

DMC1000/100 Series

Desktop Mini Media Converters

- ❑ AT-DMC1000/SC
- ❑ AT-DMC1000/ST
- ❑ AT-DMC1000/LC
- ❑ AT-DMC100/SC
- ❑ AT-DMC100/ST
- ❑ AT-DMC100/LC



Installation Guide

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Electrical Safety and Emissions Standards

This section contains the following:

- “US Federal Communications Commission”
- “Industry Canada”
- “Emissions, Immunity and Electrical Safety Standards” on page 4
- “Translated Safety Statements” on page 4

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 (CULUS)



Warning

Laser Safety: EN60825 ⚡ 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.

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Preface

This preface contains the following sections:

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

This guide contains the installation instructions for the following Desktop Mini Media Converters.

- AT-DMC1000/SC
- AT-DMC1000/ST
- AT-DMC1000/LC
- AT-DMC100/SC
- AT-DMC100/ST
- AT-DMC100/LC

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**

Laser 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 Return Merchandise Authorizations (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 an 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 contains the following sections:

- “Introduction” on page 16
- “Features” on page 17
- “Front and Back Panels” on page 25
- “Twisted-Pair Port” on page 28
- “Reset the Media Converter” on page 29

This chapter describes the following Desktop Mini Media Converters:

- AT-DMC1000/SC
- AT-DMC1000/ST
- AT-DMC1000/LC
- AT-DMC100/SC
- AT-DMC100/ST
- AT-DMC100/LC

Introduction

The AT-DMC1000/100 Series Desktop Mini Media Converters include the following models:

- AT-DMC1000/SC
- AT-DMC1000/ST
- AT-DMC1000/LC
- AT-DMC100/SC
- AT-DMC100/ST
- AT-DMC100/LC

The AT-DMC1000/100 Series Desktop Mini Media Converters are designed to extend the distance of your network by interconnecting LAN devices that are physically separated by large distances.

These media converters:

- Provide a smaller-sized space-saving alternative that allows enterprises to connect 1000Mbps copper networks to 1000Mbps fiber networks (AT-DMC1000/SC, AT-DMC1000/ST, and AT-DMC1000/LC) or connect 100Mbps copper networks to 100Mbps fiber networks (AT-DMC100/SC, AT-DMC100/ST, and AT-DMC100/LC): This offers a cost-effective method for integrating fiber-optic cabling into a 100/1000 UTP environment.
- Operate at 1000Mbps full duplex (AT-DMC1000/SC, AT-DMC1000/ST, and AT-DMC1000/LC) or 100 Mbps full duplex (AT-DMC100/SC, AT-DMC100/ST, and AT-DMC100/LC).
- Can be installed on a desktop or can optionally be wall mounted: easy to install and does not require any software configuration or management.

Note

Wall-mounting equipment is ordered separately as a five-pack package: five mounting brackets for five media converters.

In addition:

- Optional Smart MissingLink™ (SML) may be enabled or disabled using a DIP switch.
- Powered via a Micro-B USB 5VDC connector. Can be powered from a PC USB port or with the optional AC/DC power adapter.

Features

Here are the key features of the AT-DMC1000/100 Series Desktop Mini Media Converters:

AT-DMC1000/SC, AT-DMC1000/ST, AT-DMC1000/LC

- 1000Base-SX fiber-optic port
- Auto Negotiation and Auto MDI/MDI-X on 1000Base-T twisted-pair (copper) port. The twisted-pair port will auto-negotiate to 1000Mbps, full duplex operation.
- Support for Jumbo frames up to 16kB
- LEDs for unit and port status
- SML DIP switch for activating the SML feature which notifies end nodes of connection failures
- Micro-B USB 5VDC connector

AT-DMC100/SC, AT-DMC100/ST, AT-DMC100/LC

- 100Base-FX fiber-optic port
- Auto Negotiation and Auto MDI/MDI-X on 100Base-TX twisted-pair port. The twisted-pair port will auto-negotiate to 100Mbps, full duplex operation.
- Support for Jumbo frames up to 16kB
- LEDs for unit and port status
- SML DIP switch for activating the SML feature which notifies end nodes of connection failures
- Micro-B USB 5VDC connector

Twisted-Pair Port

Here are the basic features of the twisted-pair (copper) port:

- 1000Base-T (AT-DMC1000/SC, AT-DMC1000/ST, AT-DMC1000/LC) or 100Base-TX (AT-DMC100/SC, AT-DMC100/ST, AT-DMC100/LC) compliant
- IEEE 802.3u Auto-Negotiation compliant
- Auto MDI/MDI-X
- 100 meters (328 feet) maximum operating distance
- RJ45 connector

Fiber Connection

The AT-DMC1000/100 Series media converters support the following transceiver fiber connections:

- The AT-DMC1000/SC has a fixed dual fiber SC 1000-X connection.
- The AT-DMC1000/ST has a fixed dual fiber ST 1000-X connection.
- The AT-DMC1000/LC has a fixed dual fiber LC 1000-X connection.
- The AT-DMC100/SC has a fixed dual fiber SC 100-X connection.
- The AT-DMC100/ST has a fixed dual fiber ST 100-X connection.
- The AT-DMC100/LC has a fixed dual fiber LC 100-X connection.

For the maximum operating distance, refer to Table 10 on page 58.

Auto MDI/MDI-X

An RJ45 twisted-pair port on a 100 Mbps Ethernet network device can have one of two possible wiring configurations: MDI or MDI-X. The RJ45 port on a PC, router, or bridge is typically wired as MDI, while the twisted-pair port on a switch or hub is usually MDI-X.

The media converter features Auto MDI/MDI-X. The twisted-pair port automatically determines the configuration of the port on the device to which it is connected and then configures itself appropriately.

For example, if a port on a media converter is connected to a port on a bridge, which is typically wired as MDI, the port on the media converter automatically configures itself as MDI-X.

This feature allows you to use a straight-through cable when connecting any type of device to the media converter, regardless of the wiring configuration of the port on the device.

LEDs Figure 1 shows the SYS and copper port LEDs.

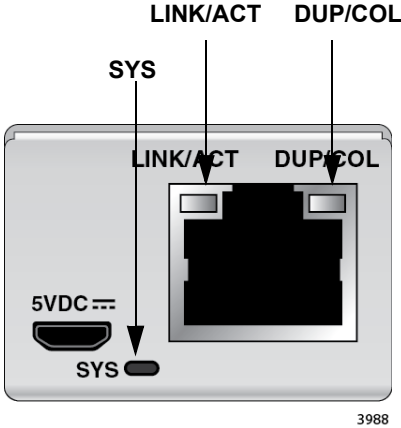


Figure 1. SYS and Copper Port LEDs

Figure 2 shows the fiber port LED.

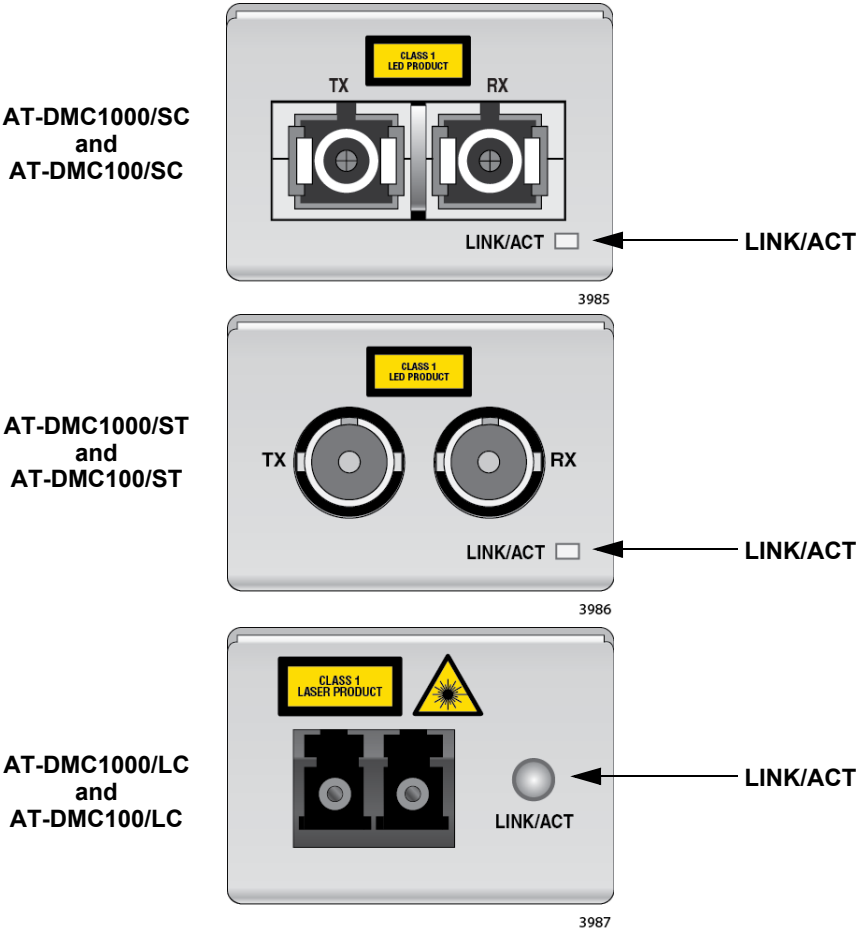


Figure 2. Fiber Port LED

Table 1 describes the media converter’s LEDs.

