

*Installation/Operation Instructions*

**Fiber Optic 10/100/1000Mbps Ethernet Transmission System**

Part Number: AFS6500  
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. ALBA 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**

Alfa Fiber Transmission Systems are manufactured with optical connector covers to keep them from accumulating dirt. In addition to safety precautions, our manual also provide 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. Propyl 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 Alfa 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

The ALBA FIBER SYSTEMS Series AFS6500 are media converters designed to transmit and receive 10/100/1000Mbps data over one or two optic fibers. Available in commercial temperature grade, units feature half or full duplex mode and Auto-Negotiation to 10/100/1000Mbps Ethernet rate without adjustments. The optical interface operates at a 1000Mbps rate. Plug-and play design ensures ease of installation and no user electrical or optical adjustments required. Features included are low power consumption, LED indicators for monitoring equipment link and performance operating status and auto resettable voltage transient fuses. The Series AFS6500 are outstanding products for transmission of 10/100/1000Mbps Ethernet signals.

### 4.0 Product Features

- 10/100/1000Mbps Ethernet
- Electrical Port Supports Auto-Negotiation for 10/100/1000Mbps, 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.
- No Electrical or Optical User Adjustments
- Performance and Link Status Indicator LEDs
- Voltage Transient Protection on Power/Signals
- 1 or 2 fiber Versions, SC
- Auto Resettable Fuses on Power Lines
- Designed with Lowest Power Consumption
- 12VDC Input Voltage, 48VDC Only with PoE
- Compliance with CE, FCC
- PoE+ selectable

## 10/100/1000MBPS ETHERNET MEDIA CONVERTER ON 1 OR 2 FIBERS

### 5.0 Installation

The ALBA FIBER SYSTEMS Series AFS6500 products are interchangeable between Standalone and Rackmount. Cards units occupy one slot in Alba’s standard 19"x2U chassis series AFS920-1 with one power supply (total 14 cards) or ASF920-2 with 2 power supplies. To install card and power supply, keep the orientation of Alba logo on top and slide onto the top and bottom card guides in the chassis. Press securely on the top and bottom of the card to ensure that it is fully seated so that the electrical connector mates with the chassis-mounted motherboard. Once installed, manually tighten the two thumbscrews located at the top and bottom of the card. Do not use tools to secure these and do not over tighten.

### 6.0 Product Signal Format & Specifications

The tables below identify the specifications for the various signals that these fiber units transmit / receive.

<b>CONNECTORS</b>	
Optical	SC, 1 or 2 Fibers
Power	Terminal Block
Ethernet	RJ-45

<b>OPTICAL PARAMETERS</b>	
Fiber	Single-mode or Multi-mode
Wavelengths (MM)	850/1310nm
Wavelengths (SM)	1310/1550nm

<b>DATA</b>	
Data Interface	Ethernet
Data Rate	10/100/1000 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port / Full Duplex Optical Port

<b>POE PARAMETERS</b>	
Standard	IEEE802.3at
Data Rate	48V, 25.5W

**10/100/1000MBPS ETHERNET MEDIA CONVERTER ON 1 OR 2 FIBERS**

**7.0 Panels Layout and Pinout Assignment Diagrams**

Figures 7.1 and 7.2 below show the front panel layout;  
Figures 7.3 below show the connector diagrams of rear panel layout;



Figure 7.1: the layout of front Panel of standalone version



Figure 7.2: the layout of front panel in Card (rackmount) version

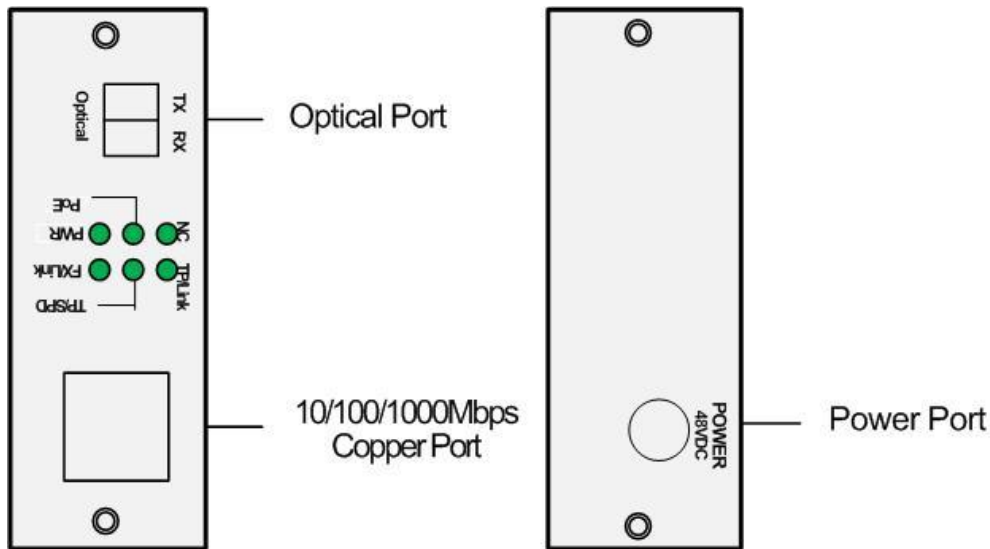


Figure 7.3: the connection diagram of rear panel.

