

Gigabit Multi-mode SX
to
Single Mode LX Converter

User's Manual
NGF-728 Series

COPYRIGHT

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, whether electronic, mechanical, photo copying, recording or otherwise, without the prior written permission of the publisher.

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 giving in the warning boxes



Warning

Table of Contents

1 Introduction	1
About This Guide.....	1
Welcome	1
Purpose.....	1
Terms/Usage.....	1
Features	2
Specifications	3
Package Contents	4
2 Hardware Description	5
Product Overview.....	5
Converter with SC connectors	6
3 Installation	7
Location.....	8
Desktop Installation	9
Getting Connected	10
Connecting Fiber Cable	11
4 LED Indicators	13
LED Table	13
Appendix A	14
Mini Converter Chassis	14
Features	15
Affixing Brackets.....	16
Installing the Converter	17
Rear view of Chassis and specifications	18
Rear View of Chassis with AC Power Supply..	18
Rear View of Chassis with DC Power Supply .	18

Appendix B	19
Cables	19
Appendix C	20
Application Diagrams	20
Application Diagram I	20
Application Diagram II	21
Application Diagram II	21

1 Introduction

About This Guide

Welcome

Thank you for choosing the Gigabit Multi-mode SX to Single Mode LX Converter. This device integrates multi-mode and single mode fiber networks in one flexible package.

Purpose

This guide discusses how to setup and install your Gigabit Multi-mode SX to Single Mode LX Converter.

Terms/Usage

In this guide, the term “Converter” (first letter upper case) refers to your Gigabit Multi-mode SX to Single Mode LX Converter, and “converter” (first letter lower case) refers to other converters.

Features

- Complies with IEEE 802.3z standard
- Supports Multi-mode & Single Mode fiber
- ST, SC, and WDM connectors for Multi-mode and Single Mode applications
- Extends fiber distance of up to 10km per segment (max. possible distance of 30km with converter situated in the middle of two segments)
- Compatible with other Gigabit Multi-mode to Single Mode devices
- Status LEDs for power & link to easily monitor network activity
- Suitable as stand-alone or in 19" 4/12-slot rack-mount converter chassis or the single slot mini chassis (with internal power supply)
- FCC Class A & CE approved

Specifications

Standard:	IEEE 802.3z
Connector:	SC and WDM for Multi-mode and Single Mode applications
Max. Distance:	Gigabit: Multi-mode 220m (62.5 μ m) 500m (50 μ m) Single Mode 10km (9 μ m)
Unit LEDs:	Power - Green- illuminates for normal operation
Port LEDs:	Link - Green- illuminates when connectors are attached
Power:	External power supply, 12V DC at 0.8A
Environment	
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:	109.2 x 73.8 x 23.4 mm (LxWxH)

Package Contents

- One converter unit
- One AC adapter (please check connector type)
- Self-adhesive pads (4 pieces)
- User's Manual

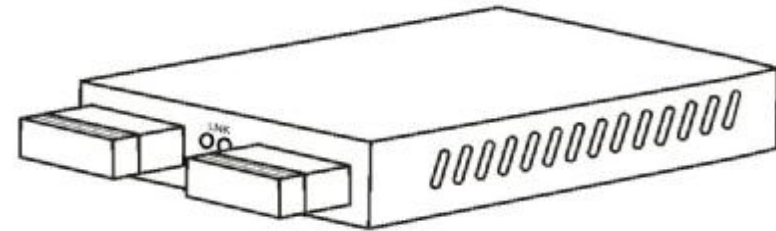
2 Hardware Description

Product Overview

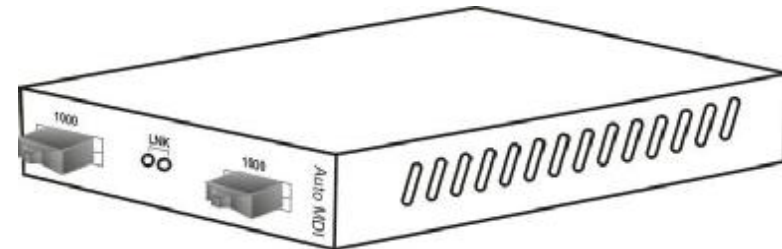
The Converter range is primarily designed for network or data installations that require extended fiber distances between 850nm & 1310nm fiber medium. Used individually or in conjunction with other converters. The fiber cable distances can now be greatly increased.

