



Questo manuale d'istruzione è fornito da trovaprezzi.it. Scopri tutte le offerte per [Allied Telesis AT-IE340-12GP-80](#) o cerca il tuo prodotto tra le [migliori offerte di Switch](#)



Questo manuale d'istruzione è fornito da trovaprezzi.it. Scopri tutte le offerte per [Allied Telesis AT-IE340-12GP-80](#) o cerca il tuo prodotto tra le [migliori offerte di Switch](#)



IE340 Series

Industrial Ethernet Layer 3 Switches

IE340-12GP

IE340-12GT

IE340-20GP

IE340L-18GP



Installation Guide

Copyright © 2020 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

This section contains the following:

- ❑ “US Federal Communications Commission”
- ❑ “Industry Canada”
- ❑ “VCCI Statement”
- ❑ “Regulatory Approvals” on page 4
- ❑ “Translated Safety Statements” on page 5

US Federal Communications Commission

Radiated Energy

Note

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

Note

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

Industry Canada

Radiated Energy

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.

VCCI Statement

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

Regulatory Approvals

Compliance mark

CE, FCC, ICES, RCM, UL, UL-EU, VCCI

Safety

AS/NZS 60950-1¹
AS/NZS 62368-1¹
CAN/CSA C22.2 No.60950-1
CAN/CSA C22.2 No.62368-1
EN/IEC/UL 60950-1
EN/IEC/UL 62368-1
EN/IEC/UL 60950-22
EN/IEC/UL 61010-1¹
EN/IEC/UL 61010-2-201¹
CAN/CSA C22.2 61010-1-12¹
CAN/CSA C22.2 61010-2-201¹

Electromagnetic Immunity

EN 55024
EN 61000-6-2
IEC 61000-3-2²
IEC 61000-3-3²
IEC 61000-4-2 level 3
IEC 61000-4-3 level 4
IEC 61000-4-4 level 4
IEC 61000-4-5 level 3, class 3
IEC 61000-4-6 level 3
IEC 61000-4-11²

Electromagnetic Emission

AS/NZS CISPR 32, class A
CISPR 11, group 1, class A
CISPR 21, class A
EN 55032, class A
EN 61000-6-4, class A
FCC 47 CFR Part 15, subpart B, class A
ICES 003 issue 6, class A
VCCI class A

Industry

EN 50121-4
NEMA TS2: 2003

1. Not applicable to the IE340L-18GP switch.
2. Applicable when using the IE048-480 power supply.

Shock

EN 60068-2-27
EN 60068-2-31

Vibration

EN 60068-2-6

Allied Telesis Approved SFP Modules

EN 60825-1
EN 60825-2
UL/IEC/EN 62368-1
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. ⚡ E84



Laser Safety

EN 60825

Translated Safety Statements

Important: The ⚡ indicates that translations of the safety statement are available in the PDF document **Translated Safety Statements** posted on the Allied Telesis website at alliedtelesis.com/support.

Übersetzte Sicherheitserklärungen

Wichtig: Das ⚡ zeigt an, dass Übersetzungen der Sicherheitserklärung in den **übersetzten PDF-Sicherheitserklärungen** auf der Allied Telesis-Website unter alliedtelesis.com/support verfügbar sind.

Declaraciones de seguridad traducidas

Importante: El ⚡ indica que las traducciones de la declaración de seguridad están disponibles en las **Declaraciones de seguridad traducidas** en PDF publicadas en el sitio web de Allied Telesis en alliedtelesis.com/support.

Consignes de sécurité traduites

Important: Le symbole ⚡ indique que les traductions de la déclaration de sécurité sont disponibles dans le PDF **Traduit des déclarations de sécurité** publiées sur le site Web de Allied Telesis à l'adresse alliedtelesis.com/support.

Dichiarazioni di sicurezza tradotte

Importante: ~ indica che le traduzioni della dichiarazione di sicurezza sono disponibili nelle **dichiarazioni di sicurezza tradotte** in PDF pubblicate sul sito Web di Allied Telesis all'indirizzo [*alliedtelesis.com/support*](http://alliedtelesis.com/support).

Перевод заявлений о безопасности

Важное замечание: ~ указывает на то, что переводы заявления о безопасности доступны в **переведенных заявлениях о безопасности** в формате PDF, размещенных на веб-сайте Allied Telesis по адресу [*alliedtelesis.com/support*](http://alliedtelesis.com/support).

Contents

Preface	15
Safety Symbols Used in this Document	16
Contacting Allied Telesis	17
Chapter 1: Overview	19
Hardware Components	20
IE340-12GP	20
IE340-12GT	21
IE340-20GP	21
IE340L-18GP	22
Top Panels	22
Back Panel	23
Features	24
Twisted Pair Ports	24
Power Over Ethernet (PoE)	24
SFP Slots	25
Protection Circuits	25
Alarm Monitoring	25
Alarm Connectors	25
LEDs	26
MAC Address Tables	26
Management Software	26
Management Methods	26
Installation Options	26
Additional Features	26
Twisted Pair Ports	27
Connector Type	27
Speed	27
Duplex Mode	27
Maximum Distance	27
Cable Requirements	28
Automatic MDIX Detection	28
Port Pinouts	28
Power over Ethernet	29
PoE Versions	29
Cabling Requirements for PoE Devices	30
Powered Device Classes for PoE and PoE+	30
Power Delivery with Alternatives A and B	30
PoE Power Budget	31
PoE Port Priorities	32
SFP Slots	33
Console Port	34
USB Port	35
Reset Button	36
Ground Screw	36
PWR 1 and PWR 2 DC Power Connectors	37

Alarm In Connector	38
Alarm Out Connector	41
DIN Rail Bracket	42
Screw Holes for Wall Brackets	42
LEDs	43
Status LEDs	43
Twisted Pair Port LEDs on PoE PSE Switches	45
Twisted Pair Port LEDs on the IE340-12GT Switch	46
SFP Slot LEDs	47
Power Supplies	49
IE048-480 Power Supply	49
Power Requirements	50
Chapter 2: Beginning the Installation	53
Reviewing Safety Precautions	54
Safety Precautions When Working with Electricity	58
Reviewing Site Requirements	59
Unpacking the Product Package	63
Chapter 3: Installing the Switch	69
Installing the Switch on a DIN Rail	70
Installing the Switch on an Indoor Wooden Wall	73
Tools and Material	75
Installing the Plywood Base	75
Installing the Switch on the Plywood Base	76
Installing the Switch on an Indoor Concrete Wall	79
Installing the Switch in an Outdoor Environment	83
Requirements for Outdoor Installation	83
Immunity and Precautions	83
Lightning Protection Requirements	84
Chapter 4: Cabling the Ports	87
Cabling the Twisted Pair Ports	88
Installing SFP Transceivers	90
Chapter 5: Powering On the Switch	95
Connecting the Grounding Wire	96
Wiring the ALM IN and ALM OUT Connectors	99
Preparing the DC Power Cables	104
Powering On the Switch	108
Verifying Switch Operations	109
Monitoring the Initialization Process	110
Starting a Local Management Session	113
Verifying PoE	115
Verifying the PoE Budget	115
Configuring the Provisioned PoE Budget	116
Chapter 6: Troubleshooting	119
PWR 1 and PWR 2 LEDs	120
Twisted Pair Ports	121
SFP Slots	123
Power Over Ethernet	124
Appendix A: Technical Specifications	125
Physical Specifications	126
Environmental Specifications	128
Power Specifications	130
RJ-45 Twisted Pair Port Pinouts	132

RJ-45 Style Serial Console Port Pinouts..... 134

PWR 1 and PWR 2 DC Power Connectors..... 135

Device Dimensions..... 136

Figures

Figure 1: Front Panel of the IE340-12GP Switch.....	20
Figure 2: Front Panel of the IE340-12GT Switch.....	21
Figure 3: Front Panel of the IE340-20GP Switch.....	21
Figure 4: Front Panel of the IE340L-18GP Switch.....	22
Figure 5: Top Panel of the IE340-12GP, IE340-20GP, and IE340L-18GP Switches	22
Figure 6: Top Panel of the IE340-12GT Switch	23
Figure 7: Back Panel	23
Figure 8: Example 1 of the Alarm In (ALM IN) Connector	39
Figure 9: Example 2 of the Alarm In (ALM IN) Connector	40
Figure 10: Example of the Alarm Out Port.....	42
Figure 11: Twisted Pair Port LEDs on the IE340 PoE PSE Switches.....	45
Figure 12: Twisted Pair Port LEDs on the IE340-12GT Switch	46
Figure 13: Spacing Between SFP Module and Twisted Pair Port	62
Figure 14: Removing the Switch from the Shipping Box	63
Figure 15: Removing the Switch from the Anti-static Bag	64
Figure 16: Pre-installed Components	65
Figure 17: The Switch Installed on a DIN Rail	70
Figure 18: Orientation of the Switch on a DIN Rail	70
Figure 19: Installing the Switch on a DIN Rail - 1	71
Figure 20: Installing the Switch on a DIN Rail - 2	71
Figure 21: Verifying the DIN Rail Installation	72
Figure 22: Switch on the Wall with a Plywood Base	74
Figure 23: Steps to Installing the Switch with a Plywood Base	75
Figure 24: Removing the DIN Rail Bracket from the Switch.....	76
Figure 25: Installing the Wall Brackets on the Switch.....	77
Figure 26: Attaching the Switch to the Plywood Base	78
Figure 27: Marking the Locations of the Bracket Holes on a Concrete Wall	81
Figure 28: Installing the Switch on a Concrete Wall	82
Figure 29: Removing the Dust Plug from an SFP Slot	91
Figure 30: Installing an SFP Transceiver.....	91
Figure 31: Removing the Dust Cover from an SFP Transceiver	92
Figure 32: Verifying the Position of the SFP Handle	92
Figure 33: Connecting a Fiber Optic Cable to an SFP Transceiver.....	93
Figure 34: Stripping the Grounding Wire	96
Figure 35: Loosening the Grounding Screw	97
Figure 36: Wrapping the Grounding Wire Around the Grounding Screw.....	97
Figure 37: Securing the Grounding Wire to the Switch.....	98
Figure 38: Polarity Legend for the Alarm Connectors.....	100
Figure 39: Stripping an Alarm Wire.....	100
Figure 40: Wrapping the Wire Strands	101
Figure 41: Removing an Alarm Connector	101
Figure 42: Loosening the Wire Retaining Screws on an Alarm Connector.....	101
Figure 43: Inserting the Wires into the DC Cable Connector.....	102
Figure 44: Inserting the DC Connector into the Alarm Connector	103
Figure 45: Pin Signals Legends for the PWR 1 and PWR 2 Connectors	104
Figure 46: Stripping a Power Cable Wire	105
Figure 47: Removing the PWR 1 - PWR 2 Cable Connector	105
Figure 48: Loosening the Wire Retaining Screws on the PWR 1 - PWR 2 Cable Connector.....	106
Figure 49: Inserting the Wires into the PWR 1 - PWR 2 Cable Connector.....	106

Figure 50: Verifying the Wire Installation107

Figure 51: Connecting the Power Cable to the PWR 1 - PWR 2 Connector108

Figure 52: Initialization Messages.....110

Figure 53: Initialization Messages (Continued).....111

Figure 54: Initialization Messages (Continued).....112

Figure 55: RJ-45 Port Pin Layout (Front View).....132

Figure 56: Console Port Pin Layout (Front View)134

Figure 57: IE340 Switches Dimensions136

Tables

Table 1: PoE Sourcing Ports and Maximum Power Levels	29
Table 2: PoE and PoE+ Device Classes	30
Table 3: Maximum Installation Site Temperatures Versus SFP Temperature Ratings	33
Table 4: Status LEDs	43
Table 5: Twisted Pair Port LEDs on the IE340 PoE PSE Switches	45
Table 6: Twisted Pair Port LEDs on the IE340-12GT Switch	47
Table 7: SFP Slot LED for the IE340-12GP, IE340-12GT, and IE340-20GP Models	47
Table 8: SFP Slot LED for IE340L-18GP Model	48
Table 9: Input Voltage Requirements	51
Table 10: Ground Resistivity Recommendations	61
Table 11: Shipping Package Contents	65
Table 12: Product Dimensions (W x H x D)	126
Table 13: Product Weights	126
Table 14: Ventilation Requirements for Cabinet Installation	126
Table 15: Minimum Cabinet (Enclosure) Dimensions	126
Table 16: Operating Temperature Ratings	128
Table 17: Environmental Specifications	128
Table 18: Ingress Protection	128
Table 19: Input Voltage Specifications	130
Table 20: Maximum Power Consumptions	130
Table 21: Heat Dissipation	130
Table 22: ALM IN and ALM OUT Power Ratings	131
Table 23: Pin Signals for 10 and 100 Mbps	132
Table 24: Pin Signals for 1000 Mbps	133
Table 25: RJ-45 Style Console Port Pin Signals	134
Table 26: PWR 1 and PWR 2 DC Connector Pin Signals on the IE340-12GP, IE340-12GT, and IE340-20GP Switches	135
Table 27: PWR 1 and PWR 2 DC Connector Pin Signals on the IE340L-18GP Switch	135

Preface

The preface contains the following sections:

- ❑ “Safety Symbols Used in this Document” on page 16
- ❑ “Contacting Allied Telesis” on page 17

This guide contains the hardware installation instructions for the IE340 Series of Industrial Ethernet Layer 3 switches. The switch models included in this manual are:

- ❑ IE340-12GP
- ❑ IE340-12GT
- ❑ IE340-20GP
- ❑ IE340L-18GP

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 Return Merchandise Authorizations (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 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 IE340 switches. The sections in the chapter are listed here:

- ❑ “Hardware Components” on page 20
- ❑ “Features” on page 24
- ❑ “Twisted Pair Ports” on page 27
- ❑ “Power over Ethernet” on page 29
- ❑ “SFP Slots” on page 33
- ❑ “Console Port” on page 34
- ❑ “USB Port” on page 35
- ❑ “Reset Button” on page 36
- ❑ “Ground Screw” on page 36
- ❑ “PWR 1 and PWR 2 DC Power Connectors” on page 37
- ❑ “Alarm In Connector” on page 38
- ❑ “Alarm Out Connector” on page 41
- ❑ “DIN Rail Bracket” on page 42
- ❑ “Screw Holes for Wall Brackets” on page 42
- ❑ “LEDs” on page 43
- ❑ “Power Supplies” on page 49

Hardware Components

The IE340 switches are Industrial Managed Layer 3 switches that are designed for high performance in harsh environments. They feature eight or sixteen twisted pair ports, two or four SFP transceiver slots, and a Console port for local management. All models, except the IE340-12GT switch, support PoE+ on the twisted pair ports and all models, except the IE340L-18GP switch, come with a USB port.

The IE340 switches are listed here:

- ❑ “IE340-12GP”, next
- ❑ “IE340-12GT” on page 21
- ❑ “IE340-20GP” on page 21
- ❑ “IE340L-18GP” on page 22

IE340-12GP The front panel of the IE340-12GP switch is shown in Figure 1.

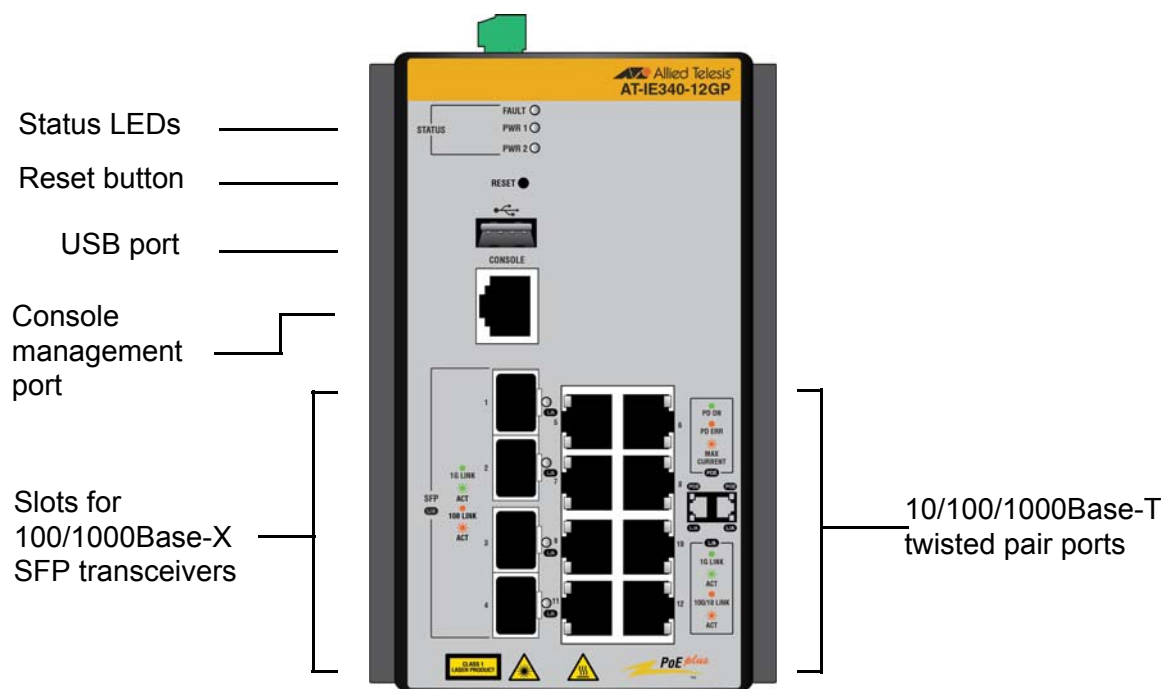


Figure 1. Front Panel of the IE340-12GP Switch

IE340-12GT The front panel of the IE340-12GT switch is shown in Figure 2.

