# FM-2200-R Fiber Optic Module Installation Instructions

## Description

FM-2200-R modules are used to interconnect FX-2200 Alarm Control Panels (FACPs), and RAM-2944LCD Fire Alarm Annunciator Panels (FAAPs) over greater distances than standard, copper network wiring. Two versions of the FM-2200-R are available--FM-2200-R1, which contains a single fiber modem and FM-2200-R2, which contains two fiber modems.

## Features

- Data transfer to 9600 baud
- 2 fibers
- Tx and Rx Indicators
- Multi-mode
- Transmission distances up to 3.5 km (2.1 miles) for 62.5/125 fiber and 2 km (1.2 miles) for 50/125 fiber
- Comes mounted in surface-mount enclosure
- Broad operating temperature range
- Military-grade circuit board material
- Solid state limiters on all power lines provide automatic reset
- Meets the Control Unit requirement of NFPA 72, UL 864 1996 edition
- Connects a Class A, Style 7 fiber optic network

## Locating and Mounting Module

Hold the unit against the mounting surface and mark locations of mounting holes. Drill holes and install plugs (if necessary). Use suitable screws, #6, minimum. Ensure enclosure is level before tightening screws. Enclosure knockouts are provided for both wire and fiber.

## LEDs

There are three LED indicators for this module. The first is a red LED located near the terminal block, which is turned on when power is applied. The other two indicators are LEDs next to the fiber ports; there is a yellow LED next to the REC port that blinks when data is received, and there is a green LED next to the XTMR port that blinks when data is turned on.

## Trouble Indicators

All troubles concerning the fiber optic module operation cause a common trouble condition on the host and master Fire Alarm Control Panel. Also, if the FACP should lose communication with any of the networked panels due to errors in operation by the transceiver or network card, a common trouble condition will be generated at the master panel.

| Specifications | |
|---|---|
| **Data** | |
| General | Balanced, Duplex |
| Maximum Rate | 64 Kbps |
| Input/Output Voltage | + 15 Volts |
| **Optical Power** | |
| Max. Attenuation on 62.5/125 Fiber | 14 dBm |
| Max. Attenuation on 50/125 Fiber | 11 dBm |
| Wavelength | 850 nm |
| Maximum Distance (pt-pt) 62.5/125 | 12,000 ft (3.5 km) |
| Maximum Distance (pt-pt) 50/125 Fiber | 6,500 ft (2 km) |
| Power Requirement | 19.4 to 28.8 VDC, 150 mA max, 75 mA nominal power on COM lines, 15 VDC @ 1 mA max. |
| **Connectors** | |
| Power/Data | Removable terminal block with screw terminals |
| Optical | ST |
| **Dimensions** | |
| Surface Mount | 4.2” L x 3.5” W x 1.0” H |
| **Environmental** | |
| Operating Temperature | 32ºF to 120ºF (0ºC to 49ºC) |
| Relative Humidity | 0% to 93%, non-condensing |
| **Power Connections** | |
| Terminal 1 | + 24 V |
| Terminal 2 | GND* |
| Terminal 8 | GND* |
| **RS-232/RS-422 Pin Outs** | |
| Terminal 3 | RS-232 Out |
| Terminal 4 | (Not Used) |
| Terminal 5 | (Not Used) |
| Terminal 6 | (Not Used) |
| Terminal 7 | RS-232 In |

**Note:** *Ensure that standby calculations are done before installing the module. See the host panel installation manual for all power information and calculation charts. Nominal voltage rating for FM-2200-R is 75 mA at 24 VDC.*

## Programming the FM-2200-R

It is not necessary to program the FM-2200-R fiber optic module into the fire alarm control panel network.

## Overview

Each FACP or FAAP attached to the network requires either one or two FM-2200-R modules. Any port without a fiber optic modem must be wired directly to another port in the network. This allows the network to be a closed loop, meaning every port on every panel on the network must be connected to another port.

