MR22NTW Network Module Installation Instructions

Description

This document describes the installation procedure for the MR22NTW Network Module, which is a two-port module used for network communications between MR-2100/2200 fire alarm panels. Its ports use isolated voltages for standard communications between two panels, but have assemblies that can communicate in serial RS-232 format with modems.

There are four distinct versions of this network module. These modules allow communication between panels in two different formats - standard network communication format or RS-232.

- MR22NTWR. This model features two standard ports. Refer to "Installing and Wiring the MR22NTWR" in this document for information on wiring standard ports.
- MR22NTWR1. On this model, Port 1 is an RS-232 port and Port 2 is standard. Refer to "Installing and Wiring the MR22NTWR" for information on wiring standard ports and RS-232 ports.
- MR22NTWR2. On this model, Port 1 is a standard port and Port 2 is an RS-232 port. Refer to "Installing and Wiring the MR22NTWR" for information on wiring standard ports and RS-232 ports.
- MR22NTW12. This model features two RS-232 ports. Refer to "Installing and Wiring the MR22NTWR" for information on wiring standard ports and RS-232 ports.

Features

General Features of the MR22NTW include:

- Two communication ports.
- Either port may be RS-232 or isolated, depending on assembly.
- Allowable wiring distance of 33, 000 feet with standard ports (22 AWG wire). RS-232 wiring is limited to 20 feet (max.) in conduit using 22 AWG wiring.
- Connects networks in a DCLR, or Class A/Style 7 loop format
- Assign priorities for different signals sent along the network
- Up to 254 control and/or annunciator units may be networked together.
- Network information is sent at a variable baud rate of 9600, 4800, and 2400 bits per second.
- Allows communications with networkable MR-2900 FACPs, MR-2100/2200 FACPs, and MR-2944 FACPs.

Specifications

Electrical	
Current	50 mA @ 5 VDC, +/- 5%
Com Line Voltage and Current	The max. voltage on the COM lines is 15 VDC, and the max. current draw is 1 mA.
LED Indicators	There are no LED indicators on this module.
Environmental	
Operating Temperature	0° C to 49° C (32° F to 120° F)
Relative Humidity	93% relative humidity, non condensing
Codes, Standards, Related Documentation	
Relevant Codes and Standards	The MR22NTW is designed to meet the Control Unit requirements of NFPA 72 and UL864.
Field Wiring	Field wiring examples are intended as guidelines. All field wiring must be installed in accordance with NFPA 70 National Electrical Code and in Canada with the most current National Electrical Code, and with all relevant local codes and standards.
Related Documentation	When installing the MR22NTW, refer to this manual and the manual for the control panel into which the module is being installed. This network card must be programmed into the system using the Modul-R Human Interface (MHI) program. Refer to the MR-2100/2200 Programming Manual for details on programming the fire alarm control panel

Note: *Ensure that standby calculations are done before installing the module. See the MR-2100/2200 Fire Panel Installation Manual for all power information and calculation charts.*

Communication with FACP

All troubles concerning network module operation cause a common trouble condition on the host FACP. Also if the FACP loses communication with the network card, a common trouble is generated.

Mounting the MR22NTW

The MR22NTW network module mounts directly onto CON2 of the MR-2100/2200 control panel. CON2 is a 2 x 24 socket, located near the top of the panel. Insert the two standoffs into the component side of the board, and remove the cover protecting the double-sided tape on the bottom of the standoffs. Position the module so that the corner of the board that is nearest to the connector P1 is close, but not quite touching J1 of the main board

Make sure the unit is powered down and insert P1 of the network card into CON2 of the control panel, and make sure the standoffs are not touching any components on the main board.

General Wiring Information

The network card is wired using terminal block TB1 on the main board, the one nearest to the top of the board when mounted in the cabinet. On the terminal block, the first four terminals are used for networking the main panels together and are named (from the top down) as COM2+, COM2-, COM1+, and COM1-. The network that is being wired together must be fully closed, meaning every port on every panel involved must be wired to another port, and connected in a Class A/Style 7 loop.

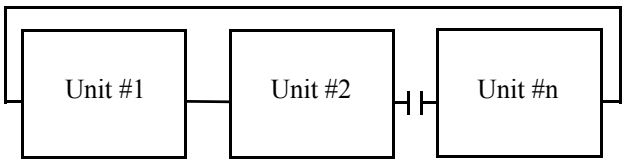

Figure 1. DCLR Loop Layout

Standard Network Wiring

Network wiring uses a twisted pair of wires between each port connection. The two ports that are being connected must have different port numbers (i.e., COM1 connects to COM2 of the next panel and COM2 connects to COM1 of the previous panel in the loop. The wiring is not polarity sensitive, but it is power-limited and supervised. The maximum line resistance allowable is 680 Ohms, and the maximum line capacitance is 100 nF.

