



*AT-MCF6ST, SC*  
*AT-MCF6VF, SM*  
*AT-MCF12ST, SC*  
*AT-MCF12VF, SM*

*Multichannel Ethernet Media Converters*

*Installation Guide*

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## U.S. 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

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


### RFI Emission

FCC Class A, EN55022 Class A,  
VCCI Class A, ICES Class A  1




**WARNING:** In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.  2

### Immunity


EN50082-1  3


### Electrical Safety


EN60950, UL1950, CSA 950  4





### Laser


EN60825  5

**IMPORTANT:** Appendix B contains translated safety statements for installing this equipment. When you see the , go to Appendix B for the translated safety statement in your language.


**WICHTIG:** Anhang B enthält übersetzte Sicherheitshinweise für die Installation dieses Geräts. Wenn Sie  sehen, schlagen Sie in Anhang B den übersetzten Sicherheitshinweis in Ihrer Sprache nach.


**VIGTIGT:** Tillæg B indeholder oversatte sikkerhedsadvarsler, der vedrører installation af dette udstyr. Når De ser symbolet , skal De slå op i tillæg B og finde de oversatte sikkerhedsadvarsler i Deres eget sprog.

**BELANGRIJK:** Appendix B bevat vertaalde veiligheidsopmerkingen voor het installeren van deze apparatuur. Wanneer u de  ziet, raadpleeg Appendix B voor vertaalde veiligheidsinstructies in uw taal.

**IMPORTANT:** L'annexe B contient les instructions de sécurité relatives à l'installation de cet équipement. Lorsque vous voyez le symbole , reportez-vous à l'annexe B pour consulter la traduction de ces instructions dans votre langue.

**TÄRKEÄÄ:** Liite B sisältää tämän laitteen asentamiseen liittyvät käännetyt turvaohjeet. Kun näet -symbolin, katso käännettyä turvaohjetta liitteestä A.

**IMPORTANTE:** L'Appendice B contiene avvisi di sicurezza tradotti per l'installazione di questa apparecchiatura. Il simbolo , indica di consultare l'Appendice B per l'avviso di sicurezza nella propria lingua.

**VIKTIG:** Tillegg B inneholder oversatt sikkerhetsinformasjon for installering av dette utstyret. Når du ser , åpner du til Tillegg B for å finne den oversatte sikkerhetsinformasjonen på ønsket språk.

**IMPORTANTE:** O Anexo B contém advertências de segurança traduzidas para instalar este equipamento. Quando vir o símbolo ⚠, leia a advertência de segurança traduzida no seu idioma no Anexo A.

**IMPORTANTE:** El Apéndice B contiene mensajes de seguridad traducidos para la instalación de este equipo. Cuando vea el símbolo ⚠, vaya al Apéndice B para ver el mensaje de seguridad traducido a su idioma.

**OBS!** Bilaga B innehåller översatta säkerhetsmeddelanden avseende installationen av denna utrustning. När du ser ⚠, skall du gå till Bilaga B för att läsa det översatta säkerhetsmeddelandet på ditt språk.

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# Preface

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This guide contains instructions on how to install and configure the AT-MCF6xx and AT-MCF12xx Series Multichannel Ethernet Media Converters.

## Where to Find Related Guides

The Allied Telesyn web site at [www.alliedtelesyn.com](http://www.alliedtelesyn.com) offers you an easy way to access the most recent documentation, software, and technical information for all of our products. For product guides, select “Support & Services” from our web site.

## Document Conventions

This guide uses the following conventions:

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### Note

A note provides additional information.

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### Caution

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

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### Warning

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

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## **Contacting Allied Telesyn**

This section provides Allied Telesyn contact information for technical support as well as sales or corporate information.

### **Online Support**

You can request technical support online by accessing the Allied Telesyn Knowledge Base from the following web site: **<http://kb.alliedtelesyn.com>**.

You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

### **E-mail and Telephone Support**

For Technical Support via e-mail or telephone, refer to the Support & Services section of the Allied Telesyn web site: **<http://www.alliedtelesyn.com>**.

### **Returning Products**

Products for return or repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to Allied Telesyn without a RMA number will be returned to the sender at the sender's expense.

To obtain a RMA number, contact Allied Telesyn's Technical Support at our web site: **<http://www.alliedtelesyn.com>**.

### **For Sales or Corporate Information**

You can contact Allied Telesyn for sales or corporate information at our web site: **<http://www.alliedtelesyn.com>**.

To find the contact information for your country, select "Contact Us" then "Worldwide Contacts."



# Chapter 1

## Overview

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The Ethernet AT-MCF6xx and the AT-MCF12xx Series Multichannel Media Converters are designed to extend the reach of your network by converting your twisted pair cabling into fiber optic cabling. These products, which transfer Ethernet data between 10Base-T and 10Base-FL technologies, enable you to quickly and easily interconnect the nodes in your network to distances of 2 kilometers (1.24 miles) to 15 kilometers (9.3 miles), depending on the model. With this product, remote devices and networks, which previously were difficult to interconnect, are easily interconnected to form one integrated network.

The ports on the media converters are grouped into pairs, referred to as “channels,” with each pair consisting of a 10Base-T twisted pair port and a 10Base-FL fiber optic port. Each channel functions as an independent media converter. The Ethernet AT-MCF6xx unit features six channels, providing you with six individual media converters, while the AT-MCF12xx unit features twelve channels, giving you twelve individual media converters.

The twisted pair ports are designed to operate with Category 3 or better cabling at a speed of 10 Mbps. The fiber optic ports also operate at a speed of 10 Mbps and are available in a variety of connector types. The fiber optic ports support IEEE standard Multimode Fiber (MMF) or Single-Mode Fiber (SMF) cable.

The media converters can be installed either as standalone units, such as on a table, or in a standard 19-inch rack. The units are easy to install and do not require any software configuration or software management.

### Optional Management Module

The AT-MCM02 is an optional management module for the AT-MCF6xx and AT-MCF12xx Series Multichannel Media Converters. When installed, the AT-MCM02 module allows you to monitor the operating status of the media converter from a management station on your network using either the Telnet application protocol or an SNMP management program.

## System Models

Table 1 lists the available system models.

**Table 1** Models of the AT-MCF6xx and AT-MCF12xx Series Multichannel Media Converters

| <b>Model</b> | <b>Number of Media Converter Channels</b> | <b>Type of Fiber Optic Connector</b> | <b>Type of Fiber Optic Cabling</b> | <b>Maximum Distance<sup>1</sup></b> |
|--------------|---|--------------------------------------|------------------------------------|-------------------------------------|
| AT-MCF6ST    | 6   | ST                                   | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF6SC    | 6   | SC                                   | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF6VF    | 6   | VF-45                                | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF6SM    | 6   | SC                                   | Single-mode                        | 15 km<br>(9.3 mi)                   |
| AT-MCF12ST   | 12  | ST                                   | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF12SC   | 12  | SC                                   | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF12VF   | 12  | VF-45                                | Multimode                          | 2 km<br>(1.24 mi)                   |
| AT-MCF12SM   | 12  | SC                                   | Single-mode                        | 15 km<br>(9.3 mi)                   |

<sup>1</sup> The maximum distance may be less depending on the duplex mode of the nodes and the type of fiber optic cabling used with the media converter.

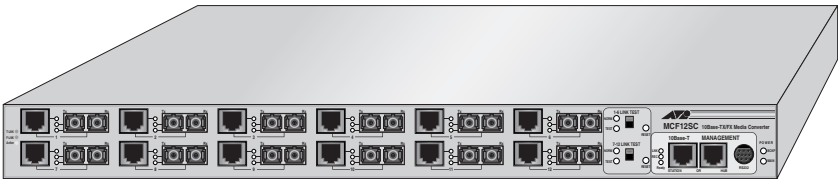
## Front and Back Panel Components

This section describes the features and components of the AT-MCF6xx and AT-MCF12xx Series Multichannel Media Converters. Figure 1 illustrates the front panel of an AT-MCF6xx system.



**Figure 1** Front Panel of the AT-MCF6xx Multichannel Media Converter (Model AT-MCF6SC)

Figure 2 illustrates the front panel of an AT-MCF12xx Series system.



**Figure 2** Front Panel of the AT-MCF12xx Series Multichannel Media Converter (Model AT-MCF12SC)

## Status LEDs

The media converter does not require any software configuration or software management. The status of the unit can be determined by viewing the LEDs on the front of the unit. Table 2 lists the functions of the power supply and Link Test switch LEDs.

