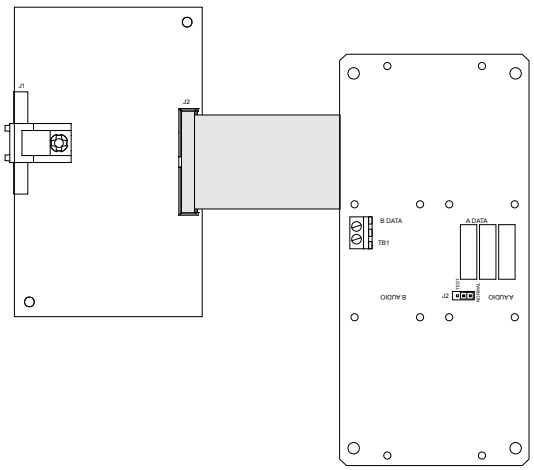
VM-NOCF Fiber Network Option Module Installation Sheet



Description

The VM-NOCF Fiber Network Option Module provides a fiber optic or combination fiber optic and RS-485 communication path for VM-1 fire alarm control units (FACUs).

The VM-NOCF consists of the adapter card and electronics card, and supports the following fiber optic transceivers.

Model	Description
SMXLO2	Standard output single-mode fiber optic transceiver for up to 8.7 mi. (14 km) node-to-node distance
SMXHI2	High output single-mode fiber optic transceiver for up to 24.85 mi. (40 km) node-to-node distance
MMXVR	Standard output multimode fiber optic transceiver for up to 8,000 ft. (2.4 km) node-to-node distance

The VM-NOCF provides terminals for connecting an optional 24 VDC backup power source to maintain data transmissions when the control unit is powered down.

Note: All fiber optic networked fire alarm control units must have a network option card installed.

Installation

Install and wire this module in accordance with applicable national and local codes, ordinances, and regulations.

Installing the VM-NOCF module consists of two steps:

1. Installing the adapter card
2. 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.

Cautions

- Circuit boards are sensitive to electrostatic discharge (ESD). To avoid damage, follow ESD handling procedures.
- Do not install the fiber optic card in the wrong location on the VM-CPU main board. Doing so will damage the card and the CPU.

Step 1: Installing the adapter card

1. Connect the ribbon cable to J2 on the VM-NOCF adapter card (see Figure 1). Use the cable end that allows it to exit at a right angle.
2. Plug the adapter card into J6 (NETWORK) on the VM-CPU main board.
3. Secure the card using the nylon screw provided.

Step 2: Installing the electronics card

1. Install the required number of transceivers on the electronics card as described on the *Fiber Optic Transceivers Installation Sheet* (P/N 3101770-ML).
2. Connect the loose end of the ribbon cable to J1 on the back of the VM-NOCF electronics card. See Figure 2.
3. Snap the electronics card onto the mounting bracket studs.
4. Place jumper J2 in the NORMAL position. See the inset in Figure 2.
5. Snap the mounting bracket onto the mounting studs on the CAB6B backbox.

