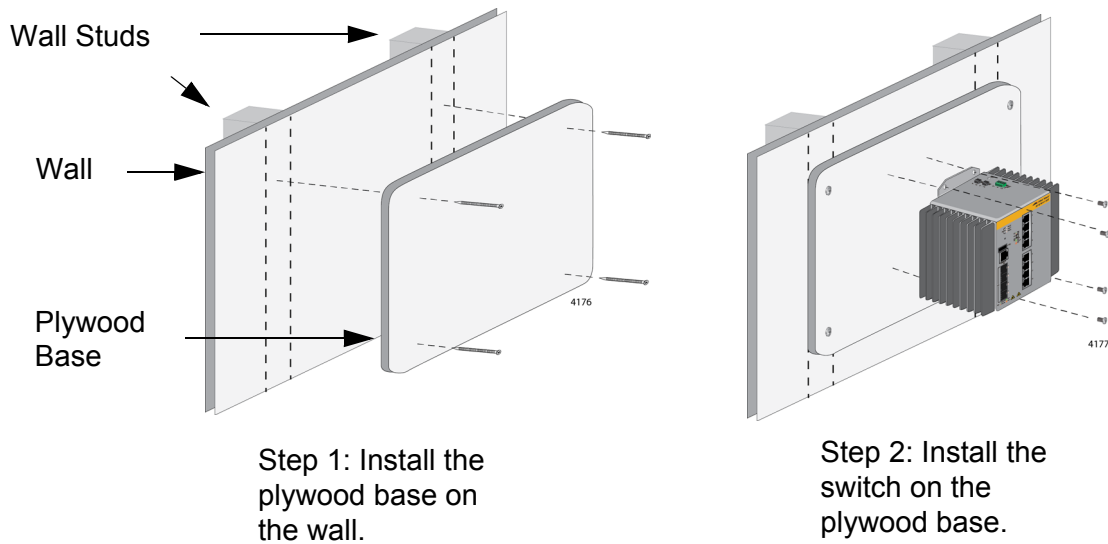


Figure 20. Steps to Installing the Switch with a Plywood Base

Tools and Material

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

- 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 wall studs and hot electrical wiring (not provided)
- Plywood base (not provided)
- Four wall screws for attaching the switch to the plywood base (not provided). The diameter of the screw holes in the wall brackets is 4.5 mm (0.17 in.).
- Four screws and anchors for attaching the plywood base to the wall (not provided)

Installing the Plywood Base

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

- You should use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- You should attach the base to two wall studs with a minimum of four screws.

- ❑ The selected wall location for the base should adhere to the recommendations in “Reviewing Site Requirements” on page 57.

Installing the Switch on the Plywood Base

This procedure assumes that the plywood base for the switch is installed on the wall. Please review “Reviewing Safety Precautions” on page 52 and “Reviewing Site Requirements” on page 57 before performing this procedure.



Warning

The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.



Warning

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

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

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

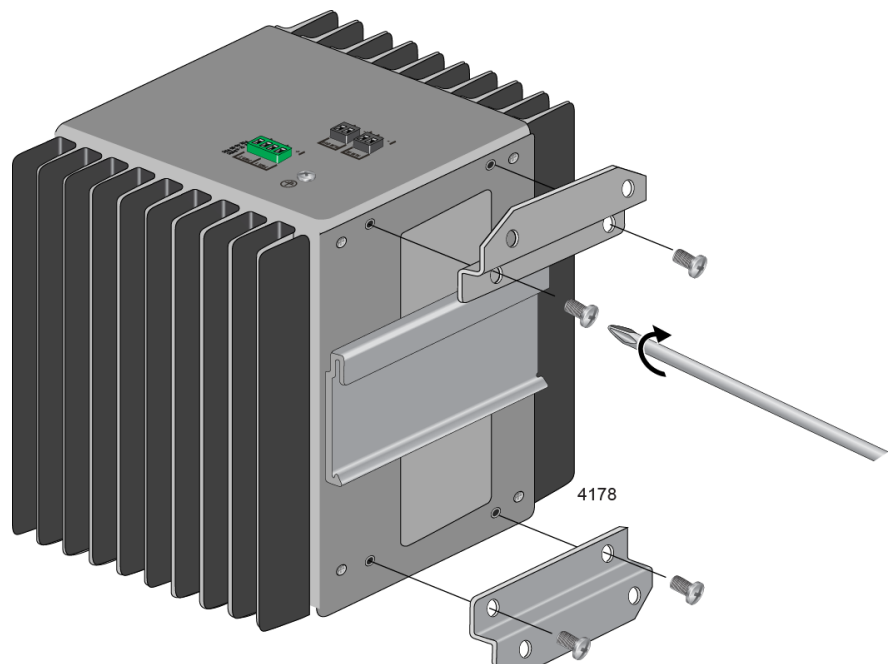


Figure 21. Installing the Wall Brackets on the Switch

3. Have another person hold the switch on the plywood base on the wall while you secure it with four screws (not provided). Refer to Figure 22.

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

- ❑ 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 57 for further information.

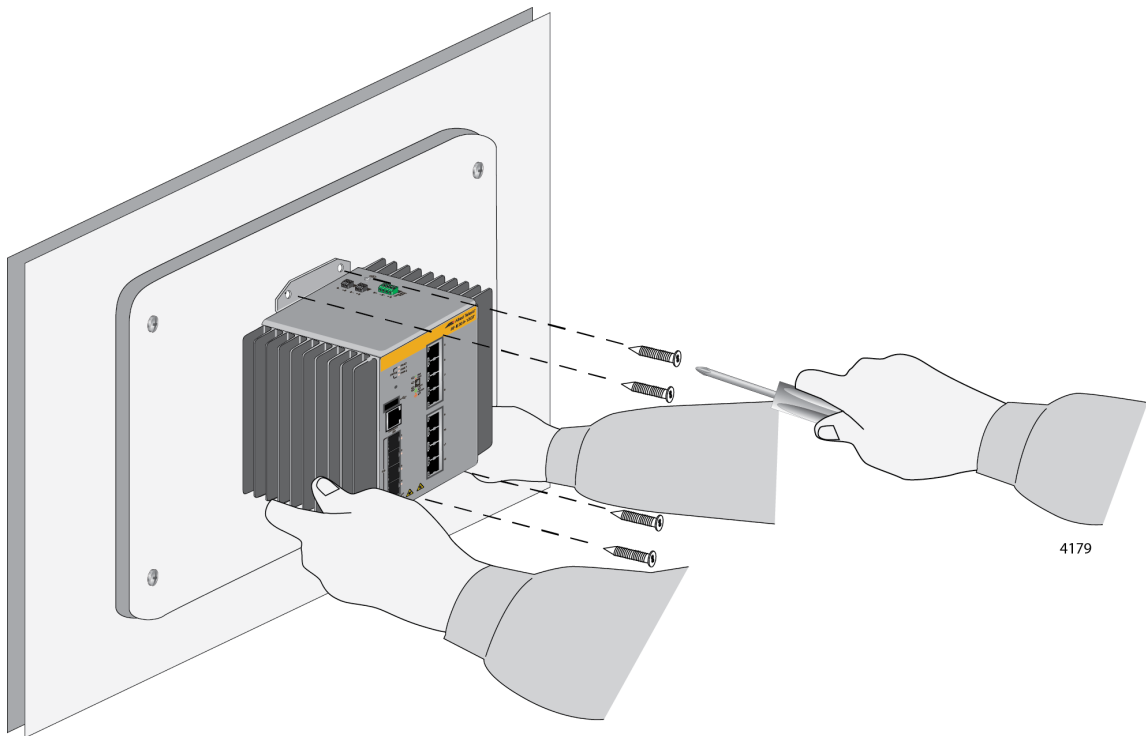


Figure 22. Attaching the Switch to the Plywood Base

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

Installing the Switch on a Concrete Wall

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



Warning

The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.



