FIRE·LITE ALARMS
by Honeywell

PRE-ACTION/DELUGE CONTROL PANEL
MRP-2001
MRP-2001E
MRP-2001C
Instruction Manual

Document 53040
1/26/2017   Rev: H

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 fire 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 a 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 alarm 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 photoelectronic 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 monthly or 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.

Limit-D-1-2013

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 32°C ± 2°C (90°F ± 3°F). 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.

Precau-D1-9-2005

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.

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 radio-oelectriques 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.

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.

Documentation Feedback

Your feedback helps us keep our documentation up-to-date and accurate. If you have any comments or suggestions about our online Help or printed manuals, you can email us.

Please include the following information:

- •Product name and version number (if applicable)
- •Printed manual or online Help
- •Topic Title (for online Help)
- •Page number (for printed manual)
- •Brief description of content you think should be improved or corrected
- •Your suggestion for how to correct/improve documentation

Send email messages to:

FireSystems.TechPubs@honeywell.com

Please note this email address is for documentation feedback only. If you have any technical issues, please contact Technical Services.

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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

• 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 13 Installation of Sprinkler Systems
NFPA 15 Water Spray Fixed Systems
NFPA 16 Deluge Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 72 National Fire Alarm Code for Local Fire Alarm Systems and Remote Station Fire Alarm Systems (requires an optional Remote Station Output Module)

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	Document #15384
411UD Manual	Document #50759
411UDAC Manual	Document #51073
CHG-75 Battery Charger Manual	Document #51315
CHG-120F Battery Charger Manual	Document #50888
ANN-80 Product Installation Doc.	Document #52749
ANN-(R)LED Product Installation Doc.	Document #53032
ANN-I/O Product Installation Doc.	Document #151416
ANN-RLY Product Installation Doc.	Document #53033
ANN-S/PG Product Installation Doc.	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).

Main Circuit Board

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Style D (Class A) IDC

Style Z (Class A) NAC

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

CAC-5X
Class A Converter Module

TB1
TB4
TB6
ZONE ZONE ZONE ZONE ZONE
1/6 2 3 4 5
ZONE ZONE ZONE ZONE
A A
+ -
1 1

J2

TB5/
TB7
OUT1/3 OUT2/4
A A A A
+ - + -
1 1 1 1

TB2
OUT OUT

TB5
OUT1 OUT2
B B
2 2
+ -
2 2

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

3 Programmable Relays

Nonsupervised relay contacts
Contact Ratings
2.0 amps @ 30 VDC (resistive)
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)

Alarm* Trouble* Supervisory*

TB8
NO NC C NO NC C NO NC C
RELAY 1 RELAY 2 RELAY 3

Cut this jumper to enable Supervisory Relay when 4XTMF module is installed

JP24
J4
4XTM OPT BD
J5

SW1
Push switch down to upgrade software

JP30
J6
Auxiliary Trouble Input

Kiss-off LED

Cut this jumper to supervise the 4XTMF module when installed (see J4 & J5)

J13
ANN-SEC
option card connector

TB3
- + ANN-BUS
GND PWR A B

Normally Open Waterflow Devices or Pressure Switches

TB6
ZONE 6
B B
- +
6 6

Input IDC Waterflow Circuit #6

J7

Output Circuit #4

TB7
OUT3 OUT4
B B
- +
3 3

Output Circuit #3 NAC

Class A Converter Module

Remove jumper JP43 to disable Ground Fault Detection circuit (only with approval of AHJ)

JP43

Normally Open Tamper or Pressure Switches

manual release

Input IDC Supervisory Circuit #5

TB4
ZONE ZONE ZONE ZONE
2 3 4 5
B B
- +
5 5

heat detector

J2

FIRE ALARM
TROUBLE
AC POWER
ALARM SILENCED
SUPERVISORY
ALARM SILENCED
RESET
ENTER
ACK/STEP
DRILL HOLD 2 SEC
1ST EVENT
CLEAR
ESC
MODE
1 2ABC 3DEF
4GHI 5JKL 6MNO
7PRS 8TUV 9WXY
*QZ_ 0RECALL #_/.

J3

Input IDC Circuit #1

smoke detector
pull station

TB4
ZONE ZONE
1 2
B B
- +
1 1

Output Circuit #2 Releasing

TB5
OUT1 OUT2
B B B B
- + - +
1 1 2 2

polarized bell
polarized strobe
polarized horn

Output Circuit #1 NAC

JP31
3
2
1
RST AUX PWR
RST/NONRS AUXPWR

TB9

J12

J15

Battery
24 VDC, supervised, nonpower-limited
26 Amp Hour maximum

Power Supply Connector

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, Nonpower-Limited, Class 1) 3.0 amp max. per circuit. (See Style Z illustrated near right edge of board.)
4.7Kohm, ½ watt End-of-Line Resistor PN 71252
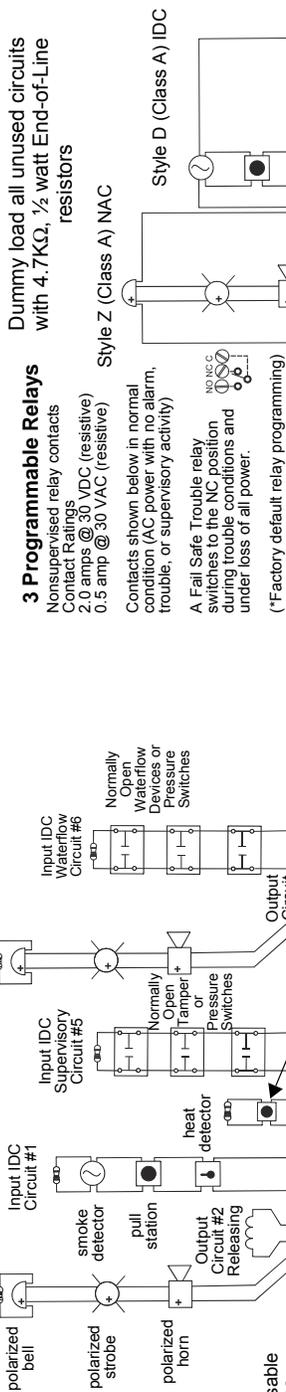
Important! Removing Ground Fault Disable Jumper JP43 voids UL/NFPA Style/Class indentifications for circuits. Remove jumper JP43 only with the approval of the local AHJ (Authority Having Jurisdiction).

Special Application
DC Power Outputs 24 VDC)

Nonsupervised, power-limited circuits
Supervise with a power supervision relay EOLR-1

Resettable Power - 24 VDC filtered, power-limited, Class 2 (0.5 amp maximum) to smoke detectors (IDC) Supervise with power supervision relay EOLR-1.

Nonresettable or Resettable Power Jumper selectable by JP31, 24 VDC filtered, power-limited, Class 2 (0.5 amp maximum). Supervise with power supervision relay EOLR-1. Nonresettable Power suitable for powering smoke detectors.

Configure TB9, Terminals 1 & 2 as Resettable or Nonresettable Power.
• Resettable Power - jumper JP31 pins 2 & 3
• Nonresettable Power - jumper JP31 pins 1 & 2 (as shown)

For more specific UL wiring information, refer to page 28.

Basic System Connections

ANN-80(C)
LCD Text Annunciator/Indicator
Doc. #52749

ANN-I/O
LED Driver
Doc. #151416

ANN-S/PG
Printer Driver
Doc. #151417

ANN-BUS - TB3

ANN-RLY
10 Form-C Relay Card
Doc. #53033

ANN-(R)LED
LED Display
Doc. #53032

FIRE ALARM CONTROL PANEL

FIRE ALARM CONTROL PANEL

J4 & J5

4XTMF
Reverse Polarity Module

Battery Connector - J12

CHG-120F Charger
Doc. #50888

CHG-75 Charger
Doc. # 51315

rp-peri.wmf

Section 1: Product Description

The MRP-2001 is a six zone FACP for single and dual hazard deluge and preaction applications. The FACP provides reliable fire detection, signaling and protection for commercial, industrial and institutional buildings requiring water-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 45º F (7ºC) (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 nonresettable 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-2001C (Canada) is a ULC approved Canadian version of the FACP which offers the same features as the MRP-2001 but is supplied standard with a dress panel and one built-in ANN-LED annunciator.

The MRP-2001E offers the same features as the MRP-2001 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 Silenced
  - ✓ System Reset/Lamp Test

- ✓ Drill
- • Indicators
  - ✓ Fire Alarm
  - ✓ Supervisory
  - ✓ Trouble
  - ✓ AC Power
  - ✓ Alarm Silenced
  - ✓ Discharge
- • 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 sprinkler standards NFPA 13, 15 and 16
- • Disable/Enable control per input zone and output zone
- • Extensive transient protection
- • Dual hazard operation
- • Adjustable waterflow discharge timer and two soak timers
- • Cross-zone (double-interlock) capability
- • Pre-programmed and custom application templates
- • 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 secondary ANN-BUS

1.2 Specifications

AC Power

MRP-2001/C: 120 VAC, 60 Hz, 3.66 amps
MRP-2001E: 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 TB 4
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 "Wire Requirements" on page 121 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 Resettable or Nonresettable Power - TB9

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

- ✓ Jumper pins 1 & 2 on JP31 for nonresettable power
- ✓ Jumper pins 2 & 3 on JP31 for resettable 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: 500 mA
Power-limited circuit

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

Operating voltage: Nominal 24 VDC
Maximum Available Current: 500 mA
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.
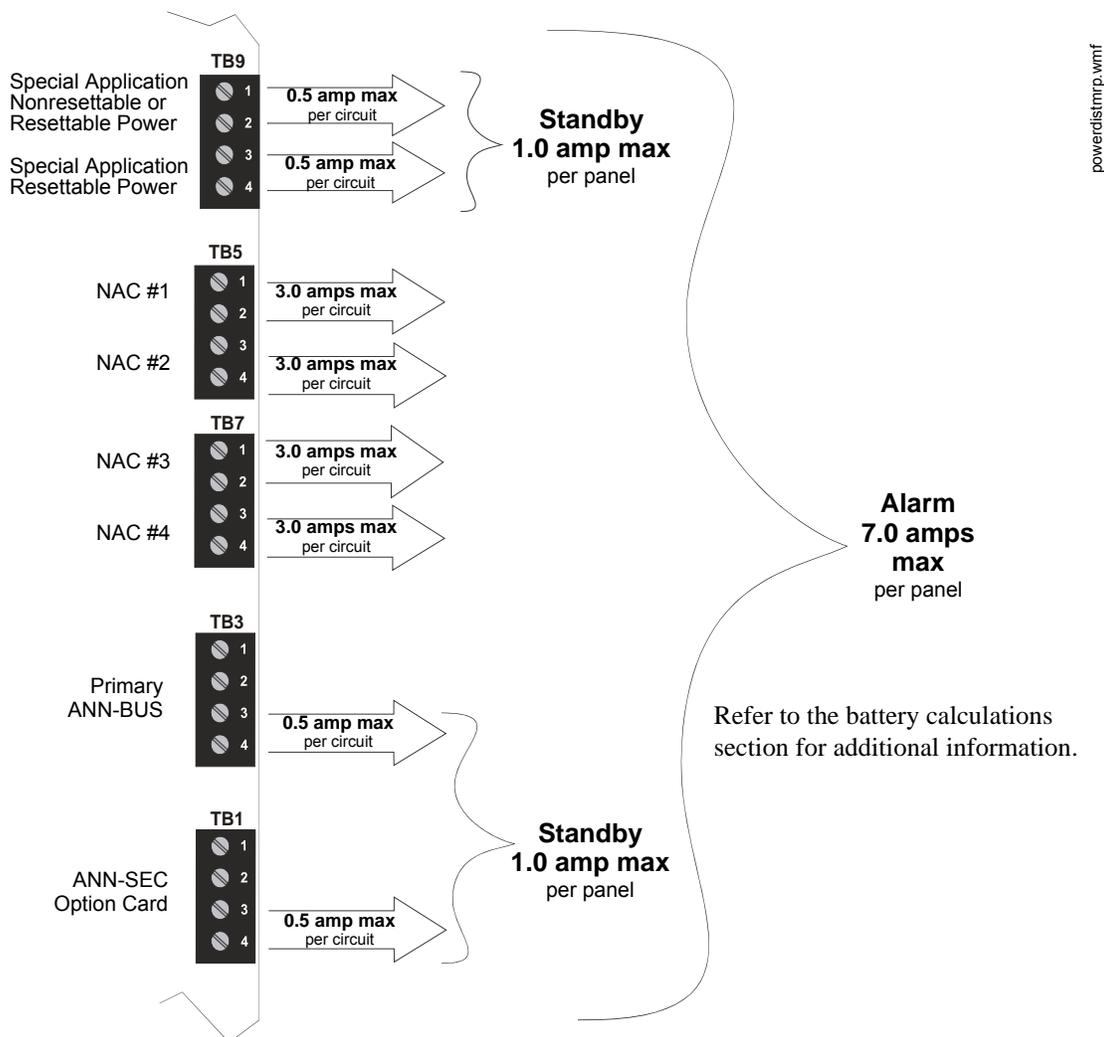
Figure 1.1 Current Availability

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.

```
SYSTEM ALL NORMAL
  10:00A 091814
```

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.

MRP-2001 Keypad   MRP-2001C Keypad
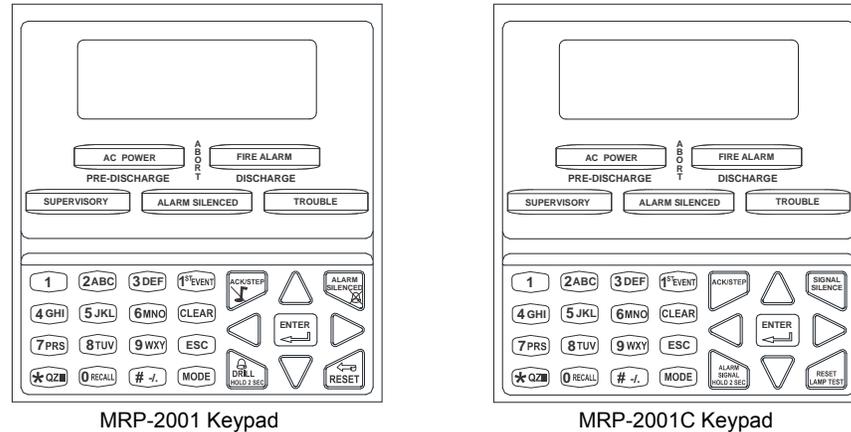
Figure 1.2 Membrane/Display Panel

Function keys:
- Acknowledge/Step
- Alarm Silenced (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

- Pre-Discharge - red indicator

- 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. he 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.

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.

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.

- ✓ 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
- ✓ Install center top fastener in the wall with the screw head protruding
- ✓ Place backbox over the top screw, level and secure
- ✓ 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
- ✓ Install remaining fasteners and tighten

Board on Chassis
mounting holes

mounting slots

mounting studs

mounting tabs

grounding stud:
attach solid earth
ground wire (refer to
Figure 2.4 on page 23)

mounting slots

Backbox

rp2001brdinbox.wmf
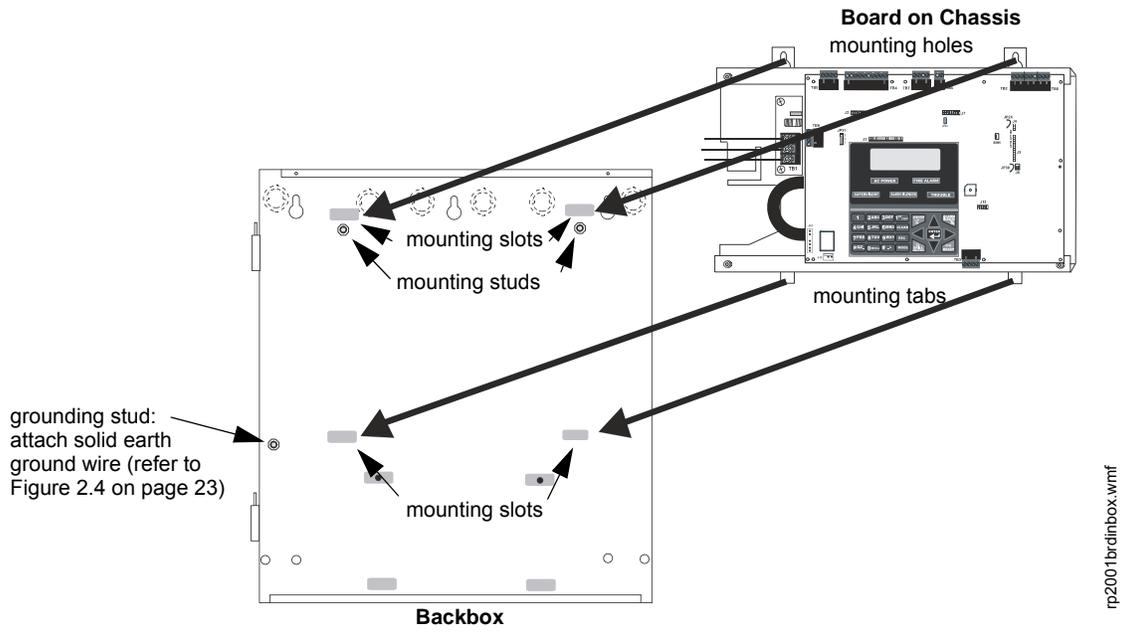
Figure 2.1 Chassis Mounting in Backbox
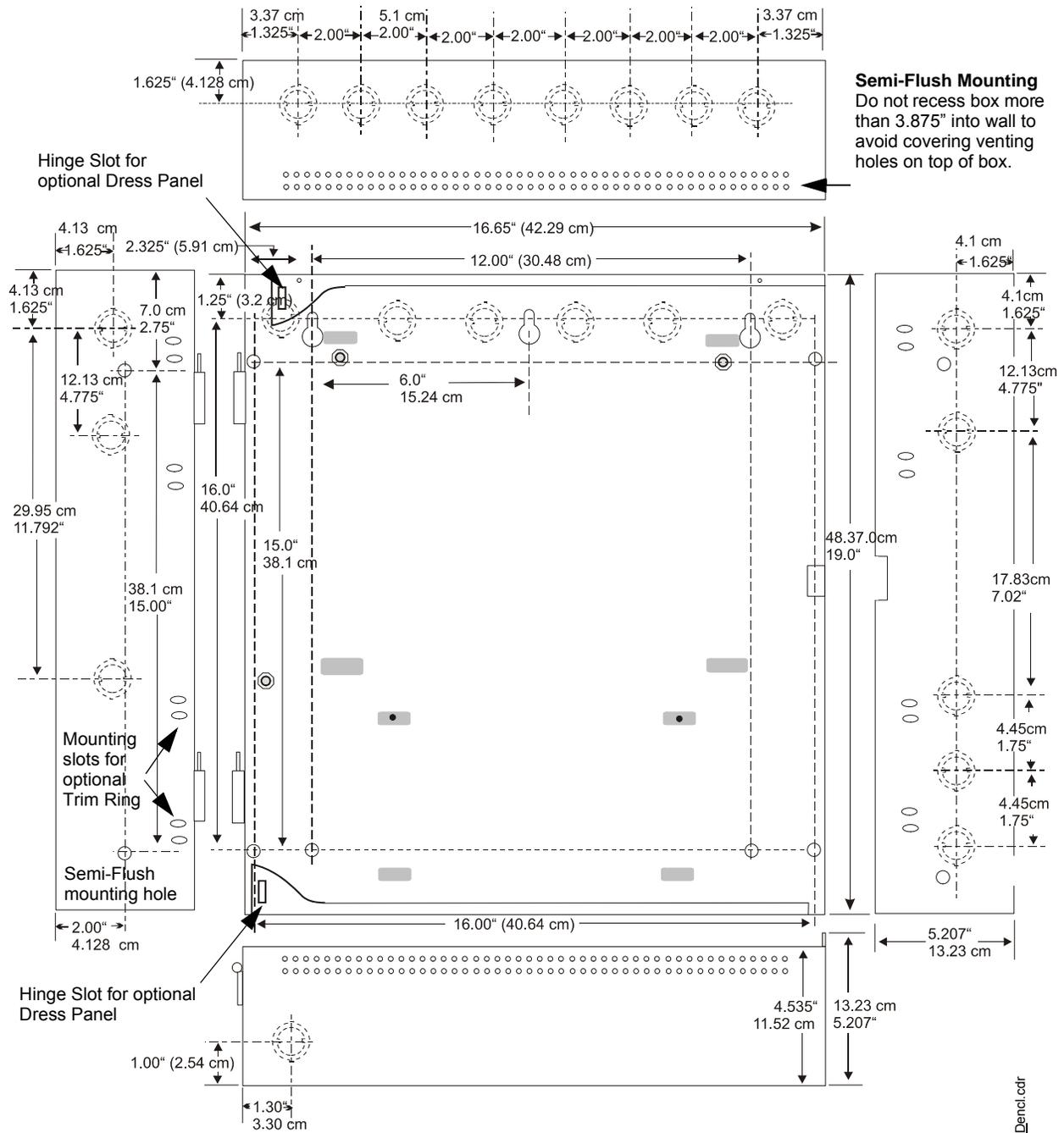
Figure 2.2 Cabinet Dimensions
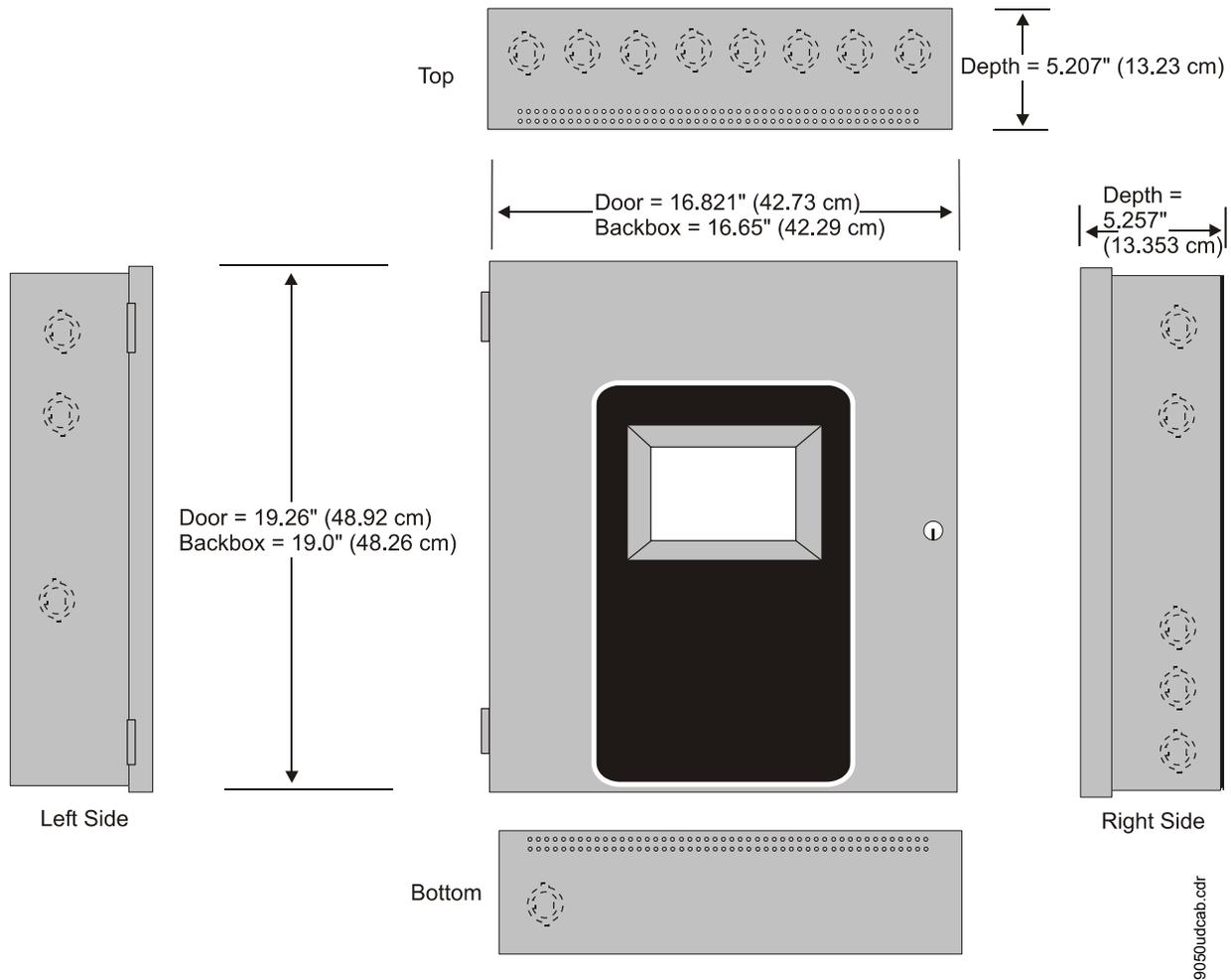
Figure 2.3 Backbox

