100Base-FX Multi-mode
to
100Base-FX Single Mode Converter

NXF-708 Series
User's Manual

COPYRIGHT

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 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

3 Installation 8
Installing Your Converter 8
Location.....9
Install the Converter 9
Desktop Installation.....10
Powering On Unit 11
Connecting Fiber Cable.....12

4 LED Indicators.....13
LED Table.....13

Appendix A 14
Cables.....14

Appendix B 15
Mini Converter Chassis.....15
Affixing Brackets.....16

Installing the Converter 17
Rear view of Chassis and specifications.....18

Appendix C 19
Application Diagram.....19
Application Diagram I 19
Application Diagram II 20
Application Diagram III 20

1 Introduction

About This Guide

Welcome

Thank you for choosing the 100Base-FX Multi-mode to Single Mode Media Converter. This device integrates Fast Ethernet multi-mode and single mode fiber segments in a highly flexible package.

Purpose

This guide discusses how to install and configure your 100Base-FX Multi-mode to Single Mode Media Converter.

Terms/Usage

In this guide, the term “Converter” (first letter upper case) refers to your 100Base-FX Multi-mode to Single Mode Media Converter and “converter” (first letter lower case) refers to other converters.

Features

- Complies with IEEE 802u standard
- Supports: Multi-mode ST or SC; Single Mode SC Connectors
- Fiber 850nm, 1310nm, 1550nm fiber where applicable
- Extend fiber distance up to 60km per segment (max. possible distance of 120km with converter situated in middle of two segments)
- Auto-detection of half/full duplex mode
- Compatible with other Fast Ethernet Multi-mode to Single Mode devices
- Status LEDs for Power, Receive & 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)
- External power supply
- FCC Class A and CE approved

Specifications

Standard:	IEEE 802.3u
Connector:	Depending on model ST or SC fiber optic
Max. Distance:	Fast Ethernet- Multi-mode: 2km Single Mode: 20km Long Haul Single: Mode 60km
Unit LEDs:	Power - illuminated for normal operation
Port LEDs:	Link - illuminated when connectors are attached Receive - flashing or illuminated when receiving data packets
Power:	External power supply, 12V DC at 0.8A
Temperature:	Operating: 0°C to 50°C Storage: -20°C to 70°C
Humidity:	Operating: 10% to 90%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) Go to Location

Package Contents

The Converter package should include:

- One converter
- One AC adapter (for external power supply)
- Four pieces self-adhesive pads
- One user’s manual

Go to
Installing Your Converter

2 Hardware Description

Product Overview

The Converter range is primarily designed for network or data installations that require extended fiber distances between 850nm, 1310nm and 1550nm fiber media for Fast Ethernet. Used individually or in conjunction with other converters, the fiber cable distances can be greatly increased.

These Converters have been designed to support both ST and SC fiber optic connectors in Multi-mode and SC Single mode configurations. This allows it to connect up to 100Base networks using the existing connectors and fibers used in today's networking environments.

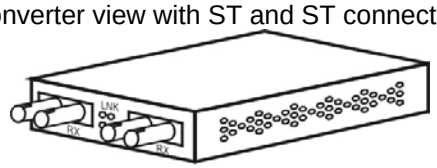
At full duplex, these converters can create potential distances of up to 120km with long haul single mode to long haul single mode fiber between two respective nodes.

Note: It is not recommended to use the Converter in half-duplex mode as back-to-back distance for multi-mode fiber will only be 412m.

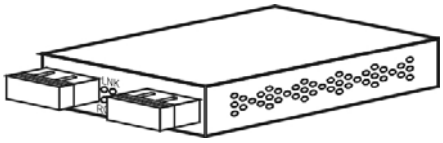
Due to the different types of connectors available and the modes of operation in use, there are several converter combinations available. See table below:

Operation Mode	Connector 1	Connector 2
Single to Single mode	**SC**	**SC**
Multi to Single mode	**ST**	**SC**
Multi to Single mode	**SC**	**SC**
Multi to Multi-mode	**SC**	**SC**
Multi to Multi-mode	**ST**	**ST**
Multi to Multi-mode	**SC**	**ST**
Converter connectors are Mode and Frequency Length dependant		

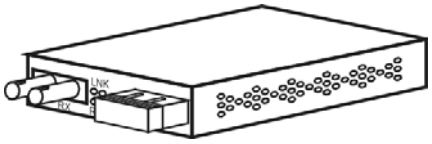
Converter view with ST and ST connectors



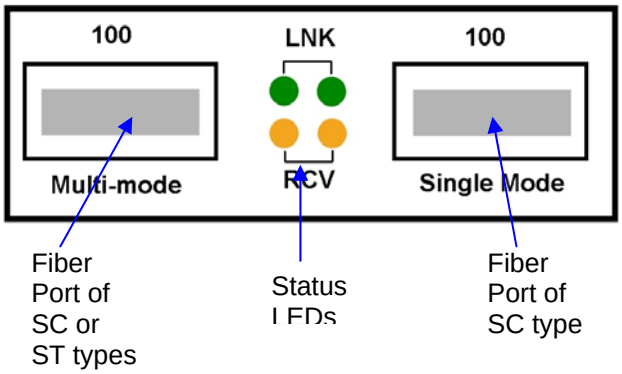
Converter view with SC and SC connectors



Converter view with ST and SC connectors



Front Panel View



3 Installation

Installing Your Converter

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 present.

