



MODUL-R™
MR-2400

*ADDRESSABLE FIRE ALARM
CONTROL UNIT*

GENERAL DESCRIPTION

The MR-2400 fire alarm system control unit is the heart of a sophisticated microprocessor-based fire alarm system. Employing addressable input circuits with addressable analog detectors, and monitoring and control modules, the MR-2400 is ideally suited to fit the varied needs of residential, commercial, industrial, and institutional applications.

The MR-2400 provides up to 2 Style 6 (Class A) addressable or 4 Style 4 (Class B) addressable circuits, 2 general purpose Form C relays and 6 polarity reversing notification appliance (bell) circuits as well as system operated relays for alarm and trouble indication.

The MR-2400 can use a MR-2944 series annunciator for remote control and display. The MR-2944 can contain up to 576 LEDs (192 zones) for annunciation, an LCD display for messages, and 16 pre-defined switch inputs for control functions. The MR-2944 can use any of the MR-2902, MR-2622, or MR-2915 boards for interfacing to the LEDs. Using the MR-2944 requires that the MR-2400 have the MR-2109-2 communications module installed.

The MR-2400 can use a MR-2614 series annunciator for remote control and display. The MR-2614 can contain up to 216 LEDs (72 zones) for annunciation and 4 pre-defined switch inputs for control functions. The MR-2614 can use any of the MR-2902, MR-2622, or MR-2915 boards for interfacing to the LEDs. The MR-2614 connects to the annunciator port on the MR-2400.

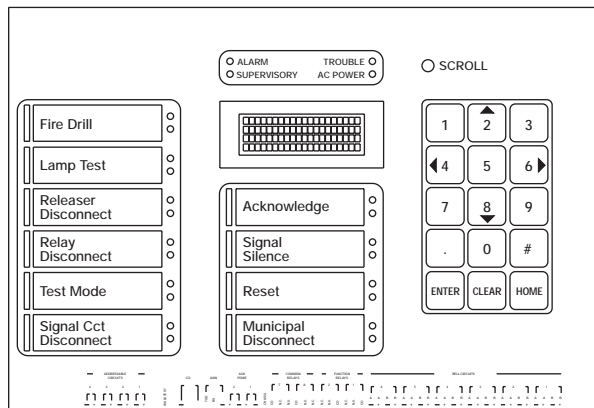
FEATURES

- UL, ULC, CSFM, and MEA Listed
- UL Central Station Connection
- UL and ULC Listed for Releasing Service
- CSFM High Rise Listed
- 5 year warranty
- Sophisticated capabilities yet simple to operate
- Addressable detection circuits
- Adjustable sensitivity
- Day/night sensitivity
- Two-stage alarm capability
- One-person system test capability
- Totally software driven
- Field programmable via PC
- Passcode protection
- History log ≈ 900 events
- System alarm and trouble relays
- Remote alarm and trouble annunciation
- LCD supertwist 80 character (4 x 20) backlit display
- Sprinkler supervision
- Ground fault indication by supervised circuit
- Cross-zoned releasing circuit
- Addressable input circuits Style 4 (Class B) or Style 6 (Class A)
- Style Y (Class B) or Style Z (Class A) notification appliance (bell) circuits
- Power limited circuits
- 'Hot Key' system controls
- Display of real time
- Signal silence inhibit
- Signal time limit cut-out
- Alarm verification by device

MODUL-R MR-2400 Addressable Fire Alarm Control Unit

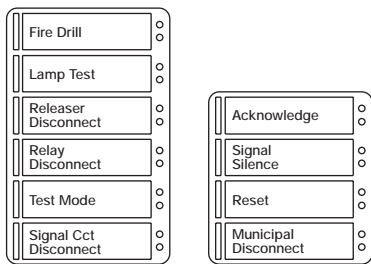
MAIN CONTROL UNIT

System controls and visual indicators are contained on the main circuit board which also contains the system processor, programming port, printer port and non-volatile memory for storage of system programming. Operating software is installed on the main board for critical functions such as timing functions and non-critical functions such as custom zone and devices messages.



