Fire·Lite Alarms
by Honeywell

Fire Alarm Control Panels
MS-5UD Series
MS-10UD Series

Fire Alarm System Limitations

While a fire alarm system may lower insurance rates, it is not a substitute for fire 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 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.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise 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 Guides for Proper Use of System Smoke Detectors, which are made available at no charge to all installing dealers. These documents can be found at *http:/www.systemsensor.com/html/ applicat.html*. 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, or chimneys 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.
- 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 stor-age 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, crippling its ability to report a fire.

Audible warning devices such as bells 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:

- 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 or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise 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 fire alarm 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. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise 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 fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm 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 fire alarm installers only. Adequate written records of all inspections should be kept.

Installation Precautions

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

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

CAUTION - *System Reacceptance 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. Reacceptance 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 indoor dry operation at 0-49° C/32-120° F and at a relative humidity of 93 ±2% RH (non-condensing) at 32 ±2° C/90 ±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 all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Refer to manual Specifications section for maximum allowable 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 interferences, 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, and 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 by authorized personnel.

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 device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when 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 their 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. This Class A digital apparatus complies with Canadian ICES-003.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada. Cet appareil numerique de la Classe A est conforme a la norme NMB-003 du Canada.

Notes

It is imperative that the installer understand the requirements of the Authority Having Jurisdiction (AHJ) and be familiar with the standards set forth by the following regulatory agencies:

- Underwriters Laboratories Standards
- NFPA 72 National Fire Alarm Code
- CAN/ULC - S527-99 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 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
UL 2017 General-Purpose Signaling Devices and Systems

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:

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
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
ACC-25/50 Series Audio Panel	Document #51889

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).

MS-5UD Series Main Circuit Board

Style D (Class A) IDC

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

Style Z (Class A) NAC

TB1

ZONE ZONE ZONE ZONE ZONE
1/6 2/7 3/8 4/9 5/10

J2

Class A Converter Module

USB Port for local programming using a personal computer and PK-5X Utility

J11

Kiss-off LED

3 Programmable Relays
Nonsupervised relay contacts
Contact Ratings:
2.0 amps @ 30 VDC (resistive)
0.5 amps @ 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.

Alarm* Trouble* Supervisory*

(*Factory default relay programming)

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

TB8

Cut this jumper to enable Supervisory relay when 4XTM module is installed

JP24

J4

J5

4XTM OPT BD

JP30

Auxiliary Trouble Input

J6

Secondary Phone Active LED

J9

Secondary

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

Primary Phone Active LED

J8

Primary

DACT Phone Line Jacks
(Nonpower-Limited)

ANN-BUS
GND PWR A B
- + A B - +

TB3

Remote Synchronization Output (see note 2)
Special Application Power 24 VDC filtered, supervised and power-limited. 0.040 amps maximum. Requires 4.7KΩ ELR.

TB2

J7

JP43

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

Class A Converter Module

TROUBLE

FIRE ALARM

ALARM SILENCED

RESET

ENTER

ACK/STEP

DRILL HOLD 2 SEC

AC POWER

SUPERVISORY

ALARM SILENCED

1 2ABC 3DEF 1ST EVENT
4GHI 5JKL 6MNO CLEAR
7PRS 8TUV 9WXY ESC
*QZ. 0 RECALL # ./. MODE

J3

Notification Appliance Circuits (see note 1)
Special Application Power
NAC #1, #2, #3 & #4, Style Y (Class B) (Supervised, Power Limited)
(See Style Z illustrated near right edge of board).
4.7KΩ, ½ watt
End-of-Line Resistor
PN 71252

NAC #4

NAC #3

OUT3 OUT4
B B B B
+ 1 + 1
1 2 1 2

TB7

Initiating Device Circuits
IDCs 1 through 5, Style B (Class B) (Supervised, Power Limited)
(See Style D illustrated near right edge of board).
4.7KΩ, ½ watt
End-of-Line Resistor
PN 71252

ZONE ZONE ZONE ZONE ZONE
1 2 3 4 5
B B
+ 1
1

TB4

J2

NAC #2

NAC #1

OUT1 OUT2
B B B B
+ 1 + 1
1 2 1 2

TB5

JP31
3
2
1

RST AUX PWR
RST/NONRST AUXPWR

TB9

J12
BATTERY
- +

J15

Battery (see note 3)
24 VDC, supervised, nonpower-limited

Basic System Connections 5-Zone Panel

Notes:
1. MS-5UD-3(E) = 2.5 amps max. per NAC
   MS-5UD-7(C/E)= 3 amps max. per NAC
2. Remote Sync Output is required only for the MS-5UD-3(E): refer to "Remote Synchronization Output" on page 31
3. 18 Amp Hour max. for MS-5UD-3(E)
   26 Amp Hour max. for MS-5UD-7(C/E)

Important! Removing Ground Fault Disable Jumper JP43 voids UL/NFPA Style/Class identifications for circuits. Remove jumper JP43 only with the approval of the 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 (0.500 amps maximum) to smoke detectors (IDC). Supervision required.

Nonresettable or Resettable Power Jumper selectable by JP31. 24 VDC filtered, power-limited (0.500 amps maximum) Supervision required. Nonresettable Power suitable for powering annunciators. Resettable 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 35.

Power Supply Connector J15

MS-10UD Series Main Circuit Board

Basic System Connections 10-Zone Panel

Notes:

1. MS-10UD-3(E) = 2.5 amps max. per NAC
   MS-10UD-7(C/E) = 3 amps max. per NAC
2. Remote Sync Output is required only for the MS-10UD-3(E); refer to "Remote Synchronization Output" on page 31
3. 18 Amp Hour max. for MS-10UD-3(E)
   26 Amp Hour max. for MS-10UD-7(C/E)

Important! Removing Ground Fault Disable Jumper JP43 voids UL/NFPA Style/Class identifications for circuits. Remove jumper JP43 only with the approval of the 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 (0.500 amps maximum) to smoke detectors. Supervision required.

Nonresettable or Resettable Power Jumper selectable by JP31, 24 VDC filtered, power-limited (0.500 amps maximum) Supervision required. Nonresettable Power suitable for powering annunciators, Resettable Power suitable for powering smoke detectors. Configure TB9, Terminals 1 & 2
• Resettable or Nonresettable Power. Jumper JP31 pins 1 & 2 as Resettable or Nonresettable Power.
• Resettable Power - jumper JP31 pins 2 & 3.
• Nonresettable Power - jumper JP31 pins 1 & 2 (as shown).

Power Supply Connector J15

For more specific UL wiring information refer to page 35.

Battery (see note 3)
24 VDC, supervised, nonpower-limited

Notification Appliance Circuits (see note 1)

Special Application Power
NAC #1, #2, #3 & #4, Style Y (Class B) (Supervised, Power Limited) (See Style Z illustrated near right edge of board).
4.7KΩ, ½ watt End-of-Line Resistor PN 71252

Initiating Device Circuits

IDCs 1 through 5, Style B (Class B) (Supervised, Power Limited) (See Style D illustrated near right edge of board). 4.7KΩ, ½ watt End-of-Line Resistor PN 71252

Remote Synchronization Output (see note 2)

Special Application Power 24 VDC filtered, supervised and power-limited. 0.040 amps maximum. Requires 4.7KΩ ELR.

Initiating Device Circuits

IDCs 6 through 10, Style B (Class B) (Supervised, Power Limited) (See Style D illustrated near right edge of board). 4.7KΩ, ½ watt End-of-Line Resistor PN 71252

3 Programmable Relays

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

Cut this jumper to enable Supervisory relay when 4XTM module is installed

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

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

USB Port for local programming using a personal computer and PK-5X Utility

Kiss-off LED

Auxiliary Trouble Input

Secondary Phone Active LED

Primary Phone Active LED

DACT Phone Line Jacks (Nonpower-Limited)

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

Style D (Class A) IDC

Style Z (Class A) NAC

Class A Converter Module

SECTION 1 Product Description

The MS-5UD is a five zone FACP (Fire Alarm Control Panel) and the MS-10UD is a ten zone FACP. The information in this manual refers to both the MS-5UD and MS-10UD unless otherwise specified. The combination control and digital communicator panels provide reliable fire signaling protection for small to medium sized commercial, industrial and institutional buildings. The FACP is compatible with System Sensor's i³ detectors which are conventional smoke detectors that can transmit a maintenance trouble signal to the FACP indicating the need for cleaning and a supervisory 'freeze' signal when the ambient temperature falls below the detector rating of approximately 45° F (refer to System Sensor 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 Fire•Lite Device Compatibility Document for a complete listing of compatible devices.

Outputs include four NACs (Notification Appliance Circuits), three programmable Form-C relays (factory programmed for Alarm, Trouble and Supervisory) and 24 VDC special application resettable and nonresettable power outputs. The FACP supervises all wiring, AC voltage, battery level and telephone line integrity. Available accessories include local and remote upload/download software, remote annunciators and reverse polarity/city box transmitter.

The integral DACT transmits system status (alarms, troubles, AC loss, etc.) to a Central Station via the public switched telephone network. It also allows remote programming or interrogation of the control panel using the PS-Tools Upload/Download utility via the public switched telephone network. Local programming interrogation is also possible using the PS-Tools and the USB port on the FACP. Any personal computer with Windows™ XP or newer, compatible modem with a speed of 2400 baud and PS-Tools may serve as a Service Terminal. This allows download of the entire program or upload of the entire program, history file, walktest data and current status.

Activation of a compatible smoke detector or any normally-open fire alarm initiating device will activate audible and visual signaling devices, illuminate an indicating LED, 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 following versions of the MS-5UD and MS-10UD are available:

FACP Version	Description
MS-5UD-3	Five Zone Panel: 120 VAC with FLPS-3 power supply providing 3.0 amps total 24 VDC output current
MS-5UD-7	Five Zone Panel: 120 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current
MS-5UD-7C	Five Zone Panel: 120 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current. Includes built-in ANN-LED Annunciator. This panel is approved for Canadian applications
MS-5UD-3E	Five Zone Panel: 240 VAC with FLPS-3 power supply providing 3.0 amps total 24 VDC output current
MS-5UD-7E	Five Zone Panel: 240 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current
MS-10UD-3	Ten Zone Panel: 120 VAC with FLPS-3 power supply providing 3.0 amps total 24 VDC output current
MS-10UD-7	Ten Zone Panel: 120 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current
MS-10UD-7C	Ten Zone Panel: 120 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current. Includes built-in ANN-LED Annunciator. This panel is approved for Canadian applications.
MS-10UD-3E	Ten Zone Panel: 240 VAC with FLPS-3 power supply providing 3.0 amps total 24 VDC output current
MS-10UD-7E	Ten Zone Panel: 240 VAC with FLPS-7 power supply providing 7.0 amps total 24 VDC output current

Note: Unless otherwise specified, the information in this manual applies to all versions of the panels.

1.1 Product Features

- Built-in DACT (Digital Alarm Communicator/Transmitter)
- Style B (Class B) IDC (Initiating Device Circuit)
  - ✓ MS-5UD - five programmable IDCs
  - ✓ MS-10UD - ten programmable IDCs
- Four Style Y (Class B) NAC (Notification Appliance Circuit) - special application power
- Three programmable Form-C relays
- Built-in Programmer
- Touchtone/Rotary dialing
- Programmable Make/Break Ratio
- Optional Dress Panel DP-51050
- 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
- ANN-BUS for connection to optional:
  - ✓ ANN-80 Remote LCD Annunciator
  - ✓ ANN-I/O LED Driver
  - ✓ ANN-S/PG Printer Module
  - ✓ ANN-RLY Relay Module
  - ✓ ANN-LED Annunciator Module
- 80-character LCD display (backlit)
- Real-time clock/calendar with daylight savings time control
- History log with 256 event storage
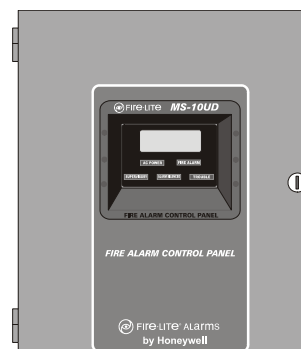
- Control Buttons
  - ✓ ACK (Acknowledge)
  - ✓ Alarm Silence
  - ✓ System Reset/Lamp Test
  - ✓ Drill
- LED Indicators
  - ✓ Fire Alarm
  - ✓ Supervisory
  - ✓ Trouble
  - ✓ AC Power
  - ✓ Alarm Silence
  - ✓ Primary and Secondary Phone Line Active LEDs
- Piezo sounder for alarm, trouble and supervisory
- 24 volt operation
- Low AC voltage sense
- Alarm Verification
- 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
- Automatic battery charger with charger supervision
- Silent or audible walktest capabilities
- Optional PK-CD (contains PS-Tools utility) for local or remote Upload/Download of program and data
- Optional CAC-5X Class A Converter Module for NACs and IDCs
- Optional 4XTMF Transmitter Module

1.2 Specifications

Note: For wiring specifications, refer to "Wire Requirements" on page 150.

AC Power

MS-5UD-3 (FLPS-3 Power Supply): 120 VAC, 60 HZ, 1.00 amps
MS-5UD-7 (FLPS-7 Power Supply): 120 VAC, 60 HZ, 3.90 amps
MS-5UD-7C (FLPS-7 Power Supply): 120 VAC, 60 HZ, 3.90 amps
MS-10UD-3 (FLPS-3 Power Supply): 120 VAC, 60 HZ, 1.00 amps
MS-10UD-7 (FLPS-7 Power Supply): 120 VAC, 60 HZ, 3.90 amps
MS-10UD-7C (FLPS-7 Power Supply): 120 VAC, 60 HZ, 3.90 amps
MS-5UD-3E (FLPS-3 Power Supply): 240 VAC, 50 HZ, 0.54 amps
MS-5UD-7E (FLPS-7 Power Supply): 240 VAC, 50 HZ, 2.20 amps
MS-10UD-3E (FLPS-3 Power Supply): 240 VAC, 50 HZ, 0.54 amps
MS-10UD-7E (FLPS-7 Power Supply): 240 VAC, 50 HZ, 2.20 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: 18 Amp Hour battery for MS-5UD-3(E), MS-10UD-3(E) and 26
Amp Hour battery for MS-5UD-7(E), MS-10UD-7(E) [two 18 Amp Hour batteries can be
housed in FACP cabinet. Larger batteries require separate battery box such as BB-26 or BB-55]
Minimum Battery Size: 7 Amp Hour (12 Amp Hour for MS-5UD-7C & MS-10UD-7C)

Initiating Device Circuits - TB4 (and TB6 on MS-10UD only)

Alarm Zones 1 - 5 on TB 4 (MS-5UD and MS-10UD)
Alarm Zones 6 - 10 on TB6 (MS-10UD only)
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
End-of-Line Resistor: 4.7KΩ, 1/2 watt (Part #71252)
Standby Current: 2 mA
Refer to Fire•Lite Device Compatibility Document for listed compatible devices

Notification Appliance Circuit(s) - TB5 and TB7[1]

Four NACs
Operation: Style Y (Class B)
Special Application power
Supervised and power-limited circuitry
Normal Operating Voltage: Nominal 24 VDC
Maximum Signaling Current: 3.0 amps for MS-5UD-3(E), MS-10UD-3(E) (2.5 amp maximum
per NAC); 7.0 amps for MS-5UD-7(E), MS-10UD-7(E) (3.0 amps maximum per NAC)
End-of-Line Resistor: 4.7KΩ, 1/2 watt (Part #71252)
Refer to Fire•Lite 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), 0.5 amps @ 30 VAC (resistive)

Special Application Resettable Power - TB9

Operating Voltage: Nominal 24 VDC
Maximum Available Current: 500 mA - appropriate for powering 4-wire smoke detectors (see
note 1)
Power-limited Circuitry
Refer to Fire•Lite Device Compatibility Document for compatible listed devices

Special Application Resettable or Nonresettable Power - TB9

Operating Voltage: Nominal 24 VDC
Maximum Available Current: 500 mA (see note 1)
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 Fire•Lite Device Compatibility Document for compatible listed devices

---

1. Total current for resettable power, nonresettable power and Notification Appliance Circuits
   must not exceed 3.0 amps for the FACP versions which are powered by the FLPS-3 power
   supply or 7.0 amps for the FACP versions which are powered by the FLPS-7 power supply.

Remote Sync Output - TB2

Remote power supply synchronization output, only required for the MS-5UD-3(E), MS-10UD-3(E) [refer to "Remote Synchronization Output" on page 31]
24 VDC nominal special application power
Maximum current is 40 mA
End-of-Line Resistor: 4.7KΩ
Supervised and power-limited circuit

Auxiliary Trouble Input - J6

The Auxiliary Trouble Input is an open collector circuit which can be used to monitor an external device 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.

1.3 Controls and Indicators

LCD Display
The FACP uses an 80-character
(4 lines X 20 characters) high viewing angle
LCD display. The display includes a long life
LED backlight that remains illuminated. If AC
power is lost and the system is not in alarm, the
LED backlight will turn off to conserve batteries.
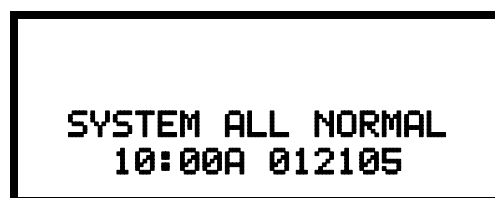
Key Panel
Mounted on the main circuit board, the key panel includes a window for the LCD display and LED indicators as listed above. The key panel, which is visible with the cabinet door closed, has 25 keys, including a 16 key alpha-numeric pad similar to a telephone keypad.

Function keys:

- Acknowledge/Step

- Alarm Silence

- Drill

- 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

Figure 1.1 Membrane/Display Panel

LED Indicators

LEDs are provided to annunciate the following conditions:

- Fire Alarm - red LED

- Supervisory - yellow LED

- AC Power - green LED

- System Trouble - yellow LED

- Alarm Silence - yellow LED

- Primary Phone Line Active (on circuit board) - red LED

- Secondary Phone Line Active (on circuit board) - red LED

- Kiss-off (on circuit board) - green LED

Local Piezo Sounder

A piezo sounder provides separate and distinct sounds for alarm, trouble, maintenance, process monitor and supervisory conditions as follows:

- Alarm - on steady

- Trouble - pulse 1 second on and 1 second off

- Maintenance - pulse 1 second on and 1 second off

- Supervisory - pulse ½ second on and ½ second off

- Process Monitor - pulse ¼ second on and ¼ second off

1.4 Digital Alarm Communicator/Transmitter

Two modular phone jacks allow easy connection to telephone lines. Modular jacks are labeled PH1 for Primary Phone Line and PH2 for Secondary Phone Line. Two telephone line active red LEDs are provided as well as a green *Kissoff* LED. The integral digital communicator provides the following functions:

- Line Seizure: takes control of the phone lines disconnecting any premises phones

- Off/On Hook: performs on and off-hook status to the phone lines

- Listen for dial tone: 440 Hz tone typical in most networks

- Dialing the Central Station(s) number: default is Touch-Tone®, programmable to rotary

- For tone burst or touchtone type formats: discern proper *Ack* and *Kissoff* tone(s). The frequency and time duration of the tone(s) varies with the transmission format. The control panel will adjust accordingly.

- Communicate in the following formats:

    ✓ Ademco Contact ID

    ✓ SIA-DCS-8

    ✓ SIA-DCS-20

1.5 Components

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

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

- FLPS-3 for the MS-5UD-3(E), MS-10UD-3(E)
- FLPS-7 for the MS-5UD-7(C/E), MS-10UD-7(C/E)

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 an optional dress panel (DP-51050) which mounts inside the cabinet and trim-ring (TR-CE). 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-26 or BB-55). Batteries must be ordered separately.

1.6 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) Notification Appliance Circuits to Style Z (Class A). The module connects to J2 on the MS-5UD and MS-10UD main circuit board and to J7 on the MS-10UD. Note that two Class A Converter modules are required for the 10 zone panel.

4XTMF Transmitter Module

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

ANN-80 LCD Annunciator

The ANN-80 is a remote LCD annunciator which mimics the information displayed on the FACP LCD display.

ANN-LED Annunciator Module

The ANN-LED Annunciator Module provides three LEDs for each zone: Alarm, Trouble and Supervisory. ANN-LED module is installed in dress panel for Canadian version.

ANN-RLY Relay Module

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

ANN-S/PG Serial/Parallel Printer Gateway

The ANN-S/PG module provides a connection for a serial or parallel printer.

ANN-I/O LED Driver Module

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

DP-51050 Dress Panel

A dress panel DP-51050 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 is available as an option. The trim-ring allows semi-flush mounting of the cabinet.

Battery Box

The BB-26 or BB-55 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.

PS-Tools Programming Utility

The PS-Tools Programming Utility can be used to locally or remotely program the FACP directly from most IBM compatible personal computers (PC), running Windows^{TM} XP (or newer). FACP program files can also be created and stored on the PC and then downloaded later to the control panel. The P/N: PK-CD includes the Windows-based Programming Utility software on CD-ROM with on-line help file. A standard USB cable with male-A to male-B connectors, which must be purchased separately, is required for local connection of the PC to the USB port J11 on the FACP main circuit board. Remote programming requires that the PC have a 2400 baud (or faster) modem.

Important: *Remote modification of FACP programming requires that the panel be enabled for remote download (refer to "Remote Download" on page 129). Remote interrogation of panel programming, history logs, detector status, etc., is possible without enabling the remote download option.*

1.7 Telephone Requirements and Warnings

1.7.1 Telephone Circuitry

Ringer Equivalence Number (REN) = 0.0B

AC Impedance: 10.0 Mega Ohm

Complies with FCC Part 68

Mates with RJ31X Male Connector

Supervision Threshold: loss of phone line voltage for 2 minutes

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

1.7.2 Digital Communicator

Before connecting the control panel to the public switched telephone network, the installation of two RJ31X jacks is necessary. If trouble is experienced with this equipment, for repair or warranty information, please contact:

Manufacturer:Fire•Lite Alarms
One Fire-Lite Place
Northford, CT 06472
(203) 484-7161

Product Model Number: **MS-5UD/MS-10UD**
FCC Registration Number: **1W6AL00B10UD**
Ringer Equivalence: **0.0B**

Important! *The DACT must <u>not</u> be used to dial a phone number that is call-forwarded.*

Note: This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the inside of the FACP door is a label that contains, among other information, a product identifier in the format **US:AAAEQ##TXXXX**. If requested, this number must be provided to the telephone company.

Alarm dialing equipment must be able to seize the telephone line and place a call in an emergency situation. It must be able to do this even if other equipment (telephone, answering system, computer modem, etc.) already has the telephone line in use. To do so, alarm dialing equipment must be connected to a properly installed RJ31X jack that is electrically in series with and ahead of all other equipment attached to the same telephone line. If there are any questions concerning these instructions, consult the telephone company or a qualified installer about installing the RJ31X jack and alarm dialing equipment.   Refer to "Digital Communicator" on page 33 for an illustration of the proper installation of this equipment.

1.7.3 Telephone Company Rights and Warnings

The telephone company, under certain circumstances, may temporarily discontinue services and/or make changes in its facilities, services, equipment or procedures which may affect the operation of this control panel. However, the telephone company is required to give advance notice of such changes or interruptions.

If the control panel causes harm to the telephone network, the telephone company reserves the right to temporarily discontinue service. Advance notification will be provided except in cases when advance notice is not practical. In such cases, notification will be provided as soon as possible. The opportunity will be given to correct any problems and to file a complaint with the FCC if you believe it is necessary.

DO NOT CONNECT THIS PRODUCT TO COIN TELEPHONE, GROUND START, OR PARTY LINE SERVICES.

When the control panel activates, premise phones will be disconnected.

Two separate phone lines are required. Do not connect both telephone interfaces to the same telephone line.

The control panel must be connected to the public switched telephone network upstream (as first device) of any private telephone system at the protected premises.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by ACTA. This equipment is designed to be connected to the telephone network or premises wiring using a compliant RJ31X male modular plug and compatible modular jack that is also compliant.

1.7.4 For Canadian Applications

The following is excerpted from CP-01 Issue 5:

NOTICE: The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the users's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspections authority, or electrician.

"The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. the termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the REN of all devices does not exceed 5."

DOC Compliance - "This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications."

Representative: NOTIFIER/FIRE•LITE, CANADA
10 Whitmore Road
Woodbridge, Ontario L4L7Z4
Phone: (905) 856-8733
FAX: (905) 856-9687

IC Certificate Number: 2132A-10UD

Ringer Equivalence Number (REN): 0.0B

Load Number: 2

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 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

⚠ *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 transformer 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.

See Page

✓ Mark and predrill hole in the wall for the center top keyhole mounting bolt using the dimensions illustrated in Figure 2.2 on page 24

✓ 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" O.C. stud mounting

✓ Install remaining fasteners and tighten
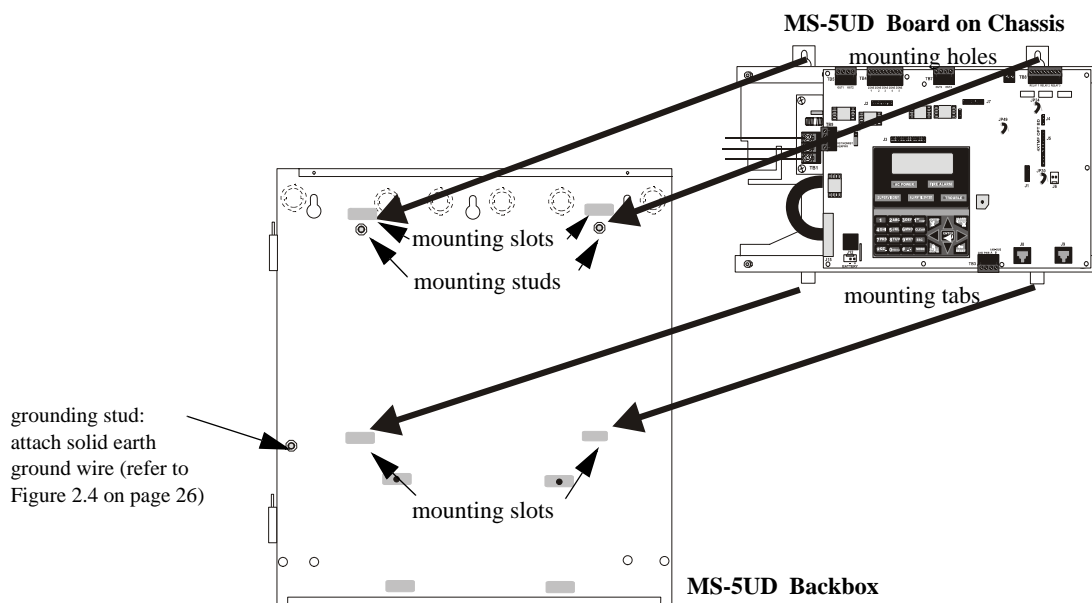
Figure 2.1 Chassis Mounting in Backbox

Figure 2.2 Cabinet Dimensions

Top   Depth = 5.207" (13.23 cm)

Door = 16.821" (42.73 cm)
Backbox = 16.65" (42.29 cm)

Depth =
5.257"
(13.353 cm)

Left Side

Door = 19.26" (48.92 cm)
Backbox = 19.0" (48.26 cm)

Right Side

Bottom

9050UDcab.cdr

Figure 2.3 Backbox and Battery Box

2.2 Operating Power
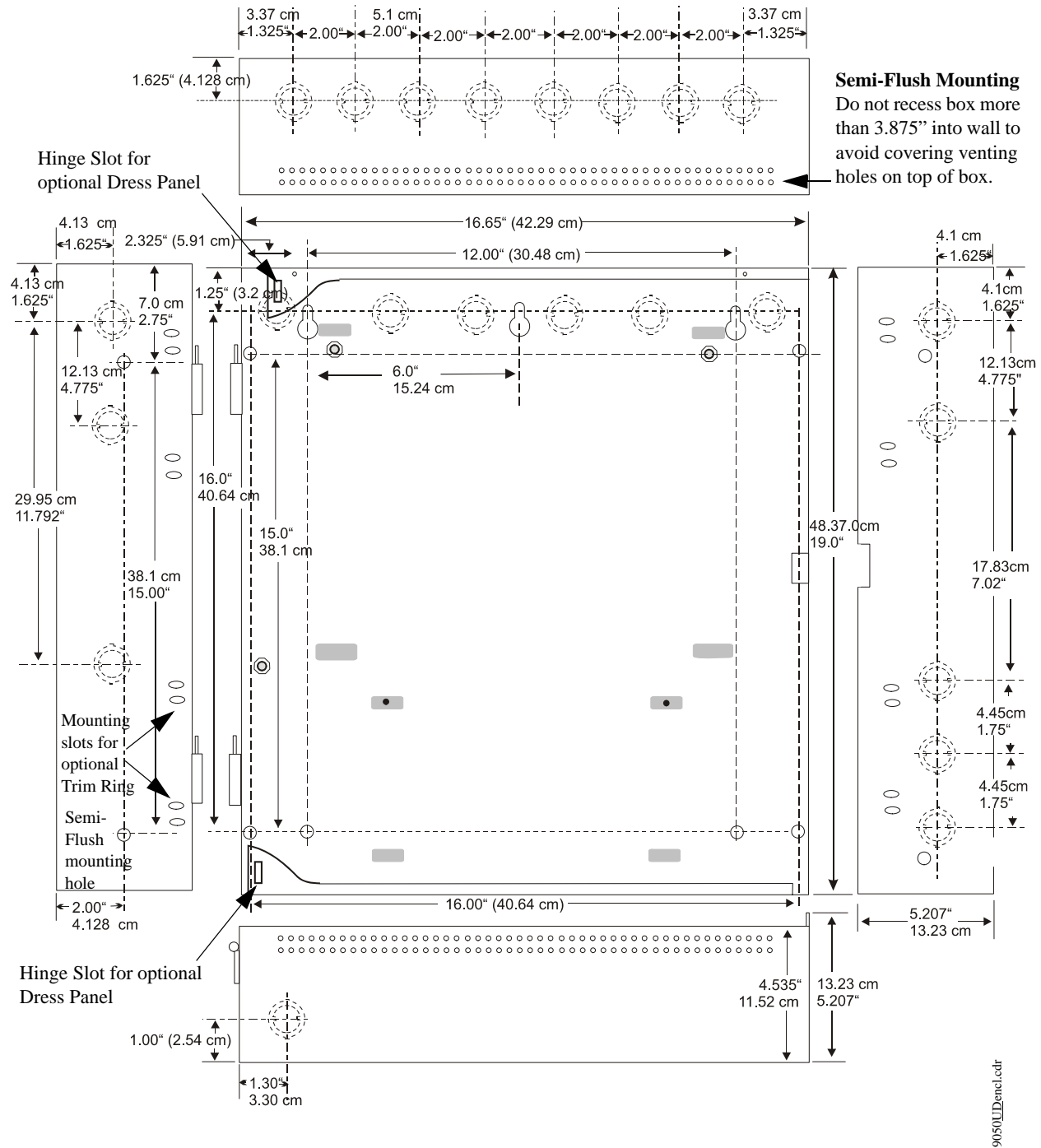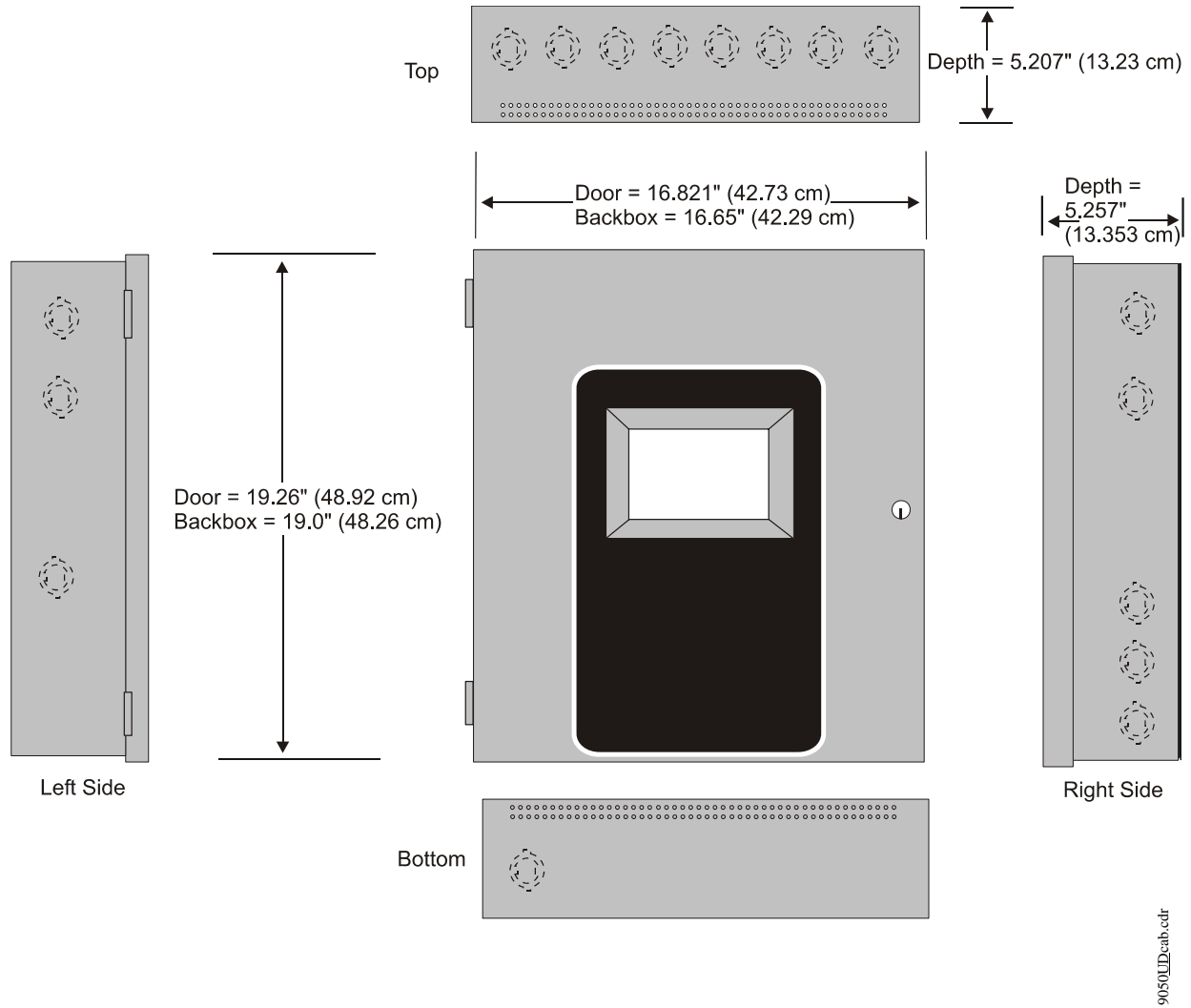
WARNING: Several different sources of power can be connected to this panel. Disconnect all sources of power before servicing. The panel and associated equipment may be damaged by removing and/or inserting cards, modules or interconnecting cables while this unit is energized.

