ALLEN-BRADLEY

Allen-Bradley Fiber Optic Cable

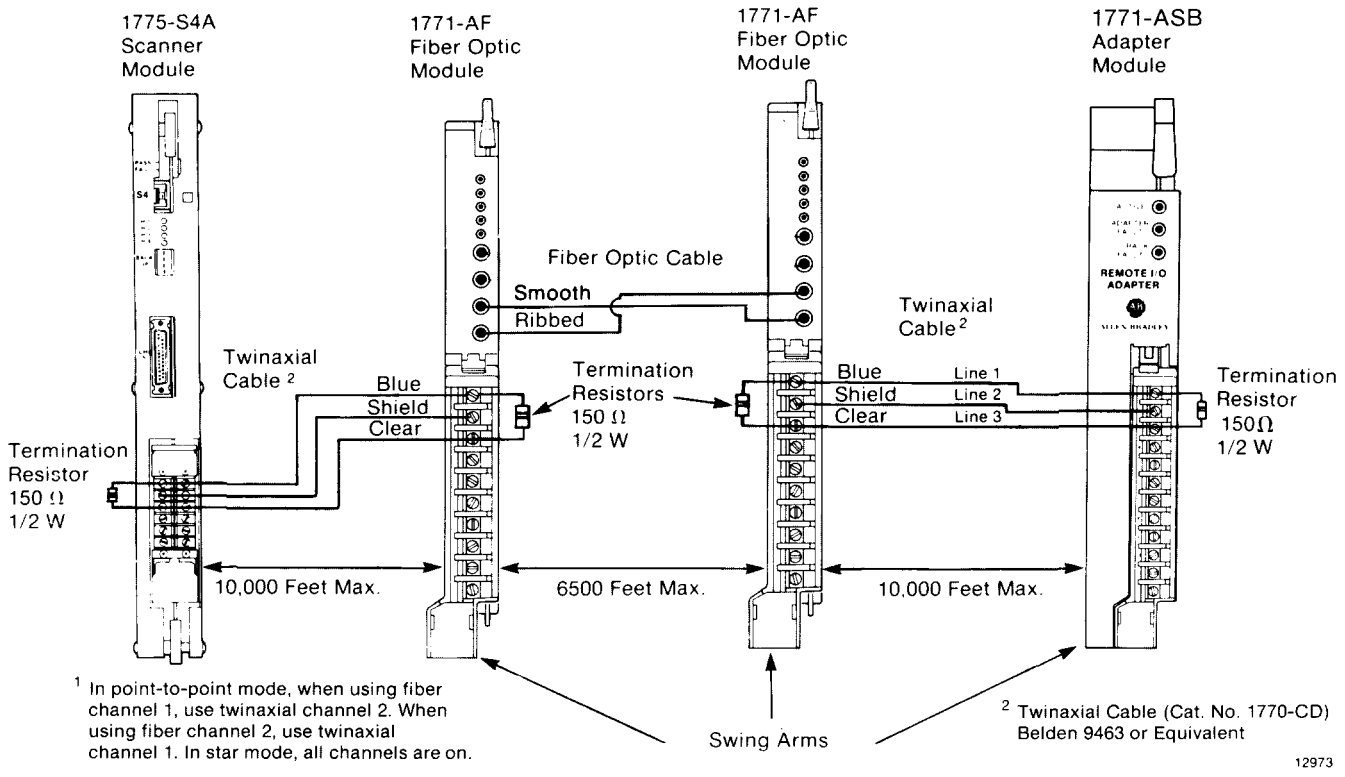
(Cat. No. 1771-AF)

Product Data

Description

Your fiber optic module converts electrical signals to light signals and transmits them through a fiber optic cable. At the other end of the cable, a second fiber optic module converts the light signals back into electrical signals and transmits them through an electrical cable. The fiber optic converter introduces no appreciable system delay and is completely transparent to the devices that are connected to it (refer to figure 1). The module can also function as a twinaxial cable repeater. This module's communication capability is especially useful in high RFI/EMI areas and in environments which require a high degree of intrinsic safety.

1
Typical Fiber 1 Optic Module Installation



[1] In point-to-point mode, when using fiber channel 1, use twinaxial channel 2. When using fiber channel 2, use twinaxial channel 1. In star mode, all channels are on.

[2] Twinaxial Cable (Cat. No. 1770-CD) Belden 9463 or Equivalent

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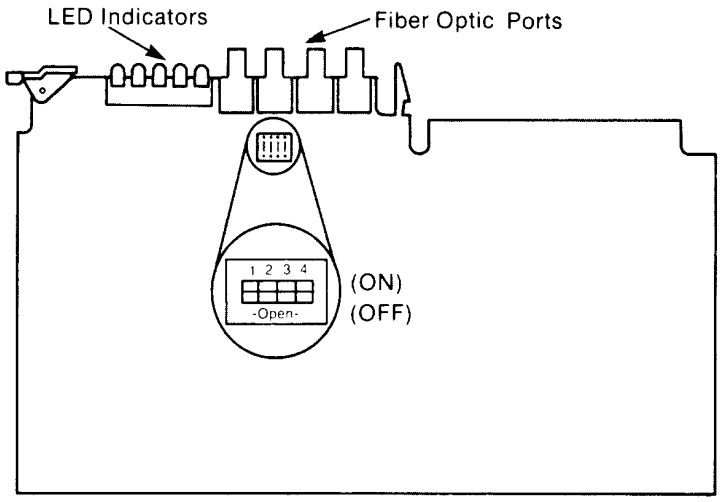
DIP Switches

A four-position DIP switch assembly configures the module to your specific application. You must set these switches before you install the module in the I/O chassis.

