



## ***EtherNodePlus* Model OTEN-MC-01 Media Converter, 10/100/1000M, SFP**



## **OPERATING MANUAL**

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**Typical Mating SFP Module**



**Typical AC Power Supply (Ships with Unit)**

## **SAFETY**

### **Safety Precautions**

The optical emissions from the units are laser-based and may present eye hazards if improperly used. **NEVER USE ANY KIND OF OPTICAL INSTRUMENT TO VIEW THE OPTICAL OUTPUT OF THE UNIT IF IT MAY BE POWERED.** Be careful when working with optical fibers. Fibers can cause painful injury if they penetrate the skin.

### **Laser Safety Procedure**

**ALWAYS** read the product data sheet and the laser safety label before powering the product. Note the operation wavelength, optical output power and safety classifications.

If safety goggles or other eye protection are used, be certain that the protection is effective at the wavelength emitted by the device under test **BEFORE** applying power.

**ALWAYS** connect a fiber to the output of the device **BEFORE** power is applied. Power should never be applied without an attached fiber. If the device has a connector output, a connector should be attached that is connected to a fiber. This will ensure that all light is confined within the fiber waveguide, virtually eliminating all potential hazard.

**NEVER** look at the end of the fiber to see if light is coming out. **NEVER!** Most fiber optic laser wavelengths (1310nm and 1550nm) are totally invisible to the unaided eye and will cause permanent damage. Shorter wavelength lasers (e.g., 780nm) are visible and are very damaging. Always use instruments, such as an optical power meter, to verify light output.

**NEVER, NEVER, NEVER** look into the end of a fiber on a powered device with **ANY** sort of magnifying device if the unit may be powered. Be aware that the other end of fibers connected to this unit may be carrying hazardous light levels. This includes microscopes, eye loupes and magnifying glasses. This **WILL** cause a permanent and irreversible burn on your retina. Always double check that power is disconnected before using such devices. If possible, completely disconnect the unit from any power source. If you have questions about laser safety procedures, please call Olson Technology before powering your product.

## INTRODUCTION

The Olson Technology, Inc. Model OTEN-MC-01 EtherNodePlus Media Converter, 10/100/1000Mb/s allows network operators to convert signals between an electrical Ethernet 10/100/1000Mb/s UTP interface and an optical interface. Traditional 10/100/1000Mb/s gigabit Ethernet can be extended to the distance of 80+km through a fiber optic link.

The OTEN-MC-01 incorporates the latest gigabit IC technology. Indicator LED's on the front panel allow the unit's status to be fully monitored, simplifying installation and maintaining network performance.

**Figure 1 - Front Panel Layout**



**Table 1 - LED Indicator Functions**

Designation	FUNCTION	STATUS	Meaning
1000M	Copper interface speed	ON	Lit when Ethernet speed is 1000Mb/s
100M	Copper interface speed	ON	Lit when Ethernet speed is 100Mb/s
FX/ACT	Fiber interface link/action status	ON	Fiber optic network connection is present
		Blink	Fiber optic port is transmitting data
		OFF	Fiber is disconnected or no Network connection
TP/ACT	UTP interface link/action status	ON	10M or faster Copper interface is connected
		Blink	Copper port is transmitting data
		OFF	No copper cable is connected or no Network connection
FDX	Copper interface duplex mode	ON	Full duplex
		OFF	Half duplex
PWR	Power LED	ON	Unit is powered
		OFF	Unit is not powered

## ETHERNET SPECIFICATIONS

Parameter	Specification
Standards	IEEE802.3U and IEEE9-2.3z, 10/100/1000Base-T and 1000Base-SX/LX/HX
Cables	UTP Category 5e or Category 6 (100m max. distance) 50/125µm Multimode Fiber (500m max. distance) 9/125µm Single-mode Fiber (80+ km max. distance depending on SFP module)
Connectors	UTP: RJ-45, 10/100/1000Mb/s Optical: SFP Module
Mac Add. Table	1K
Data Buffer	256K
Flow Control	Full-duplex IEEE802.3x Half-duplex Back Pressure

## DIP Switches

Switch	Position	Function
SW1	ON	LFP Enable
	OFF	LFP Disable
SW2	ON	Cut-Through
	OFF	Store and Forward

LFP (Link Fault Pass Through) means the link fault on the one side (local side) media converter will be passed to the media converter on the other side (remote side). For example, the media converter on side A (local side) has the TP link loss, the media converter will disconnect the link of transmit on fiber. The media converter on the side B (remote side) will know there is the linkage error and also disconnect it TP link. The LFP function can immediately alarm network administrators the problem of the link media and provide efficient solution to monitor the network, which can minimize the loss caused by the link problem. The LFP function include the LLCF(link loss carry forward) and LLR (Link loss return) function.

## TYPICAL PERFORMANCE WITH DIFFERENT SFP MODULES

Fiber Type	Max. Distance	Wavelength	Tx Power	Sensitivity	Link Budget
50µm Multimode	550m	850nm	-11 to -6dBm	<-18dBm	7dB
Single-mode	30km	1310nm	-8 to 0dBm	<-25dBm	17dB
Single-mode	80km	1550nm, CWDM	-5 to 0dBm	-25dBm	20dB

## ELECTRICAL CHARACTERISTICS

	Min.	Typ.	Max.	Units
Converter Power Requirements		5		V <sub>DC</sub>
		270		mA
Power Supply Voltage	100		240	V <sub>AC</sub>
	50		60	Hz

## ENVIRONMENTAL CHARACTERISTICS

	Min.	Typ.	Max.	Units
Operating Temperature Range	0		+50	°C
Storage Temperature Range	-20		+70	°C
Humidity, RH, non-condensing	5		90	%

## PHYSICAL CHARACTERISTICS

	Min.	Typ.	Max.	Units
Weight		6.4		oz.
		180		g
Dimensions	1.02 x 2.79 x 3.70			in.
	26 x 71 x 94			mm

## INSTALLATION

- 1) Insert an SFP module into the SFP cage on the converter.
- 2) Attach a fiber cable from the SFP on the converter to the fiber network. The fiber connections must match: transmit socket to receive socket. *Never power the unit without fiber connections in place.*
- 3) Attach a UTP cable from the TP network device to the RJ45 port on the converter.
- 4) Connect the power cord to the converter and check that the PWR LED lights up. The TP Act and FX Act LED's will light when all the cable connections are satisfactory.