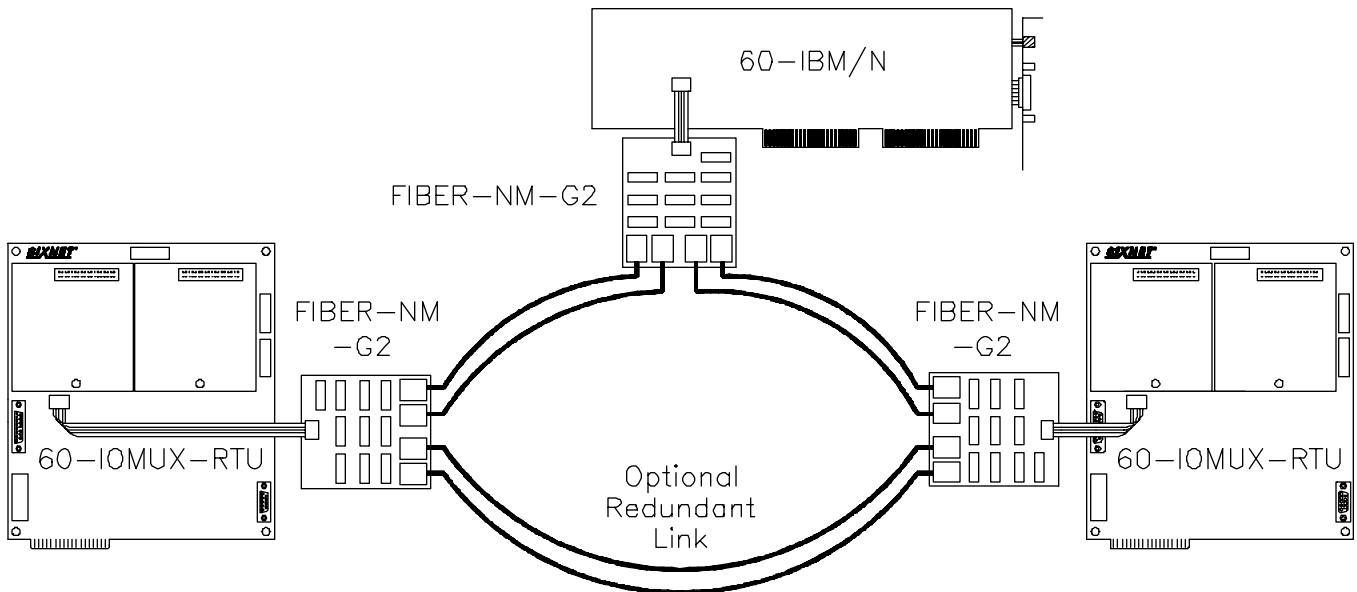


FIBER-NM-G2 FIBER-NM-P2

SIXNET Fiber Optic Modems



A Self-healing Ring Configuration Provides Fiber Optic Cable Redundancy

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The **FIBER-NM-G2** and **FIBER-NM-P2** fiber optic modems convert the **SIXNET** network electrical signals into an optical media for applications that require fiber optic network cabling. A ten conductor ribbon cable is used for interfacing either modem to the fiber optic modem port found on **IOMUXN** (network version) controllers and on **60-IBM/N** network co-processor boards.

Each fiber optic modem has two pairs of cable connections, either glass or plastic, to provide the repeater function necessary to connect multiple **SIXNET** stations in a string. Up to 32 **SIXNET** stations may be connected together on a fiber optic network. Both glass cable (**FIBER-NM-G2**) and plastic cable (**FIBER-NM-P2**) modems are available to meet the varying distance requirements of fiber optic applications. (A **SIXNET** fiber optic network must consist of all glass or all plastic cable.) Fiber optic cable can be installed in a self-healing ring configuration to safeguard against loss of data due to cable damage.

Three diagnostic LEDs are provided on each **FIBER-NM** board, to display the status of the transmit and receive data signals.

1-1: Ordering Information

- FIBER-NM-G2** Dual port fiber optic modem for glass cable.
- FIBER-NM-G2-AT** Dual port fiber optic modem for glass cable, with AT style mounting bracket.
- FIBER-NM-P2** Dual port fiber optic modem for plastic cable.

1-2: Typical Performance Specifications

FIBER-NM-G2:

Cable Type	Glass
Number of ports	2
Conductors per Fiber Link	2
Maximum Network Stations	32
Wavelength	820 μ m
Cable Attenuation per Mile	9.7 dB
Regeneration Delay	60 nS
Total Optical Budget / Link	
With 200 μ m Cable	14 dB
Maximum Distance Between Stations	6000 Feet
Recommended Cable Type	200/380 μ m Duplex
Connector type	SMA
Operating Range	0 to 65 Degrees C
Power Consumption	275 mW

FIBER-NM-P2:

Cable Type	Plastic
Number of ports	2
Conductors per Fiber Link	2
Maximum Network Stations	32
Maximum Distance Between Stations	200 Feet
Cable Ambient Environment	-35 to 80 Degrees C.
Recommended Cable Type	1 mm Plastic Simplex
Operating Range	0 to 65 Degrees C
Power Consumption	275 mW

2-1: Mounting Instructions

The **FIBER-NM-G2** or **FIBER-NM-P2** modem board may be installed in any orientation within a distance of ten inches from the **IOMUX** controller. The **FIBER-NM-G2-AT** may be installed in any available slot in an IBM AT style computer chassis. Figure 2-1 shows the mounting dimensions for the **FIBER-NM-P2** and **FIBER-NM-G2** modem boards.

