

---

**Fire Alarm Control Panel**  
**NFS2-640/E**  
**Operations Manual**

Document 52743	Rev: <b>C</b>
4/25/2008	
P/N 52743-C	ECN 08-365

# Fire Alarm System Limitations

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

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

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guides for Proper Use of System Smoke Detectors, which are made available at no charge to all installing dealers. These documents can be found at <http://www.systemsensor.com/html/applicat.html>. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

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

**Particles of combustion or "smoke"** from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

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

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

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

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

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

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

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

**Telephone lines** needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

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

Limit-C1-2-2007

# Installation Precautions

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

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

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

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

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

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

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

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

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

**This system contains static-sensitive components.**

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

**Follow the instructions** in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

Precau-D1-9-2005

## FCC Warning

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

## Canadian Requirements

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

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

HARSH™, NIS™, Notifier Integrated Systems™, and NOTI-FIRE-NET™ are all trademarks; and Acclimate® Plus, FlashScan®, NION®, NOTIFIER®, ONYX®, ONYXWorks®, UniNet®, VeriFire®, and VIEW® are all registered trademarks of Honeywell International Inc. Echelon® is a registered trademark and LonWorks™ is a trademark of Echelon Corporation. ARCNET® is a registered trademark of Datapoint Corporation. Microsoft® and Windows® are registered trademarks of the Microsoft Corporation. LEXAN® is a registered trademark of GE Plastics, a subsidiary of General Electric Company.

©Thursday, August 28, 2008 by Honeywell International Inc. All rights reserved. Unauthorized use of this document is strictly prohibited.

## Software Downloads

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

## Documentation Feedback

Your feedback helps us keep our documentation up-to-date and accurate. If you have any comments or suggestions about our online Help or printed manuals, you can email us.

Please include the following information:

- Product name and version number (if applicable)
- Printed manual or online Help
- Topic Title (for online Help)
- Page number (for printed manual)
- Brief description of content you think should be improved or corrected
- Your suggestion for how to correct/improve documentation

Send email messages to:

**FireSystems.TechPubs@honeywell.com**

Please note this email address is for documentation feedback only. If you have any technical issues, please contact Technical Services.



# Table of Contents

<b>Section 1: General Information.....</b>	<b>9</b>
1.1: UL 864 Compliance.....	9
1.2: About This Manual.....	9
1.2.1: Cautions and Warnings.....	9
1.2.2: Typographic Conventions.....	9
1.2.3: Supplemental Information.....	10
1.2.4: Shortcuts to Operating Functions.....	11
1.3: Introduction to the Control Panel.....	11
<b>Section 2: Use of the Controls.....</b>	<b>13</b>
2.1: Introduction.....	13
2.2: System Status Indicator LEDs.....	13
2.3: Control Keys.....	14
2.3.1: Acknowledge/Scroll Display.....	14
2.3.2: Signal Silence.....	15
2.3.3: System Reset.....	15
2.3.4: Drill.....	15
2.3.5: Lamp Test.....	17
2.4: Programming Keypad.....	17
<b>Section 3: Operation of the Control Panel.....</b>	<b>19</b>
3.1: Overview.....	19
3.2: Normal Mode of Operation.....	19
3.3: Fire Alarm Mode of Operation.....	20
3.3.1: How the Control Panel Indicates a Fire Alarm.....	20
3.3.2: How to Respond to a Fire Alarm.....	20
3.3.3: Interpreting Fire Alarm Type Codes.....	21
3.4: System Trouble Mode of Operation.....	22
3.4.1: How the Control Panel Indicates a System Trouble.....	22
3.4.2: How to Respond to a System Trouble.....	23
3.5: Security Alarm Mode of Operation.....	24
3.5.1: How the Control Panel Indicates a Security Alarm.....	24
3.5.2: How to Respond to a Security Alarm.....	24
3.5.3: Interpreting Security Type Codes.....	25
3.6: Active Supervisory Signal Mode of Operation.....	25
3.6.1: How the Control Panel Indicates an Active Supervisory.....	25
3.6.2: How to Respond to an Active Supervisory.....	26
3.6.3: How to Interpret Supervisory Type Codes.....	26
3.7: Pre-Alarm Warning Mode of Operation.....	27
3.7.1: How the Control Panel Indicates a Pre-Alarm Warning.....	27
3.7.2: How to Respond to a Pre-Alarm Warning.....	27
3.8: Disabled Points Mode of Operation.....	28
3.9: Non-Alarm Mode of Operation.....	29
3.9.1: Purpose of Non-Alarm Points.....	29
3.9.2: How the Control Panel Indicates an Active Fire Control.....	29
3.9.3: How the Control Panel Indicates an Active Non-Fire Point.....	30
3.10: Active Trouble Monitor Mode of Operation.....	30
3.10.1: How the Control Panel Indicates an Active Trouble Monitor.....	30
3.10.2: How to Respond to an Active Trouble Monitor.....	30
3.11: Output Circuit Trouble Mode of Operation.....	31
3.11.1: Overview.....	31
3.11.2: How the Control Panel Indicates a NAC Trouble.....	32
3.11.3: How the Control Panel Indicates a Control/Relay Trouble.....	32
3.11.4: How to Respond to a NAC or Control/Relay Trouble.....	32
3.12: Operation of Special System Timers.....	33

3.12.1: What are System Timers?	33
3.12.2: How to View System Timer Selections	33
3.12.3: How System Timers Work	33
3.13: Waterflow Circuit Operation	34
3.14: Style 6 and Style 7 Operation	34
<b>Section 4: Read Status Operation</b>	<b>35</b>
4.1: Introduction	35
4.2: What is Read Status?	35
4.2.1: Quick Reference Key Sequences	35
4.3: Entering Read Status	35
4.4: Viewing and Printing a Read Status	36
4.4.1: How to View Read Status of Devices, Zones, & System Settings	36
4.4.2: How to View Read Status for Event and Alarm History	44
4.4.3: How to Print Points, Event and Alarm History	45
4.4.4: How to View and Print Hidden Event and Alarm History	47
<b>Appendix A: Special Zone Operation</b>	<b>49</b>
A.1: Overview	49
A.2: Releasing Zones (R0-R9)	49
A.2.1: Purpose of Releasing Zones	49
A.2.2: How to View Releasing Zone Selections	50
A.2.3: How Releasing Zones Operate	50
A.3: Time, Date, and Holiday Functions	52
A.3.1: Overview	52
A.3.2: How to View Time Control Selections	52
A.3.3: How to View Holiday Function Selections	53
A.3.4: How Time Control and Holiday Functions Work	53
A.4: NAC Coding	54
A.4.1: Overview of Coding	54
A.4.2: How to View Coding (F8) Selections	54
A.4.3: How to Respond to an Alarm with Coding	55
A.5: Presignal and Positive Alarm Sequence (PAS) Operation	55
A.5.1: Overview	55
A.5.2: What is Presignal and PAS?	55
A.5.3: How to View Presignal and PAS Selections	56
A.5.4: How to Respond to an Alarm with Presignal Delay Timer (no PAS)	56
A.5.5: How to Respond to an Alarm with Presignal Delay Timer (PAS selected)	57
<b>Appendix B: Intelligent Detector Functions</b>	<b>59</b>
<b>Appendix C: Remote Terminal Access</b>	<b>61</b>
C.1: General Description	61
C.2: Operating Modes	61
C.2.1: Local Terminal Mode (LocT)	61
C.2.2: Local Monitor Mode (LocM)	62
C.2.3: Remote Terminal Mode (RemT)	62
C.3: Using the CRT-2 for Read Status	63
C.3.1: Overview	63
C.3.2: Accessing Read Status Options	63
C.3.3: Read Point	64
C.3.4: Display Devices in Alarm or Trouble	64
C.3.5: Display All Programmed Points	65
C.3.6: Step-through History	65
C.3.7: View All History	65
C.3.8: Step-through Alarm History	65
C.3.9: View All Alarm History	65
C.4: Using the CRT-2 for Alter Status	66

C.4.1: Overview .....	66
C.4.2: Accessing Alter Status Options .....	66
C.4.3: Enable or Disable Detectors, Modules or Zones .....	67
C.4.4: Change Alarm and Pre-Alarm Levels.....	67
C.4.5: Clear Verification Counter.....	68
C.4.6: Clear the Entire History Buffer.....	68
C.4.7: Set the Pre-Alarm for Alert or Action.....	68
<b>Appendix D: Point and System Troubles Lists .....</b>	<b>69</b>
D.1: Point (Device) Troubles .....	69
D.2: System Troubles.....	70
<b>Index.....</b>	<b>73</b>



# Section 1: General Information

## 1.1 UL 864 Compliance

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 9th Edition.

## 1.2 About This Manual

### 1.2.1 Cautions and Warnings

This manual contains cautions and warnings to alert the reader as follows:

**CAUTION:**


Information about procedures that could cause programming errors, runtime errors, or equipment damage.

**WARNING:**

Indicates information about procedures that could cause irreversible damage to the control panel, irreversible loss of programming data or personal injury.

### 1.2.2 Typographic Conventions

This manual uses the following typographic conventions as listed in below:

When you see	Specifies	Example
text in small caps	the text as it appears in the LCD display or on the control panel	MARCH TIME is a selection that appears in the LCD display; or Press the ENTER key
text in quotes	a reference to a section or a LCD menu screen	"Read Status"; specifies the Read Status section or menu screen
bold text	In body text, a number or character that you enter	Press <b>1</b> ; means to press the number "1" on the keypad
italic text	a specific document	<i>NFS2-640 Installation Manual</i>
a graphic of the key	In a graphic, a key as it appears on the control panel	Press  means to press the Escape key

**Table 1.1 Typographic Conventions in this Manual**



**NOTE:** In this manual, the term NFS2-640 is used to refer to the NFS2-640 and NFS2-640E unless otherwise noted.

### 1.2.3 Supplemental Information

The table below provides a list of documents referenced in this manual, as well as documents for selected other compatible devices. The document series chart (DOC-NOT) provides the current document revision. A copy of this document is included in every shipment.

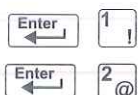
<b>Compatible Conventional Devices (Non-addressable)</b>	<b>Document Number</b>
Device Compatibility Document	15378
<b>Fire Alarm Control Panel (FACP) and Main Power Supply Installation</b>	<b>Document Number</b>
NFS2-640 Installation, Operations, and Programming Manuals	52741, 52742, 52743
DVC and DAA Digital Audio Series Manual	52411
DAA Digital Audio Amplifier Product Installation Document	52410
SLC Wiring Manual	51253
Note: For individual SLC Devices, refer to the <i>SLC Wiring Manual</i>	
<b>Off-line Programming Utility</b>	<b>Document Number</b>
VeriFire® Tools CD help file	VERIFIRE-TCD
VeriFire Medium Systems Help File	VERIFIRE-CD
<b>Cabinets &amp; Chassis</b>	<b>Document Number</b>
CAB-3/CAB-4 Series Cabinet Installation Document	15330
Battery/Peripherals Enclosure Installation Document	50295
<b>Power Supplies, Auxiliary Power Supplies &amp; Battery Chargers</b>	<b>Document Number</b>
ACPS-610/E Instruction Manual	53018
ACPS-2406 Installation Manual	51304
APS-6R Instruction Manual	50702
CHG-120 Battery Charger Manual	50641
FCPS-24 Field Charger/Power Supply Manual	50059
FCPS-24S6/8 Field Charger/Power Supply Manual (Sync)	51977
<b>Networking</b>	<b>Document Number</b>
NotiFire•Net Manual, Network Version 5.0 & Higher	51584
NCM-W/F Installation Document	51533
NCS Network Control Station Manual, Network Version 5.0 & Higher	51658
Onyxworks Workstation	52305, 52306, 52307
<b>System Components</b>	<b>Document Number</b>
Annunciator Control System Manual	15842
Annunciator Fixed Module Manual	15048
AFM-16A Annunciator Fixed Module Manual	15207
ACM-8R Annunciator Control Module Manual	15342
FDU-80 Remote Annunciator Manual	51264
LDM Series Lamp Driver Annunciator Manual	15885
NCA-2 Network Control Annunciator Manual	52482
SCS Smoke Control Manual (Smoke and HVAC Control Station)	15712
RPT-485W/RPT-485WF EIA-485 Annunciator Loop Repeater Manual	15640
DPI-232 Direct Panel Interface Manual	51499
TM-4 Installation Document (Reverse Polarity Transmitter)	51490
UDACT Manual (Universal Digital Alarm Communicator/Transmitter)	50050
ACT-2 Installation Document	51118

**Table 1.2 Supplemental Documentation (1 of 2)**

FireVoice 25/50 & FireVoice 25/50ZS Manual	52290
RM-1 Series Remote Microphone Installation Document	51138
RA400Z Remote LED Annunciator Installation Document	I56-508
XP10-M Installation Document	I56-1803
XP6-C Installation Document	I56-1805
XP6-MA Installation Document	I56-1806
XP6-R Installation Document	I56-1804
XPIQ Audio Transponder Manual	51013

Table 1.2 Supplemental Documentation (2 of 2)

## 1.2.4 Shortcuts to Operating Functions



To the left of each program function, you'll find a keypad shortcut, which contains a series of keypad entries required to access the program function. All shortcuts start with the control panel in normal operation.

For example, the keypad shortcut to the left, shows how to enter the Read Status function with the control panel in normal operation, as well as how to exit the function.

