10/100Base-TX to 100Base-TX Mini Converter

Operation Manual

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FCC WARNING

This equipment has been tested and found to comply with the limits for class A device, pursuant to part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. 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 the user's own expense.

CE

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Take special note to read and understand all content given in the warning boxes  **Warning**

Table of Contents

1 Introduction

About This Guide

Welcome

Thank you for choosing the 10/100Base-TX to 100Base-FX Mini Media Converter. This device integrates copper and multi-mode/single mode fiber networks in one flexible package.

Purpose

This guide discusses how to setup and install your 10/100Base-TX to 100Base-FX Mini Media Converter.

Terms/Usage

In this guide, the term “Converter” (first letter upper case) refers to your 10/100Base-TX to 100Base-FX Mini Media Converter, and “converter” (first letter lower case) refers to other converters.

Features

- Automatic MDI/MDI-X selection on RJ-45 port
- Store-and -forward at full wire speed
- Auto-negotiation, NWay support
- Extends distance of up to 2km (6600 feet) multi-mode fiber and 120km (396000 feet) long-haul single mode fiber
- Compatible with other 10Base-T & 100Base-TX /FX devices
- LEDs for at-a-glance device status
- Compact design, cost effective and space saving
- FCC Class A & CE approved

Specifications

Standard: IEEE 802.3 (10BASE-T Ethernet), IEEE 802.3u (100BASE-TX/FX Fast Ethernet)

Connector: 1x duplex fiber optic connector: ST / SC types **or** simplex fiber optic connector: WDM single fiber type
1x UTP 100/120ohm; RJ-45 type

Max. Distance: **UTP:** 100m Cat 3/4/5
Fiber Optic:
2km MM, dual fiber
120km Long-haul SM, dual fiber

Power: External power supply: 5V DC @ 0.5A

Temperature:	Operating:	0 to 50 Celsius
	Storage:	-20 to 70 Celsius
Humidity:	Operating:	10% to 80%RH
	Storage:	5% to 90%RH

Emissions: FCC Part 15 of Class A & CE approved

Dimensions: 86.2 x 59.4 x 23.4 mm (L x W x H)

Package Contents

- One Mini Media Converter unit
- One AC adapter (please check adaptor type)
- Self-adhesive pads
- User's Manual CD

2 Hardware Description

Product Overview

The Converter offers the most comprehensive network extension and monitoring status. It is designed for large workgroups who demand higher speed and wider bandwidth. It allows migration and expansion from a copper-based Ethernet to a fiber optic Fast Ethernet.

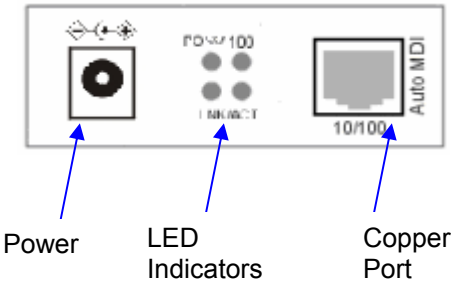
It features automatic MDI detection setting. This function allows for simple direct connection to a workstation, switch or hub. Therefore, network managers no longer need to worry about cable type configuration when establishing a connection between RJ-45 ports.

This Converter is equipped with an RJ-45 port and a fiber optic ST or SC or WDM port. This allows it to quickly integrate a 10/100Base-TX network into a 100Base-FX (fiber) network.

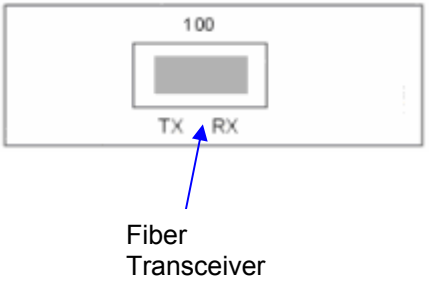
This Converter has the ability to support distances of up to 2 kilometers for multi-mode fiber and up to 120

kilometers for long-haul single mode fiber between a LAN switch, file server or another networking device.