2.2 Operating Power

⚠ **CAUTION: DISCONNECT ALL POWER BEFORE SERVICING**
SEVERAL DIFFERENT SOURCES OF POWER CAN BE CONNECTED TO THIS PANEL.
DISCONNECT ALL SOURCES OF POWER BEFORE SERVICING. 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-2001/C or 240 VAC, 50/60 HZ, 2.085 amps for the MRP-2001E. 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 the 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: BATTERY CONTAINS SULFURIC ACID**
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.
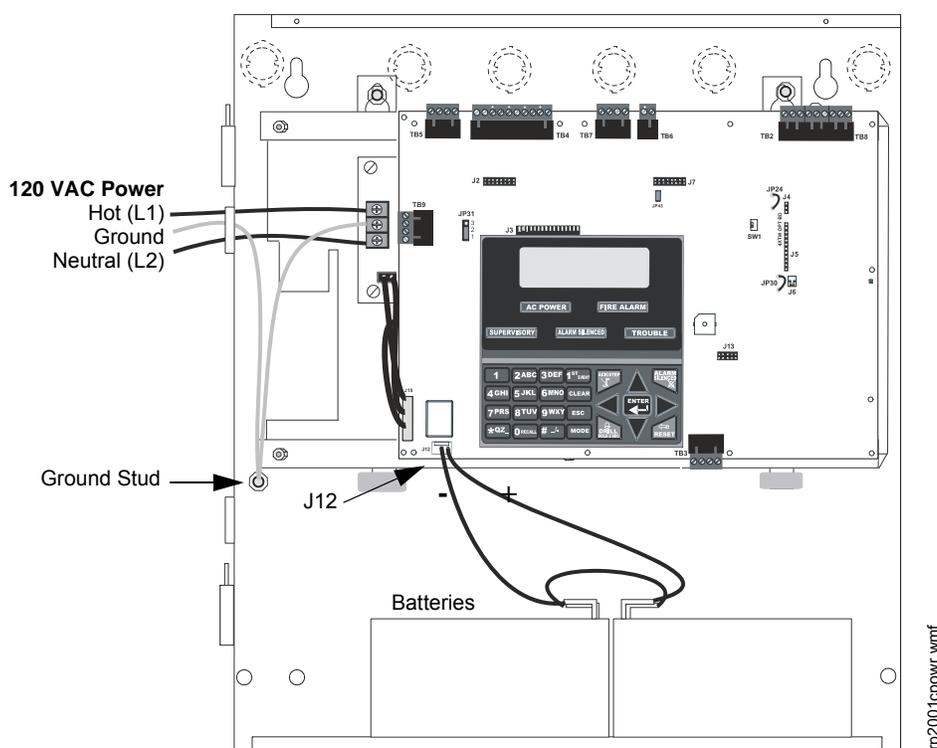
Figure 2.4 Operating Power Connections

2.3 Input Circuits

The MRP-2001 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 29.

Class B Initiating Device Circuits (supervised and power-limited) 4.7 KΩ, ½ watt resistor P/N:71252
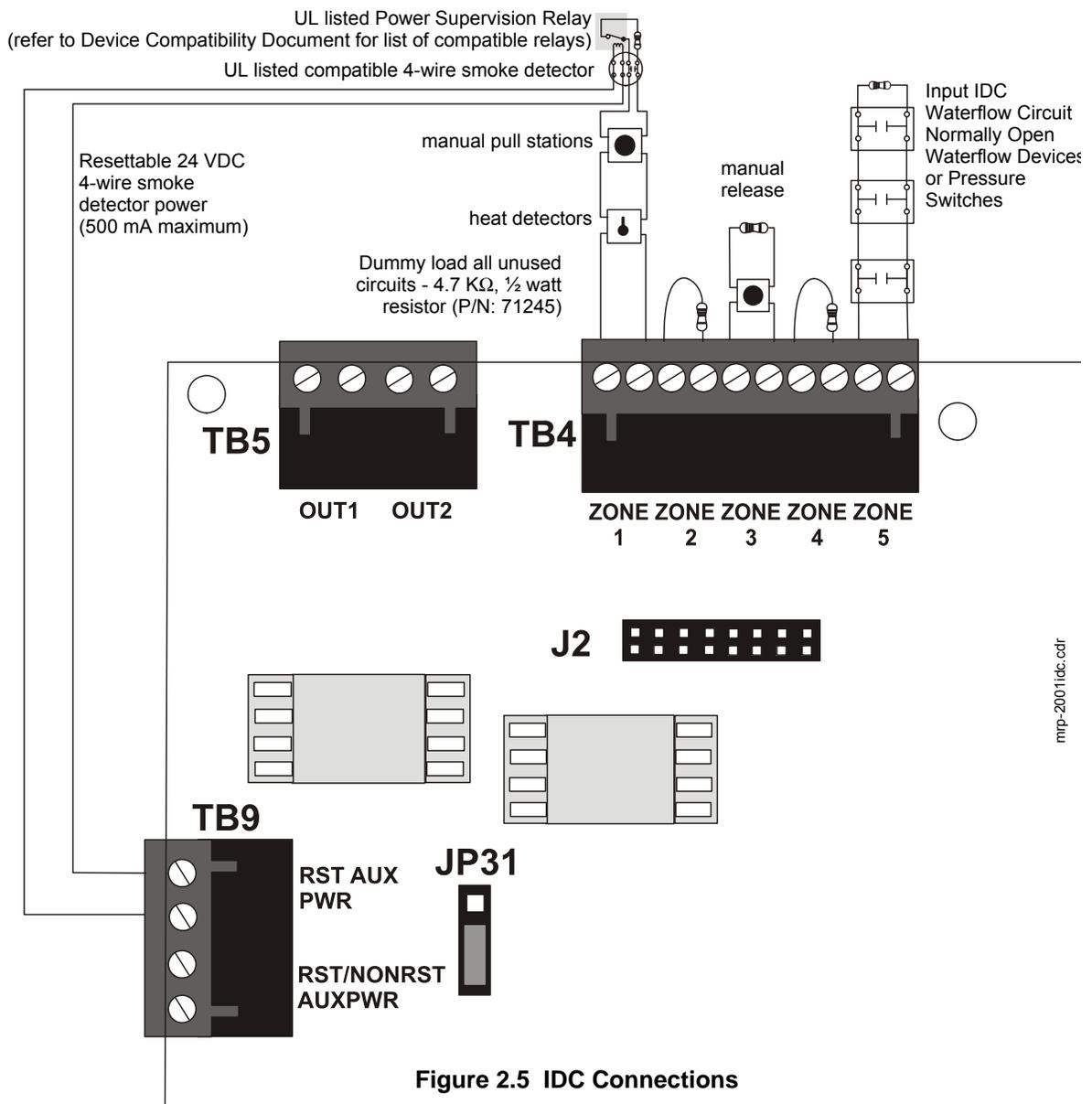
Figure 2.5 IDC Connections

Combination Waterflow/Supervisory Zone

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.
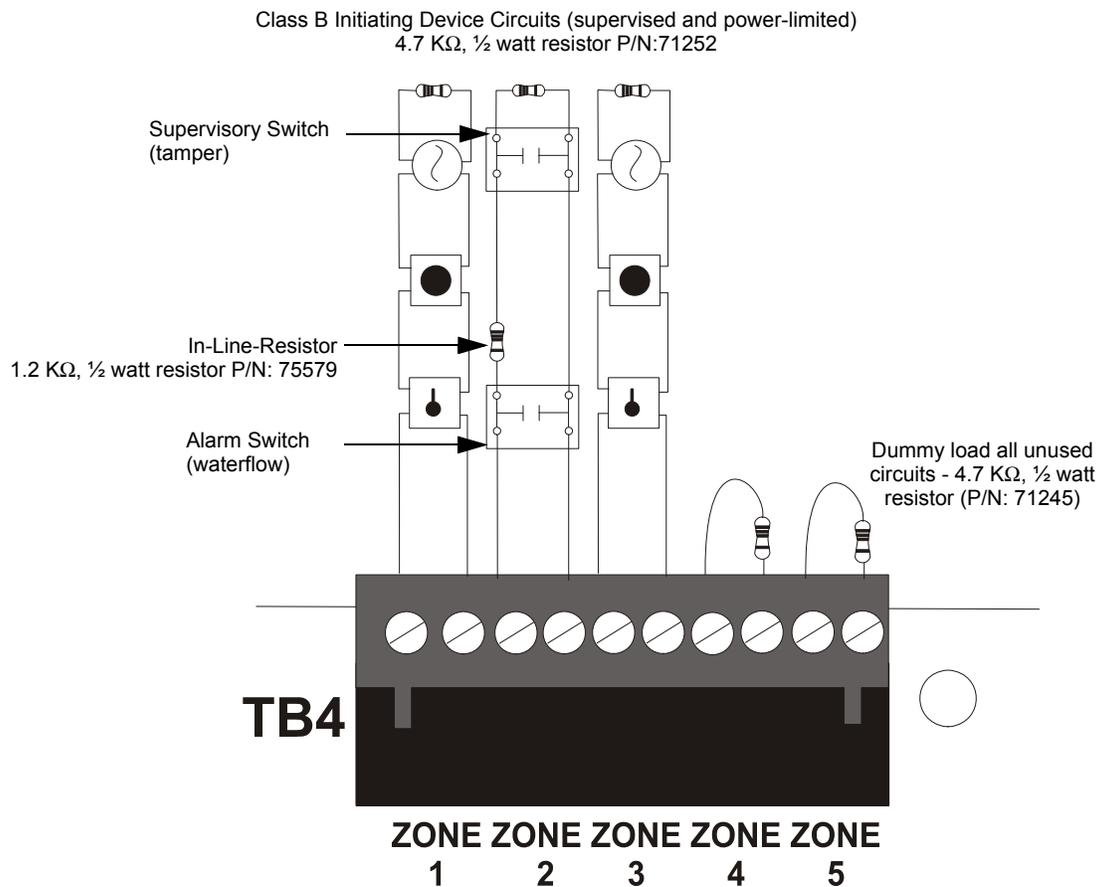
Figure 2.6 Style B Combination Circuit on Zone 2

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 52. *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 62.*

✓ 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 the 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.

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 29.

Class B Notification Appliance Circuits (supervised and power-limited)
4.7 KΩ, ½ watt resistor P/N:71252
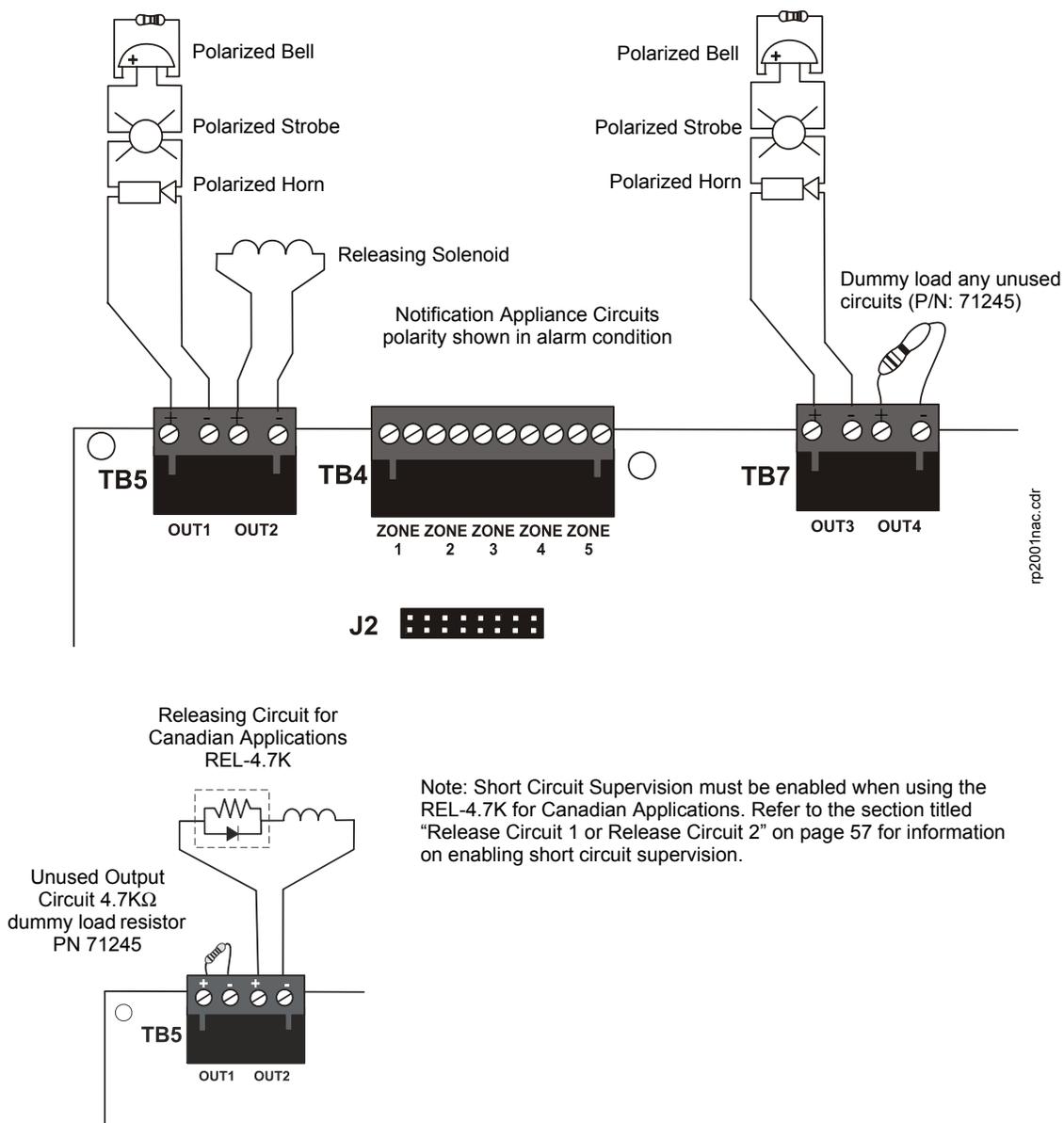
Figure 2.7 NAC/Output Connections

2.4.2 Special Application DC Power Output Connections

Special Application Resettable and Nonresettable 24 VDC power is available on the MRP-2001 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

TB9

RST AUX PWR

RST/NONRST AUXPWR

JP31

ms-10UDtb9.cdr

Figure 2.8 Special Application Auxiliary Power

2.4.3 Relays - Programmable

The MRP-2001 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 "On-Board Relays" on page 60). 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.

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.

ALARM   TROUBLE   SUPV
NO NC C   NO NC C   NO NC C

TB8

ms10udrelay.cdr
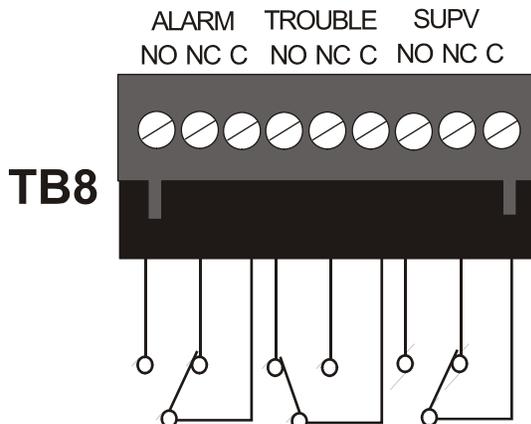
Figure 2.9 Relay Terminals

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)

Deluge - Preaction Control FACP
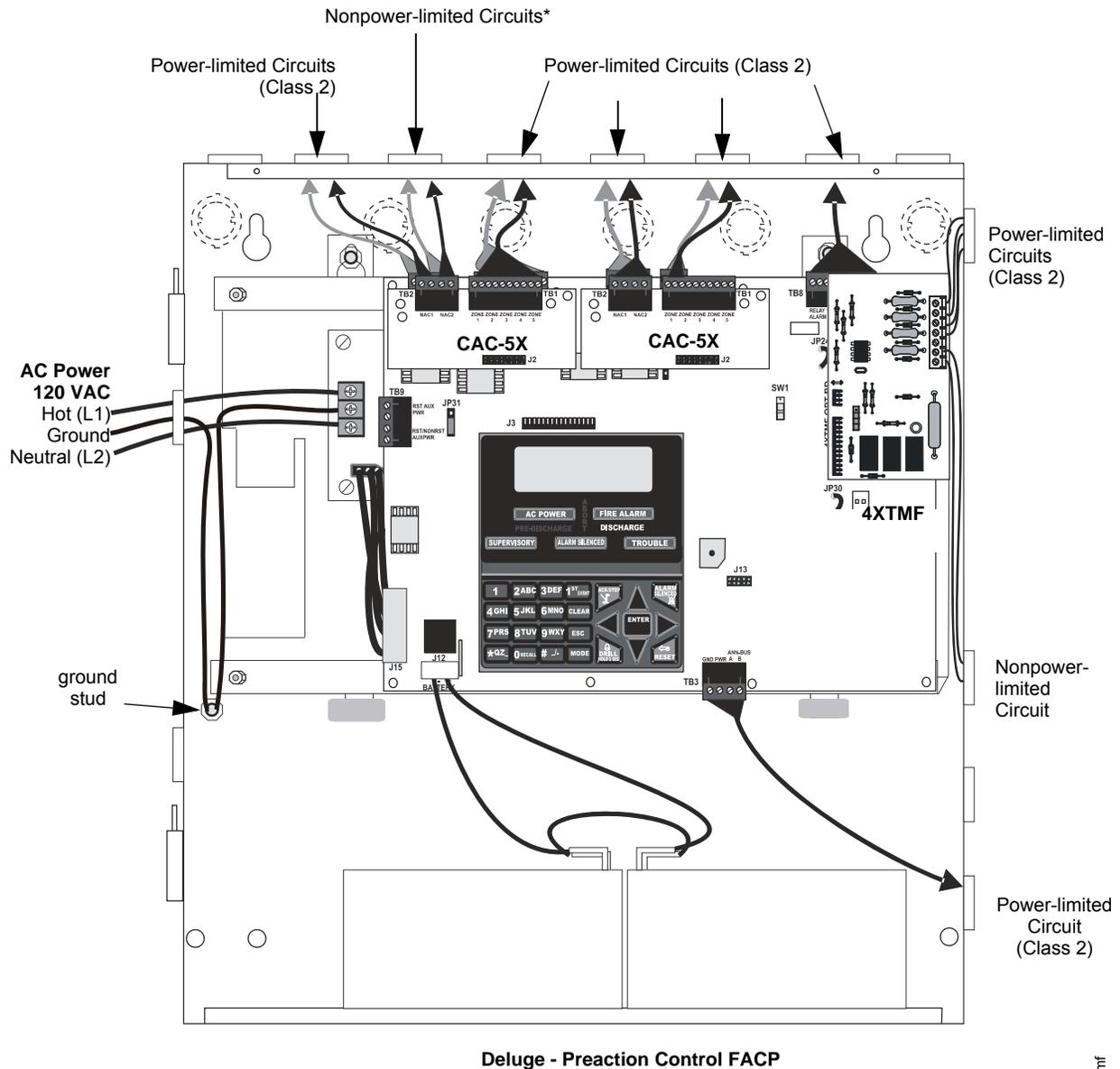
Figure 2.10 Typical UL Power-limited Wiring Requirements