## 1.3 Introduction to the Control Panel

The NFS2-640 is a modular, intelligent Fire Alarm Control Panel (FACP) with features suitable for most applications. Following is a list of operating features available.

- Alarm Verification selection, to reduce unwanted alarms, for intelligent detector points
- Positive Alarm Sequence (PAS) and Presignal per NFPA 72
- Silence Inhibit timer and Auto Silence timer for Notification Appliance Circuits (NACs)
- March time/temporal code for Notification Appliance Circuits (NACs)
- Programmable Signal Silence, System Reset, and Alarm Activate functions through monitor modules
- Automatic time-of-day and day-of-week control functions, with holiday option
- Intelligent Sensing with nine field-adjustable Pre-Alarm levels with programmable Control-By-Event (CBE)
- Operate automatic smoke or heat detector sounder base on action Pre-Alarm level, with general evacuation on alarm level
- Security alarm point option with separate audible signal code
- Centralized voice paging and audible alarm signaling options
- Programmable Control-By-Event control of outputs from individual alarm or supervisory addressable devices
- Networks with other FACP's and equipment for large applications.



## Section 2: Use of the Controls

### 2.1 Introduction

Listing of the controls and indicators and where to find information on their use:

Operating Components	Covered in
Twelve System Status Indicator LEDs	"System Status Indicator LEDs" on page 13
Five Control Keys	"Control Keys" on page 14
Programming Keypad	"Programming Keypad" on page 17

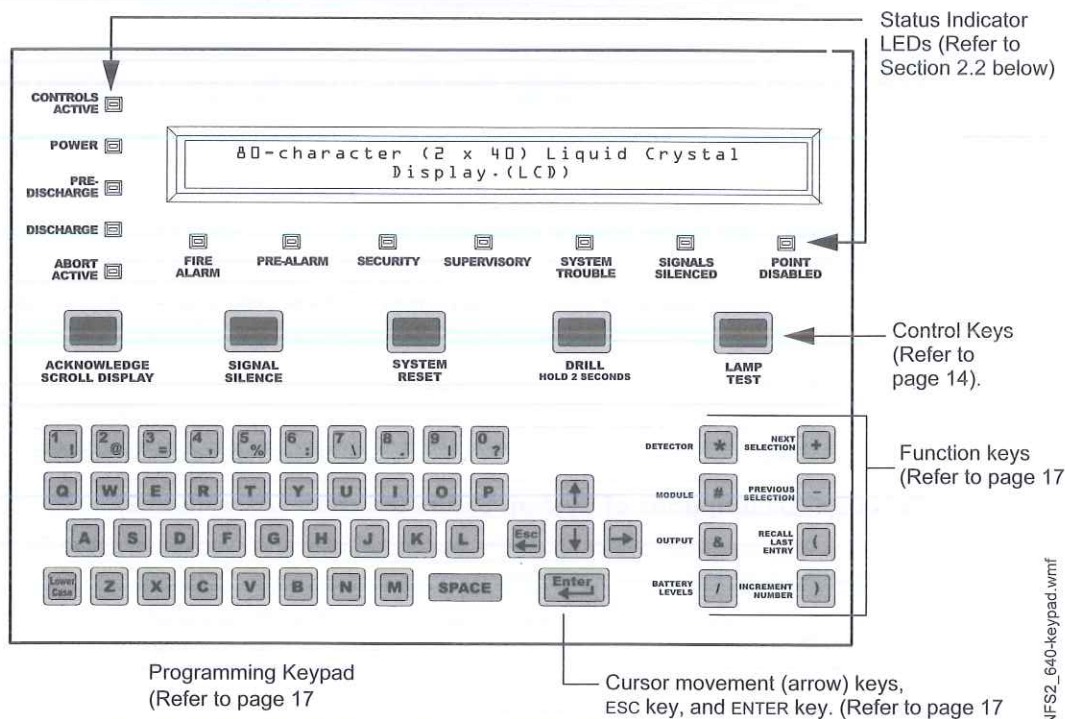


Figure 2.1 NFS2-640 Control Panel Keys and Indicators

### 2.2 System Status Indicator LEDs

The control panel contains 12 labeled LEDs described in Table 2.1.

Indicator	Color	When Active	To Turn Off
CONTROLS ACTIVE	Green	Lights when the panel assumes control of local operation as primary display.	Turns off automatically when another panel assumes control of local operation.
POWER	Green	Lights when the proper primary AC power is applied. Remains lit while power is applied.	Always lit with AC power applied.

Table 2.1 Descriptions of System Status Indicator LEDs (1 of 2)

Indicator	Color	When Active	To Turn Off
PRE-DISCHARGE	Red	Lights when any of the releasing zones have been activated, but have not yet discharged a releasing agent.	Turns off automatically when no releasing zones are in the pre-discharge state.
DISCHARGE	Red	Lights when any of the releasing zones are active and in the process of discharging a releasing agent.	Turns off automatically when no releasing zones are discharging a releasing agent.
ABORT ACTIVE	Yellow	Lights when an abort switch has been activated.*	Turns off automatically when an abort switch has been pressed and its timer is still counting down.
FIRE ALARM	Red	Flashes when a non-acknowledged fire alarm exists. Lights steadily after you acknowledge the fire alarm.	Clear the alarm condition and reset the system.
PRE-ALARM	Red	Flashes when a non-acknowledged fire Pre-Alarm exists. Lights steadily after you acknowledge the Pre-Alarm.	Clear the pre-alarm condition. (An Action Pre-Alarm requires a system reset.)
SECURITY	Blue	Flashes when a non-acknowledged Security alarm exists. Lights steadily after you acknowledge the alarm.	Clear the Security alarm condition and reset the system.
SUPERVISORY	Yellow	Flashes when a non-acknowledged Supervisory condition exists. Lights steadily after you acknowledge the event.	Clear the condition (Supervisory inputs require a system reset if they are latching. Refer to Table 3.3 page 26 for latching information.).
SYSTEM TROUBLE	Yellow	Flashes when a non-acknowledged system trouble exists. Lights steadily after you acknowledge the trouble.	Clear the trouble condition.
SIGNALS SILENCED	Yellow	Lights steadily after a fire alarm condition occurs and after you press SIGNAL SILENCE to silence all outputs. Flashes to indicate that some silenceable outputs are on and some are off.	Press SYSTEM RESET. DRILL will also turn off the LED.
POINT DISABLED	Yellow	Lights when one or more system devices are disabled.	Enable the device or remove the disabled device from the system program.

**Table 2.1 Descriptions of System Status Indicator LEDs (2 of 2)**

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

## 2.3 Control Keys

The control panel provides five Control Keys as described below:

### 2.3.1 Acknowledge/Scroll Display

Use the ACKNOWLEDGE/SCROLL DISPLAY key to respond to new alarm or trouble signals. When pressed, the control panel does the following:

- Silences the panel sounder
- Changes all active LED indicators from flashing to steady
- Sends an Acknowledge message to the History buffer and installed printers, CRT-2 terminals, and FDU-80 annunciators
- Sends a signal to silence the sounders on the FDU-80 and ACS annunciators

You can also press this key to display multiple alarms or troubles. If more than one alarm or trouble exists, the control panel displays the next alarm or trouble for 3 seconds (or until you press the ACKNOWLEDGE/SCROLL DISPLAY key), then displays the next alarm or trouble.



---

**NOTE:** If Local Control is set to "1" (No Control), the FACP will not respond to ACKNOWLEDGE, and the piezo will not sound.

---

### 2.3.2 Signal Silence

Use the SIGNAL SILENCE key to silence the panel sounder and turn off all audio and visual devices connected to Notification Appliance Circuits. When pressed, the control panel does the following:

- Turns off the panel sounder
- Turns off all silenceable output circuits
- Lights the SIGNALS SILENCED LED
- Sends a SIGNALS SILENCED message to the History buffer and installed printers, CRT-2 terminals, and FDU-80 annunciators

#### Partial Signal Silence

When some active outputs are silenced and others remain constant, the SIGNALS SILENCED LED will flash.



---

**NOTE:** If Local Control is set to "1" (No Control) or "2" (Partial Control), the FACP will not respond to SIGNAL SILENCE.

---

### 2.3.3 System Reset

Use the SYSTEM RESET key to reset the control panel. When pressed, the control panel does the following:

- Clears ALL active inputs
- Interrupts resettable power
- Sends a "System Reset" message to the History buffer, and installed printers, CRT-2 terminals, and FDU-80 annunciators
- Decouples from Noti•Fire•Net, if connected, for 60 seconds to allow Cooperative Control By Event (CCBE) to clear.

If any alarm or trouble exists after you press the SYSTEM RESET key, all NACs, control outputs, and panel audio and visual indicators will reactivate.



---

**NOTE:** Trouble conditions will not clear and re-report upon reset.

---



---

**NOTE:** If Local Control is set to "1" (No Control), the FACP will not respond to SYSTEM RESET.

---

### 2.3.4 Drill

Use the DRILL key to manually activate all silenceable outputs and Notification Appliance Circuits. To prevent accidental activation, you must press the DRILL key for 2 seconds. When pressed, the control panel does the following:

- Turns on all silenceable NACs

- Turns off the SIGNALS SILENCED LED
- Sends a Manual Evacuate message to the History buffer and installed printers, CRT-2 terminals, and FDU-80 annunciators



**NOTE:** If Local Control is set to "1" (No Control) or "2" (Partial Control), the FACP will not respond to DRILL.

### 2.3.5 Lamp Test

Use the LAMP TEST key to test the control panel LEDs and the panel sounder. When pressed and held, the control panel does the following:

- Lights all control panel LEDs
- Turns on the panel sounder
- Lights all segments of the LCD display. When the LAMP TEST key is held for longer than five seconds, the LCD will display the Software Revisions.

## 2.4 Programming Keypad

The programming keypad includes:

- Function keys: DETECTOR, MODULE, OUTPUT, BATTERY LEVELS, NEXT SELECTION, PREVIOUS SELECTION, RECALL LAST ENTRY, and INCREMENT NUMBER
- ENTER key
- Cursor movement keys: ESC/LEFT ARROW key, UP key, RIGHT key, DOWN key
- Alphabetic and numeric keys, with LOWER CASE selection key



Shown below is the Programming Keypad, with descriptions for the keys.

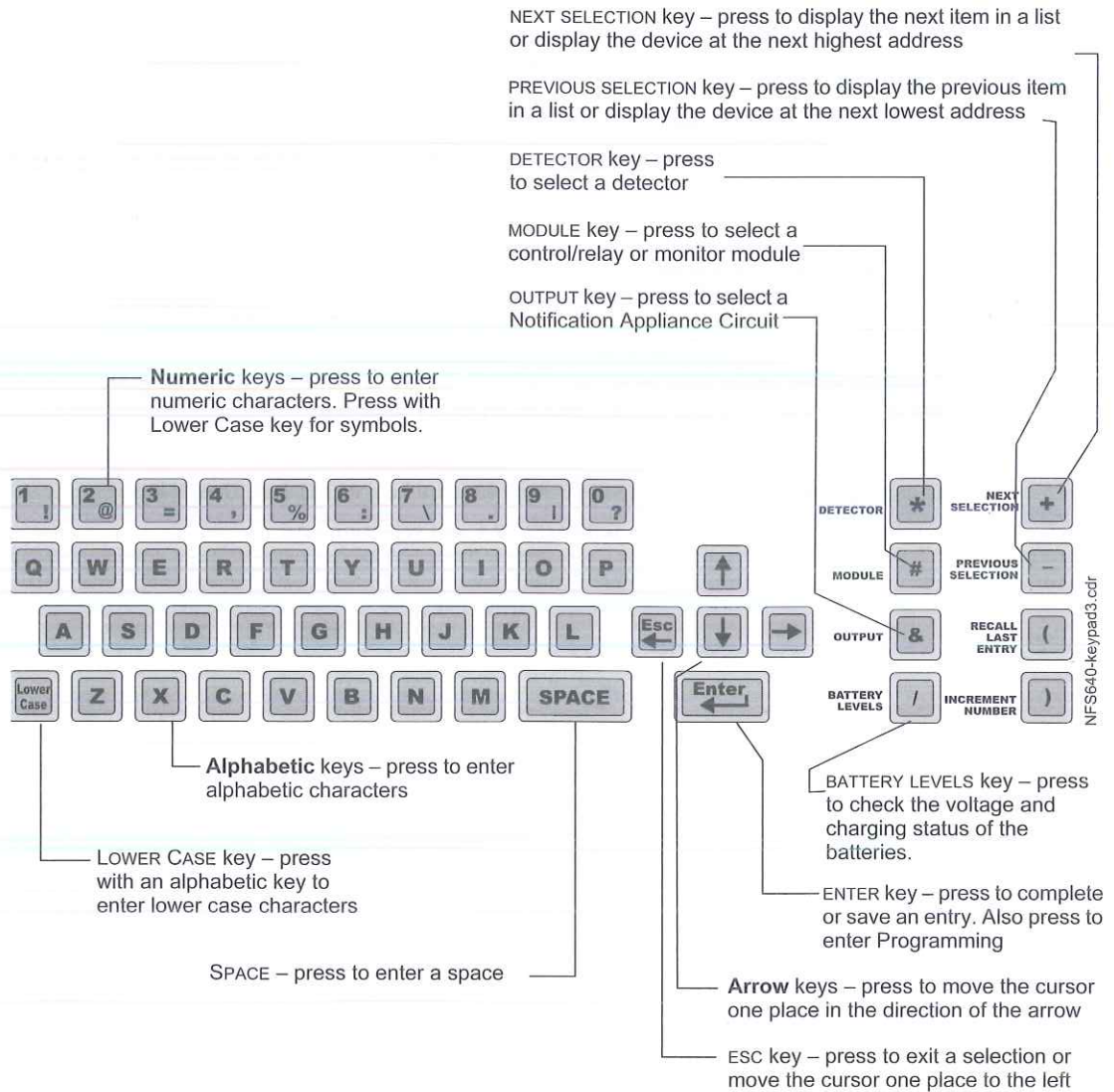


Figure 2.2 Programming Keypad



## Section 3: Operation of the Control Panel

### 3.1 Overview

This section contains instructions for operating the control panel. Listed below are the topics detailed in this section:

