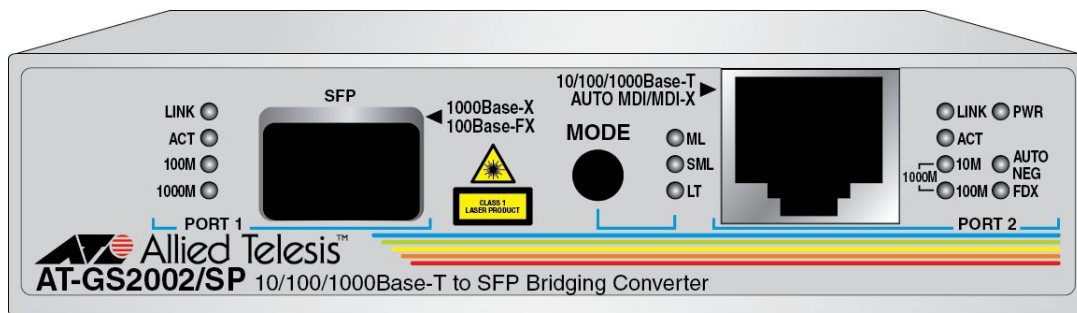


AT-GS2002/SP

Gigabit Ethernet to Fiber SFP Media Converter



AT-GS2002/SP Media Converter Installation Guide

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Electrical Safety and Emissions Standards


This product meets the following standards.

U.S. Federal Communications Commission	
Declaration of Conformity	
Manufacturer Name:	Allied Telesis, Inc.
Declares that the product:	Fast Ethernet Switch
Model Numbers:	AT-GS2002/SP
This product complies with FCC Part 15B, Class B Limits:	
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	
Radiated Energy	
Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:	
<ul style="list-style-type: none">- Reorient or relocate the receiving antenna.- Increase the separation between the equipment and the receiver.- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.- Consult the dealer or an experienced radio/TV technician for help.	
Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.	

Industry Canada	
This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.	
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.	

RFI Emissions	FCC Class B, CISPR 22 Class B, EN55022 Class B, EN55022 Class B, VCCI Class B, C-TICK
Immunity	EN55024
Electrical Safety	CSA22.2 No.950, TUV (EN60950), CE UL1950

Translated Safety Statements

Important: The  indicates that a translation of the safety statement is available on the Allied Telesis website at www.alliedtelesis.com.

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Preface

This guide contains the installation instructions for the AT-GS2002/SP Media Converter. This preface contains the following sections:

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

Symbol 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.



Warning

Warnings inform you that an eye and skin hazard exists due to the presence of a Class 1 laser device.

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 questions in our knowledge database, check support tickets, learn about RMAs, and 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 guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates - Download the latest software releases for your product.
- For sales or corporate contact information, go to **www.alliedtelesis.com/purchase** and select your region.

Chapter 1

Overview

This chapter describes the AT-GS2002/SP Media Converter in the following sections:

- ❑ “Introduction” on page 16
- ❑ “Front and Back Panels” on page 19
- ❑ “Twisted-Pair Ports” on page 20
- ❑ “SFP Port” on page 22
- ❑ “LEDs” on page 23
- ❑ “Power Supply” on page 27

Introduction

The AT-GS2002/SP Media Converter is a 10/100/1000Base-TX copper to SFP (Small Form-factor Pluggable) media converter. It does not require software configuration or management.

General Here are the basic features of the AT-GS2002/SP Media Converter:

- ❑ MODE push button for MissingLink (ML), Smart Missing Link (SML), and Link Test (LT) modes
- ❑ LEDs for unit and port status
- ❑ Transparent to VLAN packets
- ❑ MAC address table up to 4KB
- ❑ Automatic learning and aging
- ❑ Supports jumbo packets up to 10240 bytes
- ❑ DC receptacle power adapter provided

Twisted-Pair Port Here are the features of the twisted-pair port:

- ❑ 1 port
- ❑ 10Base-TX, 100Base-T and 1000Base-T compliant
- ❑ IEEE 802.3u Auto-Negotiation compliant
- ❑ Auto-MDI/MDIX
- ❑ RJ-45 connector
- ❑ 100 meters (328 feet) maximum operating distance
- ❑ IEEE 802.3x flow control in 10/100Base-TX full-duplex operation
- ❑ IEEE 802.3x back pressure in 10/100Base-TX half-duplex operation
- ❑ IEEE803.3z 1000Base-T flow control

SFP Port Here are the features of the SFP port:

- 1 Port
- 100BaseX and 1000BaseFX compliant
- IEEE 802.3x flow control in 100Base-TX full-duplex operation
- IEEE 802.3x back pressure in 100Base-TX half-duplex operation
- IEEE803.3z 1000Base-T flow control

Note

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

LEDs The AT-GS2002/SP Media Converter has the following LEDs:

- Speed and link/activity LEDs for the both the twisted-pair port and SFP slot
- Duplex LEDs
- Mode LEDs
- Power LED

Installation Options Here are the installation options for the AT-GS2002/SP Media Converter:

- Desk or tabletop installation
- Wall mount installation

Note

Wall mount installation requires that the AT-GS2002/SP Media Converter be installed in an AT-TRAY1 Rack/Wall Mount Bracket.

