AFP-300/AFP-400
Analog Fire Panel

Programming Manual

Document 50259

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

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

CAUTION - *System Reacceptance Test after Software Changes:* To ensure proper system operation, this product must be tested in accordance with NFPA 72-1993 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity of 85% RH (non-condensing) at 30° C/86° 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 nominal room temperature of 15-27° C/60-80° 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 interferences, proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

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

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

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

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

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

Fire Alarm System Limitations *While installing a fire alarm system may make lower insurance rates possible, 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 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.

Any fire alarm system may fail for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in walls, or 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. Further-more, all types of smoke detectors - both ionization and photoelectric types, have sensing limitations. No type of smoke detector can sense every kind of fire caused by carelessness and safety hazards like smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

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.

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.

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.

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

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled.

The most common cause of fire alarm malfunctions, however, is inadequate maintenance. All devices and system wiring should be tested and maintained by professional fire alarm installers following written procedures supplied with each device. System inspection and testing should be scheduled monthly or as required by National and/or local fire codes. Adequate written records of all inspections should be kept.

FCC Warning

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

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

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

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1. Introduction

Overview

The AFP-300/AFP-400 is an intelligent, field-programmable Fire Alarm Control Panel. Field-programming the AFP-300/AFP-400 lets you customize the fire alarm system by selecting and setting program options for output circuits, intelligent/addressable devices, Notification Appliance Circuits (NACs), and monitor/control modules.

Benefits

Benefits of AFP-300/AFP-400 programming include the following:

- Ease-of-use – Field program the control panel without needing special software skills.

- Autoprogramming Function – Automatically detects newly installed, addressable devices, allowing quicker installation.

- Local programming – program directly from the control panel keypad to reduce installation time.

- Remote programming – input long data entry programming information on a PC; transfer programming data between a PC and the control panel.

- Security – use passwords to control access to the control panel and protect memory.

- 80-Character (2x40) Liquid Crystal Display – view programming and device information on the control panel.

In This Chapter

Note: This manual contains information for entering programming data to the control panel using programming keys on the front panel. For details on control panel operation, refer to the AFP-300/AFP-400 Operations Manual.

This chapter provides introductory information for programming the AFP-300/AFP-400. Table 1 outlines the contents of Chapter 1:

Section	Topic(s) covered	Refer to page...
Conventions and Symbols	Typographic conventions and symbols used for entering data.	2
Entering Information from the Control Panel	The control panel keys used to program the control panel.	2
Additional Information	Where to find additional information on the AFP-300/AFP-400 control panel.	2
Using Programming Keys	Definitions for keys used to program the control panel	2
Choosing a Programming Method	Summarizes the two methods for field-programming the control panel: Autoprogramming and Veri•Fire.	4
Veri•Fire Off-Line Programming Utility	How to set up the control panel for using the Veri•Fire Off-line Programming Utility.	4

Table 1 Topics Covered in Chapter 1

Conventions and Symbols

This manual uses conventions and symbols to provide the following types of information:

* Note – indicates supplementary information.

* **Warning** – indicates information about procedures that could cause error, programming errors, runtime errors, or equipment damage.

For presentation and printing purposes, this manual uses different typeface characters, in place of the actual LCD letters that you see on the panel display.

Entering Information from the Control Panel

Figure 1 identifies the control panel keys that you use when programming the control panel:
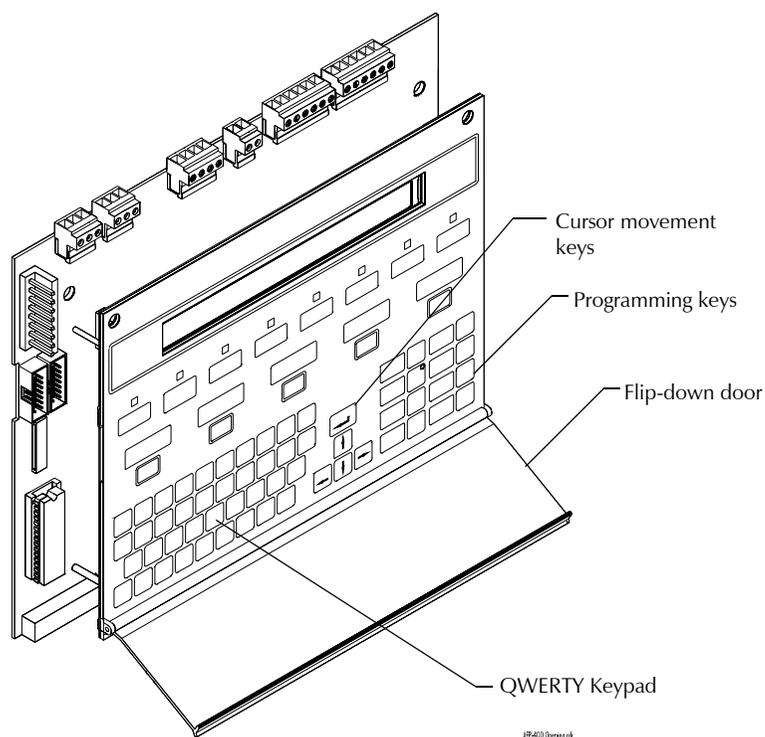
Figure 1 Control Panel Keys

Using Programming Keys

Table 2 contains definitions for keys used to program the control panel:

Press this key	To
ENTER	Accept information.
ESC	Aborts last operation without saving information. Also use to exit Program mode.
NEXT SELECTION	Move the cursor to the next field.
PREVIOUS SELECTION	Move the cursor to the previous field.
→	Move the cursor among data fields.

Table 2 Common Programming Keys

This manual uses the following conventions for entering data and pressing control panel keys, as listed in Table 3:

When you see	Do this	Example
\<text in brackets\>	Type the text	\<1\> means to type "1"
a graphic of the key	Press the key	[ESC] means to press the key

Table 3 Type Conventions

Additional Information

Table 4 contains a list of documents that contain additional information on the AFP-300/AFP-400:

Document Title	Document No.
Veri•Fire 400™ Off Line Programming Utility Product Installation Document	50376
AFP-300/AFP-400 Operations Manual	50260
AFP-300/AFP-400AFP-400 Installation Manual	50253

Table 4 Additional Documentation

Choosing a Programming Method

The AFP-300/AFP-400 provides two methods for field-programming the control panel: using the Autoprogram feature or the Veri•Fire™ Programming Utility. Table 5 lists the benefits of each method:

This programming method...	is most suitable for...
Autoprogram	Speed and convenience of putting the control panel on line quickly; and changing programming information.
Veri•Fire 400™	Efficient means of creating and editing programs that require a lot of data entry.

Table 5 Field-Programming Options

Veri•Fire Off-Line Programming Utility

Note: For detailed installation operations instructions, refer to: the Veri•Fire 400 Production Installation Document or the Veri•Fire online help file.

The Veri•Fire Off-Line Programming Utility lets you upload or download programs between a personal computer and the control panel. To use Veri•Fire, follow the steps in Table 6:

Step	Action
1	Connect a PC-compatible computer to the EIA-232 port on the control panel: • Connect the supplied cable (P/N 75267) to the PC COM port (COM1–COM4). • Connect the other end of the cable to terminal TB2 (PC/Terminal) on the control panel (depending on the type of connection) as follows: TB2 (PC/Terminal) Direct Wire Connections Modem Connections TX Black Green RX Green Black REF Red Red
2	Load the Veri•Fire software into the PC.
3	Run the Veri• Fire Off Line Programming Utility.

Table 6 PC-to-Control Panel Transfer Connections

Figure 2 shows typical connections between a PC and the control panel using Veri•Fire 400:
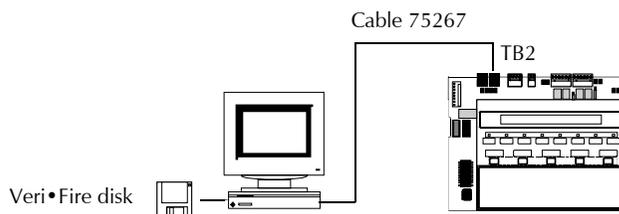
Figure 2 PC-to-Control Panel Connections (Veri•Fire)

2. Program Change

Overview

This chapter contains instructions and sample screens for using the Program Change options, selected from the Programming Entry Screen.

Entering Program Change Mode

Enter Program Mode by pressing <Enter>. The control panel displays the Program Entry screen:

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

Figure 3 Program Entry Screen

Press <1>. The control panel displays the Enter Password screen:

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

Figure 4 Enter Password Screen

Note: If the Password does not work – The control panel displays: Incorrect Password and a hexadecimal error code number. Contact the manufacturer for assistance.

Enter a password to enter Program Change or Status Change. In Program Change or Status Change, the control panel does the following:

- activates the trouble relay (TB5 on the MPS-400);

- shuts off the panel sounder; and

- flashes the System Trouble LED (and cannot be made steady).

For example, if you enter a Program Change password, the control panel displays the Program Change screen:

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

Figure 5 Program Change Screen

Entering a Password

The AFP-300/AFP-400 provides two types of selectable passwords: Program Change and Status Change. Refer to Table 7 for uses and the factory-set password for each:

Password type	Used to	Factory Setting
Program Change (high level)	Enter Program Change mode (see Figure 5) to program control panel functions and set system parameters.	00000
Status Change (low level)	Enter Status Change mode (see the "Status Change Screen" on page 21) to set time, enter walk test, or make low level status changes.	11111

Table 7 Type of Programming Passwords

Changing a Password

For security purposes, you can change your passwords. To do so, follow the instructions in "Changing a Password" on page 14.

Clear Programming Information

The Clear option removes all programming information from control panel memory. If installing the control panel for the first time, use Option 0 to clear control panel memory. To do so, follow these steps:

1. From the Program Change screen, press <0> to display the Clear Program screen. The control panel prompts for verification as shown in Figure 6:

```
PRESS ENTER TO      CLEAR ENTIRE PROGRAM
OR ESCAPE TO ABORT
```

Figure 6 Clear Program Screen

2. Press <Enter> to clear control panel memory or press <Esc> to exit the screen without clearing.

Autoprogram

The Autoprogram option provides the following features:

*   identifies all installed, addressable devices connected to a Signaling Line Circuit (SLC);

*   detects new (unprogrammed) devices and new panel modules;

*   lets you view, edit, and accept any new devices; and

*   loads default program information for new devices.

If programming for the first time, the control panel displays a screen similar to Figure 7:

SLC2 (Loop 2) only applies to an AFP-400 control panel.

```
L1:02 DETS, 02 MODS L2:00 DETS, 00 MODS
PANEL OUTPUTS: 00    BELLS: 04
```

Figure 7 Autoprogram Screen

SLC devices already programmed into control panel memory do not change and do not appear in the Autoprogram Device Count Screen. Devices not matching the program (not same SLC address and type) display in the Autoprogram Device Count Screen. To accept autoprogrammed devices, press <Enter>. The control panel displays the following message:

```
ACCEPT ALL DEVICES     PLEASE WAIT!
```

Figure 8 Autoprogram Prompt Screen

After accepting all devices, the Program Change screen appears in the panel display.

