Fire Alarm & Emergency Communication System Limitations

While a life safety system may lower insurance rates, it is not a substitute for life and property insurance!

An automatic fire alarm system—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel (FACP) with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

An emergency communication system—typically made up of an automatic fire alarm system (as described above) and a life safety communication system that may include an autonomous control unit (ACU), local operating console (LOC), voice communication, and other various interoperable communication methods—can broadcast a mass notification message. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire or life safety event.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premises following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer’s recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. This document can be found at http://www.systemsensor.com/appguides/. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense smoke where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or “smoke” from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, chimneys, even wet or humid areas may inhibit particle or smoke flow.
- Smoke particles may become “cold,” stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets, such as air conditioning vents.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of “smoke” present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alert at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectric sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, compromising its ability to report a fire.

Audible warning devices such as bells, horns, strobes, speakers and displays may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol, or medication. Please note that:

- An emergency communication system may take priority over a fire alarm system in the event of a life safety emergency.
- Voice messaging systems must be designed to meet intelligibility requirements as defined by NFPA, local codes, and Authorities Having Jurisdiction (AHJ).
- Language and instructional requirements must be clearly disseminated on any local displays.
- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond to or comprehend the meaning of the signal. Audible devices, such as horns and bells, can have different tonal patterns and frequencies. It is the property owner’s responsibility to conduct fire drills and other training exercises to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A life safety system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premises to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of life safety system malfunction is inadequate maintenance. To keep the entire life safety system in excellent working order, ongoing maintenance is required per the manufacturer’s recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt, or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer’s representative. Maintenance should be scheduled as required by National and/or local fire codes and should be performed by authorized professional life safety system installers only. Adequate written records of all inspections should be kept.
Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

**WARNING - Several different sources of power can be connected to the fire alarm control panel.** Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

**CAUTION - System Re-acceptance Test after Software Changes:** To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49º C/32-120º F and at a relative humidity 93% ± 2% RH (non-condensing) at 32ºC ± 2ºC (90ºF ± 3ºF). However, the useful life of the system’s standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27º C/60-80º F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

**FCC Warning**

**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

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Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

**Canadian Requirements**

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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Software Downloads

In order to supply the latest features and functionality in fire alarm and life safety technology to our customers, we make frequent upgrades to the embedded software in our products. To ensure that you are installing and programming the latest features, we strongly recommend that you download the most current version of software for each product prior to commissioning any system. Contact Technical Support with any questions about software and the appropriate version for a specific application.

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Send email messages to:

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WARNING!

When used for CO₂ releasing applications, observe proper precautions as stated in NFPA 12.

DO NOT enter the protected space unless physical lockout and other safety procedures are fully completed.

DO NOT use software disable functions in the panel as lockout.
It is imperative that the installer understand the requirements of the Authority Having Jurisdiction (AHJ) and be familiar with the standards set forth by the following regulatory agencies:

- Underwriters Laboratories Standards
- NFPA 72 National Fire Alarm Code
- CAN/ULC - S527-11 Standard for Control Units for Fire Alarm Systems

Before proceeding, the installer should be familiar with the following documents.

**NFPA Standards**
This Fire Alarm Control Panel complies with the following NFPA Standards:

- NFPA 12 CO₂ Extinguishing Systems (High Pressure Only)
- NFPA 12A Halon 1301 Extinguishing Systems
- NFPA 17 Dry Chemical Extinguishing Systems
- NFPA 17A Wet Chemical Extinguishing Systems
- NFPA 2001 Clean Agent Fire Extinguishing Systems
- NFPA 2010 Fixed Aerosol Fire-Extinguishing Systems
- NFPA 12 CO₂ Extinguishing Systems (High Pressure Only)
- NFPA 12A Halon 1301 Extinguishing Systems
- NFPA 17 Dry Chemical Extinguishing Systems
- NFPA 17A Wet Chemical Extinguishing Systems
- NFPA 2001 Clean Agent Fire Extinguishing Systems
- NFPA 2010 Fixed Aerosol Fire-Extinguishing Systems
- NFPA 12A Halon 1301 Extinguishing Systems
- NFPA 17 Dry Chemical Extinguishing Systems
- NFPA 17A Wet Chemical Extinguishing Systems
- NFPA 2001 Clean Agent Fire Extinguishing Systems
- NFPA 2010 Fixed Aerosol Fire-Extinguishing Systems

**Underwriters Laboratories Documents for Reference:**

- UL 38 Manually Actuated Signaling Boxes
- UL 217 Smoke Detectors, Single and Multiple Station
- UL 228 Door Closers–Holders for Fire Protective Signaling Systems
- UL 268 Smoke Detectors for Fire Protective Signaling Systems
- UL 268A Smoke Detectors for Duct Applications
- UL 346 Waterflow Indicators for Fire Protective Signaling Systems
- UL 464 Audible Signaling Appliances
- UL 521 Heat Detectors for Fire Protective Signaling Systems
- UL 864 Standard for Control Units for Fire Protective Signaling Systems
- UL 1481 Power Supplies for Fire Protective Signaling Systems
- UL 1638 Visual Signaling Appliances
- UL 1971 Signaling Devices for Hearing Impaired

**CAN/ULC - S524-01 Standard for Installation of Fire Alarm Systems**

This Class (A) digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe (A) est conforme à la norme NMB-003 du Canada.

**Other:**

- Canadian Electrical Code, Part I
- NEC Article 250 Grounding
- NEC Article 300 Wiring Methods
- NEC Article 760 Fire Protective Signaling Systems
- Applicable Local and State Building Codes
- Requirements of the Local Authority Having Jurisdiction (LAHJ)

**Fire•Lite Documents**

- Fire•Lite Device Compatibility Document
- 411UD Manual
- 411UDAC Manual
- CHG-75 Battery Charger Manual
- CHG-120F Battery Charger Manual
- ANN-80 Product Installation Doc.
- ANN-(R)LED Product Installation Doc.
- ANN-I/O Product Installation Doc.
- ANN-RLY Product Installation Doc.

Document #15384
Document #50759
Document #51073
Document #51315
Document #50888
Document #52749
Document #53032
Document #151416
Document #53033
Document #151417

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, 9th Edition. Operation of this product with products not tested for UL 864, 9th Edition has not been evaluated. Such operation requires the approval of the local Authority Having Jurisdiction (AHJ).

This product has been certified to comply with the requirements in the Standard for Control Units for Fire Alarm Systems, ULC-S527, 3rd Edition. Operation of this product with products not tested for ULC-S527 3rd Edition has not been evaluated. Such operation requires the approval of the local Authority Having Jurisdiction (AHJ).
Basic System Connections

Output Circuits - TB5 & TB7

Special Application Power
In this example NAC Output Circuits #1, #3, & #4, Style Y (Class B) (Supervised, Power-Limited, Class 2) NAC Output Circuit #2 (Releasing) is Style Y (Class B) (Supervised, Non-power-Limited, Class 1). 3.0 amp max. per circuit. (See Style Z, illustrated near right edge of board.)

4.7 Kohm, ½ watt End-of-Line Resistor PN 71252

Initiating Device Circuits
IDCs 1 through 6, Style B (Class B) (Supervised, Power-Limited, Class 2) (See Style D illustrated near right edge of board.)

Dummy load all unused circuits with 4.7 Ω, ½ watt End-of-Line resistors

3 Programmable Relays
Non-supervised relay contacts
Contact Ratings
0.5 amp @ 30 VAC (resistive)

Contacts shown below in normal condition (AC power with no alarm, trouble, or supervisory activity)

A Fail Safe Trouble relay switches to the NC position during trouble conditions and under loss of all power.

(“Factory default relay programming”)

5.0 amp @ 30 VDC (resistive)

For more specific UL wiring information, refer to page 30.

Power Supply Connector

Battery
24 VDC, supervised, non-power-limited
26 Amp Hour maximum
Section 1: Product Description

The MRP-2002 is a six zone FACP for single and dual hazard agent releasing applications. The FACP provides reliable fire detection, signaling and protection for commercial, industrial and institutional buildings requiring agent-based releasing. The FACP is compatible with System Sensor’s i3 detectors which are conventional smoke detectors that can transmit a maintenance trouble signal to the FACP indicating the need for cleaning and a supervisory ‘freeze’ signal when the ambient temperature falls below the detector rating of approximately 45°F (refer to System Sensor for i3 Installation and Maintenance Instructions). In addition, the control panel is compatible with conventional input devices such as two-wire smoke detectors, four-wire smoke detectors, pull stations, waterflow devices, tamper switches and other normally-open contact devices. Refer to Device Compatibility Document for a complete listing of compatible devices.

Four outputs are programmable as NACs (Notification Appliance Circuits) or releasing solenoids. Three programmable Form-C relays (factory programmed for Alarm, Trouble and Supervisory) and 24 VDC special application resettable and non-resettable power outputs are also included on the main circuit board. The FACP supervises all wiring, AC voltage, battery charger and battery level.

Activation of a compatible smoke detector or any normally-open fire alarm initiating device will activate audible and visual signaling devices, illuminate an indicator, display alarm information on the panel’s LCD, sound the piezo sounder at the FACP, activate the FACP alarm relay and operate an optional module used to notify a remote station or initiate an auxiliary control function.

The MRP-2002C is a ULC approved Canadian version of the FACP which offers the same features as the MRP-2002 but is supplied standard with a dress panel and one built-in ANN-LED annunciator.

The MRP-2002E offers the same features as the MRP-2002 but allows connection to 220/240 VAC. Unless otherwise specified, the information in this manual applies to all versions of the panel.

1.1 Product Features

- Six programmable Style B (Class B) IDCs (Initiating Device Circuit)
- Four programmable Style Y (Class B) output circuits - (special application power)
- Three programmable Form-C relays
- 7.0 amps total 24 VDC output circuit current
- Resettable and non-resettable output power
- Built-in Programmer
- ANN-BUS for connection to optional:
  ✓ ANN-80 Remote LCD Annunciator
  ✓ ANN-I/O LED Driver
  ✓ ANN-S/PG Printer Module
  ✓ ANN-RLY Relay Module
  ✓ ANN-LED Annunciator Module
- 80-character LCD display (backlit)
- Real-time clock/calendar with daylight savings time control
- History log with 256 event storage
- Control Buttons
  ✓ ACK (Acknowledge)
  ✓ Alarm Silence
  ✓ System Reset/Lamp Test
  ✓ Drill
Product Description

• Indicators
  ✓ Fire Alarm
  ✓ Supervisory
  ✓ Trouble
  ✓ AC Power
  ✓ Alarm Silenced
  ✓ Discharge
  ✓ Pre-Discharge
  ✓ Abort
• Piezo sounder for alarm, trouble and supervisory
• 24 volt operation
• Low AC voltage sense
• Outputs Programmable for:
  ✓ Releasing Solenoids
  ✓ NACs programmable for:
    – Silence Inhibit
    – Auto-Silence
    – Strobe Synchronization (System Sensor, Wheelock, Gentex, Faraday, Amseco)
    – Selective Silence (horn-strobe mute)
    – Temporal or Steady Signal
    – Silenceable or Nonsilenceable
    – Release Stage Sounder
• Designed for agent releasing standards NFPA 12, 12A, and 2001
• Disable/Enable control per input zone and output zone
• Extensive transient protection
• Dual hazard operation
• Adjustable pre-discharge, discharge and waterflow delay timers
• Cross-zone (double-interlock) capability
• Pre-programmed and custom application templates
• Programmable Abort operation
• Automatic battery charger with charger supervision
• Silent or audible walktest capabilities
• Optional Dress Panel DP-51050 (red)
• A modified Dress Panel is provided standard with Canadian models: includes an ANN-LED Annunciator module
• Optional Trim Ring TR-CE (red) for semi-flush mounting the cabinet
• Optional CAC-5X Class A Converter Module for Outputs and IDCs
• Optional 4XTMF Municipal Box Transmitter Module
• Optional Digital Alarm Communicators (411, 411UD, 411UDAC)
• Optional ANN-SEC card for a secondary ANN-BUS

1.2 Specifications

AC Power

MRP-2002/C: 120 VAC, 60 Hz, 3.66 amps
MRP-2002E: 240 VAC, 50/60 Hz, 2.085 amps
Wire size: minimum #14 AWG (2.0 mm²) with 600V insulation
Supervised, nonpower-limited
Battery (sealed lead acid only) - J12

Maximum Charging Circuit - Normal Flat Charge: 27.6 VDC @ 1.4 amp
Supervised, nonpower-limited
Maximum Charger Capacity: 26 Amp Hour battery (two 18 Amp Hour batteries can be housed in the FACP cabinet. Larger batteries require a separate battery box such as the BB-26 or BB-55F and the CHG-75 or CHG-120F Battery Charger.)
Minimum Battery Size: 7 Amp Hour

Canadian Applications
  Minimum Battery Size: 12 Amp Hour
  Maximum Battery Size: 18 Amp Hour

Initiating Device Circuits - TB4 and TB6

Alarm Zones 1 - 5 on TB4
Alarm Zone 6 on TB6
Supervised and power-limited circuitry
Operation: All zones Style B (Class B)
Normal Operating Voltage: Nominal 20 VDC
Alarm Current: 15 mA minimum
Short Circuit Current: 40 mA max.
Maximum Loop Resistance: 100 ohms (700 ohms for linear heat detection - See Section 2.3, “Input Circuits” for more information.)
End-of-Line Resistor: 4.7KΩ 1/2 watt (Part #71252)
Standby Current: 2 mA
Refer to the Device Compatibility Document for listed compatible devices

Notification Appliance and Releasing Circuit(s) - TB5 and TB7

Four Output Circuits
Operation: Style Y (Class B)
Special Application power
Supervised and power-limited circuitry
Normal Operating Voltage: Nominal 24 VDC
Maximum Signaling Current: 7.0 amps (3.0 amps special application, 300 mA regulated maximum per NAC)
End-of-Line Resistor: 4.7KΩ 1/2 watt (Part #71252)
Refer to “FACP Wire Specifications” on page 150 for wire specifications
Refer to the Device Compatibility Document for compatible listed devices

Form-C Relays - Programmable - TB8

Relay 1 (factory default programmed as Alarm Relay)
Relay 2 (factory default programmed as fail-safe Trouble Relay)
Relay 3 (factory default programmed as Supervisory Relay)
Relay Contact Ratings: 2 amps @ 30 VDC (resistive) and 0.5 amps @ 30 VAC (resistive)

Auxiliary Trouble Input - J6

The Auxiliary Trouble Input is an open collector, unsupervised circuit which can be used to monitor external devices for trouble conditions. It can be connected to the trouble bus of a peripheral, such as a power supply, which is compatible with open collector circuits.
All connections must be in conduit, less than 20 ft. (610 cm) in length in the same room.

Special Application Resettable Power - TB9

Operating Voltage: Nominal 24 VDC
Maximum Available Current: 500 mA - appropriate for powering 4-wire smoke detectors
Power-limited Circuitry
Refer to the Device Compatibility Document for compatible listed devices
Special Application Resettatable or Nonresettatable Power - TB9

Operating Voltage: Nominal 24 VDC
Maximum Available Current: 500 mA
Power-limited Circuitry
Jumper selectable by JP31 for resettatable or nonresettatable power:

- Jumper pins 1 & 2 on JP31 for nonresettatable power
- Jumper pins 2 & 3 on JP31 for resettatable power

Refer to the Device Compatibility Document for compatible listed devices

Special Application Primary ANN-BUS Power - TB3

Operating voltage: Nominal 24 VDC
Maximum Available Current: 500mA
Power-limited circuit

Special Application Secondary ANN-BUS Power - ANN-SEC - TB1

Operating voltage: Nominal 24 VDC
Maximum Available Current: 500mA
Power-limited circuit

The following figure illustrates the maximum current that is possible for each major panel output circuit and the total current available from the FACP with the FLPS-7 power supply.

![Current Availability Diagram](image.jpg)

Refer to the battery calculations section for additional information.

Figure 1.1 Current Availability
1.3 Controls and Indicators

**LCD Display**

The FACP uses an 80-character (4 lines x 20 characters) high viewing angle LCD display. The display includes a long life LED backlight that remains illuminated. If AC power is lost and the system is not in alarm, the LED backlight will turn off to conserve batteries.

**Key Panel**

Mounted on the main circuit board, the key panel includes a window for the LCD display and indicators as listed above. The key panel, which is visible with the cabinet door closed, has 25 keys, including a 16 key alpha-numeric pad similar to a telephone keypad.

**Function keys:**
- Acknowledge/Step
- Alarm Silence (Domestic/Export version)/Signal Silence (Canadian version)
- Drill (Domestic/Export version)/Alarm Signal (Canadian version)
- System Reset (lamp test)

**Service/program keys:**
- Keys labeled 1 to 9
- * key
- # key
- 0 (recall) key
- 1st Event key
- Clear key
- Escape key
- Mode key
- Four cursor keys (up, down, left and right)
- Enter key

**Local Piezo Sounder**

A piezo sounder provides separate and distinct pulse rates for alarm, trouble and supervisory conditions.

**Indicators**

Indicators are provided to annunciate the following conditions:
• Fire Alarm - red indicator
• Supervisory - yellow indicator
• AC Power - green indicator
• System Trouble - yellow indicator
• Alarm Silenced - yellow indicator
• Discharge - red indicator
• Pre-discharge - red indicator
• Abort - yellow indicator

Local Piezo Sounder
A piezo sounder provides separate and distinct sounds for alarm, trouble, maintenance and supervisory conditions as follows:
• Alarm - on steady
• Trouble - pulse 1 second on and 1 second off
• Maintenance - pulse ½ second on and ½ second off
• Supervisory - pulse ½ second on and ½ second off

1.4 Components

Main Circuit Board
The main circuit board contains the system’s CPU and other primary components and wiring interface connectors. Optional modules plug in and are mounted to the main circuit board.

Power Supply
One FLPS-7 power supply is provided standard with each FACP, mounted to a chassis.

Cabinet
The backbox measures 16.65” (42.29 cm) x 19.0” (48.26 cm) x 5.207” (13.23 cm) and provides space for two batteries (up to 18 Amp Hours). Also available are the optional dress panel DP-51050 [red] and trim-ring TR-CE [red]. The Canadian version is supplied standard with a modified dress panel and one ANN-LED annunciator module.

Batteries
The cabinet provides space for two 18 Amp Hour batteries (larger batteries require use of a UL listed battery box such as the BB-55F or BB-26). Batteries must be ordered separately.

1.5 Optional Modules and Accessories

CAC-5X Class A Converter Module
The CAC-5X Module can be used to convert the Style B (Class B) Initiating Device Circuits to Style D (Class A) and Style Y (Class B) Output Circuits to Style Z (Class A). The modules connect to J2 and J7 on the FACP main circuit board. Note that two Class A Converter modules are required to convert all six Initiating Device Circuits and four Output Circuits.

4XTMF Transmitter Module
The 4XTMF provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity. It includes a disable switch and disable trouble LED. A module jumper option allows the reverse polarity circuit to open with a system trouble condition if no alarm condition exists. The 4XTMF mounts to the main circuit board connectors J4 & J5.

ANN-SEC Secondary ANN-BUS Module
The ANN-SEC module provides another ANN-BUS port for more wiring flexibility and for Canadian applications requiring remote annunciation.
Optional Modules and Accessories

**ANN-80 LCD Annunciator**
The ANN-80 (red) and ANN-80-W (white) are remote LCD annunciators that mimic the information displayed on the FACP LCD display.

**ANN-80C LCD Indicator (Canadian applications)**
The ANN-80C is a remote LCD indicator which mimics the information displayed on the FACP LCD display but does not allow remote control of the FACP.

The ANN-80C is **not** ULC-S527 3rd Edition Listed.

**ANN-LED Annunciator Module**
The ANN-LED Annunciator Module provides three LEDs for each zone: Alarm, Trouble and Supervisory.

**ANN-RLY Relay Module**
The ANN-RLY Module, which can be mounted inside the cabinet, provides 10 Form-C relays.

**ANN-S/PG Serial/Parallel Printer Gateway**
The ANN-S/PG module provides a connection for a serial or parallel printer.

**ANN-I/O LED Driver Module**
The ANN-I/O module provides connections to a user supplied graphic annunciator.

**DP-51050 Dress Panel**
A dress panel DP-51050 (red) is available as an option. The dress panel restricts access to the system wiring while allowing access to the membrane switch panel. The Canadian version is supplied standard with a modified dress panel.

**TR-CE Trim-ring**
A trim-ring TR-CE (red) is available as an option. The trim-ring allows semi-flush mounting of the cabinet.

**Battery Box**
The BB-55F or BB-26 battery box may be used to house two batteries greater than 18 Amp Hour. The battery box mounts directly below the control panel cabinet, centered to the main circuit board.

**Battery Chargers**

**CHG-75 Battery Charger**
The CHG-75 is capable of charging up to 75 AH lead-acid batteries with the FACP. The FACP battery charger must be disabled, through software programming, when using the CHG-75. The charger and up to 26 AH batteries can be housed in the BB-26 battery box. Larger batteries and the charger can be housed in the BB-55F battery box which can be mounted up to 20 feet away from the control panel. Refer to the **CHG-75 Manual** for additional information.

**CHG-120F Battery Charger**
The CHG-120F is capable of charging up to 120 AH lead-acid batteries with the FACP. The FACP battery charger must be disabled, through software programming, when using the CHG-120F. The batteries and charger can be housed in the BB-55F battery box which can be mounted up to 20 feet away from the control panel. Note that when using the BB-55F for housing the charger and batteries greater than 26AH, multiple BB-55Fs are required. Refer to the **CHG-120F Manual** for additional information.
Section 2: Installation

The cabinet can be surface mounted or semi-flush mounted. The door is removable during the installation period by opening and lifting it off the hinges. The cabinet mounts using two key slots at the top of the backbox and two additional securing holes located at the bottom.

Carefully unpack the system and check for shipping damage. Mount the cabinet in a clean, dry, vibration-free area where extreme temperatures or levels of humidity are not encountered. The area should be readily accessible with sufficient room to easily install and maintain the panel. Locate the top of the cabinet approximately 5 feet (1.5 m) above the floor with the hinge mounting on the left. Determine the number of conductors required for the devices to be installed. Sufficient knockouts are provided for wiring convenience. Select the appropriate knockout(s) and pull the conductors into the box. All wiring should be in accordance with the National and/or Local codes for fire alarm systems.

2.1 Backbox Mounting

CAUTION: STATIC SENSITIVE COMPONENTS
THE CIRCUIT BOARD CONTAINS STATIC-SENSITIVE COMPONENTS. ALWAYS GROUND YOURSELF WITH A PROPER WRIST STRAP BEFORE HANDLING ANY BOARDS SO THAT STATIC CHARGES ARE REMOVED FROM THE BODY. USE STATIC SUPPRESSIVE PACKAGING TO PROTECT ELECTRONIC ASSEMBLIES.

To prevent damage to the circuit board and to facilitate backbox mounting, the chassis with main circuit board and power supply can be easily removed. Loosen the two 3/8” nuts securing the top flanges of the chassis, then slide the chassis up to free it from the lower tabs. Place the chassis assembly in a protective antistatic bag in a safe location until it can be reinstalled in the backbox.

1. Mark and predrill hole in the wall for the center top keyhole mounting bolt using the dimensions illustrated in Figure 2.2 on page 21.
2. Install center top fastener in the wall with the screw head protruding.
3. Place backbox over the top screw, level and secure
4. Mark and drill the left and right upper and lower mounting holes.
   Note: outer holes (closest to sidewall) are used for 16” on-center stud mounting.
5. Install remaining fasteners and tighten.

![Figure 2.1 Chassis Mounting in Backbox]
Semi-Flush Mounting
Do not recess box more than 3.875" into wall to avoid covering venting holes on top of box.

Figure 2.2 Cabinet Dimensions
Figure 2.3 Backbox
2.2 Operating Power

**WARNING: RISK OF ELECTRICAL SHOCK AND EQUIPMENT DAMAGE**
DISCONNECT ALL SOURCES OF POWER (AC AND DC) BEFORE INSTALLING OR REMOVING ANY MODULES OR WIRING. THE PANEL AND ASSOCIATED EQUIPMENT MAY BE DAMAGED BY REMOVING AND/OR INSERTING CARDS, MODULES OR INTERCONNECTING CABLES WHILE THIS UNIT IS ENERGIZED.

**Primary Power Source (AC) and Earth Ground Connections**
AC power connections are made inside the control panel cabinet. The primary power source for the panel is 120 VAC, 60 Hz, 3.66 amps for the MRP-2002/C or 240 VAC, 50/60 Hz, 2.085 amps for the MRP-2002E. Run a pair of wires (with ground conductor) from the protected premises main breaker box to the AC terminal block TB1 on the main power supply. As per the National Electrical Code, use 14 AWG (2.00 mm², 1.6 mm O.D.) or heavier gauge wire with 600V insulation. No other equipment may be connected to this circuit. In addition, this circuit must be provided with overcurrent protection and may not contain any power disconnect devices. A separate Earth Ground connection must be made to ensure proper panel operation and lightning and transient protection. Connect the Earth Ground wire [minimum 14 AWG (2.00 mm²)] to the grounding stud in the backbox and then run wire to TB1. Do not use conduit for the Earth Ground connection since this does not provide reliable protection.

**Secondary Power Source (Batteries)**
Observe polarity when connecting the battery. Connect the battery cable to J12 on the main circuit board using the plug-in connector and cable provided. The battery charger is current-limited and capable of charging sealed lead acid batteries. The charger shuts off when the system is in alarm.

**WARNING: RISK OF PERSONAL INJURY**
BATTERY CONTAINS SULFURIC ACID WHICH CAN CAUSE SEVERE BURNS TO THE SKIN AND EYES AND CAN DESTROY FABRICS. IF CONTACT IS MADE WITH SULFURIC ACID, IMMEDIATELY FLUSH THE SKIN OR EYES WITH WATER FOR 15 MINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.
2.3 Input Circuits

The MRP-2002 has six programmable IDCs (Initiating Device Circuits). Each circuit is compatible with System Sensor’s i3 smoke detectors which generate a maintenance signal when the detector becomes dirty and a separate supervisory ‘freeze’ signal when ambient temperature falls below the detector rating of approximately 45°F. The maximum loop resistance limit for each IDC is 100 ohms (700 ohms for linear heat detection). Do not use 2-wire smoke detectors on input zones used for linear heat detection. The field wiring for each zone is supervised for opens, shorts and ground faults. All conditions are visually and audibly annunciated.

Each circuit is configured for Style B (Class B) operation and will accept i3 smoke detectors, any normally-open contact devices as well as conventional 2-wire or 4-wire, 24 VDC smoke detectors. Refer to the Device Compatibility Document for a list of compatible devices.

Initiating Device Circuits can be converted to Style D (Class A) by installing the optional Class A Converter module. Refer to “CAC-5X Class A Converter Module” on page 31.