2.6 Installation of Optional Modules

⚠ **CAUTION: REMOVE ALL SOURCES OF POWER**
REMOVE ALL POWER (AC AND DC) BEFORE INSTALLING OR REMOVING 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.
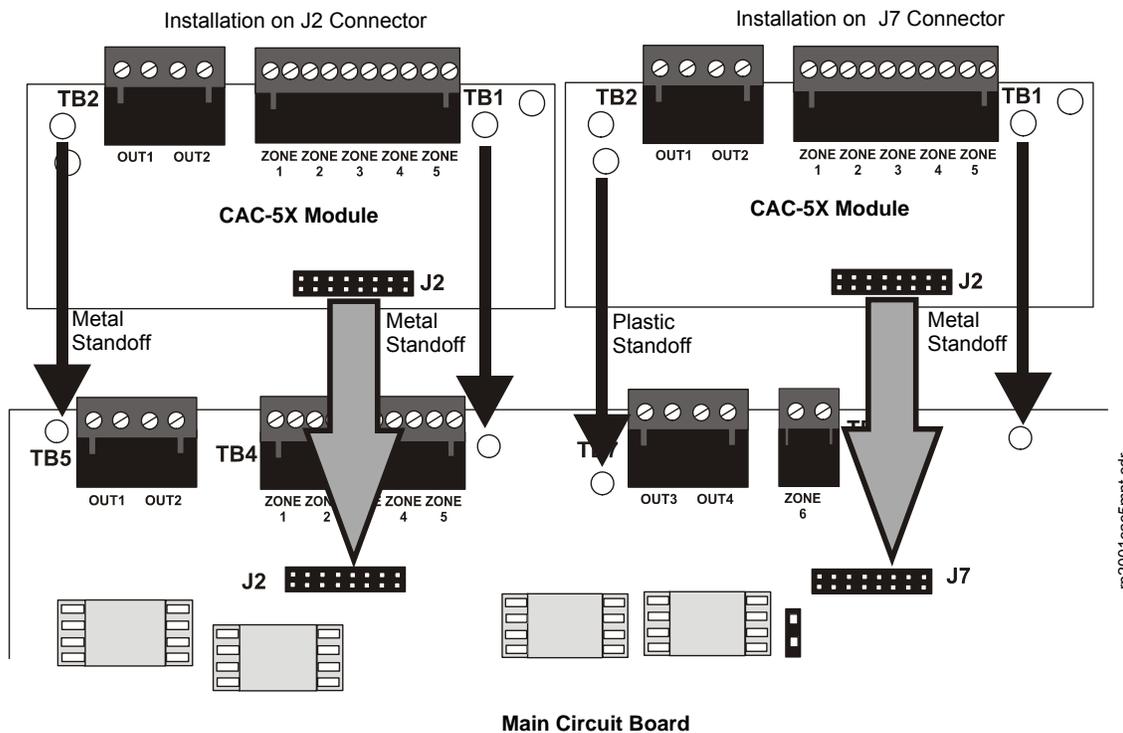
Figure 2.11 CAC-5X Module Installation

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.
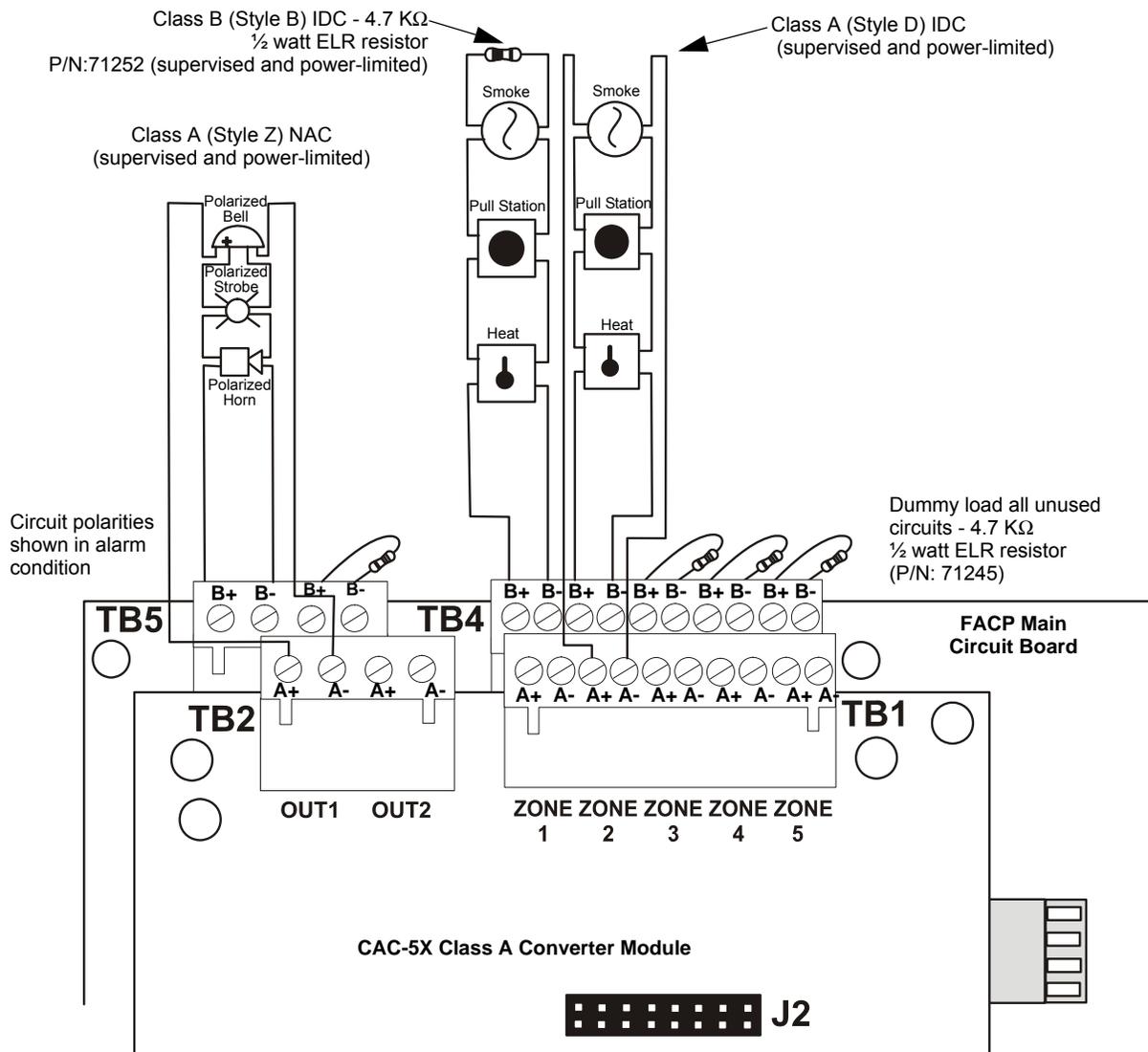
Figure 2.12 Wiring NACs and IDCs for Class A Operation

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
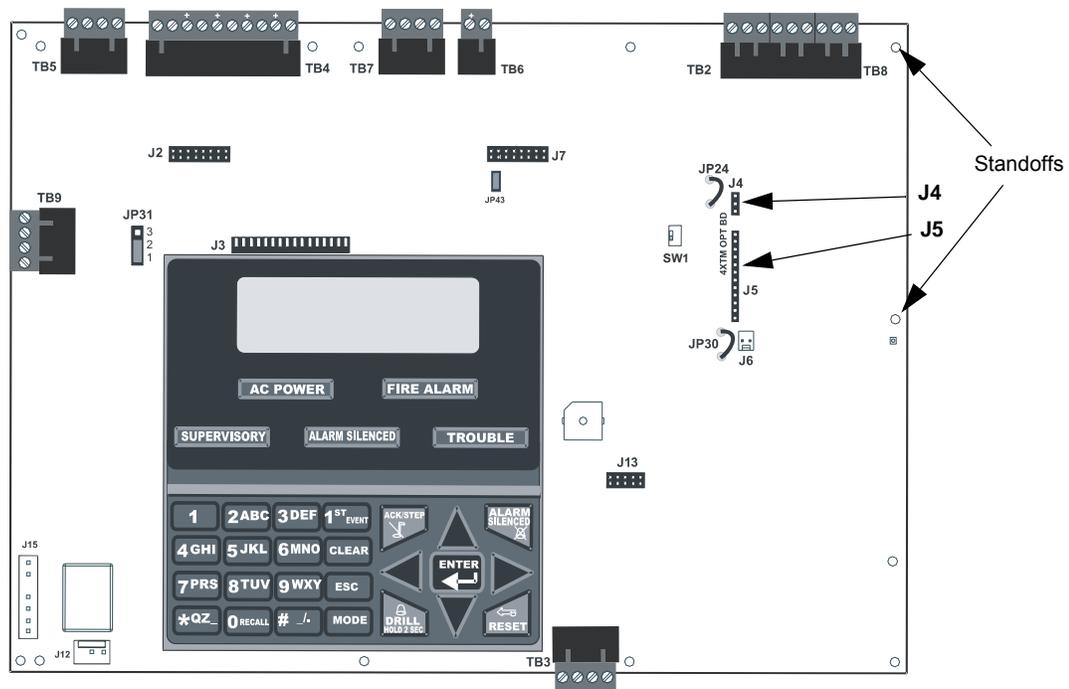
Figure 2.13 4XTMF Option Module Connection

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:**   The 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 118.
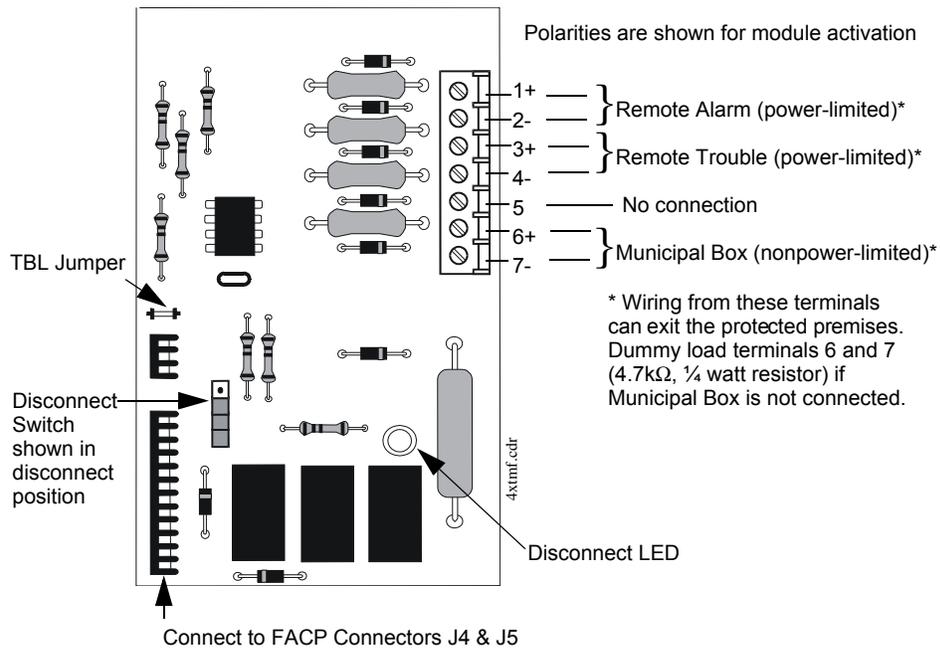
Figure 2.14 4XTMF Transmitter Module

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.
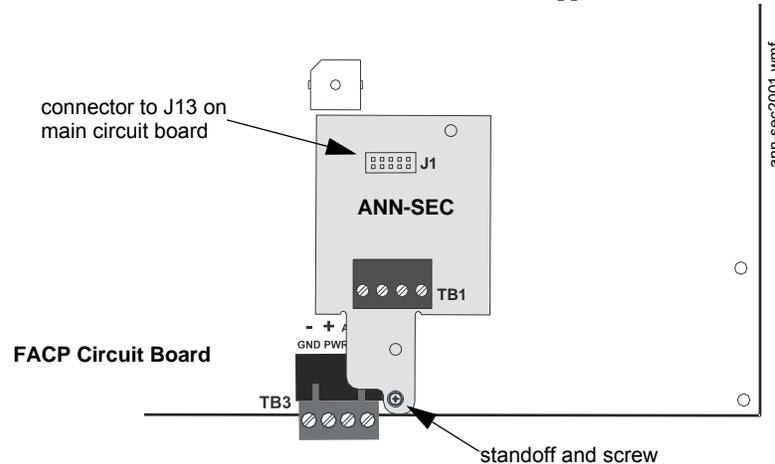
Figure 2.15 Installing the ANN-SEC Option Card

2.7 ANN-BUS Devices

⚠ **WARNING: DISCONNECT ALL SOURCES OF POWER**
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:

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

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.

Wiring Distance: ANN-BUS Modules to FACP[1]				
Total Worst Case Current Draw (amps)	22 Gauge	18 Gauge	16 Gauge	14 Gauge
0.100	1,852 ft.	4,688 ft.	* 6,000 ft.	*6,000 ft.
0.200	926 ft.	2,344 ft.	3,731 ft.	5,906 ft.
0.300	617 ft.	1,563 ft.	2,488 ft.	3,937 ft.
0.400	463 ft.	1,172 ft.	1,866 ft.	2,953 ft.
0.500	370 ft.	938 ft.	1,493 ft.	2,362 ft.

Table 2.1 Wiring Distances

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

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

$$\text{Maximum Wire Length (feet)} \atop \text{(6,000 feet maximum)} = \frac{\text{Maximum Resistance (Ohms)}}{\text{Rpu}} \quad *500$$

where: Rpu = Ohms per 1,000 feet for various Wire Gauges (see table below)

Wire Gauge	Ohms per 1,000 feet (Rpu)
22	16.2
18	6.4
16	4.02
14	2.54

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:

Wire Gauge	Maximum Wire Length
18	312 feet
16	497 feet
14	787 feet
12	1,250 feet

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:

ANN-80 Current Draw	= 2 X 0.040 amps	= 0.080 amps
ANN-S/PG Current Draw	= 1 X.0.040 amps	= 0.040 amps
ANN-I/O Current Draw	= 1 X.0.200 amps	= 0.200 amps
Total Worst Case Current Draw		= 0.320 amps

Using this value and referring to the Wiring Distance Table 2.1 on page 34, 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 2.16 illustrates the wiring between the FACP and ANN-BUS devices.
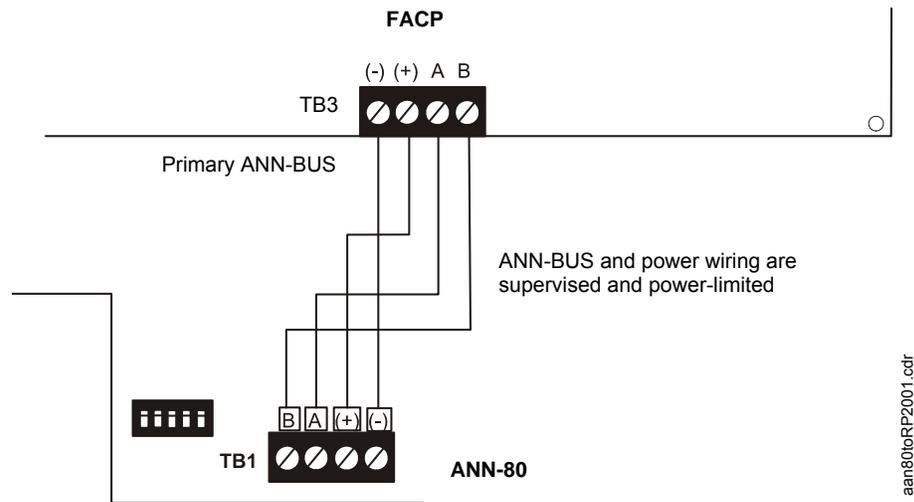
Figure 2.16 FACP wiring to ANN-BUS Device

Powering ANN-BUS Devices from Auxiliary Power Supply

Figure 2.17 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.
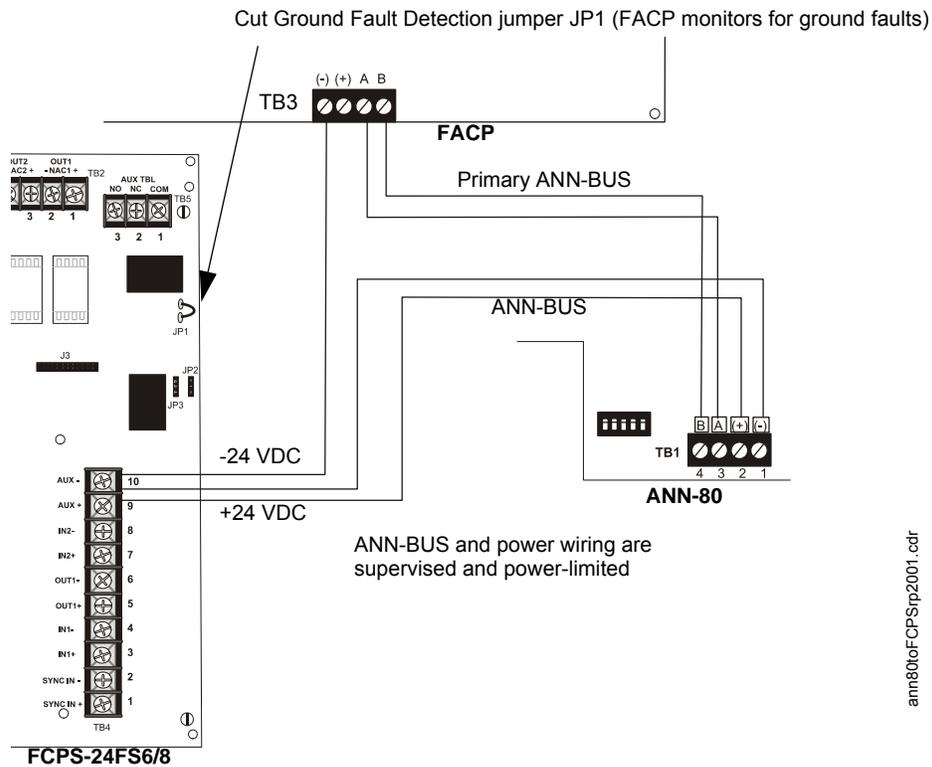
Figure 2.17 Powering ANN-BUS Devices from FCPS-24FS6/8

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 "ANN-BUS" on page 66).

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.

NOTE: address (ID Number) DIP switches on some devices may have more than 5 switch positions. Unless otherwise specified in the documentation supplied with each device, switch positions 6 and above must be set to **OFF**.

Address	Switch 5	Switch 4	Switch 3	Switch 2	Switch 1
not valid	OFF	OFF	OFF	OFF	OFF
01	OFF	OFF	OFF	OFF	ON
02	OFF	OFF	OFF	ON	OFF
03	OFF	OFF	OFF	ON	ON
04	OFF	OFF	ON	OFF	OFF
05	OFF	OFF	ON	OFF	ON
06	OFF	OFF	ON	ON	OFF
07	OFF	OFF	ON	ON	ON
08	OFF	ON	OFF	OFF	OFF

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
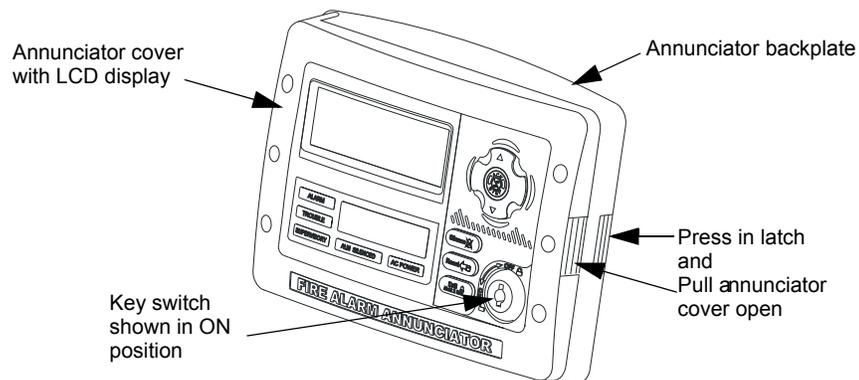
Wiring ANN-80 to FACP

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.
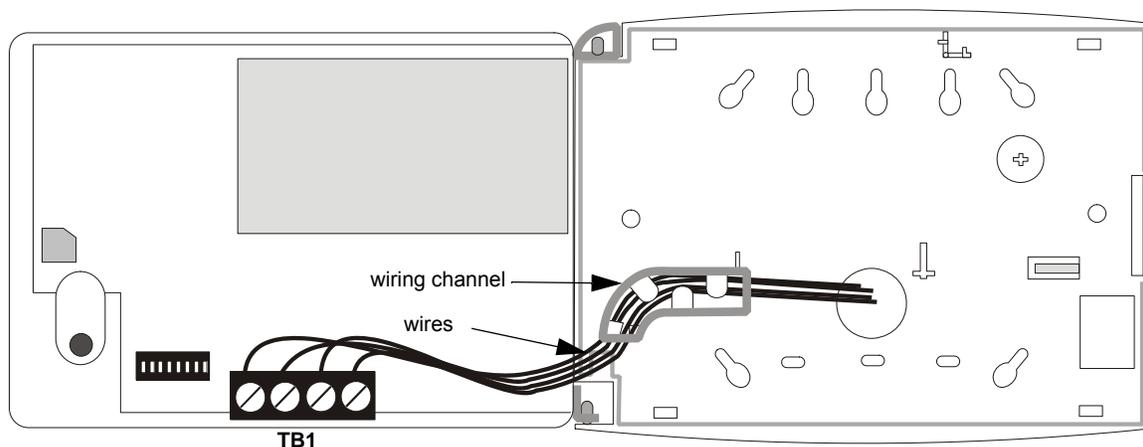
2. Remove appropriate amount of wire insulation.

