

MPC-6000 / MPC-7000 / RND-2

Fire Alarm System Control Unit

Installation, Operation and Maintenance Manual

FARADAY
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INTRODUCTION

CONTROL UNIT LIMITATIONS

This control unit may not show an alarm condition without compatible initiating devices (smoke detectors, etc.) and notification devices (horn, lights, etc.) connected to it. Electrical ratings of the initiation and notification appliances must be compatible with the electrical ratings of the control unit and must be properly interconnected. The wiring used for interconnection must be large enough to carry the total current for all appliances without excessive voltage drop. The RND-2 will not indicate alarm conditions without being connected to and configured correctly on an MPC-NET2 network. (Refer to the MPC-NET2 Manual, P/N 315-049594, for more information.)

The control unit must be connected to a dedicated primary electrical source that has a high degree of reliability and adequate capacity for this control unit. The only means of disconnecting this power source shall be available only to authorized personnel and clearly marked "Fire Alarm Circuit Control".

The control unit must also have connected to it a battery set (24V) that has enough capacity to properly operate the system for 24, 60 or 90 (depending on system type) hours standby and 5 minutes alarm per NFPA 72 (Chapter 1). These batteries do lose capacity with age. Batteries must be replaced when they fail to provide the control unit with the required standby and alarm power or after 4 years, whichever happens first. These batteries must be checked for performance at least two (2) times a year or more often if local requirements dictate.

Even though this control unit was made to last for the expected life of the fire alarm system, any part could fail at any time. Therefore a regular test program should be followed and documented to make sure that each part of the system is tested as in Chapter 7 of NFPA 72 or more often if dictated by local code requirements. Malfunctioning units must be replaced or repaired immediately by factory authorized service personnel.



This control unit is designed to show an alarm condition when the initiating devices connected to it detect specific conditions. These conditions may or may not represent a life-threatening condition. Also, evacuation of a building or area unnecessarily may subject individuals to an unnecessary hazard. Therefore, it is most important that the building owner, manager, or representative promulgate, distribute, and/or post instructions describing steps to be taken when the fire alarm control unit signals an alarm condition. These instructions should be developed in cooperation and conformance with representatives of the local authority having jurisdiction.

As a backup or precautionary measure, it is strongly suggested that one of these steps should be to notify the local fire department of an abnormal condition even where the DACT option (or similar device) is included in the system.

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES		
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.		
Program Feature or Option	Possible Settings	Settings Permitted in UL 864
Abort function	ULI-Type IRI-type NYC-type AHJ-type	Yes Yes, provided pre-discharge time is 60 seconds or less. No Yes, provided pre-discharge time is 60 seconds or less.
Supervision/ Trouble Resound	Not enabled 1-30 hours	Yes 1-24 hours
Courtesy Delay (Releasing)	0-60 seconds	0-30 seconds
On MPC-REL module: S2 8 th /9 th Edition Jumper	8 th Edition 9 th Edition	No Yes

INSTALLATION AND WARRANTY INFORMATION

Warranty Information: Faraday (the Manufacturer) provides a limited warranty to the original purchaser of this product. The original purchaser is the party to whom the manufacturer issued its sales order, generally the manufacturer's distribution. In order to preserve this warranty, it is important that only persons who have been properly trained and authorized by the manufacturer service the product.

Other parties involved in the installation of this product may have also provided a warranty, which may be different from that of the manufacturer. The manufacturer will only be responsible to the original purchaser and only for the manufacturer's own warranty. For further information regarding the manufacturers warranty, contact the original purchaser.

OWNER'S MANUAL: The owner's manual does not purport to cover all the details or variations in the equipment described, nor does it provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently, the matter should be referred to the installer or original purchaser listed below.

Installer Information:

Installer: _____
Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____
Date installed: _____
Installer's signature: _____

Original Purchaser Information:

Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____
Date purchased: _____
Purchaser's purchase order number: _____
Faraday sales order acknowledgment number: _____
Original purchaser's signature: _____

PREFACE

Along with the use of this instruction manual, the appropriate following standards and the manufacturer's instructions for initiating and notification devices should be used to install and maintain a functioning fire alarm signaling system.

NFPA 70 National Electrical Code

NFPA 72 National Fire Alarm Code

NFPA 101 Life Safety Code

For other standards that may apply contact the authority having jurisdiction.

In order to comply with NFPA 750, NFPA 13 and NFPA 2001, the MPC-REL releasing module and RPT-1 transformer must be installed in an MPC-6000 panel only.

When the system is configured per NFPA 750 an emergency release device shall be provided.

For NFPA publications, contact:

National Fire Protection Association
Batterymarch Park
Quincy, Massachusetts 02269

DESCRIPTIONS

MPC-6000 SYSTEM DESCRIPTION

The MPC-6000 is a modular fire alarm control unit. It features advanced addressable detection, programming, and memory capability. Its base configuration includes a power supply, an X1 addressable device circuit, four/two notification circuits (NAC), serial interface circuit, four status relays and a programming port.

The MPC-6000 control unit mounts in a 22" x 18" backbox with overall cover size of 22-9/32" x 18-3/8". Operating controls and indicators are mounted on the inside hinged plate. An 80 (4x20) – alphanumeric character LCD provides specific indications for addressable devices while LEDs indicate general panel status.

Semi-flush mounting kits are available for the enclosure.

The main board mounts in the rear of the enclosure. The power supply is physically contiguous with the main board. The MPC-6000 main board (MPC6-MB or MPC6-MB2) provides the connections for external field wiring. Optional boards mount on the main board or on the rear of the enclosure.

The display board (MPC6-DB or MPC6-DB2) mounts on the inner-hinged plate.

All normal operation is controlled via a membrane keypad. Displays are provided by an 80-character, alphanumeric, backlit LCD display and by discrete LED indicators for major control unit functions.

The 80-character (20 x 4) LCD is used to display event data, including alarms and troubles, identification of zone or device, and presentation of history. The display is controlled by a set of four push-button switches commanding the control processor. A back light is included in the display to assure visibility in low light, but to conserve power it is only activated during a reported event or on operation of a display control switch.

Individual LEDs on the panel are provided to indicate SYSTEM ALARM, PREALARM, SUPERVISORY, ALARM SILENCED, SYSTEM TROUBLE and AC POWER ON. Direct push-button controls are provided for ALARM SILENCE, ACKNOWLEDGE, MENU and SYSTEM RESET. For MPC-6000 Electronics Package2, LEDs for Releasing application (PREDISCHARGE, ABORT, DISCHARGE) are also provided.

Power Supply

A 24V (nominal) power supply provides all operating power to the control unit for both standby and alarm conditions. Sufficient battery charging capability is available to charge 38 AH sealed lead-acid batteries within code requirements for up to 90 hours quiescent plus 5 minutes alarm. The cabinet will hold batteries only up to 12 AH. The back-up battery is 24V, maintained by floating on the power supply. The battery will be automatically disconnected at low battery voltage to prevent deep discharge.

X1 Addressable Device Circuit

The MPC-6000 control unit has one addressable device circuit utilizing the X1 Detection Technology. The circuit has the capacity for 252 addresses.

Notification Appliance Circuits

The MPC-6000 control unit has four independent Class B (Style Y) notification appliance circuits (NACs). Pairs of NACs can be combined for Class A (Style Z) operation. This reduces the number of NACs to two. Each circuit can be selected to give continuous output or one of five sounding patterns. There is also a system coder capable of zone-coded operation. All of the NACs are power limited and support synchronization of listed devices via the Faraday SYNC Protocol.

Serial Interface Circuit

The MPC-6000 control unit has a Serial Interface Circuit that will drive up to 16 remote LCD annunciators and up to a total of 8 Serial Relay Units and Serial Annunciator Units.

Status Relays

Four relays with dry contacts are provided. Three relays are programmable and the Trouble status relay is non-programmable. The relay contacts are Form C and are rated for 1A @ 28VDC resistive.

Programming Port

An RJ-11 jack is provided for a non-isolated RS-232 connection for temporary connection to a computer for panel programming.

MPC-7000 SYSTEM DESCRIPTION

The MPC-7000 is an expandable modular fire alarm control unit. It features advanced addressable detection, programming, and memory capability. Its base configuration includes a power supply, two X1 addressable device circuits, four/two notification circuits (NAC), serial interface circuit, four status relays and a programming port.

The basic MPC-7000 control unit mounts in a 38" x 18" backbox with overall cover size of 38-9/32" x 18-3/8". Operating controls and indicators are mounted on the inside hinged plate. An 80-character LCD provides specific indications for addressable devices while LEDs indicate general panel status.

Semi-flush mounting kits are available for the enclosure.

The main board mounts in the rear of the enclosure. The power supply is physically contiguous with the main board. The MPC-7000 main board (MPC7-MB) provides the connections for external field wiring and connection points for optional modules. Optional boards mount on the main board or mount on the rear of the enclosure.

The display board (MPC7-DB or MPC6-DB2) and controls mount on the inner-hinged plate.

All normal operation is controlled from the front of the control unit via push-button switches. Displays are provided by an 80-character, alphanumeric, backlit LCD display and by discrete LED indicators for major control unit functions.

The 80-character (20 x 4) LCD is used to display event data, including alarms and troubles, identification of zone or device, and presentation of history. The display is controlled by a set of four push-button switches commanding the control processor. A backlight is included in the display to assure visibility in low light, but to conserve power it is only activated during a reported event or on operation of a display control switch.

Individual LEDs on the panel are provided to indicate SYSTEM ALARM, PREALARM, SUPERVISORY, ALARM SILENCED, SYSTEM TROUBLE and AC POWER ON. Direct push-button controls are provided for ALARM SILENCE, ACKNOWLEDGE, MENU and SYSTEM RESET.

Power Supply

A 24V (nominal) power supply provides all operating power to the control unit for both standby and alarm conditions. Sufficient battery charging capability is available to charge 38 AH sealed lead-acid batteries within code requirements for up to 60 hour quiescent plus 5 minutes alarm. The cabinet will hold batteries only up to 18 AH. The back-up battery is 24V, maintained by floating on the power supply. The battery will be automatically disconnected at low battery voltage to prevent deep discharge.

X1 Addressable Device Circuits

The MPC-7000 control unit has two addressable device circuits (expandable to three or four), utilizing the X1 Detection Technology. Each circuit has the capacity for 252 addresses.

Notification Appliance Circuits

The MPC-7000 control unit has four (expandable to twelve) independent Class B (Style Y) notification appliance circuits (NACs). Pairs of NACs can be combined for Class A (Style Z) operation. This reduces the number of NACs to two (six). Each circuit can be selected to give continuous output or one of five sounding patterns. There is also a system coder capable of zone-coded operation. All of the NACs are power limited and support synchronization of listed devices via the Faraday SYNC Protocol.

Serial Interface Circuit

The MPC-7000 control unit has a Serial Interface Circuit that will drive up to 16 remote LCD annunciators and up to a total of 8 Serial Relay Units and Serial Annunciator Units.

Status Relays

Four relays with dry contacts are provided. Three relays are programmable and the Trouble status relay is non-programmable. The relay contacts are Form C and are rated for 1A @ 28VDC resistive.

Programming Port

An RJ-11 jack is provided for a non-isolated RS-232 connection for temporary connection to a computer for panel programming.

RND-2 SYSTEM DESCRIPTION

The RND-2 is a Remote Network Display designed to connect to a Faraday MPC-NET2 Network. It features advanced programming and memory capability. Its base configuration includes a power supply, serial interface circuit, four status relays and a programming port.



In a system with multiple panels connected via the MPC-NET2, the RND is used to Acknowledge, Silence and Reset the total system.

The RND-2 Network annunciator mounts in a 22" x 18" backbox with overall cover size of 22-9/32" x 18-3/8". Operating controls and indicators are mounted on the inside hinged plate. An 80 (20 x 4) – alphanumeric character LCD provides specific indications for addressable devices while LEDs indicate general panel status.

Semi-flush mounting kits are available for the enclosure.

The main board mounts in the rear of the enclosure. The power supply is physically contiguous with the main board. The RND-2 main board (MPC6-MB or MPC6-MB2) provides the connections for external field wiring. Optional boards mount on the main board and the network interface card mounts on the rear of the enclosure.

The display board mounts on the inner-hinged plate.

All normal operation is controlled via a membrane keypad. Displays are provided by an 80-character, alphanumeric, backlit LCD and by discrete LED indicators for major control unit functions.

The 80-character LCD is used to display event data, including alarms and troubles, identification of network links or devices and presentation of history. The display is controlled by a set of four push-button switches commanding the control processor. A back light is included in the display to assure visibility in low light, but to conserve power it is only activated during a reported event or on operation of a display control switch.

Individual LEDs on the panel are provided to indicate SYSTEM ALARM, PREALARM, SUPERVISORY, ALARM SILENCED, SYSTEM TROUBLE and AC POWER ON. Direct push-button controls are provided for ALARM SILENCE, ACKNOWLEDGE, MENU and SYSTEM RESET.

Power Supply

A 24V (nominal) power supply provides all operating power to the control unit for both standby and alarm conditions. Sufficient battery charging capability is available to charge 38 AH sealed lead-acid batteries within code requirements for up to 60 hour quiescent plus 5 minutes alarm. The cabinet will hold batteries only up to 12 AH. The back-up battery is 24V, maintained by floating on the power supply. The battery will be automatically disconnected at low battery voltage to prevent deep discharge.

Serial Interface Circuit

The RND-2 control unit has a Serial Interface Circuit that will drive up to 16 remote LCD annunciators.

Status Relays

Four relays with dry contacts are provided. Three relays are programmable and the Trouble status relay is non-programmable. The relay contacts are Form C and are rated for 1A @ 28VDC resistive.

Programming Port

An RJ-11 jack is provided for a non-isolated RS-232 connection for temporary connection to a computer for panel programming.



Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more details on the networking system.

OPTIONAL MODULES

CT-1K City Tie Board (MPC-6000 / MPC-7000 / RND-2)

The Faraday CT-1K city tie board provides local energy and polarity reversal connections. The polarity reversal connections provide a trouble circuit and an alarm circuit with optional trouble output. The CT-1K mounts on the MPC6-MB, MPC6-MB2 or MPC7-MB (Cannot be used in conjunction with a DACT Board).

MPC-DACT Board (MPC-6000 / MPC-7000 / RND-2)

The Faraday MPC-DACT Digital Alarm Communication Transmitter board will send control unit status data to a remote receiving station. The MPC-DACT mounts the MPC6-MB, MPC6-MB2 or MPC7-MB (Cannot be used in conjunction with the City Tie Board).

NPE-1 Transformer Assembly (MPC-6000 / MPC-7000)

The Faraday NPE-1 optional transformer assembly provides an additional 3 amps of NAC power. The transformer mounts in the cabinet above the two transformers that come standard with the MPC-6000 / MPC-7000. A maximum of one optional NPE-1 is allowed per system.

NEM-1 NAC Expansion Board (MPC-7000)

The NEM-1 NAC Expansion Board has eight independent Class B (Style Y) notification appliance circuits (NACs). Pairs of NACs can be combined for Class A (Style Z) operation. This reduces the number of NACs to four. Each circuit can be selected to give continuous output or one of five sounding patterns. There is also a system coder capable of zone-coded operation.

All of the NACs are power limited and support synchronization of listed devices via the Faraday SYNC Protocol. If a NEM-1 is installed in an MPC-7000 panel, its NACs are synchronized in sets of 4 as follows:

- NAC1, NAC2, NAC3 and NAC4 are synchronized with each other.
- NAC5, NAC6, NAC7 and NAC8 are synchronized with each other.
- NAC9, NAC10, NAC11 and NAC12 are synchronized with each other.

A maximum of one NEM-1 NAC Expander board can be installed per MPC-7000 panel.

LEM-1 Loop Expander Board (MPC-7000)

The LEM-1 has circuitry for the addition of an additional two FDLC Loop Driver boards to a MPC-7000 panel. (FDLC Loop Driver Boards are not included). A maximum of one Loop Expander Board is allowed per MPC-7000 system.

FDLC Loop Driver Board (MPC-7000)

The FDLC has one addressable device circuit that is programmed for connection to Faraday addressable devices using the X1. The circuit has the capacity for 252 addresses. A maximum of four FDLC boards per MPC-7000 panel is allowed. (Loops 3 and 4 require a LEM-1 Loop Expander Board.)

HBC-1 Battery Charger (MPC-7000)

The HBC-1 is an optional battery charger to increase the charging capacity of the MPC-7000 up to 100AH lead acid batteries.

Battery Sets


The MPC-6000 / MPC-7000 / RND-2 control units are designed to use only rechargeable sealed lead-acid batteries for back-up power. Attaching a close-coupled battery box, if required, may allow use of battery sets beyond the physical capacity of the enclosure (12 AH for the MPC-6000 and 18 AH for the MPC-7000). Maximum battery charging capacity for the MPC-6000 is 38 AH. Maximum battery charging capacity for the MPC-7000 is 38 AH. Some of the battery models are listed in the table below:

Model Number	Description	Part Number	Panel
BT-34	10 Amp-Hour Battery Set	175-387140	MPC-6000/-7000/RND-2
BP-61	15 Amp-Hour Battery Set	175-387194	MPC-6000/-7000/RND-2
BTX-1	31 Amp-Hour Battery Set	175-083897	MPC-6000/-7000/RND-2
BTX-2	55 Amp-Hour Battery Set	175-083898	MPC-7000 with HBC-1
BTX-3	100 Amp-Hour Battery Set	599-034220	MPC-7000 with HBC-1

MPC-REL Releasing Module (MPC-6000 Only)

The MPC-REL Releasing module is an optional accessory for the MPC 6000 Fire Alarm System Control Panel that allows the panel to control Sprinkler Systems (Pre-Action / Deluge), Water Spray Systems and Clean Agent Fire Suppression Systems via approved solenoids (NFPA 13, NFPA 750 and NFPA 2001). The MPC-REL provides two independent releasing circuits with a capacity of 1.5 amps each. This module is controlled by the panel. All of the operating parameters are programmed through the panel or the CIS-4 configuration tool. The MPC-REL requires an MPC-6000 Electronics Package 2, see page 30, and an RPT-1 transformer that mounts above the NPE-1 transformer(s).

NOTE  When an RPT-1 transformer is used, the optional NPE-1 transformer is not available.

NOTE  The MPC-REL must not be installed in a networked system.

12603A (MPC-6000 / MPC-7000 / RND-2)

This is the basic NIB (Network Interface Board) card that is installed in the panel enclosure that allows the panel to communicate in the MPC-NET2 network. It is connected to the serial port of the main board (MPC6-MB, MPC6-MB2, MPC7-MB2). Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

12523A (MPC-6000 / MPC-7000 / RND-2)

The 12523A is a 12603A NIB (Network Interface Board) card installed in a 12411 surface box enclosure that is installed external to the panel enclosure. It is connected to the serial port of the main board (MPC6-MB, MPC6-MB2, MPC7-MB2). Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

12526A (MPC-6000 / MPC-7000 / RND-2)

The 12526A is a 12523A NIB (Network Interface Board) card has an RS232 daughter card. This allows the network to be connected to a diagnostics isolated serial printer to print network events. Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

12525 (MPC-6000 / MPC-7000 / RND-2)

This is a line surge suppressor module that allows the NIB cards to be installed in a separate building location. This module is installed in a 12525 surface box enclosure that is installed external to the panel. Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

12535 (MPC-6000 / MPC-7000 / RND-2)

This is a multi-mode fiber optic converter that is installed in NIB cards. Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

12536 (MPC-6000 / MPC-7000 / RND-2)

This is a single-mode fiber optic converter that is installed in NIB cards. Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

AUXILIARY MODULES

Serial LCD Annunciators

The RDC-2 Serial LCD Annunciator consists of a backlit 80 character (20 x 4) alphanumeric LCD display, 4 menu buttons, 4 dedicated buttons for operator interface, 6 LED indicators and a security key switch. The display and controls of the RDC-2 are the same as those on the front of the MPC-7000 and RND-2 panels, including a key switch for security. The backlight activates only during active button press or when events are present in the system to conserve power. The RDC-2 can be installed in RND-2 and MPC-7000 panels. It can also be installed in the MPC-6000 panel provided that the Releasing application features are not used.

The RDC-3 Serial LCD annunciator consists of a backlit 80 character (20 x 4) alphanumeric LDC display, 4 menu buttons, 4 dedicated buttons for operator interface, 9 LED indicators and a security key switch. The display and controls of the RDC-3 are the same as those on the front of the MPC-6000 panel including a key switch for security. The backlight activates only during active button press or when events are present on the system to conserve power. The RDC-3 can be installed in MPC-6000 panels with releasing application only.

Up to sixteen annunciators may be addressed by the communication circuit. Some may require additional RSE-300 auxiliary power supplies depending on the total accessory power loading.

Serial Relay Unit and Serial Relay Extender

The SRU-2 Serial Relay Unit includes a processor board and a relay board. The processor board receives commands from the control unit for activating the relays and transmits supervision and control functions to the control unit. The processor board can control up to 3 SRE-8 relay boards. Each relay board provides 8 programmable relays with Form C contacts. The control unit can address up to a total of 8 Serial Relay Units and/or Serial Annunciator Units. RSE-300 auxiliary power supplies will be required to power units beyond the control unit capability.

Serial Annunciator Unit and Serial Annunciator Extender

The SLU-2 Serial Annunciator Unit includes a processor board and an annunciator driver board. The processor board receives commands from the control unit for activating the outputs and transmits supervision and control functions to the control unit. The processor board can control up to 4 SLE-16 annunciator driver boards. Each driver board provides 16 supervised programmable outputs for LEDs or incandescent lamps. The control unit can address up to 8 Serial Relay Units and/or Serial Annunciator Units. RSE-300 auxiliary power supplies will be required to power units beyond the control unit capability.

RSE-300 Remote Signal Expander

The RSE-300 is a notification appliance circuit expander with a built-in auxiliary power output. This power source is designed to provide power for notification appliances, door holders and 4-wire smoke detectors. The RSE-300 provides 6 amps of 24 VDC power for multiple uses. All 6 amps can be directed to 4 Notification Appliance Circuits (NACs). Each is rated at 3 amps and is power limited. Either 1 or 2 inputs can control the four outputs. These outputs are compatible with Faraday notification appliances.

The RSE-300 can be configured so that the inputs can be programmed to provide steady outputs, ANSI temporal outputs, or Faraday SYNC protocol for synchronized horn/strobe outputs. It can also be programmed to silence Faraday sync horns while the sync strobes remain on, using two wires. This requires a silenceable and non-silenceable input.

The RSE-300 also offers a 3 amp auxiliary output for driving other portions of your fire alarm system.

X1 ADDRESSABLE DEVICES

Fire Smart™ Smoke Detector

The control unit processor sends the sensitivity and pre-alarm settings to the detectors and polls the detectors as to their status. The detector determines normal, trouble, pre-alarm or alarm conditions and communicates the status to the control unit.

- Variable Thesholds - The detectors can be set to operate in various pre-programmed optimizations, depending on installation locations.
- Operator Alerts - The control unit can trigger an alarm or trouble automatically on the occurrence of a number of conditions of the detector. These include (but are not limited to):
 - Maintenance alert
 - Pre-alarm alert
 - No response
 - Incorrect response
 - Multiple response

Heat Detectors

Addressable heat sensing detectors may be intermixed on the circuit for locations where heat sensing may be the most effective detection mode. The heat detectors may be programmed for rate of rise operation.

Addressable Modules (Monitor and Control)

In addition to detectors, the circuit can communicate with addressable modules, allowing initiating devices or notification appliances with local power sources to supervise the power sources and generate event conditions.

Manual Stations

Addressable manual stations may be intermixed on the circuit with proper response programmed into the control unit.

Programming X1 Devices

X1 devices can be programmed in the following manner:

- 8720 Device Programmer/ Loop Tester - Refer to the 8720 User's Manual, P/N 315-033260FA, for further information.
- MPC-6000 / MPC-7000 / RND-2 Panel Keypad – Refer to the MPC-6000 / MPC-7000 / RND-2 Programmer's Manual, P/N 315-049403FA, for detailed information of system programming. Used only for field removal and reinstallation of individual devices.

EVENT HISTORY

The control unit includes a non-volatile memory recording over 1900 system events. Identified alarm, trouble, supervisory trouble and other significant events will be recorded along with the date and time of occurrence and can be inspected by operating front panel push buttons.

Events recorded in the history are:

- Alarm, Trouble or Supervisory conditions.
- Drill, Recall and General Evacuation.
- Activation of NACs or modules used for sounders or strobes.
- Unit used for command functions (Silence, acknowledge, reset, etc.).
- Alarm silence (Manual).
- System reset.
- Power up.
- Entry to Programmer Mode.
- Back-up configuration edited.
- Validity check on backup configuration (Errors detected or no errors detected).
- Replacement of primary configuration.
- Execution of Auto-program.
- Exit from Programmer Mode.
- System time or date change.
- Input point disable/enable.
- Start and stop of Quick Test.
- Expiration of Quick Test Timer.
- Trouble/supervisory reminder.
- Alarm/trouble/supervisory Acknowledgment.
- Trouble/supervisory restored to normal.
- Pre-alarm activation.
- Pre-alarm acknowledgment/restore.
- Activation of points defined for logging.
- Pre-discharge condition (Applicable to MPC-6000 with Releasing application only).
- Discharge condition (Applicable to MPC-6000 with Releasing application only).
- Abort condition (Applicable to MPC-6000 with Releasing application only).
- Manual Fan Restart.

GENERAL DESIGN FEATURES

Environmental

The MPC-6000/MPC-7000/RND-2 panels and subassemblies are suitable for use in a dry, interior or protected location.

Power Limiting

The AC power, battery wiring and open collector circuits (when MPC-REL is installed) are not power limited. All other circuits leaving the control unit are power limited, provided the proper installation rules are maintained.

Ground Fault Detection

The control unit provides system ground fault detection and is annunciated as a trouble condition on the system. In addition, each addressable loop circuit has its own ground detection circuitry and indicator.

System (+) Ground Fault Threshold $<20k\Omega$

System (-) Ground Fault Threshold $<20k\Omega$

NAC Operation

The notification appliance circuits are commanded and controlled by a microprocessor.

- Output Sounding Patterns - The notification appliance circuits are operable in different sounding patterns. Any circuit is selectable to any of five software-generated patterns or continuous sounding.
- Audible Silence Inhibit - In addition to designation of water flow zones, the entire control unit may be programmed to inhibit audible silence for 0, 1, 3, or 6 minutes from the last alarm. System reset may also be inhibited.

All of the NACs are power limited and support synchronization of listed devices. If a NEM-1 is installed in an MPC-7000 panel, its NACs are synchronized in sets of 4 as follows:

- NAC1, NAC2, NAC3 and NAC4 are synchronized with each other.
- NAC5, NAC6, NAC7 and NAC8 are synchronized with each other.
- NAC9, NAC10, NAC11 and NAC12 are synchronized with each other.

A maximum of one NEM-1 NAC Expander board can be installed per MPC-7000 panel.

Transient Protection

Transient protection devices are provided to meet UL864 requirements.

Security Features

Processor control and addressing allow inclusion of several functions to assure security and proper programming of the system.

Multi-level password protection of programming functions prevents unauthorized configuration changes.

Device type supervision: If the type reported by an addressable detector or module does not agree with the configuration, the system reports a trouble condition.

Device address supervision: The system checks that all configured devices on the addressable device circuit and the Serial Interface Circuit respond to an address poll. The system reports a trouble condition if the following conditions are detected:

- Configured device is missing.
- Unconfigured device is installed.
- Two devices are programmed with the same address location.
- Loop card is shorted.



When “loop card is shorted,” trouble is detected by the panel; all devices on the loop card are disabled and will not be able to annunciate any events.

REGULATORY STANDARDS

The MPC-6000 / MPC-7000 control units and the RND-2 network annunciator meet the requirements of industry and government regulatory agencies as noted.

