3-FIBMB2 Fiber Optic Interface Module Installation Sheet

Description

This document describes how to install the 3-FIBMB2 fiber optic interface module for typical applications and special applications.

The 3-FIBMB2 gives a fire panel the ability to network with fiber optic cable. Both Class B and Class A connections are supported.

The 3-FIBMB2 module consists of an adapter card and electronics card, and supports the following fiber optic transceivers.

Model	Description
SMXLO	Standard output single mode fiber optic transceiver
SMXLO2 [1]	Standard output single mode fiber optic transceiver
SMXHI	High output single mode fiber optic transceiver
SMXHI2 [1]	High output single mode fiber optic transceiver
MMXVR	Standard output multimode fiber optic transceiver

[1] Not backward compatible with the 3-FIBMB

The 3-FIBMB2 provides terminals for connecting a 24 VDC backup power source to maintain data transmissions in the event the panel is powered down.

Application notes

- A 3-FIBMB2 using SMXLO2 and SMXHI2 single mode fiber transceivers is not backward compatible with the 3-FIBMB.
- In a multimode fiber application, the 3-FIBMB and 3-FIBMB2 are fully backward compatible when using a MMXVR transceiver.
- For service replacement and network expansion in an existing single mode fiber application, all or some of the 3-FIBMB electronics cards may need to be replaced with 3-FIBMB2 electronics cards. See “Special applications installation” on page 3.
- The 3-FIBMB2 does not support annunciator panels.

Typical application installation

Installing the 3-FIBMB2 module for a typical installation consists of the following steps:

1. Installing the adapter card
2. Installing the transceivers
3. Installing the electronics card

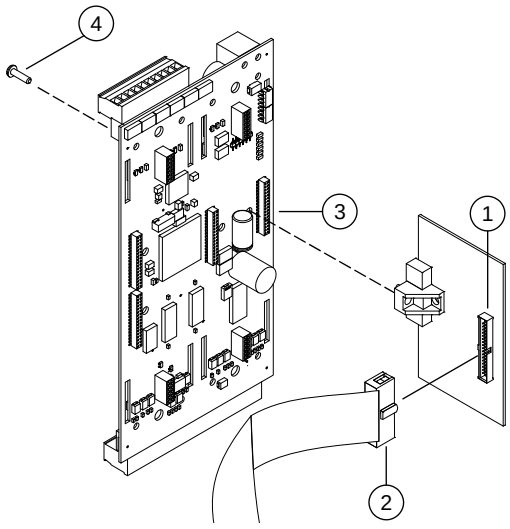
WARNING: Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment.

Caution: Circuit boards are sensitive to electrostatic discharge (ESD). To avoid damage, follow ESD handling procedures.

Step 1: Installing the adapter card

1. Connect the ribbon cable (P/N 250222) to J2 on the adapter card (see Figure 1 below, items 1 and 2). Use the cable end that allows it to exit at a right angle.
2. Plug the adapter card into J2 on the CPU.
3. Secure the card using the nylon screw provided.
4. Route the ribbon cable to the bottom of the chassis.

Figure 1: Installing the 3-FIBMB2 adapter card



1. J2 on the adapter card
2. Ribbon cable
3. J2 on the CPU
4. Nylon screw

P/N 3101835 • REV 1.0 • ISS 24JUN10

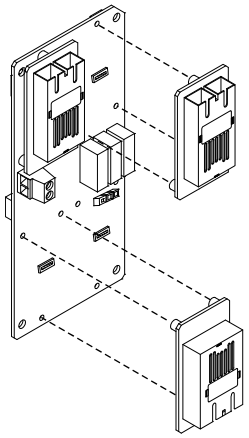
Step 2: Installing the transceivers

Note: Any combination of transceivers can be mounted in any of the four positions on the electronics card.

To install the transceivers:

1. For each transceiver required, align its mounting studs and plug with the position holes and socket on the electronics card. See Figure 2.
2. Snap each transceiver into place. Do not put excessive pressure on a transceiver when installing it.

