NOTIFIER® by Honeywell

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NFS-320 and NFS-320SYS Listing Document

PN 52745LD:G9 5/19/2022 16475

For additional documentation on this product, visit http://notifiermanuals.com. This additional documentation for the NFS-320 may be used as a reference only.

NOTE: The term NFS-320 is used to refer to the NFS-320, NFS-320E, NFS-320C, and NFS-320SYS unless otherwise noted.

NOTE: For Mass Notification applications, Class A circuits called out in this manual are Class X.

1 Installation

Wiring methods used shall be in accordance with Standard for Installation and Classification of Burglar and Holdup Alarm Systems, UL 681.

Wiring methods used shall be in accordance with Standard for Central Station Alarm Services, UL 827.

This product is intended to be installed in accordance with the following:

- NFPA 70 - National Electrical Code
- NFPA 72 - National Fire Alarm Code
- NFPA 12 - Standard on Carbon Dioxide Extinguishing Systems
- NFPA 12A - Standard on Halon 1301 Fire Extinguishing Systems
- NFPA 13 - Standard for Installation of Sprinkler Systems
- Canadian Electrical Code, Part I
- ULC S524 - Standard for the Installation of Fire Alarm Systems
- NFPA 2010 - Standard for Fixed Aerosol Fire Extinguishing System
- NFPA 92 - Standard for Smoke-Control Systems
- UL 2572 - Standard for Mass Notification Systems
- NFPA 16 - Standard for Deluge-Foam Water Systems
- NFPA 17 - Standard for Dry Chemical Extinguishing Systems
- NFPA 17A - Standard for Wet Chemical Extinguishing Systems
- NFPA 2001 - Standard for Clean Agent Fire Extinguishing Systems
- UL 2610 - Standard for Commercial Premises Security Alarm Units and Systems
- NFPA 15 - Standard for Water Spray Fixed Systems
- ULC S561 - Installation and Services for Fire Signal Receiving Centers and Systems
- ULC-S527-11 - Standard for Control Units for Fire Alarm Systems
- UL 864 Standard for Control Units and Accessories for Fire Alarm Systems, 10th Edition

Follow these guidelines when mounting the product's backbox:

- Backbox should be installed in a dry, indoor location.
- It is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27°C/60-80°F and at a relative humidity of 93% ± 2% RH (non-condensing) at 32°C ± 2°C (90°F ± 3°F).
- Locate the backbox so the top edge is 66 inches (1.6764 m) above the surface of the finished floor.
- Access to the cabinet shall be in accordance with NFPA 90, article 110.33.
- Allow sufficient clearance around cabinet for door to swing freely.
- Use cables provided to connect dress panel(s) and cabinet door to earth ground.

Terminal Block/ Connector	Description	Specifications
TB4	Alarm & Trouble Output Relays - Common	• Power-limited (Class 2) only if connected to a power-limited source • Voltage and Current: Rated 2.0 A at 30 VDC resistive • Non-supervised
TB5	Supervisory & Security Output Relay - Common or programmable	• Power-limited (Class 2) only if connected to a power-limited source • Voltage and Current: Rated 2.0 A at 30 VDC resistive • Can be programmed as Alarm via VeriFire Tools • Non-supervised
TB6 thru TB9	NAC Circuits	• Nominal Operating Voltage: 24 VDC Regulated • Maximum Current: 1.5A (See Note 1) • End-Of-Line Resistors: 2.2 K 1/2 W (ELR-2.2K) • Wiring Configuration: Class B or Class A • Ground Fault Impedance: 0 ohms • Maximum Line Impedance: 20 ohms • Supervised • Power-limited (Class 2)

Table 1 CPU Wiring Connections (1 of 2)

Terminal Block/ Connector	Description	Specifications
TB10	DC Power	• Nominal Voltage: 24 VDC, Regulated • Maximum Current: 1.25 A DC, 1.5 A max for special applications (See Note 1) • Maximum Ripple Voltage: 176 mVrms • Class B wiring. Supervise with a power supervision relay EOLR-1 • Ground Fault Impedance: 0 ohms • Supervised • Supported by battery backup during AC power loss • Power-limited (Class 2) • Resettable and Non-resettable power available.
TB11	EIA-485 Terminal Mode & ACS Mode Connection	• Characteristic. Impedance: 120 ohms • Supervised • Power Limited (Class 2)
TB12	EIA-232 Printer/PC/CRT (Terminal) Connection	• Power Limited (Class 2) • Not Supervised • Equipment must be located in the same room within 20 feet of the panel with cables encased in conduit.
TB13	SLC Loop	• Voltage: 24 VDC nominal voltage, 27.6 VDC maximum voltage • Maximum Current: 200 mA average (short circuit will shut down the circuit until the short is fixed). For battery calculations use 200mA. • Wiring Configuration: Class A or B • Maximum Length: 12,500 ft (3810 m) total loop length Class A and B • Maximum Resistance: 50 ohms Class A or B • Device Capacity: 01- 159 Intelligent Detectors, 01 -159 Monitor/Control Modules • Maximum Capacitance: 0.5 µF for all SLC wiring • Ground Fault Impedance: 0 ohms • Supervised • Power-limited (Class 2)
J1	Network/Service Connection (NUP)	• Power Limited (Class 2) • Supervised
J2	USB A - VeriFire Tools Connection	USB connection for VeriFire Tools communication to the panel (Mini AB)
J3	USB B - VeriFire Tools Connection	USB connection for VeriFire Tools communication to the panel (Standard B)
J4	LEM-320 Connector	Not Used
J5	Security Tamper Switch	Connection for a Security Tamper Switch (STS-200 for the NFS-320, STS-1 for the NFS-320SYS)
J6	Auxiliary Trouble Input	Trouble monitoring connection for auxiliary equipment
J7	KDM-R2/C Connection	Connection for the addition of the KDM-R2/C display
J8	Zone Coder Connection	Connection for the UZC-256 Zone Coder

Notes:

1. Total current drawn from the power supply by TB2, TB6 through TB9 and TB10 cannot exceed 3.0 A in standby or 6.0 A in an alarm condition. The Control Panel provides a total of 4.4 A of power in standby and 7.4 A of power in alarm to be shared by all internal circuitry and external provisions (24 V resettable and non-resettable).
2. Refer to the Notifier Device Compatibility Document for a list of Notification Appliance Circuits and Releasing Circuits. Refer to Table 12 for SLC devices that are compatible with the NFS-320.
3. Refer to the Section 6, “Compatibilities” for a list of external accessories that are compatible with the NFS-320.

Table 1 CPU Wiring Connections (2 of 2)

1.1 NFS-320SYS Option Boards

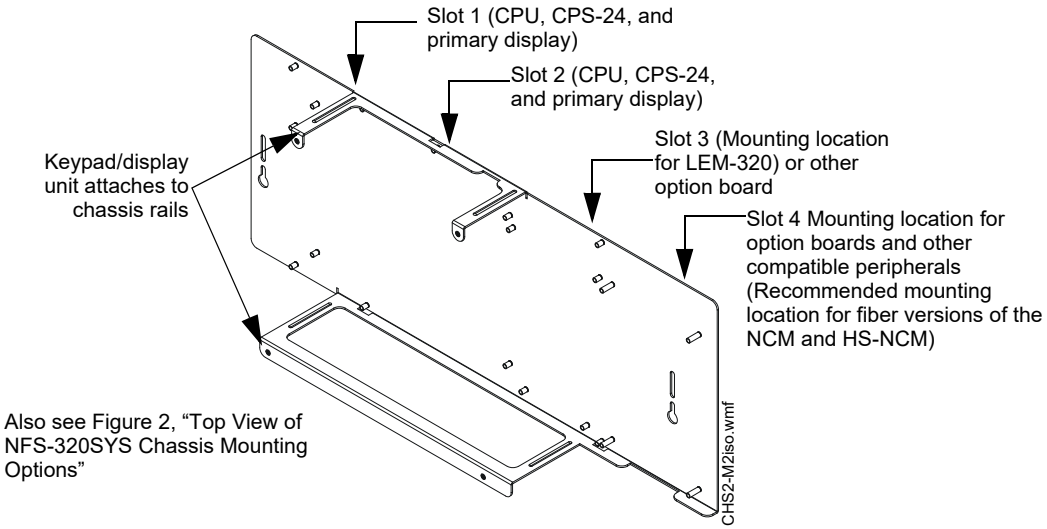


Figure 1 Side View of the NFS-320SYS Chassis Mounting Options

NOTE: When designing the cabinet layout, consider separation of power-limited (Class 2) and non-power-limited wiring as discussed in Section "UL Power-limited Wiring Requirements".

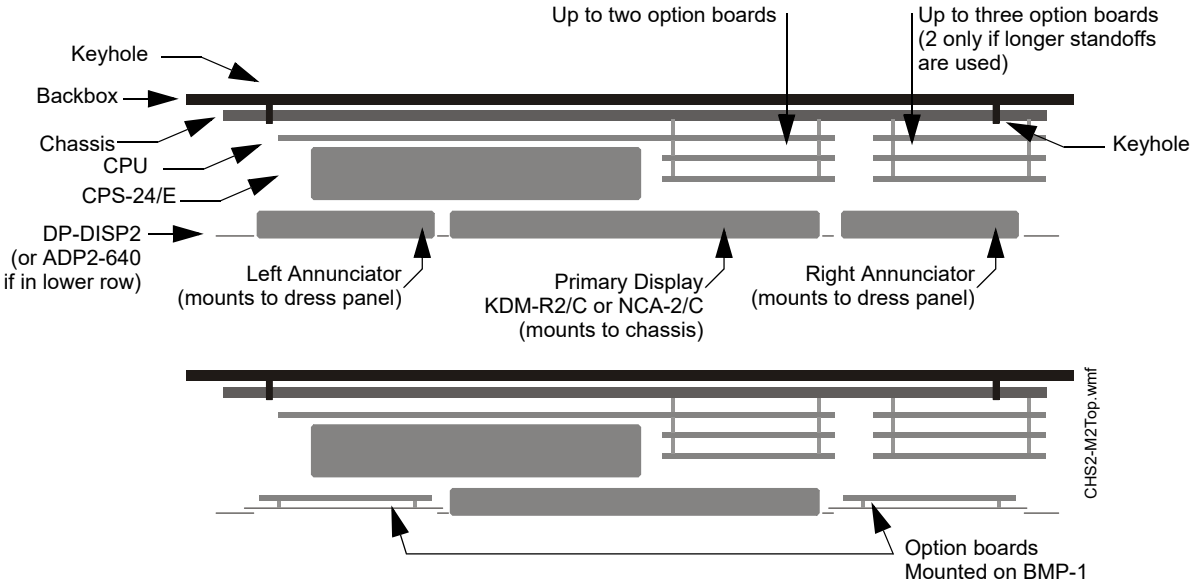


Figure 2 Top View of NFS-320SYS Chassis Mounting Options

When installing the Network Control Display (NCD) into the NFS-320SYS chassis, it can only be left mounted because of the position of the grounding screw.

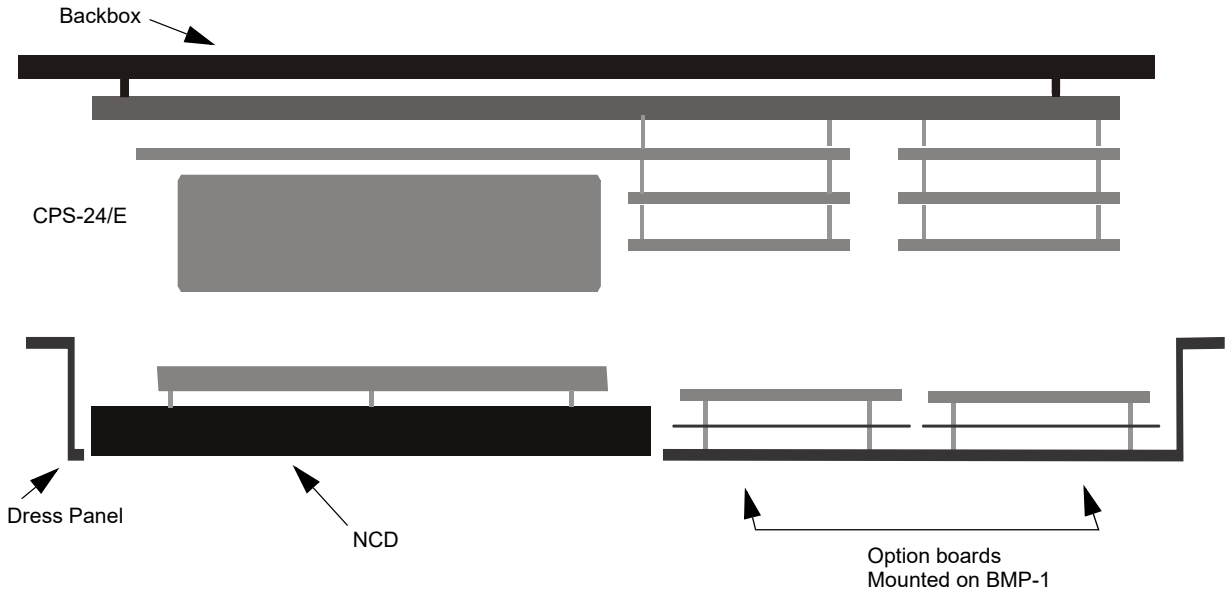


Figure 3 Top View of Mounting an NCD in the NFS-320SYS Chassis

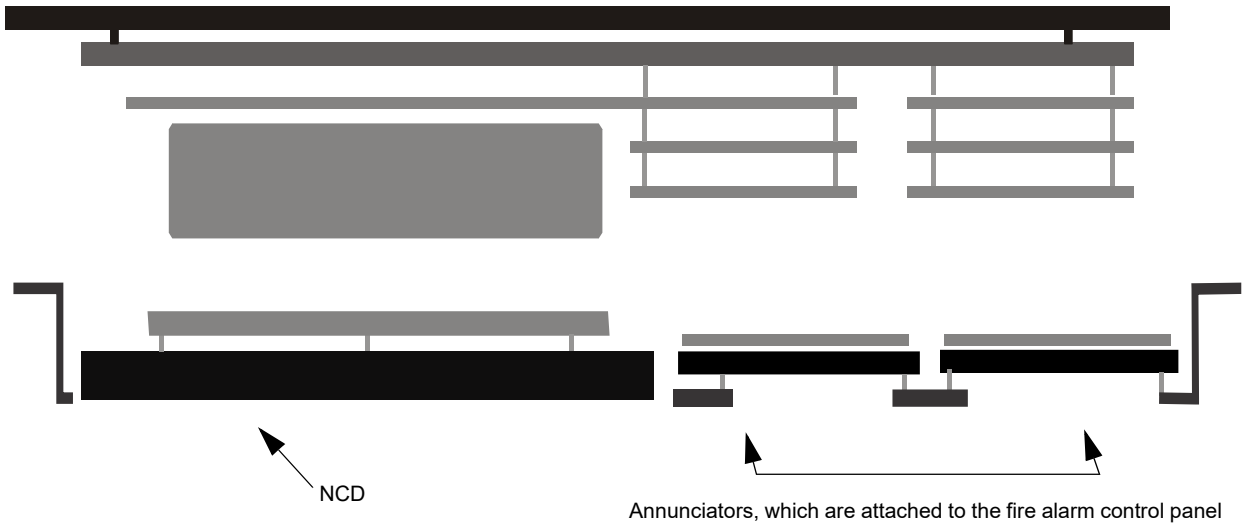


Figure 4 Top View of Mounting an NCD with Annunciators

NOTE: See the *NCD Manual* #LS10210-051NF-E for more information.

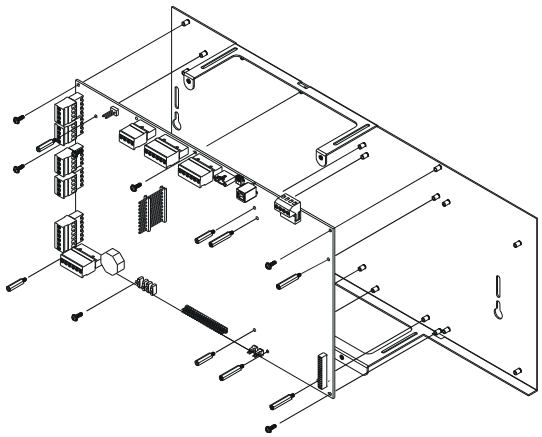


Figure 5 Installing the CPU on the Chassis

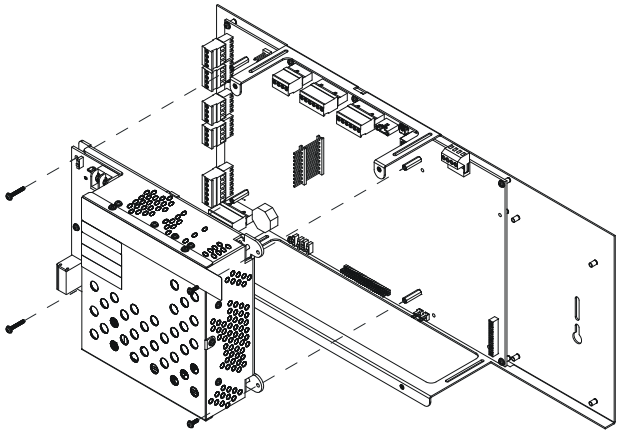


Figure 6 Installing the Power Supply on the CPU

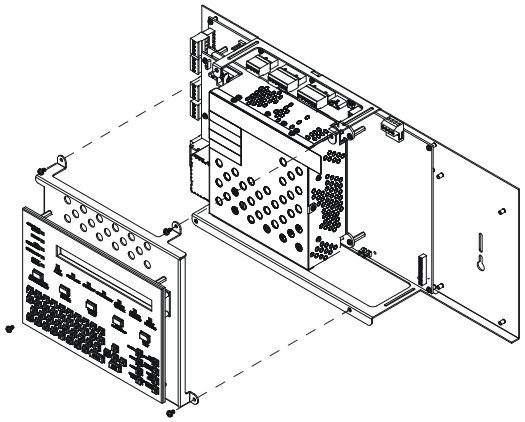


Figure 7 Installing the KDM-2 on the CPU

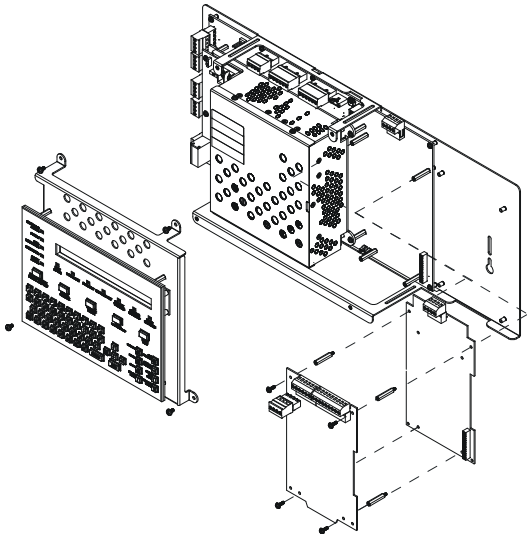


Figure 8 Installing Option Boards on the CPU

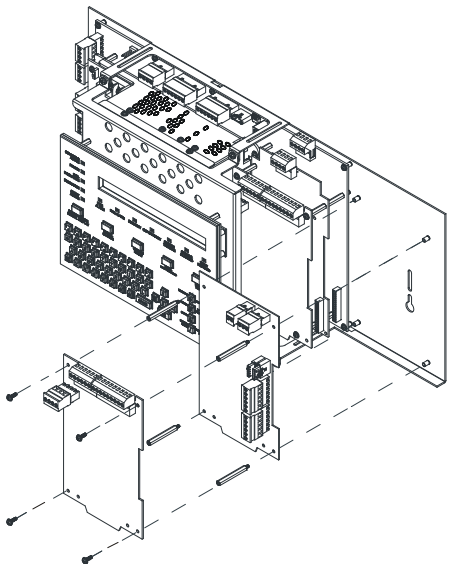


Figure 9 Installing Option Boards on the Chassis

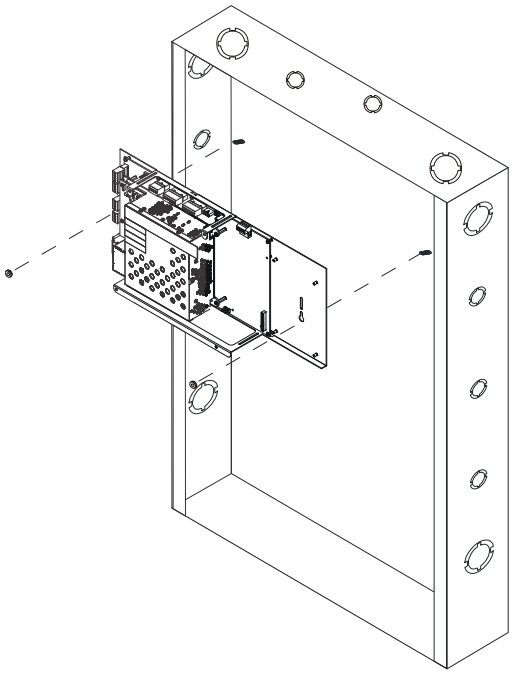


Figure 10 Installing the Chassis into the Cabinet

1.2 NFS-320 Option Boards

The NFS-320 ships fully assembled within its cabinet. One or two option boards can be mounted inside the NFS-320 cabinet, under the keypad, as shown in Figure 12. Option boards that can be installed internally include the wire and/or fiber versions of the NCM or HS-NCM, TM-4, and UDACT/UDACT-2. When installing option boards, temporarily remove the KDM-R2/C keypad/display unit to provide full access to hardware connections.