Copper Port View



Fiber Port View



3 Installation

To install your Converter, please see the following procedures:

- Location
- Install the Converter

Location

The location selected to install the Converter may greatly affect its performance. When selecting a site, we recommend considering the following rules:

- Install the Converter in a fairly cool and dry place. See Technical Specifications for the acceptable temperature and humidity operating ranges.
- Install the Converter in a location free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.
- Leave at least 10cm of space at the front and rear of the unit for ventilation.
- Affix the provided rubber pads to the bottom of the Converter to protect the case from scratching.

Install the Converter

This Converter utilizes ports with fiber and copper port connectors functioning under Ethernet and/or Fast Ethernet protocols.

10/100BASE-TX Port

The 10/100BASE-TX port supports network speeds of either 10Mbps or 100Mbps, and can operate in half- and full duplex transfer modes. This port also offers automatic MDI/MDI-X crossover detection that gives true "plug and play" capability - just plug-in the network cable to the port and the port will adjust according to end node device automatically. The RJ-45 connector is suitable for UTP cable Category 3, 4, 5 or better.

100BASE-FX Port

The 100BASE-FX port adds a fiber Fast Ethernet link to your network device. Compliant with IEEE 802.3u, this port can transmits data at 100Mbps in full duplex mode across distances of up to 2km over multi-mode fiber-optic cable. The fiber port has a choice of three fiber connector types: ST, SC and WDM.

Desktop Installation

Follow the instructions listed below to install the Converter onto a desktop location.

1. Locate the Converter in a clean, flat and safe position that has easy access to AC power.

2. Affix the four (4) self-adhesive rubber pads to the underside of the Converter.
3. Apply AC power to the Converter. (The green PWR LED should be lit).
4. Connect cables from the network partner devices to the ports on the front panel. (The green LNK LED on the front panel associated with the port should be lit).

Warning

Please exercise caution when using power tools. Also, install this unit away from damp or wet locations, or in close proximity to very hot surfaces. These types of environments can have a detrimental effect on the converter and cables. An ideal location is a lightly cooled place such as a typical equipment room. Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures.

Getting Connected

Powering On Unit

The Converter uses an AC power supply 100~240V AC, 50~60 Hz. The Converter's power supply automatically self-adjusts to the local power source and may be powered on without having any or all LAN segment cables connected.

1. Insert the power cable plug directly into the receptacle located at the back of the device.
2. Plug the power adapter into an available socket.

Note: For International use, you may need to change the AC power adapter cord. You must use a power cord set that has been approved for the receptacle type and electrical current in your country.

3. Check the power LED of the Converter
4. When the device is powered on to verify that power is applied. If not, check that the power cable is correctly and securely plugged in.

Connecting Fiber Cable

When connecting fiber cable to a 100BASE-FX port on the Converter, be sure the correct type - ST or SC or WDM - connector is used. Follow the steps below to properly connect fiber cable:

1. Remove and keep the ST/SC/WDM port's rubber cover. When not connected to a fiber cable, the rubber cover should be replaced to protect the optics.
2. Check that the fiber terminators are clean. You can clean the cable plugs by wiping them gently with a clean tissue or cotton ball moistened with a little ethanol. Dirty fiber terminators on fiber optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.
3. Connect one end of the cable to the ST/SC/WDM port on the Converter and the other end to the ST/SC/WDM port on the other device.

Note: When inserting the cable, be sure the tab on the plug clicks into position to ensure that it is properly seated.

4. Check the corresponding port LED on the Converter to make sure that the connection is valid. (Refer to the LED chart in next section)

Connecting Copper Cable

The 10/100BASE-TX RJ-45 Ethernet port fully supports auto-sensing and auto-negotiation.