Displaying a Device

For each new device, the Autoprogram option selects and displays default program values. For example, Figure 9 shows Autoprogram default values for a detector:

Type Code — Loop number — Two-digit address

```
PROGRM SMOKE (PHOTO) DETECTOR ADDR 101
Z03 Z Z Z Z    AL:8 PA:8    **       D101
```

Control-by-Event (CBE) Equation

Alarm Threshold

Pre-Alarm Level

Alarm Verification

Multi-Detector mode

Figure 9 Autoprogram Default Values for a Detector

Autoprogramming Defaults

Table 8 contains descriptions for the fields that display in the Autoprogram Default screen for a detector:

Field	Description
SMOKE (PHOTO)	Type code of the detector.
DETECTOR ADDR 101	Default custom label: 101 (1=loop 1; 01=address 01).
Z03 Note: You can change zones as well as add four more zones for each detector's CBE.	Default zone selection: Zone 01 (Heat detectors) Zone 02 (Ion detectors) Zone 03 (Photo detectors) Zone 04 (Laser detectors) Zone 05 (Multisensor)
AL:8 (Photo default) AL:6 (Ion default) AL:6 (LPX default) AL:5 (Multisensor default)	The Alarm sensitivity level, with 9 the least sensitive Alarm level and 1 the most sensitive Alarm level.
PA:8 (Photo default) PA:6 (Ion default) PA:6 (LPX default) PA:5 (Multisensor default)	Shows the Pre-Alarm level setting—a number between 0 and 9—as follows: **0** – no Pre-Alarm. **1** – most sensitive Pre-Alarm level. **9** – least sensitive Pre-Alarm level.
**	***** The first asterisk (*) indicates the cooperative multi-detector mode: **A** combines the detector's alarm decision with the next address above. **B** combines the detector's alarm decision with the next address below. **C** combines the detector's alarm decision with the next address above and the next address below. ***** – the second asterisk (*) indicates Alarm Verification (V=on, *=off). Refer to "Interpreting a Detector Status Display or Maintenance Report" on page 42 for more information on the Alarm Verification feature.

Table 8 Autoprogram Default Fields

If a device exists in the control panel program, but is missing (no response from the program), the control panel displays a screen similar to the following:

Type Code

```
PROGRM SMOKE (ION) DETECTOR ADDR 133
DEVICE NOT ANSWERING DELETE FR MEM: D133
```

Two-digit address (01-99)
SLC number
D (detector) or M (module)
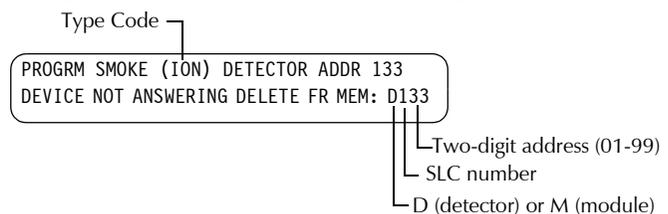
Figure 10 Autoprogram Device Display Screen

- To delete the device from memory, press Enter. The next new device appears in the display.

- To keep the device in memory, press <Esc>. The control panel displays the Program Change screen.

System Defaults

Autoprogram selects the following default system functions the first time you program the control panel. System defaults do not appear on the display. Subsequent Autoprogramming will not change previous editing of these functions.

Table 9 contains a list of the default functions and values:

Note: For details on programming special zones F0-F9 and R0-R9, refer to "Special Zone Change" on page 16. For details on programming system parameters, Refer to "System Function Programming" on page 18.

Function	Value
Zone 00	Custom label=General Alarm Zone
Zones 01 through 89	Custom label is blank
F0	Label=Presignal/PAS Delay; Delay=180; PAS=N
R0-R9	Label=Release Funct Release Control
ABORT=ULI; CROSS=N; SOAK=0000; Delay=00	N/A
F5 and F6	Label=Time Function Time Control Off=00:00; Days=SMTWTFSH
F7	Label=Holiday Funct; all days are 00/00
F8	Label=Code Type=March Time
F9	Label=Pre-Alarm Funct Default=Alert
System Parameters (see Figure 28 on page 18)	SIL INH=000 AUTO=000 VERIFY=30 USA TIME TERM_SUPERV=NO LocT BLINK=Y ST=4 ACS=N
Passwords	Program Change=00000, Status Change=11111
All Systems Normal	N/A
Custom Message	40 blanks

Table 9 System Defaults

Point Programming

Point Programming Overview

After programming all SLC-connected devices into the system, you can modify or delete points using Option 2, Point Prog. From the Program Change screen, press <2> to display the Point screen:

```
POINT PROG.            1=MODIFY POINT
2 = DELETE POINT
```

Figure 11 Point Screen

You can now modify or delete a point. To modify a point for a detector, module, or output circuit: press <1> to display the Modify Point screen; or press <2> to display the Delete Point screen.


```
POINT PROG.     ENTER:  DETECTOR=*,AAA,E
MODULE=#,AAA,E          OUTPUT CKT=&,A-A,E
```
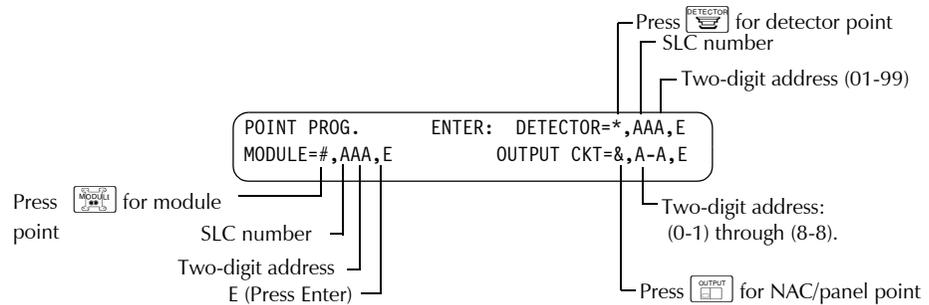
Figure 12 Modify Point screen

```
DELETE POINT.   ENTER: DETECTOR=*,AAA,E
MODULE=#,AAA,E OUTPUT CKT=&,A-A,E
```
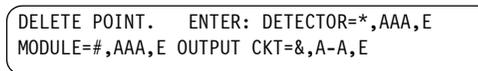
Figure 13 Delete Point screen

The Modify Point and Delete Point screens let you edit or delete points for a detector, module, or output circuit. To select a device, follow these steps:

To select...	Do the following...
Addressable Detector	Press [DETECTOR] Type the loop number (1 or 2) and detector and address (01-99). Press [ENTER]
Addressable Module	Press [MODULE] Type the loop number (1 or 2) and the module address (01-99). Press [ENTER]
NAC/Panel Output Circuit	Press [OUTPUT] Type the output circuit address: (0-1) through (8-8). Press [ENTER]

Figure 14 Using the Modify Point and Delete Point Screens

Programming a Detector

The section "Autoprogram" on page 6 contains a sample detector programming screen, detector default selection, and instructions for programming a detector point.

Programming a Monitor Module (MMX)

When you select a device, the control panel returns a screen that displays information about the point. For example, Figure 15 shows information for a sample monitor module (M101) on the panel display:

Note: The Type Code is used to change the function of a point.

```
┌Blinking Type Code selection
PROGRM MONIIOR MODULE ADDR    101
Z04 Z Z Z Z                  M101
```
Two-digit address (01-99)
SLC number
D (detector) or M (module)

Note: SLC2 (Loop 2) only applies to an AFP-400.
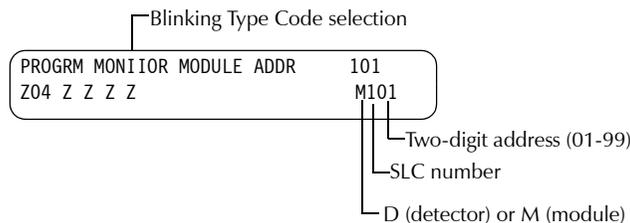
Figure 15 MMX Point Screen

The Type Code selection blinks, indicating that you can press the Next or Previous Selection keys to scroll through the Type Code selections. Refer to Table 11, which lists the function for all Monitor Module Type Codes.   You can also do the following:

1. Use the arrow and alphanumeric keys to modify point information, such as the CBE equation.

2. When finished modifying a point, press <Enter>; then use the Next or Previous keys to select another point.

MMX Default Zone Assignments

Table 10 lists the monitor module address range and the default zone assignment for each range:

Monitor Module Address	Zone Default
01 through 19	Z04
20 through 39	Z05
40 through 59	Z06
60 through 79	Z07
80 through 99	Z08

Table 10 Monitor Module (MMX) Default Zones

Change default zones for a monitor module as shown in Table 11, "Autoprogramming Default Fields."

Type Codes for Monitor Modules (MMX)

Table 11 lists Monitor Module (MMX) Type Codes:

Type Code Label	Special Function
Monitor	none (default)
Pull Station	none
Smoke Detect	none
Heat Detect	Use to monitor conventional detectors
Blank (12 spaces)	none (use when no other Type Code applies)
Waterflow	causes a non-silenceable alarm
Supervisory	becomes a supervisory point
Tamper	becomes a supervisory point
Non Fire	special non-alarm point
Hazard Alert	special non-alarm point
Fire Control	special non-alarm point
Abort Switch	aborts the release zone
Man. Release	overrides Abort
Silence	functions like the Silence switch
System Reset	functions like the Reset switch
Evacuate	functions like the Alarm Activate switch
PAS Inhibit	overrides Presignal
Trouble Mon	short = trouble
Burglar Ala	causes a Security alarm on an open or short
Tele. Page	allows remote paging to a fire area
AllCall Page	allows All Call paging from a remote phone in the installation
Man Rel Delay	initiate manual release with 10-second delay
Second Shot	reactivate release output, second agent discharge
Sprinklr Sys	allows waterflow and supervisory monitoring on same module
Comb. Monitor	allows waterflow and supervisory monitoring on same module

Table 11 Monitor Module (MMX) Type Codes

Programming a Control Module (CMX)

Programming a CMX module is similar to MMX modules—except the default zone is always set to Zone 00 (General Alarm). Figure 16 shows a sample display for editing a CMX module:

```
                           Blinking type code selection
          ┌─────────────────────────────────────────────┐
          │ PROGRM CONTROL          MODULE ADDR 108       │
          │ Z00 Z Z Z Z             IS * M108             │
          └─────────────────────────────────────────────┘
    Switch Inhibit: I=selected                Walk Test Selection: *=off
    (default); *=off                          (default); W=selected

              Silenceable: S=selected
              (default); *=off
```
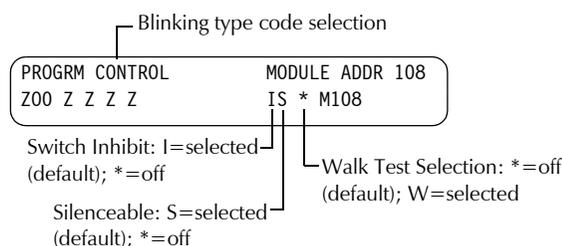
Figure 16 Control Module Programming Screen

The Type Code selection blinks, indicating that you can press the Next or Previous Selection keys to scroll through the CMX Type Code selections (listed in Table 12). You can also do the following:

1. Use the arrow and alphanumeric keys to modify point information, such as the CBE equation.

2. When finished modifying a point, press <Enter>; then use the Next and Previous keys to select another point.

Type Codes for Control Modules (CMX)

Table 12 contains a comprehensive list of Control Module Type Codes. The Type Codes that display, however, depend on the configuration.

