Allied Telesyn

Simply connecting the IP world

# *AT-LMC10SC*
# *AT-LMC10ST*

*Ethernet Media Converters*

# *Installation Guide*

PN 613-50451-00 Rev B

# Electrical Safety and Emission Compliance

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

**U.S. Federal Communications Commission**

**Declaration Of Conformity**

| | |
|---|---|
| Manufacturer Name: | Allied Telesyn, Inc. |
| Manufacturer Address: | 960 Stewart Drive, Suite B<br>Sunnyvale, CA 94085 USA |
| Manufacturer Telephone: | 408-730-0950 |
| Declares that the Product: | Ethernet Media Converters |
| Model Numbers: | AT-LMC10SC<br>AT-LMC10ST |

This product complies with FCC Part 15B, Class B Limits:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Radiated Energy**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

**Warning**: This product requires only Category 3, 4, or 5 shielded twisted-pair cable for all 10 Mbps RJ-45 connections, and Category 5 shielded twisted-pair for all 100 Mbps RJ-45 connections to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures to reduce interference levels.

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

**RFI Emission** EN55022 Class B ✍ **1**

**Immunity** EN55024 ✍ **2**

**Warning**: This product requires shielded cables to comply with emission and immunity standards. If it is used with unshielded cables, the user may be required to take measures to correct the interference problem at their own expense. ✍ **3**

**Electrical Safety** EN60950 (TUV), UL1950, ($_{c}UL_{us}$)✍ **4**

**Laser** EN60825 ✍ **5**

Power to the hub must be sourced only from the adapter. ✍ **10**

**USA/Canada**
Use a UL Listed/CSA Certified AC adapter of DC 12V, 500mA.

**Europe - EU**
Use TÜV licensed AC adapter of DC 12V, 500mA.

**UK**
Use a UK Safety Approved AC adapter of DC 12V, minimum 500mA.

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

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

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

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

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

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

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

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

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

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

# Table of Contents

**Appendix A**



**Appendix B**

# Welcome to Allied Telesyn

This guide contains instructions on how to install an AT-LMC10SC or an AT-LMC10ST Fast Ethernet Media Converter.

## Where to Find Web-based Guides

The Allied Telesyn web site at **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:

**Note**
Notes provide additional information.

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

**Warning**
Warnings indicate that performing or omitting a specific action may result in bodily injury.

## 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

The AT-LMC10 Series Ethernet Media Converters include the following models:

- ❑ AT-LMC10SC
- ❑ AT-LMC10ST

The AT-LMC10 Series Ethernet 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 have the functionality to connect any managed/unmanaged 10Mbps switch or hub using standard 10Base-T RJ-45 connections and convert the signal to 10Base-FL fiber.

Each AT-LMC10 Series media converter features a 10Base-T twisted pair port and a 10Base-FL fiber optic port. The twisted pair port has an RJ-45 connector and a maximum operating distance of 100 meters (328 feet). The fiber optic port has a multi-mode ST or SC connector and a maximum operating distance of 2 kilometers (1.2 miles). These units operate at 10 Mbps and feature half- and full-duplex operation.

The media converters can be installed on a desktop or in an AT-MCR12 chassis. The AT-LMC10 Series Media Converters are easy to install and do not require any software configuration or management. Figure 1 and Figure 2 display the front panel of the AT-LMC10 Series Media Converters.

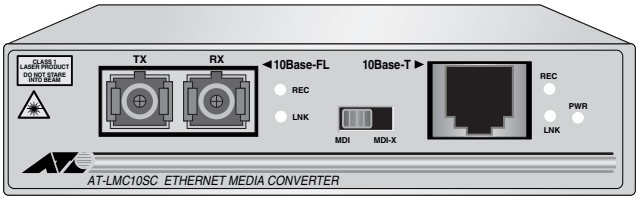


**Figure 1** AT-LMC10SC Model Converter - Front Panel

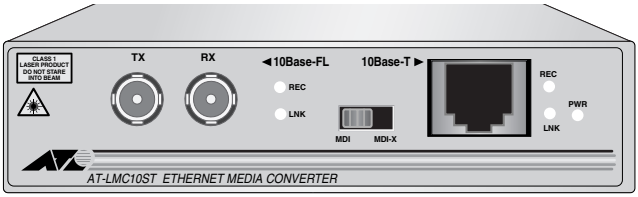


**Figure 2** AT-LMC10ST Model Converter - Front Panel

Figure 3 displays the rear panel of the AT-LMC10 Series Media Converters.

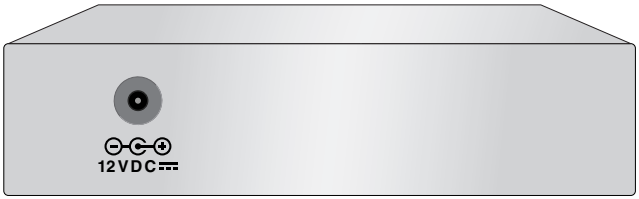


**Figure 3** AT-LMC10 Series Converters - Rear Panel

Table 1 lists the maximum operating distances for the media converters.