Table 1. Media Converter LED Functional Descriptions

LED	State	Description
SYS	Off	The media converter is not receiving power or is not operational and will not pass traffic.
	Solid Green (with Heartbeat)	The media converter is operational. Note: The SYS LED will flicker briefly at a regular interval. This “heartbeat” indicates that the internal system is running normally.
	Slow Blinking Green	An error is present on the media converter.
Copper Port LINK/ACT (ACT = Activity)	Off	The port has not established a link.
	Steady Green	The port has an established link to a network device, but it is not transmitting or receiving network packets.
	Rapid Blinking Green	The port is transmitting or receiving network packets.
	Slow Blinking Green	SML is on and detects a failure on the fiber port.
Copper Port DUP/COL	Off	The port has not established a link.
	Steady Green	The port is operating in full-duplex mode.
	Blinking Green	Collisions are occurring on the port.
	Slow Blinking Green	If copper port LINK/ACT LED also slowly blinking, SML is on.

Table 1. Media Converter LED Functional Descriptions (Continued)

LED	State	Description
Fiber Port LINK/ACT	Off	The port has not established a link.
	Steady Green	The port has an established link to a network device, but it is not transmitting or receiving network packets.
	Rapid Blinking Green	The port is transmitting or receiving network packets.
	Slow Blinking Green	SML is on and detects a failure on the copper port or the remote copper port when operating in a back-to-back configuration with another AT-DMC1000 or AT-DMC100.

Smart MissingLink™ (SML)

If one of the Ethernet connections to the media converter loses link, the Smart MissingLink™ (SML) feature allows you to determine which port still has a valid connection and which port requires troubleshooting. The value to this type of network monitoring and fault notification is that you can quickly determine which media converter port has failed and troubleshoot the specific area where the problem is occurring.

When the media converter detects a loss of connection on one of the ports, the port's LINK/ACT LED is turned off. At the same time, the media converter causes the opposite port's LINK/ACT LED to blink while simultaneously turning OFF that port's Ethernet connection to its end node. This occurs even though the properly operating port had a valid connection before the failure occurred: The reason for this is so that its end node is notified that the data path has been compromised, and immediate action is required.

For example, if the network connection to the media converter's copper port fails (as shown in Figure 5 on page 22), the fiber port's LINK/ACT LED turns ON and OFF simultaneously with the fiber port's link going up and down, and the fiber port's end node will detect its link going up and down. The copper port's LINK/ACT LED is turned OFF, indicating a failed connection on the copper port.

If the failure had started with the fiber-optic cabling (as shown in Figure 4 on page 22), then the copper port's LINK/ACT LED would blink slowly with the copper port link down, and the fiber port's LINK/ACT LED would turn OFF.

SML Example Scenarios

Following are example scenarios with one SML enabled media converter

connected between two end nodes.

Figure 3 shows media converter and end node LINK/ACT LED behavior with SML enabled under normal conditions.

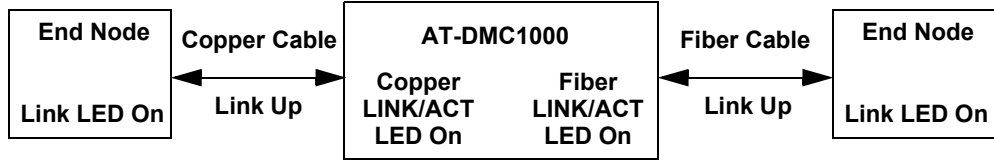


Figure 3. SML in Normal Condition

Figure 4 shows media converter and end node LINK/ACT LED behavior with SML enabled with a fiber connection down.

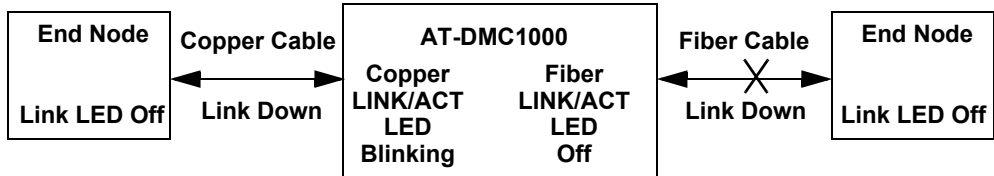


Figure 4. SML with Fiber Connection Down

Figure 5 shows media converter and end node LINK/ACT LED behavior with SML enabled with a copper connection down.

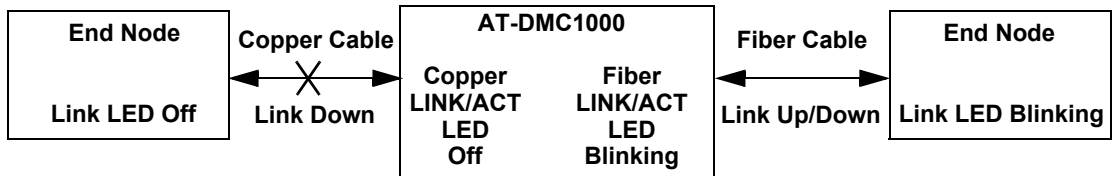


Figure 5. SML with Copper Connection Down

SML Example Scenarios with Two Connected Media Converters

Following are example scenarios with two SML enabled media converters connected back-to-back (bookend mode).

Figure 6 on page 23 shows media converter and end node LINK/ACT LED behavior with SML enabled under normal conditions.

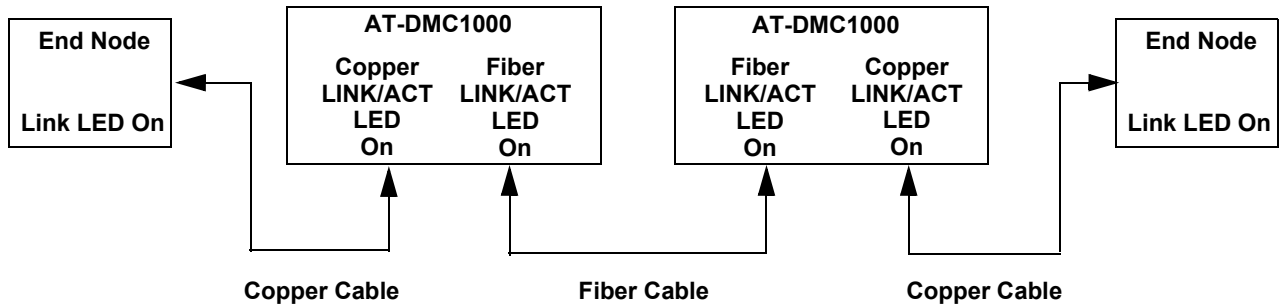


Figure 6. SML in Normal Condition with Two Media Converters

Figure 7 shows media converter and end node LINK/ACT LED behavior with SML enabled with a copper connection down between a media converter and an end node.

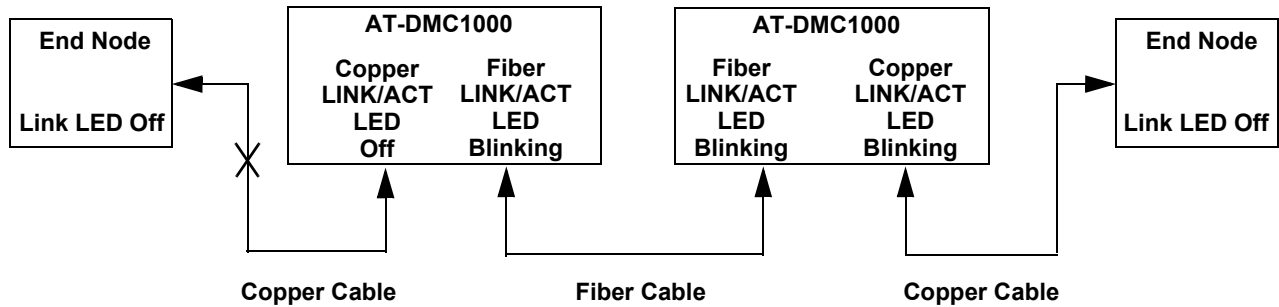


Figure 7. SML with Copper Connection to End Node Down

Figure 8 shows media converter and end node LINK/ACT LED behavior with SML enabled with a fiber connection down between two media converters.

