NOTIFIER®
by Honeywell

Fire Alarm Control Panel
N16
Instruction Manual

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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-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

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

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

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

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

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

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 more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled as required by National and/or local fire codes and should be performed by authorized professional life safety system installers only. Adequate written records of all inspections should be kept.

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Installation Precautions

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

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

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

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

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

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

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

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

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

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

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 Warning

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

Canadian Requirements

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

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

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Software Downloads

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

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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
- Underwriters Laboratories Standard 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. Operation of this product with products not tested for UL 864, 10th Edition has not been evaluated. Such operation requires the approval of the local Authority Having Jurisdiction (AHJ).

For product compliance, refer to the UL listing cards located on the UL online certification directory at https://iq.ulprospector.com/en/.

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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 13 Sprinkler Systems
- NFPA 15 Water Spray 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 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 Detectors, Single and Multiple Station
- UL 228 Door Closers - Holders for Fire Protective Signaling Systems
- UL 268 Smoke Detectors for Fire Protective Signaling Systems
- UL 268A Smoke Detectors for Duct Applications
- UL 346 Waterflow Indicators for Fire Protective Signaling Systems
- UL 464 Audible Signaling Appliances
- UL 521 Heat Detectors for Fire Protective Signaling Systems
- UL 864 Standard for Control Units for Fire Protective Signaling Systems
- UL 1481 Power Supplies for Fire Protective Signaling Systems
- UL 1971 Visual Signaling Appliances
- UL 2017 Standard for General-Purpose Signaling Devices and SystemsUL 2610 Standard for Commercial Premises Security Alarm Units and 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.

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	
HW-CGW-MBB CLSS Gateway	LS10248-051HW-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
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
ONYXWorks® 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

Table 1.1

Document Name	Document Number
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

Table 1.1

***** 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.

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NOTE: Unless otherwise specified, the term N16is used to refer to all versions of the panel.

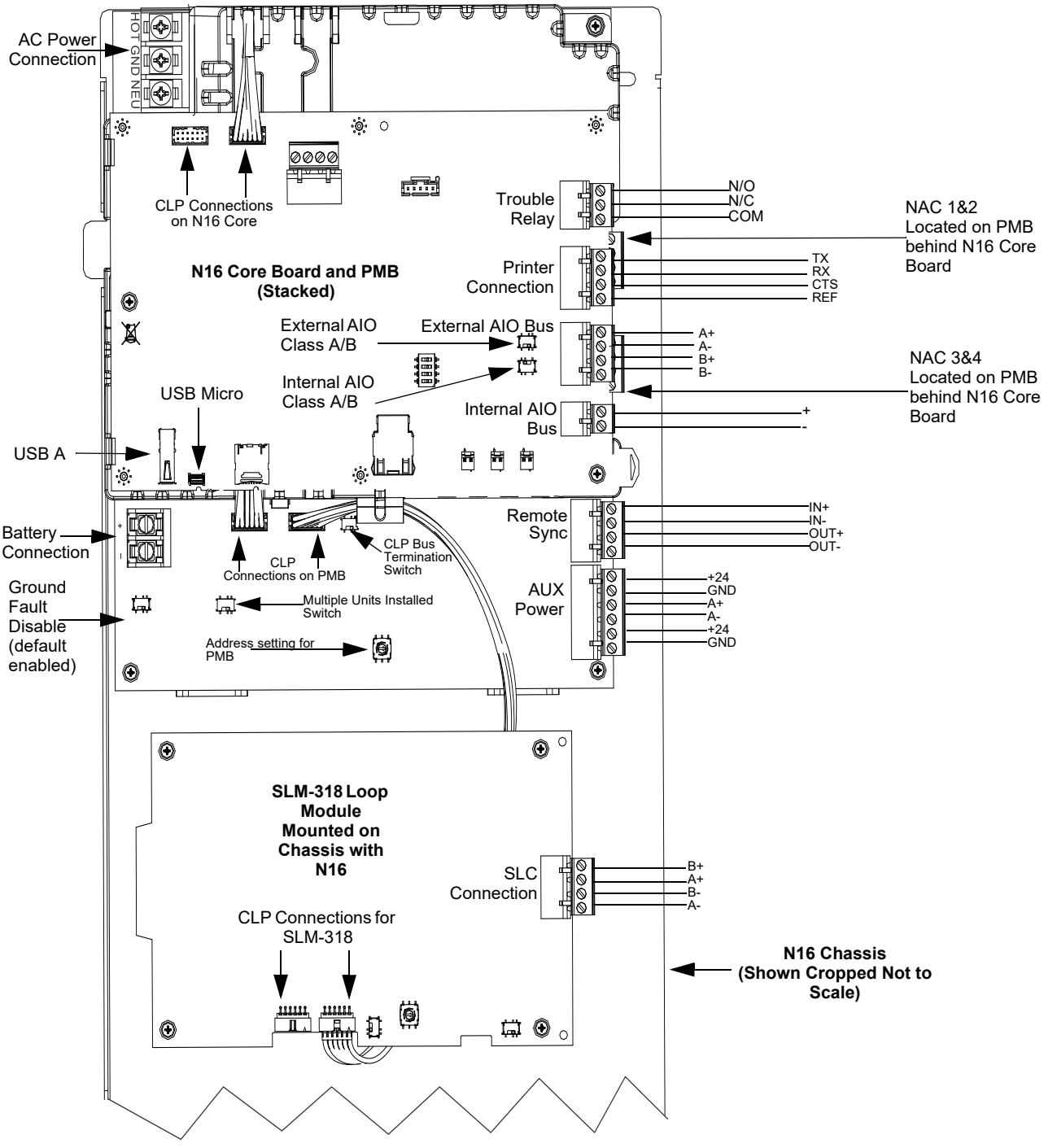


Figure 1.1 N16 Board Layout

1.1 Panel Features

- 10 inch high definition color touchscreen display with customizable buttons
- 6.0 A power supply with four Class A/B built-in Notification Appliance Circuits (NAC). Selectable for System Sensor, Wheelock and Gentex strobe synchronization
- 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 (NFS2-3030 NFS2-640, NFS-320, NFS-320SYS, NCD, NCA-2/, DVC-EM ONYXWorks)
  - Standard network for up to 103 nodes (NFS2-3030, NFS2-640, NFS-320 NFS-320SYS, NCD, NCA-2, DVC-EM, ONYXWorks). Up to 54 nodes when DVC-EM is used in network paging
  - 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 annunciatorsHistory 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 Figure 1.1, “N16 Board Layout” on page 13 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.

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: Class A/B, NAC power, Class D door holder power, Special application Class A/B aux power, UZC

2.8 ohm max line impedance

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

NAC 3 and NAC 4- TB3

Power-limited (Class 2), 24VDC, 1.5 Amps

Special applications, 150ma regulated, Class A/B, NAC power, Class D door holder power, Special application Class A/B aux power, UZC

2.8 ohm max line impedance

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

Battery Connection- TB9

Charges 7-100 AH sealed lead-acid batteries

Charging current: 1A, 2A and 4.25A

Charging voltage: 27.6VDC nominal

Remote Sync Input- TB6

Power-limited (Class 2)

Aux Power 1/Aux Power2- TB7

24VDC, 1.5Amps Class A/B, power-limited (Class 2), special applications, resettable/Non-Resettable

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

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.

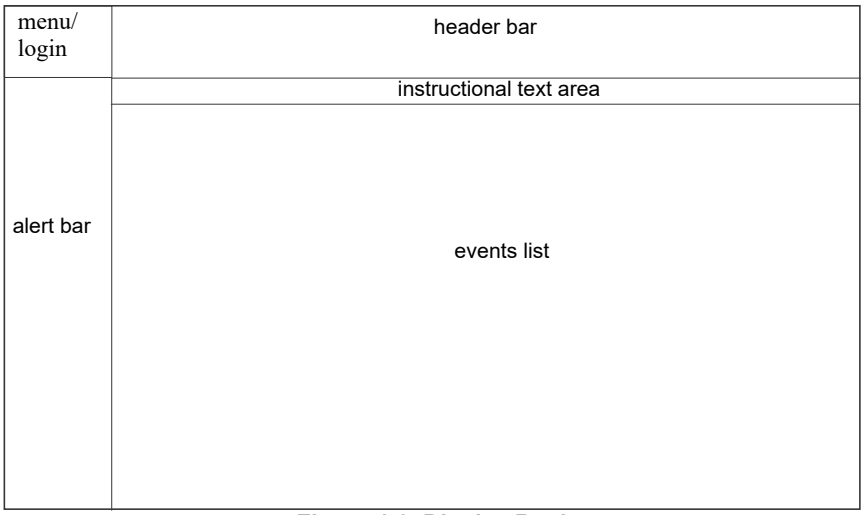


Figure 1.2 Display Regions

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.

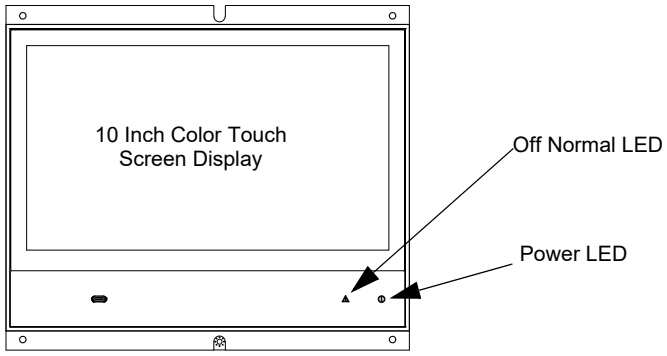


Figure 1.3 LED Indicators

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)

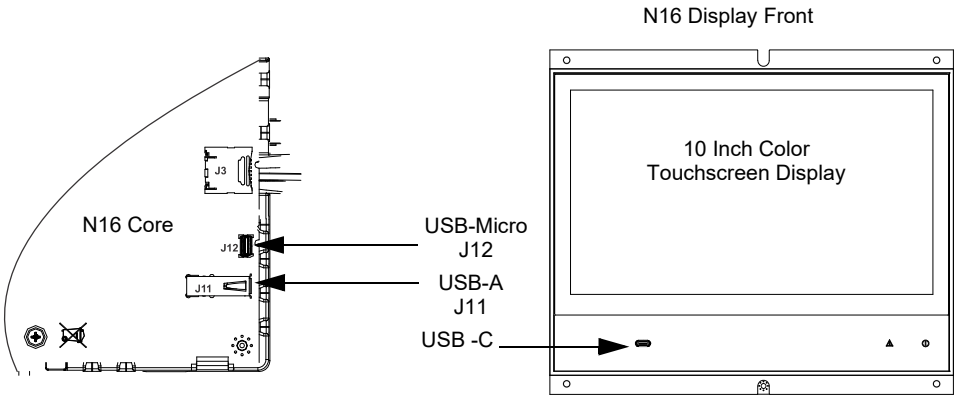


Figure 1.4 USB Connections

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.

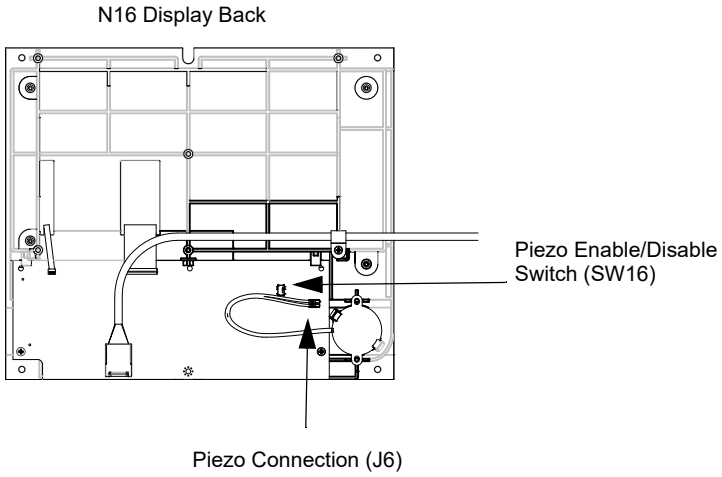


Figure 1.5 Local Piezo Sounder

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-AUX/PMB-AUX-RTO

The PMB Power Supply is the power supply for the N16 panel. It features 3 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-N16LNDchassis assemblies. The CAB-4 Series is compatible with the CPU-N16RTOfor retrofit applications.

Batteries

The CAB-4 and CAB-5 Series cabinets provides space for two batteries (up to 18 Amp Hour). Batteries larger than 18 Amp Hour require an external charger such as the CHG-120 and a UL listed battery box such as the BB-26 or NFS-LBB. 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 Accessories

1.5.1 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 7 or newer, 32 or 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.

1.5.2 CLSS Dialer (HON-CGW-DACT)

The N16 can report to central stations via the public switched telephone network using the HON-CGW-DACT. The assembly includes one CGW-MB and one CGW-PT and is housed in the CGW-BB. There are no Gateway capabilities with this configuration.

1.5.3 Dress Panel

Optional Dress Panels are available for the CAB-5 enclosures for mounting AIO annunciators and NCDdisplays.

- DP-4A - Dress panel for mounting four (4) ACM-30 annunciators
- DP-T2A - Dress panel for mounting the NCDor DIS-10-RD display and two (2) ACM-30 annunciators

Optional Dress Panels are available for CAB-4 enclosures for retrofit installations of N16 equipment.

- 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 first row only
- DP-GDISP2 - Dress panel for mounting the NCD or DIS-10-RD display and Onyx Series Annunciators in the second, third, or fourth rows

1.5.4 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.

1.5.5 Battery Charger

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.

1.5.6 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 10,000 simultaneous events.

1.5.7 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.

1.5.8 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)*

1.6 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 59)

1.7 Telephone Requirements and Warnings

1.7.1 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.

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

1.7.2 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 is necessary.

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

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

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

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

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

Section 2: Installation

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.

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)*

Devices:

- **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-DACT** CLSS Dialer
- **CGW-MB** Common Communicator Module
- **CGW-PT** POTS Card
- **CPU-N16-RTO**Core Board with Retrofit Chassis
- **CPU-N16-LD** Core Board with 10HD Display
- **CPU-N16-NLD** Core Board without Display
- **CPU-N16-RD** Core 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
- **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
- **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
- **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
- **ONYXWorks** Workstation Network Monitoring Workstation
- **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)
- **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

Licenses:

- N16-CAC
- N16-CLP
- N16-GZ
- N16-LGZ
- N16-NWD
- N16-UZC

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.

2.1.1 Mounting the Backbox

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

1. Mark and pre-drill hole in the wall for the center top keyhole mounting bolt using the dimensions illustrated in Figure 2.1.
2. Install center top fastener in the wall with the screw head protruding.
3. Place backbox over the top screw, level and secure.
4. Mark and drill the left and right upper and lower mounting holes.
   Note: Outer holes (closest to sidewall) are used for 16" O.C. stud mounting.
5. Install remaining fasteners and tighten.
6. When the location is dry and free of construction dust, install the chassis/circuit board assembly.
7. Mount the chassis to the backbox by aligning the two mounting tabs with the slots in the backbox, then position the two mounting hole tabs over the studs with nuts located in the upper portion of the backbox.
8. Slide the tabs located on the bottom of the chassis into the mounting slots in the backbox by pressing the chassis down.
9. Secure the chassis to the backbox by tightening the two mounting nuts (#10-32) at the top and to ensure proper grounding, use a 3/8" nut driver or socket.

If the main circuit board is not already attached to the chassis, install it by positioning the ten mounting holes over the studs on the chassis and secure with the supplied screws

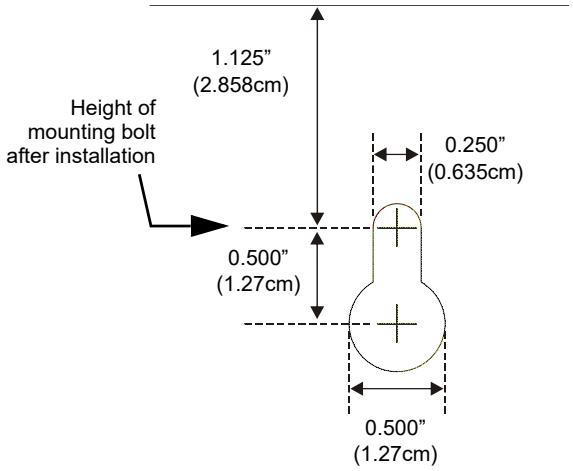


Figure 2.1 Keyhole Dimensions

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 connections between the PMB, the N16 Core Board 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 ends of the communication bus are set for "enable termination" (SW6 on the SLM-318 and SW5 on the PMB-AUX). Termination is always enabled on the N16 Core Board.

The power is segregated by the PMB power supplies. The Core and SLM-318 on the top section are powered by the top PMB (refer to Figure 2.2, "Multiple PMB Power Supplies with Ten SLM-318 Modules") The SLM-318 modules on the bottom two sections are powered by EITHER the middle PMB-AUX power supply OR bottom PMB-AUX power supply.

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

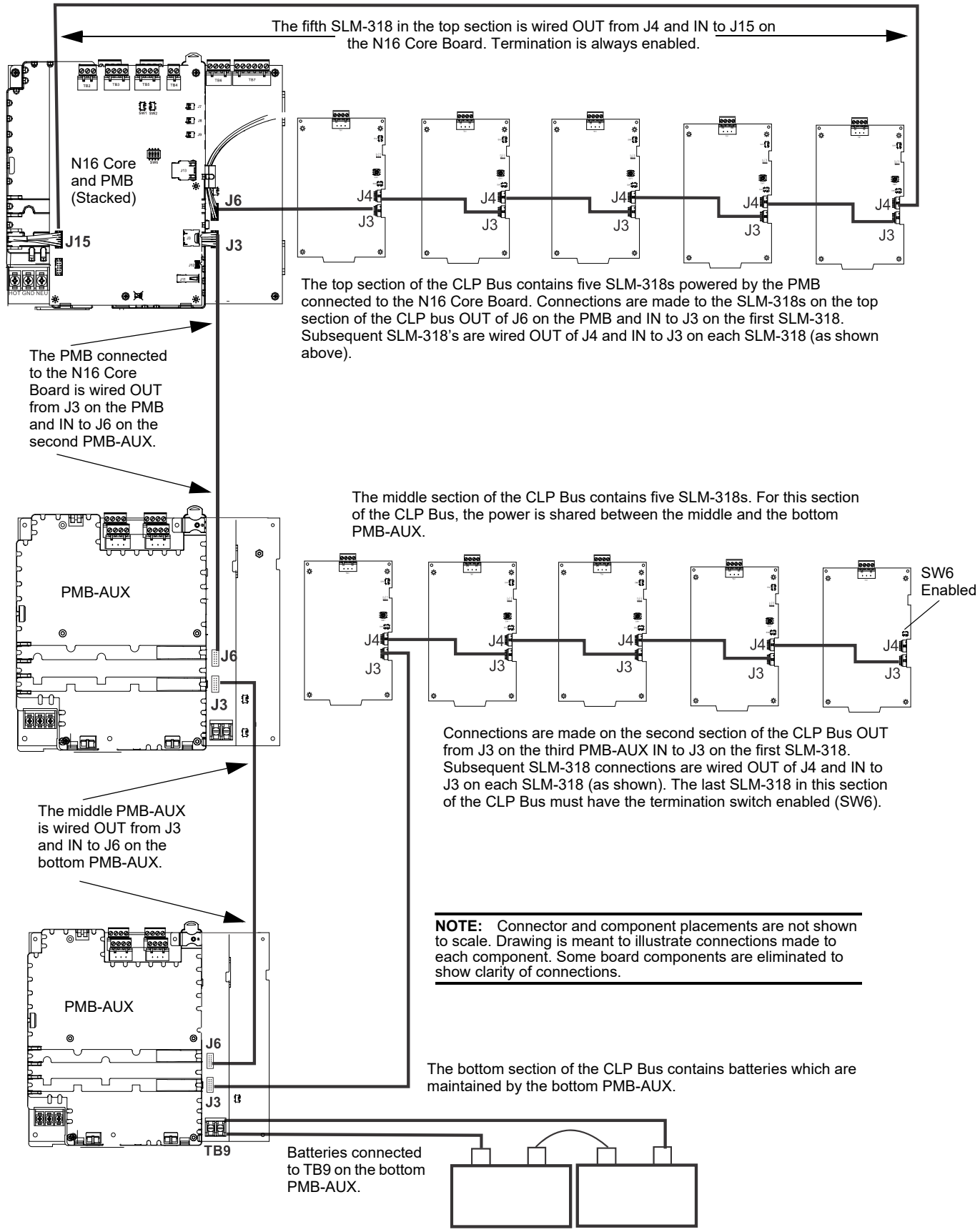
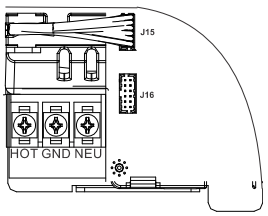


Figure 2.2 Multiple PMB Power Supplies with Ten SLM-318 Modules

NOTE: A maximum of five (5) SLM-318 loop cards can run on one (1) N16 PMB. For additional power needs or loop cards, additional 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. If ten (10) loop cards are installed, two (2) additional PMB-AUX power supplies will be required.

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 cableover the ground stud and secure with the second keps nut. Wire the ground cable to the bottom position of TB11 as shown in Figure 2.3. 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

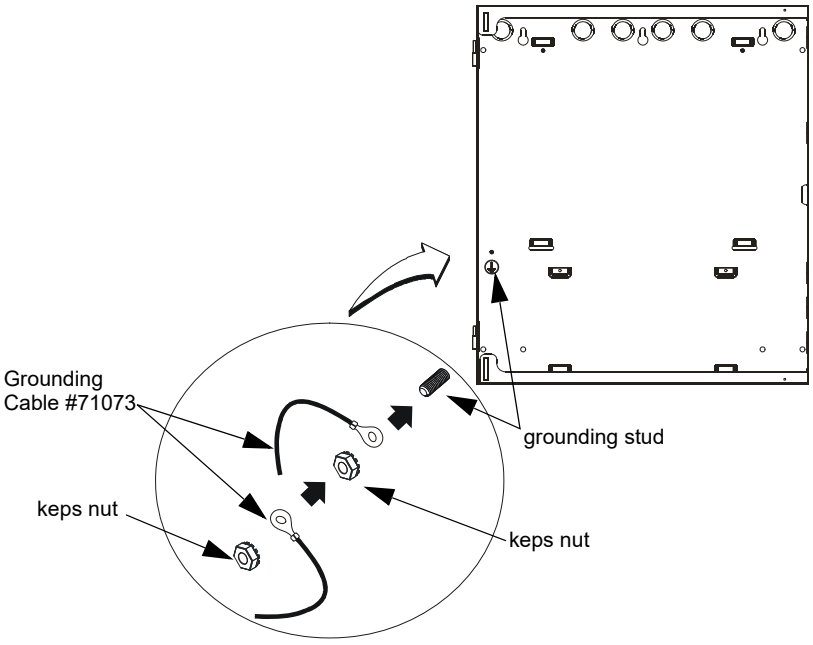
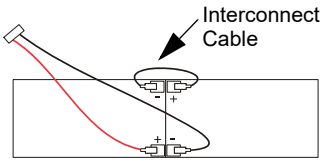


Figure 2.3 Earth Ground Connection

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. Observe polarity when connecting the batteries. Connect the battery cable to TB9 on the main PMB.