Type Code	Special Function
Control	Supervised NAC
Relay	Relay output
Bell Circuit	Supervised NAC
Strobe Ckt	Supervised NAC
Horn Circuit	Supervised NAC
Audible Ckt	Supervised NAC
Speaker	Supervised NAC
Rel End Bell	Supervised NAC
blank label	Supervised NAC (use when no other Type Code applies)
Release Ckt	Releasing Circuit, nonpower-limited, supervised for opens, shorts, and ground faults (always non-silenceable)
Rel Ckt ULC	Releasing Circuit, power-limited, supervised for opens, shorts, and ground faults
Relea. Form C	Relay output, contacts operate upon release
Rel Audible	NAC, activated upon release
NonReset Ctl	Relay output, unaffected by "System Reset" command
Telephone	Standard telephone circuit

Table 12 Control Module (CMX) Type Codes

Programming NAC/
Panel Output Circuits

Programming Output Circuits (four NACs or Panel Output Circuits connected through one of the panel NAC circuits) is like programming Control Modules—except for the Type Code and device address.

Blinking type code selection

```
PROGRM BELL CIRCUIT PANEL CIRCUIT NO. 3
Z00 Z Z Z Z                    IS W    B03
```

Default zone
selection is Z00
(general alarm)

Switch Inhibit: I=selected
(default); *=off

Silenceable: S=selected
(default); *=off

Walk Test Selection:
W=selected (default) *=off

Address of a NAC/Panel Output
Circuit connected through
NAC1 (B01), NAC2 (B02),
NAC3 (B03), or NAC4 (B04)
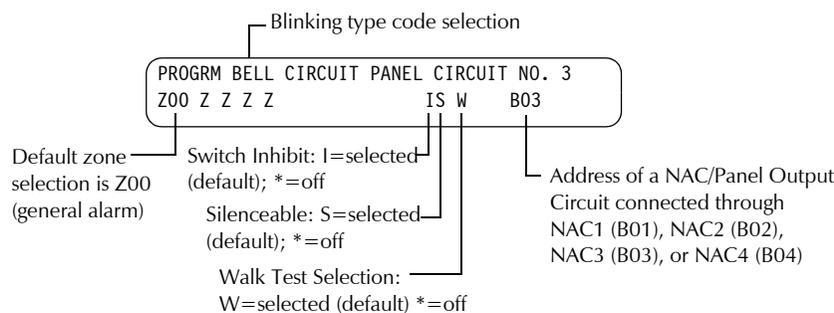
Figure 17 NAC/Panel Module Programming Screen

The Type Code selection blinks, meaning you can press the Next or Previous keys to scroll through the Type Code selections (listed in Table 13).

NAC/Panel Output
Circuit Type Codes

Table 13 contains a comprehensive list of NAC/Panel Module Type Codes. The Type Codes that display, however, depend on the type of circuit (Control or Relay).

Type Code	Special Function
Control	Supervised NAC
Relay *(only displays for a Relay circuit)*	Relay output
Bell Circuit	Supervised NAC
Strobe Ckt	Supervised NAC
Horn Circuit	Supervised NAC
Audible Ckt	Supervised NAC
Speaker *(only displays for a Relay circuit)*	Supervised NAC
Rel End Bell	Supervised NAC
blank label	Supervised NAC (use when no other Type Code applies)
Release Ckt *(only displays for a Control circuit)*	Releasing Circuit, nonpower-limited, supervised for opens, shorts, and ground faults
Rel Ckt ULC *(only displays for a Control circuit)*	Releasing Circuit, power-limited, supervised for opens, shorts, and ground faults
Relea. Form C *(only displays for a Relay circuit)*	Relay output, contacts operate upon release
Rel Audible	NAC, activated upon release
Telephone *(only displays for a Relay circuit)*	Standard telephone circuit
Rel Code Bell	Supervised NAC (MPS-400 NAC only)

Table 13 NAC/Panel Output Circuit Type Codes

Changing a Password

Password Change lets you customize a high-level or low-level password. From the Program Change screen, press <3> to display the screen, then follow the instructions in Table 14.

```
CHANGE PASSWORD     *,NNNNN,E=PROGRAM
#,NNNNN, E=STATUS  [              ]
```
└── Display area for new password
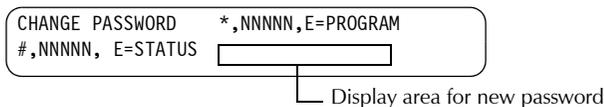
Figure 18 Change Password Screen

To change a password, follow the instructions in Table 14:

To...	Press...	Then...
Change the Program password.	[DETECTOR]	type the new Program password.
Change the Status password.	[MODULI]	type the new Status password.
Save the password.	[ENTER]	the Password Change screen appears.
Leave the edit screen without changing a password.	<Backspace> or <Esc>	the Password Change screen appears.

Table 14 Changing a Password

Changing the System Message

The Message option lets you change the 40-character All Systems Normal message. From the Program Change screen, press <4> to display the Message Change screen:

```
SYS NORMAL MESSAGE
  [■                ]
```
└── Blinking cursor prompt   └── Message change area
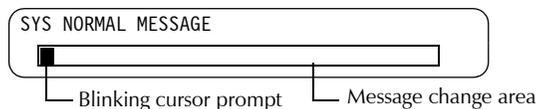
Figure 19 Message Change screen

To change the system message, follow these guidelines:

- Change one character at a time, indicated by the blinking cursor on the second line of the display.

- Enter up to 40 characters maximum.

Table 15 contains instructions for entering characters in the Message Change screen:

To...	Do this...
Change a blinking character	Type a character from the keypad.
Move to the next character	Press [→]
Enter additional characters (!@#$%^=*:;)	Press [LOWER CASE] then press a number key as follows: ! @ # $ % ^ = * : ; 1 2 3 4 5 6 7 8 9 0 For example, press [LOWER CASE] then press <7> to enter a "=" character.
Save the new message	Press [ENTER]

Table 15 Changing System Message

Changing a Custom Label

The Zone option lets you change the custom label assigned to zones 1-99. From the Program Change screen, select <5> to display the Zone Change screen.

Blinking cursor prompt

```
CHANGE ZONE LABEL    SELECT ZONE 01-99: ■
ENTER UP TO 19 CHAR  [                 ]
```

Custom label (characters 22-40)
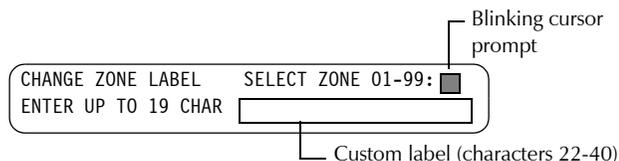
Figure 20 Zone Change Screen

Rules for Changing a Custom Label

- The zone number displays in the first line, characters 39 and 40.

- For single digit numbers, enter a leading zero before the digit.

- Enter an alphanumeric zone label into line 2, characters 22–40.

- The program forces a blank for the first character which inserts a space between the device and zone labels for a printout.

How to Change a Custom Label

To change a custom label for a zone or a device, follow these instructions:

To	Do this
Change a zone label	Type a new zone label from the keypad.
Save the zone label in memory	Press ⏎ ENTER The program stores the zone label in memory and displays the Zone Change screen with all fields blank.
Leave the Zone Change screen without changing a zone label	Press ESC The display returns to the Program Mode screen.

Table 16 Changing a Custom Label

Special Zone Change

The Special Zone Change option lets you change the program for special zones F0-F9 or releasing zones R0-R9. From the Program Change screen, select <6> to display the Special Function Change screen.

```
SPECIAL FUNCTION: F0=PRESIG   R0-R9=REL
F5-F6=TIME F7=HOL F8=CODE   F9=PRE-ALARM
```

Figure 21 Special Function Change Screen

Table 17 contains descriptions for each special function that appears in the Special Function Change screen.

Special Function	Specifies...
F0 (Presignal)	the delay time or the PAS selection.
F1 (Trouble less AC)	an output programmed to turn on/off if a system trouble—other than an AC power loss—occurs.
F2 (AC Trouble)	an output programmed to turn on/off if an AC power loss or a brownout condition occurs.
F3 (Security)	an output programmed to turn on/off if a Security input activates.
F4 (Supervisory)	an output programmed to turn on/off if a Supervisory input activates.
F5-F6 (Time Control)	the start time, stop time, or days of the week.
F7 (Holiday)	up to nine holiday dates. An F7-programmed device activates on the specified holiday dates.
F8 (Coding)	one of four code types: March Time, Temporal, California, or Two Stage. F8 only takes effect if you program one or more NACs to F8.
F9 (Pre-Alarm)	the Alert and Action Pre-Alarm level.
R0-R9 (Releasing)	the delay times, abort type, cross zoning, or soak time.

Table 17 Special Functions

Special Function Screens

Select Function screens by entering the special function letter and number (for example, F0, R0, and so on) from the Special Function Change screen. The following sections show sample screens that display when you select a special function.

F0 (Presignal)   The Presignal screen provides fields for changing the delay time or PAS. From the Special Function Change screen, select <F0> to display the Presignal Function screen.

```
PRG PRESIGNAL FUNCT   PRESIGNAL DELAY
DELAY=180            PAS=NO            F00
```

Figure 22 Presignal Screen

R0-R9 (Releasing Functions)
The Releasing Function screen provides fields for changing the delay time or PAS. From the Special Function Change screen, select a function (R0-R9) to display the Releasing Function screen:

```
PRG RELEASE FUNCTION  RELEASE CONTROL
DELAY=00 ABORT=ULI   CROSS=N SOAK=0000 R00
```

Figure 23 Releasing Function Screen

F5-F6 (Time Control Functions)
The Time Control screen provides fields for changing the start time, stop time, or days of the week. From the Special Function Change screen, select F5 or F6 to display the Time Control screen:

```
PRG TIME FUNCTION        TIME CONTROL
ON=**:**  OFF=**:**      DAYS=******** F05
```

Figure 24 Time Control Screen

F7 (Holiday)
The Holiday screen provides fields for specifying up to nine holiday dates. From the Special Function Change screen, select F7 to display the Holiday screen:

```
PRG HOLIDAY FUNC  **/**    **/**    **/**
**/** **/** **/** **/**    **/**    **/**
```

Figure 25 Holiday Screen

F8 (Code Type)
The Code Type screen provides fields for specifying one of four code types: March Time, Temporal, California, or Two Stage. From the Special Function Change screen, select F8 to display the Code Type screen:

```
PRG CODING FUNCTION CODE TYPE
MARCH TIME                       F08
```
└─Code Type (Refer to "NAC Coding" on page 32)

Figure 26 Code Type Screen

F9 (Pre-Alarm)
The Pre-Alarm screen provides fields for programming the Alert and Action Pre-Alarm functions. From the Special Function Change screen, select F9 to display the Pre-Alarm screen:

Action or Alert (Refer to "Selecting a Pre-Alarm Level" on page 38) ─┐

```
PRG PRELARM FUNCT              ALERT
                                 F09
```

Figure 27 Pre-Alarm Screen

System Function Programming

System Functions   The System option lets you set general system functions. From the Program Change screen, select <7> to display the System Function screen:

```
SIL INH=000 AUTO=000 VERIFY=30  USA TIME
TERM_SUPERV=NO LocT BLINK=Y   ST=4 ACS=N
```

Figure 28 System Function Screen

Table 18 contains settings for general system functions.