Federal Communications Commission

The MPC-DACT meets the Class A requirements of the Code of Federal Regulations (CFR 47), Part 15, for electromagnetic field emissions. The MPC-DACT also meets the requirements of the Code of Federal Regulations (CFR 47), Part 68, for connection of equipment to the public switched telephone network.

Underwriters Laboratories

The MPC-6000 / MPC-7000 Fire Alarm control units and the RND-2 network annunciator are listed under UL Standard 864 for compliance to NFPA Standard 72 for fire service.

GENERAL SPECIFICATIONS

Operating specifications for the MPC-6000 / MPC-7000 / RND-2 are as follows:

Environmental

- Operating temperature - 32 - 120°F (0 - 49°C)
- Relative humidity - Up to 93% @ 90°F (32°C)
- To be installed in a dry protected environment only

Primary Supply

- Primary Input Voltage: 120 VAC (60 Hz) nominal
- MPC-6000 / RND-2 Maximum primary input current: 2.4A at 120 VAC
- MPC-7000 Maximum primary input current: 3.5A at 120 VAC

Secondary Power Supply

- 24 volt lead-acid battery set
- Maximum Charge Voltage: 27.8 VDC
- Automatic Low Battery Disconnect - Disconnect Voltage: 18VDC
- MPC-6000 / RND-2 Maximum Charge Current: 1.7A (Minimum supervisory load)
- MPC-7000 Maximum Charge Current: 3.8A
- MPC-6000 / RND-2 Battery capacity: 7-38 AH (over 12 AH requires separate enclosure for the batteries)
- MPC-7000 Battery capacity: 7-38 AH / 100 AH with optional Battery Charger, HBC-1 (over 18 AH requires separate enclosure for the batteries)

Auxiliary Power Outputs

- 0.4A maximum per power output circuit
- Non-Resettable Power Output
Power limited
Voltage: 24 VDC nominal (31 VDC max.) filtered
Ripple: 1.5 VAC maximum (120Hz)
- Resettable Power Output
Power limited
Voltage: 24 VDC nominal (31 VDC max.) filtered
Ripple: 1.5 VAC maximum (120Hz)



The maximum cumulative available power output (including Auxiliary power and Serial Interface power) is: 0.5A for MPC-6000/RND-2, 1.0A for MPC-7000.

Status Relays

- Three programmable relays
- One Non-programmable status relay
Status: Trouble
- Contact Rating:
1 A, 28 VDC maximum, resistive
- Form C Contact

Notification Appliance Circuits

- Power limited
 - Supervised
 - Maximum Standby Current: 3.4mA
 - Maximum Line Resistance @ 24V (nominal), unfiltered fullwave rectified
- | <u>Current Draw</u> | <u>Line Impedance</u> |
|---------------------|-----------------------|
| 1.5A | 2Ω |
| 1.0A | 3Ω |
| 0.5A | 6Ω |
- Alarm Voltage: 24V, nominal (31V max.), unfiltered fullwave rectified
 - Maximum Ripple: 16 VAC, 120Hz
 - Use for special application only
 - MPC-6000 Four Style Z/Class B or two Style Y/Class A circuits
 - MPC-7000 Four Style Z/Class B or two Style Y/Class A circuits
Expandable to twelve Style Z/Class B or six Style Y/Class A circuits
 - Maximum NAC Current: 1.5A / NAC circuit
MPC-6000 maximum total NAC current 3.0A (6.0A with optional NPE-1 transformer installed)
MPC-7000 Maximum total NAC current 5.0A (8.0A with optional NPE-1 transformer installed)
 - Suitable for coded and non-coded application
 - Refer to Appendix B to determine maximum synchronized notification appliances allowed per NAC

Serial Interface Circuit

- Power limited
- Supervised
- (+, -) Voltage: 24 VDC nominal (31 VDC max.) filtered
- Maximum current: 0.40A at 24VDC
- (X+, X-) RS485 Voltage levels
- Maximum wire loop resistance: 11 ohms/line
- Communications Protocol: RS485



The maximum cumulative available power output (including Auxiliary power and Serial Interface power) is: 0.5A for MPC-6000/RND-2, 1.0A for MPC-7000.

X1 Addressable Device Circuits

- Power limited
- Supervised
- Voltage: 24 VDC nominal (31 VDC max.) filtered
- Maximum Current (shorted): 0.375A
- Maximum wire loop resistance: 50 ohms (see graph in Appendix A on page 60)
- Style 4 or 6 circuit
- 252 Addresses: detectors and modules max.
- MPC-6000: One circuit
- RND-2: No loop circuits
- MPC-7000: Two circuits expandable to four

City Tie (Optional City Tie Board P/N CT-1K)

CA Reverse Polarity: Selectable for Alarm with Trouble or Alarm only operation

- Not power limited
- Supervised by receiver
- Voltage: 24 VDC nominal (31 VDC max.) filtered
- Current: 0.020A maximum (normal or trouble)
- Current: 0.025A maximum (shorted)
- Ripple: 1.5 VAC maximum, 120Hz

CT Reverse Polarity: Programmable for Trouble or Supervisory or both

- Not power limited
- Supervised by receiver
- Voltage: 24 VDC nominal (31 VDC max.) filtered
- Current: 0.020A maximum (normal or alarm)
- Current: 0.025A maximum (shorted)
- Ripple: 1.5 VAC maximum, 120Hz

LE Local Energy

- Not power limited
- Supervised for open by control unit
- Voltage: 24 VDC nominal (31 VDC max.) filtered
- Standby Current: 0.007A maximum
- Alarm Current: 0.400A maximum
- Ripple: 1.5 VAC maximum, 120Hz
- Maximum wire loop resistance: 30 ohms
- Trip coil impedance: 14.5 ohms

DACT Circuit (Optional DACT Board MPC-DACT)

- Power limited
- Supervised for short or open circuit
- Maximum Voltage: 60 VDC
- Maximum Current (shorted): 0.100A

Additional Transformer (Optional Transformer Sub-assembly NPE-1)

- Provides an additional 3.0A of NAC power (max. 1 per panel)

MPC-REL (Optional Releasing Module for MPC-6000 only)

- Two power limited releasing circuits
- Four non-power limited open collector circuits
- Releasing Circuits are rated at 1.5A at 24VDC, filtered
- Open Collector Circuits are rated at 200mA at 24VDC, filtered
- Maximum cumulative current output must not exceed 3A
- Each Releasing Circuit requires REL-EOL module (P/N 500-696359) installed as close as possible to the last solenoid for proper wire supervision
- Requires an RPT-1 transformer



REL-EOL module (P/N 500-696359) is required for supervision of open and short circuits on the releasing circuit. REL-EOL must be in the same enclosure or close nipped to the last solenoid in the loop.

CONTROL UNIT OPERATION

OPERATION INSTRUCTIONS

Standby Condition

In normal standby operation, the green AC POWER ON LED should be illuminated and no other indicator operating. The display will show the system label and the current date, day, and time.

Alarm Conditions

- GENERAL ALARM

When a general alarm occurs, all NACs with output type set to "ALARM" activate.

To activate a general alarm, proceed as follows:

- Press "MENU".
- On the MENU display, select "GENERAL ALARM".
- At the next screen, select "Yes".

Silence and reset the system to restore the system to supervisory state.

- NORMAL ALARM

When the system detects an alarm condition, the system alarm LED activates (ON - flashing) and the buzzer activates (ON - steady). Local audible and visual signals along with remote alarm signals operate and the LCD panel indicates the alarm.

On receipt of an alarm, proceed in accordance with the established emergency plan. Assure that all personnel are accounted for, and notify the Fire Department.

To silence the audible after evacuation (where permitted by the codes and control unit programming), press ALARM SILENCE. The alarm audible will be silenced, the alarm silence LED will be illuminated.

Operating the ACKNOWLEDGE button will silence the local buzzer and change the LED alarm indicator from flashing to steady.

- WATERFLOW Alarms

Alarms detected on devices with usage designated as "waterflow" to indicate sprinkler operation and the audible alarms cannot be silenced in this condition. Operation of alarm silence will produce no effect.

- SILENCEABLE WATERFLOW Alarms

Alarms detected on devices with usage designated as "waterflow" to indicate sprinkler operation. The associated audibles are silenceable.

- POSITIVE Alarm Sequence (PAS)

Activation of an initiating device in an input group programmed for PAS, activates the Alarm LED, display, buzzer, system and user-programmed outputs, but delays additional programmed outputs for 15 seconds.

Operation of the ACKNOWLEDGE button within 15 seconds will add a number of seconds (60-180) to the PAS timer for the purpose of investigation. If the ACKNOWLEDGE button is not operated within 15 seconds, the additional user-programmed outputs activate.

If the initiating device and the panel are reset before the PAS timer times out, the alarm sequence is aborted.

During the investigation period, an alarm condition on a device programmed for direct alarm response will override the PAS timer and activate the additional user-programmed outputs.

See the MPC-6000 / MPC-7000/ RND-2 Programming Manual, P/N 315-049403FA, for additional details.

- **PRE-SIGNAL ALARMS**

Activation of an initiating device in an input group programmed for PRE-SIGNAL, activates the Alarm LED, display, buzzer, system and user-programmed outputs.

The delay of activation of additional user-programmed outputs can be programmed from 60 to 180 seconds. If the system is not reset during this period, these additional user-programmed outputs will activate.

See the MPC-6000 / MPC-7000/ RND-2 Programming Manual, P/N 315-049403FA, for additional details.



Do not reset the system until the alarm condition has been cleared. The LCD will indicate the area in which the alarm was detected. The detector or module associated with the device initiating the alarm will display a light indicating activation (if applicable).

When the alarm condition has been corrected, return the system to standby operation by pressing the SYSTEM RESET button.

- **ALARMS ON RELEASING ZONES (MPC-6000 ONLY)**

Devices that activate the releasing circuits must be assigned to the releasing group via the CIS-4 configuration tool or front panel programming. The releasing group may be configured to activate on any one alarm, any two alarms, or any one smoke plus any one thermal alarm.

For instance, if the threshold of the group was set at any 2, the following would occur:

The first device activating will put the panel in a releasing group 1st alarm condition. When the 2nd device in that group activates, it will start the pre-discharge timer and put the panel in the pre-discharge condition. If the threshold were to be set at one, any device in that group activating would immediately start the pre-discharge timer.

When the pre-discharge timer is activated, the LCD displays the timer as it counts down and the “Pre-Discharge” LED will be ON-steady.

When the pre-discharge timer expires, the panel goes to the discharge condition and activates the releasing zones. The “Discharge” LED will be ON-steady.

It is recommended that the releasing group has devices with abort and manual release usages.

Abort Function

Input modules may be assigned to the “Abort” usage. The abort type is selected when the releasing application is activated. Failure of the abort switch to communicate with the fire panel will automatically restart the agent release timer. When the abort input is activated, it puts the panel in abort condition and turns the “Abort” LED to ON-steady. The following abort functions may be assigned:

ULI Standard UL Type Delay Timer

If the abort function type is configured as ULI and an abort condition is initiated during pre-discharge condition, the pre-discharge delay timer counts down or restores to 10 seconds then holds as long as the abort switch is pressed. The pre-discharge delay timer will resume the countdown as soon as the abort switch is released.

IRI Type Delay Timer

If the abort function type is configured as IRI, an abort condition is initiated only if the abort switch is held during the releasing group 1st alarm condition. Otherwise, it will be ignored. When the abort switch is held during the 1st alarm condition, the pre-discharge timer is prevented from starting even if the threshold is subsequently met. When abort is released, pre-discharge starts from the beginning.



A releasing threshold of “Any 1” is not allowed for an IRI abort type.

NYC Type Delay Timer

If the abort function type is configured as NYC, it meets the New York City abort condition requirement for releasing application. If the abort condition is initiated during the pre-discharge condition, a 90 second investigation time delay is added before pre-discharge delay countdown initiates again.

AHJ Local Jurisdiction Delay Timer

If the abort timer function type is configured as AHJ and abort condition is initiated during pre-discharge condition, the pre-discharge delay timer is restored to its initial programmed value and will not start the countdown as long as the abort switch is pressed.

A supervisory condition is initiated whenever the abort switch is pressed.

Failure of an initiated abort switch to communicate with the fire panel will automatically restart the pre-discharge delay countdown timer.

See the MPC-6000 / MPC-7000 / RND-2 Programming Manual, PN 315-049403FA for more information.

Manual Release

Input modules can be configured for “Manual Release” usage to be used for releasing application only. If an input module programmed for Manual Release is initiated, it will generate an alarm condition, override all abort timers and activated abort switches, and automatically activate the releasing circuits placing the panel in discharge condition. A manual release courtesy delay is provided if required.

See the MPC-6000 / MPC-7000 / RND-2 Programming Manual, PN 315-049403FA for more information.

Trouble Conditions

In case of a trouble condition, the system trouble LED and any programmed trouble LEDs activate (ON-pulsing), the LCD identifies the problem and the buzzer sounds (pulsing). Refer to the applicable section of the system manual to determine the probable cause of the trouble and the action to be taken.

When the trouble condition has been noted, pressing the ACKNOWLEDGE button will silence the buzzer and change the trouble LED to steady ON. If the panel is configured for Supv/Trouble Resound Reminder and the trouble condition is not corrected and the Supv/Trouble Resound Reminder timer has elapsed, the panel will re-annunciate the trouble condition.

If the control unit is programmed for “trouble acknowledge required”, when the indicated trouble condition has been cleared, the system reverts to standby condition only after the ACKNOWLEDGE button is pressed.



Some trouble conditions are latching troubles that require a system reset to restore the control unit to supervisory mode.

Supervisory Conditions

In case of a supervisory condition, the system supervisory LED activates (ON – flashing) and the sounder activates (ON – pulsing).

When the supervisory has been noted, pressing the ACKNOWLEDGE button will silence the buzzer and change the supervisory LED to steady ON. If the panel is configured for Supv/Trouble Resound Reminder and the supervisory condition is not corrected and the Supv/Trouble Resound Reminder timer has elapsed, the panel will re-annunciate the supervisory condition.

The releasing zone will indicate a supervisory condition when it is disabled.

Detector Pre-Alarm Conditions

A pre-alarm condition is annunciated by pre-alarm LEDs and buzzers on the control unit and LCD Annunciators and Remote Processors. The LEDs flash and buzzers are on steady until acknowledgment.

Acknowledging the pre-alarm condition puts LEDs on steady and buzzers off.

If pre-alarm has been acknowledged and the system restores to normal, the condition clears.

Fan Restart

If the fan restart feature is implemented, the input keyswitch (*Independent Fan Restart procedure*) with fan restart usage must be initiated to deactivate the hold-thru reset output. A supervisory condition will be annunciated that will clear when the keyswitch is restored to its standby state.

Fan restart can also be initiated from the front panel—user level. If fan restart is initiated from the panel (*Global Fan Restart procedure*), all outputs with hold-thru reset output type will immediately deactivate.



If a Global Fan Restart procedure is initiated, precaution must be taken to prevent physical damage to the fans, dampers, air ducts and other equipment. For example, staggering fan activation to avoid power surges and verifying that dampers are opened before the fan activates to prevent damage to the air ducts. These parameters must be monitored and controlled by another method/technique that is not discussed in this manual.

Maintenance

In order to ensure continued safe and reliable operation of the fire alarm system, periodic inspection and testing should be performed in accordance with applicable NFPA 72 standards.



If the system has remote connections to the Fire Department or other monitor, be sure to disable the remote signals and/or notify the remote monitoring station before performing test operations.

To access the Panel Firmware Version Number:

- Press Menu on the keypad
- Select the Maintenance mode
- Enter the maintenance password

If password is correct, the firmware version displays on the LCD screen.

For any required service, refer to the system manual or contact a factory authorized representative.

ADDITIONAL OPERATING PROCEDURES

In addition to the basic fire alarm instructions above, several features are included to facilitate maintenance and increase the versatility of the system. Following are procedures to call up these functions.

Lamp Test

When selected, Lamp Test activates the buzzer and turns on all the LEDs on the user interface for 2 seconds, then reverts to its previous state.

To initiate a Lamp Test, proceed as follows:

- Press "MENU".
- On the MENU display, select "More".
- On the next screen, select "More" again.
- Select Lamp Test to initiate the lamp test sequence.
- Select "Esc" to return the control unit to normal display.

Note that lamp test operates the indicators only on the units being operated and no record is reported to system history.

Drill

When selected, activates all NACs assigned to the Output Zone selected for "Drill".

To activate a fire alarm drill, proceed as follows:

- Press "MENU".
- On the MENU display, select "More".
- At the next screen, select "DRILL".
- At the next screen, select "Yes".
- Operate RESET to terminate drill signal.

Recall

When selected, activates all NACs assigned to Output Zones selected for "Recall".

To signal recall after a drill, proceed as follows:

- Press "MENU".
- On the MENU display, select "More".
- Select "RECALL".
- At the next screen, select "Yes".
- Operate RESET to terminate recall signal.

Alert

When selected, activates all NACs assigned to the Output Zone selected for "Alert".

To activate an alert alarm, proceed as follows:

- Press "MENU".
- On the MENU display, select "ALERT".
- At the next screen, select "Yes".
- Operate RESET to terminate alert signal.

Global Fan Restart

When the fan restart feature is implemented, initiating a global fan restart will immediately deactivate all hold-thru reset outputs.

To initiate a Global Fan Restart, proceed as follows:

- Press "MENU".
- On the MENU screen, select "More".
- On the next screen, select "More" again.
- On the next screen, select "More" again.
- Select "Fan Restart".
- On the next screen, select "Yes" to execute the global fan restart.



If a Global Fan Restart procedure is initiated, precaution must be taken to prevent physical damage to the fans, dampers, air ducts and other equipment. For example, staggering fan activation to avoid power surges and verifying that dampers are opened before the fan activates to prevent damage to the air ducts. These parameters must be monitored and controlled by another method/technique that is not discussed in this manual.

History

The last approximately 2000 system events are time-tagged and recorded for review in the user level event history. This history is available to anyone with the door key, but may be erased only at the maintenance security level.

- Operation of history:
 - New events overwrite old when filled.
 - Printer (if used) records all events.
 - For more information see the Event History section.

- Access to history:
 - To recall past events, proceed as follows:
 - Press "MENU" button.
 - On the "MENU" display, select "More".
 - On the next screen, select "More".
 - Select "View History".
 - Operate upper left button adjacent to the LCD for previous event display.
 - Operate lower left button adjacent to the LCD for next event display.
 - Operate upper right button adjacent to the LCD to exit to MENU DISPLAY.
- The display reverts to its previous state if no action is performed within 30 seconds.

MPC-6000 / MPC-7000 / RND-2 OPERATING INSTRUCTIONS

Alarm Operation

In case of alarm, the *Alarm* LED flashes, LCD displays alarm conditions and the panel buzzer sounds steady. Local audible and visual signals and remote alarm signals operate.

When an alarm occurs, proceed according to the established emergency plan. Assure that all personnel are accounted for, and notify the Fire Department to advise of the alarm and/or verify that an automatic signal has been received at the Fire Department.

Authorized Personnel Only

To acknowledge the alarm:

To acknowledge the alarm, press the *Acknowledge* button. The local buzzer will be silenced and the *Alarm* LED will change from on-flashing to on-steady.

Note: On a networked system, the alarm may only be acknowledged at the node which initiates the alarm or the RND-2.

To silence the alarm:

To silence the notification appliances after evacuation, where permitted, press the *Alarm Silence* button. The silenceable notification appliances will be silenced. The *Alarm Silenced* LED will be lit.

Note: Do not reset the panel until the alarm has been cleared.

Warning: Alarm silence inhibit (if set) prevents the alarm from being silenced for a predetermined time.

To reset panel after alarm:

When the alarm condition is corrected, return the panel to normal standby operation by pressing the *System Reset* button.

Note: If the fan restart feature is implemented, the Independent or Global Fan Restart procedure must be initiated to deactivate the hold-thru reset output type (and activate the fans).

Trouble Operation

Trouble is indicated by:

Trouble LED flashes, LCD displays trouble conditions. Panel buzzer sounds (pulsing).

To acknowledge the trouble:

Press the *Acknowledge* button. The *Trouble* LED turns on-steady and the buzzer turns off. When the trouble condition has been cleared, you may need to reset the panel to restore to a normal standby condition.

Warning: Leaving the panel in a trouble condition may prevent a fire alarm condition from initiating a fire alarm sequence.

Event Scrolling

Viewing Events on the System:

Events are displayed in the system by event priority (Alarm, Supervisory, Trouble) followed by event occurrence (oldest to latest event) in a circular list.

If there are multiple events on the system, pressing the upper right button adjacent to the LCD displays the next event that occurred (to latest event of highest priority). Pressing the lower right button adjacent to the LCD displays the previous event that occurred (to the oldest event with the lowest priority).

Normal Standby Condition

The green *AC Power On* LED will be lit and no other indicators on.

For service, contact: _____
Telephone Number: _____

Frame these instructions and mount them near the control unit for operator reference.

RDC-2 / RDC-3 OPERATING INSTRUCTIONS

Alarm Operation

In case of alarm, the *Alarm* LED flashes, LCD displays alarm conditions and the buzzer sounds. Local audible and visual signals and remote alarm signals operate.

When an alarm occurs, proceed according to the established emergency plan. Assure that all personnel are accounted for, and notify the Fire Department to advise of the alarm and/or verify that an automatic signal has been received at the Fire Department.

Authorized Personnel Only

Important Note: The Button Enable key switch must be in the ON position for the keypad to operate.

To acknowledge the alarm:

To acknowledge the alarm, place the *Button Enable* key switch in the ON position and press the *Acknowledge* button. The local buzzer will be silenced and the *Alarm* LED will change from on-flashing to on-steady.

Note: On a networked system, the alarm may only be acknowledged at the node which initiates the alarm or the RND-2.

To silence the alarm:

To silence the notification appliances after evacuation, where permitted, place the *Button Enable* key switch in the ON position and press the *Alarm Silence* button. The silenceable notification appliances and buzzer will be silenced, and LED indications will change from flashing to continuous. The *Alarm Silenced* LED will be lit.

Note: Do not reset the panel until the alarm has been cleared.

Warning: Alarm silence inhibit (if set) prevents the alarm from being silenced for a predetermined time.

To reset panel after alarm:

When the alarm condition is corrected, return the panel to normal standby operation by placing the *Button Enable* key switch in the ON position and then pressing the *System Reset* button.

Note: If the fan restart feature is implemented, the Independent or Global Fan Restart procedure must be initiated to deactivate the hold-thru reset output type (and activate the fans).

Trouble Operation

Trouble is indicated by:

Trouble LED flashes, LCD displays trouble conditions. Panel buzzer sounds (pulsing).

To acknowledge the trouble:

Place the *Button Enable* key switch in the ON position and press the *Acknowledge* button. The *Trouble* LED turns on-steady and the buzzer turns off. When the trouble condition has been cleared, you may need to reset the panel to restore to a normal standby condition.

Warning: Leaving the panel in a trouble condition may prevent a fire alarm condition from initiating a fire alarm sequence.

Event Scrolling

Viewing Events on the System:

Events are displayed in the system by event priority (Alarm, Supervisory, Trouble) followed by event occurrence (oldest to latest event) in a circular list.

If there are multiple events on the system, pressing the upper right button adjacent to the LCD displays the next event that occurred (to latest event of highest priority). Pressing the lower right button adjacent to the LCD displays the previous event that occurred (to the oldest event with the lowest priority).

Normal Standby Condition

The green *AC Power On* LED will be lit and no other indicators on.

For service, contact: _____

Telephone Number: _____

Frame these instructions and mount them near the annunciator for operator reference.

MPC-6000 / RDC-3 with releasing OPERATING INSTRUCTIONS

Alarm Operation

When an alarm occurs and the set threshold is satisfied on a releasing zone, the agent release timer is activated. The LCD displays the timer as it counts down and the "Pre-Discharge" LED will be on. Proceed according to the established emergency plan. Assure that all personnel are accounted for and notify the Fire Department to advise of the alarm and/or verify that an automatic signal has been received at the Fire Department.

Authorized Personnel Only

Important Note: The RDC-3 Button Enable key switch must be in the ON position for the keypad to operate.

To abort the suppression release:

Press the *Abort* switch. Depending on the configuration of the panel, the pre-discharge timer will be halted or reset. Proceed to clearing and acknowledging the alarm.

To initiate manual release:

Press the *Manual Release* switch. This will actuate the releasing zones and put the panel to discharge condition regardless of the previous condition of the panel.

Note: Manual release and abort switches are installed external to the panel and are normally monitored by contact devices.

To acknowledge the alarm:

To acknowledge the alarm, press the *Acknowledge* button. The local buzzer will be silenced and the *Alarm* LED will change from on-flashing to on-steady.

To silence the alarm:

To silence the notification appliances after evacuation, where permitted, press the *Alarm Silence* button. The silenceable notification appliances will be silenced and LED indications will change from flashing to continuous. The *Alarm Silenced* LED will be lit.

Note: Do not reset the panel until the alarm has been cleared.

Warning: Alarm silence inhibit (if set) prevents the alarm from being silenced for a predetermined time.

To reset panel after alarm:

When the alarm condition is corrected, return the panel to normal standby operation by pressing the *System Reset* button.

Note: If the fan restart feature is implemented, the Independent or Global Fan Restart procedure must be initiated to deactivate the hold-thru reset output type (and activate the fans).

Trouble Operation

Trouble is indicated by:

Trouble LED flashes, LCD displays trouble conditions. Panel buzzer sounds (pulsing).

To acknowledge the trouble:

Press the *Acknowledge* button. The *Trouble* LED turns on-steady and the buzzer turns off. When the trouble condition has been cleared, you may need to reset the panel to restore to a normal standby condition.

Warning: Leaving the panel in a trouble condition may prevent a fire alarm condition from initiating a fire alarm sequence.

Event Scrolling

Viewing Events on the System:

Events are displayed in the system by event priority (Alarm, Supervisory, Trouble) followed by event occurrence (oldest to latest event) in a circular list.

If there are multiple events on the system, pressing the upper right button adjacent to the LCD displays the next event that occurred (to latest event of highest priority). Pressing the lower right button adjacent to the LCD displays the previous event that occurred (to the oldest event with the lowest priority).

Normal Standby Condition

The green *AC Power On* LED will be lit and no other indicators on.

For service, contact: _____

Telephone Number: _____

Frame these instructions and mount them near the annunciator for operator reference.