Primary Power Source (AC) and Earth Ground Connections

AC power connections are made inside the control panel cabinet. Refer to **AC Power** in the section titled "Specifications" on page 14, for power and current requirements for each FACP version. 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. *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 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.
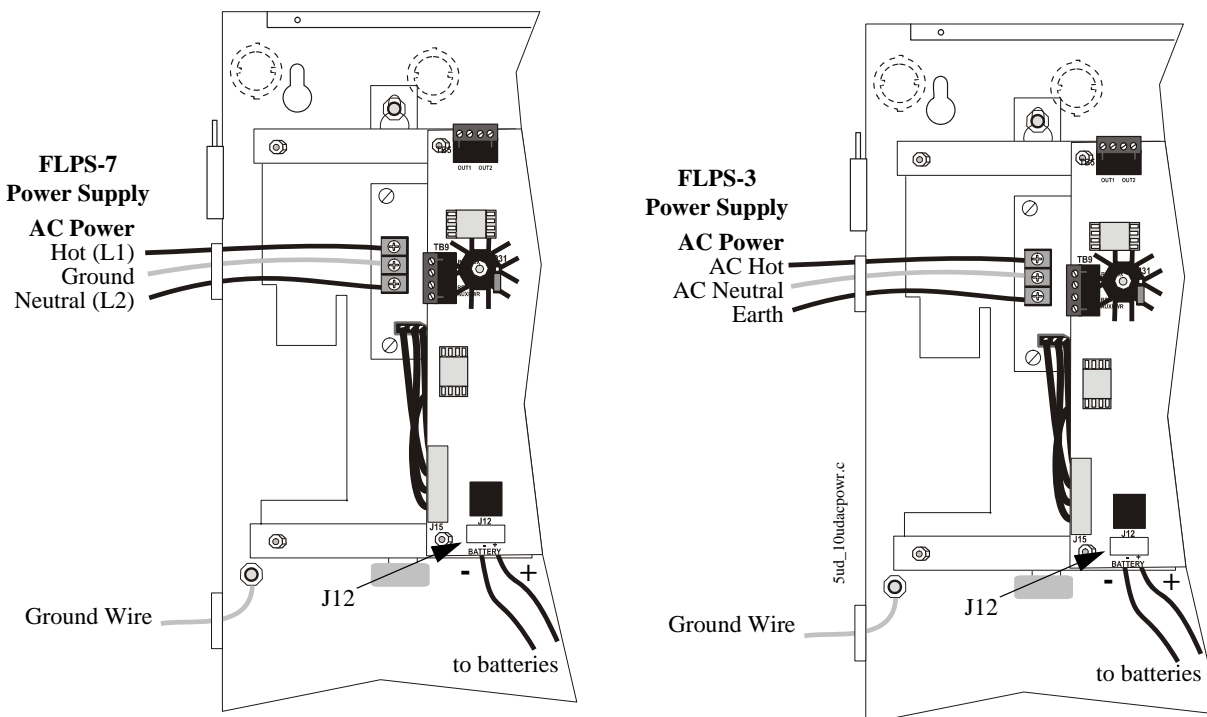
Figure 2.4 Operating Power Connections

2.3 Input Circuits

The MS-5UD has five IDCs (Initiating Device Circuits) and the MS-10UD has ten IDCs. 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. 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 Fire•Lite 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 34.

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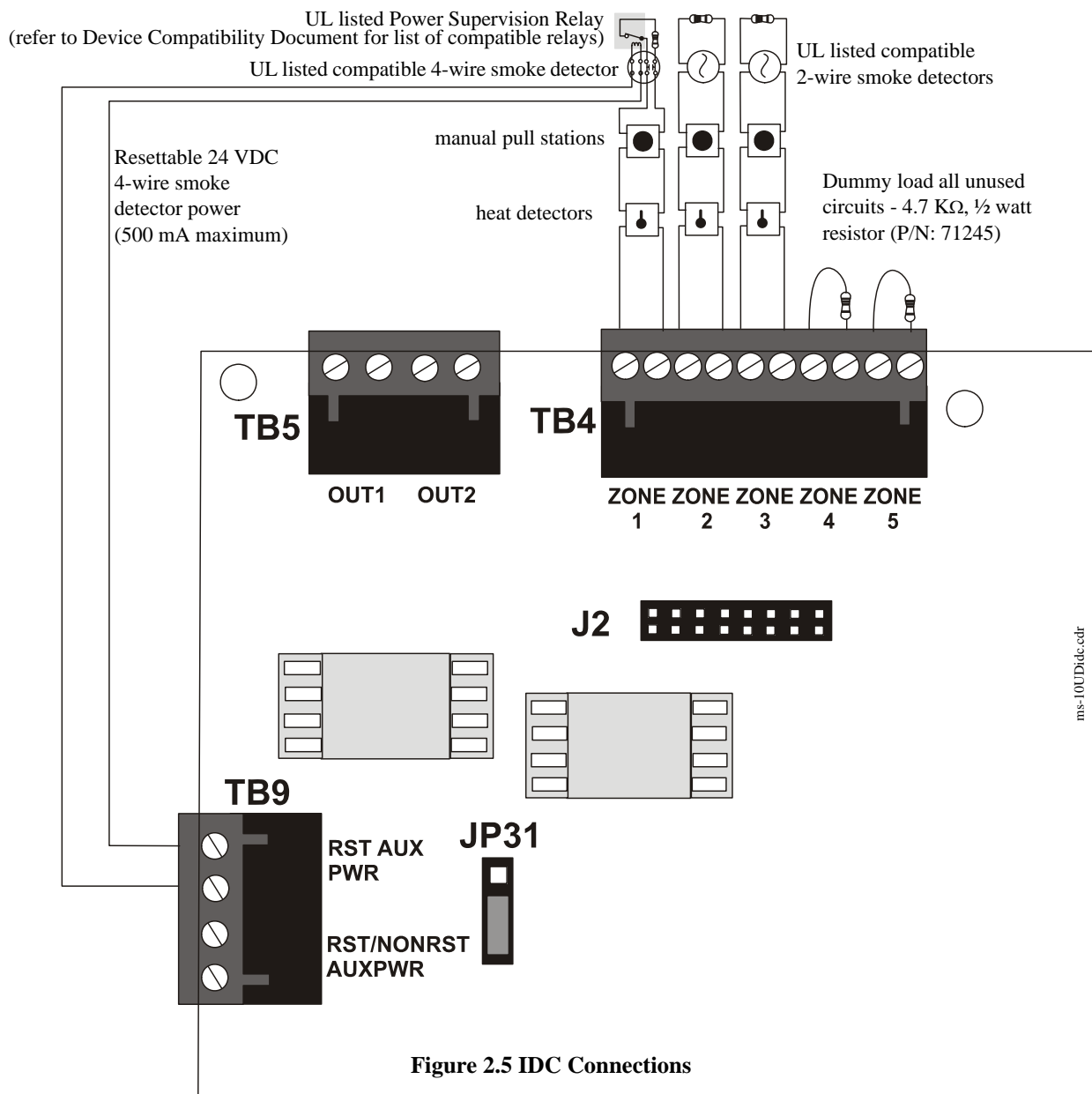
Figure 2.5 IDC Connections

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.

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

Supervisory Switch (tamper)

In-Line-Resistor
1.2 KΩ, ½ watt resistor P/N: 75579

Alarm Switch (waterflow)

Dummy load all unused circuits - 4.7 KΩ, ½ watt resistor (P/N: 71245)

ms10udcomboIDC.cdr

TB4

ZONE 1   ZONE 2   ZONE 3   ZONE 4   ZONE 5

Figure 2.6 Style B Combination Circuit on Zone 2

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

✓ 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 59. *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 75.*

✓ 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 Notification Appliance Circuits

Total current drawn from the four Style Y (Class B) Notification Appliance Circuits as well as other DC power outputs cannot exceed 3.0 amps for the MS-5UD-3(E), MS-10UD-3(E) [2.5 amp maximum per NAC] powered by the FLPS-3 power supply or 7.0 amps for the MS-5UD-7(C/E), MS-10UD-7(C/E) [3.0 amps maximum per NAC] powered by the FLPS-7 power supply (refer to "Power Supply Calculations" on page 133). Each circuit is supervised, power-limited and provides special application power. Refer to the Fire•Lite Device Compatibility Document for a listing of compatible notification appliances.

The NACs can be converted to Style Z (Class A) by installing the optional Class A Converter module. Refer to "CAC-5X Class A Converter Module" on page 34.

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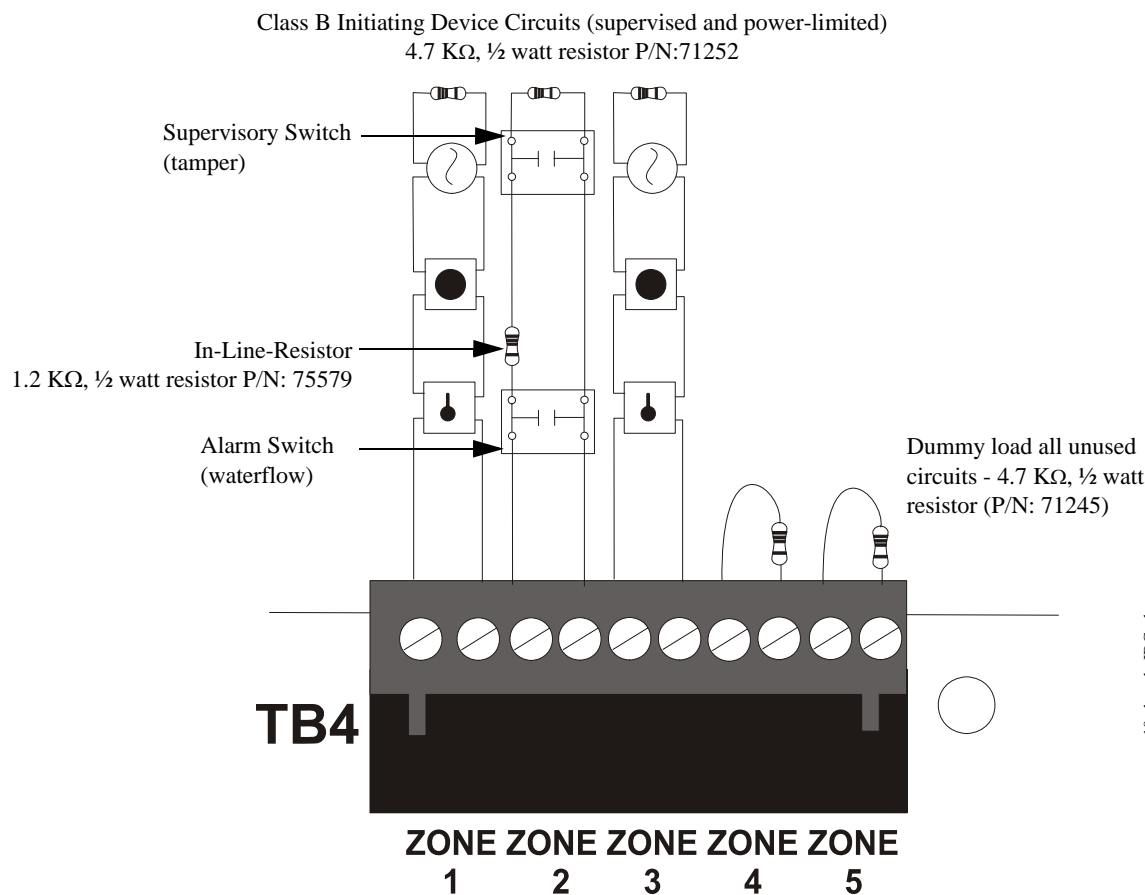4.7 KΩ, ½ watt resistor P/N:71252
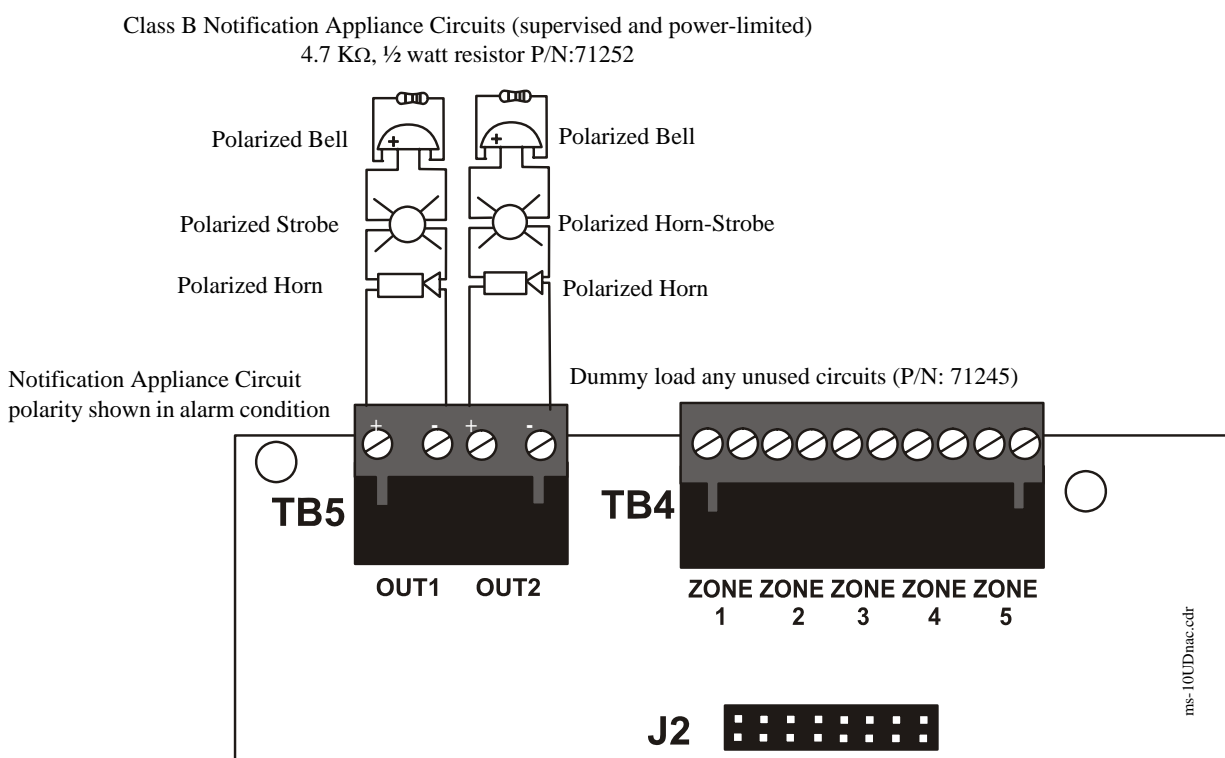
Figure 2.7 NAC Connections

2.4.2 Special Application DC Power Output Connections

Special Application Resettable and Nonresettable 24 VDC power is available on the MS-5UD and MS-10UD 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)

TB9

RST AUX PWR

RST/NONRST AUXPWR

JP31

ms-10UDtb9.cdr

- Jumper JP31 pins 1 & 2 for nonresettable power (as illustrated in figure to right)

- Jumper JP31 pins 2 & 3 for resettable power
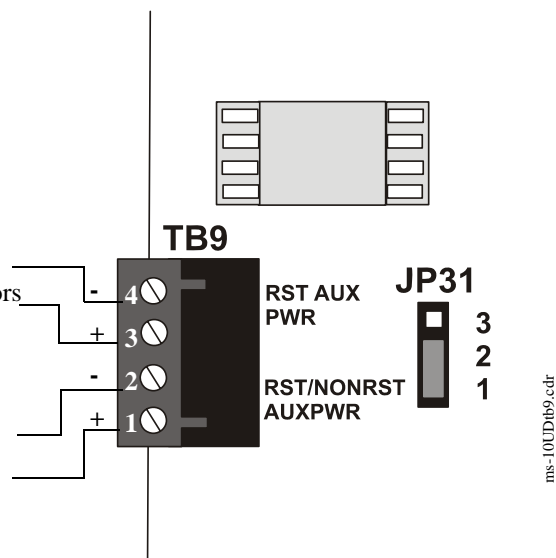
Figure 2.8 Special Application Auxiliary Power

2.4.3 Relays - Programmable

The MS-5UD and MS-10UD control panels provide 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 "Relays" on page 71). 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
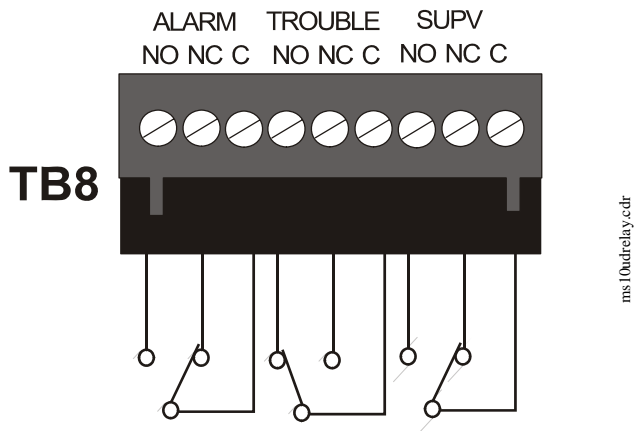
Figure 2.9 Relay Terminals

2.4.4 Remote Synchronization Output

Synchronization is a feature that controls the activation of notification appliances in such a way that all devices 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 to individuals. Devices connected directly to the control panel's NAC can be synchronized as described in "Synchronized NAC Operation" on page 69.

Notification appliances connected to remote power sources may require synchronization with the FACP's devices. For the MS-5UD-3(E), MS-10UD-3(E), this can be accomplished by connecting the Remote Synchronization Output from TB2 of the FACP to a compatible sync input of a power supply such as the FCPS-24FS6/8. The 24 VDC, 40 mA signal from TB2 follows, that is mimics the signal on NAC 1 (Out 1). This allows the devices connected to the power supply to be synchronized with the devices connected to Out 1 on the FACP.

For the MS-5UD-7(C/E), MS-10UD-7(C/E), the Remote Sync Output is not required. Synchronization for remote power supplies is provided directly from NAC1 (Out 1). Note that NAC 1 (Out 1) must be programmed for sync operation when used for this purpose.

The Remote Synchronization Output is power-limited and supervised and requires a 4.7KΩ ELR resistor at the remote power supply end of the wiring.
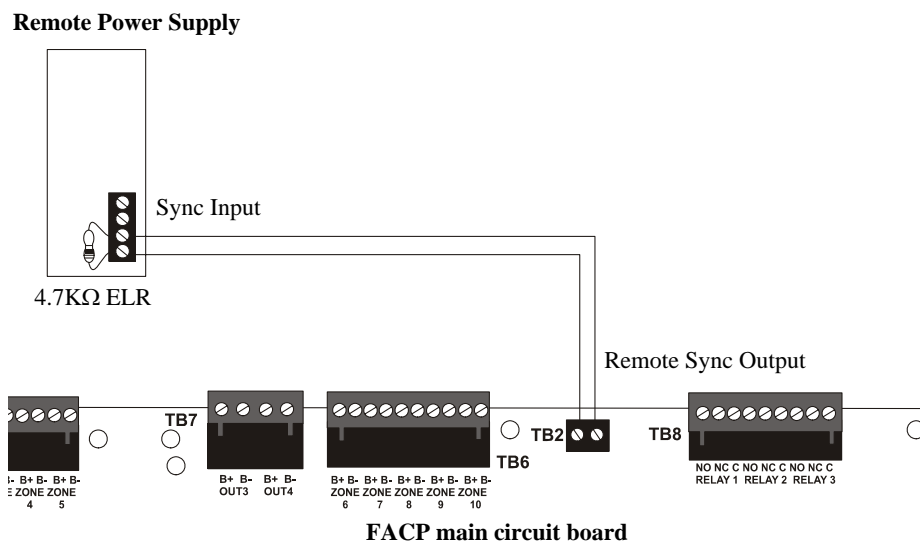
Figure 2.10 Remote Sync Output

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.

Figure 2.11 Typical UL Power-limited Wiring Requirements

2.6 Digital Communicator

Two independent telephone lines can be connected to the control panel. Telephone line control/ command is made possible via double line seizure as well as usage of an RJ31X style interconnection. *Note that it is critical that the panel's digital communicator be located as the first device on the incoming telephone circuit to properly function.*

Important! *The DACT must* <u>not</u> *be used to dial a phone number that is call-forwarded.*
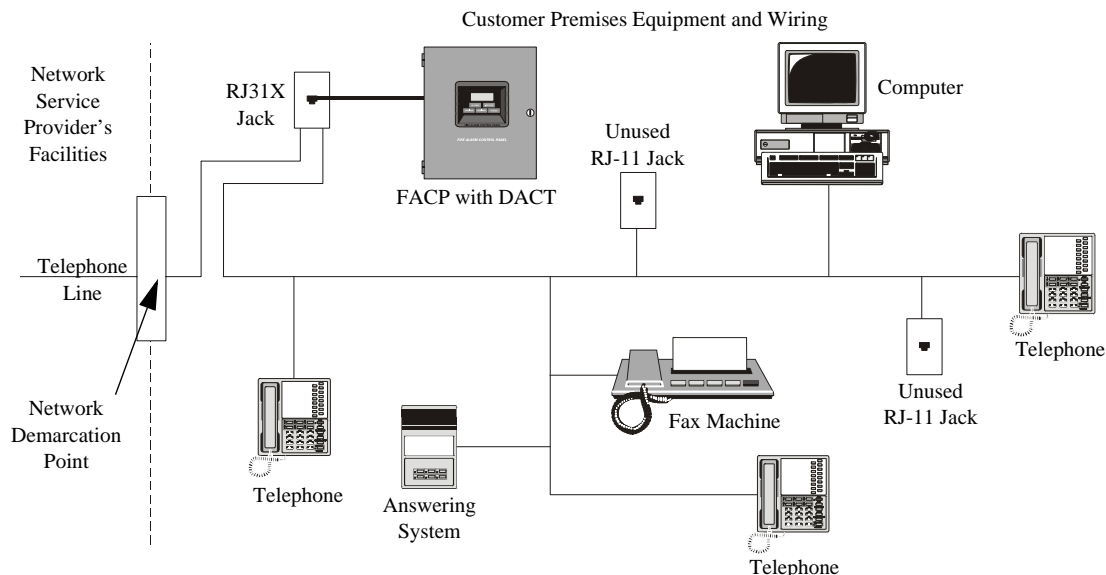
Figure 2.12 DACT Installation

The control panel's digital communicator is built into the main circuit board. Connection and wiring of two phone lines is required as shown below.
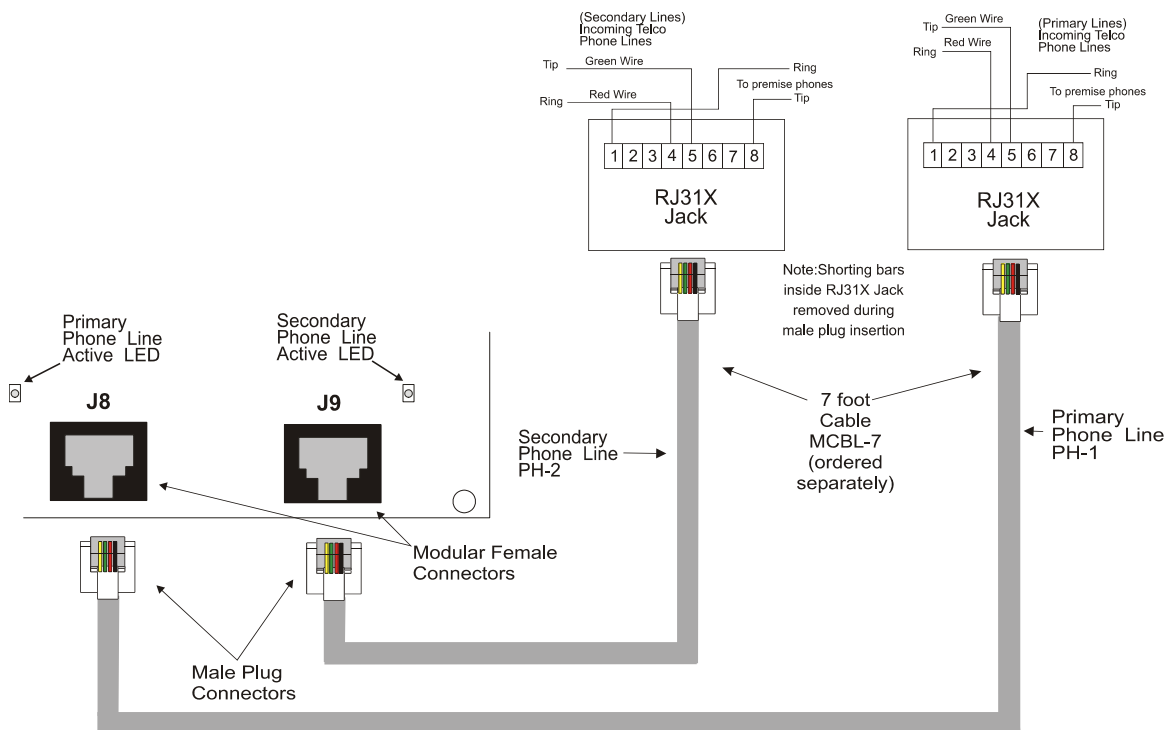
Figure 2.13 Wiring Phone Jacks

2.7 Installation of Optional Modules

CAUTION: Remove all power (AC and DC) before installing or removing modules or wiring.

⚠ 2.7.1 CAC-5X Class A Converter Module

2.7.1.1 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). The module plugs into connector J2 which is located at the top left of the MS-5UD and MS-10UD main circuit board and J7 which is located at the top center of the MS-10UD. *Note that two CAC-5X modules are required to convert all NACs and IDCs on the MS-10UD to Class A circuits.*

To install the CAC-5X in the MS-5UD or MS-10UD, 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 of the MS-10UD, 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.