System Function	Setting	Default
SIL INH (Silence Inhibit time)	0 to 300 seconds	0
AUTO (Auto Silence time)	• 000 (none) • 600 to 900 seconds	0
VERIFY (Alarm Verification time)	0 to 30 seconds	30
USA TIME	EUR time with Next/Previous keys European time format changes to 24-hour time, and places the day before the month	USA time
TERM_SUPERV	No or Yes	No
Terminal mode – one of three operating modes of PC or terminal connected to the control panel through TB2 on the CPU. For a complete list of functions, refer to the Installation Manual.	• LocT (terminal connected to control panel and located in same room); • LocM (same as LocT but requires password); or • RemT (terminal connected through a modem for Read Status only).	LocT
BLINK=Y (device LED blink)	Set to Blink=N (no blink) by pressing the Up/Down keys.	Blink=Y
ST=4 – the NFPA wiring style used for the SLC loop.	ST=6 (Style 6 SLC loop wiring) ST=4 (Style 4 SLC loop wiring)	ST=4
ACS – Use ACS Selection Groups (Refer to "Annunciator Options" on page 19).	N or Y	ACS=N

Table 18 Setting General System Functions

Annunciator Options   Use Annunciator Selection screens to select information that will display on the ACS annunciators. (Table 19 contains the ACS display selections.) Setting ACS=Y displays the Annunciator Selection 1 Screen, address A1–A10. If UDACT=Y, you can use addresses A11-A19 with UDACTs having software release #UDACT01.0 or higher to send control panel status to a UDACT.

```
                          ┌── A=ACS Address
                          │   ┌── ACS Selection Group (1-9) or *=not selected
                          │   │
 ╭────────────────────────────────────────────────────────╮
 │ ANNUN SELECTION1    A1=* A2=* A3=* A4=*                 │
 │ A5=* A6=* A7=* A8=* A9=* A10=* UDACT=N                  │
 ╰────────────────────────────────────────────────────────╯
```
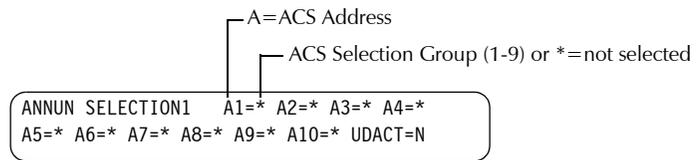
Figure 29 Annunciator Selection 1 Screen

If UDACT=N:

•   The control panel displays the Annunciator Selection 2 Screen (Figure 30), addresses A11-A19.

•   You can use addresses A11–A19 on Annunciator Selection 2 Screen (Figure 30) to select annunciators.

```
                          ┌── A=ACS Address
                          │   ┌── ACS Selection Group (11-19) or *=not selected
                          │   │
 ╭────────────────────────────────────────────────────────╮
 │ ANANNUN SELECTION2    A11=* A12=* A13=*                 │
 │ A14=* A15=* A16=* A17=* A18=* A19=*                     │
 ╰────────────────────────────────────────────────────────╯
```
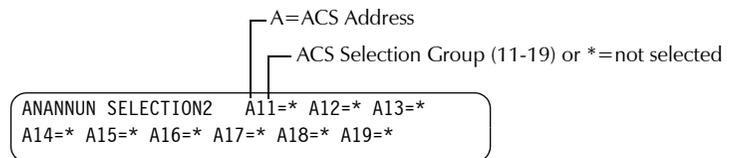
Figure 30 Annunciator Selection 2 Screen

The control panel's annunciation points are divided into nine ACS selection groups of 64 points, listed in Table 19. Refer to Appendix A in the Installation Manual for a list of the 64 points within the ACS Selection Groups.

ACS Selection Group	Annunciator Display
1	CPU Status and Zones 1-56
2	Zones 57-99, NAC Ckts 1-4 and 16 Special Zones
3	Intelligent Modules 101 to 164
4	Intelligent Modules 201-264 (AFP-400 only)
5	Intelligent Modules 165-196 and 265-296 (AFP-400 only)
6	Detectors 101 to 164 on SLC loop 1
7	Detectors 201-264 on SLC loop 2 (AFP-400 only)
8	Detectors 165-196 and 265-296 (AFP-400 only)
9	NAC/Panel Output Circuit Modules (64 points)
* or 0	Annunciator Not Installed At Address

Table 19 ACS Selection Groups

ACS Selection Group Example

Figure 31 shows an example of a screen listing ACS Selection Groups:

A=ACS Address

ACS Selection Group 6

```
ANNUN SELECTION1   A1=6 A2=7 A3=9 A4=*
A5=* A6=* A7=* A8=* A9=* A10=* UDACT=Y
```
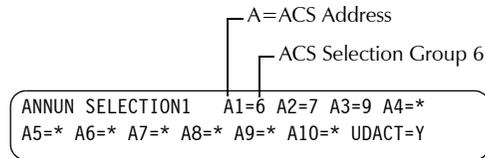
Figure 31 Annunciator Selection Screen Example

Figure 31 shows annunciator selections for addresses A1-A3 (addresses A4-A10 not selected) and addresses A11–A19 set to send panel status to a UDACT.

• Annunciators set to Address 1 display the status of detectors 1-64 (ACS Selection Group 6) on SLC loop 1;

• Annunciators set to Address 2 display the status of detectors 1-64 (ACS Selection Group 7) on SLC loop 2 (SLC2 used only on AFP-400); and

• Annunciators set to Address 3 display the status of the NAC/Panel Output Circuit modules (ACS Selection Group 9).

Check

When finished programming, use the Check option to search the program entries for possible errors. From the Program Change screen, select <8>. The Check option searches the program for the following conditions:

• Output points mapped to a zone without a mapped input.

• A zone with mapped input points without mapped output points (including Z00 outputs).

• Releasing zone inputs (R0-R9) with no RELEASE CKT outputs mapped to them; or RELEASE CKT outputs with no R0-R9 inputs mapped to them.

• RO-R9 inputs not mapped to MAN RELEASE.

If the Check option detects multiple devices that fail the check, press the Previous or Next key to step through the devices. If the Check option displays errors, return to Point Programming ("Point Programming" on page 9) and correct the errors. Figure 32 shows a sample display of program screen that appears after a successful program check:

```
Program Check OK.
RE-TEST PANEL NOW   09:50A Fri 02/07/97
```

Figure 32 Display After Successful Program Check

3. Status Change

Overview

Note: Assign the Status Change password to persons who do not need to do application programming or autoprogramming.

Status Change provides a second programming level—accessed by an assigned password—for changing operating parameters. (These operating parameters do not affect control program settings.) For example, the Status Change password lets someone change settings such as detector sensitivity, system time and date, and so on.

From the Password Entry screen (Figure 3), enter the Status Change password to display the Status Change screen:

```
STATUS CHANGE PRESS:1=DISABL 2=SENSITIV
3=CLR VER 4=CLR HIST 5=TIME 6=WALK TEST
```

Figure 33   Status Change Screen

Disable/Enable

Note: The program does not all Disable/Enable change to: a) initiating devices in alarm; and b) control points that are on.

The Disable/Enable option lets you disable programmed points for detectors, modules, and NAC/Panel Output Circuit modules.

1. Select <1> from the Status Change screen to display the Disable/Enable screen:

2. Select the point type:

    ⊟ for detectors

    ⊟ for modules

    ⊟ for output circuits

    Z for zones

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

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

3. Enter the address of the point, then press <Enter>. A sample display follows:

Blinking status banner (ENABLE or DISABL)

```
ENABLE MONITOR       MODULE ADDRESS 101
ZO4 Z Z Z                          M101
```

When you disable a point and press <Esc> to return to the Disable/Enable screen, the control panel: a) turns on the Disable Points LED; b) sounds the panel sounder; and c) changes the status banner to TROUBL.

Figure 34   Enable/Disable Screen

You can disable or enable a point by changing the status banner as follows:

To...	Press...
change the status	NEXT SELECTION or PREVIOUS SELECTION
save the status	ENTER
go to the next or previous point address	NEXT SELECTION or PREVIOUS SELECTION

Table 20   Enabling or Disabling a Point

Detector Sensitivity

Overview   The Detector Sensitivity option lets you change the Alarm and Pre-Alarm (sensitivity) level for an installed detector. From the Status Change screen, press <2> to display the Detector Sensitivity screen:

Blinking cursor

```
DET. SENS. & COMP.   ENTER POINTS:AAA,E
```

Figure 35 Detector Sensitivity Screen

How to Select a Detector   Enter the address of an installed detector. The control panel displays the following screen:

Note: If you enter an invalid address (nonexisting address or invalid type, such as FDX, the control panel displays the Detector Sensitivity Screen.

```
PROGRM SMOKE (PHOTO) DETECTOR ADDR 101
Z03 Z Z Z Z          AL:8 PA:8  ** D101
```

Alarm Level

Pre-Alarm Level
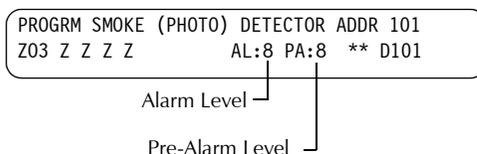
Figure 36   Status Change Screen

Selecting Detector Sensitivity   Use the instructions in Table 21 to change detector sensitivity, display additional detectors, and set sensitivity values.

To...	Type or Press...
Display detector information on the screen.	The detector address, then press ⬚ENTER⬚.
Note: Change Alarm and Pre-Alarm sensitivity. Refer to "Detector Sensitivity Settings" on page 39 for a complete list of detector sensitivity settings.	A value (1-9) or increase or decrease values by pressing the Next or Previous keys: ⬚NEXT SELECTION⬚ or ⬚PREVIOUS SELECTION⬚ Note: If not using Pre-Alarm, set PA=0.
Save the sensitivity values.	⬚ENTER⬚
Display the next existing detector address.	⬚NEXT SELECTION⬚
Display the previous existing detector address.	⬚PREVIOUS SELECTION⬚

Table 21 Selecting Detector Sensitivities

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Clear Verification Counters

The Clear Verification screen lets you clear all verification tally counters for detectors selected for Alarm Verification. From the Status Change screen (Figure 33), select <3> to display the Clear Verification screen:

```
PRESS ENTER TO CLEAR VERIFICATION COUNTS
OR ESCAPE TO ABORT
```

Figure 37 Clear Verification Screen

From the Clear Verification screen, you can do the following:

•   Press <Enter> to clear all verification counters and return to the Status Change screen; or

•   Press <Esc> to return to the Status Change screen without clearing.

Clear the History File

The Clear History screen lets you clear the entire history file from memory. Select <4> from the Status Change screen (Figure 33) to display the Clear History screen:

```
PRESS ENTER TO CLEAR HISTORY FILE
OR ESCAPE TO ABORT
```

Figure 38 Clear History Screen

From the Clear History screen, you can do the following:

•   Press <Enter> to clear the contents of the history file and return to the Status Change screen; or

•   Press <Esc> to return to the Status Change screen without clearing.

Set the System Time and Date

The Time/Date option lets you set the time and date for the system clock. Select <5> from the Status Change screen (Figure 33) to display the Time/Date screen:

```
CHANGE TIME/DATE
                11:40A TUE 02/04/97
```

Figure 39 System Time/Date Screen

The first digit flashes until you change the value or press <Enter>. To set the system time and date, follow the instructions in Table 22.