Class B Initiating Device Circuits (supervised and power-limited) 4.7 KΩ, ½ watt resistor P/N: 71252
Combination Waterflow/Supervisory

A combination Waterflow/Supervisory circuit allows an FACP to distinguish between an alarm switch (waterflow device) and a supervisory switch (tamper) installed on the same circuit. Any circuit can be programmed as a Combo Type zone. The following figure illustrates the wiring of Zone 2 as a Style B (Class B) Waterflow/Supervisory circuit.

Requirements for the Combination Waterflow/Supervisory circuit are as follows:

✓ This circuit is only intended for one Waterflow and one Supervisory device.
✓ The Waterflow Alarm Switch must connect to the FACP Initiating Device Circuit before the In-Line Resistor as shown in Figure 2.6.
✓ The Supervisory Switch must connect to the FACP Initiating Device Circuit after the In-Line Resistor as shown in Figure 2.6.
✓ Program the FACP Initiating Device Circuit as a Combination circuit as described in “Input Zones” on page 54. Note that since a Waterflow Supervisory Switch is included in a Combination circuit, the Waterflow delay must be taken into consideration. Refer to “Waterflow Delay” on page 66.
✓ Waterflow Alarm Switch activation causes the panel to latch into alarm until the alarm condition is cleared and the FACP is reset.
✓ Supervisory Switch activation causes the panel to latch into supervisory condition if the Combo type code is selected or track (the panel will clear when the supervisory condition is cleared) if the Combo Autoresettable Supervisory type code is selected.
Combination Manual Release/Abort

A combination Manual Release/Abort circuit allows an FACP to distinguish between a manual release pull station and an abort switch installed on the same circuit. Any circuit can be programmed as a Combo Type zone. The following figure illustrates the wiring of Zone 2 as a Style B (Class B) Manual Release/Abort circuit.

![Combination Manual Release/Abort Circuit Diagram](ms10udcomboIDC.cdr)

Requirements for the Combination Manual Release/Abort circuit are as follows:

- The manual release pull station must connect to the FACP Initiating Device Circuit before the In-Line Resistor as shown in Figure 2.7.
- The Abort Switch must connect to the FACP Initiating Device Circuit after the In-Line Resistor as shown in Figure 2.7.
- Program the FACP Initiating Device Circuit as a Manual Release/Abort combination circuit as described in “Input Zones” on page 54.
2.4 Output Circuits

2.4.1 Outputs/Notification Appliance/Releasing Circuits

Each of the four Style Y (Class B) Notification Appliance Circuits can output a maximum of 3.0 amps of current. Total current drawn from these as well as other DC power outputs cannot exceed 7.0 amps (refer to battery calculations section). Each circuit is supervised, power-limited and provides special application power. Refer to the Device Compatibility Document for a listing of compatible notification appliances.

The NACs can be converted to Style Z (Class A) by installing two optional Class A Converter module. Refer to “CAC-5X Class A Converter Module” on page 31.

Note: Short Circuit Supervision must be enabled when using the REL-4.7K for Canadian Applications. Refer to the section titled “Release Circuit 1 or Release Circuit 2” on page 59 for information on enabling short circuit supervision.

Figure 2.8 NAC/Output Connections
**Stat-X Aerosol Generators**

Figure 2.9 shows typical wiring for Stat-X devices using the Ematch Protection Device (P/N 3005014).

![Figure 2.9 Wiring Stat-X Devices](statxmultieol.wmf)

**Notes:**

1. Each Stat-X device requires an Ematch Protection Device to protect against high voltage transient signals, such as lightning, that may cause the device to accidentally release.
2. Multiple Stat-X devices can be connected in series (as shown).
3. No more than ten (10) Stat-X devices can be connected on a single releasing circuit.
4. An REL-4.7K can be installed on a single Stat-X device for short circuit detection. For multiple Stat-X devices installed in series, the REL-4.7K is installed on the last device on the releasing circuit (as shown). An REL-4.7K is required for ULC applications.
2.4.2 Special Application DC Power Output Connections

Special Application Resettable and Nonresettable 24 VDC power is available on the MRP-2002 control panel.

Special Application
4-Wire Smoke Detector Power (500 mA)
24 VDC filtered, resettable power for 4-wire smoke detectors can be obtained from these terminals (power-limited)

Special Application
Resettable or Nonresettable Power (500 mA)
24 VDC filtered, resettable or nonresettable power can be obtained from these terminals (power-limited)
- Jumper JP31 pins 1 & 2 for nonresettable power (as illustrated in figure to right)
- Jumper JP31 pins 2 & 3 for resettable power

Figure 2.10 Special Application Auxiliary Power

2.4.3 Relays - Programmable

The MRP-2002 control panel provides a factory default programmed alarm relay, fail-safe trouble relay and supervisory relay. Each relay can be programmed to activate for other conditions (refer to Section 3.5.5, “On-Board Relays”, on page 63). Each Form-C relay is rated for 2 amps @ 30VDC (resistive) and 0.5 amps @ 30 VAC (resistive).

Note that relay connections must be power-limited.

Figure 2.11 Relay Terminals

Note: Relay contacts are shown with power applied to the panel and no active troubles, alarms or supervisories. The Trouble Relay is a fail-safe relay which will transfer on any trouble or total power failure.
2.5 Power-limited Wiring Requirements

Power-limited and nonpower-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" (6.35 mm) away from any nonpower-limited circuit wiring. Furthermore, all power-limited and nonpower-limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits. A typical wiring diagram is illustrated below.

*Note: In certain applications, an NAC (power-limited circuit) could be adjacent to a releasing circuit (nonpower-limited without supervision kit REL-4.7K)
2.6 Installation of Optional Modules

WARNING: RISK OF ELECTRICAL SHOCK AND EQUIPMENT DAMAGE
DISCONNECT ALL SOURCES OF POWER (AC AND DC) BEFORE INSTALLING OR REMOVING ANY MODULES OR WIRING.

2.6.1 CAC-5X Class A Converter Module

Installation

The CAC-5X Module can be used to convert five Style B (Class B) Initiating Device Circuits to Style D (Class A) and the two Style Y (Class B) Notification Appliance Circuits to Style Z (Class A). Two CAC-5X Modules are required to convert all Output Circuits and/or Initiating Device Circuits to Class A. The modules plug into connector J2 which is located at the top left of the main circuit board and J7 which is located at the top center of the main circuit board.

To install the CAC-5X, remove the two main circuit board mounting screws referenced in the following illustration and replace with the two supplied male/female standoffs in the locations indicated in the following figure. Carefully align the connector on the CAC-5X with J2 on the FACP main circuit board and press the module securely into place. Make certain the pins are properly aligned to prevent bending or breaking of any connector pins. Secure the CAC-5X to the standoffs with the screws that were just removed.

To install the second CAC-5X on J7, remove the main circuit board mounting screw referenced in the following illustration and replace with the supplied male/female standoff. Insert the supplied plastic standoff in the location indicated in the following illustration. Carefully align the connector on the CAC-5X with J7 and press the module securely into place. Make certain the pins are properly aligned to prevent bending or breaking of any connector pins. Secure the CAC-5X to the metal standoff with the screw that was just removed.

Figure 2.13  CAC-5X Module Installation
Wiring NACs and IDCs for Class A

Wire the Style Z (Class A) Notification Appliance Circuits using TB5 of the FACP main circuit board and TB2 of the CAC-5X module. Wire the Style D (Class A) Initiating Device Circuits using TB4 of the FACP main circuit board and TB1 of the CAC-5X. Note that the wiring will be identical when using TB7 NAC and TB6 IDC of the FACP. Make certain to observe polarity when connecting the devices to the circuits. The B+ and A+ terminals must comprise the feed and return for the positive side of a device and the B- and A- terminals must comprise the feed and return for the negative side of a device. To configure any of the zones for Class B when the CAC-5X is installed, simply wire to the B+ and B- input on the FACP terminal(s) and install the End-of-Line Resistor after the last device on the circuit. Do not wire to the corresponding A+ and A- terminals on the CAC-5X module.

![Diagram of Wiring NACs and IDCs for Class A Operation]

Figure 2.14 Wiring NACs and IDCs for Class A Operation
2.6.2 4XTMF Municipal Box Transmitter Option Module

The 4XTMF module can be plugged into connectors J4 and J5 on the main circuit board.

The following steps must be followed when installing the 4XTMF module:

1. Remove all power (AC and DC) from the FACP before installing the modules
2. Cut jumper JP30 on the main circuit board to allow the control panel to supervise the placement of the 4XTMF option module
3. Install the two supplied metal standoffs in the locations indicated. These standoffs provide the required earth ground protection
4. Carefully plug the connectors on the option module into connectors J4 and J5 on the FACP main circuit board, being careful not to bend any pins
5. Secure the option module to the standoff on the main circuit board with the supplied screws
6. When the installation has been completed, connect the wiring to the modules as indicated in the following sections
7. Test system for proper operation

4XTMF Transmitter Module Installation

The 4XTMF provides a supervised output for a local energy municipal box transmitter in addition to alarm and trouble reverse polarity. A jumper option allows the reverse polarity circuit to open with a system trouble condition if no alarm condition exists. A disable switch allows disabling of the transmitter output during testing to prevent accidental calling of the monitoring service.

- **Local Energy Municipal Box Service (NFPA 72 Auxiliary Fire Alarm Systems):**

  Supervisory Current: 5.0 mA
  Trip Current: 350 mA (subtracted from notification appliance power)
  Coil Voltage: 3.65 VDC
Maximum Coil Resistance: 14.6 ohms
Maximum allowable wire resistance between panel and trip coil: 3 ohms
Municipal Box wiring can leave the building

**Remote Station Service (NFPA 72 Remote Station Fire Alarm Systems)** - Intended for connection to a polarity reversal circuit or a Remote Station receiving unit having compatible ratings:

Maximum load for each circuit: 10 mA
Reverse polarity output voltage: 24 VDC
Remote Alarm and Remote Trouble wiring can leave the building

Before installing the module, place the disconnect switch to the down (disconnect) position to prevent accidental activation of the municipal box. Note that a Disconnect LED will illuminate after the module is installed in the FACP. In addition, the System Trouble indicator will turn on to indicate the Disconnect condition.

**Note:** 4XTMF Module is not directly suitable for transmitting reverse polarity supervisory signal. For an application using reverse polarity of a supervisory signal, refer to the Appendix titled "FACP with Keltron" on page 147.

2.6.3 **ANN-SEC Option Card**

The ANN-SEC option card allows for a secondary ANN-BUS. Install the ANN-SEC as follows.

1. Remove the chassis mounting screw to the right of TB3 and replace it with the supplied 0.5” x 4-40 male-female standoff.
2. Install header J1 on the ANN-SEC into J13 on the main circuit board.
3. Secure the ANN-SEC to the circuit board with the supplied screw.

Figure 2.17 Installing the ANN-SEC Option Card

2.7 ANN-BUS Devices

WARNING: RISK OF ELECTRICAL SHOCK AND EQUIPMENT DAMAGE
DISCONNECT ALL SOURCES OF POWER (AC AND DC) BEFORE INSTALLING OR REMOVING ANY MODULES OR WIRING.

Guidelines

- A variety of optional annunciation devices can be connected to an ANN-BUS communication circuit. ANN Series devices can be connected to the primary communication circuit (EIA-485) terminals on TB3. A secondary communication circuit (EIA-485) for these devices is available at TB1 on the ANN-SEC card.
- When using one ANN-BUS circuit, up to eight (8) annunciators can be supported.
- When using both ANN-BUS communication circuits, the primary circuit supports up to three (3) annunciators and the secondary circuit supports up to (5) annunciators.

Compatible devices include:
- ANN-80 LCD Annunciator
- ANN-80C LCD Indicator (Canadian Applications)
- ANN-S/PG Serial/Parallel Printer Interface Module
- ANN-I/O LED Driver Module
- ANN-LED Annunciator Module
- ANN-RLY Relay Module (can be mounted in the FACP chassis)

- When operating two ANN-BUS circuits, only one ANN-S/PG Printer module can be used in the system.
- The panel is capable of operating a primary ANN-BUS (TB3) and a secondary ANN-BUS (TB1 on ANN-SEC card) simultaneously.
2.7.1 ANN-BUS Wiring

This section contains information on calculating ANN-BUS wire distances and the types of wiring configurations (Class B).

Calculating Wiring Distance for ANN-BUS Modules

The following instructions will guide the installer in determining the type of wire and the maximum wiring distance that can be used with FACP ANN-BUS accessory modules.

To calculate the wire gauge that must be used to connect ANN-BUS modules to the FACP, it is necessary to calculate the total worst case current draw for all modules on a single 4-conductor bus. The total worst case current draw is calculated by adding the individual worst case currents for each module. The individual worst case values are shown in the following table:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Worst Case Current Draw[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANN-80(C) LCD Annunciator/Indicator</td>
<td>0.040 amps</td>
</tr>
<tr>
<td>ANN-S/PG Serial/Parallel Printer Interface Module</td>
<td>0.040 amps</td>
</tr>
<tr>
<td>ANN-I/O LED Driver Module</td>
<td>0.200 amps</td>
</tr>
<tr>
<td>ANN-LED Annunciator Module</td>
<td>0.068 amps</td>
</tr>
<tr>
<td>ANN-RLY Relay Module</td>
<td>0.075 amps</td>
</tr>
</tbody>
</table>

[^1] Total worst case current draw on a single ANN-BUS cannot exceed 0.5 amp.

After calculating the total worst case current draw, Table 2.1 specifies the maximum distance the modules can be located from the FACP on a single wire run. The table ensures 6.0 volts of line drop maximum. In general, the wire length is limited by resistance, but for heavier wire gauges, capacitance is the limiting factor.

These cases are marked in the chart with an asterisk (*). Maximum length can never be more than 6,000 feet (1,800 m), regardless of gauge used. The formula used to generate this chart is shown in the note below.

<table>
<thead>
<tr>
<th>Total Worst Case Current Draw (amps)</th>
<th>22 Gauge</th>
<th>18 Gauge</th>
<th>16 Gauge</th>
<th>14 Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.100</td>
<td>1,852 ft.</td>
<td>4,688 ft.</td>
<td>* 6,000 ft.</td>
<td>* 6,000 ft.</td>
</tr>
<tr>
<td>0.200</td>
<td>926 ft.</td>
<td>2,344 ft.</td>
<td>3,731 ft.</td>
<td>5,906 ft.</td>
</tr>
<tr>
<td>0.300</td>
<td>617 ft.</td>
<td>1,563 ft.</td>
<td>2,488 ft.</td>
<td>3,937 ft.</td>
</tr>
<tr>
<td>0.400</td>
<td>463 ft.</td>
<td>1,172 ft.</td>
<td>1,866 ft.</td>
<td>2,953 ft.</td>
</tr>
<tr>
<td>0.500</td>
<td>370 ft.</td>
<td>938 ft.</td>
<td>1,493 ft.</td>
<td>2,362 ft.</td>
</tr>
</tbody>
</table>

Table 2.1 Wiring Distances

The following formulas were used to generate the wire distance chart:

\[
\text{Maximum Resistance (Ohms)} = \frac{6.0 \text{ Volts}}{\text{Total Worst Case Current Draw (amps)}}
\]

\[
\text{Maximum Wire Length (feet)} = \frac{\text{Maximum Resistance (Ohms) \times 500}}{\text{Rpu}}
\]

(6,000 feet maximum)

where: Rpu = Ohms per 1,000 feet for various Wire Gauges (see table below)
Exception: When using the ANN-RLY module, the installer must ensure that the maximum 24VDC power line drop does not exceed 0.3 volts. This results in the following wiring limitations:

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>Ohms per 1,000 feet (Rpu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>16.2</td>
</tr>
<tr>
<td>18</td>
<td>6.4</td>
</tr>
<tr>
<td>16</td>
<td>4.02</td>
</tr>
<tr>
<td>14</td>
<td>2.54</td>
</tr>
</tbody>
</table>

**Wiring Distance Calculation Example:**

Suppose a system is configured with the following ANN-BUS modules:

- 2 ANN-80 Remote LCD Annunciators
- 1 ANN-S/PG Serial/Parallel Printer Interface Module
- 1 ANN-I/O LED Driver Module

The total worst case current is calculated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Current Draw</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANN-80 Current Draw</td>
<td>= 2 X 0.040 amps</td>
<td>= 0.080 amps</td>
</tr>
<tr>
<td>ANN-S/PG Current Draw</td>
<td>= 1 X 0.040 amps</td>
<td>= 0.040 amps</td>
</tr>
<tr>
<td>ANN-I/O Current Draw</td>
<td>= 1 X 0.200 amps</td>
<td>= 0.200 amps</td>
</tr>
</tbody>
</table>

Total Worst Case Current Draw = 0.320 amps

Using this value and referring to the Wiring Distance Table 2.1 on page 36, it can be found that the available options are:

- ✔️ 463 feet maximum using 22 Gauge wire
- ✔️ 1,172 feet maximum using 18 Gauge wire
- ✔️ 1,866 feet maximum using 16 Gauge wire
- ✔️ 2,953 feet maximum using 14 Gauge wire
Wiring Configuration

Figure 2.18 illustrates the wiring between the FACP and ANN-BUS devices.

Powering ANN-BUS Devices from Auxiliary Power Supply

Figure 2.19 illustrates the powering of ANN-BUS devices from an auxiliary power supply such as the FCPS-24FS6/8, when the maximum number of ANN-BUS devices exceeds the ANN-BUS power requirements.
### 2.7.2 ANN-BUS Device Addressing

Each ANN-BUS device requires a unique address (ID Number) in order to communicate with the FACP. A 5-position DIP switch on each device is used to set this address. The address set for these devices must also be programmed at the FACP for the specific device (refer to the programming section titled Section 3.5.7, “ANN-BUS”, on page 70).

A maximum of 8 devices can be connected to the FACP ANN-BUS communication circuit. Device addresses do not need to be sequential and can be set to any number between 01 and 08. Note that 00 is not a valid address. The following table shows the DIP switch setting for each address.

<table>
<thead>
<tr>
<th>Address</th>
<th>Switch 5</th>
<th>Switch 4</th>
<th>Switch 3</th>
<th>Switch 2</th>
<th>Switch 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>not valid</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>01</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>02</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>03</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>04</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>05</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>06</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>07</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>08</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

### 2.7.3 ANN-80 Remote LCD Annunciator

The ANN-80 LCD Annunciator is a compact, 80 character, backlit LCD remote fire annunciator which mimics the FACP display. It also provides system status indicators for AC Power, Alarm, Trouble, Supervisory and Alarm Silenced conditions. Communication between the ANN-80 and FACP is accomplished over a two wire serial interface employing the ANN-BUS communication format. The devices are powered, via two additional wires, from either the host FACP or remote UL-listed, filtered, power supply.

**Specifications**
- Operating Voltage Range: 18 VDC to 28 VDC
- Current Consumption @ 24 VDC nominal (filtered and nonresettable):
  - Normal/Standby (no activity): 37.0 mA
  - Trouble: 39.0 mA
  - Alarm: 40.0 mA
  - AC Fail (not backlit): 15.0 mA
- For use indoors in a dry location

**Installation**

Ensure that all power (AC and DC) has been removed from the FACP before installing the annunciator.

**Mounting**

The ANN-80 can be surface mounted using the optional ANN-SB80KIT-R (red) or ANN-SB80KIT-W (white) surface mounting box or semi-flush mounted to a single, double or 4” square electrical box. Select and remove the appropriate knockout(s), pull the necessary wires through the knockouts and mount the annunciator in or on the wall depending on the type of installation desired.
The ANN-80 cover must be attached to the annunciator backplate before mounting the annunciator to the electrical box/wall. The cover cannot be reattached or removed after the annunciator has been mounted.

### Opening/Closing Annunciator

The following procedure details the steps used to open the annunciator in order to access the terminal block and DIP switches (refer to figure below):

1. Turn the key switch to the ON (Unlocked) position by turning the key counter-clockwise.
2. Push in the snap latch located on the right side of the unit while pulling the cover open.
3. To close the cover, make certain the key switch is in the ON (Unlocked) position. Swing the cover closed, snapping it shut.
4. Turn the key switch to the OFF (Locked) position by turning clockwise and remove the key.

### Wiring ANN-80 to FACP

The following steps can be used as a guide to wire the annunciator. Make certain all power has been removed from the FACP prior to annunciator installation.

1. Route wires from hole in backplate, through wiring channel and then to ANN-80 terminal block TB1.
2. Remove appropriate amount of wire insulation.
3. Connect the wiring from the FACP ANN-BUS to annunciator TB1 terminals 3 (A) & 4 (B). Make certain to connect A to A and B to B.
4. If appropriate, connect the wiring going to the next device on the ANN-BUS to TB1 terminals 3 & 4. Make certain to connect A to A and B to B.
5. Connect the wiring from the 24 VDC power source to annunciator TB1 terminals 1 (+) & 2 (+). Make certain to observe proper polarity.
6. If appropriate, connect the power wiring going to the next device to terminals 1 (-) & 2 (+). Make certain to observe proper polarity.

7. After all connections are made, remove extra wire from inside of annunciator by dressing it neatly through wire channel, with any excess wire pushed back through hole into electrical box.

The following table shows the ANN-80 connections to the FACP.

<table>
<thead>
<tr>
<th>FACP (TB3)</th>
<th>ANN-80 (TB1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal 4 GND (-)</td>
<td>Terminal 1 (-)</td>
</tr>
<tr>
<td>Terminal 3 PWR (+)</td>
<td>Terminal 2 (+)</td>
</tr>
<tr>
<td>Terminal 2 A (ANN-BUS)</td>
<td>Terminal 3 (A)</td>
</tr>
<tr>
<td>Terminal 1 B (ANN-BUS)</td>
<td>Terminal 4 (B)</td>
</tr>
</tbody>
</table>

**Programming**

Following installation and wiring of the ANN-80 LCD annunciator to the FACP, the annunciator must be added to the system via FACP programming. Refer to the programming section titled Section 3.5.7, “ANN-BUS”, on page 70 in this manual for detailed programming information. Select the LCD option for programming.

**2.7.4 ANN-S/PG Serial/Parallel Printer Interface Installation**

The ANN-S/PG Serial/Parallel Interface module allows the ancillary connection of a serial or parallel printer to the FACP for a real-time log of system events, detector status reports and event history. Note that either a serial or parallel printer may be installed, not both. Only one ANN-S/PG can be used per panel. Proceed with the installation as described in the following:

1. Ensure that all power (AC and DC) has been removed from the FACP.
2. Connect the ANN-S/PG to the FACP as illustrated in Figure 2.21.

3. Using the DIP switches on the back of the ANN-S/PG module, assign an ID number (address) to the module.

4. Select the address and configuration options for the ANN-S/PG module as described in the Programming section of this manual (refer to Section 3.5.7, “ANN-BUS”, on page 70). Note that the Auto-configure feature allows the programmer to quickly bring all installed ANN-BUS modules online (refer to “Auto-Configure” on page 71).

5. Connect a printer to the ANN-S/PG Parallel or Serial connector (refer to Figure 2.21 on page 42).

**Specifications**
- Operating Voltage: 24 VDC
- Current (Alarm and Standby): 45 mA
- Ambient Temperature: 32°F to 120°F (0°C to 49°C)
- Max. Wiring Distance from FACP: 6,000 ft. (1,800 m)
- Mounting: Surface
- Dimensions: 6”W x 7-3/4”H x 1-7/16”D (15.2 cm W x 19.7 cm H x 3.7 cm D)
- For indoor use in a dry location only

**PRN-7 Printer Installation**
When connected to the FACP via the ANN-S/PG module, the PRN-7 prints the status changes within the control panel and time-stamps the printout with the time of day and date that the event occurred. It provides 80 columns of data on standard 9” x 11” tractor-feed paper. This section contains information on connecting a printer to the control panel and setting the printer options.

- **Connecting a PRN-7 Printer**

Remote printers require a primary AC power source. If required for the fire alarm system configuration (for example, a Proprietary Fire Alarm System), a remote printer requires a secondary power source (battery backup). Since a secondary power source is not provided as a standard feature, a separate UL-listed Uninterruptible Power Supply (UPS) should be used. The building emergency power supply may be used, as long as it meets the power continuity requirements of NFPA 72. Refer to NFPA 72 for further details.

Connect the remote printer to the FACP via the ANN-S/PG module using a standard DB-9 cable. One end of the cable will plug into the DB-9 connector on the PRN-7 printer and the other end plugs into the serial connector on the ANN-S/PG module.
Setting Printer Options

Refer to the documentation supplied with the PRN-7 printer for instructions on using the printer menu controls. Set the printer options (under the menu area) as shown in the following table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Setting</th>
<th>Option</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font</td>
<td>HS Draft</td>
<td>CPI</td>
<td>10CPI</td>
</tr>
<tr>
<td>LPI</td>
<td>6 LPI</td>
<td>Skip</td>
<td>0.5</td>
</tr>
<tr>
<td>ESC Character</td>
<td>ESC</td>
<td>Emulate</td>
<td>LQ-2550</td>
</tr>
<tr>
<td>Bidirectional Copy</td>
<td>ON</td>
<td>I/O</td>
<td></td>
</tr>
<tr>
<td>CG-TAB</td>
<td>Graphic</td>
<td>Buffer</td>
<td>64K</td>
</tr>
<tr>
<td>Country</td>
<td>E-US ASCII</td>
<td>Serial</td>
<td></td>
</tr>
<tr>
<td>Auto CR</td>
<td>OFF</td>
<td>Baud</td>
<td>9600 or 2400</td>
</tr>
<tr>
<td>Color Option</td>
<td>Not Installed</td>
<td>Format</td>
<td>7 Bit, Even, 1 Stop</td>
</tr>
<tr>
<td>Formien</td>
<td></td>
<td>Protocol</td>
<td>XON/XOFF</td>
</tr>
<tr>
<td>Lines</td>
<td>6LPI=60</td>
<td>Character Set</td>
<td>Standard</td>
</tr>
<tr>
<td>Standard</td>
<td>Exec 10.5</td>
<td>Sl.Zero</td>
<td>On</td>
</tr>
<tr>
<td>Barcode</td>
<td>Off</td>
<td>Auto LF</td>
<td>On</td>
</tr>
<tr>
<td>Barcode</td>
<td>Unsecured</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.2 PRN-7 Setup Options

PRN-6F Printer Installation

When connected to the FACP via the ANN-S/PG module, the PRN-6F prints the status changes within the control panel and time-stamps the printout with the time of day and date that the event occurred. It provides 80 columns of data on standard 9” x 11” tractor-feed paper. This section contains information on connecting a printer to the control panel and setting the printer options.