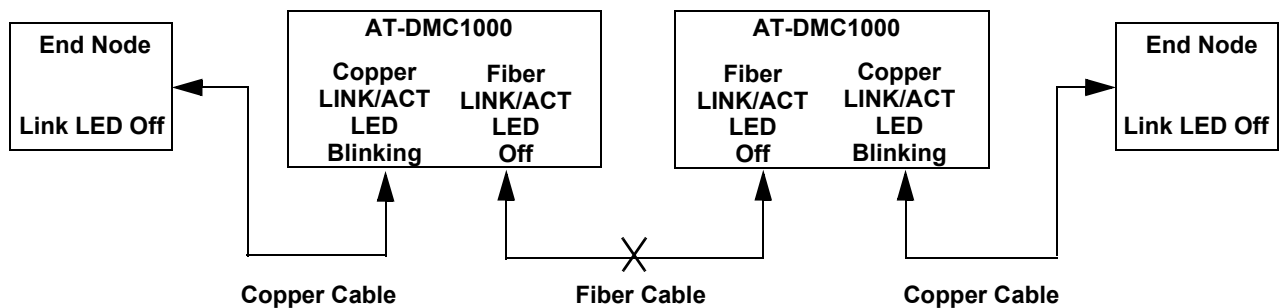


Figure 8. SML with Fiber Connection Between Media Converters Down

Enabling SML

To enable SML on the unit, set the SML ON/OFF DIP switch on the bottom of the unit to the ON position. See Figure 9.

Note

The unit is shipped with SML in the ON position.



Figure 9. SML ON/OFF DIP Switch

Power Source

The media converter is powered via a Micro-B USB connector and provided Micro-USB to Type-A USB cable. The power source can be a PC USB port or the optional external AC/DC power adapter.

Depending on the customer order, the AC/DC power adapter is included with the media converter for standalone operation. The power adapter supplies 5 VDC to the media converter. Allied Telesis supplies a UL approved safety-compliant AC power adapter for the 120 and 240 VAC versions with a regulated output of 5 VDC. The power required for the media converter is 5 VDC, 0.5 A.

Front and Back Panels

Figure 10 illustrates the front panel of the AT-DMC1000/SC and AT-DMC100/SC Media Converters.

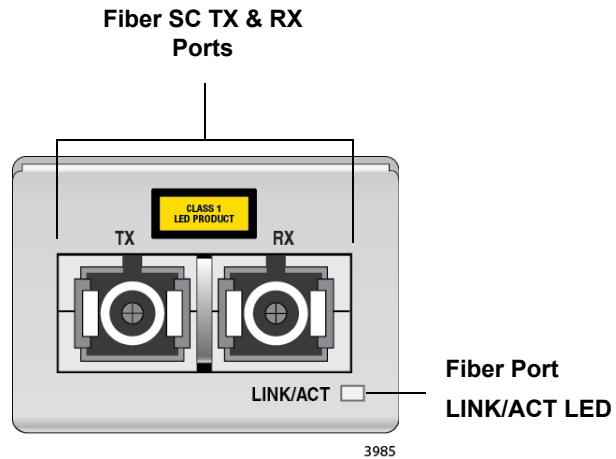


Figure 10. AT-DMC1000/SC and AT-DMC100/SC Front Panel

Figure 11 illustrates the front panel of the AT-DMC1000/ST and AT-DMC100/ST Media Converters.

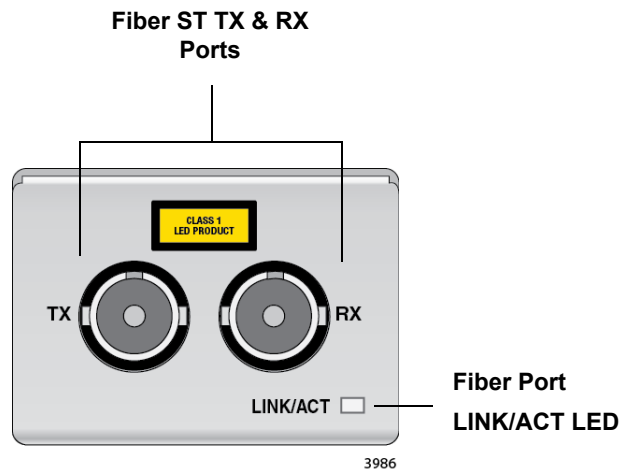


Figure 11. AT-DMC1000/ST and AT-DMC100/ST Front Panel

Figure 12 illustrates the front panel of the AT-DMC1000/LC and AT-DMC100/LC Media Converters.

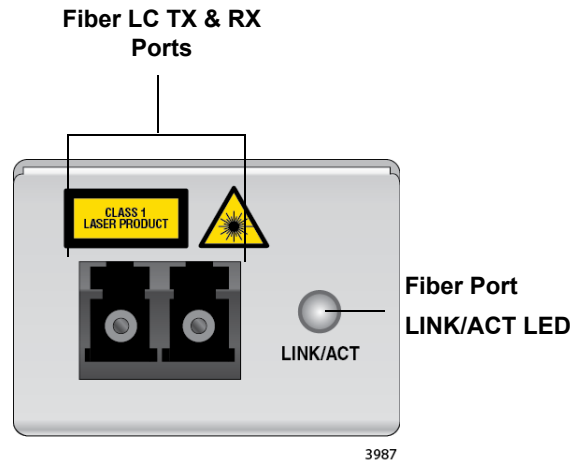


Figure 12. AT-DMC1000/LC and AT-DMC100/LC Front Panel

Figure 13 illustrates the media converter back panel.

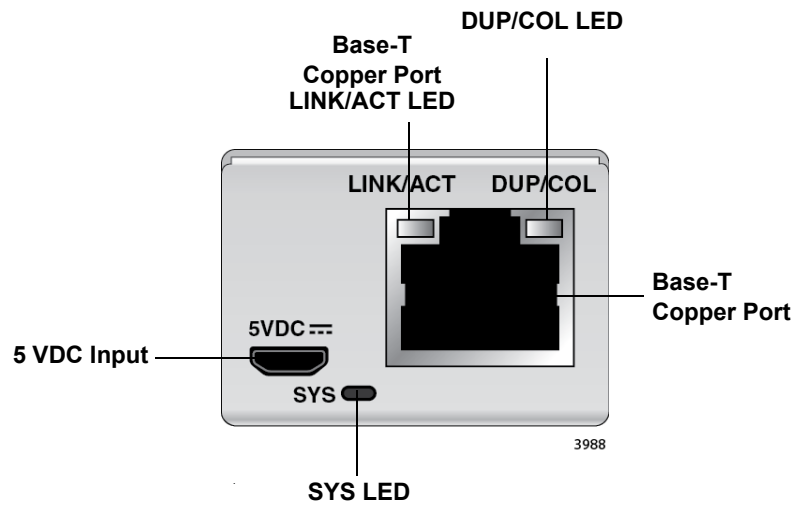


Figure 13. Media Converter Back Panel

Figure 14 illustrates the media converter bottom panel.



Figure 14. Media Converter Bottom Panel

Twisted-Pair Port

The twisted-pair (copper) port features an eight-pin RJ45 connector that uses four pins at 100 Mbps and all eight pins at 1000 Mbps. For the port pinouts, see “RJ45 Connector and Port Pinouts” on page 56.

The port has a maximum operating distance of 100 meters (328 feet). For twisted-pair port cabling specifications, refer to “Planning the Installation” on page 35.

Reset the Media Converter

Reset the media converter by powering the unit OFF, then ON.

Chapter 2

Installation

This chapter contains the following sections:

- “Reviewing Safety Precautions” on page 32
- “Selecting a Site for the Media Converter” on page 34
- “Planning the Installation” on page 35
- “Unpacking the Media Converter” on page 36
- “Installing the Media Converter” on page 40
- “Installing the Media Converter on a Wood Wall” on page 40
- “Powering On and Cabling the Media Converter” on page 45

Reviewing Safety Precautions

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* on the Allied Telesis website at www.alliedtelesis.com/support.




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




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

Note

The power input must be provided from SELV source only, per IEC60950. Do not connect to a centralized DC battery bank. ⚡ E31



Caution

Failing to pick up the ferrule tip when you reach the bottom of the cleaning surface can result in static electricity that can damage the fiber-optic cable. ⚡ E82



Warning

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



Caution

Power to the device must be sourced only from the adapter or from a PC USB port. ⚡ E101

Selecting a Site for the Media Converter

Observe the following requirements when choosing a site for your media converter:

- 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 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 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.
- You should use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

Planning the Installation

Be sure to observe the following guidelines when planning the installation of your media converter.

- For AT-DMC1000 media converters, the end node connected to the fiber connector on the media converter must operate at 1000 Mbps. For AT-DMC100 media converters, the end node connected to the fiber connector on the media converter must operate at 100 Mbps.
- The two end-nodes connected to the ports of the media converter must operate in full-duplex mode.
- The media converter copper port will only link up at the same speed as its fiber port. However, it will only link up properly using Auto Negotiation. As such, do not try to force the copper port to match the speed.
- The devices connected to the two ports on the media converter can be a network adapter card, repeater, switch, media converter, or router.
- The twisted-pair port has a maximum operating distance of 100 meters (328 feet).
- Cable specifications for the twisted-pair port are: 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.

For the fiber-optic port specifications, refer to “Fiber-Optic Port Specifications” on page 58.