To...	Do this...
Change the time and date values	Input values from the numeric keys on the keypad.
Change A (AM) or P (PM)	Press [NEXT SELECTION] or [PREVIOUS SELECTION]
Change the day	Press [NEXT SELECTION] or [PREVIOUS SELECTION]
Move to another digit	Press [→]
Save the time and date and return	Press [ENTER]

Table 22 Changing the System Time and Date

Walk Test

Overview

The Walk Test option lets you test the entire fire alarm system while away from the control panel. You can do a Standard or Silent Walk Test as described in Table 23:

When doing a...	the control panel does this...
Standard Walk Test	Active alarms sound for 3 seconds.
Silent Walk Test	Active alarms do not sound. The control panel provides a 1-hour timer for Walk Test mode. When the 1-hour timer expires, the control panel automatically returns to standard operation.

Table 23 Standard and Silent Walk Test

⚠ **Warning: Walk Test mode can deactivate fire protection. Make sure to do the following for a Walk Test:**

- Before doing a Walk Test, make sure to secure all protected buildings, and notify the building owner/operator, fire department, and other persons that testing is in progress.

- When finished doing a Walk Test, exit Walk Test mode immediately and notify the building owner/operator, fire department, and other persons that testing is complete and is restored to normal operation.

What the Control Panel Does in Walk Test

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

- Activate each new alarm's programmed control points;

- Save and store each test in the history file;

- Send a TEST Axx status banner for each alarm to the printer (xx equals the number of tests for a detector with this address);

- Turn on the System Trouble LED;

- Turn on the Trouble relay (MPS-400, TB5); and

- Turn off the System Alarm relay (MPS-400, TB3).

What to do Before Selecting Walk Test

Before selecting Walk Test, note the following:

- Troubles – all control modules programmed for Walk Test, activate for a longer period (about 8 seconds). The control panel sends the trouble banner "TEST Txx" to the history file and printer.

- Silent Walk Test – do not select any of the output modules for Walk Test (W) when programming (refer to "Programming a Control Module (CMX)" on page 12).

How to do a Walk Test   From the Status Change screen, press <6>; then press <Enter>. The control panel displays the Walk Test screen:

```
WALK TEST              PRESS ENTER TO START
ESCAPE TO ABORT
```
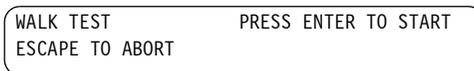
Figure 40 Walk Test Screen

Entering and Exiting Walk Test Mode   To operate the control panel in Walk Test, follow these instructions:

To...	Press...
Put the control panel into Walk Test mode	⏎ ENTER
Stop a walk test and return to the Status Change screen	ESC

Table 24 Starting and Stopping a Walk Test

Finishing a Walk Test   When finished with a Walk Test, do the following:

1.   Press <Esc> to exit Walk Test mode to return the control panel to normal operation.

2.   Notify the building owner/operator, fire department, and other persons that testing is complete and is restored to normal operation.

3.   View the history file to check the results of the Walk Test.

Appendix A: Releasing Applications

Overview

The control panel includes ten software zones that you can use to control releasing functions. Releasing zones R0-R9—reserved for special releasing functions—allow up to ten release operations. Each releasing zone operates independently, and is fully programmable. From the Special Function Change Screen (Figure 21), select releasing functions (R0-R9) to display the Releasing Function screen:

```
PRG RELEASE FUNCT   RELEASE CONTROL
DELAY=XX ABORT=XXX CROSS=N SOAK=XXXX R05
```

Figure 41 Releasing Function Screen

Note: "Soak" equals the elapsed time, in seconds, between activation of a zone and shut down of the releasing zone valves.

Each releasing zone includes four releasing functions, outlined in Table 25:

Function	Lets You...
Delay	Program a 0-60-second delay. The delay equals the time that must elapse between activating an initiating device and activating all zones mapped to the active initiating device.
Abort	Select a 3-letter Abort switch-type code (ULI, IRI, NYC, or AHJ) that adds a delay time to a releasing zone, or prevents a release of a releasing zone (see Table 27 on page 27).
Cross	Select one of three types of cross zoning or "N" (not used). Cross zoning requires tripping two or more devices to activate the outputs mapped to one of the releasing zones.
Soak	Select a Soak timer (0-9999 seconds) or "0" (not used).

Table 25 Releasing Functions

NFPA Standards

You can use the AFP-300/AFP-400 as a control panel for agent release or preaction/deluge control applications. When used with compatible, UL-listed actuating and initiating devices, the control panel meets the requirements of the following NFPA standards:

| Standard	Covers
NFPA 12	CO_2 Extinguishing Systems
NFPA 12A	Halon 1301 Extinguishing Systems
NFPA 12B	Halon 1211 Extinguishing Systems
NFPA 13	Sprinkler Systems
NFPA 15	Water Spray Systems
NFPA 16	Foam-water Deluge and Foam-water Spray Systems
NFPA 17	Dry Chemical Extinguishing Systems
NFPA 17A	Wet Chemical Extinguishing Systems
NFPA 2001	Clean Agent Fire Extinguishing Systems

Table 26 NFPA Standards for Releasing Applications

Programming a Releasing Zone

This section provides details for programming the releasing functions: Delay Timer, Abort Timer, Cross Zoning, and Soak Timer.

Delay Timer

Use a Delay Timer to specify the elapsed time between alarm activation of an initiating device and activation of all output devices mapped to that device. You can set the Delay Timer from 0 to 60 seconds. For example, Figure 42 shows graphical representation of a 15-second timer:

Initiating device(s) in zone R1 activates.   Delay = 15 (15 seconds)   All outputs mapped to zone R1 activate.
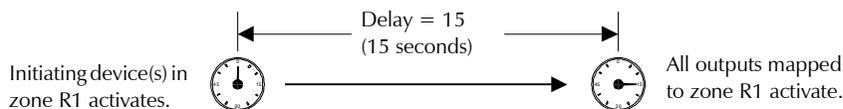
Figure 42 Example of 15-Second Delay Timer

Abort Timer

You can select an Abort Timer if you programmed a monitor module point with the type code label "Abort Switch." (Refer to "Programming a Monitor Module (MMX)" on page 10 or "Programming a Control Module (CMX)" on page 12 for instructions on setting the Abort switch.) The following lists the four types of Abort Timers:

- ULI[1] – Standard UL-type delay timer.

- IRI[1] – Same as ULI with additional requirement (Table 27).

- NYC[2] – Standard NYC-type timer.

- AHJ[2] – Local Authority Having Jurisdiction delay timer.

  [1] Complies with UL Standard 864.

  [2] Does not comply with UL Standard 864.

Table 27 contains the Abort selections for a releasing zone:

If you select	The Abort Timer operates as follows...
Abort=ULI	• Press Abort and the timer continues to count down and stops and holds at 10 seconds. • Release the ABORT switch and the timer resumes the countdown at 10 seconds.
Abort=IRI	Same as ULI with the following condition: For the Abort switch to function, you must press and hold the Abort switch before the second zone goes into alarm.
Abort=NYC	• Press the Abort switch and the control panel adds 90 seconds to the delay timer. • Press and hold the Abort switch and the timer does not start. • Release the Abort switch and the timer resumes counting down.
Abort=AHJ	• The timer does not start while you press and hold the Abort switch. • Press the Abort switch and the timer resumes counting down. • Press the Abort switch again to restore the timer to its full value. • Release the Abort switch and the timer resumes counting down.

Table 27 Abort Timer Options

Cross Zoning

Cross Zoning lets you program the control panel to activate a releasing zone and any output mapped to the releasing zone. (If not using Cross Zoning, set CROSS= to N.) Table 28 summarizes the types of cross zoning and the conditions for activating a releasing zone.

Type	Activates when...
Y	Two or more detectors are alarmed that are mapped to one of the ten releasing zones (R0-R9).
Z	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).
H	At least one smoke detector mapped to one of the ten releasing zones (R0-R9) is alarmed *and* at least one heat detector mapped to one of the ten releasing zones (R0-R9) is alarmed.

Table 28 Cross Zoning Types

Note: Only the first non-special zone listed in the zone map is used to determine Cross=Z.

Cross Zoning Examples Table 29 contains examples of devices mapped to releasing zones (ZR1 stands for Releasing Zone 1).

Device Address	Device Type	Zone Mapping
D101	Detector Smoke	ZR1 Z01
D102	Detector Smoke	ZR1 Z01
D103	Detector Smoke	ZR1 Z02
D104	Detector Heat	ZR1 Z02
B01	Output Circuit (Rel Ckt)	ZR1

Table 29 Example: Devices Mapped to Releasing Zones

The following explanations apply to the examples listed in Table 29:

• **Cross=N** – An alarm from any detector activates the releasing circuit.

• **Cross=Y** – An alarm from any two detectors in the system activates the releasing circuit.

• **Cross=Z** – Release requires the activation of two detectors mapped to different zones: D101 and D102 cannot activate the releasing circuit because both detectors are mapped to Z01; D101 and D103 can activate the releasing circuit because they are mapped to different zones.

• **Cross=H** – Release requires activation of heat detector D104 and one smoke detector (D101, D102, or D103).

Soak Timer (NFPA 16 Applications Only)

The Soak Timer specifies the length of time (0000 to 9999 seconds) to dump releasing agents when a zone activates. When the Soak Timer elapses, the control panel automatically shuts off the releasing solenoids for the active zone. To program a Soak Timer for a point, follow these instructions:

Select Soak   On the Release Function Screen, move the cursor to the Soak value as shown in Figure 43:

```
PRG RELEASE FUNCTION RELEASE CONTROL
DELAY=00 ABORT=ULI CROSS=N SOAK=0600 R00
```

Soak Timer Value = 600 seconds
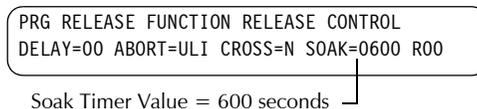
Figure 43 Soak Timer Selection

Enter the Soak Timer Value   Enter a value for the Soak Timer: 0000=no Soak Timer; or 0001-9999 seconds to select the amount of time for the Soak Timer.

Special Module Types

Note: All MMX wiring for special module types is fully supervised. For instructions, refer to the AFP-300/AFP-400 Installation Manual.

You can program the following module type codes—which have special releasing functions—into the control panel.

Type Code	Assigned to...
Abort Switch	An MMX monitor module—connected to a listed abort station (such as the Notifier ARA-10)—that performs abort functions. You can install multiple Abort Switch modules that provide a logical "or" function, like multiple conventional abort switches on a conventional zone.
Man. Release	An MMX monitor module—connected to a listed manual station (such as the Notifier ARA-10 or NBG-10) that performs a manual release function. A module programmed to Man. Release overrides all active Abort Switch modules programmed to the same releasing zone. You can install multiple Man. Release modules that provide a logical "or" function like multiple conventional release switches on a conventional zone.
Rel Ckt Ulc	A CMX control module, or one of the four NACs on the panel, that activates a releasing solenoid or other releasing device. The release device—and all wiring to the release device—is fully supervised and usable with limited energy cable. The release device activates when (a) an initiating device programmed to the same zone activates (two devices if cross-zoning is selected); and (b) the delay timer (if used) expires; and (c) no Abort Switch (if used) is active. Multiple Rel Ckt Ulc types may be programmed to the same releasing zone, and they all activate together when the zone becomes active.
Release Ckt	A CMX control module that operates like a Rel Ckt Ulc module—except the release device circuit is supervised for open circuits and ground faults only. With this type code, do not use for the following: • an application requiring ULC Listing or with limited energy cable; • a REL-4.7K (panel output); or • a REL-47K (CMX module).
Rel End Bell	A CMX control module—supervised like a bell circuit—that activates when a releasing solenoid shuts off. This type code is always non-silenceable, and is only turned off by a System Reset. You must call out at least one or more releasing zones in the device's CBE.