NOTE: *UDACT/UDACT-2 only:*
If using a UDACT or UDACT-2 inside the cabinet, do not install a second option board.
See the *UDACT Manual* or *UDACT-2 Manual* for instructions on using the mounting bracket.

1. Remove and re-install KDM-R2/C as shown in Figure 11. It may be convenient to do some basic field-wiring before reinstalling KDM-R2/C.
2. Lay the first option board over the four stand-offs already installed on the CPU, so that the holes and stand-offs align.
3. If attaching a second option board, use its standoffs to secure the first option board, then lay the second option board over the standoffs. Two sizes of standoffs are shipped with the option boards; select standoffs that allow sufficient clearance for electronics on the lower option board.
4. Secure the top option board with four #4-40 screws (supplied).
5. Re-attach KDM-R2/C.

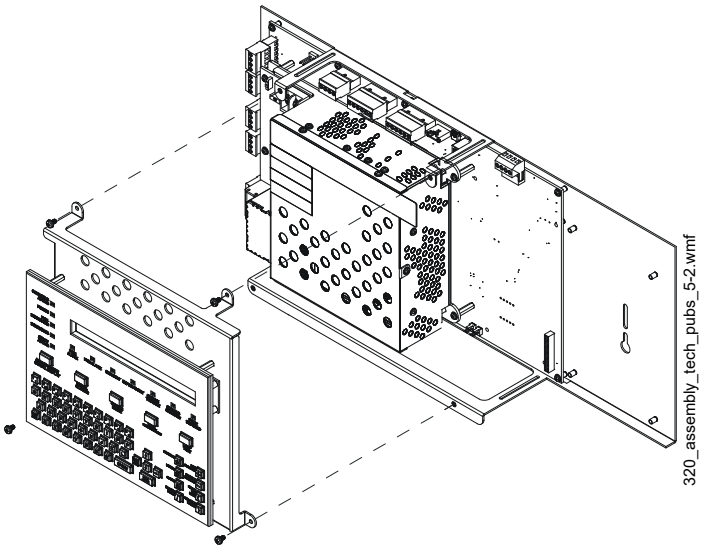


Figure 11 Removing and Reinstalling KDM-R2/C

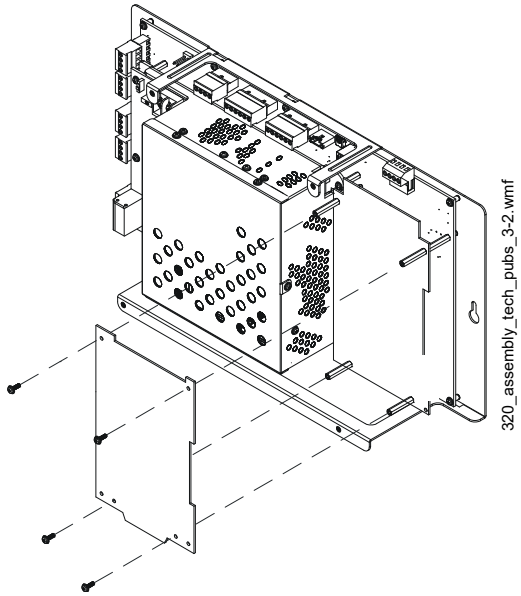


Figure 12 Installing Option Boards

CAUTION: EARTH GROUND
IT IS CRITICAL THAT ALL MOUNTING HOLES OF THE NFS-320 ARE SECURED WITH A SCREW OR STANDOFF TO INSURE CONTINUITY OF EARTH GROUND.

NOTE: It may be convenient to field-wire the SLC loop before installing any option boards, and to make wiring connections on the first option board before installing a second option board in front of it.

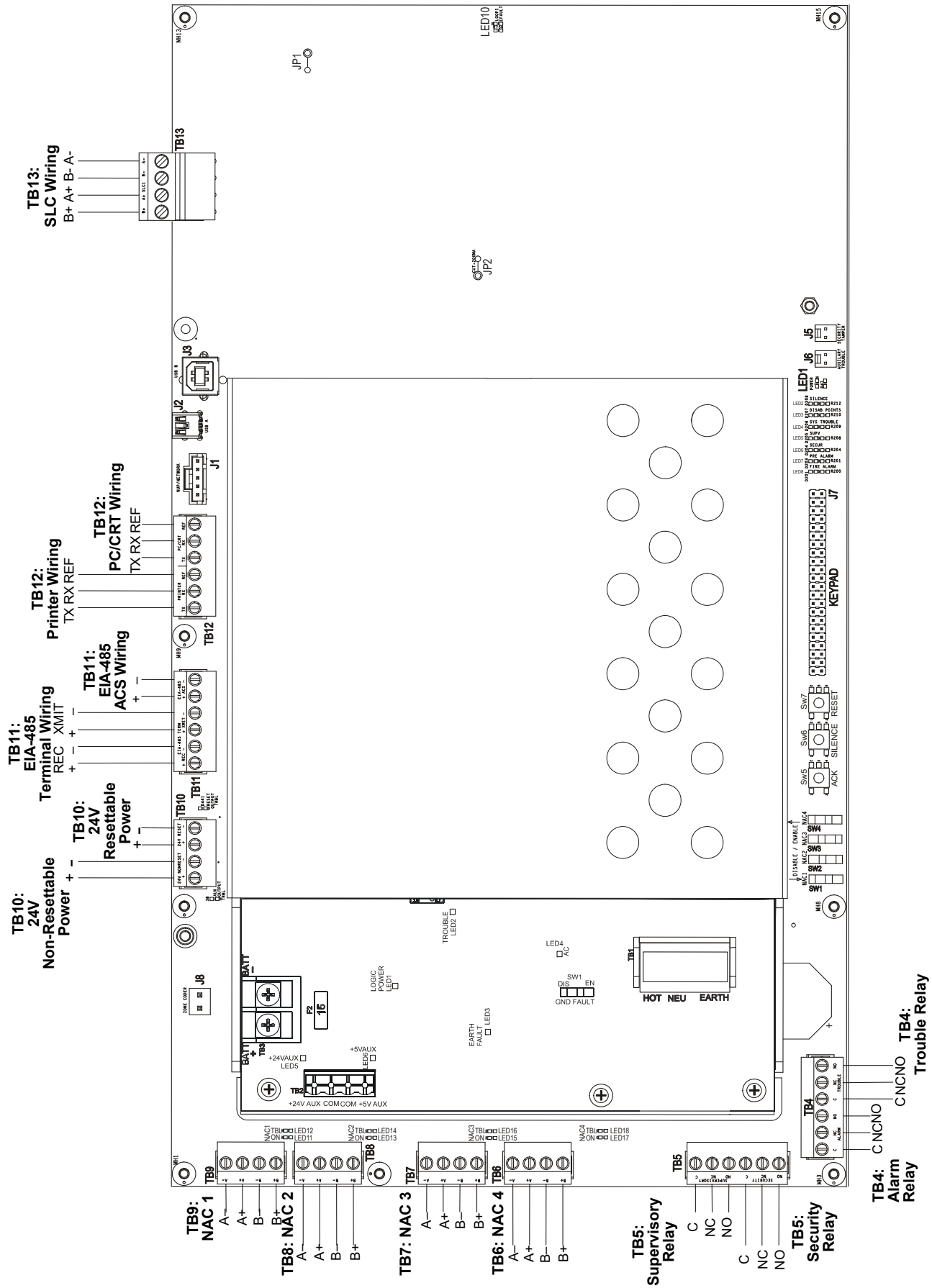


Figure 13 CPU Wiring Connections

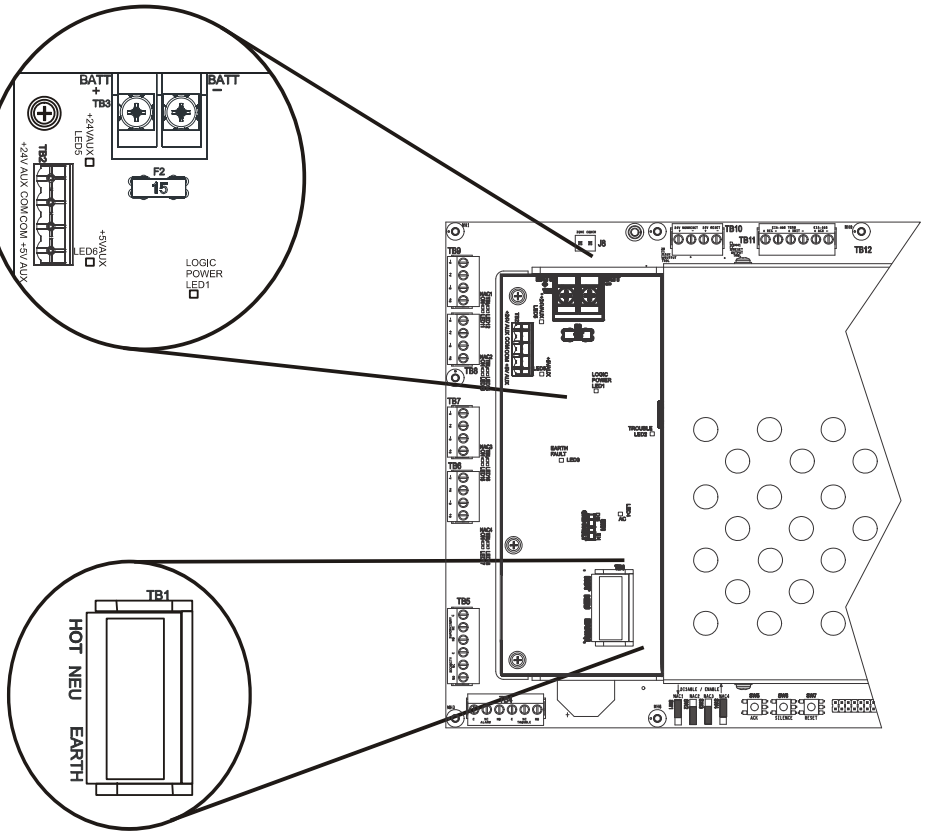


Figure 14 Power-Supply Wiring Connections

Terminal Block/ Connector	Description	Specifications
TB1	AC Power	• Voltage and current: NFS-320(SYS): 120 VAC 5.0 A NFS-320E(SYSE): 240 VAC 2.5 A • Frequency: 50/60 Hz • Wiring size: Maximum 12 AWG (3.31 mm^2) with 600 VAC insulation • Supervised • Non-power-limited
TB2	Power Auxiliary Outputs	• Voltage: 24 VDC power at 0.5A 5 VDC power at 0.15A (See Note 1 and 10) • Power-limited (Class 2) • Maximum Ripple: 176 mVrms • Class B wiring. Supervise with a power supervision relay EOLR-1 • Ground Fault Impedance: 0 ohms • Supervised
TB3	Battery Connection	• Voltage: 24 VDC • Battery type: Sealed lead-acid • Maximum Battery Capacity: 200 AH • Non-power-limited • Over-current protected • Battery Charger Voltage: 27.6 VDC +/- 0.24 VDC • Battery Charger Current: 2.0 A or 5.7 A (Software selectable) • Supervised

Notes:

1. Total current drawn from the power supply by TB2, TB6 through TB9 and TB10 cannot exceed 3.0 A in standby or 6.0 A in an alarm condition. The Control Panel provides a total of 4.4 A of power in standby and 7.4 A of power in alarm to be shared by all internal circuitry and external provisions (24 V resettable and non-resettable).
2. NFPA 72 Local, Proprietary, and Central Station systems require 24 hours of standby power followed by 5 minutes in alarm.
3. NFPA 72 Auxiliary and Remote Station Systems require 24 hours of standby power followed by 5 minutes in alarm.
4. Batteries installed in a system powered by an automatic starting engine generator need to provide at least 4 hours of standby power.
5. Factory Mutual requires 90 hours of standby for deluge-preaction systems.
6. Emergency voice/alarm communications systems require 2 hours of operation in the alarm condition. Due to the sporadic nature of voice operation, however, NFPA 72 permits 15 minutes of operation at a maximum connected load to equal 2 hours of normal use.
7. If the total exceeds 26 AH, the system requires a separate NFS-LBB, BB-100 or BB-200 battery enclosure for two larger capacity batteries.
8. The following battery derating factors must be used for Canadian installations using NFS-320 charger:
   • For a 26 AH battery, use derating factor of 1.5
   • For a 55 AH battery, use derating factor of 1.8
   • For a 100 AH battery, use derating factor of 2.5
   • For a 200 AH battery, use derating factor of 2.5
   • For 26 AH batteries: maximum standby current cannot exceed 0.65A; maximum alarm current cannot exceed 6.75A.
9. Internal Battery Charger on the CPS-24/E is rated for use with 18 AH to 200 AH batteries.
10. Accessories using the 5 VDC power connection must be located within 10 ft (3.658 m) of the FACP
11. UL2610 Proprietary Burg requires 24 hours of standby power

Table 2 NFS-320 Power Supply Wiring Connections

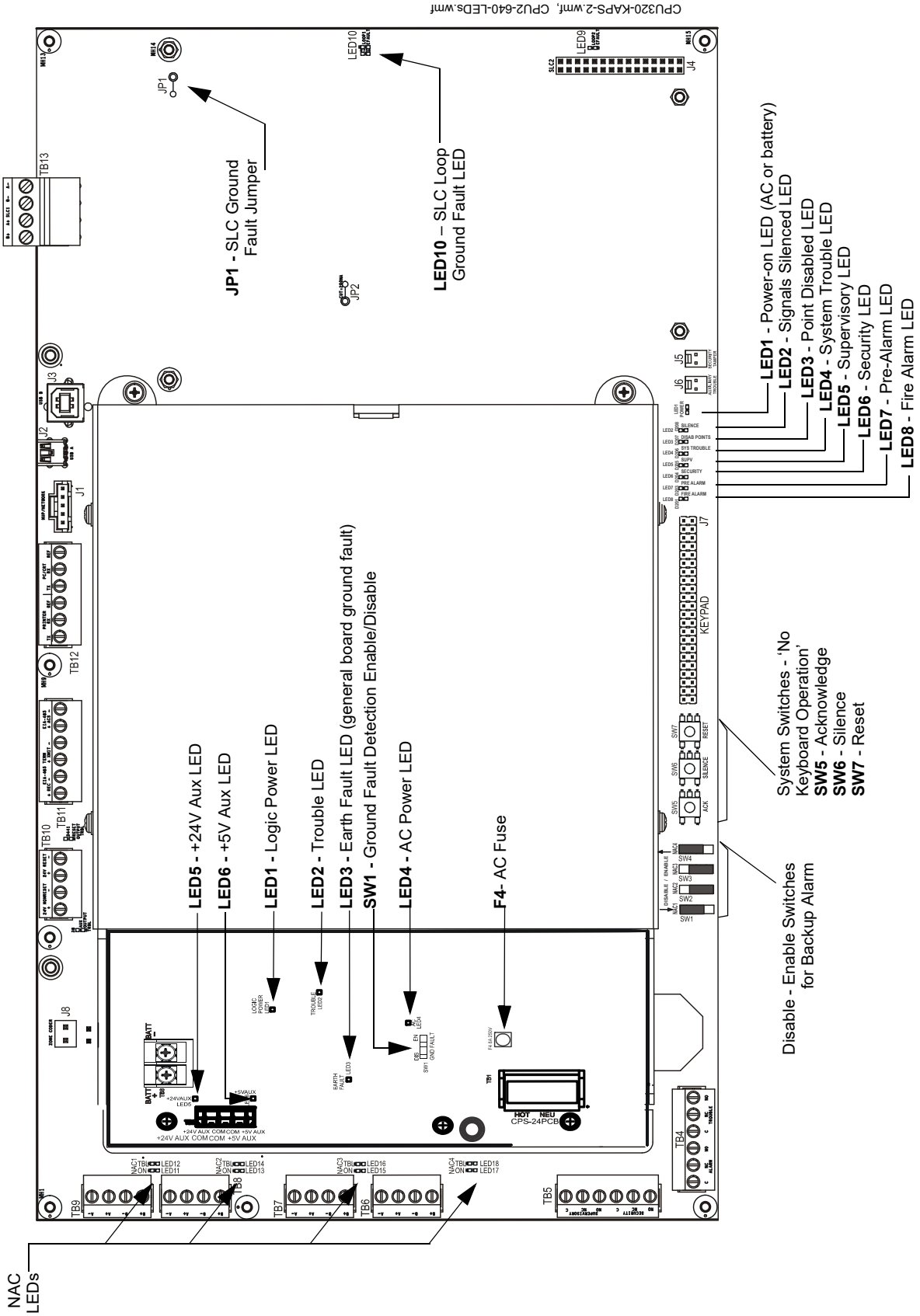


Figure 15 CPU and Power Supply Switches and LED Indicators

UL Power-limited Wiring Requirements

Power-limited (Class 2) and non-power-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25 inches (6.35 mm) from any non-power-limited circuit wiring. All power-limited and non-power-limited circuit wiring must enter and exit the cabinet through different knockout and or conduits. To maintain separation, group non-power limited modules together, i.e., group modules on the same side of the enclosure or in separate rows.

NOTE: If additional knockouts are added to the backbox, proper separation of power-limited and non-power-limited wiring should be maintained.

Figure 16 shows one configuration that meets these UL requirements. Equipment is configured with at least a 0.25 inch (6.35 mm) separation between power-limited and non-power-limited wiring. AC and battery wiring is routed away from power-limited wiring.