- Rack mount installation

Note

Rack mount installation requires that the AT-GS2002/SP Media Converter be installed in an AT-MCR12 Rack Mount Chassis, an AT-TRAY4 Rack Mount Tray or an AT-TRAY1 Rack/Wall Mount Bracket.

MAC Address Table Here are the basic features of the AT-GS2002/SP Media Converter MAC address table:

- Storage capacity of 4,000 MAC address entries
- Automatic learning and aging

Dimensions

Here are the physical dimensions of the AT-GS2002/SP Media Converter:

- ❑ Width - 105 mm (4.12 in), Depth - 95mm (3.75 in), Height - 25mm (1.0 in)

Environmental Operating Conditions

Here are the general environmental operating conditions for the AT-GS2002/SP Media Converter:

- ❑ Operating temperature range of 0° C to 40° C (32° F to 104° F)
- ❑ Operating altitude: Up to 3,048 meters (10,000 feet)
- ❑ Operating humidity range of 5% to 90% non-condensing
- ❑ Storage temperature: -25° C to 70° C (-13° F to 158° F)
- ❑ Storage humidity range of 5% to 95% non-condensing

Front and Back Panels

Figure 1 illustrates the front panel of the AT-GS2002/SP Media Converter.

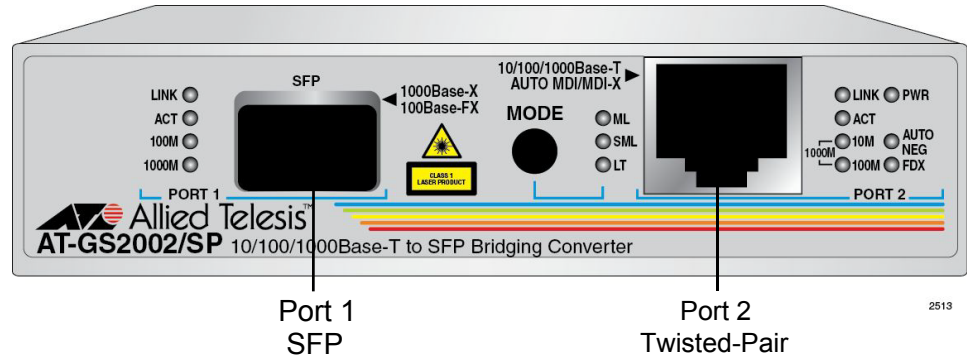


Figure 1. AT-GS2002/SP Front Panel

Figure 2 illustrates the back panel of the AT-GS2002/SP Media Converter.

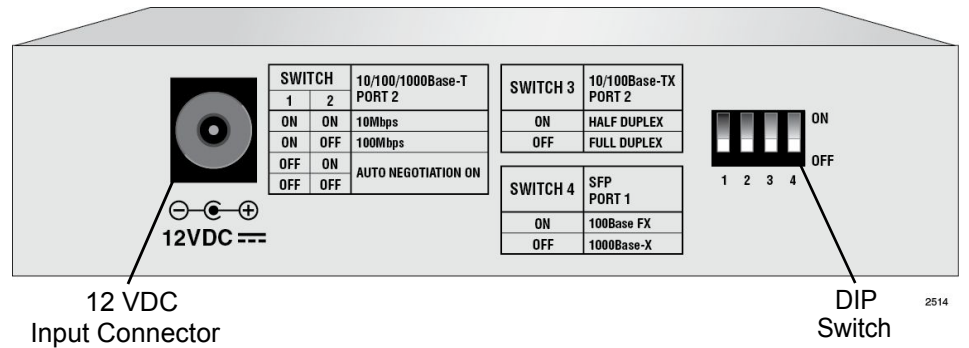


Figure 2. AT-GS2002/SP Back Panel

Twisted-Pair Ports

The AT-GS2002/SP Media Converter features one twisted-pair port that is 10Base-T, 100Base-TX, and 1000Base-T compliant and has a maximum operating distance of 100 m (328 feet). You can configure this port for Auto-Negotiation or you can configure the port's speed and duplex mode manually. This port is labeled "Port 2" on the front panel. Refer to Figure 1 on page 19 for its location.

Note

Refer to "DIP Switches" on page 26 and Table 7, "Rear Panel DIP Switch Settings" on page 34 for information on how to configure the Auto-Negotiation feature and the speed and duplex settings.

The twisted-pair port features an 8-pin RJ-45 connector. For the port pinouts, refer to "Connectors and Port Pinouts" on page 50.

Cable Specifications

The cable requirements for the twisted-pair port on the AT-GS2002/SP are listed in Table 1.