Table 30 Special Releasing Device Types

Initiating Devices

Releasing zone initiating devices include the following:

- FDX intelligent heat detectors;

- SDX, CPX, LPX, or IPX intelligent smoke detectors; or

- Conventional detection devices listed for the purpose and connected to MMX modules.

You can use multiple zone initiating devices for the same releasing hazard. Do so by mapping zone initiating devices to the same releasing zone. Factory Mutual and certain Local Authorities Having Jurisdiction require using redundant wiring (NFPA 72 Style 6 or Style D) for initiating devices in releasing applications.

Warning Sounders

- If selecting cross-zoning, this sounder only activates when two zones go into alarm.

- Unlike release solenoids, sounders do not wait for the delay timer.

- If coded sounds are required for warning sounders, they must use one of the four panel Notification Appliance Circuits, not a CMX circuit.

Warning sounders connect to any of the four panel Notification Appliance Circuits or to CMX module circuits (refer to the AFP-300/AFP-400 Installation Manual). The same releasing hazard can activate multiple Notification Appliance Circuits.

To activate a sounder...	Do this....
When the delay timer starts, when the releasing device activates, or both.	Map the CMX module to a releasing hazard zone (R0-R9).
Immediately when one of the initiating devices activate.	Map the CMX to a separate zone (not R0-R9) that is also mapped to all initiating devices of the hazard.

Table 31 Warning Sounder

Auxiliary Control Functions

Table 32 contains instructions for using control functions:

If...	Do this...
A releasing application requires control relays	Use CMX modules set for dry contact operation. Program the control relays for different functions by following the instructions in Table 31.
Providing control functions	Use an ACM-8R remote relay module mapped to the software zones of the control panel.

Table 32 Using Control Functions

ACS Annunciation

Table 33 contains instructions for annunciating ACS points and detectors:

To Annunciate...	Do this...
Points of releasing functions	Select Annunciator Selection Group 1 or 2 to annunciate any of the software zones described above, including zones R0-R9. For instructions, refer to "Annunciator Options" on page 19.
Individual detectors	Select Annunciator Selection Group 6, 7, or 8. For instructions, refer to "Annunciator Options" on page 19.

Table 33 Annunciating ACS Points and Detectors

Appendix B: Outputs

Presignal and Positive Alarm Sequence (PAS)

The control panel delays activation of outputs containing F0 in their Control-By-Event (CBE) equation for all alarm initiating devices that contain F0 in their Control-By-Event equation. A subsequent alarm will abort the delay and execute CBE equations. If using F0, note the following:

- Do not include F0 in the CBE equation for a releasing device.

- Abort circuit activation by pressing Alarm Silence before the delay expires.

Presignal

You can set Presignal delay time between 60 and 180 seconds. Presignal delay does not apply to the following:

- the System Alarm relay (TB3 on the MPS-400);

- the 4XTM polarity reversal alarm output; and

- the 4XTM municipal box output.

Positive Alarm Sequence (PAS)

Do not include F0 in the CBE equation for any monitor module that connects to a device other than an automatic fire detector. NFPA-72-1993 requires installation of a PAS Inhibit switch. To do this, use a Monitor Module with type code PAS Inhibit.

Selected outputs delay for 15 seconds. Pressing Acknowledge within the 15-second delay increases the delay to the full programmed value (60–180 seconds). When an alarm comes from an initiating device—with a CBE equation that includes F0—the control panel delays the following outputs:

- the System Alarm relay (TB3 on the MPS-400);

- the 4XTM Polarity Reversal Alarm output; and

- the 4XTM Municipal Box output.

Time Control

Note: All active Time Control outputs will turn off temporarily while resetting or programming the control panel.

All outputs with a CBE equation 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 equation 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 "Appendix C: AWACS Applications" on page 33 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. Enter the time 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.

NAC Coding

Note: The control panel automatically sends an alert signal to any of the four Notification Appliance Circuits mapped to Z00 and F8, but not mapped to the alarm signal. After 5 minutes without an Acknowledge or Silence, the alert signal becomes steady.

Control panel Notification Appliance Circuits with a CBE equation that includes F8 are coded when activated by a fire alarm. These circuits are steady when activated exclusively by an initiating device with a Hazard Alert Type Code. If using these NACs for releasing or zone coding, do not include F8 in the CBE equation. Select the code type on a system basis, through special zone F8. Table 34 contains coding selections:

Code	Signal
March Time (default)	120 PPM (Pulses Per Minute)
Two-Stage	Alert signal – 20 PPM; General alarm signal: Steady on
California	10 sec. on, 5 sec. off, repeats
Temporal	0.5 on, 0.5 off, 0.5 on, 0.5 off, 0.5 on, 1.5 off, repeats

Table 34 NAC Coding Selections

Appendix C: AWACS Applications

AWACS Overview

AWACS™ (Advanced Warning Addressable Combustion Sensing) is a set of software algorithms that provide the AFP-300/AFP-400 with industry-leading smoke detection capability. The development of these sophisticated algorithms are made possible by the close cooperation between Notifier and System Sensor, the world leaders in fire detection and alarm technology. These complex algorithms require many calculations on each reading of each detector, and are made possible by the very high speed microcomputer used by the AFP-300/AFP-400. Appendix C covers the following topics:

Topic	Refer to Page...
AWACS features – Descriptions of AWACS features, such as Drift Compensation, Sensitivity Adjust, and so on.	33
Pre-Alarm – Alert and Action settings, programming	38
Detector Sensitivity Settings – Pre-Alarm and Alarm sensitivity settings for photo, ion, laser, and multisensor detectors.	39
Detector Maintenance Features – Instructions for viewing and printing detector maintenance information.	41

Table 35 AWACS Topics

AWACS Features

AWACS features include the following:

- Drift Compensation and Smoothing

- Maintenance Warnings

- Sensitivity Adjust

- Self-optimizing Pre-Alarm

- Cooperating Multi-Detector Sensing

- Pre-Alarm

Drift Compensation and Smoothing

Drift compensation uses algorithms (U.S. patent pending) that identify and compensate for long-term changes in the analog readings from each smoke sensor.   (Typically, dirt and dust accumulation inside the smoke chamber causes long-term changes in detector readings.)   Drift compensation does the following:

- Allows a detector to retain its original ability to detect actual smoke, and resist false alarms, even as dirt and dust accumulates.

- Reduces maintenance requirements by allowing the control panel to automatically perform the periodic sensitivity measurements required by NFPA Standard 72.

AFP-300/AFP-400 software also provides smoothing filters to remove transient noise signals, usually caused by electrical interference. Different smoothing algorithms are used, depending on the sensitivity selection of each detector. Refer to "Detector Sensitivity Settings" on page 39 for more information on detector sensitivity levels.

Figure 44 contains a graphic representation of a detector analog reading using drift compensation and smoothing:
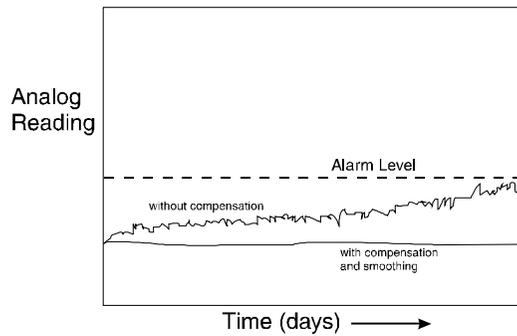
Figure 44 Graphic Representation of Drift Compensation

Maintenance Warnings – Three Levels

The software determines when the drift compensation for a detector reaches an unacceptable level that can compromise detector performance. When a detector reaches an unacceptable level, the software gives a maintenance warning. Table 36 summarizes the three levels of AWACS maintenance warnings:

Maintenance Level	Indicates...
Low Chamber value	a hardware problem in the detector.
Maintenance Alert	dust accumulation that is near but below the allowed limit.
Maintenance Urgent	dust accumulation above the allowed limit. The Maintenance Alert level allows maintenance before the performance of the device is compromised.

Table 36 Definitions of AWACS Maintenance Levels

Figure 45 contains a graphic representation of the maintenance levels:
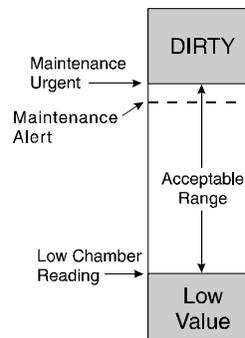
Figure 45 Diagram of Maintenance Levels

Self-Optimizing Pre-Alarm

Each detector [except FDX (Heat)] may be set for Self-Optimizing Pre-Alarm (PA=1). In this Self-Optimizing mode, a detector learns its normal environment, as the software measures the peak analog readings over a long period of time, and setting the Pre-Alarm level just above these normal peaks. This allows extremely sensitive Pre-Alarm capability with reasonable protection against non-fire signals. Figure 46 shows a graphical representation of the Self-Optimizing Pre-Alarm level:
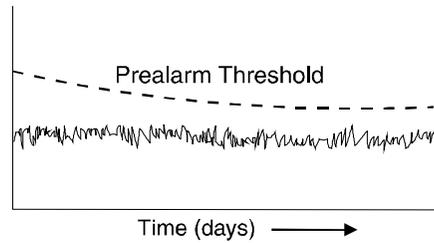
Figure 46 Self-optimizing Pre-Alarm Level

For more information on setting Pre-Alarm levels, refer to the following sections:

•   "Detector Sensitivity" on page 22.

•   "Selecting Detector Sensitivity" on page 22.

Sensitivity Levels

The control panel provides nine Sensitivity Levels for alarm detection—down to approximately 0.03% per foot obscuration (for laser detectors used in a very clean environment only). You can set the Sensitivity Levels as fixed or programmed for Day/Night operation. For details, refer to "Time Control" on page 31.

Note: For a list of all detector sensitivity levels, see Table 38 on page 39.

•   **Detector Sensitivity Levels** Set the sensitivity of a detector from 1-9 (1=highest sensitivity; 9=lowest sensitivity).

•   **Pre-Alarm Sensitivity Levels** Nine levels from 1 to 9 (0=no Pre-Alarm, 1=self-optimizing, 2=highest sensitivity, 9=lowest sensitivity). You can set Pre-Alarm operation to latching or self-restoring and to activate Special Control Functions.