2-2: Electrical Connections

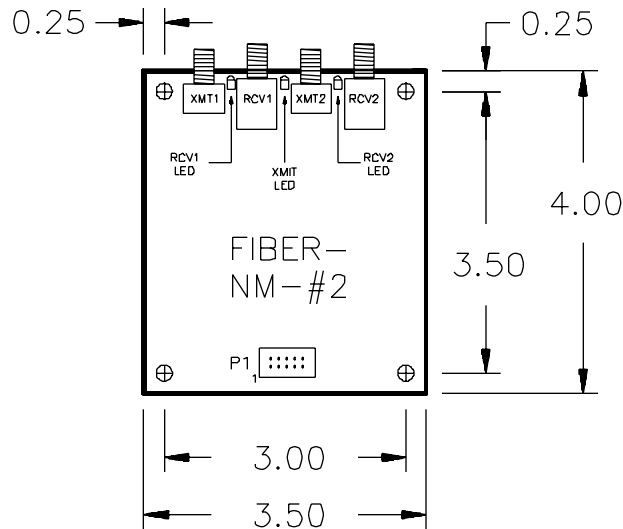
Connect the supplied ten pin ribbon cable between header 'P1' on the **FIBER-NM** board and the ten pin header labeled 'FIBER MODEM' on the **SIXNET** station. All power to operate the fiber optic modem is supplied by the **SIXNET** station. The presence of the fiber optic modem is detected automatically by the **SIXNET** station upon powerup. No additional jumper or switch settings are necessary.

Note: Each communication link between **SIXNET** network stations must be made with fiber optic cable or twisted pair network cable, but not both. Also, all communication links on any given network must be the same type, either fiber optic modems or twisted pair network cable.

Fiber Optic Cable Connections

Each **FIBER-NM** board has two pairs of connectors for fiber optic cable. These connectors are labeled 'RCV1', 'RCV2', 'XMTR1' and 'XMTR2' on the board. Fiber optic cable may be attached to either connector pair, as they are functionally equivalent. **SIXNET** stations may be connected in either a multidrop or self-healing ring configuration. With a self-healing ring configuration, communication will be maintained between stations in the event of a single break in either fiber optic conductor.

A self-healing ring configuration is illustrated on the cover of this manual.



FIBER-NM-G2, FIBER-NM-P2 Mounting Dimensions
Figure 2-1

3-1: Hardware and Software Compatibility

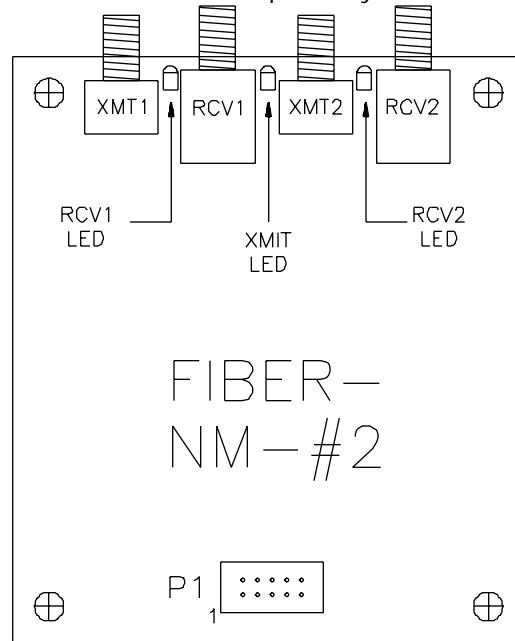
A **FIBER-NM** modem may be installed on any **IOMUX** or **60-IBM/N** board equipped with a fiber modem port. (The **6-IBM/N** board does not support fiber optic communication.) Fiber optic communication is possible over the Universal Network or Master/Slave network, provided all **SIXNET** stations are configured for the same network mode. If Universal Network mode is selected, all stations must be running version 5 or later firmware. Refer to the Technical Manuals for the boards in use for network compatibility information. Fiber optic communication typically provides the same capabilities as network communication, with the following exceptions.

1. There may be up to 32 stations on a **SIXNET** fiber optic network.
2. There may be up to 6,000 feet of glass cable or 200 feet of plastic cable between stations.
3. There may up to 60,000 feet of glass fiber optic cable on a **SIXNET** fiber optic network.
- 4.

Fiber optic cable may be connected in a self-healing ring.

3-2: Status LEDs

There are three status LEDs on each **FIBER-NM** board. The 'XMIT' LED will be lit any time the **SIXNET** station is transmitting. The 'RCVR1' or 'RCVR2' LED will be lit any time the station is receiving characters through the Receive 1 or Receive 2 connector, respectively. Refer to Figure



3-2 for the location of these LEDs.

FIBER-NM Status LEDs
Figure 3-2