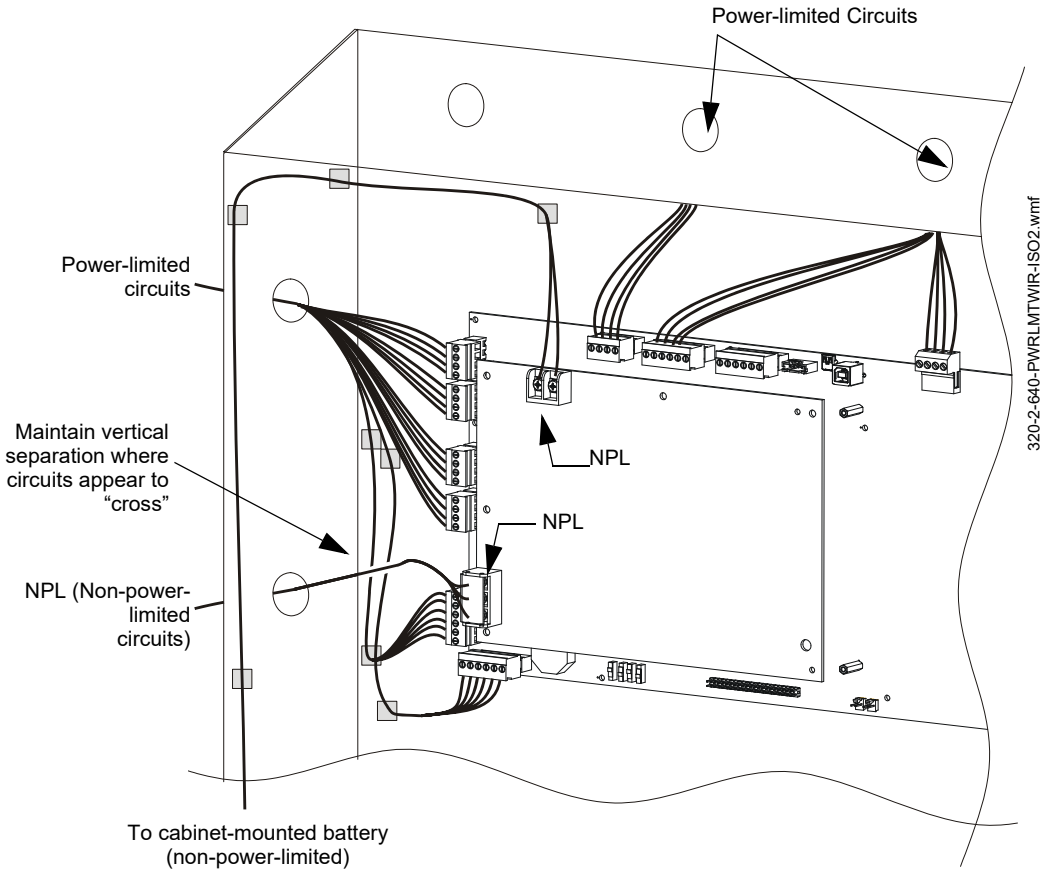


Figure 16 Typical Wiring for UL Power-limited Wiring Requirements (Shown with relays as connected to power-limited modules)

NOTE: AC and battery wiring are not power-limited. Maintain at least 0.25 inches (6.35 mm) between power-limited and non power-limited circuit wiring. Install tie wraps and adhesive squares to secure the wiring. Use a power-limited source for relay output on terminals TB8 – TB11. See Figure 13, "CPU Wiring Connections" to identify power-limited and non-power-limited circuits.

NOTE: Drawing is not to scale; proportions and angles are exaggerated to show wire-placement more clearly.

NOTE: The NFS-320 is not approved for use in security applications in Canada.

1.3 Fire/Security Applications

NOTE: The NFS-320 is not approved for use in security applications in Canada.

General Operation

The NFS-320 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 17. 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.

CAUTION: WIRING
DAMAGE CAN RESULT FROM INCORRECT WIRING CONNECTIONS.

General Security Requirements

The following security requirements must be met:

- 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 control panels 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 ring-back signal from the Central Station to the arming location is required. The ring-back signal informs the Protected Premises Control Panel that the signal to arm/disarm has been received by the Central Station
- An ACM-24AT point must be programmed as 'disable' for each security point or zone programmed, doing so allows for a manual bypass before arming if the point or zone is in trouble
- A duplicate control panel or sufficient spare parts should be made available so that the control panel can be brought back online within 30 minutes of any failure
- There must be a sufficient number of ACM-24AT's installed on the control panel to show the status of each zone or point so that each zone or point can be monitored Any ACM-24AT's or optional annunciators must be installed inside the protected area
- A single control panel combines a Protected Premises Unit and Receiving Unit as a single unit, as such, it must be located in an area that is monitored at all times
- The Installer should be familiar with and follow the best practices set forth within ANSI/SIA CP-01 for troubleshooting and reduction in dispatch calls
- The loss of communication with the monitoring station shall be treated as an alarm condition by monitoring station personnel when the burglar alarm system is in the armed state, and as a trouble condition while the system is disarmed
- Refer to the *SLC Wiring Manual (51253)* for additional information on required wiring sizes

NOTE: For Security applications the maximum number of points on a system must be limited to 1000 or less.

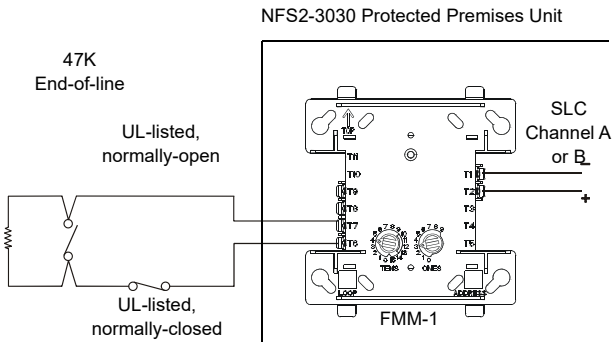


Figure 17 Wiring Diagram for Proprietary Security Alarm

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 LCD or require state change acknowledgment. State changes in devices with these software types may be output at a printer.Proprietary Security Alarm Applications

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 number 15378, for compatible NAC devices.
- All monitor modules used for security applications must be installed in the control panel with an STS-1 Security Tamper Switch.

Wiring for Proprietary Security Alarm Applications

Typical wiring for proprietary security alarm applications with the FMM-1 module.

Note the following:

- The module is programmed with one of five type codes (see "General Security Requirements" on page 12).
- Supplementary use only applies to UL-listed systems.
- NAC devices used for security cannot be shared with fire NAC devices.
- Refer to the *Device Compatibility Document* for compatible NAC devices.

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

All monitor modules used for security application must be installed in the control panel cabinet with STS-1 Security Tamper Switch.

Connecting an RKS-S Remote Key Switch

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

Single Tenant Security System with Entry/Exit Delay

The following system requirements are illustrated in Figure 18 on page 13.

- One NFS2-3030 Control Panel
- Multiple Security Supervisory Circuits Reporting to Central Station as a Single Area
- The minimum security equipment required is as follows:
  - Multiple MM Monitor Modules per Protected Area
  - One Group Interface for security alarm
  - One Group Interface to generate trouble arming system
  - Contact Switch for Each Entry/Exit Door
  - RKS-S Key Switch
  - MM Monitor Modules
  - Remote Annunciator for Each Entry/Exit Door (ACM-24AT, ACM-48A, ACM-16AT, ACM-32A)
  - Security Devices
  - RM Relay Module
  - Compatible Printer

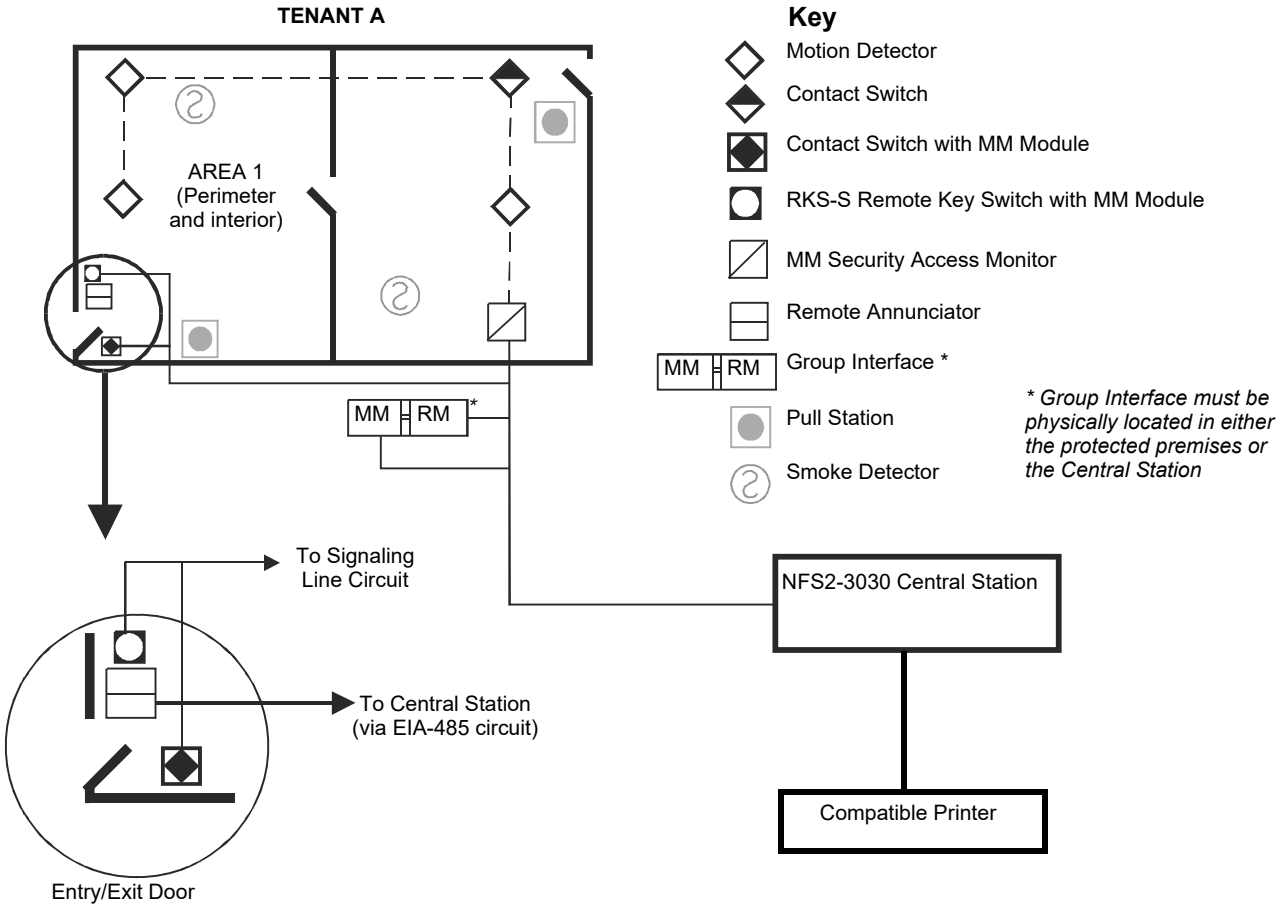


Figure 18 Single Tenant Security System with Entry/Exit Delay

Programming of Key Switch, Access Points, and Motion Detection

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

Contact Switches with Monitor Modules
Address: LXXMYYY (arbitrary)
Type ID: ACCESS MONITOR

Zone Map: ZA

Custom Label: Exit Door #

☒ Motion Detectors with Monitor Modules

Address: LXXMYYY (arbitrary)

Type ID: ACCESS MONITOR

Zone Map: ZB

Custom Label: Motion Detection

6. Programming of Logic Equations

Logic Equation for 1 minute exit delay:
ZLa* = DEL(00:30, 00:00:00, address of key switch)

Logic Equation for Trouble arming system:
ZLb* = AND (ZA, address of key switch, NOT(Zla))

Logic Equation to arm system:
ZLc* = AND (ZLa, NOT(ZLb))

Logic Equation providing 30-second entry delay:
ZLd* = SDEL(00:00:30, 00:00:30, AND (ZA,ZLc)

Logic Equation for Security Alarm:
ZLe* = AND (ZLc, OR (ZLd))

*Follow the following restrictions on values:
a < b < c < d <e

7. Programming Group Interfaces

MM | RM Group Interface for Trouble when system is armed while access point(s) active

A. CM programming

Address:LXXMYYY (arbitrary)

Type ID:RELAY

Zone Map:ZLb

Custom Label:Arming Trouble Group Output

Signal Silence:No

Walk Test:Yes/No (Installer Specified)

Switch Inhibit:Yes

B. MM Programming

Address:LXXMYYY (arbitrary)

Type ID:TROUBLE MON

Zone Map:(none)

Group Interface for Security Alarm

A. CM programming

Address:LXXMYYY (arbitrary)

Type ID:RELAY

Zone Map:ZLe

Custom Label:Security Group Output

Signal Silence:No

Walk Test:Yes/No (Installer Specified)

Switch Inhibit:Yes

B. MM Programming

Address:LXXMYYY (arbitrary)

Type ID:SECURITY-L

Zone Map:(none)

Security Annunciation

A1P1

Mode: Monitor

Source: ZLc

A1P2

Mode: Monitor

Source: ZLe

A1P3

Mode: Monitor

Source: LXXMYY

A1P4

Mode: Monitor

Source: LXXMYY

Additional doors can be monitored, up to the number of available annunciator points.

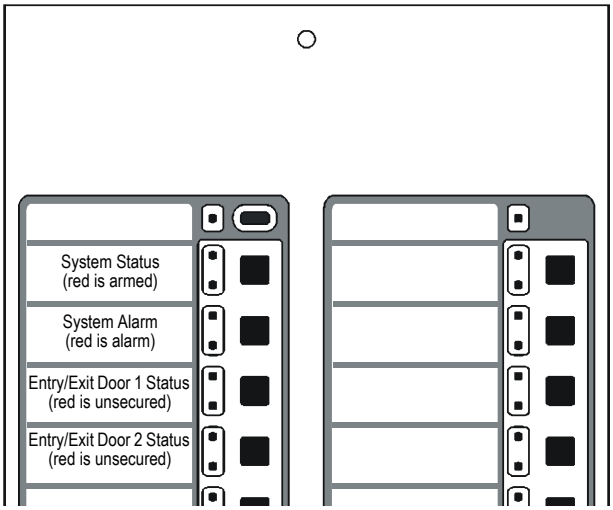


Figure 19 Sample Annunciator Display

To wire the cabinet with a Security Tamper Switch kit model STS-200 or STS-1:

Refer to Figure 20:

1. Install the STS-200 or STS-1 Tamper Switch into the location shown in 20. Push the switch through the opening until it snaps into place.
2. Connect the STS-200 or STS-1 connector to J5 (Security Tamper) on the Control Panel. (As shown in figure 20, J5 is located on the circuit board, underneath the edge of KDM-R2/C.)

NOTE: When installing a Security Tamper Switch, use the STS-200 for the NFS-320. For the NFS-320SYS, use the STS-1.

NOTE: Total SLC points connected to the FACP are limited to 1000 or less for burglar-alarm applications

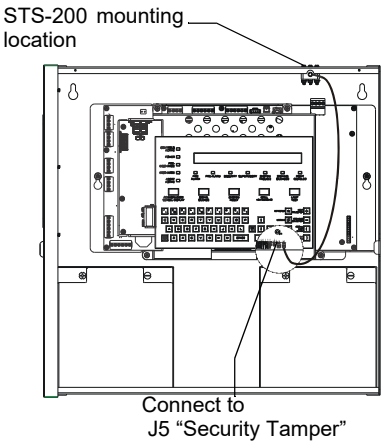


Figure 20 Installing the STS-200 Security Tamper Switch

Typical wiring for proprietary security alarm applications with monitor modules

Figure 21 shows typical wiring for proprietary security alarm applications with FMM-1 modules. Note the following:

- The module is programmed with software SECURITY Type Code.
- For use with UL listed systems only; application not for ULC security usage.
- NAC devices used for security cannot be shared with fire NAC devices.
- Refer to the *Device Compatibility Document* for compatible NAC devices.
- All monitor modules used for security application must be installed in the *NFS-320* cabinet with STS-1 Security Tamper Switch or *NFS-320SYS* cabinet with STS-1 Security Tamper Switch.

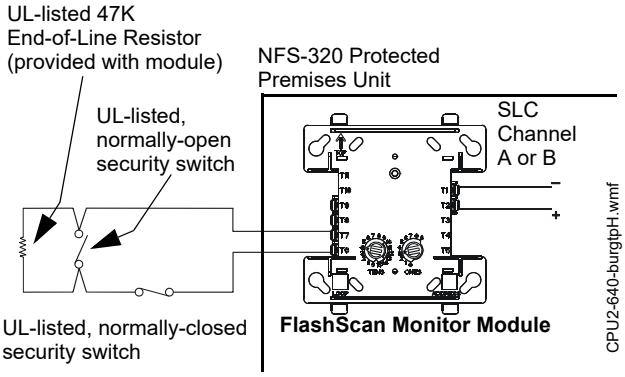


Figure 21 Wiring Diagram for Proprietary Security Alarm Applications

Typical wiring for STAT-X devices using the Ematch Protection Device (P/N 3005014)

Refer to Figure 22 and note the following:

- Each Stat-X device requires an Ematch Protection Device to protect against high-voltage transient signals, such as lightning, that may cause the device to accidentally release.
- Multiple Stat-X devices can be connected in series (as shown).
- No more than ten (10) Stat-X devices can be connected on a single releasing circuit.
- A REL-2.2K can be installed on a single Stat-X device for short circuit detection. For multiple Stat-X devices installed in series, the REL-2.2K is installed on the last device on the releasing circuit (as shown). A REL-2.2K is required for ULC applications.
- Stat-X devices are not to be used with the FCM-1 or FCM-1-REL.

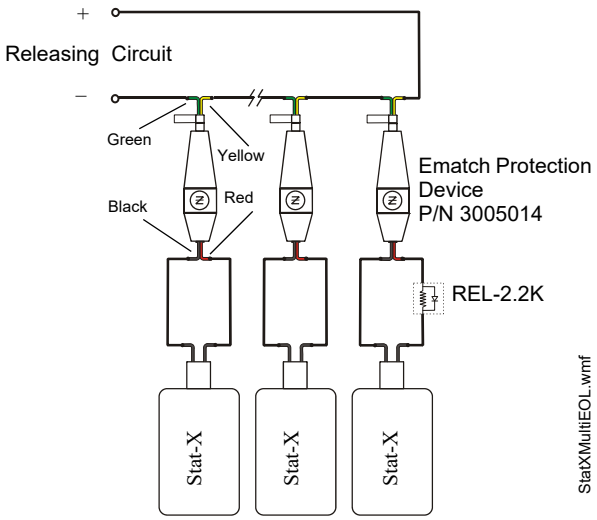


Figure 22 Wiring Diagram for Stat-X Devices

Earth Ground

To meet UL wiring requirements, install grounding straps on the backbox as shown below.