Table 1. twisted-pair Cable Specifications for the AT-GS2002/SP

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

MDI/MDI-X Mode

This twisted-pair port features auto-MDI/MDI-X when operating at 10, 100, or 1000 Mbps. A port is automatically configured as MDI or MDI-X when it is connected to another Ethernet port. Consequently, you can use a straight-through or cross-over twisted-pair cable when connecting any type of network device to this port on the media converter.

Auto-Negotiation Mode

When the Auto-Negotiation feature is enabled on the twisted-pair port, the speed and duplex mode are automatically configured for you. Enabling this feature assumes that the end-node device connected to a twisted-pair port is also be configured for Auto-Negotiation mode. This feature insures that the speed and duplex mode is matched on each end.

When the Auto-Negotiation feature is disabled, the port parameters must be configured for the same speed and duplex mode as the link-partner.

Note

If an end-node device connected to the AT-GS2002/SP twisted-pair port is set to a fixed speed and duplex mode and the AT-GS2002/SP has Auto-Negotiation enabled, a speed and duplex mismatch may occur which can cause a reduction in the data flow. In this case, disable the Auto-Negotiation feature on the AT-GS2002/SP.

Note

Refer to “DIP Switches” on page 26 and Table 7, “Rear Panel DIP Switch Settings” on page 34 for information on how to configure the Auto-Negotiation feature, Speed and Duplex settings.

Flow Control and Back Pressure

When two connected Ethernet device ports are set to different speeds, an Ethernet device with the slower data rate capability may randomly be flooded with more data than it can process and may need to signal the opposite end-node device to stop sending data until it is ready to receive more data again. How a port signals its end-node device to stop transmitting data differs depending on the duplex mode of the Ethernet ports.

A port operating in full-duplex mode uses PAUSE frames to momentarily stop the transmission of data from the opposite end-node device. This is specified in the IEEE 802.3x standard. Whenever a port wants an end-node device to stop transmitting data because it is being flooded by data, it issues a PAUSE frame. This frame instructs the end-node device to temporarily cease transmission. The port continues to issue PAUSE frames until it is ready to receive data again from the opposite end-node device. This is referred to as *flow control*.

A twisted-pair port operating at half-duplex mode stops its end-node device from transmitting data by forcing a collision. A collision on an Ethernet network occurs when two end-nodes attempt to transmit data using the same data link at the same time. A collision causes the end-nodes to momentarily stop sending data. When a port has received more data than it can process, it needs to temporarily stop the opposite end-node device from transmitting data. The port does this by forcing a collision, which stops the opposite end-node device from transmitting data. When the port is ready to receive data again, the media converter stops forcing collisions. This process is referred to as *back pressure*.

SFP Port

The AT-GS2002/SP Media Converter features one SFP port. This port is labeled “Port 1” on the front panel. Refer to Figure 1 on page 19 for its location.

The SFP port is capable of supporting a range of fiber SFP modules offered by Allied Telesis. Refer to the AT-GS2002/SP product data sheet for information concerning the specific SFP models supported and fiber cable specifications. See “Contacting Allied Telesis” on page 5 for a link to the AT-GS2002/SP product page.

LEDs

There are four types of LEDs on the AT-GS2002/SP Media Converter, as shown in Figure 3:

- ❑ SFP Port LEDs
- ❑ Twisted-pair port LEDs
- ❑ Status LED
- ❑ Missing Link Mode LEDs

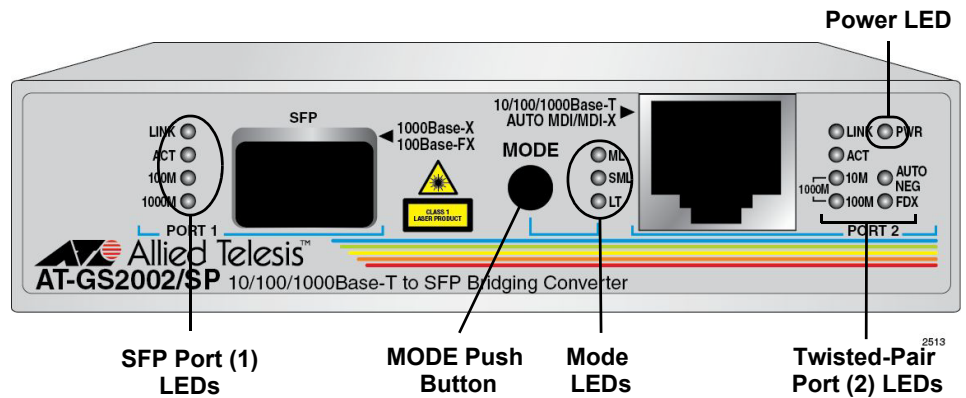


Figure 3. LEDs on the AT-GS2002 Series Converter

Power LED The Power LED indicates the operating status of the converter. Refer to Figure 3 for the location of this status LED. This LED is described in Table 2.

Table 2. Power LED

LED	Color	Description
PWR	Green	Indicates that the unit power is ON.
	Off	Indicates that the converter power is OFF.

MODE LEDs

The MODE LEDs indicate the operating status of the three operation modes: Link Test (LT), MissingLink (ML), and Smart MissingLink (SML). These LEDs are described in Table 3.

