Fiber Optic Communications Interface
3-FIBMB2, SMXLO2, SMXHI2, MMXVR

Overview
EST3 networks easily configure to single or multi mode fiber optic or combination fiber optic / copper networks using the 3-FIBMB2 Fiber Optic Communications Interface and the appropriate fiber optic transceivers.

The 3-FIBMB2 electronics card plugs right into the CPU. A ribbon cable connects the 3-CPU directly to the 3-FIBMB2 fiber interface card. The interface card mounts in the ½ footprint space in a 3-CHAS7 chassis or 3-CAB5 enclosure.

The 3-FIBMB2 supports from one to four single or multi mode transceivers that plug into the interface card. Each transceiver provides the transmission and reception capability for the network data or digital audio data to/from a 3-FIBMB2 located in the next network node using single and/or multi mode fiber optic cables.

The 3-FIBMB2 also supports copper wire connections, permitting network data and audio communications format changes from copper to single mode fiber, copper to multi-mode fiber, and single to multi-mode fiber, as job conditions require. All copper and fiber circuits can be configured as supervised Class A or Class B (Style 7 or Style 4) circuits.

The 3-FIBMB2 has a constant output test signal that simplifies installing and testing multi-mode fiber circuits only, reducing setup and troubleshooting time. Secondary power input terminals and an external 24 Vdc source can be used to provide continuous network and audio data to flow through the 3-FIBMB2, when the panel is powered down for servicing.

Standard Features
- Class A or Class B (Style 7 or Style 4) network data connections
- Class A or Class B (Style 7 or Style 4) audio data connections
- Node to node distances: Multi-mode: Up to 8,000 ft. (2.4 km) using multi-mode fiber
  Single-mode high power: Up to 24.85 mi (40 km) using single mode fiber driver - model SMXHI2
  Single-mode low power: Up to 8.7mi (14km) using single mode fiber driver- model SMXLO2
- Built-in test signal
- Secondary power input
- Transition from copper to fiber on same network
- Transition from single to multi-mode fiber on same network
Application

Fiber optics communication links provide a high level of immunity from electrical noise. The circuits are power limited and suitable for use through hazardous atmospheres. Fiber optic circuits also provide a high level of security and are resistant to the effects of moisture. The choice of either single mode or multi mode fiber links is one of cost vs the distances between nodes. System performance is identical with either single or multi mode fiber. NOTE: The 3-FIBMB2/MMXVR is compatible with 3-FIB(A) multi mode fiber modules.

The SMXLO2 standard output single mode transceiver is suitable for distances up to approximately 8.7 miles (14km). The SMXH2 high output single mode transceiver is available to span distances up to approximately 24 miles (40km).

For multi mode applications, the MMXVR transceiver is suitable for distances up to approximately 8,000ft (2,400m). Actual distances are dependent on the losses in each fiber optic circuit, and should be calculated for each installation. One transceiver is required for each fiber side of both network and audio links. Simply order the required type and number and type of transceiver(s) for your application.

Engineering Specification

The intra-node communications links for network and digital audio data shall utilize copper and/or fiber optic connections. The fiber optics interface card shall provide Class B (Style 4) or Class A (Style 7) connections. It shall be possible to convert from fiber optic cable to copper wiring or from copper wiring to fiber optic cable at any network panel node. The fiber optics interface card shall have provisions for an external power source input to permit continuous network and audio data to flow through a network node while primary node power is removed for servicing purposes. The fiber optics interface card shall provide a constant output test signal for maintenance and troubleshooting purposes. The fiber optics interface module shall utilize single/multi mode fiber with SC single mode or ST multi-mode connectors.

Installation and Mounting

Attaching the transceivers. Any type of transceiver can be mounted in any of the four positions on the board.

Mounting the bracket and the 3-FIBMB2 to a CAB5 enclosure

Connecting the ribbon cable and adapter card.

Installing the 3-FIBMB2 bridge in a 3-CAB7, 3-CAB14, or 3-CAB21 enclosure

1. 3-FIBMB2 electronics card on a 3-MPFIB mounting bracket
2. MMXVRs in the B data slot and A audio slot on the 3-FIBMB2
3. SMXLO2/SMXH2 in the A data slot and B audio slot on the 3-FIBMB2
4. Mounting studs
5. Existing 3-FIBMB
6. MMXVR in the A data slot and B audio slot on the 3-FIBMB
7. 24 VDC

Installing the 3-FIBMB2 electronics card in an MFC enclosure
Typical Wiring

The following wiring diagrams can be used with single or multimode fiber. If using single mode use the SMXLO2 or SMXHI2 transceivers. If using multimode use the MMXVR transceivers.

Class B hybrid fiber-optic and copper wire network and audio connections

Class A hybrid fiber-optic and copper wire network and audio connections

Legend

- Single mode transceiver
- Multimode transceiver

Note: These diagrams are for general information only. For more wiring diagrams and installation details, please refer to 3-FIBMB2 Fiber Optic Interface, Installation Sheet 3101835.
Using single and multimode transceivers

Transition from single mode fiber to multimode fiber requires special configuration for the audio circuit. The following wiring diagrams show how to wire audio circuits in class B and class A using single mode and multimode fiber.