CONTROL UNIT INSTALLATION

PARTS SUPPLIED – MPC-6000 / MPC-7000 / RND-2

Enclosure Packages (Black or Red)

- Backbox Assembly
- Front Door Assembly with Window
- Inner Door Assembly

Electronics Package MPC-6000 / MPC-7000

MPC(6/7)-MB Main Board or MPC6-MB2	575-447328 Nameplate (MPC-7000)
MPC(6/7)-DB or MPC6-DB2 Display Board	906-220604 #6-32 x 1/4" Screws (17)
FDLC Loop Driver Board (2 with MPC-7000)	375-F943165 Spacers (8)
215-649113 Keyboard	140-820405 24K Ohm 1/2W Resistor (4)
330-944373 Thermal pad	140-050008-1 120 Ohm E.O.L. Resistor Assembly (2)
465-633943 Battery cable assembly	555-446055 Cable Assembly, 26 Pin
315-447309 Installation and Operation Manual	130-PM3223 Bridge Rectifier
315-447311 Operating Instructions	555-449116 Rectifier Cable Assembly
575-447310 Riser Diagram (MPC-6000)	899-G67197 #6-32 Keps Nuts (1)
575-447388 Riser Diagram (MPC-7000)	950-220604 #6-32 Nut (1)
575-447312 Nameplate (MPC-6000)	600-149373 Ground Wire Assembly
315-049403FA Programming Manual	

Electronics Package2 MPC-6000

MPC6-MB2 Main Board	575-447328 Nameplate (MPC-7000)
MPC6-DB2 Display Board	906-220604 #6-32 x 1/4" Screws (17)
FDLC Loop Driver Board	375-F943165 Spacers (8)
215-649577FA Keyboard w/Releasing	140-820405 24K Ohm 1/2W Resistor (4)
330-944373 Thermal pad	140-050008-1 120 Ohm E.O.L. Resistor Assembly (2)
465-633943 Battery cable assembly	555-446055 Cable Assembly, 26 Pin
315-447309 Installation and Operation Manual	130-PM3223 Bridge Rectifier
315-447311 Operating Instructions	555-449116 Rectifier Cable Assembly
575-447310 Riser Diagram (MPC-6000)	899-G67197 #6-32 Keps Nuts (1)
575-447388 Riser Diagram (MPC-7000)	950-220604 #6-32 Nut (1)
575-447312 Nameplate (MPC-6000)	600-149373 Ground Wire Assembly
315-049403FA Programming Manual	

Electronics Package RND-2

MPC6-MB Main Board or MPC6-MB2	950-220604 #6-32 Nut (1)
RND2-DB or RND2-DB2 Display board for RND-2	906-220604 #6-32 x 1/4" Screws (17)
575-447328 Nameplate (RND-2)	375-F943165 Spacers (8)
215-649113 Keyboard	140-820405 24K Ohm 1/2W Resistor (4)
330-944373 Thermal pad	140-050008-1 120 Ohm E.O.L. Resistor Assembly (2)
465-633943 Battery cable assembly	555-446055 Cable Assembly, 26 Pin
315-447309 Installation and Operation Manual	130-PM3223 Bridge Rectifier
315-447311 Operating Instructions	555-449116 Rectifier Cable Assembly
575-447310 Riser Diagram (RND-2)	899-G67197 #6-32 Keps Nuts (1)
600-149373 Ground Wire Assembly	315-049403FA Programming Manual

With NPE-1 Transformer Package

Transformer Assembly (120VAC) (2 required)	(899-G67197) #6-32 Keps Nuts (2)
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CAUTIONS

1. Remove the printed circuit boards for any procedure that may cause dust, metal shavings, grease (or such matter that may affect the operation of the boards) to get in contact with the units.
2. Disconnect all sources of power prior to installing or removing modules, connecting or disconnecting wiring and programming jumpers.

CONTROL UNIT LOCATION

The control unit should be located near an exit at ground level, where the normal ambient temperature is maintained within the control unit specification (See General Specifications). The unit should be in an area that is free of dust, vibration, moisture and condensation. Any auxiliary battery box or other accessory not connected through a protective device or a circuit designed for remote connection must be within 20 ft. and in the same room, connected through electrical conduit.

INSTALLATION

The enclosures must be fastened securely to a clean, dry, shock-free, and vibration-free surface in a protected environment. Consider the following when mounting the box.

- Mounting height for visual and manual access to the display and keypad
- Weight and size of backbox
- Local mounting codes

When mounting the backbox, position the backbox clear of obstructions so that the door can open freely and so that indicators and controls are easily accessible.

The fire alarm control unit must be mounted in a properly accessible location as required by applicable codes. Any auxiliary battery box or other accessory not connected through a protective device or a circuit designed for remote connection must be within 20 ft. and in the same room, connected through electrical conduit.

Installation is to be done only by qualified personnel who have thoroughly read and understood these instructions. The fire alarm control unit must be mounted in a properly accessible location as required by applicable codes.

ENCLOSURE MOUNTING

Install the backbox:

- Select a clean, dry, shock and vibration free surface in a protected environment.
- Position the backbox clear of obstructions so that the front door opens freely and the controls and indicators are easily accessible.
- Mark the locations of the two upper mounting bolts of the backbox on the wall.



There are two key-shaped cutouts on the top of the backbox. Make sure the end with the two key-shaped cutouts is on top when installing the backbox.

- Drill the two holes located in the previous step and screw in the top bolts, leaving a small gap between the wall and each top bolt.



The screw type and length must be able to support the control panel, options and battery set. You may need a different screw type, depending on the wall material.

Place the backbox over the two top bolts and allow it to slide down over the bolts.

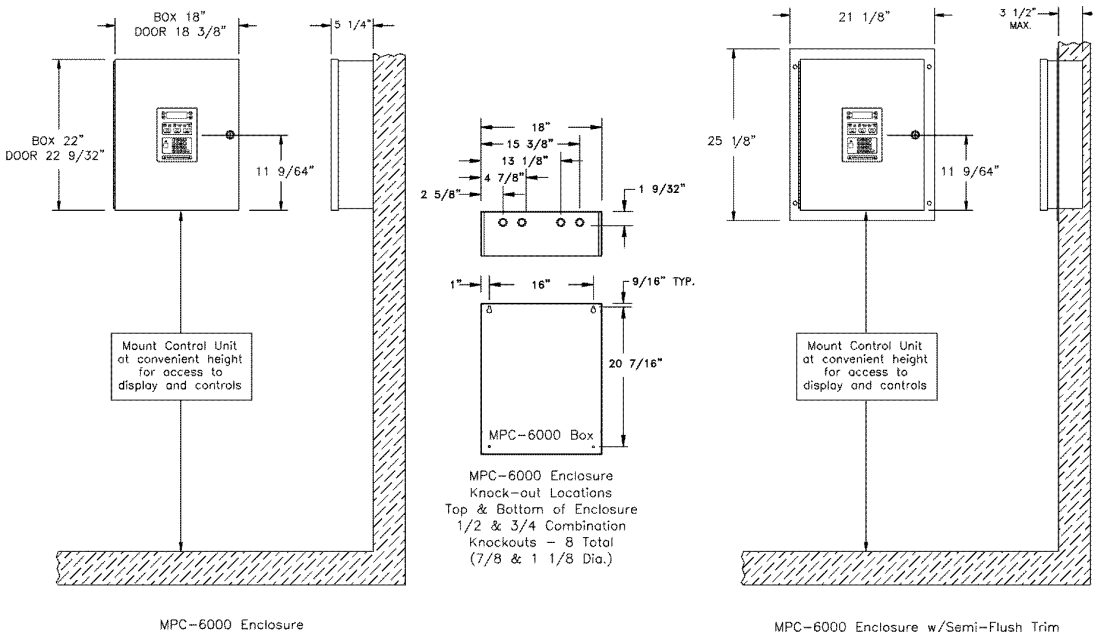
- Mark, drill, and install the two bottom bolts in the backbox.
- Tighten all four bolts securely against the back wall of the backbox.
- The RSE-300 Auxiliary Power Supply or battery enclosure may be mounted immediately below the main enclosure, close nipple, allowing a minimum of 1 inch in between the enclosures for clearance between the doors. Keeping the wire run to the control unit short will keep the voltage drop to a minimum.
- If a semi-flush mount installation is desired, use the SFTK-6(R/B) Semi-flush Trim for the MPC-6000 / RND-2 and the SFTK-7(R/B) Semi-flush Trim for the MPC-7000. The backbox can be mounted up to 3 1/2 inches into the wall. Place the semi-flush trim around the backbox and affix to the wall with four #10 x 3/4 inch wood screws (provided with trim).



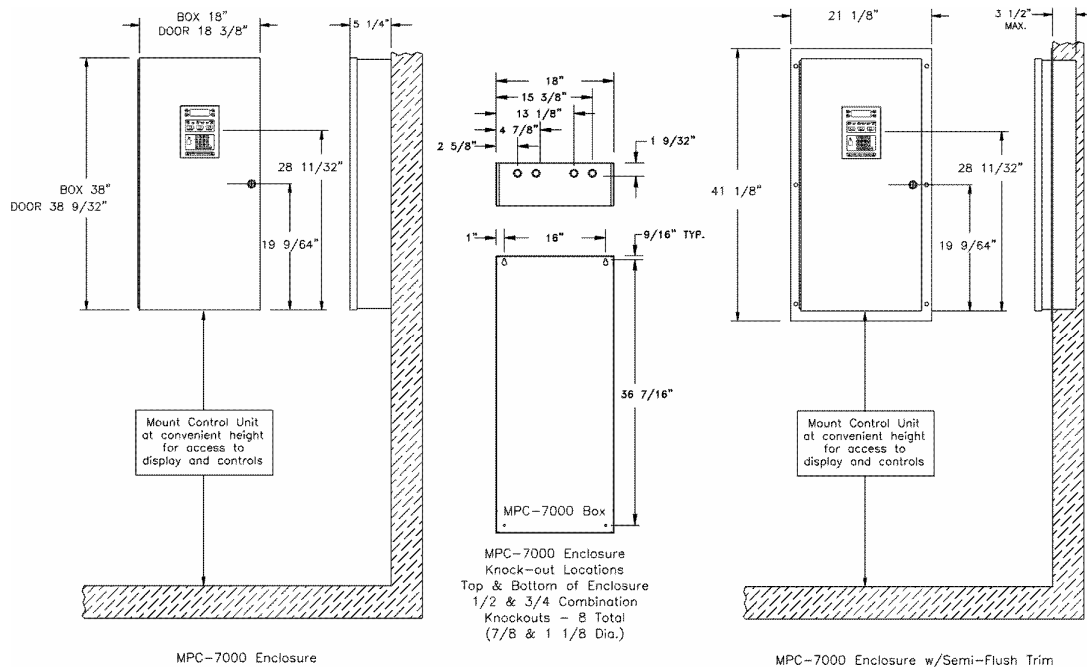
You may need a different screw type, depending on the wall material.

For semi-flush installations, if the RSE-300 Auxiliary Power Supply or a battery enclosure is required, it may be mounted immediately above or below the main enclosure, close nipple, allowing a minimum of 3 inches in between the enclosures for clearance between the semi-flush trims. Keeping the wire run to the control unit short will keep the voltage drop to a minimum.

MPC-6000 and RND-2 Enclosure Mounting Pictures



MPC-7000 Enclosure Mounting Pictures



Remove Knock-Outs

Prepare the enclosure for electrical wiring by breaking out the appropriate conduit entry points. Segregation is required between power limited and non-power limited conductors. In order to maintain the minimum separation, follow the wire routing illustrated on page 43. Separation of at least a 1/4 inch is required between the non-power limited and power limited conductors. Power limited and non-power limited wiring must be run in separate conduit.

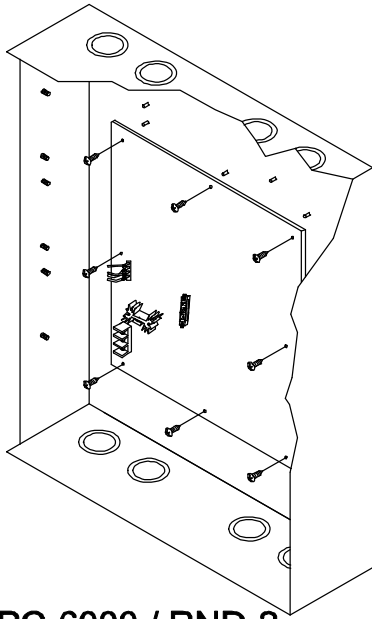
Attach conduit (if required) and run wires as required. Label each field cable for future reference.

Basic system wiring and detector siting must be in accordance with NFPA 72 or other instructions from the appropriate local authority having jurisdiction. Unit connections and limitations are as indicated on the wiring diagrams included in System Wiring part of this manual.

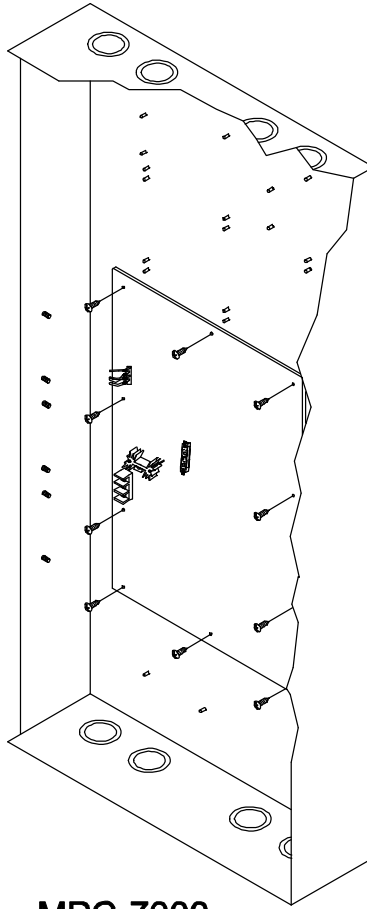
Wire reference data are included in Appendix A.

Main Board Installation – P/N MPC6-MB / MPC6-MB2 / MPC7-MB

- Secure the board to the back of enclosure using the provided #6-32 x 1/4 screws (P/N 906-220604). (Eight for the MPC6-MB and ten for the MPC7-MB.)
- AC Input terminals must be located at the left side of the enclosure.



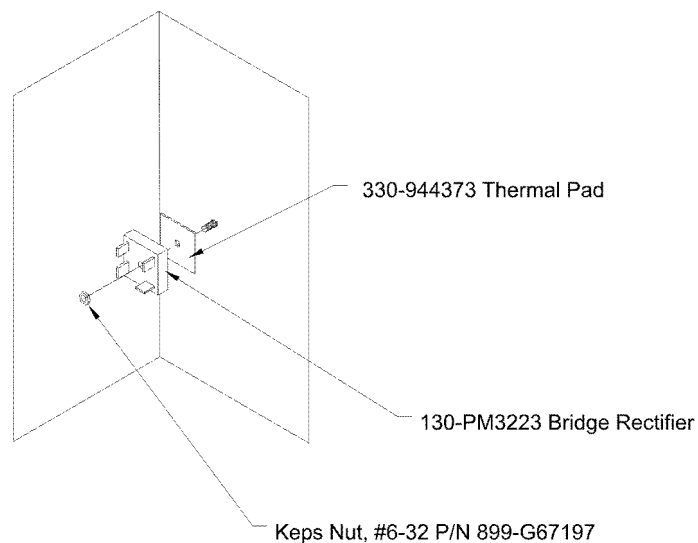
MPC-6000 / RND-2



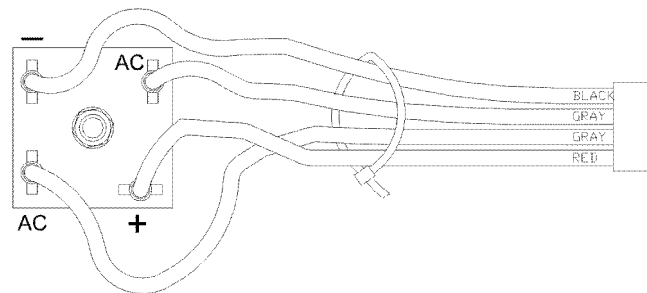
MPC-7000

Bridge Rectifier Installation – P/N 130-PM3223

- Secure the bridge rectifier (P/N 130-PM3223) to the backbox, placing the thermal pad (P/N 330-944373) between the Bridge Rectifier and the backbox using a provided #6 keps nut (P/N 899-G67197). See drawing below for details.
- Wire Bridge Rectifier to Rectifier Cable Assembly (555-449116). Red wire goes to the plus (+) connection of Bridge Rectifier and Black wire goes to the minus (-) connection of the Bridge Rectifier. Gray wires connect to the AC connections of the Bridge Rectifier. Plug Rectifier Cable Assembly into J4 on the Main Board (P/N MPC(6/7)-MB).

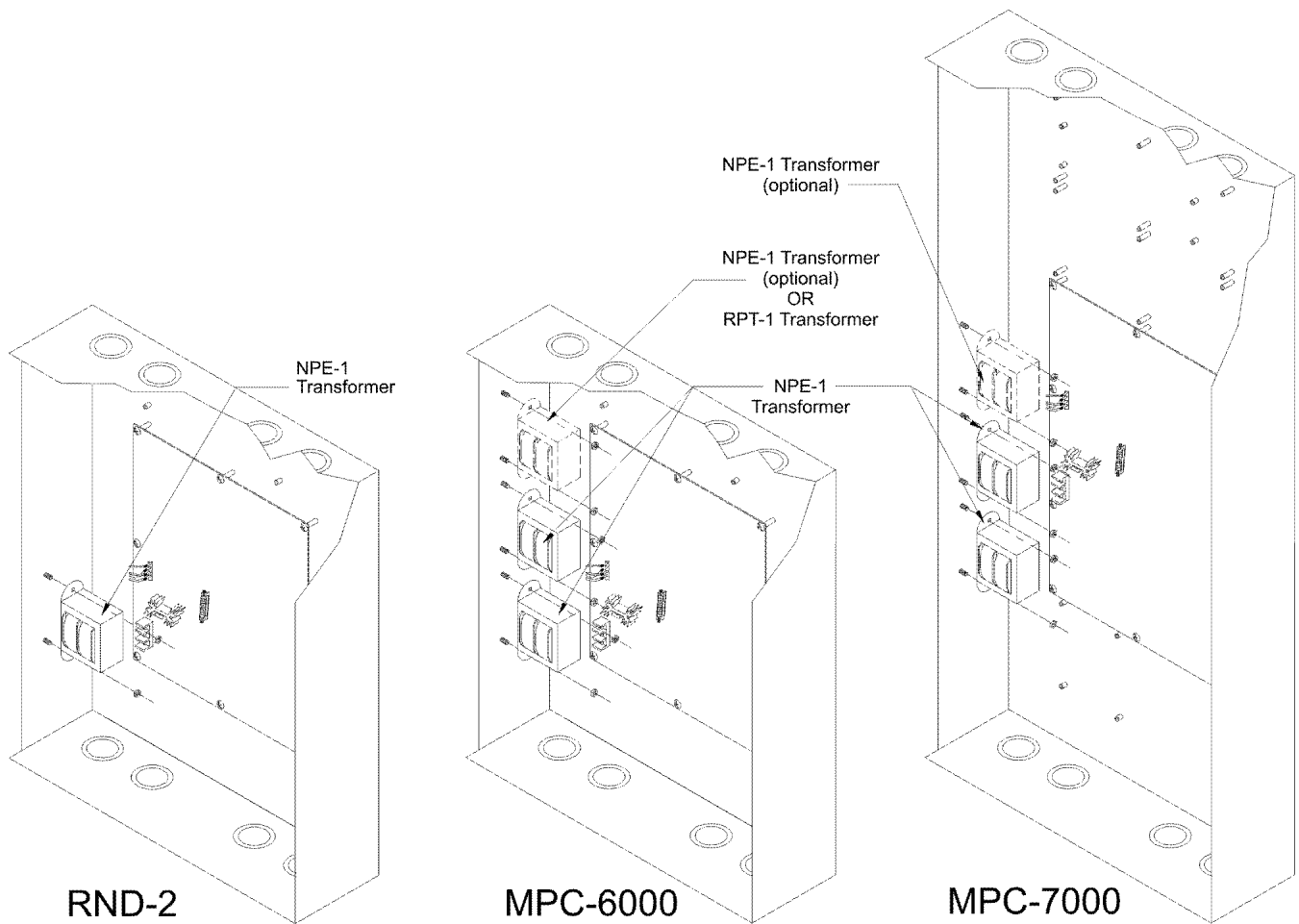


Bridge Rectifier Mounting



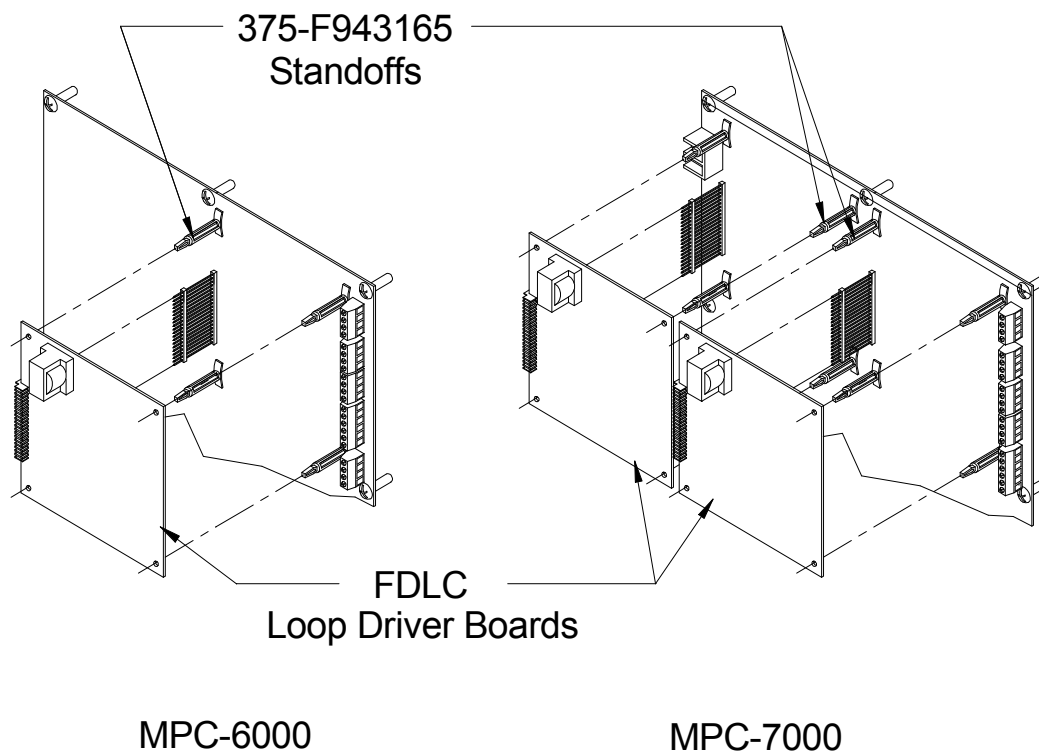
Transformer Mounting

- Place the NPE-1 transformer assemblies (one for RND-2, two for MPC-6000 or MPC-7000) over the bottom one or two sets of studs on the left side of the enclosure, if desired. Mounting the transformer can be accomplished before mounting the enclosure.
- Tighten provided transformer-mounting nuts (P/N 899-G67197) (2 per NPE-1).
- Plug the transformer assemblies into connectors J1 and J2 on the Main Board (P/N MPC(6/7)-MB or MPC6-MB2). Bottom transformer plugs into J1.
- If optional additional transformer (P/N NPE-1 or RPT-1) is required, install it also at this time.
- Optional transformer plugs into connector J3 on the Main Board (P/N MPC(6/7)-MB or MPC6-MB2).



Loop Driver Board(s) Mounting – P/N FDLC

- Place the provided standoffs (P/N 375-F943165) in locations shown on the Main Board (four for the MPC-6000 and eight for the MPC-7000).
- Carefully align connector J1 on the Loop Driver Board with connector J9 on the MPC-6000 Main Board (P/N MPC6-MB or MPC6-MB2) or with connectors J9 and J14 on the MPC-7000 Main Board (P/N MPC7-MB).



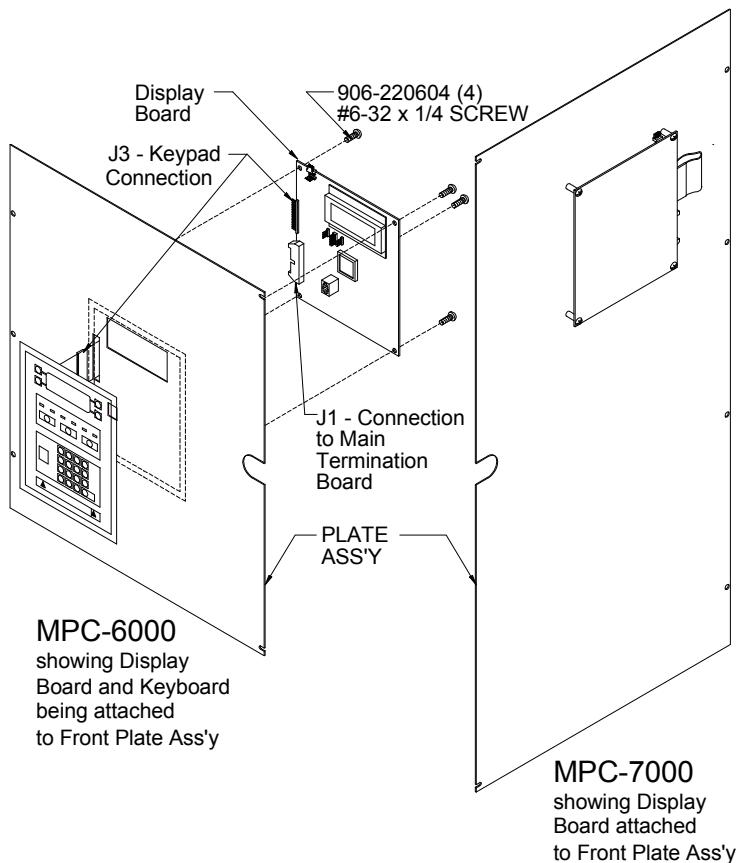
Display Board Installation – P/N MPC(6/7)-DB, MPC6-DB2, RND2-DB or RN2-DB2

- With the Inner Front Plate closed, carefully pass connector and cable from keypad through vertical slot in front plate.
- Remove backing from keypad and carefully attach keypad to front plate. Center window in keypad on large opening in front plate.



Do not remove the small strip of paper backing next to the ribbon cable. This will prevent the cable from adhering to the keypad prior to positioning on the plate.

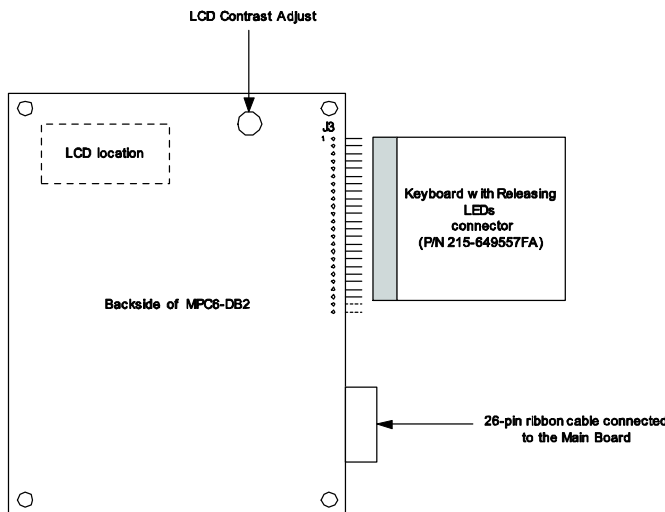
- Attach the cable connection from the keypad on the Inner Front Plate to connector J3 on the Display Board (P/N MPC(6/7)-DB, MPC6-DB2, RND2-DB or RND2-DB2).
- Secure Display Board (P/N MPC(6/7)-DB, MPC6-DB2, RND2-DB or RND2-DB2) to Inner Front Plate Assembly using four of the provided #6-32x1/4" screws (P/N 906-220604).
- Plug the Cable Assembly (P/N 555-446055) into connector J1 of the Display Board (P/N MPC(6/7)-DB, MPC6-DB2, RND2-DB or RND2-DB2) and to connector J11 of the Main Board (P/N MPC6-MB, MPC6-MB2 or MPC7-MB).