**Table 1** Maximum Operating Distances

| Model | Type of Connector | | Maximum Operating Distance | |
|---|---|---|---|---|
| | 10Base-FL | 10Base-T | 10Base-FL | 10Base-T |
| AT-LMC10SC | Multi-mode SC | RJ-45 | 2 km (1.24 mi) | 100 m (328 ft) |
| AT-LMC10ST | Multi-mode ST | RJ-45 | 2 km (1.24 mi) | 100 m (328 ft) |

## Key Features

The media converters have the following key features:

- ❑ LEDs for unit and port status
- ❑ MDI/MDI-X selector switch on RJ-45 port
- ❑ Automatic half- or full-duplex mode operation with 10Base-T or 10Base-FL fiber optic port
- ❑ Maximum transmission distance of fiber connection is 2 kilometers at full-duplex mode
- ❑ External AC/DC power adapter
- ❑ Standard size for use in an AT-MCR12 chassis

### Status LEDs

Table 2 defines the media converter's LEDs.

**Table 2** Status LEDs

| LED | State | Color | Description |
|---|---|---|---|
| PWR | ON | Green | Power is applied to the media converter. |
| REC | ON | Green | Data is received on the port. |
| LNK | ON | Green | A link has been established on the port. |

### MDI/MDI-X Selector Switch

An RJ-45 port on a 10 Mbps Ethernet network device can have one of two possible wiring configurations: MDI or MDI-X. The RJ-45 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.

To connect two 10 Mbps network devices together that have dissimilar port wiring configurations, such as MDI to MDI-X, you use a straight-through cable. To connect two network devices that have an RJ-45 port with the same wiring configuration, such as MDI to MDI, you use a crossover cable.

The RJ-45 port on the media converter features an MDI/MDI-X switch. You can use this switch to configure the twisted pair port on the media converter as either MDI or MDI-X. This feature allows you to use a straight-through cable regardless of the type of end-node connected to the port.

**Note**
After using the MDI/MDI-X switch to change between the two settings, you must reset the media converter by powering OFF then powering ON the unit.

### External AC/DC Power Adapter

An external AC/DC power adapter is included with the media converter for standalone operation. The power adapter supplies 12VDC to the media converter. Allied Telesyn supplies an approved safety compliant AC power adapter for the 120 or 240V AC versions with an unregulated output of 12VDC at 1 A. The power required for the media converter is 12VDC, 500 mA.

## Network Topologies

The AT-LMC10 Series Media Converters can be used in two different types of topologies: standalone and back-to-back. Both topologies are described below.

### Standalone Topology

Figure 4 illustrates a standalone topology where two AT-8224XL switches have been interconnected with an AT-LMC10SC media converter.

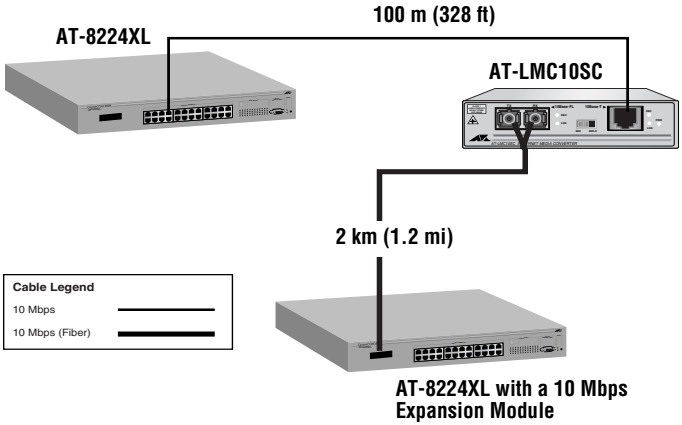


**Figure 4** Standalone Topology

## Back-to-Back Topology

Figure 5 illustrates two media converters in a back-to-back configuration.

