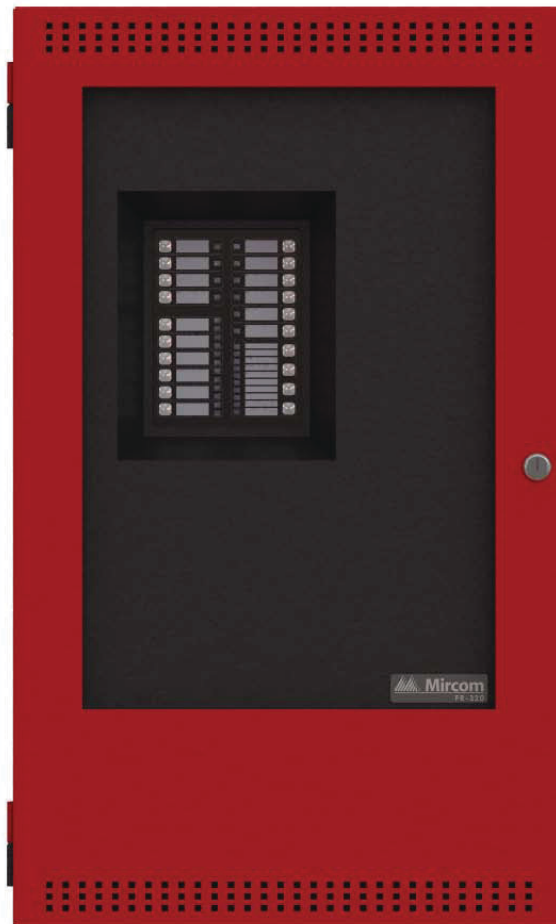


FR-320 Series

Pre-Action/Deluge and Agent Release Control Panel



**FM APPLICATIONS MUST HAVE CLASS A INITIATING CIRCUITS ONLY
(FOR RELEASING) AND 90 HOUR BATTERY STANDBY OPERATION**

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1.0 Introduction

Mircom's FR-320 Series Pre-Action/Deluge and Agent Release Control Panel performs the function of fire suppression in a wide variety of applications. It is capable of being used in an agent release sprinkler system or in a pre-action or deluge sprinkler system. It can be used in single-hazard or dual-hazard applications with or without cross-zoning. The panel includes common alarm, supervisory, and trouble relays, and provides regulated and unregulated auxiliary power along with four-wire smoke power. It supports auxiliary relays and a city tie module. The auxiliary relays are based on a hazard area status. The FR-320 has six input zones and four output zones, allowing for flexibility in most single and dual-hazard applications for both deluge and agent releasing applications.

1.1 Panel Type

The panel can function as an agent release panel or as a pre-action/deluge panel, depending on which of the available fixed configurations are chosen from the main programming menu.

1.1.1 Deluge sprinkler system

In deluge sprinkler system open-valve sprinkler heads terminate to a water supply that is controlled by a single valve. When the system detects fire, it automatically opens the valve via a releasing circuit, allowing the water to flow through all the sprinkler heads. Deluge sprinkler systems are useful for applications in which simultaneous discharge of water through every sprinkler is required.

1.1.2 Pre-action sprinkler system

In a pre-action sprinkler system close-valve sprinkler heads are connected to pipes that are supervised for air pressure. The pipes terminate directly to a water supply. Pre-action systems are useful for applications in which the prevention of an accidental discharge of water is required.

1.1.3 Agent release system

In an agent release system, an extinguishing agent (such as Argon, dry chemical, CO², Halon, etc.) is automatically released upon fire detection. An abort function is added to prevent the false release of the extinguishing agent.

1.2 Overall Features

- Basic unit has six Class B (Style B) initiating circuits, which may be configured as Class A (Style D) using input Class A converter adder modules. Each initiating circuit is pre-configured as Alarm, Supervisory (Latching or non-latching), water-flow, Manual Release Switch, or Abort Switch. There are two LEDs per circuit, one for Trouble (amber), and one dual color (amber/red) LED for Supervisory (amber) and Alarm (red).
- Basic unit has 4 power limited class B (style Y) output circuits. Output circuits 1 & 2 are indicating circuits while output circuits 3 & 4 are releasing circuits (circuit 4 can work as an indicating circuit in some situations; check Pre-Programmed Modes on page 57 for details). Each indicating circuit process type is pre-configured and can be silenceable. The signal rates depend on the selected pre-programmed configuration.
- A pushbutton associated with each initiating, indicating and releasing circuit can individually bypass the circuit.
- Configurable Signal Silence Inhibit and Auto Signal Silence Timers. For UL installations, disable the Auto Signal Silence Timer.

- Subsequent Alarm, Supervisory, and Trouble operation.
- Four wire reset-able smoke power supply.
- Relay Contacts for Common Alarm, Common Supervisory, Common Trouble, and Auxiliary Alarm Relay (disconnectable).
- RS-485 Interface for RA-1000 Series Remote Multiplex Annunciators and Smart relay Module.
- Optional Modules for additional Relay Circuits, City Tie and Polarity Reversal Signaling.
- Extensive transient protection.
- Easy configuration of the panel using LCD service tool (CFG-300).
- Releasing circuit protection from false alarm by disconnecting the battery if the voltage falls below 20.4V at the last releasing device.

2.0 Conventions

2.1 Circuits

Refers to an actual electrical interface for initiating (detection), indicating (signal), and releasing.

2.2 Zone

Is a logical concept for a Fire Alarm Protected Area, and will consist of at least one Circuit.

Often the terms Zone and Circuit are used interchangeably, but in this Manual the term Circuit is used.

2.3 Display Points

There is a display point associated with every initiating and indicating circuit of the FR-320 LED Series fire panel. For an initiating circuit there are two LEDs for every display point: one single color (amber) and one dual color (red/amber). For an indicating circuit there is only one LED: one single color (amber), for every display point.

2.4 Wiring Styles

Initiating and indicating circuits are Class B (Style B and Y). Changing the initiating circuits to Class A requires an ICAC-306 adder board which will convert SIX initiating zones from Class B (Style B) circuits to Class A (Style D). This is done without penalizing the number of circuits, which remains the same as in Class B (Style B). Changing the indicating circuits to Class A requires an OCAC-302 adder board, which will convert TWO indicating zones from Class B (Style Y) circuits to Class A (Style Z). Releasing circuits (Z) are Class B (Style B) only.

3.0 System Components

3.1 Main Pre-Action/Deluge and Agent Release Control Panel

The following models are part of the FR-320 Series:

- FR-320
- FR-320-W
- FR-320-R

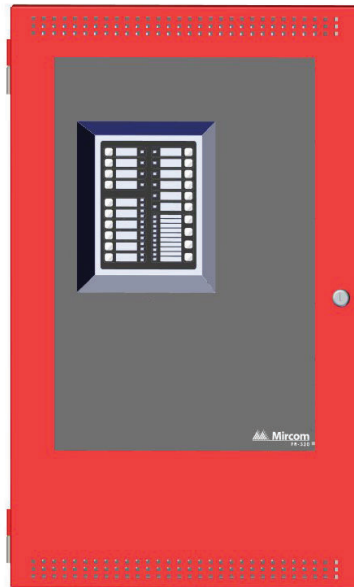


Figure 1 FR-320 Panel

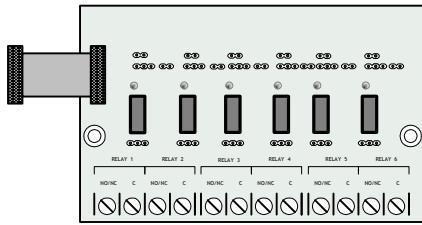
All FR-320 Panels have the following features:

- Six Zone Pre-Action/Deluge and Agent Release Control Panel with LED display (red or white door, black box).
- six Class B (Style B) initiating circuits, and four Class B (Style Y) output circuits
- Output circuits 1 & 2 are Class B (Style B) indicating circuits that can be converted to Class A (Style Z) using an **OCAC-302 Output Class A Converter** adder module.
- Output circuits 3 & 4 are Class B (Style B) only releasing circuits.
- Each output circuit can draw 1.7A current, 5A total. A six zone **ICAC-306 Input Class A Converter** adder module may be used for Class A (Style D) wiring of Initiating circuits.
- The FR-320 contains Common Alarm, Common Supervisory & Common Trouble Relays, auxiliary alarm relay (disconnectable), an RS-485 Interface for Remote Annunciators and a Resettable Four Wire Smoke Detector Power Supply.
- Two batteries are required.

Additionally:

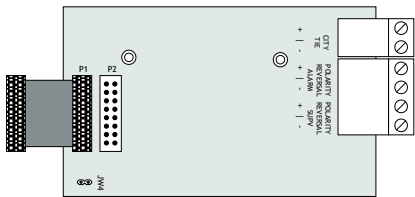
- FR-320 uses a BBX-1024DS or BBX-1024DSR enclosure.

3.2 Relay Modules: Six Relays



Model	Description
RM-306	Six-relay adder module

3.3 Polarity Reversal/City Tie



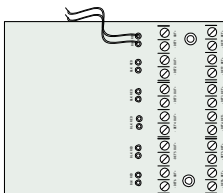
Model	Description
PR-300	Polarity Reversal and/or City Tie Module

3.4 Smart Relay Module



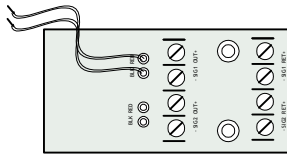
Model	Description
SRM-312W	Smart Relay Module (12 relays) with white enclosure
SRM-312R	Smart Relay Module (12 relays) with red enclosure

3.5 Input Class A Converter: Six Circuits



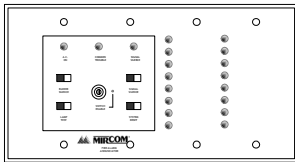
Model	Description
ICAC-306	Input Class A converter Module (six circuits). This module has built-in active EOL resistors.

3.6 Output Class A Converter: Two Circuits



Model	Description
OCAC-302	Output Class A converter module (two circuits)

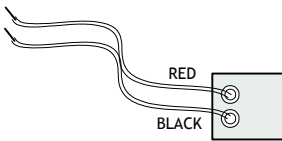
3.7 RAM-216 Ancillary Annunciator



Model	Description
RAM-216	16 Zone ancillary annunciator

3.8 Active end-of-line

The ELRX-300R(W) are power-saving End-of-Line resistors that eliminate the need for an additional battery cabinet or larger batteries in order to meet the 60 hour standby requirement.



Model	Description
ELRX-300	Active end-of-line resistor without plate
ELRX-300R	Active end-of-line resistor with end-of-line red plate

3.9 Additional System Accessories

RAM-208	Eight Zone Remote Annunciator	(ULC and ULI Approved)
RTI-1	Remote Trouble Indicator	(ULC and ULI Approved)
RAM-1016/TZ	Remote Annunciator	(ULC and ULI Approved)
RAM-1016TZDS	Remote Annunciator	(ULC and ULI Approved)
MP-300	EOL resistor plate, 3.9KΩ	(ULC and ULI Approved)
MP-300R	EOL resistor plate, red	(ULC and ULI Approved)
BC-160	External Battery Cabinet	(ULC and ULI Approved)
MP-320R/W	Solenoid EOL Module	(ULC and ULI Approved)

4.0 Mechanical Installation



Note: Installation, use and maintenance should be in accordance with the manufacturer's documents and the National Electrical Code, ANSI/NFPA 70, and the National Fire Alarm Code ANSI/NFPA 72.

4.1 Installing the Enclosure

Install the FR-320 Series panel enclosure as shown below. Mount enclosure surface mount using the four mounting holes with the provided screws.

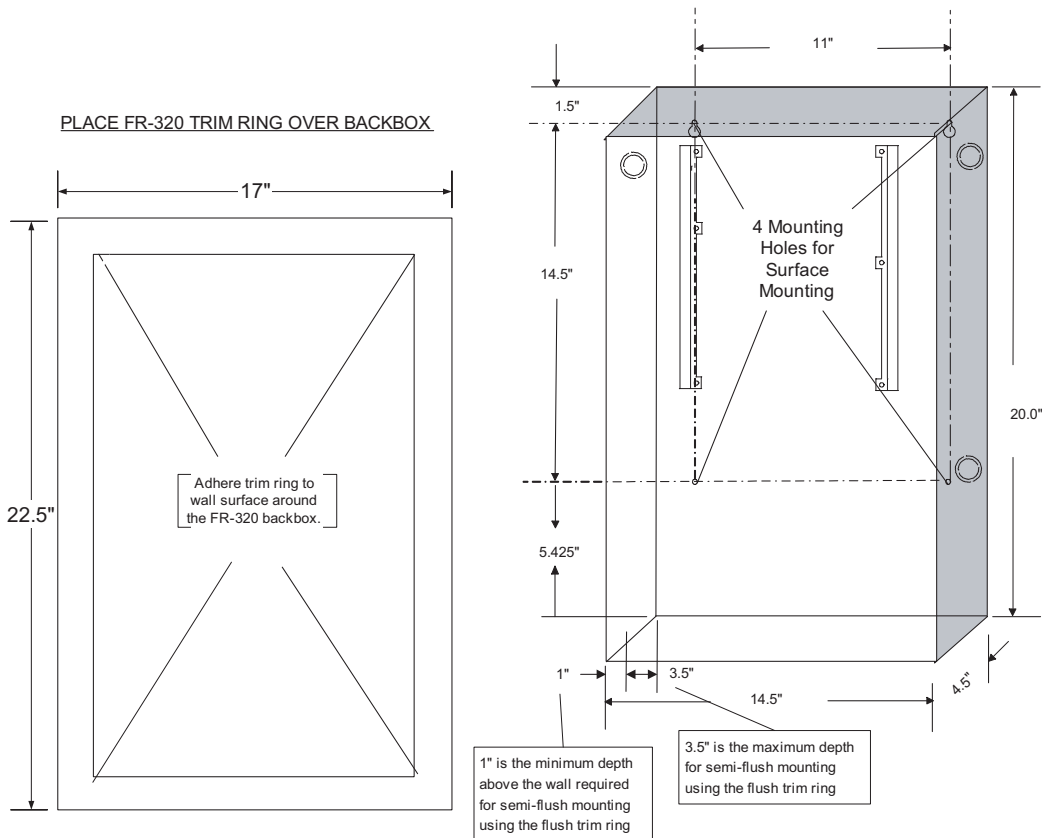


Figure 2 Box dimensions, semi-flush mounting and trim ring

Remove the door (also disconnect the ground strap), the dead front and semi-flush mount the backbox into the wall. Peel the adhesive cover from the trim ring and stick to the wall surface around the backbox, after wall is finished.

Figure 3 shows a cross-section of the semi-flush mounted backbox and the trim ring. **Make sure to allow a minimum depth of 1” above the wall surface for proper door opening.**

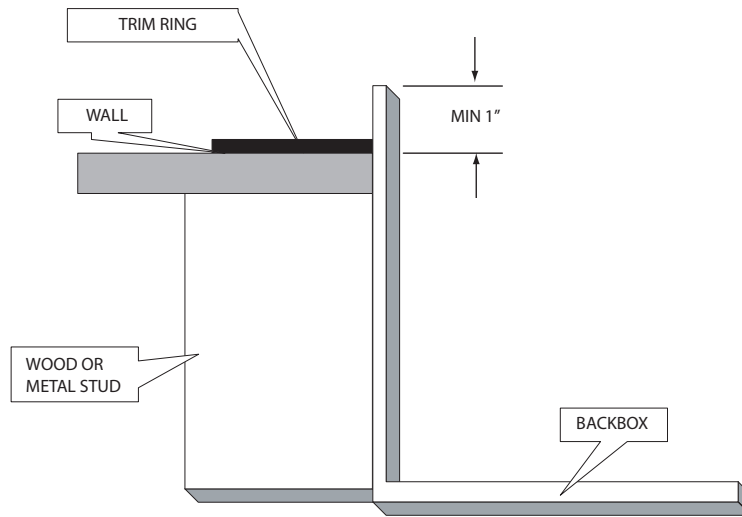


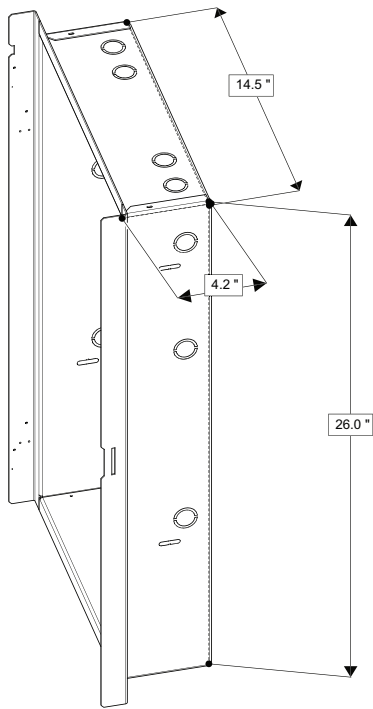
Figure 3 Flush Trim Detail

4.2 BBX-1024DS and BBX-1024DSR Mechanical Installation

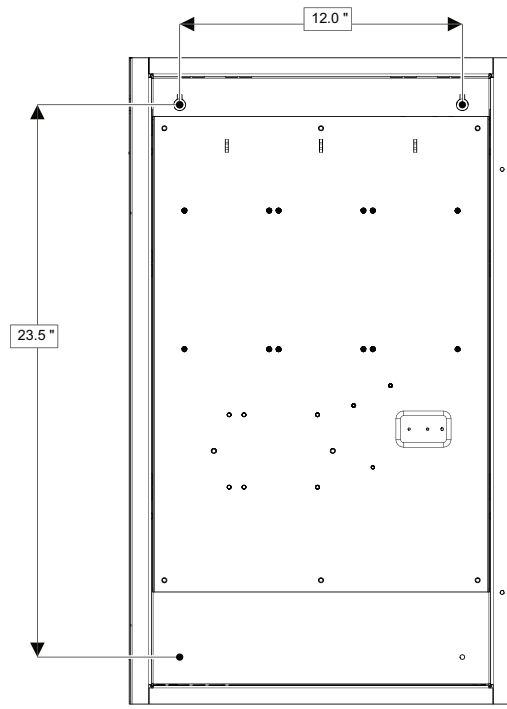
The BBX-1024DS and BBX-1024DSR are suitable for flush or surface mounting, and have a built-in trim ring.

Dimensions of Enclosure (minus built in trim ring)	14 1/2" x 4 1/4" x 26"
Distance between horizontal mounting screws	12"
Distance between vertical mounting screws	23 1/2"
Complete Dimensions of Enclosures	16 3/4" x 5 1/2" x 28"

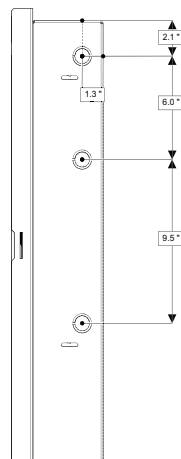
External Dimensions



Mounting Dimensions



Side View



Top View

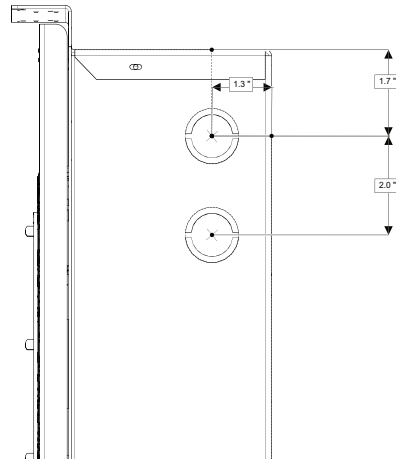


Figure 4 BBX-1024DS and BBX-1024DSR Installation Instructions and Dimensions

4.3 Installing the Adder Modules

The FR-320 Series panel comes pre-assembled with all components and boards except for adder modules. Module installation locations are shown below. Refer to Figure 6 on the next page for Jumper or DIP Switch settings and see *section 6.9 Wiring Tables and Information on page 30* for wiring specifications.