Connecting PRN-6F Printer

Remote printers require a primary AC power source. If required for the fire alarm system configuration (for example, a Proprietary Fire Alarm System), a remote printer requires a secondary power source (battery backup). Since a secondary power source is not provided as a standard feature, a separate UL-listed Uninterruptible Power Supply (UPS) should be used. The building emergency power supply may be used, as long as it meets the power continuity requirements of NFPA 72. Refer to NFPA 72 for further details.

Connect the remote printer to the FACP via the ANN-S/PG module using a standard DB-25 cable. One end of the cable will plug into the DB-25 connector on the PRN-6F printer and the other end plugs into the parallel connector on the ANN-S/PG module. Note that the 9-pin DB-9 port on the ANN-S/PG is used to connect a serial printer. The 25-pin port is used for a Centronics parallel printer cable. Connect either a serial or parallel printer, but not both at the same time.
## Setting Printer Options

Refer to the documentation supplied with the PRN-6F printer for instructions on using the printer menu controls. Set the printer options (under the menu area) as shown in the following table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Setting</th>
<th>Option</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font</td>
<td>RS Draft</td>
<td>CPI</td>
<td>10CPI</td>
</tr>
<tr>
<td>LPI</td>
<td>6 LPI</td>
<td>Skip</td>
<td>0.5</td>
</tr>
<tr>
<td>ESC Character</td>
<td>ESC</td>
<td>Emulate</td>
<td>Epson FX-850</td>
</tr>
<tr>
<td>Bidirectional Copy</td>
<td>ON</td>
<td>I/O</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buffer</td>
<td>40K</td>
</tr>
<tr>
<td>CG-TAB</td>
<td>Graphic</td>
<td>Serial</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>E-US ASCII</td>
<td>Baud</td>
<td>9600 or 2400</td>
</tr>
<tr>
<td>Auto CR</td>
<td>OFF</td>
<td>Format</td>
<td>7 Bit, Even, 1 Stop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Protocol</td>
<td>XON/XOFF</td>
</tr>
<tr>
<td>Color Option</td>
<td>Not Installed</td>
<td>Character Set</td>
<td>Standard</td>
</tr>
<tr>
<td>Formien</td>
<td></td>
<td>SI.Zero</td>
<td>On</td>
</tr>
<tr>
<td>Lines</td>
<td>6LPI=60</td>
<td>Auto LF</td>
<td>On</td>
</tr>
<tr>
<td>Standard</td>
<td>Exec 10.5</td>
<td>PAPER</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIN 1</td>
<td>12/72&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIN 2</td>
<td>12/72&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SINGLE</td>
<td>12/72&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PUSH TRA</td>
<td>12/72&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PULL TRA</td>
<td>12/72&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAP ROLL</td>
<td>12/72&quot;</td>
</tr>
</tbody>
</table>

Table 2.3 PRN-6F Setup Options
2.7.5 ANN-I/O LED Driver Module

The ANN-I/O is an LED driver module that can be used in a wide variety of applications, including as an interface with most customized graphic annunciators. The ANN-I/O can drive up to 40 LEDs. The following sections describe hardware installation. Refer to the section titled Section 3.5.7, “ANN-BUS”, on page 70 for programming information.

ANN-I/O Board Layout

Figure 2.22 illustrates the ANN-I/O board showing locations of screw terminals for connection to the FACP, pin connectors for connecting LEDs and the DIP switch for selecting the ANN-BUS ID number.

Specifications

- Max. ANN-BUS Voltage: 28 VDC
- Max. Current:
  - Alarm: 200 mA
  - Standby: 35 mA
  - Each LED: 10 mA
- Operating Temperature: 32°F to 120°F (0°C to 49°C)
- For indoor use in a dry location only
ANN-I/O Connection to FACP

The ANN-I/O connects to the FACP via the ANN-BUS as illustrated in Figure 2.23. After the ANN-I/O is connected to the panel, it must be added to the system via FACP programming.

ANN-I/O Module LED Wiring

There are four 12-pin connectors on the ANN-I/O module for connecting LEDs. Each set of 10 LEDs get their power from Pin 11 of the corresponding connector. Internal resistors are sized so that there is approximately 10 mA of current for each LED. No series resistors are required. LED outputs are mapped to output circuits. Refer to the section titled “ANN-I/O LED Zone Assignments” on page 72 of this manual.
The LEDs are wired as illustrated in Figure 2.24. Note that the illustration depicts only connectors P1 and P2. Wiring is identical for P3 (LEDs 21-30) and P4 (LEDs 31-40).

![ANN-I/O LED Wiring Diagram](image)

**Figure 2.24 ANN-I/O LED Wiring**

### 2.7.6 ANN-LED Annunciator Module

The ANN-LED annunciator modules provide LED annunciation of general system faults and input zones when used with a compatible FACP. The ANN-LED module provides alarm (red), trouble (yellow) and supervisory (yellow) indication for up to ten input zones.

Canadian Applications: The ANN-LED is supplied standard with the Canadian version of the FACP. It is mounted to the dress panel included with this model.

**Specifications**

- Max. ANN-BUS Voltage: 24 VDC
- Max. Current:
  - ✔️ Alarm: 68 mA
  - ✔️ Standby: 28 mA
- Operating Temperature: 32°F to 120°F (0°C to 49°C)
- For indoor use in a dry location only

**Mounting/Installation**

Install the ANN-LED Module as described in the documentation supplied with the annunciator.
ANN-LED Board Layout and Connection to FACP

Figure 2.25 illustrates the ANN-LED board showing locations of screw terminals for connection to the FACP and the DIP switches for selecting the ANN-BUS ID number.

2.7.7 ANN-RLY Relay Module

The ANN-RLY relay module provides 10 programmable Form-C relays when used with a compatible FACP.

Specifications

- Operating Voltage: 24 VDC
- Max. Current:
  - Alarm: 75 mA
  - Standby: 15 mA
- Relay Contact Ratings:
  - 2.0 amps @ 30 VDC (resistive)
  - 0.5 amps @ 30 VAC (resistive)
- Operating Temperature: 32°F to 120°F (0°C to 49°C)
- For indoor use in a dry location only
Mounting/Installation

The ANN-RLY relay module can be mounted inside the FACP main circuit board chassis. An optional ANN-MBRLY mounting bracket allows mounting of the ANN-RLY in the lower right hand corner of the FACP cabinet instead of or in conjunction with the mounting provisions under the main FACP circuit board chassis. Refer to the documentation supplied with the module for information on installation.

ANN-RLY Board Layout and Connection to FACP

Figure 2.25 illustrates the ANN-RLY board showing locations of screw terminals for connection to the FACP and the DIP switches for selecting the ANN-BUS ID number.
Section 3: Programming

3.1 User Programming

The FACP is completely field programmable using the panel keypad and requires no special software skills. While programming the FACP, the fire protection capabilities of the control panel are enabled. Programming Mode times-out after 10 minutes of inactivity.

Program Templates have been provided to allow the panel to be quickly programmed with typical job-site configurations. Refer to “Circuit Mapping and Cross-Zoning” on page 95 for an explanation of mapping and cross-zoning and “FACP Configuration Templates” on page 100 for a detailed description of each template.

Site-specific programming may be accomplished:

- by Manual programming or editing, using the FACP keypad

The System All Normal screen will be displayed in a programmed system with no active alarms, troubles or supervisories, as illustrated below:

```
SYSTEM ALL NORMAL
10:00A 092105
```
Read Status mode can be entered while the panel is in any mode of operation. If an alarm or supervisory event exists at the panel, the event must be cleared before entering Programming mode. The exception to this is the programmer/operator can access Programming mode if the supervisory is due to the Disable Release event. Refer to Table 3.1 on page 55.

To access any of the programming or read status features, the Enter or Mode key must be pressed, which will cause the LCD to display the following:

```
AGENT RELEASE PANEL
1=READ STATUS MODE
2=PROGRAMMING MODE
```

Pressing 1, while this screen is being displayed, will cause the control panel to enter the Read Status Mode which allows the user to view the programmed features and status of the control panel. The Read Status feature is not password protected. Refer to “Read Status” on page 87 for a detailed description of this feature.

Pressing 2 will select user Programming Mode which may only be accomplished by an authorized person. After pressing 2, a screen will prompt for a password. After entering the correct password, the user may select from a list of programming options.

**Exit Programming and Read Status Mode**

The programmer can exit any mode by repeatedly pressing the keypad ESC (Escape) key until the display reads System All Normal. Ten minutes of inactivity will also cause the panel to exit Programming Mode. *Note that the data which is entered during Programming mode is automatically saved by the control panel*. If the Reset key is pressed or power is lost before exiting Programming mode, all data just entered will be retained.

**User Programming Levels**

There are two user programming levels:

- User Master Program Level 1 is used for programming panel specific data relating to device types, zoning, messages, control panel functions, etc.
- User Maintenance Program Level 2 is used by a qualified operator to access features such as Disable/Enable, View and Clear History, Walktest and System Time Change.

### 3.2 Initial Power-up

The following sections describe the initial programming procedures for a new system. The same procedures are used to modify programming in an existing system.

After completing the wiring of devices to the FACP, apply power to the control panel. If wiring has not been completed and/or End-of-Line resistors are not installed at the panel, a trouble condition will be indicated at the panel and a trouble message will be displayed on the LCD. Following is an example of a possible trouble message that may be displayed.

```
OPEN   PULL STATION
ZONE 1 OPEN FAULT
09:03A 092214
```

### 3.3 Programming Screens Description

Two options are available when the Enter key is pressed: Read Status and Programming Mode. The Read Status and Programming options have multiple functions or features which may be chosen. To view all of the choices, it is necessary that the programmer scroll through a number of additional subscreens. These selections are displayed on multiple screens to make them more readable for the programmer. Refer to “Master Programming Level” on page 53, for additional information on the various screens.
The title of the main option screen will always be displayed at the top of the subscreens for the programmer’s convenience. If additional subscreens exist, an Up or Down arrow will be displayed in the upper right corner of the screen being viewed. The programmer can then press the keypad Up or Down arrow key to view the new subscreen. To select one of the choices in a screen, the programmer presses the keypad numerical key corresponding to the desired choice.

Note that subscreens may also have multiple options which require viewing more than one screen. The same process, as detailed in the previous paragraphs, is followed to view all option choices.

### 3.4 Programming and Passwords

There are two factory set programming passwords which will access the Programming screens as indicated in the following examples. From either of the screens, access to specific system and device features or programming may be obtained. All user programming entries are stored in nonvolatile memory. The factory set passwords can be changed by the user as described in “Password Change” on page 76. If an invalid password is entered, the blinking cursor will return to the first password character position. To exit Programming or Read Status mode at any time, press the ESC (Escape) key repeatedly. Note that all programming data is automatically saved as it is entered into the control panel. If the Reset key is pressed or power is lost before exiting Programming mode, the data just entered will be retained.

To access user Programming mode, press the Enter or Mode key. The LCD will display the following:

```
1=READ STATUS MODE
2=PROGRAMMING MODE
```

To enter the user Programming mode, press 2. The display will read as follows:

```
PROGRAMMING
ENTER PASSWORD
*****
```

Entering the Master level password (default 00000) will cause the following screen to appear:

```
PROGRAMMING
1=FACP CONFIG    T5
2=INPUT ZONES
3=OUTPUT CIRCUITS
```

If the Maintenance level password (default 11111) is entered, the following screen will appear:

```
PROGRAMMING
1=INPUT ZONES
2=HISTORY
3=WALKTEST
```

Note that in the two preceding screens, an arrow appears to inform the programmer that additional options can be viewed by pressing the keypad down arrow key.
3.5 Master Programming Level

When the Master Program Level password is entered, the control panel will enter user Programming mode. In this mode, the piezo sounder remains off, the trouble relay is activated and the system Trouble indicator flashes until Programming mode is exited. The following display will appear:

![Programming Screen #1](image)

The down arrow which appears in the display indicates that additional programming choices can be viewed by pressing the down arrow key on the keypad. If a down and up arrow appear in the display, pressing the ‘down’ arrow key will display the subsequent Programming Screens as illustrated below while pressing the ‘up’ arrow key will display the previous screen.

![Programming Screens #2, #3, #4](image)

3.5.1 FACP CONFIG (Application Templates)

For a detailed description of each Template, refer to “FACP Configuration Templates” on page 100. The FACP Configuration option allows the user to program the FACP with 1 of 13 factory preprogrammed templates or one custom template which can be programmed by the user. The templates have been provided to allow the user to quickly program the panel with typical job-site configurations. The user may choose to select one of the templates or bypass this option, proceeding to the next sections which detail customized programming of the FACP.

A factory template may be chosen and later changed to better fit a site requirement. The changed template can be saved as the one custom template.

Pressing 1, while viewing Programming Screen #1, will select the FACP Config option and display the following screen:

![FACP Config Screen #1](image)

Press the down arrow key to view all available templates. During initialization of the panel following power-up or reset, the selected Template will be displayed by the LCD.

**NOTE:** Template 1 through Template 13 as well as the Custom Template are available for the MRP-2002/E Agent Release Control Panel.

To select a pre-programmed template, press the number key corresponding to the desired template. Note that the factory templates may pre-set most programmable features of the FACP.
3.5.2 Input Zones

The Input Zones option allows the user to initially program or change the programming for the six input zones (circuits). Pressing 2, while viewing Programming Screen #1, will select the Input Zones option and display a screen similar to the following:

Pressing the down arrow key will display additional screens for Input Zones 4 through 6. To program a specific zone, press the number key corresponding to the desired zone while viewing one of the Input Zone screens.

To program Input Zone 1, press the 1 key while viewing Input Zone Screen #1. The following screens will be displayed:

To change the programming for the displayed zone, press the keyboard ‘down’ arrow key to view the Edit Zone screens.

The following examples show the editing of Input Zone 1:

Enable/Disable Zone

To Enable or Disable the zone, press the 1 key while viewing the Edit Input Zone Screen #2. Each press of the key will toggle the screen between Enabled Yes and Enabled No. If Enabled No is selected, the zone will be disabled by the control panel, preventing the circuit from reporting alarms and troubles to the panel. The control panel LCD will display the zone which has been disabled and FACP will turn on the Trouble indicator.

Type

To select the type of zone being programmed, press the 2 key while viewing the Edit Input Zone Screen #2. This will cause the control panel to display the following Zone Type Screen:
Pressing the down arrow key displays additional zone types as indicated in the following table.

<table>
<thead>
<tr>
<th>Zone Type</th>
<th>Action When Activated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull-Station</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>Manual Release(^1)</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>Manual Release/Abort(^1,5)</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>Discharge Pressure(^2)</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>Normally Open Contact</td>
<td>Fire</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Waterflow</td>
<td>Fire</td>
</tr>
<tr>
<td>Waterflow NS (nonsilenceable)</td>
<td>Fire, nonsilenceable</td>
</tr>
<tr>
<td>Combo</td>
<td>Fire/Supervisory</td>
</tr>
<tr>
<td>Combo w/AutoResettable Superv(^3)</td>
<td>Fire/Supervisory, nonlatching</td>
</tr>
<tr>
<td>2-Wire Smoke</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>2-Wire Heat</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Linear Heat</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Fire</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>Low Pressure</td>
<td>Supervisory, latching</td>
</tr>
<tr>
<td>Low Pressure AutoResettable(^3)</td>
<td>Supervisory, nonlatching</td>
</tr>
<tr>
<td>High Pressure</td>
<td>Supervisory</td>
</tr>
<tr>
<td>High Pressure AutoResettable(^4)</td>
<td>Supervisory, nonlatching</td>
</tr>
<tr>
<td>Disable Release(^4)</td>
<td>Supervisory, nonlatching (disables Release Circuits)</td>
</tr>
<tr>
<td>Supervisory</td>
<td>Supervisory, latching</td>
</tr>
<tr>
<td>Supervisory AutoResettable(^3)</td>
<td>Supervisory, nonlatching</td>
</tr>
<tr>
<td>Abort Release Switch(^5)</td>
<td>Supervisory, nonlatching</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 3.1 Zone Types

1. Activation of a Manual Release Switch will override Predischarge Delay and override an active Abort Release Switch, resulting in an immediate agent release.
2. Discharge Pressure Switch can be mapped to one or both Release Circuits, **but it will not activate them**. The following will occur when it is activated:
   - Alarm LED flashes 1/2 second on, 1/2 second off
   - Discharge LED turns on steady
   - Alarm Relay(s) activate
   - Momentarily activate/energize any relay programmed as a pre-discharge relay
   - Activate any relay programmed as a discharge relay
   - Turn on all enabled and mapped NACs
   - Display an active IDC message on FACP display and send message to printer/pc
   - Turn on FACP piezo
3. **AutoResettable** means that a device with this type code, when activated, will automatically reset when the corresponding condition is cleared.
4. **Disable Release** allows the installer to disable the releasing solenoids during system testing. Disable Release will only work when the system is **not** in alarm.
5. Activation of an Abort Release Switch during system normal operation (non-alarm) results in an audible and visual indication at the FACP. If the Abort Switch is pressed and then the Manual Release is activated, the Manual Release will over-ride the Abort and cause an immediate release. If Manual Release is activated and then Abort Switch is pressed, the Abort Switch will have no effect.

While viewing any Zone Type screen, select the type of zone being programmed by pressing the corresponding keyboard number key. The display will return to Edit Input Zone Screen #2 and indicate the selection next to the Type option.
Output Circuit Map

Output Mapping (per input zone) allows the programmer/operator to assign the Output Circuits that will be activated when a particular Input Zone or cross-zoned releasing group goes active. Pressing 1 for Output Circuit Map while viewing Edit Input Zone Screen #3 will display screens which show the Output Circuits programmed to activate when the selected Input Zone (or cross-zoned releasing group) is activated. Output Map Screen #1 displays the Output Type Codes and programming for Output Circuits 1 through 3 and Output Map Screen #2 displays the Output Type Code and programming for Output Circuit 4.

As an example, if Template 1 has been selected as the FACP Configuration [refer to “FACP CONFIG (Application Templates)” on page 53], selecting the Output Circuit Map for Input Zone 1 will display the following screens:

The screens indicate that when Input Zone 1 is activated:

- Output Circuit #1 default programmed as Release 1 will activate (Yes)
- Output Circuit #2 default programmed as Horn NAC will activate (Yes)
- Output Circuit #3 default programmed as Alarm NAC will not activate (No)
- Output Circuit #4 default programmed as Alarm NAC will activate (Yes)

Note that the MAP may indicate that an Input Zone is programmed to a particular Output Circuit but, if it is cross-zoned with one or more other Input Zones, all must be active in order to activate the Output Circuit. Refer to the examples in “Circuit Mapping and Cross-Zoning” on page 95.

The Output Circuit Map can be customized by selecting or deselecting any of the four output circuits for activation. Pressing the number key corresponding to the selected output will toggle the display between Yes for activation by the Input Zone to No for no activation. The new customized programming is automatically saved as it is entered into the control panel.

Freeze Supervision

Pressing 2 for Freeze Supervision while viewing Edit Input Zone Screen #3, will program the FACP to supervise the devices connected to the selected zone for a temperature freeze condition. Each press of the 2 key will toggle the display between Freeze Supv. Yes and No. The factory default setting is No Freeze Supervision.

Adjective/Noun

The Adjective/Noun selection allows the programmer to enter specific descriptors about the detector currently being programmed. Pressing 1 while viewing Edit Input Zone Screen #3 will cause the following screen to be displayed:
Pressing 1 while viewing the Adjective/Noun Screen will cause the following screen(s) to be displayed. Note that the keyboard down arrow key must be pressed to see all the Adjective screens. Press the number corresponding to the adjective that is to be used as a descriptor for the location of the detector currently being programmed. When an adjective has been selected, it will appear at the top of the display as indicated by the asterisks.

Pressing 2 while viewing the Adjective/Noun Screen will cause the following screen(s) to be displayed. Note that the keyboard down arrow key must be pressed to see all the Noun screens. Press the number corresponding to the noun that is to be used as a descriptor for the location of the detector currently being programmed. When a noun has been selected, it will appear at the top of the display as indicated by the asterisks.

Description

The Description selection allows the programmer to enter additional information about the detector currently being programmed. This information will be displayed as part of the device label on the display. Pressing 2 while viewing Edit Input Zone Screen #3 will cause the following screen to be displayed:

A flashing cursor will appear at the first asterisk to the left. The programmer can enter additional descriptive information about the device being programmed. This information will appear on the display along with the standard device label information.

A maximum of 20 characters (including spaces) can be entered. To enter alphanumeric characters from the keypad, repeatedly press the appropriate key until the desired character is displayed in the first position. For example, to enter the letter B, press the 2 (ABC) key three times to toggle through.
the characters $I$, $A$ and $B$. Press the right arrow key to move the cursor one position to the right and repeat the process to enter the next character. To enter a space, press the * (QZ) key four times until a blank appears in the desired position. When all characters have been entered, press the Enter key to store the information. The display will return to the Edit Detector Screen #5, displaying the new information at the bottom of the screen.

**Recall/Increment Function**

In addition, the user may use the Recall/Increment function at any time when the cursor is on the first letter of the Description, Adjective or Noun field as follows:

- If the zero key is pressed, a 0 is placed in the first letter position
- If the zero key is then pressed a second time with no intervening key actions, the entire field is replaced with the field entered for the previous device programmed, and the cursor moves to the last character of the field (Recall function). The Recalled Adjective or Noun field may now be changed letter-by-letter
- If the zero key is pressed again with no other intervening key actions and the last character in the field is a number 0-9, the number is incremented by one. If the last character is a letter, it changes to a 0. If the last character goes from 9 to 0 and the characters to the left of the last character are also numbers, they are also incremented (overflow)
- The above increment function may be repeated with each press of the zero key

As an example, the user could quickly enter ‘FLR_3_ROOM_305’ as follows:

1. The cursor is on the first letter of the Adjective field. Press the zero key twice to display FLR_3.
2. With the cursor on the first letter of the Noun field, press the zero key twice to recall the display ROOM_304. The cursor automatically jumps from the first to the last letter of the Noun field.
3. With the cursor on the last letter of the Noun field, press the zero key again to increment the room number to 305.
4. Press the Enter key to store the information.

**3.5.3 Output Circuits**

The options for the Output Circuits on the control panel main circuit board can be configured by pressing 2 while viewing Programming Screen #2. The following screens will be displayed:

The Output Circuits can be configured independently by pressing 1 for Output 1, 2 for Output 2, 3 for Output 3 or, on the next screen, 1 for Output 4.

To program an Output circuit, press the number corresponding to the Output to be programmed. The following screens will be displayed for each selection:

**Enabled**

Pressing 1 while viewing Output Screen #1 will cause the display to change to Enabled No. This will prevent the selected main circuit board NAC from activating its devices. Each press of the 1 key will cause the display to toggle between Enabled Yes and Enabled No.
Note that if a circuit is disabled, a trouble will be logged on the FACP until the circuit is enabled. The exception is when a Release Circuit is disabled, a supervisory will be logged on the FACP until the circuit is enabled.

**Type**

Pressing 2 while viewing Output Screen #1 will cause the following screen to be displayed:

```
EDIT OUTPUT # TYPE
1 = RELEASE CIRCUIT 1
2 = RELEASE CIRCUIT 2
3 = ALARM NAC
```

Pressing the down arrow key while viewing the Edit Output Type Screen will display additional screens with the following types:

- Release Circuit 1
- Release Circuit 2
- Alarm NAC
- Waterflow NAC
- Release Stage Coded NAC (Refer to “Release Stage/NAC Operation” on page 85.)
- Release Stage Discharge NAC (Refer to “Release Stage/NAC Operation” on page 85.)
- Release Stage Pre-Discharge NAC (Refer to “Release Stage/NAC Operation” on page 85.)
- Horn NAC
- Strobe NAC
- Supv Bell NAC
- Trouble Bell NAC

Press the number key corresponding to the desired Output Type to program the selected Output.

**Release Circuit 1 or Release Circuit 2**

If Release Circuit 1 or Release Circuit 2 is selected as the Output Type, the following subscreen will be displayed:

```
EDIT RELEASE CIR 
1 = UNSUPV SHORTS
2 = SUPV SHORTS
```

This screen allows the programmer to select whether or not to supervise the Releasing Circuit Output for shorts.

- UNSUPV SHORTS - this option should normally be selected when a releasing solenoid is connected to the output so the solenoid coil is not supervised for shorts
- SUPV SHORTS - this option, which supervises for shorts, should only be selected when the REL-4.7K option is installed in series with the solenoid coil.

**NOTE:** Release circuits may be directly activated by a single input zone or may be activated using cross-zoned inputs. Refer to “Circuit Mapping and Cross-Zoning” on page 95 for a description of cross-zoning and input to output circuit mapping.
Release Stage NAC

If Release Stage Coded, Release Stage Discharge or Release Stage Pre-Discharge is selected as the Output Type, the following subscreen will be displayed:

An NAC can be used to signal the stages of a release operation. This screen allows the programmer to select the NAC output that will indicate the release stages for Release Circuit 1 or Release Circuit 2. For a description of this feature, refer to “Release Stage/NAC Operation” on page 85.

Silence

Pressing 1 while viewing Output Screen #2 will cause the following screen to be displayed:

Pressing 1 while viewing the Silenceable Screen #1 will program the selected Output as a silenceable circuit. This will allow the Output to be silenced by pressing the Alarm Silence key or by the Auto Silence feature.

Pressing 2 while viewing the Silenceable Screen #1 will program the selected Output as a nonsilenceable circuit. This will prevent the selected main circuit board Output from being silenced by pressing the Alarm Silence key or by the Auto Silence feature.

Pressing 3 while viewing the Silenceable Screen #1 will program the selected Output for Stage Silenceable. This option is used for Release Stage NACs or cross-zone coding NACs. These NACs will be non-silenceable until its associated Release Circuit has finished discharging, after which the NAC will become silenceable.

Pressing 1 while viewing the Silenceable Screen #2 will program the selected Output as a synchronized mute circuit. Refer to “Synchronized NAC Operation” on page 62 for a description of synchronization.

Important: When an Output Circuit with a mix of audible and visual devices is programmed for Sync Mute, only the audible devices will be turned off if the Silence key is pressed or if the Autosilence feature is enabled. The visual devices (strobes, etc.) will continue to operate.

NOTE: If the Output Circuit has been programmed as a Releasing Circuit, the Silenceable Option will not be available and the display will indicate N/A next to it.

Auto Silence

The Auto Silence feature, when enabled, automatically silences all main circuit board silenceable notification appliances after a programmed length of time. To enable this feature and program the time delay before Auto Silence activation, press 2 while viewing Output Screen #2. The following screens will be displayed:
To disable the Auto Silence feature, press 1 for No while viewing Auto Silence Screen #1. To enable the Auto Silence feature, press the number corresponding to the time delay which will elapse before Auto Silence activates. This information will be stored in memory and the display will return to NAC Screen #1.

**NOTE:** If the Output Circuit has been programmed as a Releasing Circuit, the Auto Silence Option will not be available and the display will indicate N/A next to it.