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### 8.0 Front Panel LED Indicators

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

#### AFS6500 LED STATUS INDICATORS

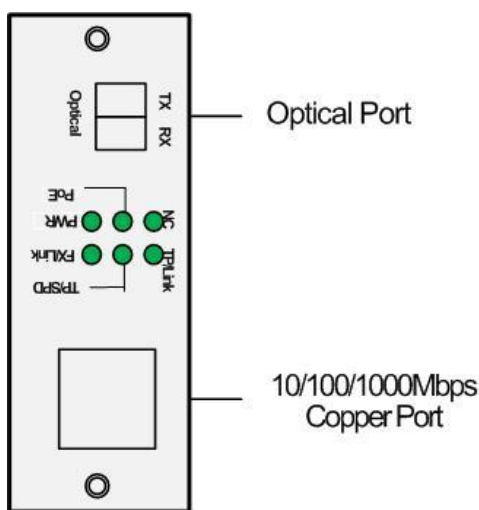


Figure 8.1: LED indicators of rear panel

LED indicator lamp	Status	Explanation
FX/Link	On	Connection status display for fiber link. "ON" indicates that Fiber link connection is correct
	Blink	Active status display of fiber link "Blink" indicates packet transmits through FX end
TP/Link	On	Connection status display for electric link. "ON" indicates that electric link connection is correct
	Blink	Active status display of fiber link "Blink" indicates packet transmits through TX end
PoE	On	Power supply of PD Cameras normally on the copper ports
PWR	On	Power is on and normal
	Off	Power is off
TP/SPD	On	Transfer rate of electric interface is 100Mbps
	Off	Rate of electric interface is 1000Mbps



## 10/100/1000MBPS ETHERNET MEDIA CONVERTER ON 1 OR 2 FIBERS

### 9.0 Product Part Number Variations

The table below lists the various part numbers associated with different versions of the products.

#### ORDER INFORMATION

MODEL	DESCRIPTION	FIBER PORT	COPPER PORT	OPTICAL BUDGET	MAXIMUM DISTANCE
<b>AFS6500-1S-2SC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	2	1	10dB	MM, 0.6miles (1 Km)
<b>AFS6500-2S-2SC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	2	1	10dB	SM, 12 miles (20 Km)
<b>AFS6500-1S-1ASC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1	10dB	MM, 0.6miles (1 Km)
<b>AFS6500-1S-1BSC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1	10dB	MM, 0.6miles (1 Km)
<b>AFS6500-2S-1ASC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1	10dB	SM, 12 miles (20 Km)
<b>AFS6500-2S-1BSC</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1	10dB	SM, 12 miles (20 Km)
<b>AFS6500-1S-2SC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	2	1 with PoE+	10dB	MM, 0.6 miles (1 Km)
<b>AFS6500-2S-2SC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	2	1 with PoE+	10dB	SM, 12 miles (20 Km)
<b>AFS6500-2S-1ASC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1 with PoE+	10dB	MM, 0.6 miles (1 Km)
<b>AFS6500-2S-1BSC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1 with PoE+	10dB	MM, 0.6 miles (1 Km)
<b>AFS6500-2S-1ASC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1 with PoE+	10dB	SM, 12 miles (20 Km)
<b>AFS6500-2S-1BSC-PoE+</b>	10/100/1000BaseT(X) to 1000BaseFX Media Converter	1	1 with PoE+	10dB	SM, 12 miles (20 Km)

**AFS6500 1=MM(1KM), 2=SM (20Km) 3=SM(40Km) 4=SM(60Km) 5=SM(80Km);**

**S=Standalone, C=Card (rackmount) ; 2= 2 fibers, 1= 1 fiber; 1A=1310/1550nm, 1B=1550/1310nm**

**10/100/1000MBPS ETHERNET MEDIA CONVERTER ON 1 OR 2 FIBERS**

**10.0 Warranty**

- 3 years warranty for product - please refer to Alba Fiber Systems warranty document.
- Repair
  - If product is found to be defective; user must contact a local distributors or re-seller. In order to return any items for repair or credit, buyer must receive a dated Return Materials Authorization form (RMA #), assigned by Alba Fiber Systems Customer Service department. Please contact RMA@albfiber.net. Returns must be shipped prepaid, fully insured, door to door service and clearly identified with RMA on package exterior or it will not be accepted. Alba reserves the right to apply repair charges to any products that have been dismantled or modified by anyone other than an Authorized Alba Security engineer.
    - Please attach a statement clearly describing the problem.
- Alba will repair defective product under warranty free of charge to our customers.
- Any unauthorized modification of hardware and software voids the warranty.
- Warranty does not cover mishandling and/or abuse of the product.

Products comply with the following Safety Label for International Fiber Communication Equipment.

NOTE: 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 the instruction manual, 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 this own expense.

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