Unpacking the Media Converter

To unpack the media converter, perform the following procedure:

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

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. Place the media converter on a level, secure surface.
3. In addition to the media converter, verify that the shipping container includes the following items as follows:
 - Figure 15 on page 37 shows shipping container items for the AT-DMC1000/SC and AT-DMC100/SC.
 - Figure 16 on page 37 shows shipping container items for the AT-DMC1000/ST and AT-DMC100/ST.
 - Figure 17 on page 38 shows shipping container items for the AT-DMC1000/LC and AT-DMC100/LC.
4. If you plan to install the media converter on the wall, remove the components from the shipping package of the AT-DMCWLMT-005 wall-mount bracket kit. See Figure 18 on page 39.

Note

The AT-DMCWLMT-005 wall-mount bracket kit includes 5 sets of wall-mount brackets.

Note

You must purchase the AT-DMCWLMT-005 wall-mount bracket kit separately.

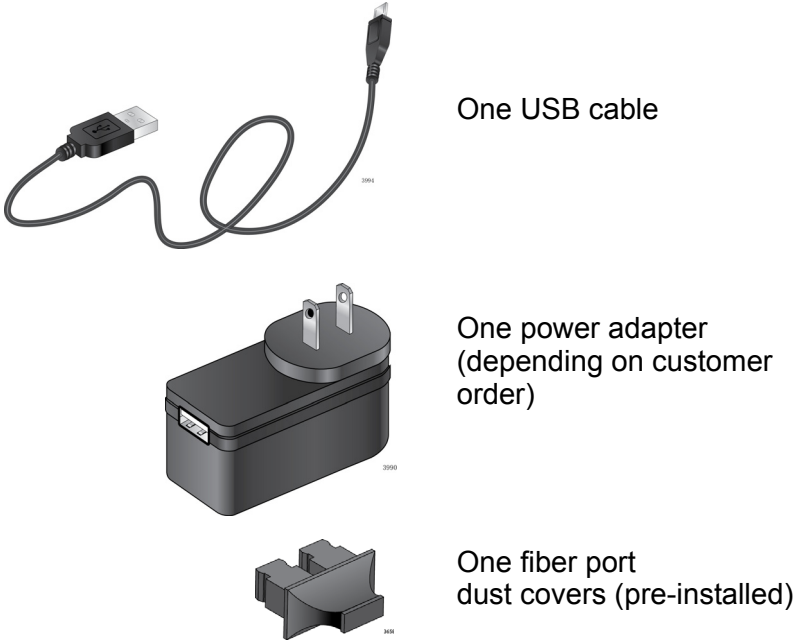


Figure 15. AT-DMC1000/SC and AT-DMC100/SC Shipping Package Contents

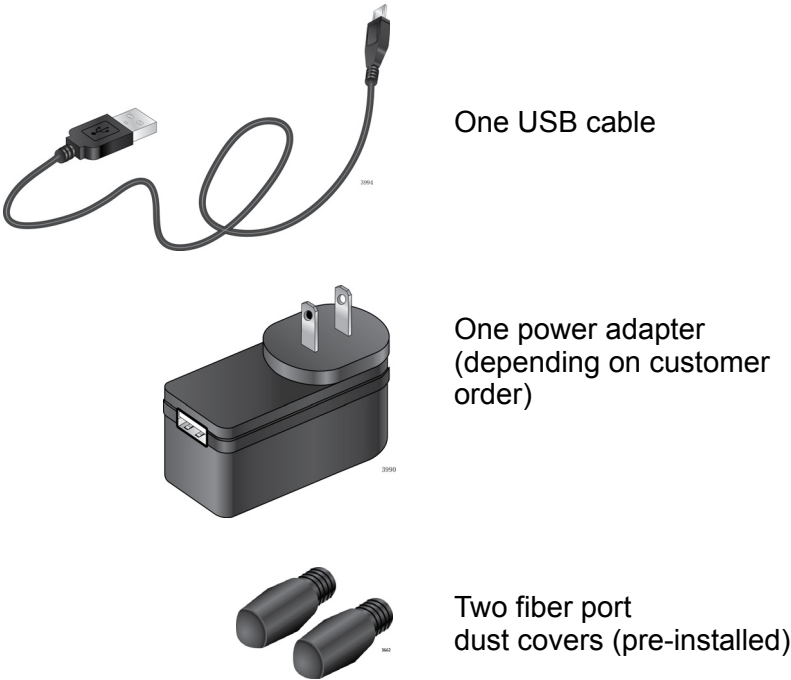
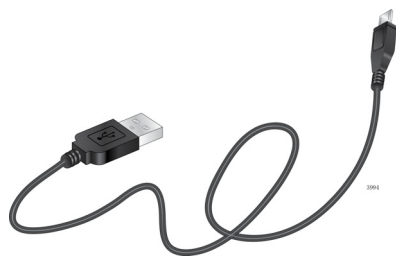
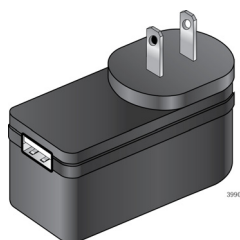


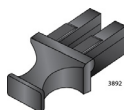
Figure 16. AT-DMC1000/ST and AT-DMC100/ST Shipping Package Contents



One USB cable

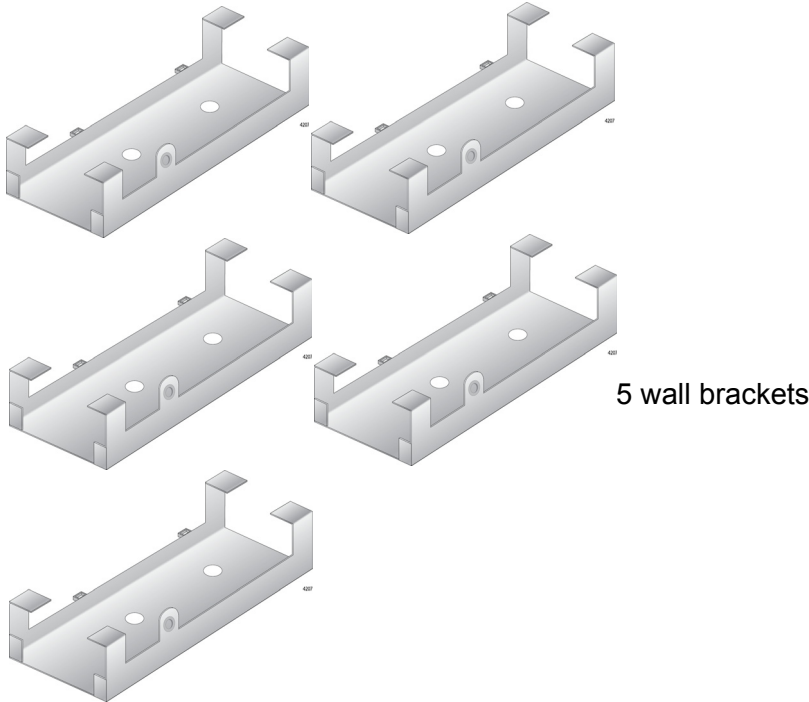


One power adapter
(depending on customer
order)



One fiber port
dust covers (pre-installed)

Figure 17. AT-DMC1000/LC and AT-DMC100/LC Shipping Package Contents



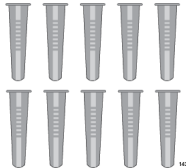
5 wall brackets



5 bracket screws for media converter to wall bracket



10 screw for wall bracket to wall



10 plastic anchors



10 cable ties

Figure 18. AT-DMCWLMT-005 Bracket Kit Shipping Package Contents

Installing the Media Converter

The AT-DMC1000/100 series media converter can be mounted on a desktop or a wall. Select one of the following procedures depending upon your mounting surface:

- “Installing the Media Converter on a Desktop,” next
- “Installing the Media Converter on a Wood Wall,” next.
- “Installing the Media Converter on a Sheetrock, Cinder Block, or Concrete Wall” on page 43.

Installing the Media Converter on a Desktop

To install the media converter on a desktop, perform the following procedure:

1. Place the media converter on a flat, secure surface, such as a desk or table, leaving ample space around the unit for ventilation.
2. Go to “Powering On and Cabling the Media Converter” on page 45.

Installing the Media Converter on a Wood Wall

To install the media converter on a wood wall, perform the following procedure:

1. Provide the following items:
 - One wall-mount bracket (included in the AT-DMCWLMT-005 kit)
 - One screw to attach the media converter to the bracket (included in the AT-DMCWLMT-005 kit)
 - Two flat-head self-tapping screws to attach the wall-mount bracket to the wall (included in the AT-DMCWLMT-005 kit)
 - Phillips-head screwdriver (not provided)
 - Scotch tape (not provided)
 - Wall-mount template (printout of the template in Appendix C, “Wall-mount Template” on page 65)
2. Place the printout of the wall-mount template from Appendix C on page 65 on the wall where you install the media converter.

Allied Telesis recommends the bracket horizontally oriented with the cable tie notches facing either upward or downward. However, if there are space restrictions, the bracket may also be oriented vertically with the cable tie notches facing toward either the left or right. Figure 19 on page 41 shows an example of a recommended orientation.

