

FT-EMCU-1G-SM-SX-WM-KIT

User Manual

Gigabit Media Converter, Single Optical Port

Fiber Optic 10/100/1000Mbps
Ethernet Transmission System



Model Number: FT-EMCU-1G-SM-SX-WM-KIT
10/100/1000Mbps Ethernet Media Converter





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1.0 Safety Instructions

The safety information contained in this section, and on other pages of this manual, must be observed whenever this unit is operated, serviced, or repaired. Failure to comply with any *precaution*, warning, or instruction noted in the manual is in violation of the standards of manufacture, warranty and intended use of the unit. NACE assumes no liability for the customer's failure to comply with any of these safety requirements.

**LASER RADIATION CAUTION:
DISCONNECTED OPTICAL CONNECTORS MAY EMIT OPTICAL ENERGY.
DO NOT VIEW BEAM WITH OPTICAL INSTRUMENTS (MAGNIFIERS).**

This product contains Class 1M lasers

- Class 1M laser product according to IEC60825-1:1993+A1+A2
- **CAUTION: Use of controls or adjustments or procedures other than those specified herein may result in hazardous radiation exposure.**
- **Precautions should be taken to prevent exposure to optical radiation if the internal PCB removed from its enclosure or when the fiber is disconnected from the unit.**
- Laser radiation may be present on a fiber connection to this unit even when the power has been removed from the unit.
- This unit is intended for installation in locations where only trained service personnel have access to the fiber connections.
- The optical connectors are listed in the Connection Diagrams and Function section of this manual.
- Optical outputs and wavelengths are listed in the Specifications section of this manual.

The optical devices used in this equipment are Hazard Level 1M. As required by IEC60825-1, the installer is responsible for insuring that the label depicted below is present in the restricted locations where this equipment is installed.



This assembly contains parts sensitive to damage by electrostatic discharge (ESD).

Use ESD precaution procedures when touching, removing or inserting parts or assemblies.



Units are not waterproof; please install in an appropriate NEMA Enclosure.

When units are installed in extremely hot environments, the metal enclosures may become hot to the touch. Please install in restricted areas where properly trained personnel have access.

2.0 Fiber Installation Hints

Fiber Information

We are manufactured with optical connector covers to keep them from accumulating dirt. In addition to safety precautions, our manual also provides the following guidelines when working with optical fibers.

Please maintain optical fiber connectors as clean as possible to reduce loss of optical transmission output. Cleanliness is extremely important to proper operations.

1. Protect optical connectors by leaving the connector covers in place on unused fiber connections and on the fiber tips themselves.
 - a. Personnel who remove and replace fiber connectors or fiber pigtails should be equipped with a fiber cleaning kit. These are available as off-the-shelf items from a supplier of fiber optic accessories.
 - b. Isopropyl Alcohol and lint-free tissue or cloth may be used to clean fiber connector tips.
 - c. Do not use rubbing alcohol mixed with water. This can cause additional spots.
 - d. Clean the fiber by pulling the connector tip across the tissue, then turn the connector 90 degrees and repeat it in a different spot on the tissue.
 - e. Don't pull the fiber across and then push it back. This will put the dirt that was cleaned off back on again.
 - f. Repeat the process on a dry, folded tissue.
2. When removing fiber cables from fiber system ports, it is good practice to clean them again.
3. Installer must pay attention to the bend radius of the fibers. A general rule is to have a 3-inch (8cm) bend radius. A bend radius less than 3 inches may cause attenuation also known as optical signal loss.
4. Installers of fiber equipment should be equipped with an Optical Light Source an Optical Power Meter to measure the optical inputs and outputs in a system. These instruments are available from Alba at great savings, especially to our customers. The use of these tools will save much time and effort in getting optical communications links up and running. Properly equipped and trained installers can quickly determine the source of any problems that occur.

3.0 Product Description

FiberTronix FT-EMCU-1G-SM-SX-WM-KIT series are gigabit fiber optic transceiver products specifically designed for applications including electrical system, transportation, petroleum and petrochemical, justice system, and surveillance system.