These Converters have been designed to support SC fiber optic connectors for Multi-mode and Single Mode configurations. It can also be adapted to used SC, and WDM type connectors, thereby widening its application across different types of networks. This flexibility allows the converter to easily connect to a Gigabit network using the existing connectors and fibers found in today's networking environments.

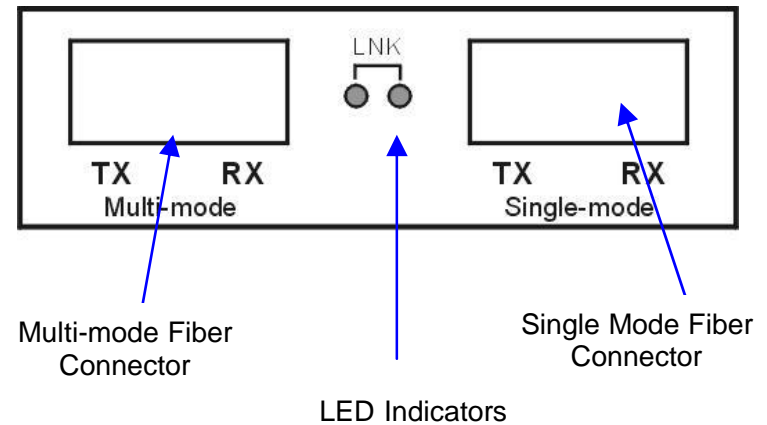
At full duplex, these converters can create three segments with a potential distance of up to 30km using single mode to single mode fiber between two respective nodes.



Converter with SC connectors



Converter with WDM connectors



3 Installation

In this chapter, we will take a look at how to install converters within its operating environment. First, it is important to unpack the Converter and ensure that all the components listed in [Package Contents](#) are present. Then see the following sections to correctly install your Converter

- Location
- Desktop Installation
- Getting Connected
- Connecting Fiber Cable
- 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.

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 on the front panel should light).
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 light).

This Converter can also be mounted on a vertical surface. Simply use the underside of the unit as a template to measure and mark out the position of the holes on to the surface where the unit is to be installed. Then use two screws to mount the converter firmly in place.



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

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. 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 on the rear of the Converter 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

This Converter utilizes ports with fiber connectors functioning under the Gigabit Ethernet protocol.

1000BASE-FX Ports

The 1000BASE-FX port adds a fiber Gigabit Ethernet link to your network device. Compliant with IEEE 802.3z, this port can transmit data at 1000Mbps in full-duplex mode across distances of up to 2km over multi-mode and 30km over single mode fiber-optic cable. The fiber port has a choice of two fiber connector types: SC and WDM.

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

1. Remove and keep the 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 SC/WDM port on the Converter and the other end to the 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)



Warning

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.

4 LED Indicators

LED Table

This Converter has LED indicators located at the front 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
LNK	On (Green)	Illuminated when connectors are attached
	Off	No valid link established on ports

The link (LNK) LED will light to indicate when fiber connectors are inserted in the ports. They do not indicate when data packets are being transmitted or received. For optimum transfer rate and distance extension, ensure that fiber loss does not exceed the maximum power budget given in our catalog and websites.

Appendix A

Mini Converter Chassis

The Chassis was developed to accommodate just one media converter or slide in module. The Chassis provides AC or DC power protection for converter units. Now, network designers can plan their Ethernet, Fast Ethernet, ATM, or Gigabit networks without having to worry about the power source. Furthermore, its unique sizes allows it to be installed in locations where space is limited.

Features

- Simple and easy to install
- Adds fiber connectivity to otherwise copper based networks
- Supports 10/100/1000Base, copper, fiber, single/multi-mode, ST, SC, MT-RJ, VF-45, LC, WDM connector converters
- Supports one media converter
- Suitable for all size of networks in all locations
- Provides internal AC and DC switching power supply
- Made from high quality durable steel
- Optional external redundant power adapter

Affixing Brackets

We have supplied 2 special brackets that easily attaches to the Converter. This allows for the secure placement of the Converter into the Chassis. It also seals off the front of Chassis and allows it to function correctly.

- Step 1 Using a Phillips screwdriver, remove two screws from the side panels on the converter.



- Step 2 Place the converter and brackets on a flat horizontal surface as illustrated above. Secure the brackets by replacing the screws.



Ensure that the rails are flush-mounted with the underside of the Converter. The Converter is now ready for loading into the Chassis.