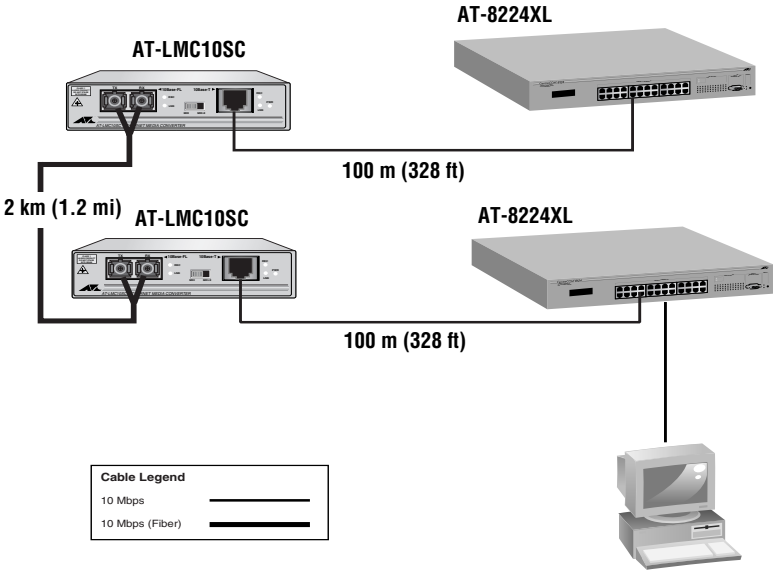


**Figure 5** Back-to-Back Topology

# Chapter 2
# Installing the Media Converter

## Verifying the Package Contents

Make sure the following items are included in your package. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- ❑ One AT-LMC10SC or AT-LMC10ST Ethernet Media Converter
- ❑ Four protective feet (for desktop use only)
- ❑ An external AC/DC power adapter
- ❑ This installation guide
- ❑ Warranty card

## Planning the Installation

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

- ❑ The end-nodes connected to the media converter must operate at 10 Mbps.
- ❑ The two end-nodes connected to the ports of the media converter must operate with the same duplex mode, either half- or full-duplex. The media converter itself can operate in either mode.
- ❑ The devices connected to the two ports on the media converter can be a network adapter card, repeater, switch, or router.
- ❑ Refer to Table 3 and Table 4 for the twisted pair and fiber optic port specifications.

**Table 3** 10Base-T Twisted Pair Port Cabling Specifications

| Cable Type | Maximum Operating Distance |
|---|---|
| Shielded or unshielded Category 5 or better | 100 m (328 ft) |

**Table 4** 10Base-FL Fiber Optic Port Specifications (Full-duplex)

| Model | Type of Fiber Optic Cable | Maximum Operating Distance | Maximum Allowable Loss Budget |
|---|---|---|---|
| AT-LMC10SC and AT-LMC10ST | 50/125 micron multi-mode | 2 km (1.2 mi) | 13 dB at 1310 nm |
| | 62.5/125 micron multi-mode | 2 km (1.2 mi) | 13 dB at 1310 nm |

## Reviewing Safety Precautions

Please review the following safety guidelines before installing the media converter.

Class 1 laser product. ↷ **6**

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

**Warning**
**Lightning Danger**: Do not work on equipment or cables during periods of lightening activity. ↷ **8**

Do not block air vents. ↷ **9**

Power to this product must be sourced only from the adapter. ↷ **10**

**Operating Temperature**: This product is designed for a maximum ambient temperature of 40°C. ↷ **11**

**All Countries**: Install this product in accordance with local and National Electric Codes. ↷ **12**

## Installing the Media Converter

The following procedure explains how to install an AT-LMC10SC or an AT-LMC10ST Media Converter.

To install the media converter, perform the following procedure:

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

**Note**
Do not remove the dust cover from the fiber optic port until you are ready to connect the fiber optic cable. Dust contamination can adversely impact the operating performance of the port on the media converter.

2. If you are installing the media converter in an AT-MCR12 chassis, refer to the chassis's installation guide for instructions on how to install the unit, then proceed to Step 5.

3. Place the media converter on a flat, secure surface (such as a desk or table) leaving ample space around the unit for ventilation.

4. Attach the four protective rubber feet to the bottom of the media converter, as illustrated in Figure 6.

**Note**
**Do not attach the protective feet if you are installing the unit in an AT-MCR12 chassis.**

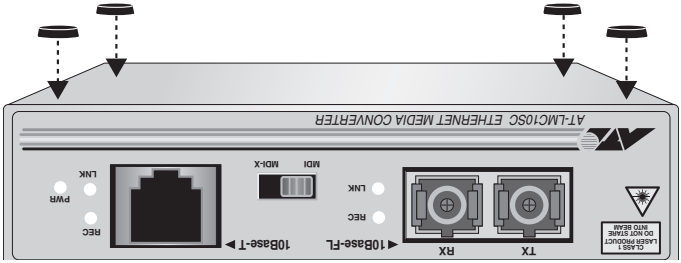


**Figure 6** Attaching the Protective Feet

5. Plug the AC/DC power adapter into an appropriate AC power outlet and insert the power plug into the DC receptacle located on the back of the unit. Refer to Figure 7 on page page 10.