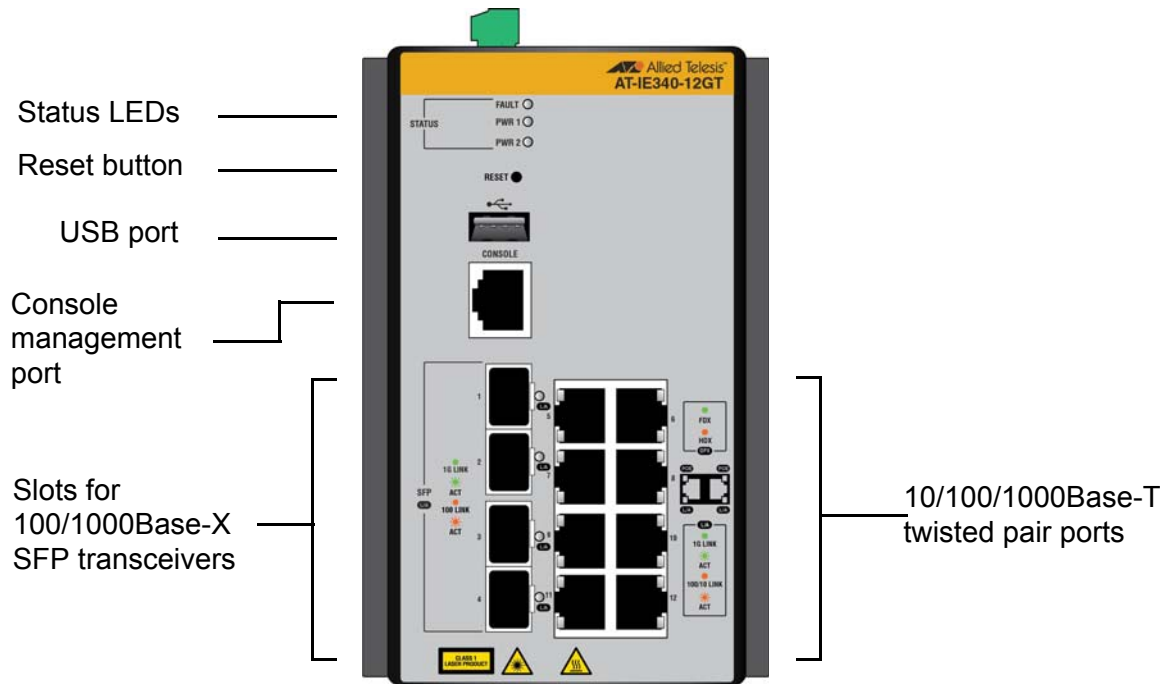


Figure 2. Front Panel of the IE340-12GT Switch

IE340-20GP The front panel of the IE340-20GP Switch is shown in Figure 3.

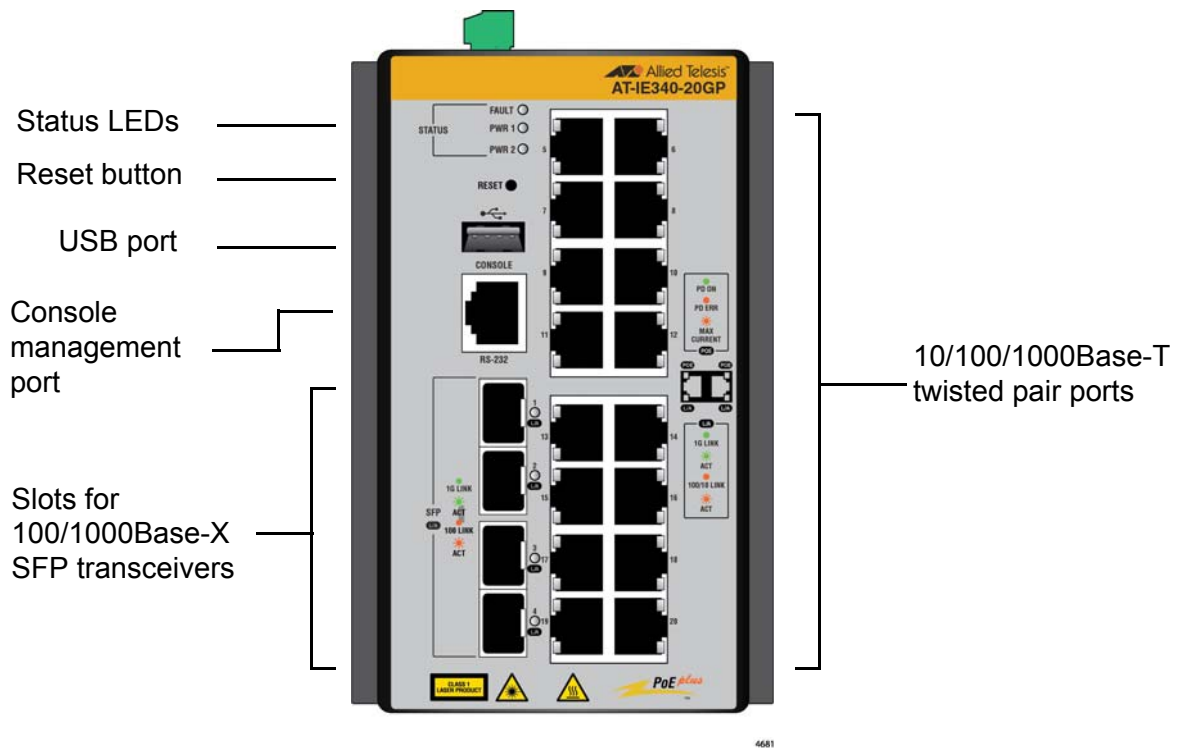


Figure 3. Front Panel of the IE340-20GP Switch

IE340L-18GP The front panel of the IE340L-18GP Switch is shown in Figure 4.

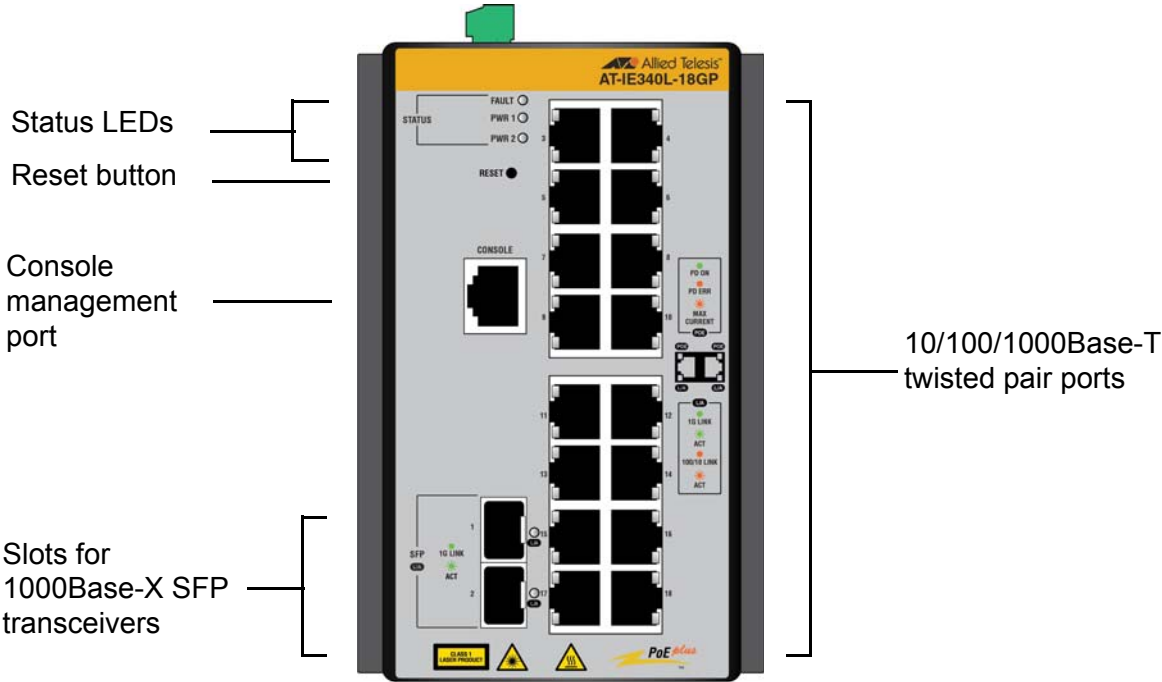


Figure 4. Front Panel of the IE340L-18GP Switch

Top Panels Figure 5 identifies the components on the top panels of the IE340-12GP, IE340-20GP, and IE340L-18GP Switches.

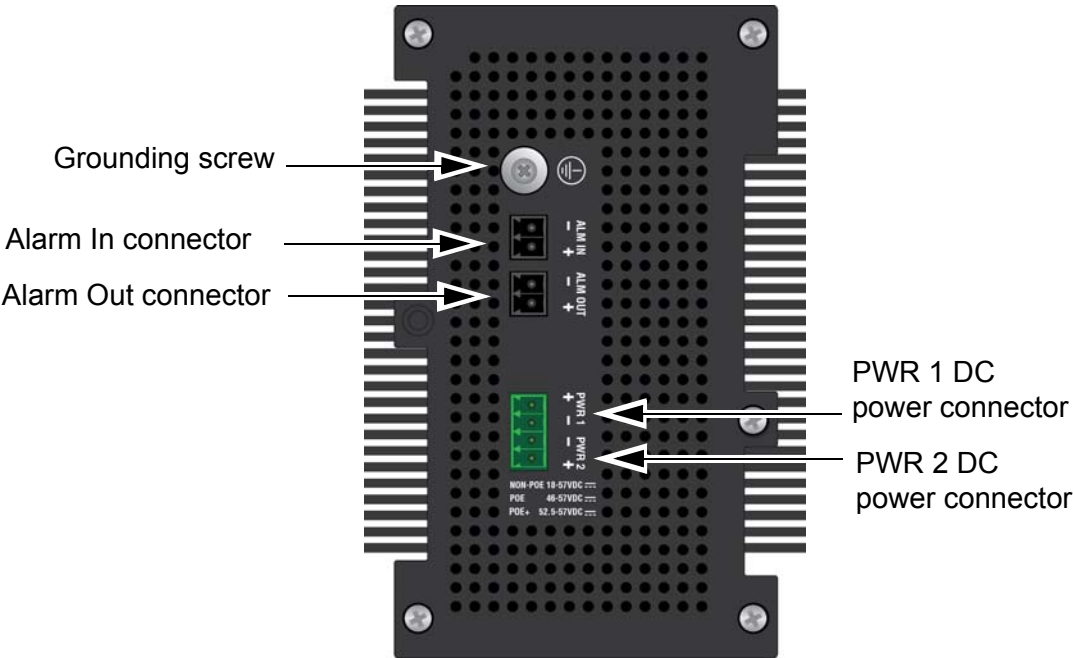


Figure 5. Top Panel of the IE340-12GP, IE340-20GP, and IE340L-18GP Switches

Figure 6 identifies the components on the top panel of the IE340-12GT Switch.

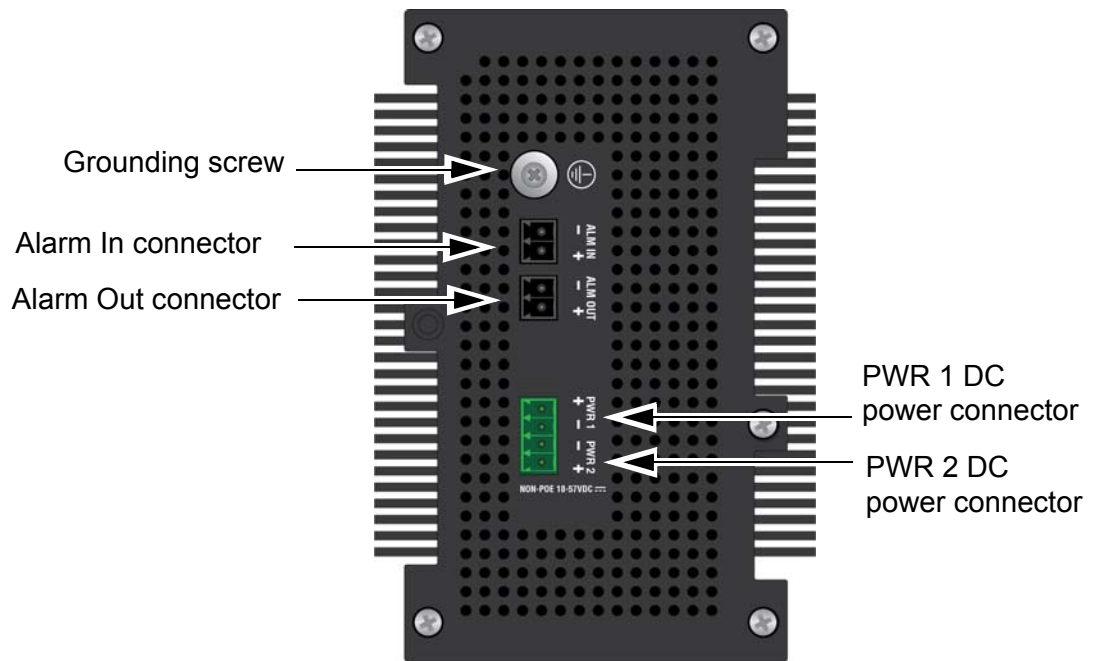


Figure 6. Top Panel of the IE340-12GT Switch

Back Panel Figure 7 identifies the components on the back panel.

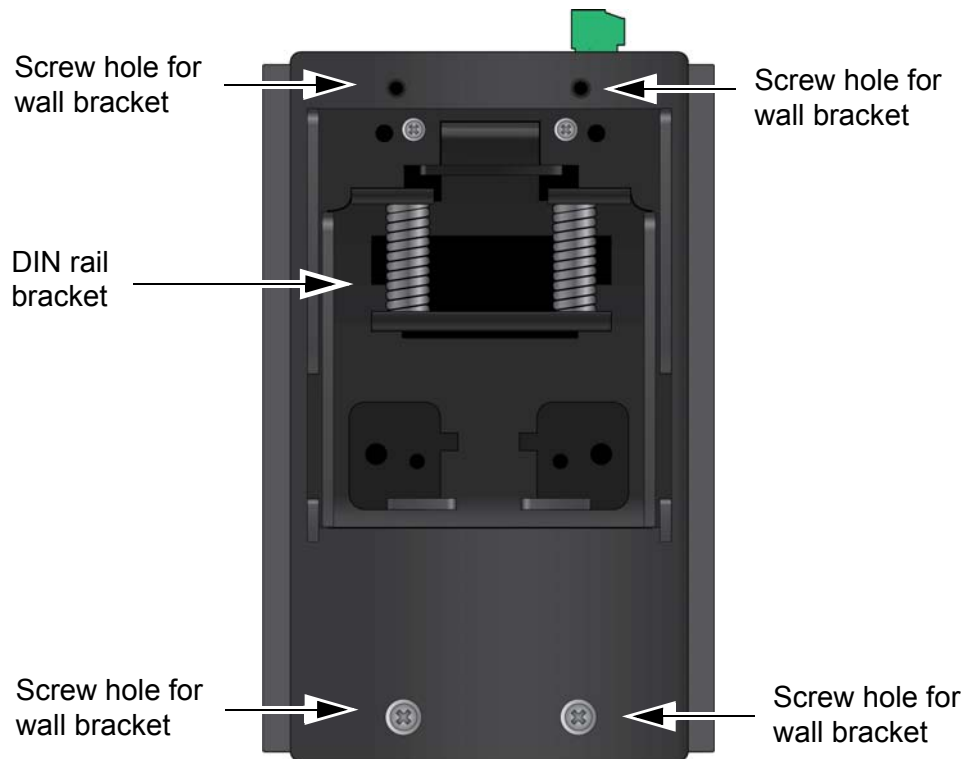


Figure 7. Back Panel

Features

Here are the basic features of the switches.

