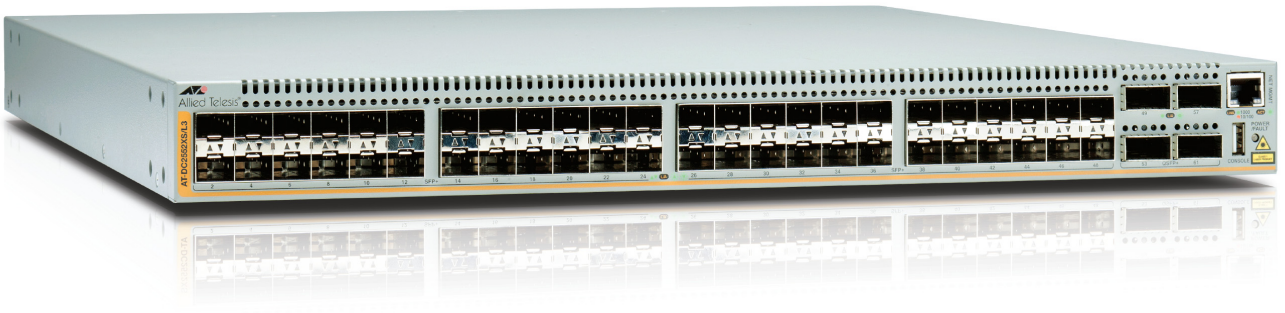
AT-DC2552XS/L3

ENTERPRISE CORE SWITCH



Installation Guide

the solution : the network

613-002097 Rev. B

Electrical Safety and Emissions Standards

This section contains the following:

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.

Emissions, Immunity and Electrical Safety Standards

RFI Emissions FCC Class A, EN55022 Class A, CISPR 22 Class A, VCCI Class A, C-TICK

Warning
In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. E84

EMC (Immunity) EN55024, EN61000-3-2, EN61000-3-3

Electrical Safety EN60950-1 (TUV), UL 60950-1 ($_{C}UL_{US}$)

Warning
Laser Safety: EN60825-1 L7

Translated Safety Statements

Important: The indicates that a translation of the safety statement is available in a PDF document titled *Translated Safety Statements* on the Allied Telesis website at **www.alliedtelesis.com/support**.

Contents

Figures

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Preface

This guide contains instructions on how to install the AT-DC2552XS / L3 Enterprise Core Switch and the associated power supply and fan modules on a desktop or in a 19 inch equipment rack.

This preface contains the following sections:

Document Conventions

This document uses the following conventions:

Note
Notes provide additional information.

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

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

Contacting Allied Telesis

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

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

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

Chapter 1
Overview

This chapter contains the following sections:

AT-DC2552XS / L3 Features

The AT-DC2552XS / L3 Enterprise Core Switch has a high-density switching fabric (1280 Gbps) in a compact 1 RU chassis. The switch's functions and physical description are described in the following sections:

AT-DC2552XS/ L3 Functions

A list of the AT-DC2552XS / L3 switch's functions is as follows:

Ports

You will find the following network and management ports on the AT-DC2552XS / L3:

- 48 SPF+ slots
- 4 QSFP+ slots
- 1 Console port (USB)
- 1 NET MGMT port (RJ-45)

Note
Refer to Table 16 on page 95 for the Console connector pinout functions.

System Capacity

Here are the basic features of the AT-DC2552XS / L3 Enterprise Core Switch:

- System Capacity
- 2GB RAM size
- 128MB flash memory
- 9MB packet buffer
- 128K MAC addresses
- 4094 VLAN IDs (802.1Q)
- 1K MAC-based VLAN
- 512 ACL profiles with 256 ACL rules/profile
- 8 QoS queues per port
- 255 Layer 2 multicast groups
- Maximum jumbo frames 12k bytes
- 32 Link Aggregation group (member 8)
- Port Mirroring

Installation Options

The AT-DC2552XS / L3 Enterprise Core Switch is designed to be installed in one of two ways:

- On a desktop.
- In a 19-inch equipment rack.

Power Supply/Fan Modules

The AT-DC2552XS / L3 must have two fan modules and at least one power supply module installed. You may elect to install a second power supply module for redundancy. The power supply and fan modules are:

- AT-PWR06 power supply module
- AT-FAN06 fan module

Note
The AT-DC2552XS / L3 must have two fan modules and at least one power supply module installed before you power the unit on. You may elect to install a second power supply module for redundancy.

Note
The AT-PWR06 power supply module and AT-FAN06 fan module are sold separately from the AT-DC2552XS / L3 Enterprise Core Switch. Contact your local Allied Telesis representative for more information.

Optional SFP+ Transceivers

The following SFP+ transceivers and direct attach cable assemblies have been approved by Allied Telesis and may be installed in the AT-DC2552XS / L3 chassis:

Note
The SFP+ transceivers and direct attach cable assemblies are sold separately from the AT-DC2552XS / L3 Enterprise Core Switch. Contact your local Allied Telesis representative for more information.

- AT-SP10SR (10GBASE-SR LC Ren (2))
- AT-SP10LR (10GBASE-LR LC Ren (2))
- AT-SP10TW1 (SFP + Direct Attach Cable (1m))
- AT-SP10TW3 (SFP + Direct Attach Cable (3m))
- AT-SP10TW7 (SFP + Direct Attach Cable (7m))

Optional QSFP+ Transceivers

The following QSFP+ transceivers direct attach cable assemblies have been approved by Allied Telesis and may be installed in the AT-DC2552XS / L3 chassis:

Note
The QSFP+ transceivers and direct attach cable assemblies are sold separately from the AT-DC2552XS / L3 Enterprise Core Switch. Contact your local Allied Telesis representative for more information.

- AT-QSFPSR (40GBASE-SR4 (MPO))
- QSFP+ Direct Attach Cables
  - AT-QSFP1CU (QSFP + Direct Attach Cable (1m))
  - AT-QSFP3CU (QSFP + Direct Attach Cable (3m))
- Fiber-Optic Cable for AT-QSFPSR
  - ET3-MPO12-1 (1m)
  - ET3-MPO12-5 (5m)

Management Software and Interfaces

Here are the management software and the management interfaces:

- AlliedWare Plus Management Software
- Command line interface
- SNMP V1, V2 and V3

Note
Refer to the *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide* for information concerning specific commands.

Management Methods

Here are the methods for managing the switches:

- Local management through the Console port
- Telnet client on a network or NET MGMT port
- Secure Shell with telnet client on a network (SSH) port
- SNMPv1, v2c, and v3 on a network or NET MGMT port

AT-DC2552XS/ L3 Physical Description

The AT-DC2552XS / L3 Enterprise Core Switch physical description is as follows:

AT-DC2552XS / L3 Front Panel

The front panel of the AT-DC2552XS / L3 is shown in Figure 1.

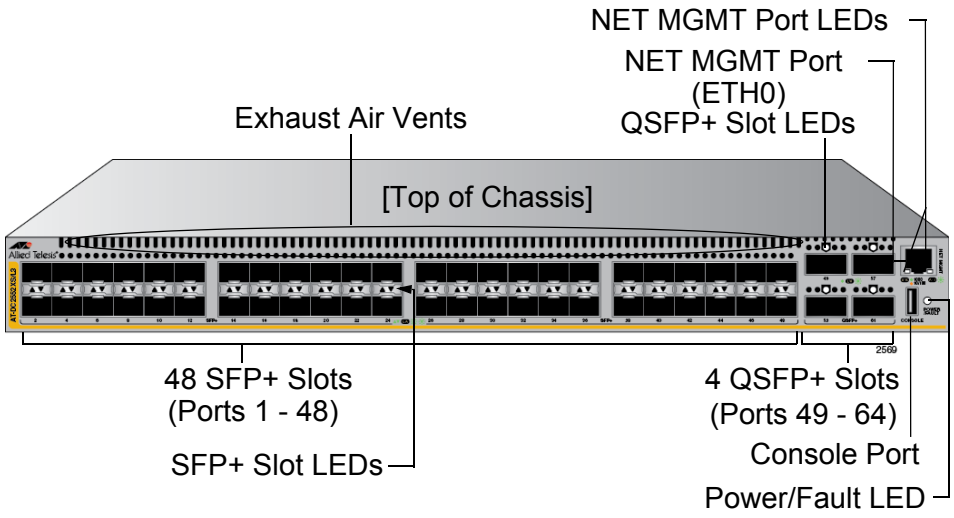


Figure 1. AT-DC2552XS / L3 Front Panel

- Exhaust Air Vents - Air is forced through the chassis by the fan modules and power supply modules and exits through the exhaust air vents on the top of the front panel.

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

- SFP+ Slots - There are 48 SPF+ slots (ports 1 - 48) on the front panel. Each port supports communication speeds up to 10Gbps. The switch supports a variety of 10G SFP+ transceivers and direct attach cables.

  The AT-DC2552XS / L3 Enterprise Core Switch only supports SFP+ transceivers in this product. Refer to “Installing SFP+ Transceivers and Cables” on page 70 for installation instructions of the SFP+ transceivers.

Note
Each SFP+ slot has a dust cover installed at the factory which should be left in place until an SFP+ transceiver is installed.

- SFP+ Slot LEDs - Each SFP+ slot has a corresponding LED which displays the link and activity status of the port. See Figure 3 on page 24 for the location of these LEDs and Table 2 on page 24 for their functional description.
- QSFP+ Slots - There are four QSFP+ slots which support communication speeds up to 40 GB. These slots are numbered 49, 53, 57 and 61. Each slot may be configured as one 40 GB port or 4 X 10GB ports in the management software. See Figure 4 on page 25 for the location of these LEDs and Table 3 on page 25 for their functional description. Refer to “Installing QSFP+ Transceivers and Cables” on page 75 for installation instructions.

Note
Each QSFP+ slot has a dust cover installed at the factory which should be left in place until a QSFP+ transceiver is installed.

Note
QSFP+ transceivers must be purchased separately. For more information about the list of supported QSFP+ transceivers, refer to “Optional SFP+ Transceivers” on page 17.

- QSFP+ Slot LEDs - Each QSFP+ slot has a corresponding QSFP+ LED which displays the link and activity status of the QSFP + slots. Refer to “QSFP+ Slot LEDs” on page 25 for the functional description.
- Power/Fault LED - The Status LED displays the overall status of the chassis, power supply modules and fan modules. Refer to “Power/Fault LED” on page 26 for the functional description.
- Console Port - The console port is a standard RS-232 interface using an USB interface. This port provides the capability to manage the configuration and firmware of the switch locally independent from the Ethernet network. Refer to “Connecting the Console Port” on page 84 for more information.

Note
An RS-232 cable (female USB / D-Sub 9 pin) cable is included with the AT-DC2552XS / L3 shipping container.

- NET MGMT Port - This 10/100/1000BASE-T RJ-45 Ethernet port provides the capability to manage the configuration and firmware of the switch. You can obtain or forward information via the command line interface (CLI) or SNMP interface. The port features auto MDI/MDI-X and auto negotiation.

  The cable requirements of the NET MGMT port are given in Table 1.

Table 1. Twisted Pair Cable Specifications for the NET MGMT Port

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

- NET MGMT Port LEDs - These two LEDs display the speed, link and activity status of the NET MGMT Port. Refer to “NET MGMT LED” on page 27 for more information.

AT-DC2552XS / L3 Rear Panel

The rear panel of the AT-DC2552XS / L3 is shown in Figure 2.