Section	Refer to Page
3.2, "Normal Mode of Operation"	page 19
3.3, "Fire Alarm Mode of Operation"	page 20
3.4, "System Trouble Mode of Operation"	page 22
3.5, "Security Alarm Mode of Operation"	page 24
3.6, "Active Supervisory Signal Mode of Operation"	page 25
3.7, "Pre-Alarm Warning Mode of Operation"	page 27
3.8, "Disabled Points Mode of Operation"	page 28
3.9, "Non-Alarm Mode of Operation"	page 29
3.10, "Active Trouble Monitor Mode of Operation"	page 30
3.11, "Output Circuit Trouble Mode of Operation"	page 31
3.12, "Operation of Special System Timers"	page 33
3.13, "Waterflow Circuit Operation"	page 34
3.14, "Style 6 and Style 7 Operation"	page 34

This manual also contains information on operating the control panel in the appendixes, listed as follows:

- Appendix A, "Special Zone Operation", on page 49
- Appendix B, "Intelligent Detector Functions", on page 59
- Appendix C, "Remote Terminal Access", on page 61
- Appendix D, "Point and System Troubles Lists", on page 69

**WARNING:**

When used for CO<sub>2</sub> releasing applications, observe proper precautions as stated in NFPA 12. Do not enter the protected space unless physical lockout and other safety procedures are fully completed. Do not use software disable functions in the panel as lockout.

### 3.2 Normal Mode of Operation

The system operates in Normal mode when no alarms or troubles exist. In Normal mode, the control panel displays a System Normal message as follows

SYSTEM NORMAL	01:56P 041508 Sat
---------------	-------------------

Figure 3.1 Sample System Normal Message

In Normal mode, the control panel does the following functions at regular intervals:

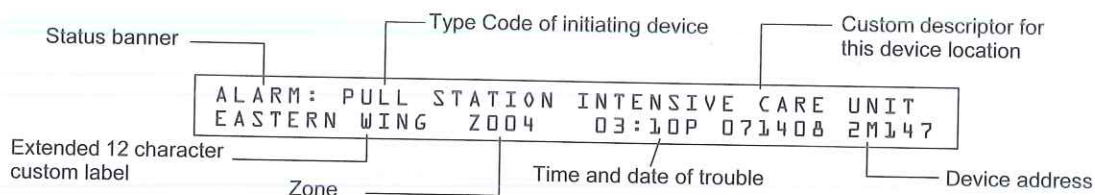
- Polls all SLC devices and the four NACs to check for valid replies, alarms, troubles, circuit integrity, supervisory signals, etc.
- Checks power supply troubles and batteries at 10-second intervals
- Sends a supervisory query on the optional FDU-80 and verifies proper response
- Refreshes the LCD display and the optional FDU-80 display and updates time
- Scans for any keypad or Control Key entries
- Performs a detector automatic test operation
- Tests system memory
- Monitors for microcontroller failure

### 3.3 Fire Alarm Mode of Operation

#### 3.3.1 How the Control Panel Indicates a Fire Alarm

When an initiating device (detector or monitor module) activates, the control panel does the following:

- Produces a steady audible tone
- Activates the System Alarm relay (TB4)
- Flashes the FIRE ALARM LED
- Displays a Type Code that indicates the type of device that activated the fire alarm
- Displays ALARM in the status banner on the LCD display, along with information specific to the device, as shown below:



**Figure 3.2 Sample Fire Alarm Display**

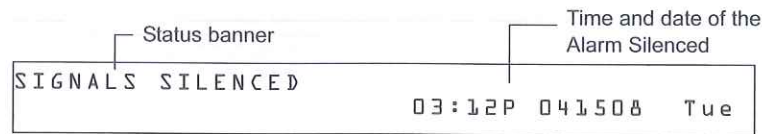
- Sends an Alarm message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.
- Latches the control panel in alarm. (You can not return the control panel to normal operation until you correct the alarm condition and reset the control panel)
- Initiates any Control-By-Event actions
- Starts timers (such as Silence Inhibit, Auto Silence)
- Activates the general alarm zone (Z00)

#### 3.3.2 How to Respond to a Fire Alarm

If the control panel indicates a fire alarm, you can do the following:

- To silence only the panel sounder:  
Press the ACKNOWLEDGE/SCROLL DISPLAY key. The local sounder will silence and the FIRE ALARM LED will change from flashing to steady.  
The control panel will send an acknowledge message to the LCD display, history buffer, and installed printers, FDU-80 annunciators, 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 light steady. The control panel sends an Signal Silenced message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s. The figure below shows a sample Alarm Silenced message.



**Figure 3.3 Sample Alarm Silenced Message**

1. Check the Alarm message for the location and type of trouble.
2. Correct the condition causing the alarm.
3. When you finish correcting the alarm condition, press the SYSTEM RESET key to return the control panel to normal operation (indicated by the "System Normal" message). The control panel sends a "System Normal" message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

### 3.3.3 Interpreting Fire Alarm Type Codes

The Type Code that displays in the Alarm message indicates the function of the point that initiates the fire alarm. For example, a monitor module with a PULL STATION Type Code means that the monitor module connects to a manual pull station. The table below lists the Type Codes that can appear in an alarm message:

Type Code	Latching (Y/N)	Purpose	What it does
<b>Monitor Modules</b>			
Blank	Y	Indicates activation of a device with no description	Lights FIRE ALARM LED and activates CBE
HEAT DETECT	Y	Indicates activation of a conventional heat detector	Lights FIRE ALARM LED and activates CBE
MONITOR	Y	Indicates activation of an alarm-monitoring device	Lights FIRE ALARM LED and activates CBE
PULL STATION	Y	Indicates activation of a manual fire-alarm-activating device, such as a pull station.	Lights FIRE ALARM LED and activates CBE
RF MON MODUL	Y	Indicates activation of a wireless alarm-monitoring device	Lights FIRE ALARM LED and activates CBE
RF PULL STA	Y	Indicates activation of a wireless manual fire-alarm-activating device, such as a pull station	Lights FIRE ALARM LED and activates CBE
SMOKE CONVEN	Y	Indicates activation of a conventional smoke detector attached to an FZM-1	Lights FIRE ALARM LED and activates CBE
SMOKE DETECT	Y	Indicates activation of a conventional smoke detector attached to an FZM-1	Lights FIRE ALARM LED and activates CBE
WATERFLOW	Y	Indicates activation a waterflow alarm switch	Lights FIRE ALARM LED and activates CBE
EVACUATE SW	N	Performs Drill function.	Activates all silenceable outputs
MAN. RELEASE	Y	Indicates activation of a monitor module programmed to a releasing zone to perform a releasing function.	Lights FIRE ALARM LED and activates CBE
MANREL DELAY	Y	Indicates activation of a monitor module programmed for a release output	Lights FIRE ALARM LED and activates CBE
SECOND SHOT	N	Provides second activation of releasing zone after soak timer has expired.	Indicates ACTIVE and activates CBE

**Table 3.1 Fire Alarm Type Codes (1 of 2)**



Type Code	Latching (Y/N)	Purpose	What it does
<b>Detectors</b>			
SMOKE(ION)	Y	Indicates activation of an ion smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(DUCT I)	Y	Indicates activation of a duct ion smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(PHOTO)	Y	Indicates activation of a photo smoke detector	Lights FIRE ALARM LED and activates CBE
RF_PHOTO	Y	Indicates activation of a wireless photoelectric smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(DUCTP)	Y	Indicates activation of a duct photo smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(HARSH)*	Y	Indicates activation of a HARSH smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(LASER)	Y	Indicates activation of a laser smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(DUCTL)	Y	Indicates activation of a duct laser smoke detector	Lights FIRE ALARM LED and activates CBE
SMOKE(BEAM)	Y	Indicates activation of a beam smoke detector	Lights FIRE ALARM LED and activates CBE
AIR REF	Y	Indicates activation of a laser air reference detector.	Lights FIRE ALARM LED and activates CBE
HEAT	Y	Indicates activation of a 190°F intelligent thermal detector	Lights FIRE ALARM LED and activates CBE
HEAT+	Y	Indicates activation of a 190°F adjustable threshold intelligent thermal detector	Lights FIRE ALARM LED and activates CBE
HEAT(ANALOG)	Y	135°F intelligent thermal sensor	Lights FIRE ALARM LED and activates CBE
HEAT (ROR)	Y	15°F per minute rate-of-rise detector	Lights FIRE ALARM LED and activates CBE
SMOKE ACCLIM	Y	Indicates activation of detector (Acclimate Plus™, FSC-851 IntelliQuad), without freeze warning	Lights FIRE ALARM LED and activates CBE
SMOKE (ACCL+)	Y	Indicates activation of detector (Acclimate Plus™, FSC-IntelliQuad), with freeze warning	Lights FIRE ALARM LED and activates CBE
SMOKE MULTI*	Y	Multisensor smoke detector	Lights FIRE ALARM LED and activates CBE
*CLIP mode only			

Table 3.1 Fire Alarm Type Codes (2 of 2)

## 3.4 System Trouble Mode of Operation

### 3.4.1 How the Control Panel Indicates a System Trouble

The system goes into system trouble when the control panel detects an electrical fault. If no fire alarms exist, the control panel does the following:

- Produces a pulsed audible tone
- Activates the Trouble relay (TB4)
- Flashes the SYSTEM TROUBLE LED
- Displays a Type Code that indicates the type of device with a trouble.
- Displays TROUBL in the status banner on the LCD display as well as the type of trouble and information specific to the device, as shown in Figure 3.4 below.
- Sends a Trouble message to the LCD display, history buffer and installed printers, FDU-80 annunciators, and CRT-2s.



**NOTE:** If a fire alarm exists when a trouble exists, the SYSTEM TROUBLE LED lights, but the Alarm message appears in the LCD display.

Typical Trouble message that appears on the LCD display:

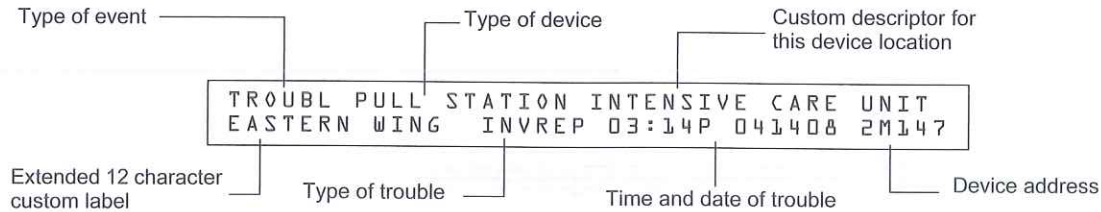


Figure 3.4 Sample Trouble Message

### 3.4.2 How to Respond to a System Trouble

If the control panel indicates a trouble, you can do the following:

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.



**NOTE:** Pressing the SIGNAL SILENCE key when only troubles exist, gives the same result as pressing the ACKNOWLEDGE/SCROLL DISPLAY key. The SIGNALS SILENCED LED does not light unless an alarm exists in the system.

2. The control panel sends an Acknowledge message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

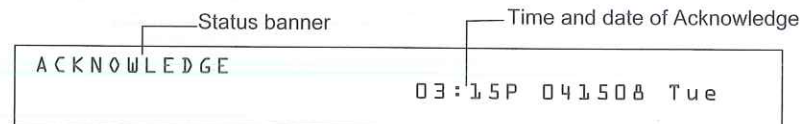


Figure 3.5 Sample Acknowledge Message

3. Check the trouble message for the location and type of trouble.

TROUBL MONITOR	MODULE ADDRESS	M021 Z00 OPEN CIRCUIT	08:10A 042108 2M021
TROUBL MONITOR	MODULE ADDRESS	M022 Z00 OPEN CIRCUIT	08:12A 042108 2M022

Figure 3.6 Sample Trouble Messages on CRT-2 or Printer

4. Correct the condition causing the trouble. If the trouble clears, the control panel sends a Clear Trouble message to the History buffer and installed printers FDU-80 annunciators, and CRT-2s.

If all troubles clear and no supervisory signals or fire alarms exist, the control panel does the following:

- Returns to Normal operation (indicated by the "System Normal" message)
- Sends a "System Normal" message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s
- Restores troubles automatically - even if troubles are not acknowledged

If multiple trouble conditions exist in the system, the LCD and optional CRT-2 and FDU-80s automatically step through each trouble every 3 seconds in the following order:

1. Alarms, in order of address
2. Supervisory, in order of address
3. Troubles, in order of address



Press the ACKNOWLEDGE/SCROLL DISPLAY key and the display stops on the current trouble event for 1 minute, then begins to automatically step through remaining troubles. To manually step through remaining troubles, press the ACKNOWLEDGE/SCROLL DISPLAY key.