Twisted Pair Ports

Here are the basic features of the twisted pair ports:

- ☐ Sixteen ports on the IE340-20GP and IE340L-18GP Switches
- ☐ Eight ports on the IE340-12GP and IE340-12GT Switches
- ☐ 10/100/1000Mbps supported on all ports
- ☐ IEEE 802.3i 10Base-T compliant
- ☐ IEEE 802.3u 100Base-TX compliant
- ☐ IEEE 802.3ab 1000Base-T compliant
- ☐ IEEE 802.3u Auto-Negotiation compliant
- ☐ IEEE 802.3x flow control in full-duplex mode
- ☐ IEEE 802.3x back pressure compliant
- ☐ Jumbo frames up to 9KB
- ☐ RJ-45 connectors

Power Over Ethernet (PoE)

The following IE340 Switches are PoE Power Sourcing Equipment (PSE):

- ☐ IE340-12GP
- ☐ IE340-20GP
- ☐ IE340L-18GP

They have these PoE features:

- ☐ All twisted pair ports source PoE
- ☐ IEEE 802.3af Power over Ethernet (PoE) compliant, maximum of 15.4W per port
- ☐ IEEE 802.3at Power over Ethernet (PoE+) compliant, maximum of 30W per port
- ☐ Support powered device classes 0 to 4
- ☐ Support Alternative A wiring for PoE or PoE+ devices
- ☐ Maximum PoE budget of 240 watts with one or two power supplies
- ☐ Dynamic PoE power budget allocation, according to powered device consumptions and/or PoE port priorities
- ☐ Uninterrupted PoE during warm switch restarts
- ☐ PoE power shedding on over-temperature, according to port priorities

SFP Slots The number of SFP slots and types of supported transceivers are given here:

- ☐ Four SFP slots on the IE340-12GP, IE340-12GT and IE340-20GP Switches
- ☐ Two SFP slots on the IE340L-18GP Switch
- ☐ 100Base-FX transceivers (All models except the IE340L-18GP switch.)
- ☐ 1000Base-SX/LX transceivers
- ☐ Single-port Bi-directional (BiDi) 1000Base-LX transceivers
- ☐ 1000Base-ZX transceivers

Note

SFP transceivers are purchased separately.

Protection Circuits The switches have optimized protection circuits to guard against the following abnormal conditions:

- ☐ Reverse input voltage polarity
- ☐ Over- and under-voltage
- ☐ Over-current
- ☐ Peak-current and short-circuit
- ☐ Over-temperature

Alarm Monitoring The alarm facility lets you monitor the switch's environment and respond to problems as they occur. Example of alarm events include:

- ☐ Main power supply failure
- ☐ Over-temperature
- ☐ Port link down
- ☐ Power requirements of all powered devices exceeding available power budget
- ☐ Powered devices exceeding individual port budgets
- ☐ External Alarm contact input

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.

LEDs	The switches have the following LEDs: ☐ System fault ☐ Status of the power supplies ☐ Link/activity of the SFP and twisted pair ports ☐ Duplex mode of the twisted pair ports on the IE340-12GT switch ☐ PoE sourcing status for the twisted pair ports on the IE340-12GP, IE340-20GP, and IE340L-18GP Switches
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 5.4.9 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 (compatible with DIN 35x7.5mm rail) ☐ Concrete or wood wall ☐ Indoor or outdoor environment
Additional Features	Here are additional features: ☐ Slot for USB flash memory on the IE340-12GP, IE340-12GT, and IE340-20GP Switches ☐ Reset button ☐ Two DC power supply connectors ☐ Extended environmental range ☐ IP30-compliant ☐ RJ-45 style Console port for local management

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 23 on page 132 and Table 24 on page 133.

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

Minimum cable requirements for the twisted pair ports are listed here:

- ❑ 10Mbps operations: Standard TIA/EIA 568-compliant Category 3, 100 ohm shielded or unshielded cabling, complying with IEEE 802.3i 10Base-T specifications.
- ❑ 100Mbps operations: Standard TIA/EIA 568-compliant Category 5, 100 ohm shielded or unshielded cabling, complying with IEEE 802.3u 100Base-TX specifications.
- ❑ 1Gbps operations: Standard TIA/EIA 568-compliant Category 5, 100 ohm, 4-pair shielded or unshielded cabling, complying with IEEE 802.3ab 1000Base-T specifications. Category 5e is recommended.

Note

Category 3 and 5 cables may be used for EN55024 immunity levels; however, they are not recommended for IEC61000-6-2 and EN50121-4 immunity levels.

Note

A Category 6 or 6a shielded or unshielded cable is required to meet IEC61000-6-2 and EN50121-4 immunity levels.

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 23 on page 132 for the pinouts of the twisted-pair ports at 10 or 100 Mbps and to Table 24 on page 133 for the port pinouts at 1000 Mbps.

Power over Ethernet

The section explains the Power over Ethernet (PoE) Power Sourcing Equipment (PSE) feature for the following IE340 switches:

- ❑ IE340-12GP
- ❑ IE340-20GP
- ❑ IE340L-18GP

Note

The IE340-12GT Switch does not support PoE PSE.

The PoE PSE feature allows the switches to 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 switches as central power sources 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 IE340 PoE PSE Switches support the following versions of PoE:

- ❑ PoE (IEEE 802.3af, IEEE 802.3at Type 1)
- ❑ PoE+ (IEEE 802.3at Type 2)

Table 1 lists the switch ports that source PoE and the maximum power levels.

Table 1. PoE Sourcing Ports and Maximum Power Levels

PoE Version	Port Numbers			Maximum Power Output at Switch Port	Maximum Power at PD
	IE340-12GP	IE340-20GP	IE340L-18GP		
PoE	5 to 12	5 to 20	3 to 18	15.4W	12.95W
PoE+	5 to 12	5 to 20	3 to 18	30.0W	25.5W

Cabling Requirements for PoE Devices

Minimum cable requirements for twisted pair ports when sourcing PoE are listed here:

- ❑ PoE devices: Standard TIA/EIA 568-compliant Category 3, shielded or unshielded cabling.
- ❑ PoE+ devices: Standard TIA/EIA 568-compliant Category 5e, 4-pair shielded or unshielded cabling. Category 6 is recommended.

Note

Category 3 and 5 cables may be used for EN55024 immunity levels; however, they are not recommended for IEC61000-6-2 and EN50121-4 immunity levels.

Note

Category 6 or 6a shielded or unshielded cable is required to meet IEC61000-6-2 and EN50121-4 immunity levels.

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 2. The IE340 PoE PSE switches support all five classes.

Table 2. PoE and PoE+ Device Classes

Class	Usage	Maximum Power Output at the Switch Port	PD Power Range
0	Default	15.4W	0.44W to 12.95W
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 switch sourcing PoE.

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.

The IE340 PoE PSE switches support only Alternative A: They support 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.

Note

Legacy Powered Devices that are non-standard or were manufactured before the completion of the standards and support only one method might not be compatible with the IE340 PoE PSE.

PoE Power Budget

The IE340 PoE PSE switches have a configurable power budget. This is the total amount of power output that a switch can supply to the powered devices on its ports. The switches have a maximum allowed budget of 240W. The actual power budget depends on the capabilities of the DC power supply.

The number of powered devices the switch can support at one time depends on the switch's PoE budget and the wattage requirements of the powered devices.

To determine whether the wattage requirements of the PoE devices you plan to connect to the switch exceed its budget, see their documentation for their power requirements and add the requirements together. The switch can power all the devices simultaneously as long as the total is below its PoE power 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 PoE port priorities.

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.

PoE Port Priorities

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 PoE port priorities. 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 following IE340 switches have four slots for 100/1000Base-X fiber optic, MSA-compliant SFP transceivers:

- ❑ IE340-12GP
- ❑ IE340-12GT
- ❑ IE340-20GP

The IE340L-18GP Switch has two SFP slots for Ethernet 1000Base-X 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 3 provides recommendations for SFP maximum operating temperatures for several ambient site temperatures.

Table 3. Maximum Installation Site Temperatures Versus SFP Temperature Ratings

Maximum Ambient Installation Site Temperature	Recommended Maximum SFP Operating Temperature
75 °C (167° F) ^a	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)

- a. The 75 °C ambient and 105 °C SFP operating temperatures are not applicable to IE340L-18GP switch, which has a maximum ambient temperature of 65 °C.

Console Port

The Console port is a serial RS-232 port. You use the port 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 comes with a management cable. If you need a replacement cable, you can purchase one or build your own. Refer to Table 25 on page 134 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 the management cable.

The Console port has the following settings:

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

Note

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

USB Port

The USB port can be used with a flash drive for the following management functions:

- ❑ Use Allied Telesis Autonomous Management Framework (AMF) 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.

Note

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



Caution

Do not leave a flash drive in the USB port when the ambient temperature exceeds 65°C.

Note

The IE340L-18GP switch does not have a USB port.

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 paper-clip or similar object.



Caution

The switch does not forward network traffic during the reboot process. Some network traffic may be lost. [GE113](#)

Note

The reboot process may take two to three minutes.

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.



Warning

The switch must be connected to an earth ground. Do not operate the device without an earth ground. [E129](#)

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

For power supply requirements, see “Power Supplies” on page 49.

Note

The AT-iMG008 Power Supply and Backup Unit from Allied Telesis is not compatible with IE340 Switches.

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 IE340 Switches*.

Here are the requirements for the external sensor:

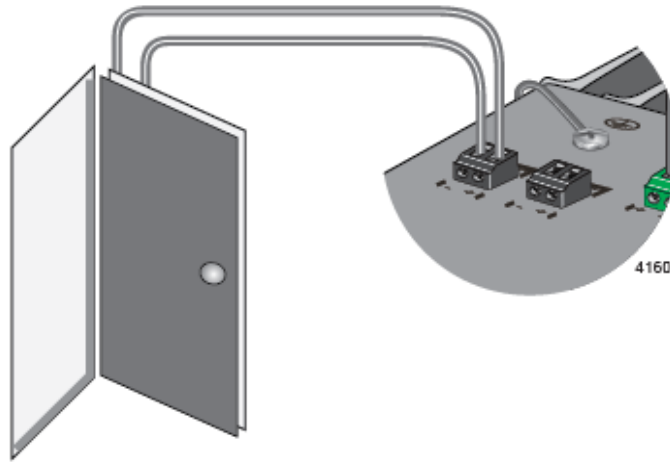
- ☐ It must be a dry contact.
- ☐ It must not place any current on the circuit.
- ☐ It must not use the voltage or current for its own operations.
- ☐ It must be able to handle a minimum of 3.3VDC and 320uA.



Caution

The external sensor might damage the Alarm In connector if it places a voltage on the circuit. [GE E118](#)

The example in Figure 8 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.

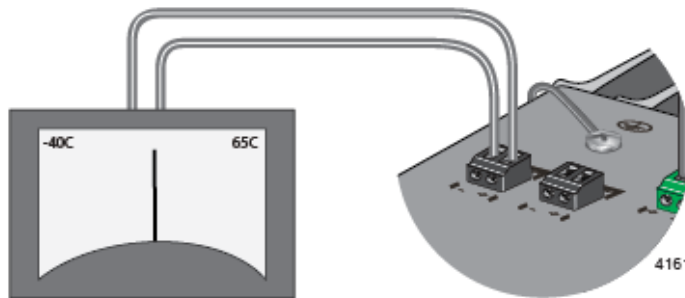
Figure 8. Example 1 of the Alarm In (ALM IN) Connector

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 9 on page 40, 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 9. 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.

Note

External sensors are not available from Allied Telesis.

Alarm Out Connector

The switch has a 2-pin Alarm Out (ALM OUT) connector on the top panel 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. [GE119](#)

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 IE340 Switches*.

An example of the feature is illustrated in Figure 10 on page 42. 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 are the ALARM FACILITY RELAY commands:

- ❑ IE340-20GP:


```
awplus(config)# alarm facility link-down
port1.0.1-port1.0.20 relay
```

❑ IE340L-18GP:

```
awplus(config)# alarm facility link-down  
port1.0.1-port1.0.18 relay
```