Note: PA:0 = no Pre-Alarm

Figure 47 shows a sample sensitivity window for a laser detector:
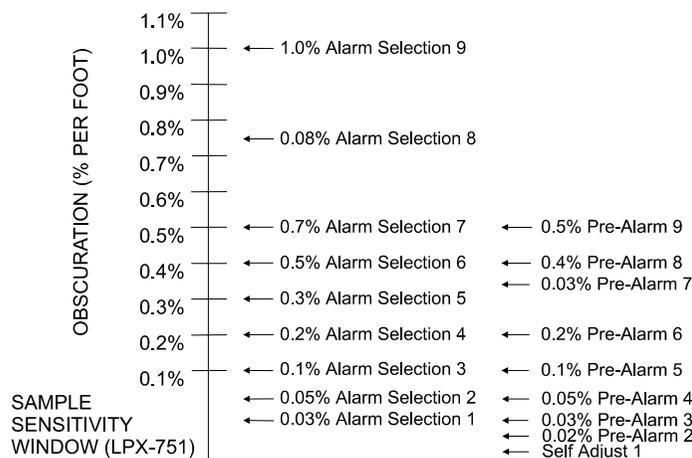
Figure 47 Sensitivity Levels for a Laser Detector

Cooperating Multi-Detector Sensing

A unique feature of AWACS, Cooperating Multi-Detector Sensing is the ability of a smoke sensor to consider readings from nearby sensors in making alarm or Pre-Alarm decisions. Using fuzzy logic algorithms, each sensor can include up to two other sensors in its decision. Without statistical sacrifice in the ability to resist false alarms, it allows a sensor to increase its sensitivity to actual smoke by a factor of almost 2 to 1. Cooperating Multi-Detector Sensing also allows the combination of ionization with photoelectric technology in reaching an alarm decision. Figure 48 shows a graph representing Cooperating Multi-Detector Sensing:
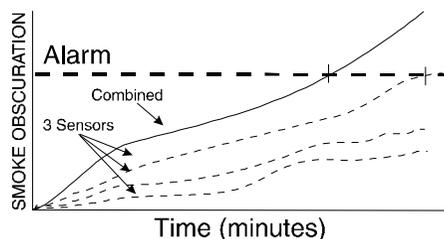
Figure 48 Cooperating Multi-Detector Sensing

Pre-Alarm

Pre-Alarm Overview

The AWACS™ (Advanced Warning Addressable Combustion Sensing) feature also provides the Pre-Alarm function to give an early warning of incipient or potential fire conditions. There are two levels of Pre-Alarm:

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

- Action (Refer to "Action Level" on page 37).

Alert and Action Pre-Alarm settings are global—for instance, if Pre-Alarm is selected, all intelligent detectors programmed for Pre-Alarm are set to Alert or Action. You can, however, set unique Pre-Alarm Levels (PA) for individual detectors. Refer to "Detector Sensitivity Settings" on page 39.

Alert Level

The control panel software, in addition to checking for alarm levels if selected, checks for Pre-Alarm thresholds for each addressable, intelligent smoke detector.   If the Pre-Alarm level exceeds the programmed Alert threshold, the control panel indicates an Alert condition. The control panel does the following functions when a detector reaches Alert level:

- The Alert message is sent to the history file and to the optional LCD-80 and printer. The message is sent (and time stamped) only at the time that it first occurred. This historical data could provide valuable information about the progress of a fire.

- The Pre-Alarm LED flashes and the panel sounder pulses until acknowledged.

- Zone F09 activates—but Zone 00 (general alarm) or any other zone, or trouble relay or alarm relay does not activate.

- The Pre-Alarm indication for this detector will restore automatically to normal if its sensitivity drops below Alert level. Zone F09 clears automatically when no Pre-Alarm conditions exist.

- A subsequent alarm for this detector will clear the Alert indication.

Alert Level Example. For example, if you program an ion detector for AL:7 and PA:5 (covered in "Selecting Detector Sensitivity" on page 22), an Alert Pre-Alarm occurs at measured smoke detector levels that exceed 1.00% per foot obscuration. When the smoke level of this detector exceeds 1.00% per foot obscuration, the panel sounder and Pre-Alarm Warning LED pulse, and a panel display similar to the sample screen shown in Figure 49 appears:

Pre-Alarm status banner

```
PREALM SMOKE (ION)   DETECTOR ADDR 102
  ALERT:  100%/5      10:37A 03/07/97 D102
```

ALERT indicates that the Alert Pre-Alarm level is reached.

100%/5 indicates that 100% of Pre-Alarm level 5 is reached.
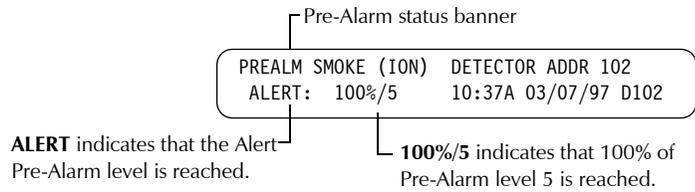
Figure 49 Sample Display of an Alert Condition

Note: To silence a panel sounder, press the Acknowledge switch on the control panel.

If viewing the Pre-Alarm level of the same detector using the Read Status function, a panel display similar to the sample screen in Figure 50 appears:

Pre-Alarm status banner

```
PREALM SMOKE (ION)   DETECTOR ADDR 102
Z02 Z   Z   Z Z  050%A7 PA:5 ** D102
```

050%A7 indicates that 50% of AL:7 is reached, which equals the Pre-Alarm level of PA:5 (see Table 38 on page 39).
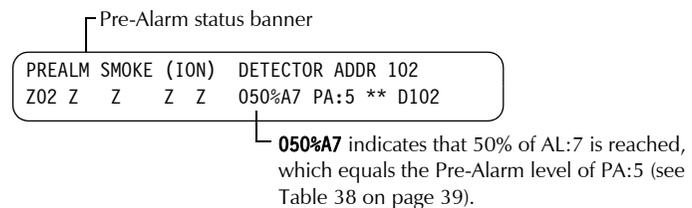
Figure 50 Sample Display of an Alert Condition (Read Status)

Action Level

If you program a detector for Action Pre-Alarm and the detector reaches a level that exceeds the programmed Pre-Alarm level, the control panel indicates an Action condition. Figure 51 shows a sample Action message that appears on the panel display when a detector reaches an Action level. The control panel does the following functions when a detector reaches the programmed Action level:

• The Pre-Alarm LED and panel sounder pulse until acknowledged.

• Zone F09 is activated—but Zone Z00 (general alarm) and the MPS-400 trouble and alarm relays do not activate.

• The fifth zone programmed (not the first four) for this detector activates. The fifth zone is the right-most entry on line two of the detector CBE in the point programming screen (refer to the programming manual for detailed information). This zone may be used to control functions of a detector or group of detectors on Action level. Fifth zone activations also allow ACS annunciation by a detector or group of detectors in Action Pre-Alarm condition.

• The Pre-Alarm condition and the zone programmed latch until System Reset, even if the sensitivity drops below the Action level.

• A subsequent alarm condition for this detector clears the Action indication from the panel display alarm list.

Pre-Alarm status banner

```
PREALM SMOKE (ION)   DETECTOR ADDR 102
 ACTION: 100%/5      10:37A 03/07/97 D102
```

100%/5 indicates that the Action Pre-Alarm level is reached.
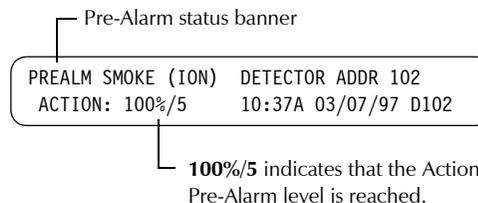
Figure 51 Sample Display of a Pre-Alarm Action Condition

Selecting a Pre-Alarm Level

Note: If using ACS annunciation Only the Action level will provide ACS point annunciation.

Table 37 contains instructions and sample displays to program Pre-Alarm for Alert or Action:

Do this...	And the control panel displays...

1. Access the Program Change screen by entering the Program Change password from the Enter Password Screen (Figure 4 on page 5).	`0=CLR 1=AUTO 2=POINT 3=PASSWD 4=MESSAGE`
	`5=ZONES 6=SPL FUNCT 7=SYSTEM 8=CHECK PRG`
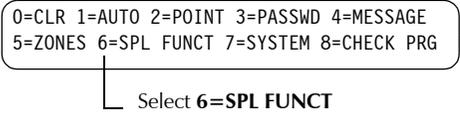	
	Select **6=SPL FUNCT**

2. From the Program Change screen, select **6=Spl Funct** to display the Special Function Zone Change screen.	`SPECIAL FUNCTION: F0=PRESIG   R0-R9=REL` `F5-F6=TIME F7=HOL F8=CODE  `**`F9=PRE-ALARM`** Select **F9=PRE-ALARM**
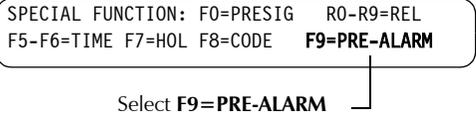
3. From the Special Function Zone Change screen, select **F9=Pre-Alarm**, to display the Pre-Alarm Function screen with **Alert** blinking.	**ALERT** blinking
	
	`PRG PRELARM FUNCT                    ALERT`
	`                                     F09`

4. To select **Action**, press the [NEXT SELECTION] or [PREVIOUS SELECTION] key.	**ACTION** blinking
	
	`PRG PRELARM FUNCT                   ACTION`
	`                                     F09`

Table 37 Programming a Pre-Alarm Level (Alert or Action)

Detector Sensitivity Settings

Selecting Pre-Alarm and Alarm Sensitivity

Each detector provides a host of selectable intelligent options. You can program Pre-Alarm and Alarm detector sensitivity levels (Table 38) in the widest allowed ranges (0.03 to 4% per foot obscuration). The AFP-300/AFP-400 provides nine levels of Pre-Alarm (PA:1–PA:9) and Alarm (AL:1–AL:9) in percent per foot obscuration:

- **PA:1** a self-optimizing setting where the control panel selects a suitable Pre-Alarm level for a detector.

- **PA:2–PA:9** selects the detector Pre-Alarm sensitivity level—with PA:2 the most sensitive and PA:9 the least sensitive. (PA:0 = no Pre-Alarm).

- **AL:1–AL:9** selects the detector Alarm sensitivity level—with AL:1 the most sensitive and AL:9 the least sensitive.

Detector Type	Detector Sensitivity in % per foot obscuration	
	Alarm	**Pre-Alarm**
Photo Electric SMOKE (PHOTO) SDX-551/SDX-751 (See note 3)	AL:1=0.50 % AL:2=0.73 % AL:3=0.96 % AL:4=1.19 % AL:5=1.43 % AL:6=1.66 % AL:7=1.89 % AL:8=2.12 %* AL:9=2.35 %	PA:1=Auto PA:2=0.30 % PA:3=0.47 % PA:4=0.64 % PA:5=0.81 % PA:6=0.99 % PA:7=1.16 % PA:8=1.33 %* PA:9=1.50 %
Ion SMOKE (ION) CPX-551/CPX-751 (See note 3)	AL:1=0.50 % AL:2=0.75 % AL:3=1.00 % AL:4=1.25 % AL:5=1.50 % AL:6=1.75 %* AL:7=2.00 % AL:8=2.25 % AL:9=2.50 %	PA:1=Auto PA:2=0.40 % PA:3=0.50 % PA:4=0.75 % PA:5=1.00 % PA:6=1.25 %* PA:7=1.50 % PA:8=1.75 % PA:9=2.00 %
Laser SMOKE (LPX) LPX-751	AL:1=0.03 % AL:2=0.05 % AL:3=0.10 % AL:4=0.20 % AL:5=0.30 % AL:6=0.50 %* AL:7=0.70 % AL:8=0.80 % AL:9=1.00 %	PA:1=Auto PA:2=0.02 % PA:3=0.03 % PA:4=0.05 % PA:5=0.10 % PA:6=0.20 %* PA:7=0.30 % PA:8=0.40 % PA:9=0.50 %
Multi Sensor MUTLISENSOR IPX-751	AL:1=0.71 % AL:2=0.71 % AL:3=1.00 % AL:4=1.00 % AL:5=2.00 %* AL:6=3.00 % AL:7=3.00 % AL:8=4.00 % AL:9=4.00 %	PA:1=0.71% PA:2=0.71 % PA:3=0.50 % PA:4=1.00 % PA:5=1.00 %* PA:6=2.00 % PA:7=2.00 % PA:8=3.00 % PA:9=3.00 %

Notes:

1. * Signifies the factory default setting.

