Manual

Important: Note that XSNet Series manuals may cover multiple models. To establish if a particular feature or specification in this manual applies to the unit at hand, consult the datasheet of the given model.
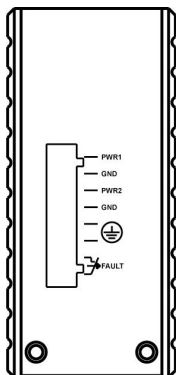
Quick Start Guide

Note: The EU Declaration of Conformity for this product can be found at www.siqura.com/support-files.

This quick start guide describes how to install and use the hardened media converter. This is the media converter of choice for harsh environments constrained by space.

Physical Description

Terminal Assignments

PWR1	Power Input 1 (10~48VDC)
GND	Power Ground
PWR2	Power Input 2 (10~48VDC)
GND	Power Ground
⏚	Earth Ground
FAULT	1. The relay opens if PWR1 or PWR2 fails 2. The relay opens if the Port Link fails (When Link Down Detection is Enabled)

DIP	LFP	TX		FX	LINK DOWN
	Enable	F. Mode	10M	H. Duplex	H. Duplex	ON
	Disable	Auto Mode	100M	F. Duplex	F. Duplex	OFF

• DC Terminal Block Power Inputs: There are two pairs of power inputs can be used to power up this media converter. Redundant power supplies function is supported. You need to have two power inputs connected to run the media converter, but the FAULT LED indicator will light up to remind that the power redundant system functions abnormal in case either PWR1 or PWR2 is dead. Media Converter, however, continues working normally even fault LED indicator lights up.

1. The 10/100Base-TX Connections
The following lists the pinouts of 10/100Base-TX ports.
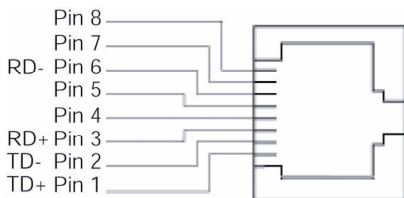
Pin	Regular Ports	Uplink port
1	Output Transmit Data +	Input Receive Data +
2	Output Transmit Data -	Input Receive Data -
3	Input Receive Data +	Output Transmit Data +
4	NC	NC
5	NC	NC
6	Input Receive Data -	Output Transmit Data -
7	NC	NC
8	NC	NC

2. The 100Base-FX Connections

The fiber port pinouts: The Tx (transmit) port of device I is connected to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II.
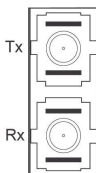
3. The WDM 100Base-BX Connections

The fiber port pinouts: Only one optical fiber is required to transmit and receive data.

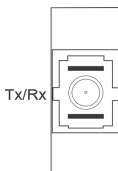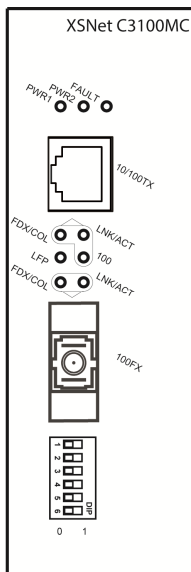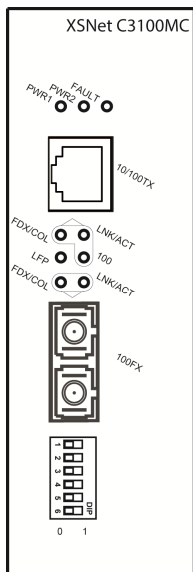| LEDs	State	Indication
FAULT	Steady	Power redundant system or port function abnormally
	Off	Power redundant system and ports function normally
PWR1 PWR2	Steady	Power on PWR stands for POWER
	Off	Power off
100 (Mbps)	Steady	Connection at the speed of 100Mbps
	Off	Connection at the speed of 10Mbps
LFP	Steady	LFPT function enabled
	Off	LFPT function disabled
LNK/ACT	Steady	Valid network connection established LNK stands for LINK
	Flashing	Transmitting or receiving data ACT stands for ACTIVITY
	Off	Neither valid network connection established nor transmitting/receiving data
FDX/COL	Steady	Connection in full-duplex mode FDX stands for FULL-DUPLEX
	Flashing	Collision occurred COL stands for COLLISION
	Off	Connection in half-duplex mode