Keypad Connection to MPC6-DB2

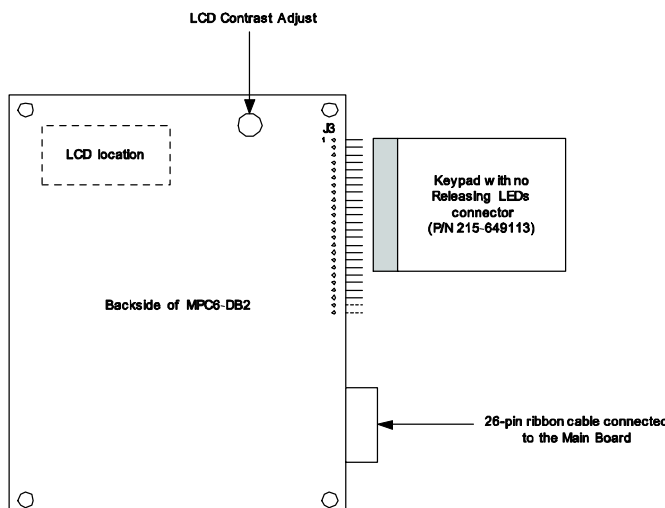
Keypad with releasing application LEDs (P/N 215-649577FA) for MPC-6000 only

- Align the keypad connector (P/N 215-649577FA) to J3 of the MPC6-DB2 as shown below. If J3 is populated with a 22-pin header, insert the keypad connector to J3 header until it is a tight fit.
- If J3 is populated with 24-pin header, insert the keypad connector to J3 header with pin 1 of J3 properly aligned with the keypad connector until it is a tight fit.
- Verify that pins 23 and 24 (last two pins on the bottom) of J3 are not connected to the keypad connector.**



Keypad without releasing application LEDs (P/N 215-649113)

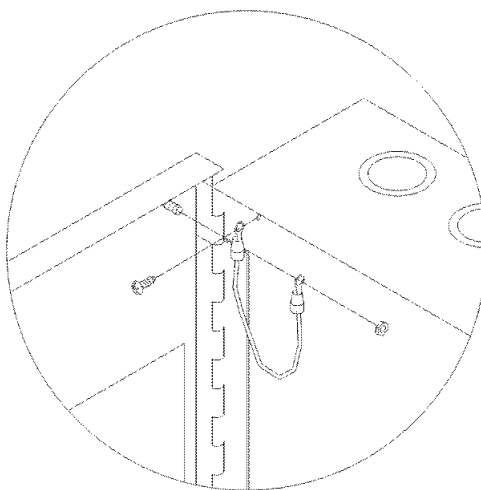
- Align the keypad connector (P/N 215-649113) to J3 of MPC6-DB2 as shown below. If J3 is populated with a 22-pin header, insert the keypad connector to J3 header with pin 1 of J3 properly aligned with the keypad connector until it is a tight fit. **Verify that pins 19-22 (last four pins) of J3 are not connected to the keypad.**
- If J3 is populated with 24-pin header, insert the keypad connector to J3 header with pin 1 of J3 properly aligned with the keypad connector until it is a tight fit. **Verify that pins 19-24 (last six pins) of J3 are not connected to the keypad.**



Ground Wire Installation – P/N 600-149373

Attach Ground Wire (P/N 600-149373) to inside of outer door using provided #6 nut (P/N 950-220604).

Attach Ground Wire (P/N 600-149373) to outside of inner door using provided #6 screw (P/N 906-220604).

**SYSTEM WIRING**

Before connecting the field wiring, check the wiring for opens, shorts, grounds and stray voltages.

WARNING

Damage may result if a high voltage insulation tester is used on wiring while connected to the control unit.

Terminate the field wiring to the main board in accordance with the diagrams in System Wiring Section and the system design documents.



All wiring must be in accordance with local codes and the National Electrical Code. Use only wire as described in Article 760 of the National Electric Code.

AC Supply Connection

Wire the AC supply to terminal block TB1 on the main board. The supply should originate from a dedicated 15A branch circuit. It should be provided with a breaker or other means of isolation that must be colored red. (Refer to Primary and Secondary Wiring Section for connection diagram.)

Observe the wiring order — the bottom terminal is ground and must be wired back to the electrical panel ground (earth) bonding point or another good ground acceptable to the authority having jurisdiction and the electrical inspector. The neutral wire must be taken back to the electrical panel neutral distribution bar.



Dangerous voltages will be present on this terminal block and on other components surrounding it and the transformer when the AC supply is turned on. Do not touch.

Battery Installation

WARNING

Improper battery connections or shorting battery terminals may damage the system and/or batteries and may cause personal injuries.

Use the battery calculation chart to determine the battery size. Place the batteries in the space provided in the bottom of the backbox. If a battery set larger than 12 AH (MPC-6000, RND-2) or 18 AH (MPC-7000) is required, a separate enclosure must be used. The Faraday 14050 may be used for battery sets 18 AH and smaller. The Faraday BE-1 may be used for battery sets 38 AH up to 100 AH.

The control unit uses a 24V battery set. Connect the two 12V batteries (or four 6V batteries) in series with wire that is rated for the maximum worst-case battery current draw. Route the battery leads to the left of the enclosure and up to the battery connector. The battery leads are not power-limited. **DO NOT CONNECT THE BATTERIES YET.**

Powering the Control Unit

After all modules and wiring are installed and properly checked, apply AC power to the control unit. AC POWER ON LED, SYSTEM TROUBLE LED, and the trouble buzzer should be on.

Observe polarity. Connect the B- (black) lead from the main board into the black or - terminal of the battery set and the B+ (red) lead from the main board into the red or + terminal of the battery set. (Refer to Primary and Secondary Wiring for diagram.)

Optional Modules

See Appendix D for the list of installation instructions for each optional module. Installation Instructions are provided with each module. Follow these instructions for proper installation.

Check System Operation

Check for proper operation of all the system functions. See Operation Instructions section on page 21.

WIRING

Basic system wiring and detector locations must be in accordance with NFPA 72 or other instructions from the appropriate local authority having jurisdiction.

Devices that may be satisfactorily used with the control unit are shown in the compatible device listing in Appendix B.

Wire reference data are included in Appendix A.

Control Unit Wiring Overview

In compliance with NEC Article 760 and UL 864, all power limited fire protective signaling conductors must be separated a minimum of 1/4 inch from all of the following wiring located within a control panel:

- Electric light
- Power
- Class 1 or non-power limited fire protective signaling conductors

To meet these requirements, the following guidelines **must be observed** when installing modules and wiring to this control panel.

When installing power limited field wiring, the installer must comply with NEC article 760, which states:

The fire alarm power-limited circuits are installed using Types FPL, FPLR, FPLP or permitted substitute cable, provided these power-limited cable conductors extending beyond the jacket are separated by a minimum of 0.25 in. (6.35 mm) or by a nonconductive sleeve or nonconductive barrier from all other conductors.

If energy limited cable or equivalent is not used within the MPC-6000 / MPC-7000 / RND-2 enclosure, then the following guidelines do not apply. In that case, be sure to follow standard wiring practices.

Wiring Entering Enclosure

- Non-Power Limited Wiring - Wiring entering the enclosure from the bottom left side of the backbox is considered non-power limited wiring. Wiring must be in the shortest route and must not overlap any other wiring.
- Power Limited Wiring - Wiring entering the enclosure from the top and the left side of the backbox is considered power limited. Wiring must be in the shortest route and must not overlap any other wiring.

Install Wiring

The primary mains input must have a separate or dedicated circuit breaker. Wire in accordance with local codes and NEC 760.

- Remove the knockouts in the backbox for the entry of field wiring. (Refer to Enclosure Mounting Pictures on pages 32 and 33 and Wiring Separation Diagram on next page for the location of knockouts.)
- Pull all field wiring into the backbox. Do not dress the wiring until the location of all the equipment is known.

Install the wiring from the external power source to the approximate location of the power supply.

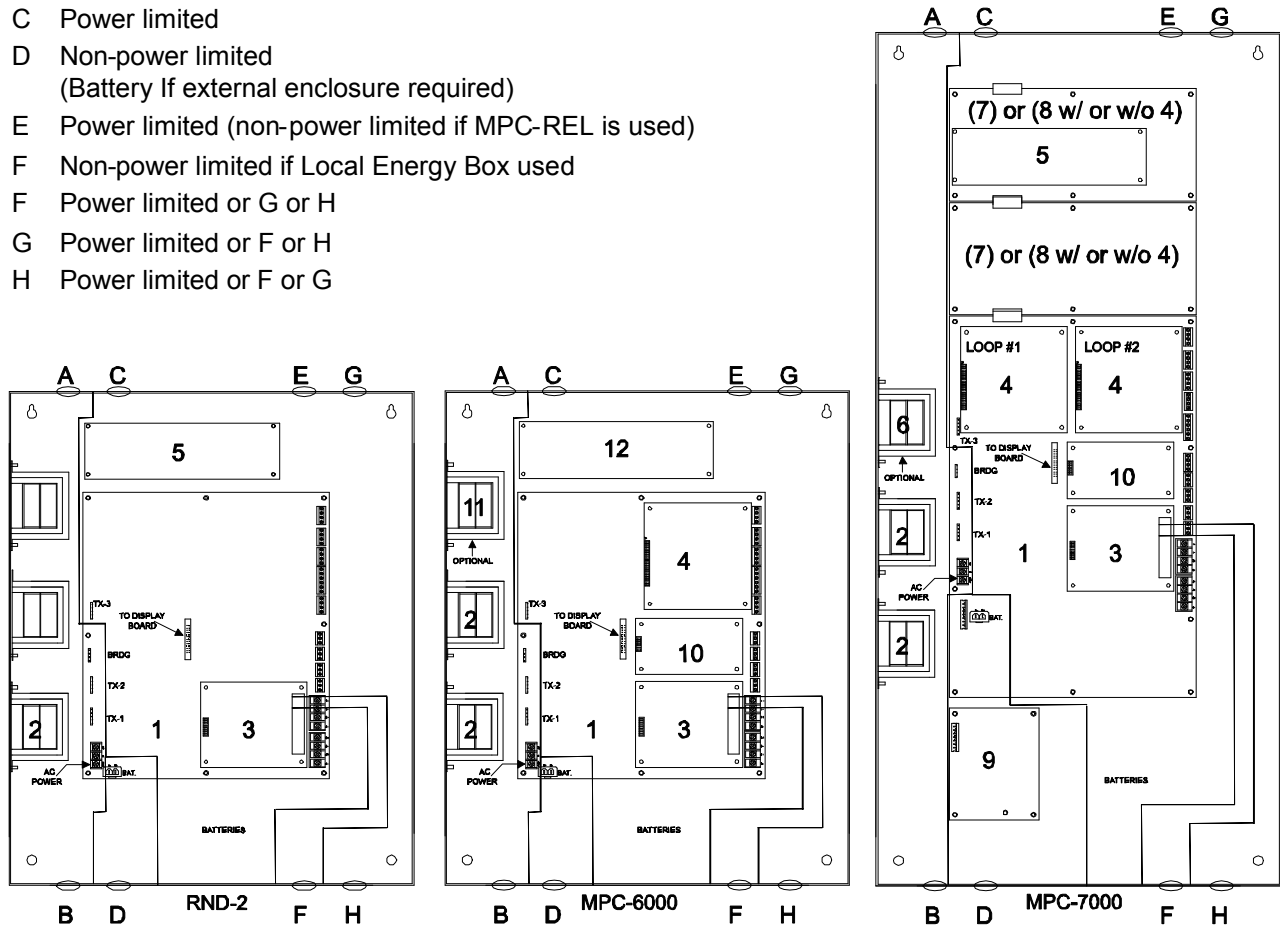
The overall arrangement of boards in the control unit is shown in the following diagram.

Wiring Separation and Module Placement

All high voltage and non-power limited wiring must be kept separate from power limited wiring. A separation of at least a 1/4 inch must be maintained, with high voltage and non-power limited wiring running in separate conduit openings from power limited wiring.

KNOCKOUTS FOR MPC-6000/MPC7000/RND-2

- A Non-power limited - High Voltage (AC power) or B
- B Non-power limited - High Voltage (AC power) or A
- C Power limited
- D Non-power limited (Battery If external enclosure required)
- E Power limited (non-power limited if MPC-REL is used)
- F Non-power limited if Local Energy Box used
- G Power limited or G or H
- H Power limited or F or G



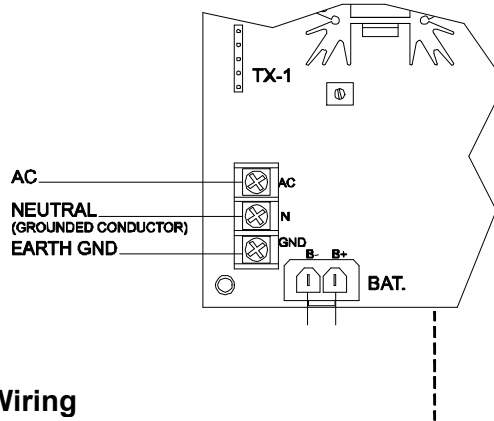
SYSTEM MODULES FOR MPC-6000/MPC-7000/RND-2

1. Main Board
2. NPE-1 Transformer
3. MPC-DACT DACT Board or CT-1K City Tie
4. FDLG Loop Driver Board – requires Main Board or LEM-1 Loop Expansion Board
5. 12603A Network Interface Board
Note: Cannot be used with an expansion module in the uppermost position.
6. NPE-1 Expansion Transformer
7. NEM-1 NAC Expansion Module
8. LEM-1 Loop Expansion Module
9. HBC-1 Optional Battery Charger
10. Future Expansion
11. NPE-1 Expansion Transformer or RPT-1 if MPC-REL is installed.
12. 12603A Network Interface Board or MPC-REL Module.

Primary and Secondary Power Wiring

The AC main connections (TB1) and the battery connections (J4) must be made along the left-hand side of the main termination board (P/N MPC6-MB or MCP7-MB). Route all high voltage and non-power limited wiring together and away from power limited wiring. Use the battery calculation chart to determine battery size.

Supervised
120 VAC 60Hz
2.4A Max MPC-6000 / RND-2
3.5A Max MPC-7000
Non-Power Limited



Battery Connections
Supervised
Non-Power Limited

For MPC-6000
24V Battery Set (7 to 38AH)

For MPC-7000
24V Battery Set (7 to 38AH)
(up to 100 AH if HBC-1 Battery
Charger is used)

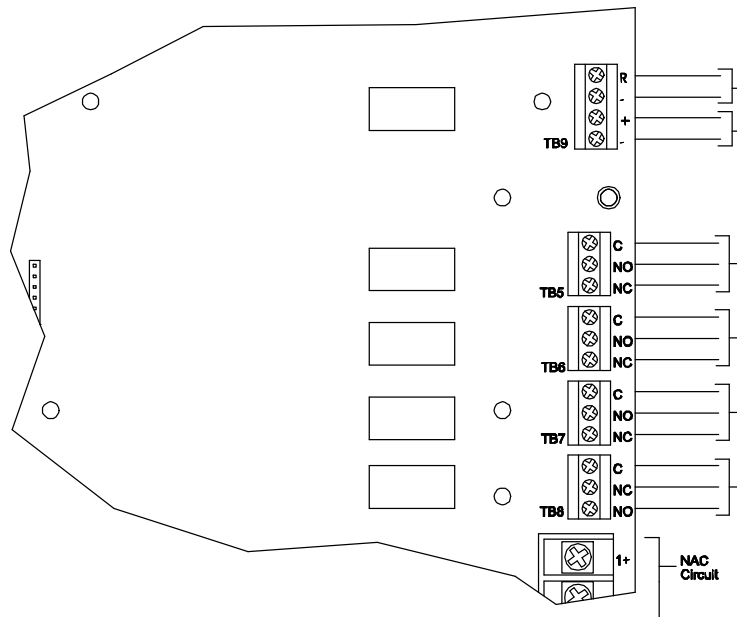
For RND-2
24V Battery Set (7 to 38AH)

**Keep All Non-Power Limited Wiring
Separate from Power Limited Wiring**

Status Relays and Auxiliary Power Outputs Wiring

The right side of the main board provides for connection of status relay contacts (TB5-8) and auxiliary power connections (TB9). Four relays with dry contacts are provided. Three relays are programmable for various output types. The relay contacts are Form C and are rated 1A @ 28VDC resistive.

The right-hand edge of the main termination board (TB9) provides for resettable and non-resettable auxiliary power connections. The resettable terminal (TB9-R) interrupts the power for 6 seconds after a reset condition.



Auxiliary Power Outputs
0.4A max. @24VDC Nominal,
Filtered (31VDC max).
Supervised, Power Limited
Maximum cumulative current of
all available output circuits,
Serial Interface Circuit and
option boards is:
0.5A for the MPC-6000/RND-2
1.0A for the MPC-7000

Programmable
Relay Circuit 1
C NO NC
Programmable
Relay Circuit 2
C NO NC
Programmable
Relay Circuit 3
C NO NC
Trouble Status
Relay Circuit
C NO NC

Relay Contacts
(Shown in normal
standby condition)
1A 28VDC max Resistive
For connection to a
Power Limited Source,
Supervised

C – Common
NO – Normally Open
NC – Normally Closed

MPC-6000 System Power Requirements (Does not include NAC power and releasing circuit)

Device	Item Max.(Amps)	MPC-6000 Amps
MPC-6000 Control Unit (Includes 1 FDLC)	0.190	0.190
Addressable Device Circuit Power	# of Devices X 0.0018 Amps	
Auxiliary Power Outputs *	Depends on devices installed	
CT-1K City Tie Board	0.055	
MPC-DACT DACT Board	0.054	
RDC-2 Remote LCD Annunciator *	0.085	
RDC-3 Remote LCD Annunciator *	0.048	
SRU-2/SRE-8 Serial Relay Unit *	0.032+0.020 A for each relay	
SLU-2/SLE-16 Serial Annunciator Unit *	0.042+ load of each LED or lamp	
MPC-REL Releasing Module ¹	0.050	0.050
Total current requirements		
Must be less than or equal to		0.750

¹Maximum module current draw from the system (Does not include the current draw from releasing circuit and open collector.)

RND-2 System Power Requirements

Device	Item Max.(Amps)	RND-2 Amps
RND-2 Control Unit (No FDLC)	0.090	0.090
Auxiliary Power Outputs *	Depends on devices installed	
CT-1K City Tie Board	0.055	
MPC-DACT DACT Board	0.054	
RDC-2 Remote LCD Annunciator *	0.085	
Total current requirements		
Must be less than or equal to		0.750

MPC-7000 System Power Requirements (Does not include NAC power)

Device	Item Max.(Amps)	MPC-7000 Amps
MPC-7000 Control Unit (Includes 2 FDLCs)	0.500	0.500
FDLC Loop Driver Board	0.150 x # of FDLCs on LEM-1	
NEM-1 Signal Expansion Board	0.250	0.250
LEM-1 Loop Expansion Board	0	0
HBC-1 Battery Charger ²	0	0
Addressable Device Circuit Power	# of Devices X 0.0018 Amps	
Auxiliary Power Outputs *	Depends on devices installed	
CT-1K City Tie Board	0.055	
MPC-DACT DACT Board	0.054	
RDC-2 Remote LCD Annunciator *	0.085	
SRU-2/ SRE-8 Serial Relay Unit *	0.032+0.020 A for each relay	
SLU-2/ SLE-16 Serial Annunciator Unit *	0.042+ load of each LED or lamp	
Total current requirements		
Must be less than or equal to		3.220

²Does not include charging current of 1.9A for a fully discharged battery.

Auxiliary Power Supply

*Connect an RSE-300 auxiliary supply when power requirement calculation indicates that an additional source is required. For further information, refer to Appendix D.

Battery Size Calculations

For calculation of battery size requirements see Appendix A.

NAC Wiring

At the lower right corner of the main board the terminal blocks TB12 and TB13 are used for the connection of notification appliances. Four individual NACs marked 1 through 4 are provided and the polarity shown is when the NAC is activated.

NAC Rating:

Power Limited

Alarm Voltage: 24V nominal, unfiltered fullwave rectified (31V max.)

Max. Alarm Current: 1.5A/NAC circuit

Max. Ripple: 16VAC, 120Hz

Maximum Line Resistance @ 24V (nominal), unfiltered fullwave rectified

Current Draw	Line Impedance
1.5A	2Ω
1.0A	3Ω
0.5A	6Ω

Max. Standby Current: 3.4mA

For special application only. Suitable for coded and non-coded application.

Refer to Appendix B to determine maximum sync notification appliances allowed per NAC.

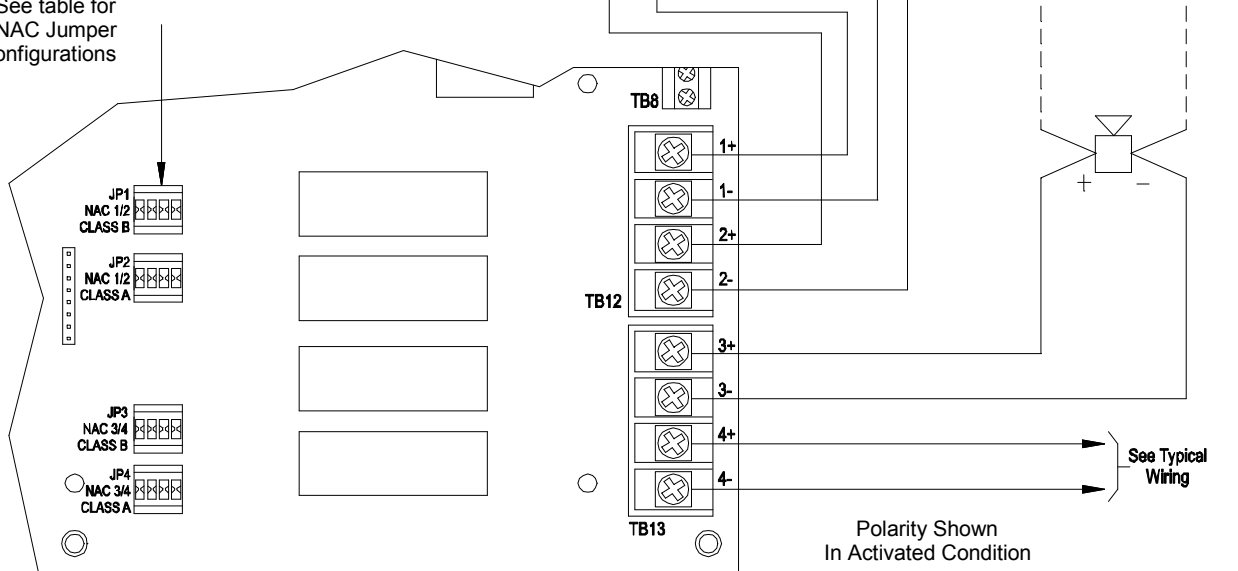
NOTE:

The maximum total current for the MPC-6000 NACs is 3.0A and 6.0A with the optional additional Transformer P/N NPE-1.

The maximum total current for the MPC-7000 NACs is 5.0A and 8.0A with the optional additional Transformer P/N NPE-1.

Voltages are in RMS values.

See table for
NAC Jumper
Configurations

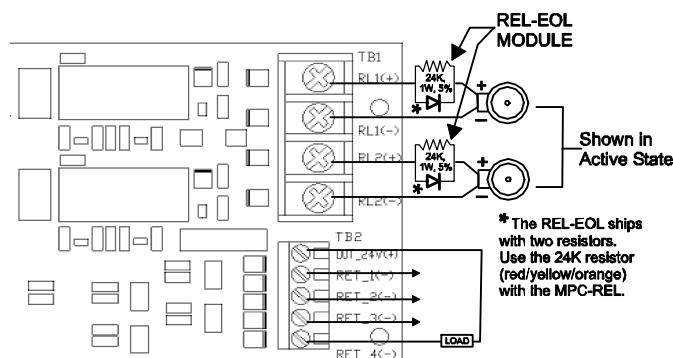


Use the following table to configure the NACs for either Class A or Class B operation by placing the 8-pin jumper to the proper socket location. This must be configured before system power up.

NAC #s	Class "B" Operation	Paired Class "A" Operation
1,2	JP1	JP2
3,4	JP3	JP4

Releasing Circuit Wiring (Use only if MPC-REL is installed)

The releasing circuits are connected to TB1 of the MPC-REL module. Two individual Releasing Circuits are provided along with 4 programmable open collector circuits that are connected to TB2.



Releasing Rating:

Power Limited

Alarm Voltage: 24VDC, Filtered

Max. Alarm Current: 1.5A/Releasing circuit

For Special Application Only

Open Collector Rating:

Non-power Limited

Alarm Voltage: 24VDC, Filtered

Max. Alarm Current: 200mA/Circuit

Notes:

1. All wiring must be in accordance with Article 760 of NEC or local building codes.
2. Polarity shown in active state.
3. For Compatible Solenoids refer to table below.
4. The maximum cumulative output current of the MPC-REL must not exceed 3A.
5. REL-EOL module (P/N 500-696359) is required for supervision of open and short circuits on the releasing circuit. REL-EOL must be in the same enclosure or close nipped to the last solenoid in the loop.
6. The MPC-REL requires an RPT-1 transformer.
7. A mechanical manual release must be employed to meet NFPA 2001 requirements.
8. Releasing circuit maximum voltage line drop = 0.6V.
9. Wiring shown complies with UL864 9th Edition requirements.

Compatible Solenoids

APPLICATION	MANUFACTURER	SOLENOID MODEL OR PART NUMBER	NUMBER OF SOLENOIDS IN SERIES	MAX. # OF SOLENOIDS PER CARD	APPROVAL
NFPA 13 (Pre-Action Deluge)	ASCO	R8210A107	One 24 VDC	2	UL
		T8210A107	One 24 VDC	2	UL
	SKINNER	7321GBN99N00N0C111C2	One 24 VDC	2	UL
		LV2LBX25	One 24 VDC	2	UL
NFPA 2001 (HFC-227ea)	ASCO	HV21832-6	Four 6 VDC	8	UL
	SNAPTITE	P/N 2823A-2NB-A4F5	Two 12 VDC	4	UL
		P/N 2823A-2NB-A4F6	One 24 VDC	2	UL
		P/N 2823A-2NB-A4F4	Four 6 VDC	8	UL
		P/N 932594B	One 24 VDC	2	UL

Note 1:

Single 12VDC and 6VDC solenoids are not supported. If 6VDC solenoids are used, four solenoids in series must be used.

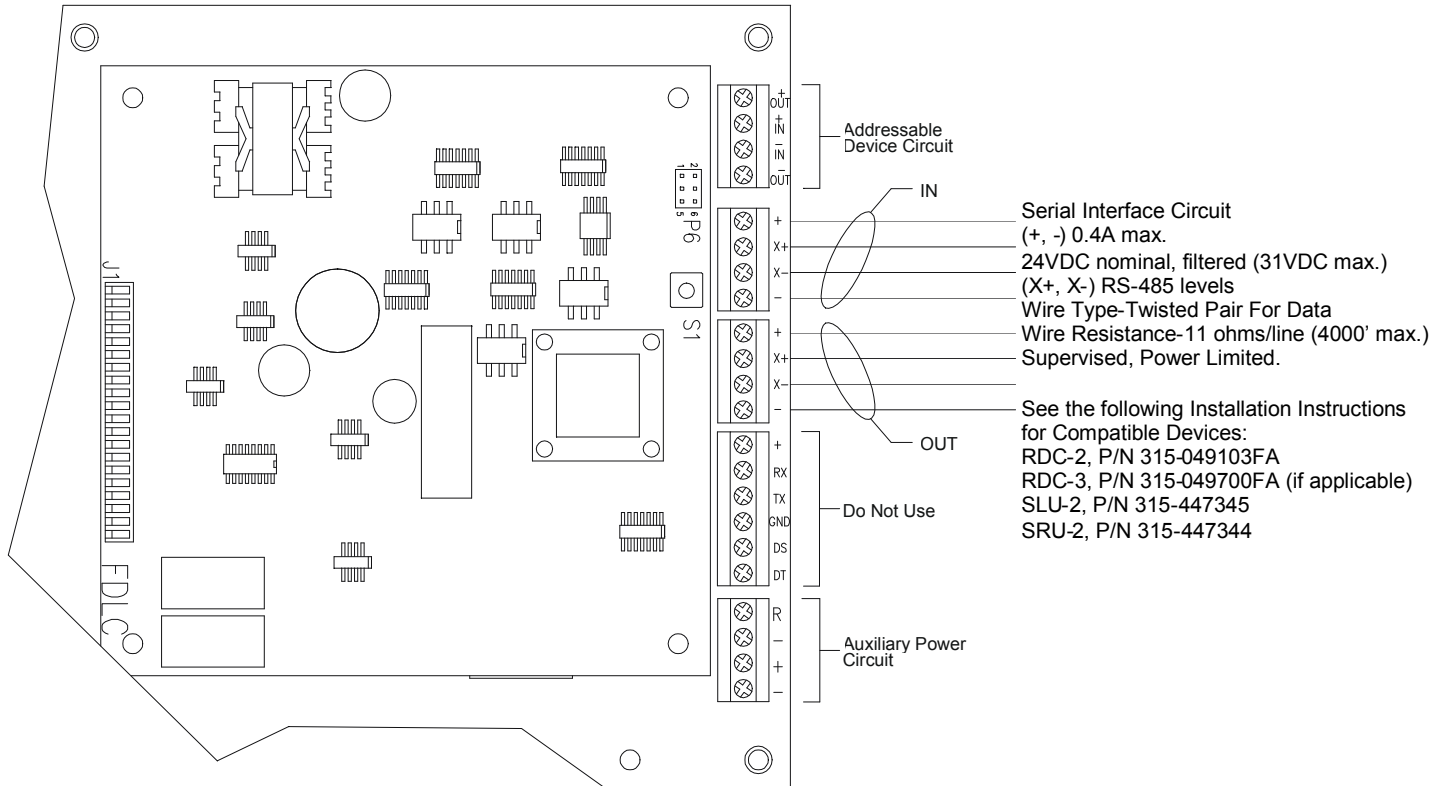
If 12VDC solenoids are used, two solenoids in series must be used.