2. The use of alarm sensitivities below 0.50%/ft obscuration requires a 90 day test to ensure that the environment for the detectors is suitable for the higher sensitivity setting. (Refer to "Testing Detectors Set Below 0.50%" on page 40.)

3. Suitable for open area protection only with 0 to 300 feet per minute air velocity.

Table 38 Detector Sensitivity (in percent per foot obscuration)

Testing Detectors Set Below 0.50%

Using alarm sensitivities below 0.50%/ft obscuration requires a 90-day test to ensure that the detector environment is suitable for the higher sensitivity setting. To meet Notifier and Underwriters Laboratory requirements, test each detector planned to operate below 0.50%/ft obscuration as follows:

4. Set the detector as follows:

Step	Action
1	Initially set to the 0.50%/ft obscuration alarm level.
2	Set the Pre-Alarm level to the desired final alarm sensitivity.
3	Set the Pre-Alarm to Alert mode (non-latching).

5. Operate detectors continuously for 90 days with all environmental factors—including temperature, humidity, air flow, occupancy, etc.—similar to the intended application for the detectors.   Record all events for each tested detector with an electronic history file or a printout.

6. At the end of the 90 day test: An authorized Notifier representative, or an end user trained by an authorized Notifier representative must inspect the results of the test. If the test results show no alarms or Pre-Alarms for the tested detectors, reprogram the fire alarm system to set the alarm sensitivity to the more sensitive Pre-Alarm level.

Detector Maintenance Features

Overview

The AFP-300/AFP-400 provides features to check the maintenance performance level of addressable, intelligent detectors. Detector maintenance features include the following:

- View detector maintenance information for an individual detector (Figure 54).

- Print a detector maintenance report for all detectors (Figure 55).

Accessing Detector Maintenance Information

Access detector maintenance functions by pressing <Enter>. The control panel displays the Program Entry screen.

```
1=PROGRAMMING        2=READ STATUS ENTRY
  (ESCAPE  TO ABORT)
```
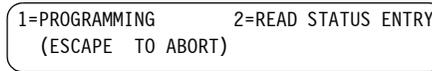
Figure 52 Program Entry Screen

From the Program Entry screen, press ⧠M⧠; then, press ⧠ENTER⧠. The control panel displays the Detector Maintenance Selection Screen (Figure 54).

Press D; type the detector address; then press <Enter>.

Detector address [SLC no., device address (01-99)].

```
Select Detector Address (Dxxx) <ENTER>
or Press 1, <ENTER> for print all.
```

Press 1; then, press <Enter> to print a Detector Maintenance Report (Figure 55 on page 42).
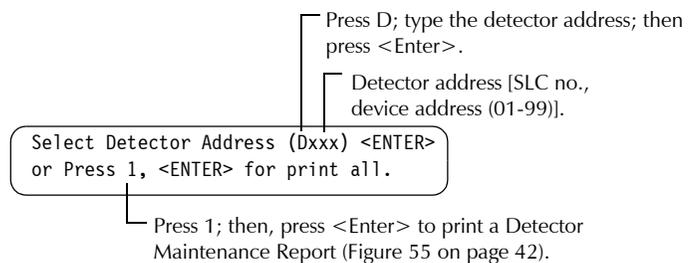
Figure 53 Detector Maintenance Selection Screen

Viewing Detector Maintenance for a Detector

From the Detector Maintenance Selection Screen, you can view Maintenance Status for a detector by doing the following: Press ⧠DETECTOR⧠; enter the detector address; then, press <Enter>. The control panel displays the Detector Maintenance Status Screen. Figure 54 shows a sample Detector Maintenance Status screen for a laser detector. Refer to "Interpreting a Detector Status Display or Maintenance Report" on page 42 for descriptions of each item.

Note: Once you display information for a detector, you can use the ⧠PREVIOUS SELECTION⧠ and ⧠NEXT SELECTION⧠ keys to view information for the next or previous detector on the SLC.

Type Code

Device Status

20-character custom label

```
Normal Smoke(LASER) Detector ADDR 101
Comp:020% Pk:0029% 000%A2 PA:1 A*   D101
```

Percentage of drift compensation

Peak value – the highest alarm level reached in the past week

Current Alarm reading (percentage of alarm)

Alarm sensitivity setting (1-9)

Pre-Alarm sensitivity setting (0=none; 1-9)

Multi-Detector selection

Alarm Verification selection

D address prefix (indicates a detector)

Address (SLC number, device address (01-99)

Figure 54 Detector Maintenance Status Screen

Creating a Detector Maintenance Report

A Detector Maintenance Report lists detector maintenance status for each installed addressable detector [except FDX (an analog heat detector)]. From the Detector Maintenance Selection Screen (Figure 53), print a Detector Maintenance Report as follows: press 1; then press <Enter>. The control panel sends a Detector Maintenance Report (Figure 55) to the printer connected the control panel.   Refer to "Interpreting a Detector Status Display or Maintenance Report" for descriptions of the items in the Detector Maintenance Status screen and the Detector Maintenance Report.

```
Detector Maintenance Report
1
*** Smoke detector maintenance list    ***
NORMAL SMOKE (LASER) Southeast Corner     Comp:020% Pk:0029%  000%A2 PA:1 A* D101
NORMAL SMOKE (LASER) Southeast -10        Comp:030% Pk:0015%  000%A2 PA:1 C* D102
NORMAL SMOKE (LASER) Southeast -20        Comp:034% Pk:0018%  005%A2 PA:1 C* D103
NORMAL SMOKE (LASER) Southeast -30        Comp:023% Pk:0021%  000%A2 PA:1 C* D104
NORMAL SMOKE (LASER) Northeast -30        Comp:063% Pk:0023%  003%A2 PA:1 C* D105
NORMAL SMOKE (LASER) Northeast -20        Comp:033% Pk:0020%  000%A2 PA:1 C* D106
NORMAL SMOKE (LASER) Northeast -10        Comp:027% Pk:0032%  003%A2 PA:1 C* D107
NORMAL SMOKE (LASER) Northeast Corner     Comp:028% Pk:0015%  005%A2 PA:1 C* D108
NORMAL SMOKE (LASER) Southwest Corner     Comp:021% Pk:0038%  002%A2 PA:1 C* D109
NORMAL SMOKE (LASER) Southwest -10        Comp:021% Pk:0016%  000%A2 PA:1 C* D110
NORMAL SMOKE (LASER) Southwest -20        Comp:014% Pk:0015%  000%A2 PA:1 C* D111
NORMAL SMOKE (LASER) Southwest -30        Comp:036% Pk:0024%  003%A2 PA:1 C* D112
NORMAL SMOKE (LASER) Northwest -30        Comp:038% Pk:0019%  011%A2 PA:1 C* D113
NORMAL SMOKE (LASER) Northwest -20        Comp:020% Pk:0015%  001%A2 PA:1 C* D114
NORMAL SMOKE (LASER) Northwest -10        Comp:037% Pk:0031%  010%A2 PA:1 C* D115
NORMAL SMOKE (LASER) Northwest Corner     Comp:042% Pk:0018%  008%A2 PA:1 C* D116
NORMAL SMOKE (LASER) Duct -15'            Comp:024% Pk:0030%  000%A2 PA:1 C* D117
NORMAL SMOKE (LASER) Duct -2''            Comp:030% Pk:0021%  001%A2 PA:1 C* D118
NORMAL SMOKE (LASER) Duct Laser Detector Comp:032% Pk:0025%  002%A2 PA:1 C* D119
NORMAL SMOKE (PHOTO) Northeast Area       Comp:035% Pk:0025%  003%A2 PA:1 A* D123
NORMAL MULTISENSOR   Detector Address 124Comp:039% Pk:000%   000%A2 PA:1 B* D124
NORMAL SMOKE (PHOTO) Southwest Area       Comp:031% Pk:0005%  000%A2 PA:1 A* D129
NORMAL MULTISENSOR   Detector Address 130Comp:037% Pk:0000%  000%A2 PA:1 C* D130
NORMAL SMOKE (PHOTO) West Center          Comp:019% Pk:0004%  000%A2 PA:1 C* D131
NORMAL MULTISENSOR   West Center          Comp:038% Pk:0000%  000%A2 PA:1 B* D132
    *******************      PRINT END    *********************************
```

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

Figure 55 Sample Detector Maintenance Report

Interpreting a Detector Status Display or Maintenance Report

Detector Maintenance Status Screens and Detector Maintenance Reports provide the same information (such as Device Status, Compensation, Peak Value) about a detector. This section contains descriptions of each item that appears in a Detector Maintenance Status Screen or a Detector Maintenance Report.

1. **Device Status** The status of the detector: Normal, Alarm, or Test.

2. **Type Code** The software Type Code that identifies the type of detector. (Refer to "Point Programming" on page 9).

3. **Custom Label** The 20-character user-defined custom label. (Refer to "Changing a Custom Label" on page 15).

4. **Drift Compensation (Comp:)** The relative cleanliness of a detector determined by sampling the amount of contaminants in the detector, ambient air conditions, and the age of the detector. The COMP value also indicates if a detector requires maintenance. Refer to "Maintenance Warnings – Three Levels" on page 34 for definitions of maintenance levels. See Table 39 for a list of the normal level and maintenance level values for each type of detector:

Type of Detector	Normal	Low Chamber Reading	Maint. Alert	Maint. Urgent
Ion	006-068	less than 006	92-99	100
Photo	006-069	less than 006	93-99	100
Laser	003-063	less than 003	83-99	100
Multisensor	024-040	less than 024	80-99	100

Table 39 Maintenance Levels by Detector Type

5. **Peak Value** (0000%) The highest analog value reached by the detector during the past week. The peak value slowly returns to zero.

6. **Alarm Reading (xxx%)** The current alarm reading of the detector.

7. **Alarm Sensitivity Setting (Ax)** The Alarm Sensitivity (x=1-9) entered in the Detector Sensitivity Screen (Figure 35). Refer to "Detector Sensitivity Settings" on page 39 for more information on the Alarm Sensitivity settings.

8. **Pre-Alarm Sensitivity Setting (PA:x)** The Pre-Alarm Sensitivity (1-9; 0 = Pre-Alarm not used) entered in the Detector Settings Screen (Figure 35). Refer to "Detector Sensitivity Settings" on page 39 for more information on the Pre-Alarm alarm sensitivity settings.

9. **Cooperative Multi-Detector Selection** A smoke detector programmed so that it evaluates readings from nearby sensors 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.

Note: Refer to Table 8 for instructions on setting Cooperative Multi-Detector Settings.

* – Multi-not used.

A – combines the detector's alarm decision with the next address above.

B– combines the detector's alarm decision with the next address below.

C – combines the detector's alarm decision with the next address above and the next address below.

10. **Alarm Verification (* or Vxx)**
* – Alarm Verification not programmed for this detector.
xx – Alarm Verification programmed for the detector; xx equals the verification counter (00-99). Refer to Table 8 on page 7 for instructions on setting Alarm Verification.

Alarm Verification is a user-defined global time function (set using option 7, System) that can reduce the number of nuisance alarms. When you select Alarm Verification for a detector, the control panel delays an alarm signal for a user-specified time period. (The control panel ignores the Alarm Verification Timer if it detects another alarm during the verification period.)

11. **Device Address** The address of the detector. Refer to Figure 54 on page 41 for a complete description.

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One Fire-Lite Place, Northford, CT 06472
Phone: (203) 484-7161
FAX: (203) 484-7118