Figure 2: Installing the transceivers on the electronics card



Step 3: Installing the electronics card

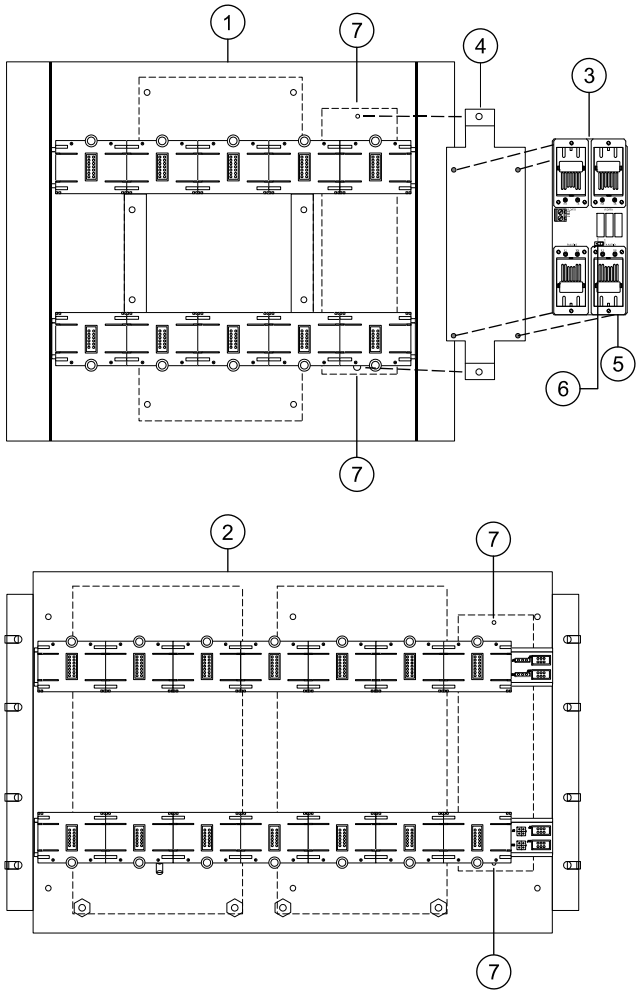
The 3-FIBMB2 electronics card can be mounted in a 3-CAB5, 3-CHAS7, or, when used in standalone and 3-FIBMB conversion applications, an MFC-A enclosure.

Note: When using an MFC-A enclosure, the enclosure must be installed no farther than 3 ft. (with conduit) in the same room as the control panel.

To install the electronics card in a 3-CAB5 or 3-CHAS7:

1. Connect the loose end of the ribbon cable to J1 on the back of the 3-FIBMB2 electronics card. See Figure 3, items 3 and 5.
2. Snap the electronics card (item 3) on the 3-MPFIB mounting bracket studs (item 4).
3. Place JP2 (item 6) in the NORMAL position.
4. Mount the 3-MPFIB bracket on the mounting studs located on the right side and behind the rails (item 7) of the 3-CAB5 backbox (item 1) or 3-CHAS7 back plate (item 2).

Figure 3: Installing the 3-FIBMB2 electronics card in a 3-CAB5 or 3-CHAS7

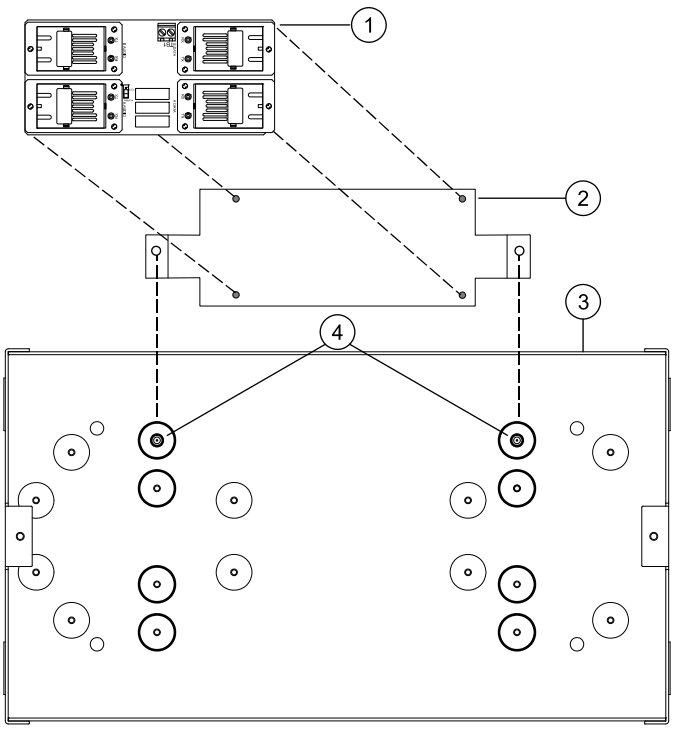


1. 3-CAB5
2. 3-CHAS7
3. 3-FIBMB2 electronics card
4. 3-MPFIB mounting bracket
5. J1 on the electronics card
6. JP2
7. Mounting studs

To install the electronics card in an MFC-A enclosure:

1. Insert two #6-32 1/2 in. standoffs included with the MFC-A enclosure into the selected mounting holes. See Figure 4, item 4. You can select any two parallel mounting holes.
2. Snap the electronics card on the 3-MPFIB mounting bracket studs.
3. Place JP2 on the electronics card in the NORMAL position.
4. Mount the 3-MPFIB bracket on the standoffs.

Figure 4: Installing the 3-FIBMB2 electronics card in an MFC enclosure



1. 3-FIBMB2 electronics card
2. 3-MPFIB mounting bracket
3. MFC-A enclosure
4. Standoffs

Special applications installation

Service replacements

For a multinode, single mode fiber, Class B application, replace the 3-FIBMB electronics card with a 3-FIBMB2 electronics card in all nodes unless a copper or multimode separation exists. If a separation exists between nodes, no replacement is required from that point forward. After replacing the electronics card, you can reuse the existing SMXLO and SMXHI transceivers.