Warning

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

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 69.
3. Have a person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the four screw holes in the two wall brackets. Refer to Figure 23 on page 72.

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

- The switch must be oriented as shown in Figure 23 on page 72. 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 57 for further information.

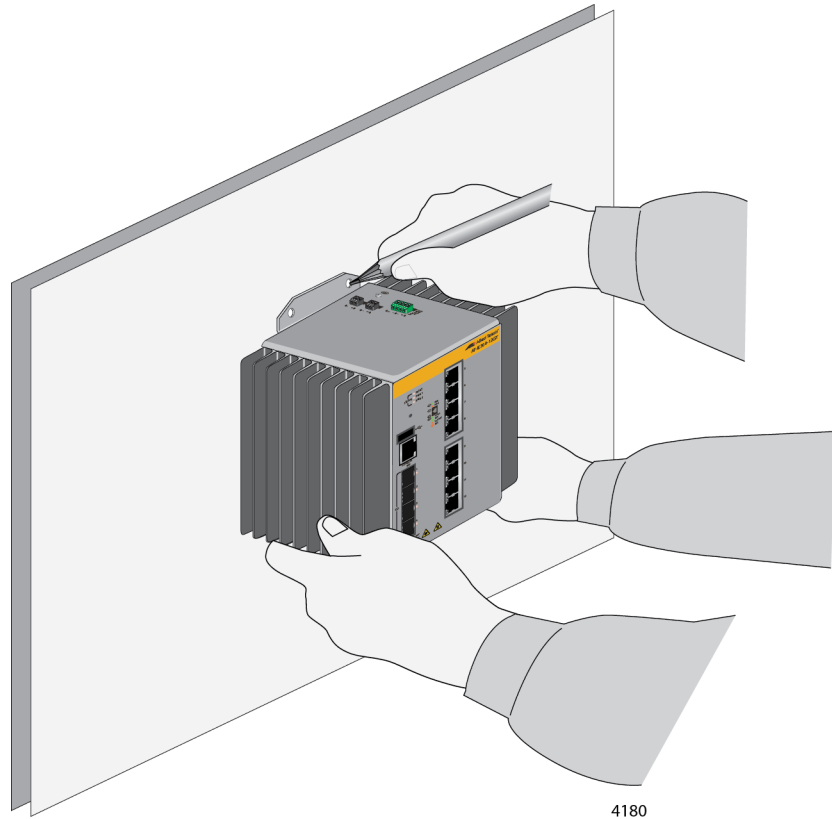


Figure 23. Marking the Locations of the Bracket Holes on a Concrete Wall

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. Have another person hold the switch at the selected wall location while you secure it with four screws (not provided). Refer to Figure 24 on page 73.

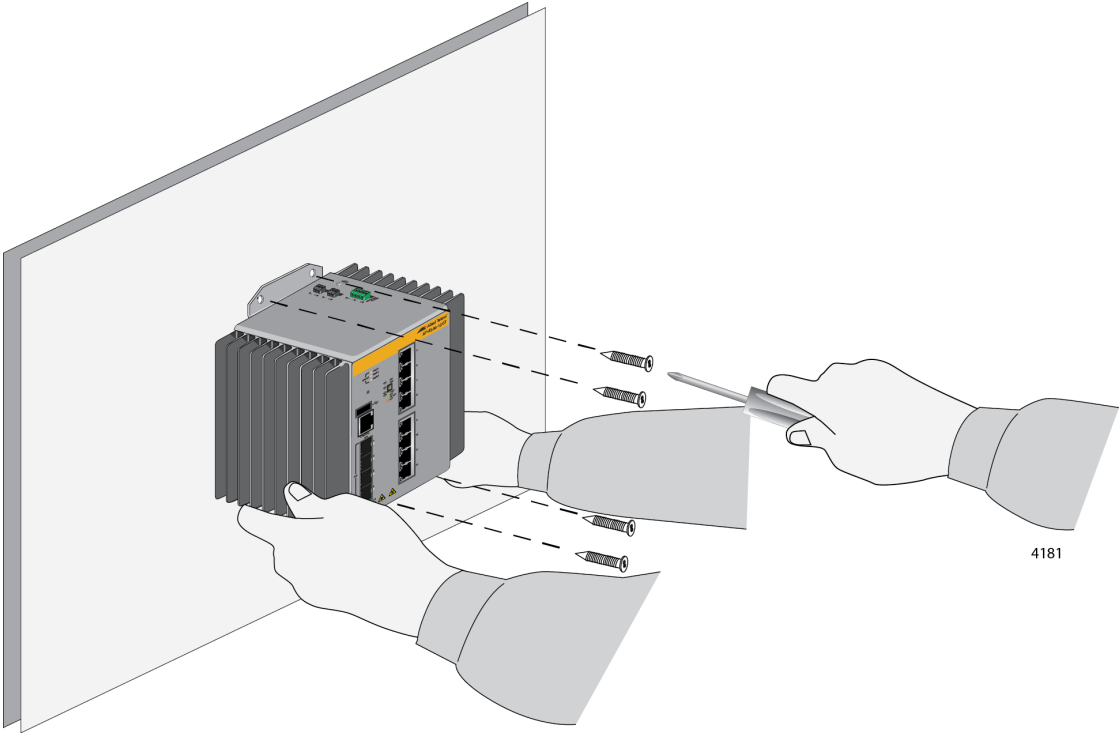


Figure 24. Installing the Switch on a Concrete Wall

8. Go to Chapter 4, "Cabling the Ports" on page 75.

Chapter 4

Cabling the Ports

This chapter contains the following procedures:

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

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-IE300-12GT Switch are listed in Table 1 on page 25.
- ❑ The cable specifications for the twisted pair ports on the AT-IE300-12GP Switch are listed in Table 3 on page 27.
- ❑ 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 ports 5 to 12 on the AT-IE300-12GP Switch is enabled.
- ❑ The default setting for Hi-PoE on ports 9 to 12 on the AT-IE300-12GP Switch is disabled.
- ❑ 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 data sheet.
- ❑ The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.
- ❑ You should install a transceiver before connecting its fiber optic cable.
- ❑ Fiber optic transceivers are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed, or when you store the transceiver. When you do remove the plug, keep it for future use.
- ❑ Unnecessary removal and insertion of a transceiver can lead to premature failure.
- ❑ 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. *⚡* 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 79 shows the dust plug removed from slot 1.

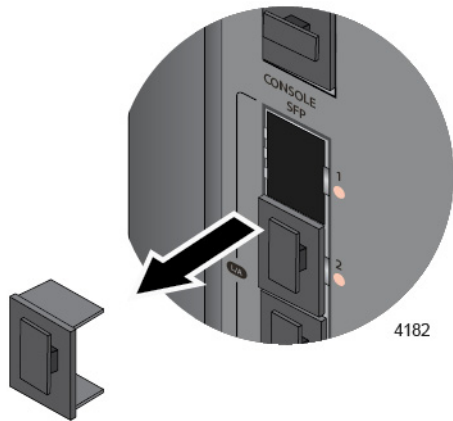


Figure 25. Removing the Dust Plug from an SFP Slot

- 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.

