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# Installation Guide for 10 GigaBit Media Converter





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No licenses, express or implied, are granted with respect to any of the technology described in this manual. Net Optics retains all intellectual property rights associated with the technology described in this manual. This manual is intended to assist application in installing Net Optics products into your network.

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***Additional Information***

Net Optics, Inc. reserves the right to make changes in specifications and other information contained in this document without prior notice. Every effort has been made to ensure that the information in this document is accurate.

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## **Introduction**

Net Optics 10 GigaBit Converters are optimized, high-performance media converters for connecting dissimilar 10 GigaBit devices and links. Deploy these bidirectional media converters individually to connect SR and LR fiber devices, or in pairs at each end of long-distance fiber links. These Converters are the perfect solution for dispersed networks where media conversion is required between multimode segments separated by long distances.

### **Fast and Versatile**

The 10 GigaBit Converters support seamless media conversion at 10 Gbps over link distances up to 65 meters with 50/125 multimode SR fiber and up to 10 kilometers with singlemode LR fiber. These Converters feature XFP module connectors for quick reconfiguration and redeployment.

### **Long Link Reliability**

To control jitter over long optical links, the Converter features Clock and Data Recovery (CDR). CDR ensures that the overall jitter budget is not exceeded when deploying converter pairs with long fiber links.

### **Simple and Reliable**

Media conversion is a snap since all network and monitoring cables necessary for plug-and-play deployment are included with the Tap. For extra uptime protection, Net Optics Converters offer redundant power connections. Should the primary power source fail, the Converter automatically switches to the backup power source with no traffic interruption.

## **Key Features**

### **Secure Technology**

- Optimized and tested for 10 GigaBit fiber networks
- Provides transparent conversion at 10 Gbps without data stream interference or introducing a point of failure
- Clock and Data Recovery (CDR) control overall jitter when deploying converter pairs
- Redundant power ensures link uptime
- Compatible with all LR singlemode fiber and SR multimode fiber
- Fully IEEE 802.3ae compliant
- Fully RoHS compliant

### **Ease of Use**

- LED indicators show link status and redundant power
- XFP connectors support easy reconfiguration and redeployment
- Optional 19-inch rack frame holds three Converters
- Tested and compatible with all major manufacturers' monitoring devices, including protocol analyzers, probes, and intrusion detection/prevention systems

### **Support**

- Net Optics offers free technical support throughout the lifetime of your purchase. Our technical support team is available from 8 am to 5 pm Pacific Time, Monday through Friday at +1 (408) 737-7777 and via email at [ts-support@netoptics.com](mailto:ts-support@netoptics.com). FAQs are also available on Net Optics website at [www.netoptics.com](http://www.netoptics.com).

## About this Guide

This guide covers the installation and use of the following models:

Part Number	Description
FMC-XFP	10 GigaBit Converter

## Unpacking and Inspection

Unpack the 10 GigaBit Media Converter, verify that you have all components by checking the Packing List against goods received.

The 10 GigaBit Media Converter ships with the following:

- 2 Power supplies
- 2 Network cables
- 1 Installation Guide

You may have also ordered a panel for rack mounting the Converter and an extended warranty. If any part is missing or damaged, immediately contact Net Optics Customer Service at 1 408.737.7777.

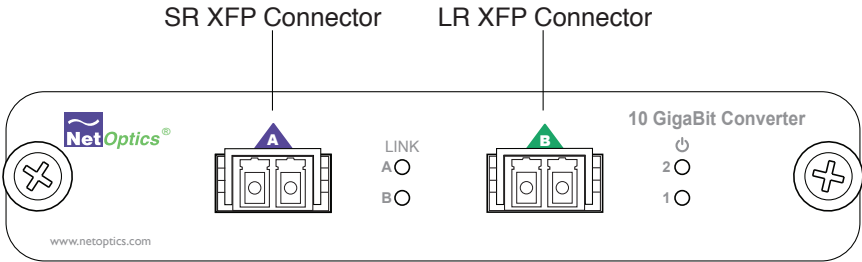
If you need to change the interface on the Converter, Net Optics offers conversion kits that include the XFP and corresponding cable.

The conversion kits are:

XFPKT-50SR	10GBase-SR XFP Conversion Kit 50µm
XFPKT-SR	10GBase-SR XFP Conversion Kit
XFPKT-LR	10GBase-LR XFP Conversion Kit

For more information, contact Net Optics Customer Service, 1 408.737.7777.

**Product Diagram**



**Figure 1: FMC-LR/50SR Front Panel**

## Installing the Media Converter

The Converter has two LC XFP connectors labeled according to media type. If you have any doubt, you can verify connector type by removing the XFP and reading the label on the bottom of the XFP.