**Table 2** Power Supply and Link Test Switch LEDs

| LED  | Color          | Indicates                                       |
|------|----------------|---|
| MAIN | Green          | The main power supply is functioning normally.  |
|      | Flashing Green | The main power supply is failing or has failed. |

**Table 2** Power Supply and Link Test Switch LEDs

| LED  | Color          | Indicates   |
|------|----------------|---|
| MAIN | Green          | The main power supply is functioning normally.  |
|      | Flashing Green | The main power supply is failing or has failed.   |
| BCKP | Green          | The optional redundant power supply, if installed, is functioning normally.                       |
|      | Flashing Green | The optional redundant power supply, if installed, is failing or has failed.                      |
| NORM | Green          | The unit is not performing a link test.   |
| TEST | Amber          | The unit is performing a link test on the fiber optic ports associated with the Link Test switch. |

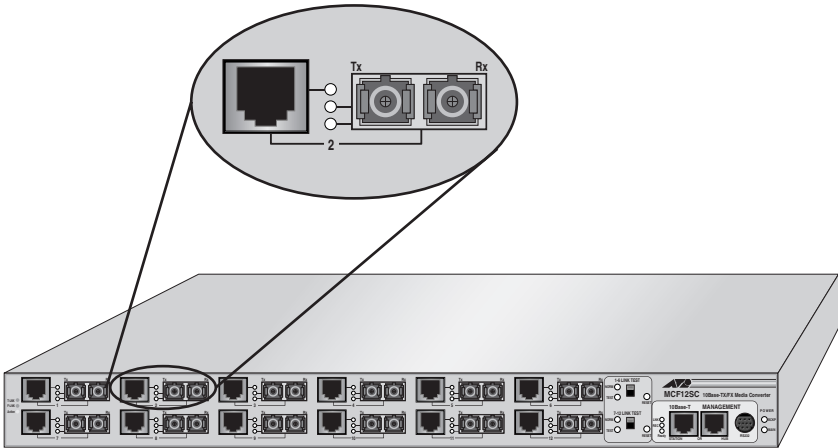
Each twisted pair port has one LED labelled T-LNK that indicates whether or not a link has been established between the port and the node connected to the port. Each fiber optic port has two LEDs, one labelled F-LNK that lights when a link has been established with the node connected to the port and another LED labelled Active that lights when the port is receiving traffic. Table 3 lists the functions of the port LEDs.

**Table 3** Port LEDs

| LED    | Color          | Indicates  |
|--------|----------------|--|
| T-LNK  | Green          | A link exists between the twisted pair port and the node to which the port is connected. |
| F-LNK  | Green          | A link exists between the fiber optic port and the node to which it is connected.        |
| ACTIVE | Flashing Amber | The fiber optic port is receiving data.  |

## Twisted Pair and Fiber Optic Ports

The twisted pair and fiber optic ports on the unit are paired together (see Figure 3). Each pair is referred to as a “channel” and each channel functions as an independent media converter. The AT-MCF6xx unit has six channels while the AT-MCF12xx unit has twelve channels.



**Figure 3** Twisted Pair Port and Fiber Optic Port Channel (Model AT-MCF12SC)

### Twisted Pair Ports

The twisted pair ports are IEEE 802.3 10Base-T compatible, and thus operate at 10 Mbps only. The ports require Category 3 or better cabling and allow for a distance of 100 meters (328 feet).

The devices that you connect to the twisted pair ports must operate at 10 Mbps. To connect a switch, hub, or router to a twisted pair port requires a straight-through cable. To connect a workstation to a twisted pair port requires a crossover cable.

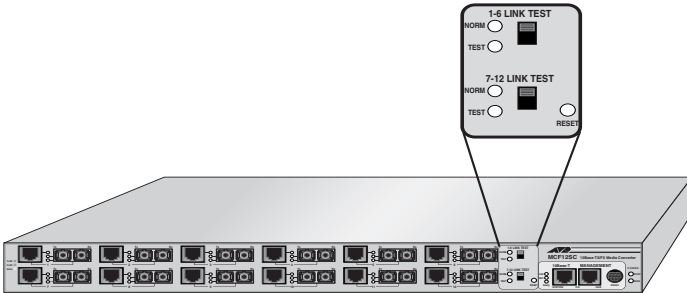
### 10Base-FL Fiber Optic Port

The 10Base-FL fiber optic ports operate at 10 Mbps and, depending on the model, function with multimode or single-mode fiber optic cabling.

The type of connector on the fiber optic ports will depend on the system model you purchased. Refer to Table 1 on page 2 for a list of the available types of connectors.

## Link Test Switch

The Link Test switch is a fast and easy way for you to test the integrity of the fiber optic connections to the fiber optic ports on the media converter (see Figure 4). The AT-MCF6xx unit has one Link Test switch which is used to test all six fiber optic ports on the unit. The AT-MCF12xx unit has two Link Test switches; one switch is used to test the fiber optic ports in channels 1 through 6 and the second switch is used to test the fiber optic ports in channels 7 through 12 on the unit.



**Figure 4** Link Test Switch

The Link Test switch is used after installation to verify that the unit and connections are operating properly, or whenever you need to test the fiber optic ports or the integrity of the fiber connections to the nodes connected to the ports.

The LED next to the Link Test switch indicates the operating mode of the fiber optic ports. If the Test LED is lit amber, a link test is being performed on the fiber optic ports associated with the switch. The section “Troubleshooting” on page 23 contains instructions for performing a link test. Refer to Table 2, “Power Supply and Link Test Switch LEDs,” on page 3 for the Link Test Switch LEDs.

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### Note

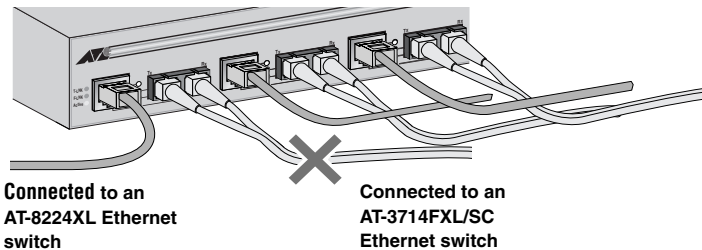
The media converter will not pass network data when the Link Test switch is in the Link Test position. For normal network operations, the switch must be set to the Normal setting.

---

## MissingLink Feature

The MissingLink™ feature enables the twisted pair and fiber optic ports of each channel on the media converter to pass the “Link” status of their connections to each other. When a channel detects a problem with one of the ports, such as the loss of connection to a node, the channel shuts down the connection to the other port of the channel, thus notifying the node that the connection has been lost.

For example, Figure 5 illustrates the two ports of Channel 1 on an AT-MCF6xx unit. The twisted pair port in Channel 1 is connected to a port on an AT-8224XL Ethernet switch and the fiber optic port is connected to an AT-3714FXL/SC Ethernet switch. If the fiber optic cable of the AT-3714FXL/SC switch experiences a failure, the MissingLink feature in the channel will detect the problem and drop the link on the twisted pair port. In this way, the AT-MCF6xx unit notifies the AT-8224XL Ethernet switch that the connection to the AT-3714FXL/SC Ethernet switch has been lost. Had the failure started with the twisted pair cabling, the MissingLink feature would have dropped the link to the fiber optic port.



**Figure 5** MissingLink Example

The value to this type of network monitoring and fault notification is that some hubs and switches can be configured to take a specific action in the event of the loss of connection on a port. In some cases, the unit can be configured to seek a redundant path to a disconnected node or send out a trap to a network management station, and so alert the network administrator of the problem. In the example above, once the AT-8224XL Ethernet switch realizes that its connection has been lost to the media converter, and, consequently, to the AT-3714FXL/SC switch, the switch can send a trap to the management station, alerting the network administrator of the problem.

---

### Note

The MissingLink feature is disabled when you perform a link test with the Link Test switch.

---

## Reset Button

The Reset button allows you to reset the ports on the unit. You might need to reset the ports after completing the installation or after adding or swapping a power supply. You must reset the unit after a power disruption or whenever a general power failure status is observed.

## Power Inlet

The unit does not have an ON/OFF power switch. Power is applied to and removed from the system by connecting and disconnecting the power cable.



### Warning

**Power cord is used as a disconnection device:** To de-energize equipment, disconnect the power cord. *See* 10

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## Optional Redundant Power Supply Slot

The rear panel of the media converter contains an expansion slot for an optional redundant power supply. When installed, the optional power supply shares the load of powering the unit with the standard power supply that comes with the system. If one power supply fails, the remaining unit assumes the role of providing all power to the system, thereby protecting the unit from a system failure.