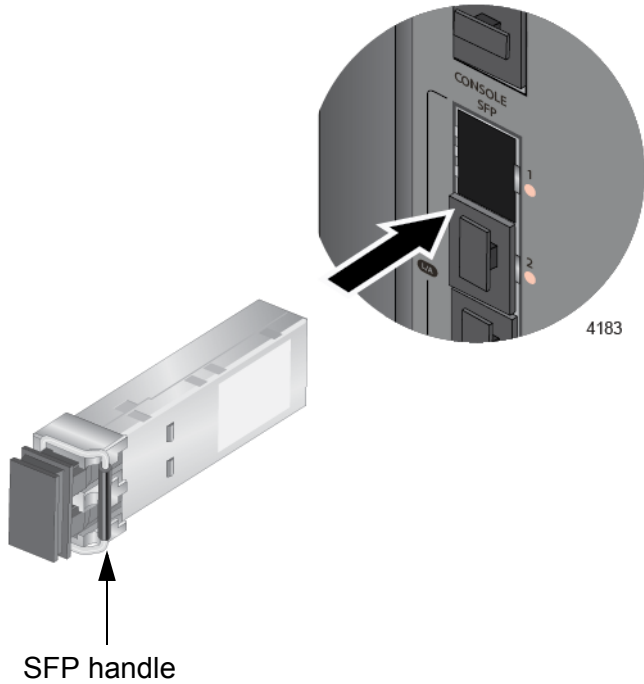


Figure 26. Installing an SFP Transceiver

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.

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

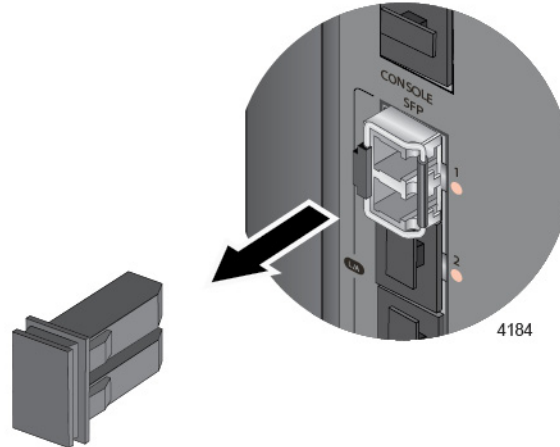


Figure 27. Removing the Dust Cover from an SFP Transceiver

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

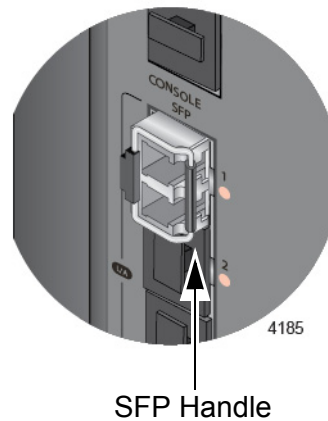


Figure 28. Verifying the Position of the SFP Handle

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 81.

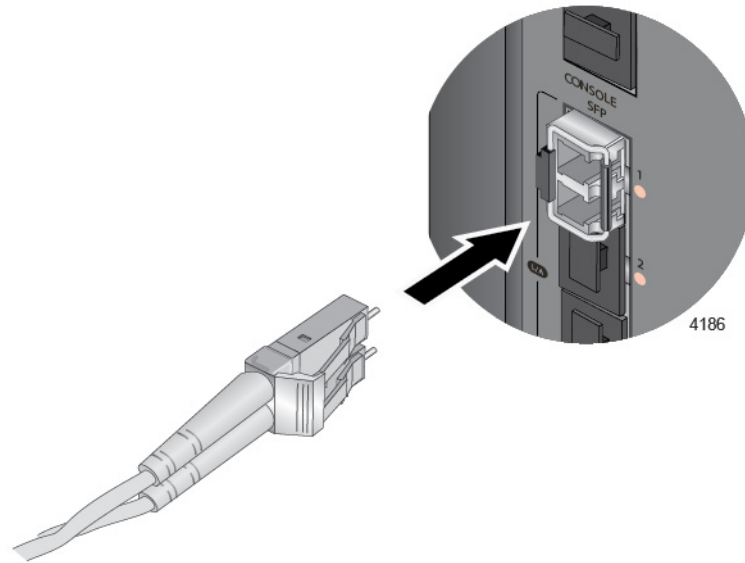


Figure 29. Connecting a Fiber Optic Cable to an SFP Transceiver

7. Repeat this procedure to install and cable the remaining transceivers.
8. Go to Chapter 5, "Powering On the Switch" on page 83.

Chapter 5

Powering On the Switch

This chapter contains the following procedures:

- ❑ “Connecting the Grounding Wire” on page 84
- ❑ “Wiring the ALM IN and ALM OUT Connectors” on page 87
- ❑ “Preparing the DC Power Cables” on page 92
- ❑ “Powering On the Switch” on page 96
- ❑ “Monitoring the Initialization Process” on page 98
- ❑ “Starting a Local Management Session” on page 100
- ❑ “Verifying the AT-IE300-12GP Switch” on page 102
- ❑ “Installing the Optional Drip Guard” on page 107

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.