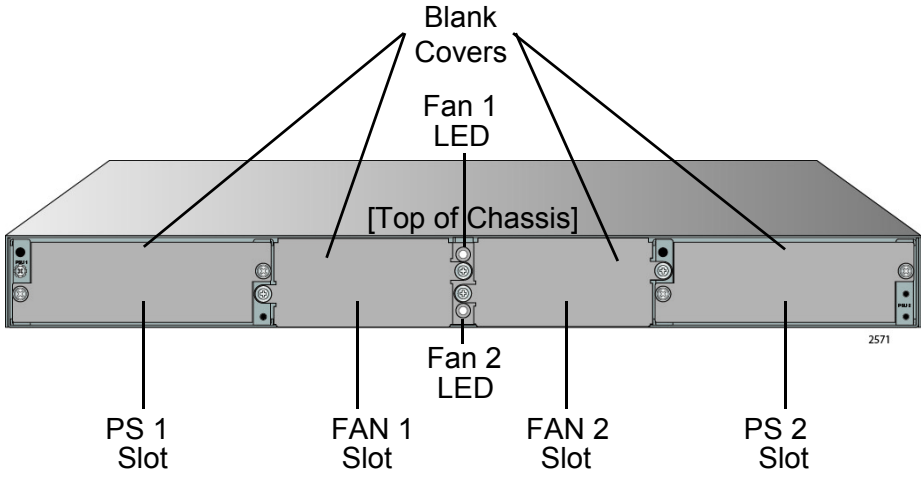


Figure 2. AT-DC2552XS / L3 Rear Panel View

- Blank Covers - When the switch is shipped from the factory, four blank covers are installed.
  - Two blank covers for the power supply slots (PS 1/PS 2)
  - Two blank covers for the two fan module slots (FAN 1/FAN 2)

Warning
To insure proper cooling and air flow within the chassis, the blank covers should not be removed unless the modules are installed in their place. E76

- The power unit slots (PS 1/PS 2) are for the installation of the AT-PWR06 power supply module. These slots are located on the far right and far left sides of the chassis.
- A second AT-PWR06 power supply module may be installed for redundancy, but is not required for normal operation of the switch.
- With a redundant power supply configuration, you can replace one of the two power supply modules without turning off the primary power supply. Each AT-PWR06 power supply module that is installed in the chassis is hot-swappable. Refer to “Installing and Replacing AT-PWR06 Power Supply Module” on page 62 for the installation procedure.

Note
The AT-PWR06 power supply module is sold and packaged separately from the AT-DC2552XS / L3 Enterprise Core Switch.

- The fan module slots (FAN 1/FAN 2) are for the installation of the AT-FAN06 fan module. These slots are located on the center right and center left of the chassis.
- Two AT-FAN06 fan modules are required in the chassis for normal operation of the switch. Refer to “Installing and Replacing AT-FAN06 Fan Module” on page 66 for the installation procedure.

Note
The AT-FAN06 fan module is sold and packaged separately from the AT-DC2552XS / L3 Enterprise Core Switch.

- Fan LEDs - The fan LEDs FAN 1 (upper LED) / FAN 2 (lower LED) display the status of the fan modules. They are located in the center of the chassis between the fan module slots. Refer to Table 6 on page 28 for the functional description of these LEDs.

LEDs

Here are the descriptions of the switch's LEDs.

SFP+ Slot LED

Each SFP+ slot has one Link/Activity LED. The LED is triangular in shape. The triangle LED pointing up shows the status of the upper SFP+ slot while the triangle LED pointing down shows the status of the lower SFP+ slot. These SFP+ slot LEDs are shown in Figure 3.

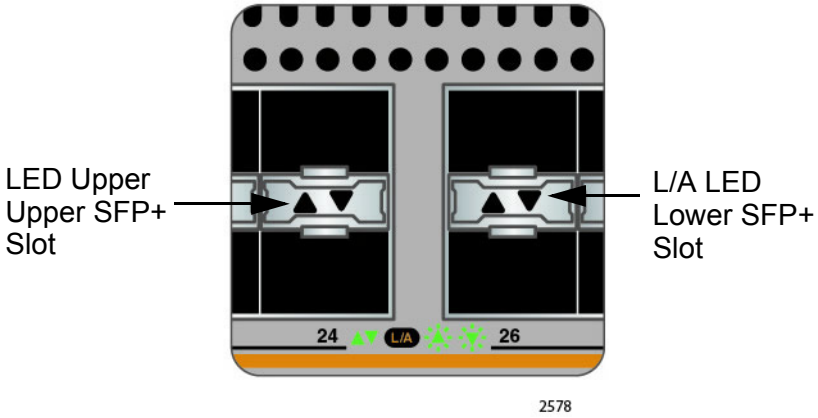


Figure 3. SFP+ Slot LEDs

The SFP+ slot LEDs are described in Table 2.

Table 2. SFP+ Slot LED

LED	State	Description
Link/Activity	Solid green	The SFP+ transceiver has established a link to a network device.
	Flashing green	The SFP+ transceiver is receiving or transmitting packets to a network device.
	Off	The SFP+ slot is empty or the SFP+ transceiver has not established a link to a network device.

QSFP+ Slot LEDs

Each QSFP+ port has one link/activity LED labeled LINK/ACT. These LEDs are shown in Figure 4.

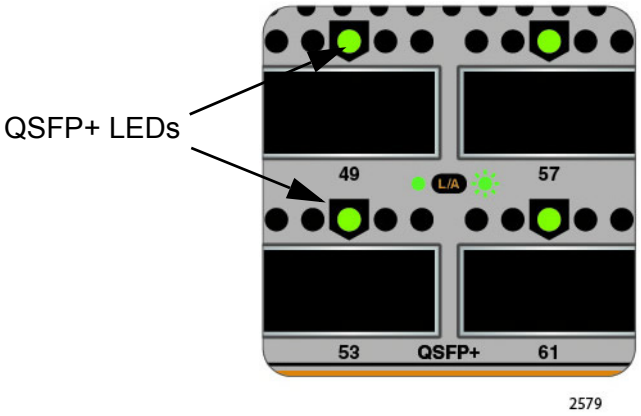


Figure 4. QSFP+ LEDs

The QSFP+ LED is described in Table 3.

Table 3. QSFP+ LED

LED	State	Description
Link/Activity	Solid green	The QSFP+ transceiver has established a link to a network device.
	Flashing green	The QSFP+ transceiver is receiving or transmitting packets to a network device.
	Off	The QSFP+ slot is empty or the QSFP+ transceiver has not established a link to a network device.

Power/Fault LED

The Power/Fault LED is shown in Figure 5.

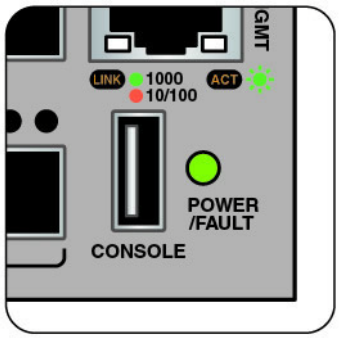


Figure 5. Power/Fault LED

The Power/Fault LED is described in Table 4.

Table 4. Power/Fault LED Description

Location	LED	State	Description
Front Panel	POWER /FAULT	Solid green	Power is being supplied and the chassis is operating normally.
		Flashing green	System is booting up.
		Solid yellow	Failure of one or more power supply fans.
		Flashing yellow	Only one PSU is powered up.
		Off	No power.

NET MGMT LED

The NET MGMT LEDs are shown in Figure 6.

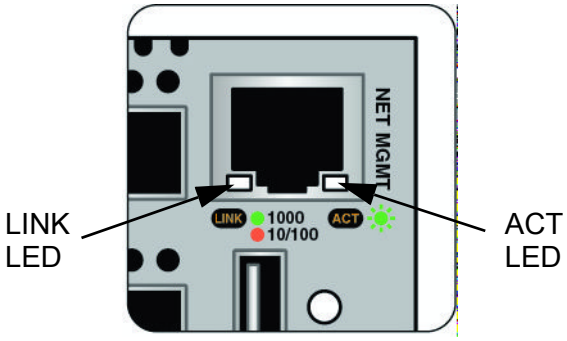


Figure 6. NET MGMT LEDs

The NET MGMT LEDs are described in Table 5.

Table 5. NET MGMT LED Descriptions

Location	LED	State	Description
Front Panel	ACT (Right LED)	Solid green	The NET MGMT port has established a link to a network device, but no packets are being transmitted or received.
		Flashing green	The NET MGMT port is receiving or transmitting packets to a network device.
		Off	The NET MGMT port established a link to a network device.
	LINK (Left LED)	Solid green	A valid 1G link is established on the port.
		Solid yellow	A valid 10/100M link is established on the port.
		Off	No link is established on the port.

FAN Status LEDs

The fan status LEDs are shown in Figure 7.

Figure 7. FAN Status LEDs

The fan status LEDs are described in Table 6.

Table 6. FAN Status LED Descriptions

Location	LED	State	Description
Rear Panel	FAN1 (top LED)	Solid Green	Fan operating normally.
		Solid Red	Fan is in failure mode.
		Off	No power is supplied to the fan module.
	FAN2 (bottom LED)	Solid Green	Fan operating normally.
		Solid Red	Fan is in failure mode.
		Off	No power is supplied to the fan module.

AC Power LED

Each AT-PWR06 power supply module has an AC power (AC OK) LED. This LED is shown in Figure 8.

Figure 8. AC Power LED

The AC Power LED is described in Table 7.

Table 7. AC Power LED Description

Location	LED	State	Description
Power Supply Module Panel	AC OK	Solid Green	AC power is supplied to power supply.
		Off	No AC power is supplied to power supply.

Console Port

The Console port is a USB connector located on the front panel. See Figure 1 on page 19 for its location. It is used to locally configure the features and parameter settings of the switch. This type of management uses the RS-232 serial communications protocol. It is commonly referred to as local or out-of-band management because it is not connected over an Ethernet network. To perform local management, you must be at the location of the switch and must use the management cable included with the switch.

Note
Refer to “Console Port Pinouts” on page 95 for USB pin orientation and the signal functions assigned to each pin.

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 using the management cable provided with the switch. This cable has a USB connector on one end and a DB-9 (D-sub 9-pin) connector on the other.

The Console port is configured at the factory to the following specifications:

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

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

AT-PWR06 Power Supply Module

The AT-DC2552XS / L3 Enterprise Core Switch is powered by one AT-PWR06 power supply module. A second AT-PWR06 power supply module may be installed for redundancy. The power supply module has an AC connector on the power supply module panel and is installed by the user in slot PS1 or slot PS2. The location of these slots is shown in Figure 2 on page 22.

When two power supplies are installed and operating, only one power supply is active at a time. The second power supply operates in a redundant state and is automatically activated by the switch if the active power supply loses power or fails. The change-over is instantaneous and has no effect on the Ethernet data being passed through the chassis.

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

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

Refer to “Power Specifications” on page 94 for the input power specifications.

A view of the AT-PWR06 power supply module is shown in Figure 9.

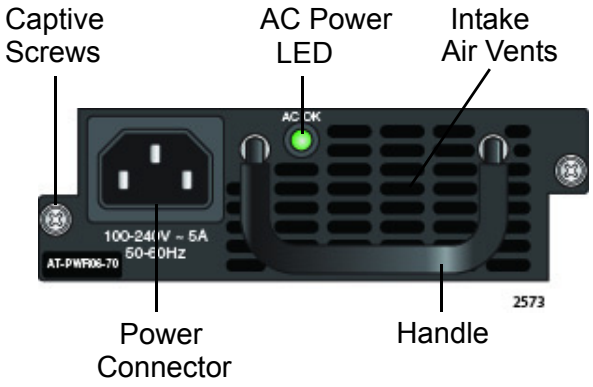


Figure 9. AT-PWR06 Power Supply Module

The components of the AT-PWR06 power supply module (see Figure 9 on page 31) are as follows:

- Power connector - The AC power cable plugs into this connector. Regional AC power cables are provided in the AT-PWR06 power supply module shipping box. Refer to “Powering On the Switch” on page 80 and “Turning Off the Switch” on page 82.
- AC Power LED - This LED displays the status of the power supply module. Refer to “AC Power LED” on page 29 for a functional description of this LED.
- Intake Air Vents - The AT-PWR06 power supply module has two fans which pull air into the power supply module through the intake air vents to cool the power supply and the chassis components. The air is discharged through the exhaust air vents on the top of the chassis front panel. See Figure 1 on page 19 for the location of the exhaust vents.

