

# **SIGNAMAX** **CONNECTIVITY SYSTEMS**

**Signamax™ Connectivity Systems**  
**Gigabit SFP**  
**Converter Series**

**Model - 065-1896SFPTB**

**U S E R ' S   G U I D E**



**Signamax™ Connectivity Systems**

**Gigabit SFP  
Converter Series**

**User's Guide**

## **FCC Warning**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. 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 his or her own expense.

## **CE Mark Warning**

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.

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## **Trademarks**

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## Preface

Our hardened media converter provides an affordable solution for rugged environments, transportation road-side cabinets, industrial shop floors, multi tenant dwellings or Fiber To The Home (FTTH) applications. Capable of operating at temperature extremes of -40°F to +167°F (-40°C to +75°C), this is by far the media converter of choice for harsh environments in which space constraints exist.

### Plug-and-Play Solution:

The hardened media converter is a plug-and-play compact media converter which doesn't have any complicated software to set up.

This manual describes the installation and use of the hardened media converter with the Link Fault Signaling (LFS) function. The converter also provides one channel media conversion between 10/100/1000BaseT/TX and a Gigabit SFP socket port.

The converter is in full compliance with IEEE802.3 10BaseT, IEEE802.3u 100BaseTX, IEEE802.3ab 1000BaseT and IEEE802.3z 1000BaseSX/LX standards.

In this manual, you will find:

- **Product overview**
- **Features of the media converter**
- **Illustrative LED functions**
- **Installation instructions**
- **Specifications**

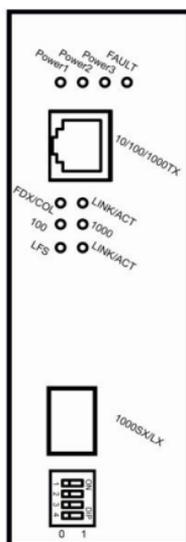
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## Introduction

The media converter provides one channel for media conversion between 10/100/1000BaseT/TX and a Gigabit SFP socket port with the Link Fault Signaling (LFS) function. This hardened fiber optic solution is perfectly suitable for industrial applications or rugged environmental conditions.

## Product Overview



## Product Features

- Meets NEMA TS1/TS2 environmental requirements such as temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-3 EMC Generic Standard Immunity for industrial environment.
- DIP switch configuration for link-fault-pass-through, fiber auto/force mode, and port link down alarm.
- 4096 MAC addresses, 2.75M bits buffer memory.
- Supports 802.3/802.3u/802.3ab/802.3z/802.3x. Auto-negotiation and Auto MDI/MDIX.
- SFP socket for Gigabit fiber optic expansion.

- The Gigabit SFP socket with SFP fiber transceiver should be set to (forced full duplex mode, forced full duplex mode) or (auto mode, auto mode) when two 10/100/1000BaseT/TX and Gigabit SFP socket one-channel media converters are connected to each other via the Gigabit SFP socket with a SFP fiber transceiver.
- Full wire-speed forwarding rate.
- Back-pressure & IEEE802.3x compliant flow control.
- Alarms for power and port link failure by relay output.
- Relay contact rating with current 1A @ 30VDC, 0.5A @ 120VAC.
- Operating voltage and Max. current consumption: 1A @ 12VDC, 0.5A @ 24VDC, 0.25A @ 48VDC. Power consumption: 12W Max.
- Power Supply: Redundant DC Terminal Block power inputs or 12VDC DC JACK with 100-240VAC external power supply.
- Field Wiring Terminal Markings: Use Copper Conductors Only, 140/167°F (60/75°C), wire range 12-24 AWG, torque value 7 lb-in.
- -40°F to 167°F (-40°C to 75°C) operating temperature range. Tested for functional operation @ -40°F to 185°F (-40°C to 85°C). UL508 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 167°F (75°C).
- For use in Pollution Degree 2 Environment.
- Supports DIN-Rail, Panel, or Rack Mounting installation.
- Front panel status LEDs.