To replace failed SMXLO and SMXHI transceivers:

1. Disconnect the wiring from the transceivers on the 3-FIBMB electronics card.
2. Remove the 3-FIBMB from the 3-MPFIB mounting bracket and disconnect the ribbon cable.
3. Remove all transceivers from the card, discarding the failed ones.
4. Connect the ribbon cable to J1 on the back of a 3-FIBMB2 electronics card.
5. Replace the failed transceivers with new SMXLO2/SMXHI2 transceivers. You can reuse the functioning SMXLO/SMXHI transceivers on the new 3-FIBMB2 electronics card. See Figure 2 on page 2.
6. Snap the 3-FIBMB2 electronics card on the 3-MPFIB mounting bracket studs. See Figure 3 on page 2.
7. For a multinode, single mode fiber application, repeat step 1 to step 6 for all nodes in a Class A configuration or refer to Figure 13 on page 7 to create a bridge. For a Class B configuration, repeat the steps in all nodes unless a copper or multimode separation exists between nodes. In this case, no replacement is required beyond that point.

Network expansions

When adding a new node to an existing multinode, single mode fiber application, there are two options for upgrading to the 3-FIBMB2:

1. Replace all 3-FIBMB electronics cards in the single mode fiber application with 3-FIBMB2 cards. After replacing the electronics card you can reuse existing SMXLO and SMXHI transceivers or install new SMXLO2 and SMXHI2 transceivers.

   For this option, in a Class B application replace the 3-FIBMB electronics card with a 3-FIBMB2 electronics card in all nodes unless a copper or multimode separation exists. If a separation exists between nodes, no replacement is required from that point forward.
2. For a 3-CAB7, 3-CAB14, or 3-CAB21 enclosure using Class B wiring, install a 3-FIBMB2 electronics card in the enclosure to create a bridge with the existing 3-FIBMB. The bridge uses a combination of single mode and multimode transceivers in both electronics cards to cause a separation in the single mode application. In this configuration, the 3-FIBMB2 electronics card is powered by connecting to 24 VDC from the PSMON and is not connected to the 3-CPU.

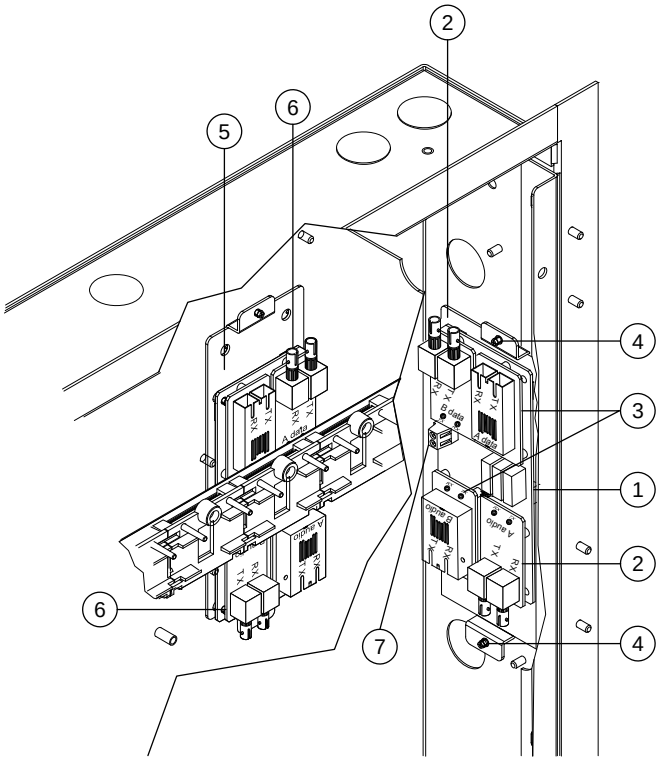
To add a new node to an existing single mode fiber network and replace all 3-FIBMB electronics cards:

1. For the new node, install the 3-FIBMB2 module as described in “Typical application installation” on page 1.
2. For existing nodes, disconnect the wiring from the transceivers on the 3-FIBMB electronics card.
3. Remove the 3-FIBMB from the 3-MPFIB mounting bracket and disconnect the ribbon cable.
4. Connect the ribbon cable to J1 on the back of the replacement 3-FIBMB2 electronics card.
5. Reinstall the SMXLO and SMXHI transceivers or replace them with new SMXLO2 and SMXHI2 transceivers. See Figure 2 on page 2.
6. Snap the 3-FIBMB2 electronics card on the 3-MPFIB mounting bracket studs. See Figure 3 on page 2.
7. For a multinode, single mode fiber application, repeat step 1 to step 6 for all nodes in a Class A configuration. For a Class B configuration, repeat the steps in all nodes unless a copper or multimode separation exists between nodes. In this case, no replacement is required beyond that point.