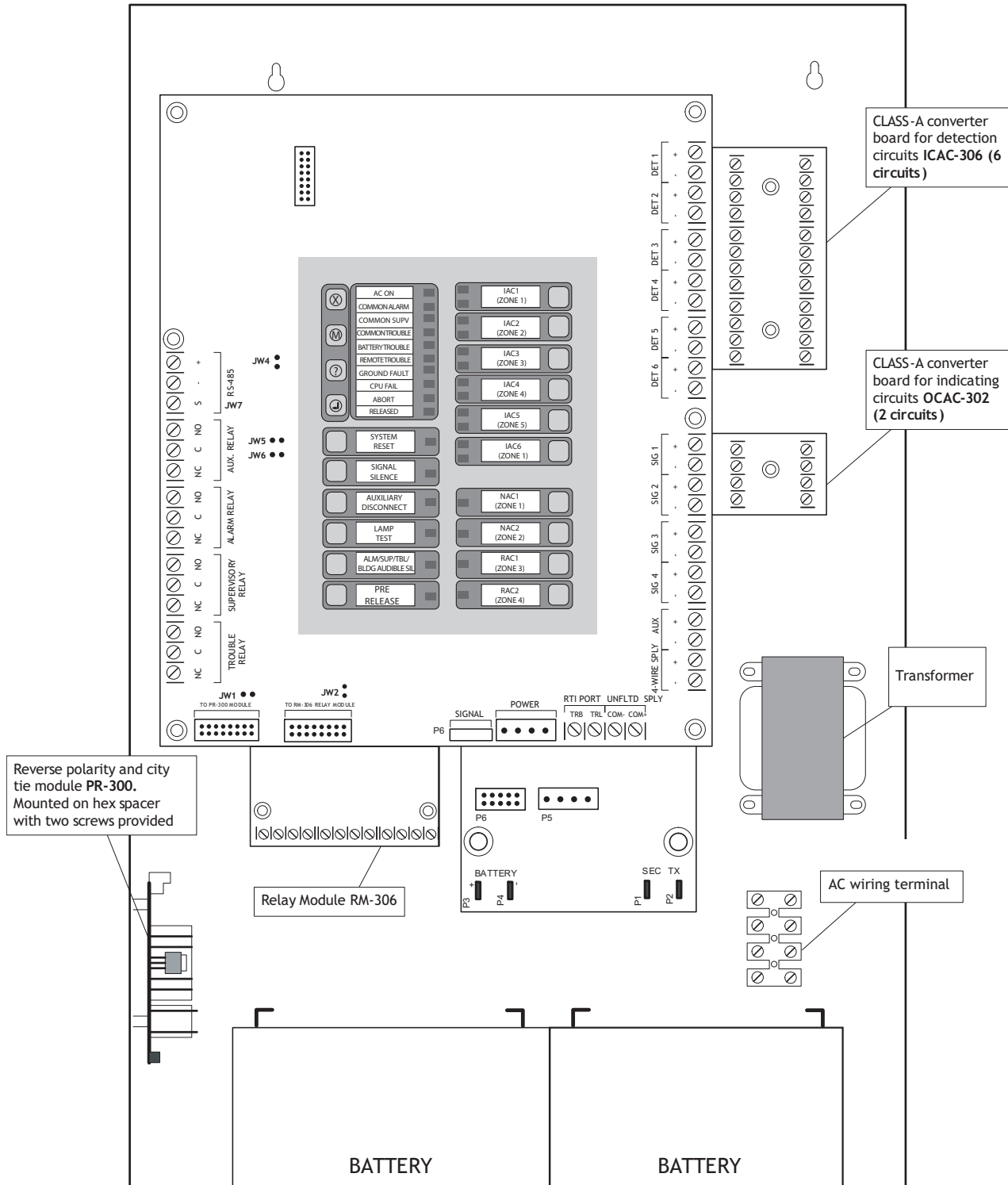


Figure 5 Installation of Adder Modules

5.0 Cable and Jumper Connections for Main Board, Core Board and Adder Modules

5.1 Main Pre-Action/Deluge and Agent Release Control Board

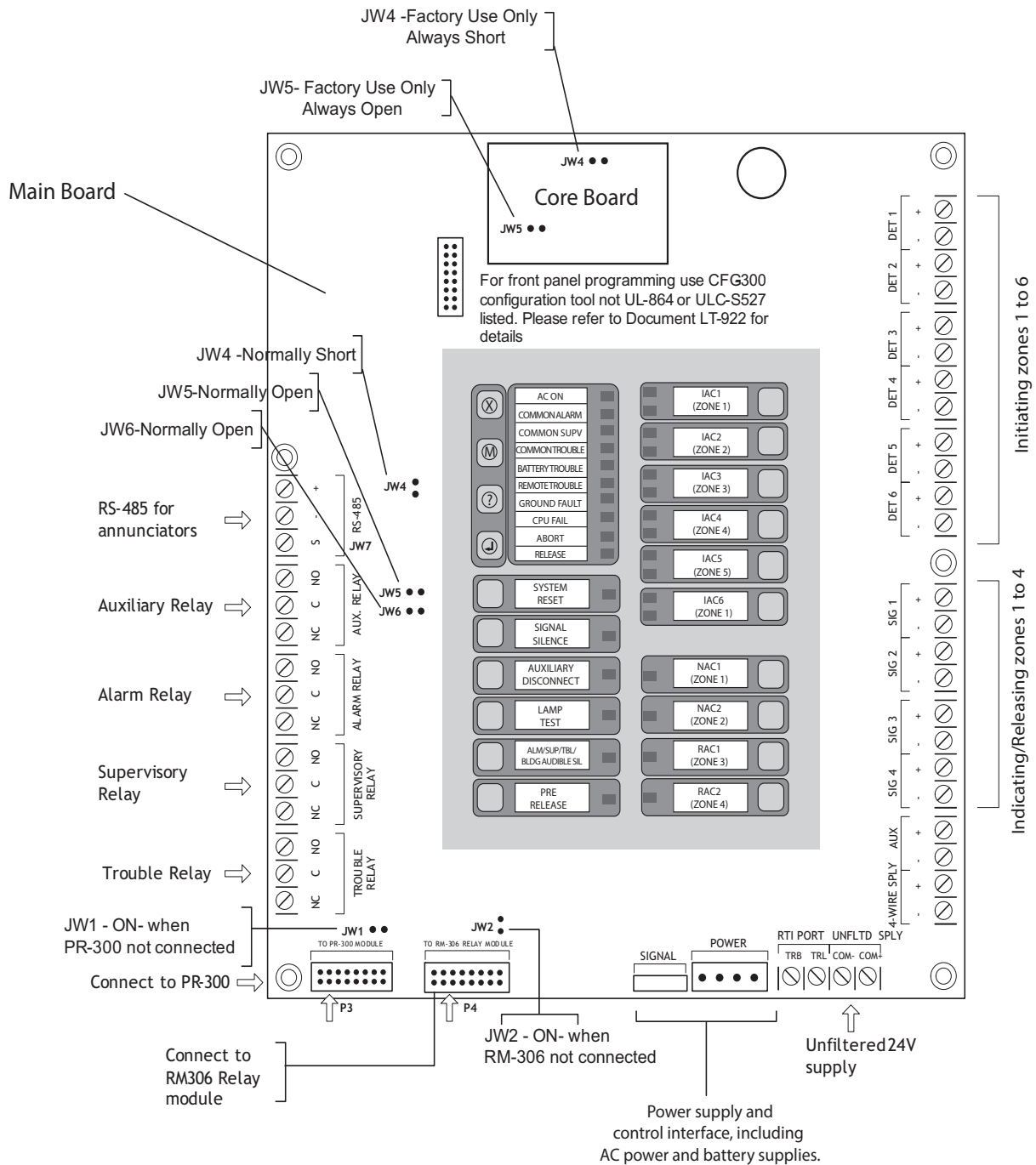


Figure 6 Main Control Board cable connector and jumper settings

5.1.1 Connectors and Jumpers on the Main Fire Alarm Board

- JW1** Remove this jumper if **PR-300** is connected.
- P4** Cable from connector **P1** of the **RM-306 Relay Adder Module** connects here. Otherwise not used.
- JW2** Remove this jumper if an **RM-306 Relay Adder Module** is used.
- JW4** Shorted if there is no external unit on RS485. This jumper works as 'end of line' jumper. If one or more units are connected on RS485, only short on the last connected unit. JW4 on all other units should be left open.
- JW5** Normally open. To reset the password, place jumper here and power down the panel (both AC power and batteries). Then power up the panel again, the password is restored to the default after system startup. Once the system has reset, **REMOVE** the jumper from the pins at JW5.
- JW6** Normally open to BLOCK configuration via modem, PC with a UIMA converter module or a CFG-300 Configuration Tool. Place jumper here to ALLOW any type of configuration.

5.1.2 Connectors and Jumpers on the Core Board

- JW4** Factory Use Only. Always Short.
- JW5** Factory Use Only. Always Open.

5.2 ICAC-306 Input Class-A Converter Adder Module

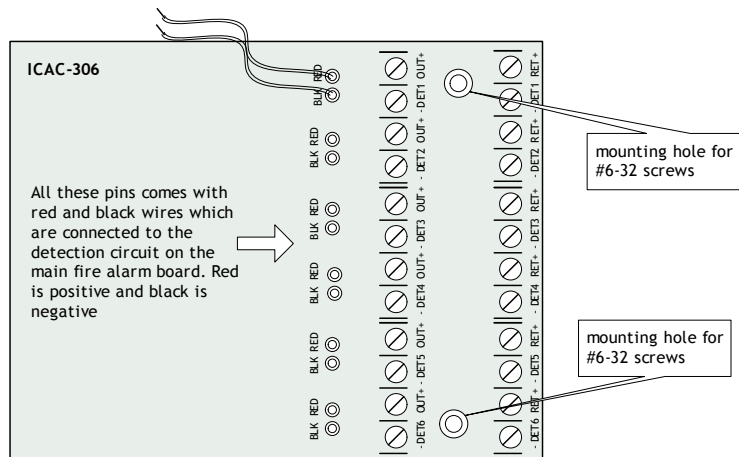


Figure 7 ICAC-306 Input Class-A Converter Adder Module

There are no jumpers or cables to set on this module, just wiring from the converter (wires are fixed here) to the Main Fire Alarm Board.

Initiating circuits must be wired from the ICAC-306 module to the Main Fire Alarm board. For example, Initiating circuit 1 positive (red) and negative (black) wires are connected to the positive and negative terminals (respectively) of Initiating circuit 1 on the Main Fire Alarm Board. From the ICAC-306 converter Initiating circuits are wired out to the devices from the positive and negative terminals marked DET OUT and the circuit return wires are brought back to the converter module to positive and negative terminals marked DET RET.

5.3 OCAC-302 Output Class-A Converter Adder Module

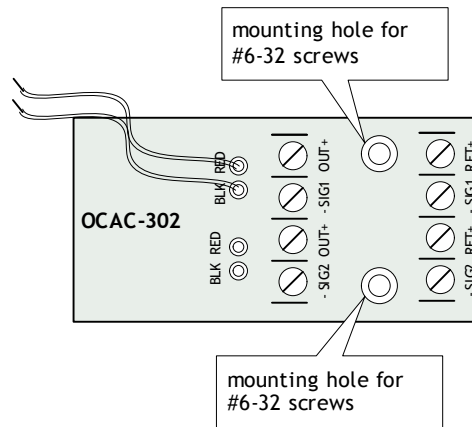


Figure 8 OCAC-302 Output Class-A Converter Adder Module

Indicating circuits must be wired from the OCAC-302 to the main Fire Alarm board. For example indicating circuit 1 positive (red wire) and negative (black wire) is wired from the Class A converter module to the positive and negative terminals of Indicating circuit 1 on the Main Fire Alarm board.

The actual indicating zone is wired from the SIGNAL OUT positive and negative to the signaling devices and then wired back to the SIGNAL RET positive and negative.

5.4 RM-306 Relay Adder Module

Cable from P1 of the RM-306 is connected to P4 on the Main Fire Alarm Board. The jumpers located above each relay on the RM-306 are used to configure the relays. The jumpers located below the relays are used to select either normally open contacts or normally closed contacts.

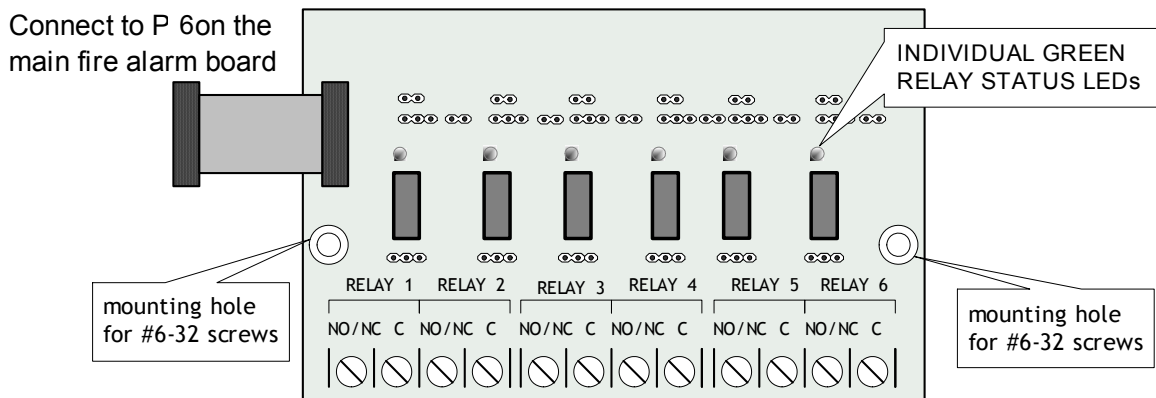


Figure 9 RM-306 six relay adder module

5.4.1 RM-306 Jumpers

P1 Cable from RM-306 Relay Adder Module connects to P4 on Main Fire Alarm Board.

5.4.2 RM-306 Correlations

The correlation of the relays are fixed and is as follows:

	Relay1	Relay2	Relay3	Relay4	Relay5	Relay6
Active State	Hazard 1 Alert	Hazard 1 Alarm	Hazard 1 Release	Hazard 2 Alert	Hazard 2 Alarm	Hazard 2 Release

5.5 Polarity Reversal and City Tie Module (Model PR-300)

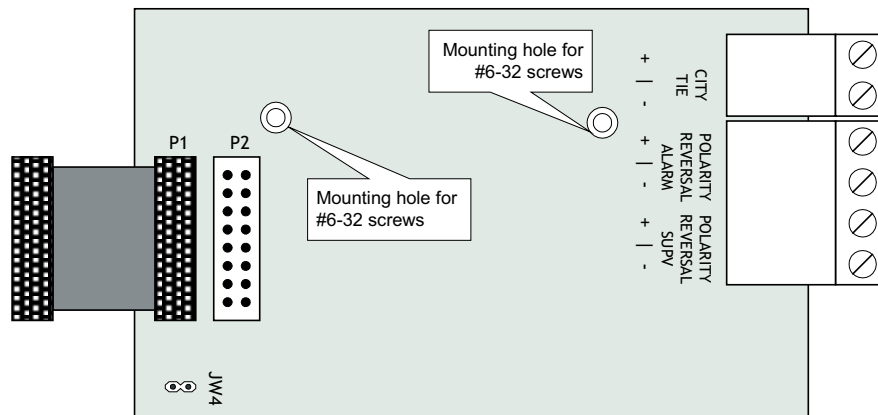


Figure 10 Polarity reversal and city tie module

The following hardware configuration must be performed before installing the PR-300.

5.5.1 PR-300 jumper settings

P1 Cable connects to **P3** on the **Main Board**

P2 & JW4 Not used. Jumper JW4 remains on board.

The Alarm Transmit signal to the PR-300 can be programmed to turn OFF when signal silence is active. This allows the City Tie Box to be manually reset. On subsequent alarms the silenceable signals will resound and the City Tie Box will be retriggered. See 8. *Alarm Xmit-Sil.* on page 50 for more information.

The Trouble Transmit signal to the PR-300 can be programmed to delay AC power fail for 0, 1 or 3 hours if this is the only system trouble. See 9. *Pwr Fail Tmr* on page 50 for more information.

6.0 Field Wiring

Table 1 Settings permitted in CAN/ULCS527

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 CAN/ULCS527, Standard for Control Units for Fire Alarm Systems, certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	Permitted in CAN/ULCS527? (Y/N)	Possible settings\methods	Settings permitted in CAN/ULCS527
System Reset and Signal Silence on RAM-208/216	N	JW4 (Orange Wire) Intact = Buzzer silence & Lamp Test local function only. System Reset & Signal Silence are disabled. Cut Jumper (Orange Wire) to have all remote functions operate.	Leave JW4 intact on RAM-208/216

6.1 Main Board Field Wiring

Wire devices to the terminals as shown in the figures that follow. Refer to *section 6.9 Wiring Tables and Information on page 30* for wire gauges and *Appendix C: Specifications on page 81* for specifications.



Caution: Do not exceed power supply ratings.

6.1.1 Initiating Circuit Wiring

Wiring diagrams for the initiating circuits are shown below. The panel supports Style B wiring for the initiating circuits and Style D wiring for the indicating circuits. The initiating circuits are supervised by a 3.9KΩ EOL resistor or an active EOL module.

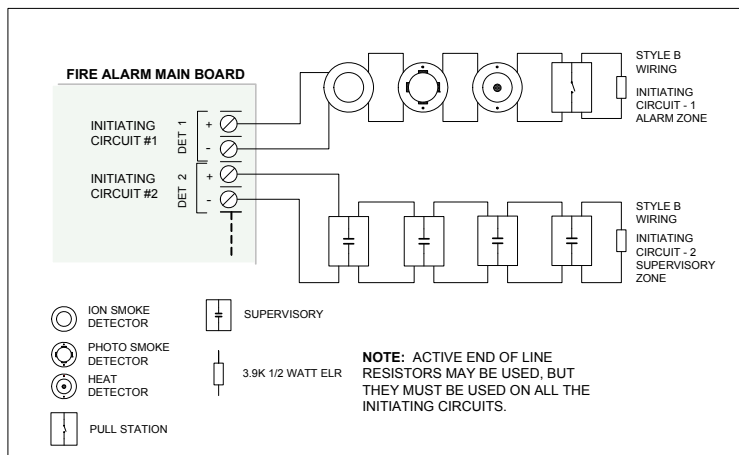


Figure 11 Initiating circuit – Class B or Style B Wiring

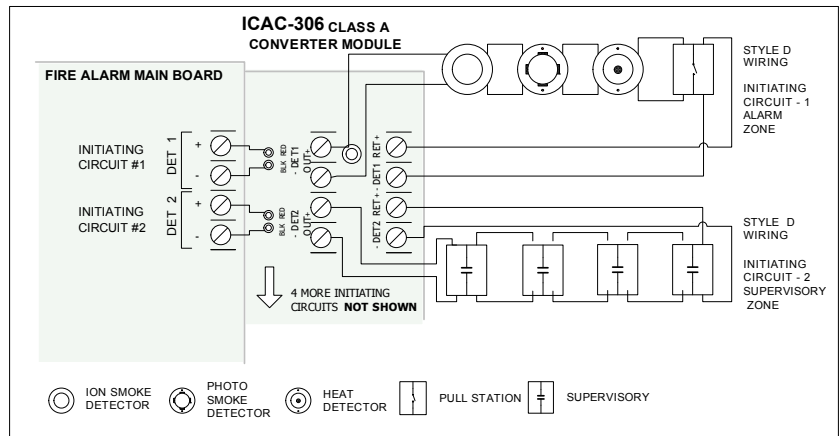
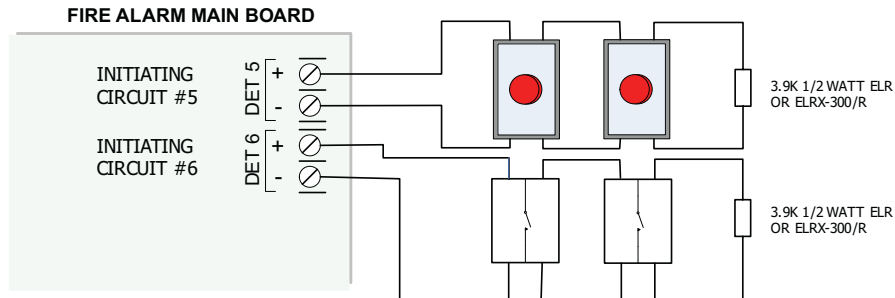


Figure 12 Initiating circuit– Class A or Style D Wiring

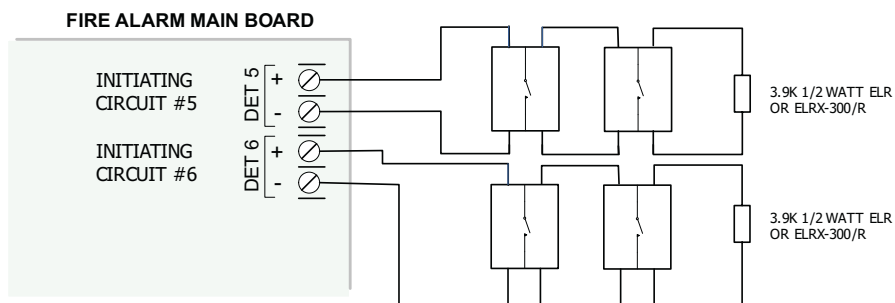
6.2 Abort and Manual Release Switch Wiring

Wiring for the abort and manual release switches is shown in *Figure 13* and *Figure 14*. The Abort and Manual release switches must be on different circuits. DET5 is used for the Abort switch and DET6 is used for the manual release switch.

