PREACTION PAC
SPRINKLER VALVE ASSEMBLY®

with Fenwal FN-6000 Releasing Control Panel

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

Serial Number _____

Date of Installation _____ Date of Commissioning _____

◇ FM APPROVED ◇

UNITED Fire Protection Corporation

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HAZARD IDENTIFICATION

Carefully read, understand, and follow instructions identified by these symbols.

 DANGER

The use of the word "DANGER" identifies an immediate hazard with a likelihood of death or serious personal injury if instructions, including recommended precautions, are not followed.

 WARNING

The use of the word "WARNING" identifies the presence of hazards or unsafe practices that could result in death, personal injury, or serious property damage if instructions, including recommended precautions, are not followed.

 CAUTION

The use of the word "CAUTION" identifies possible hazards or unsafe practices that could result in personal injury or property damage if instructions, including recommended precautions, are not followed.

 IMPORTANT

The use of the word "IMPORTANT" identifies special instructions, not related to hazards, that should be followed.

FOREWORD

This manual is written for those who install, operate and maintain United Fire Protection PREACTION-PAC sprinkler valve assemblies. The manual contains installation, operation, and maintenance information for these assemblies.

IMPORTANT

United Fire Protection assumes no responsibility for the installation, operation, or maintenance of any systems other than those addressed in this manual. The data contained in this manual is for information purposes only. United Fire Protection believes this data to be accurate at the time of publication, but the data is published and presented without any guarantee or warranty whatsoever. United Fire Protection disclaims any liability for any use that may be made of the data and information contained in this manual by any and all parties.

IMPORTANT

The United Fire Protection PREACTION-PAC sprinkler valve assembly is a vital part of the fire protection of any facility where these units are installed. Life safety and property protection depends on continuing proper operation of the assembly. The owner of the PREACTION-PAC is responsible for the condition of the assembly and its continued proper operation. United Fire Protection strongly recommends that all owners of PREACTION-PACs engage the services of qualified, trained fire protection professionals to design the system containing the assembly, and to install and maintain the assembly.

United Fire Protection PREACTION-PAC sprinkler valve assemblies are to be installed and maintained by qualified, trained personnel in accordance with:

- This Installation, Operation, and Maintenance Manual P/N 10-500001-00D.
- National Fire Protection Association No. 13, "Standard for the Installation of Sprinkler Systems."
- National Fire Protection Association No. 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."
- National Fire Protection Association No. 70, "National Electrical Code®".
- National Fire Protection Association No. 72, "National Fire Alarm Code®."

Any questions on the information in this manual should be addressed to:

United Fire Protection Corporation
1 Mark Road
Kenilworth, NJ USA 07033
908-688-0300
www.unitedfireprotection.com

Upper Enclosure

Operating Instructions

Manual Release Valve Door with Latch (No Lock)

Upper Enclosure Door Lock

Lower Enclosure Door Lock

Lower Enclosure

Figure 1 – PREACTION-PAC Shown With Enclosure Doors Closed

1. GENERAL

1.1. Introduction. The United Fire Protection PREACTION-PAC is a fully assembled and factory tested pre-action fire suppression system, including pre-action valve, trim, and control panel providing one complete zone of pre-action water sprinkler fire protection. All components are contained in two steel enclosures assembled one above the other. The system pressure gages and the required manual release handle are mounted on the front of the lower enclosure. The system detection and control panel is mounted behind a door in the upper enclosure with a clear polycarbonate window allowing visual access to the system indicators. Lockable latches on both doors permit authorized access to all system components. Both enclosures are finished in powder-coat red paint. Gasketing provides sealing of the enclosure doors. Knockouts permit easy attachment of external electrical conduits.

1.1.1. Pre-Action-Valve. The pre-action valve installed in the PREACTION-PAC is a low-differential, latched clapper valve that uses a unique direct-acting diaphragm to separate the system water supply from the system piping. The positive latching system uses the supply water pressure to hold the clapper shut. When the water pressure in the diaphragm chamber is released, the latch retracts from the clapper and the valve actuates. The low differential and unique latch and actuator design of the valve allows the valve to be self-resetting.