The DIP switches are located on the inside of the module. To access the switches, remove the four protective dust cover caps (2 transmitter and 2 receiver), the four perimeter screws, and the center screw on the back of the module. Remove the module covers.

Figure 2 shows the switch positions. Use the tip of a ball point pen or a similar object to set the switches. Do not use the tip of a pencil - a piece of lead could break off and damage the module.

2
DIP Switch Settings



Switch	ON	OFF (OPEN)
SW1 - Baud Rate	57.6K Baud[1]	115.2K Baud
SW2 - Configuration	Point-to-Point[1]	Star (Repeater)
SW3 - Twinaxial Channel 1	Channel[1] Disable	Channel Enable
SW4 - Twinaxial Channel 2	Channel Disable	Channel[1] Enable

[1] Typical point-to-point DIP configuration using fiber channel 1.

Note: Factory DIP switch settings are set for: star configuration, low baud rate, and both twinaxial channels on.

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Reassemble the module by carefully slipping the front cover over the fiber optic ports. Attach the module's back cover with the four perimeter screws and the center screw.

Module Indicators

The fiber optic module has the following indicators and connectors on the front panel:

- PWR LED - power is applied to the module
- CHANNEL ACTIVE 1 LED - receive data on fiber optic channel 1
- CHANNEL ACTIVE 2 LED - receive data on fiber optic channel 2
- CHANNEL ACTIVE 3 LED - receive data on twinaxial channel 1
- CHANNEL ACTIVE 4 LED - receive data on twinaxial channel 2
- CHANNEL 1 XMT Fiber Optic Port - fiber optic channel 1 transmitter
- CHANNEL 1 RCV Fiber Optic Port - fiber optic channel 1 receiver
- CHANNEL 2 XMT Fiber Optic Port - fiber optic channel 2 transmitter
- CHANNEL 2 RCV Fiber Optic Port - fiber optic channel 2 receiver
- 10-Point Swing Arm - twinaxial connections

In point-to-point mode, when using fiber channel 1, use twinaxial channel 2. When using fiber channel 2, use twinaxial channel 1. In star mode, all channels are on.

Module Location

You can place a fiber optic module in any slot in the 1771 I/O chassis except for the left-most slot reserved for the 1771-ASB adapter module.

ATTENTION: Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing an I/O module.

- Failure to remove power from the backplane or wiring arm could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

Fiber Optic Module Handling

Do not discard the protective dust cover caps. They are required for module storage and shipment. You should also keep the dust cover caps on any unused fiber optic ports.

ATTENTION: Never look into the ends of an active fiber optic cable or the fiber optic module transmitters. Harmful optical radiation may be present. Permanent eye damage could result. Use a fiber optic power meter to determine if a signal is present.

Electrostatic Discharge

Under some conditions, electrostatic discharge can degrade performance or cause permanent damage. If you observe the following precautions you can guard against electrostatic damage.

- Touch a grounded object before handling the module to discharge yourself.
- Do not touch the backplane connector or connector pins.
- When you need to configure or replace internal components, do not touch other circuit components inside the module. If available, use a static-safe work station.
- When not in use, keep the module in its static-shielded bag.

Specifications

Module Location
- Single slot in 1771 I/O chassis

Operating Temperature
- 0° C - 60° C
- 32° F-140°F

Storage Temperature
- -40° C - 85° C
- -40° F - 185° F

Humidity - (Non-condensing)
- 5-95%

Power Supply Requirement
- +5VDC @ 600mA from Backplane (4 ports on)

Configurations
- Point-to-Point or Star

Maximum Fiber Distance Between Module Pairs
- 6500 Feet (2Km) of Fiber Optic Cable

Maximum Distance
- 43,000 Feet Combination of Twinaxial/Fiber-Optic Cable

Maximum Twinaxial Distance Between Module Pairs (Twinaxial Repeater)
- 10,000 Feet of Twinaxial Cable Per Module Pair (30,000 Feet Maximum)

Receiver Sensitivity (Optical)
- -24dB at 1 Meter Using 100/140μm Glass Fiber Optic Cable

Optical Wavelength
- 820NM

Fiber Optic Cable Connector Required
- SMA-Style Connector

Transmitter Power (Optical)
- -21.9dB at 1 Meter Using 50/125 μm Fiber-Optic Cable
- -16.5dB at 1 Meter Using 62.5/125 μm Fiber-Optic Cable
- -15.0 dB at 1 Meter Using 85/125 μm Fiber-Optic Cable
- -11.5 dB at 1 Meter Using 100/140 μm Fiber-Optic Cable
- -6.5dB at 1 Meter Using 200/230 μm Fiber-Optic Cable

Acceptable Fiber Optic Cable Diameters, Cable Attenuation (dB Loss Per Kilometer), and Numerical Aperture (NA):
- 50/125μm = 1 dB/Km and 0.20 NA
- 62.5/125μm = 2 dB/Km and 0.28 NA
- 85/125μm = 3 dB/Km and 0.26 NA
- 100/140μm = 4 dB/Km and 0.30 NA
- 200/230μm = 6dB/Km and 0.37 NA

Maximum Connector Loss
- 2dB or Less Per Connector

Minimum Fiber Optic Cable Bandwidth Required
- 17 MHz/Km or Greater

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