Functional Description

- Meets NEMA TS2 Environmental requirements: temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-3 EMC Generic Standard Immunity for industrial environment.
- Supports 802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps, full/half-duplex. Auto MDI/MDIX.
- 100Base-FX: Multi mode/Single mode SC type. 100Base-BX: WDM Multi mode/Single mode SC type.
- One DIP switch for configuring link-fault-pass-through, fixed speed, full/half duplex, and link down alarm.
- Alarms for power and port link failure by relay output. Relay contact rating with current 1.5A @ 24VDC, 0.5A @ 120VAC.
- Operating voltage and Max. current consumption: 0.36A @ 12VDC, 0.18A @ 24VDC, 0.09A @ 48VDC. Power consumption: 4.32W Max.
- Power Supply: Redundant DC Terminal Block power inputs.
- Field Wiring Terminal: Use Copper Conductors Only, 60/75°C，12-24 AWG torque value 7 lb-in.
- -40°C to 75°C (-40°F to 167°F) operating temperature range. Tested for functional operation @ -40°C to 85°C (-40°F to 185°F). UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74°C (165°F).
- Supports Din-rail, Panel, or Rack Mounting installation.
- UL1604 Class I, Division 2 Classified for use in hazardous locations (Applicable to versions with Terminal Block power option).
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D OR non-hazardous locations only.
- WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.
- WARNING – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2.

Assembly, Startup, and Dismantling

- Assembly: Place the media converter on the DIN rail from above using the slot. Push the front of the media converter toward the mounting surface until it audibly snaps into place.
- Startup: Connect the supply voltage to start up the media converter via the terminal block.
- Dismantling: Pull out the lower edge and then remove the media converter from the DIN rail.
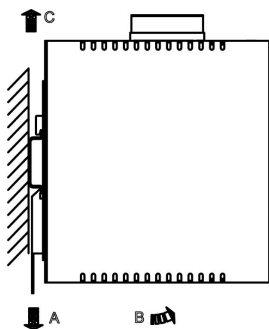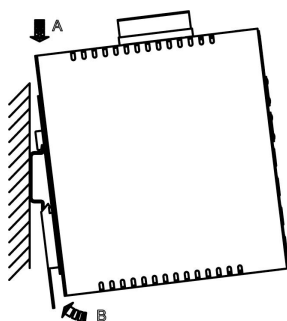
Preface

This hardened media converter provides an affordable solution for rugged and outdoor environment, transportation road-side cabinet, industrial floor shop, multitenant dwellings or Fiber To The Home (FTTH) applications. Capable of operating at temperature extremes of -40°C to +75°C, this is the media converter of choice for harsh environments constrained by space.

Plug-and-Play Solution:
The hardened media converter is a plug-and-play media converter in compact size. It doesn't have any complicated software to set up.

This manual describes how to install and use the hardened media converter with the link-fault-pass-through function. The converter introduced here provides one channel media conversion between 10/100Base-TX and 100Base-FX.

The converter fully complies with IEEE802.3 10Base-T and IEEE802.3u 100Base-TX/FX standards.

In this manual, you will find:
• Product overview
• Features on the media converter
• Illustrative LED functions
• Installation instructions
• Specifications

Table of Contents

Introduction

The media converter provides one channel for media conversion between 10/100Base-TX and 100Base-FX with the link-fault-pass-through function. This hardened fiber optic solution is perfectly fitted in the industrial applications or rugged environment.