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 annunciator by dressing it
    neatly through wire channel, with any excess wire pushed back through hole into electrical
    box.
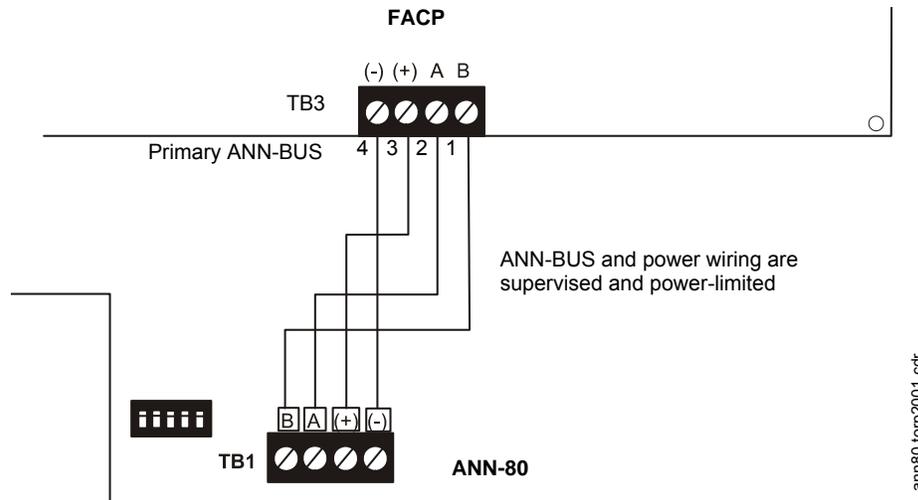
Figure 2.18 ANN-80 Wiring to FACP

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

FACP (TB3)	ANN-80 (TB1)
Terminal 4 GND (-)	Terminal 1 (-)
Terminal 3 PWR (+)	Terminal 2 (+)
Terminal 2 A (ANN-BUS)	Terminal 3 (A)
Terminal 1 B (ANN-BUS)	Terminal 4 (B)

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
"ANN-BUS" on page 66 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 2.19
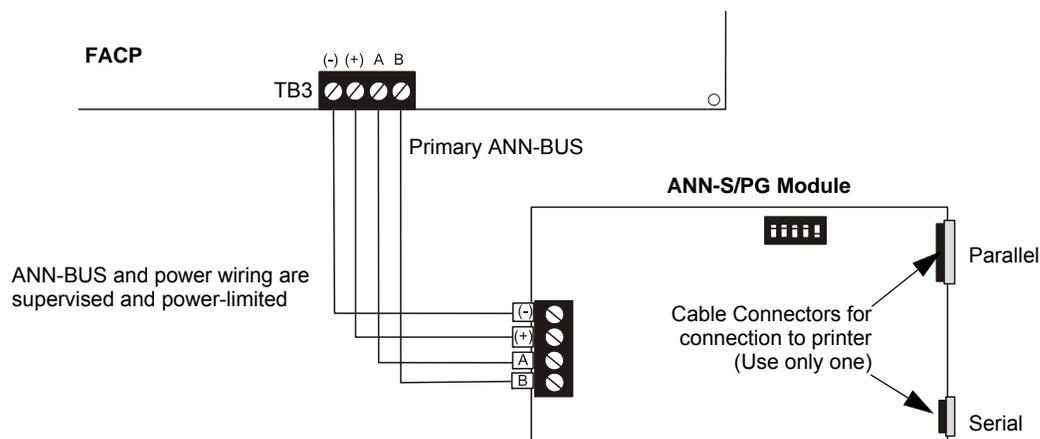
Figure 2.19 ANN-S/PG Connection to FACP

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 "ANN-BUS" on page 66)
Note that the Auto-configure feature allows the programmer to quickly bring all installed ANN-BUS modules online (refer to "Auto-Configure" on page 67)

5. Connect a printer to the ANN-S/PG Parallel or Serial connector (refer to Figure 2.19 on page 40)

Specifications

• Operating Voltage: 24 VDC

• Current (Alarm and Standby): 45 mA

• Ambient Temperature: 32ºF to 120ºF (0ºC to 49ºC)

• 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:

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

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 a 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:

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

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"ANN-BUS" on page 66 for programming information.

ANN-I/O Board Layout

Figure 2.20 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.
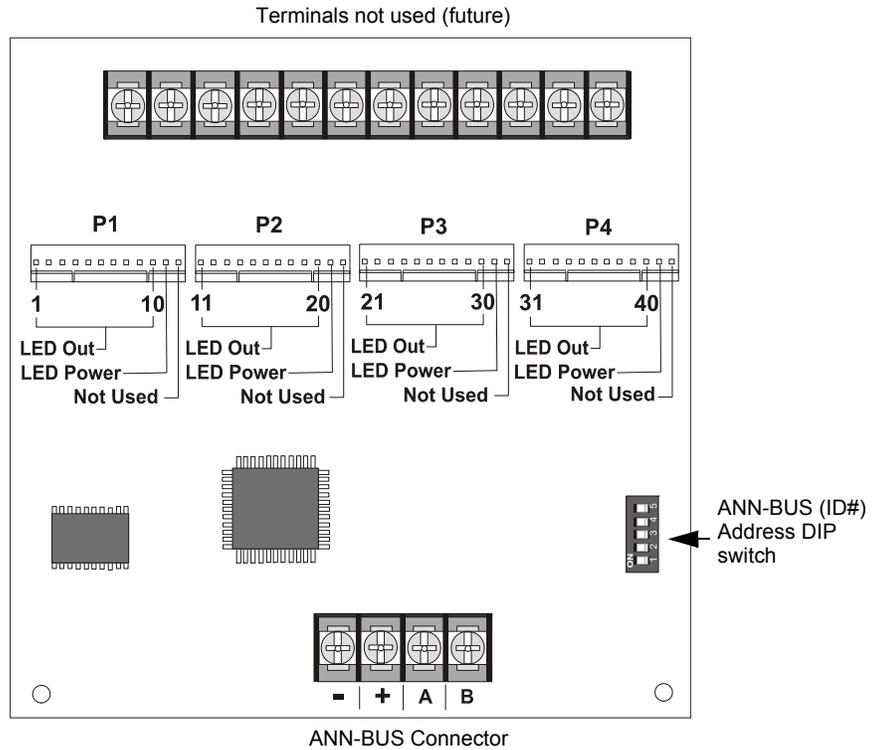
Figure 2.20 ANN-I/O Board Layout

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 2.21. After the ANN-I/O is connected to the panel, it must be added to the system via FACP programming.
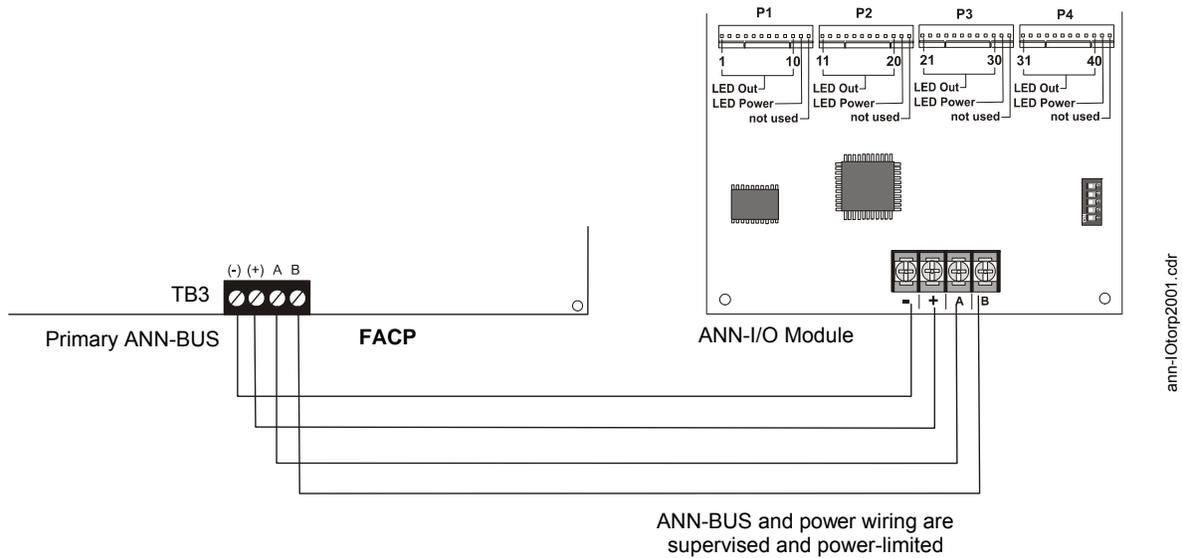
Figure 2.21 ANN-I/O Connection to FACP

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 68 of this manual.

The LEDs are wired as illustrated in Figure 2.22. Note that the illustration depicts only connectors P1 and P2. Wiring is identical for P3 (LEDs 21-30) and P4 (LEDs 31-40).
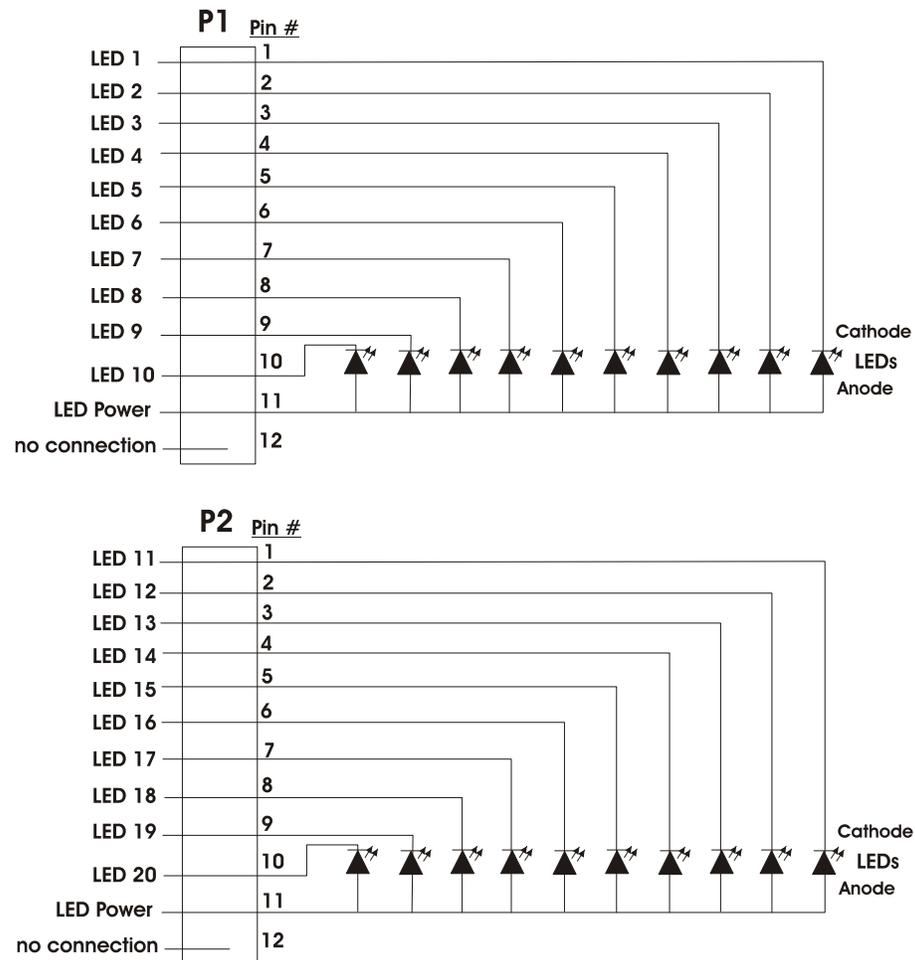
Figure 2.22 ANN-I/O LED Wiring

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 2.23 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.
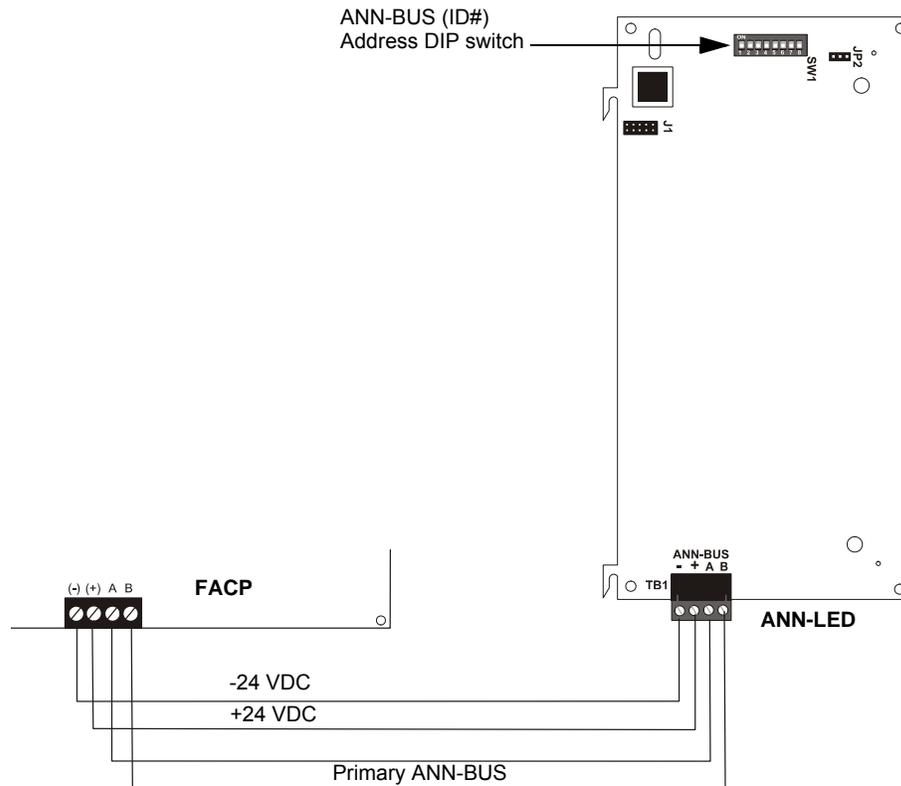
Figure 2.23 ANN-LED Board Layout and Connection to FACP

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 2.23 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.
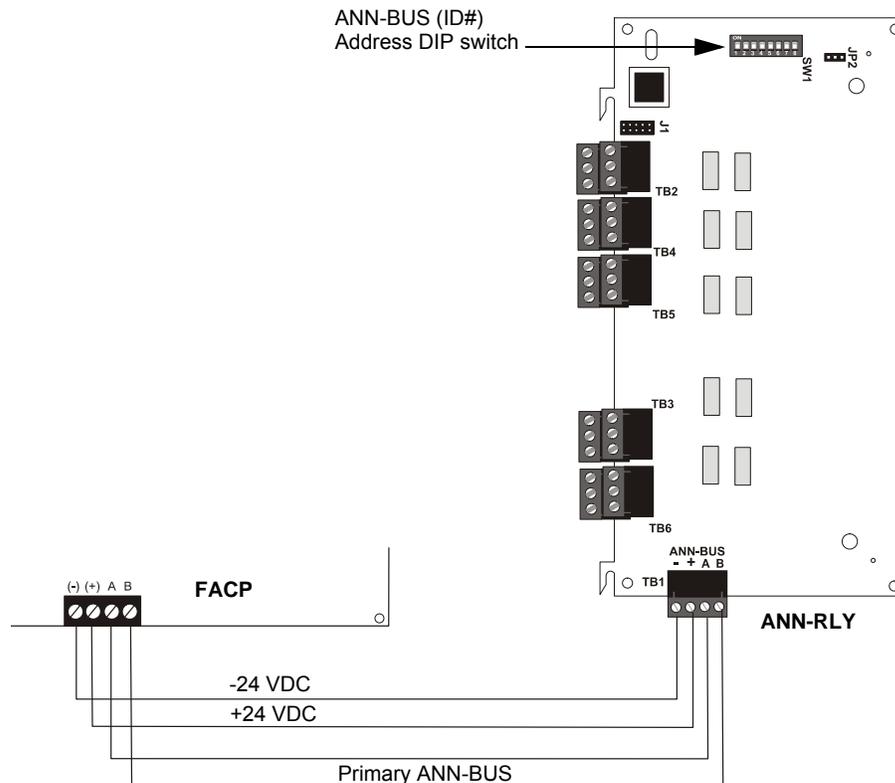
Figure 2.24 ANN-RLY Board Layout and Connection to FACP

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 <u>are</u> 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 91 for an explanation of mapping and cross-zoning and "FACP Configuration Templates" on page 96 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 091814
```

Read Status mode can be entered while the panel is in <u>any</u> 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 52.*

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:

```
WATER 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 83 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 panel as soon as the data is entered. If the Reset key is pressed or power is lost before exiting Programming mode, all data just entered will <u>not</u> be lost.*

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 091814
```

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 51, 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 72. 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 as soon as program data is entered, the data is automatically saved by the panel. If the *Reset* key is pressed or power is lost before exiting Programming mode, the data just entered will not be lost.

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    T7 ⇩
2=INPUT ZONES
3=OUTPUT CIRCUITS
```
Programming Screen #1

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
1=FACP CONFIG    T7  ⬇
2=INPUT ZONES
3=OUTPUT CIRCUITS
```
Programming Screen #1

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
1=CROSS INPUT ZONES ⬍
2=ON-BOARD RELAYS
3=SYSTEM SETUP
```
Programming Screen #2

```
     PROGRAMMING
1=ANN-BUS          ⬍
2=HISTORY  256 EVENTS
3=WALKTEST
```
Programming Screen #3

```
       PROGRAMMING
1=CLEAR PROGRAM    ⬆
2=PASSWORD CHANGE
```
Programming Screen #4

3.5.1 FACP CONFIG (Application Templates)

For a detailed description of each Template, refer to "FACP Configuration Templates" on page 96. The FACP Configuration option allows the user to program the FACP with one of seven 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.

```
PROGRAMMING
1=FACP CONFIG USER
2=INPUT ZONES
3=OUTPUT CIRCUITS
```
Programming Screen #1

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
1=TEMPLATE 1       ⬇
2=TEMPLATE 2
3=TEMPLATE 3
```
FACP Config Screen #1

Pressing the down arrow key will display screens for additional Templates 1 through 7 and the Custom Template. During initialization of the panel following power-up or reset, the selected Template will be displayed by the LCD.

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:

```
┌─────────────────────────────┐
│      INPUT ZONES          ⬇ │
│ 1=ZONE 1                    │
│ 2=ZONE 2                    │
│ 3=ZONE 3                    │
└─────────────────────────────┘
```
Input Zone Screen #1
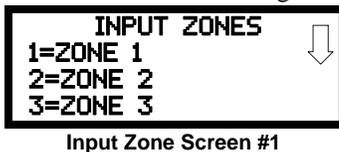
Pressing the down arrow key will display additional screens for Input Zones 4 through 6. To program a specific zone, press the number key corresponding to the desired zone while viewing one of the Input Zone screens.

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

```
┌─────────────────────────────┐
│      INPUT ZONE 1           │
│  NORMAL PULL STATION        │
│                             │
│    PRESS ⬇ TO EDIT          │
└─────────────────────────────┘
```
Edit Input Zone Screen #1
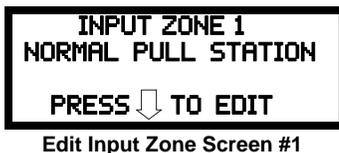
To change the programming for the displayed zone, press the keyboard 'down' arrow key to view the Edit Zone screens.

The following examples show the editing of Input Zone 1:

```
┌───────────────────────┐  ┌───────────────────────┐  ┌───────────────────────┐
│    INPUT ZONE 1    ⬇  │  │    INPUT ZONE 1    ⬆⬇ │  │    INPUT ZONE 1    ⬆  │
│ 1=ENABLED     YES     │  │ 1=OUTPUT CIRCUIT MAP  │  │ 1=ADJECTIVE/NOUN      │
│ 2=TYPE   PULL STATION │  │ 2=FREEZE SUPV.  YES   │  │ 2=DESCRIPTION         │
│                       │  │                       │  │ ****************      │
└───────────────────────┘  └───────────────────────┘  └───────────────────────┘
```
Edit Input Zone Screen #2   **Edit Input Zone Screen #3**   **Edit Input Zone Screen #4**
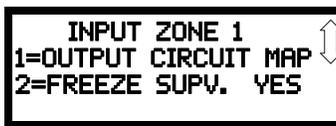
Enable/Disable Zone

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.

```
┌─────────────────┐
│   INPUT ZONE    │
│ 1=ENABLED       │
│ 2=TYPE          │
└─────────────────┘
```
Edit Input Zone Screen #2

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:

```
┌─────────────────────────────┐
│      ZONE 1 TYPE          ⬇ │
│ 1=PULL STATION              │
│ 2=N/A                       │
│ 3=MANUAL RELEASE            │
└─────────────────────────────┘
```
Zone Type Screen #1

Pressing the down arrow key displays additional zone types as indicated in the following table.

Zone Type	Action When Activated
Pull-Station	Fire Alarm
Manual Release[1]	Fire Alarm
N/A	
Normally Open Contact	Fire
N/A	

Table 3.1 Zone Types

N/A	
N/A	
Waterflow	Fire
Waterflow NS (nonsilenceable)	Fire, nonsilenceable
Combo	Fire/Supervisory
Combo w/AutoResettable Superv[2]	Fire/Supervisory, nonlatching
2-Wire Smoke	Fire Alarm
2-Wire Heat	Fire Alarm
N/A	
Linear Heat	Fire Alarm
N/A	
N/A	
Fire	Fire Alarm
Low Pressure	Supervisory, latching
Low Pressure AutoResettable2	Supervisory, nonlatching
High Pressure	Supervisory
High Pressure AutoResettable2	Supervisory, nonlatching
Disable Release[3]	Supervisory, nonlatching (disables Release Circuits)
Supervisory	Supervisory, latching
Supervisory AutoResettable2	Supervisory, nonlatching
N/A	
2nd-Shot Water Switch[4]	Fire Alarm, nonlatching

Table 3.1 Zone Types

1 Activation of a Manual Release Switch will override Predischarge Delay, resulting
   in an immediate water release.
2 *AutoResettable* means that a device with this type code, when activated, will
   automatically reset when the corresponding condition is cleared.
3 *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.
4 The *2nd-Shot Water Switch* provides the option of performing another immediate
   water release manually. Refer to "2nd-Shot Water Switch" on page 81.

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.

```
 INPUT ZONE #
1=OUTPUT CIRCUIT MAP
2=FREEZE SUPV.
```
Edit Input Zone Screen #3

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 51], selecting the Output Circuit Map for Input Zone 1 will display the following screens:

```
 OUTPUT MAP ZONE 1
1=ALARM  NAC    YES
2=WATERFLOW NAC  NO
3=RELEASE 1     YES
```
Output Map Screen#1

```
 OUTPUT MAP ZONE 1
4=SUPV BELL NAC N/A
```
Output Zone Screen#2

The screens indicate that when Input Zone 1 is activated:

Output Circuit #1 default programmed as *Alarm NAC* will activate (Yes)

Output Circuit #2 default programmed as *Waterflow NAC* will not activate (No)

Output Circuit #3 default programmed as *Release 1* will activate (Yes)

Output Circuit #4 default programmed as *Supv Bell NAC* is not mapped (N/A)

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 91.

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 by the panel as soon as it is entered.

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.

```
INPUT ZONE #
1=ADJECTIVE/NOUN
2=DESCRIPTION
*************
```
Edit Input Zone Screen #3

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:

```
1=STANDARD ADJECTIVE
2=STANDARD NOUN
```

Adjective/Noun Screen

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.