Figure 1: Installing the VM-NOCF adapter card

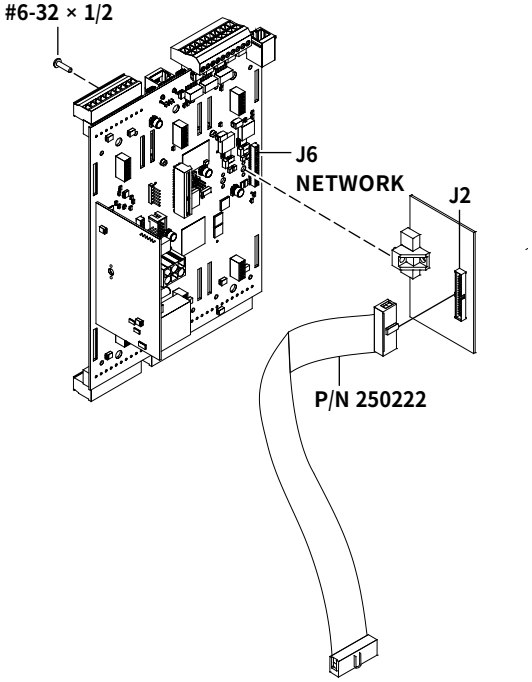


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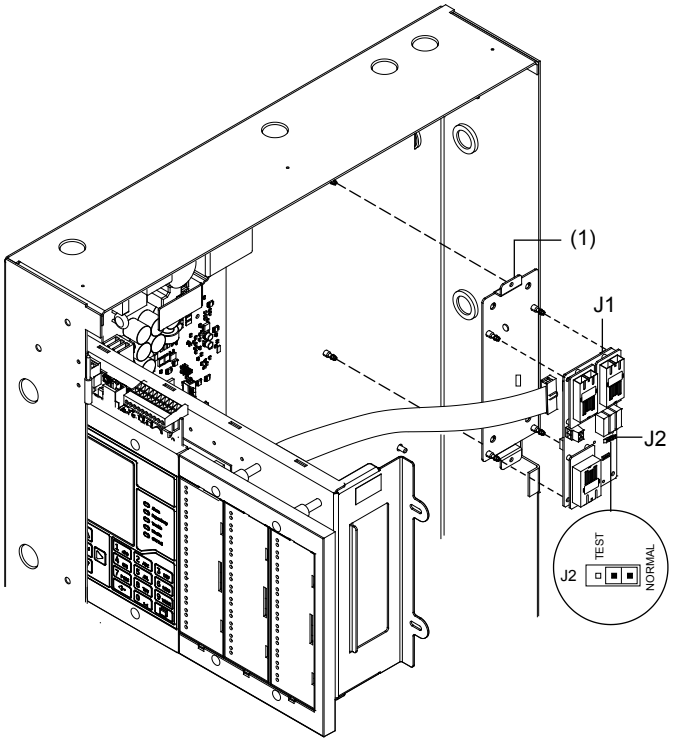
Figure 2: Installing the VM-NOCF electronics card



(1) Mounting bracket

Wiring

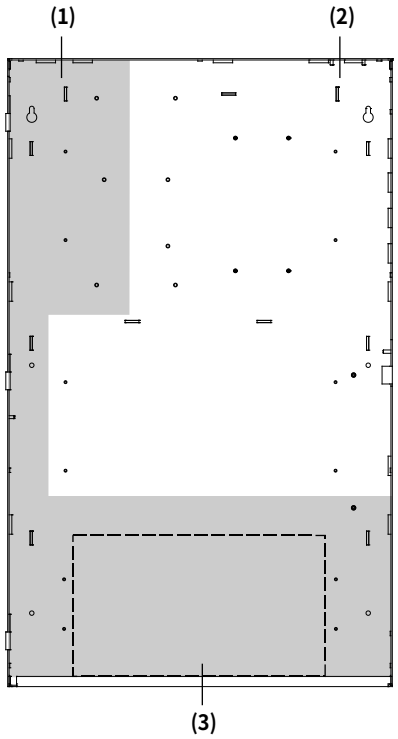
Connect the field wiring as shown in Figure 4 through Figure 6.

Caution: Connecting SMXHI2 to SMXLO2 transceivers is not recommended. Doing so may damage the transceiver and electronics card.

Notes

- All wiring is supervised and power-limited.
- Maintain 0.25 in. (6 mm) separation between power-limited and nonpower-limited wiring at all times. Keep nonpower-limited wiring in the shaded area shown in Figure 3. Secure the wiring to the cabinet using nylon cable ties.
- When using an SMXHI2 transceiver, if fiber attenuation is less than 8 dBm between control units, then an attenuator must be used to reduce the level of the received signal.
- When servicing an FACU, connect battery power to the VM-NOCF. The battery size must support the specific field configuration for the duration of the service procedure. Example: The VM-NOCF plus two SMXHI2 transceivers for 24 hours would require a 6.43 Ah battery: (105 + (2 × 79)) mA × 24 h = 6.31 Ah. During normal operation, battery connection to the VM-NOCF is not required.
- The fiber optic transmitters use eye-safe lasers that comply with IEC 825/CDRH Class 1.