To add a new node to an existing single mode fiber network and create a bridge in a 3-CAB7, 3-CAB14, or 3-CAB21 enclosure:

1. In the new enclosure, install the 3-FIBMB2 module as described in “Typical application installation” on page 1.
2. In the last cabinet in the network, snap a 3-FIBMB2 electronics card on a 3-MPFIB mounting bracket.
3. Snap the mounting bracket on the two right, side panel mounting studs in the enclosure. See Figure 5, item 4. The short edge of the mounting bracket must be positioned closest to the enclosure door.
4. On the 3-FIBMB2, install an MMXVR multimode transceiver in the B data slot and, if using audio, in the A audio slot (item 2).
5. On the 3-FIBMB2, install an SMXLO2/SMXHI2 single mode transceiver in the A data slot and, if using audio, in the B audio slot (item 3).
6. On the existing 3-FIBMB card (item 5) on the chassis in the enclosure, disconnect the wiring from the A data and B audio SMXLO/SMXHI single mode transceivers and replace them with MMXVR multimode transceivers (item 6).
7. Connect the fiber optic cables and 24 VDC wiring as shown in “Special application wiring ” on page 7.

Figure 5: 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/SMXHI2 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

Wiring

All fiber optic cable and copper wiring is supervised and power-limited.

Notes

- When using an SMXHI or SMXHI2 transceiver, if fiber attenuation is less than 8 dBm between panels, then an attenuator must be used to reduce the level of the received signal.
- The 3-FIBMB2 transmitters are eye-safe laser IEC 825/CDRH Class 1 compliant.

Typical wiring of fiber optic and hybrid connections

If using single mode, use the SMXLO, SMXLO2, SMXHI, or SMXHI2 transceivers. For multimode, use an MMXVR transceiver.

Note: When transitioning from single mode to multimode fiber, a special configuration for the audio circuit is required. See Figure 10 and Figure 11 on page 6 to wire audio circuits in Class B and A when using both single mode and multimode fiber.

Figure 6: Class B network and audio fiber optic connections

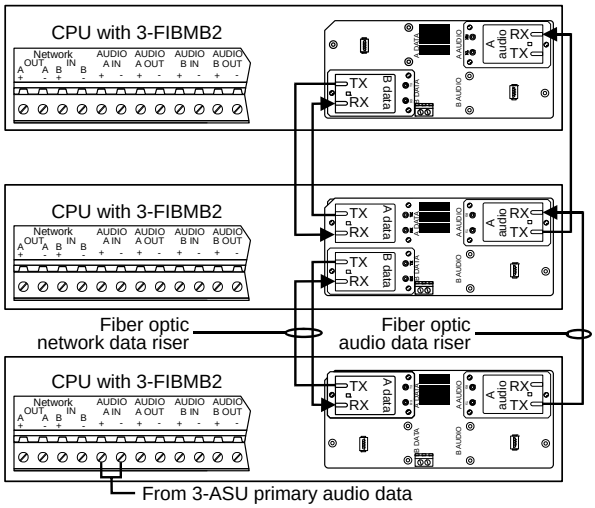


Figure 7: Class B hybrid fiber optic and copper wire network and audio connections