```
*****************
1=NORTH
2=SOUTH
3=EAST
```
Adjective Screen #1

```
*****************
1=WEST
2=FRONT
3=CENTER
```
Adjective Screen #2

```
*****************
1=REAR
2=UPPER
3=LOWER
```
Adjective Screen #3

```
*****************
1=MAIN
2=FIRST
3=2ND
```
Adjective Screen #4

```
*****************
1=3RD
2=4TH
3=5TH
```
Adjective Screen #5

```
*****************
1=FLOOR1
2=FLOOR2
3=FLOOR3
```
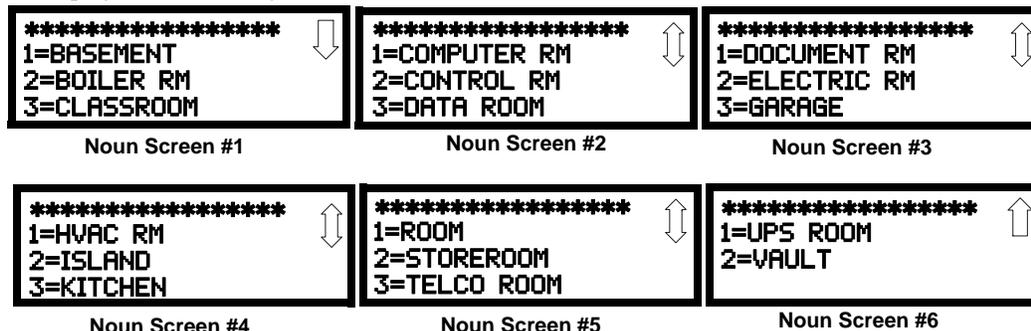**Adjective Screen #6**

```
*****************
1=FLOOR4
2=FLOOR5
3=ROOM
```
Adjective Screen #7

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.

```
****************        ⇕          ****************        ⇕          ****************        ⇕
1=BASEMENT                          1=COMPUTER RM                      1=DOCUMENT RM
2=BOILER RM                         2=CONTROL RM                       2=ELECTRIC RM
3=CLASSROOM                         3=DATA ROOM                        3=GARAGE
```
    Noun Screen #1   **Noun Screen #2**   **Noun Screen #3**

```
****************        ⇕          ****************        ⇕          ****************        ⇧
1=HVAC RM                           1=ROOM                             1=UPS ROOM
2=ISLAND                            2=STOREROOM                        2=VAULT
3=KITCHEN                           3=TELCO ROOM
```
    Noun Screen #4   **Noun Screen #5**   **Noun Screen #6**

Description

```
INPUT ZONE #
1=ADJECTIVE/NOUN
2=DESCRIPTION
```
Edit Input Zone Screen #3

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:

```
ZONE # DESCRIPTION

PRESS ENTER IF DONE
****************
```
Adjective/Noun Screen
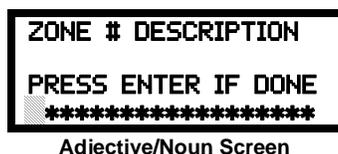
A flashing cursor will appear at the first asterisk to the left. The programmer can enter additional descriptive information about the device being programmed. This information will appear on the display along with the standard device label information.

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 *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 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

```
  PROGRAMMING
1=FACP CONFIG
2=INPUT ZONES
3=OUTPUT CIRCUITS
```
Programming Screen #1

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:

```
   OUTPUT CIRCUITS   ⇩
1=OUTPUT 1
2=OUTPUT 2
3=OUTPUT 3
```
NAC Selection Screen

```
   OUTPUT CIRCUITS   ⇧
1=OUTPUT 4
```
NAC Selection Screen

The Output Circuits can be configured independently by pressing *1* for Output 1, *2* for Output 2, *3* for Output 3 or *4* 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:

```
     OUTPUT #      ⇩
1=ENABLED    YES
2=TYPE   ALARM NAC
```
Output Screen #1

```
     OUTPUT #      ⇧
1=SILENCE   NON-SIL
2=AUTO SILENCE   NO
3=SIL INHIBIT    NO
```
Output Screen #2

```
     OUTPUT #      ⇧
1=CODING
            STEADY
```
Output Screen #3

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.

```
    NAC #
1=ENABLED
2=TYPE   ALARM NAC
```
NAC Screen #1

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
```
Edit Output # Type Screen

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

- ✓ Release Circuit 1
- ✓ Release Circuit 2
- ✓ Alarm NAC
- ✓ Waterflow NAC
- ✓ Release Stage NAC
- ✓ 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 91 for a description of cross-zoning and input to output circuit mapping.

■ Release Stage NAC

If Release Stage NAC is selected as the Output Type, the following subscreen will be displayed:

```
RELEASE STAGES
1=RELEASE 1 ONLY
2=RELEASE 2 ONLY
```

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 Stages" on page 81.

Silence

```
OUTPUT #
1=SILENCE  NON-SIL
2=AUTO SILENCE NO
3=SIL INHIBITED NO
```
Output Screen #2

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

```
SILENCEABLE
1=SILENCEABLE
2=NON SILENCEABLE
3=STAGE SILENCEABLE
```
Silenceable Screen #1

```
SILENCEABLE
1=SYNC MUTE
```
Silenceable Screen #2

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 *SYNC MUTE* (synchronized mute) circuit. Refer to "Synchronized NAC Operation" on page 59 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:

```
  AUTO SILENCE      ⇩        AUTO SILENCE      ⇕        AUTO SILENCE
1=NO                       1=15 MINUTES               1=30 MINUTES
2=5 MINUTES                2=20 MINUTES
3=10 MINUTES               3=25 MINUTES
```
   Auto Silence Screen #1   **Auto Silence Screen #2**   **Auto Silence Screen #3**

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.

```
      OUTPUT #
1=SILENCEABLE  YES
2=AUTO SILENCE  NO
3=SIL INHIBITED NO
```
Output Screen #2

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.

```
OUTPUT #1=CODING
```
Output Screen #3

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:

```
        CODING        ⇩                  CODING        ⇕
1=STEADY                         1=TEMPORAL
2=MARCH TIME                     2=FUTURE USE
3=CALIFORNIA                     3=FUTURE USE
```
      Coding Screen #1   **Coding Screen #2**

```
        CODING            ⇕              CODING        ⇧
1=CROSS ZONE                     1=SYNC GENTEX
2=SYNC SYSTEM SENSOR             2=SYNC FARADAY
3=SYNC WHEELOCK                  3=SYNC AMSECO
```
      Coding Screen #3   **Coding Screen #4**

The programmer can select the notification appliance output coding by pressing the number corresponding to the desired output. The coding selections are:

• 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:

    ✓ 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 three 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 to turn on steady

• Synchronized output for System Sensor, Wheelock, Gentex, Faraday or Amseco - Refer to "Synchronized NAC Operation" on page 59 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 dual 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

```
  PROGRAMMING
1=CROSS INPUT ZONES
2=ON-BOARD RELAYS
3=SYSTEM SETUP
```

Programming Screen #2

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 91 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
1=RELEASE 1 GROUPS
2=RELEASE 2 GROUPS
```

This screen allows the programmer to view the cross-zoned grouping for Release Circuit 1 or Release Circuit 2. In the following example, Template 7 has been chosen as the FACP Configuration [refer to "FACP CONFIG (Application Templates)" on page 51]. Pressing *1* for Release 1 Groups will display the following screen:

```
 REL 1 CROSS GROUPS
1=              X 1 2
2=              NONE
3=              NONE
```

The display indicates that Input Zone 1 is cross-zoned with Input Zone 2. Input Zone 3 is not cross-zoned.

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 ⬇
1=ZONE 1        YES
2=ZONE 2        YES
3=ZONE 3        NO
```
Select Cross Zone Screen #1

```
REL 1 CROSS GROUP 1 ⬆
1=ZONE 4        NO
2=ZONE 5        NO
3=ZONE 6        N/A
```
Select Cross Zone Screen #2

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. The remaining zones display *NO* or *N/A* for no cross-zoning to Zone 1. 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.

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
1=RELAY 1      ALARM
2=RELAY 2    TROUBLE
3=RELAY 3  SUPERVSRY
```
Relays Selection Screen

To program Relay 1, 2 or 3, press the number corresponding to the selected relay. The following screen will be displayed:

```
        RELAY #
1=TYPE          ALARM
2=LATCHING         NO
```

Relay Programming Screen

Pressing *1* for Type will display the following screens:

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

```
      RELAY TYPE     ⇧
1=FUTURE USE
2=DISCHARGE
3=AC LOSS
```

Relay Screen #1   **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:

• *Timers:* This option allows the programmer to set the Soak 1, Soak 2, 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 <u>not</u> enabled and a trouble condition is not cleared within 24 hours, the panel will reactivate the trouble sounder an 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 66).
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.

```
    PROGRAMMING
1=CROSS INPUT ZONES
2=ON-BOARD RELAYS
3=SYSTEM SETUP
```
Programming Screen #2

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

```
   SYSTEM SETUP    ⇩
1=FUTURE USE
2=TIMERS
3=BANNER
```
System Setup Screen #1

```
   SYSTEM SETUP    ⇕
1=TIME-DATE
2=TROUBLE REMIND  NO
3=CHARGR DISABLE  NO
```
System Setup Screen #2

```
   SYSTEM SETUP    ⇧
1=CANADIAN OPTION OFF
2=SEC ANN ENABLE  NO
```
System Setup Screen #3

```
    SYSTEM SETUP
1=FUTURE USE
2=TIMERS
3=BANNER
```
System Setup Screen #1

Timers

Timers for Soak, Waterflow Delay and AC Loss Delay can be programmed by pressing *2* while viewing System Setup Screen #1. The following screen will be displayed:

```
       TIMERS
1=SOAK  1      10 MIN
2=SOAK  2      10 MIN
3=WATERFLOW DELAY60S
```
Timer Screen #1

```
       TIMERS
1=AC LOSS DELAY  2 HR
```
Timer Screen #2

■ Soak 1 or Soak 2

The factory default setting for Soak Time is 10 minutes. To select a Soak Time delay of 10 to 30 minutes, press *1* for Soak 1 (Release Circuit 1) or *2* for Soak 2 (Release Circuit 2) while viewing Timer Screen #1. The following display will appear:

```
     SOAK # TIME
1=ALWAYS ON
2=ENTER MINUTES
```
Soak Time Setup Screen

Pressing *1* while viewing the Soak Time Setup Screen will program the corresponding releasing circuit to remain on during alarm activation until the alarm is cleared and the panel is reset.

Pressing *2* while viewing the Soak Time Setup Screen will display the following screen:

```
     SOAK # TIME

RANGE 10-30 MINUTES
```
Soak Time Screen

This screen allows the user to program a specific length of time for the releasing circuit to remain active after an input initiating a release has cleared. A flashing cursor is positioned in the lower left corner of the display. Enter a soak time consisting of two digits, such as 10 for ten minutes. 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 soak time. In this example, when the input circuit which initiated a release has cleared, the soak timer will start, allowing the releasing circuit to continue releasing water for a total of ten minutes and then deactivate.

```
       TIMER
1=SOAK 1       1 MIN
2=SOAK 2       2 MIN
3=WATERFLOW DELAY 0S
```
Timer Screen #1

■ 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
```
Waterflow Delay Screen

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.

```
    TIMER
1=AC LOSS DLAY 2 HR
```

Timer Screen #2

■ 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:

```
AC LOSS DELAY

RANGE 00-24 HOURS
```

AC Loss Delay Screen #1

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

```
  SYSTEM SETUP
1=FUTURE USE
2=TIMERS
3=BANNER
```

System Setup Screen #1

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:

```
  SELECT BANNER
1=FACTORY BANNER
2=USER BANNER
```

Select Banner Screen

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

```
FACTORY BANNER

PRESS ENTER IF OK
```

User Defined Banner Screen #1

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:

```
USER BANNER-LINE 1

PRESS ENTER IF OK
```

User Defined Banner 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.

```
    SYSTEM SETUP
1=TIME-DATE
2=TROUBLE REMIND
3=CHARGR DISABLE
```
System Setup Screen #2

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 AND DATE     ⬇
1=TIME        10:00A
2=DATE      09182014
3=CLOCK FORMAT  12HR
```
Time-Date Screen #1

```
   TIME AND DATE
1=DAYLIGHT SAVINGS
```
Time-Date Screen #2

■ Time

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

```
ENTER TIME AS 12HRS
          :
        10:00
1=AM             2=PM
```
Time Screen

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 beginning again.

■ Date

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

```
     ENTER DATE
   **-**-****
  MONTH DAY YEAR
   09-19-2014
```
Date Screen

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).

```
TIME AND DATE
1=DAYLIGHT SAVINGS
```
Time & Date Screen #2

Daylight Savings Time

Pressing *1* while viewing Time-Date Screen #2 will cause the following screens to be displayed:

```
 DAYLIGHT SAVINGS
1=ENABLED      YES
2=START MONTH  MAR
3=START WEEK   WK 2
```
Daylight Savings Screen #1

```
 DAYLIGHT SAVINGS  ⇧
1=END MONTH    NOV
2=END WEEK     WK 1
```
Daylight Savings Screen #2

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.

```
  SYSTEM SETUP
1=TIME-DATE
2=TROUBLE REMIND
3=CHARGR DISABLE
```
System Setup Screen #2

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 61, 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.

```
   SYSTEM SETUP
1=CANADIAN OPTION
2=SEC ANN ENABLE
```
System Setup Screen #3

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

```
   ROGRAMMING
1=ANN-BUS
2=HISTORY
3=WALKTEST
```
Programming Screen #3

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.

```
      ANN-BUS
1=BUS ENABLED    NO
2=BUS MODULES
3=AUTO CONFIGURE
```
ANN-BUS Screen #1

```
      ANN-BUS
1=ANN-S/PG OPTIONS
2=ANN-80 OPTIONS
3=ANN-RLY OPTIONS
```
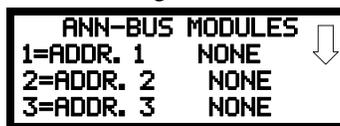**ANN-BUS Screen #2**

An ANN-S/PG Printer module, ANN-80 LCD annunciator module and an ANN-RLY relay module can be programmed in 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.

```
ANN-BUS MODULES
1=ADDR. 1    NONE      ⇩
2=ADDR. 2    NONE
3=ADDR. 3    NONE
```
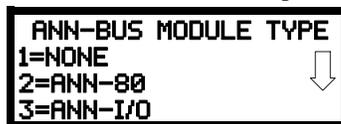**ANN-BUS Module Screen #1**

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.
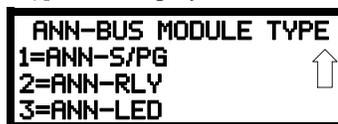
NOTE: When the Secondary ANN-BUS is enabled through System Setup programming, addresses 1 - 3 will be on the primary ANN-BUS and addresses 4 - 8 will be on the seconary ANN-BUS.

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

```
ANN-BUS MODULE TYPE
1=NONE                 ⇩
2=ANN-80
3=ANN-I/O
```
Module Type Screen #1

```
ANN-BUS MODULE TYPE
1=ANN-S/PG             ⇧
2=ANN-RLY
3=ANN-LED
```
Module Type Screen #2

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:
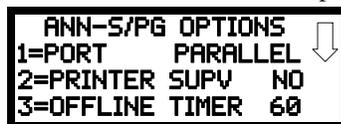
```
     ANN-BUS
  AUTO-CONGFIGURE
   IN PROGRESS
   PLEASE WAIT
```
Auto-Configure Screen

```
PROGRAMMING
1=ANN-S/PG OPTIONS
2=ANN-I/O OPTIONS
3=ANN-80 OPTIONS
```
ANN-BUS Screen #2

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:

```
ANN-S/PG OPTIONS    ⇩
1=PORT     PARALLEL
2=PRINTER SUPV   NO
3=OFFLINE TIMER  60
```
Printer Options Screen #1

```
ANN-S/PG OPTIONS    ⇧
1=BAUD RATE     N/A
2=DATA BITS     N/A
3=PARITY        N/A
```
Printer Options Screen #2

```
ANN-S/PG OPTIONS    ⇧
1=STOP BITS     N/A
```
Printer Options Screen #3

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.

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

ANN-80 Options

Pressing 2 while ANN-BUS screen #2 will display the following screen:

```
  ANN-80 OPTIONS    ⇩        ANN-80 OPTIONS    ⇧
1=PIEZO ENABLE             1=SIL BTN ENABLE
2=LOCK ENABLE             2=RST BTN ENABLE
3=ACK BTN ENABLE          3=DRL BTN ENABLE
```
ANN-80 Options Screen #1   **ANN-80 Options Screen #2**

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).
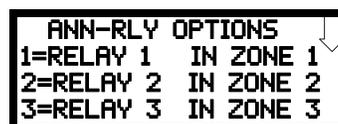
The Drill Button Enable *(DRL BTN ENABLE)* option allows the programmer to select whether the Drill button on any installed ANN-80 LCD annunciator will function normally or always be ignored. Pressing *3* while viewing the ANN-80 Options Screen #2 causes the display to toggle between *Drl Btn Enable 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 annunciator is installed, the programming screens will display the Canadian annunciator button options instead of the options shown above.

ANN-RLY Options

```
   PROGRAMMING
1=ANN-RLY OPTIONS
2=ANN-LED OPTIONS
```
ANN-BUS Screen #3

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

```
  ANN-RLY OPTIONS    ⇩
1=RELAY 1   IN ZONE 1
2=RELAY 2   IN ZONE 2
3=RELAY 3   IN ZONE 3
```
ANN-RLY Options Screen

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. Following is a list of the available programming options for each relay:

• General Alarm

• General Trouble

• General Supervisory

• Future Use

• Future Use

• Future Use

• General Discharge

• Discharge Release 1

• Discharge Release 2

• AC Loss

• Waterflow Delay

• Future Use

• Future Use

• Future Use

• General 2nd Shot Release

• 2nd Shot Release 1

• 2nd Shot Release 2

• Input Zone 1

• Input Zone 2

• Input Zone 3

• Input Zone 4

• Input Zone 5

• Input Zone 6

3.5.8 History

```
  PROGRAMMING
1=ANN-BUS
2=HISTORY
3=WALKTEST
```
Programming Screen #3

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:

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

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:

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

```
  PROGRAMMING
1=ANN-BUS
2=HISTORY
3=WALKTEST
```
Programming Screen #3

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.

```
ALARM ZONE 1
   <ADJ> <NOUN>
             Z01
10*00A 091814
```

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
```

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

```
  PROGRAMMING
1=CLEAR PROGRAM
2=PASSWORD CHANGE
```

Programming Screen #4

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!
     SYSTEM CHANGE
        PROCEED?
1=YES          2=NO
```

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
1=MASTER
2=MAINTENANCE
```

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 <u>not</u> be displayed on annunciators.*

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

```
ENTER NEW FIVE DIGIT
     PASSWORD
        ▨
```

Enter 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
        ▨
```

Password Change 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
```
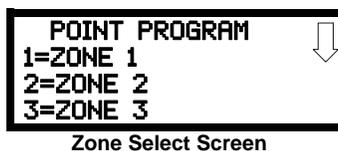
3.6.1 Input Zones - Enable/Disable

```
     PROGRAMMING
1=INPUT ZONES
2=HISTORY
3=WALKTEST
```
Maintenance Screen #1

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
```
Erase History Screen

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

```
    PROGRAMMING
1=INPUT ZONES
2=HISTORY
3=WALKTEST
```
Maintenance Screen #1

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
```
Walktest Screen

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

```
    PROGRAMMING
1=TIME-DATE
```
Maintenance Screen #2

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       01012009
3=CLOCK FORMAT 12HRS
```
Time and Date Screen

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

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

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
      09-19-2014
```
Date Screen

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

Factory programmed Templates have 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 96 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.

NOTES:
1. If Silence Inhibit has been enabled, NACs cannot be silenced for one minute following initiation of an alarm.
2. When the system is configured for dual hazard operation, an alarm in one hazard area may reactivate notification appliance circuits programmed for that area <u>only</u>.

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 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, 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 six 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.

Discharge

This is a red indicator that illuminates steadily when the water releasing circuit is activated.

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.

```
┌─────────────────────┐
│   SYSTEM ALL NORMAL  │
│    10:00A 091814     │
└─────────────────────┘
```

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.)

✓ **i³** 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 output circuits programmed as Trouble Bell NAC to activate
- The trouble relay to activate
- *TROUBL* 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:

```
TROUBL PULL STATION
   <ADJ> <NOUN>
ZONE 1 OPEN FAULT
   10:00A 091814
```

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 *2-WIRE SMOKE* for Smoke Detector, *2-WIRE 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:
  - – *OPEN* - indicating an open circuit
  - – *DIRTY* - maintenance alert indicating that a detector is near but below the allowed alarm limit and is in need of maintenance before the performance is compromised
- 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, *18* for the 18th day of the month and *14* for the year 2014

Pressing the *Acknowledge/Step* or *Alarm Silence* key will cause the pulsing piezo to silence and the system Trouble indicator to change from flashing to on steady. This block acknowledgment occurs regardless of the number of troubles, alarms and supervisory events active in the system. When the *Acknowledge/Step* key is pressed and at least one new alarm or trouble exists in the system, the 'acknowledge' message is sent to the printer and history file. If the trouble clears, either before or after the *Acknowledge/Step* key is pressed, the 'clear trouble' message is sent to the printer and history file.

If all troubles clear and there are no supervisory or fire conditions active in the system, the system returns to normal mode operation and the *System All Normal* message is shown on the LCD display and sent to the history and printer files. The auto-restore feature will restore cleared troubles even if the troubles were never acknowledged. Note that pressing the *Alarm Silence* key when only troubles exist in the system will have the same effect as pressing the *Acknowledge/Step* key except the Alarm Silenced indicator will light.