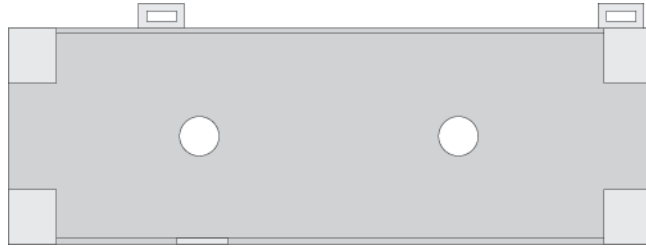


Figure 19. Recommended Orientation

3. Use scotch tape to attach the template on the wall as shown in Figure 20.

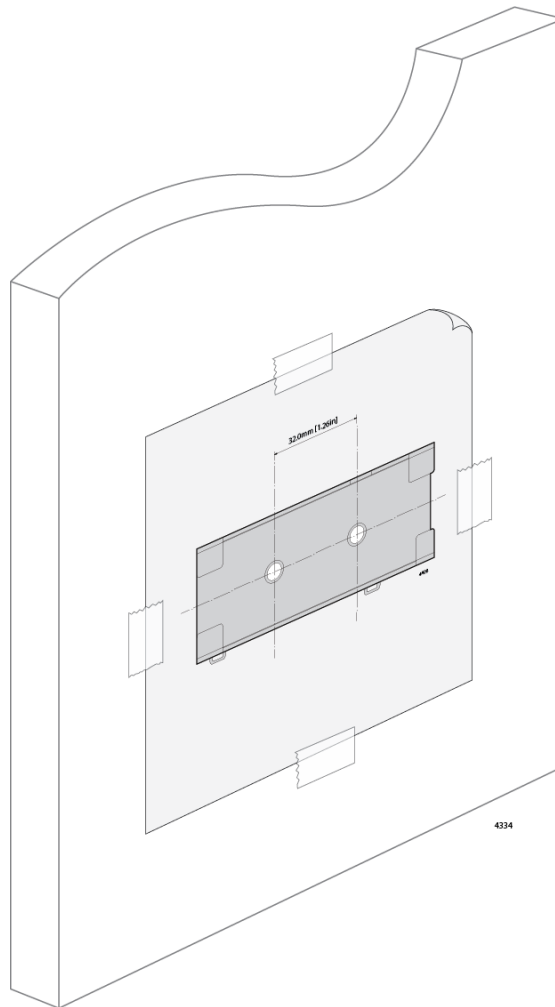


Figure 20. Placing the Template on the Wall

4. Use a Phillips-head screwdriver or hard and pointy object to mark two holes on the wall.
5. Remove the template from the wall.

6. Align the holes on the brackets to the marks on the wall.
7. Secure the bracket to the wall using two wall mounting screws as shown in Figure 21.

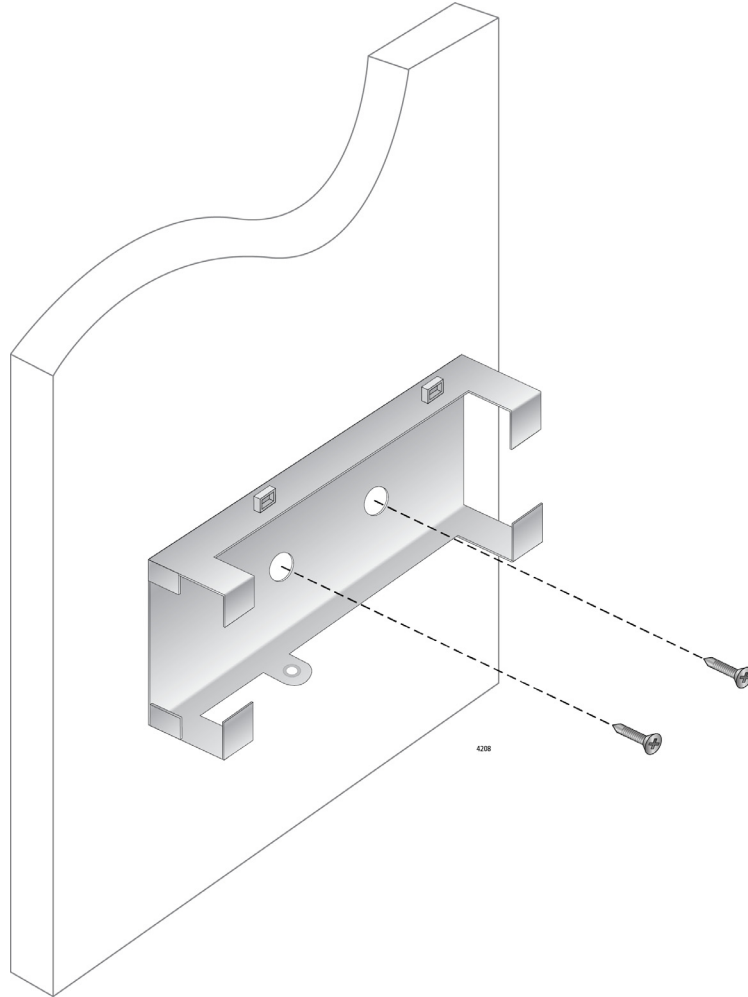


Figure 21. Securing the Mounting Bracket to the Wall

8. Slide the media converter through the mounting bracket with the DIP switch facing outward, as shown in Figure 22 on page 43,

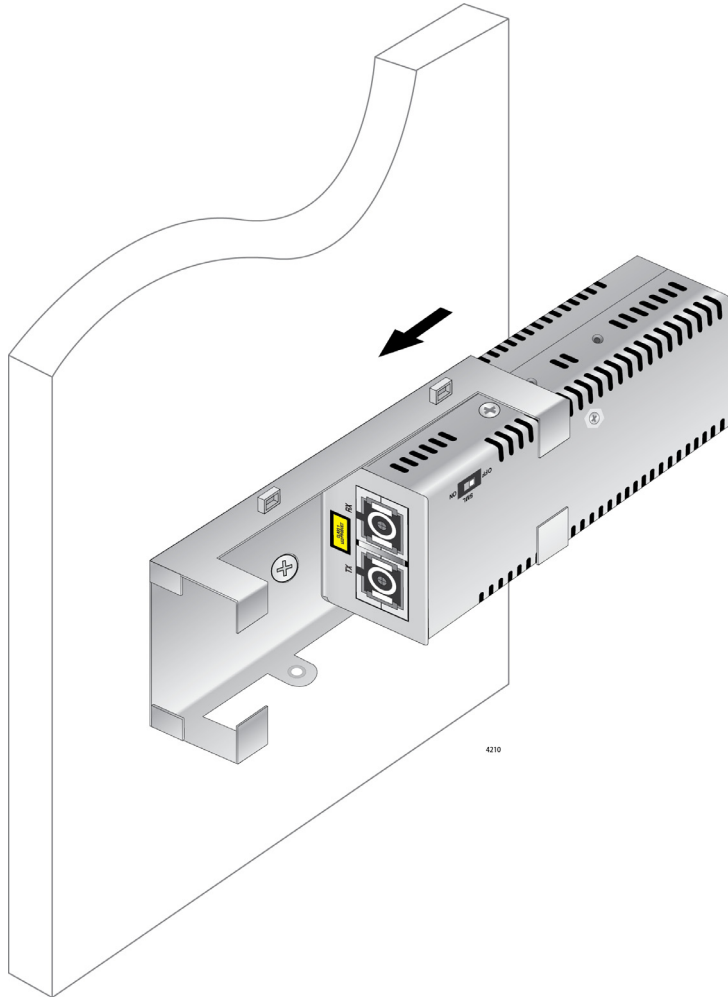


Figure 22. Attaching the Media Converter to the Mounting Bracket

9. Secure the bracket to the media converter with the bracket screw included with the bracket.
10. Go to “Powering On and Cabling the Media Converter” on page 45.

Installing the Media Converter on a Sheetrock, Cinder Block, or Concrete Wall

To install the media converter on a sheetrock, cinder block, or concrete wall, perform the following procedure:

1. Provide the following items:
 - One wall-mount bracket (included in the AT-DMCWLMT-005 kit)
 - One screw to attach the media converter to the bracket (included in the AT-DMCWLMT-005 kit)
 - Two flat-head self-tapping screws to attach the media converter to the wall (included in the AT-DMCWLMT-005 kit)
 - Two anchor plugs to attach the media converter to the wall (included in the AT-DMCWLMT-005 kit)

- Phillips-head screwdriver (not provided)
 - Scotch tape (not provided)
 - Wall-mount template (printout of the template in Appendix C, “Wall-mount Template” on page 65)
2. Place the printout of the wall-mount template from Appendix C on page 65 on the wall where you install the media converter.

Allied Telesis recommends the bracket horizontally oriented with the cable tie notches facing either upward or downward. However, if there are space restrictions, the bracket may also be oriented vertically with the cable tie notches facing toward either the left or right. Figure 19 on page 41 shows an example of a recommended orientation.