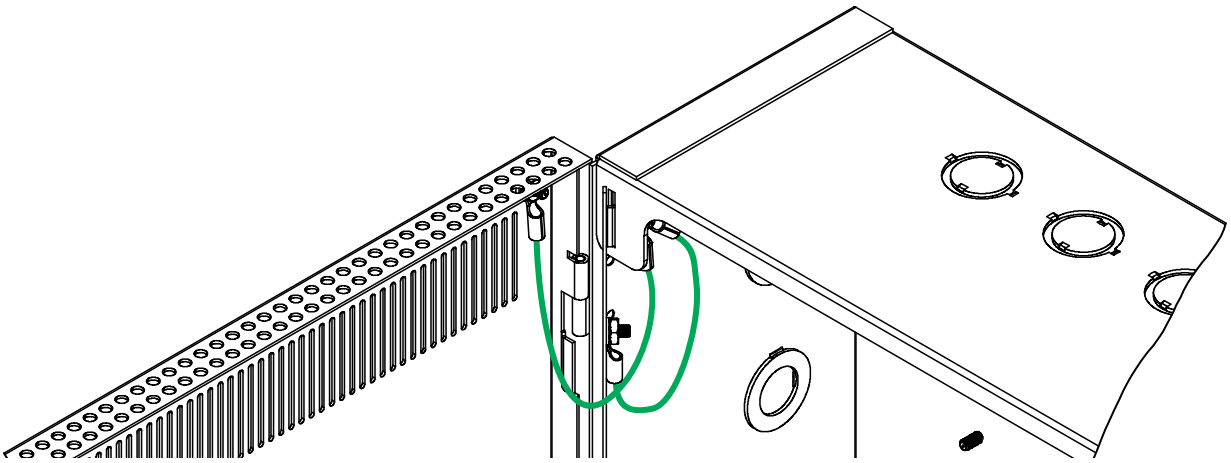


Figure 23 Installing Grounding Straps

2 Operation

Following are the approved applications of the NFS-320:

- Local application
  - Emergency relocation (paging, live and pre-recorded)
  - Emergency communication (telephone)
- Protected premises unit
  - Auxiliary
  - Central station
  - Proprietary
  - Proprietary (Rec unit)
  - Remote station
- Communication transmission path
  - Coded
  - Non-coded
  - Reverse polarity
  - DACT, no line security
  - Other transmission technologies, no line security
- Marine application
- Releasing
  - Cross zone
  - NFPA 12, Carbon dioxide extinguishing systems
  - NFPA 12A, Halon 1301 fire extinguishing systems
  - NFPA 13, Sprinkler systems
  - NFPA 15, Water spray fixed systems for fire protection
  - NFPA 16, Foam-water sprinkler and foam-water spray systems
  - NFPA 17, Dry chemical extinguishing systems
  - NFPA 17A, Wet chemical extinguishing systems
  - NFPA 2001, Clean agent fire extinguishing systems
  - NFPA 2010, Standard for Fixed Aerosol Fire Extinguishing System
- Process Control, non-critical
- Fire Alarm Event (If other events exist and the panel is silenced, a fire alarm will resound the panel sounder)

NOTE: If multiple events exist in the system, the LCD, annunciators and optional CRT-2 will automatically display the last non-Acknowledged fire or MN Alarm (depending on priority). If all events have been acknowledged, the panel will step through each event every 3 seconds in the following order:
1. MNS/Fire Alarms (in order of address)
2. Supervisory (in order of address)
3. Troubles (in order of address)

  - Initiating Device Activation
    - Produces a steady audible tone
    - Activates the System Alarm Relay (TB4)

- Flashes the FIRE ALARM LED (red)
- Displays a Type Code that indicates the type of device that activated the fire alarm
- Sends an Alarm message to LCD Display, remote annunciators, History buffer, installed printers and CRT-2s.
- Latches the control panel in alarm (Panel will not return to normal operation until a System Reset is completed)
- Initiates any Control-By-Event actions
- Starts timers (such as Silence Inhibit, Auto Silence)
- Activates the General Alarm zone (Z00) and sends the zone activation over the network (if applicable)
- Sends a Fire Alarm message to the proprietary receiver via the network, if applicable.
- Displays ALARM in the status banner on the LCD display, along with information specific to the device as shown below:

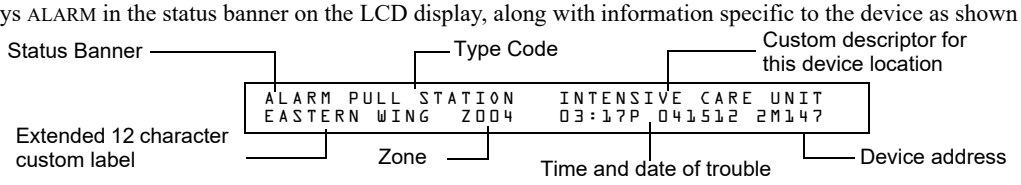


Figure 24 Sample Fire Alarm Message

– Responding to a fire alarm event:

To silence only the panel sounder:
Press the ACKNOWLEDGE/SCROLL display key to silence the panel sounder and switch the FIRE ALARM LED from flashing to steady. The fire panel will send an Acknowledge message to the remote annunciators, history buffer, installed printers, and CRT-2s.
To silence the panel sounder and any activated outputs that are programmed as silenceable:
Press the SIGNAL SILENCE key. The FIRE ALARM LED and SIGNALS SILENCED LED will light steady. The control panel sends a Signal Silenced message to the remote annunciators, history buffer, installed printers, and CRT-2s.

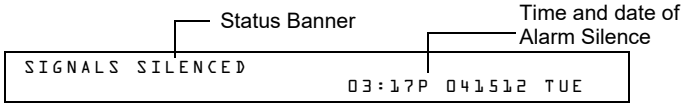


Figure 25 Sample Alarm Silence Message

1. Check the alarm message for the location and type of event.
2. Correct the condition that activated the Fire Alarm.
3. Press the SYSTEM RESET key to return the control panel to normal operation. A "System Normal" message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

• Mass Notification (MN) Event (If other events exist and the panel is silenced, a mass notification event will resound the panel sounder)

NOTE: An ACM-24AT or AEM-24AT LED point must be programmed as a dedicated visual indicator of an MN event.

– Mass Notification Alarm

- Produces a steady audible tone
- Does not flash any LEDs
- Displays a Type Code that indicates the type of device that activated the MN alarm
- Sends an MN Alarm message to LCD Display, remote annunciators, History buffer, installed printers and CRT-2s.
- Latches the control panel in MN alarm (Panel will not return to normal operation until a System Reset is completed)
- Initiates any Control-By-Event actions
- Activates Special Zone ZFD (Not applicable for FirstCommand applications)
- Does not activate any alarm relays or devices programmed as Alarm Pending or General Pending
- Sends a MN Alarm message to the central control station via the network, if applicable.
- Displays MN ALM in the status banner on the LCD display, along with information specific to the device as shown below:

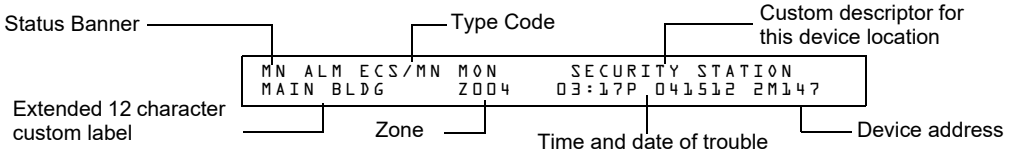


Figure 26 Sample MN Alarm Message

– Responding to an MN alarm event:

1. To silence only the panel sounder:
Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder. The fire panel will send an Acknowledge message to the remote annunciators, history buffer, installed printers, and CRT-2s. If multiple MN Alarms are present on the fire panel, the ACKNOWLEDGE/SCROLL DISPLAY key must be pressed for each alarm.
To silence the panel sounder and any activated outputs that are programmed as silenceable:
Press the SIGNAL SILENCE key. The SIGNALS SILENCED LED will light steady. The control panel sends a Signal Silenced message to the remote annunciators, history buffer, installed printers, and CRT-2s. Check the alarm message for the location and type of event.

2. Correct the condition that activated the MN Alarm.
3. Press the SYSTEM RESET key to return the control panel to normal operation. A “System Normal” message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

– Mass Notification Supervisory (If no other events exist on the fire panel)
  • Produces a warbling audible tone
  • Activates any supervisory relays and devices programmed as Supervisory Pending, General Supervisory and General Pending
  • Flashes the SUPERVISORY LED (yellow)
  • Activates Special Zone ZFE
  • Sends a MN Supervisory message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.
  • Sends a Supervisory message to the central control station via the network, if applicable.
  • Displays a type code that indicates the type of MN supervisory alarm being generated
  • Displays MN SUP in the status banner on the control panel, along with information specific to the device as shown below:

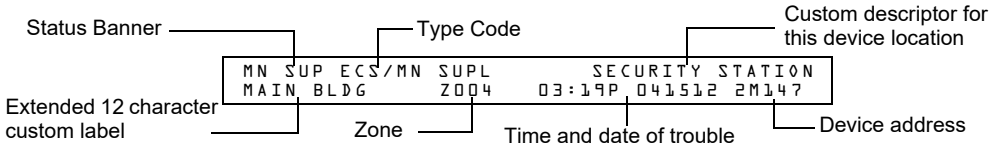


Figure 27 Sample MN Supervisory Alarm Message

– Responding to a MN Supervisory event:

1. Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder and switch the SUPERVISORY LED from flashing to steady. An Acknowledge message is sent to the remote annunciators, history buffer, installed printers, and CRT-2s. Pressing the ACKNOWLEDGE/SCROLL DISPLAY key will acknowledge all MN supervisory events on the fire panel.
2. Correct the condition that activated the MN supervisory point.
3. For a Latching event, press the SYSTEM RESET key to return the control panel to normal operation.
   For a Non-Latching Event, the panel will return to normal operation once the supervisory condition is corrected,
   A “System Normal” message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

– Mass Notification Trouble (If no other events exist on the fire panel)
  • Produces a pulsed audible tone
  • Activates any trouble relays and devices programmed as General Trouble, Trouble Pending, and General Pending
  • Flashes the TROUBLE LED (yellow)
  • Activates Special Zone ZFF
  • Displays a Type Code that indicates the type of device with a trouble
  • Sends a Trouble message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.
  • Sends an Trouble message to the central control station via the network, if applicable.
  • Displays MN TBL in the status banner on the control panel, along with information specific to the device as shown below:

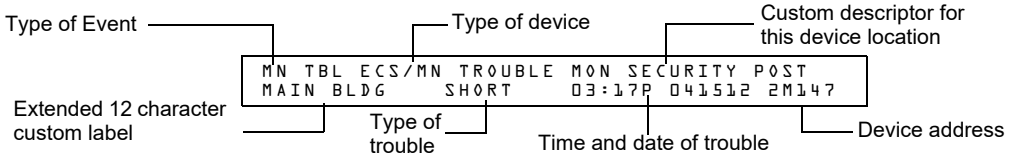


Figure 28 Sample MN Trouble Message

– Responding to an MN trouble event:

1. Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder and switch the SYSTEM TROUBLE LED from flashing to steady. An Acknowledge message is sent to the remote annunciators, history buffer, installed printers, and CRT-2s. Pressing the ACKNOWLEDGE/SCROLL DISPLAY key will acknowledge all MN trouble events on the fire panel.
   NOTE: Pressing the SIGNAL SILENCE key when only troubles exist will give the same result as pressing the ACKNOWLEDGE STEP/SCROLL DISPLAY key. The SIGNALS SILENCED LED does not light unless an alarm exists on the fire panel.
2. Check the trouble message for the location and type of trouble.
3. Correct the condition causing the trouble condition. If the trouble clears, the control panel sends a Clear Trouble message to the History Buffer and installed printers, annunciators and CRT-2s. (troubles will clear from the fire panel even if the trouble is not acknowledged.)
4. If no other events are present on the fire panel. a “System Normal” message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s and the fire panel returns to normal operation.

• Trouble Event (If a fire alarm exists and alarms are silenced, a trouble event will resound the panel sounder. The fire alarm message will remain displayed on the LCD display.)
  – System Trouble (If no fire alarms exist on the fire panel)
    • Produces a pulsed audible tone
    • Activates the Trouble relay (TB4)
    • Flashes the TROUBLE LED (yellow)
    • Displays a Type Code that indicates the type of device with a trouble

• Displays TROUBL in the status banner on the control panel, along with information specific to the device
• Sends a Trouble message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.
• Sends a Trouble message to the proprietary receiver via the network, if applicable.

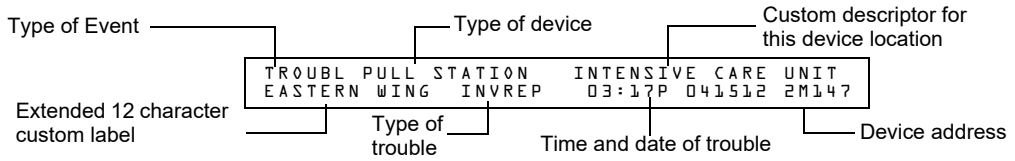


Figure 29 Sample Trouble Message

– Responding to a trouble event:

1. Press the ACKNOWLEDGE/SCROLL display key to silence the panel sounder and switch the SYSTEM TROUBLE LED from flashing to steady - regardless of the number of troubles, alarms, security, and supervisory signals. An Acknowledge message is sent to the remote annunciators, history buffer, installed printers, and CRT-2s.
   NOTE: Pressing the SIGNAL SILENCE key when only troubles exist will give the same result as pressing the ACKNOWLEDGE STEP/SCROLL DISPLAY key. The SIGNALS SILENCED LED does not light unless an alarm exists on the fire panel.
2. Check the trouble message for the location and type of trouble.
3. Correct the condition causing the trouble condition. If the trouble clears, the control panel sends a Clear Trouble message to the History Buffer and installed printers, annunciators and CRT-2s. (troubles will clear from the fire panel even if the trouble is not acknowledged.)
4. If no other events are present on the fire panel. a "System Normal" message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s and the fire panel returns to normal operation.

• Security Event (If a fire alarm exists and alarms are silenced, a security alarm will resound the panel sounder)
– Proprietary Burglar Alarm Units and Systems
  • Produces a warbling audible tone
  • Turns on the Security relay (TB5)
  • Flashes the SECURITY LED (blue)
  • Displays a Type Code that indicates the type of security alarm being generated
  • Displays ACTIVE in the status banner on the control panel, along with information specific to the device
  • Sends a Security message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.
  • Sends a Security message to the proprietary receiver via the network, if applicable.

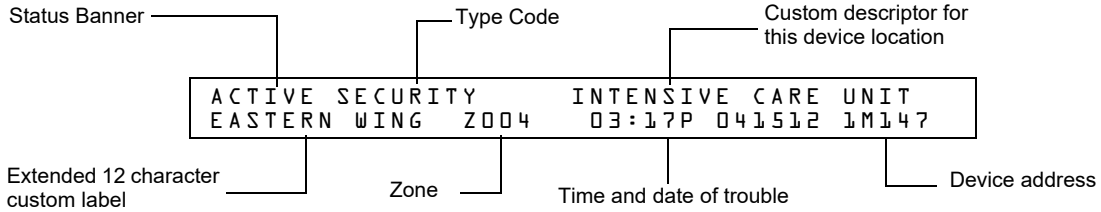


Figure 30 Sample Security Alarm Message

– Responding to a security event:

1. Press the ACKNOWLEDGE/SCROLL display key to silence the panel sounder and switch the SECURITY LED from flashing to steady. A Security message is sent to the remote annunciators, history buffer, installed printers, and CRT-2s.
2. Correct the condition that activated the Security point.
3. Press the SYSTEM RESET key to return the control panel to normal operation. A "System Normal" message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

• Supervisory Event (If a fire alarm exists and alarms are silenced, a supervisory alarm will resound the panel sounder)
– Module Type ID codes for latching and tracking. See programming section.
  • Produces a warbling audible tone
  • Turns on the Supervisory relay (TB5)
  • Flashes the SUPERVISORY LED (yellow)
  • Displays a type code that indicates the type of supervisory alarm being generated
  • Displays ACTIVE in the status banner on the control panel, along with information specific to the device
  • Sends a Supervisory message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

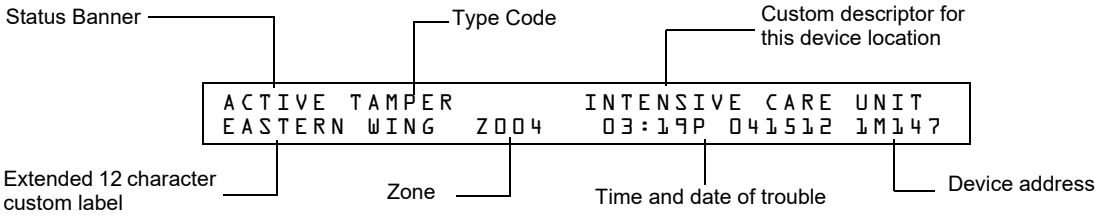


Figure 31 Sample Supervisory Message

– Responding to a Supervisory event:

1. Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder and switch the SUPERVISORY LED from flashing to steady. A Supervisory message is sent to the remote annunciators, history buffer, installed printers, and CRT-2s.
2. Correct the condition that activated the supervisory point.
3. For a Latching event, press the SYSTEM RESET key to return the control panel to normal operation.
   For a Non-Latching Event, the panel will return to normal operation once the supervisory condition is corrected,
   A "System Normal" message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

- CO Event (If a fire alarm exists and alarms are silenced, a CO event will resound the panel sounder)

NOTE: An ACM-24AT or AEM-24AT LED point must be programmed as a dedicated visual indicator of a CO event. This is not required for display-less systems.

– CO Device Activation
  - Produces a pulsed audible tone
  - Displays a the CO alarm event that indicated the type of device that activated the CO alarm
  - Displays ALARM in the status banner on the control panel, along with information specific to the device
  - Sends a CO alarm message to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s
  - Latches the control panel in CO alarm
  - Initiates any Control-By-Event actions
  - Activates Special Zone ZFC

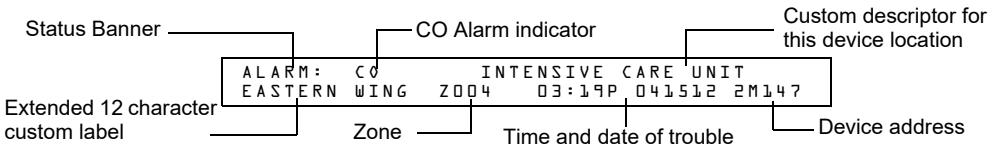


Figure 32 Sample CO Alarm Message

– Responding to a CO event:

1. <u>To silence only the panel sounder:</u>
   Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder. The fire panel will send an Acknowledge message to the remote annunciators, history buffer, installed printers, and CRT-2s.
   <u>To silence the panel sounder and any activated outputs that are programmed as silenceable:</u>
   Press the SIGNAL SILENCE key. The SIGNALS SILENCED LED will light steady. The control panel sends a Signal Silenced message to the remote annunciators, history buffer, installed printers, and CRT-2s. Check the alarm message for the location and type of event.
2. Correct the condition that activated the CO alarm.
3. Press the SYSTEM RESET key to return the control panel to normal operation.
   A "System Normal" message is sent to the LCD display, remote annunciators, history buffer, installed printers, and CRT-2s.

- Emergency Signaling, Type SM
- Smoke Control, Smoke Movement

  All fires produce smoke, and the movement of smoke will follow the same pattern as the overall air movement within a building, often flowing away from the fire to unwanted areas. A smoke control system must be able to inhibit the flow of smoke within a building. Elements that cause the movement of smoke include one or more of the following:

  – Stack effect
  – Buoyancy of the smoke
  – Expansion
  – Wind
  – Elevator piston effect
  – the HVAC system

  Principles of Smoke Control

  The smoke control system uses a building's ventilation system to exhaust the fire floor and pressurize surrounding floors. The three major considerations for smoke control are:

  – Smoke containment
  – Purging
  – Door-opening forces

HVAC Equipment

For smoke control applications, HVAC systems must have the following capabilities:

– Supply outside air to a space
– Return air from a space
– Exhaust air from a space to the outside

The SCS/SCE

– The SCS-8 Smoke Control Station and the SCE-8 Smoke Control Expander can be used in conjunction with this panel to provide smoke control capabilities.
– The SCS-8LSmoke Control Lamp Driver and the optional SCE-8L are used with the smoke control system to provide graphic annunciation.
– Dedicated/Non-dedicated Smoke Control System Wiring Diagrams

Figures 33 and 34 show wiring for a dedicated and non-dedicated smoke control system performing the same fan control functions. The system in Figure 34 features an Energy Management System.