In the example below, each pair of FM-2200-R fiber modules is wired to the terminal board of its host FX-2200 panel, one attaches to Port 1 and the other attaches to Port 2. The optical ports connect to the optical ports of another FM-2200-R transciever. This transceiver, in turn, is wired to its own host panel, allowing communications between the two panels through the fiber optic modules.

**Note:** *If the copper wiring running between the FACP or FAAP and the fiber module originates at an RS-232 port, it must be wired in conduit (20 feet max.). There are 20 ohms of line resistance allowed on standard network ports, approximately 3,000 feet of 18 AWG.*

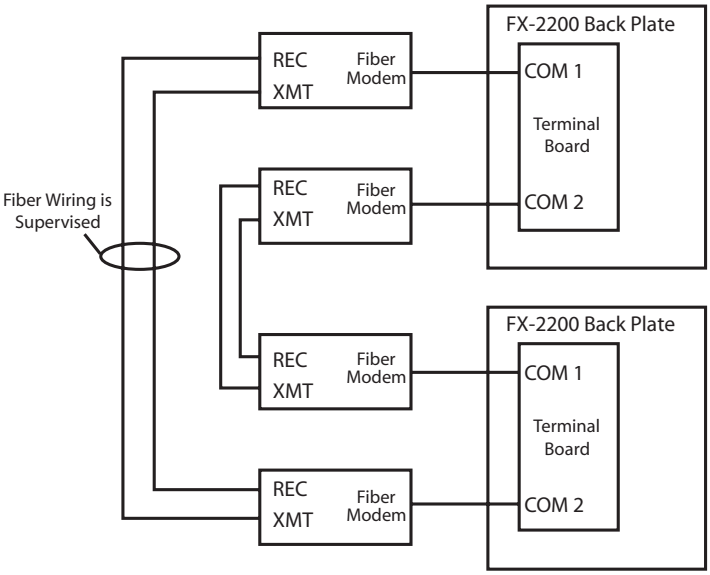


**Figure 1: Block Diagram**

## Wiring RAM-2944LCD

Wire the fiber optic modules to the RAM-2944LCD terminal board as shown in Figure 3. Wire must be 12 to 18 AWG. Wiring must test free of all grounds. Power for the modems and annunciator must be from a regulated, power-limited 24 volt power supply that is UL-listed for Fire Protective Signaling use. All filed wiring connections are power-limited and supervised.