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

- Captive screws - These two screws secure the power supply module to the chassis frame. Refer to “Installing and Replacing AT-PWR06 Power Supply Module” on page 62 for the power supply installation procedure.
- Handle - The handle is used to physically push or pull the AT-PWR06 power supply module when it is inserted or removed. Refer to “Installing and Replacing AT-PWR06 Power Supply Module” on page 62 for the power supply installation procedure.

AT-FAN06 Fan Module

Installation of two AT-FAN06 fan modules are required in the AT-DC2552XS / L3. Refer to “Installing and Replacing AT-FAN06 Fan Module” on page 66 for the fan installation procedure.

Each AT-FAN06 fan module is equipped with two forced-air cooling fans The fans push air through the chassis from the rear to the front. The AT-FAN06 fan module is ordered and shipped separately from the AT-DC2552XS / L3 Enterprise Core Switch.

A view of the AT-FAN06 fan module is shown in Figure 10.

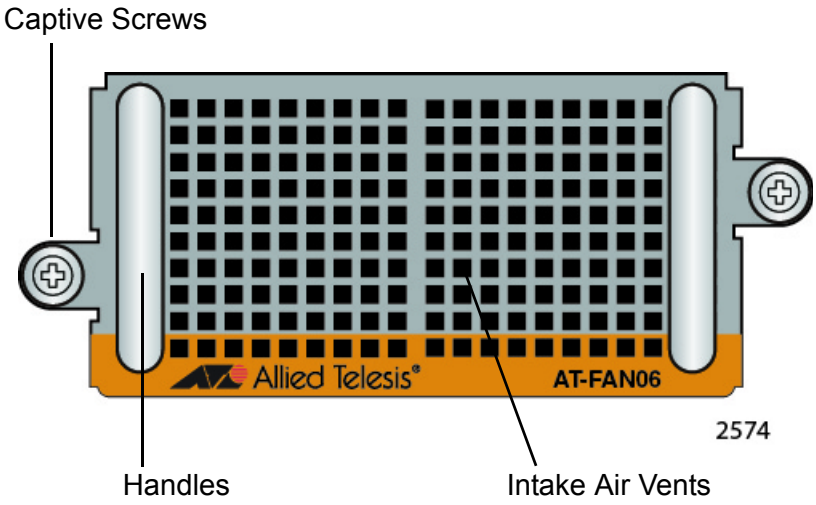


Figure 10. AT-FAN06 Fan Module

The components of the AT-FAN06 fan module are as follows:

- Captive screws - The two captive screws secure the fan module to the chassis frame.
- Handles - The two handles are used to physically push or pull the AT-FAN06 fan module into and out of the chassis.
- Intake Air Vents - The AT-FAN06 fan module has two fans which pull air through the intake air vents to cool the chassis components. The air is discharged through the front panel exhaust air vents. See Figure 1 on page 19 for the location of the exhaust vents.

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

Chapter 2

VCStack Overview

The chapter contains the following sections:

VCStack Introduction

This chapter describes Virtual Chassis Stacking (VCStack), its features, and basic connection examples.

VCStack is a group of physically separate switches that are configured to operate as a single logical switch. In order to function as a VCStack, its component switches are connected using high-speed stacking links.

Features of Virtual Chassis Stacking

Creating a VCStack greatly eases network management, because you can configure all the stacked devices via a single IP address. Creating a VCStack will often eliminate your need to configure protocols such as VRRP and Spanning Tree. VCStack also enables you to create highly resilient networks. This resiliency can be applied in several ways.

Within the stack itself, switch interconnection is via two links. The second link is able to provide an alternative data path, thus the stack will continue to function if a single switch fails. Degraded performance might occur however, due to the reduced VCStack bandwidth.

User ports can also be made extremely resilient by utilizing link aggregation. Aggregated links can span ports, modules, and even switches within the stack. Creating aggregated links that span multiple switches within a stack creates an extremely resilient configuration. Communication will still exist even if a switch and its aggregated ports fail. See Figure 13 on page 39.

Caution

Stack operation is only supported if STACK VIRTUAL-MAC is enabled. E72

For more information, refer to the STACK VIRTUAL-MAC command in the *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide*.

VCStack Capable Switches

VCStack is supported on the following Allied Telesis switch types:

- SwitchBlade® x8100 Series (VCStack Plus)
- x900-24XT, x900-24XS, x900-24XT-N
- x900-12XT/s
- SwitchBlade® x908
- AT-DC2552XS / L3
- x610 Series
- x510 Series
- IX5-28GPX

- x310 Series

Note
You can only create VCStacks using switches from within the same product group, for example, all AT-DC2552XS / L3 switches, or all x610 Series switches.

Stacking connectivity and functionality varies slightly between switch types. Your AT-DC2552XS / L3 switch can support a maximum of two devices per stack. Consult the appropriate software reference for stacking functionality of other Allied Telesis switches.

The Physical Stack

A VCStack can consist of a maximum of two individual AT-DC2552XS / L3 switches, interconnected via high-speed stacking links (QSFP+ ports 49, 53, 57, or 61). A stack always has a primary stack member called the stack master (displayed in the show commands as the active master). The remaining switch then becomes an ordinary member of the stack, and is referred to as the backup member.

VCStack Cables and Connections

Stack members are interconnected via the QSFP+ ports 49, 53, 57, or 61. These ports are shown in Figure 11.

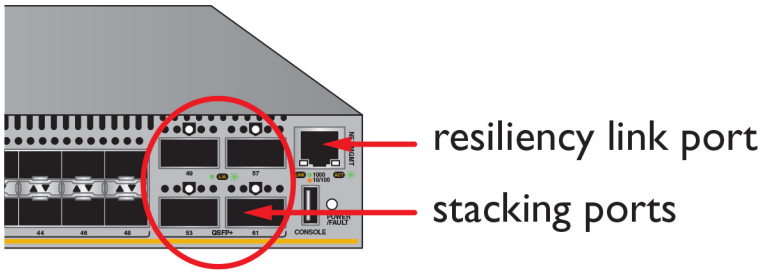


Figure 11. Stacking Ports

The stacking cables must connect ports that have the same port number. A stack will form regardless of which port numbers are used for linking, as long as the same numbers are linked together. This means that you can connect your stack using any two of the following pairs of ports:

- port 49 connected to port 49
- port 53 connected to port 53
- port 57 connected to port 57
- port 61 connected to port 61

Figure 12 shows an example configuration. In this example, the QSFP+ stacking ports labeled 49 and 61 on one member are connected to the QSFP+ stacking ports labeled 49 and 61 on the other stack member, respectively.

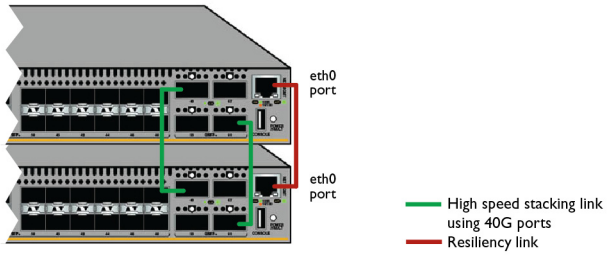


Figure 12. AT-DC2552XS / L3 Stacking Configuration Example

Resilient Stacked Topology

Where network connectivity uptime is a major criteria, you can use virtual chassis stacking to create highly reliable network configurations. The network shown in Figure 13 on page 39 employs redundant links and switches to create a stacked network that offers extremely reliable user connectivity.

Employing link aggregation, rather than spanning tree, to manage the parallel paths enables the bandwidth of both data links to be utilized under normal conditions while enabling a single data link to operate should its partner link fail.

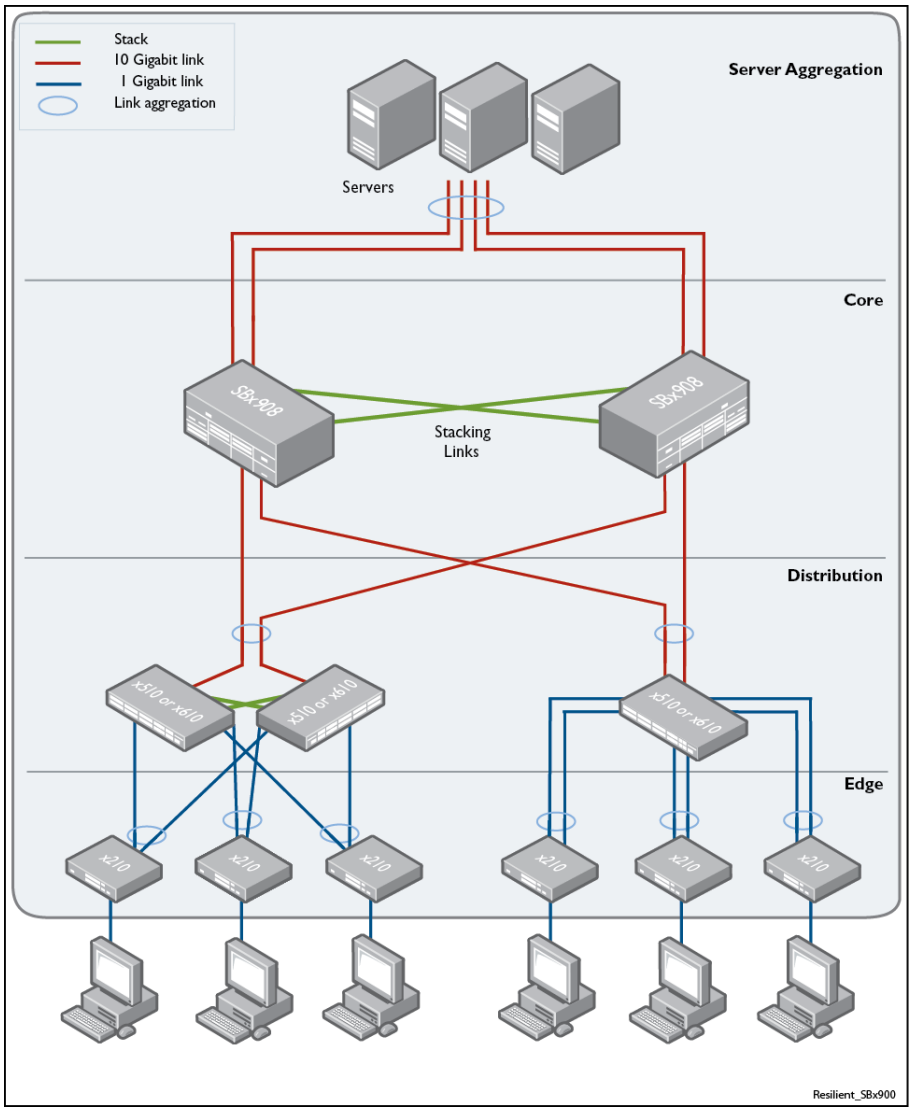


Figure 13. VCStack Resilient Stacked Topology Example

The network depicted in Figure 13 employs two SwitchBlade® x908 switches to form an expandable network core. These switches are stacked and so appear as a single logical switch

Note
Smaller switches, such as the AT-DC2552XS / L3, can be also be used to form the stacked core or stacked distribution.

This network topology supplies multiple dual connections to a number of downstream distribution switches that can in turn connect to user devices. Similarly, the dual network paths provide very reliable connectivity to the servers portion of the network.