Refer to Appendix D, "Point and System Troubles Lists", on page 69 for explanations of troubles that appear on the display.

## 3.5 Security Alarm Mode of Operation

### 3.5.1 How the Control Panel Indicates a Security Alarm

The system goes into Security mode when a monitor module point programmed with a Security Type Code activates. If no fire alarm exists, the control panel does the following:

- 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, History buffer, and installed printers, FDU-80 annunciators, and CRT-2s
- Sends a Security message to the proprietary receiver via the network, if applicable.



**NOTE:** If a fire alarm exists, and there are silenced alarms (the SIGNALS SILENCED LED is lighted), a Security alarm will resound the panel sounder.

A Typical security message that appears on LCD display:

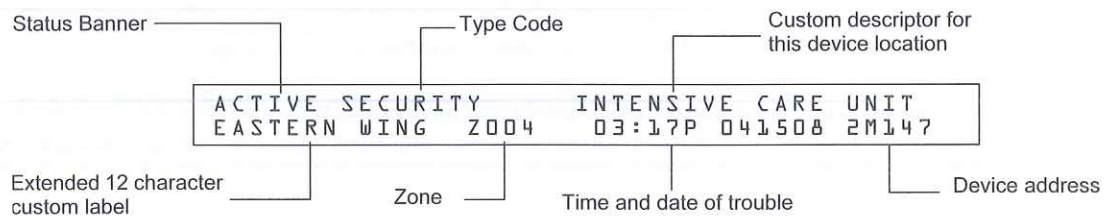


Figure 3.7 Sample Security Alarm Message

### 3.5.2 How to Respond to a Security Alarm

A Security Type Code latches the control panel. To return the control panel to normal operation, you must correct the condition causing the security condition, then reset the control panel. If the control panel indicates a security alarm, take the following action:



**NOTE:** If a fire alarm exists, and there are silenced alarms (the SIGNALS SILENCED LED is lighted), a Security alarm will resound the panel sounder.

1. Press the ACKNOWLEDGE/SCROLL display key to silence the panel sounder and switch the SECURITY LED from flashing to steady—regardless of the number of troubles, alarms, supervisory, and security signals. The control panel sends a Security message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s.
2. Correct the condition that activated the Security point.



- When you finish correcting the Security condition, press the SYSTEM RESET key to return the control panel to normal operation (indicated by the "System Normal" message). The control panel sends a "System Normal" message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

### 3.5.3 Interpreting Security Type Codes

The Type Code that displays in the security alarm message indicates the type of security alarm being generated by the monitor module that initiates the alarm. For example, a monitor module with a Type Code of AREA MONITOR indicates an intruder in a protected premises area. The table below lists the Type Codes that can appear in a security alarm message.

<b>Monitor Modules</b>			
Type Code	Latching (Y/N)	Purpose	What it does
AREA MONITOR	Y	Monitors area surveillance equipment, such as motion detectors	Lights SECURITY LED, activates CBE
SECURITY	Y	Monitors security switches for tampering	Lights SECURITY LED, activates CBE
SYS MONITOR	Y	Monitors critical equipment for security	Lights SECURITY LED, activates CBE

Table 3.2 Security Type Codes

## 3.6 Active Supervisory Signal Mode of Operation

### 3.6.1 How the Control Panel Indicates an Active Supervisory

The system goes into Supervisory mode when a monitor module point programmed with a Supervisory type code activates. When a Supervisory point activates, the control panel does the following:

- Produces a warbling audible tone
- Turns on the Supervisory relay (TB5)
- Flashes the SUPERVISORY LED (yellow)
- Displays one of the Type Codes listed in Table 3.3.
- 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, History buffer, and installed printers, FDU-80 annunciators, and CRT-2s



**NOTE:** If a fire alarm exists, and there are silenced alarms (the SIGNALS SILENCED LED is lighted), a Supervisory alarm will resound the panel sounder.

A Typical Supervisory message that appears on LCD display:

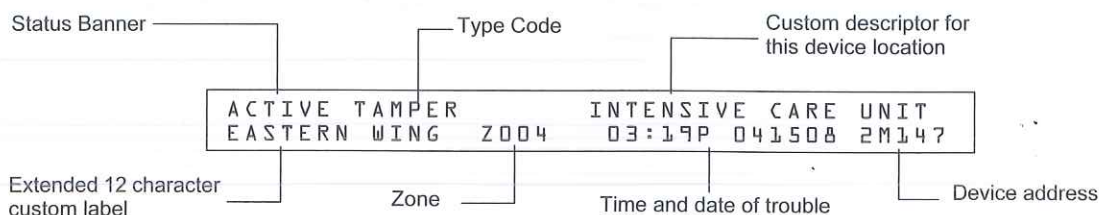


Figure 3.8 Sample Supervisory Signal Message

### 3.6.2 How to Respond to an Active Supervisory

#### If a Latching Supervisory Type Code Displays

Some Supervisory Type Codes latch the control panel (Refer to Table 3.3 for a list of these type codes). To return the control panel to normal operation, you must correct the condition causing the supervisory condition, then reset the control panel. Take the following action:



**NOTE:** If a fire alarm exists, and there are silenced alarms (the SIGNALS SILENCED LED is lighted), a Supervisory alarm will resound the panel sounder.

1. Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder and switch the SUPERVISORY LED from flashing to steady—regardless of the number of troubles, alarms, and supervisory signals. The control panel sends a Supervisory message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s.
2. Correct the condition that activated the supervisory point.
3. When you finish correcting the latching supervisory condition, press the SYSTEM RESET key to return the control panel to normal operation (indicated by the “System Normal” message). The control panel sends a “System Normal” message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

#### If Non-latching Type Code Displays

Some Supervisory Type Codes do not latch the control panel. (Refer to Table 3.3 for a list of these type codes). The control panel automatically returns to normal operation, when you correct the condition that activates the supervisory point. If the control panel indicates a non-latching supervisory point, take the following action:



**NOTE:** If a fire alarm exists, and there are silenced alarms (the SIGNALS SILENCED LED is lighted), a Supervisory alarm will resound the panel sounder.

1. Press the ACKNOWLEDGE/SCROLL DISPLAY key to silence the panel sounder and switch the SUPERVISORY LED from flashing to steady—regardless of the number of troubles, alarms, and supervisory signals. The control panel sends a Supervisory message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s.
2. Correct the condition that activated the supervisory point.
3. The control panel automatically returns to normal operation (indicated by the “System Normal” message) and the control panel sends a “System Normal” message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

### 3.6.3 How to Interpret Supervisory Type Codes

The Type Code that displays in the Supervisory message indicates the function of the point that initiates the Supervisory. For example, a monitor module with a TAMPER Type Code means that the monitor module connects to a tamper switch.

Type Codes that can appear in an Supervisory message:

<i>Monitor Modules</i>			
Type Code	Latching (Y/N)	Purpose	What it does
WATERFLOW S	Y	Indicates supervisory condition for activated waterflow switch	Lights SUPERVISORY LED and activates CBE
RF SUPERVSRV	N	Monitors a radio frequency device	Lights SUPERVISORY LED and activates CBE
LATCH SUPERV	Y	Indicates latching supervisory condition	Lights SUPERVISORY LED and activates CBE

**Table 3.3 Supervisory Type Codes (1 of 2)**

<b>Monitor Modules</b>			
Type Code	Latching (Y/N)	Purpose	What it does
TRACK SUPERV	N	Indicates tracking supervisory condition	Lights SUPERVISORY LED and activates CBE
SPRINKLR SYS	Y	Indicates activation of sprinkler system	Lights SUPERVISORY LED and activates CBE
TAMPER	Y	Indicates activation of tamper switch	Lights SUPERVISORY LED and activates CBE
<b>Detectors</b>			
SUP.T(DUCTI)	N	Ion detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.L(DUCTI)	Y	Ion detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUPT(DUCTL)	N	Laser detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUPL(DUCTL)	Y	Laser detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.T(DUCTP)	N	Photo detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.L(DUCTP)	Y	Photo detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUPT(PHOTO)	N	Photo detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUPL(PHOTO)	Y	Photo detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.T(ION)	N	Ion detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.L(ION)	Y	Ion detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.L(LASER)	Y	Laser detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE
SUP.T(LASER)	N	Laser detector that indicates supervisory (non-alarm) condition	Lights SUPERVISORY LED and activates CBE

Table 3.3 Supervisory Type Codes (2 of 2)

## 3.7 Pre-Alarm Warning Mode of Operation

### 3.7.1 How the Control Panel Indicates a Pre-Alarm Warning

The control panel activates a Pre-Alarm Warning if a detector exceeds the programmed Pre-Alarm Alert or Action level. When a detector activates a Pre-Alarm, the control panel does the following:

- Pulses the panel sounder
- Flashes the PRE-ALARM LED
- Activates the Pre-Alarm zone (F9)
- Sends a Pre-Alarm message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s
- Displays a PREALARM status banner, the Type Code of the detector, and the Pre-Alarm level (Alert or Action) on the LCD display, along with information specific to the device as shown in Figure 3.9.

### 3.7.2 How to Respond to a Pre-Alarm Warning

#### Pre-Alarm Alert and Action Levels

The Pre-Alarm function is a programmable option which determines the system's response to real-time detector sensing values above the programmed setting. Use the Pre-Alarm function if you want to get an early warning of incipient or potential fire conditions. The Pre-Alarm function provides one of two levels of Pre-Alarm as follows:

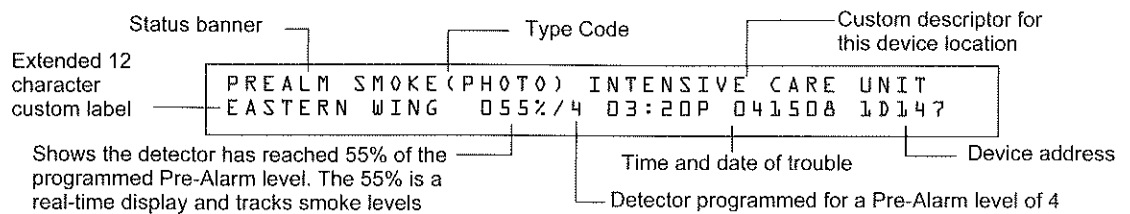


**NOTE:** For detailed information on Pre-Alarm applications, refer to the *NFS2-640 Programming Manual*.

- Alert – a non-latching condition that causes a Pre-Alarm when a detector reaches the programmed Pre-Alarm level.
- Action – a latching condition that causes a Pre-Alarm when a detector reaches the programmed Pre-Alarm level.

## Responding to a Pre-Alarm Warning

The Pre-Alarm screen display is the same for both alert and action conditions. Following is a sample screen for a Pre-Alarm message.



**Figure 3.9 Sample of an Alert Pre-Alarm Message**

An Alert Pre-Alarm automatically restores to normal when the detector sensitivity, programmable to one of nine settings, drops below the programmed Alert level. Zone F09 automatically clears when no Pre-Alarm conditions exist.

An Action Pre-Alarm latches until you reset the system - even if the detector sensitivity drops below the Action level. Zone F09 activates - but Zone Z00 (general alarm) and the trouble and alarm relays do not activate. The fifth zone programmed, not the first four, in the detector's CBE activates. A subsequent alarm condition for this detector clears the Action indication from the LCD display.

### Interpreting Pre-Alarm Type Codes

The Type Code that displays in the Pre-Alarm warning indicates the function of the point that initiates the Pre-Alarm warning. Refer to the Detectors section of Table 3.1 for the Type Codes that can appear in a Pre-Alarm warning, and for descriptions of those Type Codes.

## 3.8 Disabled Points Mode of Operation

The control panel indicates disabled points by displaying a screen for each disabled detector, monitor module, and control/relay module. Disabled points do not cause an alarm or any Control-by-Event activity. If more than one point is disabled, the control panel automatically displays each point in the sequence in which the point was disabled.



### CAUTION:

**Disabling a zone disables all input and output devices associated with the zone.**

When one or more points are disabled, the control panel does the following:

- Holds all disabled output points in the off-state
- Flashes the SYSTEM TROUBLE LED
- Lights the POINT DISABLED LED
- Sends a Disabled Point message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s
- Displays a message for each disabled point



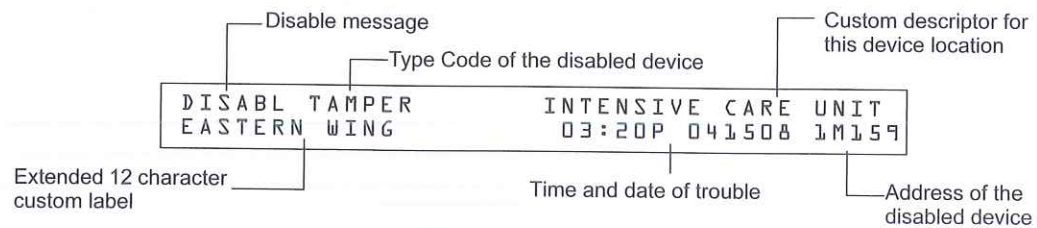


Figure 3.10 Sample Disabled Point Message

## 3.9 Non-Alarm Mode of Operation

### 3.9.1 Purpose of Non-Alarm Points

Non-Alarm points are addressable monitor modules programmed with one of the Non-Alarm Type Codes listed in Table 3.4. Non-Alarm points, except Non-Fire, operate like monitored system functions that can produce troubles—but with the differences shown in the following sections.