Abort and Manual Release switches on separate circuits



Manual Release switches on separate circuits



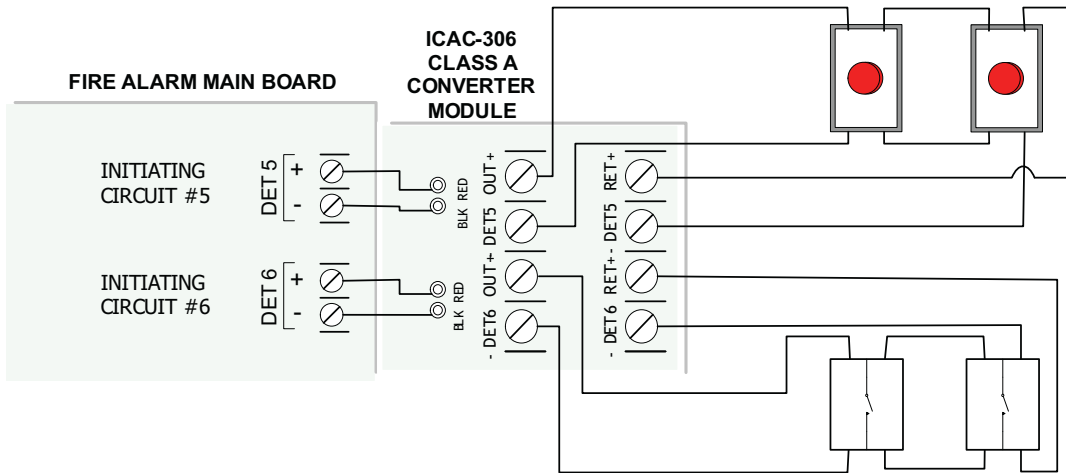
MANUAL RELEASE SWITCH
Use MS-403,404
USE ONLY NO CONTACT

ABORT SWITCH
CONNECT A UL/ULC LISTED ABORT STATION ACCEPTABLE TO THE AHJ, COMPLYING WITH THE FOLLOWING SPECIFICATIONS:
MAXIMUM IMPEDANCE = 1.4K OHMS
RATED CURRENT = 45mA
RATED VOLTAGE= 24V

Figure 13 Abort and Manual Release Switch Class B or Style B Wiring

FM APPLICATIONS MUST HAVE CLASS A INITIATING CIRCUITS ONLY (FOR RELEASING) AND 90 HOUR BATTERY STANDBY OPERATION

Abort and Manual Release switches on separate circuits



Manual Release switches on separate circuits

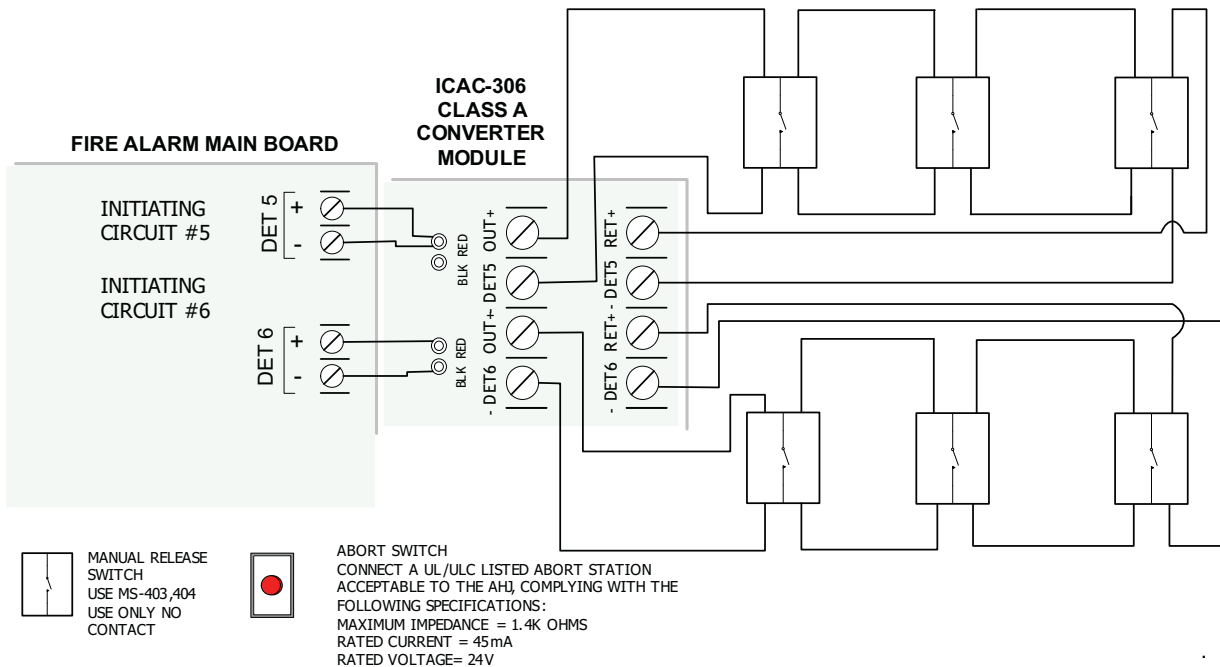


Figure 14 Abort and Manual Release Switch Class A or Style D Wiring

6.3 Indicating Circuit Wiring

The FR-320 Series Fire Alarm supports Class B or Style Y and Class A Style Z wiring for its indicating circuits. Each circuit is supervised by a 3.9KΩ EOL resistor or active EOL module. Each indicating circuit provides up to 1.7 A, 5 A maximum total if no auxiliaries are used.

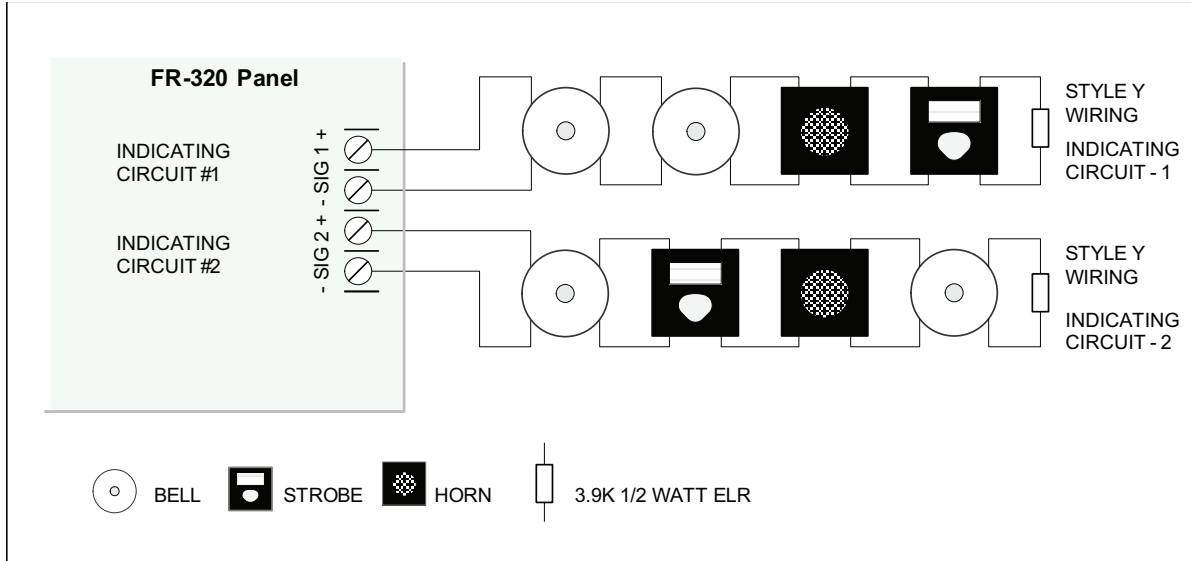


Figure 15 Indicating circuit – Class B or Style Y wiring

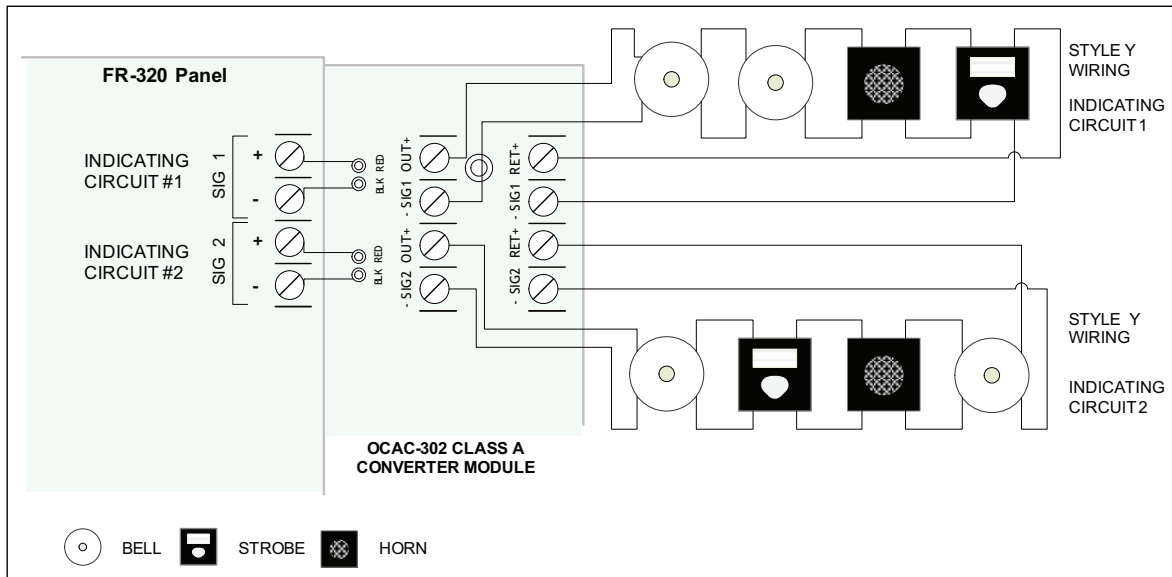


Figure 16 Indicating circuit – Class A or Style Z wiring

6.4 Releasing Circuit Wiring

Wiring for the releasing circuit is shown in *Figure 17* below. SIG3 and SIG4 output circuits are reserved for the releasing circuits. Solenoid EOL module (MP-320R/W) is used to supervise the solenoid coil. If the solenoid is already fitted with the directional diode then only the 3.9KΩ EOL resistor is used. The supervisory current passes through the solenoid coil thus confirming the integrity of the solenoid coil for open coil. The wiring is supervised for the open and short conditions. See *Appendix A: Compatible Solenoids on page 79* for compatible solenoids.

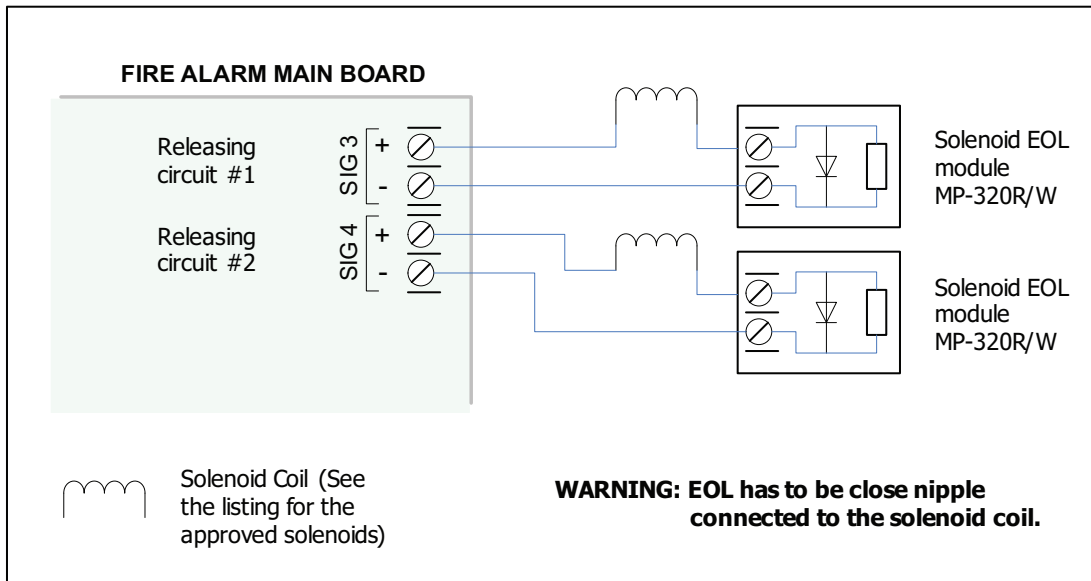


Figure 17 Releasing Circuit Wiring

6.5 Four-Wire Smoke Detector Wiring

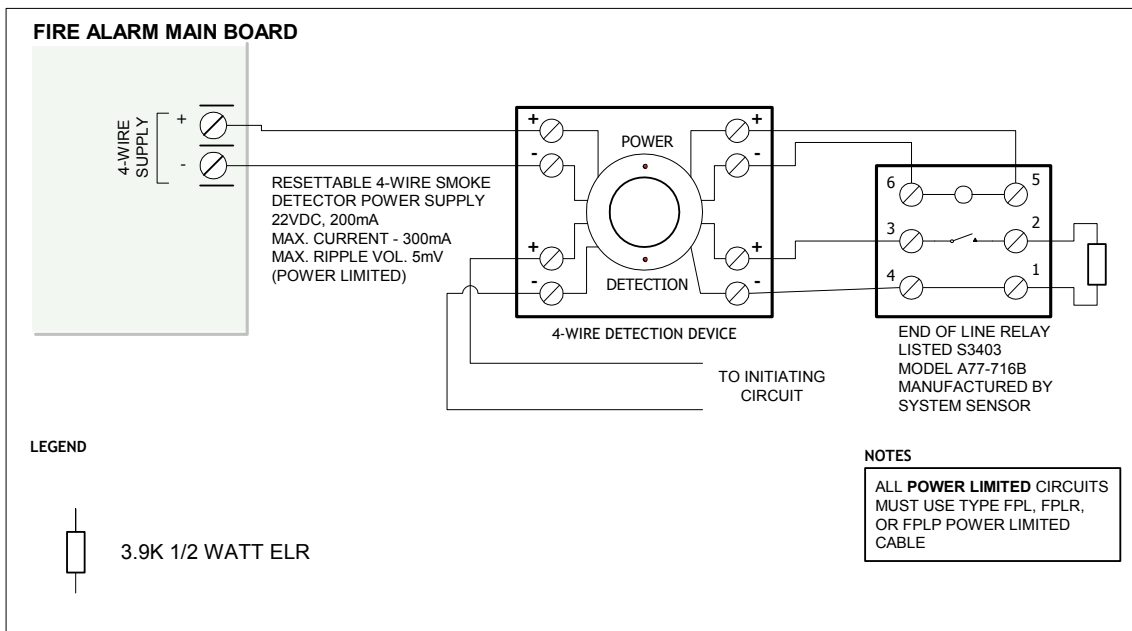


Figure 18 Four-wire smoke detector wiring

6.6 Relay Adder Module Wiring

Wire relays on the relay adder module RM-306 as shown in *Figure 19*.

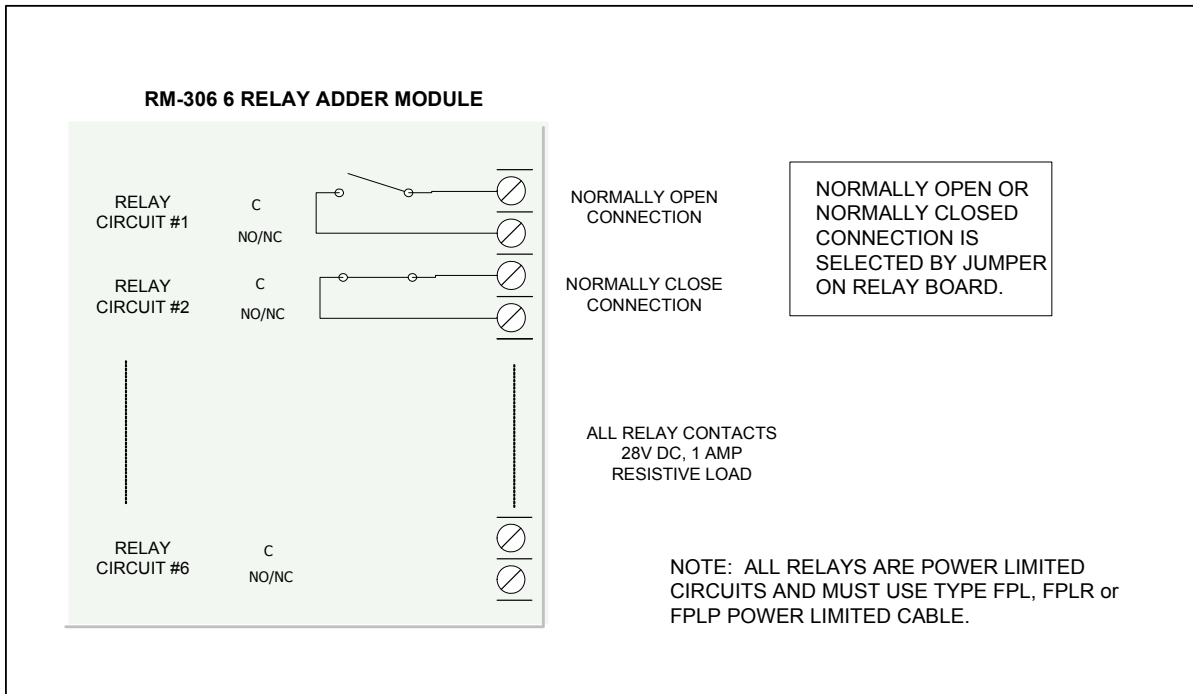


Figure 19 Relay per zone (RM-306) Terminal connection

6.7 Polarity Reversal and City Tie Module (PR-300) Wiring

Wire PR-300 Polarity Reversal and City Tie Module (if used) as shown in *Figure 20* below. See *Appendix C: Specifications on page 81* for module specifications. Power Limited cable type FPL, FPLR or FPLP must be used.

For USA installation, the installer must use **Atlantic Scientific (Tel: 407-725-8000), Model #24544 Protective Device**, or similar **UL-Listed QVRG secondary protector**, as shown.

For use in Canada, the Protective Device is not required but still recommended.

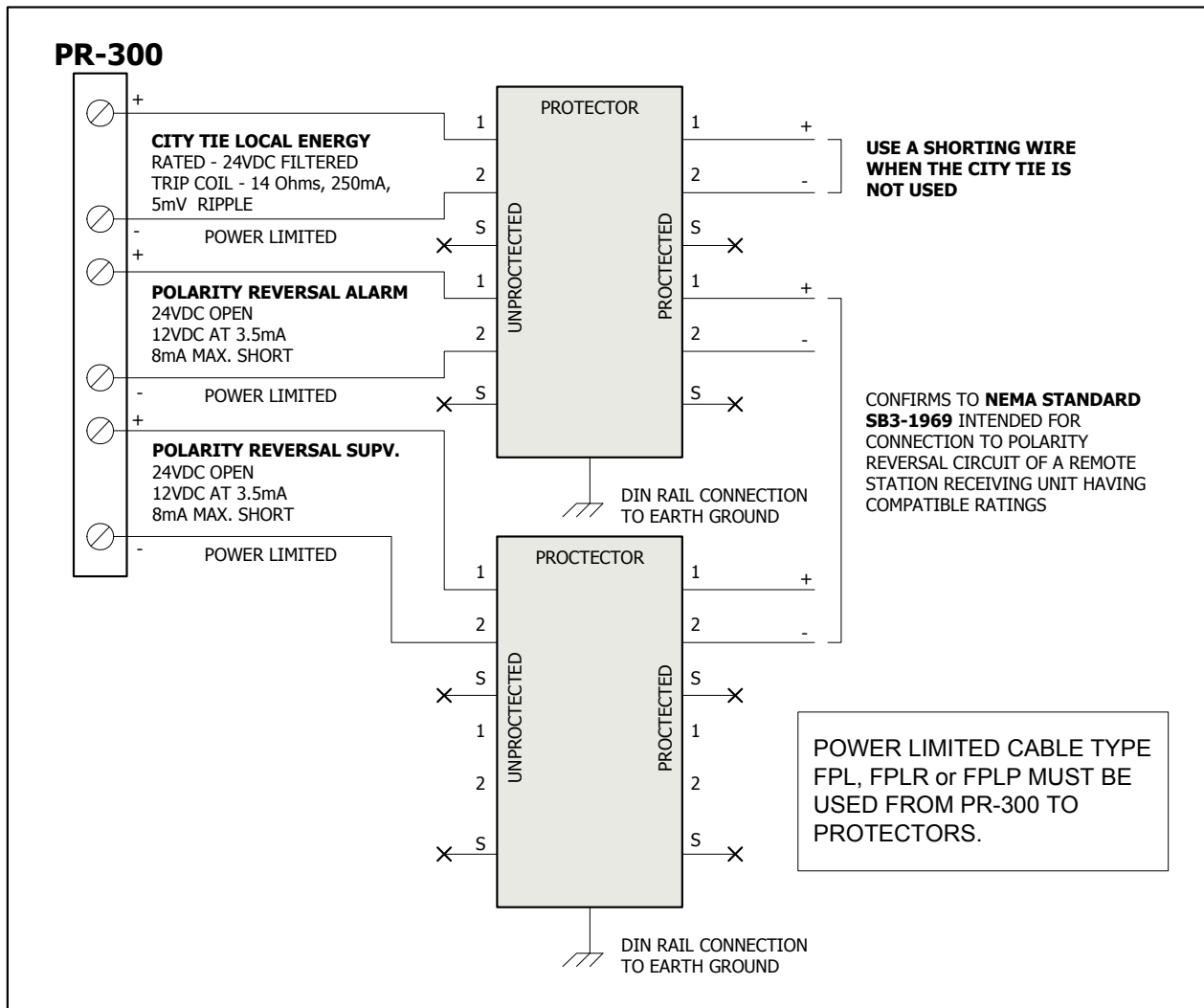


Figure 20 Polarity reversal and city tie module terminal connection

6.8 Power Supply Connection

The power supply is part of the Main Chassis. The ratings are:

Table 2 Power Supply Ratings

Type	Rating
Electrical Input rating	120 VAC 60Hz 1.75 A / 240 VAC 50 Hz 0.93 A, 10A slow blow fuse on secondary of transformer
Power supply total current	6.5A AC maximum @ secondary of transformer
Battery fuse on Main module	10A, slow blow micro fuse

Wire the power supply as shown below in *Figure 21* using the proper wire gauge.