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 Special Application DC Power Output Connection

All Special Application DC power outputs are power-limited (refer to "UL Power-Limited Wiring Requirements" on page 28). The PMB has two independent AUX power outputs. One has an optional Class A return. The second AUX power output is Class B only.

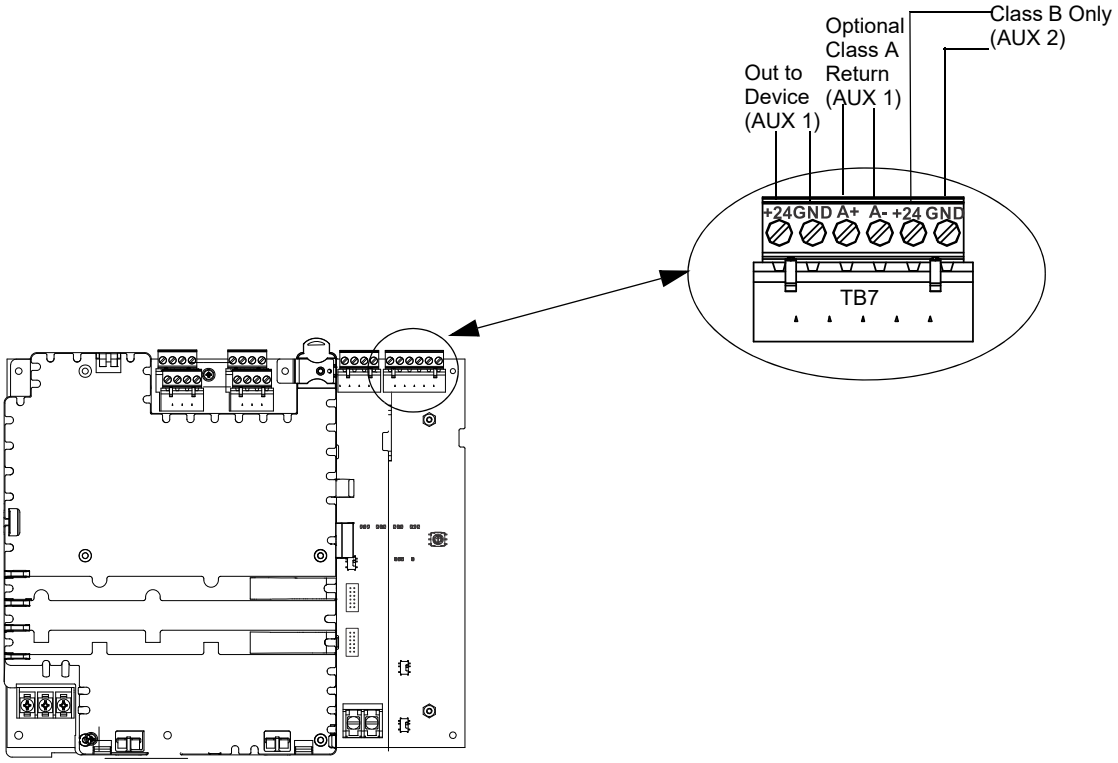


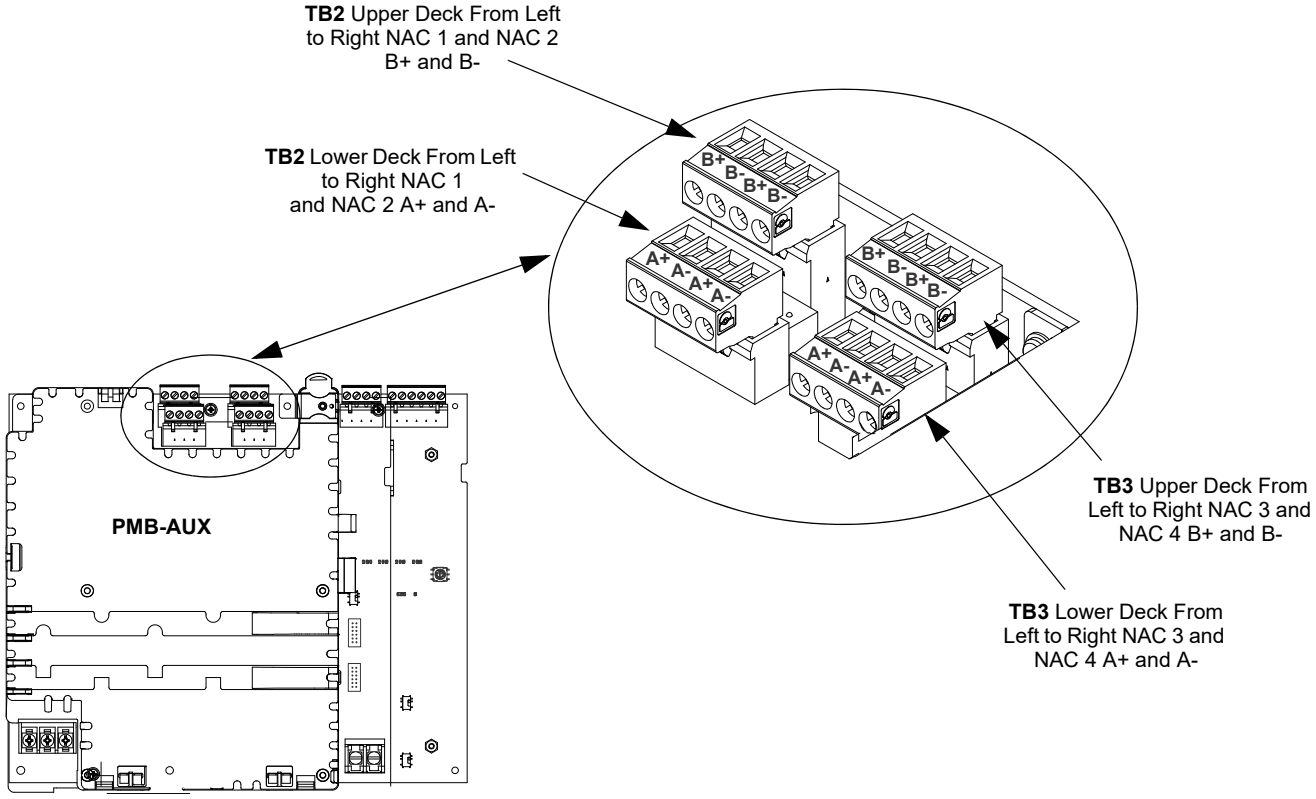
Figure 2.4 Special Application Power Outputs - 24 VDC

2.3 Notification Appliance Circuits

NAC (Notification Appliance Circuits) circus 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 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



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.

Figure 2.5 NAC Wiring

2.3.2 Gentex Notification Appliance Using the ELRD-2.2K

The Gentex Commander III Notification Appliance requires the ELRD-2.2K to be installed across the H+ and H- terminals on the appliance for proper operation on the N16 FACP. Refer to Figure 2.6, "Gentex Notification Appliance with ELRD-2.2K Wiring" 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 resistor across the H+ and H- terminals.
3. Wire Strobe Only to the next Notification Appliance as normal.

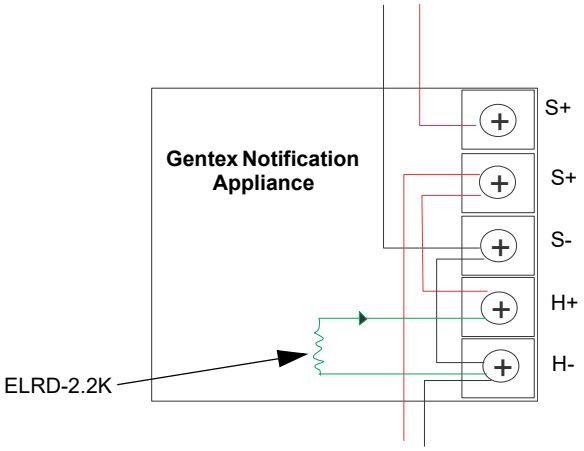


Figure 2.6 Gentex Notification Appliance with ELRD-2.2K Wiring

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.

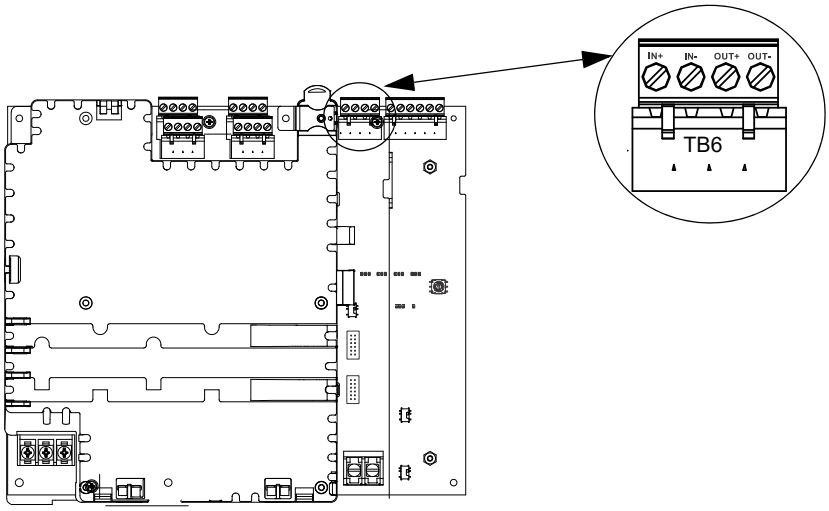


Figure 2.7 Remote Sync Wiring

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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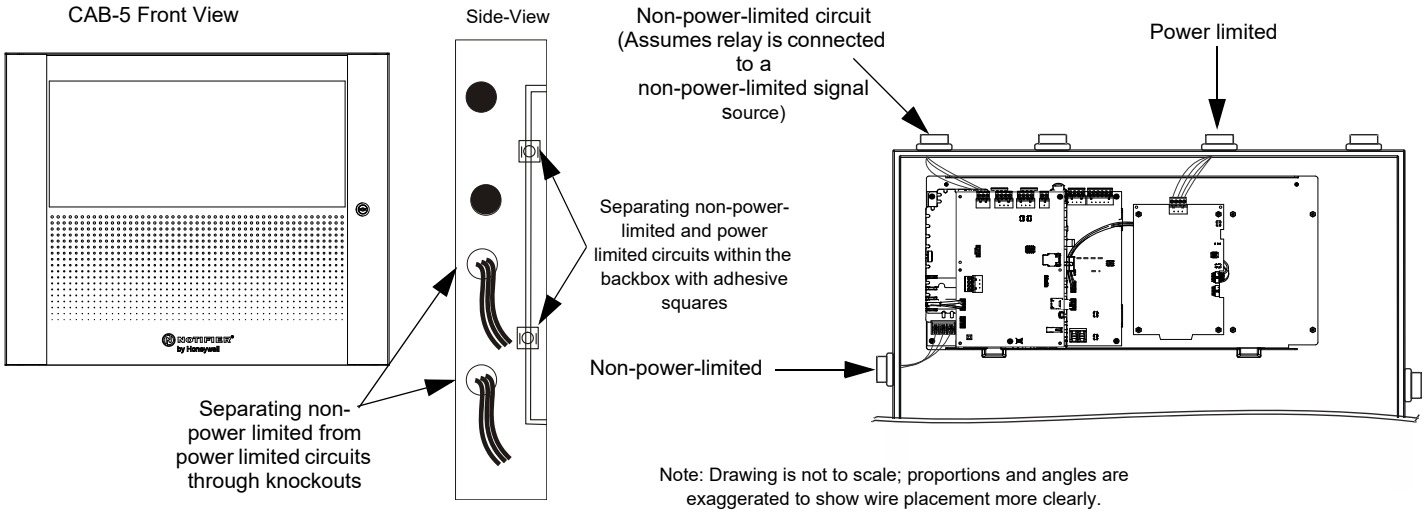


Figure 2.8 Power-Limited and Non-Power-Limited Wiring

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.

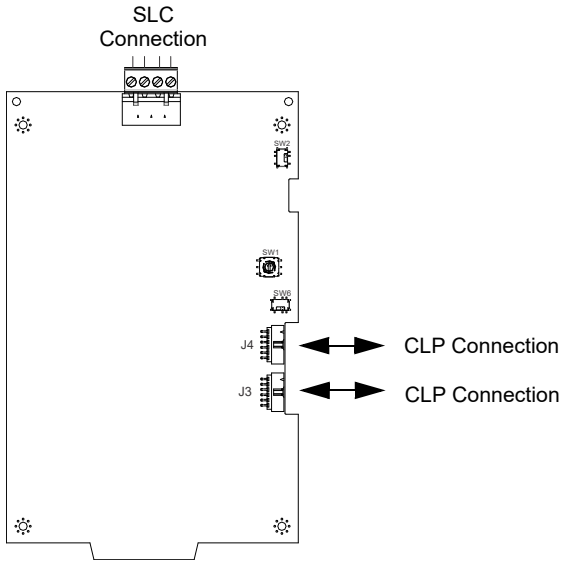


Figure 2.9 SLM-318 Wiring

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 84.

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.

CAUTION: LOOP POLLING INTERRUPTION
WHEN THE FACP IS PREFORMING 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 preformed.

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 page 29. 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*.

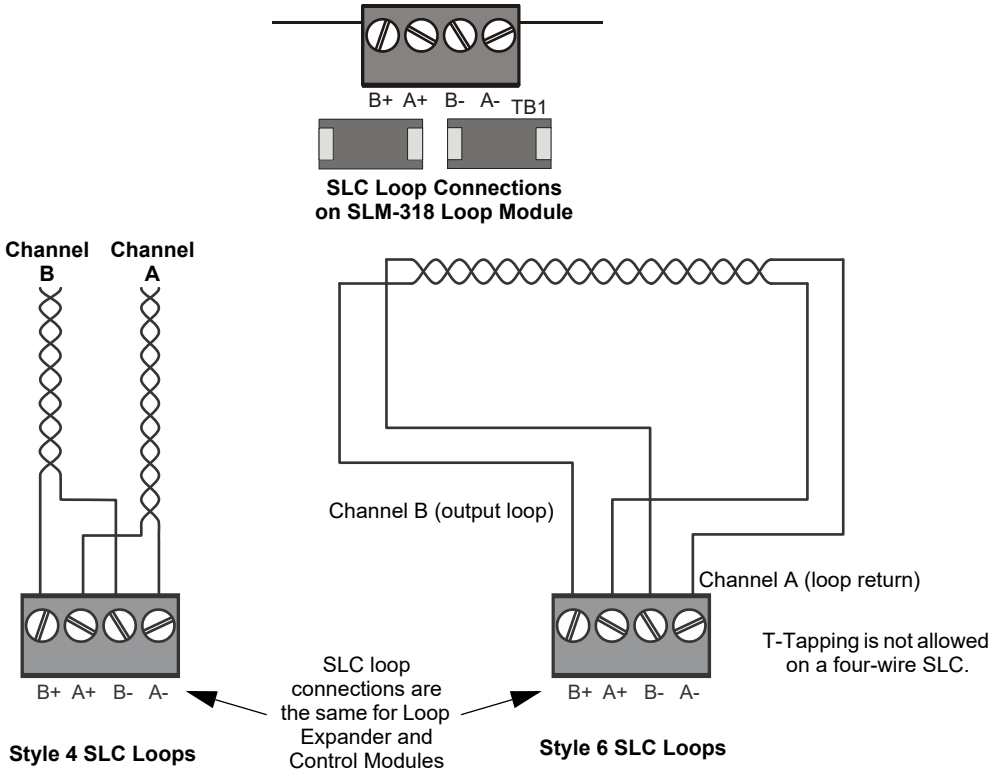


Figure 2.10 SLC Loop Connections and Wiring

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 28.

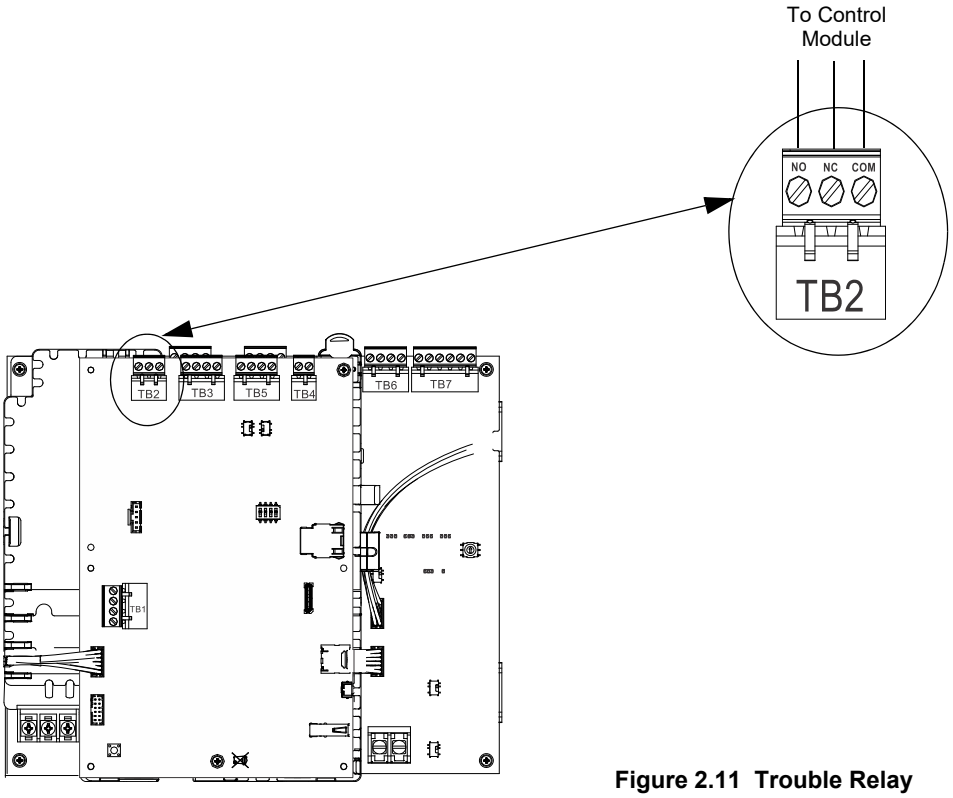


Figure 2.11 Trouble Relay

2.9 Central Station Communications

2.9.1 CLSS Dialer

The N16 can report to central stations via the public switched telephone network using the CGW-DACT. The assembly includes one CGW-MB and one CGW-PT. There is an optional backbox (CGW-BB) that can house the CGW-MB and the CGW-PT. 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 2.12, “CGW-MB Mounted on Chassis with CPU-N16LND NUP to NUP” on page 32. There are no Gateway capabilities with this configuration. Refer to the *CLSS Dialer User Manual (LS10318-000HW-E) and the CLSS Dialer Install Guide (LS10319-000HW-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:

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

Refer to Figure 2.12 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).*

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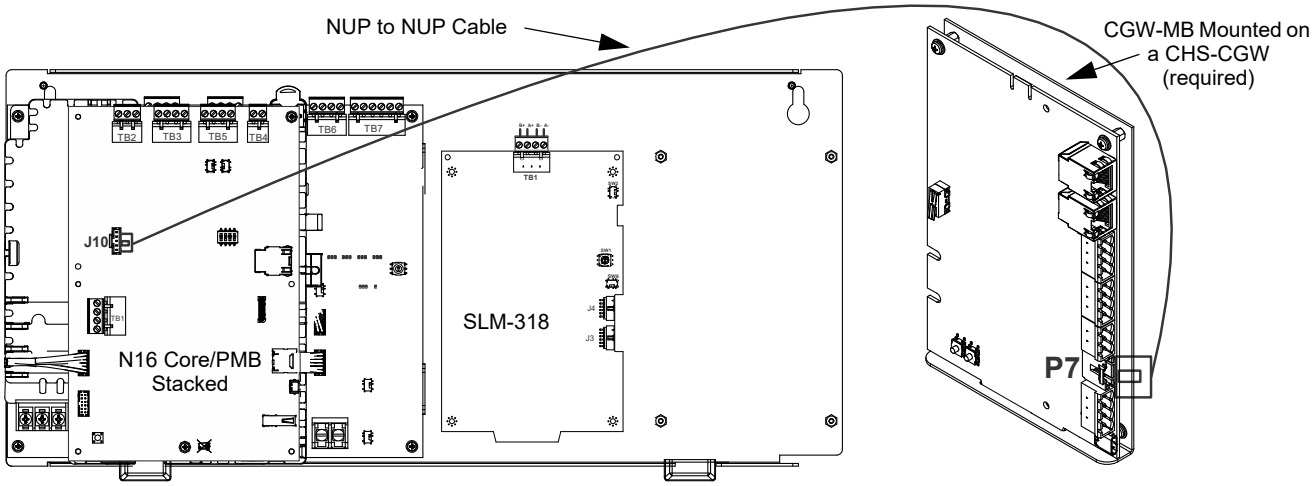


Figure 2.12 CGW-MB Mounted on Chassis with CPU-N16LND NUP to NUP

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, APS-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 2.13, "Typical Proprietary Fire Alarm Systems Wiring Connections". Connect the receiving unit to the protected premises unit as shown in Figure 2.12, "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 Table G.2, "Type Codes for Monitor Modules," on page 112.