<b>Monitor Modules</b>			
Type Code	Latching (Y/N)	Purpose	What it does
ACCESS MONTR	N	Used for monitoring building access	Activates CBE
ACK SWITCH	N	Performs Acknowledge function	Silences panel sounder, gives an Acknowledge message on the panel LCD
ALLCALL PAGE	N	Activates all speaker circuits for paging	Activates speakers
DRILL SWITCH	N	Performs Drill function	Activates silenceable outputs
FIRE CONTROL	N	Used for air handler shutdown, intended to override normal operating automatic functions	Activates CBE, does NOT light an indicator at the control panel
NON-FIRE	N	Used for energy management or other non-fire situations. Does not affect operation of the control panel	Activates CBE, does NOT light an indicator at the control panel
PAS INHIBIT	N	Inhibits Positive Alarm Sequence	Inhibits Positive Alarm Sequence
RESET SWITCH	N	Performs Reset function	Resets control panel
SIL SWITCH	N	Performs Signal Silence function	Turns off all activated silenceable outputs
TELE PAGE	N	Performs function of Page Button on FFT-7	Allows remote paging to a fire area
ABORT SWITCH	N	Indicates Active at the panel	Aborts activation of a releasing zone

Table 3.4 Non-Alarm Type Codes

### 3.9.2 How the Control Panel Indicates an Active Fire Control

Activation of a FIRE CONTROL point causes the control panel to do the following:

- Initiate the monitor module Control-by-Event
- Send a message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s
- Display an ACTIVE status banner and FIRE CONTROL Type Code on the LCD display, along with information specific to the device

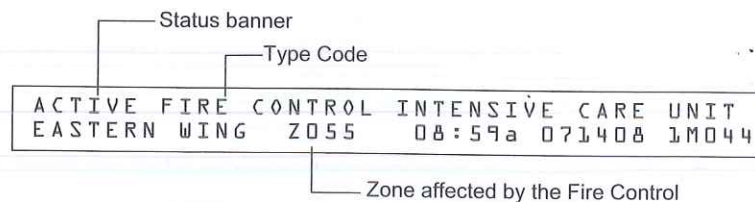


Figure 3.11 Sample Fire Control Point Display

### 3.9.3 How the Control Panel Indicates an Active Non-Fire Point

Non-Fire point operation does not affect control panel operation, nor does it display a message at the panel LCD. Activation of a Non-Fire point activates CBE—but does not cause any indication on the control panel. For example, you can program a Non-Fire point to turn lights in a zone to a lower setting when activated. In this case, when the point activates the control panel activates the point's CBE to turn the lights down without any audio or visual indication on the control panel.

## 3.10 Active Trouble Monitor Mode of Operation

### 3.10.1 How the Control Panel Indicates an Active Trouble Monitor

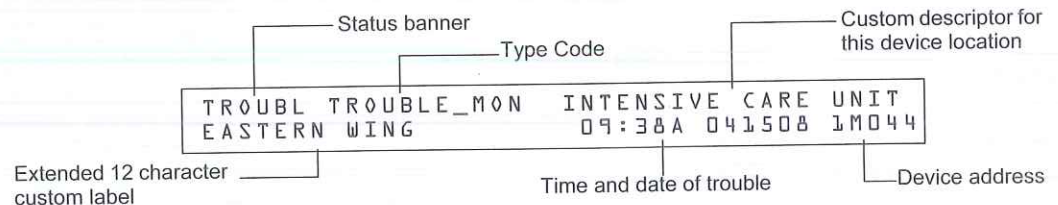
Trouble Monitor Points are monitor modules programmed with the following Type Codes:

Type Code	Latching (Y/N)	Device Function	Point Function
AUDIO SYSTEM	N	Used for monitoring audio equipment audio amplifiers or associated equipment	Indicates trouble
EQUIP MONITR	N	Used for recording access to monitored equipment	Activates CBE
POWER MONITR	N	Used to monitor remote power supplies or other external equipment	Indicates trouble
TROUBLE MON	N	Used to monitor remote power supplies or other external equipment	Indicates trouble

**Table 3.5 Trouble Monitor Type Codes**

These types of monitor modules operate like monitored system functions that can produce troubles—but with the following differences:

- The LCD display status banner displays ACTIVE as shown:



**Figure 4 Sample Trouble Monitor Point Message**

- The monitor module is non-latching: the module will return to normal when the trouble condition no longer exists.
- The monitor modules activate Control-by-Event
- The panel trouble relay transfers (TB4)

### 3.10.2 How to Respond to an Active Trouble Monitor

If the control panel indicates an active Trouble Monitor Point, take the following action:

- 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, and supervisory signals.
- The control panel sends an Acknowledge message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s. Check the trouble message for the location and type of trouble.
- Correct the condition causing the trouble.
- When the trouble condition is corrected, the panel will return to normal operation (indicated by the "System Normal" message).
- The control panel sends a "System Normal" message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.



## 3.11 Output Circuit Trouble Mode of Operation

### 3.11.1 Overview

Output circuits include NACs, Control/Relay Modules, and Transponder Points. This section contains a description of control panel operation for each type of output circuit.

- Four NACs are included on the control panel
- Control/Relay Modules connected to the control panel on an SLC
- Transponder Points: XPC-8 (CLIP only), or XP6-C (CLIP or FlashScan)

<b>Trouble Type Codes for Control Modules and NAC Circuits</b>			
Type Code	Silenceable (Y/N)	Configuration	Device Function
CONTROL	N	NAC	Supervised NAC
RELAY	N	FORM-C relay	Relay Output
BELL CIRCUIT	N	NAC	Supervised NAC for notification appliance
STROBE CKT	N	NAC	Supervised NAC for notification appliance
HORN CIRCUIT	N	NAC	Supervised NAC for notification appliance
AUDIBLE CKT	N	NAC	Supervised NAC for notification appliance
SPEAKER	N	NAC	Supervised NAC for speaker circuit
REL END BELL	N	NAC	Supervised NAC for notification appliance
blank	N	NAC	Supervised NAC for undefined device
RELEASE CKT	N	NAC	Directs outputs to perform a releasing function.
REL CKT ULC	N	NAC	Directs outputs to perform a release function as required by ULC.
REL AUDIBLE	N	NAC	NAC, activated upon release
NONRESET CTL*	N	NAC	Relay output, unaffected by "System Reset" command
TELEPHONE	N	NAC	Standard Telephone circuit
REL CODE BELL**	N	NAC	Supervised NAC (NFS2-640 NAC only)
INSTANT RELE	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.
CONTROL NAC**	N	NAC	Supervised NAC
GEN ALARM	Y		Control Module, an XPC-8 circuit, or an XP6-C configured as a Municipal Box Transmitter for NFPA 72 Auxiliary Fire Alarm Systems application. This Type ID can also be used for general alarm activation.
GEN SUPERVIS	Y		Control Module, an XPR-8 relay, or an XP6-R activated under any Supervisory condition (includes sprinkler type).
GEN TROUBLE	Y		Control Module, an XPR-8 relay, or an XP6-R activated under any System Trouble condition.
GENERAL PEND	Y		Control Module, an XPC-8 circuit, or an XP6-C that will activate upon receipt of an alarm and/or trouble condition, and remain in the ON state until all events have been ACKNOWLEDGED.
TROUBLE PEND	N		Control Module, an XPC-8 circuit, or an XP6-C that will activate upon receipt of a trouble condition, and remain in the ON state until all troubles have been ACKNOWLEDGED.

\* Type Code is Control Module type code only.  
 \*\* Type Code is NAC Circuit type code only.

**Table 3.6 Control Module and NAC Circuit Trouble Type Codes**

### 3.11.2 How the Control Panel Indicates a NAC Trouble

A Trouble occurring on a NAC causes the control panel to do the following:

- Produce a pulsed audible tone
- Flash the SYSTEM TROUBLE LED
- Turn on the Trouble relay (TB4)
- Send a message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s
- Display a TROUBL status banner and a CONTROL Type Code on the LCD display, along with information specific to the device

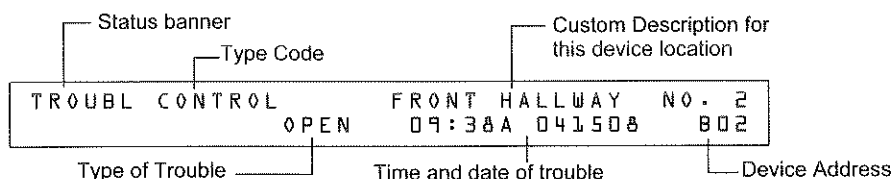


Figure 3.1 Sample of a NAC in Trouble Message

### 3.11.3 How the Control Panel Indicates a Control/Relay Trouble

A trouble occurring on a control/relay module or control/relay transponder causes the control panel to do the following:

- Produce a pulsed audible tone
- Flash the SYSTEM TROUBLE LED
- Turn on the Trouble relay (TB4)
- Send a message to the LCD display, History buffer and installed printers FDU-80 annunciators, and CRT-2s
- Display a TROUBL status banner and CONTROL Type Code on the LCD display, along with information specific to the device

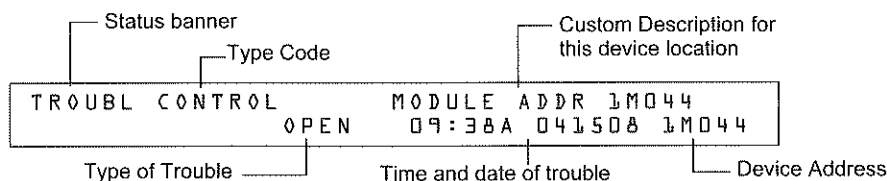


Figure 3.2 Sample of a Control/Relay Module in Trouble Message

### 3.11.4 How to Respond to a NAC or Control/Relay Trouble

If the control panel indicates an active NAC or Control/Relay Trouble, take the following action:

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, and supervisory signals.
2. The control panel sends an Acknowledge message to the History buffer and installed printers, FDU-80 annunciators, and CRT-2s. Check the trouble message for the location and type of trouble.
3. Correct the condition causing the trouble.
4. When the trouble condition is corrected, the panel will return to normal operation (indicated by the "System Normal" message).
5. The control panel sends a "System Normal" message to the LCD display, History buffer and installed printers, FDU-80 annunciators, and CRT-2s.

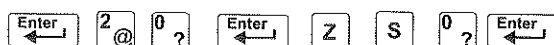
## 3.12 Operation of Special System Timers

### 3.12.1 What are System Timers?

There are user-programmable time delays for three specific functions: the Auto Silence Timer, the Alarm Verification Timer, and the Silence Inhibit Timer. Figure 3.3 shows a sample System Function Selection screen with system timer settings. For instructions on changing system functions, refer to the *NFS2-640 Programming Manual*.

### 3.12.2 How to View System Timer Selections

You can use the Read Status Entry option (explained in Chapter 4) to view the current selection for the System Timers. To do so, press the keys shown below in sequence:



The LCD display shows the current selections for System Functions, which includes the three system timers.

Sample LCD display of a System Function screen with system timer selections:

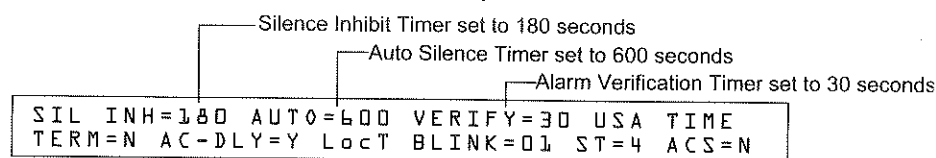


Figure 3.3 Sample System Function Selection Screen

### 3.12.3 How System Timers Work

The control panel can operate with special system timers: Auto Silence Timer, Alarm Verification Timer and Silence Inhibit Timer.

#### Auto Silence Timer

A timer that functions like pressing the SIGNAL SILENCE key. When the Auto Silence Timer reaches its programmed value (600-900 seconds), the control panel automatically shuts off all active outputs programmed as silenceable.

#### Alarm Verification Timer

A timer that directs the control panel to ignore a fire alarm for a smoke detector, programmed for Alarm Verification, while the Alarm Verification Timer is counting. Table 3.7 contains a summary of how the Alarm Verification Timer works.

If	The control panel does this
A second fire alarm occurs while the Alarm Verification Timer is counting	Ignores the Alarm Verification Timer
The Alarm Verification Timer elapses and a fire alarm still exists	Activates the fire alarm
The Alarm Verification Timer expires and a fire alarm no longer exists	Increments the Alarm Verification counter (up to 99) for the device and returns to normal operation .

Table 3.7 Alarm Verification Timer Operation

#### Silence Inhibit Timer

A timer that disables the SIGNAL SILENCE key function and inhibits reset during countdown for the programmed time (0-300 seconds) when a fire alarm occurs. A Silence Inhibit Timer starts at the first fire alarm. Subsequent alarms will not restart the timer until the alarm condition is completely resolved and a panel reset is performed.

### 3.13 Waterflow Circuit Operation

If a monitor module programmed with a WATERFLOW Type Code initiates a fire alarm, the control panel disables the SIGNAL SILENCE key and the Auto Silence Timer. Refer to the *NFS2-640 Installation Manual* for information on Waterflow circuits.

### 3.14 Style 6 and Style 7 Operation

Style 6 and Style 7 are supervised methods of communicating with addressable devices. If the control panel detects a trouble (open or short), it will attempt to drive both ends of the loop, maintaining communication in an unsupervised method. The trouble will display on the panel as a Style 6 trouble until you correct the condition. Style 7 configuration of the SLC requires the use of ISO-X isolator modules.