Caution: Do not exceed power supply ratings.

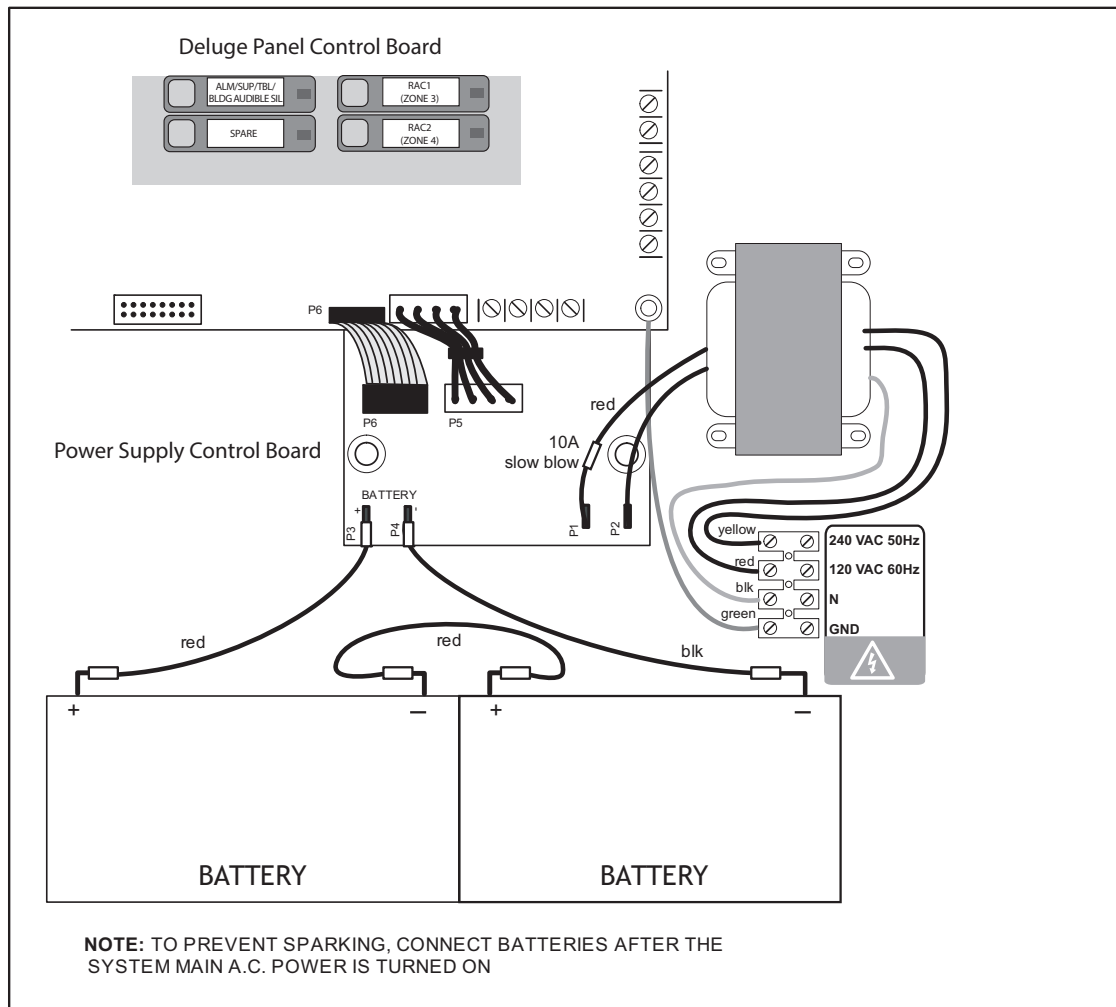


Figure 21 Power Supply Connection

6.9 Wiring Tables and Information

Table 3 Initiating Circuit Wiring Distances

WIRE GAUGE	MAXIMUM WIRING RUN TO LAST DEVICE	
	AWG	FEET
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200



Notes: For Class A the maximum wiring run to the last device is divided by two.

Maximum loop resistance should not exceed 100 ohms.

Maximum capacitance of 0.5uF total on each initiating circuit.

Table 4 Indicating Circuit Wiring Distances

TOTAL SIGNAL LOAD	MAXIMUM WIRING RUN TO LAST DEVICE (ELR)								MAX. LOOP RESISTANCE
	18AWG		16AWG		14AWG		12AWG		
Amperes	ft	m	ft	m	ft	m	ft	m	Ohms
0.06	2350	716	3750	1143	6000	1829	9500	2895	30
0.12	1180	360	1850	567	3000	915	4720	1438	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	950	289	3
0.90	156	47	250	76	400	122	630	192	2
1.20	118	36	185	56	300	91	470	143	1.5
1.50	94	29	150	46	240	73	380	115	1.2
1.70	78	24	125	38	200	61	315	96	1.0



Notes: For Class A wiring the resistance in ohms is multiplied by two.

Maximum voltage drop should not exceed 1.8 volts.

6.10 Four-Wire Smoke Power (regulated)

Four-wire smoke power is provided for four-wire smoke detectors. This filtered supply is supervised therefore a short will disconnect the power and the common trouble is active. The power is reconnected after the 'RESET' key is pressed. See *Appendix C: Specifications on page 81* for supply rating.

6.11 Supervised Auxiliary Power (regulated)

Supervised auxiliary power is used to power the remote annunciators and smart relay modules. This filtered circuit is supervised therefore a short will disconnect the power and the common trouble is active. The power is reconnected after the 'RESET' key is pressed. See *Appendix C: Specifications on page 81* for supply rating.

6.12 Unfiltered Supply (full wave rectified)

This regulated supply is not supervised. If there is a short on this circuit, the auxiliary power does not recover automatically when the short is removed. This power supply must be disconnected, then reconnected and the panel reset to re-establish the auxiliary power supply. See *Appendix C: Specifications on page 81* for supply rating.

7.0 System Checkout

7.1 Before turning the power “ON”

To prevent sparking, **do not connect** the batteries. Connect the batteries after powering the system from the main AC supply.

1. Check that all modules are installed in the proper location with the proper connections.
2. Check all field (external) wiring for opens, shorts, and ground.
3. Check that all interconnection cables are secure, and that all connectors are plugged in properly.
4. Check all jumpers and switches for proper setting.
5. Check the AC power wiring for proper connection.
6. Check that the chassis is connected to **EARTH GROUND** (cold water pipe).
7. Make sure to **close the front cover plate** before powering the system from main AC supply.

The best way to check out a panel first is to not connect any field wiring. Power up the panel with an end of line. The panel should be free of trouble. Then connect one circuit at one time. If a trouble occurs, correct the fault then continue the field wiring.

7.2 Power-up procedure

After completing the System Checkout procedures outlined above,

1. Power up the panel. The "AC ON" green LED and the “Common Trouble” LED should illuminate, and the buzzer should sound. Press the “System Reset” button. Since the batteries are not connected, the trouble buzzer should sound intermittently and the common trouble LED should flash.
2. Connect the batteries while observing correct polarity: the red wire is positive (+) and black wire is negative (-). All indicators should be OFF except for normal power "AC ON" green LED and green LED I4 (below the TROUBLE relay at left bottom of board).



Note: Green LED I4 is illuminated when the system is normal. This LED indicates that the trouble relay is in normal standby condition.

3. Configure the Fire Alarm Control Panel as described in the Configuration section.

7.3 Troubleshooting

Table 5 Troubleshooting

Symptoms	Possible Cause
Circuit Trouble	To correct the fault, check for open wiring on that particular circuit loop or if the Circuit Disconnect Button is active. <i>Notes: (1) Bypassing a detection circuit or signal circuit will cause a system trouble (off-normal status); (2) Bypassing a releasing circuit will cause a supervisory signal.</i>
Remote Trouble	Remote Trouble will be indicated on the main panel display for any failure reported by, or failure to communicate with a remote annunciator or other remote device.
Ground Fault	This panel has a common ground fault detector . To correct the fault, check for any external wiring touching the chassis or other Earth Ground connection.
Battery Trouble	Check for the presence of batteries and their conditions. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace batteries as soon as possible.
Common Trouble	<p>If only a common trouble is indicated on the main panel and none of the above confirming trouble indicators are on, check the following for possible fault:</p> <ul style="list-style-type: none"> • Check for any missing interconnection wiring. • Check for any Module missing that was part of the Configuration. • Check for improperly secured cabling.

8.0 Indicators, Controls and Operations

Refer to Figure 22 below for LED Indicator and Control Button locations.

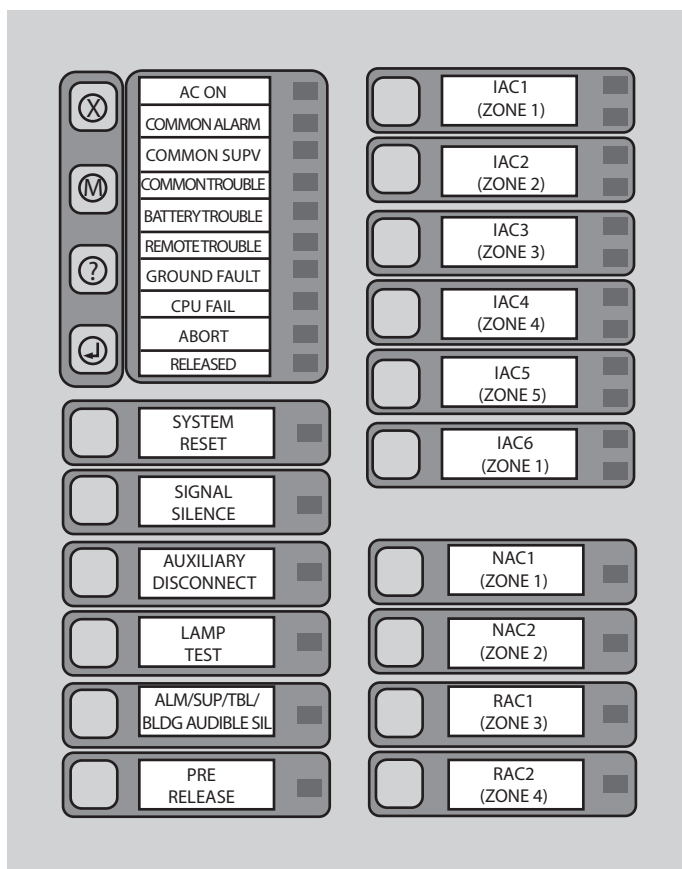


Figure 22 LED indicators and control buttons

The Main Display Panel on the Main Pre-Action/Deluge and Agent Release Control Board consists of:

- 16 common LED Indicators (left portion of display)
- Ten Common Buttons (left half portion of display)
- Up to six Initiating Circuit Alarm LEDs and six Initiating Circuit Trouble LED Indicators
- Four Indicating/Releasing Circuit LEDs (labeled NAC for Notifying Appliance Circuit or RAC for Releasing Appliance Circuit)
- Up to ten disconnect buttons (six for initiating circuits & four for indicating/releasing circuits)

LED Indicators may be amber, red, or green, and may illuminate continuously (steady), or at one of two flash rates.

- Fast Flash (Supervisory)- 120 flashes per minute, 50% duty cycle
- Trouble Flash (Trouble) - 20 flashes per minute, 50% duty cycle



Note: Each display is supplied with laser printer printable paper labels for sliding into the plastic label template on the panel. For the Main Display, the paper label is **Mircom# NP-2056**. This includes English and French versions.

8.1 Common LED Indicators

8.1.1 AC On

The AC ON led is on steady green while the main AC power is within acceptable levels. It is turned off when the level falls below the power-fail threshold.

8.1.2 Common Alarm

The common alarm led is illuminated steady red as a result of any active alarm present in the system.

8.1.3 Common Trouble

The common trouble led is illuminated steady amber as a result of a trouble condition being detected on the system.

8.1.4 Battery Trouble

Flashes amber at a slow rate, when the battery voltage is lower than the specified threshold or the battery is off line. Flashes amber at a fast rate when there is a trouble on the battery charger circuit.

8.1.5 Remote Trouble

Flashes amber at a slow rate as a result of any remote trouble condition.

8.1.6 Ground Fault

Flashes amber at a slow rate when there is a ground fault detected in the system.

8.1.7 CPU Fail

Flashes amber at a slow rate when the CPU is not working properly.

8.1.8 Abort

Illuminate steady amber when the abort circuit is active.

8.1.9 Released

Illuminate steady red when the releasing circuit(s) is active.

8.1.10 System Reset

Turn on steady amber during the system reset process.

8.1.11 Signal Silence

Flashes amber at a slow rate when the signal circuits are silenced.

8.1.12 Auxiliary Disconnect

Flashes amber at a slow rate when the auxiliary disconnect function is active.

8.1.13 Lamp Test

Illuminate amber steady when the lamp test button is pressed.

8.1.14 ALM/SUP/TBL/BLDG AUDIBLE SIL (Buzzer Silence)

Flashes amber at a slow rate when the buzzer is silenced.







8.1.15 Pre Release

Flashes red at a fast rate, when the release timer is started turns off when the release timer expires or the system is reset.

8.2 Menu Buttons

To use the menu buttons you will need to install the CFG-300 configuration tool. See *section 9.1 Using the CFG-300 Tool on page 43* for details.

Menu Button

	Menu Button	Pressing  and entering the passcode will allow you to enter the command menu.
	Info Button	When the system is off-normal, press  to display extra information of the event.
	Enter Button	Pressing this button to select a menu option or to confirm a menu operation.
	Cancel Button	To return to previous menu in the configuration or command mode.

8.3 Switches and Common Indicators

The FR-320 Series panel is a six-zone panel with four output circuits. The circuits are arranged in the following configuration:

Zone 1	Input circuit
Zone 2	Input circuit
Zone 3	Input circuit
Zone 4	Input circuit
Zone 5	Manual Release switches or Abort switches or individual switch
Zone 6	Manual Release switches or individual switch
Out 1	NAC1
Out 2	NAC2
Out 3	Releasing circuit 1
Out 4	Releasing circuit 2 or NAC3 in some applications

8.3.1 Zone 1 to Zone 4

- Alarm LED (red) turns on steady when an alarm is detected
- Supervisory LED (amber) turns on steady when the circuit is active
- Trouble LED (amber) turns on at slow flash rate when in trouble or bypassed

8.3.2 Zone 5 and Zone 6

- Alarm LED & Trouble LED The zone type and LED behavior varies upon the configuration. Steady when turned on.

8.3.3 Out1 and Out2 (NAC circuits)

- Trouble LED (amber) turns on at slow flash rate when in trouble or bypassed

8.3.4 Out3 and Out4 (Releasing circuits)

- Trouble LED (amber) turns on steady when the circuit is bypassed
turns on at slow flash rate when in trouble

8.3.5 Input Circuits Bypass Switch

These bypass switches are used to bypass the input circuit. Bypass is a toggle switch which will bypass and un-bypass in a sequence whenever the switch is pressed. When the input circuit is bypassed a trouble is generated and the system will not respond to any trouble or alarm on the bypassed input circuit. If the bypassed input circuit is active and the Bypass Switch is pressed for un-bypassing, the Alarm LED will flash at the fast rate for 10 seconds. During these 10 seconds, pressing the Bypass Switch can bypass the active input circuit again. After 10 seconds, the bypassed alarm will be processed.

8.3.6 Output Circuits Bypass Switch

The output circuit bypass switches bypasses the NAC circuit and the releasing circuit. The switch is a toggle switch and pressing it again, will un-bypasses the output circuit the trouble LED turns off.

8.4 Common Controls

8.4.1 System Reset Button

The System Reset button resets the Fire Alarm Control Panel and all Circuits. In particular, the system reset button

- Resets all Latching Trouble Conditions
- Resets all Initiating and Releasing Circuits
- Resets 4-Wire Smoke Supply
- Turns off all Indicating Circuits
- Turns off Signal Silence Indicator
- Stops and resets all Timers
- Processes inputs as new events
- Does not affect Aux Disconnect

8.4.2 Signal Silence Button

Activation of the Signal Silence button when the panel is in alarm turns on the Signal Silence indicator and deactivates any Silenceable Indicating Circuits. Non-Silenceable Circuits are unaffected. Signals will re-sound upon any subsequent alarm. Subsequent operation of signal silence resounds all Silenceable signals. This button does not function during any configured Signal Silence Inhibit Timer period.

8.4.3 Auxiliary Disconnect Button

Activating the Auxiliary Disconnect button activates the Auxiliary Disconnect function. The Auxiliary Alarm Relay is always disconnected with this button. The Common Alarm Relay, the Common Supervisory relay and all correlated alarm relays may be disconnected as selected through configuration. Activating the Auxiliary Disconnect button also causes the Common Trouble LED to illuminate steady, the common trouble relay to send a trouble message and the trouble buzzer to flash at the trouble flash rate. Pressing the Auxiliary Disconnect button

again de-activates this function and the system will go back to normal.

8.4.4 Lamp Test Button

Activation of the Lamp Test button causes all front panel Indicators to steadily illuminate and turns the buzzer ON steady. If Lamp Test is active for more than 10 seconds, Common Trouble is activated.

8.4.5 ALM/SUP/TBL/BLDG AUDIBLE SIL Button (Buzzer Silence)

Activation of the ALM/SUP/TBL/BLDG AUDIBLE SIL button while the buzzer is sounding silences the buzzer. The buzzer will resound if there is a subsequent event. Pressing the button when the buzzer is not sounding has no effect.

8.5 Circuit (zone) disconnect buttons

Circuit (Zone) Disconnect pushbuttons are provided for all initiating indicating, and releasing circuits on the Fire Alarm Control Panel. These pushbuttons are located beside their respective indicating LED.

Pressing a Circuit Disconnect pushbutton bypasses the associated circuit and turns on its Trouble Indicator, activating Common Trouble. Pressing a releasing circuit disconnect pushbutton bypasses the associated releasing circuit and turns on its LED, activating common supervisory. While a Circuit is disconnected, all changes in status (alarms and troubles) on that circuit are ignored. The panel does not activate disconnected indicating circuits. Circuit Disconnect pushbuttons are toggle switches; therefore, pressing an activated switch a second time will un-bypass (reconnect) the circuit.

Disconnecting an active Latching Initiating Circuit (including Alarms, Water flow Alarm, Sprinkler Alarm, General Alarm, and Latching Supervisory) does not affect its status until the panel is reset. Disconnecting an active Non-Latching Initiating Circuit (including Non-Latching Supervisory and Trouble-Only) causes them to behave as if the alarm situation has disappeared. Disconnecting an active indicating circuit immediately deactivates the circuit.

When an Initiating Circuit Disconnect pushbutton is returned to the normal state (by pressing it again in order to un-bypass the circuit), the panel checks the state of the circuit. If the circuit is active, the Status Indicator flashes for 10 seconds at the Fast Rate without processing the input. If the Circuit is not re-bypassed by then, it will be processed as a new input.