### Silence Inhibited

The Silence Inhibit feature, when enabled, prevents the silencing of the selected main circuit board Output for a period of one minute. Resetting the FACP will also be prevented for one minute while the Output programmed for silence inhibit is activated. Pressing 3 while viewing Output Screen #2 will cause a screen to be displayed with the options 1=No Silence Inhibit and 2=1 Min. Silence Inhibit. Pressing 1 will disable the Silence Inhibit feature while pressing 2 will enable a 1 minute Silence Inhibit for the selected Output.

### Coding

The Coding feature allows the programmer to select the type of output that the main circuit board outputs will generate when activated. Pressing 1 while viewing Output Screen #3 will cause the following displays to appear:

- **Steady** - a continuous output with no coding
- **March Time** - 120 ppm (pulse-per-minute) output
- **California** - 10 seconds on and 5 seconds off
- **Temporal** - ½ second on, ½ second off, ½ second on, ½ second off, ½ second on, 1½ second off
- **Cross-Zone for Release Circuit 1 or Release Circuit 2:**
  - 1st zone of a cross-zoned group in alarm causes programmed NAC output to pulse 1 second on and 1 second off
  - 2nd zone of a cross-zoned group in alarm causes programmed NAC output to pulse ½ second on and ½ second off - Note: if more than two zones are cross-zoned, the programmed NAC output will continue to pulse ½ second on and ½ second off for each subsequent zone in alarm, until the final zone in the cross-zoned group goes into alarm
  - All zones of a cross-zoned group in alarm causes the output programmed as a Releasing Circuit to perform a release and the programmed NAC output for that Releasing Circuit to turn on steady
- **Cross-Zone Pre-Discharge for Release Circuit 1 or Release Circuit 2:**
  - 1st zone of cross-zoned group in alarm causes programmed NAC output to turn on steady
Programming

✓ NAC remains on steady until all zones of the cross-zoned group go into alarm
✓ Release Circuit going into Pre-discharge or Discharge state (at any time) causes the NAC to turn off. All other NACs will operate as programmed.

When using this coding protocol at least one other NAC must be programmed for one of the following: Cross-Zone (see above), Release Stage Coded (see page 85), Release Stage Pre-Discharge (see page 85), or Release Stage Discharge (see page 85).

• Cross-Zone Discharge for Release Circuit 1 or Release Circuit 2:
  ✓ 1st zone of cross-zoned group in alarm causes programmed NAC output to turn on steady
  ✓ NAC remains on steady when all zones of the cross-zoned group go into alarm and during Pre-discharge
  ✓ Release Circuit going into Discharge state (at any time) causes the NAC to turn off. All other NACs will operate as programmed.
  When using this coding protocol at least one other NAC must be programmed for one of the following: Cross-Zone (see above), Release Stage Coded (see page 85), Release Stage Pre-Discharge (see page 85), or Release Stage Discharge (see page 85).

• Synchronized output for System Sensor, Wheelock, Gentex, Faraday or Amseco - Refer to “Synchronized NAC Operation” on page 62 for additional information.

Selection of one of the above options will cause the control panel to store the information in memory and return the display to Output Screen #1, which will display the new coding choice.

NOTE: If the Output Circuit has been programmed as a Releasing Circuit, the Coding Option will not be available and the display will indicate N/A next to it.

Synchronized NAC Operation

Synchronization is a panel feature that controls the activation of notification appliances in such a way that all horns and strobes will turn on and off at exactly the same time. This is particularly critical when activating strobes which must be synchronized to avoid random activation and a potential hazard or confusion. The FACP can be programmed to operate with a variety of manufacturer’s devices.

NOTES:
1. The NAC1 output can be used to synchronize notification appliances connected to external panels such as remote power supplies (wire NAC1 to the power supply sync input).
2. For Dual Hazard applications, NAC circuits are not synchronized across hazard areas.

Maximum Number of Strobes for Synchronization

The maximum current draw for a Notification Appliance Circuit cannot exceed 3.0 amps. Refer to the manufacturer’s documentation supplied with the Strobes to determine the maximum current draw for each strobe and ensure that the circuit maximum is not exceeded.

To ensure proper strobe and circuit operation, there is also a limit to the number of strobes that can be attached to each circuit. Following is a list of the strobes that have been tested with this FACP and the maximum number that can be connected to each NAC. Make sure that the NAC maximum current is not exceeded:

✓ System Sensor: 46 Strobes
✓ Wheelock: 50 Strobes
✓ Gentex: 39 Strobes
✓ Faraday: 33 Strobes
✓ Amseco: 34 Strobes

Refer to the Device Compatibility Document for a list of compatible devices.
3.5.4 Cross Input Zones

An application may require that two or more input zones become active at the same time before a particular releasing output activates. This is referred to as cross-zoning. For example, an installer may want four particular zones to become active at the same time before a releasing circuit is activated. By using the Cross Input Zone feature, the programmer can designate the input zones that must become active and the output circuits that will be affected. Refer to “Circuit Mapping and Cross-Zoning” on page 95 for additional information.

The Cross Input Zone option allows the user to view and program the groups of input zones that will be used to activate one of the releasing output circuits. Pressing 1 while viewing Programming Screen #2 will display a screen similar to the following:

![Cross Input Zones Screen](image1)

This screen allows the programmer to view the cross-zoned grouping for Release Circuit 1 or Release Circuit 2. In the following example, Template 1 has been chosen as the FACP Configuration [refer to “FACP CONFIG (Application Templates)” on page 53]. Pressing 1 for Release 1 will display the following screen:

![Rel 1 Cross Groups Screen](image2)

The display indicates that Input Zone 1 is cross-zoned with Input Zone 2. Both of these zones active at the same time will cause Release Circuit 1 to activate.

The user can alter the cross-zoning by pressing the number key corresponding to the Zone to be reprogrammed. Screens similar to the following will be displayed:

![Rel 1 Cross Group 1 Screen](image3)

![Rel 1 Cross Group 1 Screen](image4)

In this example, since the cross-zoning for Release Circuit 1 (Zone 1) is being displayed, Yes is shown for Zone 1 which is cross-zoned with Zone 2. Zone 2 displays Yes since it is cross-zoned with Zone 1. Zone 3 displays No for no cross-zoning. Zone 4 displays N/A since it is an Abort Switch. Zone 5 displays No for cross-zoning. Zone 6 is a supervisory and displays N/A. By pressing the number key corresponding to the desired zone, the display for that zone will toggle between Yes and No indicating cross-zoning to Zone 1 or no cross-zoning to Zone 1.

Note that zones programmed as supervisory cannot be cross-zoned and will therefore indicate N/A.

3.5.5 On-Board Relays

Pressing 2 while viewing Programming Screen #2 will allow the programmer to configure the three main circuit board Form-C relays. The following screen will be displayed:

![On-Board Relays Screen](image5)
To program Relay 1, 2 or 3, press the number corresponding to the selected relay. The following screen will be displayed:

```
RELAY #
1=TYPE
2=LATCHING
```

Relay Programming Screen

Pressing 1 for Type will display the following screens:

```
RELAY TYPE
1=ALARM
2=TROUBLE
3=SUPERVISORY
```

Relay Screen #1

```
RELAY TYPE
1=PRE-DISCHARGE
2=DISCHARGE
3=AC LOSS
```

Relay Screen #2

While viewing the selected screen, press the number corresponding to the desired relay type to program the main circuit board relay. The choice will be stored in memory and the display will return to the Relay Type Screen which will show the programmed type choice. Press the Escape key to return to the Relays Selection Screen and repeat the preceding procedure for the remaining relays.

Pressing 2 for Latching will toggle the display between Latching Yes and No.

If Latching Yes is selected, when the Relay is activated, the condition causing the activation must be cleared and the FACP must be reset to clear the Relay.

If Latching No is selected, when the Relay is activated, the Relay will reset as soon as the condition causing the activation is cleared. The FACP does not need to be reset.

### 3.5.6 System Setup

System Setup allows the programmer to configure the following control panel features:

- **Abort Type**: Pressing an Abort Switch will interrupt agent releasing during an alarm condition. Releasing the Abort Switch will resume the agent release.
- **Timers**: This option allows the programmer to set the Pre-Discharge, Discharge, Waterflow and AC Loss time delays.
- **Banner**: This option allows the user to change the top two lines of the LCD display from the factory default readout to a user defined readout when the control panel is in Normal condition.
- **Time-Date**: This feature allows the programmer to set the time, display format (24 hr or 12 hr), date and daylight savings time feature into the FACP memory.
- **Trouble Reminder**: This feature, when enabled, provides an audible reminder that an alarm or trouble still exists on the FACP after the control panel has been silenced. The control panel piezo sounder will pulse once every 15 seconds during an alarm and every two minutes during a trouble condition, after the Alarm Silence or Acknowledge key is pressed. The piezo will continue to sound at these rates until the alarm or trouble condition is cleared. If the Trouble Reminder feature is not enabled and a trouble condition is not cleared within 24 hours, the panel will reactivate the trouble sounder and send an Abnormal 24 hour Test message via the optional communicator.
- **Charger Disable**: This option allows the programmer to disable the onboard battery charger in the event an external battery charger is being used.
- **Canadian Option**: This option allows the automatic programming of the FACP to Canadian specifications (refer to “Canadian Option” on page 69).  

**Important!** For Canadian Applications, this option must be set to ON prior to any other panel programming.
• **ANN-SECONDARY**: This option allows the use of a secondary ANN-BUS with the ANN-SEC option module. This option must be enabled if the ANN-SEC option card is installed on J13 of the main circuit board.

Pressing 3 for System Setup, while viewing Programming Screen #2, will cause the following screens to be displayed:

### Abort Type

The Abort function provides the ability to stop an agent release that was initiated by an automatic detection device. The Abort Type provides the programmer with four abort methods:

- **UL (UL 864 approved)** - A releasing event starts the Pre-discharge timer. If the Abort Switch is pressed while the Delay Timer continues to count down, the timer counts down to 10 seconds and holds there. If the Abort Switch is released, the timer resumes the countdown from 10 seconds.

- **IRI (UL 864 approved)** - This Abort Type functions the same way as the UL type, except that the Abort Switch will not function unless it is pressed before the cross-zoned second input device activates.

- **NYC** - A releasing event starts the Pre-discharge timer. Pressing an Abort switch will stop the Pre-discharge timer. Releasing the Abort switch resets the Pre-discharge timer to the original time plus 90 seconds. The Abort switch can be operated multiple times, with each operation resetting the Pre-discharge timer to the original time plus 90 seconds.

- **Local Jurisdiction** - A releasing event starts the Pre-discharge timer. Pressing an Abort switch will stop the Pre-discharge timer. Releasing the Abort switch resets the Pre-discharge timer to the original time. The Abort switch can be operated multiple times, with each operation resetting the Pre-discharge timer to the original time.

### Timers

Timers for Pre-discharge, Discharge, Waterflow Delay and AC Loss Delay can be programmed by pressing 2 while viewing System Setup Screen #1. The following screens will be displayed:

#### Pre-Discharge

There are two Pre-discharge timers which allows each releasing circuit to be programmed with different pre-discharge delay times. The factory default setting for each Pre-discharge timer is 0 for no delay. To select a Pre-discharge delay of 01 to 60 seconds, press 1 for Pre-Discharge1 or 2 for Pre-Discharge2 while viewing Timer Screen #1. The following display will appear:
This screen allows the user to program a specific delay time before the releasing circuit begins an agent release during an alarm condition. A flashing cursor is positioned in the lower left corner of the display. Enter a Pre-Discharge delay time consisting of two digits, such as 05 for five seconds. Upon entering the second digit, the time delay will be stored in the control panel memory and the display will return to the Delay Screen which will indicate the new Pre-Discharge delay time. In this example, when the corresponding agent releasing circuit is activated, it will delay agent release for five seconds.

*Note that if a Manual Release is activated, the Discharge Delay time will be ignored and the release will begin immediately.*

### Discharge Timer

There are two Discharge timers which allows each releasing circuit to be programmed with different discharge delay times. The Discharge Timers determine how long an agent release will continue once activated. The factory default setting for the Discharge Timers is Always On. To program the Discharge Timer, press 3 for Discharge 1 while viewing the Timer Screen #1 or press 1 for Discharge 2 while viewing Timer Screen #2. The following display will appear:

```
DISCHARGE
1=ALWAYS ON
2=ENTER MINUTES
```

Pressing 1 while viewing the Discharge Setup screen will program the releasing circuit to continue an agent release until the panel is reset.

Pressing 2 while viewing the Discharge Setup screen will cause the following screen to be displayed:

```
DISCHARGE
RANGE 01-20 MINUTES
```

A Discharge Time of 01 to 20 minutes can be programmed. A flashing cursor is positioned in the lower left corner of the display. Enter a Discharge time consisting of two digits, such as 05 for five minutes. Upon entering the second digit, the time will be stored in the control panel memory and the display will return to the Delay Screen which will indicate the new Discharge time. In this example, when the corresponding agent releasing circuit is activated, it will continue an agent release for five minutes after activation.

*Note that if a Manual Release is activated, the Discharge Timer will be activated and the release will continue for the duration of the Discharge Timer.*

### Waterflow Delay

A delay can be added prior to declaring a waterflow type of alarm. Be careful to include any built-in delays of the waterflow device. The factory default setting for Waterflow delay is 00 for no delay. To select a Waterflow delay of 01 to 90 seconds for all devices programmed for Waterflow delay, press 3 while viewing Timer Screen #1 to display the following screen:

```
WATERFLOW DELAY
RANGE 00-90 SECONDS
```

A flashing cursor is positioned in the lower left corner of the display. Enter a delay time consisting of two digits, such as 25 for twenty-five seconds. Upon entering the second digit, the time delay will be stored in the control panel memory and the display will return to the Delay Screen which will indicate the new delay time.
AC Loss Delay

The reporting of a loss of AC power can be delayed by programming the length of the desired delay. Press 1 while viewing Timer Screen #2 to display the following:

A flashing cursor will appear in the lower left corner of the display. The factory default setting is 02 hours. Type the two digit AC loss reporting delay in hours (00 to 24 hour delay). When the second digit is entered, the display will return to AC Loss Delay Screen #1.

**NOTE:** Upon the loss of AC power at the control panel, relays programmed for AC Loss will transfer immediately, regardless of the AC Loss Delay setting. If no troubles other than AC Loss exist in the panel, the System Trouble relay will delay activation for the duration of the AC Loss Delay setting.

Banner

The top line of the display, which appears when the control panel is in normal mode, can be changed by using the Banner option. Pressing 2 while viewing System Setup Screen #1 will cause the following to be displayed:

Pressing 1 while viewing the Select Banner Screen will display the following screen:

This screen allows the user to select the factory default Banner which will be displayed when the system is in Normal Mode of operation. Press the Enter key to accept this as the default display. Press the Escape key to cancel and return to the Select Banner Screen.

Pressing 2 while viewing the Select Banner Screen will display the following screen:

This screen allows the programmer to enter a custom banner. A flashing cursor will appear in the bottom left corner of the display. A maximum of 20 characters (including spaces) can be entered into the screen. After entering up to 20 characters in the screen, press Enter to store the entry. To quickly clear the current banner, press the CLR key.

To enter alphanumeric characters from the keypad, repeatedly press the appropriate key until the desired character is displayed in the first position. For example, to enter the letter B, press the 2 (ABC) key three times to toggle through the characters 1, A and B. Press the right arrow key to move the cursor one position to the right and repeat the process to enter the next character. To enter a space, press the * (QZ) key four times to place a blank in the desired position. When all characters have been entered, press the Enter key to store the information. The display will return to the Select Banner Screen.
Time-Date

The control panel time and date can be changed by pressing 1 while viewing the System Setup Screen #2. The following screen will be displayed:

- **Time**
  
  To change the time, press 1 while viewing the Time-Date Screen. The following screen will be displayed:

  ![Time Screen](image)

  A flashing cursor is located toward the top left of the display. Below the cursor is the current time. To change the time, enter the two-digit hours followed by the two-digit minutes. The cursor will move one position to the right each time a digit is entered. After the last minutes digit is entered, the cursor will again move one position to the right. At this point enter 1 for AM or 2 for PM. The display will then return to the Time-Date Screen which will show the new time entry. If an error is made while entering a digit, press the CLR key to delete the entire entry and begin again.

- **Date**
  
  To change the date, press 2 while viewing the Time-Date Screen. The following screen will be displayed:

  ![Date Screen](image)

  A flashing cursor is located toward the top left of the display. Below the cursor is the current date. To change the date, enter the two-digit month followed by the two-digit day and then the two-digit year (14 for 2014, 15 for 2015, etc.). The cursor will move one position to the right each time a digit is entered. After the last year digit is entered, the display will return to the Time-Date Screen which will show the new date entry. If an error is made while entering a digit, press the CLR key to delete the entire entry and beginning again.

- **Clock Format**
  
  The clock can be configured to display 12 hour (AM & PM) or 24 hour (military) time. Pressing 3 while viewing the Time-Date screen will cause the display to toggle between 12HR and 24HR. Select 12HR for 12 hour display or 24HR for 24 hour display.

  **NOTE:** If the clock is changed to 24 hour (military) format, the date will change to the European standard of Day-Month-Year (for display purposes only).
Daylight Savings Time
Pressing 1 while viewing Time-Date Screen #2 will cause the following screens to be displayed:

```
<table>
<thead>
<tr>
<th>Daylight Savings Screen #1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=ENABLED YES</td>
</tr>
<tr>
<td>2=START MONTH MAR</td>
</tr>
<tr>
<td>3=START WEEK WK 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Daylight Savings Screen #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=END MONTH NOV</td>
</tr>
<tr>
<td>2=END WEEK WK 1</td>
</tr>
</tbody>
</table>
```

Pressing 1 while viewing Daylight Savings Screen #1 will cause the display to toggle between Enabled Yes and Enabled No. The control panel will automatically update the time for daylight savings time when Enabled Yes is selected.

Pressing 2 while viewing Daylight Savings Screen #1 will display another screen which allows the programmer to select the month that daylight savings time will begin. In this sub-screen, pressing 1 will select March, 2 will select April and 3 will select May.

Pressing 3 while viewing Daylight Savings Screen #1 will display two sub-screens which allow the programmer to select the week of the month that daylight savings time will begin. In the first sub-screen, pressing 1 will select the first week, 2 will select the second week and 3 will select the third week, while in the second sub-screen, pressing 1 will select the fourth week and 2 will select the last week of the selected month.

Pressing 1 while viewing Daylight Savings Screen #2 will display another screen which allows the programmer to select the month that daylight savings time will end. In this sub-screen, pressing 1 will select September, 2 will select October and 3 will select November.

Pressing 2 while viewing Daylight Savings Screen #2 will display two sub-screens which allow the programmer to select the week of the month that daylight savings time will end. In the first sub-screen, pressing 1 will select the first week, 2 will select the second week and 3 will select the third week, while in the second sub-screen, pressing 4 will select the fourth week and 5 will select the last week of the selected month.

Trouble Reminder
The Trouble Reminder features causes the control panel piezo to sound a reminder ‘beep’ for alarms and troubles, after the panel has been silenced. Refer to “System Setup” on page 64, for a detailed description of this feature. Pressing 2 while viewing System Setup Screen #2 will cause the display to toggle to Trouble Remind Yes, which enables this feature. Each press of the 2 key will cause the display to toggle between Trouble Remind Yes and Trouble Remind No.

Note that if the Trouble Reminder feature is not enabled, a trouble existing on the panel for more than 24 hours will cause the FACP to resound the trouble sounder.

Charger Disable
Pressing 3 while viewing System Setup Screen #2 will allow the programmer to enable or disable the onboard battery charger. If an external battery charger is being used, the onboard battery charger must be disabled. Each press of the 3 key will toggle between Chargr Disable No and Chargr Disable Yes.

Canadian Option
Pressing 1 while viewing System Setup Screen #3 will configure the FACP to comply with Canadian requirements. The display will change to Canadian Opt. On. Each press of the 2 key will cause the display to toggle between Canadian Opt. On and Canadian Opt. Off. The factory default setting is Canadian Opt. Off.

The Canadian Options configures the FACP with the following as required by Canada:
- The following zone type codes are not available:
  - non-latching supervisory
  - non-latching drill
• Any allowed zone type programmed as Auto-Resettable will be changed to latching version of that zone type (N.O. Contact AR will be changed to N.O. Contact, Combo with AR Supervisory will be changed to Combo, 2-wire Heat AR will be changed to 2-wire Heat, Low Pressure AR will be changed to Low Pressure, High Pressure AR will change to High Pressure and Supervisory AR will change to Supervisory)

• The auto-silence feature will be disabled by the panel.

• The installer must write in the Date of Final Assembly on the Master Marking and Warranty label, located on the FACP backbox door

• When the ANN-80C LCD Canadian Indicator is installed: Local Silence button will silence annunciator piezos, Lamp Test button will perform an annunciator lamp test, pressing and holding Sounder Test button will sound annunciator piezo, pressing step up/down arrows will scroll through stored events. These buttons may be enabled or disabled by programming.

Secondary ANN-BUS Option

Pressing 2 while viewing System Setup Screen #3 allows the user to enable the secondary ANN-BUS. The secondary ANN-BUS must be enabled if any modules are connected to the ANN-SEC option card at J13. To enable the Secondary ANN-BUS, press 1 while viewing the SEC-ANN screen so that the display reads SEC ANN Enabled Yes. Each press of the 1 key will cause the display to toggle between SEC ANN Enabled Yes and SEC ANN Enabled No. The factory default setting is ANN-SECONDARY Enabled No.

3.5.7 ANN-BUS

Optional ANN-BUS devices available for the FACP include annunciators, relay modules and printer connection for acquiring hardcopy printouts of panel data. Pressing 1 while viewing Programming Screen #3 will cause the control panel to display the following screens.

An ANN-S/PG Printer module, ANN-80 LCD annunciator module and ANN-RLY relay module can be programmed into the FACP. These devices communicate with the FACP over the ANN-BUS terminals on the control panel.

ANN-BUS Enabled

The ANN-BUS must be enabled if any modules are installed on the ANN-BUS terminals. To enable the ANN-BUS, press 1 while viewing ANN-BUS screen #1 so that the display reads ANN-BUS Enabled Yes. Each press of the 1 key will cause the display to toggle between ANN-BUS Enabled Yes and ANN-BUS Enabled No.

ANN-BUS Modules

If an ANN-BUS module is installed, press 2 while viewing ANN-BUS screen #1 to select ANN-BUS addresses for the module(s). The following screen will be displayed.

Pressing the down arrow key will allow the programmer to view additional screens displaying Addresses 1 - 8. Pressing the number corresponding to the desired address will display a screen with technical information about the selected module.
NOTE: When the Secondary ANN-BUS is enabled through System Setup programming, addresses 1 - 3 will be on the primary ANN-BUS and addresses 4 - 8 will be on the secondary ANN-BUS.

In the technical information screen, pressing 1 for Type will display the following screens:

![Module Type Screen #1](image1)

![Module Type Screen #2](image2)

Press the number corresponding to the module type, if any, that is installed with the selected address. This will enable the module.

**Auto-Configure**

The ANN-BUS Auto-Configure features allows the programmer to quickly bring all installed ANN-BUS modules online. The software will search for all ANN-BUS modules and automatically program the device type and address into the system. Pressing 3 while viewing ANN-BUS Screen #1 will begin the Auto-Configure process and cause the following screen to be displayed:

![Auto-Configure Screen](image3)

**ANN-S/PG Options**

The Printer Option allows the user to configure the optional printer. Pressing 1 while viewing the ANN-BUS Screen #2 will display the following screens:

![Printer Options Screen #1](image4)

![Printer Options Screen #2](image5)

![Printer Options Screen #3](image6)

Pressing 1 for Port while viewing Printer Options screen #1 will allow the programmer to select between a Parallel and Serial Port for printer connection. Each press of the 1 key will cause the display to toggle between Port PAR (parallel) and Port SER (serial). It is important to note that the interface selected determines which options are available to the user.

If the Parallel Port option is selected, the user has the option to supervise the printer and select an offline timer for the supervision by pressing 2 for Printer Supervision while viewing Print Options screen #1. Each press of the 2 key will cause the display to toggle between Printer Supv NO for no supervision and Printer Supv YES for printer supervision. Note that this option is not selectable if the Serial Port option has been selected.

If the Parallel Port option is selected, the user has the ability to select an Offline Timer by pressing 3 while viewing Print Options screen #1. The resultant screen allows the programmer to program the Offline Timer for a delay of between 0 and 255 seconds before loss of printer supervision is reported as a trouble.

If the Serial Port option is selected, the Printer Supv and Offline Timer options will not be available. The Baud Rate, Data Bits, Parity and Stop Bits options are only available when the Serial Port option has been selected.

Pressing 1 for Baud Rate while viewing Printer Options screen #2 will cause a screen to appear which allow the user to select a Baud Rate of 19200, 9600, or 2400.

Pressing 2 for Data Bits while viewing Printer Options screen #2 will cause screens to appear which allow the user to select 5, 6, 7, or 8 Data Bits.
Pressing 3 for Parity while viewing Printer Options screen #2 will cause a screen to appear which allows the user to select between No Parity, Even Parity, or Odd Parity.

Pressing 1 for Stop Bits while viewing Printer Options screen #3 will cause a screen to appear which allows the user to select between 0.5, 1.0, or 2.0 Stop Bits.

**ANN-I/O LED Zone Assignments**

The information displayed by LEDs on every ANN-I/O module is not programmable and will therefore be as indicated in the following table.

<table>
<thead>
<tr>
<th>LED</th>
<th>Zone (any address)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC Fault</td>
</tr>
<tr>
<td>2</td>
<td>General Alarm</td>
</tr>
<tr>
<td>3</td>
<td>General Supervisory</td>
</tr>
<tr>
<td>4</td>
<td>General Trouble</td>
</tr>
<tr>
<td>5</td>
<td>Alarm Silenced</td>
</tr>
<tr>
<td>6</td>
<td>Earth Fault</td>
</tr>
<tr>
<td>7</td>
<td>Battery Fault</td>
</tr>
<tr>
<td>8</td>
<td>Charger Fault</td>
</tr>
<tr>
<td>9</td>
<td>Disable</td>
</tr>
<tr>
<td>10</td>
<td>Maintenance</td>
</tr>
<tr>
<td>11</td>
<td>Zone 1 Alarm</td>
</tr>
<tr>
<td>12</td>
<td>Zone 2 Alarm</td>
</tr>
<tr>
<td>13</td>
<td>Zone 3 Alarm</td>
</tr>
<tr>
<td>14</td>
<td>Zone 4 Alarm</td>
</tr>
<tr>
<td>15</td>
<td>Zone 5 Alarm</td>
</tr>
<tr>
<td>16</td>
<td>Zone 6 Alarm</td>
</tr>
<tr>
<td>17</td>
<td>Not Used</td>
</tr>
<tr>
<td>18</td>
<td>Not Used</td>
</tr>
<tr>
<td>19</td>
<td>Not Used</td>
</tr>
<tr>
<td>20</td>
<td>Not Used</td>
</tr>
<tr>
<td>21</td>
<td>Zone 1 Trouble</td>
</tr>
<tr>
<td>22</td>
<td>Zone 2 Trouble</td>
</tr>
<tr>
<td>23</td>
<td>Zone 3 Trouble</td>
</tr>
<tr>
<td>24</td>
<td>Zone 4 Trouble</td>
</tr>
<tr>
<td>25</td>
<td>Zone 5 Trouble</td>
</tr>
<tr>
<td>26</td>
<td>Zone 6 Trouble</td>
</tr>
<tr>
<td>27</td>
<td>Not Used</td>
</tr>
<tr>
<td>28</td>
<td>Not Used</td>
</tr>
<tr>
<td>29</td>
<td>Not Used</td>
</tr>
<tr>
<td>30</td>
<td>Not Used</td>
</tr>
<tr>
<td>31</td>
<td>Zone 1 Supervisory</td>
</tr>
<tr>
<td>32</td>
<td>Zone 2 Supervisory</td>
</tr>
<tr>
<td>33</td>
<td>Zone 3 Supervisory</td>
</tr>
<tr>
<td>34</td>
<td>Zone 4 Supervisory</td>
</tr>
<tr>
<td>35</td>
<td>Zone 5 Supervisory</td>
</tr>
<tr>
<td>36</td>
<td>Zone 6 Supervisory</td>
</tr>
<tr>
<td>37</td>
<td>Not Used</td>
</tr>
<tr>
<td>38</td>
<td>Not Used</td>
</tr>
<tr>
<td>39</td>
<td>Not Used</td>
</tr>
<tr>
<td>40</td>
<td>Not Used</td>
</tr>
</tbody>
</table>

**ANN-80 Options**

Pressing 2 while ANN-BUS screen #2 will display the following screen:
The **Piezo Enable** option allows the programmer to select whether the piezo sounder on any installed ANN-80 annunciator will ever sound. Pressing 1 while viewing the ANN-80 Options Screen #1 causes the display to toggle between **Piezo Enable Yes** and **Piezo Enable No**.

The **Lock Enable** option allows the programmer to select whether or not the ANN-80 LCD annunciator must be unlocked by its key before any annunciator key presses will function. Pressing 2 while viewing the ANN-80 Options Screen #1 causes the display to toggle between **Lock Enable Yes** ( annunciator must be unlocked for keys to function) and **Lock Enable No** (lock position is ignored). A trouble will generate at the panel if **Lock Enable Yes** is selected for an unlocked ANN-80.

The Acknowledge Button Enable (**ACK BTN ENABLE**) option allows the programmer to select whether the Ack/Step button on any installed ANN-80 LCD annunciator will function normally or always be ignored. Pressing 3 while viewing the ANN-80 Options Screen #1 causes the display to toggle between **Ack Btn Enable Yes** (Ack/Step button functions normally) and **Ack Btn Enable No** ( Ack/Step button never functions).

The Silence Button Enable (**SIL BTN ENABLE**) option allows the programmer to select whether the Silence button on any installed ANN-80 LCD annunciator will function normally or always be ignored. Pressing 1 while viewing the ANN-80 Options Screen #2 causes the display to toggle between **Sil Btn Enable Yes** (Silence button functions normally) and **Sil Btn Enable No** (Silence button never functions).

The Reset Button Enable (**RST BTN ENABLE**) option allows the programmer to select whether the Reset button on any installed ANN-80 LCD annunciator will function normally or always be ignored. Pressing 2 while viewing the ANN-80 Options Screen #2 causes the display to toggle between **Rst Btn Enable Yes** (Reset button functions normally) and **Rst Btn Enable No** (Reset button never functions).

The Drill Button Enable (**DRL BTN ENABLE**) option allows the programmer to select whether the Drill button on any installed ANN-80 LCD annunciator will function normally or always be ignored. Pressing 3 while viewing the ANN-80 Options Screen #2 causes the display to toggle between **Drl Btn Enable Yes** (Drill button functions normally) and **Drl Btn Enable No** (Drill button never functions).

**NOTE:** If Canadian Option is enabled and an ANN-80C LCD Canadian indicator is installed, the programming screens will display the Canadian indicator button options instead of the options shown above.

---

**ANN-RLY Options**

Pressing 1 for **ANN-RLY Options** while viewing ANN-BUS Screen #3 will cause the following screen to be displayed:

The ANN-RLY module provides ten Form-C relays which can be programmed for various functions. The initial screen displays Relays 1 through 3. Pressing the down arrow key will display the remaining relays for this module.
To program any of the ANN-RLY relays, while viewing the appropriate ANN-RLY Option screen, press the number key corresponding to the relay to be programmed. The following screen will appear:

Pressing 1 will display the available relay types. Following is a list of the available programming options for each relay:

- General Alarm
- General Trouble
- General Supervisory
- General Pre-Discharge
- Pre-Discharge Release 1
- Pre-Discharge Release 2
- General Discharge
- Discharge Release 1
- Discharge Release 2
- AC Loss
- Waterflow Delay
- General Abort Release
- Abort Release Release 1
- Abort Release Release 2
- Future Use
- Future Use
- Future Use
- Input Zone 1
- Input Zone 2
- Input Zone 3
- Input Zone 4
- Input Zone 5
- Input Zone 6

Press 2 to select Latching or non-Latching relay. Each press of the 2 key will cause the display to toggle between Latching Yes and No.

### 3.5.8 History

The History option allows an authorized user to view or erase events which have occurred in the control panel. Pressing 2 while viewing Programming Screen #3 will display the History options as shown in the following display:
View Events

Pressing 1 while viewing the History Screen will allow the user to select the events to be viewed as illustrated in the following:

```
<table>
<thead>
<tr>
<th>HISTORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=VIEW ALL</td>
</tr>
<tr>
<td>2=VIEW ALARMS</td>
</tr>
<tr>
<td>3=VIEW OTHER EVENTS</td>
</tr>
</tbody>
</table>
```

View Events Screen

While displaying the View Events screen, press 1 to view all events, 2 to view only alarms or 3 to view other events. Use the up and down arrow keys to scroll through all of the displayed events.

Erase History

The Erase History option allows a user to erase all events from the history file. This will provide a clean slate in order to use the history file to track future events. Pressing 2 while viewing the History Screen will display the following screen:

```
| ERASE HISTORY |
| PROCEED ? |
| 1=YES           2=NO |
```

Erase History Screen

Pressing 1 while viewing the Erase History Screen will erase all events from the History file. After the History file has been erased, the display will return to the History Screen.

3.5.9 Walktest

Walktest allows an individual to test the fire alarm system without the necessity to reset the control panel after each device activation. Pressing 3 while viewing the Programming Screen #3 will cause the following Walktest options to be displayed:

```
| WALKTEST |
| 1=SILENT |
| 2=AUDIBLE |
| 3=VIEW EVENTS |
```

Walktest Screen

To perform a silent walktest which will not sound the NACs, press 1 while viewing the Walktest Screen. To perform an audible walktest, which will sound the NACs, press 2 while viewing the Walktest Screen. When either option is chosen, the panel will enter Walktest Mode and the following screen will be displayed:

```
| UNIT IN WALKTEST |
```

Walktest Active Screen

The user can now perform a one-person walktest by activating devices throughout the system. As each device is activated, the screen will display the information about the activated device as shown below. Note that the colon (:) in the time is replaced with an asterisk (*) to distinguish the walktest screen from an actual alarm screen.
After completion of the Walktest, press the *Esc* (Escape) key to exit Walktest Mode and return to the Walktest Screen. The results of the Walktest can now be viewed by pressing 3 while viewing the Walktest Screen. The following screen will be displayed:

![Walktest Events Screen]

Use the up and down arrow keys to view all of the walktest results which will be displayed as illustrated in the preceding screen. Note that the Walktest log is stored in RAM. If all power (AC and DC) is removed from the FACP, the Walktest log information will be lost. This information is also overwritten when subsequent walktests are performed.

### 3.5.10 Clear Program

Pressing 1 while viewing Programming Screen #4, will select the Clear Program option. The control panel will provide a warning to the user by prompting with the following display:

![Warning Display]

Pressing 1 for *Yes* will cause the control panel to carry out the selected clear option. Pressing 2 for *No* will prevent programming from being cleared.

### 3.5.11 Password Change

The factory set passwords, which have been programmed into the control panel, can be changed by selecting the Password Change option. Pressing 2 while viewing Programming Screen #4 will cause the following screen to be displayed:

![Password Change Screen]

Press 1 to change the Master Programming Level password or 2 to change the Maintenance Level password. *Note that the passwords will not be displayed on annunciators.*

The following screen will appear when either change option is selected:

![Enter New Password Screen]

A flashing cursor will appear in the center of the display. Enter a new five digit password (such as 10101 for the Master Level). After the fifth digit is entered, the following screen will be displayed:

![Verify New Password Screen]

The new five digit password must be re-entered to accept the change. The display will then return to the initial Password Change Screen.
### 3.6 Maintenance Programming Level

To access Maintenance Programming mode, press the Enter key. The LCD will display the following:

```
1=READ STATUS
2=PROGRAMMING
```

To enter the Maintenance Programming mode, press 2. The display will read as follows:

```
PROGRAMMING
ENTER PASSWORD
```

When the Maintenance level password (default 11111) is entered, the following screen will appear:

```
PROGRAMMING
1=INPUT ZONES
2=HISTORY
3=WALKTEST
```

Note that in the preceding screens, an arrow appears to inform the programmer that additional options can be viewed by pressing the keypad down arrow key, as shown in the following screen.

```
PROGRAMMING
1=TIME-DATE
```

#### 3.6.1 Input Zones - Enable/Disable

The Input Zones option allows the user to enable or disable desired zones. Pressing 1 for Input Zones, while viewing Maintenance Screen #1 will cause the following screens to be displayed:

```
POINT PROGRAM
1=ZONE 1
2=ZONE 2
3=ZONE 3
```

Zone Select Screen

Pressing the down arrow key will display additional Zones 4 - 6. Select the number corresponding to the desired zone. A screen will appear which will allow enabling or disabling of the selected zone, as illustrated in the following example:

```
INPUT ZONE 1
1=ENABLED YES
TYPE PULL STATION
```

Enable/Disable Select Screen

Pressing 1 repeatedly will cause the display to toggle between Enabled Yes and Enabled No.

#### 3.6.2 History

Pressing 2 while viewing Maintenance Screen #1 will cause the following screen to be displayed:

```
HISTORY
1=VIEW EVENTS
2=ERASE HISTORY
```

History Screen
The History feature allows the operator to view control panel events which have been stored in a history file in memory and erase the contents of the history file.

Pressing 1 while viewing the History screen will cause the following screen to be displayed:

```
HISTORY
1=VIEW ALL
2=VIEW ALARMS
3=VIEW OTHER EVENTS
```

To view all the events which have occurred in the control panel since the history file was last erased, press 1 while viewing the Events screen. To view only alarms which have occurred, press 2 while viewing the Events screen. To view events other than alarms, press 3. The most recent event will be displayed on the screen. To view all of the selected events, press the up or down arrow keys to scroll through the list of events. If no events have occurred, the display will read NO EVENTS IN HISTORY.

Pressing 2 while viewing the History Screen will cause the following screen to be displayed:

```
ERASE HISTORY
PROCEED?
1=YES  2=NO
```

Pressing 1 while viewing the Erase History Screen will erase all events from the History file. The display will then return to the History Screen. Pressing 2 will cause the display to return to the History Screen without erasing the History file.

### 3.6.3 Walktest

To perform a walktest, press 3 while viewing Maintenance Screen #1. The following screen will be displayed:

```
WALKTEST
1=SILENT
2=AUDIBLE
3=VIEW EVENTS
```

The operator can press 1 to perform a silent walktest or 2 to perform an audible walktest. The display will read UNIT IN WALKTEST. To end the Walktest, press the Esc (Escape) key.

Pressing 3 after the walktest has been completed, will allow the operator to view the results of the walktest.

### 3.6.4 Time-Date

To program the time and date into the control panel, press 1 while viewing Maintenance Screen #2. The following display will appear:

```
TIME AND DATE
1=TIME 01:00A
2=DATE 09212014
3=CLOCK FORM 12HRS
```

To change the time, press 1 to display the following screen:

```
ENTER TIME AS 12HRS
01:00
1=AM 2=PM
```

Programing

Maintenance Programming Level
A flashing cursor will appear on the left side of the display. Enter the four digit number corresponding to the time (0000 - 1259). When the fourth digit is entered, the cursor will move one position to the right. Press 1 for AM or 2 for PM to complete entering the time. The display will return to the Time and Date Screen displaying the new time.

To change the date, press 2 while viewing the Time and Date Screen. The following screen will be displayed:

```
ENTER DATE
**-****
MONTH DAY YEAR
09-21-2014
```

A flashing cursor will appear on the left side of the display. Enter the two digit month, two digit day and four digit year. The cursor will move one position to the right after each entry. When the fourth digit of the year has been entered, the display will return to the Time and Date Screen which will show the new date.

To change between 12 hour and 24 hour format, press 3 for Clock Format while viewing the Time and Date screen. Each press of the 3 key will toggle the display between 12 HR and 24 HR format.
Section 4: Operating Instructions

A factory programmed Template has been provided to facilitate the installation and configuration of the Fire Alarm Control Panel. The factory default programming for this panel is Template #1. Refer to “FACP Configuration Templates” on page 100 for a detailed description of the FACP operation for Template #1.

4.1 Panel Control Buttons

4.1.1 Acknowledge/Step

The first press of the Acknowledge/Step key silences the piezo sounder, changes flashing LEDs to steady and also changes the status field on the LCD display from capital letters to small letters (TROUBL to Troubl). When the piezo is silenced, an acknowledge message is sent to the printer and the history file. Acknowledge also sends a silence piezo command to the optional annunciators connected to the FACP. The Acknowledge key will have no effect on the Notification Appliance Circuits.

When more than one event exists, the first press of the Acknowledge/Step key functions as described in the preceding paragraph. Subsequent pressing of the key steps through each active event.

4.1.2 Alarm Silenced (Domestic/Export Versions)/Signal Silence (Canadian Version)

The Alarm Silenced/Signal Silence key performs the same functions as Acknowledge/Step, except it will not step through each event when multiple events are present at the panel. In addition, if an alarm exists, it turns off all silenceable NACs (Notification Appliance Circuits) and causes the Alarm Silenced indicator to turn on. It also sends an ‘alarm silenced’ message to the printer, history file and optional annunciators. A subsequent new alarm will resound the system NACs. The Alarm Silenced indicator is turned off by pressing the Reset key, the Drill key or subsequent activation of the NACs.

4.1.3 Drill/Hold 2 Sec (Domestic/Export Versions)/Alarm Signal (Canadian Version)

When the Drill/Alarm Signal key is held for a minimum of two seconds (time required to prevent accidental activations), the FACP turns on all NAC outputs except Releasing Circuits and turns off the Alarm Silenced indicator if it was previously on. The EVAC IN SYSTEM message is shown on the LCD display. The same message is sent to the printer and history file. The Alarm Silence/Signal Silence key can be used to turn off all silenceable NAC outputs following activation by the Drill/Alarm Signal key.

4.1.4 Reset

Pressing and releasing the Reset key turns off all NACs, temporarily turns off resettable power to 4-wire detectors, causes a RESET IN SYSTEM message to be displayed on the LCD and sends the same message to the printer and history file. It also performs a lamp test by turning on all LEDs.

NOTES:
1. If Silence Inhibit has been enabled, NACs cannot be silenced for one minute following initiation of an alarm.
2. When a system is configured for dual hazard operation, an alarm in one hazard area may reactivate notification appliance circuits programmed for that area only.
piezo sounder and LCD display segments after the Reset key is released. Any alarm or trouble that exists after a reset will resound the system. *Note that if Silence Inhibit has been enabled, the FACP cannot be reset for one minute following initiation of an alarm.*

### 4.2 Indicators

The eight indicators, which are located on the front panel, operate as follows:

**AC Power**

This is a green indicator which illuminates if AC power is applied to the FACP. A loss of AC power will turn off this indicator.

**Fire Alarm**

This red indicator flashes when one or more alarms occur. It illuminates steady when the *Acknowledge/Step or Alarm Silence* key is pressed. The Fire Alarm indicator turns off when the *Reset* key is pressed. The indicator will remain off if all alarms have been cleared.

**Supervisory**

This is a yellow indicator that flashes when one or more supervisory conditions occur, such as a sprinkler valve tamper condition. It illuminates steady when the *Acknowledge/Step or Alarm Silence* key is pressed. It turns off when the *Reset* key is pressed and remains off if all supervisory alarms have been cleared.

**Trouble**

This is a yellow indicator that flashes when one or more trouble conditions occur. It stays on steady when the *Acknowledge/Step or Alarm Silence* key is pressed. The indicator turns off when all trouble conditions are cleared. This indicator will also illuminate if the microprocessor watchdog circuit is activated.

**Alarm Silenced**

This is a yellow indicator that illuminates after the *Alarm Silence* key is pressed while an alarm condition exists. It turns off when the *Drill or Reset* key is pressed.

**Pre-Discharge**

Pre-discharge is a yellow indicator that indicates a releasing event has been initiated and the releasing delay timer has been started.

**Discharge**

This is a red indicator that illuminates steadily when the agent releasing circuit is activated and a discharge is taking place.

**Abort**

This is a yellow indicator that illuminates steadily to indicate that an input Abort circuit has been activated to interrupt an agent release.

### 4.3 Normal Operation

With no alarms or troubles in the system, the display message is *System All Normal* along with the current time and date as shown below. To set the time and date, refer to the appropriate section in this manual.
The FACP performs the following functions at regular intervals in Normal mode:

- Monitors AC input voltage and battery voltage
- Monitors and reports status option cards and control panel
- Refreshes LCD display and updates time
- Scans control panel keypad for key presses
- Tests memory
- Updates and reads all communications busses (EIA-485, etc.)
- Smoke detectors will be polled for maintenance and freeze conditions (temperature of 45°F or less) on initial entry into Normal mode. Thereafter, each device will be polled every hour for freeze and every four hours for maintenance conditions.

NOTE: To ensure that the system is functioning properly, the FACP will perform a freeze check within minutes after the panel is reset, followed by a maintenance check. If there is no freeze or maintenance condition, the panel will continue to monitor for freeze conditions every hour and maintenance conditions every four hours.

4.4 Trouble Operation

With no alarms in the system, the detection of a trouble will cause the following:

- The piezo to pulse 1 second On and 1 second Off
- The system Trouble indicator to flash one second On and one second Off
- The trouble relay to activate
- The output circuits programmed as TROUBLE BELL NAC to activate
- TROUBLE with device type, adjective/noun, address and trouble description will appear on the LCD display
- The same message, along with the time and date, is sent to the optional printer and the history buffer

Note that specific troubles will initiate additional actions; for example, loss of AC power will turn off the AC Power indicator, etc.

Input Zone

For Input Zones, the following is a typical message that could appear on the LCD display for a device trouble:

```
OPEN   PULL STATION
<ADJ> <NOUN>
ZONE 10 OPEN FAULT
10:00A 092314
```

The information displayed in the above example provides the following information:

- First line in display:
  - The type of event; in this example OPEN indicating a circuit trouble
  - Device type identifier; in this example, PULL STATION indicates a manual device. Other device type identifiers which can be displayed include SMOKE for Smoke Detector, HEAT for Heat Detector, etc.
- Second line in display:
  - <ADJ>; refers to the user programmed adjective descriptor from library list resident in the control panel or custom entry via PC.
  - <NOUN>; refers to the user programmed noun descriptor from library list resident in the control panel or custom entry via PC.
- Third line in display indicates Zone and the fault condition. Other possible troubles include:
4.5 Alarm Operation

For a detailed description of the alarm operation for each preprogrammed Template, refer to “FACP Configuration Templates” on page 100 and “Circuit Mapping and Cross-Zoning” on page 95. Alarm operation is similar to trouble operation with the following differences:

- The piezo sounder produces a steady output as opposed to a pulsed output
- The Fire Alarm indicator flashes 1 second On and 1 second Off
- The LCD displays Alarm along with the device name, type, adjective/noun, associated zones and time/date
- Alarms latch and are not allowed to clear automatically
- Timers for Silence Inhibit, Autosilence and Trouble Reminder are started
- Pre-Discharge, Discharge and Waterflow Delay Timers are started (if enabled) for appropriate circuits
- Alarms activate the general alarm relay
- Release Solenoid circuits are activated to produce an agent release
- The trouble relay is not activated
- Store event in history buffer

A typical alarm display would be as illustrated below:

```
ALARM  PULL STATION
<ADJ>   <NOUN>
ZONE 1
10:00A 092314
```

Note that the device type, which in this example is PULL STATION, can be any other programmable alarm type.

The information displayed in the above example provides the following information:

- First line in display:
  - The type of event; in this example ALARM indicating an alarm condition
– Device type identifier; in this example, PULL STATION indicates a manual pull box. Other device type identifiers which can be displayed include SMOKE for Smoke Detector, HEAT for Heat Detector, etc.

- Second line in display:
  – <ADJ>; refers to the user programmed adjective descriptor from library list resident in the control panel or custom entry via PC.
  – <NOUN>; refers to the user programmed noun descriptor from library list resident in the control panel or custom entry via PC.

- Third line in display: Zone 1 indicates the zone programmed to this device which, in this example, is Input Zone 1.

- Fourth line in display:
  – Time; the current time in this example is 10:00A which represents 10:00 AM
  – Date; the current month, day and year in this example is 09 for September, 23 for the 23rd day of the month, and 14 for the year 2014

### 4.6 Supervisory Operation

Supervisory operation is similar to alarm operation but with the following differences:

- The piezo sounder pulses ½ second On and ½ second Off
- The Supervisory indicator flashes ½ second On and ½ second Off
- The LCD displays the status label Active Supervisory along with the device name, type, adjective/noun, associated zones and time/date
- The output circuits programmed as SUPERVISORY NAC to activate
- The supervisory relay is activated
- The alarm relay is not activated
- Silenced alarms are resounded
- Timers are not started
- Store event in history buffer

A typical Supervisory event would be displayed as illustrated in the following:

![Supervisory Display Example]

In the preceding example:

- FROZEN SUPRV - indicates zone detector is below approximately 45°F

Note that, like alarms, supervisory signals latch (except when programmed for supervisory autore-settable) and can be assigned to software zones. Open circuits in supervisory wiring are processed by the control panel the same way as other trouble conditions. Refer to “Alarm Operation” on page 83, for a description of the information displayed on the control panel LCD.

### 4.7 Disable/Enable Operation

Input zones which are disabled do not cause an alarm or any zone activation. Disabled NACs are held in the off state. Disabled zones/NACs are treated as if they were in trouble, with the exception being the LCD status label that will be displayed is DISABL.

Note that disabled Releasing Circuits are treated as supervisory events.
4.8 Waterflow Circuits Operation

If an alarm exists from a zone that is a waterflow non-silenceable type, the Alarm Silence key will not function.

4.9 Detector Functions

Maintenance Alert

Smoke detectors will be polled for maintenance and freeze conditions (temperature less than 45°F) on initial entry into Normal mode. Thereafter, each device will be polled every hour for freeze and every four hours for maintenance conditions. All alarm and system trouble conditions are annunciated on the control panel’s LCD.

NOTE: To ensure that the system is functioning properly, the FACP will perform a freeze check five minutes after the panel is reset, followed by a maintenance check. If there is no freeze or maintenance condition, the panel will continue to monitor for freeze conditions every hour and maintenance conditions every four hours.

WARNING: OBSERVE PROPER PRECAUTIONS
WHEN USED FOR CO₂ RELEASING APPLICATIONS, OBSERVE PROPER PRECAUTIONS AS STATED IN NFPA 12. DO NOT ENTER THE PROTECTED SPACE UNLESS PHYSICAL LOCKOUT AND OTHER SAFETY PROCEDURES ARE FULLY COMPLETED. DO NOT USE SOFTWARE DISABLE FUNCTIONS IN THE PANEL AS LOCKOUT.

4.10 Time Functions: Real-Time Clock

The FACP includes a crystal-based clock that provides time, date and day of week. Time is displayed as 12 or 24 hour time with month/day/year and is stored in RAM. Daylight savings time change-over is programmable and automatic. If both AC and battery are lost, time must be reprogrammed.

4.11 Coded NAC Operation

The NAC circuits resident on the control panel main circuit board can be programmed for coded operation. The available options which can be programmed for coded operation are as follows:

- Steady - Steady output with no pulsing
- March Time - Pulses at 120 ppm (pulses per minute)
- California Code - 10 seconds On, 5 seconds Off
- Temporal Code - Pulses at ½ second On, ½ second Off, ½ second On, ½ second Off, ½ second On, 1½ second Off
- Two-Stage - Pulses at 20 ppm (pulses per minute) for 3 or 5 minutes and then changes to Temporal
- Cross-Zone (refer to Cross-Zone for Release Circuit 1 or Release Circuit 2: on page 61)
- Synchronized output for System Sensor, Wheelock, Gentex, Faraday or Amseco - Refer to “Synchronized NAC Operation” on page 62 for additional information.

4.12 Release Stage/NAC Operation

Outputs programmed as Release Stage NACs indicate the stages of a release operation. There are three possible release stage methods:
• Release Stage Coded: activation of an input zone programmed to activate an output Releasing Circuit will start a Pre-discharge delay timer and cause the programmed indicating NAC output to pulse at a 1/2 sec. on and 1/2 sec. off rate during pre-discharge, turn on steady during discharge and then 1.5 sec. on and 1.5 sec off after discharge time has expired.

• Release Stage Pre-discharge: activation of an input zone programmed to activate an output Releasing Circuit will start a Pre-discharge delay timer and cause the programmed indicating NAC output to turn on steady during discharge, remain on or turn on steady during the discharge and then turn off after discharge time has expired.

• Release Stage Discharge: activation of an input zone programmed to activate an output Releasing Circuit will start a Pre-discharge delay timer and cause the programmed indicating NAC output to remain off. When discharge begins, the NAC will turn on steady and when the discharge time has expired, the NAC will turn off.

4.13 Special System Timers

4.13.1 Silence Inhibit Timer

This option, if selected, prevents the Alarm Silence key from functioning for 60 seconds following an alarm. A new alarm during the initial 60 second period will not cause the timer to restart with a new 60 seconds. Silence Inhibit operation requires the approval of the local AHJ.

4.13.2 Autosilence Timer

If Autosilence is selected, the notification appliances, programmed as silenceable, will automatically be silenced after a programmable duration of from 5 to 30 minutes. Pressing the Drill key will restart the timer. Autosilence operation requires the approval of the local AHJ.

4.13.3 Trouble Reminder

If selected, this feature causes a reminding ‘beep’ every 15 seconds during an alarm (after the Alarm Silence key is pressed) and every two minutes during a trouble condition (after the Acknowledge/Step or Alarm Silence key is pressed). The ‘beeps’ from the onboard piezo sounder will occur until the alarm or fault is cleared.

Note that if Trouble Reminder feature is not selected and the trouble is not cleared within 24 hours, the piezo will resound, indicating that the trouble condition still exists.

4.13.4 Pre-Discharge Delay Timers

The Pre-Discharge Delay Timers can be set to a value between 00 and 60 seconds. Upon activation of an alarm, the agent release will be delayed by the amount of time programmed into the Pre-Discharge Delay Timers.

4.13.5 Discharge Timers

The Discharge Timers can be set to Always On or a value of between 01 and 20 minutes. Following activation of a releasing circuit, the agent will continue to release either continuously until the panel is reset (Always On) or until the Discharge Timers count down to 0.

4.13.6 Waterflow Delay Timer

If selected, this option will delay the activation of a waterflow type alarm for a programmable time duration from 1 to 90 seconds. This delay is in addition to any time delay inherent in the waterflow device. This feature requires the approval of the local AHJ.
4.14 Walktest

Walktest is a feature which allows one person to test the fire alarm system. An audible walktest will momentarily sound the Notification Appliance Circuits in the building and store the walktest information in a file at the panel. A silent walktest will not sound the NACs but will store the walktest information in a file which can be viewed at the panel. Disabled NAC devices will not activate during walktest. In addition, i3 smoke detectors will enter their own test mode causing their LEDs to flash twice every five seconds (refer to i3 specification document).

Alarm/Shorted Condition

When in audible Walktest, the panel responds to each new alarm and activates its programmed control outputs for four seconds, for any mapped NAC (silenceable or non-silenceable activation). It also stores each alarm in the walktest history file which can be sent to an optional printer. The stored display will be the same as if the device actually activated except the colon (:) in the time stamp is replaced with an asterisk (*).

Open Condition

Initiating Device Circuits as well as all main circuit board NACs are monitored for fault conditions during Walktest mode. When a new trouble condition occurs, the FACP will activate all NACs programmed for Walktest, then shut them off after eight seconds.

While in Walktest, the trouble relay is activated and the system Trouble indicator flashes (as in all of the Program and status change operations). The alarm relay is not activated.

4.15 Read Status

Read Status functions do not require a password. The control panel will continue to provide fire protection while in Read Status mode. This mode can be entered while the control panel is in alarm or trouble. If a new alarm or trouble occurs during these functions, the Read Status is exited to prevent confusion.

Read Status Entry

When the operator presses the control panel Enter key, the LCD will display the following:

```
1=READ STATUS MODE
2=PROGRAMMING MODE
```

Pressing 1, while this screen is being displayed, will cause the control panel to enter the Read Status mode which allows the user to view and print the programmed features and status of the control panel.

The following screens will be displayed:

- **Read Status Screen #1**
  
  READ STATUS
  1=FACP CONFIG
  2=INPUT ZONES
  3=OUTPUT CIRCUITS

- **Read Status Screen #2**
  
  READ STATUS
  1=CROSS INPUT ZONES
  2=ON-BOARD RELAYS
  3=SYSTEM SETTINGS

- **Read Status Screen #3**
  
  READ STATUS
  1=TIMERS
  2=DAYLIGHT SAVINGS
  3=HISTORY

- **Read Status Screen #4**
  
  READ STATUS
  1=PRINT
  2=ANN-BUS
4.15.1 FACP Configuration

Pressing 1 while viewing Read Status Screen #1 will display the type of configuration programmed into the FACP (refer to “FACP CONFIG (Application Templates)” on page 53). As an example, if Template 1 was programmed as the FACP configuration, the following screen will be displayed:

![Read FACP Config Template 1 Cross-Zone System With Horn]

4.15.2 Input Zones

Pressing 2 while viewing Read Status Screen #1 will cause the following screens to be displayed:

![Read Input Zones 1=Zone 1 2=Zone 2 3=Zone 3]

Pressing the down arrow key will allow the selection of Zones 4-6.

The operator selects the zone which is to be viewed by pressing the number corresponding to the desired zone in each screen. For example, if 1 is pressed in the first screen, the display will change to a screen similar to the following:

![Read Input Zone 1 Normal 2-Wire Smoke Press To View]

Pressing the down arrow key, while viewing the screen shown above, will allow the operator to view additional programming information about the selected device, such as:

- Enable/Disable Status
- Device Type
- Output Circuit MAP
- Freeze Supervision
- Adjective/Noun descriptor

4.15.3 Output Circuits

Pressing 3 while viewing Read Status Screen #1 will display the following screens:

![Read Outputs 1=Output 1 2=Output 2 3=Output 3]

Read Outputs Screen #1

![Read Outputs 1=Output 4]

Read Outputs Screen #2

The operator can press 1 to view the programmed options for Output 1, 2 to view the programmed options for Output 2, 3 to view the programmed options for Output 3, or 4 to view the programmed options for Output 4.

The resulting screens will display the following information:

- Enable/Disable Status
- Circuit Type
- Silenceable/Nonsilenceable
- Auto Silence Enable/Disable and time delay (in minutes)
- Silence Inhibit Enabled/Disabled
- Coding Selection (Temporal, Steady, etc.)
4.15.4 Cross Input Zones

Pressing 1 while viewing Read Status Screen #2 will display the following screens:

<table>
<thead>
<tr>
<th>Cross Input Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=RELEASE 1</td>
</tr>
<tr>
<td>2=RELEASE 2</td>
</tr>
</tbody>
</table>

Cross Input Zone Screen

Press 1 for Release Circuit 1 or 2 for Release Circuit 2. A screen similar to the following will be displayed:

<table>
<thead>
<tr>
<th>Cross Zones Rel 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>X 1 2</td>
</tr>
<tr>
<td>NONE</td>
</tr>
<tr>
<td>NONE</td>
</tr>
</tbody>
</table>

Cross Zones Release Screen

The Cross Zones Release screen displays the zones that have been cross-zoned. In this example, Zone 1 is cross-zoned with Zone 4.

4.15.5 On-Board Relays

Pressing 2 while viewing Read Status Screen #2 will display the following screen:

<table>
<thead>
<tr>
<th>On-Board Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=RELAY 1</td>
</tr>
<tr>
<td>2=RELAY 2</td>
</tr>
<tr>
<td>3=RELAY 3</td>
</tr>
</tbody>
</table>

To view the information about a relay, press the number key corresponding to the desired relay. The following screen will be displayed:

<table>
<thead>
<tr>
<th>RELAY #</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
</tr>
<tr>
<td>LATCHING</td>
</tr>
<tr>
<td>ALARM</td>
</tr>
</tbody>
</table>

| NO               |

4.15.6 System Settings

Pressing 3 while viewing Read Status Screen #2 will display the following screens:

<table>
<thead>
<tr>
<th>System Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABORT TYPE</td>
</tr>
<tr>
<td>TROUBLE REMIND</td>
</tr>
<tr>
<td>CHARGER DISABLE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factory Banner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Option</td>
</tr>
<tr>
<td>Sec Ann Enable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-DISCHARGE1 30S</td>
</tr>
<tr>
<td>PRE-DISCHARGE 30S</td>
</tr>
<tr>
<td>DISCHARGE 1MIN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISCHARGE2 1MIN</td>
</tr>
<tr>
<td>WATERFLOW DELAY 90S</td>
</tr>
<tr>
<td>AC LOSS DELAY 2HR</td>
</tr>
</tbody>
</table>

The operator can view the system settings options that have been programmed into the FACP.

4.15.7 Timers

Pressing 1 while Read Status Screen #3 will display the following screens:

<table>
<thead>
<tr>
<th>Timers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-DISCHARGE1 30S</td>
</tr>
<tr>
<td>PRE-DISCHARGE 30S</td>
</tr>
<tr>
<td>DISCHARGE1 1MIN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Timers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISCHARGE2 1MIN</td>
</tr>
<tr>
<td>WATERFLOW DELAY 90S</td>
</tr>
<tr>
<td>AC LOSS DELAY 2HR</td>
</tr>
</tbody>
</table>

These screens allow the operator to view the various timer settings.
4.15.8 Daylight Savings

Pressing 2 while Read Status Screen #3 will cause the following screens to be displayed:

These screens allow the operator to view settings that have been programmed for Daylight Savings Time.

4.15.9 History

Pressing 3 while viewing Read Status Screen #3 will display the following screens:

The operator can view all events which have been stored in the history file, only alarms or other events, such as troubles or supervisories, by pressing the corresponding number key.

4.15.10 Print

To print control panel data, press 2 while viewing Read Status Screen #4. This allows printing to the printer connected to the ANN-S/PG module. The following screens will be displayed:

Pressing 1 allows the user to print the History file which will detail all of the system activities since the file was last cleared from memory.

Pressing 2 allows the user to print the Walktest log which will detail all of the system activations during walktest since the log was last cleared. Refer to “Walktest” on page 75 for additional information on the display.

Pressing 3 will exit the Print operation.

4.15.11 ANN-BUS

Pressing 2 while viewing Read Status Screen #4 will display the settings for the ANN-BUS options as shown in the following screens:

ANN-BUS Screen #1 indicates whether the ANN-BUS is enabled (Yes/No).

Pressing 1 while viewing ANN-BUS Screen #1 will display BUS Module addresses 1-8 and the devices, if any, located at those addresses.

Pressing 2 while viewing ANN-BUS Screen #1 will display the programmed options for the ANN-S/PG Module devices connected to the ANN-BUS.

Pressing 1 while viewing ANN-BUS Screen #2 will display the programmed options for the ANN-80 LCD annunciators connected to the ANN-BUS.

Pressing 2 while viewing ANN-BUS Screen #2 will display the programmed options for the ANN-RLY devices connected to the ANN-BUS.
Section 5: Power Supply Calculations

5.1 Overview

This section contains instructions and tables for calculating power supply currents in alarm and standby conditions. This is a four-step process, consisting of the following:

1. Calculating the total amount of AC branch circuit current required to operate the system
2. Calculating the power supply load current for non-fire and fire alarm conditions and calculating the secondary (battery) load
3. Calculating the size of batteries required to support the system if an AC power loss occurs
4. Selecting the proper batteries for your system

5.2 Calculating the AC Branch Circuit

The control panel requires connection to a separate, dedicated AC branch circuit, which must be labeled **FIRE ALARM**. This branch circuit must connect to the line side of the main power feed of the protected premises. No other non-fire alarm equipment may be powered from the fire alarm branch circuit. The branch circuit wire must run continuously, without any disconnect devices, from the power source to the control panel. Overcurrent protection for this circuit must comply with Article 760 of the National Electrical Codes as well as local codes. Use 14 AWG (2.00 mm²) wire with 600 volt insulation for this branch circuit.

Use Table 5.1, to determine the total amount of current, in AC amperes (A), that must be supplied to the system.

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Number of Devices</th>
<th>Current Draw (AC amps)</th>
<th>Total Current per Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRP-2002/C or MRP-2002E</td>
<td>1 X 3.66 or 2.085</td>
<td>[ ] X [ ] =</td>
<td></td>
</tr>
<tr>
<td>[ ] X [ ] =</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] X [ ] =</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum Column for AC Branch Current Required =</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1 Branch Circuit Requirements
5.3 Calculating the System Current Draw

5.3.1 Overview

The control panel must be able to power all internal and external devices continuously during the non-fire alarm condition. To calculate the non-fire alarm load on the system power supply when primary power is applied, use Calculation Column 1 in Table 5.3 on page 93. The control panel must support a larger load current during a fire alarm condition. To calculate the fire alarm load on the power supply, use Calculation Column 2 in Table 5.3 on page 93. The secondary power source (batteries) must be able to power the system during a primary power loss. To calculate the non-fire alarm load on the secondary power source, use Calculation Column 3 in Table 5.3 on page 93.

When calculating current draw and the battery size, note the following:

- ‘Primary’ refers to the main power source for the control panel
- ‘Secondary’ refers to the control panel’s backup batteries
- All currents are given in amperes (A). Table 5.2 shows how to convert milliamperes and microamperes to full amperes.

5.3.2 How to Use Table 5.3 on page 93 to Calculate System Current Draw

Use Table 5.3 on page 93 to calculate current draws as follows:

1. Enter the quantity of devices in all three columns
2. Enter the current draw where required. Refer to the Device Compatibility Document for compatible devices and their current draw
3. Calculate the current draws for each in all columns
4. Sum the total current for each column
5. Copy the totals from Column 2 and Column 3 to Table 5.4 on page 94

Following are the types of current that can be entered into Table 5.3 on page 93:

- **Calculation Column 1** - The primary supply current load that the control panel must support during a non-fire alarm condition, with AC power applied.
- **Calculation Column 2** - The secondary supply current load that the control panel must support during a fire alarm condition.
- **Calculation Column 3** - The standby current drawn from the batteries in a non-fire alarm condition during a loss of AC power.

### Table 5.2 Converting to Full Amperes

<table>
<thead>
<tr>
<th>To convert...</th>
<th>Multiply</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milliamperes (mA) to amperes (A)</td>
<td>mA x 0.001</td>
<td>3 mA x 0.001 = 0.003A</td>
</tr>
<tr>
<td>Microamperes (µA) to amperes (A)</td>
<td>µA x 0.000001</td>
<td>300 µA x 0.000001 = 0.0003 A</td>
</tr>
</tbody>
</table>

To convert... Multiply Example

<table>
<thead>
<tr>
<th>To convert...</th>
<th>Multiply</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milliamperes (mA) to amperes (A)</td>
<td>mA x 0.001</td>
<td>3 mA x 0.001 = 0.003A</td>
</tr>
<tr>
<td>Microamperes (µA) to amperes (A)</td>
<td>µA x 0.000001</td>
<td>300 µA x 0.000001 = 0.0003 A</td>
</tr>
</tbody>
</table>

Table 5.2 Converting to Full Amperes
Calculating the System Current Draw

Table 5.3 contains three columns for calculating current draws. For maximum output current available per circuit and per panel, refer to Section 1.2, “Specifications”, on page 14. For each column, calculate the current and enter the total (in amperes) in the bottom row. When finished, copy the totals from Calculation Column 2 and Calculation Column 3 to Table 5.4 on page 94.

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Calculation Column 1 Primary, Non-Fire Alarm Current (amps)</th>
<th>Calculation Column 2 Secondary, Fire Alarm Current (amps)</th>
<th>Calculation Column 3 Secondary, Non-Fire Alarm Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty X[current draw]=</td>
<td>Qty X [current draw] =</td>
<td>Qty X[current draw]=</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Main Circuit Board</td>
<td>1 X[0.095]= 0.095</td>
<td>1 X[0.221]= 0.221</td>
<td>1 X[0.095]= 0.095</td>
</tr>
<tr>
<td>CAC-5X</td>
<td>[ ] X[0.001]=</td>
<td>[ ] X[0.001]=</td>
<td>[ ] X[0.001]=</td>
</tr>
<tr>
<td>4XTMF</td>
<td>[ ] X[0.005]=</td>
<td>[ ] X[0.011]=</td>
<td>[ ] X[0.005]=</td>
</tr>
<tr>
<td>ANN-SEC Card</td>
<td>[ ] X[0.003]=</td>
<td>[ ] X[0.003]=</td>
<td>[ ] X[0.003]=</td>
</tr>
<tr>
<td>(1 max.)</td>
<td>(1 max.)</td>
<td>(1 max.)</td>
<td>(1 max.)</td>
</tr>
<tr>
<td>ANN-80(C)</td>
<td>[ ] X[0.037]=</td>
<td>[ ] X[0.040]=</td>
<td>[ ] X[0.015]=</td>
</tr>
<tr>
<td>ANN-I/O</td>
<td>[ ] X[0.035]=</td>
<td>[ ] X[0.200]=</td>
<td>[ ] X[0.035]=</td>
</tr>
<tr>
<td>ANN-RLY</td>
<td>[ ] X[0.015]=</td>
<td>[ ] X[0.075]=</td>
<td>[ ] X[0.015]=</td>
</tr>
<tr>
<td>ANN-(R)LED</td>
<td>[ ] X[0.028]=</td>
<td>[ ] X[0.068]=</td>
<td>[ ] X[0.028]=</td>
</tr>
<tr>
<td>ANN-S/PG</td>
<td>[ ] X[0.045]=</td>
<td>[ ] X[0.045]=</td>
<td>[ ] X[0.045]=</td>
</tr>
<tr>
<td>2-wire Detector Heads</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
</tr>
<tr>
<td>Power Supervision Relays5</td>
<td>[ ] X[0.025]=</td>
<td>[ ] X[0.025]=</td>
<td>[ ] X[0.025]=</td>
</tr>
<tr>
<td>NAC #1</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
</tr>
<tr>
<td>NAC #2</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
</tr>
<tr>
<td>NAC #3</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
</tr>
<tr>
<td>NAC #4</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
<td>[ ] X[ ]=</td>
</tr>
<tr>
<td>Current Draw from TB9 (nonalarm)</td>
<td>[ ]=</td>
<td>[ ]=</td>
<td>[ ]=</td>
</tr>
<tr>
<td>Sum each column5 for totals</td>
<td>Primary Non-Alarm =</td>
<td>Secondary Alarm =</td>
<td>Secondary Non-Alarm =</td>
</tr>
</tbody>
</table>

Table 5.3 System Current Draw Calculations

1 If using the Reverse Polarity Alarm output, add 0.005 amps; if using the Reverse Polarity Trouble output, add another 0.005 amps.
2 The current shown represents one zone (IDC) on the main circuit board in alarm. One zone consumes 0.040 amps.
3 Refer to the Device Compatibility Document for standby current.
4 Enter the number of IDCs used minus one.
5 Must use compatible listed Power Supervision Relay.
6 Total current draw listed above cannot exceed 7.2 amps.
5.4 Calculating the Battery Size

Use Table 5.4 to calculate the total Standby and Alarm load in ampere hours (AH). This total load determines the battery size (in AH), required to support the control panel under the loss of AC power. Complete Table 5.4 as follows:

1. Enter the totals from Table 5.3 on page 93, Calculation Columns 2 and 3 where shown.
2. Enter the NFPA Standby and Alarm times (refer to ‘NFPA Requirements’ below).
3. Calculate the ampere hours for Standby and Alarm, then sum the Standby and Alarm ampere hours.
4. Multiply the sum by the derating factor of 1.2 to calculate the proper battery size (in AH).
5. Write the ampere hour requirements on the Protected Premises label located inside the cabinet door.

<table>
<thead>
<tr>
<th>Secondary Standby Load (total from Table 5.3 Calculation Column 3)</th>
<th>Required Standby Time (24 hours)</th>
<th>= AH</th>
</tr>
</thead>
<tbody>
<tr>
<td>X[ ]</td>
<td>X[ ]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Alarm Load (total from Table 5.3 Calculation Column 2)</th>
<th>Required Alarm Time (for 5 min., enter 0.084, for 10 min., enter 0.168)</th>
<th>= AH</th>
</tr>
</thead>
<tbody>
<tr>
<td>X[ ]</td>
<td>X[ ]</td>
<td></td>
</tr>
</tbody>
</table>

Sum of Standby and Alarm Ampere Hours = AH

Multiply by the Derating Factor X 1.2

Battery Size, Total Ampere Hours Required = AH

Table 5.4 Total Secondary Power Requirements at 24 VDC

5.4.1 NFPA Battery Requirements

NFPA 72 Local, Central and Proprietary Fire Alarm Systems require 24 hours of standby power followed by 5 minutes in alarm.

5.4.2 Selecting and Locating Batteries

Select batteries that meet or exceed the total ampere hours calculated in Table 5.4. The control panel can charge batteries in the 7 AH to 26 AH range. The control panel cabinet is capable of housing batteries up to 18 AH. Batteries larger than 18 AH require the BB-55F, BB-26, or other UL listed external battery cabinet.

For Canadian Applications, the minimum battery size is 12 AH and the maximum battery size is 18 AH.
Appendix A: Circuit Mapping and Cross-Zoning

A.1 Input-to-Output Circuit Mapping and Cross-Zone Operation

The flexible cross-zoning and input-to-output (I/O) mapping capability of this fire panel provides a powerful toolset to accommodate many site-specific configurations. To simplify initial setup, preconfigured application templates that employ cross-zoning and I/O mapping are included from the factory. Refer to “FACP Configuration Templates” on page 100 for a description of each supplied template.

The following sections provide some examples of setting up your own cross-zoned or I/O mapped system.

⚠️ CAUTION: COMPLETE TESTING REQUIRED
THE INSTALLER IS RESPONSIBLE FOR COMPLETELY TESTING THE PROPER OPERATION OF THE FIRE PANEL AS SET UP BY PROGRAMMING.

NOTES:
1. Any general system trouble, such as a battery fault, will activate any output circuit programmed as TROUBLE NAC in the OUTPUT CIRCUITS menu. Circuit mapping does not apply.
2. Any input zone programmed for supervisory operation or as a DISABLE RELEASE switch in the INPUT CIRCUITS menus will activate any output circuit programmed as SUPV BELL NAC in the OUTPUT CIRCUITS menus. Circuit mapping does not apply.
3. The programming menus will prevent you from mapping any incompatible input zone and output circuit types together, such as mapping a supervisory input zone to a releasing output circuit.
4. Timers and/or delays are not represented in these examples.
**A.1.1 Mapping Input Zones to Output Circuits for Direct Activation**

Using the INPUT ZONES menus, you can assign any input zone to directly activate (without cross-zoning) any of the four output circuits provided they are assigned matching operational types (see the OUTPUT CIRCUIT MAP menu within the INPUT ZONES menus).

**Example 1:** A waterflow input zone assigned to directly activate an alarm output circuit by setting the OUTPUT CIRCUIT MAP assignment to *YES*.

- Output Circuit 1 is programmed as alarm NAC using the OUTPUT CIRCUITS menus.
- Output Circuit 2 is programmed as Release Circuit 1 using the OUTPUT CIRCUITS menus.
- Output Circuit 3 is programmed as Release Circuit 2 using the OUTPUT CIRCUITS menus.
- Output Circuit 4 is programmed as supervisory NAC using the OUTPUT CIRCUITS menus.
- Input Zone 1 is programmed as a waterflow zone using the INPUT ZONES menus.

Waterflow Input Zone 1 will directly activate Output Circuit 1 (Alarm NAC) but not Output Circuits 2, 3 or 4.

<table>
<thead>
<tr>
<th>ZONE 1 TYPE</th>
<th>1=N/A</th>
<th>2=N/A</th>
<th>3=WATERFLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=ALARM NAC</td>
<td>YES</td>
<td>2=RELEASE 1</td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=SUPV BELL NAC</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Example 2:** A single hazard application where a smoke detector input zone will directly activate both an alarm NAC circuit and a releasing output circuit.

- Output Circuit 1 is programmed as alarm NAC using the OUTPUT CIRCUITS menus.
- Output Circuit 2 is programmed as Release Circuit 1 using the OUTPUT CIRCUITS menus.
- Output Circuit 3 is programmed as waterflow NAC using the OUTPUT CIRCUITS menus.
- Output Circuit 4 is programmed as supervisory NAC using the OUTPUT CIRCUITS menus.
- Input Zone 1 is programmed as a smoke detector zone using the INPUT ZONES menus.

Smoke detector Input Zone 1 will directly activate Output Circuits 1 (Alarm NAC) and 2 (Release 1) but not output circuits 3 or 4.

<table>
<thead>
<tr>
<th>ZONE 1 TYPE</th>
<th>1=2-WIRE SMOKE</th>
<th>2=2-WIRE HEAT</th>
<th>3=N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=ALARM NAC</td>
<td>YES</td>
<td>2=RELEASE 1</td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=SUPV BELL NAC</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
A.1.2 Mapping Input Zones to Release Circuits for Cross Zone Activation

Using the OUTPUT CIRCUITS menus, this fire panel will allow you to assign a release circuit type of operation to any two of the four output circuits. Up to two releasing circuits (or hazards), called RELEASE 1 and RELEASE 2, may be created. Input zones may be assigned in various ways to activate either one or both of the release circuits. The fire panel treats RELEASE 1 and RELEASE 2 functions independently from each other, although they may share input circuits for activation.

Cross-zoning is set up in the CROSS INPUT ZONES menus, where you can create up to three groups of input zones for each release circuit. When cross zone groups have been set up, the OUTPUT CIRCUIT MAP associated with the input zones will automatically show YES for release output circuits. This extremely flexible cross-zone with grouping capability is used in the following examples.

Example 3: A single hazard, cross-zoned application using two smoke detector input zones and one releasing output circuit. Input Zones 1 and 2 are cross-zoned to activate output circuit 2, which is programmed as a RELEASE 1.

- Output Circuit 1 is programmed as alarm NAC using the OUTPUT CIRCUITS menus.
- Output Circuit 2 is programmed as Release Circuit 1 using the OUTPUT CIRCUITS menus.
- Output Circuit 3 is programmed as alarm NAC using the OUTPUT CIRCUITS menus
- Output Circuit 4 is programmed as supervisory NAC using the OUTPUT CIRCUITS menus.
- Either of smoke detector Input Zones 1 or 2 will directly activate Output Circuit 1 (Alarm NAC).
- Smoke detector Input Zone 2 will also directly activate Output Circuit 3 (Alarm NAC) but not Output Circuits 2 or 4.
- Smoke detector Input Zones 1 and 2 are cross-zoned (both must be in alarm) to activate Output Circuit 2 (Release 1) but not Output Circuit 4.

<table>
<thead>
<tr>
<th>ZONE 1 TYPE</th>
<th>1=2-WIRE SMOKE</th>
<th>2=2-WIRE HEAT</th>
<th>3=N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONE 2 TYPE</td>
<td>1=2-WIRE SMOKE</td>
<td>2=2-WIRE HEAT</td>
<td>3=N/A</td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=ALARM NAC YES</td>
<td>2=RELEASE 1 YES</td>
<td>3=ALARM NAC NO</td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 2</td>
<td>1=ALARM NAC YES</td>
<td>2=RELEASE 1 YES</td>
<td>3=ALARM NAC YES</td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 1</td>
<td>1=SUPV BELL NAC N/A</td>
<td>2=SUPV BELL NAC N/A</td>
<td></td>
</tr>
<tr>
<td>OUTPUT MAP ZONE 2</td>
<td>1=SUPV BELL NAC N/A</td>
<td>2=SUPV BELL NAC N/A</td>
<td></td>
</tr>
<tr>
<td>REL 1 CROSS GROUP 1</td>
<td>1=ZONE 1 YES</td>
<td>2=ZONE 2 YES</td>
<td>3=ZONE 3 NO</td>
</tr>
</tbody>
</table>
Example 4: A dual hazard, cross-zoned application using four input zones and two releasing output circuits. Input Zones 1 and 2 are cross-zoned to activate Output Circuit 2, which is programmed as RELEASE 1. Input Zones 3 and 4 are cross-zoned to activate Output Circuit 3, which is programmed as a RELEASE 2.

- Output Circuit 1 is programmed as alarm NAC using the OUTPUT CIRCUITS menus.
- Output Circuit 2 is programmed as Release Circuit 1 using the OUTPUT CIRCUITS menus.
- Output Circuit 3 is programmed as Release Circuit 2 using the OUTPUT CIRCUITS menus
- Output Circuit 4 is programmed as supervisory NAC using the OUTPUT CIRCUITS menus.
- Any of smoke detector Input Zones 1 through 4 will directly activate Output Circuit 1 (Alarm NAC) but not Output Circuits 2, 3 or 4.
- Smoke detector Input Zones 1 and 2 are cross-zoned (both must be in alarm) to activate Output Circuit 2 (Release 1) but not Output Circuits 3 or 4.
- Smoke detector Input Zones 3 and 4 are cross-zoned (both must be in alarm) to activate Output Circuit 3 (Release 2) but not Output Circuits 2 or 4.

<table>
<thead>
<tr>
<th>ZONE 1 TYPE</th>
<th>ZONE 3 TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=WATERFLOW NS</td>
<td>1=WATERFLOW NS</td>
</tr>
<tr>
<td>2=COMBO</td>
<td>2=COMBO</td>
</tr>
<tr>
<td>3=COMBO W/AR. SUPERV</td>
<td>3=COMBO W/AR. SUPERV</td>
</tr>
<tr>
<td>ZONE 2 TYPE</td>
<td>ZONE 4 TYPE</td>
</tr>
<tr>
<td>1=WATERFLOW NS</td>
<td>1=WATERFLOW NS</td>
</tr>
<tr>
<td>2=COMBO</td>
<td>2=COMBO</td>
</tr>
<tr>
<td>3=COMBO W/AR. SUPERV</td>
<td>3=COMBO W/AR. SUPERV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT MAP ZONE 1</th>
<th>OUTPUT MAP ZONE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=ALARM NAC</td>
<td>1=ALARM NAC</td>
</tr>
<tr>
<td>2=RELEASE 1</td>
<td>2=RELEASE 1</td>
</tr>
<tr>
<td>3=RELEASE 2</td>
<td>3=RELEASE 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT MAP ZONE 1</th>
<th>OUTPUT MAP ZONE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=SUPV BELL NAC</td>
<td>1=SUPV BELL NAC</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT MAP ZONE 3</th>
<th>OUTPUT MAP ZONE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=ALARM NAC</td>
<td>1=ALARM NAC</td>
</tr>
<tr>
<td>2=RELEASE 1</td>
<td>2=RELEASE 1</td>
</tr>
<tr>
<td>3=RELEASE 2</td>
<td>3=RELEASE 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT MAP ZONE 3</th>
<th>OUTPUT MAP ZONE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=SUPV BELL NAC</td>
<td>1=SUPV BELL NAC</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REL 1 CROSS GROUP 1</th>
<th>REL 2 CROSS GROUP 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=ZONE 1</td>
<td>1=ZONE 1</td>
</tr>
<tr>
<td>2=ZONE 2</td>
<td>2=ZONE 2</td>
</tr>
<tr>
<td>3=ZONE 3</td>
<td>3=ZONE 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REL 2 CROSS GROUP 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1=ZONE 4</td>
</tr>
<tr>
<td>2=ZONE 5</td>
</tr>
<tr>
<td>3=ZONE 6</td>
</tr>
</tbody>
</table>
A.1.3 Complex Examples of Cross Zoning and I/O Mapping for Release Circuits

Following are some complex examples of cross-zoning for more demanding applications that are possible with this fire panel. Input zone entries in a single cross-zone group are effectively AND’ed together while the cross-zone groups are effectively OR’ed together. For the purpose of describing this, the following language is used:

- **R1** = RELEASE 1
- **R2** = RELEASE 2
- **Z1** = INPUT ZONE 1
- **Z2** = INPUT ZONE 2
- **Z3** = INPUT ZONE 3
- **Z4** = INPUT ZONE 4
- **Z5** = INPUT ZONE 5
- **Z6** = INPUT ZONE 6
- **OR** = any input zone may cause a release
- **AND** = all input zones must be active for a release

**Example 5:** Release Circuit 1 activates if either Input Zone 1 or 2 are active in addition to Input Zone 3 being active.

- R1 = (Z1 AND Z3) OR (Z2 AND Z3)
- Set Zones 1 and 3 to YES in Cross Zoning Group 1 for RELEASE 1 in the CROSS INPUT ZONES menus.
- Set Zones 2 and 3 to YES in Cross Zoning Group 2 for RELEASE 1 in the CROSS INPUT ZONES menus.
- Set all other zones to NO in Cross Zoning Groups 1, 2 and 3 for RELEASE 1 in the CROSS INPUT ZONES menus.

**Example 6:** Release Circuit 1 activates if Input Zones 1 and 2 and 3 are all active.

- R1 = Z1 AND Z2 AND Z3
- Set Zones 1, 2 and 3 to YES in Cross Zoning Group 1 for RELEASE 1 in the CROSS INPUT ZONES menus.
- Set all other zones to NO in Cross Zoning Groups 1, 2 and 3 for RELEASE 1 in the CROSS INPUT ZONES menus.

**Example 7:** Release Circuit 1 activates if Input Zones 1 and 2 and 3 are all active. Release Circuit 2 activates if Input Zones 2 and 3 and 4 are all active.

- R1 = Z1 AND Z2 AND Z3
- R2 = Z2 AND Z3 AND Z4
- Set Zones 1, 2 and 3 to YES in Cross Zoning Group 1 for RELEASE 1 in the CROSS INPUT ZONES menus.
- Set Zones 2, 3 and 4 to YES in Cross Zoning Group 1 for RELEASE 2 in the CROSS INPUT ZONES menus.
- Set all other zones to NO in Cross Zoning Groups 1, 2 and 3 for RELEASE 1 in the CROSS INPUT ZONES menus.
- Set all other zones to NO in Cross Zoning Groups 1, 2 and 3 for RELEASE 2 in the CROSS INPUT ZONES menus.

**Example 8:** Release Circuit 1 activates if Input Zone 1 activates followed in time by Input Zone 2 activating.

- This kind of sequential reaction is not possible at this time.
Appendix B: FACP Configuration Templates

The MRP-2002 has been provided with preprogrammed templates which allows the user to quickly configure the FACP [refer to “FACP CONFIG (Application Templates)” on page 53]. The user also has the option to reprogram selected portions of each template for customized applications. The following pages of this appendix describe the programming for the templates.

**NOTE:** The MRP-2002 Agent Release Control Panel can be configured using preprogrammed Templates 1 through 13.

**Important!** The Templates have been programmed with specific Input Zone Types and Output Circuit Types. If the FACP is configured with the preprogrammed Templates, the user must ensure that the devices connected to each Input Zone and Output Circuit are compatible with the programmed types. (The user can reprogram the circuit types if desired).
# B.1 Template 1: Cross-Zone System - With Horn

## Template 1: Cross-Zone System with Horn

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>INPUT ZONES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>2-WIRE SMOKE</td>
<td>C1</td>
<td>C1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#2 HORN NAC</td>
<td>2-WIRE SMOKE</td>
<td>Xc</td>
<td>Xc</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 ALARM NAC</td>
<td>MANUAL RELEASE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 ALARM NAC</td>
<td>ABORT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PULL STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SUPERVISORY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table Legend:

- **X** = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- **Xc** = cross-zone output where **X** indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and **c** indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).
- **Cn** = cross-zone inputs where **n** is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.

### Input Zone Types:

- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Pull Station
- Zone 6 = circuit with type code of Supervisory

### Output Circuit Types:

- Output 1 = Release Circuit 1 - Unsupervised for shorts
- Output 2 = Horn NAC - silenceable, programmed for cross-zone coded operation for Release Circuit 1 (refer to Cross Zone in the section titled “Coded NAC Operation” on page 85
- Output 3 = Alarm NAC - silenceable, coded for steady on
- Output 4 = Alarm NAC - silenceable, coded for steady on

### Timers

- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for 1 minute
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours
**FACP Operation**

- **Input Zone 1 (2-Wire Smoke) Activation only:**
  - Output 2 (Horn NAC) will pulse 1 second on and 1 second off.
  - Output 4 (Alarm NAC) will turn on steady.

- **Input Zone 2 (2-Wire Smoke) Activation only:**
  - Output 2 (Horn NAC) will pulse 1 second on and 1 second off.
  - Output 4 (Alarm NAC) will turn on steady.

- **Input Zone 3 (Manual Release) Activation only:**
  - Output 1 (Release Circuit 1) begins agent release and the Discharge Timer will begin to count down. When the Discharge Timer reaches 0, Output 1 will turn off the agent release.
  - Output 2 (Horn NAC) will turn on steady.
  - Output 4 (Alarm NAC) will turn on steady.

- **Input Zone 4 (Abort Release Switch) Activation only:**
  - Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

- **Input Zone 5 (Pull Station) Activation only:**
  - Output 1 (Release Circuit 1) begins agent release and the Discharge Timer will begin to count down. When the Discharge Timer reaches 0, Output 1 will turn off the agent release.
  - Output 3 (Alarm NAC) turns on steady.

- **Input Zone 6 (Supervisory) Activation only:**
  - No output circuits will be activated. FACP will indicate a supervisory condition.

- **Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together:**
  - In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer will begin to count down. Output 2 will pulse at a $\frac{1}{2}$ second on and $\frac{1}{2}$ second off rate while the Pre-Discharge Timer is counting down. When the Pre-Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release, Output 2 will turn on steady and the Discharge Timer will begin to count down. When the Discharge Timer reaches 0, Output 1 will turn off the agent release.

**FACP Relay Operation**

The following description of FACP relay operations are in addition to normal system operation.

- **Alarm Relay** - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay.

- **Trouble Relay** - any system trouble will activate the Trouble Relay.

- **Supervisory** - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay.
Device Installation Example for Template 1

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.2 Template 2: Single Zone System With Horn

Template 2: Single Zone System with Horn

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>2-WIRE SMOKE</th>
<th>2-WIRE SMOKE</th>
<th>MANUAL RELEASE</th>
<th>ABORT</th>
<th>PULL STATION</th>
<th>SUPERVISORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#2 RELEASE STAGE NAC</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 ALARM NAC</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 ALARM NAC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table Legend:

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

Input Zone Types:
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Pull Station
- Zone 6 = circuit with type code of Supervisory

Output Circuit Types:
- Output 1 = Release Circuit 1 - Unsupervised for shorts
- Output 2 = Release Stage NAC - silenceable, programmed Release Stage operation (refer to “Release Stage/NAC Operation” on page 85)
- Output 3 = Alarm NAC - silenceable, coded for steady on
- Output 4 = Alarm NAC - silenceable, coded for steady on

Timers
- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for 1 minute
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours
FACP Operation

- Input Zone 1 (2-Wire Smoke) Activation:
  Output 1 will perform an agent release following a 30 second Pre-discharge delay. The release will continue for the one minute duration of the Discharge timer.
  Output 2 (Release Stage NAC) will indicate the Release Stage by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).
  Output 4 (Alarm NAC) will turn on steady.

- Input Zone 2 (2-Wire Smoke) Activation:
  Output 1 will perform an agent release following a 30 second Pre-discharge delay. The release will continue for the one minute duration of the Discharge timer.
  Output 2 (Release Stage NAC) will indicate the Release Stage by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).
  Output 4 (Alarm NAC) will turn on steady.

- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) begins agent release. The release will continue for the one minute duration of the Discharge timer.
  Output 2 (Release Stage NAC) turns on steady for 1 minute then pulses at 20 ppm upon completion of the release.
  Output 4 (Alarm NAC) turns on steady.

- Input Zone 4 (Abort Release Switch) Activation only:
  The Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

- Input Zone 5 (Pull Station) Activation:
  Output 1 (Release Circuit 1) will perform an agent release. The release will continue for the one minute duration of the Discharge timer.
  Output 2 (Release Stage NAC) pulses at 60 ppm during pre-discharge (30 seconds), then turns on steady for 1 minute during release, then pulses at 20 ppm upon completion of release.
  Output 3 (Alarm NAC) will turn on steady.

- Input Zone 6 (Supervisory) Activation only: No output circuits will be activated. FACP will indicate a supervisory condition.

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay
- Trouble Relay - any system trouble will activate the Trouble Relay
- Supervisory - activation of Input Zone 6 (Supervisory), disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 2

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
### B.3 Template 3: Single Hazard - Cross-Zone

**Template 3: Single Hazard - Cross-Zone**

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>1-WIRE SMOKE</th>
<th>2-WIRE SMOKE</th>
<th>MANUAL RELEASE</th>
<th>ABORT</th>
<th>DISCHARGE PRESSURE</th>
<th>SUPERVISORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>C1</td>
<td>C1</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>#2 ALARM NAC</td>
<td>Xc</td>
<td>Xc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 RELEASE STAGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
<td>Xr</td>
</tr>
<tr>
<td>PRE-DISCHARGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
<td>Xr</td>
</tr>
<tr>
<td>DISCHARGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table Legend:**

- * = shows relationship only, will not activate a release circuit
- X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- Xc = cross-zone output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and c indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to Cross Zone in “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).

Cn = cross-zone inputs where n is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

**Input Zone Types:**

- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory

**Output Circuit Types**

- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Alarm NAC - silenceable, programmed for cross-zone coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
- Output 3 = Release Stage Pre-Discharge - silenceable, programmed Release State Pre-Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
- Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
Timers

- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

FACP Operation

- Input Zone 1 (2-Wire Smoke) Activation only: Output 2 (Alarm NAC) will pulse 1 second on and 1 second off.
- Input Zone 2 (2-Wire Smoke) Activation only: Output 2 (Alarm NAC) will pulse 1 second on and 1 second off.
- Input Zone 3 (Manual Release) Activation only: Output 1 (Release Circuit 1) agent release remains on until reset. Output 3 (Release Stage Pre-Discharge) will turn on steady. Output 4 (Release Stage Discharge) will turn on steady.
- Input Zone 4 (Abort Release Switch) Activation only: Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.
- Input Zone 5 (Discharge Pressure Switch) Activation only: Output 3 (Release Stage Pre-Discharge) will turn on steady. Output 4 (Release Stage Discharge) will turn on steady.
- Input Zone 6 (Supervisory) Activation only: No output circuits will be activated. FACP will indicate a supervisory condition.
- Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together: In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer will begin to count down. Output 2 will pulse and output 3 will turn on steady while the Pre-Discharge Timer is counting down. When the Pre-Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release which will continue until reset. Output 2 will turn on steady when the release begins. Output 4 will turn on steady to indicate a discharge is in progress.

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 3

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.4 Template 4: Single Hazard - Count One

**INPUT ZONES**

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 ALARM NAC</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 ALARM NAC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE DISCHARGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table Legend:**

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

**Input Zone Types:**
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory

**Output Circuit Types:**
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Alarm NAC - silenceable, programmed for Cross-Zone Discharge coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
- Output 3 = Alarm NAC - silenceable, programmed for Cross-Zone coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
- Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)

**Timers**
- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for Always On
- Waterflow Delay Timer - set for 90 seconds
• AC Loss Delay Timer - set for 2 hours

FACP Operation

• Input Zone 1 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will turn on steady until discharge. Turns off upon discharge.
  Output 3 (Alarm NAC) will pulse 1 second on, 1 second off until discharge, then turns on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

• Input Zone 2 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will turn on steady until discharge. Turns off upon discharge.
  Output 3 (Alarm NAC) will pulse 1 second on, 1 second off until discharge, then turns on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

• Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) begins agent release and remains on until reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

• Input Zone 4 (Abort Release Switch) Activation only:
  Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop.
  Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

• Input Zone 5 (Discharge Pressure Switch) Activation:
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

• Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

• Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm Relay
• Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
• Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 4

Notes:
1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.5 Template 5: Single Hazard - Single Detector, Cross-Zone NAC

Table Legend:

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

Input Zone Types:

• Zone 1 = circuit with type code of 2-wire smoke
• Zone 2 = circuit with type code of 2-wire smoke
• Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
• Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
• Zone 5 = circuit with type code of Discharge Pressure Switch
• Zone 6 = circuit with type code of Supervisory

Output Circuit Types:

• Output 1 = Release Circuit 1 - Supervised for shorts
• Output 2 = Alarm NAC - silenceable, programmed for Cross-Zone coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61.)
• Output 3 = Alarm NAC - silenceable, steady on
• Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

Timers

• Pre-Discharge Delay - set for 30 seconds
• Discharge - set for Always On
• Waterflow Delay Timer - set for 90 seconds
FACP Configuration Templates

Template 5: Single Hazard - Single Detector, Cross-Zone NAC

- AC Loss Delay Timer - set for 2 hours

FACP Operation

- Input Zone 1 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will pulse 1 second on, 1 second off until discharge, then turns on steady.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

- Input Zone 2 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will pulse 1 second on, 1 second off until discharge, then turns on steady.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) begins agent release and remains on until reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

- Input Zone 4 (Abort Release Switch) Activation only:
  Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop.
  Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

- Input Zone 5 (Discharge Pressure Switch) Activation:
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady

- Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 5

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
### B.6 Template 6: Single Hazard - Cross-Zone NAC

#### Table Legend:

- * = shows relationship only, will not activate a release circuit
- X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- Xc = cross-zone output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and c indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).
- Cn = cross-zone inputs where n is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.
- Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

#### Input Zone Types:

- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory

#### Output Circuit Types:

- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Alarm NAC - silenceable, programmed for Cross-Zone coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 3 = Release Stage Pre-Discharge - silenceable, programmed Release Stage Pre-Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

#### Template 6: Single Hazard - Cross-Zone NAC

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>2-WIRE SMOKE</th>
<th>2-WIRE SMOKE</th>
<th>MANUAL RELEASE</th>
<th>ABORT</th>
<th>DISCHARGE PRESSURE</th>
<th>SUPERVISORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>C1</td>
<td>C1</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>#2 ALARM NAC</td>
<td>Xc</td>
<td>Xc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 RELEASE STATE PRE-DISCHARGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td>Xr</td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE DISCHARGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Table Legend:

- * = shows relationship only, will not activate a release circuit
- X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- Xc = cross-zone output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and c indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).
- Cn = cross-zone inputs where n is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.
- Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).
• Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

**Timers**

- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

**FACP Operation**

- Input Zone 1 (2-Wire Smoke) Activation only:
  Output 2 (Alarm NAC) will pulse 1 second on, 1 second off.

- Input Zone 2 (2-Wire Smoke) Activation only:
  Output 2 (Alarm NAC) will pulse 1 second on, 1 second off.

- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 3 (Release Stage Pre-Discharge) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

- Input Zone 4 (Abort Release Switch) Activation only:
  Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

- Input Zone 5 (Discharge Pressure Switch) Activation:
  Output 3 (Release Stage Pre-Discharge) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

- Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition.

- Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together:
  In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer will begin to count down. Output 2 will pulse and Output 3 will turn on steady while the Pre-Discharge Timer is counting down. When the Pre-Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release which will continue until reset. Output 2 will turn on steady when the release begins. Output 4 will turn on steady to indicate a discharge is in progress.

**FACP Relay Operation**

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm Relay

- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay

- Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 6

Notes:
1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
# Template 7: Cross-Zone System - Bell/Horn/Strobe

## Template 7: Cross-Zone System - Bell/Horn/Strobe

### Table Legend:
- \* = shows relationship only, will not activate a release circuit
- X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- \(X_c\) = cross-zone output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and c indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).
- \(C_n\) = cross-zone inputs where \(n\) is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.
- \(X_r\) = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

## Input Zone Types:
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory

## Output Circuit Types:
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Alarm NAC - silenceable, programmed for Cross-Zone Pre-Discharge coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 3 = Release Stage Coded - silenceable, programmed Release Stage Coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>INPUT ZONES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>2-WIRE SMOKE</td>
<td>C1</td>
<td>C1</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>#2 ALARM NAC</td>
<td>2-WIRE SMOKE</td>
<td>Xc</td>
<td>Xc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 RELEASE STAGE CODED</td>
<td>MANUAL RELEASE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE DISCHARGE</td>
<td>ABORT</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td>Xr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DISCHARGE PRESSURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SUPERVISORY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory
Timers
- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

FACP Operation
- Input Zone 1 (2-Wire Smoke) Activation only:
  Output 2 (Alarm NAC) will turn on steady.
- Input Zone 2 (2-Wire Smoke) Activation only:
  Output 2 (Alarm NAC) will turn on steady.
- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 3 (Release Stage Coded) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.
- Input Zone 4 (Abort Release Switch) Activation only:
  Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop.
  Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count
down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge
  Timer reaches 0, the Timer will reset to 10 seconds and hold.
- Input Zone 5 (Discharge Pressure Switch) Activation:
  Output 3 (Release Stage Pre-Discharge) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady
- Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition
- Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together:
  In addition to the individual events that will occur for each Input Zone as detailed above, the
  Pre-Discharge Timer will begin to count down. Output 2 will turn off. Output 3 will pulse 1/2
  second on, 1/2 second off while the Pre-Discharge Timer is counting down. When the Pre-
  Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release which
  will continue until reset. Output 3 & 4 will turn on steady when the release begins.

FACP Relay Operation
The following description of FACP relay operations are in addition to normal system operation.
- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire
  Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm
  Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing
  Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 7

Notes:
1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.8 Template 8: Single Hazard, Single Detector - Bell/Horn/Strobe

Template 8: Single Hazard, Single Detector - Bell/Horn/Strobe

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>INPUT ZONES</th>
<th>2-WIRE SMOKE</th>
<th>2-WIRE SMOKE</th>
<th>MANUAL RELEASE</th>
<th>ABORT</th>
<th>DISCHARGE PRESSURE</th>
<th>SUPERVISORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>#2 ALARM NAC</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 RELEASE STAGE CODED</td>
<td></td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td>Xr</td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE DISCHARGE</td>
<td></td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td>Xr</td>
<td></td>
</tr>
</tbody>
</table>

Table Legend:

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

Input Zone Types:
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Abort Release Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 5 = circuit with type code of Discharge Pressure Switch
- Zone 6 = circuit with type code of Supervisory

Output Circuit Types:
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Alarm NAC - silenceable, programmed for Cross-Zone Discharge coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 3 = Release Stage Coded - non-silenceable, programmed Release Stage Coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 4 = Release Stage Discharge - nonsilenceable, programmed Release Stage Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

Timers
- Pre-Discharge Delay - set for 30 seconds
- Discharge - set for Always On
- Waterflow Delay Timer - set for 90 seconds
• AC Loss Delay Timer - set for 2 hours

FACP Operation

• Input Zone 1 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will turn on steady until discharge, it will then turn off.
  Output 3 (Release Stage Coded) will pulse at 1/2 second on, 1/2 second off until discharge, it will then turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

• Input Zone 2 (2-Wire Smoke) Activation:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Alarm NAC) will turn on steady until discharge, it will then turn off.
  Output 3 (Release Stage Coded) will pulse at 1/2 second on, 1/2 second off until discharge, it will then turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge.

• Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) begins agent release and remains on until reset.
  Output 3 (Release Stage Coded) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

• Input Zone 4 (Abort Release Switch) Activation only:
  Pre-Discharge Timer will continue to count down until it reaches 10 seconds and then stop.
  Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

• Input Zone 5 (Discharge Pressure Switch) Activation:
  Output 3 (Release Stage Coded) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

• Input Zone 6 (Supervisory) Activation:
  No output circuits will be activated. FACP will indicate a supervisory condition

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

• Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 5 (Discharge Pressure Switch) will operate Alarm Relay
• Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
• Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 8

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.9 Template 9: Dual Hazard - Cross-Zone

Template 9: Dual Hazard - Cross-Zone

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>INPUT ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2-WIRE SMOKE</td>
<td></td>
</tr>
<tr>
<td>2-WIRE SMOKE</td>
<td></td>
</tr>
<tr>
<td>MANUAL RELEASE/ABORT SW. COMBO</td>
<td></td>
</tr>
<tr>
<td>2-WIRE SMOKE</td>
<td></td>
</tr>
<tr>
<td>2-WIRE SMOKE</td>
<td></td>
</tr>
<tr>
<td>MANUAL RELEASE/ABORT SW. COMBO</td>
<td></td>
</tr>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>C1</td>
</tr>
<tr>
<td>#2 RELEASE CIRCUIT 2</td>
<td></td>
</tr>
<tr>
<td>#3 HORN NAC</td>
<td>Xc</td>
</tr>
<tr>
<td>#4 HORN NAC</td>
<td></td>
</tr>
</tbody>
</table>

Table Legend:
- \( X \) = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- \( X_c \) = cross-zone output where \( X \) indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and \( c \) indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).
- \( C_n \) = cross-zone inputs where \( n \) is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.

Input Zone Types:
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release/Abort Switch Combination - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 4 = circuit with type code of 2-wire smoke
- Zone 5 = circuit with type code of 2-wire smoke
- Zone 6 = circuit with type code Manual Release/Abort Switch Combination - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)

Output Circuit Types:
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Release Circuit 2 - Supervised for shorts
- Output 3 = Horn NAC - silenceable, programmed Cross-Zone coding operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 4 = Horn NAC - silenceable, programmed Cross-Zone coding operation for Release Circuit 2 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

Timers
- Pre-Discharge Delay: Release 1 - set for 30 seconds; Release 2 - set for 30 seconds
- Discharge: Release 1 - set for Always On; Release 2 - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours
FACP Operation

- Input Zone 1 (2-Wire Smoke) Activation only:
  Output 3 (Horn NAC) will pulse 1 second on, 1 second off.
- Input Zone 2 (2-Wire Smoke) Activation only:
  Output 3 (Horn NAC) will pulse 1 second on, 1 second off.
- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 3 (Horn NAC) will turn on steady.
- Input Zone 3 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 1 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.
- Input Zone 4 (2-Wire Smoke) Activation:
  Output 4 (Horn NAC) will pulse 1 second on, 1 second off.
- Input Zone 5 (2-Wire Smoke) Activation:
  Output 4 (Horn NAC) will pulse 1 second on, 1 second off.
- Input Zone 6 (Manual Release) Activation only:
  Output 2 (Release Circuit 2) agent release remains on until reset.
  Output 4 (Horn NAC) will turn on steady.
- Input Zone 6 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 2 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.
- Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together:
  In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer for Release Circuit 1 will begin to count down. Output 3 will pulse 1/2 second on, 1/2 second off while the Pre-Discharge Timer is counting down. When the Pre-Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release which will continue until reset. Output 3 will turn on steady when the release begins.
- Input Zone 4 (2-Wire Smoke) and Input Zone 5 (2-Wire Smoke) Activation together:
  In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer for Release Circuit 2 will begin to count down. Output 4 will pulse 1/2 second on, 1/2 second off while the Pre-Discharge Timer is counting down. When the Pre-Discharge Timer reaches 0, Output 2 (Release Circuit 2) will begin the agent release which will continue until reset. Output 4 will turn on steady when the release begins.

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 4 (2-Wire Smoke) or Zone 5 (2-Wire Smoke) or Zone 6 (Manual Release) will operate Alarm Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 9

Notes:
1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.10 Template 10: Dual Hazard - Single Detector

### Table Legend:

- **X** = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).
- **Xr** = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

### Input Zone Types:

- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release/Abort Switch Combination - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 4 = circuit with type code of 2-wire smoke
- Zone 5 = circuit with type code of 2-wire smoke
- Zone 6 = circuit with type code Manual Release/Abort Switch Combination - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)

### Output Circuit Types:

- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Release Circuit 2 - Supervised for shorts
- Output 3 = Release Stage Coded - silenceable, programmed Release Stage Coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

### Timers

- Pre-Discharge Delay: Release 1 - set for 30 seconds; Release 2 - set for 30 seconds
- Discharge: Release 1 - set for Always On; Release 2 - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

---

<table>
<thead>
<tr>
<th>INPUT ZONES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td><strong>OUTPUT CIRCUITS</strong></td>
<td><strong>2-WIRE SMOKE</strong></td>
<td><strong>2-WIRE SMOKE</strong></td>
<td><strong>MANUAL RELEASE/ABORT SW. COMBO</strong></td>
<td><strong>2-WIRE SMOKE</strong></td>
<td><strong>2-WIRE SMOKE</strong></td>
<td><strong>MANUAL RELEASE/ABORT SW. COMBO</strong></td>
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<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>X</td>
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<tr>
<td>#2 RELEASE CIRCUIT 2</td>
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<td></td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
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<tr>
<td>#3 RELEASE STAGE CODED</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
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<tr>
<td>#4 RELEASE STAGE CODED</td>
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<td></td>
<td></td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
</tr>
</tbody>
</table>
FACP Operation

- Input Zone 1 (2-Wire Smoke) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 3 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge, then on steady.

- Input Zone 2 (2-Wire Smoke) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 3 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge, then on steady.

- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 3 (Release Stage Coded) will turn on steady.

- Input Zone 3 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 1 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

- Input Zone 4 (2-Wire Smoke) Activation only:
  Output 2 (Release Circuit 2) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 4 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge, then on steady.

- Input Zone 5 (2-Wire Smoke) Activation only:
  Output 2 (Release Circuit 2) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 4 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge, then on steady.

- Input Zone 6 (Manual Release) Activation only:
  Output 2 (Release Circuit 2) agent release remains on until reset.
  Output 4 (Release Stage Coded) will turn on steady.

- Input Zone 6 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 2 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 4 (2-Wire Smoke) or Zone 5 (2-Wire Smoke) or Zone 6 (Manual Release) will operate Alarm Relay

- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay

- Supervisory (Tracking) - the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 10

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.11 Template 11: Agent/Waterflow - Cross-Zone

Table Legend:

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xc = cross-zone output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and c indicates that the output circuit will indicate when one or more inputs of a cross-zoned group have been activated (refer to Cross Zone in “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61).

Cr = cross-zone inputs where n is the number of the Release Circuit. All inputs with the same Release Circuit number must be active at the same time to turn on the corresponding Release output circuit.

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

Input Zone Types:

• Zone 1 = circuit with type code of 2-wire smoke
• Zone 2 = circuit with type code of 2-wire smoke
• Zone 3 = circuit with type code Manual Release/Abort Switch Combo - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
• Zone 4 = circuit with type code of Discharge Pressure Switch
• Zone 5 = circuit with type code of Waterflow
• Zone 6 = circuit with type code of Supervisory

Output Circuit Types:

• Output 1 = Release Circuit 1 - Supervised for shorts
• Output 2 = Release Circuit 2 - Supervised for shorts
• Output 3 = Alarm NAC - silenceable, programmed for Cross-Zone Pre-Discharge coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
• Output 4 = Release Stage Coded - nonsilenceable, programmed Release Stage Coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
**ANN-BUS**
- Enabled = Yes
- Address 1: ANN-RLY

**Timers**
- Pre-Discharge Delay: Release 1 - set for 30 seconds; Release 2 - set for 0 seconds
- Discharge: Release 1 - set for Always On; Release 2 - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

**FACP Operation**
- Input Zone 1 (2-Wire Smoke) Activation only:
  Output 3 (Alarm NAC) will turn on steady.
- Input Zone 2 (2-Wire Smoke) Activation only:
  Output 3 (Alarm NAC) will turn on steady.
- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 2 (Release Circuit 2) agent release remains on until reset.
  Output 4 (Release Stage Coded) will turn on steady.
- Input Zone 3 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 1 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.
- Input Zone 4 (Discharge Pressure Switch) Activation only:
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will turn on steady.
- Input Zone 5 (Waterflow) Activation only (following 90 second Waterflow Delay):
  Output 3 (Alarm NAC) will turn on steady.
- Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition.
- Input Zone 1 (2-Wire Smoke) and Input Zone 2 (2-Wire Smoke) Activation together:
  In addition to the individual events that will occur for each Input Zone as detailed above, the Pre-Discharge Timer will begin to count down. Output (Release Circuit 2) will activate. Output 3 will turn off. Output 4 will pulse 1/2 second on, 1/2 second off while the Pre-Discharge Timer for Release Circuit 1 is counting down. When the Pre-Discharge Timer reaches 0, Output 1 (Release Circuit 1) will begin the agent release which will continue until reset. Output 4 will turn on steady when discharge for Release Circuit 1 begins.

**FACP Relay Operation**
The following description of FACP relay operations are in addition to normal system operation.
- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 4 (Discharge Pressure Switch) or Zone 5 (Waterflow) will operate Alarm Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 11

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.12 Template 12: Agent/Waterflow - Single Detector

Template 12: Agent/Waterflow - Single Detector

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 RELEASE CIRCUIT 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 ALARM NAC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>#4 RELEASE STAGE CODED</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table Legend:

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

Input Zone Types:
- Zone 1 = circuit with type code of 2-wire smoke
- Zone 2 = circuit with type code of 2-wire smoke
- Zone 3 = circuit with type code Manual Release/Abort Switch Combo - activation of the Manual Release will cause an immediate agent release; Abort Switch - programmed for UL Abort Type operation (refer to “Abort Type” on page 65)
- Zone 4 = circuit with type code of Discharge Pressure Switch
- Zone 5 = circuit with type code of Waterflow
- Zone 6 = circuit with type code of Supervisory

Output Circuit Types:
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Release Circuit 2 - Supervised for shorts
- Output 3 = Alarm NAC - silenceable, steady on
- Output 4 = Release Stage Coded - nonsilenceable, programmed Release Stage Coded operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

ANN-BUS
- Enabled = Yes
- Address 1: ANN-RLY

Timers
- Pre-Discharge Delay: Release 1 - set for 30 seconds; Release 2 - set for 0 seconds
- Discharge: Release 1 - set for Always On; Release 2 - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours
FACP Operation

• Input Zone 1 (2-Wire Smoke) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Release Circuit 2) will perform an agent release, and remain on until panel reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge of Release Circuit 1, then on steady.

• Input Zone 2 (2-Wire Smoke) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Release Circuit 2) will perform an agent release, and remain on until panel reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will pulse 1/2 second on, 1/2 second off until discharge of Release Circuit 1, then on steady.

• Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) agent release remains on until reset.
  Output 2 (Release Circuit 2) agent release remains on until reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will turn on steady.

• Input Zone 3 (Abort Release Switch) Activation only:
  Pre-Discharge Timer for Release Circuit 1 will continue to count down until it reaches 10 seconds and then stop. Releasing the Abort Release Switch will allow the Pre-Discharge Timer to continue its count down from 10 second. If the Abort Release Switch is again activated before the Pre-Discharge Timer reaches 0, the Timer will reset to 10 seconds and hold.

• Input Zone 4 (Discharge Pressure Switch) Activation only:
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will turn on steady

• Input Zone 5 (Waterflow) Activation only (following 90 second Waterflow Delay):
  Output 3 (Alarm NAC) will turn on steady.

• Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

• Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Smoke) or Zone 2 (2-Wire Smoke) or Zone 3 (Manual Release) or Zone 4 (Discharge Pressure Switch) or Zone 5 (Waterflow) will operate Alarm Relay

• Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay

• Supervisory (Tracking) - activation Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 12

Notes:

1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
B.13 Template 13: HP CO2 Single Detector

Table Legend:

* = shows relationship only, will not activate a release circuit

X = direct correlation between Input Zone and Output Circuit (input zone activation will turn on corresponding output circuit after any applicable delays).

Xr = release stage output where X indicates a direct correlation between Input Zone and Output Circuit (input zone activation will activate the corresponding output circuit) and r indicates that the output circuit will indicate one of three stages of a releasing operation by its pulse rate (refer to “Release Stage/NAC Operation” on page 85).

**Input Zone Types:**
- Zone 1 = circuit with type code of 2-wire heat
- Zone 2 = circuit with type code of 2-wire heat
- Zone 3 = circuit with type code Manual Release - activation will cause an immediate agent release
- Zone 4 = circuit with type code of Discharge Pressure Switch
- Zone 5 = circuit with type code of Supervisory
- Zone 6 = circuit with type code of Supervisory

**Output Circuit Types:**
- Output 1 = Release Circuit 1 - Supervised for shorts
- Output 2 = Release Circuit 2 - Supervised for shorts
- Output 3 = Alarm NAC - silenceable, programmed for Cross-Zone operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)
- Output 4 = Release Stage Discharge - silenceable, programmed Release Stage Discharge operation for Release Circuit 1 (refer to “Cross-Zone for Release Circuit 1 or Release Circuit 2:” on page 61)

**Timers**
- Pre-Discharge Delay: Release 1 - set for 30 seconds; Release 2 - set for 30 seconds
- Discharge: Release 1 - set for Always On; Release 2 - set for Always On
- Waterflow Delay Timer - set for 90 seconds
- AC Loss Delay Timer - set for 2 hours

<table>
<thead>
<tr>
<th>OUTPUT CIRCUITS</th>
<th>1-WIRE HEAT</th>
<th>2-WIRE HEAT</th>
<th>MANUAL RELEASE</th>
<th>DISCHARGE PRESSURE</th>
<th>SUPERVISORY</th>
<th>SUPERVISORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 RELEASE CIRCUIT 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 RELEASE CIRCUIT 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 ALARM NAC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 RELEASE STAGE DISCHARGE</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td>Xr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FACP Operation

- Input Zone 1 (2-Wire Heat) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Release Circuit 2) will perform an agent release following a 30 second Pre-Discharge delay, and remains on until panel reset.
  Output 3 (Alarm NAC) will pulse 1 second on, 1 second off until discharge of Release Circuit 1, then turns on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge of Release Circuit 1.

- Input Zone 2 (2-Wire Heat) Activation only:
  Output 1 (Release Circuit 1) will perform an agent release following a 30 second Pre-Discharge delay and remains on until panel reset.
  Output 2 (Release Circuit 2) will perform an agent release following a 30 second Pre-Discharge delay, and remains on until panel reset.
  Output 3 (Alarm NAC) will pulse 1 second on, 1 second off until discharge of Release Circuit 1, then turns on steady.
  Output 4 (Release Stage Discharge) will turn on steady upon discharge of Release Circuit 1.

- Input Zone 3 (Manual Release) Activation only:
  Output 1 (Release Circuit 1) begins agent release and remains on until panel reset.
  Output 2 (Release Circuit 2) begins agent release and remains on until panel reset.
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Coded) will turn on steady.

- Input Zone 4 (Discharge Pressure Switch) Activation only:
  Output 3 (Alarm NAC) will turn on steady.
  Output 4 (Release Stage Discharge) will turn on steady.

- Input Zone 5 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition.

- Input Zone 6 (Supervisory) Activation only:
  No output circuits will be activated. FACP will indicate a supervisory condition.

FACP Relay Operation

The following description of FACP relay operations are in addition to normal system operation.

- Alarm Relay (Latching) - activation of Input Zone 1 (2-Wire Heat) or Zone 2 (2-Wire Heat) or Zone 3 (Manual Release) or Zone 4 (Discharge Pressure Switch) will operate Alarm Relay
- Trouble Relay (Tracking) - any system trouble will activate the Trouble Relay
- Supervisory (Tracking) - activation of Input Zone 5 (Supervisory) or Input Zone 6 (Supervisory), the disabling of Releasing Circuit or any other system supervisory will operate the Supervisory Relay
Device Installation Example for Template 13

Notes:
1. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ½ watt (PN: 71252).
2. All devices are connected as Class B circuits. For details on connecting as Class A circuits, refer to “CAC-5X Class A Converter Module” on page 31.
Appendix C: NFPA Standard-Specific Requirements

This panel has been designed for use in commercial, industrial and institutional applications and meets the requirements for service under the National Fire Protection Association (NFPA) Standards outlined in this Appendix. The minimum system components required for compliance with the appropriate NFPA standard are listed below:

**MRP-2002 Control Panel**
Contains the main control board, cabinet (backbox and door) and power supply.

**Batteries**
Refer to “Power Supply Calculations” on page 91, for Standby Power Requirements.

**Initiating Devices**
Connected to one of the control panel's Initiating Device Circuits.

**Notification Appliances**
Connected to one of the control panel's Output Circuits.

**Releasing Devices**
Connected to one of the control panel's Output Circuits.

The following additional equipment is needed for compliance with the NFPA 72 standards listed below:

**NFPA 72 Central Station Service (Protected Premises Unit) or Remote Station Service**
- 411UD may be installed as illustrated in Figure C.1, “FACP Connection to 411UD,” on page 141
- OR
- 4XTMF Transmitter Module for connection to the RS82 Remote Station Receiver. See Figure C.3 on page 144, for installation instructions for this unit

**NFPA 72 Auxiliary Fire Alarm System**
4XTMF Transmitter Module for connection to a compatible listed Local Energy Municipal Box. This unit must be installed as illustrated in the section titled “4XTMF Municipal Box Transmitter Option Module” on page 33 and as outlined in Figure C.2, “Municipal Box Connected to 4XTMF Transmitter Module,” on page 143.

**NFPA 72 Proprietary Fire Alarm System**
FACP Alarm, Trouble and Supervisory contacts connected to Transmitter(s). See Figure C.4, “Proprietary Protective Signaling System,” on page 145, for installation instructions for this unit.

The relay contacts of this control panel may be used to trip any dialer that is UL-listed for Central Station/Remote Station services. The illustrations in this appendix provide examples of possible system configurations.
The following figure illustrates an example of Central Station/Remote Station Reporting using a 411UD. The relay contacts from the MRP-2002 may be used to trip any dialer UL-listed for Central Station/Remote Station Reporting Services.

Figure C.1  FACP Connection to 411UD
Notes:

1. Reference the 411UD Manual for additional information.
2. All connections between the MRP-2002 and the 411UD must be in conduit, less than 20 ft. (610 cm) in length in the same room.
3. Any zone of the 411UD can be wired to function as alarm, trouble or supervisory; the 411UD must be programmed accordingly. In this example, Channel/Zone 1 is wired to the control panel’s alarm relay, Channel 2/Zone 2 is wired to the control panel’s trouble relay and Channel 3/Zone 3 is wired to the control panel’s supervisory relay.
4. Nonresettable 24 VDC power is supplied to the 411UD via TB9 terminals configured for nonresettable power on the FACP. Jumper J4 on the 411UD must be removed for 24 VDC power.
5. End-of-Line resistors must terminate all 411UD circuits, including unused circuits.
6. Program the 411UD for slave operation.
7. The MRP-2002 must be programmed for AC Loss Reporting Delay. This prevents the immediate transmission of a trouble on the loss of AC power.
8. A (-)VDC from the 411UD Trouble Contacts will activate the Trouble Input J6 on the FACP when the 411UD goes into DACT Trouble (the 411UD Trouble Contact is programmed as DACT Trouble).

<table>
<thead>
<tr>
<th>411UD</th>
<th>FACP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td></td>
</tr>
<tr>
<td>TB2-1</td>
<td>TB8-1</td>
</tr>
<tr>
<td>TB2-2</td>
<td>TB8-3</td>
</tr>
<tr>
<td>Trouble</td>
<td></td>
</tr>
<tr>
<td>TB2-3</td>
<td>TB8-4</td>
</tr>
<tr>
<td>TB2-4</td>
<td>TB8-6</td>
</tr>
<tr>
<td>Supervisory</td>
<td></td>
</tr>
<tr>
<td>TB2-5</td>
<td>TB8-7</td>
</tr>
<tr>
<td>TB2-6</td>
<td>TB8-9</td>
</tr>
</tbody>
</table>

Table C.1 411-UD Connections to FACP
C.1 NFPA 72 Auxiliary Fire Alarm System

All connections are power-limited and supervised. This application is not suitable for separate transmission of sprinkler supervisory or trouble conditions.

Notes:

1. 3 ohms maximum loop resistance allowed for wiring from control panel to Municipal Box.
4. Refer to “4XTMF Municipal Box Transmitter Option Module” on page 33 for detailed information.

Figure C.2 Municipal Box Connected to 4XTMF Transmitter Module
NFPA 72 Remote Station Protective Signaling System

Notes:

2. Refer to “4XTMF Municipal Box Transmitter Option Module” on page 33 for detailed information.

Figure C.3 Remote Station Connection Using 4XTMF Module

RS82 Remote Station Receiver UL listed.
Refer to Instruction Manual for Remote Station Receiver Model RS82.
NFPA 72 Proprietary Protective Signaling Systems

Notes:
1. Connection between the FACP and the transmitter are supervised by the transmitter.
2. This FACP/Transmitter arrangement can be employed for NFPA 72 Proprietary Protective Signaling System.
3. Potter Electric Model EFT-C has not been tested for UL 864 9th Edition and is for use in retrofit applications only.

Figure C.4 Proprietary Protective Signaling System
C.2 Central Station/Remote Station Transmitter: Connection to FACP Dry Contacts

The dry contacts of the FACP programmable relays can be used to trip a UL-864 Listed Central Station/Remote Station Transmitter. The FACP contacts must be supervised by the Central Station/Remote Station Transmitter module using End-of-Line Resistors (ELRs) with a value determined by the Transmitter manufacturer. Power is also provided by the Central Station/Remote Station Transmitter manufacturer. Refer to the Central Station/Remote Station Transmitter manufacturer’s manual for details.

Figure C.5  FACP Dry Contacts Connection to Central Station/Remote Station Transmitter
Appendix D: FACP with Keltron

The following figure illustrates the connections between the FACP and Keltron Receiver/Transmitter.

⚠️ IMPORTANT! All connections between the FACP and Keltron modules must be made within 20 feet and enclosed within conduit or equivalently protected against mechanical injury.

---

CAUTION: OBSERVE CORRECT TERMINAL LOCATIONS
FOR REASONS OF WIRING DIAGRAM CLARITY, TERMINAL DESIGNATIONS OF KELTRON MODULES ARE NOT SHOWN IN ACTUAL ORDER. FOLLOW KELTRON MANUAL AND MODULE MARKINGS FOR EXACT TERMINAL LOCATIONS TO PREVENT SEVERE MODULE DAMAGE.

---

Keltron 95M3158 TTM-RPS

1. Terminals 7 and 8: Remote station alarm/trouble inputs
2. Terminals 9 and 10: Sprinkler supervisory input

---

4XTMF Module

Note: Cut TBL jumper on 4XTMF module to send alarm/trouble signal from the same pair or terminals.

---

Fire Alarm Control Panel

(terminal blocks are not shown in their actual positions in order to clarify wiring connections)
Appendix E: Testing & Maintenance

E.1 Testing

E.1.1 Inspection

Once installation has been completed, a careful visual inspection should be made before applying power to the system. Check the actual wiring hookup with the wiring diagrams. Insure that no pieces of wire have fallen into the circuitry. Check for missing or damaged parts.

E.1.2 Alarm Test

An initial alarm test should be conducted following installation to determine that all parts of the system are functioning properly. The panels should remain powered for 24 to 36 hours prior to connecting the releasing solenoids. This precaution will avoid false activation of the suppression system in case of faulty or improperly placed detectors.

To perform an alarm test on the control panel, proceed with the following steps:

1. Disconnect AC power and battery power.
2. Disconnect the installed solenoid valve circuit leads and connect spare solenoid valves or connect an End-of-Line device to serve as a dummy load.
3. Reconnect AC and battery power.
4. Initiate a first zone alarm condition by introducing smoke into one of the Zone 1 detectors. This should cause the first zone alarm condition.
   - The red Fire Alarm indicator will illuminate.
   - The LCD display will indicate an alarm condition for zone 1.
   - The control panel piezo will sound.
   - The Alarm relay will energize.
   - The devices connected to the Indicating Circuit(s) programmed to activate on Zone 1 alarm will turn on.
5. Repeat step 4 for each input zone.
6. When testing has been completed, remove AC and battery power, reconnect the solenoid valve circuits removed in step 2, reconnect AC and battery power and ensure that the control panel is in normal standby condition.

E.1.3 Detector Testing

Detectors must be tested after installation and following maintenance.

Important: Before testing, notify the proper authorities that maintenance is being performed and the system will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent any unwanted alarms. Disconnect the installed solenoid valve circuit leads and connect spare solenoid valves or connect an End-of-Line device to serve as a dummy load to prevent unwanted agent release.

Ensure proper wiring and power is applied. After power-up, allow 80 seconds for the detectors to stabilize before testing. Refer to System Sensor’s i3 Installation and Maintenance Instructions document I56-1800-00 for device specifications and testing procedures.
Test $i^2$ Series detectors as follows:

**Test Switch**

1. An opening for the recessed test switch is located on the detector housing.
2. Insert a small screwdriver or allen wrench (0.18” max.) into the test switch opening; push and hold.
3. If the detector is within the listed sensitivity limits, the detector’s red LED should light within five seconds.

**Smoke Entry Test**

Hold a smoldering punk stick or cotton wick at the side of the detector and gently blow the smoke through the detector until it alarms.

---

**NOTE:** For the above tests, the detector will reset only after the power source has been momentarily interrupted.

If a detector fails any of the above test methods, its wiring should be checked and it should be cleaned as outlined in the Maintenance section of the System Sensor Document. If the detector still fails, it should be replaced.

Notify the proper authorities when the system is back in service.

**E.2 Maintenance**

A regular schedule of inspection, testing and maintenance is vital to ensure proper and reliable operation of the control panel. The procedures should be performed as required by the local authority having jurisdiction. Refer to NFPA documentation for further details.
Appendix F: Wire Requirements

Connecting external system accessories to the main circuits must be carefully considered to ensure proper operation. It is important to use the correct type of wire, gauge and run length for each circuit. Reference the chart below to specify wire requirements and limitations for each circuit.

<table>
<thead>
<tr>
<th>CIRCUIT CONNECTIONS</th>
<th>WIRE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Circuit Type</strong></td>
<td><strong>Circuit Function</strong></td>
</tr>
<tr>
<td>Initiating Device Circuit (power-limited)</td>
<td>Connects to Initiating Devices</td>
</tr>
<tr>
<td>ANN-BUS (EIA-485) power-limited</td>
<td>Communication for ANN-BUS annunciator and relay modules</td>
</tr>
<tr>
<td>ANN-BUS Power</td>
<td>Power for ANN-BUS annunciators</td>
</tr>
<tr>
<td>24 VDC Regulated, resettable, nonresettable</td>
<td>Power for accessories and 4-wire devices</td>
</tr>
<tr>
<td>Auxiliary Trouble Input</td>
<td>Open Collector trouble input for CHG-75, CHG-120F, etc.</td>
</tr>
<tr>
<td>NAC/Solenoid Outputs</td>
<td>Connects to NAC devices or Release devices</td>
</tr>
</tbody>
</table>

Table F.1  FACP Wire Specifications
F.1 NAC Wiring

The following table lists NAC wiring requirements for the FACP.

<table>
<thead>
<tr>
<th>NAC Load (Amps)</th>
<th>Max. allowable total loop resistance (ohms)</th>
<th>CLASS-B</th>
<th>Max. allowable wire pair length (feet)</th>
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Table F.2 NAC Wiring Requirements for FACP

Calculations are based on Direct-Current Resistance data for uncoated copper wire, per National Electrical Code (2005 Edition) Table 8, Conductor Properties.
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NORMAL - Only AC POWER is illuminated green. All other indicators are off. LCD display will read SYSTEM ALL NORMAL.

PANEL KEY - The key to open the panel can be found at the following location:

WHEN AUDIBLE DEVICES ARE SOUNDING -
Discharge has occurred if DISCHARGE Indicator is on.
Discharge timer has timed out if the DISCHARGE Indicator is flashing.

FOR AN ALARM

1. Evacuate the protected area
2. Notify the monitoring service and/or the Fire Department immediately. Tell them briefly what happened and what your current status is.

   Phones: ________________________________
            Fire Department                  Monitoring Service

3. If the Fire Department is responding, be prepared to provide directions to arriving firefighters.

FOR TROUBLE ONLY

1. Notify the monitoring service and/or Fire department if this panel is connected to either one, and tell them what is happening.
2. Silence audible devices by unlocking and opening the panel and pressing the ACKNOWLEDGE/STEP button. The TROUBLE indicator will remain illuminated yellow. Contact authorized service personnel immediately! (See Below).

   NOTE: Notification Appliance Circuits may be programmed as nonsilenceable. Signal Silence Inhibit, if enabled, will prevent silencing of NACs for one minute after an alarm (see manual).

   Manual activation (Fire Drill or otherwise)
   Notification Appliance Circuits (NACs) can be activated by pressing and holding the DRILL button for at least two seconds.
   NOTE: You may want to disconnect the municipal box by sliding the DISCONNECT switch, located on the 4XTMF module, to its disconnect position (to the right). If a DACT is connected, notify the monitoring service before conducting any fire drills or tests.

   Alarm Silencing
   Notification Appliance Circuits may be silenced by pressing the ALARM SILENCE button. ALARM SILENCED will turn on yellow. Subsequent alarms will reactivate circuits. Press the RESET button to clear the "silenced" condition.
   NOTE: Notification Appliance Circuits may be programmed as nonsilenceable. Also, Signal Silence Inhibit, if enabled, will prevent silencing of NACs for one minute after an alarm (see manual).

To test the indicators, LCD display and piezo
Press and release the RESET button and check all indicators/LEDs. Every indicator/LED should be on, LCD shows all pixels on, piezo sounder beeps.

For more information, refer to the MRP-2002 Series Manual, Document #53049. It is kept in the following location:

   __________________________________________
   THIS SHEET SHALL BE FRAMED ADJACENT TO THE CONTROL PANEL

Cut along dotted line.
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