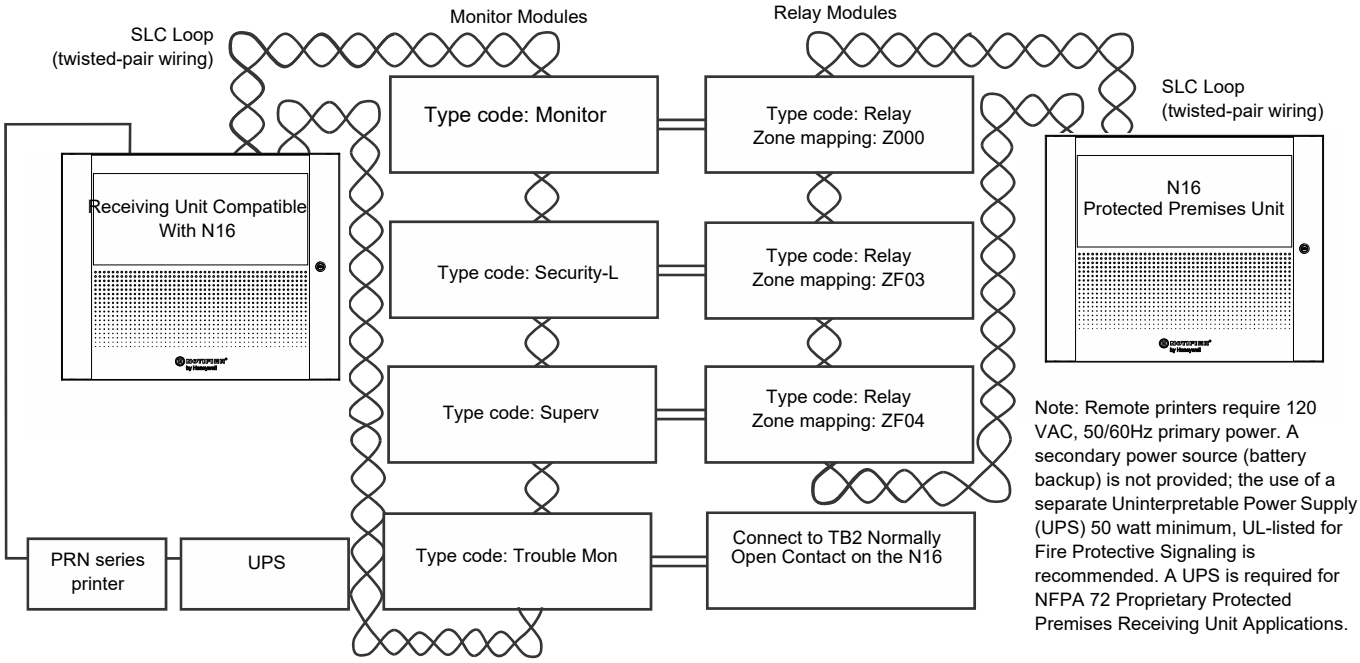


Figure 2.13 Typical Proprietary Fire Alarm Systems Wiring Connections

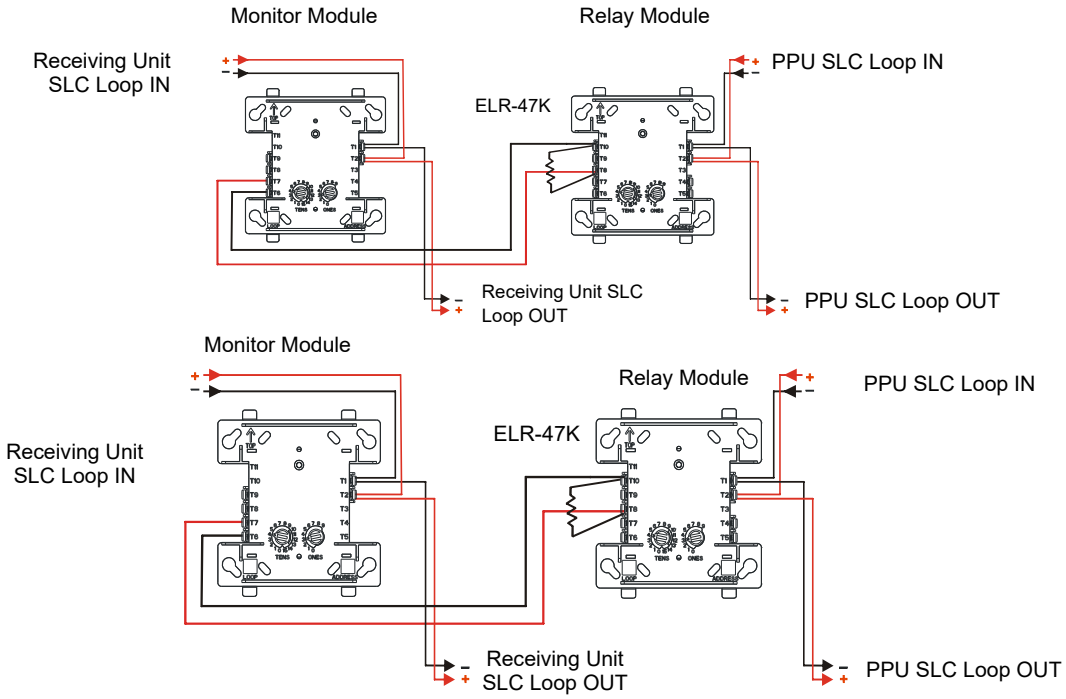


Figure 2.14 Typical Proprietary Fire Alarm Systems Wiring Connections: Detail Views

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 2.15, "Wiring Diagram for Contact Closure Remote Station" 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)

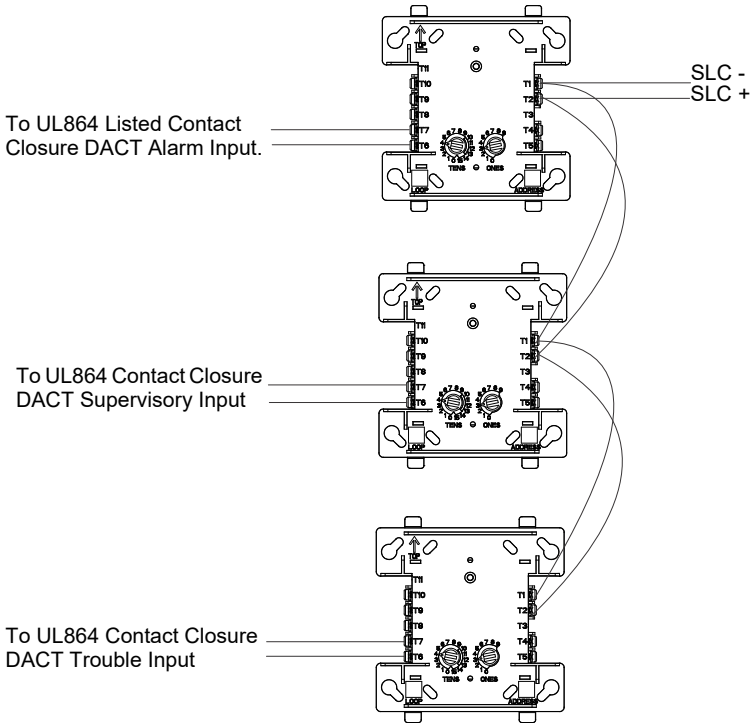


Figure 2.15 Wiring Diagram for Contact Closure Remote Station

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 Security Tamper Switch

2.11.1 Installation

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

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.
2. 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.
3. Connect the STS-1 connector to J8 Security on the CPU.
4. Program panel supervision for Security Alarm or AKS Key Switch.

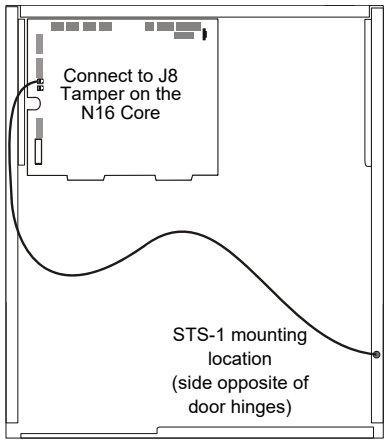


Figure 2.16 Installing the STS-1 Security Tamper

2.11.2 Proprietary Security Alarm

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

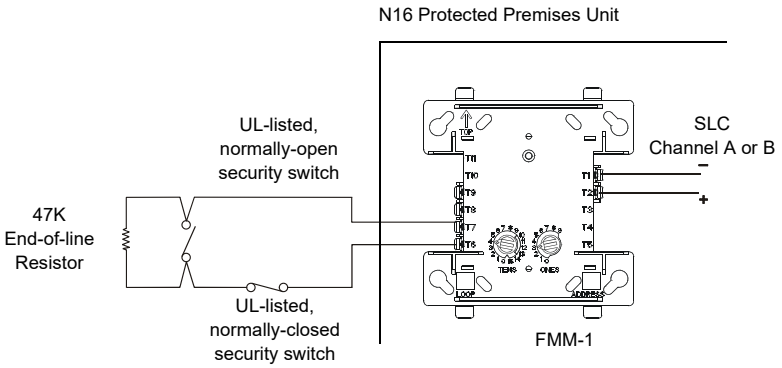


Figure 2.17 Wiring Diagram for Proprietary Security Alarm Applications

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.

2.11.3 AIO-BUS Wiring

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

Shielding the AIO Circuit

The AIO circuit must be wired using a twisted pair cable having a characteristic impedance of 120 ohms, +/- 20%. Do not run cable adjacent to, or in the same conduit as, 120-volt AC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 Vrms, motor control circuits, or SCR power circuits.

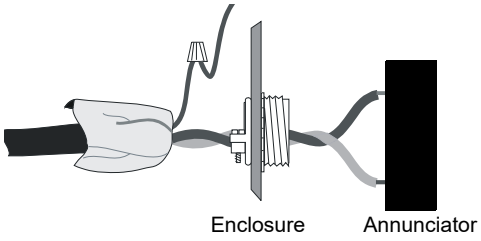


Figure 2.18 Terminating the Shield

NOTE: Shielded wire is not necessary but when it is used, the shield should be connected to system ground (not earth) at the FACP and ground on the Main AIO connector (P6) at the ACM-30. If the ACM-30 is using a remote power supply, the shield will serve as the AIO reference wire.

ACM-30 AIO Bus Wiring

- AIO wiring to the external bus of a control panel can be wired class A or class B.
- AIO wiring to the internal bus of a control panel can be wired class B only.
- The AIO circuit cannot be T-Tapped; it must be wired in a continuous fashion to function properly.
- There is a maximum of 6,000 feet at 16 AWG between the panel and the last annunciator on the internal AIO circuit (subject to the system's power restrictions). There is a maximum of 200 feet at 16 AWG between the panel and the last annunciator on the external AIO circuit (subject to the system's power restrictions).
- The wiring size must be a 12 AWG to 18 AWG twisted shielded pair cable having a characteristic impedance of 120 ohms, +/- 20%.
- Each AIO circuit must have 18VDC with a max current of 93mA at each device.

- Do not run cable adjacent to, or in the same conduit as, 120 volts AC service, “noisy” electrical circuits that are powering mechanical bells or horns, audio circuits above 25 V_{RMS}, motor control circuits, or SCR power circuits.

If annunciators are to be mounted in a separate cabinet or powered by a remote power supply, see Figure 2.22, “Using Multiple Power Supplies with the AIO Circuit” on page 38.

Wiring Configuration

Figure 2.19 illustrates the wiring between the FACP’s External AIO-BUS and AIO-BUS devices.The external AIO BUS can be wired for Class B as well as Class A as it provides for an optional Class A return.

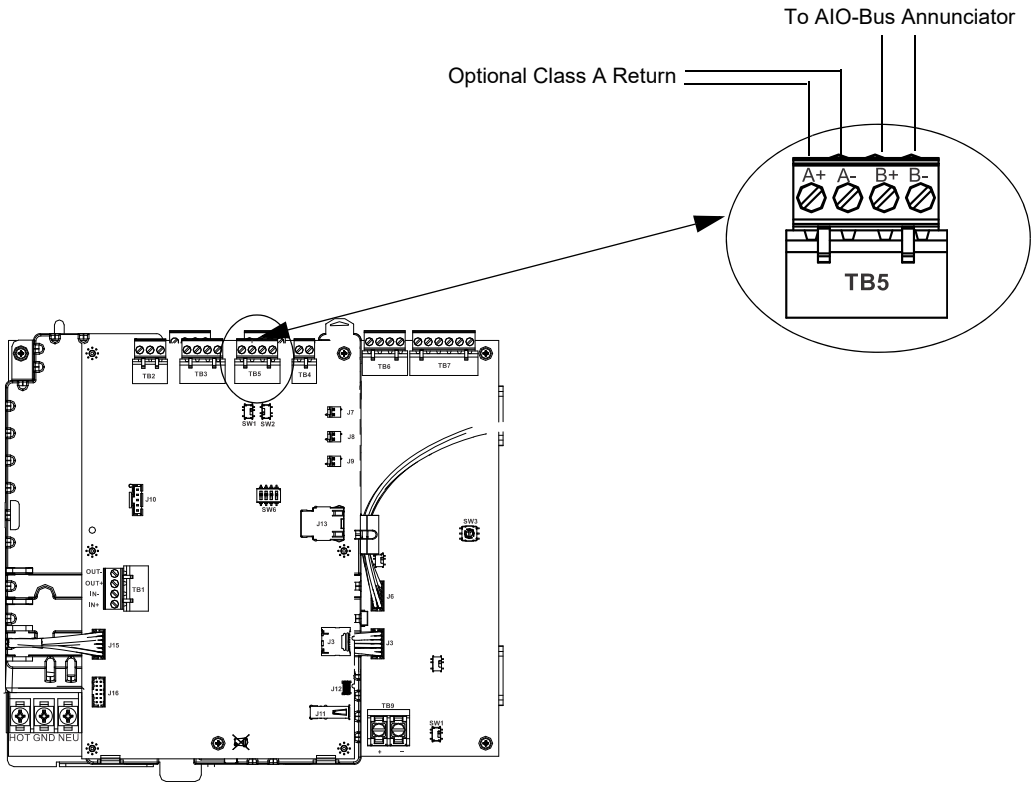


Figure 2.19 External AIO-BUS wiring to AIO-BUS Device

Figure 2.20 illustrates the wiring between the FACP's Internal AIO-BUS and AIO-BUS devices. The Internal AIO BUS can be wired for class B only.

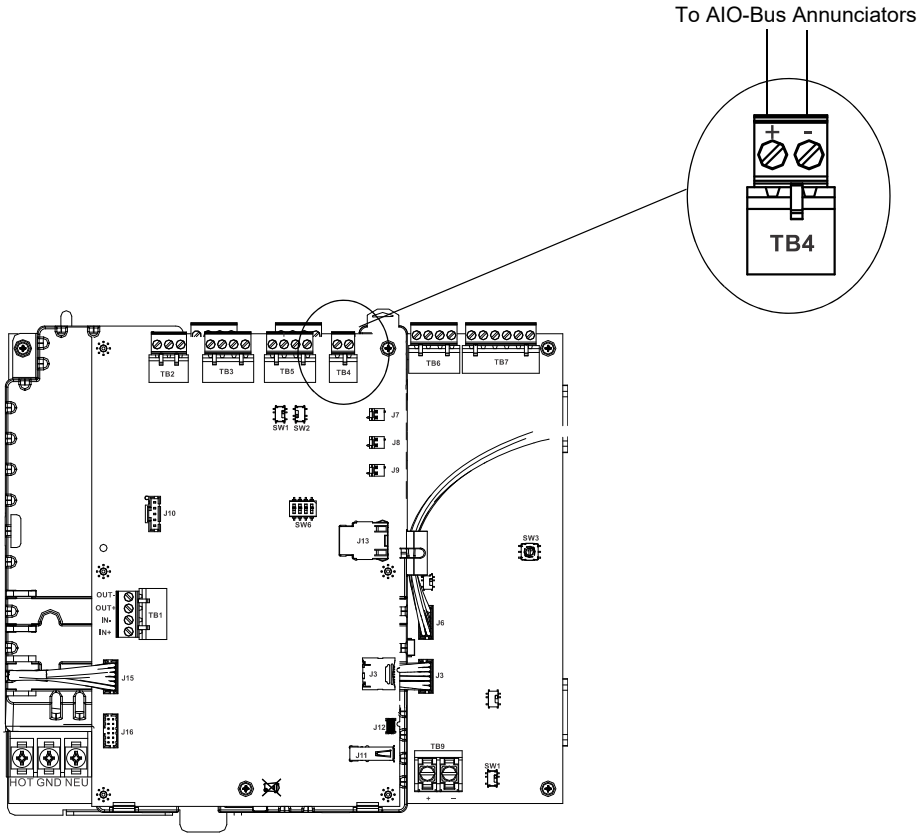


Figure 2.20 Internal AIO-BUS wiring to AIO-BUS Device

Powering Both AIO-BUS Circuits Simultaneously

When simultaneously using the External and Internal AIO-BUS circuits on the FACP, power can be shared from the Non-resettable Power outputs on TB7. This provides the benefit of independently acting power-limiting for the two AIO-BUS circuits.

AIO-BUS Device Addressing

Each AIO-BUS device requires a unique address (ID Number) in order to communicate with the FACP. An address dial on each device is used to set this address. The address set for these devices must also be programmed at the FACP for the specific device

A maximum of 40 devices can be connected to each FACP AIO-BUS communication circuit, with up to 10 set as Routers each capable of hosting 15 peripherals. Device addresses do not need to be sequential and can be set to any number between *01* and *15* This applies to both AIO-BUS communication circuits (External and Internal). Note that *00* is not a valid address.

2.12 ACM-30 Remote Fire Annunciator

2.12.1 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.

2.12.2 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.

NOTE: All power must be turned off when connecting the 24 VDC power to the annunciator. Reapply power according to the instructions in the control panel manual.

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).

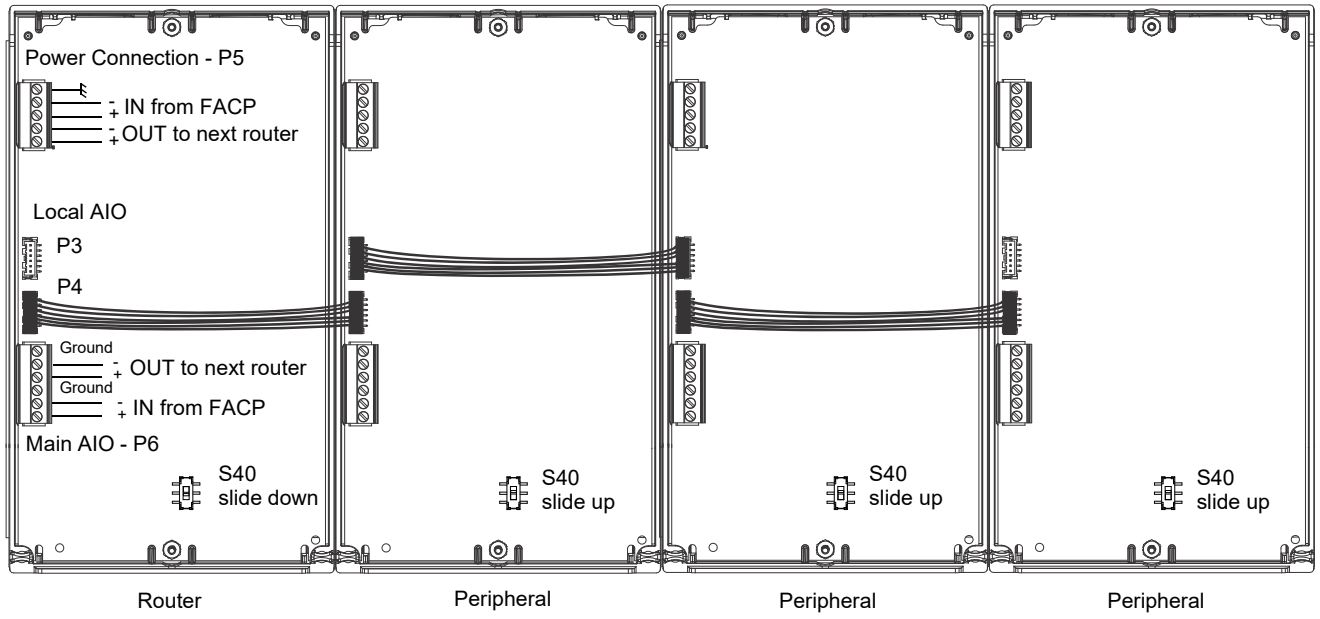


Figure 2.21 Power and AIO Circuit Connections

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

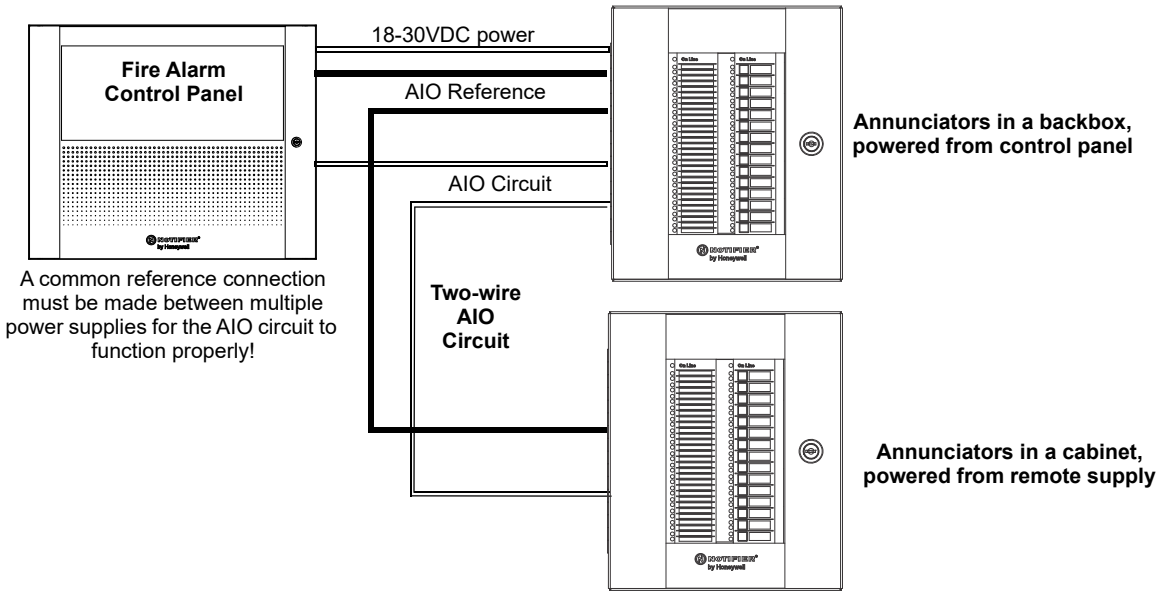


Figure 2.22 Using Multiple Power Supplies with the AIO Circuit

Wire the ACM-30 as shown in Figure 2.21, "Power and AIO Circuit Connections" on page 38 .All power must be turned off when connecting the annunciator. These requirements must be followed:

2.13 RLD

2.13.1 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 LS10310-000NF-E for more information.

NOTE: All power must be turned off when connecting the 24 VDC power to the annunciator. Reapply power according to the instructions in the control panel manual.