3. Use scotch tape to attach the template on the wall as shown in Figure 20 on page 41.
4. Pre-drill two 1/4” (6mm) diameter holes on the template.
5. Remove the template from the wall.
6. Install two plastic anchors into the holes you just made.
7. Align the holes on the wall-mount bracket to the holes that the plastic anchors were inserted.
8. Secure the bracket to the wall using two wall mounting screws. See Figure 21 on page 42.
9. Slide the media converter through the mounting bracket with the DIP switch facing outward, as shown in Figure 22 on page 43.
10. Secure the bracket to the media converter with the screw.
11. Go to “Powering On and Cabling the Media Converter” on page 45.

Powering On and Cabling the Media Converter

Cabling Guidelines

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

- The connector on the cable 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 port has Auto MDI/MDI-X, you may use straight-through twisted-pair cable to connect any type of network device to that port.
- For the fiber optic cables, refer to the cable manufacturer specification for the minimum bend radius.

Applying Power and Connecting the Network Cables

To apply power to the media converter and connect the network cables, perform the following steps:

1. Attach the smaller end of the USB cable to the USB port labeled 5VDC on the back panel of the media converter.
2. Secure the USB cable to the media converter using one of the cable ties (included with the separately purchased wall-mount bracket) as described below and shown in Figure 23 on page 46:
 - a. Insert the cable tie through the integral notch on the mounting bracket adjacent to the USB port.
 - b. Route the cable next to the cable tie.

Note

Do not exceed the minimum bend radius of your fiber optic cable. See the manufacturer specifications for the minimum bend radius of your cable.

- c. Loop the cable tie around the cable.
- d. Fasten the cable tie.

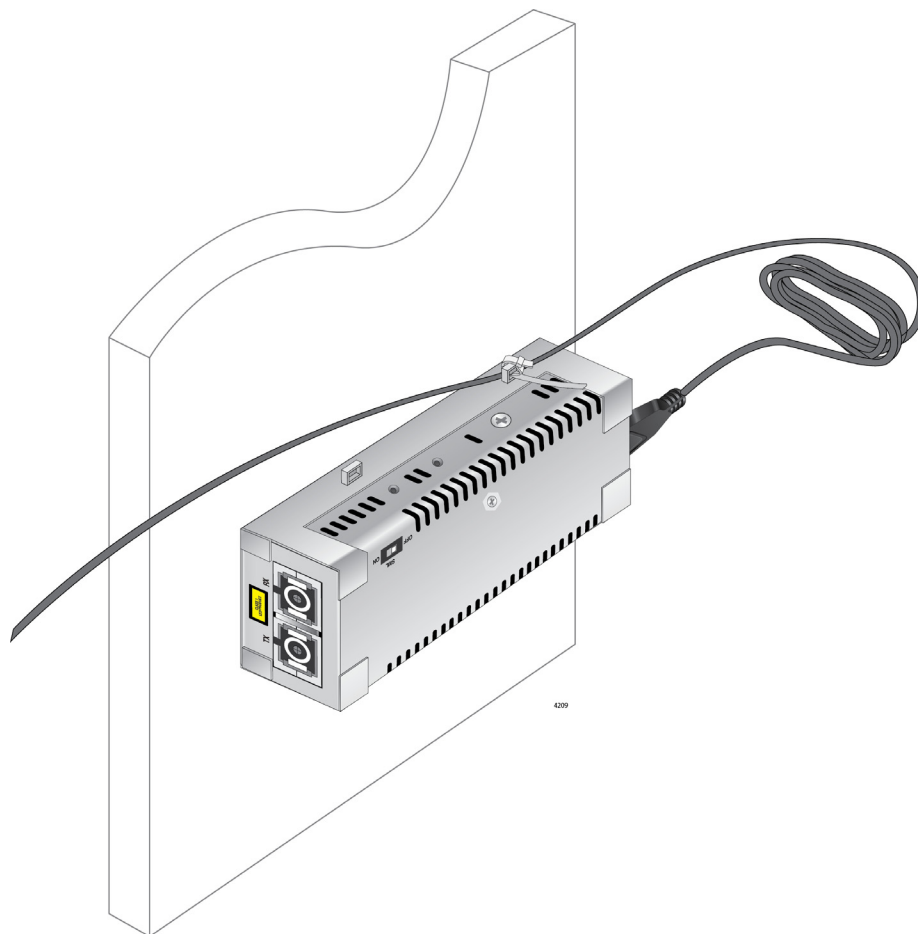


Figure 23. Securing the USB Cable Tie

3. Do one of the following:
 - Attach the other end of the USB cable to the USB port on a PC, as shown in Figure 24 on page 47.

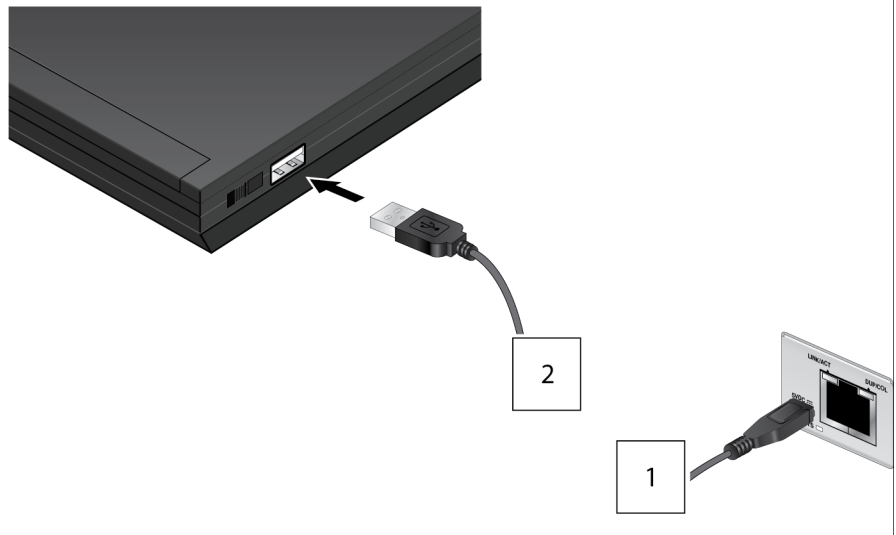


Figure 24. Connecting Power via USB Port

OR

- Attach the other end of the USB cable to the USB port on the power adapter, then plug the power adapter to a power outlet, as shown in Figure 25 on page 48. Refer to “Power Specifications” on page 55 for power requirements.

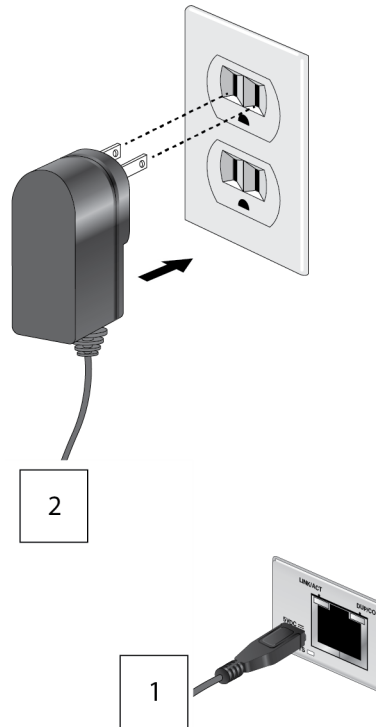


Figure 25. Connecting Power via Power Adapter

4. Verify that the SYS LED is lit green. If the SYS LED is off, refer to “Troubleshooting” on page 51.
5. Remove the dust cover from the fiber-optic connector(s) and connect the cable to the fiber-optic port as shown in Figure 26 on page 49.

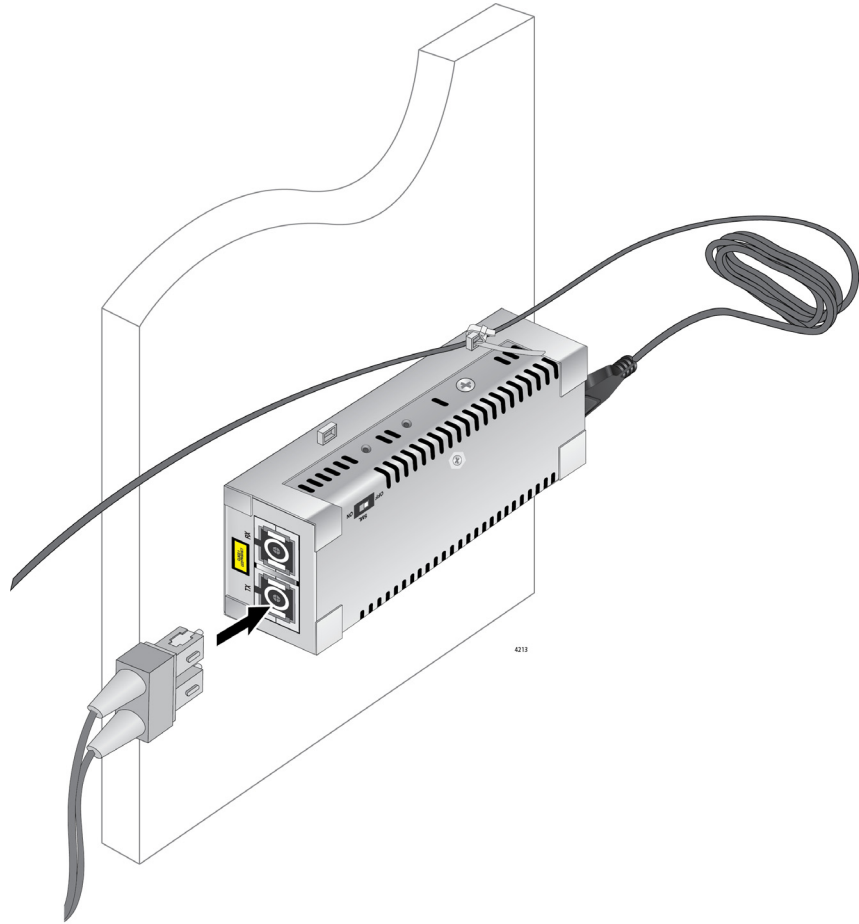


Figure 26. Connecting Cable to Fiber Optic Port

Verify that the media converter's transmitter port (TX) is connected to the end node's receiver port (RX) and that the media converter's receiver port (RX) is connected to the end node's transmitter port (TX).