Product Overview
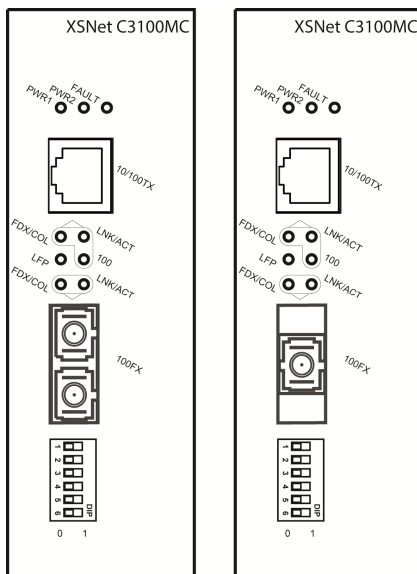
Product Features

- Meets NEMA TS2 Environmental requirements: temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-3 EMC Generic Standard Immunity for industrial environment.
- Supports 802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps, full/half-duplex. Auto MDI/MDIX.
- 100Base-FX: Multi mode/Single mode SC type. 100Base-BX: WDM Multi mode/Single mode SC type.

- One DIP switch for configuring link-fault-pass-through, fixed speed, full/half duplex, and link down alarm.
- Alarms for power and port link failure by relay output. Relay contact rating with current 1.5A @ 24VDC, 0.5A @ 120VAC.
- Operating voltage and Max. current consumption: 0.36A @ 12VDC, 0.18A @ 24VDC, 0.09A @ 48VDC. Power consumption: 4.32W Max.
- Power Supply: Redundant DC Terminal Block power inputs.
- Field Wiring Terminal: Use Copper Conductors Only, 60/75°C，12-24 AWG torque value 7 lb-in.
- -40°C to 75°C (-40°F to 167°F) operating temperature range. Tested for functional operation @ -40°C to 85°C (-40°F to 185°F). UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74°C (165°F).
- Supports Din-rail, Panel, or Rack Mounting installation.
- UL1604 Class I, Division 2 Classified for use in hazardous locations (Applicable to versions with Terminal Block power option).
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D OR non-hazardous locations only.
- WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.
- WARNING – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2.

Packing List

When you unpack this product package, you will find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to our authorized reseller.

- The Media Converter
- User's Manual

One-Channel Media Converter

Ports

The Converter provides one TX port and one FX/BX port. For the FX/BX port, it provides options of
• Multi-mode/Single-mode fiber using SC connector or
• Multi-mode/Single-mode WDM fiber using single SC connector
For the TX port, it uses RJ-45 connector, auto-MDIX, and auto negotiates 10/100Mbps and full/half-duplex.

Port Settings

Port settings are made very simple by means of a DIP (Dual Inline Package) switch at the front panel of the harden media converter.
DIP switch settings:
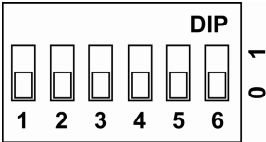
DIP switch

There are six pins on the DIP switch for port settings. Refer to the table below for more details.

DIP switch No.	0	1	
1	Disable LFPT	Enable LFPT	LFPT: link fault pass through
2	Enable auto negotiation for TX port	Enable forced mode for TX port	
3	TX port forced to 100Mbps	TX port forced to 10Mbps	
4	TX port forced to full duplex mode	TX port forced to half duplex mode	
5	FX port forced to full duplex mode	FX port forced to half duplex mode	
6	Disable link down alarm	Enable link down alarm	

• First, disconnect the converter from the power. Then toggle Pin 2 of the DIP switch to position 1 to enable the forced mode for TX port.
  <NOTE>Pin 2 must be toggled to position 1 prior to speed and duplex mode settings manually.
• Toggle Pin 3 to position 0 to force the TX port at the speed of 100Mbps. Or toggle Pin 3 to position 1 for 10Mbps speed.
• Toggle Pin 4 to position 0 to force the TX port at full duplex mode. Or toggle Pin 4 to position 1 for half duplex mode.
• Toggle Pin 5 to position 0 to force the FX port at full duplex mode. Or toggle Pin 5 to position 1 for half duplex mode.
• Toggle Pin 1 to position 0 to disable link-fault-pass-through.
• Toggle Pin 6 to position 0 to disable link down alarm.
• Connect the converter to the power again. The new setting will come into effect then.