Note

Refer to Figure 3 on page 23 for the location of these LEDs.

Table 3. MODE LEDs

LED	Color	Description
ML	Green	MissingLink mode is enabled.
	Off	MissingLink mode is disabled.
SML	Green	Smart MissingLink mode is enabled.
	Off	Smart MissingLink mode is disabled.
LT	Green	Link Test mode is enabled.
	Off	Link Test mode is disabled.

Twisted-Pair Port LEDs

The twisted-pair port LEDs indicate the operating status of the twisted-pair port (Port 2) on the AT-GS2002 Series converter. Refer to Figure 3 on page 23 for the location of these LEDs. The link, activity, and Auto-Negotiation functions are defined in Table 4 and the speed LEDs are defined in Table 5.

Note

Refer to Table 7, “Rear Panel DIP Switch Settings” on page 34 to configure the Auto-negotiation, speed, and duplex features

Table 4. Twisted-Pair Port LINK/ACT/AUTO-NEG LEDs

LED	Color	Description
LINK	Green	A valid link is established on the port with its link-partner.
	Blinking Green	Indicates that when the AT-GS2002/SP Media Converter is in SML mode, and the LINK has been dropped because the LINK on the other port is lost.
	Off	A valid link is not established on the port with its link-partner.
ACT	Blinking Green	Indicates that the port is transmitting and/or receiving data packets.
	Off	Indicates that there is no activity on the port.
AUTO NEG	Green	Indicates that the port Auto-Negotiation is ON.
	Off	Indicates that the port Auto-Negotiation is OFF.

Table 5. Twisted-Pair Port 100/1000 LEDs

Speed LEDs		Description
10M	100M	
Off	Off	Indicates that the port is not linked to its end-node.
Green	Off	Indicates that the port is operating at 10 Mbps.
Off	Green	Indicates that the port is operating at 100 Mbps.
Green	Green	Indicates that the port is operating at 1000 Mbps.

Fiber Optic Port LEDs (SFP Slot)

The fiber optic port (Port 1) LEDs indicate the operating status of the SFP slot on the AT-GS2002/SP Media Converter. Refer to Figure 3 on page 23 for the location of these LEDs. The functions of these LEDs are defined in Table 6.

Note

Refer to Figure 3 on page 23 for the location of these LEDs.

Table 6. Fiber Optic Port LEDs

LED	Color	Description
LINK	Green	Indicates a valid link has been established between the port and its end-node.
	Blinking Green	Indicates that when the AT-GS2002/SP Media Converter is in SML mode, and the LINK on the SFP port has been dropped because the LINK on the other port is lost.
	Off	Indicates that there is no link between the port and its end-node.
ACT	Green	Indicates that the port is transmitting and/or receiving data packets.
	Off	Indicates that there is no activity on the port.
100M	Green	The port is operating at 100FX.
	OFF	The port is not operating at 100FX.
1000M	Green	The port is operating at 1000X.
	OFF	The port is not operating at 1000X.

DIP Switches

The DIP switches are used to manually configure the operating characteristics of the RJ-45 twisted-pair port (Port 2), such as port speed, duplex mode, Auto-Negotiation and the SFP port speed based on the SFP module that is inserted into the SFP port.

The RJ-45 twisted-pair port is 10/100/1000Base capable. In forced mode, you can configure the port of 10 or 100 Mbps only. By default, the 1000 Mbps speed is set to Auto-Negotiation only

For the DIP switch setting, refer to Table 7, “Rear Panel DIP Switch Settings,” on page 34.

Power Supply

One multi-region 12VDC AC/DC power adapter is supplied in the shipping carton with the AT-GS2002/SP Media Converter. It is illustrated in Figure 4. This is an approved safety compliant AC power adapter for the 100 and 240V AC versions with an unregulated output of 12VDC.

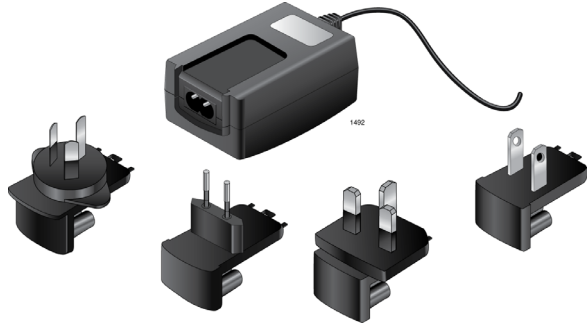


Figure 4. AC/DC Power Adapter

Note

For the AT-GS2002/SP Media Converter power requirements, refer to the “Power Specifications” on page 49.

Chapter 2

Installation


This chapter contains the following sections:

- “Safety Precaution Review” on page 30
- “Site Selection” on page 32
- “Unpacking the AT-GS2002/SP Media Converter” on page 33
- “Rear Panel DIP Switches Configuration” on page 34
- “SFP Transceiver Installation” on page 35
- “Desktop Installation” on page 37
- “Rack Mount Installation” on page 39
- “Cable Installation” on page 40
- “Powering On the AT-GS2002/SP Media Converter” on page 43

Safety Precaution Review


Please review the following safety precautions before you begin to install the chassis or any of its components.