An LED on the front panel of the unit reflects the status of the optional redundant power supply, if installed. When the redundant power supply is operating properly, its LED is a steady green.

Both the redundant power supply and the main power supply can be “hot swapped.” This means that should either power supply fail, the failed unit can be removed and replaced with a new power supply while the unit is operating, without network operations being interrupted.

Each power supply has its own power cord. By connecting the two power cords to outlets on separate power supply circuits, you increase the protection to your media converter from operational failure should a power circuit fail.

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### Note

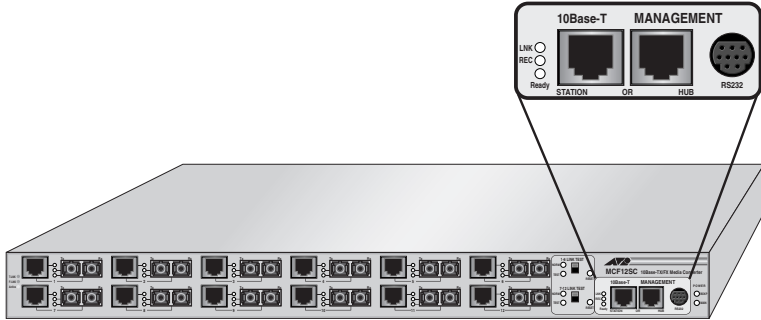
A redundant power supply is strongly recommended for the AT-MCF12xx Media Converter to help avoid a “single point of failure” to as many as twelve links.

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## 10Base-T, Management, and RS-232 Ports

These ports, as shown in Figure 6, are reserved for future development.



**Figure 6** 10Base-T, Management, and RS-232 Ports

## Duplex Mode

The duplex mode refers to the manner in which a node sends and receives data on the network. Depending on its capabilities, a node can operate in either half-duplex mode or full-duplex mode. A node that is operating in half-duplex mode can either send data or receive data, but not both at the same time. A node that is operating in full-duplex mode can send and receive data simultaneously. Naturally, the best network performance is achieved when a node can operate at full-duplex, since the node is able to both send and receive data at the same time.

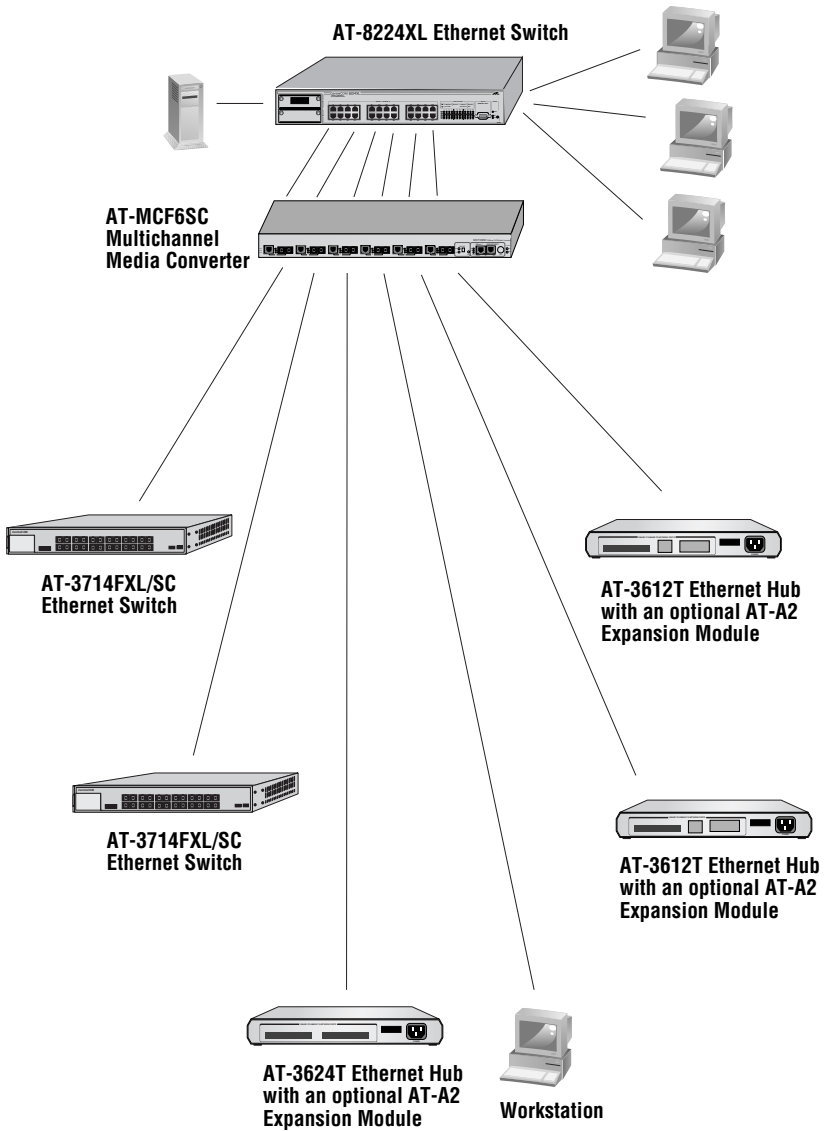
The AT-MCF6xx and AT-MCF12xx Series Multichannel Media Converters are transparent to the duplex mode of the nodes that are connected to their ports. That is, the units can operate with nodes operating at either half-duplex or full-duplex mode. However, the two nodes that are connected to the same channel on the media converter must operate with the same duplex mode.

For example, assume that you connected a node operating at half-duplex to the twisted pair port of a channel on the media converter and a node operating at full-duplex to the fiber optic port of the same channel. This would be an invalid configuration and could adversely affect the performance of the network. Either the node connected to the twisted pair port would have to be changed to full-duplex (if it supports that capability), or the node connected to the fiber optic port would have to be changed to half-duplex.

## Network Topology

The value of the AT-MCF6xx and AT-MCF12xx Series Multichannel Media Converters is that they allow you to extend the reach of your network and to interconnect widespread network devices and subnetworks into one integrated network.

Figure 7 on page 11 illustrates an example of a network that incorporates a model AT-MCF6SC unit to interconnect dispersed network devices. The model has SC type fiber optic connectors and a range of 2 kilometers (1.24 miles) on the fiber optic ports. At the top of the topology is an AT-8224XL Fast Ethernet switch. Six of the twisted pair ports on the switch are connected to the six twisted pair ports on the AT-MCF6SC media converter. Fiber optic cabling from the AT-MCF6SC unit connects the media converter to the switches, hubs, and workstation that comprise the network.



**Figure 7** Network Topology Example



## **Chapter 2**

# **Installation**

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The following sections explain how to install the unit onto your network. The unit can be installed as a standalone system (such as on a desk) or in a standard 19-inch rack.

### **Selecting a Site for the Media Converter**

Be sure to observe the following requirements when choosing a site for your media converter:

- ❑ Select a site that is dust-free and moisture-free.
- ❑ Do not block the ventilation openings on the unit. The site should allow for proper heat dissipation from and adequate ventilation around the media converter.
- ❑ Be sure that the site will allow you to easily access the twisted pair cables, fiber cables, and power cord.
- ❑ Use dedicated power circuits or power conditioners to supply reliable power to the unit.
- ❑ Keep the media converter and twisted pair cabling away from sources of electrical noise, such as radios, electric motors, transmitters, broadband amplifiers, power lines, and fluorescent fixtures.

### **Planning the Installation**

Refer to the following guidelines when planning the installation of the media converter:

- ❑ All nodes connected to the ports on the media converter must operate at 10 Mbps.
- ❑ The nodes connected to a same channel on the media converter must operate with the same duplex mode, either half-duplex or full-duplex. For example, you cannot connect a node operating at half-duplex to a twisted pair port and another node operating at full-duplex to the fiber optic port of the same channel on the media converter.

- Refer to Table 4 for the twisted pair cabling specifications.

**Table 4** Twisted Pair Cabling Specifications

| <b>Specifications</b> |  |
|-----------------------|--|
| Type                  | Shielded or unshielded twisted pair                    |
| Cable Category        | 3 or better  |
| Maximum Distance      | 100 meters (328 feet)                                  |
| External Device       | Network adapter card, repeater, switch, router, or hub |

- Use a straight-through cable to connect a hub or switch to a twisted pair port on the media converter. Use a crossover cable to connect a workstation to a twisted pair port on the unit.
- Refer to Table q for the fiber optic cabling specifications.