1.1.2. Piping. Water inlet pipe connections are located on the lower left and lower right sides and the upper right corner of the lower enclosure. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection.) The unused inlets are left plugged. Grooved pipe is used for the inlet connection. The water outlet pipe connection is located at the top center of the lower enclosure, behind the upper enclosure. The drain connection is accessible within the lower enclosure, and knockouts are provided allowing exit of the drain from either side. All pipe connections are done in the lower enclosure.

1.1.3. Control Panel. A Fenwal FN-6000 addressable releasing control panel is factory-installed in the upper enclosure. Programming for a basic pre-action system is factory programmed and tested. Additional programming may be necessary after installation to suit field conditions. This manual provides complete instructions for additional programming. All necessary internal wiring connections are factory-installed and tested.

1.1.4. Wiring. All wiring from the integral control panel to the valve solenoid and all switches is factory installed and tested. Wiring for compressor power and control is also factory installed and tested. All field wiring for control panel power, compressor power, detection circuits, notification appliance circuits, and circuits requiring contact closure is connected to terminal strips in the upper enclosure. No access to the lower enclosure is necessary to complete the wiring installation.

1.1.5. Compressor. The compressor for air pressurization of the pre-action sprinkler piping is pre-installed, wired and adjusted. Three sizes of compressor are available, depending on the volume of installed piping to be pressurized. The compressor is mounted using molded rubber mounts and bushings to minimize noise and vibration during motor operation. A compressor disconnect switch is located in the upper enclosure.

1.2. Features

1.2.1. Attractive and rugged metal enclosure. The entire enclosure is manufactured from steel with continuous welded seams. The lower enclosure is 12 gage, while the upper enclosure is 14 gage. Both enclosures are coated with red powder-coat paint inside and out. Continuous piano-style hinges attach the doors to the enclosures.

1.2.2. Easy-to-see gages on front of enclosure. Three pressure gages are mounted on the front of the lower enclosure, and are visible at all times. These gages monitor the air pressure in the system piping, the water supply pressure up to the pre-action valve, and the water pressure keeping the valve clapper piston closed.

1.2.3. Easy access to manual release valve. The emergency manual release ball valve is located behind a small unlocked door on the front of the lower enclosure. Operation of this ball valve opens the pre-action valve, filling the system piping with water. No power is necessary to accomplish this

operation. The key for the lower enclosure main door does not have to be available to accomplish this operation.

1.2.4. Lower and upper water inlet connections. The water inlet piping may attach to the lower enclosure either near the bottom on either side, or to a pre-piped upper inlet at the top of the lower enclosure. (NOTE: Assemblies equipped with 1/2HP compressor do not have upper inlet connection.)

1.2.5. Easy-to-follow instructions on enclosure front. System instructions, mounted behind clear plastic, are located on the front of the upper enclosure.

1.2.6. Space for required spare sprinkler heads and wrench. As required by NFPA 13, a built-in storage location for spare sprinkler heads and a sprinkler wrench is behind the door of the upper enclosure.