MS-10UD Main Circuit Board
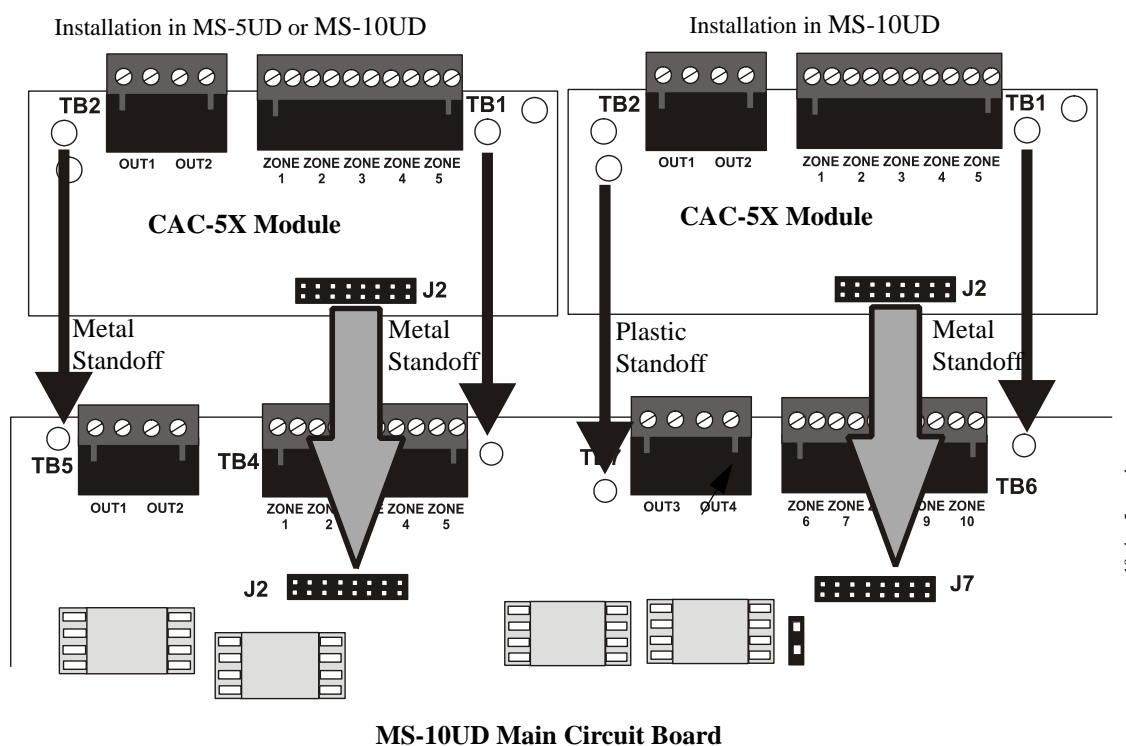
Figure 2.14 CAC-5X Module Installation

2.7.1.2 Wiring NACs and IDCs for Class A

Wire the Style Z (Class A) Notification Appliance Circuits using TB5 of the MS-5UD/MS-10UD and TB2 of the CAC-5X module. Wire the Style D (Class A) Initiating Device Circuits using TB4 of the MS-5UD/MS-10UD and TB1 of the CAC-5X. Note that the wiring will be identical when using TB7 NAC and TB6 IDC of the MS-10UD. 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.
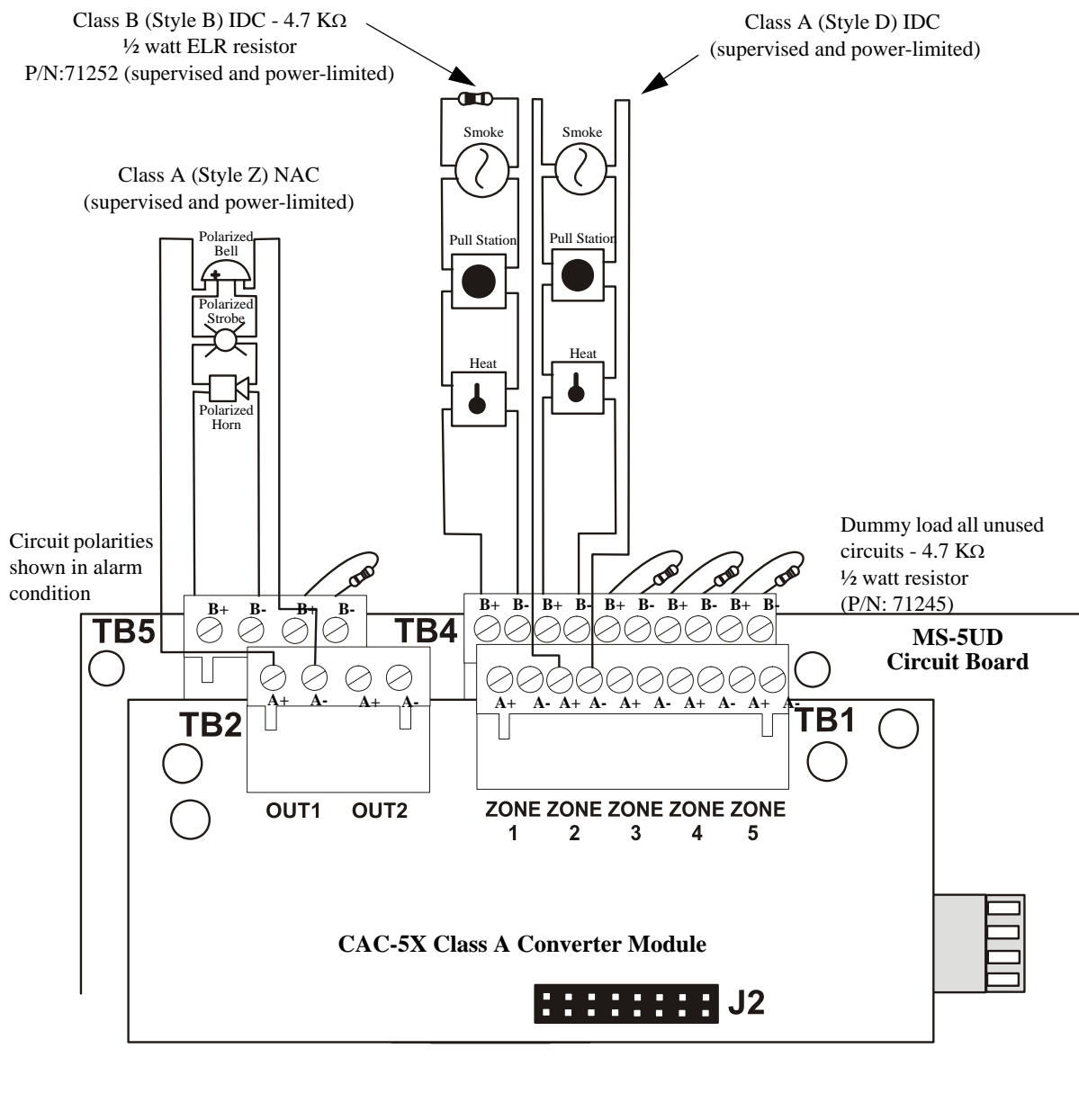
Figure 2.15 Wiring NACs and IDCs for Class A Operation

2.7.2 4XTMF 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
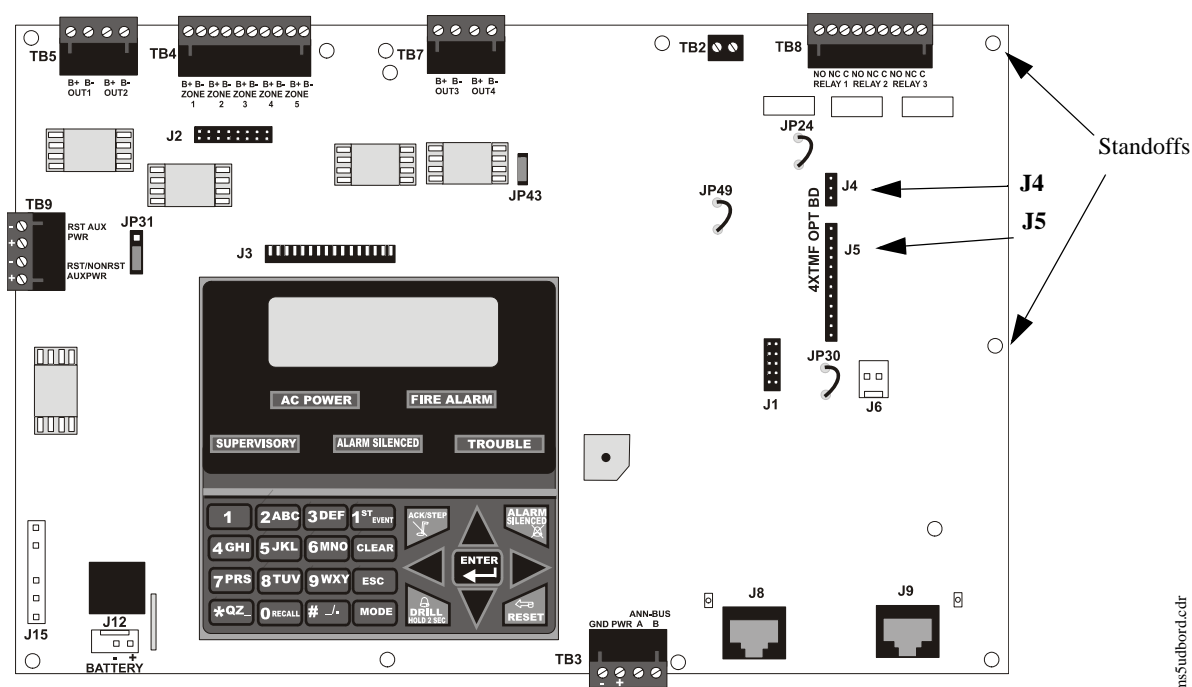
Note: This illustration shows the installation of the Option Module on the 5-zone panel. The module is installed in the same location on the 10-zone panel.

Figure 2.16 4XTMF Option Module Connection to MS-5UD

2.7.2.1 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 LED 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 of reverse polarity of a supervisory signal, refer to the Appendix titled "FACP with Keltron" on page 149.
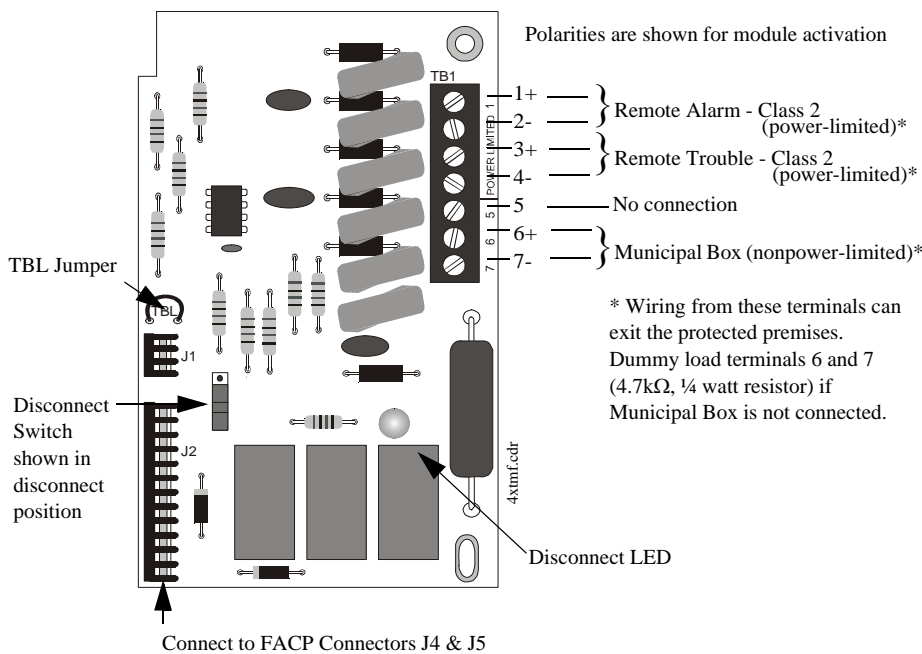
Figure 2.17 4XTMF Transmitter Module

2.8 ANN-BUS Devices

⚠ *WARNING! Disconnect all sources of power (AC and DC) before installing or removing any modules or wiring.*

A variety of optional devices can be connected to the FACP ANN-BUS communication circuit. Compatible devices include:

- ANN-80 LCD Annunciator
- ANN-S/PG Serial/Parallel Printer Interface Module
- ANN-I/O LED Driver Module
- ANN-LED Annunciator Module
- ANN-RLY Relay Module

2.8.1 ANN-BUS Wiring

This section contains information on calculating ANN-BUS wire distances and the types of wiring configurations (Class B). The length of the 4-conductor wire run is governed by the power pair loading as described below.

2.8.1.1 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
ANN-80 LCD Annunciator	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

Note: 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.

24 VDC Power Wiring Distance: ANN-BUS Modules to FACP				
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

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

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

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

where: R_{pu} = 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 Fire 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 39, 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

2.8.1.2 Wiring Configuration

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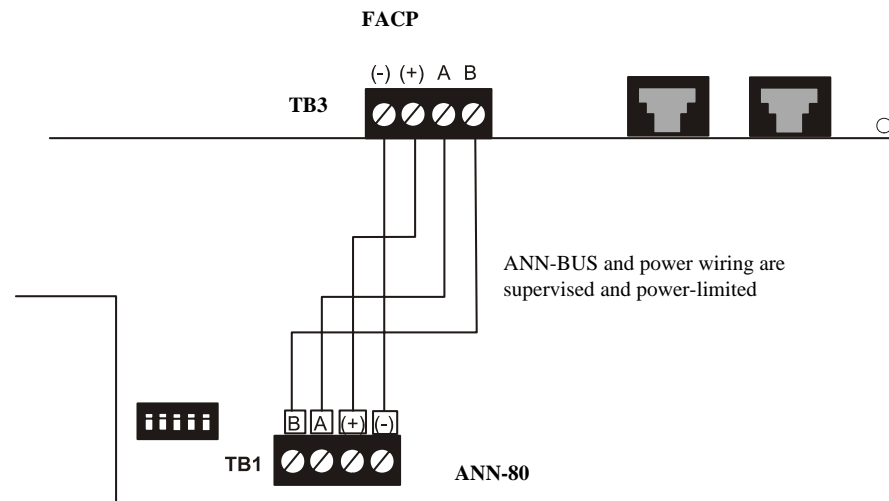
Figure 2.18 FACP wiring to ANN-BUS Device

2.8.1.3 Powering ANN-BUS Devices from Auxiliary Power Supply

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

Cut Ground Fault Detection jumper JP1 (FACP monitors for ground faults)
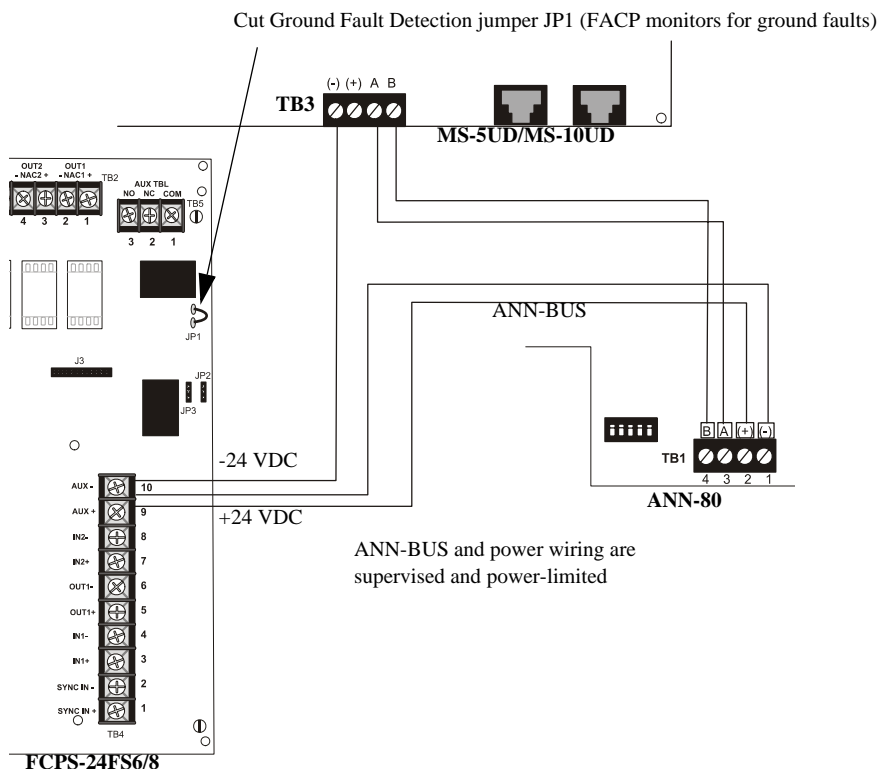
Figure 2.19 Powering ANN-BUS Devices from FCPS-24FS6/8

2.8.2 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 80).

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

2.8.3 ANN-80 Remote Fire Annunciator

The ANN-80 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.

2.8.4 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

2.8.5 Installation

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

2.8.5.1 Mounting

The ANN-80 can be surface 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.

2.8.5.2 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
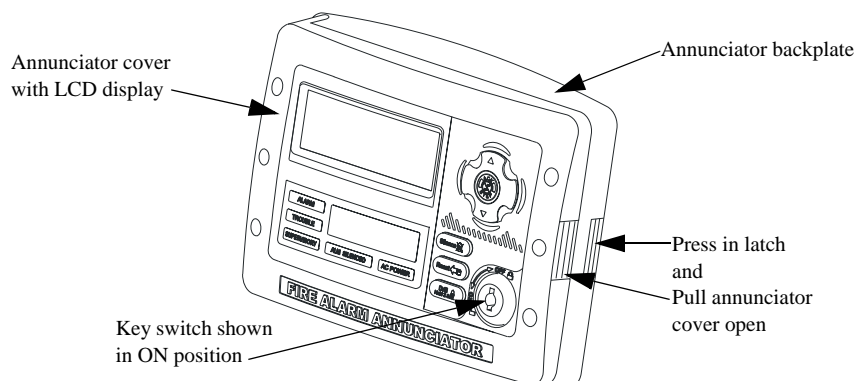
2.8.5.3 Wiring ANN-80 to FACP

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

1. Route wires from hole in backplate, through wiring channel and then to ANN-80 terminal block TB1
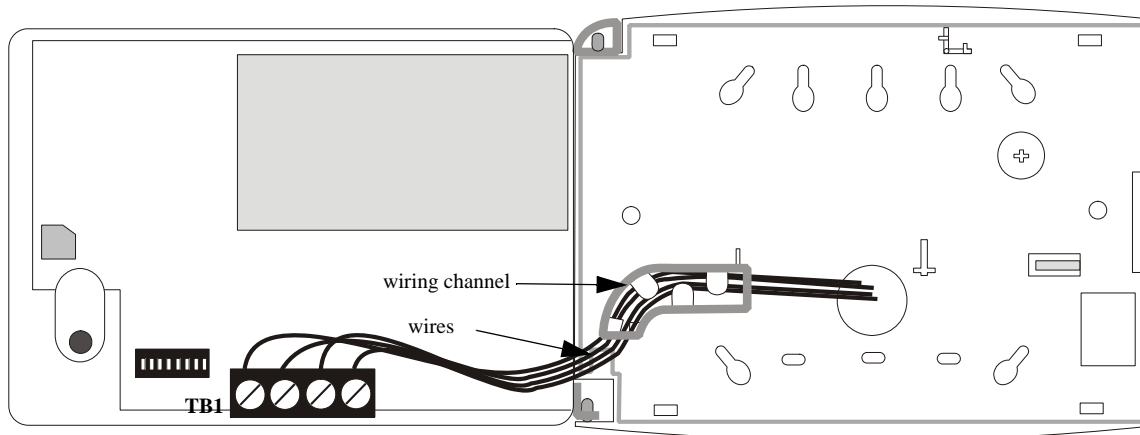
2. Remove appropriate amount of wire insulation

3. Connect the wiring from the FACP ANN-BUS to annunciator TB1 terminals 3 (A) & 4 (B). Make certain to connect A to A and B to B

4. If appropriate, connect the wiring going to the next device on the ANN-BUS to TB1 terminals 3 & 4. Make certain to connect A to A and B to B

5. Connect the wiring from the 24 VDC power source to annunciator TB1 terminals 1 (-) & 2 (+). Make certain to observe proper polarity

6. If appropriate, connect the power wiring going to the next device to terminals 1 (-) & 2 (+). Make certain to observe proper polarity

7. After all connections are made, remove extra wire from inside of annunciator by dressing it neatly through wire channel, with any excess wire pushed back through hole into electrical box
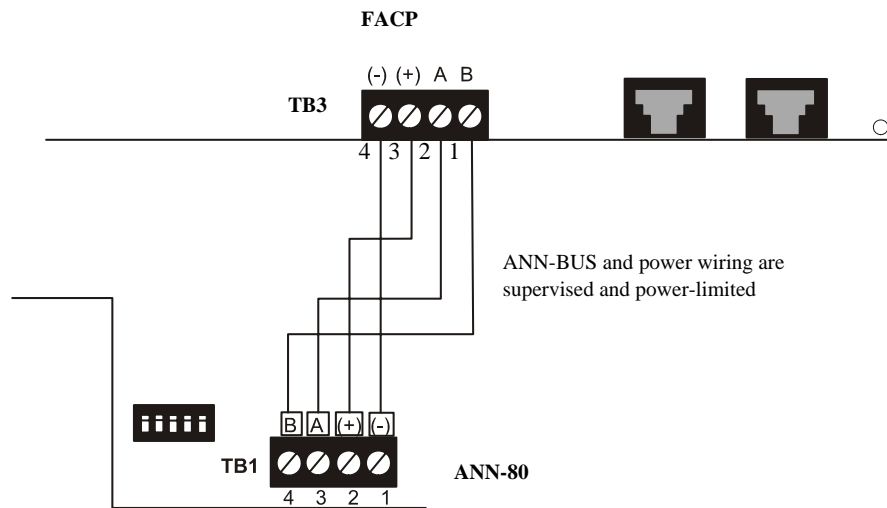
Figure 2.20 ANN-80 Wiring to FACP

The following table shows the ANN-80 connections to the MS-5UD/MS-10UD.

MS-5UD/MS-10UD (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 80 in this manual for detailed programming information. Select the LCD option for programming.

2.8.6 ANN-S/PG Serial/Parallel Printer Interface Installation

The ANN-S/PG Serial/Parallel Printer 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. Proceed with the installation as described in the following:

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

2. Connect the ANN-S/PG to the FACP as illustrated in Figure 2.21
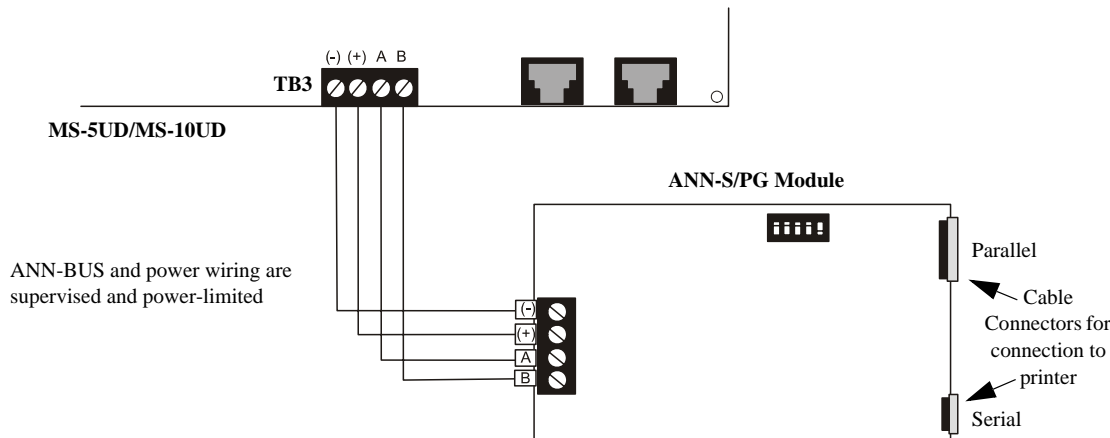
Figure 2.21 ANN-S/PG Connection to FACP

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 80)
Note that the Auto-configure feature allows the programmer to quickly bring all installed ANN-BUS modules online (refer to "Auto-Configure" on page 81)

5. Connect a printer to the ANN-S/PG Parallel and/or Serial connectors (refer to Figure 2.21 on page 45)

2.8.6.1 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

2.8.6.2 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.

2.8.6.2.1 Connecting PRN-6F Printer

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

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

2.8.6.2.2 Setting Printer Options

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

Table 2.2 PRN-6F Setup Options

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"

2.8.7 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 80 for programming information.

2.8.7.1 ANN-I/O Board Layout

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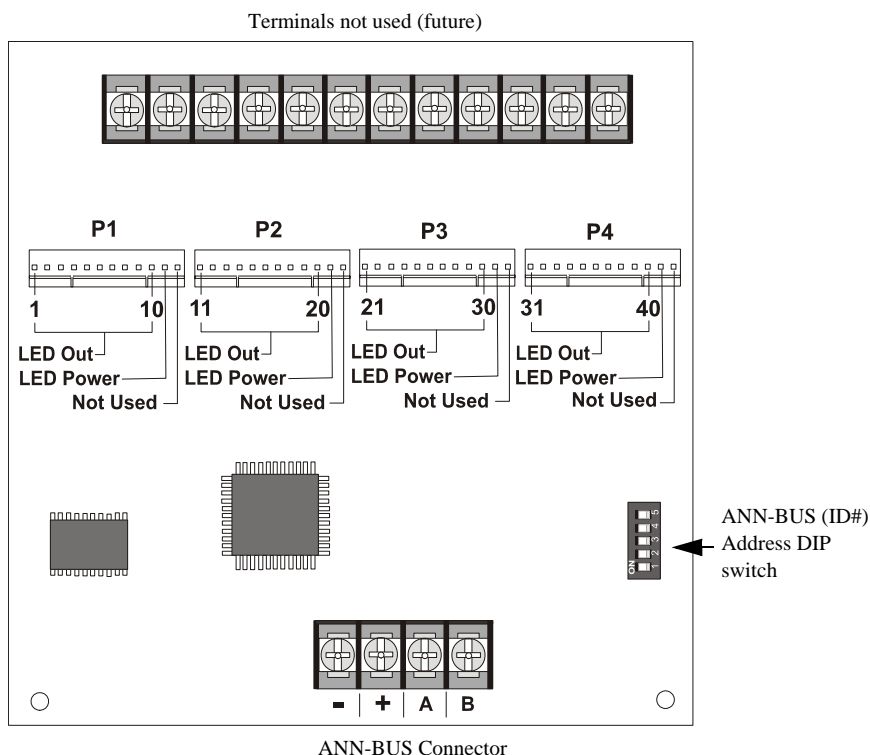
Figure 2.22 ANN-I/O Board Layout

2.8.7.2 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

2.8.7.3 ANN-I/O Connection to FACP

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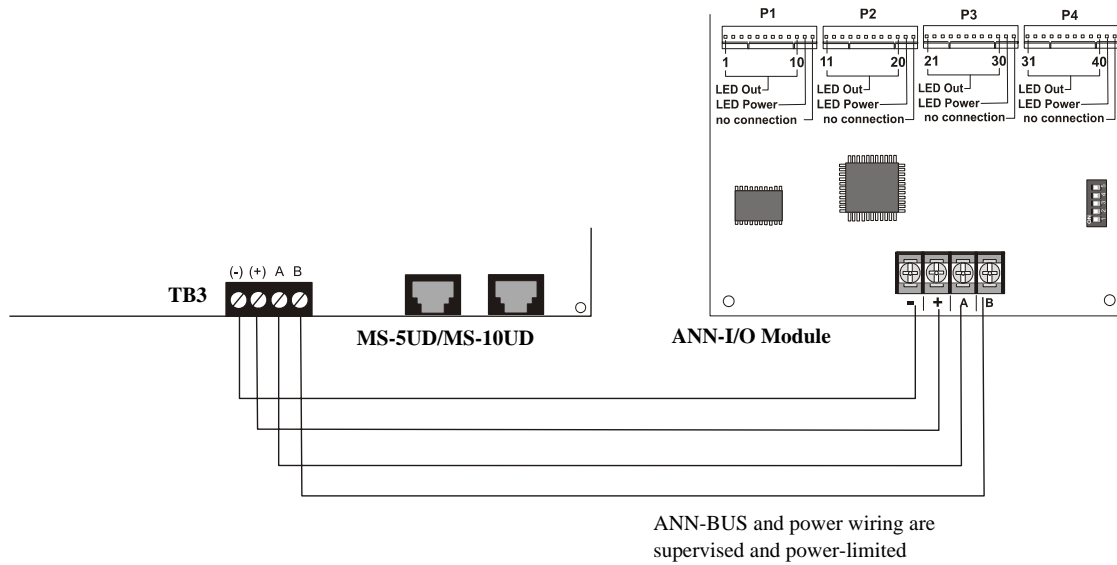
Figure 2.23 ANN-I/O Connection to FACP

2.8.7.4 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 83 of this manual.