- Mount the RLD in a standard 3 gang electrical box
- Connect the ground on the (terminal P5) to a grounded mounting screw
- Connect shield for AIO circuit
- Wire the RLD to the external AIO BUS as shown in Figure 2.23, “RLD Wiring”

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

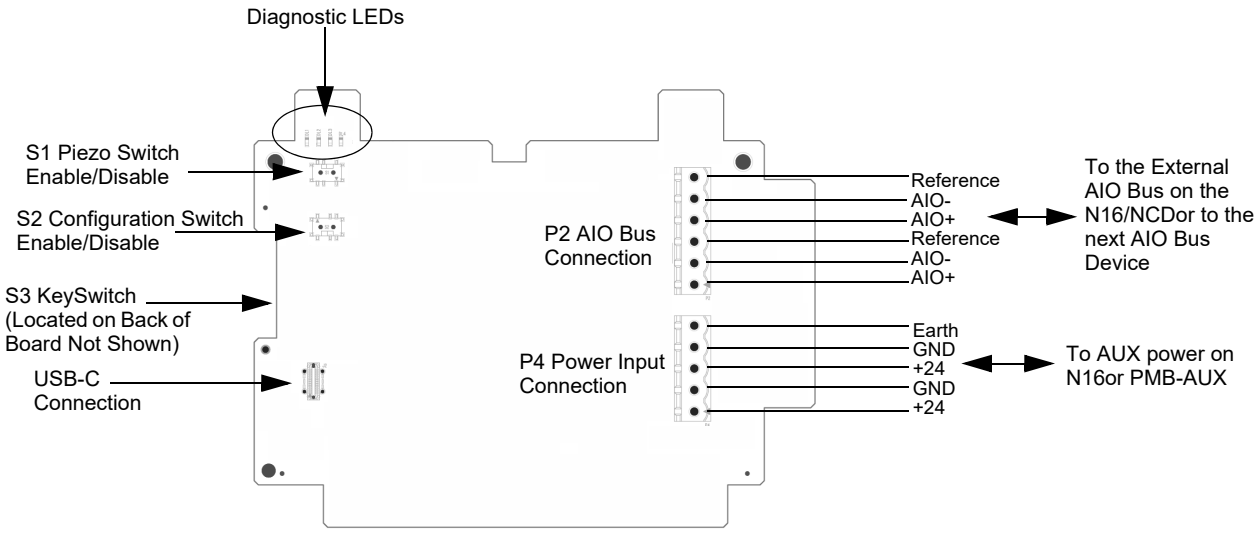


Figure 2.23 RLD Wiring

2.14 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.

2.15 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's 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.

2.15.1 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.

2.16 Network Control Display (NCD)

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

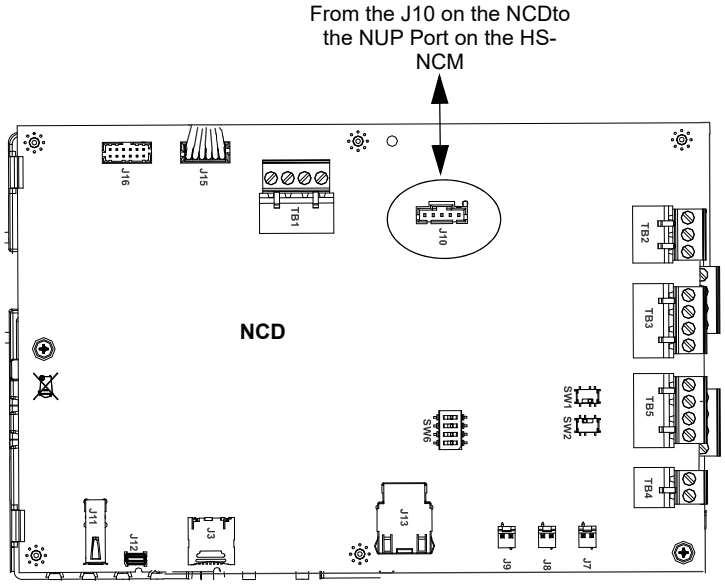


Figure 2.24 Connecting the NCD

For more information on the NCDrefer to the *NCDManual (document number LS10210-051NF-E)*

2.17 Wiring the N16to theDVC

TheDVC can be connected to the N16FACP 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.

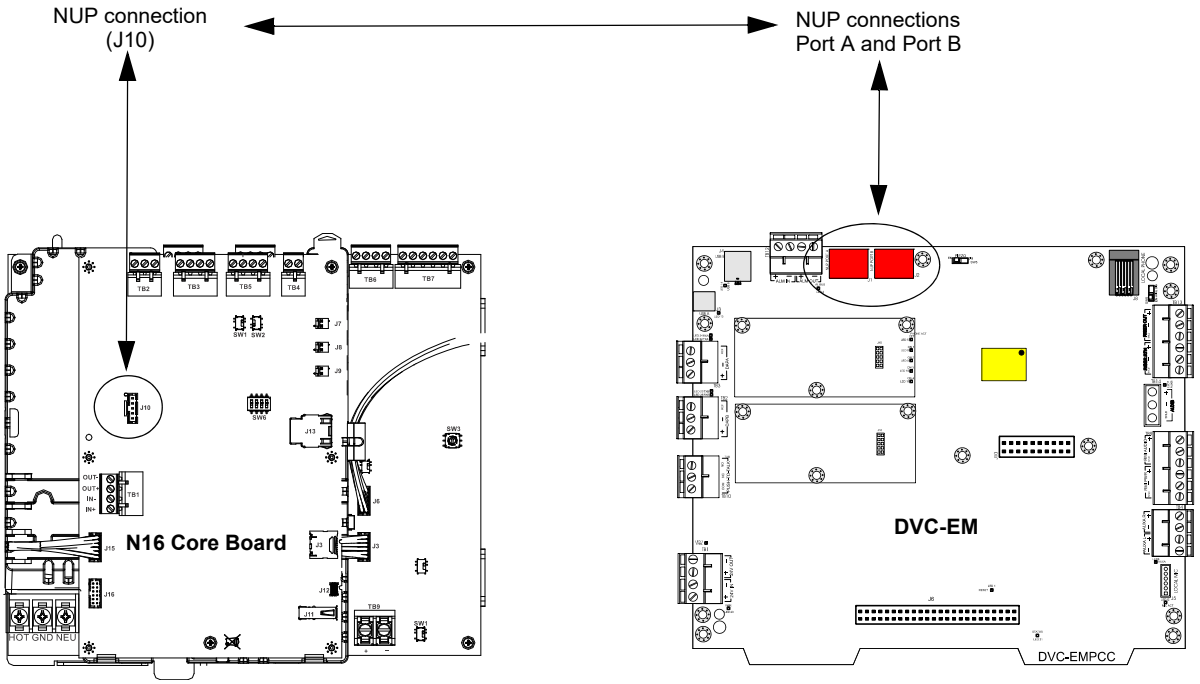


Figure 2.25 Connecting the N16 to the DVC

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

2.18 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.

2.19 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:

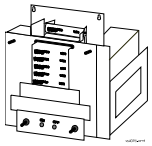
1. Make custom cable & connect it from printer to TB3 on the CPU.
2. Connect printer's power supply.
3. Configure printer settings as described in printer documentation.

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.



2.19.1 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 Figure 2.26.
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 Figure 2.26.

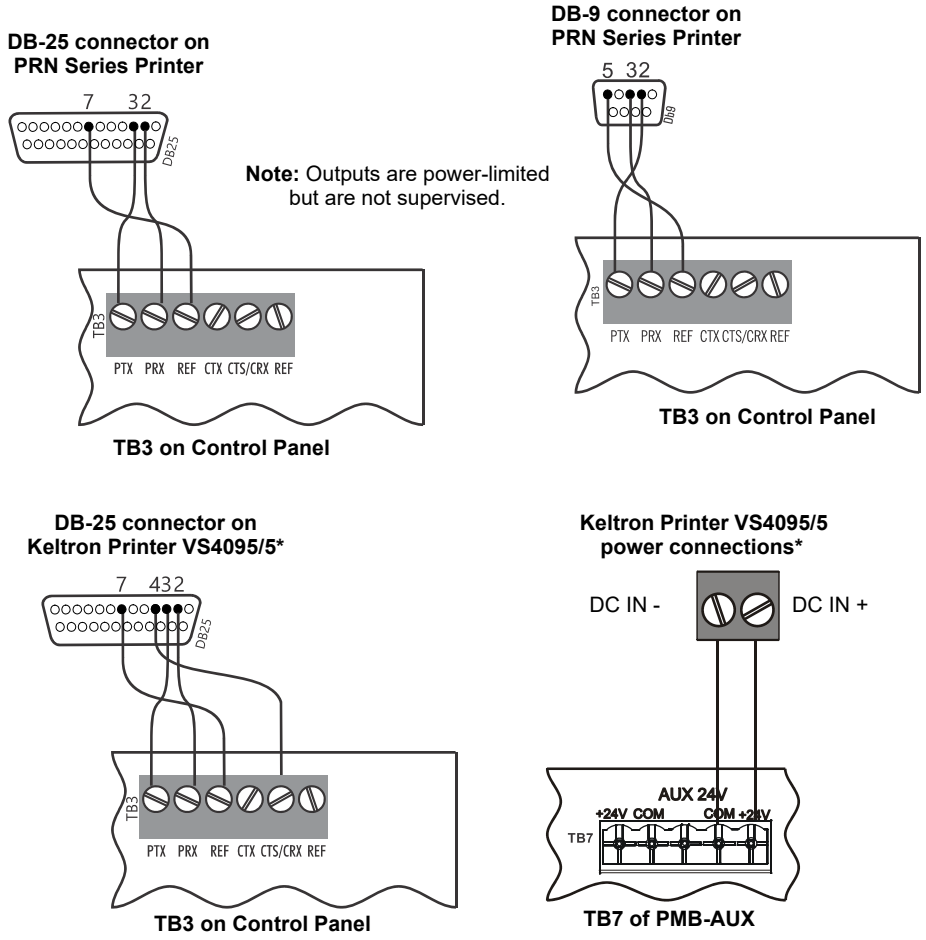


Figure 2.26 Printer Connections

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 Figure 2.26 (14 AWG).
4. If installing a PRN series printer, plug it into your AC power source.
   Note: The PRN 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” on page 43.

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.

2.19.2 Printer Connections

The N16 Core Board includes a printer connection as shown in Figure 2.27. The printer connection is for supplemental use only.

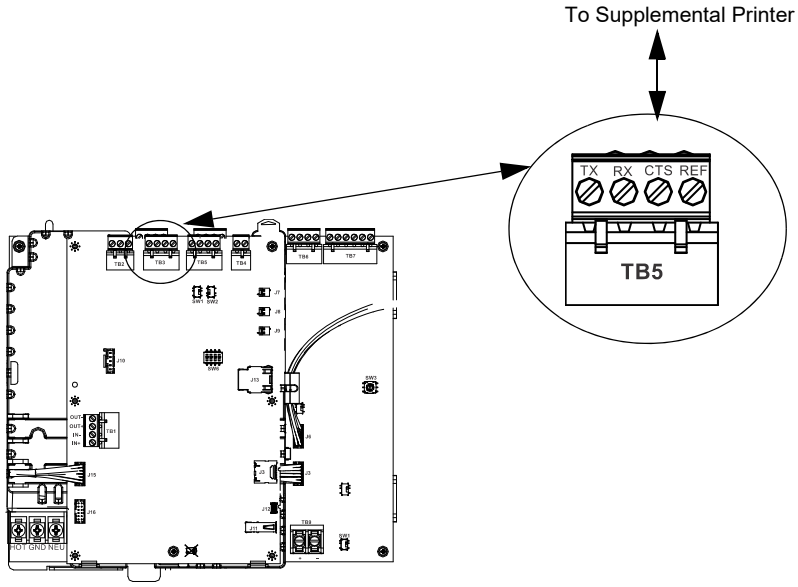


Figure 2.27 N16 Printer Connection

2.19.3 Configuring the Printer

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

2.19.4 PRN Printer Settings

Set the printer options according to the settings listed in Table 2.1.

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”.

Table 2.1 PRN Setup Options

2.19.5 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 Table 2.3.

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
5	X		5	X		5	X	
6		X	6		X	6		X
7	X		7	X		7	X	
8	X		8	X		8	X	

Table 2.2 Keltron DIP Switch Settings

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 Table 2.3.

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
5	X		5	X		5	X	
6		X	6		X	6		X
7	X		7	X		7	X	
8	X		8	X		8	X	

Table 2.3 Keltron DIP Switch Settings

2.19.6 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 (see Figure 2.28) unless one of the following typecodes is selected for the device:

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

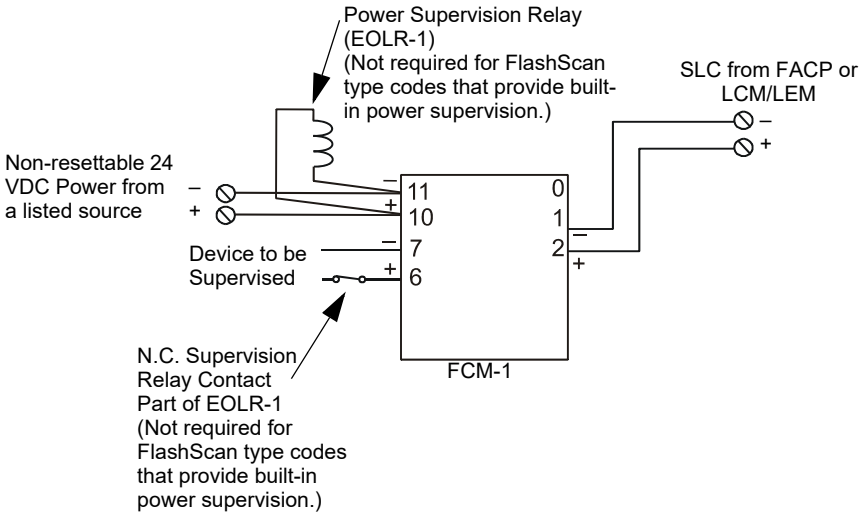


Figure 2.28 Enabling External Power Supervision Using Relays

*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.

2.19.7 Fire/Security ApplicationsGeneral 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 2.17, “Wiring Diagram for Proprietary Security Alarm Applications” on page 35. 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:

(a) on an open or short circuit
(b) on a ±50% change in resistance value from the End-of-Line resistor value
(c) 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.

2.19.8 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.
- 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.
- When employed as a Protected Premises Unit, the N16 cabinet door must be wired with an STS-1 Tamper Switch that is monitored by the control panel.
- 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 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 CIRCUITS (XPP-1, XPM-8, XPC-8, XPR-8, XPM-8L) ARE NOT SUITABLE FOR SECURITY APPLICATIONS.

2.20 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:

Figure 2.29 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*.

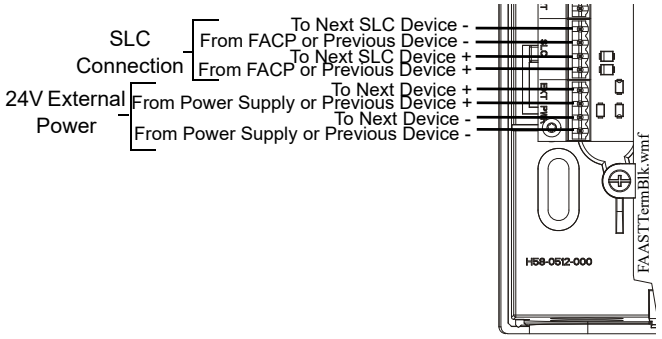


Figure 2.29 FAAST Connection to the FACP

2.21 System Configuration

System Configuration information for requirements in UL Listed applications

Module	Description	CS	Local	RS	P (PPU)	P(Burg)	P Rec	Process Mana.(1)	Emerg. Sign. (2)
ACM-30	Annunciator	O	O	O	O	Y	O	O	O
RLD	Remote Display	O	O	O	O	O	O	O	O
ABP-1	Blank Plate for ACM-30	O	O	O	O	O	O	O	O
ABB-1	Backbox for One ACM-30	O	O	O	O	O	O	O	O
ABB-2	Backbox for Two ACM-30's	O	O	O	O	O	O	O	O
BP-5	Battery Dress Panel for CAB-5	O	O	O	O	O	O	O	O

Table 3 System Configuration for UL Requirements (1 of 5)

Module	Description	CS	Local	RS	P (PPU)	P(Burg)	P Rec	Process Mana.(1)	Emerg. Sign. (2)
CGW-MB	CLSS Gateway Main Board	Y(8)	O	N	N	N	N	O	Y(8)
HON-CGW-MBB	CLSS Gateway in Plastic Enclosure	Y(8)	O	N	N	N	N	O	Y(8)
CGW-PT	CLSS POTS Board	Y(8,10)	N	N	O	N	N	O	Y(8)
CGW-BB	CGW-MB Enclosure	Y(11)	0(11)	N	N	N	N	0(11)	Y(11)
CGW-DACT	CLSS Dialer (CGW-MB with CGW-PT)	Y(8,10)	N	N	O	N	N	O	Y(8)
CGW-DACT-CH	Chassis for CGW-DACT	O	O	O		N	O	O	O
HON-CGW-DACT	CLSS Dialer in Plastic Enclosure	Y(8,10)	N	N	O	N	N	O	Y(8)
HWF2A-COM	LTE/IP Dialer Capture Alarm Communicator	O(8,10)	N	N	O	N	N	O	O(8)
HWF2V-COM	LTE/IP Dialer Capture Alarm Communicator	O(8,10)	N	N	O	N	N	O	O(8)
TG7LAF02	LTE Dialer Capture Alarm Communicator	O(8,10)	N	N	O	N	N	O	O(8)
TG7LVF02	LTE Dialer Capture Alarm Communicator	O(8,10)	N	N	O	N	N	O	O(8)
CCM-ATT-HON	AT&T Cellular Module	O	O	N	N	N	N	O	O
CCM-VZ-HON	Verizon Cellular Module	O	O	N	N	N	N	O	O
CPU-N16LD	CPU Board (Core/PMB/SLM-318) with 10inch HD Display	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)
CPU-N16-RB	CPU Board Only (Core)	O	O	O	O	O	O	O	O
CPU-N16LND	CPU Board (Core/PMB/SLM-318) w/o Display	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)
CPU-16-RTO	Core Board with Retrofit Chassis for CAB-4	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)
DP-4A	Dress Panel, Mounts 4 ACM-30	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)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)
DP-BLN	Blank Dress Panel	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
DP-T2A-CB4	Dress Panel for 10inch Touch Screen Display and two ACM-30 Annunciators for CAB-4 Enclosure	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)
NCA-2*	Network Control Annunciator	O	O	O	O	O	O	O	O
NCD	Network Control Display	O	Y(9)	O	O	O	O	O	O
CPU-NCD-RB	NCD Replacement Board	O	O	O	O	O	O	O	O
NBB-2	Backbox for NCD	O	O	O	O	O	O	O	O
DVC/DVC-EM	Digital Voice Command/Extended Memory Module	O	O	O	O	O	O	N	N
DVC-RPU	Digital Voice Command Remote Paging Unit	O	O	O	O	O	O	N	N
DAA-5025 (E)*	Digital Audio Amplifier	O	O	O	O	O	O	N	N
DAA-5070 (E)*	Digital Audio Amplifier	O	O	O	O	O	O	N	N
DAA-7525 (F) (SF)*	Digital Audio Amplifier	O	O	O	O	O	O	N	N
DIS-10-RD	10inch Touch Screen Display	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)	Y(9)
NCM-W/F	Network Control Module	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
PMB-AUX	Power Supply	O	O	O	O	O	O	O	O
PMB-AUX-RTO	Power Supply with CAB-4 Retrofit Chassis	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)

Table 3 System Configuration for UL Requirements (2 of 5)

Module	Description	CS	Local	RS	P (PPU)	P(Burg)	P Rec	Process Mana.(1)	Emerg. Sign. (2)
CMIC-1	Microphone Assembly	O	O(5)	O	O	O	O	O	O
SLM-318	Signaling Loop Card	Y	Y	Y	Y	Y	Y	Y	Y
TELH-1	Telephone Assembly	O	O(5)	O	O	O	O	O	O
N16E-R	CPU-N16LD in Red Enclosure	O	O	O	O	O	O	O	O
N16E	CPU-N16LD in Enclosure	O	O	O	O	O	O	O	O
N16-GZ	Panel License for General Zones	O	O	O	O	O	O	O	O
N16-LGZ	Panel License for Logic Zones	O	O	O	O	O	O	O	O
N16-UZC	Panel License for Universal Zone Coding	O	O	O	O	O	O	O	O
N16-NWD	Panel License for Network Display Mode	O	O	O	O	O	O	O	O
N16-CAC	Panel License for Custom Action Buttons	O	O	O	O	O	O	O	O
N16-CLP	Panel License for CLIP Mode	Y	Y	Y	Y	Y	Y	Y	Y
SBB-A5	CAB-5 Backbox Size A	Y	Y	Y	Y	Y	Y	Y	Y
SBB-B5	CAB-5 Backbox Size B	Y	Y	Y	Y	Y	Y	Y	Y
SBB-C5	CAB-5 Backbox Size C	Y	Y	Y	Y	Y	Y	Y	Y
SBB-D5	CAB-5 Backbox Size D	Y	Y	Y	Y	Y	Y	Y	Y
SBB-E5	CAB-5 Backbox Size E	Y	Y	Y	Y	Y	Y	Y	Y
CHS-ADP	Chassis for Amplifier	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)
CHS-CGW	Chassis for CGW-MB Communicator	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)	0(7)
CAB-A4	Enclosure	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)
CAB-C4	Enclosure	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)
ADDR-B4	Door Assembly	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
ADDR-C4	Door Assembly	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
ADDR-D4	Door Assembly	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
DP-1B	Blank Panel	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)
BP2-4	Battery Plate	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
CA-1	Chassis	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
CA-2	Chassis	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
C5A-M	DVC Chassis, Well for Phone and Mic, Includes Mic-1 for CAB-5	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
DPA-1A4	Dress Panel	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)
DPA-2	Dress Panel	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	O	O	O	O	O	O	O
DPA-C5	Dress Plate, DVC one row for DVC-KD	O	O	O	O	O	O	O	O
DR-A5	Door Assembly	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)
DR-B5	Door Assembly	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)
DR-C5	Door Assembly	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)

Table 3 System Configuration for UL Requirements (3 of 5)

Module	Description	CS	Local	RS	P (PPU)	P(Burg)	P Rec	Process Mana.(1)	Emerg. Sign. (2)
DR-D5	Door Assembly	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)
DR-E5	Door Assembly	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)
DTR-A5	Red Cladding for CAB-5 Enclosure	O	O	O	O	O	O	O	O
DTR-B5	Red Cladding for CAB-5 Enclosure	O	O	O	O	O	O	O	O
DTR-C5	Red Cladding for CAB-5 Enclosure	O	O	O	O	O	O	O	O
DTR-D5	Red Cladding for CAB-5 Enclosure	O	O	O	O	O	O	O	O
DTR-E5	Red Cladding for CAB-5 Enclosure	O	O	O	O	O	O	O	O
DVC-KDB	DVC Keypad, Black	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)
DP-DISP2	Dress Panel	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
CHS-M3	Chassis, 1st tier	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)	O(7)
FZM-1	Monitor Module	O	O	O	O	O	O	O	O
FMM-1*	Monitor Module	O	O	O	O	O	O	O	O
FMM-101*	Monitor Module	O	O	O	O	O	O	O	O
FDM-1*	Dual Monitor Module	O	O	O	O	O	O	O	O
FTM-1*	Control Module	O	O	O	O	O	O	O	O
FCM-1*	Control Module	O	O	O	O	O	O	O	O
FRM-1*	Relay Module	O	O	Y	O	O	O	O	O
AA-30*	Amplifier 30 watts	O	O(5)	O	O	O	O	O	O
AA-100*	Amplifier 100 watts	O	O(5)	O	O	O	O	O	O
AA-120*	Amplifier 120 watts	O	O(5)	O	O	O	O	O	O
ACT-1*	Audio Coupling Transformer	O	O(5)	O	O	O	O	O	O
ACT-2*	Audio Coupling Transformer	O	O(5)	O	O	O	O	O	O
ACT-4	Audio Coupling Transformer	O	O(5)	O	O	O	O	O	O
ACT-25	Audio Coupling Transformer	O	O(5)	O	O	O	O	O	O
ACT-70	Audio Coupling Transformer	O	O(5)	O	O	O	O	O	O
XPM-8L*	Transponder Monitor Module	O	O	O	O	X	O	O	O
PRN-6*	Printer	O	O	O	O	O	O	O	O
PRN-7*	Printer	O	O	O	O	O	O	O	O
AMG-E*	Audio Message Generator	O	O(5)	O	O	O	O	O	O
AKS-1*	Annunciator Key Switch	O	O	O	O	O	O	O	O
RKS-S*	Remote Security Keyswitch	O	O	O	O	Y	O	O	O
RPT-W*	Repeater Wire	O	O	O	O	O	O	O	O
RPT-F*	Repeater Fiber	O	O	O	O	O	O	O	O
RPT-485W*	Repeater Wire	O	O	O	O	O	O	O	O
RPT-485FW*	Repeater Wire/Fiber	O	O	O	O	O	O	O	O
FFT-7*	Firefighter’s Telephone	O	O(5)	O	O	O	O	O	O
FFT-7S*	Firefighter’s Telephone	O	O(5)	O	O	O	O	O	O
FHS*	Fireman’s Handset	O	O(5)	O	O	O	O	O	O
FPJ*	Fireman’s Phone Jack	O	O(5)	O	O	O	O	O	O
NBG-12LX*	Addressable Manual Pull Station	O	O	O	O	O	O	O	O
RM-1, RM-1SA*	Remote Microphone	O(5)	O	O	O	O	O	O	O
BP2-4	Battery Plate	Y	Y	Y	Y	Y	Y	Y	Y
FCO-851	Fire/CO Detector	O	O	O	O	O	O	O	O

Table 3 System Configuration for UL Requirements (4 of 5)

Module	Description	CS	Local	RS	P (PPU)	P(Burg)	P Rec	Process Mana.(1)	Emerg. Sign. (2)
XP6-R	6 Relay Control Module	O	O	Y	O	O	O	O	O

KEY:
***** - Modules are listed separately **Y -** Yes **N** - No **O** - Optional **X -** Not permitted for security applications
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. One of the cab enclosures must be utilized.
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.