The jumpers on P2 and P3 of the network card are used to set Port 1 (only when it is the standard port) for either wire or fiber communications using the MR-D1010R fiber optic module. The jumpers are factory configured on pins 2 and 3, which sets the network card for wire communications. For fiber optic communications, both jumpers must be moved to pins 1 and 2 of P2 and P3. For more detail on wiring a fiber optic network, refer to the MR-D1010R Installation Instructions.

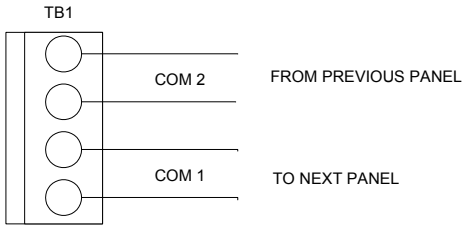

Figure 2. Standard Network Wiring

RS-232 Network Wiring

RS-232 Network wiring (see Figure 3) uses three wires between each panel. COM2 of each unit should be, connected to COM1 of the next unit, and the wiring polarities should be flipped; i.e. COM1+ connects to COM2-, and COM1- to COM2+. Also, it is necessary to connect a ground wire between the two panels so that the transmitted RS-232 voltages have a reference. This ground wire should be connected to the ground block of the RS-232-2 port (also TB1) if the RS-232 wiring is for COM2, and the ground block of the RS-232-1 port (also on TB1) if the RS-232 wiring is for COM1. This wiring may only be wired to panels or modems within 20 feet of the network card.

It is rare to wire RS232 ports directly together. These ports should be used with the MR-D1010R Fiber Optic Module. Refer to the fiber module's installation instructions for information on wiring it into a network.

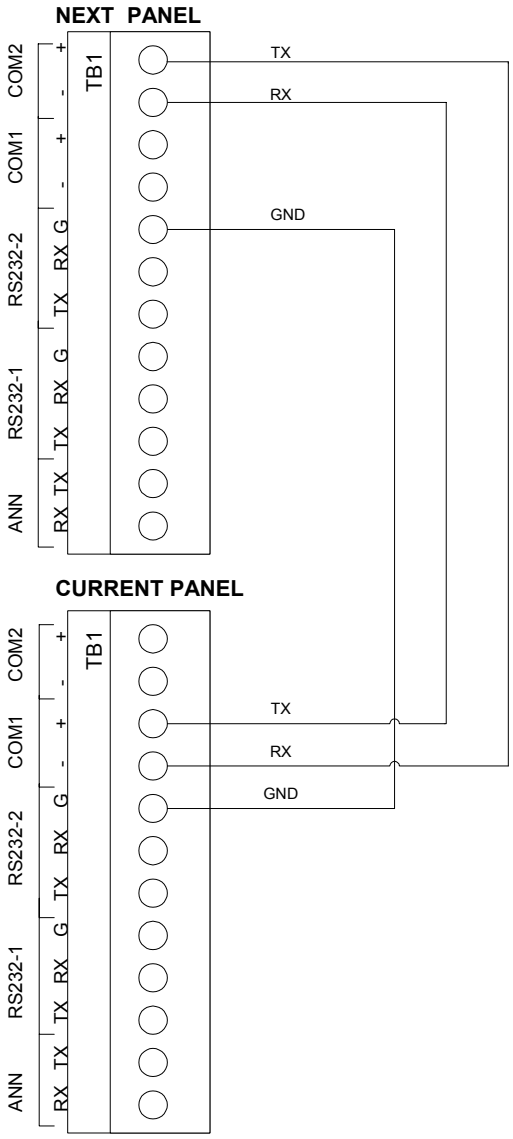

Figure 3. RS-232 Network Wiring

Programming the MR22NTW

The Modul-R Human Interface (MHI) is used to program a Fire Alarm Control Panel Network. In order to program a network of multiple panels, only one job is defined in the MHI, and this job will be downloaded onto all of the panels, in the network. This job includes all of the control panels and the devices that they control. Defining this job begins by entering into MHI all of the control panels that will be part of the network. After this, the normal steps of defining inputs, outputs, and relays for each panel must be followed - refer to the MR-2100/MR2200 Programming Manual for information on how to do this. On the Modul-R Human Interface (MHI) job form there is a field for the master panel, which is automatically defined as 1. Leave the master as number 1, and check to make sure that the panel in the network that should be the master is in fact defined as panel 1. After defining all of the panels in MHI, the only step left is to turn all of the control panels on and change the panel IDs to what their IDs are in the job that will be downloaded.

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, handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

DO 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 measures may be required to correct the interference.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES - To ensure proper system operation, this product must be tested in accordance with NFPA72-1996, Chapter 7 after any programming operation or change in site-specific software. Reacceptance 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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