4.5 Alarm Operation

For a detailed description of the alarm operation for each preprogrammed Template, refer to "FACP Configuration Templates" on page 96 and "Circuit Mapping and Cross-Zoning" on page 91. 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
- Soak and Waterflow Delay Timers are started (if enabled) for appropriate circuits
- Alarms activate the general alarm relay
- Silenced alarms are resounded
- Release Solenoid circuits are activated to produce a water 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 091814
```

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 *2-WIRE SMOKE* for Smoke Detector, *2-WIRE 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, *18* for the 8th 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 are activated
- The supervisory relay is activated
- The alarm relay is <u>not</u> activated
- Silenced alarms are not resounded
- Timers are not started
- Store event in history buffer

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

```
FREEZE  SUPERVISORY
    <ADJ> <NOUN>
ZONE 05 FROZEN SUPRV
 10:00A 091814
```

In the preceding example:

– *FROZEN SUPRV* - indicates zone detector is below approximately 45ºF

Note that, like alarms, supervisory signals latch (except when programmed for supervisory autoresettable). Supervisory alarms do not cause resound as do other alarm conditions. Open circuits in supervisory wiring are processed by the control panel the same way as other trouble conditions. Refer to "Alarm Operation" on page 79, 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 2nd-Shot Water Switch

Following an initial waterflow release, an input circuit with the nonlatching Type Code of 2nd-Shot Water Switch, when activated, will cause another waterflow release to occur immediately. If a manual switch is connected to the circuit, an operator has the option to perform any number of additional waterflow releases following an initial release.

4.10 Detector Functions

Maintenance Alert

i³ 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.

Time Functions: Real-Time Clock

The FACP includes a crystal-based clock that provides time of day, 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, the 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
*   Cross-Zone:
    *   ✓ 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 three 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 water release and the programmed NAC output to turn on steady
*   Synchronized output for System Sensor, Wheelock, Gentex, Faraday or Amseco - Refer to "Synchronized NAC Operation" on page 59 for additional information.

4.12 Release Stages

Outputs programmed as Release Stage NACs indicate the two stages of a release operation:

✓ the activation of an output programmed as a Releasing Circuit will cause the programmed indicating NAC output to turn on steady

✓ upon completion of the release, the programmed indicating NAC output will pulse at a 20 pulse-per-minute rate or extinguish

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 <u>not</u> 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 <u>not</u> selected and the trouble is not cleared within 24 hours, the piezo will resound, indicating that the trouble condition still exists.

4.13.4 Soak Timers

Two Soak Timers allow the user to program a time between 10 and 30 minutes for each water releasing circuit to remain active. Soak Timer 1 is used for Releasing Solenoid Circuit 1 and Soak Timer 2 is used for Releasing Solenoid Circuit 2. Following an alarm condition in which the releasing circuit is activated, the water release will stop when the corresponding Soak Timer reaches zero.

4.13.5 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 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      ⇩
1=FACP CONFIG
2=INPUT ZONES
3=OUTPUT CIRCUITS
```
Read Status Screen #1

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

```
      READ STATUS      ⇕
1=TIMERS
2=DAYLIGHT SAVINGS
3=HISTORY
```
Read Status Screen #3

```
      READ STATUS      ⇧
1=PRINT
2=ANN-BUS
```
Read Status Screen #4

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 51). As an example, if Template 7 was programmed as the FACP configuration, the following screen will be displayed:

```
   READ FACP CONFIG
     TEMPLATE 7
    SINGLE HAZARD
       3 ZONE
```

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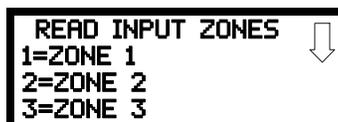
Pressing the down arrow key will allow the selection of Zones 4-6.

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 PULL STATION

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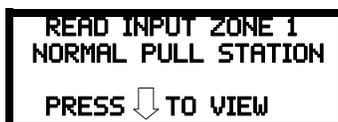
Pressing the down arrow key, while viewing the screen shown above, will allow the operator to view additional programming information about the selected device, such as:

•   Enable/Disable Status

•   Device Type

•   Output Circuit MAP

•   Adjective/Noun descriptor

4.15.3 Output Circuits

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

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
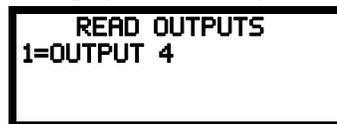
```
READ OUTPUTS
1=OUTPUT 4
```
Read Outputs Screen #2

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

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

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

```
CROSS INPUT ZONES
1=RELEASE 1
2=RELEASE 2
```
Cross Input Zone Screen

Pressing *1* for Release 1 or *2* for Release 2 will display the cross-zoning, if any, for the selected Releasing Circuit as illustrated in the following screen:

```
┌─────────────────────┐
│   CROSS ZONE REL 1  │
│        X 1 4        │
│        NONE         │
│        NONE         │
└─────────────────────┘
```
Cross Input Zone Screen
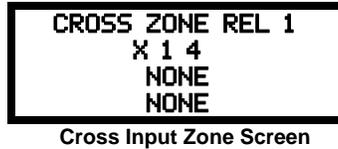
The Cross Zone Release screen displays the zones that have been cross-zoned. In this example, Zone 1 is cross-zoned with Zone 4.

4.15.5 On-Board Relays

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

```
┌─────────────────────┐
│    ON-BOARD RELAYS  │
│  1=RELAY 1          │
│  2=RELAY 2          │
│  3=RELAY 3          │
└─────────────────────┘
```

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

```
┌─────────────────────┐
│       RELAY #       │
│  TYPE         ALARM │
│  LATCHING        NO │
└─────────────────────┘
```

4.15.6 System Settings

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

```
┌─────────────────────┐ ┌─────────────────────┐ ┌─────────────────────┐
│  SYSTEM SETTINGS ⇩  │ │  SYSTEM SETTINGS ⇕  │ │  SYSTEM SETTINGS ⇧  │
│ FUTURE USE          │ │  FACTORY BANNER     │ │ CANADIAN OPTION  NO │
│ TROUBLE REMIND   NO │ │                     │ │ SEC ANN ENABLE   NO │
│ CHARGER DISABLE  NO │ │                     │ │                     │
└─────────────────────┘ └─────────────────────┘ └─────────────────────┘
```

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

4.15.7 Timers

```
┌─────────────────────┐
│  READ STATUS        │
│ 1=TIMERS            │
│ 2=DAYLIGHT SAVINGS  │
│ 3=HISTORY           │
└─────────────────────┘
```
Read Status Screen #3

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

```
┌─────────────────────┐ ┌─────────────────────┐
│      TIMERS      ⇩  │ │      TIMERS      ⇧  │
│ SOAK  1     10 MIN  │ │ AC LOSS DELAY  2 HR │
│ SOAK  2     10 MIN  │ │                     │
│ WATERFLOW DELAY  0S │ │                     │
└─────────────────────┘ └─────────────────────┘
```
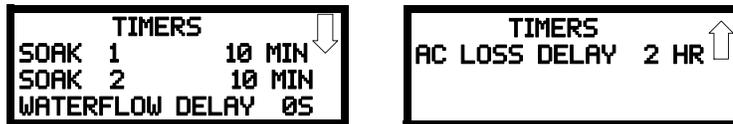
These screens allow the operator to view the various timer settings.

4.15.8 Daylight Savings

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

```
┌─────────────────────┐ ┌─────────────────────┐
│  DAYLIGHT SAVINGS ⇩ │ │  DAYLIGHT SAVINGS ⇧ │
│ ENABLED       YES   │ │ END MONTH      NOV  │
│ START MONTH   MAR   │ │ END WEEK       WK 1 │
│ START WEEK    WK 2  │ │                     │
└─────────────────────┘ └─────────────────────┘
```
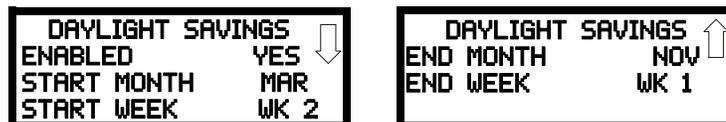
These screens allow the operator to view settings that have been programmed for Daylight Savings Time.

4.15.9 History

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

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

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

```
  READ STATUS
1=PRINT
2=ANN-BUS
```

Read Status Screen #4

To print control panel data, press *1* 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:

```
        PRINT
1=HISTORY
2=WALKTEST LOG
3=EXIT PRINTING
```

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 71 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        ⇩
BUS ENABLED      NO
1=BUS MODULES
2=ANN-S/PG OPTIONS
```
ANN-BUS Screen #1
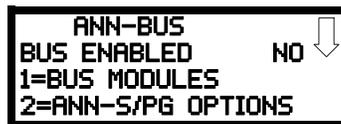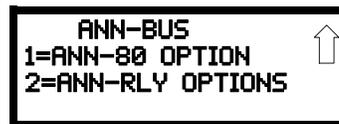
```
      ANN-BUS        ⇧
1=ANN-80 OPTION
2=ANN-RLY OPTIONS
```
ANN-BUS Screen #2

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.

NOTE: The ANN-I/O and ANN-LED modules do not require any additional programming configuration.

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 mm^2) 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.

Device Type	Number of Devices		Current Draw (AC amps)			Total Current per Device
MRP-200/C or MRP-2001E	1	X	3.66 or 2.085		=	
	[ ]	X	[ ]		=	
	[ ]	X	[ ]		=	
Sum Column for AC Branch Current Required					=	

Table 5.1 AC 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 89. 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 89. 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 89.

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.

To convert...	Multiply	Example
Milliamperes (mA) to amperes (A)	mA x 0.001	3 mA x 0.001 = 0.003A
Microamperes (μA) to amperes (A)	μA x 0.000001	300 μA x 0.000001 = 0.0003 A

Table 5.2 Converting to Full Amperes

5.3.2 How to Use Table 5.3 on page 89 to Calculate System Current Draw

Use Table 5.3 on page 89 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 90.

Following are the types of current that can be entered into Table 5.3 on page 89:

- ✓ **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 5.3 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 13.* 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 90.

Device Type	Calculation Column 1 Primary, Non-Fire Alarm Current (amps)			Calculation Column 2 Secondary, Fire Alarm Current (amps)			Calculation Column 3 Secondary, Non-Fire Alarm Current (amps)		
	Qty	X [current draw]=	Total	Qty	X [current draw] =	Total	Qty	X [current draw]=	Total
Main Circuit Board	1	X[0.095]=	0.095	1	X[0.221][1,2] =	0.221	1	X[0.095]=	0.095
CAC-5X	[　]	X[0.001]=		[　]	X[0.001]=		[　]	X[0.001]=	
4XTMF	[　] (1 max.)	X[0.005]=		[　]	X[0.011][1]=		[　]	X[0.005]=	
ANN-SEC card	[　] (1 max.)	X[0.003]=		[　] (1 max.)	X[0.003]=		[　] (1 max.)	X[0.003]=	
ANN-80(C)	[　]	X[0.037]=		[　]	X[0.040]=		[　]	X[0.015]=	
ANN-I/O	[　]	X[0.035]=		[　]	X[0.200]=		[　]	X[0.035]=	
ANN-RLY	[　]	X[0.015]=		[　]	X[0.075]=		[　]	X[0.015]=	
ANN-(R)LED	[　]	X[0.028]=		[　]	X[0.068]=		[　]	X[0.028]=	
ANN-S/PG	[　]	X[0.045]=		[　]	X[0.045]=		[　]	X[0.045]=	
2-wire Detector Heads	[　]	X[　][3]=		[　][4]	X[0.040=		[　]	X[　][3]=	
4-wire Detector Heads	[　]	X[　][3]=		[　][4]	X[0.040]=		[　]	X[　][3]=	
Power Supervision Relays[5]	[　]	X[0.025]=		[　]	X[0.025]=		[　]	X[0.025]=	
NAC #1	■			[　]	X[　]=		■		
NAC #2	■			[　]	X[　]=		■		
NAC #3	■						■		
NAC #4	■						■		
Current Draw from TB9 (nonalarm)	[　]=			[　]=			[　]=		
Sum each column[6] for totals	**Primary Non-Alarm =**			**Secondary Alarm =**			**Secondary Non-Alarm =**		

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 89, 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.

Secondary Standby Load (total from Table 5.3 Calculation Column 3) [ ]	Required Standby Time (24 hours) X[ ]	=	AH
Secondary Alarm Load (total from Table 5.3 Calculation Column 2) [ ]	Required Alarm Time (for 5 min., enter 0.084, for 10 min., enter 0.168) X[ ]	=	AH
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 96 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.

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.

```
            ZONE 1 TYPE
1=N/A
2=N/A
3=WATERFLOW
```

```
         OUTPUT MAP ZONE 1
1=ALARM NAC              YES
2=RELEASE 1               NO
3=RELEASE 2               NO
```

```
         OUTPUT MAP ZONE 1
1=SUPV BELL NAC          N/A
```

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.

```
            ZONE 1 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
         OUTPUT MAP ZONE 1
1=ALARM NAC              YES
2=RELEASE 1              YES
3=WATERFLOW NAC           NO
```

```
         OUTPUT MAP ZONE 1
1=SUPV BELL NAC          N/A
```

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.

```
        ZONE 1 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
        ZONE 2 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
      OUTPUT MAP ZONE 1
1=ALARM NAC            YES
2=RELEASE 1            YES
3=ALARM NAC            NO
```

```
      OUTPUT MAP ZONE 2
1=ALARM NAC            YES
2=RELEASE 1            YES
3=ALARM NAC            YES
```

```
      OUTPUT MAP ZONE 1
1=SUPV BELL NAC        N/A
```

```
      OUTPUT MAP ZONE 2
1=SUPV BELL NAC        N/A
```

```
     REL 1 CROSS GROUP 1
1=ZONE 1               YES
2=ZONE 2               YES
3=ZONE 3               NO
```

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.

```
         ZONE 1 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
         ZONE 3 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
         ZONE 2 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
         ZONE 4 TYPE
1=2-WIRE SMOKE
2=2-WIRE HEAT
3=N/A
```