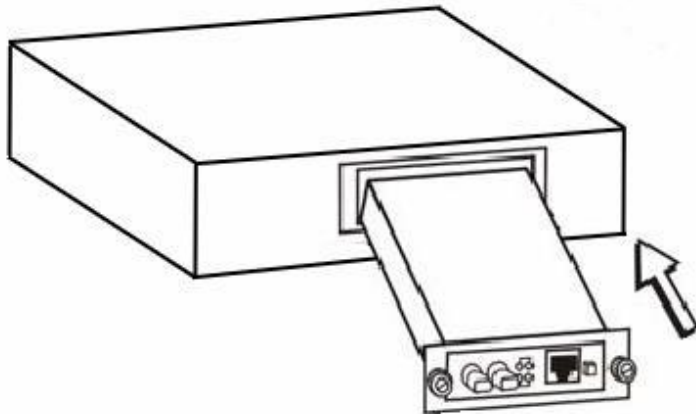
Installing the Converter

Once the Converter has been attached to the bracket, it can be installed into the Chassis. Special care must be taken to ensure the correct mating of the power connector. Align the Converter so that it fits between the upper and lower guide rails.



Warning

Always ensure that the converter power socket is positioned at the base of the Chassis. Never force the Converter into the Chassis - check power socket position and alignment.



Rear view of Chassis and specifications



Rear View of Chassis with AC Power Supply

Power: 100 - 240V AC (Optional 12V adapter)
Dimensions: 109 x 174 x 44.3 mm (L x W x H)



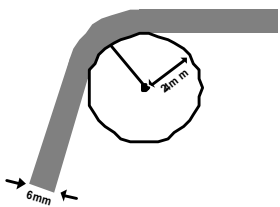
Rear View of Chassis with DC Power Supply

Power: -48V DC (Optional 12V Adapter)
Dimensions: 109 x 174 x 44.3 mm (L x W x H)

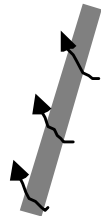
Appendix B

Cables

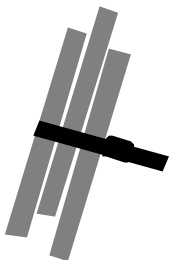
The following are some recommendations as to what you should and should not do when installing cables. Remember - cables are the deciding factor in network performance.



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.

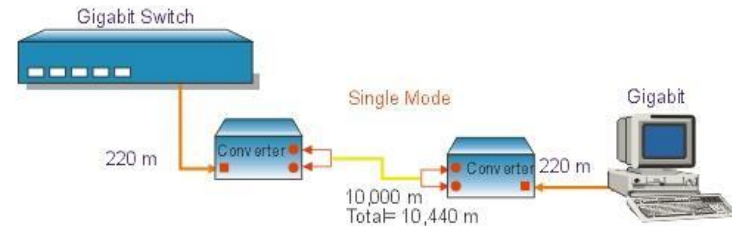
Appendix C

Application Diagrams

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

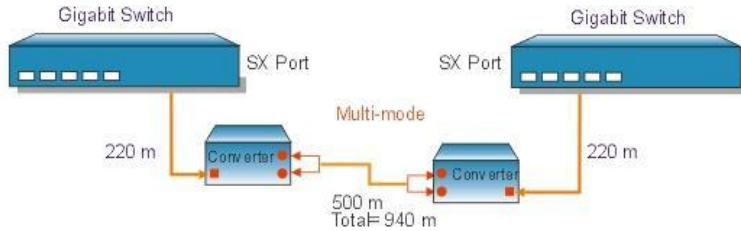
Application Diagram I

In the figure below, the Converter is functioning as a high-speed bridge between a Gigabit switch and a networking node to creating increased capacity for the user on a Metro or Local Area Network. It is providing a 1000Mbps Multi-mode to Single Mode link between Gigabit Ethernet networking devices.



Application Diagram II

In the figure below, the Converter is functioning as a high-speed link that spans 940m between two enterprise or gigabit LAN switches. With this configuration, it is providing a data transfer rate of 1000Mbps between networking nodes or stations.



Application Diagram II

In the figure below, the Converter is functioning as a high-speed link that spans 10,440m between two enterprise or Fast Ethernet LAN switches via their Gigabit uplink ports. With this configuration, it is providing a data transfer rate of 1000Mbps between networking nodes or stations.