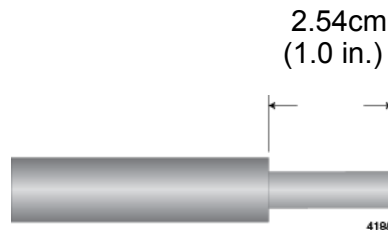


Figure 30. Stripping the Grounding Wire



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

2. Loosen the grounding screw several turns with a #2 Phillips-head screwdriver. Refer to Figure 31 on page 85.

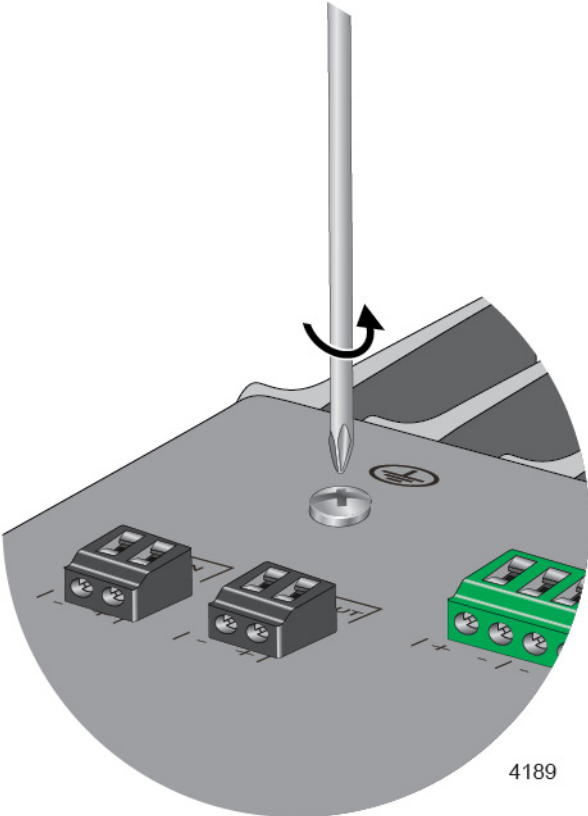


Figure 31. Loosening the Grounding Screw

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

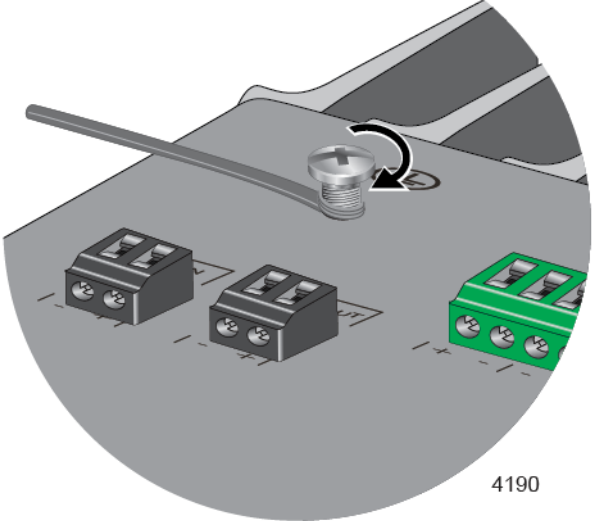


Figure 32. Wrapping the Grounding Wire Around the Grounding Screw

4. Tighten the screw to secure the grounding wire to the switch. Refer to Figure 33.

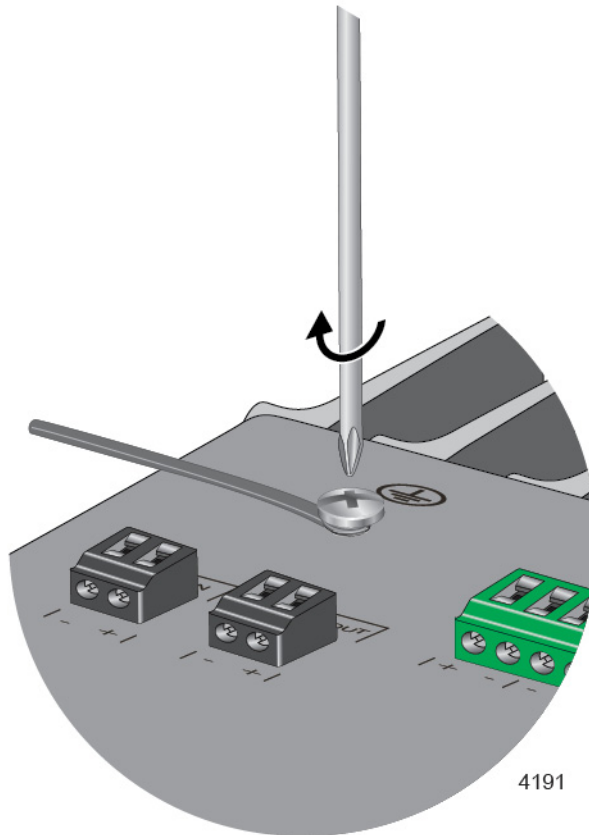


Figure 33. Securing the Grounding Wire to the Switch

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 87.
 - Otherwise, go to “Preparing the DC Power Cables” on page 92.

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:

- ❑ 30VDC maximum
- ❑ 0.5A maximum



Caution

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

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.

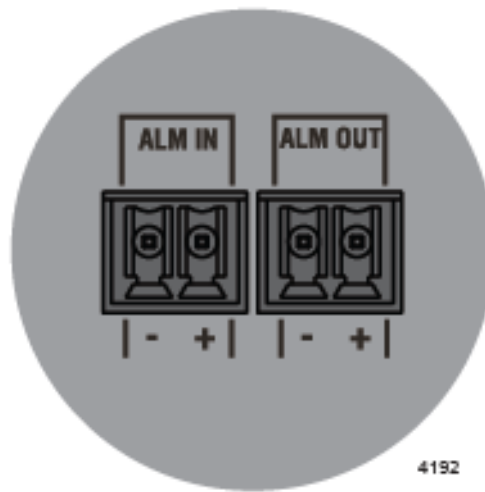


Figure 34. Polarity Legend for the Alarm Connectors

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.

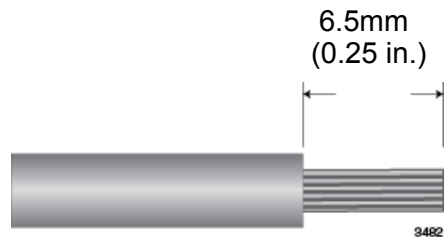


Figure 35. Stripping an Alarm Wire



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. *ES* E10

2. Tightly wrap the wire strands with your finger tips. Refer to Figure 36 on page 89.

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

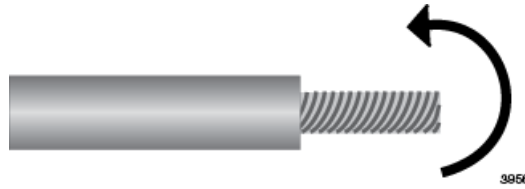


Figure 36. Wrapping the Wire Strands

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.

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

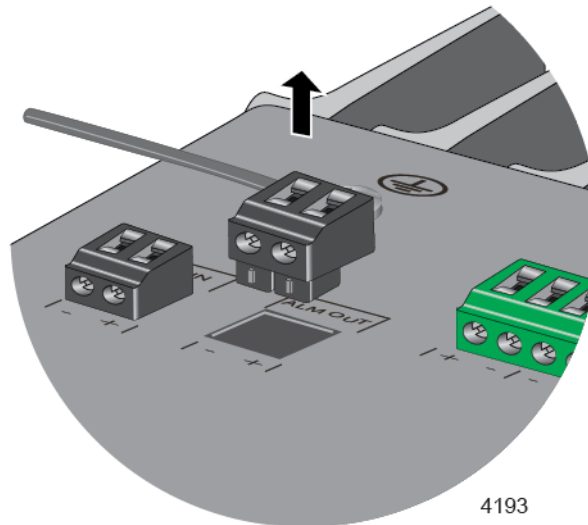


Figure 37. Removing an Alarm Connector

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

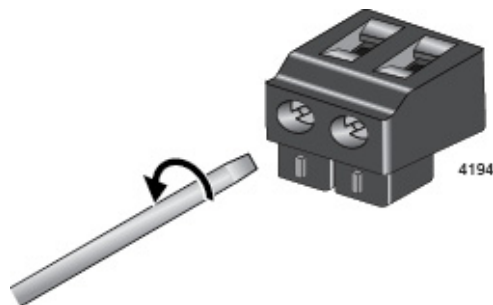


Figure 38. Loosening the Wire Retaining Screws on an Alarm Connector

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.

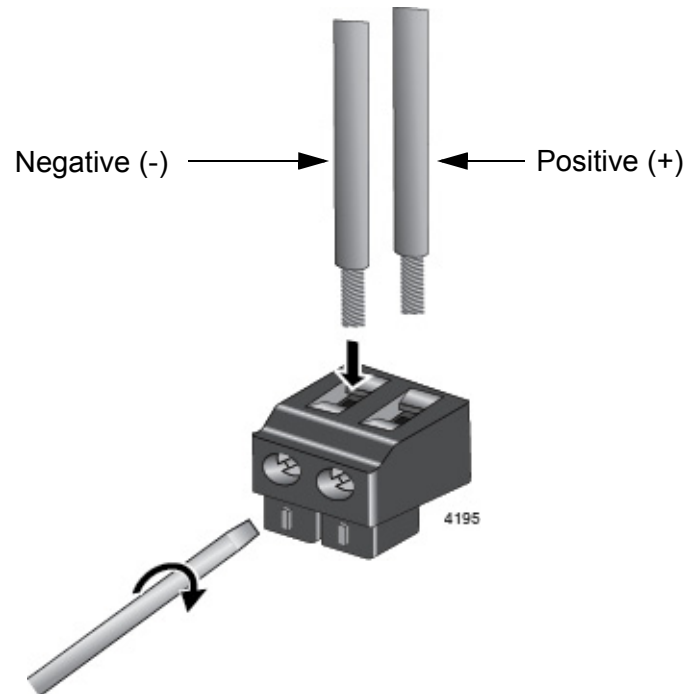


Figure 39. Inserting the Wires into the DC Cable Connector

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 95.



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 on page 91.

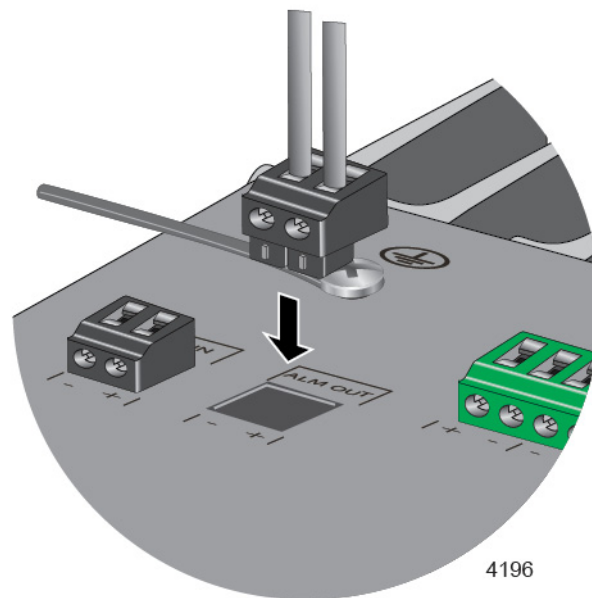


Figure 40. Inserting the DC Connector into the Alarm Connector

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 92.