Note 2:

It is not permitted to mix one 12 VDC solenoid with any combination of 6VDC solenoids.

Serial Interface Circuit

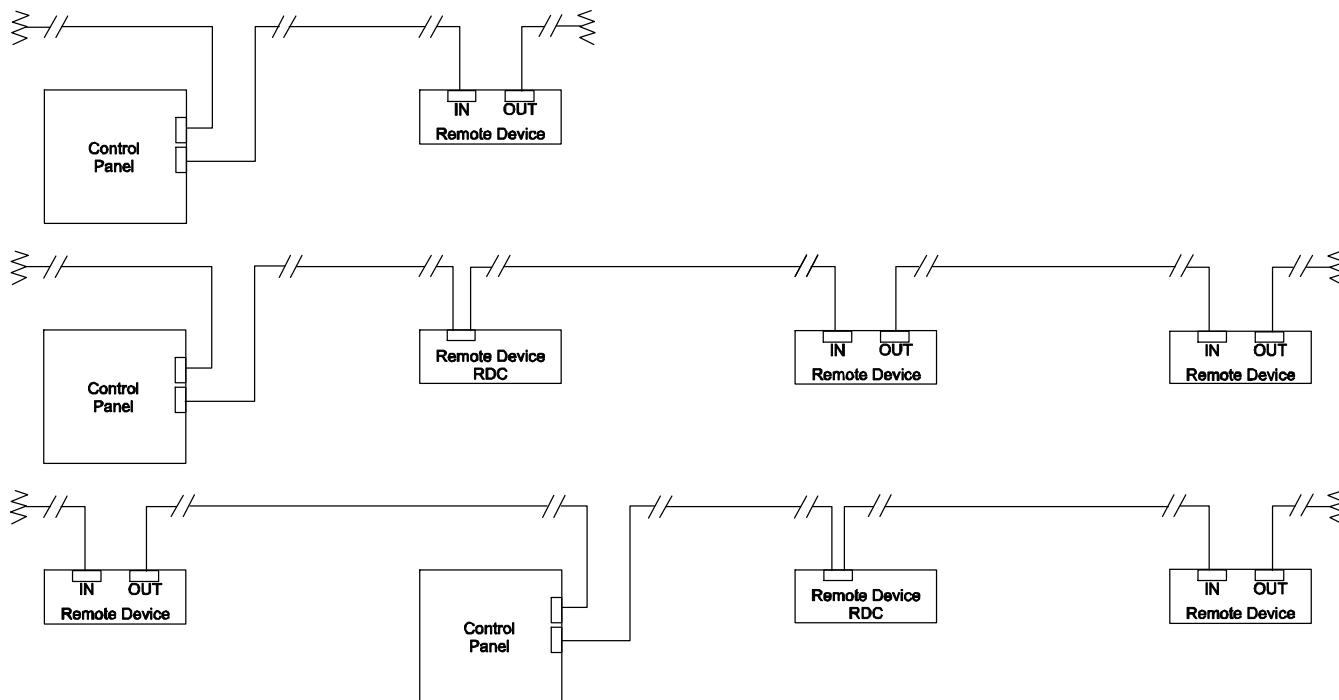
The serial interface circuit can address up to 16 standard annunciators and/or 8 remote processors to drive graphic annunciation or relay modules. Devices on the circuit may be connected up to 4000 feet from the control unit. At the top of the main board the terminal blocks are used for the connection of remote serial devices.



Remote Device Power - When connecting devices on the serial interface circuit, a limited amount of current is available from the control unit. If more current supply is required for the connected devices, auxiliary power must be provided. Each address on the circuit must be fully powered from either control unit or auxiliary power (*no combined source can be configured*).

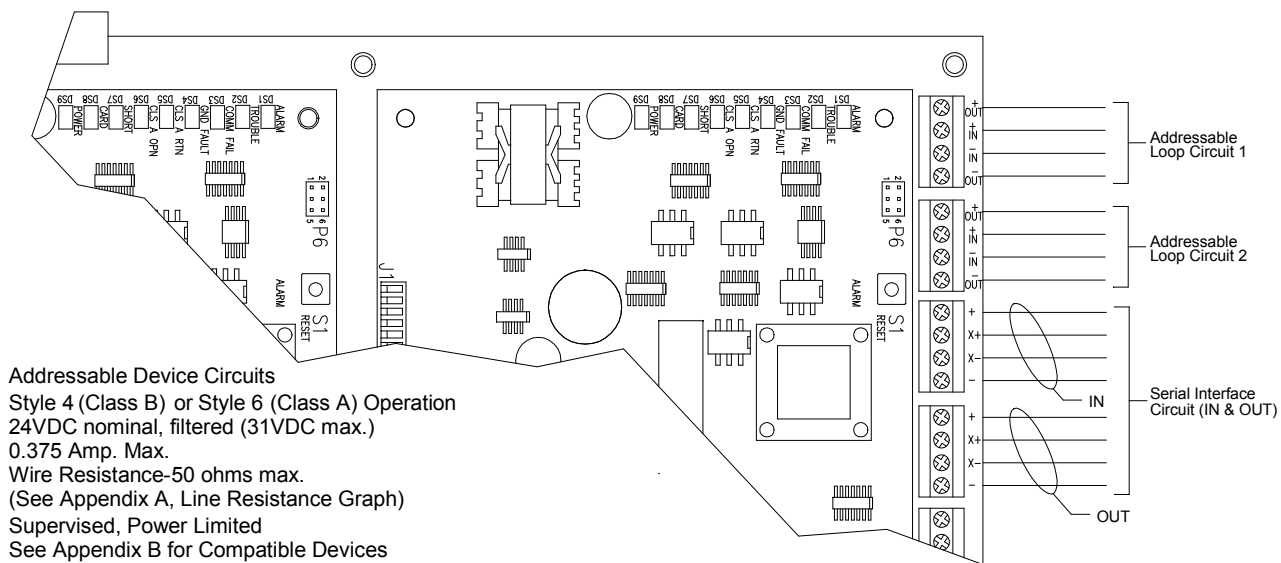
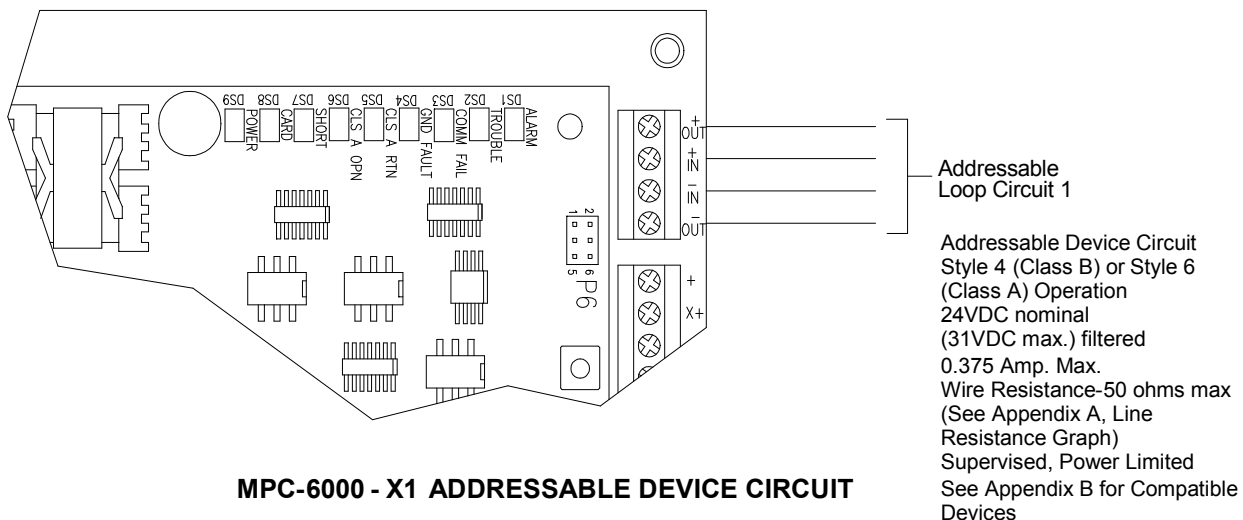
Serial Remote Device Wiring Overview

When connecting devices on the Serial Interface Circuit, the data wires must be daisy chained and with no T-taps to preserve the integrity of the data. Each end (two places) must be terminated with a 120 ohm E.O.L. Resistor Assembly (P/N 140-050008-1). The following diagrams show the proper wiring.



X1 Addressable Device Circuit(s)

These devices are polled by the control unit every few seconds and input or output functions communicated to determine device status or function. The control unit monitors all device addresses for alarm and trouble conditions.



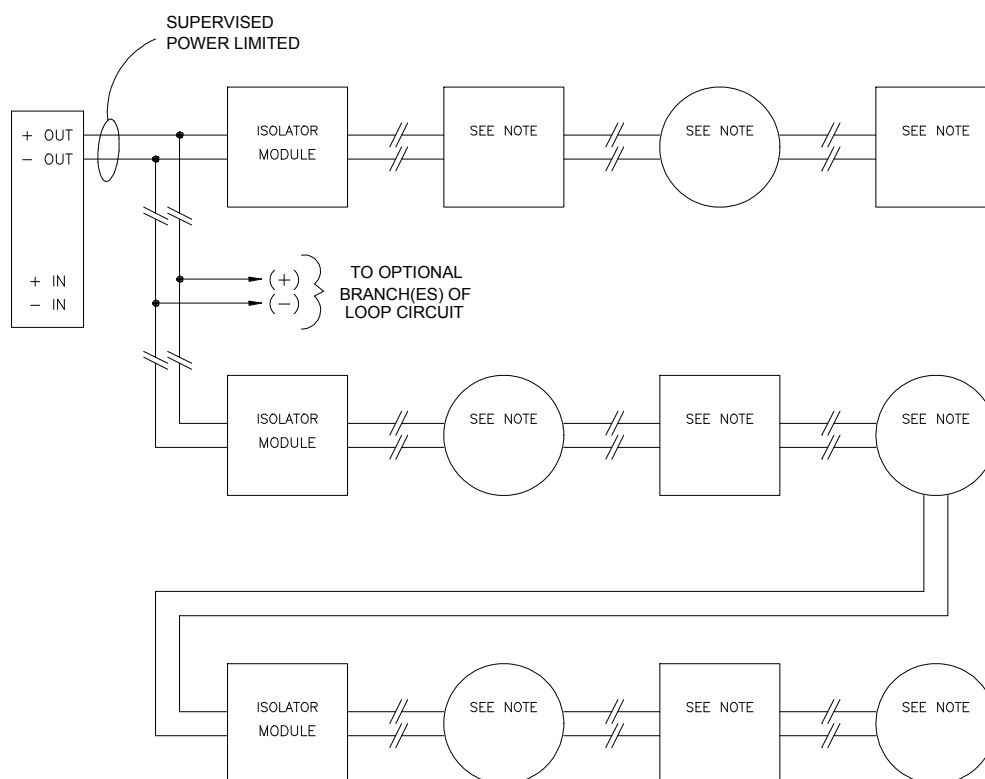
X1 Addressable Device Wiring Diagrams

Refer to the instruction sheets packed with each device.

Detectors and modules may be wired together according to several NFPA defined wiring styles. The wiring style that is appropriate for your installation should be determined from the relevant building codes and the local authority having jurisdiction.

Style 4 wiring permits branching of circuit connections. The control equipment supervises modules because they are active and must respond periodically to the control unit's poll.

X1 ADDRESSABLE DEVICE CIRCUIT WIRING / OPERATION COMPARABLE TO NFPA STYLE 4

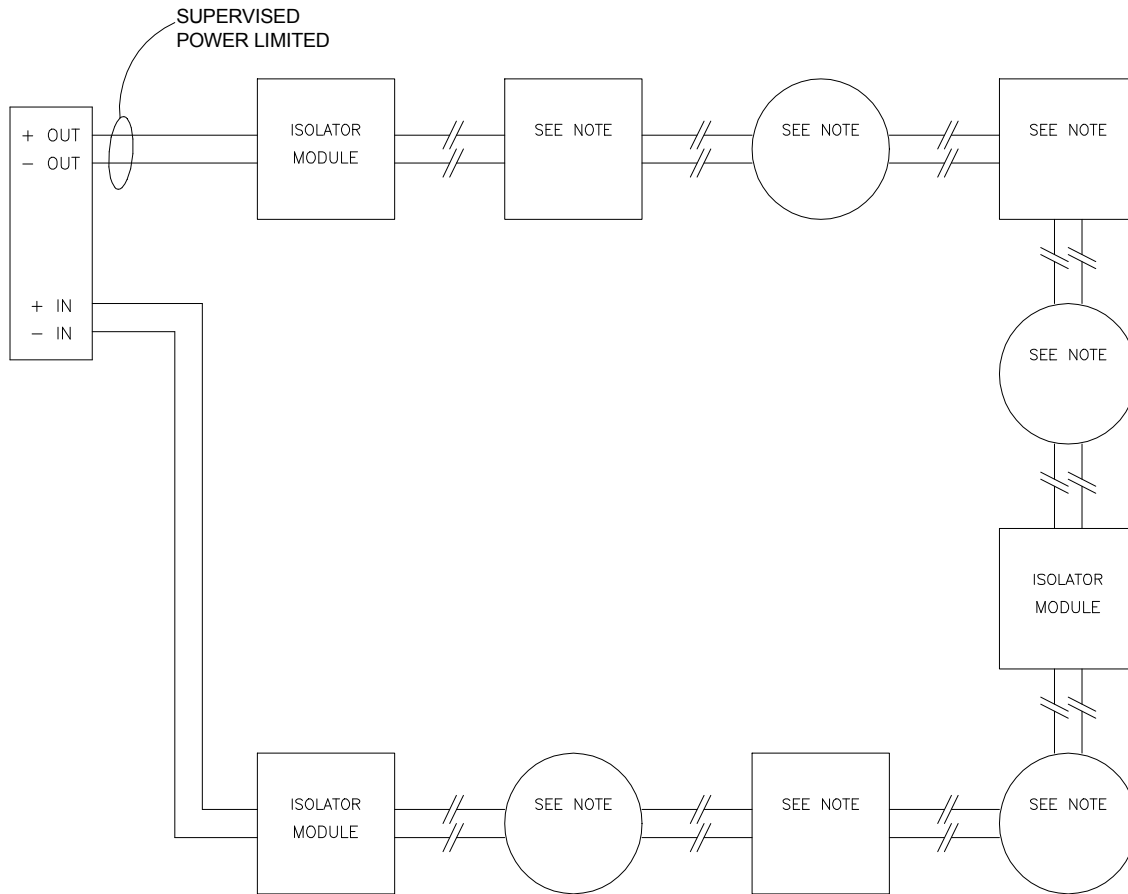


NOTE: Faraday X1 Devices: Detectors, Monitor Modules, or Control Modules up to a maximum of 252 devices per addressable device circuit. A Maximum of 20 devices recommended per Isolator Module. A Maximum of 15 Isolator Modules per addressable device circuit.

NOTE: If more than one 8706 control module is installed on an addressable device circuit, Style 4 wiring cannot be used.

X1 ADDRESSABLE DEVICE CIRCUIT WIRING / OPERATION COMPARABLE TO NFPA STYLE 6

Style 6 provides redundant communication paths.



NOTE: Faraday X1 Devices: Detectors, Monitor Modules, or Control Modules up to a maximum of 252 devices per addressable device circuit. A Maximum of 20 devices recommended between Isolator Modules. A Maximum of 15 Isolator Modules per addressable device circuit.

NOTE: If more than one 8706 is used on an X1 device loop, the loop must be wired Class A or the riser conductors must be installed in accordance with the Survivability From Attack By Fire requirements in the National Fire Alarm Code, NFPA 72. If wired Class A, at least one 8709 loop isolator must be installed between each 8706 and between the panel and the first and last 8706. See the 8709 installation instructions for the maximum number of isolators allowed per loop and other wiring instructions.

PROGRAMMING THE CONTROL UNIT

KEYPAD PROGRAMMING

Customized programming of the control unit may be accomplished through the keypad in the control unit. See the Faraday MPC-6000 / MPC-7000 / RND-2 Programmer's Manual, P/N 315-049403FA, for detailed information of system programming.

PC PROGRAMMING

Programming the panel may also be done by a temporary connection to the programming port with a computer. This is a convenient method to program the panel.

The Faraday CIS-4 software allows programming the control unit by connection to a Personal Computer (PC) with an EIA-232 serial port. This allows ease of operation by preparing the program in advance and downloading to the control unit in a simple, rapid operation.

PROGRAMMING SECURITY

The following levels of security protect the system from unauthorized use:

- User – Locked Door
- Maintenance – Locked Door and 4-digit Maint. Password
- Technician – Locked Door and 6-digit Tech Password

The User Level is also accessible from the Remote LCD Annunciators.

MAINTENANCE

GENERAL

The MPC-6000 / MPC-7000 / RND-2 provides a maintenance mode to allow for the setting and controlling of various features in the system. Since the RND-2 does not have devices connected to it, some of these functions are not available on the RND-2.

The maintenance functions are protected by a four digit password. To access the maintenance features press the “MENU” button until “Maint. Level” is displayed and select “Maint. Level” from the display, enter the four digit code when prompted and then press “Enter”. The functions listed below are now accessible to the user by using the function buttons on either side of the display.

- Disable/Enable Devices
- Disable/Enable Input Groups
- Disable/Enable Output Zones
- Disable/Enable NACs
- Disable/Enable City Tie
- Disable/Enable DACT
- Disable/Enable Status Relays
- Disable/Enable Detector Applications
- Disable/Enable PAS
- Disable/Enable Open Collector Circuit*
- Disable/Enable Releasing Circuit*
- Starting and Configuring Quick Test
- Print/Clear History Log
- Print Sensor Levels
- Edit Device Labels
- Edit System Labels
- Program a Device
- Set the Time
- Set the Date
- Change the Maintenance Password

*For MPC-6000 only when MPC-REL is installed.



Disabling any input and output devices, modules and applications will annunciate a trouble condition.
Exception: Disabling the Releasing Circuits using the disable switch on MPC-REL will annunciate a supervisory condition.

Refer to the Programming Manual, P/N 315-049403FA, for more information about accessing and using the maintenance level functions.

QUICK TEST

If the control unit has remote connections to the Fire Department or other monitor, be sure to disable the remote signal and notify the remote monitoring station before performing test operations, since an off-normal state will be indicated.



If the MPC-6000 uses the releasing application, make sure to disconnect the releasing circuit wiring prior to performing this test to avoid inadvertent discharge.



Caution: All system timers are disabled during quick test.

The Quick Test mode makes it fast and easy to test a system by eliminating the need to reset the panel after each device is activated. In this way, a single person is able to quickly check that each device is working and activating the system.

For the system with more than one device loop, Quick Test is done on a loop-by-loop basis, so that the remainder of the system may operate normally. When the loop is in Quick test mode, the NAC will sound for the programmed period as each *addressable* device on the loop is activated.

To configure the Quick Test parameters, enter the Maintenance mode and navigate through the menu to the Quick Test option. Configure the following parameters prior to starting the Quick Test:

- Loop Number (if applicable) – the device loop number that will be tested.
- NAC Activation Time – the time to NAC will activate when associated device is initiated.
- Configure Diagnostic printer – allows use of diagnostic printer during quick test.

To initiate the Quick Test mode, enter Maintenance mode and navigate through the menu for the Quick Test option and then select “START”. A trouble condition is annunciated and the LCD on the panel indicates that the panel is in Quick Test Mode. It will also indicate the time before it reverts back to stand-by mode if there is no activity on the panel. This is configurable in Technician Mode < System Parameter < System Timers < Quick Test Exit Time. Initiation of any addressable device on the loop that is Quick Test mode will activate associated NACs and outputs for the configured activation time. This event will be indicated on the panel and recorded in Event History. As soon as the NAC deactivates, the next addressable device is ready to be initiated.

Initiating a reset condition (by pressing the Reset pushbutton) while in Quick Test mode will exit Quick Test and restore the panel to its stand-by mode.

Refer to the MPC-6000/-7000/RND-2 Programming manual, P/N 315-049403FA, for details on accessing the Quick Test functions.

8705 in Quick Test

Testing conventional detectors in Quick Test requires a few more steps than testing addressable devices. Since the 8705 only guarantees that one detector will stay in alarm at a time, its detector loop must be reset after each detector is alarmed. This can be accomplished in the following ways:

- By shorting the device loop for at least six seconds.
- By interrupting power to the device loop or the active device for at least six seconds.

Either of these methods will cause the active detector to reset. Even though the 8705 latches into alarm when the first detector on its loop activates, it will report additional alarms to the panel as they occur, provided the last active detector is reset each time. The NACs activate for the programmed NAC Sound Time after each detector is alarmed.



The previous detector must be clear of smoke after resetting the loop or it will generate another alarm.

APPENDIX-A: REFERENCE DATA

This appendix provides reference for the following topics:

- Wire selection guides
- Battery size calculations

WIRE SELECTION GUIDES

Resistance of Solid Copper Wire

AWG	Ohms per Thousand Feet*
18	8.08
16	5.08
14	3.19
12	2.01

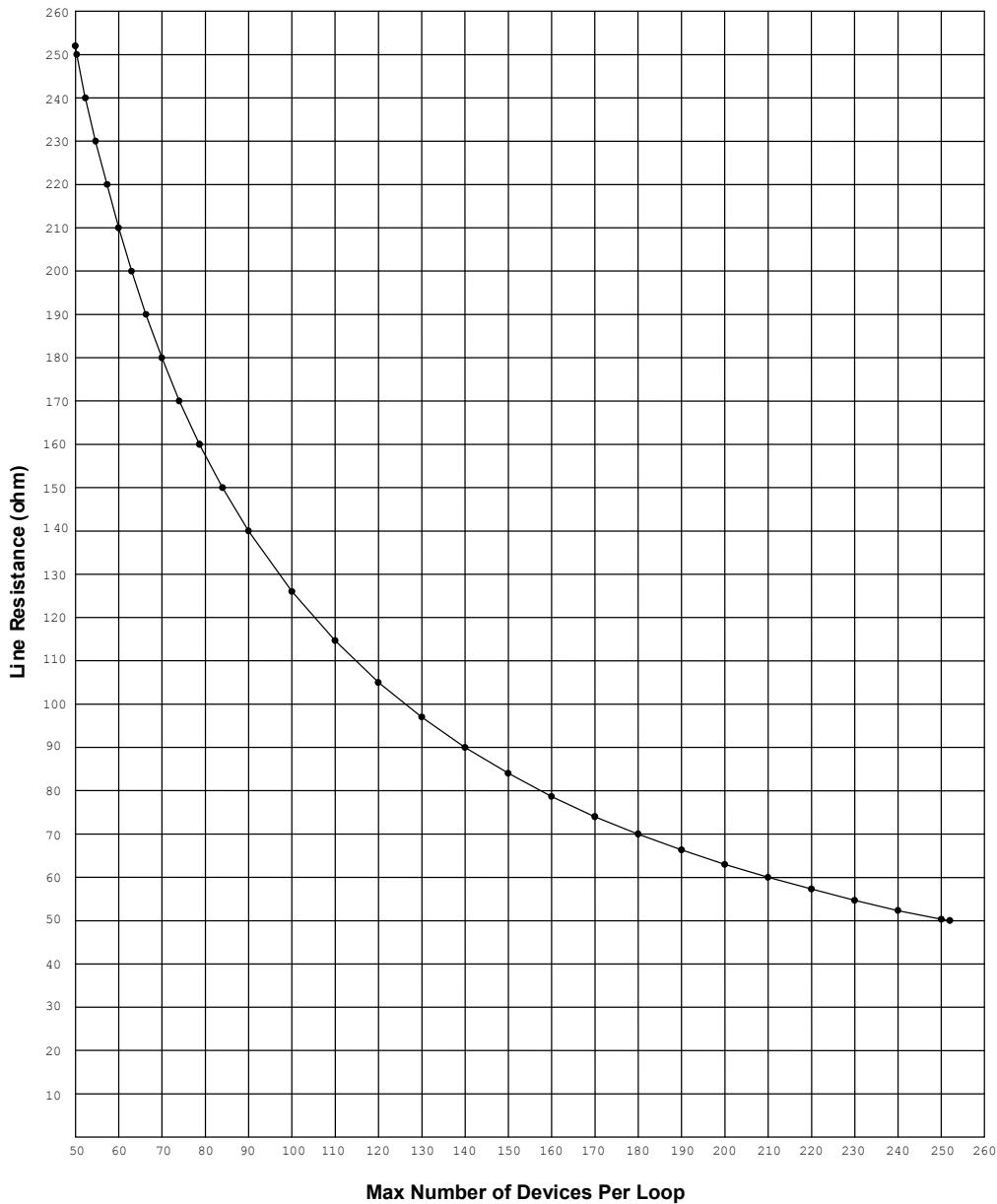
*NEC Chapter 9, Table 8.

Addressable Device Circuit Wire Selection Guide

Each addressable device circuit must meet the following requirements:

- Total loop resistance - 50 ohm maximum with 252 devices. (Refer to following graph.)
- Total loop capacitance - 0.5uF max line to line and 1.0uF max line to shield

Line Resistance Graph



FDLC LINE RESISTANCE vs MAX NUMBER OF DEVICES

Note: The total number of devices can not exceed 252.



The terminal blocks of Faraday X1 devices are rated for a maximum of 14AWG wire.

BATTERY SIZE CALCULATIONS**MPC-6000 Current Calculations**

Panel and Module Current			Standby Current (A)	Alarm Current (A)
MPC-6000 Control Unit (includes one loop driver board)			0.190	0.190
CT-1K City Tie	Standby	0.005	+	+
	Alarm (Table 1)		NA	+
MPC-DACT Board	Standby	0.038	+	NA
	Alarm	0.054	NA	+
MPC-REL ¹	Standby	0.017		
	Alarm	0.050	+	+
Total Panel currents				

¹Include the total releasing circuit and open collector devices current draw in the appropriate column.