**Table 5** Fiber Optic Cabling Specifications

| <b>Specifications</b>  |   |
|------------------------|---|
| Media                  | 50/125 micron multimode fiber (MMF)<br>62.5/125 micron multimode fiber (MMF)<br>9/125 micron single-mode fiber <sup>1</sup> (SMF) |
| Maximum Segment Length | Multi-mode fiber: 2 kilometers (1.24 miles)<br>Single mode fiber: 15 kilometers (9.3 miles) <sup>2</sup>                          |
| External Devices       | Network Adapter Card, Repeater, Switch, or Router   |

<sup>1</sup> The single-mode fiber optic transmitter is rated as a Class 1 laser.

<sup>2</sup> This applies to the AT-MCF6SM and AT-MCF12SM models only.

Check the attenuation on the fiber optic cabling after installation. Refer to Table for the maximum allowable loss budget.

**Table 6** Maximum Allowable Loss Budget

| <b>Model</b> | <b>Maximum Allowable Loss Budget</b> | <b>Wavelength</b> |
|--------------|--------------------------------------|-------------------|
| AT-MCF6ST    | 20 dB (MMF)                          | 850 nm            |
| AT-MCF6SC    | 20 dB (MMF)                          | 850 nm            |
| AT-MCF6VF    | 20 dB (MMF)                          | 850 nm            |
| AT-MCF6SM    | 13 dB (SMF)                          | 1310 nm           |
| AT-MCF12ST   | 20 dB (MMF)                          | 850 nm            |
| AT-MCF12SC   | 20 dB (MMF)                          | 850 nm            |
| AT-MCF12VF   | 20 dB (MMF)                          | 850 nm            |
| AT-MCF12SM   | 13 dB (SMF)                          | 1310 nm           |

## Checking the Media Converter Package

Your media converter package should include the following items:

- One AT-MCF6xx or AT-MCF12xx Multichannel Media Converter
- Rack mounting kit
- One AC power cord
- Four self-adhesive rubber feet
- This installation guide
- Warranty card

If any of the above items are missing or damaged, contact your Allied Telesyn representative.

## Reviewing Safety Precautions

Please review the following safety precautions before you install the media converter.



**Laser**

Class 1 laser product. ⚡ 6

---



**Laser**

Do not stare into the laser beam. ⚡ 7

---



**Warning**

**Electric Shock Hazard:** To prevent electric shock, do not remove the cover. There are no user-serviceable parts inside. The 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. ⚡ 8

---



**Warning**

**Lightning Danger:** Do not work on equipment or cables during periods of lightening activity. ⚡ 9

---



**Warning**

**Power cord is used as a disconnection device:** To de-energize equipment, disconnect the power cord. ⚡ 10

---



**Warning**

**Electrical-Type Class 1 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. ⚡ 11

---



**Caution**

**Pluggable Equipment:** The socket outlet shall be installed near the equipment and shall be easily accessible. ⚡ 12

---



**Caution**

**Air vents:** The air vents must not be blocked on the unit and must have free access to the room ambient air for cooling. ⚡ 13

---



**Caution**

**Operating Temperature:** This product is designed for a maximum ambient temperature of 40°C. *↪* 14

---

**Caution**

**All Countries:** Install this product in accordance with local and National Electric Codes. *↪* 15

---

## Installing the Media Converter as a Standalone Unit

The media converter can be installed as a standalone unit (for instance, on a table) or in a standard 19-inch rack. To install the unit in a rack, go to the procedure “Installing the Media Converter in a Rack” on page 19. To install the media converter as a standalone unit, perform these steps:

1. Remove all equipment from the shipping package and store the package in a safe place.

**Caution**

Do not remove the dust covers from the fiber optic ports on the media converter until you are ready to connect the cables. Dust contamination can adversely impact the operation of the fiber optic ports.

---

2. Select a level, secure surface for the media converter.
3. Remove the adhesive protecting sheet from the rubber feet included with the unit and affix the feet to the corners on the bottom of the media converter, approximately 1 centimeters (0.39 inches) from each edge.
4. Place the device horizontally on a hard, clean surface (for example, a table or desk), leaving free space around it for ventilation.

---

**Note**

Do not place the unit on other active, heat generating equipment and avoid placing other devices on top of the media converter.

---

5. If you purchased a redundant power supply unit, install the unit by following the directions included with the unit.

---

**Note**

Do not remove the back panel covering the expansion slot for the redundant power supply unless you intend to install the unit.

---

6. Plug the power cord into the back of the unit and plug the other end of the power cord into a power outlet. If you installed an optional redundant power supply, plug its power cord into the power supply and the other end into a power outlet.



**Caution**

When connecting a power cord, you should always plug the power cord into the media converter first. Only after it has been securely installed should you plug the power cord into a power source.

---



**Warning**

**Power cord is used as a disconnection device:** To de-energize equipment, disconnect the power cord. *See* 10

---

If you installed a redundant power supply, you should connect the media converter's two power cords to power outlets that are on different power circuits. This will protect the media converter from a loss of power should a power circuit fail.

7. Remove the dust covers from the fiber optic ports.



**Laser**

Do not stare into the laser beam. *See* 7

---

8. Connect the twisted pair cables and fiber optic cables to their respective ports. As you connect the cables, observe these guidelines:
  - To connect a hub or switch to a twisted pair port, use a straight-through cable. To connect a workstation to a twisted pair port, use a crossover cable.
  - With ST fiber optic connectors, be sure to correctly connect the cables to the port connectors: that is, the transmitting (TX) fiber optic cable should be connected to the RX port and the receiving cable should be connected to the TX port.
9. Press the Reset button on the front of the unit.
10. Go to the procedure "Troubleshooting" on page 23 for instructions on how to test the media converter.

## Installing the Media Converter in a Rack

To install the unit in a 19-inch rack, perform the following steps:

1. Remove all equipment from the shipping package and store the package in a safe place.




---

### Caution

Do not remove the dust covers from the fiber optic ports on the media converter until you are ready to connect the cables. Dust contamination can adversely impact the operation of the fiber optic ports.

---

2. Select a level, secure surface to prepare the media converter.
3. If you purchased an optional redundant power supply for the switch, install the redundant power supply by following the directions included with the unit.

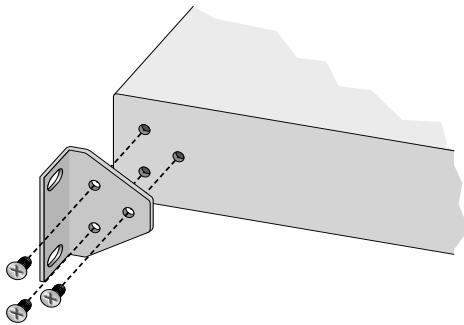
---

### Note

Do not remove the back panel covering the expansion slot for the optional redundant power supply unless you intend to install the unit.

---

4. Place the mounting bracket over the mounting holes on one side of the unit. Insert the three screws provided with the unit and tighten with a suitable screwdriver, as shown in Figure 8.



**Figure 8** Installing the Mounting Bracket

5. Repeat Step 4 to install the remaining bracket on the other side of the unit.
6. Insert the unit into a 19-inch rack and secure with suitable screws (not provided).

---

**Note**

To ensure adequate cooling, there should be a minimum of 1 centimeter (0.39 inches) of ventilation space between the unit and any other device installed in the rack.

---

7. Plug the power cord into the back of the unit and plug the other end of the power cord into a power outlet. If you installed an optional redundant power supply, plug its power cord into the power supply and the other end into a power outlet.

**Caution**

When connecting a power cord, you should always plug the power cord into the media converter first. Only after it has been securely installed should you plug the power cord into a power source.

---

**Warning**

**Power cord is used as a disconnection device:** To de-energize equipment, disconnect the power cord. ⚡ 10

---

If you installed a redundant power supply, you should connect the media converter's two power cords to power outlets that are on different circuits. This will protect the unit from a loss of power should a power circuit fail.

8. Remove the dust covers from the fiber optic ports.

**Laser**

Do not stare into the laser beam. ⚡ 7

---

9. Connect the twisted pair cables and fiber optic cables to their respective ports. As you connect the cables, observe these guidelines:
  - ❑ To connect a hub or switch to a twisted pair port, use a straight-through cable. To connect a workstation to a twisted pair port, use a crossover cable.
  - ❑ With ST fiber optic connectors, be sure to correctly connect the cables to the port connectors: that is, the transmitting (TX) fiber optic cable should be connected to the RX port and the receiving cable should be connected to the TX port.
10. Press the Reset button on the front of the unit.
11. Go to the next section, "Verifying the Installation," for instructions on how to test the media converter.