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 48.

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.

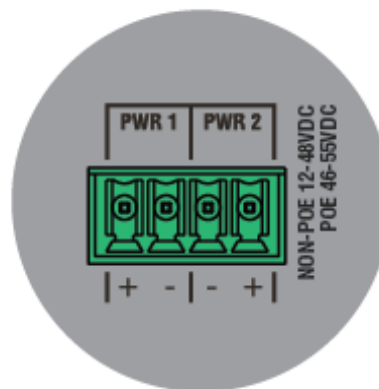


Figure 41. Pin Signals Legends for the PWR 1 and PWR 2 Connectors

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 93.

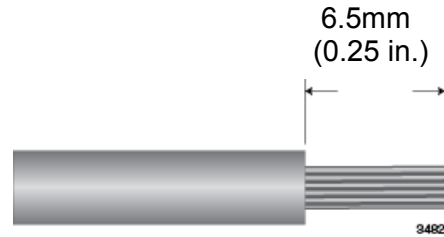


Figure 42. Stripping a Power Cable Wire

**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 89.

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.

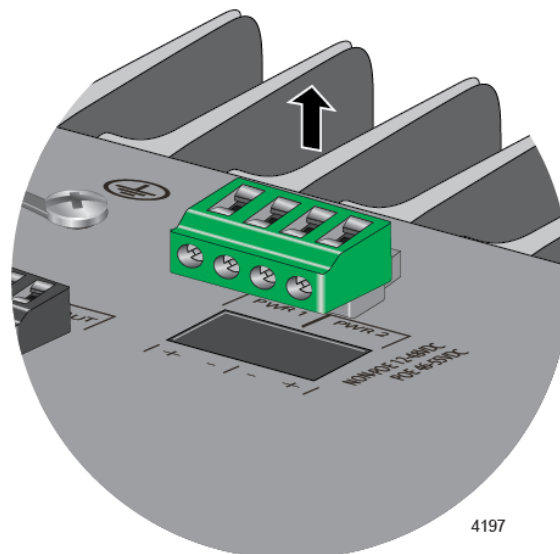


Figure 43. Removing the PWR 1 - PWR 2 Cable Connector

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

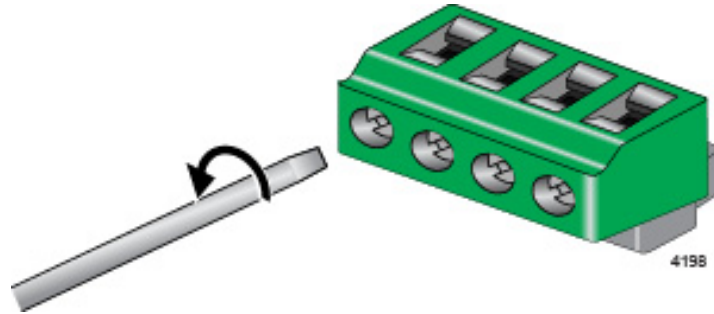


Figure 44. Loosening the Wire Retaining Screws on the PWR 1 - PWR 2 Cable Connector

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.

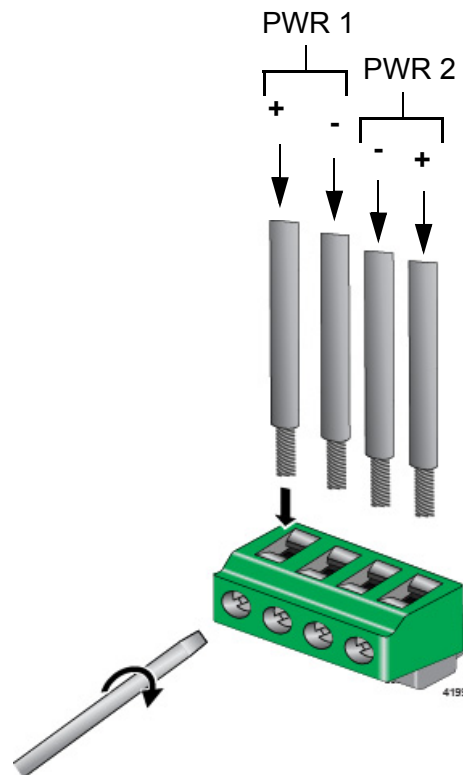


Figure 45. Inserting the Wires into the PWR 1 - PWR 2 Cable Connector

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 95.

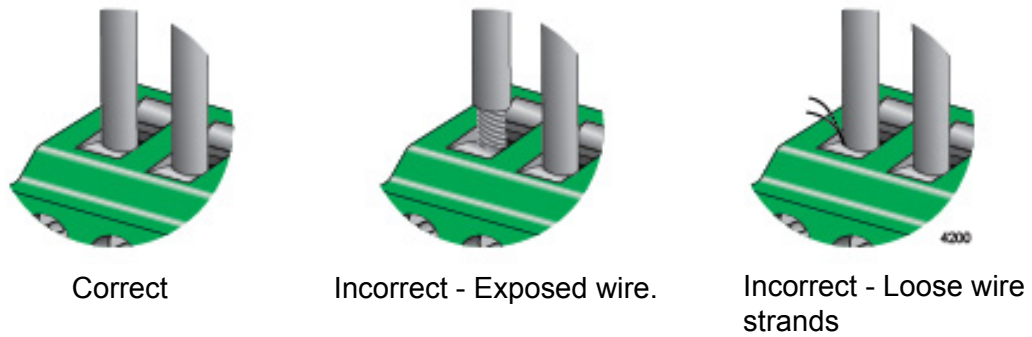


Figure 46. Verifying the Wire Installation

**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 96.

Powering On the Switch

This section contains the procedure for powering on the switch.

Note

The switch can update its release or configuration file from a USB flash drive during the initial power up of the unit. This is called the Autoboot feature. Using the Autoboot feature is optional. It is only available during the initial power up of the unit. To use the feature, insert a USB flash drive with the appropriate files into the USB port on the switch before powering on the unit. For more information on the feature, refer to the *Software Reference for the IE300 Series Switches*.

For power supply requirements, refer to “Power Supplies” on page 48. 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.

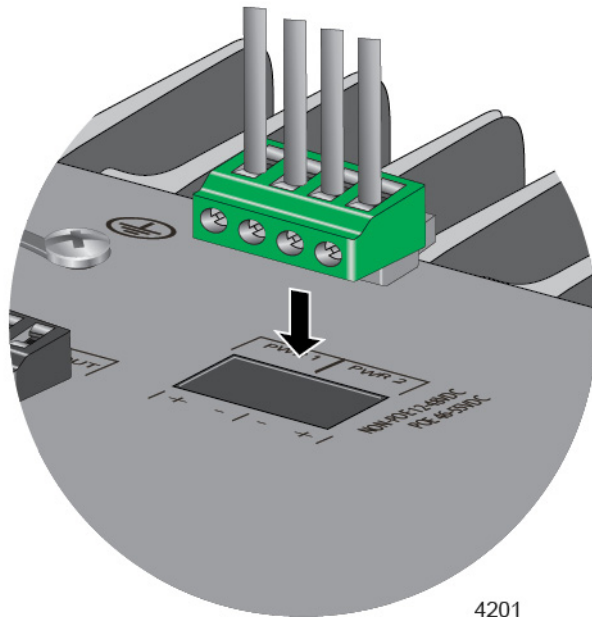


Figure 47. Connecting the Power Cable to the PWR 1 - PWR 2 Connector

**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 98.

Verifying Switch Operations

Here are items to check to verify that the switch is operating normally. If there is a problem, refer to Chapter 6, “Troubleshooting” on page 109 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 8 on page 42 and Figure 9 on page 43.
- The PoE LEDs on the AT-IE300-12GP Switch should be solid green on ports that are connected to PoE, PoE+, or Hi-PoE devices. The PoE LEDs are identified in Figure 9 on page 43.