Front Panel & LEDs

LED Indicators
The LED indicators give you instant feedback on status of the converter:
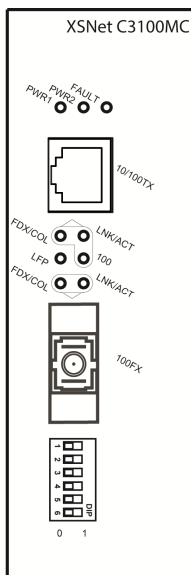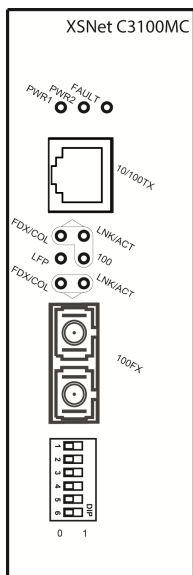
LEDs	State	Indication
FAULT	Steady	Power redundant system or ports function abnormally
	Off	Power redundant system and ports function normally
PWR1 PWR2	Steady	Power on PWR stands for POWER
	Off	Power off
100 (Mbps)	Steady	Connection at the speed of 100Mbps
	Off	Connection at the speed of 10Mbps
LFP	Steady	LFPT function enabled
	Off	LFPT function disabled
LNK/ACT	Steady	A valid network connection established LNK stands for LINK
	Flashing	Transmitting or receiving data ACT stands for ACTIVITY
	Off	Neither valid network connection established nor transmitting/receiving data.
FDX/COL	Steady	Connection in full-duplex mode FDX stands for FULL-DUPLEX
	Flashing	Collision occurred COL stands for COLLISION
	Off	Connection in half-duplex mode

Link-Fault-Pass-Through

Connect the FX ports of two Media Converters A and B through the fiber cable.

Link Fault of the FX port:
A Link Fault condition will be sensed on the TX port whenever the media converter detects a Link Fault condition on the FX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of the media converter would be off.

Link Fault of the TX port of the Media Converter A:
The Media Converter A: A Link Fault condition will be sensed on the FX port whenever the media converter detects a Link Fault condition on the TX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of the TX port of the Media Converter A would be off.

The Media Converter B: A Link Fault condition will be informed to the FX port of the Media Converter B. Then a Link Fault condition will be sensed on the TX port of the Media Converter B whenever the Media Converter B detects a Link Fault condition on the FX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of the Media Converter B would be off.

Link Fault of the FX port						
		TX Port			FX Port	
LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
Media Converter A	ON	OFF	OFF	OFF	OFF	OFF
Media Converter B	ON	OFF	OFF	OFF	OFF	OFF
Link Fault of the TX port of the Media Converter A						
		TX Port			FX Port	
LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
Media Converter A	ON	OFF	OFF	OFF	ON	ON
Media Converter B	ON	OFF	OFF	OFF	OFF	OFF

Installation

This chapter gives step-by-step installation instructions for the Converter.

Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

* The ambient temperature should be between -40 to 75 degrees Celsius.
* The relative humidity should be less than 95 percent, non-condensing.
* Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
* Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes of the equipment.
* The power outlet should be within 1.8 meters of the product.

DIN Rail Mounting

Fix the DIN rail attachment plate to the back panel of the media converter.

* Installation: Place the media converter on the DIN rail from above using the slot. Push the front of the media converter toward the mounting surface until it audibly snaps into place.

* Removal: Pull out the lower edge and then remove the media converter from the DIN rail.
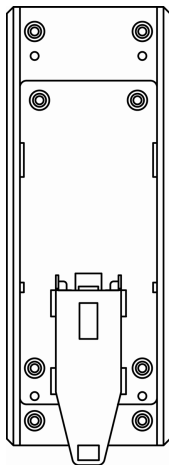
Connecting to Power

There are two pairs of power inputs can be used to power up this device. You need to have two power inputs connected to run the media converter, but the FAULT LED indicator will light up to remind that the power redundant system functions abnormal in case either PWR1 or PWR2 is dead. Media Converter, however, continues working normally even fault LED indicator lights up.