The LEDs are wired as illustrated in Figure 2.24. Note that the illustration depicts only connectors P1 and P2. Wiring is identical for P3 (LEDs 21-30) and P4 (LEDs 31-40).
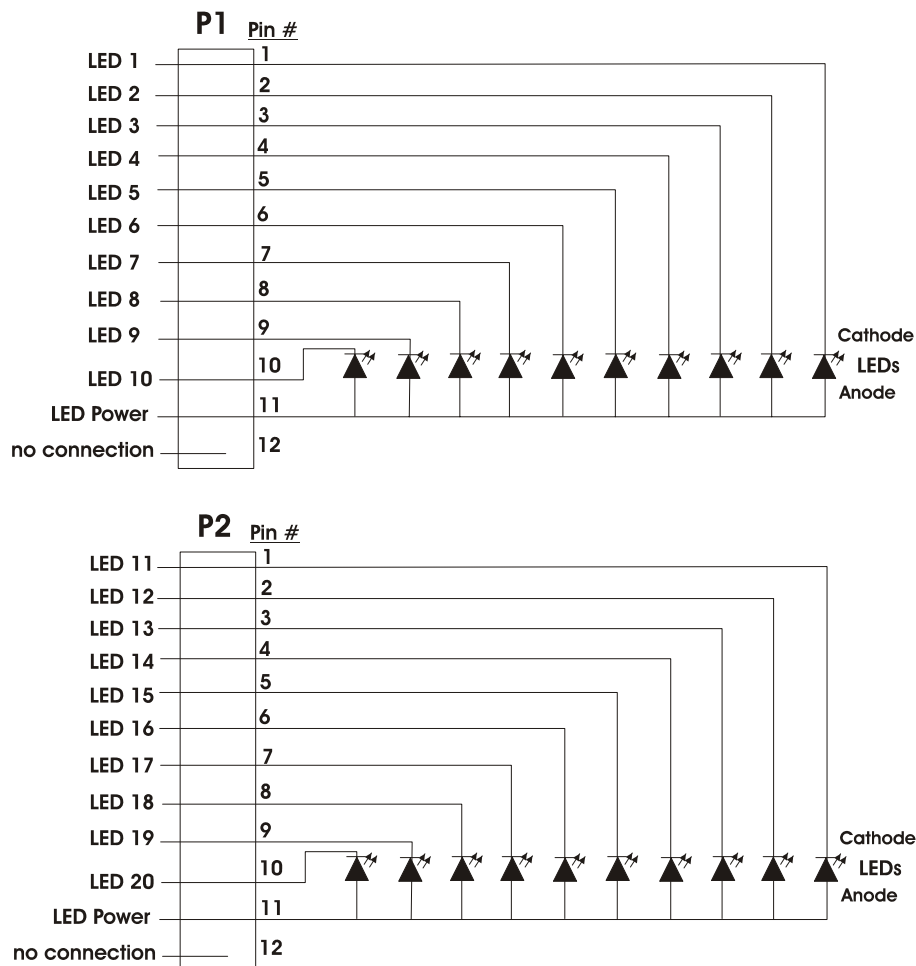
Figure 2.24 ANN-I/O Board Layout

2.8.8 ANN-LED Annunciator Module

The ANN-LED annunciator module provides 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 MS-5UD-7C and MS-10UD-7C models. It is mounted to the dress panel included with these models.

2.8.8.1 ANN-LED Board Layout

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

ANN-BUS (ID#)
Address DIP switch

ANN-BUS Connector
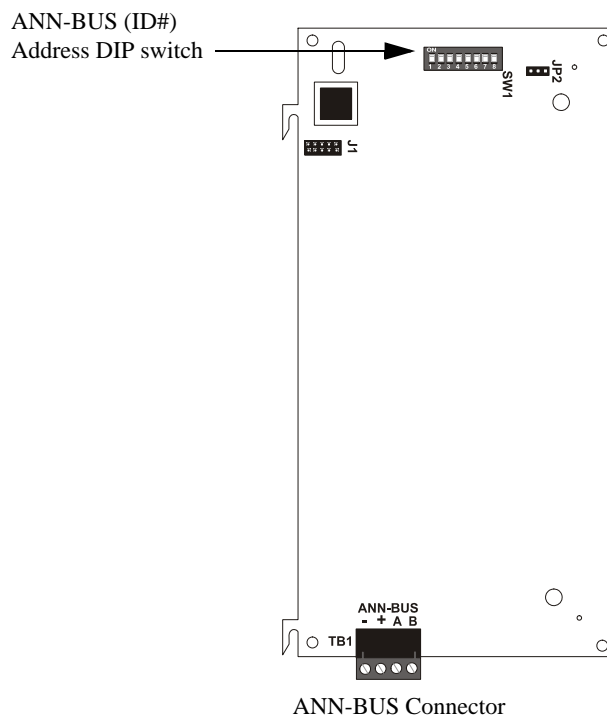
Figure 2.25 ANN-LED Board Layout

2.8.8.2 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

2.8.8.3 Mounting/Installation

Install the ANN-LED Module as described in the documentation supplied with the annunciator.

2.8.8.4 ANN-LED Connection to FACP

Figure 2.26 illustrates the ANN-LED board wiring connections to the FACP.
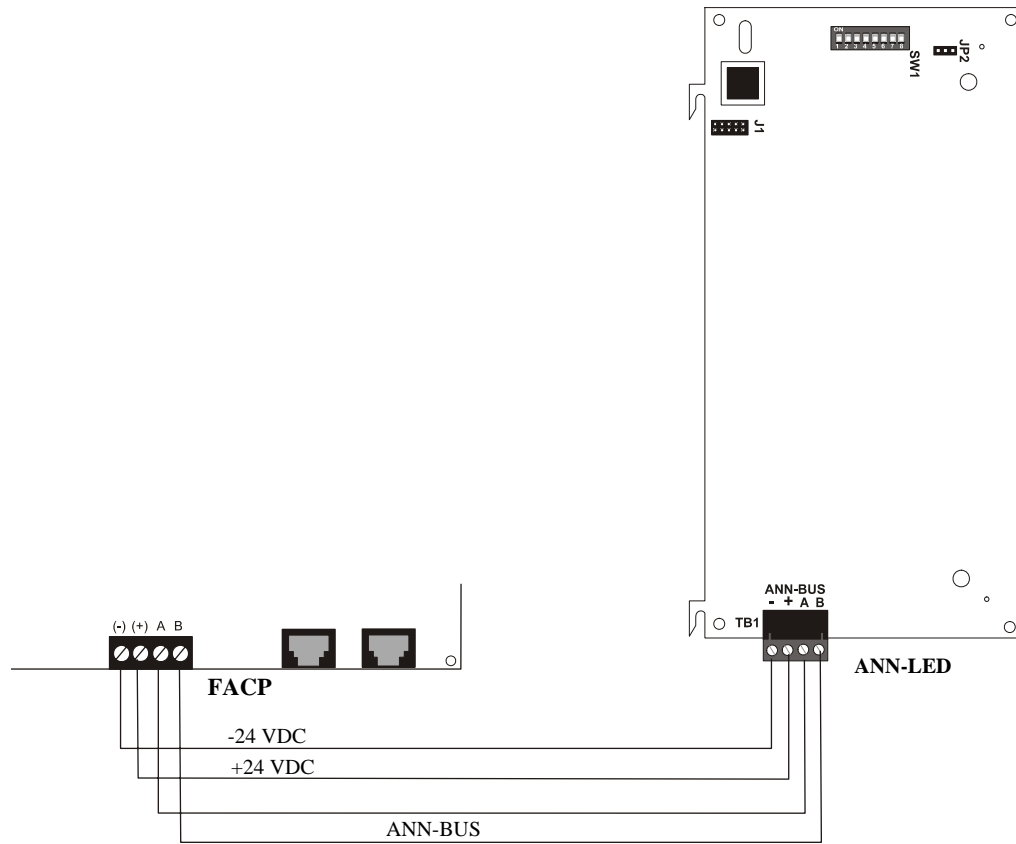
Figure 2.26 ANN-LED Connection to FACP

2.8.9 ANN-RLY Relay Module

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

2.8.9.1 ANN-RLY Board Layout

Figure 2.27 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.
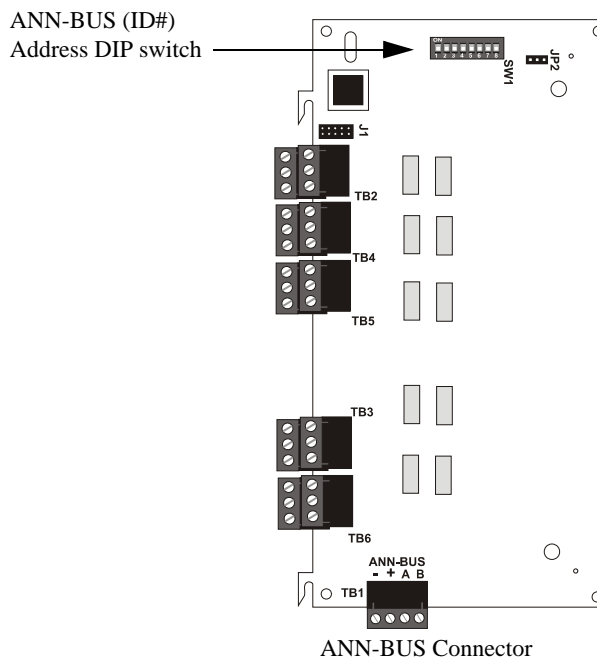
Figure 2.27 ANN-RLY Board Layout

2.8.9.2 Specifications

- Operating Voltage: 24 VDC
- Max. Current:
    - ✓ Alarm: 75 mA
    - ✓ Standby: 15 mA
- Relay Contact Ratings:
    - ✓ 2 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

2.8.9.3 Mounting/Installation

The ANN-RLY relay module can be mounted inside the FACP main circuit board chassis.

2.8.9.4 ANN-RLY Connection to FACP

Figure 2.28 illustrates the ANN-RLY board wiring connections to the FACP.
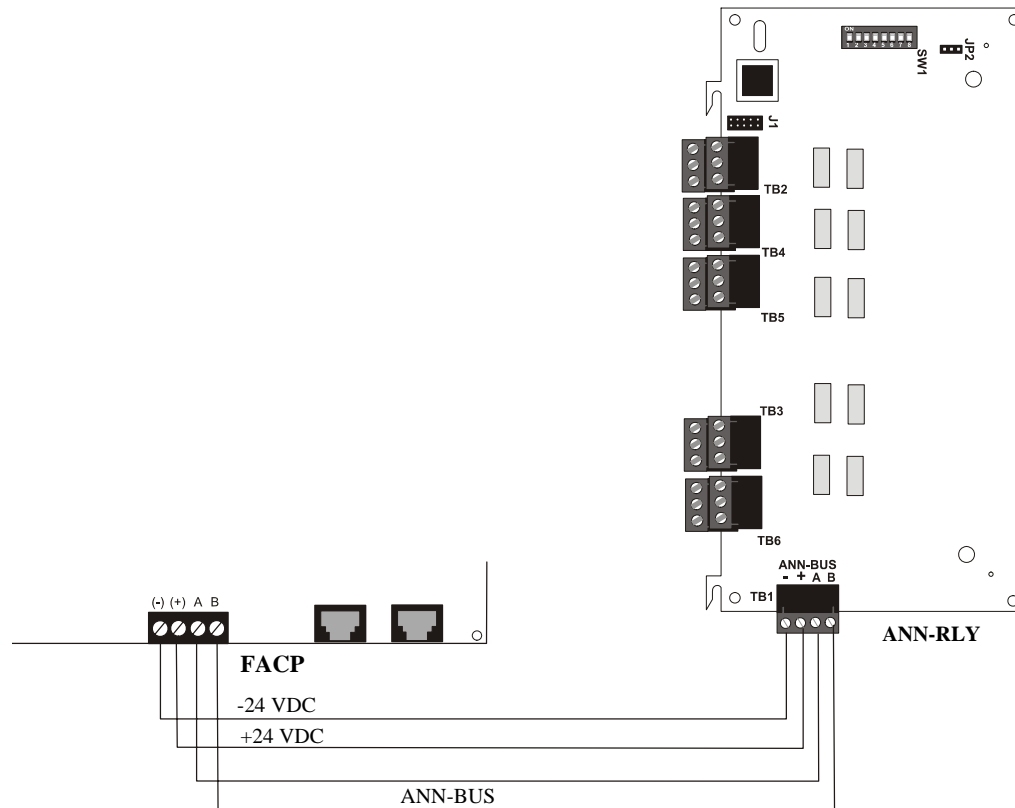
Figure 2.28 ANN-RLY Connection to FACP

2.9 ANN-BUS Audio Panel

⚠ *WARNING! Disconnect all sources of power (AC and DC) before installing or removing any wiring.*

The FACP must be enabled to communicate with the ACC-25/50ZS Audio Panel over the ANN-BUS (refer to "ANN-BUS Enabled" on page 80). This is accomplished by programming the Audio Panel ANN-BUS address into the FACP (refer to "BUS Modules" on page 80). For details on setting the ANN-BUS address and programming the audio panel, refer to the ACC-25/50ZS Series Audio Panel manual (document #51889).

The ACC-25/50ZS Series audio panel connects to the FACP via the ANN-BUS communication circuit. The five input zones on the MS-5UD correspond to the first five ACC-25/50ZS Series audio zones and the ten input zones on the MS-10UD correspond to the first ten ACC-25/50ZS Series audio zones. The programmer can select which of the five audio messages at the audio panel will play when an FACP input zone goes into alarm (refer to "ACC Message" on page 63). The message will play over the corresponding audio panel output circuit. For example, if FACP Input Zone 3 goes into alarm, the programmed message will play over the ACC-25/50ZS output circuit 3. If two or more input zones are active at the same time, the highest priority message will turn on.

One of the FACP input zones can be programmed as an All-Call Zone. If this zone goes into alarm, all ACC-25/50ZS Series audio zones will activate (refer to "ANN-AUDIO Options Screen" on page 86).

A fault at the ACC-25/50ZS Series panel will cause the FACP to indicate a System Trouble and the display will indicate a Voice Evac Fault.

The only connection between the MS-5UD/10UD and the ACC-25/50ZS audio panel is a pair of communication wires connected between the A/B terminals on TB3 of the FACP and TB1 terminals 2 & 3 of the ACC-ZPMK module on the ACC-25/50ZS.
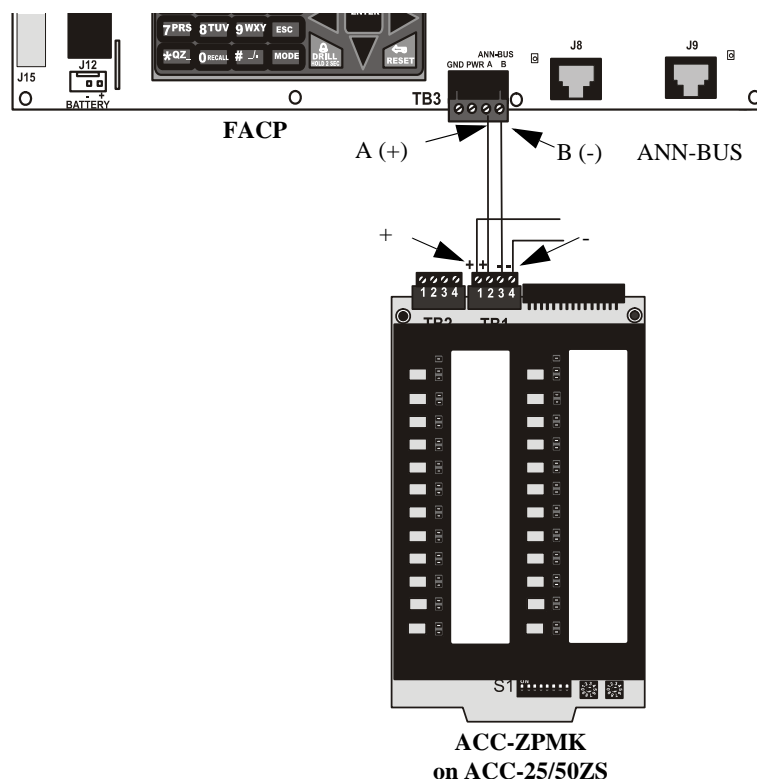
Figure 2.29 FACP Connection to ACC-25/50ZS Audio Panel

SECTION 3   Programming

		NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION AND OTHER INVOLVED PARTIES	
		This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below:	
Program feature or option	**Permitted in UL 864? (Y/N)**	**Possible settings**	**Settings permitted in UL 864**
Trouble Call Limit	N	Refer to "Trouble Call Limit (Dialer Runaway Prevention)" on page 99. Trouble Call Limit = 0 (factory default): unlimited calling to Central Station for any trouble condition Trouble Call Limit = 1 - 99: limits call for each unique trouble to from 1 to 99 within a 24 hour period	*Trouble Call Limit = 0* for unlimited Central Station trouble calls
Remote Download	Y	Refer to "Remote Download" on page 129. Remote Download - Proprietary No Remote Download - Proprietary Yes	Remote Download *Proprietary Yes* for Proprietary system intended to protect only contiguous properties

3.1 User Programming

⚠ The MS-5UD/MS-10UD FACP is completely field programmable using the panel keypad and requires no special software skills. *While programming the FACP, the fire protection capabilities of the control panel are enabled. Programming Mode times-out after 10 minutes of inactivity.*

Site-specific programming may be accomplished in the following ways:

- Manual programming or editing, using the FACP keypad

- Remote Programming and Editing Feature - allows creation and editing of site-specific custom programs using a Windows-based computer and modem. For programs requiring a large amount of data entry, this method may be preferred. A PK-CD programming CD ROM can be ordered for this purpose

- Local Programming and Editing Feature - allows creation and editing of site-specific custom programs using a Windows-based computer and USB connection. For programs requiring a large amount of data entry, this method may be preferred. A PK-CD programming CD ROM can be ordered for this purpose

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 070707
```

Read Status mode can be entered while the panel is in any mode of operation. If an alarm or supervisory event exists at the panel, the event must be cleared before entering Programming mode. 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:

```
1=READ STATUS MODE
2=PROGRAMMING MODE
3=FUTURE USE
4=REMOTE DOWNLOAD
```

See Page

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 118 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.

Pressing *4* will select Remote Download which allows the user to enable the remote programming option. Refer to "Remote Download" on page 129.

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 <u>not</u> saved until the programmer exits this mode by repeatedly pressing the 'ESC' key. If the Reset key is pressed or power is lost before exiting Programming mode, all data just entered will 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.

```
TROUBL   PULL STATION

ZONE  1  OPEN FAULT
09:03A 070707
```

3.3 Programming Screens Description

Three options are available when the *Enter* key is pressed: Read Status, Programming and Remote Download 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 58, for additional information on the various screens.

See Page

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 103. 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 Programming mode must be exited using the *ESC* key in order to store the program data entered during this mode. If the *Reset* key is pressed or power is lost before exiting Programming mode, the data just entered will not be saved.

See Page

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

```
1=READ STATUS MODE
2=PROGRAMMING MODE
3=FUTURE USE
4=REMOTE DOWNLOAD
```

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=INPUT ZONES
2=NACS
3=RELAYS
```

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 LED flashes until Programming mode is exited. The following display will appear:

```
        PROGRAMMING        ⇩
1=INPUT ZONES
2=NACS
3=RELAYS
```
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=SYSTEM SETUP
2=OPTION MODULES
3=HISTORY
```
Programming Screen #2
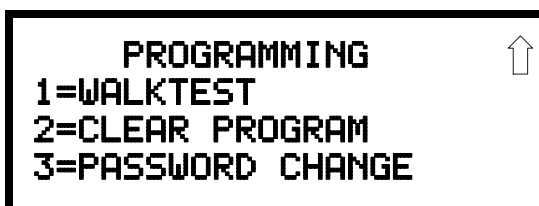
```
        PROGRAMMING        ⇧
1=WALKTEST
2=CLEAR PROGRAM
3=PASSWORD CHANGE
```
Programming Screen #3

3.5.1 Input Zones

The Input Zones option allows the user to initially program or change the programming for the five input zones (circuits) on the MS-5UD or the ten input zones (circuits) on the MS-10UD. Pressing *1*, while viewing Programming Screen #1, will select the Input Zones option and display a screen similar to the following:

```
PROGRAMMING
1=INPUT ZONES
2=NACS
3=RELAYS
```

Programming Screen #1

```
┌──────────────────────────────┐
│      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 5 in the MS-5UD or Input Zones 4 through 10 in the MS-10UD. 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:

```
┌──────────────────────────────┐
│ Normal  PULL STATION ⇩       │
│ ************************       │
│  ZONE 1                       │
│   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         ⇕        │
│ 1=ENABLED          YES           │
│ 2=TYPE   PULL STATION            │
│ 3=VERIFICATION     NO            │
└─────────────────────────────────┘
```
Edit Input Zone Screen #2

```
┌─────────────────────────────────┐
│    INPUT ZONE 1         ⇕        │
│ 1=PAS/PRE-SIG DELAY              │
│               NO DELAY           │
│                                  │
└─────────────────────────────────┘
```
Edit Input Zone Screen #3

```
┌─────────────────────────────────┐
│    INPUT ZONE 1         ⇕        │
│ 1=FREEZE SUPV.     NO            │
│                                  │
│ 2=ACC MSG#          2            │
└─────────────────────────────────┘
```
Edit Input Zone Screen #4

```
┌─────────────────────────────────┐
│    INPUT ZONE 1         ⇑        │
│ 1=NOUN/ADJECTIVE                 │
│ 2=DESCRIPTION                    │
│ ********************             │
└─────────────────────────────────┘
```
Edit Input Zone Screen #5

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 LED.

```
┌──────────────────────┐
│    INPUT ZONE        │
│ 1=ENABLED            │
│ 2=TYPE               │
│ 3=VERIFICATION       │
└──────────────────────┘
```
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 TYPE            ⇩        │
│ 1=PULL STATION                   │
│ 2=WATERFLOW                      │
│ 3=WATERFLOW NS                   │
└─────────────────────────────────┘
```
Zone Type Screen #1

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

Note: Some of the following Zone Types are not available for Canadian applications. Refer to "Canadian Option" on page 79 for additional details.

Zone Type	Action When Activated
Pull-Station	Fire Alarm
Waterflow	Fire Alarm Delayed (uses waterflow delay)
Waterflow Nonsilenceable	Fire Alarm (uses waterflow delay)
Combo	Fire/Supervisory (uses waterflow delay)
Combo AutoResettable	Fire/Supervisory AR, nonlatching (uses waterflow delay)
2-Wire Detector	Fire Alarm
Normally Open Contact	Fire Alarm
Fire	Fire Alarm
Tamper	Supervisory
Supervisory	Supervisory, latching
Supervisory AutoResettable	Supervisory, nonlatching
Medic-Alert	Supervisory, latching
Hazard-Alert	Supervisory, latching
Tornado-Alert	Supervisory, latching
Proc-Mon	Piezo
Procmon-AR	Piezo, nonlatching
AC-Loss-Mon	Trouble
Ack-Switch	Acts like panel Acknowledge Key
Sil-Switch	Acts like panel Alarm Silence Key
Drill-Switch	Acts like panel Drill Key
Reset-Switch	Acts like panel Reset Key
PAS-Bypass	Positive Alarm Sequence Disable
Drill-Switch AutoResettable	Acts like panel Drill Key, nonlatching

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=ENABLED
 2=TYPE
 3=VERIFICATION
```

Edit Input Zone Screen #2

Note: Almost any Input Zone type can activate an ACC-25/50ZS audio zone and output an assigned message with the exception of ACKNOWLEDGE, SILENCE, RESET and PAS BYPASS Switches. The DRILL Switch (or input programmed as a drill switch) will cause all of the corresponding ACC-25/50ZS audio zones to go active and will output Message 1.

Verification

Alarm verification is used to confirm that a smoke detector activation is a true alarm condition and not a false alarm. This feature is selected by pressing *3* while viewing the Edit Zone Screen #2 so that the display reads *Verification On*. Each time the *3* key is pressed, the display will toggle between *Verification On* and *Verification Off*. For a detailed description, refer to "Alarm Verification (None or One Minute)" on page 117.

See Page

Note that verification can only be enabled for a zone that is programmed as a smoke detector type. Zones programmed for any other type will not allow the Verification feature to be enabled. *Do not use the verification feature if a mix of smoke detectors and normally open contact devices are connected to the same zone*.

PAS/Pre-Signal Delay

Pressing *1* while viewing Edit Input Zone Screen #3 will display the following screen:

```
 PAS/PRE-SIG DELAY   ⇩
1=NO DELAY
2=PRE-SIGNAL DELAY
3=PAS DELAY
```

PAS/Pre-Signal Delay Screen

```
  INPUT ZONE #
1=PAS/PRE-SIG DELAY
        NO DELAY
```

Edit Input Zone Screen #3

Pre-signal

The Pre-signal option programs the zone to delay panel activation for a preprogrammed time delay of up to three minutes while allowing for visual verification by a person. Note that the alarm relay and communicator will respond to the initial alarm immediately. To enable the Pre-signal feature, press *2* while viewing PAS/Pre-Signal Screen. Refer to "Presignal" on page 115.

See Page

PAS

The PAS (Positive Alarm Sequence) option will program the zone to delay panel activation (including alarm relay and communicator) for a period of 15 seconds plus a programmable time of up to 3 minutes. To enable the PAS feature, press *3* while viewing the PAS/Pre-Signal Screen. This option is available only for circuits programmed as smoke detector circuits. Refer to "Positive Alarm Sequence" on page 115.

See Page

Freeze Supervision

Pressing *1* for *Freeze Supv.* while viewing Edit Input Zone Screen #4 programs the FACP to supervise the devices connected to the selected zone for freeze conditions. Each press of the 1 key will toggle the display between *Freeze Supv. Yes* and *No*. The factory default setting is No Freeze Supervision.

```
  INPUT ZONE #
1=FREEZE SUPV.  NO
2=ACC MSG #
```

Edit Input Zone Screen #4

ACC Message

Pressing *2* for *ACC MSG #* while viewing Edit Input Zone Screen #4 will cause the following screens to be displayed:

```
   INPUT ZONE #
1=FREEZE SUPV.  NO
2=ACC MSG #
```

Edit Input Zone Screen #4

```
    ACC MSG NUMBER      ⇩
1=NO MSG-ACTIVE
2=NO MSG-INACTIVE
3=MESSAGE 1
```

ACC Message Screen #1

```
    ACC MSG NUMBER      ⇕
1=MESSAGE 2
2=MESSAGE 3
3=MESSAGE 4
```

ACC Message Screen #2

```
    ACC MSG NUMBER      ⇧
1=MESSAGE 5
```

ACC Message Screen #3

Using these screens, the programmer can assign an audio message to each input zone. The NO MSG-ACTIVE option is the factory default selection which means that no message has been programmed for the input zone but its corresponding ACC-25/50ZS audio zone will turn on when this input zone goes active (if an input zone with a programmed audio message goes active, the message will also be played over this zone). The NO MSG-INACTIVE option will not turn on the corresponding ACC-25/50ZS audio zone when this input goes active. If MESSAGE 1 through 5 is the programmed option, the selected message will play when the FACP is connected to an ACC-25/50ZS Audio Panel via the ANN-BUS and the corresponding FACP input zone goes into alarm.

Noun/Adjective

The Noun/Adjective selection allows the programmer to enter specific descriptors about the detector currently being programmed. Pressing *1* while viewing Edit Input Zone Screen #4 will cause the following screen to be displayed:

```
   INPUT ZONE #
1=NOUN/ADJECTIVE
2=DESCRIPTION
****************
```

Edit Input Zone Screen #5

```
1=STANDARD ADJECTIVE
2=STANDARD NOUN
3=CUSTOM ADJECTIVE
4=CUSTOM NOUN
```

Noun/Adjective Screen

Pressing *1* while viewing the Noun/Adjective 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=3RD                ⇕
2=4TH
3=5TH
```
Adjective Screen #5

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

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

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

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

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

```
1=STANDARD ADJECTIVE
2=STANDARD NOUN
3=CUSTOM ADJECTIVE
4=CUSTOM NOUN
```

Noun/Adjective Screen

Pressing *2* while viewing the Noun/Adjective 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          ⇩
2=BOILER RM
3=CLASSROOM
```
Noun Screen #1

```
************************
1=KITCHEN           ⇕
2=LOBBY
3=OFFICE
```
Noun Screen #5

```
************************
1=CLOSET            ⇕
2=CORRIDOR
3=ELECTRIC RM
```
Noun Screen #2

```
************************
1=PATIENT           ⇕
2=RESTROOM
3=ROOM
```
Noun Screen #6

```
************************
1=ELEVATOR          ⇕
2=ENTRANCE
3=FLOOR
```
Noun Screen #3

```
************************
1=STAIRWAY          ⇕
2=STOREROOM
3=WING
```
Noun Screen #7

```
************************
1=GARAGE            ⇕
2=HALLWAY
3=HVAC RM
```
Noun Screen #4

```
************************
1=ZONE              ⇧
```
Noun Screen #8

Pressing *3* or *4* while viewing the Noun/Adjective Screen will display screens similar to the previous Adjective and Noun Screens. The new screens will list custom Adjectives and Nouns which have been programmed into the control panel by the user utilizing the PK-CD programming kit. These descriptors are selected as described in the previous sections.

```
1=STANDARD ADJECTIVE
2=STANDARD NOUN
3=CUSTOM ADJECTIVE
4=CUSTOM NOUN
```
Noun/Adjective Screen

Description

The Description selection allows the programmer to enter additional information about the zone 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 #4 will cause the following screen to be displayed:

```
   INPUT ZONE #
 1=NOUN/ADJECTIVE
 2=DESCRIPTION
```
Edit Input Zone Screen #4

```
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

3.5.2 NAC (Notification Appliance Circuit)

```
 PROGRAMMING
1=INPUT ZONES
2=NACS
3=RELAYS
```

Programming Screen #1

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

```
           NACS
1=NAC 1        3=NAC 3
2=NAC 2        4=NAC 4
```

NAC Selection Screen

The Notification Appliance Circuits can be configured independently by pressing *1* for NAC 1, *2* for NAC 2, *3* for NAC 3 or *4* for NAC 4.

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

```
         NAC #          ⇩
1=ENABLED        YES
2=CODING
   STEADY
```

NAC Screen #1

```
         NAC #          ⇧
1=SILENCE        YES
2=AUTO SILENCE    NO
3=SIL INHIBITED   NO
```

NAC Screen #2

3.5.2.1 Enabled

Pressing *1* while viewing NAC 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.

3.5.2.2 NAC Coding

The Coding feature allows the programmer to select the type of output that the main circuit board notification appliances will generate when activated. Pressing *2* while viewing NAC Screen #1 will cause the following displays to appear:

```
    NAC #
1=ENABLED
2=CODING
   STEADY
```
NAC Screen #1

```
        CODING            ⇩
 1=STEADY
 2=MARCH TIME
 3=CALIFORNIA
```
Coding Screen #1

```
        CODING            ⇕
1=TEMPORAL
2=TWO STAGE 3 MIN
3=TWO STAGE 5 MIN
```
Coding Screen #2