Front Panel

System controls consist of 10 system switches ('HOT KEYS') which are factory defined for operations such as alarm acknowledge, notification appliance (bell) silence, and system reset.



Hot Keys

Display

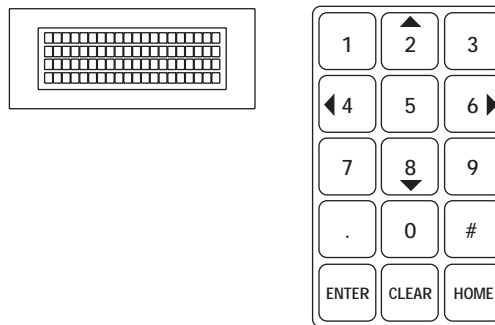
The visual display consists of a series of LEDs for common system indication of power, alarm, supervisory, and trouble.



System Display

An 80 character (4 x 20) supertwist backlit LCD alphanumeric display is provided for identification of addressable devices and input circuits, and for display of history files, first/last device in alarm, custom messages, etc. Custom alphanumeric messages can be assigned on a per device basis for addressable devices.

The scroll button located next to the display is used to scroll through the display. It is available without having to open the cabinet. Once the entire list has been shown, pressing the scroll button again will show the beginning of the list. The keypad can also be used to scroll through the display. The keypad and the display are also used for maintenance functions, such as testing.



LCD Display & Keypad

Addressable devices are indicated on the LCD display which provides device number, addressable input circuit number and custom message.

Input Circuits

Up to 99 addressable analog detectors and up to 99 addressable control/monitoring modules may be connected to one circuit for a total of 198 addressable devices per addressable circuit. Addressable monitoring modules can be programmed for alarm or supervisory function.

The circuit of origin will be indicated for ground fault conditions occurring on the addressable input circuits.

Output Circuits

The MR-2400 includes 6 supervised polarity reversing notification appliance (bell) circuits, 2 general purpose Form C relays, and 2 system Form C relays. Field connections are terminated at the terminal strip located at the bottom of the main circuit board.

The notification appliance (bell) circuits, Style Y and Style Z, are rated at 1.0A @ 24VDC. (**Note** : maximum system loading and stand-by battery power must be considered when determining actual notification appliance (bell) loading). Style Y (Class B) notification appliance (bell) circuits require a 10kΩ end-of-line resistor for supervision.

The general purpose Form C relay operation is program defined. The relays are rated at 1.0A @ 120VAC. The system Form C relays are for common alarm and trouble indication. These relays are rated at 1.0A @ 120VAC.

The operation of the general purpose relays and the notification appliance (bell) circuits is totally program defined. It is possible to program the activation of relays and notification appliances (bells) in response to any device or group of devices and to inhibit the operation for a specifiable period of time.

Communication Ports

The following ports are available for use :

- Port #3 - general purpose (RS-232/opto-coupled/RS-485)
- Port #4 - service terminal (RS-232)
- Port #5 - printer interface (IBM/Centronics)
- Port #6 - annunciator port (proprietary)

The system service terminal port (RS-232) permits the downloading and uploading of custom software such as device messages and I/O functions. This port is a DB-9 connector behind the terminal strip.

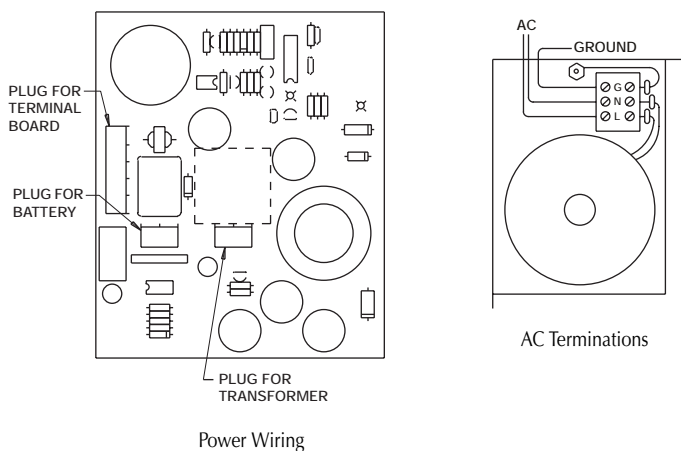
The system printer port is a parallel port (IBM/Centronics) providing an interface to any standard printer. It can be used for system commissioning and testing by producing a printed log of received events. This can then be checked against a log of tests performed to confirm correct operation. This port is a DB-25 connector behind the terminal strip.