1.2.7. Separate mechanical and electrical enclosures. This allows mechanical and electrical trades to keep their work areas separate.
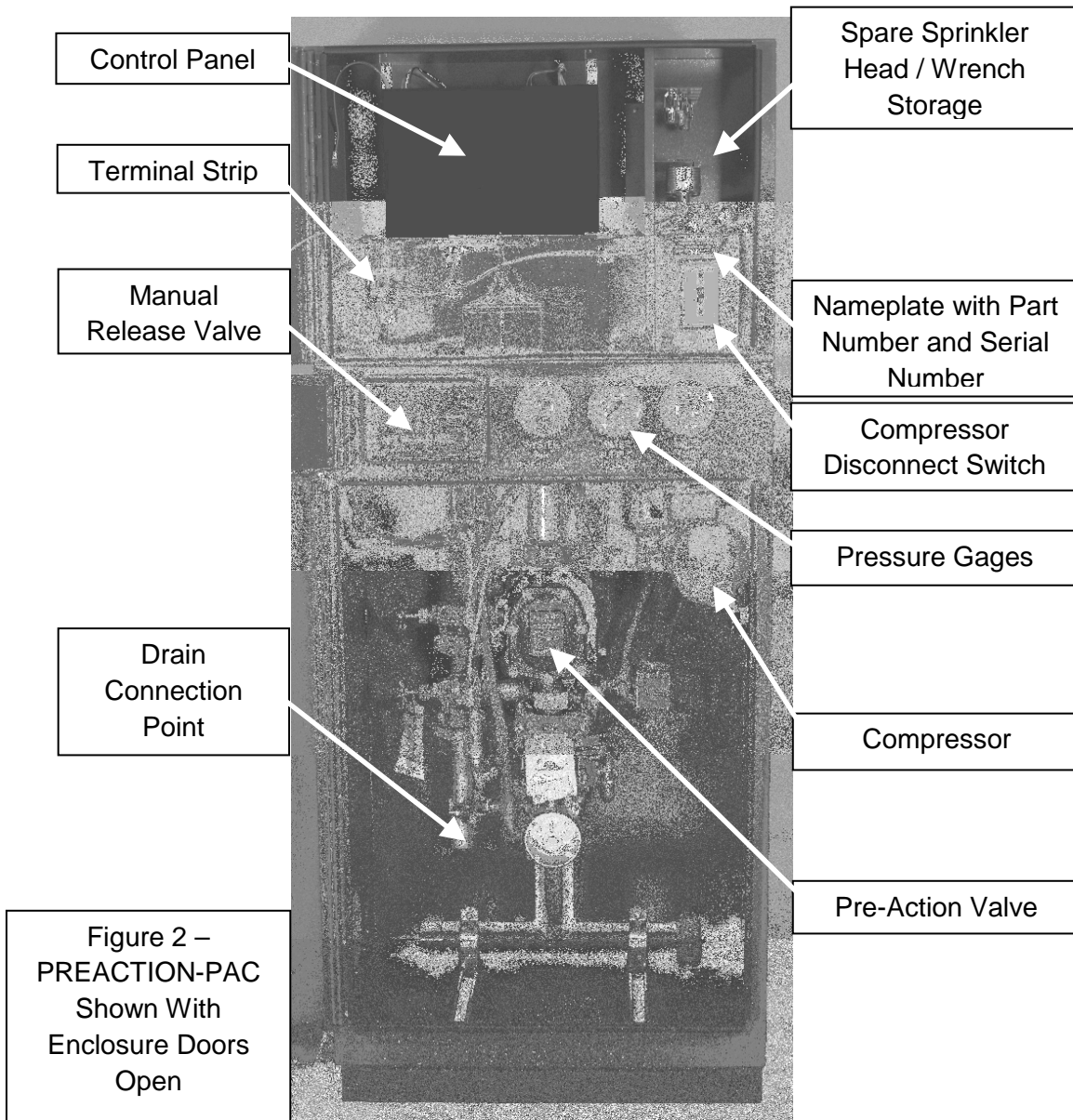
Control Panel