Note

The  indicates that a translation of the safety statement is available in a PDF document titled “**Translated Safety Statements**”.



Warning

Class 1 laser device.  L1




Warning

Do not stare into the laser beam.  L2




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

Pluggable Equipment: The socket outlet should be installed near the equipment and should 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

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

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

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

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

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

Site Selection

Observe the following requirements when choosing a site for your installation

- If you plan to install the AT-GS2002/SP into an equipment rack, you must first install the AT-GS2002/SP Media Converter in an AT-MCR12 Rack Mount Chassis, AT-TRAY4 Rack Mount Tray or AT-TRAY1 Rack/Wall Mount Bracket.

Note

The AT-MCR12, AT-TRAY4 and AT-TRAY products are provided separately and can be procured by contacting an Allied Telesis sales representative. For a detailed description of the installation procedures for these products, refer to the product documentation on our www.alliedtelesis.com web site.

- If you are installing the media converter on a table, verify that the table is level and secure.
- The power outlet for the media converter should be located near the unit and should be easily accessible.
- The site should provide for easy access to the ports on the front of the media converter. This will make it easier for you to connect and disconnect cables, as well as view the media converter's LEDs.
- Air flow around the unit and through its vents on the side and rear should not be restricted so that the media converter can maintain adequate cooling.
- Do not place objects on top of the media converter.
- Do not expose the media converter to moisture or water.
- Ensure that the site is a dust-free environment.
- You should use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

Unpacking the AT-GS2002/SP Media Converter

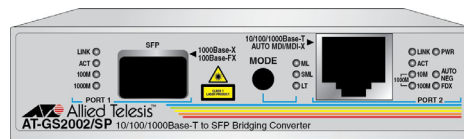
To unpack the AT-GS2002/SP Media Converter, perform the following procedure:

1. Remove all of the components from the shipping container.

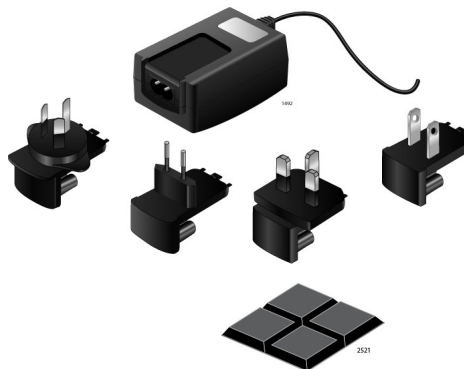
Note

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.

2. The contents of the shipping container are shown in Figure 5. Verify that you have received all the items shown. If any items are missing or damaged, contact your Allied Telesis sales representative for assistance.



One AT-GS2002/SP Media Converter



One Multi-region AC/DC Power Supply

Four rubber protective feet

Figure 5. Components within the AT-GS2002/SP Media Converter Shipping Box

Rear Panel DIP Switches Configuration

Before the AT-GS2002/SP Media Converter is installed, the rear panel DIP switches must be configured for the two Ethernet ports. The DIP switches are numbered 1 - 4 and each one controls a specific function for a specific port. The port numbers assigned to each DIP switch are clearly marked in the table on the rear panel. The specific switch functions are given in Table 7 for the possible settings.

Note

The DIP switch location is shown in Figure 2 on page 19. Port 1 (SFP port) and Port 2 (twisted-pair port) are shown in Figure 1 on page 19.

Table 7. Rear Panel DIP Switch Settings

DIP Switch Number	Port	Setting	Position	Description
1	2	AUTO NEG	UP	Auto-negotiation on the twisted-pair port is OFF.
			DOWN	Auto-negotiation on the twisted-pair port is ON.
2	2	SPEED (Mbps)	UP	The twisted-pair port operates at 10 Mbps.
			DOWN	The twisted-pair port operates at 100 Mbps.
3	2	DUPLEX MODE	UP	The twisted-pair port operates in half-duplex mode.
			DOWN	The twisted-pair port operates in full-duplex mode.
4	1	SFP	UP	A 100Base-FX SFP module is installed.
			DOWN	A 1000Base-X SFP module is installed.

When setting the DIP switches, consider the following:

- ❑ Setting the Auto Neg DIP switch for the twisted-pair port to ON or OFF enables or disables Auto-Negotiation for the port. If you disable Auto-Negotiation, be sure to set the DIP switches for the port's speed and duplex mode to match the speed and duplex mode of the end-node device connected to the converter's copper port.
- ❑ If you enable Auto-Negotiation, be sure that the end-node device is also configured for Auto-Negotiation.

SFP Transceiver Installation

To install an SFP transceiver, perform the following procedure:

Note

You should always install the transceiver before connecting the fiber optic cables to it.

Note

The transceiver can be hot-swapped; you do not need to power off the media converter to install a transceiver.

1. Remove the transceiver from its shipping container and store the packaging material in a safe location.



Warning

An SFP 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 transceiver.