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 CGW-MB
11. Required when using CGW-MB alone OR using a CGW-MB with CGW-PT OR using CGW-DACT.

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

Table 3 System Configuration for UL Requirements (5 of 5)

Section 3: Programming

The features and/or options listed below must be approved by the local AHJ

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION AND OTHER INVOLVED PARTIES			
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below:			
Program feature or option	**Permitted in UL864? (Y/N)**	**Possible settings**	**Settings permitted in UL 864**
Service Mode	No	Yes No Timed	No
Detector Programming: Supervisory Type Codes	Yes	SUP L(DUCTI) SUP T(DUCTI) SUP T(DUCTP) SUP L(DUCTP) SUP L(ION) SUP T(ION) SUP L(PHOTO) SUP T(PHOTO) SUP L(LASER) SUP T(LASER) P/CO (P SUP)	SUP L(DUCTI) SUP T(DUCTI) SUP L(DUCTP) SUP T(DUCTP)
AC Fail Delay Timer	Yes	0 for no delay, or 1-12 hours	1-3 hours
Regional Settings	Yes	Chicago	Chicago
Alarm Verification Reset Time	Yes	0 to 240 seconds	0 to 60 seconds
Alarm Verification Confirmation Time	Yes	0-300 seconds	60-300 seconds
Trouble reminder Duration: Wireless Applications	Yes	Off 4 Hours Daily = 24 Hours	4 Hours
Alarm Reminder	Yes	0-24 Hours	1-24 Hours
Supervisory Reminder	Yes	0-24 Hours	1-24 Hours
CO Reminder	Yes	0-24 Hours	0-24 Hours
Presignal Delay/Alarm Delay	No	Presignal Delay: 60-180 seconds Alarm Delay:15-59 seconds	No
Auto Silence Timer (Global Setting)	Yes	0(none) or 3-20min 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	0(none) or 3-20min

3.1 Licensing

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

Title	License	Description	Part Number
N16e	Yes	License to operate N16e. Limit Configuring or programming a zone that exceeds the limit set by the license(s) will generate a trouble condition.	N16-EBUN
N16x	Yes	License to operate N16x. Configuring or programming a zone that exceeds the limit set by the license(s) will generate a trouble condition.	N16-XBUN
N16e to N16x Upgrade	Yes	Upgrade license from N16e panel operation to N16x panel operation.	N16-XUPG
Fire Zone Expansion	General Zones Yes* 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	N16-GZN N16-LGZ N16-GZ50 N16-LGZ50

Table 3.1 Licensing Requirements

Title	License	Description	Part Number
UZC (Universal Zone Coding)	Yes	Adding zone coding capability without a license will generate a trouble condition.	N16-UZC
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 only supports up to 32 Custom Action touchpoints.	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

Table 3.1 Licensing Requirements

* General Zones, up to 250 zones, no license required. Additional blocks of 50 zones will require a license for each block. Maximum of 2,000 zones
† Logic Zones, up to 250 zones, no license required. Additional blocks of 50 zones will require a license for each block. Maximum of 2,000 zones

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. Use the tokens to purchase the desired VeriFire Tools licenses via the CLSS web.

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

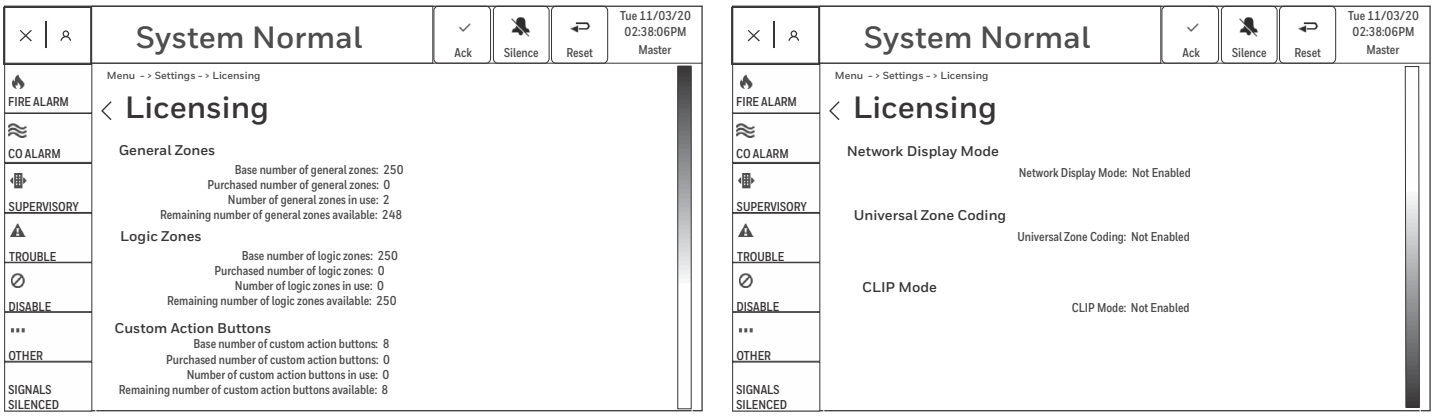


Figure 1 Licensing Screens

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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. Refer to User Level Programming Capabilities on page 54 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

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 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
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 User Programming Options 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.

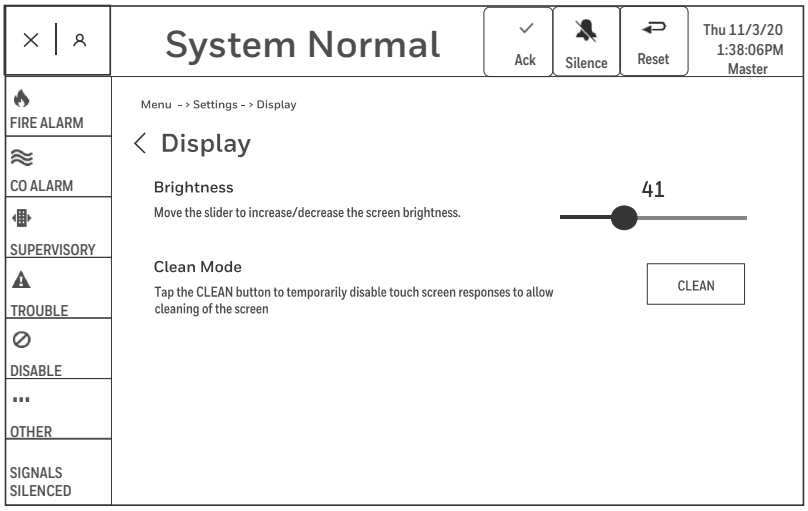


Figure 2 Display Screen

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

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.

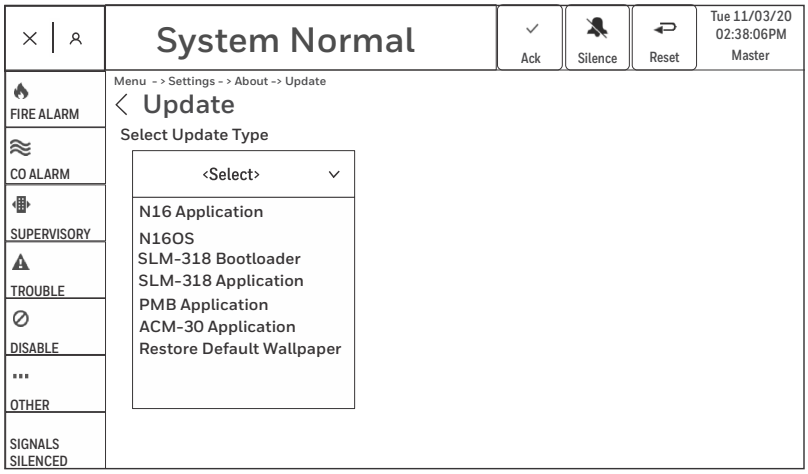


Figure 3 System Update Screen

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.

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

The About Screen has multiple screens, 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 screens.

Update Loops

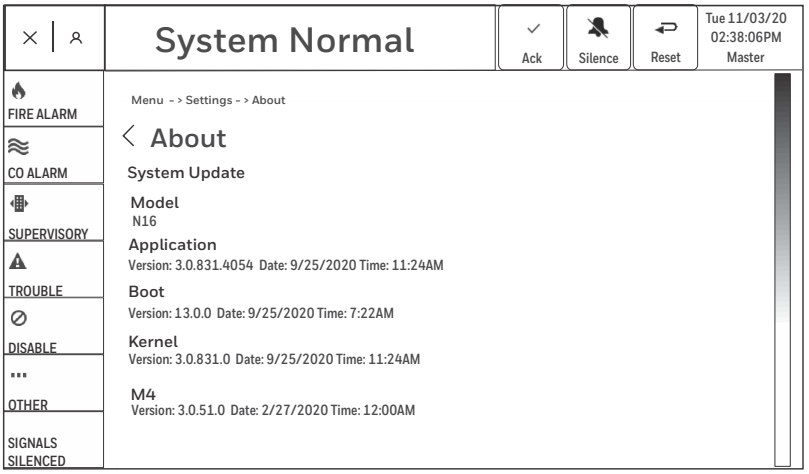
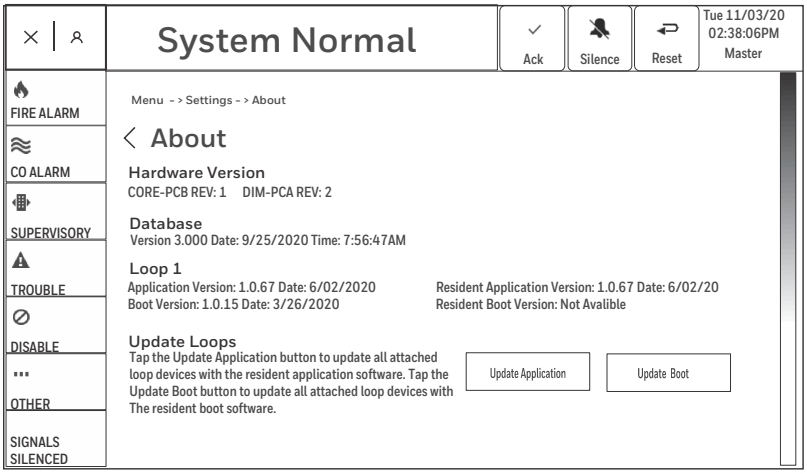


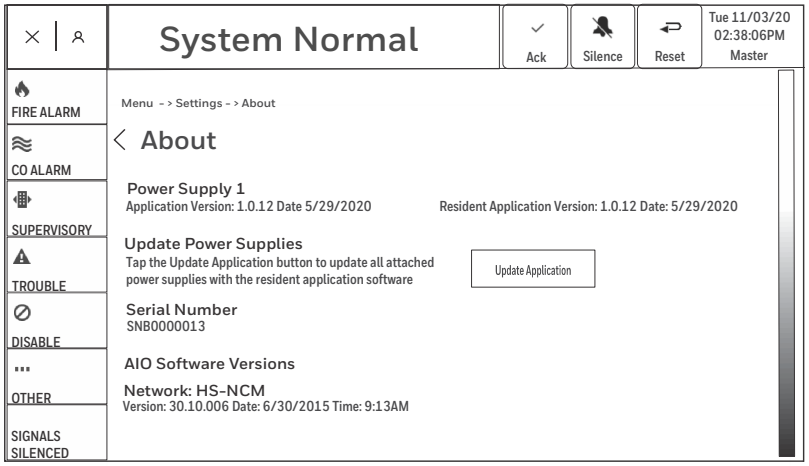
Figure 4 About Screens

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.



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

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.



3.3.3 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

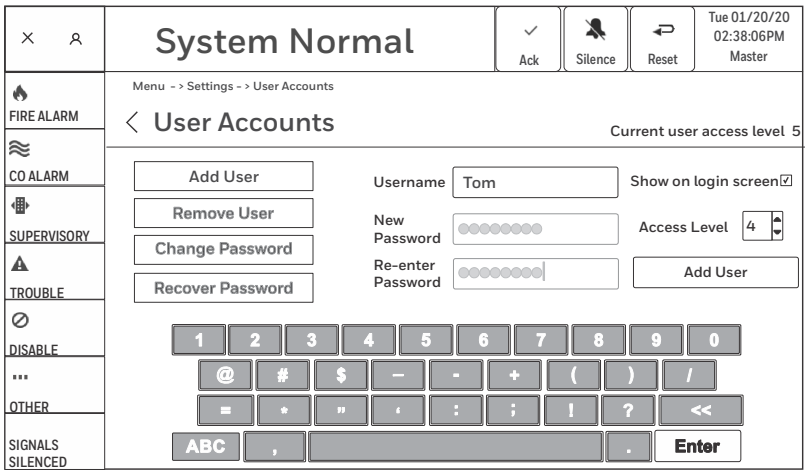


Figure 5 User Accounts Screen

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 USER NAME text box. Tap on the REMOVE USER touchpoint to remove the specified user.

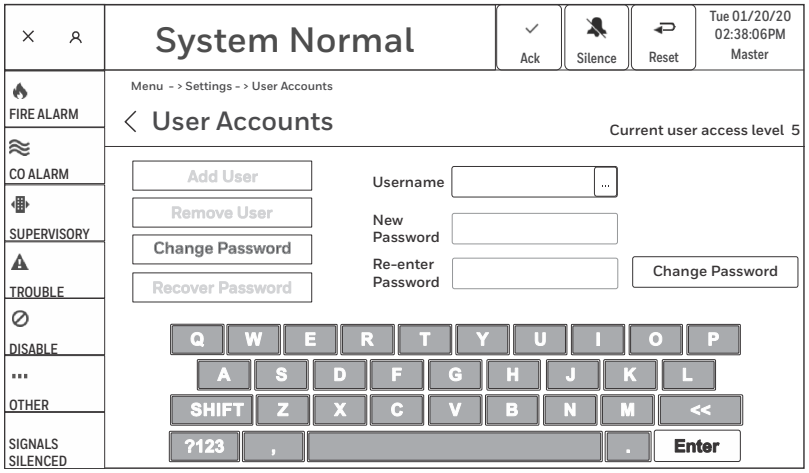


Figure 6 Password Screen

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. Type in the new password. Tap on CHANGE PASSWORD to save the new password.

Recovering a Master Password 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.

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

3.3.4 Panel Settings

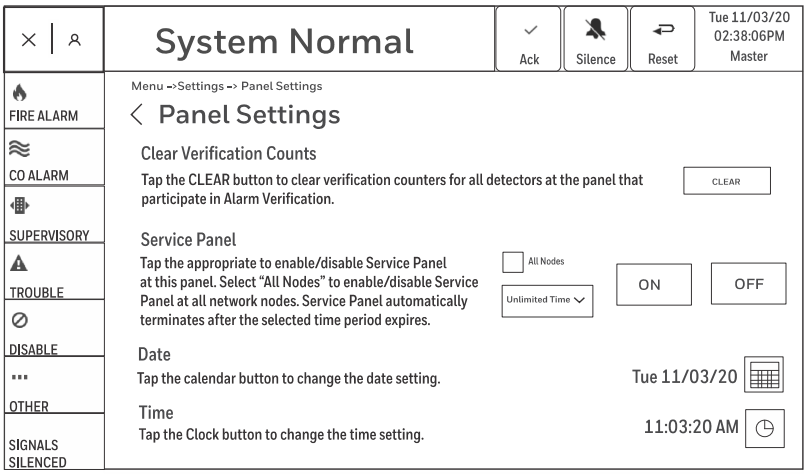


Figure 7 Panel Setting Screen

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.

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.

3.3.5 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 offline 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.

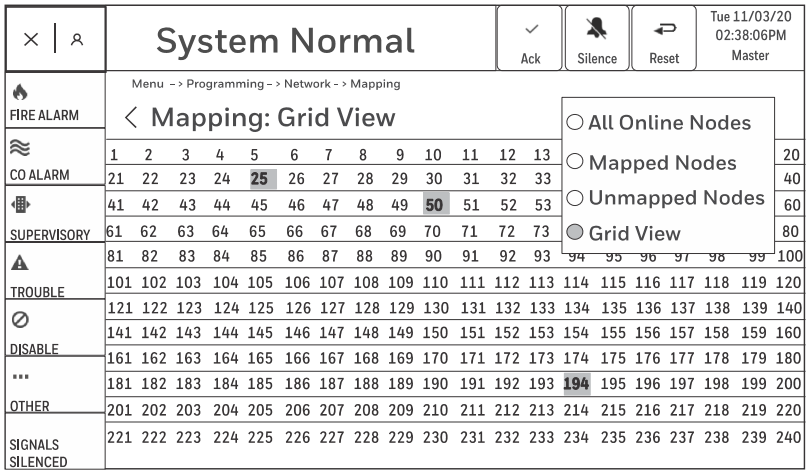


Figure 8 Grid View Screen

3.3.6 Autoprogram

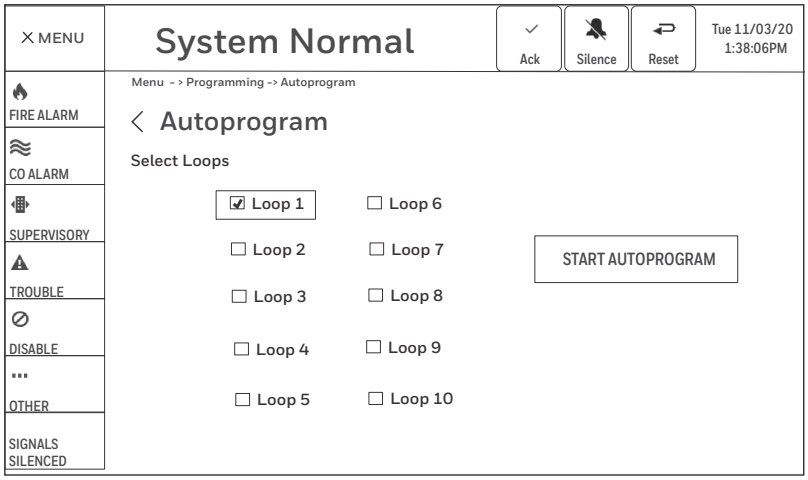


Figure 9 Autoprogram Screen

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 Help Files* for more information.

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.

3.3.7 Point Information

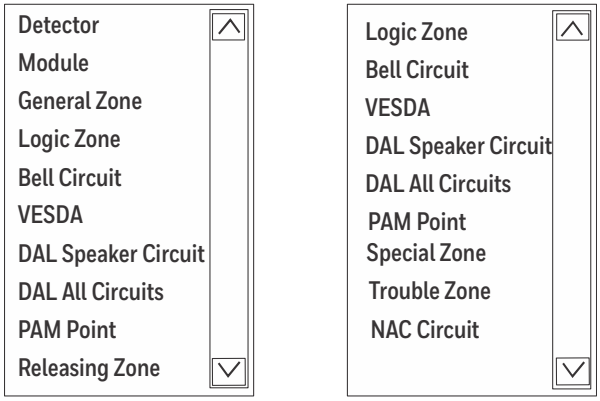


Figure 10 Point Type Selections

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, VEDSA, DAL Speaker Circuit, DAL All Circuits, PAM Point, Releasing Zone, Special Zone, Trouble Zone and NAC Circuit. 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:

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 and force on 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.

Detector/Module/VESDA If a detector module or VESDA 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, view the history as well as view read status for the point and force on 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.

General Zone/Logic Zone/Special Zone/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 and force on 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.

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 for the point and force on/off the point. Tap DISABLE to disable 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.

3.3.8 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 view and reset all SLM-318 and PMB communication statistics. Tap the RESET touchpoint next to SLM-318 and PMB 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 panel history and diagnostic information.

3.3.9 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.

3.3.10 History

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

Sorting and 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.

Alarms Only This displays only the alarm events stored in the history buffer.

Troubles Only This displays only the trouble events stored in the history buffer.

Supervisory Only This displays only the supervisory events stored in the history buffer.

Security/Other This displays only security and events deemed “other” stored in the history buffer. (i.e. Critical Process, Prealarm CO Alarm, etc.)

Time Date Interval This displays a screen to allow for the selection of a time period to define the range of events displayed, as well as specific event type. (i.e. All Events, Alarms Only, etc.)