**Note**
This step does not apply if you installed the unit in an AT-MCR12 chassis.

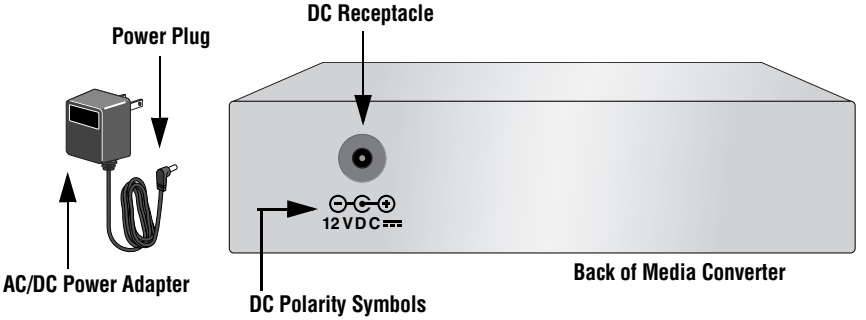


**Figure 7** 12VDC Connector on Rear Panel

6. Verify that the PWR LED is green. If the LED is OFF, refer to "Troubleshooting" on page 13.

7. Remove the dust cover from the fiber optic connector and connect the cable to the 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).

8. Connect the twisted pair cable to the twisted pair port.

**Note**
End-nodes connected to the media converter must operate with the same duplex mode, either both full-duplex or both half-duplex.

9. Set the MDI/MDI-X switch as follows:

   - ❑ If you are connecting a workstation to the 10Base-T port, set the MDI/MDI-X switch to the **MDI-X** position. MDI-X is the default position.
   - ❑ If you are connecting a hub or a switch to the 10Base-T port, set the MDI/MDI-X switch to the **MDI** position.

**Note**
After using the MDI/MDI-X switch to change between the two settings, you must reset the media converter by powering OFF then powering ON the unit.

10. Power ON the end-nodes.

    The media converter is now ready for use.

## Warranty Registration

When you finish installing the product, you should register your product by completing the enclosed warranty card and sending it in.

# Chapter 3
# Troubleshooting

## Troubleshooting Guidelines

Follow the guidelines below to test and troubleshoot the installation in the event a problem occurs.

If the PWR LED is OFF, do the following:

- ❑ If the unit is installed on a desktop, check to be sure that the power adapter is securely connected to a power outlet and that the power adapter cable is securely connected to the back of the media converter.
- ❑ If the unit is installed in an AT-MCR12 chassis, check that the unit is fully seated in the slot.
- ❑ 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.

If the LNK LED for the twisted pair port is OFF, do the following:

- ❑ Check that the end-node connected to the port is powered ON and is operating properly.
- ❑ Check that the twisted pair cable is securely connected to the twisted pair port on the media converter and on the remote end-node.
- ❑ Make sure that the twisted pair cable does not exceed 100 meters (328 feet) and that you are using Category 5 or better.
- ❑ Verify that both end-nodes connected to the media converter are operating at the same speed. Both must be operating at either 10 Mbps.
- ❑ Make sure no configuration changes have been made. If so, you must reset the media converter by powering OFF and then powering ON the unit.

If the LNK LED for the fiber optic port is OFF, do the following:

- ❑ Verify that then end-node connected to the port is ON and is operating properly.
- ❑ Check that the fiber optic cable is securely connected to the fiber optic port on the media converter and on the end-node.
- ❑ Verify that the end-nodes connected to the media converter are operating at the same speed. Both must be operating at 10 Mbps.
- ❑ Make sure that the cable connected to the media converter's receiver port (RX) is connected to the end-node's transmitter port (TX) and that the media converter's transmitter port (TX) is connected to the end-node's receiver port (RX).
- ❑ Make sure no configuration changes have been made. If so, you must reset the media converter by powering OFF then powering ON the unit.
- ❑ Test the attenuation on the fiber optic cable to ensure that it does not exceed acceptable values. Refer to "Troubleshooting" on page 13 for more information.
- ❑ Verify that you are using the appropriate type of fiber optic cable and that you have not exceeded the maximum operating distance. For maximum operating distances, refer to Table 1 on page 2. For cable types, refer to "Fiber Optic Port Specifications" on page 18.
- ❑ Check that the operating specifications (e.g., wavelength and maximum operating distance) of the fiber optic port on the end-node are compatible with the operating specifications of the fiber optic port on the media converter. Refer to "Fiber Optic Port Specifications" on page 18 for more information.

If there is a communication problem between the end-nodes connected to the media converter, do the following:

- ❑ Verify that both end-nodes are operating with the same duplex mode.

If you are still experiencing problems after testing and troubleshooting the installation, refer to "Contacting Allied Telesyn" on page x or visit our web site at **www.alliedtelesyn.com** for support information.

## Loopback Test

To check hardware reliability of the media converter, perform the following procedure:

1. Power OFF the media converter by unplugging the power adapter from the wall outlet and from the back of the unit.

2. Connect the RJ-45 twisted pair port to a 10Base port on the end-node and power ON the end-node.

3. Set the MDI/MDI-X switch as follows:

   - ❑ If you are connecting a workstation to the 10Base port, set the MDI/MDI-X switch to the **MDI-X** position. MDI-X is the default position.