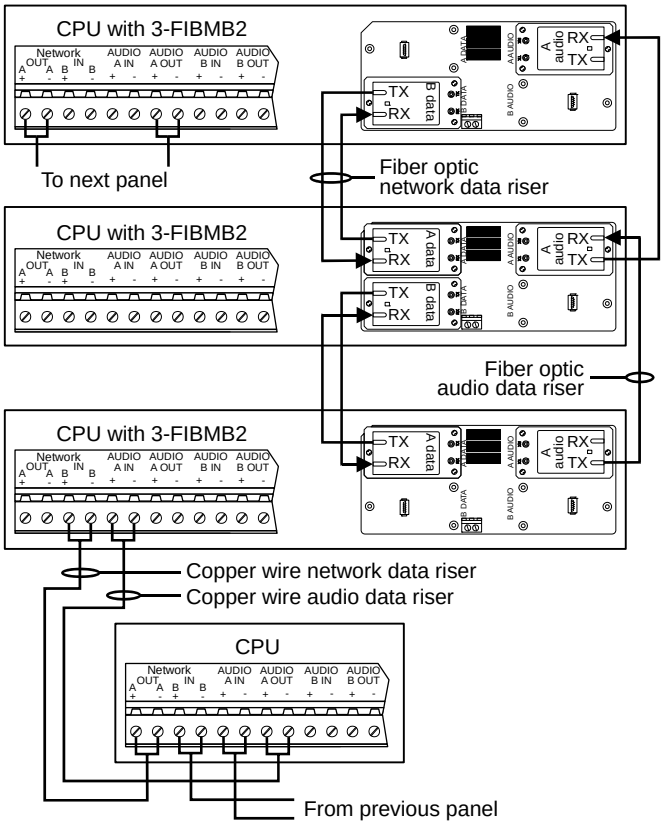


Figure 8: Class A network and audio fiber optic connections

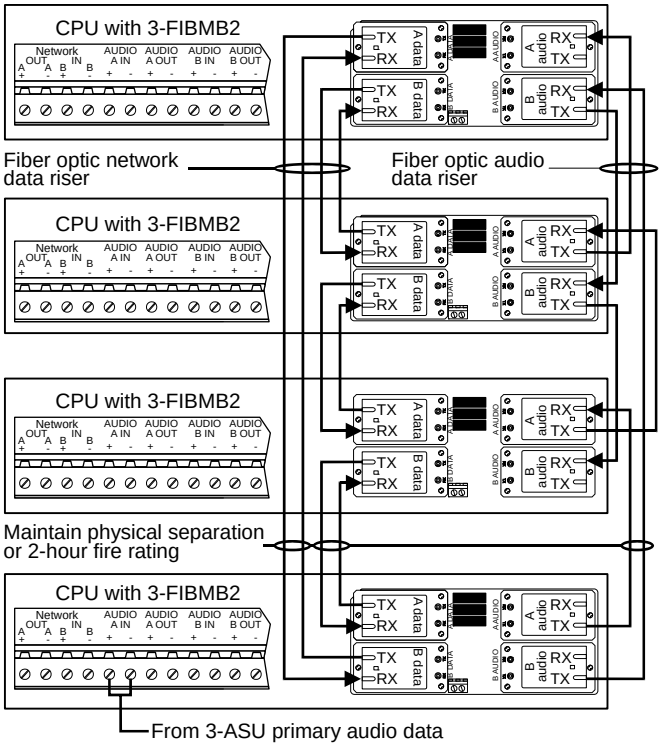


Figure 9: Class A hybrid fiber optic and copper wire network and audio connections

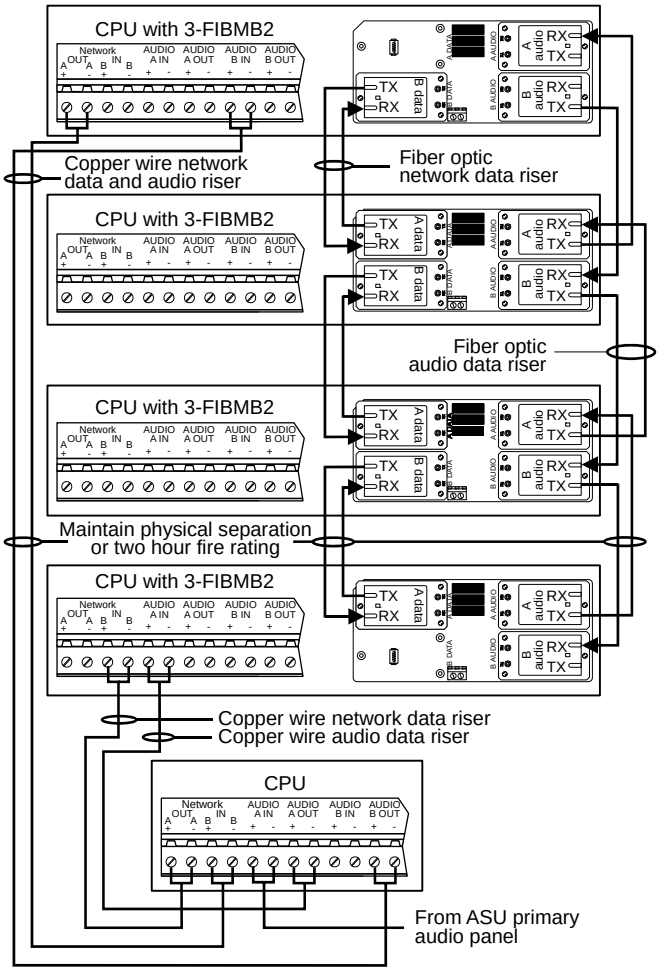


Figure 10: Data and audio circuit for Class B using single mode and multimode fiber