## Verifying the Installation

The procedure in this section has you test the unit by performing a link test. A link test will determine whether each fiber optic port on the unit is receiving a signal from the node connected to it. You should perform this test immediately after you have installed the unit or whenever you need to test the integrity of the fiber optic connections to the fiber optic ports on the unit. To perform a link test, follow these steps:

1. Verify that the Main LED is a steady green, indicating that the unit is receiving power.
2. If you installed an optional redundant power supply, check that the BCKP LED is a steady green.
3. Check to be sure that the fans for the main power supply and the redundant power supply, if installed, are operating.
4. Set the Link Test switch to the Test position. If you are installing an AT-MCF12xx unit, set both Link Test switches to the Test position.

The Test LED next to the Link Test switch(es) should be amber.

---

### Note

In order to run a link test, the nodes connected to the ports on the multichannel media converter must be powered on and operating.

---

5. Check that the F-LNK LED for each fiber optic port on the unit is lit, indicating a link exists between the fiber optic port on the multichannel media converter and the node to which the port is connected.
6. If one or more of the F-LNK LEDs for the fiber optic ports are not lit, go to the section “Troubleshooting” on page 23.
7. Set the Link Test switch(es) to Normal.

---

### Note

The multichannel media converter will not pass network data when the Link Test switch is in the Link Test position. For normal network operations, the switch must be set to the Normal setting.

---

The multichannel media converter is now ready for normal network operations. For information on the status LEDs, refer to “Status LEDs” on page 3.



## **Chapter 3**

# **Troubleshooting**

---

This section contains guidelines for troubleshooting the media converter in the event a problem occurs.

If the Main LED is OFF, check the following:

- Check to be sure that the power cord for the main power supply is securely connected to the power supply and the power outlet.
- Check that the power outlet has power by connecting another device to it.
- Check that the input power source is within the acceptable range. For AC models, the range is between 100 and 240 VAC.

If an optional redundant power supply is installed but the BCKP LED is OFF, check the following:

- Check to be sure that the power cord for the redundant power supply is securely connected to the unit and the power outlet.
- Check that the power outlet has power by connecting another device to it.
- Press the Reset button on the front of the media converter to reset the unit.
- Check that the input power source is within the acceptable range. For AC models, the range is between 100 and 240 VAC.

If the F-LNK LED for a fiber optic port is OFF, check the following:

- Check to be sure the node connected to the port is powered ON.
- Check to be sure that the fiber optic cable is properly connected to the fiber optic port.
- Check to be sure that the node connected to the port is operating at 10 Mbps.
- Verify that the maximum allowable loss budget on the fiber optic cable is within acceptable limits (see Table 4).

If the T-LNK LED for a twisted pair port is OFF, check the following:

- Check to be sure the node connected to the port is powered ON.
- Check to be sure that the twisted pair cable is securely connected to both the port on the media converter and the node.
- If the twisted pair port is connected to a workstation, check to be sure that you used a crossover cable. (A crossover cable is not necessary when connecting a hub or switch to a twisted pair port on the media converter.)

If a Link LED for a port is lit but there is communication problem with the port, check the following:

- Check to be sure that the node connected to the port is operating at 10 Mbps.
- Check to be sure that the duplex setting is set the same on the two nodes connected to the twisted pair and fiber optic ports of the channel. For example, if the node connected to a twisted pair port is set to full-duplex, then the node connected to its corresponding fiber optic port must also be set to full-duplex.

## Resetting the Unit

In some instances you might need to reset the unit. To do so, press the Reset button on the front of the unit for about 1 second. The LEDs on the unit will flash once, after which the unit is ready for normal network operations.



# **Appendix A**

## **Technical Specifications**

---

### **Physical Specifications**

|             |  |
|-------------|--|
| Dimensions: | W x H x D<br>44.1 cm x 26.5 cm x 4.4 cm<br>(17.3 in x 10.4 in x 1.75 in) |
| Weight:     | 4.2 kg (9.2 lbs)   |

### **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% (noncondensing)          |
| Storage Humidity:       | 5% to 95% (noncondensing)          |
| Operating Altitude:     | 3,000 m (approx. 10,000 ft)        |
| Non-operating Altitude: | 4,000 m (approx. 13,100 ft)        |

### **Power Specifications**

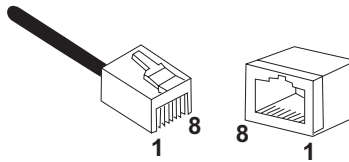
|                       |                                  |
|-----------------------|----------------------------------|
| Input Supply Voltage: |                                  |
| AC Power Models       | 110-120/200-240V AC, 50 to 60 Hz |
| DC Power Models       | 48V DC, 2A                       |
| Power Consumption:    |                                  |
| AC Power Models       | 35 watts maximum                 |
| DC Power Models       | 51 watts maximum                 |

## Safety and Electromagnetic Emissions Certifications

|                    |  |
|--------------------|--|
| EMI/RFI:           | FCC Class A, EN55022 Class A, VCCI Class A, ICES Class A |
| Electrical Safety: | EN60950, UL1950, CSA950                                  |
| Immunity:          | EN50082-1  |
| Laser:             | EN60825  |

## Pinout Assignments

Figure 9 shows the pinout assignments for the RJ-45 connector.



**Figure 9** RJ-45 Pin Assignments

Table 7 lists the RJ-45 connector pins and their signals used in Port 1 - Port 4 when these port are operating in either MDI or MDI-X configuration.

**Table 7** RJ-45 Pin Signals used in Ports 1 - 4

| MDI-X (Default) | Signal | MDI | Signal |
|-----------------|--------|-----|--------|
| 1               | RX+    | 1   | TX+    |
| 2               | RX-    | 2   | TX-    |
| 3               | TX+    | 3   | RX+    |
| 4               | -      | 4   | -      |
| 5               | -      | 5   | -      |
| 6               | TX-    | 6   | RX-    |
| 7               | -      | 7   | -      |
| 8               | -      | 8   | -      |

## **Appendix B**

# ***Translated Safety and Emission Information***

---

**Important:** This appendix contains multiple-language translations for the safety statements in this guide.

**Wichtig:** Dieser Anhang enthält Übersetzungen der in diesem Handbuch enthaltenen Sicherheitshinweise in mehreren Sprachen.

**Vigtigt:** Dette tillæg indeholder oversættelser i flere sprog af sikkerhedsadvarslerne i denne håndbog.

**Belangrijk:** Deze appendix bevat vertalingen in meerdere talen van de veiligheidsopmerkingen in deze gids.

**Important:** Cette annexe contient la traduction en plusieurs langues des instructions de sécurité figurant dans ce guide.

**Tärkeää:** Tämä liite sisältää tässä oppaassa esiintyvät turvaohjeet usealla kielellä.

**Importante:** questa appendice contiene traduzioni in più lingue degli avvisi di sicurezza di questa guida.

**Viktig:** Dette tillegget inneholder oversettelser til flere språk av sikkerhetsinformasjonen i denne veiledningen.

**Importante:** Este anexo contém traduções em vários idiomas das advertências de segurança neste guia.

**Importante:** Este apéndice contiene traducciones en múltiples idiomas de los mensajes de seguridad incluidos en esta guía.

**Obs!** Denna bilaga innehåller flerspråkiga översättningar av säkerhetsmeddelandena i denna handledning.

**Standards:** This product meets the following standards:

**U.S. 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**



This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.











- 1 RFI Emission FCC Class A, EN55022 Class A, VCCI Class A, ICES Class A
- 2  **WARNING:** In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
- 3 **Immunity** EN50082-1
- 4 **Electrical Safety** EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- 6  **SAFETY**
- 7  **WARNING:** Class 1 Laser product.
- 8  **WARNING:** Do not stare into the laser beam.
- 9  **ELECTRICAL NOTICES**  
**WARNING: ELECTRIC SHOCK HAZARD**  
 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.
- 10  **LIGHTNING DANGER**  
**DANGER: DO NOT WORK** on equipment or CABLES during periods of LIGHTNING ACTIVITY.

- 10  **CAUTION: POWER CORD IS USED AS A DISCONNECTION DEVICE. TO DE-ENERGIZE EQUIPMENT,** disconnect the power cord.
- 11  **ELECTRICAL - TYPE CLASS 1 EQUIPMENT**  
**THIS EQUIPMENT MUST BE EARTHED.** 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.
- 12  **PLUGGABLE EQUIPMENT,** the socket outlet shall be installed near the equipment and shall be easily accessible.
- 13  **CAUTION:** Air vents must not be blocked and must have free access to the room ambient air for cooling.
- 14  **OPERATING TEMPERATURE:** This product is designed for a maximum ambient temperature of 40° degrees C.
- 15  **ALL COUNTRIES:** Install product in accordance with local and National Electrical Codes.












**Normen:** Dieses Produkt erfüllt die Anforderungen der nachfolgenden Normen.

- 1 Hochfrequenzstörung EN55022 Klasse A
- 2  **WARNUNG:** Bei Verwendung zu Hause kann dieses Produkt Funkstörungen hervorrufen. In diesem Fall müßte der Anwender angemessene Gegenmaßnahmen ergreifen.
- 3 Störsicherheit EN50082-1
- 4 Elektrische Sicherheit EN60950, UL1950, CSA 950
- 5  **Laser** EN60825













**SICHERHEIT**

- 6  **WARNUNG:** Laserprodukt der Klasse 1.
- 7  **WARNUNG:** Nicht direkt in den Strahl blicken.
- 8  **ACHTUNG: GEFÄHRLICHE SPANNUNG**  
Das Gehäuse nicht öffnen. Das Gerät enthält keine vom Benutzer wartbaren Teile. Das Gerät steht unter Hochspannung und darf nur von qualifiziertem technischem Personal geöffnet werden. Vor Anschluß der LAN-Kabel, Gerät vom Netz trennen.
- 9  **GEFAHR DURCH BLITZSCHLAG**  
**GEFAHR:** Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen.
- 10  **VORSICHT: DAS NETZKABEL DIEN TUM ZUM TRENNEN DER STROMVERSORGUNG. ZUR TRENNUNG VOM NETZ, KABEL AUS DER STECKDOSE ZIEHEN.**
- 11  **GERÄTE DER KLASSE 1**  
**DIESE GERÄTE MÜSSEN GEERDET SEIN.** Der Netzstecker darf nur mit einer vorschriftsmäßig geerdeten Steckdose verbunden werden. Ein unvorschriftsmäßiger Anschluß kann die Metallteile des Gehäuses unter gefährliche elektrische Spannungen setzen.
- 12  **STECKBARES GERÄT:** Die Anschlußbuchse sollte in der Nähe der Einrichtung angebracht werden und leicht zugänglich sein."
- 13  **VORSICHT**  
Die Entlüftungsöffnungen dürfen nicht versperrt sein und müssen zum Kühlen freien Zugang zur Raumluft haben.
- 14  **BETRIEBSTEMPERATUR:** Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 40° C entworfen.
- 15  **ALLE LÄNDER:** Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.

**Standarder:** Dette produkt tilfredsstiller de følgende standarder.













- 1 Radiofrekvens forstyrrelsesemission EN55022 Klasse A
- 2  **ADVARSEL:** I et hjemligt miljø kunne dette produkt forårsage radio forstyrrelse. Bliver det tilfældet, påkræves brugeren muligvis at tage tilstrækkelige foranstaltninger.
- 3 Immunitet EN50082-1
- 4 Elektrisk sikkerhed EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- SIKKERHED**
- 6  **ADVARSEL** Laserprodukt av klasse 1.
- 7  **ADVARSEL** Stirr ikke på strålen.
- 8  **ELEKTRISKE FORHOLDSREGLER**  
**ADVARSEL: RISIKO FOR ELEKTRISK STØD**  
For at forebygge ELEKTRISK stød, undlad at åbne apparatet. Der er ingen indre dele, der kan reparerer af brugeren. Denne enhed indeholder LIVSFARLIGE STRØMSPÆNDINGER og bør kun åbnes af en uddannet og kvalificeret tekniker. For at undgå risiko for ELEKTRISK STØD, afbrydes den elektriske strøm til produktet, før LAN-kablerne monteres eller afmonteres.
- 9  **FARE UNDER UVEJR**  
**FARE:** UNDLAD at arbejde på udstyr eller KABLER i perioder med LYNAKTIVITET.
- 10  **ADVARSEL: DEN STRØMFØRENDE LEDNING BRUGES TIL AT AFBRYDE STRØMMEN. SKAL STRØMMEN TIL APPARATET AFBRYDES, tages ledningen ud af stikket.**
- 11  **ELEKTRISK - KLASSE 1-UDSTYR**  
**DETTE UDSTYR KRÆVER JORDFORBINDELSE.** Stikket skal være forbundet med en korrekt installeret jordforbunden stikkontakt. En ukorrekt installeret stikkontakt kan sætte livsfarlig spænding til tilgængelige metaldele.
- 12  **UDSTYR TIL STIKKONTAKT, stikkontakten bør installeres nær ved udstyret og skal være lettilgængelig.**
- 13  **ADVARSEL:** Ventilationsåbninger må ikke blokeres og skal have fri adgang til den omgivende luft i rummet for afkøling.
- 14  **BETJENINGSTEMPERATUR:** Dette apparat er konstrueret til en omgivende temperatur på maksimum 40 grader C.
- 15 **ALLE LANDE:** Installation af produktet skal ske i overensstemmelse med lokal og national lovgivning for elektriske installationer.

**Eisen:** Dit product voldoet aan de volgende eisen.













- 1 RFI Emissie EN55022 Klasse A
- 2  **WAARSCHUWING:** Binnenshuis kan dit product radiostoring veroorzaken, in welk geval de gebruiker verplicht kan worden om gepaste maatregelen te nemen.
- 3 Immuniteit EN50082-1
- 4 Elektrische Veiligheid EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- VEILIGHEID**
- 6  **WAARSHUWING** Klasse-1 laser produkt.
- 7  **WAARCHUWING** Niet in de straal staren.
- 8  **WAARSCHUWINGEN MET BETREKKING TOT ELEKTRICITEIT**  
**WAARSCHUWING: GEVAAR VOOR ELEKTRISCHE SCHOKKEN**  
 Verwijder het deksel niet, teneinde ELEKTRISCHE schokken te voorkomen. Binnenin bevinden zich geen onderdelen die door de gebruiker onderhouden kunnen worden. Dit toestel staat onder GEVAARLIJKE SPANNING en mag alleen worden geopend door een daartoe opgeleide en bevoegde technicus. Om het gevaar op ELEKTRISCHE SCHOKKEN te vermijden, moet u het toestel van de stroombron ontkoppelen alvorens de LAN-kabels te koppelen of ontkoppelen.
- 9  **GEVAAR VOOR BLIKSEMINSLAG**  
**GEVAAR: NIET** aan toestellen of KABELS WERKEN bij BLIKSEM.
- 10  **WAARSCHUWING: HET TOESTEL WORDT UITGESCHAKELD DOOR DE STROOMKABEL TE ONTKOPPELEN. OM HET TOESTEL STROOMLOOS TE MAKEN: de stroomkabel ontkoppelen.**
- 11  **ELEKTRISCHE TOESTELLEN VAN KLASSE 1**  
**DIT TOESTEL MOET GEAARD WORDEN.** De stekker moet aangesloten zijn op een juist geaarde contactdoos. Een onjuist geaarde contactdoos kan de metalen onderdelen waarmee de gebruiker eventueel in aanraking komt onder gevaarlijke spanning stellen.
- 12  **AAN TE SLUITEN APPARATUUR,** de contactdoos wordt in de nabijheid van de apparatuur geïnstalleerd en is gemakkelijk te bereiken."
- 13  **OPGELET:** De ventilatiegaten mogen niet worden gesperd en moeten de omgevingslucht ongehinderd toelaten voor afkoeling.
- 14  **BEDRIJFSTEMPERATUUR:** De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 40 graden Celsius.
- 15  **ALLE LANDEN:** het toestel installeren overeenkomstig de lokale en nationale elektrische voorschriften.