   - ❑ If you are connecting a hub or a switch to the 10Base port, set the MDI/MDI-X switch to the **MDI** position.

4. Using a tested and good fiber patch cable, attach the matching ends of the fiber cable to the transmit (TX) and receive (RX) connectors of the media converter.

5. Power ON the media converter.

6. Verify that the LNK LED on both the twisted pair and fiber optic ports are green.

   - ❑ If the LEDs are green, the unit is working properly and there is a problem elsewhere on the segment.

   - ❑ If the LEDs are OFF, contact Allied Telesyn Technical Support for a RMA number to replace the unit. Refer to “Returning Products” on page x for more information. You can also find RMA information by accessing the Knowledge Base at **http:\\kb.alliedtelesyn.com**.

## *Appendix A*

# *Technical Specifications*

### Physical

| | |
|---|---|
| Dimensions: | W x D x H<br>10.5 cm x 9.5 cm x 2.5 cm<br>(4.125 in x 3.75 in x 1.0 in) |
| Weight: | 0.27 kg (0.60 lbs) |

### Environmental

| | |
|---|---|
| Maximum Operating Temperature: | 0° C to 40° C (32° F to 104° F) |
| Maximum Storage Temperature: | -20° C to 60° C (-4° F to 140° F) |
| Operating and Storage Altitude: | Up to 3,048 meters (10,000 feet) |
| Relative Humidity Operating and Storage: | 5% to 95% (non-condensing) |

### Electrical Rating

| | |
|---|---|
| Input Supply Voltage: | 12VDC ± 5% |
| Maximum Current: | 500 mA |
| Power Consumption: | 6W |

## Agency Certifications

| | |
|---|---|
| EMI/RFI: | FCC Class B, EN55022 Class B, VCCI Class B |
| Electrical Safety: | EN60950 (TUV), UL1950 ($_{c}UL_{us}$), CE Compliant |
| Immunity: | EN55024, VCCI Class B |

## Fiber Optic Port Specifications

Table 5 through Table 7 list the specifications for the 10Base-FL fiber optic port.

**Table 5** Fiber Optic Transmitter

| Model | Fiber Type[1] | Fiber Optic Diameter (microns) | Optical Wavelength | Launch Power (dBm)[2] | | |
|---|---|---|---|---|---|---|
| | | | | Max. | Avg. | Min. |
| AT-LMC10SC and AT-LMC10ST | MMF | 50/125 | 1310 nm | -14.0 | -20.3 | -22.5 |
| | MMF | 62.5/125 | 1310 nm | -14.0 | -16.8 | -19.0 |

1. MMF = Multimode Fiber
2. The launch power is measured at one meter from the transmitter.

**Table 6** Fiber Optic Receiver

| Model | Fiber Type[1] | Fiber Optic Diameter (microns) | Optical Wavelength | Receive Power (dBm) | | |
|---|---|---|---|---|---|---|
| | | | | Min. | Typical | Saturation |
| AT-LMC10SC and AT-LMC10ST | MMF | 50/125 | 1310 nm | -31.8 | -34.4 | -14.0 |
| | MMF | 62.5/125 | 1310 nm | -31.8 | -34.4 | -14.0 |

1. MMF = Multimode Fiber

**Table 7** Fiber Optic Datalink

| Model | Fiber Type[1] | Minimum Power / Link Budget | Average Signal Loss | Minimum Distance Spec.[2] | Maximum Distance Spec. |
|---|---|---|---|---|---|
| AT-LMC10SC and AT-LMC10ST | 50/125 MMF | 13.00 dB | 18.70 dB | 0 | 2 km (1.2 mi) |
| | 62.5/125 MMF | 16.80 dB | 22.50 dB | 0 | 2 km (1.2 mi) |

1. MMF = Multimode Fiber
2. The recommended minimum range is stated in all cases where the maximum transmitter output power exceeds the receivers saturation level. This is to prevent blinding or burning out of the optical receiver on the far-end-node.

Fiber Optic Loss Specifications (Benchmarks)

| Fiber Type[1] | Fiber Optic Diameter (microns) | Optical Wavelength | Typical Loss Factor (dB/km) | Worst Case Loss Factor (dB/km) | Bandwidth (Mhz-km) |
|---|---|---|---|---|---|
| MMF | 50/125 | 850 nm | 3.00 | 3.50 | 400 |
| | 50/125 | 1310 nm | 1.00 | 1.50 | 400 |
| | 62.5/125 | 850 nm | 3.00 | 3.75 | 200 |
| | 62.5/125 | 1310 nm | 1.00 | 1.50 | 500 |
| | 100/140 | 850 nm | 4.00 | 4.00 | 100 |

1. MMF = Multimode Fiber

## *Appendix B*

# *Translated Electrical 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

**Declaration Of Conformity**

| | |
|---|---|
| Manufacturer Name: | Allied Telesyn, Inc. |
| Manufacturer Address: | 960 Stewart Drive, Suite B<br>Sunnyvale, CA 94085 USA |
| Manufacturer Telephone: | 408-730-0950 |
| Declares that the Product: | Ethernet Media Converters |
| Model Numbers: | AT-LMC10SC<br>AT-LMC10ST |

This product complies with FCC Part 15B, Class B Limits:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Radiated Energy**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

**Warning**: This product requires only Category 3, 4, or 5 shielded twisted-pair cable for all 100 Mbps RJ-45 connections, and Category 5 shielded twisted-pair for all 100 Mbps RJ-45 connections to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures to reduce interference levels.