<Note>

Both of the Gigabit SFP socket with SFP fiber transceiver should be forced to full duplex mode (or auto mode) when two 10/100/1000BaseT/TX and Gigabit SFP socket one-channel media converters are connected to each other via the Gigabit SFP socket with a SFP fiber transceiver.

### **Packing List**

When you open 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
- AC to DC Power Adaptor and Power Cable (optional)

## One-Channel Media Converter

### Ports

This Converter provides one copper port and one Gigabit SFP socket port. The Gigabit SFP socket port is available for options of Multi-mode, Single-mode, or WDM Single-mode SFP fiber transceiver using LC connector.

The copper port uses RJ-45 connector, auto-MDIX, and auto negotiates.

### Port Settings

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

Default DIP switch settings:

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

DIP switch	0 (OFF)	1 (ON)
1	Disable LFS	Enable LFS
2	Disable link down alarm for copper port	Enable link down alarm for copper port
3	Disable link down alarm for SFP socket port	Enable link down alarm for SFP socket port
4	Enable force mode for SFP socket port	Enable auto-negotiation for SFP socket port

## Front Panel & LEDs

The LED indicators give you instant feedback on converter status:

LEDs	State	Indication
FAULT	Steady	Power redundant system or ports function abnormally
	Off	Power redundant system and ports function normally
Power1	Steady	Power on
Power2	Off	Power off
LFS	Steady	LFS function enabled
	Off	LFS function disabled
1000BaseSX/LX		
LINK/ACT	Steady	A valid network connection established for SFP port
	Flashing	Transmitting or receiving data ACT stands for Activity
	Off	No valid network connection established for SFP port
10/100/1000BaseTX		
LINK/ACT	Steady	A valid network connection established for copper port
	Flashing	Transmitting or receiving data ACT stands for Activity
	Off	No valid network connection established for copper port
FDX/COL	Steady	Connected in full duplex mode
	Flashing	Collision occurred COL stands for Collision
	Off	Connected in half duplex mode
1000	Steady	Connected at 1000Mbps
	Off	Not connected at 1000Mbps
100	Steady	Connected at 100Mbps
	Off	Connected at 10Mbps

## Installation

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

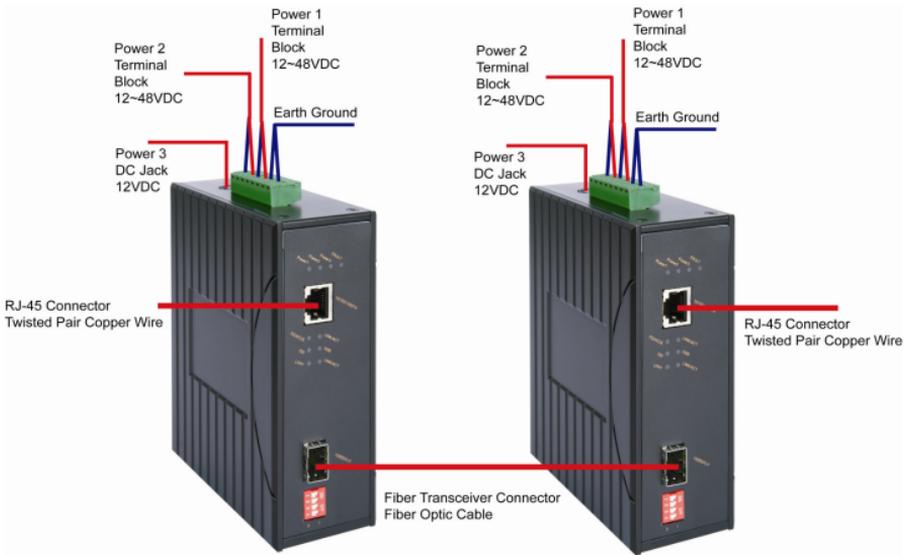
### Selecting a Site for the Equipment

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 167 degrees Fahrenheit (- 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 6 feet (1.8 meters) of the product.**

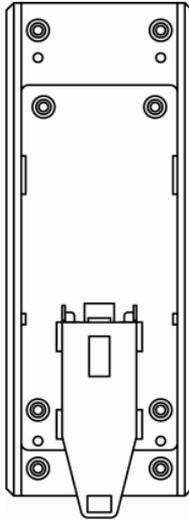
### Wiring Diagram

Field Wiring Terminal Markings: Use Copper Conductors Only, 140/167°F (60/75°C), wire range 12-24 AWG, torque value 7 lb-in.