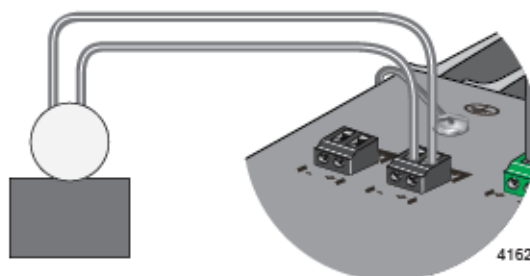
❑ IE340-12GP and IE340-12GT:

```
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.

Note

Alarm devices are not available from Allied Telesis.



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

Figure 10. 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 35 x 7.5mm 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”, next
- ❑ “Twisted Pair Port LEDs on PoE PSE Switches” on page 45
- ❑ “Twisted Pair Port LEDs on the IE340-12GT Switch” on page 46
- ❑ “SFP Slot LEDs” on page 47

Status LEDs

The status LEDs are defined in Table 4.

Table 4. Status LEDs

LED	State	Description
Fault	Off	The switch is operating normally or powered off.
	Solid Amber	The switch is booting up.
	Five flashes followed by a pause	The switch is experiencing an alarm condition. Use the SHOW FACILITY-ALARM STATUS command to view active alarms. The ALARM FACILITY command in the Global Configuration mode is the command for programming the Fault LED to flash in response to an alarm condition. The following example of the command configures the switch to flash the Fault LED if port 1 does not have a link to a network device: <pre>alarm facility link-down port1.0.1 led</pre> For more information, refer to the <i>Software Reference for IE340 Series Switches</i> or <i>Command Reference for IE340 Series Switches</i>.
	Six flashes in two seconds	The switch is overheating and might shutdown.

Table 4. Status LEDs (Continued)

LED	State	Description
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.
	Solid Green	The switch is receiving power on the PWR 1 connector and is operating normally.
	Solid Yellow	The switch is receiving power on the PWR1 connector, but the power is under the minimum voltages listed here: - IE340-12GT Switch: 18Vdc - All other IE340 Switches: 52.5Vdc (PoE+ voltage threshold)
	Solid Red	The switch is receiving power on the PWR1 connector, but the power exceeds the maximum voltage. The maximum voltage depends upon the operating mode.
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.
	Solid Yellow	The switch is receiving power on the PWR2 connector, but the power is under the minimum voltages listed here: - IE340-12GT Switch: 18Vdc - All other IE340 Switches: 52.5Vdc (PoE+ voltage threshold)
	Solid Red	The switch is receiving power on the PWR2 connector, but the power exceeds the maximum voltage. The maximum voltage depends on the operating mode.

Twisted Pair Port LEDs on PoE PSE Switches

The twisted pair ports on the IE340 PoE PSE Switches have two LEDs each. The LEDs are identified in Figure 11.

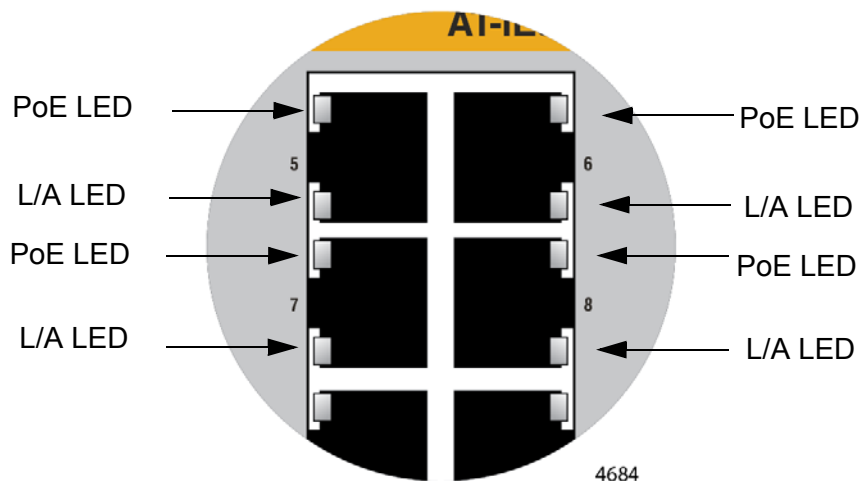


Figure 11. Twisted Pair Port LEDs on the IE340 PoE PSE Switches

The states of the LEDs are defined in Table 5.

Table 5. Twisted Pair Port LEDs on the IE340 PoE PSE Switches

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: - 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.

Table 5. Twisted Pair Port LEDs on the IE340 PoE PSE Switches

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

Twisted Pair Port LEDs on the IE340-12GT Switch

The LEDs of the twisted pair ports on the IE340-12GT Switch are identified in Figure 12.

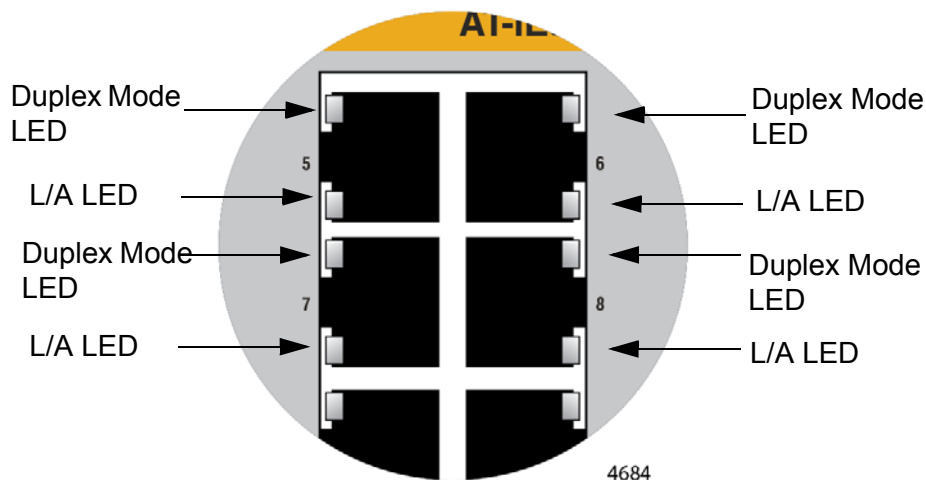


Figure 12. Twisted Pair Port LEDs on the IE340-12GT Switch

The states of the twisted pair port LEDs are defined in Table 6 on page 47.

Table 6. Twisted Pair Port LEDs on the IE340-12GT 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 Mbps.
	Off	The port has not established a link with another network device.

SFP Slot LEDs

Each SFP slot has one LED. For the IE340-12GP, IE340-12GT, and IE340-20GP switches, see Table 7. For the IE340L-18GP switch, see Table 8 on page 48.

Table 7. SFP Slot LED for the IE340-12GP, IE340-12GT, and IE340-20GP Models

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.
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.

Table 8. SFP Slot LED for IE340L-18GP Model

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.
Off	The port has not established a link to a network device.

Power Supplies

IE340 Switches can be powered with the IE048-480 Power Supply from Allied Telesis or with power supplies from third-party manufacturers that meet the requirements in Table 9 on page 51 and “Power Specifications” on page 130. They should also support the environment of the location site.



Warning

Use a UL-listed DC power supply with 48VDC/10A output. It should be suitable for the operating altitude and maximum ambient temperature of the physical location of the switch. Refer to the installation instructions from the manufacturer for installation and safety guidelines.

IE048-480 Power Supply

The IE048-480 Power Supply endures harsh environments such as those found in industrial applications. Here are main features:

- ☐ 480W output power
- ☐ Wide input voltage range: 85 ~ 264Vac
- ☐ Wide operating temperature range: -25 ~ 70°C
- ☐ Electromagnetic immunity (EMI) suitable for industrial applications
- ☐ High efficiency: 94% @230Vac
- ☐ 150% peak current capability
- ☐ Active PFC: PF type. 0.93 @230Vac
- ☐ Protection circuits: peak-current, over-current, over-voltage, over-temperature
- ☐ Remote ON/OFF
- ☐ Output power confirmation relay (DC_OK)
- ☐ DIN rail mount



Warning

The IE048-480 Power Supply and other non-compliant UL/EN/IEC 61010-1 and 61010-2-201 power supplies must be installed in fire protection enclosures when installed on walls of combustible material (e.g., wood). Additionally, the floor area directly below the power supplies should be non-combustible (e.g., metal or concrete) and free of combustible material (e.g., paper, plastic, or wood).

**Caution**

The output power of the IE048-480 Power Supply is affected by the input voltage and ambient temperature. Refer to the data sheet for the derating curve.

The IE048-480 Power Supply is sold separately.

Power Requirements

The IE340 Switches have the following power supply requirements:

- ❑ The DC input voltage for the IE340-12GP, IE340-12GT, and IE340-20GP Switches has to be between 18 and 57Vdc; this range is absolute with no tolerance.
- ❑ The DC input voltage for the IE340L-18GP Switch has to be between 46 and 57Vdc; this range is absolute with no tolerance.
- ❑ DC input voltage has to meet the requirements in Table 9 on page 51 to enable PoE sourcing.
- ❑ DC input voltage must not exceed 57Vdc to avoid the device breakdown.
- ❑ DC input current has to be available continuously over the operating temperature range and required consumption.

Note

The IE340 Switches can be powered by one or two power supplies. A single power supply that meets the above requirements can fully power the switches. Adding a second power supply adds power redundancy.

IE340 PoE PSE Switches can operate in the following modes:

- ❑ Non-PoE mode: All network devices connected to the switch do not require PoE sourcing.
- ❑ PoE mode: Some or all network devices connected to the switch require PoE sourcing, in accordance with std. IEEE 802.3at Type 1 “PoE.”
- ❑ PoE+ mode. Some or all network devices connected to the switch require PoE sourcing, in accordance with std. IEEE 802.3at Type 1 and or Type 2 “PoE+.”

Table 9 on page 51 describes the input voltage requirements; the listed voltage ranges are absolute with no tolerance.

Table 9. Input Voltage Requirements

Mode	Input Voltage Range		Input Voltage Recommended	Over-voltage Alarm
Non-PoE	IE340-12GP IE340-12GT IE340-20GP	18.0 to 57.0 VDC	24 VDC, 48 VDC	≥ 57 VDC
	IE340L-18GP	46.0 to 57.0 VDC	48 VDC	
PoE	46.0 to 57.0 VDC		54 VDC	
PoE+	52.5 to 57.0 VDC			

Note

An input voltage of 53.5VDC on the switch ensures the maximum power budget of 240W for the powered devices (PD).

Chapter 2

Beginning the Installation

The chapter contains the following sections:

- ❑ “Reviewing Safety Precautions” on page 54
- ❑ “Safety Precautions When Working with Electricity” on page 58
- ❑ “Reviewing Site Requirements” on page 59
- ❑ “Unpacking the Product Package” on page 63

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. L9



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.
E124



Warning

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

Note

An appropriate disconnect device must be provided as part of the building or enclosure installation.



Warning

Use a UL-listed DC power supply having 48VDC/10A output and being suitable for the maximum operating altitude of 3,000 m and the maximum ambient temperature of the switch's location.



Warning

This equipment must be earthed. The ground screw on the unit must be connected to a properly earthed bonding point. [E120](#)

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](#)



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

Install the switch in a UL-listed Type 3X or 4X enclosure when installing it in an outdoor environment.



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. [E121](#)

Note

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

Note

Allied Telesis does not warrant against lightning or power surges damaging 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:



Warning

You must install the switch in a UL Listed 3X or 4X enclosure when installing it in an outdoor environment.

- ☐ The switch must be installed in a Restricted Access location.
- ☐ The switch does not require an enclosure when installed in most indoor environments.
- ☐ The switch must be installed in a UL Listed or Nationally Recognized Test Lab enclosure when used in a Measurement, Control, or Laboratory indoor environment, as specified in UL/EN/IEC 61010-1 and 61010-2-201.
- ☐ The IE340L-18GP switch is not compliant with UL/EN/IEC 61010-1 and 61010-2-201 and should not be used in an indoor Measurement, Control, or Laboratory environment.
- ☐ 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 might not be strong enough to safely support the device.
- ☐ You should not install the switch on sheetrock or similar material. Sheetrock might not be strong enough to safely support the device.
- ☐ 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 DC power source should be located near the device and be easily accessible.
- ☐ The site should not expose the device to moisture or water.
- ☐ The site should be a dust-free environment.
- ☐ Do not place objects on top of the switch.
- ☐ When installing the device in an enclosure, verify that the enclosure has adequate airflow so that the unit does not overheat.
- ☐ The site should allow for adequate air flow around and through the cooling fins on the sides of the switch. The following minimum open spaces around the switch are recommended:
 - Two inches (5.08cm) under and above the switch.
 - Two inches (5.08cm) in front of the switch.

- Two inches (5.08cm) on the left and right sides of the switch.
- ❑ Select an enclosure that is large enough for the switch, DC power supply, and all other included equipment.
- ❑ The enclosure size must be determined by considering multiple factors, including the outside ambient temperature, total heat generated by the installed equipment, sealed or unsealed enclosure type, enclosure material, paint color, mounting method (wall, pole, ground, etc.), and sun load. The smaller enclosure size you choose, the higher the risk of overheating the product faces.

If the product overheats in an enclosure that was built without taking into account these factors, the warranty of the product might be voided. Consult Allied Telesis when assistance is needed.

- ❑ The enclosure BTU/hour rating must be higher than the total BTU/hour values of equipment installed in the enclosure, over the expected operating temperature range. For the operating temperature ratings, refer to Table 16 on page 128. For heat dissipation, refer to Table 21 on page 130.
- ❑ The switch's maximum operating temperature depends on its orientation on the wall and the type of enclosure. Allied Telesis recommends installing the device vertically for best possible ventilation and cooling.
- ❑ If you install the switch in a 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 must be installed close to each other so that the DC power cables are kept as short as possible to minimize voltage loss.
- ❑ 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.
- ❑ The site should include dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- ❑ The switch and power supply must be properly connected to a protective earth ground.
- ❑ The switch and power supply must be individually grounded to the grounding conductor. Do not daisy-chain the ground wires.
- ❑ If you install the switch in a metal enclosure, the enclosure must be properly grounded 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 must be grounded to the same grounding conductor at the service entrance as the switch.
- ❑ LAN ports should have additional lightning protections as specified in 802.3at standard, 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 10.

Table 10. Ground Resistivity Recommendations

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

- ❑ 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.
- ❑ Allied Telesis recommends using CAT6 STP or UTP for LAN ports. These cables provide higher protection from radio frequency interference.
- ❑ Outdoor installation requires adequate electromagnetic immunity due to the higher threat-level conditions. For guidelines, refer to “Installing the Switch in an Outdoor Environment” on page 83.
- ❑ The narrow spacing between SFP transceiver slots and adjacent twisted pair ports can make it difficult to connect and disconnect cables. Refer to Figure 13 on page 62. Allied Telesis recommends installing and cabling SFP slots before cabling adjacent twisted pair ports. You might need to use a flat tool to disconnect cables.

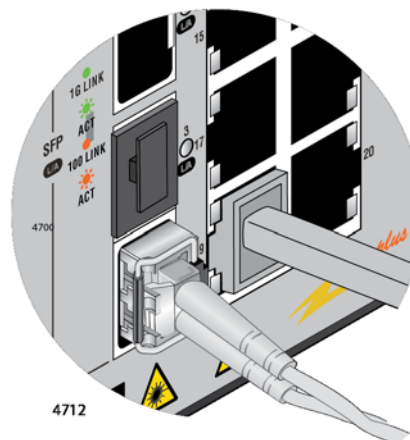


Figure 13. Spacing Between SFP Module and Twisted Pair Port

Unpacking the Product Package

To unpack the product package, perform the following procedure:

1. Remove all the components from the shipping box. Refer to Figure 14.

Note

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

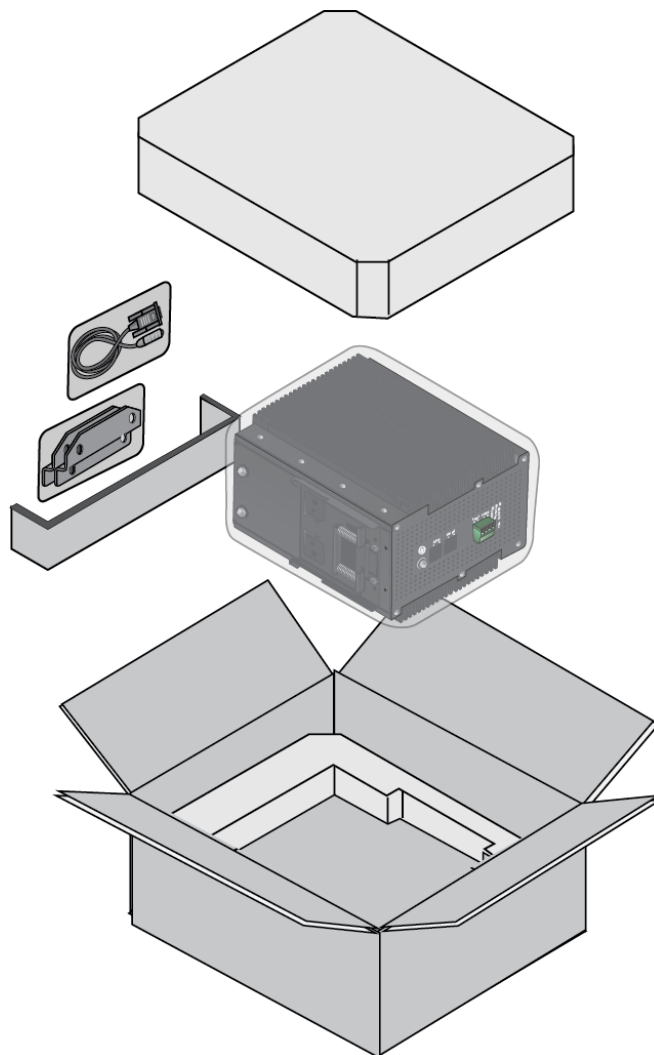


Figure 14. Removing the Switch from the Shipping Box

2. Remove the switch from the anti-static bag and place it on a level, secure surface. Refer to Figure 15.

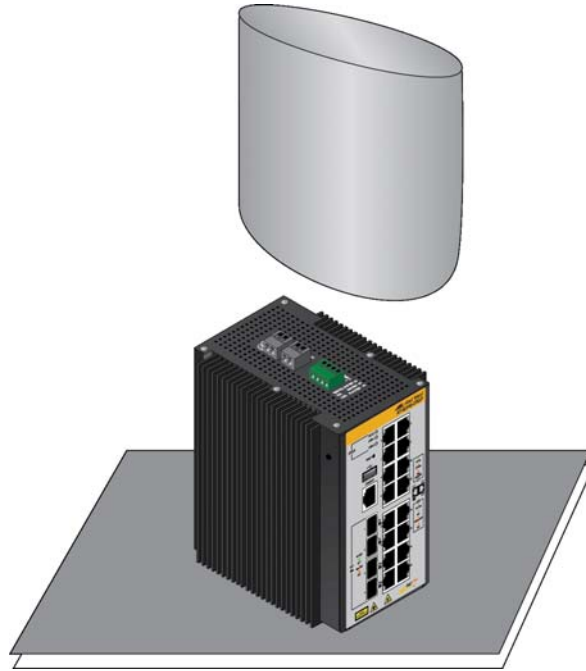


Figure 15. Removing the Switch from the Anti-static Bag

3. Verify that the shipping container includes the items shown in Table 11 on page 65.

Figure 16 on page 65 identifies the pre-installed components of the IE340-20GP Switch as an example.

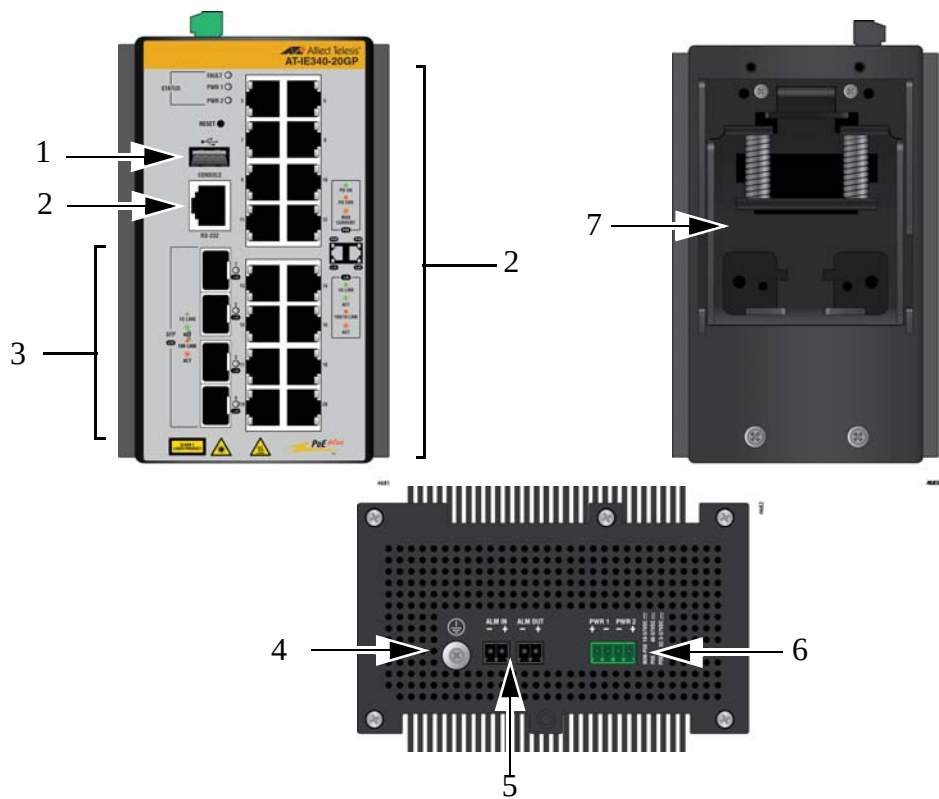


Figure 16. Pre-installed Components

Table 11. Shipping Package Contents

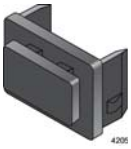
	Shipping Component		IE340-12GP IE340-12GT	IE340-20GP	IE340L-18GP
			Number of the Components		
1		Dust cover on the USB port (Pre-installed)	1	1	N/A
2		Dust covers on the twisted pair and Console ports (Pre-installed)	9	17	17

Table 11. Shipping Package Contents (Continued)

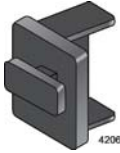
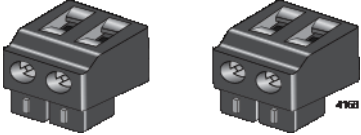
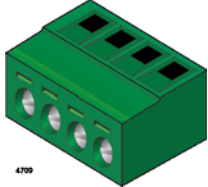
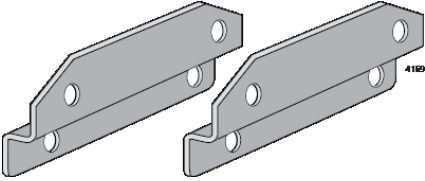
	Shipping Component		IE340-12GP IE340-12GT	IE340- 20GP	IE340L- 18GP
			Number of the Components		
3		Dust covers on the SFP slots (Pre-installed)	4	4	2
4		M4x8 Phillips-head grounding screw (Pre-installed)	1	1	1
5		2-pin connectors on the ALM IN and ALM OUT connectors (Pre-installed)	2	2	2
6		4-pin connector on the DC power PWR 1 and PWR 2 connectors (Pre-installed)	1	1	1
7		DIN rail bracket (Pre-installed)	1	1	1

Table 11. Shipping Package Contents (Continued)

	Shipping Component		IE340-12GP IE340-12GT	IE340-20GP	IE340L-18GP
			Number of the Components		
		Wall bracket	2	2	2
		M4x8 Phillips-head screws (one screw for spare)	5	5	5
		2m (6.6ft) local management cable with RJ-45 (8P8C) and DB0 (D-sub 9-pin) connectors	1	1	1

Chapter 3

Installing the Switch

The procedures in this chapter are listed here:

- ❑ “Installing the Switch on a DIN Rail” on page 70
- ❑ “Installing the Switch on an Indoor Wooden Wall” on page 73
- ❑ “Installing the Switch on an Indoor Concrete Wall” on page 79
- ❑ “Installing the Switch in an Outdoor Environment” on page 83

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 35 x 7.5mm rails. Figure 17 shows the switch installed on a DIN rail.

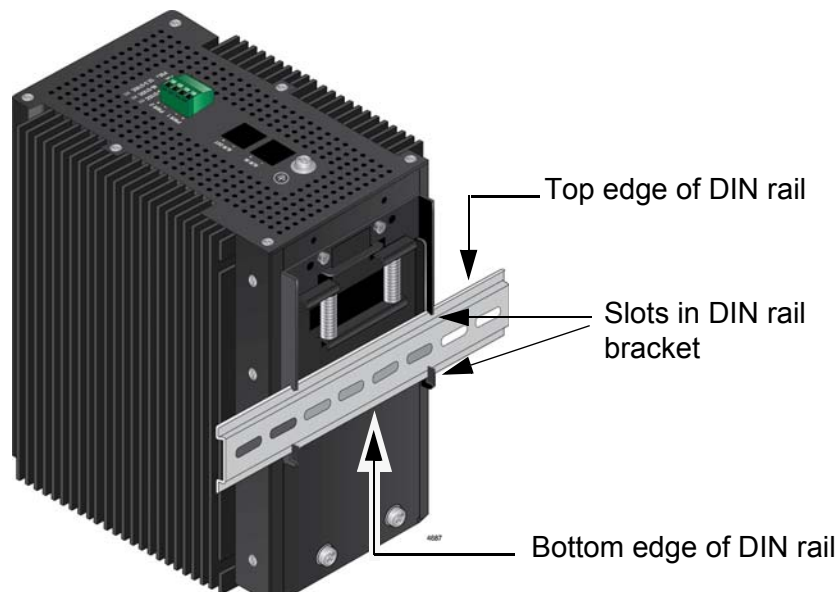


Figure 17. The Switch Installed on a DIN Rail

Figure 18 shows the proper orientation of the switch on a DIN rail. Do not install the switch horizontally or upside-down.

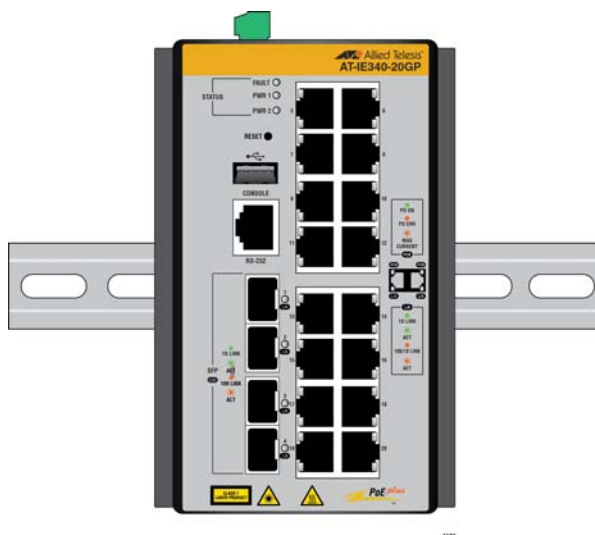


Figure 18. Orientation of the Switch on a DIN Rail

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

1. Hold the switch with both hands facing toward the DIN rail on the wall.
2. Tilt the bottom of the switch towards the wall and hook the bottom of the switch bracket on the bottom edge of DIN rail.

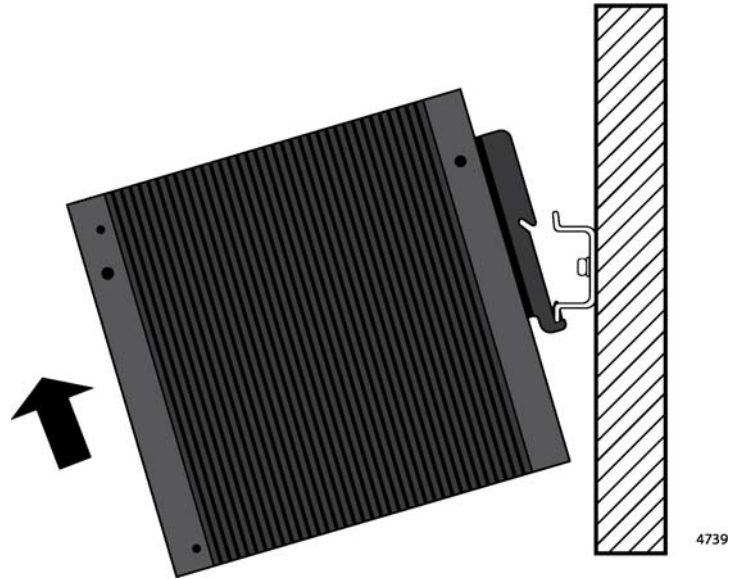


Figure 19. Installing the Switch on a DIN Rail - 1

3. While pressing the switch upwards to compress the springs of the bracket, hook the top of the bracket on the DIN rail by pushing the top of the switch toward the wall until it is vertical.

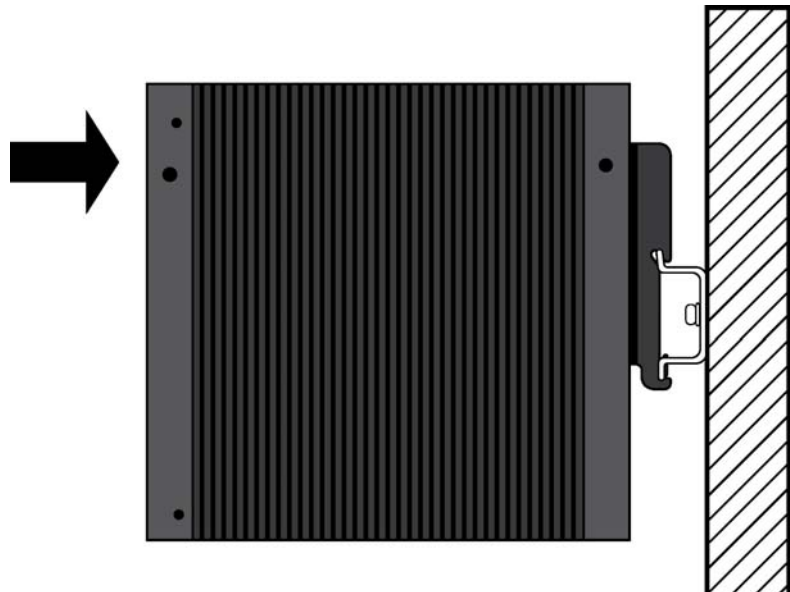


Figure 20. Installing the Switch on a DIN Rail - 2

4. Visually inspect the bracket to verify that the DIN rail is now fitted into the top and bottom slots. Refer to Figure 21.

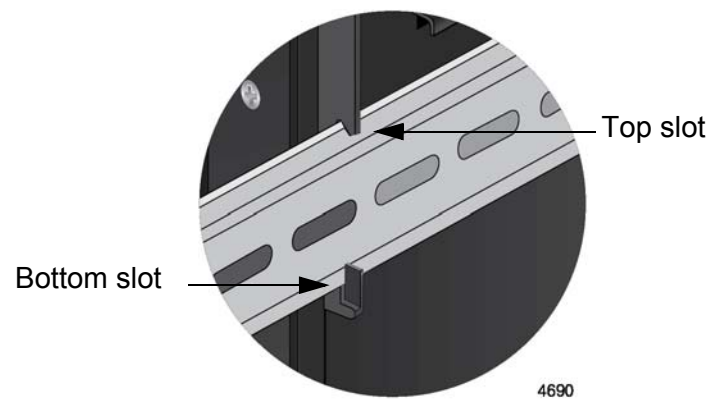


Figure 21. Verifying the DIN Rail Installation

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.

5. Go to Chapter 4, “Cabling the Ports” on page 87.

Installing the Switch on an Indoor Wooden Wall

This section contains the procedure for installing the switch on a wooden wall in a protected, indoor environment.

Note

The switch does not require an enclosure when installed in most indoor environments.

Note

The switch must be installed in a UL Listed or Nationally Recognized Test Lab enclosure when used in a Measurement, Control, or Laboratory indoor environment, as specified in UL/EN/IEC 61010-1 and 61010-2-201.

Note

The IE340L-18GP Switch is not compliant with UL/EN/IEC 61010-1 and 61010-2-201 and must not be installed in a Measurement, Control, or Laboratory environment.

**Warning**

The IE048-480 Power Supply and other non-compliant UL/EN/IEC 61010-1 and 61010-2-201 power supplies must be installed in fire protection enclosures when installed on walls of combustible material (e.g., wood). Additionally, the floor area directly below the power supply should be non-combustible (e.g., metal or concrete) and be free of combustible material (e.g., paper, plastic, or wood).

**Warning**

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

 E105

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 22 on page 74.

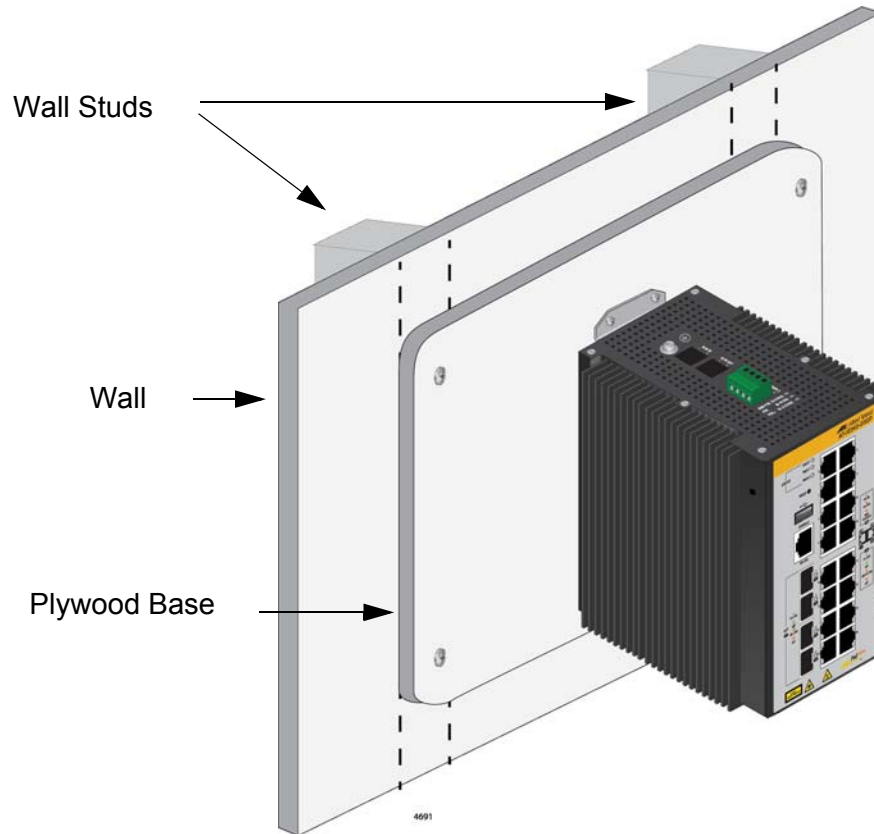


Figure 22. Switch on the Wall with a Plywood Base

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 23 on page 75.

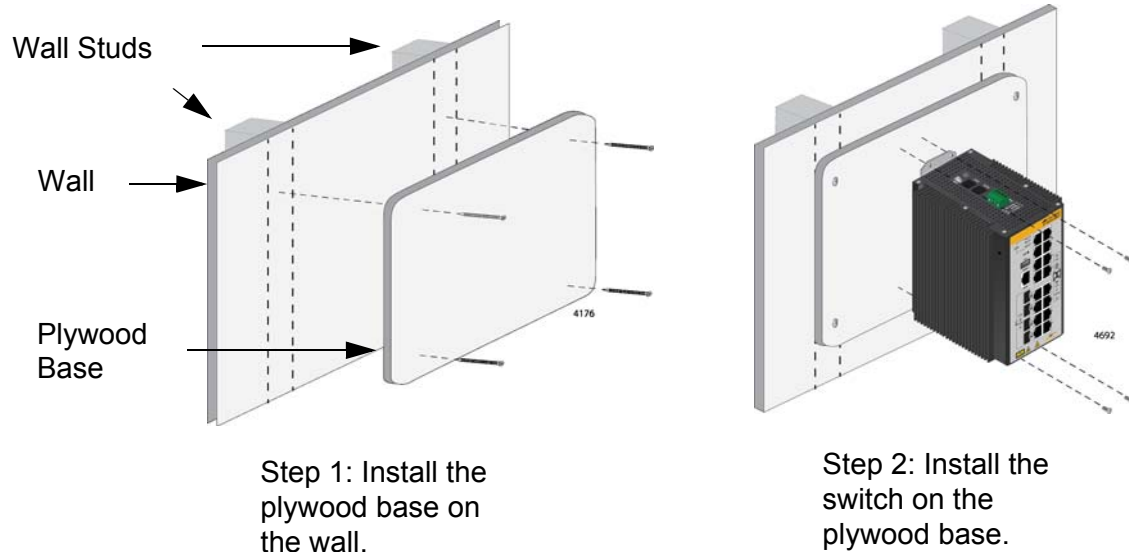


Figure 23. Steps to Installing the Switch with a Plywood Base

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 59.

Installing the Switch on the Plywood Base

This procedure assumes that the plywood base for the switch is installed on the wall. Please review “Reviewing Safety Precautions” on page 54 and “Reviewing Site Requirements” on page 59 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.

 E122

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

1. Place the switch on a table.
2. With a Phillips-head screwdriver, remove the four screws holding the pre-installed DIN rail bracket, and remove the bracket. Refer to Figure 24.

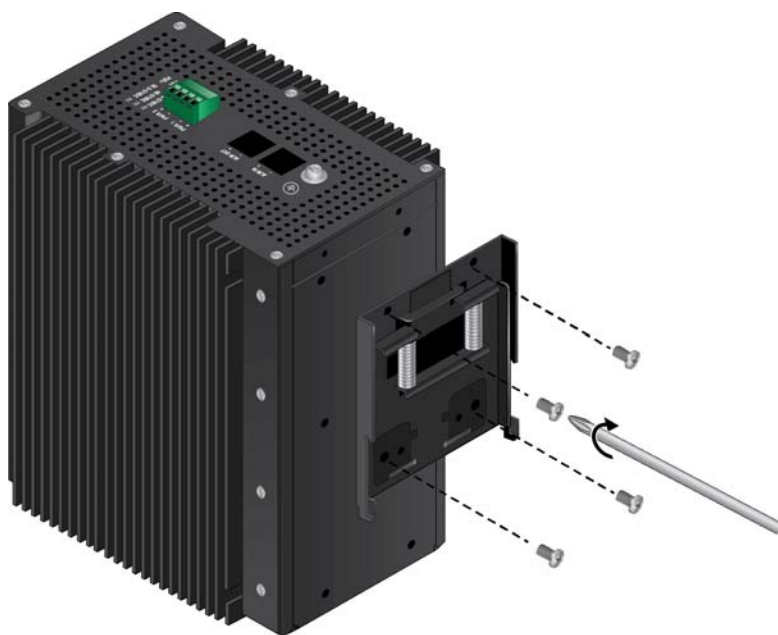


Figure 24. Removing the DIN Rail Bracket from the Switch

3. Install the two wall brackets to the back panel of the switch, with the four screws included with the unit. Refer to Figure 25.

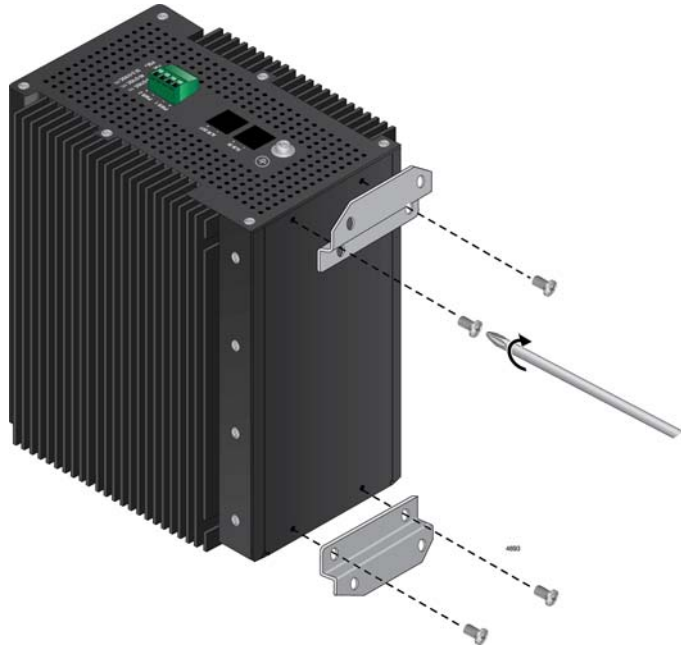


Figure 25. Installing the Wall Brackets on the Switch

4. 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 26 on page 78.

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

- ☐ The switch must be oriented as shown in Figure 26. 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 59 for further information.

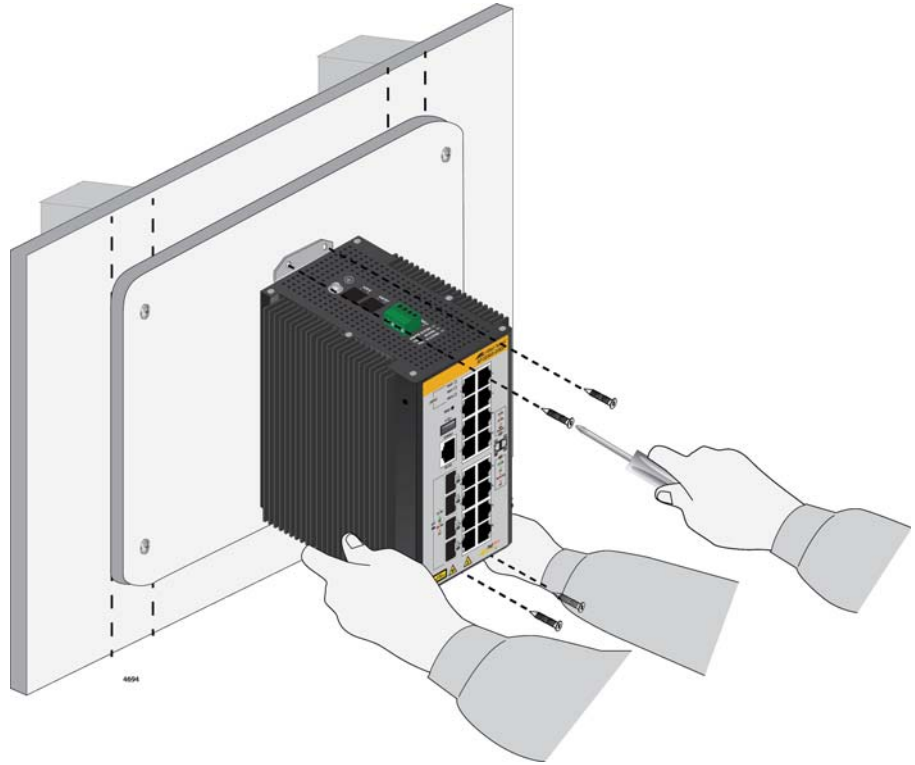


Figure 26. Attaching the Switch to the Plywood Base

5. Go to Chapter 4, “Cabling the Ports” on page 87.

Installing the Switch on an Indoor Concrete Wall

This section contains the procedure for installing the switch on a concrete wall in a protected, indoor environment.

Note

The switch does not require an enclosure when installed in most indoor environments.

Note

The switch must be installed in a UL Listed or Nationally Recognized Test Lab enclosure when used in a Measurement, Control, or Laboratory indoor environment, as specified in UL/EN/IEC 61010-1 and 61010-2-201.

Note

The IE340L-18GP Switch is not compliant with UL/EN/IEC 61010-1 and 61010-2-201 and must not be installed in a Measurement, Control, or Laboratory environment.



Warning

The IE048-480 Power Supply and other non-compliant UL/EN/IEC 61010-1 and 61010-2-201 power supplies must be installed in fire protection enclosures when installed on walls of combustible material (e.g., wood). Additionally, the floor area directly below the power supply should be non-combustible (e.g., metal or concrete) and be free of combustible material (e.g., paper, plastic, or wood).

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.

⚠E122



Warning

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

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. With a Phillips-head screwdriver, remove the four screws holding the pre-installed DIN rail bracket, and remove the bracket. Refer to Figure 24 on page 76.
3. Install the two brackets that come with the switch to the back panel of the unit. Refer to Figure 25 on page 77.
4. 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 27 on page 81.

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

- ☐ The switch must be oriented as shown in Figure 27. 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 59 for further information.

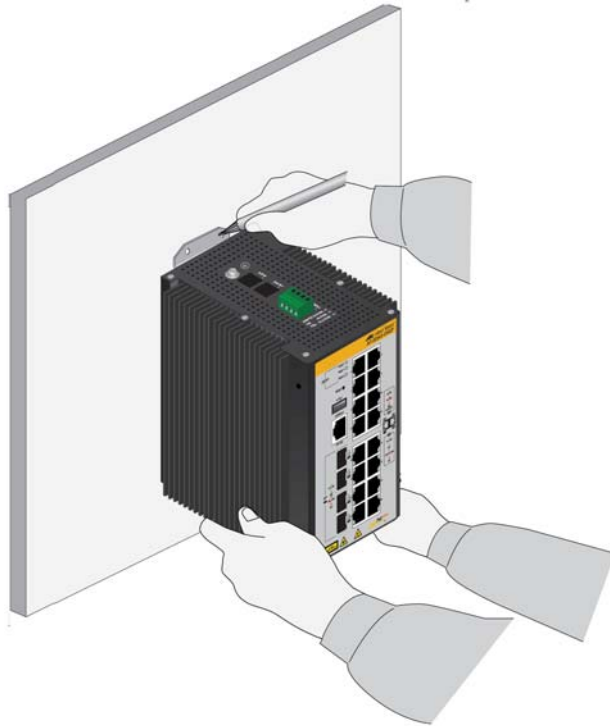


Figure 27. Marking the Locations of the Bracket Holes on a Concrete Wall

5. Place the switch on a table or desk.
6. 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.
7. Insert four anchors (not provided) into the holes.
8. Have another person hold the switch at the selected wall location while you secure it with four screws (not provided). Refer to Figure 28 on page 82.

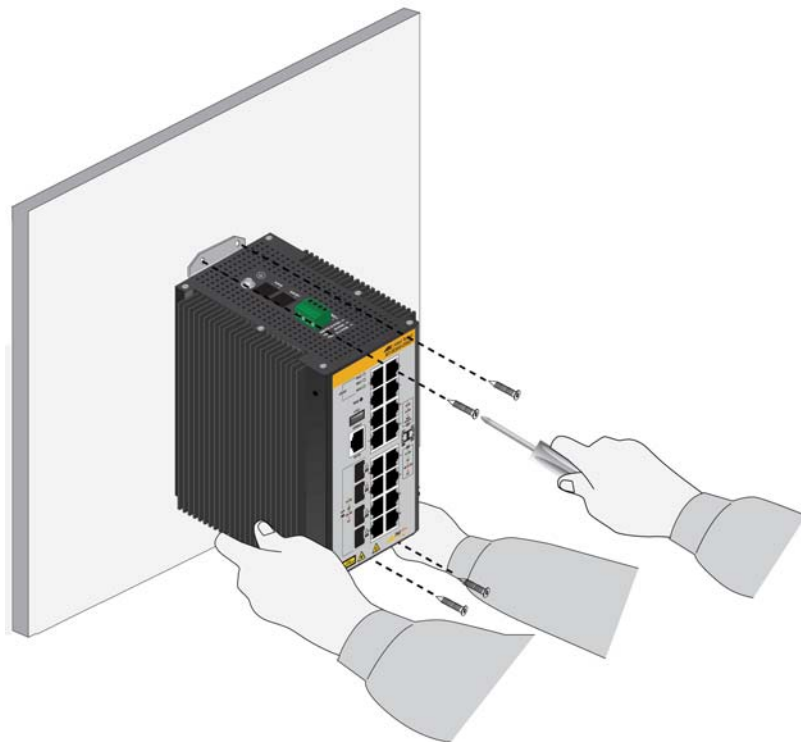


Figure 28. Installing the Switch on a Concrete Wall

9. Go to Chapter 4, “Cabling the Ports” on page 87.

Installing the Switch in an Outdoor Environment

The switch can be installed in an outdoor environment. Before planning to install the switch outdoors, read following requirements and precautions. You must meet all requirements to install the switch outdoors.

Requirements for Outdoor Installation

Here are the requirements:



Warning

Install the switch in a UL-listed Type 3X or 4X enclosure when installing the switch in an outdoor environment.

- ❑ Follow the enclosure manufacturers installation recommendations to maintain safety and protection from outdoor environment.
- ❑ Verify that the enclosure BTU/hour rating is higher than the total BTU/hour values of equipment installed in the enclosure over the expected operating temperature range. For the operating temperature ranges, see Table 16 on page 128.
- ❑ The enclosure size should be determined by considering multiple factors, such as the outside ambient temperature, total heat generated from the installed equipment, sealed or unsealed enclosure type, enclosure material, paint color, mounting method (wall, pole, ground, etc.), and sun load. The smaller enclosure size you choose, the higher risk of overheating the product faces. If the product overheats in an enclosure that was built without taking into account these factors, the warranty of the product might be voided. Consult Allied Telesis when assistance is needed.

Immunity and Precautions

The IE340 Switches are suitable for industrial applications, which require electromagnetic compatibility (EMC) standards, such as EN 61000-6-2 for immunity and EN 61000-6-4 for interference.

The generic standard EN 61000-6-2 specifies the immunity test levels in relation to continuous and transient conducted and radiated disturbances. Tests within the standard include Electrostatic Discharges (ESD), Electrical Fast Transients (EFT), surge, Power Frequency Magnetic Fields, and power interruptions. These tests use the same detailed measurements and test methods used for the basic standard EN 61000-4-x series.

The equipment connected to outdoor cables may be exposed to surges, which can damage components and circuits.

The IE340 Switches satisfy the surge immunity defined by IEC 61000-4-5 test level 3 and the requirements for the installation class 3.

The IE340 Switches have a surge immunity of up to 2 kV. This is sufficient when interconnection cables are partly outdoor cables and close to the grounding network. If this condition is not satisfied, Allied Telesis strongly recommends installing primary surge protections, which are usually provided by the use of solid state or gas tube arrestors located at the point where the cable enters the building or the outdoor cabinet.

Note

The requirements may not be sufficient to protect against damages in extreme environments and in cases such as close or direct lightning strikes.

Lightning Protection Requirements

Lightning strikes the ground and follows the paths of least impedance to cause damages. To provide an effective lightning protection system, you must put the following fundamental measures in place:

- ❑ Surge protection device must be installed at every service entrance to stop the intrusion of lightning from outside.
- ❑ Bonding must be accommodated to eliminate the opportunity for lightning to side-flash internally. The bonding resistance between any termination point and the related earthing rod should not exceed 0.01 ohms.
- ❑ Grounding electrode system must efficiently move the lightning to its final destination away from the structure and its contents. The resistance of the common grounding electrode should not exceed 5 ohms.
- ❑ Cable conductors route lightning current over and through the construction, without damage, toward the grounding electrode system.
- ❑ To avoid interference problems, use CAT6 Shielded Twisted Pair (STP) cables to connect devices if a device, e.g. camera, is installed outdoors, or a network cable is routed outdoors.
- ❑ Avoid Ground Loop. STP cabling *must* be grounded on *one* side only. Failure to do so can lead Ground Loop, which is a condition created when a network has more than one ground point. Ground Loop causes a voltage difference between connected networking components. As a result, current loops potentially damage the connected equipment.
- ❑ Use appropriate grounding. Systems without appropriate grounding can experience either complete system failures or intermittent problems that are hard to diagnose. Improper installation of electrical grounding components can make the components work ineffectively. Installing a system with the proper grounding equipment and following proper installation guidelines can reduce potential down time as well as costly repairs to system electronics.

Note

The users of the plant or those responsible for the installation should apply the necessary measures (e.g. shielding, bonding, and grounding protection) to ensure that the interference voltages caused by lightning strokes do not exceed the available immunity level.

Chapter 4

Cabling the Ports

This chapter contains the following procedures:

- ❑ “Cabling the Twisted Pair Ports” on page 88
- ❑ “Installing SFP Transceivers” on page 90

Cabling the Twisted Pair Ports

Here are the guidelines to cabling the twisted pair ports:

- ❑ The ports have 8-pin RJ45 connectors.
- ❑ The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- ❑ 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.
- ❑ The narrow spacing between SFP transceiver slots and adjacent twisted pair ports can make it difficult to connect and disconnect cables. Refer to Figure 13 on page 62. Allied Telesis recommends installing and cabling SFP slots before cabling adjacent twisted pair ports. You might need to use a flat tool to disconnect cables.

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.
- ❑ The narrow spacing between SFP transceiver slots and adjacent twisted pair ports can make it difficult to connect and disconnect cables. Refer to Figure 13 on page 62. Allied Telesis recommends installing and cabling SFP slots before cabling adjacent twisted pair ports. You might need to use a flat tool to disconnect cables.



Warning

A transceiver can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an anti-static wrist strap, to avoid damaging the 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 29 on page 91 shows the dust plug removed from slot 1.

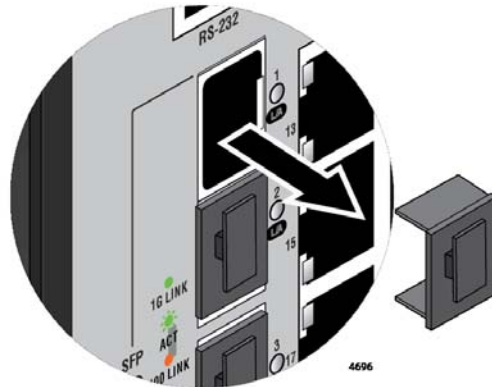


Figure 29. Removing the Dust Plug from an SFP Slot

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 30.

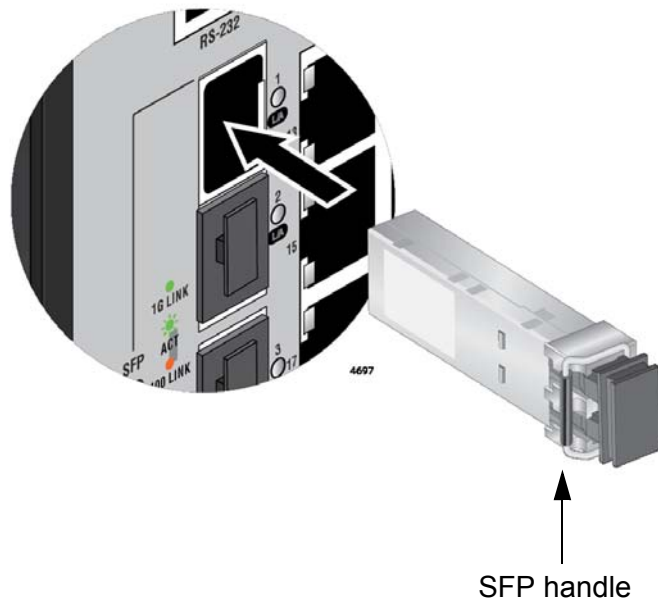


Figure 30. Installing an SFP Transceiver

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 31.

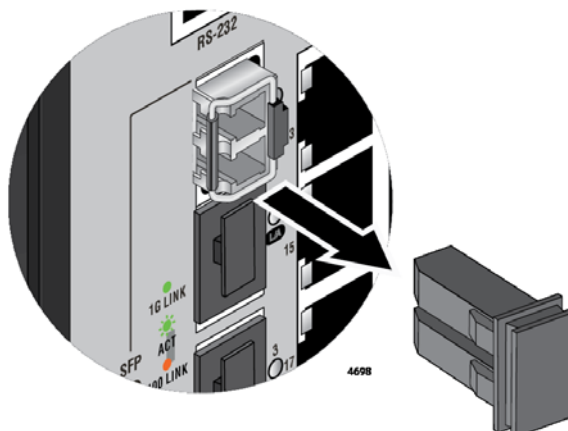


Figure 31. Removing the Dust Cover from an SFP Transceiver

5. Verify the handle on the transceiver is turned to the left. Refer to Figure 32.

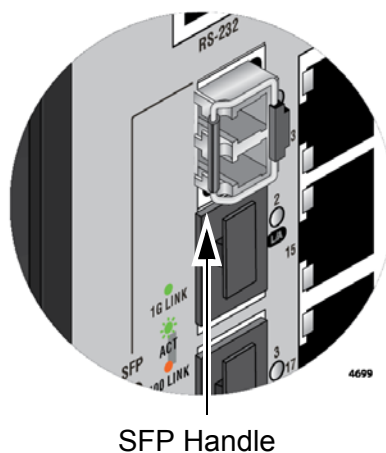


Figure 32. Verifying the Position of the SFP Handle

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 33 on page 93.

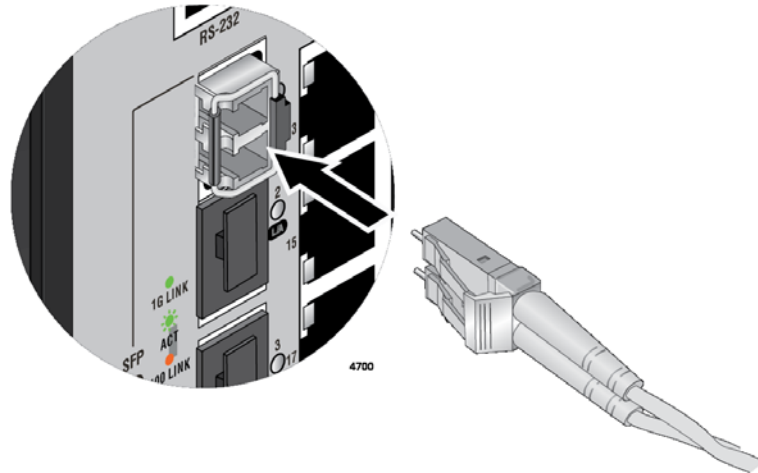


Figure 33. Connecting a Fiber Optic Cable to an SFP Transceiver

7. Repeat this procedure to install and cable the remaining transceivers.
8. Go to Chapter 5, “Powering On the Switch” on page 95.

Chapter 5

Powering On the Switch

This chapter contains the following procedures:

- ❑ “Connecting the Grounding Wire” on page 96
- ❑ “Wiring the ALM IN and ALM OUT Connectors” on page 99
- ❑ “Preparing the DC Power Cables” on page 104
- ❑ “Powering On the Switch” on page 108
- ❑ “Monitoring the Initialization Process” on page 110
- ❑ “Starting a Local Management Session” on page 113
- ❑ “Verifying PoE” on page 115

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. [⌕E120](#)

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 34.

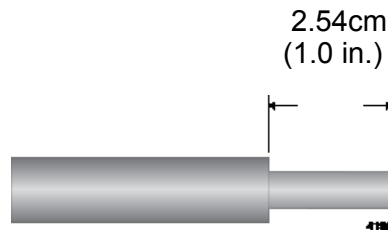


Figure 34. Stripping the Grounding Wire



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. [⌕E10](#)

2. Loosen the grounding screw several turns with a #2 Phillips-head screwdriver. Refer to Figure 35 on page 97.



Figure 35. Loosening the Grounding Screw

3. Wrap the grounding wire clockwise around the base of the grounding screw. Refer to Figure 36.

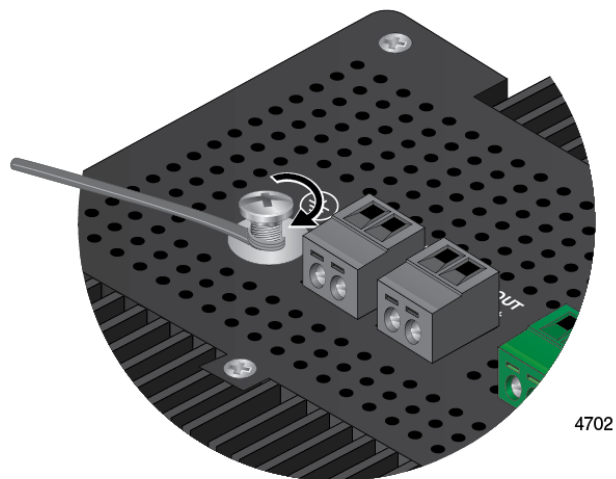


Figure 36. Wrapping the Grounding Wire Around the Grounding Screw

4. Tighten the screw to secure the grounding wire to the switch. Refer to Figure 37 on page 98.



Figure 37. 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 99.
 - ❑ Otherwise, go to “Preparing the DC Power Cables” on page 104.

Wiring the ALM IN and ALM OUT Connectors

For background information on the alarm connectors, refer to “Alarm In Connector” on page 38 and “Alarm Out Connector” on page 41. 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. [E118](#)

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. [E123](#)

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 38.



Figure 38. 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 39.

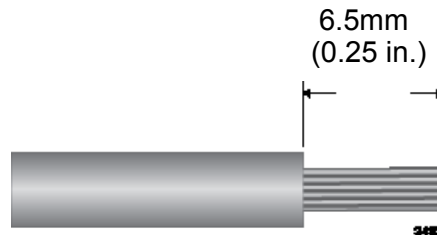


Figure 39. Stripping an Alarm Wire



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. [E10](#)

2. Tightly wrap the wire strands with your finger tips. Refer to Figure 40 on page 101.

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

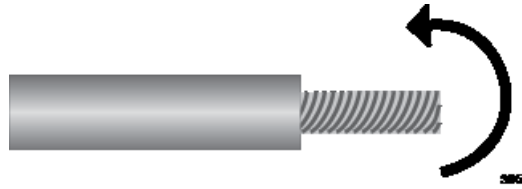


Figure 40. Wrapping the Wire Strands

Note

Allied Telesis recommends tinning the wires with solder for 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 41 shows the removal of the ALM OUT connector.

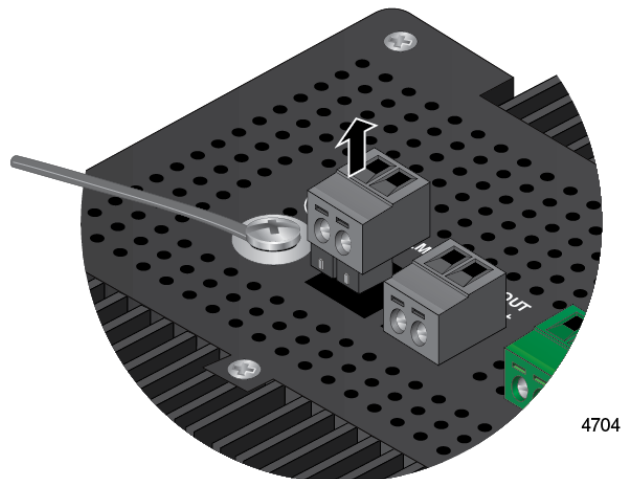


Figure 41. Removing an Alarm Connector

4. Loosen the wire retaining screws in the connector with a #1 screwdriver. Refer to Figure 42.

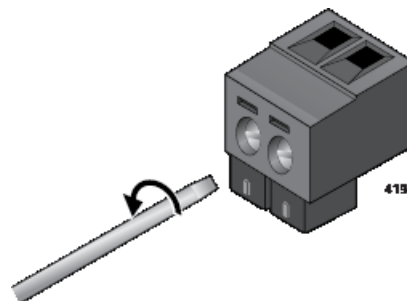


Figure 42. Loosening the Wire Retaining Screws on an Alarm Connector

5. Insert the wires into the connector and tighten the retaining screws to secure the wires. Refer to Figure 43.

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

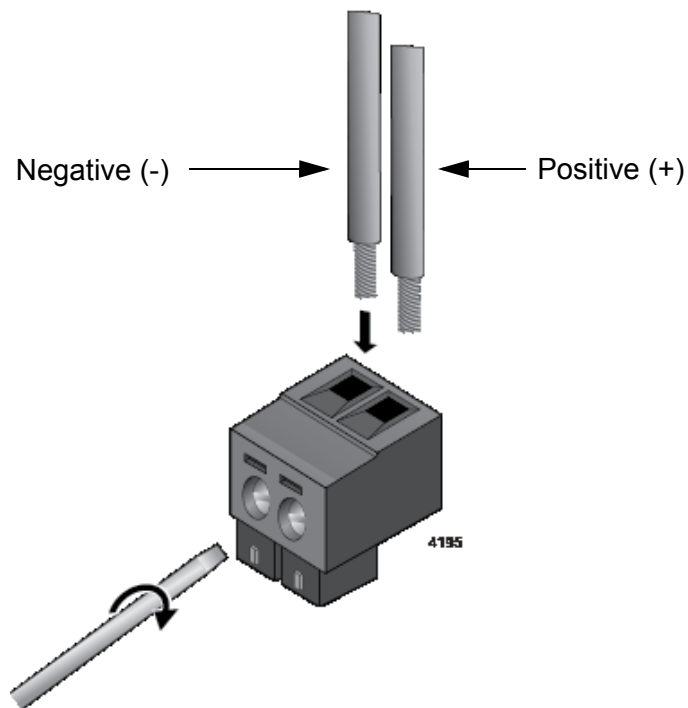


Figure 43. Inserting the Wires into the DC Cable Connector

6. After attaching the wires to the connector, verify that there are no exposed wires or loose wire strands. Refer to Figure 50 on page 107.



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. *GE12*

7. Insert the alarm connector back into its connector on the switch. Refer to Figure 44 on page 103.

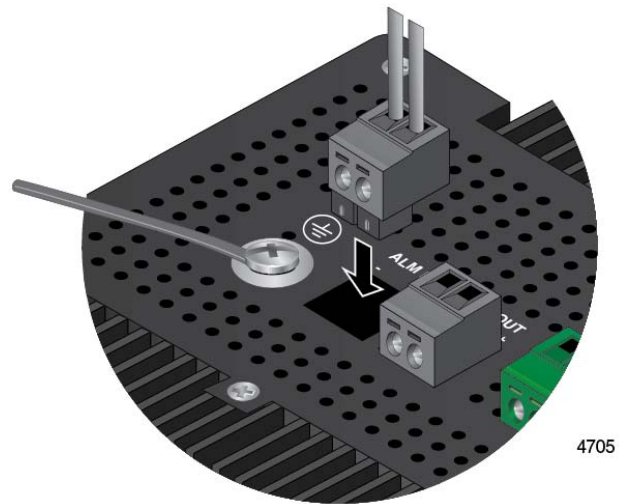


Figure 44. Inserting the DC Connector into the Alarm Connector

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 104.

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 49.

Power supplies are connected to the 4-wire, DC power connector on the top panel of the switch. Figure 45 shows the DC connector on the IE340-20GP switch as an example. 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.

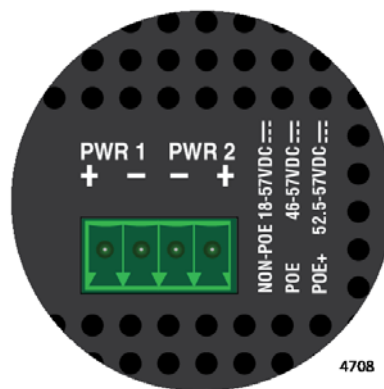


Figure 45. Pin Signals Legends for the PWR 1 and PWR 2 Connectors

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 46 on page 105.

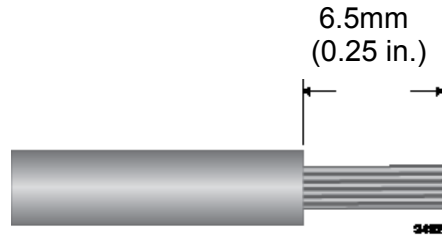


Figure 46. Stripping a Power Cable Wire

**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 40 on page 101.

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

Note

Allied Telesis recommends tinning 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 47.

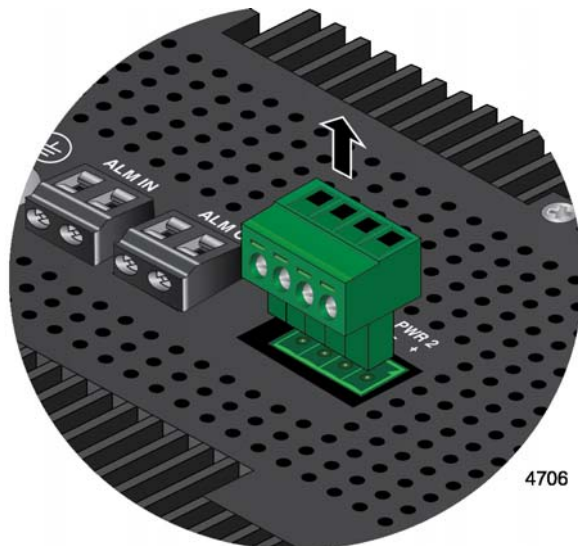


Figure 47. Removing the PWR 1 - PWR 2 Cable Connector

4. Loosen the wire retaining screws in the connector with a #1 screwdriver. Refer to Figure 48.

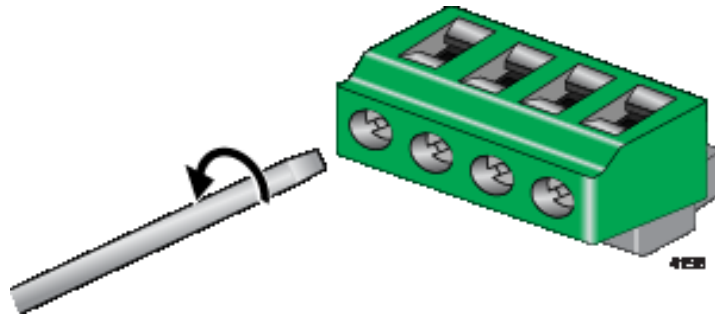


Figure 48. Loosening the Wire Retaining Screws on the PWR 1 - PWR 2 Cable Connector

5. Insert the wires into the connector and tighten the retaining screws to secure the wires. Refer to Figure 49.

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

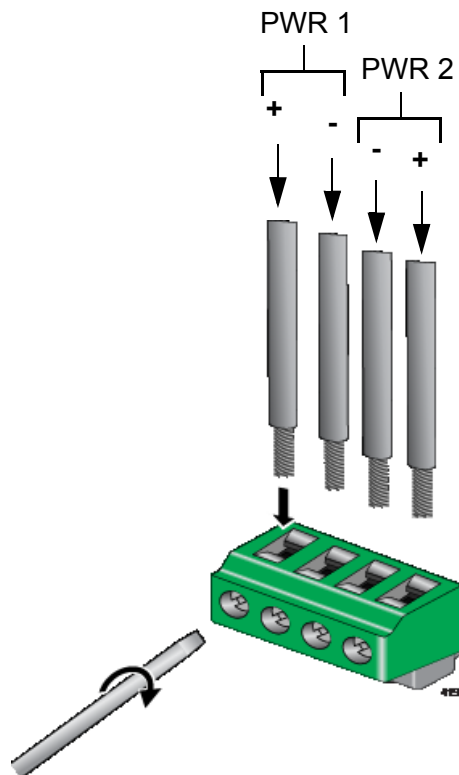


Figure 49. Inserting the Wires into the PWR 1 - PWR 2 Cable Connector

6. After attaching the wires to the connector, verify that there are no exposed wires or loose wire strands. Refer to Figure 50 on page 107.

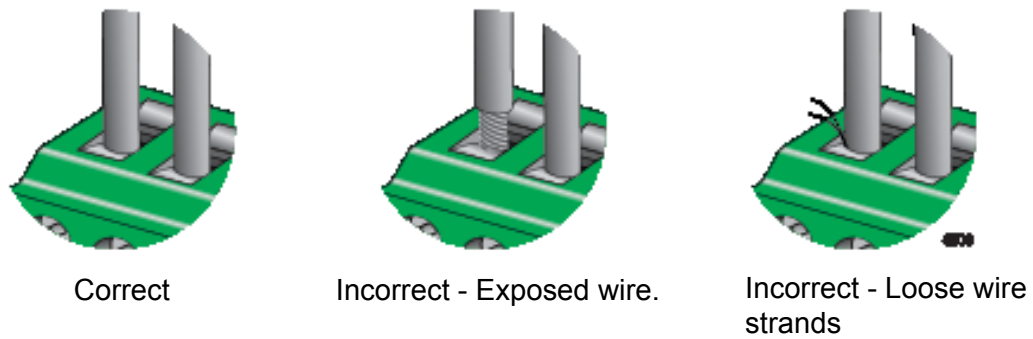


Figure 50. Verifying the Wire Installation

**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 108.

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 IE340 Switches*.

For power supply requirements, refer to “Power Supplies” on page 49. 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 51.

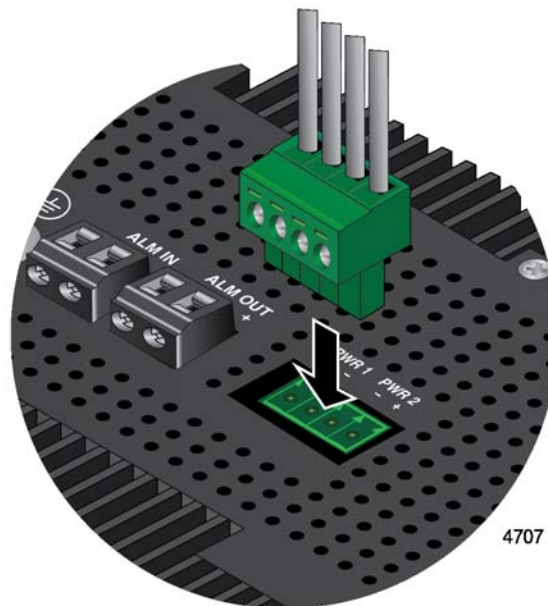


Figure 51. Connecting the Power Cable to the PWR 1 - PWR 2 Connector

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 two to three minutes for the switch to initialize its operating system and load the default configuration.

To monitor the console messages as the device initializes the management software, go to “Monitoring the Initialization Process” on page 110.

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 119 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 11 on page 45.
- ☐ The PoE LEDs on the switch should be solid green on ports that are connected to PoE or PoE+ devices. The PoE LEDs are identified in Figure 11 on page 45.

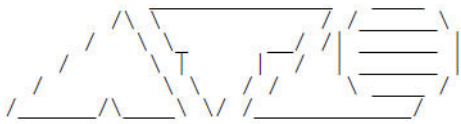
After verifying the operations of the switch, go to “Starting a Local Management Session” on page 113.

Monitoring the Initialization Process

It takes two to three minutes for the switch to initialize the 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 113. Figure 52 here and Figure 53 on page 111 contain the initialization messages.

After monitoring the initialization process, go to “Starting a Local Management Session” on page 113.