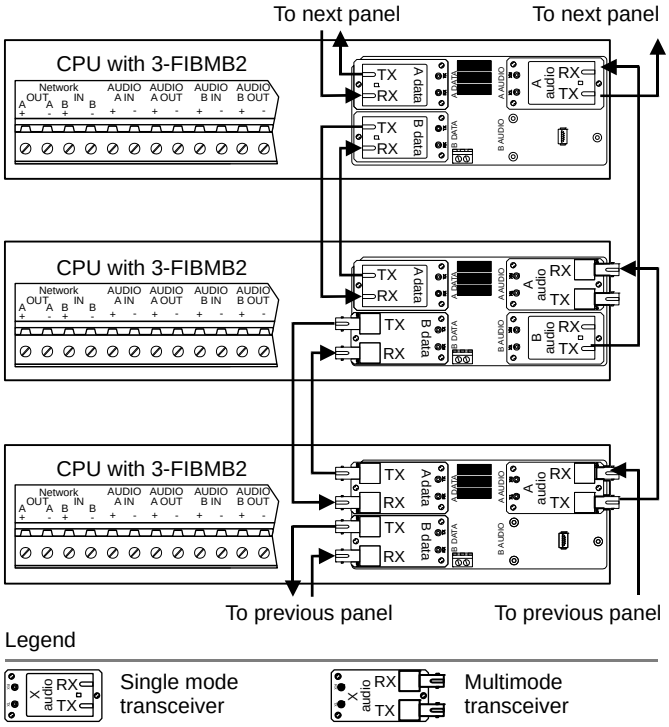
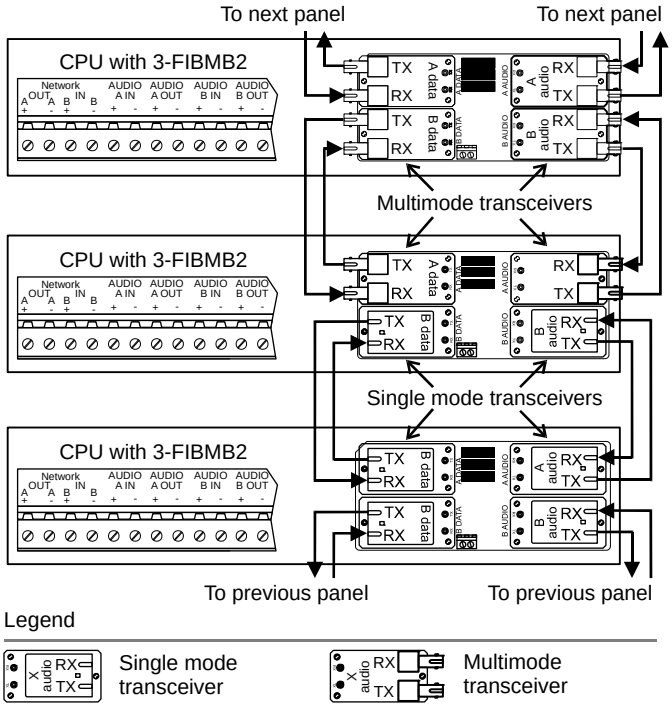


Figure 11: Data and audio circuit for Class A using single mode and multimode fiber



Special application wiring for a 3-FIBMB2 electronics card bridge in a 3-CAB7, 3-CAB14, or 3-CAB21 enclosure

The following diagrams provide wiring details for creating a 3-FIBMB2 bridge in an existing fiber optic network.

Figure 12: 3-FIBMB2 bridge for data and audio connections for a Class B single mode fiber network

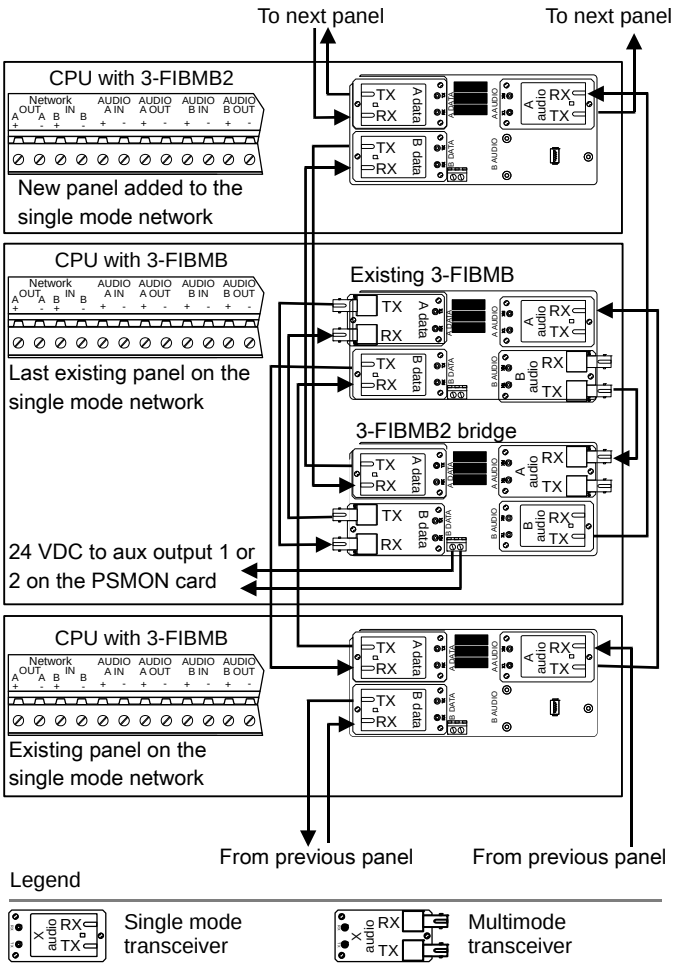


Figure 13: 3-FIBMB2 bridge for data and audio connections for a Class A single mode fiber network