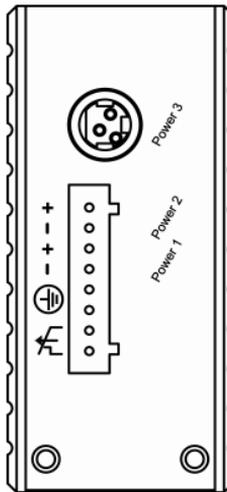
## DIN Rail Mounting

- 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

Redundant DC Terminal Block Power Inputs and 12VDC DC Jack:



## Redundant DC Terminal Block Power Inputs (preferred connection)

There are two pairs of power inputs can be used to power up this device.

**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.

**12VDC DC Jack (not supplied; available separately via special order)**

**Step 1:** Connect the AC to DC power adapter to the receptacle on the topside of the media converter.

**Step 2:** Connect the power cord to the AC to DC power adapter and attach the plug into a standard AC outlet with the appropriate AC voltage.

### Alarms for Power and Port Failure

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

Power Input Assignment		
Power3		12VDC DC Jack
Power2	+	12-48VDC
	-	Power Ground
Power1	+	12-48VDC
	-	Power Ground
		Earth Ground
Relay Alarm Assignment		
 FAULT	*Relay warning signal disable for following: The relay contact closes if Power1 and Power2 are both failed but Power3 on. The relay contact closes if Power3 is failed but Power1 and Power2 are both on.	

**<Note>**

The relay output is normal in an open position when there is no power to the media converter. Please do not connect any

power source to this terminal to prevent a short circuit to your power supply.

## **Specifications**

Applicable Standards	IEEE 802.3 10BaseT IEEE 802.3u 100BaseTX IEEE 802.3ab 1000BaseT IEEE 802.3z 1000BaseSX/LX
Fixed Ports	1 copper port, 1 Gigabit SFP socket port
Speed 10BaseT 100BaseTX 1000BaseT 1000BaseSX/LX	10/20Mbps for half/full-duplex 100/200Mbps for half/full-duplex 2000Mbps for full-duplex 2000Mbps for full-duplex
Forwarding rate	14,880pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps
Cable 1000BaseT 1000BaseSX/LX	4-pair UTP/STP Cat. 5 up to 328ft. (100m) MMF (50 or 62.5µm), SMF (9 or 10µm)
LED Indicators	Per Unit: FAULT, Power1, Power2, Power3, LFS Per Port: SFP socket: LINK/ACT Copper: LINK/ACT, FDX/COL, 1000, 100
Dimensions	1.97" (W) x 4.33" (D) x 5.31" (H) (50mm (W) x 110mm (D) x 135mm (H))
Weight	1.76lbs. (0.8Kg)
Power	DC Jack: 12VDC, External AC/DC required Terminal Block: 12-48VDC
Operating Voltage & Max. Current Consumption	1A @ 12VDC, 0.5A @ 24VDC, 0.25A @ 48VDC
Power Consumption	12W Max.
Operating Temperature	-40°F ~ 167°F (-40°C ~ 75°C) Tested for functional operation @ -40°F ~ 185°F (-40°C ~ 85°C) UL508 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 167°F (75□)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Humidity	5 ~ 95%, non-condensing
Safety	UL508
EMI	FCC Part 15, Class A VCCI, Class A EN61000-6-3: EN55022, EN61000-3-2, EN61000-3-3

## Signamax™ Gigabit SFP Hardened Media Converter

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 Compliance	Test IEC60068-2-6 Fc (Vibration Resistance) IEC60068-2-27 Ea (Shock) IEC60068-2-32 Ed (Free Fall)
NEMA TS1/2 Environmental requirements for traffic control equipment	

## Contact Information

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