Terminal Strip

Manual Release Valve

Drain Connection Point

Figure 2 – PREACTION-PAC Shown With Enclosure Doors Open

Spare Sprinkler Head / Wrench Storage

Nameplate with Part Number and Serial Number

Compressor Disconnect Switch
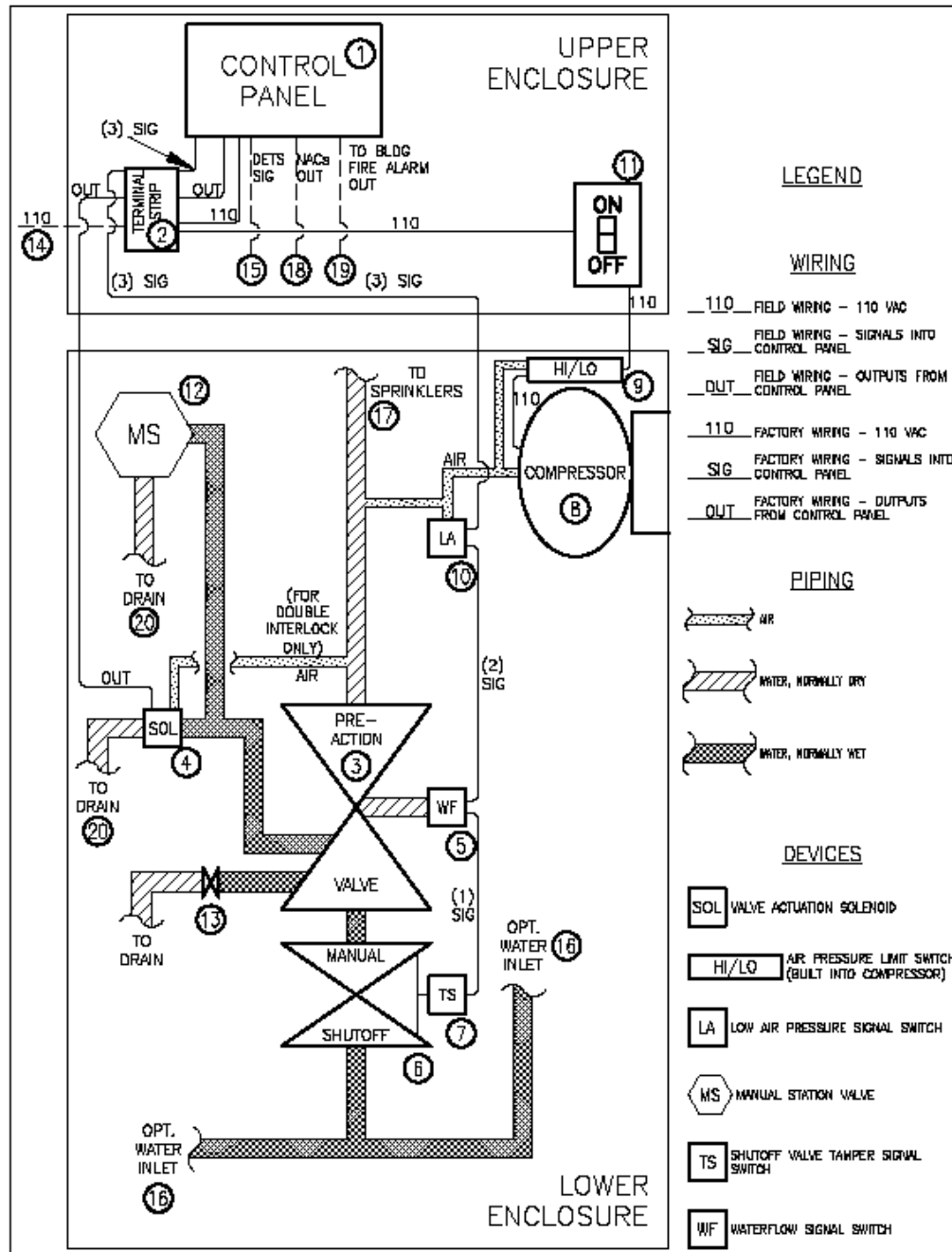
Pressure Gages

Compressor

Pre-Action Valve

Figure 3 – Diagram - Functional Description

1.3. Functional Description. Refer to Figure 3 on page 4.

1.3.1.Control panel (1). The control panel receives signals from fire detectors located in the protected space, as well as signals from various switches within the assembly. The panel processes the input signals per a pre-determined sequence of operation, and operates outputs for external audible / visual devices and building fire alarm signaling, as well as the signal to open the pre-action valve within the assembly. Refer to the control panel instruction manuals in Section 4 for details on the panel and the sequence of operation.

1.3.2.Terminal strip (2). The terminal strip provides a convenient point for landing some of the required field wiring, and also serves as the interface point between the control panel (1) and the various connections in the lower enclosure.

1.3.3.Pre-action valve (3). The pre-action valve is the heart of the assembly. The valve holds back the sprinkler water until the control panel (1) reacts to the signal from the fire detectors and sends a signal to the valve actuation solenoid (4). In single-interlock assemblies, actuation of the valve actuation solenoid (4) sends water into the sprinkler pipe. In double-interlock assemblies, fusing of a sprinkler head from heat is required, along with valve actuation solenoid (4) actuation, to send water into the sprinkler pipe. Refer to Manual I-769P in Section 2 for more detailed information on the pre-action valve.

1.3.4.Valve actuation solenoid (4). The valve actuation solenoid receives the signal from the control panel (1), and actuates the pre-action valve (3). The solenoid is the Victaulic Series 753-E, and is rated at 24VDC, 0.364 amps, 8.7 watts, 66 ohms. The solenoid is FM Approved under Group I (as in India). Refer to Manual I-769P in Section 2 for more detailed information.