The system general purpose port is available for remote annunciation of system alarm and system trouble. The operation of this port is software defined and requires the use of an MR-2109-X board. This port is on the terminal strip. An MR-2109-2 board is used for communications to the MR-2944 annunciator or to an SE2000. An MR-2109-4 is used for communications to GRID or other monitoring equipment. This port can only be used for one purpose at a time. Each different use of the port requires a different operating program in the MR-2400.

The annunciator port is used for connection to an MR-2614 annunciator. This port is located on the terminal strip.

Power Supply

The MR-2905 power supply is rated at 10A unregulated, providing the system with primary DC power. The power supply is complete with battery charger rated at 2A and battery supervisory circuitry. The power supply is located in a separate compartment behind the main board.

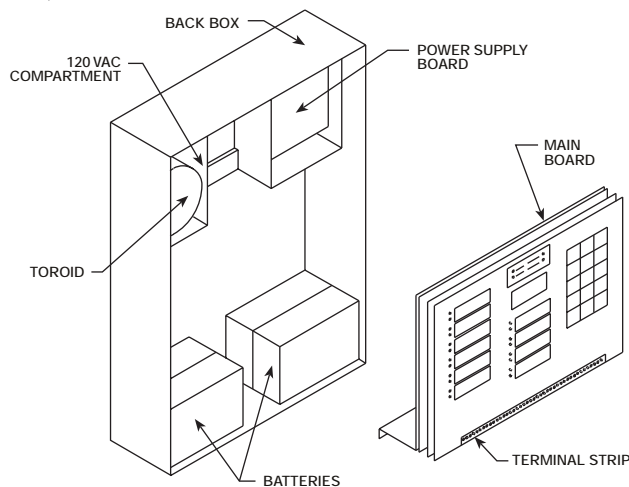


Battery supervision uses true dynamic supervision circuitry, simulating a load condition approximately every 90 seconds to ensure that the battery is capable of handling the system load requirements on loss of primary power.

A second compartment behind the main board is provided for 120VAC or 220VAC terminations.

Enclosure

The enclosure for MR-2400 consists of a back box complete with power supply, and an inner assembly complete with main board, and door assembly. The back box and door assemblies are fabricated from 1.59mm (¹/₁₆"¹¹) steel. The front door includes a tempered glass window, hinge, and lock assembly. The back box provides knock outs for conduit entry. The enclosure dimensions are 36.83 cm wide x 52.07 cm high x 10.16 cm deep (14.5 x 20.5 x 4 in). The front door assembly is 38.10 cm wide x 53.34 cm high x 1.27 cm deep (15 x 21 x 0.5 in).



Exploded View of MR-2400
(for clarity front door assembly is not shown)

FIELD PROGRAMMING

The system program can be downloaded, in the field, from a computer via the service terminal port. The control unit operational database is downloaded from a computer.

There is provision for uploading the database from the control unit to the computer.

All information is stored in non-volatile flash memory and E²PROM.