Place these totals in the Total System Current Table

Go to Auxiliary Module Current calculations

RND-2 Current Calculations

Panel and Module Current			Standby Current (A)	Alarm Current (A)
RND-2 Control Unit (no loop driver board)			0.090	0.090
CT-1K City Tie	Standby	0.005	+	+
	Alarm (Table 1)		NA	+
MPC-DACT Board	Standby	0.038	+	NA
	Alarm	0.054	NA	+
Total Panel currents				

Place these totals in the Total System Current Table

Go to Auxiliary Module Current calculations

MPC-7000 Current Calculations

Panel and Module Current			Standby Current (A)	Alarm Current (A)
MPC-7000 Control Unit (includes two loop driver boards)			0.450	0.500
CT-1K City Tie	Standby	0.005	+	+
	Alarm (Table 1)		NA	+
FDLC Loop Driver (on LEM-1)	Standby 0.150	X		N/A
	Alarm 0.150	X	N/A	
HBC-1 Loop Expander Bd.	Standby ² 0		0	N/A
	Alarm 0		N/A	0
NEM-1 NAC Expander Bd.	Standby 0.015		0.015	N/A
	Alarm 0.250		N/A	0.250
MPC-DACT Board	Standby 0.038		+	NA
	Alarm 0.054		NA	+
Total Panel currents				

²Does not include charging current of 1.9A for fully discharged battery.

Place totals in the Total System current table

Go to Auxiliary Module Current calculations

TABLE 1

When using the CT-1K City Tie Board add the following currents for standby and alarm for features being used:

Type of City Tie Connection	Standby	Alarm
1. Local Energy	+ 0.007	+ 0.020
Reverse Polarity Alarm Output (CA)		
2. Alarm	+ 0	+ 0.020
3. Alarm w/Trouble	0	+ 0.020
4. Reverse Polarity Trouble Output (CT)	+ 0	+ 0.020

Auxiliary Module Battery Calculations

Panel and Module Current				Standby Current (A)	Alarm Current (A)
RDC-2 Remote Annunciator	Standby	0.048	X =	+	NA
	Alarm	0.085	X =	NA	+
RDC-3 Remote Annunciator	Standby	0.025	X =	+	NA
	Alarm	0.048	X =	NA	+
SRU-2 Serial Relay Unit	Standby	0.032	X =	+	NA
	Alarm	0.192	X =	NA	+
SRE-8 Serial Relay Extender	Standby	0.000	X =	+	NA
	Alarm	0.170	X =	NA	+
SLU-2 Serial Annunciator Unit	Standby	0.018	X =	+	
	Alarm (Note 5)	0.042	X =	NA	+
SLE-16 Serial Annunciator Extender	Standby	0.005	X =	+	
	Alarm (Note 5)	0.032	X =	NA	+
Total Auxiliary Module Current					

Place these totals in the Total System Current table
Go to Device Current Calculations

Device Current Calculations

Device Current				
Catalog #	Quantity	X Current (A)	Standby Current (A)	Alarm Current (A)
	Standby	X =	+	NA
	Alarm	X =	NA	+
	Standby	X =	+	NA
	Alarm	X =	NA	+
	Standby	X =	+	NA
	Alarm	X =	NA	+
	Standby	X =	+	NA
	Alarm	X =	NA	+
4-wire Smoke Detectors				
Catalog #	Quantity	X Current (A)		
	Standby	X =	+	NA
	Alarm	X =	NA	+
	Standby	X =	+	NA
	Alarm	X =	NA	+
End of Line Relay				
Catalog #	Quantity	X Current (A)		
		X =	+	+
Notification Appliances				
Catalog #	Quantity	X Current (A)		
		X =	NA	+
		X =	NA	+
		X =	NA	+
		X =	NA	+
Other =			+	+
TOTAL DEVICE Current				

Place these totals in the Total System Current table
Go to Total System Current Calculations

Total System Currents

		STANDBY (A)	ALARM (A)
Total Panel & Modules current			
Total Auxiliary current		+	+
Total Device current		+	+
TOTAL PANEL+ Modules + DEVICES (Note 2)			

Use the **Total Panel+ Modules + Devices** for the Battery Size Calculations

Battery Size

Total Standby Current (from above)	Hours of Standby Required per NFPA 72 Standard (4, 24 or 90)	AH for Standby (Note 3, 4)
A.	x Hours	=

Total Alarm Current (from above)	5 Minutes of Alarm Operation per NFPA 72 Standard*	AH for Alarm (Note 3, 4)
A.	x 0.09 Hours	=

A.H. for Standby	A.H. for Alarm	Calculated A.H.	De-rating Factor	A.H. Required Battery Capacity
	+	=	X 1.25	=

Notes:

1. An additional multiplier is included to compensate for the higher discharge rate in alarm. Battery capacity decreases with age.
2. The Standby current + Alarm current for an MPC-6000 must never exceed 3.0 Amps when using the two supplied transformers and 6.0 Amps when using the supplied transformers and the NPE-1 optional transformer assembly.
 The Standby current + Alarm current for MPC-6000 with releasing must never exceed 3.0 Amps when using the two supplied transformers. The MPC-REL releasing circuit and open collectors must never exceed 3.0 Amps using the supplied RPT-1 transformer.
 The Standby current + Alarm current for an MPC-7000 must never exceed 5.0 Amps when using two supplied transformers and 8.0 Amps when using the supplied transformers and the NPE-1 optional transformer assembly.
 The Standby current + Alarm current for an RND-2 must never exceed 0.9 Amps when using the supplied transformer assembly.
3. The following states the maximum standby current allowed for a MPC-6000 / RND-2 panel using a 38 AH battery set:
 90 hours of standby time is 0.320 Amps
 24 hours of standby time is 1.144 Amps
4. The following states the maximum standby current allowed for a MPC-7000 panel using a 100 AH battery set:
 24 hours of standby time is 3.22 Amps
5. Does not include lamp or LED current, add separately. Refer to installation instructions P/N 315-447345 for maximum activated current rating of individual drive circuits.

APPENDIX-B: COMPATIBLE DEVICES

DEVICES FOR ADDRESSABLE DEVICE CIRCUITS

Faraday X1 Manual Pull Stations

Faraday Cat. No.	Description
8700-S	Manual Station, Single Action
8700-D	Manual Station, Double Action
8700-M	Manual Station, Single Action, Metal

Faraday X1 Modules

Faraday Cat. No.	Description
8701*	Mini- Module for Contact Devices
8702*	Module for Contact Devices
8703*	Dual Module for Contact Devices
8704*	Module for Contact Devices with Relay
8705	Conventional Detector Zone Module
8706**	Intelligent Control Point
8709	Isolator Module

*See Note 3.

**See Note 4.

Faraday X1 Photo Electric Detectors

Faraday Cat. No.	Description	Compatible Base
8710	Photo Detector	8853, 8715, 8716, 8840, 8717
8712	Thermal Detector, Fixed or Fixed/Rate of Rise	8853, 8715, 8716
8713	Fire Smart™ Photo/Thermal Detector	8853, 8715, 8716

Faraday X1 Bases

Faraday Cat. No.	Description	Compatible Detector
8853	Base	8710, 8712, 8713
8715	Audible Base	8710, 8712, 8713
8716	Relay Base	8710, 8712, 8713
8840	Duct Housing	8710, 8813
8717	Duct Housing with Relay	8710, 8713

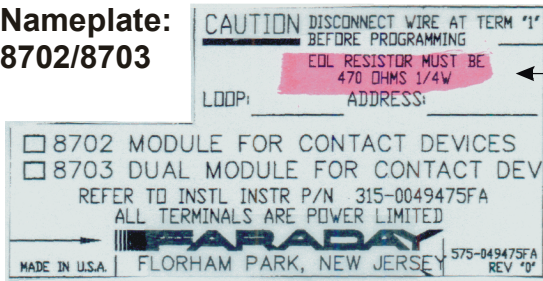
Faraday X1 Accessories

Faraday Cat. No.	Description
8726C	Intelligent Remote Lamp, Ceiling mount
8726W	Intelligent Remote Lamp, Wall mount
8727C	Remote Lamp, Ceiling mount
8727W	Remote Lamp, Wall mount

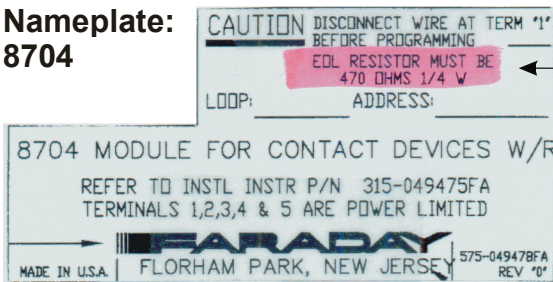
Notes:

- Faraday X1 devices, detectors and modules, up to a maximum of 252 addresses may be used per addressable X1 FDLC Loop Driver Circuit.
- For specific wiring and installation information, read the instructions provided with each device.
- If the contact device family is used in a releasing application (the EOL resistor listed on the nameplate is a 470ohm ¼W EOL resistor), Rev 7.0 or higher firmware must be used. Refer to the nameplate figures on the following page.
- If more than one 8706 is used on an X1 device loop, the loop must be wired Class A or the riser conductors must be installed in accordance with the Survivability From Attack By Fire requirements in the National Fire Alarm Code, NFPA 72. If wired Class A, at least one 8709 loop isolator must be installed between each 8706 and between the panel and the first and last 8706. See the 8709 installation instructions for the maximum number of isolators allowed per loop and other wiring instructions.

Nameplate:
8702/8703

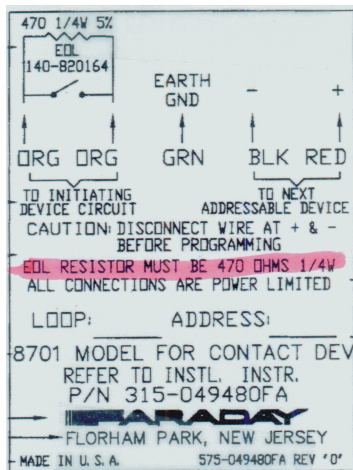


Nameplate:
8704



EOL RESISTOR
RATING
(470 OHMS 1/4W)

Nameplate: 8701



DEVICES FOR NOTIFICATION APPLIANCE CIRCUITS

Refer to P/N 315-096363FA for a list of compatible notification appliances.

Accessory Devices

Faraday Cat. No.	Mfg. Part Number	Description
	Faraday	
R711-1	711-1	Polarized Auxiliary Relay
RSE 300	RSE-300	Remote Signal Expander

1. The accessory devices listed above may be wired to activate from the notification appliance circuits.
2. For specific wiring and installation information, read the instructions provided with each device.
3. Controlled device/equipment must be within 3 feet of R711-1.

DEVICES FOR AUXILIARY POWER OUTPUTS

The following lists compatible devices for the auxiliary power outputs.

- Relays
- Four Wire (Separately Powered) Heat & Smoke Detectors. See Devices for Initiating Device Circuits.

Relays

Faraday Cat. No.	Mfg. Part Number	Description
	Faraday	
R711-1	711-1	Remote Relay Unit

Notes:

1. The accessory devices listed above may be wired to the auxiliary power outputs.
2. For specific wiring and installation information, read the instructions provided with each device.
3. Controlled device/equipment must be within 3 feet of R711-1.

APPENDIX-C: TROUBLESHOOTING

DEFINITIONS FOR EVENT HISTORY ENTRIES

A. General

ENTRY	INDICATES
ALARM	General alarm
ALRM	Alarm
Blank	Plain alarm
CrossZone	cross zone point
CZ1A	Cross zone
CZ1B	Cross zone
CZ2A	Cross zone
CZ2B	Cross zone
DETECTOR	General alarm
HEAT	Thermal detector
ION	Ion detector
LCDxx	LCD Annunciator xx
MAIN	Main panel
MANL PULL	Manual pull station
PAS	Positive alarm sequence
PHOTO	PE detector
PRE SIGNAL	pre-signal
PreA	Pre-alarm
SUPERVSRV	Supervisory
SUPR	Supervisory
TRBL	Trouble
TROUBLE	Trouble
USERx	User-defined input x
WATERFLOW	Waterflow

B. System Troubles

ENTRY	INDICATES
1aaa Mult Addr	Multiple devices reporting at loop 1 device aaa address
1aaa Not Pgrmd	System detected a device at loop 1 address aaa that is not part of the configuration
AC Trouble	AC input low or off
AddrLp 1 DBLSHT	Double short trouble on addressable loop 1
AddrLp 1 OPEN	Open circuit trouble on addressable loop 1
AddrLp 1 SHORT	Short circuit trouble on addressable loop 1
Alm/Sup/Pre Riys Dsbl@MAIN	Status relays have been disabled at MPC panel
Application Status Disabled	ASD application specific detection has been disabled
BATT Trouble	Battery input low or off
Cannot Edit Requested NAC Ckt. Is Second Half of a Class A Ckt.	Attempting to program the second half of a Class A NAC pair
CHARGER SUPV Trouble	Battery charger voltage too low
CITY Trouble	Local Energy circuit open
DACT Acct Trb (See Note 1)	DACT account reporting trouble
DACT Com Trouble	DACT communication trouble with main processor
DACT PL x Trouble	Open or short on DACT phone line x
Disp Queue Full	Trouble messages exceed 2000 events
FDLC 1aaa Uncf. Devi	System detected an unconfigured device at loop 1 device address aaa
FDLC x DLC Open	FDLC loop x detected an open circuit
FDLC x DLC Short	Short circuit is detected on FDLC x loop
FDLC x EXT EE	EEPROM of FDLC X is corrupted, requires replacement of the FDLC
FDLC x GF Minus	FDLC x loop detected a negative ground fault
FDLC x GF Plus	FDLC x loop detected a positive ground fault
FDLC x Not Resp	FDLC loop x is not responding
FLASH FATAL Trb	Configuration Flash memory trouble
GRD FAULT Trb	System detected positive or negative ground fault
LCDxx NoRespons	LCD Annunciator xx programmed but is not responding
LCDxx Not Pgmd	LCD Annunciator xx is not programmed but is responding
LCDxx Trouble	LCD Annunciator xx reports trouble
MNLP Bad Msg	Main processor to loop processor communication trouble
MNLP Fifo Xmit	Main processor to loop processor communication trouble
MNLP NoRespons	Main processor to loop processor communication trouble
Multiple Devices at Address 1aaa. Must Resolve	Multiple device types are responding on the same loop address (1=loop, aaa=device address)
NACxx Trouble	NAC xx wiring is open or shorted
NC xx NAC Jumpers	NAC xx jumpers are in the wrong setting
NC xx Trbl	Open or short circuit detected on NAC xx
Nib Com Trb	NIB is not responding
NN: GR ggg Dsbl@MAIN	Group at Node NN, Group ggg has been disabled
NN: NC xx Dsbl@MAIN	Group at Node NN, NAC xx has been disabled
NN: Xaaa Dsbl@MAIN	Device at Node NN, Loop x, Device aaa has been disabled
NN xx ComFlt	A panel (or node) is removed from the network
NN: ZN xx Dsbl@MAIN	Group at Node NN, Output Zone xx has been disabled
NW Disabled	Panel is removed from the network
NW Fwd Link	Single break detected on NIB network communication port
NW Node Cnt	Wrong number of nodes has been programmed or a break is detected on the network
NW Rev Link	Single break detected on NIB network communication port
NW Ring Brkn	Single break detected on NIB network communication port
PAS Status Disabled	PAS has been disabled
PC Pgrmr Trb	Control unit is not receiving communication from PC
QuickTest Abort	Quick Test Timer expired causing abnormal exit of Quick Test
RDC xx Norespons	Configured RDC-2/3 xx is not responding
RP xx No Respons	Configured remote processor (SLU2/SRU2) xx is not responding
Trb Reminder	Trouble Reminder timer expired

Note 1: Panel reset is required to clear this trouble.

C. System Events

ENTRY	INDICATES/NOTES
Alarm Silenced	MAIN, LCDxx shown on bottom line
All AV Ctrs Clr	All AV counters cleared
AutoProgram Run	Auto programming function run
Backup Cnfg Check	Backup configuration validated, result on bottom line
Backup Cnfg Edit	Backup configuration edited
ConfigsCompared	Backup and primary configurations compared, result on bottom line
ConfigsSwapped	Backup and Primary configurations swapped
EventHist Clear	Event History cleared
Mnt Levl Enter	Entered Maintenance level
Mnt Levl Exit	Exited Maintenance level
Mnt Levl PW Changed	Changed Maintenance level password
NACxx Active Confirm	NAC activation confirmed
Panel Reset	MAIN, LCDxx shown on bottom line
Power Up	
PriConfigCopied	Primary configuration copied to backup
QuickTest Exit	Exited Quick Test, MAIN or LCDxx shown on bottom line
QuickTest Start	Started Quick Test, MAIN or LCDxx shown on bottom line
System Date Changed	Changed system date, old and new dates shown on lines 3 and 4
System Time Changed	Changed system time, old and new times shown on lines 3 and 4
Tech Levl Enter	Entered Tech level
Tech Levl Exit	Exited Tech level
Tech Levl PW Changed	Changed Tech level password
User Levl Enter	Entered User level
User Levl Exit	Exited User level

D. Validation and Warning

Warning/Error Messages	Condition
Address 1xxx-1 bad input usage	Loop 1 address xxx requires valid input usage.
Address out of range 1001-4353	Device being programmed is out of range.
City Tie required in auxiliary system	No City Tie installed in Auxiliary system type.
Counting Zone Group xxx: too few points	Counting Zone at Input Group xxx has less devices than required.
Dact Account x bad PN	DACT account x has a bad phone number.
Dact alm restore event not rept	An installed DACT must have alarm and alarm restore configured on account 1.
Detector 1xxx-1: Alarm input not in a valid group	Loop 1 addresss xxx needs to be programmed to valid input group.
Detector 1xxx-1: Fire input doesn't activate an audible NAC	Fire input group the device belongs to is not properly configured.
Detector 1xxx: ASD with alarm verify is not a Duct detector	Configured an 8713 FireSmart detector for "Office" and for "Alarm Verify".
Detector 1xxx enabled but no type selected	Loop 1 address xxx requires device type configuration.
General alarm group fails to activate an audible NAC	The general alarm must have at least 1 output zone selected that is configured with at least one NAC circuit.
Warning: 1xxx-1: doesn't activate an audible NAC in PAS/Pre-signal	No output zone selected on the NAC, no output group selected for input zone.
Warning: City tie not allowed in local system	A City Tie is programmed and set up for a local system.
Warning: Dact not allowed in local system	A DACT is programmed and set up for a local system.
Warning: No zone selected for group xxx	Input group xxx has no output zone selected or input group is not activated.

APPENDIX-D: MODULE INSTALLATION INSTRUCTIONS LIST

This Appendix provides a list of installation instructions for the following option modules and accessories:

• BE-1	Battery Box	315-033917FA
• CIS-4	Laptop Configuration Tool	315-049380FA
• CT-1K	City Tie Board	315-447052
• FDLC	Loop Driver Board	315-447360FA
• HBC-1	Battery Charger	315-447362FA
• LEM-1	Loop Expansion Module	315-447361
• MPC-DACT	Serial Digital Communicator	315-699464FA
• MPC-NET2	System Networking Owner's Manual	315-049594
	12603A Network Interface Board	315-049594
	12525 Line Surge Suppressor	315-049594
	12523A Network Interface Board	315-049594
	12526A NIB w/Isolated RS232 Port	315-049594
	12535 / 12536 Fiber Converter Board	315-049594
• MPC-REL	Releasing Module	315-049570FA
• NEM-1	NAC Expansion Module	315-447363FA
• NPE-1	Optional Transformer Assembly	315-049120FA
• RDC-2	Remote LCD Annunciator	315-049103FA
• RDC-2	Remote LCD Annunciator Operating Instructions	315-049104FA
• RDC-3	Remote LCD Annunciator	315-049700FA
• RDC-3	Remote LCD Annunciator Operating Instructions	315-049701FA
• RPT-1	Releasing Transformer	315-049590FA
• RSE-300	Remote Signal Expander	315-099082FA
• SLU-2	Serial Annunciator Unit	315-447345
• SLE-16	Serial Annunciator Extender	315-447345
• SRU-2	Serial Relay Unit	315-447344
• SRE-8	Serial Relay Extender	315-447344

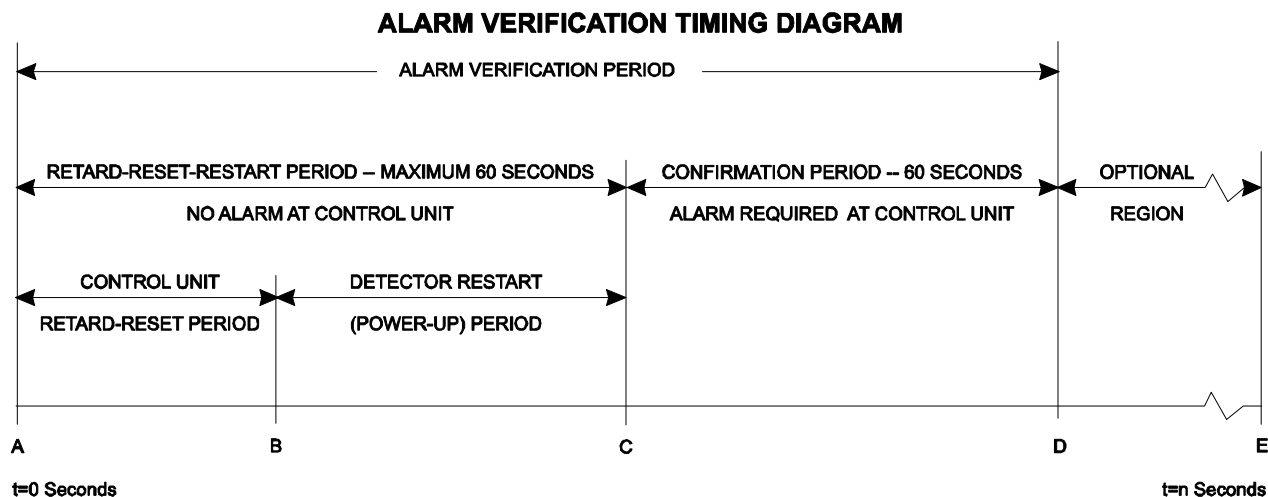
APPENDIX-E: ALARM VERIFICATION

Alarm verification provides MPC-6000/MPC-7000/RND-2 with a way to verify an alarm from area type addressable smoke detectors connected to intelligent loops (FDLC). This feature reduces the incidence of false alarms. Only detectors that do not contain an integral alarm verification feature can be used.

Addressable detectors connected to FDLCs indicate that an alarm condition has been detected. If the device is subject to alarm verification, the FDLC alerts the control panel that the device has entered verification but is not yet considered to be in alarm. The FDLC starts a timer using the MPC-6000/MPC-7000/RND-2 system Retard-Reset Period. When the timer expires, the FDLC begins the fixed 60-second confirmation period. If the device is no longer in alarm during the confirmation period, the verification cycle is considered complete and detection of a subsequent alarm from that device results in the verification cycle restarting. If the device still reports in the alarm state during this confirmation period, the alarm condition is reported to the control panel and the system annunciates the alarm condition.

See the figure below for a graphic illustration of Alarm Verification.

NOTE: For devices connected to the FDLC, the Detector Restart period is 0 seconds.



A - Smoke detector goes into alarm.

AB - RETARD-RESET PERIOD (Control Unit) - Control unit senses detector in alarm and retards (delays) alarm signal, usually by de-energizing power to the detector. Length of time varies with design (11 to 55 seconds).

BC - RESTART PERIOD (Detector Power-up Time) - Power to the detector is reapplied and time is allowed for detector to become operational for alarm. Time varies with detector design.

AC - RETARD-RESET-RESTART PERIOD - No alarm obtained from control unit. Maximum permissible time is 60 seconds.

CD - CONFIRMATION PERIOD - Detector is operational for alarm at point C. If detector is still in alarm at point C, control unit will alarm. If detector is not in alarm, system returns to standby. If the detector re-alarms at any time during the confirmation period the control unit will alarm.

DE - OPTIONAL REGION - Either an alarm can occur at control unit or restart of the alarm verification cycle can occur.

AD - ALARM VERIFICATION PERIOD - Consists of the retard-reset-restart and confirmation periods.

APPENDIX-F: APPLICATION SPECIFIC DETECTION

Application Specific Detection (ASD) allows the system designer to program an 8713 detector's sensitivity, pre-alarm threshold, and other alarm-related parameters using English descriptions of the detector's environment (application). This eliminates the need for detailed knowledge of smoke detector terminology and operation. The designer can set all of the critical detector parameters by simply selecting an application description that closely fits the one where the detector is to be installed.

For example, to use ASD to select the optimal parameters for a detector in a hotel lobby, select the LOBBY application in the CIS-4 programming tool for that device. The system will automatically transmit the factory determined sensitivity, pre-alarm threshold, and detection algorithm (R-algorithm) to the corresponding device. This eliminates the guesswork of selecting these parameters for different environments.

ASD APPLICATIONS

ASD Application	ASD Description
Disable	No Applications (Standard Photo/thermal Detector)
Office (Retail)	Reasonably clean, climate controlled atmosphere
Warehouse (Light Manufacturing)	Airborne dust, equipment, fork truck and light to medium dock area exhaust fumes
Lobby	Relatively clean area, temperature changes, cellular phones, smoking
Computer Room	Very controlled environment, clean, temperature closely regulated, high cost clean machinery operating, no smoking, high air velocity
Dormitory	Airborne dust and temperature changes, living quarters, cooking fumes, smoking
Healthcare	Higher level risk, relatively clean, electronic equipment
Parking Garage	Airborne dust, car and diesel fumes, temperature swings
Equipment Storage (Transformer) Room	Normal to somewhat dirty environment, heat from running equipment
Precious Storage (Sensitive Environment)	Sensitive materials or equipment storage, clean dust-free environment, earliest warning desired
Hostile Environment	Dirty, dusty, humid, operating equipment, RF present, wide temperature swings
Duct (Open air or duct housing)	Dirty, dusty, humid, wide temperature swings, high air velocity
Duct – Alarm Verification	Duct application with Alarm Verification enabled
Alarm Verification	Alarm Verification enabled (No application)

APPENDIX-G: TESTING/MAINTENANCE

If the system is connected to the fire department, etc., or actuates an internal system, disarm the appropriate outputs before servicing to prevent actuation. Notify the fire department and personnel at your facility that a System test is being performed so that any alarm sounding can be ignored during the test. Notify the fire department before resetting the system.

Inspection, Testing, and Maintenance of the fire alarm system should be performed in accordance with NFPA 72, The National Fire Alarm Code and all applicable local codes.

BATTERY MAINTENANCE

Perform the following tests at the recommended interval. Replace the battery set every four years or if any of the test criteria are not met.

Initiation / Reacceptance

1. **Charger Test**—With the batteries fully charged and connected to the charger, measure the voltage across the battery set. It must read 27.3V +/- 0.3V.
2. **Discharge Test**—With full system alarm load, the voltage on a fully charged battery must not fall below 20.4V after 30 minutes.
3. **Load Voltage Test**—With full system alarm load, the voltage on a fully charged battery must not fall below 24.6V after one minute.

Testing Interval

1. **Semiannually**—Perform the Load Voltage Test.
2. **Annually**—Perform the Charger Test and Discharge Test.

APPENDIX-H: LCD, CONTROLS AND INDICATORS

The MPC-6000/MPC-7000/RND-2 has a sounder, 6 LEDs, 4 navigational push buttons adjacent to the LCD display (M1-M4), 3 dedicated push buttons, alphanumeric keypad and communication port connector.

Communication Port Connector

The communication port is connected to the serial output terminal of the computer that has the CIS-4 programming tool. This is used to upload and/or download panel configuration if this method of programming is used.

The computer must be disconnected from the panel if not in use.