2. Position the SFP transceiver with the label facing up.
3. With the handle on the transceiver oriented towards the top of the media converter, slide the transceiver into the SFP slot until it clicks into place. See Figure 6

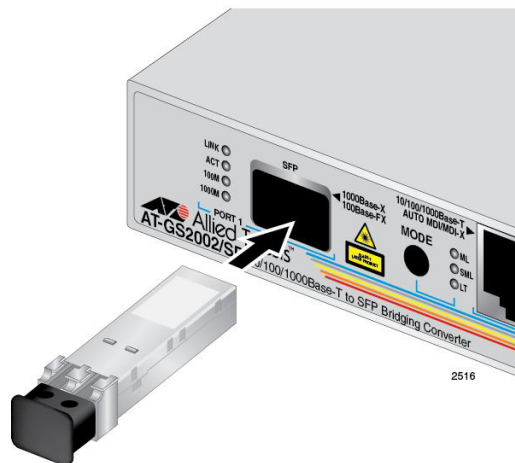


Figure 6. Inserting the SFP

4. Verify that the handle on the transceiver is in the upright position or oriented towards the top of the media converter. This secures the transceiver and prevents it from being dislodged from the slot.

Note

SFP transceivers are dust sensitive. Always keep the protective plug in the optical bore when a fiber optic cable is not installed, or when storing the SFP. When you do remove the plug, keep it for future use.

Note

Repeated and unnecessary removal and insertion of an SFP module may lead to premature failure.

For information on the cable specifications of the SFP, consult the documentation shipped with the SFP.

5. Go to “Cable Installation” on page 40.

Desktop Installation

You may install the AT-GS2002/SP Media Converter on a desktop by performing the following procedure:

1. Remove all equipment from the package and store the packaging material in a safe place.
2. Turn the media converter over and place it on a table.
3. Attach the four rubber feet to the bottom of the media converter as shown in Figure 7.

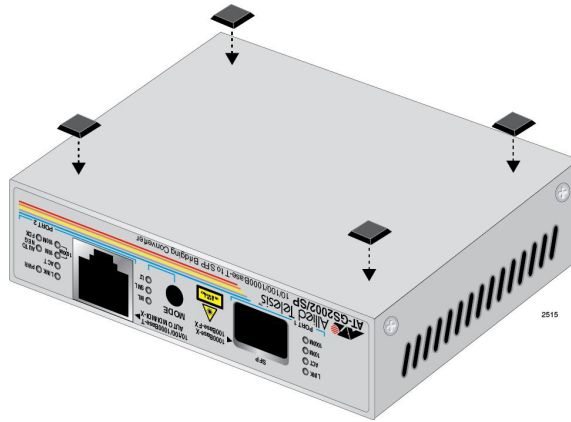


Figure 7. Attaching the Rubber Feet

4. Turn the media converter over and place it on a flat, secure surface (such as a desk or table) leaving ample space around the unit for ventilation.
5. Go to “SFP Transceiver Installation” on page 35 or “Cable Installation” on page 40.

Wall Mount Installation

For a wall mount installation, you must first install the AT-GS2002/SP into an AT-TRAY1 Rack/Wall Mount Bracket.

Note

The AT-TRAY product is provided separately and can be procured by contacting an Allied Telesis sales representative. For a detailed description of the installation procedures for this product, refer to the product documentation on our www.alliedtelesis.com web site.

After the AT-GS2002/SP Media Converter is installed on the wall, go to “Cable Installation” on page 40

Rack Mount Installation

For a rack mount installation of the AT-GS2002/SP into an equipment rack, you must first install the AT-GS2002/SP into an AT-MCR12 Rack Mount Chassis, AT-TRAY4 Rack Mount Tray or AT-TRAY1 Rack/Wall Mount Bracket.

Note

The AT-MCR12, AT-TRAY4 and AT-TRAY products are provided separately and can be procured by contacting an Allied Telesis sales representative. For a detailed description of the installation procedures for these products, refer to the product documentation on our www.alliedtelesis.com web site.

After the AT-GS2002/SP Media Converter is installed in the equipment rack, go to “Cable Installation” on page 40

Cable Installation

Observe the following guidelines when connecting twisted-pair and fiber optic cables to the ports on the media converter:

- ❑ The cable specifications for the twisted-pair ports are given in Table 1 on page 20.
- ❑ The cable connector should fit snugly into the port on the media converter. The tab on the connector should lock the connector into place.
- ❑ Because the twisted-pair ports have auto-MDI/MDI-X, you may use straight-through or cross-over twisted-pair cables to connect any type of Ethernet network devices to the media converter.
- ❑ Refer to the cable specifications included in the SFP module data sheet for the SFP module installed.