Resiliency Link

The resiliency link carries no network data. Its function is to provide additional stack status information to enable the stack members to more accurately decide whether it is appropriate for one of them to take over the role of stack master if the existing master fails.

A resiliency link can be created using a single physical connection between two eth0 (NET MGMT) ports, or it can use a VLAN (resiliency link VLAN) to which the switch ports can be attached.

To create a resiliency link using eth0 (NET MGMT) ports, connect a standard twisted pair LAN cable (either straight through, or crossover—MDI-MDIX negotiation is supported on these ports) between the two eth0 (NET MGMT) ports on both devices. Once you have connected the cable, you can run the STACK RESILIENCYLINK command to create the resiliency link.

Resiliency Link Configurations via Switch Ports

Two resiliency-link configurations that use switch ports are shown below. Figure 14 shows the resiliency link connecting in a ring topology, while Figure 15 on page 41 shows the resiliency link connecting to the switch ports via a network hub. In both configurations, the resiliency link connections are made using a designated VLAN running over switch-port connections between each stack member. For more information on using the resiliency link commands, refer to the STACK RESILIENCYLINK and SWITCHPORT RESILIENCYLINK commands in the *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide*.

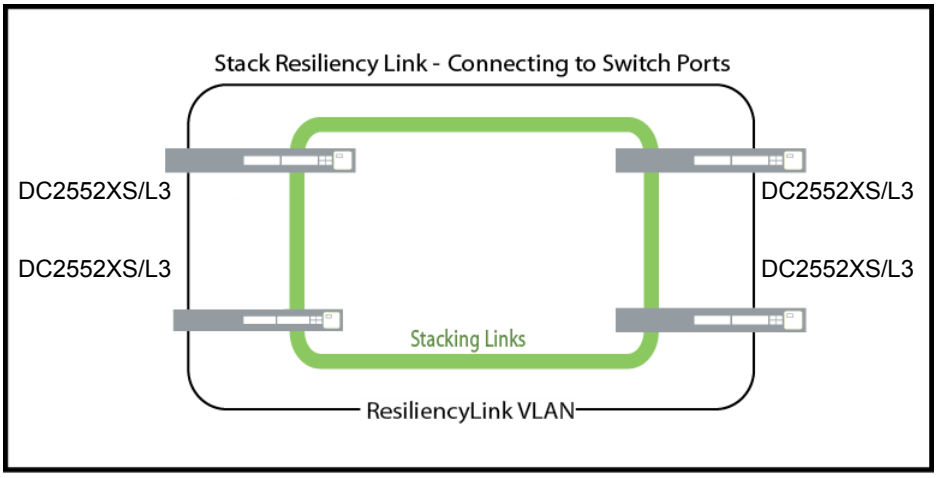


Figure 14. Resiliency Link Connecting to Switch Ports Over the Resiliency Link VLAN

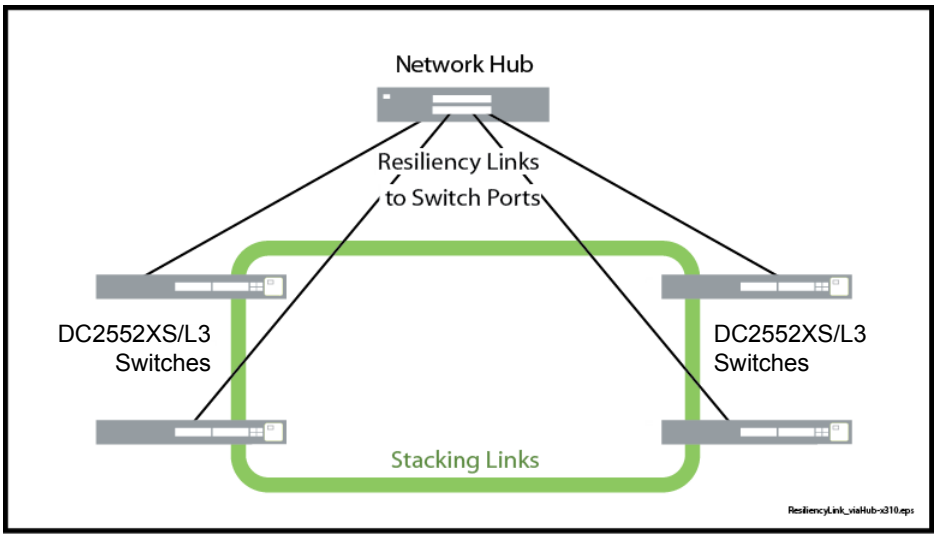


Figure 15. Resiliency Link Connecting to Switch Ports Over the Resiliency Link VLAN Using a Network Hub

Stack Formation

As previously mentioned, a VCStack always contains a stack (active) master and a stack member (backup). To be part of a stack, a switch must connect to the other potential stack member via dedicated stacking ports. See Figure 16.

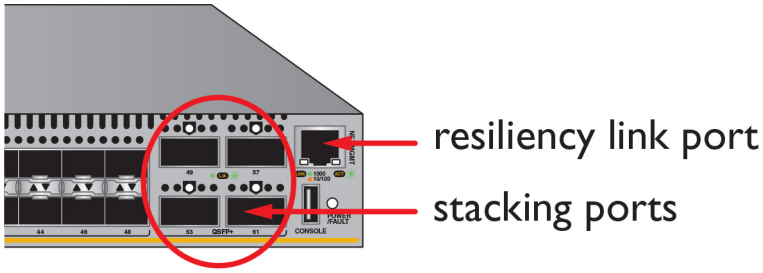


Figure 16. Stacking Ports

Once the switches have been physically connected, powering the members on sets off a number of automatic processes that enable the stack members to detect the presence of one another and form themselves into a VCStack.

Long-Distance Stacking

You can extend the distance between stacked units up to the maximum distance supported by the particular QSFP+ port you are using. This capability enables you to create a stack of 2 geographically separated switches as a single stack.

The Role of the Stack Master

In addition to being a member of its VCStack, the stack master manages functions such as software version control and distribution, routing processing, and network management.

Selecting the Stack Master

The stack members are able to automatically select which switch will become the stack master. This selection is based on two components:

1. The stack member's priority setting.

2. The stack member's MAC address.

For both components, the lower the number, the higher the priority will be. To set the stack priority, run the STACK PRIORITY command. Note that changes to these settings will not take effect until the next master re-election. To display these components run the SHOW STACK command.

The master is the switch with the lowest priority setting, or if the priority settings are equal, the switch with the lowest MAC address will become the stack master. When a stack member is initially booted, its priority value defaults to 128. Therefore, if both switches retain their defaults, then the stack master will be determined by MAC address comparison.

The stack also assigns a stack ID number to each member. This number provides a unique reference number for switches within the stack; it plays no part in selecting the stack master. The stack ID is used as the first digit of the three component port identifier numbers. For example, port number 2.0.14 has the stack ID of 2.

Note
The stack ID number assignment is important to remember when using configuration scripts. You should ensure that you modify your configuration scripts to match any changes you have made to the stack ID assignments.

Note
The ability to independently set both a stack member's priority and its ID means that the stack master does not need to have an ID of 1; although configuration is simplified by arranging for ID 1 to be the device with the lowest priority value - and thereby forcing it to be the stack master. If you create a stack using new switches, the following (simplified) process should ensure that the master member has an ID of 1.

Note
New switches are shipped with a Stack Member ID of 1 and a priority of 128. If two such switches are created as a stack, the switch with the lowest MAC address will be selected to be the stack master (because all priority settings are 128). The remaining stack member device will then reboot. The stack master does not reboot and retains its Stack Member ID of 1.

You can change the stack ID by using the command stack renumber.

Common Stack Configuration

Once the switches have configured themselves into a VCStack, they all share the same configuration information and startup scripts.

Chapter 3

Beginning the Installation

The chapter contains the following sections:

Installation Overview

Table 8 lists the installation procedures for the AT-DC2552XS / L3 Enterprise Core Switch. The procedures should be performed in the order presented in the table.

Table 8. Installation Procedures

Step	Procedure
1	“Reviewing Safety Precautions” on page 47
2	“Planning the Installation” on page 52
3	“Unpacking the Switch” on page 53
4	“Installing the Switch on a Desktop” on page 58 OR “Installing the Switch in an Equipment Rack” on page 59
5	“Installing Power Supply Module” on page 62
6	“Installing Fan Module” on page 66
7	“Installing SFP+ Transceivers and Cables” on page 70
8	“Installing QSFP+ Transceivers and Cables” on page 75
9	“Powering On the Switch” on page 80
10	“Managing the Switch” on page 83

Reviewing Safety Precautions

Please review the following safety precautions before you begin to install the switch.

Note
The ✍ indicates that a translation of the safety statement is available in a PDF document titled *Translated Safety Statements* on the Allied Telesis website at **www.alliedtelesis.com/support**.

Warning
Class 1 Laser product. ✍ L1

Warning
Do not stare into the laser beam. ✍ L2

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

Warning
Laser Safety: EN60825-1 ✍ L7

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Caution
To insure proper cooling and airflow within the chassis, a blank cover should be installed if a module is not present in the chassis E70

Caution
Stack operation is only supported if STACK VIRTUAL-MAC is enabled. E72

Warning
To operate this product, two fan modules must be installed. Operation with one fan module will cause the chassis to overheat. E73

Warning
To insure proper cooling and air flow within the chassis, the blank covers should not be removed unless the modules are installed in their place. E76

Warning
In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. E84

Warning
A transceiver can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device. E92

Planning the Installation

The AT-DC2552XS / L3 Enterprise Core Switch can be installed on a desktop or in a 19 inch equipment rack. Observe these general requirements when planning the installation of the switch.

- Check that the power outlets for the switches are located near the devices and are easily accessible.
- Verify that the site provides easy access to the ports on the front of the switch. This will make it easy for you to connect and disconnect cables, as well as view the port LEDs.
- Check that the site allows for adequate air flow around the units and through the cooling vents on the front and rear panels. (The airflow direction is from fan modules on the rear panel through the unit to the port side on the front panel.)
- Do not place objects on top of the switch.
- Do not expose the switch to moisture or water.
- Make sure the site is a dust-free environment.
- Use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- Do not install the switch in a wiring or utility box because it will overheat and fail from inadequate airflow.
- If the unit is to be installed in an equipment rack, check that the rack is safely secured and will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.

Unpacking the Switch

Refer to the following figures in this section to verify the contents of the shipping containers:

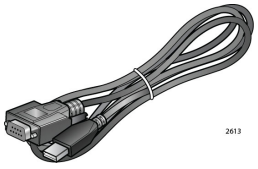
- ”AT-DC2552XS/L3 Switch”
- “AT-PWR06 Power Supply” on page 54
- “AT-FAN06 Fan Module” on page 55

Note
If any item in a shipping container is missing or damaged, contact your Allied Telesis sales representative for assistance.

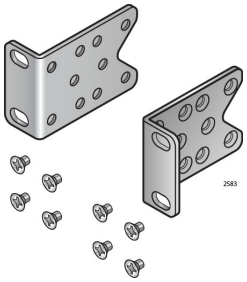
AT-DC2552XS/ L3 Switch

The contents of the AT-DC2552XS / L3 shipping box are listed in Figure 17.

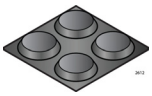
One AT-DC2552XS / L3 switch



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



Two rack mounting brackets with eight bracket screws



Desktop mounting feet

Figure 17. Contents of the AT-DC2552XS / L3 Shipping Box

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

AT-PWR06 Power Supply

The contents of the AT-PWR06 power supply module shipping box are listed in Figure 18.