After verifying the operations of the switch, go to “Starting a Local Management Session” on page 100.

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 100. Figure 48 here and Figure 49 on page 99 contain the initialization messages.

After monitoring the initialization process, go to “Starting a Local Management Session” on page 100.

```

Bootloader 3.1.7 loaded
Press <Ctrl+B> for the Boot Menu

Reading filesystem...
Loading flash:IE300-5.4.6-20160329-2.re1
Verifying release... OK
Booting...
Starting base/first... [ OK ]
Mounting virtual filesystems... [ OK ]



Allied Telesis Inc.
AlliedWare Plus (TM) v5.4.6
Current release filename: IE300-5.4.6-20160329-2.re1
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
imiproxyd, irdpd, lacp, lldpd, looprot, mstp, nsm
ospf6d, pdmd, pim6d, pimd, ripd, ripngd, rmon
sflowd, udldd, vrrpd, ospfd, imi

Received event network.initialized

Assigning Active Workload to HA processes:
15:10:42 awplus Pluggable[394]: Pluggable AT-SPTX inserted into port1.0.1
15:10:42 awplus Pluggable[394]: Pluggable AT-SPTX inserted into port1.0.2
15:10:42 awplus Pluggable[394]: Pluggable AT-SPTX inserted into port1.0.3
15:10:42 awplus Pluggable[394]: Pluggable AT-SPTX inserted into port1.0.4
hsl, nsm, lacpd, looprotd, 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. 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 14 on page 62.
- 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 boot loader.

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:

```
awp1us>
```

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-IE300-12GT Switch, no further installation steps are required. For instructions on how to configure the features, refer to the *Software Reference for the IE300 Series Switches*.
 - If you are installing the AT-IE300-12GP Switch, go to “Verifying the AT-IE300-12GP Switch” on page 102.

Verifying the AT-IE300-12GP Switch

This section contains the following procedures for the AT-IE300-12GP Switch:

- “Verifying the PoE Budget” on page 102
- “Configuring Alternatives A and B” on page 103
- “Configuring the Provisioned PoE Budget” on page 104

Verifying the PoE Budget

The following procedure explains how to verify the PoE budget on the AT-IE300-12GP Switch. The budget is the maximum wattage the switch has available for the powered devices on its twisted pair ports. The budget for should be 240W for power supplies that meet the specifications in “Power Supplies” on page 48.

The procedure assumes you have already started a local management session on the device. For instructions, refer to “Starting a Local Management Session” on page 100. To confirm the PoE budget, perform the following procedure:

1. Enter the ENABLE command at the User Exec mode to move to the Privileged Exec mode, as shown here:

```
awplus> enable  
awplus#
```

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

```
awplus# show power-inline
```

3. Examine the Power Allocated field in the command output. It should be 240W. This is the maximum PoE budget for the powered devices on the ports of the AT-IE300-12GP Switch.

If the power budget is 240W, go to the next step.

If the power budget is less than 240W, either the power supply does not meet the specifications in “Power Supplies” on page 48 or it has a problem. If the latter, refer to Chapter 6, “Troubleshooting” on page 109 for troubleshooting suggestions.

4. Please review the following information.

Ports connected to non-PoE devices do not require any further configuration steps. The ports function as regular networking ports, but without power for PoE devices.

At this port, ports 5 to 12 are using the following default PoE values:

- PoE is enabled.
- The wiring configuration is Alternative A.

No further configuration steps are required for ports connected to the following types of powered devices:

- PoE or PoE+ devices that comply with PoE standards and support both Alternatives A and B.
- Legacy devices that only support Alternative A.

The above devices should now be receiving power from the ports on the switch.

5. Do one of the following:

- If ports 9 to 12 are connected to Hi-PoE devices or legacy PoE devices that only support Alternative B, go to “Configuring Alternatives A and B” on page 103.
- Other wise, go to “Configuring the Provisioned PoE Budget” on page 104.

Configuring Alternatives A and B

This procedure explains how to configure Alternatives A and B on ports 9 to 12 on the AT-IE300-12GP Switch, for Hi-PoE devices or legacy devices that only support Alternative B. The procedure does the following:

- For ports connected to Hi-PoE devices, you enable Alternative B so that both Alternatives A and B are enabled on the ports.
- For ports connected to legacy devices that only support Alternative B, you disable Alternative A and enable Alternative B.

You should not perform the procedure on ports connected to the following devices:

- Non-PoE devices.
- PoE or PoE+ devices that comply with the standards and support both Alternatives A and B.
- Legacy PoE or PoE+ devices that support only Alternative A.

This procedure only applies to ports 9 to 12. Ports 5 to 8 only support Alternative A.

If you do not need to configure Alternatives A and B, go to “Configuring the Provisioned PoE Budget” on page 104.

The following steps assume you are continuing directly from the previous procedure. To configure Alternatives A and B on the switch, perform the following procedure.

1. From the Privilege Exec mode, enter CONFIGURE TERMINAL to move to the Global Configuration mode:

```
awplus# configure terminal
awplus(config)#
```

2. Use the INTERFACE PORT command to move to the Port Interface modes of ports connected to Hi-PoE or legacy PoE devices. This example of the command moves into the Port Interface modes for ports 9 and 10:

```
awplus(config)# interface port1.0.9-port1.0.10
awplus(config-if)
```

3. Enter the POWER-INLINE PAIR SPARE ENABLE command to activate power on the spare strands, which corresponds to Alternative B, on the ports:

```
awplus(config-if)# power-interface pair spare enable
```

Because Alternative A is enabled by default, the ports are now transmitting power on all eight strands in the cables on the ports.

4. Do one of the following:
 - If you are configuring ports for Hi-PoE devices, no further steps are required. The switch ports are now providing wattage to the Hi-PoE devices on all eight strands in the cables. Go to “Configuring the Provisioned PoE Budget” on page 104.
 - For ports connected to legacy PoE or PoE+ devices that only support Alternative B, continue with the next step to disable Alternative A.
5. Enter the NO POWER-INLINE PAIR DATA ENABLE command to disable power on the data strands, which corresponds to Alternative A, on the ports:

```
awplus(config-if)# no power-interface pair data enable
```

6. Go to “Configuring the Provisioned PoE Budget” on page 104.

Configuring the Provisioned PoE Budget

The procedure in this section explains how to verify and adjust, if necessary, the provisioned or nominal PoE budget for the switch. This value is the maximum wattage the switch is expecting from the power supply for the powered devices on its ports. The provisioned budget should be the same as or less than the actual PoE budget from the power supply. If the provisioned budget is above the actual budget, the switch may experience problems. For instance, it may attempt to distribute more power than it actually has available from the power supply or display the PoE Status LEDs incorrectly.

The default nominal or provisioned PoE budget is 240W. The default value corresponds to the maximum PoE budget for power supplies that meet the specifications in “Power Supplies” on page 48. If you purchase a power supply that does not meet the specifications, the actual PoE budget may be less, in which case you should perform the following procedure to adjust the provisioned budget to match the actual value.

To verify and adjust the maximum provisioned PoE budget for the switch, perform the following

1. In the Privileged Exec mode, enter the SHOW POWER-INLINE command:

```
awplus# show power-inline
```

2. Compare the Nominal Power and Power Allocated fields in the command output. The Nominal Power field is the provisioned PoE budget of the switch. It is the wattage the switch is expecting from the power supply for PoE devices. The Power Allocated is the actual wattage the switch is receiving from the power supply. The default value for the provisioned budget is 240W.

3. Do one of the following:

- If the values in the Nominal Power and Power Allocated fields are the same, no further installation steps are required. Refer to the *Software Reference for the IE300 Series Switches* for management instructions.
- If the values are different, continue with the next step:

4. Enter the CONFIGURE TERMINAL command to move to the Global Configuration mode:

```
awplus# configure terminal
awplus(config)#
```

5. In the Global Configuration mode, enter the POWER INLINE WATTAGE MAX command to change the nominal value to be either equal to or less than the actual wattage value. The format of the command is given here:

```
power inline wattage max max
```

The max variable is the value from the Power Allocated field from the SHOW POWER-INLINE command. For example, if the Power Allocated field has the value 180W, the command would be:

```
awplus(config)# power inline wattage max 180
```

The provisioned PoE budget of the switch is now set. Refer to the *Software Reference for the IE300 Series Switches* for management instructions.

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.

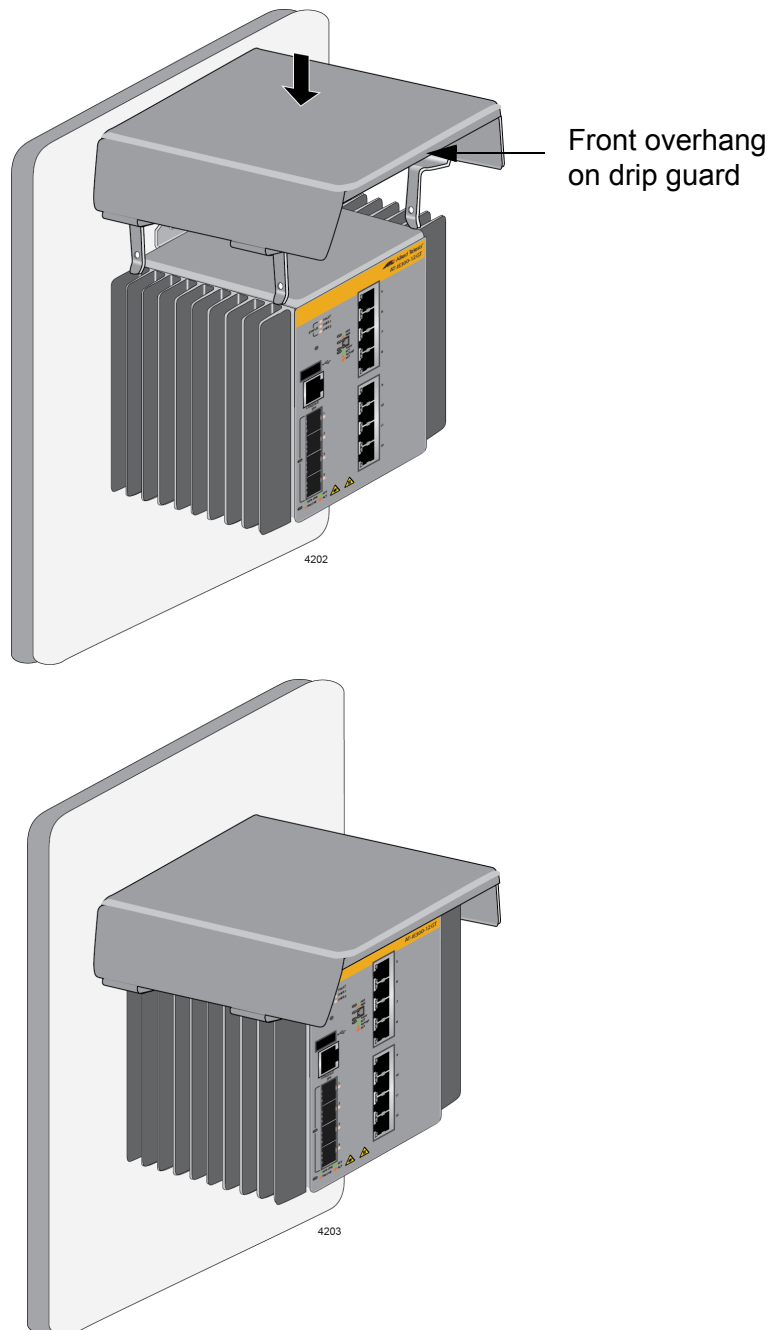


Figure 50. Installing the Optional Drip Guard

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

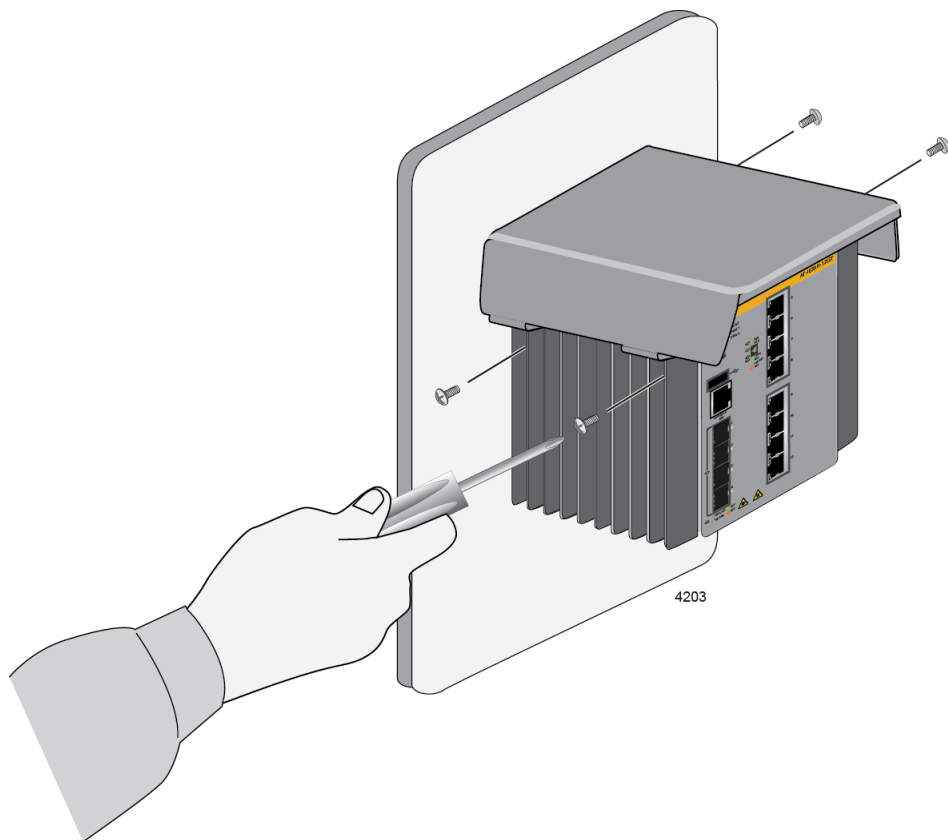


Figure 51. Securing the Drip Guard

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 110
- ❑ “Twisted Pair Ports” on page 111
- ❑ “SFP Slots” on page 113
- ❑ “Power Over Ethernet” on page 114

Note

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

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 of 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 48.
- ❑ 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 25 and Table 3 on page 27.
- ❑ 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-IE300-12GT Switch, 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 43. For the AT-IE300-12GP Switch, 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 with the other network device.
- ❑ Use the switch's management software to verify that the port is enabled.
- ❑ If the remote network device is a managed device, use its management firmware to 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-IE300-12GP 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 26. 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 27.
- ❑ 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.
- ❑ Check the 90% POE LED on the front panel of the switch. If it is solid green, the switch might not have enough free power for additional devices.
- ❑ 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.
- ❑ If the device is a legacy PoE device that only supports Alternative B, verify that it is connected to ports 9 to 12. (Legacy devices that only support Alternative B are not supported on ports 5 to 8.) Then use the SHOW POWER-INLINE command to verify that Alternative B is enabled and Alternative A disabled on the port. If necessary, use the POWER-INTERFACE PAIR command to enable or disable Alternatives A and B.

Problem: The AT-IE300-12GP Switch is not providing any power or only partial power to a Hi-PoE device.

Solutions: Try the following solutions:

- ❑ Review the device's documentation to confirm that maximum power consumption of the powered device does not exceed 51.8W, which is the maximum amount of power a switch port can support. A device may only partially work if it has a higher consumption value.

- ❑ Review the powered device's documentation to confirm that it receives power on all four strand pairs in the twisted pair cable (combined Alternatives A and B). Hi-PoE devices may only partially work if they can receive power on only one Alternative.
- ❑ Verify that the Hi-PoE device is connected to a Hi-PoE port. The switch supports Hi-PoE devices on ports 9 to 12, but not ports 5 to 8.
- ❑ Use the `SHOW POWER-INLINE` command on the switch to confirm that both Alternatives A and B are enabled on the port. The default settings are enabled for Alternative A and disabled for Alternative B. If necessary, use the `POWER-INTERFACE PAIR` command to enable Alternative B.
- ❑ Check the 90% POE LED on the front panel of the switch. If it is solid green, the switch might not have enough free power for additional devices.
- ❑ Use the `SHOW POWER-INLINE` command to determine the amount of unused, available power by subtracting the Actual Power Consumption value from the Power Allocated value. The switch cannot support the Hi-PoE device if this value is less than the device's power requirements.