```
        CODING            ⇕
1=SYNC SYSTEM SENSR
2=SYNC WHEELOCK
3=SYNC GENTEX
```
Coding Screen #3

```
        CODING            ⇧
1=SYNC FARADAY
2=SYNC AMSECO
```
Coding Screen #4

The programmer can select the notification appliance output 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
- Two Stage 3 Minutes or 5 Minutes - refer to "Two Stage Operation" on page 69 for a description of this feature
- Synchronized output for System Sensor, Wheelock, Gentex, Faraday or Amseco - Refer to "Synchronized NAC Operation" on page 69 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 NAC Screen #1, which will display the new coding choice.

3.5.2.2.1 Two Stage Operation

Two Stage operation consists of the following:

- 1st stage output - 20 ppm (pulse-per-minute) coding
- 2nd stage output - Temporal coding as described above

If Two Stage operation is programmed as the Coding option, the following sequence of events will occur during an alarm.

1. The on-board NACs will activate with a 1st stage output upon activation of any alarm

2. If, after the programmed time of 3 or 5 minutes, the Acknowledge switch has <u>not</u> been pressed, all NACs presently in 1st stage activation will go to 2nd stage activation

3. If an Acknowledge switch has been pressed, any NACs currently in 1st stage activation will remain in 1st stage. Pressing the Acknowledge switch does not affect NACs already in 2nd stage activation

4. If another alarm point is activated and the countdown timer is counting, the alarm point will have no effect on the NACs

5. If another alarm point is activated and the countdown timer has stopped counting due to the Acknowledge switch being pressed, the countdown timer will restart and the NACs will respond as outlined in step 1. NACs already in 2nd stage activation will not be affected

3.5.2.2.2 Synchronized NAC Operation

Synchronization is a panel feature that controls the activation of notification appliances in such a way that all devices 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.

3.5.2.2.2.1 Maximum Number of Strobes for Synchronization

The maximum current draw for a Notification Appliance Circuit cannot exceed 2.5 amps for models with the FLPS-3 power supply or 3.0 amps for models with the FLPS-7 power supply (refer to the **AC Power** section under "Specifications" on page 14). 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:

Strobe Manufacturer	FACP with FLPS-3 Power Supply: Maximum Number of Strobes	FACP with FLPS-7 Power Supply: Maximum Number of Strobes
System Sensor	35	46
Wheelock	24	50
Gentex	22	39
Faraday	22	33
Amseco	19	34

```
        NAC #
1=SILENCE      YES
2=AUTO SILENCE NO
3=SIL INHIBITED NO
```
NAC Screen #2

3.5.2.3 Silence

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

```
     SILENCEABLE
1=SILENCEABLE
2=NON SILENCEABLE
3=SYNC MUTE
```

Silenceable Screen

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

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

Pressing *3* while viewing the Silenceable Screen will program the selected NAC as a synchronized mute circuit. Refer to "Synchronized NAC Operation" on page 69 for a description of synchronization.

Important: When a Notification Appliance 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.

3.5.2.4 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 NAC Screen #2. The following screens will be displayed:

```
 PROGRAM NAC #
1=SILENCEABLE  YES
2=AUTO SILENCE  NO
3=SIL INHIBITED NO
```
NAC Screen #2

```
   AUTO SILENCE        ⇩
1=NO
2=5 MINUTES
3=10 MINUTES
```
Auto Silence Screen #1

```
   AUTO SILENCE        ⇳
 1=15 MINUTES
 2=20 MINUTES
 3=25 MINUTES
```
Auto Silence Screen #2

```
   AUTO SILENCE        ⇧
1=30 MINUTES
```
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.

3.5.2.5 Silence Inhibited

The Silence Inhibit feature, when enabled, prevents the silencing of the selected main circuit board NAC for a period of one minute. Resetting the FACP will also be prevented for one minute while the NAC programmed for silence inhibit is activated. Pressing *3* while viewing NAC Screen #2 will cause the display to change from the factory default of *Silence Inhibit No* to *Silence Inhibit Yes*. Each press of the *3* key will cause the display to toggle between the two options.

3.5.3 Relays

```
   PROGRAMMING
1=INPUT ZONES
2=NACS
3=RELAYS
```
Programming Screen #1

Pressing *3* while viewing Programming Screen #1 will allow the programmer to configure the three main circuit board Form-C relays. The following screen will be displayed:

```
       RELAYS
1=RELAY 1   ALARM
2=RELAY 2   TROUBLE
3=RELAY 3   SUPERV
```
Relays Selection Screen

To program Relay 1, 2 or 3, press the number corresponding to the selected relay. The following screens will appear for each relay to be programmed:

```
    RELAY TYPE      ⇩
1=ALARM
2=TROUBLE
3=SUPERVISORY
```
Relay Screen #1

```
    RELAY TYPE      ⇧
1=COMM FAIL
2=MEDICAL
3=SILENCEABLE ALARM
```
Relay Screen #3

```
    RELAY TYPE      ⇕
1=PROCESS MONITOR
2=AC LOSS
3=HAZARD
```
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.

Note: A relay programmed with the Silenceable Alarm type will **deactivate** *when the FACP Alarm Silenced LED is illuminated.*

3.5.4 System Setup

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

- *Timers:* This option allows the programmer to set the PAS (Positive Alarm Sequence) time delay, Pre-Signal time delay and Waterflow time delay
- *Banner:* This option allows the user to change the top two lines of the LCD display from the factory default readout, which is blank, to a user defined readout when the control panel is in Normal condition
- *Time-Date:* This feature allows the programmer to set the time, display format (24 hr or 12 hr), date and daylight savings time feature into the FACP memory
- *Trouble Reminder*: This feature, when enabled, provides an audible reminder that an alarm or trouble still exists on the FACP after the control panel has been silenced. The control panel piezo sounder will pulse once every 15 seconds during an alarm and every two minutes during a trouble condition, after the Alarm Silence or Acknowledge key is pressed. The piezo will continue to sound at these rates until the alarm or trouble condition is cleared. If the *Trouble Reminder* feature is not enabled and a trouble condition is not cleared within 24 hours, the panel will reactivate the trouble sounder and retransmit the trouble condition to the central station if connected
- *Canadian Option:* This option allows the automatic programming of the FACP to Canadian specifications (refer to "Canadian Option" on page 79).
  Important! *For Canadian Applications, this option must be set to ON prior to any other panel programming.*
- *Charger Disable:* This option allows the programmer to disable the onboard battery charger in the event an external battery charger is being used

```
 PROGRAMMING
1=SYSTEM SETUP
2=OPTION MODULES
3=HISTORY
```
Programming Screen #2

Pressing *1* for System Setup, while viewing Programming Screen #2, will cause the following screens to be displayed:

```
    SYSTEM SETUP      ⇩
1=TIMERS
2=BANNER
3=TIME-DATE
```
System Setup Screen #1

```
    SYSTEM SETUP      ⇧
1=TROUBLE REMIND   NO
2=CANADIAN OPTION OFF
3=CHARGR DISABLE   NO
```
System Setup Screen #2

3.5.4.1 Timers

Timer delays for PAS, Pre-signal and waterflow activation can be programmed by pressing *1* while viewing System Setup Screen #1. The following screen will be displayed:

```
SYSTEM SETUP
1=TIMERS
2=BANNER
3=TIME-DATE
```
System Setup Screen #1

```
       TIMERS          ⇩
1=PAS DELAY        120
2=PRE SIGNAL       120
3=WATERFLW DELAY     0
```
Timer Screen #1

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

```
 TIMERS
1=PAS DELAY      120
2=PRE SIGNAL     120
3=WATERFLW DELAY   0
```
Timer Screen #1

3.5.4.1.1 PAS (Positive Alarm Sequence) Delay

The factory default setting for PAS is 000 for no delay. To select a PAS delay of 001 to 180 seconds for all devices programmed for PAS, press *1* while viewing Timer Screen #1. The following display will appear:

```
     PAS DELAY

RANGE 000-180 SECONDS
▨
```
PAS Delay Screen

A flashing cursor is positioned in the lower left corner of the display. Enter a delay time consisting of three digits, such as 005 for five seconds. Upon entering the third 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.

3.5.4.1.2 Pre-signal Delay

The factory default setting for Pre-signal delay is 000 for no delay. To select a Pre-signal delay of 001 to 180 seconds for all devices programmed for Pre-signal, press *2* while viewing Timer Screen #1. The following screen will be displayed:

```
   PRESIGNAL DELAY

RANGE 000-180 SECONDS
▨
```
Pre-signal Delay Screen

A flashing cursor is positioned in the lower left corner of the display. Enter a delay time consisting of three digits, such as 009 for nine seconds. Upon entering the third 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.

Note that the FACP can have both PAS and Pre-signal timers programmed with values but a zone can only use either the PAS or Pre-signal feature, but not both.

```
     TIMER
1=PAS DELAY      120
2=PRE SIGNAL     120
3=WATERFLW DELAY   0
```
Timer Screen #1

3.5.4.1.3 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 000 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. The following screen will be displayed:

```
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 DELAY 2
```
Timer Screen #2

3.5.4.1.4 AC Loss Delay

The reporting of a loss of AC power to a central station 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.

3.5.4.2 Banner

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

```
 SYSTEM SETUP
1=TIMERS
2=BANNER
3=TIME-DATE
```
System Setup Screen #1

```
    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* wile 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.
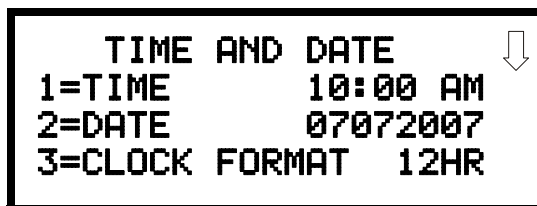
To enter alphanumeric characters from the keypad, repeatedly press the appropriate key until the desired character is displayed in the first position. For example, to enter the letter *B*, press the *2 (ABC)* key three times to toggle through the characters *1*, *A* and *B*. Press the right arrow key 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=TIMERS
2=BANNER
3=TIME-DATE
```
System Setup Screen #1

3.5.4.3 Time-Date

The control panel time and date can be changed by pressing *3* while viewing the System Setup Screen #1. The following screen will be displayed:

```
        TIME AND DATE        ⇩
1=TIME            10:00 AM
2=DATE            07072007
3=CLOCK FORMAT    12HR
```
Time-Date Screen #1
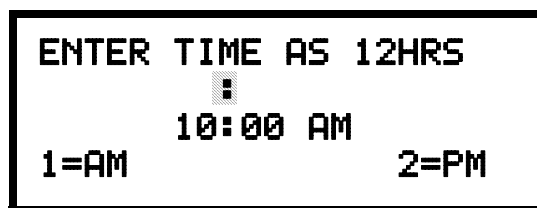
```
        TIME AND DATE        ⇧
1=DAYLIGHT SAVINGS
```
Time-Date Screen #2

3.5.4.3.1 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 AM
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.

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

```
┌──────────────────────────────┐
│        ENTER DATE            │
│       ▓▓-▓▓-▓▓▓▓             │
│      MONTH DAY YEAR          │
│        07-07-2007            │
└──────────────────────────────┘
```

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 (07 for 2007, 08 for 2008, 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.

3.5.4.3.3 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).*

3.5.4.3.4 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

```
┌──────────────────────────┐
│  TIME AND DATE          │
│ 1=DAYLIGHT SAVINGS      │
│                         │
└──────────────────────────┘
```

Time & Date Screen #2

```
┌──────────────────────────────┐
│  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=TROUBLE REMIND  NO
2=CANADIAN OPTION OFF
3=CHARGR DISABLE  NO
```
System Setup Screen #2

See Page

3.5.4.4 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 73, for a detailed description of this feature. Pressing *1* while viewing System Setup Screen #2 will cause the display to toggle to *Trouble Rem Yes*, which enables this feature. Each press of the *1* key will cause the display to toggle between *Trouble Rem Yes* and *Trouble Rem 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.

3.5.4.5 Canadian Option
Pressing *2* while viewing System Setup Screen #2 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
  - ✓ process monitor (latching or non-latching)
  - ✓ hazard
  - ✓ tornado
  - ✓ medical alert
  - ✓ combo autoresettable
- The auto-silence feature can be enabled or disabled. If this feature is enabled, the alarm signals will be turned off after 20 minutes of activation
- The installer must write in the Date of Final Assembly on the Master Marking and Warranty label, located on the FACP backbox door

3.5.4.6 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 *Chrgr Disable No* and *Chrgr Disable Yes*.

3.5.5 Option Modules

```
   PROGRAMMING
1=SYSTEM SETUP
2=OPTION MODULES
3=HISTORY
```
Programming Screen #2

Options available for the FACP include annunciators, printer connection for acquiring hardcopy printouts of panel data and onboard DACT.

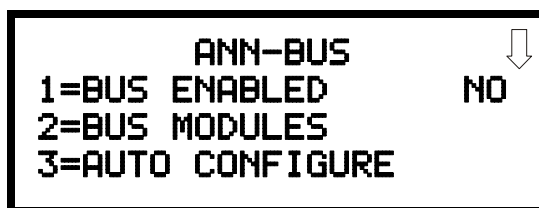Pressing *2* while viewing Programming Screen #2 will display the following screen:

```
    OPTION MODULES
1=ANN-BUS
2=ON BOARD DACT
```

3.5.5.1 ANN-BUS

Pressing *1* while viewing the Option Modules screen 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

```
┌─────────────────────────────┐
│        ANN-BUS         ⬆    │
│  1=ANN-AUDIO OPTIONS        │
│                             │
│                             │
└─────────────────────────────┘
```
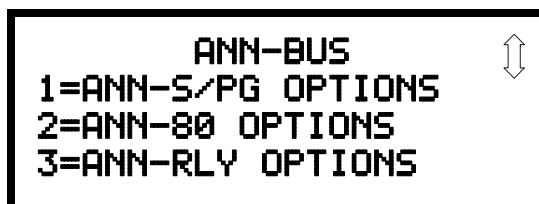
ANN-BUS Screen #3

A variety of ANN-BUS option modules can be installed in the FACP. These devices communicate with the FACP over the ANN-BUS terminals on the control panel.

3.5.5.1.1 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*.

3.5.5.1.2 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         │
└─────────────────────────────┘
```
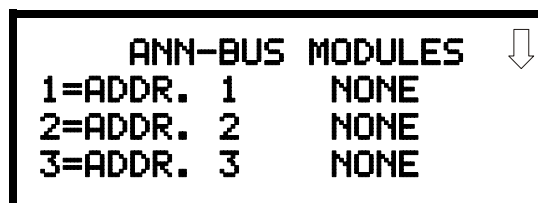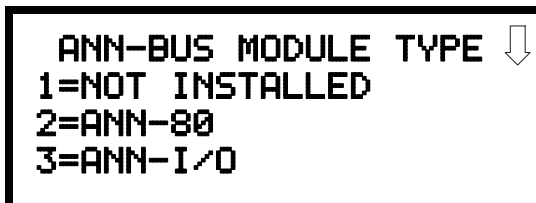
On Board DACT Screen #1

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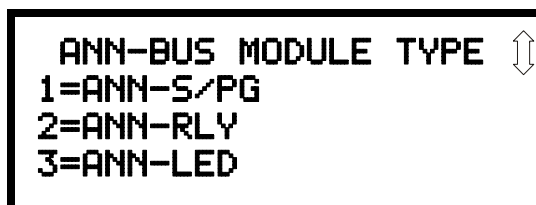
In the technical information screen, pressing *1* for *Type* will display the following screens:

```
 ANN-BUS MODULE TYPE ⇩
1=NOT INSTALLED
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

```
 ANN-BUS MODULE TYPE ⇧
1=ANN-AUDIO MODULE
```

Module Type Screen #3

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

3.5.5.1.3 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

3.5.5.1.4 ANN-S/PG Options Screen

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

```
┌──────────────────────┐
│     PROGRAMMING      │
│ 1=ANN-S/PG OPTIONS   │
│ 2=ANN-80 OPTIONS     │
│ 3=ANN-RLY OPTIONS    │
└──────────────────────┘
```
ANN-BUS Screen #2

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*.

3.5.5.1.5 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	Zone 7 Alarm
18	Zone 8 Alarm
19	Zone 9 Alarm
20	Zone 10 Alarm
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	Zone 7 Trouble
28	Zone 8 Trouble
29	Zone 9 Trouble
30	Zone 10 Trouble
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	Zone 7 Supervisory
38	Zone 8 Supervisory
39	Zone 9 Supervisory
40	Zone 10 Supervisory

3.5.5.1.6 ANN-80 Options Screen
Pressing *2* while viewing ANN-BUS screen #2 will display the following screen:
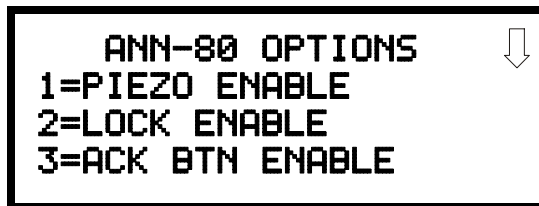
```
┌─────────────────────────────┐
│   ANN-80 OPTIONS        ⇩   │
│ 1=PIEZO ENABLE              │
│ 2=LOCK ENABLE               │
│ 3=ACK BTN ENABLE            │
└─────────────────────────────┘
```
ANN-80 Options Screen #1
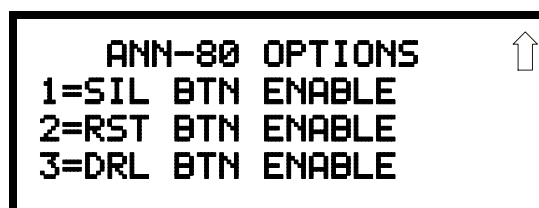
```
┌─────────────────────────────┐
│   ANN-80 OPTIONS        ⇧   │
│ 1=SIL BTN ENABLE            │
│ 2=RST BTN ENABLE            │
│ 3=DRL BTN ENABLE            │
└─────────────────────────────┘
```
ANN-80 Options Screen #2

The *Piezo Enable* option allows the programmer to select whether the piezo sounder on any installed ANN-80 module 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 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).

The Acknowledge Button Enable (*ACK BTN ENABLE*) option allows the programmer to select whether the Ack/Step button on any installed ANN-80 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 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 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 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).

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

3.5.5.2 ANN-RLY Options Screen
Pressing *3* for *ANN-RLY Options* while viewing ANN-BUS Screen #2 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
• AC Loss
• Waterflow Delay
• Input Zone 1
• Input Zone 2
• Input Zone 3
• Input Zone 4
• Input Zone 5
• Input Zone 6
• Input Zone 7
• Input Zone 8
• Input Zone 9
• Input Zone 10
• Silenceable Alarm
• Not Assigned

```
 PROGRAMMING
1=ANN-AUDIO OPTIONS
```

ANN-BUS Screen #3

3.5.5.3 ANN-AUDIO Options Screen

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

```
  ANN-AUDIO OPTIONS
1=ALL CALL ZONE      1
```

ANN-AUDIO Options Screen

This screen shows the Input Zone that has been assigned to be the All-Call Zone. In this example, Zone 1 is the All-Call Zone. The All-Call Zone can be changed by pressing the *1* key while viewing the ANN-AUDIO Options Screen. The following screens will be displayed.

```
  ANN-AUDIO ALL CALL ⇩
1=NO ALL CALL ZONE
2=INPUT ZONE 1
3=INPUT ZONE 2
```

Printer Options Screen #1

```
  ANN-AUDIO ALL CALL ⇕
1=INPUT ZONE 3
2=INPUT ZONE 4
3=INPUT ZONE 5
```

Printer Options Screen #2

```
  ANN-AUDIO ALL CALL ⇕
1=INPUT ZONE 6
2=INPUT ZONE 7
3=INPUT ZONE 8
```

Printer Options Screen #2

```
  ANN-AUDIO ALL CALL ⇧
1=INPUT ZONE 9
2=INPUT ZONE 10
```

Printer Options Screen #3

These screens allow the programmer to select which Input Zone will be assigned as the All-Call Zone.

3.5.5.4 Onboard DACT

The Onboard DACT (Digital Alarm Communicator/Transmitter) provides communication to a central station. Pressing *2* while viewing the Option Module Screen will cause the following screens to be displayed:

```
┌─────────────────────────────┐
│   ON  BOARD  DACT        ⇩  │
│  1=PRIM PHONE     TCH TNE   │
│  2=SCND PHONE     TCH TNE   │
│  3=CENTRAL STATION         │
└─────────────────────────────┘
```
Onboard DACT Screen 1

```
┌──────────────────────┐
│  OPTION MODULES      │
│ 1=ANN-BUS            │
│ 2=ON BOARD DACT      │
└──────────────────────┘
```
Option Module Screen

```
┌─────────────────────────────┐
│   ON  BOARD  DACT        ⇧  │
│  1=SERVICE TERMINAL        │
│  2=SUPERV PHONE LINE       │
│                            │
└─────────────────────────────┘
```
Onboard DACT Screen 2

3.5.5.4.1 Primary Phone

Press *1* while viewing Onboard DACT Screen to program the type of primary phone line being connected to the DACT. The following screen will be displayed:

```
┌─────────────────────────────┐
│      PHONE  LINE            │
│  1=TOUCHTONE               │
│  2=ROTARY 67/33 (EURO)     │
│  3=ROTARY 60/40 (U.S.)     │
└─────────────────────────────┘
```
Primary Phone Type Screen

Press *1* to select Touchtone dialing, *2* to select Rotary dialing with a make/break ratio of 67/33 or *3* to select Rotary dialing with a make/break ratio of 60/40.

3.5.5.4.2 Secondary Phone

Press *2* while viewing Onboard DACT Screen 1 to program the type of secondary phone line being connected to the DACT. The following screen will be displayed:

```
┌──────────────────────┐
│  ON BOARD DACT       │
│ 1=PRIM PHONE         │
│ 2=SCND PHONE         │
│ 3=CENTRAL STATION    │
└──────────────────────┘
```
Onboard DACT 1

```
┌─────────────────────────────┐
│      PHONE  LINE            │
│  1=TOUCHTONE               │
│  2=ROTARY 67/33 (EURO)     │
│  3=ROTARY 60/40 (U.S.)     │
└─────────────────────────────┘
```
Secondary Phone Type Screen

Press *1* to select Touchtone dialing, *2* to select Rotary dialing with a make/break ratio of 67/33 or *3* to select Rotary dialing with a make/break ratio of 60/40.

3.5.5.4.3 Central Station

Central Station programming configures the control panel DACT for contacting the central station. Pressing *3* while viewing Onboard DACT Screen 1 will cause the following screens to be displayed:

```
 ON BOARD DACT
1=PRIM PHONE
2=SCND PHONE
3=CENTRAL STATION
```
Onboard DACT

```
   CENTRAL STATION      ⇩
1=REPORTING         NO
2=REPORT STYLE
        FIRST AVAILABLE
```
Central Station Screen #1

```
   CENTRAL STATION      ⇧
1=PRIMARY
2=SECONDARY
3=CALL LIMIT         0
```
Central Station Screen #2

3.5.5.4.3.1 Reporting

To enable the DACT for reporting FACP activity to the central station, press *1* while viewing Central Station Screen #1 so the display reads *Reporting Yes*. Each press of the *1* key will toggle the display between *Reporting Yes* and *Reporting No*.

3.5.5.4.3.2 Report Style

The DACT can be programmed to transmit reports to primary and/or secondary central station phone numbers as a backup. Press *2* while viewing Central Station Screen #1 to display the following screen:

```
    REPORT STYLE
1=BACKUP ONLY
2=BOTH
3=FIRST AVAILABLE
```
Backup Reporting Screen

Press *1* to have all reports transmitted to the central station secondary phone number as a backup only if the primary phone line fails, *2* to transmit all reports to both the primary and secondary phone numbers all of the time or *3* to send reports to the first available phone number.

3.5.5.4.3.3 Central Station Primary and Secondary Phone Numbers

Pressing *1* for Primary or *2* for Secondary, while viewing Central Station Screen #2, will display the following screens.

Note that the following information must be entered for both the Primary and Secondary Central Station Phone Numbers.

```
┌──────────────────────────────┐
│ CENTRAL STATION #      ⇩      │
│ 1=TEST TIME INT     24       │
│ 2=ACCOUNT CODE     0000      │
│ 3=24HR T TIME      0000      │
└──────────────────────────────┘
```

```
┌─────────────────────┐
│  CENTRAL STATION    │
│ 1=PRIMARY           │
│ 2=SECONDARY         │
│ 3=CALL LIMIT        │
└─────────────────────┘
```
Central Station Screen #2

Primary/Secondary Screen #1

```
┌──────────────────────────────┐
│ CENTRAL STATION        ⇕      │
│ 1=PHONE NUMBER               │
│                              │
│                              │
└──────────────────────────────┘
```

Primary/Secondary Screen #2

```
┌──────────────────────────────┐
│ CENTRAL STATION        ⇕      │
│ 1=COMM FORMAT                │
│    ADEMCO CONTACT ID         │
│ 2=EVENT CODES                │
└──────────────────────────────┘
```

Primary/Secondary Screen #3

Test Time Interval

Pressing *1* while viewing Primary/Secondary Screen #1 will cause the following screens to be displayed:

```
┌─────────────────────┐
│  CENTRAL STATION    │
│ 1=TEST TIME INT     │
│ 2=ACCOUNT CODE      │
│ 3=24HR TST TIME     │
└─────────────────────┘
```
Primary/Secondary Screen #1

```
┌──────────────────────────────┐
│  TEST TIME INTERVAL    ⇩      │
│ 1=24 HOURS                   │
│ 2=12 HOURS                   │
│ 3=8 HOURS                    │
└──────────────────────────────┘
```

Test Time Interval Screen #1

```
┌──────────────────────────────┐
│  TEST TIME INTERVAL    ⇧      │
│ 1=6 HOURS                    │
│                              │
│                              │
└──────────────────────────────┘
```

Test Time Interval Screen #2

The test report sent to the Central Station phone number may be sent once every 6, 8, 12 or 24 hours. Select the desired Test Time Interval by pressing the corresponding digit in the screens shown above.

Account Code

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

```
┌─────────────────────────────┐
│                             │
│     ACCOUNT CODE            │
│                             │
│  RANGE 0000-FFFF            │
│  ▪                          │
│                             │
└─────────────────────────────┘
```
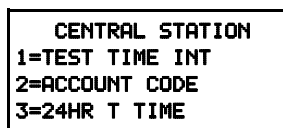
Account Codes Screen

The Account Code, which is assigned by a Central Station, depends on the communication format being used. The Account Code screen will have a flashing cursor in the lower left corner. Program the supplied 4-digit account code using 0 - 9 and A - F keys. Enter the first digit, then press the right arrow key to move the cursor to the right, one position. Repeat the process until all digits are entered.
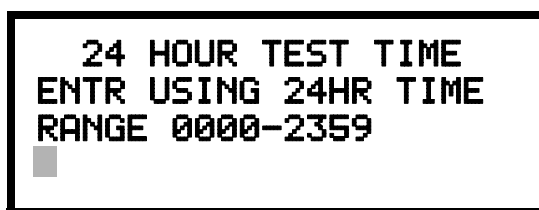
24 Hour Test Time

Pressing 3 while viewing Primary/Secondary Screen #1 will cause the following screen to be displayed:

```
┌─────────────────────────────┐
│   24 HOUR TEST TIME         │
│  ENTR USING 24HR TIME       │
│  RANGE 0000-2359            │
│  ▪                          │
└─────────────────────────────┘
```
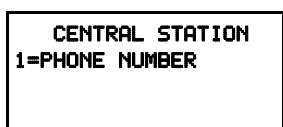
24 Hour Test Time Screen

```
┌─────────────────────────────┐
│    CENTRAL STATION          │
│  1=TEST TIME INT            │
│  2=ACCOUNT CODE             │
│  3=24HR T TIME              │
└─────────────────────────────┘
```
Primary/Secondary Screen #1

Use the 24 Hour Test Time screen to program the time that the DACT will transmit the 24 Hour Test to the Central Station. A flashing cursor will appear in the lower left corner of the screen. Enter a four digit number representing the test time using military time (0000 = midnight and 2359 = 11:59PM).
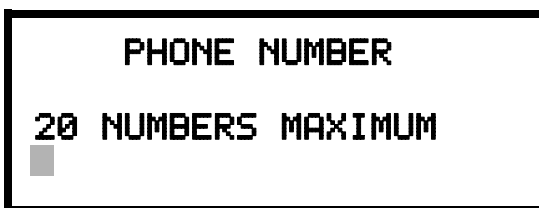
Phone Number

```
┌─────────────────────────────┐
│    CENTRAL STATION          │
│  1=PHONE NUMBER             │
│                             │
│                             │
└─────────────────────────────┘
```
Primary/Secondary Screen #2

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

```
┌─────────────────────────────┐
│                             │
│    PHONE NUMBER             │
│                             │
│  20 NUMBERS MAXIMUM         │
│  ▪                          │
│                             │
└─────────────────────────────┘
```

Phone Number Screen

The Phone Number screen is used to enter the Central Station phone number that the DACT will be contacting. A maximum of 20 characters can be entered with valid entries being 0 - 9 and A - C where A = *, B = # and C = look for secondary dial tone for up to 2 seconds (then dial anyway).

A flashing cursor will appear in the lower left corner of the screen. Enter the first digit then press the right arrow key to move the cursor to the right one position. Enter the second digit and repeat the process until all digits are entered. Press the *Enter* key to store the phone number in memory.

Enter the digits as you would like the number to be dialed. For example, if it's necessary to dial 9 before dialing a number outside the building, you may wish to pause after dialing 9. Enter *9* followed by *D* for a three second pause or *E* for a five second pause then the phone number followed by an F to indicate the end of the number.

Communication Format

Pressing *1* while viewing Primary/Secondary Screen #3 will cause the following screen to be displayed:

```
    CENTRAL STATION
1=COMM FORMAT
2=EVENT CODES
```

Primary/Secondary Screen #3

```
       COMM FORMAT
1=ADEMCO CONTACT ID
2=SIA-DCS-8
3=SIA-DCS-20
```

The Communication Format is determined by the type of receiver that the DACT is transmitting to. *Consult your Central Station for proper selection or consult our factory representatives. For any format chosen, the control panel automatically programs all of the event codes.*

Select the Communication Format by pressing the corresponding number key while viewing the Comm Format screen. The following table describes each format:

Table 3.1 Communication Formats

Screen Selection	Communication Format Description
ADEMCO CONTACT ID	Contact ID, DTMF, 1400/2300 ACK
SIA-DCS-8	Security Industry Association, 8 messages per call
SIA-DCS-20	Security Industry Association, 20 messages per call

Event Codes

Pressing *2* while viewing Primary/Secondary Screen #3 will cause the following screen to be displayed:

```
   EVENT CODES        ⇩
1=ZONE 1 ALARM
2=ZONE 2 ALARM
3=ZONE 3 ALARM
```

Event Code Screen

Pressing the down arrow key allows viewing of all Events associated with the selected Communication Format. Pressing the number corresponding to the event displayed in each screen will display its default active and restoral event codes which can be customized by the programmer.

For example, if Ademco Contact ID is the selected format, pressing *3* for Zone 3 Alarm will display the following screen which allows the Event Code to be changed from the default value.