One AT-PWR06 Power Supply Module

One regional AC power cord

Figure 18. Contents of the AT-PWR06 Power Supply Module Shipping Box

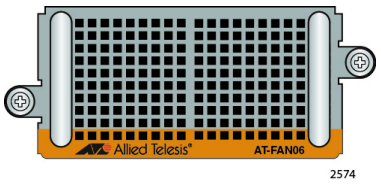
Note
The AT-DC2552XS / L3 switch can operate with one power supply module installed. You may elect to install a second power supply module for redundancy.

Note
The AT-PWR06 power supply module is sold and packaged separately from the AT-DC2552XS / L3 Enterprise Core Switch. Contact your local Allied Telesis representative for more information.

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

AT-FAN06 Fan Module

The contents of the AT-FAN06 fan module shipping box is shown in Figure 19.



One AT-FAN06 FAN Module

Figure 19. Contents of the AT-FAN06 Fan Module Shipping Box

Note
The AT-DC2552XS / L3 switch must have two fan modules installed for proper operation.

Note
The AT-FAN06 fan module is sold and packaged separately from the AT-DC2552XS / L3 Enterprise Core Switch. Contact your local Allied Telesis representative for more information.

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

Chapter 4

Installing the Switch and Modules

You may install the AT-DC2552XS / L3 Switch on a desktop or in a standard 19 inch equipment rack. In addition, you must install at least one AT-PWR06 power supply module and two AT-FAN06 fan modules in the switch chassis.

Here are the installation procedures in this chapter:

Installing the Switch on a Desktop

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

> **Note**
> To install the switch in a rack, refer to “Installing the Switch in an Equipment Rack” on page 59.

1. Remove all equipment from the package and store the packaging material in a safe place.
2. Turn the switch over and place it on a table.
3. Remove the adhesive backing from the rubber feet.
4. Four rubber feet are provided in the switch shipping container, see Figure 17 on page 53. Attach the feet to the bottom of the switch in the corners as shown in Figure 20.

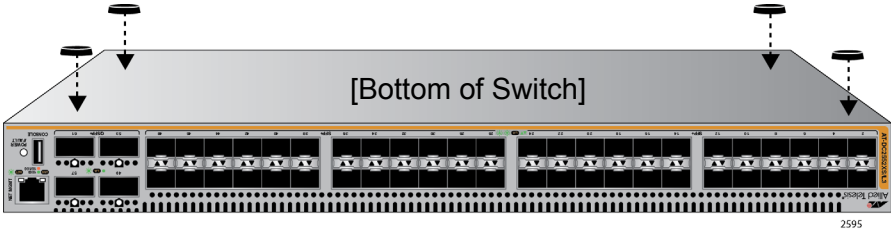


Figure 20. Attaching the Rubber Feet

5. Turn the switch over again and place it on a flat, secure surface (such as a desk or table) leaving ample space around the unit for ventilation.
6. The next step in the installation process is installing the power supply module(s). Go to “Installing Power Supply Module” on page 62 for the installation procedure.

Installing the Switch in an Equipment Rack

Note
To install the switch on a desktop, refer to “Installing the Switch on a Desktop” on page 58.

When installing the AT-DC2552XS / L3 switch in a 19 inch rack, it must always be mounted horizontally with the top side up; see Figure 1 on page 19 and Figure 2 on page 22. The switch can be oriented and positioned in the rack in four different ways. This is determined by where you install the two rack mount brackets that are provided. The four possible positions for the brackets are:

- Flush with the rear of chassis so the rear of the chassis is even with the vertical rack rails.
- Offset by 17.5 cm from the rear of the chassis so that the rear of the chassis protrudes beyond the vertical rack rails by 17.5 cm.
- Flush with the front of chassis so the front of the chassis is even with the vertical rack rails.
- Offset by 17.5 cm from the front of the chassis so that the front of the chassis protrudes beyond the vertical rack rails by 17.5 cm.

These four possible bracket locations are illustrated in Figure 21.

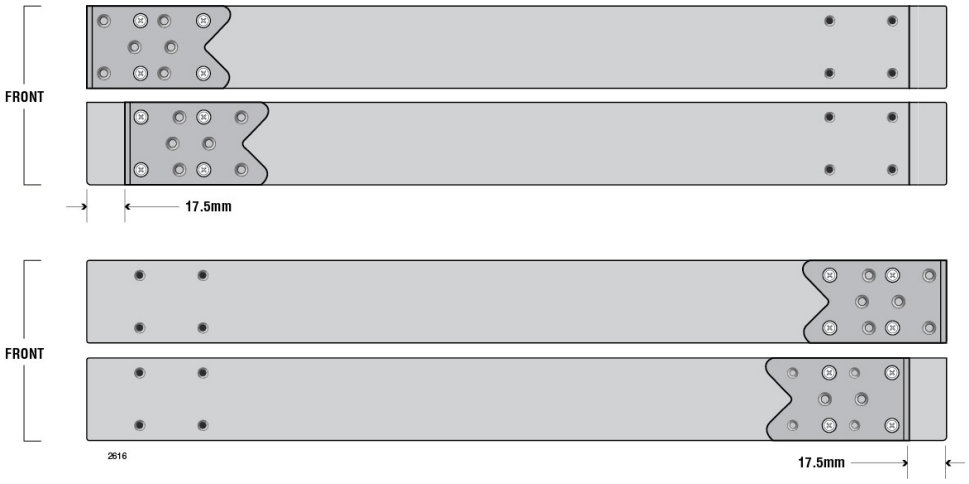


Figure 21. Possible Bracket Locations

This procedure requires the following items:

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

Perform this procedure to install the switch in a 19-inch equipment rack:

Note
If you have installed the rubber feet, remove the rubber feet by prying them off the bottom of the chassis with a flat-bladed tool.

1. Secure the two rack mount brackets to the sides of the switch using the eight bracket screws provided. Figure 22 shows an example of mounting the rack mount bracket on the rear of the chassis and with the bracket flush to the rear panel. See Figure 21 on page 59 for other possible bracket mounting positions on the chassis.

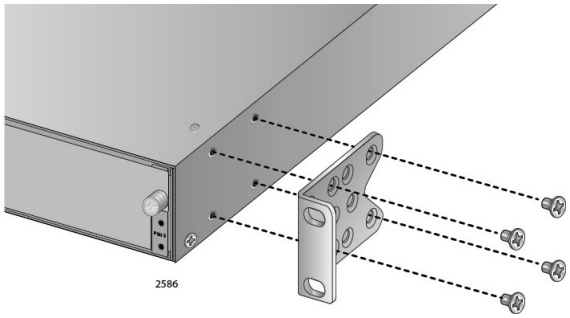


Figure 22. Attaching the Brackets to Switch

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

2. Have another person hold the switch in the equipment rack while you secure it using standard rack mount screws (not provided).

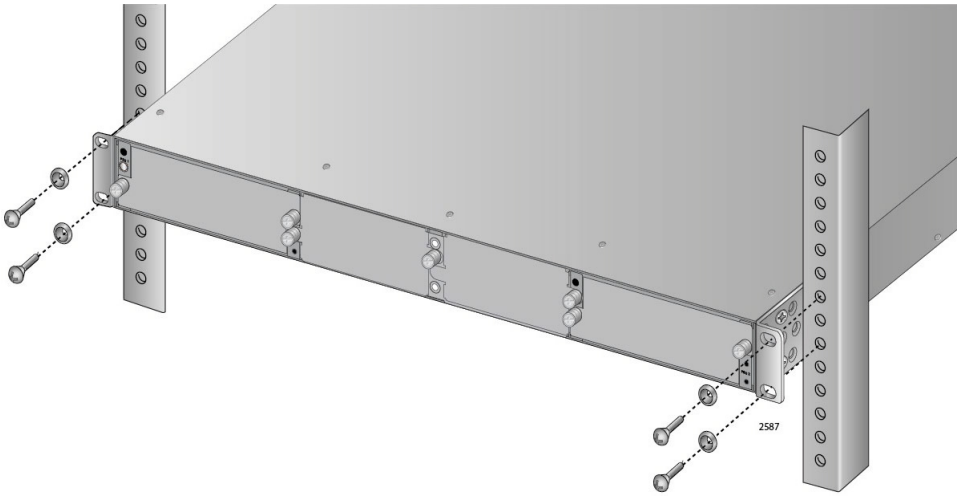


Figure 23. Mounting the Switch in an Equipment Rack

Installing and Replacing AT-PWR06 Power Supply Module

The AT-PWR06 power supply module may be installed in one of the two power supply slots - PSU1 or PSU2. See Figure 2 on page 22 for the location of these slots.

The AT-DC2552XS / L3 Enterprise Core Switch can operate under full load with one power supply module installed. However, if you want power supply redundancy, a second power supply may be installed.

There is no functional difference between the two available power supply slots. Operation of the AT-DC2552XS / L3 is the same when installed in either slot. If you want to use only one power supply, Allied Telesis recommends that you install it in the PSU1 slot.

The following procedures are included in this section:

- ❒ “Installing Power Supply Module”
- ❒ “Replacing Power Supply Module” on page 64
- ❒ “Installing Power Supply Blank Cover” on page 65

Installing Power Supply Module

Install the AT-PWR06 power supply module by performing the following procedure:

1. Identify the power supply slot where you are installing the AT-PWR06 power supply module.
2. Loosen the captive screw on the blank cover panel of the power supply slot blank cover and remove the cover. See Figure 24.

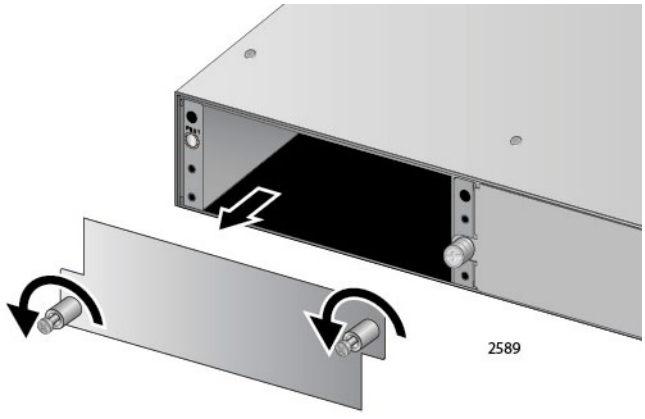


Figure 24. Loosen Power Supply Captive Screws

3. Store the blank cover in a safe place for future use.

Warning
To insure proper cooling and air flow within the chassis, the blank covers should not be removed unless the modules are installed in their place. E76

4. Slowly insert the AT-PWR06 power supply module into the PSU slot until it is flush with the rear of the chassis. See Figure 25.

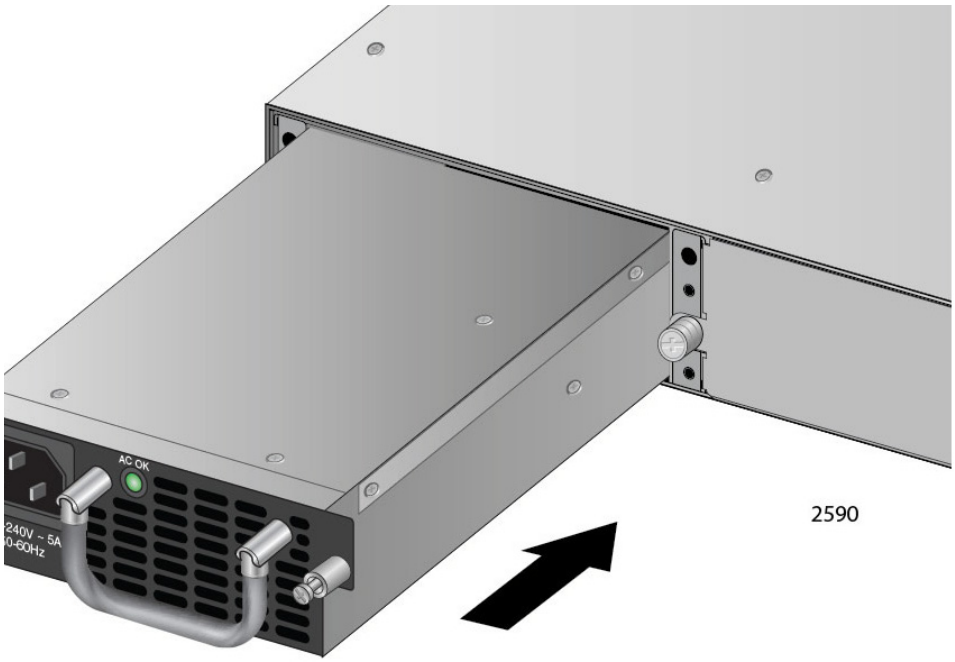


Figure 25. Insert AT-PWR06 Module Into Chassis

5. Tighten the captive screws to fasten the power supply module to the chassis. See Figure 26.

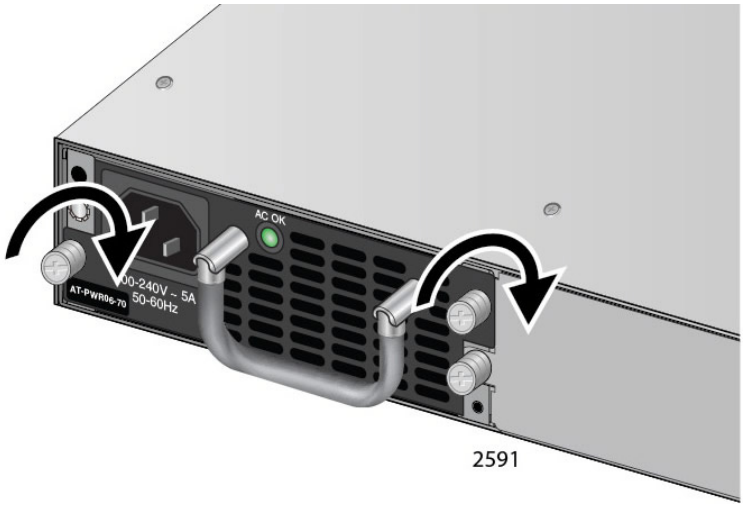


Figure 26. Tighten AT-PWR06 Captive Screws

6. The next step in the installation process is installing the fan modules. Go to “Installing Fan Module” on page 66 for the installation procedure.

Replacing Power Supply Module

The AT-PWR06 power supply module is hot swappable within the chassis assuming a second AT-PWR06 power supply module is already installed and operating.

Perform the following procedure to replace a AT-PWR06 power supply module:

Caution
To insure proper cooling and airflow within the chassis, a blank cover should be installed if a module is not present in the chassis.
E70
Refer to “Installing Power Supply Blank Cover” on page 65.

1. Turn off the power to the AT-PWR06 power supply module by disconnecting the AC power cord. Refer to “Turning Off the Switch” on page 82.

2. Loosen the captive screws on the AT-PWR06 power supply module.

3. Gently pull the handle of the AT-PWR06 power supply module to remove the module from the chassis.

Note
If a new AT-PWR06 power supply module is not available to replace the module you are removing, perform the procedure outlined in “Installing Power Supply Blank Cover” on page 65.

4. Slowly insert the new AT-PWR06 power supply module into the PSU slot until it is flush with the rear of the chassis.
5. Tighten the captive screws to fasten the power supply module to the chassis.
6. Turn the power on to the newly installed AT-PWR06 power supply module by connecting the AC power cord.

Installing Power Supply Blank Cover

If you have removed an AT-PWR06 power supply module from the chassis, and a replacement power supply module is not available, the blank power supply cover should be installed to insure proper airflow in the chassis.

Caution
To insure proper cooling and airflow within the chassis, a blank cover should be installed if a module is not present in the chassis E70

Perform the following procedure to install the blank power supply cover:

1. Locate the blank power supply cover that was originally shipped with the chassis.
2. Remove the AT-PWR06 power supply module by following Step 1 - Step 3 in “Replacing Power Supply Module” on page 64.
3. Once the AT-PWR06 power supply module has been removed, place the blank power supply cover over the vacant power supply slot.
4. Tighten the captive screws on the power supply blank cover.

Installing and Replacing AT-FAN06 Fan Module

The following procedures are included in this section:

- ❒ “Installing Fan Module”
- ❒ “Replacing Fan Module” on page 68

The AT-FAN06 fan module is hot swappable within the chassis.

Installing Fan Module

Perform the following procedure to install an AT-FAN06 fan module:

1. Loosen the captive screws on the fan blank cover panel on Fan 1 (left) slot. See Figure 27.

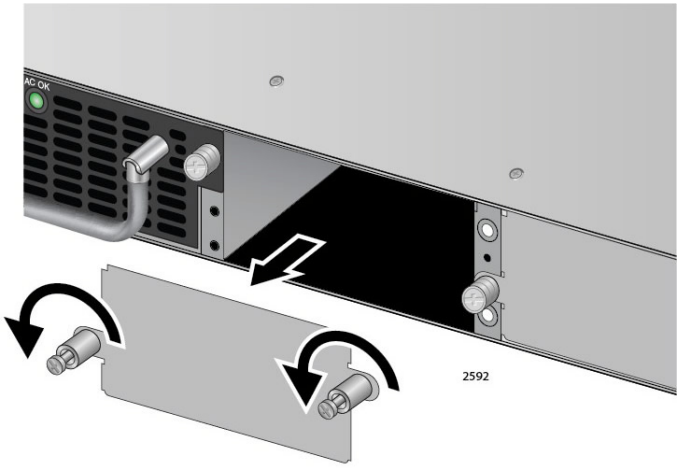


Figure 27. Loosen Screws on Fan Blank Cover

2. Remove the blank cover and store in a safe place.
3. Gently push the fan module into the slot with the handles on the fan module until the module front panel is flush with the chassis rear panel. See Figure 28.

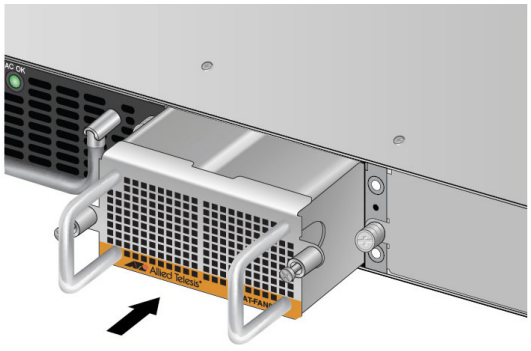


Figure 28. Insert AT-FAN06 Module Into Chassis

4. Tighten the captive screws to fasten the fan module to the chassis. See Figure 29.

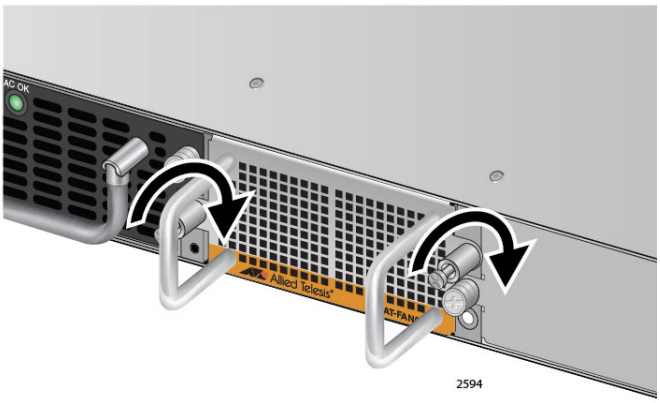


Figure 29. Tighten AT-FAN06 Captive Screws

5. Repeat Step 1 through Step 4 to install the second fan module into Fan 2 (right) slot.

Warning
To operate this product, two fan modules must be installed. Operation with one fan module will cause the chassis to overheat.
E73

6. The next step in the installation process is installing the SFP+ transceivers. Go to “Installing SFP+ Transceiver” on page 71 for the installation procedure.

Replacing Fan Module

The AT-FAN06 fan module is hot swappable within the chassis. The power to the chassis can remain ON while one of the fan modules is replaced. The following procedure assumes a second AT-FAN06 fan module is already installed and operating.

Perform the following procedure to replace an AT-FAN06 fan module:

Warning
The chassis cooling is designed to operate with two fan modules operating together. To avoid overheating of the chassis, please complete the following procedure within one minute. E74

1. Loosen the captive screws on the AT-FAN06 fan module.
2. Gently pull the handle of the AT-FAN06 fan module to remove it from the chassis.
3. Slowly insert the new AT-FAN06 fan module into the vacant fan slot until it is flush with the rear of the chassis.

   The new AT-FAN06 fan module immediately powers up assuming the chassis power supplies are turned on.
4. Tighten the captive screws to fasten the fan module to the chassis. See Figure 29 on page 67.

Chapter 5

Installing the SFP+ and QSFP+ Transceivers and Cables

The list of approved SFP+ and QSFP+ transceivers and direct connect cables that may be installed in the AT-DC2552XS / L3 chassis are given in “Optional SFP+ Transceivers” on page 17 and “Optional QSFP+ Transceivers” on page 18.

This chapter contains the following procedures:

Installing SFP+ Transceivers and Cables

General Guidelines

Review the following guidelines before installing optional SFP+ transceivers or SFP+ direct attach cables in the switch:

- SFP+ transceivers and SFP+ direct attach cables can be hot-swapped while the switch is powered on. For an SFP+ transceiver, you should always disconnect the fiber optic cable before removing a module.
- When you are installing an SFP+ transceiver, you should install the module before connecting the fiber optic cable.
- Fiber optic modules are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed or when you store the module. When you do remove the plug, keep it for future use.
- Unnecessary removal and insertion of a module can lead to premature failure.

Warning
A transceiver can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device. E92

- Go to “Optional SFP+ Transceivers” on page 17 for a list of approved SFP+ transceivers for the AT-DC2552XS / L3.
- Allied Telesis recommends using the following SFP+ cables listed in Table 9 on page 71:

Table 9. SFP+ Cables

SFP+ Transceiver	Cable Used	Max Transmission Distance
10GBASE-SR AT-SP10SR	GI 50/125 multimode fiber (In accordance with ITU-T G.651)	66m (At 400MHz - km transmission band)
		82m (At 500MHz - km transmission band)
		300m (At 2000MHz - km transmission band)
	GI 62.5/125 multimode fiber	26m (At 160MHz - km transmission band)
		33m (At 200MHz - km transmission band)
10GBASE-LR AT-SP10LR	Monomode fiber (In accordance with ITU-T G.652)	10km

Installing SFP+ Transceiver

Perform the following procedure to install an SFP+ transceiver:

1. Remove the dust plug from an SFP+ slot on the switch. See Figure 30.

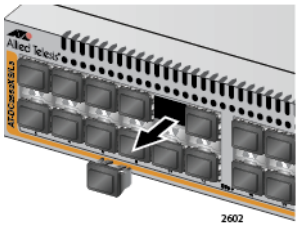


Figure 30. Removing the Dust Plug from an SFP+ Slot

2. Remove the module from its shipping container and store the packaging material in a safe location.

3. If you are installing the module in the top SFP+ slot, position the module with the handle facing up as shown in Figure 31 on page 72. If you are installing the module in the bottom slot, position the module with the handle facing down.

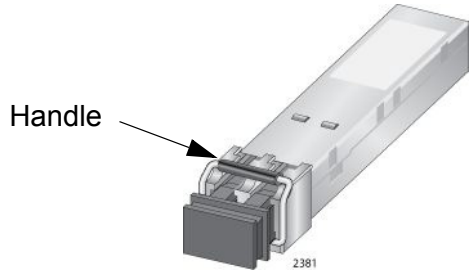


Figure 31. Handle on SFP Transceiver

4. Verify that the SFP module handle is closed against the body of the module.

5. Slide the module into the slot until it snaps into place as shown in Figure 32.

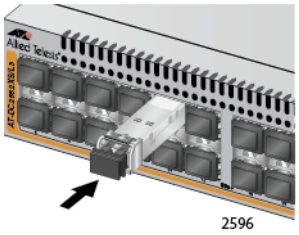


Figure 32. Installing an SFP+ Transceiver

Note
If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat Step 1 to Step 5 to install the remaining SFP+ transceivers in the chassis. Do not remove the dust cover from the installed SFP+ transceiver(s) until you are ready to install the fiber optic cable.

6. Remove the dust cover from the module. See Figure 33.

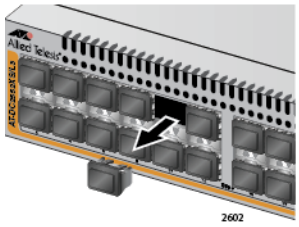


Figure 33. Removing SFP+ Dust Cover

7. Refer to Table 9 on page 71 for the recommended fiber optic cable. Insert the cable to the port on the transceiver, as shown in Figure 34, until it snaps in place.

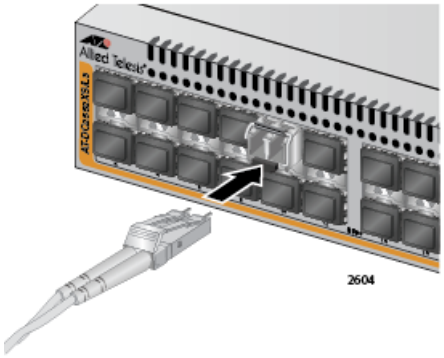


Figure 34. Attaching a Fiber Optic Cable to an SFP+ Transceiver

8. Repeat Step 6 and Step 7 for the cable installation into the remaining SFP+ transceivers that are installed.

Installing an SFP+ Direct Attach Cable

The AT-SP10TW1, AT-SP10TW3 and AT-SP10TW7 10G direct attach cables come in 1m, 3m, and 7m cable lengths respectively. These SFP+ cable modules are ordered and supplied separately from the AT-DC2552XS / L3.

Perform the following procedure to install an SFP+ direct attach cable:

1. Remove the dust plug from an SFP+ slot on the switch. See Figure 35.

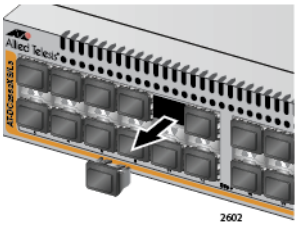


Figure 35. Removing the Dust Plug from an SFP+ Slot

2. Remove the SFP+ direct attach cable from its shipping container and store the packaging material in a safe location.

3. If you are installing the direct attach cable in a top SFP+ slot, position it with the Allied Telesis label and tab facing up. If you are installing the direct attach cable in a bottom slot, position the it so that the label and tab are facing down.

4. Slide the direct attach cable into the slot until it snaps in place. See Figure 36.

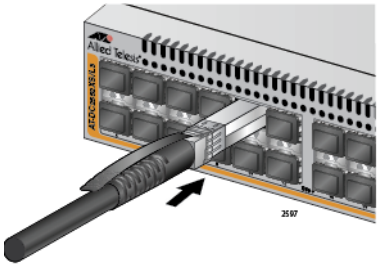


Figure 36. Installing an SFP+ Direct Attach Cable

5. Repeat Step 1 through Step 4 of this procedure if you have other SFP+ direct attach cables to install.

6. If you have QSFP+ transceivers or QSFP+ MTHTP cables, go to “Installing QSFP+ Transceivers and Cables” on page 75.

Installing QSFP+ Transceivers and Cables

Review the following guidelines before installing optional QSFP+ transceivers in the switch:

- QSFP+ transceivers can be hot-swapped while the switch is powered on. However, you should always disconnect the fiber optic cables first before removing a module.
- You should install the module before connecting the fiber optic cable.
- Unnecessary removal and insertion of a module can lead to premature failure.
- Go to “Optional QSFP+ Transceivers” on page 18 for a list of approved QSFP+ transceivers for the AT-DC2552XS / L3.
- Allied Telesis recommends using the following SFP+ cables listed in Table 10:

Table 10. QSFP+ Cables

Port	Cable Used	Max Transmission Distance
40GBASE-SR4 AT-QSFPSR	GI 50/125 multimode fiber (In accordance with ITU-T G.651)	26m (At 400MHz - km transmission band)
		30m (At 500MHz - km transmission band)
		100m (At 2000MHz - km transmission band)
		150m (At 4700MHz - km transmission band)
ET3-MTP 12-1	MTHTP cable for AT-QSFPSR GI 50/125 multimode fiber (In accordance with ITU-T G.651)	1m
ET3-MTP 12-5		5m

Installing a QSFP+ Transceiver

Perform the following procedure to install a QSFP+ transceiver:

1. Remove the module from its shipping container and store the packaging material in a safe location.
2. Remove the dust cover from the chassis QSFP+ slot. See Figure 37 on page 76.

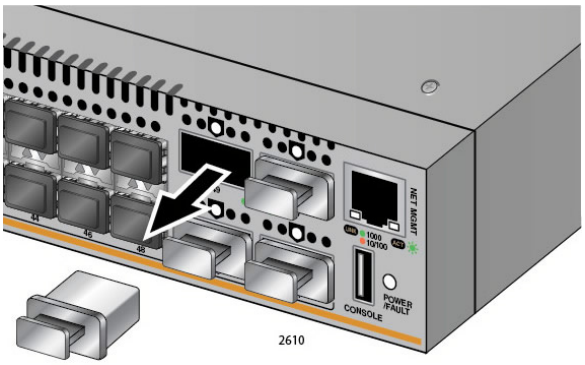


Figure 37. Removing QSFP+ Slot Dust Cover

3. If you are installing the transceiver in the top QSFP+ slot, position the transceiver with the Allied Telesis handle facing up. If you are installing the transceiver in the bottom slot, position the transceiver with the handle facing down.

4. Slide the module into the slot until it clicks into place. See Figure 38.

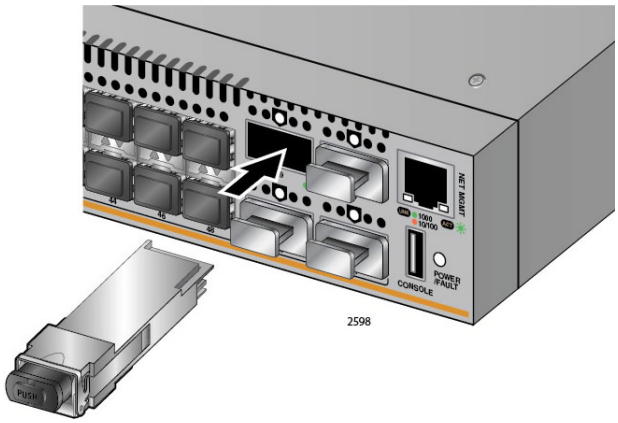


Figure 38. Installing a QSFP+ Transceiver

5. Repeat Step 1 - Step 4 if you have other QSFP+ transceivers to install.

Note
If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat Step 1 - Step 4 to install the remaining QSFP+ transceiver(s) in the line cards. Do not remove the dust cover from the installed QSFP+ transceiver until you are ready to install the fiber optic cable.

6. Remove the dust cover from the transceiver. See Figure 39 on page 77.

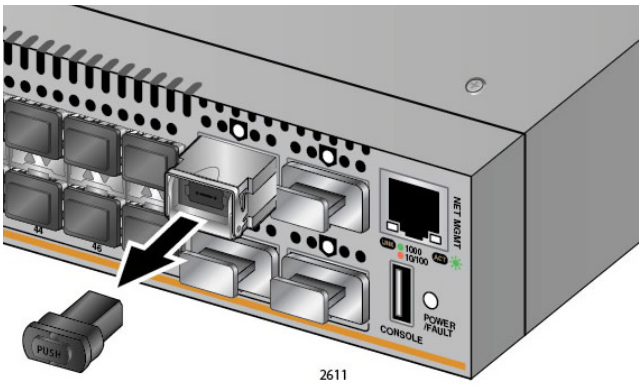


Figure 39. Removing QSFP+ Dust Cover

7. Insert the fiber optic cable to the port on the transceiver, as shown in Figure 40, until it clicks in place.

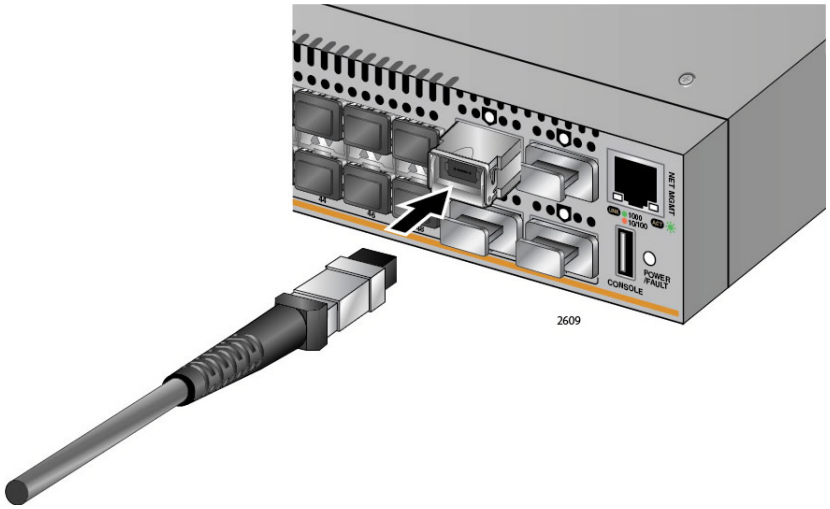


Figure 40. Attaching a Fiber Optic Cable to a QSFP+ Transceiver

8. Repeat this procedure if you have other QSFP+ transceivers to install.

Installing a QSFP+ MTHTP Cable

Perform the following procedure to install a QSFP+ MTHTP cable:

1. Remove the QSFP+ MTHTP cable from its shipping container and store the packaging material in a safe location.

2. Remove the dust cover from the chassis QSFP+ slot. See Figure 41 on page 78.

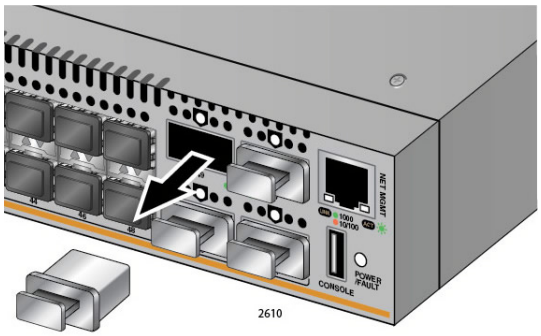


Figure 41. Removing QSFP+ Slot Dust Cover

3. If you are installing the QSFP+ MTHTP cable in the top QSFP+ slot, position the cable with the tab facing up. If you are installing the module in the bottom slot, position the cable with the tab facing down.

4. Slide the module into the slot until it clicks into place.

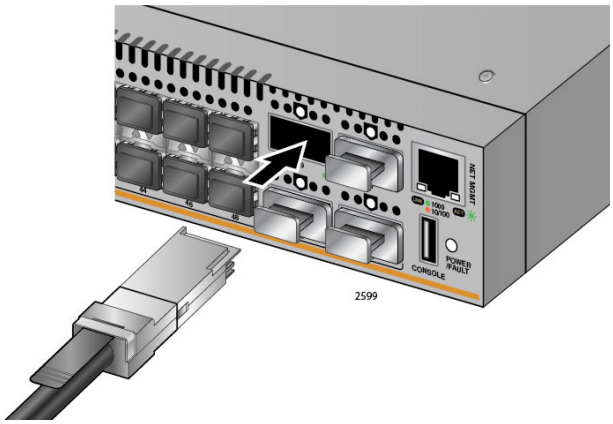


Figure 42. Installing a QSFP+ MTHTP Cable

5. Repeat this procedure if you have other QSFP+ MTHTP cables to install.

6. The next step in the installation process is applying AC power to the switch. Go to Chapter 6, “Powering the Switch” on page 79.