## Section 4: Read Status Operation

### 4.1 Introduction

This section contains instructions and sample screens to show how to access all Read Status functions and menus. For information on Read Status using a CRT-2 refer to Appendix C, “Remote Terminal Access”, on page 61.

### 4.2 What is Read Status?

Read Status is a control panel function that lets you view system program information—but not change any programmed settings. The Read Status function lets you do the following:

- View Read Status information without entering a password.
- Enter and operate Read Status functions while the control panel provides full fire protection.
- View Read Status information while a fire alarm or trouble condition exists.



**NOTE:** If a fire alarm or trouble occurs while you are in Read Status, the control panel automatically exits Read Status operation and displays the new fire alarm or trouble.

#### 4.2.1 Quick Reference Key Sequences



For quick reference, in the left margin next to each Read Status option is a block that shows the key sequence needed to view that option.

For example, the block to the left shows how to display the “Read Point” screen:

### 4.3 Entering Read Status

To enter Read Status, follow these steps:

1. From the “System Normal” screen, press the ENTER key. The control panel displays the “Entry” screen as shown below;

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

2. From the “Entry” screen, press the 2 key. The control panel displays the “Read Status Options” screen as shown below:

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

## 4.4 Viewing and Printing a Read Status

To view or print Read Status information follow the instructions below:

Option	Press	Lets you
Read Point	0 key, ENTER key	View information for a detector, module, NAC or zone
Print Points	1 key, ENTER key	Print information for all installed points in the system
Read History	2 key, ENTER key	Display the total number of events in the History buffer and step through each event in sequence
Print History	3 key, ENTER key	Print the contents of the History buffer (up to 800 events)
Read Alarm History	4 key, ENTER key	View a display of the number of alarms in the Alarm History buffer, then scroll through each alarm event
Print Alarm History	5 key, ENTER key	Print the contents of the Alarm History buffer (up to 200 events)



**NOTE:** If attempting to read a point that is not installed, the control panel displays "Not Installed".

During all Read Status operations (except print operations) the control panel starts a 2-minute timer each time you press a key. If the control panel does not detect a key press for 2 minutes, the control panel exits Read Status and returns to the "System Normal" display.

In Read Status, you can also do the following:

- Press the ESC key to delete the previous entry.
- Press the SYSTEM RESET key to abort Read Status.

### 4.4.1 How to View Read Status of Devices, Zones, & System Settings

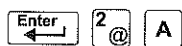
#### Overview

Read Point options 0, 2, and 4 in the Read Status Screen let you display and view information for devices and zones programmed into the control panel, as well as view system and annunciator settings. This section provides instructions and sample displays so you can view Read Status.

Topics covered in this section:

To view Read Status for	Refer to
Intelligent Detectors	"How to View Read Status for a Detector" on page 37
Control/relay and Monitor modules	"How to View Read Status for a Control/Relay or Monitor Module" on page 38
NAC	"How to View Read Status for a NAC" on page 39
Software Zones (Z01-Z99)	"How to View Read Status for a Software Zone (Z01-Z99)" on page 40
Special Zones (F0-F9)	"How to View Read Status for a Special Zone (F0-F9)" on page 40
Releasing Zones (R0-R9)	"How to View Read Status for a Releasing Zone (R0-R9)" on page 41
System Functions	"How to Read Status for System Functions" on page 41
Annunciator Selections	"How to Read Status for Annunciator Selections" on page 42

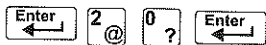
### How to Display the Total of Installed Devices



To view the total number of installed devices, enter the "Read Status" screen by pressing the ENTER key, then 2, then A. A screen similar to the following will appear:

```
L1:159Dets, 159Mods  L2:055Dets, 047Mods
Panel Outputs: 64  Bells: 04
```

### How to Display a Point or Zone for Read Status



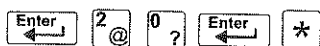
From the "Read Status" screen, press 0, then press the ENTER key to display the "Read Point Entry" screen as shown below:

```
ZONE=Z,AA,E      DETECTOR=*1LDAAA,E
MODULE=#1LMAA,E   OUTPUT CKT=B,AA,E
```

- To view a detector, press DETECTOR **\***, SLC number, detector SLC address, ENTER.
- To view a zone, press **Z**, zone number, ENTER.
- To view a monitor or control/relay module, press MODULE **#**, SLC number, module SLC address, ENTER.
- To view a NAC, press OUTPUT **&**, two-digit address, (for example 01 for B01, etc.), ENTER.

When you select a device or a zone, the control panel displays information for the device or zone, but does not send this information to the serial ports or the History buffer.

### How to View Read Status for a Detector



SLC number followed by three digit address

- +** next device
- previous device

From the "Read Status" screen, press 0, then press the ENTER key. You can now view Read Status for a detector as follows: press DETECTOR, enter the SLC number followed by the three digit address, then press the ENTER key. For example, to read the status of detector 1D002: press DETECTOR, enter the SLC number (1), enter address 002, then press the ENTER key. The control panel now displays information about the detector, as shown in Figure 4.1.

The display and descriptions of the fields are shown below:

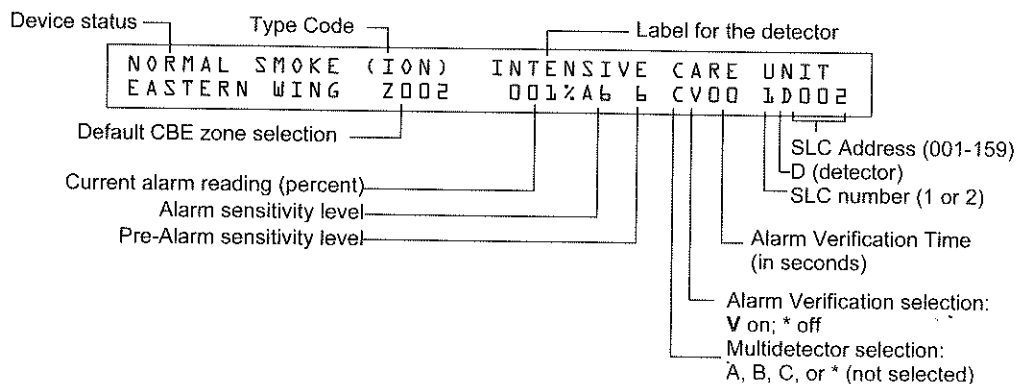


Figure 4.1 Sample Detector Read Status Display



- **Device Status** The status of the detector: Normal, Alarm, or Test.
- **Type Code** The software Type Code that identifies the type of detector. (Refer to “Point Programming” in the *NFS2-640 Programming Manual*.)
- **Default CBE Zone Selection** This is the first zone in the 5 zone CBE list. Defaults are Zone 001 (Heat detectors) Zone 002 (Ion detectors) Zone 003 (Photo detectors) Zone 004 (Laser detectors) Zone 005 (Multisensor). Values may differ depending on point programming.
- **Current alarm reading (xxx%)** The current alarm reading of the detector, as a percentage of the alarm sensitivity setting.
- **Alarm sensitivity level (Ax)** The alarm sensitivity (x=1-9) entered in the Detector Sensitivity Screen.
- **Pre-Alarm sensitivity level** The Pre-Alarm Sensitivity (1-9; 0 = Pre-Alarm not used) entered in the Detector Settings Screen.

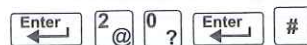


**NOTE:** Refer to “Detector Sensitivity Settings” in the *NFS2-640 Programming Manual* for more information on the Pre-Alarm and Alarm Sensitivity settings

- **Cooperative Multi-Detector selection** A smoke detector programmed to evaluate readings from nearby detectors in making Alarm or Pre-Alarm decisions. Cooperative Multi-Detector sensing also allows the combination of ionization with photoelectric technology in reaching an alarm decision.
  - \* – Multi-not used.
  - A – combines the detector’s alarm decision with the next SLC address above.
  - B – combines the detector’s alarm decision with the next SLC address below.
  - C – combines the detector’s alarm decision with the next SLC address above and the next SLC address below.
- **Alarm Verification (\* or V)**
  - \* – Alarm Verification not programmed for this detector.
  - V – Alarm Verification enabled.

Alarm Verification is a user-defined global time function that can reduce the number of nuisance alarms. Refer to page 33 for more information.
- **Device SLC Address** The SLC address of the detector.

### How to View Read Status for a Control/Relay or Monitor Module



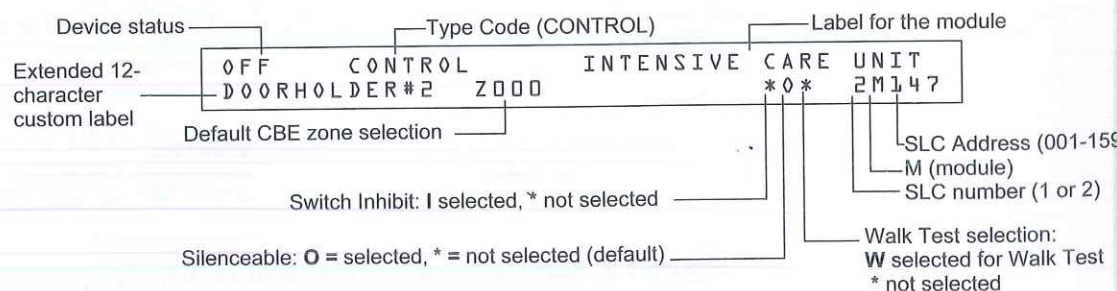
SLC address

next device

previous device

From the “Read Status” screen, press 0, then press the ENTER key. You can now view Read Status for a monitor or a control/relay module as follows: press MODULE, enter the SLC address, then press the ENTER key. For example, to read the status of a FCM-1 module 2M147: press MODULE, enter 2 then 147, then press the ENTER key. The control panel now displays information about the module as shown in Figure 4.2.

The display and descriptions of the fields are shown below:



**Figure 4.2 Sample Control/Relay or Monitor Module Read Status Display**



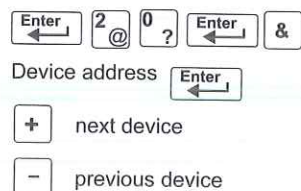
- **Device Status** The status of the module: control/relay module [On (device active) OFF (device not active)] or monitor module (Normal, Alarm, or Test).
- **Type Code** The software Type Code that identifies the type of module. (Refer to “Point Programming” in the *NFS2-640 Programming Manual*.)
- **CBE list** Only the first zone in the device’s CBE list will be displayed.
- **Device SLC Address** The SLC address of the module.
- **Switch Inhibit (control/relay module only)** Displays whether the remote ON/OFF capability of the device is inhibited. (I=on; \*=off).
- **Silenceable (control/relay module only)** A selection that specifies if the device can be silenced during an alarm by pressing the signal silence key. Possible values are:  
 \* = output nonsilenceable  
 F = silenceable, resound by fire alarm  
 U = silenceable, resound by supervisory alarm  
 B = silenceable, resound by security alarm  
 T = silenceable, resound by trouble  
 O = silenceable, does not resound



**NOTE:** If the “Strobe” Type ID is used with System Sensor Strobe synchronization, F, U, B, T, or O will silence the entire circuit, “\*” will silence the horn portion only.

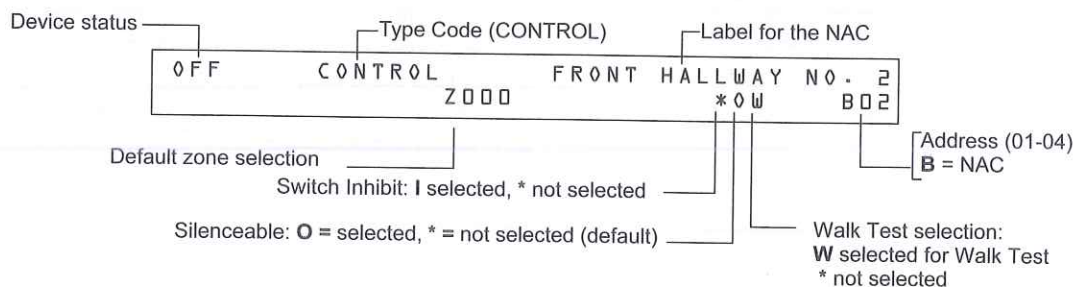
**Walk Test (control/relay module only)** A selection that specifies if the device will activate during a Walk Test.

### How to View Read Status for a NAC



From the “Read Status” screen, press 0, then press the ENTER key. You can now view Read Status for a NAC as follows: press OUTPUT, enter the device address, then press the ENTER key. For example, to read the status of NAC 0-2: press OUTPUT, enter 02, then press the ENTER key. The control panel now displays information for a NAC as shown in Figure 4.3.

The display and descriptions of the fields are shown below:



**Figure 4.3 Sample NAC Read Status Display**

- **Device Status** The status of the device: ON (device active) OFF (device not active).
- **Type Code** The software Type Code that identifies the type of NAC. Refer to “Appendix F - Type Codes” in *NFS2-640 Programming Manual*.
- **CBE List** Only the first zone in the NAC’s CBE list will be displayed here.
- **Device Address** The address of the NAC (01-04)
- **Switch Inhibit** A selection for disabling the switch function for the control/relay or transponder output circuit. (I=on; \*=off).