Step 1: Connect the DC power cord to the plug-able terminal block on the media converter, and then plug it into a standard DC outlet.

Step 2: Disconnect the power cord if you want to shut down the media converter.
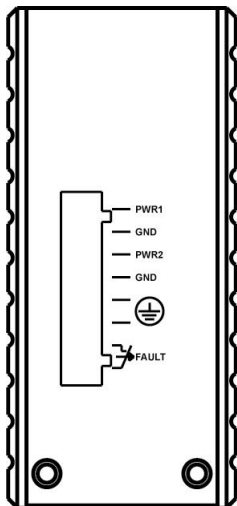
Field Wiring Terminal: Use Copper Conductors Only, 60/75°C，12-24 AWG torque value 7 lb-in.

Step 1: There are two pins on the terminal block are used for power failure detection. It provides the normally closed output when the power source is active. Use this as a dry contact application to send a signal for power failure detection.

Terminal Assignments	
PWR1	Power Input 1 (10~48VDC)
GND	Power Ground
PWR2	Power Input 2 (10~48VDC)
GND	Power Ground
⊕	Earth Ground
FAULT	1. The relay opens if PWR1 or PWR2 fails 2. The relay opens if the Port Link fails (When Link Down Detection is Enabled)

DIP	LFP	TX			FX	LINK DOWN
	Enable	F. Mode	10M	H. Duplex	H. Duplex	ON
	Disable	Auto Mode	100M	F. Duplex	F. Duplex	OFF

Special note:

The relay output is normal open position when there is no power to the media converter. Please do not connect any power source to this terminal to prevent the shortage to your power supply.

Specifications

Applicable Standards	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX
Fixed Ports	1 TX port, 1 FX/BX port
Speed 10Base-T 100Base-TX 100Base-FX/BX	10/20Mbps for half/full-duplex 100/200Mbps for half/full-duplex 200Mbps for full-duplex
Switching Method	Store-and-Forward
Forwarding rate	14,880/148,810pps for 10/100Mbps
Cable 10Base-T 100Base-TX 100Base-FX/BX	2-pair UTP/STP Cat. 3, 4, 5 up to 100m 2-pair UTP/STP Cat. 5 up to 100m MMF (50 or 62.5µm), SMF (9 or 10µm)
LED Indicators	Per Unit- (4 LEDs): PWR1, PWR2, FAULT, LFP
	Per Port- TX (3 LEDs): LNK/ACT, FDX/COL, 100 FX/BX (2 LEDs): LNK/ACT, FDX/COL
Dimensions	50mm (W) × 110mm (D) x 135mm (H) (1.97" (W) x 4.33" (D) x 5.31" (H))
Weight	0.8Kg (1.76lbs.)
Power	Terminal Block: 10-48VDC
Operating Voltage & Max. Current Consumption	0.36A @ 12VDC, 0.18A @ 24VDC, 0.09A @ 48VDC
Power Consumption	4.32W Max.
Operating Temperature	-40°C ~ 75°C (-40°F ~ 167°F) Tested for functional operation @ -40°C ~ 85°C (-40°F ~ 185°F) UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74°C (165°F)
Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Humidity	5 ~ 95%, non-condensing

Safety	Hazardous locations: Class I, Division 2 group A, B, C & D UL60950-1, EN60950-1, IEC60950-1
EMI	FCC Part 15, Class A EN61000-6-3: EN55022, EN61000-3-2, EN61000-3-3
EMS	EN61000-6-2: EN61000-4-2 (ESD Standard) EN61000-4-3 (Radiated RFI Standards) EN61000-4-4 (Burst Standards) EN61000-4-5 (Surge Standards) EN61000-4-6 (Induced RFI Standards) EN61000-4-8 (Magnetic Field Standards)
Environmental Test Compliance	IEC60068-2-6 Fc (Vibration Resistance) IEC60068-2-27 Ea (Shock) IEC60068-2-32 Ed (Free Fall)
NEMA TS2 Environmental requirements for traffic control equipment	