- ❑ Use the `SHOW POWER-INLINE` command to determine whether the Hi-PoE power setting for the port was reduced to a value below the power requirements of the device.
- ❑ Verify that you are using the appropriate category of twisted-pair cable by referring to Table 3 on page 27.
- ❑ Try connecting the device to a different port on the switch.
- ❑ Try replacing the twisted pair cable.

Appendix A

Technical Specifications

This appendix contains the following sections:

- “Physical Specifications” on page 118
- “Environmental Specifications” on page 120
- “Power Specifications” on page 121
- “Certifications” on page 122
- “RJ-45 Twisted Pair Port Pinouts” on page 123
- “RJ-45 Style Serial Console Port Pinouts” on page 125
- “PWR 1 and PWR 2 DC Power Connectors” on page 126

Physical Specifications

Dimensions

Table 12 lists the dimensions of the products.

Table 12. Product Dimensions

AT-IE300-12GT	14.61 x 15.24 x 12.70 cm (W x H x D) (5.75 x 6.00 x 5.00 in.)
AT-IE300-12GP	14.61 x 15.24 x 12.70 cm (5.75 x 6.00 x 5.00 in.)

Weights

Table 13 lists the weights of the products.

Table 13. Product Weights

AT-IE300-12GT	2.0 kg (4.4 lb.)
AT-IE300-12GP	2.04 kg (4.5 lb.)

Ventilation

Table 14 lists the ventilation requirements.

Table 14. 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 15 provides the minimum cabinet dimensions.

Table 15. Minimum Cabinet Dimensions

Minimum Cabinet Dimensions (W x H x D)	50.8 x 50.8 x 30.5 cm (20.0 x 20.0 x 12.0 in)
--	--

Environmental Specifications

Table 16 lists the environmental specifications of the switches.

Table 16. 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 Indoor installation in an Enclosure	-40° C to 75° C (-40° F to 167° F)
Operating Temperature Range for Indoor installation Without an Enclosure	-40° C to 65° 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)

Table 17 lists the ingress protection values.

Table 17. Ingress Protection

IE300 Series Switch Without Drip Guard	IP30
IE300 Series Switch With Drip Guard	IP31

Power Specifications

Table 18 lists the maximum power consumption values.

Table 18. Maximum Power Consumptions

AT-IE300-12GT	30 watts
AT-IE300-12GP	320 watts (including PDs' consumption and margin) 43 watts (excluding PDs' consumption)

Table 19 lists the input power specifications.

Table 19. Input Power Specifications

AT-IE300-12GT	12-55 VDC 2.5A maximum
AT-IE300-12GP	46-55 VDC 7.0A maximum

Note

A 48V power supply must have an absolute maximum tolerance of +2.5% when adjusted to 53.5V at the input to the switch.

Note

For power supply specifications, refer to "Power Supplies" on page 48.

Table 20 lists heat dissipation.

Table 20. Heat Dissipation (British Thermal Units/Hour)

AT-IE300-12GT	102 BTU/hr
AT-IE300-12GP	147 BTU/hr

Certifications

The regulatory approvals of the product are listed in Table 21.

Table 21. Regulatory Approvals

Safety	UL/IEC/EN 60950-1 UL/IEC/EN 60950-22 CAN/CSA-22.2: 60950-1 CAN/CSA-22.2: 60950-22
EMC	CE, FCC Part 15 Class A EN55032 (CISPR32) Class A EN61000-3-2 EN61000-3-3 EN55024 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-8 EN61000-4-11 2004/108/EC EMC Directive 2006/95/EC Low Voltage Directive
Shock	EN60068-2-27 EN60068-2-31
Vibration	EN60068-2-6
Allied Telesis approved SFP modules	EN60825-1 EN60825-2 UL/IEC/EN60950-1 FDA CDRH accession registration

RJ-45 Twisted Pair Port Pinouts

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

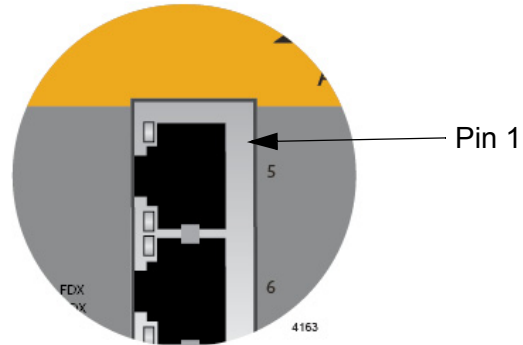


Figure 52. RJ-45 Port Pin Layout (Front View)

Table 22 lists the pin signals for a port when it is operating at 10 or 100 Mbps.

Table 22. Pin Signals for 10 and 100 Mbps

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

Table 23 lists the pin signals for a port when it operating at 1000 Mbps.

Table 23. Pin Signals for 1000 Mbps

Pinout	Pair
1	Pair 1 +

Table 23. Pin Signals for 1000 Mbps (Continued)

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

RJ-45 Style Serial Console Port Pinouts

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

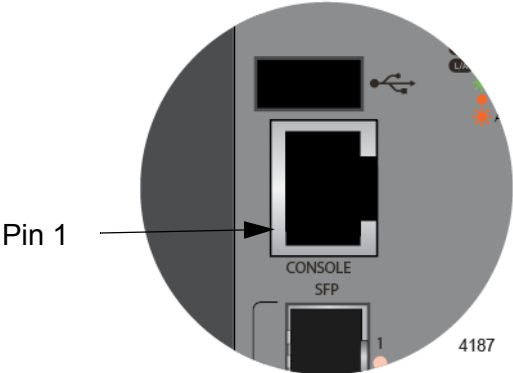


Figure 53. Console Port Pin Layout (Front View)

Table 24 lists the pin signals for the RJ-45 style serial Console port.

Table 24. 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 25 lists the pin signals for the PWR 1 and PWR 2 DC power connectors on the AT-IE300-12GT Switch.

Table 25. PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE300-12GT Switch

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

Table 26 lists the pin signals for the PWR 1 and PWR 2 DC power connectors on the AT-IE300-12GP Switch.

Table 26. PWR 1 and PWR 2 DC Connector Pin Signals on the AT-IE300-12GP Switch

Pin	Signal
+	46/55VDC
-	46/55VDC Return

For power supply requirements, refer to “Power Supplies” on page 48.