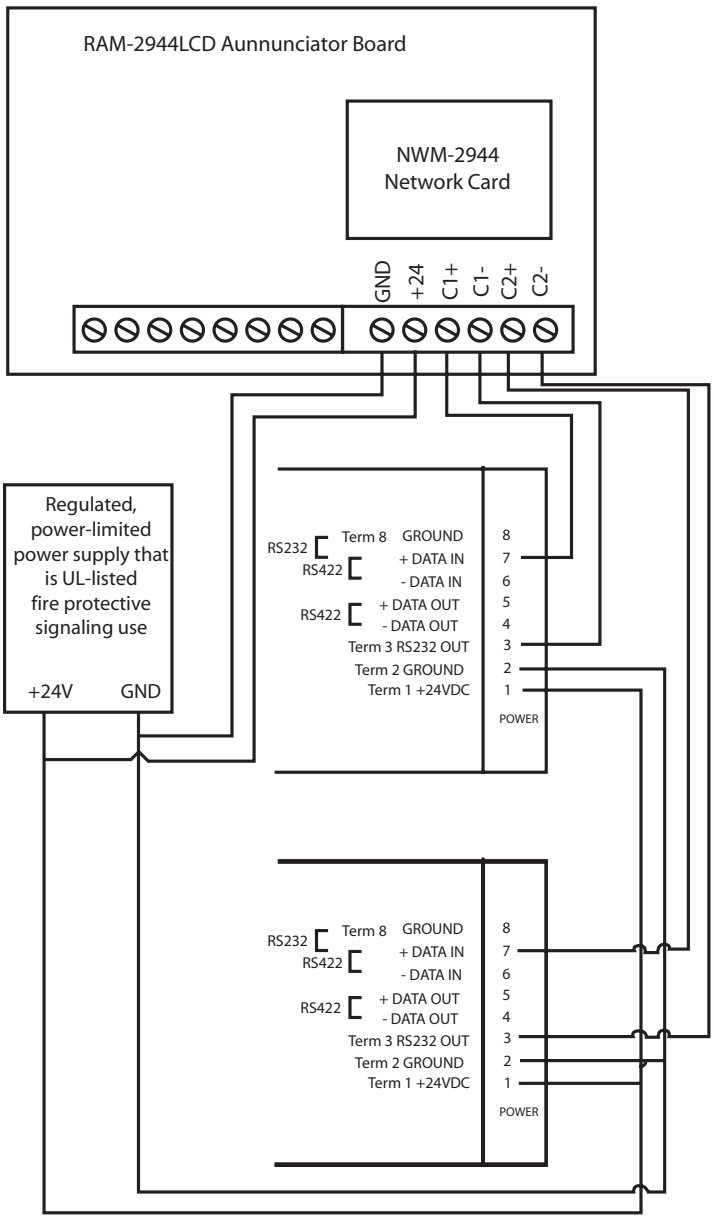


**Figure 2: RAM-2944LCD Wiring**

## Wiring FX-2200

Wire the fiber optic modules to the FX-2200 terminal board as shown in Figure 4. Wire must be 12 to 18 AWG. Wiring must test free of all grounds. All field wiring connections are power-limited and supervised.

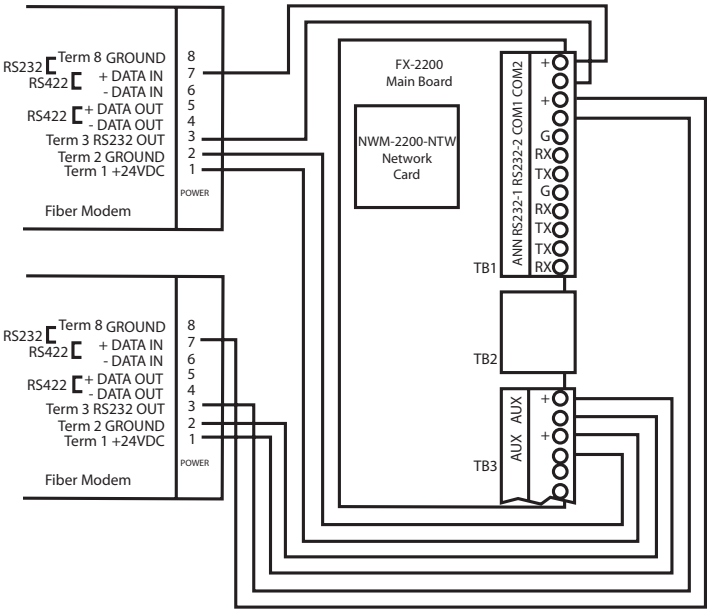


**Figure 3: FX-2200 Wiring**

**Note:** *Terminals, 4, 5, 6, and 8 on both modems do not have any connections made to them.*

## Network Card Setup

The FM-2200-R interfaces to both styles of network cards, standard or RS232. In order for standard COM ports on all FX-2200 network cards to function properly when wired to a FX-2200-R fiber optic module, you must move the shunt jumpers found on jumpers P2 and P3 from pins 2 and 3 to pins 1 and 2.

The FX-2200 network card is located on CON2 of the FX-2200 panel, near the upper right corner.

**Read and save these instructions.** Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depends upon proper installation.

**Static hazard.** Static electricity can damage components. Therefore, handles as follows:
- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

**Don not install any product that appears damaged.** Upon unpacking your product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify your product supplier.

**Electrical hazard.** Disconnect electrical power when making any internal adjustments or repairs. Servicing should be performed by qualified Technical Representatives.

**Radio frequency energy.** This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user, at his or her own expense, must take whatever measure may be required to correct the interference.

**System re-acceptance test after software changes.** To ensure proper system operation, this product must be tested in accordance with NFPA72-2002, Chapter 7 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

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