1.3.5.Waterflow signal switch (5). The waterflow signal switch responds to waterflow in the pipe downstream of the pre-action valve (3). The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 1/2HP, 2.5A-6/12/24VDC. Contacts transfer when waterflow begins after pre-action valve opens. Contacts automatically restore when waterflow ceases. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manuals in Section 4 for details on the response of the panel to the waterflow signal switch.

1.3.6.Manual shutoff valve (6). The manual shutoff valve is used to shut off the flow of water after actuation of the pre-action valve (3). The normal position of this valve when the system is in service is open. Refer to Manual I-769P in Section 2 for more detailed information on the use of this valve.

1.3.7.Shutoff valve tamper signal switch (7). The shutoff valve tamper signal switch sends a supervisory signal to the control panel (1) when the manual shutoff valve (6) is closed. The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 0.5A-125VDC. Contacts transfer when valve begins to close. Contacts restore when valve is fully open. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manuals in Section 4 for details on the response of the panel to the shutoff valve tamper signal switch.

1.3.8.Compressor (8). The compressor supplies supervisory air pressure to fill the sprinkler pipe downstream of the pre-action valve (3). The sprinkler pipe is pressurized to 13 PSIG minimum and 18 PSIG maximum by the compressor (8). Loss of this pressure, from damage to the pipe or a sprinkler head, results in a supervisory signal at the control panel (1).

1.3.9.High / low air pressure limit switch (9). The high / low air pressure limit switch is built in to the compressor (8). When pressure in the pipe falls below 13 PSIG, the switch turns the compressor (8) on. When pressure in the pipe rises to 18 PSIG, the switch turns the compressor (8) off.

1.3.10.Low air pressure signal switch (10). The low air pressure signal switch sends the supervisory signal for low air pressure to the control panel (1). The switch contains Quantity 2, SPDT switches, rated at 10A-125/250VAC, 1/2HP, 2.5A-6/12/24VDC. Contacts transfer when pressure in the piping falls below 13PSIG. Contacts automatically restore when pressure rises above 13PSIG. One contact is factory-wired to send a signal to the control panel (1). Refer to the control panel instruction manual in Section 4 for details on the response of the panel to the low air pressure signal switch.

1.3.11.Compressor disconnect switch (11). The compressor disconnect switch is used to manually interrupt the 110VAC power to the compressor motor, during inspection, maintenance, and

resetting of the assembly. Only trained personnel should use this switch. The normal position of this switch when the system is in service is ON.

1.3.12. Manual station valve (12). The manual station valve is located behind a separate door on the front of the lower enclosure. No key is needed to open this door. To manually open the pre-action valve (3), open the door and pull the lever on the manual station valve forward. The pre-action valve (3) will open, and the sprinkler pipe will fill with water. No power is needed to manually open the pre-action valve (3) in this manner.

⚠️ IMPORTANT

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of the manual station valve.

1.3.13. Drain valve (13). The drain valve is used to drain the sprinkler pipe after actuation of the pre-action valve (3). This valve is used only during inspection, maintenance, and resetting of the assembly. Only trained personnel should use this valve. Refer to Manual I-769P in Section 2 for more detailed information on this valve. The normal position of this valve is closed.

1.3.14. Input connection for 110 VAC power (14). 110VAC is required to power the assembly. This power shall come from a source in compliance with all applicable codes and standards. Internal wiring (factory assembled) takes this power to the control panel (1) and the compressor (8). If local codes require individual 110VAC power sources for the control panel (1) and the compressor (8), jumpers may be removed from the terminal strip (2) permitting this. Refer to Section 1.10 for additional information on this connection.

1.3.15. Input connection for automatic fire detectors (15). Automatic fire detectors are required to provide the signal for opening the pre-action valve (3). These detectors are field-connected to this connection. See Section 1.10, and refer to the control panel instruction manuals in Section 4. And 4.2 for details on these detectors and this connection.

⚠️ IMPORTANT

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of automatic fire detectors.

1.3.16. Water inlet connection (16). The sprinkler water supply is field-connected to this connection. One of three optional water inlet connections may be chosen. The first is at the upper right corner of the lower enclosure. Use this connection if it is desired to bring the pipe to the assembly from above. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection.) If it is desired to bring the pipe to the assembly from a location close to the floor, the connection may be made on the lower left of the assembly, or by disconnecting the top inlet piping, the connection may be made on the lower right of the assembly. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P for more detailed information on this connection.