For example, on the AT-DMC1000/ST media converter, connect the red TX connector on the fiber-optic cable to the transmitter port on the AT-DMC1000/ST media converter and connect the other connector to the receiver port on the end node. Then connect the black RX connector on the fiber-optic cable to the receiver port on the AT-DMC1000/ST media converter and connect the other connector to the transmitter port on the end node.

6. Secure the fiber optic cable to the media converter using the other cable tie as described below and shown in Figure 27:
 - a. Insert the cable tie through the other integral notch on the mounting bracket.
 - b. Route the cables next to the cable tie.

Note

Do not exceed the minimum bend radius of your fiber optic cable. See the manufacturer specifications for the minimum bend radius of your cable.

- c. Loop the cable tie around the cables.
- d. Fasten the cable tie.

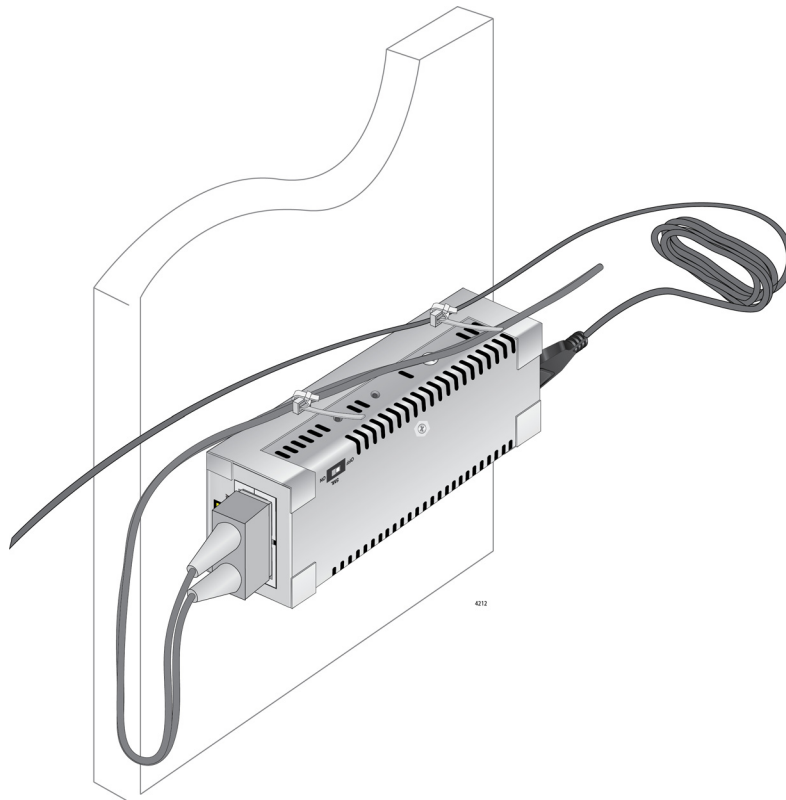


Figure 27. Securing the Fiber Optic Cable Tie

7. Connect the twisted-pair cable to the twisted-pair port.
8. Power on the end nodes.

The media converter is now ready for use.

Chapter 3

Troubleshooting

This chapter contains information on how to troubleshoot the media converter if a problem occurs.

Note

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

Problem 1: The SYS LED on the media converter is off.

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

- Verify that the power cord is securely connected to the power source and to the DC connector on the back panel of the media converter.
- Verify that the power outlet has power by connecting another device to it.
- Try using another power adapter of the same type that came with your media converter.
- Verify that the voltage from the power source is within the required levels for your region.
- An error is present on the unit. Try power cycling the unit.

Problem 2: The SYS LED on the media converter is blinking slowly.

Solution: An internal component on the unit is damaged or not working properly. Try power cycling the unit. If power cycling does not clear the fault, return the unit to Allied Telesis.

Problem 3: The twisted-pair port on the media converter is connected to an end node, but the copper port's LINK/ACT LED is off.

Solutions: The port is unable to establish a link to an end node. Try the following:

- Verify that the end node connected to the twisted-pair port is powered on and is operating properly.
- Verify that the twisted-pair cable is securely connected to the port on the media converter channel and to the port on the remote end-node.

- 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 end-node, such as a powered-off device.
- Try connecting another end node 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 end-node.
- Verify that the twisted-pair cable does not exceed 100 meters (328 feet).
- Verify that the end node connected to the media converter is set to auto-negotiate.
- Verify that you are using the appropriate category of twisted-pair cable: Category 5 or Category 5E.

Note

A 1000Base connection may require 5 to 10 seconds to establish a link.

Problem 4: The fiber port's LINK/ACT LED for the fiber-optic port is off.

Solutions: The fiber-optic port on the transceiver is unable to establish a link to an end node. Try the following:

- Verify that the end node 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 end-node.
- Verify that the end node connected to the media converter is operating at the same speed.
- Verify that the media converter's transmitter port (TX) is connected to the end node's receiver port (RX) and that the media converter's receiver port (RX) is connected to the end node's transmitter port (TX).
- Verify that the correct type of fiber-optic cabling is being used.
- Verify that the wavelength between the media converter and end node matches, and the media converter fiber port is connected to a multi-mode (not single-mode) port on the end node.
- 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 end-node, such as a powered-off device.
- Try connecting another end node 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 end node.
- If the remote end-node is a management 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).

Problem 5: Network performance between the twisted-pair port on the media converter and an end node is slow.

Solution: Check the DUP/COL LED: if it is off and occasionally blinking, there might be a duplex-mode mismatch between the port and the end node. (Off indicates the port has not established a link, and blinking indicates collisions.) This occurs when a twisted-pair port using Auto Negotiation is connected to a device with a fixed duplex mode of full duplex. If this is the cause of the problem, set the end node to auto-negotiate speed and duplex.

Appendix A

Technical Specifications

Below are the technical specifications for the media converters. The specification categories are as follows:

- “Physical Specifications”
- “Power Specifications”
- “Environmental Specifications” on page 56
- “Safety and Electromagnetic Emissions Certifications” on page 56
- “RJ45 Connector and Port Pinouts” on page 56
- “Fiber-Optic Port Specifications” on page 58

Physical Specifications

DMC100/100 Series Media Converter

Table 2. Physical Specifications

Dimensions W x D x H	3.2 cm x 9.1 cm x 2.2 cm (1.3 in x 3.6 in x 0.9 in)
Weight	113g (0.25 lb)

AT-DMCWLMT-005 Wall Bracket

Table 3. Physical Specifications

Dimensions W x D x H	3.9 cm x 9.2 cm x 2.9 cm (1.5 in x 3.6 in x 1.2in)
Weight	45.4g (0.1 lb)

Power Specifications

The following specifications apply to the DC power connector on the media converter.

Table 4. Power Specifications

Input supply voltage	5 VDC
Input current	0.5 A

Environmental Specifications

Table 5. Environmental Specifications

Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-30° C to 70° C (-22° F to 158° F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing
Operating Altitude Range	Up to 3,000 m (9,843 ft)

Safety and Electromagnetic Emissions Certifications

Table 6. Safety and Electromagnetic Emissions Certifications

Safety	UL60950-1, EN60950-1
Emissions (EMI)	FCC Class A, CISPR 22 Class A, EN55022 Class A, C-TICK, VCCI Class A
Immunity	EN55024, EN61000-3-2, EN61000-3-3
Environmental Compliance	EU-RoHS compliant, WEEE China RoHS compliant

RJ45 Connector and Port Pinouts

Figure 28 illustrates the pin layout for the RJ45 connector and port.

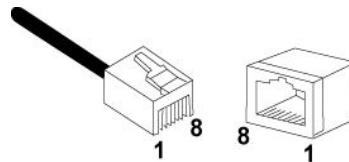


Figure 28. RJ45 Connector and Port Pin Layout

Table 7 lists the pin signals when a port is operating in the MDI configuration at 100 Mbps.