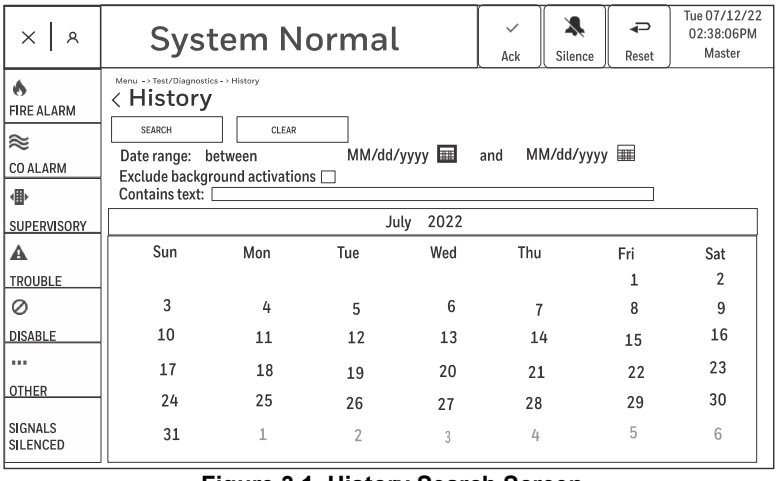


Figure 3.1 History Search Screen

Point Range This displays a screen to allow for the selection of a beginning and an end point that defines the range of events to be displayed.

Exporting History to USB Flash Drives: Tap on the VIEW HISTORY touchpoint. Tap on FILTER to preform a search (refer to , "Sorting and filtering") to display the history to be exported. Tap on EXPORT, a pop-up box will appear prompting the user to insert a USB flash drive or tap CANCEL. Tap CONTINUE. The history will be exported onto the USB flash drive. TO close the box without a history search tap CANCEL.

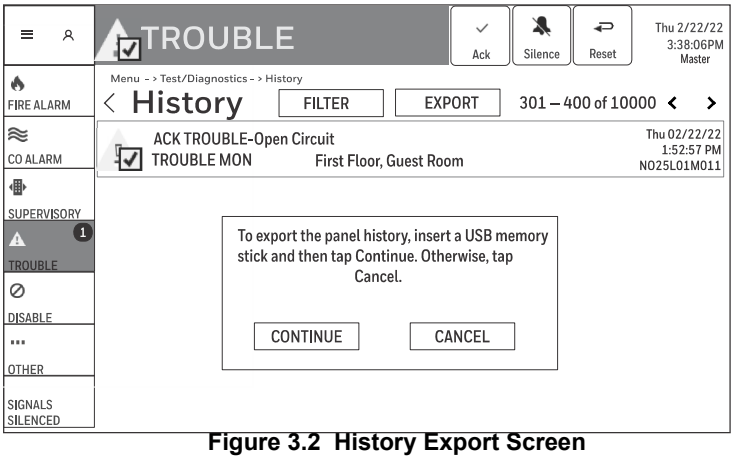


Figure 3.2 History Export Screen

NOTE: The user must be logged in as either a level 5 or 4 user to export panel history and diagnostic information.

3.3.11 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

3.4 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

The following programming is done via VeriFire Tools.

3.4.1 Local Control

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

3.4.2 AIO Mapping

The N16 has both an external and internal AIO-Bus that connects annunciators and remote displays with the FACP. Each AIO device can have a customizable primary label of up to 80 characters. The External AIO-Bus can be wired in Class A or Class B. The internal AIO is fixed at Class B only. Devices on the AIO-Bus can be configured as routers or peripherals. There is a maximum of 10 unique router addresses available for devices configured as routers.

The N16 AIO-Bus can support 80 ACM-30 annunciators with up to 10 configured as routers, each controlling up to 15 ACM-30s configured as peripherals. Additionally, the AIO-Bus can support up to 5 RLD's (remote display). The RLD can be configured as a router, each utilizing one of the 10 available router addresses but does not support peripherals.

The following restrictions apply: When mapping alarm points using SWIFT Wireless devices as inputs there is a limit of 8 ACM-30s per node. 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.

3.4.3 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.

3.4.4 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

3.4.5 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.

3.4.6 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.

3.4.7 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

3.4.8 Panel Timers Settings

Verify 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: If this value exceeds 60 seconds, AHJ approval is required.

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 5 minutes. 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

Program Setting for:	Default:
Verification Time	30 seconds
Max. Verification Time	0 (disabled)
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

Table 4 Panel Timer Settings

3.4.9 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: There are three options are available: Not Used, Security Alarm and AKS Key Switch.

- 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

3.4.10 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.

3.4.11 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

3.4.12 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.

3.4.13 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: Choose between YES and NO. This option will allow the photo element of any PSUP detectors on the fire panel to be latching or tracking.

If NO: The photo element of all PSUP detectors will be tracking.

If YES: The photo element of all PSUP detectors will be latching.

Default: NO

FIRE/CO (Co Supervisory) Latching: Only applies to Fire/CO detectors programmed as CSUP: Choose between YES and NO. This option will allow the CO element of any CSUP detectors on the fire panel to be latching or tracking.

If NO: The CO element of all CSUP detectors will be tracking.

If YES: The CO element of all PSUP detectors will be latching.

Default: NO

Acclimate Device Settings: Only applies to Acclimate Photo Supervisory detectors (PSUP): Choose between YES and NO. This option will allow the photo element of any Acclimate PSUP detectors on the fire panel to be latching or tracking.

If NO: The photo element of all Acclimate PSUP detectors will be tracking.

If YES: The photo element of all Acclimate PSUP detectors will be latching.

Default: NO

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:

1. Physically remove the old detector.
2. In VeriFire Tools, change the Type and FlashScan Code label to the values appropriate for the new detector.
3. 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 detectors only: Select YES or NO to enable the CO Prealarm function for the FIRE/CO smoke detector.

Custom Action Message: 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.

Local Mode: During communication loss between the panel and the SLM-318 devices selected for Local Mode participation and place in a local mode zone will continue to function across all the panel's SLCs in a limited manner. Input points will activate output points mapped to the same local mode zone. For example: SLC inputs mapped to "local mode zone 2" will activate mapped SLC outputs also placed in "local mode zone 2".

In addition to creating a "local mode zone" map, inputs and outputs must also be enabled for "local mode participation" to work at the device level.

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 detector for to be used 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 detector only: Activates when the photo element of the Fire/CO 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 Fire/CO detector reports a CO Pre-Alarm.
- **Position 9** - Used to activate sounder/relay bases of FlashScan detectors.
  When mapped to the same zone as Position 10, the sounder or relay base will activate when the detector goes into prealarm (Action). When mapped to a general or logic zone and this zone activates, the panel is searched for any detector with the same zone mapped in its 9th position. The sounder base of any FlashScan detector that matches the search will activate. Continuous tone only. Position 9 is not typically used with intelligent sounder bases.
  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.

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 135oF 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: **3.4.14** 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.

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.

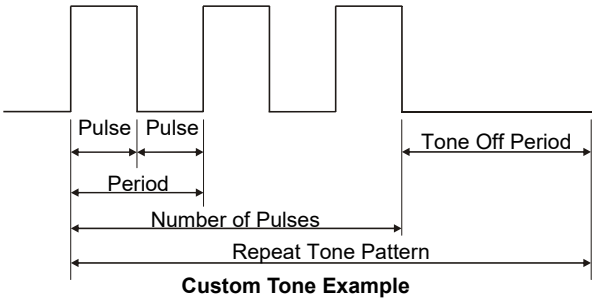
Sounder Base Custom Tone Setup

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.



Custom Tone Example

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

3.4.15 Module Point Programming

Type Code Label: Choose the appropriate type code label. (Refer to Appendix F, "System Trouble Codes" 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: Create a point label up to 20 characters long. 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 Appendix D, “CBE Zones and Equations” 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.

Local Mode: During communication loss between the panel and the SLM-318 devices selected for Local Mode participation and place in a local mode zone will continue to function across all the panel’s SLCs in a limited manner. Input points will activate output points mapped to the same local mode zone. For example: SLC inputs mapped to “local mode zone 2” will activate mapped SLC outputs also placed in “local mode zone 2”.

In addition to creating a “local mode zone” map, inputs and outputs must also be enabled for “local mode participation” to work at the device level.

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

3.4.16 Module Point Programming: Control

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

Local Mode: During communication loss between the panel and the SLM-318 devices selected for Local Mode participation and place in a local mode zone will continue to function across all the panel’s SLCs in a limited manner. Input points will activate output points mapped to the same local mode zone. For example: SLC inputs mapped to “local mode zone 2” will activate mapped SLC outputs also placed in “local mode zone 2”.

In addition to creating a “local mode zone” map, inputs and outputs must also be enabled for “local mode participation” to work at the device level.

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.

3.4.17 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.

3.4.18 General Zone Programming

The following zone programming options are available (Z0-Z999):

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

3.4.19 Zones

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

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. Zone Z000 is a general alarm zone: those points listing Z000 in their zone map participate in a general alarm. 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. 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.

Table 5 Zone Types

3.4.20 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.
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
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*

Table 6 Special Function Zones

* Auto Silence is only applicable for Fire Alarm activations

3.4.21 Trouble Zone Programming

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 lo12/20/2022cal 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.

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

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

3.4.22 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:

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 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.
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).

Equations are entered using Point Programming for logic or trouble 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.

Table 3.1

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) (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:	
"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.
"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.
"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.
"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.
"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.
"XZONE" Operator	Requires that any combination of two or more input devices programmed to a zone be active. (Local General Zones only) Example: **XZONE(Z02)** If any combination of two or more initiating devices that have been mapped to this software zone come into alarm, then outputs mapped to this zone will activate.
"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.
"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. 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.
"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.
"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.
"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.
"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.

Table 3.3

3.4.23 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**

The following are approved applications for the N16.:

NOTE: ONYXWORKS-WS: When operating as a Protected Premises Control Unit, the ONYXWORKS-WS 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 initiating device circuits
- Class A or B power-limited notification appliance circuits
- Power-limited 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

Process control, non-critical

Regional settings

- Chicago
  - Panel signal silence button 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

4.1 Panel Features

- Custom banner/graphics
- Basic functions
- Ack
- Silence
- Reset
- Date and time
- Display conditioning mode
- Alarm verification
- Pre-signal/alarm delay
- Co-operative detection
- Fire Event List
- History
- Filtering history
- Extracting history
- Look-ahead warning
- Drill
- Disable/enable
- Custom action buttons (license)
- Force on/off

- Menu
- Alert bar and customization
- Instructional text
- Logic zones (license)
- Special function zones
- General zone (license)
- Control-by-event
- Networking
- User management
- Firmware update & backup (the trouble for running a backup partition)
- Occupancy schedule
- Precedence
- Temperature measurements
- Network display node (license)
- Auto program
- Read status
- Reminders
- Configuration tool user
- Remote access
- Local Mode

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
- Alarm Delay
- Pre-signal
- 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.
- NAC Resound
- 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

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 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, a customizable alert bar that shows system status and touchpoints for acknowledge, signal silence and reset functions.

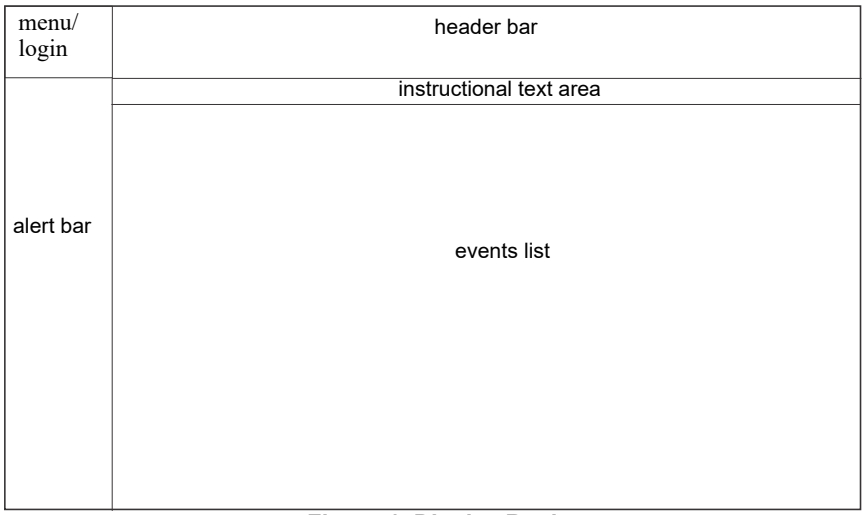


Figure 1 Display Regions

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 “Alert Bar” is always present and located along the side of the screen. The Alert Bar event categories can be configured though VeriFire Tools and can be configured for a minimum of four events up to a maximum of ten events. It shows color coded events, such as “Fire Alarm”, “CO Alarm”, “Supervisory” activation, “Trouble” activation, “Drill” activation” along with event counts and whether the outputs have been silenced.

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.

4.4.7 Pre-Signal/Alarm Delay

The panel includes an option to program a presignal/alarm delay time between one and three minutes (resolution in seconds). The default is 3 minutes. The local alarm delay setting can be turned on or off. Automatic detection devices and output devices include a setting designating them to participate in local alarm delay. Devices can not be programmed for both local alarm delay and alarm verification. , Note: when using the Alarm Delay feature, only local evacuation outputs configured to participate in the Alarm Delay feature will be delayed upon receipt of initial alarm. Off-premises signaling will IMMEDIATELY be transmitted upon initial alarm receipt.

4.5 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 54, “Panel Settings” on page 58, “About” on page 55, “User Accounts” on page 57 and “Obtaining a License” on page 53 for more information.

Programming This menu provides access to network programming and Autoprogram options. Refer to “Network” on page 58 and “Autoprogram” on page 59 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 page 59 for more information.

Test/Diagnostics This menu provides access to Diagnostics and also allows for the export of diagnostics, along with: Lamp Test, Clear Database, View History and Reboot. Refer to “History” on page 60, “Diagnostics” on page 60 and “Lamp Test” on page 60 for more information.

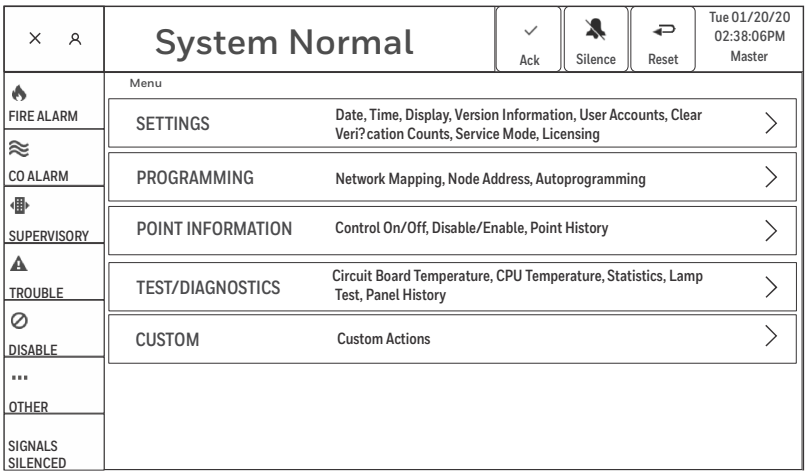


Figure 2 Main Menu Screen

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

4.6 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 status banner 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.

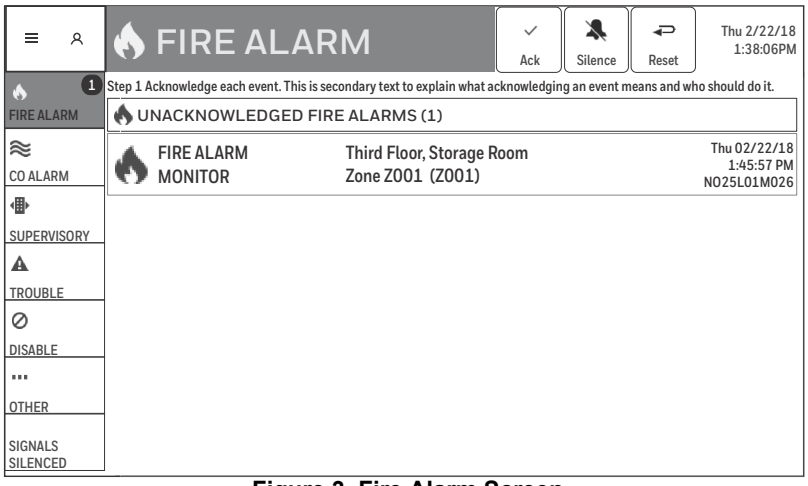


Figure 3 Fire Alarm Screen

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.

NOTE: If both Fire Alarms and Mass Notification Alarms are present on the fire panel at the same time, a second System Reset will need to be performed to reset the fire panel. The N16 will display MN SYSTEM RESET or FIRE SYSTEM RESET, depending on which event has priority.

4.7 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.

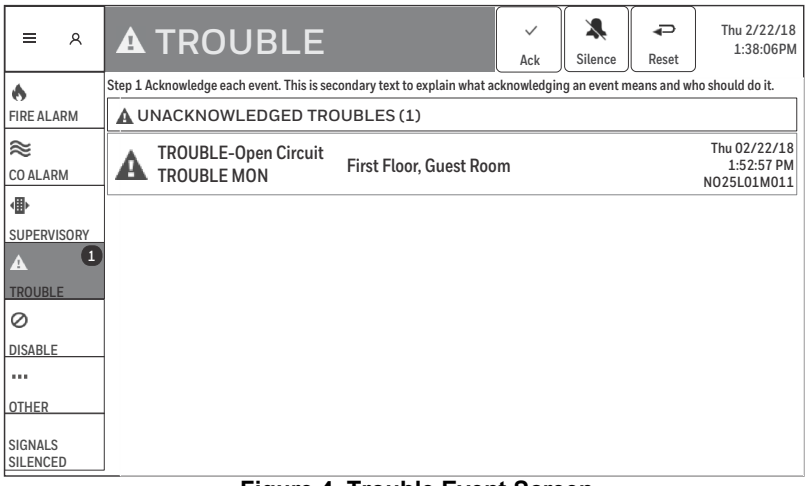


Figure 4 Trouble Event Screen

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.

4.8 CO Alarm

CO Alarm Event

- Activation of a device (detector or module) with a CO Alarm type code. (Refer to Table G.2, “Type Codes for Monitor Modules,” on page 112)
- 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.

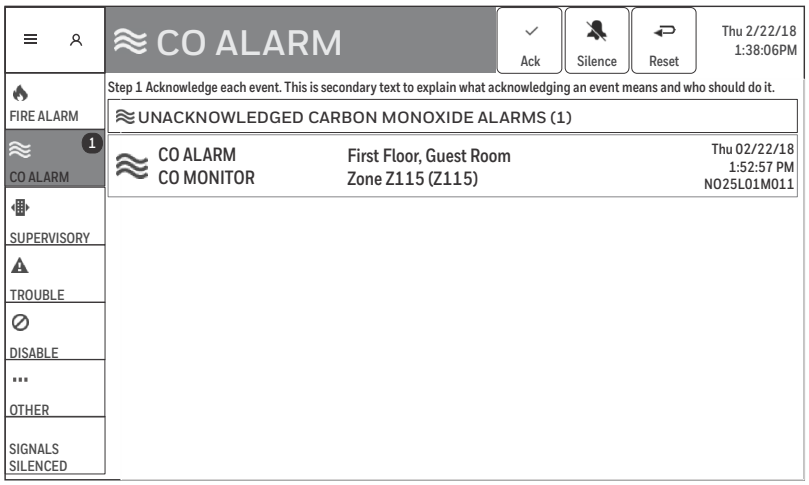


Figure 5 CO Alarm Screen

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.

4.9 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.

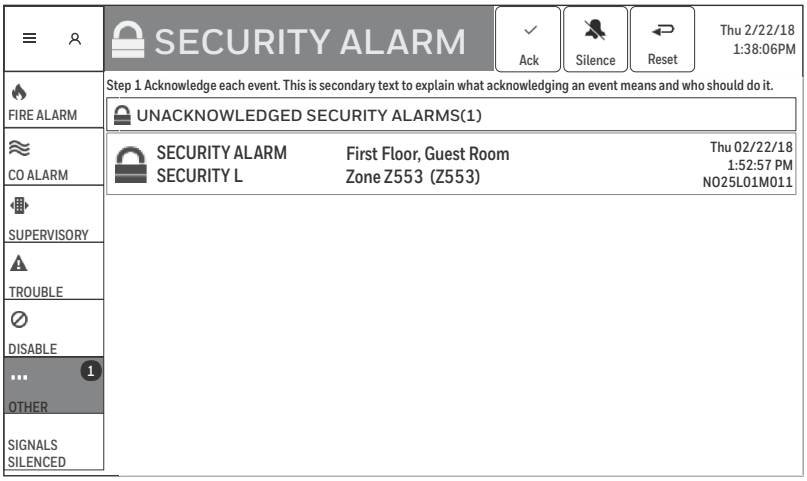


Figure 6 Other Event Screen

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.

4.10 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

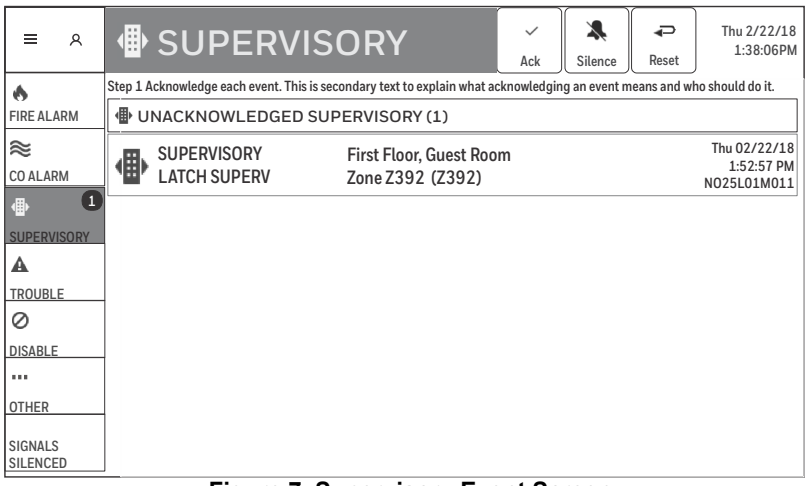


Figure 7 Supervisory Event Screen

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.