```
ZONE 3 ACTIVE
                115
```

The following table lists the Zone Alarm Types that can be programmed for zones 1 through 10 and the corresponding Event Codes for Ademco Contact ID and SIA DCS Formats. Note that Table 3.3 on page 93, Table 3.4 on page 94, Table 3.5 on page 95 and Table 3.6 on page 97 list the default settings for Zone 1 through Zone 10. These can be changed to any of the Types listed in Table 3.2 .

Note: The third character in the SIA-DCS Format (*x* in the table below) represents the zone number.

Table 3.2 Zone Alarm Type Event Codes

Zone Alarm Type	Ademco Contact ID	SIA-DCS Format	
	Active	Active	Restoral
Pull-Station	115	FAx	FHx
Waterflow	113	SAx	SHx
Waterflow Nonsilenceable	113	SAx	SHx
Combo	113	SAx	SHx
Combo AutoResettable Supervisory	113	SAx	SHx
2-Wire Detector	111	FAx	FHx
Normally Open Contact	110	UAx	UHx
Fire	110	FAx	FHx
Tamper	144	TAx	THx
Supervisory	200	FSx	FVx
Supervisory AutoResettable	200	FSx	FVx
Medic-Alert	100	MAx	MHx
Hazard-Alert	150	PAx	PHx
Tornado-Alert	150	PAx	PHx
Proc-Mon	200	IAx	IRx
Procmon-AR	200	IAx	IRx
AC-Loss-Mon	301	ATx	ARx
Drill-Switch	604	FIx	FKx
Drill-Switch AutoResettable	604	FIx	FKx

The following tables list all of the Events and their default Event Codes for the Ademco Contact ID and SIA-DCS Communication Formats.

Note: A detector *freeze* condition will be reported as a Supervisory Event Code.

Ademco Contact ID Format - Primary Central Station Phone Number

The information shown in Table 3.3 is automatically programmed for the Primary Central Station phone number Event Codes when Ademco Contact ID Format is selected. To disable event reporting, select the desired Event Code to be disabled and press *0* or *Clear* and then *Enter* to disable it. (*Enter* must be pressed to save the selection. Pressing *Escape* will not save the selection).

Table 3.3 Ademco Contact ID Primary # Event Codes

Event Description	Event Code Settings Active
Primary # Zone 1 - 10 Alarm	115
Primary # Zone 1 - 10 Disabled	570
Primary # Drill	604
Primary # AC Fault	301
Primary # Zone 1 - 10 Fault	380
Primary # Zone 1 - 10 Dirty	380
Primary # Earth Fault	310
Primary # Low Battery Fault	302
Primary # No Battery Fault	311
Primary # Telco Primary Line Fault	351
Primary # Telco Secondary Line Fault	352
Primary # NAC #1 Fault	321
Primary # NAC #2 Fault	322
Primary # NAC #3 Fault	326
Primary # NAC #4 Fault	327
Primary # NAC #1 Disable	521
Primary # NAC #2 Disable	522
Primary # NAC #3 Disable	526
Primary # NAC #4 Disable	527
Primary # Charger Fault	300
Primary # Comm Trouble Primary #	354
Primary # Comm Trouble Secondary #	354
Primary # Printer Fault	336
Primary # ANN-Bus Fault	330
Primary # Option Card Fault	333
Primary # CS CALC Fault	304
Future	000
Primary # System Off Normal	308
Primary # System Test Message	602
Primary # System Abnormal Test Message	608
Primary # Upload/Download Request	411
Primary # Upload Successful	416
Primary # Download Successful	412
Primary # Upload/Download Failed	413
Primary # Voice EVAC Fault	330
Primary # Power Supply Sync Fault	300

Ademco Contact ID Format - Secondary Central Station Phone Number

The information shown in Table 3.4 is automatically programmed for the Secondary Central Station phone number Event Codes when Ademco Contact ID Format is selected. To disable event reporting, select the desired Event Code to be disabled and press *0* or *Clear* and then *Enter* to disable it. (*Enter* must be pressed to save the selection. Pressing *Escape* will not save the selection).

Table 3.4 Ademco Contact ID Secondary # Event Codes

Event Description	Event Code Settings Active
Secondary # Zone 1 - 10 Alarm	115
Secondary # Zone 1 - 10 Disabled	570
Secondary # Drill	604
Secondary # AC Fault	301
Secondary # Zone 1 - 10 Fault	380
Secondary # Zone 1 - 10 Dirty	380
Secondary # Earth Fault	310
Secondary # Low Battery Fault	302
Secondary # No Battery Fault	311
Secondary # Telco Primary Line Fault	351
Secondary # Telco Secondary Line Fault	352
Secondary # NAC #1 Fault	321
Secondary # NAC #2 Fault	322
Secondary # NAC #3 Fault	326
Secondary # NAC #4 Fault	327
Secondary # NAC #1 Disable	521
Secondary # NAC #2 Disable	522
Secondary # NAC #3 Disable	526
Secondary # NAC #4 Disable	527
Secondary # Charger Fault	300
Secondary # Comm Trouble Primary #	354
Secondary # Comm Trouble Secondary #	354
Secondary # Printer Fault	336
Secondary # ANN-BUS Fault	330
Secondary # Option Card Fault	333
Secondary # CS CALC Fault	304
Future	000
Secondary # System Off Normal	308
Secondary # System Test Message	602
Secondary # System Abnormal Test Message	608
Secondary # Upload/Download Request	411
Secondary # Upload Successful	416
Secondary # Download Successful	412
Secondary # Upload/Download Failed	413
Secondary # Voice EVAC Fault	330
Secondary # Power Supply Sync fault	300

SIA-DCS Format - Primary Central Station Phone Number

The information shown in Table 3.5 is automatically programmed for the Primary Central Station phone number Event Codes when SIA-DCS Format is selected. To disable event reporting, select the desired Event Code to be disabled and press *0* or *Clear* and then *Enter* to disable it. (*Enter* must be pressed to save the selection. Pressing *Escape* will not save the selection).

Table 3.5 SIA-DCS Primary # Event Codes

Event Description	Event Code Settings	
	Active	Restoral
Primary # Zone 1 Alarm	FA1	FH1
Primary # Zone 2 Alarm	FA2	FH2
Primary # Zone 3 Alarm	FA3	FH3
Primary # Zone 4 Alarm	FA4	FH4
Primary # Zone 5 Alarm	FA5	FH5
Primary # Zone 6 Alarm	FA6	FH6
Primary # Zone 7 Alarm	FA7	FH7
Primary # Zone 8 Alarm	FA8	FH8
Primary # Zone 9 Alarm	FA9	FH9
Primary # Zone 10 Alarm	FA10	FH10
Primary # Zone 1 Disabled	FB1	FU1
Primary # Zone 2 Disabled	FB2	FU2
Primary # Zone 3 Disabled	FB3	FU3
Primary # Zone 4 Disabled	FB4	FU4
Primary # Zone 5 Disabled	FB5	FU5
Primary # Zone 6 Disabled	FB6	FU6
Primary # Zone 7 Disabled	FB7	FU7
Primary # Zone 8 Disabled	FB8	FU8
Primary # Zone 9 Disabled	FB9	FU9
Primary # Zone 10 Disabled	FB10	FU10
Primary # Drill	FI	FK
Primary # AC Fault	AT	AR
Primary # Zone 1 Fault	FT1	FJ1
Primary # Zone 2 Fault	FT2	FJ2
Primary # Zone 3 Fault	FT3	FJ3
Primary # Zone 4 Fault	FT4	FJ4
Primary # Zone 5 Fault	FT5	FJ5
Primary # Zone 6 Fault	FT6	FJ6
Primary # Zone 7 Fault	FT7	FJ7
Primary # Zone 8 Fault	FT8	FJ8
Primary # Zone 9 Fault	FT9	FJ9
Primary # Zone 10 Fault	FT10	FJ10
Primary # Zone 1 Dirty	FT1	FJ1
Primary # Zone 2 Dirty	FT2	FJ2
Primary # Zone 3 Dirty	FT3	FJ3
Primary # Zone 4 Dirty	FT4	FJ4

Table 3.5 SIA-DCS Primary # Event Codes (Continued)

Primary # Zone 5 Dirty	FT5	FJ5
Primary # Zone 6 Dirty	FT6	FJ6
Primary # Zone 7 Dirty	FT7	FJ7
Primary # Zone 8 Dirty	FT8	FJ8
Primary # Zone 9 Dirty	FT9	FJ9
Primary # Zone 10 Dirty	FT10	FJ10
Primary # Earth Fault	ET38	ER38
Primary # Low Battery Fault	YT0	YR0
Primary # No Battery Fault	YT0	YR0
Primary # Telco Primary Line Fault	LT1	LR1
Primary # Telco Secondary Line Fault	LT2	LR2
Primary # NAC #1 Fault	ET32	ER32
Primary # NAC #2 Fault	ET33	ER33
Primary # NAC #3 Fault	ET34	ER34
Primary # NAC #4 Fault	ET35	ER35
Primary # NAC #1 Disable	ET101	ER101
Primary # NAC #2 Disable	ET102	ER102
Primary # NAC #3 Disable	ET103	ER103
Primary # NAC #4 Disable	ET104	ER104
Primary # Charger Fault	YP	YQ
Primary # Comm Trouble Primary #	YC1	YK1
Primary # Comm Trouble Secondary #	YC2	YK2
Primary # Printer Fault	VT	VR
Primary # ANN-Bus Fault	ET61	ER61
Primary # Option Card Fault	ET	ER
Primary # CS CALC Fault	YF	000
Future	000	000
Primary # System Off Normal	LB	LX
Primary # System Test Message	RP	000
Primary # System Abnormal Test Message	RP99	000
Primary # Power Supply Sync Fault	OU	OV
Primary # Upload/Download Request	RB	000
Primary # Upload Successful	RS	000
Primary # Download Successful	RS	000
Primary # Upload/Download Failed	RU	000
Primary # Voice EVAC Fault	ET	ER
Primary # Power Supply Sync Fault	OU	OV

SIA-DCS Format - Secondary Central Station Phone Number

The information shown in Table 3.6 is automatically programmed for the Secondary Central Station phone number Event Codes when SIA-DCS Format is selected. To disable event reporting, select the desired Event Code to be disabled and press *0* or *Clear* and then *Enter* to disable it. (*Enter* must be pressed to save the selection. Pressing *Escape* will not save the selection).

Table 3.6 SIA-DCS Secondary # Event Codes

Event Description	Event Code Settings	
	Active	Restoral
Secondary # Zone 1 Alarm	FA1	FH1
Secondary # Zone 2 Alarm	FA2	FH2
Secondary # Zone 3 Alarm	FA3	FH3
Secondary # Zone 4 Alarm	FA4	FH4
Secondary # Zone 5 Alarm	FA5	FH5
Secondary # Zone 6 Alarm	FA6	FH6
Secondary # Zone 7 Alarm	FA7	FH7
Secondary # Zone 8 Alarm	FA8	FH8
Secondary # Zone 9 Alarm	FA9	FH9
Secondary # Zone 10 Alarm	FA10	FH10
Secondary # Zone 1 Disabled	FB1	FU1
Secondary # Zone 2 Disabled	FB2	FU2
Secondary # Zone 3 Disabled	FB3	FU3
Secondary # Zone 4 Disabled	FB4	FU4
Secondary # Zone 5 Disabled	FB5	FU5
Secondary # Zone 6 Disabled	FB6	FU6
Secondary # Zone 7 Disabled	FB7	FU7
Secondary # Zone 8 Disabled	FB8	FU8
Secondary # Zone 9 Disabled	FB9	FU9
Secondary # Zone 10 Disabled	FB10	FU10
Secondary # Drill	FI	FK
Secondary # AC Fault	AT	AR
Secondary # Zone 1 Fault	FT1	FJ1
Secondary # Zone 2 Fault	FT2	FJ2
Secondary # Zone 3 Fault	FT3	FJ3
Secondary # Zone 4 Fault	FT4	FJ4
Secondary # Zone 5 Fault	FT5	FJ5
Secondary # Zone 6 Fault	FT6	FJ6
Secondary # Zone 7 Fault	FT7	FJ7
Secondary # Zone 8 Fault	FT8	FJ8
Secondary # Zone 9 Fault	FT9	FJ9
Secondary # Zone 10 Fault	FT10	FJ10
Secondary # Zone 1 Dirty	FT1	FJ1
Secondary # Zone 2 Dirty	FT2	FJ2

Table 3.6 SIA-DCS Secondary # Event Codes (Continued)

Secondary # Zone 3 Dirty	FT3	FJ3
Secondary # Zone 4 Dirty	FT4	FJ4
Secondary # Zone 5 Dirty	FT5	FJ5
Secondary # Zone 6 Dirty	FT6	FJ6
Secondary # Zone 7 Dirty	FT7	FJ7
Secondary # Zone 8 Dirty	FT8	FJ8
Secondary # Zone 9 Dirty	FT9	FJ9
Secondary # Zone 10 Dirty	FT10	FJ10
Secondary # Earth Fault	ET38	ER38
Secondary # Low Battery Fault	YT0	YR0
Secondary # No Battery Fault	YT0	YR0
Secondary # Telco Primary Line Fault	LT1	LR1
Secondary # Telco Secondary Line Fault	LT2	LR2
Secondary # NAC #1 Fault	ET32	ER32
Secondary # NAC #2 Fault	ET33	ER33
Secondary # NAC #3 Fault	ET34	ER34
Secondary # NAC #4 Fault	ET35	ER35
Secondary # NAC #1 Disable	ET101	ER101
Secondary # NAC #2 Disable	ET102	ER102
Secondary # NAC #3 Disable	ET103	ER103
Secondary # NAC #4 Disable	ET104	ER104
Secondary # Charger Fault	YP	YQ
Secondary # Comm Trouble Primary #	YC1	YK1
Secondary # Comm Trouble Secondary #	YC2	YK2
Secondary # Printer Fault	VT	VR
Secondary # ANN-Bus Fault	ET61	ER61
Secondary # Option Card Fault	ET	ER
Secondary # CS CALC Fault	YF	000
Future	000	000
Secondary # System Off Normal	LB	LX
Secondary # System Test Message	RP	000
Secondary # System Abnormal Test Message	RP99	000
Secondary # Power Supply Sync Fault	OU	OV
Secondary # Upload/Download Request	RB	000
Secondary # Upload Successful	RS	000
Secondary # Download Successful	RS	000
Secondary # Upload/Download Failed	RU	000
Secondary # Voice EVAC Fault	ET	ER
Secondary # Power Supply Sync Fault	OU	OV

```
  CENTRAL STATION
1=PRIMARY
2=SECONDARY
3=CALL LIMIT
```

Central Station Screen #2

3.5.5.4.3.4 Trouble Call Limit (Dialer Runaway Prevention)

The Call Limit option limits the number of DACT trouble calls to the Central Station, to a programmed amount between 0 and 99, for each unique trouble within a 24 hour period. Separate limit counters keep track of each unique type of trouble. Note that the number of phone line (communication) faults called to the Central Station are not limited by this feature. No subsequent restoral message is sent to the Central Station(s) for a particular trouble whose call limit has been reached. Local DACT annunciation will still track the particular trouble and restoral.

To set the Trouble Call Limit, press *3* while viewing Central Station Screen #2. The following screen will be displayed.

```
  TROUBLE CALL LIMIT

RANGE 00-99 TROUBLES
*
```

Backup Reporting Screen

Enter a value between 00 and 99, then press Enter to set the Call Limit to this value.

Note: Entering a value of 00 will disable the Trouble Call Limit allowing the DACT to call the Central Station an unlimited number of times. This is the factory default setting.

3.5.5.4.4 Service Terminal

```
       DACT
1=SERVICE TERMINAL
2=SUPERV PHONE LINE
```

Onboard DACT Screen #2

The FACP can be programmed remotely from a PC using a modem and telephone line. Information can also be retrieved from the FACP using the same method. The Upload/Download option allows an operator to set the necessary parameters to allow the uploading and downloading of data between the FACP and PC. The Service Terminal selection provides the means for entering these parameters.

Pressing *1* while viewing Onboard DACT Screen #2 will cause the following screens to appear:

```
    SERVICE TERMINAL
1=RING COUNT      0
```

Service Terminal Screen

```
 SERVICE TERMINAL
1=RING COUNT
```

Service Terminal Screen #2

3.5.5.4.4.1 Ring Count

The ring count designates the number of rings allowed on the phone line prior to answering an incoming call from a service terminal. The factory default is *0* which means the control panel will not answer an incoming call. This entry may be programmed for *1* to *25* rings.

To change the Ring Count, press *1* while viewing the Service Terminal Screen #2. The following screen will be displayed:

```
     RING COUNT

RANGE 00-25 RINGS
▓
```

Ring Count Screen

A flashing cursor will appear in the lower left corner of the display. Enter the two-digit ring count which can be a value between 00 and 25. After the second digit is entered, the display will return to the Service Terminal screen.

3.5.5.4.5 Supervised Phone Line

The Supervised Phone Line feature allows the user to disable the supervision of Phone Line 2 by the DACT when using an alternate means of secondary transmission path. The factory default setting is Phone Line 2 supervised.

```
       DACT
1=SERVICE TERMINAL
2=SUPERV PHONE LINE
```

Onboard DACT Screen #2

Pressing *2* for *Superv Phone Line* while viewing Onboard DACT Screen 2 will cause the following screen to be displayed:

```
SUPERVISE PHONE LINE
1=PHONE LINE 2  YES
```

Each press of the *1* key while viewing this screen will toggle the option between Supervise Phone Line 2 Yes and No.

3.5.6 History

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

```
   PROGRAMMING
1=SYSTEM SETUP
2=OPTION MODULES
3=HISTORY
```

Programming Screen #2

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

History Screen

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

History Screen

3.5.6.1 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.

3.5.6.2 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.

3.5.7 Walktest

Walktest allows an individual to test the fire alarm system without the necessity to reset the control panel after each device activation. Refer to the sections titled "Walktest" on page 106 and "Walktest" on page 117 for additional information regarding the Walktest feature. Pressing *1* while viewing the Programming Screen #3 will cause the following Walktest options to be displayed:

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

Programming Screen #3

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

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 010805
```

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 RESULTS
```

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.

3.5.8 Clear Program

Pressing *2* while viewing Programming Screen #3, will select the Clear Program option. The control panel will provide a warning to the user by prompting with the following display:

```
┌─────────────────────────┐
│  PROGRAMMING            │
│ 1=WALKTEST              │
│ 2=CLEAR PROGRAM         │
│ 3=PASSWORD CHANGE       │
└─────────────────────────┘
```
Programming Screen #3

```
┌──────────────────────────────────┐
│          WARNING!                 │
│        SYSTEM CHANGE              │
│          PROCEED?                 │
│  1=YES            2=NO            │
└──────────────────────────────────┘
```

Pressing *1* will cause the control panel to carry out the selected clear option. Pressing *2* will prevent programming from being cleared.

3.5.9 Password Change

```
┌─────────────────────────┐
│  PROGRAMMING            │
│ 1=WALKTEST              │
│ 2=CLEAR PROGRAM         │
│ 3=PASSWORD CHANGE       │
└─────────────────────────┘
```
Programming Screen #3

The factory set passwords, which have been programmed into the control panel, can be changed by selecting the Password Change option. Pressing *3* while viewing Programming Screen #3 will cause the following screen to be displayed:

```
┌──────────────────────────────────┐
│     PASSWORD CHANGE               │
│  1=MASTER                         │
│  2=MAINTENANCE                    │
│  3=REMOTE DOWNLOAD                │
└──────────────────────────────────┘
```
Password Change Screen

Press *1* to change the Master Programming Level password, *2* to change the Maintenance Level password or *3* to change the Remote Download password. *Note that the passwords will <u>not</u> be displayed on annunciators.*

The following screen will appear when one of the change options 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
3=REMOTE DOWNLOAD
```

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

```
PROGRAMMING
ENTER PASSWORD
```

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

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

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

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

3.6.1 Input Zones - Enable/Disable

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

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

Maintenance Screen #1

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

Zone Select Screen

Pressing the down arrow key will display additional Zones (Zones 4 - 5 for MS-5UD and Zones 4 - 10 for MS-10UD). 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:

```
        ZONE 1
1=ENABLED          YES
```

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 RESULT
```

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

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

```
 ┌─────────────────────┐
 │     PROGRAMMING     │
 │ 1=TIME-DATE         │
 │                     │
 │                     │
 └─────────────────────┘
```

Maintenance Screen #2

```
 ┌──────────────────────────────┐
 │     TIME AND DATE            │
 │ 1=TIME          01:00 AM     │
 │ 2=DATE          01-01-2001   │
 │ 3=CLOCK FORMAT     12HRS     │
 └──────────────────────────────┘
```
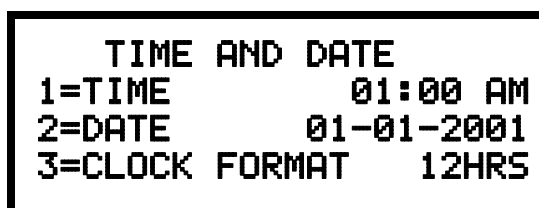
Time and Date Screen

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

```
 ┌──────────────────────────────┐
 │   ENTER TIME AS 12HRS        │
 │            :                 │
 │        01:00 AM              │
 │ 1=AM              2=PM       │
 └──────────────────────────────┘
```
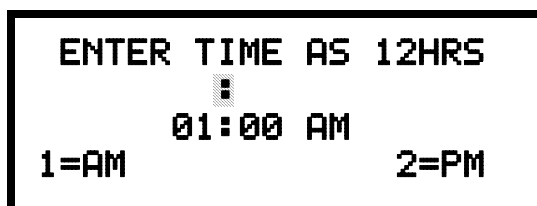
Time Screen

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            │
 │      01-01-2001              │
 └──────────────────────────────┘
```

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* 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

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

The *Alarm Silenced* key performs the same functions as Acknowledge/Step except it will not step through each event when multiple events are present at the panel. If an alarm exists, the Alarm Silenced key turns off all silenceable NACs (Notification Appliance Circuits) and causes the Alarm Silenced LED 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 LED is turned off by pressing the Reset key, the Drill key or subsequent activation of the NACs.
Note that if Silence Inhibit has been enabled, NACs cannot be silenced for one minute following initiation of an alarm.

4.1.3 Drill/Hold 2 Sec

When the *Drill* 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 LED 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* key can be used to turn off all silenceable NAC outputs following activation by the *Drill* 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 LED Indicators

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

AC Power

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

Fire Alarm

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

Supervisory

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

Alarm Silenced

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

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 070707
```

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.)
- ✓ i^3 smoke detectors will be polled for maintenance and freeze conditions 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 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.

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 LED to flash one second On and one second Off
- The trouble relay to activate
- *TROUBL* with device type, noun/adjective, 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.
- Communicate the trouble conditions to the Central Station
- Terminate upload or download communications

Note that specific troubles will initiate additional actions; for example, loss of AC power will turn off the AC Power LED, 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 10 OPEN FAULT
   10:00A 070707
```

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

- First line in display:
  - ✓ The type of event; in this example *OPEN* indicating a circuit trouble
  - ✓ Device type identifier; in this example, *PULL STATION* indicates a manual device. Other device type identifiers which can be displayed include *SMOKE* for Smoke Detector, *HEAT* for Heat Detector, etc.
- Second line in display:
  - ✓ <ADJ>; refers to the user programmed adjective descriptor from library list resident in the control panel or custom entry via PC.
  - ✓ <NOUN>; refers to the user programmed noun descriptor from library list resident in the control panel or custom entry via PC.
- Third line in display indicates Zone and the fault condition. Other possible troubles include:
  - ❑ *OPEN* - indicating an open circuit
  - ❑ *DIRTY* - maintenance alert indicating that an i^3 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, *08* for the 8th day of the month and *07* for the year 2007

Pressing the *Acknowledge/Step* or *Alarm Silence* key will cause the pulsing piezo to silence and the system Trouble LED 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 LED will light.

4.5 Alarm Operation

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 LED 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
- Communicate the alarm to the Central Station
- Alarms latch and *are not allowed to clear automatically*
- Timers for Silence Inhibit, Autosilence and Trouble Reminder are started
- Alarms activate the alarm relay
- Silenced alarms are resounded
- The trouble relay is not activated
- Store event in history buffer
- Terminate upload or download communications

A typical alarm display would be as illustrated below:

```
ALARM  PULL STATION
      <ADJ> <NOUN>
ZONE 10
 10:00A 070707
```

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

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

- First line in display:
  - ✓ The type of event; in this example *ALARM* indicating an alarm condition
  - ✓ Device type identifier; in this example, *PULL STATION* indicates a manual pull box. Other device type identifiers which can be displayed include *SMOKE* for Smoke Detector, *HEAT* for Heat Detector, etc.
- Second line in display:
  - ✓ <ADJ>; refers to the user programmed adjective descriptor from library list resident in the control panel or custom entry via PC.
  - ✓ <NOUN>; refers to the user programmed noun descriptor from library list resident in the control panel or custom entry via PC.
- Third line in display: *Zone 10* indicates the zone programmed to this device which, in this example, is Input Zone 10.

- 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, *08* for the 8th day of the month and *07* for the year 2007

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 LED 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
- Communicate the supervisory condition to the Central Station
- The supervisory relay is activated
- The alarm relay is <u>not</u> activated
- Silenced alarms are <u>not</u> resounded
- Timers are not started
- Store event in history buffer
- Terminate upload or download communications

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

```
FREEZE  SUPERVISORY
     <ADJ> <NOUN>
 ZONE 05  FROZEN SUPRV
 10:00A 070707
```

In the preceding example:

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

Note that, like alarms, supervisory signals latch, except when programmed for supervisory autoresettable. Supervisory activations do not cause silenced alarms to 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 111, for a description of the information displayed on the control panel LCD.

4.7 Process Monitor Operation

Process Monitor operation will initiate the following events:

- The piezo sounder pulses ¼ second On and ¼ second Off
- The LCD displays a process monitor message along with the device name, type, adjective/ noun, associated zones and time/date
- Communicate the process monitor condition to the Central Station
- Relays programmed for process monitoring will be activated
- The alarm relay is <u>not</u> activated
- Silenced alarms are <u>not</u> resounded
- Timers are not started
- Store event in history buffer

Note that, like supervisories, process monitor signals latch, except when programmed for process monitor autoresettable.

4.8 Hazard/Tornado Condition Operation

Hazard/Tornado Condition operation will initiate the following events:

- The piezo sounder pulses ½ second On, ½ second Off
- The LCD displays a hazard message along with the device name, type, adjective/noun, associated zones and time/date
- Communicate the hazard condition to the Central Station
- Relays programmed for hazard will be activated
- The alarm relay is <u>not</u> activated
- Silenced alarms are <u>not</u> resounded
- Timers are not started
- Store event in history buffer
- Supervisory LED flashes ½ second On, ½ second Off

Hazard conditions latch.

4.9 Medical Alert Condition Operation

Medical Alert Condition operation will initiate the following events:

- The piezo sounder ½ second On, ½ second Off
- The LCD displays a medical alert message along with the device name, type, adjective/noun, associated zones and time/date
- Communicate the medical alert condition to the Central Station
- Relays programmed for medical alert will be activated
- The alarm relay is <u>not</u> activated
- Silenced alarms are <u>not</u> resounded
- Timers are not started
- Store event in history buffer
- Supervisory LED flashes ½ second On, ½ second Off

Medical alert conditions latch.

4.10 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. All disabled zones/NACs are treated as if they were in trouble, with the exception being the status label that will be displayed is *DISABL*.

4.11 Waterflow Circuits Operation

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

4.12 Detector Functions

Maintenance Alert

i^3 smoke detectors will be polled for maintenance and freeze conditions 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.

System Alarm Verification

The control panel may be programmed to perform alarm verification to help eliminate the nuisance of false alarms. Alarm verification applies to smoke detectors only.

4.13 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.

4.14 Coded Operation

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

- Continuous: Steady output with no pulsing
- March Time: Pulses at 120 ppm (pulses per minute)
- Temporal Code: Pulses at ½ second On, ½ second Off, ½ second On, ½ second Off, ½ second On, 1½ second Off
- California Code: 10 seconds On, 5 seconds Off
- Two-Stage   Pulses at 20 ppm (pulses per minute) for 3 or 5 minutes and then changes to Temporal

4.15 Presignal

Presignal option programs an initiating device to delay the activation of NACs while allowing visual verification by a person. Once a detector triggers an alarm, the onboard piezo sounds immediately, but the NACs are not activated for a user programmed time duration of up to three minutes. Note that the alarm relay and communicator will respond to the initial alarm immediately.

After the programmed delay, the NACs will activate if the source of the alarm is not cleared. Note that if a second alarm occurs during the programmed time delay, the alarm will be processed immediately, causing activation of the NACs. The events which occur upon Presignal activation are as follows:

- ✓ onboard piezo sounds immediately
- ✓ control panel LCD display will indicate a presignal event and the active zone
- ✓ annunciators (if enabled) will sound the local piezo, and pulse the alarm LED and zone LED
- ✓ outputs (NACs) of associated zones will be inhibited from activating for a user programmed time delay of up to three minutes
- ✓ second alarm occurring anytime during the time delay will cause immediate activation of all associated outputs

Presignal operation requires the approval of the local Authority Having Jurisdiction.

4.16 Positive Alarm Sequence

PAS (Positive Alarm Sequence) option will program a smoke detector to delay panel activation (including alarm relay and communicator) for a period of 15 seconds.

When a detector triggers an alarm, the onboard piezo sounds immediately, but the NACs are prevented from activating for 15 seconds. This inhibit time is factory set and cannot be changed. Pressing the Alarm Silence or Acknowledge/Step key during the 15 second inhibit time will silence the piezo sounder and start a timer which prevents activation of NACs for an additional time duration which can be user programmed for up to three minutes. After the programmed delay, the NACs will activate if the source of the alarm is not cleared. Note that if a second alarm occurs during either time delay, the alarm will be processed immediately, causing activation of the NACs. The events which occur upon PAS activation are as follows:

- ✓ onboard piezo sounds immediately
- ✓ control panel LCD display will indicate a PAS event and the active zone
- ✓ annunciators (if enabled) will sound the local piezo, and pulse the alarm LED and zone LED
- ✓ outputs (NACs) of associated zones will be inhibited from activating for a factory set duration of 15 seconds
- ✓ pressing the Alarm Silence or Acknowledge/Step key will start a timer which inhibits output activation for additional time delay of up to three minutes which is user programmable
- ✓ second alarm occurring anytime during either time delay will cause immediate activation of all associated outputs

PAS operation requires the approval of the local Authority Having Jurisdiction.

4.17 Special System Timers

4.17.1 Silence Inhibit Timer

This option, if selected, prevents the *Alarm Silenced* and *Reset* keys 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 Authority Having Jurisdiction.*

4.17.2 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 Authority Having Jurisdiction.*

4.17.3 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.

4.17.4 Waterflow Retard 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 Authority Having Jurisdiction.*

4.17.5 Alarm Verification (None or One Minute)

If alarm verification is selected, a smoke detector activation will cause the FACP to reset the detector by removing power for 6 seconds. Power is reapplied and a 17 second retard period begins which allows all detectors to stabilize. If no other detectors alarm, there will be no alarm indication at the FACP during the 23 second Reset/Retard period. A Confirmation period of 60 seconds follows, during which a subsequent alarm from the same detector will cause the panel to immediately activate the appropriate outputs and indicate the alarm condition at the FACP. If a different detector zone alarms any time during the first detector's Retard & Confirmation period, the panel will immediately activate all appropriate outputs and indicate the alarm condition at the FACP. If no additional detector alarms occur within 83 seconds of the first alarm (23 second Reset/Retard plus 60 second Confirmation), the timer resets and the panel is ready to verify any new detector alarms which may occur.

```
        0 sec.      6 sec.     23 sec.                                                      83 sec.
                  RESET    RETARD    ◄────────── CONFIRMATION (60 seconds) ──────────►
Detector Alarm
Verification (Reset/
Retard + Confirmation)

                     Alarm Ignored        ◄─ Control Panel Processes Alarm if Same Detector is Still in Alarm ─►
Detector Goes Into Alarm


Different Detector Alarms          ◄──────── Control Panel Immediately Processes Alarm ────────►
During First Detector's
Verification Period
```
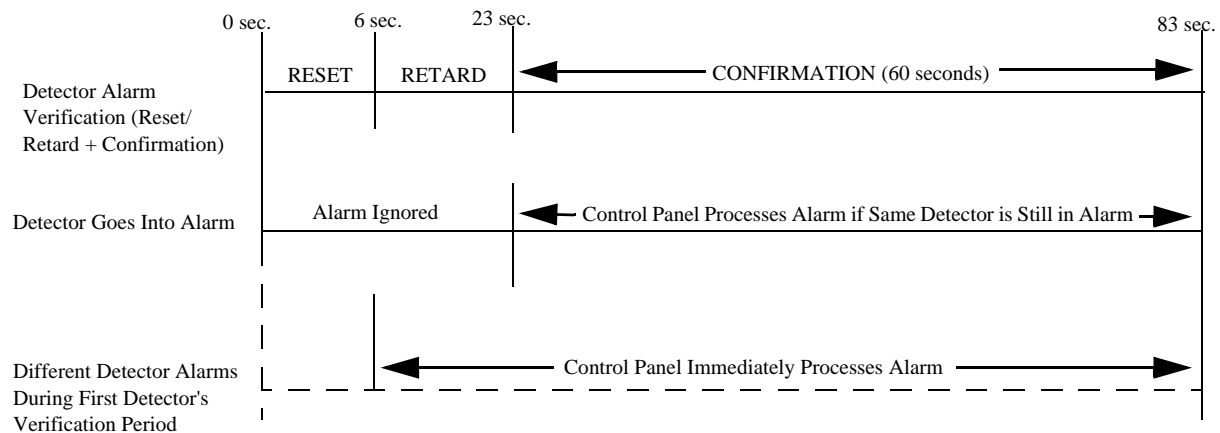
Note: Alarm Verification is available only for smoke detectors.

4.18 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, if those outputs have been programmed for 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

IDCs and all main circuit board NACs are monitored for fault conditions during Walktest mode. When an open condition occurs on an IDC, the FACP will activate all enabled NACs during an audible Walktest and remain activated until the open condition is cleared.

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

Note: In Walktest, an NAC open or short fault will not cause the NACs to activate.

4.19 Read Status

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

Read Status Entry

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

```
1=READ STATUS MODE
2=PROGRAMMING MODE
3=REMOTE DOWNLOAD
```

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=INPUT ZONES
2=NACS
3=RELAYS
```

Read Status Screen #1

```
        READ STATUS      ⇕
1=HISTORY
2=PRINTER
3=ANN-BUS
```

Read Status Screen #3

```
        READ STATUS      ⇕
1=SYSTEM SETTINGS
2=TIMERS
3=DAYLIGHT SAVINGS
```

Read Status Screen #2

```
        READ STATUS      ⇧
1=CENTRAL STATION
2=PHONE LINES
3=SERVICE TERMINAL
```

Read Status Screen #4

4.19.1 Input Zones

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

```
        ZONE STATUS        ⇩
1=ZONE 1
2=ZONE 2
3=ZONE 3
```

```
  READ STATUS
1=INPUT ZONES
2=NACS
3=RELAYS
```

Read Status Screen #1

Pressing the down arrow key will allow the selection of Zones 4-5 for the MS-5UD and Zones 4-10 for the MS-10UD.

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, the display will change to a screen similar to the following:

```
  Normal PULL STATION

ZONE 1
  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
- Alarm Verification On/Off (for detectors)
- PAS (Positive Alarm Sequence) Yes/No (for detectors only)
- Pre-Signal Yes/No (for detectors only)
- Input Zone Freeze Supervision
- Adjective/Noun descriptor
- Silenceable Yes/No

4.19.2 NAC

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

```
        NAC STATUS
1=NAC 1        3=NAC 3
2=NAC 2        4=NAC 4
```

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

4.19.5 Timers

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

```
      READ STATUS
1=SYSTEM SETTINGS
2=TIMERS
3=DAYLIGHT SAVINGS
```
Read Status Screen #2

```
         TIMERS          ⇩
PAS DELAY           120
PRE SIGNAL          120
WATERFLW DELAY        0
```

```
         TIMERS          ⇧
AC LOSS DELAY     2
```

These screens allow the operator to view the various timer settings.

4.19.6 Daylight Savings

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

```
    DAYLIGHT SAVINGS   ⇩
ENABLED             NO
START MONTH        MAR
START WEEK        WK 3
```

```
    DAYLIGHT SAVINGS   ⇧
END MONTH          NOV
END WEEK          WK 3
```

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

4.19.7 History

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

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

```
   READ STATUS
1=HISTORY
2=PRINTER
3=ANN-BUS
```

Read Status Screen #3

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.

4.19.8 Print

To print program data or control panel status, press *2* while viewing Read Status Screen #3. The following screens will be displayed:

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

Print Screen #1

```
         PRINT          ⇧
1=PRINTER OPTIONS
```

Print Screen #2

Pressing *1* while viewing Print Screen #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* while viewing Print Screen #1 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 102 for additional information on the display.

Pressing *3* while viewing Print Screen #1 will exit the Print operation.

Pressing *1* while viewing Print Screen #2 allows the user to view the printer settings.

4.19.9 ANN-BUS

Pressing *3* while viewing Read Status Screen #3 will display the settings for the ANN-BUS options as shown in the following screens:

```
    READ STATUS
1=HISTORY
2=PRINTER
3=ANN-BUS
```
Read Status Screen #3

```
        ANN-BUS           ⇩
BUS ENABLED          NO
1=BUS MODULES
2=ANN-S/PG OPTIONS
```
ANN-BUS Screen #1

```
        ANN-BUS           ⇧
1=ANN-80 OPTIONS
2=ANN-RLY OPTION
3=ANN-AUDIO 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 printer settings for the printer connected to the FACP. This information includes:

- Serial or Parallel printer
- Printer Supervision (Yes or No)
- Off-line Timer setting
- Baud Rate
- Data Bits
- Parity
- Stop Bits

Pressing 1 while viewing ANN-BUS Screen #2 will display the programmed options for the ANN-80 devices connected to the ANN-BUS. These include Piezo enable/disable, Lock enable/disable and which buttons/keys on the annunciator are enabled/disabled.

Pressing *2* while viewing ANN-BUS Screen #2 will display the zone programming for each ANN-RLY relay.

Pressing *3* while viewing ANN-BUS Screen #3 will display the zone, if any, that has been assigned as the All-Call Zone.

4.19.10 Central Station

Pressing *1* while viewing Read Status Screen #4 will display the following screens:

```
┌──────────────────────────────┐
│    CENTRAL STATION       ⇩   │
│ REPORTING          YES       │
│ REPORT STYLE                 │
│          BOTH                │
└──────────────────────────────┘
```
Central Station Screen #1

```
┌──────────────────┐
│    READ STATUS   │
│ 1=CENTRAL STATION│
│ 2=PHONE LINES    │
│ 3=SERVICE TERMINAL│
└──────────────────┘
```
Read Status Screen #4

```
┌──────────────────────────────┐
│    CENTRAL STATION       ⇧   │
│ 1=PRIMARY                    │
│ 2=SECONDARY                  │
│ 3=CALL LIMIT         0       │
└──────────────────────────────┘
```
Central Station Screen #2

Central Station Screen #1 indicates whether the Central Station Reporting is enabled or disabled and if the Reports will be sent to one or both the Primary and Secondary Central Station phone numbers. Central Station Screen #2 provides information on the Primary and Secondary Central Station programming which includes:

- Test Time Interval
- Account Code
- 24 Hour Test Time
- Phone Number
- Communication Format
- Event Codes

This screen also displays the Call Limit for each unique DACT trouble call within a 24 hour period

4.19.11 Phone Line

Pressing *1* while viewing Read Status Screen #4 will display the following screen:

```
     PHONE LINES
PRIMARY        TCH TNE
SECONDARY      TCH TNE
3=SUPERV PHONE LINE
```

The second and third lines of this screen indicate that both the Primary and Secondary phone lines have been configured for touchtone dialing operation.

Pressing *1* for *Superv Phone Line* will cause the following screen to be displayed:

```
SUPERVISE PHONE LINE
PHONE LINE 2    YES
```

This screen indicates whether or not Phone Line 2 is being supervised by the DACT. The factory default setting is Phone Line 2 supervised (Yes).

4.19.12 Service Terminal

```
    READ STATUS
1=CENTRAL STATION
2=PHONE LINES
3=SERVICE TERMINAL
```

Read Status Screen #4

Pressing 3 while viewing Read Status Screen #4 will display the following screens:

```
   SERVICE TERMINAL
RING COUNT
```

Service Terminal Screen

The Ring Count is displayed as the first item in the Service Terminal Screen.

SECTION 5   Central Station Communications

The control panel transmits zone and system status reports to Central Stations via the public switched telephone network. Two supervised telephone line connections are made to interface the control panel to the telephone lines. Two optional 7 foot telephone cords are available for this purpose and can be purchased separately.

The control panel supervises both telephone lines for proper voltage. A delay of two minutes will occur before a fault in either phone line connection is reported as a trouble. When a fault is detected, an audible trouble signal will sound, the LCD display will indicate the phone line trouble and the trouble condition will be reported to the Central Station over the remaining operational phone line.

The control panel comes with line seizure capability provided for both the primary and secondary telephone line interfaces. Any time that the control panel needs to make a call to a Central Station, line seizure will disconnect any local premises phones sharing the same telephone line.

All transmissions to the Central Stations will be sent over the primary phone line. In the event of noisy phone lines, transmissions will be sent over the backup secondary phone line.

Two phone numbers must be programmed, the primary Central Station phone number and the secondary Central Station phone number. All system reports will be transmitted to the primary Central Station phone number. Reports will automatically be sent to the secondary Central Station phone number if attempts to transmits to the primary Central Station phone number are unsuccessful. If 10 total attempts to communicate are unsuccessful, a Communicator Failure report will be displayed. Note that as an option, *all* reports may also be sent to the secondary Central Station phone number.

The FACP meets NFPA 72 National Fire Code reporting requirements for: (a) the type of signal, (b) condition and (c) location of the reporting premises. The general priority reporting structure is:

1. Zone Alarms and Restores

2. Zone Troubles and Restores

3. System Troubles and Restores

4. 24-hour Test

5.1 Transmittal Priorities

The integral communicator transmits highest priority events first. Events, in terms of priority, are listed below in descending order:

1. Alarms (highest priority level)
   - ✓ Pull stations
   - ✓ Waterflow
   - ✓ Smoke detector
   - ✓ Other alarm types

2. Supervisory Zone

3. System Troubles
   - ✓ Zone disabled
   - ✓ Fire drill
   - ✓ AC fail (after delay)
   - ✓ Zonal faults
   - ✓ Earth fault
   - ✓ Low battery
   - ✓ Telephone line fault
   - ✓ Notification Appliance Circuits fault
   - ✓ Communication trouble
   - ✓ Annunciator trouble
   - ✓ System off normal

4. Restoral Reports
   - ✓ Zone alarm
   - ✓ Supervisory
   - ✓ Zone(s) enabled
   - ✓ Fire drill
   - ✓ AC
   - ✓ Zone fault
   - ✓ Earth
   - ✓ Battery
   - ✓ Telephone line
   - ✓ Notification Appliance Circuits
   - ✓ Communication
   - ✓ Annunciator trouble
   - ✓ System off normal

5. 24 Hour Test (lowest priority)

The table below shows UL listed receivers which are compatible with the MS-5UD and MS-10UD.

Table 5.1 Compatible UL Listed Receivers

	Format	Ademco 685 (1)	Ademco MX8000 (2)	Silent Knight 9500 (3)	Silent Knight 9800 (4)	Osborne Hoffman 2000E (5)	Radionics 6600 (6)	SurGard MLR2 (7)	SurGard System III (8)	SurGard MLR-2000 (9)	FBI CP220FB (10)
0	SIA-DCS-8		✔	✔	✔	✔	✔		✔		✔
1	SIA-DCS-20		✔	✔	✔	✔	✔		✔		✔
2	Ademco Contact ID	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

1. With 685-8 Line Card with Rev. 4.4d software

2. With 124060V206B and 124063 Line Card Rev. B

3. With version V2.4 Receiver and 126047 Line Card Rev. G

4. With 124077V2.00 Receiver and 126047 Line Card Rev. M

5. With V.7301 Receiver S/W

6. With 01.01.03 Receiver S/W and Line Card 01.01.03

7. With software V1.86

8. With software V1.72

9. With DSP4016 and V1.6 Line Card

10. With software V3.9

IMPORTANT! *It is the installer's responsibility to ensure that the Digital Alarm Communicator/ Transmitter is compatible with the Central Station Receiver, utilized by the monitoring service, prior to installation. The Compatibility Table provides a list of compatible receivers and associated software versions for the receivers. Changes in the hardware and/or software by the receiver manufacturers may affect the receiver compatibility with the FACP DACT. After completing the installation, communication between the DACT and Central Station Receiver must be tested and verified.*

SECTION 6   Local/Remote Site Upload/Download

The control panel may be programmed or interrogated off-site via the public switched telephone network or locally using a USB cable. Any personal computer with Windows™ XP or later, with a 2400 baud compatible modem or USB port and Upload/Download software PS-Tools on the CD ROM P/N PK-CD, may serve as a Service Terminal. This allows download of the entire program or upload of the entire program, history file, walktest data, current status, system voltages, time and date.

Upload/Download Preparation

The PK-CD must be placed into the personal computer CD drive and the instructions that come with it must be followed to install the PS-Tools utility onto the computer. Once the is done, the PS-Tools utility must be set up to communicate using either a USB serial port or a dial-up modem.

For local USB programming, a standard *male-A to male-B* USB cable must be connected from the PC's USB port to the fire panel's USB port (J11).

For remote modem programming, you must have the fire panel's primary line telephone number entered in the PS-Tools site information screens for that site. You must also change the fire panel's ring count from zero (the default) to answer after at least one ring.

Important: Modification of FACP programming requires that the panel be enabled for download (refer to "Remote Download" on page 129). Remote interrogation of panel programming, history logs, detector status, etc., is possible without enabling the remote download option.

CAUTION: After successfully downloading a program, make certain to perform the following steps:

1. Print out all programmed data via Print Mode or manually view programmed entries and compare to intended program data

2. Test all affected panel operations

3. Immediately correct any problems found

6.1 Remote Download

NFPA 72 requirements state that a technician must be on-site and at the control panel whenever the Programming Utility is used to download any information to the FACP. This applies to local and remote programming. For this reason, a new option has been added to the FACP which allows an individual at the FACP to enter a password and either enable the proprietary mode where downloading will be allowed at any time or access a specific password protected screen where downloading will be allowed regardless of the current proprietary setting. The Remote Download option can be selected from the main menu screen as shown below:

```
1=READ STATUS MODE
2=PROGRAMMING MODE
3=REMOTE DOWNLOAD
```

Pressing *3* for Remote Download while viewing the main menu will cause the following screen to be displayed:

```
REMOTE DOWNLOAD
ENTER PASSWORD
*****
```

The Remote Download password (default 00000) must be entered to access the Remote Download feature. Note that the default password can be changed using the Password Change option (refer to "Password Change" on page 103).

Entering the correct password will cause the following screen to be displayed:
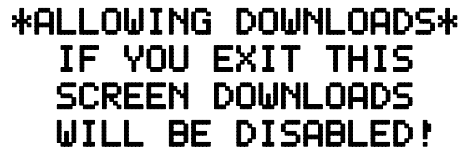
```
REMOTE DOWNLOAD
1=PROPRIETARY        NO
2=ACCEPT DOWNLOAD
```

Pressing *1* for **Proprietary No** (factory default setting), while viewing the Remote Download screen, will cause the display to toggle from **Proprietary No** to **Proprietary Yes**. Each press of the *1* key will cause the display to toggle between **Proprietary No** and **Proprietary Yes**. Selecting **Proprietary Yes** will program the FACP to allow remote programming downloads from the programming utility at all times without the need to access the Remote Download screen.

Pressing *2* for **Accept Download** will cause the following screen to be displayed:

```
*ALLOWING DOWNLOADS*
   IF YOU EXIT THIS
   SCREEN DOWNLOADS
   WILL BE DISABLED!
```

While this screen is displayed, remote programming downloads are allowed regardless of the Proprietary setting. Exiting this screen will disable any further downloads to the FACP. Also, following 30 minutes of inactivity (including up/downloading), the Accept Download screen will time-out, causing the display to return to the System All Normal screen.

6.2 Transferring a Program

The first time that the control panel is contacted, a secret code is loaded in by a Service Terminal. Future upload or download requests cause verification of the secret code by the control panel before processing of data is allowed. If the secret code is not verified, the control panel will terminate the request.

While the control panel is communicating with the remote Service Terminal, one of the DACT's red phone line active LEDs and the green Kissoff LED will remain on steady.

In order to download the panel (whether initiated at the jobsite or remotely), the following must be true:

✓ The control panel must be in the Normal Mode of operation. Downloading is not possible if the panel is in any other mode

✓ There cannot be any active communications ongoing with a Central Station receiver

✓ All active events must be successfully 'kissed-off' by the Central Station(s). The communicator must be in a standby state with no new information waiting to be transmitted to a Central Station

6.2.1 Security Features

Upload and download with the control panel have been carefully designed to include key security features to ensure proper functionality. Any time a transfer is initiated, the control panel and the Service Terminal will communicate and transfer data before contacting a Central Station. When the data transfers are completed and the control panel disconnects from the Service Terminal, the control panel will call the Central Station and report one of the following conditions:

• Upload/download request received

• Upload and/or download request successful

• Upload/download failed

The key features are listed and explained in the following sections.

Secret Code Verification

A secret code is stored in the control panel by a Service Terminal to prevent unauthorized access. The secret code is created at the Service Terminal by the master user and cannot be viewed or changed by anyone other than a master user. Viewing of the secret code is prohibited at the control panel. Prior to allowing an upload or download of data, the control panel will verify the secret code transmitted by the Service Terminal.

Time-out at Control Panel

Upon answering an incoming (modem) call on the primary Central Station phone line, the control panel will listen for a modem connection signal. If this signal is not received within 50 seconds, the control panel will disconnect the call. Upon successful connection (secret code verified), if no communication occurs within 30 minutes, the panel will disconnect the call. Upon time-out, transfer activity will be reported to the Central Station (if enabled) and the connection will be terminated.

Error Checking

As each block of data is received by the control panel, it is checked for accuracy. If an error is detected, the block is retransmitted until correct, up to a maximum of four times. If the Secret Code is not verified and four errors occur, the call is disconnected and the report that the upload/download was not successful is called to the Central Station(s).

Central Station Data Protection

The primary and secondary Central Station phone numbers, communications format, account code, test time and programmable event codes are vital Central Station information. These blocks of data are protected from partial programming due to faulty phone connections, line noise and other errors. This prevents the panel from being confused due to a wrong phone number, account code, test time and most critical formatting errors.

SECTION 7 Power Supply Calculations

7.1 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

7.2 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 7-1 , to determine the total amount of current, in AC amperes (A), that must be supplied to the system.

TABLE 7-1:AC Branch Circuit Requirements

Device Type	Number of Devices		Current Draw (AC amps)			Total Current per Device
MS-5UD-3/MS-10UD-3 or MS-5UD-7(C)/MS-10UD-7(C) or MS-5UD-3E/MS-10UD-3E or MS-5UD-7E/MS-10UD-7E	1	X	1.00 3.90 0.54 2.20		=	
	[ ]	X			=	
	[ ]	X	[ ]		=	
	Sum Column for AC Branch Current Required				=	

7.3   Calculating the System Current Draw

7.3.1 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 7-3 on page 135. 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 7-3 on page 135. 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 7-3 on page 135.

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 7-2 shows how to convert milliamperes and microamperes to full amperes.

TABLE 7-2:Converting 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

7.3.2 How to Use Table 7-3 on page 135 to Calculate System Current Draw

Use Table 7-3 on page 135 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 7-4 on page 136

Following are the types of current that can be entered into Table 7-3 on page 135:

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

Table 7-3 contains three columns for calculating current draws. 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 7-4 on page 136.

TABLE 7-3:System Current Draw Calculations

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 MS-5UD or MS-10UD	1	X[0.080]= X[0.085]=		1	X[0.235][1, 8]= X[0.265][1, 8]=		1	X[0.100]= X[0.127]=	
CAC-5X	[ ]	X[0.001]=		[ ]	X[0.001]=		[ ]	X[0.001]=	
4XTMF	[ ] 1 max.	X[0.005]=		[ ] 1 max.	X[0.011][1]=		[ ] 1 max.	X[0.005]=	
ANN-80	[ ]	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[2]	[ ]	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]=		[ ][9]	X[0.040]=		[ ]	X[ ][3]=	
4-wire Detector Heads	[ ]	X[ ][3]=		[ ][9]	X[0.040]=		[ ]	X[ ][3]=	
Power Supervision Relays[4]	[ ]	X[0.025]=		[ ]	X[0.025]=		[ ]	X[0.025]=	
NAC #1[5]				[ ]	X[ ]=				
NAC #2				[ ]	X[ ]=				
NAC #3									
NAC #4									
Current Draw from TB9 (nonalarm[6])	[ ]=			[ ]=			[ ]=		
Sum each column[7] for totals	Primary Non-Alarm =			Secondary Alarm =			Secondary Non-Alarm =		

Table Footnote

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. ANN-LED is supplied standard with the MS-5UDC and MS-10UDC
3. Refer to the Device Compatibility Document for standby current.
4. Must use compatible listed Power Supervision Relay.
5. Current limitation of Terminal TB5 circuits is 2.5 amps per NAC for the MS-5UD-3(E), MS-10UD-3(E) and 3.0 amps per NAC for the MS-5UD-7(C/E), MS-10UD-7(C/E)
6. The total standby current must include both the resettable (TB9 Terminals 3 & 4) and nonresettable/ resettable (TB9 Terminals 1 & 2) power. Caution must be taken to ensure that current drawn from these outputs during alarm does not exceed maximum ratings specified. Current limitations of TB9, Terminals 1 & 2 = 0.500 amps, filtered, 24 VDC +/-5%, 120 Hz ripple @ 10 mV$_{RMS}$, nonresettable power and TB9, Terminals 3 & 4 = 0.500 amps, filtered, 24 VDC +/-5%, 120 Hz ripple @ 10mV$_{RMS}$, resettable power.
7. Total current draw listed above cannot exceed 3.0 amps for MS-5UD-3(E), MS-10UD-3(E) or, 7.0 amps for MS-5UD-7(C/E), MS-10UD-7(C/E).
8. The current draw shown represents one zone (IDC) on the main circuit board in alarm. One zone consumes 0.040 amps
9. Enter the number of IDCs used minus one

7.4   Calculating the Battery Size

Use Table 7-4 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 7-4 as follows:

1. Enter the totals from Table 7-3 on page 135, Calculation Columns 2 and 3 where shown
2. Enter the NFPA Standby and Alarm times (refer to 'NFPA Requirements' below)
3. Calculate the ampere hours for Standby and Alarm, then sum the Standby and Alarm ampere hours
4. Multiply the sum by the derating factor of 1.2 to calculate the proper battery size (in AH)
5. Write the ampere hour requirements on the Protected Premises label located inside the cabinet door

TABLE 7-4:Total Secondary Power Requirements at 24 VDC

Secondary Standby Load (total from Table 7-3 Calculation Column 3) [ ]	Required Standby Time (24 hours) X[ ]	= AH
Secondary Alarm Load (total from Table 7-3 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

7.4.1 NFPA Battery Requirements

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

7.4.2 Selecting and Locating Batteries

Select batteries that meet or exceed the total ampere hours calculated in Table 7-4 . 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-26, BB-55 or other UL listed external battery cabinet.

For Canadian applications, the minimum battery size is 12 AH and the maximum battery size is 18AH.

APPENDIX A   # Ademco Contact ID Format Event Code Descriptions

This appendix describes the various Event Codes and their messages which are available for the Ademco Contact ID Format.

A.1 Transmission Format Between DACT and Receiver

The transmission string for the Ademco Contact ID Format is as follows:

SSSS 18 QXYZ GG CCC where

SSSS	= Four digit Subscriber ID Account Code
18	= Identifies transmission as Contact ID to the receiver at the Central Station
Q	= Event Qualifier where 1 = New Event and 3 = New Restore
XYZ	= Event code
GG	= Group number
CCC	= Zone number

Notes:

1. **18**, which is used in the reporting structure to identify the transmission as Contact ID, is not printed out in the alarm and trouble report.

2. **GG** Group Number is fixed at '00' and cannot be changed.

3. **CCC** for Zone Number is transmitted as '001' for zone 1 up to '010' for zone 10

A.2 Ademco Contact ID Typical Printout

A typical printout from a Central Station receiver (such as the Ademco 685) of alarm and trouble reports in the Ademco Contact ID Reporting Structure follows:

Time	Date	Rcvr/Line ID	SSSS	QXYZ	GG	CCCC
11:28	03/25	11	7777	E110	00	C001 - general fire alarm on zone one
11:28	03/25	11	7777	E111	00	C002 - smoke detector alarm on zone two
11:28	03/25	11	7777	E380	00	C003 - fault on zone three
11:28	03/25	11	7777	E570	00	C009 - Zone nine disabled
11:28	03/25	11	7777	R110	00	C001 - Zone one alarm restored
11:28	03/25	11	7777	R111	00	C002 - smoke detector zone two restored
11:28	03/25	11	7777	R380	00	C003 - zone three fault restored
11:28	03/25	11	7777	R570	00	C009 - zone nine reenabled
11:28	03/25	11	7777	E158	00	C006 - high temperature, zone six
11:28	03/25	11	7777	E151	00	C007 - gas detected, zone seven

Notes:

1. **11** is an example of a Receiver/Line Card, showing which receiver and line card the message was transmitted to.

2. **Q**, which is the Event Qualifier for the reporting structure, is printed out in the report as an **E** for New Event or <u>R</u> for New Restore.