```
      OUTPUT MAP ZONE 1
1=ALARM NAC           YES
2=RELEASE 1           YES
3=RELEASE 2            NO
```

```
      OUTPUT MAP ZONE 2
1=ALARM NAC           YES
2=RELEASE 1           YES
3=RELEASE 2            NO
```

```
      OUTPUT MAP ZONE 1
1=SUPV BELL NAC       N/A
```

```
      OUTPUT MAP ZONE 2
1=SUPV BELL NAC       N/A
```

```
      OUTPUT MAP ZONE 3
1=ALARM NAC           YES
2=RELEASE 1            NO
3=RELEASE 2           YES
```

```
      OUTPUT MAP ZONE 4
1=ALARM NAC           YES
2=RELEASE 1            NO
3=RELEASE 2           YES
```

```
      OUTPUT MAP ZONE 3
1=SUPV BELL NAC       N/A
```

```
      OUTPUT MAP ZONE 4
1=SUPV BELL NAC       N/A
```

```
     REL 1 CROSS GROUP 1
1=ZONE 1              YES
2=ZONE 2              YES
3=ZONE 3               NO
```

```
     REL 2 CROSS GROUP 1
1=ZONE 1               NO
2=ZONE 2               NO
3=ZONE 3              YES
```

```
     REL 2 CROSS GROUP 1
1=ZONE 4              YES
2=ZONE 5               NO
3=ZONE 6               NO
```

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-2001/E has been provided with preprogrammed templates which allow the user to quickly configure the FACP [refer to "FACP CONFIG (Application Templates)" on page 51]. The user also has the option to reprogram selected portions of the template for customized applications. The following pages of this appendix describe the programming for each of the templates.

NOTE: The MRP-2001/E Pre-Action/Deluge Control Panel can be configured using preprogrammed Templates 1 through 7.

Important! Each Template has been programmed with specific Input Zone Types and Output Circuit Types. If the FACP is configured with one of 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: Single Hazard - 3 Zone

Template 1: SINGLE HAZARD - 3 ZONE

OUTPUT CIRCUITS	INPUT ZONES					
	1	2	3	4	5	6
	2-WIRE SMOKE	FIRE	WATERFLOW	MANUAL RELEASE	PULL STATION	SUPV.
#1 ALARM NAC	X	X		X	X	
#2 WATERFLOW NAC			X			
#3 RELEASE SOLENOID 1	X	X		X	X	
#4 SUPV. BELL NAC						X

Table Legend:

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

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - no waterflow delay since Waterflow Delay Timer is set to 0
- Zone 4 = Manual Release
- Zone 5 = Pull Station
- Zone 6 = Supervisory

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Waterflow NAC - no waterflow delay since Waterflow Delay Timer is set to 0, silenceable, coded for steady on
- Output 3 = Release Solenoid 1 (unsupervised for shorts)
- Output 4 = Supervisory Bell NAC, silenceable, coded for steady on

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 0 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of Input Zone 1 (2-Wire Smoke) **or** Zone 2 (Fire) **or** Zone 4 (Manual Release) **or** Zone 5 (Pull Station) will operate the Alarm NAC Output #1 and Release Solenoid 1 Output #3. Release Solenoid 1 will turn off water release following time-out of the 10 minute Soak Timer 1
- Activation of Input Zone 3 (Waterflow) will operate the Waterflow NAC Output #2. There is no FACP initiated delay in activation since the Waterflow Delay Timer is set to 0 seconds
- Activation of Input Zone 6 (Supervisory) will operate the Supervisory Bell NAC Output #4

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 (Fire) or Zone 3 (Waterflow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

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

- Supervisory - activation of Zone 6 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 1
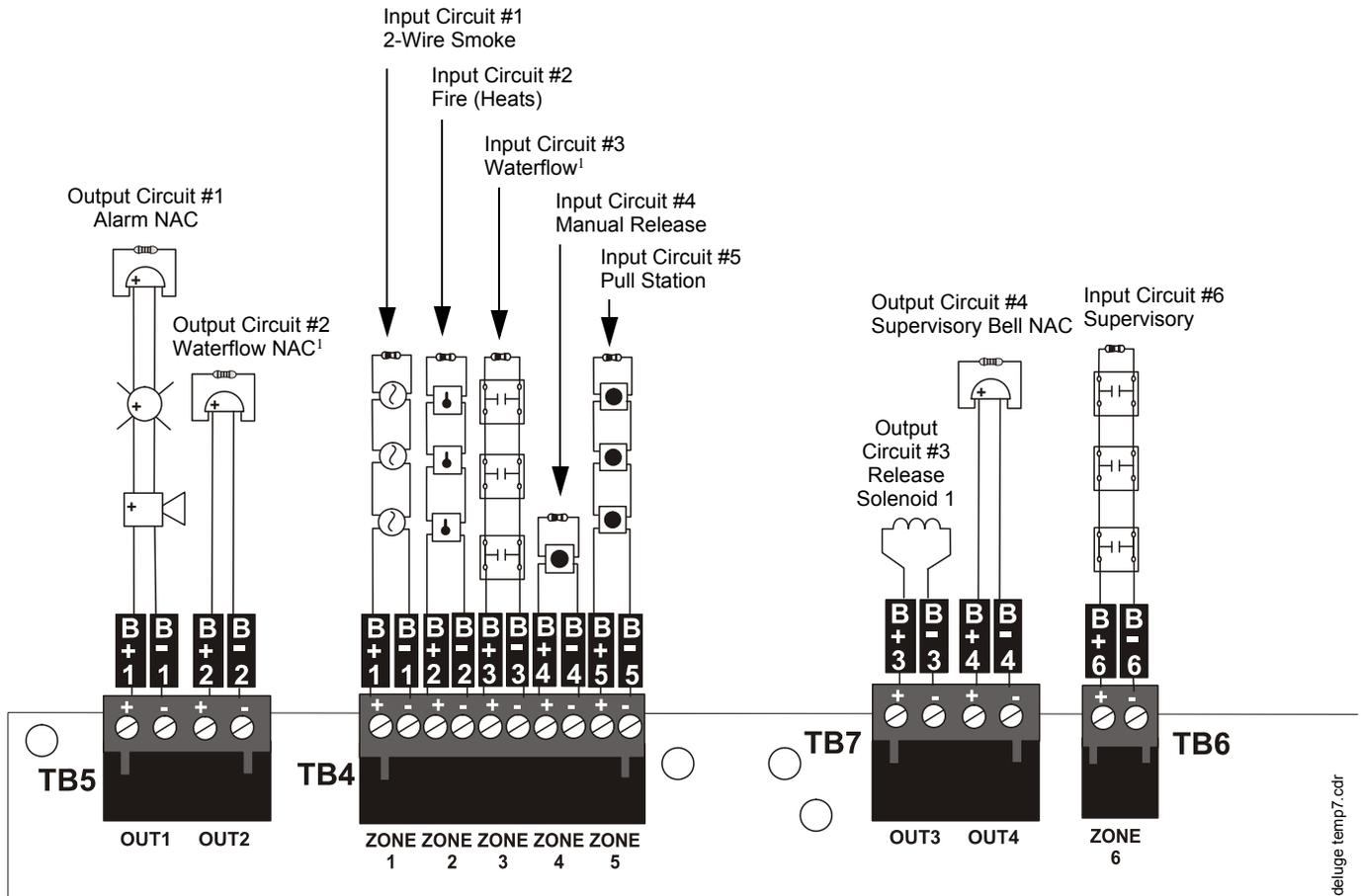
Notes:

1. No Waterflow Delay is programmed.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ″ watt (PN: 71252).

3. 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 29.

B.2 Template 2: Single Hazard - Cross-Zone With Manual Release

Template 2: CROSS-ZONE WITH MANUAL RELEASE SWITCH

	INPUT ZONES					
	1	2	3	4	5	6
OUTPUT CIRCUITS	**2-WIRE SMOKE**	**FIRE**	**WATERFLOW**	**MANUAL RELEASE**	**PULL STATION**	**SUPV.**
#1 ALARM NAC	X	X		X	X	
#2 WATERFLOW NAC			X			
#3 RELEASE SOLENOID 1	C1	C1		X	X	
#4 SUPV. BELL NAC						X

Table Legend:

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

Cx = cross-zone where x is the number of the Release Solenoid. All inputs with the same Release Solenoid number must be active at the same time to turn on the corresponding solenoid output circuit

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - activation delayed for 60 seconds (Waterflow Delay set to 60 secs.)
- Zone 4 = Manual Release
- Zone 5 = Pull Station
- Zone 6 = Supervisory

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Waterflow NAC - activation delayed for 60 seconds (Waterflow Delay set to 60 sec), silenceable, coded for steady on
- Output 3 = Release Solenoid 1 (unsupervised for shorts)
- Output 4 = Supervisory Bell NAC, silenceable, coded for steady on

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 60 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of both Input Zone 1 (2-Wire Smoke) **and** Zone 2 (Fire) at the same time, **or** Zone 4 (Manual Release) **or** Zone 5 (Pull Station) will operate the Release Solenoid 1 Output #3. Release Solenoid will turn off water release following time-out of the 10 minute Soak Timer 1. Activation of any one of these zones will operate Alarm NAC Output #1
- Activation of Input Zone 3 (Waterflow) will operate the Waterflow NAC Output #2. There is a 60 second FACP initiated delay in activation since Waterflow Delay Timer is set to 60 seconds
- Activation of Input Zone 6 (Supervisory) will operate the Supervisory Bell NAC Output #4

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 (Fire) or Zone 3 (Waterflow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

• Trouble Relay - any system trouble will activate the Trouble Relay

• Supervisory - activation of Zone 6 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 2
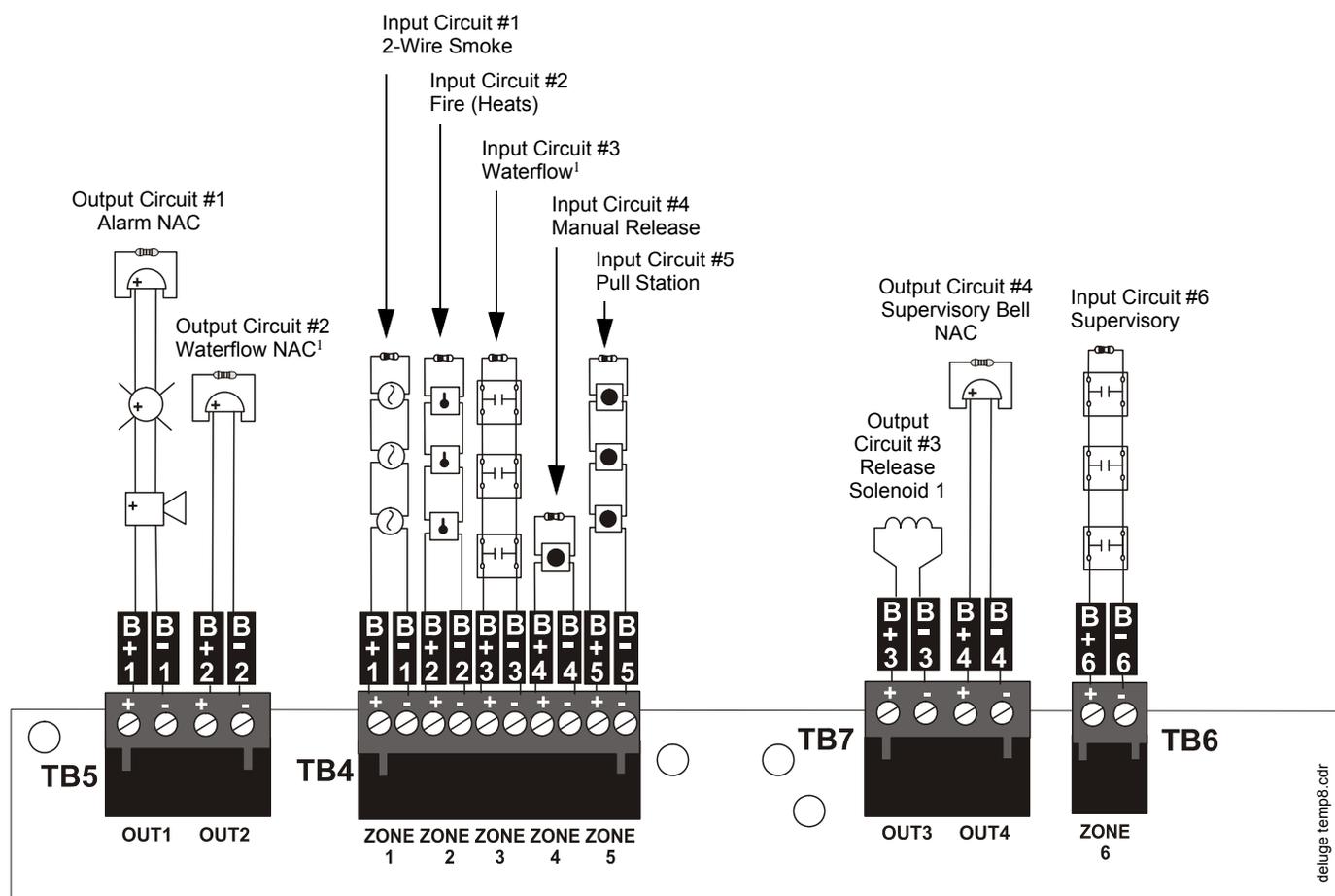
Notes:

1. Waterflow Delay is programmed for 60 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ″ watt (PN: 71252).

3. 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 29.

B.3 Template 3: Dual Hazard - Combined Release

Template 3: DUAL HAZARD - COMBINED RELEASE

	INPUT ZONES					
	1	**2**	**3**	**4**	**5**	**6**
OUTPUT CIRCUITS	**2-WIRE SMOKE**	**FIRE**	**WATERFLOW**	**MANUAL RELEASE**	**PULL STATION**	**SUPV.**
#1 ALARM NAC	X	X	X	X	X	
#2 SUPV BELL NAC						X
#3 RELEASE SOLENOID 1	X	X		X	X	
#4 RELEASE SOLENOID 2	X	X		X	X	

Table Legend:

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

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.)
- Zone 4 = Manual Release
- Zone 5 = Pull Station
- Zone 6 = Supervisory

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Supervisory Bell NAC, silenceable, coded for steady on
- Output 3 = Release Solenoid 1 (unsupervised for shorts)
- Output 4 = Release Solenoid 2 (unsupervised for shorts)

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 10 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of Input Zone 1 (2-Wire Smoke) **or** Zone 2 (Fire) **or** Zone 4 (Manual Release) **or** Zone 5 (Pull Station) will operate the Alarm NAC Output #1, Release Solenoid 1 Output #3 and Release Solenoid 2 Output #4. Release Solenoid 1 will turn off water release following time-out of the 10 minute Soak Timer 1 and Release Solenoid 2 will turn off water release following time-out of the 10 minute Soak Timer 2
- Activation of Input Zone 3 (Waterflow) will operate the Alarm NAC Output #1. There is a 10 second FACP initiated delay in activation since Waterflow Delay Timer is set to 10 seconds
- Activation of Input Zone 6 (Supervisory) will operate the Supervisory Bell NAC Output #2

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 (Fire) or Zone 3 (Water-flow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

• Trouble Relay - any system trouble will activate the Trouble Relay

• Supervisory - activation of Zone 6 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 3

Notes:

1. Waterflow Delay is programmed for 10 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ˝ watt (PN: 71252).

3. 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 29.

B.4 Template 4: Dual Hazard - Split Release

Template 4: DUAL HAZARD - SPLIT RELEASE

	INPUT ZONES					
	1	**2**	**3**	**4**	**5**	**6**
OUTPUT CIRCUITS	**2-WIRE SMOKE**	**FIRE**	**WATERFLOW**	**SUPV.**	**MANUAL RELEASE**	**PULL STATION**
#1 ALARM NAC	X	X	X		X	X
#2 SUPV BELL NAC				X		
#3 RELEASE SOLENOID 1	X				X	X
#4 RELEASE SOLENOID 2		X			X	X

Table Legend:

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

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - activation delayed for 10 seconds (Waterflow Delay Timer 10 set to secs.)
- Zone 4 = Supervisory
- Zone 5 = Manual Release
- Zone 6 = Pull Station

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Supervisory Bell NAC, silenceable, coded for steady on
- Output 3 = Release Solenoid 1 (unsupervised for shorts)
- Output 4 = Release Solenoid 2 (unsupervised for shorts)

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 10 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of Input Zone 1 (2-Wire Smoke) will operate Release Solenoid 1 Output #3 and Alarm NAC Output #1. Activation of Input Zone 2 (Fire) will operate Release Solenoid 2 Output #4 and Alarm NAC Output #1. Activation of Input 5 (Manual Release) **or** Input 6 (Manual Pull Station) will operate Solenoid 1 Output #3 **and** Solenoid 2 (Output #4) **and** Alarm NAC Output #1. Release Solenoid 1 will turn off water release following time-out of the 10 minute Soak Timer 1 and Release Solenoid 2 will turn off water release following time-out of the 10 minute Soak Timer 2
- Activation of Input Zone 3 (Waterflow) will operate the Alarm NAC Output #1. There is a 10 second FACP initiated delay in activation since Waterflow Delay Timer is set to 10 seconds
- Activation of Input Zone 4 (Supervisory) will operate the Supervisory Bell NAC Output #2

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 (Fire) or Zone 3 (Waterflow - with Waterflow Delay time) or Zone 5 (Manual Release) or Zone 6 (Pull Station) will operate Alarm Relay

• Trouble Relay - any system trouble will activate the Trouble Relay

• Supervisory - activation of Zone 4 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 4
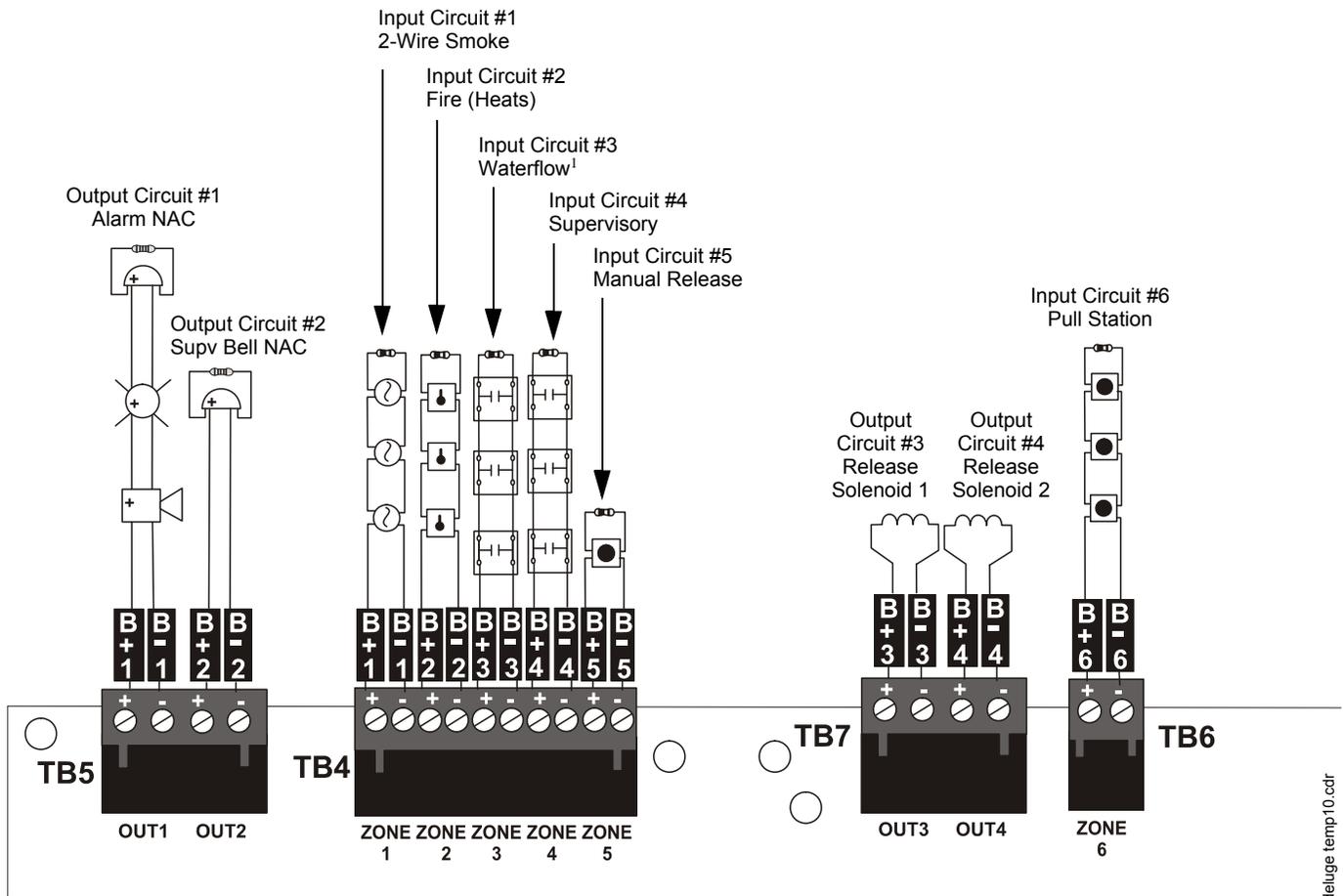
Notes:

1. Waterflow Delay is programmed for 10 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ″ watt (PN: 71252).

3. 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 29.

B.5 Template 5: Single Hazard - 3 Zones and Low Pressure

Template 5:   SINGLE HAZARD - 3 ZONES AND LOW PRESSURE

	INPUT ZONES					
	1	2	3	4	5	6
OUTPUT CIRCUITS	2-WIRE SMOKE	FIRE	WATERFLOW	MANUAL RELEASE	PULL STATION	LOW PRESS.
#1 ALARM NAC	X	X		X	X	
#2 WATERFLOW NAC			X			
#3 SUPV. BELL NAC						X
#4 RELEASE SOLENOID 1	X	X		X	X	

Table Legend:

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

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.)
- Zone 4 = Manual Release
- Zone 5 = Pull Station
- Zone 6 = Low Pressure

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Waterflow NAC - activation delayed for 10 secs. (Waterflow Delay set to10 secs.), silenceable, coded for steady on
- Output 3 = Supervisory Bell NAC, silenceable, coded for steady on
- Output 4 = Release Solenoid 1 (unsupervised for shorts)

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 10 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of Input Zone 1 (2-Wire Smoke) **or** Zone 2 (Fire) **or** Zone 4 (Manual Release) **or** Zone 5 (Pull Station) will operate the Alarm NAC Output #1 and Release Solenoid 1 Output #4. Release Solenoid 1 will turn off water release following time-out of the 10 minute Soak Timer 1
- Activation of Input Zone 3 (Waterflow) will operate the Waterflow NAC Output #2. There is a 10 second FACP initiated delay in activation since Waterflow Delay Timer is set to 10 seconds
- Activation of Input Zone 6 (Low Pressure) will operate the Supervisory Bell NAC Output #3

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 (Fire) or Zone 3 (Waterflow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