**Warning:** The intended use of this product is in systems that contain lasers.

**DANGER:** Invisible Laser Radiation when open or when operating with fiber disconnected. AVOID DIRECT EXPOSURE TO THE BEAM. Never operate unit with a broken fiber or with a fiber connector disconnected.

### To install the Converter:

1. If you are rack mounting the Converter, install the panel in the rack with the four thumbscrews provided.
2. Insert the Converter into one of the available slots and secure it to the panel by tightening the thumbscrews.
3. Using the supplied cables, connect the Converter ports to the corresponding devices.
4. Connect the redundant power supplies to separate power sources and then to the converter.
5. Secure the DC power connectors with the connector clips.
6. Check the Power LEDs to verify that the Converter is receiving power.
7. Check the Link LEDs to verify that the link has been established.

## Installing a Conversion Kit

The conversion kits include the XFP and matching cable. Remove power from the Converter before installing the conversion kit.

### To change the XFP:

1. Remove the cable and lower the wire clip to release the old XFP.
2. With the clip in the lowered position, pull gently on the clip to free the XFP.
3. Insert the new XFP until you hear it click into place.
4. Connect the appropriate cable and check the Link LEDs.

## 10 GigaBit Ethernet Connection Distances

### 10GB-SR (850 nm laser)

Fiber Core Diameter	Type	Fiber Bandwidth Mhz/km	Distance
62.5 μm	Multimode	160 Mhz/km	26 m
62.5 μm	Multimode	200 Mhz/km	33 m
50.0 μm	Multimode	400 Mhz/km	66 m
50.0 μm	Multimode	500 Mhz/km	83 m
50.0 μm	Multimode	2007 Mhz/km	300 m

### 10GB-LR (1310 nm laser)

Fiber Core Diameter	Type	Fiber Bandwidth Mhz/km	Distance
8.5 μm	Singlemode	n/a	up to 10 Km

## Specifications

### Environmental

Operating Temperature: 0°C to 55°C

Storage Temperature: -10°C to 70°C

Relative Humidity: 10% min, 95% max, non-condensing

### Mechanical

Dimensions: 1.0" high x 5.3" deep x 2.9" wide

### Power

Power Supply: Input: 100-240 VAC, 0.6A, 50-60 Hz

(AC100-125V~30VA, 50-60 Hz, for Japan)

Output: 5V, 2A (5V, 2.4A for UK and Japan)

### Certifications

Fully RoHS compliant

### Optical Interface

#### Laser Class

Class I, eye-safe, laser emitter type. These Class I Lasers conform to the applicable requirements per US 21 CFR (J) and EN 60825-1, also UL 1950 applications.

#### SR Fiber Optic Interface:

Fiber Type: Multimode Corning 50 $\mu$ m or 62.5 $\mu$ m, wavelength 850nm

Connector: XFP

Optical Transmitter Wavelength: 850 nm nominal

Output Power: -7.3 dBm min, -1.0 dBm max

Optical Receiver Input Sensitivity: -7.5 dBm

#### LR Fiber Optic Interface:

Fiber Type: Singlemode Corning 8.5 $\mu$ m, wavelength 1310/1550 nm

Connector: XFP

Optical Transmitter Wavelength: 1310 nm nominal

Output Power: -6.0 dB min, -.5 dB max

Optical Receiver Input Sensitivity: -10.0 dBm

### Connectors

**FMC-XFP**

(2) XFP hot-pluggable

**XFP Conversion Kits**

XFPKT-50SR      10GBase-SR XFP Conversion Kit 50 $\mu$ m

XFPKT-SR        10GBase-SR XFP Conversion Kit

XFPKT-LR        10GBase-LR XFP Conversion Kit

## **Limitations on Warranty and Liability**

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Net Optics, Inc. warrants this GigaBit Media Converter to be in good working order for a period of ONE YEAR from the date of purchase from Net Optics or an authorized Net Optics reseller.

Should the unit fail anytime during the said ONE YEAR period, Net Optics will, at its discretion, repair or replace the product. This warranty is limited to defects in workmanship and materials and does not cover damage from accident, disaster, misuse, abuse or unauthorized modifications.

If you have a problem and require service, please call the number listed at the end of this section and speak with our technical service personnel. They may provide you with an RMA number, which must accompany any returned product. Return the product in its original shipping container (or equivalent) insured and with proof of purchase.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, EXPRESS OR IMPLIED. No Net Optics reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

Net Optics is always open to any comments or suggestions you may have about its products and/or this manual.

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