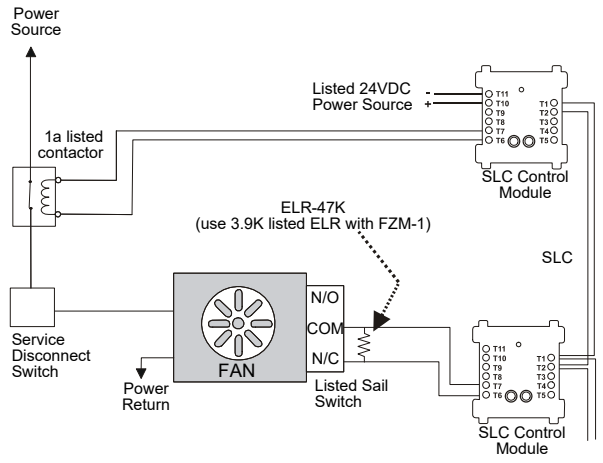


Figure 33 Dedicated Smoke Control System

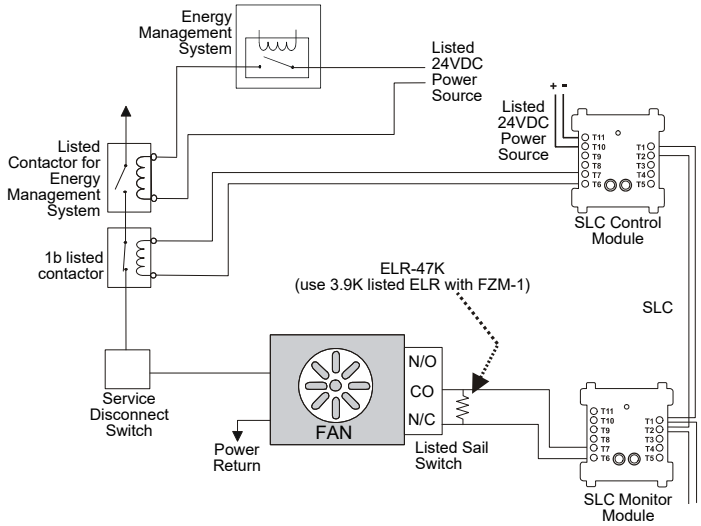


Figure 34 Non-Dedicated Smoke Control System

Refer to the *SCS Series Manual*, #15712, for more detailed information on the Smoke Control System.

3 Functionality

The approved functions of the NFS-320 are listed below.

- Drift Compensation
- Remote Programming
- Extent/Limitations of Synchronization
  – No synchronization across networks
- 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.
- Positive Alarm Sequence
- Pre-signal
- Alarm Verification
- Two wire compatibility

  One alarm per initiating device circuit
- Polling Style Limitations
  – Polling style is FlashScan or CLIP (Classic Loop Interface Protocol)

  Options:

  1. 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.
  2. 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.
  3. All detectors may be programmed as CLIP, all modules as FlashScan, on an SLC. Detectors may be a mix of CLIP and FlashScan type devices, modules must all be FlashScan type devices. Maximum number of devices per SLC: 99 CLIP detectors, 159 FlashScan modules.
- Manual release /abort switch interaction

NOTE: An abort switch can only be associated with one releasing zone.

  – Activation of a Manual Release Switch will override Predischarge Delay and override an active Abort Release Switch, resulting in an immediate agent release.

- NAC Reactivation
- Primary power source failure indication
- DAC Communication Format
  - SIA
  - Contact ID
  - 4 + 2 Standard
  - 4 + 1
  - 3 + 1
  - 4 + 1 Ademco Express
  - 4 + 2 Ademco Express
- 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. All interconnected panels must also connect to a network annunciator to display these conditions. Acknowledged trouble, supervisory, alarm and CO events will re-annunciate after 24 hours, if not cleared.
- Walk test
- Integrated/network local functionality
- Circuit disables
- Mapping
- Detection/alarm algorithms
- Day/night sensitivity
- Detection sensitivity adjustment
- Mass Notification Systems
- Extent/limitations of combination system
- Priority of signals

Canadian Applications

Standalone Applications:

- KDM-R2/C as primary display: An ACS Series annunciator must be mounted adjacent to the fire panel or within the fire panel enclosure
- NCA-2/C as primary display: The 640 character, multi-line display complies with ULC requirements when used as a primary display for the fire panel
- Two-Stage Systems (3/5 minute timer) - ACM-24AT control point is required for Automatic Alarm Signal Cancel. Acknowledge will not cancel the Two-Stage Timer. For applications using Two-Stage with the ACPS-610, see the ACPS-610 manual for additional programming instructions.

Network Applications:

- The network's Manual Controls may only be operated from one location at any given time. When panels are networked (using NCM Network Communications Modules or High-Speed Network Communications Modules), use AKS-1B Key Switch on each panel's Primary Annunciator to enable its functions. NCA-2/C may be a Primary Annunciator when AKS-1B is installed.
- TheNCA-2/C or ONYXWorks may be employed as a Display and Control Center. In the event that communication fails between the panels and the Control Center, the panels will continue to function in local/standalone mode.

Automatic Alarm Signal Silence:

- For a system requiring annunciators, consult the Authority Having Jurisdiction.
- Auto Silence:

  If auto silence is enabled, the value must be set to 20 minutes

  An ACS point is required to monitor special function zone ZF40

  Activation of Auto Silence will activate the Signal Silence LED on the fire panel display and any ACM LED point programmed for Auto Silence.

Annunciator Applications:

- ACM series annunciator modules must be used to annunciate the fire alarm input points/zones only, if no multi-line sequential display is installed.
- The following LED colors must be employed:
  - Red must be used to indicate active alarm inputs.
  - Yellow must be used to indicate supervisory, burglary, trouble signals, and Automatic Alarm Signal Cancel.
  - Green must be used to indicate the presence of power or an activated output.
- The ACM point designated for Automatic Alarm Signal Cancel should be labeled as "Automatic Alarm Signal Cancel" or "Auto Alm Signal Cancel."
- If the DCC option is enabled, an ACS control point is required to monitor (request control) ZF36 for the panel, as well as an ACS monitor point for each DCC on the network. If the DCC option is disabled (subject to AHJ approval), Acknowledge, Signal Silence, and System Reset will function as stated.

Ancillary Devices

- Panel control functions (Acknowledge, Signal Silence, and System Reset will not function on ancillary devices such as the FDU-80 or the LCD2-80. (Local acknowledge will function on the ancillary device to silence the piezo and steady the LEDs.) If the DCC option is disabled (subject to AHJ approval), Acknowledge, Signal Silence, and System Reset will function as stated.

Releasing Devices:

- Supervision for shorts is required; use REL devices and type code REL CKT ULC.
  (With onboard NACs, use REL-2.2K; with FCM-1 modules use REL-47K.)

4 Programming Options

Menu Hierarchy

From the "SYSTEM NORMAL" screen: Press ENTER, press **1.** Enter a password, then press ENTER

```
1=PROGRAMMING          2=READ STATUS ENTRY
(ESCAPE TO ABORT)
```

```
ENTER PROG OR STAT PASSWORD, THEN ENTER.
(ESCAPE TO ABORT) _
```

Enter password here
Program Change Level Default = 00000
Status Change Level Default = 11111

NOTE: During a local or network Walk Test, activating a Mass Notification device will activate associated special function zones according to CBE programming and simulate a Mass Notification event. Any network nodes, zones, or devices not participating in Walk Test will not participate in the simulated Mass Notification event.

Programming Level: Program Change

1 = PROGRAMMING

Program Change (High Level)

1 = **BASIC PROGRAM**

0 = CLR (Clear Program)
1 = AUTO (Autoprogram)
2 = POINT (Point Program)
1 = MODIFY POINT
2 = DELETE POINT
3 = PASSWD (Password)
*** = PROGRAM** (Program Password Level)
 # = STATUS (Status Password Level)
4 = MESSAGE (All Systems Normal Message)
5 = ZONES (Zone Programming)
6 = SPL FUNCT (Special Function)
F0 = PRESIG (Presignal Delay/PAS)
R0-R9 = REL (Releasing Zones)
F5-F6 = TIME (Time Function)
F7 = HOL (Holiday)
F8 = CODE (Coding Function)
F9 = PRE-ALARM
7 = SYSTEM (System Programming)
SIL INH (Silence Inhibit)
AUTO (Auto Silence Timer)
VERIFY (Alarm Verification)
USA TIME
TERM (Terminal Supervision)
AC DLY (AC Delay)
LocT (Terminal Location)
BLINK (Device Blink)
ST (SLC Wiring Style)
ACS (Annunciator Programming)
8 = CHECK PRG (Check Programming)

2 = NETWORK (Network Programming)
THRESHOLD CH. A
THRESHOLD CH. B
NODE (Network Node Number)
STYLE (Network Wiring Style)

3 = UTILITY (Utility Programming)
REGION
TBL. REMIND (Trouble Reminder)
ALA. SCROLL (Alarm Scroll)
LOCAL CONTROL
IP-ACCESS
DCC MODE (Display and Control Center)

4 = FLASHSCAN POLL
L1DET (Loop 1 Detectors)
L1MOD (Loop 1 Modules)

Status Change (Low Level)

1 = DISABL (Disable/Enable Point)
2 = SENSITIV (Detector Sensitivity)
3 = CLR VER (Clear Alarm Verification Counters)
4 = CLR HIST (Clear History Buffer)
5 = TIME (Set System Time and Date)
6 = WALK TEST

```
1=BASIC PROGRAM              2=NETWORK
3-UTILITY                    4=FLASHSCAN POLL
```

Choose one of the Program Change selections: 1, 2, 3 or 4

1 Basic Program options

```
0=CLR 1=AUTO 2=POINT 3=PASSWD 4=MESSAGE
5=ZONES 6=SPL FUNCT 7=SYSTEM 8=CHECK PRG
```

2 Network Program options

```
THRESHOLD CH.A:H, THRESHOLD CH.B:H
NODE:    .000, CLASSA:Y,  <ENTER>
```

3 Utility Program options

```
REGION=0   TBL.REMIND=2   ALA.SCROLL=N
LOCAL CONTROL=0
```

4 FlashScan Poll options

```
FLASHSCAN     L1DET   L1MOD
                N       Y
```

Special Zone	Lets you
F0=PRESIG	Select a Presignal Delay Timer and select PAS (Positive Alarm Sequence)
F5-F6=TIME	Specify Time Control functions such as the start time, stop time, or days of the week
F7=HOL	Specify up to nine holiday dates. An F7-programmed device activates on the specified holiday dates
F8=CODE	Specify one of the following coding function selections: March Time, Temporal, California, Two-Stage, Two-Stage Canada (3 minute or 5 minute), Two-Stage Canada Manual, System Sensor Strobes, Gentex Strobes, or Wheelock Strobes. F8 only takes effect if you program one or more NACs to F8
F9=PRE-ALARM	Select a Pre-Alar m level: Alert or Action
FA† (ZF10*)	Turn on when detector in verification mode. This is a fixed point and is not programmable
FB† (ZF16*)	Turn on if custom drill set to Y and the panel in Drill mode (Alarm Signal On in Canadian applications).
FC† (ZF18*)	Turn on when a CO alarm occurs.
FD† (ZF20*)	Turn on when a Mass Notification Alarm occurs (Does not apply for FirstCommand applications)
FE† (ZF21*)	Turn on when a Mass Notification Supervisory occurs
FF† (ZF22*)	Turn on when a Mass Notification Trouble occurs
ZF36*	If the local control active LED is on, this special zone will activate
ZF37*	Automatic Alarm Signal Activation Timer will turn on when the first alert stage has been entered.
ZF38*	Turns on when the panel enters the second (evacuation) stage.
ZF39*+	Automatic Alarm Signal Timer canceled. Can only be canceled if there is an ACS button mapped to this zone.
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 On for Canadian applications) is performed.
R0-R9=REL	Program up to ten Releasing Zones, each with a selection for a Delay Timer, an Abort Switch, a Cross Zone selection, or a Soak Timer

* VeriFire Tools settings.
†Not field programmable. Used for CBE programming only.
+Required for stand alone application

Table 3 Summary of Special Function Zones

2 = Read Status

READ

0 = POINT
2 = HIST (History)
4 = ALARM HIST (Alarm History)

PRNT (Print)

1 = POINT
3 = HIST (History)
5 = ALARM HIST (Alarm History)

```
1=PROGRAMMING          2=READ STATUS ENTRY
(ESCAPE TO ABORT)
```

```
READ POINT=0 HIST=2 ALARM HIST=4 <ENTER>
PRNT POINT=1 HIST=3 ALARM HIST=5 <ENTER>
```

Notice to Users, Installers, Authorities Having Jurisdiction and Other Involved Parties:

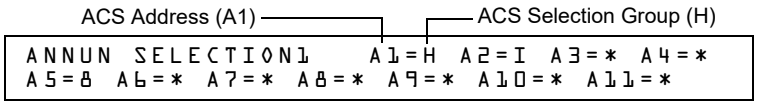
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, ULC 527-11, certain programming features or options must be limited to specific values or not used at all as indicated in Table 4 below.

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.							
Program Feature or Option	**Permitted in UL 864 (Y/N)**	**Permitted in UL2610 (Y/N)**	**Permitted in ULC 527-11 (Y/N)**	**Possible Settings**	**Setting Permitted in UL 2610**	**Settings Permitted in UL 864**	**Permitted in ULC 527-11**
IP downloads over a local area network (LAN) or the internet (WAN - Wide Area Network)	No	N/A	No	Yes No Timed	N/A	No	No
Releasing: Abort Switch	Yes	N/A	Yes	NYC AHJ ULI IRI	N/A	ULI IRI	ULI IRI
For Wireless Applications: Trouble Re-annunciation	Yes	N/A	Yes	4 hours, 24 hours	N/A	4 hours	4 hours
Alarm Re-annunciation	Yes	N/A	Yes	4 Hours, 24 Hours	N/A	24 Hours	24 Hours
Supervisory Re-annunciation	Yes	N/A	Yes	4 Hours, 24 Hours	N/A	24 Hours	24 Hours
CO Re-annunciation	Yes	N/A	Y/N	4 Hours, 24 Hours	N/A	24 Hours	Y/N
Detector Programming: Supervisory Type Codes	Yes	N/A	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) FIRE/CO (P SUP)	N/A	SUP L(DUCTI) SUP T(DUCTI) SUP L(DUCTP) SUP T(DUCTP)	SUP L(DUCTI) SUP T(DUCTI) SUP L(DUCTP) SUP T(DUCTP)
ALA.SCROLL (Scroll Display)	No	N/A	No	Y N	N/A	N	N
TBL.REMIND	Yes	N/A	Yes	*, 1, 2, 3, 4, 5	N/A	2	2
REGION	No	N/A	Yes	0 No special setting 1 China 2 Canada	N/A	0 (No special setting)	Canada
Alarm Verification Time	Yes	N/A	Yes	0 to 240 seconds	N/A	0 to 60 seconds	0 to 60 seconds
Presignal Delay/PAS[1]	Y	N/A	Presignal Delay - 60-180-seconds PAS (Positive alarm sequence) - 15 seconds	Y	N/A	N	
DCC Enable	Yes	N/A	Yes	Yes, No	N/A	Yes or No	Yes
Exit Time Dealy	N/A	Y	N/A	N/A	60 Sec. or Less	N/A	N/A
Entry Time Delay	N/A	Y	N/A	N/A	60 Sec. or Less	N/A	N/A
Auto-Silence	Y	Y	Y	OFF, 3, 10,15,20 Min.	15, 20	OFF, 3-20	10,15,20

Table 4 Programming Features with Settings Requiring AHJ Approval

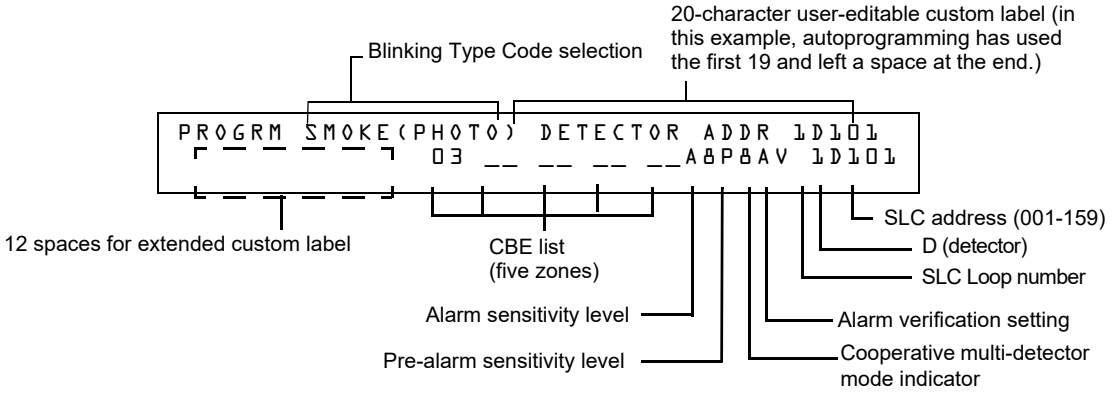
1 For proper PAS operation, a CGW-MB may not be installed on the network.

NOTE: When programming points, take the following into design consideration:
Each general zone must be dedicated to a single event type (i.e. Fire, MN, Security, etc.)
Map inputs only to general zones designated for the input's event type. For example, map mass notification devices to general zones designated for mass notification.
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.



ACS Selection Group	Annunciator Display	ACS Selection Group	Annunciator Display
A	8 System points & Zones 1 - 56	M	Programmable for use with FireVoice NFV-25/50ZS or FirstCommand
B	Zones 57 - 99, 9 F Zones, 8 R Zones, 4 NACs	N	8 System Points & Zones 1-56
C	Loop 1, Modules 1 - 64	O	8 System Points & Zones 1-56
D	Not used	P*	Loop 1, Modules 65-100 Loop 1, Detectors 1-14 (each detector occupies 2 points)
E	Loop 1, Modules 65 - 128	Q*	Not used
F	Not used	R*	Loop 1, detectors 15-46 (Each detector occupies 2 points)
G	Loop 1, Modules 129 - 159 (1 unused point)	S*	Not used
H	Loop 1, Detectors 1 - 64	T*	Loop 1 Detectors 47-78 (Each detector occupies 2 points)
I	Not used	U*	Not used
J	Loop 1, Detectors 65 - 128	V*	Loop 1 Detectors 79-100 (Each detector occupies 2 points)
K	Not used	W*	Not used
L	Loop 1, Detectors 129 - 159 (1 unused point)	*Group only available with UDACT programmed as option 2.	

Table 5 ACS Selection Groups



The following is a table of detector sensitivity settings by detector type:

NOTE: (d) Signifies the factory default setting in the detector sensitivity table below.