## Industry Canada

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

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

1 **RFI Emission** EN55022 Class B

2 **Immunity** EN55024

3 **Warning**: This product requires shielded cables to comply with emission and immunity standards. If it is used with unshielded cables, the user may be required to take measures to correct the interference problem at their own expense.

4 **Electrical Safety** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Safety**

5 **Laser** EN60825

6 **Warning:** Class 1 Laser product.

7 **Warning:** Do not stare into the Laser beam.

At time of installation, the Fiber Optic Lasers comply with FDA Radiation Performance Standard 21CFR Subchapter J, applicable at date of manufacture. Use of controls or adjustments of performance or procedures other than those specified herein may result in hazardous radiation exposure.

8 **Lightning Danger**
**Danger**: Do not work on equipment or cables during periods of lightning activity.

9 Do not block air vents

10 Power to the hub must be sourced only from the adapter.

**USA/Canada**
Use a UL Listed/CSA Certified AC adapter of DC 12V, 500mA.

**Europe - EU**
Use TÜV licensed AC adapter of DC 12V, 500mA.

**UK**
Use a UK Safety Approved AC adapter of DC 12V, minimum 500mA.

11 **Operating Temperature:** This product is designed for a maximum ambient temperature of 40 degrees C.

12 **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 B

✍ **2** **Störsicherheit** EN55024

✍ **3** **Achtung**: Für dieses Produkt sind abgeschirmte Kabel erforderlich, damit den Richtlinien für Emission und Interferenzschutz entsprochen wird. Falls das Produkt mit nicht abgeschirmten Kabeln verwendet wird, können weitergehende Maßnahmen für die Korrektur von Interferenzproblemen auf Kosten des Benutzers notwendig werden.

✍ **4** **Elektrische Sicherheit** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Sicherheit**

✍ **5**  **Laser** EN60825

✍ **6**  **Warnung:** Laserprodukt der Klasse 1.

✍ **7**  **Warnung:** Nicht direkt in den Strahl blicken.

✍ **8**  **Gefahr Durch Blitzschlag**
**Gefahr**: Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen

✍ **9**  Entlüftungsöffnungen nicht versperren

✍ **10**  Der Buchse darf nur aus dem Adapter Strom zugeführt werden.

**Europe - EU**
Gebrauchen Sie einen von TÜV zugelassenen Wechselstromadapter für Gleichstrom 12 V, 500 mA.

✍ **11**  **Betriebstemperatur:** Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 40° C entworfen.

✍ **12**  **Alle Länder**: Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.

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

**1** **Radiofrekvens forstyrrelsesemission** EN55022 Klasse B

**2** **Immunitet** EN55024

**3** **Advarsel**: Dette produkt skal bruges med afskærmede kabler for at overholde bestemmelserne vedrørende udstråling og støjimmunitet. Hvis det bruges med uafskærmede kabler, kan det blive påkrævet af brugeren at korrigere interferensproblemer for egen regning.

**4** **Elektrisk sikkerhed**. EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Sikkerhed**

**5**  **Laser** EN60825

**6**  **Advarsel:** Laserprodukt av klasse 1.

**7**  **Advarsel:** Stirr ikke på strålen.

**8**  **Fare Under Uvejr**
**Fare**: Undlad at arbejde på udstyr eller kabler i perioder med lynaktivitet.

**9**  Ventilationsåbningerne må ikke blokeres

**10**  Strømforsyningen til apparatet må udelukkende tages fra tilpasningstransformatoren.

**Europe - EU**
Brug kun TÜV godkendt vekselstrømstransformator på 12 V jævnstrøm, 500 mA.

**11**  **Betjeningstemperatur:** Dette apparat er konstrueret til en omgivende temperatur på maksimum 40 grader C.

**12**  **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 B

✍ **2** **Immuniteit** EN55024

✍ **3** **Waarschuwing**: Om te voldoen aan de emissie- en immuniteitsnormen dient dit apparaat te zijn voorzien van afgeschermde kabels. Als het met niet-afgeschermde kabels wordt gebruikt, kan het zijn dat de gebruiker maatregelen moet treffen om interferentieproblemen voor eigen rekening op te lossen.