1. Insert one end of a Category 3/4/5/5e type twisted pair cable into an available RJ-45 port on the Converter and the other end into the port of the network node.
2. Check the corresponding port LED on the Converter to be sure that the connection is valid. (Refer to LED chart in next section)

4 LED Indicators

This Converter has LED indicators located at the copper port side of the device. The LEDs have been designed to give easy at-a-glance network status, and provides 'real-time' connectivity information. Please see below for an interpretation of their functions:

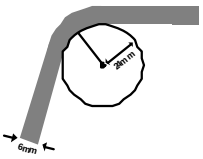
Unit LEDs		
LED	**Condition**	**Status**
PWR	On (Green)	Converter is receiving power
	Off	Power off or failure
100	On (Green)	Copper Port operating at 100Mbps
	Off	Copper Port operating below 100Mbps

Port LEDs		
LED	**Condition**	**Status**
LNK/ACT (Copper)	On (Green)	Illuminated when connectors are attached
	Flashing (Green)	Data traffic passing through port
	Off	No valid link established on port
LNK/ACT (Fiber)	On (Green)	Illuminated when connectors are attached
	Flashing (Green)	Data traffic passing through port
	Off	No valid link established on port

Appendix A

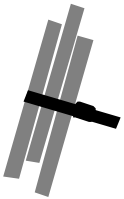
Cables

The following are some recommendations as to what you should and should not do when installing cables. Remember - cables are the deciding factor in network performs



Try to maintain a bend radius of (min.) 4x the diameter of the cable for UTP and 100x for fiber.

Try not to allow the cable to twist too much - this creates a strain on the internal cables.



Place cable ties at regular intervals - do not over tighten cable ties - try to avoid using with fiber.

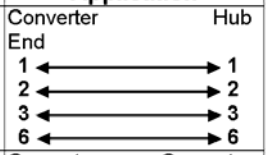
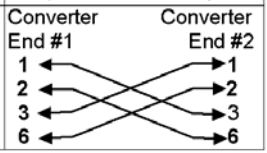
Do not stretch the cable especially on corners, in vertical cable trays and when spanning long distances.

Appendix B

About RJ-45 Cables

When connecting your network devices, use standard Category 3 eight-way cables for 10Base-T configurations and Category 5 cable for 100Base-TX. The pin assignments are as follows:

Pin	1	TD+	Pair	2	White/Orange
Pin	2	TD-	Pair	2	Orange/White
Pin	3	RX+	Pair	3	White/Green
Pin	4	N/A	Pair	1	Blue/White
Pin	5	N/A	Pair	1	White/Blue
Pin	6	RX-	Pair	3	Green/White
Pin	7	N/A	Pair	4	Brown/White
Pin	8	N/A	Pair	4	Brown/White

Application	Cable Type	Application
Converter to Converter or Network Adapter	Straight-through Cable	
Converter to Switch	Cross-Over Cable	

Note: Automatic MDI/MDI-X selection on RJ-45 port

Appendix C

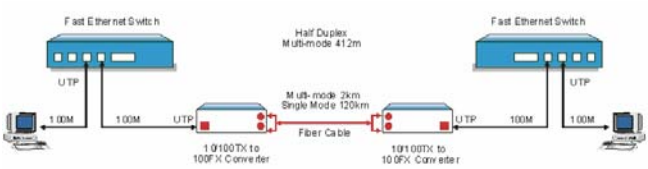
Application Diagrams

To effectively expanding a Fast Ethernet network, position two converters back-to-back as illustrated.

Application Diagram I

In the figure below, the Converter is functioning as a high-speed bridge between switches creating increased capacity for each user (node) on the local area network. It is providing a 100Mbps full duplex link to a variety of Fast Ethernet network devices within a LAN.

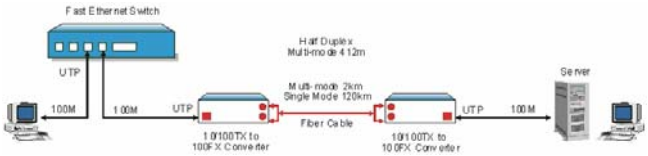
Switch ↔ CONVERTER ↔ CONVERTER ↔ Switch



Application Diagram II

In the figure below, the Converter is functioning as a server aggregation for an enterprise or LAN configuration. It is providing a 100Mbps full duplex link to a workgroups of 10/100 switches located on separate floors within a single building.

Switch ↔ CONVERTER ↔ CONVERTER ↔ Server



Application Diagram III

In the figure below, the Converter is functioning as a high-speed dedicated link within a campus network configuration. It is providing a 100Mbps full duplex link to a remote network node.

Switch ↔ CONVERTER ↔ CONVERTER ↔ Switch