Connecting to the Copper Port

To connect to the RJ-45 twisted-pair port on the AT-GS2002/SP Media Converter, perform the following procedure:

1. Connect the RJ-45 twisted-pair cable to the 10/100/1000Base-TX port, as shown in Figure 8.

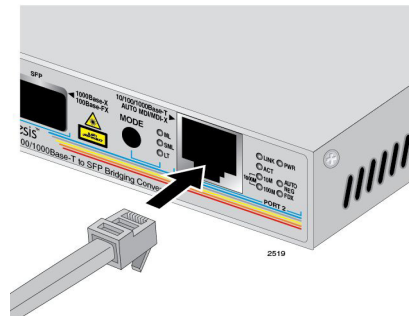


Figure 8. Connecting to the RJ-45 Copper Ports

When connecting a twisted-pair cable to an RJ-45 twisted-pair port, observe the following guidelines:

- ❑ An RJ-45 connector should fit snugly into the port on the converter. The tab on the connector should lock the connector into place.
 - ❑ You can use a straight-through or crossover twisted-pair cable to connect any type of network device to a port on the converter.
2. Then connect the other end of the RJ-45 cable to the link partner.
 3. Connect the fiber cable to the SFP module as described in “Connecting to the SFP Module” on page 41

Connecting to the SFP Module

To connect to the SFP transceiver on the AT-GS2002/SP converter, perform the following procedure:



Warning

Class 1 laser product. ⚡ 1



Warning

Do not stare into the laser beam. ⚡ 2

1. Remove the dust cover from the SFP transceiver, as shown in Figure 9.

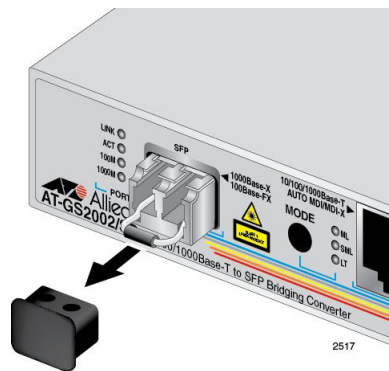


Figure 9. Removing the Dust Cover from the SFP Transceiver

2. Connect the appropriate optical cable to the transceiver, as shown in Figure 10.

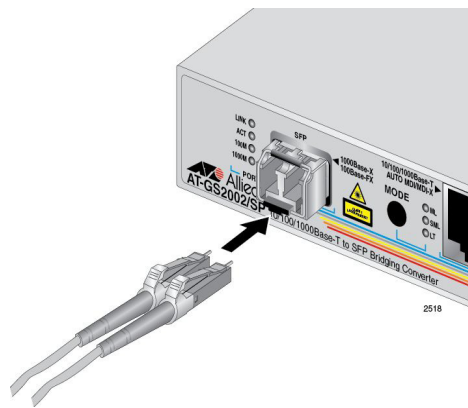


Figure 10. Connecting to the SFP Transceiver

When attaching a optical cable, be sure to observe the following guidelines:

- Be sure that the cable connector is firmly locked into place in the port.
 - You should verify that you are using the appropriate type of optical cabling for the SFP module you have installed.
 - You should verify that the operating specifications of the remote fiber optic port are compatible with the SFP transceiver. For example, you cannot connect a fiber optic SFP transceiver with a maximum distance of 40 kilometers and an operating wavelength of 1550 nanometers (nm) to a remote fiber optic port with an maximum distance of only 10 kilometers and an operating wavelength of 1310 nm.
 - The SFP transceiver consists of two connectors in one slot, as shown in Figure 10. Each connector connects to a separate fiber strand. One is for receiving data and the other is for transmitting data. When connecting a fiber optic cable to a SFP module, be sure that the receive fiber connector is connected to the transmitter connector on the remote end-node device, and the transmit fiber connector is connected to the receiver connector on the remote node.
3. Then connect the other end of the optical cable to the link partner.
 4. Power on the AT-GS2002/SP as instructed in “Powering On the AT-GS2002/SP Media Converter” on page 43.
 5. Power on the end-node devices.

Powering On the AT-GS2002/SP Media Converter

To power on an AT-GS2002/SP Media Converter, perform the following procedure:

Note

The AC/DC power adapter shipped with the unit is not used if you install the AT-GS2002 in an AT-MCR12 chassis. In this case, refer to the AT-MCR12 Installation Guide for installation of the media converter into the chassis and the power up instructions.

Note

The AC/DC power adapter shipped with the unit is used if you install the AT-GS2002 in an AT-TRAY4 or AT-TRAY1 chassis. The following procedure applies in these cases.

1. Locate the 12 VDC input connector on the rear panel of the AT-GS2002/SP Media Converter as shown in Figure 11.

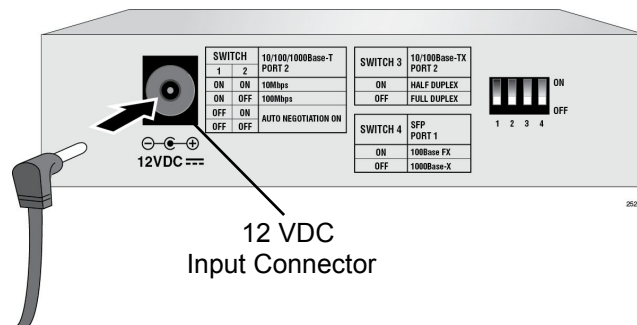


Figure 11. Connecting Power Cord to an AT-GS2002 AC Powered Chassis

2. Plug the DC end of the power cord to the power receptacle connector labeled 12VDC.

3. Plug the AC/DC adapter to a power outlet, as shown in Figure 12. Refer to Appendix A, “Technical Specifications” on page 49 for power requirements.