✍ **4** **Electrische Veiligheid** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Veiligheid**

✍ **5**  **Laser** EN60825

✍ **6**  **Waarshuwing:** Klasse-1 laser produkt.

✍ **7**  **Waarchuwing**: Neit in de straal staren.

✍ **8**  **Gevaar Voor Blikseminslag**
**Gevaar**: Niet aan toestellen of kabels werken bij bliksem.

✍ **9**  Ventilatiegaten niet blokkeren

✍ **10**  Stroom mag alleen via de adapter naar het apparaat toegevoerd worden.

**<u>Europe - EU</u>**
Gebruik een door TÜV gekeurde wisselstroomadapter van 12 Volt gelijkstroom, 500 milliampères.

✍ **11**  **Bedrijfstemperatuur:** De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 40 graden Celsius.

✍ **12**  **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 B

✍ **2** **Immunité** EN55024

✍ **3** **Avertissement**: Il faut utiliser des câbles blindés pour ce produit afin de respecter les normes d'émission et d'immunité. Si l'utilisateur choisit d'utiliser des câbles non blindés, il sera peut-être contraint de prendre les mesures nécessaires pour corriger les problèmes d'interférences, ainsi que d'assumer le coût correspondant.

✍ **4** **Sécurité Électrique** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Sécurité**

✍ **5**  **Laser** EN60825

✍ **6**  **Attention** Producit laser di classe 1.

✍ **7**  **Attention** Ne pas fixer le faisceau des yeux.

✍ **8**  **Danger De Foudre**
**Danger**: Ne pas manier le matériel ou les câbles lors d'activité orageuse.

✍ **9**  Ne pas bloquer les fentes d'aération

✍ **10**  L'alimentation du concentrateur doit être uniquement fournie par l'adaptateur.

**Europe - EU**
Utiliser un adaptateur secteur conforme TÜV de 12 V, 500 mA en courant continu.

✍ **11**  **Température De Fonctionnement:** Ce matériel est capable de tolérer une température ambiante maximum de 40 degrés Celsius.

✍ **12**  **Pour Tous Pays**: Installer le matériel conformément aux normes électriques nationales et locales.

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

✍ **1** **Radioaaltojen häirintä** EN55022 Luokka B

✍ **2** **Kestävyys** EN55024

✍ **3** **Varoitus**: Tämä tuote vaatii suojattuja kaapeleita toimiakseen emissio- ja häiriönsietostandardien mukaisesti. Jostuotetta käytetään ilman suojattuja kaapeleita, käyttäjä voi joutua korjaamaan häirinnän aiheuttaman ongelman omallakustannuksellaan.

✍ **4** **Sähköturvallisuus** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Turvallisuus**

✍ **5**  **Laser** EN60825

✍ **6**  **Varoitus:** Luokan 1 Lasertuote.

✍ **7**  **Variotus:** Älä katso säteeseen.

✍ **8**  **Salamaniskuvaara**
**Engenvaara**: Älä työskentele laitteiden tai kaapeleiden kanssa salamoinnin aikana.

✍ **9**  Älä tuki ilmareikiä

✍ **10**  Tähtipisteeseen (hub) syötettävän virran pitää tulla ainoastaan sovittimesta.

**<u>Europe - EU</u>**
Käytä TÜV-lisenssillä valmistettua verkkosovitinta, jonka tasajännitteen nimellisarvot ovat DC 12 V, 500 mA (milliampeeria).

✍ **11**  **Käyttölämpötila:** Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 40° C.

✍ **12**  **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 B

✍ **2** **Immunità** EN55024

✍ **3** **Avvertenza**: questo prodotto, se utilizzato con cavi schermati, è conforme alle norme sulle emissioni e sull'immunità. In caso di uso senza cavi schermati, l'utente può dover adottare a proprie spese misure correttive contro le interferenze.

✍ **4** **Sicurezza Elettrica** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

Norme Di Sicurezza

✍ **5**  **Laser** EN60825

✍ **6**  **Avvertenza:** Prodotto laser di Classe 1.

✍ **7**  **Avertenza:** Non fissare il raggio con gli occhi.

✍ **8**  **Pericolo Di Fulmini**
**Pericolo**: Non lavorare sul dispositivo o sui cavi durante precipitazioni temporalesche.

✍ **9**  Non ostruire le prese d'aria

✍ **10**  Questo dispositivo deve essere alimentato solo mediante l'adattatore.

**Europe - EU**
Utilizzare l'adattatore per c.a. da 12 V c.c. e 500 mA conforme alla normativa TÜV.

✍ **11**  **Temperatura Di Funzionamento:** Questo prodotto è concepito per una temperatura ambientale massima di 40 gradi centigradi.

✍ **12**  **Tutti I Paesi**: installare il prodotto in conformità delle vigenti normative elettriche nazionali.