```
Verifying release... OK
Booting...
Uncompressing Linux... done, booting the kernel.
Starting base/first... [ OK ]
Mounting virtual filesystems... [ OK ]
```



```
Allied Telesis Inc.
AlliedWare Plus (TM) v0.0.0
Current release filename: IE340-main-20190213-1.rel
Built: Tue Feb 12 22:58:46 UTC 2019
Mounting static filesystems... [ OK ]
Checking flash filesystem... [ OK ]
Mounting flash filesystem... [ OK ]
Checking for last gasp debug output... [ OK ]
Initializing random number generator... [ OK ]
Starting base/hwrandom... [ OK ]
Starting base/dbus... [ OK ]
Starting base/linux... [ OK ]
Starting base/syslog... [ OK ]
Starting base/loopback... [ OK ]
Starting base/poe_done... [ OK ]
Received event syslog.done
Starting base/modules... [ OK ]
Received event module.done
Starting base/reboot-stability [ OK ]
Checking system reboot stability [ OK ]
Starting base/apteryx... [ OK ]
Starting base/debugevent... [ OK ]
```

Figure 52. Initialization Messages

```

Starting base/crond... [ OK ]
starting base/appmond... [ OK ]
Starting base/clockcheck... [ OK ]
Starting network/execd... [ OK ]
Starting base/inet... [ OK ]
Received event apteryx.done
Starting hardware/early_host_info... [ OK ]
Starting base/alfred... [ OK ]
Starting network/kermond... [ OK ]
Starting network/fips (apteryx.done)... [ OK ]
Starting base/logconf... [ OK ]
Starting hardware/platformd.... [ OK ]
Starting hardware/plugman.... [ OK ]
Starting hardware/timeout.... [ OK ]
Starting hardware/hardware-done.... [ OK ]
Received event board.inserted
Received event hardware.done
Starting network/poefw... [ OK ]
Starting base/external-media... [ OK ]
Received event poefw.done
Starting network/hostcfg... [ OK ]
Received event hostcfg.done
Starting network/cmlplatformd... [ OK ]
Starting base/eventwatch... [ OK ]
Starting network/startup... [ OK ]
Starting hardware/platform_eventd.... [ OK ]
Starting network/licd... [ OK ]
Starting network/tempond... [ OK ]
Received event network.enabled

Initializing HA processes:
almond, atmf_agentd, excd, hostd, sflowd, vrrpd, mstp
ripngd, rmon, atmfd, espr, hsl, irdpd, lldpd
loopprot, ospf6d, auth, pim6d, ripd, nsm, pdmd
lacp, onm, udlld18:00:59, awplus Platform: SENSOR Board Base - Voltage:
Input 1: Alarm asserted. Reading:0.000 Threshold:46.000 (Volts)
, pimd, bgpd, ospfd18:00:59 awplus Platfor: SENSOR Board Base - Almmmon:
Relay Output 1: Alarm cleared. Closed.
, imi

Received event network. initialized

Assigning Active Workload to HA processes:
hsl, nsm, sflowd, irdpd, lacpd, loopprot, ospfd
ripd, ripngd, rmond, vrrpd, bgpd, epsfr, mstpd
onmd, ospf6d, pdmd, pim6d, pimd, authd, lldpd
imi

```

Figure 53. Initialization Messages (Continued)

```
Received event network.activated  
  
Loading configuration file flash:/test1.cfg, please wait.  
...  
  
done!  
Received event network.activated  
  
awplus login:
```

Figure 54. 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 Table 11 on page 65.
- ☐ 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:

`awplus>`

The prompt indicates the command line interface is in the User Exec mode.

6. Go to “Verifying PoE” on page 115.

Verifying PoE

This section contains procedures for verifying and, if necessary, configuring the PoE budget on IE340 PoE PSE Switches. The procedures are listed here:

- ❑ “Verifying the PoE Budget,” next
- ❑ “Configuring the Provisioned PoE Budget” on page 116

Verifying the PoE Budget

The PoE budget is the maximum wattage the switch has available for the powered devices on its twisted pair ports. The budget should be 240W for power supplies that meet the specifications in “Power Supplies” on page 49.

The procedure assumes you have already started a local management session on the switch. For instructions, refer to “Starting a Local Management Session” on page 113. 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 switch sourcing PoE.

- ❑ 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 49 or it has a problem. If the latter, refer to Chapter 6, “Troubleshooting” on page 119 for troubleshooting suggestions.

4. 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.

The default PoE values for ports sourcing PoE are listed here:

- ☐ PoE is enabled.
- ☐ The wiring configuration is Alternative A. (This parameter is not adjustable.)

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.

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 IE340 PoE PSE switches. 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 49. 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 IE340 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 IE340 Switches* for management instructions.

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 120
- ❑ “Twisted Pair Ports” on page 121
- ❑ “SFP Slots” on page 123
- ❑ “Power Over Ethernet” on page 124

Note

For further assistance, 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 49.
- ❑ 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 "Cable Requirements" on page 28.
- ❑ 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 switch, 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 switch sourcing PoE is not providing power to the connected PoE powered devices

Solutions: Try the following:

- ❑ Check that the device's power requirements do not exceed those listed in Table 1 on page 29. 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 "Cabling Requirements for PoE Devices" on page 30.
- ❑ Try replacing the twisted pair cable.
- ❑ Use the management software on the switch to determine whether PoE/PoE+ is enabled on the port. The default setting is enabled.
- ❑ Use the SHOW POWER-INLINE command to determine whether the PoE power setting for the port was reduced to a value below the power requirements of the device.
- ❑ Try connecting the device to a different port on the switch.

Appendix A

Technical Specifications

This appendix contains the following sections:

- ❑ “Physical Specifications” on page 126
- ❑ “Environmental Specifications” on page 128
- ❑ “Power Specifications” on page 130
- ❑ “RJ-45 Twisted Pair Port Pinouts” on page 132
- ❑ “RJ-45 Style Serial Console Port Pinouts” on page 134
- ❑ “PWR 1 and PWR 2 DC Power Connectors” on page 135
- ❑ “Device Dimensions” on page 136

Physical Specifications

Dimensions

Table 12. Product Dimensions (W x H x D)

IE340 Switches	9.1 x 15.3 x 13.9 cm (3.58 x 6.02 x 5.47 in)
----------------	---

Weights

Table 13. Product Weights

IE340 Switch with DIN rail bracket	2.34 kg (5.16 lbs)
IE340 Switch with wall brackets	2.23 kg (4.91 lbs)

Ventilation

Table 14. Ventilation Requirements for Cabinet Installation

Minimum Open Space Below Switch	5.08 cm (2.0 in)
Minimum Open Space Above Switch	5.08 cm (2.0 in)
Minimum Open Space in Front of Switch	5.08 cm (2.0 in)
Minimum Open Space On Sides of Switch	5.08 cm (2.0 in)

Cabinet (Enclosure) Dimensions

Table 15. Minimum Cabinet (Enclosure) 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)
---	--

Note

The enclosure size should be determined by considering multiple factors. This includes the outside ambient temperature, total heat generated from the installed equipment, sealed or unsealed enclosure type, enclosure material, paint color, mounting method (wall, pole, ground, etc.), and sun load. The smaller enclosure size you choose, the higher risk of overheating the product faces.

If the product overheats in an enclosure that was built without taking into account these factors, the warranty of the product might be voided. Consult Allied Telesis when assistance is needed.

Environmental Specifications

Table 16. Operating Temperature Ratings

Model Name	Operating Temperature Ranges ¹			
	Rating	Enclosure Type		
		Sealed Enclosure: 0 LFM ²	Ventilated Airflow: 40 LFM	Cooling Fan Airflow: 150 LFM
IE340-12GP	-40°C to 75°C (-40° F to 167° F)	-40°C to 65°C (-40° F to 149° F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 75°C (-40°F to 167°F)
IE340-12GT		-40°C to 75°C (-40°F to 167°F)		
IE340-20GP		-40°C to 65°C (-40° F to 149° F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 75°C (-40°F to 167°F)
IE340L-18GP	-40°C to 65°C (-40° F to 149° F)	-40°C to 55°C (-40°F to 131°F)	-40°C to 65°C (-40°F to 149°F)	

1. These values are for vertical mounting orientation. For horizontal mounting orientation, reduce the maximum values by 5°C.

2. Linear Feet per Minute

Table 17. Environmental Specifications

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 18. Ingress Protection

IE340 Switch	IP30
--------------	------



Warning

You must use a UL Listed 3X or 4X enclosure when installing the device in an outdoor environment.

Note

The switch does not require an enclosure when installed in most indoor environments. However, the switch must be installed in a UL Listed or Nationally Recognized Test Lab enclosure when used in an indoor Measurement, Control, or Laboratory environment, as specified in UL/EN/IEC 61010-1 and 61010-2-201.

Note

The IE340L-18GP switch is not compliant with UL/EN/IEC 61010-1 and 61010-2-201 and should not be used in an indoor Measurement, Control, or Laboratory environment.

Power Specifications

Table 19. Input Voltage Specifications

Switch	PoE	PoE+	Non-PoE
IE340-12GP	46-57VDC	52.5-57VDC	18-57VDC
IE340-20GP			18-57VDC
IE340L-18GP			46-57VDC
IE340-12GT	N/A	N/A	18-57VDC

Table 20. Maximum Power Consumptions

IE340-12GP	271 watts (including PDs' consumption) 31 watts (excluding PDs' consumption) 24 watts (without PoE load)
IE340-20GP	
IE340L-18GP	
IE340-12GT	24 watts

Note

For power supply specifications, see "Power Supplies" on page 49.

Table 21. Heat Dissipation

Switch	PoE	PoE+	Non-PoE
IE340-12GP	105.8 BTU/hr	105.8 BTU/hr	81.9 BTU/hr
IE340-20GP			
IE340L-18GP			
IE340-12GT	N/A	N/A	

Note

The cooling requirements of the switch are smaller than the power draw because most of the load is dissipated at the PoE powered device and along the cabling. Use these BTU ratings for facility capacity planning.

AA

Table 22. ALM IN and ALM OUT Power Ratings

ALARM OUT	30VDC maximum	0.5A maximum
ALARM IN	3.3VDC minimum	320uA

Note
For ALARM IN and ALARM OUT wiring specifications, see “Wiring the ALM IN and ALM OUT Connectors” on page 99.

RJ-45 Twisted Pair Port Pinouts

Figure 55 identifies pin 1 on an RJ-45 twisted pair port.

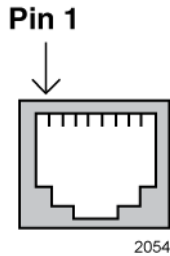


Figure 55. RJ-45 Port Pin Layout (Front View)

Table 23 lists the pin signals for a port when it is operating at 10 or 100 Mbps.

Table 23. 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 24 lists the pin signals for a port when it operating at 1000 Mbps.

Table 24. Pin Signals for 1000 Mbps

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

RJ-45 Style Serial Console Port Pinouts

Figure 56 identifies pin 1 on the RJ-45 connector on the Console port.

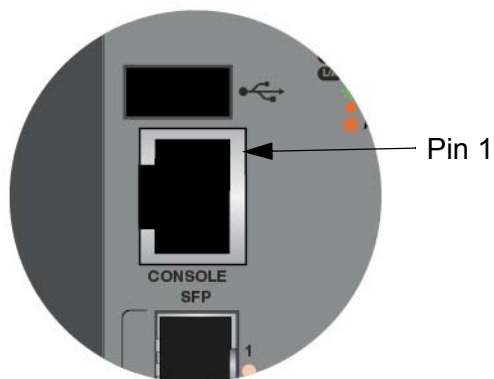


Figure 56. Console Port Pin Layout (Front View)

Table 25 lists the pin signals for the RJ-45 style serial Console port.

Table 25. 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 26. PWR 1 and PWR 2 DC Connector Pin Signals on the IE340-12GP, IE340-12GT, and IE340-20GP Switches

Pin	Signal
+	24/48/54 VDC
-	VDC Return

Table 27. PWR 1 and PWR 2 DC Connector Pin Signals on the IE340L-18GP Switch

Pin	Signal
+	48/54 VDC
-	VDC Return

Device Dimensions

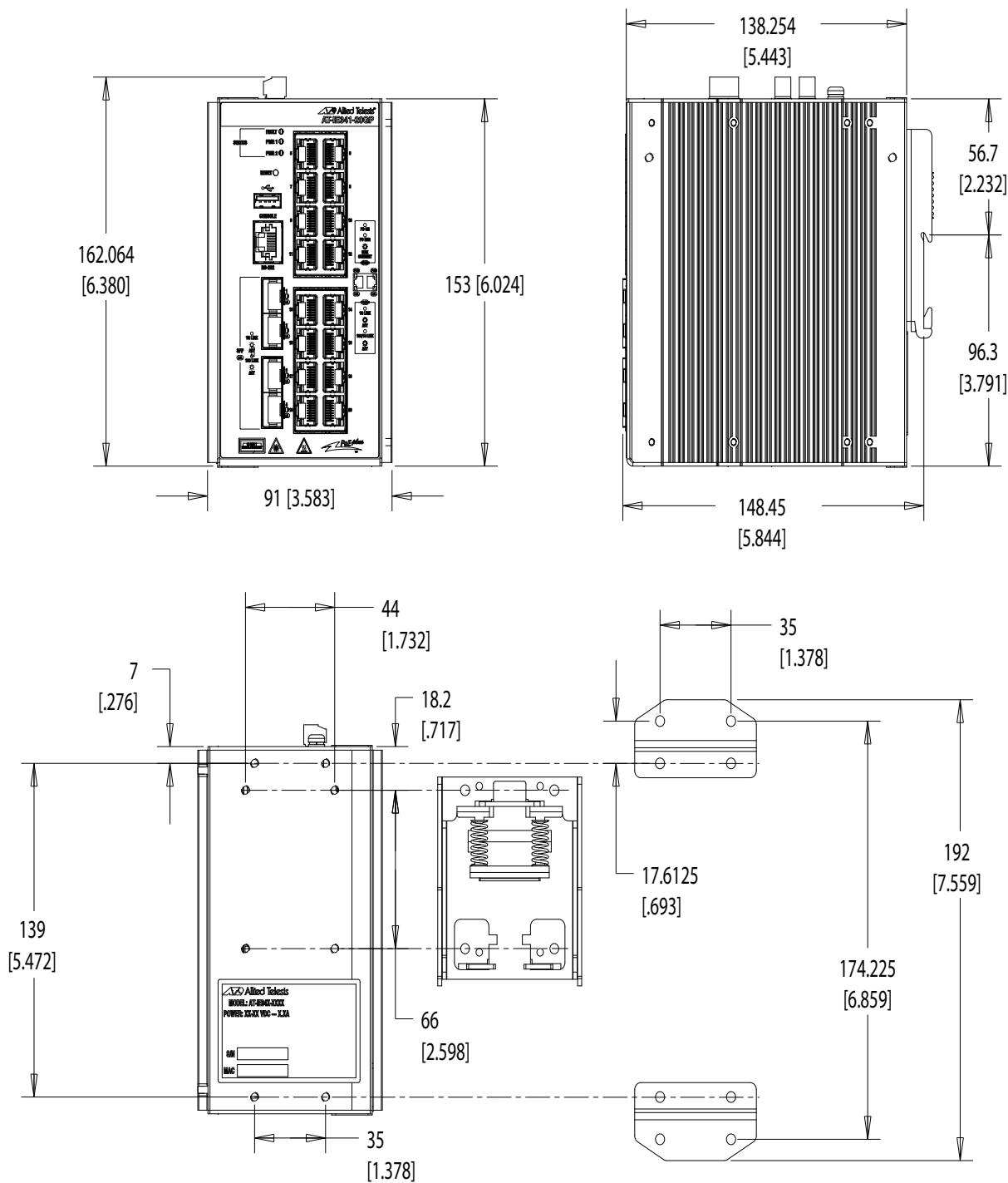


Figure 57. IE340 Switches Dimensions