•   Trouble Relay - any system trouble will activate the Trouble Relay

•   Supervisory - activation of Zone 6 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 5

Notes:

1. Waterflow Delay is programmed for 10 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ˝ watt (PN: 71252).

3. 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 29.

B.6 Template 6: Single Hazard - 2 Zones Cross-Zoned With All Active

Template 6: SINGLE HAZARD - 2 ZONES CROSS-ZONES WITH ALL ACTIVE

	INPUT ZONES					
	1	2	3	4	5	6
OUTPUT CIRCUITS	**2-WIRE SMOKE**	**FIRE**	**WATERFLOW**	**MANUAL RELEASE**	**PULL STATION**	**LOW PRESS.**
#1 ALARM NAC	X	X		X	X	
#2 WATERFLOW NAC			X			
#3 SUPV. BELL NAC						X
#4 RELEASE SOLENOID 1	C1	C1		X	X	

Table Legend:

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

Cx = cross-zone where x is the number of the Release Solenoid. All inputs with the same Release Solenoid number must be active at the same time to turn on the corresponding solenoid output circuit

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Waterflow - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.)
- Zone 4 = Manual Release
- Zone 5 = Pull Station
- Zone 6 = Low Pressure

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Waterflow NAC - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.), silenceable, coded for steady on
- Output 3 = Supervisory Bell NAC, silenceable, coded for steady on
- Output 4 = Release Solenoid 1 (unsupervised for shorts)

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 10 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of both Input Zone 1 (2-Wire Smoke) **and** Zone 2 (Fire) at the same time, **or** Zone 4 (Manual Release) **or** Zone 5 (Pull Station) will operate the Release Solenoid 1 Output #4. Release Solenoid will turn off water release following time-out of the 10 minute Soak Timer 1. Activation of any one of these zones will operate Alarm NAC Output #1
- Activation of Input Zone 3 (Waterflow) will operate the Waterflow NAC Output #2. There is a 10 second FACP initiated delay in activation since Waterflow Delay Timer is set to 10 seconds
- Activation of Input Zone 6 (Low Pressure) will operate the Supervisory Bell NAC Output #3

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 (Fire) or Zone 3 (Water-flow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

•   Trouble Relay - any system trouble will activate the Trouble Relay

•   Supervisory - activation of Zone 6 (Supervisory) will operate the Supervisory Relay

Device Installation Example for Template 6

Notes:

1. Waterflow Delay is programmed for 10 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ˝ watt (PN: 71252).

3. 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 29.

B.7 Template 7: Single Hazard - Dual Zone

Template 7: SINGLE HAZARD - DUAL ZONE

	INPUT ZONES					
	1	**2**	**3**	**4**	**5**	**6**
OUTPUT CIRCUITS	**2-WIRE SMOKE**	**FIRE**	**LOW PRESS.**	**WATERFLOW**	**PULL STATION**	**MANUAL RELEASE**
#1 ALARM NAC	X	X		X	X	X
#2 WATERFLOW NAC				X		
#3 RELEASE SOLENOID 1	X	X			X	X
#4 WATERFLOW NAC				X		

Table Legend:

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

Input Zone Types:

- Zone 1 = 2-wire smoke
- Zone 2 = Fire
- Zone 3 = Low Pressure
- Zone 4 = Waterflow - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.)
- Zone 5 = Pull Station
- Zone 6 = Manual Release

Output Circuit Types:

- Output 1 = Alarm NAC, silenceable, coded for steady on
- Output 2 = Waterflow NAC - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.), silenceable, coded for steady on
- Output 3 = Release Solenoid 1 (unsupervised for shorts)
- Output 4 = Waterflow NAC - activation delayed for 10 seconds (Waterflow Delay set to 10 secs.), silenceable, coded for steady on

Timers

- Soak Timer 1 - set for 10 minutes
- Soak Timer 2 - set for 10 minutes
- Waterflow Delay Timer - set for 10 seconds
- AC Loss Delay Timer - set for 2 hours

Operation

- Activation of Input Zone 1 (2-Wire Smoke) **or** Zone 2 (Fire) **or** Zone 5 (Pull Station) **or** Zone 6 (Manual Release) will operate the Alarm NAC Output #1 and Release Solenoid 1 Output #3. Release Solenoid will turn off water release following time-out of the 10 minute Soak Timer 1
- Activation of Input Zone 4 (Waterflow) will operate the Alarm NAC Output #1, Waterflow NAC Output #2 and Waterflow NAC Output #4. There is a 10 second FACP initiated delay in activation of these outputs since the Waterflow Delay Timer is set to 10 seconds
- Activation of Input Zone 3 (Low Pressure) will not operate any Output Circuits (see Relays)

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 (Fire) or Zone 3 (Water-flow - with Waterflow Delay time) or Zone 4 (Manual Release) or Zone 5 (Pull Station) will operate Alarm Relay

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

- Supervisory - activation of Zone 3 (Low Pressure) will operate the Supervisory Relay

Device Installation Example for Template 7
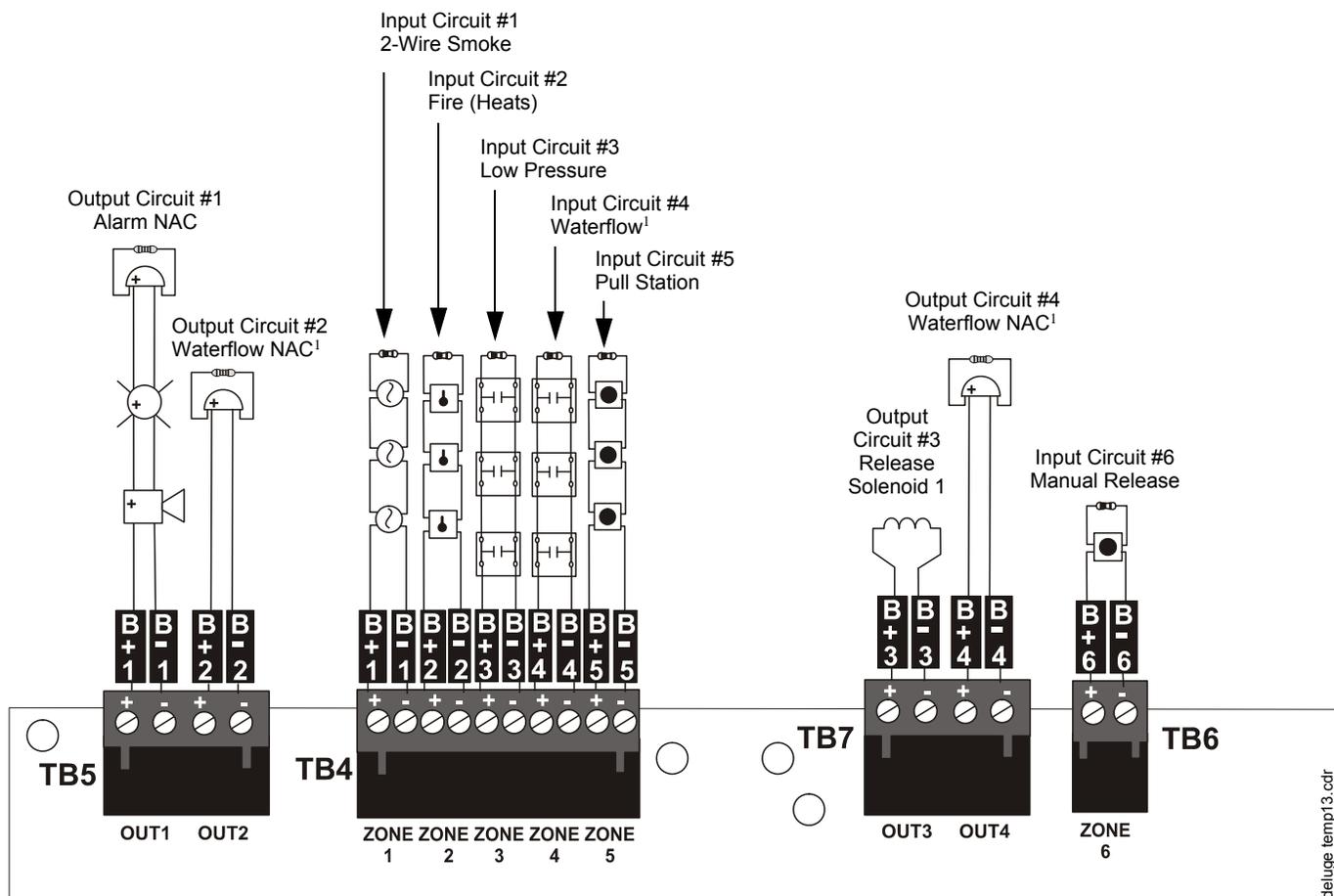
Notes:

1. Waterflow Delay is programmed for 10 seconds.

2. All End-of-Line Resistors, illustrated in this example, are 4.7KΩ, ˝ watt (PN: 71252).

3. 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 29.

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-2001 Control Panel

Contains the main control board, cabinet (backbox and door) and power supply.

Batteries

Refer to "Power Supply Calculations" on page 87, 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 112

OR

4XTMF Transmitter Module for connection to the RS82 Remote Station Receiver. See Figure C.3 on page 115, 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 31 and as outlined in Figure C.2, "Municipal Box Connected to 4XTMF Transmitter Module," on page 114.

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 116, 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-2001 may be used to trip any dialer UL-listed for Central Station/Remote Station Reporting Services.
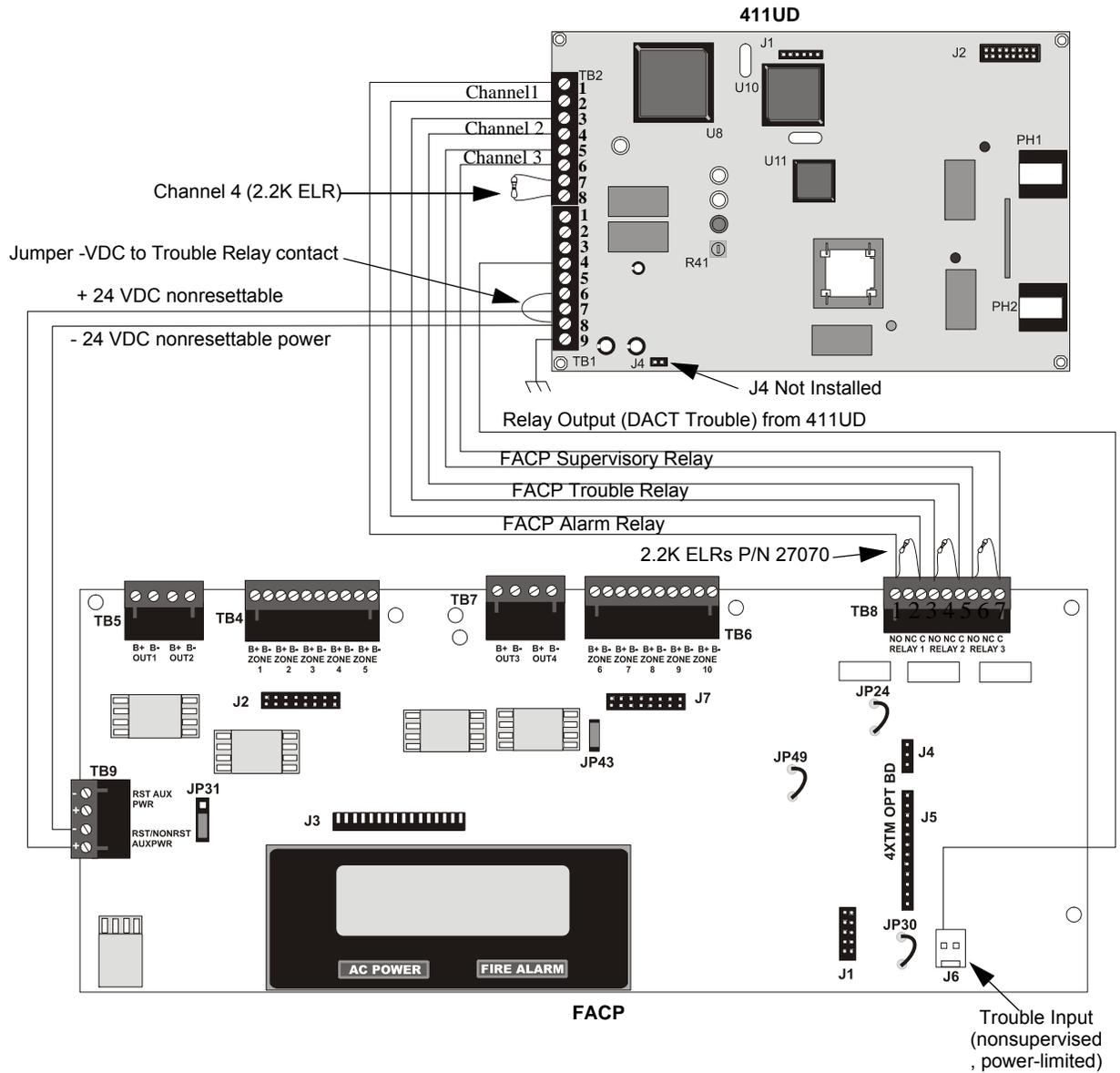
Figure C.1 FACP Connection to 411UD

	411UD	FACP
Alarm	TB2-1	TB8-1
	TB2-2	TB8-3
Trouble	TB2-3	TB8-4
	TB2-4	TB8-6
Supervisory	TB2-5	TB8-7
	TB2-6	TB8-9

Table C.1 411UD Connections to FACP

Notes:

1. Reference the 411UD Manual for additional information

2. All connections between the control panel 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-2001 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).

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.

2. Cut JP30 on the MRP-2001 main circuit board to supervise placement of 4XTMF module and circuit.

3. Cut JP24 on the MRP-2001 main circuit board to enable FACP Supervisory relay.

4. Refer to "4XTMF Municipal Box Transmitter Option Module" on page 31 for detailed information.
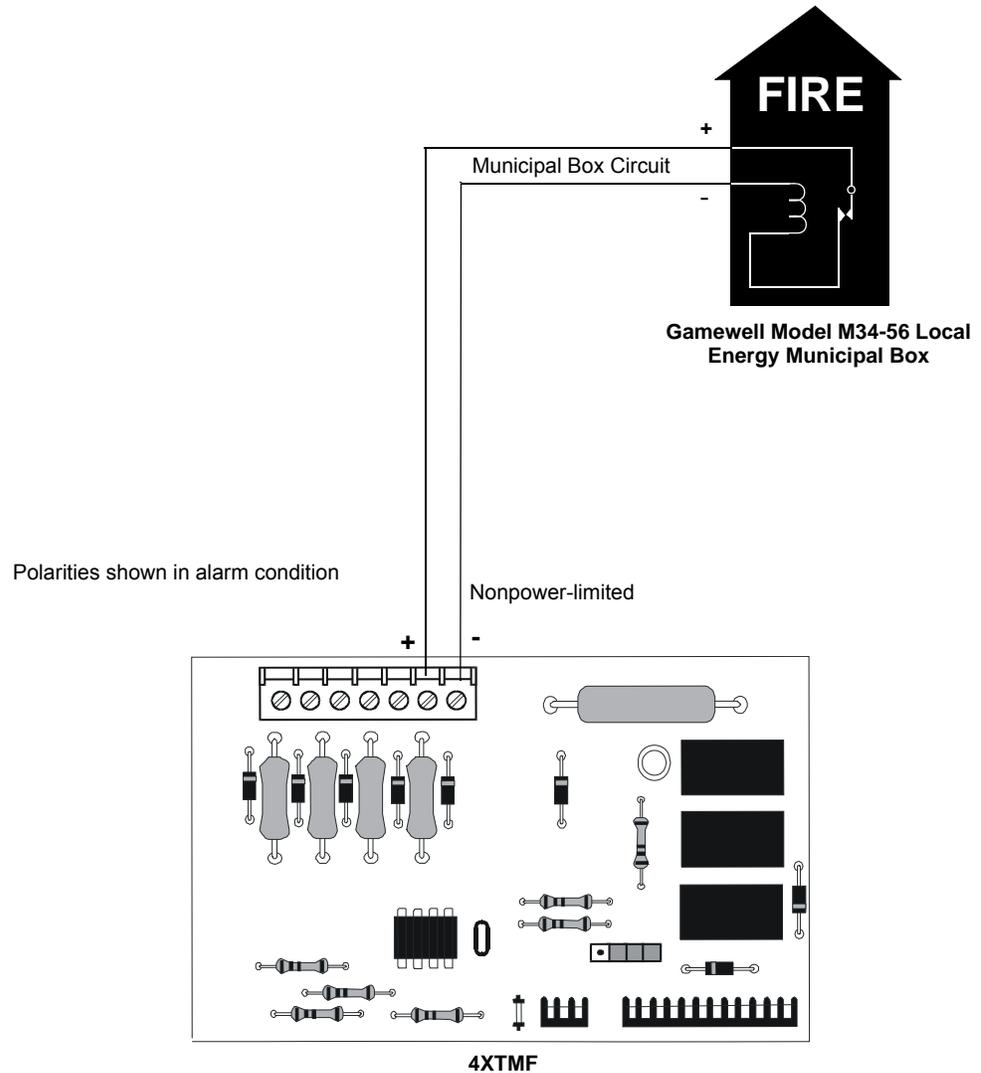
Figure C.2 Municipal Box Connected to 4XTMF Transmitter Module

NFPA 72 Remote Station Protective Signaling System

Notes:

1. Cut Jumper JP30 on the MRP-2001 main circuit board to supervise placement of the 4XTMF module.

2. Refer to "4XTMF Transmitter Module Installation" on page 31 for detailed information.
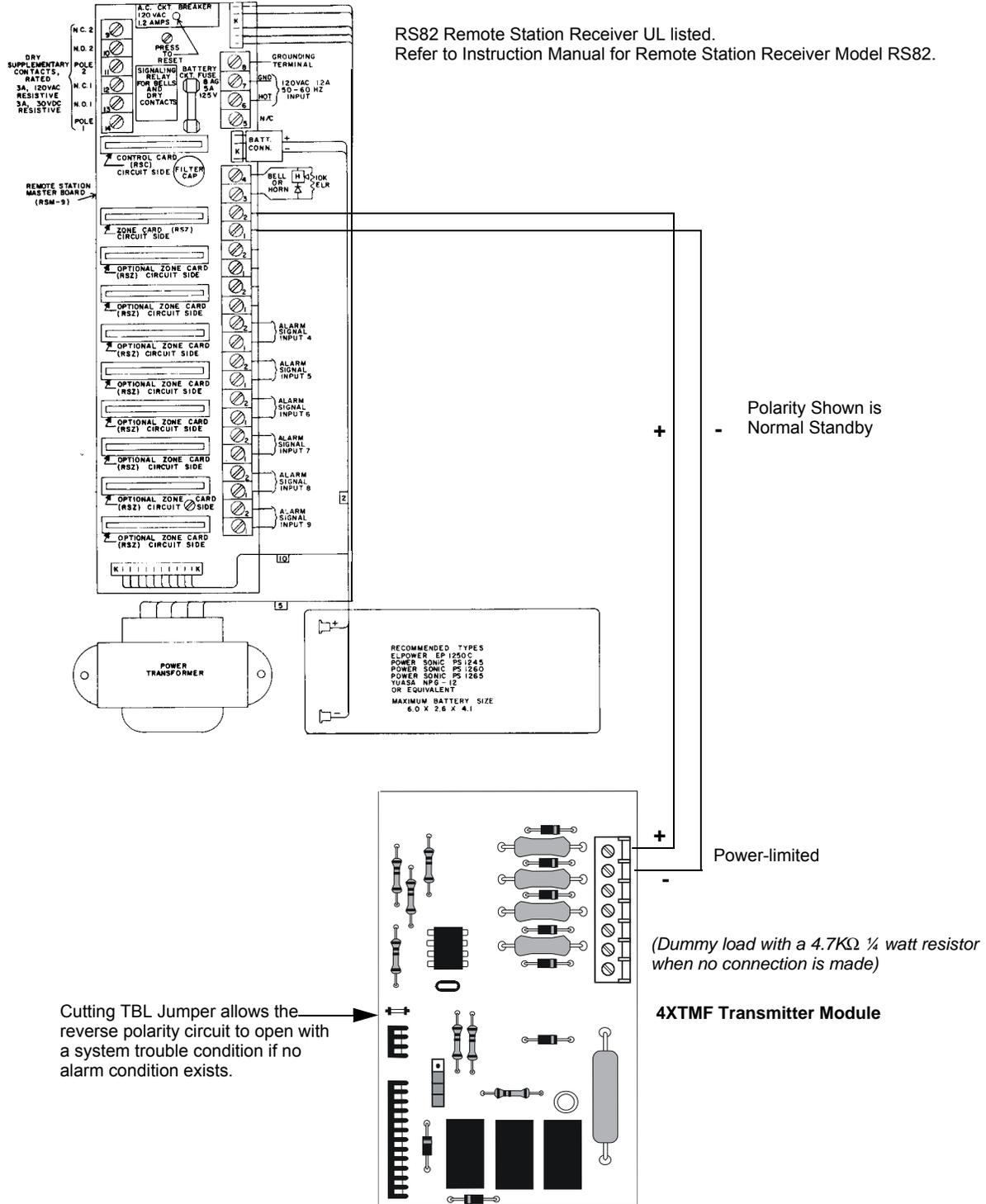
Figure C.3 Remote Station Connection Using 4XTMF Module

NFPA 72 Proprietary Protective Signaling Systems

Fire Alarm Control Panel

FACP Main Circuit Board

Form-C Alarm contact programmed to activate on General Alarm.

Form-C Trouble contact which will automatically activate on any Trouble condition.

Form-C relay contact programmed to activate on Supervisory condition.

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 MRP-2001 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.
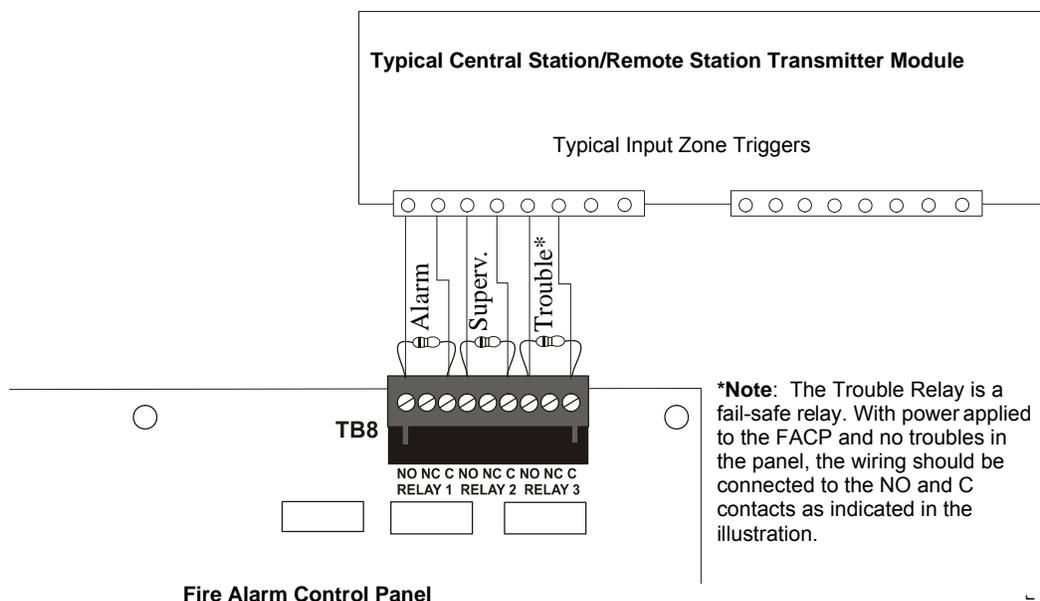
Figure C.5 FACP Dry Contacts Connection to Central Station/Remote Station Transmitter

Appendix D: FACP with Keltron

The following figure illustrates the connections between the FACP and Keltron Receiver/Transmitter.

⚠️ **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.

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.

Keltron 95M3158 TTM-RPS
1. Terminals 7 and 8: Remote station alarm/trouble inputs.
2. Terminals 9 and 10: Sprinkler supervisory input.
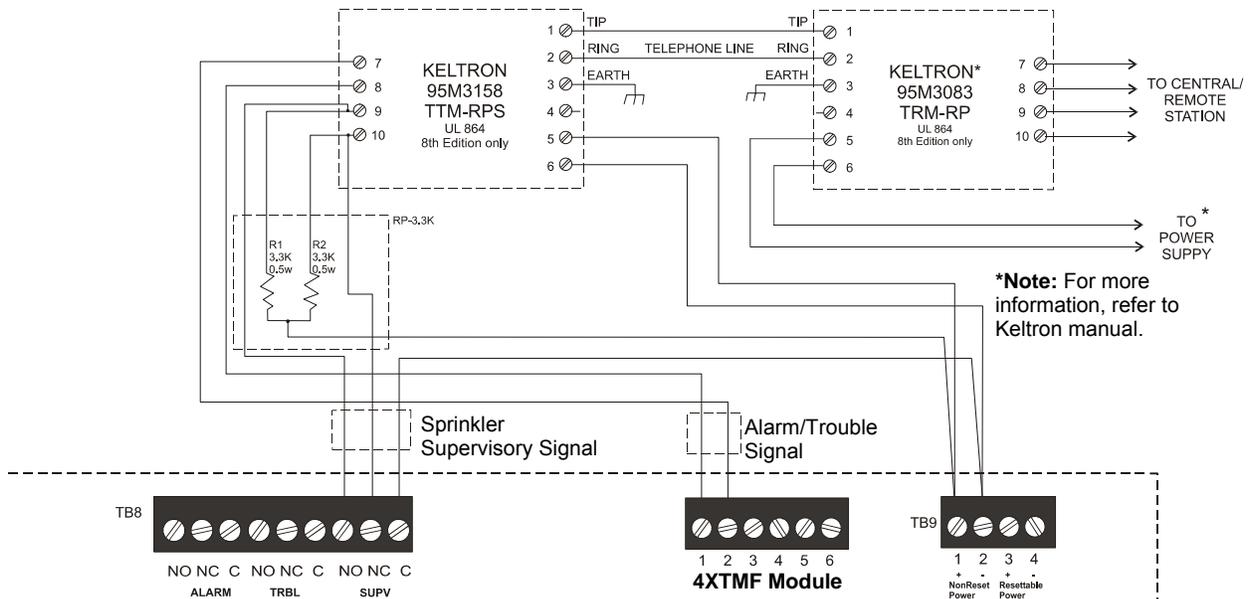
Note: Cut TBL jumper on 4XTMF module to send alarm/trouble signal from the same pair or terminals.

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 water 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 i³ 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.

CIRCUIT CONNECTIONS		WIRE REQUIREMENTS		
Circuit Type	Circuit Function	Wire Type and Limitations	Recommended Max. Distance Feet (meters)	Wire Gauge
Initiating Device Circuit (power-limited)	Connects to Initiating Devices	Untwisted, unshielded wire or twisted pair, unshielded wire (maximum loop resistance not to exceed 100 ohms)	Distance limitation set by 100 ohm resistance limitation	12-18 AWG (3.25 - 0.75 mm^2)
ANN-BUS (EIA-485) power-limited	Communication for ANN-BUS annunciator and relay modules	Twisted pair a maximum loop resistance of 120 ohms	6,000 (1,800 m)	12-18 AWG (3.25 - 0.75 mm^2)
ANN-BUS Power	Power for ANN-BUS annunciators	Refer to "ANN-BUS Devices" on page 33 for information on device wiring		
24 VDC Regulated, resettable, nonresettable	Power for accessories and 4-wire devices	Untwisted, unshielded wire or twisted pair, unshielded wire	Distance limitation set by 4 volt maximum line drop	12-18 AWG (3.25 - 0.75 mm^2)
Auxiliary Trouble Input	Open Collector trouble input for CHG-75, CHG-120F, etc.	Single conductor	Distance limitation 20 feet in same room	18 AWG (0.75 mm^2)
NAC/Solenoid Outputs	Connects to NAC devices or Release devices	Untwisted, unshielded pair wire or twisted, unshielded pair wire	Refer to Section F.1 on page 122.	

Table F.1 FACP Wire Specifications

F.1 NAC Wiring

The following table lists NAC wiring requirements for the FACP.

NAC Load (Amps)	Max. allowable total loop resistance (ohms)	CLASS-B Max. allowable wire pair length (feet)				CLASS-A Max. allowable wire pair length (feet)			
		AWG 12 solid	AWG 14 solid	AWG 16 solid	AWG 18 solid	AWG 12 solid	AWG 14 solid	AWG 16 solid	AWG 18 solid
0.25	13.60	3523	2215	1391	875	1762	1107	695	438
0.5	6.80	1762	1107	695	438	881	554	348	219
0.75	4.53	1174	738	464	292	587	369	232	146
1	3.40	881	554	348	219	440	277	174	109
1.25	2.72	705	443	278	175	352	221	139	88
1.5	2.27	587	369	232	146	294	185	116	73
1.75	1.94	503	316	199	125	252	158	99	63
2	1.70	440	277	174	109	220	138	87	55
2.25	1.51	391	246	155	97	196	123	77	49
2.5	1.36	352	221	139	88	176	111	70	44
2.75	1.24	320	201	126	80	160	101	63	40
3	1.13	294	185	116	73	147	92	58	36

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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MRP-2001, MRP-2001E, MRP-2001C
PRE-ACTION/DELUGE CONTROL PANEL
Operating Instructions

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).

WARNING!

DO NOT ALLOW TROUBLE CONDITIONS TO REMAIN LOGGED IN THE SYSTEM. THE PROTECTION THE SYSTEM OFFERS HAS BEEN COMPROMISED OR ELIMINATED, WHEN A TROUBLE CONDITION EXISTS.

To return to normal after an alarm
1. Do not enter the protected area until safe to do so.
2. Clear all initiating devices. Smoke detectors will not reset if there is still smoke in the area.
3. Reset the control panel (PRESS the RESET button).

Power failure or brownout
If AC power drops too low or fails, the *AC POWER* indicator will extinguish, the system *TROUBLE* indicator will turn on yellow, and the panel buzzer and any other audible trouble devices will sound. Contact authorized service personnel immediately. See below.

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-2001 Series Manual, Document #53040. It is kept in the following location:

_____
THIS SHEET SHALL BE FRAMED ADJACENT TO THE CONTROL PANEL

⊚ FIRE·LITE ALARMS
by Honeywell

In the event of trouble, contact the
local Fire-Lite Service Representative

Name: _____

Company: _____

Address: _____

Telephone Number: _____

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Cut along dotted line.

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Fire·Lite Alarms
by Honeywell

ISO 9001
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ENGINEERING & MANUFACTURING
QUALITY SYSTEMS