Chapter 6

Powering the Switch

The procedures in this chapter are listed here:

Powering On the Switch

The power turns on automatically when you connect the power cable to one or both of the AT-PWR06 power supply modules. To power on the switch, perform the following procedure:

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

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

Note
If one of the power supply slots is empty with the power supply unit not installed, install the cover panel before powering the switch on. Refer to “Installing and Replacing AT-PWR06 Power Supply Module” on page 62.

1. Inspect the rear of the AT-DC2552XS / L3 chassis to insure that at least one AT-PWR06 power supply module and two AT-FAN06 fan modules are installed. If one of these modules needs to be installed, perform the steps described in “Installing Power Supply Module” on page 62 or “Installing Fan Module” on page 66.

2. Connect the AC power cable to the AC power connector on the AT-PWR06 power supply module.

3. Connect the AC power plug to an AC power outlet.

4. With the AC power cable connected to the power supply module and an AC power source, the AC power is turned on to the switch.

   You can observe that the AT-PWR06 power (AC OK) LED is solid green. If only one power supply module is powered on, the POWER / FAULT LED on the front of the chassis is blinking yellow.

   If two AT-PWR06 power supply modules are powered on, both power supply module AC OK LEDs are solid green, and the POWER / FAULT LED is also solid green.

5. If you have installed a second redundant power supply module and have not powered it on, repeat Step 1 - Step 3.

6. The next step in the installation process is to access the AT-DC2552XS / L3 management interface. Go to Chapter 7, “Connecting the Console Port” on page 84 for instructions on connecting to the Console port.

Turning Off the Switch

To turn off the AC power to the switch, disconnect the power plug from the power outlet. If you have two AT-PWR06 power supply modules installed, be sure to disconnect the AC power plugs to both power supply modules.

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

Chapter 7

Managing the Switch

You may manage an AT-DC2552XS / L3 Enterprise Core Switch with these methods and tools:

- Local management via Telnet client
- Remote management via Telnet client
- Remote management via SNMPv1, v2C, v3

This chapter contains the following procedures to manage the switch:

Local Management

You can manage the AT-DC2552XS / L3 switch locally through the Console port (USB connector) on the front panel of the switch. This is called local management or out-of-band management because the management sessions are not connected over your Ethernet network. The requirements for local management are listed here:

- A terminal or computer with a VT100 or equivalent terminal emulator program
- The management cable included with the switch

This management method uses the command line interface, which gives you access to all of the features and parameters of the switch. Refer to the *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide* for information at **alliedtelesis.com/support/documentation**.

Connecting the Console Port

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

1. Connect the USB connector on the management cable to the Console (USB) port on the front panel of the switch. See Figure 43.

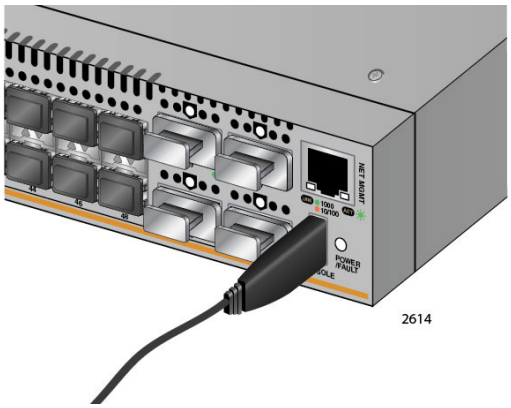


Figure 43. Connecting the Management Cable to the Console Port

2. Connect the other end of the cable to an RS-232 port on a terminal or PC with a terminal emulator program.

3. Configure the terminal or terminal emulator program as follows:

   - Baud rate: 9600 bps (The baud rate of the Console Port is adjustable from 1200 to 115200 bps. The default is 9600 bps.)
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None

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

4. Press Enter.

   You are prompted for a user name and password.

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

You are now logged into the switch’s management software. Refer to the *AT-DC2552XS / L3 Management Software Command Line Interface User’s Guide* for more information about the switch’s command line interface (CLI) commands.

Remote Network Management

You can manage the AT-DC2552XS / L3 switch remotely through any of the Ethernet ports (1 through 64) or through or the NET MGMT (ETH0) Ethernet port on the front panel of the switch. See Figure 1 on page 19 for the location of these ports.

A management session may be established through these ports over an Ethernet network. The requirements for remote management of the switch are listed here:

- A terminal or computer with a VT100 or equivalent terminal emulator program with a connection to your Ethernet network.
- A connection from the AT-DC2552XS / L3 Enterprise Core Switch to your Ethernet network.
- You can also manage the switch using the NET MGMT (ETH0) port which is an Ethernet port, but is out of band from normal Ethernet traffic. Refer to the “NET MGMT Cable Installation,” next on this page to connect to this port.

With remote management, you can choose to use the CLI or SNMP. The CLI gives you access to all of the features and parameters of the switch.

If you want to use SNMP, you must initially start with the CLI SNMP configuration commands where you can customize the SNMP interface.

Refer to the *AT-DC2552XS / L3 Management Software Command Line Interface User’s Guide* for more information at **alliedtelesis.com/support/documentation**.

NET MGMT Cable Installation

The NET MGMT port is a 10/100/1000BASE-T, RJ-45 port located on the front panel of the switch. See Figure 1 on page 19 for this port’s location. Perform the following procedure to install the cable in the NET MGMT port.

1. Select a twisted pair cable from Table 1 on page 21 to connect to the NET MGMT port.
2. Place the locking tab on the bottom and insert the twisted-pair cable into the NET MGMT port. See Figure 44 on page 87. The connector should click into place when it is fully seated.

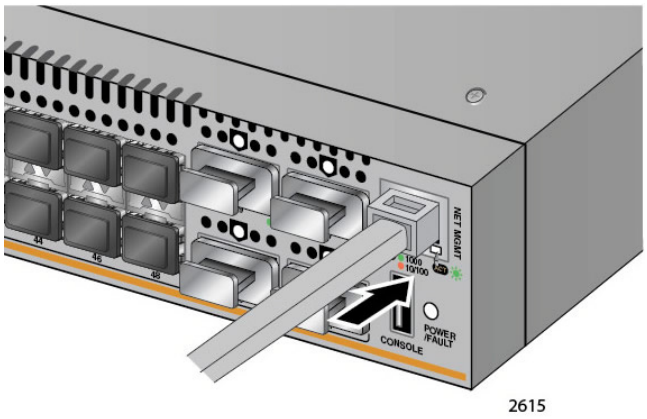


Figure 44. Connecting the Twisted Pair Cable into the NET MGMT port

3. With the AT-DC2552XS / L3 and link partner network device powered on, verify that the NET MGMT port LINK/ACT LED is either amber or green. Refer to “NET MGMT LED” on page 27 for the functional description of this LED. Refer to Chapter 8, “Troubleshooting” on page 89 if this LED does not illuminate.

Chapter 8
Troubleshooting

This chapter contains suggestions on how to troubleshoot the switch if a problem occurs.

> **Note**
> For further assistance, please contact Allied Telesis Technical Support. Refer to “Contacting Allied Telesis” on page 13.

Problem: The NET MGMT 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 network device connected to the twisted pair port is powered on and is operating properly.
- 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.
- Try connecting another network device to the twisted pair port with a different cable. If the twisted pair port is able to establish a link, then the problem is with the cable or the other network device.
- Verify that the twisted pair cable does not exceed 100 meters (328 feet).
- Verify that you are using the appropriate category of twisted pair cable. The cable types are listed in Table 1 on page 21.

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

Solutions: The fiber optic port on the module is unable to establish a link to a network device. Try the following:

- Verify that the 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+ transceiver and to the port on the remote network device.
- Check that the SFP module is fully inserted in the slot.
- Verify that the operating specifications of the fiber optic ports on the SFP+ transceiver and the 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 either the cable or the other network device.
- ❒ Use the switch's management software to verify that the port is enabled. Refer to *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide* for information concerning specific commands.
- ❒ If the remote network device is a managed device, use its management firmware to determine whether its port is enabled.
- ❒ Test the attenuation on the fiber optic cable with a fiber optic tester to determine whether the input optical signal is too weak (sensitivity) or too strong (maximum input power).

Problem: The LINK/ACT LED for a QSFP+ transceiver is off.

Solutions: The fiber optic port on the module is unable to establish a link to a network device. Try the following:

- ❒ Verify that the 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 QSFP+ transceiver and to the port on the remote network device.
- ❒ Check that the QSFP module is fully inserted in the slot.
- ❒ Verify that the operating specifications of the fiber optic ports on the QSFP+ transceiver and the 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 either the cable or the other network device.
- ❒ Use the switch's management software to verify that the port is enabled. Refer to *AT-DC2552XS / L3 Management Software Command Line Interface User's Guide* for information concerning specific commands.
- ❒ If the remote network device is a managed device, use its management firmware to determine whether its port is enabled.

- Test the attenuation on the fiber optic cable with a fiber optic tester to determine whether the input optical signal is too weak (sensitivity) or too strong (maximum input power).

Appendix A
Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions (H x W x D)

Table 11. Product Dimensions

Model	Specification
AT-DC2552XS / L3	44.0 x 46.0 x 4.4 cm (17.3 x 18.1 x 1.7 inch)

Weights

Table 12. Product Weights

Model	Specifications
AT-DC2552XS / L3	7.2 kg (15.9 lb.)
AT-PWR06	1.3 kg (2.9 lb.)
AT-FAN06	0.2 kg (0.4 lb.)

Environmental Specifications

Table 13. Environmental Specifications

Model	Specifications
Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-20° C to 60° C (-4° F to 140° F)
Operating Humidity	0% to 80% noncondensing
Storage Humidity	0% to 90% noncondensing

Power Specifications

AT-PWR06 Input Specifications

Table 14. AT-PWR06 Input Specifications

Parameter	Specifications
Voltage	Voltage: 100-240V AC (10% auto-ranging)
Frequency	50/60 Hz per input
Maximum Current	16A @ 100V

Certifications

Table 15. Product Certifications

Parameter	Specifications
EMI (Emissions)	FCC Class A, EN55022 Class A, VCCI, CISPR 22 Class A, C-TICK
EMC (Immunity)	EN55024, EN61000-3-2, EN61000-3-3
Electrical and Laser Safety	EN60950-1 (TUV), UL 60950-1 ($_{C}UL_{US}$)

Console Port Pinouts

Figure 45 illustrates the pin locations of the USB Console connector.

Figure 45. USB Console Connector and Port Pin Layout

Table 16 lists the pinout functions for the Console port connector.

Table 16. Console Pinouts

Pinout	Signal
1	RTS (RS)
2	RXD (RD
3	TXD (SD)
4	CTS (CS)
5	NOT USED
6	NOT USED
7	NOT USED
1	RTS (RS)

RJ-45 Twisted Pair Port Pinouts

Figure 46 illustrates the pin layout of an RJ-45 connector and port.

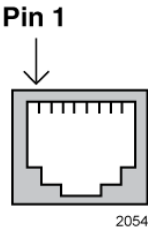


Figure 46. RJ-45 Connector and Port Pin Layout

Table 17 lists the pin signals for 10 and 100 Mbps.

Table 17. 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 18 lists the pin signals when a port operating at 1000 Mbps.

Table 18. Pin Signals - 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 -