**Normes:** ce produit est conforme aux normes de suivantes:

- 1 Emission d'interférences radioélectriques EN55022 Classe A
- 2  **MISE EN GARDE** : dans un environnement domestique, ce produit peut provoquer des interférences radioélectriques. Auquel cas, l'utilisateur devra prendre les mesures adéquates.
- 3 Immunité EN50082 - 1
- 4 Sécurité électrique EN60950, UL1950, CSA 950
- 5  **Laser** EN60825  
**SÉCURITÉ.**
- 6  **ATTENTION** Produit laser de classe 1.
- 7  **ATTENTION** Ne pas fixer le faisceau des yeux.
- 8  **INFORMATION SUR LES RISQUES ÉLECTRIQUES**  
**AVERTISSEMENT: DANGER D'ÉLECTROCUTION**  
Pour éviter toute ÉLECTROCUTION, ne pas ôter le revêtement protecteur du matériel. Ce matériel ne contient aucun élément réparable par l'utilisateur. Il comprend des TENSIONS DANGEREUSES et ne doit être ouvert que par un technicien dûment qualifié. Pour éviter tout risque d'ÉLECTROCUTION, débrancher le matériel avant de connecter ou de déconnecter les câbles LAN.
- 9  **DANGER DE Foudre**  
**DANGER: NE PAS MANIER** le matériel ou les CÂBLES lors d'activité orageuse.
- 10  **ATTENTION: LE CORDON D'ALIMENTATION SERT DE MISE HORS CIRCUIT.**  
**POUR COUPER L'ALIMENTATION DU MATÉRIEL,** débrancher le cordon.
- 11  **ÉQUIPEMENT DE CLASSE 1 ÉLECTRIQUE**  
**CE MATÉRIEL DOIT ÊTRE MIS À LA TERRE.** La prise de courant doit être branchée dans une prise femelle correctement mise à la terre car des tensions dangereuses risqueraient d'atteindre les pièces métalliques accessibles à l'utilisateur.
- 12  **EQUIPEMENT POUR BRANCHEMENT ELECTRIQUE,** la prise de sortie doit être placée près de l'équipement et facilement accessible".
- 13  **ATTENTION:** Ne pas bloquer les fentes d'aération, ceci empêcherait l'air ambiant de circuler librement pour le refroidissement.
- 14  **TEMPÉRATURE DE FONCTIONNEMENT:** Ce matériel est capable de tolérer une température ambiante maximum de ou 40 degrés Celsius.
- 15  **POUR TOUS PAYS:** Installer le matériel conformément aux normes électriques nationales et locales.












**Standardit:** Tämä tuote on seuraavien standardien mukainen.

- 1 Radioaaltojen häirintä EN5022 Luokka A
- 2  VAROITUS: Kotiolosuhteissa tämä laite voi aiheuttaa radioaaltojen häiröitä, missä tapauksessa laitteen käyttäjän on mahdollisesti ryhdyttävä tarpeellisiin toimenpiteisiin.
- 3 Kestävyys EN50082-1
- 4 Sähköturvallisuus EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- TURVALLISUUS**
- 6  **VAROITUS** Luokan 1 Lasertuote.
- 7  **VARIOTUS** Älä katso säteeseen.
- 8  **SÄHKÖÖN LIITTYVIÄ HUOMAUTUKSIA**  
**VAROITUS: SÄHKÖISKUVAARA**  
Estääksesi SÄHKÖISKUN älä poista kantta. Sisällä ei ole käyttäjän huollettavissa olevia osia. Tämä laite sisältää VAARALLISIA JÄNNITTEITÄ ja sen voi avata vain koulutettu ja pätevä teknikko. Vältääksesi SÄHKÖISKUN mahdollisuuden katkaise sähkövirta tuotteeseen ennen kuin liität tai irrotat paikallisverkon (LAN) kaapelit.
- 9  **SALAMANISKUVAARA**  
**HENGENVAARA: ÄLÄ TYÖSKENTELE** laitteiden tai KAAPELEIDEN KANSSA SALAMOINNIN AIKANA.
- 10  **HUOMAUTUS: VIRTAJOHTOA KÄYTETÄÄN VIRRANKATKAISULAITTEENA.** VIRTAA KATKAISTAAN irrottamalla virtajohto.
- 11  **SÄHKÖ - TYYPPILUOKAN 1 LAITTEET**  
TÄMÄ LAITE TÄYTYY MAADOITTA. Pistoke täytyy liittää kunnollisesti maadoitettuun pistorasiaan. Virheellisesti johdottetu pistorasia voi altistaa metalliosat vaarallisille jännitteille.
- 12  **PISTORASIAAN KYTKETTÄVÄ LAITE;** pistorasia on asennettava laitteen lähelle ja siihen on oltava esteetön pääsy."
- 13  **HUOMAUTUS:** Ilmavaihtoreikiä ei pidä tukkia ja niillä täytyy olla vapaa yhteys ympäröivään huoneilmaan, jotta ilmanvaihto tapahtuisi.
- 14  **KÄYTTÖLÄMPÖTILA:** Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 40°C.
- 15  **KAIKKI MAAT:** Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti.













**Standard:** Questo prodotto è conforme ai seguenti standard.

- 1 Emissione RFI (interferenza di radiofrequenza) EN55022 Classe A
- 2  **AVVERTENZA:** in ambiente domestico questo prodotto potrebbe causare radio interferenza. In questo caso potrebbe richiedersi all'utente di prendere gli adeguati provvedimenti.
- 3 Immunità EN50082-1
- 4 Sicurezza elettrica EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- NORME DI SICUREZZA**
- 6  **AVVERTENZA** Prodotto laser di Classe 1.
- 7  **AVVERTENZA** Non fissare il raggio con gli occhi.
- 8  **AVVERTENZE ELETTRICHE**  
**ATTENZIONE: PERICOLO DI SCOSSE ELETTRICHE**  
 Per evitare SCOSSE ELETTRICHE non asportare il coperchio. Le componenti interne non sono riparabili dall'utente. Questa unità ha TENSIONI PERICOLOSE e va aperta solamente da un tecnico specializzato e qualificato. Per evitare ogni possibilità di SCOSSE ELETTRICHE, interrompere l'alimentazione del dispositivo prima di collegare o staccare i cavi LAN.
- 9  **PERICOLO DI FULMINI**  
**PERICOLO: NON LAVORARE** sul dispositivo o sui CAVI durante PRECIPITAZIONI TEMPORALESCHIE.
- 10  **ATTENZIONE: IL CAVO DI ALIMENTAZIONE È USATO COME DISPOSITIVO DI DISATTIVAZIONE. PER TOGLIERE LA CORRENTE AL DISPOSITIVO** staccare il cavo di alimentazione.
- 11  **ELETTRICITÀ - DISPOSITIVI DI CLASSE 1**  
**QUESTO DISPOSITIVO DEVE AVERE LA MESSA A TERRA.** La spina deve essere inserita in una presa di corrente specificamente dotata di messa a terra. Una presa non cablata in maniera corretta rischia di scaricare una tensione pericolosa su parti metalliche accessibili.
- 12  **APPARECCHIATURA COLLEGABILE, la presa va installata vicino all'apparecchio per risultare facilmente accessibile".**
- 13  **ATTENZIONE:** le prese d'aria non vanno ostruite e devono consentire il libero ricircolo dell'aria ambiente per il raffreddamento.
- 14  **TEMPERATURA DI FUNZIONAMENTO:** Questo prodotto è concepito per una temperatura ambientale massima di 40 gradi centigradi.
- 15  **TUTTI I PAESI:** installare il prodotto in conformità delle vigenti normative elettriche nazionali.



**Sikkerhetsnormer:** Dette produktet tilfredsstiller følgende sikkerhetsnormer.

- 1 RFI stråling EN55022 Klasse A
- 2  **ADVARSEL:** Hvis dette produktet benyttes til privat bruk, kan produktet forårsake radioforstyrrelse. Hvis dette skjer, må brukeren ta de nødvendige forholdsregler.
- 3 Immunitet EN50082-1
- 4 Elektrisk sikkerhet EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- SIKKERHET**
- 6  **ADVARSEL** Laserprodukt av klasse 1.
- 7  **ADVARSEL** Stirr ikke på strålen.
- 8  **ELEKTRISITET**  
**ADVARSEL: FARE FOR ELEKTRISK SJOKK**  
 For å unngå ELEKTRISK sjokk, må dekslet ikke tas av. Det finnes ingen deler som brukeren kan reparere på innsiden. Denne enheten inneholder FARLIGE SPENNINGER, og må kun åpnes av en faglig kvalifisert tekniker. For å unngå ELEKTRISK SJOKK må den elektriske strømmen til produktet være avslått før LAN-kablene til- eller frakobles.
- 9  **FARE FOR LYNNEDSLAG**  
**FARE:** ARBEID IKKE på utstyr eller KABLER i TORDENVÆR.
- 10  **FORSIKTIG: STRØMLEDNINGEN BRUKES TIL Å FRAKOBLE UTSTYRET. FOR Å DEAKTIVISERE UTSTYRET, må strømforsyningen kobles fra.**
- 11 ELEKTRISK - TYPE 1- KLASSE UTSTYR  
 DETTE UTSTYRET MÅ JORDES. Strømkontakten må være tilkopleet en korrekt jordet kontakt. En kontakt som ikke er korrekt jordet kan føre til farlig spenninger i lett tilgjengelige metaldeler.
- 12  **UTSTYR FOR STIKKONTAKT.** Stikkontakten skal monteres i nærheten av utstyret og skal være lett tilgjengelig."
- 13  **FORSIKTIG:** Lufterventilene må ikke blokkeres, og må ha fri tilgang til luft med romtemperatur for avkjøling.
- 14  **DRIFTSTEMPERATUR:** Dette produktet er konstruert for bruk i maksimum romtemperatur på 40 grader celsius.
- 15  **ALLE LAND:** Produktet må installeres i samsvar med de lokale og nasjonale elektriske koder.