Figure 3: Power-limited and nonpower-limited wiring



(1) Nonpower-limited wiring area
(2) Power-limited wiring area
(3) Battery area

Figure 4: Wiring the alternate power terminals

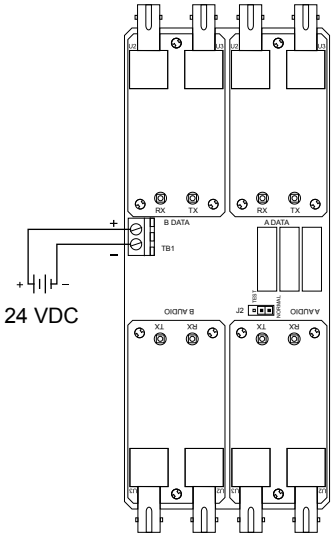


Figure 5: Fiber optic data and audio network wiring

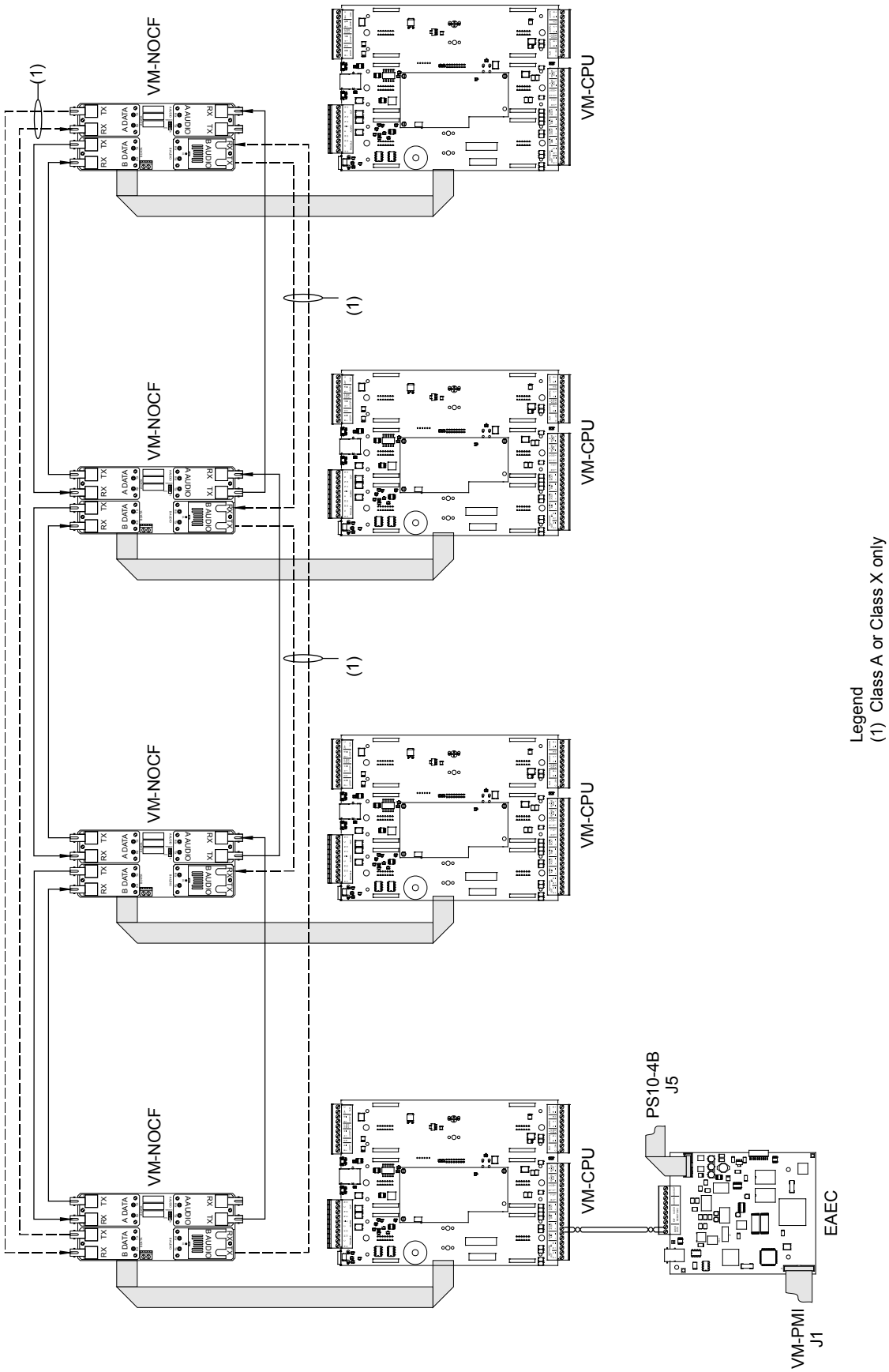
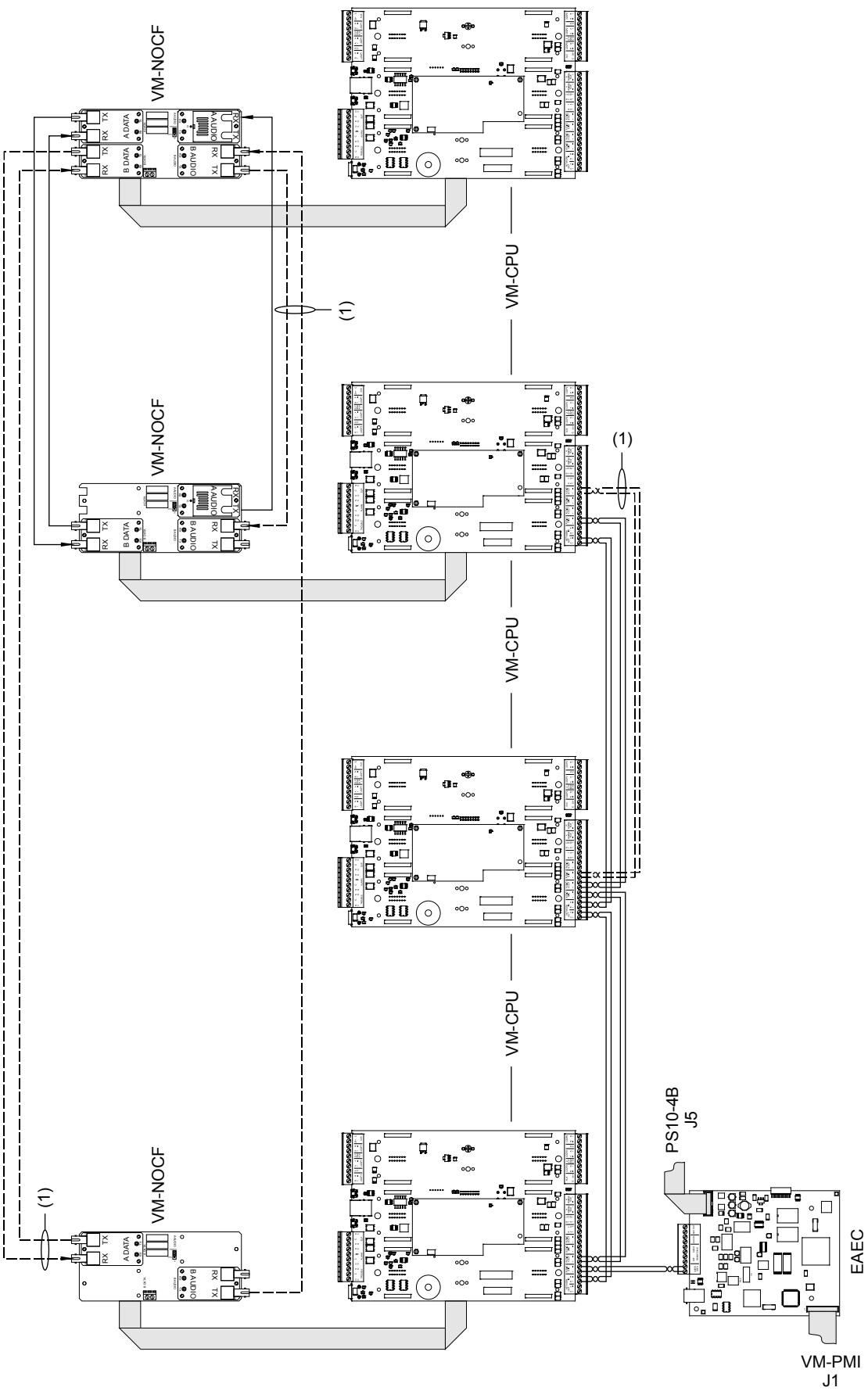