1.3.17. Outlet connection to fire sprinklers (17). The outlet connection from the assembly to the fire sprinklers is field-connected to this connection. The connection is located in the top center of the lower enclosure, behind the upper enclosure. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P for more detailed information on this connection.

1.3.18. Notification appliance output connection (18). Notification appliances are required by code to alert occupants that a fire has been detected. These appliances are field-connected to this connection. Refer to the control panel instruction manuals in Section 4 for details on this connection.

1.3.19. Output connection to building fire alarm system (19). Most codes require a fire protection sub-system to signal the building fire alarm system. This signal is field-connected to this connection. Refer to the control panel instruction manuals in Section 4 for details on this connection.

1.3.20. Drain connection (20). Drain water from the assembly must be piped away to a drain. The drain piping may be connected to the assembly on the left or the right side. Refer to Section 1.10 and Section 2 – Victaulic manual I-769P for more detailed information on this connection.

1.4. Configurations. United Fire Protection PREACTION-PAC sprinkler valve assemblies are available in the following configurations:

1.4.1. Valve sizes: 1-1/2" through 4".

1.4.2. Valve types: Single-interlock and double-interlock available in all valve sizes.

1.4.3. Compressor sizes:

1.4.3.1. For 1-1/2" and 2" valves: 1/6HP compressor only.

1.4.3.2. For 2-1/2" valves: 1/6HP and 1/3HP compressors available.

1.4.3.3. For 3" and 4" valves: 1/6HP, 1/3HP, and 1/2HP compressors available.

1.4.3.4. Compressors are capable of pressurizing piping systems up to the following limits:

1.4.3.4.1. 1/6HP compressor: maximum system capacity is 290 gallons.

1.4.3.4.2. 1/3HP compressor: maximum system capacity is 475 gallons.

1.4.3.4.3. 1/2HP compressor: maximum system capacity is 780 gallons.

1.4.4. Control panel: A Fenwal FN-6000 addressable detection control panel is factory-installed in the upper enclosure.

1.5. Options. None at this time.

1.6. Approvals. United Fire Protection PREACTION-PAC sprinkler valve assemblies, as listed in this Manual, are Approved by FM Approvals under the heading "Automatic Water Control Valves." See pages 13 and 14 for Approved assemblies. NOTE: Although most PREACTION-PAC assemblies are FM Approved, custom-built units are supplied from time to time upon request. Various components within these custom assemblies maintain their individual approvals, but these custom assemblies are not FM Approved as a unit.

1.7. Applicable Standards. United Fire Protection PREACTION-PAC sprinkler valve assemblies are to be installed and maintained by qualified, trained personnel in accordance with:

1.7.1. National Fire Protection Association No. 13, "Standard for the Installation of Sprinkler Systems."

1.7.2. National Fire Protection Association No. 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."

1.7.3. National Fire Protection Association No. 70, "National Electrical Code®".

1.7.4. National Fire Protection Association No. 72, "National Fire Alarm Code®."

1.8. Applicable Manuals. Manuals supplied by the manufacturers of components used in United Fire Protection PREACTION-PAC assemblies are included with this manual. In some cases, these manuals contain references that are **NOT APPLICABLE** to PREACTION-PAC assemblies. The following tables detail these NOT APPLICABLE items. Care should be taken to be clear on what is applicable and what is not when referring to these manuals for installation, operation, inspection, and maintenance instructions.

Table 1.8.1 – Items Applicable and Not Applicable in Section 2 – Victaulic Manual
I769P – Firelock NXT Preaction Valve