8.6 Common Relays

Table 6 Relay Types

Relay Type	Single Hazard	Dual Hazard
Trouble Relay	Trouble	Trouble
Supervisory Relay	Supervisory	Supervisory
Alarm Relay	Alarm	Hazard1 (Alarm)
Aux Alarm Relay	Alarm (Silence-able)	Hazard2 (Alarm)



Note: Some troubles are latching once they are detected they remain active until system reset. In this case the common trouble indicator will also remain active until system reset. The common trouble is not bypassed by the auxiliary disconnect function.

8.7 Circuit Types

8.7.1 Initiating (Detection) Circuit Types

8.7.2 Non-Verified Alarm

A Non-Verified alarm is a “normal” type of alarm that can have pull stations, smoke detectors, or heat detectors attached to it. Activation of any of these devices will immediately result in an alarm condition in the Fire Alarm Control Panel. An Alarm condition causes the associated Circuit Status LED and the Common Alarm LED to illuminate red.

8.7.3 Water Flow Alarm (Water flow Sensors)

Water Flow Alarms are identical to normal Non-Verified Alarms except that any indicating circuits programmed to these circuits (all are by default) are Non-Silenceable. Also, if Water Flow Retard Operation is enabled, these circuits are sampled every one second. If ten samples are active within any 15-second interval, the Water flow Alarm is confirmed and processed. An alarm condition causes the associated Circuit Status LED and the Common Alarm LED to illuminate red.



Note: Do not use Retard Operation with any external retarding device; maximum retard may not exceed 120 seconds.

8.7.4 Non-Latching Supervisory (For Supervisory Circuits)

Activation on these circuits will cause the Circuit Status LED and the amber Common Supervisory LED to illuminate. The buzzer will sound at fast rate. If the circuit activation is removed, the Supervisory condition will clear (as long as there are no other Supervisory conditions in the system) and the Circuit Status LED will turn off.

8.7.5 Latching Supervisory (For Supervisory Devices)

Activation on these circuits will cause the Circuit Status LED and the amber Common Supervisory LED to illuminate. The buzzer will sound at fast rate. If the circuit activation is removed, the Supervisory condition will NOT clear.

8.7.6 Abort Switch

When the hazard area is in alarm (pre-discharge) state and the release timer is running, the activation of the corresponding Abort Switch will pause the releasing timer. The release process is held while the Abort Switch is pressed. Releasing the Abort Switch will resume the releasing timer and the corresponding hazard area goes into Alarm (pre-discharge) state again. The value of the release timer after Abort Switch is released depends on the type of Abort Delay in the configuration. When the release timer expires, the corresponding releasing circuit is activated. When the panel is in normal condition, activation of the Abort Switch will cause a trouble signal and the corresponding zone amber LED turns on at slow flash rate.

8.7.7 Manual Release Switch

Activation of the Manual Release Switch of a hazard area will activate the corresponding releasing circuit. If the corresponding Manual Release Delay is non-zero, the releasing circuit will be activate after the Manual Release Delay expires.

8.7.8 Indicating (Signal) Circuits Types

8.7.9 Silenceable Signal

The Silenceable Signal circuit is used for audible devices such as bells and piezo mini-horns that may be silenced either manually or automatically.

8.7.10 Non-Silenceable Signal

The Non-Silenceable Signal Circuit is used for audible devices such as bells and piezo mini-horns that may **not** be silenced either manually or automatically. While sounding, these devices follow the evacuation code pattern that is configured by the user. For more information on evacuation codes, refer to *section 8.8 Evacuation codes on page 41*.

8.7.11 Silenceable Strobe

Silenceable strobes will be silenced when the “signal silence” key is pressed.

8.7.12 Non-Silenceable Strobes

Non-Silenceable Strobes will not be silenced when the “signal silence” key is pressed.

8.8 Evacuation codes

Continuous	On 100% of the time
Temporal Code	3 of 0.5 second on, 0.5 second off then, 1.5 second pause
20 BPM	1.5 seconds on, 1.5 seconds off
60 BPM	0.5 second on, 0.5 second off
120 BPM	0.25 second on, 0.25 second off

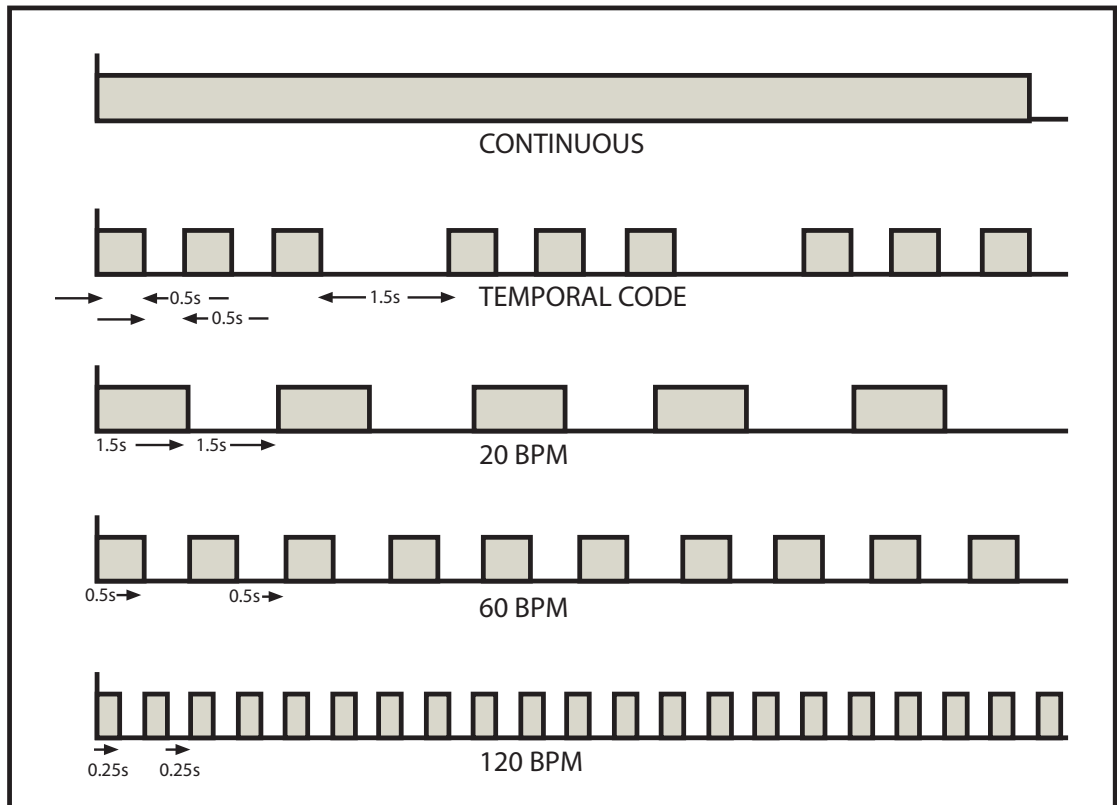


Figure 23 Evacuation and Alert Codes

9.0 Configuration

Table 7 Settings permitted in CAN/ULCS527


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 CAN/ULCS527, Standard for Control Units for Fire Alarm Systems, certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	Permitted in CAN/ULCS527? (Y/N)	Possible settings\methods	Settings permitted in CAN/ULCS527
Temporal pattern in conjunction with manual alarm evacuation control	Y	Modes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Modes 9, 11
Auto signal silence timer	Y	Disabled or 5, 10, 20, or 30 minutes	All
Abort and manual release on same circuit (unsupervised)	N	Modes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Modes 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

Table 8 Settings permitted in UL864

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 UL864, Standard for Control Units and Accessories for Fire Alarm Systems, certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	Permitted in UL864? (Y/N)	Possible settings\methods	Settings permitted in UL864
AC power fail delay	Y	0, 60, 180 minutes	60, 180 minutes
Temporal pattern in conjunction with manual alarm evacuation control	Y	Modes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Modes 9, 11
Auto signal silence timer	N	Disabled or 5, 10, 20, or 30 minutes	Disabled
Abort and manual release on same circuit (unsupervised)	N	Modes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	Modes 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

Configure the FR-320 Series Panels using the CFG-300 LCD Tool (see further documentation packaged with CFG-300 for configuration information).

9.1 Using the CFG-300 Tool

Connect the CFG-300 to the panel, then press  (Menu button). The CFG-300 LCD display will display the Main Menu. The function of different buttons on the front panel display is shown in *Figure 24* below.

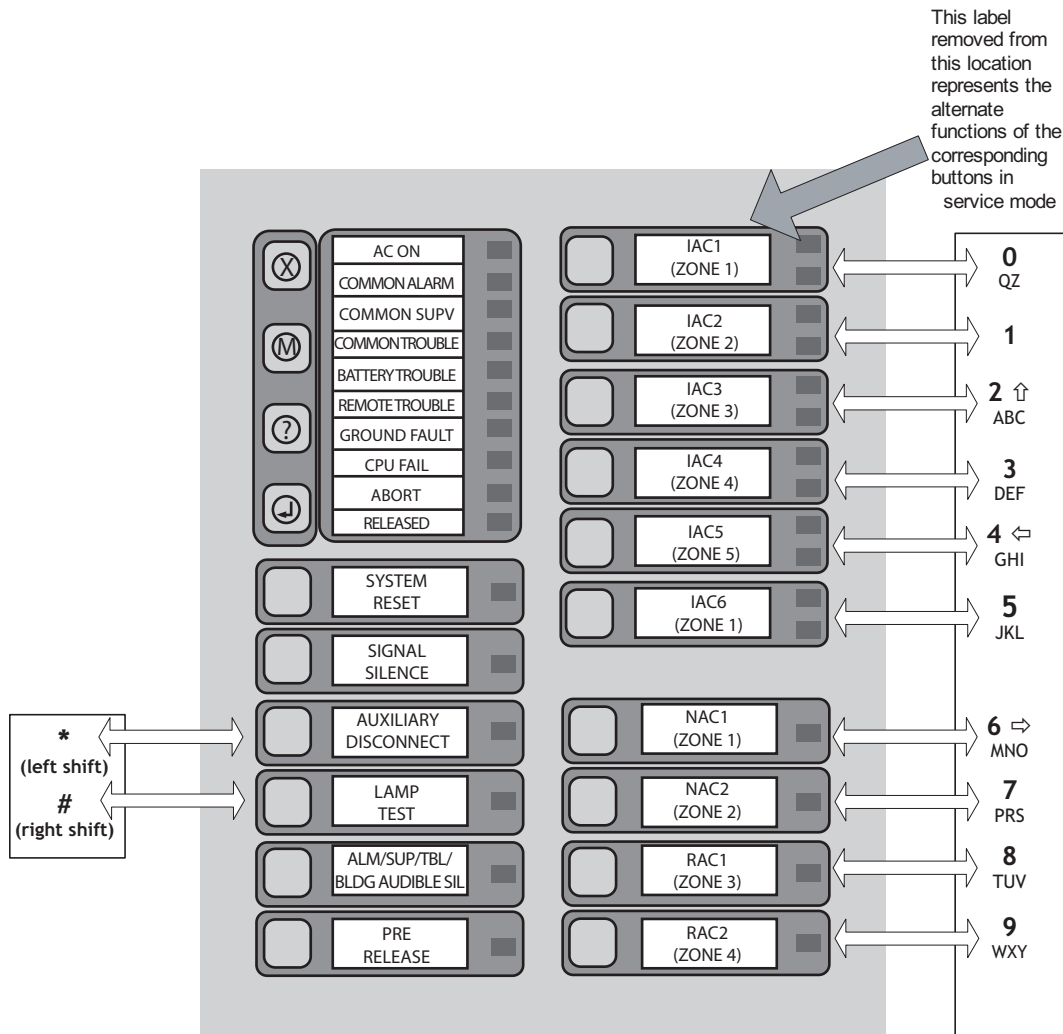

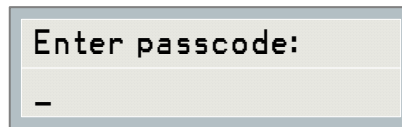


Figure 24 FR-320 Configuration

9.2 Entering the Passcode

The programming section is passcode protected. The following screen shows the message that is displayed to enter the passcode. The maximum allowable passcode is ten digits long, and permits numerical values only. Press  (Enter button) after entering the passcode. If the passcode is correct, it will take you to the main command menu. If the passcode is wrong the system will ask you to re-enter passcode. The system will be exhausted after three retries and will then take you back to the Normal message display.









When the user presses “MENU” and enters the password, they should enter the password of the level intended. If the user is in a lower level of access, attempts to operate functions requiring a higher level of access will be refused. The three levels of access are defined in Table 9.




Table 9 Access Levels

Access Level	Description
Level 0 - Command	The default password is for this level “1111” without quotes. In this level the user can only perform regular testing and operation.
Level 1 - Configuration	The default password is for this level “2222” without quotes. User can change configuration and have access to command level.
Level 2 - Factory	Currently not used.

9.3 How to Use the Keypad to Program the FR-320

1. Press  (Menu button). You will be prompted to enter your password.
2. Enter your password, then press  (Enter button) to continue.
3. Select a Command Menu option by pressing . The corresponding submenu will display.
4. Use the up and down arrow buttons to scroll through the submenu.
5. Press  to select a submenu option.
6. Use the left or right arrow buttons to select/unselect an option (selected = “X”). Use the up and down arrows to scroll through the different menu options. When entering numerical data, use the up and down arrows to increase or decrease the number.
7. Once you have made the correct selection, press  to confirm the change. The display will return to the submenu screen.
8. Press  (Cancel button) to return to the previous menu.

9.4 Command Menu

The main command menu is shown in *Figure 25*. The first line of the LCD will always show “-Command Menu-”, and the second line scrolls through different selections. Use the “UP” and “DOWN” keys to scroll through the menu, and press the  key to make a selection. To exit from the main command menu, select the “Exit” menu option and then press either the  or  key.



Note: Command Menu Item 1 and 6 can only be accessed if jumper JW6 is placed on the main board.

-Command Menu-	Access level Required
1. Panel Config	Configuration
2. Set Time	Configuration
3. Set Password	Configuration
4. View EventLog	Command
5. Print Event Log	Command
6. Clear Event Log	Command
7. Exit	Command

Figure 25 Command Menu

Pressing “LAMP TEST” at any time will show the information about the system and the software version. The first line shows the panel mode number and pre-programmed mode. The second line shows the software version number. The version of the software is read as Major.Minor.Revision.

9.5 1. Panel Config (Command-Menu)

The following is a detailed description of the FR-320 configuration menu.



Note: Refer to *section 9.3 How to Use the Keypad to Program the FR-320 on page 44* for detailed instructions on making menu selections.

```
-Panel Config-
1. Choose a mode
2. Hazard Config
3. Panel Features
4. Default Config
```

9.5.1 Command Menu-->Panel Config-->Choose a mode

<p><i>Command Menu-->Panel Config-->Choose a mode</i></p> <p>1. Choose a mode</p> <pre>Choose a mode: 1</pre>	<p>1-->Default</p>	<p>Use this function to choose a pre-programmed panel configuration.</p> <p>Selections range from modes 1 to 14. Refer to <i>section 11.0 Pre-Programmed Modes on page 57</i> for details on mode configurations.</p> <p>Note: changing the fixed configuration of the panel will cause all configuration data set to default for that particular mode.</p>
--	-----------------------	--

9.5.2 Command Menu-->Panel Config-->Hazard Config

```
-Hazard Param.-
1. Release timer
2. Abort Delay
3. Manual Rls Delay
4. Soak timer
```



Note: Refer to section 9.3 *How to Use the Keypad to Program the FR-320* on page 44 for detailed instructions on making menu selections.

<p>Command Menu-->Panel Config-->Hazard Config</p> <p>1. Release Timer</p> <pre>Release timer(sec): 60</pre>	<p>60->Default</p> <p>Available options: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 seconds</p>	<p>Use this function to set the programmable timer that delays the activation of the releasing application circuits.</p> <p>This timer starts immediately after receiving a confirming alarm (cross-zoned hazard area) or a single alarm (non-cross-zoned hazard area). When the timer expires, the releasing circuit activates.</p> <p>Value: 0 to 60 seconds in five-second increments.</p>
<p>Command Menu-->Panel Config-->Hazard Config</p> <p>2. Abort Delay</p> <pre>Abort Delay Type: [X] Standard UL</pre>	<p><input checked="" type="checkbox"/> Standard UL->Default</p> <p><input type="checkbox"/> IRI</p> <p><input type="checkbox"/> NYC</p> <p><input type="checkbox"/> Local Juris.</p>	<p>Use this function to set how the Abort Switch operates with the Release Timer.</p> <p>Note that if the Release Timer is set to zero, the Abort Switch does not operate.</p> <p>In standard UL mode, after the Abort switch is pressed, the release timer will reset and then restart. If the switch is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if the switch is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.</p> <p>In IRI mode, the switch works in the same way as it does in Standard UL mode, except that the switch will function only if it is pressed and held before the second alarm comes in.</p> <p>In NYC mode, pressing the Abort Switch will reset to the Release Timer and add 90 seconds to the configured timer duration. After the Abort Switch is released, the Release Timer will restart.</p> <p>In Local Juris. (Local Jurisdiction Delay), pressing the Abort Switch will reset the Release Timer back to its configured value. After the switch is released, the Release Timer will restart.</p>

<p>Command Menu-->Panel Config-->Hazard Config</p> <p>3. Man. Rls Delay</p> <div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0;"> <p>Man. Rls Delay(sec):</p> <p>0</p> </div>	<p>0->Default</p> <p>Available options:</p> <p>0, 5, 10, 15, 20, 25, 30 seconds</p>	<p>Use this function to set the time delay of activation of corresponding releasing circuit(s) after activation of the manual release switch.</p> <p>Value: 0 to 30 seconds in five-second increments.</p>
<p>Command Menu-->Panel Config-->Hazard Config</p> <p>4. Soak timer</p> <div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0;"> <p>Man. Rls Delay(sec):</p> <p>0</p> </div>	<p>0->Default (continuous)</p> <p>The selectable values are in seconds: 0, 10, 20, 30, 40, 50, 60, 120(2min), 180(3min), 240(4min), 300(5min), 360(6min), 420(7min), 480(8min), 540(9min), 600(10min), 660(11min), 720(12min), 780(13min), 840(14min), 900(15min)</p>	<p>Use this function to set the length of time for which the releasing circuit is active. When the soak timer expires, the control panel automatically shuts off the activated releasing circuit.</p> <p>0 seconds means that the soak timer is disabled and the releasing circuit is active continuously.</p>

Command Menu-->Panel Config-->Features

-Panel Features-

1. Man. Sig. Sil
2. Wtr/Sprk. Retd
3. Aux Dis Corr
4. Sig-Sil Inh Tm
5. Aux Dis Alm&Sv
6. Auto Sil. Tmr
7. Rem. Annun.
8. Alm. Xmit. Sil.
9. Pwr Fail Tmr.
10. Com. Supv. Rly
11. Sig. Sil. Isol.
12. 1st Alarm Code
13. 2nd Alarm Code
14. Supv. Latching
15. Supv on NAC-2
16. Sig-Sil NAC



Note: Refer to section 9.3 *How to Use the Keypad to Program the FR-320* on page 44 for detailed instructions on making menu selections.

<p>Command Menu-->Panel Config-->Features</p> <p>1. Manual Sig. Silence</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Man. Sig. Sil. <input checked="" type="checkbox"/> ENABLE </div>	<input checked="" type="checkbox"/> ENABLE ->Default <input type="checkbox"/> DISABLE	Use this function to enable or disable the Signal Silence operation on the panel.
<p>Command Menu-->Panel Config-->Features</p> <p>2. Wtr/Sprk. Retd</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Waterflow/Sprk Retd <input checked="" type="checkbox"/> DISABLE </div>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default	By default all the initiating circuits configured as waterflow or sprinkler act as non-verified alarms. If enabled, a retard operation is performed for initiating circuits configured as waterflow or sprinkler.
<p>Command Menu-->Panel Config-->Features</p> <p>3. Aux Dis Corr</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Aux Dis. Dis Corr <input checked="" type="checkbox"/> ENABLE </div>	<input checked="" type="checkbox"/> ENABLE ->Default <input type="checkbox"/> DISABLE	By default this function will disconnect the auxiliary alarm relay when the aux disconnect button is pressed. If enabled, this function will disconnect the auxiliary alarm relay <i>and</i> all correlated relays when the aux disconnect button is pressed. Correlated relays include: RM-306 and SRM-312.
<p>Command Menu-->Panel Config-->Features</p> <p>4. Sig-Sil Inh Tmr</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Sig-Sil. Inhibit Timer <input checked="" type="checkbox"/> DISABLE </div>	<input checked="" type="checkbox"/> DISABLE->Default <input type="checkbox"/> 10sec <input type="checkbox"/> 20sec <input type="checkbox"/> 30sec <input type="checkbox"/> 1min	Use this function to inhibit the signal silence switch for a desired length of time. The time period should expire before the signals may be silenced. According to the Canadian National Building Code, this timer should be set to one minute.
<p>Command Menu-->Panel Config-->Features</p> <p>5. Aux. Dis. Dis Alam&Sv</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Aux Dis. Dis Alm&Sv <input checked="" type="checkbox"/> DISABLE </div>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default	If enabled the Common Alarm and Common Supervisory relays will be disconnected when Aux. Disconnect is pressed. Also, the PR-300 will not transmit a supervisory or alarm event. If disabled, the Aux disconnect switch has no effect on the Common Alarm relay, the Common Supervisory relay, and the PR-300.
<p>Command Menu-->Panel Config-->Features</p> <p>6. Auto Sig-Sil. Tmr</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Auto Sig-Sil. Tmr <input checked="" type="checkbox"/> DISABLE </div>	<input checked="" type="checkbox"/> DISABLE->Default <input type="checkbox"/> 5 Min <input type="checkbox"/> 10 Min <input type="checkbox"/> 20 Min <input type="checkbox"/> 30 Min	Use this function to set the time period for which the indicating circuits will sound before they are automatically silenced. For UL installations, disable the Auto Signal Silence Timer.
<p>Command Menu-->Panel Config-->Features</p> <p>7. Rem. Annun.</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> No. of Remote Annun. <input checked="" type="checkbox"/> NONE </div>	<input checked="" type="checkbox"/> NONE->Default <input type="checkbox"/> 1 <input type="checkbox"/> 2 ... <input type="checkbox"/> 6	Use this function to program the number of remote annunciators. Any combination of remote annunciators or smart relays can be used as long as the number does not exceed 6. The annunciators' addresses should be linear: without gaps and in sequence.

<p>Command Menu-->Panel Config-->Features 8. Alarm Xmit-Sil.</p> <pre> Alm Xmit-Sil. [X] DISABLE </pre>	<p><input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default</p>	<p>Use this function to allow the alarm transmit and auxiliary alarm relay to reset on the Signal Silence rather than the Reset switch.</p>
<p>Command Menu-->Panel Config-->Features 9. Pwr Fail Tmr</p> <pre> AC Pwr Fail Dly Tmr. [X] None </pre>	<p><input checked="" type="checkbox"/> NONE->Default <input type="checkbox"/> 1 HRS <input type="checkbox"/> 3 HRS</p>	<p>Use this function to delay the reporting of AC power fail trouble for a specific time period. If disabled, the AC power fail will be reported immediately.</p>
<p>Command Menu-->Panel Config-->Features 10. Com. Supv. Rly</p> <pre> Common Supv. Relay [X] ENABLE </pre>	<p><input checked="" type="checkbox"/> ENABLE->Default <input type="checkbox"/> DISABLE</p>	<p>If disabled, the common supervisory relay can be used as a common alarm relay. It will act the same way as a common alarm relay. If enabled, it is used as a common supervisory relay.</p>
<p>Command Menu-->Panel Config-->Features 11. Sig-Sil. Isol.</p> <pre> Sig-Sil. Isol. [X] DISABLE </pre>	<p><input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default</p>	<p>Enable this function only when suite isolators are used (Canada only).</p>
<p>Command Menu-->Panel Config-->Features 12.1st Alarm NAC Code</p> <pre> 1st Alarm NAC Code [X] Temporal </pre>	<p><input checked="" type="checkbox"/> Temporal ->Default <input type="checkbox"/> 20 BPM</p>	<p>Sets the NAC indicating code when the 1st alarm comes in.</p>
<p>Command Menu-->Panel Config-->Features 13. 2nd Alarm NAC Code</p> <pre> 2nd Alarm NAC Code [X] 120 BPM </pre>	<p><input checked="" type="checkbox"/> 120 BPM->Default <input type="checkbox"/> 60 BPM <input type="checkbox"/> Temporal</p>	<p>Choose the NAC indicating code when the 2nd alarm comes in.</p>
<p>Command Menu-->Panel Config-->Features 14.Supv. Latching</p> <pre> Supervisory Latching [X] Non-latching </pre>	<p><input type="checkbox"/> Latching <input checked="" type="checkbox"/> Non-latching->Default</p>	<p>Use this function to set the supervisory circuit as either latching or non-latching. NOTE: For ULC operation the supervisory should be programmed as latching</p>
<p>Command Menu-->Panel Config-->Features 15. Supv on NAC-2</p> <pre> Supv. Alert on NAC-2 [X] DISABLE </pre>	<p><input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default</p>	<p>Use this function to enable/disable the supervisory circuit indication on NAC-2.</p>

<p>Command Menu-->Panel Config-->Features 16. Sig-Sil NAC</p> <pre>Silenceable NAC [X] NAC-1</pre>	<p>[X] NAC-1->Default [X] NAC-2->Default</p>	<p>Use this function to set which NAC circuits are silenceable or non-silenceable.</p>
<p>Command Menu/FR-320 Config/Features/ 17. Active EOL</p> <pre>Active EOL [X] DISABLE</pre>	<p>[X] DISABLE->Default [] ENABLE</p>	<p>Enable this function if using an Active EOL. If ICAC-306 is used, this function should be enabled since the Class A Converter has built in Active EOL resistors.</p>

9.5.3 Command Menu-->Panel Config-->Default Config

<p>Command Menu-->Panel Config-->Default Config 4. Default Config</p> <pre>Load the default Settings? Y</pre>	<p>Y-->Default</p>	<p>Use this function to reset the panel to the default configuration of the chosen programming mode.</p>
--	-----------------------	--

9.6 2. Set Time (Command-Menu)



Note: Refer to section 9.3 How to Use the Keypad to Program the FR-320 on page 44 for detailed instructions on making menu selections.

- ```
1. Daylight Save
2. Time Clock
3. Compensation
```

|                                                                                                                             |                                                 |                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Command Menu/Set time Date</b><br/> <b>1. Daylight saving time</b></p> <pre>Daylight Saving [X] DISABLE</pre>         | <p>[X] DISABLE -&gt;Default<br/> [ ] ENABLE</p> | <p>Use this function to enable daylight savings time.</p>                                                                                                                                                                                                                                                                                          |
| <p><b>Command Menu/Time Clock</b><br/> <b>2. Set time and date</b></p> <pre>HH:MM WKD YYYY-MM-DD 00:00 MON 2000-01-01</pre> | <p>Default<br/> 00:00 MON 2000-01-01</p>        | <p>Use this function to set the time and date. Use the "LEFT" and "RIGHT" keys to move the cursor to the desired location in the display and use the "UP" and "DOWN" keys to increase or decrease the values. Press the "ENTER" key to accept the changes and the "CANCEL" key to ignore the changes.<br/> <b>Note:</b> time is in 24hr format</p> |

|                                                                                                                                                                                                                                    |                                                                                                               |                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Command Menu/Time Clock<br/><b>2. Compensation</b></p> <pre>HH:MM WKD YYYY-MM-DD 00:00 MON 2000-01-01</pre> <p>When value is entered the following message will appear</p> <pre>Daily Compen. (Sec): Panel Config Updated</pre> | <p>Default: 0 seconds<br/>(no compensation)</p> <p>Compensation values can range from -15 to +15 seconds.</p> | <p>Use the up down arrow keys to select daily compensation value and press ENTER. For a fast clock adjust negatively. For a slow clock adjust positively. For example: for a clock which runs 5 minutes a month (based on 30 days) fast select -10 seconds.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

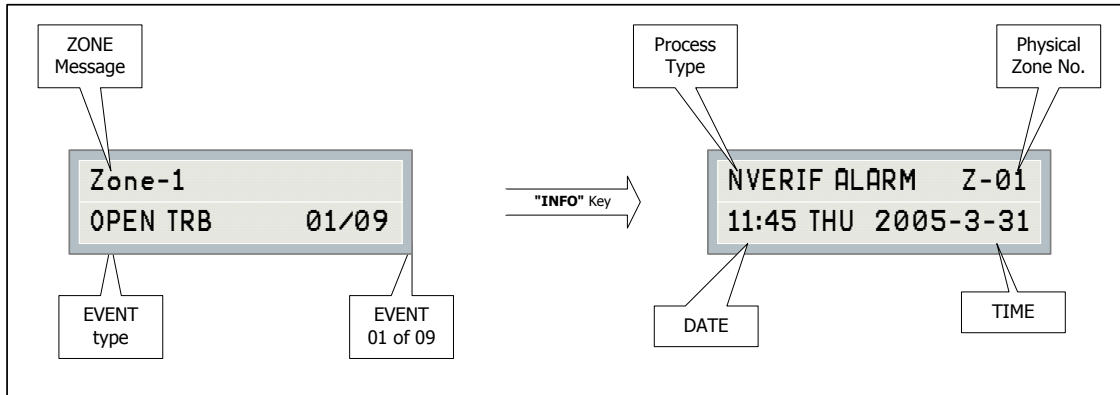
- 3. Set password (Command-Menu)

|                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <p>First choose the level of password to be changed</p> <pre>Select Access Level 0</pre> <p>Then</p> <pre>Enter new passcode:</pre> <pre>Re-enter new passcode:</pre> <p>If the passcode does not match, the following message appears and the system exit to the main menu</p> <pre>invalid passcode</pre> <p>If the passcode is OK the following message appears and exits to the main menu</p> <pre>passcode updated</pre> | <p>0 -&gt; Default</p> | <p>Use this function to change the passcode. The minimum number of digits is 4 and the maximum is 10. Only numeric digits are allowed.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|

The user can change the password only for the current access level as well as any lower levels.

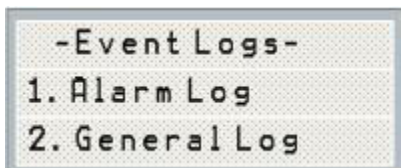
## 9.7 4. View Event Log (Command-Menu)

The event log looks the same as the normal event queue. Pressing the “INFO” key has the same effect that it does in the event queue. The illustration below provides an example of how the “INFO” key works and shows the CFG-300 LCD Configuration tool display.



There are a maximum of 200 recent events saved in the event log. If the number of events goes beyond 200, the oldest event is overwritten by the most recent one.

## 9.8 5. Print Event Log



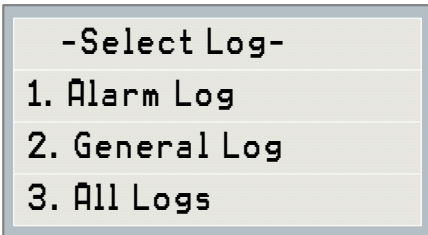
Use this function to print the Alarm or General log.

Select the type of log to print. Press the “ENTER” key. The system will then print the requested log

## 9.9 6. Clear Event Log (Command-Menu)

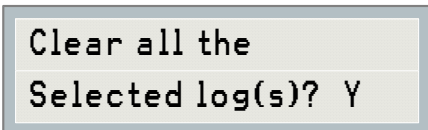


**Note:** Refer to *section 9.3 How to Use the Keypad to Program the FR-320 on page 44* for detailed instructions on making menu selections.

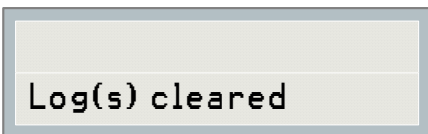


Select the type of log to clear. Press the “ENTER” key. The system will then confirm before clearing logs.

Use this function to clear alarm logs, event logs, or both.



Press the “ENTER” key to confirm or the “CANCEL” key to cancel the operation.



## 9.10 9. Exit (Command-Menu)

Pressing, “ENTER” after selecting “Exit” from the menu will return the panel to normal LCD operation.

## 10.0 Operating the Panel

### 10.1 Panel Operation During Various Hazard States

The escalating hazard zone states include Idle, Alert, Alarm and Release. They are defined based on the status of Hazard Area input zone(s), correlated Abort Switch and Manual Release Switch.

#### 10.1.1 Hazard Idle

- No correlated alarm zone active.
- Release Timer is not started.
- Manual Release Delay Timer is not started.
- Abort Switch is off.
- Manual Release Switch is off.
- Corresponding NAC circuit is off.
- Releasing circuit(s) is off.

#### 10.1.2 Hazard Alert (or equivalently first Alarm in Cross-zoned Application)

- The panel enters the Hazard Alert state when
  - a single alarm comes in for a cross-zoned hazard. For non cross-zoned hazard area, a single alarm will put hazard into Hazard Alarm state directly.
  - the Abort Switch becomes active during Hazard Alarm state, so that the hazard area state downgrades from Hazard Alarm to Hazard Alert.
- Release Timer is not started.
- Manual Release Delay Timer is not started.
- Correlated NAC circuit(s) turns on at alert rate.

#### 10.1.3 Hazard Alarm (pre-discharge, or equivalently second Alarm in Cross-zoned Application)

- The panel enters the Hazard Alarm state when
  - it detects the confirming alarm for hazard area (single alarm active for the non cross-zoned system, or 2nd alarm active in the cross-zoned system), or
- Manual Release Switch is active.
- Release Timer (RT) is started when the panel enters Hazard Alarm state after by detecting the 2nd alarm in cross-zoned hazard or 1st alarm in non cross-zoned hazard.
- Manual Release Delay Timer is started when the panel enters Hazard Alarm state by detecting the correlated Manual Release Switch active.
- Releasing circuit(s) will be activated after the Release Timer or Manual Release Timer expires.
- Corresponding NAC(s) turns on at alarm rate.
- During Hazard Alarm State, when the release timer is running and the Abort Switch turns on, the hazard area state will change from Hazard Alarm to Hazard Alert. Release Timer is held and the corresponding NAC sounds the Alert rate. If the Abort Switch is released, the hazard state will go back to Hazard Alarm and the Release Timer resumes running. The value of release timer depends on Abort Delay Type. The corresponding NAC sounds Alarm rate again.

### 10.1.4 Hazard Release

- Panel enters Hazard Release when the Release Timer or Manual Release Timer expires. The correlated releasing circuit is activated.
- NAC code for Hazard Release state is steady.

## 10.2 General Panel Operation

- Activation of Manual Release Switch starts the Manual Release Delay Timer. The expiration of Manual-release Delay Timer (MDT) activates the releasing circuits consequently. Manual Release Switch overrides the Abort Switch always and Manual-release Timer (MDT) always overrides Release Timer (RT).
- When the manual release switch is active and the panel is in the Hazard Alarm (pre-discharge) state, Abort Switch cannot override the Manual Release Switch. Only the System Reset key can interrupt and reset the panel and hazard area.
- System Reset will reset all circuits, including releasing circuits.
- The supervisory circuit can be optionally indicated on NAC-2 circuit. The NAC code of supervisory circuit should be different from those of Hazard Alert or Hazard Alarm. By default, when the NAC code for Hazard Alert is Temporal, the NAC code for supervisory circuit is 20 BPM or verse visa. This configuration change is automatically done by the panel. If NAC code for alert is chosen other than 20 BPM and Temporal, Supervisory NAC code will remain unchanged during the configuration.
- In some pre-programmed modes, the Alert Rate and the Alarm Rate are configured the same. So the action of Abort Switch does not change the NAC rate.
- To avoid the conflict of different NAC code on the same circuit, the priority of signals are defined as, Water-flow alarm has the highest priority, then hazard cadence. The supervisory signal has the lowest priority.
- Soak Timer sets the time period how long the releasing circuits should be active. Upon the expiration of soak timer, the releasing circuits will be shut off. Setting of 0 second means the releasing circuits will be turned on without timer running. They will be shut off upon system reset.
- Abort function is not applicable in pre-action and deluge application.



# 11.0 Pre-Programmed Modes

## 11.1 Mode 1: Agent Release, Single Hazard, Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |    |     |    |    | Phantom Zones |       | Release Timers |            |
|------------------------------|--------|------------|-----------------|-----|----|-----|----|----|---------------|-------|----------------|------------|
|                              |        |            | Z1              | Z2  | Z3 | Z4  | Z5 | Z6 | Zp1           | Zp2   | RT1<br>Exp     | RT2<br>Exp |
|                              |        |            | Alm             | Alm | WF | Sup | AB | MR | Z1+Z2         | Z3+Z4 |                |            |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X  |     |    | X  |               |       |                |            |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X  | (X) |    | X  | X             |       |                |            |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |    |     |    | X  |               |       | X              |            |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |    |     |    | X  |               |       | X              |            |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |    |     |    |    | X             |       |                |            |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |    |     | X  |    |               |       |                |            |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |    |     |    | X  |               |       |                |            |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |    |     |    |    |               |       |                |            |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |    |     |    |    |               |       |                |            |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |    |     |    |    |               |       |                |            |

### 11.1.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, Cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, Cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory (Non-latching by default)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release Switch
- NAC-1: Signal, will be on steady if there is any alarm zone or manual release switch active.
- NAC-2: Signal, indicates the cadence of hazard area 1 state or supervisory circuit (optional).
- RAC-1: Releasing Circuit (Hazard Area 1)
- RAC-2: Releasing Circuit (Hazard Area 1)

### 11.1.2 Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

### 11.1.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)

- Hazard Alarm: 120 BPM
- Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

#### 11.1.4 How the Panel Works in Mode 1

- Activation of either Z-1 or Z-2 turns NAC-1 on steady. Hazard Area 1 state changes from Idle into Alert. NAC-2 turns on at Temporal.
- Activations of both Z-1 and Z-2 change the Hazard Area 1 state from Alert into Alarm. NAC-1 turns on steady. NAC-2 turns on at 120BPM. Release timer-1 (RT-1) is started.
- Expiration of Release Timer-1 change Hazard Area 1 state to Release. Both RAC-1 and RAC-2 turn on. NAC-2 sounds steady.
- Activation of Z-6 in any situation changes Hazard Area 1 state into Alarm. NAC-1 turns on steady, NAC-2 turns on at 120BPM. The manual release delay timer 1 (MDT-1) is started. Upon the expiration of MDT-1, Hazard Area 1 state changes to Release. RAC-1 and RAC-2 are activated. NAC-1 and NAC-2 turns on steady.
- During Hazard Alarm state, after Z-5 (abort switch) is pressed, Release Timer-1 will reset and then restart. NAC-2 rate changes from 120BPM to Temporal. After releasing of Z-5, NAC-2 goes back to 120BPM. Release Timer-1 values depend on Abort Delay Type. If Z-5 is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if Z-5 is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if enabled.

## 11.2 Mode 2: Agent Release, Single Hazard, Not Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |    |     |    |    | Phantom Zones |       | Release Timers |            |
|------------------------------|--------|------------|-----------------|-----|----|-----|----|----|---------------|-------|----------------|------------|
|                              |        |            | Z1              | Z2  | Z3 | Z4  | Z5 | Z6 | Zp1           | Zp2   | RT1<br>Exp     | RT2<br>Exp |
|                              |        |            | Alm             | Alm | WF | Sup | AB | MR | Z1+Z2         | Z3+Z4 |                |            |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X  |     |    | X  |               |       |                |            |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X  | (X) |    | X  |               |       |                |            |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |    |     |    | X  |               |       | X              |            |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |    |     |    | X  |               |       | X              |            |
| <b>RLS TMR 1 Started</b>     |        |            | X               | X   |    |     |    |    |               |       |                |            |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |    |     | X  |    |               |       |                |            |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |    |     |    | X  |               |       |                |            |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |    |     |    |    |               |       |                |            |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |    |     |    |    |               |       |                |            |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |    |     |    |    |               |       |                |            |

### 11.2.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Water-flow or pressure switch)
- Detection Zone -4: Supervisory (default non-latching)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC-1: Signal, will be on steady if there is any alarm zone or manual release switch active.
- NAC-2: Signal, indicates the cadence of hazard area 1 state or supervisory circuit (optional).
- RAC-1: Releasing Circuit (Hazard Area 1)
- RAC-2: Releasing Circuit (Hazard Area 1)

### 11.2.2 Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

### 11.2.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)
  - Hazard Alarm: Temporal
  - Hazard Release: Steady
- Default NAC code of Supervisory Signal is 20 BPM.

### **11.2.4 How the Panel Works in Mode 2**

- Activation of either Z-1 or Z-2 turns NAC-1 on steady.
- Activation of either Z-1 or Z-2 changes the Hazard Area 1 state from Idle into Alarm directly. NAC-1 turns on steady. NAC-2 turns on Temporal. Release Timer-1 is started.
- Expiration of Release Timer-1 activates both RAC-1 and RAC-2. NAC-1 and NAC-2 turn on steady.
- Activation of Z-6 starts Manual-release Timer 1 (MDT-1) in any situation. NAC-1 turns on steady. NAC-2 turns on Temporal. Upon the expiration of MDT-1, RAC-1 and RAC-2 turn on.
- During Hazard Alarm state, after Z-5 (abort switch) is pressed, Release Timer-1 will reset and then restart. If Z-5 is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if Z-5 is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if enabled.

### **11.3 Mode 3: Agent Release, Dual Hazard, Cross-zoned, Split Release**

This mode is no longer used.

### **11.4 Mode 4: Agent Release, Dual Hazard, Not Cross-zoned, Split Release**

This mode is no longer used.

## 11.5 Mode 5: Pre-action/Deluge, Single Hazard, Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |     |     | Phantom Zones |    |             |         |
|------------------------------|--------|------------|-----------------|-----|-----|-----|---------------|----|-------------|---------|
|                              |        |            | Z1              | Z2  | Z3  | Z4  | Z5            | Z6 | Zp1         | RT1 Exp |
|                              |        |            | Alm             | Alm | Alm | Alm | Supv          | WF | Z1+Z2+Z3+Z4 |         |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X   | X   |               | X  |             |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     |     | (X)           | X  |             |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |             | X       |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |             | X       |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |     |     |               |    | X           |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |     |               |    |             |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |     |               |    |             |         |

### 11.5.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow Alarm.
- NAC -1: Signal, will be activated if there is any alarm zone active.
- NAC -2: Escalating Signal, indicates Hazard Area 1 status, Supervisory Optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### 11.5.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.5.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)
  - Hazard Alarm: 120 BPM
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

### 11.5.4 How the Panel Works in Mode 5

- Activation of Z-1, Z-2, Z-3 or Z-4 changes Hazard Area 1 state from Idle to Alert. NAC-1 turns on steady. NAC-2 sounds Temporal.

- Activations of any two of Z-1, Z-2, Z-3 and Z-4 change Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-2 turns on at 120 BPM. Upon the expiration of Release Timer 1, both RAC-1 and RAC-2 turn on. NAC-1 and NAC-2 turn on Steady
- Activation of Z-6 turns on both NAC-1 and NAC-2 steady.
- Activation of Z-5 is indicated on NAC-2 at 20 BPM, if configured.

## 11.6 Mode 6: Pre-action/Deluge, Single Hazard, Not Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |     |     |      |    | Phantom Zones |         |
|------------------------------|--------|------------|-----------------|-----|-----|-----|------|----|---------------|---------|
|                              |        |            | Z1              | Z2  | Z3  | Z4  | Z5   | Z6 | Zp1           | RT1 Exp |
|                              |        |            | Alm             | Alm | Alm | Alm | Supv | WF | Z1+Z2+Z3+Z4   |         |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X   | X   |      |    | X             |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     |     | (X)  |    |               |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |     |      |    |               | X       |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |     |      |    |               | X       |
| <b>RLS TMR 1 Started</b>     |        |            | X               | X   | X   | X   |      |    |               |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |     |      |    |               |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |     |      |    |               |         |

### 11.6.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Signal, steady on any alarm.
- NAC -2: Supervisory optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### 11.6.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.6.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)
  - Hazard Alarm: Temporal (see Table 7)
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

### 11.6.4 How the Panel Works in Mode 6

- Activation of any one among Z-1, Z-2, Z-3 and Z-4 changes Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-1 turns on at Temporal. Upon the expiration of Release Timer-1, NAC-1 turns on steady. RAC-1 and RAC-2 are activated.
- Activation of Z-5 can be indicated on NAC-2 at 20 BPM, if configured.
- Activation of Z-6 turns NAC-1 steady.

## 11.7 Mode 7: Pre-action/Deluge, Dual Hazard, Cross-zoned, Split Release

|                              |        |            | Detection Zones |     |     |     | Phantom Zones |    | Release Timers |       |         |         |
|------------------------------|--------|------------|-----------------|-----|-----|-----|---------------|----|----------------|-------|---------|---------|
|                              |        |            | Z1              | Z2  | Z3  | Z4  | Z5            | Z6 | Zp1            | Zp2   | RT1 Exp | RT2 Exp |
|                              |        |            | Alm             | Alm | Alm | Alm | Supv          | WF | Z1+Z2          | Z3+Z4 |         |         |
| <b>Out1</b>                  | Signal | Steady     |                 |     |     |     |               | X  | X              |       |         |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     |     |               | X  |                | X     |         |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |                | X     |         |         |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |                |       | X       |         |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |     |     |               | X  |                |       |         |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |     |     |               |    | X              |       |         |         |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |     |     |               |    |                |       |         |         |

### 11.7.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Escalating Signal, indicates Hazard Area 1 status
- NAC -2: Escalating Signal, indicates Hazard Area 2 status
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

### 11.7.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.7.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)
  - Hazard Alarm: 120BPM
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.



#### **11.7.4 How the Panel Works in Mode 7**

- Activation of either Z-1 or Z-2 changes Hazard Area 1 state into Alert. NAC-1 turns on at Temporal.
- Activations of both Z-1 and Z-2 change Hazard Area 1 state into Alarm. Release Timer-1 is started. Upon the expiration of Release Timer-1, RAC-1 is active. NAC-1 turns on steady.
- Activation of either Z-3 or Z-4 changes Hazard Area 2 state into Alert. NAC-2 turns on at Temporal.
- Activations of both Z-3 and Z-4 changes Hazard Area 2 state into Alarm. Release Timer 2 is started. Upon the expiration of Release Timer 2, RAC-2 is active. NAC-2 turns on steady.
- Activation of Z-6 turns both NAC-1 and NAC-2 steady.
- Activation of Z-5 can be indicated on NAC-2, if enabled.

## 11.8 Mode 8: Pre-action/Deluge, Dual Hazard, Not Cross-zoned, Split Release

|                              |        |            | Detection Zones |     |     |     | Phantom Zones |    | Release Timers |       |         |         |
|------------------------------|--------|------------|-----------------|-----|-----|-----|---------------|----|----------------|-------|---------|---------|
|                              |        |            | Z1              | Z2  | Z3  | Z4  | Z5            | Z6 | Zp1            | Zp2   | RT1 Exp | RT2 Exp |
|                              |        |            | Alm             | Alm | Alm | Alm | Supv          | WF | Z1+Z2          | Z3+Z4 |         |         |
| <b>Out1</b>                  | Signal | Steady     | X               | X   |     |     |               | X  |                |       |         |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X   | X   |               | X  |                |       |         |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |                |       | X       |         |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |     |               |    |                |       |         | X       |
| <b>RLS TMR 1 Started</b>     |        |            | X               | X   |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     | X   | X   |               |    |                |       |         |         |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |     |     |               |    |                |       |         |         |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |     |     |               |    |                |       |         |         |

### 11.8.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Escalating Signal, indicates Hazard Area 1 status
- NAC -2: Escalating Signal, indicates Hazard Area 2 status
- RAC 1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

### 11.8.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.8.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal (see Table 7)
  - Hazard Alarm: Temporal (see Table 7)
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

#### **11.8.4 How the Panel Works in Mode 8**

- Activation of either Z-1 or Z-2 changes Hazard Area 1 state into Alarm. Release Timer 1 is started. NAC-1 turns on at Temporal. Upon the expiration of Release Timer 1, RAC-1 is active. NAC-1 turns on steady.
- Activation of either Z-3 or Z-4 changes Hazard Area 2 state into Alarm. Release Timer 2 is started. NAC-2 turns on at Temporal. Upon expiration of Release Timer 2, RAC-2 is active. NAC-2 turns on steady.
- Activation of Z-6 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-5 can be indicated on NAC-2, if enabled.

## 11.9 Mode 9: Agent Release, Single Hazard, Cross-zoned, NYC abort

|                              |        |            | Detection Zones |     |    |      |    |    | Phantom Zones |       | Release Timers |         |
|------------------------------|--------|------------|-----------------|-----|----|------|----|----|---------------|-------|----------------|---------|
|                              |        |            | Z1              | Z2  | Z3 | Z4   | Z5 | Z6 | Zp1           | Zp2   | RT1 Exp        | RT2 Exp |
|                              |        |            | Alm             | Alm | WF | Supv | AB | MR | Z1+Z2         | Z3+Z4 |                |         |
| <b>Out1</b>                  | Signal | Steady     |                 |     |    |      |    |    | X             |       |                |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X  | (X)  |    |    | X             |       |                |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |    |      |    |    | X             |       | X              |         |
| <b>Out4</b>                  | Strobe | Steady     |                 |     | X  |      |    |    | X             |       | X              |         |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |    |      |    |    | X             |       |                |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |    |      | X  |    |               |       |                |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |    |      |    | X  |               |       |                |         |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |    |      |    |    |               |       |                |         |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |    |      |    |    |               |       |                |         |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |    |      |    |    |               |       |                |         |

### 11.9.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC-1: Escalating Signal, indicate Hazard Area 1 status.
- NAC-2: Escalating Signal, indicate Hazard Area 1 status, Supervisory Optional.
- RAC-1: Releasing Circuit (Hazard Area 1)
- NAC-3: Silenceable Strobe.

### 11.9.2 Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds
- Default Abort Delay Type: NYC
- Default Soak Timer Value: 0 seconds (continuous)

### 11.9.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Steady
  - Hazard Alarm: 120BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is 20 BPM

#### 11.9.4 How the Panel Works in Mode 9

- The activation of either Z-1 or Z-2 turns NAC-1 on steady.
- The activations of both Z-1 and Z-2 turn NAC-1 off, turn NAC-2 on at 120BPM, and turn NAC-3 on steady. Hazard Area 1 state changes to Alarm. Release Timer-1 is started. Upon the expiration of Release Timer 1, RAC-1 is active, NAC-1 and NAC-2 turn on steady, and NAC-3 remains on steady.
- If Abort Switch Z-5 is active when Release Timer-1 is running, Hazard Area 1 state changes to Alert. NAC-2 turns off and NAC-1 turns on Steady. Release Timer-1 is held.
- If Abort Switch Z-5 is released, NAC-1 turns off and NAC-2 turns on 120BPM. Release Timer resumes running. Release Timer-1's value depends on Abort Delay Type.
- Activation of Z-6 starts Manual Release Timer 1 (MDT-1). Upon the expiration of MDT-1, NAC-2 and NAC-3 turn on steady. RAC-1 is active.
- Activation of Z-4 is indicated at 20BPM on NAC-2, if configured.



**Note:** NAC-3 is to be used only for unsynchronized strobes, such as a strobe installed over a doorway to indicate that a hazard zone is in the alarm state.

## 11.10 Mode 10: Agent Release, Single Hazard, Not Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |    |      |    |    | Phantom Zones |       | Release Timers |            |
|------------------------------|--------|------------|-----------------|-----|----|------|----|----|---------------|-------|----------------|------------|
|                              |        |            | Z1              | Z2  | Z3 | Z4   | Z5 | Z6 | Zp1           | Zp2   | RT1<br>Exp     | RT2<br>Exp |
|                              |        |            | Alm             | Alm | WF | Supv | AB | MR | Z1+Z2         | Z3+Z4 |                |            |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X  |      |    | X  |               |       |                |            |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X  | (X)  |    | X  | X             |       |                |            |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |    |      |    | X  |               |       | X              |            |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |    |      |    | X  |               |       | X              |            |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |    |      |    |    | X             |       |                |            |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |    |      | X  |    |               |       |                |            |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |    |      |    | X  |               |       |                |            |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |    |      |    |    |               |       |                |            |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |    |      |    |    |               |       |                |            |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |    |      |    |    |               |       |                |            |

### 11.10.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, not cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC -1: Signal, will be activated steady when there is any alarm zone active.
- NAC -2: Signal, indicate the Hazard Area1 status.
- RAC 1: Releasing Circuit
- RAC -2: Releasing Circuit

### 11.10.2 Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Soak Timer Value: 0 seconds (continuous)

### 11.10.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: 20BPM
  - Hazard Alarm: 60BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is Temporal (see Table 7)

#### 11.10.4 How the Panel Works in Mode 10

- Activation of either Z-1 or Z-2 turns NAC-1 on steady.
- Activation of either Z-1 or Z-2 turns NAC-2 on at 60BPM. Release Timer-1 is started.
- Expiration of Release Timer-1 activates both RAC-1 and RAC-2. NAC-1 and NAC-2 turn on steady.
- Activation of Z-6 starts Manual Release Delay Timer -1(MDT-1). Upon the expiration of MDT-1, both RAC-1 and RAC-2 are active. NAC-1 and NAC-2 turn on steady.
- If Z-5 is active, NAC-2 is downgraded from 60BPM to 20BPM. After releasing of Z-5, NAC-2 goes back to 60BPM. Release Timer-1's values depend on Abort Delay Type.
- During Hazard Alarm state, after Z-5 (abort switch) is pressed, Release Timer-1 will reset and then restart. If Z-5 is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if Z-5 is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at Temporal, if configured.

## 11.11 Mode 11: Agent Release, Single Hazard, Cross-zoned, Combined Release

|                              |        |            | Detection Zones |     |    |      |    |    | Phantom Zones |       | Release Timers |         |
|------------------------------|--------|------------|-----------------|-----|----|------|----|----|---------------|-------|----------------|---------|
|                              |        |            | Z1              | Z2  | Z3 | Z4   | Z5 | Z6 | Zp1           | Zp2   | RT1 Exp        | RT2 Exp |
|                              |        |            | Alm             | Alm | WF | Supv | AB | MR | Z1+Z2         | Z3+Z4 |                |         |
| <b>Out1</b>                  | Signal | Steady     |                 |     |    |      |    |    | X             |       |                |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     | X  | (X)  |    | X  | X             |       |                |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |    |      |    | X  |               |       | X              |         |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |    |      |    | X  |               |       | X              |         |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |    |      |    |    | X             |       |                |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |    |      | X  |    |               |       |                |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |    |      |    | X  |               |       |                |         |
| <b>RLS Tmr 2 Started</b>     |        |            |                 |     |    |      |    |    |               |       |                |         |
| <b>RLS Tmr 2 Interrupted</b> |        |            |                 |     |    |      |    |    |               |       |                |         |
| <b>RLS Tmr 2 Cancelled</b>   |        |            |                 |     |    |      |    |    |               |       |                |         |

### 11.11.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory (Default non-latching)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC -1: Signal, indicate the Hazard Area1 status.
- NAC -2: Signal, indicate the Hazard Area1 status.
- RAC -1: Releasing Circuit
- RAC -2: Releasing Circuit

### 11.11.2 Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds
- Default Abort Delay Type: Standard UL.
- Soak Timer Value: 0 seconds (continuous)

### 11.11.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Steady
  - Hazard Alarm: 60BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is 20 BPM



#### 11.11.4 How the Panel Works in Mode 11

- The activation of either Z-1 or Z-2 turns NAC-1 on steady.
- The activations of both Z-1 and Z-2 turn NAC-1 off and turn NAC-2 on at 60BPM. Release Timer-1 is started.
- Expiration of Release Timer-1 results in the activation of RAC-1 and RAC-2. NAC-2 turns on steady.
- If Z-5 is active, NAC-2 turns off and NAC-1 turns on instead. After releasing of Z-5, NAC-1 turns off and NAC-2 turns on at 60BPM. Release Timer-1's values depend on Abort Delay Type.
- During Hazard Alarm state, after Z-5 (abort switch) is pressed, Release Timer-1 will reset and then restart. If Z-5 is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if Z-5 is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.
- Activation of Z-6 starts Manual Release Delay Timer-1(MDT-1). Upon the expiration of MDT-1, RAC-1 and RAC-2 are active. NAC-2 turns on steady.
- Activation of Z-3 turns NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if configured.

## 11.12 Mode 12: Pre-action/Deluge, Single Hazard, Cross Zoned, Combined Release



**Attention:** This mode of operation is not FM approved.

|                              |        |            | Detection Zones |     |     |      |      |    | Phantom Zones |            |
|------------------------------|--------|------------|-----------------|-----|-----|------|------|----|---------------|------------|
|                              |        |            | Z1              | Z2  | Z3  | Z4   | Z5   | Z6 | Zp1           | RT1<br>Exp |
|                              |        |            | Alm             | Alm | Alm | Supv | Supv | WF | Z1+Z2+Z3      |            |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X   |      |      | X  |               |            |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     | (X)  | (X)  | X  |               |            |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |      |      |    |               | X          |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |      |      |    |               | X          |
| <b>RLS TMR 1 Started</b>     |        |            |                 |     |     |      |      |    | X             |            |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |      |      |    |               |            |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |      |      |    |               |            |

### 11.12.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -4: Supervisory
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow Alarm.
- NAC -1: Signal, will be activated if there is any alarm zone active.
- NAC -2: Escalating Signal, indicates Hazard Area 1 status, Supervisory Optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### 11.12.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.12.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
- Hazard Idle: Off
- Hazard Alert: Temporal (see Table 7)
- Hazard Alarm: 120 BPM
- Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

#### **11.12.4 How the Panel Works in Mode 12**

- Activation of Z-1, Z-2 or Z-3 changes Hazard Area 1 state from Idle to Alert. NAC-1 turns on steady. NAC-2 sounds Temporal.
- Activations of any two of Z-1, Z-2 and Z-3 change Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-2 turns on at 120 BPM. Upon the expiration of Release Timer 1, both RAC-1 and RAC-2 turn on Steady. RAC-1 and RAC-2 are activated.
- Activation of Z-6 turns on both NAC-1 and NAC-2 steady.
- Activation of Z-4 or Z-5 is indicated on NAC-2 at 20 BPM, if configured.

## 11.13 Mode 13: Pre-action/deluge, Single Hazard, Not Cross Zoned, Combined Release

|                              |        |            | Detection Zones |     |     |      |      |    | Phantom Zones |         |
|------------------------------|--------|------------|-----------------|-----|-----|------|------|----|---------------|---------|
|                              |        |            | Z1              | Z2  | Z3  | Z4   | Z5   | Z6 | Zp1           | RT1 Exp |
|                              |        |            | Alm             | Alm | Alm | Supv | Supv | WF | Z1+Z2+Z3      |         |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X   |      |      | X  |               |         |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     | (X)  | (X)  | X  | X             |         |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |      |      |    |               | X       |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |      |      |    |               | X       |
| <b>RLS TMR 1 Started</b>     |        |            | X               | X   | X   |      |      |    |               |         |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |      |      |    |               |         |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |      |      |    |               |         |

### 11.13.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -4: Supervisory
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Signal, steady on any alarm.
- NAC -2: Escalating signal, indicates Hazard Area 1 status, Supervisory Optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### 11.13.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.13.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
- Hazard Idle: Off
- Hazard Alert: Temporal (see Table 7)
- Hazard Alarm: Temporal (see Table 7)
- Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

### 11.13.4 How the Panel Works in Mode 13

- Activation of any one among Z-1, Z-2 or Z-3 changes Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-1 turns on at Temporal. Upon the expiration of Release Timer-1, NAC-1 turns on steady. RAC-1 and RAC-2 are activated.
- Activation of Z4 or Z-5 can be indicated on NAC-2 at 20 BPM, if configured.
- Activation of Z-6 turns NAC-1 and NAC-2 steady.

## 11.14 Mode 14: Pre-action/deluge, Single Hazard, Not Cross Zoned, Combined Release



**Attention:** This mode of operation is neither FM nor UL approved.

|                              |        |            | Detection Zones |     |     |     |      |    | Phantom Zones |            |
|------------------------------|--------|------------|-----------------|-----|-----|-----|------|----|---------------|------------|
|                              |        |            | Z1              | Z2  | Z3  | Z4  | Z5   | Z6 | Zp1           | RT1<br>Exp |
|                              |        |            | Alm             | Alm | Alm | Alm | Supv | WF | Z1+Z2+Z3      |            |
| <b>Out1</b>                  | Signal | Steady     | X               | X   | X   | X   |      | X  |               |            |
| <b>Out2</b>                  | Signal | Escalating |                 |     |     |     | (X)  | X  | X             |            |
| <b>Out3</b>                  | Rel.   | Releasing  |                 |     |     |     |      |    |               | X          |
| <b>Out4</b>                  | Rel.   | Releasing  |                 |     |     |     |      |    |               | X          |
| <b>RLS TMR 1 Started</b>     |        |            | X               | X   | X   | X   |      |    |               |            |
| <b>RLS Tmr 1 Interrupted</b> |        |            |                 |     |     |     |      |    |               |            |
| <b>RLS Tmr 1 Cancelled</b>   |        |            |                 |     |     |     |      |    |               |            |

### 11.14.1 Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Signal, steady on any alarm.
- NAC -2: Escalating Signal, indicates Hazard Area 1 status, Supervisory Optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### 11.14.2 Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### 11.14.3 NAC Configuration

- Default Escalating NAC code of Hazard Area State:
- Hazard Idle: Off
- Hazard Alert: Temporal (see Table 7)
- Hazard Alarm: Temporal (see Table 7)
- Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

#### 11.14.4 How the Panel Works in Mode 14

- Activation of any one among Z-1, Z-2, Z-3 or Z4 changes Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-1 turns on steady. NAC-2 turns on Temporal if the release timer is non-zero. Upon the expiration of Release Timer-1, both NAC-1 and NAC-2 turns on steady. RAC-1 and RAC-2 are activated.
- Activation of Z-5 can be indicated on NAC-2 at 20 BPM, if configured.
- Activation of Z-6 turns NAC-1 and NAC-2 steady.



- For the use of the system for pre-action, deluge releasing applications.
- Acceptable, Approved solenoids for the FR-320 are listed in *Appendix A: Compatible Solenoids on page 79*.
- Secondary power supply must provide for minimum of 90 hours of standby operation followed by 10 minutes of releasing and alarm operation. See *Appendix D: Power Supply and Battery Calculations on page 84*.
- Minimum secondary supply voltage for this application is 21.1 VDC. In order to maintain required operating voltage at the solenoid, wiring lengths must not be as such as to exceed the maximum line resistance value of 1 Ohms at a maximum load of 1A.
- Initiating device circuits must be Class A for this application, thus necessitating use of the ICAC-306 Class A Converter Module.

## 12.0 Appendix A: Compatible Solenoids

| Manufacturer                                           | Description    |
|--------------------------------------------------------|----------------|
| <b>ASCO 8210 series</b>                                |                |
| T8210A107 24VDC                                        |                |
| R8210A107 24VDC                                        |                |
| 8210A107 24VDC                                         |                |
| <b>AMEREX</b>                                          |                |
| 17014                                                  | Actuator       |
| <b>BSCO</b>                                            |                |
| 510006                                                 | Actuator       |
| <b>Kidde Fenwal Protection Systems</b>                 |                |
| 486500-01                                              | Actuator       |
| <b>Parker</b>                                          |                |
| 73212                                                  | Valve Solenoid |
| <b>Parker Skinner Valve Division Cardox 7-061-0006</b> |                |
| V5L 72750                                              | Valve Solenoid |
| <b>SIEMENS</b>                                         |                |
| CPYEC-2-24                                             |                |
| CPYEC-24                                               |                |
| <b>TSP</b>                                             |                |
| 17842                                                  | Actuator       |

## 13.0 Appendix B: Compatible Synchronized Modules and Horn/Strobes (UL/ULC)



**Note:** Do not mix and match sync modules with strobes from different manufacturers because each manufacturer uses different synchronization protocols.

| Manufacturer    | Brand           | Sync. Module | Horns/Strobes                                                               | Maximum # of Horns/Strobes |
|-----------------|-----------------|--------------|-----------------------------------------------------------------------------|----------------------------|
| Cooper Wheelock | Cooper Wheelock | DSM-12-24    | NS-24MCW-FW/-FR Horn/Strobes                                                | 13                         |
| Gentex          | Secutron        | AVS44-R      | MRA-HS3-24 Horn/Strobe                                                      | 8                          |
| SpectrAlert     | System Sensor   | MDL          | P1224 MC Horn/Strobe                                                        | 12                         |
| Amseco/Potter   | Mircom          | SDM-240      | FHS-240-110 Horn/Strobe                                                     | 9                          |
| Faraday         | Siemens         | DSC(-W)      | ZR-MC-R/-W,<br>ST-MC-R-AR,<br>MTH-MC Strobes                                | 15                         |
|                 |                 |              | ZH-MC-R/-W Horn/<br>Strobes                                                 | 12                         |
|                 |                 |              | ZH-R/-W Horns                                                               | 22                         |
| Faraday         | Faraday         | DSC          | 6234 Series Horn/Strobes<br><b>Note:</b> Separate Circuit for Horn & Strobe | 9                          |

### 13.1 Compatible Bells

| Brand   | Bells             | Maximum # of Bells |
|---------|-------------------|--------------------|
| Siemens | MBDC-6, -10 Bells | 30                 |
|         | B10-115-R Bell    | 14                 |
|         | B6-24AC-R Bell    | 2                  |



**Note:** Synchronization is on a NAC zone basis.



# 14.0 Appendix C: Specifications

Table 10 FR-320 Series Specifications

| FR-320 Series Fire Control Panel Chassis           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>                                     | Digital Signal Processor (DSP) based design. Fully configurable using front panel LCD display with Password Access.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Indicating (NAC) Circuits</b>                   | 2 supervised style Y (Class B) indicating circuits, configured as strobes or audibles. Terminals are labeled <b>SIG 1</b> and <b>SIG 2</b> .<br><br>Power limited / Regulated 24VDC FWR / 1.7A @ 49C per circuit                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initiating Circuits</b>                         | 6 supervised style B (Class B) initiating circuits, configurable. Terminals are labeled <b>DET</b> . Compatibility ID <b>A</b> .<br><br>Power limited / 19VDC reg. / 3mA for detectors / 110MVpp AC ripple / 45mA max (alarm short)                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Releasing Circuits</b>                          | Terminals are labeled <b>SIG 3</b> and <b>SIG 4</b><br><br>Power limited / Special Application<br>21.1 VDC @ 1 A max per circuit, 1.7 A max combined<br><br>See <i>Appendix A: Compatible Solenoids on page 79</i> for compatible solenoids.                                                                                                                                                                                                                                                                                                                                                         |
| <b>Supervised Auxiliary Power (non resettable)</b> | Power limited / 21.1 VDC regulated / 300mA max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>4-wire smoke supply (resettable)</b>            | Power limited / 21.1 VDC regulated / 100mA max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>RS-485 Connection</b>                           | For Remote Annunciators. Terminals are labelled RS485. Line impedance is 120 Ω.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Electrical ratings</b>                          | <p><b>AC line voltage</b> 120 VAC 60Hz 1.75 A / 240 VAC 50 Hz 0.93 A, 10A slow blow fuse on secondary of transformer</p> <p><b>Power Supply Rating</b> 6.5A AC maximum @ secondary of transformer</p> <p><b>Max power allowed</b> = 5A</p> <ul style="list-style-type: none"> <li>• 1.7A (aux power unfiltered if used)</li> <li>• 0.5A (aux power filtered if used)</li> <li>• 0.3A (resettable auxiliary power if used)</li> <li>• 1.7A (for releasing circuits)</li> </ul> <p><b>Note:</b> If no auxiliaries are used the maximum power is 5 A for the indicating and the releasing circuits.</p> |

Table 10 FR-320 Series Specifications (Continued)

| FR-320 Series Fire Control Panel Chassis       |                                                                                                                                                   |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Auxiliary relays (resistive loads)</b>      | Must be connected to a listed power limited source of supply. Terminals are labelled <b>ALARM</b> , <b>TROUBLE</b> , <b>SUPV</b> and <b>AUX</b> . |
|                                                | <b>Common Alarm</b> Form C, 1 A max, 28 VDC                                                                                                       |
|                                                | <b>Common Supv</b> Form C, 1 A max, 28 VDC                                                                                                        |
|                                                | <b>Common Trouble</b> Form C, 1 A max, 28 VDC                                                                                                     |
|                                                | <b>Aux Relay</b> Form C, 1 A max, 28 VDC                                                                                                          |
| <b>Unfiltered supply (full wave rectified)</b> | Power limited / Unregulated / Special Application<br>1.7A Max, 21.3 VDC to 42.00 VDC<br>Minimum Load 5mA                                          |
| <b>Battery</b>                                 | <b>Type</b> 24VDC Gel Cell/Sealed lead acid – 10AH to 26AH                                                                                        |
|                                                | <b>Charging capability</b> 10AH to 26AH                                                                                                           |
|                                                | <b>Protection</b> 10A on board (F1) slow blow micro fuse                                                                                          |
| <b>Ground Fault Circuit</b>                    | Less than 3.3 kΩ will generate a ground fault.                                                                                                    |
| <b>Compliance</b>                              | <b>System Model</b> FR-320 Series Control Unit - Fire Alarm, for Releasing services                                                               |
|                                                | <b>System Type</b> Local Auxiliary (using PR-300)                                                                                                 |
|                                                | <b>Type of Service</b> A, M, WF, SS                                                                                                               |
|                                                | <b>Type of Signalling</b> Non-Coded                                                                                                               |
|                                                | <b>Applicable Standards</b> NFPA 12, 12A, 12B, 12, 15, 16, 70, 72, UL-864 Rev. 9, ULC S-524, ULC S-527-11                                         |

Table 11 FR-320 System Modules and Annunciators

| FR-320 System Modules and Annunciators          |                                                                                                                                                                                                     |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RM-306 Relay adder module</b>                | Must be connected to a listed power-limited source of supply<br><b>Contact rating</b> FormC/ 28VDC per contact / 1A resistive load max, zoned<br><b>Current consumption</b> standby 0mA, alarm 80mA |
| <b>ICAC-306 Input Class A Converter module</b>  | standby: 0mA / alarm: 0mA                                                                                                                                                                           |
| <b>OCAC-304 Output Class A Converter module</b> | standby: 0mA / alarm: 0mA                                                                                                                                                                           |

Table 11 FR-320 System Modules and Annunciators (Continued)

| FR-320 System Modules and Annunciators                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SRM-312<br/>Smart Relay<br/>Module</b>                       | Must be connected to a listed power-limited source of supply<br><b>Contact rating</b> FormC/ 28VDC per contact / 1A resistive load max, zoned<br><b>Current consumption</b> standby 30mA / alarm 140mA                                                                                                                                                                                                                                                                                   |
| <b>RAM-208<br/>8 Zone Remote<br/>Annunciator</b>                | Standby 35mA / alarm 90mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>PR-300<br/>Polarity<br/>Reversal and<br/>City Tie Module</b> | <b>City tie</b> power limited / 24VDC unfiltered / 250mA max / 14 Ω trip coil<br><b>Polarity reversal</b> power limited / 24VDC open / 12VDC at 3.5mA / 8.5mA max (shorted)<br><b>Polarity reversal supv terminal</b><br>24VDC (normal) / -24VDC (supervisory) / 0V (trouble)<br><b>Polarity reversal alarm terminal</b><br>24VDC (normal) / -24VDC (alarm) / 0V (trouble)<br><b>Current consumption</b> standby 50mA / alarm 300mA (city tie in use) / alarm 70mA (city tie not in use) |
| <b>RTI<br/>Remote Trouble<br/>Indicator</b>                     | Standby 35mA / alarm 35mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

AS PER NFPA 72: System releasing circuits will not initiate an alarm signal due to movement of waste water, surges, or variable pressure.

# 15.0 Appendix D: Power Supply and Battery Calculations

Use the form below to determine the required secondary power supply (batteries).

| IMPORTANT NOTICE                                                                                                                                                                                                                                                                                                                                             |                                                                        |     |   |             |               |                 |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----|---|-------------|---------------|-----------------|-------------|
| The main AC branch circuit connection for Fire Alarm Control Panel must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes. Refer to <i>Appendix C: Specifications on page 81</i> for specifications. |                                                                        |     |   |             |               |                 |             |
| POWER REQUIREMENTS (ALL CURRENTS ARE IN AMPERES)                                                                                                                                                                                                                                                                                                             |                                                                        |     |   |             |               |                 |             |
| Model Number                                                                                                                                                                                                                                                                                                                                                 | Description                                                            | Qty |   | Standby     | Total Standby | Alarm           | Total Alarm |
| FR-320(-R/W)                                                                                                                                                                                                                                                                                                                                                 | Pre-Action/Deluge and Agent Release Control Panel FIXED ELR/ACTIVE ELR |     | X | 0.123/0.092 | =             | 0.316/<br>0.292 | =           |
| ICAC-306                                                                                                                                                                                                                                                                                                                                                     | Det Class A Converter Adder Module                                     |     | X | 0.000       | =             | 0.000           | =           |
| OCAC-302                                                                                                                                                                                                                                                                                                                                                     | Sig Class A Converter Adder Module--2 Circuits                         |     | X | 0.000       | =             | 0.000           | =           |
| PR-300                                                                                                                                                                                                                                                                                                                                                       | Polarity Reversal and City Tie Module                                  |     | X | 0.050       | =             | 0.300           | =           |
| RM-306                                                                                                                                                                                                                                                                                                                                                       | 6 Relay Adder Module                                                   |     | X | 0.000       | =             | 0.080           | =           |
| SRM-312                                                                                                                                                                                                                                                                                                                                                      | 12 Relay Smart Relay Module                                            |     | X | 0.030       | =             | 0.140           | =           |
| RAM-208/216                                                                                                                                                                                                                                                                                                                                                  | Remote Annunciators                                                    |     | X | 0.035       | =             | 0.090           | =           |
| RTI-1                                                                                                                                                                                                                                                                                                                                                        | Remote Trouble Indicator                                               |     | X | 0.035       | =             | 0.035           | =           |
| Two-Wire Smoke Detectors                                                                                                                                                                                                                                                                                                                                     |                                                                        |     | X | * 0.00011   | =             | * 0.135         | =           |
| Four-Wire Smoke Detectors                                                                                                                                                                                                                                                                                                                                    |                                                                        |     | X |             | =             |                 | =           |
| Signal Load (bells, horns, strobes, and etc.)                                                                                                                                                                                                                                                                                                                |                                                                        |     | X |             |               |                 | =           |
| Auxiliary Power Supply for Annunciators, etc.                                                                                                                                                                                                                                                                                                                |                                                                        |     |   |             | =             |                 | =           |
| Total currents (Add above currents)                                                                                                                                                                                                                                                                                                                          |                                                                        |     |   | STANDBY     | (A)           | ALARM           | (B)         |

\* Assume three Initiating Circuits are in alarm.

' Use **0.084** for five minutes, 0.168 for 10 minutes and 0.5 for 30 minutes of alarm as a multiplier figure.

\* Using the Mircom MPD-65P 2-wire photoelectric smoke detector. See LT-1007 Conventional Device Compatibility Guide for other compatible smoke detectors.

**Total Current Requirement:** ALARM (B) \_\_\_\_\_ Amps. (Value obtained from column B)

**Battery Capacity Requirement:**

$$\text{Battery (AH)} = ([\text{STANDBY (A)} \quad ] \times [(24, 60 \text{ or } 90 \text{ Hours}) \quad ]) + ([\text{ALARM (B)} \quad ] \times [\text{Alarm in Hr.}] \quad ) = \text{(C)} \quad \text{AH}$$

**Total System Current in Alarm State:** Must be 5.5 amperes or less for FR-320 Series.

**Battery Selection:** Multiply (C) by 1.20 to derate battery.

## 16.0 Warranty and Warning Information

### WARNING!

Please read this document **CAREFULLY**, as it contains important warnings, life-safety, and practical information about all products manufactured by the Mircom Group of Companies, including Mircom and Secutron branded products, which shall include without limitation all fire alarm, nurse call, building automation and access control and card access products (hereinafter individually or collectively, as applicable, referred to as “**Mircom System**”).

#### NOTE TO ALL READERS:

1. **Nature of Warnings.** The within warnings are communicated to the reader out of an abundance of caution and create no legal obligation for Mircom Group of Companies, whatsoever. Without limiting the generality of the foregoing, this document shall NOT be construed as in any way altering the rights and obligations of the parties, governed by the legal documents that apply in any given circumstance.
2. **Application.** The warnings contained in this document apply to all Mircom System and shall be read in conjunction with:
  - a. the product manual for the specific Mircom System that applies in given circumstances;
  - b. legal documents that apply to the purchase and sale of a Mircom System, which may include the company’s standard terms and conditions and warranty statements;
  - c. other information about the Mircom System or the parties’ rights and obligations as may be application to a given circumstance.
3. **Security and Insurance.** Regardless of its capabilities, no Mircom System is a substitute for property or life insurance. Nor is the system a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation. Building automation systems produced by the Mircom Group of Companies are not to be used as a fire, alarm, or life-safety system.

#### NOTE TO INSTALLERS:

All Mircom Systems have been carefully designed to be as effective as possible. However, there are circumstances where they may not provide protection. Some reasons for system failure include the following. As the only individual in contact with system users, please bring each item in this warning to the attention of the users of this Mircom System. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure:

4. **Inadequate Installation.** All Mircom Systems must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. National standards require an inspection and approval to be conducted by the local authority having jurisdiction following the initial installation of the system and following any changes to the system. Such inspections ensure installation has been carried out properly.
5. **Inadequate Testing.** Most problems that would prevent an alarm a Mircom System from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested by the local authority having jurisdiction immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises.

The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

## NOTE TO USERS:

All Mircom Systems have been carefully designed to be as effective as possible. However, there are circumstances where they may not provide protection. Some reasons for system failure include the following. The end user can minimize the occurrence of any of the following by proper training, testing and maintenance of the Mircom Systems:

6. **Inadequate Testing and Maintenance.** It is imperative that the systems be periodically tested and subjected to preventative maintenance. Best practices and local authority having jurisdiction determine the frequency and type of testing that is required at a minimum. Mircom System may not function properly, and the occurrence of other system failures identified below may not be minimized, if the periodic testing and maintenance of Mircom Systems is not completed with diligence and as required.
7. **Improper Operation.** It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm. A Mircom System may not function as intended during an emergency situation where the user is unable to operate a panic or emergency switch by reason of permanent or temporary physical disability, inability to reach the device in time, unfamiliarity with the correct operation, or related circumstances.
8. **Insufficient Time.** There may be circumstances when a Mircom System will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.
9. **Carelessness or Safety Hazards.** Moreover, smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits or children playing with matches or arson.
10. **Power Failure.** Some Mircom System components require adequate electrical power supply to operate. Examples include: smoke detectors, beacons, HVAC, and lighting controllers. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage Mircom Systems or other electronic equipment. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.
11. **Battery Failure.** If the Mircom System or any device connected to the system operates from batteries it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition, and installed correctly. Some Mircom Systems use replaceable batteries, which have a limited life-span. The expected battery life is variable and in part dependent on the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. Moreover, some Mircom Systems do not have a battery monitor that would alert the user in the event that the battery is nearing its end of life. Regular testing and replacements are vital for ensuring that the batteries function as expected, whether or not a device has a low-battery monitor.
12. **Physical Obstructions.** Motion sensors that are part of a Mircom System must be kept clear of any obstacles which impede the sensors' ability to detect movement. Signals being communicated by a Mircom System may not reach the receiver if an item (such as metal, water, or concrete) is placed on or near the radio path. Deliberate jamming or other inadvertent radio signal interference can also negatively affect system operation.

13. **Wireless Devices Placement Proximity.** Moreover all wireless devices must be a minimum and maximum distance away from large metal objects, such as refrigerators. You are required to consult the specific Mircom System manual and application guide for any maximum distances required between devices and suggested placement of wireless devices for optimal functioning.
14. **Failure to Trigger Sensors.** Moreover, Mircom Systems may fail to operate as intended if motion, heat, or smoke sensors are not triggered.
  - a. Sensors in a fire system may fail to be triggered when the fire is in a chimney, walls, roof, or on the other side of closed doors. Smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building. In this situation the control panel may not alert occupants of a fire.
  - b. Sensors in a nurse call system may fail to be triggered when movement is occurring outside of the motion sensors' range. For example, if movement is occurring on the other side of closed doors or on another level of the residence or building the motion detector may not be triggered. In this situation the central controller may not register an alarm signal.
15. **Interference with Audible Notification Appliances.** Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners, appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.
16. **Other Impairments.** Alarm notification appliances such as sirens, bells, horns, or strobes may not warn or waken a sleeping occupant if there is an intervening wall or door. It is less likely that the occupants will be alerted or awakened when notification appliances are located on a different level of the residence or premise.
17. **Software Malfunction.** Most Mircom Systems contain software. No warranties are provided as to the software components of any products or stand-alone software products within a Mircom System. For a full statement of the warranties and exclusions and limitations of liability please refer to the company's standard Terms and Conditions and Warranties.
18. **Telephone Lines Malfunction.** Telephone service can cause system failure where telephone lines are relied upon by a Mircom System. Alarms and information coming from a Mircom System may not be transmitted if a phone line is out of service or busy for a certain period of time. Alarms and information may not be transmitted where telephone lines have been compromised by criminal tampering, local construction, storms or earthquakes.
19. **Component Failure.** Although every effort has been made to make this Mircom System as reliable as possible, the system may fail to function as intended due to the failure of a component.
20. **Integrated Products.** Mircom System might not function as intended if it is connected to a non-Mircom product or to a Mircom product that is deemed non-compatible with a particular Mircom System. A list of compatible products can be requested and obtained.

## Warranty

**Purchase of all Mircom products is governed by:**

<https://www.mircom.com/product-warranty>

<https://www.mircom.com/purchase-terms-and-conditions>

<https://www.mircom.com/software-license-terms-and-conditions>



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