LEDs, Sounder and Dedicated Push Buttons

The LEDs operate as follows:

POWER (Green)	Normally ON (steady) – indicates that power is applied to the panel. OFF indicates that the panel is not powered up.
ALARM (Red)	Normally OFF – indicates that there is no alarm event in the system. ON (flashing) – indicates that at least ONE alarm event is unacknowledged. ON (pulsing) – indicates that ALL alarm events have been acknowledged.
ALARM SIL (Yellow)	Normally OFF – indicates that NACs are in the OFF state if the system is in normal supervisory mode. If any event is present, it indicates that the silenceable NACs are in the OFF state. ON (steady) – indicates that at least one silenceable NAC has been activated.
PRE-ALARM (Yellow)	Normally OFF – indicates that there is no pre-alarm event in the system. ON (flashing) – indicates that at least ONE pre-alarm event is unacknowledged. ON (steady) – indicates that ALL pre-alarm events have been acknowledged.
SUPERVISORY (Yellow)	Normally OFF – indicates that there is no supervisory event in the system. ON (flashing) – indicates that at least ONE supervisory event is unacknowledged. ON (steady) – indicates that ALL supervisory events have been acknowledged.
TROUBLE (Yellow)	Normally OFF – indicates that there is no trouble event in the system. ON (flashing) – indicates that at least ONE trouble event is unacknowledged. ON (steady) – indicates that ALL trouble events have been acknowledged.
DISCHARGE LED (Yellow)	Indicates that one of the releasing circuits is active (MPC-6000 only).
PRE-DISCHARGE LED (Yellow)	Indicates that the panel is counting down the release delay timer before discharge (MPC-6000 only).
ABORT Led (Yellow)	Indicates that one of the devices which have been assigned to abort the discharge is active (MPC-6000 only).

The sounder operates as follows:

SOUNDER Normally OFF – indicates that the system is in supervisory mode or all events in the system have been acknowledged.
 ON (steady) – indicates that at least ONE unacknowledged alarm is present in the system.
 ON (pulsing) – indicates that at least ONE unacknowledged non-alarm (trouble, supervisory or pre-alarm) event is present in the system.

Dedicated Push Buttons:

ALARM SILENCED When pressed when ALARM SILENCED LED is OFF, silences all the activated silenceable NACs.
 When pressed when the ALARM SILENCED LED is ON, reactivates all previously silenced NACs.

ACKNOWLEDGE When pressed, acknowledges all events that are unacknowledged.

RESET When pressed, initiates a system reset.

M1 – M4



These push buttons are used for navigation while in the USER screen.
 If events are present in the system, M3 (UP button) is used to scroll up to the next event and M4 (DOWN button) is used to scroll to the previous event, M1 (TOP button) is used to place the list at the top of the queue and M2 (NEXT QUE) is used to go to the next queue (if present) of lower priority.

Alphanumeric Keypad:

The alphanumeric keypads are used to enter the password to access the maintenance and technician modes of the panel. It allows the user to program the panel using these keypads with using the CIS-4 programming tool.

Refer to the MPC-6000/MPC-7000/RND-2 Programming Manual (P/N 315-049403FA).

LCD Display:

The LCD operates as follows:

Supervisory Mode:

Line 1 – First Custom Message and System ID
 Line 2 – Second Custom Message and System ID
 Line 3 – Current Time
 Line 4 – Day and Date

```

20 supervisory msg01
20 supervisory msg02
    10:16:30 am
Monday      07/26/04
  
```

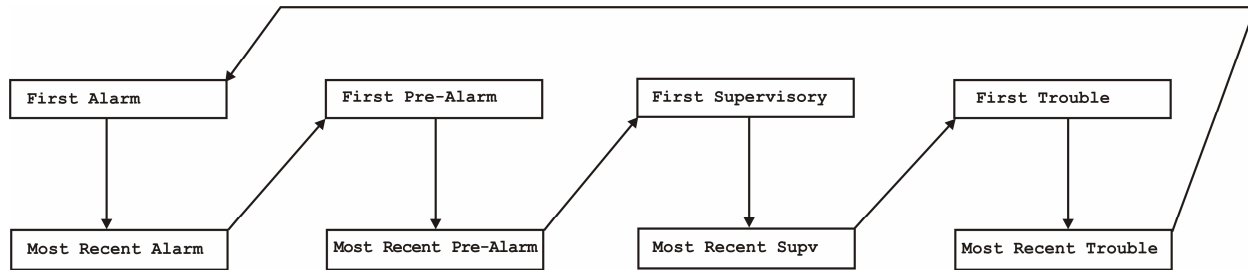
Active Event Mode:

Line 1 – Acknowledged or unacknowledged event, Event type, Event location in the list and time the event occurred.
 Line 2 – First 20 character custom message.
 Line 3 – Second 20 character custom message.
 Line 4 – Address of the device where the event occurred and a generic description of the device or trouble type.

```

√R-SUP 100/100 10:14
20 char custom msg01
20 char custom msg02
1003 Dual in/rel
  
```

The events are displayed one at a time and cycle through a circular list once the first event or last event message is reached.

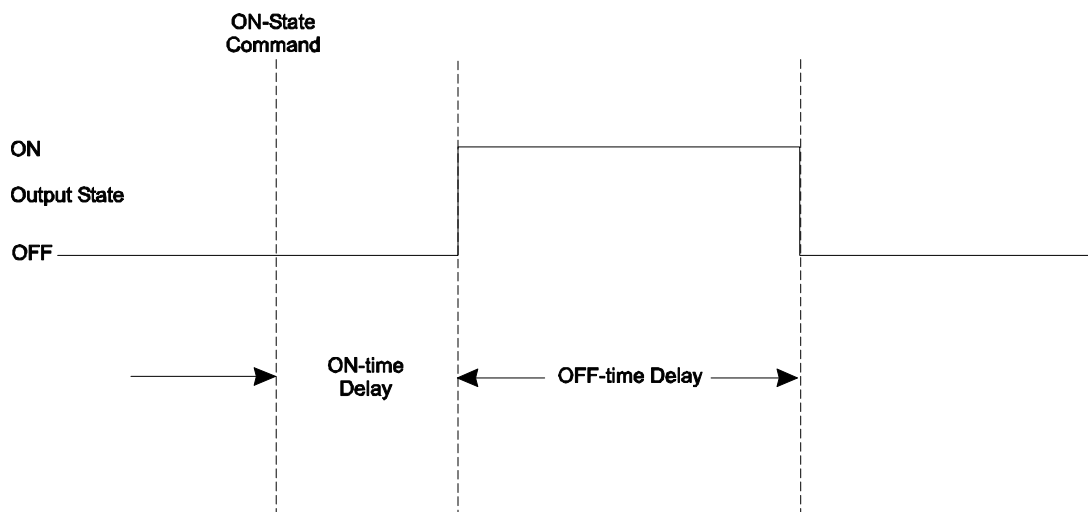


APPENDIX-I: OUTPUT FEATURES

Output ON- and OFF- Time Delays

Each output device has a selection for ON time delay and OFF time delay when it is installed in the configuration. The ON time delay refers to the delay in which the output will activate after the reception of its activation command. If the ON time delay is set to 0 (default setting), the output immediately activates.

For output types: Alarm, Pre-Alarm, Trouble, Supervisory, 1st Alarm (if applicable), Pre-discharge (if applicable), Discharge (if applicable), AC Fail (if applicable), the OFF-time delay refers to the time the output will remain active before it is deactivated. If the OFF time delay is set to 0 (default setting), the output will remain ON until activation of manual fan restart.



Fan Restart Feature

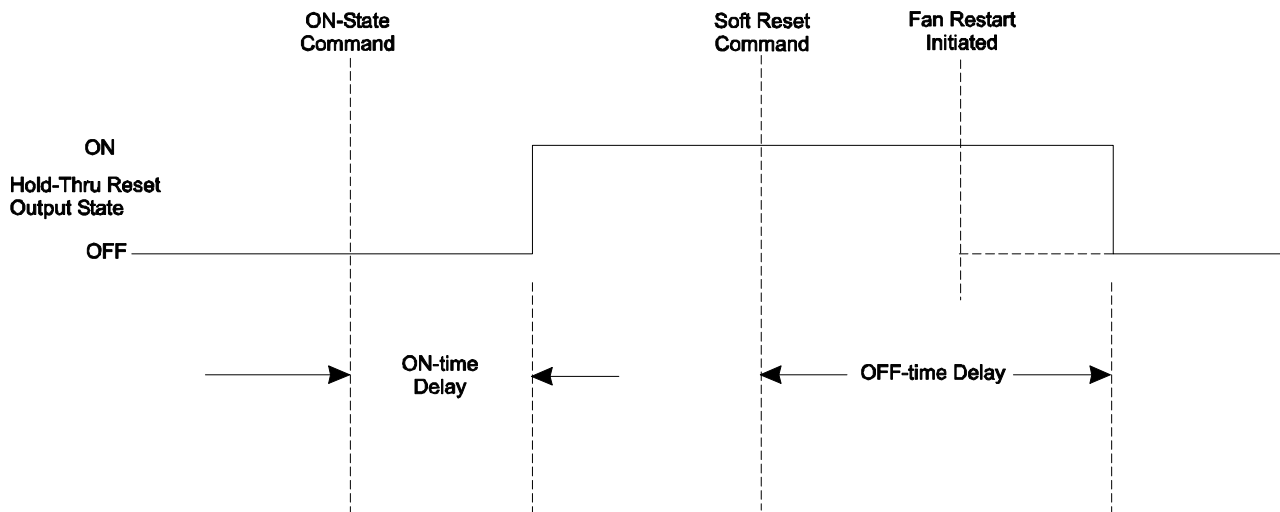
The Fan Restart feature is implemented when the input device usage “Fan Restart” is selected and its input group is associated to an output zone that has a device output with “Hold-Thru Reset” output type selected.

Hold-Thru reset output type acts differently than other output types because its output does not change state on soft reset command. Hold-Thru Reset is also non-silenceable output type.

When hold-thru output type is selected, the ON-time delay selection refers to the time delay from the reception of the ON command to the actual activation of the output. When ON-time delay is set to 0 (default setting), the output immediately activates upon reception of the ON command. The OFF-time delay selection refers to the time delay from the System Soft Reset to the actual deactivation of the output. When the OFF-time delay is set to 0 (default setting), the output will remain ON indefinitely until Global or Independent Fan Restart procedure is initiated. Global or Independent Fan Restart procedure will immediately deactivate the hold-thru reset output type regardless of the state of its OFF-time.

Global Fan Restart refers to the fan restart procedure initiated from the panel. Refer to Additional Operating Procedures on page 25.

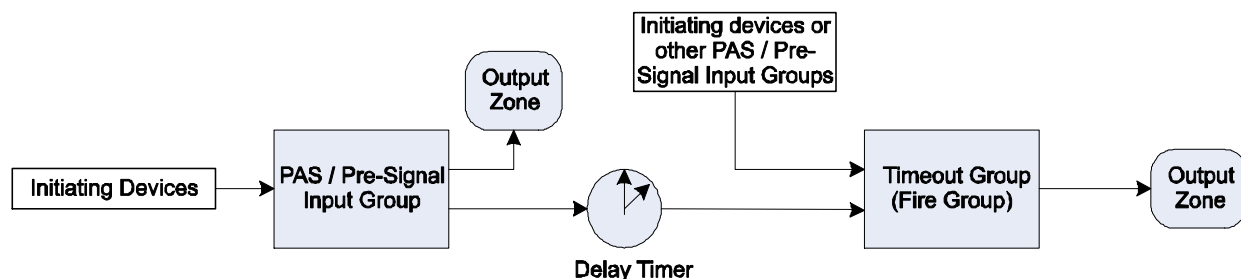
Independent Fan Restart refers to the fan restart procedure initiated from a device with fan restart usage that will deactivate the hold-thru reset associated with its input group.



The initiation of fan restart usage device during stand-by will annunciate a supervisory event that clears as soon as the input device reverts back to its stand-by state.

APPENDIX-J: PAS / PRE-SIGNAL

PAS (Positive Alarm Sequence) and Pre-Signal input groups allow the user to delay the activation of the audibles, strobes and other output devices when an initial alarm is detected. These input groups have an associated timeout group that activates when the delay timer elapses thereby activating its outputs. The Timeout group must be a fire group type and it can have its own initiating devices. This scenario is based on the PAS group with no output zone association. If output zones are directly associated with PAS input groups, then these zones immediately activate.



It works as follows (refer to the diagram above):

When an initiating device is initiated in a PAS / Pre-signal group, it activates its associated output (typically a non-audible device) and starts a delay timer. When the delay timer elapses, the timeout group it is associated with is initiated and activates its audible outputs. The timeout group and delay timers are configurable. Refer to the MPC-6000/-7000/RND-2 Programming Manual, P/N 315-049403FA, for procedures in programming these features.

PAS

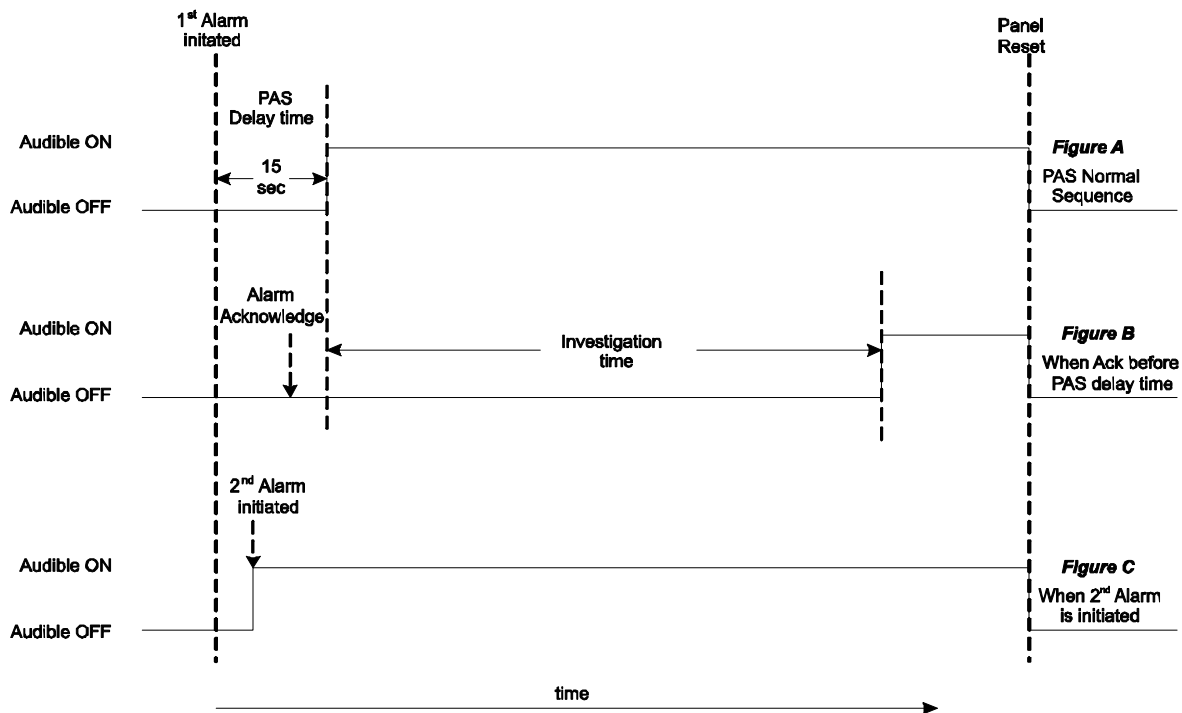
When an alarm causing device associated with a PAS input group is initiated, the alarm condition is reported on the panel. The activation of its timeout group outputs (e.g. NACs, output relays) are delayed for 15 seconds (PAS delay time) waiting for a manual acknowledgement response.

If no response is received within 15 seconds, the panel proceeds to activate the associated outputs. See Figure A.

If the alarm event is acknowledged during the PAS delay time, the programmable PAS investigation time (60-180 seconds) is added to the PAS delay time before the audible is activated. See Figure B.

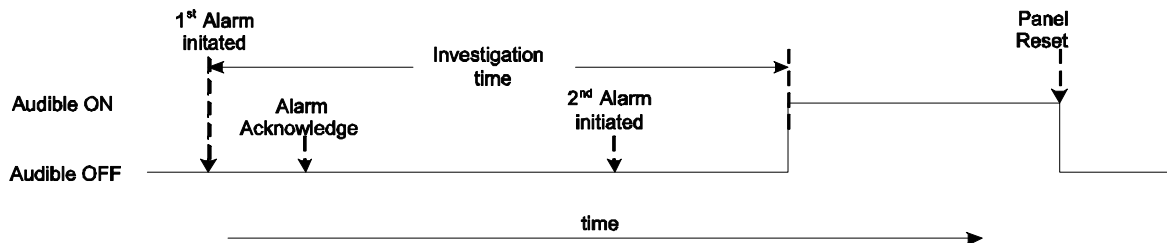
However, if a 2nd alarm is initiated anytime during the PAS delay time or PAS investigation time, the audibles are immediately activated. See Figure C.

Pressing the Reset button at anytime during the PAS sequence will initiate a reset condition and restore the panel to stand-by state.



Pre-Signal

When an alarm causing device in a Pre-Signal input group is initiated, the alarm condition is reported at the panel. Its timeout group outputs are not activated until the programmed investigation delay has elapsed regardless of annunciation of subsequent alarms and acknowledgement of alarms (see figure below).



Pressing the Reset button at anytime during the Pre-Signal sequence will initiate a reset condition and restore the panel to stand-by state.

APPENDIX-K: DIAGNOSTIC LEDS

The LEDs on the following boards are used for diagnostic purposes only.

MPC6-MB / MPC6-MB2

DS3 – ON, indicates Low battery voltage or No battery detected.

DS2 – ON, indicates High Battery voltage detected.

DS4 – ON, indicates panel detected a ground fault condition.

DS16 – ON, indicates defective battery charger circuit.

DS1 – OFF, indicates panel detected an AC Failure.

DS12 – ON, indicates that NAC1 is active.

DS13 – ON, indicates that NAC2 is active.

DS14 – ON, indicates that NAC3 is active.

DS15 – ON, indicates that NAC4 is active.

DS5 – ON, indicates Relay #1 is activated.

DS6 – ON, indicates Relay #2 is activated.

DS7 – ON, indicates Relay #3 is activated.

DS8 – ON, indicates Relay #4 is activated.

DS9 – ON, indicates voltage is OFF on TB9-R terminal.

DS10, DS11 flashing – indicates that I2C communication line is active.

APPENDIX-L: DACT INFORMATION OVERVIEW

The DACT (Digital Alarm Communicator Transmitter) is an optional module for the MPC-6000, MPC-7000 and RND-2 control panels that allows transmission of event information to a remote receiver at a monitoring station using a dial-up modem connection. These events are transmitted in one of the following formats:

- SIADCS 8
- SIADCS 20
- ADEMC0
- 4/2 1400 HZ
- 3/1 1400 HZ
- 3/1 2300 HZ
- 4/2 2300 HZ

Information on the format of the codes reported can be found in the DACT Installation Instructions, P/N 315-699464FA.

A few aspects of the operation of the DACT are clarified below.

Lines / Accounts

The DACT supports two independent lines and can report to two separate accounts. "Lines" should not be confused with "accounts". "Lines" are the actual telephone cords that plug into the DACT module, which are in turn connected to the PSTN (Public Service Telephone Network). If line 1 is not functioning (no dial tone, etc.), the DACT will try line 2 instead.

"Accounts" are the phone numbers that the DACT dials. Once the DACT has found a "live" line to dial out on, it transmits the event(s) on that line, starting with the first account that is configured to send that event. If the first account does not respond after the programmed number of attempts (busy, account not responding, etc.), the DACT will automatically attempt to send the event to the second account, providing the event is set to report for that account.

The DACT may be configured for connection to lines that are set up for Rotary and/or Tone dialing. See the MPC-6000/MPC-7000/RND-2 Programming Manual, P/N 315-049403FA, for details.

Must / Can / No Report

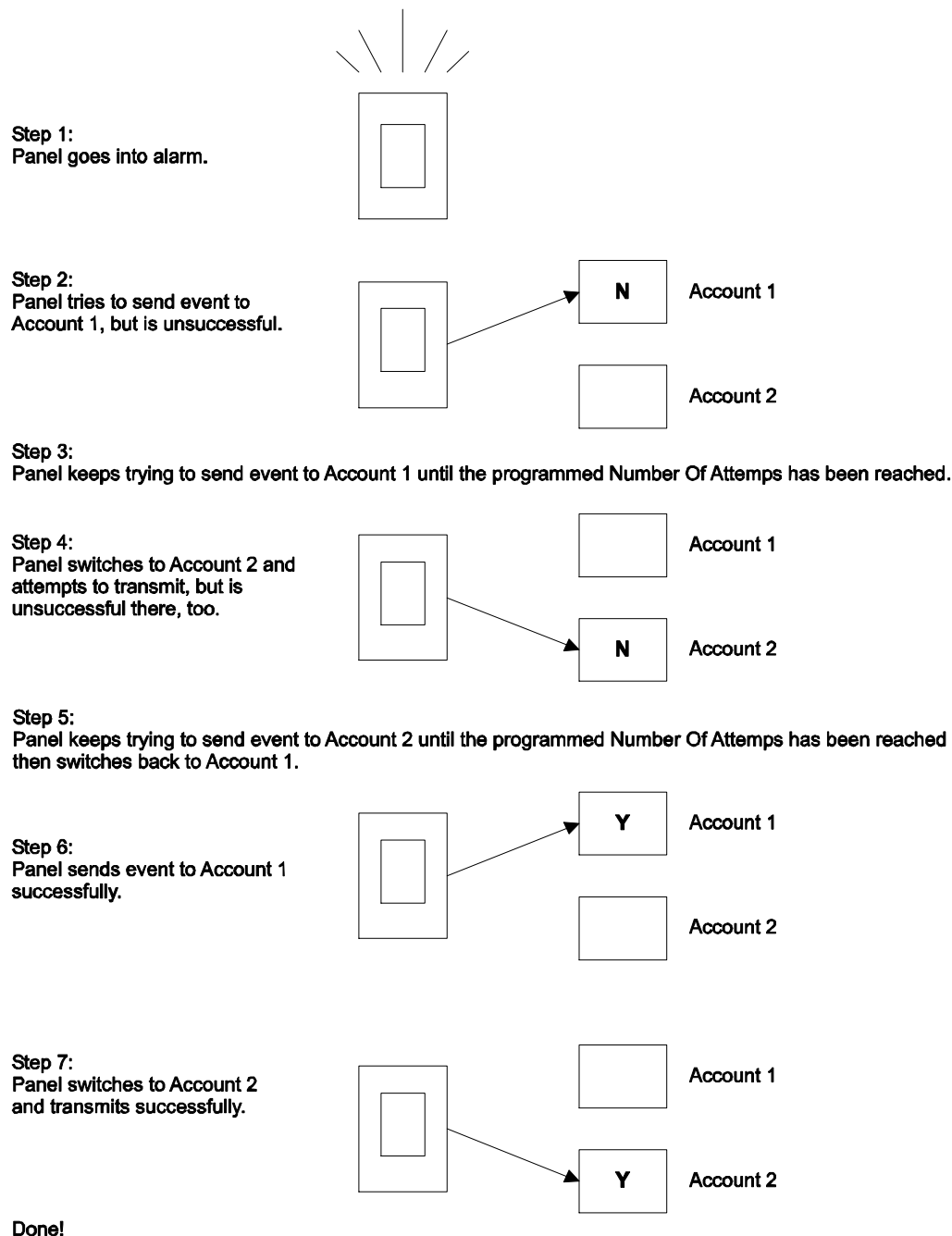
Each event type (Alarm, Alarm Restoral, etc.) can be configured as "Must", "Can" or "No" report independently for each account. If configured as "No" report, the DACT will not report the event to that account. If configured as "Can" report, the DACT will only attempt to report the event to the account if it has not reported it on the other account. If configured as "Must" report, the DACT will attempt to report the event to the account even if it has already reported it to the other account. In summary:

Must Report	The event will be reported to this account even if it has reported it to the other account.
Can Report	The event will only report to this account if it has not been successfully reported to the other account.
No Report	The event will never report to this account.

To configure an event to be reported to Account 1 *and* Account 2, set it to Must report on both. If the event needs to be reported to either Account 1 *or* Account 2, set it to Can report on both. If it *has* to be reported to Account 1, but only needs to be reported on Account 2 if Account 1 is temporarily out-of-order, set the event to Must Report on Account 1 and Can Report on Account 2.

Following are examples for illustration purposes.

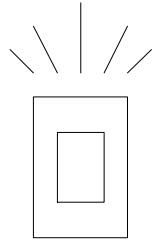
Scenario 1 — Must/Must
Alarm event is set to Must Report on Accounts 1 and 2.



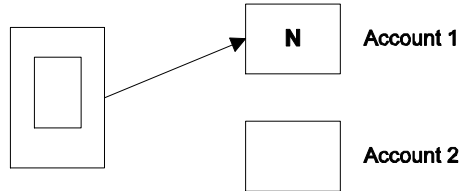
Scenario 2 — Must/Can

Alarm event is set to Must Report on Account 1 and Can Report on Account 2. Panel succeeds on Account 1 before Account 2.

Step 1:
Panel goes into alarm.

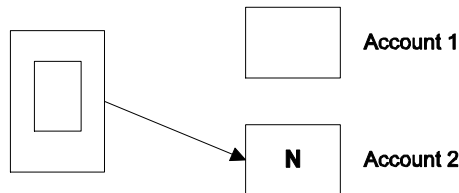


Step 2:
Panel tries to send event to Account 1, but is unsuccessful.



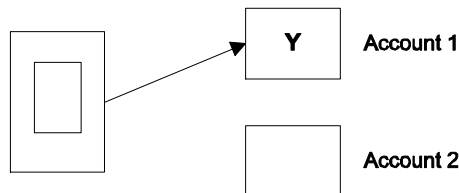
Step 3:
Panel keeps trying to send event to Account 1 until the programmed Number Of Attempts has been reached.

Step 4:
Panel switches to Account 2 and attempts to transmit, but is unsuccessful there, too.



Step 5:
Panel keeps trying to send event to Account 2 until the programmed Number Of Attempts has been reached, then switches back to Account 1.

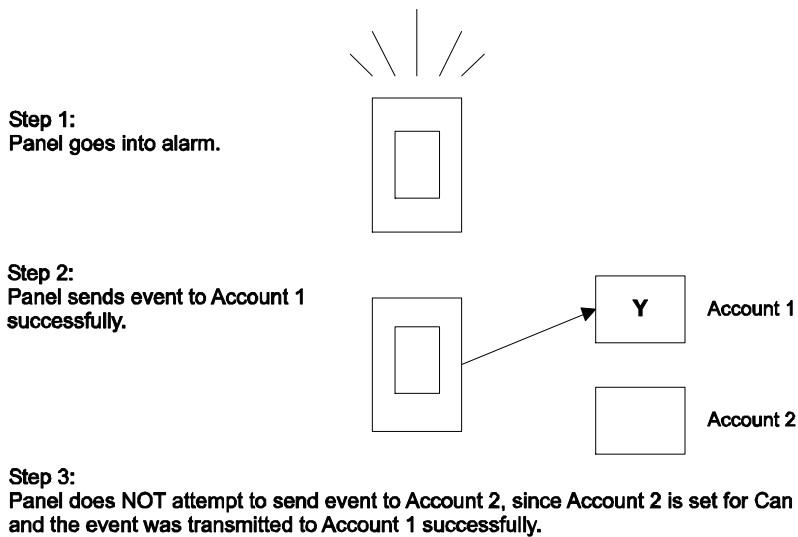
Step 6:
Panel sends event to Account 1 successfully.



Done! The panel does not try to send to Account 2 again, since Account 2 is set for Can Report and the event was already successfully sent to Account 1.