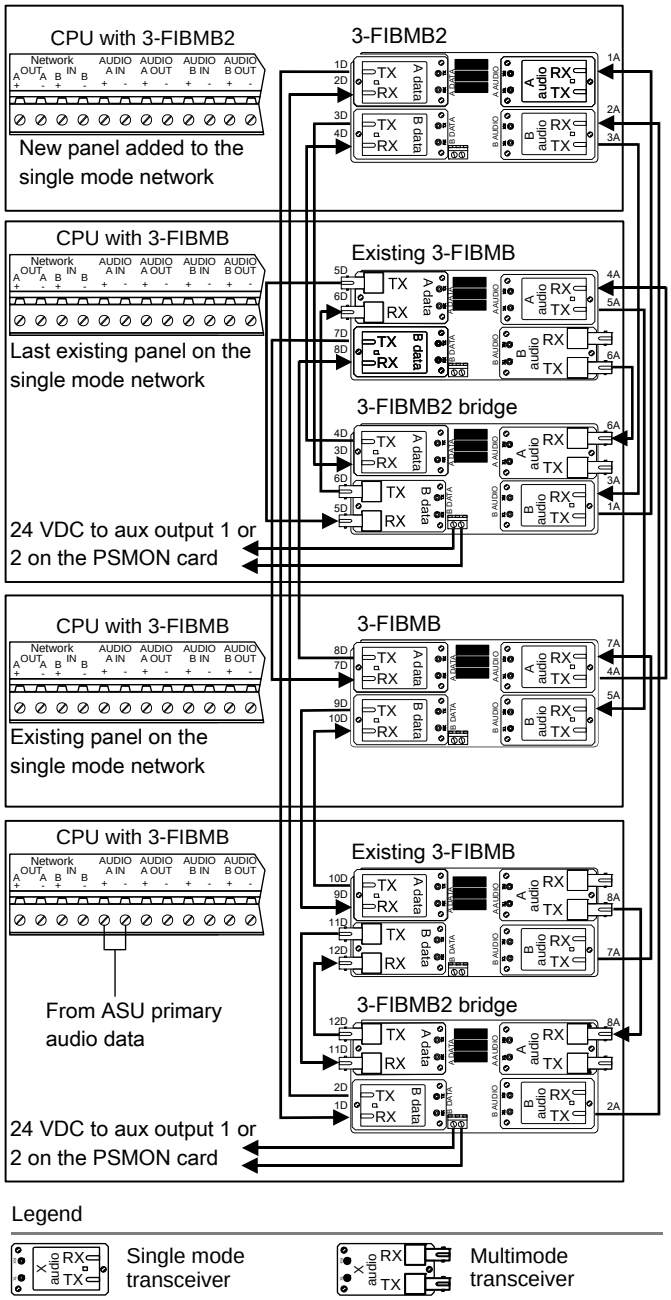
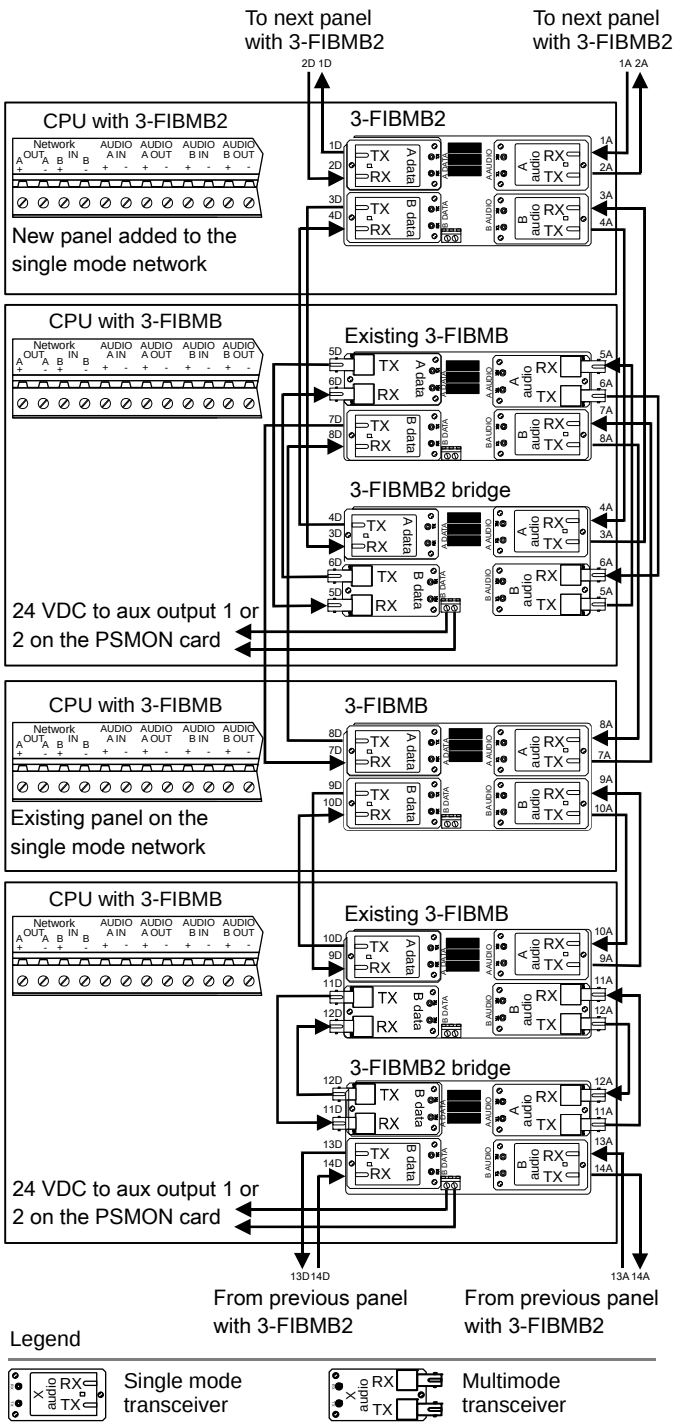


