

M4202
Security System
Fiber-Optic Transceiver
Installation Guide

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Security System Fiber-Optic Transceiver

Installation Guide

GENERAL

This section contains detailed information on the installation and initial checkout of the Model M4202 Security System Fiber-Optic Transceiver. Paragraph 2.2 provides general information on site selection and placement of the units. Paragraphs 2.3 through 2.5 comprises detailed instructions for connection Model M4202 products to your system. Paragraph 2.6 lists initial checkout procedures.

SITE SELECTION AND MOUNTING

The Model M4202 transceivers are designed to connect directly to the keypad and controller units of the security system via copper wire (customer supplied) to the terminal strip. The M4202 module is small enough to permit flexible placement options, but designed to be mounted near the controller or keypad. The M4202 enclosure has two flanges with mounting holes for surface-mount applications. Whether permanently mounting or using in a stand-alone situation, place the transceiver so as to not be biffed, nudged, cuffed, jostled, pummeled, walloped or buffeted, and provide space for a transformer if required. The transceivers are rugged but not unbreakable.

POWER REQUIREMENTS

The Model M4202 transceivers are designed to operate from an AC power transformer or a DC power source with a DC voltage of +12 VDC, 0.25 A. Terminal A of the terminal Strip accepts +12V (Red) and Terminal D is common (Black). Before inserting the power transformer (Versitron Model M0002TS) into an AC power source, the plug should be connected to Terminals A & D of the M4202 using a screw driver. DC power may be used instead of the power transformer if available. Typically, a security system controller is designed to provide a DC voltage to the keypad. This source may be used by the transceiver connected to the controller but then a separate power source is needed at the M4202 connected to the keypad unit.

INTERFACE CONNECTIONS

Table 1 shows the terminal strip connections for the digital-side interface to the Model M4202 Fiber-Optic Transceiver. The wire for connecting the controller or keypad signals should be at least 22 AWG or heavier. On the optical-side interface, one fiber cable (pair) is connected with ST connectors. The cable must be crossed from one unit to the second, i.e., transmit to receive and receive to transmit.

SWITCH SETTINGS

The Model M4202 Fiber-Optic Transceiver has no user-selectable switches or jumpers.

Terminal	M4202 Fiber-Optic Transceiver
A	Red +12 V
B	Yellow - Controller Green - Keypad
C	Green - Controller Yellow - Keypad
D	Black-Common

INITIAL CHECKOUT PROCEDURE

The Model M4202 Security System products contain no power on/off switch. Once the unit is properly installed and power is applied it is considered fully operational.

Before beginning system operation the following items should be checked to verify proper installation:

1. Verify that the power connections are securely made to Terminals A & D of the M4202 and the AC plug is seated fully if using a power transformer.
2. Confirm that good copper wire connections are made from the security system controller or keypad to Terminals B & C of the M4202.
3. Authenticate that the fiber-optic cable is crossed transmit to receive from unit one to unit two.

If a malfunction is detected during the initial checkout procedure, refer to Chapter 5 for information on isolating the malfunction in the unit.

Operation

INTRODUCTION

This chapter contains a description of the operating controls and indicators associated with the Model M4202 Security System Fiber-Optic Transceiver. Since the Model M4202 is designed for continuous and uninterrupted operation, there are no operating requirements. Once the Model M4202 is powered up it should remain in service as long as required.

STATUS INDICATOR/AUDIBLE ALARM

There are no status indicators or audible alarms available with the Model M4202 Security System Transceivers. The interconnected security equipment provides indication of proper operation or system failures.

OPERATING CONTROLS

There are no operating controls or internal switches with the Model M4202 Security System Transceivers. There are no settings to be made after installation.

Theory of Operation

INTRODUCTION

The Model M4202 Series Fiber-Optic Transceiver provides a transparent path for security system control signals. Converting security system signals from copper to fiber-optic carriers provides additional security - protection from lightning strikes, protection from tampering, and immunity to electromagnetic and radio frequency interference. The Model M4202 transceivers will transmit and receive signals up to 2 km (1.24 miles) without the need for a repeater or amplifier.

In the Model M4202 transmitter circuitry, the security control signals are received via the terminal strip interface, processed and transformed to TTL logic. Next the signal is synchronized and converted into an optical signal input. The optical signal transmitter then sends the signal out onto the fiber-optic cable.

Through the receiver circuitry of the M4202 the same process occurs in reverse. First the optical signal is received and converted back to an electrical signal. The receiver decodes the serial data stream. The data signal is then re-encoded to the digital control protocol and output to Terminals B & C of the terminal strip interface. To the keypad and system controller equipment connected via the M4202 pair, the transition from copper to fiber and back is transparent.

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Maintenance and Troubleshooting

INTRODUCTION

This chapter contains general information designed to isolate a malfunction in the Model M4202 to a replaceable unit. These units are not equipped with redundancy. Therefore a failure in one of these units would interrupt service.

FAULT ISOLATION

Since there are no status indicators on the M4202, you must remove the transmit fiber-optic cable to verify that the unit is emitting light (transmitting). If no light is present, check that power is being supplied to the unit. Swap out transformers to check for a bad power unit, if light is still not present. If both units are emitting light, and the transmit fiber-optic line of the local unit is connected to the receive terminal of the remote unit in both directions, then measure the optical levels at both ends (if possible) to determine if there is a problem with the fiber-optic cable. Contact Versitron Customer Service for assistance.