4.11 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 Screen Area
- Displays information on how to react to the event in the Informational Text Area

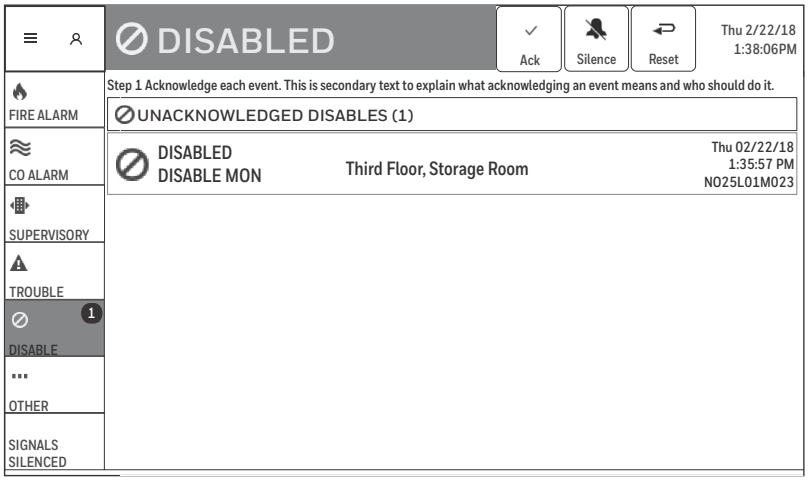


Figure 8 Disabled Point Screen

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.
- Enable the disabled point.

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 refer to Figure 5.2, “About Screens” for an illustration of the screens.

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 screens with a scroll bar touchpoint on the right side of each screen. Tap and hold on this touchpoint to scroll up or down between the screens. 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.

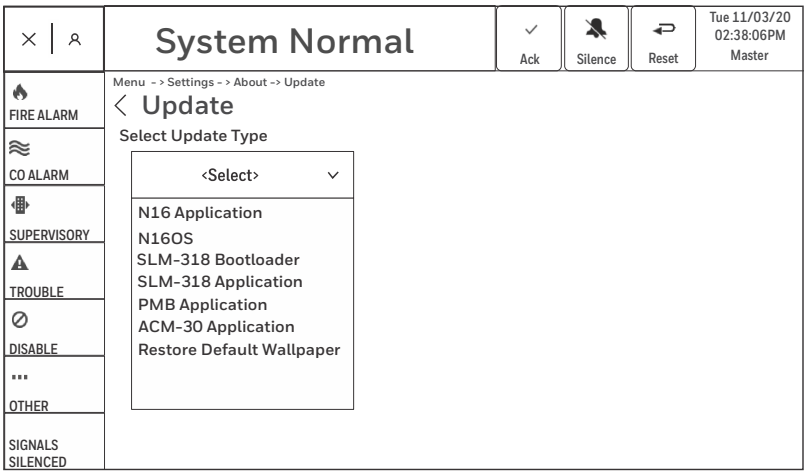
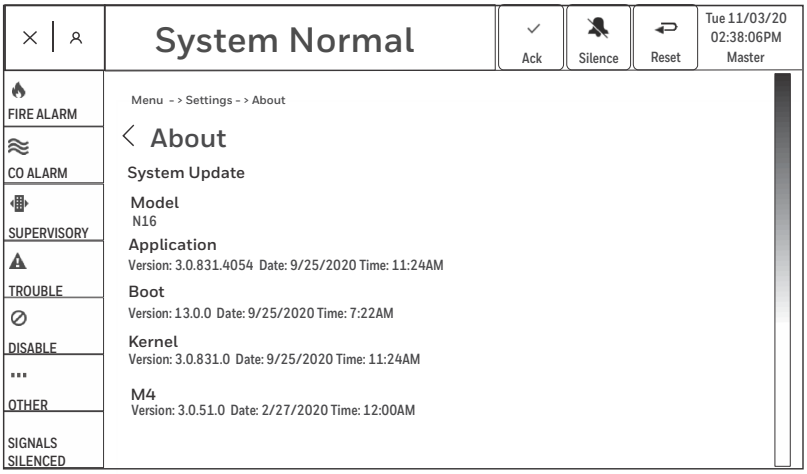


Figure 5.1 System Update Screen

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.



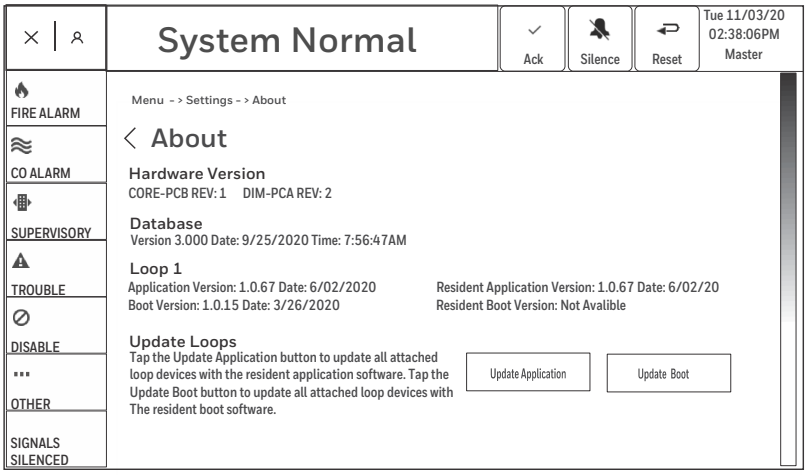
NOTE: The system will copy the image to flash and reboot running the new image. Do not power down the system during this time.

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 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 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 connected AIO devices resident application version. Tap the UPDATE (relevant connected AIO device) touchpoint to update all connected AIO devices of that particular type.

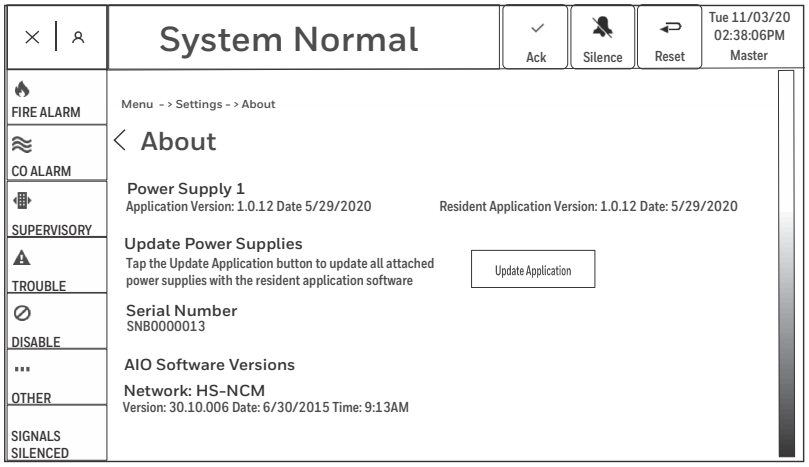


Figure 5.2 About Screens

CAUTION: RISK OF EQUIPMENT DAMAGE

THE ACM-30 FIRMWARE MUST BE UPDATED BEFORE UPDATING THE N16 OR NCD FIRMWARE.

Updating the ACM-30 The ACM-30 firmware update can be initiated from the N16 or NCD. Alternately, the ACM-30 can be updated via VeriFire Tools. The ACM-30 firmware update will require a .acm30 file extension.

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 DISABLE/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.

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.
- 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.

.

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.

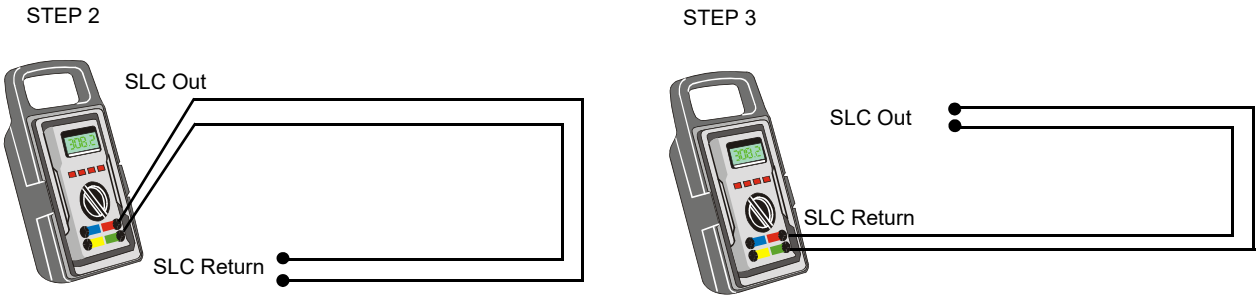


Figure 6.1 Measuring DC Resistance on an Unpopulated SLC Loop

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.

Appendix A: Electrical Specifications

A.1 Operating Power

2.5A @ 120V or 1.25 A @ 240 V, 50/60 Hz (primary power source) and 24 VDC battery (standby power source).

A.1.1 External Power Sources

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>
<tr><th>AC Voltage</th><th>AC Current</th><th>Max. AH Capacity</th><th>Max. Standby Current</th><th>Max. Alarm Current</th><th>Max. Standby Time</th><th>Max. Alarm Duration</th></tr>
<tr><td rowspan="2">120VAC, 50/60 Hz</td><td rowspan="4">2.5A</td><td>N/A</td><td rowspan="4">Refer to Table A.3, “Maximum Battery Standby Loads for 24 Hour Standby on the PMB Power Supply,” on page 86.</td><td rowspan="4">8.5 A</td><td rowspan="4">24 hours</td><td>N/A</td></tr>
<tr><td>26</td><td rowspan="3">5 minutes standard,
15 minutes for emergency voice/alarm communications systems.
30 minutes-Future use</td></tr>
<tr><td rowspan="2">240VAC, 50/60 Hz</td><td>55</td></tr>
<tr><td>1.25A</td><td>100</td></tr>
</table>

Table A.1 System Power

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

Table A.2 System Size

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 the PMB-AUX power supply manual for connection requirements.

NOTE: When disabling the battery charger on the PMB Power Supply, the batteries must be shared with a UL 864 compliant, supervised power supply capable of charging batteries with a charger voltage not to exceed 29VDC.

Battery Capacity	Alarm Time				
	5	10	15	20	30
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

Table A.3 Maximum Battery Standby Loads for 24 Hour Standby on the PMB Power Supply

A.2 SLC Loops

Terminal Block/Connection	Description	Specification
TB1	SLC Connection	24VDC Alarm 210mA Class B/A/X Standby 159mA Power Limited Supervised 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 • 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 • PMB power supplies use only the RS-485 data

Table A.4 SLM-318 Connections

Listed below are specifications for a Signaling Line Circuit loop. Refer to the *SLC Wiring Manual* for more detailed specifications and specific device listings:

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). **Note:** Refer to Appendix A.4 “Wire Requirements” 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 Section 6.2 “Operational Checks”.

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 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).

Circuit Type	Circuit Function	Wire Requirements	Distance (feet/meters)	Typical Wire Type
SLC (power limited)	Connects to intelligent and addressable modules.	Twisted-unshielded pair, 12 to 18 AWG (3.25 to 0.75mm^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) 9,500 ft. (2,895.6 m) 6,000 ft. (1,828.8 m) 3,700 ft. (1,127.76 m)	12 AWG (3.31 mm^2) 14 AWG (2.08 mm^2) 16 AWG (1.31 mm^2) 18 AWG (0.82 mm^2)
	or	Twisted-shielded pair. NOTE: • Shields must be isolated from ground. • Shields should be broken at each device.	5,000 ft (1524 m) 3,700 ft. (1,127.76 m)	12 to 16 AWG (3.31 mm^2 to 1.31 mm^2) 18 AWG (0.82 mm^2)
	or	Untwisted, unshielded wire, in conduit or outside of conduit. **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) 3,700 ft. (1,127.76 m)	12 to 16 AWG (3.31 mm^2 to 1.31 mm^2) 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 PMB power supplies use only the RS-485 data			
AIO External Connection (Supervised return) (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 Long line resistance: 100 ohms		
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 Must be within 20ft of panel Must be in same room as panel Cable must be in conduit		
IDC Initiating Device Circuit	FMM-1, FMM-101 (power limited)	12-18 AWG 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 1.2 V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used.	To meet 1.2 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-4 Transmitter, Annunciator and FCM-1 modules	12-18 AWG. Size wire so that no more than 1.2 V drop across wire run from supply source to end of any branch.	To meet 1.2 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) maximum	12 AWG (3.31 mm^2)

Table A.5 Wire Requirements

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).

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	Page
Intelligent Sensing features – Descriptions of Intelligent Sensing features, such as Drift Compensation, Sensitivity Adjust, programmable on a per-detector basis.	
Pre-Alarm – Alert and Action settings, programming (global settings).	
Detector Sensitivity Settings – Pre-Alarm and Alarm sensitivity settings for photo, ion, laser and multi-sensor detectors programmable on a per-detector basis.	
Detector Maintenance Features – Instructions for viewing and printing detector maintenance information.	

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 toTable B.2, “Detector Sensitivity Settings,” on page 94 for more information on detector sensitivity levels.

A graphic representation of a detector analog reading using drift compensation and smoothing

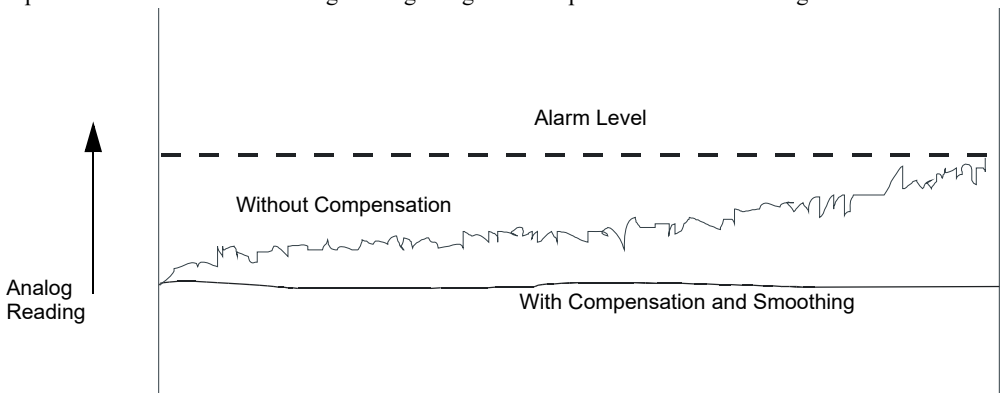


Figure B.1 Self-optimizing Pre-Alarm Level

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:

Detector Trouble Message	Indicates	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

Table B.1 Definitions of Intelligent Sensing Maintenance Levels

A graphic representation of the maintenance levels:

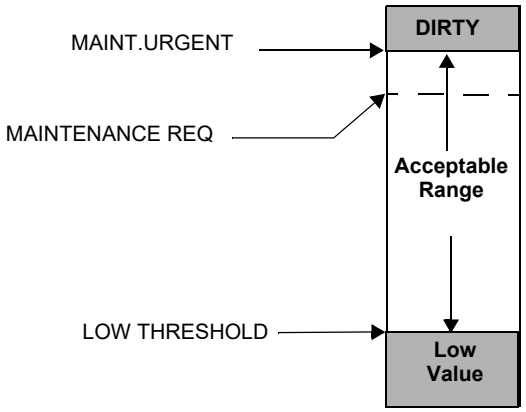


Figure B.2 Diagram of Maintenance Levels

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:

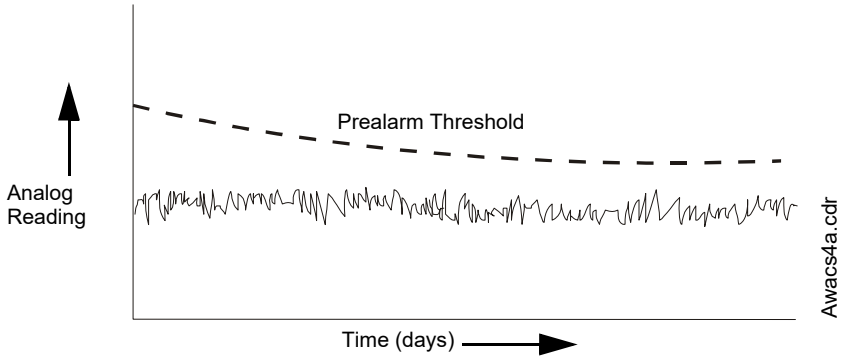


Figure B.3 Self-optimizing Pre-Alarm Level

B.2.4 Detector Sensitivity

The control panel provides 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:

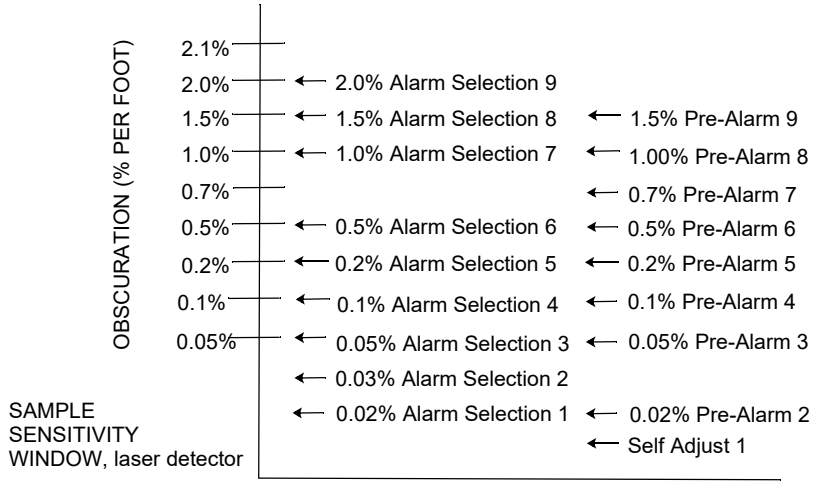


Figure B.4 Sample Sensitivity Levels for a FlashScan View Laser Detector

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:

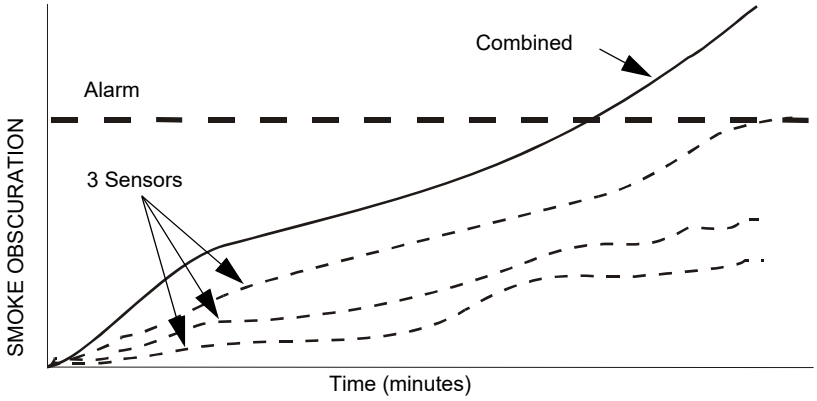


Figure B.5 Cooperative Multi-Detector Sensing

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 "Alert Level" below)
- Action (Refer to "Action Level" below)

Alert and Action Pre-Alarm settings are set with point programming. Unique Pre-Alarm sensitivity levels (PA) for individual detectors are listed in Appendix B.4, "Detector Sensitivity Settings", on page 93.

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.

Detector Type	Alarm (FlashScan)		Pre-Alarm
Photo Electric SMOKE (PHOTO) (See note *)	AL:1=0.50 % AL:2=0.73 % AL:3=0.96 % AL:4=1.19 % AL:5=1.43 % AL:6=1.66 % AL:7=1.89 % AL:8=2.12 %~ AL:9=2.35 %		PA:1=Auto PA:2=0.30 % PA:3=0.47 % PA:4=0.64 % PA:5=0.81 % PA:6=0.99 % PA:7=1.16 % PA:8=1.33 %~ PA:9=1.50 %
Ion SMOKE (ION) (See notes *, **, and †)	AL:1=0.50 % AL:2=0.75 % AL:3=1.00 % AL:4=1.25 % AL:5=1.50 % AL:6=1.75 %~ AL:7=2.00 % AL:8=2.25 % AL:9=2.50 %		PA:1=Auto PA:2=0.40 % PA:3=0.50 % PA:4=0.75 % PA:5=1.00 % PA:6=1.25 %~ PA:7=1.50 % PA:8=1.75 % PA:9=2.00 %
FlashScan Laser‡ (See Note **)	AL:1=0.02 % AL:2=0.03 % AL:3=0.05 % AL:4=0.10 % AL:5=0.20 % AL:6=0.50 %~ AL:7=1.00 % AL:8=1.50 % AL:9=2.00 %		PA:1=Auto PA:2=0.02 % PA:3=0.05 % PA:4=0.10 % PA:5=0.20 % PA:6=0.50 %~ PA:7=0.70 % PA:8=1.00 % PA:9=1.50 %
Acclimate Multi-Sensor See Note ††)	 AL:1=0.50 % AL:2=1.00 % AL:3=1.00 to 2.00 % AL:4=2.00 % AL:5=2.00 to 3.00 %~ AL:6=3.00 % AL:7=3.00 to 4.00 % AL:8=4.00 % AL:9=thermal 135°F	Alarm (CLIP) AL:1=1.00 % AL:2=1.00 % AL:3=1.00 to 2.00 % AL:4=2.00 % AL:5=2.00 to 4.00 %~ AL:6=2.00 to 4.00 % AL:7=2.00 to 4.00 % AL:8=4.00 % AL:9=4.00 %	 PA:1=0.50 % PA:2=1.00 % PA:3=1.00 % PA:4=1.00 to 2.00 % PA:5=1.00 to 2.00 %~ PA:6=2.00 % PA:7=2.00 % PA:8=2.00 to 3.00 % PA:9=2.00 to 3.00 %
Heat (Adjustable Threshold)	AL:1=43°C AL:2=57°C AL:3=63°C~ AL:4=68°C AL:5=74°C AL:6=88°C AL:7=88°C AL:8=88°C AL:9=88°C		PA:1=40°C PA:2=43°C PA:3=57°C~ PA:4=65°C PA:5=70°C PA:6=75°C PA:7=75°C PA:8=75°C PA:9=75°C
Beam (See Note ‡‡)	AL:1=25% AL:2=30% AL:3=40% AL:4=50% AL:5=30 - 50% AL:6=40 - 50%		PA:1=50% PA:2=55% PA:3=60% PA:4=65% PA:5=70% PA:6=75% PA:7=80% PA:8=85% PA:9=90%
Intelliquad FSC-851 (See Note ***)	AL:1= 1% AL:2= 2% AL:3= 3% AL:4= 3% w/ 10 minute confirmation period**** AL:5= 4% w/ 10 minute confirmation period AL:6= Thermal 135°F		PA:1= 1% PA:2= 2% PA:3= 3% PA:4= 3% w/ 10 minute confirmation period PA:5= 4% w/ 10 minute confirmation period PA:6= Thermal 135°F

Table B.2 Detector Sensitivity Settings (1 of 2)

Detector Type	Alarm (FlashScan)	Pre-Alarm
Photo/CO	AL:1=1% AL:2=2% AL:3=3% AL:4=3% with a 10 minute confirmation period**** AL:5=4% with a 10 minute confirmation period AL:6=Thermal 135°F	PA:1=1% PA:2=2% PA:3=3% PA:4=3% with a 10 minute confirmation period PA:5=4% with a 10 minute confirmation period PA:6=Thermal 135°F
		˜Signifies the factory default setting.