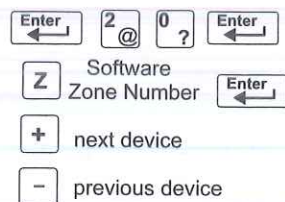
- **Silenceable** A selection that specifies if the device can be silenced during an alarm by pressing the SIGNAL SILENCE key. Possible values are:  
 \* = output nonsilenceable  
 F = silenceable, resound by fire alarm  
 U = silenceable, resound by supervisory alarm  
 B = silenceable, resound by security alarm  
 T = silenceable, resound by trouble  
 O = silenceable, does not resound



**NOTE:** If the "Strobe" Type ID is used with System Sensor Strobe synchronization, F,U, B, T, or O will silence the entire circuit, "\*" will silence the horn portion only.

- **Walk Test** A selection that specifies if the device will activate during a Walk Test.

### How to View Read Status for a Software Zone (Z01-Z99)



From the "Read Status" screen, press 0, then press the ENTER key. You can now view Read Status for a Software Zone as follows: press Z, enter the zone number (01-99), then press the ENTER key. For example, to read the status of Software Zone 07: press Z, enter 07, then press the ENTER key. The control panel now displays information for a Software Zone as shown below.

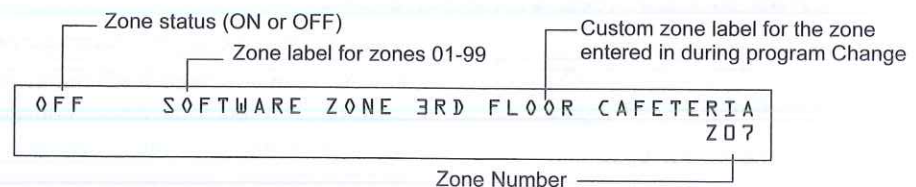
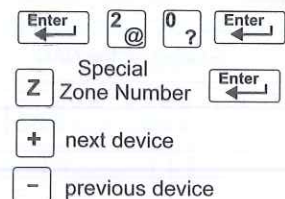


Figure 4.4 Sample Software Zone Read Status Display

### How to View Read Status for a Special Zone (F0-F9)



From the "Read Status" screen, press 0, then press the ENTER key. You can now view Read Status for a Special Zone as follows: press Z, enter the zone number (F0-F9), then press the ENTER key. For example, to read the status of Special Zone F8: press Z, enter F8, then press the ENTER key. The control panel now displays information for a Special Zone as shown below.



**NOTE:** The zone label depends on the type of Special Zone. For example, CODING FUNCTION CODE TYPE for F8.

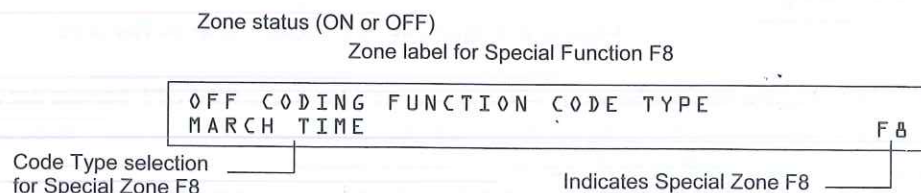
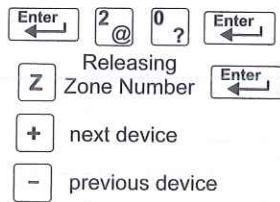


Figure 4.5 Sample Special Zone Read Status Display



### How to View Read Status for a Releasing Zone (R0-R9)



From the "Read Status" screen, press 0, then press the ENTER key. You can now view the Read Status of a Releasing Zone as follows: press Z, enter the zone number (R0-R9), then press the ENTER key. For example, to read the status of Releasing Zone R0, enter Z, enter R0, then press the ENTER key. The control panel now displays information for a Releasing Zone as shown below.

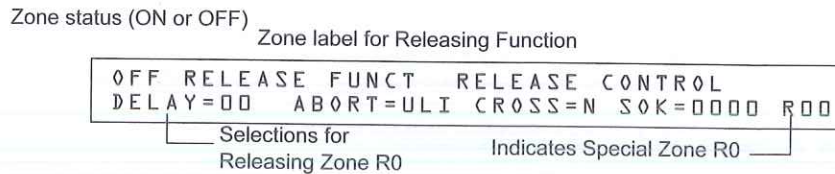
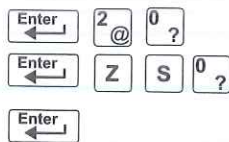


Figure 4.6 Sample Releasing Zone Read Status Display

### How to Read Status for System Functions



The "System Functions" screen specifies global settings for the control panel. From the "Read Status" screen, press 0, then press the ENTER key. You can now view Read Status for System Functions as follows: press Z, enter S0, press the ENTER key. Shown below is a sample display and description of items for the Read Status of System Functions:

```

SIL INH=000 AUTO=000 VERIFY=30 USA TIME
TERM=N AC_DLY=Y LocT BLINK=01 ST=4 ACS=N
  
```

Parameter	Description	Settings
SIL INH=000	Silence Inhibit timer in seconds. Required in Canada and some areas of the USA.	000 = no timer; or the timer duration in seconds up to 300.
AUTO=000	Auto Silence Timer in seconds.	000 = no timer; 600-900 seconds.
VERIFY=30	Alarm Verification Timer	00 = no timer; 00-30 seconds.
USA TIME	Time and date display format	USA TIME or EUR TIME
TERM=N	Terminal supervision	YES – To supervise the wiring of an FDU-80. NO – No FDU-80 supervision.
AC_DLY=N	Delays AC loss reporting	YES - AC loss reporting is delayed for approximately 3 hours. NO - No AC loss delay.
LocT	One of three operating modes of a PC or terminal connected to the control panel (through TB12 PC Terminal)	LocT – terminal connected to control panel and located in the same room as the control panel. LocM – terminal connected to control panel but requires password for operation. RemT – terminal connected through a modem for Read Status operations only.

Table 4.1 System Function Parameters (1 of 2)

## 4.4.2 How to View Read Status for Event and Alarm History

### Overview

The control panel maintains a History buffer of the last 800 events, each with a time and date stamp. History events include the following:

- All alarms, troubles and operator actions, such as: Acknowledge, System Reset, Signal Silence, Drill, and Walk Test.
- Programming entries (Program Change and Status Change, but not Read Status), along with a number (0-9) indicating the programming submenu (for example, 0=Clear). For an example, see Figure 4.14.

You can view events from the History buffer in two forms: by displaying all events (option 2, HIST=2) or by displaying alarm events only (option 4, ALARM HIST=4).

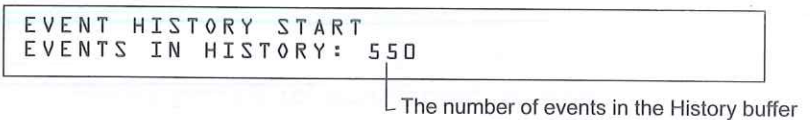


**NOTE:** The History buffer contains 800 events total, including the alarm events that display for Alarm history. The control panel generates Alarm history from the alarm events that exist in the 800-event History buffer.

### How to View Read Status for Event History



Option 2 (HIST=2) lets you view the total number of events in the History buffer (up to 800 events), then view each event in chronological sequence. From the "Read Status" screen, press 2, then press the ENTER key to display the "Event History" screen. A sample of the Event History screen is shown below:



**Figure 4.12 Sample Event History Display**

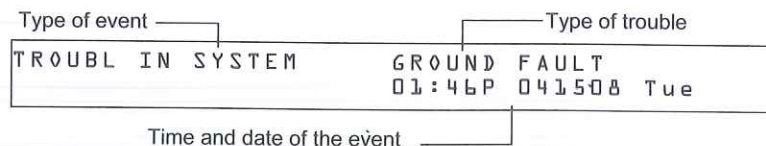
To display events in the History buffer, do the following:

- Press the NEXT SELECTION key to step through each event from the first entry (oldest event first) in the History buffer, or
- Press the PREVIOUS SELECTION key to step through each event from the most recent entry in the History buffer.



**NOTE:** The NEXT SELECTION key will show the most recent event first, and then move to its normal function of displaying the oldest events first.

A sample LCD display for a trouble event:



**Figure 4.13 Sample Trouble Event Display**



A sample LCD display for a Program Change event:

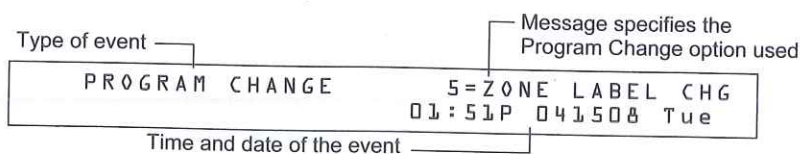


Figure 4.14 Sample Program Change Event Display

### How to View Read Status for Alarm History



next event



previous event

Option 4 (ALARM HIST=4) lets you view the total number of alarms in the History buffer (up to 200), then view each alarm in chronological sequence. From the "Read Status" screen, press 4, then press the ENTER key to display the "Event History" screen. A sample Alarm History screen is shown below:

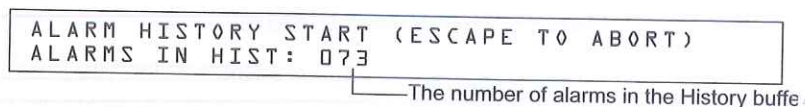


Figure 4.15 Sample Alarm History Display

To display alarms in the buffer, do the following:

- Press the NEXT SELECTION key to step through each alarm from the first entry (oldest alarm first) in the buffer, or
- Press the PREVIOUS SELECTION key to step through each alarm from the most recent entry in the buffer



**NOTE:** The NEXT SELECTION key will show the most recent event first, and then move to its normal function of displaying the oldest events first.

A sample display for an alarm event:

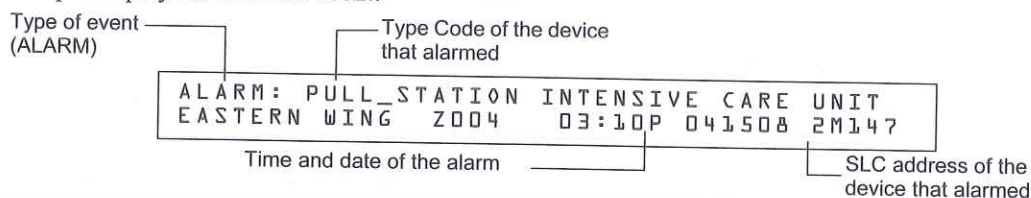


Figure 4.16 Sample Alarm Event Display

## 4.4.3 How to Print Points, Event and Alarm History

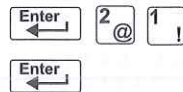
### Overview

Read Point options 1, 3, and 5 in the "Read Status" screen let you print points, event history, and alarm history. This section contains instructions for printing, as well as sample point, event history, and alarm history printouts.



**NOTE:** Before printing, make sure your control panel is connected to a compatible printer and the printer is configured according to the manufacturer's specifications, and that the correct baud rate is selected at the panel.

## How to Print Points



Option 1 (PRNT POINT=1) lets you print a list of all points programmed into the system. From the "Read Status" screen, press **1**, then press the ENTER key to print a list of installed points. A sample Print Point screen is shown below:

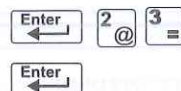
```
STATUS PRINT
```

**Figure 4.17 Sample Print Point Display**

A sample printout of three points using the Print Point option:

```
NORMAL SMOKE (PHOTO) DETECTOR ADDR 1D043      Z003 000%AB 8 ** 1D043
NORMAL SMOKE (PHOTO) DETECTOR ADDR 1D044      Z003 000%AB 8 ** 1D044
NORMAL SMOKE (PHOTO) DETECTOR ADDR 1D045      Z003 000%AB 8 ** 1D045
```

## How to Print Event History



Option 3 (HIST=3) lets you print a list of all events in the History buffer (up to 800). From the "Read Status" screen, press **3**, then press the ENTER key to print a list of events. A sample History Print screen is shown below:

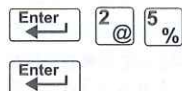
```
HISTORY PRINT
```

**Figure 4.18 Sample History Print Screen**

A sample printout of three events in history using the History Print option:

```
***** EVENT HISTORY START*****
SYSTEM RESET                                02:28P 042408 Thu
ALARM: SMOKE (ION) DETECTOR ADDR 1D075      Z002 02:28P 042408 1D075
ALARM: SMOKE (ION) DETECTOR ADDR 1D076      Z002 02:28P 042408 1D076
ACKNOWLEDGE                                02:28P 042408 Thu
```

## How to Print Alarm History



Option 5 (ALARM HIST=5) lets you print a list of alarm events in the History buffer (up to 200). From the "Read Status" screen, press **5**, then press the ENTER key to print a list of alarm events. A sample Print Alarm History screen is shown below:

```
ALARM HISTORY PRINT
```

**Figure 4.19 Sample Print Alarm History Display**

A sample printout of two alarm events in the History buffer using the Print Alarm History option.

```
*****ALARM HISTORY START*****
ALARM: SMOKE (ION) DETECTOR ADDR 1D075      Z002 02:28P 012208 1D075
ALARM: SMOKE (ION) DETECTOR ADDR 1D076      Z002 02:28P 012208 1D076
***** PRINT END *****
```

#### 4.4.4 How to View and Print Hidden Event and Alarm History

The control panel maintains a copy of the History buffer. For instance, if someone clears the History buffer using Status Change programming option 4, the control panel retains a copy of the History buffer. The copy of the preceding History buffer is called a Hidden History buffer and a copy of the preceding Alarm History is called a Hidden Alarm History buffer.