Note: If a detectors sensitivity is changed to a value in its Special Applications range, the extended label should be modified at this detector address to include the phrase `SPECIAL APPLICATIONS' or `SPECIAL APPS'. Refer to the VeriFire Tool help files for more information on extended label programming

Detector Type	Alarm (FlashScan)	Alarm (CLIP)	Pre-Alarm
Photo Electric SMOKE (PHOTO) (See note [1] and [2])	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 % (d) AL:9=2.35 %	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 % (d) 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 % (d) PA:9=1.50 %

Table 6 Detector Sensitivity (in percent obscuration per foot) (1 of 2)

Detector Type	Alarm (FlashScan)	Alarm (CLIP)	Pre-Alarm
Ion SMOKE (ION) (See notes [1] and [3])	AL:1=0.50 % AL:2=0.75 % AL:3=1.00 % AL:4=1.25 % AL:5=1.50 % AL:6=1.75 % (d) AL:7=2.00 % AL:8=2.25 % AL:9=2.50 %	AL:1=0.50 % AL:2=0.75 % AL:3=1.00 % AL:4=1.25 % AL:5=1.50 % AL:6=1.75 % (d) 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 % (d) PA:7=1.50 % PA:8=1.75 % PA:9=2.00 %
FlashScan View® Laser (See Note [4])	AL:1=0.02 % AL:2=0.03 % AL:3=0.05 % AL:4=0.10 % AL:5=0.20 % AL:6=0.50 % (d) AL:7=1.00 % AL:8=1.50 % AL:9=2.00 %	AL:1=0.02% AL:2=0.03 % AL:3=0.05 % AL:4=0.10 % AL:5=0.20 % AL:6=0.50 % (d) AL:7=1.00 % AL:8=1.50 %[5] 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 % (d) PA:7=0.70 % PA:8=1.00 % PA:9=1.50 %
Acclimate® Plus™ (See Note [6] and [7])	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% (d) 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% (d) 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 % (d) PA:6=2.00 % PA:7=2.00 % PA:8=2.00 to 3.00 % PA:9=2.00 to 3.00 %
Beam Detector (See note [8])	AL:1=25% AL:2=30% AL:3=40% AL:4=50% AL:5=30 - 50% AL:6=40 - 50%	AL:1=25% AL:2=30% AL:3=40% AL:4=50% AL:5=30 - 50% AL:6=40 - 50%	N/A
FSC-851 IntelliQuad Detector[9]	AL:1=1% AL:2=2% AL:3=3% AL:4=3% w/ 10 minute confirmation[10] AL:5=4% w/ 10 minute confirmation AL:6=Thermal 135°F AL:7=Thermal 135°F AL:8=Thermal 135°F AL:9=Thermal 135°F	N/A	PA:1=1% PA:2=1% PA:3=2% PA:4=3% PA:5=3% w/ 10 minute confirmation PA:6=4% w/ 10 minute confirmation PA:7=4% w/ 10 minute confirmation PA:8=4% w/ 10 minute confirmation PA:9=4% w/ 10 minute confirmation
IntelliQuad PLUS Multi-Criteria Fire/CO Detector[11]	AL:1=1% AL:2=2% AL:3=3% AL:4=3% w/ 10 minute confirmation[10] AL:5=4% w/ 10 minute confirmation AL:6=Thermal 135°F	N/A	PA:1=1% PA:2=1% PA:3=2% PA:4=3%w/ 10 minute confirmation PA:5=3%w/ 10 minute confirmation PA:6=4% Thermal 135°F

Table 6 Detector Sensitivity (in percent obscuration per foot) (2 of 2)

1 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. The nominal sensitivity displayed on the FACP is for reference only.
2 FSP-951, FSP-951-IV, FSP-951R, FSP-951R-IV, FSP-951T, FSP-951T-IV detectors must be programmed with sensitivity level 8 or 9 for Open Area Protection, and Levels 1 through 7 for Special Applications to be compliant with UL 268 7th Edition requirements (Default = 8).
3 Use only alarm sensitivity setting of AL=1, AL=2 or AL=3 for ION detectors installed in Canada.
4 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.
5 1% maximum on CLIP. Higher figures may display.
6 For Acclimate detectors installed in Canada: Use only the alarm settings of AL:1 or AL:2.
7 FPTI-951, FPTI-951-IV detectors must be programmed with sensitivity level 8 for Open Area Protection, and Level 2, 4, or 6 (Default=8) for Special Applications to be compliant with UL 268 7th Edition requirements.
8 Refer to the beam detector manual to determine the alarm settings: they are a function of the distance between the detector and its reflector.
9 In CLIP mode, any AL: settings over AL:5 will be set to AL:5 by the panel. Any PA: settings over PA:5 will be set to PA:5 by the panel.
10 Within the 10 minute fire 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.
11 FCO-951, FCO-951-IV detectors must be programmed with sensitivity level 3, 4, or 5 for Open Area Protection, and Level 1 or 2 (Default = 4) for Special Applications to be compliant with UL 268 7th Edition requirements.

	Point Characteristics			
Type Code	**Point Type**	**Latching (Y/N)**	**Point Function**	**Device Function**
SMOKE (ION)	fire alarm	Y	lights fire alarm LED and activates CBE	Ionization smoke detector
SMOKE(DUCTI)	fire alarm	Y	lights fire alarm LED and activates CBE	Duct Ionization smoke detector
SUP.T(DUCTI)[1]	supervisory	N	lights supervisory LED	Ionization smoke detector used as a duct detector to report supervisory condition rather than alarm. Tracking.

Table 7 Intelligent Detector Type Codes (1 of 3)

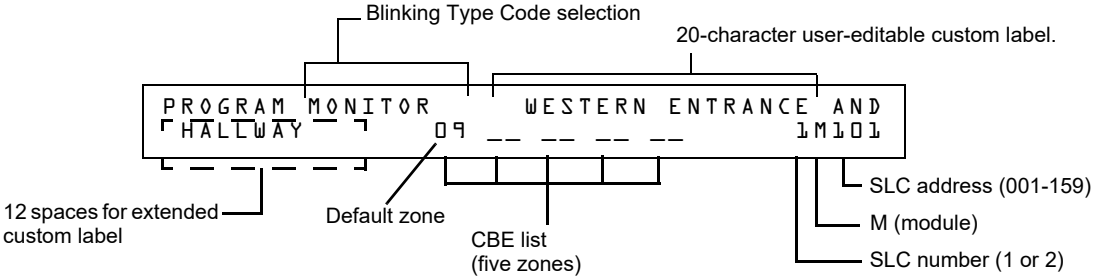
SUP.L(DUCTI)	supervisory	Y	lights supervisory LED	Ionization smoke detector used as a duct detector to report supervisory condition rather than alarm. Latching.
SUP.T(ION)[1, 2]	supervisory	N	lights supervisory LED	Ionization smoke detector used to report supervisory condition rather than alarm. Tracking.
SUP.L(ION)[2]	supervisory	Y	lights supervisory LED	Ionization smoke detector used to report supervisory condition rather than alarm. Latching.
SMOKE(PHOTO)	fire alarm	Y	lights fire alarm LED and activates CBE	Photoelectric smoke detector
SMOKE(DUCTP)	fire alarm	Y	lights fire alarm LED and activates CBE	Duct Photoelectric smoke detector
SUP.T(DUCTP)[1]	supervisory	N	lights supervisory LED	Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm. Tracking.
SUP.L(DUCTP)	supervisory	Y	lights supervisory LED	Photoelectric smoke detector used as a duct detector to report supervisory condition rather than alarm. Latching.
SUP.T(PHOTO)[1,2]	supervisory	N	lights supervisory LED	Photoelectric smoke detector used to report supervisory condition rather than alarm. Tracking.
SUP.L(PHOTO)[2]	supervisory	Y	lights supervisory LED	Photoelectric smoke detector used to report supervisory condition rather than alarm. Latching.
RF_PHOTO	fire alarm	Y	lights fire alarm LED and activates CBE	Wireless Photoelectric smoke detector
SMOKE(HARSH)[3]	fire alarm	Y	lights fire alarm LED and activates CBE	HARSH smoke detector
FIRE/CO[4]	fire alarm	Y	lights fire alarm LED for photo and heat, no LED will light for a CO alarm, photo and heat will activate CBE, CO alarm activates special function zone FC and sixth CBE zone only (sixth CBE zone programmable via VeriFire Tools)	Photoelectric, Carbon Monoxide, and Heat detector
FIRE/CO (P SUP)[2,4,5]	fire alarm/ supervisory	Y	lights fire alarm LED for heat, no LED will light for a CO alarm, supervisory LED will light for photo alarm, heat and photo will activate CBE, CO alarm activates special function zone FC and sixth CBE zone only (sixth CBE zone programmable via VeriFire Tools)	Photoelectric, Carbon Monoxide, and Heat detector
FIRE/CO (C SUP)[4]	fire alarm/ supervisory	Y	lights fire alarm LED for heat and photo alarms, will light supervisory LED for CO alarm, photo and heat alarms will activate CBE, CO alarm will activate sixth CBE zone only (sixth CBE zone programmable via VeriFire Tools)	Photoelectric, Carbon Monoxide, and Heat detector
Note: For FIRE/CO detectors: Detectors programmed as FIRE/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 (P SUP) setting. Detectors programmed as FIRE/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 (C SUP) setting.				
CO ALARM	CO alarm	Y	CBE Position #5 Activates for CO Pre-alarm, all other CBEs activate for a CO Alarm	Carbon Monoxide detector
CO SUP	CO supervisory	Y (see note on page 30)	CBE Position #5 Activates for CO Pre-alarm, all other CBEs activate for a CO Supervisory	Carbon Monoxide detector
PHOTO/CO[4]	fire	Y	CBE Position #4 activates for CO, CBE Position #5 Activates for CO Pre-alarm, all other CBEs activate when the Photo element activates (i.e. fire alarm)	Photoelectric and Carbon Monoxide detector
P/CO (P SUP)[2,4,5]	photo - supervisory CO - Alarm	Y (see note on page 30)	CBE Position #4 activates for CO, CBE Position #5 Activates for CO Pre-alarm, all other CBEs activate when the Photo element activates (i.e. Supervisory)	Photoelectric and Carbon Monoxide detector
P/CO (C SUP)[4]	Photo - Fire CO - supervisory	Y	CBE Position #4 activates for CO, CBE Position #5 Activates for CO Pre-alarm, all other CBEs activate when the Photo element activates (i.e. fire alarm)	Photoelectric and Carbon Monoxide Detector
For PHOTO/CO detectors: Detectors programmed as PHOTO/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 PHOTO/CO (P SUP) setting. Detectors programmed as PHOTO/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 PHOTO/CO (C SUP) setting. For Photo/CO and CO Detectors programmed as Photo/CO (P SUP) or CO (CO SUP) will either latch and track, depending on the setting.				
SMOKE(BEAM)	fire alarm	Y	lights fire alarm LED and activates CBE	Beam smoke detector
SMOKE(LASER)	fire alarm	Y	lights fire alarm LED and activates CBE	Laser smoke detector

Table 7 Intelligent Detector Type Codes (2 of 3)

SUP.L(LASER)[2]	supervisory	Y	lights supervisory LED	Laser smoke detector used to report supervisory condition rather than alarm. Latching.
SUP.T(LASER)[1,2]	supervisory	N	lights supervisory LED	Laser smoke detector used to report supervisory condition rather than alarm. Tracking.
SMOKE(DUCTL)	fire alarm	Y	lights fire alarm LED and activates CBE	Duct Laser smoke detector
SUP T(DUCTL)	supervisory	N	lights supervisory LED	Laser smoke detector used as a duct detector to report supervisory condition rather than alarm. Tracking.
SUP L(DUCTL)	supervisory	Y	lights supervisory LED	Laser smoke detector used as a duct detector to report supervisory condition rather than alarm. Latching.
AIR REF	fire alarm	Y	lights fire alarm LED and activates CBE	Assign to one or more FSL-751 detectors 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 you should set the detector sensitivity level to the least sensitive level—AL:9 and PA:9 Change Alarm and Pre-Alarm sensitivity. Refer to “Detector Sensitivity (in percent obscuration per foot)” on page 26 for a complete list of detector sensitivity settings.				
HEAT	fire alarm	Y	lights fire alarm LED and activates CBE	190°F intelligent thermal sensor
HEAT+	fire alarm	Y	lights fire alarm LED and activates CBE	190°F intelligent thermal sensor with low temperature warning.
HEAT(FIXED)	fire alarm	Y	lights fire alarm LED and activates CBE	135°F intelligent thermal sensor
HEAT (ROR)	fire alarm	Y	lights fire alarm LED and activates CBE	15°F per minute rate-of-rise detector
SMOKE ACCLIM	fire alarm	Y	lights fire alarm LED and activates CBE	Combination Photoelectric/heat detector without freeze warning (Acclimate Plus™)
SMOKE(ACCLI+)	fire alarm	Y	lights fire alarm LED and activates CBE	Combination Photoelectric/heat detector with freeze warning (Acclimate Plus™, or IntelliQuad FSC-851 Photoelectric Multi-Criteria Smoke Sensor)
SMOKE(MULTI)[3]	fire alarm	Y	lights fire alarm LED and activates CBE	Multi-sensor smoke detector
ASPIRATION	fire alarm	Y	lights fire alarm LED and activates CBE	Aspiration smoke detector
ASPIR (SUP)	supervisory	Y	lights supervisory LED and activates CBE	Aspiration detector supervision
ASPIR. (PRE)	Pre-alarm	N	lights Pre-alarm LED and actives CBE	Aspiration detector Pre-alarm
ASPIR. (NON)	non-fire	N	activates CBE	Aspiration detector non-alarm
ASPIR. (REF)	non-fire	N	activates CBE	Used as a reference for other aspiration detectors on the loop.
Note: Aspiration detector (FAAST) point programming requires 5 SLC addresses.				
ACCL				
ACCL (P SUP)	fire	Y (see note below)	activates CBE	Combination Photoelectric/Heat detector. Photo element activation generates a supervisory condition
ACCL+ (P SUP)	fire	Y (see note below)	activates CBE	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 7 Intelligent Detector Type Codes (3 of 3)

1 Not suitable for Canadian applications.
2 Requires approval of AHJ.
3 CLIP Mode only
4 LED representation of a CO alarm may be performed using an ACS annunciator.
5 Photo element can be programmed as latching or tracking for all FIRE/CO devices programmed as this type ID via VeriFire Tools.



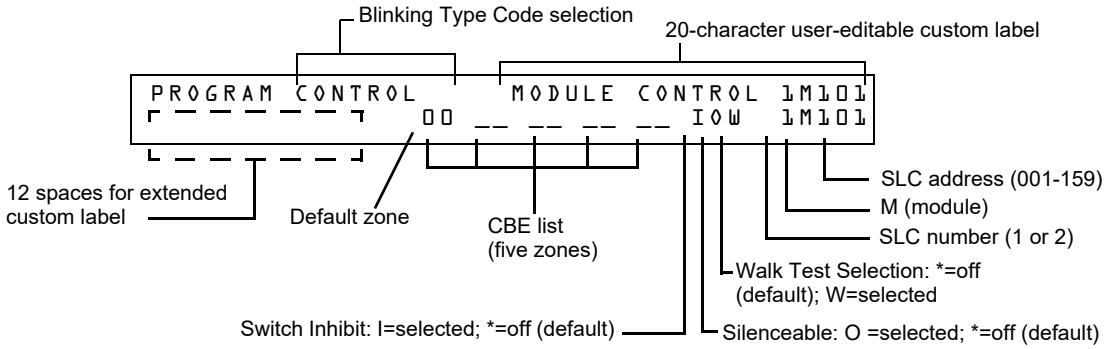
Type Code	Point Characteristics: Point Type	Point Characteristics: Latching (Y/N)	Point Characteristics: Point Function	Device Function
MONITOR	fire alarm	Y	Lights fire alarm LED and activates CBE	Alarm-monitoring device
PULL STATION	fire alarm	Y	Lights fire alarm LED and activates CBE	Manual fire-alarm-activating device, such as a pull station
RF MON MODUL	fire alarm	Y	Lights fire alarm LED and activates CBE	Wireless alarm-monitoring device
RF PULL STA	fire alarm	Y	Lights fire alarm LED and activates CBE	Wireless manual fire-alarm-activating device, such as a pull station
SMOKE CONVEN	fire alarm	Y	Lights fire alarm LED and activates CBE	Indicates activation of a conventional smoke detector attached to an FZM-1
SMOKE DETECT	fire alarm	Y	Lights fire alarm LED and activates CBE	Indicates activation of a conventional smoke detector attached to an FZM-1
WATERFLOW	fire alarm	Y	Lights fire alarm LED and activates CBE	Monitor for waterflow alarm switch
WATERFLOW S	supervisory	Y	Lights supervisory LED and activates CBE	Indicates supervisory condition for activated waterflow switch
ACCESS MONTR	non-alarm	N	Activates CBE	Used for monitoring building access
AREA MONITOR	security	Y	Lights security LED and activates CBE	Monitors building access
AUDIO SYSTEM	trouble	N	Lights trouble LED	Not used
EQUIP MONITR	security	N	Activates CBE	Used for recording access to monitored equipment
RF SUPERVSRY	supervisory	N	Lights Supervisory LED	Monitors a radio frequency device
SECURITY	security	Y	Lights security LED	Indicates activation of security alarm
LATCH SUPERV	supervisory	Y	Lights supervisory LED	Indicates latching supervisory condition
TRACK SUPERV	supervisory	N	Lights supervisory LED	Monitors for waterflow tamper switches for alarm points
SYS MONITOR	security	Y	Lights security LED and activates CBE	Monitors equipment security
TAMPER	supervisory	Y	Lights supervisory LED, activates CBE	Indicates activation of tamper switch
ACK SWITCH	non-alarm	N	Performs Acknowledge function, no CBE	Silences panel sounder, gives an Acknowledge message on the panel LCD
ALLCALL PAGE	non-alarm	N	Activates all speaker circuits, no CBE	Not used
DRILL SWITCH[1]	non-alarm	N	Performs Drill function	Activates silenceable outputs
EVACUATE SWITCH[2]	non-alarm	N	Performs Drill function	Activates all silenceable outputs
FIRE CONTROL	non-alarm	Y	Activates CBE	Used for non-fire activation of outputs
NON FIRE	non-alarm	N	Activates CBE	Used for building energy management
PAS INHIBIT[3]	non-alarm	N	Inhibits Positive Alarm Sequence	Inhibits Positive Alarm Sequence
POWER MONITR	trouble	N	Indicates trouble	Monitors auxiliary power supplies
RESET SWITCH	non-alarm	N	Performs Reset function	Resets control panel
SIL SWITCH	non alarm	N	Performs Signal Silence function	Turns off all activated silenceable outputs
TELE PAGE	non-alarm	N	Performs function of Page Button on FFT-7	Not used
DISABLE MON	disable	N	When a point with this type code activates, it will create a disable on the panel for that point. No CBE generated.	Module can not be disabled via ACS, Alter Status, or over the network.
TROUBLE MON	trouble	N	Indicates Trouble	Monitors trouble inputs
ABORT SWITCH	non alarm	N	Indicates Active at the panel	Aborts activation of a releasing zone. Note: Abort switch can only be associated with one (1) releasing zone.
MAN RELEASE	fire alarm	Y	Lights Fire Alarm LED and activates CBE	Indicates activation of a monitor module programmed to releasing zone to perform a releasing function
MANREL DELAY	fire alarm	Y	Lights Fire Alarm LED and activates CBE	Indicates activation of a monitor module programmed for a release output
SECOND SHOT	fire alarm	Y	Indicates Active at the panel and activates CBE	Provides second activation of releasing zone after soak timer has expired.
Blank	fire alarm	Y	Lights fire alarm LED and activates CBE	Monitors for a device with no description
HEAT DETECT	fire alarm	Y	Lights fire alarm LED and activates CBE	Monitors for conventional heat detector
CO MON[4]	CO alarm	Y	Activates CBE, no LED will light for CO alarm	Monitors conventional CO detector
ECS/MN SUPT	supervisory	N	Lights supervisory LED and activates CBE.	Monitors mass notification devices.
ECS/MN SUPL	supervisory	Y	Lights supervisory LED and activates CBE.	Monitors mass notification devices

Table 8 Monitor Module Type Codes (1 of 2)

ESC/MN TROUBLE MON	trouble	N	Indicates Trouble on a Mass Notification device	Monitors mass notification devices. Will generate a trouble condition for both open and short conditions.
ECS/MN MONITOR[5]	MNS alarm	Y	Does not light any LEDs, overrides existing fire event, shuts off silenceable outputs and all fire activated strobes and activates CBE.	Monitors mass notification devices
RF GATEWAY	non-alarm	Y	Activates CBE	Provides communication between wireless device and the fire panel.

Table 8 Monitor Module Type Codes (2 of 2)

1 The Drill Switch type code should not be used for Canadian applications.
2 For Canada, the point type is alarm.
3 For proper PAS operation, a CGW-MB may not be installed on the network.
4 LED representation of a CO alarm may be performed using an ACS annunciator.
5 If ECS/MN Override is not selected in VeriFire Tools, fire events will take priority over ECS/MN audio events.



NOTE: On a control module, the default zone is always set to Zone 00 (general alarm).