Table B.2 Detector Sensitivity Settings (2 of 2)

* 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.

‡‡ 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.

****Within the 10 minute signature confirmation delay period, if there is a detection of another fire signature (Carbon Monoxide, Infrared or Thermal) it overrides the 10 minute confirmation time.

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 two selections:

- A **Presignal Delay Timer** (1:00 to 3:00 minutes) that delays activation of all outputs with a CBE that includes Special Zone ZF0.

An illustration of Presignal timing.

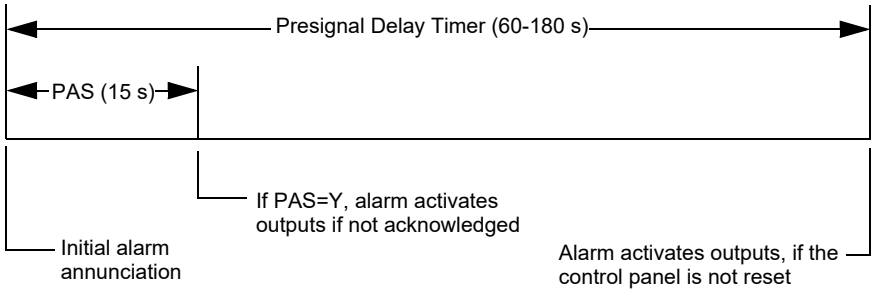


Figure C.1 Presignal Time

The control panel delays activation of outputs containing ZF0 in their zone maps for all alarm initiating devices that contain ZF0 in their CBE list. A subsequent alarm will abort the Presignal Delay Timer and execute CBE lists.

Notes on using ZF0

- The Presignal Delay timer countdown can be stopped by pressing the SYSTEM RESET key before the timer expires.
- Program zone ZF0 to participating inputs and outputs.

Restrictions on using ZF0

- Do not include ZF0 in the CBE list for any monitor module that connects to a device other than an automatic fire detector.

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-4 polarity reversal alarm output
- TM-4 municipal box output
- CGW-MB
- CLSS-Gateway
- HON-CGW-DACT

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 the drill zone (Special Function Zone 11) to be added to the zone mapping of each point. ZF11 When the drill touchpoint is tapped or drill is performed, ZF11 will go active. ZF11 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 and special zone.
- Each output point (control module) can list up to ten zones. Allowable zone types are general zone, logic zone, releasing zone, special zone and trouble zone.
- Output points can list zone Z000 (general alarm). Non-Alarm or Supervisory points do not activate zone Z000 (general alarm).

Networked CBE, or CCBE (Cooperative Control-By-Event), provides CBE initiating-event/output-response relationships over the network through general, logic and/or trouble 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.

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. Zone Z000 is a general alarm zone: those points listing Z000 in their zone map participate in a general alarm. 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. 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.
Trouble Zone	A trouble zone consists of a trouble equation. Whenever the trouble equation becomes true, all output points mapped to the trouble zone will activate. The panel will support up to one hundred trouble zones, designated as ZT001 through ZT100. Trouble zones can be used in CCBE applications when a node number is entered before the zone number. NOTE: Trouble zones can be used only in CCBE applications between NFS2-3030, NFS-3030 and NFS-640 FACPs. Trouble zones will not activate with other combinations.
Releasing Zone	A releasing zone is used to control a releasing operation. The panel will support up to ten releasing zones, designated as ZR00 through ZR09.

Table D.1 CBE Zone Types

Special Zone	ZF0	An output participates in Presignal with this special zone in its zone map.
	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.
	ZF6	Plant Isolate special zone for Australian Mode. When the Plant Isolate button is pressed, ZF6 will toggle between Normal and Active.
	ZF7	Drill for Australian Mode. In the event of a drill activation, ZF7 will activate and will remain active until a reset is performed on the fire panel.
	ZF9	An output programmed to turn on/off if a PreAlarm is active (ALERT, ACTION).
	ZF10	Any detector or module in alarm verification will activate this zone.
	ZF11	When the drill (alarm signal for Canadian applications) key is pushed or drill/alarm signal is performed, ZF11 will go active. ZF11 will go to normal after a 5 second delay.
	ZF12	When the acknowledge key is pushed, or a block or event acknowledge is performed, ZF12 will go active. After a five-second delay, ZF12 will go to normal.
	ZF13	When the signal silence key is pushed or a signal silence is performed, ZF13 will go active. After a five-second delay, ZF13 will go to normal.
	ZF14	When the system reset key is pushed or a system reset is performed, ZF14 will go active. After a ten-second delay, ZF14 will go 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 go to normal.
	ZF16	Drill Zone (Alarm Signal Zone for Canadian applications). This zone used when Drill/Alarm Signal Mode is set to Custom. When a drill/alarm signal is performed on the fire panel, ZF16 will be set to active. ZF16 will return to normal following a system reset.
	ZF17	Signal Silence for Australian Mode operations. When a signal silence is performed, ZF17 will go active and will remain active until a System Reset is performed. The special zone will only function when Australian Mode is enabled.
	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.
	ZF20	When an mass notification alarm occurs on the fire panel, ZF20 will go active. If mass notification events have priority over fire, network nodes MN mapped to the fire panel (via VeriFire Tools) will suppress any active fire events. ZF20 will remain active until a system reset is performed and the MN alarm is cleared
	ZF21	When a mass notification supervisory event occurs, ZF21 will activate. ZF21 will remain active until the MN Supervisory condition is cleared. If the supervisory is latched, a system reset will need to be performed to clear the condition.
	ZF22	When a mass notification trouble occurs on the fire panel, ZF22 will activate. ZF22 will remain active until the MN trouble is cleared
	ZF36	With DCC enabled: If the panel or an LCD-160 connected to the panel is in control of the network (Control Active LED illuminated), ZF36 for the panel will activate. ZF36 will remain active until a different node on the network is given control. For Canadian Applications: If an LCD-160 is connected to the NFS2-3030 and DCC is enabled, local control should be disabled.
	ZF37	Automatic Alarm Signal Activation Timer. ZF37 will activate when the first (alert) stage of Two-Stage notification has begun and will remain active until the duration of the first stage is complete (3 or 5 minute timer has expired) or canceled (signal silence or system reset performed).
	ZF38	Second Stage. ZF38 will activate when the second stage (evacuation) of Two-Stage notification has begun and will remain active until a signal silence or system reset is performed OR if a subsequent fire alarm returns the panel to the First Stage.
	ZF39*	Automatic Alarm Signal Activation Canceled. ZF39 will activate when the first (alert) stage of the Two-Stage notification has been canceled via an ACM series annunciator control point mapped to ZF39. ZF39 will remain active till a signal silence or system reset is performed, a subsequent alarm restarts the Two-Stage 3/Two-Stage 5 first (alert) stage timer, a drill/alarm signal is performed, or a device programmed as an Evacuate Switch is activated.
	ZF40	Auto Silence Activation. ZF40 will activate when the auto silence timer has expired and silenceable outputs on the fire panel have been silenced as a result. ZF40 will remain active until a System Reset, resound, or Drill (Alarm Signal for Canadian applications) is performed.

Table D.1 CBE Zone Types

* Required for Two-Stage Notification Canadian Standalone Applications

D.2 Equations

Logic and Trouble Equations can define complex relationships between input and output devices.

The FACP supports up to 1000 Logic Equations, each designated with a Logic Zone number of ZL1 through ZL1000. It also supports up to 100 Trouble Zones, each designated with a Trouble Zone number of ZT001 through ZT100. 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 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.
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 or trouble 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.3 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.

LxxD1 - LxxD159	detectors loop xx	(159 per loop)
LxxM1 - LxxM159*	modules loop xx	(159 per loop)
(Nxxx)Z0 - (Nxxx)Z999*	general zones	(1000)
ZF0 - ZF7, ZF9 - ZF22,ZF36 - ZF40	special zones	(27)
T0 - T685	system troubles (trouble equations only)	(686)
(Nxxx)ZT001 - (Nxxx)ZT100	trouble zones	(100)
(Nxxx)ZL1 - (Nxxx)ZL1000	logic zones	(1000)
xx = loop number (01 through 10) (Nxxx) = Node number, necessary for CCBE programming. The node number identifies what node the panel will watch for a particular zone activation.		

Table D.2 Table of Arguments

* 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.4 Logic Equations

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 "XZONE" Operator**
  Requires that any combination of two or more input devices programmed to a zone be active.

NOTE: Local General Zones only.

  Example: XZONE(Z02)
  If any combination of two or more initiating devices that have been mapped to this software zone come into alarm, then outputs mapped to this zone will activate.
- **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.
- **The "AUTO(point argument)" Operator***
  This operator will evaluate as "Active" if all of the SCS switches or specified switch group are in the "Auto" position. When the SCS-8L/SCE-8L is disabled, the evaluation will be based on the switch position prior to the disable.
  Examples:
  The switch associated with switch group 16 on Annunciator 1 must be set as "Auto" for the equation to go active.
  OR(AUTO(A1G16))
  All the switches of Annunciator 1 must be set to "Auto" for the equation to go active.
  OR(AUTO(A1))
- **The "NORM(point argument)" Operator***
  This operator will evaluate as "Active" if the entire SCS device or a specified switch group is in a normal state.
  Examples:

Switch group 16 on Annunciator 1 must be in the “normal” (no trouble) state for the equation to go active.

OR(NORM(A1G16))

(All switches groups on) Annunciator 1 must be in the “normal” (no trouble) state for the equation to go active.

OR(NORM(A1)

- **The “SCSDIS(point argument)” Operator***

  For use with the SCS-8L only. This operator will evaluate as “Active” if the keyswitch on the specified SCS device is in the disabled position.

  Example:

  If the keyswitch on annunciator 25 is disabled, this equation will go active.

  OR(SCSDIS(A25))

* For use with local SCS applications

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.

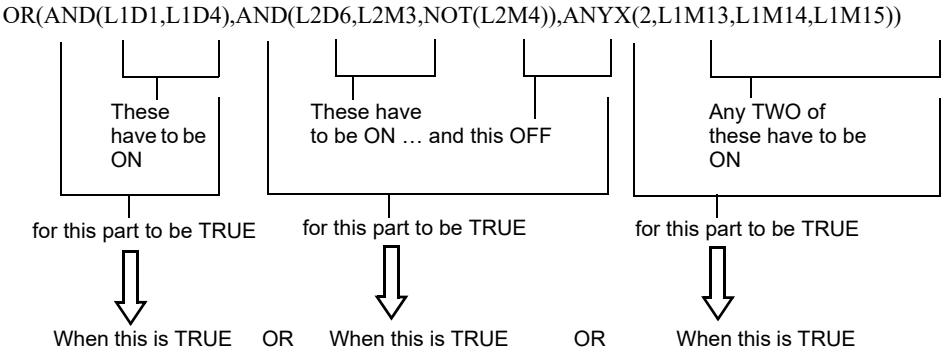
5 *Logic Functions* (maximum of 10) - OR, AND, AND, NOT and ANYX.

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:



D.5 Trouble Equations

A trouble equation follows the same syntax rules as the logic equation. The system allows up to a hundred trouble equations, ZT001 through ZT100. It differs from a logic equation in the following manner:

- Equations evaluate as true when the arguments go into trouble.
- Argument entries may consist of system trouble codes. Refer to Table F, “System Trouble Codes,” on page 106 for a listing of these codes.

Examples:

AND(L1M149,L2M110) will evaluate as true when both arguments go into trouble.

OR(ZT049,ZT050) will evaluate as true when either argument goes into trouble.

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	Preform an Autoprogram on the panel touch screen.
5	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.6, “Self-Test FlashScan Codes,” on page 115 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.

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	RESERVED	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	FUTURE USE	83	CHARGER FAIL
84	GROUND FAULT LOOP 2	85	CLASS A NEG LOOP 1	86	CLASS A NEG LOOP 2	87	GROUND FAULT LOOP 1
88	RESERVED	89	RESERVED	90	PROG MODE ACTIVATED	91	LOADING...NO SERVICE
92	FUTURE USE	93	NFPA 24HR REMINDER	94	NVRAM BATT TROUBLE	95	RESERVED
96	RESERVED	97	RESERVED	98	RESERVED	99	RESERVED
100	RESERVED	101	RESERVED	102	RESERVED	103	RESERVED
104	RESERVED	105	CLASS A ON LOOP 3	106	RESERVED	107	RESERVED
108	MAN EVAC INITIATED	109	MAN EVAC RECEIVED	110	RESERVED	111	RESERVED
112	RESERVED	113-175	RESERVED	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	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	RESERVED	201	BUZZER OFF-LINE
202	RESERVED	203	RESERVED	204	RESERVED	205	RESERVED
206	PRINTER PAPER OUT	207	PRINTER OFF LINE	208	RESERVED	209	RESERVED
210	MANUAL MODE ENTERED	211	NCM COMM FAILURE	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

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
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	RESERVED	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	NCM COM FAILURE	244	RESERVED	245	RESERVED
246	RESERVED	247	RESERVED	248	RESERVED	249	RESERVED
250	SELF TEST FAILED	251	NETWORK INCOMPATIBILITY	252	RESERVED	253	NETWORK MAP LIMIT EXCEEDED
254	INVALID NODE TYPE	255	DISPLAY NODE LIMIT EXCEEDED	256-383	RESERVED	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
449-502	RESERVED	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

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
510	TEST PROGRAM UPDATE	511-521	RESERVED	522-571	RESERVED	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	DAA 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	DAA ADDRESS CONFLICT
593 - 603	RESERVED	604	DATABASE CORRUPTED	605	AUDIO LIBRARY CORRUPTED	606	DATABASE INCOMPATIBLE
607	AUDIO LIBRARY INCOMPATIBLE	608	DAA DOWNLOAD IN PROGRESS	609	RESERVED	610	RESERVED
611	PHONE CHANNEL LIMIT EXCEEDED	612	NCM SNIFFER MODE ACTIVE	613	NCM CONNECTION LIMIT EXCEEDED	614	HARDWARE MISMATCH
615	DAL DEVICE NO ANSWER	616	PRIMARY AMP 1 HARDWARE FAILURE	617	PRIMARY AMP 2 HARDWARE FAILURE	618	PRIMARY AMP 3 HARDWARE FAILURE
619	PRIMARY AMP 4 HARDWARE FAILURE	620	BACKUP AMP 1 HARDWARE FAILURE	621	BACKUP AMP 2 HARDWARE FAILURE	622	BACKUP AMP 3 HARDWARE FAILURE
623	BACKUP AMP 4 HARDWARE FAILURE	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	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	686-724	RESERVED
725	ALARM SIGNAL	726	FUTURE USE	727	CHANGE SERVICE 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

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
737	LOOP CARD 10 COMM LOSS	738	PLEASE CHANGE THE MASTER USER PASSWORD	739	PASSWORD DATABASE CORRUPTED	740	DEFAULT DATABASE PLEASE PROGRAM
741	PMB 1 COMM LOSS	742	PMB 2 COMM LOSS	743	PMB 3 COMM LOSS	744	PMB 4 COMM LOSS
745	PMB 5 COMM LOSS	746	RECOVERY PARTITION APPLICATION ACTIVE	747	AIO COMM CLASS A TROUBLE	748	AC FAILURE
749	EARTH FAULT	750	EARTH FAULT SWITCH MISMATCH	751	BATTERY LOW	752	BATTERY HIGH
753	BATTERY VERY LOW OR MISSING	754	CHARGER FAIL	755	POWER SUPPLY FAILURE	756	AIO ADDRESS N COMM LOSS

Table F.1 System Trouble Names and Codes

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	Appendix G.1 on page 110
Monitor Modules	Appendix G.2 on page 112
SLC Outputs	Appendix G.3 on page 113
PMB Outputs	Appendix G.4 on page 114
FlashScan Codes	Appendix G.5 on page 114
Self Test Detectors	Appendix G.6 on page 115

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.

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: 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.

Table G.1 Intelligent Detector Type Codes (1 of 3)

Type Code	Point Type	Latching (Y=yes N=no)	Activates CBE	Device/Point Function
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.
Note: For Fire/CO detectors: 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. 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 CO- Alarm	Y (See note below)	Y	PHOTO CO detector
P/CO (C SUP)	PHOTO- Fire 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 Table B.2, “Detector Sensitivity Settings,” on page 94 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

Table G.1 Intelligent Detector Type Codes (2 of 3)

Type Code	Point Type	Latching (Y=yes N=no)	Activates CBE	Device/Point Function
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.
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: 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.				

Table G.1 Intelligent Detector Type Codes (3 of 3)

* 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.4 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.

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
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 (Not for use in Canadian Applications)

Table G.2 Type Codes for Monitor Modules (1 of 2)

Type Code	Point Type	Point Characteristics		
		Latching (Y=yes, N=no)	Activates CBE	Device Function
EVACUATE SWITCH	non-alarm	Y	N	Performs Drill function (Alarm Signal for Canadian applications), 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 (use trouble zones for activations)
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 (use trouble zones for activations)
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
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: 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.

Table G.2 Type Codes for Monitor Modules (2 of 2)

* Does not activate General Alarm Zone Z0

G.5 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.h

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

Table G.3 SLC Control Module Type Codes (1 of 2)

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	Control Module, XPC-8, or an XP5-C (in 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.
GEN SUPERVIS†	N	Y	NAC	supervisory	Control Module, XPC-8, or an XP5-C (in NAC mode) activated under any Supervisory condition (includes sprinkler type).
GEN TROUBLE†	N	Y	NAC	trouble	Control Module, XPC-8, or an XP5-C (in NAC mode) activated under any System Trouble condition.This device will not turn ON when it is in trouble (short or open).
GENERAL PEND†	N	Y	NAC	trouble	Control Module XPC-8 circuit, or an XP5-C (in 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. This device will not turn ON when it is in trouble (short or open)
TROUBLE PEND†	N	Y	NAC	trouble	Control Module or an XP5-C (in NAC mode) 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).
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
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

* Values represent program defaults **Table G.3 SLC Control Module Type Codes (2 of 2)**

† With LCM-320 revision 2.0 and higher, this Type Code has external power supervision (FlashScan only). An external power-supervision relay is not required. 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.6 Output Type Codes for PMB Devices

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	

Table G.4 PMB Output Type Codes

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::

FlashScan Code	Device/Point	FlashScan Code	Device/Point
ACCLIMATE	FAPT-751, FAPT-851	HEAT ROR	FSP-951R, FSP-951RA, FSP-951R-IV, FSP-951RA-IV

Table G.5 FlashScan Codes (1 of 2)

BEAM	FSB-200,FSB-200S	PHOTO/CO	FPC-951, FPC-951-IV
IQUAD	FSC-851	C/O	FSCO-951
CONTROL	FCM-1	FAASTX	FSA-20000/A, FSA-5000/A FSA-20000P
HEAT	FST-751/R, FST-851/R,	FAAST	FSA-8000/A
HIGH HEAT	FST-851H	PS RELAY	ACPS RELAY
ION	FSI-751, FSI-851	RELAY	FRM-1
LASER	FSL-751	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,	XPIQ TELEPHONE	XPIQ TELEPHONE
PHOTO/HEAT	FSP-751T, FSP-851T,	XPIQ MUSIC	XPIQ MUSIC
FIRE/CO	FCO-851	PS MON	PS MON

Table G.5 FlashScan Codes (2 of 2)

G.8 Self-Test FlashScan Codes

The following are FlashScan Codes for Self-Test Devices.

Self Test FlashScan Code	Device
Photo	FSP-951-SELFT
Photo/Heat	FSP-951-SELFT
Heat	FSP-951-SELFT
High Heat	FSP-951-SELFT
Heat ROR	FSP-951-SELFT

Table G.6 Self-Test FlashScan Codes

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 panel programming Network Display Mode choices, available through VeriFire Tools are described below. Network Display Mode allows the N16 to display network events for mapped nodes. This feature is programmable via VeriFire Tools.

I.1.1 Limitations

When in Network Display Mode:

1. Only the following network node types can be mapped to the N16:

- NFS2-3030
- NFS2-640
- NFS-320
-
- DVC
- NCD

2. Read Status, Control On/Off, Disable/Enable and Network Control-By-Event will only function for the nodes that are mapped to the N16.
3. The number of display type nodes for the entire network is limited to a total of 25. Display nodes include NCA, NCA-2, a Gateway node, or an N16 in Network Display Mode.

I.2 Event and Drill/Alarm Signal Mapping

The N16 can be programmed to monitor events and initiate drill (alarm signal for Canadian Applications) 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.*

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/AlarmSignal 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.

Software Type ID Code	Device
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
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

Table J.1 Software Type ID Codes, Alphabetical List (1 of 3)

Software Type ID Code	Device
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
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
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-1
SMOKE DETECT	Conventional smoke detector attached to an FZM-1
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

Table J.1 Software Type ID Codes, Alphabetical List (2 of 3)

Software Type ID Code	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.

Table J.1 Software Type ID Codes, Alphabetical List (3 of 3)

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

Device Type	Number of Devices		Current Draw (AC amps)		Total Current per Device
	1	X	3.25	=	
CHG-120	[ ]	X	2.00	=	
	[ ]	X	[ ]	=	
	Sum Column for AC Branch Current Required			=	

Table K.1 AC Branch Circuit Requirements

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 Table K.3 on page 127.

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 Table K.3 on page 127. To calculate the standby load on the secondary power source, use Calculation Column 3 in Table K.3 on page 127.

All currents are given in amperes (A). Table K.2 shows how to convert milliamperes and microamperes to full amperes.

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

Table K.2 Converting to Full Amperes

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.

Table K.3 Battery Calculations

K.4 Calculating the Battery Size

Use Table K.4 to calculate the total Standby and Alarm load in ampere hours (AH). This total load determines the battery size (in AH), required to support the system upon loss of primary (AC) power. Complete Table K.4 as follows:

1. Enter the totals from Table K.3 on page 127, Calculation Columns 2 and 3 where shown
2. Enter the NFPA Standby and Alarm times (refer to 'NFPA Requirements' below)
3. Calculate the ampere hours for Standby and Alarm, then sum the Standby and Alarm ampere hours
4. Multiply the sum by the derating factor of 1.2 to calculate the proper battery size (in AH)
5. Write the ampere hour requirements on the Protected Premises label located inside the cabinet door

Total Standby Load, Battery Powered (from Table K.3 Calculation Column 3) [ ]	Required Standby Time (24 hours) X[ ]	= AH

Table K.4 Total Secondary Power Requirements at 24 VDC

Total Fire Alarm Load, Battery Powered (from Table K.3 Calculation Column 2) [ ]	Required Alarm Time (for 5 min., enter 0.084, for 10 min., enter 0.168) X[ ]	 = AH
Sum of Standby and Alarm Ampere Hours		= AH
Multiply by the Derating Factor		X 1.2
Battery Size, Total Ampere Hours Required		= AH

Table K.4 Total Secondary Power Requirements at 24 VDC

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.4 . 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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12 Clintonville Road
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