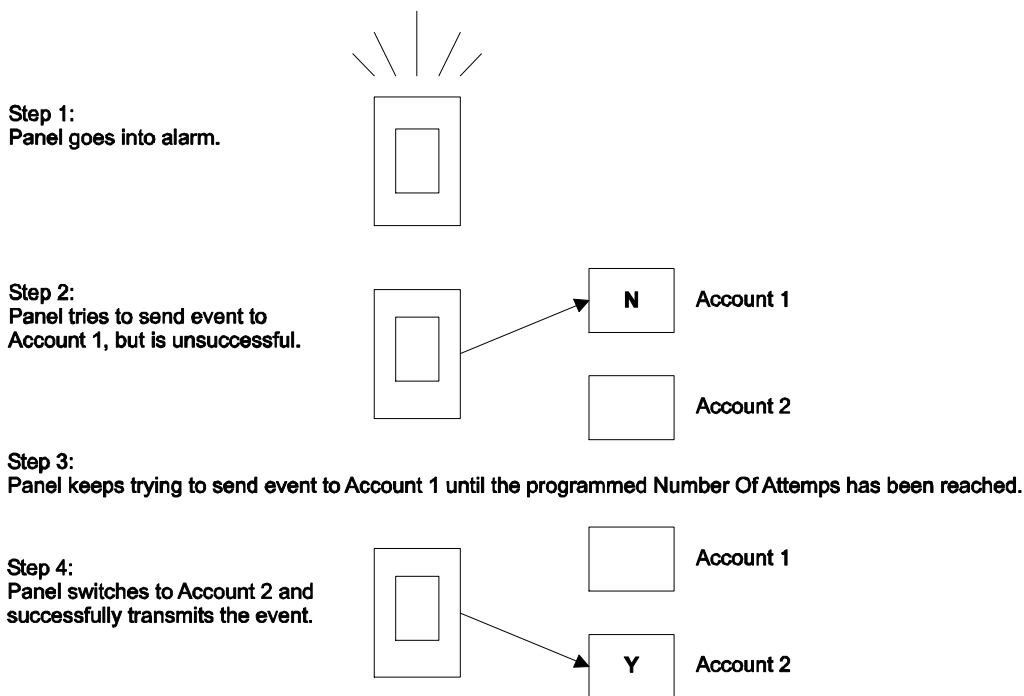
Scenario 3 — Must/Can

Alarm event is set to Must Report on Account 1 and Can Report on Account 2. Panel succeeds on Account 1 the first time.



Scenario 4 — Can/Can

Alarm event is set to Can Report on Account 1 and Account 2. Panel succeeds on Account 2 before Account 1.

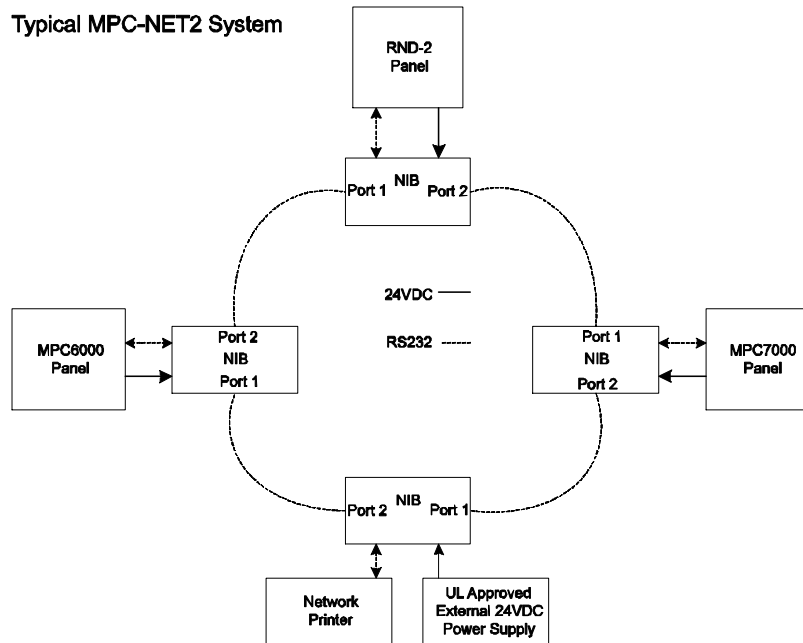


Done! The panel does not try to send to Account 1 again, since Account 1 is set for Can Report and the event was already successfully sent to Account 2.

Note: The same sequence of events would happen if Account 2 was set to Must Report.

APPENDIX-M: NETWORK OVERVIEW

The purpose of this section is to provide a general understanding of the network portion of this system.



Basic Networking Principles

The MPC networking system allows up to 99 panels or nodes to be connected in a network. Every panel counts as a node address as does a network Printer NIB. For a panel to be connected to the MPC network, a network interface board (NIB) is required.

The optional RND-2 acts as a location to monitor network events and simultaneously acknowledge, silence and reset all networked panels.

Each node requires a unique network address which can also have a label that describes the panel location or capability. For example, an RND-2 at the lobby of an office might be programmed to have a node address of "1" and a label such as "RND-2_Lobby". If an RND-2 is not configured into the system, each network node will act individually unless programmed to activate the other panel's output zone. This can be accomplished using the network links described below.

The auto-program feature can be used to detect connected hardware; however, it will not detect other nodes in the network. Additional nodes must be configured separately through either the CIS-4 programming tool or directly from each panel. If programming from the panel, each node requires a unique network node address and total number of network nodes that will be configured.

To program the network nodes from the panel in the Tech mode, choose Edit > Manual Pgm > Network Setup.

If not already configured, install the node, and then follow prompts to configure the panel for node #, print events, and total number of network nodes.

If using the CIS-4 tool, choose “Configure a Network”. An untitled.ncf configuration will be displayed and panels (nodes) can be easily added to the system and individually configured.

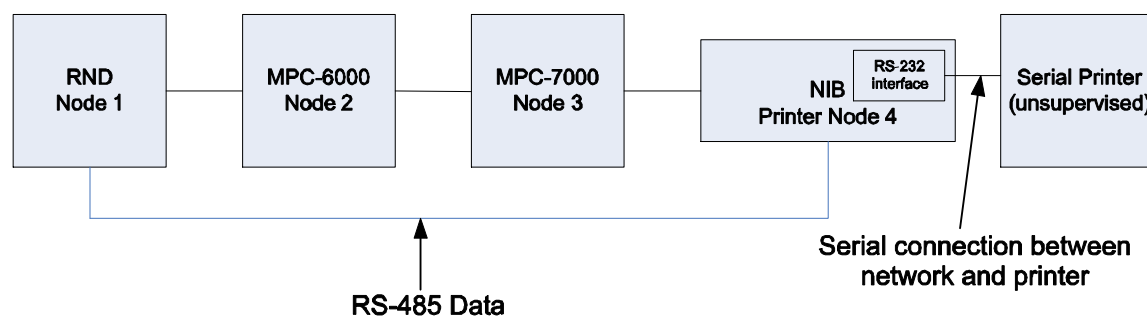
Network Printing



Diagnostic printers are NOT supervised and MUST NOT be installed permanently on the panel (typically longer than 24 hours). The printers are used strictly for diagnostic purposes only.

Network printing requires a serial printer connected to an RS-232 serial interface module which is then connected to a network interface board (NIB). The NIB is connected to the network and programmed with a node number. Refer to the network block diagram below.

NETWORK BLOCK DIAGRAM



To configure the printer NIB using the CIS-4 configuration tool, connect a programming cable between the RS-232 port on a laptop and the NIB, then right click on the printer node and choose the write command. The LED on the NIB will flash briefly indicating the NIB has been configured. This should be done with the system powered. Since the printer capability is always on, there is no need to configure it further. Every panel has the capability to turn off the printer via the Tech menu < Network Setup option. Once enabled, everything will be printed to the network which is picked up by the printer Node. Refer to MPC-NET2 Owner’s Manual, P/N 315-049594, for further information.

Network Links

Network links allow the panel to display and annunciate events from other networked panels. They may be programmed with either the configuration tool or the firmware. A maximum of 255 network links may be used. Refer to the MPC-6000/MPC-7000/RND-2 Programming Manual, P/N 315-049403FA, for a detailed description of network links. When using a DACT, network links must be programmed for input groups to report to the DACT. Input groups that are not associated with network links will not report to the DACT.

Global Accept

This option can only be configured in MPC-6000/-7000 networked panels. There are two programming options for Global Accept, “Yes” and “No”.

- Setting this option to “Yes” allows a Networked panel (MPC-6000/-7000) to be silenced, acknowledged and reset from the RND-2.
- Setting this option to “No” requires independent silence, acknowledge and reset at the local panel.

Global Send

Setting this option to “Yes” at the RND-2 allows the RND-2 to activate General Alarm, Alert, Drill and Recall from the RND-2 to the networked panels. Setting this option to “No” disables this feature.

APPENDIX-N: DIAGNOSTIC PRINTER

NOTE 

Diagnostic printers are NOT supervised and MUST NOT be installed permanently on the panel (typically longer than 24 hours). The printers are used strictly for diagnostic purposes only.

MPC-6000 / MPC-7000 printer connection

Diagnostic printers are connected to the MPC-6000/-7000 panels through terminal TB4 of its main board using an RS232 DB25 serial cable (serial cable is not provided). See Figure 1 below.

Following are the pin connections to connect the diagnostic printer:

Main Board TB4 Terminal	RS232 DB25 (serial printer) Pin Number
RX	2 – TXD
TX	3 – RXD
GND	7 – SG

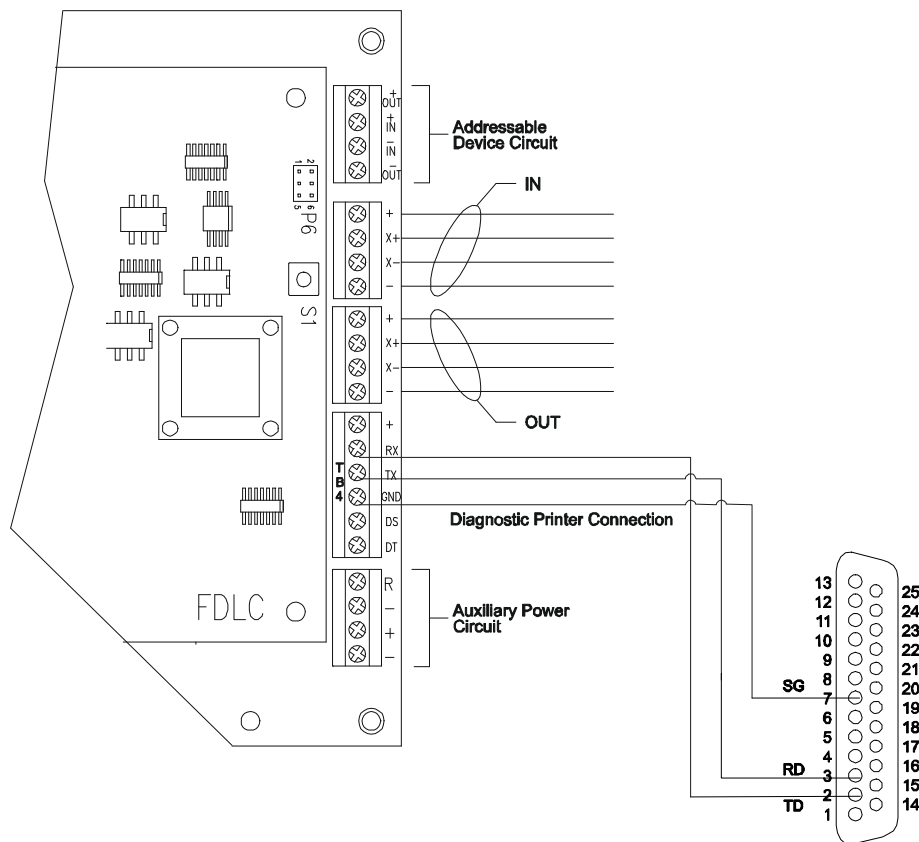


Figure 1

DB25 RS232 Diagnostic Printer Connection

MPC-6000/-7000 panels can also be connected to a computer running terminal emulation software using an RS232 DB9 serial cable. Terminal emulation software is a communication program that is designed to emulate various types of text terminals configured to be connected through a modem or directory over a serial port. HyperTerminal is a terminal emulation program that is typically bundled with Microsoft® Windows operating system. See Figure 2 below for wiring connections. Its communication parameters must be as follows:

Baud Rate: 19200
 Data Bit: 8
 Parity: None
 Stop Bit: 1
 Flow Control: None

Following are the pin connections to connect the computer serial connector:

Main Board Terminal TB4	RS232 DB9 (computer serial connection) Pin Number
RX	3 – RXD
TX	2 – TXD
GND	5 – SG

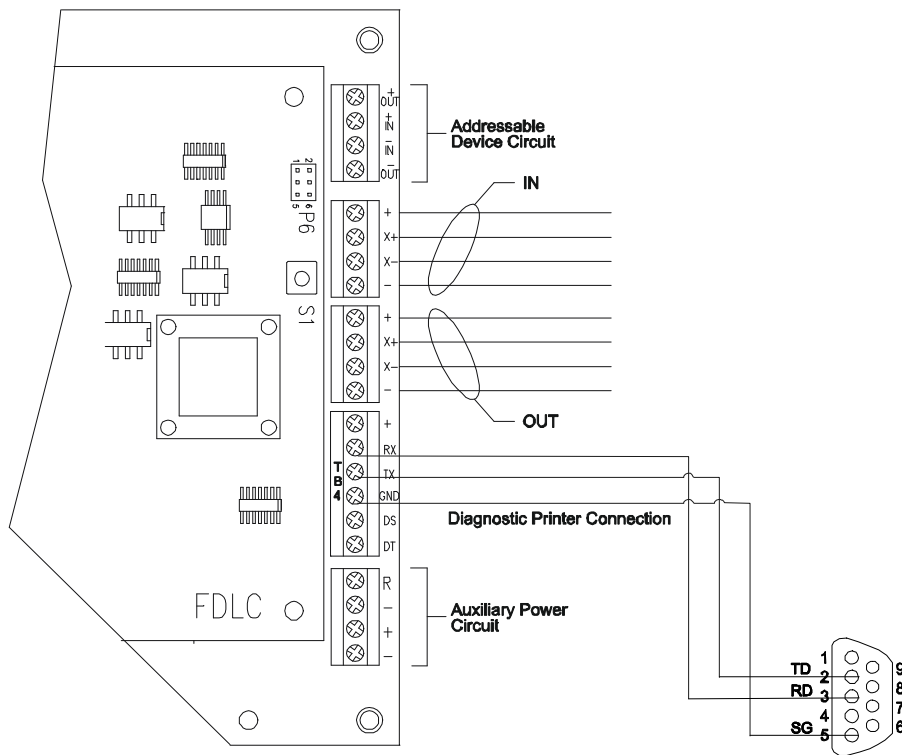


Figure 2
RS232 Connection for HyperTerminal

Following is an example of the Events Output on a HyperTerminal connection.

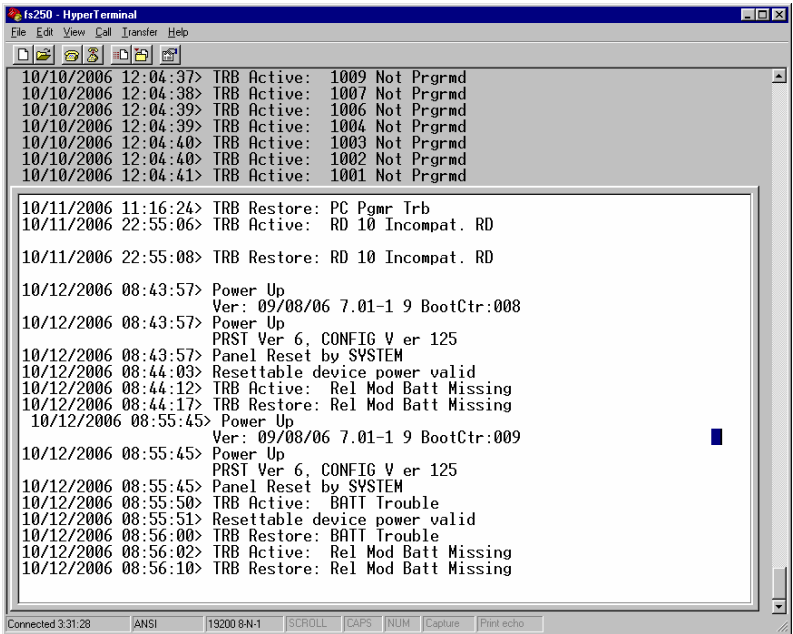


Figure 3
Events Output when HyperTerminal is Connected

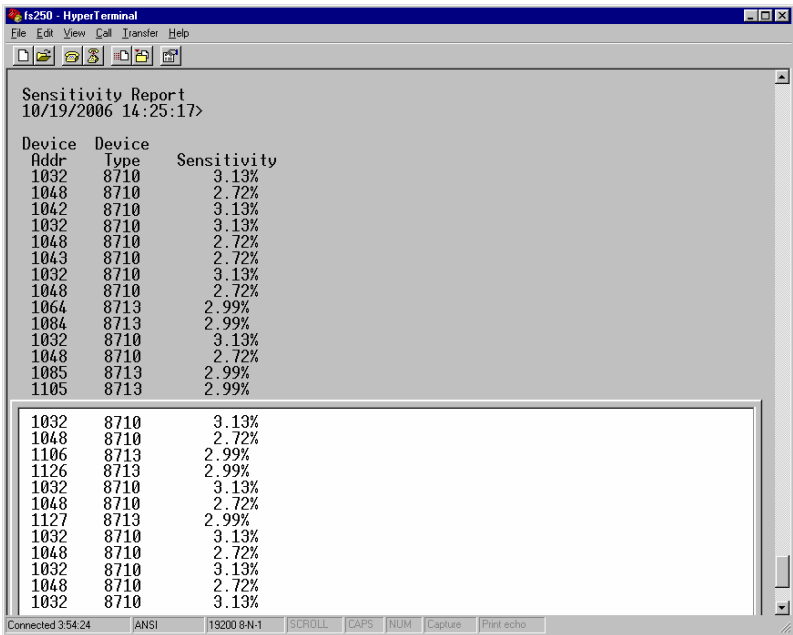


Figure 4
Sensitivity Report on HyperTerminal
(Refer to Programming Manual to access this feature)

```

10/19/2006 14:28:24> Maintenance Level entered at MAIN
10/19/2006 14:28:27> ACKed Manual at MAIN

Starting Stored Event History Printing:
10/19/2006 14:27:25> Event History Cleared at MAIN
10/19/2006 14:27:34> SUP Active: 1076 8713
                        8713      Fire Grp 2
10/19/2006 14:27:36> SUP Restore: 1076 8713
                        8713      Fire Grp 2
10/19/2006 14:27:40> ALM Active: 1074 8713
                        8713      Fire Grp 2
10/19/2006 14:27:40> Maintenance Level exited on timeout by SYSTEM
10/19/2006 14:27:44> GEN ALM Active: MAIN
10/19/2006 14:27:44> ALM Active: 1122 8713
                        8713      Fire Group 32
10/19/2006 14:27:47> ALM Active: 1123 8713
                        8713      Fire Group 32
10/19/2006 14:27:55> ALM Active: 1114 8713
                        8713      Fire Group 16
10/19/2006 14:28:02> ACKed Manual at MAIN
10/19/2006 14:28:03> Alarm Silenced Manual at MAIN
10/19/2006 14:28:07> Panel Reset at MAIN
10/19/2006 14:28:10> Resettable device power turned off
10/19/2006 14:28:15> User Level entered at MAIN
10/19/2006 14:28:16> Resettable device power turned on
10/19/2006 14:28:23> Resettable device power valid
10/19/2006 14:28:24> TRB Active: RD 10 NoResposns
10/19/2006 14:28:24> Maintenance Level entered at MAIN
10/19/2006 14:28:27> ACKed Manual at MAIN
Stored Event History Printing Complete

```

Figure 5
System History on HyperTerminal
 (Refer to the Programming Manual to access this feature)

Network Printer

A diagnostic printer can also be installed in a network. Refer to the Network Block diagram in Figure 6.

NETWORK BLOCK DIAGRAM

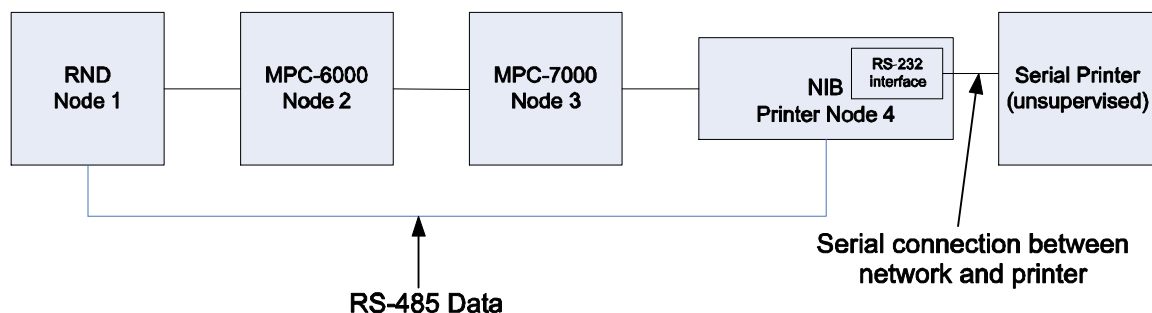


Figure 6
Network Block Diagram

Network printing requires a serial printer connected to a 12526A (NIB with serial interface) that is connected to the MPC-NET2 network system. Connect 12536A serial connector to the printer using an RS232 DB25 or DB9 as shown in Figure 7.



To configure the printer NIB in the CIS-4 configuration tool, follow the steps listed below:

1. Power up the system.
2. Connect the programming cable between the laptop and the NIB.
3. Right click on the printer node and choose the write command.
4. The LED on the NIB will flash briefly indicating the NIB has been configured.

Since the printer capability is always on, there is no need to configure it. Every panel, however, has the capability to turn the printer off using the Tech menu < Network Setup. Once enabled, everything will be printed to the network that is picked up by the printer node.



The printer is unsupervised.

Refer to the MPC-NET2 Owner's Manual, P/N 315-049594, for more information.

APPENDIX-O: GLOSSARY

1st Alarm Condition. Refers to the condition in which the releasing or counting zone input group meets at least one of the threshold requirements. This does not refer to the pre-alarm condition detected by the smoke detector.

Abort Condition. Condition in which the abort function is pressed during 1st-Alarm (IRI type only) or during Pre-Discharge condition.

Abort Function. Defines an event that is manually initiated during the proper releasing event sequence that will indefinitely prevent the releasing circuit from activating.

AC Power Fail. Refers to a condition in which AC power loss is detected by the system.

Agent Release Delay. Same as Pre-Discharge Delay.

Alarm Signal. A signal indicating an emergency requiring immediate action, such as an alarm for fire from a manual station, a waterflow alarm, or an automatic smoke detector.

Alarm Silence Inhibit. An option that prevents a human operator from silencing the notification appliances for a preset period of time.

Alarm System. A combination of compatible initiating devices, control units, and notification appliances designed and installed to produce an alarm signal in the event of a fire.

Alarm Verification. A preset option that causes the control unit to verify alarms originated by smoke detectors before indicating an alarm.

Annunciator. A remotely located, electrically powered display, separate from the control unit, containing LEDs or lamps to indicate the states of the fire alarm system.

Audible Signal. An audible signal is a sound made by one or more audible notification appliances, such as bells or horns, in response to the operation of an initiating device.

Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for approving equipment, installation or procedure.

Auxiliary Relays. Control relays that energize only during alarm conditions that are used to either apply power to or remove power from other equipment during an alarm condition.

Class A Circuit. An initiating device or notification appliance circuit within which all components remain fully functional, even though a single open or ground exists in the circuit.

Class B Circuit. An initiating device or notification appliance circuit within which some or all components may be disabled with a single open or ground exists in the circuit.

Detector - FireSmart™. An intelligent fire detector that blends photoelectric, thermal and neural network technologies for superior protection without false alarms.

Detector - Smoke, Photoelectric Type. A detector employing the photoelectric principle of reflection or obstruction of light by smoke.

Detector - Thermal Type. An addressable thermal sensor that is programmable as either a fixed temperature (135° F) or as a rate of rise detector.

Discharge Condition. Refers to the condition in which the releasing circuit is activated.

Discharge Output Type. Defined as the output type associated with a releasing group and activated if the panel proceeds to the Discharge event.

Discharge Period. Defined as the time period in which the releasing circuit will remain active before automatically deactivating.

Enable / Disable. Refers to the state of individual circuits (inputs and outputs) or logic functions regardless of the presence of its corresponding modules.

End Of Line (EOL). A device used to terminate a supervised circuit.

Fan Restart Condition. Refers to a condition where after a soft reset from an alarm condition, the deactivation of a hold-thru reset output (where ON time = 0) is dependent on the initiation of fan restart usage device.

General Alarm. A term usually applied to the simultaneous operation of all the notification appliances on a system mapped to the general alarm system group.

Global Fan Restart. Refers to the fan restart procedure initiated from the panel.

Ground Fault. A trouble condition in which a low resistance has been detected between the system wiring and conduit ground.

Hold-Thru Reset Condition. Refers to a condition where the hold-thru reset output will remain in its current state before and after the reset until the OFF time delay has elapsed. Initiation of fan restart usage has higher priority than the OFF time delay and will therefore immediately deactivate the hold-thru reset outputs.

Independent Fan Restart. Refers to the fan restart procedure initiated from a device with fan restart usage that will deactivate hold-thru reset associated with its input group.

Initiating Device. A manually or automatically operated device such as a manual pull station, smoke detector, heat detector, waterflow switch or tamper switch.

Initiating Device Circuit (IDC). A circuit to which initiating devices are connected.

Labeled. Equipment or materials to which have been attached a label, symbol, or other identifying mark of an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of the production of such labeled equipment or materials. And by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed. Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials. And whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

Manual Release Function. Defines an event that is manually initiated in which the releasing circuit activates regardless of the condition of the system. This function is ignored if the releasing circuit has already activated and the Discharge Period has elapsed.

NEC. National Electrical Code also published as NFPA standard 70.

Node. In a networked system, it is a redistribution or end point for data transmission that has a programmed or engineered capability to recognize and process or forward transmission to other nodes.

Notification Appliance. An electrically operated appliance used to indicate the system status such as a bell, horn, strobe light or speaker.

Notification Appliance Circuit (NAC). A circuit to which notification appliances are connected.

Power Supply. That portion of the fire alarm control unit, which provides the power needed to operate all control unit modules, as well as that, needed to operate all electrically powered initiating devices and all notification appliances.

Pre-discharge Condition. Refers to the condition in which the Pre-discharge delay has been activated.

Pre-discharge Delay. The time period delay before the activation of the releasing circuit when the releasing condition is met.

Programming Tool. Refers to an external proprietary software package that allows the user to program the panel (CIS-4 for the MPC-6000 / MPC-7000 panels).

Quick Test. A term pertaining to the test mode of the system, that automatically resets after a service technician tests initiating devices.

Releasing Group Threshold. Defined as a set of conditions which the input releasing group has to meet in order to initiate a pre-discharge event.

Releasing Input Group. The only input group type that can be associated with the releasing circuits.

Releasing NAC. NAC associated with releasing input group type that annunciates Releasing Group 1st Alarm pre-discharge and discharge conditions associated with the releasing application.

Reset Condition. Condition in which the panel is forced to return to its normal state, usually performed by pressing the "SYSTEM RESET" button after all known events / conditions are cleared.

Supervisory Alarm. A signal indicating the operation of a supervisory device.

Supervisory Device. A device that monitors the condition of a sprinkler system such as a gate-valve switch, water-level switch, low pressure switch, low temperature switch or fire pump monitor.

Trouble Signal. An audible signal indicating trouble of any nature, such as a circuit break or ground, occurring in the device or wiring associated with a fire alarm signal.

Waterflow Switch. An assembly approved for service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler head will result in activation of this switch and subsequent indication of an alarm condition.

Zone. A designated area of a building. Commonly, zone, is interchanged with initiating device circuit.



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