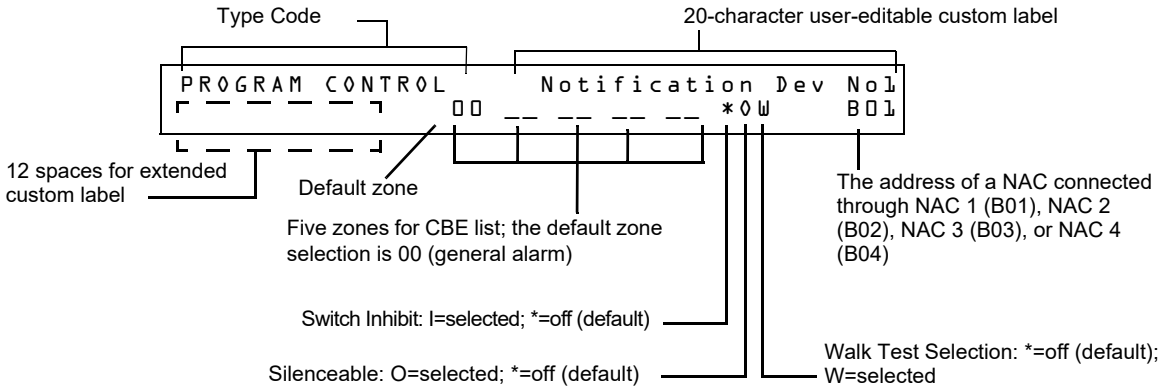
Type Code	Silenceable (Y/N)	Configuration	Device Function
CONTROL	Y	NAC	Supervised NAC for notification appliance
RELAY	Y	Form-C relay	Relay output
BELL CIRCUIT	Y	NAC	Supervised NAC for notification appliance
STROBE CKT	Y	NAC	Supervised NAC for notification appliance
HORN CIRCUIT	Y	NAC	Supervised NAC for notification appliance
AUDIBLE CKT	Y	NAC	Supervised NAC for notification appliance
SPEAKER	Y	NAC	Supervised NAC for notification appliance
ISOLATED NAC	Y	NAC	Supervised NAC for notification appliance, used with audio isolators. Activates even if there is a short on its NAC circuit. For ULC installations only.
ISOLATED SPK	Y	NAC	Supervised NAC for speaker circuits, used with audio isolators. Activates even if there is a short on its audio circuit. For ULC installations only.
REL END BELL	N	NAC	Supervised NAC for notification appliance
blank	Y	NAC	Supervised NAC (for use when no other Type Code applies)
REL CKT ULC[1]	N	NAC	Releasing Circuit, power-limited (Class 2), supervised for opens, shorts and ground faults (always non-silenceable)
RELEASE CKT[1]	N	NAC	Releasing circuit, non-power-limited, supervised for opens and ground faults
RELEA.FORM C[1]	N	Form-C Relay	Relay output, contacts operate upon release
REL AUDIBLE	Y	NAC	NAC, activated upon release
NONRESET CTL	N	Form-C Relay and NAC	Relay output, unaffected by “System Reset” command
TELEPHONE	N	NAC	Standard Telephone circuit
INSTANT RELE[1]	N	NAC	NAC, short = normal; supervised for open circuits and ground faults. Always non-silenceable and switch-inhibited.
ALARMS PEND.	N	NAC	Output that will activate upon receipt of an alarm condition, and remain in the alarm state until all alarms have been acknowledged. It is programmed as “switch inhibit”.
CONTROL NAC	Y	NAC	Supervised NAC
GEN ALARM	N	NAC	Control Module, an XPC-8 circuit, or an XP5-C (in NAC mode) configured as a Municipal Box Transmitter for NFPA 72 Auxiliary Fire Alarm Systems applications. This Type ID can also be used for general alarm activation. It is programmed as “switch inhibit”.
GEN SUPERVIS	N	NAC	Control Module, an XPR-8 relay, or an XP5-C (in relay mode) activated under any Supervisory condition (includes sprinkler type). It is programmed as “switch inhibit”.
GEN TROUBLE	N	NAC	Control Module, an XPR-8 relay, or an XP5-C (in relay mode) activated under any System Trouble condition. It is programmed as “switch inhibit”.
GENERAL PEND	N	NAC	Control Module, an 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.

Table 9 Control Module Type Codes (1 of 2)

TROUBLE PEND	N	NAC	Control Module, an XPC-8 circuit, 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. It is programmed as “switch inhibit”.
MNS GENERAL	Y	NAC	Mass notification supervised output.
MNS CONTROL	Y	NAC	Mass notification supervised NAC.
MNS STROBE	Y	NAC	Mass notification supervised NAC.
MNS SPEAKER	Y	NAC	Mass notification supervised NAC for speaker circuits.
MNS RELAY	Y	Relay	Mass notification relay output.

Table 9 Control Module Type Codes (2 of 2)

1 The FCM-1-REL checks for shorts with all releasing type codes.



Type Code	Silenceable (Y/N)	Device Function
CONTROL	Y	Supervised NAC
BELL CIRCUIT	Y	Supervised NAC for notification appliance
STROBE CKT	Y	Supervised NAC for notification appliance
HORN CIRCUIT	Y	Supervised NAC for notification appliance
AUDIBLE CKT	Y	Supervised NAC for notification appliance
SPEAKER	N	Not used
REL END BELL	N	Supervised NAC
blank label	Y	Supervised NAC for undefined device
REL CKT ULC	N	Releasing Circuit, power-limited (Class 2), supervised for opens, shorts and ground faults (always non-silenceable)
RELEASE CKT	N	Releasing circuit, non-power-limited, supervised for opens and ground faults
REL AUDIBLE	Y	NAC, activated upon release
REL CODE BELL	Y	Supervised NAC (NFS-320 NAC only)
INSTANT RELE	N	NAC, short = normal; supervised for open circuits and ground faults. Always non-silenceable and switch-inhibited.
ALARMS PEND	N	Output that will activate upon receipt of an alarm condition, and remain in the alarm state until all alarms have been acknowledged. It is programmed as “switch inhibit”.
CONTROL NAC	Y	Supervised NAC
GEN ALARM	N	Control Module, an XPC-8 circuit, or an XP5-C (in NAC mode) configured as a Municipal Box Transmitter for NFPA 72-2002 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 SUPERVIS	N	Control Module, an XPR-8 relay, or an XP5-C (in relay mode) activated under any Supervisory condition (includes sprinkler type). It is programmed as “switch inhibit”.
GEN TROUBLE	N	Control Module, an XPR-8 relay, or an XP5-C (in relay mode) activated under any System Trouble condition. It is programmed as “switch inhibit”.
GENERAL PEND	N	Control Module, an 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.
TROUBLE PEND	N	Control Module, an XPC-8 circuit, 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. It is programmed as “switch inhibit”.

Table 10 NAC Type Codes

5 Testing/Maintenance

When finished with the original installation and all modifications, 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. All test and maintenance instruction codes and software necessary to provide test and inspection requirements of CAN/ULC-S536, Standard for the Inspection and Testing of Fire Alarm Systems. 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.

Disable or Enable a Point

WARNING: DO NOT USE SOFTWARE FOR RELEASING LOCKOUT
DO NOT RELY ON DISABLE/ENABLE SOFTWARE SETTINGS TO LOCK OUT RELEASING DEVICES. RELEASING DEVICES MUST BE PHYSICALLY DISCONNECTED.

NOTE: When an input or output point associated with releasing functions is disabled, a single supervisory trouble will be generated.

Enter 1 ! Status Change Password

Enter 1 !

The Disable/Enable option lets you disable programmed points for detectors, modules, zones, and NACs. The program allows you to disable an initiating device in alarm: however, the disable will not take effect until after the panel has been reset.

1.From the "Status Change Selection" screen, press the **1** key to display the "Disable/Enable" screen.

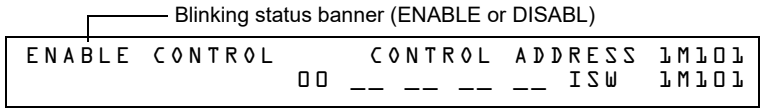
2.Select the point type.

The cursor will blink the first SLC address digit in the detector, zone, module, or NAC field.

* for detectors
# for modules
& for NACs
Z for zones

WARNING: ZONE DISABLE
DISABLING A ZONE DISABLES ALL INPUT AND OUTPUT DEVICES THAT USE THE ZONE AS THE FIRST ENTRY IN THE CBE LIST.

3. Enter the address of the point, then press the ENTER key. A sample display follows:



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 (Alarm Signal On for Canadian applications) Use the Drill/Alarm Signal On key to manually activate all silenceable outputs and NACs. Press and hold the Drill/Alarm Signal On key for 2 seconds. During a drill, the panel will turn on all silenceable NACs, Turn off the Signals Silenced LED, and sends a Manual Evacuate message to the History Buffer and installed printers, CRT-2 terminals and annunciators.
- Lamp Test - Use the Lamp Test key to test the control panel LEDs and panel sounder. Press and hold the key. The panel will light all control panel LEDs, turn on the panel sounder, and light all segments of the LCD display. If the Lamp Test key is held longer than 5 seconds, the LCD will display the software revisions.

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.
- Disconnect all releasing devices to prevent accidental activation in accordance with NFPA 2001 and NFPA 12A releasing agents.

WARNING: RELEASING DEVICES MUST BE PHYSICALLY DISCONNECTED
DO NOT RELY ON DISABLE/ENABLE SOFTWARE SETTINGS TO LOCKOUT RELEASING DEVICES.

- Check that the green POWER LED lights.
- Check that all status LEDs are off.
- Press and hold the LAMP TEST key. Verify that all LEDs and all LCD 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 all status LEDs are off and the green POWER LED is on.
- Notify fire, central station and/or building personnel when you finish testing the system.

Walk Test

Walk Test allows the user to test the entire fire alarm system. There are two kinds of Walk Test - Basic and Advanced, described later in this section.

Before entering Walk Test, note the following:

- For each individual activation, the control panel sends "TEST Axx" (for alarm testing) or TEST Txx (for trouble testing) to the History buffer, installed printers and CRT-2s so results can be reviewed.
- Basic Walk Test, Silent – In order to keep the test silent, do not program any of the output modules with "W" in the Walk Test field.
- Advanced Walk Test - This test overrides a setting of "*" (silent) in the Walk Test field. All activated outputs will sound until panel reset.
- The control panel provides a 1-hour timer for Walk Test mode. When the hour expires with no activity, the control panel automatically returns to normal operation.
- Walk Test may be exited at any time by pressing the ESC key.

WARNING: FIRE PROTECTION DEACTIVATED
WALK TEST MODE DEACTIVATES FIRE PROTECTION. ALWAYS OBSERVE THE FOLLOWING:

1. PRIOR TO WALK TEST, SECURE ALL PROTECTED BUILDINGS, AND NOTIFY THE BUILDING OWNER/OPERATOR, FIRE DEPARTMENT, AND OTHER PERTINENT PERSONNEL THAT TESTING IS IN PROGRESS.
2. IMMEDIATELY AFTER WALK TEST IS COMPLETED, NOTIFY THE SAME PEOPLE THAT TESTING IS COMPLETE AND IS RESTORED TO NORMAL OPERATION.

WARNING: RELEASING DEVICES MUST BE PHYSICALLY DISCONNECTED
DO NOT RELY ON DISABLE/ENABLE SOFTWARE SETTINGS TO LOCKOUT RELEASING DEVICES.

NOTE: Walk Test will not start if any devices are active (i.e., fire alarms, security, supervisories or pre-alarms.) To perform a walk test while a device is active, disable the device and press the System Reset button.

Basic Walk Test

When the tester activates an input during Basic Walk Test, all silenceable outputs mapped by CBE to that input will activate. The activations are tracking; once the activation stimulus is removed, the input will deactivate. Basic Walk Test may be audible or silent, depending on the Walk Test setting of participating outputs. Program the Walk Test field for control modules and NACs as follows:

For	Program Silenceable Outputs with	Silenceable Outputs will
an audible Basic Walk Test	**W**	sound for approximately 4 seconds during Walk Test
a silent Basic Walk Test	*	not sound during Walk Test
a trouble Basic Walk Test	**W**	sound for approximately 8 seconds when put into trouble

Table 11 Walk Test Operation

Enter Basic Walk Test in the following manner:

Enter 1 !
Status Change Password

From the "Status Change Selection" screen, press the **6** key. The control panel displays the "Walk Test" screen as shown below:

```
WALK TEST                PRESS ENTER TO START
ESCAPE TO ABORT
```

Enter 6 :

Operate the control panel in Walk Test as follows

To	Press
Put the control panel into Walk Test mode	Enter
Stop a Walk Test and return to the "Status Change Selection" screen	Esc

Basic Walk Test directs the control panel to do the following:

- Activate silenceable outputs associated by programming with each new alarm. (The panel does not activate non-silenceable outputs.)
- Save and store each test in the History buffer
- Send a TEST Axx status banner for each alarm, and a TEST TXX banner for each trouble, to the printer (xx equals the number of tests for a detector or input device with this address)
- Turn on the System Trouble LED
- Turn on the System Trouble relay
- Disable activation of the System Alarm relay

Advanced Walk Test

During Advanced Walk Test, when the tester activates an input, all CBE mapped to that input will activate with the exception of releasing functions. Each input activation is latching; that is, it will not deactivate until the system is reset. Advanced Walk Test will sound all activated outputs, overriding a setting of "*" (silent) in the Walk Test field.

NOTE: Some detectors, laser detectors for example, can be difficult to place in alarm using a magnet. Advanced Walk Test facilitates magnet testing of these detectors.

Enter Advanced Walk Test as follows:

Enter, 1 !

LTEST

Enter

Enter LTEST at the password screen. Asterisks will display where LTEST has been typed. Pressing ENTER displays the following screen.

```
TROUBL IN SYSTEM     ADV WALK TEST
PROCESSING DISABLED 10:07a 041508 MON
```

NOTE: The control panel can not be put into Walk Test from an alarm condition.

To	Press
Stop an Advanced Walk Test and return to the "Status Change Selection" screen	Esc

Advanced Walk Test directs the control panel to do the same as it does for Basic Walk Test with the following exceptions:

- alarm and trouble messages are sent to the printer, not test messages. (These Walk Test messages can be distinguished from others at the printer because they begin with the trouble message generated when Walk Test is entered, and end with the cleared trouble when Walk Test is exited.)
- all CBE mapped to the test input is activated except releasing functions.

Walk Test Activation Indications

FlashScan poll mode - Once the test is started:

- each intelligent addressable input device will blink its address in red, and each intelligent addressable output device will blink its address in green. Pattern examples are given below.

Address	Blink Pattern
8	8 blinks, long stop, 8 blinks, long stop,....
37	3 blinks, stop, 7 blinks, long stop, 3 blinks, stop, 7 blinks, long stop,....
70	7 blinks, stop, 10 blinks, long stop, 7 blinks, stop,.....
107	10 blinks, stop, 7 blinks, long stop, 10 blinks, stop,.....
152	15 blinks, stop, 2 blinks, long stop, 15 blinks, stop, 2 blinks, long stop....

- an input device activated in Basic Walk Test latches on steady green for the duration of the test.
- an output device activated in Basic Walk Test will remain active and the LED will glow steady green for:
  - approximately 4 seconds for alarms
  - approximately 8 seconds for troubles.
- an output device activated in Advanced Walk Test will remain active and the LED will glow steady green until the reset key is pressed.

CLIP mode - Once the test is started:

- intelligent addressable input and output devices continue to blink red as usual until activated.
- an input device activated in Basic Walk Test latches on steady red during activation. If the device is put in trouble (for instance, the detector head is removed, then replaced), the LED will be latched on for the duration of the test.
- an output device activated during Basic Walk Test will remain active and the LED will glow steady green (if a FlashScan module) or steady red (if a CLIP module) for:
  - approximately 4 seconds for alarms
  - approximately 8 seconds for troubles
- an output device activated in Advanced Walk Test will remain active and the LED will glow steady green (if a FlashScan module) or steady red (if a CLIP module) until the reset key is pressed.

Viewing Walk Test Results

When finished with a Walk Test, view the History buffer, installed printers and CRT-2s to check the results of the Walk Test. View the History buffer by using the Read Status function. From the SYSTEM NORMAL screen, press the ENTER key, press the **2** key two times, then press the ENTER key to view the History buffer.

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 (2.0A for 18-26AH; 5.0A-5.7A for 26AH-200AH).

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. You can get replacement batteries 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, tools, bracelets, rings, and coins.

WARNING: DO NOT SHORT BATTERIES
SHORTING THE BATTERY LEADS CAN DAMAGE THE BATTERY, EQUIPMENT, AND COULD CAUSE INJURY TO PERSONNEL.

6 Compatibilities

NOTIFIER Compatible Equipment

- "A" or "CDN" suffix indicates a ULC Listed model.
- "Products marked with a check mark have not received UL 864 9th or 10th Edition certification and may only be used in retrofit applications.
- The wireless option is not suitable for ULC.

Devices

FMM-1 Monitor Module
FSP-851 Photo Detector
NBG-12LX Addressable Manual Pull Station

For a complete list of compatible devices refer to the SLC Manual (#51253) and the Device Compatibility Document (#15378)

Electronic Equipment

A77-716B End-of-Line Resistor Assembly
ACM-24AT Annunciator Control Module
ACM-48A Annunciator Control Module
ACM-8R Annunciator Control Module
ACPS-610 Addressable Charger/Power Supply
AEM-24AT Annunciator Expander Module
AEM-48A Annunciator Expander Module
AKS-1B Annunciator Key Switch
APS2-6R Auxiliary Power Supply
BAT-12120 Battery 12-volt, 12 amp hour
BAT-12180 Battery 12-volt, 18 amp hour
BAT-12250 Battery 12-volt, 25 amp hour
BAT-12260 Battery 12-volt, 26 amp hour
BAT-12550 Battery 12-volt, 55 amp hour
BAT-12600 Battery 12-volt, 60 amp hour
CGW-MB CLSS Gateway
CGW-PT CLSS POTS Board
CGW-DACT CLSS Dialer
CCM-ATT-HON AT&T Cellular Module
CCM-VZ-HON Verizon Cellular Module
HWF2A-COM IP Digital Alarm Communicator
HWF2V-COM IP Digital Alarm Communicator
CHG-120 Battery Charger
CPU2-320/E Control Panel Circuit Board
CRT-2 Video Display Monitor with Keyboard
DPI-232 Direct Panel Interface
FCPS-24S6/S8 Field Charger Power Supply
FDU-80 Remote Fire Annunciator
FTM-1 Telephone Module
FWSG/A Wireless Gateway
HS-NCM-MF High-Speed Network Communications Module (Multi-Mode Fiber)
HS-NCM-MFSF High-Speed Network Communications Module (Multi-Mode Fiber to Single-Mode Fiber)
HS-NCM-SF High-Speed Network Communications Module (Single-Mode Fiber)
HS-NCM-W High-Speed Network Communications Module (Wire)
HS-NCM-W-2 High-Speed Network Communications Module (Wire)
HS-NCM-WMF High-Speed Network Communications Module (Wire to Multi-Mode Fiber)
HS-NCM-WMF-2 High-Speed Network Communications Module (Wire to Multi-Mode Fiber)
HS-NCM-WSF High-Speed Network Communications Module (Wire to Single-Mode Fiber)
HS-NCM-WSF-2 High-Speed Network Communications Module (Wire to Single-Mode Fiber)
HWF2A-COM IP Digital Alarm Communicator
HWF2VCOM IP Digital Alarm Communicator
KDM-R2/C Keypad/Display Unit
LCD-80 Liquid Crystal Display Annunciator
LCD2-80 Liquid Crystal Display Annunciator
LDM-32 Lamp Driver Module
LDM-E32 Lamp Driver Module
LDM-R32 Lamp Driver Module
MRD-1 Manual Releasing Disconnect Assembly
NCA-2/C Network Control Annunciator
NCD Network Control Display
NCM-F Network Communications Module (Fiber)
NCM-W Network Communications Module (Wire)
NCS Network Control Station
NFV-25/50 Notifier FireVoice-25/50
N-ELR Assortment ELR Pack with Mounting Plate
ONYXWorks Graphical Workstation
PRN-7 80-Column Printer
PSE-6/10 Battery Charger/Power Supply
R-120 120 Ohm End-of-Line Resistor
R-2.2K 2.2K End-of-Line Resistor
R-27K 27K End-of-Line Resistor
R-470 470 End-of-Line Resistor
R-47K 47K End-of-Line Resistor
RPT-485F EIA-485 Repeater (Fiber)
RPT-485W EIA-485 Repeater (Wire)
RPT-485WF EIA-485 Repeater (Wire/Fiber)
RM-1 Remote Microphone
RM-1SA Remote Microphone
SCS-8, SCE-8 Smoke Control Station
SCS-8L, SCE-8L Smoke Control Lamp Driver
SLC-IM Signaling Line Control Integration Module
STS-1/STS-200 Security Tamper Switch
TM-4 Transmitter Module
UDACT Universal Digital Alarm Communicator Transmitter
UDACT-2 Universal Digital Alarm Communicator Transmitter

Backboxes, Chassis, Dress Panels, etc.