If you attempt to view or print history and the control panel displays one of the screens shown below you can use the options listed in the table below to view the contents of a Hidden History buffer.

```
HISTORY EMPTY      (ESCAPE TO ABORT)
*****
```

Figure 4.20 History Empty Display

```
ALARM HISTORY EMPTY (ESCAPE TO ABORT)
*****
```

Figure 4.21 Alarm History Empty Display

Options for viewing and printing Hidden History and Hidden Alarm History do not appear in the LCD display when in Read Status. You can view and print the contents of these Hidden History buffers using the options listed in the table below. You read and print Hidden History and Hidden Alarm History the same way you read and print history using the options that appear on the "Read Status" screen. The table also contains references to the sections that contain instructions for reading and printing history.









To	Press	Refer to
Read Hidden Alarm History	 2 @ 6 	"How to View Read Status for Alarm History" on page 45
Print Hidden Alarm History	 2 @ 7 \ 	"How to Print Alarm History" on page 46
Read Hidden History	 2 @ 8 . 	"How to View Read Status for Event History" on page 44
Print Hidden History	 2 @ 9   	"How to Print Event History" on page 46

Table 4.3 Hidden History Selections

# Appendix A: Special Zone Operation

## A.1 Overview

This section contains information for operating the control panel as detailed in the topics listed below:

Section	Special Zone	Refer to Page
A.2, "Releasing Zones (R0-R9)"	R0-R9	page 49
A.3, "Time, Date, and Holiday Functions"	F5, F6, F7	page 52
A.4, "NAC Coding"	F8	page 54
A.5, "Presignal and Positive Alarm Sequence (PAS) Operation"	F0	page 55

## A.2 Releasing Zones (R0-R9)

### A.2.1 Purpose of Releasing Zones



**WARNING:** When used for CO<sub>2</sub> releasing applications, observe proper precautions as stated in NFPA 12. Do not enter the protected space unless physical lockout and other safety procedures are fully completed.

Do not use software disable functions in the panel as lockout.

The control panel provides ten Releasing Zones (R0-R9). These are special zones that you can use for up to ten independent releasing operations. This section contains descriptions of each Releasing Function option and an example of how Releasing Zone options work.

For instructions on programming Releasing Functions, refer to the *NFS2-640 Programming Manual*.

Each Releasing Zone includes the following releasing options:

Option	Description
Cross Zone	Cross Zones let you program the control panel to activate a Releasing Zone when two or more detectors are alarmed. Cross Zone selections are: <b>Y</b> Two or more detectors are alarmed that are mapped to one of the ten Releasing Zones (R0-R9) <b>Z</b> Two or more detectors are alarmed that are mapped to two different Software Zones and mapped to one of the ten Releasing Zones (R0-R9). <b>H</b> At least one smoke detector mapped to one of the ten Releasing Zones (R0-R9) is alarmed <i>and</i> at least one heat detector mapped to the same Releasing Zone as the smoke detector is alarmed. <b>N</b> Cross Zones not used
Delay Timer	Select a 0–60 second delay before activating a zone.
Abort	An Abort Switch Type Code used to abort activation of a zone.
Manual Release	Allows immediate zone activation by overriding the abort function, cross-zone function, and delay timer.
Soak Timer	Automatically shuts off the releasing device after a preprogrammed period of time. Select 0001-9999 seconds for a Soak Timer or 0000 seconds for no Soak Timer.

**Table A.1 Releasing Options**



## A.2.2 How to View Releasing Zone Selections

You can use the Read Status Entry option to view the current selections for a Releasing Zone. For example, to view selections for Releasing Zone R1, press the keys in sequence:

Enter 2 @ 0 ? Enter Z R 1 Enter

A sample LCD display of a Releasing Function selected for Releasing Zone R1:

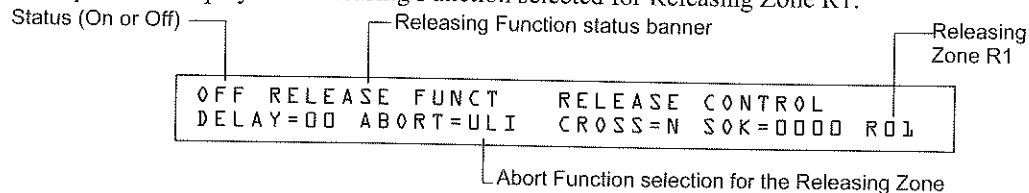


Figure A.1 Sample Read Status for a Releasing Zone

## A.2.3 How Releasing Zones Operate

The figure below contains an illustrated example of how Releasing Zones work, using cross zone selections with four detectors and a NAC mapped to Releasing Zone 1 (listed as ZR1 in the CBE list). Table A.2 lists the cross zone selections and the conditions that activate the Releasing Zone:

```
PROGRAM SMOKE (PHOTO) DETECTOR ADDR 2D101
01 R1 -- -- -- A&P&A** 2D101
```

CBE list = 01 R1

```
PROGRAM SMOKE (PHOTO) DETECTOR ADDR 2D102
01 R1 -- -- -- A&P&A** 2D102
```

CBE list = 01 R1

```
PROGRAM SMOKE (ION) DETECTOR ADDR 2D103
02 R1 -- -- -- A&P&A** 2D103
```

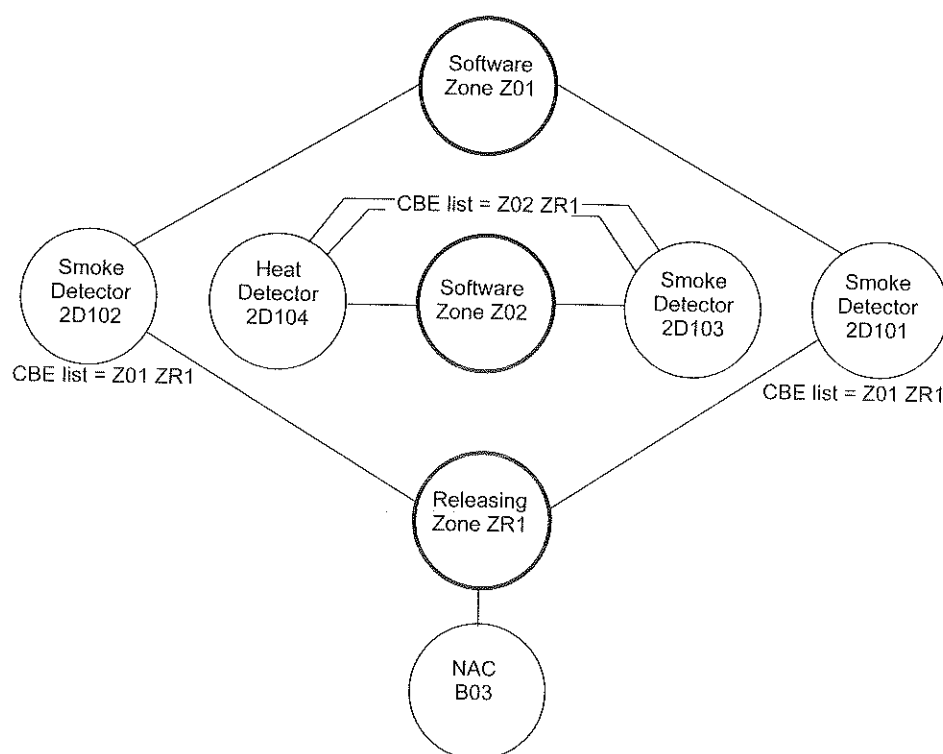
CBE list = 02 R1

```
PROGRAM HEAT (ANALOG) DETECTOR ADDR 2D104
02 R1 -- -- -- A&P&A** 2D104
```

CBE list = 02 R1

```
PROGRAM RELEASE CKT FRONT HALLWAY NO. 3
R1 -- -- -- I** 803
```

CBE list = R1



**Figure A.2 Illustrated Example of Cross Zone Programming**

Listing of each Cross Zone option and the conditions required to activate the Releasing Zone, according to the example shown in Figure A.2.

Cross Zone Selection (Cross=)	Condition(s) Required to Activate the Releasing zone
Cross=N	An alarm from any detector activates the releasing circuit.
Cross=Y	An alarm from any two detectors activates the releasing circuit.
Cross=Z	An alarm from two detectors mapped to different Software Zones, but mapped to the same Releasing Zone. <ul style="list-style-type: none"> <li>• An alarm from 2D101 and 2D103 – detectors mapped to different zones, but both list ZR1 in their CBE.</li> <li>• An alarm from 2D102 and 2D104 – detectors mapped to different zones, but both list ZR1 in their CBE.</li> <li>• An alarm from 2D101 and 2D104 – detectors mapped to different zones, but both list ZR1 in their CBE.</li> <li>• An alarm from 2D102 and 2D103 – detectors mapped to different zones, but both list ZR1 in their CBE.</li> </ul>
Cross=H	Activation of heat detector 2D104 and one smoke detector (2D101, 2D102, or 2D103).

**Table A.2 Example of Cross Zone Selections**

## A.3 Time, Date, and Holiday Functions

### A.3.1 Overview

The control panel includes a real-time clock that displays the time-of-day, the date, and the day-of-week. The clock includes a lithium battery backup. Time displays in a USA format (12-hour time format with month/day/year) or a EUR (European) format as shown below:

TR OUBL CONTROL	MODULE ADDR 1M159
OPEN 03:48P 041508 1M159	

USA Time and Date format (default)

TR OUBL CONTROL	MODULE ADDR 1M159
OPEN 15:48 140408 1M159	

EUR Time and date format

**Figure A.3 Sample USA and EUR Time/Date Formats**

The control panel also provides Time Control zones F5 and F6 for time and date control functions and zone F7 for holiday functions.

### A.3.2 How to View Time Control Selections

You can use the Read Status Entry option to view the current selection for the Time function. To do so, press the following keys in sequence:

Enter 2 @ 0 ? Enter Z F 5 % Enter

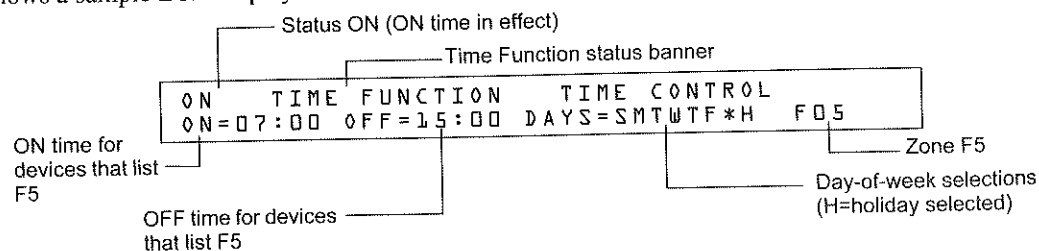
or

Enter 2 @ 0 ? Enter Z F 6 : Enter



**NOTE:** For instructions on programming the Time function, refer to the *NFS2-640 Programming Manual*.

The LCD display shows the current selections for the Time Control function. The figure below shows a sample LCD display of a Time Control function:



**Figure A.4 Sample Read Status for Time Function**

### A.3.3 How to View Holiday Function Selections

You can use the Read Status Entry option to view the current selection for the Holiday function. To do so, press the following keys in sequence:



**NOTE:** For instructions on programming the Holiday function, refer to the *NFS2-640 Programming Manual*.

The LCD display in Figure A.5 gives an example of an LCD display of a Holiday function:

Status ON (holiday function not in effect)  
Holiday Function status banner

```
ON HOLIDAY FUNCTION 12/15 **/** **/**
**/** **/** **/** **/** **/** **/**
```

Holiday selections (for zone F7)

**Figure A.5 Sample Read Status for Holiday Function**

### A.3.4 How Time Control and Holiday Functions Work

Time and Holiday activation occurs automatically and does not require operator intervention. All outputs with a CBE list containing F5 or F6 activate within the times specified for the days of the week listed in F5 or F6. All smoke detectors with a CBE list containing F5 or F6 switch to their lowest sensitivity (AL:9) within the times specified for the days of the week listed in ZF5 or ZF6. Refer to "Intelligent Sensing Applications" in the *NFS2-640 Programming Manual* for details on setting detector sensitivity.

Time Control is active for all days of the week listed in F5 or F6. Holidays listed in F7 are excluded unless you list Holidays (H) in the day-of-week selection of F5 and F6 (shown in Figure A.4). Enter the time functions in a 24-hour format with the OFF time later than the ON time. After changing programming using Time Control, always reset the control panel.



**NOTE:** You can turn a NON FIRE control point on and off, by listing zone F5 or F6 in the CBE list of a control/relay module.

You can use Time Control zones F5 and F6 to program non-fire applications such as turning lights on and off, setting a thermostat, and so on. For example, you can program zones F5 and F6 to activate outputs at one time of day and deactivate outputs at later time, on specified days of a week. Table A.3 contains descriptions of additional Time Control applications:

Application	Requirement
Control day and night sensitivity of intelligent, addressable detectors	List zone F5 or F6 in the detector CBE. This automatically sets the detector sensitivity to the minimum setting (AL:9) during the day and automatically returns detector sensitivity to programmed sensitivity during the evening.
Control a specific date of-year	Input up to nine date in the Holiday selection screen for Special Zone F7, then list zone F7 (Holiday) in the CBE of a device.

**Table A.3 Time Control Applications**