Table 7. MDI Pin Signals (100 Mbps)

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

Table 8 lists the pin signals when a port is operating in the MDI-X configuration at 100 Mbps.

Table 8. MDI-X Pin Signals (100 Mbps)

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

Table 9 lists the pin signals when a port is operating at 1000 Mbps.

Table 9. Pin Signals (1000 Mbps)

Pin	Pair	Signal
1	1	TX and RX+
2	1	TX and RX-
3	2	TX and RX+
4	3	TX and RX+
5	3	TX and RX-
6	2	TX and RX-
7	4	TX and RX+
8	4	TX and RX-

Fiber-Optic Port Specifications

The fiber type for the media converter is multimode.

Table 10 lists fiber-optic port specifications for the AT-DMC1000 media converters.

Table 10. AT-DMC1000 Fiber-Optic Port Specifications

Fiber Optic Diameter (microns)	Optical Wavelength	Launch Power (dBm) ¹		Receive Power (dBm)			Max. Distance
		Min.	Max.	Min.	Typical	Saturation	
50/125	850 nm	-9.5	-4	-17	-20	-3	500 m (1,640 ft)
62.5/125	850 nm	-9	-4	-17	-20	-3	220 m (722 ft)

1. The launch power is measured 1 meter (3.28 feet) from the transmitter.

Table 11 lists fiber-optic port specifications for the AT-DMC100 media converters.

Table 11. AT-DMC100 Fiber-Optic Port Specifications

Fiber Optic Diameter (microns)	Optical Wavelength	Launch Power (dBm) ¹		Receive Power (dBm)			Max. Distance
		Min.	Max.	Min.	Typical	Saturation	
50/125	1310 nm	-19.	-14	-32	-34	-3	2000 m (6,562 ft)
62.5/125	1310 nm	-22.5	-14	-32	-34	-3	2000 m (6,562 ft)

1. The launch power is measured 1 meter (3.28 feet) from the transmitter.

Appendix B

Cleaning Fiber-Optic Connectors

This appendix contains the following sections:

- “Introduction”
- “Using a Cartridge-Type Cleaner” on page 60
- “Using a Swab” on page 62

This appendix describes how to clean fiber-optic connectors.

Introduction

The fiber-optic connector consists of a fiber-optic plug and its adapter. The end of the fiber-optic cable is held in the core of the ferrule in the plug. Light signals are transmitted through the core of the fiber. Even minor smudges, or dirt, on the end face of the fiber (completely invisible to the naked eye) can disrupt light transmission and lead to failure of the component or of the entire system. Therefore, it is of utmost importance to clean all fiber-optic connectors before use.

Figure 29 shows the ferrule in an SC connector.

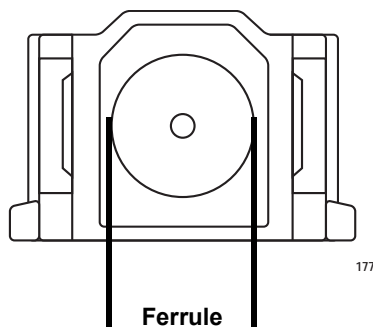


Figure 29. Ferrule in an SC Connector Plug

The end face of an unclean and clean ferrule are shown in Figure 30.

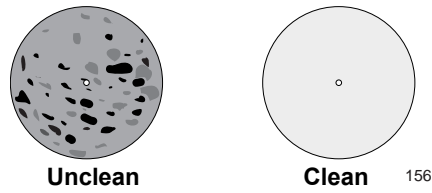


Figure 30. Unclean and Clean Ferrule

Using a Cartridge-Type Cleaner

Fiber-optic cartridge cleaners, shown in Figure 31, are available from many vendors and are typically called “cartridge cleaners”.



Figure 31. Cartridge Cleaner

Note

Do not use compressed air or aerosol air to clean a fiber-optic connector.

To clean a fiber-optic connector using a cartridge cleaner, perform the following procedure.

1. With one hand, hold the cartridge cleaner and push the lever on the cleaning cartridge in the direction of the arrow to expose the cleaning surface, as shown in Figure 32 on page 61.
2. Place the ferrule tip on the exposed cleaning surface and rub the ferrule in a downward direction, as shown in Figure 32 on page 61.

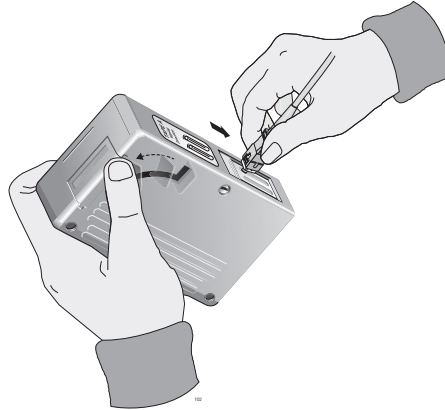


Figure 32. Rubbing the Ferrule Tip on the Cleaning Surface

Note

Rub the ferrule tip on the cleaning surface in one direction only.

3. When you reach the end of the cleaning surface, pick up the ferrule tip, rotate and place it at the top, and rub downwards at least two times.



Caution

Failing to pick up the ferrule tip when you reach the bottom of the cleaning surface can result in static electricity that can damage the fiber-optic cable. ⚡ E82

4. If desired, repeat Step 2 and Step 3.
5. If a fiber inspection scope is available, use the scope to inspect the ferrule end face to make sure that it is clean.
6. Reconnect the cable to the port or protect the ferrule tip with a dust cap.

Note

Always keep a dust cap on a fiber-optic cable when it is not in use.

Note

Do not touch the end face of the ferrule in the connector.



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

Using a Swab

Specially treated swabs, or stick cleaners, are available for cleaning inside connector adapters or hard-to-reach ferrule tips. These swabs, often referred to as “lint-free” or “alcohol-free” swabs, shown in Figure 33, are available from many vendors. Stick cleaners are available in both 2.5 mm and 1.25 mm sizes for use on SC and MU connectors, respectively.

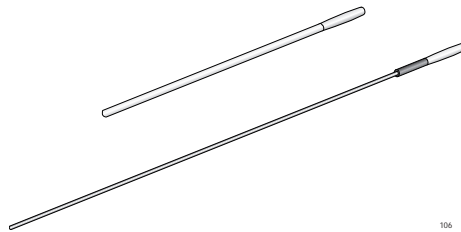


Figure 33. Lint-Free and Alcohol-Free Swabs

Note

Never use a household cotton swab and alcohol to clean a fiber-optic connector. This may leave a residue on the ferrule tip.

Note

Do not use compressed air or aerosol air to clean a fiber-optic connector.

To clean a recessed ferrule using a swab, perform the following procedure.

1. Insert the swab into the adapter as shown in Figure 34. Rub the ferrule tip with the swab.

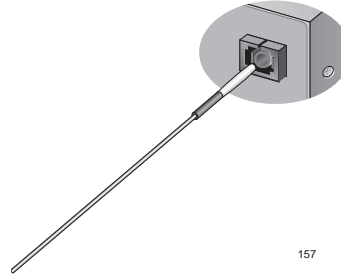


Figure 34. Cleaning a Recessed Ferrule

2. If desired, repeat Step 1.
3. If a fiber inspection scope is available, use the scope to inspect the connector to make sure that it is clean and to check for scratches, pits, or other problems that may affect performance.

Note

Always keep a dust cap on a fiber-optic cable when it is not in use.



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

Appendix C

Wall-mount Template

When installing the media converter on a wall, use the template shown in Figure 35 as a guide.

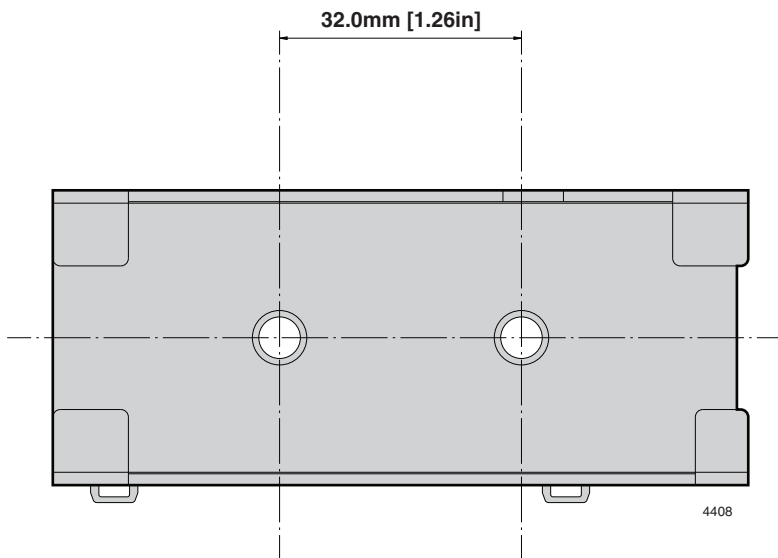


Figure 35. Wall-mount Template