```
                        ┌─────────────────────────────────┐
                        │   EVENT CODE CLASSIFICATIONS    │
                        └─────────────────────────────────┘
```

100 ALARMS	200 SUPERVISORY	300 TROUBLES	400 OPEN/CLOSE REMOTE ACCESS	500 DISABLES/ BYPASSES	600 TEST/ MISC.
Medical Fire Panic Burglary General 24 Hour	Fire	System Sounder/Relay System Peripheral Communication Protective Loop Sensor	Open/Close Remote Access Access Control	System Sounder/Relay System Peripheral Communication	Test

EVENT   **MESSAGE**

Medical Alarms - 100
100 Medical   EMERG - Personal Emergency - #
101 Pendant transmitter   EMERG - Personal Emergency - #
102 Fail to report in   EMERG - Fail to Check-in - #

Fire Alarms - 110
110 Fire Alarm   FIRE - Fire Alarm - #
111 Smoke   FIRE - Smoke Detector - #
112 Combustion   FIRE - Combustion - #
113 Waterflow   FIRE - Waterflow - #
114 Heat   FIRE - Heat Sensor - #
115 Pull station   FIRE - Pull Station - #
116 Duct   FIRE - Duct Sensor - #
117 Flame   FIRE - Flame Sensor - #
118 Near Alarm   FIRE - Near Alarm - #

Panic Alarms - 120
120 Panic Alarm   PANIC - Panic - #
121 Duress   PANIC - Duress
122 Silent   PANIC - Silent Panic - #
123 Audible   PANIC - Audible Panic - #

Burglar Alarms - 130
130 Burglary   BURG - Burglary - #
131 Perimeter   BURG - Perimeter - #
132 Interior   BURG - Interior - #
133 24-Hour   BURG - 24-Hour - #
134 Entry/Exit   BURG - Entry/Exit - #
135 Day/Night   BURG - Day/Night - #
136 Outdoor   BURG - Outdoor - #
137 Tamper   BURG - Tamper - #
138 Near Alarm   BURG - Near Alarm - #

General Alarms - 140
140 General Alarm   ALARM - General Alarm - #
141 Polling loop open   ALARM - Polling Loop Open - #
142 Polling loop short   ALARM - Polling Loop Short - #
143 Expansion module failure   ALARM - Exp. Module Fail - #
144 Sensor tamper   ALARM - Sensor Tamper - #
145 Expansion module tamper   ALARM - Exp. Module Tamper - #

EVENT	MESSAGE

24 Hour Non-Burglary - 150 and 160

150 24-Hour Non-Burg	ALARM - 24-Hr. Non-Burg - #
151 Gas detected	ALARM - Gas Detected - #
152 Refrigeration	ALARM - Refrigeration - #
153 Loss of heat	ALARM - Heating System - #
154 Water leakage	ALARM - Water Leakage - #
155 Foil break	ALARM - Foil Break - #
156 Day trouble	ALARM - Day Zone - #
157 Low bottled gas level	ALARM - Low Gas Level - #
158 High temp	ALARM - High Temperature - #
159 Low temp	ALARM - Low Temperature - #
161 Loss of air flow	ALARM - Air Flow - #

Fire Supervisory - 200 and 210

200 Fire supervisory	SUPER. - Fire Supervisory - #
201 Low water pressure	SUPER. - Low Water Pressure - #
202 Low CO2	SUPER. - Low CO2
203 Gate valve sensor	SUPER. - Gate Valve - #
204 Low water level	SUPER. - Low Water Level - #
205 Pump activated	SUPER. - Pump Activation - #
206 Pump failure	SUPER. - Pump Failure - #

System Troubles - 300 and 310

300 System trouble	TROUBLE - System Trouble
301 AC loss	TROUBLE - AC Power
302 Low system battery	TROUBLE - System Low Battery
303 RAM checksum bad	TROUBLE - Bad RAM Checksum (restore not applicable)
304 ROM checksum bad	TROUBLE - Bad ROM Checksum (restore not applicable)
305 System reset	TROUBLE - System Reset (restore not applicable)
306 Panel program changed	TROUBLE - Programming Changed (restore not applicable)
307 Self-test failure	TROUBLE - Self Test Failure
308 System shutdown	TROUBLE - System Shutdown
309 Battery test failure	TROUBLE - Battery Test Failure
310 Ground fault	TROUBLE - Ground Fault - #
311 No battery	TROUBLE - No Battery

Sounder/Relay Troubles - 320

320 Sounder/Relay	TROUBLE - Sounder Relay - #
321 Bell 1	TROUBLE - Bell/Siren #1
322 Bell 2	TROUBLE - Bell/Siren #2
323 Alarm relay	TROUBLE - Alarm Relay
324 Trouble relay	TROUBLE - Trouble Relay
325 Reversing	TROUBLE - Reversing Relay
326 Bell 3	TROUBLE - Bell/Siren #3
327 Bell 4	TROUBLE - Bell/Siren #4

System Peripheral Troubles - 330 and 340

330 System peripheral	TROUBLE - Sys. Peripheral - #
331 Polling loop open	TROUBLE - Polling Loop Open
332 Polling loop short	TROUBLE - Polling Loop Short
333 Expansion module failure	TROUBLE - Exp. Module Fail - #
334 Repeater failure	TROUBLE - Repeater Failure - #
335 Local printer paper out	TROUBLE - Printer Paper Out
336 Local printer failure	TROUBLE - Local Printer

Ademco Contact ID Format Event Code Descriptions

EVENT	MESSAGE	
Communication Troubles - 350 and 360		
350 Communication	TROUBLE - Communication Trouble	
351 Telco 1 fault	TROUBLE - Phone Line #1	
352 Telco 2 fault	TROUBLE - Phone Line #2	
353 Long range radio xmitter fault	TROUBLE - Radio Transmitter	
354 Fail to communicate	TROUBLE - Fail to Communicate	
355 Loss of radio supervision	TROUBLE - Radio Supervision	
356 Loss of central polling	TROUBLE - Central Radio Polling	
Protection Loop Troubles - 370		
370 Protection loop	TROUBLE - Protection Loop - #	
371 Protection loop open	TROUBLE - Protection Loop Open - #	
372 Protection loop short	TROUBLE - Protection Loop Short - #	
373 Fire Trouble	TROUBLE - Fire Loop - #	
Sensor Troubles - 380		
380 Sensor trouble	TROUBLE - Sensor Trouble - #	
381 Loss of supervision - RF	TROUBLE - RF Sensor Supervision - #	
382 Loss of supervision - RPM	TROUBLE - RPM Sensor Supervision - #	
383 Sensor tamper	TROUBLE - Sensor Tamper - #	
384 RF transmitter low battery	TROUBLE - RF Sensor Batt. - #	
Open/Close - 400		
400 Open/Close	OPENING	CLOSING
401 Open/Close by user	OPENING - User #	CLOSING - User #
402 Group Open/Close	OPENING - Group User #	CLOSING - Group User #
403 Automatic Open/Close	OPENING - Automatic	CLOSING - Automatic
404 Late Open/Close	OPENING - Late	CLOSING - Late
405 Deferred Open/Close	Opening not used	Closing not used
406 Cancel	OPENING - Cancel	Closing not used
407 Remote arm/disarm	OPENING - Remote	CLOSING - Remote
408 Quick arm	Opening not applicable	CLOSING - Quick arm
409 Keyswitch Open/Close	OPENING - Keyswitch	CLOSING - Keyswitch
Remote Access - 410		
411 Callback request made	REMOTE - Callback Requested	(restore not applicable)
412 Success - download/access	REMOTE - Successful Access	(restore not applicable)
413 Unsuccessful access	REMOTE - Unsuccessful Access	(restore not applicable)
414 System shutdown	REMOTE - System Shutdown	
415 Dialer shutdown	REMOTE - Dialer Shutdown	
416 Success - upload/access	REMOTE - Successful Access	(restore not applicable)
Access Control - 420		
421 Access denied	ACCESS - Access Denied - User #	(restore not used)
422 Access report by user	ACCESS - Access Gained - User #	(restore not used)
System Disables - 500 and 510		

EVENT   **MESSAGE**

Sounder/Relay Disables - 520
520 Sounder/Relay disable   DISABLE - Sounder/Relay - #
521 Bell 1 disable   DISABLE - Bell/Siren - #1
522 Bell 2 disable   DISABLE - Bell/Siren - #2
523 Alarm relay disable   DISABLE - Alarm Relay
524 Trouble relay disable   DISABLE - Trouble Relay
525 Reversing relay disable   DISABLE - Reversing Relay
526 Bell 3 disable   DISABLE - Bell/Siren - #3
527 Bell 4 disable   DISABLE - Bell/Siren - #4

System Peripheral Disables - 530 and 540

Communication Disables - 550 and 560
551 Dialer disabled   DISABLE - Dialer Disable
552 Radio transmitter disabled   DISABLE - Radio Disable

Bypasses - 570
570 Zone bypass   BYPASS - Zone Bypass - #
571 Fire bypass   BYPASS - Fire Bypass - #
572 24-Hour zone bypass   BYPASS - 24-Hour Bypass - #
573 Burglar bypass   BYPASS - Burg. Bypass - #
574 Group bypass   BYPASS - Group Bypass - #

Test Misc. - 600
601 Manual trigger test   TEST - Manually Triggered   (restore not applicable)
602 Periodic test report   TEST - Periodic   (restore not applicable)
603 Periodic RF transmission   TEST - Periodic Radio   (restore not applicable)
604 Fire test   TEST - Fire Test   (restore not used)
605 Status report to follow   STATUS - Status Follows   (restore not applicable)
606 Listen-in to follow   LISTEN - Listen-in Active   (restore not applicable)
607 Walk test mode   TEST - Walk Test Mode
608 System abnormal test   TEST - System Abnormal Test

APPENDIX B   NFPA Standard-Specific Requirements

The MS-5UD/MS-10UD 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:

MS-5UD/MS-10UD Control Panel

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

Batteries

Refer to "Power Supply Calculations" on page 133, for Standby Power Requirements.

Initiating Devices

Connected to one of the control panel's Initiating Device Circuits.

Notification Appliances

Connected to the control panel's Notification Appliance Circuits via a control module.

The following additional equipment is needed for compliance with the NFPA 72 standards listed below:

NFPA 72 NATIONAL FIRE ALARM STANDARDS FOR:

NFPA 72 Central Station Service (Protected Premises Unit) or Remote Station Service

> Onboard Digital Alarm Communicator Transmitter for connection to a compatible listed Central Station DACR or Protected Premises Receiving Unit. This unit must be installed as outlined in "Digital Alarm Communicator/Transmitter" on page 17.

> **OR**

> 411UD may be installed as illustrated in Figure B.1, "MS-5UD/MS-10UD FACP Connection to 411UD," on page 143.

> **OR**

> 4XTMF Transmitter Module for connection to the RS82 Remote Station Receiver. See Figure B.3, "Remote Station Connection Using 4XTMF Module," on page 146, 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 Transmitter Module Installation" on page 37 and as outlined in Figure B.2, "Municipal Box Connected to 4XTMF Transmitter Module," on page 145.

NFPA 72 Proprietary Fire Alarm System

MS-5UD/MS-10UD Alarm, Trouble and Supervisory contacts connected to Transmitter(s). See Figure B.4, "Proprietary Protective Signaling System," on page 147, for installation instructions for this unit.

The following figure illustrates an example of Central Station/Remote Station Reporting using a 411UD. The relay contacts from the MS-5UD/MS-10UD may be used to trip any dialer UL listed for Central Station/Remote Station Reporting Services.

411UD

Channel1
Channel 2
Channel 3
Channel 4 (2.2K ELR)

Jumper -VDC to Trouble Relay contact

+ 24 VDC nonresettable power

- 24 VDC nonresettable power

J4 Not Installed

Relay Output (DACT Trouble) from 411UD

FACP Supervisory Relay

FACP Trouble Relay

FACP Alarm Relay

2.2K ELRs P/N 27070

FACP

Trouble Input
(non-supervised,
power-limited)
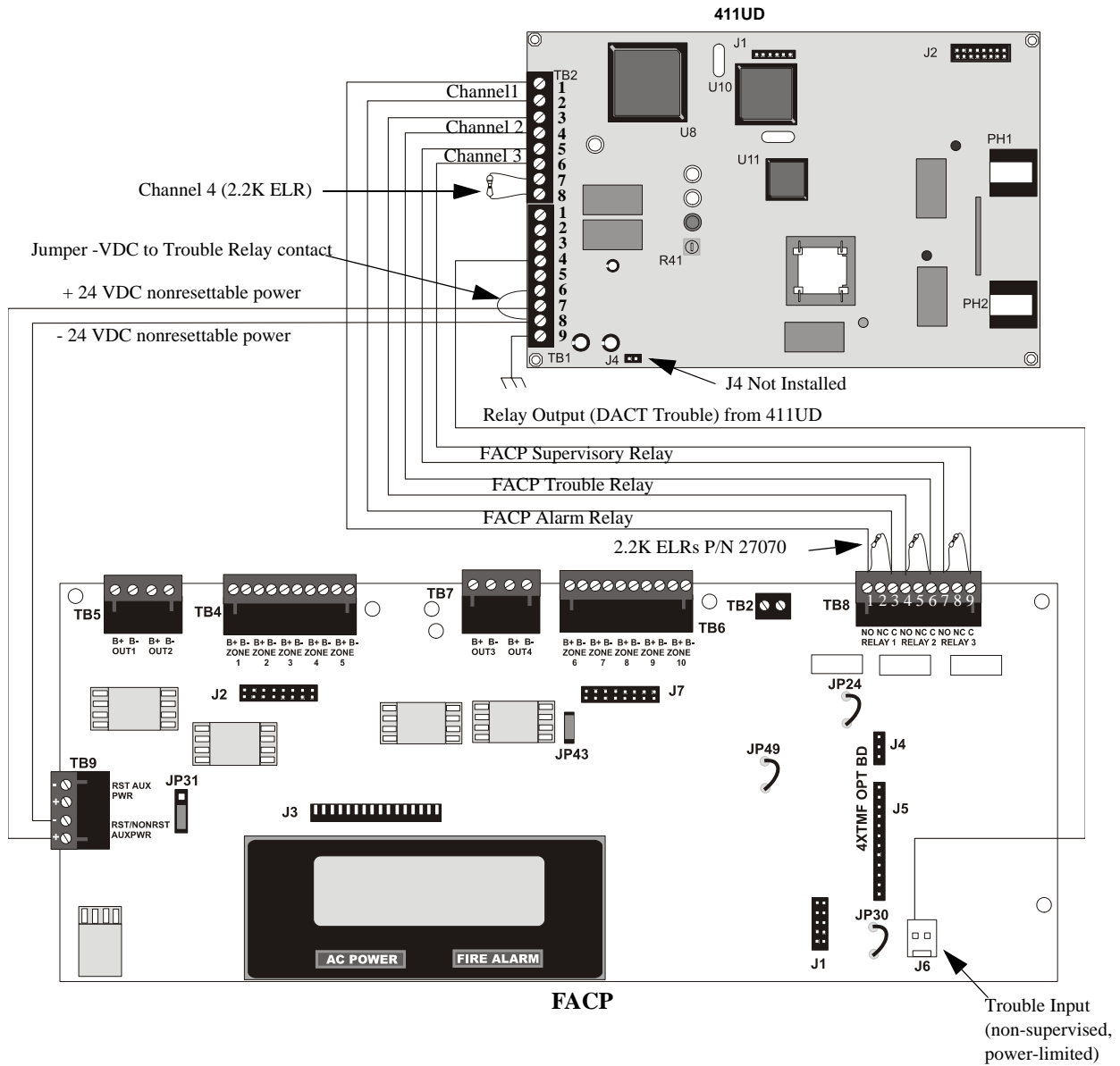
Figure B.1 MS-5UD/MS-10UD FACP Connection to 411UD

	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 B.1 411UD Connections to FACP

Notes:

1. Reference the 411UD Manual for additional information

2. Program the 411UD for slave operation

3. The MS-5UD/MS-10UD must be programmed for AC Loss Reporting Delay This prevents the immediate transmission of a trouble on the loss of AC power

4. All connections between the control panel and the 411UD must be in conduit, less than 20 feet (610 cm) in length, in the same room

5. Any zone of the 411UD can be wired to function as alarm, trouble or supervisory. In Figure B.1 on page 143, Channel 1/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

6. 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

7. End-of-Line resistors must terminate all 411UD circuits, including unused circuits

8. A -VDC from the 411UD Trouble Contacts will activate the Trouble Input J6 on the FACP

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 MS-5UD/MS-10UD main circuit board to supervise placement of 4XTMF module and circuit.

3. Cut JP24 on the MS-5UD/MS-10UD main circuit board to enable FACP Supervisory relay.

4. Refer to "4XTMF Transmitter Module Installation" on page 37 for detailed information.
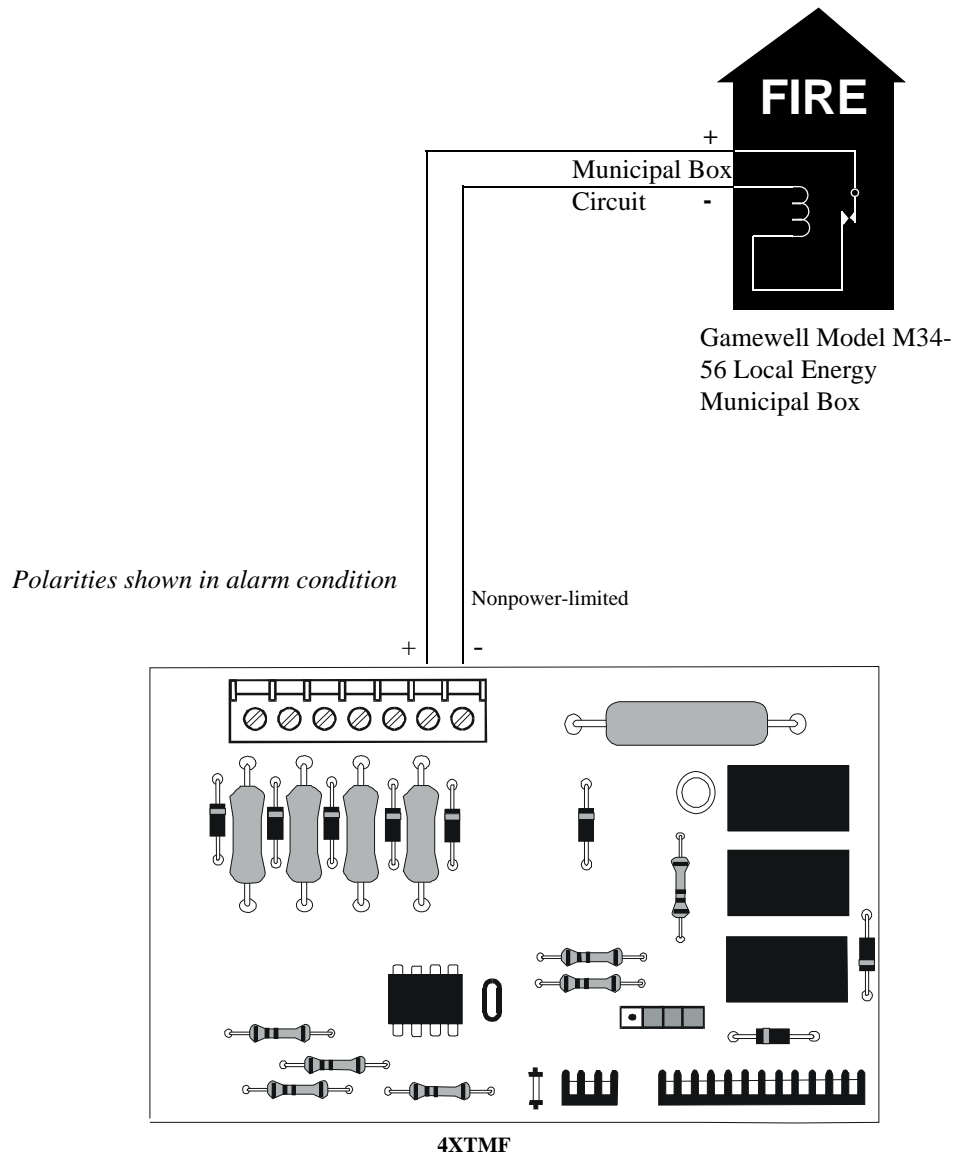
4XTMF

Figure B.2 Municipal Box Connected to 4XTMF Transmitter Module

NFPA 72 Remote Station Protective Signaling System

Notes:

1. Cut Jumper JP30 on the MS-5UD/MS-10UD main circuit board to supervise placement of the 4XTMF module.

2. Refer to "4XTMF Transmitter Module Installation" on page 37 for detailed information.

RS82 Remote Station Receiver UL listed.
Refer to Instruction Manual for Remote Station Receiver Model RS82.

Polarity Shown is Normal Standby

Power-limited

(Dummy load with a 4.7KΩ ¼ watt resistor when no connection is made)

4XTMF Transmitter Module

Cutting TBL Jumper allows the reverse polarity circuit to open with a system trouble condition if no alarm condition exists.
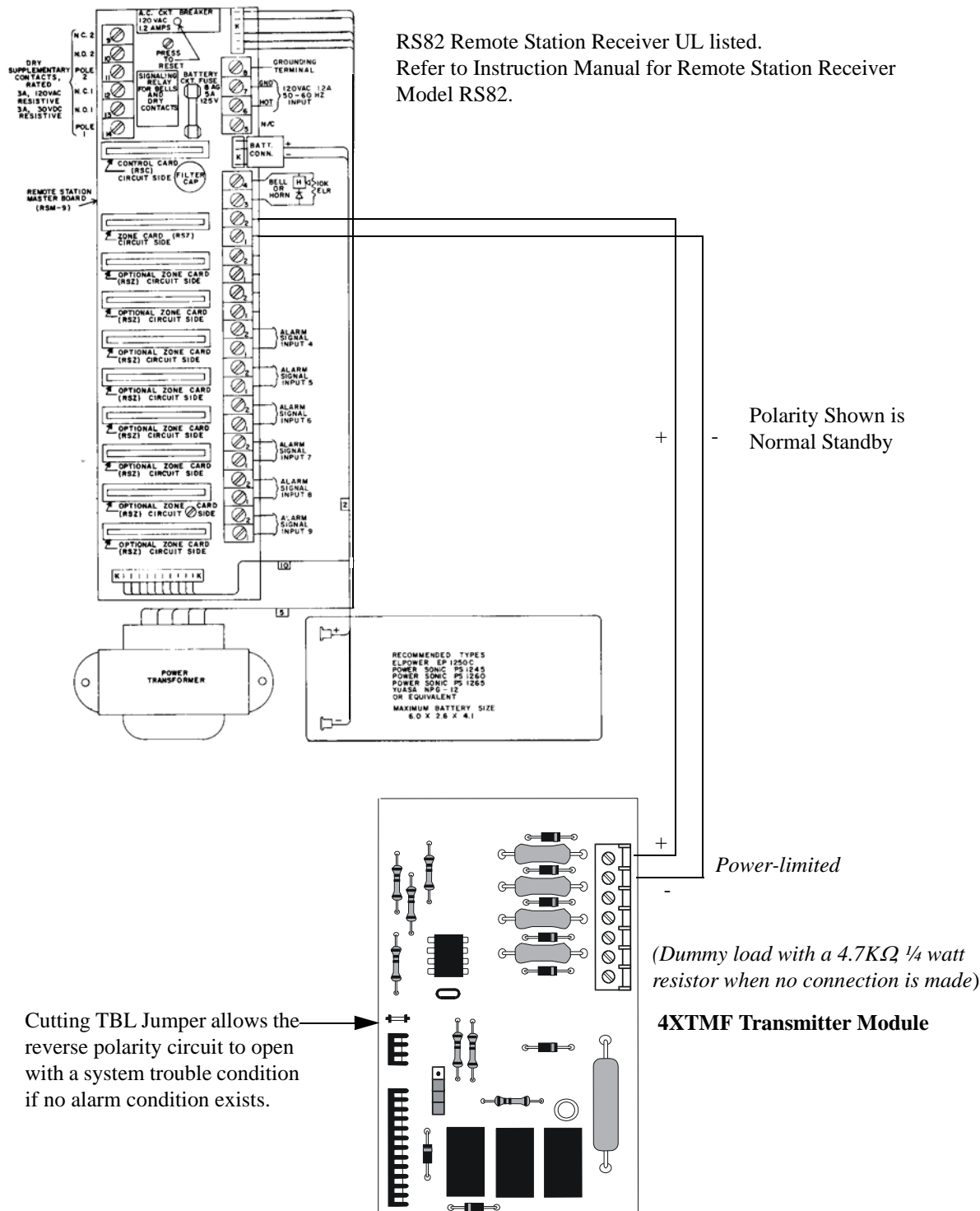
Figure B.3 Remote Station Connection Using 4XTMF Module

NFPA 72 Proprietary Protective Signaling Systems

Fire Alarm Control Panel

FACP Main 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 MS-5UD/MS-10UD and the transmitter are supervised by the transmitter.

2. This MS-5UD/MS-10UD Transmitter arrangement can be employed for NFPA 72 Proprietary Protective Signaling System.

Potter Electric Signal Company Transmitter Model EFT-C used to transmit Alarm and Trouble Signals

Figure B.4 Proprietary Protective Signaling System

B.1 Central Station/Remote Station Transmitter: Connection to FACP Dry Contacts

The dry contacts of the FACP programmable relays can be used to trip a UL-864 Listed Central Station/Remote Station Transmitter. The FACP contacts must be supervised by the Central Station/ Remote Station Transmitter module using End-of-Line Resistors (ELRs) with a value determined by the Transmitter manufacturer. Power is also provided by the Central Station/Remote Station Transmitter manufacturer. Refer to the Central Station/Remote Station Transmitter manufacturer's manual for details.

Typical Central Station/Remote Station Transmitter Module

Typical Input Zone Triggers

Alarm Superv. Trouble*

TB2

TB8

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

*Note: The Trouble Relay is a fail-safe relay. With power applied to the FACP and no troubles in the panel, the wiring should be connected to the NO and C contacts as indicated in the illustration.

Fire Alarm Control Panel

Figure B.5 FACP Dry Contacts Connection to Central Station/Remote Station Transmitter

APPENDIX C   FACP with Keltron

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

CAUTION! 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.
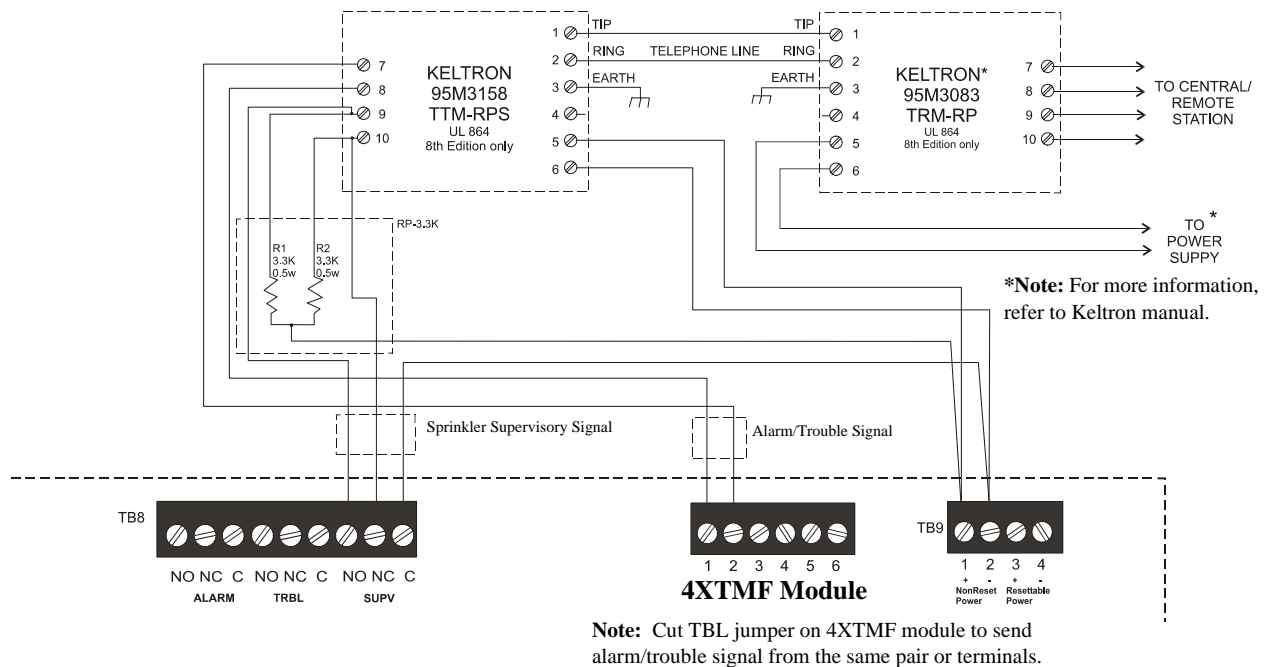
Fire Alarm Control Panel
(terminal blocks are not shown in
their actual positions in order to
clarify wiring connections)

Figure C.1 Keltron Wiring

APPENDIX D Wire Requirements

Connecting external system accessories to the main circuits must be carefully considered to ensure proper operation. It is important to use the correct type of wire, gauge and run length for each circuit. Reference the chart below to specify wire requirements and limitations for each circuit.

Table D.1 FACP Wire Specifications

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 (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 38 for information on device wiring		
24 VDC Regulated, resettable, nonresettable	Power for accessories and 4-wire devices	Untwisted, 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)
Remote Sync Output	Provides strobe and normal sync for remote NAC power supplies	Untwisted, unshielded pair wire	Distance set by 295 ohm resistance limitation	12-18 AWG (3.25 - 0.75 mm^2)
NAC Outputs	Connects to NAC devices or Release devices	Untwisted, unshielded pair wire	Refer to Section D.1 and Section D.2 on page 151.	

D.1 MS-5UD-3(E) & MS-10UD-3(E) NAC Wiring

The following table lists NAC wiring requirements for the MS-5UD-3(E) & MS-10UD-3(E) FACP which utilizes the FLPS-3 power supply.

Table D.2 NAC Wiring Requirements for FACP with FLPS-3 Power Supply

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	9.60	2487	1564	982	618	1244	782	491	309
0.5	4.80	1244	782	491	309	622	391	245	154
0.75	3.20	829	521	327	206	415	261	164	103
1	2.40	622	391	245	154	311	195	123	77
1.25	1.92	497	313	196	124	249	156	98	62
1.5	1.60	415	261	164	103	207	130	82	51
1.75	1.37	355	223	140	88	178	112	70	44
2	1.20	311	195	123	77	155	98	61	39
2.25	1.07	276	174	109	69	138	87	55	34
2.5	0.96	249	156	98	62	124	78	49	31

Note: Calculations are based on Direct-Current Resistance data for uncoated copper wire, per National Electrical Code (2005 Edition) Table 8, Conductor Properties.

D.2 MS-5UD-7(C/E) & MS-10UD-7(C/E) NAC Wiring

The following table lists NAC wiring requirements for the MS-5UD-7(C/E) & MS-10UD-7(C/E) FACP which utilizes the FLPS-7 power supply.

Table D.3 NAC Wiring Requirements for FACP with FLPS-7 Power Supply

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

Note: Calculations are based on Direct-Current Resistance data for uncoated copper wire, per National Electrical Code (2005 Edition) Table 8, Conductor Properties.

Notes

Notes

Limited Warranty

Honeywell International Inc. warrants products manufactured by it to be free from defects in materials and workmanship for eighteen (18) months from the date of manufacture, under normal use and service. Products are date stamped at time of manufacture. The sole and exclusive obligation of **Honeywell International Inc.** is to repair or replace, at its option, free of charge for parts and labor, any part that is defective in materials or workmanship under normal use and service. All returns for credit are subject to inspection and testing at the factory before actual determination is made to allow credit. **Honeywell International Inc.** does not warrant products not manufactured by it, but assigns to the purchaser any warranty extended by the manufacturer of such products. This warranty is void if the product is altered or repaired by anyone other than **Honeywell International Inc.** or as expressly authorized by **Honeywell International Inc.** in writing, or is serviced by anyone other than **Honeywell International Inc.** or its authorized distributors. This warranty is also void if there is a failure to maintain the products and systems in which they operate in a proper and workable manner. In case of defect, secure a Return Material Authorization form from our Return Authorization Department.

This writing constitutes the only warranty made by **Honeywell International Inc.**, with respect to its products. **Honeywell International Inc.**, does not represent that its products will prevent any loss by fire or otherwise, or that its products will in all cases provide the protection for which they are installed or intended. Buyer acknowledges that **Honeywell International Inc.**, is not an insurer and assumes no risk for loss or damages or the cost of any inconvenience, transportation damage, misuse, abuse, accident or similar incident.

HONEYWELL INTERNATIONAL INC. GIVES NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE WHICH EXTENDS BEYOND THE DESCRIPTION ON THE FACE HEREOF. UNDER NO CIRCUMSTANCES SHALL **HONEYWELL INTERNATIONAL INC.** BE LIABLE FOR ANY LOSS OF OR DAMAGE TO PROPERTY, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE **HONEYWELL INTERNATIONAL INC.**'S PRODUCTS. FURTHERMORE, **HONEYWELL INTERNATIONAL INC.** SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY OR DEATH WHICH MAY ARISE IN THE COURSE OF, OR AS A RESULT OF, PERSONAL, COMMERCIAL OR INDUSTRIAL USE OF ITS PRODUCTS.

This warranty replaces all previous warranties and is the only warranty made by **Honeywell International Inc**. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

Warn-HL-05-2007.fm

Fire·Lite Alarms
by Honeywell

ISO 9001
CERTIFIED
ENGINEERING & MANUFACTURING
QUALITY SYSTEMS