Figure 6: Combination copper and fiber optic data and audio network wiring



Testing

Fiber optic loss can be determined by transmitting and measuring a steady-state output test signal.

Note: Use a locally purchased optical power meter to measure the test signal. Follow the manufacturer's instructions for using the device.

To test the fiber optic connection:

1. Place jumper J2 on the electronics card in the TEST position.
2. Attach one end of a short cable to an active transceiver on the VM-NOCF electronics card and the other end to an optical power meter.
3. Measure the dB power output of the transceiver as described in the optical power meter manufacturer's instructions.
4. Disconnect the short cable from the optical power meter and then connect it to your field installed cable.
5. Measure the dB power level of the connection by placing the optical power meter at the end of the cable where it connects to the receiving transceiver.
6. Compare the two measurements taken in steps 3 and 5. The difference between them is the dB loss. This value must comply with the Budget values provided in the "Specifications" table.
7. Return jumper J2 to the NORMAL position when testing is finished.

Specifications

Operating voltage	24 VDC
Fiber optics network and audio	
Budget	
SMXLO2	15 dBm max. between two interfaces
SMXHI2	8 to 25 dBm between two interfaces
MMXVR	10 dBm max. between two interfaces
Cable type	
SMXLO2, SMXHI2	8.3/125µ
MMXVR	50/125µ, 62.5/125µ, or 100/140µ
Connector type	
SMXLO2, SMXHI2	Duplex SC
MMXVR	ST
Wavelength	
SMXLO2, SMXHI2	1300 nm
MMXVR	820 nm
Network data circuit	
Circuit configuration	Class B, Class A, or Class X
Data rate	19.2 and 38.4 Kbps
Isolation	Isolated from previous FACU CPU when using wire Total isolation when using fiber optic cable
Digital audio circuit	
Circuit configuration	Class B, Redundant Class B, or Class X [1]
Data rate	327 Kbps
Isolation	Isolated from previous FACU CPU when using wire Total isolation when using fiber optic cable
Network data circuit wire segment	
Length	5,000 ft. (1,524 m) max. between any three FACUs
Resistance	90 Ω max.
Capacitance	0.3 µF max. [2]
Wire type	Twisted pair, 18 AWG (0.75 mm²) min.
Digital audio circuit wire segment	
Length	5,000 ft. (1,524 m) max. between any three FACUs
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 71.2 mA for each SMXLO2, add 76.8 mA for each SMXHI2, and add 20 mA for each MMXVR
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

Environmental class	UL: Indoor dry

Contact information

For contact information, see www.kiddelifesafety.com.