**Padrões:** Este produto atende aos seguintes padrões.

- 1 Emissão de interferência de radiofrequência EN55022 Classe A
- 2  **AVISO:** Num ambiente doméstico este produto pode causar interferência na radiorecepção e, neste caso, pode ser necessário que o utente tome as medidas adequadas.
- 3 Imunidade EN50082-1
- 4 Segurança Eléctrica EN60950, UL1950, CSA 950
- 5  **Laser** EN60825
- SEGURANÇA**
- 6  **AVISO** Produto laser de classe 1.
- 7  **AVISO** Não olhe fixamente para o raio.
- 8  **AVISOS SOBRE CARACTERÍSTICAS ELÉTRICAS**  
**ATENÇÃO: PERIGO DE CHOQUE ELÉTRICO**  
 Para evitar CHOQUE ELÉTRICO, não retire a tampa. Não contém peças que possam ser consertadas pelo usuário. Este aparelho contém VOLTAGENS PERIGOSAS e só deve ser aberto por um técnico qualificado e treinado. Para evitar a possibilidade de CHOQUE ELÉTRICO, desconecte o aparelho da fonte de energia elétrica antes de conectar e desconectar os cabos da LAN.
- 9  **PERIGO DE CHOQUE CAUSADO POR RAIOS**  
**PERIGO: NÃO TRABALHE** no equipamento ou nos CABOS durante períodos suscetíveis a QUEDAS DE RAIOS.
- 10  **CUIDADO: O CABO DE ALIMENTAÇÃO É UTILIZADO COMO UM DISPOSITIVO DE DESCONEXÃO. PARA DESELETRIFICAR O EQUIPAMENTO, desconecte o cabo de ALIMENTAÇÃO.**
- 11  **ELÉTRICO - EQUIPAMENTOS DO TIPO CLASSE 1 DEVE SER FEITA LIGAÇÃO DE FIO TERRA PARA ESTE EQUIPAMENTO. O plugue de alimentação deve ser conectado a uma tomada com adequada ligação de fio terra. Tomadas sem adequada ligação de fio terra podem transmitir voltagens perigosas a peças metálicas expostas.**
- 12  **EQUIPAMENTO DE LIGAÇÃO, a tomada eléctrica deve estar instalada perto do equipamento e ser de fácil acesso."**
- 13  **CUIDADO:** As aberturas de ventilação não devem ser bloqueadas e devem ter acesso livre ao ar ambiente para arrefecimento adequado do aparelho.
- 14  **TEMPERATURA DE FUNCIONAMENTO:** Este produto foi projetado para uma temperatura ambiente máxima de 40 graus centígrados.
- 15  **TODOS OS PAÍSES:** Instale o produto de acordo com as normas nacionais e locais para instalações eléctricas.

**Estándares:** Este producto cumple con los siguientes estándares.

- 1 Emisión RFI EN55022 Clase A
- 2  **ADVERTENCIA:** en un entorno doméstico, este producto puede causar radiointerferencias, en cuyo caso, puede requerirse del usuario que tome las medidas que sean convenientes al respecto.
- 3 Inmunidad EN50082-1
- 4 Seguridad eléctrica EN60950, UL1950, CSA 950
- 5  **Laser** EN60825

### SEGURIDAD

- 6  ¡**ADVERTENCIA!** Producto láser Clase 1.
- 7  ¡**ADVERTENCIA!** No mirat fijamente el haz.
- 8  **AVISOS ELECTRICOS**  
**ADVERTENCIA: PELIGRO DE ELECTROCHOQUE**  
Para evitar un ELECTROCHOQUE, no quite la tapa. No hay ningún componente en el interior al cual puede prestar servicio el usuario. Esta unidad contiene VOLTAJES PELIGROSOS y sólo deberá abrirla un técnico entrenado y calificado. Para evitar la posibilidad de ELECTROCHOQUE desconecte la corriente eléctrica que llega al producto antes de conectar o desconectar los cables LAN.
- 9  **PELIGRO DE RAYOS**  
**PELIGRO: NO REALICE NINGUN TIPO DE TRABAJO O CONEXION** en los equipos o en LOS CABLES durante TORMENTAS ELECTRICAS.
- 10  **ATENCION: EL CABLE DE ALIMENTACION SE USA COMO UN DISPOSITIVO DE DESCONEXION.** PARA DESACTIVAR EL EQUIPO, desconecte el cable de alimentación.
- 11  **ELECTRICO - EQUIPO DEL TIPO CLASE 1**  
**ESTE EQUIPO TIENE QUE TENER CONEXION A TIERRA.** El cable tiene que conectarse a un enchufe a tierra debidamente instalado. Un enchufe que no está correctamente instalado podría ocasionar tensiones peligrosas en las partes metálicas que están expuestas.
- 12  **EQUIPO CONECTABLE,** el tomacorriente se debe instalar cerca del equipo, en un lugar con acceso fácil".
- 13  **ATENCION:** Las aberturas para ventilación no deberán bloquearse y deberán tener acceso libre al aire ambiental de la sala para su enfriamiento.
- 14  **TEMPERATURA REQUERIDA PARA LA OPERACIÓN:** Este producto está diseñado para una temperatura ambiental máxima de 40 grados C.
- 15  **PARA TODOS LOS PAÍSES:** Monte el producto de acuerdo con los Códigos Eléctricos locales y nacionales.

**Standarder:** Denna produkt uppfyller följande standarder.

- 1 Radiostörning EN55022 Klass A
- 2  **WARNING:** Denna produkt kan ge upphov till radiostörningar i hemmet, vilket kan tvinga användaren till att vidtaga erforderliga åtgärder.
- 3 Immunitet EN50082-1
- 4 Elsäkerhet EN60950, UL1950, CSA 950
- 5  **Laser** EN60825  
**SÄKERHET**
- 6  **WARNING!** Laserprodukt av klass 1.
- 7  **WARNING!** Laserstrålning när enheten är öppen.
- 8  **TILLKÄNNAGIVANDEN BETRÄFFANDE ELEKTRICITETSRIK:**  
**RISK FÖR ELEKTRISK STÖT** För att undvika ELEKTRISK stöt, ta ej av locket. Det finns inga delar inuti som behöver underhållas. Denna apparat är under HÖGSPÄNNING och får endast öppnas av en utbildad kvalificerad tekniker. För att undvika ELEKTRISK STÖT, koppla ifrån produktens strömanslutning innan LAN-kablarna ansluts eller kopplas ur.
- 9  **FARA FÖR BLIXTNEDSLAG**  
**FARA:** ARBETA EJ på utrustningen eller kablarna vid ÅSKVÄDER.
- 10  **WARNING:** NÄTKABELN ANVÄNDS SOM STRÖMBRYTARE FÖR ATT KOPPLA FRÅN STRÖMMEN, dra ur nätkabeln.
- 11  **ELEKTRISKT - TYP KLASS 1 UTRUSTNING**  
**DENNA UTRUSTNING MÅSTE VARA JORDAD.** Nätkabeln måste vara ansluten till ett ordentligt jordat uttag. Ett felaktigt uttag kan göra att närliggande metalldelar utsätts för högspänning. Apparaten skall anslutas till jordat uttag, när den ansluts till ett nätverk.
- 12  **UTRUSTNING MED PLUGG.** Uttaget skall installeras i utrustningens närhet och vara lättåtkomligt".
- 13  **WARNING:** Luftventilerna får ej blockeras och måste ha fri tillgång till omgivande rumsluft för avsvälvning.
- 14  **DRIFTSTEMPERATUR:** Denna produkt är konstruerad för rumstemperatur ej överstigande 40 grader Celsius.
- 15  **ALLA LÄNDER:** Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning.