- Location
- Installing Converter
- Desktop Installation
- Powering On Unit
- Connecting Fiber Cable

Location

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

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

Install the Converter

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

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).
5.

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 the two screws provided 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.**

Powering On Unit

The Converter uses external power supply 12V DC at 0.8A , frequency 50~60 Hz.

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.
3. Check the front-panel LEDs as the device is powered on to verify that the Power LED is lit. If not, check that the power cable is correctly and securely plugged in.

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.

Connecting Fiber Cable

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

1. Remove and keep the ST/SC 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 port on the Converter and the other end to the ST/SC port on the other device.
4. Check the corresponding port LED on the Converter to be sure that the connection is valid. (Refer to the LED chart in next section)

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

Warning Because invisible laser radiation may be emitted from the aperture of the fiber port when no cable is connected, avoid exposure to laser radiation and do not stare into the open apertures.

4 LED Indicators

LED Table

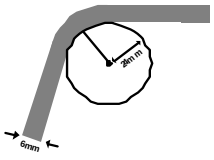
This Converter has LED indicators located at the front of the device. The LEDs have been designed to give easy at-a-glance network status, and provides 'real-time' connectivity information. Please see below for an interpretation of their functions:

LED Indicators		
LED	**Condition**	**Status**
PWR	On (Green)	Converter is receiving power
	Off	Power off or failure
LNK	On (Green)	Illuminated when connectors are attached
	Flashing (Green)	Data traffic passing through port
	Off	No link established
RCV	On (Amber)	Receiving data packets
	Flashing	Receiving data packets at a slower rate
	Off	No data packets received

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 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 B

Mini Converter Chassis

The Chassis was developed to accommodate just one media converter. The Chassis provides protection for converter units and an option of AC or DC power supplies. 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 converters with, RJ-45, ST, SC, MT-RJ, VF-45, LC, WDM connectors
- Accommodates one media converter
- Suitable for all size of networks in all locations
- Provides internal AC or 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.**

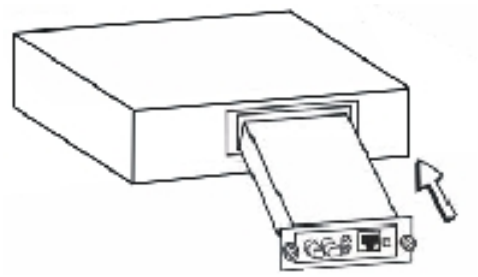
Step 2 **Place the converter and brackets on a flat horizontal surface as illustrated above. Secure the brackets by replacing the screws.**

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)

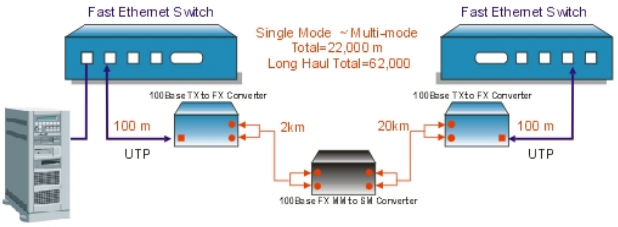
Appendix C

Application Diagram

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

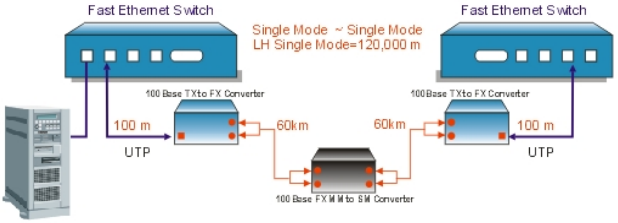
Application Diagram I

In the figure below, the Converter is functioning as a high-speed bridge between converters creating increased distance between each user (node) on the local area network. It is providing a 100Mbps, full duplex, 22km link using single mode and multi-mode fiber.



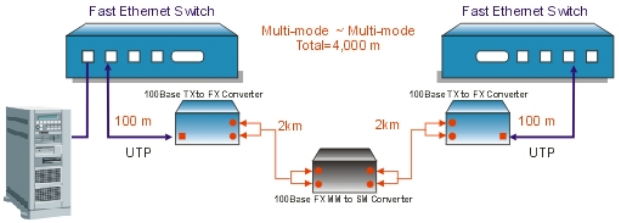
Application Diagram II

In the figure below, the Converter is functioning as a server aggregation for an enterprise or LAN configuration. The nodes can be situated 120km apart, and the Converter is creating a long distance link between nodes using long haul single mode fiber.



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, 4km link with multi-mode fiber between networking nodes.



VOLKTEK CORPORATION

4F, No. 192 Lian-Cheng Road

Chung-Ho, Taipei 235, Taiwan ROC

TEL: +86 (2) 8242-1000

FAX: +886 (2) 8242-3333

Tech Support: +886 800-286-286

ISO 9001 Certified