The series provide 1000 Base SC fiber optic interface, multi- mode/single mode with two/single fiber. Single-mode product provides a standard 20 km optical fiber transmission distance, or alternatively 40km/60km/80km/120km; Multimode product offers optical fiber transmission distance of 2km. At the same time, FT-EMCU-1G-SM-SX-WM-KIT series units provide a 10/100/1000 Base-T RJ45 port, supporting 10/100/1000 Mbps, full duplex/half duplex and MDI/MDIX adaptive polarity. This series adopts high performance network exchange chips, in which all ports support non-blocking, full speed packet forwarding, excluding addition delay in optical transceiver packet forwarding.

This series boasts a metal shell, achieves IP30 protection grade, and works under a wide temperature range of -10 °C ~70 °C with the average trouble-free working time of over 100, 000 hours.

This equipment series meets CCC, CE/FCC, and EN 61000, and will satisfy the demands of high stability and high reliability, industrial temperature applications.

4.0 Product Features

- 10/100/1000Mbps Ethernet
- Electrical Port Supports Auto-Negotiation for 10Mbps, 100Mbps or 1000Mbps,
- Full or Half Duplex Mode
- Optical Port Supports 1000Mbps Full Duplex Data
- Automatic MDI/MDI-X Crossover Cables
- Transparent to Data Encoding / Compatible with Major Data Protocols;
- IEEE 802.3 compliant
- Backplane Bandwidth: 4Gbps
- Packet Forwarding Rate: 2.976Mpp
- Performance and Link Status Indicator LEDs
- Voltage Transient Protection on Power / Signals
- Single fiber Versions, SC
- Auto Resettable Fuses on Power Lines
- 12VDC Input Voltage (Standalone)
- Operating Temp: 14°F - 158°F (-10 - 70°C)
- Common Model 4KV Lightning Protection
- IP30 rate