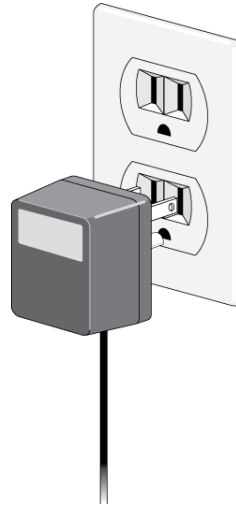


Figure 12. Plugging an AC/DC Adapter to a Power Outlet



Warning

The power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ 5

4. Verify that the PWR LED on the front of the converter is green. If the LED is OFF, refer to “Troubleshooting” on page 45 for instructions.
5. Verify that the LINK LEDs for both the SFP port and the twisted-pair port are green. If either LED is OFF, refer to “Troubleshooting” on page 45 for instructions.

The chassis is now ready for network operations.

Chapter 3

Troubleshooting

This chapter contains information on how to troubleshoot the AT-GS2002/SP Media Converter if a problem occurs. The following areas are discussed:

Note

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

- “Power LED is Off” on page 46
- “Twisted-Pair Port LINK/ACT LED is Off” on page 47
- “SFP Port LINK/ACT LED Off” on page 48

Power LED is Off

Problem: The POWER LED on the front of the media converter is off.

Solutions: The unit is not receiving power. Try the following:

- Verify that the power adapter is securely connected to a power outlet and that the power adapter cable is securely connected to the back of the converter.
- Verify that the AC power outlet has power by connecting another device to it.
- Try connecting the unit to another power source.
- Try using another power adapter.
- Verify that the voltage from the power source is within the required levels for your region.

Twisted-Pair Port LINK/ACT LED is Off

Problem: A twisted-pair port on the media converter 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 twisted-pair cable is securely connected to the media converter port and to the port of the remote network device.
- ❑ Verify that the port is connected to the correct twisted-pair cable. This eliminates the possibility that the port is connected to the wrong network device, such as a powered-off 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: Use Category 3 or better for 10 Mbps operation and Category 5 and Category 5E for 100 and 1000 Mbps operation.

Note

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

SFP Port LINK/ACT LED Off

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

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

- ❑ Verify that the 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 media converter channel 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 eliminates the possibility that the port is connected to the wrong remote network device, such as a powered-off 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.
- ❑ 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 optical signal is too weak (sensitivity) or too strong (maximum input power).
- ❑ Verify that Switch 4 of the rear panel DIP switch is set to the same speed as the SFP module that is installed.

Appendix A

Technical Specifications

The following specifications are for the AT-GS2002/SP Media Converter.

Physical Specifications

Table 8. Physical Specifications

Dimensions (H x W x D)	105 mm x 95 mm x 25 mm (4.12 in x 3.75 in x 1.0 in)
Weight	294 g (10.4 oz)

Environmental Specifications

Table 9. Environmental Specifications

Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing
Operating Altitude Range	Up to 3,048 m (10,000 ft)

Power Specifications

Figure 13. Power Specifications

Input Supply Voltage	12V DC
Rated Input Current	0.5A Maximum
Power Consumption	6 Watts Maximum

Safety and Electromagnetic Emissions Certifications

Table 10. Safety and Electromagnetic Emissions Certifications

RFI Emissions	FCC Class B, EN55022 Class B, C-TICK, CD
Immunity	EN55024
Electrical Safety	EN60950 (TUV), UL 60950 (CUL-US)
Environmental Compliance	EU-RoHS compliant, WEEE, China RoHS compliant
Quality and Reliability (MTBF @ 30° C)	1,430,000 Hours

Connectors and Port Pinouts

This section lists the connectors and connector pinouts.

Figure 14 illustrates the pin layout for an RJ-45 connector and port.

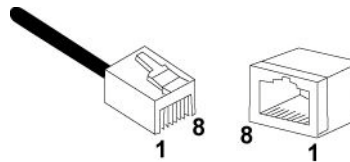


Figure 14. RJ-45 Connector and Port Pin Layout

Table 11 lists the RJ-45 pin signals when a twisted-pair port is operating in the MDI configuration.

Table 11. MDI Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Table 12 lists the RJ-45 port pin signals when a twisted-pair port is operating in the MDI-X configuration.

Table 12. MDI-X Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	RX+
2	RX-
3	TX+
6	TX-

Table 13 lists the RJ-45 connector pins and their MDI/MDI-X pin signals when the twisted-pair port is operating at 1000 Mbps.

Table 13. MDI and MDI-X Pin Signals (1000Base-TX)

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