ABF-1B/C Annunciator Flush Box
ABF-1DB/C Annunciator Flush Box with Door
ABF-2B Annunciator Flush Box
ABF-2DB/C Annunciator Flush Box with Door
ABF-4B Annunciator Flush Box
ABM-16AT Annunciator Blank Module
ABM-32A Annunciator Module Blank
ABS-1TB/C Annunciator Surface Box
ABS-1B/C Annunciator Surface Box
ABS-2B Annunciator Surface Box
ABS-2D/C Annunciator Surface Box
ABS-4D/C Annunciator Surface Box
ABS-8RB Annunciator Backbox for ACM-8R
NFS-LBBR Red Battery Box
NFS-LBB Battery Box
VP-2B 2" Filler Dress Plate

The following equipment is for use with the NFS-320SYS only:
ADP2-640 Dress Panel: NFS-320SYS/E in lower row
ADP-4B Annunciator Dress Panel
BMP-1 Blank Module Plate
BP2-4 Battery Dress Plate

CAB-4 Series Doors (Black unless "R" is added to the P/N. Add "B" to the P/N for blank door)
DR-A4 A-sized door, 1 row of equipment
DR-B4 B-sized door, 2 rows of equipment
DR-C4 C-sized door, 3 rows of equipment
DR-D4 D-sized door, 4 rows of equipment

CAB-4 Series Backboxes (Black unless "R" is added to the P/N.)
SBB-A4 A-sized backbox
SBB-B4 B-sized backbox
SBB-C4 C-sized backbox
SBB-D4 D-sized backbox

CAB-4 Series Trim Rings (Black unless "R" is added to the P/N)
TR-A4 A-sized trim ring
TR-B4 B-sized trim ring
TR-C4 C-sized trim ring
TR-D4 D-sized trim ring

CHS-4L Low-Profile Chassis
CHS-4, CHS-4N Chassis for 4 Option Boards
NFS-320 Chassis for 1st row (included with the CPU-320SYS)
DP-1B Blank Dress Plate
DP-DISP2 Dress Panel: NFS2-640/E in top row
DP-GDIS1 Dress Plate for Row A of the CAB-4 series cabinets
DP-GDIS2 Dress Plate for Rows B-D of the CAB-4 series cabinets
Trim Ring: TR300, TR300-IV

System Sensor Equipment

A2143-00 End of Line Resistor Assembly
EOLR-1 End-of-Line Resistor Assembly

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

NOTE: The products in this list have not received UL 864 9th or 10th Edition certification and may only be used in retrofit applications.

✔ **ACM-16AT** Annunciator Control Module
✔ **ACM-32A** Annunciator Control Module
✔ **ACPS-2406** Auxiliary Charger/Power Supply
✔ **AEM-16AT** Annunciator Expander Module
✔ **AEM-32A** Annunciator Expander Module
✔ **AMG-1** Audio Message Generator
✔ **APS-6R** Auxiliary Power Supply
✔ **BGX-101L** Addressable Manual Pull Station
✔ **CHG-120** Battery Charger
✔ **FCPS-24** Field Charger Power Supply
✔ **IPX-751** Advanced Multi-Sensor Intelligent Detector
✔ **NCA** Network Control Annunciator
✔ **P-40** Keltron Printer
✔ **P40-KITB** Dress plate for Keltron Printer
✔ **PRN-4, PRN-5, PRN-6** 80-Column Printers
✔ **RA400** Remote Annunciator
✔ **RA400Z** Remote Annunciator with diode
✔ **XP5-C** Transponder Control Module
✔ **XP5-M** Transponder Monitor Module
✔ **XPC-8** Transponder Control Module
✔ **XPDP** Transponder Dress Panel
✔ **XPM-8** Transponder Monitor Module
✔ **XPM-8L** Transponder Monitor Module
✔ **XPP-1** Transponder Processor
✔ **XPR-8** Transponder Relay Module

7 System Configuration

The following is the minimum configuration to meet NFPA, UL, and ULC requirements for the categories listed.

Module	Description	CS	Local	AUX	RS	P (PPU)	P(Burg)	REL	P Rec	Process Mana.
CPU-320/CPU-320E	CPU Board w/ display	Y	Y	Y	Y	Y	Y	Y	Y	Y
KDM-R2/C	Keyboard Display Module	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)
NCA-2/C	Network Control Annunciator	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)	Y(1)
KAPS-24 (Only 1 needed per unit) Alternate Construction CPS-24	Power Supply	Y	Y	Y	Y	Y	Y	Y	Y	Y
KAPS-24E (Only 1 needed per unit) Alternate Construction CPS-24	Power Supply	Y	Y	Y	Y	Y	Y	Y	Y	Y
FCPS-24S6	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
FCPS-24S8	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
PSE-6	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
PSE-10	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
ACPS-610 Alternate Construction CPS-24	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
ACPS-610E Alternate Construction CPS-24	Power Supply/Battery Charger	O	O	O	O	O	O	O	O	O
TM-4	Transmitter Module	N	N	Y	Y(2)	Y	O	O	O	O
NCS4-W-ONYX/NCS4-F-ONYX	Network Control Station	O	O	O	O	O	O	O	O	O
NCS5-W-ONYX/NCS5-F-ONYX	Network Control Station	O	O	O	O	O	O	O	O	O
NCM-W/F	Network Control Module	O	O	O	O	O	O	O	O	O
HS-NCM-W/W-2/MF/SF/WMF/ WMF-2/WSF/WSF-2/MFSF	Network Control Module	O	O	O	O	O	O	O	O	O
CGW-MB	CLSS Gateway Main Board	Y(3,8)	N	N	N	N	N	N	N	N
HON-CGW-MBB	CLSS Gateway in Plastic Enclosure	Y(3,8)	N	N	N	O	N	N	N	O
CGW-PT	CLSS POTS Board	Y(3,8)	N	N	N	O	N	N	N	O
CGW-BB	CLSS Dialer Enclosure	Y(7)	O(7)	N	N	N	N	N	N	O(7)
CGW-DACT	CLSS Dialer (CGW-MB with CGW-PT)	Y(3,8)	N	N	N	O	N	N	N	O
CGW-DACT-CH	Chassis for CGW-DACT	O	O	O	O	O	O	O	O	O
HON-CGW-DACT	CLSS Dialer in Plastic Enclosure	Y(3,8)	N	N	N	O	N	N	N	O
CCM-ATT-HON	AT&T Cellular Module	O	O	N	N	N	N	N	N	O
CCM-VZ-HON	Verizon Cellular Module	O	O	N	N	N	N	N	N	O
HWF2A-COM	IP Digital Alarm Communicator	O(3)	N(3)	N	O	O(3)	N	N	N	N
HWF2V-COM	IP Digital Alarm Communicator	O(3)	N(3)	N	O	O(3)	N	N	N	N

Table 12 System Configuration (1 of 3)

Module	Description	CS	Local	AUX	RS	P (PPU)	P(Burg)	REL	P Rec	Process Mana.
CAB-A4	Enclosure	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)
CAB-B4	Enclosure	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)
CAB-C4	Enclosure	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)
CAB-D4	Enclosure	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)	Y(4) (5)
DP-1B	Blank Panel	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)
ADP-4B	Dress Panel	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)
BMP-1	Blank Module	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)
BP-4	Battery Plate	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)
BP2-4	Battery Plate	Y(5)	Y(5)	Y(5)	Y(5)	Y(5)	Y(5)	Y(5)	Y(5)	Y(5)
DP-DISP2	Dress Panel	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)	O(5) (6)
FZM-1	Monitor Module	O	O	O	O	O	O	O	O	O
FMM-1	Monitor Module	O	O	O	O	O	O	O	O	O
FMM-101	Monitor Module	O	O	O	O	O	O	O	O	O
FDM-1	Dual Monitor Module	O	O	O	O	O	O	O	O	O
FDRM-1	Dual Monitor/Dual Relay	O	O	O	O	O	O	O	O	O
FTM-1	Control Module	O	O	O	O	O	O	O	O	O
FCM-1	Control Module	O	O	O	O	O	O	O	O	O
FCM-1-REL	Releasing Module	O	O	O	O	O	O	O	O	O
FCM-1-RELA	Releasing Module	O	O	O	O	O	O	O	O	O
FRM-1	Relay Module	O	O	O	O	O	O	O	O	O
XPM-8L	Transponder Monitor Module	O	O	O	O	O	X	O	O	O
PRN-7	Printer	O	O	O	O	O	O	O	O	O
DPI-232	Panel Interface	O	O	O	O	O	O	O	O	O
SCS-8	Smoke Control Station	O	O	O	O	O	O	O	O	O
SCS-8L	Smoke Control Lamp Driver	O	O	O	O	O	O	O	O	O
SCE-8	Smoke Control Expander	O	O	O	O	O	O	O	O	O
SCE-8L	Smoke Control Lamp Driver Expander	O	O	O	O	O	O	O	O	O
IPDACT	IP Digital Alarm Communicator	O	N	N	O	N	N	N	N	N
UDACT-2	Digital Alarm Communicator	Y	N	N	O	O	N	N	N	N
ACM-16AT	Annunciator Control Module	O	O	O	O	O	O	O	O	O
ACM-32A	Annunciator Control Module	O	O	O	O	O	O	O	O	O
AEM-16AT	Annunciator Expander Module	O	O	O	O	O	O	O	O	O
AEM-32A	Annunciator Expander Module	O	O	O	O	O	O	O	O	O
AFM-16A	Annunciator Fixed Module	O	O	O	O	O	O	O	O	O
AFM-16AT	Annunciator Fixed Module	O	O	O	O	O	O	O	O	O
AFM-32A	Annunciator Fixed Module	O	O	O	O	O	O	O	O	O
AKS-1B	Annunciator Key Switch	O	O	O	O	O	O	O	O	O
RKS-S	Remote Security Keyswitch	O	O	O	O	O	Y	O	O	O
ACM-24AT	Annunciator Control Module	O	O	O	O	O	O	O	O	O
AEM-24AT	Annunciator Expander Module	O	O	O	O	O	O	O	O	O
ACM-48A	Annunciator Control Module	O	O	O	O	O	O	O	O	O
AEM-48A	Annunciator Expander Module	O	O	O	O	O	O	O	O	O
FDU-80	Annunciator	O	O	O	O	O	O	O	O	O
LCD-80	Annunciator	O	O	O	O	O	O	O	O	O
LCD-80TM	Annunciator	O	O	O	O	O	O	O	O	O
LCD2-80	Annunciator	O	O	O	O	O	O	O	O	O
RPT-W	Repeater Wire	O	O	O	O	O	O	O	O	O
RPT-F	Repeater Fiber	O	O	O	O	O	O	O	O	O
RPT-485W	Repeater Wire	O	O	O	O	O	O	O	O	O
RPT-485FW	Repeater Wire/Fiber	O	O	O	O	O	O	O	O	O
NBG-12LX	Addressable Manual Pull Station	O	O	O	O	O	O	O	O	O
NBG-12LRA	Agent Release Abort Station	O	O	O	O	O	O	O	O	O
FCO-851	IntelliQuad PLUS Multi-Criteria Fire/CO Detector	O	O	O	O	O	O	O	O	O
FSA-8000	Intelligent Aspiration Detector	O	O	O	O	O	O	O	O	O
FSA-20000P	Intelligent Aspiration Detector	O	O	O	O	O	O	O	O	O

Table 12 System Configuration (2 of 3)

Module	Description	CS	Local	AUX	RS	P (PPU)	P(Burg)	REL	P Rec	Process Mana.

KEY:
Y - Yes **N** - No **O** - Optional
NOTES:

1. The system must contain either one of the two displays.
2. The system must contain at least one of the units.
3. Also required when devices for Carbon Monoxide signaling are employed.
4. Each NFS-320SYS/NFS-320SYSE must include at least one enclosure.
5. This equipment for use with the NFS-320SYS/NFS-320SYSE only.
6. Various dress panels/dead fronts/ trim rings must be employed so that internal components and high voltage is not accessible
7. Required if utilizing a central station other than supported by CGW-MB

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

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

Table 12 System Configuration (3 of 3)

8 System Power/Size

Power	Current	Max. AH Capacity	Derating Factor	Max. Standby Current	Max. Alarm Current	Max. Standby Time	Max. Alarm Duration
Primary (Power Supply)	5A (CPS-24 Power Supply) or 2.5A (CPS-24E Power Supply)	N/A	N/A	891 mA (CPS-24) or 498 mA (CPS-24E)	2.4 A (CPS-24) or 1.46 A (CPS-24E)	N/A	N/A
Secondary (backup)	7.4A	200AH	26 AH batteries: UL=1.2, ULC=1.5 55 AH batteries: UL=1.2, ULC=1.8 100 AH batteries: UL=1.2, ULC=2.5 200 AH batteries: UL=1.2, ULC=2.5	4.4A (For 26AH batteries: max standby current cannot exceed 0.65A)	7.4A (max alarm current cannot exceed 6.75A)	24 hours	5 minutes standard, 15 minutes for emergency voice/ alarm communications systems.

Table 13 System Power

Accessories/Subassemblies/Networked panels	Maximum System Capacity
Monitor and Control Modules	159
Detectors	159
Initiating Device Circuits (SLC)	1
NFS-320/NFS-320SYS 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 14 System Size

9 Operating Instructions

Frame and mount the NFS-320 Operating Instructions, p/n 52748, adjacent to the control panel. See back of this manual.

NFS-320/E/C and NFS-320SYS/E OPERATING INSTRUCTIONS

Section 1 Operating Information

Normal Standby Operation.

1. Green POWER indicator lit steadily.
2. Red FIRE ALARM indicator off.
3. Yellow TROUBLE indicators off.

Alarm Condition.

1. Red FIRE ALARM indicator lit.
2. Alarm signaling devices activated.
3. Option module (remote station or supplementary alarm relay) activated.
4. Alarm information visible on LCD display.

Alarm Reset. After locating and correcting the alarm condition, reset the control panel by pressing the SYSTEM RESET switch. If both Fire and MNS conditions are present on the panel, SYSTEM RESET must be pressed twice.

Trouble Conditions. Activation of trouble signal under normal operation indicates a condition that requires **immediate** attention. Contact your local service representative. Silence the audible signal by pressing the ACKNOWLEDGE/SCROLL DISPLAY switch. The trouble indicator will remain illuminated.

Section 2 Switch Functions

Acknowledge/Scroll Display. This silences the piezo sounder and changes all flashing conditions to steady. Only one press is necessary, regardless of the number of new alarms, troubles, or supervisory signals. If the piezo is silenced, it sends an acknowledge message to the printer and history file. Acknowledge also automatically sends a special command to silence piezo sounders on the FDU-80 and ACS Annunciators.

Signal Silence. SIGNAL SILENCE performs all the functions of ACKNOWLEDGE. In addition, if an alarm exists, it turns off all silenceable circuits and illuminates the SIGNALS SILENCED indicator. It also sends a SIGNALS SILENCED message to the LCD display, printer, and history file. A subsequent alarm will then resound the system.

Notes:

4. This unit is programmed to inhibit signal silence for ____seconds.
5. This unit is programmed to automatically silence alarm signal after _____ minutes.

Drill (Alarm Signal On for Canadian applications). The NFS-320/E/C and NFS-320SYS/E/C waits for the Drill/Alarm Signal On switch to be pressed for 2 seconds (to prevent accidental activations), then turns on all silenceable circuits (all FCM-1 modules/bell circuits that are programmed silenceable), and turns off the Signals Silenced LED. It sends a Drill Activated message to the LCD display, FDU-80, printer, and History file.

System Reset. Resets the control panel in standalone applications. Resets panel when enabled in network applications.

Lamp Test. Press and hold the switch to lamp-test the LEDs.

Section 3 LED Indicators

Controls Active. Green LED which illuminates when the panel assumes control of local operation as primary display. Turns off automatically when another panel assumes control of local operation.

Power. Green LED which illuminates when primary power is applied to the control panel.

Pre-Discharge. Red LED lights when any of the releasing zones have been activated, but have not yet discharged a releasing agent; turns off when no releasing zones are in the pre-discharge state.

Discharge. Red LED lights when any of the releasing zones are active and in the process of discharging a releasing agent; turns off when no releasing zones are discharging a releasing agent.

Abort Active. Yellow LED lights when an abort switch has been activated; turns off when an abort switch has been pressed and its timer is still counting down. Activation of a Manual Release Switch will override Pre-discharge Delay and override an active Abort Release Switch, resulting in an immediate agent release.

Fire Alarm. Red LED that flashes when one or more alarms occur. Illuminates steadily after alarms are acknowledged; turns off when SYSTEM RESET is pressed after alarm clears.

Pre-Alarm. Red LED that flashes when a pre-alarm threshold is reached. The LCD display indicates if it is an ALERT or ACTION pre-alarm.

Security. Blue LED that illuminates for a security alarm. LED turns off after the alarm clears and SYSTEM RESET is pressed.

Supervisory. Yellow LED that flashes when a Supervisory, Hazard Alert, or Tamper condition occurs, such as a sprinkler valve tamper condition. The LED turns off when the Supervisory condition clears. The MNS, Hazard Alert, or Tamper indication will latch until reset.

System Trouble. Yellow LED that flashes when one or more troubles occur. Goes on steadily when ACKNOWLEDGE is pressed, and turns off when all trouble conditions are cleared. Will illuminate if the microprocessor watchdog timer fails (CPU FAIL).

Signals Silenced. Yellow LED that illuminates after SIGNALS SILENCED has been pressed. Turns off when DRILL or SYSTEM RESET is pressed.

Point Disabled. Yellow LED that illuminates when one or more points are disabled. The LCD will indicate which points have been disabled. Turns off when points are re-enabled.

Section 4 Audible Tone Indicator

Alarm. A continuous sounding tone.

Trouble/Security. A slow, pulsating tone signal having an equal on and off time.

Supervisory. A fast, pulsating tone signal having an equal on and off time.

Section 5 Periodic Testing and Maintenance

To ensure proper and reliable operation, system inspection and testing should be scheduled as required by the Authority Having Jurisdiction, or as required by NFPA 72 or local fire codes. A qualified Service Representative should perform testing.

Before Testing: Notify fire department and/or central alarm receiving station if alarm condition is transmitted. Notify facility personnel of the test so alarm sounding devices are ignored during the test period.

After Testing: Notify all fire, central station, and/or building personnel when testing is complete.

Section 6 Local Service Representative:

NAME: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

This sheet must be framed and mounted adjacent to the control panel.

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