Data and audio circuit for Class A using single mode and multimode fiber

Data and audio circuit for Class B using single mode and multimode fiber

Legend

Single mode transceiver

Multimode transceiver

Wiring alternative power terminals

The 3-FIBMB2 provides a secondary power option, permitting communications to flow through the module, even with panel power disconnected.

Note: In the event a panel needs to be powered down for service; a 24 V battery can be connected to the module to maintain network and audio communications during servicing.

Note: These diagrams are for general information only. For more wiring diagrams and installation details, please refer to 3-FIBMB2 Fiber Optic Interface, Installation Sheet 3101835.
Specifications

Agency Listings
UL, ULC

Installation
Connector J2 of 3-CPU1. Fiber card mounts on ½ footprint 3-CHAS7, 3-CAB5 enclosure, or an MFC-A cabinet.

Compatibility
3-CPU1 and later

Single Mode (network & audio)
- Budget: 15 dBm (approximately 8.7 mi. [14 km] max).
- SMXLO2: 8.7 mi. [14 km] max.
- SMXHI2: 25 dBm (approximately 24.85 mi. [40 km] max).¹
- Wavelength: 1300nm
- Cable Type: 8.3µ Single Mode
- Connector: Duplex SC

Multi mode (network & audio)
- MMXVR Budget: 10 dBm (approximately 8,000 ft [2.4 km] max).
- Wavelength: 820nm
- Cable Type: 50/125µ, 62.5/125µ or 100/140µ Multi mode
- Connector: ST

Network Data Circuit
- Circuit Configuration: Class B (Style 4) or Class A (Style 7)
- Data Rate: 19.2K, or 38.4K Baud
- Isolation: From “previous” 3-CPU using copper, total isolation using fiber optics

Digital Audio Data Circuit
- Circuit Configuration: Class B (Style 4) or Class A (Style 7)
- Data Rate: 327K Baud
- Isolation: From “previous” 3-CPU using copper, total isolation using fiber optics

Copper Wired Network Data Circuit Segment
- Circuit Length: 5.000 ft (1,524 m) max. between any three panels
- Circuit Resistance: 90 Ohms, max.
- Circuit Capacitance: 0.3 µf max.
- Wire Type: Twisted pair, 18 AWG (0.75 mm²) min

Copper Wired Audio Data Circuit Segment
- Circuit Length: 5.000 ft (1,524 m) max. between any three panels
- Circuit Resistance: 90 Ohms, max.
- Circuit Capacitance: 0.09 µf max.
- Wire Type: Twisted pair, 18 AWG (0.75 mm²) min

Eye Safety
Complies with: FDA CDRH 2-CFR 1040 Class 1 and IEC 825 Issue 1 1993:11 Class 1; CENELEC EN60825 Class 1

Power Consumption
Supervisory and/or Alarm
- 3-FIBMB2: 105 mA @ 24Vdc
- Add 79 mA for each SMXLO2 and SMXHI2
- Add 20 mA for each MMSVR

Operating Environment
- Temperature: 32° F - 120° F (0° C - 49° C)
- Humidity: 93% RH, Non-condensing @ 90° F (32° C)

¹ A minimum fiber attenuation of -8dBm is required when using the SMXHI2 in order to prevent overloading the receiver.

Ordering Information

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Shipping Wt., lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-FIBMB2</td>
<td>Fiber Optic Communications Interface (requires one or more transceivers) c/w mounting bracket for 3-CHAS7 or 3-CAB5 enclosure mounting</td>
<td>1.0(.45)</td>
</tr>
<tr>
<td>*SMXLO2</td>
<td>Plug-In standard output single mode transceiver for 3-FIBMB2</td>
<td>0.5(.23)</td>
</tr>
<tr>
<td>*SMXHI2</td>
<td>Plug-In high output single mode transceiver for 3-FIBMB2</td>
<td>0.5(.23)</td>
</tr>
<tr>
<td>*MMXVR</td>
<td>Plug-In standard output multi mode transceiver for 3-FIBMB2</td>
<td>0.5(.23)</td>
</tr>
</tbody>
</table>

* 1 to 4 transceivers required, depending on application.
Detection & alarm since 1872

U.S.
T 888 378 2329
F 866 503 3996

Canada
Chubb Edwards
T 519 376 2430
F 519 376 7258

Southeast Asia
T : +65 6391 9300
F : +65 6391 9306

India
T : +91 80 4344 2000
F : +91 80 4344 2050

Australia
T +61 3 9239 1200
F +61 3 9239 1299

Europe
T +32 2 725 11 20
F +32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

utcfireandsecurity.com

© 2010 UTC Fire & Security.
All rights reserved.