Figure 14: 3-FIBMB2 bridge for data and audio connections for a Class A single mode and multimode fiber network



Wiring to an alternate DC power supply

The 3-FIBMB2 provides terminals for connecting to an alternate DC power supply. This allows communication to continue through the module when panel power is disconnected.

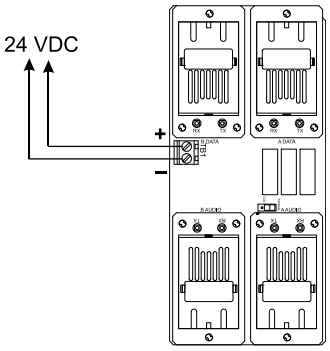
Notes

- In the event a panel needs to be powered down for service, a 24 VDC battery can be connected to the module.
- When powering the 3-FIBMB2 by battery, the battery size must support the specific field configuration for the duration of the service procedure. Example: The 3-FIBMB2 plus two SMXHI2 transceivers for 24 hours would require a 5.04 Ah battery: (90 + (2 x 60)) mA x 24hr = 5.04 Ah.

To wire the alternate power terminals:

Wire connector TB1 on the electronics card to the alternate power supply as shown in Figure 15.

Figure 15: Wiring the alternate power terminals



Testing

The system's fiber optic operating integrity and fiber type are calculated and verified by transmitting a constant test signal. Gathered test data is used for budget loss analysis and troubleshooting.

To test the fiber optic connection:

1. Place JP2 in the TEST position to generate a constant signal.
2. Return JP2 to the NORMAL position when testing is finished.

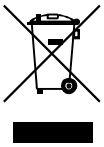
Specifications

Operating voltage	24 VDC
Fiber optics network and audio	
Budget	
SMXLO	15 dBm between two interfaces
SMXLO2	15 dBm between two interfaces
SMXHI	25 dBm max. and 8 dBm min. between two interfaces
SMXHI2	25 dBm max. and 8 dBm min. between two interfaces
MMXVR	10 dBm between two interfaces
Cable type	50/125, 62.5/125, or 100/140 for MMXVR
Connectors	
SMXLO, SMXLO2, SMXHI, and SMXHI2	Type Duplex SC
MMXVR	Type ST
Network data circuit	
Circuit configuration	Class B (Style 4) or Class A (Style 7)
Data rate	19.2 K, 38.4 Kbps
Isolation	Isolated from previous panel CPU when using copper Total isolation when using fiber optic
Digitized audio data circuit	
Circuit configuration	Class B (Style 4) or redundant Class B (Style 7) [1]
Data rate	327 Kbps
Isolation	Isolated from previous panel CPU when using copper Total isolation when using fiber optic
Copper wired network data circuit segment	
Circuit	
Length	5,000 ft. (1,524 m) max. between any three panels
Resistance	90 Ω max.
Capacitance	0.3 μF max. [2]
Wire type	Twisted pair, 18 AWG (0.75 mm²) min.
Copper wired audio data circuit	
Circuit	
Length	5,000 ft. (1,524 m) max. between any three panels
Resistance	90 Ω max.
Capacitance	0.09 μF, max [2]
Wire type	Twisted pair, 18 AWG (0.75 mm²) min.
Current rating	105 mA Add 79 mA for each SMXLO, SMXLO2, SMXHI, and SMXHI2 Add 20 mA for each MMSVR
Compatible CPUs	3-CPU1 and later
Operating environment	
Temperature	32 to 120 °F (0 to 49 °C)
Relative humidity	0 to 93% noncondensing

[1] Must be installed in separate conduit.

[2] Include shield capacitance.

Regulatory information

Manufacturer	Edwards, A Division of UTC Fire & Security Americas Corporation, Inc. 8985 Town Center Parkway, Bradenton, FL 34202, USA Authorized EU manufacturing representative: UTC Fire & Security B.V. Kelvinstraat 7, 6003 DH Weert, Netherlands
Year of manufacture	The first two digits of the product serial number (located on the product identification label) are the year of manufacture.
Environmental class	UL: Indoor dry | Indoor damp and wet IEC: 3K5 | other class
North American standards	UL 864, UL 1638, CE; FCC Part 15, Subpart J, Class B; DOC Class / MDC Class B
European Union directives	1999/5/EC (R&TTE directive): Hereby, UTC Fire & Safety declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
	2002/96/EC (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Contact information

For contact information see our Web site:
www.utcfireandsecurity.com