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

✍ **1** **RFI stråling** EN55022 Klasse B

✍ **2** **Immunitet** EN55024

✍ **3** **Advarsel**: Dette produktet må brukes med vernede kabler for å tilfredsstille emisjons- og fritakelsesstandarder. Dersom produktet brukes med uvernede kabler, må brukeren muligens rette forstyrrelsesproblemene for egen regning.

✍ **4** **Elektrisk sikkerhet** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Sikkerhet**

✍ **5**  **Laser** EN60825

✍ **6**  **Advarsel:** Laserprodukt av klasse 1.

✍ **7**  **Advarsal:** Stirr ikke på strålen.

✍ **8**  **Fare For Lynnedslag**
**Fare**: Arbeid ikke på utstyr eller kabler i tordenvær.

✍ **9**  Blokker ikke luftventilene

✍ **10**  All strømtilførsel må komme fra adapteren.

**Europe - EU**
Benytt TÜV-godkjent AC-adapter på 12VDC, 500mA (millismpere)

✍ **11**  **Driftstemperatur:** Dette produktet er konstruert for bruk i maksimum romtemperatur på 40 grader celsius.

✍ **12**  **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 B

✍ **2** **Imunidade** EN55024

✍ **3** **Advertência**: Este produto requer a utilização de cabos blindados para cumprimento dos standards de limites de emissão e imunidade. Se o produto for utilizado com cabos não blindados, o utilizador poderá necessitar de tomar medidas para correcção de problemas de interferência, por sua própria conta.

✍ **4** **Segurança Eléctrica** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Segurança**

✍ **5**  **Laser** EN60825

✍ **6**  **Aviso** Produto laser de classe 1.

✍ **7**  **Aviso** Não olhe fixamente para o raio.

✍ **8**  **Perigo De Choque Causado Por Raio**
**Perigo**: Não trabalhe no equipamento ou nos cabos durante períodos suscetíveis a quedas de raio.

✍ **9**  Não bloqueie as aberturas de ventilação

✍ **10**  Use somente o adaptador fornecido para alimentação elétrica do hub.

**Europe - EU**
Use um adaptador de corrente alternada com saída DC de 12V e 500mA em conformidade com as especificações da TÜV.

✍ **11**  **Temperatura De Funcionamento:** Este produto foi projetado para uma temperatura ambiente máxima de 40 graus centígrados.

✍ **12**  **Todos Os Países**: Instale o produto de acordo com as normas nacionais e locais para instalações elétricas.

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

✍ **1** **Emisión RFI** EN55022 Clase B

✍ **2** **Inmunidad** EN55024

✍ **3** **Advertencia**: Este producto exige cables protectores para ajustarse a las normas de emisión e inmunidad. Si se utiliza con cables sin protección, el usuario tendrá que correr con los gastos por las medidas a tomar en caso de problemas de interferencias.

✍ **4** **Seguridad Eléctrica** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Seguridad**

✍ **5**  **Laser** EN60825

✍ **6**  **¡Advertencia!** Producto láser Clase 1.

✍ **7**  **¡Advertencia!** No mirat fijamente el haz.

✍ **8**  **Peligro De Rayos**
**Eligro**: No realice ningun tipo de trabajo o conexion en los equipos o en los cables durantetormentas electricas.

✍ **9**  No bloquee las aberturas para ventilacion

✍ **10**  La energía para el dispositivo central o "hub" debe provenir únicamente del adaptador.

**Europe - EU**
Utilizar un adaptador de corriente alterna autorizado TÜV de 12 voltios de corriente continua y 500 miliamperios.

✍ **11**  **Temperatura Requerida Para La Operación:** Este producto está diseñado para una temperatura ambiental máxima de 40 grados C.

✍ **12**  **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 B

✍ **2** **Immunitet** EN55024

✍ **3** **Varning**! Denna produkt kräver skärmade kablar för att uppfylla standardkraven för emission och immunitet. Om den används med oskärmade kablar kan användaren vara tvungen att vidta åtgärder på egen bekostnad för att åtgärda störningsproblemet.

✍ **4** **Elsäkerhet** EN60950 (TUV), UL1950 ($_{c}UL_{us}$)

**Säkerhet**

✍ **5**  **Laser** EN60825

✍ **6**  **Varning!** Laserprodukt av klass 1.

✍ **7**  **Varning!** Laserstrålning när enheten är öppen.

✍ **8**  **Fara För Blixtnedslag**
**Fara**: arbeta ej på utrustningen eller kablarna vid åskväder.

✍ **9**  Blockera inte luftventilerna

✍ **10**  Endast anslutningsenheten får vara kraftkälla till centralen.

**Europe - EU**
Använd en växelströmsanslutningsenhet licensierad av TÜV. Likström 12V, 500mA.

✍ **11**  **Driftstemperatur:** Denna produkt är konstruerad för rumstemperatur ej överstigande 40 grader Celsius.

✍ **12**  **Alla Länder**: Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning.