NOTIFIER by Honeywell

# N16 Fire Alarm Control Panel

# Instruction Manual

**LS10239-000NF-E**

**Rev C**

## LS10239-000NF-E-C

**ECN: 00065621**

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# FIRE ALARM & EMERGENCY COMMUNICATION SYSTEM LIMITATIONS

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

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

**An emergency communication system**—typically made up of an automatic fire alarm system (as described above) and a life safety communication system that may include an autonomous control unit (ACU), local operating console (LOC), voice communication, and other various interoperable communication methods—can broadcast a mass notification message. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire or life safety event. The Manufacturer recommends that smoke and/ or heat detectors be located throughout a protected premises following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. This document can be found at http:/ / www.systemsensor.com/ appguides/ . A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

**Smoke detectors** may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire. Particles of combustion or “smoke” from a developing fire may not reach the sensing chambers of smoke detectors because:

• Barriers such as closed or partially closed doors, walls, chimneys, even wet or humid areas may inhibit particle or smoke flow.

• Smoke particles may become “cold,” stratify, and not reach the ceiling or upper walls where detectors are located.

• Smoke particles may be blown away from detectors by air outlets, such as air conditioning vents.

• Smoke particles may be drawn into air returns before reaching the detector.

The amount of “smoke” present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm. Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

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

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

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

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

• An emergency communication system may take priority over a fire alarm system in the event of a life safety emergency.

• Voice messaging systems must be designed to meet intelligibility requirements as defined by NFPA, local codes, and Authorities Having Jurisdiction (AHJ).

• Language and instructional requirements must be clearly disseminated on any local displays.

• Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.

• Studies have shown that certain people, even when they hear a fire alarm signal, do not respond to or comprehend the meaning of the signal. Audible devices, such as horns and bells, can have different tonal patterns and frequencies. It is the property owner's responsibility to conduct fire drills and other training exercises to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.

• In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

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

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

**Alarm Signaling Communications:**

• **IP connections** rely on available bandwidth, which could be limited if the network is shared by multiple users or if ISP policies impose restrictions on the amount of data transmitted. Service packages must be carefully chosen to ensure that alarm signals will always have available bandwidth. Outages by the ISP for maintenance and upgrades may also inhibit alarm signals. For added protection, a backup cellular connection is recommended.

• **Cellular connections** rely on a strong signal. Signal strength can be adversely affected by the network coverage of the cellular carrier, objects and structural barriers at the installation location. Utilize a cellular carrier that has reliable network coverage where the alarm system is installed. For added protection, utilize an external antenna to boost the signal.

• **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 alarm signaling connections are recommended.

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

# INSTALLATION PRECAUTIONS

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

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

**CAUTION - System Re-acceptance Test after Software Changes:**

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

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

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

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

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

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

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

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

**Units with a touchscreen display** should be cleaned with a dry, clean, lint free/ microfiber cloth. If additional cleaning is required, apply a small amount of Isopropyl alcohol to the cloth and wipe clean. Do not use detergents, solvents, or water for cleaning. Do not spray liquid directly onto the display.

**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.

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## FCC REQUIREMENTS

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

### Canadian Requirements

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

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada

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# SOFTWARE DOWNLOADS

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

Contact Technical Support with any questions about software and the appropriate version for a specific application.

# DOCUMENTATION FEEDBACK

Your feedback helps us keep our documentation up-to-date and accurate. If you have any comments or suggestions about our online

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

• Underwriters Laboratories
• National Fire Protection Association

**Before proceeding, the installer should be familiar with the following documents:**

• Underwriters Laboratories Standard UL 864
• UL 2610 for Commercial Premises Security Alarm Units and Systems
• UL 2017 for General-Purpose Signaling Devices and Systems
• NFPA 72 National Fire Alarm Code

The contents of this manual are important and must be kept in close proximity of the hardware. If building ownership is changed, this manual and all other testing and maintenance information must also be passed to the current owner of the facility. A copy of this manual is available from the manufacturer.

This product is intended to be installed in accordance with the following standards UL 864 Tenth Edition Compliance.

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 10th Edition. Software version must be 3.0 or higher to comply with UL864 10th edition. Operation of the N16 with products not tested for UL 864 9th Edition has not been evaluated and may not comply with NFPA 72 and/ or the latest edition of UL 864. These applications will require the approval of the local Authority Having Jurisdiction (AHJ).

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, ULC-S527-19. Software version must be 7.0 or higher to comply with ULC-S527-19. Operation of the N16 with products not tested for ULC-S527-19 has not been evaluated and may not comply with ULC-S524-19 and/ or the latest edition of ULC-S527. These applications will require the approval of the local Authority Having Jurisdiction (AHJ).

**NOTE:** Firmware version 3.0 or higher must be installed on the N16 for UL 10th Edition compliance.

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

• NFPA 12- Standard on Carbon Dioxide Extinguishing Systems
• NFPA 12A - Standard on Halon 1301 Fire Extinguishing Systems
• NFPA 13 Sprinkler Systems
• NFPA 15 Water Spray Systems
• NFPA 16 Deluge-Foam Water Systems
• NFPA 17 - Dry Chemical Extinguishing Systems
• NFPA 17A - Wet Chemical Extinguishing Systems
• NFPA 92 - Design, Installation and Testing of Smoke Control Systems
• NFPA 750 Water Mist Fire Protection Systems
• NFPA 2001 - Clean Agent Fire Extinguishing Systems
• NFPA 2010 Fixed Aerosol Fire Extinguishing Systems
• NFPA 72 Central Station Fire Alarm Systems (Automatic, Manual and Waterflow) Protected Premises Unit (requires CGW-MB).
• NFPA 72 Local (Automatic, Manual, Waterflow and Sprinkler Supervisory) Fire Alarm Systems.
• NFPA 72 Remote Station (Automatic, Manual and Waterflow) Fire Alarm Systems
• NFPA 72 Proprietary (Automatic, Manual and Waterflow) Fire Alarm Systems (Protected Premises Unit).

**The installer should be familiar with the following documents and standards:**

• NFPA 70 - National Electrical Code/ Article 300 Wiring Methods,
• NFPA 70 - National Electrical Code/ Article 760 Fire Alarm Systems
• NFPA 72 Initiating Devices for Fire Alarm Systems
• NFPA 72 Inspection, Testing and Maintenance for Fire Alarm Systems
• NFPA 72 Notification Appliances for Fire Alarm Systems

### Underwriters Laboratories (UL)

• UL 38 Manually Actuated Signaling Boxes
• UL 217 Smoke Detector, 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 681 Wiring methods used shall be in accordance with “Standard for Installation and Classification of Burglar and Holdup Alarm Systems”
• UL 827 “Wiring methods used shall be in accordance with Standard for Central Station Alarm Services”
• UL 1971 Visual Signaling Appliances
• ULC-S527-19 - Standard for Control Units for Fire Alarm Systems
• ULC S524 - Standard for the Installation of Fire Alarm Systems
• ULC-S527-1.2 - Standard for Display and Control Center (DCC) in Fire Alarm Systems

### Other

• 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

### Related Documents

Below is a list of documents referenced in this manual, as well as documents for selected other compatible devices.

**Table 6.1** Referenced Documents

| Document Name | Document Number |
|---|---|
| **Compatible Conventional Devices (Non-addressable)** | |
| Device Compatibility Document* | 15378 |
| **Fire Alarm Control Panel (FACP) and Main Power Supply Installation** | |
| PMB-AUX Installation Document | LS10242-000GE-E |
| DVC Digital Voice Command Manual | 52411 |
| DVC-RPU UL Listing Document | 50107424-001 |
| DAA2 and DAX Amplifiers Manual | 53265 |
| DS-DB Digital Series Distribution Board and Amplifier | 53622 |
| DAL Devices Reference Document | 52410 |
| AA-Series Audio Amplifier Manual | 52526 |
| SLC Wiring Manual | 51253 |
| **Communicators** | |
| CGW-MB CLSS Gateway | LS10248-051HW-E |
| HON-DACT-DS Darksite Dialer | LS10406-000HW-E |
| **Off-line Programming Utility** | |
| VeriFire®Tools help file | Available for download |
| **Cabinets & Chassis** | |
| CAB-3/ CAB-4 Series Cabinet Installation Document | 15330 |
| CAB-5 Series Cabinet Installation Document | LS10244-000GE-E |
| ABB Series Annunciator Backboxes | LS10249-000GE-E |
| NBB-2 Backbox | LS10250-000GE-E |
| Battery/ Peripherals Enclosure Installation Document | 50295 |
| Heat Dissipation for Cabinets with Digital Audio Products | 53645 |

| Document Name | Document Number |
|---|---|
| **Power Supplies, Auxiliary Power Supplies & Battery Chargers** | |
| ACPS-610 Installation Manual | 53018 |
| APS2-6R Instruction Manual | 53232 |
| CHG-120 Battery Charger Manual | 50641 |
| HPF24S6/ S8 Field Charger/ Power Supply | 52751 |
| PSE-6/ 10 Series Power Supply Extenders | LS10227-000NF-E |
| HPF-PS6/ 10 Series Power Supplies | LS10227-003HP-E |
| **Networking** | |
| High-Speed Network Communications Module | 54014 |
| High-Speed Noti•Fire•Net Instruction Manual | 54013 |
| Noti•Fire•Net Manual, Network Version 5.0 | 51584 |
| NCM-W/ F Installation Document | 51533 |
| NCS Network Control Station, Network Version 5.0 & Higher Manual | 51658 |
| NCD Network Control Display | LS10210-051NF-E |
| Network Control Workstation | 52342 |
| NFN-GW-PC W/ F UL Listing Document | LS10077-051NF-E |
| High Speed PC NFN Gateway UL Listing Document (NFN-GW-PC-xxx) | LS10078-051NF-E |
| BACNET-GW-3 UL Listing Document | LS10014-051NF-E |
| MODBUS-GW UL Listing Document | LS10015-051NF-E |
| **System Components** | |
| ACM-30 Annunciator Manual | LS10238-000GE-E |
| RLD Remote Display Annunciator Manual | LS10310-000NF-E |
| SLM-318 Product Installation Document | LS10243-000GE-E |
| SLC-IM Listing Document | LS10026-051NF-E |
| SWIFT Network Manual | LS10036-000NF-E |
| XP Transponder Manual | 15888 |
| XP10-M Ten Input Monitor Module Installation Document | I56-1803 |
| XP6-C Supervised Control Module Installation Document | I56-1805 |
| XP6-MA Six Zone Interface Module Installation Document | I56-1806 |
| XP6-R Six Relay Control Module Installation Document | I56-1804 |

* For individual SLC Devices, refer to the *SLC Wiring Manual (51253)*

# SECTION 1: PRODUCT DESCRIPTION

The NOTIFIER INSPIRE™N16e/ x is an addressable FACP (Fire Alarm Control Panel). With the combination of the CLSS Gateway, newer series devices and legacy devices, the NOTIFIER INSPIRE™N16e/ x FACP offers the latest in fire protection technology. The N16 operates with High Speed or Standard NFN Networks, or as a stand alone FACP. It has a high definition 10 inch color touch screen display and is capable of displaying up to 3,000 simultaneous events.

The FACP is highly configurable to specific site needs for fire protection. Available accessories include multi-technology central station communicators, color touchscreen network displays, capacitive touch annunciators, local and remote upload/ download software and remote power expansion.

**NOTE:** Unless otherwise specified, the term N16 is used to refer to all versions of the panel.

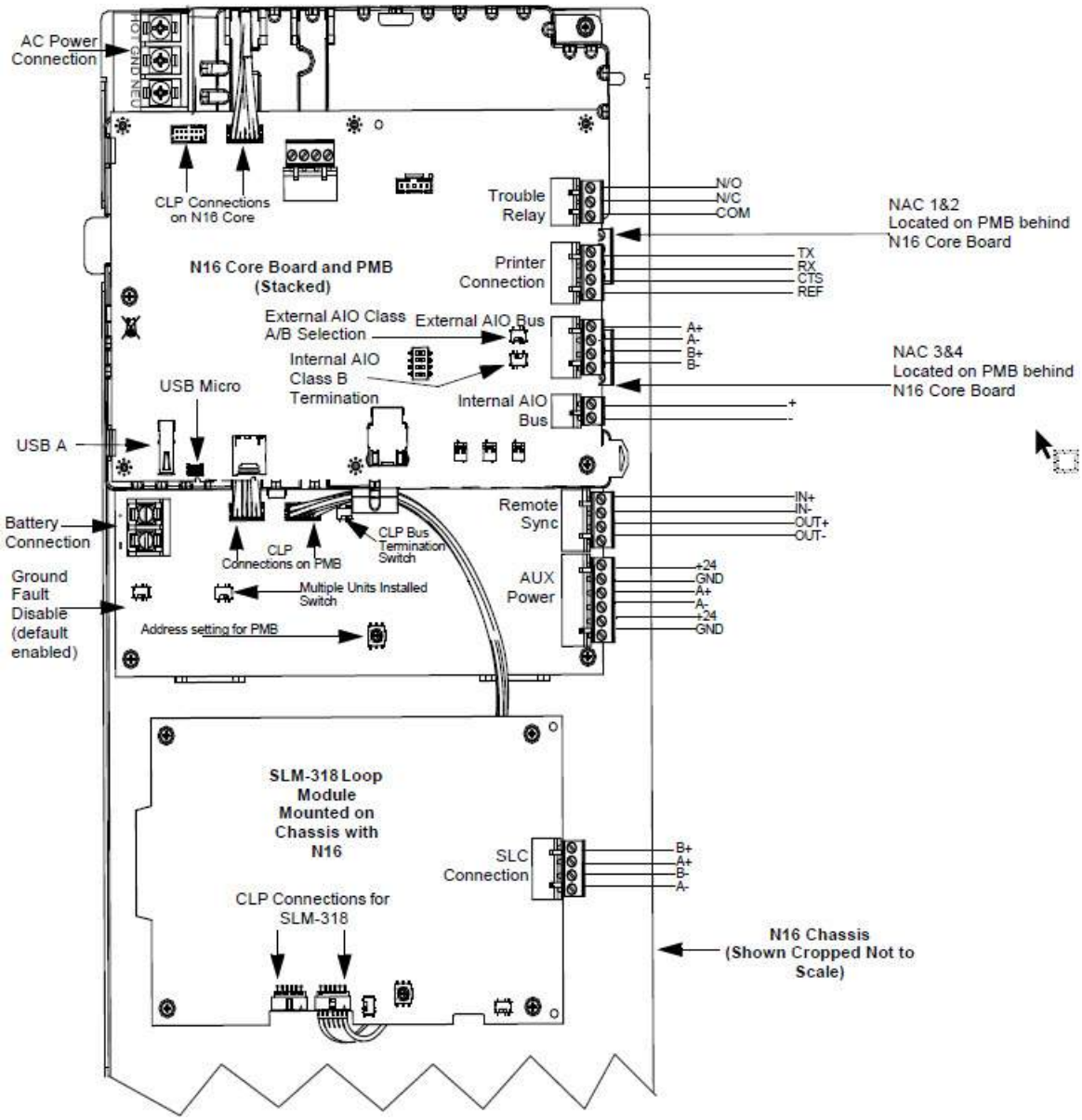



**Figure 1-1:** N16 Board Layout

## 1.1 PANEL FEATURES

- 10 inch high definition color touchscreen display with customizable buttons
- 6.0 A (standby)/ 8.5 A (alarm) power supply with the following built-in outputs:
  - Four Class A/ B Notification Appliance Circuits (NACs), selectable through programming for System Sensor, Wheelock, or Gentex strobe synchronization, or as 24VDC general purpose power outputs
  - One Class A/ B Auxiliary 24VDC Power output, selectable through programming as non-resettable or resettable
  - One Class B only Auxiliary 24VDC Power output, selectable through programming as non-resettable or resettable
  - N16x allows for up to two additional power supplies to be added
- Easy expansion of isolated intelligent Signaling Line Circuit (SLC) capacity
  - One expandable to three on N16e
  - One expandable to ten on N16x
- Up to 159 detectors and 159 modules per SLC; 318 devices per loop/ 3,180 per FACP or network node
- Self-test detector technology, detectors can be any mix of photo, thermal, or multi-sensor.
- Modules include addressable pull stations, relay modules and monitor modules
- Network options:
  - High-speed network for up to 200 nodes (Refer to the Noti-Fire-Netmanual #51584 for a list of compatible nodes)
  - Standard network for up to 103 nodes (Refer to the Noti-Fire-Netmanual #51584 for a list of compatible nodes)
  - Network Display Mode: allows the fire panel to act as a network display with the full capabilities of an NCD
- Built-in Local Mode operation: the system is capable of general alarm if a fire alarm condition is present even if the SLM-318 loop module fails
- Weekly Occupancy Schedules allow changing sensitivity by time of day and day of week
- AIO Bus annunciators History Buffer (up to 10,000 events displayed)
- Advanced history filters allow sorting by event, time, date, or address
- History can be exported to a USB drive
- Alarm Verification selection per point, with automatic counter
- Color-coded Icon-based event notification
- Event vectoring for quick viewing of event groups
- Optional Cloud connectivity for remote off-site monitoring through connected Life Safety Services (CLSS)
  - Multiple off-campus central station reporting through the CLSS Gateway (CGW-MB)
- Silence Inhibit and Auto Silence timer options
- Field programmable with VeriFire Tools programming
- Remote programing through CLSS

## 1.2 SPECIFICATIONS

Refer to "N16 Board Layout" on the previous page"N16 Board Layout" on the previous page"N16 Board Layout" on the previous page for terminal locations and connections.

### 1.2.1 N16 CORE BOARD

**Trouble Relay- TB2**

• 30 VDC 2A, 0.35 PF non-power-limited.

**Printer Connection (for supplemental use only)- TB3**

• Power-limited (Class 2), supervision of end-to-end communication, isolated printer connection (left side).

• Equipment must be located in the same room within 20 feet of the panel with cables in conduit.

**Internal AIO Bus- TB4**

• Characteristic impedance: 120 ohms, supervised, power-limited (Class 2).

• 80 AIO devices max per system, up to 10 routers with 15 peripherals max.

• Equipment must be located within 20' of the panel, in the same room, with cable in conduit.

• Class B wiring only.

**External AIO Bus- TB5**

• Characteristic impedance: 120 ohms, supervised, power-limited (Class 2).

• 80 AIO devices max per system, up to 10 routers with 15 peripherals max.

• Long line resistance: 100 ohms.

**Network Service Connection (NUP)- J10**

• Power-limited (Class 2), supervised.

• Equipment must be in cabinet located in the same room within 20 feet of the panel with cables in conduit.

**PMB Connection- J15**

• RS-485 interface to panel, 24VDC power IN, 6A max, alarm bus, sync bus, CLP bus terminated on Core board.

**CLP Bus Connection- J16**

• RS-485 interface to panel, 24VDC power OUT, 6A max, alarm bus, sync bus, CLP bus terminated on Core board.

### 1.2.2 PMB POWER SUPPLY

**NAC 1 and NAC 2- TB2**

• Power-limited (Class 2), 24VDC

• 1.5 Amps (special applications), 150ma (regulated), 2.0Amps (releasing)*

• Class A/ B NAC power, Class D door holder power, special application Class B aux power, UZC 2.8 ohm max wire loop resistance at 1.5A

• 12-18 AWG. MPS-24A: At alarm current level, no more than a 3.84V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used

• End-of-Line resistor 2.2k 1/ 2 W (ELR-2.2K)

**NOTE:** Releasing service is only available with PMBLNL-PCB Rev. B (or later) generation

**NAC 3 and NAC 4- TB3**

• Power-limited (Class 2), 24VDC

• 1.5 Amps (special applications), 150ma (regulated), 2.0Amps (releasing)*

• Class A/ B NAC power, Class D door holder power, special application Class B aux power, UZC 2.56 ohms max wire loop resistance at 1.5A

• 12-18 AWG. MPS-24A: At alarm current level, no more than a 3.84V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used

• End-of-Line resistor 2.2k 1/ 2 W (ELR-2.2K)

**NOTE:** Releasing service is only available with PMBLNL-PCB Rev. B (or later) generation

**Battery Connection- TB9**

• Charges 7-100 AH sealed lead-acid batteries (7-210Ah with PMBLNL-PCB Rev B or later generation)

• Charging current: OFF/ Disabled, 1A, 2A and 4.25A (PMBNL-PCB Rev B or later generation adds 5.5A)

• Charging voltage: 27.6VDC nominal

**Remote Sync Input- TB6**

• Power-limited (Class 2)

**Aux Power 1/Aux Power2- TB7**

• AUX 1: 24VDC, 1.5Amps, defaults to Class B, power-limited (Class 2), special applications, Non-Resettable

• AUX 2: 1.5Amps, defaults to Class B, power-limited (Class 2), special applications, Resettable with a 30 sec timer

**AC Power Connection- TB8**

• 2.5A, 120VAC, 50/ 60 HZ, non-power-limited

• 1.25A, 240VAC, 50/ 60 Hz, non-power-limited

### 1.2.3 SLM-318 SIGNALING LOOP MODULE

**SLC Connection- TB1**

• 24VDC, Class A/ B/ X, power-limited, 50 ohms max.

• Alarm current: 210mA

• Standby current: 159mA

> **NOTE:** Above current draws are for the SLM-318 only, devices must be added for the total SLC loop current draw

### 1.2.4 ACCESSORIES/SUB-ASSEMBLIES/NETWORKED PANELS MAXIMUM SYSTEM CAPACITY

**Monitor and Control Modules:** 159 per loop, up to 1,590 total in FlashScan; 99 per loop, up to 990 in CLIP mode

**Detectors:** 159 per loop, up to 1,590 total in FlashScan; 99 per loop, up to 990 in CLIP mode

**Signaling Line Circuits (SLC):** 10

**N16 Fire Alarm Control Panel System Size:**

• High-Speed Noti•Fire•Net - 200 Nodes
• Noti•Fire•Net - 103 Nodes.
• 54 nodes when DVC is used in network paging.

## 1.3 CONTROLS AND INDICATORS

**N16 Display Regions**

The N16 has as high-definition 10 inch touchscreen to display system events. The display features a touchpoint for menu access, a header bar which shows color-coded event status and touchpoints for acknowledge, signal silence and reset functions.

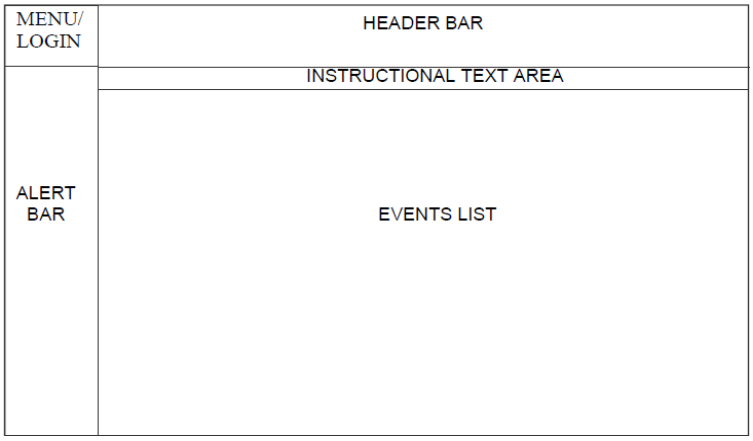



**Figure 1-2:** Display Regions

### LED Indicators

LED indicators are located on the lower right hand corner of the N16 display. They include a power LED and an Off Normal LED.

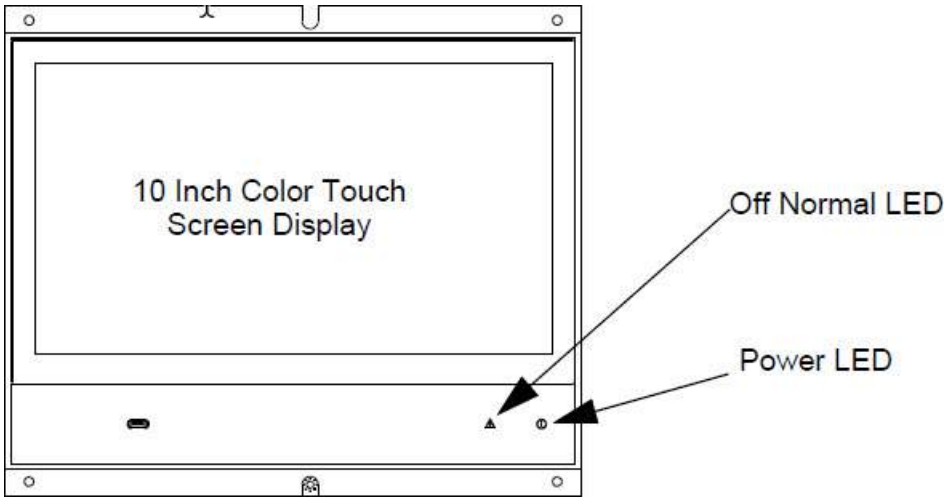



**Figure 1-3:** LED Indicators

### USB Connections

USB connections are located on the front of the N16 display (USB-C) for ease of connecting VeriFire Tools for programming, as well as on the Core board (USB-A and USB-Micro).

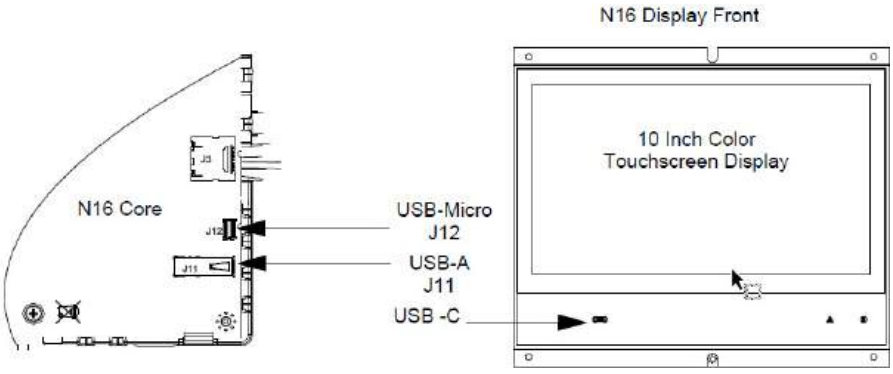



**Figure 1-4:** USB Connections

### Local Piezo Sounder

A piezo sounder provides separate and distinct pulse rates for alarm, trouble and supervisory conditions. The piezo can be enabled or disabled through SW16.

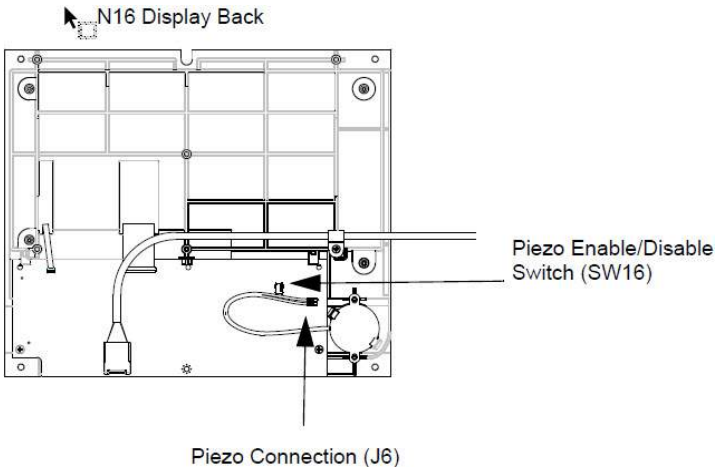



**Figure 1-5:** Local Piezo Sounder

## 1.4 COMPONENTS

### Core Board

The N16 Core Board contains connections for both the internal and external AIO Bus, an OcuLink connection for the touchscreen display, a Trouble and Tamper Input, a NUP connection, a USB-A and USB-Micro Connection for updating the FACP and connecting the VeriFire Tools Programming Utility and a PMB Power Supply as well as a CLP connection for additional SLM-318 SLC cards.

### PMB

The PMB is the power supply for the N16 panel. It features 6 amps of power in standby/ 8.5 amps of power in alarm, four power-limited NAC outputs which can be configured for either Class A or Class B wiring, two 24VDC auxiliary power outputs and a remote sync input. One auxiliary power output, AUX1, can be configured for either class A or class B wiring.

### SLM-318

The SLM-318 provides expansion for one loop per module, up to 318 devices per module. Additional SLM-318 cards are available with a maximum of ten modules on a system. It operates in both CLIP and FlashScan protocols.

### CLSS Gateway (CGW-MB)

The CLSS gateway is the system interface, which serves as a portal between the panel, the Cloud and peripheral devices. The HON-CGW-MBB can also be used as a Fire Alarm Communicator to central station when used with the optional cellular module and feature activation.

### Cabinets

All cabinets are fabricated from 16 gauge steel. The cabinet consists of two basic components: a backbox and a locking door. The backbox and door are sold separately. Cabinets are available in five sizes: A, B, C, D and E. “A” size accommodates one chassis and two 26 AH batteries. “B” size accommodates two chassis and two 26 AH batteries. “C” size accommodates three chassis and two 26 AH batteries. “D” size accommodates four chassis and two 26 AH batteries. “E” size accommodates five chassis and two 26 AH batteries. Doors can be mounted on the left or right-hand side. The same hinge works in both configurations, so that this choice can be made in the field. The door opens 120°. The CAB-5 Series is compatible with the CPU-N16LD and CPU-N16LND chassis assemblies. The CAB-4 Series is compatible with the CPU-N16RTO for retrofit applications.

### Batteries

The PMB can charge up to 210AH batteries. The CAB-4 and CAB-5 Series cabinets provides space for two batteries (up to 26 Amp Hour). Batteries larger than 26 Amp Hour require a UL listed battery box. Batteries must be ordered separately.

### 1.4.1 INTELLIGENT ADDRESSABLE DETECTORS

Intelligent, addressable detectors provide information to the control panel on an SLC Signaling Line Circuit (refer to the NOTIFIER SLC Wiring Manual (51253) for detailed information on 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. The maximum address cannot exceed address 99. Note that a blinking LED on an intelligent detector indicates communication between the detector and the control panel.

These devices (951 Series or newer) can operate in CLIP mode (Classic Loop Interface Protocol) or FlashScan mode to provide a quicker response. They are also compatible with older 851 Series devices. If a mix of old and new series devices are installed on the same loop, the FACP must be programmed to operate in CLIP mode. Refer to the NOTIFIER Device Compatibility Document (15378) for a list of compatible addressable detectors.

### 1.4.2 INTELLIGENT ADDRESSABLE MODULES

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. The maximum address cannot exceed address 99. Note that a blinking LED on an addressable module indicates communication between the module and the control panel.

These devices can operate in CLIP mode (Classic Loop Interface Protocol) or FlashScan mode to provide a quicker response.

If a mix of old and new series devices are installed on the same loop, the FACP must be programmed to operate in CLIP mode. Refer to the NOTIFIER SLC Wiring Manual for a list of compatible addressable modules. Refer to the Device Compatibility Document (15378) for a list of approved conventional notification and initiating devices.

### 1.4.3 ADDRESSABLE DEVICE ACCESSORIES

#### End-of-Line Resistor Assembly

The End-of-Line resistors are included with each module. Refer to the specific module documentation for specific information.

#### 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.

#### EOL-C(R/W) Mounting Plate

The EOL-CR (red) and EOL-CW (white) are single End-of-Line resistor plates. An ELR, which is supplied with each module and fire alarm control panel, is mounted to the EOL-C(R/W) plate. Resistors mounted to the plate can be used for the supervision of a monitor and control module circuit.

## 1.5 VERIFIRE TOOLS PROGRAMMING UTILITY

The VeriFire Tools Programming Utility can be used to locally or remotely program the FACP from most Windows®compatible computers (PC), running Windows 10 or newer, 64 bit. The FACP program files can also be created and stored on the PC for future download to the control panel. VeriFire Tools can be downloaded from www.notifier.com. A standard USB-C cable, which must be purchased separately, is required for local connection of the PC to the USB-C port located on the N16 display under the touchscreen. Remote programming requires the CLSS Gateway.

## 1.6 DARKSITE DIALER

The N16 can report to central stations via the public switched telephone network using the HON-DACT-DS. There are no Gateway capabilities with this configuration. Refer to the Darksite Dialer User Manual (LS10416-000HW-E) for more information.

## 1.7 N16 DRESS PANEL AND EQUIPMENT LAYOUT

The N16 series equipment can be installed in CAB-5 or CAB-4 series backbox. Additional rows of equipment can be mounted to dress panels or chassis mounted on rows below the N16. For additional information on the CAB-5 and CAB-4 series backbox, refer to the CAB-5 Product Installation Document (LS10242-000GE-E) and CAB-3/ CAB-4 Series Cabinets Product Installation Document (15330). For additional information on mounting the CPU-16-RTO in the CAB-4 series enclosures, refer to the PMB-AUX Series Product Installation Document (LS10242-000GE-E).

NOTIFIER INSPIRE™ equipment compatible with the CAB-4 Series includes:

• DP-4A-CB4 - Dress panel for mounting four (4) ACM-30 annunciators
• DP-T2A-CB4 - Dress panel for mounting the NCD or DIS-10-RD display and two (2) ACM-30 annunciators
• DP-GDISP1 - Dress panel for mounting the NCD or DIS-10-RD display and Onyx Series Annunciators for use in CAB-4, first row only
• DP-GDISP2 - Dress panel for mounting the NCD or DIS-10-RD display and Onyx Series Annunciators in CAB-4, second, third, or fourth rows
• CHS-CGW - Chassis to mount the CGW-MB CLSS gateway
NOTIFIER INSPIRE™ equipment compatible with the CAB-5 Series includes:
• CHS-ADP - Adapter plate to mount a CAB-4 chassis into a CAB-5 backbox
• DP-4A - Dress panel for mounting four (4) ACM-30 annunciators
• DP-T2A - Dress panel for mounting the NCD or DIS-10-RD display and two (2) ACM-30 annunciators
• CHS-CGW - Chassis to mount the CGW-MB CLSS gateway

**NOTE:** When designing the cabinet layout, consider UL requirements regarding separation of power-limited (Class 2) and non-power-limited wiring. Refer to "UL Power-Limited Wiring Requirements" on page 24

### 1.7.1 N16 CHASSIS

The N16 chassis can mount in any row of a CAB-4 or CAB-5 series enclosure. The core board and PMB power supply occupy the left half (positions one and two) of the chassis and can hold up to three layers of equipment, including option cards.

The N16Chassis includes:

• CPU-16-RTO
• CPU-N16LD
• CPU-N16LND

### 1.7.2 OPTION CARDS

Option cards may be mounted next to the core board on the N16 chassis, in a stacked configuration, in positions three and four. All option modules come with the necessary hardware for mounting. Refer to the SLM-318 Installation Document (LS10243-000GE-E) for mounting instructions.

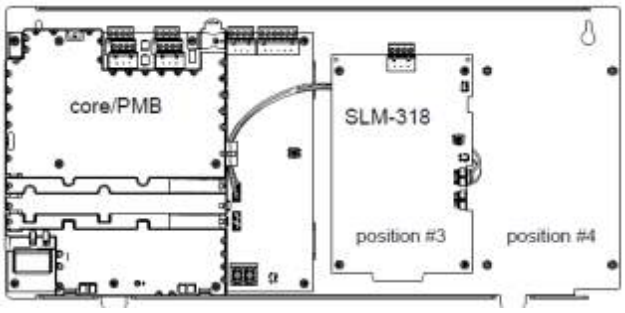



Figure 1.6 CPU Mounting and Option Card Locations

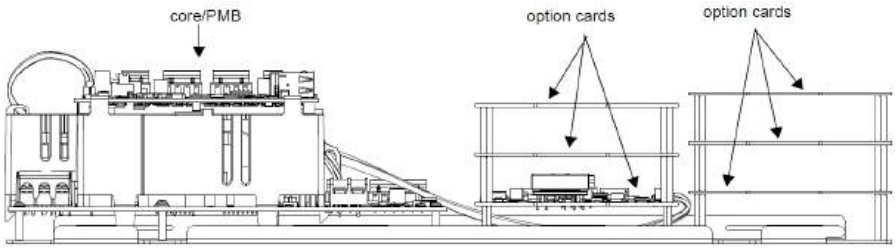



Figure 1.7 N16 Equipment Mounting Options (Shown with Stacked Option Cards)

## 1.8 BATTERY BOX

**NFS-LBB**

The NFS-LBB battery box may be used to house two 26 AH batteries, two 60 AH batteries or one 100 AH battery. When the CHG-120 is mounted in the NFS-LBB, two 26 AH or one 60 AH battery may also be housed in the battery box.

**CHG-120 Battery Charger**

The CHG-120 is capable of charging up to 120 AH lead-acid batteries with the N16 FACP. The FACP battery charger must be disabled, through user programming, when using the CHG-120. The batteries and charger can be housed in the NFS-LBB battery box which can be mounted up to 20 feet away from the control panel. Note that when using the NFS-LBB for housing the charger and batteries greater than 26AH, multiple NFS-LBBs are required. Refer to the CHG-120 Manual (50641) for additional information.

## 1.9 NETWORK CONTROL DISPLAY (NCD)

The NCD is a Network Control Display for High Speed or Standard NFN Networks. It offers a direct connect display for the N16 and stand-alone ONYX panels (version 26 or higher), as well as the DVC. It has a high-definition 10-inch color touchscreen display and is capable of displaying up to 3,000 simultaneous events.

### 1.9.1 LDM2-60/32

The LDM2-60/32 is a Lamp Driver Control to drive LEDs on a graphic display.

### 1.9.2 RLD

The RLD is a remote display for the N16 that can display up to 50 events. It includes configurable touchpoints for acknowledge, silence, reset and drill that are only operational when the key switch is unlocked. The display has six programmable touchpoints each capable of including a descriptor/label, a status indicator, force on/off and enable/disable.

## 1.10 ACM-30 ANNUNCIATOR

The N16 can support up to eighty ACM-30 annunciators with up to 10 configured as routers, each controlling 15 peripheral devices. Each AIO device can have a customizable primary label of up to 80 characters. The annunciators can be wired in Class A or Class B. The internal AIO is fixed at Class B only. For more information, refer to the ACM-30 instruction manual (LS10238-051GE-E)

## 1.11 TM-8

The TM-8 is a transmitter module for signaling for municipal boxes.

## 1.12 GETTING STARTED

The following is a brief summary of the minimal steps involved in bringing a N16 on-line:

- Install backbox and main circuit board (refer to the CAB-5 Product Install Document #LS10244-000GE-E)
- Address and install intelligent devices (refer to the NOTIFIER SLC Wiring Manual #51253)
- Enter autoprogramming (refer to "Autoprogram" on page 73)

# 1.13 TELEPHONE REQUIREMENTS AND WARNINGS

## 1.13.1 TELEPHONE CIRCUITRY

- Ringer Equivalence Number (REN) = 0.3A
- 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.

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:**

Honeywell International, Inc.

12 Clintonville Road

Northford, CT 06472

(203) 484-7161

Product Model Number: N16e/ x

FCC Registration Number: US:1W6AL03AEVOLX

Ringer Equivalence: 0.3A

**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.

**NOTE:** The DACT must not be used to dial a phone number that is call-forwarded.

## 1.13.2 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 if 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

## 2.1 NOTIFIER COMPATIBLE EQUIPMENT

**NOTE:** Products marked with a check mark have not received UL 864 9th Edition certification and may only be used in retrofit applications.

**Sample Compatible Devices:** For a list of additional compatible devices for the FACP refer to the Device Compatibility Document (15378), the SLC Wiring Manual (51253) and the SWIFT Wireless Manual (LS10036-000NF-E).

- FSP-951 Intelligent Photoelectric Smoke Detector
- FMM-1 Monitor Module
- NBG-12LX Series Addressable Manual Pull Station

**Electronic Equipment:**

- AA-100 100-Watt Audio Amplifier
- AA-120 120-Watt Audio Amplifier
- AA-30 30-Watt Audio Amplifier
- A2143-00 End of Line Resistor Assembly (system sensor equipment)
- ACM-30 Annunciator
- ACPS-610 Addressable Charger/ Power Supply
- ACPS2-6R Auxiliary Power Supply
- ACT-1 Audio Coupling Transformer
- ACT-2 Audio Coupling Transformer
- AKS-1B Annunciator Key Switch
- APJ-1B Annunciator Phone Jack-G
- A77-716B End-of-Line Resistor Assembly
- APS2-6R Auxiliary Power Supply (for UL applications only)
- CMM-1 Communication converter Module
- CGW-MB CLSS Gateway
- HON-DACT-DS Dark Site Dialer
- CPU-NCD-RB NCD Replacement Board
- DAA Series Digital Audio Amplifiers
- DAA2 Series Digital Audio Amplifier
- DAX Digital Audio Amplifier
- DS-AMP Audio Amplifier
- DS-BDA Backup Audio Amplifier
- DS-DB Digital Distribution Board
- HS-NCM-MFSF High-Speed Network Communications Module (Multi-Mode Fiber to Single-Mode Fiber)
- HS-NCM-W/-2 High-Speed Network Communications Module (Wire)
- HS-NCM-WSF/-2 High-Speed Network Communications Module (Wire to Single-Mode Fiber)
- HS-NCM-MF High-Speed Network Communications Module (Multi-Mode Fiber)
- HS-NCM-SF High-Speed Network Communications Module (Single-Mode Fiber)
- HS-NCM-WMF/-2 High-Speed Network Communications Module (Wire to Multi-Mode Fiber)
- MRD-1 Manual Releasing Disconnect Assembly
- N16-CAC License for Custom Action Buttons
- N16-CLP License for CLIP Mode
- N16-GZ License for General Zones
- N16-LGZ License for Logic Zones
- N16-NWD License for Network Display Mode
- N16-UZC License for Universal Zone Coding
- NCD Network Control Display
- NCM-F Network Communications Module (Fiber)
- NCM-W Network Communications Module (Wire)
- NCS Network Control Station
- N-ELR Assortment ELR Pack with Mounting Plate
- Network Control Workstation
- PMB-AUX Power Supply
- CPU-N16-RB N16 Replacement Board
- PRN-6 80-Column Printer

PRN-7 80-Column Printer

- R-120 120 Ohm End-of-Line Resistor
- R-470 470 End-of-Line Resistor
- R-27K 27K End-of-Line Resistor
- R-47K 47K End-of-Line Resistor
- R-2.2K 2.2K End-of-Line Resistor
- RKS-S Remote Security Keyswitch
- RLD Remote Display
- RM-1 Remote Microphone
- RM-1SA Remote Microphone
- RPJ-1 Remote Phone Jack
- RPT-485W EIA-485 Repeater (Wire)
- RPT-485SF EIA-485 Repeater (Fiber)

**Electronic Equipment:**

- DS-XF70V Transformer
- DVC-EM Digital Voice Command
- DVC-RPU DVC Remote Paging Unit
- EOL-CR/ CB Assortment ELR Pack with Mounting Plate
- EOLR-1 End of Line Resistor Assembly
- FCM-1 NAC Module
- FHS Fireman's Handset
- FPJ Fireman's Phone Jack
- FTM-1 Telephone Module
- RPT-485WF EIA-485 Repeater (Wire/ Fiber)
- SLC-IM Signaling Line Circuit Integration Module (FlashScan)
- SLM-318 SLC Loop Module
- STS-1 Security Tamper Switch
- VeriFire Tools Upload/ Download Software

Retrofit Equipment: Compatible Notifier Equipment Listed Under Previous Editions of UL 864

**NOTE:** The products in this list have not received UL 864 9th Edition certification and may only be used in retrofit applications.

- CHG-120 Battery Charger
- VS4095 Keltron Printer (Dress plate P-40)
- PRN-4, PRN-5 80-Column Printers

**Licenses:**

- N16-CAC
- N16-CLP
- N16-GZ
- N16-LGZ
- N16-LGZ50
- N16-WREL
- N16-ADDWREL
- N16-NWD
- N16-UZC
- N16-XUPG
- N16-GZ50
- N16-AREL
- N16-ADDAREL

**CAUTION:** Static Sensitive Components
The circuit board contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any boards so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies.

## 2.2 PMB POWER SUPPLY

**WARNING:** Risk of equipment damage and personal injury
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.

### 2.2.1 CONNECTING MULTIPLE PMBS AND SLM-318S

The wire harness connections between the N16 Core Board, PMBs and SLM-318s have two primary purposes; they carry communications and they carry power. The communication takes place on a bus with two endpoints. The N16 is always the endpoint of the bus so it's termination resistance is hard-wired (e.g. not selectable). The other endpoint will either be a SLM-318 or a PMB and will need its termination resistance enabled through an on-board switch (SW6 on a SLM-318, or SW5 on a PMB). All other (intermediate) SLM-318s/ PMBs on the bus MUST have termination disabled.

Unlike data, power from the PMBs connected through the wire harness must be kept segregated. This is necessary to properly account for each PMBs current load in the system. To help accomplish this, power at each PMBs J3/ J6 connectors is designed to only flow outward into the wire harnesses. However, the installer must also assure that no SLM-318 or section of SLM-318 is connected to more than one PMB. Refer to the example in "Multiple PMB Power Supplies with Ten SLM-318 Modules (Maximum System Shown)" on the next page.

**NOTE:** The Core board on the N16 can only receive power on J15, it cannot pass power out of J15.

**NOTE:** A maximum of five (5) SLM-318 loop cards can run on one (1) N16 PMB supply. For additional loop cards, PMB-AUX power supplies will be required. Each PMB-AUX can power up to five (5) SLM-318 cards for a maximum of ten (10) total SLM-318 cards on a system. Do not install SLM-318 loop cards on the CLP bus between PMB units.

### Single-Row Configurations

The FACP is shipped from the factory with the wiring configuration to support one PMB and up to 5 SLM-318 in a single row. See "Default Single-Row Configuration" below

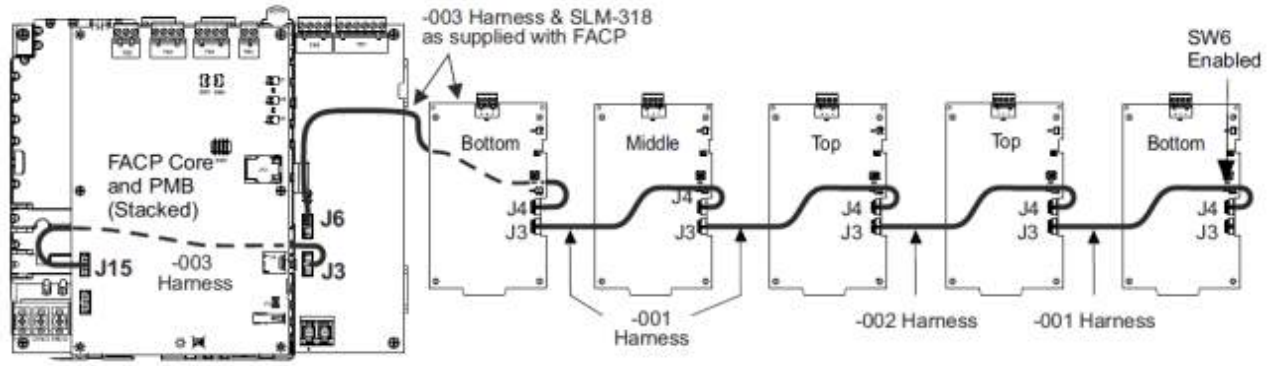



**Figure 2-1:** Default Single-Row Configuration

### Multi-Row Installation

With any multiple row installation, the N16 Core board must be lifted and the supplied -003 harness to the PMB must be unplugged from J15 and removed from the channel in the PMB cover. It can then be used to wire to the (first) PMB-AUX, below it. Then wire a -005 harness (supplied with the PMB-AUX) from J15 on the N16 Core Board to J3 on the fifth (last) SLM-318 in the upper section. See "Multiple PMB Power Supplies with Ten SLM-318 Modules (Maximum System Shown)" on the next page.

The connections between the PMB, the N16 Core Board, and SLM-318s have two primary purposes; they carry communications, and they carry power. The communications take place on a bus with two endpoints. The ends of the communication bus are set for “enable termination” (SW6 on the SLM-318 and SW5 on the PMB-AUX). On the N16 Core Board, termination is always enabled. The power is segregated by the PMBs. The Core and SLM-318 on the top section are powered by the top PMB. (Refer to "Multiple PMB Power Supplies with Ten SLM-318 Modules (Maximum System Shown)" on the next page.) The SLM-318s on the bottom two sections are powered by EITHER the middle PMB-AUX OR bottom PMB-AUX.

The upper section of the CLP Bus is powered by the core board’s PMB, co-located with that core board. The supplied -003 wire harness is already installed between J6 on the PMB and J4 on the supplied SLM-318. Wire from J3 on the first (supplied) SLM-318 to J4 on the next SLM-318. Repeat this pattern through the fifth (last) SLM-318 as shown.

The SLM-318s in the lower section of the CLP Bus are powered by the lower (second) PMB-AUX. (In systems with only one PMB-AUX, e.g., fewer than 10 SLM-318s installed, the SLM-318s in the lower section would be powered by that PMB-AUX).

In the lower section of the CLP Bus, wire from J6 on the second (lower) PMB-AUX to J4 on the first SLM-318. Wire from J3 on the first SLM-318 to J4 on the next SLM-318 - repeat this pattern through the fifth (last) SLM-318, as shown. The last SLM-318 in this section of the CLP Bus must have the termination switch (SW6) enabled.

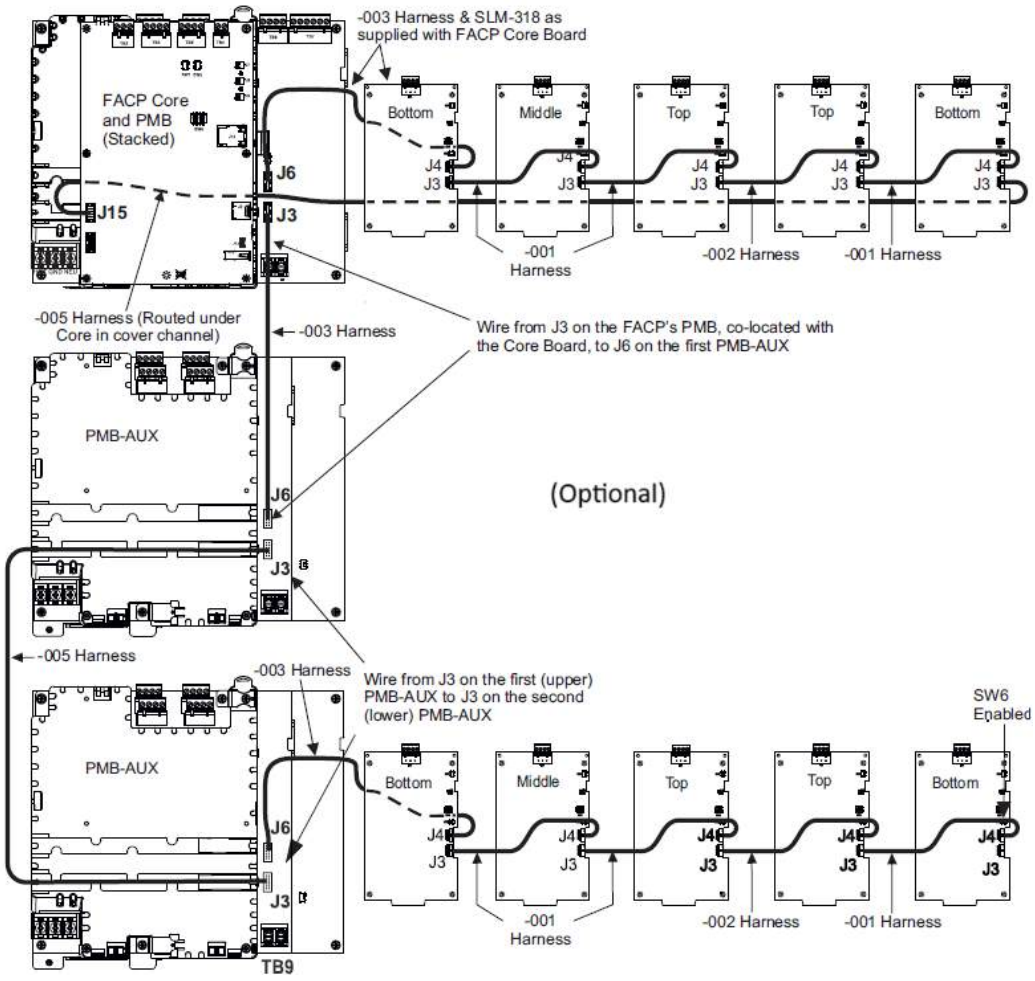



**Figure 2-2:** Multiple PMB Power Supplies with Ten SLM-318 Modules (Maximum System Shown)

**NOTE:** Connector and component placements are not shown to scale. Drawing is meant to illustrate connections made to each component. Some board components are eliminated to show clarity of connections.

### Connecting Multiple PMBs to AC Power and Batteries

Multiple PMB's can be connected together to provide for additional notification circuits and auxiliary DC power as shown in "PMB Power Supply" on page 16".

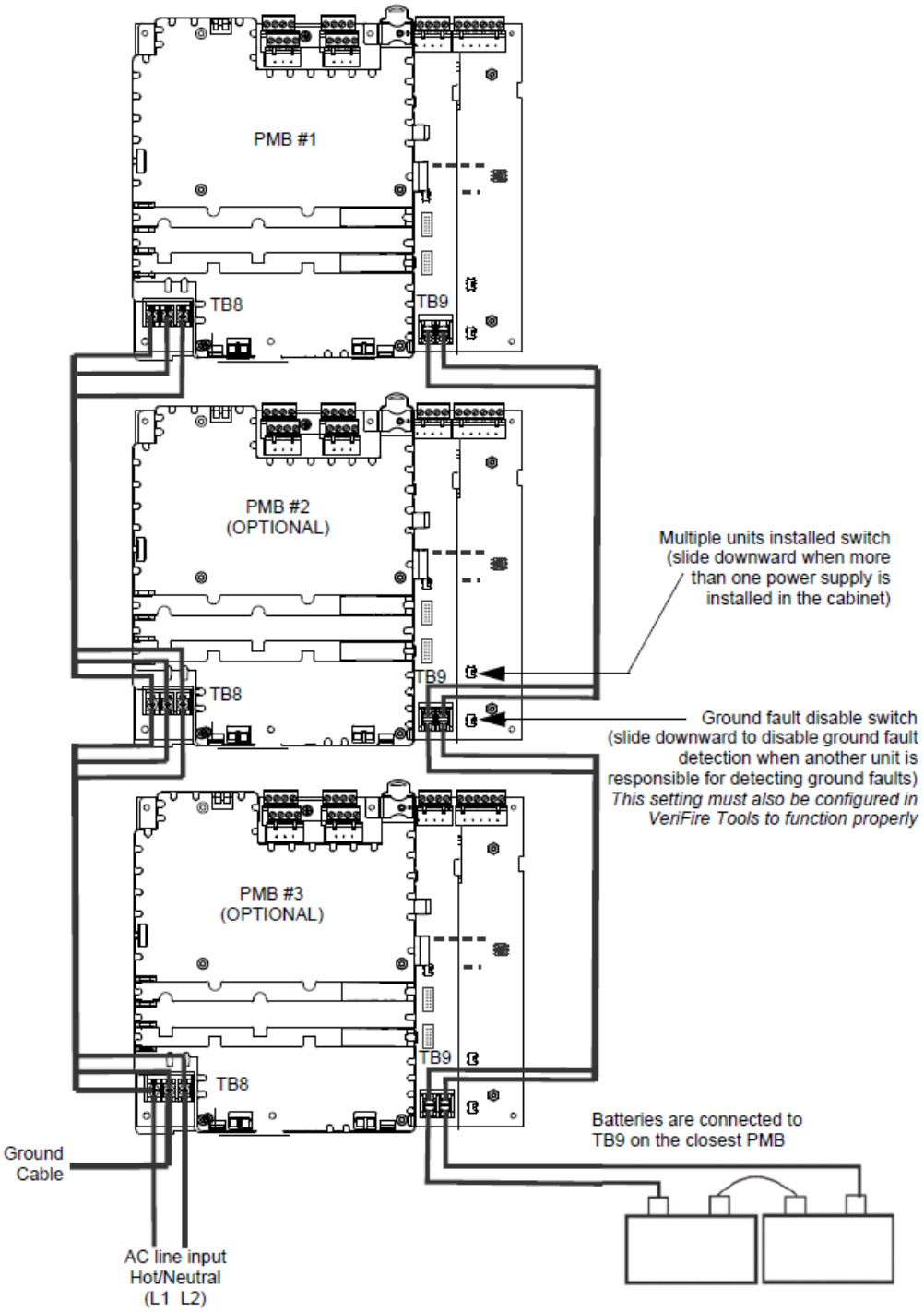


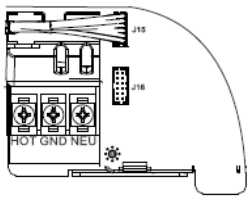

**Figure 2-3:** Connecting AC Power and Batteries to Multiple PMBs

**NOTE:** Connector and component placements are not show to scale. Drawing is meant to illustrate connections made to each component. Some board components are eliminated to show clarity of connections.

**NOTE:** Any ONE PMB can be selected through VeriFire Tools programming as the charger (multiple chargers are not allowed). The charge rate setting as well as the external charging are also selectable through programming.

## 2.2.2 AC POWER AND EARTH GROUND CONNECTION

Primary power required for the FACP is 120 or 240 VAC, 50/ 60 Hz, 3.25 amps. The FACP will auto-detect the voltage used. No special switch or jumper is required to select AC power. Over-current 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 TB8 on the FACP, being careful to observe proper connections.



TB8 AC Power Connection

Remove the two keps nuts from the grounding stud in the backbox. Connect the incoming earth ground wire to the supplied cable with a wire nut. Position the ring terminal end over the grounding stud. Secure with one of the keps nuts. Place the ring terminal from the other supplied ground cable over the ground stud and secure with the second keps nut. Wire the ground cable to the center position of TB8 as shown in Figure 2-4: Earth Ground Connection . Ensure that the ground for AC mains is the first cable installed, closest to the backbox. This connection is vital in reducing the panel's susceptibility to 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.

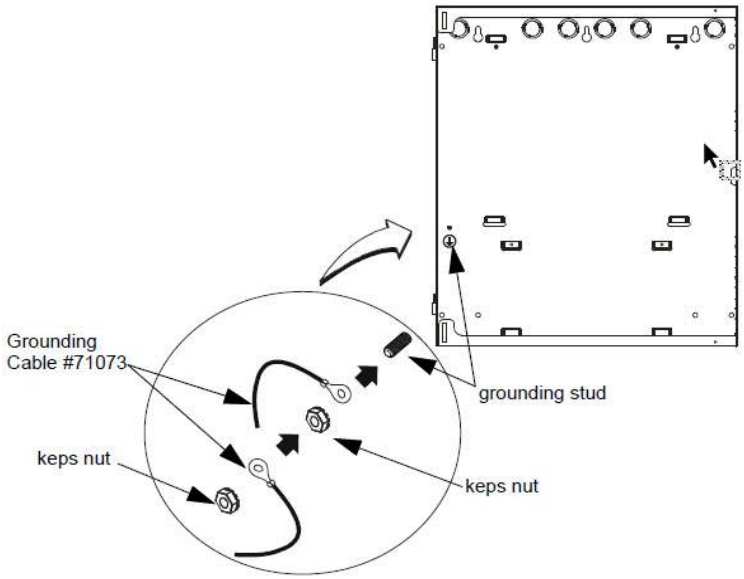
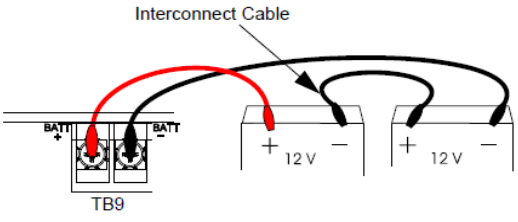



**Figure 2-4:** Earth Ground Connection

## 2.2.3 BATTERY POWER

The batteries must be sealed lead acid type. 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 and AC power has been energized. Observe polarity when connecting the batteries. Connect the battery cable to TB9 on the N16 PMB or closest PMB-AUX. Refer to "Battery Calculations" on page 176, for calculation of the correct battery rating.




**WARNING: Risk of Personal Injury**
Battery contains sulfuric acid which can cause severe burns to the skin and eyes and can destroy fabrics. If contact is made with sulfuric acid, immediately flush the skin or eyes with water for 15 minutes and seek immediate medical attention.

### 2.2.4 RELEASING SERVICE AND BATTERY CHARGING

When Releasing Service and 210Ah battery charging capabilities are required on the N16, all PMBs used for these features MUST be PMBNL-PCB, REV B or later generation. See Figure 2-5: PMB Designator Location for PCB designator location on the PMB.

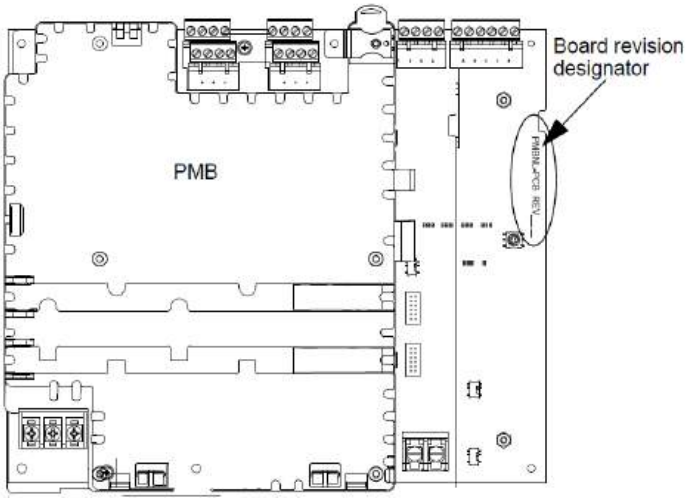



**Figure 2-5:** PMB Designator Location

**NOTE:** When the PMBNL-PCB, REV B (or later) generation is installed in the N16 panel, the hardware version displayed in the About screen will be “REV 4” (or higher). The “Ultra (105 - 210 AH)” battery charger rate setting in Verifier Tools is only available in database version 6 and above, and only on PMB hardware version “REV 4” or higher. If this charger setting is selected when REV3 or lower PMB hardware versions are installed, the panel will display “Power Supply Database Incompatible.

**CAUTION: Risk of Equipment Damage**
Due to the significant potential for damage to property and occupants from an accidental release, per NFPA72, it is not recommended to use a panel disable function or a logical bypass for releasing outputs. The solenoid should be isolated via a physical disconnection means.

### 2.2.5 SPECIAL APPLICATION DC POWER OUTPUT CONNECTION

All Special Application DC power outputs are power-limited (refer to "UL Power-Limited Wiring Requirements" on page 24). The PMB has two independent AUX power outputs. One has an optional Class A return. The second AUX power output is Class B only.

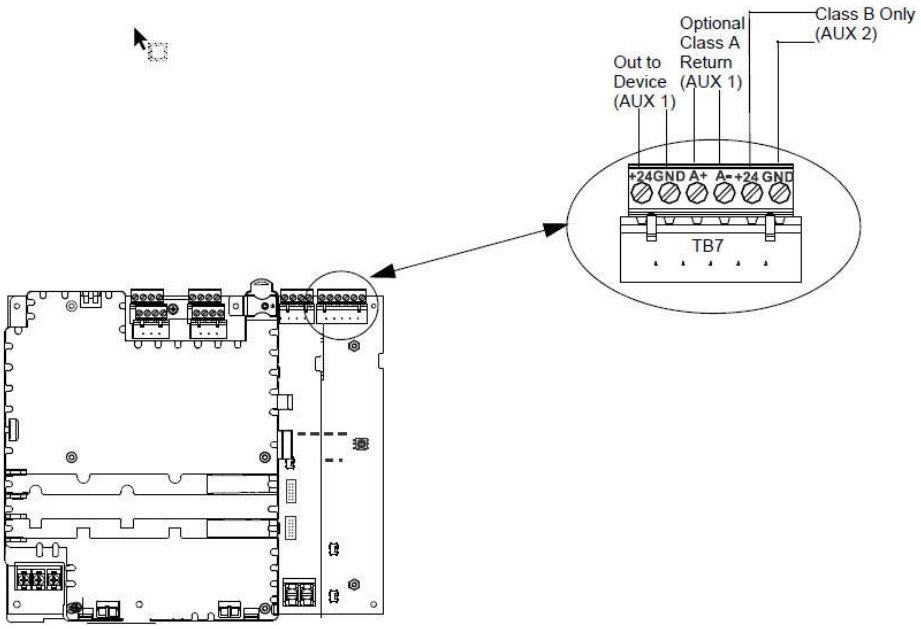



**Figure 2-6:** Special Applications Power Outputs - 24 VDC

## 2.3 NOTIFICATION APPLIANCE CIRCUITS

NAC (Notification Appliance Circuits) output circuits are located on the PMB. They provide four Class B or four Class A NACs. Each circuit is capable of 1.5 amps of current. Total NAC output current in alarm for all external devices cannot exceed 6.0 amps (refer to the *PMB Product Installation Document LS10242-000GE-E*). Use UL listed 24 VDC notification appliances only. Circuits are supervised and power-limited. Refer to the *Device Compatibility Document# 15378* for a listing of compatible notification appliances. The NACs, which are located on the main PMB board, may be expanded via adding additional PMB-AUX power supplies.

The following sections describe the configuration and wiring of Class B and Class A Notification Appliance Circuits on the PMB that is connected to the main N16 core board and any additional PMB-AUX power supplies.

### 2.3.1 NAC WIRING

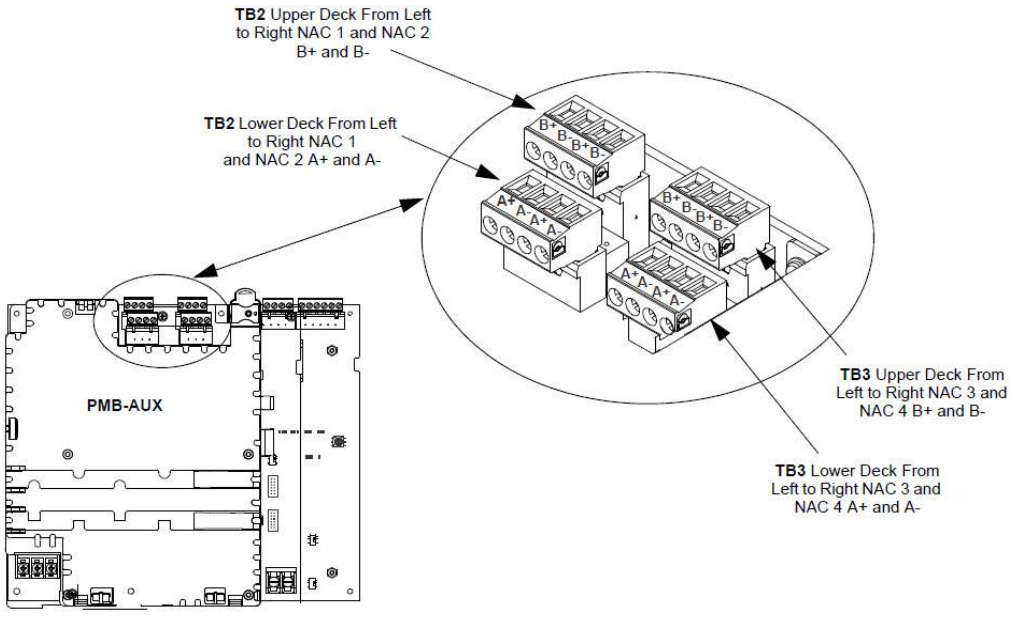



**Figure 2-7:** NAC Wiring

**NOTE:** Class B NACs require a supplied 2.2K ohm, ½ watt End-Of-Line resistor (ELR 2.2K)

**NOTE:** PMB with N16 Core and PMB-AUX are identical for NAC wiring. Drawing is shown with PMB-AUX for clarity of terminal block locations.

### 2.3.2 GENTEX NOTIFICATION APPLIANCE USING THE ELRD-2.2K

The Gentex Commander III Notification Appliance requires an ELRD-2.2K to be installed across the H+ and H- terminals on the appliance for proper operation when wired to the N16 FACP in Class A. Only one ELRD-2.2K is required pre Class A NAC. on the N16 FACP. Refer to Figure 2.9, "Gentex Notification Appliance with ELRD-2.2K Wiring (required for Class A wiring only)" for a wiring illustration. Follow the steps below to install the ELRD-2.2K

1. A Gentex Strobe Only Notification Appliance must be installed within twenty feet of the FACP.

2. On the Strobe Only Appliance, install the ELRD-2.2K across the H+ and H- terminals. Be sure to orient the "+" label at H+. For Class B wiring, use the standard ELR 2.2K (supplied) at the end-of-line; the ELRD2.2K is not required for Class B.

3. Wire Strobe Only to the next Notification Appliance as normal.

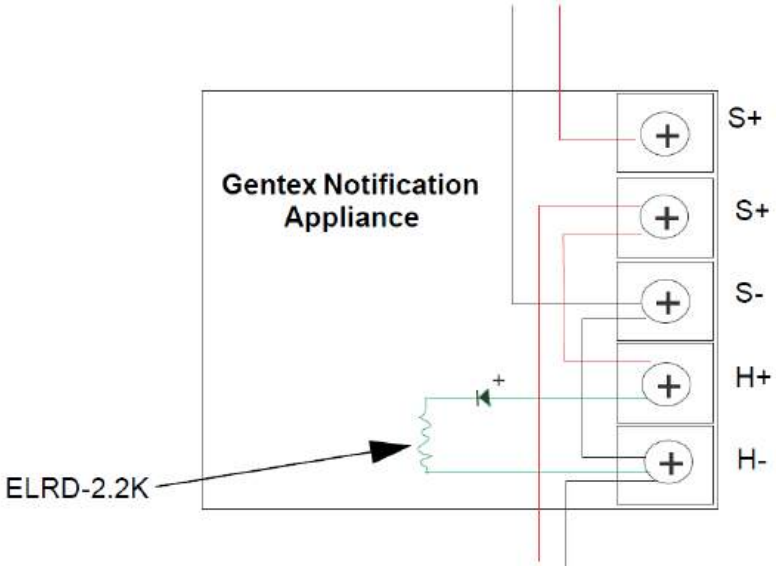



**Figure 2-8:** Gentex Notification Appliance with ELRD-2.2K Wiring (required for Class A wiring only)

**NOTE: NOTE POLARITY** on the ELRD-2.2K. Install the positive side of the ELRD-2.2K on H+ terminal on the Gentex strobe only appliance, install the negative side of the ELRD-2.2K to the H- terminal on the Gentex strobe only appliance.

## 2.4 REMOTE SYNCHRONIZATION INPUT

Synchronization is a feature that controls the activation of notification appliances in such a way that all devices will turn on and off at exactly the same time. This is particularly critical when activating strobes which must be synchronized to avoid random activation and a potential hazard to individuals. The PMB offers a Remote Sync input that can accept synchronization outputs from NAC circuits to easily sync notification appliances from multiple sources.

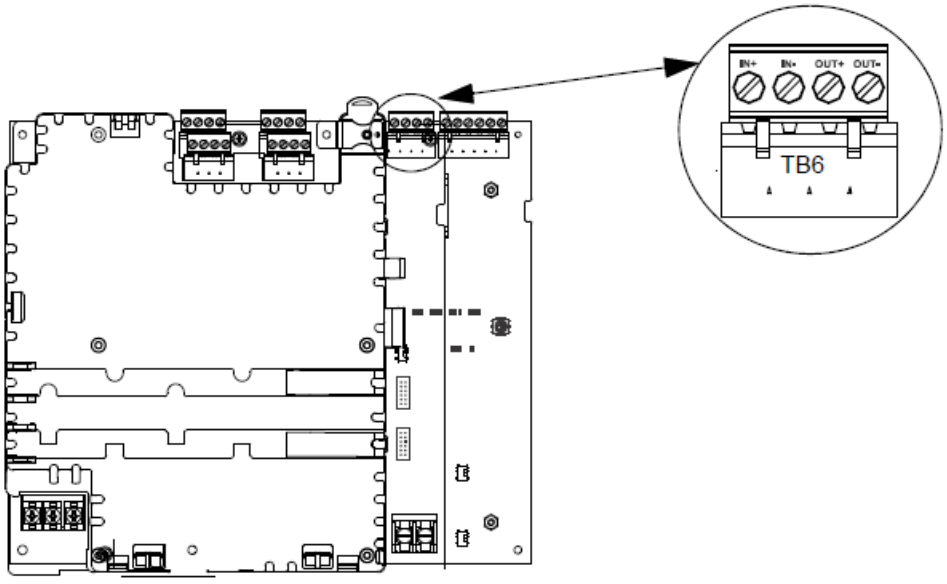



**Figure 2-9:** Remote Sync Wiring

## 2.5 UL POWER-LIMITED WIRING REQUIREMENTS

• Power-limited (Class 2) and non-power-limited circuit wiring must remain separated in the cabinet. The following requirements apply:
• All power-limited circuit wiring must remain 0.25 inches (6.35mm) from non-power-limited circuit wiring.
• All power-limited and non-power-limited circuit wiring must enter and exit the cabinet through different knockouts or conduits.
• If the device connected is only power-limited when connected to a power-limited source, the power limited marking must be removed and at the time of installation, each non-• power-limited circuit connected to these modules must be identified in the space provided on the cabinet door label.
• If additional knockouts are added to the backbox, proper separation of power-limited and non-power-limited wiring should be maintained.

**NOTE:** Relays are power-limited only when connected to power-limited sources for the relay outputs.

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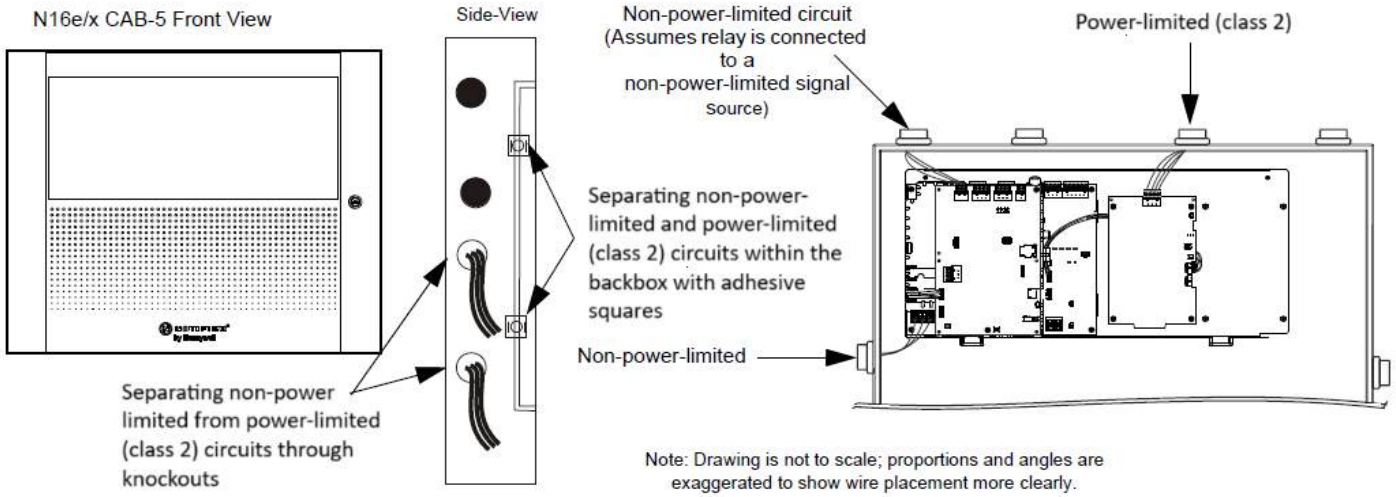



**Figure 2-10:** Power-Limited and Non-Power-Limited Wiring

## 2.6 SLM-318 SIGNALING LOOP MODULE

The N16 can have up to 10 SLM-318s. The SLM-318 is connected to the FACP via the CLP bus located on the N16 Core Board. Each subsequent SLM-318 is connected through the CLP Bus on the SLM-318.

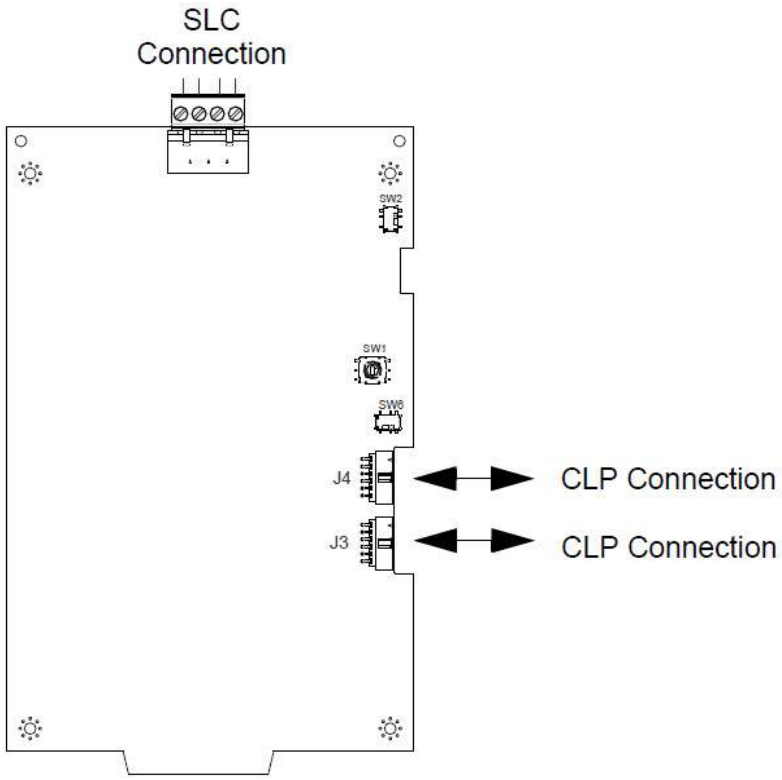



**Figure 2-11:** SLM-318 Wiring

## 2.7 WIRING A SIGNALING LINE CIRCUIT (SLC)

### 2.7.1 SLC OVERVIEW

Communication between the CPU and intelligent and addressable initiating, monitor and control devices takes place through a Signaling Line Circuit (SLC). You can wire an SLC to meet the requirements of NFPA Class A, B or X circuits. This manual provides requirements and performance details specific to this control panel; for installation information and general information, refer to the *SLC Wiring Manual #51253*.

For electrical specifications, see the *SLM-318 Product Installation Document #LS10243-000GE-E*. For additional notes on SLC resistance values, see "Operational Checks" on page 122.

### 2.7.2 SLC CAPACITY

The N16 supports up to ten SLM-318 loop modules, providing from one to ten SLC loops. Loop capacity depends on operating mode:

• Flash Scan: 01-159 intelligent detectors, 01-159 monitor and control modules

• CLIP: 0-99 intelligent detectors, 01-99 monitor and control modules (requires license)

FlashScan devices can operate in either FlashScan or, for retrofit applications in CLIP mode. Older models of CLIP devices only support addresses up to address 99. CLIP loops are limited to 99 detectors and 99 modules.

**NOTE:** Response times for CLIP loops may vary. CLIP loops must be tested to assure that actuation of notification appliances occurs within 10 seconds after activation of an initiating device. Systems with response time that exceed 10 seconds must be approved by the AHJ.

The following configuration guidelines may be used to improve the response times of CLIP loops:

1. All manual pull stations must be assigned addresses from 1-20.
2. Loops must be programmed for Rapid Poll.
3. Modules on a fully loaded loop must adhere to a ratio of two monitor modules to one control module.

### 2.7.3 SELF-TEST DETECTOR FUNCTION ON THE SLC

The SLM-318 is capable of supporting up to 159 Self Test Detectors. When Self-Test Detectors are installed on the SLM-318 and a self test is being performed the voltage on the SLC Loop will increase to 29.5VDC +/-5% (28.0-30.98VDC). If there is no self test in process, the voltage will remain at 24VDC. Note: when the SLC loop is polling normally (no self-test in process or activated devices), the voltage will vary between 24VDC, 0VDC and 5VDC so when reading the voltage with a meter you will read the average of 12.5-13.5VDC +/-5%.

**CAUTION:** Loop Polling Interruption
When the FACP is performing a self test the devices on the loop will not poll.

**NOTE:** When AC power is disconnected and the FACP is operating off of a secondary power source, a self test will not be performed

**WARNING:** Disconnect all power sources. Remove all power sources to equipment while connecting electrical components. Leave
Remove all power sources to equipment while connecting electrical components. Leave external, main power breaker off until installation of the entire system is complete. Several sources of power can be connected to the control panel. Before servicing the control panel, disconnect all sources of input power including the battery. While energized, the control panel and associated equipment can be damaged by removing and/or inserting cards, modules, or interconnecting cables.

### 2.7.4 LOCAL MODE ON THE SLC

The SLM-318 is capable of running in Local Mode if it has not received communication from the core board for one minute. A user can create a local mode zone and map both inputs and outputs to this zone. While the SLM-318 is in Local Mode, if any of the inputs placed in the local mode zone activate, the SLM-318 will turn ON all of the outputs mapped to the same zone.

### 2.7.5 SLC INSTALLATION

Install the SLM-318 as described in "SLM-318 Signaling Loop Module" on the previous page. Note that the unique SLC loop number assigned to a module does not need to match the module's location in the cabinet. For details on designing, installing and configuring SLC loops, see the Notifier SLC Wiring Manual #51253.

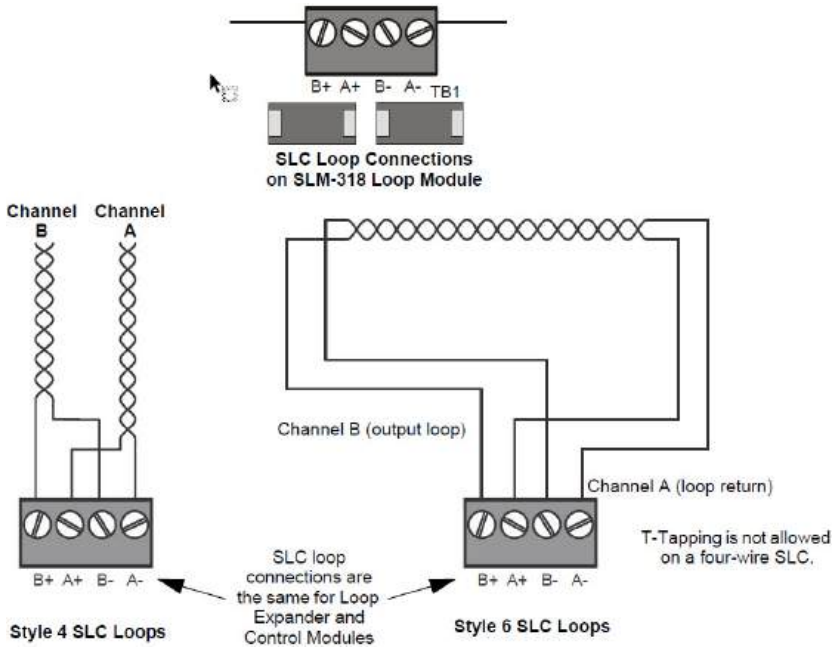



**Figure 2-12:** SLC Loop Connections and Wiring

### 2.7.6 CANADA ONLY DCL RESTRICTIONS

Audible Signal Devices and Visible Signal Devices within the same manually initiated fire alarm zone are required to operate within 5 seconds. To meet this requirement, the following restriction must be followed:

- **N16:** The addressing range of modules on each SLC loop shall be restricted to 1 to 119 for any loop that contains output devices used for the notification of occupants (Strobes/ Horns/ Chimes) within 5 seconds of the manual activation.

SWIFT wireless devices are not compliant with ULC-527 4th ed. and require approval from the local authority having jurisdiction (AHJ).

## 2.8 TROUBLE RELAY

The N16 provides a trouble relay for trouble supervision. It is located on the N16 Core Board. The trouble relay contact operates at 30 VDC, with 2A of power and is rated at 0.35 PF.

**NOTE:** The 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" on page 24.

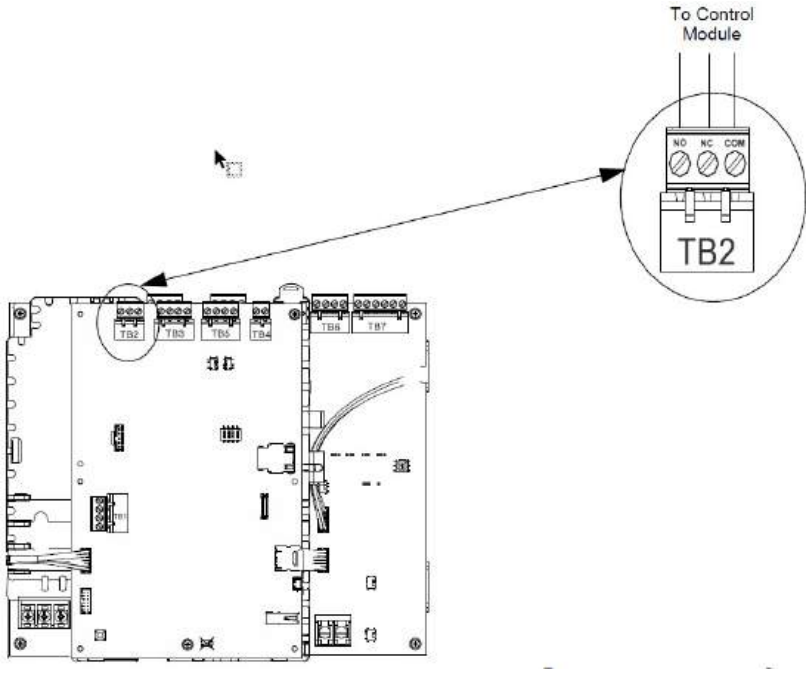



**Figure 2-13:** Trouble Relay

## 2.9 CENTRAL STATION COMMUNICATIONS

### 2.9.1 DARKSITE DIALER

The N16 can report to central stations via the public switched telephone network using the HON-DACT-DS (Darksite Dialer. It is connected to the N16 via the NUP connection on the CGW-MB (P7) and the NUP connection on the N16 (J10) as shown in Figure 2-14: CGW-MB Mounted on Chassis with CPU-N16LND NUP to NUP . There are no Gateway capabilities with this configuration. Refer to the *Darksite Dialer User Manual (LS10406-000HW-E*) for more information.

### 2.9.2 CGW-MB COMMUNICATOR

The CGW-MB utilizes the NUP connection to connect to the FACP. It must be mounted on a CHS-CGW and can be installed in the cabinet or in the NBB backbox (refer to *NBB-2 Product Installation Document LS10250-000GE-E* for more information on mounting in the backbox).

#### Mounting the CGW-MB on the CHS-CGW

The CHS-CGW must be mounted on the far right side of the N16 chassis in the last position. No other option card can be mounted above it due to lack of mounting holes in the CGW-MB. Follow the steps below to mount the CGW-MB on the chassis:

- Mount plate to standoff supplied with the chassis/ CGW-MB
- Use screws (38134) to secure the bottom of the mounting plate to the standoffs on the chassis
- Use standoff (42124) to secure the top of the mounting plate to the standoffs on the chassis
- Slide the CGW-MB into the slot on the bottom of the mounting plate
- Attach the top of the CGW-MB with screws (38134) to the standoffs

Refer to "CGW-MB Communicator" above for a typical wiring diagram for a NFPA 72 Central Station Fire Alarm System (Protected Premises Unit) or a Remote Station Fire Alarm System (Protected Premises Unit) using the Common Communicator Module (CGW-MB) and the N16 for a NUP-to-NUP configuration. Program the CGW-MB according to the directions given in The *CGW-MB Installation Manual (LS10248-000HW-E*).

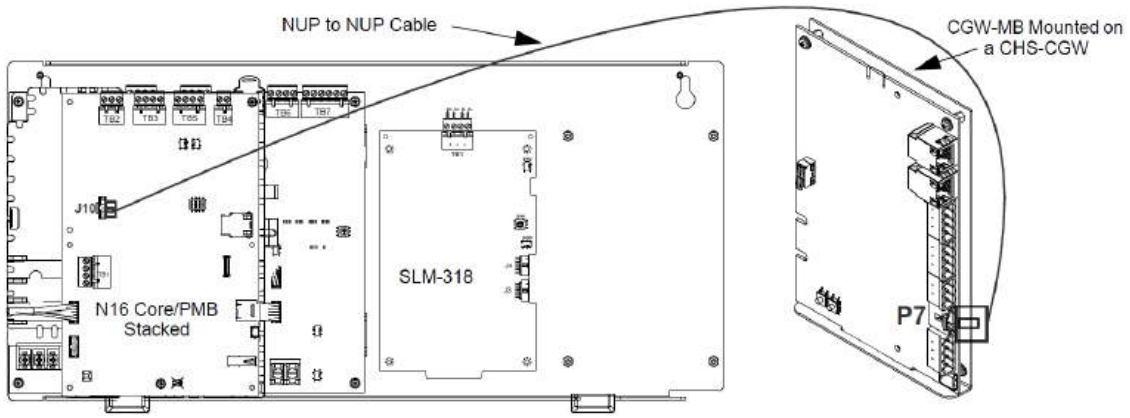



**Figure 2-14:** CGW-MB Mounted on Chassis with CPU-N16LND NUP to NUP

**NOTE:** An NFPA 72 Central Station requires 24 hours of standby power.

**NOTE:** The following models do not comply with requirements for AC loss delay reporting when used with Central Station Protected Premises systems: AA-30, AA-120, AA-100, APS2-6R, CHG-120

## 2.10 NFPA 72 PROPRIETARY FIRE ALARM SYSTEMS

When connected and configured as a protected premises unit with monitor and relay modules, the N16 will automatically transmit General Alarm, General Trouble, General Supervisory and Security signals to a listed compatible Protected Premises Receiving Unit. A simplified drawing of connections between the receiving unit and the N16 protected premises unit is shown in Figure 2-15: Typical Proprietary Fire Alarm Systems Wiring Connections . Connect the receiving unit to the protected premises unit as shown in Figure 2-14: CGW-MB Mounted on Chassis with CPU-N16LND NUP to NUP . Install and program the Receiving unit with type codes and zone mappings shown in "Type Codes for Monitor Modules" on page 165.

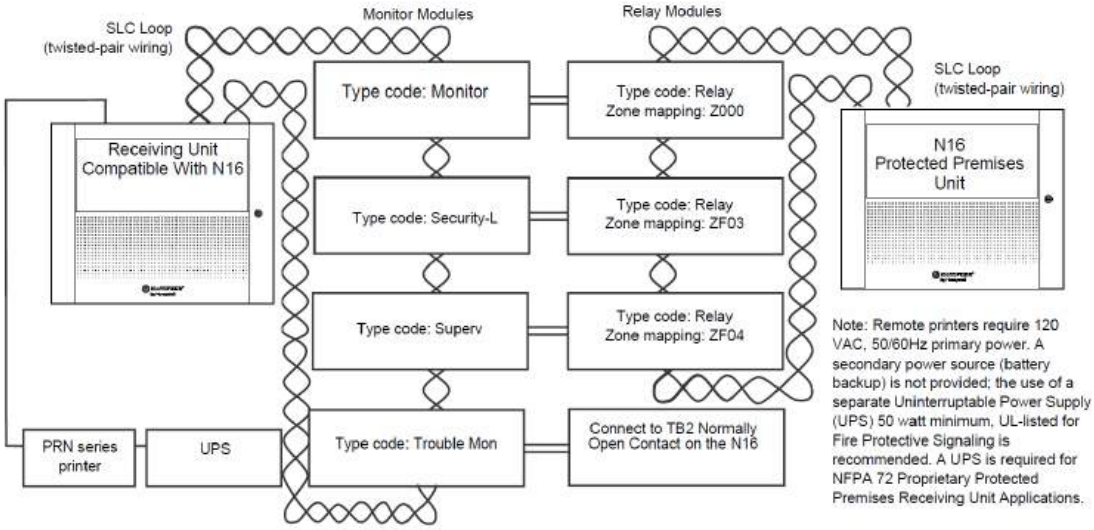



**Figure 2-15:** Typical Proprietary Fire Alarm Systems Wiring Connections

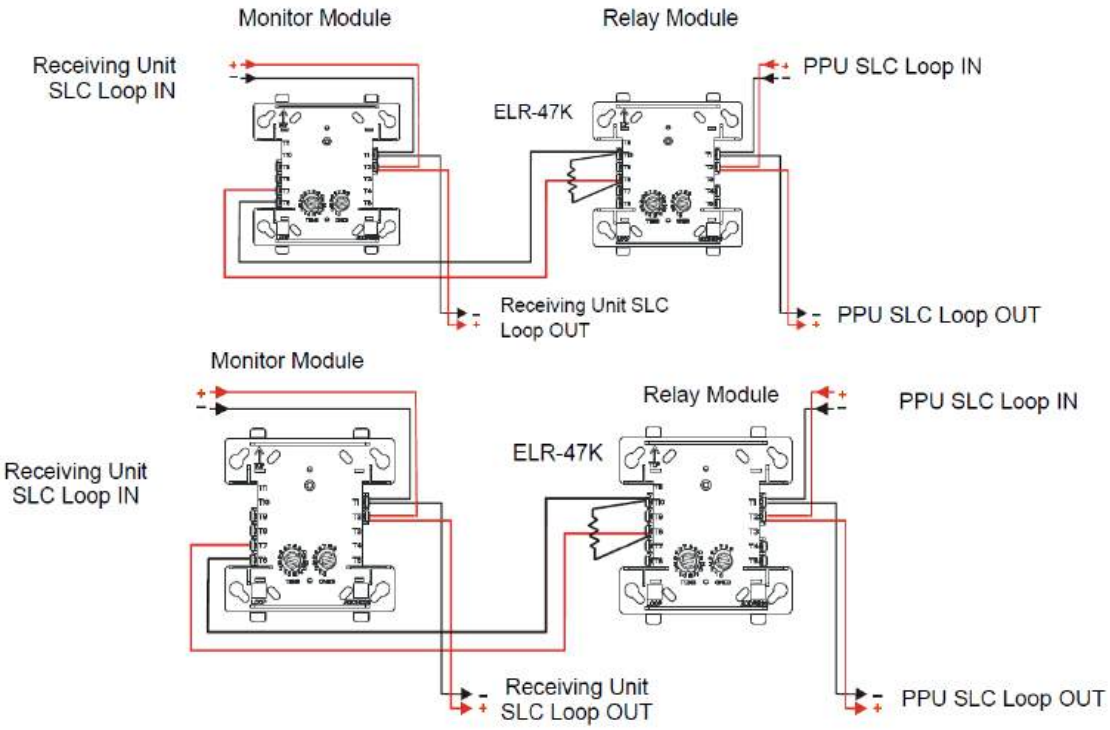



**Figure 2-16:** Typical Proprietary Fire Alarm Systems Wiring Connections: Detail Views

### 2.10.1 REMOTE STATION APPLICATION USING THE FRM-1

The FRM-1 can be used for a Remote Station Application when using a UL864 Contact Closure DACT Listed for Remote Station. Refer to Figure 2-17: Wiring Diagram for Contact Closure for typical wiring with the FRM-1.

Program each FRM-1 as follows:

- FRM-1 used to transmit Fire Alarm Signals: CBE: Z0
- FRM-1 used to transmit Supervisory Signals: CBE: ZF4
- FRM-1 used to transmit Trouble Signals: CBE: ZLxxx (Where ZLxxx is the Logic Zone programmed for Trouble Signals)
- Logic Zone Programming: OR(ZF1,ZF2)

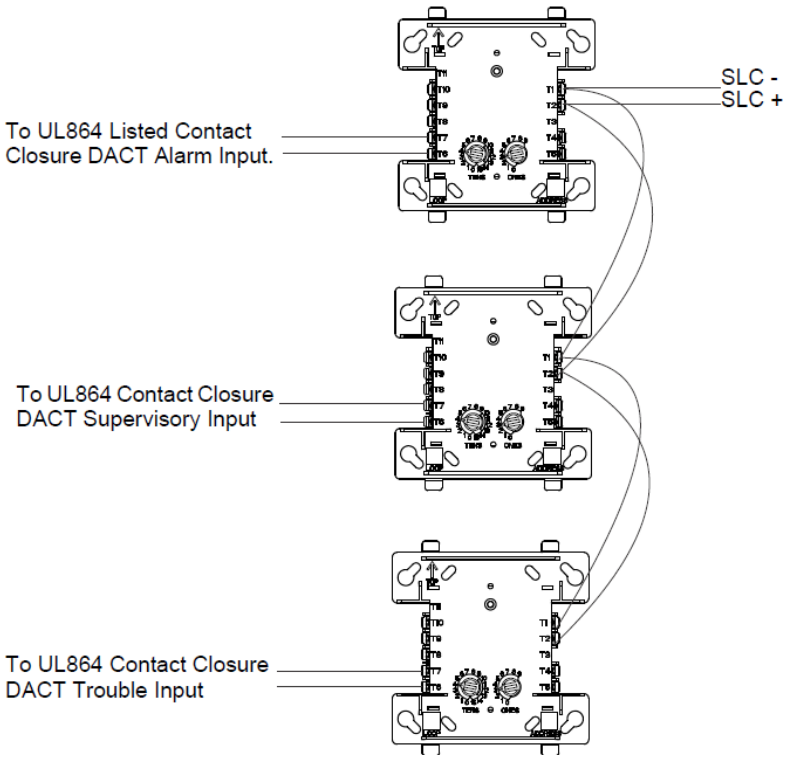



**Figure 2-17:** Wiring Diagram for Contact Closure

**NOTE:** Note polarity on the ELRD-2.2K. Install the positive side of the ELRD-2.2K on H+ terminal on the Gentex strobe only appliance, install the negative side of the ELRD-2.2K to the H- terminal on the Gentex strobe only appliance.

## 2.11 CENTRAL STATION FIRE ALARM

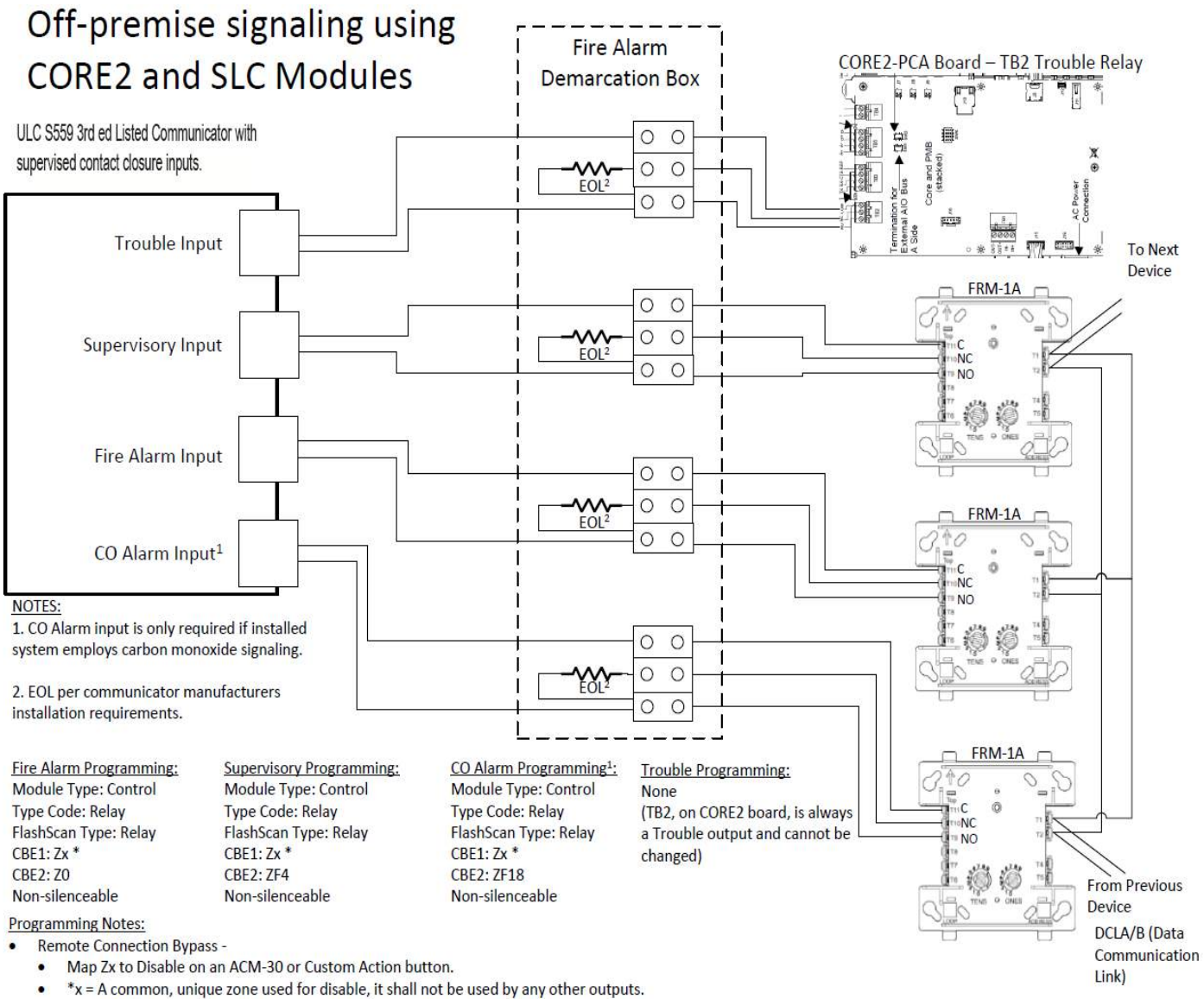



**Figure 2-18:** Connection to Contact-Closure Communicator using CORE2-PCA and FRM-1(A)

• The Alarm and Supervisory relays can be bypassed by assigning the two SLC points to a common general zone and assigning a disable operation of the general zone to a custom action button or an ACM-30 button.
• The button on the user interface (ACM-30 or customer action button) shall be labeled as "Remte Connection Bypass" or equivalent.
• The general zone for disable shall not be the same as the alarm zone used for the fire alarm or supervisory conditions.
• The general zone for disable shall be programmed in CBE position 1
• Devices will be disabled by a zone disable only for zones in the primary zone assignment (CBE position 1)
• FACP shall be in network display mode to support event reporting for the entire network
• The Alarm and Supervisory relays can be programmed as participating or not participating in Presignal or PAS delay
• Change the custom label of the disable zone to "Remote Connection Bypass"

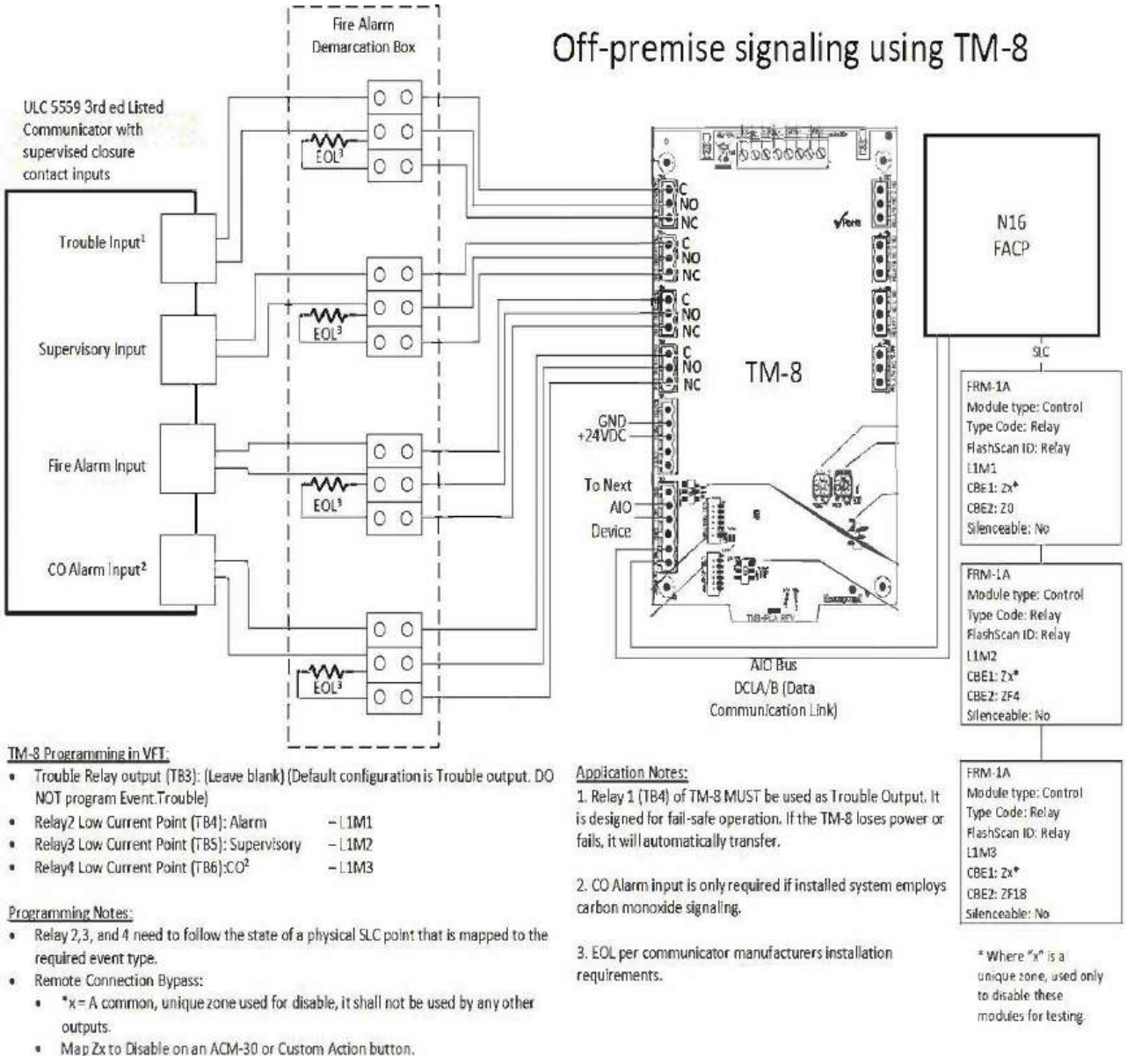



**Figure 2-19:** Connection to Contact-Closure Communicator using TM-8 and Relay Modules

• Relay #1 is on the TM-8 unique from other relay outputs. It is held in a "fail-safe" position and will transfer, even without power.
• Do NOT program any event for Relay #1 of the TM-8 (such as EVENT.TROUBLE), it's default programming is for trouble events.
• The FRM-1(A) Relays will need to follow the state of a physical point that is able to be disabled in isolation.
• The button on the user interface (ACM-30 or customer action button) shall be labeled as "Remote Connection Bypass" or equivalent.
• The general zone for disable shall not be the same as the alarm zone used for the fire alarm or supervisory conditions.
• The general zone for disable shall be programmed in CBE position 1
• Devices will be disabled by a zone disable only for zones in the primary zone assignment (CBE position 1)
• FACP shall be in network display mode to support event reporting for the entire network
• The Alarm and Supervisory relays can be programmed as participating or not participating in Presignal or PAS delay.
• Change the custom label of the disable zone to "Remote Connection Bypass"

**ULC Remote Connection Feature:** Devices such as TM-8 shall have their power and data connections shunted or disconnected during annual testing.

**Disconnecting TM-8 for Annual Testing:** See installation procedures as described in the TM-8 installation documentation, LS10388-000GE-E.

## 2.12 SECURITY TAMPER SWITCH

### 2.12.1 INSTALLATION

Follow the instructions below to wire the cabinet with a Security Tamper Switch kit model STS-1:

• Install the STS-1 Tamper Switch onto the side of the backbox opposite the door hinge, pushing the switch through the opening until it snaps into place.
• Install the magnet on the same side of the cabinet door as the lock. Push the magnet through the opening in the door until it snaps into place.
• Connect the STS-1 connector to J8 Security on the CPU.
• Program panel supervision for Security Alarm or AKS Key Switch.

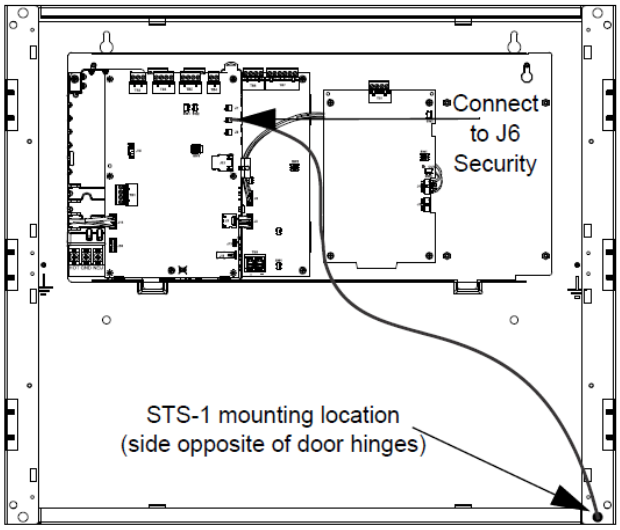



**Figure 2-20:** Installing the STS-1 Security Tamper Switch

### 2.12.2 PROPRIETARY SECURITY ALARM

**NOTE:** A maximum of 1000 SLC points may be programmed with security type codes.

For security applications, program one or more monitor modules (listed for security applications) with a security type code.

Note the following:

• The module is programed as an ACCESS MONIITOR, AREA MONITOR, EQUIP MONITOR, SECURITY-L, or SYS MONITOR type code.
• Supplementary use applies to UL Systems only.
• NAC devices used for security cannot be shared with fire NAC devices.
• Refer to the Device Compatibility Document, document #15378 for compatible NAC devices.
• For each SLC point programmed with a security type code, there must be a matching annunciator point programmed to monitor its status
• A maximum of 1000 SLC points may be programmed with security type codes.
• The Protected Premises Unit and Receiving Unit must be located in the same facility.

#### Wiring for Proprietary Security Alarm Applications

Typical wiring for proprietary security alarm applications with the FMM-1 module. "Wiring Diagram for Proprietary Security Alarm Applications" on the next page shows typical wiring, using the FlashScan module as a sample.

Note the following:

• The module is programed as an ACCESS MONIITOR, AREA MONITOR, EQUIP MONITOR, SECURITY-L, or SYS MONITOR type code.
• Supplementary use applies to UL Systems only.
• NAC devices used for security cannot be shared with fire NAC devices.
• Refer to the Device Compatbility Document for compatible NAC devices.

**NOTE:** If NAC devices are used, the audible pattern for a Security Alarm signal should be distinct from a Fire Alarm.

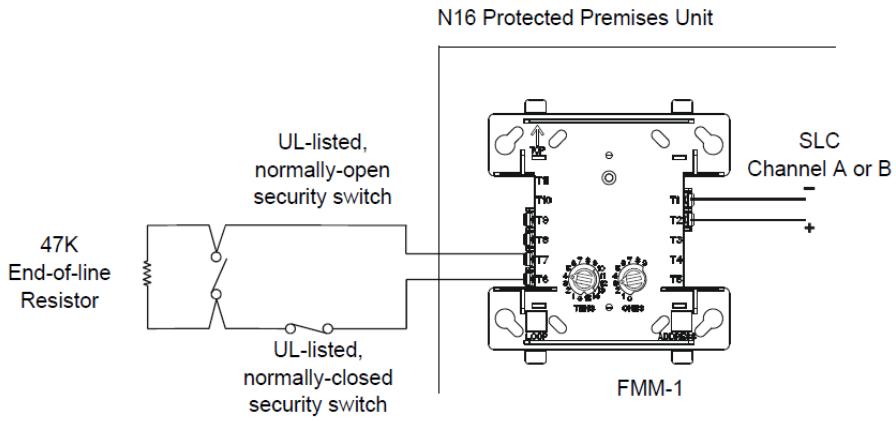



**Figure 2-21:** Wiring Diagram for Proprietary Security Alarm Applications

### Connecting an RKS-S Remote Key Switch

The RKS-S Remote Key Switch arms and disarms the system. It must be mounted in a UL listed single-gang electrical box. Both the monitor module and RKS-S must be mounted within the protected area. Refer to the RKS-S Product Installation Document (15984) for information on how to wire the RKS-S to a FMM-1 and FMM-101 module.

### Single Tenant Security System with Entry/Exit Delay

The following system requirements are illustrated in "Proprietary Security Alarm" on the previous page.

• One N16 Control Panel
• Multiple Security Supervisory Circuits Reporting to Central Station as a Single Area
• The minimum security equipment required is as follows:
  - Multiple MM Monitor Modules per Protected Area
  - One Group Interface for security alarm
  - One Group Interface to generate trouble arming system
  - Contact Switch for Each Entry/ Exit Door
  - RKS-S Key Switch
  - MM Monitor Modules
  - Remote Annunciator for Each Entry/ Exit Door (ACM-30)
  - Security Devices
  - RM Relay Module
  - Compatible Printer

### Security System Entry/Exit Delay

For security applications, logic zone programming is used to provide exit and entry alarm delays (See examples below).

**Programming a 1 minute exit delay using a DEL Logic Zone:** DEL(1:00, 00:00, LXXMYYY) where LXXMYYY is the SLC point of the switch being monitored for the delay.

**Programming a 30 second entry delay using an SDEL Logic Zone:** SDEL(00:30, 00:30, ZXXX) where ZXXX is the fire panel zone programmed to the switch being monitored for the delay.

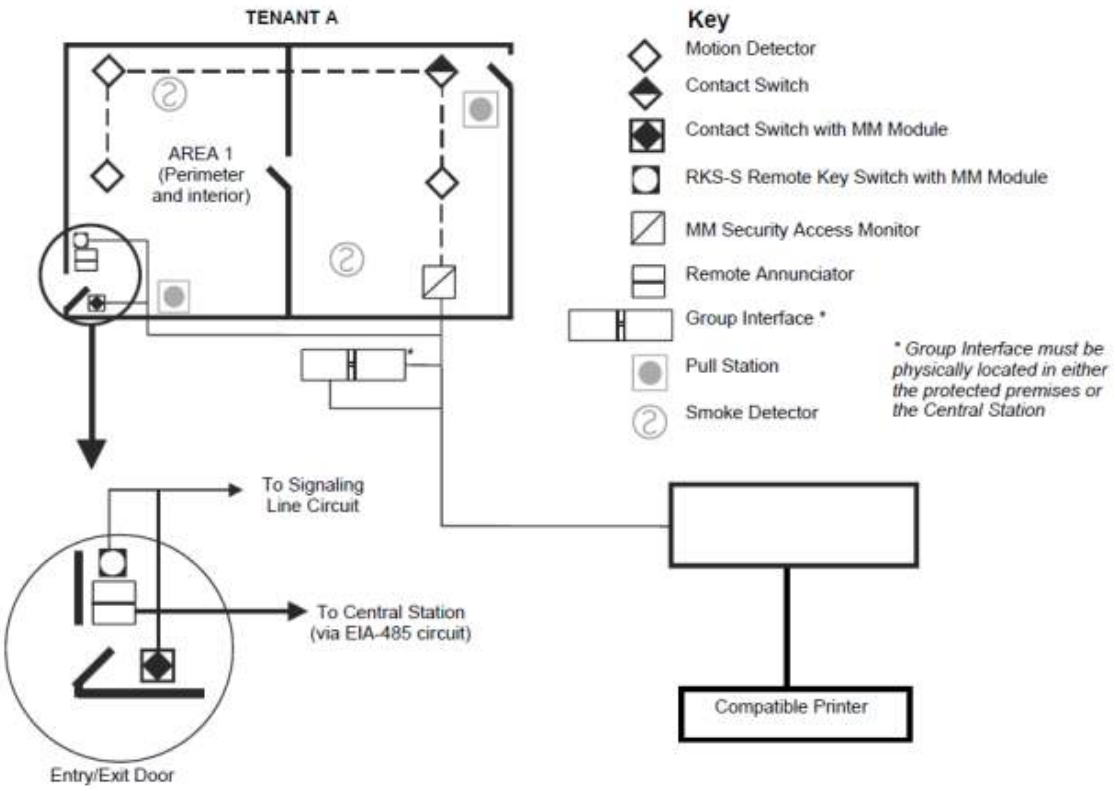



**Figure 2-22:** Single Tenant Security System with Entry/ Exit Delay

## Programming of Key Switch, Access Points, and Motion Detection

**RKS Remote Key Switch with Monitor Modules**
Address: LXXMYYY (arbitrary)
Type ID: ACCESS MONITOR
Zone Map: (none)
Custom Label: Arming Switch

**Programming of Logic Equations**

Logic Equation for 1 minute exit delay:
ZLa* = DEL(00:30, 00:00:00, address of key switch)
Logic Equation for Trouble arming system:
ZLb* = AND (ZA, address of key switch, NOT(Zla))
Logic Equation to arm system:
ZLc* = AND (ZLa, NOT(ZLb))
Logic Equation providing 30-second entry delay:
ZLd* = SDEL(00:00:30, 00:00:30, AND (ZA,ZLc)
Logic Equation for Security Alarm:
ZLe* = AND (ZLc, OR (ZLd))
*Follow the following restrictions on values:
a < b < c < d <e

**Contact Switches with Monitor Modules**
Address: LXXMYYY (arbitrary)
Type ID: ACCESS MONITOR
Zone Map: ZA
Custom Label: Exit Door #

**Motion Detectors with Monitor Modules**
Address: LXXMYYY (arbitrary)
Type ID: ACCESS MONITOR
Zone Map: ZB
Custom Label: Motion Detection

**Programming Group Interfaces**



Group Interface for Trouble when system is armed while access point(s) active
A. CM programming
Address: LXXMYYY (arbitrary)
Type ID: RELAY
Zone Map: ZLb
Custom Label: Arming Trouble Group Output
Signal Silence: No
Switch Inhibit: Yes
B. MM Programming
Address: LXXMYYY (arbitrary)
Type ID: TROUBLE MON
Zone Map: (none)

**Group Interface for Security Alarm**

A. CM programming
Address: LXXMYYY (arbitrary)
Type ID: RELAY
Zone Map: ZLe
Custom Label: Security Group Output
Signal Silence: No
Switch Inhibit: Yes
B. MM Programming
Address: LXXMYYY (arbitrary)
Type ID: SECURITY-L
Zone Map: (none)

**Security Annunciation**

A1P1
Mode: Monitor
Source: ZLc

A1P2
Mode: Monitor
Source: ZLe

A1P3
Mode: Monitor
Source: LXXMYY

A1P4
Mode: Monitor
Source: LXXMYY
Additional doors can be monitored, up to the number of available annunciator points.

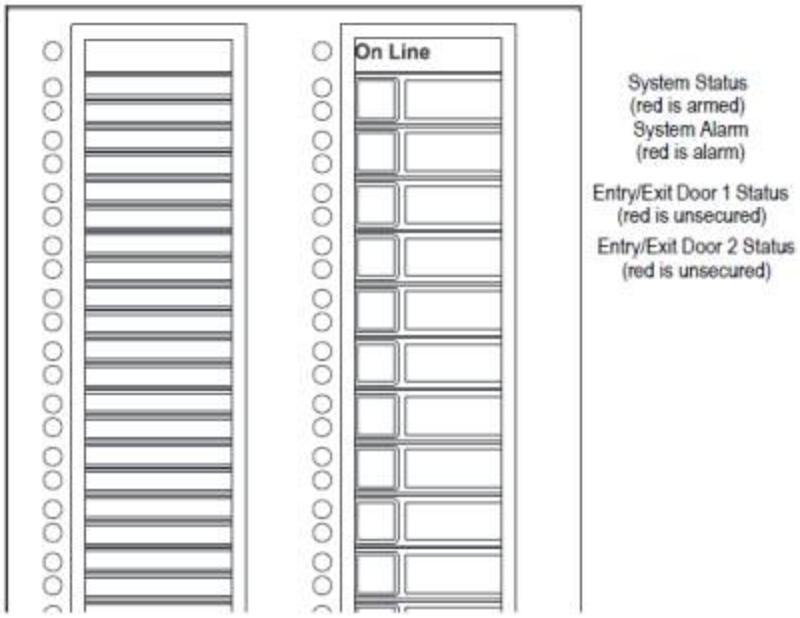



**Figure 2-23:** Sample Annunciator Display

## 2.13 AIO-BUS WIRING

### 2.13.1 AIO-BUS CONNECTIONS

There are two AIO data busses originating from the FACP CORE board: one bus intended for AIO devices that are co-located inside the FACP cabinet (“INTERNAL”), and one bus intended for externally located, or “remote”, AIO devices (“EXTERNAL”).

The EXTERNAL AIO-Bus can be wired as either Class B or Class A, whereas the INTERNAL AIO-Bus is Class B only. Both outputs are power limited.

Figure 2-24: External AIO-BUS wiring to AIO-BUS Device  illustrates the wiring between the FACP’s EXTERNAL AIO-Bus (TB5) and AIO-Bus devices. Class A return terminals are

provided at TB5 for installations that require Class A.

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

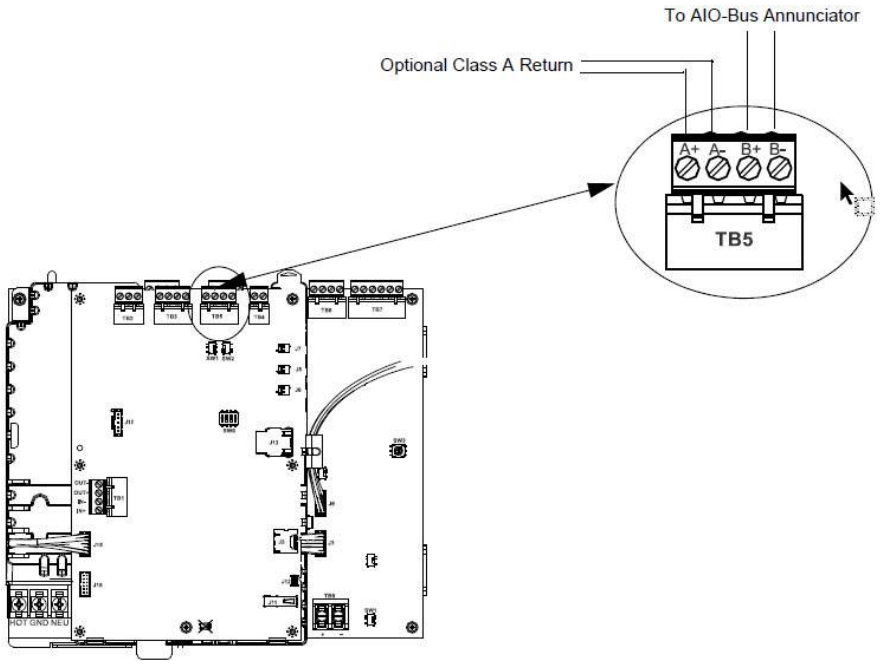



**Figure 2-24:** External AIO-BUS wiring to AIO-BUS Device

Figure 2-25: Internal AIO-BUS wiring to AIO-BUS Device illustrates the wiring between the FACP's INTERNAL AIO-Bus (TB4) and AIO-Bus devices. Note that there is no provision for Class A return wiring.

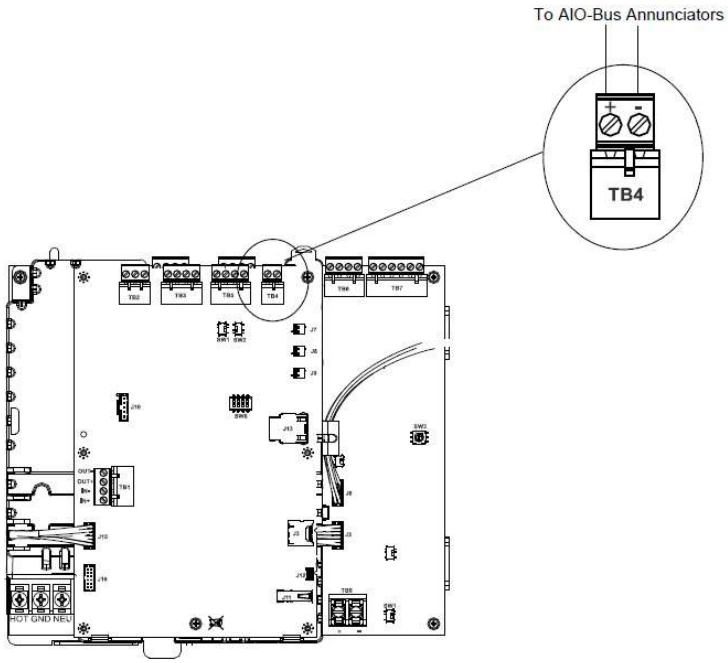



**Figure 2-25:** Internal AIO-BUS wiring to AIO-BUS Device

### 2.13.2 AIO-BUS WIRING REQUIREMENTS

All external AIO data bus connections must use twisted pair cable having a characteristic impedance of 120 ohms, +/- 20%. The relatively short wire runs for the internal AIO data bus connections inside the FACP cabinet do not require cable with controlled impedance. Wire gauge for either bus can range from 18AWG to 12AWG.

Shielded cable is not required for AIO devices that are powered by the FACP. However if shielded cable is used, the shield should be connected to system ground (i.e., power "-" or "GND") at both the FACP end and at the annunciator device(s). Do not connect the shield to earth/ chassis ground at either end.

For external AIO devices that are powered by a remote power supply, a signal reference ground connection is required between the FACP and AIO devices. In this type of installation, shielded cable can be advantageous for the AIO bus, as the shield can conveniently be used as a third wire for the reference ground. If unshielded cable is used, a third wire must be run to connect the power/ signal grounds together.

**NOTE:** A defined signal ground reference connection helps prevent exceeding the common mode voltage range of the data transceivers,which would result in communication failure. See Figure 2-26: Using Remote Power Supplies with the AIO Circuit

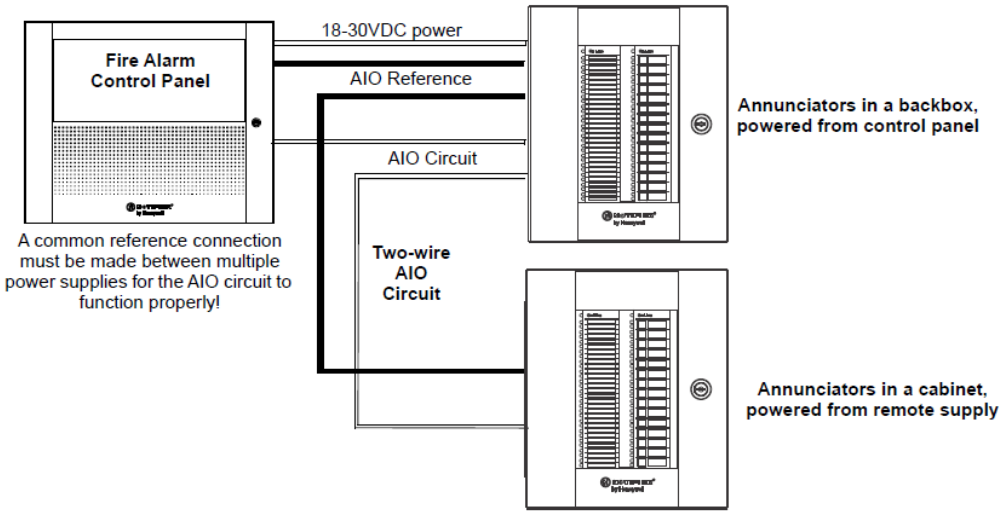



**Figure 2-26:** Using Remote Power Supplies with the AIO Circuit

For external AIO data wiring in Class B, the absolute maximum distance between the FACP and last annunciator on the bus, when using 16 AWG, is 6,000 ft. However, when the FACP also supplies power to those external AIO devices, the actual maximum distance may be less, subject to voltage drop in the power wires. See 2.13.3 External AIO-Bus Power .

**NOTE:** For external AIO data wiring in Class A, the absolute maximum distance between the FACP and last annunciator on the bus, when using 16 AWG, is 200 ft.

***Do not*** run AIO-Bus wiring adjacent to, or in the same conduit as, AC service wiring, noisy electrical circuits that are powering bells or horns, audio circuits above 25 Vrms, motor control circuits, or SCR power circuits.

***Do not*** T-tap the AIO-Bus, creating branches; the bus must be wired in a contiguous fashion to preserve the bus termination resistance and signal integrity.

### 2.13.3 EXTERNAL AIO-BUS POWER

In order to determine the wire gauge required to supply power from the FACP to externally located AIO devices, and/ or the maximum allowable distance between the FACP and those devices, it is necessary to calculate the total worst-case current draw of all the connected devices, leading to the voltage drop in the wire:

1. Refer to the installation manual for each AIO device to be installed to obtain its worst-case current draw value.

2. Multiply the worst-case current draw value by the quantity of that device that will be connected.

3. Add all the device current draw totals together.

4. Be sure not to exceed the maximum current rating of the power output on the FACP that is being used, or else multiple power outputs will be needed. Special Applications ratings for NAC1-NAC4, AUX1 & AUX2 on the FACP's PMBNL board are as follows:

- PMBNL-PCA (all revisions) and PMBNL-PCB, Rev A generations: 1.5A
- PMBNL-PCB, Rev B generation or later: 2.0A

5. Calculate the maximum allowable wire resistance:

    • Maximum wire resistance (ohms) = 3.84 volts / Total worst-case current draw (amps)

6. Calculate the maximum wire length:

    • Maximum wire length (feet) = [Maximum wire resistance (ohms) / Rpu] x 500
    • Where Rpu is the standard wire gauge resistance in ohms per 1,000 feet (see table below).

| Wire Gauge | Ohms per 1,000 feet (Rpu) |
|---|---|
| 12 | 1.588 |
| 14 | 2.525 |
| 16 | 4.016 |
| 18 | 6.385 |

    • The “x 500” factor is used instead of “x 1,000” to take into account the “round-trip” distance of the two power wires, “plus” and “minus”.
    • To illustrate the impact of (power wire) voltage drop on maximum allowable distance to the AIO devices, a total worst-case current draw of just 100 mA (0.1 A) when using 16 AWG wire results in a maximum distance of 4,781 feet – significantly less than the AIO data pair maximum limit of 6,000 feet.

## 2.14 ACM-30 REMOTE FIRE ANNUNCIATOR

### 2.14.1 INSTALLING THE ACM-30

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

The ACM-30 annunciators can be mounted in special backboxes, the ABB Series, or in the CAB-4/5 series cabinets using a hinged dress panel, the DP-4A, DP-T2A, DP-4A-CB4, or DP-T2A-CB4. Refer to the ABB, CAB-4, or CAB-5 Series Installation Documents for enclosure mounting instructions.

### 2.14.2 WIRING THE ACM-30

Select an appropriate knockout on the enclosure for the wiring to run through and snap it out. Pull all annunciator wiring into the enclosure. Connect annunciator wiring to the removable terminal blocks at this time. for circuit requirements

**CAUTION: RISK OF EQUIPMENT DAMAGE**
Remove all power when connecting 24vdc to the ACM-30.

The ACM-30 power source must be filtered, non-resettable, 24VDC listed for fire-protective signaling use. Sources include FACP power supplies and auxiliary power supplies. The power run to the annunciator need not contain a power supervision relay because loss of power is inherently supervised through communication loss (AIO communication loss is registered at the control panel during loss of power to the annunciator).

Connector P6 is the Main AIO bus connection to wire the router to the FACP. Connectors P3 and P4 are used for the Local AIO bus to wire from the router to the peripherals. These connectors are interchangeable, providing both power and data from the router. Use the 6” local AIO cable to wire ACM-30 annunciators in the same row of the cabinet. Use the 48” local AIO cable to wire annunciators on different rows of cabinets.

An Optional Kit (Part number ACM-30CBL) can be obtained if additional rows of ACM-30 are required. The kit contains a longer cable to connect one row of ACMs to an adjacent row of ACMs and 4 interconnect cables (for connecting ACM in the same row).

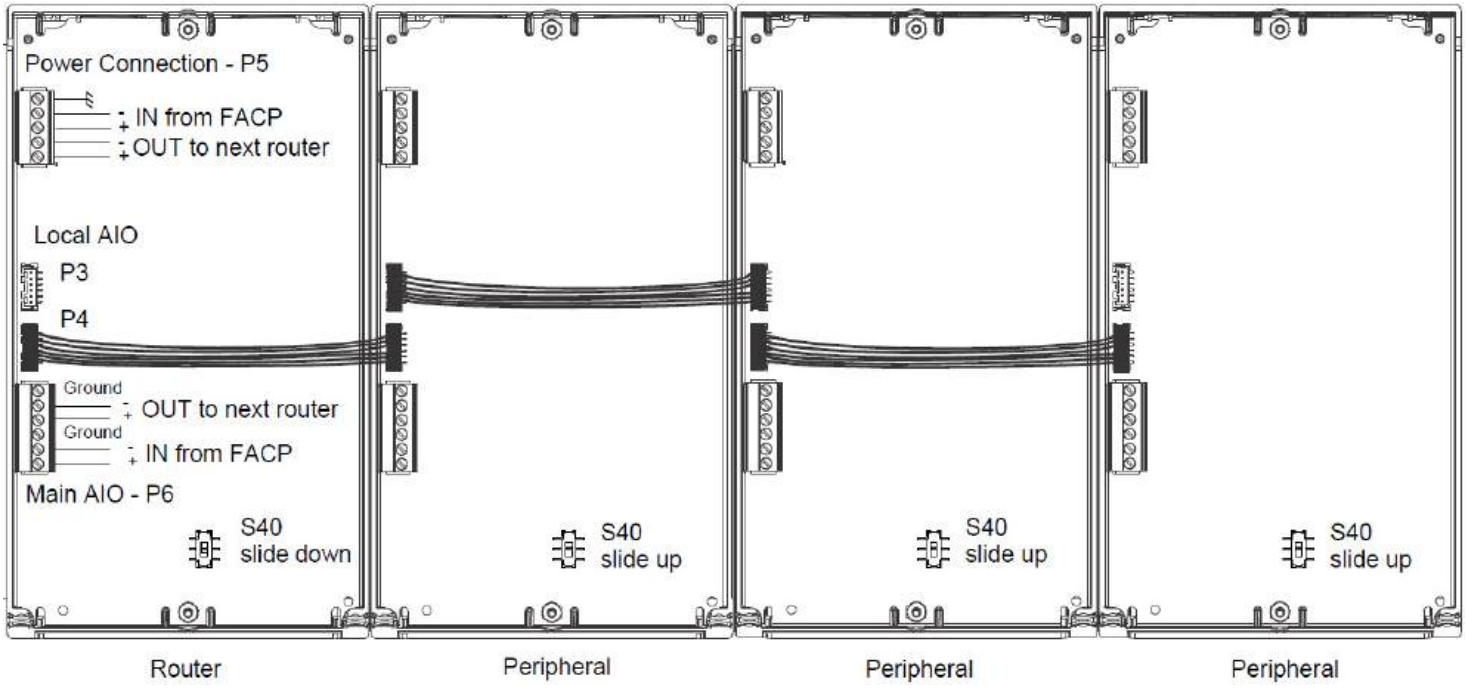



**Figure 2-27:** Power and AIO Circuit Connections

A common reference connection must be made between multiple power supplies for the AIO circuit to function properly.

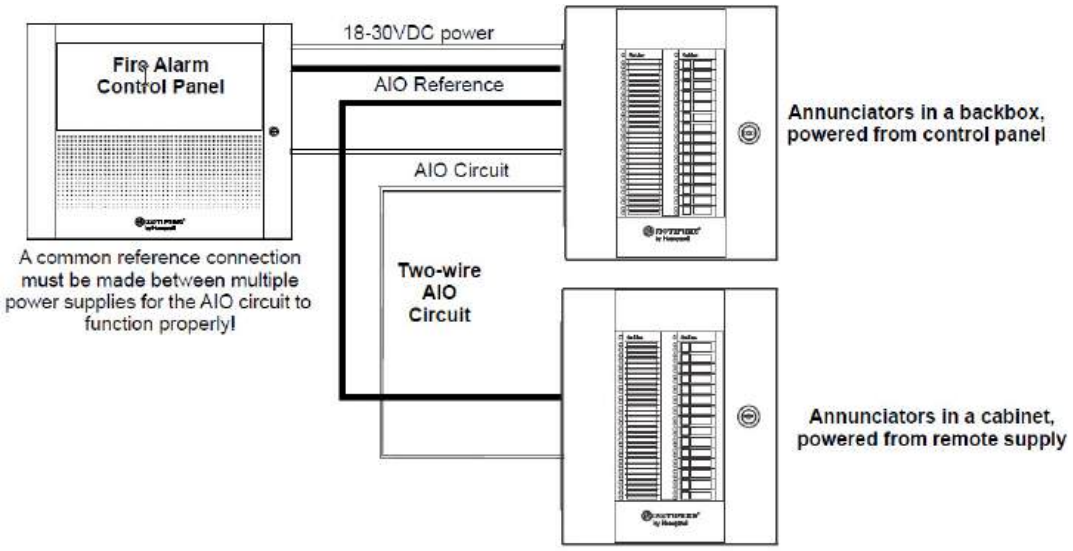



**Figure 2-28:** Using Multiple Power Supplies with the AIO Circuit

Wire the ACM-30 as shown in 2.14.2 Wiring the ACM-30 . All power must be turned off when connecting the annunciator. These requirements below must be followed.

## 2.15 INSTALLING THE RLD

Select an appropriate knockout on the enclosure for the wiring to run through and snap it out. Pull all annunciator wiring into the enclosure. Connect annunciator wiring to the removable terminal blocks at this time.

The RLD power source must be filtered, non-resettable, 24VDC listed for fire-protective signaling use. Sources include FACP power supplies and auxiliary power supplies and on-board power supplies (integral to fire alarm control panel). The power run to the annunciator need not contain a power supervision relay because loss of power is inherently supervised through communication loss (AIO communication loss is registered at the control panel during loss of power to the annunciator).

**NOTE:** End of Line resistor and RLD addressing is set through the on screen menu programming of the RLD refer to LS103010-000NF-E for more information.

**CAUTION: Risk of Equipment Damage**
Remove all power when connecting 24vdc to the RLD.

### Wiring the RLD

Wire the RLD to the external AIO BUS as shown in Figure 2-29: RLD Wiring 2.15 Installing the RLD . Refer to the RLD instruction manual *LS10310-000-E* for more information on the RLD.

**NOTE:** The RLD can only be connected to the external AIO Bus.

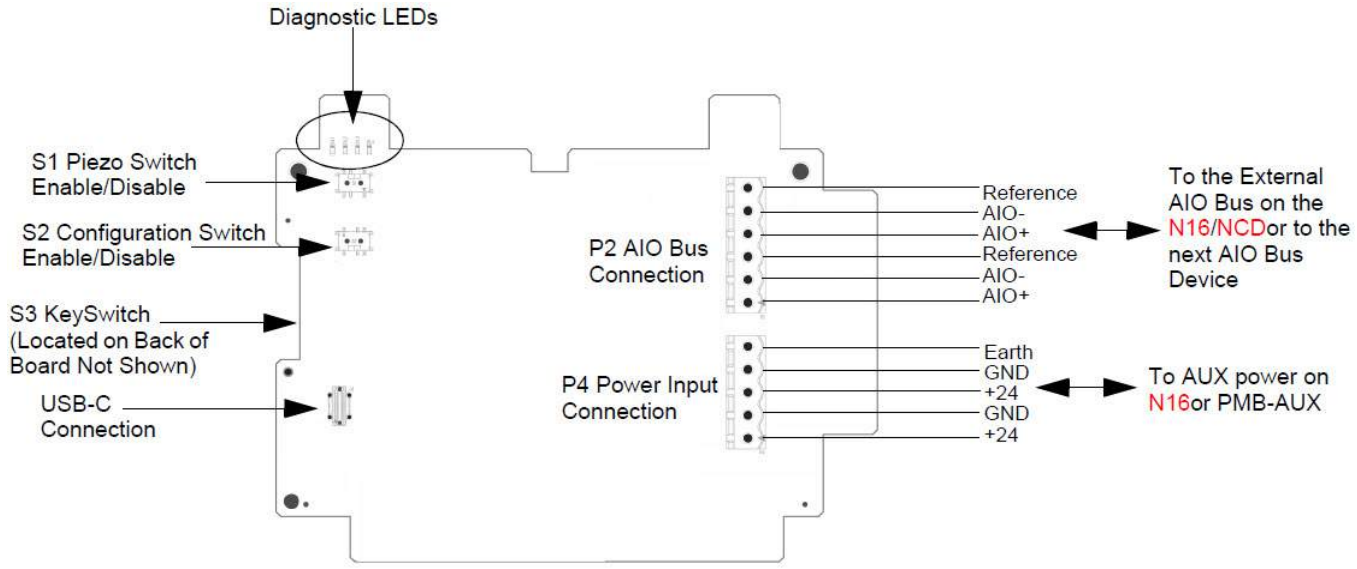



**Figure 2-29:** RLD Wiring

## 2.16 INSTALLING THE LDM-60/32

The LDM2-60/32 annunciators must be mounted in special backboxes, the ABB Series, or in the CAB-4/5 series cabinets using a hinged dress panel, the DP-4A, DP-T2A, DP-4A-CB4, or DP-T2A-CB4. The LDM2-60/32 can also be mounted on a CHS-L4. Refer to the ABB, CAB-4, or CAB-5 Series Installation Documents for enclosure mounting instructions. Other cabinets such as those provided by custom graphic annunciator manufacturers may be used provided they meet UL requirements as UL listed secured enclosures.

**CAUTION: RISK OF EQUIPMENT DAMAGE**
Remove all power when connecting 24vdc to LDM-60/32.

### Wiring the LDM-60/32

The LDM2-60/32 power source must be filtered, non-resettable, 24 VDC listed for fire-protective signaling use. Sources include FACP power supplies and auxiliary power supplies. The power run to the annunciator need not contain a power supervision relay because loss of power is inherently supervised through communication loss (AIO communication loss is registered at the control panel during loss of power to the annunciator). When wiring for router to peripheral, connector TB2 is the Main AIO bus connection to wire the router to the FACP. Connector P19 is used for the External AIO bus and P20 is used for the Local AIO bus to wire from the router to the peripherals. These connectors are interchangeable, providing both power and data from the router. Use the 6" local AIO cable to wire LDM2-60/32 annunciators in the same row of the cabinet. Use the 48" local AIO cable to wire annunciators on different rows of cabinets.

An Optional Kit (Part number xxx) can be obtained if additional rows of LDM2-60/32 are required. The kit contains a longer cable to connect one row of LDMs to an adjacent row of LDMs and 4 interconnect cables (for connecting ACM in the same row). Refer to the LDM-60/32 Instruction manual LS10385-000NF-E for more detailed information on wiring for specific applications.

## 2.17 INSTALLING THE TM-8

TM-8 is designed to mount in standard option module positions on a variety of chassis compatible with cabinet series CAB-5 and CAB-4, or on the back wall of ABB-1, ABB-2, and NBB-2 behind door-mounted equipment. Due to the configuration and height of terminal blocks, the TM-8 must be the upper-most module installed in a stack, or the only one. Refer to chassis and cabinet mounting instructions for specifics such as use of CHSADP adapter plate to mount CHS-4, CHS-4L, or CHS-4N in a CAB-5 series backbox.

**CAUTION: RISK OF EQUIPMENT DAMAGE**
Remove all power when connecting 24vdc to the TM-8.

**NOTE:** Do not install modules in front of the TM-8 or install the TM-8 in the same backbox as the HS-NCM.

### Wiring the TM-8

The Main AIO terminals connect the TM-8 as a router on the FACPs AIO Bus with wiring possible to additional routers. The Local AIO bus connects peripheral devices to the router. Any AIO device configured as a peripheral will not communicate with the FACP using the Main Data Communications Port. Order cable kit AIO-CBL whenever connecting peripherals. The kit includes three (3) 6" ribbon cables and one (1) 48" ribbon cable. When wiring for Remote Station Service or Municipal Box, only one of the two applications can function at a time. Refer to the TM-8 Instruction manual LS10388-000GE-E for more detailed information on wiring for specific applications

The TM-8 ships with a 4.7K ohm dummy load resistor. The resistor must be connected for Remote Station Service and removed for Municipal Box and is configured in the FACP programming tool. Both applications require field wiring to be minimum size of 26 AWG.

## 2.18 NETWORKING

The N16 can be networked to another control panel or network control annunciator. Each panel (known as a node when networked) requires a Network Communications Module (NCM) or High-Speed Network Communications Module (HS-NCM). Refer to the *Noti•Fire•Net Version 5.0 & Higher Manual* , (document number 51584) and the *NCM Installation Document* (document number 54014) or the *High-Speed Noti•Fire•Net Manual*(document number 54013) and *HS-NCM Installation Document* (document number 54014) for system configuration information.

**NOTE:** NCM hardware is not compatible with HS-NCM hardware and should not be mixed on the same network.

## 2.19 CONNECTING THE NETWORK COMMUNICATIONS MODULE

If networking two or more control panels (or network control annunciators), each one requires a Network Communications Module; a wire version and a fiber version are available. If the system uses Digital Voice Command, the DVC wire or fiber version of the NCM or HS-NCM can be mounted behind the DVC on its chassis; see the DVC Manual for instructions. If using the Digital Audio Amplifier, the DAA's wire or fiber version of the NCM or HS-NCM can be mounted on the DAA chassis; see the *DAA Manual* for instructions.

1. Mount the NCM or HS-NCM in the selected position. If another board is going to be mounted in the slot immediately in front of it, use stand-offs to secure it in place. Otherwise use the screws provided.

2. Connect J10 on the N16 Core Board to J3 on the NCM or J6 on the HS-NCM using the network cable provided (P/N 75556). Do not connect two NCMs via NUP ports (aka NUP to NUP).

3. **When installing an NCM:** Connect Channel A and/ or Channel B as described in the *NCM Installation Document*.
**When installing a HS-NCM:** Connect Channel A to Channel B as described in the HS-NCM Installation Document.

**NOTE:** See the *Noti•Fire•Net Version 5.0 & Higher Manual* and the *NCM Installation Document* or the *High-Speed Noti•Fire•Net Manual* for system configuration information. See the *BMP-1 Product Installation Drawing* if considering mounting the module (wire version) behind blank module plate in a dress plate or annunciator backbox.

**NOTE:** Over-bending fiber-optic cable can damage it. Do not exceed a 3 inch (7.62 cm) minimum bend radius.

**NOTE:** NCM hardware is not compatible with HS-NCM hardware and should not be mixed on the same network.

### 2.19.1 SWIFT WIRELESS DEVICE RESTRICTIONS

• Wireless inputs cannot activate network points on standard NFN (54 display nodes on a 54 node network)
• Wireless inputs can activate wired network outputs on high speed network with a limit of 12 module groups per SLC
• Wireless inputs cannot activate wireless outputs over the network (standard or high speed)
• There is a limit of 8 ACM-30s per node that can be mapped to alarm points when using swift wireless devices as inputs.
• There is a limit of 32 ACM-30s per node that can be mapped to alarm points when there are no swift wireless devices being used as inputs.

## 2.20 NETWORK CONTROL DISPLAY (NCD)

Connect the NCD to a networked NOTIFIER INSPIRE™ system using a HS-NCM network card.

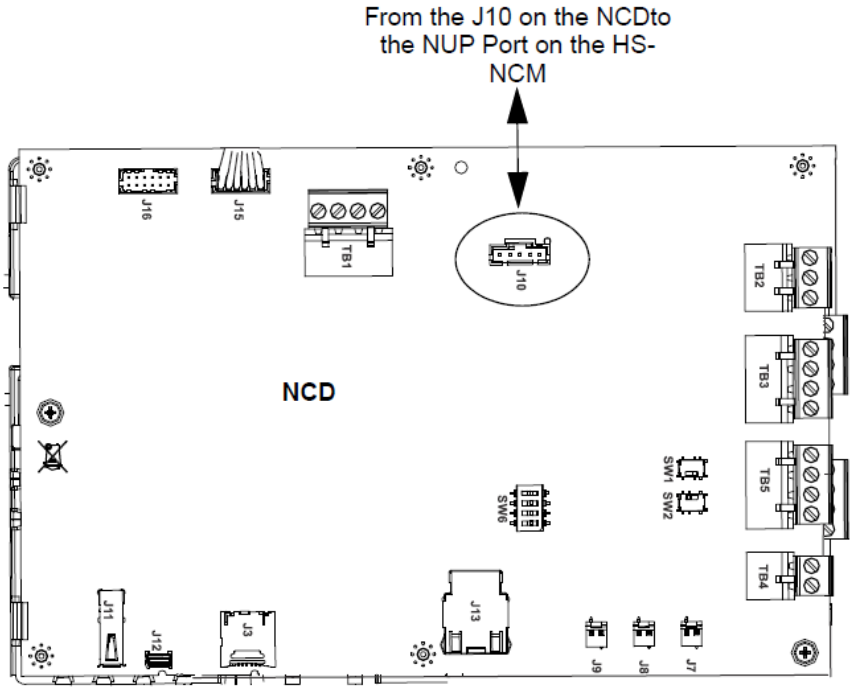



**Figure 2-30:** Connecting the NCD

For more information on the NCD, refer to the *NCD Manual (document number LS10210-051NF-E*).

## 2.21 WIRING THE N16 TO THE DVC

The DVC can be connected to the N16 FACP in the following ways:

• Direct connected to a stand alone FACP or a retrofit application via the NUP port
• In a networked N16 system, connect the DVC via a HS-NCM.

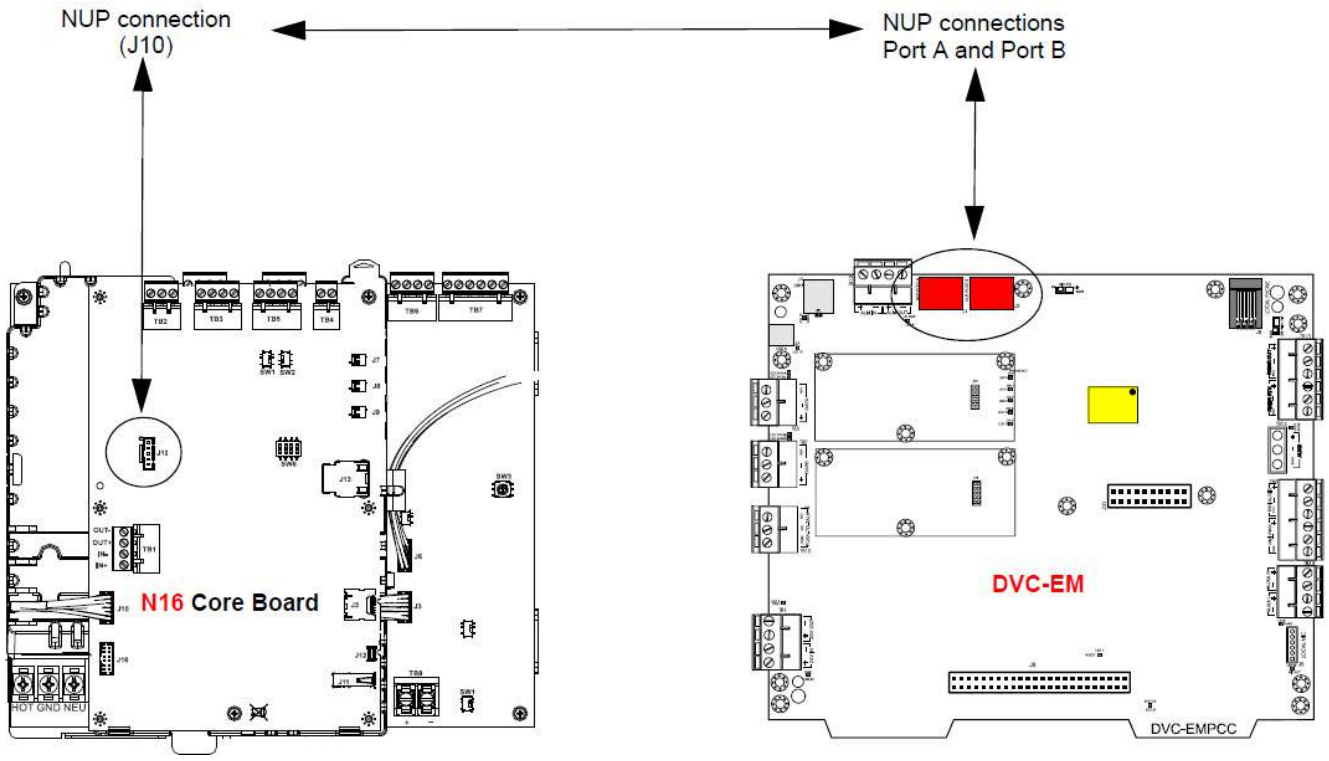



**Figure 2-31:** Connecting the N16 to the DVC

For more information on the DVC refer to the *DVC Manual (document number 52411*).

## 2.22 CONNECTING A PC FOR PROGRAMMING

A PC running the VeriFire®Tools programming utility can upload and download the operating program of the control panel when attached to J11 USB Connection, J1 Network/ Service Connection (NUP) or to the second Network/ Service connection on an attached wire or fiber version of the NCM or HS-NCM. Refer to the VeriFire®Tools Help Files for instructions.

**NOTE:** Download operations that change the basic program of the control panel must be performed by responsible service personnel in attendance at the control panel. After downloading a program, test the control panel in accordance with NFPA 72.

## 2.23 INSTALLING PRINTERS

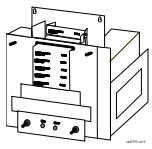
This section contains information on connecting a printer to the CPU and for setting the printer options. The basic steps are as follows:

1. Make custom cable & connect it from printer to TB3 on the CPU.
2. Connect printer's power supply.
3. Configure printer settings as described in printer documentation.

**Overview: PRN Printer**

The PRN provides a printed record (80 columns on standard 9" x 11" tractor-feed paper) of all system events (alarm, trouble) and status changes within the system. The control panel can be configured to time-stamp the printout with the current time-of-day and date for each event. The equipment must be located in the same room within 20 feet (6.10 m) of the control panel and encased in conduit. Installation and configuration instructions follow.

**Overview: Keltron Remote Printer (Model VS4095)**



The VS4095 is a two-color (red and black), 40-column, 24 VDC printer that can print up to 50 messages in 90 seconds. This printer connects to the TB3 on the CPU and to the +24V screw on TB7 of PMB power supply and mounts in a separate cabinet next to the control panel. The VS4095 meets UL fire and security requirements for an ancillary device. For more information on the Keltron printer, contact the manufacturer (Keltron Corp., Waltham, MA). Installation and configuration instructions follow.

## 2.23.1 PRINTER INSTALLATION SEQUENCE

1. Fabricate a custom cable to connect a printer to the system. Length of the cable will vary with each installation, but should not exceed a maximum length of 50 feet (15.24 meters). Printer must be installed in the same room within 20 feet (6.10 meters) of the panel. Using overall foil/ braided-shield twisted-pair cable, properly connect one end to the DB-25 or DB-9 Connector (provided) using the wiring specifications shown in "Printer Connections" below.

2. Tighten clamp on connector to secure cable. Connect the four open leads of the custom cable to the TB3 terminal block on the CPU as shown in "Printer Connections" below.

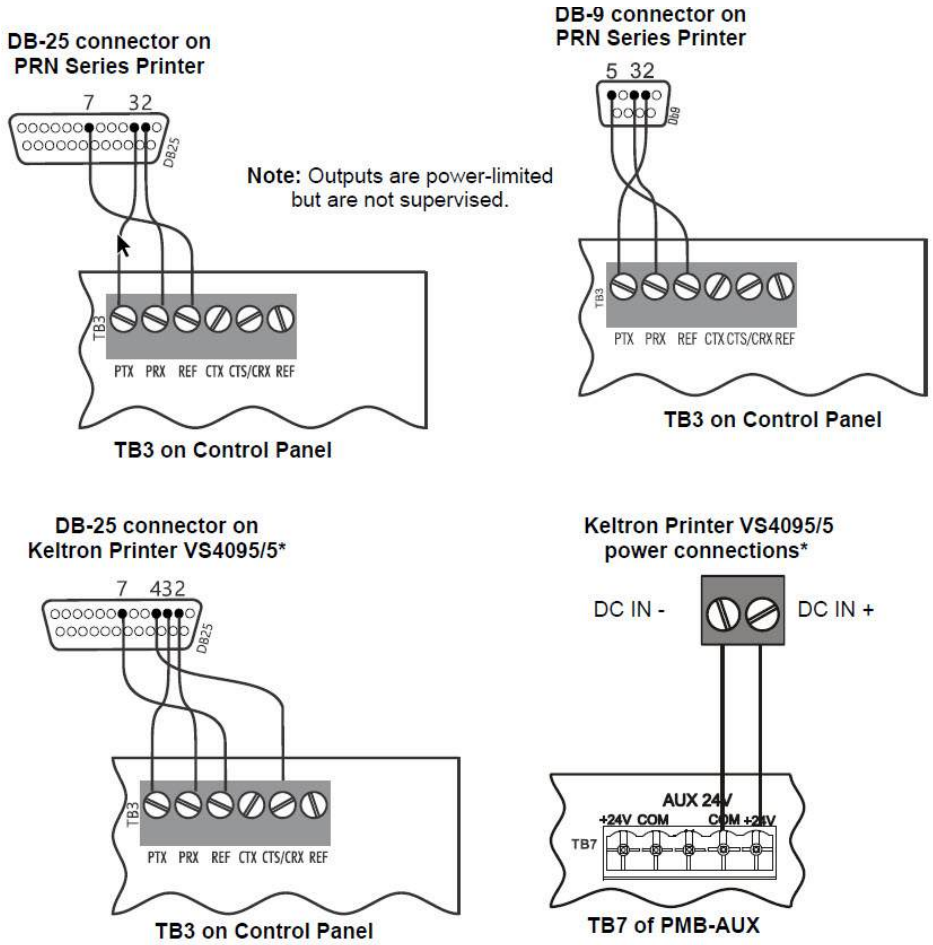



**Figure 2-32:** Printer Connections

3. If installing a Keltron Printer VS4095/ 5, connect 24 VDC non-resettable power from a UL-listed power supply to the Keltron printer as shown in "Printer Connections" above (14 AWG).

4. If installing a PRN series printer, plug it into your AC power source. The P

**NOTE:** RN series of printers require a primary AC power source. Refer to the Manufacturer's Installation Guide for additional information. 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). Because a secondary power source is not provided, use a separate Uninterruptable Power Supply (UPS) that is UL-listed for Fire Protective Signaling.

5. Plug the DB-25 or DB-9 connector end of the custom cable into the EIA-232 port of your printer. Tighten securely.
6. Configure the printer as described in "Configuring the Printer" below

**NOTE:** Depending on which version of the AMPS-24/E is being used, the terminal block designations may differ from those listed. Please refer to the AMPS-24/E manual.

### 2.23.2 PRINTER CONNECTIONS

The N16 Core Board includes a printer connection as shown in "Printer Connections" above. The printer connection is for supplemental use only.

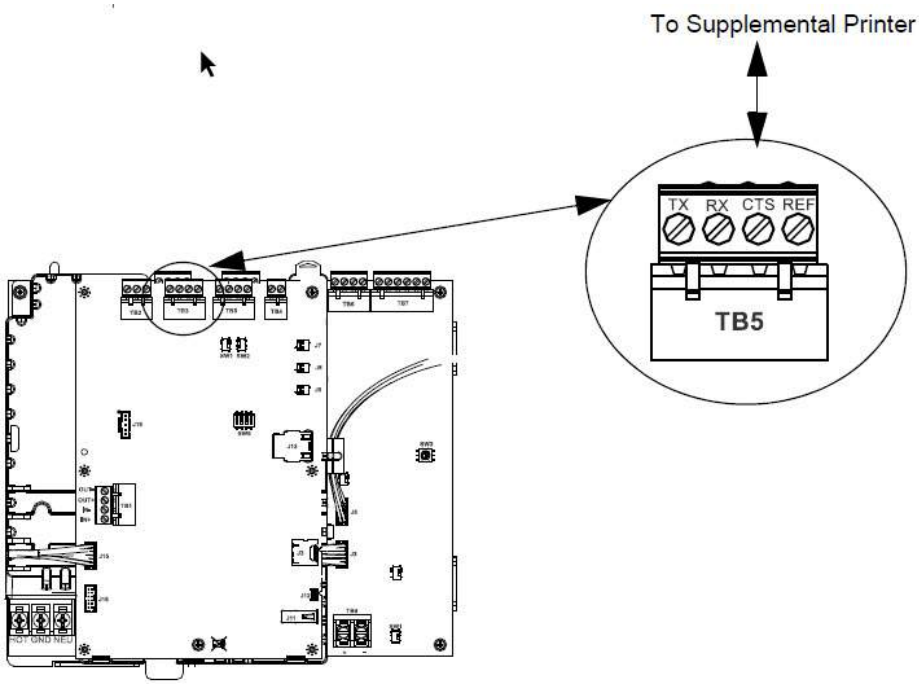



**Figure 2-33:** N16 Printer Connection

### 2.23.3 CONFIGURING THE PRINTER

Refer to the documentation supplied with your printer for instructions on configuring your printer.

### 2.23.4 PRN PRINTER SETTINGS

Set the printer options according to the settings listed in "Configuring the Printer" above.

| Option | Setting for Printer Model | |
|---|---|---|
| | PRN-6 and previous models | PRN-7 |
| L/R Adjust | 0 | 0 |
| Font | HS Draft | HS Draft |
| CPI | 10 CPI | 10 CPI |
| LPI | 6 LPI | 6 LPI |
| Skip | 0.0 | 0.0 |
| ESC Character | ESC | ESC |
| Emulate | FX-850 | LQ-2550 |
| Bidirectional Copy | ON | ON |
| I/O | | |
| Interface | Serial | Serial |
| Buffer | 40K | 64K |
| Serial | | |
| Baud | 9600, 4800, 2400 | 9600, 4800, 2400 |
| Format | 8 Bit, None, 1 Stop | 8 Bit, None, 1 Stop |
| Protocol * | ENQ/STX | ENQ/STX |
| CG-TAB | Graphic | Graphic |
| Character Set | Standard | Standard |
| Country | E-USA ASCII | E-USA ASCII |
| Select Zero | ON | ON |
| Auto-CR | OFF | OFF |
| Auto-LF | OFF | OFF |

| Option | Setting for Printer Model | |
|---|---|---|
| | PRN-6 and previous models | PRN-7 |
| Menu Lock | ON | All |
| Language | English | English |
| Paper | | |
| Single | | |
| Form Adjust | 12/72 | 12/72 |
| Trac 1 | | |
| Form Adjust | 12/72 | 12/72 |
| Trac 2 | | |
| Form Adjust | 12/72 | 12/72 |
| Auto Sheet Feeder | | |
| Form Adjust | 12/72 | 12/72 |
| Auto Tear | OFF | OFF |
| F-Eject | OFF | Top |
| Form Length | | |
| Trac 1 | | |
| Lines | 66 | 66 |
| Standard | 10.5" | 11" |
| Trac 2 | | |
| Lines | 66 | 66 |
| Standard | 10.5" | 11" |
| Barcode | Off | Off |
| Barmode | Unsecured | Unsecured |

*Protocol: When printing in graphics mode, set I/O Serial Protocol to "Robust XON/OFF".

**Figure 2-34:** PRN Setup Options

### 2.23.5 KELTRON PRINTER VS4095/5 SETTINGS

The printer communicates using the following protocol:

• Baud Rate

- Supervised mode: 2400
- Unsupervised mode: 300

* (Supervision is a programmed setting; refer to the Panel Programming section of the Programming Manual for instructions.)

• Data bits: 8
• Parity: None
• Stop bits: 1

Set the printer DIP switches SP1 and SP2 according to settings in the table below.

| Supervised | | | Unsupervised | | | Supervised and Unsupervised | | |
|---|---|---|---|---|---|---|---|---|
| SP1 | On | Off | SP1 | On | Off | SP2 | On | Off |
| 1 | | X | 1 | X | | 1 | | X |
| 2 | X | | 2 | | X | 2 | | X |
| 3 | | X | 3 | X | | 3 | | X |
| 4 | | X | 4 | | X | 4 | | X |

| Supervised | | | Unsupervised | | | Supervised and Unsupervised | | |
|---|---|---|---|---|---|---|---|---|
| 5 | X | | 5 | X | | 5 | X | |
| 6 | | X | 6 | | X | 6 | | X |
| 7 | X | | 7 | X | | 7 | X | |
| 8 | X | | 8 | X | | 8 | X | |

**Figure 2-35:** Keltron DIP Switch Settings

### 2.23.6 DEVICES REQUIRING EXTERNAL POWER SUPERVISION

Certain type codes have external power supervision (FlashScan only) built into the software. An external power-supervision relay is required unless one of the following typecodes is selected for the device:

- Control
- Strobe
- Horn
- (Blank)
- Release Ckt
- Rel Ckt Ulc
- Nonreset Ctl
- Alarm Pend
- Gen Alarm
- Gen Super
- Gen Trouble
- Gen Pend
- Trouble Pend

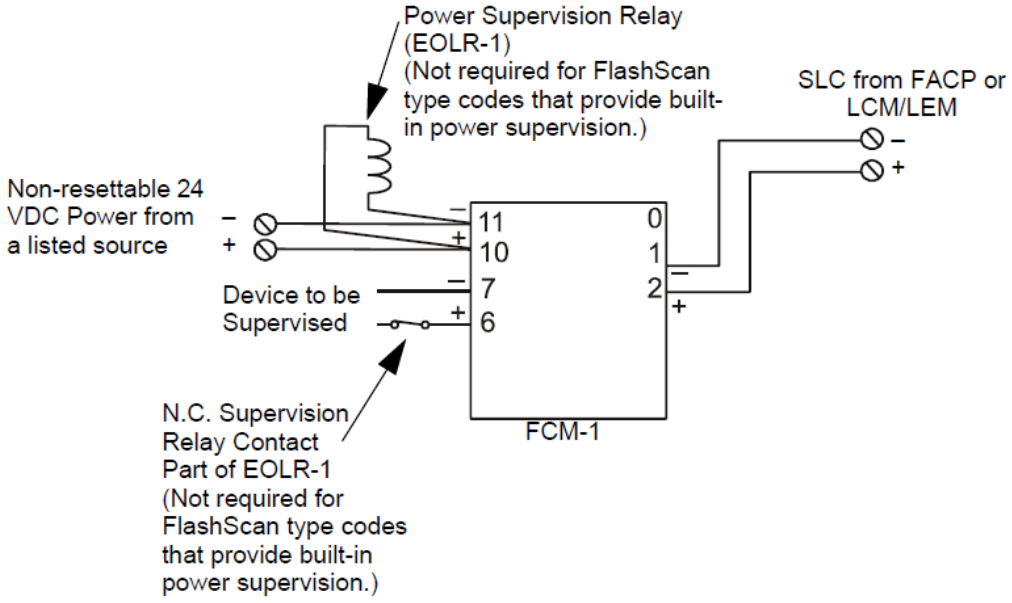



**Figure 2-36:** Enabling External Power Supervision Using Relays

*If the SLC device does not match the one in this figure, refer to the SLC manual appendix, which contains wiring conversion charts for type V and type H modules.

### 2.23.7 FIRE/SECURITY APPLICATIONS GENERAL OPERATION

The N16 can be used as a combination Fire/ Security system when installed and operated according to the instructions in this section.

For security applications, program one or more monitor module (listed for security applications) with the security-L, system monitor, or area monitor Type Codes and wire as shown in Figure 2-21: Wiring Diagram for Proprietary Security Alarm Applications . Activating these types of modules lights the security LED and displays a security alarm condition on the primary display. The panel sounder will sound until you acknowledge the Security alarm. You can also program additional sounders or output devices to activate with the security alarm initiating device. These type codes are designed to indicate an alarm in one or more of the following situations:

- on an open or short circuit
- on a ±50% change in resistance value from the End-of-Line resistor value
- on loss of communication with the device

A tamper switch installed in the cabinet door will indicate a door tamper condition whenever the door is open. If the control panel indicates a Security alarm, you can perform acknowledge, signal silence and system reset from the control panel.

Damage can result from incorrect wiring connections.

### 2.23.8 GENERAL SECURITY REQUIREMENTS

The following security requirements must be met:

• Use PMB power supply.
• Shielded cable must be used on all input/ output wiring associated with security functions.
• The control panels cabinet door can be optionally wired with an STS-1 Tamper Switch that is monitored by the control panel.
• SLC Loop Shielding (refer to the SLC Wiring Manual).
• Security Module I/ O Circuit Shielding - terminate the shield at earth ground at the junction box containing the module.
• If the system has arming and disarming capability, a ringback signal from the Central Station to the arming location is required. The ringback signal informs the Protected Premises Control Panel that the signal to arm/ disarm has been received by the Central Station.
• A single SLC loop may be used for both Fire and Security Device Connections.
• There must be a sufficient number of ACM-30s installed on the control panel to show the status of each zone or point so that each zone or point can be monitored. Any ACM-30's or optional annunciators must be installed inside the protected area.
• A single control panel combines a Protected Premises Unit and Receiving Unit as a single unit, as such, it must be located in an area that is monitored at all times.
• The Installer should be familiar with and follow the best practices set forth within ANSI/ SIA CP-01 for troubleshooting and reduction in dispatch calls.
• For Security applications the maximum number of points on a system must be limited to 1000 or less.

There are five software type IDs associated with security operation: Access Monitor alarm, Area Monitor, Equip Monitor, Security-L and Sys Monitor. There is also one software function, Security Delay (SDEL). These software elements are essential to all aspects of security operation, including Control-By-Event (CBE) programming. Devices with the type IDs Access Monitor and Equip Monitor do not automatically display at the display or require state change acknowledgment. State changes in devices with these software types may be output at a printer. Refer to this panel's programming section for more information about the characteristics of software type IDs.

**WARNING:** XP Transponder circuit (XPP-1, XPM-8, XPC-8, XPR-8, XPM-8L) are not suitable for security applications.

## 2.24 CONNECTING AN FAAST INTELLIGENT ASPIRATION DETECTOR

The FAAST Intelligent Aspiration detector may be used to provide early warning fire protection using aspiration sensing technology.

**FAAST Wiring:**

2.24 Connecting an FAAST Intelligent Aspiration Detector shows the wiring for the FAAST detector to the N16.

For additional installation information for the FAAST detectors, refer the FAAST Installation and Maintenance Instruction document provided with your equipment and the SLC Wiring Manual.

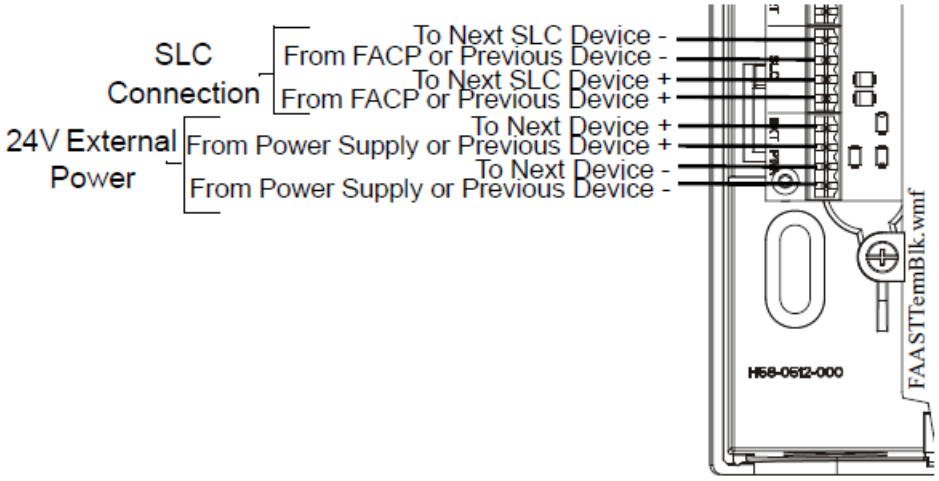



**Figure 2-37:** FAAST Connection to the FACP

## 2.25 UL SYSTEM CONFIGURATION

The following tables display System Configuration information for UL applications. See key and footnotes at end of table.

**Table 2.1** System Configuration for UL Requirements

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ACM-30 | Annunciator | O | O | O | O | O | Y | O | O | O | O |
| RLD | Remote Display | O | O | O | O | O | O | O | O | O | O |
| ABP-1 | Blank Plate for ACM-30 | O | O | O | O | O | O | O | O | O | O |
| ABB-1 | Backbox for One ACM-30 | O | O | O | O | O | O | O | O | O | O |
| ABB-2 | Backbox for Two ACM-30s | O | O | O | O | O | O | O | O | O | O |
| BP-5 | Battery Dress Panel for CAB-5 | O | O | N | O | O | O | N | O | O | O |
| CGW-MB | CLSS Gateway, main board | Y (4,8,10) | N | N | O | O | N | N | N | N | N |
| HON-CGW-MBB | CLSS Gateway, in a plastic enclosure | Y (4,8,10) | N | N | O | O | N | N | N | N | N |
| HON-DACT-DS | Dark Site Dialer | Y (4,8,10) | N | N | O | O | N | N | N | N | N |
| HWF2A-COM | LTE/IP Dialer Capture Alarm Communicator | O(8,10) | N | N | N | O | N | O | N | O | O(8) |
| HWF2V-COM | LTE/IP Dialer Capture Alarm Communicator | O(8,10) | N | N | N | O | N | O | N | O | O(8) |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TG7LAF02 | LTE Dialer Capture Alarm Communicator | O(8,10) | N | N | N | O | N | O | N | O | O(8) |
| TG7LVF02 | LTE Dialer Capture Alarm Communicator | O(8,10) | N | O | N | O | N | O | N | O | O(8) |
| CCM-ATT-HON | AT&T Cellular Module | O | O | O | N | N | N | O | N | O | O |
| CCM-VZ-HON | Verizon Cellular Module | O | O | O | N | N | N | O | N | O | O |
| CPU-N16LD | CPU Board (Core/ PMB/ SLM-318) with 10inch HD Display | Y(9) | Y(9) | O | Y(9) | Y(9) | Y(9) | O | Y(9) | Y(9) | Y(9) |
| CPU-N16-RB | CPU Board Only (Core) | O | O | O(7) | O | O | O | O(7) | O | O | O |
| CPU-N16LND | CPU Board (Core/ PMB/ SLM-318) w/ o Display | Y(9) | Y(9) | Y | Y(9) | Y(9) | Y(9) | O | Y (9) | Y(9) | Y(9) |
| CPU-16-RTO | Core Board with Retrofit Chassis for CAB-4 | 0(7) | 0(7) | O | 0(7) | 0(7) | 0(7) | O | 0(7) | 0(7) | 0(7) |
| DP-4A | Dress Panel, Mounts 4 ACM-30 | O | O | O | O | O | O | O | O | O | O |
| DP-4A-CB4 | Dress Panel, Mounts 4 ACM-30s in a CAB-4 Enclosure | 0(7) | 0(7) | O | 0(7) | 0(7) | 0(7) | O | O(7) | O(7) | O(7) |
| DP-BLN | Blank Dress Panel | O | O | O | O | O | O | O | O | O | O |
| DP-T2A | Dress Panel for 10inch Display for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |
| DP-T2A-CB4 | Dress Panel for 10inch Touch Screen Display and two ACM-30 Annunciators for CAB-4 Enclosure | 0(7) | 0(7) | O | O(7) | O(7) | O(7) | O | O(7) | O(7) | O(7) |
| NCA-2*± | Network Control Annunciator | O | O | O | O | O | O | O | O | O | O |
| NCD | Network Control Display | O | Y(9) | O | O | O | O | O | O | O | O |
| CPU-NCD-RB | NCD Replacement Board | O(7) | O(7,9) | O(7) | O(7) | O(7) | O(7) | Y(9) | O(7) | O(7) | O(7) |
| NBB-2 | Backbox for NCD | O | O | O | O | O | O | O | O | O | O |
| DVC/ DVC-EM | Digital Voice Command/ Extended Memory Module | O | Y(5) | N | N | O | O | O | N | N | O(5) |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DVC-RPU | Digital Voice Command Remote Paging Unit | N | O(5) | N | N | N | N | O | N | N | O |
| DAA2-5025 (E)* | Digital Audio Amplifier | N | O(5) | N | N | N | N | O(5) | O | N | O |
| DAA2-5070 (E)* | Digital Audio Amplifier | N | O(5) | N | N | N | N | O(5) | N | N | O |
| DAA2-7525 (F) (SF)* | Digital Audio Amplifier | N | O(5) | N | N | N | N | Y | N | N | O |
| DIS-10-RD | 10inch Touch Screen Display | Y(7,9) | Y(7,9) | O | Y (7,9) | Y(7,9) | Y(7,9) | O | Y (7,9) | Y(7,9) | Y(7,9) |
| NCM-W/F | Network Control Module | O | O | O | O | O | O | O | O | O | O |
| HS-NCM-W/MF/SF/WMF/WSF/MFSF/W-2/WMF-2/WSF-2 | Network Control Module | O | O | O | O | O | O | O | O | O | O |
| PMB-AUX | Power Supply | O | O | O | O | O | O | O | O | O | O |
| PMB-AUX-RTO | Power Supply with CAB-4 Retrofit Chassis | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| CMIC-1 | Microphone Assembly | N | O(5) | N | N | N | N | O | N | N | O |
| SLM-318 | Signaling Loop Card | Y | Y | O | Y | Y | Y | O | Y | Y | Y |
| TELH-1 | Telephone Assembly | N | O(5) | N | N | N | N | O | N | N | O |
| N16E-R | CPU-N16LD in Red Enclosure | O | O | O | O | O | O | O | O | O | O |
| N16E | CPU-N16LD in Enclosure | O | O | O | O | O | O | O | O | O | O |
| N16-GZ | Panel License for General Zones (in increments of 250) | O | O | O | O | O | O | O | O | O | O |
| N16-LGZ | Panel License for Logic Zones (in increments of 250) | O | O | O | O | O | O | O | O | O | O |
| N16-UZC | Panel License for Universal Zone Coding | O | O | O | O | O | O | O | O | O | O |
| N16-NWD | Panel License for Network Display Mode | O | O | O | O | O | O | O | O | O | O |
| N16-CAC | Panel License for Custom Action Buttons | O | O | O | O | O | O | O | O | O | O |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N16-CLP | Panel License for CLIP Mode | O | O | O | O | O | O | O | O | O | O |
| N16-XUPG | Panel License for upgrade to N16x persona | O | O | N | O | O | O | N | O | O | O |
| N16-GZ50 | Panel License for general zone in increments of 50 | O | O | N | O | O | O | N | O | O | O |
| N16-LGZ50 | Panel License for logic zone in increments of 50 | O | O | N | O | O | O | N | O | O | O |
| N16-AREL | Panel license for first 10 agent releasing zones (max 1 per panel) | N | N | N | N | N | N | Y | N | N | N |
| N16-WREL | Panel license for first 10 water releasing zones (max 1 per panel) | N | N | N | N | N | N | Y | N | N | N |
| N16-ADDAREL | Panel license for the next 10 agent releasing zones for an N16X persona (up to 4 per panel) | N | N | O | N | N | N | O | N | N | N |
| N16-ADDWREL | Panel license for the next 10 water releasing zones for an N16X persona (up to 9 per panel) | N | N | N | N | N | N | O | N | N | N |
| SBB-A5 | CAB-5 Backbox Size A | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| SBB-B5 | CAB-5 Backbox Size B | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| SBB-C5 | CAB-5 Backbox Size C | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| SBB-D5 | CAB-5 Backbox Size D | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| SBB-E5 | CAB-5 Backbox Size E | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| CHS-ADP | Chassis for Amplifier | O | O | O | O | O | O | O | O | O | O |
| CHS-CGW | Chassis for CGW-MB Communicator | O | O | O | O | O | O | O | O | O | O |
| CAB-A4 | Enclosure | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| CAB-B4 | Enclosure | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| CAB-C4 | Enclosure | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| CAB-D4 | Enclosure | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ADDR-B4 | Door Assembly | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| ADDR-C4 | Door Assembly | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| ADDR-D4 | Door Assembly | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| DP-1B | Blank Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| BMP-1 | Blank Module | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| BP2-4 | Battery Plate | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| CA-1 | Chassis | O | O | O | O | O | O | O | O | O | O |
| CA-2 | Chassis | O | O | O | O | O | O | O | O | O | O |
| C5A-M | DVC Chassis, Well for Phone and Mic, Includes Mic-1 for CAB-5 | O | O | O | O | O | O | O | O | O | O |
| C5A-NW | DVC Chassis Without Mic and Phone Well for CAB-5 | O | O | O | O | O | O | O | O | O | O |
| DPA-1A4 | Dress Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DPA-1 | Dress Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DPA-2 | Dress Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DPA-2A5 | Dress Plate DVC-KD with 2 Annunciator Positions CAB-5 | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DPA-C5 | Dress Plate, DVC one row for DVC-KD | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-A5 | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-A5B | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-B5 | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-B5B | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-C5 | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-C5B | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-D5 | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-D5B | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-E5 | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DR-E5B | Door Assembly | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DTR-A5 | Red Cladding for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |
| DTR-B5 | Red Cladding for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |
| DTR-C5 | Red Cladding for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |
| DTR-D5 | Red Cladding for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DTR-E5 | Red Cladding for CAB-5 Enclosure | O | O | O | O | O | O | O | O | O | O |
| DVC-KDB | DVC Keypad, Black | O | O | O | O | O | O | O | O | O | O |
| VP-2B | Dress Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| DP-DISP2 | Dress Panel | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) | O(7) |
| CHS-M3 | Chassis, 1st tier | O | O | O | O | O | O | O | O | O | O |
| FZM-1* | Monitor Module | O | O | O | O | O | O | O | O | O | O |
| FMM-1* | Monitor Module | O | O | O | O | O | O | O | O | O | O |
| FMM-101* | Monitor Module | O | O | O | O | O | O | O | O | O | O |
| FDM-1* | Dual Monitor Module NOTE: N16 does not support legacy Type V FDM-1; see *SLC* 51253 Appendix C for retrofit use. | O | O | O | O | O | O | O | O | O | O |
| FTM-1* | Control Module | O | O | O | O | O | O | O | O | O | O |
| FCM-1* | Control Module | O | O | O | O | O | O | O | O | O | O |
| FRM-1* | Relay Module | O | O | O | Y | O | O | O | O | O | O |
| AA-30* | Amplifier 30 watts | N | O(5) | N | N | N | N | O | N | N | O(5) |
| AA-100* | Amplifier 100 watts | N | O(5) | N | N | N | N | O | N | N | O(5) |
| AA-120* | Amplifier 120 watts | N | O(5) | N | N | N | N | O | N | N | O(5) |
| ACT-1* | Audio Coupling Transformer | N | O(5) | N | N | N | N | O | N | N | O(5) |
| ACT-2* | Audio Coupling Transformer | N | O(5) | N | N | N | N | O | N | N | O(5) |
| ACT-4 | Audio Coupling Transformer | N | O(5) | N | N | N | N | O | N | N | O(5) |
| ACT-25 | Audio Coupling Transformer | N | O(5) | N | N | N | N | O | N | N | O |
| ACT-70 | Audio Coupling Transformer | N | O(5) | N | N | N | N | O | N | N | O |
| PRN-6* | Printer | O | O | O | O | O | O | O | O | O | O |
| PRN-7* | Printer | O | O | O | O | O | O | O | O | O | O |
| AKS-1* | Annunciator Key Switch | O | O | O | O | O | O | O | O | O | O |
| RKS-S* | Remote Security Keyswitch | O | O | O | O | O | Y | O | O | O | O |
| RPT-W* | Repeater Wire | O | O | O | O | O | O | O | O | O | O |
| RPT-F* | Repeater Fiber | O | O | O | O | O | O | O | O | O | O |
| RPT-485W* | Repeater Wire | O | O | O | O | O | O | O | O | O | O |
| RPT-485FW* | Repeater Wire/ Fiber | O | O | O | O | O | O | O | O | O | O |
| FHS* | Fireman's Handset | N | O(5) | O | O | O | O | N | O | O | O |

| Module | Description | CS | Local | AUX | RS | P (PPU) | P (Burg) | REL | P Rec | Process Mana. (1) | Emerg. Sign. (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FPJ* | Fireman's Phone Jack | O | O(5) | O | O | O | O | N | O | O | O |
| NBG-12LX* | Addressable Manual Pull Station | O | O | O | O | O | O | O | O | O | O |
| NBG-12LRA | Agent Release Abort Station | O | O | O | O | O | O | O | O | O | O |
| RM-1, RM-1SA* | Remote Microphone | N | O(5) | O | O | O | O | O | O | O | O |
| BP2-4 | Battery Plate | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| FCO-951* | Fire/ CO Detector | O | O | O | O | O | O | O | O | O | O |
| XP6-R | 6 Relay Control Module | O | O | O | O | O | O | O | O | O | O |
| FCM-1-REL* | Releasing Module | N | N | N | N | N | N | Y | N | N | N |
| DP-ADP | Dress Panel chassis for mounting RLD | N | O | O | N | O | O | O | O | O | O |
| LDM2-32 | Lamp Driver Module, 32 outputs | N | O | N | N | N | N | O | N | O | O |
| LDM2-60 | Lamp Driver Module, 60 outputs | N | O | O | N | N | N | O | N | O | O |
| TM-8 | Transmitter and Relay Module | N | O | Y | Y | N | N | O | O | O | O |

**KEY**:

*****- Modules are listed separately

± - For a system with an NCA-2 and an NCD on the same network, the NCD is the required network operator interface. The NCA-2 can only display and control non-INSPIRE nodes.

**Y** - Yes

**N** - No

**O** - Optional

**NOTES:**
1. Non-emergency
2. Emergency
3. At least one power supply must be utilized.
4. The system must contain one of these units.
5. When configured for Emergency Relocation and Evacuation Equipment, the system must meet Local configuration with a minimum of one amplifier, one Audio Message Generator, one Voice Control Module. The phones, remote microphones, and audio coupling transformers are optional. (Voice Alarm System Manual, Part No. 51252, shown in File S635, Vol. 5C, ILL. 1)
6. A minimum of one CAB Enclosure must be utilized with appropriate door for application.
7. Various dress panels/ dead fronts/ trim rings must be employed so that internal components and high voltage is not accessible.
8. Also required when devices for Carbon Monoxide signaling are employed
   - When configured for security applications, system must be configured for a maximum of 60 seconds for Entry/ Exit delay.
   - Standby power must provide 24 hours of standby.
   - Not suitable for Canadian (ULC) applications

9. In a large networked system, the NCD can be used as a primary display allowing multiple CPU-N16LND to be employed in lieu of CPU-N16LD
10. Required if utilizing a central station other than supported by HON-CGW-MBB
11. Required when using CGW-MB alone OR using a HON-DACT-DS.

**The units may employ the following features:**
- Alarm verification (maximum verification period of 60 for field programmable between 0 and 60s)
- Supports standard 2-wire smoke detectors using Models FZM-1. Refer to the *Device Compatibility Document* for compatible 2-wire smoke detectors.
- Supports addressable or analog devices
- Field Programming
- Signal Silence Inhibit
- Remote annunciator outputs
- Automatic Alarm Signal Silence
- Drift compensation
- Detector sensitivity testing per Par. 7-3.2.1 of NFPA 72

**Security Applications:**
- System must be configured for a maximum of 60 seconds for Entry/ Exit delay
- Standby power must provide 24 hours of standby
- Not suitable for Canadian (ULC) applications

Table 2.2 UL Type of Service Configurations

| UL Type Service | Model | IDC Class | Initiating Device Types | NAC | Type Signaling | Signaling Line Circuit |
|---|---|---|---|---|---|---|
| Local | N16X, N16E | A, B | A,M ,WF,SS | A, B | C,NC,M | Class B<br>Class A,X |
| Auxillary | N16X, N16E | A, B | A,M ,WF | N/ A | N/ A | Class B<br>Class A,X |
| Remote Station (PPU) | N16X, N16E | A, B | A,CO,M ,WF,SS | N/ A | DACT (+), Rev. Pol (+)., PB (+) | Class B<br>Class A,X |
| Proprietary (PPU) | N16X, N16E | A, B | A,CO,M ,WF,SS | N/ A | DACT (+), PB (+) | Class B<br>Class A,X |
| Central Station (PPU) | N16X, N16E | A, B | A,CO,M ,WF,SS | N/ A | DACT, PB (+) | Class B<br>Class A,X |
| Proprietary Security (PPU) (RU) | N16X, N16E | A, B | A, M | N/ A | MX(+) | Class B<br>Class A,X |
| Process Management (Non-emergency) | N16X, N16E | A, B | A, M | A,B | C,NC, DACT (+), PB (+) | Class B, Class A,X |
| Emergency Signaling | N16X, N16E | A, B | A, M | A,B | C,NC | Class B, Class A,X |
| Non-Emergency Signaling | N16X, N16E | A, B | M | A,B | C,NC | Class B, Class A,X |
| Releasing | N16X, N16E | A, B | A,M ,WF,SS | A,B | C,NC | Class B, Class A,X |
| EVAC | N16X, N16E | A, B | A,M ,WF,SS | A,B | C,NC,M | Class B, Class A,X |
| (+) Requires seperately listed equipment | | | | | | |

## 2.26 ULC SYSTEM CONFIGURATION

**Table 2.1** ULC Configuration Table

| Model No. | Description | Local | AUX | Remote Station (PPU) | Propietary Fire PPU | Releasing | Proprietary Fire RU |
|---|---|---|---|---|---|---|---|
| AA-30, AA-100, AA-120 | Audio Amplifiers | O | O | O | O | O | O |
| ABP-1 | Blank Plate for ACM-30 | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| ACM-30 | Annunciator | O | O | O | O | O | O |
| ADDR-B4, ADDR-C4, ADDR-D4 | Door Assemblies | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) |
| AKS-1 | Annunciator Key Switch | O | O | O | O | O | O |
| BMP-1 | Black Module Plate | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| BP-5 | Battery Dress Panel for CAB-5 | O(2) | O(2) | O(2) | O(2) | O(2) | O(2) |
| BP2-4 | Battery Plate | Y | Y | Y | Y | Y | Y |
| CA-1, CA-2 | Chassis | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| CAB-A4, CAB-B4, CAB-C4, CAB-D4 | Enclosures | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) |
| CGW-MB | Communicator Subassembly | O(5) | O(5) | O(5) | O(5) | O(5) | O(5) |
| CGW-BB | Communicator Enclosure Subassembly | O(5) | O(5) | O(5) | O(5) | O(5) | O(5) |
| CHS-ADP | Chassis for Amplifier | O | O | O | O | O | O |
| CHS-CGW | Chassis for CGW-MB | O | O | O | O | O | O |
| CMIC-1 | Microphone Assembly | O | O | O | O | O | O |
| CPU-N16LD | CPU Board (Core/ PMB/ SLM-18) w/ 10 inch HD Display | Y(2) | Y(2) (6) | Y(2)(6) | Y(2)(6) | Y(2)(6) | Y(2)(6) |
| CPU-N16-RB | CPU Main Board (Core) | O | O | O | O | O | O |
| CPU-N16LND | CPU Main Board (Core/ PMB/ SLM-318) no Display | Y(2) | Y(2) (6) | Y(2)(6) | Y(2)(6) | Y(2)(6) | Y(2)(6) |
| CPU-N16-RTO | Core Board with Retrofit Chassis for CAB-4 | O(2) | Y(2) (6) | Y(2)(6) | Y(2)(6) | Y(2)(6) | Y(2)(6) |
| DAA-5025 (E) | Digital Audio Amplifiers | O | O | O | O | O | O |
| DAA-5070 (E) | Digital Audio Amplifiers | O | O | O | O | O | O |
| DAA-7527 (F)(SF) | Digital Audio Amplifiers | O | O | O | O | O | O |
| DIS-10-RD | 10 Inch Touchscreen Display | Y(2) | Y(2) | Y(2) | Y(2) | Y(2) | Y(2) |
| DP-1B | Blank Panel | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| DP-4A | Dress Panel, Mounts 4 ACM 30s | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| DP-4A-CB4 | Dress Panel, Mounts 4 ACM 30s in a CAB-4 Enclosure | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| DP-BLN | Blank Dress Panel | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |
| DP-T2A | Blank Dress Plate for 10 inch Display | O(2) | O(2) | O(2) | O(2) | O(2) | O(2) |

| Model No. | Description | Local | AUX | Remote Station (PPU) | Propietary Fire PPU | Releasing | Proprietary Fire RU |
|---|---|---|---|---|---|---|---|
| DP-T2A-CB4 | Dress Panel for 10 inch Touch Screen Display and two ACM 30 Annunciators for CAB-4 Enclosure | O(2) | O(2) | O(2) | O(2) | O(2) | O(2) |
| FCM-1-REL | Releasing Module | O | O | O | O | Y | O |
| TM-8 | Transmitter Module | O | Y(6) | Y(6) | Y(6) | Y(6) | Y(6) |
| LDM2-32, -60 | Lamp Driver Module | O | O | O | O | O | O |
| DR-A5, DR-A5B, DR-B5, DR-B5B, DR-C5, DR-C5B, DR-D5, DR-D5B, DR-E5, DR-E5B | Door Assembly | O(3) | O(3) | O(3) | O(3) | O(3) | O(3) |
| DTR-A5, DTR-B5, DTR-C5, DTR-D5, DTR-E5 | Red cladding for CAB-5 | O | O | O | O | O | O |
| DVC/ DVC-EM | Digital Voice Command w/ Extended Memory Module | O | O | O | O | O | O |
| FFT-7, FFT-7S | Firefighter Telephones | O | O | O | O | O | O |
| FHS | Fireman Handset | O | O | O | O | O | O |
| FMM-1 | Monitor Module | O | O | O | O | O | O |
| FPJ | Fireman Phone Jack | O | O | O | O | O | O |
| FRM-1 | Relay Module | O | O(6) | O(6) | O(6) | O(6) | O(6) |
| HON-CGW-MBB | Commincator | O | O | O | O | O | O |
| HS-NCM-W/ MF/ SF/ WMF/ WSF/ MFSF/ W-2/ WMF-2/ WSF-2; NCM-F, NCM-W | Network Control Modules | O | O | O | O | O | O |
| NCD | Network Control Display | Y(4) | O | O | O | O | O |
| N16E, N16E-R | Control Units | Y | Y | Y | Y | Y | Y |
| RLD | Remote Annunicator | O | O | O | O | O | O |
| RM-1, RM-1SA | Remote Microphones | O | O | O | O | O | O |
| SBB-A5, SBB-B5, SBB-C5, SBB-D5, SBB-E5 | CAB-5 Backboxes | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) | Y(3) |
| SLM-318 | SLC Single Loop Module | Y | Y | Y | Y | Y | Y |
| TELH-1 | Telephone Assembly | O | O | O | O | O | O |
| VP-2B | Dress Panel | O(4) | O(4) | O(4) | O(4) | O(4) | O(4) |

1. At least one power supply must be used
2. The system must contain one of these units
3. One of the cab enclosures must be utilized
4. Various dress panels/ dead fronts/ trim rings must be employed so that internal components and high voltage is not accessible.
5. Ancilliary use only
6. Relay signaling to Contact Closure communicator inputs are also required when devices for carbon monoxide signaling are employed.

# SECTION 3: PROGRAMMING

This product incorporates field-programmable software. The features and/or options listed below must be approved by the local AHJ.

**Table 3.1** Programming Features Subject to AHJ Approval

**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) | Permitted in ULC-S527? (Y/N) | Permitted in UL 2610? (Y/N) | Possible Settings | Settings Permitted in UL 864 | Settings Permitted in ULC-S527 | Settings Permitted in UL 2610 |
|---|---|---|---|---|---|---|---|
| Service Mode | No | No | N/A | Yes<br>No<br>Timed | No | No | N/A |
| Releasing: Abort Switch | Yes | Yes | N/A | NYC<br>AHJ<br>ULI<br>IRI<br>ULA | ULA | ULA | N/A |
| Detector Programming: Supervisory Type Codes | Yes | Yes | N/A | SUP L(DUCTI)<br>SUP T(DUCTI)<br>SUP T(DUCTP)<br>SUP L(DUCTP)<br>SUP L(ION)<br>SUP T(ION)<br>SUP L(PHOTO)<br>SUP T(PHOTO)<br>SUP L(LASER)<br>SUP T(LASER)<br>P/CO (P SUP)<br>SUP L(DUCTL)<br>SUP T(DUCTL)<br>Fire/CO (Photo Sup)<br>Accl(P Sup)<br>Accl+(P Sup)<br>Aspir.(SUP) | SUP L (DUCTI)<br>SUP T (DUCTI)<br>SUP L (DUCTP)<br>SUP T (DUCTP) | SUP L (DUCTI)<br>SUP T (DUCTI)<br>SUP L (DUCTP)<br>SUP T (DUCTP) | N/A |
| AC Fail Delay Timer | Yes | Yes | N/A | 0 for no delay, or 1-12 hours | 1-3 hours | 1-3 hours | N/A |
| Regional Settings | Yes | Yes | N/A | Chicago<br>Canada<br>Default | Default | Canada | N/A |
| Alarm Verification Reset Time | Yes | Yes | N/A | 0 to 240 seconds | 0 to 30 or 0 to 60 seconds | 0 to 30 or 0 to 60 seconds | N/A |
| Alarm Verification Confirmation Time | Yes | Yes | N/A | 0-300 seconds | 0 to 60 seconds | 0 to 60 seconds | N/A |

**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) | Permitted in ULC-S527? (Y/ N) | Permitted in UL 2610? (Y/ N) | Possible Settings | Settings Permitted in UL 864 | Settings Permitted in ULC-S527 | Settings Permitted in UL 2610 |
|---|---|---|---|---|---|---|---|
| Trouble Reminder Duration: Wireless Applications | Yes | Yes | N/ A | Off<br>4 Hours<br>Daily = 24 Hours | 4 Hours | 4 Hours | N/ A |
| Alarm Reminder | Yes | Yes | N/ A | 0-24 Hours | 1-24 Hours | 24 Hours | N/ A |
| Supervisory Reminder | Yes | Yes | N/ A | 0-24 Hours | 1-24 Hours | 24 Hours | N/ A |
| CO Reminder | Yes | Yes | N/ A | 0-24 Hours | 0-24 Hours | 24 Hours | N/ A |
| Presignal Delay/ PAS | No | No | N/ A | Presignal Delay: 60-180 seconds<br>Alarm Delay:15-59 seconds | No | No | N/ A |
| Exit Time Delay | N/ A | N/ A | Y | N/ A | N/ A | N/ A | 60 sec or less |
| Entry Time Delay | N/ A | N/ A | Y | N/ A | N/ A | N/ A | 60 sec or less |
| Auto Silence Timer (Global Setting) | Yes | Yes | Yes | 0-20 min<br>Note: When Auto Silence activates, special function zone ZF40 will activate and will remain active until a system reset, alarm resound or drill is initiated. Acknowledged trouble, supervisory, alarm and CO events will re-annunciate after 24 hours, if not cleared | 3 min | 5, 20 | N/ A |
| Display and Control Center | No | Yes | N/ A | Enabled/ Disabled | Disabled | Enabled | N/ A |
| Signal Silence Inhibit | No | Yes | N/ A | 0-300 sec | 0 (none) | 60-300 | N/ A |

* A value of 60 seconds is allowed if alarm verification is only configured for a single zone. If Alarm Verification is to be accomplished on a multiple circuit (zone) or system basis, the duration shall not exceed 30 seconds.

## 3.1 LICENSING

Starting with Version 6.X of the N16 firmware, N16E/ R and CPU-N16LD, CPU-N16LD, CPU-N16-RTO will be shipped from the factory with an N16E persona. The functionality of the N16E persona and N16X persona is as described below. The panel capability can be expanded to an N16X persona at any time by adding a one time N16e to N16x Upgrade license. Refer to Table 3.1 N16e/ x Persona Licensing for information on what each persona allows for.

**Table 3.1** N16e/x Persona Licensing

| N16e Persona Enables | N16x Persona Enables |
|---|---|
| Support for up to 3 Loops | Support for up to 10 Loops |
| Support for 1 PMB | Support for up to 3 PMBs |
| Agent Releasing zone, 0 in base offering, multiples of 10, max 10 zones | Agent Releasing zone, 0 in base offering, multiples of 10, max 50 zones |
| Water Releasing zone, 0 in base offering, multiples of 10, max 10 zones | Water Releasing zone, 0 in base offering, multiples of 10, max 100 zones |
| Support two additional nodes without a network display license; add one for the panel node to act as a network display | Support two additional nodes without a network display license; add one for the panel node to act as a network display |
| 100 general zones base offering, increments of 50 or 250, max 2000 | 250 general zones base offering, increments of 50 or 250, max 2000 |
| 50 logic zones base offering, increments of 50 or 250, max 2000 | 250 logic zones base offering, increments of 50 or 250, max 2000 |

The functionality of the N16 can be enhanced through the addition of the following software based licensed options

**Table 3.2** Licensing Requirements

| Title | License | Description | Part Number |
|---|---|---|---|
| N16e to N16x persona upgrade | Yes | Upgrade license from N16e persona panel operation to N16x pesrsona panel operation. | N16-XUPG |
| Fire Zone Expansion | General Zones: Yes<br>Logic Zones: Yes | Configuring or programming a zone that exceeds the limit set by the license(s) will generate a trouble condition. Multiple licenses can be activated for the same panel, each license will expand the zone limit.<br>• N16-GZN - ADDS 250 GENERAL ZONES<br>• N16-LGZ- ADDS 250 LOGIC ZONES<br>• N16-GZ50 - ADDS 50 GENERAL ZONES<br>• N16-LGZ50- ADDS 50 LOGIC ZONES | N16-GZN<br>N16-LGZ<br>N16-GZ50<br>N16-LGZ50 |
| Releasing Zone Expansion | Yes | Configuring or programming a zone that exceeds the limit set by the license(s) will generate a trouble condition. Multiple licenses can be activated for the same panel, each license will expand the zone limit<br>N16-AREL - ADDS FIRST 10 AGENT RELEASING ZONES (ONLY 1 PER PANEL)<br>N16-WREL - ADDS FIRST 10 WATER RELEASING ZONES (ONLY 1 PER PANEL)<br>N16-ADDAREL - ADDS NEXT 10 AGENT RELEASING ZONES FOR AN N16X PERSONA (MAX 4 PER PANEL)<br>N16-ADDWREL- ADDS NEXT 10 WATER RELEASING ZONES FOR AN N16X PERSONA (MAX 9 PER PANEL) | N16-AREL<br>N16-WREL<br>N16-ADDAREL<br>N16-ADDWREL |
| UZC (Universal Zone Coding) | Yes | Adding universal zone coding capability without a license will generate a trouble condition. | N16-UZC |

| Title | License | Description | Part Number |
|---|---|---|---|
| Network Display | Yes | Allows the fire panel to act as a network display with full capabilities of an NCD, applies only to network applications | N16-NWD |
| Custom Actions | Yes | Initial 8 Custom Action touchpoints require NO license. Each set of 8 Custom Actions touchpoints following the initial 8 will require a license. The N16 supports up to 32 Custom Action touchpoints; up to 1000 endpoints can be mapped to those buttons. | N16-CAC |
| CLIP Mode | Yes | Allows the panel to run in CLIP protocol for older devices. Will generate a trouble if not licensed. Device functionality remains. | N16-CLP |
| NOTE: Out of the box, default panel date is 2018. Update the date on the panel to current date before applying license or it will not get applied | | | |

### 3.1.1 OBTAINING A LICENSE

To obtain a License for the N16 programming features:

1. Log on to the CLSS website, www.fire.honyewell.com and purchase the required amount of tokens.
2. Purchase the desired VeriFire Tools licenses via the CLSS website.

Refer to the *CLSS Gateway Manual (LS10248-000HW-E)* for more information.

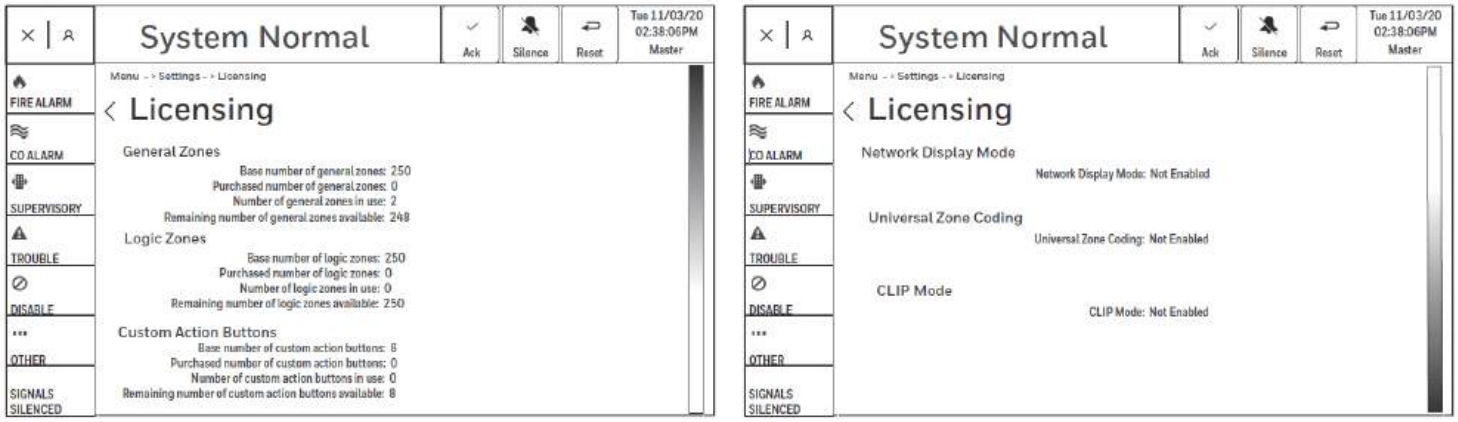



**Figure 3-1:** Licensing Screens

## 3.2 LEVELS OF PROGRAMING ACCESS FOR USERS ON THE N16

There are four access levels (1-4) that can be assigned to 49 of the 50 programmable users. Additionally, there is a master user whose access level is fixed at level five (5). Only one level five user allowed.

Default master or service tool password is 00000000. Default passwords will generate persistent troubles in the panel. The service tool password is used to authenticate downloads to the panel. Service tool password may be reset or changed at the panel once you are logged in as a master. Verifier tools can be used to create a database of user accounts wherein you may add/ remove/ change users and user passwords and access restrictions for all 50 users including the master. User accounts can be downloaded to the panel with service tool authentication.

Refer to "User Level Permissions" below for default information on user level capabilities. Actions defaulted to YES can be changed to NO through the user setup screen. This applies to user levels 1 through 4.

*All user names can be customized to a unique user name in VeriFire Tools.

### 3.2.1 USER LEVEL PERMISSIONS

• Master User (level 5 user)

- Admin User (level 4 user)
- Technician User (level 3 user)
- Building Maint User (level 2 user)
  - A Level 2 user can be programmed to be logged in by default when there is no other user logged in The default user name is set at “General Access”
  - A Level 2 user can also be programmed to be logged in via a key-switch wired to the back of the panel. The default user name is set at “Key-switch Access”
- System Operator (level 1 user)
  - A Level 1 user can be programmed to be logged in by default when there is no other user logged in. The default user name is set at “Public Access”

### 3.2.2 USER LEVEL PROGRAMMING CAPABILITIES

**Table 3.1** User Level Permissions

| Action | Master (Level 5) | Level 4 | Level 3 | General Access (Level 2) | Public Access (Level 1) |
|---|---|---|---|---|---|
| Acknowledge | Yes | Yes | Yes | Yes | Yes |
| Signal Silence | Yes | Yes | Yes | Yes | Yes |
| Reset | Yes | Yes | Yes | Yes | Yes |
| Enable/ Disable | Yes | Yes | Yes | Yes | No |
| Modify Point Label | Yes | Yes | Yes | No | No |
| Clone Points | Yes | Yes | No | No | No |
| Delete Point | Yes | Yes | No | No | No |
| Change Password | All Users | Individual Level 4<br>All Level 3 and 2 | Individual Level 3 All Level 2 | Individual Level 2 | N/ A |
| Drill | Yes | Yes | Yes | Yes | Yes |
| Read Status | Yes | Yes | Yes | Yes | Yes |
| Force ON/ OFF | Yes | Yes | Yes | Yes | No |
| Upload Database | Yes | Yes | No | No | No |
| Download Database | Yes | Yes | No | No | No |
| Change Time/ Date | Yes | Yes | Yes | No | No |
| Set Network Configuration | Yes | Yes | No | No | No |
| Ability to Revoke Other Users | Yes | No | No | No | No |
| View General History | Yes | Yes | Yes | Yes | Yes |
| View Sensitive History | Yes | No | No | No | No |
| Export History | Yes | Yes | Yes | No | No |
| Scroll the Display | Yes | Yes | Yes | Yes | Yes |
| Resound | Yes | Yes | Yes | No | No |
| Download Firmware | Yes | Yes | No | No | No |
| Change Sensitivity | Yes | Yes | Yes | No | No |
| Change Node Address and Label | Yes | Yes | No | No | No |
| Autoprogram SLC | Yes | Yes | No | No | No |
| Autoprogram Node Map | Yes | Yes | No | No | No |
| Modify Node Map | Yes | Yes | No | No | No |
| Add Annunciators/ Remote Displays/ Communicator | Yes | Yes | No | No | No |

| Action | Master (Level 5) | Level 4 | Level 3 | General Access (Level 2) | Public Access (Level 1) |
|---|---|---|---|---|---|
| Auto Program (add/ remove) Annunciators/ Remote Displays/ Communicator | Yes | Yes | No | No | No |
| Add/ remove Loop Cards/ Modules | Yes | Yes | No | No | No |
| Modify Loop Card/ Module Settings | Yes | Yes | No | No | No |
| Add Communicator | Yes | Yes | No | No | No |
| Power Supply Monitoring Settings | Yes | Yes | No | No | No |
| Lamp Test | Yes | Yes | Yes | Yes | |
| Service Mode | Yes | Yes | No | No | No |
| Firmware Update Via USB | Yes | Yes | No | No | No |

## 3.3 PROGRAMMING FEATURES ACCESSED FROM THE FACP

### 3.3.1 DISPLAY

From the main menu, tap the settings touchpoint and then display to access the back-light brightness setting and clean mode.

**Brightness**

Tap and hold the touchpoint and slide to adjust the backlight brightness. Setting the display brightness above 75% for prolonged periods of time will decrease the overall life of the display.

Clean mode

Tap the clean touchpoint to activate clean mode. Once activated, clean mode disables the touch response to allow for cleaning of the screen. A countdown timer is displayed, providing indication of time left before the system exits Clean Mode. The Clean Mode countdown timer is programmable through VeriFire Tools and defaulted to 15 seconds.

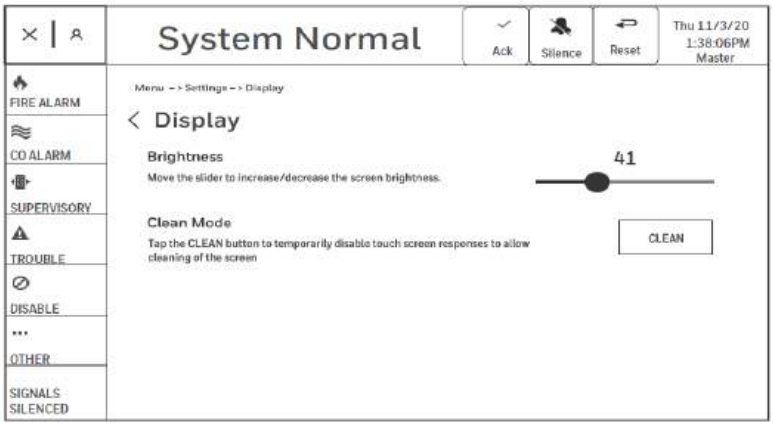



**Figure 3-2:** Display Screen

**CAUTION:** Cleaning Recommendations
It is recommended to use only a dry clean, lint free/ microfiber cloth to clean the display. If additional cleaning is needed, apply a small amount of Isopropyl alcohol to the cloth and wipe clean. Do not use detergents, solvents, or water for cleaning. Do not spray liquid directly onto the display.

### 3.3.2 ABOUT

**View System Information**

The About Screen has multiple sections. There is a scroll bar touchpoint on the right side of the screen. Tap and hold on this touchpoint to scroll up or down through the screens. Certain updates can be initiated from this screen as described in"Update System Information" on the next page.

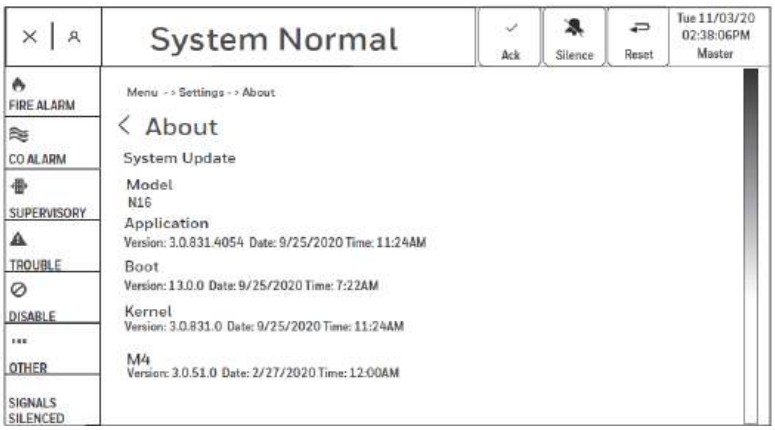



**Figure 3-3:** About Screen #1

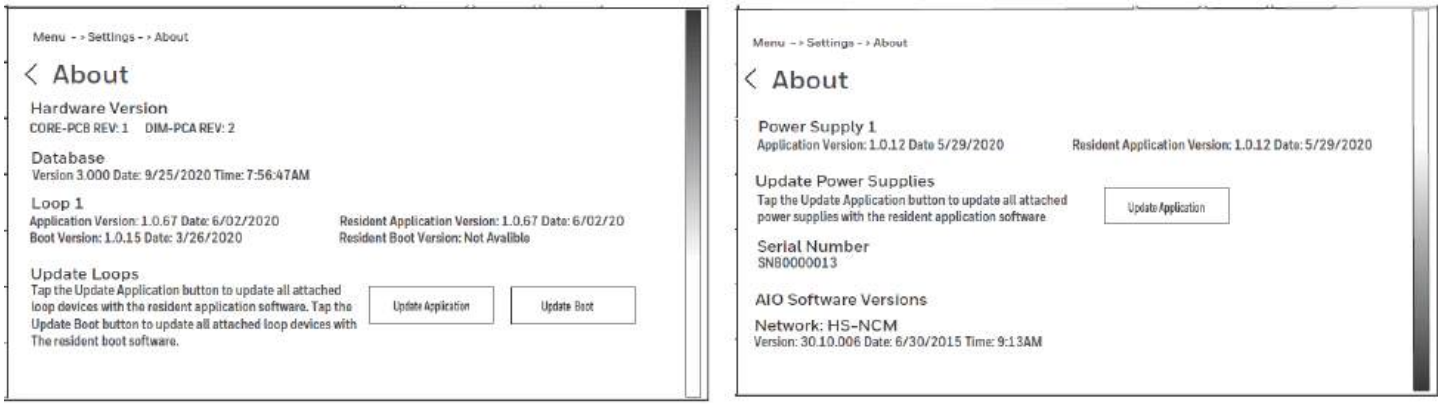



**Figure 3-4:** About Screens #2 and #3

The About Screen has multiple sections, there is a scroll bar touchpoint on the right side of the screen. Tap and hold on this touchpoint to scroll up or down between the sections.

### 3.3.3 UPDATE SYSTEM INFORMATION

Tap the ABOUT touchpoint to access the system update screen, model information, application information, boot, kernel information, M4(Co-processor) information, hardware version, database information, loop information, update loops application, serial number, AIO software versions and Network HS-NCM versions.

**System Update** The user must be logged into the FACP as either a level 4 or 5 User to perform a system update. Move/ copy the appropriate firmware update image (name.sys) to a USB A flash drive. Insert the USB A memory drive to the USB port on the Core board (J11) of the FACP. Select from the following update types: N16 APPLICATION, N16OS, SLM BOOTLOADER, SLM APPLICATION, PMB APPLICATION, ACM-30 APPLICATION and RESTORE DEFAULT WALLPAPER.

Tap the SYSTEM UPDATE touchpoint to access all update capabilities. To update a specific application, tap on that particular application. Tap on PREFORM UPDATE to complete the update.

Tap the about touchpoint to access the system update screen, model information, application information, boot, kernel information, M4(Co-processor) information, hardware version, database information, loop information, update loops application, serial number, AIO software versions and Network HS-NCM versions.

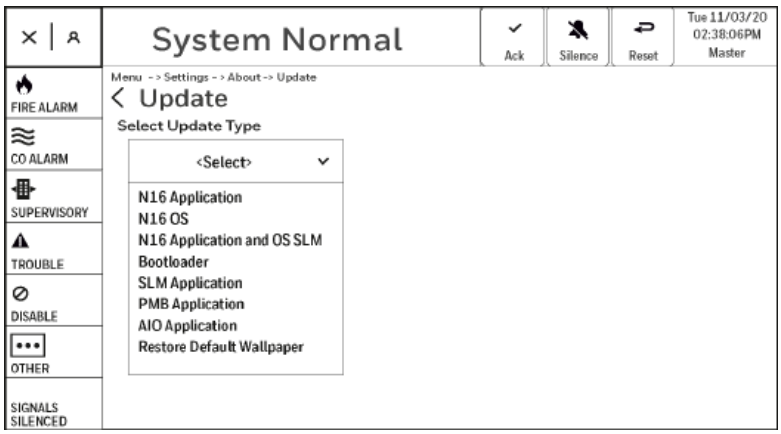



**Figure 3-5:** System Update Screen

**NOTE:** The system will copy the image to flash and reboot running the new image. Do not power down the system during this time.

**Updating the N16** When updating the N16 the user should connect the flash drive with the update file on it to the N16 via the USB A port located on the Core Board. The update for the N16 must be initiated from the either the N16 or the NCD and will require a file with a ".sys" extension.

**CAUTION:** Firmware for AIO devices must be updated before updating the N16 or NCD firmware.

**Update Loops** Tap the Update Application touchpoint to update all attached loop devices with resident application software. Tap the Update Boot touchpoint to update all resident loop devices with the resident boot software.

**Updating the SLM-318** A SLM-318 firmware update can be initiated from the N16 using a flash drive connected to the USB A port located on the Core Board. Alternately the SLM-318 can be updated from VeriFire Tools. The SLM-318 firmware update will require a file with a ".slmboot" or ".slm" file extension.

**Update Power Supplies** Tap the Update Application touchpoint to update all attached power supplies with the resident application software.

**Updating the PMB** A PMB firmware update can be initiated from the N16 using a flash drive connected to the USB A port located on the Core Board. Alternately, the PMB can be updated via VeriFire Tools. The PMB firmware update will require a ".pmb" file extension.

**AIO Software Versions** Tap the AIO Software Versions touchpoint to view connected AIO devices on both the internal and external AIO Bus. Tap the Resident Version touchpoint to view information about all connected AIO devices and their resident application versions. Tap the Update (relevant connected AIO device) touchpoint to update all connected AIO devices of that particular type.

## 3.4 USER ACCOUNTS

Tap the user accounts touchpoint to add a user, remove a user, change a password, and recover a password. The default password for the master user account on the N16 is eight zeros.

> **NOTE:** For firmware version 5.0 or higher a USB Drive is required for password recovery

**Add User** At the main menu tap on the settings touchpoint and then users. Once in the Users menu, tap on the add user touchpoint. A virtual keyboard will appear. Type in the name of the user to be added. Type in a password for the added user in the new password box. Re-enter the password in the re-enter password box. If the user is to be visible on the log in screen, tap on the box show on login screen and a check mark will appear. Tap again to remove the check mark. Tap in the access level box to select what access level the added user will be set for (levels 1-4 can be selected). Tap on the add user touchpoint to save and add the new user.

**Remove User** At the main menu, tap on the settings touchpoint and then users. Once in the Users menu, tap on the remove user touchpoint. A virtual keyboard will appear. Tap in the name of the user to be removed in the username text box. Tap on the remove user touchpoint to remove the specified user.




**Figure 3-6:** User Accounts Screen

**Changing the Password**

At the main menu, tap on the settings touchpoint and then users. Once in the user menu, tap on change password.A virtual keyboard will appear and prompt to enter the user name for the password that is changing. Enter the current password, the new password and re-enter the new password. Tap on change password to save the new password.

**Recovering a Master Password**

• **Recovering a master password for firmware version 5.0 or higher.** To recover a master password on firmware version 5.0 or higher a USB drive is required. Follow the steps below to recover the master password.

- At the main menu, tap on settings and users
- Once in the users menu, insert the USB drive, tap on recover password and follow the prompts
- A password recovery file will upload to the USB drive
- Once the password change file has been received and uploaded to the panel, the master password must be changed
- The password change file is only active for five days. Once it expires the recovery process must be re-initiated
- Send an email to notifier.tech@honeywell.com to initiate the NOTIFER password agreement process

• **Recovering a master password for firmware versions before v5.0.** At the main menu, tap on settings and users. Once in the users menu, tap on recover password and then tap on generate recovery code. Record the code and contact NOTIFIER Technical Support. Once the temporary password has been received and entered into the panel, the master password must be changed. The temporary password is only active for five days. Once it expires the recovery process must be re-initiated.




**Figure 3-7:** Password Screen

### 3.4.1 PANEL SETTINGS

Tap on the panel touchpoint to clear Verification Counts, enter Service Mode and adjust the date and time.

**Clear Verification Counts** Tap the clear touchpoint to clear verification counters for all detectors connected to the N16 that participate in Alarm Verification.

**Service Mode** Service Mode must be off to change the settings. The off box will be highlighted when Service Mode is off. When Service Mode is on, time and node settings will be grayed out and unable to be changed. Tap the all nodes box and a check mark will appear. Tap again to remove the check mark. A check mark in this box indicates that all networked nodes on the panel have been enabled for Service Mode. Tap in the time box to select a time period from unlimited to 18 hours. Service Mode will terminate after the selected time period. Tap the on touchpoint to enable Service Mode on the N16. Tap off to disable Service Mode on the N16.

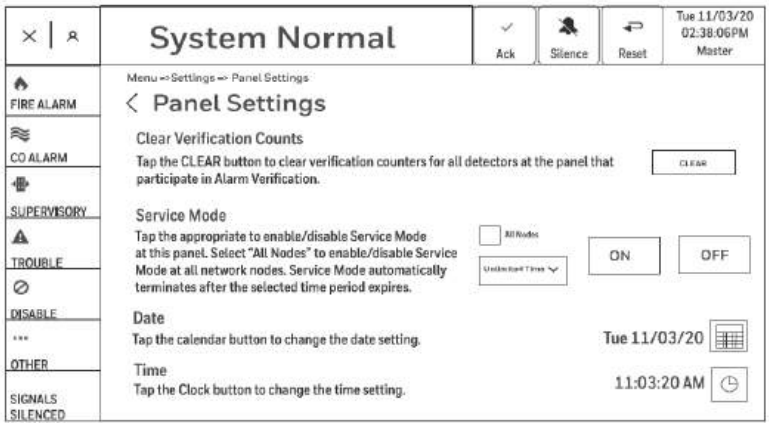



**Figure 3-8:** Panel Settings Screen

**Date and Time Settings** Tap the calendar touchpoint to change the date settings. A virtual calendar will appear. Tap in the correct date. Tap the left and right arrows to select the correct month and year. Tap the clock touchpoint to change the time settings. A digital clock with plus, minus and a check mark will appear. Tap the plus and minus touchpoints to adjust the time. Tap the check mark touchpoint to save the settings.

### 3.4.2 NETWORK

Tap on the network touchpoint to access the Network Mapping screen. Network Mapping allows the user to view all online nodes, mapped nodes, unmapped nodes and grid view. Grid view provides access to view and edit mapped and unmapped node addresses.

**Network Mapping** Tap on the mapping touchpoint to view mapped nodes.Tap on the view touchpoint to select from all online nodes, mapped nodes, unmapped nodes and grid view. Tap on the circle next to the desired view. Tap the legend touchpoint for information on node status for both online and off-line mapped and unmapped nodes. To map a node, tap on the desired node number. The number will change from gray to green indicating it is now mapped. Tap on the accept changes touchpoint to save any changes made in Grid view.

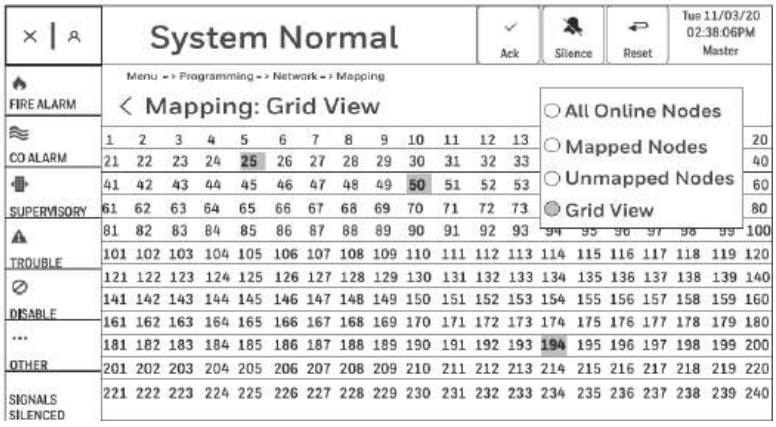



**Figure 3-9:** Grid View Screen

### 3.4.3 AUTOPROGRAM

Autoprogram allows the user to select loops 1-10 and program the devices on each installed loop card into the panel. It shows installed and new device counts for each loop and adds any new devices (detectors/ modules). Autoprogram allows the user to install an SLM-318 card on the FACP with default settings. Any editing or additional loop programming must be done through VeriFire Tools. Refer to VeriFire Tools for more information.

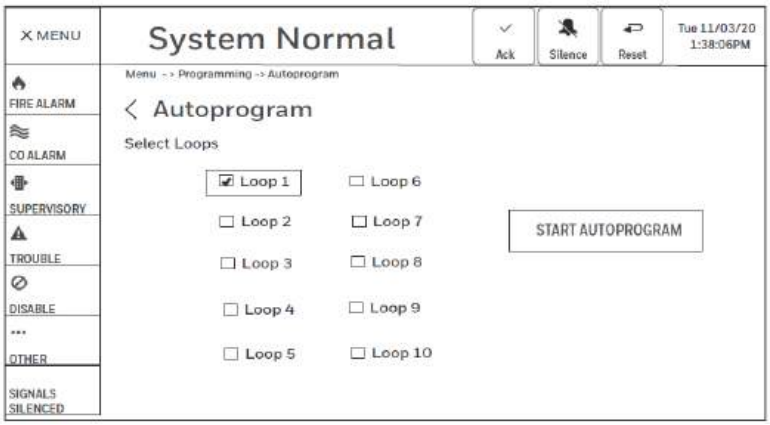



**Figure 3-10:** Autoprogram Screen

**NOTE:** To delete an installed point, use VeriFire Tools. Autoprogram will not prompt the user to delete a previously installed point. If a point is removed, it will appear on the loop as unresponsive after autoprogram.

#### Intelligent Sounder Base

**NOTE:** Intelligent Sounder bases do not have a code wheel. They must take the address of the detector it is connected to. Hence Setting the right address on the intelligent sounder base is crucial.

Fresh out of the box, the intelligent sounder base will match the address of the detector its connected to it. There is no need to auto program. If "Intelligent Sounder Base auto Addressing" is selected in general settings under SLC loop settings, it will match the detector address its connected to even if the detector changes address. If this feature is turned off, changes in detector address needs auto program to sync up the address on the sounder base.

**NOTE:** If the detector and intelligent base is not in the database, auto program will add both detector and sounder base to the database. If the detector was already there in the database, autoprogram will not add the intelligent sounder base. In this case use VFT to manually add it.

### 3.4.4 POINT INFORMATION

From the Main Menu, tap on Point Information. Then, tap on the select touchpoint. A drop-down menu will appear listing the following point types: Detector, Module, General Zone, Logic Zone, Bell Circuit, VESDA, DAL Speaker Circuit, DAL All Circuits, PAM Point, Releasing Zone, Water Releasing Zone, Special Zone, Trouble Zone, NAC, and Custom Action Message. Tap on the desired point type. A select box for node will appear. Tap on select for a list of nodes connected to the N16. Tap the desired node number to select that node. If a point type is not connected to the system, a node number will not appear. Specific point types will display various menu selections that pertain to that point type. Refer to the following point types for specific menus:

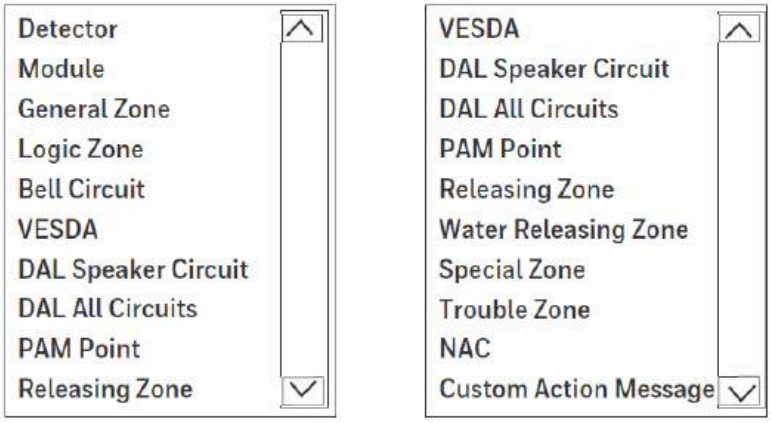



**Figure 3-11:** Point Type Selections

**NAC Circuit** If nac circuit is selected, a drop-down menu for power supply will appear. Tap on select for a list of power supply address numbers. Tap on the desired power supply address number (1-3). A drop-down menu for NAC circuit will appear. Tap on select to for a list of NAC circuits (1-4). Tap on the desired NAC circuit number. Tap get point. The screen will change to the point commands screen. From this screen, the user can disable the point, view the history, as well as view read status for the point. Tap disable to disable the selected point. Tap read status to view the programmed settings of the selected point

**Detector/ Module/ VESDA** If a detector, module, or VESDA-HLI-GW is selected, a drop-down menu for loop will appear. Tap select and choose the desired loop number (1-10). A drop-down menu for detector or module will appear. Tap select to choose the desired point address. Tap get point. The screen will change to the point commands screen. From this screen the user can disable the point and view the history. Read status is available for SLC detectors and modules. Module points can be forced on. Tap disable to disable the selected point. Tap point history to view and search the history of the selected point. *Detector/ module points:* Tap read status to view the programmed settings of the selected point. *Module points:* Tap force on to force a module point to an active state. NOTE: VESDA option refers to VESDA-HLI-GW; select detector for VESDA-E SLC loop devices.

**General Zone/ Logic Zone/ Special Zone/ Releasing Zone/ Water Releasing Zone/ Trouble Zone** A drop-down menu for the selected zone type will appear. Tap on select to choose the desired point address. Tap on get point. The screen will change to the point commands screen. From this screen the user can disable the point, view the history as well as view read status for the point. For General Zones, this can force on the point. Tap disable to disable the selected point. Tap read status to view the programmed settings of the selected point. For General Zones, tap force on to force the point to an active state. Tap point history to view and search the history of the selected point.

**Bell Circuit** If Bell Circuit is selected, a drop-down menu for Bell Circuit will appear. Tap on select to for a list of Bell Circuits (1-4). Tap on the desired Bell Circuit number. Tap get point. The screen will change to the point commands screen. From this screen, the user can disable the point, view the history as well as view read status for the point and force on/ off the point. Tap disable to disable the selected point. Tap read status to view the programmed settings of the selected point.Tap force on to force the point to an active state. Tap point history to view and search the history of the selected point

**PAM Point** If PAM Point is selected, a drop-down menu for node will appear. Tap select to choose the appropriate node number. Tap on the desired node number. A drop-down menu for Amplifier will appear. Tap on the desired amplifier number. A drop-down menu for speaker circuit will appear. Tap on the desired speaker circuit. A drop-down menu for input will appear. Tap on the selected input number. Tap get point. The screen will change to the point commands screen. From this screen, the user can force on/ off the point and view the status of the point. Tap force on to force the point to an active state.

**DAL All Circuits** If DAL All Circuits is selected, a drop-down menu for node will appear, tap select to choose the appropriate node number. Tap on the desired node number. A drop-down menu for Amplifier will appear. Tap on the desired amplifier number. Tap get point. The screen will change to the point commands screen. From this screen, the user can disable the point.

**DAL Speaker Circuit** If DAL Speaker Circuits is selected, a drop-down menu for node will appear, tap select to choose the appropriate node number. Tap on the desired node number. A drop-down menu for Amplifier will appear. Tap on the desired amplifier number. A drop-down menu for speaker circuit will appear. Tap on the desired speaker circuit. Tap get point. The screen will change to the point commands screen. From this screen, the user can disable the point and view the point history.

**Custom Action Message** If Custom Action Message is selected, a drop-down menu for node will appear, tap select to choose the appropriate node number. Tap on the desired node number.

### 3.4.5 DIAGNOSTICS

Tap the diagnostics touchpoint to view the circuit board temperature and the CPU temperature. The screen displays the highest circuit board temperature and the highest CPU temperature. Each may be reset by tapping on the reset touchpoint next to the relevant information. The user can also reset all SLM-318, PMB, and AIO communication statistics. Tap the reset touchpoint next to SLM-318, PMB, and AIO Communication Statistics to reset the statistics.

**Exporting diagnostics to a USB flash drive** Tap on the export diagnostics touchpoint. A pop up box will appear prompting you to insert a USB memory drive and then tap continue. Diagnostics will be exported onto the USB memory drive. If the user wishes to cancel exporting of Diagnostics, tap the touchpoint cancel.

> **NOTE:** The user must be logged in as either a lever 5 or 4 user to export diagnostic information.

### 3.4.6 LAMP TEST

Tap the lamp test touchpoint to turn on all pixels on the screen. This will illuminate the entire screen as well as the AC Power and Off Normal LED for approximately four seconds. During this time a tone will sound. A black spot on the screen will indicate that a pixel is out.

### 3.4.7 HISTORY

The history feature allows the user to view the panel history as well as the network history. History views may also be filtered.

**Filtering** Tap on the filter touchpoint. A touchpoint for search and clear will appear along with a virtual keyboard. Enter a date under date range to search a specific date range. Type in a keyword in the contains text section to search the history for particular text. To clear a search, tap the clear touchpoint. Tap on the exclude background activations check box to select that feature. Tap again to clear the field.

History will show, and can be filtered, for the following:

**All Events** This displays the entire history buffer, regardless of event type. The history buffer can display up to a total of 10,000 events, including alarms.

**Time Date Interval** This displays a screen to allow for the selection of a time period to define the range of events displayed.

**Exporting History to USB Flash Drives:** Tap on the export history touchpoint. A pop-up box will appear prompting the user to insert a USB flash drive and then tap continue. The history will be exported onto the USB flash drive as a compressed ".tar" file. To extract the exported history you may use: 7-Zip, Winzip, WinRAR or any program compatible with ".tar" files. Once its extracted you can find the history file in ".csv" format. Tap the cancel touchpoint to cancel history export.

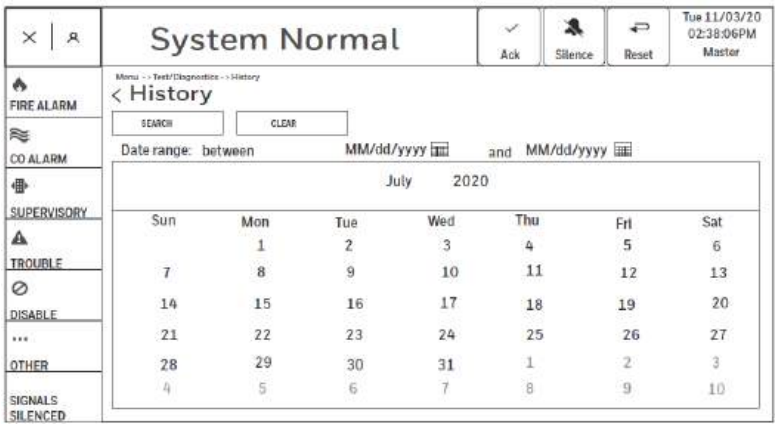



**Figure 3-12:** History Search Screen

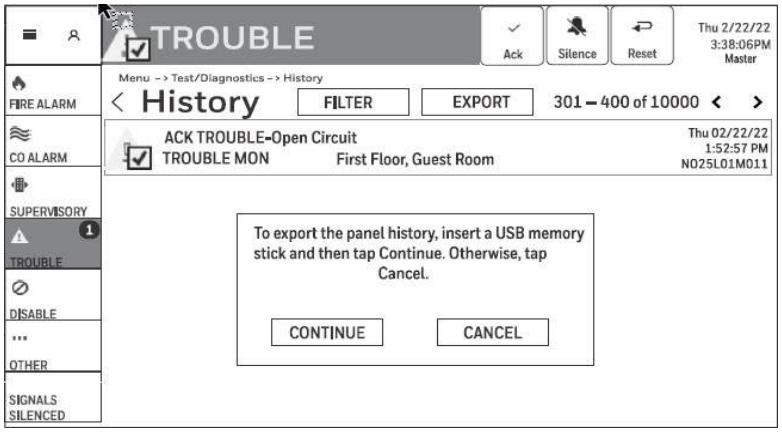



**Figure 3-13:** History Export Screen

**NOTE:** The user must be logged in as either a lever 5 or 4 user to export diagnostic information.

### 3.4.8 CYBERSECURITY HISTORY

Cybersecurity history events are stored in the panel history. A master level user is the only user level that can access Cybersecurity History.

Items logged in Cybersecurity history are as follows:

- Signing file failed
- Verify file signature failed
- Verify file signature failed-file open
- Verify file signature failed-start
- Verify file signature failed-sign fail
- N16 starting
- N16 shutting down
- N16 shutdown canceled

## 3.5 PROGRAMMING FEATURES ACCESSED THROUGH VERIFIRE TOOLS

**NOTE:** The following panel functions are programmed through VeriFire Tools only and cannot be done at the FACP. Refer to the VeriFire Tools help files for more information.

### 3.5.1 LOCAL CONTROL

This option disables or enables local panel control of the Signal Silence, System Reset, and Drill Fixed Function keys, as well as Signal Silence, System Reset and Acknowledge. A setting of NO (disable) turns the panel piezo sounder off. Default is set to ON.

### 3.5.2 AIO MAPPING

• The panel supports up to 10 Router addresses which may be distributed between an Internal or External AIO bus.

• External AIO bus can be configured in Class A or B and primarily used for wiring AIO bus devices outside the FACP enclosure.

• Internal AIO bus can only be configured in Class B and is typically used for wiring AIO devices within the FACP enclosure.

• The connection on the AIO bus device is labeled as MAIN or LOCAL. A device wired using the Main AIO Bus terminal block is a Router and the device wired via the local terminal is a Peripheral.

• An RLD can only be a Router, it does not support Peripherals. RLD is supported only on the external bus. Max 10 RLDs supported per panel.

• ACM-30/ LDM/ TM-8 may be configured to be a Router or Peripheral and can be on the internal or external AIO bus.

• Each Router (except RLD) can support up to 15 Peripherals. The total number of AIO bus devices (ACM-30, LDM2-32,LDM2-60, RLD, TM-8) per panel shall not exceed 80. Example configurations are as follows:

- 5 RLD (Router) + 75 any mix of ACM-30/ LDM2-32/ LDM2-60/ TM-8 (Router and Peripheral)
- 10 RLDs (Router)
- 9 RLD (Router) + 16 any mix of ACM-30/ LDM2-32/ LDM2-60/ TM-8 (Router and Peripheral)

• The AIO-CBL must be ordered whenever configuring AIO devices as peripherals (kit contains 4x6" ribbon cables and 1x48" ribbon cable)

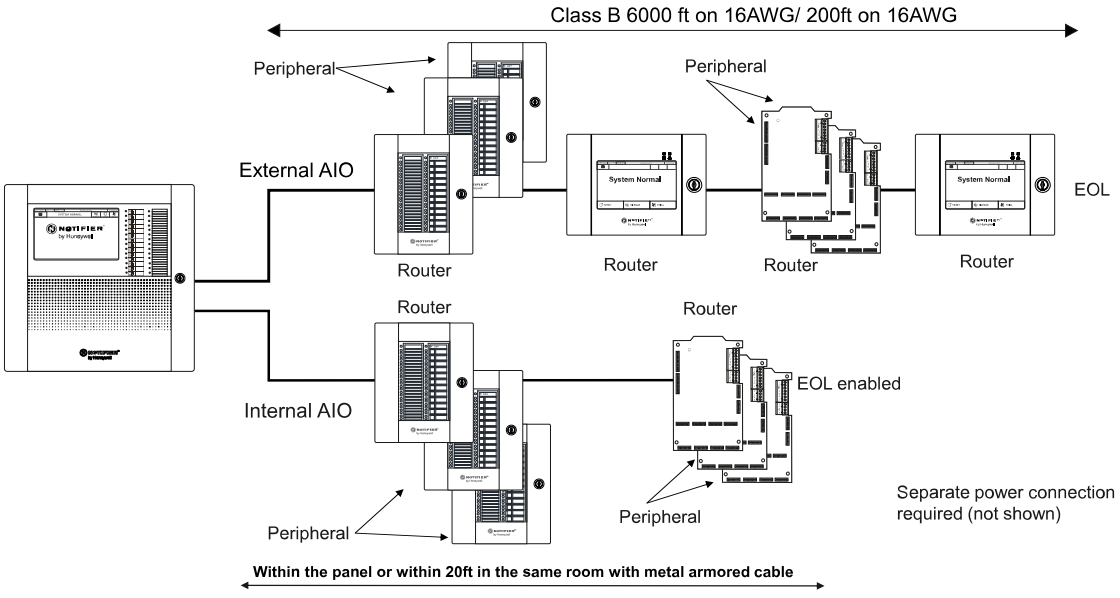



**Figure 3-14:** AIO Bus Two-Wire Serial Interface

**NOTE:** When installing an AIO device on the N16 version 6.x or higher, tap the ENROLL DEVICES touch point to initiate the automated process for the device to be recognized on the bus. (See "About" for accessing this touch point.) Dialog box will display the number of devices enrolled; press <STOP> button if all devices are counted before process is completed. Refer to your specific AIO device documents for more information on installation.

**NOTE:** The following restrictions apply: When mapping alarm points using SWIFT Wireless devices as inputs there is a limit of 8 ACM-30s per node (Highspeed network only). If no SWIFT Wireless devices are being used as inputs, there is a limit of 32 ACM-30s per node that can be mapped to alarm points.

### 3.5.3 EVENT PRIORITY

Event Priority is a configurable option that is selected by using the Event ordering drop down under General settings of N16/ NCD in VFT. The event priority list when configured for USA and Canada is shown below:

**USA Event Priority List**
- FIRE
- CO
- Security
- Supervisory
- Troubles
- Disables

Canadian event priority list:
- FIRE
- CO
- Supervisory
- Security
- Troubles
- Disables

### 3.5.4 AUDIO SETTINGS

**Piezo:** Can be set for Events and Touch Screen Beep. It is defaulted with both settings enabled.

**NOTE:** The Piezo disable is not supervised when the FACP is in alarm and is not an approved method of acknowledging or silencing events on the FACP.

### 3.5.5 POWER MANAGEMENT MODE

The power management mode will conserve power consumption. In this mode, the number of LEDs that can be turned ON for a particular loop will be limited. A maximum of 30 input device (monitor modules and detectors) LEDs will be allowed ON at a time. No output module LEDs will turn ON. When the limit of 30 LEDs is reached, every time a new LED is turned ON, the oldest LED activation will turn OFF and will poll in red rather than the usual green. Default: OFF

### 3.5.6 DCC PARTICIPATION

Press to program the panel for DCC (Display and Control Center) participation. This network function ensures that one location at a time is in command of the Acknowledge, System Reset, Signal Silence and Drill functions. Default: Disabled

For fire applications, DCC participation should be enabled for all locations that can participate in DCC.
For mass notification applications, DCC participation should be disabled. When the panel is in Network Display Mode and used as part of an ACU, LOC, or CCS. the JDVC associated with the fire panel should have Mass Notification Control Settings selected and the node of the fire panel selected. In the event of a mass notification page, the fire panel associated with the JDVC that initiated the page will assume control of the network until the mass notification page is complete. Each fire panel will assume local control until a mass notification event occurs.

**NOTE:** For Canadian applications, DCC should be enabled and may be disabled subject to AHJ approval.

### 3.5.7 CUSTOM ACTION MESSAGES

The screen shown below allows programming the text for up to 100 custom action messages, up to 160 characters each, which may then be assigned to any detector or module in the device specific programming.

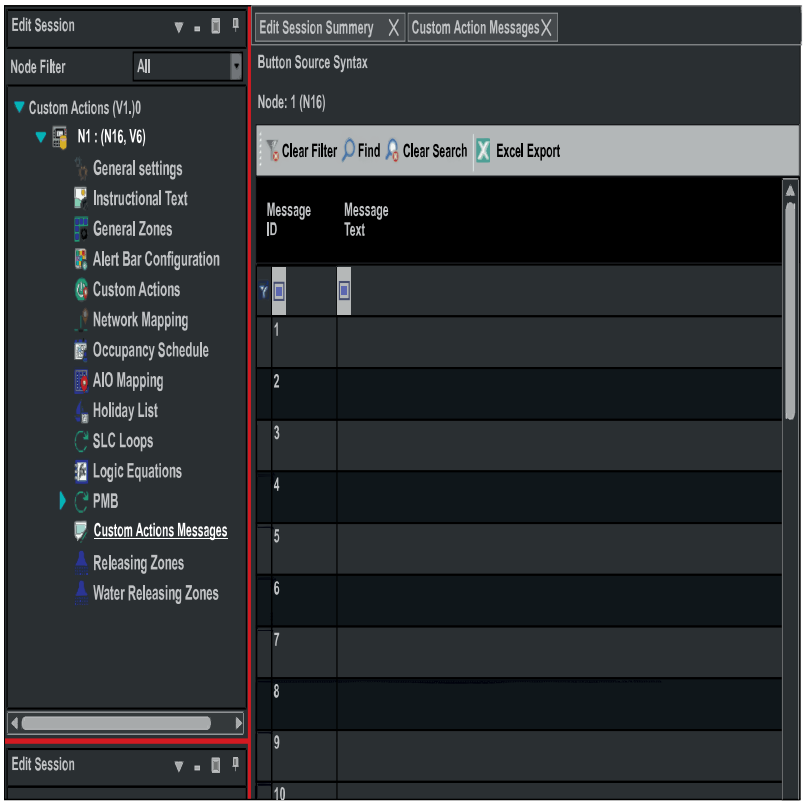



**Figure 3-15:** Custom Action Messages

### 3.5.8 CUSTOM ACTION BUTTONS

Custom Action Buttons are programmable soft buttons available on the FACP, NCD or RLD. They can be mapped to different endpoints (modules, general or logic zones , detectors) to Enable/ Disable or Turn on/ Turn Off the end. Custom Action Buttons are also used to simplify and make routine testing faster. Refer to "Licensing" on page 64 for details on what is available on the base system and how to expand number of custom action buttons.

| | N16/ NCD | RLD |
|---|---|---|
| **Max custom action buttons** | Supports up to 32 custom action buttons. | Supports up to 6 custom action buttons per RLD. |
| **Max end points** | The N16/ NCD supports up to 1000 different end points per panel. | Supports up to 24 different end points per RLD. |
| **Mapping** | You may map all 1000 endpoints to a single custom action button or distribute them across 32 custom action buttons. | You may map all 24 endpoints to a single custom action button or distribute them across 6 custom action buttons. |

### 3.5.9 LOCAL MODE

The SLM-318 is capable of running in Local Mode if it has not received communication from the core board for one minute. A user can create a Local Mode zone and map both inputs and outputs to this zone. While the SLM-318 is in Local Mode, if any of the inputs placed in the local mode zone activate, the SLM-318 will turn ON all of the outputs mapped to the same zone.

Any general zone can be used to create a local mode zone. Map inputs and outputs to the same “local mode zone” and ensure that “local mode participation” is checked for each input and output mapped to that zone. When configured this way, any output mapped to this zone will turn ON when the input in the same zone is activated.

### 3.5.10 HOLIDAY AND WEEKLY OCCUPANCY SCHEDULING

**Holiday Menu** The Holiday settings allow a user to program up to 15 holidays which are used with the occupancy schedule to determine holiday occupancy hours.

**Weekly Occupancy Schedule** The Weekly Occupancy Schedule allows for up to six different occupancy schedules to be programmed. Choose between schedules 1 - 6. A value of zero indicates no schedule.

### 3.5.11 REMINDER SETTINGS

**Trouble reminder** Choose between OFF, Every Four Hours and Daily.

**Trouble reminder Time** If Trouble Reminder is enabled: Choose between 4 HOURS and 24 HOURS to select the duration of time between trouble reminders.

**CO Reminder** Choose to set CO Reminder 0 OFF Set from 1-24 hours. Default value is 24.

**Supervisory Reminder** Choose to set Supervisory Reminder 0 OFF Set from 1-24 hours Default value is 24.

**Fire Alarm Reminder** Choose to set Fire Alarm Reminder 0 OFF Set from 1-24 hours Default value is 24.

### 3.5.12 PANEL TIMERS SETTINGS

Alarm Verification Reset Time **Set the Alarm Verification timer. Choose a value of 0-240 (seconds), which will delay initiating devices set for Alarm Verification from signaling for the amount of time entered. If a second alarm occurs while the alarm verification timer is counting, the timer will stop and the alarm will signal immediately. Default: 30**

> **NOTE:** A value of 60 seconds is allowed if alarm verification is only configured for a single zone. If Alarm Verification is to be accomplished on a multiple circuit (zone) or system basis, the duration shall not exceed 30 seconds . Exceeding these limits is subject to AHJ approval.

**Alarm Verification Maximum Count** Enter a value from 0-20 for a maximum verification count threshold value that applies to detectors set to participate in Alarm Verification. A value of zero produces no verification trouble. When the counter exceeds the threshold value entered, a trouble is generated to the panel. Default: 4

**AC Fail Delay** Set the timing for the time delay from AC failure to when the trouble is reported. Choose a value of 1-12 (hours), or select 0. A value of 0 will turn OFF the AC Fail delay.

- The on-board trouble relay (TB2 on the N16) will activate
- CGW-MBs are notified immediately of AC failure by the panel, regardless of the panel’s delay setting. Once the CGW-MB receives notification, it operates according to its own programmed AC Fail Delay reporting schedule.
- Power LED is NOT delayed and will turn off immediately if all installed PMB supplies lose power.
- Delay timer starts the countdown when the first PMB goes into AC Fail, will not reset if additional PMB’s also go into AC Failure.

**Signal Silence Inhibit Time** Enter a value from 0 (disabled) to 300 sec. This software timer disables the SIGNAL SILENCE function for the time entered when a fire alarm occurs. The timer starts at the first alarm only; it does not restart with each new alarm. Default: 0

**Automatic Silence Time** Enter a value from 0 (disabled) to 20 minutes. This global software timer functions like pressing the SIGNAL SILENCE key. For example, if a value of 10 is entered, the control panel will silence all active outputs programmed as silenceable after ten minutes. When Auto Silence activates, special function zone ZF40 will activate and will remain active until a system reset, alarm resound, or drill is initiated. Default: 0

**Verify=Pre-Alarm** Check the box to enable Verify=Pre-Alarm. Default unchecked.

**Enable Alarm Delay** Check the check box to enable Alarm Delay. Set the timer for between 0-59 seconds. Default is 15 seconds.

**Presignal Delay Time** Enter a value of 00:00 (disabled) or a value of 1:00 to 3:00 minutes (in the format MM:SS, where MM= minutes, SS= seconds). This feature initially causes alarm signals to sound only in specific areas, monitored by qualified personnel. This allows delay of the alarm for up to 3 minutes after the start of alarm processing. Default: 3:00

**NOTE:** An error box will appear if entering a value greater than 3:00 for the Presignal Delay Time

**Table 3.1** Panel Timer Settings

| Program Setting for: | Default: |
|---|---|
| Alarm Verification Reset Time | 30 seconds |
| Alarm Verification Max Count | 0 (disabled) |
| Alarm Verification Conformation Time | 60 seconds |
| AC Fail Delay | 2 hours |
| Silence Inhibit | 0 (disabled) |
| Auto Silence | 0 (disabled) |
| Verify=Prealarm | Unchecked |
| Alarm Delay | Unchecked |
| Presignal Delay | 3 minutes |
| Alarm Delay Timer | 15 seconds |

### 3.5.13 PRINTER FUNCTIONS

**Programming** Allows for the printing of Network Parameters, Panel Settings, Panel Timers, LCD Display, Supervision and Custom Action Message information.

**Active Points** Displays the Active Points screen. Allows for the printing of Alarms, Troubles, Supervisory Alarms, Security/ Other, Prealarms, Disabled Points and Activated Points.

**Supervision Settings**

**Printer** Types: NONE, 40-COLUMN, 40-COLUMN SUPERVISED, 80-COLUMN, 80-COLUMN SUPERVISED, The printer will not be active if NONE is selected. If a SUPERVISED selection is made, the printer will be supervised. Default: NONE

Choice of Baud Rate Settings:

- 300bps
- 2400bps
- 4800bps
- 9600bps
- 19.2Kbps
- 38.4Kbps
- 57.6Kbps

**Power Supply (PMB)** AUX trouble input if connected to trouble contacts of an N16 for supervision.

**Auxiliary Trouble Reporting** Check the box to enable Auxiliary trouble reporting.

**Tamper Input** The following three options are available:

- Not Used: Does not report a tamper situation at the panel cabinet door.
- Security Alarm: Reports a tamper security event at the panel when the cabinet door is using an STS-1 tamper switch.
- AKS Key Switch: Should be used when there is an AKS-1 key switch connected to the panel cabinet door. The AKS switch may enable level 2 access. Must be programmed to do so in the password database and enabled in the NCD programming database.

### 3.5.14 LOOP CONFIGURATION

**Installed** Choose between YES and NO, depending on whether an SLC is installed at this address

**Detector Mode** Select Loop Polling mode for detectors on this loop.

**Module Mode** Select Loop Polling mode for modules on this loop.

**Wiring Style** Select the NFPA wiring Class (B or A) of the loop. If Class A is entered when the wiring is Class B, a trouble message will be generated at the panel.

**LED Disable** Enable or disable individual SLC loop device LEDs.

### 3.5.15 SILENCEABLE WATERFLOW

Set for YES or NO. If set for NO the incoming Waterflow events will not be allowed to be silenced. If set for YES the incoming Waterflow events can be silenced. The default is NO.

### 3.5.16 POINT PROGRAMMING

Allows the user to edit/ change point information for detectors, modules and general zones logic zones.

**NOTE:** When programming points, take the following into design consideration:
Each general zone must be dedicated to a single event type (i.e. Fire, Security, etc.).
Map inputs only to general zones designated for the input's event type.
Outputs can be mapped to multiple general zones that are dedicated to different event types. For instance, a single output can be mapped to an MN general zone and a Fire general zone.

### 3.5.17 DETECTOR POINT PROGRAMMING

The following device type settings for detectors apply:

**FIRE/ CO (Photo supervisory) Latching** Only applies to Fire/ Co detectors programmed as PSUP. Default: NO (The photo element of all PSUP detectors is programmable through the service tool.)

**FIRE/ CO (CO Supervisory) Latching** Only applies to Fire/ CO detectors programmed as CSUP. Default: NO (The CO element of all CSUP detectors is programmable through the service too.)

**Acclimate Device Settings** Only applies to Acclimate Photo Supervisory detectors (PSUP). Default: NO (The photo element of all Acclimate PSUP detectors is programmable through the service too.)

The control panel will automatically perform a detector initialization routine when a detector is added/ changed in programming or if the detector was removed for more than 15 seconds. This can take approximately 2.5 minutes. During this time, the detector does not perform fire protection functions. When in this mode, the LEDs of the detectors will be on a steady green (for FlashScan) or red (for CLIP). Make sure the detector is free of residual smoke during initialization and do not test the detector until the initialization is complete.

**Replacing a detector with a different type of detector** When replacing a detector with a different type of detector, the control panel must be immediately programmed for the new detector type to avoid incorrect panel operation, including false alarms. To replace a detector, follow these steps:

- Physically remove the old detector.
- In VeriFire Tools, change the Type and FlashScan Code label to the values appropriate for the new detector.
- Physically install the new detector. Initialization will occur automatically.

**Multi-detector** Displays up to 2 other detectors that can be linked with the one being programmed for cooperative multi-detector sensing. The detector addresses do not need to be sequential.

**Sensitivity** Set between 1-9 for individual detectors. Can be set for both occupied and unoccupied detectors, for both alarm and prealarm.

**Low Temp Enable** Fire/ CO detectors only: Select YES or NO to enable the Low Temperature Warning.

**Prealarm** Select ALERT or ACTION for the Prealarm function.

**Silenceable** Determines whether a user can manually silence an activated sounder/ relay base.

- NO: Not manually silenceable.
- YES - RESOUND FIRE: Silenceable, resound on fire events (Network and Local resound)
- YES - RESOUND SUPERV: Silenceable, resound on supervisory events (Network and Local resound)
- YES - NO RESOUND: Silenceable, no resound

Specific nodes can be excluded from having the ability to initiate a resound on the local fire panel.

**CO Pre-Alarm: Fire/ CO and Photo/ CO detectors only** Select YES or NO to enable the CO Prealarm function for the FIRE/ CO or Photo/ CO smoke detector.

**Custom Action Messages** Displays the custom action message number (1 through 100). The default value is 0 (no message). Press to display the Custom Action Message screen.

**Alarm Verification Participation** Select from Alarm Verification Reset, Alarm Verification Confirmation Timer, and Alarm Verification Max Count to determine the device's participation in Alarm Verification.

**Flow Fault Threshold** Set the percentage change from the baseline value when a Flow Fault is detected. Range: 0-45%
DEFAULT: 21%

**Flow Fault Delay** Set the amount of time before the panel indicates the Flow Fault. Range 0-255 seconds
DEFAULT: 200s

**NOTE:** Specific nodes can be excluded from having the ability to initiate a resound on the local fire panel. This option is programmable via VeriFire Tools.

**Reference Detector Address** Set a FAAST detector for use as a reference for air flow for other FAAST detectors. All 5 detectors of each FAAST device using this detector as a reference must be set with the same reference detector address, have the same Threshold value (set via PipeIQ), and must be on the same loop as the reference detector. Range: 0, 1-159
DEFAULT: 0 (No reference detector programmed)

**Zone Map** Up to 10 zones available. During initial programming, the primary zone (position 1) displayed is associated with the loop the device is installed on. For example, the device's default programming set the primary zone as Z003, indicating that the device is installed on Loop 3. Certain zone map positions are used for specific functions.

• Position 1 - Use to link zone label to detector and for group zone disable.
• Position 3 - Fire/ CO Fire/ CO, Photo/ CO, Acclimate Photo Sup, Acclimate Plus Photo Sup: Activates when the photo element of the detector activates.
• Position 4 - Fire/ CO and PHOTO/ CO detectors only: Activates when the CO element of the Fire/ CO detector activates. (Map the zone in this location to one of the Aux Controls of the intelligent sounder bases in order to play the Temp-4 tone for CO Alarms.)
• Position 5 - Fire/ CO, PHOTO/ CO, and CO detectors only: Activates when the detector reports a CO Pre-Alarm.
• Position 10 - Used for detectors set to Prealarm, Action. This zone will activate when the detector reaches its Prealarm threshold; no other zones in this detector's zone map will activate.
• Remote Output Zone - When enabled, if the zone mapped to the remote output zone activates, the remote output (i.e. sounder base, relay base, or remote LED) of the detector will activate.

**Multicriteria Devices** Activates the CBE positions listed below:

Fire/ CO
• CO: CBE 4
• Heat: CBE 1, 2, 6-10
• Photo: CBE 1, 2, 3, 6-10
• CO Prealarm: CBE 5

Photo/ CO
• CO: CBE 4
• Photo: CBE 1, 2, 3, 6-10
• CO Prealarm: CBE 5

Acclimate Photo Sup/ Acclimate+ Photo Sup
• Heat: CBE 1, 2, 4-10
• Photo: CBE 3

**Sensitivity** The N16 Control panel provides 9 levels of Prealarm and Alarm in percent per foot obscuration with the following 3 exceptions:

• for heat detectors, the settings are in degrees Centigrade.
• for beam detectors, there are only 6 levels of Alarm. Prealarm is not an option for beam detectors in CLIP mode.

• for IntelliQuad FSC-851 detectors, there are only six levels of Alarm and Prealarm for FlashScan mode, The sixth level is a fixed 135°F, and it is not available in CLIP mode.

**Alarm Sensitivity** Values range from one to nine; one represents the most sensitive level, nine the least sensitive.

**Prealarm Sensitivity** Values range from zero to nine; Zero indicates no prealarm, a value of one can be a self-optimizing setting where the control panel selects a suitable prealarm level for the detector. Values one or two through nine represent decreasing sensitivity, with nine being the least sensitive. Refer to "Detector Sensitivity Settings" on page 139 for sensitivity settings for detectors by type.

### 3.5.18 SOUNDER BASE SETUP

**AUX Tone 1:** Select CONTINUOUS, TEMP-3, TEMP-4, MARCH or CUSTOM for the first auxiliary tone of the intelligent sounder base.

**AUX Tone 1 Control:** Enter the Logic Zone or General Zone that will control the activation of the first auxiliary tone of the intelligent sounder base.

**AUX Tone 2:** Select CONTINUOUS, TEMP-3, TEMP-4, MARCH or CUSTOM for the second auxiliary tone of the intelligent sounder base.

**AUX Tone 2 Control:** Enter the Logic Zone or General Zone that will control the activation of the second auxiliary tone of the intelligent sounder base.

**Volume:** Select LOW or HIGH for the intelligent sounder base volume level.

**Sounder Base Custom Tone Setup**

Pulse On Time:**The Pulse On time is the amount of time that the tone will be ON within a Period. Enter the amount of time in second and fraction of a second increments.**

**Period:** A Period is the length of time designated for a pulse, including Pulse On time and Pulse Off time. The pulse off time is designated by the amount of time left in a Period after the Pulse On time has expired. Enter the amount of time in second and fraction of a second increments.

**Number of Pulses:** Enter the number of pulses that will occur before the Tone Off Period.

**Tone Off Period:** The Tone Off Period is the amount of time that the tone will be silent before running the pulse pattern again.

**Temp 3 Sync Setting:** Choose between Power Supply and Loop Card. Default: Power Supply

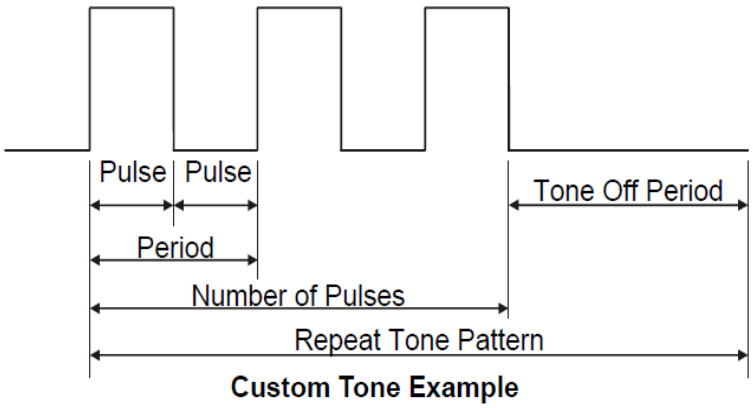



**Figure 3-16:** Custom Tone Example

### 3.5.19 MODULE POINT PROGRAMMING

**Type Code Label:** Choose the appropriate type code label. (Refer to "System Trouble Names and Codes" on page 150 for a list of type code labels.)

**Module Type:** Choose between Control and Monitor.

**Flashscan Type:** Select NONE if the device is not Flashscan.

**Point Label:** If no entry is made, the field will default to the point address.

**Custom Action Message:** Displays the custom action message number (1 through 100). The default value is 0 (no message).

**Zone Map:** Displays the zones mapped to this device. Refer to "CBE Zones and Equations" on page 143 for a list of available zone types and their descriptions. Certain zone map positions are used for specific functions.

Position 1 - Use to link zone label to detector and for group zone disable.

**Alarm Verification:** Choosing Yes will set the device participation to the values entered in Panel Timers. The only module type that can participate in alarm verification is the FZM-1.

**Waterflow delay:** When the WATERFLOW DELAY option is set to 0, waterflow events are immediately reported to the panel upon activation. If a non-zero value is entered in the WATERFLOW DELAY, activation of a waterflow event is delayed for the duration of that time. The waterflow event will have to remain active for the duration of the delay. If the waterflow event does not remain active for the entire delay duration, the waterflow event will not be reported to the panel.

Default: 0

Range: 0-60 seconds

### 3.5.20 MODULE POINT PROGRAMMING: CONTROL

Programmed through VeriFire Tools. When Control is selected as the module type, the following control module programming options are available:

**Zone Map:** Map the zones that will activate this device.

**Switch Inhibit:** This determines whether a user can manually activate an output. Box checked (cannot be activated manually) or box unchecked (can be activated manually). Default: Box unchecked

**Silenceable:** Determines whether the user can manually silence an activated output. Values are as follows:

NO: Not manually silenceable.
- YES - RESOUND FIRE: Silenceable, resound on fire events (Network and Local resound)
- YES - RESOUND SUPERV: Silenceable, resound on supervisory events (Network and Local resound)
- YES - RESOUND SECURITY: Silenceable, resound on security events (Network and Local resound)
- YES - RESOUND TROUBLE: Silenceable, resound on trouble events (Local resound)
- YES - NO RESOUND: Silenceable, no resound
- YES - RESOUND CO: Silenceable, resound on CO events (Network and Local resound)

Specific nodes can be excluded from having the ability to initiate a resound on the local fire panel. This option is programmable via VeriFire Tools. This key will not appear for type codes where silence is not an option.

**LED Enable:** Disabling will disable the LED on the device.

**Local Alarm Delay:** Selection of this feature will delay activation until alarm delay routine has completed.

**Drill Participation:** Selection of this feature will activate a device in a drill.

### 3.5.21 UZC PROGRAMMING REQUIREMENTS

When utilizing the UZC function of the PMB, the following parameters must be followed, depending on the application:

- Alarm Coded Signal - A coded alarm signal shall consist of not less than three complete rounds of the number transmitted and each round shall consist of not less than three impulses.

- Coded Supervisory Signal - A coded supervisory signal shall consist of not less than 2 complete rounds of the number transmitted to indicate a supervisory off-normal condition and not less than one complete round of the number transmitted to indicate the restoration of the supervisory condition to normal.

### 3.5.22 GENERAL ZONE PROGRAMMING

The following zone programming options are available (Z0-Z1999):

**Zone Label:** Choose a 20-character maximum zone description that will appear in the zone's display messages.

**Non-resettable Control:** Select YES to designate the zone as non-resettable (not affected by System Reset), or NO to designate the zone as resettable (zone will turn off when System Reset occurs.). Default: NO

**Silenceable Zone:** Designates the general zone as silenceable. When programmed as silenceable, a signal silence local to the panel or over the network will deactivate the zone and any devices mapped to it, unless those devices are programmed with another active zone that is not silenceable. Default: NO

**Precedence Participation:** Must be set to YES if the zone is programmed as a control zone to an ACM or SCS device.Default: NO

### 3.5.23 ZONES

The following is a list of available zone types for CBE (Control-By-Event) and Zone Map programming when programming devices.

**Table 3.1** Zone Types

| Zone Type | Description/ Function |
|---|---|
| General Zone | A general zone is used to link input and output devices. When an input device activates, any general zone in its zone map will be active and any output device that has an active general zone in its map will be active. General zones can be used as arguments in logic equations.<br>Zone Z000 is a general alarm zone: those points listing Z000 in their zone map participate in a general alarm.<br>The panel will support up to 2000 general zones, designated as Z0 through Z2000. General zones can be used in CCBE applications when a node number is entered before the zone number. |
| Logic Zone | A logic zone consists of a logic equation. Whenever the logic equation becomes true, all output points mapped to the logic zone will activate.<br>The panel will support up to 2000 logic zones, designated as ZL1 through ZL2000. Logic zones can be used in CCBE applications when a node number is entered before the zone number. |
| Releasing Zone | A releasing zone is used to control a releasing operation.<br>The panel will support up to 50 agent releasing zones and up to 100 water releasing zones. |

### 3.5.24 SPECIAL FUNCTION ZONES

**Table 3.1** Special Function Zones

| Special Function Zone | Description |
|---|---|
| ZF1 | (Trouble less AC) An output programmed to turn on/ off if a System Trouble (other than an AC power loss) occurs |
| ZF2 | (AC Trouble) An output programmed to turn on/ off if an AC power loss or a brownout condition occurs |
| ZF3 | (Security) An output programmed to turn on/ off if a Security input activates |
| ZF4 | (Supervisory) An output programmed to turn on/ off if a Supervisory input activates |
| ZF5 | (Alternate Sensitivity Activation) An input programmed to switch from the active detector alarm sensitivities to the alternate alarm sensitivities when a non-fire point with ZF5 in its CBE activates |
| ZF9 | (ALERT, ACTION) An output programmed to turn on/ off if a PreAlarm is active |
| ZF10 | Any detector or module programmed for alarm verification will activate this zone |
| ZF11 | When the Drill touchpoint is activated or Drill Signal is performed, ZF11 will become active. ZF11 will return to normal after a 5 second delay |
| ZF12 | When the Acknowledge touchpoint is tapped, or a Block Acknowledge or Event Acknowledge is performed, ZF12 will become active. After a five-second delay, ZF12 will return to normal |
| ZF13 | When a signal silence is performed, ZF13 will activate. After a five-second delay, ZF13 will return to normal. |
| ZF14 | When the System Reset touchpoint is tapped or a System Reset is performed, ZF14 will become active. After a ten second delay, ZF14 will return to normal. |

| Special Function Zone | Description |
|---|---|
| ZF15 | When there are disabled events present in the system, ZF15 will be set to active. When all disabled events have cleared, the state of ZF15 will return to normal. |
| ZF16 | When a Drill Signal is performed on the FACP, ZF16 will be set to active. ZF16 will return to normal following a system reset or system silence. |
| ZF18 | (CO Alarm) When a CO Alarm is present, ZF18 will activate |
| ZF19 | (CO Pre-Alarm) When a CO Pre-Alarm is present, ZF19 will activate |
| ZF40 | (Auto Silence Activation) ZF40 will activate when the Auto Silence Timer has expired and silenceable outputs on the FACP have been silenced. ZF40 will remain active until a System Reset, Resound, or Drill is performed[1] |
| ZF43 | Ground Fault ZF43 will activate when there is a ground fault present |
| [1] Auto Silence is only applicable for Fire Alarm activations. | |

### 3.5.25 RELEASING ZONE PROGRAMMING

**NOTE:** For Releasing Applications in Canada, the input and output circuits shall be served by the same control unit or transponder.

Releasing zones are available with a license for both agent and water (for agent: ZR00 through ZR49 and for water ZW00 through ZW99) refer to Table 3.2 Licensing Requirements and "Obtaining a License" on page 65 for more information on licensing related to releasing applications. Subaddressing is available to show states of the releasing zones (see below).

Programming options for releasing applications in VeriFire Tools are as follows:

**Delay Time** Enter a delay value from 0 to 60 (seconds). Default 00

**Abort Switch** Select: ULA, ULI, IRI, NYC, or AHJ. Default: ULA

**Cross Zone** Select: YES, NO, ZONE, HEAT. Default: NO

**Soak Time** enter a value from 0 to 9999 (seconds). Default: 0000

**NOTE:** For agent releasing with non-zero delay time, the System has an inherent 1-3 second delay to incorporate an ARM operation prior to ACTIVATION depending on the address of the releasing module, which must be factored into the Delay time entry. Design Tip: This delay can be optimized to 1 sec by restricting the releasing modules to 50 sequential addresses per loop.
For releasing applications that do not incorporate a pre-discharge delay period (i.e.deluge applications) the System has an inherent 3-5 second delay to incorporate an ARM operation prior to ACTIVATION depending on the address of the releasing module. Design Tip: This delay can be reduced to 3 sec by restricting the releasing module to 50 sequential addresses per loop.

**NOTE:** For agent releasing cross zone functionality, the first CBE position for input devices (detectors/ modules) is the general zone evaluated for cross zone activation. It should not be empty, it should not be the releasing zone, it needs to be a general zone assignment. General Zones assigned to CBE positions 2-10 will activate but they are not counted in the cross zone determination.

**NOTE:** Input devices (detector/ monitor) that are contributing to an agent releasing event must be fire alarms or supervisory not non fire type codes.

### Releasing Subaddressing

Releasing zones have subaddresses that correspond to the various states of the zone. The subaddresses can be used to play appropriate patterns to NAC circuits and may also be used for annunciation by assigning them to the outputs of the various AIO devices.

There are a total of six subaddresses per agent releasing zone, and three per water releasing zone.

**Syntax** When referencing the subaddresses in NAC and AIO programming, the syntax is:

• Agent releasing zone: ZRy.z where y=0-49, z=1–6

• Water releasing Zone is ZWy.z where y=0-99, z=1, 2 or 6

**Table 3.2** Releasing Subaddress Behavior

| Subaddress (y) | Name | Used by | Description |
|---|---|---|---|
| 1 | Discharge | Agent and Water | Activates when the solenoid is activated.<br>Deactivates when the soak time expires.<br>If there is no soak time programmed it will stay active until the system is reset. |
| 2 | First Alarm | Agent and Water | In a system where cross-zoning is used, the subaddress activates after the first alarm and remains active while the cross-zone conditions are not met.<br>Deactivates when cross-zone conditions are met.<br>In IRI mode, it deactivates if the abort switch is held. |
| 3 | Pre-discharge | Agent only | Activates when the delay timer starts and remains active if an abort switch is held.<br>In IRI mode, it activates when the cross-zone conditions are met while an abort switch is being held.<br>Deactivates when the delay timer ends, and the solenoid activates. |
| 4 | Abort | Agent only | Activates when an abort switch is used during Pre-discharge, except in IRI mode.<br>In IRI mode, it activates when the cross-zone conditions are met while an abort switch is being held.<br>Deactivates when the abort switch is released. |
| 5 | Cross Abort (IRI only) | Agent only | In IRI mode when cross-zoning is used, the subaddress activates when there is a single alarm and an abort switch is held.<br>Deactivates when the abort switch is released, or the cross-zone conditions are met. |
| 6 | Soak Expired | Agent and Water | Activates when the soak timer expires. |
| NOTE: All subaddress deactivate upon system reset. | | | |

## 3.5.26 ULA ABORT SWITCH

A ULA Abort Switch has a standard UL-type delay timer that complies with UL Standard 864 and ULC-S527.

When an alarm initiates in the programmed releasing zone, the abort switch can be pressed while the delay timer continues to count down, and held for as long as necessary. If the abort switch is pressed after the delay timer has expired, the abort switch has no effect. Releasing the abort switch starts a countdown by a 5 second ULA timer. When the 5 second ULA timer expires, the control panel activates the releasing zone outputs.

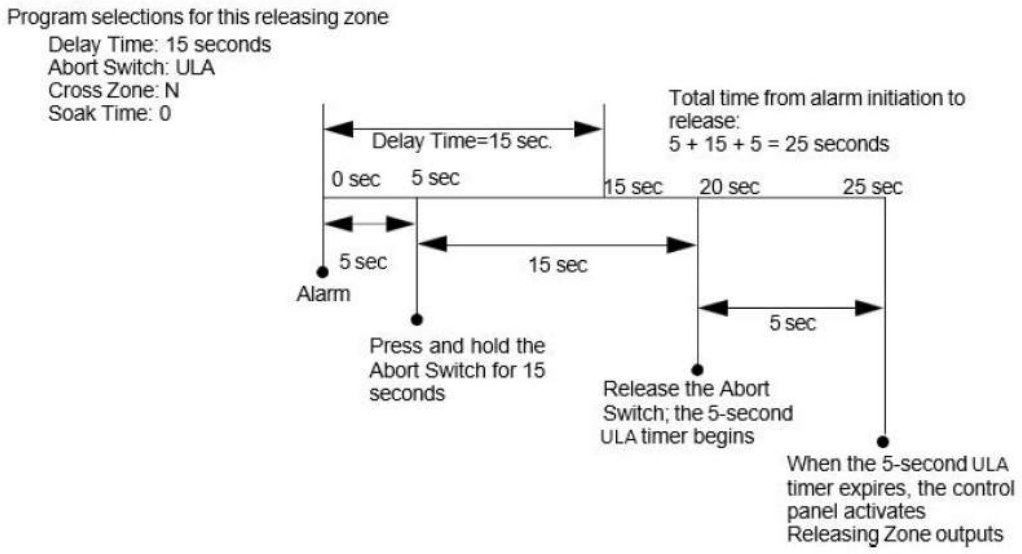



**Figure 3-17:** ULA Abort Switch

### 3.5.27 ULI ABORT SWITCH

A ULI Abort Switch operates like ULA, but has a 10 second timer after the abort switch is released.

When an alarm initiates in the programmed releasing zone, the abort switch can be pressed while the delay timer continues to count down, and held for as long as necessary. If the abort switch is pressed after the delay timer has expired, the abort switch has no effect. Releasing the abort switch starts a countdown by a 10-second ULI timer. When the 10-second ULI timer expires, the control panel activates the releasing zone outputs.

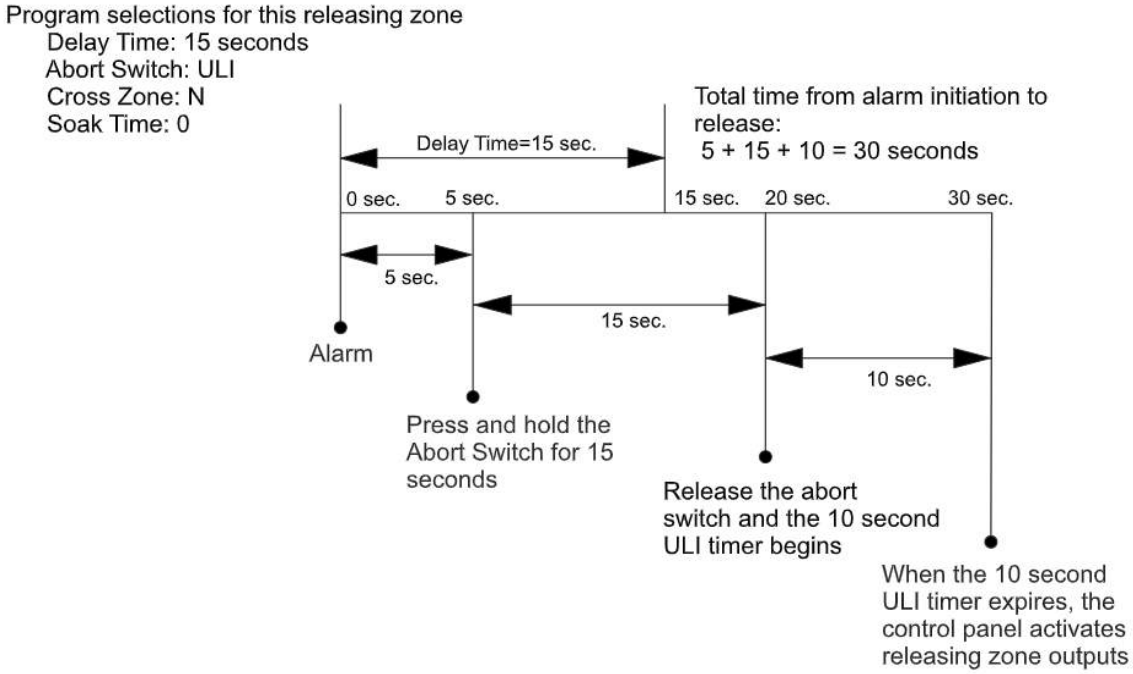



**Figure 3-18:** ULI Abort Switch

### 3.5.28 IRI ABORT SWITCH

An IRI Abort Switch operates like ULI but with additional functions for Cross Zones. When the first alarm occurs in a releasing zone programmed with a cross-zone code, pressing the abort switch will prevent activation of the releasing zone should a second alarm occur while the switch is held.

When the abort switch is released, if a second alarm has occurred while the switch was held, the ten-second IRI timer activates immediately, and the control panel activates the releasing zone outputs at the end of the IRI timer countdown.

When the abort switch is released and a second alarm has not occurred while the switch was held, the panel waits for the cross-zone conditions to be met before activating the releasing zone.

**WARNING:** THE IRI ABORT SWITCH WILL ONLY WORK IF IT IS PUSHED BEFORE THE SECOND ALARM OCCURS. IF IT IS PUSHED AFTER THE SECOND ALARM, THE RELEASING ZONE WILL ALREADY HAVE BEEN ACTIVATED, AND THE SWITCH WILL HAVE NO EFFECT.

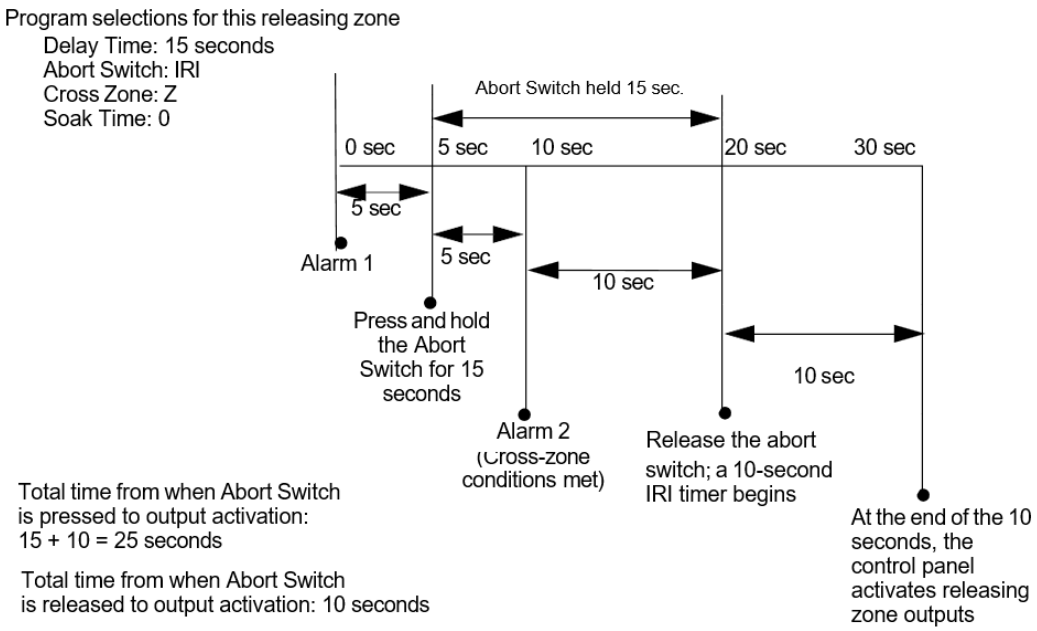



**Figure 3-19:** IRI Abort Switch

### 3.5.29 NYC ABORT SWITCH

An NYC Abort Switch has a standard NYC delay timer that adds 90 seconds to the programmed Delay Time.

**NOTE:** An NYC timer does not comply with UL Standard 864.

When an alarm initiates in the programmed releasing zone, pressing and holding the abort switch stops the delay timer countdown. The delay timer restarts at the beginning of its countdown when the abort switch is released. When the Delay Time expires, the 90-second NYC timer starts counting down. When both timers expire, the control panel activates releasing zone outputs.

**NOTE:** 120 seconds is the maximum delay after the abort switch is released. If the Delay Time plus the NYC delay time of 90 seconds exceeds 120 seconds, the releasing zone outputs will still be activated at 120 seconds after the abort switch is released.

#### Example 1 - Delay Time Does Not Exceed 120 Seconds

Program a Delay Time of 15 seconds and an Abort Switch type of NYC. The releasing zone activates and the 15-second delay timer starts. Ten seconds into the delay timer countdown, press and hold the abort switch for 30 seconds, then release the abort switch. The control panel restarts the delay timer at 15 seconds and adds the NYC delay of 90 seconds. The delay timers will both expire at 105 seconds, and releasing zone outputs will begin releasing at that time. Following is a graphic example of a NYC Abort Switch and a delay timer programmed to a releasing zone.

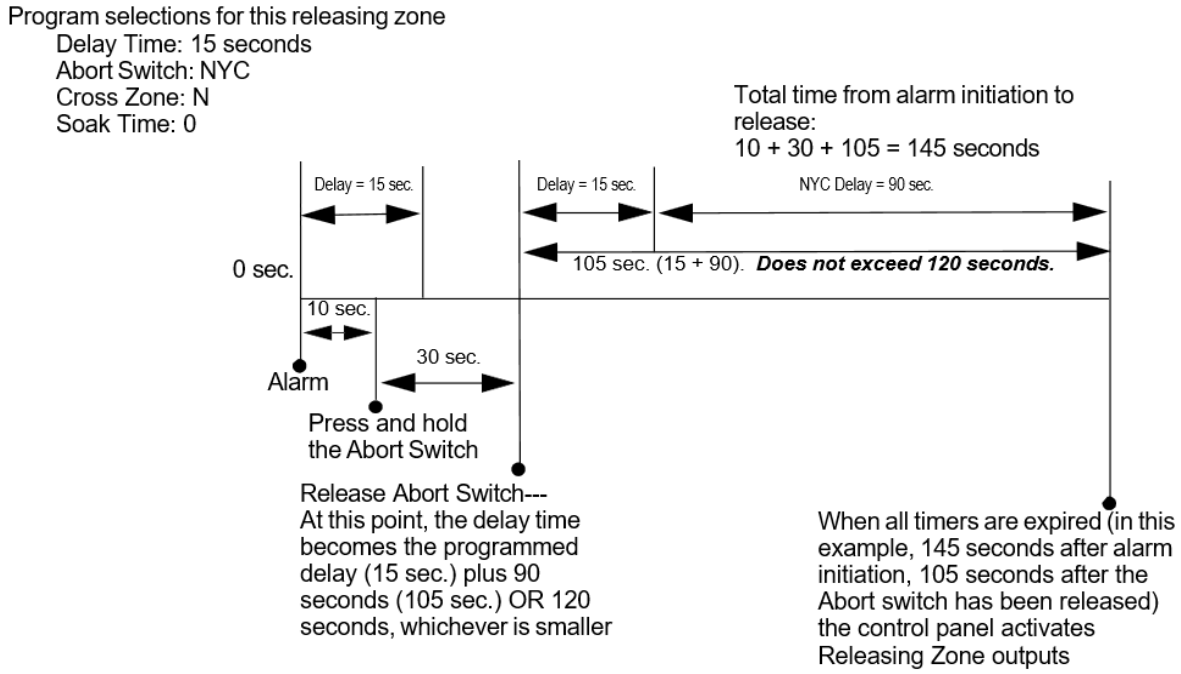



**Figure 3-20:** NYC Abort Switch - Example 1

## Example 2 - Delay Time Exceeds 120 Seconds

Program a Delay Time value of 60 seconds and an Abort Switch type of NYC. The releasing zone activates and the 60-second delay timer starts. Ten seconds into the Delay Time countdown, press and hold the abort switch for 30 seconds, then release the abort switch. The control panel restarts the delay timer at 60 seconds and adds the NYC delay of 90 seconds. The delay timers will both expire at 150 seconds: however, this time exceeds the maximum of 120 seconds, so the releasing zone outputs will begin releasing at 120 seconds, not at 150. Following is a graphic example of an NYC Abort Switch and a delay timer programmed to a releasing zone.

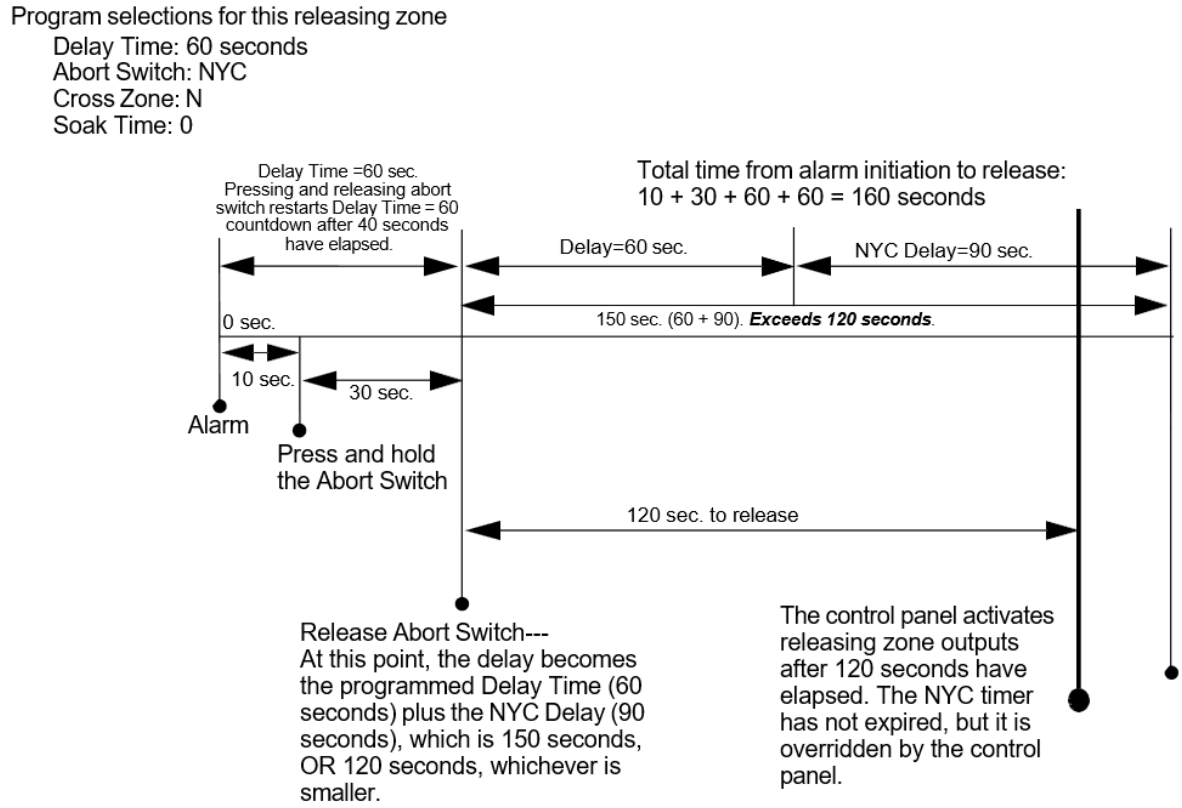


**Figure 3-21:** NYC Abort Switch - Example 2

### 3.5.30 AHJ ABORT SWITCH

An AHJ (Authority Having Jurisdiction) Abort Switch has a delay timer that restores the programmed Delay Time.

**NOTE:** An AHJ timer does not comply with UL Standard 864.

When an alarm initiates in the programmed releasing zone, the programmed Delay Time starts. Pressing and holding the abort switch suspends the delay timer. When the abort switch is released, the control panel restores the value of the programmed Delay Time and the delay timer counts down. When the Delay Time expires, the control panel activates releasing zone outputs.

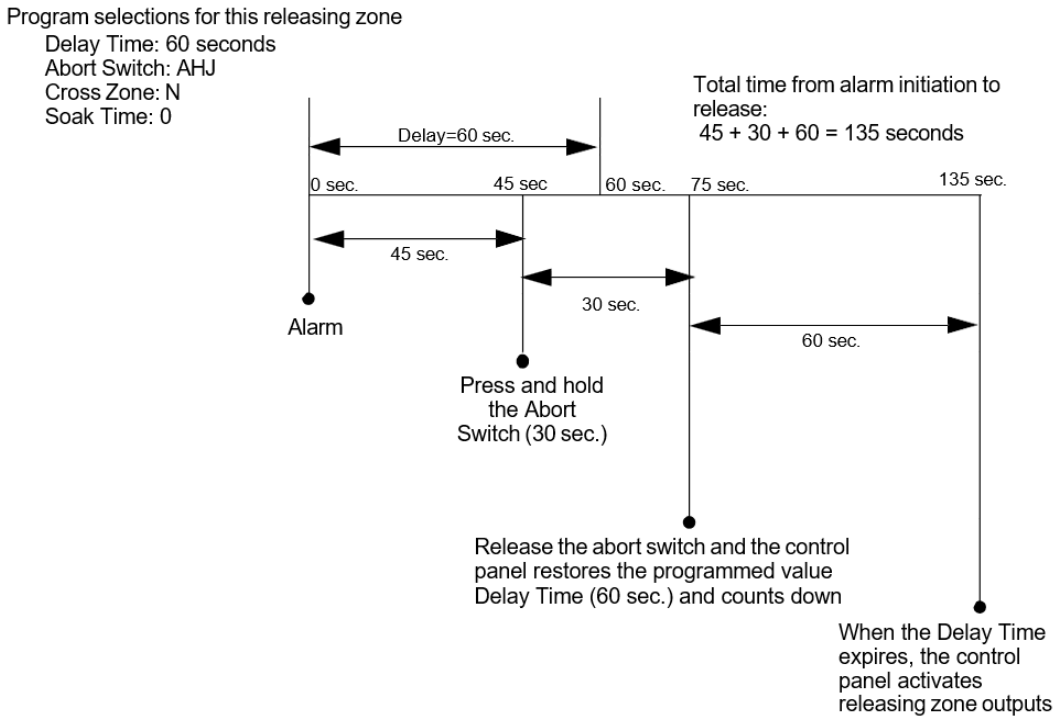



**Figure 3-22:** AHJ Abort Switch

### 3.5.31 TROUBLE FUNCTION PROGRAMMING (LOGIC ZONES)

On the N16 Trouble Zones have been replaced with Logic Zones. A logic equation using the logic function **TBL** will monitor the arguments you place in that equation for trouble conditions. Place points of either a detector, module, or a trouble code into the equation. When a detector or module is in trouble or the system trouble is active the **TBL** operand will go into an active state, activating the logic equation. For system troubles you do not have to use the **TBL** operand you can use the System TBL point directly to activate the logic equation when the trouble is active.

**Detector Example:**

- OR(TBL(L1D1)) will activate when the local loop 1 detector 1 goes into trouble and not when it activates
- OR(TBL(N1L1D1)) will activate when node 1 loop 1 detector 1 goes into trouble and not when it activates

**Module Example:**

- OR(TBL(L1M1)) will activate when local loop 1 module 1 goes into trouble and not when it activates
- OR(TBL(N1L1M1)) will activate when node 1 loop 1 module 1 goes into trouble and not when it activates

**System Trouble Example:**

- OR(TBL(T1)) will activate when local system trouble 1 is active

• OR(TBL(N1T1)) will activate when node 1 system trouble 1 is active

### 3.5.32 LOGIC ZONE PROGRAMMING

Logic Zones can be used to define complex relationships between inputs and output devices via CBE programming. Equations are built using arguments and logic functions. Refer to the rules below for additional information:

**Rules to building Logic/Trouble Equations**

• Equations will always begin with a logic function. The function set is listed below.
• Equations will be a maximum of 80 characters long, including parentheses and commas.
• Logic and Trouble Equations can have a maximum of 10 logic functions unless a time delay function is used: a time delay function must be the only function in its equation.
• Equations are evaluated after all other devices have been evaluated.
• One logic equation can be used as an argument in another logic equation, or one trouble equation can be used in another trouble equation, only if the equation used has previously been evaluated; that is, only zones with a lower number than the zone currently being edited can be used as arguments.
• A logic function can have a maximum of 20 arguments (inclusive start and stop address).
• Maximum for the delay timer is 23 hours, 59 minutes, 59 seconds (23:59:59).

The panel will check for errors after the user has entered the complete equation. Possible errors are too many or too few parentheses, too many or too few arguments inside the parentheses, unknown function and unknown device type. Equations are made up of two basic components: functions (either logic or time delay) and arguments.

**Table 3.1** Arguments

| Arguments: | | |
|---|---|---|
| LxxD1 - LxxD159 | detectors loop xx | (159 per loop) |
| LxxM1 - LxxM159 | modules loop xx | (159 per loop) |
| (Nxxx)Z0 - (Nxxx)Z999 | general zones | (2000) |
| ZF1 - ZF7, ZF9 - ZF22, ZF36 - ZF40 | special zones | (27) |
| T0 - T510 | system troubles (trouble equations only) | (511) |
| (Nxxx)ZL1 - (Nxxx)ZL1000 | logic zones | (2000) |
| xx = loop number (01 through 10)<br>(Nxxx) = Node number, necessary for CCBE programming. The node number identifies what node the panel will watch for a particular zone activation. | | |

**Table 3.2** Logic Functions

| Logic Functions: | |
|---|---|
| “AND” Operator | Requires that each argument be active.<br>**Example: AND(Z02,Z05,L2D12)**<br>All three arguments in the equation must be active for the logic zone to be activated. |
| “OR” Operator | Requires that any argument be active.<br>**Example: OR(Z02,Z05,L2D12)**<br>If any one of the three arguments in the equation is active the logic zone will be activated. |

| Logic Functions: | |
|---|---|
| “NOT” Operator | Inverts the state of the argument (activated to deactivated OR deactivated to activated).<br>**Example: NOT(Z02)**<br>The logic zone will remain activated until the argument activates.<br>If the argument activates the logic zone will deactivate. |
| “ONLY1” Operator | Requires that only one argument be active.<br>**Example: ONLY1(Z02,Z05,Z09)**<br>If only one of the arguments activates the logic zone will be activated. |
| “ANYX” Operator | Requires that the amount of arguments specified by the number preceding the arguments be active.<br>**Example: ANYX(2,Z02,Z05,Z09)**<br>If any two or more of the arguments are in alarm the output point will be activated.<br>The X amount may be a value from 1 through 9. |
| “RANGE” Operator | Each argument within the range must conform to the requirements of the governing function. The range limit is 20 consecutive arguments.<br>**Example: AND(RANGE(Z1,Z20)**<br>Zone 1 through Zone 20 must all be active to activate the logic zone. |
| “DIS(point argument)” Operator | Requires that the point argument be disabled for the operator to go active. |
| “PRE(point argument)” Operator | Requires that the point argument be in prealarm for the operator to go active.<br>**Example: AND(L1D1,PRE(L1D2)**<br>The detector at address L1D1 must be active and the detector at L1D2 must be in prealarm for this equation to go active. |
| “SUP(point argument)” Operator | Requires that the point argument be in an active supervisory state for the operator to go active.<br>**Example: OR(L1D1,SUP(L1M1)**<br>The detector at address L1D1 must be active, or the module at L1M1 must be in an active supervisory state, for the equation to go active. |
| “FIRE(point argument)” Operator | Requires that the point argument be in an active fire alarm state for the operator to go active.<br>**Example: AND(L1D1,FIRE(L1M1),FIRE(L1M2)**<br>The detector at address L1D1 must be active and the modules at L1M1 and L1M2 must be in an active fire alarm state, for the equation to go active. |

| Logic Functions: | |
|---|---|
| “NON(point argument)” Operator | Requires that the point argument be in an active non-alarm state for the operator to go active.<br>**Example: AND(L1D1,NON(L1M1)**<br>The detector at address L1D1 must be active and the module at address L1M1 must be in an active non-fire alarm state, for the equation to go active. |
| “SEC(point argument)” Operator | Requires that the point argument be in an active security alarm state for the operator to go active.<br>**Example: AND(L1M1,SEC(L1M2)**<br>The module at address L1M1 must be active and the module at address L1M2 must be in an active security alarm state, for the equation to go active. |

### 3.5.33 EDITING A LOGIC EQUATION

The following options are programmed through VeriFire Tools. Refer to VeriFire Tools Help Files for more information

- INS/ OVR
- ADD POINT/ ZONE
- ADD LOGIC FUNCTION
- ADD TIME/ DATE
- DELETE EQUATION

# SECTION 4: OPERATIONS

The following are approved applications for the N16.

**NOTE:** Network Control Workstation: When operating as a Protected Premises Control Unit, the Network Control Workstation is UL Listed for monitoring and control of fire alarm notification devices.

The N16, when installed in accordance with the above manuals, comply with the following NFPA 72 standards for fire protective signaling systems:

- Central station (protected-premises unit, requires CGW-MB)
- Local, remote station (protected-premises unit, requires UL 864 10th edition listed contact closure DACT)
- Proprietary (protected-premises unit)
- Proprietary (receiving unit)
- Emergency communication (requires DVC/ DAA/ DAA-2)
- Relocation

The N16 is also suitable for use as the following:

- Proprietary burglar alarm unit, (multiplex requires ACM-30)
- Type of signaling service: Non-Coded, March Time, Coded.
- Class A or B power-limited (class 2) initiating device circuits
- Class A or B power-limited (class 2) notification appliance circuits
- Power-limited (class 2) communications loop meeting NFPA 72 Class A, B, and X requirements
- Alarm signal cutoff (if enabled) programmable from 180 – 1200 seconds
- Presignal delay (if enabled) programmable from 60 – 180 seconds
- Signal inhibit (if enabled) programmable from 0 – 300 seconds
- Performance based Technologies (requires CGW-MB)

Types of signals: automatic fire alarm, manual fire alarm, waterflow alarm, sprinkler supervisory service

Type of signaling device: Type NM (non-monitoring) and SM (self-monitoring). Installation limits in all categories of service are under the jurisdiction of the local authority and in accordance with NFPA70 National Electrical Code. System and peripherals for indoor dry use (without specific marine listings) in a recommended environment with a nominal room temperature of 15°C to 27°C (60°F to 80°F).

Electrical ratings: 2.5A @120V or 1.25 A @240 V, 50/ 60 Hz (primary power source), and 24 VDC battery (standby power source). Operating system software: software version information may be displayed by navigating to the Settings > About menu on the main display.

Local Applications:

- Emergency relocation (paging, live and pre-recorded)
- Emergency communication (telephone)

Protected premises unit:

- Central station
- Remote station
- Proprietary
- Local

Communication transmission path:

- POTS communication off premises using CGW-MB
- Performance-based with CGW-MB

The following requirements cover products to be employed in accordance with the following National Fire Protection Association (NFPA) Standards:

- NFPA 12, Carbon Dioxide Fire Extinguishing Systems
- NFPA 12A, Halon 1301 Fire Extinguishing Systems
- NFPA 13, Installation of Sprinkler Systems
- NFPA 15, Water Spray Fixed Systems for Fire Protection
- NFPA 16, Installation of Foam-Water sprinkler and Foam-Water Spray Systems

• NFPA 17, Dry Chemical Extinguishing Systems
• NFPA 17A, Wet Chemical Extinguishing Systems
• NFPA 70, National Electrical Code
• NFPA 72, National Fire Alarm Code
• NFPA 750, Standard for Water Mist Fire Protection Systems
• NFPA 2001, Clean Agent Fire Extinguishing Systems

Process control, non-critical

Regional settings

• Canada
  - DCC enabled (default)
  - Alarm Signal System Trouble
  - Drill ACS should not be used.
  - LCD-160 must have local control disabled.

Will default the following settings in VeriFire Tools when selected:

- Enables Display and Control Center
- Changes Event Management to "Resound/ Annunciation By Zone"

• Chicago
  - Panel signal silence button will not function
  - SLC modules should not be programmed with type codes Drill Switch or Sil Switch
  - AIO device inputs should not be programmed for Drill or Silence functions
  - The Alert Bar programming should not include Drill
  - Events must be acknowledged prior to system reset

## 4.1 PANEL FEATURES

• Custom banner/ graphics

• Basic Function
  - ACK
  - Silence
  - Reset

• Date and time

• Display conditioning mode

• Alarm verification

• Pre-signal/ alarm delay

• Co-operative detection

• Menu

• Alert bar and customization

• Instructional text

• Logic zones (license)

• Special function zones

• General zone (license)

• Fire Event List

• History
- Filtering history
- Extracting history

• Look-ahead warning

• Drill

• Disable/ enable

• Custom action buttons (license)

• Force on/ off

• Occupancy schedule

• Precedence

• Temperature measurements

• Network display node (license)

• Auto program

• Read status

- Control-by-event
- Networking
- User management
- Firmware update & backup (the trouble for running a backup partition)
- Reminders
- Configuration tool user
- Remote access
- DCC Control Center Status (Full Control, Partial Control, Not in Control)

## 4.2 FUNCTIONALITY

The following are approved functions for the N16:

- Drift Compensation
- Connected Capabilities (CLSS gateway required for Connected Capabilities)
    - CLSS gateway
    - Remote access for diagnostics
    - Remote communication session- requires FACP to be in service mode. Technician required on site
- Service Mode
    - Remote programming. Technician required on-site
- Multiple Detector Operation
    - Units employing multiple detector operation shall include a minimum of two detectors in each protected space and reduce the detector installation spacing to 0.7 times the linear spacing in accordance with National Fire Alarm Code, NFPA
- Pre-signal
- Positive Alarm Sequence
- Alarm verification
- Two-wire compatibility
    - One alarm per initiating device circuit
- Polling Style limitations
    - Polling Style is FlashScan or CLIP (Classic Loop Protocol)
    - All detectors and modules on an SLC may be programmed as FlashScan. All detectors and modules must be FlashScan type devices. Maximum number of devices per SLC: 159 detectors, 159 modules.
    - All detectors and modules on an SLC may be programmed as CLIP. Detectors and modules may be a mix of CLIP and FlashScan type devices, but all must be programmed as CLIP. Maximum number of devices per SLC: 99 detectors, 99 modules.
    - All detectors may be programmed as CLIP, all modules as FlashScan, on an SLC. Detectors may be a mix of CLIP and FlashScan type devices, modules must all be FlashScan type devices. Maximum number of devices per SLC: 99 CLIP detectors, 159 FlashScan modules.
- Manual release/ abort switch interaction
    - Activation of a Manual Release Switch will override Pre-discharge Delay and override any active Abort switches that are preexisting to the activation of the manual release delay switch. A ten second delay period will start after the activation of the manual release delay switch. Within the delay period, the release can be aborted with a subsequent abort switch activation.Activation of a Manual Release Switch will override Predischarge Delay and override an active Abort Switch, resulting in an immediate agent release
    - Multiple abort switches are supported

**NOTE:** Multiple Abort switches may be wired in to provide the abort option at different locations. They will work individually. If multiple Abort switches are pressed simultaneously, the activation of the releasing device will start after all abort switches have been released.

- NAC Resound
- Local Mode
- Primary power source failure indication
- CGW-MB Communication Format
    - TCP/ IP
- Interconnected control panels

- Alarm, supervisory, and trouble conditions, as well as reset, alarm silence, or trouble silence actuation originating at this panel are annunciated at this panel.

• Integrated/ network local functionality
• Circuit disables
• Network Mapping
• Detection/ alarm algorithms
• Day/ night sensitivity
• Detection sensitivity adjustment
• Extent/ limitations of combination system
  - Priority of signals
• Canadian Applications
• Display and Control Center
  - when enabled, allows users to request control over one or more nodes in the network

## 4.3 NORMAL OPERATION

With no alarms or troubles in the system, System Normal is displayed on the Header Bar of the display. The N16 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 touchscreen display and updates time
• Performs autotest for all SLC devices
• Tests memory
• Updates and reads all communications busses

## 4.4 N16 DISPLAY

The N16 has a high definition 10 inch touchscreen to display system events. The display features a touchpoint for menu access, a header bar which shows color-coded event status, and touchpoints for acknowledge, signal silence, and reset functions.

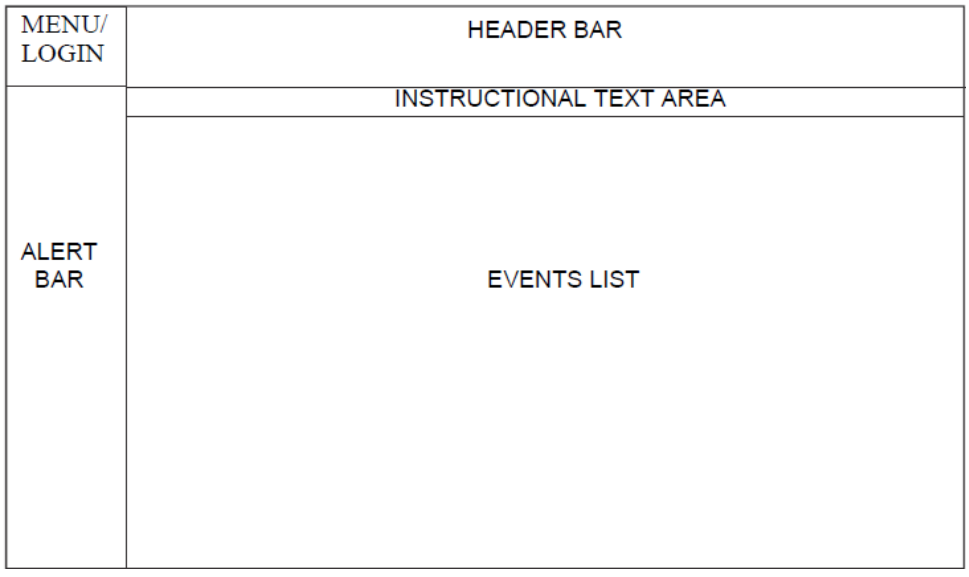



**Figure 4-1:** Display Regions

**CAUTION: Display Life —**Setting the display brightness above 75% for prolonged periods of time will decrease the overall life of the display.

### 4.4.1 DISPLAY CONDITIONING MODE

Every 30 minutes, the display will enter Display Conditioning mode. During Display Conditioning, the display will transition through various screens including a completely blank screen. This process takes about seven seconds. It is done to prevent image persistence, and keeps information clear and undistorted. Any display interaction will abort Display Conditioning mode.

**NOTE:** Display Conditioning mode is not configurable. Display Conditioning will not engage when there is a Fire or CO alarm on the system, as well as Fire and CO pre-alarm.

### 4.4.2 HEADER BAR

The “Header Bar” is always present and located along the top of the screen. It displays all active events, system normal and the “Acknowledge”, “Silence” and “Reset” touch points. The date and time are also displayed in the Header Bar. It provides system status as well as highest priority unacknowledged events.

### 4.4.3 CONFIGURABLE ALERT BAR

The number of event types in the Alert Bar is customizable using VeriFire Tools. The Alert Bar can be configured for a minimum of four event types up to a maximum of nine event types.

### 4.4.4 INSTRUCTIONAL TEXT

The Instructional Text Area is used to provide user instruction in an off-normal condition. The instructional Text can be enabled and disabled and is fully configurable through VeriFire Tools.

### 4.4.5 EVENTS LIST

The “Events List” (Main Display Area) shows all events and their status. It indicates if events have been acknowledged or silenced and is color coded as well as scrollable.

### 4.4.6 ALARM VERIFICATION

Alarm Verification delays a device from going into alarm to reduce false alarms. The user programs which devices participate in alarm verification, sets a panel-wide alarm verification time, alarm confirmation time, maximum verification count, and a verification pre-alarm setting. If a device reaches or exceeds the alarm threshold, it will delay going into alarm by the programmed amount of alarm verification time. If during this time, a second device on the same loop reaches its alarm threshold, the first device will immediately go into alarm.

**NOTE:** The Alarm Verification feature is not allowed to be used for detectors that are employed in either a cross-zone initiation function or a single-zone, multiple-detectors (counting zone) initiation function.

### 4.4.7 PRE-SIGNAL/ POSITIVE ALARM SEQUENCE (PAS)

**Pre-Signal**

Presignal is a feature that initially causes alarm signals to only sound in specific areas, monitoredby qualified persons. This allows delay of the alarm up to 180 seconds after the start of alarm processing. The control panel Presignal feature provides the two following selections:

• **Presignal Delay Timer** (1:00 to 3:00 minutes) that delays activation selected for PAS/ Presignal Delay participation.. See Figure 4-2: Presignal and PAS Time

• **PAS** (Positive Alarm Sequence) (00:00 to 00:59 seconds) selection, in addition to the Presignal Delay Timer, is a default 15-second timer, for acknowledging an alarm signal from a fire detection/ initiating device. If the alarm is not acknowledged within the time period, all local and remote outputs activate immediately and automatically. See Figure 4-2: Presignal and PAS Time

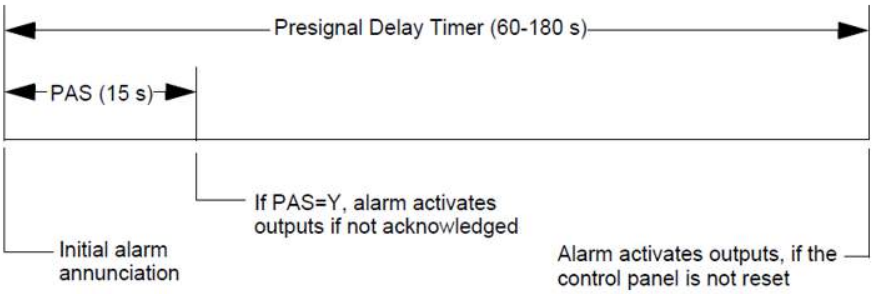



**Figure 4-2:** Presignal and PAS Time

**Network PAS**

This feature allows points on networked panels to participate in PAS. This includes the communicator/ gateway, to allow local indication of the alarm while delaying notification on premises and off premises of an alarm condition. Only the following nodes/ peripherals can participate in Network PAS operation:

- N16E/ X
- CLSS Gateway - HON-CGW-MBB
- Dark Dialer - HON-DACT-DS
- TM-8

**NOTE:** To incorporate a delay on networked Onyx or DVC outputs, the system needs to be programmed to have the Onyx or DVC output points follow the state of a delayed Inspire output point.

The panel shall have an option to program a presignal/ alarm delay time between one and three minutes (resolution in seconds). The default is 3 minutes. The panel shall have a PAS delay setting that can be turned on or off. Automatic detection devices and output devices shall have a setting designating them to participate in the PAS delay. Devices may not be programmed for both local alarm delay and alarm verification.

**Pre-signal/ PAS Programming:** For each SLC device that will participate, the "PAS/ PreSignal Participation" box must be checked in SLC programming for that devices address.

**Network Programming:** All network nodes participating in PAS/ Presignal must have the same timers set and Network PAS/ Pre-signal enabled.

**Network PAS/ Pre-signal**

- Enabled: The node will send out the state of its PAS/ Presignal timer. The node will also cooperate with other nodes that are enabled for PAS/ Presignal in its network map. Alarms from other nodes in its map, will be considered a second alarm and immediately and automatically initiate evacuation signals associated with the activated initiating device and any off-premises signaling.
- Disabled: Used for local PAS. The node will not consider alarms from other nodes.

**NOTE:** If using a network-based communicator for transmitting signal off-premise this setting must be enabled, otherwise signals will not be delayed and be immediately transmitted on the first alarm.

**Enable Positive Alarm Sequence Setting**

- Enabled: Panel will follow the configured PAS Timer and Pre-Signal delay timer. See Figure 5-2
- Disabled: Panel will follow only the Pre-Signal delay. See Figure-5-2

## 4.5 SYSTEM RESOUND SETTINGS

### 4.5.1 RESOUND BY POINT

After outputs are silenced, if another Event comes in that matches an outputs resounds settings, the previously silenced points will turn back on.

Output resound options are as follows:
• Fire
• Supervisory
• Security
• Trouble
• CO
• No Resound

### 4.5.2 RESOUND BY ZONE

The following applies to the Resound by Zone setting on the N16:

• Default setting for Canada Regional Setting
• When using this setting, different event types CANNOT be mapped to the same zone.
• When Resound By Zone is selected, silenced outputs must meet both of the following criteria to resound:
- Resound setting of the output must match the event type of the subsequent local activation or network node activation.
- A different zone must go active from the initially activated silenced zone. (e.g. A second alarm in the same zone, will not resound outputs.)
* Example: If the output is mapped for resound on fire, and another fire alarm occurs that activates a zone different from the zone initially activated, the point will resound.

## 4.6 DISPLAY EVENTS BY ZONE

The following applies to the Display Events by Zone feature on the N16:

• Defaults to "Enabled" when Canada Regional Setting is enabled.
• Instead of displaying events by point; Fire, CO and Supervisory events are grouped by zone instead. The highest priority event in the zone will display on top as the primary event.
• Up to 8 zones can be displayed at once on the N16E/ X or NCD.
• A counter will show additional number of events that are also in the same zone.
• You can touch the drop-down arrow for the zone and all other events will show beneath it. This list can be collapsed by touching the arrow again.
• When a primary event is acknowledged, all unacknowledged events in that zone and event category will be acknowledged.
• Attached RLD’s will follow the panel’s system setting.
• The first CBE of the device is its primary zone.

## 4.7 MAIN MENU

From the Main Menu of the N16, the following options can be selected:

**Settings** This menu provides access to Display Settings, Panel Settings, About, Licensing Information and User Accounts. Refer to"Display" on page 67, "About" on page 68, "Panel Settings" on page 72, "User Accounts" on page 70, and "Obtaining a License" on page 65 for more information.

**Programming** This menu provides access to network programming and Autoprogram options. Refer to "Network" on page 72 and"Autoprogram" on page 73 for more information.

**Point Information** Allows the user to enable/ disable points, control points on/ off, perform read status of a point, and view point history. Refer to "Point Information" on the next page for more information.

**Test/ Diagnostics** This menu provides access to Diagnostics, Lamp Test, History and also allows for the export of Diagnostics and History. Refer to "History" on page 76, "Diagnostics" on page 75 and "Lamp Test" on page 75 for more information.

**Custom** Allows the user to customize buttons that can be mapped and assigned to manually control common system commands such as enable/ disable points.

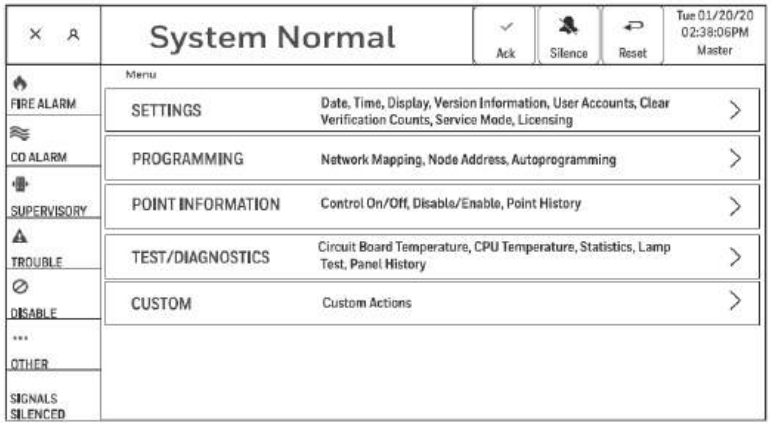



**Figure 4-3:** Main Menu Screen

## 4.8 SETTINGS

From the Settings Screen, the following options can be selected

**Display** Tap to access brightness levels and Clean Mode.

**About** Tap to access any system update, model, application, boot, kernel, and M4 (co-processor) information, hardware version, database information, loop information, update loops application, serial number, AIO software versions, and network HS-NCM versions.

**User Accounts** Tap to add users, remove a user, change a password, and recover a password.

**Panel** Tap to clear verification counts, enter service mode, and change the date and time.
NOTE: User should set panel date on first power-up.

**Licensing** Tap to view status of licensable features such as loops, general zones, logic zones, releasing zones, water releasing zones, custom action buttons, power supplies, network display mode, UZC (Universal Zone Coding) and CLIP mode.

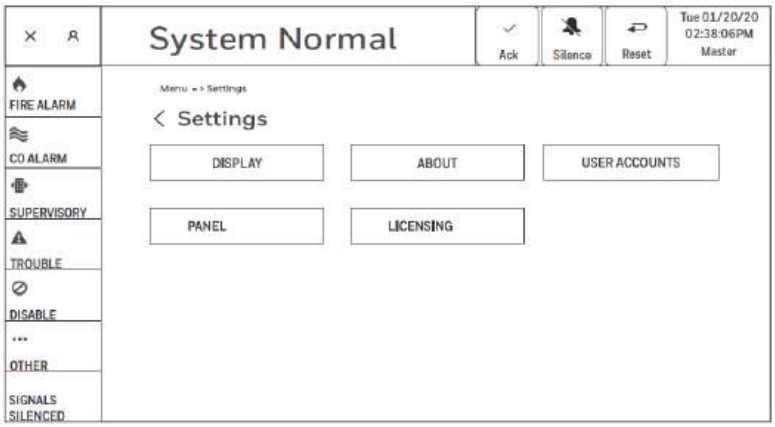



**Figure 4-4:** Settings Screen

## 4.9 PROGRAMMING

From the programming screen, the following options can be selected:

**Network** Tap to view/ change the panel node number and network mapping.

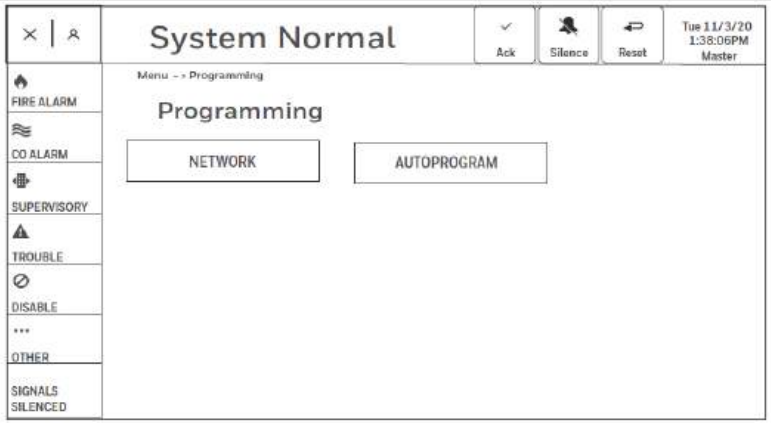



**Figure 4-5:** Programming Screen

**Autoprogram** Tap the desired loop to autoprogram the devices connected to the selected loop onto the FACP. Tap START AUTOPROGRAM to begin the autoprogram for selected loops. Deleting and editing of devices cannot be done from the FACP.

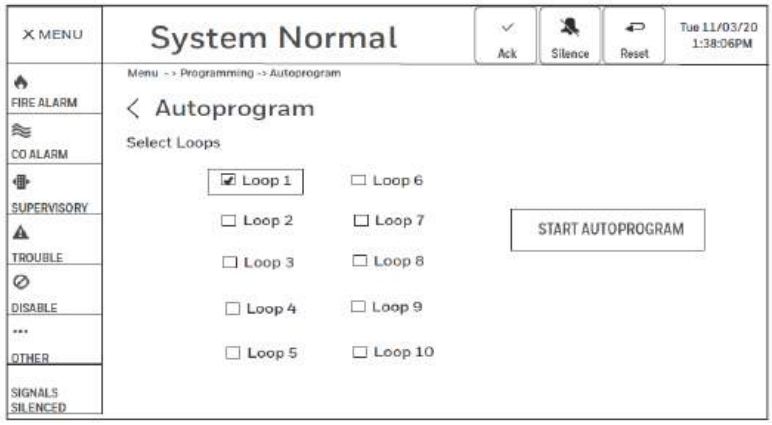



**Figure 4-6:** Autoprogram Screen

## 4.10 POINT INFORMATION

The Point Information Screen allows for the selection of points for disabling/ enabling specific points on the FACP as well as controlling ON/ OFF and viewing Point History as well as read status

**Point Type** Tap to select a specific point type. Can be used as a network node for viewing points over a network that is mapped. Refer to "Point Information" on page 1 for more information.

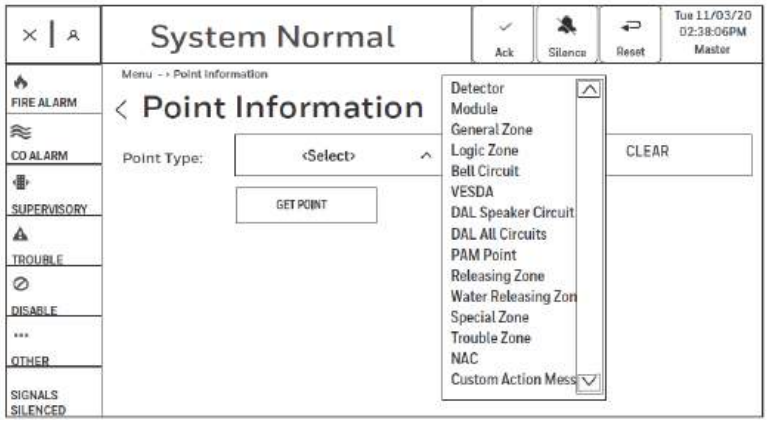



**Figure 4-7:** Point Information Screen

## 4.11 TEST/DIAGNOSTICS

The Test/ Diagnostics screen allows access to FACP diagnostics, Lamp Test, History, as well as allowing for the export of diagnostics, clear database and clear licensing.

**Diagnostics** Tap to view temperature information for the board/ CPU. This will show the current temperature and the highest measured temperature. The user can reset the highest temperature record. The user can also reset the SLM-318, PMB, and AIOcommunication statistics. The diagnostic feature also shows the current occupancy schedule. Note: U= unoccupied.

**Lamp Test** Tap the lamp test touchpoint to turn on all pixels on the screen. This will illuminate the entire screen as well as the AC Power and Off Normal LED for approximately four seconds. During this time, a tone will sound. A black spot on the screen will indicate that a pixel is out.

**View History** Tap to view and search panel history.

**Export Diagnostics** Tap to export the panel diagnostics to a USB flash drive. Diagnostics will be exported as a compressed ".tar" file. To extract the exported diagnostics file you may use: 7-Zip, Winzip, WinRAR or any program compatible with ".tar" files.

**Clear Database** Tap to remove all programming and restore panel database back to initial factory setting.

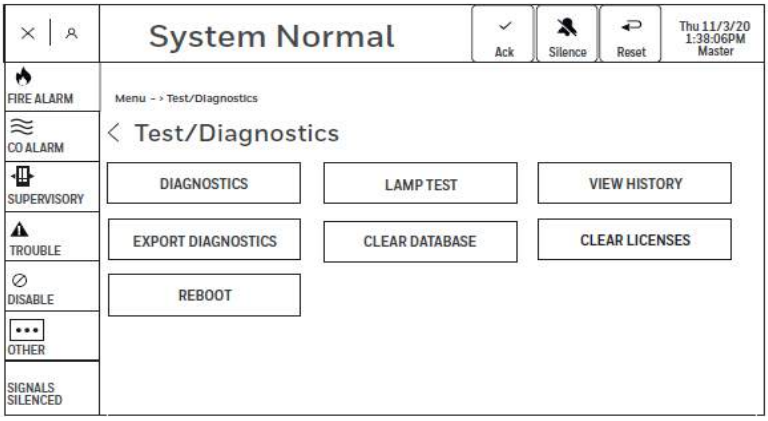



**Figure 4-8:** Test Diagnostics Screen

## 4.12 CUSTOM

Custom Actions are buttons (touchpoints) that can be mapped and assigned to manually control common system commands such as enable/ disable points. Custom actions are completely programmable and can be user-defined within VeriFire Tools.

**Custom Actions** Configured touchpoints and their respective functions will be displayed here.

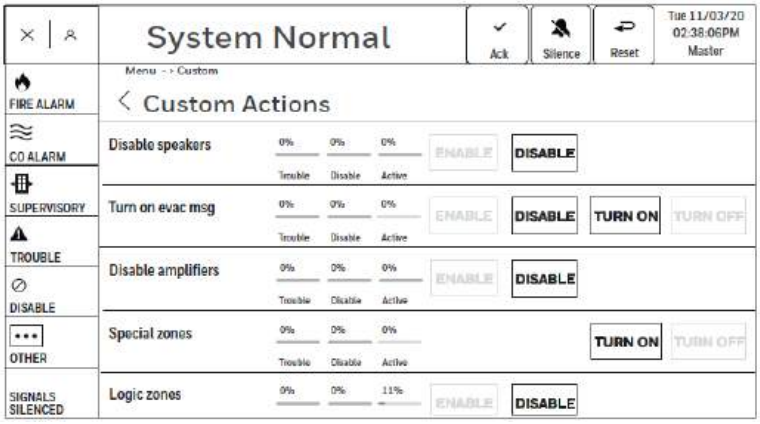



**Figure 4-9:** Custom Actions Screen

## 4.13 FIRE ALARM

### Fire Alarm Event

- Produces a steady audible tone
- fire alarm appears in the Header Bar
- fire alarm illuminates in the Alert Bar as a red color indicator and provides fire event counts
- Illuminates the yellow Off Normal Event LED

• Displays fire alarm and specific device information in the Events List
• Displays information on how to react to the event in the Instructional Text Area
• Latching events must be corrected and a Reset performed to clear the alarm state from the N16

### Initiating Device Activation

• Produces a steady audible tone
• Flashes the fire alarm
• Displays a type code that indicates the type of fire alarm being generated
• Latches the control panel in alarm (condition must be corrected and a reset performed to clear the alarm state from the panel)
• Activates the general alarm zone (Z000)
• Displays fire alarm in the header bar on the control panel, along with information specific to the device
• Sends an alarm message to the graphic display, remote annunciators, history buffer, and installed printers
• Initiates any control-by-event actions
• Starts timers such as Silence Inhibit and Auto Silence
• Sends an alarm message to the proprietary receiver via the network, if applicable. If the panel is not networked, the CGW-MB will be directly connected to the fire panel and send the alarm message to the proprietary receiver via the CGW-MB

**NOTE:** If the alarm event is initiated by a device with a waterflow type Code, the control panel will disable the Signal Silence key and the Auto Silence Timer.




**Figure 4-10:** Fire Alarm Screen

### Responding to a Fire Alarm Event

• The Informational Text Area on the screen will indicate step by step how to acknowledge and silence the event.
• Tap on the acknowledge touchpoint located in the Header Bar, which will be highlighted in blue. A check mark will appear next to the acknowledged event. Acknowledge will need to be tapped for each Fire Event. Block Acknowledge is not available. Once all the events have been acknowledged, the blue highlight indicator will move from the acknowledge touchpoint to the silence touchpoint.
• Tap on the silence touchpoint located in the Header Bar. The silence icon in the Alert Bar will illuminate yellow once the N16 has silenced and all silenceable outputs will turn off.
• Investigate and correct the condition that activated the Fire Alarm.
• Once the N16 has been silenced the blue highlight indicator will move from the silence touchpoint to the reset touchpoint.
• Tap the reset touchpoint located in the Header Bar to return the N16 to normal operations.

## 4.14 SYSTEM TROUBLE

### Trouble Event

System or Point Trouble, electrical or mechanical faults (when no higher priority unacknowledged events exist)

• Produces a pulsed audible tone
• Turns on the trouble relay
• trouble appears in the Header Bar
• trouble appears in the Alert Bar as a yellow color indicator and provides Trouble event counts
• The Off Normal LED flashes yellow
• Displays Trouble and specific device information in the Events List
• Displays information on how to react to the event in the Informational Text Area

**NOTE:** If an unacknowledged, higher priority event exists, the control panel will retain the indications of the higher priority event, such as the Graphic, audible tone, etc. The Trouble relay, flashing the system Off Normal LED and sending the trouble message to the history buffer and printer, and annunciators will still occur at the time of the event.

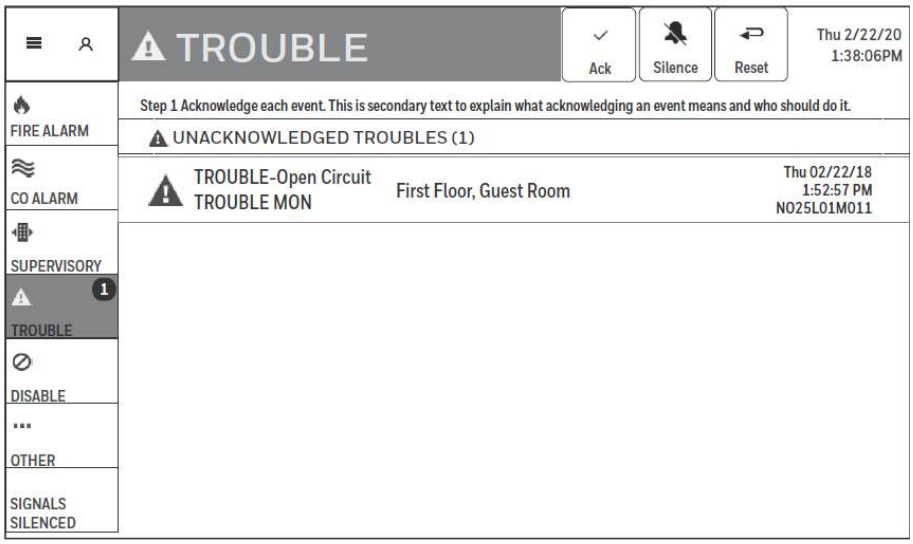



**Figure 4-11:** Trouble Event Screen

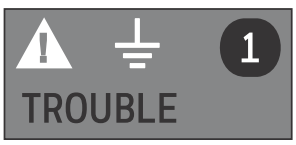
### Responding to a Trouble Event

• The Informational Text Area on the screen will indicate step by step what needs to be done to acknowledge the event.
• Tap on the acknowledge touchpoint located in the Header Bar. The acknowledge touchpoint will be highlighted in blue. A check mark will appear next to the acknowledged event.
• block acknowledge allows for multiple events to be acknowledged at once.
• Investigate and correct the condition that initiated the trouble condition.

## 4.14.1 GROUND FAULT INDICATOR

When enabled, a ground symbol will appear in the Trouble Alert Bar for the following events:

• Any ground fault on any circuit on the local panel is detected, including the Ground Fault monitor module type code. Special Function Zone ZF43 will also go active.
• Any network node that is mapped to the panelthat has a ground fault.
• Trouble alert will appear on the left side of screen as shown below.




# 4.15 CO ALARM

### CO Alarm Event

• Activation of a device (detector or module) with a CO Alarm type code. (Refer to"Type Codes for Monitor Modules" on page 165)

• Produces a pulsed audible tone
• co alarm appears in the Header Bar
• co alarm illuminates in the Alert Bar as a blue color indicator and provides CO event counts
• Illuminates the yellow Off Normal LED
• Displays co alarm and specific device information in the Events List
• Displays information on how to react to the event in the Instructional Text Area

**NOTE:** If an unacknowledged, higher priority event exists, the control panel will retain the indications of the higher priority event, such as an audible tone, etc. The flashing the CO Pre-Alarm Graphic and sending the CO Pre-Alarm message to the history buffer and printer, and annunciators will still occur at the time of the event.

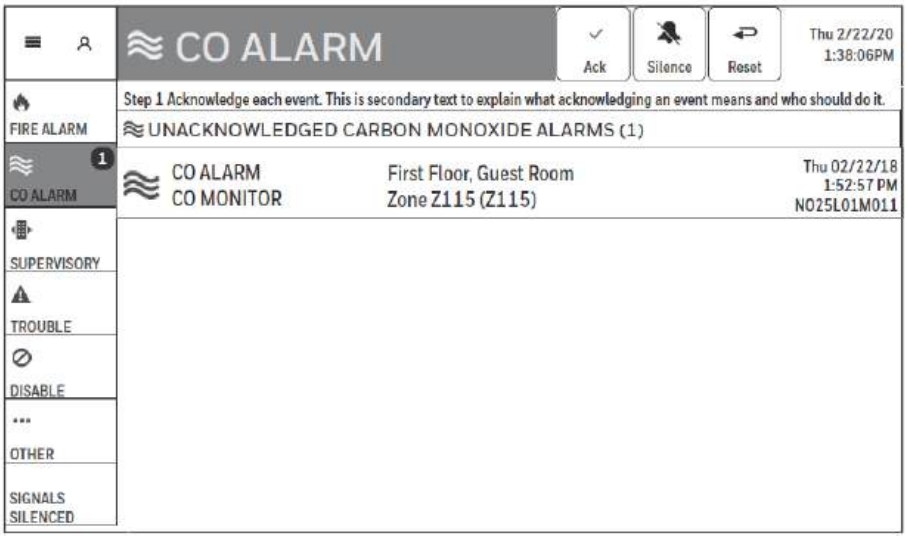



**Figure 4-12:** CO Alarm Screen

### Responding to a CO Alarm Event

• The Informational Text Area on the screen will indicate step by step what needs to be done to acknowledge and silence the event.
• Tap on the acknowledge touchpoint located in the Header Bar. The acknowledge touchpoint will be highlighted in blue. A check mark will appear next to the acknowledged event. Once all the events have been acknowledged the blue highlight indicator will move from the acknowledge touchpoint to the silence touchpoint.
• Tap on the silence touchpoint located in the Header Bar. The silence icon in the Alert Bar will illuminate yellow once the N16 is silenced all silenceable outputs will turn off.
• Investigate and correct the condition that activated the CO Alarm point.
• Once all events on the N16 have been silenced the blue highlight indicator will move from the silence touchpoint to the reset touchpoint.
• Tap the reset touchpoint located in the Header Bar to return the N16 to normal operations.

## 4.16 OTHER EVENTS

Events listed as Other are as follows:

• CO Pre-Alarm (blue)
• Critical Processes (yellow)
• Security (blue)
• Pre-Alarm (red)
• Hazard/ Weather Alert (Yellow)

**NOTE:** When more than one of these conditions have been activated, they will be listed in order of priority. CO-Pre Alarm will be listed first, followed by Critical Processes, Security, Pre-Alarm and Hazard/ Weather Alert.




**Figure 4-13:** Other Event Screen

**Responding to an Other Event**

• The Informational Text Area on the screen will indicate step by step what needs to be done to acknowledge and silence the event.
• Tap on the acknowledge touchpoint located in the Header Bar. The acknowledge touchpoint will be highlighted in blue. A check mark will appear next to the acknowledged event.
• block acknowledge allows for multiple events to be acknowledged at once.
• Tap on the silence touchpoint located in the Header Bar. The silence icon in the Alert Bar will illuminate yellow once the N16 is silenced.
• Once all the events have been acknowledged the blue highlight indicator will move from the acknowledge touchpoint to the silence touchpoint.
• Tap reset for a latched event.

## 4.17 SUPERVISORY

**Supervisory Event** (If a fire alarm exists and alarms are silenced, a supervisory alarm will resound the panel sounder)

• Produces a warbling audible tone
• supervisory appears in the Header Bar
• supervisory illuminates on the Alert Bar as a yellow color indicator and provides Supervisory event counts
• Illuminates the yellow off normal LED
• Displays supervisory and specific device information in the Events List
• Displays information on how to react to the event in the Instructional Text Area

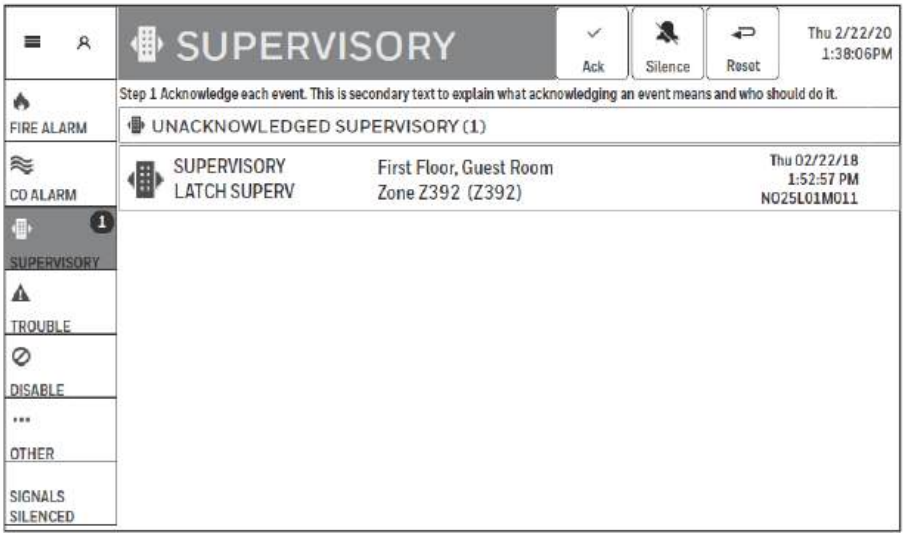



**Figure 4-14:** Supervisory Event Screen

### Responding to a Supervisory Event

• The Informational Text Area on the screen will indicate step by step what needs to be done to acknowledge and silence the event.
• Tap on the acknowledge touchpoint located in the Header Bar. The acknowledge touchpoint will be highlighted in blue. A check mark will appear next to the acknowledged event.
• Tap on the Silence touchpoint located in the Header Bar. The silence icon in the Alert Bar will illuminate yellow once the N16 is silenced. All silenceable will turn off.
• block acknowledge allows for multiple events to be acknowledged at once.
• Investigate and correct the condition that activated the Supervisory point.
• Once all the events have been acknowledged the blue highlight indicator will move from the acknowledge touchpoint to the silence touchpoint.
• For a non-latching event, the N16 will return to normal once the supervisory condition is corrected.
• For a latching event, tap on the reset touchpoint located in the Header Bar to return the N16 to normal.

## 4.18 DISABLED POINT

### Disabled Point Event

• Produces a pulsed audible sound
• Turns on the trouble Relay
• Disabled appears in the Header Bar
• Disabled illuminates in the Alert Bar as a yellow icon and indicated device event count
• Illuminates the yellow off normal LED
• Displays disabled and specific point information in the Event List
• Displays information on how to react to the event in the Informational Text Area

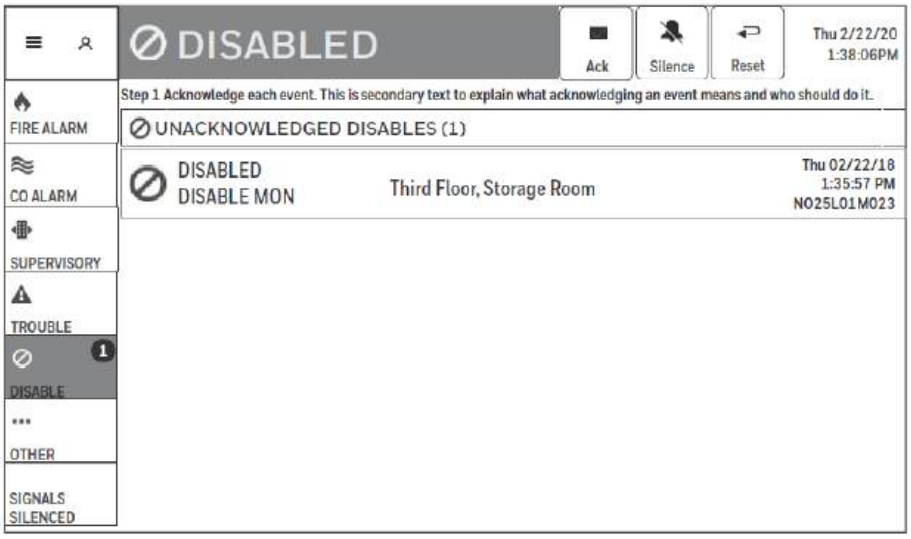



**Figure 4-15:** Disabled Point Screen

**Responding to a Disabled Point**

• The Informational Text Area on the screen will indicate step by step what needs to be done to acknowledge the event.
• Tap on the acknowledge touchpoint located in the Header Bar. The acknowledge touchpoint will be highlighted in blue. A check mark will appear next to the acknowledged event.
• Block acknowledge allows for multiple events to be acknowledged at once.

## 4.19 DRILL/FIRE DRILL

**NOTE:** When Regional Setting is set to Canada, Alert Bar will show the text, "Fire Drill". When set to any other setting, it will show "Drill".

**NOTE:** For this section, "Drill" is used to refer to "Fire Drill" as well.

Drill is used for activating selected outputs for testing. Complete the following step to activate the Drill feature:

• Press and hold "DRILL (HOLD)" for 2 seconds.
  - This produces a pulsed audible tone that turns on the trouble relay.
  - HON-CGW-MBB: "Manual Evacuation Initiated" signal is transmitted off-premises
  - HON-DACT-DS: Contact ID 330 signal will be transmitted off-premises

The following occurs when Drill is activated:
• TROUBLE flashes in the Header Bar
  - TROUBLE also appears in the ALERT BAR as a yellow indicator and provides TROUBLE event counts
• The OFF Normal LED turns yellow
• Alert Bar displays "Fire Drill Active" in yellow
• Displays TROUBLE and “MAN. EVAC INITIATED” in the Events List. Shown in  Figure 4-16: Trouble-Man Evac Initiatied Screen
• Displays information on how to react to the event in the Informational Text Area
• Turns on outputs that are selected to participate in Drill. SLC modules or PMB outputs can be selected
• Special Function Zone ZF16 will turn on

**NOTE:** If Alarm received during Drill, it is immediately ended. Alarms are then processed as normal. Signal Silence or a System Reset will also immediately end Drill.

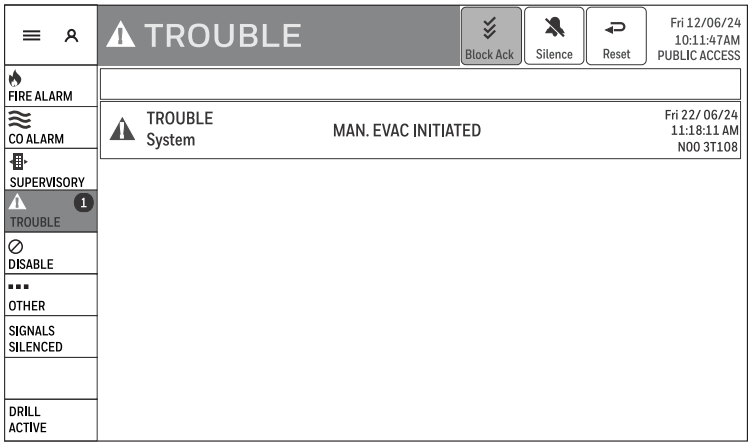



**Figure 4-16:** Trouble-Man Evac Initiatied Screen

## 4.20 ALARM SIGNAL ON

Alarm Signal ON is used for manually initiating a Fire Alarm from the control panel. Complete the following steps to initiate the fire alarm:

- Locate the "Alarm Signal ON (HOLD)" displayed on the Alert Bar.
- Press and hold for 2 seconds to activate.
  - A steady audible tone occurs.

The following occurs when Alarm Signal ON is activated:

- Fire Alarm appears in the Header Bar
- FIRE ALARM illuminates in the Alert Bar as a red color indicator and provides fire event counts
- The yellow Off Normal Event LED illuminates
- Displays FIRE ALARM displays and specific device information in the Events List, Shown in Figure 4-17: Alarm Signal ON Screen
- Displays information on how to react to the event in the Instructional Text Area
- Alarm will be off-premises (if off-premises communicator is employed)

**NOTE:** Alarm Signal ON requires additional hardware. A dedicated relay/ control module must be used, that is connected to the input of a monitor module

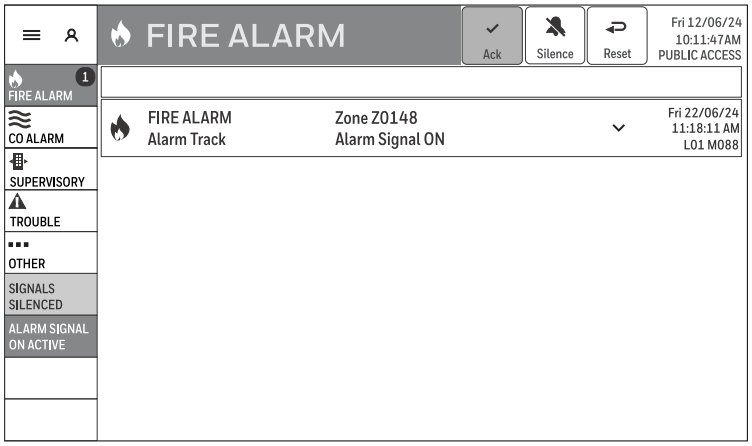



**Figure 4-17:** Alarm Signal ON Screen

**CAUTION: DO NOT** map the same zone in CBE, for both the relay/ control module and the monitor module. Outputs that are mapped to the same zone in CBE as the monitor modules zone will activate.

Configure the mapped relay/ control module as follows:

- Enter the relay/ control module address in the “Alarm Signal ON Control Module Address” field
- Select Silenceable – “Yes w/ Resound Fire”
- **For use in a mixed Onyx/ Inspire network:**– Enable Drill Participation for compatibility with Onyx

Configure the monitor module as follows:

- Configure with the “Alarm Tracking” type code
- Configure the custom label with text that is compliant for this type of event and jurisdiction

## 4.21 ABORT SWITCH ACTIVE

The following occurs when the Abort Switch is activated:

- The alert bar tile will turn yellow/ amber when any releasing zone on the local node is in the abort state or the cross abort state. See Figure 4-18: Abort Switch Active Screen
- Only valid for Agent Releasing zone

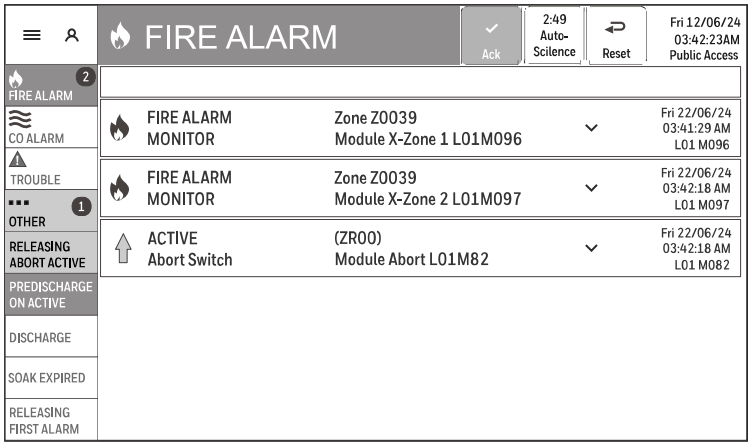



**Figure 4-18:** Abort Switch Active Screen

## 4.22 PRE-DISCHARGE

The following occurs when pre-discharge is activated:

- The alert bar tile will turn red when any releasing zone on the local node is in the pre-discharge state. It will remain lit during abort active. See Figure 4-19: Pre-Discharge Screen
- Only valid for Agent Releasing zones

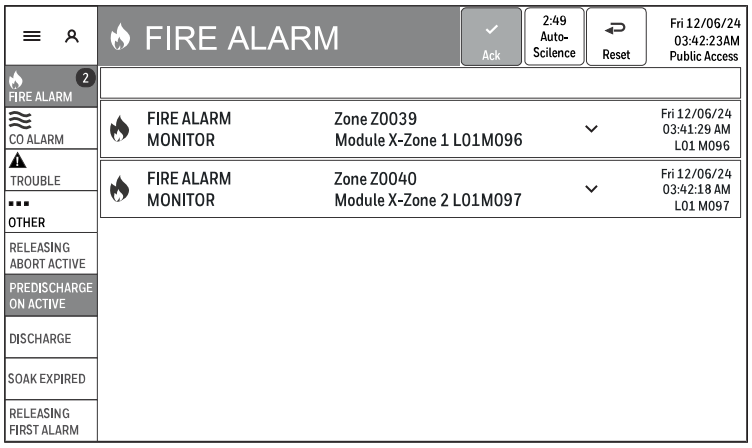



**Figure 4-19:** Pre-Discharge Screen

## 4.23 DISCHARGE

The alert bar tile will turn red when any releasing zone on the local node is in the discharge state. This indicator is applicable for both agent and water releasing zones.

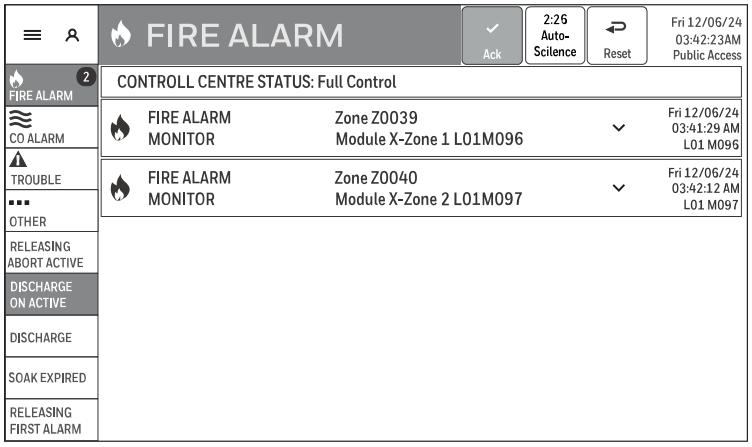
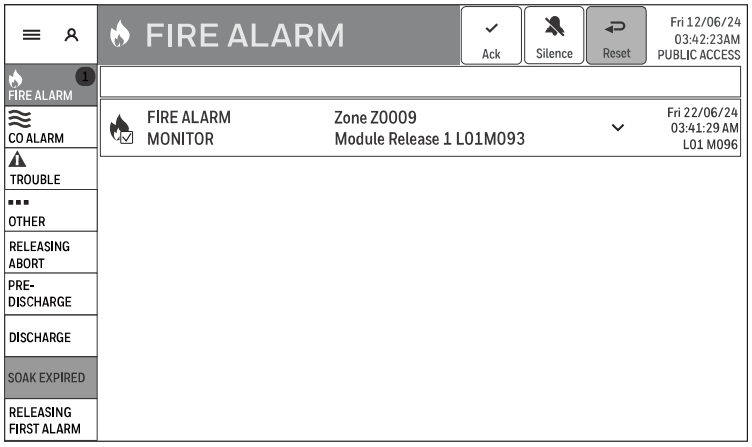



**Figure 4-20:** Discharge Screen

## 4.24 SOAK EXPIRED

The alert bar tile will turn yellow/ amber when any releasing zone on the local node is in the soak expired state. This indicator is applicable for both agent and water releasing zones.



## 4.25 FIRST ALARM

The alert bar tile will turn red when any releasing zone on the local node is in the first alarm of a Cross state. In IRI mode, it will remain lit when a zone is in the cross abort state. This indicator is applicable for both agent and water releasing zones.

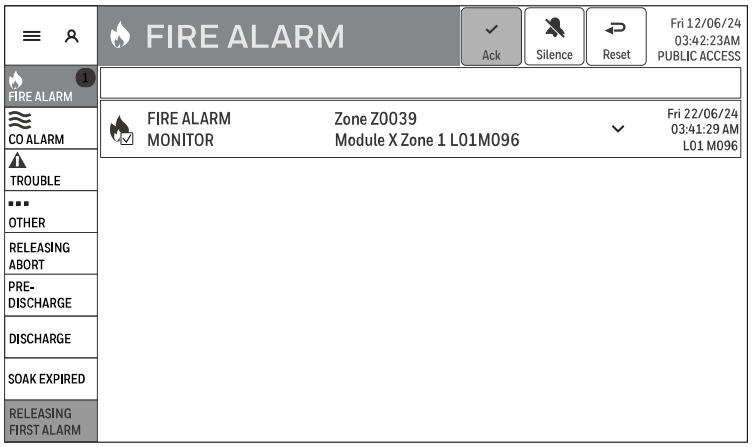



**Figure 4-21:** First Alarm Screen

## 4.26 DCC (DISPLAY AND CONTROL CENTER)

When the N16 FACP has DCC enabled, it can function as a node with control over one or more other nodes on its network. The purpose of DCC is to ensure that only one location at a time can be used to issue Acknowledge, System Reset, Signal Silence, Drill or Alarm Signal On commands. DCC also allows a user at another node to request, grant or deny control of other nodes based on user approval from the Control Center node, or due to a timeout. (A fire panel not monitoring other nodes is considered a display node for itself only.)

More than one DCC node may operate in a network, with each DCC commanding different nodes at a given time. However, any one node can only be commanded by a single DCC. DCC is enabled via VeriFire Tools and may be turned on or off by programming at each panel. The Remote Display Annunciator (RLD) and the Annunciator Control Module AMC-30 will automatically participate in DCC when connected to a N16 or NCD node that has DCC enabled.

**NOTE:** DCC is disabled by default. For Canadian applications, DCC should be enabled and may be disabled subject to AHJ approval.

### 4.26.1 THEORY OF OPERATION

Each DCC-enabled panel on the network employs a Control Center addressing scheme to identify itself and the device currently controlling it. When a node is not under control it is considered “up-for-grabs”, meaning the first node to have a human interaction will assume control. On power-up or system reset, all DCC nodes will be up-for-grabs.

### 4.26.2 ALARM EVENT EXAMPLE

In this example the user responds to an Alarm Event by initiating an Acknowledgement, Silence or Reset command. The following sequence occurs:

1. The initiating panel determines which nodes should receive a request to control command that corresponds to the user’s selected response.

2. The initiating panel attempts to gain command of all nodes in the network map that did not receive or accept the request.

3. If there has been human activity at the node receiving the request within the last two minutes, the request is communicated to the user who will be able to view the requested nodes which are currently commanded from the user’s location. The user has ten seconds to respond to the request.

4. After attempting to gain control, the node will indicate whether it has achieved full or partial control of the nodes in the network map. The user's initial event response shall re-issue the request for control if appropriate.

5. Two minutes after a non-alarm event, a panel may automatically assume control of itself.

**NOTE:** NOTE: In the presence of an alarm condition, a system reset is required. If the panel loses network communication or the node goes offline, the system resets with all uncontrolled nodes up-for-grabs.

### 4.26.3 DCC PARTICIPATION

To enable DCC for a node, use VeriFire Tools, General Settings/ Miscellaneous Setting to select Display and Control Center (checkbox). When unchecked, DCC is disabled so that the node does not participate in DCC functions via the Network Control Workstation.

**NOTE:** In Canadian applications, DCC should be enabled, and only disabled subject to AHJ approval.

**NOTE:** When DCC is enabled on an N16, it will be automatically enabled on any connected ACM-30 and RLD which shall then participate with the host panel.

**CAUTION:** ON FIRE SYSTEMS UTILIZING THE DCC FUNCTION, ALL LOCATIONS THAT CAN PARTICIPATE IN DCC SHOULD BE SET TO DCC ENABLED.

**Special Considerations:**

• Display and Control Center Paging setting allows the DVC to gain control of the network for any DVC operations. When DCC is enabled, the Enable Paging button is displayed on the panel screen for use with the associated DVC.

• Any node with DCC enabled or the Network Control Workstation may be employed as a DCC. If communication fails between the panels and the controlling node, panels will continue to function in local/ standalone mode.

• If the N16 or its connected RLD is in control of the network, Special Function Zone ZF36 for the panel will activate and remain active until a different node on the network is granted control. The ACM-30 monitor point maps to Special Function Zone ZF36 for every DCC-enabled node on the network so that every N16 will be able to show which node is in continuous control.

• A DCC participation setting allows ACM-30 or LDM to participate in DCC. This applies to both routers and peripherals. In VeriFire Tools, the DCC participation setting is under General Settings and applies to all inputs configured on the ACM-30 or LDM2-32/ 60 module. With DCC participation enabled, all button functions will participate in DCC. The node will attempt to obtain control of all online mapped nodes for any button press, and the command will only execute if control is gained. When DCC participation is not enabled for the ACM-30/ LDM, only Acknowledge/ Signal Silence/ System Reset/ Drill/ Alarm Signal functions will require control to execute. Other functions such as Control, Disable, Force On/ Off, etc., will operate without DCC. A popup window on the panel will appear when an ACM-30 button press causes a control request accompanied by a piezo chirp. The ACM-30 will be able to perform a local acknowledge of the piezo and flashing LEDs, programmable through VeriFire Tools (Ack Function in VFT under ACM programming).

### 4.26.4 DCC STATES

Use the following steps to request control and view status of the network nodes:

1. On power-up and after system reset, network nodes assume a status called "up-for-grabs" where no node is in control until a user initiates control by executing a command for Ack, Silence, Reset, Drill, Alarm Signal On or Point Control/ Disable.

2. After a successful command, a two-minute timer begins on the node. During that time, the screen shows the resulting status, whether the node is in Full Control, Partial Control or Not in Control of the network nodes.

**NOTE:** When the timer expires, the panel goes back to “up-for-grabs” mode. Note that the timer does not run during an alarm condition.

- **Full Control:** When all nodes in a display node's map are under its control or up-for-grabs, the display node will be in Full Control and display that status on the screen. Now in Full Control, when the user presses Ack, Silence, Reset, Drill or Alarm Signal On, all nodes under its control will be subject to the command. See Figure 4-22: Control Center Status-Full Control

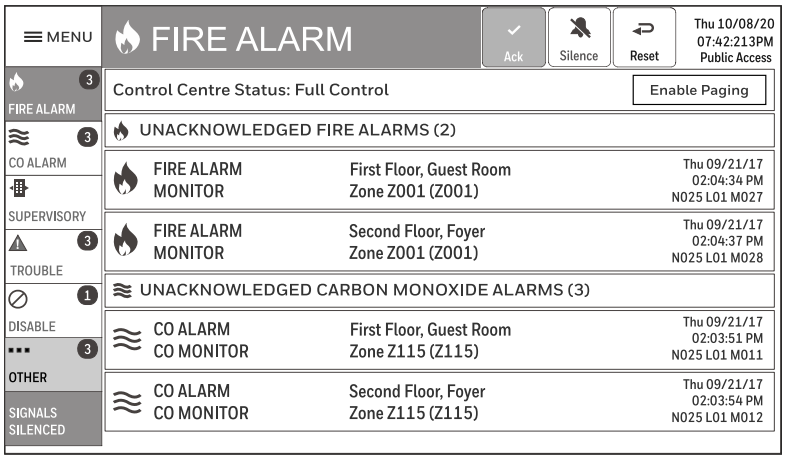



**Figure 4-22:** Control Center Status-Full Control

- **Partial Control:** When at least one node in a display node’s map is under its control but some nodes are up-for-grabs, offline, or under control of another node, the display node will be in Partial Control and display that status on the screen.
- **Not in Control:** When at least one node is up-for-grabs but some nodes are offline or not under its control, the display node will be Not In Control and will display that status on the screen.

3. With a display node in Partial Control or Not in Control, the user can request Full Control by pressing Acknowledge, Silence, Reset, Drill or Alarm Signal On. The following prompt appears: “Some or all nodes cannot be controlled. Attempt to request control and perform command? YES/ NO”.

**NOTE:** A NO response will cancel the request for Full Control.See image below.

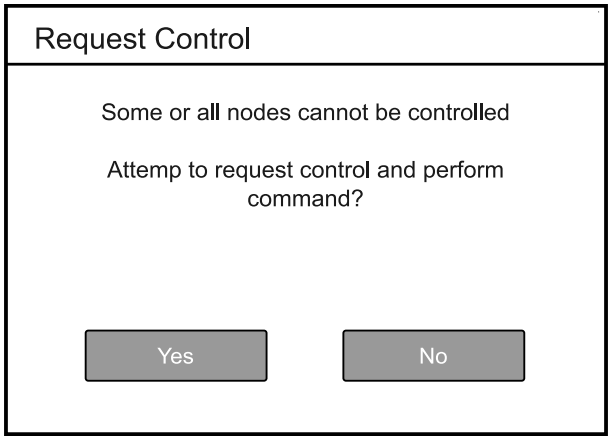



**Figure 4-23:** Request Control-NO

4. With a YES response, the panel will take control of nodes that are up-for-grabs. Any node under control of another node will be sent a request for control.

5. A 10-second timer begins and a progress indicator will display.

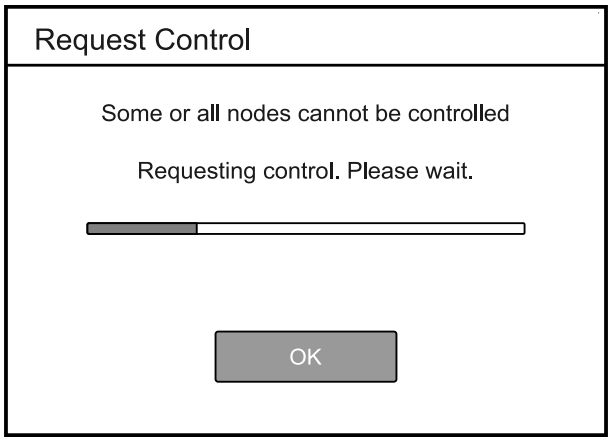



**Figure 4-24:** Request Control-Yes

6. Upon receiving the request for control, a controlling node is shown the panel label of the requesting node, e.g., “Node 125” and prompts the user to grant or deny control to the requesting node.

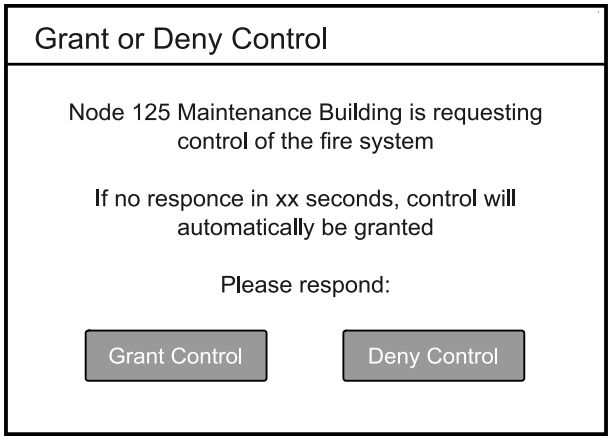



**Figure 4-25:** Grant or Deny Control

7. The dialog persists for 10 seconds. After 10 seconds, or when a response has been received for all requested nodes (whichever comes first):

- If no response was received from the controlling node, the requesting node will automatically assume control and then issue the user’s original command.
- For any denied requests for control, the requesting user will be shown that one or more nodes denied the request for control. The user’s original command will be issued to any node where control was taken.

**NOTE:** Any denials of control will be recorded in history as long the timer is running.

### 4.26.5 DCC CONTROL STATUS

Mapped nodes enabled with DCC can request control of nodes on its network by performing an Acknowledge, Silence, Reset, Drill or Alarm Signal On command. The following image and paragraphs below explain the DCC status and control fields.

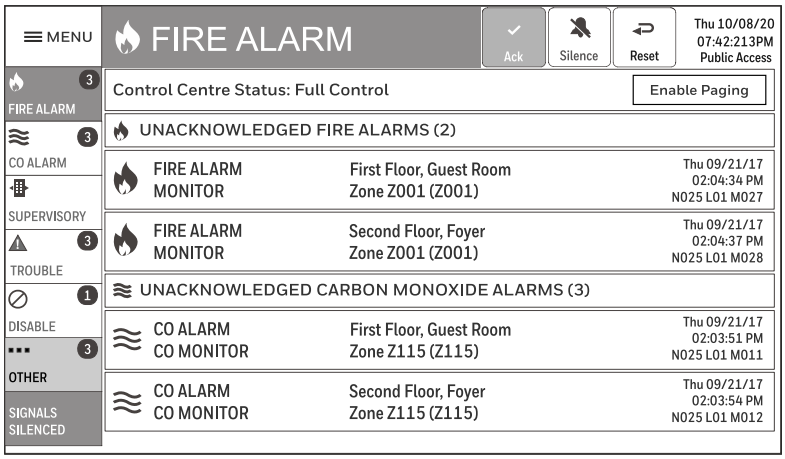



**Figure 4-26:** DCC Panel Display

- ACM-30 displays the DCC status using the Special Function Zone ZF36.
- DCC Status of all network nodes can be displayed by N16 navigating to the Network Mapping screen.
- ACM-30 displays the node's DCC status using the Special Function Zone ZF36.
- Read Status of Special Function Zone ZF36 is supported and will be active if the panel is in control.
- All control changes for a mapped node will be logged in history.

**NOTE:** At each DCC node, an ACM-30 point should be mapped to special-function zone NxZF36 (where "N" is each node number), to show which node is in control at any one time.

**NOTE:** DCC will not block Alter Status via Custom Buttons, FEL expansion, and Menu Tree Navigation.

### 4.26.6 DVC (DIGITAL VOICE CONTROL) PAGING

#### DVC Page Inhibit

When the DVC's associated N16 node is in control, DVC will allow paging. Otherwise, paging will be inhibited. To gain control for paging, use either the Enable Paging button on the associated Inspire display or an ACM-30 button mapped to control ZF36 on the associated Inspire node.

To enable the Page Inhibit feature:

- Select a logic zone in the DVC and and program it as ZLxxxx(NOT(NxxxZF36)) where Nxxx is the node number of the Inspire Node associated with that DVC.
- Enable Page Inhibit on the DVC with ZLxxxx programmed as the Page Inhibit Logic Equation.

**NOTE:** The DVC-KD Inhibit DVC setting does not need to be enabled since it does not affect the page button on the DVC-KD.

#### DVC Page Enable

The Enable Paging button on the panel display allows the panel to take control of the DVC so that commands may be initiated from DVC.

- Each DVC must be associated with a different N16 node that is set in DVC programming with an Associated Node Number. The DVC's associated node needs to have ZF36 active for the DVC to have control of its KD.

**NOTE:** If live voice paging is active at one location and the Enable Paging button is pressed at a second location, the live page should be terminated before granting control to the second location.

# SECTION 5: FIRMWARE UPDATE

Firmware updates can be found at www.securityandfire.honeywell.com/ notifier/ en-us. Once the update process is compete check that the firmware build number and file name match. This is found on the About screen and listed for each component.

Note that the USB C port is not supported at this time.

## 5.1 FIRMWARE UPDATE PROCEDURES

Tap the about touchpoint to access the system update screen, model information, application information, boot, kernel information, M4(Co-processor) information, hardware version, database information, loop information, update loops application, serial number, AIO software versions and Network HS-NCM versions. The About Screen includes multiple sections with a scroll bar touchpoint on the right side of each section. Tap and hold on this touchpoint to scroll up or down between the section. Tap the SYSTEM UPDATE touchpoint to access all update capabilities. To update a specific application, tap on that particular application. Tap on PREFORM UPDATE to complete the update.

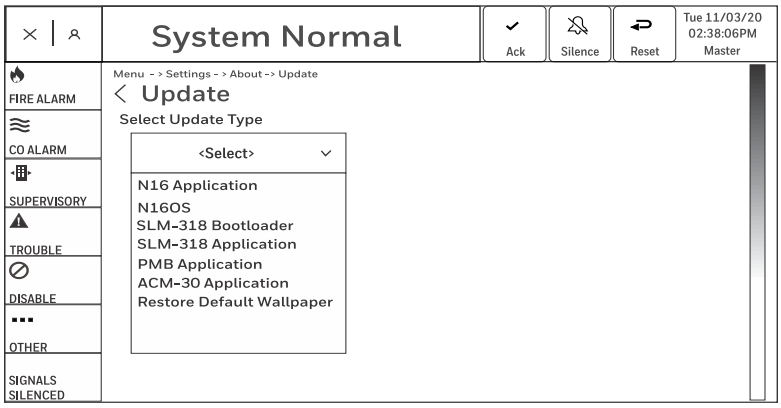



**Figure 5-1:** System Update Screen

**System Update** The user must be logged into the FACP as either a level 4 or 5 User to perform a system update. Move/ copy the appropriate firmware update image (name.sys) to a USB A flash drive. Insert the USB A memory drive to the USB port on the Core board (J11) of the FACP. Select from the following update types: N16 APPLICATION, N16 OS, SLM BOOTLOADER, SLM APPLICATION, PMB APPLICATION, ACM-30 APPLICATION and RESTORE DEFAULT WALLPAPER.

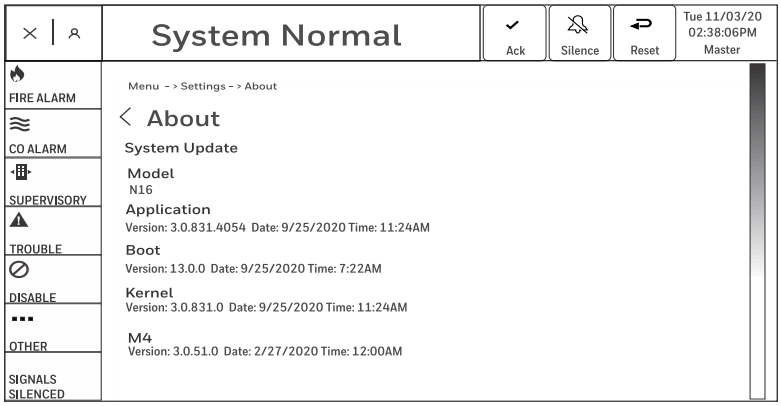



**Figure 5-2:** N16 System Update Screen

**NOTE:** The system will copy the image to flash and reboot running the new image. Do not power down the system during this time.

**Updating the N16** When updating the N16 the user should connect the flash drive with the update file on it to the N16 via the USB A port located on the Core Board. The update for the N16 must be initiated from the either the N16 or the NCD and will require a file with a .sys extension.

**Updating the NCD** When updating the NCD the user should connect the flash drive with the update file on it to the NCD via the USB A port located on the Core Board. The update for the NCD must be initiated from either the NCD or the N16 and will require a file with a .sys extension.

**Update Loops** Tap the UPDATE APPLICATION touchpoint to update all attached loop devices with resident application software. Tap the UPDATE BOOT touchpoint to update all resident loop devices with the resident boot software.

**Updating the SLM-318** A SLM-318 firmware update can be imitated from the N16 or the NCD using a flash drive connected to the USB A port located on the Core Board. Alternately the SLM-318 can be updated from VeriFire Tools. The SLM-318 firmware update will require a file with a .slmboot or .slm file extension. Update

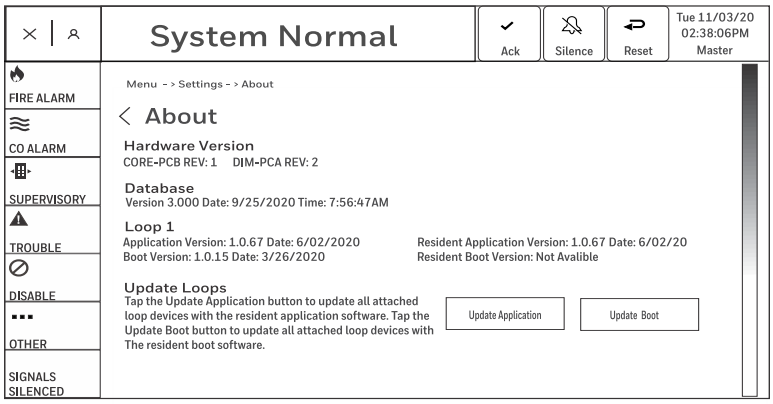



**Figure 5-3:** Update Loops Screens

**Update Power Supplies** Tap the UPDATE APPLICATION touchpoint to update all attached power supplies with the resident application software.

**Updating the PMB** A PMB firmware update can be initiated from the N16 or the NCD using a flash drive connected to the USB A port located on the Core Board. Alternately, the PMB can be updated via Veri- Fire Tools. The PMB firmware update will require a .pmb file extension.

**AIO Software Versions** Tap the AIO Software Versions touchpoint to view connected AIO devices on both the internal and external AIO bus. Tap the Resident Version touchpoint to view connected AIO devices resident application version. Tap the UPDATE (relevant connected AIO device) touchpoint to update all connected AIO devices of that particular type.

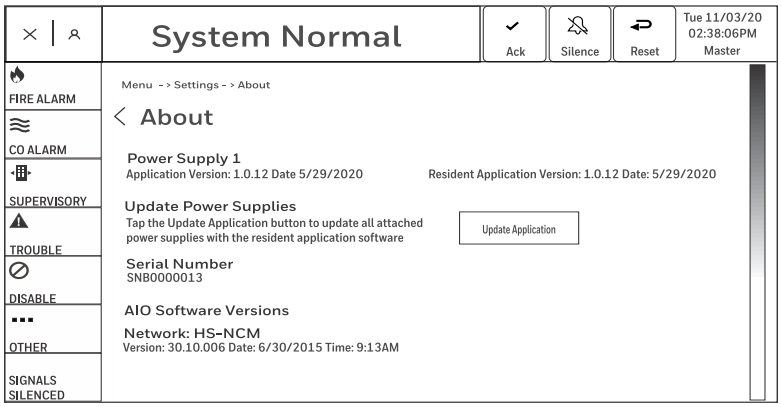



**Figure 5-4:** Update Power Supplies Screen

**CAUTION: RISK OF EQUIPMENT DAMAGE**
THE ACM-30 FIRMWARE MUST BE UPDATED BEFORE UPDATING THE N16 OR NCD FIRMWARE.

# SECTION 6: TESTING/MAINTENANCE

When installation and programming is finished, conduct a complete operational test on the entire installation to verify compliance with applicable NFPA standards. Testing should be conducted by a factory-trained fire alarm technician in the presence of a representative of the Authority Having Jurisdiction and the owner's representative. Follow procedures outlined in NFPA Standard 72's section on Inspection, Testing and Maintenance.

**NOTE:** Use 0 (zero) ohm impedance when testing wire-to-wire faults

**CAUTION:** Zone Diable/ Enable
When a zone is disabled, any input and output devices mapped to the zone are disabled if the zone is the point's primary zone. (The primary zone is the zone in the first position of the zone map). When a disabled output is enabled, it will be affected by conditions pre-existing in the system. When a condition exists in the system that would normally turn the output on, the output will turn on when it is enabled.

**WARNING:** Physically disconnect releasing devices.
Do not rely on disable/ enable software settings to lock out releasing devices.

**Disable/Enable Points or Zones**

Points or zones can be disabled for testing or maintenance via the Point Information Menu in VeriFire Tools. Refer to VeriFire Tools help files for more information.

**Disable/Enable**

Choose enable or disable to either enable or disable an installed, programmed point or enable a previously disabled point.

**Group Zone Disable**

Disabling a general zone will disable all devices with that zone programmed in the first zone map position.

When a point associated with a FAAST device is disabled, all 5 detector addresses programmed for the device will be disabled.

## 6.1 PERIODIC TESTING AND SERVICE

Periodic testing and servicing of the control panel, all initiating and notification devices and any other associated equipment is essential to ensure proper and reliable operation. Test and service the control panel according to the schedules and procedures outlined in the following documents:

• NFPA Standard 72's section on Inspection, Testing and Maintenance.
• Service manuals and instructions for the peripheral devices installed in the system. Correct any trouble condition or malfunction immediately. • Drill: Use the Drill Participation Setting to activate all silenceable outputs and NACs. Press and hold the Drill key for 2 seconds. During a drill the panel will turn on all silenceable NACs and sends a Manual Evacuate message to the History Buffer and installed printers. The outputs stay on until system reset/ system silence or a higher priority event comes in.
• Lamp Test: Use the Lamp Test function to test the control panel LEDs and panel sounder. Activated through the GUI. The panel will light all control panel LEDs, turn on the panel sounder and light all segments of the Graphic Display.

## 6.2 OPERATIONAL CHECKS

Before proceeding: a) notify the fire department and the central alarm receiving station if transmitting alarm conditions; b) notify facility personnel of the test so that alarm sounding devices are disregarded during the test period; and c) when necessary, disable activation of alarm notification appliances and speakers to prevent their sounding.

• Check that the green POWER LED is illuminated.
• Check that the off normal LED is off, that there are no active events on the system and that there are no active alert bar indicators.

• Tap the LAMP TEST touchpoint to turn on all pixels on the screen. This will illuminate the entire screen as well as the AC Power and Off Normal LED for approximately four seconds. During this time a tone will sound. A black spot on the screen will indicate that a pixel is out. Verify that all LEDs and all Graphic Display segments work.
• Activate an Initiating Device Circuit using an alarm initiating device or an addressable initiating device on the SLC and check that all programmed active notification appliances function. Reset the alarm initiating device, the control panel and any other associated equipment. In voice alarm applications, confirm that the proper tone(s) and/ or messages sound during alarm conditions. Select the paging function and confirm that the message can be heard in the affected fire zones. Repeat the above step with each Initiating Device Circuit and each addressable device.
• On systems equipped with a fire fighter's telephone circuit, make a call from a telephone circuit and confirm a ring tone. Answer the call and confirm communication with the incoming caller. End the call and repeat for each telephone circuit in the system.
• Remove AC power, activate an Initiating Device Circuit through an alarm initiating device or an addressable initiating device on the SLC and check that programmed active notification appliances sound and alarm indicators illuminate. Measure the battery voltage with notification appliances active. Replace any battery with a terminal voltage less than 21.6 VDC and reapply AC Power.

**NOTE:** The battery test requires fully charged batteries. If batteries are new or discharged due to a recent power outage, allow the batteries to charge for 48 hours before testing.

• Return all circuits to their pretest condition.
• Check that the off normal LED is off and the green POWER LED is on.
• Notify fire, central station and/ or building personnel when you finish testing the system.

**Figure 6-1:**

Step 1. Disconnect the SLC channel B (Out) and SLC channel A (Return) at the control panel.
Step 2. Measure and record the resistance at SLC Out.
Step 3. Measure and record the resistance at SLC Return.

The minimum resistance is the lesser of two and three.

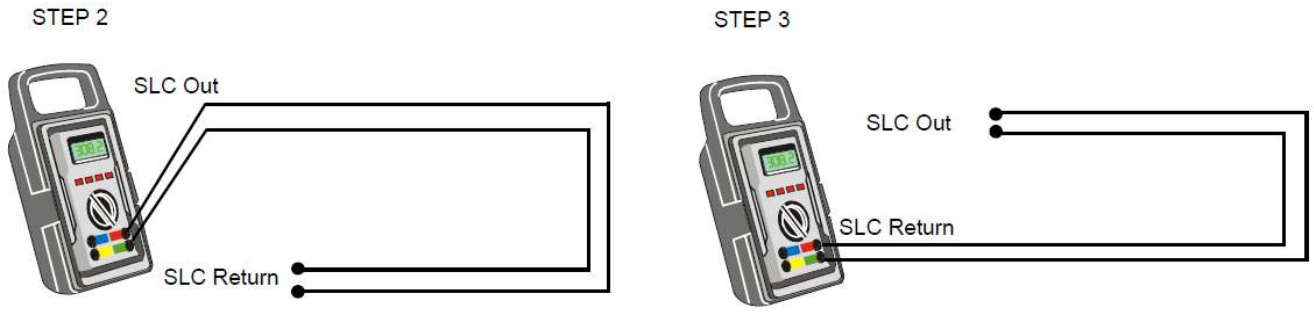



**Figure 6-2:** Measuring DC Resistance on an Unpopulated SLC Loop

## 6.3 BATTERY CHECKS AND MAINTENANCE

Maintenance-free sealed lead-acid batteries used in the system do not require the addition of water or electrolyte. These batteries are charged and maintained in a fully charged state by the main power supply's charger during normal system operation. A discharged battery typically reaches the voltage of 27.6 VDC within 48 hours; the charge rate depends on the battery size (1 amp for 7-26AH, 2 amps for 33-55AH, 4.25A for 100AH).

Sealed lead-acid batteries must be replaced within at most 5 years from their date of manufacture. Minimal replacement battery capacity appears on the control panel marking label. Immediately replace a leaking or damaged battery. Replacement batteries are available from the manufacturer.

**WARNING: SULFURIC ACID**
BATTERIES CONTAIN SULFURIC ACID WHICH CAN CAUSE SEVERE BURNS TO THE SKIN AND EYES AND DAMAGE TO FABRICS

If a battery leaks and contact is made with the Sulfuric Acid, immediately flush skin and/or eyes with water for at least 15 minutes. Water and household baking soda provides a good neutralizing solution for Sulfuric Acid.

- If Sulfuric Acid gets into eyes, seek immediate medical attention.
- Ensure proper handling of the battery to prevent short circuits.
- Take care to avoid accidental shorting of the leads from uninsulated work benches and items such as tools, bracelets, rings and coins.

**WARNING: EQUIPMENT DAMAGE**
SHORTING THE BATTERY LEADS CAN DAMAGE THE BATTERY, THE EQUIPMENT AND COULD CAUSE INJURY TO PERSONNEL.

The following battery derating factor must be used for Canadian installations that require a ULC - S559 3rd ed. listing:

For 101-210 Ah capacity, use a derating factor of 1.35.

# APPENDIX A: ELECTRICAL SPECIFICATIONS

## A.1 POWER

### A.1.1 PRIMARY POWER SOURCES

The N16 uses the PMB power supply. The PMB provides a total of 6A of power in standby and 8.5A in alarm. It charges 7-210Ah sealed lead-acid batteries with PMBNL-PCB Rev B or later generation (initial release PMBNL-PCA charged 7-100 Ah). Before connecting the batteries, chec the AC power to the system. Use the table below as a guide for checking AC power.

**Table A.1** AC Power Guidelines

| Component | Status |
|---|---|
| Core/ PMB | The green power LED will illuminate when power is coming from the main power supply. The yellow trouble indicator will illuminate until the batteries are connected. |
| Each auxiliary power supply | The yellow off normal indicator will illuminate because batteries are not connected. |

**CAUTION: Risk of Equipment Damage**
While checking power, make sure batteries are not connected.

### A.1.2 SECONDARY POWER SOURCES

Batteries provide +24 VDC secondary (backup) power. Batteries can be installed in the fire panel cabinet or in an optional battery backbox.

All wiring must be encased in conduit. A secondary power source is required to support the system during primary AC loss.

**NOTE:** If using multiple power supplies with one set of batteries, refer to "Connecting AC Power and Batteries to Multiple PMBs" on page 19.

### A.1.3 EXTERNAL POWER SIZE

Additional power can be provided via auxiliary power +24 VDC power supplies that are UL/ ULC-listed for fire protective service. For additional information on connecting auxiliary power supplies, follow connection procedures specified in the auxiliary power supply manual.

**Table A.2** System Power

| AC Voltage | AC Current | Max. AH Capacity | Max. Standby Current | Max. Alarm Current | Max. Standby Time | Max. Alarm Duration |
|---|---|---|---|---|---|---|
| 120VAC, 50/ 60 Hz | 2.5A | 210 (PMBNL-PCB, Rev B or later) | Refer to Appendix A: Electrical Specifications . | 8.5 A | Refer to Appendix A: Electrical Specifications . | |
| 240VAC, 50/ 60 Hz | 1.25A | | | | | |

### A.1.4 SYSTEM POWER SIZE

**Table A.3** System Size

| Accessories/ Subassemblies/ Networked panels | Maximum System Capacity |
|---|---|
| Monitor and Control Modules | 159 per loop, up to 1,590 total in FlashScan; 99 per loop, up to 990 in CLIP |

| Accessories/ Subassemblies/ Networked panels | Maximum System Capacity |
|---|---|
| Detectors | 159 per loop, up to 1,590 total in FlashScan; 99 per loop, up to 990 in CLIP |
| Signaling Line Circuits (SLC) | 10 |
| N16 Fire Alarm Control Panel | High-Speed Noti•Fire•Net - 200 NodesNoti•Fire•Net - 103 Nodes. 54 nodes when DVC is used in network paging. |

### A.1.5 MAXIMUM BATTERY STANDBY LOADS

**Table A.4**
Maximum Battery Standby Loads for 24 Hour Standby on the PMB Power Supply

| PMBNL generation | Battery Capacity (Ah) | Max. Standby Load (A) @Alarm Time (Min) | | | | |
|---|---|---|---|---|---|---|
| | | 5 | 10 | 15 | 20 | 30 |
| All PMBNL-generations | 7 | 0.118 | 0.089 | N/A | N/A | N/A |
| | 12 | 0.285 | 0.255 | 0.225 | 0.196 | 0.136 |
| | 18 | 0.485 | 0.455 | 0.425 | 0.396 | 0.336 |
| | 26 | 0.752 | 0.722 | 0.692 | 0.662 | 0.603 |
| | 33 | 0.985 | 0.955 | 0.925 | 0.896 | 0.836 |
| | 75 | 2.385 | 2.355 | 2.325 | 2.296 | 2.236 |
| | 100 | 3.218 | 3.189 | 3.159 | 3.129 | 3.069 |
| PMBNL-PCB Re B and later generations | 120 | 3.885 | 3.855 | 3.826 | 3.796 | 3.736 |
| | 140 | 4.552 | 4.522 | 4.492 | 4.462 | 4.403 |
| | 200 | 6.100 | 6.100 | 6.100 | 6.100 | 6.100 |
| | 210 | 6.100 | 6.100 | 6.100 | 6.100 | 6.100 |

**Table A.5** Standby Current Available at Different Settings

| | PMB Charger Setting | | | | |
|---|---|---|---|---|---|
| | No Charger | Low Charger (1A) | Medium charger (2A) | High charger (4.25A) | Ultra High charger (5.55A) |
| Max battery size supported | | 26Ah | 55Ah | 100Ah | 210Ah |
| Charging current used | 0 | 1A | 2A | 4.25A | 5.5A |
| Normal Standby current available (from a single PMB) | 6A | 6A | 5.5A | 3.25A | 2A |
| Max Alarm current | 8.5A | | | | |

**Table A.6** Maximum Battery Standby Loads for 90 Hour Standby on the PMB Power Supply (Not Required by UL)

| Alarm Time (Min) | | | | | |
|---|---|---|---|---|---|
| **Battery Capacity** | **5** | **10** | **15** | **20** | **30** |
| 100 | 0.873 | 0.857 | N/A | N/A | N/A |
| 120 | 1.051 | 1.035 | 1.019 | 1.004 | 0.972 |
| 200 | 1.762 | 1.746 | 1.731 | 1.715 | 1.683 |
| **210** | 1.851 | 1.835 | 1.819 | 1.804 | 1.772 |

## Open/Short/Ground Trip Values

The following tables provide the open/ short/ ground trip values for applicable FACP circuits.

**Table A.7** Ground Fault Trip Values

| Board | Terminal | Trip Resistance (in ohms) | Restore Value (in ohms) |
|---|---|---|---|
| SLM-318 | TB1 - B+ | 26, 000 | 27, 000 |
| SLM-318 | TB1 - A+ | 57, 000 | 59, 000 |
| SLM-318 | TB1 - B- | 110, 000 | 120, 000 |
| SLM-318 | TB1 - A- | 120, 000 | 140, 000 |
| CORE-2 | External AIO Bus +/ - | 240,000 | 300, 000 |
| CORE-2 | Internal AIO Bus +/ - | 240,000 | 300, 000 |
| PMB | AUX Power 1 - Class A/ B +/ - | 250, 000 | 400, 000 |
| PMB | AUX Power 2 +/ - | 340, 000 | 450, 000 |
| PMB | NAC + | 50, 000 | 70, 000 |
| PMB | NAC - | 225, 000 | 240, 000 |

**Table A.8** Open/ Short Trip Values

| Board | Terminal | Trip Resistance (in ohms) | Restore Value (in ohms) |
|---|---|---|---|
| PMB | NAC 1-4 | Shorts below: 1,200 | 1,700 |
| PMB | NAC 1-4 | Opens above: 60,000 | 20,000 |
| PMB | AUX1-Class A, +/ - | Opens above: 220,000 | 100,000 |

# A.2 SLM-18 SLC LOOP CARD

The SLM-318 is a SLC loop card that offers additional device capacity for the N16 Series Fire Alarm Control Panels. Each card can support 318 points when operated in FlashScan protocol, and 198 devices when operated in CLIP protocol.

Refer to the *SLM-318 Product Installation Document (LS10243-000GE-E)* for more information on the SLM-318.

### A.2.1 SLM-318 CONNECTIONS

Note the following when installing the SLM-318 boards.

• The SLM-318 can be mounted adjacent to the fire panel CPU or below in a secondary chassis within the same enclosure. Mounting multiple loop modules in one chassis position may cause intermittent electrical interference. If this occurs, move one to a separate chassis position.
• Set switches and other board settings before layering other boards on top.
• Each SLM-318 should be assigned a unique SLC loop number (1-10) but does not have to match the module's location in the daisy chain.
• Up to ten (10) SLM-318 cards can be installed on the fire panel with a maximum of five (5) SLM-318 cards per PMB power supply.
• If programmed for CLIP mode, do not install more than 198 devices on the loop.

Refer to the *SLM-318 Product Installation Document (LS10243-000GE-E)* for more information. Refer to the Notifier Device Compatibility Document (15378) for a list of compatible Notification Appliances and Releasing Circuits. Refer to the *SLC Wiring Manual (51253)* for SLC devices that are compatible with the N16. For NAC applications, NAC support is provided via the PS Series power supplies, the ACPS-610 power supply, and the PMB-AUX power supplies. Refer to documents provided with these products for NAC application information.

**Table A.1** SLM-318 Connections

| Terminal Block/ Connection | Description | Specification |
|---|---|---|
| TB1 | SLC Connection | 24VDC<br>Alarm 210mA<br>Class B/ A/ X<br>Standby 159mA<br>Power-Limited (Class 2)<br>Supervised<br>50 ohms Maximum |
| J3 | CLP Board Connection | Carry RS-485 data and internal 24V power to the SLM-318 loop cards and the core board on the N16 CPU assembly<br>PMB power supplies use only the RS-485 data |
| J4 | CLP/ PMB Board Connection | Carry RS-485 data and internal 24V power to the SLM-318 loop cards and the core board on the N16 CPU assembly<br>PMB power supplies use only the RS-485 data |

**Table A.2** SLC Wiring and Voltage

| Item | Value |
|---|---|
| Voltage | 24 VDC nominal, 27.6 VDC maximum |
| Maximum length | The maximum wiring distance of an SLC using 12 AWG (3.25 $mm^2$) twisted-pair wire is 12,500 ft. (3810 m).<br>Note: Refer to "PMB Wiring Connections" on page 131 for limitations. |
| Maximum current | Standby 159mA, Alarm 210mA, (power limited) |
| Maximum resistance | 50 ohms (supervised and power-limited). For additional notes on SLC resistance values, see "Operational Checks" on page 122. |

### A.2.2 SELF-TEST DETECTOR FUNCTION ON THE SLC

The SLM-318 is capable of supporting up to 159 Self Test Detectors. When Self-Test Detectors are installed on the SLM-318 and a self test is being performed the voltage on the SLC Loop will increase to 29.5VDC +/-5% (28.0-30.98VDC). Note: when the SLC loop is polling normally (no self-test in process or activated devices), the voltage will vary between 24VDC, 0VDC and 5VDC so when reading the voltage with a meter you will read the average of 12.5-13.5VDC +/-5%.

**CAUTION:** LOOP POLLING
Inerruption When the FACP is performing a self test the devices on the loop will not poll.

**NOTE:** When the FACP is using back up battery power a self test will not be performed.

**WARNING:** DISCONNECT ALL POWER SOURCES
Remove all power sources to equipment while connecting electrical components. Leave external, main power breaker off until installation of the entire system is complete. Several sources of power can be connected to the control panel before servicing the control panel. Disconnect all sources of input power including the battery. While energized, the control panel and associated equipment can be damaged by removing and/ or inserting cards, modules, or interconnecting cables.

## A.3 NOTIFICATION APPLIANCE CIRCUITS

The N16 includes a PMB power supply which contains four power limited class 2 notification appliance circuits rate at 24VDC, 1.5A. If additional NACs are needed the PMB-AUX can be added, each providing four more NACs.

- Special applications Class A/ B NAC power, Class D door holder power, special applications Class A/ B aux power, UZC
- 24VDC, 150mA Regulated Class A/ B NAC power
- 2.8 ohm max line impedance

## A.4 WIRING CONNECTIONS AND SWITCHES

The following table describes the wiring connections and switches on the N16 Core Board. Refer to the *SLM-318 Installation Document (LS10243-000GE-E)* and the *PMB-AUX Installation Document (LS10242-000GE-E)* for more information on wiring connections and switch settings on these boards.

**Table A.1** N16 Core Wiring Connections and Switches

| Terminal Block/ Connector on Core Board | Description | Specifications |
|---|---|---|
| TB2 | Trouble Relay | • 30 VDC<br>• 2A, 0.35 PF<br>• Non-power-limited<br>• Form C dry contact |
| TB3* | Printer Connection (for supplemental use only) | • Power-limited (Class 2)<br>• Supervision of end to end communication<br>• Isolated printer connection (left side)<br>• Equipment must be located in the same room within 20 feet of the panel with cables in conduit |
| TB4 | Internal AIO Bus | • Characteristic impedance: 120 ohms<br>• Supervised<br>• Power-limited (Class 2)<br>• A maximum of 80 annunciator devices can be connected to the system. Up to 10 annunciators can be configured as routers, each supporting 15 additional annunciators<br>• Long Line Resistance: 100 ohms<br>• Class B only |

| Terminal Block/ Connector on Core Board | Description | Specifications |
|---|---|---|
| TB5 | External AIO Bus | • Characteristic impedance: 120 ohms<br>• Supervised return<br>• Power-limited (Class 2)<br>• A maximum of 80 annunciator devices can be connected to the system. Up to 10 annunciators can be configured as routers, each supporting 15 additional annunciators<br>• Wiring Distances:<br>- Class B max wiring distance at 16AWG of 6,000ft from FACP to last annunciator (subject to system power restrictions)<br>- Class A max wiring distance at 16AWG of 200ft between FACP end points (A to B) (subject to system power restrictions)<br>• Class B Long line resistance: 100 ohms<br>• Class A Long line resistance: 2 ohms |
| J1 | OCuLink Connection | • To display (DIS-10-RD) |
| J7 | Trouble Input | • Dry contact |
| J8 | Tamper Input | • Dry contact |
| J10 | Network Service Connection (NUP) | • Power-limited (Class 2)<br>• Supervised<br>• Must be in cabinet located in the same room within 20 feet of the panel with cables in conduit |
| J11 | USB A | • Used to connect flash drive for firmware upgrades and history exports to a USB. |
| J12 | USB B Micro | • Used to connect VeriFire Tools |
| J15 | PMB Connection | • RS-485 Interface to panel<br>• 24V power IN, 6A max<br>• Alarm Bus<br>• Sync Bus<br>• CLP Bus terminated on core board |
| J16 | CLP Bus Connection | • RS-485 Interface to panel<br>• 24V power OUT, 6A max<br>• Alarm Bus<br>• Sync Bus<br>• CLP Bus terminated on core board |
| SW1 | Termination In/ Out switch for External AIO bus, A-side<br>Note: Must be set to IN position for CLASS A wiring | • Default: Class B |
| SW2 | Termination In/ Out switch for External AIO bus, B-side | • Default Class B |

The following table describes the wiring connections and switches on the PMB. Refer to the *SLM-318 Installation Document (LS10243-000GE-E)* and the *PMB-AUX Installation Document (LS10242-000GE-E)* for more information on wiring connections and switch settings on these boards.

Table A.2 PMB Wiring Connections

| Terminal block/ Connector Switch on PMB | Description | Specification |
|---|---|---|
| TB2 | NAC 1 and NAC 2 | • Power-limited (Class 2)<br>• 24VDC, 1.5 Amps per circuit NAC special applications (20.03 - 27.96)<br>• Class A/ B NAC power, Class D door holder power, UZC<br>• 24VDC, 150 mA Regulated Class A/ B NAC power<br>• 2.56 ohm max wire loop resistance at 1.5A<br>• Voltage drop 3.84V using 12-18AWG at alarm current level<br>• 24VDC, 2.0 Amps Releasing Special Applications (19.8-25.8) (with PMBNL-PCB Rev B or later generation, NAC configured as AUX)<br>• End-of-Line Resistor 2.2K 1/ 2 W (ELR-2.2K)<br>• Class B, Aux 2.0 A Special Applications |
| TB3 | NAC 3 and NAC 4 | • Power-Limited (Class 2)<br>• 24VDC, 1.5 Amps per circuit NAC special applications (20.03 - 27.96)<br>- Class A/ B NAC power, Class D door holder power, UZC<br>- 24VDC, 150 mA Regulated Class A/ B NAC power<br>• 2.56 ohm max wire loop resistance at 1.5 Amps<br>• Voltage drop 3.84V using 12-18AWG at alarm current level)<br>• 24VDC, 2.0 Amps Releasing Special Applications (19.8-25.8) (with PMBNL-PCB Rev B or later generation, NAC configured as AUX)<br>• End-of-Line Resistor 2.2K 1/ 2 W (ELR-2.2K)<br>• Class B, Aux 2.0 A Special Applications |
| TB6 | Remote Sync Input | • Power-limited (Class 2) |
| TB7 | Aux Power 1/ Aux Power 2 | • Aux Power 1<br>- 24VDC, Class A/ B (defaults to Class B) (EOLR-1 required for Class B Aux Power monitoring)<br>- Power-limited (Class 2)<br>- Releasing in conjuction with FCM-1-REL-2.0 A Special Applications (20.04-25.72)<br>- Resettable with a 30 sec timer/ Non-Resettable<br>• Aux Power 2<br>- 24VDC, defaults to Class B (EOLR-1 required for Class B Aux Power monitoring)<br>- Power-limited (Class 2)<br>- Releasing 2.0 A Special Applications (19.71-25.67)<br>- Resettable with a 30 sec timer/ Non-Resettable |
| TB8 | AC Power Connection | • 2.5A, 120VAC, 50/ 60 HZ; 1.25A, 240VAC, 50/ 60 Hz<br>• Non-power-limited |
| TB9 | Battery Connection | • Sealed lead-acid battery charger which will charge 7-100 Ah batteries (Up to 210 Ah with PMBNL-PCB Rev B or later generation)<br>• Charging current: None/ disabled, 1A, 2A, 4.25A (also 5.5A with PMBNL-PCB Rev B or later generation)<br>• Charging voltage: 27.6 VDC nominal |
| J3 | CLP Board Connection | • Carry RS-485 data and internal 24V power to the SLM-318 loop cards and the core board on the N16 CPU assembly<br>• Connect additional PMB boards sequentially with no other boards or cards in between.<br>• PMB power supplies use only the RS-485 data |

| Terminal block/ Connector Switch on PMB | Description | Specification |
|---|---|---|
| J6 | CLP/ Core Board Connection | • Carry RS-485 data and internal 24V power to the SLM-318 loop cards and the core board on the N16 CPU assembly<br>• Connect additional PMB boards sequentially with no other boards or cards in between.<br>• PMB power supplies use only the RS-485 data |
| SW1 | Ground Fault Detection Switch | • Default is enabled<br>• Switch setting must match the setting in the panel configuration tool |
| SW3 | Address Switch | • Addresses the PMB<br>• Default is set to ONE |
| SW5 | PMB/ CLP/ Core Bus Termination | • Default is "OUT"<br>• Set to "IN" when the PMB is the last (end) device on the bus |
| SW6 | Multiple Units Installed Switch | • Turn ON if more than one PMB is installed on the system |

**NOTE:** When disabling the battery charger on the PMB Power Supply, the batteries must be shared with a UL 864 or ULC S527 compliant, supervised power supply capable of charging batteries with a charger voltage not to exceed 29VDC.

**NOTE:** The N16 FACP only supports USB Memory Drives formatted in FAT32 and must be 32GB or less.

## A.5 WIRE REQUIREMENTS

Each type of circuit within the Fire Alarm Control System requires use of a specific wire type to ensure proper circuit operation. The wire gauge of a particular circuit depends on the length of that circuit and the current traveling through it. Use the table below to determine the specific wiring requirements for each circuit.

Compliance with the Federal Communications Commission (FCC) and Canadian Department of Communication regulations on electrical energy radiation requires the following: Use twisted-pair shielded wire for any non-SLC-loop wiring entering or exiting the cabinet that is not enclosed in conduit. Use twisted-pair unshielded wiring for SLC-loop wiring.

**NOTE:** If running an SLC in conduit with Notification Appliance Circuits, you can reduce problems by exclusively using electronic sounders (such as the MA/ SS-24 Series) instead of more electronically noisy notification appliances (such as electromechanical bells or horns).

**Table A.1** Wire Requirements

| Circuit Type | Circuit Function | Wire Requirements | Distance (feet/ meters) | Typical Wire Type |
|---|---|---|---|---|
| SLC<br>(power limited) | Connects to intelligent and addressable modules. | Twisted-unshielded pair, 12 to 18 AWG (3.25 to 0.75$mm^2$). 50 ohms, maximum per length of Style 6 & 7 loops. 50 ohms per branch maximum for Style 4 loop. | 12,500 ft (3,810 m)<br>9,500 ft. (2,895.6 m)<br>6,000 ft. (1,828.8 m)<br>3,700 ft. (1,127.76 m) | 12 AWG (3.31 $mm^2$)<br>14 AWG (2.08 $mm^2$)<br>16 AWG (1.31 $mm^2$)<br>18 AWG (0.82 $mm^2$) |
| | or | Twisted-shielded pair.<br>**NOTE:**<br>• Shields must be isolated from ground.<br>• Shields should be broken at each device. | 5,000 ft (1524 m)<br>3,700 ft. (1,127.76 m) | 12 to 16 AWG (3.31 $mm^2$ to 1.31 $mm^2$)<br>18 AWG (0.82 $mm^2$) |
| | or | Untwisted, unshielded wire, in conduit or outside of conduit.<br>**NOTE:** Maximum total capacitance for **all** SLC wiring (both between conductors and from any conductor to ground) should not exceed 0.5 microfarads | 5,000 ft (1524 m)<br>3,700 ft. (1,127.76 m) | 12 to 16 AWG (3.31 mm to 1.31 $mm^2$)[2]<br>18 AWG (0.82 $mm^2$) |
| CLP Connection | Carry RS-485 data and internal 24V power to the SLM-318 loop cards and the core board on the N16 CPU assembly<br>PMB power supplies use only the RS-485 data | | | |
| AIO External Connection<br>(Supervised return)<br>(Power-limited Class 2) | A maximum of 80 annunciator devices can be connected to the system. Up to 10 annunciators can be configured as routers, each supporting 15 additional annunciators | Characteristic impedance: 120 ohms<br>Long line resistance: 100 ohms | | |

| Circuit Type | Circuit Function | Wire Requirements | Distance (feet/ meters) | Typical Wire Type |
|---|---|---|---|---|
| AIO Internal Connection (Supervised) (Power-limited Class 2) | A maximum of 80 annunciator devices can be connected to the system. Up to 10 annunciators can be configured as routers, each supporting 15 additional annunciators | Characteristic impedance: 120 ohms<br>Must be within 20ft of panel<br>Must be in same room as panel<br>Cable must be in conduit | | |
| IDC Initiating Device Circuit | FMM-1, FMM-101, (power limited) | 12-18 AWG<br>Maximum circuit resistance is 20 ohms. | | 12 to 18 AWG (3.31 to 0.82 $mm^2$) |
| NAC Notification Appliance Circuit | FCM-1 (power limited) | 12-18 AWG. MPS-24A: At alarm current level, no more than a 3.84V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used.<br>Maximum line impedance is 2.56 ohms | To meet 3.84 V drop, or sized to provide the minimum rated operating voltage of the appliances used. | 12 to 18 AWG (3.31 to 0.82 $mm^2$) |
| 24 VDC Power Runs (power-limited) | To TM-8 Transmitter, Annunciator and FCM-1 modules | 12-18 AWG. Size wire so that no more than 3.84V drop across wire run from supply source to end of any branch. | To meet 3.84 volt drop | 12 to 18 AWG (3.31 to 0.82 $mm^2$) |
| CHG-120 | External battery charger | 12 AWG in conduit | 20 ft (6.1 m)<br>maximum | 12 AWG (3.31 $mm^2$) |

Relay Output circuits are “Common” 30VDC, 2A.

Power output circuits: TB7 on the N16 Core Board draws power from primary, secondary and external sources to pass +24 VDC power to devices within the same enclosure as the CPU. If those devices have outputs, the outputs must be power-limited. Power rating is determined by the power source(s).

**Maximum Allowable Wiring Assistance**

Calculation of maximum allowable wiring assistance for releasing solenoids:

$$R_{max} = \frac{21.51 - 20.4}{I_s}$$

$R_{max}$ = Maximum allowable resistance of wiring cable

$I_S$ = Solenoid Current

- Typical voltage drop through FCM-1-REL releasing module: 0.6 V

# APPENDIX B: INTELLIGENT SENSING APPLICATIONS

## B.1 INTELLIGENT SENSING OVERVIEW

Intelligent Sensing is a set of software algorithms that provide the N16 with industry-leading smoke detection capability. The user can program Intelligent Sensing functions on a global or on a per-detector basis.

| Topic | Section |
|---|---|
| **Intelligent Sensing features –** Descriptions of Intelligent Sensing features, such as Drift Compensation, Sensitivity Adjust, programmable on a per-detector basis. | Appendix B: Intelligent Sensing Applications |
| **Pre-Alarm –** Alert and Action settings, programming (global settings). | B.3 Pre-Alarm |
| **Detector Sensitivity Settings –** Pre-Alarm and Alarm sensitivity settings for photo, ion, laser and multi-sensor detectors programmable on a per-detector basis. | B.4 Detector Sensitivity Settings |
| **Detector Maintenance Features –** Instructions for viewing and printing detector maintenance information. | Appendix B: Intelligent Sensing Applications |

## B.2 INTELLIGENT SENSING FEATURES

• Intelligent Sensing features include the following:
• Drift Compensation and Smoothing
• Maintenance Warnings - Three Levels
• Self-optimizing Pre-Alarm
• Detector Sensitivity
• Cooperative Multi-Detector Sensing

### B.2.1 DRIFT COMPENSATION AND SMOOTHING

Drift compensation uses algorithms (U.S. patent pending) that identify and compensate for long-term changes in the analog readings from each smoke detector. (Typically, dirt and dust accumulation inside the smoke chamber causes long-term changes in detector readings.) Drift compensation does the following:

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

The software also provides smoothing filters to remove transient noise signals, usually caused by electrical interference. Different smoothing algorithms are used, depending on the sensitivity selection of each detector. Refer to"Detector Sensitivity Settings" on page 139 for more information on detector sensitivity levels.

A graphic representation of a detector analog reading using drift compensation and smoothing

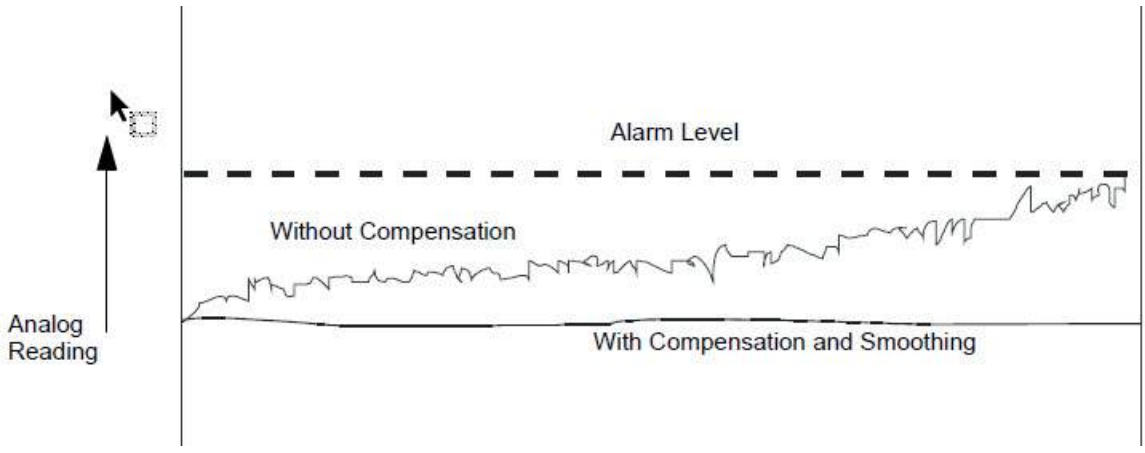


**Figure B-1:** Self-optimizing Pre-Alarm Level

### B.2.2 MAINTENANCE WARNINGS – THREE LEVELS

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 warning. The table below summarizes the three levels of Intelligent Sensing maintenance warnings:

**Table B.1** Definitions of Intelligent Sensing Maintenance Levels

| Detector Trouble Message | Indicated | Detector Compensation Percentage Range | | |
|---|---|---|---|---|
| | | Ion | Photo or Photo with Heat | Laser |
| N/A | Compensation is within acceptable range. | 6 - 80 | 6 - 45 | 3 - 50 |
| LOW THRESHOLD | A hardware problem in the detector. | 0 - 5 | 0 - 5 | 0 - 2 |
| MAINTENANCE REQ | Dust accumulation that is near but below the allowed limit. The Maintenance Required is an alert level that indicates the need for maintenance before the performance of the detector is compromised. | 92 - 99 | 92 - 99 | 83 - 99 |
| MAINT.URGENT | Dust accumulation above the allowed limit. | 100 | 100 | 100 |

A graphic representation of the maintenance levels:

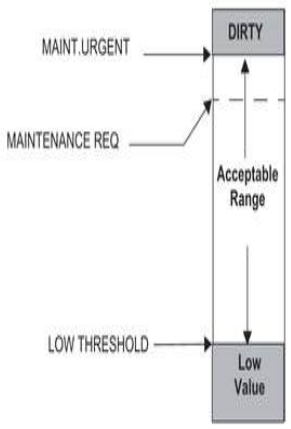



**Figure B-2:** Diagram of Maintenance Levels

### B.2.3 SELF-OPTIMIZING PRE-ALARM

You can set each detector, except FST-851/751 (Heat), for Self-Optimizing Pre-Alarm (PA=1). In this Self-Optimizing mode, the software measures the normal peak analog readings and sets the Pre-Alarm level just above these normal peaks. This allows extremely sensitive Pre-Alarm capability with reasonable protection against non-fire signals. The figure below shows a graphical representation of the Self-Optimizing Pre-Alarm level:

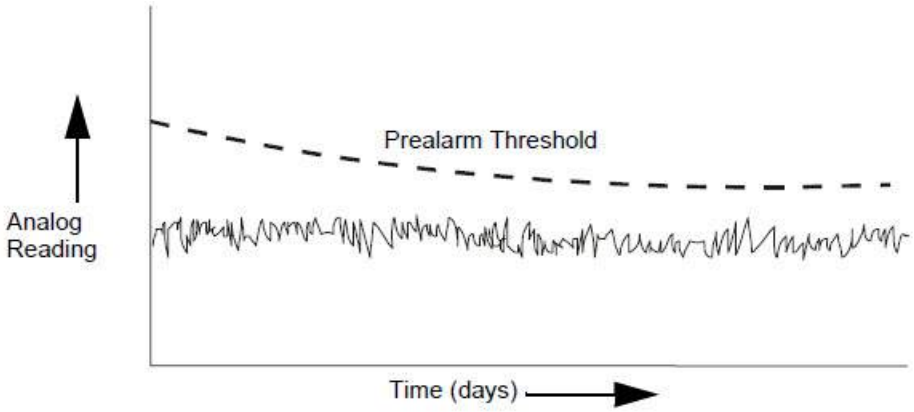



**Figure B-3:** Self-optimizing Pre-Alarm Level

## B.2.4 DETECTOR SENSITIVITY

The control panel provides devices with nine Sensitivity Levels for alarm detection and pre-alarm as follows:

• **Alarm Sensitivity Levels** You can select the sensitivity of a detector from 1-9 (1=highest sensitivity; 9=lowest sensitivity).
• **Pre-Alarm Sensitivity Levels** You can select one of nine levels from 1 to 9 (0=no Pre-Alarm, 1=self-optimizing, 2=highest sensitivity, 9=lowest sensitivity). You can set Pre-Alarm operation to Action (latching) or Alert (non-latching) and to activate Special Zones.

You can set the sensitivity levels as fixed or programmed for day and night operation.

A sample sensitivity window for a laser detector:

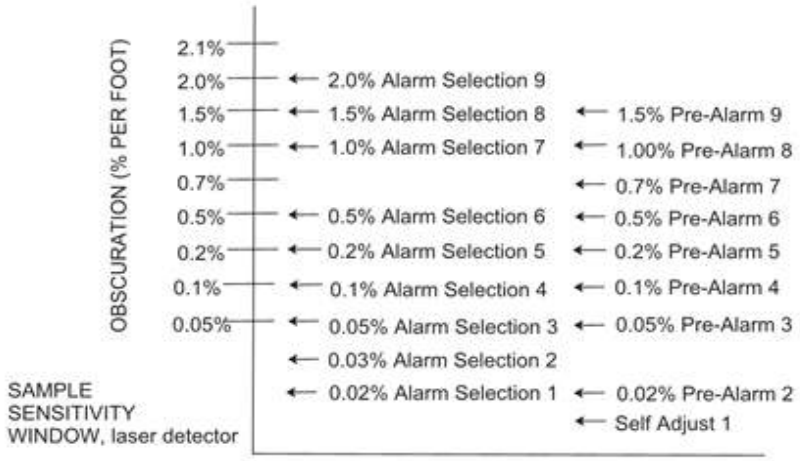



**Figure B-4:** Sample Sensitivity Levels for a FlashScan View Laser Detector

## B.2.5 COOPERATIVE MULTI-DETECTOR SENSING

Cooperative Multi-Detector Sensing is the ability of a smoke detector to consider readings from nearby detectors in making alarm or pre-alarm decisions. Each detector can include up to two other detectors in its decision. Without statistical sacrifice in the ability to resist false alarms, Cooperative Multi-Detector Sensing allows a detector to increase its sensitivity to actual smoke by a factor of almost 2 to 1. Ion, photo and laser detector types can participate. Cooperative Multi-Detector Sensing also allows the combination of ionization with photoelectric technology in reaching an alarm decision. The figure below shows a graph representing Cooperative Multi-Detector Sensing:

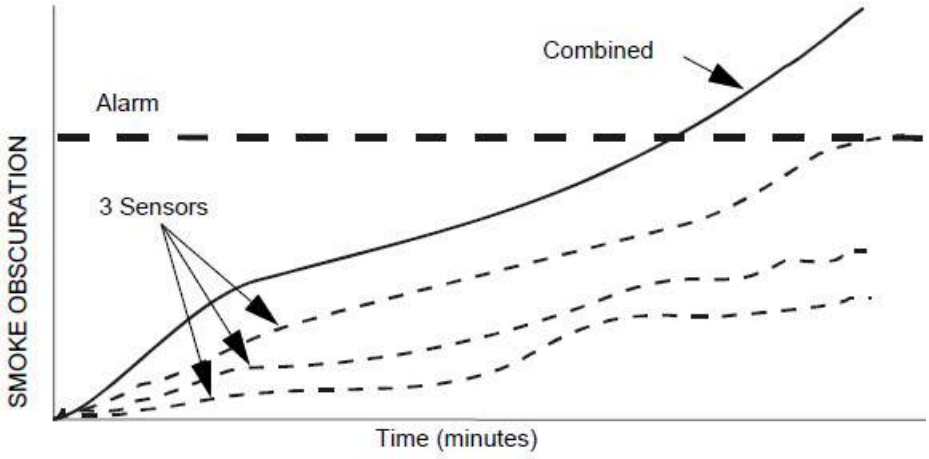



**Figure B-5:** Cooperative Multi-Detector Sensing

## B.3 PRE-ALARM

### B.3.1 DEFINITION

The Pre-Alarm function is a programmable option which determines the system's response to real-time detector sensing values above the programmed setting. Use the Pre-Alarm function to get an early warning of incipient or potential fire conditions. There are two levels of Pre-Alarm:

• Alert (Refer to B.3.2 Alert Level )
• Action (Refer to B.3.3 Action Level )

Alert and Action Pre-Alarm settings are set with point programming. Unique Pre-Alarm sensitivity levels (PA) for individual detectors are listed in "Detector Sensitivity Settings" on the next page.

The LEDs on detectors polled in FlashScan mode will light steady green when in pre-alarm.

### B.3.2 ALERT LEVEL

#### ALERT FUNCTIONS

The control panel software, in addition to checking for alarm levels, checks for Pre-Alarm thresholds for each addressable, intelligent smoke detector programmed for Pre-Alarm. If a detector's real-time sensing level exceeds the programmed Alert threshold, the control panel indicates a Pre-Alarm condition for the detector. The control panel does the following functions when a detector reaches pre-alarm level:

• The Pre-Alarm message is sent to the History buffer and to installed printers. The message is sent (and time stamped) at the time that it first occurred. This historical data could provide valuable information about the progress of a fire.

• The pre-alarm LED flashes and the panel sounder pulses until acknowledged.

• Zone Z000 (general alarm) or any other zone and the System Trouble and System Alarm relays do not activate.

• The Pre-Alarm indication for this detector will restore automatically to normal if its obscuration reading drops below pre-alarm level.

• A subsequent alarm for this detector also clears the Pre-Alarm indication.

### B.3.3 ACTION LEVEL

#### ACTION FUNCTIONS

If you program a detector for Action Pre-Alarm and the detector reaches a level that exceeds the programmed Pre-Alarm level, the control panel indicates an Action condition. The control panel does the following functions when a detector reaches the programmed pre-alarm level:

• The Action message is sent to the History buffer and installed printers. The message is sent (and time stamped) only at the time that it first occurred. This historical data could provide valuable information about the progress of a fire.

• The pre-alarm LED and panel sounder pulse until acknowledged.

• The zone that is in the tenth position of the zone map for this detector activates. The tenth zone is the right-most entry on line two of the detector zone map list in the Point Programming screen. The tenth zone can be used to control functions of a detector or group of detectors once the pre-alarm level is reached. Tenth zone activations also allow ACS annunciation by a detector or group of detectors in Action Pre-Alarm condition.

• Zone Z000 (general alarm) or any other zone and the System Trouble and System Alarm relays do not activate.

• The Pre-Alarm condition and the zone programmed will latch until system reset, even if the obscuration reading drops below the pre-alarm level.

• A subsequent alarm condition for this detector clears the Action indication from the LCD display alarm list.

## B.4 DETECTOR SENSITIVITY SETTINGS

### HOW TO SELECT PRE-ALARM AND ALARM SENSITIVITY

Each detector provides a host of selectable intelligent options. The control panel provides nine levels of Pre-Alarm (PA:1–PA:9) and Alarm (AL:1–AL:9) in percent per foot obscuration:

• **PA:0** no Pre-Alarm selection.
• **PA:1** the self-optimizing setting where the control panel selects a suitable Pre-Alarm level for a detector.
• **PA:2**–**PA:9** the detector Pre-Alarm sensitivity level - with PA:2 the most sensitive and PA:9 the least sensitive.
• **AL:1**–**AL:9** the detector Alarm sensitivity level - with AL:1 the most sensitive and AL:9 the least sensitive.

**Table B.1** Detector Sensitivity Settings

| Detector Type | Alarm (FlashScan) | Alarm (CLIP) | Pre-Alarm |
|---|---|---|---|
| Photo Electric SMOKE (PHOTO) (See note * and †) Includes -SELFT versions) | AL:1=0.50 %<br>AL:2=0.73 %<br>AL:3=0.96 %<br>AL:4=1.19 %<br>AL:5=1.43 %<br>AL:6=1.66 %<br>AL:7=1.89 %<br>AL:8=2.12 % ~<br>AL:9=2.35 % | | PA:1=Auto<br>PA:2=0.30 %<br>PA:3=0.47 %<br>PA:4=0.64 %<br>PA:5=0.81 %<br>PA:6=0.99 %<br>PA:7=1.16 %<br>PA:8=1.33 % ~<br>PA:9=1.50 % |
| Ion SMOKE (ION) (See notes * and ** | AL:1=0.50 %<br>AL:2=0.75 %<br>AL:3=1.00 %<br>AL:4=1.25 %<br>AL:5=1.50 %<br>AL:6=1.75 % ~<br>AL:7=2.00 %<br>AL:8=2.25 %<br>AL:9=2.50 % | | PA:1=Auto<br>PA:2=0.40 %<br>PA:3=0.50 %<br>PA:4=0.75 %<br>PA:5=1.00 %<br>PA:6=1.25 % ~<br>PA:7=1.50 %<br>PA:8=1.75 %<br>PA:9=2.00 % |

| Detector Type | Alarm (FlashScan) | Alarm (CLIP) | Pre-Alarm |
|---|---|---|---|
| FlashScan Laser‡<br>(See Note **) | AL:1=0.02 %<br>AL:2=0.03 %<br>AL:3=0.05 %<br>AL:4=0.10 %<br>AL:5=0.20 %<br>AL:6=0.50 %~<br>AL:7=1.00 %<br>AL:8=1.50 %<br>AL:9=2.00 % | | PA:1=Auto<br>PA:2=0.02 %<br>PA:3=0.05 %<br>PA:4=0.10 %<br>PA:5=0.20 %<br>PA:6=0.50 %~<br>PA:7=0.70 %<br>PA:8=1.00 %<br>PA:9=1.50 % |
| Acclimate<br>Multi-Sensor<br>(See Note ††and ##) | AL:1=0.50 %<br>AL:2=1.00 %<br>AL:3=1.00 to 2.00 %<br>AL:4=2.00 %<br>AL:5=2.00 to 3.00 %~<br>AL:6=3.00 %<br>AL:7=3.00 to 4.00 %<br>AL:8=4.00 %<br>AL:9=thermal 135°F | AL:1=1.00 %<br>AL:2=1.00 %<br>AL:3=1.00 to 2.00 %<br>AL:4=2.00 %<br>AL:5=2.00 to 4.00 %~<br>AL:6=2.00 to 4.00 %<br>AL:7=2.00 to 4.00 %<br>AL:8=4.00 %<br>AL:9=4.00 % | PA:1=0.50 %<br>PA:2=1.00 %<br>PA:3=1.00 %<br>PA:4=1.00 to 2.00 %<br>PA:5=1.00 to 2.00 %~<br>PA:6=2.00 %<br>PA:7=2.00 %<br>PA:8=2.00 to 3.00 %<br>PA:9=2.00 to 3.00 % |
| Heat (Adjustable Threshold) | AL:1=43°C<br>AL:2=57°C<br>AL:3=63°C~<br>AL:4=68°C<br>AL:5=74°C<br>AL:6=88°C<br>AL:7=88°C<br>AL:8=88°C<br>AL:9=88°C | | PA:1=40°C<br>PA:2=43°C<br>PA:3=57°C~<br>PA:4=65°C<br>PA:5=70°C<br>PA:6=75°C<br>PA:7=75°C<br>PA:8=75°C<br>PA:9=75°C |
| Beam<br>(See Note *** ) | AL:1=25%<br>AL:2=30%<br>AL:3=40%<br>AL:4=50%<br>AL:5=30 - 50%<br>AL:6=40 - 50% | | PA:1=50%<br>PA:2=55%<br>PA:3=60%<br>PA:4=65%<br>PA:5=70%<br>PA:6=75%<br>PA:7=80%<br>PA:8=85%<br>PA:9=90% |
| Intelliquad FSC-851<br>(See Note †††) | AL:1= 1%<br>AL:2= 2%<br>AL:3= 3%<br>AL:4= 3% w/ 10 minute confirmation period##<br>AL:5= 4% w/ 10 minute confirmation period<br>AL:6= Thermal 135°F | | PA:1= 1%<br>PA:2= 2%<br>PA:3= 3%<br>PA:4= 3% w/ 10 minute confirmation period<br>PA:5= 4% w/ 10 minute confirmation period<br>PA:6= Thermal 135°F |

| Detector Type | Alarm (FlashScan) | Alarm (CLIP) | Pre-Alarm |
|---|---|---|---|
| Fire/ CO<br>(See Note††††)<br>Photo/ CO<br>See Note | AL:1=1%<br>AL:2=2%<br>AL:3=3%<br>AL:4=3% with a 10 minute confirmation period###<br>AL:5=4% with a 10 minute confirmation period###<br>AL:6=Thermal 135°F | | PA:1=1%<br>PA:2=2%<br>PA:3=3%<br>PA:4=3% with a 10 minute confirmation period###<br>PA:5=4% with a 10 minute confirmation period###<br>PA:6=Thermal 135°F |
| ~Signifies the factory default setting. | | | |

* Detectors are suitable for open area protection within the listed air velocity range. Typically, this range is 0 - 4,000 ft/min for photoelectric detectors and 0 - 1,200 ft/min for ionization detectors. Be sure to confirm this range before installing the detector by referring to the manufacturer's installation instructions.

† For ION detectors installed in Canada: Use only an alarm sensitivity setting of AL=1, AL=2 or AL=3 .

‡ 1% max. on CLIP. Larger figures may display.

** The use of alarm sensitivities below 0.50% obscuration per foot requires a 90 day test to ensure that the environment for the detectors is suitable for the higher sensitivity setting.

†† For Acclimate detectors installed in Canada: Use only the alarm settings of AL:1 or AL:2.

‡‡ Acclimate detectors (FPTI-951/951-IV) in UL 268 7th Edition compliance must be programmed as follows: Open Area Protection: sensitivity level 8, for Special Applications sensitivity level 2, 4, or 6 (default is 8).

*** Refer to the beam detector manual to determine the alarm settings: they are a function of the distance between the detector and its reflector. There is no Prealarm for beam detectors in CLIP mode.

††† AL:6 and PA:6 are not available in CLIP mode.

**** Fire/CO detectors (FCO-951/951-IV) in UL 268 7th Edition compliance must be programmed as follows: Open Area Protection sensitivity level 3, 4, or 5, for Special Application: sensitivity level 1 and 2 (default is 4).

†††† The heat only setting (sensitivity level 6) applies to Fire/CO only.

# APPENDIX C: SPECIAL ZONE OUTPUTS

## C.1 SERVICE MODE

The N16 can be accessed remotely for a remote communication session- requires FACP to be in service mode. Technician required on site.

## C.2 PRESIGNAL

### Purpose

Presignal is a feature that initially causes alarm signals to only sound in specific areas, monitored by qualified persons. This allows delay of the alarm up to 180 seconds after the start of alarm processing. The control panel Presignal feature provides the following:

- A **Presignal Delay Timer** (1:00 to 3:00 minutes) that delays activation of all outputs with a CBE.
- An illustration of Presignal timing.

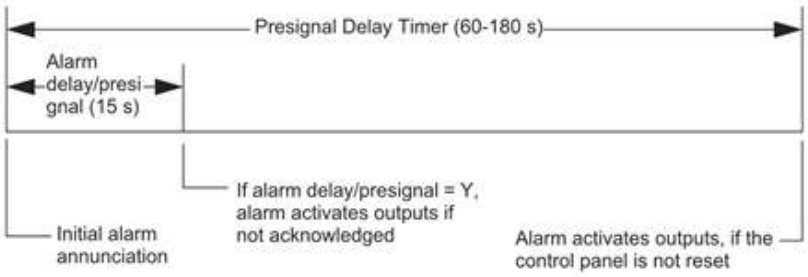



**Figure C-1:** Presignal Time

The control panel delays activation of outputs in their zone maps for all alarm initiating devices in their CBE list. A subsequent alarm will abort the Presignal Delay Timer and execute CBE lists. The Presignal Delay timer countdown can be stopped by pressing the SYSTEM RESET key before the timer expires.

### C.2.1 SELECTING PRESIGNAL OUTPUTS

#### Presignal

The Presignal Delay Timer can be set to a value between 60 and 180 seconds. A Presignal Delay Timer does not apply to the following:

- System Alarm relay
- TM-8 polarity reversal alarm output
- TM-8 municipal box output
- CGW-MB
- CLSS-Gateway
- HON-DACT-DS

## C.3 DRILL

#### What is Drill?

Drill is a feature that customizes drill activations, allowing only specific devices on the N16 to activate when a local or network Drill is performed. Each output must be checked to participate in drill in VeriFire Tools. These devices require a drill zone to be added to the zone mapping of each point. When the drill touchpoint is tapped or drill is performed, The drill zone will go active. It will go to normal after a 5 second delay.

# APPENDIX D: CBE ZONES AND EQUATIONS

CBE (Control-By-Event) is a software function that provides a means to program a variety of output responses based on various initiating events. The control panel operates CBE through lists of zones. A zone becomes listed when it is added to a point's zone map through point programming.

• Each input point (detector, monitor module) can list up to ten zones. Allowable zone types are general zone, releasing zone, water releasing zone, and special function zone.
• Each output point (control module) can list up to ten zones. Allowable zone types are general zone, logic zone, releasing zone, water releasing zone, and special function zone.
• Output points can list general alarm. Non-Alarm or Supervisory points do not activate general alarm.

Networked CBE, or CCBE (Cooperative Control-By-Event), provides CBE initiating-event/ output-response relationships over the network through general and logic zones. One of these zones, programmed into the zone maps of points on this panel and points on other nodes, will create network cause-and-effect relationships based on the type and content of the zone.

## D.1 ZONES

There are four types of zones that may be listed to a point for CBE purposes.

**Table D.1** CBE Zone Types

| Zone Type | Description/ Function |
|---|---|
| General Zone | A general zone is used to link input and output devices. When an input device activates, any general zone in its zone map will be active and any output device that has an active general zone in its map will be active. General zones can be used as arguments in logic equations.<br>Zone Z000 is a general alarm zone: those points listing Z000 in their zone map participate in a general alarm.<br>The panel will support up to 1000 general zones, designated as Z0 through Z999. General zones can be used in CCBE applications when a node number is entered before the zone number. |
| Logic Zone | A logic zone consists of a logic equation. Whenever the logic equation becomes true, all output points mapped to the logic zone will activate.<br>The panel will support up to 1000 logic zones, designated as ZL1 through ZL1000. Logic zones can be used in CCBE applications when a node number is entered before the zone number. |
| Releasing Zone | A releasing zone is used to control an agent releasing operation.<br>The panel will support up to 50 releasing zones. |
| Water Releasing Zone | A water releasing zone is used to control a deluge operation.<br>The panel will support up to 100 water releasing zones. |

## D.2 SPECIAL FUNCTION ZONES

**Table D.1** Special Function Zones

| Special Function Zone | Description |
|---|---|
| ZF1 | (Trouble less AC) An output programmed to turn on/ off if a System Trouble (other than an AC power loss) occurs |
| ZF2 | (AC Trouble) An output programmed to turn on/ off if an AC power loss or a brownout condition occurs |
| ZF3 | (Security) An output programmed to turn on/ off if a Security input activates |
| ZF4 | (Supervisory) An output programmed to turn on/ off if a Supervisory input activates |

| Special Function Zone | Description |
|---|---|
| ZF5 | (Alternate Sensitivity Activation) An input programmed to switch from the active detector alarm sensitivities to the alternate alarm sensitivities when a non-fire point with ZF5 in its CBE activates |
| ZF9 | (ALERT, ACTION) An output programmed to turn on/ off if a PreAlarm is active |
| ZF10 | Any detector or module programmed for alarm verification will activate this zone |
| ZF11 | When the Drill touchpoint is activated or Drill Signal is performed, ZF11 will become active. ZF11 will return to normal after a 5 second delay |
| ZF12 | When the Acknowledge touchpoint is tapped, or a Block Acknowledge or Event Acknowledge is performed, ZF12 will become active. After a five-second delay, ZF12 will return to normal |
| ZF13 | When a signal silence is performed, ZF13 will activate. After a five-second delay, ZF13 will return to normal. |
| ZF14 | When the System Reset touchpoint is tapped or a System Reset is performed, ZF14 will become active. After a ten second delay, ZF14 will return to normal. |
| ZF15 | When there are disabled events present in the system, ZF15 will be set to active. When all disabled events have cleared, the state of ZF15 will return to normal. |
| ZF16 | (Drill Zone) When a Drill Signal is performed on the FACP, ZF16 will be set to active. ZF16 will return to normal following a system reset |
| ZF18 | (CO Alarm) When a CO Alarm is present, ZF18 will activate |
| ZF19 | (CO Pre-Alarm) When a CO Pre-Alarm is present, ZF19 will activate |
| ZF36 | Will operate when DCC is enabled and will not be dependent on the Canada regional setting. ZF36 will activate when the NCA-2 is in control of the network, or when the NFS2-3030, NFS2-640 or NFS-320 is in control of itself, that is, the local control active LED is on. When not in control, the ZF36 will be off, that is, the local control LED is off. |
| ZF40 | (Auto Silence Activation) ZF40 will activate when the Auto Silence Timer has expired and silenceable outputs on the FACP have been silenced. ZF40 will remain active until a System Reset, Resound, or Drill is performed* |
| ZF43 | Ground fault ZF43 will activate when there is a ground fault present. |
| * Auto Silence is only applicable for Fire Alarm activations | |

## D.3 EQUATIONS

Logic Equations can define complex relationships between input and output devices.

The FACP supports up to 2000 Logic Equations, each designated with a Logic Zone number of ZL1 through ZL2000. Once created, these equations can be included in input/ output zone mapping.

1. Equations will always begin with a logic function. The function set is listed below.

2. Equations will be a maximum of 80 characters long, including parentheses and commas.

3. Logic Equations can have a maximum of 10 logic functions unless a time delay function is used: a time delay function must be the only function in its equation.

4. Equations are evaluated after all other devices have been evaluated.

5. One logic equation can be used as an argument in another logic equation, or one trouble equation can be used in another trouble equation, only if the equation used has previously been evaluated; that is, only zones with a lower number than the zone currently being edited can be used as arguments.

6. A logic function can have a maximum of 20 arguments (inclusive start and stop address).

7. Maximum for the delay timer is 23 hours, 59 minutes, 59 seconds (23:59:59).

8. CO Monitor devices: A device with the type ID of “CO Monitor” should not be used in logic equations. To include a CO Monitor in a logic equation, use zones mapped to the CO Monitor in the equation.

Equations are entered using Point Programming for logic zones. Refer to these sections in this manual for instruction. The panel will check for errors after the user has entered the complete equation. Possible errors are too many or too few parentheses, too many or too few arguments inside the parentheses, unknown function and unknown device type.

Equations are made up of two basic components: functions (either logic or time delay) and arguments.

## D.4 ARGUMENTS

Arguments are discrete parts of a logic or time delay function used in a logic or trouble equation. They can consist of another function, another equation, or any of the devices listed below.

**Table D.1** Table of Arguments

| | | |
|---|---|---|
| LxxD1 - LxxD159 | detectors loop xx | (159 per loop) |
| LxxM1 - LxxM159[1] | modules loop xx | (159 per loop) |
| (Nxxx)Z0 - (Nxxx)Z1999* | general zones | (1999) |
| ZF0 - ZF7, ZF9 - ZF22,ZF36 - ZF40 | special zones | (27) |
| (Nxxx) Z0 -(Nxxx)Z1999 | agent releasing zone | (50) |
| (Nxxx) Z0 -(Nxxx)Z1999 | water releasing zone | (100) |
| T0 - T685 | system troubles (trouble equations only) | (686) |
| (Nxxx)ZL1 - (Nxxx)ZL2000 | logic zones | (2000) |
| xx = loop number (01 through 10)<br>(Nxxx) = Node number, necessary for CCBE programming. The node number identifies what node the panel will watch for a particular zone activation. | | |
| * Modules programmed with a Type ID of CO Monitor should not be used in logic equations. Zones mapped to the CO Monitor should be used if a CO Monitor is to be included in a logic equation. | | |

## D.5 LOGIC EQUATIONS

### D.5.1 LOGIC FUNCTIONS

**The “AND” Operator**

- Requires that each argument be active.
- Example: AND(Z02,Z05,L2D12)
- All three arguments in the equation must be active for the logic zone to be activated.

**The “OR” Operator**

- Requires that any argument be active
- Example: OR(Z02,Z05,L2D12)
- If any one of the three arguments in the equation is active the logic zone will be activated.

**The “NOT” Operator**

- Inverts the state of the argument (activated to deactivated OR deactivated to activated).

• Example: NOT(Z02)
• The logic zone will remain activated until the argument activates.
• If the argument activates the logic zone will deactivate.

**The “ONLY1” Operator**

• Requires that only one argument be active.
• Example: ONLY1(Z02,Z05,Z09)
• If only one of the arguments activates the logic zone will be activated.

**The “ANYX” Operator**

• Requires that the amount of arguments specified by the number preceding the arguments be active.
• Example: ANYX(2,Z02,Z05,Z09)
• If any two or more of the arguments are in alarm the output point will be activated.
• The X amount may be a value from 1 through 9.

**The “RANGE” Operator**

• Each argument within the range must conform to the requirements of the governing function. The range limit is 20 consecutive arguments.
• Example: AND(RANGE(Z1,Z20))
• Zone 1 through Zone 20 must all be active to activate the logic zone.

**The “DIS(point argument)” Operator**

• Requires that the point argument be disabled for the operator to go active.

**The “PRE(point argument)” Operator**

• Requires that the point argument be in prealarm for the operator to go active.
• Example: AND(L1D1,PRE(L1D2))
• The detector at address L1D1 must be active and the detector at L1D2 must be in prealarm for this equation to go active.

**The “SUP(point argument)” Operator**

• Requires that the point argument be in an active supervisory state for the operator to go active.
• Example: OR(L1D1,SUP(L1M1))
• The detector at address L1D1 must be active, or the module at L1M1 must be in an active supervisory state for the equation to go active.

**The “FIRE(point argument)” Operator**

• Requires that the point argument be in an active fire alarm state for the operator to go active.
• Example: AND(L1D1,FIRE(L1M1),FIRE(L1M2))
• The detector at address L1D1 must be active and the modules at L1M1 and L1M2 must be in an active fire alarm state for the equation to go active.

**The “NON(point argument)” Operator**

• Requires that the point argument be in an active non-alarm state for the operator to go active.
• Example: AND(L1D1,NON(L1M1))
• The detector at address L1D1 must be active and the module at address L1M1 must be in an active non-fire alarm state for the equation to go active.

**The “SEC(point argument)” Operator**

• Requires that the point argument be in an active security alarm state for the operator to go active.
• Example: AND(L1M1,SEC(L1M2))
• The module at address L1M1 must be active and the module at address L1M2 must be in an active security alarm state for the equation to go active.

### D.5.2 TIME-BASED FUNCTIONS

• The panel supports three time-based functions: DEL, SDEL and TIM. Special rules apply to an equation containing a time-based function.
• Only one time-based function may be used in an equation.
• The time-based function must appear only once, as the first entry of the equation.
• It may not be nested within parentheses in the equation.

• Logic functions may be used in an equation that begins with a DEL or SDEL time-based function: however, they must appear within parentheses following the time-based function.
• Delay and duration times are in 24-hour format (HHMMSS); the allowable range is 00:00:00 to 23:59:59.

### The “DEL” Function

• Used for delayed operation.
• Example: DEL(HH.MM.SS, HH.MM.SS,AND(L1M1,L1M140))
• The first HH.MM.SS is the delay time, the second HH.MM.SS is the duration time. If the argument - AND(L1M1,L1M140) - in the example above activates, the function becomes true after the argument has been active for the delay time and continues to be true for the duration time as long as the argument stays active. If the argument goes inactive during the delay time or the duration time, the function reverts to false and the timing would begin all over again if reactivated.
• If duration time of zero is entered (00.00.00), the equation will evaluate true when the delay time expires if the argument remains active throughout the delay time period.
• If no duration or delay is specified, then the function will follow the input argument, indicating true while it is active and false when it is inactive. DEL assumes a value of false on reset.

### The “SDEL” Function

• A latched version of the DEL function.
• Example: SDEL(HH.MM.SS, HH.MM.SS,L1M140)
• The first HH.MM.SS is the delay time, the second HH.MM.SS is the duration time. If the argument (L1M140 in the example above) activates, the function becomes true after the delay time and will remain active for the duration even if the argument becomes inactive during either the delay or duration time.
• If delay time of zero is entered (00.00.00), the equation will evaluate true as soon as the argument (L1M140) activates and will remain that way for the specified duration, even if the argument becomes inactive during that time.
• If no duration or delay time is specified, then the argument will not deactivate until reset, even if the argument becomes inactive.

### The “TIM” Operator

• The TIM function is used to specify activation on specific days of the week or year.
• Examples:
  - TIM(7-11-06) will evaluate as true for 24 hours starting at midnight (00:00:00) on July 11, 2006.
  - TIM(MO,TU,WE,TH,FR,08:00:00,23:00:00) will evaluate as true at 8:00 AM and remain true until 11:00 PM (23:00) for the list of days supplied.
  - TIM(MO,TU,WE,TH,FR,08:00:00) will evaluate as true at 8:00 AM and remain true until 23:59:59 of the current day for the list of days supplied.
  - TIM(TU,07:45:00,18:30:00) will evaluate as true every Tuesday between 7:45 AM until 6:30 PM.
  - TIM(MO,TU,WE,TH,FR) will evaluate as true from Monday morning at 12:01 AM until Friday evening at 11:59:00 PM.

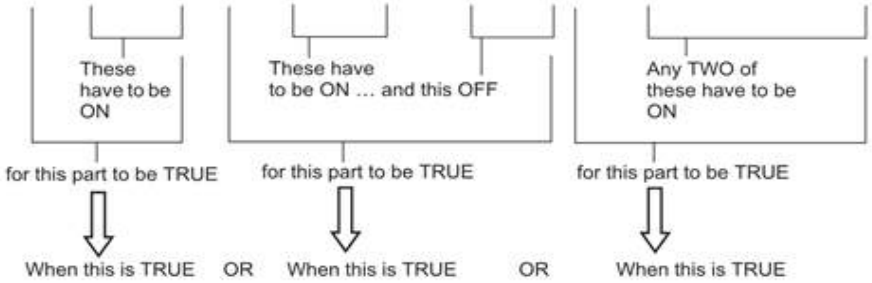
### Logic Equation Syntax Example

• OR(AND(L1D1,L1D4),AND(L2D6,L2M3,NOT(L2M4)),ANYX(2,L1M13,L1M14,L1M15))
• Equation begins with a logic function - OR
• 67 Characters (maximum of 80) - includes parentheses and commas.
• 5 Logic Functions (maximum of 10) - OR, AND, AND, NOT and ANYX.
• 8 Arguments (maximum of 20 per logic function) - L1D1,L1D4,L2D6,L2M3,L2M4...
• The equation contains no spaces.

### Evaluating an Equation

• To evaluate an equation, start from the innermost part of the equation and work outwards. For this equation to evaluate TRUE and thus turn on any output mapped to it, the following conditions must be met:

  - OR(AND(L1D1,L1D4),AND(L2D6,L2M3,NOT(L2M4)),ANYX(2,L1M13,L1M14,L1M15))




Then all outputs programmed with this equation will be turned ON.

# APPENDIX E: DETECTOR INITIALIZATION

## E.1 OVERVIEW

The control panel automatically performs a detector initialization routine when a detector is added or changed.

The detector initialization routine takes approximately 2.5 minutes. During this time, the detector being initialized does not perform fire protection functions. The LEDs of detectors polled in FlashScan mode will latch a steady green while initializing and return to blinking green when initialization is over.

While initializing a detector, follow these guidelines:

- Make sure the detector is free of residual smoke during detector initialization.
- Do not test a detector during detector initialization.

**NOTE:** The control panel only performs detector initialization if it senses that a detector was removed for at least 15 seconds.

**WARNING: Detector Replacement**
If any detector is replaced with a different type of detector (for example, a laser detector is replaced with a photoelectric detector), the control panel must be programmed immediately with the new detector Type Code. Failure to do so can cause incorrect control panel operation, including false alarms.

## E.2 TO REPLACE A DETECTOR WITH A DIFFERENT TYPE OF DETECTOR

If one type of detector is replaced with a different type of detector, the control panel must immediately be programmed for the new detector type. To replace a detector, follow these steps:

| Step | Action |
|---|---|
| 1 | Physically remove the old detector. |
| 2 | In VeriFire Tools, delete the old detector. |
| 3 | Physically install the new detector. |
| 4 | In VeriFire Tools customize the label, zoning, etc for the new detector. |

## E.3 SELF TEST DETECTORS

The Self Test Series of detectors introduce small amounts of smoke and heat into the chamber to test both sensors. They automatically test if the photo sensor smoke entry points are blocked by the dust cover and they verify that the technician has completed the visual inspection through its built-in beacon and the self test app. They are capable of performing self tests across multiple loops and panels concurrently and are compatible with FlashScan protocol. Refer to Table G.2 Self-Test FlashScan Codes for a list of Self Test FlashScan Codes.

# APPENDIX F: SYSTEM TROUBLE CODES

The following table lists possible System Trouble Codes that can be used in Logic Equation programming. The System Trouble index number can be used as an argument in equation building.

**Table F.1** System Trouble Names and Codes

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 0 | GROUND FAULT | 1 | AC FAIL | 2 | BATTERY | 3 | CLASS A POS. LOOP 1 |
| 4 | CLASS A POS. LOOP 2 | 5 | CORRUPT LOGIC EQUAT | 6 | LCD80 SUPERVISORY | 7 | EPROM ERROR |
| 8 | INTERNAL RAM ERROR | 9 | EXTERNAL RAM ERROR | 10 | PROGRAM CORRUPTED | 11 | NO DEV. INST ON L1 |
| 12 | PANEL DOOR OPEN | 13 | AUXILIARY TROUBLE | 14 | TERM. SUPERVISORY | 15 | ANNUN. 1 TROUBLE |
| 16 | ANNUN. 1 NO ANSWER | 17 | ANNUN. 2 TROUBLE | 18 | ANNUN. 2 NO ANSWER | 19 | ANNUN. 3 TROUBLE |
| 20 | ANNUN. 3 NO ANSWER | 21 | ANNUN. 4 TROUBLE | 22 | ANNUN. 4 NO ANSWER | 23 | ANNUN. 5 TROUBLE |
| 24 | ANNUN. 5 NO ANSWER | 25 | ANNUN. 6 TROUBLE | 26 | ANNUN. 6 NO ANSWER | 27 | ANNUN. 7 TROUBLE |
| 28 | ANNUN. 7 NO ANSWER | 29 | ANNUN. 8 TROUBLE | 30 | ANNUN. 8 NO ANSWER | 31 | ANNUN. 9 TROUBLE |
| 32 | ANNUN. 9 NO ANSWER | 33 | ANNUN.10 TROUBLE | 34 | ANNUN.10 NO ANSWER | 35 | ANNUN.11 TROUBLE |
| 36 | ANNUN.11 NO ANSWER | 37 | ANNUN.12 TROUBLE | 38 | ANNUN.12 NO ANSWER | 39 | ANNUN.13 TROUBLE |
| 40 | ANNUN.13 NO ANSWER | 41 | ANNUN.14 TROUBLE | 42 | ANNUN.14 NO ANSWER | 43 | ANNUN.15 TROUBLE |
| 44 | ANNUN.15 NO ANSWER | 45 | ANNUN.16 TROUBLE | 46 | ANNUN.16 NO ANSWER | 47 | ANNUN.17 TROUBLE |
| 48 | ANNUN.17 NO ANSWER | 49 | ANNUN.18 TROUBLE | 50 | ANNUN.18 NO ANSWER | 51 | ANNUN.19 TROUBLE |
| 52 | ANNUN.19 NO ANSWER | 53 | ANNUN.20 TROUBLE | 54 | ANNUN.20 NO ANSWER | 55 | ANNUN.21 TROUBLE |
| 56 | ANNUN.21 NO ANSWER | 57 | ANNUN.22 TROUBLE | 58 | ANNUN.22 NO ANSWER | 59 | ANNUN.23 TROUBLE |
| 60 | ANNUN.23 NO ANSWER | 61 | ANNUN.24 TROUBLE | 62 | ANNUN.24 NO ANSWER | 63 | ANNUN.25 TROUBLE |
| 64 | ANNUN.25 NO ANSWER | 65 | ANNUN.26 TROUBLE | 66 | ANNUN.26 NO ANSWER | 67 | ANNUN.27 TROUBLE |
| 68 | ANNUN.27 NO ANSWER | 69 | ANNUN.28 TROUBLE | 70 | ANNUN.28 NO ANSWER | 71 | ANNUN.29 TROUBLE |
| 72 | ANNUN.29 NO ANSWER | 73 | ANNUN.30 TROUBLE | 74 | ANNUN.30 NO ANSWER | 75 | ANNUN.31 TROUBLE |
| 76 | ANNUN.31 NO ANSWER | 77 | ANNUN.32 TROUBLE | 78 | ANNUN.32 NO ANSWER | 79 | NETWORK FAIL PORT A |
| 80 | NETWORK FAIL PORT B | 81 | NETWORK FAILURE | 82 | ADV WALK TEST | 83 | CHARGER FAIL |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 84 | GROUND FAULT LOOP 2 | 85 | CLASS A NEG. LOOP 1 | 86 | CLASS A NEG. LOOP 2 | 87 | GROUND FAULT LOOP 1 |
| 88 | UDACT TROUBLE | 89 | UDACT NO ANSWER | 90 | PROG MODE ACTIVATED | 91 | LOADING..NO SERVICE |
| 92 | BASIC WALK TEST | 93 | NFPA 24HR REMINDER | 94 | NVRAM BATT TROUBLE | 95-103 | (reserved) |
| 104 | OPTION MODULE | 105 | CLASS A ON LOOP 3 | 106 | AVPS. TROUBLE | 107 | NAM CCBE PROG. LOST |
| 108 | MAN. EVAC INITIATED | 109 | MAN. EVAC RECEIVED | 110 | (reserved) | 111 | (reserved) |
| 112 | ANNUN.33 TROUBLE | 113 | ANNUN.33 NO ANSWER | 114 | ANNUN.34 TROUBLE | 115 | ANNUN.34 NO ANSWER |
| 116 | ANNUN.35 TROUBLE | 117 | ANNUN.35 NO ANSWER | 118 | ANNUN.36 TROUBLE | 119 | ANNUN.36 NO ANSWER |
| 120 | ANNUN.37 TROUBLE | 121 | ANNUN.37 NO ANSWER | 122 | ANNUN.38 TROUBLE | 123 | ANNUN.38 NO ANSWER |
| 124 | ANNUN.39 TROUBLE | 125 | ANNUN.39 NO ANSWER | 126 | ANNUN.40 TROUBLE | 127 | ANNUN.40 NO ANSWER |
| 128 | ANNUN.41 TROUBLE | 129 | ANNUN.41 NO ANSWER | 130 | ANNUN.42 TROUBLE | 131 | ANNUN.42 NO ANSWER |
| 132 | ANNUN.43 TROUBLE | 133 | ANNUN.43 NO ANSWER | 134 | ANNUN.44 TROUBLE | 135 | ANNUN.44 NO ANSWER |
| 136 | ANNUN.45 TROUBLE | 137 | ANNUN.45 NO ANSWER | 138 | ANNUN.46 TROUBLE | 139 | ANNUN.46 NO ANSWER |
| 140 | ANNUN.47 TROUBLE | 141 | ANNUN.47 NO ANSWER | 142 | ANNUN.48 TROUBLE | 143 | ANNUN.48 NO ANSWER |
| 144 | ANNUN.49 TROUBLE | 145 | ANNUN.49 NO ANSWER | 146 | ANNUN.50 TROUBLE | 147 | ANNUN.50 NO ANSWER |
| 148 | ANNUN.51 TROUBLE | 149 | ANNUN.51 NO ANSWER | 150 | ANNUN.52 TROUBLE | 151 | ANNUN.52 NO ANSWER |
| 152 | ANNUN.53 TROUBLE | 153 | ANNUN.53 NO ANSWER | 154 | ANNUN.54 TROUBLE | 155 | ANNUN.54 NO ANSWER |
| 156 | ANNUN.55 TROUBLE | 157 | ANNUN.55 NO ANSWER | 158 | ANNUN.56 TROUBLE | 159 | ANNUN.56 NO ANSWER |
| 160 | ANNUN.57 TROUBLE | 161 | ANNUN.57 NO ANSWER | 162 | ANNUN.58 TROUBLE | 163 | ANNUN.58 NO ANSWER |
| 164 | ANNUN.59 TROUBLE | 165 | ANNUN.59 NO ANSWER | 166 | ANNUN.60 TROUBLE | 167 | ANNUN.60 NO ANSWER |
| 168 | ANNUN.61 TROUBLE | 169 | ANNUN.61 NO ANSWER | 170 | ANNUN.62 TROUBLE | 171 | ANNUN.62 NO ANSWER |
| 172 | ANNUN.63 TROUBLE | 173 | ANNUN.63 NO ANSWER | 174 | ANNUN.64 TROUBLE | 175 | ANNUN.64 NO ANSWER |
| 176 | GROUND FAULT LOOP 3 | 177 | GROUND FAULT LOOP 4 | 178 | GROUND FAULT LOOP 5 | 179 | GROUND FAULT LOOP 6 |
| 180 | GROUND FAULT LOOP 7 | 181 | GROUND FAULT LOOP 8 | 182 | GROUND FAULT LOOP 9 | 183 | GROUND FAULT LOOP 10 |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 184 | CLASS A NEG. LOOP 3 | 185 | CLASS A NEG. LOOP 4 | 186 | CLASS A NEG. LOOP 5 | 187 | CLASS A NEG. LOOP 6 |
| 188 | CLASS A NEG. LOOP 7 | 189 | CLASS A NEG. LOOP 8 | 190 | CLASS A NEG. LOOP 9 | 191 | CLASS A NEG. LOOP 10 |
| 192 | CLASS A POS. LOOP 3 | 193 | CLASS A POS. LOOP 4 | 194 | CLASS A POS. LOOP 5 | 195 | CLASS A POS. LOOP 6 |
| 196 | CLASS A POS. LOOP 7 | 197 | CLASS A POS. LOOP 8 | 198 | CLASS A POS. LOOP 9 | 199 | CLASS A POS. LOOP 10 |
| 200 | PRINTER SUPERVISORY | 201 | BUZZER SUPERVISORY | 202 | CRT SUPERVISORY | 203 | PRINT QUEUE FULL |
| 204 | MEMORY LOSS | 205 | PRINTER COVER OPEN | 206 | PRINTER PAPER OUT | 207 | PRINTER OFF LINE |
| 208 | WORKSTATION FAN FAILURE | 209 | UPS FAILURE | 210 | MANUAL MODE ENTERED | 211 | NCM COMM LOSS |
| 212 | CLASS B SHORT A LOOP 1 | 213 | CLASS B SHORT B LOOP 1 | 214 | CLASS B SHORT A LOOP 2 | 215 | CLASS B SHORT B LOOP 2 |
| 216 | CLASS B SHORT A LOOP 3 | 217 | CLASS B SHORT B LOOP 3 | 218 | CLASS B SHORT A LOOP 4 | 219 | CLASS B SHORT B LOOP 4 |
| 220 | CLASS B SHORT A LOOP 5 | 221 | CLASS B SHORT B LOOP 5 | 222 | CLASS B SHORT A LOOP 6 | 223 | CLASS B SHORT B LOOP 6 |
| 224 | CLASS B SHORT A LOOP 7 | 225 | CLASS B SHORT B LOOP 7 | 226 | CLASS B SHORT A LOOP 8 | 227 | CLASS B SHORT B LOOP 8 |
| 228 | CLASS B SHORT A LOOP 9 | 229 | CLASS B SHORT B LOOP 9 | 230 | CLASS B SHORT A LOOP 10 | 231 | CLASS B SHORT B LOOP 10 |
| 232 | GENERAL PS FAULT | 233 | CLASS A SHORT LOOP 1 | 234 | CLASS A SHORT LOOP 2 | 235 | CLASS A SHORT LOOP 3 |
| 236 | CLASS A SHORT LOOP 4 | 237 | CLASS A SHORT LOOP 5 | 238 | CLASS A SHORT LOOP 6 | 239 | CLASS A SHORT LOOP 7 |
| 240 | CLASS A SHORT LOOP 8 | 241 | CLASS A SHORT LOOP 9 | 242 | CLASS A SHORT LOOP 10 | 243 | NODE xxx COMM FAILURE |
| 244 | NCM PIEZO BATTERY FAILURE | 245 | DVC COMM LOSS | 246 | POWER SUPPLY CABLE NOT CONNECTED | 247 | TM4 TROUBLE |
| 248 | TM4 NO ANSWER | 249 | TM4 DISABLED | 250 | SELF TEST FAILED | 251 | NETWORK INCOMPATIBILITY |
| 252 | WORKSTATION FAILURE | 253 | NETWORK MAPPING LIMIT EXCEEDED | 254 | INVALID NODE TYPE | 255 | DISPLAY NODE LIMIT EXCEEDED |
| 256 | ANNUN. 65 TROUBLE | 257 | ANNUN. 65 NO ANSWER | 258 | ANNUN. 66 TROUBLE | 259 | ANNUN. 66 NO ANSWER |
| 260 | ANNUN. 67 TROUBLE | 261 | ANNUN. 67 NO ANSWER | 262 | ANNUN. 68 TROUBLE | 263 | ANNUN. 68 NO ANSWER |
| 264 | ANNUN. 69 TROUBLE | 265 | ANNUN. 69 NO ANSWER | 266 | ANNUN. 70 TROUBLE | 267 | ANNUN. 70 NO ANSWER |
| 268 | ANNUN. 71 TROUBLE | 269 | ANNUN. 71 NO ANSWER | 270 | ANNUN. 72 TROUBLE | 271 | ANNUN. 72 NO ANSWER |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 272 | ANNUN. 73 TROUBLE | 273 | ANNUN. 73 NO ANSWER | 274 | ANNUN. 74 TROUBLE | 275 | ANNUN. 74 NO ANSWER |
| 276 | ANNUN. 75 TROUBLE | 277 | ANNUN. 75 NO ANSWER | 278 | ANNUN. 76 TROUBLE | 279 | ANNUN. 76 NO ANSWER |
| 280 | ANNUN. 77 TROUBLE | 281 | ANNUN. 77 NO ANSWER | 282 | ANNUN. 78 TROUBLE | 283 | ANNUN. 78 NO ANSWER |
| 284 | ANNUN. 79 TROUBLE | 285 | ANNUN. 79 NO ANSWER | 286 | ANNUN. 80 TROUBLE | 287 | ANNUN. 80 NO ANSWER |
| 288 | ANNUN. 81 TROUBLE | 289 | ANNUN. 81 NO ANSWER | 290 | ANNUN. 82 TROUBLE | 291 | ANNUN. 82 NO ANSWER |
| 292 | ANNUN. 83 TROUBLE | 293 | ANNUN. 83 NO ANSWER | 294 | ANNUN. 84 TROUBLE | 295 | ANNUN. 84 NO ANSWER |
| 296 | ANNUN. 85 TROUBLE | 297 | ANNUN. 85 NO ANSWER | 298 | ANNUN. 86 TROUBLE | 299 | ANNUN. 86 NO ANSWER |
| 300 | ANNUN. 87 TROUBLE | 301 | ANNUN. 87 NO ANSWER | 302 | ANNUN. 88 TROUBLE | 303 | ANNUN. 88 NO ANSWER |
| 304 | ANNUN. 89 TROUBLE | 305 | ANNUN. 89 NO ANSWER | 306 | ANNUN. 90 TROUBLE | 307 | ANNUN. 90 NO ANSWER |
| 308 | ANNUN. 91 TROUBLE | 309 | ANNUN. 91 NO ANSWER | 310 | ANNUN. 92 TROUBLE | 311 | ANNUN. 92 NO ANSWER |
| 312 | ANNUN. 93 TROUBLE | 313 | ANNUN. 93 NO ANSWER | 314 | ANNUN. 94 TROUBLE | 315 | ANNUN. 94 NO ANSWER |
| 316 | ANNUN. 95 TROUBLE | 317 | ANNUN. 95 NO ANSWER | 318 | ANNUN. 96 TROUBLE | 319 | ANNUN. 96 NO ANSWER |
| 320 | ANNUN. 97 TROUBLE | 321 | ANNUN. 97 NO ANSWER | 322 | ANNUN. 98 TROUBLE | 323 | ANNUN. 98 NO ANSWER |
| 324 | ANNUN. 99 TROUBLE | 325 | ANNUN. 99 NO ANSWER | 326 | ANNUN. 100 TROUBLE | 327 | ANNUN. 100 NO ANSWER |
| 328 | ANNUN. 101 TROUBLE | 329 | ANNUN. 101 NO ANSWER | 330 | ANNUN. 102 TROUBLE | 331 | ANNUN. 102 NO ANSWER |
| 332 | ANNUN. 103 TROUBLE | 333 | ANNUN. 103 NO ANSWER | 334 | ANNUN. 104 TROUBLE | 335 | ANNUN. 104 NO ANSWER |
| 336 | ANNUN. 105 TROUBLE | 337 | ANNUN. 105 NO ANSWER | 338 | ANNUN. 106 TROUBLE | 339 | ANNUN. 106 NO ANSWER |
| 340 | ANNUN. 107 TROUBLE | 341 | ANNUN. 107 NO ANSWER | 342 | ANNUN. 108 TROUBLE | 343 | ANNUN. 108 NO ANSWER |
| 344 | ANNUN. 109 TROUBLE | 345 | ANNUN. 109 NO ANSWER | 346 | ANNUN. 110 TROUBLE | 347 | ANNUN. 110 NO ANSWER |
| 348 | ANNUN. 111 TROUBLE | 349 | ANNUN. 111 NO ANSWER | 350 | ANNUN. 112 TROUBLE | 351 | ANNUN. 112 NO ANSWER |
| 352 | ANNUN. 113 TROUBLE | 353 | ANNUN. 113 NO ANSWER | 354 | ANNUN. 114 TROUBLE | 355 | ANNUN. 114 NO ANSWER |
| 356 | ANNUN. 115 TROUBLE | 357 | ANNUN. 115 NO ANSWER | 358 | ANNUN. 116 TROUBLE | 359 | ANNUN. 116 NO ANSWER |
| 360 | ANNUN. 117 TROUBLE | 361 | ANNUN. 117 NO ANSWER | 362 | ANNUN. 118 TROUBLE | 363 | ANNUN. 118 NO ANSWER |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 364 | ANNUN. 119 TROUBLE | 365 | ANNUN. 119 NO ANSWER | 366 | ANNUN. 120 TROUBLE | 367 | ANNUN. 120 NO ANSWER |
| 368 | ANNUN. 121 TROUBLE | 369 | ANNUN. 121 NO ANSWER | 370 | ANNUN. 122 TROUBLE | 371 | ANNUN. 122 NO ANSWER |
| 372 | ANNUN. 123 TROUBLE | 373 | ANNUN. 123 NO ANSWER | 374 | ANNUN. 124 TROUBLE | 375 | ANNUN. 124 NO ANSWER |
| 376 | ANNUN. 125 TROUBLE | 377 | ANNUN. 125 NO ANSWER | 378 | ANNUN. 126 TROUBLE | 379 | ANNUN. 126 NO ANSWER |
| 380 | ANNUN. 127 TROUBLE | 381 | ANNUN. 127 NO ANSWER | 382 | ANNUN. 128 TROUBLE | 383 | ANNUN. 128 NO ANSWER |
| 384 | REMOTE DISPLAY 1 TROUBLE | 385 | REMOTE DISPLAY 1 NO ANSWER | 386 | REMOTE DISPLAY 2 TROUBLE | 387 | REMOTE DISPLAY 2 NO ANSWER |
| 388 | REMOTE DISPLAY 3 TROUBLE | 389 | REMOTE DISPLAY 3 NO ANSWER | 390 | REMOTE DISPLAY 4 TROUBLE | 391 | REMOTE DISPLAY 4 NO ANSWER |
| 392 | REMOTE DISPLAY 5 TROUBLE | 393 | REMOTE DISPLAY 5 NO ANSWER | 394 | REMOTE DISPLAY 6 TROUBLE | 395 | REMOTE DISPLAY 6 NO ANSWER |
| 396 | REMOTE DISPLAY 7 TROUBLE | 397 | REMOTE DISPLAY 7 NO ANSWER | 398 | REMOTE DISPLAY 8 TROUBLE | 399 | REMOTE DISPLAY 8 NO ANSWER |
| 400 | REMOTE DISPLAY 9 TROUBLE | 401 | REMOTE DISPLAY 9 NO ANSWER | 402 | REMOTE DISPLAY 10 TROUBLE | 403 | REMOTE DISPLAY 10 NO ANSWER |
| 404 | REMOTE DISPLAY 11 TROUBLE | 405 | REMOTE DISPLAY 11 NO ANSWER | 406 | REMOTE DISPLAY 12 TROUBLE | 407 | REMOTE DISPLAY 12 NO ANSWER |
| 408 | REMOTE DISPLAY 13 TROUBLE | 409 | REMOTE DISPLAY 13 NO ANSWER | 410 | REMOTE DISPLAY 14 TROUBLE | 411 | REMOTE DISPLAY 14 NO ANSWER |
| 412 | REMOTE DISPLAY 15 TROUBLE | 413 | REMOTE DISPLAY 15 NO ANSWER | 414 | REMOTE DISPLAY 16 TROUBLE | 415 | REMOTE DISPLAY 16 NO ANSWER |
| 416 | REMOTE DISPLAY 17 TROUBLE | 417 | REMOTE DISPLAY 17 NO ANSWER | 418 | REMOTE DISPLAY 18 TROUBLE | 419 | REMOTE DISPLAY 18 NO ANSWER |
| 420 | REMOTE DISPLAY 19 TROUBLE | 421 | REMOTE DISPLAY 19 NO ANSWER | 422 | REMOTE DISPLAY 20 TROUBLE | 423 | REMOTE DISPLAY 20 NO ANSWER |
| 424 | REMOTE DISPLAY 21 TROUBLE | 425 | REMOTE DISPLAY 21 NO ANSWER | 426 | REMOTE DISPLAY 22 TROUBLE | 427 | REMOTE DISPLAY 22 NO ANSWER |
| 428 | REMOTE DISPLAY 23 TROUBLE | 429 | REMOTE DISPLAY 23 NO ANSWER | 430 | REMOTE DISPLAY 24 TROUBLE | 431 | REMOTE DISPLAY 24 NO ANSWER |
| 432 | REMOTE DISPLAY 25 TROUBLE | 433 | REMOTE DISPLAY 25 NO ANSWER | 434 | REMOTE DISPLAY 26 TROUBLE | 435 | REMOTE DISPLAY 26 NO ANSWER |
| 436 | REMOTE DISPLAY 27 TROUBLE | 437 | REMOTE DISPLAY 27 NO ANSWER | 438 | REMOTE DISPLAY 28 TROUBLE | 439 | REMOTE DISPLAY 28 NO ANSWER |
| 440 | REMOTE DISPLAY 29 TROUBLE | 441 | REMOTE DISPLAY 29 NO ANSWER | 442 | REMOTE DISPLAY 30 TROUBLE | 443 | REMOTE DISPLAY 30 NO ANSWER |
| 444 | REMOTE DISPLAY 31 TROUBLE | 445 | REMOTE DISPLAY 31 NO ANSWER | 446 | REMOTE DISPLAY 32 TROUBLE | 447 | REMOTE DISPLAY 32 NO ANSWER |
| 448 | SYSTEM INITIALIZATION | 449 | POWER SUPPLY COMM FAILURE | 450-495 | Reserved | 451 | Reserved |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 496 | Reserved | 497 | Reserved | 498 | LINK PROTECTOR PRIMARY STATUS | 499 | LINK PROTECTOR SECONDARY STATUS |
| 500 | LINK PROTECTOR NOT PRESENT | 501 | EVENT BUFFER 80% FULL | 502 | EBI STATUS | 503 | Software Mismatch |
| 504 | NO POWER SUPPLY INST | 505 | LOOP 1-2 COMM FAILURE | 506 | LOOP 3-4 COMM FAILURE | 507 | LOOP 5-6 COMM FAILURE |
| 508 | LOOP 7-8 COMM FAILURE | 509 | LOOP 9-10 COMM FAILURE | 510 | TEST PROGRAM UPDATE | 511 | HISTORY 80% FULL |
| 512 | LOOP CONTINUITY TEST FAIL LOOP 1 | 513 | LOOP CONTINUITY TEST FAIL LOOP 2 | 514 | LOOP CONTINUITY TEST FAIL LOOP 3 | 515 | LOOP CONTINUITY TEST FAIL LOOP 4 |
| 516 | LOOP CONTINUITY TEST FAIL LOOP 5 | 517 | LOOP CONTINUITY TEST FAIL LOOP 6 | 518 | LOOP CONTINUITY TEST FAIL LOOP 7 | 519 | LOOP CONTINUITY TEST FAIL LOOP 8 |
| 520 | LOOP CONTINUITY TEST FAIL LOOP 9 | 521 | LOOP CONTINUITY TEST FAIL LOOP 10 | 522 | UNPROGRAMMED DEVICE ON LOOP 1 | 523 | UNPROGRAMMED DEVICE ON LOOP 2 |
| 524 | UNPROGRAMMED DEVICE ON LOOP 3 | 525 | UNPROGRAMMED DEVICE ON LOOP 4 | 526 | UNPROGRAMMED DEVICE ON LOOP 5 | 527 | UNPROGRAMMED DEVICE ON LOOP 6 |
| 528 | UNPROGRAMMED DEVICE ON LOOP 7 | 529 | UNPROGRAMMED DEVICE ON LOOP 8 | 530 | UNPROGRAMMED DEVICE ON LOOP 9 | 531 | UNPROGRAMMED DEVICE ON LOOP 10 |
| 532 | IR ENABLED ON LOOP 1 | 533 | IR ENABLED ON LOOP 2 | 534 | IR ENABLED ON LOOP 3 | 535 | IR ENABLED ON LOOP 4 |
| 536 | IR ENABLED ON LOOP 5 | 537 | IR ENABLED ON LOOP 6 | 538 | IR ENABLED ON LOOP 7 | 539 | IR ENABLED ON LOOP 8 |
| 540 | IR ENABLED ON LOOP 9 | 541 | IR ENABLED ON LOOP 10 | 542 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 1 | 543 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 2 |
| 544 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 3 | 545 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 4 | 546 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 5 | 547 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 6 |
| 548 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 7 | 549 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 8 | 550 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 9 | 551 | TRANSMIT/ RECEIVE ERROR ABOVE LIMIT ON LOOP 10 |
| 552 | TOO MANY DEVICES ON LOOP 1 | 553 | TOO MANY DEVICES ON LOOP 2 | 554 | TOO MANY DEVICES ON LOOP 3 | 555 | TOO MANY DEVICES ON LOOP 4 |
| 556 | TOO MANY DEVICES ON LOOP 5 | 557 | TOO MANY DEVICES ON LOOP 6 | 558 | TOO MANY DEVICES ON LOOP 7 | 559 | TOO MANY DEVICES ON LOOP 8 |
| 560 | TOO MANY DEVICES ON LOOP 9 | 561 | TOO MANY DEVICES ON LOOP 10 | 562 | MISMATCHED LOOP TYPE ON LOOP 1 | 563 | MISMATCHED LOOP TYPE ON LOOP 2 |
| 564 | MISMATCHED LOOP TYPE ON LOOP 3 | 565 | MISMATCHED LOOP TYPE ON LOOP 4 | 566 | MISMATCHED LOOP TYPE ON LOOP 5 | 567 | MISMATCHED LOOP TYPE ON LOOP 6 |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 568 | MISMATCHED LOOP TYPE ON LOOP 7 | 569 | MISMATCHED LOOP TYPE ON LOOP 8 | 570 | MISMATCHED LOOP TYPE ON LOOP 9 | 571 | MISMATCHED LOOP TYPE ON LOOP 10 |
| 572 | GROUND FAULT PORT A | 573 | GROUND FAULT PORT B | 574 | AMPLIFIER TROUBLE | 575 | AUXIN TROUBLE |
| 576 | DIGIN TROUBLE | 577 | FFT TROUBLE | 578 | REMOTE MIC TROUBLE | 579 | DAP PORT A FAILURE |
| 580 | DAP PORT B FAILURE | 581 | DAL NO ANSWER | 582 | LOCAL MIC TROUBLE | 583 | LOCAL PHONE TROUBLE |
| 584 | ANALOG OUTPUT A TROUBLE | 585 | ANALOG OUTPUT B TROUBLE | 586 | ANALOG OUTPUT C TROUBLE | 587 | ANALOG OUTPUT D TROUBLE |
| 588 | FLASH IMAGE ERROR | 589 | POWER SUPPLY TROUBLE | 590 | AMPLIFIER LIMIT | 591 | AMPLIFIER SUPERVISION |
| 592 | DAL ADDRESS CONFLICT | 593 | DEVICE SERVICING REQUIRED | 594 | MAPPING IN PROGRESS LOOP 1 | 595 | MAPPING IN PROGRESS LOOP 2 |
| 596 | MAPPING IN PROGRESS LOOP 3 | 597 | MAPPING IN PROGRESS LOOP 4 | 598 | MAPPING IN PROGRESS LOOP 5 | 599 | MAPPING IN PROGRESS LOOP 6 |
| 600 | MAPPING IN PROGRESS LOOP 7 | 601 | MAPPING IN PROGRESS LOOP 8 | 602 | MAPPING IN PROGRESS LOOP 9 | 603 | MAPPING IN PROGRESS LOOP 10 |
| 604 | DATABASE CORRUPTED | 605 | AUDIO LIBRARY CORRUPTED | 606 | DATABASE INCOMPATIBLE | 607 | AUDIO LIBRARY INCOMPATIBLE |
| 608 | DAL DOWNLOAD IN PROGRESS | 609 | FIRE VOICE TROUBLE | 610 | FIRE VOICE NO ANSWER | 611 | PHONE CHANNEL LIMIT EXCEEDED |
| 612 | NCM SMIFFER MODE ACTIVE | 613 | LOCAL CONNECTION LIMIT EXCEEDED | 614 | HARDWARE MISMATCH | 615 | DAL DEVICE NO ANSWER |
| 616 | PRIMARY AMP 1 HARDWARE FAIL | 617 | PRIMARY AMP 2 HARDWARE FAIL | 618 | PRIMARY AMP 3 HARDWARE FAIL | 619 | PRIMARY AMP 4 HARDWARE FAIL |
| 620 | BACKUP AMP 1 HARDWARE FAIL | 621 | BACKUP AMP 2 HARDWARE FAIL | 622 | BACKUP AMP 3 HARDWARE FAIL | 623 | BACKUP AMP 4 HARDWARE FAIL |
| 624 | DSBUS 1 COMMFAIL | 625 | DSBUS 2 COMMFAIL | 626 | DSBUS 3 COMMFAIL | 627 | DSBUS 4 COMMFAIL |
| 628 | AA TROUBLE BUS FAIL | 629 | NFN PAGING CHANNEL LIMIT EXCEEDED | 630 | BACKUP AMP LIMIT | 631 | PRIMARY AMP 1 LIMIT |
| 632 | PRIMARY AMP 2 LIMIT | 633 | PRIMARY AMP 3 LIMIT | 634 | PRIMARY AMP 4 LIMIT | 635 | BACKUP AMP 1 LIMIT |
| 636 | BACKUP AMP 2 LIMIT | 637 | BACKUP AMP 3 LIMIT | 638 | BACKUP AMP 4 LIMIT | 639 | PRIMARY AMP 1 OVERCURRENT |
| 640 | PRIMARY AMP 2 OVERCURRENT | 641 | PRIMARY AMP 3 OVERCURRENT | 642 | PRIMARY AMP 4 OVERCURRENT | 643 | BACKUP AMP 1 OVERCURRENT |
| 644 | BACKUP AMP 2 OVERCURRENT | 645 | BACKUP AMP 3 OVERCURRENT | 646 | BACKUP AMP 4 OVERCURRENT | 647 | PRIMARY AMP 1 TRIP |
| 648 | PRIMARY AMP 2 TRIP | 649 | PRIMARY AMP 3 TRIP | 650 | PRIMARY AMP 4 TRIP | 651 | BACKUP AMP 1 TRIP |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 652 | BACKUP AMP 2 TRIP | 653 | BACKUP AMP 3 TRIP | 654 | BACKUP AMP 4 TRIP | 655 | DSBUS 1 AC FAIL |
| 656 | DSBUS 2 AC FAIL | 657 | DSBUS 3 AC FAIL | 658 | DSBUS 4 AC FAIL | 659 | DSBUS 1 HIGH BATT |
| 660 | DSBUS 2 HIGH BATT | 661 | DSBUS 3 HIGH BATT | 662 | DSBUS 4 HIGH BATT | 663 | DSBUS 1 LOW BATT |
| 664 | DSBUS 2 LOW BATT | 665 | DSBUS 3 LOW BATT | 666 | DSBUS 4 LOW BATT | 667 | DSBUS 1 SELF TEST FAIL |
| 668 | DSBUS 2 SELF TEST FAIL | 669 | DSBUS 3 SELF TEST FAIL | 670 | DSBUS 4 SELF TEST FAIL | 671 | PRIMARY AMP 1 FAIL |
| 672 | PRIMARY AMP 2 FAIL | 673 | PRIMARY AMP 3 FAIL | 674 | PRIMARY AMP 4 FAIL | 675 | BACKUP AMP 1 FAIL |
| 676 | BACKUP AMP 2 FAIL | 677 | BACKUP AMP 3 FAIL | 678 | BACKUP AMP 4 FAIL | 679 | BACKUP AMP NOT INSTALLED |
| 680 | BACKUP AMP 1 NOT INSTALLED | 681 | BACKUP AMP 2 NOT INSTALLED | 682 | BACKUP AMP 3 NOT INSTALLED | 683 | BACKUP AMP 4 NOT INSTALLED |
| 684 | MODBUS COMMUNICATIONS FAULT | 685 | VESDANET TROUBLE | 686 | Reserved | 687 | DOOR INTERLOCK FAULT |
| 688 | ANNUN 01 TYPE MISMATCH | 689 | ANNUN 02 TYPE MISMATCH | 690 | ANNUN 03 TYPE MISMATCH | 691 | ANNUN 04 TYPE MISMATCH |
| 692 | ANNUN 05 TYPE MISMATCH | 693 | ANNUN 06 TYPE MISMATCH | 694 | ANNUN 07 TYPE MISMATCH | 695 | ANNUN 08 TYPE MISMATCH |
| 696 | ANNUN 09 TYPE MISMATCH | 697 | ANNUN 10 TYPE MISMATCH | 698 | ANNUN 11 TYPE MISMATCH | 699 | ANNUN 12 TYPE MISMATCH |
| 700 | ANNUN 13 TYPE MISMATCH | 701 | ANNUN 14 TYPE MISMATCH | 702 | ANNUN 15 TYPE MISMATCH | 703 | ANNUN 16 TYPE MISMATCH |
| 704 | ANNUN 17 TYPE MISMATCH | 705 | ANNUN 18 TYPE MISMATCH | 706 | ANNUN 19 TYPE MISMATCH | 707 | ANNUN 20 TYPE MISMATCH |
| 708 | ANNUN 21 TYPE MISMATCH | 709 | ANNUN 22 TYPE MISMATCH | 710 | ANNUN 23 TYPE MISMATCH | 711 | ANNUN 24 TYPE MISMATCH |
| 712 | ANNUN 25 TYPE MISMATCH | 713 | ANNUN 26 TYPE MISMATCH | 714 | ANNUN 27 TYPE MISMATCH | 715 | ANNUN 28 TYPE MISMATCH |
| 716 | ANNUN 29 TYPE MISMATCH | 717 | ANNUN 30 TYPE MISMATCH | 718 | ANNUN 31 TYPE MISMATCH | 719 | ANNUN 32 TYPE MISMATCH |
| 720 | DISPLAY COMM LOSS | 721 | ALARM DEVICES DISABLED | 722 | SMOKE CONTROL DISABLED | 723 | PANEL HAS REBOOTED |
| 724 | ZONES DISABLED BY BRIGADE | 725 | ALARM SIGNAL | 726 | KERNEL CORRUPTED | 727 | Please change service tool password |
| 728 | LOOP CARD 1 COMM LOSS | 729 | LOOP CARD 2 COMM LOSS | 730 | LOOP CARD 3 COMM LOSS | 731 | LOOP CARD 4 COMM LOSS |
| 732 | LOOP CARD 5 COMM LOSS | 733 | LOOP CARD 6 COMM LOSS | 734 | LOOP CARD 7 COMM LOSS | 735 | LOOP CARD 8 COMM LOSS |
| 736 | LOOP CARD 9 COMM LOSS | 737 | LOOP CARD 10 COMM LOSS | 738 | Please change password Master user password | 739 | PASSWORD DATABASE CORRUPTED |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 740 | Default database. Please program. | 741 | POWER SUPPLY 1 COMM LOSS | 742 | POWER SUPPLY 2 COMM LOSS | 743 | POWER SUPPLY 3 COMM LOSS |
| 744 | POWER SUPPLY 4 COMM LOSS | 745 | POWER SUPPLY 5 COMM LOSS | 746 | Recovery Partition Application Active | 747 | AIO COMM CLASS A TROUBLE |
| 748 | AC Failure (LSB is PMB address 1-5) | 749 | Earth Fault (LSB is PMB address 1-5) | 750 | Earth Fault Switch Mismatch (LSB is PMB address 1-5) | 751 | Battery Low (LSB is PMB address 1-5) |
| 752 | Battery High (LSB is PMB address 1-5) | 753 | Battery Low or Missing (LSB is PMB address 1-5) | 754 | Charger Fail (LSB is PMB address 1-5) | 755 | Power Supply Failure (LSB is PMB address 1-5) |
| 756 | AIO Address 1 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 757 | AIO Address 2 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 758 | AIO Address 3 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 759 | AIO Address 4 Comm Loss (LSB is 0 for router, 1-15 for peripheral) |
| 760 | AIO Address 5 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 761 | AIO Address 6 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 762 | AIO Address 7 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 763 | AIO Address 8 Comm Loss (LSB is 0 for router, 1-15 for peripheral) |
| 764 | AIO Address 9 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 765 | AIO Address 10 Comm Loss (LSB is 0 for router, 1-15 for peripheral) | 766 | Reserved | 767 | Reserved |
| 768 | POTS Card No Answer / Missing | 769 | POTS Line 1 Failure | 770 | POTS Line 2 Failure | 771 | POTS Call (Alarm Routing) Failure |
| 772 | POTS Software Mismatch | 773 | Cellular Card No Answer / Missing | 774 | Cellular Card No Connectivity | 775 | WiFi No Connectivity |
| 776 | Ethernet 1 No Connectivity | 777 | Ethernet 2 No Connectivity | 778 | CLSS Cloud Communication Failure | 779 | Ethernet/ WiFi Alarm Routing Failure |
| 780 | Cellular Alarm Routing Failure | 781 | Releasing Zone License Exceeded | 782 | General Zone License Exceeded | 783 | Zone Coding License Not Present |
| 784 | Logic Zone License Exceeded | 785 | Network License Not Present | 786 | CLIP License Not Present | 787 | Custom Action License Exceeded |
| 788 | Advanced Logic License Not Present | 789 | Power Supply No Service (LSB is PMB address 1-5) | 790 | Power Supply Program Corrupt (LSB is PMB address 1-5) | 791 | Power Supply Database Corrupt (LSB is PMB address 1-5) |
| 792 | Power Supply Database Incompatible (LSB is PMB address 1-5) | 793 | (Reserved) | 794 | (Reserved) | 795-799 | (Reserved) |
| 800 | (Reserved) | 801 | Loop No Database (LSB is loop address 1-10) | 802 | Loop Database Incompatible (LSB is loop address 1-10) | 803 | Loop In Bootloader (LSB is loop address 1-10) |
| 804-808 | (Reserved) | 809 | (Reserved) | 810 | (Reserved) | 811 | (Reserved) |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 812 | Service Mode Enabled | 813 | Trouble reporting | 814 | Health check over Ethernet | 815 | Health check over WiFi |
| 816 | Hardware Compromised | 817 | RLD Programming Mode Activated (LSB is AIO router address 1-10) | 818 | RLD Database Mismatch (LSB is AIO router address 1-10) | 819 | AIO Addr 1 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) |
| 820 | AIO Addr 2 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 821 | AIO Addr 3 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 822 | AIO Addr 4 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 823 | AIO Addr 5 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) |
| 824 | AIO Addr 6 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 825 | AIO Addr 7 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 826 | AIO Addr 8 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 827 | AIO Addr 9 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) |
| 828 | AIO Addr 10 Buzzer Supervisory (LSB is 0 for router, 1-15 for peripheral) | 829 | AIO Addr 1 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 830 | AIO Addr 2 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 831 | AIO Addr 3 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) |
| 832 | AIO Addr 4 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 833 | AIO Addr 5 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 834 | AIO Addr 6 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 835 | AIO Addr 7 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) |
| 836 | AIO Addr 8 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 837 | AIO Addr 9 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 838 | AIO Addr 10 Hardware Mismatch (LSB is 0 for router, 1-15 for peripheral) | 839 | AIO Addr 1 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) |
| 840 | AIO Addr 2 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 841 | AIO Addr 3 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 842 | AIO Addr 4 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 843 | AIO Addr 5 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) |
| 844 | AIO Addr 6 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 845 | AIO Addr 7 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 846 | AIO Addr 8 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 847 | AIO Addr 9 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) |
| 848 | AIO Addr 10 Hardware Failure (LSB is 0 for router, 1-15 for peripheral) | 849 | AIO Addr 1 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 850 | AIO Addr 2 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 851 | AIO Addr 3 Extra Device (LSB is 0 for router, 1-15 for peripheral) |
| 852 | AIO Addr 4 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 853 | AIO Addr 5 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 854 | AIO Addr 6 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 855 | AIO Addr 7 Extra Device (LSB is 0 for router, 1-15 for peripheral) |
| 856 | AIO Addr 8 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 857 | AIO Addr 9 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 858 | AIO Addr 10 Extra Device (LSB is 0 for router, 1-15 for peripheral) | 859 | AIO Addr 1 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 860 | AIO Addr 2 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 861 | AIO Addr 3 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 862 | AIO Addr 4 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 863 | AIO Addr 5 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) |
| 864 | AIO Addr 6 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 865 | AIO Addr 7 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 866 | AIO Addr 8 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 867 | AIO Addr 9 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) |
| 868 | AIO Addr 10 Duplicate Address (LSB is 0 for router, 1-15 for peripheral) | 869 | History Flash Error | 870 | Remote Autoprogram In Progress | 871 | Network Installation Mode |
| 872 | AIO Addr 1 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 873 | AIO Addr 2 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 874 | AIO Addr 3 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 875 | AIO Addr 4 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 876 | AIO Addr 5 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 877 | AIO Addr 6 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 878 | AIO Addr 7 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 879 | AIO Addr 8 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 880 | AIO Addr 9 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 881 | AIO Addr 10 Relay Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 882 | AIO Addr 1 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 883 | AIO Addr 2 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 884 | AIO Addr 3 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 885 | AIO Addr 4 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 886 | AIO Addr 5 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 887 | AIO Addr 6 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 888 | AIO Addr 7 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 889 | AIO Addr 8 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 890 | AIO Addr 9 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 891 | AIO Addr 10 Municipal Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 892 | AIO Addr 1 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 893 | AIO Addr 2 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 894 | AIO Addr 3 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 895 | AIO Addr 4 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 896 | AIO Addr 5 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 897 | AIO Addr 6 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 898 | AIO Addr 7 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 899 | AIO Addr 8 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) |
| 900 | AIO Addr 9 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 901 | AIO Addr 10 Isolated Voltage Fault (LSB Is 0 For Router, 1-15 For Peripheral) | 902 | Water Releasing Zone License Exceeded | 903 | DCC License Not Present |

| System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name | System Trouble Index | System Trouble Name |
|---|---|---|---|---|---|---|---|
| 904 | Ground Fault Indication License Not Present | 905 | Loop License Exceeded | 906 | Power Supply License Exceeded | 907 | Panel Upgrade Not Present |
| 908 | Alarm Signal License Not Present | 909 | Zone View License Not Present | 910 | AIO Addr 1 Alarm Disconnect | 911 | AIO Addr 2 Alarm Disconnect |
| 912 | AIO Addr 3 Alarm Disconnect | 913 | AIO Addr 4 Alarm Disconnect | 914 | AIO Addr 5 Alarm Disconnect | 915 | AIO Addr 6 Alarm Disconnect |
| 916 | AIO Addr 7 Alarm Disconnect | 917 | AIO Addr 8 Alarm Disconnect | 918 | AIO Addr 9 Alarm Disconnect | 919 | AIO Addr 10 Alarm Disconnect |
| 920 | Missing Audio Daughter Board | 921 | AIO Addr 1 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 922 | AIO Addr 2 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 923 | AIO Addr 3 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) |
| 924 | AIO Addr 4 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 925 | AIO Addr 5 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 926 | AIO Addr 6 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 927 | AIO Addr 7 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) |
| 928 | AIO Addr 8 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 929 | AIO Addr 9 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 930 | AIO Addr 10 Incompatible (LSB Is 0 For Router, 1-15 For Peripheral) | 931 | Network Address Conflict |
| 932 | Loop Card Incompatible (LSB Indicates Loop Address) | 933 | Power Supply Incompatible (LSB Indicates Power Supply Address) | 934 | Virtual Point License Exceeded | 935 | Sub-addressing Point License Exceeded |

# APPENDIX G: TYPE CODES

## G.1 WHAT ARE TYPE CODES?

Type Codes are software selections for initiating devices (detectors and monitor modules) and output devices (control modules and NACs). Some Type Codes are self-explanatory; that is, the Type Code matches the function of the device, such as a “Monitor” for a monitor module, “Smoke(photo)” for a photoelectric detector and so on. Type codes also provide special functions, such as activating switches, solenoids and control panel functions. FlashScan devices are assigned a special FlashScan code.

How to Select a Type Code

Type Codes are selected in VeriFire Tools.

This appendix contains detailed descriptions of Type Codes for input and output devices, as listed below:

| Type of Device | Refer to |
|---|---|
| Intelligent Detectors | Table G.1 Intelligent Detector Type Codes |
| Monitor Modules | Table G.1 Type Codes for Monitor Modules |
| SLC Outputs | Table G.1 SLC Control Module Type Codes |
| PMB Outputs | Table G.2 PMB Output Type Codes |
| FlashScan Codes | Table G.1 FlashScan Codes |
| Self Test Detectors | Table G.2 Self-Test FlashScan Codes |

## G.2 TYPE CODES FOR INPUT DEVICES

### Overview

This section provides a list of Type Codes for intelligent detectors and for monitor modules. The following Point Types react in the following way when activated:

• Fire Alarm- Red indication on the Alert Bar and flashes on the Header Bar when one or more alarms occur. Illuminates steadily after alarms are acknowledged and turns off when Reset is pressed after the alarm(s) clear.

• CO Alarm- Blue indication on the Alert Bar and flashes on the Header Bar for a CO alarm. Illuminates steadily after alarms are acknowledged and turns off when Reset is pressed after the alarm(s) clear.

• Supervisory- Yellow Indication that flashes on the Alert Bar when a Supervisory or Tamper condition occurs, such as a sprinkler valve tamper condition. The indication illuminates steady after conditions are acknowledged and turns off when the conditions are cleared. A Tamper indication will latch until Reset is pushed. Reset is required for any latched event.

• Security- A blue indication on the Alert Bar and flashes on Header Bar when a security activation occurs. Illuminates steadily after acknowledge is pressed and turns off when the security activation is cleared. Reset is required for any latched event.

• Trouble- Yellow indication on the Alert Bar and flashes on the Header Bar when one or more troubles occur. Illuminates steadily when Acknowledge is pressed and turns off when all trouble conditions are cleared.

• Other Event- Yellow indication that flashes on the Alert Bar when a Critical Process or Hazard / Weather Alert occurs When a CO Pre-alarm occurs, indication flashes blue and a Pre-alarm indication will flash red. Illuminates steady when Acknowledge is pressed and turns off when the condition is cleared.

## G.3 TYPE CODES FOR INTELLIGENT DETECTORS

Following is a list of intelligent detector Type Codes, which specify the type of detector installed at an SLC address.

**Table G.1** Intelligent Detector Type Codes

| Type Code | Point Type | Latching (Y=yes N=no) | Activates CBE | Device/ Point Function |
|---|---|---|---|---|
| ASPIRATION* | fire | Y | Y | Aspiration laser or Intelligent Aspiration detector |
| ASPIR. (SUP)* | supervisory | Y | Y | Supervisory for Intelligent Aspiration detector |
| ASPIR. (PRE)* | prealarm | N | Y | Pre-alarm for Intelligent Aspiration detector |
| ASPIR. (NON)* | non-fire | N | Y | Non-fire for Intelligent Aspiration detector |
| ASPIR. (REF)* | non-fire | N | Y | Reference for Intelligent Aspiration detector |
| Note for Aspiration detector programming:<br>The FAAST Intelligent Aspiration detector requires five (5) consecutive SLC devices addresses. Refer to the FAAST installation documentation for additional programming information. | | | | |
| SMOKE (ION) | fire | Y | Y | Ionization smoke detector |
| SUP L(ION)† | supervisory | Y | Y | Ionization smoke detector |
| SUP T(ION)† | supervisory | N | Y | Ionization smoke detector |
| SMOKE(DUCTI) | fire | Y | Y | Duct Ionization smoke detector |
| SUP L(DUCTI) | supervisory | Y | Y | Duct ionization smoke detector |
| SUP T(DUCTI)‡ | supervisory | N | Y | Ionization smoke detector used as a duct detector to report supervisory condition rather than alarm. |
| SMOKE(PHOTO) | fire | Y | Y | Photoelectric smoke detector |
| SUP L(PHOTO)† | supervisory | Y | Y | Photoelectric smoke detector |
| SUP T(PHOTO) †and ‡ | supervisory | N | Y | Photoelectric smoke detector |
| SMOKE(DUCTP) | fire | Y | Y | Duct Photoelectric smoke detector |
| SUP L(DUCTP) | supervisory | Y | Y | Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm |
| SUP T(DUCTP)‡ | supervisory | N | Y | Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm. |
| RFSMOKE(PHOTO) | fire | Y | Y | Wireless Photoelectric smoke detector |
| SMOKE(HARSH) | fire | Y | Y | HARSH smoke detector |
| SMOKE(LASER) | fire | Y | Y | Laser smoke detector |
| SUP T (LASER)†and ‡ | supervisory | N | Y | Laser Smoke Detector |
| SUP L (LASER)† | supervisory | Y | Y | Laser Smoke Detector |
| SMOKE(DUCTL) | fire | Y | Y | Duct Laser smoke detector |
| SUP L(DUCTL) | supervisory | Y | Y | Laser smoke detector used as a duct detector to report supervisory condition rather than alarm. |
| SUP T(DUCTL)‡ | supervisory | N | Y | Laser smoke detector used as a duct detector to report supervisory condition rather than alarm. |
| FIRE/ CO | fire | Y | Y | Combination Photoelectric/ CO detector |
| F/ CO (P SUP)* | fire | Y (See Note below) | Y | Combination Photoelectric/ CO detector. Photo element activation generates a supervisory condition. |
| F/ CO (C SUP) | fire | Y (See Note below) | Y | Combination Photoelectric/ CO detector. CO element activation generates a supervisory condition. |

| Type Code | Point Type | Latching (Y=yes N=no) | Activates CBE | Device/ Point Function |
|---|---|---|---|---|
| Note: For Fire/ CO detectors:<br>Detectors programmed as F/ CO (P SUP), the Heat and CO elements will latch and require a system reset to clear. The Photo element will latch or track, depending on the Fire/ CO (Photo SUP) setting.<br>Detectors programmed as F/ CO (C SUP), the Heat and Photo elements will latch and require a system reset to clear. The CO element will latch or track, depending on the Fire/ CO (CO SUP) setting. | | | | |
| PHOTO/ CO | Fire | Y | Y | PHOTO CO detector. |
| P/ CO (P SUP) | PHOTO- Supervisory<br>CO- Alarm | Y (See note below) | Y | PHOTO CO detector |
| P/ CO (C SUP) | PHOTO- Fire<br>CO- Supervisory | Y | Y | PHOTO CO detector |
| CO Alarm | CO Alarm | Y | Y | CO detector |
| CO SUP | Supervisory | Y (See note below) | Y | CO detector |
| Note: PHOTO/ CO and CO Detectors programmed as PHOTO/ CO (P SUP)/ CO (CO SUP) will either latch or track, depending on the setting. | | | | |
| AIR REF | fire | Y | Y | Assign to one or more FSL-751detectors used to monitor the quality of air entering the protected area. The air quality measurement allows the VIEW system to compensate for vehicle fumes, fog, or other particles brought into the protected area through the ventilation system. Poor air quality will lower the sensitivity of all FSL-751 detectors on the SLC. The detector sensitivity, however, remains within approved limits (always less than 1% obscuration per foot). |
| Note: A reference detector still functions as a smoke detector, but the detector sensitivity level should be set to the least sensitive level—AL:9 and PA:9 Alarm and Pre-Alarm sensitivity. Refer to "Detector Sensitivity Settings" on page 139 for a complete list of detector sensitivity settings. | | | | |
| HEAT | fire | Y | Y | 190°F heat detector |
| HEAT+ | fire | Y | Y | 190°F heat detector with low temperature warning |
| HEAT(FIXED) | fire | Y | Y | 135°F intelligent thermal sensor |
| HEAT (ROR) | fire | Y | Y | 15°F per minute rate-of-rise detector |
| SMOKE ACCLIM | fire | Y | Y | Combination Photoelectric/ heat detector |
| SMOKE(ACCLI+) | fire | Y | Y | Combination Photoelectric/ heat detector with low temperature warning, or Intelliquad FSC-851 Photoelectric Multi-Criteria Smoke Sensor. |
| SMOKE(MULTI)‡ | fire | Y | Y | Multi-sensor smoke detector |
| SMOKE(BEAM) | fire | Y | Y | Beam Smoke Detector |
| ACCL(P SUP) | fire | Y (See note below) | Y | Combination Photoelectric/ Heat detector. Photo element activation generates a supervisory condition. |

| Type Code | Point Type | Latching (Y=yes N=no) | Activates CBE | Device/ Point Function |
|---|---|---|---|---|
| ACCL+(P SUP) | fire | Y (See note below) | Y | Combination Photoelectric/ Heat detector with low temperature warning. Photo element activation generates a supervisory condition. |
| Note: For ACCL/ ACCL+ detectors:<br>Detectors programmed as ACCL (P SUP) or ACCL+(P SUP), the Heat element will latch and require a system reset to clear. The Photo element will latch or track, depending on the ACCL (P SUP) Latching setting. | | | | |

* When a device associated with FAAST is disabled locally, all devices associated with FAAST will automatically be disabled as well.

†Use only with AHJ approval.

‡CLIP Mode only.

### G.3.1 TYPE CODES FOR MONITOR MODULES

Following is a list of monitor module Type Codes, which can be used to change the function of a monitor module point.

**Table G.1** Type Codes for Monitor Modules

| Type Code | Point Type | Point Characteristics | | |
|---|---|---|---|---|
| | | Latching (Y=yes, N=no) | Activates CBE | Device Function |
| MONITOR | fire alarm | Y | Y | Alarm-monitoring device |
| NC MONITOR | fire alarm | Y | Y | Alarm monitoring device, where an open circuit=active. |
| PULL STATION | fire alarm | Y | Y | Manual fire-alarm-activating device |
| SMOKE CONVEN | fire alarm | Y | Y | Indicates activation of a conventional smoke detector. An FZM-1 must be used for alarm verification of a two-wire conventional detector. |
| SMOKE DETECT | fire alarm | Y | Y | Indicates activation of a conventional smoke detector. An FZM-1 must be used for alarm verification of a two-wire conventional detector |
| WATERFLOW | fire alarm | Y | Y | Monitor for waterflow alarm switch |
| WATERFLOW S | supervisory | Y | Y | Indicates supervisory condition for activated waterflow switch |
| ACCESS MONTR | non-alarm security | N | Y | Used for monitoring building access |
| AREA MONITOR | security | Y | Y | Monitors building access |
| AUDIO SYSTEM | trouble | N | N | Used for monitoring audio equipment (use trouble zones for activations) |
| EQUIP MONITR | non-alarm security | N | Y | Used for monitoring equipment |
| SECURITY L | security | Y | Y | Indicates activation of security alarm |
| LATCH SUPERV | supervisory | Y | Y | Indicates latching supervisory condition |
| NC SUP L | supervisory | Y | Y | Indicates latching supervisory condition, where an open circuit=active. |
| TRACK SUPERV | supervisory | N | Y | Monitors for waterflow tamper switches for alarm points |
| NC SUP T | supervisory | N | Y | Indicates tracking supervisory condition, where an open circuit=active. |
| SPRINKLR SYS | supervisory | Y | Y | Monitors a waterflow device |

| Type Code | Point Type | Point Characteristics | | |
|---|---|---|---|---|
| | | Latching (Y=yes, N=no) | Activates CBE | Device Function |
| SYS MONITOR | security | Y | Y | Monitors equipment security |
| TAMPER | supervisory | Y | Y | Indicates activation of tamper switch |
| ACK SWITCH | non-alarm | N | N | Performs Acknowledge function |
| ALLCALL PAGE | non-alarm | N | Y | Performs function AMG-1 All-call and telephone page |
| DRILL SWITCH | non-alarm* | Y | N | Performs Drill function |
| EVACUATE SWITCH | non-alarm"Type Codes for Monitor Modules" on the previous page | Y | N | Performs Drill function, activates silenceable fire outputs |
| FIRE CONTROL | non-alarm | N | Y | Monitors non-fire activations |
| NON FIRE | non-alarm | N | Y | Monitors non-fire activations |
| NC NON FIRE | non-alarm | N | Y | Monitors non-fire activations, where an open circuit =active. |
| POWER MONITR | trouble† | N | N | Monitors main and auxiliary power supplies |
| RESET SWITCH | non-alarm | N | N | Performs Reset function |
| SIL SWITCH | non alarm | N | N | Performs Signal Silence function |
| TELE PAGE | non-alarm | N | Y | Performs function of page button on FFT-7. Allows remote paging to a fire area |
| DISABLE MON | disable | N | N | When this point activates it will create a disable on the panel for that point. No CBE generated. Modules cannot be disabled via ACS, Alter Status, or over the network. |
| TROUBLE MON | trouble | N | N | Monitors trouble inputs |
| Blank | fire alarm | Y | Y | Monitors for a device with no description |
| HEAT DETECT | fire alarm | Y | Y | Monitors for conventional heat detector |
| RF MON MODUL | fire alarm | Y | Y | Wireless alarm-monitoring device |
| RF PULL STA | fire alarm | Y | Y | Wireless manual fire-alarm-activating device |
| RF SUPERVSRY | supervisory | N | Y | Wireless supervisory-monitoring device |
| ABORT SWITCH | non-alarm | N | Y | Provides an abort function through a monitor module (connected to a UL-listed abort station) for a releasing zone. NOTE: An abort switch can only be associated with one (1) Releasing Zone. |
| MAN RELEASE | fire alarm‡ | Y | Y | Provides a manual release through a monitor module (connected to a UL-listed pull station) for a releasing zone |
| MAN REL DELAY | fire alarm"Type Codes for Monitor Modules" on the previous page | Y | Y | Provides a manual release with a 10-second delay through a monitor module (connected to a UL-listed pull station) for a releasing zone |

| Type Code | Point Type | Point Characteristics | | |
|---|---|---|---|---|
| | | Latching (Y=yes, N=no) | Activates CBE | Device Function |
| SECOND SHOT | fire alarm"Type Codes for Monitor Modules" on the previous page | Y | Y | Provides a second manual release through a monitor module (connected to a UL-listed pull station) for a releasing zone |
| HAZARD ALRT | non-fire | N | Y | Monitors for a hazard alert |
| WEATHER ALRT | non-fire | N | Y | Monitors for a weather alert |
| PROCESS MON | critical process | Y | Y | Monitors for a critical process |
| PROCESS AUTO | critical process | N | Y | Monitors for a critical process |
| CO MONITOR | CO alarm | Y | Y | Monitors conventional CO detectors for a CO alarm condition. |
| RF GATEWAY | non-alarm | N | Y | Provides communication between wireless devices and the fire panel. |
| ALARM TRACK** | alarm | N | Y | This unit must be installed in accordance with the following requirements:<br>Monitor modules located with the protected premises which are responsible for supervising the state of the protected premises control unit may be programmed for Tracking (non-latching) operation. The supervised protected premises control unit shall be responsible for all notification and evacuation. |
| PAS INHIBIT | non-alarm | N | N | Inhibits Positive Alarm Sequence |
| Security T | security | N | Y | Indicates activation of security alarm |

* Local Mode treats this point as a fire alarm point.
† Does not participate in Local Mode.
‡ Local Mode activation of NACs only. No releasing.
** Does not activate General Alarm Zone Z0.

## G.4 TYPE CODES FOR SLC OUTPUT DEVICES

The following is a list of Type Codes for SLC control module points. Select from these codes to define the type of point.

**Table G.1** SLC Control Module Type Codes

| Type Code | Silenceable (Y=yes N=no)* | Switch Inhibit (Y=yes N=no)* | SLC Output Point | Local Mode Group Point Types | Device Function |
|---|---|---|---|---|---|
| CONTROL† | Y | N | NAC | fire | Supervised NAC |
| RELAY† | Y | N | Relay | n/a | Relay output |
| BELL CIRCUIT | Y | N | NAC | fire | Supervised NAC |
| STROBE CKT† | Y | N | NAC | fire | Supervised NAC |
| HORN CIRCUIT† | Y | N | NAC | fire | Supervised NAC |
| AUDIBLE CKT | Y | N | NAC | fire | Supervised NAC |
| SPEAKER | Y | N | NAC | fire | Supervised NAC for speaker circuits |
| blank† | Y | N | NAC | n/a | Supervised NAC for undefined device |
| NONRESET CTL† | N | N | Relay or NAC | n/a | Supervised output, unaffected by “System Reset” command |

| | | | | | |
|---|---|---|---|---|---|
| TELEPHONE | N | N | Telephone | fire | Supervised Telephone circuit |
| CONTROL NAC | Y | N | NAC | fire | Supervised NAC |
| GEN ALARM† | N | Y | NAC | fire | Single-address control module, XP6-C.<br>This type ID can be used for general alarm activation including retrofits where new equipment replaces XPC-8.<br>NOTE: Retrofits using XP5-C Municipal box should update to TM-8 (see LS10388-000GE-E). |
| GEN SUPERVIS† | N | Y | NAC | supervisory | Single-address control module or XP6-C activated under any Supervisory condition (includes sprinkler type).<br>Retrofit use replaces XPC-8 and XP5-C (in NAC mode). |
| GEN TROUBLE† | N | Y | NAC | trouble | Single-address control module or XP6-C activated under any System Trouble condition.This device will not turn ON when it is in trouble (short or open). Retrofit use replaces XPC-8 and XP5-C (in NAC mode). |
| GENERAL PEND† | N | Y | NAC | trouble | Single-address control module or XP6-C that will activate upon receipt of an alarm and/or trouble condition, and remain in the ON state until all events have been ACKNOWLEDGED. This device will not turn ON when it is in trouble (short or open). Retrofit use replaces XPC-8 and XP5-C (in NAC mode). |
| TROUBLE PEND† | N | Y | NAC | trouble | Single-address control module or XP6-C that will activate upon receipt of a trouble condition, and remain in the ON state until all troubles have been ACKNOWLEDGED. This device will not turn ON when it is in trouble (short or open). Retrofit use replaces XPC-8 and XP5-C (in NAC mode). |
| ALARMS PEND† | N | Y | NAC | fire | Control module or NAC for output that will activate upon receipt of an alarm condition, and remain in the alarm state until all alarms have been acknowledged. |
| INST RELEASE‡ | N | Y | NAC (SLC only) | fire | Supervised for open circuits and ground faults. Short = normal |
| RELFORM . C‡ | N | Y | Form-C relay (SLC only) | n/a | Directs relay outputs to perform a releasing function. |
| RELEASE CKT‡ | N | Y | NAC (SLC only) | n/a | Directs outputs to perform a releasing function.Supervised for open circuits and ground faults. Short = normal |
| REL END BELL | N | Y | NAC | n/a | Activates NAC audio or visual device when releasing circuits shut off. |
| REL AUDIBLE | Y | Y | NAC | n/a | Activates audio or visual devices steady when releasing starts. |

| | | | | | |
|---|---|---|---|---|---|
| FORM C RESET† | N | Y | Form-C Relay (SLC only) | n/a | Relay module used to interrupt 24V power to four-wire conventional detectors for 30 seconds upon reset. Used in conjunction with a monitor module with a conventional detector Type ID. |
| ISOLATED NAC | Y | N | NAC | fire | Supervised NAC for notification appliance, used with audio isolators. Activates even if there is a short on its NAC circuit. For ULC installations only. |
| ISOLATED SPK | Y | N | NAC | fire | Supervised NAC for speaker circuits, used with audio isolators. Activated even if there is a short on its audio circuit. For ULC installations only. |

* Values represent program defaults.

† This Type Code has external power supervision (FlashScan only). An external power-supervision relay is not required. These type codes will have the Short Circuit Protection feature enabled when using FCM-1 modules. Note that Type Codes RELAY, REL FORM C, and FORM C RESET are for use only with FRM-1 modules. Refer to the section on devices requiring external power supervision in this panel's installation manual.

‡ The FCM-1-REL checks for shorts with all releasing type codes.

## G.5 OUTPUT TYPE CODES FOR PMB DEVICES

**Table G.2** PMB Output Type Codes

| Type Code | | | |
|---|---|---|---|
| NAC System Sensor | Inst Relay Door Hold | NAC System Sensor | UZC |
| Relay/ Power Const | Del 30 Door Hold | NAC Wheelock | NAC Sync Follower |
| Relay/ Power Reset | NAC Coded Alarm | NAC Gentex | |

## G.6 UZC PROGRAMMING REQUIREMENTS:

When using the UZC function of the PMB, the following parameters must be followed, depending on the application:

• Alarm Coded Signal - A coded alarm signal shall consist of not less than three complete rounds of the number transmitted and each round shall consist of not less than three impulses.

• Coded Supervisory Signal - A coded supervisory signal shall consist of not less than 2 complete rounds of the number transmitted to indicate a supervisory off-normal condition and not less than one complete round of the number transmitted to indicate the restoration of the supervisory condition to normal.

## G.7 FLASHSCAN CODES

The following is a list of FlashScan Codes for FlashScan SLC devices Select from these codes to define the type of point:

**Table G.1** FlashScan Codes

| Flash Scan Code | FlashScan SLC Device | Flash Scan Code | FlashScan SLC Device |
|---|---|---|---|
| ACCLIMATE | FAPT-751, FAPT-851 | HEAT ROR | FST-851R |
| BEAM | FSB-200, FSB-200S | PHOTO/ CO | FPC-951, FPC-951-IV |
| IQUAD | FSC-851 | CO | FSCO-951 |
| CONTROL | FCM-1 | FAASTX | FSA-20000/ A , FSA-5000/ A<br>FSA-20000P |
| HEAT | FST-751/ R, FST-851/ R , FST-951, | FAAST | FSA-8000/ A |
| HIGH HEAT | FST-851H | PS RELAY | ACPS RELAY |

| Flash Scan Code | FlashScan SLC Device | Flash Scan Code | FlashScan SLC Device |
|---|---|---|---|
| ION | FSI-751, FSI-851 | RELAY | FRM-1 |
| LASER | FSL-751, FSV-951R | RFX SMOKE | SDRF-751 |
| MANUAL STATION | FSM-101 (NBG-12LX Series) | TELEPHONE | FTM-1 |
| RF PULL STATION | FW-MM | RF MONITOR* | FW-MM |
| RF GATEWAY | FWSG/A | RF HEAT* | FWH-200FIX135,FWH-200ROR135 |
| RF PHOTO | FWD-200P | RF ACCLIMATE* | FWD-200ACCLIMATE |
| RF RELAY | FW-RM | PS MON | PS MON |
| MINI/DUAL MONITOR | FMM-101,FDM-1 | PS CONTROL | ACPS CONTROL |
| MONITOR | FMM-1 | ZONE MONITOR | FZM-1 |
| PHOTO | FSP-751,FSD-751P/RP, FSP-851, FSD-751PL/RPL, FSH-75 , FSP-951 | RF PHOTO/HEAT | FWD-200PT |
| PHOTO/HEAT | FSP-751T, FSP-851T, FSP-951T | PS MON | PS MON |
| FIRE/CO | FCO-851, FCO-951 | | |

## G.8 SELF-TEST FLASHSCAN CODES

The following are FlashScan Codes for Self-Test Devices.

**Table G.2** Self-Test FlashScan Codes

| Self Test FlashScan Code | Device |
|---|---|
| Photo | FSP-951-SELFT |
| Photo/Heat | FSP-951T-SELFT |
| Heat | FST-951-SELFT |
| High Heat | FST-951-SELFT |
| Heat ROR | FST-951-SELFT |

# APPENDIX H: REGIONAL SETTINGS

## H.1 CHICAGO

The Regional Setting choice of CHICAGO disallows local drill or signal silence.

- The DRILL and SIGNAL SILENCE keys at the panel will not function.
- Annunciator Control Modules and SLC modules given a drill or signal silence Mode or Type Code will not allow local drill or signal silence initiation.
- Events must be acknowledged prior to system reset.

# APPENDIX I: NETWORK DISPLAY MODE

## I.1 NETWORK DISPLAY MODE OVERVIEW

The Network Display Mode programming options, available through VeriFire Tools are described below. Network Display Mode allows the N16 to display network events for mapped nodes. N16 (V5.0 and above) allows network mapping of up to 2 nodes without triggering a Network display mode license trouble. A one time feature activation/ license for "network display mode" can be added at any time to the panel to display events for all mapped nodes on the network with no limitation on node types or quantity.

## I.2 EVENT AND DRILL/ALARM SIGNAL MAPPING

The N16 can be programmed to monitor events and initiate drill on one (1) additional fire panel and up to four (4) DVCs. For information on Network Node Mapping.

Mapping a network node to the N16 on the Network Mapping menu will allow the N16 to monitor and annunciate events for that node. Drill/ Alarm Signal Mapping for the N16 can only be changed through VeriFire Tools. Refer to the *VeriFire Tools Help File*.

Once the Network license is installed on an N16 panel, it can be mapped to unlimited number of panels on the network.

## I.3 PANEL CONTROL FUNCTIONS

### Acknowledge, System Reset, Signal Silence and Drill/Alarm Signal

In Network Display Mode, the N16 has the ability to perform a network Acknowledge, System Reset, Signal Silence and Drill/ Alarm Signal. Only the network nodes mapped to the N16 will be affected.

### Auto Silence

In Network Display Mode, the Auto Silence feature also applies to any network nodes mapped to the N16.

**NOTE:** Initiating an Acknowledge, System Reset, Signal Silence or Drill/ Alarm Signal on a network node mapped to the N16 may affect nodes that are not participating in Network Display Mode through Logic Zone Programming.

## I.4 PRINT FUNCTIONS

When in Network Display Mode, printing active points on the N16 will also display any active points of any mapped network nodes.

# APPENDIX J: SOFTWARE TYPE ID CODES

## J.1 ALPHABETICAL LIST OF SOFTWARE TYPE ID CODES

The following chart lists N16 Type ID codes in alphabetical order. These codes are assigned during programming based on the types and functions of the devices they are assigned. The codes appear in point message formats.

**Table J.1** Software Type ID Codes, Alphabetical List

| Software Type ID Code | Device |
|---|---|
| ABORT SWITCH | Monitor that provides an abort function for a releasing zone through connection to a UL-listed abort station) |
| ACCESS MONTR | Monitor for building access |
| ACCL(P SUP) | Combination Photoelectric/ Heat Detector. Photo element activation generates a supervisory condition. |
| ACCL+(P SUP) | Combination Photoelectric/ Heat Detector with low temperature warning. Photo element activation generates a supervisory condition. |
| ACK SWITCH | Monitor used to silence panel sounder and to give an acknowledge message on the panel display |
| AIR REF | FSL-751 detector used to monitor air quality entering a protected area |
| ALARMS PEND | Control module or NAC for output that will activate upon receipt of an alarm condition and remain in the alarm state until all alarms have been acknowledged. Programmed for switch inhibit |
| ALARM TRACK | Monitor used to monitor fire alarm equipment |
| ALLCALL PAGE | Monitor used for emulation of AMG-1 All-call switch, activating all speaker circuits |
| AREA MONITOR | Monitor for building access |
| ASPIR. (NON) | For use with an aspiration detector, reports to the fire panel as a non-fire event when its threshold is reached |
| ASPIR. (PRE) | For use with an aspiration detector, reports to the fire panel as a prealarm condition when its threshold is reached |
| ASPIR. (REF) | For use with an aspiration detector, reports to the fire panel as a non-fire activation, used as a reference for other aspiration detectors on the loop |
| ASPIR. (SUP) | For use with an aspiration detector, reports to the fire panel as a supervisory when its threshold is reached |
| ASPIRATION | For use with an aspiration detector, reports to the fire panel as a fire alarm when threshold is reached |
| AUDIBLE CKT | Control module/ relay used on audible circuit NAC |
| AUDIO SYSTEM | Monitor for audio equipment |
| BELL CIRCUIT | Control module used with NAC with bells |
| BLANK | Operates as CONTROL with no Type ID label |
| CO MONITOR | Monitor Module for use with conventional CO detectors. Activation will generate a CO Alarm on the FACP. |
| CONTROL | Control module used with NAC |
| CONTROL NAC | Control module or NAC |
| DRILL SWITCH | Monitor used for activation that emulates panel Drill switch, activating silenceable fire outputs |
| EQUIP MONITR | Monitor used for recording access to equipment |
| EVACUATE SWITCH | Monitor used for activation that emulates panel Drill switch, activating silenceable fire outputs |
| FIRE CONTROL | Monitors non-fire activations |
| FORM C RESET | Control module used to interrupt 24V power to four-wire conventional detectors for 30 seconds upon reset. Used in conjunction with a monitor module with a conventional detector Type ID |

| Software Type ID Code | Device |
|---|---|
| GEN ALARM | Control module, XPC-8 circuit, or XP5-C (NAC mode) configured as a Municipal Box Transmitter for NFPA 72 Auxiliary Fire Alarm Systems applications (MBT-1 required). This Type ID can also be used for general alarm activation. It is programmed as “switch inhibit”. |
| GEN PEND | Control module, XPC-8 circuit, or XP5-C (NAC mode) that will activate upon receipt of an alarm and/ or trouble condition and remain in the ON state until all events have been acknowledged |
| GEN SUPERVIS | Control module, XPC-8, or XP5-C (NAC mode) activated under any supervisory condition (includes sprinkler type). It is programmed as “switch inhibit” |
| GEN TROUBLE | Control module, XPC-8, or XP5-C (NAC mode) activated under any System Trouble condition. It is programmed as “switch inhibit” |
| HAZARD ALERT | Indicated a hazard condition, tracking |
| HEAT | Adjustable threshold heat detector |
| HEAT+ | Adjustable threshold heat detector with a low temperature warning. |
| HEAT(FIXED) | Intelligent 135ºF thermal sensor detector |
| HEAT(ROR) | 15ºF per minute rate-of-rise detector |
| HEAT DETECT | Monitor for conventional heat detector |
| HORN CIRCUIT | Control module relay module used with NAC with horns |
| ISOLATED NAC | Supervised NAC for notification appliance, used with audio isolators. Activates even if there is a short on its NAC circuit. Canada installations only. |
| ISOLATED SPK | Supervised NAC for speaker circuit, used with audio isolators. Activates even if there is a short on its audio circuit. Canada installations only. |
| LATCH SUPERV | Indicates latching supervisory condition |
| MAN RELEASE | Monitor module that provides manual release for a releasing zone through connection to a UL-listed pull station |
| MAN REL DELAY | Monitor module that provides manual release with a 10 second delay for a releasing zone through connection to a UL-listed pull station |
| MONITOR | Alarm-monitoring device |
| NON FIRE | Monitors non fire activations |
| NONRESET CTL | Output unaffected by “System Reset” command |
| P/ CO (C SUP) | For use with a Photo/ CO detector. If the CO element in the detector activates, a supervisory condition is generated on the fire panel. An activation via the heat or photo element of the Photo/ CO detector will generate an alarm condition on the panel. |
| P/ CO (P SUP)** | For use with a Photo/ CO detector. If the photo element in the detector activates, a supervisory condition is generated on the fire panel. An activation via the CO or heat element of the Photo/ CO detector will generate an alarm condition on the panel. |
| PHOTO/ CO | For use with a Photo/ CO detector. Activation of the CO, photo or heat elements will generate an alarm condition on the fire panel. |
| POWER MONITR | Monitor for main and auxiliary power supplies |
| PROCESS AUTO | Indicates process condition, tracking |
| PROCESS MON | Indicates process condition, latching |
| PULL STATION | Manual fire-alarm activating device |
| RELAY | Form-C relay control module |
| REL. FORM C | Form-C relay that directs outputs to perform a releasing function |
| RF MON MODUL | Wireless alarm-monitoring device |
| RF PULL STA | Wireless manual fire alarm-activating device |
| RFSMOKE(PHOTO) | Wireless smoke detector |
| RF SUPERVSRY | Wireless supervisory-monitoring device |

| Software Type ID Code | Device |
|---|---|
| SECOND SHOT | Monitor module that provides a second manual release for a releasing zone through connection to a UL-listed pull station |
| SECURITY L | Monitor for activation of latching security alarm |
| SIL SWITCH | Monitor used as Signal Silence switch, turning off all activated silenceable outputs |
| SMOKE ACCLIM | Combination photoelectric/ heat detector |
| SMOKE(ACCLIM+) | Combination photoelectric/ heat detector with low temperature warning |
| SMOKE CONVEN | Conventional smoke detector attached to an FZM-1TC841A1000 or XLS-MM-Z |
| SMOKE DETECT | Conventional smoke detector attached to an FZM-1 TC841A1000 or XLS-MM-Z |
| SMOKE(DUCTI) | Duct ionization smoke detector |
| SMOKE(DUCTL) | Duct laser smoke detector |
| SMOKE(DUCTP) | Duct photoelectric smoke detector |
| SMOKE(HARSH) | HARSH smoke detector |
| SMOKE(ION) | Ionization smoke detector |
| SMOKE(LASER) | Laser smoke detector |
| SMOKE(MULTI) | Multisensor smoke detector |
| SMOKE(PHOTO) | Photoelectric smoke detector |
| SPEAKER | Control module for speaker |
| SPRINKLR SYS | Monitor for a waterflow device |
| STROBE | Control module used with NAC with strobes |
| SUP L(DUCTI) | Duct ionization smoke detector, latching |
| SUP L(DUCTL) | Duct laser smoke detector, latching |
| SUP L(DUCTP) | Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm, latching |
| SUP L(ION)** | Ionization smoke detector, latching |
| SUP L(LASER)** | Laser smoke detector, latching |
| SUP L(PHOTO)** | Photoelectric smoke detector, latching |
| SUP T(DUCTI)*, ** | Duct ionization smoke detector, tracking |
| SUP T(DUCTL)*, ** | Duct laser smoke detector, tracking |
| SUP T(DUCTP)*, ** | Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm, tracking |
| SUP T(ION)*, ** | Ionization smoke detector, tracking |
| SUP T(LASER)*, ** | Laser smoke detector, tracking |
| SUP T(PHOTO)*, ** | Photoelectric smoke detector, tracking |
| SYS MONITOR | Monitor for equipment security |
| TAMPER | Monitor for activation of tamper switch |
| TELE PAGE | Monitor used to emulate the page button on an FFT-7, allowing remote paging to a fire area |
| TELEPHONE | Control module for standard telephone circuit |
| TRACKING SUPERV | Monitor for waterflow tamper switches for alarm points |
| TROUBLE MON | Monitor for trouble inputs |
| WATERFLOW | Monitor for waterflow alarm switch |
| WATERFLOW S | Monitor for supervisory condition for activated waterflow switch |
| WEATHER ALRT | Monitor for weather condition, tracking |

*Not suitable for Canadian applications.

**Subject to AHJ approval.

# APPENDIX K: BATTERY CALCULATIONS

## K.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 worst-case system current load on the control panel, when primary (AC) power is applied, to assure that the limit of the its internal power supply will not be exceeded. This considers the fire alarm condition only.

3. Calculating the total current load on the batteries (secondary power source) in the event of an AC power loss. This considers both standby and fire alarm conditions.

4. Calculating the size of the batteries required to support the system if AC power loss occurs, based on the total battery current load, plus a regulatory agency mandated derating factor.

## K.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. Over-current 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 "Calculating the AC Branch Circuit" above to determine the total amount of current, in AC amperes (A), that must be supplied to the system.

**Table K.1** AC Branch Circuit Requirements

| Device Type | Number of Devices | | Current Draw (AC amps) | | Total Current per Device |
|---|---|---|---|---|---|
| | 1 | X | 3.25 | = | |
| CHG-120 | [ ] | X | 2.00 | = | |
| | [ ] | X | [ ] | = | |
| Sum Column for AC Branch Current Required | | | | = | |

## K.3 CALCULATING THE SYSTEM CURRENT LOAD

### Overview

The control panel's internal power supply must support all connected devices while primary (AC) power is applied. The continuous system current load is highest during a fire alarm condition. To calculate the fire alarm load on the internal power supply, use Calculation Column 1 in  Figure K-1: Battery Calculations .

The secondary power source (batteries) must be able to power the system under both standby and fire alarm conditions upon loss of primary (AC) power. To calculate the fire alarm load on the secondary power source, use Calculation Column 2 in Figure K-1: Battery Calculations . To calculate the standby load on the secondary power source, use Calculation Column 3 in Figure K-1: Battery Calculations .

All currents are given in amperes (A).  Table K.1  Converting to Full Amperes  shows how to convert milliamperes and microamperes to full amperes.

**Table K.1** Converting to Full Amperes

| To convert... | Multiply | Example |
|---|---|---|
| Milliamperes (mA) to amperes (A) | mA x 0.001 | 3 mA x 0.001 = 0.003A |

| To convert... | Multiply | Example |
|---|---|---|
| Microamperes (µA) to amperes (A) | µA x 0.000001 | 300 µA x 0.000001 = 0.0003 A |

# N16/PMB Battery Calculation

## Secondary Power Source Requirements

| | Standby Current (amps) | | | | | Secondary Alarm Current (amps) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Device Type | Qty | | Current Draw | | Total | Qty | | Current Draw | | Total |
| **1. Control Panel** | | | | | | | | | | |
| PMB-AUX | 0 | x | 0.096000 | = | | 0 | x | 0.110000 | = | |
| CPU- N16 | 0 | x | 0.116000 | = | | 0 | x | 0.116000 | = | |
| Main Display | 0 | x | 0.153000 | = | | 0 | x | 0.163000 | = | |
| NCD | 0 | x | 0.360000 | = | | 0 | x | 0.360000 | = | |
| ACM-30 | 0 | x | 0.087000 | = | | 0 | x | 0.087000 | = | |
| SLM-318 | 0 | x | 0.159000 | = | | 0 | x | 0.276000 | = | |
| HON-CGW-MBB | 0 | x | 0.100000 | = | | 0 | x | 0.250000 | = | |
| CLSS Dialer | 0 | x | 0.100000 | = | | 0 | x | 0.200000 | = | |
| NCM-W, NCM-F | 0 | x | 0.110000 | = | | 0 | x | 0.110000 | = | |
| HS-NCM-W/WF/SF/WMF/WSF/WFSF | 0 | x | 0.400000 | = | | 0 | x | 0.400000 | = | |
| **2. Addressable SLC Devices** | | | | | | | | | | |
| **USE MAX DRAW ( ENTER # LOOPS USED,DO NOT SELECT DEVICES)** | 0 | x | 0.300000 | = | | 0 | x | 0.400000 | = | |
| FSP-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSP-951T | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSP-951R | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FST-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FST-951H | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FST-951R | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FS-OSI-RI | 0 | x | 0.020000 | = | | 0 | x | 0.022000 | = | |
| FPTI-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSV-951R | 0 | x | 0.000300 | = | | 0 | x | 0.000450 | = | |
| FCO-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FPC-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSCO-951 | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSP-951-SELFT | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FSP-951T-SELFT | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| FST-951-SELFT | 0 | x | 0.000200 | = | | 0 | x | 0.000450 | = | |
| **3. Addressable SLC Modules** | | | | | | | | | | |
| FRM-1 | 0 | x | 0.025500 | = | | 0 | x | 0.006500 | = | |
| FCM-1 | 0 | x | 0.000375 | = | | 0 | x | 0.006500 | = | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FCM1-REL | 0 | x | 0.000640 | = | | 0 | x | 0.010000 | = | |
| FTM-1 | 0 | x | 0.007500 | = | | 0 | x | 0.007500 | = | |
| NBG12LX | 0 | x | 0.000375 | = | | 0 | x | 0.000375 | = | |
| FDM-1 | 0 | x | 0.000750 | = | | 0 | x | 0.000750 | = | |
| FMM-1 | 0 | x | 0.000375 | = | | 0 | x | 0.000500 | = | |
| FMM-101 | 0 | x | 0.000350 | = | | 0 | x | 0.000600 | = | |
| FZM-1 | 0 | x | 0.000270 | = | | 0 | x | 0.000510 | = | |
| XP-10M | 0 | x | 0.003750 | = | | 0 | x | 0.055000 | = | |
| XP6-R | 0 | x | 0.001900 | = | | 0 | x | 0.032000 | = | |
| XP6-C | 0 | x | 0.026500 | = | | 0 | x | 0.035000 | = | |
| FIK-M500R | 0 | x | 0.000255 | = | | 0 | x | 0.000255 | = | |
| FDRM-1 | 0 | x | 0.001300 | = | | 0 | x | 0.024000 | = | |
| XP6-MA | 0 | x | 0.002300 | = | | 0 | x | 0.004000 | = | |
| FMM-4-20 | 0 | x | 0.002000 | = | | 0 | x | 0.002000 | = | |
| FWSG | 0 | x | 0.024000 | = | | 0 | x | 0.024000 | = | |
| | 0 | x | | = | | 0 | x | | = | |
| **4. SLC Accessories** | | | | | | | | | | |
| B200S | 0 | x | 0.000300 | = | | 0 | x | 0.000300 | = | |
| B200S-LF | 0 | x | 0.003000 | = | | 0 | x | 0.000300 | = | |
| B200SR | 0 | x | 0.000300 | = | | 0 | x | 0.000300 | = | |
| B200SR-LF | 0 | x | 0.001000 | = | | 0 | x | 0.125000 | = | |
| B224RB | 0 | x | 0.000500 | = | | 0 | x | 0.000500 | = | |
| RTS151KEY | 0 | x | 0.000000 | = | | 0 | x | 0.007500 | = | |
| RA100Z | 0 | x | 0.000000 | = | | 0 | x | 0.010000 | = | |
| **5. Auxiliary Power Draw - SLC Devices** | | | | | | | | | | |
| FCM-1 (Aux. Power) | 0 | x | 0.001700 | = | | 0 | x | 0.007000 | = | |
| XP6-C (Aux. Power) | 0 | x | 0.008000 | = | | 0 | x | 0.020000 | = | |
| FZM-1 (Aux. Power) | 0 | x | 0.012000 | = | | 0 | x | 0.090000 | = | |
| XP6-MA (Aux. Power) | 0 | x | 0.050000 | = | | 0 | x | 0.270000 | = | |
| B200S (Aux. Power) | 0 | x | 0.000500 | = | | 0 | x | 0.035000 | = | |
| B200S-LF (Aux. Power) | 0 | x | 0.000550 | = | | 0 | x | 0.140000 | = | |
| B200SR (Aux. Power) | 0 | x | 0.000500 | = | | 0 | x | 0.035000 | = | |
| B200SR-LF (Aux. Power) | 0 | x | 0.001000 | = | | 0 | x | 0.125000 | = | |
| **6. SLC Isolator Devices** | | | | | | | | | | |
| ISO-X | 0 | x | 0.000450 | = | | 0 | x | 0.000450 | = | |
| B224BI | 0 | x | 0.000500 | = | | 0 | x | 0.000500 | = | |
| **7. Voice systems** | | | | | | | | | | |
| DVC | 0 | x | 0.025000 | = | | 0 | x | 0.050000 | = | |
| DVC-KD | 0 | x | 0.020000 | = | | 0 | x | 0.025000 | = | |
| **8. Battery Sharing: other power supplies & amplifiers** | | | | | | | | | | |
| MISC POWER 1 | 0 | x | | = | | 0 | x | | = | |
| MISC POWER 2 | 0 | x | | = | | 0 | x | | = | |
| MISC POWER 3 | 0 | x | | = | | 0 | x | | = | |
| **9. Miscellaneous Devices** | | | | | | | | | | |
| Conventional Detectors | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| Miscellaneous Device 1 | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| Miscellaneous Device 2 | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| Miscellaneous Device 3 | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| Miscellaneous Device 4 | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| Miscellaneous Device 5 | 0 | x | 0.000000 | = | | 0 | x | 0.000000 | = | |
| **10. Output Circuits** | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PMB 1-NAC 1 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 1-NAC 2 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 1-NAC 3 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 1-NAC 4 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 2-NAC 1 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 2-NAC 2 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 2-NAC 3 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 2-NAC 4 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 3-NAC 1 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 3-NAC 2 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 3-NAC 3 | | | 0.000000 | = | | | | 0.000000 | = | |
| PMB 3-NAC 4 | | | 0.000000 | = | | | | 0.000000 | = | |
| | | | **Total Standby Load** | | 0.000000 | | | **Total Alarm Load** | | 0.000000 |

## N16/PMB Battery Calculation

Note 1: You are fully responsible for verifying these calculations.

Note 2: Use the dropdowns in the **yellow** cells to enter values.

**Calculation in Total Sheet**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | **Required Standby Time in Hours** |
| | | | | | 24 Hours |
| **Standby Load Current** | **0.00000 Amps** | x | 24 | = | 0.000 AH |
| | | | | | **Required Alarm Time in Minutes** |
| | | | | | 5 Minutes |
| **Alarm Load Current (Amps)** | **0.00000 Amps** | x | 0.084 | = | 0.000 AH |
| | | | | **Total Current Load** | **0.000 AH** |
| | Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | | **Total Ampere Hours Required** | **0.00 AH** |

| | |
|---|---|
| **Recommended Batteries:** | **7AH Batteries** |

| |
|---|
| **Battery Check** |
| **The batteries can be charged by the PMB-AUX Charger.** |

**Figure K-1:** Battery Calculations

## K.4 CALCULATING THE BATTERY SIZE

Use "Calculating the Battery Size" above 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 system upon loss of primary (AC) power. Complete "Calculating the Battery Size" above as follows:

01. Enter the totals from Figure K-1: Battery Calculations , Calculation Columns 2 and 3 where shown.

02. Enter the NFPA Standby and Alarm times (refer to 'NFPA Requirements' below).

03. Calculate the ampere hours for Standby and Alarm, then sum the Standby and Alarm ampere hours.

04. Multiply the sum by the derating factor of 1.2 to calculate the proper battery size (in AH).

05. Write the ampere hour requirements on the Protected Premises label located inside the cabinet door.

**Table K.1** Total Secondary Power Requirements at 24 VDC

| | | |
|---|---|---|
| Total Standby Load, Battery Powered (from "Calculating the System Current Load" on page 176 Calculation Column 3) [ ] | Required Standby Time (24 hours) X[ ] | = AH |
| Total Fire Alarm Load, Battery Powered (from "Calculating the System Current Load" on page 176 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 |

### K.4.1 NFPA BATTERY REQUIREMENTS

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

### K.4.2 SELECTING AND LOCATING BATTERIES

Select sealed lead acid batteries that meet or exceed the total ampere hours calculated in Table K.1 Total Secondary Power Requirements at 24 VDC . The control panel can charge batteries in the 7 AH to 100 AH range. The control panel cabinet is capable of housing batteries up to 26 AH. Batteries larger than 26 AH require a UL listed external battery charger and cabinet such as the NFS-LBB or other UL listed external battery cabinet.

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