FIRE·LITE® ALARMS
by Honeywell

PN: 52413:A ECN 05-345

Addressable Fire Alarm Control Panel

MS-9050UD

IMPORTANT! The SLC Manual Document #51309 must be referenced in addition to this manual when installing or servicing the Fire Alarm Control Panel.

Document	**#52413**	**A**
04/27/06	**Revision:**	

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 Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. 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 storage of flammable materials, etc.).

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

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

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.

Notes

Table of Contents

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

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

NFPA Standards

NFPA 72 National Fire Alarm Code
NFPA 70 National Electrical Code

Underwriters Laboratories Documents:
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 1610 Central Station Burglar Alarm Units
UL 1638 Visual Signaling Appliances
UL 1971 Signaling Devices for Hearing Impaired

Other:

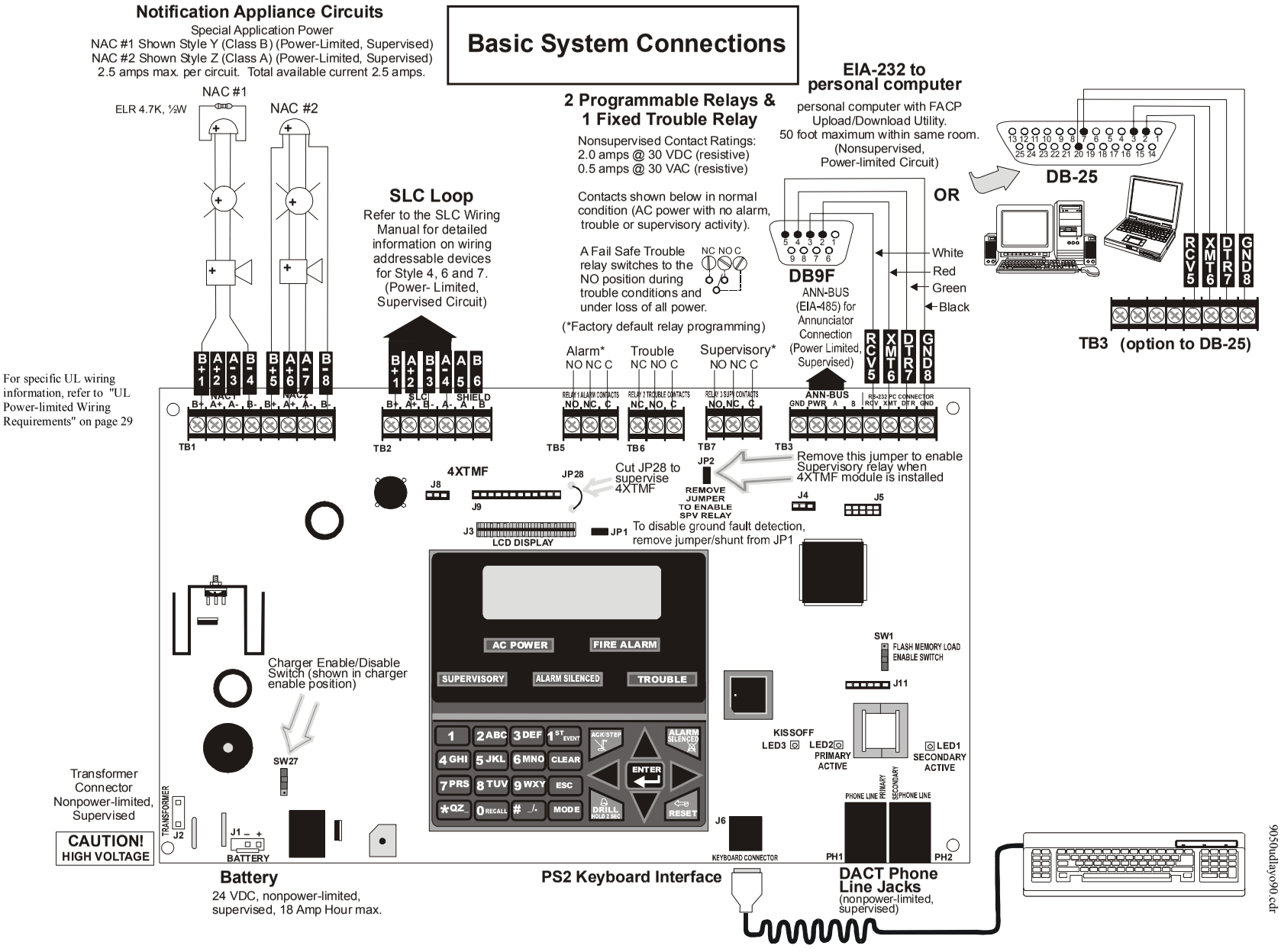
EIA-232E Serial Interface Standard
EIA-485 Serial Interface Standard
NEC Article 250 Grounding
NEC Article 300 Wiring Methods
NEC Article 760 Fire Protective Signaling Systems
Applicable Local and State Building Codes
Requirements of the Local Authority Having Jurisdiction (LAHJ)

Fire-Lite Documents:

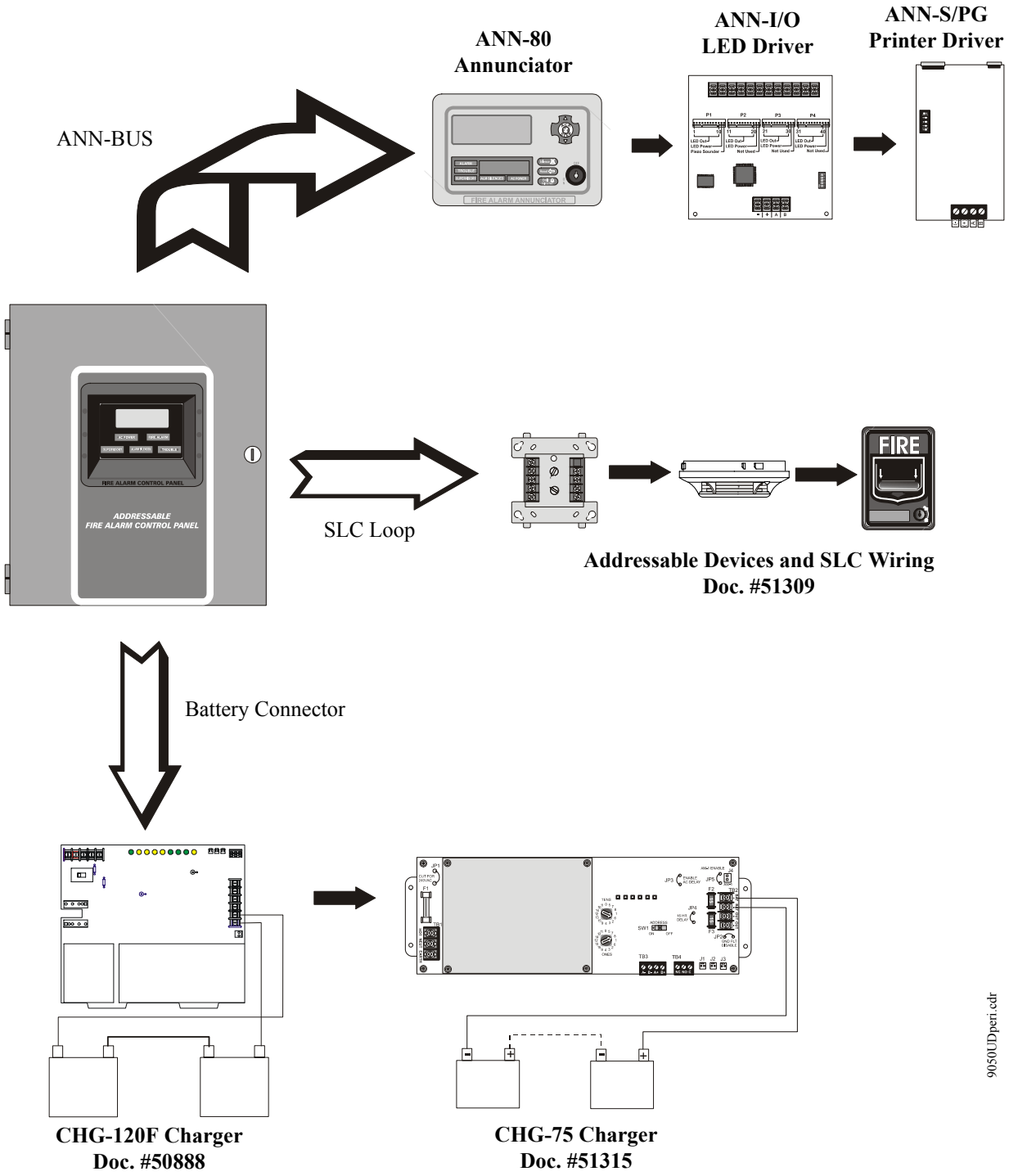
Fire-Lite Device Compatibility	Document #15384
SLC Wiring Manual	Document #51309

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).

Basic System Connections



Peripheral Devices



SECTION 1 Product Description

The Fire-Lite MS-9050UDis a combination FACP (Fire Alarm Control Panel) and DACT (Digital Alarm Communicator/Transmitter) all on one circuit board. This compact, cost effective, intelligent addressable control panel has an extensive list of powerful features. The combination of Fire-Lite's newer series devices and legacy 300 Series devices, along with the MS-9050UD FACP, offer the latest in fire protection technology. The power supply and all electronics are contained on a single circuit board housed in a metal cabinet, providing a complete fire control system for most applications. Available accessories include 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.

Inventory

When the MS-9050UD shipment is received, check to make certain that all parts have been included in the shipment. The MS-9050UD shipment should consist of one of each of the following:

- ✓ main circuit board with display
- ✓ chassis with transformer
- ✓ backbox with door
- ✓ plastic bag containing screws, cables, key, etc.
- ✓ manual

1.1 Features and Options

- Built-in DACT (Digital Alarm Communicator/Transmitter)
- Single addressable SLC loop which meets NFPA Style 4, 6 and 7 requirements
- 50 addressable device capacity (any combination of addressable detectors and addressable control/relay/monitor modules totalling 50)
- 20 software zones
- Two onboard NACs (Notification Appliance Circuits) which can be configured as Style Y (Class B) or Style Z (Class A) circuits
- 2.5 amps total power for NACs
- 2.7 amps total system power (includes battery charger)
- Two programmable relays and one fixed trouble relay
- Built-in Programmer
- Telephone Line Active LEDs
- Communication Confirmation (*Kissoff*) LED
- Touchtone/Rotary dialing
- EIA-232 PC interface
- 80-character LCD display (backlit)

- Real-time clock/calendar with daylight savings time control
- History file with 500 event capacity
- Advanced fire technology features:
  - ✓ Automatic drift compensation
  - ✓ Maintenance alert
  - ✓ Detector sensitivity test capability (NFPA 72 compliant)
  - ✓ Automatic device type-code verification
  - ✓ Point trouble identification
- Waterflow selection per module point
- Alarm verification selection per detector point
- Walktest, silent or audible
- PAS (Positive Alarm Sequence) and Pre-signal per point (NFPA 72 compliant)
- Silence inhibit timer option per NAC
- Autosilence timer option per NAC
- Continuous, March Time, Temporal or California code for main circuit board NACs with two-stage capability
- Selectable strobe synchronization per NAC
- Remote Acknowledge, Alarm Silence, Reset and Drill via addressable modules or remote annunciator
- Auto-program (learn mode) reduces installation time. Reports two devices set to the same address
- Password and key-protected nonvolatile memory
- User programmable password
- Fully programmable from local keypad or optional keyboard
- SLC operates up to 10,000 ft. (3,000 m) with twisted, unshielded fire wire
- Compatible with Fire-Lite's addressable devices (refer to SLC Wiring Manual)
- Compatible with legacy Fire-Lite 300 Series devices (refer to SLC Wiring Manual)
- Optional 4XTMF module (conventional reverse polarity/city box transmitter)
- Optional ANN-I/O LED Driver module
- Optional ANN-S/PG printer interface module
- Optional ANN-80 remote LCD annunciator

1.2 Specifications

Refer to Illustration on page 10 for terminal locations and connections.

AC Power - Transformer Connection
MS-9050UD: 120 VAC, 60 Hz, 3.0 amps
Wire size: minimum 14 AWG (2.00 mm^2) with 600 V insulation
Nonpower-limited, supervised

Battery (Lead Acid Only) - J1
Maximum Charging Circuit: Normal Flat Charge - 27.6 VDC @ 1.2 amp
Maximum Battery Charger Capacity: 18 Amp Hour (MS-9050UD cabinet holds maximum of two 18 Amp Hour batteries).
Nonpower-limited, supervised

SLC Communication Loop - TB2
24 VDC nominal, 27.6 VDC maximum
Maximum length is 10,000 ft. (3,000 m) total twisted, unshielded fire wire
Maximum loop current is 400 mA (short circuit) or 100 mA (normal)
Maximum loop resistance is 40 ohms
Supervised and power-limited circuit
Refer to SLC Loop manual for wiring information

Notification Appliance Circuits - TB1
Terminal Block provides connections for two NACs, Style Y (Class B) or Style Z (Class A)
Special Application power
Power-limited, supervised circuitry
Maximum voltage drop in wiring: 2.0 VDC
Nominal operating voltage: 24 VDC
Current-limit: fuseless, electronic, power-limited circuitry
Maximum signaling current per circuit: 2.5 amps
End-of-Line Resistor: 4.7 kΩ, ½ watt (P/N 71252 UL listed) for Style Y (Class B) NAC
Refer to Fire-Lite Device Compatibility Document for listed compatible devices

Two Programmable Relays and One Fixed Trouble Relay - TB5, TB6 & TB7
Contact rating: 2.0 amps @ 30 VDC (resistive), 0.5 amps @ 30 VAC (resistive)
Form-C relays, nonpower-limited, nonsupervised
Refer to Figure 2.5 on page 27 for information on power-limited relay circuit wiring

EIA-232 - TB3
EIA-232 PC applications connections: Terminal 5 (Receive), 6 (Transmit), 7 (DTR), 8 (Ground)
Power-limited, supervised

ANN-BUS (EIA-485) - TB3
Annunciator connector: Terminal 1 (Ground), 2 (Power), 3 (A), 4 (B)
Nominal Operating Voltage: 24 VDC
Maximum Current (Terminals 1 & 2): 500 mA
Power-limited, supervised

1.2.1 Current Availability

The Notification Appliance Circuits can provide 2.5 amps maximum per circuit. Total available current for the FACP is 2.7 amps.

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.

LED Indicators
LED indicators are provided to annunciate the following conditions:

- AC Power (green)
- Fire Alarm (red)
- Supervisory (yellow)
- Trouble (yellow)
- Alarm Silenced signals (yellow)

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 Silenced
- Drill (Manual Evacuate)
- 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

9050udkypd.cdr

Figure 1.1 Membrane/Display Panel

Local Piezo Sounder

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

1.4 Circuits

SLC Communication Loop

One SLC loop is provided on the FACP main circuit board. The SLC loop, configurable for NFPA Style 4, 6 or 7, provides communication to addressable detectors, monitor (initiating device) and control (output device) modules. Refer to the SLC Wiring manual for information on wiring devices.

Reference Manual

Output Circuits

The following output circuits are available on the FACP:

- **Charger**
  24 VDC Battery Charger (up to 18 AH batteries)
- **NAC (Notification Appliance Circuits)**
  Two NACs configurable for Style Y (Class B) or Style Z (Class A), are provided with various programmable features.

Relays

One fixed and two fully programmable Form-C dry contact relays are provided. The fixed fail-safe relay monitors system trouble and the two programmable relays are factory default programmed for system alarm and system supervisory. Contacts are rated 2.0 amps @ 30 VDC (resistive) and 0.5 amps @ 30 VAC (resistive). The programmable relays can be programmed for the following operations:

- fire alarm
- trouble
- supervisory
- supervisory auto-resettable
- DACT communication failure
- process monitor
- process monitor auto-resettable
- hazard alert
- medical alert
- AC loss

1.5 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
- 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:
  - ✓ 12 Tone Burst types: 20 pps
    (3+1, 4+1, 4+2, 3+1 Exp., 4+1 Exp., 4+2 Exp.)
  - ✓ 3 Touchtone Types
    4+1 Ademco Express
    4+2 Ademco Express
    Ademco Contact ID

1.6 Components

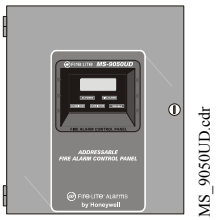
Main Circuit Board

The main circuit board contains the system's CPU, power supply, other primary components and wiring interface connectors. The 4XTMF option module plugs in and is mounted to the main circuit board. The circuit board is delivered mounted to a chassis in the MS-9050UD backbox (refer to circuit board illustration on page 10).

See Page

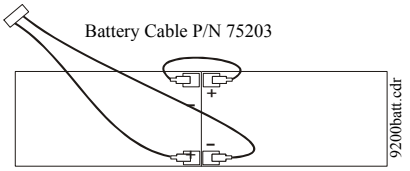
Cabinet

The MS-9050UD backbox provides space for two batteries (up to 18 Amp Hour). Ample knockouts are provided for system wiring. Also available is an optional dress panel, which mounts to the inside of the cabinet.



Batteries

The MS-9050UD cabinet provides space for two batteries (up to 18 Amp Hour). Batteries must be ordered separately.



1.6.1 Intelligent Addressable Detectors: Newer Series

Intelligent, addressable detectors provide information to the control panel on an SLC Signaling Line Circuit (refer to the SLC Wiring Manual for detailed information on addressable devices, device installation, wiring and operation). This allows the control panel to continually process the information to determine the status (alarm, trouble, maintenance or normal) of each detector. Each detector responds to an SLC address that is set in the detector head using built-in rotary decimal switches. Note that a blinking LED on an intelligent detector indicates communication between the detector and the control panel. Refer to the Fire-Lite Device Compatibility Document for a list of approved conventional detectors.

1.6.2 Intelligent Addressable Modules: Newer Series

The newer series of Control Modules and Monitor Modules provide an interface between the control panel and conventional notification and initiating devices. Each module can be set to respond to an address with built-in rotary switches. A blinking LED on a monitor module indicates communication between the module and the control panel. These devices can also be used when installed on older systems. *Refer to the SLC Wiring Manual for information on addressable devices. Refer to the Fire-Lite Device Compatibility Document for a list of approved conventional notification and initiating devices.*

Reference Manual

1.6.3 300 Series Intelligent Addressable Devices

Fire-Lite's 300 Series Intelligent Addressable Devices are fully compatible with the MS-9050UD FACP. Refer to the SLC Wiring Manual for device information.

1.6.4 Addressable Device Accessories

End-of-Line Resistor Assembly

Refer to the SLC Wiring Manual for device information. The 47 kΩ End-of-Line Resistor assembly (P/N: R-47K) is used to supervise the MMF-300, MDF-300, MMF-301 and CMF-300 module circuits. The 3.9 kΩ End-of-Line Resistor assembly is used to supervise the MMF-302 module circuit. The End-of-Line resistors are included with each module.

Power Supervision Relay

The UL listed End-of-Line power supervision relay is used to supervise the power to 4-wire smoke detectors and notification appliances.

N-ELR Mounting Plate

The N-ELR is a single End-of-Line resistor plate. An ELR, which is supplied with each module and fire alarm control panel, is mounted to the ELR plate. Resistors mounted to the N-ELR plate can be used for the supervision of a monitor and control module circuit.

1.7 Optional Modules

The MS-9050UD main circuit board includes option module connectors for the following module:

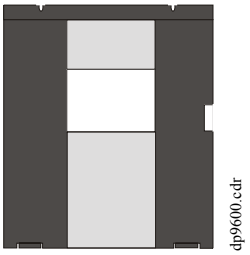
4XTMF Transmitter Module

The 4XTMF provides a supervised output for local energy municipal box transmitter, alarm and trouble reverse polarity. It includes a disable switch and disable trouble LED. A jumper on the module is used to select an option which allows the reverse polarity circuit to open with a system trouble condition if no alarm condition exists. The module plugs into connectors J8 and J9 which are located near the top center of the main circuit board. When the 4XTMF module is installed, Jumper JP28, on the main circuit board, must be cut to allow supervision of the module.

1.8 Accessories

1.8.1 Dress Panel

An optional dress panel is available for the MS-9050UD. The dress panel restricts access to the system wiring while allowing access to the key panel.



1.8.2 Annunciators/Accessories

Reference Manual

Annunciators remotely display alarm and trouble status as well as system status. They can also provide remote Acknowledge, Silence, Reset and Drill functions. In addition, relay functions may be provided. Compatible annunciators include:

- ANN-80: remote LCD annunciator mimics the FACP display
- ANN-I/O: LED Driver Module for driving graphic annunciators
- ANN-S/PG: Serial/Parallel Printer Interface module for connecting printer to FACP

For more detailed information, refer to the appropriate installation instructions.

1.9 Getting Started

The following is a brief summary of the minimal steps involved in bringing an MS-9050UD on-line:

- Install Backbox and Main Circuit Board (refer to "Mounting Backbox" on page 22)
- Address and Install Intelligent Devices (refer to the SLC Wiring Manual)
- Enter Autoprogramming (refer to "Autoprogram" on page 51)
- Resolve Programming Conflicts
- Go to Point Program to Enter Specific Data (refer to "Point Program" on page 52). Use the right and left arrow keys to navigate between devices.

1.10 Telephone Requirements and Warnings

1.10.1 Telephone Circuitry

AC Ringer Equivalence Number (REN) = 03B
DC 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.

1.10.2 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, Inc.
One Fire-Lite Place
Northford, CT 06472
(203) 484-7161

Product Model Number: **MS-9050UD**
FCC Registration Number: **US:1W6AL03B9050UD**
AC Ringer Equivalence: **0.3B**
DC Ringer Equivalence: **0.0B**

*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 30 for an illustration of the proper installation of this equipment.

Important! *The DACT must not be used to dial a phone number that is call-forwarded per requirements of UL 864 9th Edition.*

1.10.3 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.

SECTION 2 Installation

The cabinet may be either semi-flush or surface mounted. The cabinet mounts using two key slots and two 0.250" (6.35 mm) diameter holes located in the backbox. The key slots are located at the top of the backbox and the two securing holes 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 Mounting Backbox

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 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 2.3 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

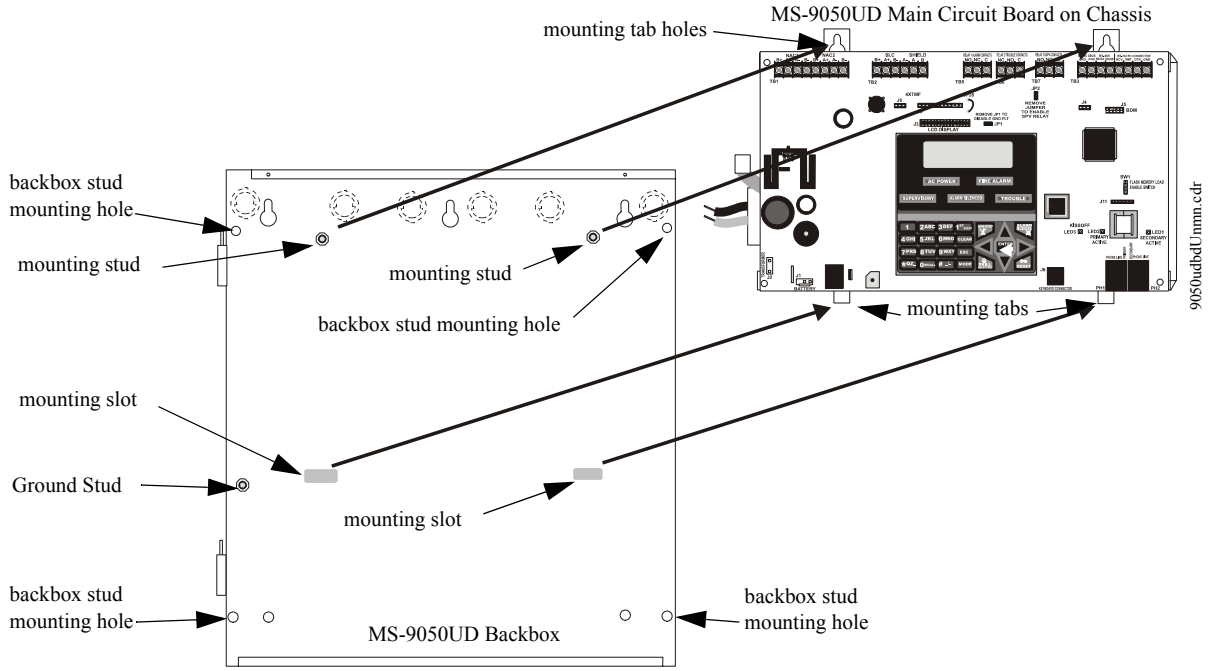


Figure 2.1 MS-9050UD Chassis Removal

2.2 Mounting Chassis/Transformer/Main Circuit Board

One transformer is supplied standard with the control panel. Install the transformer and chassis in the location indicated in the following illustration.

1. When the location is dry and free of construction dust, install the chassis/ transformer/circuit board assembly.
2. Mount the chassis to the backbox by aligning the two mounting tabs with the slots in the backbox, then position the two mounting hole tabs over the studs with nuts located in the upper portion of the backbox.
3. Slide the tabs located on the bottom of the chassis into the mounting slots in the backbox by pressing the chassis down.
4. Secure the chassis to the backbox by tightening the two mounting nuts (#10-32) at the top, and to ensure proper grounding, use a 3/8" nut driver or socket.
5. If the main circuit board is not already attached to the chassis, install it by positioning the ten mounting holes over the studs on the chassis and secure with the supplied screws.
6. Ensure the transformer plug is connected to Connector J2 on the FACP main circuit board
7. Complete the installation as detailed in the following sections.

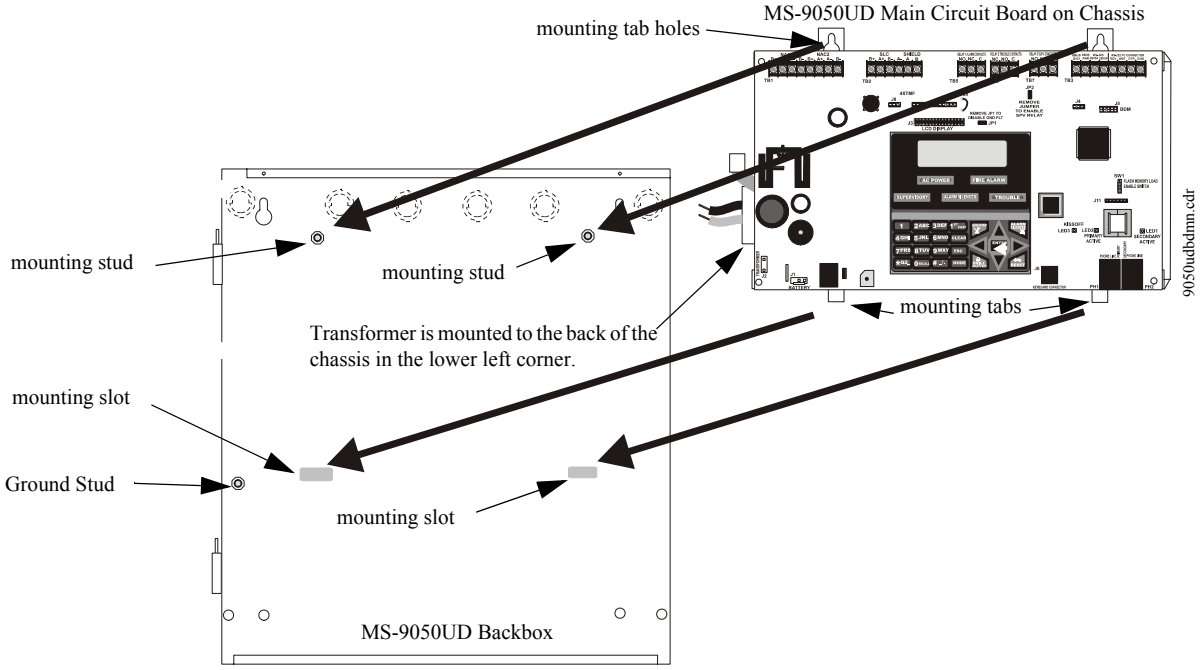


Figure 2.2 MS-9050UD Main Circuit Board/Chassis Installation

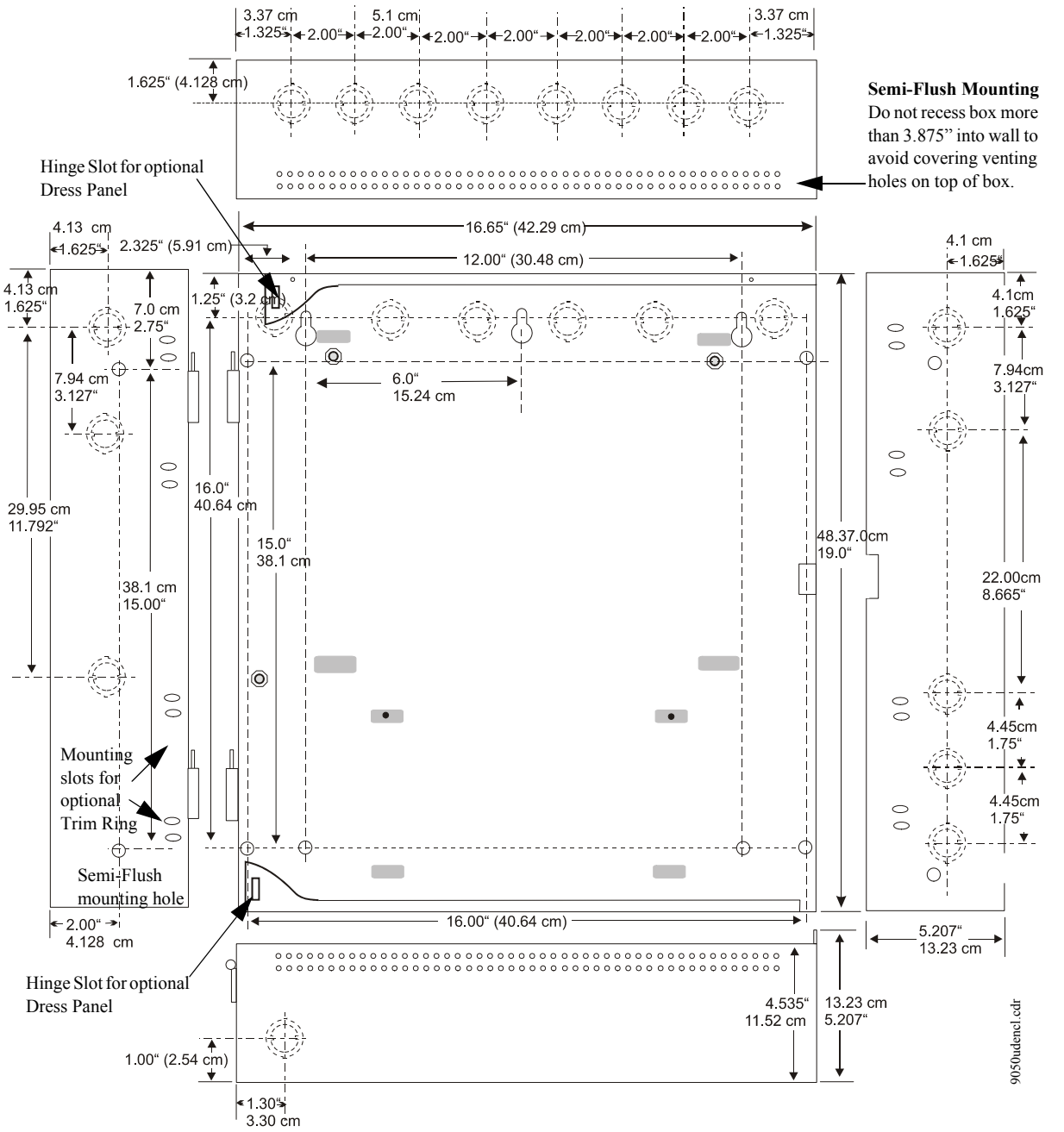


Figure 2.3 MS-9050UD Cabinet Mounting

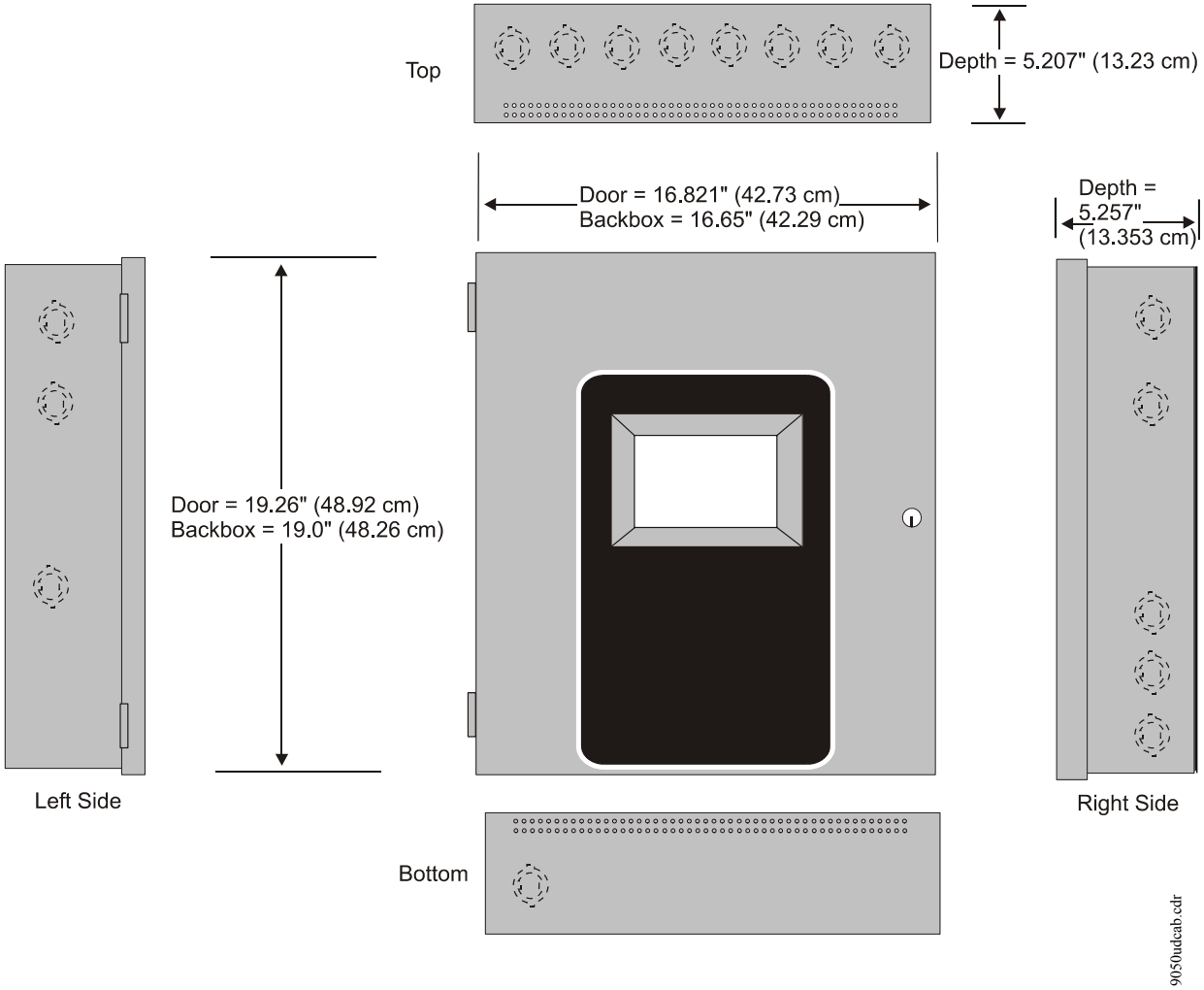


Figure 2.4 MS-9050UD Cabinet Dimensions

2.3 Power

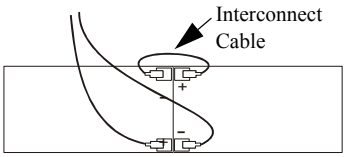
WARNING: *Several different sources of power can be connected to this panel. Disconnect all sources of power before servicing. The panel and associated equipment may be damaged by removing and/or inserting cards, modules or interconnecting cables while this unit is energized.*

2.3.1 AC Power and Earth Ground Connection

Primary power required for the FACP is 120 VAC, 60 Hz, 3.0 amps for the MS-9050UD. Overcurrent protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or local codes. Use 14 AWG (2.00 mm^2) or larger wire with 600 volt insulation rating. Make certain that the AC mains circuit breaker is off before wiring any connections between the mains and the control panel. Connect wiring from the AC mains to the Transformer on the FACP, being careful to observe proper connections.

Connect the AC ground wire to the Ground Stud located in the left side of the backbox. Refer to Figure 2.2 on page 23 and the illustration below for location of the stud. This connection is vital for maintaining the control panel's immunity to unwanted transients generated by lightning and electrostatic discharge. Apply AC power to the panel only after the system is completely installed and visually checked. *Note that AC power must be applied to the panel before installing the battery interconnect cable (refer to the following section).*

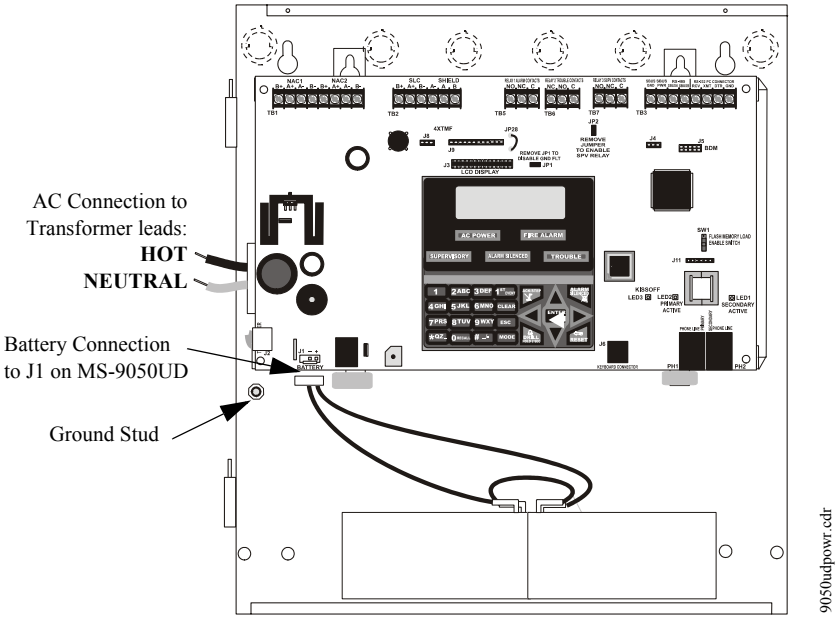
2.3.2 Battery Power



Before connecting the batteries to the FACP, make certain that the interconnect cable between the batteries is not connected. Do not connect the interconnect cable until the system is completely installed. Observe polarity when connecting the batteries. Connect the battery cable to J1 on the main circuit board. Refer "Power Supply Calculations" on page 162, for calculation of the correct battery rating.

See Page

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.*

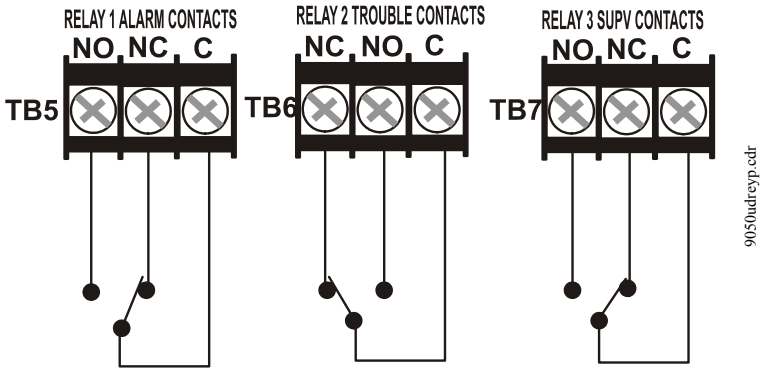


2.4 Relays

The FACP provides two programmable Form-C relays and one fixed fail-safe Form-C trouble relay, all with contacts rated for 2.0 amps @ 30 VDC (resistive) or 0.5 amps @ 30 VAC (resistive).

Note that relay connections may be power-limited or nonpower-limited, provided that 0.25" spacing is maintained between conductors of power-limited and nonpower-limited circuits. Refer to UL Power-limited wiring requirements.

Note that the programmable relay labeled as Relay 1 is factory default programmed as Alarm and programmable Relay 3 is factory default programmed as Supervisory. The relay labeled Relay 2 is fixed as a Trouble relay and cannot be changed. It is a fail-safe relay which will transfer on any trouble or total power failure.



Relay contacts shown with power applied to panel and no active troubles, alarms or supervisories

Figure 2.5 Relay Terminals

2.5 Notification Appliance Circuits

See Page

Reference Manual

The control panel provides two NACs (Notification Appliance Circuits) Style Y (Class B) or Style Z (Class A). Each circuit is capable of 2.5 amps of current. Total current in alarm for all external devices cannot exceed 2.5 amps (refer to "Calculating the System Current Draw" on page 163). Use UL listed 24 VDC notification appliances only. Circuits are supervised and power-limited. Refer to the Fire-Lite Device Compatibility Document for a listing of compatible notification appliances. The NACs, which are located on the main circuit board, may be expanded via the Fire-Lite FCPS Series field charger/power supplies.

The following sections describe the configuration and wiring of Style Y and Style Z Notification Appliance Circuits on the MS-9050UD main circuit board.

2.5.1 Configuring NACs

The Notification Appliance Circuits are configured for Style Y (Class B) or Style Z (Class A) by properly wiring the NAC devices to TB1 on the main circuit board as illustrated below.

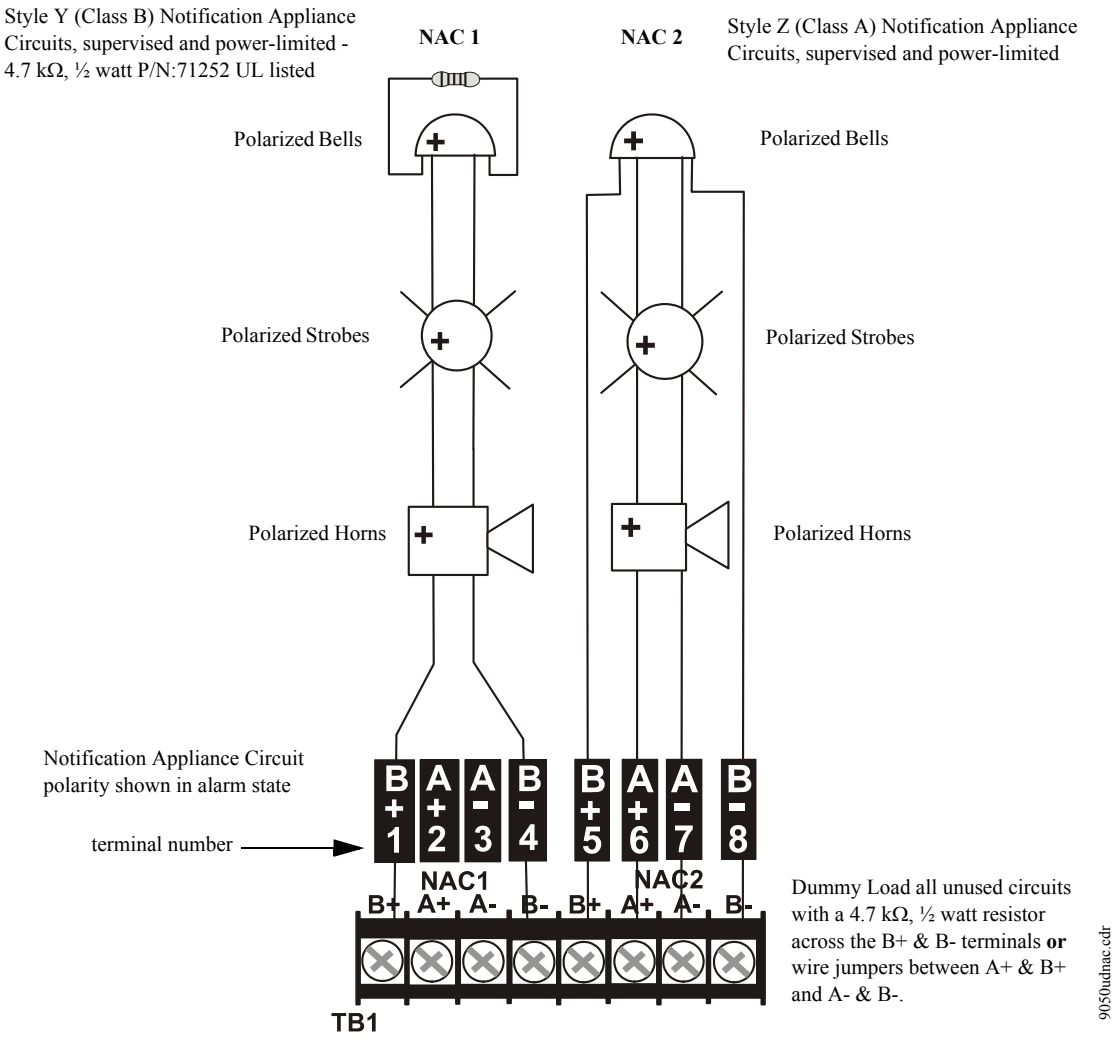


Figure 2.6 NAC Wiring

2.6 UL 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 and nonpower-limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits. A typical wiring diagram for the MS-9050UD is shown below.

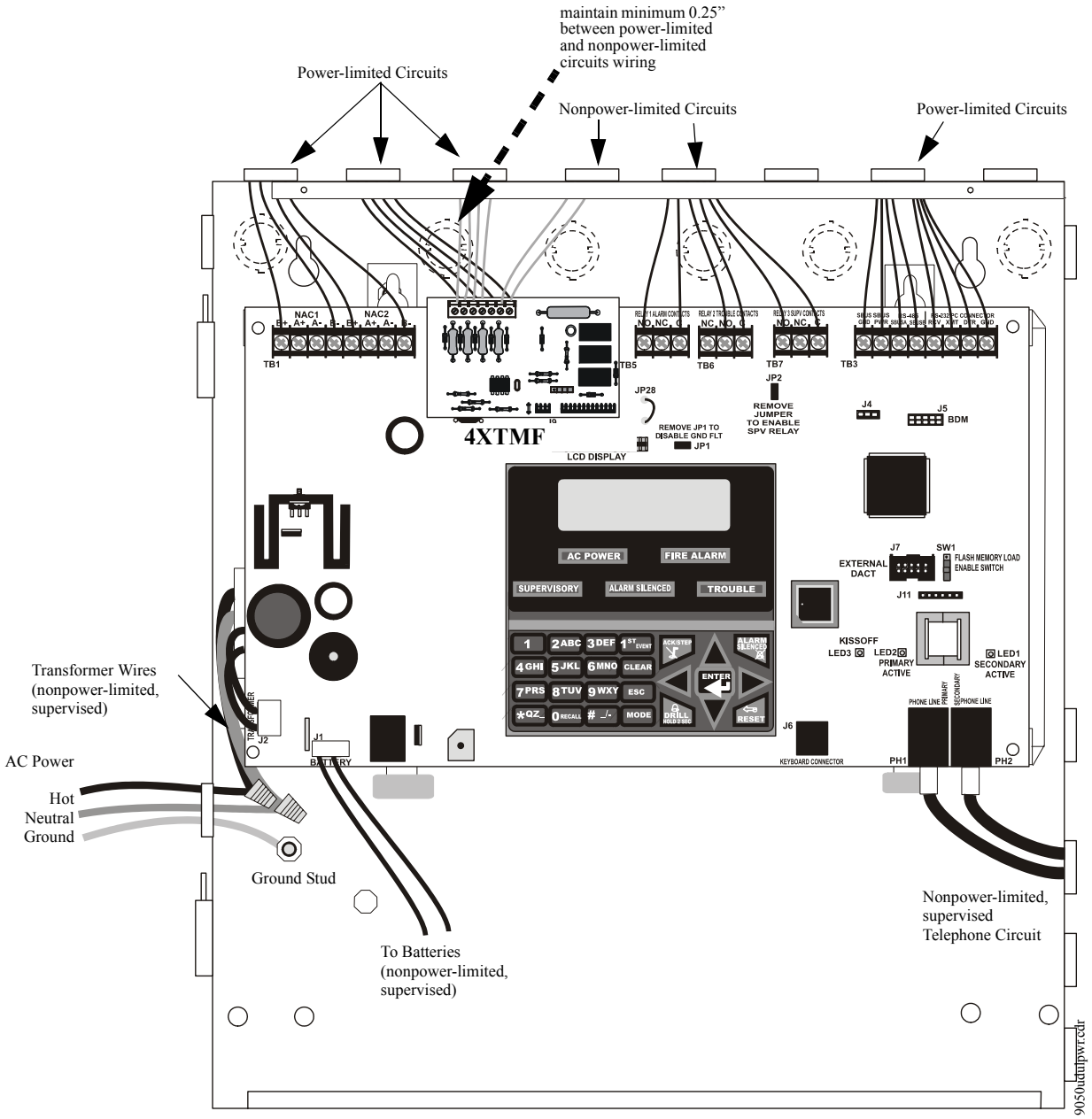


Figure 2.7 Typical UL Power-limited Wiring Requirements

2.7 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 not be used to dial a phone number that is call-forwarded per requirements of UL 864 9th Edition.*

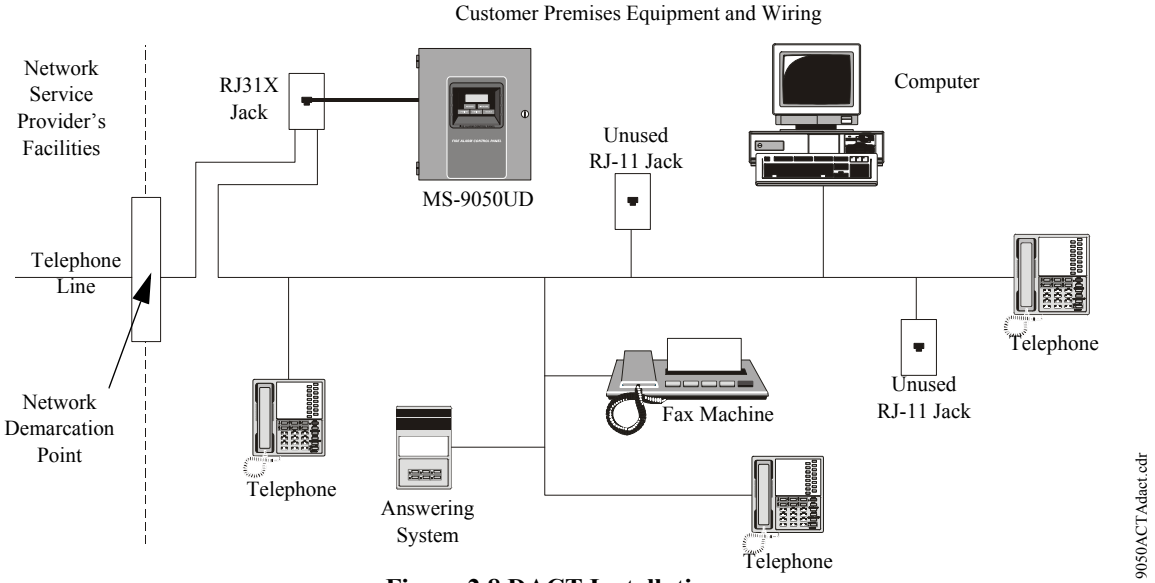


Figure 2.8 DACT Installation

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.

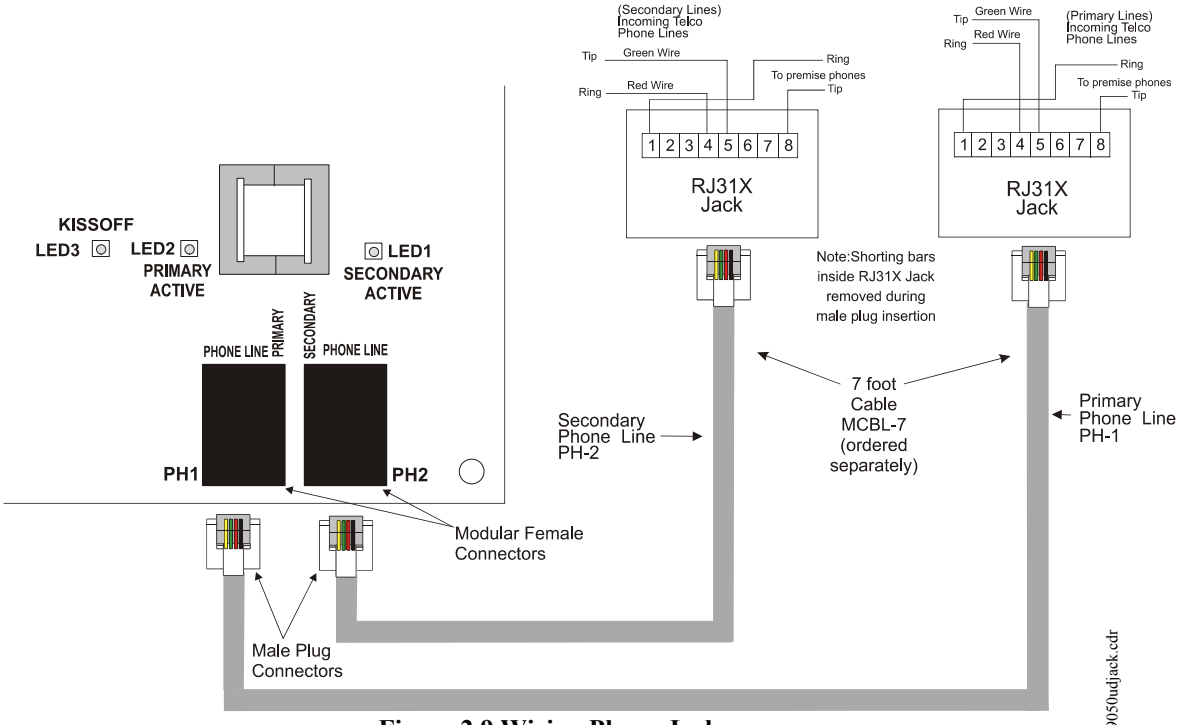


Figure 2.9 Wiring Phone Jacks

2.8 Optional Modules/Accessories Installation

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

2.8.1 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 right (disconnect) position to prevent accidental activation of the municipal box. Note that a Disconnect LED will illuminate after the module is installed in the MS-9050UD. In addition, the System Trouble LED will turn on to indicate the Disconnect condition.

Note: 4XTMF Module is not suitable for transmitting reverse polarity supervisory signal.

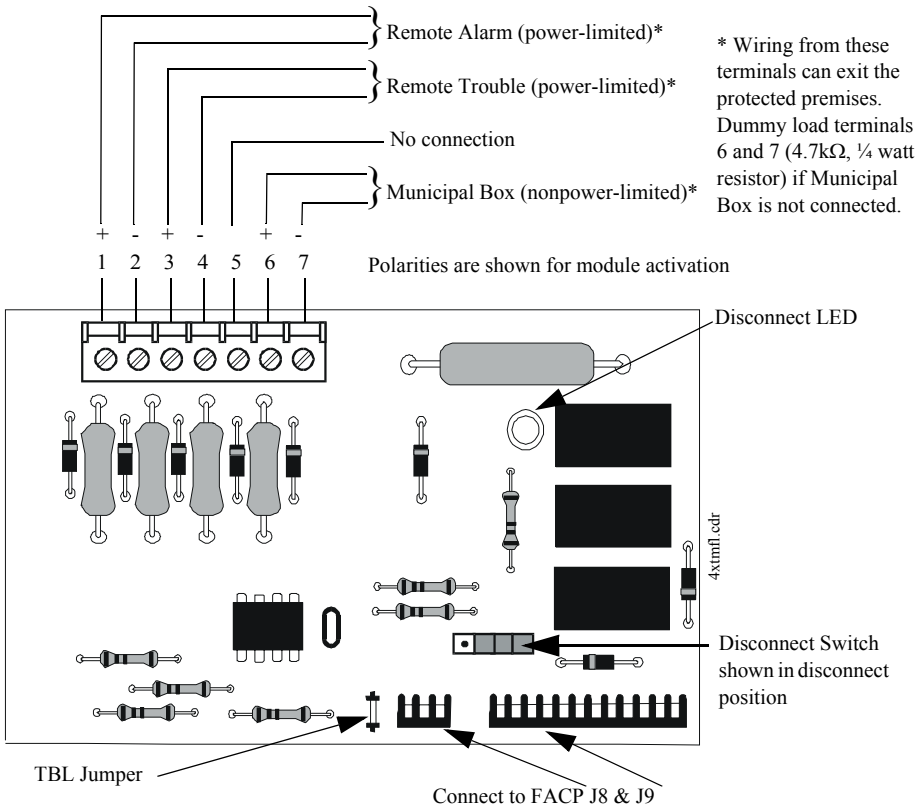


Figure 2.10 4XTMF Transmitter Module

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

1. *Remove all power (Primary and Secondary) from the FACP before installing 4XTMF*
2. Cut jumper JP28 on the main circuit board to allow the control panel to supervise the 4XTMF module
3. Remove two screws securing main circuit board to mounting plate and install two standoffs for securing 4XTMF module to main circuit board. Refer to Figure 2.11 for standoff locations on main circuit board
4. Carefully plug the connectors on the 4XTMF module into connectors J8 and J9 on the MS-9050UD main circuit board, being careful not to bend any pins
5. Secure 4XTMF module to standoffs with supplied screws removed in step 3.
6. Reapply power to the FACP
7. For proper 4XTMF operation, the main circuit board output relays must be programmed for the factory default settings: Alarm Relay 1, Trouble Relay 2 and Supervisory Relay 3
8. When the installation has been completed, enable the 4XTMF module by sliding the disconnect switch to the left
9. Test system for proper operation

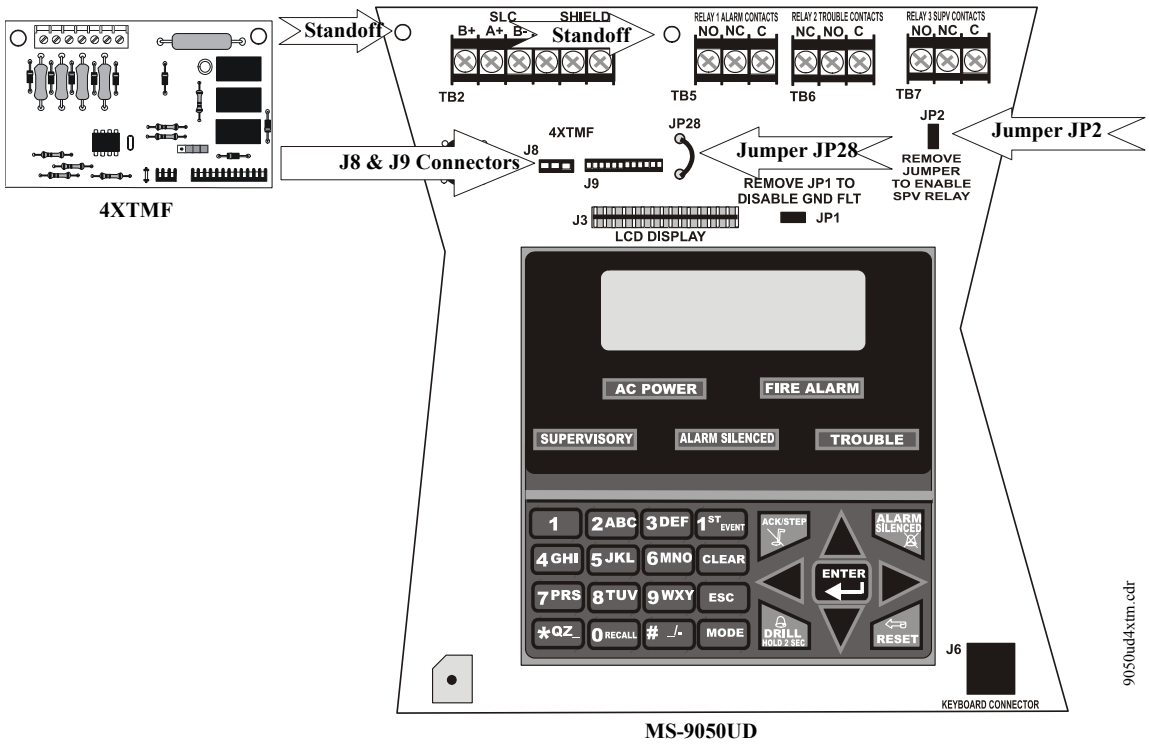


Figure 2.11 4XTMF Connectors to MS-9050UD Connectors

NOTE: Jumper JP2 on the MS-9050UD main circuit board can be used to configure the FACP supervisory relay for operation with the 4XTMF module. Relay 3 at TB3 must be programmed as a supervisory relay.
Removing the jumper from JP2 will allow the 4XTMF to generate a trouble if the supervisory contact opens
Leaving the jumper on JP2 will prevent generation of a trouble if the supervisory contact opens

2.9 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

2.9.1 ANN-BUS Wiring

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

2.9.1.1 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

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.

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:

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

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

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

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

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 34, it can be found that the available options are:

✓ 463 feet maximum using 22 Gauge wire
✓ 1,172 feet maximum using 18 Gauge wire
✓ 1,866 feet maximum using 16 Gauge wire
✓ 2,953 feet maximum using 14 Gauge wire

2.9.1.2 Wiring Configuration

Figure 2.12 illustrates the wiring between the FACP and ANN-BUS devices.

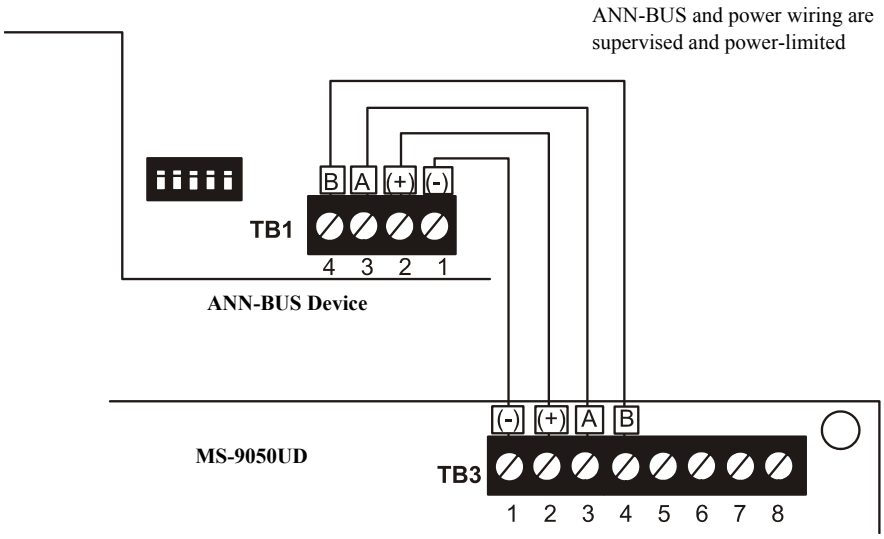


Figure 2.12 FACP wiring to ANN-BUS Device

2.9.1.3 Powering ANN-BUS Devices from Auxiliary Power Supply

Figure 2.13 illustrates the powering of ANN-BUS devices from an auxiliary power supply such as the FCPS-24FS6/8, when the maximum number of ANN-BUS devices exceeds the ANN-BUS power requirements.

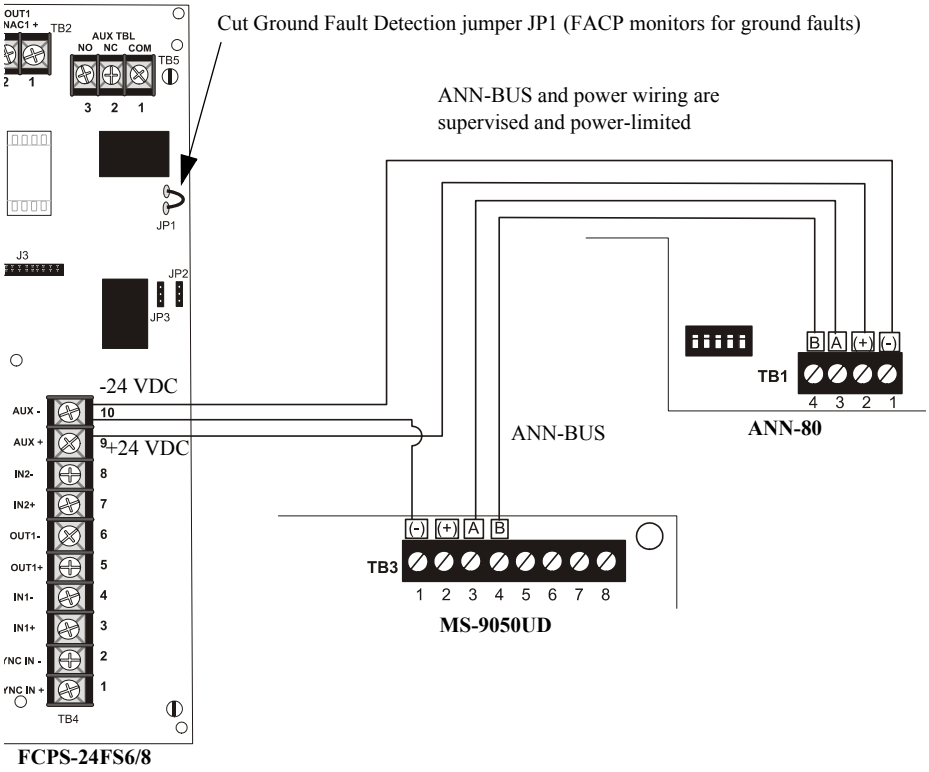


Figure 2.13 Powering ANN-BUS Devices from FCPS-24FS6/8

2.9.2 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 100).

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.

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

Note: Switch 5 must be set to OFF for ANN-BUS devices to be recognized.

2.9.3 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.

2.9.4 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

2.9.5 Installation

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

2.9.5.1 Mounting

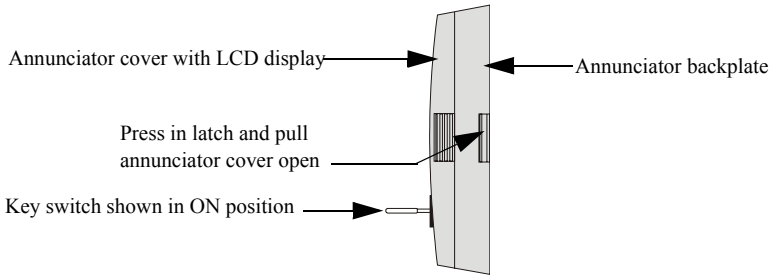
The ANN-80 can be surface or semi-flush mounted to a single, double or 4" square electrical box. Select and remove the appropriate knockout(s), pull the necessary wires through the knockouts and mount the annunciator in or on the wall depending on the type of installation desired.

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.

2.9.5.2 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):

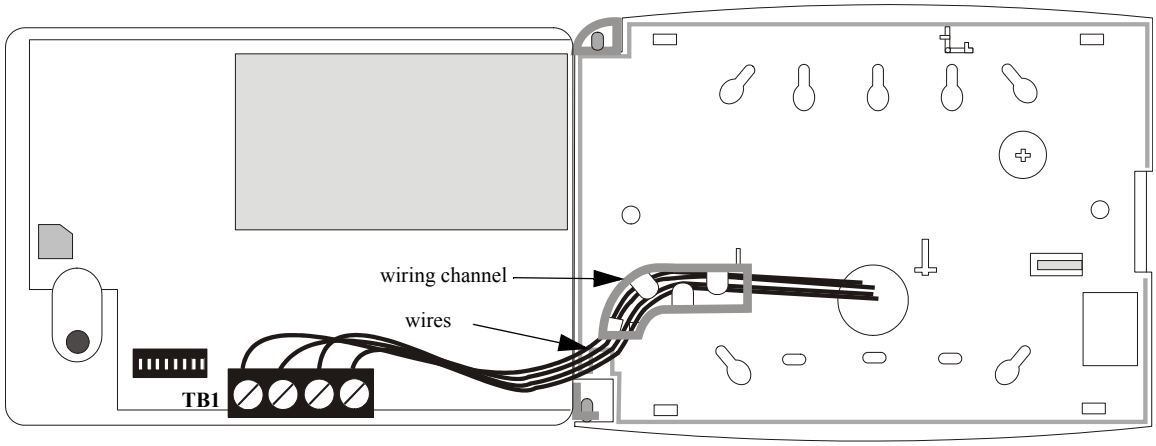
1. Turn the key switch to the ON (Unlocked) position by turning the key counter-clockwise
2. Push in the snap latch located on the right side of the unit while pulling the cover open
3. To close the cover, make certain the key switch is in the ON (Unlocked) position. Swing the cover closed, snapping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



2.9.5.3 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

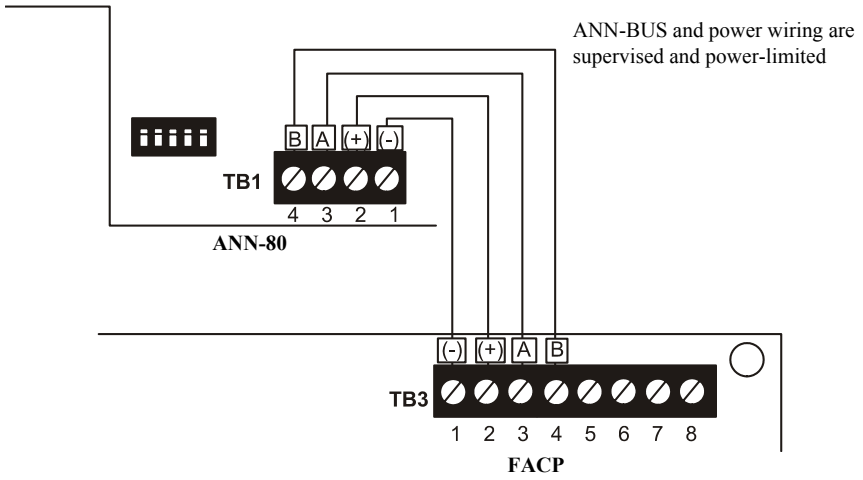


Figure 2.14 ANN-80 Wiring to FACP

The following table shows the ANN-80 connections to the MS-9050UD.

MS-9050UD (TB3)	ANN-80 (TB1)
Terminal 1 GND (-)	Terminal 1 (-)
Terminal 2 PWR (+)	Terminal 2 (+)
Terminal 3 A (ANN-BUS)	Terminal 3 (A)
Terminal 4 B (ANN-BUS)	Terminal 4 (B)

Programming

Following installation and wiring of the ANN-80 LCD annunciator to the FACP, the annunciator must added to the system via FACP programming. Refer to the programming section titled "ANN-BUS" on page 100 in this manual for detailed programming information. Select the LCD option for programming.

Trouble Response

If the ANN-80 is installed but the ANN-BUS is not enabled at the FACP, the ANN-80 will indicate a trouble condition by NOT turning on its AC Power indicator. The LCD will also display *Key Bus Trouble* and the piezo will sound approximately once every 10 seconds. Note that the FACP will provide no indication of an ANN-80 trouble.

To clear the ANN-80 trouble condition, enable the ANN-BUS and program the address corresponding to the address set on the ANN-80 at the FACP.

2.9.6 ANN-S/PG Serial/Parallel Interface Installation

The ANN-S/PG Serial/Parallel Interface module allows the 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 2.15

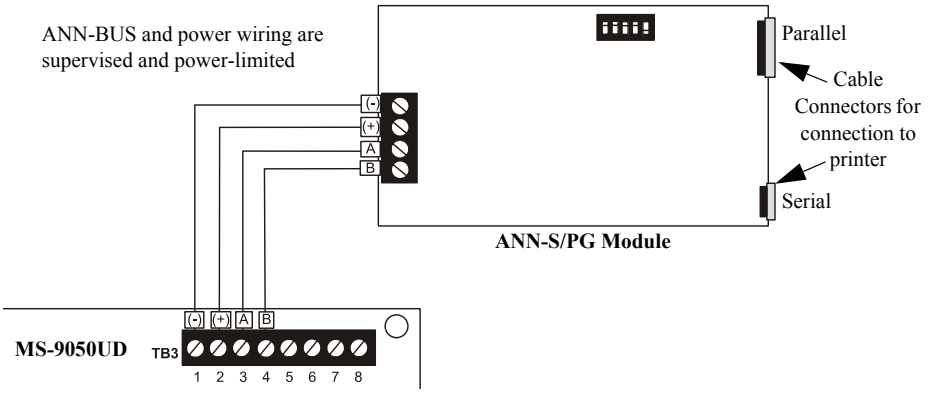


Figure 2.15 ANN-S/PG Connection to FACP

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 100)
   Note that the Auto-configure feature allows the programmer to quickly bring all installed ANN-BUS modules online (refer to "Auto-Configure" on page 102)
5. Connect a printer to the ANN-S/PG Parallel or Serial connectors (refer to Figure 2.15). Only one printer can be connected.

2.9.6.1 Specifications

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

2.9.6.2 PRN Printer Installation

When connected to the FACP via the ANN-S/PG module, the PRN 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.

2.9.6.2.1 Connecting PRN 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 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.

2.9.6.2.2 Setting Printer Options

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

TABLE 2-3:PRN 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”

2.9.7 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 and one piezo sounder. The following sections describe hardware installation. Refer to the section titled "ANN-BUS" on page 100 for programming information.

2.9.7.1 ANN-I/O Board Layout

Figure 2.1 illustrates the ANN-I/O board showing locations of screw terminals for connection to the FACP, pin connectors for connecting LEDs and one piezo sounder and the DIP switch for selecting the ANN-BUS ID number.

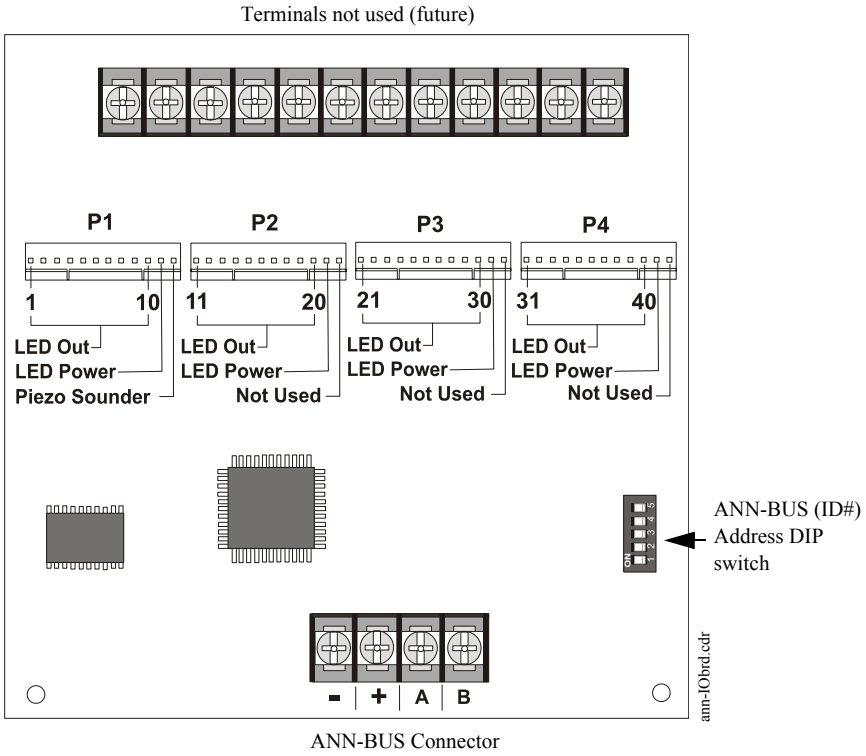


Figure 2.1 ANN-I/O Board Layout

2.9.7.2 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

2.9.7.3 ANN-I/O Connection to FACP

The ANN-I/O connects to the FACP via the ANN-BUS as illustrated in Figure 2.2. After the ANN-I/O is connected to the panel, it must be added to the system via FACP programming. Refer to the section titled "ANN-I/O Options" on page 103.

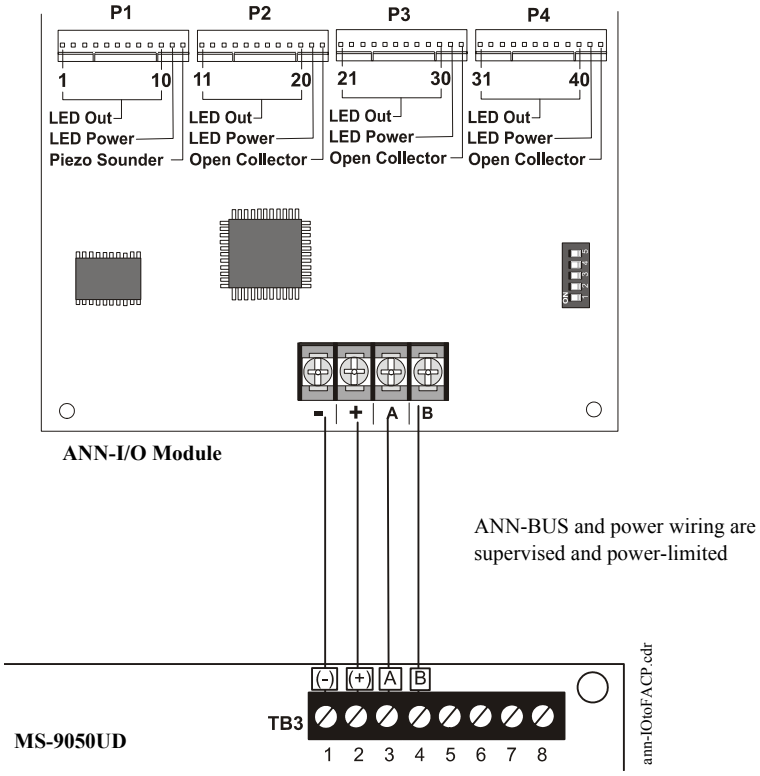


Figure 2.2 ANN-I/O Connection to FACP

2.9.7.4 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 can be mapped to output circuits. Refer to the programming section titled "ANN-I/O Options" on page 103 of this manual.

The LEDs are wired as illustrated in Figure 2.3. Note that the illustration depicts only connectors P1 and P2. Wiring is identical for P3 (LEDs 21-30) and P4 (LEDs 31-40).

Note that a Piezo Sounder can be connected to Pin 12 only on the P1 connector.

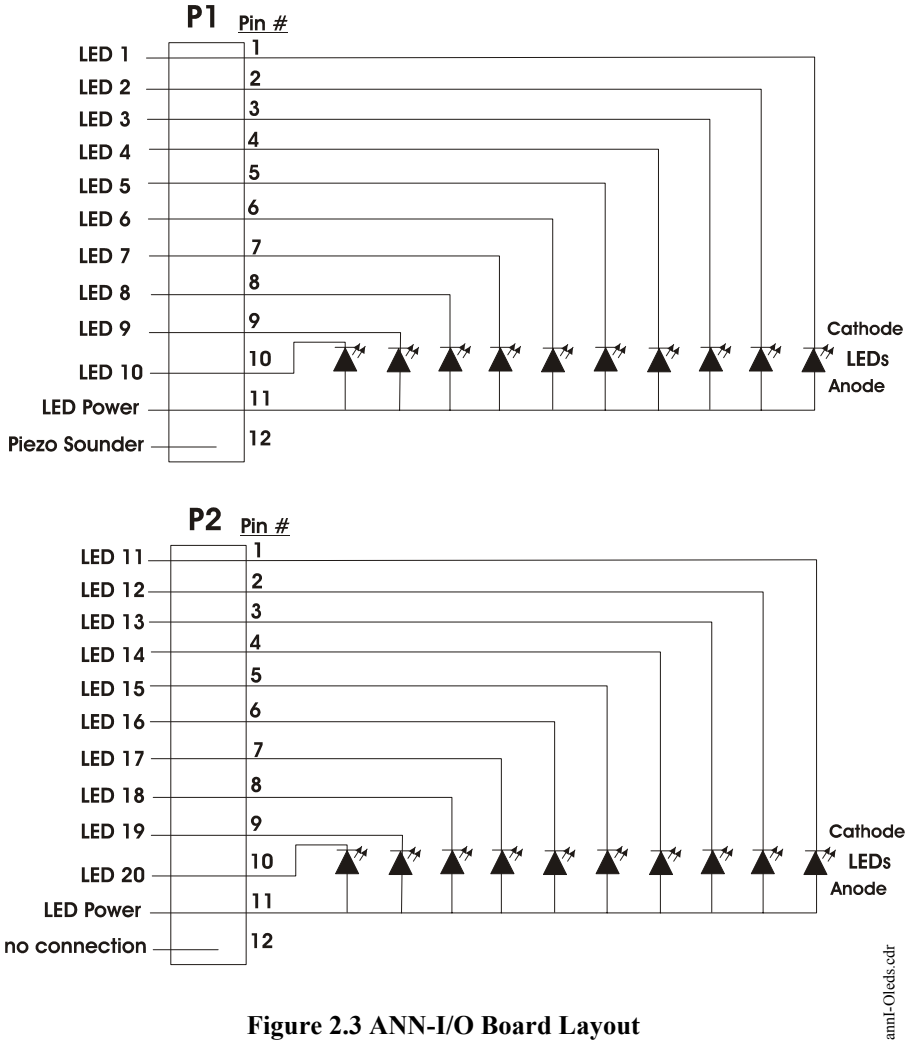


Figure 2.3 ANN-I/O Board Layout

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 108. 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

3.1 Programming Data Entry

Programming can be accomplished using the MS-9050UD keypad or by connecting an optional standard computer keyboard. The keyboard can be connected to the PS-2 connector J6 on the control panel main circuit board.

The information presented in this section refers to programming the MS-9050UD via the onboard keypad. If an optional computer keyboard is connected to the MS-9050UD main circuit board, the following table describes the keyboard keys which correspond to the onboard keypad keys.

Keypad Keys	Computer Keyboard Keys
1st Event	Home
CLR	Delete
ESC	Esc
RECALL	Insert
*	*
#	#
A - Z	A - Z
0 - 9	0 - 9
■ (on *QZ* key)	Space bar
—	—
/	/
•	•
←	←
→	→
↑	↑
↓	↓
ENTER	Enter
ACK/STEP	F1
SILENCE	F2
DRILL	F3
RESET	F4

3.2 User Programming

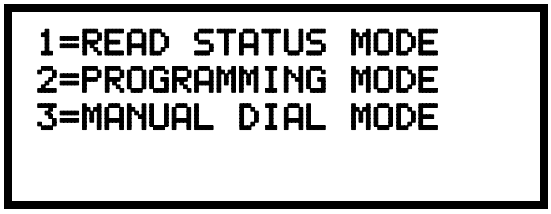
The MS-9050UD is completely field programmable and requires no special software skills. *While programming the MS-9050UD, the fire protection capabilities of the control panel are enabled.*

Site-specific programming may be accomplished in three ways:

- **Autoprogramming Feature** - This is a convenient method for quickly bringing the FACP addressable SLC devices on-line without the necessity of programming each device individually. Refer to "Autoprogram" on page 51 for a detailed description of Autoprogramming
- Manual programming or editing, using the FACP keypad or a PC keyboard

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

Read Status and Manual Dial mode can be entered while the panel is in any mode of operation. Manual Dial mode, however, cannot be entered while the panel is communicating with the Central Station. 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:



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 145 for a detailed description of this feature.

See Page

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 *3* will select the Manual Dial Mode which allows the user to enter a troubleshoot mode of operation.

Exit Programming, Read Status and Manual Dial Mode

The programmer can exit any mode by repeatedly pressing the keypad *ESC* (Escape) key until the display reads System All Normal. *Note that the data which is entered during Programming mode is not 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.

3.3 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 addressable devices to the SLC, apply power to the control panel. If the addressable devices have not yet been programmed into the FACP, their LEDs will not flash and the following trouble message will be displayed.

3.4 Programming Screens Description

Three options are available when the *Enter* key is pressed: Read Status, Programming and Manual Dial 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 50, 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.

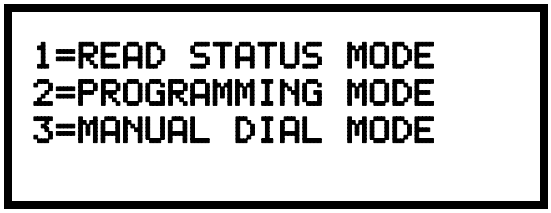
Note that subscreens may also have multiple options which require viewing more than one screen. The same process, as detailed in the previous paragraphs, is followed to view all option choices.

3.5 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 121. If an invalid password is entered, the blinking cursor will return to the first password character position. To exit Programming, Read Status or Manual Dial 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:



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

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

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

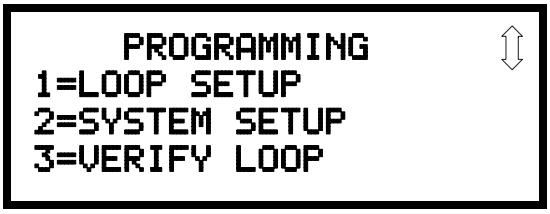
Note that in the two preceding screens, an arrow appears to inform the programmer that additional options can be viewed by pressing the keypad *down* arrow key.

3.6 Master Programming Level

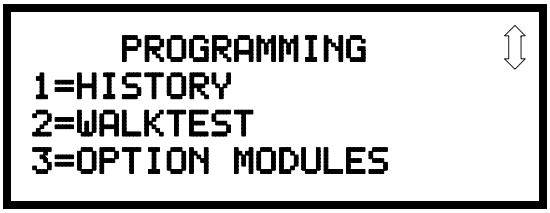
When the Master Program Level password is entered, the control panel will enter user Programming mode. In this mode, the piezo sounder remains off, the trouble relay is activated and the system Trouble LED flashes until Programming mode is exited. The following display will appear:

Programming 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 Screen #2



Programming Screen #3

Programming Screen #4

```
    PROGRAMMING
1=AUTOPROGRAM
2=POINT PROGRAM
3=ZONE SETUP
```

Programming Screen #1

3.6.1 Autoprogram

Pressing *1* while viewing Programming Screen #1, will select the Autoprogram option, which prompts the control panel to poll all devices installed on the SLC loop. The primary purpose of autoprogramming is to allow the installer a fast and easy way to bring the system on-line as quickly as possible. The first time the system is powered-up, it should be autoprogrammed.

If the system is already programmed and Autoprogram is initiated, the system will only add default values for newly installed devices.

When Autoprogram is selected, the control panel will begin autoprogramming the system by communicating with each addressable device installed on the SLC loop. While autoprogramming, the panel will display the following:

```
    AUTOPROGRAM
AUTOPROGRAMMING!
  PLEASE WAIT
```

Autoprogram Progress Screen

When Autoprogramming is completed, the control panel will display the type and quantity of each device installed on the SLC loop similar to the following display:

```
# OF DET LOOP1 022
# OF MON LOOP1 015
# OF CON LOOP1 010
```

Autoprogram Result Screen #1

In the preceding example, the display indicates that the SLC Loop has 22 addressable detectors, 15 monitor modules and 10 control modules installed.

Pressing the *ESC* key will return the display to Programming Screen #1.

```
PROGRAMMING
1=AUTOPROGRAM
2=POINT PROGRAM
3=ZONE SETUP
```

Programming Screen #1

3.6.2 Point Program

The Point Program option allows the programmer to add a new addressable device to an SLC loop, delete an existing device from a loop or change the programming for an existing device. Pressing *2*, while viewing Programming Screen #1, will select the Point Program option and display the following screen:

```
   POINT PROGRAM
    SELECT TYPE
1=DETECTOR
2=MODULE
```

Point Program Screen

3.6.2.1 Detector Programming

Pressing *1*, while viewing the Point Program Screen, will allow the programmer to add, delete or change the programming of an addressable detector. The following screen will be displayed by the control panel:

```
      DETECTOR
1=ADD
2=DELETE
3=EDIT
```

Detector Screen

3.6.2.1.1 Add Detector

Pressing *1* while viewing the Detector Screen will display the following screen which allows the programmer to add a new detector address to programming:

```
    ADD DETECTOR
ENTER DETECTOR#
***
```

Add Detector Screen

A flashing cursor will appear in the position of the first asterisk to the left. The programmer keys in the three digit detector address, such as 005.

When the last digit is keyed-in, the following screen will be displayed:

```
    DETECTOR TYPE      ⇩
1=SMOKE(PHOTO)
2=USER-DEFINED-1
3=SMOKE(ION)
```

Press the down arrow key to view additional choices. Press the number corresponding to the desired selection to program that type to the newly added detector.

When the type has been selected, the following screen will be displayed:

```
    ADD DETECTOR
DETECTOR#       005
IS ADDED
```

The programmer can continue adding detectors by pressing the *ESC* key which will return the display to the Add Detector Screen.

3.6.2.1.2 Delete Detector

```
     DETECTOR
1=ADD
2=DELETE
3=EDIT
```

Detector Screen

Pressing *2* in the Detector Screen will display the Delete Detector Screen which allows the programmer to delete a specific detector:

```
  DELETE DETECTOR
ENTER DETECTOR#
***
```

Delete Detector Screen

A flashing cursor will appear in the position of the first asterisk to the left. The programmer keys in the three digit detector address, such as 005. When the last digit is keyed-in, the following screen will be displayed:

```
  DELETE DETECTOR
DETECTOR#       005
IS DELETED
```

The programmer can continue deleting detectors by pressing the *ESC* key which will return the display to the Delete Detector Screen.

3.6.2.1.3 Edit Detector

The programmer can change a detectors existing or factory default programming by pressing *3* in the Detector Screen. The following screen will be displayed:

```
  EDIT DETECTOR
ENTER POINT ADDRESS
**
```

Edit Detector Screen

A flashing cursor will appear in the position of the first asterisk to the left. The programmer keys in the three digit detector address, such as 017.

When the last digit is keyed-in, if the selected address has not been added to programming, a screen showing information about a device that is installed with a lower address, closest to the selected address, will be displayed.

If no detectors have been installed on the loop, the following will be displayed:

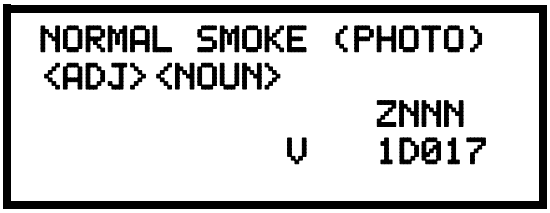
Edit Detector Screen #1

If the selected address has been added to programming, device summary screens will be displayed. These screens allow the programmer to view all device settings at a single glance. Pressing the left or right arrow keys will allow the programmer to rapidly view the devices at the previous or next address (if installed).

If a detector (such as a photoelectric detector) with the selected address is not physically installed on the SLC or has a communication fault but the address is programmed in the system, the following screen will be displayed:

Edit Detector Screen #1

If the selected address has been added to programming and a detector (such as a photoelectric detector) with the selected address is physically installed on the SLC and is communicating with the control panel, the following will be displayed:



Edit Detector Screen #1

To change the programming for the displayed detector, press the keyboard 'down' arrow key to view the Edit Detector screens.

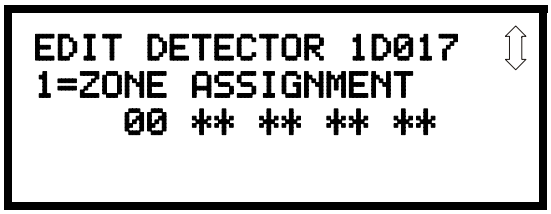
In the preceding example:

- ✓ Normal - indicates that the detector with the selected address is physically installed on the SLC and communicating with the control panel (enabled)
- ✓ <ADJ><NOUN> - represents the adjective and noun, which have been programmed, describing the location of the displayed device
- ✓ ZNNN - represents the first of five possible software zones that the detector is assigned to (NNN = the three digit zone number from 000 - 019)
- ✓ V or * - indicates whether or not alarm verification is enabled (V = alarm verification enabled and * = alarm verification disabled)
- ✓ 1D017 - represents the Loop, Device type and Device address (1 = SLC Loop, D=Detector and 017 = Detector Address 017)

The following examples show the editing of a photoelectric smoke detector with address 017, located on the SLC loop:

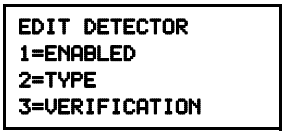
Edit Detector Screen #2

Edit Detector Screen #3



Edit Detector Screen #4

Edit Detector Screen #5



Edit Detector Screen #2

Enable/Disable Detector

To Enable or Disable the detector, press the *1* key while viewing the Edit Detector Screen #2. Each press of the key will toggle the screen between *Enabled Yes* and *Enabled No*. If *Enabled No* is selected, the detector will not be polled by the control panel, preventing the detector from reporting alarms and troubles to the panel. The control panel will display the device type and address which has been disabled and will turn on the Trouble LED.

Type

```
EDIT DETECTOR
1=ENABLED
2=TYPE
3=VERIFICATION
```

Edit Detector Screen #2

To select the type of detector being programmed, press the *2* key while viewing the Edit Detector Screen #2. This will cause the control panel to display the following Detector Type Screen:

```
   DETECTOR TYPE      ⇩
1=SMOKE(PHOTO)
2=USER-DEFINED-1
3=SMOKE (ION)
```

Detector Type Screen #1

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

Detector Type	Action When Activated
Smoke Photo	Fire Alarm
User-Defined-1	same as previous (Smoke Photo)
Smoke Ion	Fire Alarm
User-Defined-2	same as previous (Smoke Ion)
Heat Detect	Fire Alarm
User-Defined-3	same as previous (Heat Detect)
Smoke DuctP	Fire Alarm
User-Defined-4	same as previous (Smoke DuctP)
Photo w/Heat	Fire Alarm
User-Defined-5	same as previous (Photo w/Heat)
Duct Superv	Supervisory, latching
User-Defined-6	same as previous (Duct Superv)
Photo Superv	Supervisory, latching
User-Defined-7	same as previous (Photo Super)
future	not used

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

Note: If a detector is selected to be a SUPERV DUCTP type, it will function like a supervisory point not a fire alarm point. The supervisory LED and supervisory relay will activate, not the fire alarm LED or alarm relay, if the detector senses smoke.

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 Detector 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 144.

See Page

Walktest

```
EDIT DETECTOR
1=WALKTEST
2=PAS
3=PRE-SIGNAL
```

Edit Detector Screen #3

The Walktest feature allows one person to test the system devices without the necessity of manually resetting the control panel after each device activation. To enable a device for the Walktest feature, press *1* while viewing the Edit Detector Screen #3 until the display reads *Walktest Yes*. Each press of the *1* key will cause the display to toggle between *Walktest Yes* and *Walktest No*. Refer to "Walktest" on page 144.

PAS

The PAS (Positive Alarm Sequence) option will program the detector to delay panel activation (including alarm relay and communicator) for a period of 15 seconds plus a programmable time of up to 3 minutes. Zone 17, however, will activate immediately and may be used to connect a signaling device to indicate PAS activation *(do not use a Notification Appliance Circuit for this purpose)*. To enable the PAS feature, press *2* while viewing the Edit Detector Screen #3 until the display reads *PAS Yes*. Each press of the *2* key will cause the display to toggle between *PAS Yes* and *PAS No*. Refer to "Positive Alarm Sequence" on page 142.

See Page

For example, if a detector with address 005 is to be configured for PAS operation:

- ✓ Select *PAS Yes* when editing the detector set to address 005
- ✓ Program the desired zone or zones to be activated by this detector, in this example Z001
- ✓ Program an output, such as a control module that is to be activated by detector 005 by assigning the same zone to it; in this example Z001
- ✓ Program an output, such as a control module, for PAS activation by assigning zone Z17 to it. This control module may be connected to a signaling device used to indicate a PAS condition *(do not use a Notification Appliance Circuit for this purpose)*
- ✓ Enable zones Z001 and Special Purpose Zone PAS 17 and set the PAS delay timer to some value

With the preceding program settings, when the detector with address 005 is activated, zone Z17 will cause its associated control module to activate immediately, sounding the connected PAS signaling device. Following the PAS delay time, zone Z001 will cause its associated control module to activate and the control panel will initiate an alarm condition.

Note that a detector can be enabled for either PAS or Pre-signal but not both.

Pre-signal

```
EDIT DETECTOR
1=WALKTEST
2=PAS
3=PRE-SIGNAL
```

Edit Detector Screen #3

The Pre-signal option programs the detector 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. In addition, Zone 18 will activate. This zone can be programmed to a control module which may be used to activate a sounder or indicator which the installer designates as a Presignal indication *(do not use a Notification Appliance Circuit for this purpose)*. To enable the Pre-signal feature, press *3* while viewing Edit Detector Screen #3 until the display reads *Pre-signal Yes*. Each press of the *3* key will cause the display to toggle between *Pre-signal Yes* and *Pre-signal No*. Refer to "Presignal" on page 141.

See Page

For example, if a detector with address 005 is to be configured for Pre-Signal operation:

- ✓ Select *Pre-signal Yes* when editing the detector set to address 005
- ✓ Program the desired zone or zones to be activated by this detector, in this example Z001
- ✓ Program an output, such as a control module that is to be activated by detector 005 by assigning the same zone to it; in this example Z001
- ✓ Program an output, such as a control module, for Pre-signal activation by assigning zone Z18 to it. This control module may be connected to a signaling device used to indicate a Pre-signal condition *(do not use a Notification Appliance Circuit for this purpose)*
- ✓ Enable zones Z001 and Special Purpose Zone Pre-signal 18 and set the Pre-signal delay timer to some value

With the preceding program settings, when the detector with address 005 is activated, zone Z18 will cause its associated control module to activate immediately, sounding the connected signaling device to indicate the Pre-signal condition. Following the Pre-signal delay time, zone Z001 will cause its associated control module to activate and the control panel will initiate an alarm condition.

Note that a detector can be enabled for either PAS or Pre-signal but not both.

Zone Assignment

```
EDIT DETECTOR
1=ZONE ASSIGNMENT
    00 ** ** ** **
```

Edit Detector Screen #4

A maximum of five zones can be programmed to each addressable detector. Pressing *1* while viewing Edit Detector Screen #4 displays the following screen:

```
  ZONE ASSIGNMENT
Z00 Z** Z** Z** Z**
```

Zone Assignment Screen

Note that Z** represents the Zone Number(s) corresponding to this device. The factory default for an unprogrammed device is Z00 for general alarm zone. A flashing cursor will appear on the first *0* to the left. Enter the two digit number corresponding to the zone that is to be assigned to this device. The cursor moves to the next Z** designation. Continue entering zone assignments or the remaining zones can be left blank or programmed as general alarm zone Z00. When all desired changes have been made, press the Enter key to store the zone assignments. The display will return to the Edit Detector Screen #4. Note that the left and right arrow keys can be used to navigate through the zones and the *CLEAR* key can be used to quickly clear a zone.

See Page

Noun/Adjective

```
EDIT DETECTOR
1=NOUN/ADJECTIVE
2=DESCRIPTION
****************
```

Edit Detector Screen #5

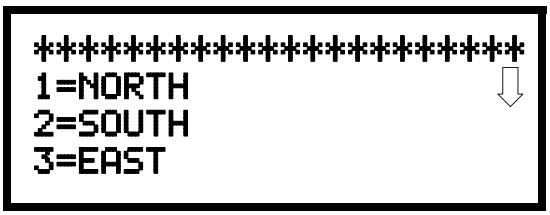
The Noun/Adjective selection allows the programmer to enter specific descriptors about the detector currently being programmed. Pressing *1* while viewing Edit Detector Screen #5 will cause the following screen to be displayed:

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

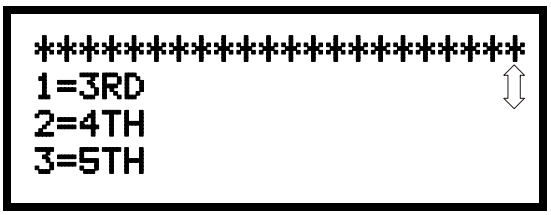
Noun/Adjective Screen

Noun/Adjective Screen

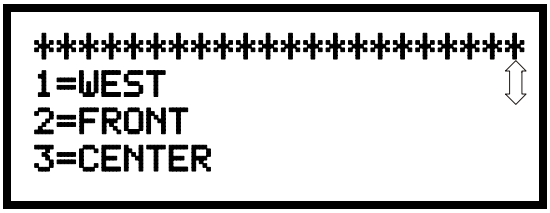
Pressing *1* while viewing the Noun/Adjective Screen will cause the following screen(s) to be displayed. Note that the keyboard *down* arrow key must be pressed to see all the Adjective screens. Press the number corresponding to the adjective that is to be used as a descriptor for the location of the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



Adjective Screen #1

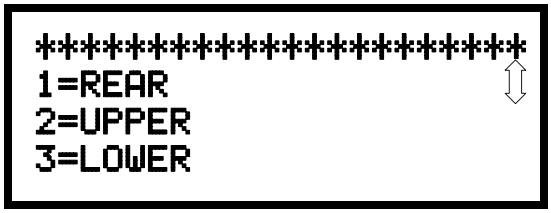


Adjective Screen #5



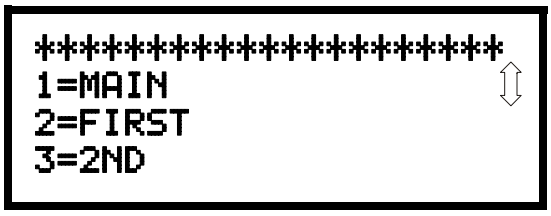
Adjective Screen #2

Adjective Screen #6



Adjective Screen #3

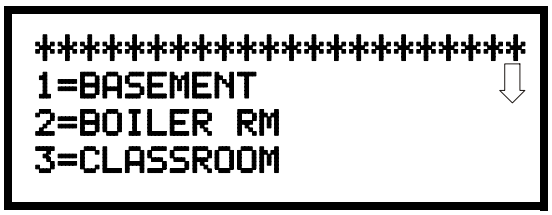
Adjective Screen #7



Adjective Screen #4

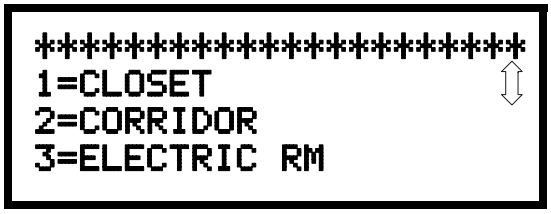
Noun/Adjective Screen

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.

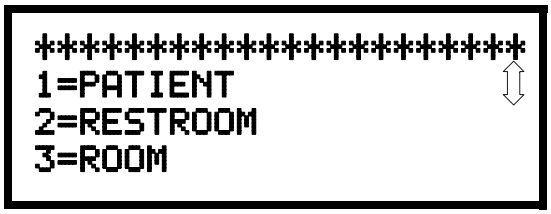


Noun Screen #1

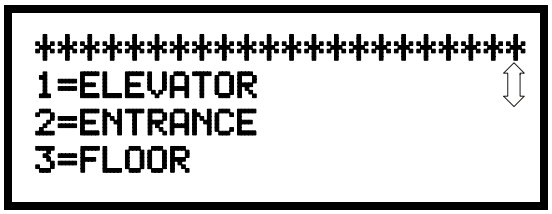
Noun Screen #5



Noun Screen #2



Noun Screen #6



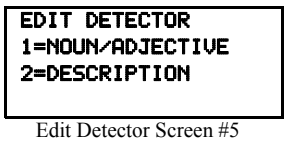
Noun Screen #3

Noun Screen #7

Noun Screen #4

Noun Screen #8

Noun/Adjective Screen



Edit Detector Screen #5

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. These descriptors are selected as described in the previous sections.

Description

The Description selection allows the programmer to enter additional information about the detector currently being programmed. This information will be displayed as part of the device label on the display. Pressing *2* while viewing Edit Detector Screen #5 will cause the following screen to be displayed:

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 right arrow key to advance the zone field
5. Select a zone number from 00 to 19. Z00 (default zone) is the general alarm zone. Z01 through Z19 may be selected to link software zones

3.6.2.2 Module Programming

Pressing *2*, while viewing Point Program Screen #2, will allow the programmer to add, delete or change the programming of an addressable module. The following screen will be displayed by the control panel:

```
POINT PROGRAM
SELECT TYPE
1=DETECTOR
2=MODULE
```

Point Program Screen #2

```
      MODULES
1=ADD
2=DELETE
3=EDIT
```

Modules Screen

3.6.2.2.1 Add Module

Pressing *1* while viewing the Modules Screen will display the following screen which allows the programmer to add a new module address to programming:

```
     ADD MODULE
ENTER MODULE#
***
```

Add Module Screen #1

A flashing cursor will appear in the position of the first asterisk to the left. The programmer keys in the three digit module address, such as *006*.

When the last digit is keyed-in, the following screen will be displayed:

```
     ADD MODULE
1=CONTROL
2=MONITOR
```

Add Module Screen #2

Pressing *1* for Control Module or *2* for Monitor Module will cause the following screen to be displayed:

```
      ADD MODULE
MODULE#          006
IS ADDED
```

Add Module Screen #3

The programmer can continue adding modules by pressing the *ESC* or left arrow key which will return the display to the Add Module Screen #1.

3.6.2.2.2 Delete Module

Pressing *2* in the Modules Screen will display the Delete Module Screen which allows the programmer to delete a specific module:

```
MODULES
1=ADD
2=DELETE
3=EDIT
```

Modules Screen

```
  DELETE MODULE
ENTER MODULE#
***
```

Delete Module Screen

A flashing cursor will appear in the position of the first asterisk to the left. Using the panel keypad, key in the module address such as *006*. When the last digit is keyed in, the following confirmation that the module has been deleted will be displayed:

```
  DELETE MODULE
MODULE#          006
IS DELETED
```

3.6.2.2.3 Edit Module Screen for Monitor Module

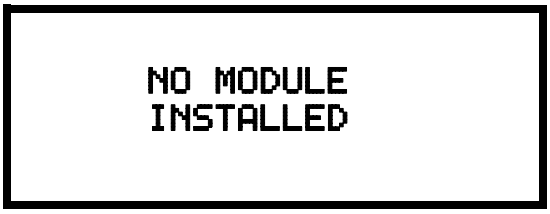
The programmer can change a modules existing or factory default programming by pressing *3* in the Modules Screen. The following screen will be displayed:

```
    EDIT MODULE
ENTER MODULE ADDRESS
***
```

Edit Module Screen

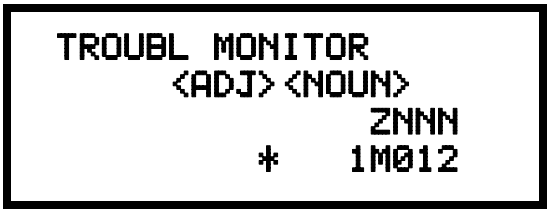
A flashing cursor will appear in the position of the first asterisk to the left. The programmer keys in the three digit module address, such as *012*. When the last digit

is keyed-in, if the selected address has not been added to programming, a screen showing information about a device that is installed with a lower address, closest to the selected address, will be displayed. If no modules are installed on the loop, the following screen will be displayed:

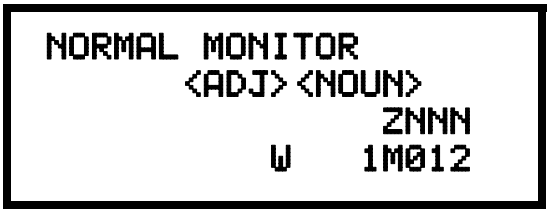


Edit Module Screen

If the selected address has been added to programming but a module (such as a monitor module) with the selected address is not physically installed on the SLC or has a communication fault, the following screen will be displayed:



If the selected address has been added to programming and a module (such as a monitor module) with the selected address is physically installed on the SLC and is communicating with the control panel, the following screen will be displayed:



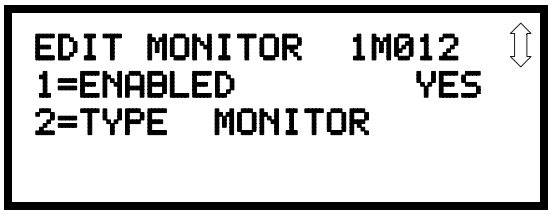
To change the programming for the displayed module, press the keyboard down arrow key to view the following Edit Monitor screens. In the preceding example:

- ✓ Normal - indicates that the module with the selected address is physically installed on the SLC and communicating with the control panel (enabled)
- ✓ <ADJ><NOUN> - represents the adjective and noun, which have been programmed, describing the location of the displayed device
- ✓ ZNNN - represents the first of five possible software zones that the module is assigned to (NNN = the two digit zone number from 000 - 019)
- ✓ 1M012 - represents the Loop, Device type and Device address (1 = SLC Loop 1, M=Module and 012 = Module Address 012)
- ✓ W or * - indicates whether or not the device is programmed for Walktest (W = programmed for walktest, * = not programmed for walktest).

See Page

If the selected address corresponds to a control module, a screen displaying information about the control module with the selected address will be displayed as shown in "Edit Module Screen for Control Modules" on page 72.

If the selected address corresponds to a monitor module, a screen displaying information about the module with the selected address will be displayed as illustrated in the following:



Edit Monitor Screen #2

Edit Monitor Screen #3

Edit Monitor Screen #4

Edit Monitor Screen #5

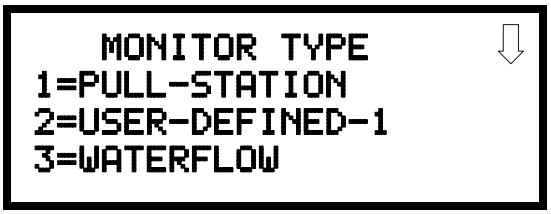
Enable/Disable Module

To Enable or Disable the monitor module, press the *1* key while viewing the Edit Module Screen #2. Each press of the key will toggle the screen between *Enabled Yes* and *Enabled No*. If *Enabled No* is selected, the module will not be polled by the control panel, preventing the module from reporting alarms and troubles to the panel. The control panel will indicate a system trouble condition if any devices are disabled.

Edit Monitor Screen #2

Type Monitor

The FACP response to the activation of a user-defined type is the same as most previous standard types in the list, thus allowing a variety of user-defined types and responses. To select the type of monitor module being programmed, press the *2* key while viewing the Edit Monitor Screen #2. This will cause the control panel to display the first Monitor Type Screen as illustrated below



Monitor Type Screen #1

To view additional Monitor Type Screens, press the down arrow key. While viewing one of the Monitor Type screens, select the type of monitor module being programmed by pressing the corresponding keypad number key. The display will return to the Edit Monitor Screen #2 which will show the new type selection. The following table lists all of the Monitor Types available for programming and their respective functions.

Monitor module type selection will affect the function of the point as follows:

Table 3.1 Monitor Types

Monitor Type	Action When Activated
Pull-Station	Fire Alarm
User-Defined-1	Fire Alarm
Waterflow	Fire Alarm Delayed (uses waterflow delay)
User-Defined-2	Fire Alarm Delayed (uses waterflow delay)
Monitor	Fire Alarm
User-Defined-3	Fire Alarm
Future Use	Future Use
Future Use	Future Use
Smoke-Conventional	Fire Alarm
User-Defined-5	Fire Alarm
Heat-Conventional	Fire Alarm
User-Defined-6	Fire Alarm
Medic-Alert	Supervisory, latching
User-Defined-7	Supervisory, latching
Hazard-Alert	Supervisory, latching
User-Defined-8	Supervisory, latching
Tornado-Alert	Supervisory, latching
User-Defined-9	Supervisory, latching
Future Use	Future Use
Future Use	Future Use
Tamper	Supervisory, nonlatching (tracking)
User-Defined-11	Supervisory, nonlatching (tracking)
Supervisory	Supervisory, latching
User-Defined-12	Supervisory, latching
Supervisory-AR	Supervisory, nonlatching (tracking)
User-Defined-13	Supervisory, nonlatching (tracking)
HVAC OVRRIDE	Switch Supervisory, nonlatching (tracking)
Power-Monitor	AC Fault
User-Defined-14	AC Fault
Trouble-Monitor	Trouble
User-Defined-15	Trouble
Proc-Mon	Piezo
User-Defined-16	Piezo
Procmon-AR	Piezo, nonlatching (tracking)
User-Defined-17	Piezo, nonlatching (tracking)
Future Use	Future Use
Future Use	Future Use
Ack-Switch	Acts like panel Acknowledge Key
Sil-Switch	Acts like panel Alarm Silence Key
Reset-Switch	Acts like panel Reset Key
Drill-Switch	Acts like panel Drill Key
PAS-Bypass	PAS Disable
HVAC RESTART	Switch
Drill-Switch AR	Acts like panel Drill Key, nonlatching (tracking)[3]

Notes:

1. For the SUPERVISORY-AR and PROCMON-AR selections, AR refers to AutoResettable.
2. For HVAC RESTART AND HVAC OVRRIDE descriptions, refer to "HVAC Control" on page 177.
3. Drill Switch Auto-Resettable turns on the NACs and any control module mapped to the Drill Switch zone.

```
EDIT MONITOR
1=PRE-SIGNAL
```

Edit Monitor Screen #3

See Page

```
EDIT MONITOR
1=WALKTEST
2=ZONE ASSIGNMENT
    00 ** ** ** **
```

Edit Monitor Screen #4

Pre-signal

To enable the Pre-signal feature, press *1* while viewing Edit Monitor Screen #3 until the display reads *Pre-signal Yes*. Each press of the *1* key will cause the display to toggle between *Pre-signal Yes* and *Pre-signal No*. Refer to "Presignal" on page 141 for additional information.

Walktest

The Walktest feature allows one person to test the system devices without the necessity of manually resetting the control panel after each device activation. To enable devices, which are connected to a monitor module, for the Walktest feature, press *1* while viewing the Edit Monitor Screen #4 until the display reads *Walktest Yes*. Each press of the *1* key will cause the display to toggle between *Walktest Yes* and *Walktest No*. Refer to "Walktest" on page 144 for additional information.

Zone Assignment

A maximum of five zones can be programmed to each addressable monitor module. Pressing *2* while viewing Edit Monitor Screen #4 displays the following screen:

```
  MON ZONE ASSIGN
Z00 Z** Z** Z** Z**
```

Zone Assignment Screen

Note that Z** represents the Zone Number(s) corresponding to this device. The factory default for an unprogrammed device is Z00 for general alarm zone. A flashing cursor will appear on the first *0* to the left. Enter the two digit number corresponding to the zone that is to be assigned to this device. The cursor moves to the next Z** designation. Continue entering zone assignments or the remaining zones can be left blank or programmed as general alarm zones Z00. When all desired changes have been made, press the Enter key to store the zone assignments. The display will return to the Edit Monitor Screen #4.

```
EDIT MONITOR
1=NOUN/ADJECTIVE
2=DESCRIPTION
****************
```

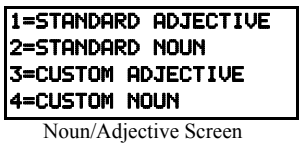
Edit Monitor Screen #5

Noun/Adjective

The Noun/Adjective selection allows the programmer to enter specific descriptors about the monitor module currently being programmed. Pressing *1* while viewing Edit Monitor Screen #5 will cause the following screen to be displayed:

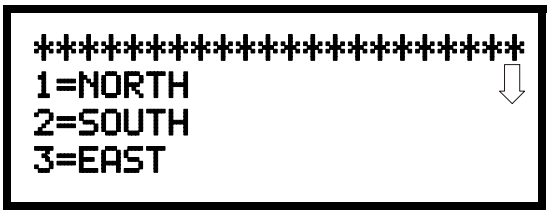
```
1=STANDARD ADJECTIVE
2=STANDARD NOUN
3=CUSTOM ADJECTIVE
4=CUSTOM NOUN
```

Noun/Adjective Screen

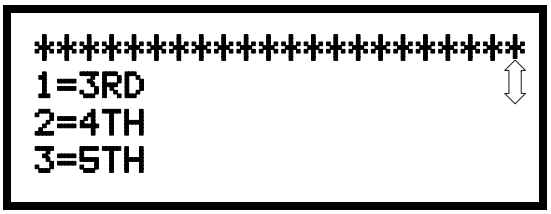


Noun/Adjective Screen

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 monitor module currently being programmed.

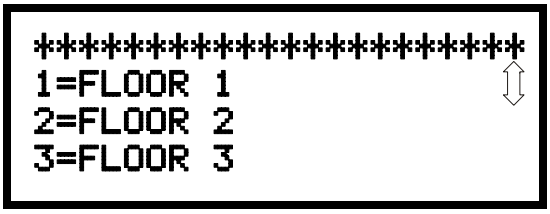


Adjective Screen #1

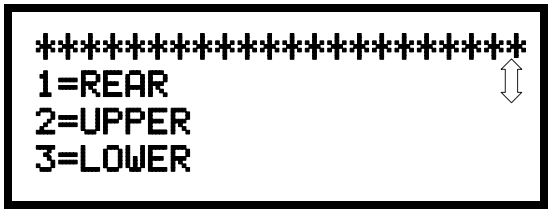


Adjective Screen #5

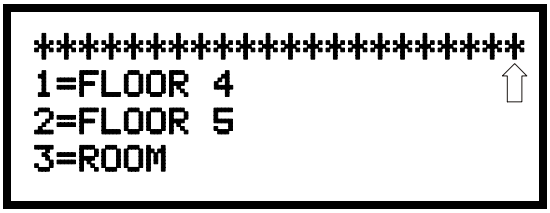
Adjective Screen #2



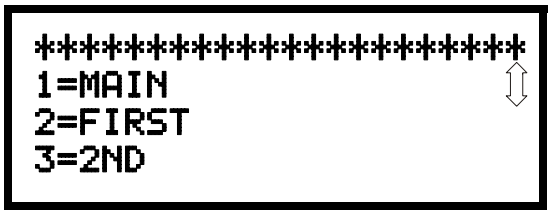
Adjective Screen #6



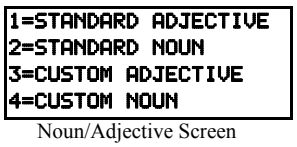
Adjective Screen #3



Adjective Screen #7

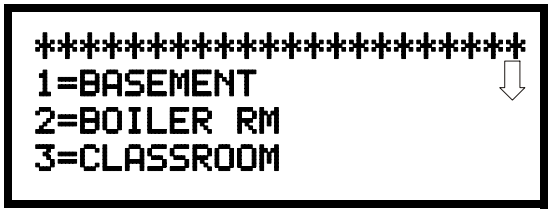


Adjective Screen #4

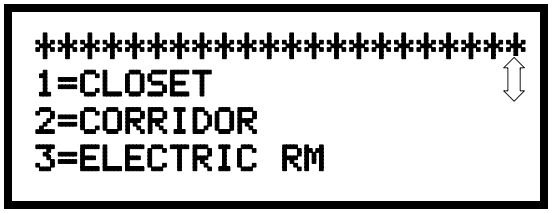


Noun/Adjective Screen

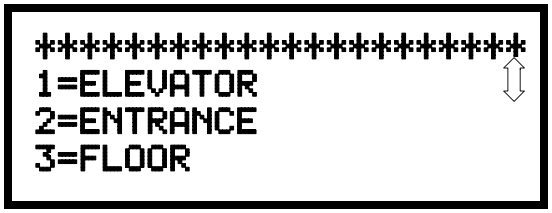
Pressing *2* while viewing the Noun/Adjective Screen will cause the following screen(s) to be displayed. Note that the keyboard *down* arrow key must be pressed to see all the Noun screens. Press the number corresponding to the noun that is to be used as a descriptor for the location of the monitor module currently being programmed.



Noun Screen #1



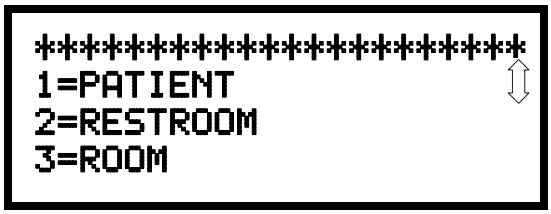
Noun Screen #2



Noun Screen #3

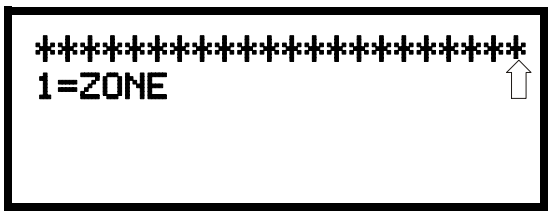
Noun Screen #4

Noun Screen #5



Noun Screen #6

Noun Screen #7



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.

Edit Monitor Screen #5

Description

The Description selection allows the programmer to enter additional information about the monitor module currently being programmed. This information will be displayed as part of the device label on the LCD display. Pressing *2* while viewing Edit Monitor Screen #5 will cause the following screen to be displayed:

Noun/Adjective 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 LCD 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 *2*, *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 Monitor Screen #4, 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 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 Adjective 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

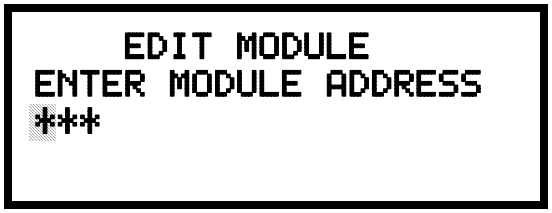
As an example, the user could quickly enter 'FLR_3_ROOM 305' as follows:

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 right arrow key to advance the zone field
5. Select a zone number from 00 to 19. Z00 (default zone) is the general alarm zone. Z01 through Z19 may be selected to link software zones

3.6.2.2.4 Edit Module Screen for Control Modules

The programmer can change a module's existing or factory default programming by pressing *3* in the Modules Screen. The following screen will be displayed:

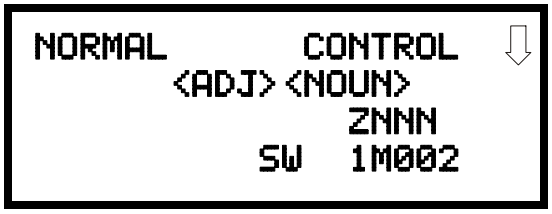
Modules Screen



Edit Module Screen

A flashing cursor will appear in the position of the first asterisk to the left.

The programmer keys in the three digit module address, such as *002*. When the last digit is keyed-in, if the selected address corresponds to a *control* module, a screen displaying information about the control module with the selected address will be displayed as illustrated in the following:

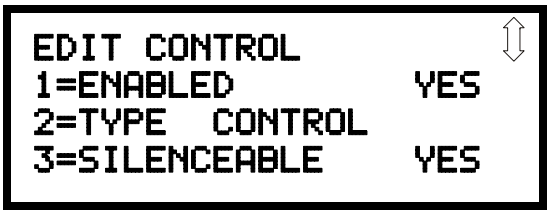


Edit Control Screen #1

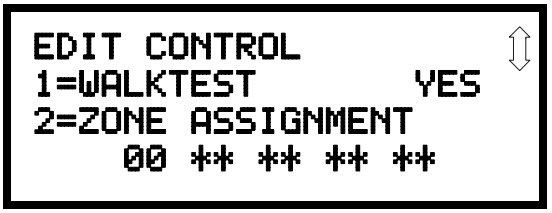
In the preceding example:

- ✓ Normal - indicates that the module with the selected address is physically installed on the SLC and communicating with the control panel (enabled)
- ✓ <ADJ><NOUN> - represents the adjective and noun, which have been programmed, describing the location of the displayed device
- ✓ Control - indicates that the selected module is a control module
- ✓ S or * - represents Silenceable (S) or Nonsilenceable (*)
- ✓ W or * - represents Waterflow Timer Delay (W = Waterflow Timer Delay enabled, * = Waterflow Timer Delay disabled)
- ✓ ZNNN - represents the first of five possible software zones that the module is assigned to (NNN = the three digit zone number from 000 - 019)
- ✓ 1M002 - represents the Loop, Device type and Device address (1 = SLC Loop, M=Module and 002 = Module Address 02)

To change the programming for the displayed module, press the keyboard *down* arrow key to view the following Edit Control screens:

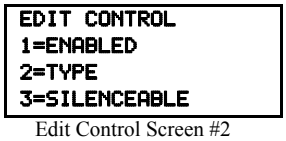


Edit Control Screen #2



Edit Control Screen #3

Edit Control Screen #4



Edit Control Screen #2

Enable/Disable Module

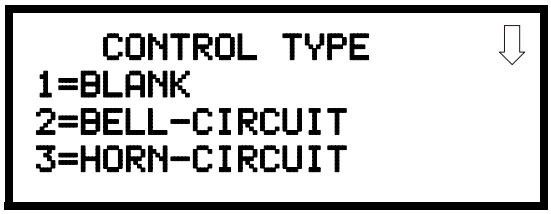
To Enable or Disable the control module, press the *1* key while viewing the Edit Control Screen #2. Each press of the key will toggle the screen between *Enabled Yes* and *Enabled No*. If *Enabled No* is selected, the module will not be polled by the control panel, preventing the module from activating its output devices. The control panel will indicate a system trouble condition and the Disable LED will turn on if any devices are disabled.

```
EDIT CONTROL
1=ENABLED
2=TYPE
3=SILENCEABLE
```

Edit Control Screen #2

Type

To select the type of control module being programmed, press the *2* key while viewing the Edit Control Screen #2. This will cause the control panel to display the following Control Type Screens:



Control Type Screen #1

While viewing one of the Control Type screens, select the type of control module being programmed by pressing the corresponding keypad number key. The display will return to the Edit Control Screen #2 and indicate the new type selection.

Notes:

1. *A control module set to the Resettable Power type will follow the main circuit board 24 VDC resettable power unless the control module is disabled.*

The following table contains control module type codes and their functions which are displayed in the Control Type screens:

Control Type	Special Function
Blank	None
Bell Circuit	None
Horn Circuit	None
Sounders	None
Relay	Ignore Open Circuit
Strobe Circuit	None
Control	None
Resettable Power	Relay Type - Ignore Open Circuit
HVAC SHUTDN	Relay Type - Ignore Open Circuit

Note: For HVAC SHUTDN description, refer to "Control Module Operation" on page 177.

```
EDIT CONTROL
1=ENABLED
2=TYPE
3=SILENCEABLE
```
Edit Control Screen #2

Silenceable

The Silenceable selection allows the programmer to select whether output devices connected to the control module can be silenced, either by pressing the Alarm Silence key or by enabling Autosilence. Pressing the *3* key while viewing Edit Control Screen #2 will enable the Silenceable feature causing the display to read *Silenceable Yes*. Repeated presses of the *3* key will cause the display to toggle between *Silenceable Yes* and *Silenceable No*.

Note that nonsilenceable outputs will not be activated for Fire Drill.

```
EDIT CONTROL
1=WALKTEST
2=ZONE ASSIGNMENT
    00 ** ** ** **
```
Edit Control Screen #3

Walktest

The Walktest feature allows one person to test the system devices without the necessity of manually resetting the control panel after each device activation. To enable devices, which are connected to a control module, for the Walktest feature, press *1* while viewing the Edit Control Screen #3 until the display reads *Walktest Yes*. Each press of the *1* key will cause the display to toggle between *Walktest Yes* and *Walktest No*. Refer to "Walktest" on page 144 for additional information.

Zone Assignment

A maximum of five zones can be programmed to each addressable control module. Pressing *2* while viewing Edit Control Screen #3 displays the following screen:

```
  ZONE ASSIGNMENT
Z00 Z** Z** Z** Z**
```
Zone Assignment Screen

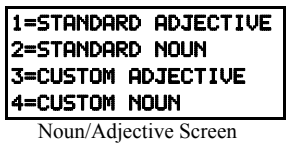
Note that Z** represents the Zone Number(s) corresponding to this device. The factory default for an unprogrammed device is Z00 for general alarm zone. A flashing cursor will appear on the first *0* to the left. Enter the two digit number corresponding to the zone that is to be assigned to this device. The cursor moves to the next Z** designation. Continue entering zone assignments or the remaining zones can be left blank or programmed as general alarm zones Z00. When all desired changes have been made, press the Enter key to store the zone assignments. The display will return to the Edit Control Screen #3.

```
EDIT CONTROL
1=NOUN/ADJECTIVE
2=DESCRIPTION
```
Edit Control Screen #4

Noun/Adjective

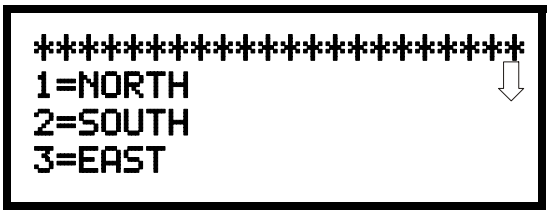
The Noun/Adjective selection allows the programmer to enter specific descriptors about the control module currently being programmed. Pressing *1* while viewing Edit Control Screen #4 will cause the following screen to be displayed:

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

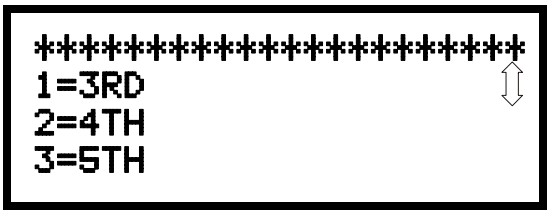


Noun/Adjective Screen

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 control module currently being programmed.

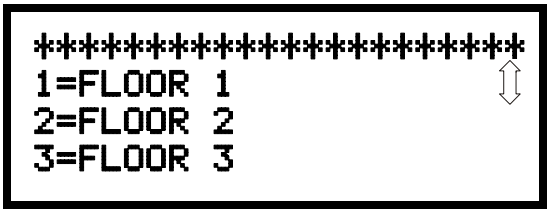


Adjective Screen #1

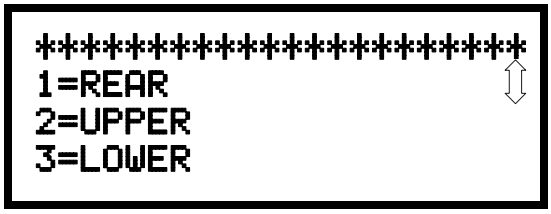


Adjective Screen #5

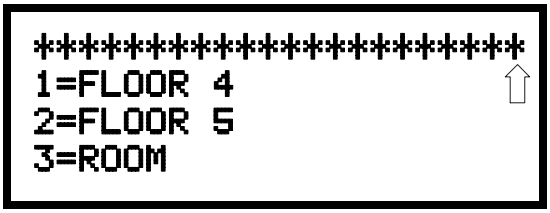
Adjective Screen #2



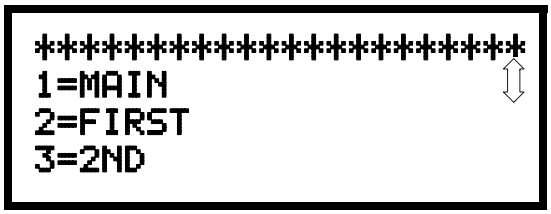
Adjective Screen #6



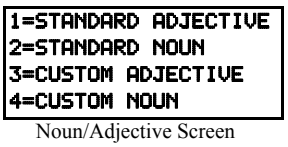
Adjective Screen #3



Adjective Screen #7

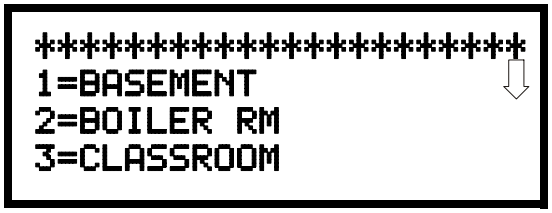


Adjective Screen #4

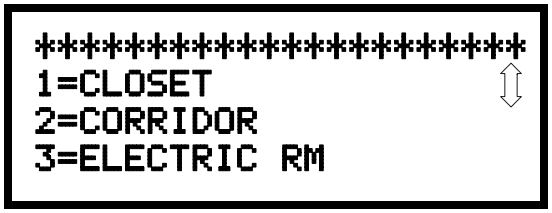


Noun/Adjective Screen

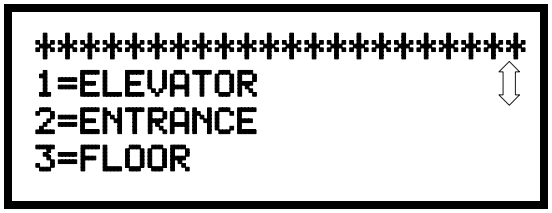
Pressing *2* while viewing the Noun/Adjective Screen will cause the following screen(s) to be displayed. Note that the keyboard *down* arrow key must be pressed to see all the Noun screens. Press the number corresponding to the noun that is to be used as a descriptor for the location of the control module currently being programmed.



Noun Screen #1



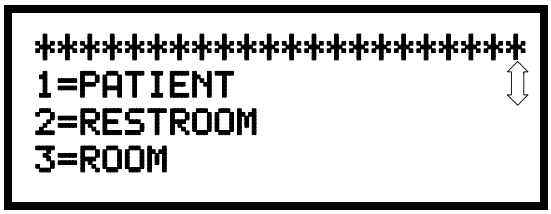
Noun Screen #2



Noun Screen #3

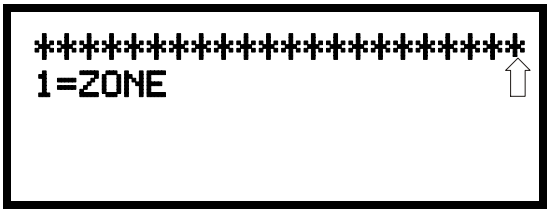
Noun Screen #4

Noun Screen #5



Noun Screen #6

Noun Screen #7



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.

Edit Control Screen #4

Description

The Description selection allows the programmer to enter additional information about the control module currently being programmed. This information will be displayed as part of the device label on the display. Pressing *2* while viewing Edit Control Screen #4 will cause the following screen to be displayed:

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 Control Screen #4, 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 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 Adjective 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 right arrow key to advance the zone field
5. Select a zone number from 00 to 19. Z00 (default zone) is the general alarm zone. Z01 through Z19 may be selected to link software zones

```
    PROGRAMMING
1=AUTOPROGRAM
2=POINT PROGRAM
3=ZONE SETUP
```

Programming Screen #2

3.6.3 Zone Setup

Pressing *3* while viewing Programming Screen #2 will access the Zone Setup screens as illustrated below:

```
    ZONE SETUP
1=ENABLE
2=DISABLE
3=ZONE 17 18 19
```

Zone Setup Screen #1

```
    ZONE SETUP
1=ZONES INSTALLED
2=ZONES ENABLED
3=ZONES DISABLED
```

Zone Setup Screen #2

```
    ZONE SETUP
1=ZONE TYPES
2=ZONES AVAILABLE
3=FUTURE USE
```

Zone Setup Screen #3

```
    ZONE SETUP
1=ENABLE
2=DISABLE
3=ZONE 17 18 19
```

Zone Setup Screen #1

3.6.3.1 Enable

Pressing *1* for Enable, while viewing Zone Setup Screen #1, will display the following screen:

```
  ZONE TO ENABLE
Z
```

Enable Screen

This screens allows the programmer to enable zones, one at a time. A flashing cursor appears next to the *Z*, prompting the programmer to enter a two digit zone number (01 - 19). When the second digit is entered, the zone will be enabled and the cursor returns to the original position next to the Z. Another zone can then be enabled.

```
   ZONE SETUP
1=ENABLE
2=DISABLE
3=ZONE 17 18 19
```
Zone Setup Screen #1

3.6.3.2 Disable

Pressing *2* for Disable, while viewing Zone Setup Screen #1, displays the following:

```
  ZONE TO DISABLE
Z
```
Disable Screen

This screen allows the programmer to disable zones, one at a time. A flashing cursor appears next to the *Z*, prompting the programmer to enter a two digit zone number (01 - 19). When the second digit is entered, the zone will be disabled and the cursor will return to the original position next to the Z. Another zone can then be disabled.

3.6.3.3 Zone 17, 18 and 19

Pressing *3* for Zone 17, 18 and 19, while viewing Zone Setup Screen #1, will display the following screen:

```
 SPEC PURPOSE ZONE
1=PAS 17          OFF
2=PRE-SIGNAL 18   OFF
3=TWO STAGE 19    OFF
```
Zone 17, 18 and 19 Screen

Zones 17, 18 and 19 can be programmed for normal zone operation or for special purpose applications. In the above illustration, the three zones are shown Off, which means they can be programmed to function in the same manner as all other zones, by assigning them to input and output devices in the Programming Zone Assignment Screen.

Pressing *1* will cause the display to change to *PAS 17 On*. Each press of the *1* key will cause the display to toggle between *PAS 17 On* and *PAS 17 Off*. When Zone 17 is programmed On, a PAS (Positive Alarm Sequence) activation of any smoke detector will cause Zone 17 to activate. By assigning Zone 17 to a control module in the Programming Zone Assignment Screen, an output device connected to the control module can be used to indicate a PAS condition in the control panel. *Do not assign Zone 17 to a Notification Appliance Circuit when using this zone to indicate a PAS condition. Attempting to do so will generate an error message and will be prevented by software checks.*

Pressing *2* will cause the display to change to *Pre-signal 18 On*. Each press of the *2* key will cause the display to toggle between *Pre-signal 18 On* and *Pre-signal 18 Off*. When Zone 18 is programmed On, a Pre-signal activation of any device will cause Zone 18 to activate. By assigning Zone 18 to a control module in the Programming Zone Assignment Screen, an output device connected to the control module can be used to indicate a Pre-signal condition in the control panel. *Do not assign Zone 18 to a Notification Appliance Circuit when using this zone to indicate a Pre-signal condition. Attempting to do so will generate an error message and will be prevented by software checks.*

Pressing *3* will cause the display to change to *Two Stage 19 On*. Each press of the *3* key will cause the display to toggle between *Two Stage 19 On* and *Two Stage 19 Off*. Refer to "Two Stage Operation" on page 94 for a description of this feature.

```
ZONE SETUP
1=ZONES INSTALLED
2=ZONES ENABLED
3=ZONES DISABLED
```
Zone Setup Screen #2

3.6.3.4 Zones Installed

Pressing *1* for Zones Installed, while viewing Zone Setup Screen #2, will display a screen similar to the following:

```
  ZONES INSTALLED
00 01 02 03 04 05
```
Zones Installed Screen

This display will show all of the zones that have been programmed into the control panel.

3.6.3.5 Zones Enabled

Pressing *2* for Zones Enabled, while viewing Zone Setup Screen #2, will display a screen similar to the following:

```
  ZONES ENABLED
00 01 02 04 05 06 07
08 09 10 11 12 13 14
15 16 17 18 19
```
Zones Enabled Screen

This display will show all of the zones that are enabled in the control panel.

3.6.3.6 Zones Disabled

Pressing *3* for Zones Disabled, while viewing Zone Setup Screen #2, will display a screen similar to the following:

```
  ZONES DISABLED
03
```
Zones Disabled Screen

This display will show all of the zones that are disabled in the control panel.

```
ZONE SETUP
1=ZONE TYPES
2=ZONES AVAILABLE
3=FUTURE
```
Zone Setup Screen #3

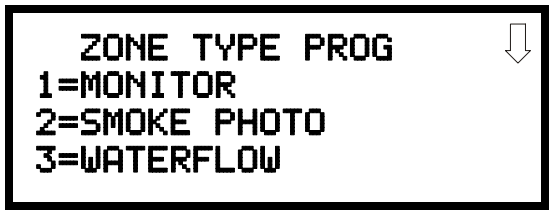
3.6.3.7 Zone Type

Zone Types must be programmed only if a DACT, programmed for zone reporting, is installed on the control panel. Pressing *1* for Zone Types, while viewing Zone Setup Screen #3, will display a screen similar to the following:

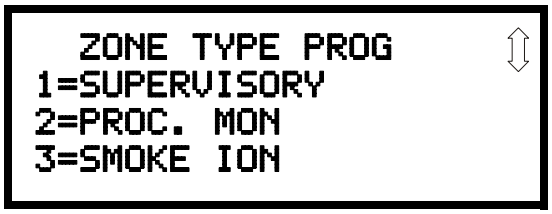
```
  ZONE TYPE PROG      ⇩
1=Z00  MONITOR
2=Z01  MONITOR
3=Z02  MONITOR
```
Zones Installed Screen

The Zones Installed screen will show the system zones (default and user programmed) and their associated types. Note that an up and/or down arrow will appear in the upper right corner of the display, indicating that additional screens of zone information exists. Press the up or down arrow keys to view zones Z00 through Z19.

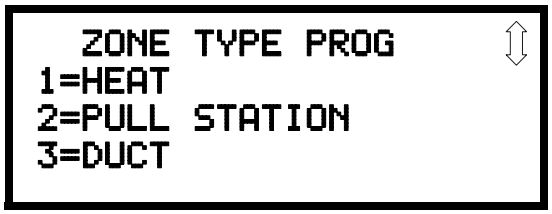
Zone types can be changed by pressing the keypad number key corresponding to the zone in each Zones Installed Screen. Available zone types will be displayed in the resultant screens. For example, to change the zone type for zone Z02 in the screen illustrated above, press *3*. The following screens will be displayed:



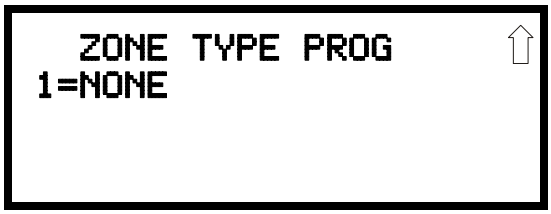
Zone Type Program Screen #1



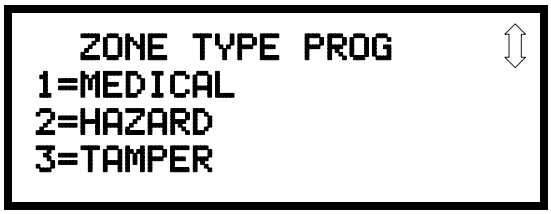
Zone Type Program Screen #4



Zone Type Program Screen #2



Zone Type Program Screen #5



Zone Type Program Screen #3

To change the zone type for Z02 to Pull Station, scroll the display until Zone Type Program Screen #2 is displayed. Press *2* to program zone Z02 as a Pull Station zone. The display will return to the Zones Installed Screen showing zone Z02 and the Pull Station program type. Repeat the procedure for each zone to be changed.

IMPORTANT! *In Zone Type Program Screen #1, selecting WATERFLOW will assign a Waterflow silenceable zone type to the selected zone. Any signaling devices programmed to the same zone can be silenced by pressing the Alarm Silence key or by using the auto-silence feature.*

To program a waterflow circuit as nonsilenceable, refer to *"System Setup" on page 84.*

Note: Zone Types are only relevant for Central Station reporting. Changing a zone type will only change how it is reported to the Central Station.

```
    ZONE SETUP
1=ZONE TYPES
2=ZONES AVAILABLE
3=FUTURE
```
Zone Setup Screen #3

3.6.3.8 Zones Available

Pressing 2 while viewing Zone Setup Screen #3 will display the following screen:

```
   ZONES AVAILABLE
01 02 03 04 05 06 07
08 09 10 11 12 13 14
15 16 17 18 19
```

The display will show all of the zones that are still available for programming.

```
    PROGRAMMING
1=LOOP SETUP
2=SYSTEM SETUP
3=VERIFY LOOP
```
Programming Screen #2

3.6.4 Loop Setup

Loop Setup allows the programmer to configure the SLC Loop for NFPA Style 4, 6 or 7 wiring and to select the loop protocol. Pressing *1* while viewing Programming Screen #2 will cause the following screen to be displayed:

```
      LOOP SETUP
1=STYLE            4
2=PROTOCOL      CLIP
```
Loop Setup Screen

3.6.4.1 Style

To program the SLC Style for the loop, press *1* for Style, while viewing Loop Setup Screen. In the preceding example, the control panel is programmed for Style 4 SLC wiring as indicated by the *4* to the right of *Style* in the display. To change the style, press *1* to toggle the display to read *Style 6*. Each press of the *1* key will cause the display to toggle between *Style 4* and *Style 6*. *Note that, when programming the Loop Style, the programmer can only select between Style 4 and Style 6. To program a system for Style 7 wiring, the programmer must select the Loop Setup for Style 6. Style 7 wiring is the same as Style 6 with the added requirement that each device on the loop must have a pair of isolator modules, one on each side.*

Note on SLC Troubles: If the FACP reports an open fault on an SLC Loop programmed for Style 6, the trouble condition will latch at the FACP. When the SLC Loop has been repaired, the *Reset* button must be pressed at the FACP (at least 2 minutes after the trouble has been repaired) to clear the SLC trouble.

3.6.4.2 Loop Protocol

Loop Protocol refers to the SLC loop mode of operation. The only mode available is CLIP (Classic Loop Interface Protocol) which is used for the older legacy addressable devices such as the M300 Series modules and detectors as well as the newer devices. Pressing *2* while viewing the Loop Setup Screen will have no effect on programming.

Device Addressing

It is important to note that the MS-9050UD addressable device capacity is 50 detectors and control/monitor modules. Addressable devices must not be set to addresses higher than 50. Programming will not allow addresses higher than 50.

Important: Detectors and Modules cannot have the same address. For example, if a detector is installed at address 04, you cannot also have a module at address 04.

Note that It is permissible to mix old and new devices on the same loop.

3.6.5 System Setup

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

- *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. *Trouble Resound is independent of Trouble Reminder. If a silenced trouble condition is not cleared by midnight, the panel will reactivate the trouble sounder.*
- *Banner:* This option allows the user to change the top two lines of the LCD display from the factory default readout of *HONEYWELL LIFE SAFETY* 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
- *Timers:* This option allows the programmer to set the PAS (Positive Alarm Sequence) time delay, Pre-Signal time delay and Waterflow time delay.
- *NACs:* This feature allows the programmer to configure the control panel Notification Appliance Circuits for a variety of options, such as circuit type, silenceable/nonsilenceable, autosilence, coding, silence inhibit, zone assignment and enable/disable.
- *Relays:* This option allows programming of two onboard relays for activation by various control panel events, such as alarm, trouble, supervisory, etc.
- *Canadian Option:* This option allows the automatic programming of ionization smoke detector sensitivity thresholds to Canadian specifications.
- *Waterflow Silenceable:* This option provides the ability to silence any output circuit activated by a monitor module programmed as a waterflow type.

```
  PROGRAMMING
1=LOOP SETUP
2=SYSTEM SETUP
3=VERIFY LOOP
```

Programming Screen #2

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

```
    SYSTEM SETUP      ⇩
1=TROUBLE REM    OFF
2=BANNER
3=TIME-DATE
```

System Setup Screen #1

```
    SYSTEM SETUP      ⇕
1=TIMERS
2=NAC
3=RELAYS
```

System Setup Screen #2

```
    SYSTEM SETUP      ⇧
1=CANADIAN OPT.   OFF
2=WATERFLOW SIL.  NO
```

System Setup Screen #3

3.6.5.1 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 84, for a detailed description of this feature. Pressing *1* while viewing System Setup Screen #1 will cause the display to toggle to *Trouble Rem On*, which enables this feature. Each press of the *1* key will cause the display to toggle between *Trouble Rem On* and *Trouble Rem Off*.

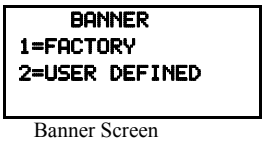
See Page

3.6.5.2 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:

```
      BANNER
1=FACTORY
2=USER DEFINED
```

Banner Screen



Banner Screen

Pressing *1* while viewing the Banner Screen will select the factory default banner setting and display the following screen:

```
   FACTORY BANNER
HONEYWELL LIFE SAFETY
```

Factory Banner Screen

Pressing the Enter key will store this selection in nonvolatile memory and return the display to the Banner Screen.

Pressing *2* while viewing the Banner Screen will cause the following screens to be displayed:

```
USER DEFINED BANNER

PRESS ENTER IF OK
```

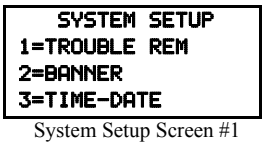
User Defined Banner Screen #1

```
USER BANNER - LINE 2
PRESS ENTER IF OK
**********
```

User Defined Banner Screen #2

These screens allow the programmer to enter a two line custom banner. A flashing cursor will appear in the bottom left corner of each display. A maximum of 20 characters (including spaces) can be entered into each screen for a total of two lines with 40 characters. After entering up to 20 characters in the first screen, press *Enter* to view the second screen. Enter up to 20 characters in the second screen in the same manner or just press *Enter* if a second banner line is not being entered. To quickly clear the current banner, press the *CLR* key.

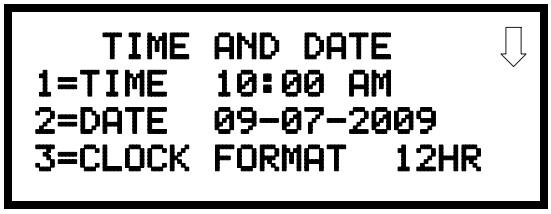
To enter alphanumeric characters from the keypad, repeatedly press the appropriate key until the desired character is displayed in the first position. For example, to enter the letter *B*, press the *2 (ABC)* key three times to toggle through the characters *1*, *A* and *B*. Press the right arrow key 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 Banner Screen.



System Setup Screen #1

3.6.5.3 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-Date Screen #1

Time-Date Screen #2

3.6.5.3.1 Time

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

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 begin again.

3.6.5.3.2 Date

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

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 (01 for 2001, 02 for 2002, 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 begin again.

3.6.5.3.3 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).*

Time & Date Screen #2

3.6.5.3.4 Daylight Savings Time

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

Daylight Savings Screen #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=TIMERS
2=NAC
3=RELAYS
```
System Setup Screen #2

3.6.5.4 Timers

Timer delays for PAS, Pre-signal and waterflow activation can be programmed by pressing *1* while viewing System Setup Screen #2. The following screen will be displayed:

```
      TIMERS
1=PAS DELAY      000
2=PRE SIGNAL     000
3=WATERFLOW      000
```
Timer Screen #1

```
      TIMERS
1=AC LOSS DELAY  000
```
Timer Screen #2

```
  TIMERS
1=PAS DELAY   000
2=PRE SIGNAL  000
3=WATERFLOW   000
```
Timer Screen #1

3.6.5.4.1 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 0-180 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.

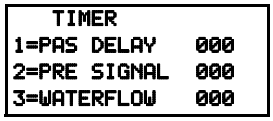
3.6.5.4.2 Pre-signal Delay

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:

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 detectors can be programmed for either PAS or Pre-signal operation, not both. Refer to "Edit Detector" on page 53 for programming details.



Timer Screen #1

3.6.5.4.3 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 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
```
Timer Screen #2

3.6.5.4.4 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
1=NO DELAY
2=ENTER DELAY
```
AC Loss Delay Screen #1

Pressing *1* while viewing AC Loss Delay Screen #1 will program the FACP to transmit an AC Loss report immediately to the central station.

Pressing *2* while viewing AC Loss Delay Screen #1 will display the following:

```
 AC LOSS DELAY

RANGE 00-23
```
AC Loss Delay Screen #2

A flashing cursor will appear in the lower left corner of the display. Type the two digit AC loss reporting delay in hours (00 to 23 hour delay). When the second digit is entered, the display will return to AC Loss Delay Screen #1.

Important: For Central Station applications, AC Loss Reporting Delay must be set to a delay value ranging from 02 to 12 hours. For Remote Station applications, AC Loss Reporting Delay must be set to a delay value ranging from 15 to 23 hours.

Note: AC Loss Delay also applies to any programmable output relay programmed for 'AC Loss.'

```
   SYSTEM SETUP
1=TIMERS
2=NAC
3=RELAYS
```
System Setup Screen #2

3.6.5.5 NAC (Notification Appliance Circuit)

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

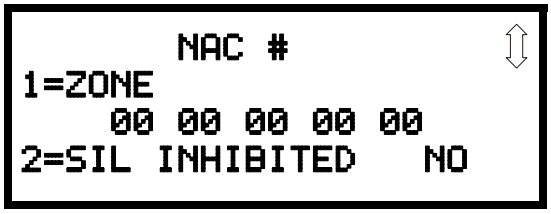
```
      NACS
1=NAC 1
2=NAC 2
```
NAC Selection Screen

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

The following screens will be displayed for each selection:

NAC Screen #1

NAC Screen #2



NAC Screen #3

NAC Screen #4

3.6.5.5.1 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*.

```
   NAC #
1=ENABLED
2=TYPE
3=SILENCEABLE
```

NAC Screen #1

3.6.5.5.2 Type

The main circuit board NAC type can be programmed by pressing *2* while viewing NAC Screen #1. The following screen will be displayed. Press the down arrow key to view additional screens:

```
      NAC TYPE        ⇩
1=BELL
2=HORN
3=STROBE
```

Type Screen #1

Select the NAC device type by pressing the number corresponding to the type in the appropriate screen. When the selection is made, the display will return to NAC Screen #1.

The following table contains NAC type codes and their functions:

NAC Type Code	Special Function
Bell	None
Horn	None
Strobe	None
Synced Strobe	Synchronized to manufacturer
Strobe Sil Sync	Same as Synced Strobe but Silence turns off audible & visual devices
Siren Circuit	None
Door Holder	NAC normally active[1]
Reset Power	NAC normally active[1]
Non-Reset Power	NAC normally active[1]

Table Footnote

1. **Important:** User should be aware that selecting Door Holder, Reset Power or Non-Reset Power types for an NAC will immediately activate (turn on) the NAC circuit and any devices connected to it.

3.6.5.5.3 Silenceable

Pressing *3* while viewing NAC Screen #1 will cause the display to change to *Silenceable No*. This will prevent the selected main circuit board NAC from being silenced by pressing the Alarm Silence key or by the Auto Silence feature. Each press of the *3* key will cause the display to toggle between *Silenceable Yes* and *Silenceable No*.

***Important**: When a Notification Appliance Circuit with a mix of audible and visual devices is programmed for silenceable and the synchronization feature is selected, 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.*

```
  NAC #
1=AUTO SILENCE
2=CODING
          TEMPORAL
```
NAC Screen #2

3.6.5.5.4 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 *1* while viewing NAC Screen #2. The following screens will be displayed:

```
  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 #2.
Note: All silenceable control modules will be controlled by the Autosilence timer for NAC 1.

3.6.5.5.5 Coding (only for NACs not programmed as Sync Strobe Type)

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 #2 will cause the following displays to appear:

```
     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

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 94. for a description of this feature

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 #2, which will display the new coding choice.

3.6.5.5.5.1 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 which are programmed to General Alarm Zone 0 will activate with a 1st stage output upon activation of any alarm point
2. If the activated alarm point is directly mapped to a zone which is programmed to an on-board NAC, that NAC will go directly to 2nd stage coding output. All other NACs not directly mapped to the activated alarm point’s zone but assigned to Zone 0 will activate with a 1st stage output
3. If, after the programmed time of 3 or 5 minutes, the Acknowledge switch has not been pressed, all NACs presently in 1st stage activation will go to 2nd stage activation
4. 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
5. If another alarm point is activated and the countdown timer is counting, the alarm point will have no effect on the NACs unless the alarm point’s zones are directly mapped to one of the NACs, in which case it will follow the procedure outlined in step 2
6. 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 2. NACs already in 2nd stage activation will not be affected
7. Any control modules assigned to special Zone 19 will be activated either by direct mapping of an input device programmed to Zone 19 or if an NAC enters 2nd stage operation
8. Control modules that are programmed to the same zone as the activated input device will not be delayed for activation

```
   NAC #
1=ZONE
    00 00 00 00 00
2=SIL INHIBITED NO
```
NAC Screen #3

3.6.5.5.6 Zone

A maximum of five zones can be programmed to each main circuit board NAC. Pressing *1* while viewing NAC Screen #3 displays the following screen:

```
  ZONE ASSIGNMENT
Z00 Z** Z** Z** Z**
```
Zone Screen

Note that Z** represents the Zone Number(s) corresponding to the selected NAC. The factory default for an unprogrammed device is Z00 for general alarm zone. A flashing cursor will appear on the first *0* to the left. Enter the two digit number corresponding to the zone that is to be assigned to this NAC. The cursor moves to the next Z** designation. Continue entering zone assignments or the remaining zones can be left blank or programmed as general alarm zone Z00. When all desired changes have been made, press the Enter key to store the zone assignments. The display will return to the NAC Screen #3 which will show the zone assignments just entered.

Note: Zones do not apply to NACs programmed as Door Holder, Reset Power or Non-Reset Power.

3.6.5.5.7 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 *2* while viewing NAC Screen #3 will cause the display to change from the factory default of *Silence Inhibit No* to *Silence Inhibit Yes*. Each press of the *2* key will cause the display to toggle between the two options.

```
   NAC #
1=SYNC TYPE
```
NAC Screen #4

3.6.5.5.8 Sync Type

If synchronized strobes were selected as the Type of device installed, the type of synchronization must be selected in this option. Pressing *1* while viewing NAC Screen #4 will cause the following screen to be displayed:

```
     NAC SYNC TYPE
1=SYSTEM SENSOR
2=WHEELOCK
3=GENTEX
```

Pressing *1* while viewing this screen will select System Sensor synchronization, *2* will select Wheelock and *3* will select Gentex.

3.6.5.5.8.1 Maximum Number of Strobes for Synchronization

The total current draw for each Notification Appliance Circuit cannot exceed 2.5 amps. Refer to the manufacturer's documentation supplied with the Strobes to determine the maximum current draw for each strobe and ensure that the circuit maximum is not exceeded.

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

- ✓ System Sensor: 40 Strobes
- ✓ Wheelock: 25 Strobes
- ✓ Gentex: 23 Strobes

```
   SYSTEM SETUP
1=TIMERS
2=NAC
3=RELAYS
```
System Setup Screen #2

3.6.5.6 Relays

Pressing *3* while viewing System Setup Screen #2 will allow the programmer to configure two of the three main circuit board Form-C relays. The following screen will be displayed:

```
     RELAYS
1=RELAY 1
2=RELAY 2
3=RELAY 3
```
Relays Selection Screen

To program Relay 1 or Relay 3, press the number corresponding to the selected relay. Note that Relay 2 is fixed as a Trouble relay. Selecting Relay 2 will have no effect on its programming. The following screen will appear for each relay to be programmed:

```
     RELAY #
1=TYPE
               ALARM
```
Relay Type Screen

Pressing *1* for Type while viewing the Relay Screen will cause the following screens to be displayed:

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

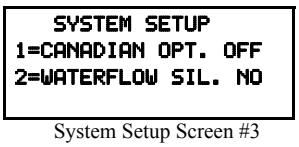
```
     RELAY                ⇕
1=PROCESS MON AR
2=AC LOSS
3=HAZARD
```
Relay Screen #3

```
     RELAY                ⇕
1=TROUBLE
2=COMM FAIL
3=PROCESS MON
```
Relay Screen #2

```
     RELAY                ⇧
1=MEDICAL
```
Relay Screen #4

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.

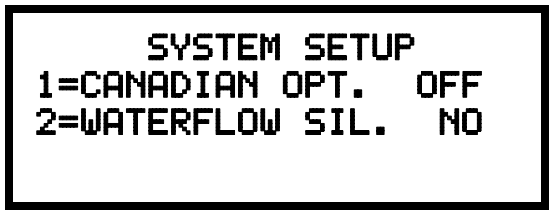
Note: *AR* in *SUPERVISORY AR* and *PROCESS MON AR* indicates AutoResettable which means that the relay will not latch when either of these conditions occur. If the corresponding condition is cleared, the relay will return to its normal state without the necessity of resetting the control panel.



System Setup Screen #3

3.6.5.7 Canadian Option

Pressing *1* while viewing System Setup Screen #3 will allow the programmer to configure the system to automatically monitor addressable ionization smoke detector sensitivity using Canadian specifications. The display will change to *Canadian Opt. On*. Each press of the *1* key will cause the display to toggle between *Canadian Opt. On* and *Canadian Opt. Off*.:



Relays Selection Screen

3.6.5.8 Waterflow Silenceable

Pressing *2* while viewing System Setup Screen #3 will allow the programmer to configure the system for silenceable on nonsilenceable waterflow circuits. Each press of the *2* key will toggle the display between *Waterflow Sil. No* and *Waterflow Sil. Yes*. When *Waterflow Sil. No* is selected, all output devices associated with a waterflow type input device, will be nonsilenceable. When *Waterflow Sil. Yes* is selected, all output devices associated with a waterflow type input device, will be silenceable.

3.6.6 Verify Loop

Programming Screen #2

Pressing *3* while viewing Programming Screen #2, will select the Verify Loop option. During loop verification, the FACP polls each device on the SLC to determine if the device is communicating and whether or not it responds with the proper type identification. The following screen will be displayed while verification is in progress:

Verification Progress Screen

When Loop verification has been completed, the display will indicate that the system is OK or, if problems have been detected, any device type programming errors. Use the up and down arrow keys to view all detected errors.

3.6.7 History

```
PROGRAMMING
1=HISTORY
2=WALKTEST
3=OPTION MODULES
```

Programming Screen #3

The History option allows an authorized user to view or erase events which have occurred in the control panel. Pressing *1* while viewing Programming Screen #3 will display the History options as shown in the following display:

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

History Screen

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

History Screen

3.6.7.1 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.

3.6.7.2 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. During this process, the display will read as follows:

```
ERASING HISTORY
  PLEASE WAIT
```

Erase History Wait Screen

After the History file has been erased, the display will return to the History Screen.

```
    PROGRAMMING
1=HISTORY
2=WALKTEST
3=OPTION MODULES
```

Programming Screen #3

3.6.8 Walktest

Walktest allows an individual to test the fire alarm system without the necessity to reset the control panel after each device activation. Pressing *2* while viewing the Programming Screen #3 will cause the following Walktest options to be displayed:

```
     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  PULL STATION
     <ADJ> <NOUN>
                Z000
 10*00A 010801 1M001
```

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
```

View Result Screen

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

3.6.9 Option Modules

```
   PROGRAMMING
1=HISTORY
2=WALKTEST
3=OPTION MODULES
```

Programming Screen #3

Options available for the MS-9050UD include annunciators, printer connection for acquiring hardcopy printouts of panel data and onboard DACT.

Pressing *3* while viewing Programming Screen #3 will display the following screen:

```
   OPTION MODULES
1=ANN-BUS
2=ONBOARD DACT
3=FUTURE USE
```

Options Screen

3.6.9.1 ANN-BUS

Pressing *1* while viewing the Option Modules screen will cause the control panel to display the following screens.

```
      ANN-BUS                ⇩
1=ENABLED  NO
2=MODULES INSTALLED
3=AUTO-CONFIGURE
```

ANN-BUS Screen #1

```
      ANN-BUS                ⇧
1=ANN-S/PG OPTIONS
2=ANN-I/O OPTIONS
3=ANN-80 OPTIONS
```

ANN-BUS Screen #2

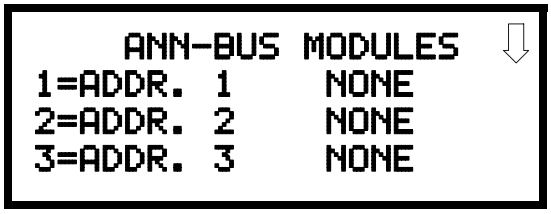
A printer module, LED annunciator module and LCD annunciator module can be installed in the MS-9050UD system. These devices communicate with the FACP over the ANN-BUS terminals on the control panel.

3.6.9.1.1 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*.

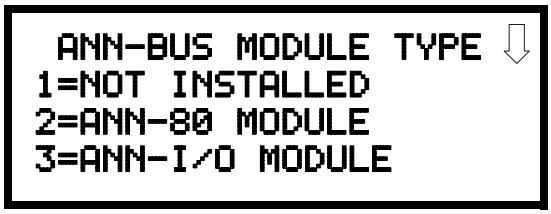
3.6.9.1.2 Modules Installed

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.

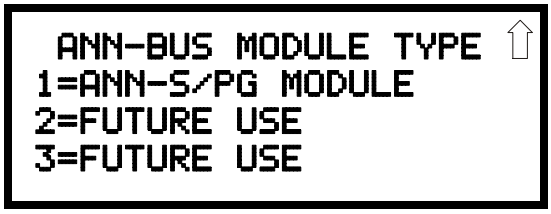


On Board DACT Screen #1

Pressing the down arrow key will allow the programmer to view additional screens displaying Addresses 1-8. To select one or more addresses for the installed module(s), press the number key corresponding to the module address in each screen. The following screens will be displayed:



Module Type Screen #1



Module Type Screen #2

Press the number corresponding to the module type that is installed with the selected address.

3.6.9.1.3 Auto-Configure

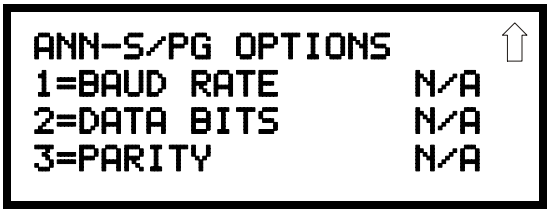
The ANN-BUS Auto-Configure features allows the programmer to quickly bring all installed ANN-BUS modules online. The software will search for all ANN-BUS modules and automatically program the device type and address into the system. Pressing *3* while viewing ANN-BUS Screen #1 will begin the Auto-Configure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

Auto-Configure Screen

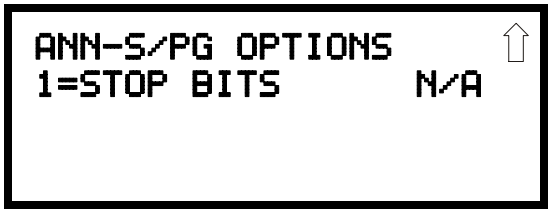
3.6.9.1.4 ANN-S/PG (Print) Options

The Print option allows the programmer to configure the optional printer. Pressing 1 while viewing ANN-BUS screen #2 will display the following screens:

ANN-S/PG Options Screen #1



ANN-S/PG Options Screen #2



ANN-S/PG Options Screen #3

Pressing *1* for Port while viewing ANN-S/PG 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 ANN-S/PG Options screen #2 will cause a screen to appear which allow the user to select a Baud Rate of *19200, 9600 or 2400*.

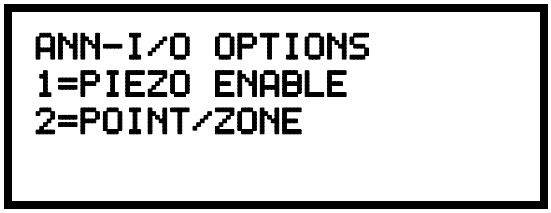
Pressing *2* for *Data Bits* while viewing ANN-S/PG Options screen #2 will cause a screen to appear which allows the user to select *7* or *8 Data Bits*.

Pressing *3* for *Parity* while viewing ANN-S/PG 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 ANN-S/PG Options screen #3 will cause a screen to appear which allows the user to select between *1.0* or *2.0 Stop Bits*.

3.6.9.1.5 ANN-I/O Options

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



ANN-I/O Options Screen

The *Piezo Enable* option allows the programmer to select whether the piezo sounder on any installed ANN-I/O module will ever sound. Pressing *1* while viewing the ANN-I/O Options Screen causes the display to toggle between *Piezo Enable Yes* and *Piezo Enable No*.

The *Point/Zone* option allows the programmer to select whether the LEDs on any installed ANN-I/O module will indicate activity for points or zones. Pressing *2* while viewing the ANN-I/O Options Screen causes the display to toggle between *Point* and *Zone*.

3.6.9.1.5.1 ANN-I/O Point/Zone Option

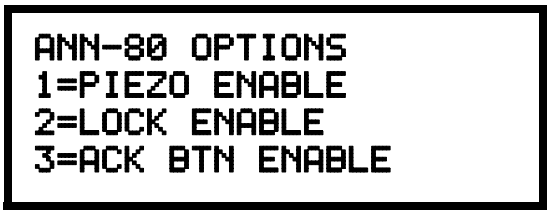
If *Point* is selected, the information displayed by LEDs on each ANN-I/O module will depend on whether the user has assigned an even or odd address to the annunciator module.

If *Zone* is selected, the information displayed by LEDs on every ANN-I/O module will be identical.

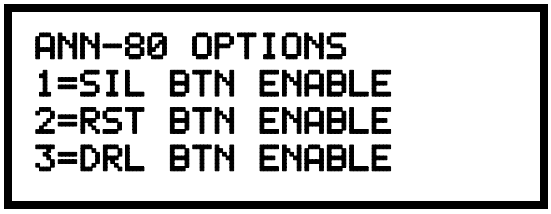
LED	Zone (any address)	Point (odd address)	Point (even address)
1	AC Fault	AC Fault	AC Fault
2	Fire Alarm	Fire Alarm	Fire Alarm
3	Supervisory	Supervisory	Supervisory
4	Trouble	Trouble	Trouble
5	Alarm Silenced	Alarm Silenced	Alarm Silenced
6	Earth Fault	Earth Fault	Earth Fault
7	Battery Fault	Battery Fault	Battery Fault
8	Charger Fault	Charger Fault	Charger Fault
9	Not Used	Not Used	Not Used
10	Not Used	Not Used	Not Used
11	Zone 00 Active/Alarm	Point 01 Active/Alarm	Point 31 Active/Alarm
12	Zone 01 Active/Alarm	Point 02 Active/Alarm	Point 32 Active/Alarm
13	Zone 02 Active/Alarm	Point 03 Active/Alarm	Point 33 Active/Alarm
14	Zone 03 Active/Alarm	Point 04 Active/Alarm	Point 34 Active/Alarm
15	Zone 04 Active/Alarm	Point 05 Active/Alarm	Point 35 Active/Alarm
16	Zone 05 Active/Alarm	Point 06 Active/Alarm	Point 36 Active/Alarm
17	Zone 06 Active/Alarm	Point 07 Active/Alarm	Point 37 Active/Alarm
18	Zone 07 Active/Alarm	Point 08 Active/Alarm	Point 38 Active/Alarm
19	Zone 08 Active/Alarm	Point 09 Active/Alarm	Point 39 Active/Alarm
20	Zone 09 Active/Alarm	Point 10 Active/Alarm	Point 40 Active/Alarm
21	Zone 10 Active/Alarm	Point 11 Active/Alarm	Point 41 Active/Alarm
22	Zone 11 Active/Alarm	Point 12 Active/Alarm	Point 42 Active/Alarm
23	Zone 12 Active/Alarm	Point 13 Active/Alarm	Point 43 Active/Alarm
24	Zone 13 Active/Alarm	Point 14 Active/Alarm	Point 44 Active/Alarm
25	Zone 14 Active/Alarm	Point 15 Active/Alarm	Point 45 Active/Alarm
26	Zone 15 Active/Alarm	Point 16 Active/Alarm	Point 46 Active/Alarm
27	Zone 16 Active/Alarm	Point 17 Active/Alarm	Point 47 Active/Alarm
28	Zone 17 Active/Alarm	Point 18 Active/Alarm	Point 48 Active/Alarm
29	Zone 18 Active/Alarm	Point 19 Active/Alarm	Point 49 Active/Alarm
30	Zone 19 Active/Alarm	Point 20 Active/Alarm	Point 50 Active/Alarm
31	Not Used	Point 21 Active/Alarm	Not Used
32	Not Used	Point 22 Active/Alarm	Not Used
33	Not Used	Point 23 Active/Alarm	Not Used
34	Not Used	Point 24 Active/Alarm	Not Used
35	Not Used	Point 25 Active/Alarm	Not Used
36	Not Used	Point 26 Active/Alarm	Not Used
37	Not Used	Point 27 Active/Alarm	Not Used
38	Not Used	Point 28 Active/Alarm	Not Used
39	Not Used	Point 29 Active/Alarm	Not Used
40	Not Used	Point 30 Active/Alarm	Not Used

3.6.9.1.6 ANN-80 Options

Pressing 3 while ANN-BUS screen #2 will display the following screen:



ANN-80 Options Screen #1



ANN-80 Options Screen #2

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

```
   OPTION MODULES
1=ANN-BUS
2=ONBOARD DACT
3=FUTURE USE
```

Option Module Screen

3.6.9.2 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=ENABLED        YES
2=PRIMARY PHONE
3=SECONDARY PHONE
```

On Board DACT Screen #1

```
    ON BOARD DACT      ⇧
1=FUTURE
2=CENTRAL STATION
3=MANUAL DIAL MODE
```

On Board DACT Screen #2

3.6.9.2.1 Onboard DACT Enable

To enable the onboard DACT, press *1* while viewing Onboard DACT Screen #1 until the display reads *Enabled Yes*. The display will toggle between *Enabled Yes* and *Enabled No* with each press of the key.

3.6.9.2.2 Primary Phone

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

```
    ON BOARD DACT
 PRIMARY PHONE LINE
1=TYPE     TOUCHTONE
```

Primary Phone Line Screen

To select the type, press *1* while viewing the Primary Phone Line screen. The following screen will be displayed:

```
    PHONE LINE
1=TOUCHTONE
2=ROTARY
```

Primary Phone Type Screen

Press *1* to select Touchtone dialing or *2* to select Rotary dialing.

```
   ON BOARD DACT
1=ENABLED
2=PRIMARY PHONE
3=SECONDARY PHONE
```

On Board DACT Screen #1

3.6.9.2.3 Secondary Phone

Press *3* while viewing On Board 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
 SECONDARY PHONE LINE
1=TYPE       TOUCHTONE
```

Secondary Phone Line Screen

To select the type, press *1* while viewing the Secondary Phone Line screen. The following screen will be displayed:

```
     PHONE LINE
1=TOUCHTONE
2=ROTARY
```

Secondary Phone Type Screen

Press *1* to select Touchtone dialing or *2* to select Rotary dialing.

```
   ON BOARD DACT
1=FUTURE
2=CENTRAL STATION
3=MANUAL DIAL MODE
```

On Board DACT Screen #2

3.6.9.2.4 Central Station

Central Station programming configures the control panel DACT for contacting the central station. Pressing *2* while viewing On Board DACT Screen #2 will cause the following screens to be displayed:

```
  CENTRAL STATION      ⇩
1=REPORTING DISABLED
2=REPORT       BACKUP
3=CALL LIMIT
```

Central Station Screen #1

```
  CENTRAL STATION      ⇧
1=PRIMARY
2=SECONDARY
3=REPORT STYLE
```

Central Station Screen #2

Note that the user will be prevented from entering the Central Station Options Screen while the DACT is busy calling the Central Station.

3.6.9.2.4.1 Reporting Enable

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 Enabled*. Each press of the *1* key will toggle the display between *Reporting Disabled* and *Reporting Enabled*.

3.6.9.2.4.2 Backup Reporting

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:

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.

3.6.9.2.5 Trouble Call Limit (Dialer Runaway Prevention)

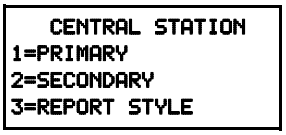
The Call Limit option limits the number of DACT trouble calls to the Central Station, to a programmed amount between 0 and 99, for each unique trouble within a 24 hour period. Separate limit counters keep track of each unique type of trouble. Note that the number of phone line (communication) faults 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 #1. The following screen will be displayed.

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.

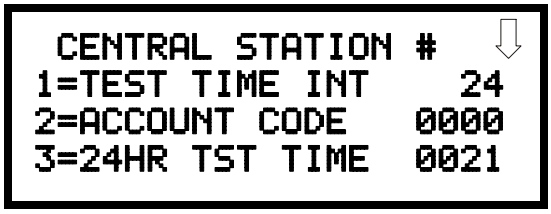


Central Station Screen #2

3.6.9.2.5.1 Central Station Primary and Secondary Phone Numbers

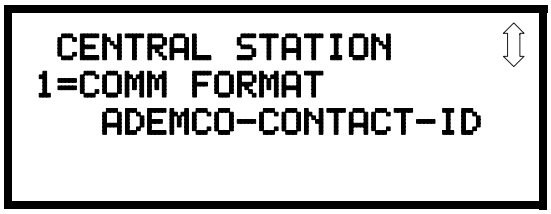
Pressing *1* for Primary or *2* for Secondary will display the following screens.

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



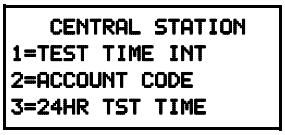
Primary/Secondary Screen #1

Primary/Secondary Screen #2



Primary/Secondary Screen #3

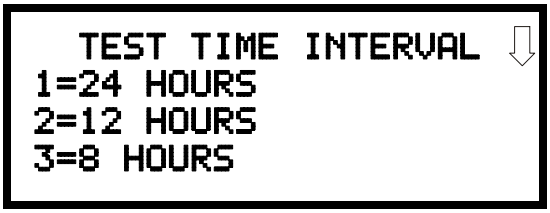
Primary/Secondary Screen #4



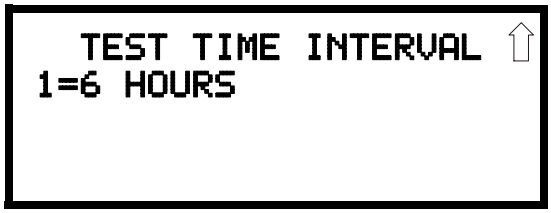
Primary/Secondary Screen #1

Test Time Interval

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



Test Time Interval Screen #1



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 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. Enter the supplied account code using 0 - 9 and A- F keys.

```
   CENTRAL STATION
1=TEST TIME INT
2=ACCOUNT CODE
3=24HR TST TIME
```

Primary/Secondary Screen #1

24 Hour Test Time

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

```
   24 HOUR TEST TIME

RANGE 0000-2359
```

24 Hour Test Time Screen

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).

```
   CENTRAL STATION
1=PHONE NUMBER
```

Primary/Secondary Screen #2

Phone Number

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

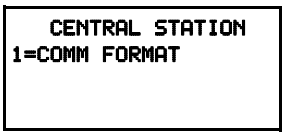
```
      PHONE NUMBER

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 - F where A = *, B = #, C = look for secondary dial tone for up to 2 seconds (then dial anyway), D = 3 second pause, E = 5 second pause and F = end of phone number (must be entered at end of phone number).

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.

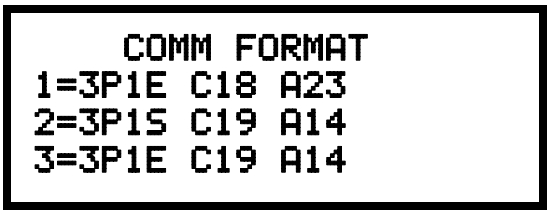


Primary/Secondary Screen #3

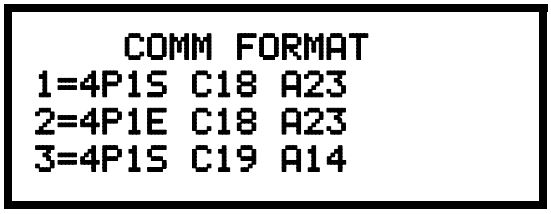
Communication Format

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

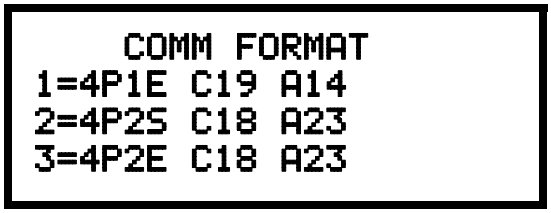
Comm Format Screen #1



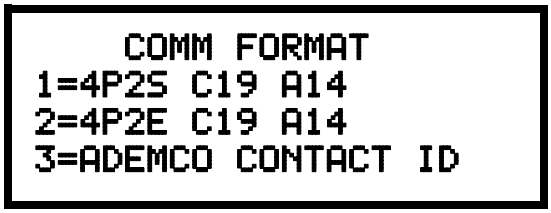
Comm Format Screen #2



Comm Format Screen #3



Comm Format Screen #4



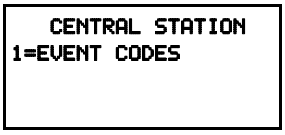
Comm Format Screen #5

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 appropriate Comm Format screen. The following table describes each format:

Table 3.1 Communication Formats

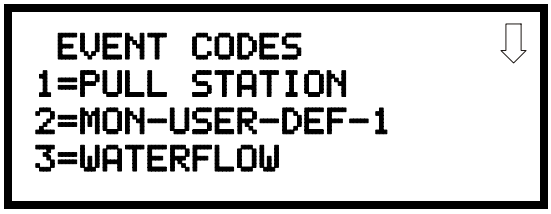
Screen Selection	Communication Format Description
ADEMCO EXPRESS 4P1	4+1 Ademco Express Standard, DTMF, 1400/2300 ACK
ADEMCO EXPRESS 4P2	4+2 Ademco Express Standard, DTMF, 1400/2300 ACK
3P1S C18 A23	3+1 Standard 1800 Hz Carrier, 2300 Hz ACK
3P1E C18 A23	3+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
3P1S C19 A14	3+1 Standard 1900 Hz Carrier, 1400 Hz ACK
3P1E C19 A14	3+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
4P1S C18 A23	4+1 Standard 1800 Hz Carrier, 2300 Hz ACK
4P1E C18 A23	4+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
4P1S C19 A14	4+1 Standard 1900 Hz Carrier, 1400 Hz ACK
4P1E C19 A14	4+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
4P2S C18 A23	4+2 Standard 1800 Hz Carrier, 2300 Hz ACK
4P2E C18 A23	4+2 Expanded 1800 Hz Carrier, 2300 Hz ACK
4P2S C19 A14	4+2 Standard 1900 Hz Carrier, 1400 Hz ACK
4P2E C19 A14	4+2 Expanded 1900 Hz Carrier, 1400 Hz ACK
ADEMCO CONTACT ID	Contact ID, DTMF, 1400/2300 ACK



Primary/Secondary Screen #4

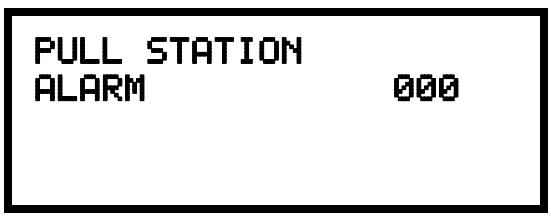
Event Codes

Pressing *1* while viewing Primary/Secondary Screen #4 will cause the following screen to be displayed:



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 event code which can be customized by the programmer. For example, pressing *1* for Pull Station will display the following screen which allows the Event Code to be changed from the default value.



Event Code Screen

The tables on the following pages list all of the Events and their default Event Codes for the various Communication Formats.

3+1, 4+1 Express and 4+1 Standard

The information shown in Table 3.2 is automatically programmed for the Central Station phone number Event Codes when any of these Formats are selected. Enter *0* for an Event Code Setting to disable the report.

Table 3.2 Event Codes

Event Description	Event Code Settings	
	Active	Restoral
PULL STATION	1	E
MON-USER-DEF-1	1	E
WATERFLOW	1	E
MON-USER-DEF-2	1	E
SMOKE (PHOTO)	1	E
DET-USER-DEF-1	1	E
SMOKE (ION)	1	E
DET-USER-DEF-2	1	E
HEAT DETECT	1	E
DET-USER-DEF-3	1	E
SMOKE DUCT-P	1	E
DET-USER-DEF-4	1	E
PHOTO W/HEAT	1	E
DET-USER-DEF-5	1	E
DUCT SUPERVISORY	8	E
DET-USER-DEF-6	8	E
PHOTO SUPERV	8	E
DET-USER-DEF-7	8	E
not used	0	0
not used	0	0
not used	0	0
not used	0	0
MONITOR	1	E
MON-USER-DEF-3	1	E
not used	0	0
not used	0	0
SMOKE CONVEN	1	E
MON-USER-DEF-5	1	E
HEAT CONVEN	1	E
MON-USER-DEF-6	1	E
MEDIC ALERT	0	0
MON-USER-DEF-7	0	0
HAZARD ALERT	0	0
MON-USER-DEF-8	0	0
TORNADO ALRT	0	0
MON-USER-DEF-9	0	0
not used	0	0
not used	0	0
TAMPER	8	E
MON-USER-DEF-11	8	E
MON SUPERVISORY	8	E
MON-USER-DEF-12	8	E
MON SUPERV AUTO	8	E
MON-USER-DEF-13	8	E

Table 3.2 Event Codes (continued)

HVAC IVRRIDE	8	E
POWER MON	6	A
MON-USER-DEF-14	6	A
TROUBLE MON	POINT_FAULT code will **always** be transmitted	
MON-USER-DEF-15	POINT_FAULT code will **always** be transmitted	
PROCESS MON	0	0
MON-USER-DEF-16	0	0
PROCMON AR	0	0
MON-USER-DEF-17	0	0
not used	0	0
not used	0	0
POINT_FAULT	F	D
POINT_DISABLE	4	5
AC_FAIL	9	3
DRILL	B	C
SLC 1 OPEN FAULT	6	A
SLC 1 SHORT FAULT	6	A
GROUND FAULT	6	A
LOW BATTERY	6	A
NO_BATTERY	6	A
TELCO LINE 1	6	A
TELCO LINE 2	6	A
COMM FAULT 1	6	A
COMM FAULT 2	6	A
TOTAL COMM FLT	0	0
PRINTER FAULT	6	A
NAC 1 FAULT	6	A
NAC 2 FAULT	6	A
27V SYS PWR FAULT	6	A
not used	0	0
NAC 1 DISABLE	4	5
NAC 2 DISABLE	4	5
MEMORY FAULT	6	A
CHARGER FAULT	6	A
OPTION CARD 1 FAULT	6	A
ANN-BUS PWR FAULT	6	A
ZONE DISABLE	4	5
MODEM CHIP FAULT	6	A
ANN-BUS COMM FAULT	6	A
NO_DEVICES_INSTLLD	6	A
OFF_NORMAL_MESSAGE	6	A
24_HOUR_TEST	9	0
24 HOUR ABNORMAL TES	F	0
GENERAL_ALARM	0	0
GENERAL_SUPERVISORY	0	0

4+2 Standard, 4+2 Express, 3 + 1, 4 + 1 and 4+2 Expanded Formats

The information shown in Table 3.3 is automatically programmed for the Central Station phone number Event Codes when any of these Formats are selected. Enter *00* for an Event Code Setting to disable the report.

Table 3.3 Event Codes

Event Description	Event Code Settings	
	Active	Restoral
PULL STATION	11	E1
MON-USER-DEF-1	11	E1
WATERFLOW	11	E1
MON-USER-DEF-2	11	E1
SMOKE (PHOTO)	11	E1
DET-USER-DEF-1	11	E1
SMOKE (ION)	11	E1
DET-USER-DEF-2	11	E1
HEAT DETECT	11	E1
DET-USER-DEF-3	11	E1
SMOKE DUCT-P	11	E1
DET-USER-DEF-4	11	E1
PHOTO W/HEAT	11	E1
DET-USER-DEF-5	11	E1
DUCT SUPERVISORY	81	E1
DET-USER-DEF-6	81	E1
PHOTO SUPERV	81	E1
DET-USER-DEF-7	81	E1
not used	00	00
not used	00	00
not used	00	00
not used	00	00
MONITOR	11	E1
MON-USER-DEF-3	11	E1
not used	00	00
not used	00	00
SMOKE CONVEN	11	E1
MON-USER-DEF-5	11	E1
HEAT CONVEN	11	E1
MON-USER-DEF-6	11	E1
MEDIC ALERT	00	00
MON-USER-DEF-7	00	00
HAZARD ALERT	00	00
MON-USER-DEF-8	00	00
TORNADO ALRT	00	00
MON-USER-DEF-9	00	00
not used	00	00
not used	00	00
TAMPER	81	E1
MON-USER-DEF-11	81	E1
MON SUPERVISORY	81	E1
MON-USER-DEF-12	81	E1
MON SUPERV AUTO	81	E1
MON-USER-DEF-13	81	E1

Table 3.3 Event Codes (continued)

HVAC OVRRIDE	81	E1
POWER MON	81	E1
MON-USER-DEF-14	81	E1
TROUBLE MON	POINT_FAULT code will **always** be transmitted	
MON-USER-DEF-15	POINT_FAULT code will **always** be transmitted	
PROCESS MON	00	00
MON-USER-DEF-16	00	00
PROCMON AR	00	00
MON-USER-DEF-17	00	00
not used	00	00
not used	00	00
POINT_FAULT	F1	D1
POINT_DISABLE	41	51
AC_FAIL	92	93
DRILL	97	98
SLC 1 OPEN FAULT	43	53
SLC 1 SHORT FAULT	44	54
GROUND FAULT	61	A1
LOW BATTERY	62	A2
NO_BATTERY	63	A3
TELCO LINE 1	64	A4
TELCO LINE 2	65	A5
COMM FAULT 1	6A	AA
COMM FAULT 2	6B	AB
TOTAL COMM FLT	00	00
PRINTER FAULT	6C	AC
NAC 1 FAULT	66	A6
NAC 2 FAULT	67	A7
27V SYS PWR FAULT	45	55
not used	00	00
NAC 1 DISABLE	4B	5B
NAC 2 DISABLE	4C	5C
MEMORY FAULT	46	56
CHARGER FAULT	47	57
OPTION CARD 1 FAULT	48	58
ANN-BUS PWR FAULT	49	59
ZONE DISABLE	42	52
MODEM CHIP FAULT	49	59
ANN-BUS COMM FAULT	49	59
NO_DEVICES_INSTLLD	4A	5A
OFF_NORMAL_MESSAGE	6F	AF
24_HOUR_TEST	99	00
24 HOUR ABNORMAL TES	FB	00
GENERAL_ALARM	00	00
GENERAL_SUPERVISORY	00	00

Ademco Contact ID Format

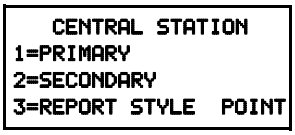
The information shown in Table 3.4 is automatically programmed for the Central Station phone number Event Codes when Ademco Contact ID Format is selected. Enter *000* for an Event Code Setting to disable the report.

Table 3.4 Event Codes

Event Description	Event Code Settings Active
PULL STATION	115
MON-USER-DEF-1	115
WATERFLOW	113
MON-USER-DEF-2	113
SMOKE (PHOTO)	111
DET-USER-DEF-1	111
SMOKE (ION)	111
DET-USER-DEF-2	111
HEAT DETECT	114
DET-USER-DEF-3	114
SMOKE DUCT-P	116
DET-USER-DEF-4	116
PHOTO W/HEAT	111
DET-USER-DEF-5	111
DUCT SUPERVISORY	200
DET-USER-DEF-6	200
PHOTO SUPERV	200
DET-USER-DEF-7	200
not used	000
not used	000
not used	000
not used	000
MONITOR	110
MON-USER-DEF-3	110
not used	000
not used	000
SMOKE CONVEN	111
MON-USER-DEF-5	111
HEAT CONVEN	114
MON-USER-DEF-6	114
MEDIC ALERT	100
MON-USER-DEF-7	100
HAZARD ALERT	150
MON-USER-DEF-8	150
TORNADO ALRT	150
MON-USER-DEF-9	150
not used	000
not used	000
TAMPER	144
MON-USER-DEF-11	144
MON SUPERVISORY	200
MON-USER-DEF-12	200
MON SUPERV AUTO	200
MON-USER-DEF-13	200

Table 3.4 Event Codes (continued)

HVAC OVRRIDE	200
POWER MON	330
MON-USER-DEF-14	330
TROUBLE MON	POINT_FAULT code will **always** be transmitted
MON-USER-DEF-15	POINT_FAULT code will **always** be transmitted
PROCESS MON	000
MON-USER-DEF-16	000
PROCMON AR	000
MON-USER-DEF-17	000
not used	000
not used	000
POINT_FAULT	380
POINT_DISABLE	570
AC_FAIL	301
DRILL	604
SLC 1 OPEN FAULT	371
SLC 1 SHORT FAULT	372
GROUND FAULT	310
LOW BATTERY	302
NO_BATTERY	311
TELCO LINE 1	351
TELCO LINE 2	352
COMM FAULT 1	354
COMM FAULT 2	354
TOTAL COMM FLT	000
PRINTER FAULT	336
NAC 1 FAULT	321
NAC 2 FAULT	322
27V SYS PWR FAULT	300
not used	000
NAC 1 DISABLE	521
NAC 2 DISABLE	522
MEMORY FAULT	304
CHARGER FAULT	300
OPTION CARD 1 FAULT	331
ANN-BUS PWR FAULT	333
ZONE DISABLE	570
MODEM CHIP FAULT	330
ANN-BUS COMM FAULT	333
NO_DEVICES_INSTLLD	380
OFF_NORMAL_MESSAGE	308
24_HOUR_TEST	602
24 HOUR ABNORMAL TES	608
GENERAL_ALARM	000
GENERAL_SUPERVISORY	000



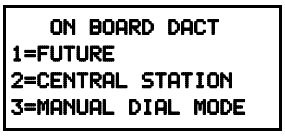
Central Station Screen #2

Report Style

Pressing *3* while viewing Central Station Screen #2 will cause the Report Style display to toggle between *Point* and *Zone*. Setting the Report Style to Point will program the DACT to report individual point status to the Central Station. The control panel is capable of monitoring a total of 50 addressable devices. Setting the Report Style to Zone will program the DACT to report zone status to the Central Station. The control panel is capable of monitoring a total of 20 individual zones.

Notes:

1. Detector/Module Address 01 will be reported to the Central Station as Point 01, Detector/Module Address 02 as Point 02, with reports continuing in a similar fashion up to Detector/Module Address 50 which will be reported as Point 50.

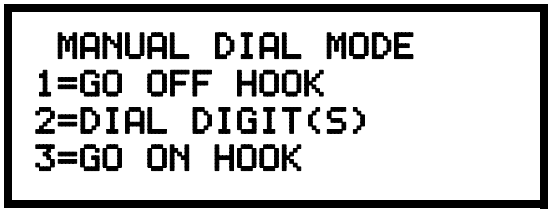


On Board DACT Screen #2

3.6.9.2.6 Manual Dial Mode

Pressing *3* while viewing On Board DACT Screen #2 will cause the following screen to be displayed:

Note that Manual Dial Mode cannot be entered while the panel is communicating with the Central Station. Pressing *1* for Primary Phone or *2* for Secondary Phone will display the following screen:



Pressing *1* for Go Off Hook will cause the DACT to access the selected phone line (similar to taking the phone handset off the cradle). The selected phone line's red Active LED will turn on.

Pressing *2* for Dial Digit(s) will display a screen which allows the user to key in the phone number to be dialed. The first digit is keyed in and then the right arrow key is pressed to move the cursor to the next position. The next digit is keyed in and the process is repeated until all digits have been entered. Pressing the *Enter* key will cause the number just entered to be dialed.

Note: It is not necessary to go off-hook prior to dialing. Pressing the Enter key in Dial Digit mode will cause the panel to automatically go off-hook prior to dialing.

Pressing *3* for Go On Hook will cause the DACT to hang-up, deselecting the previously selected phone line. The phone line's red Active LED will turn off.

3.6.10 Password Change

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

Programming Screen #4

The factory set passwords, which have been programmed into the control panel, can be changed by selecting the Password Change option. Pressing *1* while viewing Programming Screen #4 will cause the following screen to be displayed:

```
  PASSWORD CHANGE
1=MASTER
2=MAINTENANCE
```

Password Change Screen

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

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

```
ENTER NEW FIVE DIGIT
      PASSWORD
```

Enter Password Screen

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

```
VERIFY NEW
 PASSWORD
```

Password Change Screen

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

3.6.11 Clear Program

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

Programming Screen #4

Pressing *2* while viewing Programming Screen #4, will select the Clear Program option. This will cause the LCD to display the following screen:

```
   CLEAR PROGRAM
1=WHOLE SYSTEM
2=ALL POINTS
```

Clear Program Screen #1

Pressing *1*, for Whole System while viewing the Clear Program Screen #1, will clear all general system programming options and all programmed addressable devices from the nonvolatile memory of the FACP. *This function is useful when the control panel is first installed, prior to autoprogramming. Note that it is necessary to autoprogram after using the Clear Whole System function.*

See Page

Pressing *2*, for ALL POINTS while viewing the Clear Program Screen #1, will clear all programming related to the SLC loop and connected addressable devices.

Before executing any of the Clear commands listed above, the control panel will provide a warning to the user by prompting with the following display:

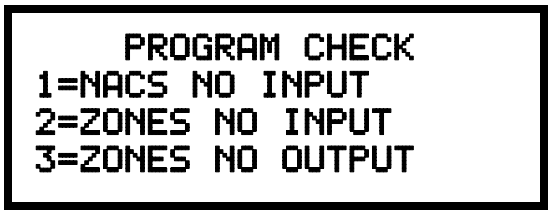
```
     WARNING!
  SYSTEM CHANGE
    PROCEED?
1=YES          2=NO
```

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

3.6.12 Program Check

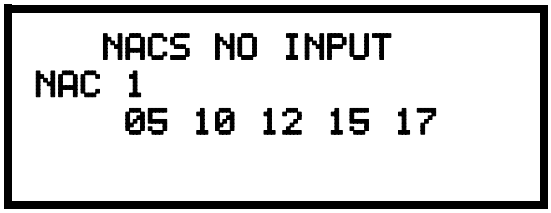
Programming Screen #4

The Program Check feature allows the programmer to view the zones which have been programmed to the Notification Appliance Circuits on the control panel but have not been programmed to Initiating Devices as well as other circuits with no input or output correlations. Pressing *3* while viewing Programming Screen #4 will cause the following screen to be displayed:



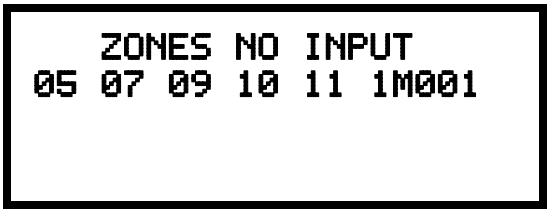
Program Check Screen

Pressing *1* while viewing the Program Check screen will display an NAC screen similar to the following.



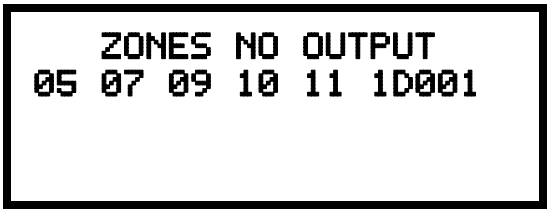
The example above indicates that NAC 1 has been programmed to Zones 05, 10, 12, 15 and 17 but no input devices have been programmed to any of these zones. Use the up and down arrow keys to view all the NAC zones without input assignments for NAC 1 and NAC2.

Pressing *2* while viewing the Program Check screen will display a screen similar to the following:



The Zone No Input screen allows the programmer to view the zones which have not been programmed to at least one input device (not including general alarm Zone 00). The example in the preceding screen indicates that Zones 05, 07, 09, 10 and 11 have been programmed to an addressable module (control module in this example) with an address of 001 on loop 1 but have not been programmed to any input devices. Use the up and down arrow keys to view all the zones without input assignments.

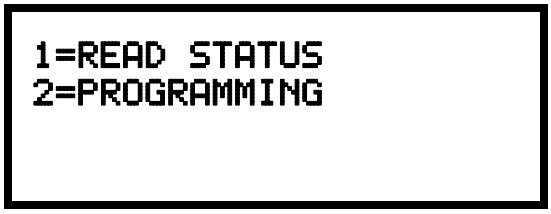
Pressing *3* while viewing Program Check screen will cause a screen similar to the following to be displayed:



The Zone No Output feature allows the programmer to view the zones which have not been programmed to at least one output device (not including general alarm Zone 00). The example in the preceding screen indicates that Zones 05, 07, 09, 10 and 11 have been programmed to an addressable detector with an address of 001 on loop 1 but have not been programmed to any output devices. Use the up and down arrow keys to view all the zones without output assignments.

3.7 Maintenance Programming Level

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



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

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

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=POINT PROGRAM
2=HISTORY
3=PROGRAM CHECK
```

Maintenance Screen #1

3.7.1 Disable Point

Pressing *1* for Point Program, while viewing Maintenance Screen #1 will cause the following screens to be displayed:

```
  POINT PROGRAM
1=DETECTOR
2=MODULE
```

Device Select Screen

Select the device type by pressing *1* for an addressable detector or *2* for an addressable module. The operator will be prompted to enter the three digit device address as shown in the following example for a detector:

```
 EDIT DETECTOR
ENTER POINT ADDRESS
**
```

Address Select Screen

A flashing cursor will appear in the bottom left corner of the display, prompting for the three digit device address. When the third digit is enter, *001* for example, a screen will appear which will allow enabling or disabling of the selected point, as illustrated in the following example:

```
EDIT DETECTOR 1D001
1=ENABLED        YES
```

Enable/Disable Select Screen

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

```
    PROGRAMMING
1=POINT PROGRAM
2=HISTORY
3=PROGRAM CHECK
```

Maintenance Screen #1

3.7.2 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
```

Events Screen

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 cause the message *ERASING HISTORY, PLEASE WAIT* to be displayed. 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.

```
    PROGRAMMING
1=POINT PROGRAM
2=HISTORY
3=PROGRAM CHECK
```

Maintenance Screen #1

3.7.3 Program Check

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

```
    PROGRAM CHECK
1=NACS NO INPUT
2=ZONES NO INPUT
3=ZONE NO OUTPUT
```

Program Check Screen

The Program Check feature allows the programmer to view the zones which have been programmed to the Notification Appliance Circuits on the control panel but have not been programmed to Initiating Devices as well as other circuits with no input or output correlations. Pressing *1* while viewing Program Check screen will cause a screen similar to the following to be displayed.

```
   NACS NO INPUT
NAC 1
    05 10 12 15 17
```

The example above indicates that NAC 1 has been programmed to Zones 05, 10, 12, 15 and 17 but no input devices have been programmed to any of these zones. Use the up and down arrow keys to view all the NAC zones without input assignments for both NAC 1 and NAC 2.

Pressing *2* while viewing the Program Check screen will display a screen similar to the following:

```
   ZONES NO INPUT
05 07 09 10 11 1M001
```

The Zone No Input screen allows the programmer to view the zones which have not been programmed to at least one input device (not including general alarm Zone 00). The example in the preceding screen indicates that Zones 05, 07, 09, 10 and 11 have been programmed to an addressable module (control module in this example) with an address of 001 on loop 1 but have not been programmed to any input devices. Use the up and down arrow keys to view all the zones without input assignments.

Pressing *3* while viewing Program Check screen will cause a screen similar to the following to be displayed:

```
   ZONES NO OUTPUT
05 07 09 10 11 1D001
```

The Zone No Output feature allows the programmer to view the zones which have not been programmed to at least one output device (not including general alarm Zone 00). The example in the preceding screen indicates that Zones 05, 07, 09, 10 and 11 have been programmed to an addressable detector with an address of 001 on loop 1 but have not been programmed to any output devices. Use the up and down arrow keys to view all the zones without output assignments.

3.7.4 Walktest

```
   PROGRAMMING
1=WALKTEST
2=SYSTEM
3=ZONE SETUP
```

Maintenance Screen #2

To perform a walktest, press *1* while viewing Maintenance Screen #2. 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.

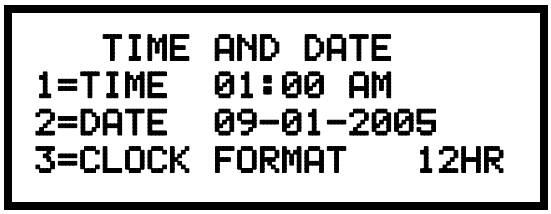
3.7.5 System

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

```
     SYSTEMS
1=TIME/DATE
```

System Screen

Pressing *1* while viewing the System Screen will cause the following screen to be displayed:



Time and Date Screen

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

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:

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.

```
    PROGRAMMING
1=WALKTEST
2=SYSTEM
3=ZONE SETUP
```

Maintenance Screen #2

3.7.6 Zone Setup

Pressing *3* while viewing Maintenance Screen #2 will display the following screen:

```
    ZONE SETUP
1=ENABLE
2=DISABLE
3=ZONE 17 18 19
```

Zone Setup Screen

Pressing *1* while viewing Zone Setup screen will display the following screen:

```
  ZONE TO ENABLE
Z
```

Enable Screen

A flashing cursor appears to the right of the Z. To enable a zone, enter the two digit zone number (00 - 19). After the second digit is entered, the zone will be enabled and the cursor will return to the original position. The next zone to be enabled can then be entered. Press Esc (Escape) to return to the previous screen.

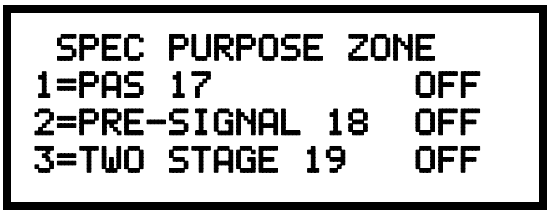
Pressing *2* while viewing Zone Setup screen will display the following screen:

```
  ZONE TO DISABLE
Z
```

Disable Screen

A flashing cursor appears to the right of the Z. To disable a zone, enter the two digit zone number (00 - 19). After the second digit is entered, the zone will be disabled and the cursor will return to the original position. The next zone to be disabled can then be entered. Press Esc (Escape) to return to the previous screen.

Pressing *3* while viewing Zone Setup screen will display the following screen:



Disable Screen

Zones 17, 18 and 19 can be programmed for normal zone operation or for special purpose applications. In the above illustration, the three zones are shown Off, which means they can be programmed to function in the same manner as all other zones, by assigning them to input and output devices in the Programming Zone Assignment Screen.

Pressing *1* will cause the display to change to *PAS 17 On*. Each press of the *1* key will cause the display to toggle between *PAS 17 On* and *PAS 17 Off*. When Zone 17 is programmed On, a PAS (Positive Alarm Sequence) activation of any smoke detector will cause Zone 17 to activate. By assigning Zone 17 to a control module in the Programming Zone Assignment Screen, an output device connected to the control module can be used to indicate a PAS condition in the control panel. *Do not assign Zone 17 to a Notification Appliance Circuit when using this zone to indicate a PAS condition.*

Pressing *2* will cause the display to change to *Pre-signal 18 On*. Each press of the *2* key will cause the display to toggle between *Pre-signal 18 On* and *Pre-signal 18 Off*. When Zone 18 is programmed On, a Pre-signal activation of any device will cause Zone 18 to activate. By assigning Zone 18 to a control module in the Programming Zone Assignment Screen, an output device connected to the control module can be used to indicate a Pre-signal condition in the control panel. *Do not assign Zone 18 to a Notification Appliance Circuit when using this zone to indicate a Pre-signal condition.*

Pressing *3* will cause the display to change to *Two Stage 19 On*. Each press of the *3* key will cause the display to toggle between *Two Stage 19 On* and *Two Stage 19 Off*. Refer to “Two Stage Operation” on page 94 for a description of this feature.

SECTION 4 Operating Instructions

4.1 Panel Control Buttons

4.1.1 Acknowledge/Step

The first press of the *Acknowledge/Step* button silences the piezo sounder, changes flashing indicators/LEDs to steady and also changes the status field on the LCD display from capital letters to small letters. When the piezo is silenced, an *acknowledge* message is sent to the printer and the history file. Multiple active events are scrolled on the display at a three second rate. *Acknowledge* also sends a *silence piezo* command to the optional annunciators connected to the FACP.

When more than one event exists, the first press of the Acknowledge/Step button functions as described in the preceding paragraph. The second press of the button stops the scrolling and holds the event on the display for one minute. Subsequent pressing of the button *steps* through each active event.

4.1.2 Alarm Silence

The *Alarm Silence* button performs the same functions as Acknowledge/Step. In addition, if an alarm exists, it turns off all silenceable NACs (Notification Appliance Circuits) and causes Alarm Silenced indicator to turn on. It also sends an 'alarm silenced' message to the printer, history file and optional annunciators. A subsequent new alarm will resound the system NACs. *Note that the Alarm Silenced indicator is turned off by pressing the Reset button, the Drill button or subsequent activation of the NACs*.

4.1.3 Drill/Hold 2 Sec

When the *Drill* button is held for a minimum of two seconds (time required to prevent accidental activations), the FACP turns on both main panel NAC outputs and all silenceable circuits such as control modules that are programmed as silenceable, and turns off the Alarm Silenced indicator if it was previously on. The *EVAC IN SYSTEM* message is shown on the LCD display. The same message is sent to the printer and history file. The *Alarm Silence* button can be used to turn off all silenceable NAC outputs following activation by the *Drill* button.

4.1.4 Reset

Pressing and releasing the *Reset* button turns off all control modules and 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 indicators/LEDs (except the Ground LED), piezo sounder and LCD display segments after the *Reset* button is released. Any alarm or trouble that exists after a reset will resound the system.

4.2 Status Indicators and LEDs

The five status indicators which are located on the front panel and the three LEDs located on the main circuit board, operate as follows:

AC Power

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

Fire Alarm

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

Supervisory

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

Trouble

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

Alarm Silenced

Alarm Silenced indicator illuminates yellow after the *Alarm Silence* button is pressed while an alarm condition exists. It turns off when the *Drill* or *Reset* button is pressed.

Primary Line Active

This is a red LED, located on the main circuit board, that indicates the primary phone line is active.

Secondary Line Active

This is a red LED, located on the main circuit board, that indicates the secondary phone line is active

Kiss-off

This is a green LED, located on the main circuit board, that blinks when a Central Station has acknowledged receipt of each transmitted message

4.3 Normal Operation

With no alarms or troubles in the system, the display message is *System All Normal* along with the current time and date as shown below. To set the time and date, refer to the appropriate section in this manual.

The MS-9050UD performs the following functions at regular intervals while in Normal mode:

- ✓ Monitors AC input voltage and battery voltage
- ✓ Monitors and reports status of SLC loop, option cards and control panel
- ✓ Polls all devices on the SLC loop and flashes each device LED while checking for valid replies, alarms, troubles, etc.
- ✓ Refreshes LCD display and updates time
- ✓ Scans control panel keypad for key presses
- ✓ Performs autotest for all SLC devices
- ✓ Tests memory
- ✓ Updates and reads all communications busses (EIA-485, EIA-232, etc.)

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

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

Addressable Smoke Detectors, Monitor Modules and Control Modules

For addressable devices connected to the SLC loop, the following is a typical message that could appear on the LCD display for a device trouble:

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

- First line in display:
  - ✓ The type of event; in this example *TROUBL* indicating a device trouble
  - ✓ Device type identifier; in this example, *SMOKE (PHOTO)* indicates a Photoelectric smoke detector. Other device type identifiers which can be displayed include *SMOKE (ION)* for Ionization Detector, *HEAT* for Heat Detector, *CONTROL* for Control Module and *MONITOR* for Monitor Module, *PULL STATION* for a manual pull box, etc. Refer to "Edit Detector" on page 53, "Edit Module Screen for Monitor Module" on page 63 and "Edit Module Screen for Control Modules" on page 72 for information on additional device types.
- 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: *INVREP* indicates an invalid reply from the addressable device. Other possible troubles include:
  - ❒ *SHORT* - indicating a shorted circuit on an addressable device
  - ❒ *OPEN* - indicating an open circuit on an addressable device
  - ❒ *DIRTY1* - maintenance alert indicating that a detector is near but below the allowed alarm limit and is in need of maintenance before the performance is compromised
  - ❒ *DIRTY2* - maintenance alert indicating that a detector needs immediate maintenance since it has been within 80% of its alarm threshold for 24 hours
  - ❒ *INVREP* - maintenance alert indicating a hardware problem in the detector
  - ❒ *TEST F* - indicating a detector has failed the automatic test operation which functionally checks its sensing chamber and electronics
  - ❒ *INV ID* - indicating that an incorrect device code (Type ID) has been programmed for an installed device (for example, Photo has been programmed but an Ion detector has been installed)
  - ❒ *SW TBL* - indicating a module has failed the testing of its Class A switching relay
- 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 *04* for the year 2004
  - ✓ Device Address; *1D001* in this example *1* represents SLC Loop, *D* represents a detector and *001* represents device address 001

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.

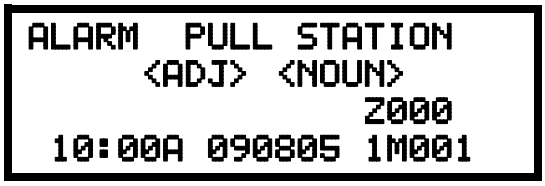
If multiple trouble conditions exist in the system, they will be automatically scrolled on the LCD display at a three second rate. *If a combination of alarms, troubles and/or supervisory conditions simultaneously occur in the system, only the alarms are scrolled on the display.*

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, address, adjective/noun, associated zones and time/date
- Communicate the alarm to the Central Station
- Alarms latch and *are not allowed to clear automatically*
- Alarms activate software zones if so programmed
- Timers for Silence Inhibit, Autosilence and Trouble Reminder are started
- Alarms activate the general alarm relay and general alarm zone Z00
- The trouble relay is not activated
- Store event in history buffer

A typical alarm display would be as illustrated below:



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 (ION)* for Ionization Detector, *HEAT* for Heat Detector, *CONTROL* for Control Module and *MONITOR* for Monitor Module, *PULL STATION* for a manual pull box, etc. Refer to "Edit Detector" on page 53, "Edit Module Screen for Monitor Module" on page 63 and "Edit Module Screen for Control Modules" on page 72 for information on additional device types.
- 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: *Z000* indicates the zone programmed to this device which, in this example, is general alarm Zone 000. Note that a single device can be programmed to five different zones but only the first zone will be displayed.
- 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 *04* for the year 2004
  - ✓ Device Address; *1M001* in this example *1* represents SLC Loop, *M* represents a module and *001* represents device address 001

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, address, adjective/noun, associated zones and time/date
- Communicate the supervisory condition to the Central Station
- The supervisory relay is activated
- The alarm relay is not activated
- Silenced alarms are resounded
- Timers are not started
- Store event in history buffer

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

Note that, like alarms, supervisory signals latch (except when programmed for supervisory autoresettable) and can be assigned to software zones. Supervisory alarms do not cause resound as do other alarm conditions. Open circuits in supervisory wiring are processed by the control panel the same way as other trouble conditions. Refer to "Alarm Operation" on page 137, 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, address, 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 not activated
- NACs will not activate
- Timers are not started
- Store event in history buffer

Note that, like supervisories, process monitor signals latch (except when programmed for process monitor autoresettable) and can be assigned to software zones.

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, address, 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 not activated
- NACs will not activate
- Timers are not started
- Store event in history buffer
- Supervisory LED flashes ½ second On, ½ second Off

Hazard conditions latch. They can be assigned to software zones.

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, address, 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 not activated
- NACs will not activate
- Timers are not started
- Store event in history buffer
- Supervisory LED flashes ½ second On, ½ second Off

Medical alert conditions latch. They can be assigned to software zones.

4.10 NAC Operation

There are two programmable NACs (Notification Appliance Circuits) resident on the MS-9050UD main circuit board which can be wired for Style Y (Class B) or Style Z (Class A) . Both NACs may be programmed as silenceable or nonsilenceable and may also be programmed for steady or coded operation. Coded operation provides a choice between March Time, Temporal or California coding.

4.11 Programmed Zone Operation

Each addressable detector and monitor module can be assigned to a maximum of five software alarm zones. A general alarm zone Z00 may be listed for output (control) points, but it is not necessary to list Z00 for input points, since this is the default zone for all alarm input devices. Zone Z00 is not activated by supervisory points.

When an input device alarms and is not disabled, it activates all software zones assigned to it. An output device that is not disabled is turned on when any of the software zones to which it is programmed become active. Only fire alarms can turn on any of the two main NACs.

Note that hazards/tornado alerts do not turn on the two main NACs.

4.12 Disable/Enable Operation

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

4.13 Waterflow Circuits Operation

If an alarm exists from a monitor module point that has a waterflow type code and its mapped NAC control module outputs are programmed for nonsilenceable operation, the Alarm Silence key will not function. Also, any output zone activated by a waterflow device will not be silenceable if the Waterflow Silenceable option is set to NO in system programming.

4.14 Detector Functions

Maintenance Alert
Each addressable detector is monitored by the control panel for its maintenance status. If a detector is near but below the allowed alarm limit, a 'maintenance alert' message will automatically be displayed, signaling that the detector is in need of servicing.

Automatic Test Operation
An automatic test of an addressable detector is performed each minute, resulting in a complete SLC loop test in approximately 5 hours (if the loop has the maximum number of devices installed). The detector's sensing chamber and electronics are functionally tested for normal, safe operation. A trouble message is displayed upon failure of this test. A System Reset will clear this trouble.

Type Code Supervision
The FACP monitors addressable hardware device codes at slow intervals. Mismatch of any type code, compared to the system program, will cause a device trouble.

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.

Smoke Detector Data
Smoke detector data is monitored by the FACP, eliminating the need to test the sensitivity of each detector at its location. A printout of each detector's data can be retrieved from the FACP using an optional printer or Windows© HyperTerminal. Detector sensing ability can decrease with age and should be monitored as part of a system's routine maintenance.

4.15 Time Functions: Real-Time Clock

The MS-9050UD 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 reset.

4.16 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.

***Important**: When a Notification Appliance Circuit with a mix of audible and visual devices is programmed for silenceable and the synchronization feature is selected, only the audible devices will be turned off if the Silence key is pressed. The visual devices (strobes, etc.) will continue to operate.*

4.17 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 on steady

4.18 Presignal

Presignal option programs an initiating device to delay the activation of NACs and/or control modules while allowing visual verification by a person. Once a detector or monitor module 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. In addition, Zone 18 will activate. This zone can be programmed to a control module which may be used to activate a sounder or indicator which the installer designates as a Presignal indication. *Do not assign Zone 18 to a Notification Appliance Circuit when using this zone to indicate a Pre-signal condition.*

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 appropriate output zones. 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 point
- ✓ control points programmed to Zone 18 will activate
- ✓ annunciators (if enabled) will sound the local piezo, and pulse the alarm LED and zone LED
- ✓ outputs (NACs and control modules) 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 does not affect monitor modules programmed as waterflow, supervisory, process monitoring or remote switches. *Presignal operation requires the approval of the local Authority Having Jurisdiction*.

4.19 Positive Alarm Sequence

PAS (Positive Alarm Sequence) option will program a detector to delay panel activation (including alarm relay and communicator) for a period of 15 seconds. Zone 17, however, will activate immediately and may be used to connect a signaling device to indicate PAS activation. *Do not assign Zone 17 to a Notification Appliance Circuit when using this zone to indicate a PAS condition.*

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 appropriate output zones. The events which occur upon PAS activation are as follows:

- ✓ onboard piezo sounds immediately
- ✓ control panel LCD display will indicate a presignal event and the active point
- ✓ control points programmed to Zone 17 will activate
- ✓ annunciators (if enabled) will sound the local piezo, and pulse the alarm LED and zone LED
- ✓ outputs (NACs and control modules) 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.

Note that the *PAS BYPASS* monitor type code, when activated, will inhibit the PAS capability until the *PAS BYPASS* monitor is deactivated. While PAS is inhibited, signaling devices will immediately place the control panel into alarm. This feature may be employed by wiring a normally open device, such as a switch, to a monitor module which has been programmed for *PAS BYPASS*.

4.20 Special System Timers

4.20.1 Silence Inhibit Timer

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

4.20.2 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.*

4.20.3 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.

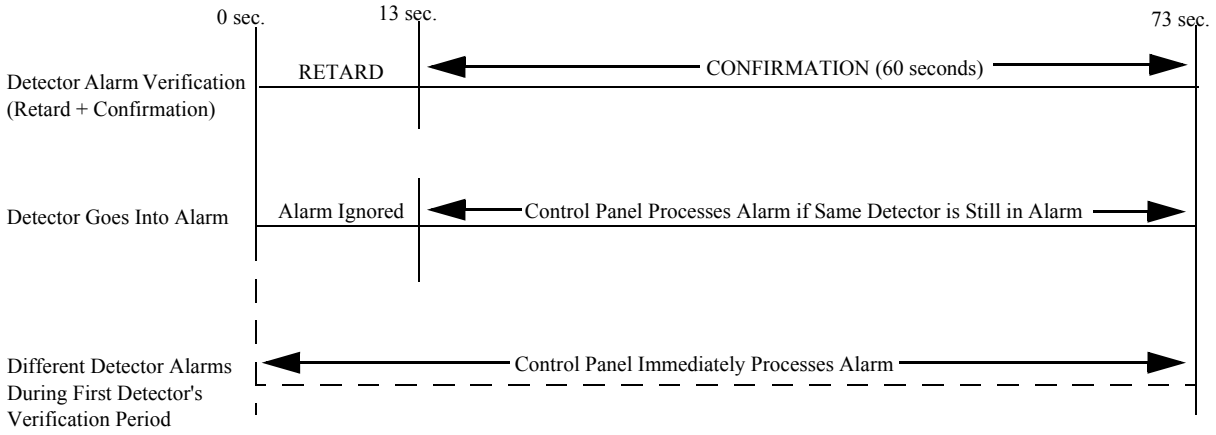
Note that enabling/disabling the Trouble Reminder feature has no effect on Trouble Resound. When an existing trouble in the system is silenced, if the trouble condition is not cleared before midnight, the piezo will resound, indicating that the trouble condition still exists.

4.20.4 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.*

4.20.5 Alarm Verification (None or One Minute)

If alarm verification is selected, an addressable smoke detector's alarm is ignored for a retard time of 13 seconds and the detector's alarm condition is automatically reset. There will be no alarm indication at the FACP during the 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 alarms any time during the first detector's verification period, the panel will immediately activate all appropriate outputs and indicate the alarm condition at the FACP. If no additional detector alarms occur within 73 seconds of the first alarm (13 second retard plus 60 second confirmation), the timer resets and the panel is ready to verify any new detector alarms which may occur.



Note: Alarm Verification is available only for addressable smoke detectors, not conventional smoke detectors.

4.21 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.

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

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

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.

4.22 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=MANUAL DIAL MODE
```

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

The following screens will be displayed:

```
    READ STATUS
1=SYSTEM POINT
2=ZONES
3=POWER
```

Read Status Screen #1

```
    READ STATUS
1=ANN-BUS
2=PHONE LINE
3=CENTRAL STATION
```

Read Status Screen #4

```
    READ STATUS
1=TROUBLE REMINDER
2=TIMERS
3=NACS
```

Read Status Screen #2

```
    READ STATUS
1=FUTURE
2=PRINT
3=TIME-DATE
```

Read Status Screen #5

```
    READ STATUS
1=RELAYS
2=PROGRAM CHECK
3=HISTORY
```

Read Status Screen #3

4.22.1 System Point

```
    READ STATUS
1=SYSTEM POINT
2=ZONES
3=POWER
```

Read Status Screen #1

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

```
 READ SYSTEM POINT
    SELECT TYPE
1=DETECTOR
2=MODULE
```

The operator selects the type of device which is to be viewed by pressing *1* for Detector or *2* for Module. If *1* is pressed, the display will change to the following screen:

```
 READ SYSTEM POINT
ENTER DETECTOR#
***
```

Entering the three digit detector address will cause the control panel to display the current status of the selected device. For example, if a detector with address *001* on the SLC loop is entered, a display similar to the following will appear:

```
NORMAL SMOKE(PHOTO)
    NORTH CLASSROOM
                Z005
             V   1D001
```

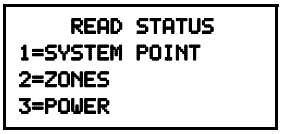
The information in the preceding display includes:

- *NORMAL* - the present status (could also be ALARM, TROUBL, DISABL, etc.)
- *SMOKE (PHOTO)* - the device type which is a photoelectric smoke detector (could also be ION for ionization smoke detector)
- *NORTH CLASSROOM* - the Adjective/Noun label for this device
- *Z005* - the first of five possible assigned software zones
- *1D001* - *1* = SLC Loop, *D* = Detector, *001* = Address 001
- V - Alarm Verification Enabled (V = Yes, * = No)
- S - Silenceable for control modules (S = Yes, * = No)
- W - Walktestable for control and monitor modules (W = Yes, * = No)

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:

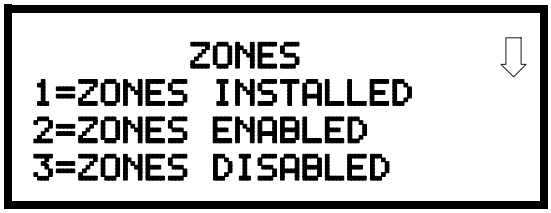
- Enable/Disable Status
- Device Type
- Alarm Verification On/Off (for detectors)
- Walktest Yes/No
- PAS (Positive Alarm Sequence) Yes/No (for detectors only)
- Pre-Signal Yes/No (for detectors and monitor modules)
- Zone Assignments (five maximum)
- Adjective/Noun descriptor
- Silenceable Yes/No (for control modules)

4.22.2 Zones

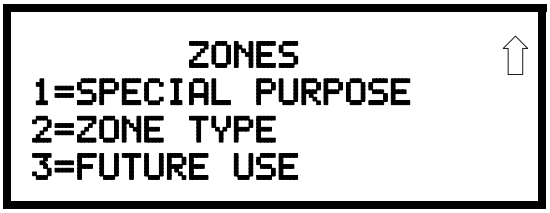


Read Status Screen #1

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



Zones Screen #1



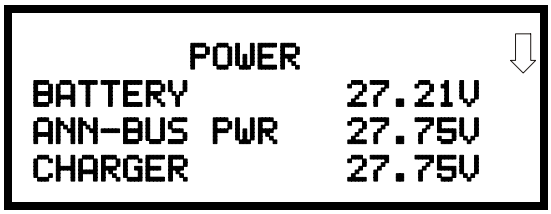
Zones Screen #2

From the preceding screens, the control panel operator can view:

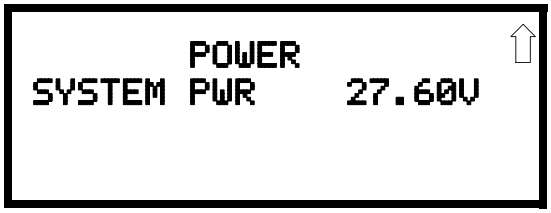
- *Zones Installed* - all software zones programmed into the system (20 maximum)
- *Zones Enabled* - all software zones that are enabled
- *Zones Disabled* - all software zones that have been disabled
- *Special Purpose* - on or off programming for Special Purpose Zones 17 reserved for PAS, 18 reserved for Pre-signal and 19 reserved for Two Stage Operation
- *Zone Type* - the Type assigned to each installed zone (default is Alarm)

4.22.3 Power

Pressing *3* while viewing Read Status Screen #1 will cause the following screens to be displayed:



Power Screen #1



Power Screen #2

A real-time display of the control panel voltages can be used to determine if a problem exists in the system.

The following table lists the circuit being measured, possible conditions and their respective voltage ranges:

Circuit	Condition	Voltage Range
Battery	Normal Battery (nominal)	27.05 to 28.15 VDC
	Low Battery	17.7 to 20.4 VDC
	No Battery	0 to 17.6 VDC
ANN-BUS Power	Normal	21.25 to 27.50 VDC
Charger	Normal	21.87 to 29.84 VDC
System Power	Nominal	27.60 VDC

```
    READ STATUS
1=TROUBLE REMINDER
2=TIMERS
3=NAC
```

Read Status Screen #2

4.22.4 Trouble Reminder

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

```
  TROUBLE REMINDER
TROUBLE REM       ON
```

The screen indicates whether the Trouble Reminder feature is On or Off.

4.22.5 Timers

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

```
      TIMERS
PAS DELAY         000
PRE SIGNAL        000
WATERFLOW         000
```

```
      TIMERS
AC LOSS DELAY       4
```

These screens will indicate the delay time, in seconds, for each of the first three possible delay options. The AC Loss Delay time is displayed in hours.

4.22.6 NAC

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

```
        NAC
1=NAC 1
2=NAC 2
```

The operator can press *1* to view the programmed options for NAC 1 or *2* to view the programmed options for NAC 2. The resulting screens will display the following information:

- Enable/Disable Status
- Circuit Type (Bell, Strobe, etc.)
- Silenceable/Nonsilenceable
- Auto Silence Enable/Disable and time delay (in minutes)
- Coding Selection (Temporal, Steady, etc.)
- Zone Assignments
- Silence Inhibit Enabled/Disabled
- Synchronization Type (System Sensor, Wheelock or Gentex)

4.22.7 Relays

```
   READ STATUS
1=RELAYS
2=PROGRAM CHECK
3=HISTORY
```

Read Status Screen #3

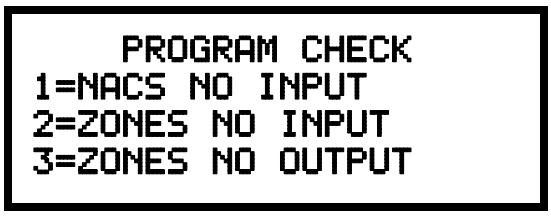
Pressing *1* while viewing Read Status Screen #3 will display the following screen:

```
        RELAY
1=RELAY 1
2=RELAY 2
3=RELAY 3
```

The operator can view the programmed option for each relay by pressing the corresponding number key.

4.22.8 Program Check

Pressing *2* while viewing Read Status Screen #3 will cause a screen similar to the following to be displayed:



Pressing *1* while viewing the Program Check screen will display a screen which will indicate if any input zones have not been programmed to one of the Notification Appliance Circuits. Use the up and down arrow keys to view all NACs.

Pressing *2* while viewing the Program Check screen will display a screen which will indicate if any output zones have not been programmed to at least one input zone. Use the up and down arrow keys to view all zones.

Pressing *3* while viewing the Program Check screen will display a screen which will indicate if any input zones have not been programmed to at least one output zone. Use the up and down arrow keys to view all zones.

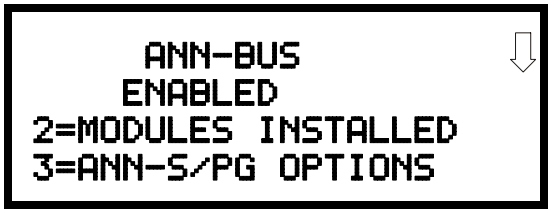
4.22.9 History

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

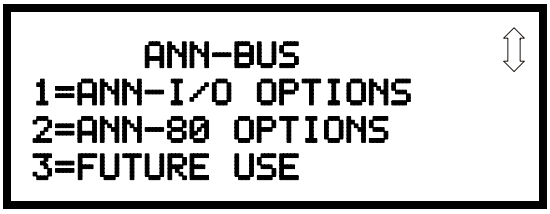
The operator can view all events which have been stored in the history file, only alarms or other events, such as troubles or supervisories, by pressing the corresponding number key.

4.22.10 ANN-BUS

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



ANN-BUS Screen #1



ANN-BUS Screen #2

ANN-BUS Screen #3

Pressing *2* for *Modules Installed*, while viewing ANN-BUS Screen #1 will display screens with ANN-BUS Addresses 1 through 7. Selecting an address will display information about the device which has been assigned that address.

Pressing *3* for *ANN-S/PG Options*, while viewing ANN-BUS Screen #1 will display screens detailing the setting for the ANN-SPG printer installed. This information includes:

- Port Parallel/Serial
- Printer Supervision Yes/No
- Off Line Timer setting
- Baud Rate
- Data Bits
- Parity
- Stop Bits

Pressing *1* for *ANN-I/O Options*, while viewing ANN-BUS Screen #2 will display a screen detailing the settings for this device. The information includes Piezo Enable/ Disable and Point/Zone setting.

Pressing *2* for *ANN-80 Options*, while viewing ANN-BUS Screen #2 will display screens detailing the settings for this device. The information includes:

- Piezo Enable/Disable
- Lock Enable/Disable
- Acknowledge Button Enable/Disable
- Silence Button Enable/Disable
- Reset Button Enable/Disable
- Drill Button Enable/Disable

4.22.11 Phone Line

Pressing *2* while viewing Read Status Screen #4 will display the following screen:

```
      PHONE LINE
PRIMARY    TOUCHTONE
SECONDARY  TOUCHTONE
```

This screen indicates the both the Primary and Secondary phone lines have been configured for touchtone dialing operation.

4.22.12 Central Station

```
   READ STATUS
1=ANN-BUS
2=PHONE LINE
3=CENTRAL STATION
```

Read Status Screen #4

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

```
  CENTRAL STATION      ⇩
REPORTING    ENABLED
REPORT         BOTH
CALL LIMIT       10
```

Central Station Screen #1

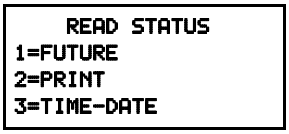
```
  CENTRAL STATION      ⇧
1=PRIMARY
2=SECONDARY
3=REPORT STYLE
```

Central Station Screen #2

Central Station Screen #1 indicates whether the Central Station Reporting is enabled or disabled, if the Reports will be sent to one or both the Primary and Secondary Central Station phone numbers and the Call Limit for DACT trouble calls within a 24 hour period. 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

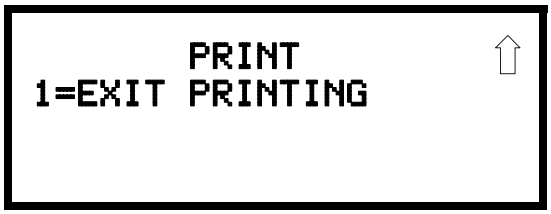
4.22.13 Print



Read Status Screen #5

To print program data or control panel status, press *2* while viewing Read Status Screen #5. The following screens will be displayed:

Print Screen #1



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 99 for additional information on the display.

Pressing *3* while viewing Print Screen #1 allows the user to print the detector data for each addressable smoke detector connected to the system. A printout, similar to the following example, will be generated if an optional printer is connected to the FACP.

DEVICE#	DEVICE TYPE	%DRIFT COMP	CHAMBER	TIME/DATE
1D001	SMOKE (PHOTO)	20	1281	12:01AM 01-08-2001
1D002	SMOKE (PHOTO)	20	1281	12:01AM 01-08-2001
1D003	SMOKE (PHOTO)	21	1259	12:01AM 01-08-2001
1D004	SMOKE (PHOTO)	20	1309	12:02AM 01-08-2001
1D005	SMOKE (PHOTO)	21	1281	12:02AM 01-08-2001
1D006	SMOKE (PHOTO)	20	1322	12:02AM 01-08-2001
1D007	SMOKE (PHOTO)	20	1280	12:02AM 01-08-2001
1D008	SMOKE (PHOTO)	20	1215	12:02AM 01-08-2001
1D009	SMOKE (PHOTO)	20	1310	12:02AM 01-08-2001

Chamber Value

The Chamber value should be within the indicated range for the following smoke detectors:

- SD350(T), SD355(T), D350P(R), SD300(T), AD350 and AD355 Addressable Photoelectric Smoke Detectors: **405 - 2100** (obscuration of 1.00%/ft to 3.66%/ft.)
- CP350, CP355 and CP300 Addressable Ionization Smoke Detectors: **750 - 2100** (obscuration of 0.50%/ft. to 1.44%/ft.)

If the addressable smoke detector's Chamber reading is not within the acceptable range, clean the detector and check the Chamber value again. If the reading is still not within the acceptable range, immediately replace the detector.

Drift Compensation

Drift compensation uses software algorithms that identify and compensate for long-term changes in the data readings from each addressable smoke detector. These long-term changes in detector data readings are typically caused by dirt and dust accumulation inside the smoke chamber. Drift compensation performs the following functions:

- Allows a smoke detector to retain its original ability to detect actual smoke and resist false alarms, even as dirt and dust accumulate
- Reduces maintenance requirements by allowing the control panel to automatically perform the periodic sensitivity measurements required by NFPA Standard 72

The FACP software also provides filters to remove transient noise signals, usually caused by electrical interference.

Maintenance Alert

The software determines when the drift compensation for a detector reaches an unacceptable level that can compromise detector performance. When a detector reaches an unacceptable level, the control panel indicates a maintenance alert. Table 4.1 summarizes the three levels of maintenance alert:

Maintenance Level	FACP Status Displays	Indicates
Low Chamber Value	INVREP	A hardware problem in the detector
Maintenance Alert	DIRTY1	Dust accumulation that is near but below the allowed limit. *DIRTY 1* indicates the need for maintenance before the performance of the detector is compromised
Maintenance Urgent	DIRTY2	Dust accumulation above the allowed limit.

Table 4.1 Maintenance Alert Levels

Figure 4.1 illustrates a graphic representation of the maintenance levels:

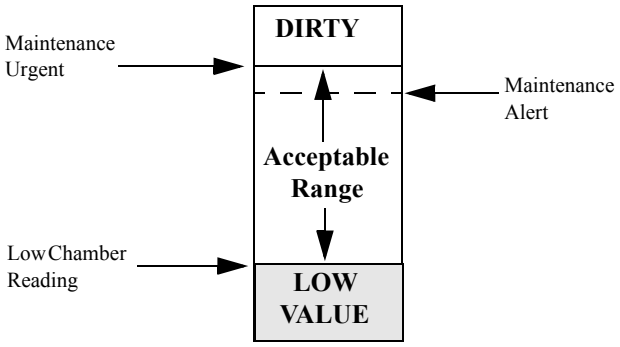


Figure 4.1 Diagram of Maintenance Levels

4.22.14 Time-Date

```
    READ STATUS
1=FUTURE
2=PRINT
3=TIME-DATE
```

Read Status Screen #5

The operator can view the daylight savings time and the month and week when daylight savings time will begin and end. Pressing 3 while viewing Read Status Screen #5 will display the following screens:

```
  DAYLIGHT SAVINGS    ⇩
ENABLED           YES
START MONTH       MAR
START WEEK     WEEK-1
```

```
  DAYLIGHT SAVINGS    ⇧
END MONTH         NOV
END WEEK       LAST-W
```

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 yellow trouble LED will blink, 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 MS-9050UD 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

The control panel is capable of reporting detailed messages depending upon the format in use. Table 5.1 shows the reporting structure for all formats.

Table 5.1 Format Selection

	Format	Format	Format	Format
Report	3+1/4+1/Standard 4+1 Express	3+1/4+1/Expanded	4+2/Standard 4+2 Express	4+2/Expanded
Alarm	SSS(S) A	SSS(S) A AAA(A) Z	SSSS AA2	SSSS AZ
Alarm Restore	SSS(S) RA	SSS(S) RA RARARA(RA) Z	SSSS RARA2	SSSS RAZ
Zone Trouble (Zone Open)	SSS(S) TZ	SSS(S) TZ TZTZTZ(TZ) Z	SSSS TZTZ2	SSSS TZZ
Zone Trouble Restore	SSS(S) RTZ	SSS(S) RTZ RTZRTZRTZ(RTZ) Z	SSSS RTZRTZ2	SSSS RTZZ
System Trouble	SSS(S) TS	SSS(S) TS TSTSTS(TS) Y	SSSS TSTS2	SSSS TSY
System Trouble Restore	SSS(S) RTS	SSS(S) RTS RTSRTSRTS(RTS) Y	SSSS RTSRTS2	SSSS RTSY
Zone Disable	SSS(S) DZ	SSS(S) DZ DZDZDZ(DZ) Z	SSSS DZDZ2	SSSS DZZ
Zone Disable Restore	SSS(S) RDZ	SSS(S) RDZ RDZRDZRDZ(RDZ) Z	SSSS RDZRDZ2	SSSS RDZZ
Low Battery	SSS(S) L	SSS(S) L LLL(L) L2	SSSS LL2	SSSS LL2
Low Battery Restore	SSS(S) RL	SSS(S) RL RLRLRL(RL) RL2	SSSS RLRL2	SSSS RLRL2
AC Loss	SSS(S) P	SSS(S) P PPP(P) P2	SSSS PP2	SSSS PP2
AC Loss Restore	SSS(S) RP	SSS(S) RP RPRPRP(RP) RP2	SSSS RPRP2	SSSS RPRP2
Fire Drill	SSS(S) FD	SSS(S) FD FDFDFD(FD) FD2	SSSS FDFD2	SSSS FDFD2
Fire Drill Restore	SSS(S) RFD	SSS(S) RFD RFDRFDRFD(RFD) RFD2	SSSS RFDRFD2	SSSS RFDRFD2
Supervisory Condition	SSS(S) V	SSS(S) V VVV(V) Z	SSSS VV2	SSSS VZ
Supervisory Condition Restore	SSS(S) RV	SSS(S) RV RVRVRV(RV) Z	SSSS RVRV2	SSSS RVZ
Test Report	SSS(S) X	SSS(S) X	SSSS XX2	SSSS XX2

Refer to Table 5.2 for an explanation of each letter code in Table 5.1 . Refer to Table 5.3 for a list of compatible receivers.

Table 5.2 Format Selection Address Explanation

Where		
SSS or SSSS	=	Subscriber ID
A	=	Alarm (1st digit)
A2	=	Alarm (2nd digit)
Z	=	Zone Number
RA	=	Alarm Restore (1st digit)
RA2	=	Alarm Restore (2nd digit)
TZ	=	Zone Trouble (1st digit)
TZ2	=	Zone Trouble (2nd digit)
RTZ	=	Zone Trouble Restore (1st digit)
RTZ2	=	Zone Trouble Restore (2nd digit)
TS	=	System Trouble (1st digit)
TS2	=	System Trouble (2nd digit)
RTS	=	System Trouble Restore (1st digit)
RTS2	=	System Trouble Restore (2nd digit)
DZ	=	Zone Disable (1st digit)
DZ2	=	Zone Disable (2nd digit)
RDZ	=	Zone Disable Restore (1st digit)
RDZ2	=	Zone Disable Restore (2nd digit)
L	=	Low Battery (1st digit)
L2	=	Low Battery (2nd digit)
RL	=	Low Battery Restore (1st digit)
RL2	=	Low Battery Restore (2nd digit)
P	=	AC Loss (1st digit)
P2	=	AC Loss (2nd digit)
RP	=	AC Loss Restore (1st digit)
RP2	=	AC Loss Restore (2nd digit)
FD	=	Fire Drill (1st digit)
FD2	=	Fire Drill (2nd digit)
RFD	=	Fire Drill Restore (1st digit)
RFD2	=	Fire Drill Restore (2nd digit)
V	=	Supervisory Condition (1st digit)
V2	=	Supervisory Condition (2nd digit)
RV	=	Supervisory Condition Restore (1st digit)
RV2	=	Supervisory Condition Restore (2nd digit)
X	=	Test Report (1st digit)
X2	=	Test Report (2nd digit)
Y	=	A trouble corresponding to the following:
	7 =	Ground Fault
	8 =	Low Battery
	9 =	not used
	A =	Telco Primary Line Fault
	B =	Telco Secondary Line Fault
	C =	Main Bell Fault, Annunciator Bell
	D =	Communication Fault to Primary Number
	E =	Communication Fault to Secondary Number
	F =	System Off Normal Fault/System Fault (Slave Operation, see Chapter 6)

Note: For Expanded Reporting, the control panel automatically adds the digit corresponding to the zone number and the second digit corresponding to any system trouble condition. Only the first digit is programmable.

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)

Red LEDs are provided on the circuit board to identify which telephone line is activated. Also, a green LED labeled *Kissoff* will turn on whenever the control panel has successfully transmitted reports to the Central Station. The *Kissoff* LED may turn on several times during communications with a Central Station.

The table below shows UL listed receivers which are compatible with the MS-9050UD.

Table 5.3 Compatible UL Listed Receivers

	Format	Ademco 685 (1)	Silent Knight 9000 (2)	Silent Knight 9800 (3)	Osborne Hoffman 2000E (4)	Radionics 6600 (5)
0	4+1 Ademco Express	✔		✔	✔	✔
1	4+2 Ademco Express	✔		✔	✔	✔
2	3+1/Standard/1800/2300	✔	✔	✔	✔	
3	3+1/Expanded/1800/2300	✔	✔	✔	✔	
4	3+1/Standard/1900/1400	✔	✔	✔	✔	
5	3+1/Expanded/1900/1400	✔	✔	✔	✔	
6	4+1/Standard/1800/2300	✔	✔	✔	✔	
7	4+1/Expanded/1800/2300	✔	✔	✔	✔	
8	4+1/Standard/1900/1400	✔	✔	✔	✔	
9	4+1/Expanded/1900/1400	✔	✔	✔	✔	
A	4+2/Standard/1800/2300	✔	✔	✔	✔	
B	4+2/Expanded/1800/2300	✔	✔	✔	✔	✔
C	4+2/Standard/1900/1400	✔	✔	✔	✔	✔
D	4+2/Expanded/1900/1400	✔	✔	✔	✔	✔
E	Ademco Contact ID	✔		✔	✔	✔
F	Not Used					

1. With 685-8 Line Card with Rev. 4.4d or later software
2. With 9002 Line Card Rev. 9035 or later software or 9032 Line Card with 9326A or later software
3. With 124077V2.00 or later Receiver and 126047 Line Card Rev. M or later
4. With V.7301 Receiver S/W or later
5. With 01.01.03 Receiver S/W or later and Line Card 01.01.03 or later

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 Power Supply Calculations

6.1 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

6.2 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 6.1 , to determine the total amount of current, in AC amperes (A), that must be supplied to the system.

Table 6.1 AC Branch Circuit Requirements

Device Type	Number of Devices		Current Draw (AC amps)		Total Current per Device
MS-9050UD	1	X	3.0	=	
	[ ]	X	[ ]	=	
	Sum Column for AC Branch Current Required			=	

6.3 Calculating the System Current Draw

6.3.1 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 6.3 on page 164. 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 6.3 on page 164. 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 6.3 on page 164.

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 6.2 shows how to convert milliamperes and microamperes to full amperes.

Table 6.2 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

6.3.2 How to Use Table 6.3 on page 164 to Calculate System Current Draw

Use Table 6.3 on page 164 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 Fire-Lite 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 6.4 on page 165

Following are the types of current that can be entered into Table 6.3 on page 164:

- ✓ **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 6.3 contains 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 6.4 on page 165.

Table 6.3 System Current Draw Calculations

Device Type	Calculation Column 1 Primary, Non-Fire Alarm Current (amps)			Calculation Column 2 Primary, Fire Alarm Current (amps)			Calculation Column 3 Secondary, Non-Fire Alarm Current (amps)		
	Qty	X[current draw]=	Total	Qty	X [current draw] =	Total	Qty	X[current draw]=	Total
Main Circuit Board	1	X[0.120]=	0.120	1	X[0.200]=	0.200	1	X[0.120]=	0.120
4XTMF	[ ]	X[0.005]=		[ ]	X[0.011][1]=		[ ]	X[0.005]=	
4-wire Detector Heads	[ ]	X[ ][2]=		[ ]	X[ ]=		[ ]	X[ ]=	
Power Supervision Relays[3]	[ ]	X[0.025]=		[ ]	X[0.025]=		[ ]	X[0.025]=	
CP350 & CP355	[ ]	X[0.00030]=		maximum alarm draw for all devices		0.400	[ ]	X[0.00030]=	
SD350 & SD355	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
SD350T & SD355T	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
AD350 & AD355	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
H350 & H355	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
H350R & H355R	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
H355HT	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
D350P	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
D350RP	[ ]	X[0.00030]=					[ ]	X[0.00030]=	
B501BH & B501BHT[4]	[ ]	X[0.001]=					[ ]	X[0.001]=	
B224RB Relay Base	[ ]	X[0.00050]=					[ ]	X[0.00050]=	
B224BI Isolator Base	[ ]	X[0.00045]=					[ ]	X[0.00045]=	
MMF-300	[ ]	X[0.00040]=					[ ]	X[0.00040]=	
MMF-300-10	[ ]	X[0.00350]=					[ ]	X[0.00350]=	
MDF-300	[ ]	X[0.00075]=					[ ]	X[0.00075]=	
MMF-301	[ ]	X[0.000375]=					[ ]	X[0.000375]=	
MMF-302	[ ]	X[0.00027]=					[ ]	X[0.00027]=	
MMF-302-6	[ ]	X[0.00200]=					[ ]	X[0.00200]=	
BG-12LX	[ ]	X[0.00023]=					[ ]	X[0.00023]=	
CMF-300	[ ]	X[0.00039]=					[ ]	X[0.00039]=	
CMF-300-6	[ ]	X[0.00225]=					[ ]	X[0.00225]=	
CRF-300	[ ]	X[0.00027]=					[ ]	X[0.00027]=	
CRF-300-6	[ ]	X[0.00145]=					[ ]	X[0.00145]=	
I300	[ ]	X[0.00040]=					[ ]	X[0.000405]=	
ANN-80	[ ]	X[0.0370]=		[ ]	X[0.0400]=		[ ]	X[0.0150]=	
ANN-I/O	[ ]	X[0.0350]=		[ ]	X[0.200]=		[ ]	X[0.0350]=	
ANN-I/O LEDs	[ ]	X[0.000]=		[ ]	X[0.010]=		[ ]	X[0.000]=	
ANN-S/PG	[ ]	X[0.0450]=		[ ]	X[0.0450]=		[ ]	X[0.0450]=	
TB3 EIA-485	[ ]			[ ]	[ ]		[ ]		
NAC #1[5]				[ ]	X[ ]=				
NAC #2				[ ]	X[ ]=				
Sum each column[6] for totals	**Primary Non-Alarm =**			**Primary 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. Refer to the Device Compatibility Document for standby current.
3. Must use compatible listed Power Supervision Relay.
4. Maximum alarm current for each sounder base is 0.015 amps which must be supplied by aux. 24VDC source.
5. Current limitation of Terminal TB1 circuits is 2.5 amps total max.
6. Total current draw listed above cannot exceed 2.7 amps.

6.4 Calculating the Battery Size

Use Table 6.4 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 6.4 as follows:

1. Enter the totals from Table 6.3 on page 164, 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 6.4 Total Secondary Power Requirements at 24 VDC

Secondary Standby Load (total from Table 6.3 Calculation Column 3) [ ]	Required Standby Time (24 or 60 hours) X[ ]	= AH
Primary Alarm Load (total from Table 6.3 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

6.4.1 NFPA Battery Requirements

- NFPA 72 Local and Proprietary Fire Alarm Systems require 24 hours of standby power followed by 5 minutes in alarm
- NFPA 72 Central, Auxiliary and Remote Station Fire Alarm Systems require 60 hours of standby followed by 5 minutes in alarm. Batteries installed in a system powered by a generator need to provide at least 4 hours of standby power

6.4.2 Selecting and Locating Batteries

Select batteries that meet or exceed the total ampere hours calculated in Table 6.4 . The control panel can charge batteries in the 7 AH to 18 AH range. The control panel cabinet is capable of housing batteries up to 18 AH.

APPENDIX A Software Zones

A.1 Correlations

Setup and configuration of an addressable system is different than a conventional system. In a conventional system, assignment of input devices (smoke detectors, pull stations, heat detectors, etc.) to zones is accomplished through wiring. The wiring is direct from clearly marked panel terminals to any device assigned to a particular zone. Connection of output devices (horns, bells, strobes, etc.) in a conventional system is accomplished by direct wiring of the output devices to Notification Appliance Circuit terminals.

In an addressable system, a minimum of a single pair of wires (SLC communication loop) is used to connect all addressable input and output devices. Communications between the FACP (Fire Alarm Control Panel) and all addressable devices takes place over the wire pair which originates from the FACP. Software programming is used to configure the system as opposed to direct wiring. Zone assignments are created via software means, hence the term *software zones*.

Setup of an MS-9050UD software zone is accomplished by panel programming. Each addressable device can be assigned to a maximum of five software zones. Each software zone, however, may have from 1 to 19[1] addressable input and output devices assigned to it.

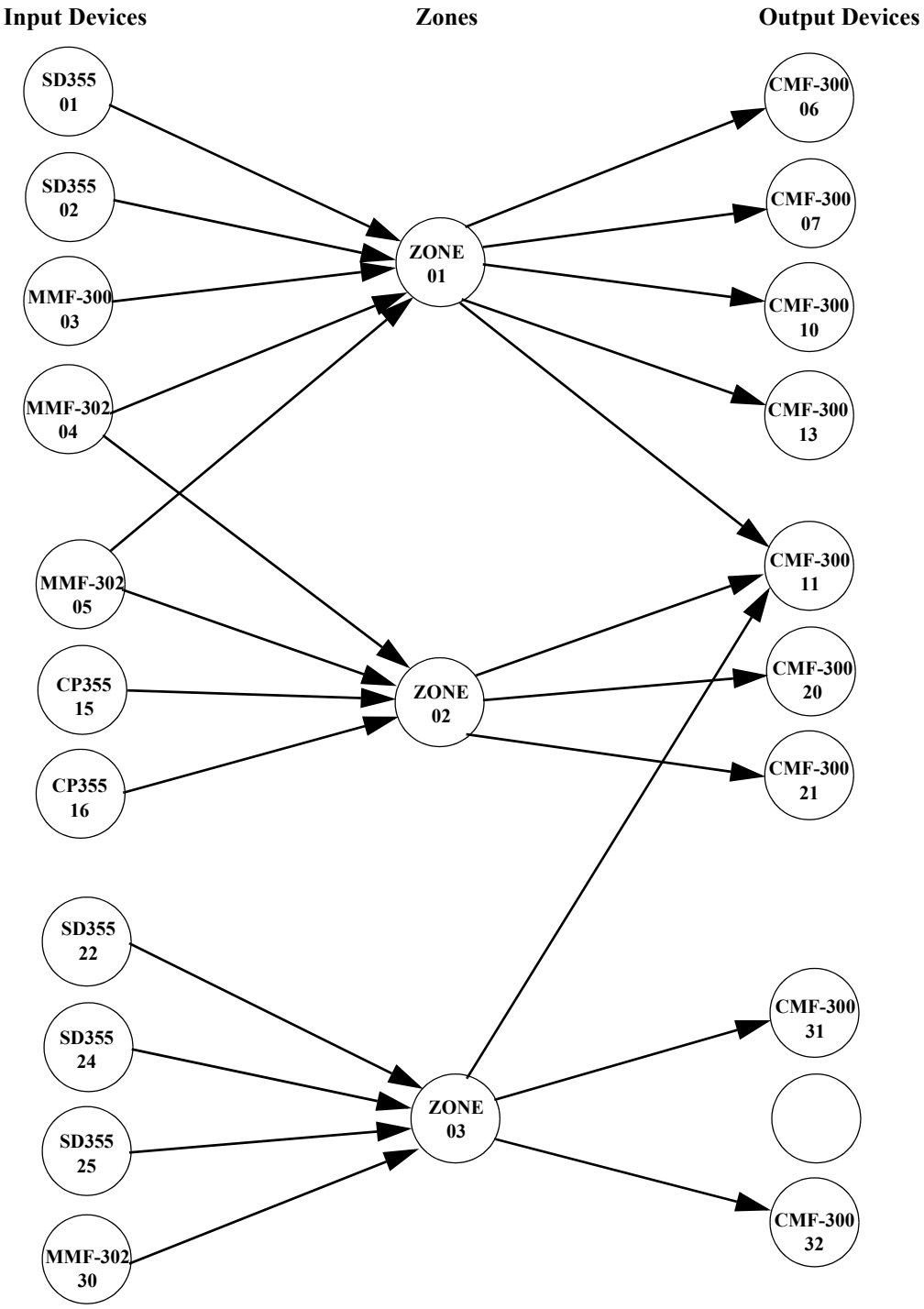
Monitor modules, control modules and detectors comprise a group of 50[1] addresses, each device having a unique address from 1 to 50[1]. Be careful not to duplicate addresses between devices. Refer to the following page for an example of zoning.

In the example on the following page:

- Zone 01 has the following addressable devices assigned to it:
  - ✓ SD355 smoke detectors with addresses *01* and *02*
  - ✓ MMF-300 monitor module with address *03*
  - ✓ MMF-302 monitor module with address *04* and *05*
  - ✓ CMF-300 control modules with addresses *06*, *07*, *10, 11* and *13*
- Zone 02 has the following addressable devices assigned to it:
  - ✓ MMF-302 monitor module with addresses *04* and *05*
  - ✓ CP355 smoke detectors with addresses *15* and *16*
  - ✓ CMF-300 control modules with addresses *20*, *11* and *21*
- Zone 03 has the following addressable devices assigned to it:
  - ✓ SD355 smoke detectors with addresses *22*, *24* and *25*
  - ✓ MMF-302 control module with address *30*
  - ✓ CMF-300 control modules with addresses *11*, *31* and *32*

The example points out some of the key assignment features of the MS-9050UD. Addresses of detectors, monitor modules and control modules are not duplicated. The control module with address 11 is assigned to three software zones (providing floor above and floor below). Be careful to properly plan the installation prior to installing any devices.

Correlation of Input and Output Zones



The zone correlations which are shown graphically above are also presented in Table A.1 on page 168.

Table A.1 Detector Programming Sheet Example

ADDRESSABLE DEVICE ZONE ASSIGNMENT			
Address	**Device Type**	**Zone Number**	**ADJ/NOUN**
01	SD355	1	FIRST HALL
02	SD355	1	ELEV. LOBBY
03	MMF-300	1	
04	MMF-302	1, 2	
05	MMF-300	1, 2	
06	CMF-300	1	
07	CMF-300	1	
08			
09			
10	CMF-300	1	
11	CMF-300	1, 2, 3	
12			
13	CMF-300	1	
14			
15	CP355	2	2ND FLOOR
16	CP355	2	ROOM 210
17			
18			
19			
20	CMF-300	2	
21	CMF-300	2	
22	SD355	3	3RD FLOOR
23			
24	SD355	3	MEZZANINE
25	SD355	3	MECH. ROOM
26			
27			
28			
29			
30	MMF-302	3	
31	CMF-300	3	
32	CMF-300	3	
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

Table A.2 Blank Programming Sheet

ADDRESSABLE DEVICE ZONE ASSIGNMENTS			
Address	**Device Type**	**Zone Number**	**ADJ/NOUN**
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

Table A.3 Blank Programming Sheet

ADDRESSABLE DEVICE ZONE ASSIGNMENTS			
Address	**Device Type**	**Zone Number**	**ADJ/NOUN**
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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21			
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23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
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41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

APPENDIX B Default Programming

The following table provides a list of the programming options and their factory default settings.

Program Option	Factory Default	Program Option	Factory Default
Detector Programming	Not Installed	Daylight Savings	Yes
Detector Type	Smoke-Photo	Month Start Daylight Savings	March
Detector Verification	Off	Week Start Daylight Savings	1st Week
Detector Walktest	Yes	Month End Daylight Savings	November
Detector PAS	No	Week End Daylight	Last Week
Detector Presignal	No	Verification	OFF
Detector Zone Assign.	000 only	(future)	
Detector Adj/Noun	none	PAS Timer	0
Module Programming	Not Installed	Presignal Timer	0
Module Type	Monitor	Waterflow Retard Timer	0
Module Walktest	Yes	NAC 1 & 2 Enable	Enabled
(not used)		NAC 1 & 2 Silenceable	Yes
Module Presignal	No	NAC 1 & 2 Type	Bell
Module Zone Assign.	000 only	NAC 1 & 2 Sync Type	System Sensor
Module Adj/Noun	none	NAC 1 & 2 Autosilence	0
Zone 0 Enable	Enabled	NAC 1 & 2 Coding	Steady
Zone 1 Enable	Enabled	NAC 1 & 2 Zones	Zone 000 only
Zone 2 Enable	Enabled	NAC 1 & 2 Silence Inhibit	0
Zone 3 Enable	Enabled	Relay 1	Alarm
.....through.....	.....	Relay 2	Trouble (fixed)
Zone 19 Enable	Enabled	Relay 3	Supervisory
(future)		(future)	No
(future)		(future)	
Loop Style	Style 4	(future)	
Loop Protocol	CLIP	(future)	
Trouble Reminder	Off	(future)	
Banner	HONEYWELL LIFE SAFETY	Onboard DACT	No
Time Format	12 Hr		
Hours Setting	12		
Minutes Setting	00		
AM-PM Setting	AM		
Month Setting	01		
Day Setting	01		
Year Setting	06		

APPENDIX C NFPA Standard-Specific Requirements

The Fire-Lite MS-9050UD 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-9050UD Control Panel

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

Batteries

Refer to "Power Supply Calculations" on page 162, 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 16.

OR

4XTMF Transmitter Module for connection to the Fire-Lite RS82 Remote Station Receiver. See Figure C.2, “Remote Station Connection Using 4XTMF Module,” on page 174, 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 31 and as outlined in Figure C.1, “Municipal Box Connected to 4XTMF Transmitter Module,” on page 173.

NFPA 72 Proprietary Fire Alarm System

MS-9050UD Alarm, Trouble and Supervisory contacts connected to Transmitter(s). See Figure C.3, “Proprietary Protective Signaling System,” on page 175, for installation instructions for this unit.

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 JP on the MS-9050UD main circuit board to supervise placement of 4XTMF module and circuit.
3. Cut JP2 on the MS-9050UD main circuit board to enable FACP Supervisory relay.
4. Refer to "4XTMF Transmitter Module Installation" on page 31 for detailed information.

Figure C.1 Municipal Box Connected to 4XTMF Transmitter Module

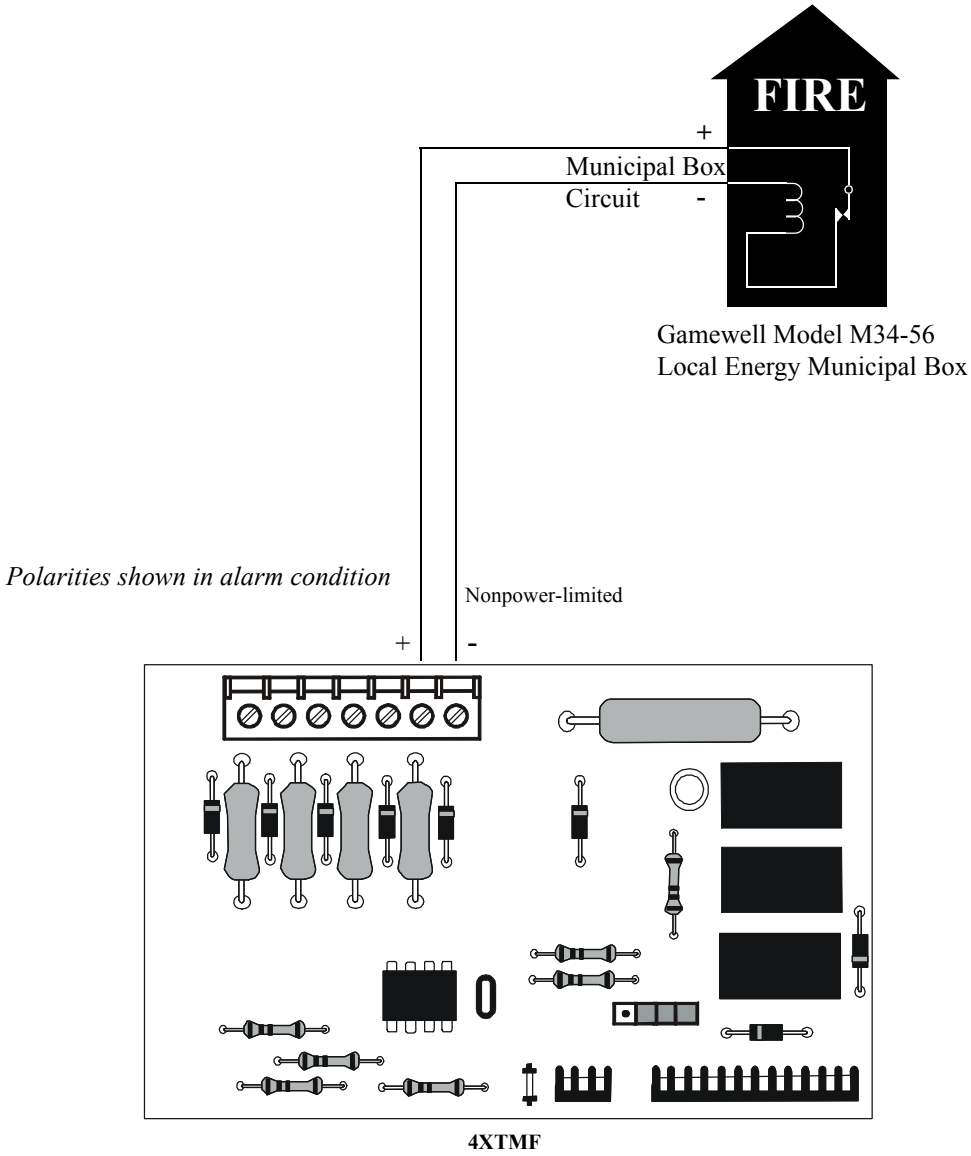


Figure C.1 Municipal Box Connected to 4XTMF Transmitter Module

NFPA 72 Remote Station Protective Signaling System

Notes:

1. Cut Jumper JP on the MS-9050UD main circuit board to supervise placement of the 4XTMF module.
2. Refer to "4XTMF Transmitter Module Installation" on page 31 for detailed information.

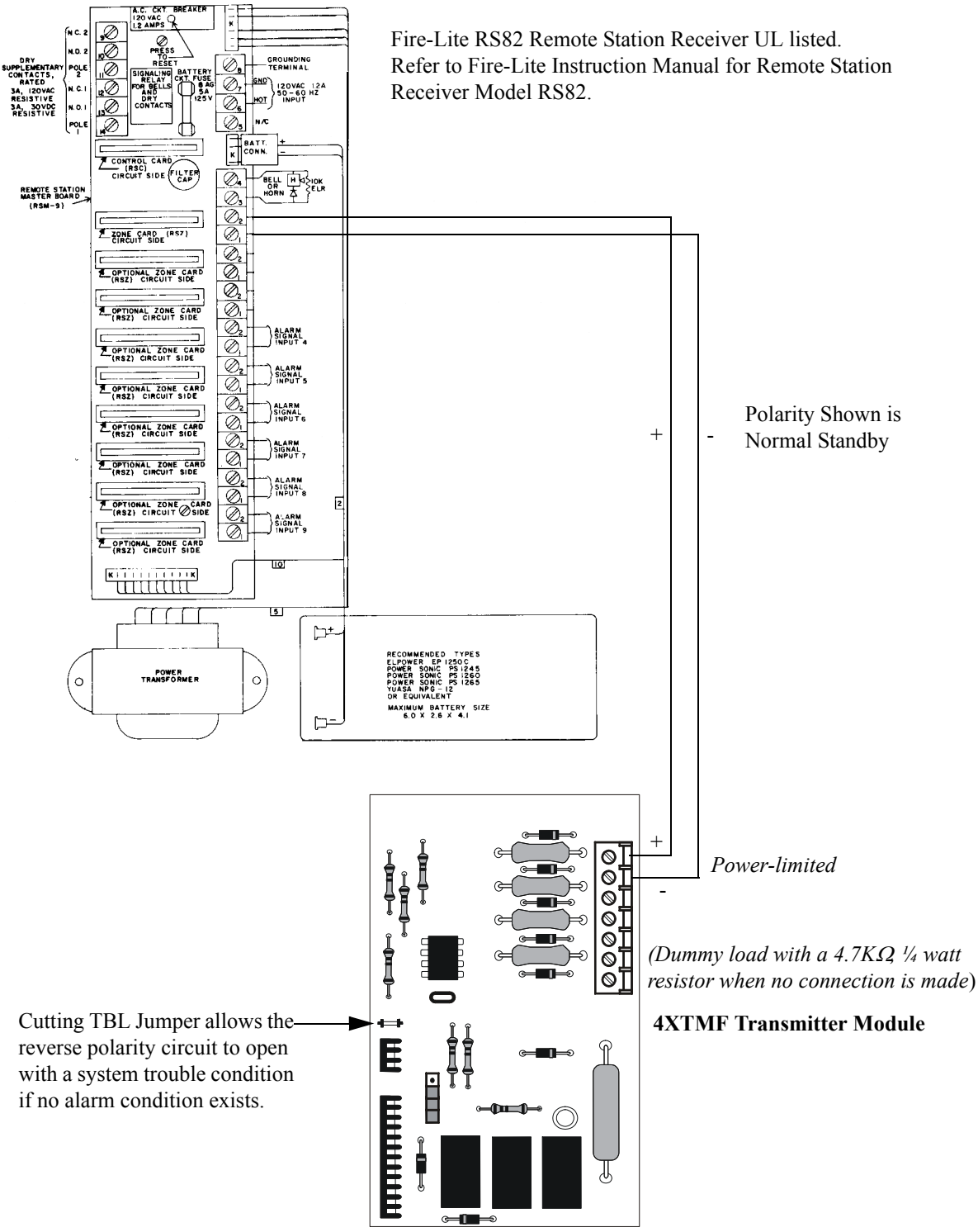


Figure C.2 Remote Station Connection Using 4XTMF Module

NFPA 72 Proprietary Protective Signaling Systems

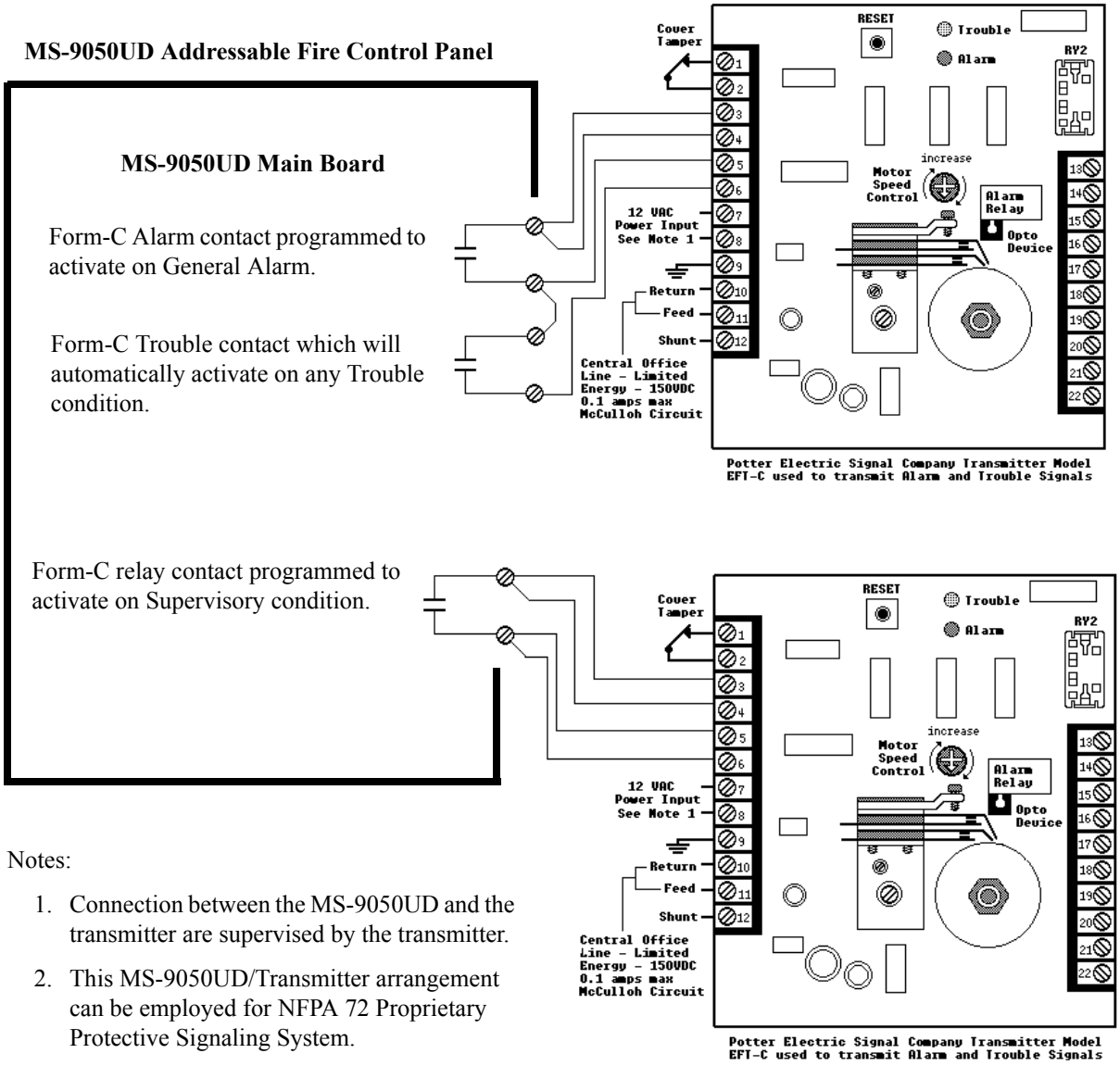


Figure C.3 Proprietary Protective Signaling System

APPENDIX D Wire Requirements

T-tapping of the SLC loop wiring is allowed for 2-wire (Style 4) configurations. The total resistance of any branch cannot exceed 40 ohms. The total wire length of all branches cannot exceed 10,000 feet (3,000 m).

Connecting external system accessories to the MS-9050UD main circuits must be carefully considered to ensure proper operation. It is important to use the correct type of wire, wire gauge and wire run length for each MS-9050UD circuit. Reference the charts below to specify wire requirements and limitations for each MS-9050UD circuit.

Note: If the SLC loop is to be run in conduit with Notification Appliance Circuits, the risk of encountering problems can be greatly reduced by exclusively employing electronic sounders (such as MA/SS-24D) instead of more electronically noisy notification appliances such as electromechanical bells or horns.

Table D.1 MS-9050UD Wire Specifications

CIRCUIT CONNECTIONS		WIRE REQUIREMENTS		
Circuit Type	**Circuit Function**	**Wire Type and Limitations**	**Recommended Max. Distance Feet (meters)**	**Wire Gauge and Compatible Brands**
SLC loop (power-limited)	Connects to Addressable Devices	Twisted, shielded pair, 40 ohms maximum per length of Style 6 and 7 loops. 40 ohms per branch maximum for Style 4 loops[1]	10,000 (3,000 m) 8,000 (2,400 m) 4,875 (1,450 m) 3,225 (980 m)	12 AWG (3.25 mm^2): Genesis 4410, Signal 98230, Belden 9583, WPW999 14 AWG (2.00 mm^2):Genesis 4408 & 4608 Signal 98430, Belden 9581, WPW995 16 AWG (1.30 mm^2): Genesis 4406 & 4606 Signal 98630, Belden 9575, WPW991 Direct Burial Cable Isotec NP713110VNQ-S 18 AWG (0.75 mm^2): Genesis 4402 & 4602 Signal 98300, Belden 9574, WPW975 Direct Burial Cable Isotec NP714110VNQ-S
		Untwisted, unshielded pair	3,000 (900 m)	12-18 AWG (3.25 - 0.75 mm^2) using listed wire
ANN-BUS (EIA-485) (power-limited)	Connects to annunciator modules	Twisted, shielded pair with a characteristic impedance of 120 ohms	6,000 (1,800 m)	18 AWG (0.75 mm^2)
EIA-232 (power-limited)	connects to remote PC computer	Twisted, shielded pair	50 (15 m)	18 AWG (0.75 mm^2) minimum
MMF-300 and MMF-301 (power-limited)	Initiating Device Circuit	Maximum loop wire resistance is 40 ohms for the MMF-300 and 20 ohms for the MMF-301	2,500 (760 m)	12-18 AWG (3.25 - 0.75 mm^2)
MMF-302 (power-limited)	Initiating Device Circuit	No more than a 2.4 volt drop allowed at end of circuit. Maximum loop wire resistance is 25 ohms	2,500 (760 m)	12-18 AWG (3.25 - 0.75 mm^2)
CMF-300 (power-limited)	Notification Appliance Circuit	In alarm, no more than a 1.2 volt drop allowed at end of circuit	Distance limitation set by 1.2 volt maximum line drop	12-18 AWG (3.25 - 0.75 mm^2)

Table Footnote

1. When using untwisted, unshielded wire, full conduit is recommended for optimum EMI/RFI protection.

SLC Loop Using Twisted, Unshielded Wire

While shielded wire is not required, it is recommended that all SLC wiring be twisted-pair to minimize the effects of electrical interference. Use the following table to determine the specific wiring requirements for the SLC when unshielded wire is used.

SLC Wire Requirements	Distance in Feet (meters)	Wire Size	Wire Type
Twisted-pair, unshielded	10,000 feet (3,048 m)	12 AWG (3.1 mm^2)	Belden 5020UL & 6020UL, Genesis WG-4315 & WG-4515
	8,000 feet (2,438 m)	14 AWG (2.0 mm^2)	Belden 5120UL & 6120UL, Genesis WG-4313 & WG-4513
	4,875 feet (1,486 m)	16 AWG (1.3 mm^2)	Belden 5220UL & 6220UL, Genesis WG-4311 & WG-4511
	3,225 feet (983 m)	18 AWG (0.75 mm^2)	Belden 5320UL & 6320UL, Genesis WG-4306 & WG-4506

APPENDIX E HVAC Control

The FACP can be programmed to shut down a building's HVAC fans in the event of a fire. The fans cannot be restarted until the fire alarm condition has been cleared and the FACP has been reset to a normal (non-alarm) condition.

IMPORTANT! *This HVAC feature is not to be used for smoke control. It is only designed to shut down fans during a fire alarm condition.*

E.1 Control Module Operation

E.1.1 HVAC SHUTDN

The **HVAC SHUTDN** type code can be assigned to any addressable control relay module for the purpose of shutting down HVAC fans during a fire alarm condition. Devices connected to a module with this type code are unsupervised. To program this feature in the FACP:

- Program the **HVAC SHUTDN** type code to the control relay module which will be used to shut down the fans (refer to *Type* under the section titled "Edit Module Screen for Control Modules" on page 72).
- Program the control relay module to a software zone and program alarm input devices which, when activated are to cause fan shutdown, to the same software zone (refer to *Zone Assignment* under the section titled "Edit Module Screen for Control Modules" on page 72).
- Monitor the control relay module using an addressable monitor module programmed for *Trouble Monitor*. The monitor module label should be programmed to indicate HVAC SHUTDOWN. When the control relay module is active (HVAC SHUTDN), the monitor module will indicate a trouble condition at the FACP and the display should indicate that the HVAC is shut down.

Once activated, the HVAC SHUTDN control module remains activated, even if the FACP is silenced or reset. After the alarm condition on the FACP has been cleared and the panel reset, the HVAC SHUTDN control relay module remains activated and the fans remain off. The monitor module programmed for *Trouble Monitor* which is being used to supervise the control relay module, will indicate a trouble condition at the control panel and the LCD should display that the HVAC is shut down. The fans can only be restarted when the HVAC SHUTDN control relay module is deactivated by the HVAC RESTART module.

E.2 Monitor Module Operation

E.2.1 HVAC RESTART

The **HVAC RESTART** type code can be assigned to any addressable monitor module for the purpose of resetting (deactivating) the HVAC SHUTDN control relay module and turning the fans back on. The **HVAC RESTART** monitor module acts globally throughout the FACP system and therefore is not programmed to a particular software zone. To program this feature in the FACP:

- Program the **HVAC RESTART** type code to the monitor module which will be used to deactivate the HVAC SHUTDN control relay module and restart the fans (refer to Type Monitor under the section titled "Edit Module Screen for Monitor Module" on page 63).

The HVAC RESTART monitor module does not latch when activated. Pressing a switch connected to the monitor module will deactivate the HVAC SHUTDN control relay module *only if there are no alarm conditions.* The HVAC SHUTDN control relay module can be deactivated if trouble conditions exist on the FACP.

E.2.2 HVAC OVRRIDE

The **HVAC OVRRIDE** type code can be assigned to any addressable monitor module for the purpose of overriding or preventing the HVAC SHUTDN control relay modules from activating. The **HVAC OVRRIDE** monitor module acts globally throughout the FACP system and therefore is not programmed to a particular software zone. To program this feature in the FACP:

- Program the **HVAC OVRRIDE** type code to the monitor module which will be used to override the HVAC SHUTDN control relay module and prevent the fans from turning off (refer to Type Monitor under the section titled "Edit Module Screen for Monitor Module" on page 63).

The HVAC OVRRIDE monitor module does not latch when activated. Activating a switch connected to the monitor module will override all HVAC SHUTDN control relay modules in the system, preventing the HVAC SHUTDN modules from activating and causing the FACP LCD to display an active HVAC OVRRIDE module and turn on the Supervisory LED. Releasing the switch will allow the HVAC SHUTDN control relay modules to activate with subsequent alarms, turning off the fans.

As an example, pressing the HVAC OVRRIDE switch with no alarms in the system will prevent the fans from being turned off when an alarm does occur. As long as the switch is activated, the fans will not shutdown for any alarms. If the system is still in alarm when the switch is released, the fans will not shutdown unless another alarm occurs after the switch is released.

Important! *If an alarm exists in the system and HVAC Shutdown has already occurred, HVAC OVRRIDE will have no effect on the HVAC SHUTDN control relay modules. HVAC OVRRIDE will prevent HVAC Shutdown from occurring only if it is initiated prior to an alarm condition.*

Note: Activation of the HVAC OVRRIDE module causes a supervisory event that will be communicated to the Central Station if enabled.

APPENDIX F 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.

F.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/Point 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 or Point Number:
   - ✓ Zone Number is transmitted as ‘00’ for zone 0 up to ‘19’ for zone 19
   - ✓ Point Number is transmitted as ‘01’ for point/address 1 up to ‘50’ for point/address 50

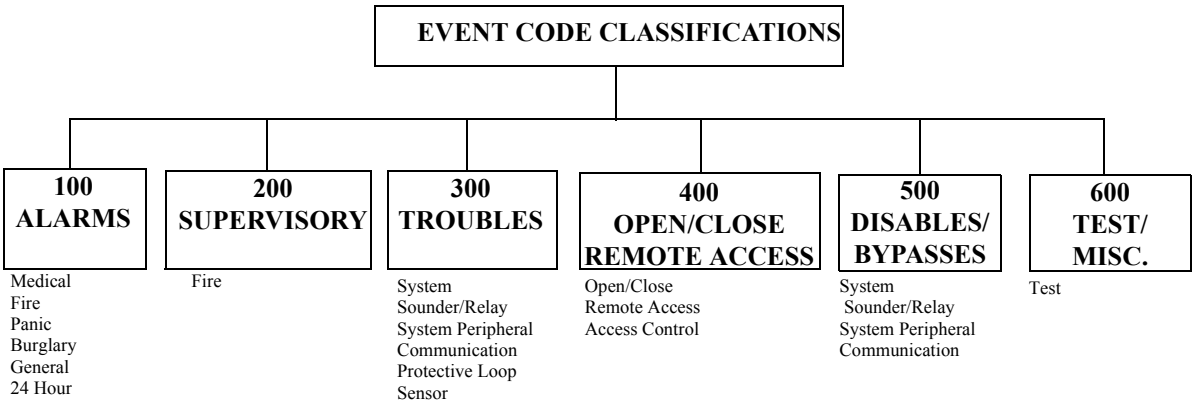
F.2 Ademco Contact ID Typical Printout

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 R for New Restore.



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 -RAM Checksum (restore not applicable)
304 ROM checksum bad	TROUBLE -ROM Checksum (restore not applicable)
305 System reset	TROUBLE - System Reset (restore not applicable)
306 Panel program changed	TROUBLE - Prog. Change (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

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

Notes

Index

Index

Index

Index

Index

Notes

Limited Warranty

The manufacturer 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 the manufacturer 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. The manufacturer 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 the manufacturer or as expressly authorized by the manufacturer in writing, or is serviced by anyone other than the manufacturer 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 the manufacturer, with respect to its products. The manufacturer, 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 the manufacturer, 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.

THE MANUFACTURER 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 THE MANUFACTURER BE LIABLE FOR ANY LOSS OF OR DAMAGE TO PROPERTY, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE THE MANUFACTURER'S PRODUCTS. FURTHERMORE, THE MANUFACTURER 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 the manufacturer. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

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