TECHNICAL DATA

INPUT POWER 120VAC, 60Hz or 220VAC, 50Hz

INPUT CIRCUITS (4)

Voltage	20-28VDC
Max. no of devices	99 detectors & 99 modules
Compatible devices	MRI series
Total line resistance	40
Total line capacitance	0.5 μF
Maximum line length	3,050m (10,000ft) (12 AWG)

NOTIFICATION APPLIANCE (BELL) CIRCUITS (6)

Supervisory current	1.0mA
Alarm current	1.0A; max 8.0A total load
Voltage	24VDC (unfiltered)
End-of-line device	10kΩ resistor (Style Y (ClassB) only)

SYSTEM RELAYS (2)

Alarm & trouble	1.0A @ 120VAC
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GENERAL PURPOSE RELAYS (2) 1.0A @ 120VAC

MODUL-R™ ADDRESSABLE FIRE ALARM MR-2400 CONTROL UNIT

TECHNICAL DATA cont'd

MR-2109 COMMUNICATION BOARDS

Model	Wire Type	Wire Gauge	Distance
MR-2109-2	twisted pair	22-28 AWG	10 km (6.2 mi)
MR-2109-4	twisted pair	22-28 AWG	10-20m (33-66ft)

CIRCUIT DESCRIPTION	STYLE (NFPA-72A)	CLASS	NO. OF DEVICES	END OF LINE
Addressable input circuit	6	A	99 detectors	no
	4	B	& 99 modules	no
Signalling (output) circuit	Z	A	1.0A/cct.	no
	Y	B	1.0A/cct.	yes

ORDERING INFORMATION

Model Description

BASIC CONTROL UNIT PACKAGE

- MR-2400B Basic control unit, 4 Style 4 (Class B) addressable circuits
- MR-2400A Basic control unit, 2 Style 6 (Class A) addressable circuits

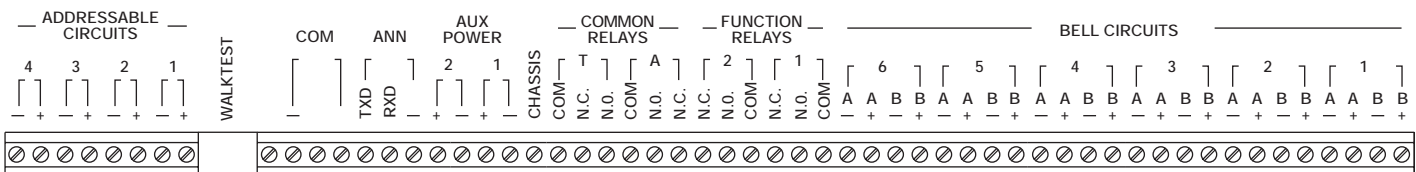
ACCESSORIES

- MR-220-8VAC 220 VAC, 50Hz option
- MR-2614EHS Enhanced 8 zone surface mount annunciator
- MR-2614EHS-16 Enhanced 16 zone surface mount annunciator
- MR-2944C/S Surface mount annunciator c/w 4 x 20 LCD display

- MR-2944C/F Flush mount annunciator c/w 4 x 20 LCD display
- MR-2944 Annunciator driver
- MR-2944LC Annunciator driver c/w 80 character LCD display
- MR-2614 Remote annunciator board
- MR-2614EHS Remote annunciator c/w board
- MR-2915 LED driver for annunciators
- MR-2902 Annunciator strip, 3 x 24 LEDs
- MR-2622 Annunciator strip, 3 x 8 LEDs
- MR-2109-2 Opto-coupled party line driver for communications to MR-2944
- MR-2109-4 RS-232 driver for GRID
- MHI Modul-R human interface database editor
- MHI-D Modul-R human interface database editor c/w Digital human interface
- MHI-U Modul-R human interface database editor c/w upload and compare features
- MHI-DU Modul-R human interface database editor c/w Digital human interface, and upload and compare features
- DHI Digital human interface database editor
- MHI-LT No-edit version of MHI, download capability only
- MHI-MS Message edit only version of MHI c/w download capability
- MR-2976 Flush trim
- MRD-EOL-10k 10kΩ end-of-line resistor for Style Y (Class B) notification appliance (bell) circuits

REPLACEMENT MODULES

- MR-2401 Motherboard assembly
- MR-2905 Power supply, included with back box for basic system



Terminal Strip

Distributor:



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