5.0 Product Signal Format & Specifications

Connectors

Optical	SC, Single Fibers
Power	Terminal Block
Ethernet	RJ45

Optical Parameter

Fiber	Single-mode
Wavelengths (MM)	1310/1550nm
Wavelengths (SM)	1310/1550nm

Properties

Switching delay	≤1.372us
MAC address table	2K
Buffer	1Mb

Power Parameter

Input	12V DC
Power	1.5W
Power port	DC Adapter

Interface

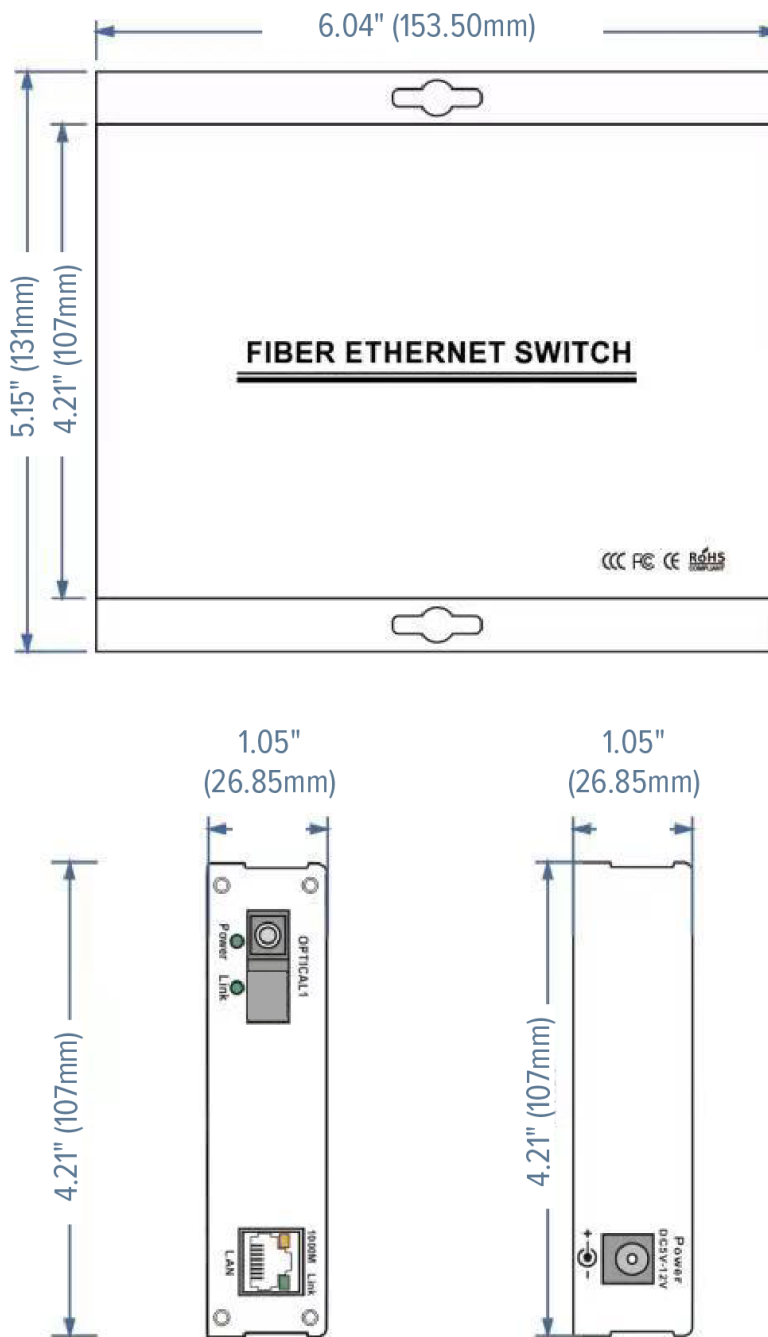
Fiber Port	1x1000 Base-X Fiber port
RJ45 Port	1x10/100/1000 Base-T Copper Ports, Support MDI/MDIX
LED	Power, LINK/ACT

Mechanical Property

Case	Aluminum alloy, IP30 Rate
Dimension	6.06 x 5.15 x 1.06" (154 × 131 x 27 mm)
Weight	0.83 lbs (0.38Kg)
Installation	Standalone/Wall mounted/ Rack-mounted
Operating Temperature	14°F - 158°F (-10 - 70°C)
Storage Temperature	60°F - 167°F (20 - 75°C)
Operating Humidity	5 - 95% (No condensation)
MTBF	100,000 hrs
Warranty	1-year Limited Warranty

6.0 Dimensions of FT-EMCU-1G-SM-SX-WM-KIT

Figure 6.1 below shows the dimensions.



7.0 Front Panel LED Indicators

All the media converters have panel mounted indicators to provide visual operational status of each slot. Below are listed and described the functions of the various LED indicators.

LED STATUS INDICATORS





8.0 FiberTronix 1-Year Limited Warranty

FIBERTRONIX. (the "Company") warrants to the Original Purchaser that the item purchased is free from defects in workmanship or material under normal use. This warranty starts on the date of shipment of the hardware to the Original Purchaser.

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component. To obtain service, the Original Purchaser must return the item to the Company properly packaged for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and a return shipping address on where to deliver the hardware, call 610-429-1821. The shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company's liability for defective hardware is limited to repairing or replacing the hardware.

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), accident, unusual physical, electrical, or electromechanical stress, modifications, neglect, misuse, operation with media not approved by the Company, tampering with or altering of the hardware, riot, war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout or interruption or failure of electricity, air conditioning, or humidity control, internet, network, or telephone service

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of shipment to the Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the laws of your local jurisdiction to find out whether the above limitation applies to you.

The Company shall not be liable to you for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been advised of the possibility of such damages, or for any claim brought against your by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the laws of your local jurisdiction to find out whether the above exclusion applies to you.



This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modification to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon.

This warranty gives you specific legal rights. You may also have other rights which vary from one jurisdiction to another.