Page No.	X Indicates Page IS Applicable	X Indicates Page IS NOT Applicable	Notes
Title	X		
Blank		X	
1 - 2	X		
3	X		Applicable valve sizes are 1-1/2" through 4".
4 - 6		X	
7	X		Item 10 – Series 760 Water Motor Alarm is NOT applicable.
8	X		
9	X		Series 776 Low Pressure Actuator is applicable to Double Interlock only.
10		X	
11	X		Series 757 Regulated AMTA is NOT applicable.
12	X		Series 757P Regulated AMTA is NOT applicable.
13	X		It is NOT necessary to remove foam spacer from valve – operation performed at UFP factory.
14	X		Compression fittings and tubes installed at UFP factory.
15	X		Series 746-LPA Dry Accelerator NOT installed.
16 - 17	X		1. Series 776 Low Pressure Actuator is applicable to Double Interlock only. 2. Step 11 – Ball valves on AMTA are NOT applicable.
18 - 19	X		Series 746-LPA Dry Accelerator is NOT applicable.
20 - 21	X		AMTA and Dry Accelerator ball valves are NOT applicable.
22	X		
23	X		AMTA and Dry Accelerator ball valves are NOT applicable.
24	X		
25	X		Series 746-LPA Dry Accelerator is NOT applicable.
26	X		AMTA ball valves are NOT applicable.
27 - 28	X		AMTA and Dry Accelerator ball valves are NOT applicable.
29 - 33	X		
34	X		AMTA ball valves are NOT applicable.
35 - 37	X		
38	X		Applicable valve sizes are 1-1/2" through 4".
39	X		
40	X		Applicable valve sizes are 1-1/2" through 4".
41	X		
42	X		Series 776 Low Pressure Actuator is applicable to Double Interlock only.
43	X		1. Series 776 Low Pressure Actuator is applicable to Double Interlock only. 2. Series 746-LPA Dry Accelerator is NOT applicable.
44	X		AMTA is not applicable.

Table 1.8.2 – Items Applicable and Not Applicable in Section 3 – General Air Products
Manual OILLESSINST – Compressor

Page No.	X Indicates Page IS Applicable	X Indicates Page IS NOT Applicable	Notes
1	X		1. For assistance, please contact United Fire Protection. 2. The sections on "Receiving" and "Mounting" are not applicable, since the compressor has been unpacked, mounted in the assembly, and tested by UFP.
2	X		1. The AMD-1 is not applicable. 2. Applicable units are OL11016, OL21533, and OL33550. All other units are not applicable.
3	X		1. Applicable pressure switch setting is 13 PSIG cut-in and 18 PSIG cut-out. 2. Compressors used by UFP are single-phase models. Three-phase information is not applicable. 3. Warranty is supplied by United Fire Protection Corporation. Warranty information on this page is not applicable.
4	X		For excessive noise in operation, contact United Fire Protection. General Air Products contact note is not applicable.
5 - 6		X	
7	X		Figure 1 is applicable. Figure 2 is not applicable.
8		X	

Table 1.8.3.1 – Items Applicable and Not Applicable in Section 4.1 – Fenwal Manual
06-236529-001 – FN-6000 Control Panel Installation, Operation, Maintenance

Page No.	X Indicates Page IS Applicable	X Indicates Page IS NOT Applicable	Notes
i – xviii	X		
1-1 to 1-2	X		
1-3	X		UFP supplies the display and printed circuit board installed and wired in the PREACTION-PAC upper enclosure. No separate backbox is required. The optional devices are not supplied as standard equipment.
1-4 to 1-22	X		UFP supplies the display and printed circuit board installed and wired in the PREACTION-PAC upper enclosure. Equipment used is dependent on specific design of system.
2-1 to 2-10	X		UFP supplies the display and printed circuit board installed and wired in the PREACTION-PAC upper enclosure. No separate backbox is required.
2-11 to 2-13	X		Connect AC power to terminal strip in upper enclosure per Section 1.10. DC power connection information is applicable.
2-14 to 2-18	X		
2-19 to 2-40	X		Applicable dependent on specific design of system.
3-1 to 3-114	X		Applicable dependent on specific design of system.
3-115 to 3-142	X		Applicable dependent on specific design of system. NIC card not installed as standard equipment.
4-1 to 4-4	X		
5-1 to 5-24	X		Applicable dependent on specific design of system.
6-1 to 6-4	X		Applicable dependent on specific design of system.
A-1 to A-4	X		If calculated battery size exceeds 26 A-H, use separate battery cabinet.
B-1 to B-4	X		
C-1 to C-4	X		Solenoid output for pre-action valve wired by UFP.
D-1 to D-4	X		
E-1 to E-2	X		Follow the guidelines on these pages for wire routing, keeping in mind that the panel is installed in the PREACTION-PAC upper enclosure, not the OEM enclosure.
F-1 to F-2	X		
G-1 to G-2	X		

Table 1.8.3.2 – Items Applicable and Not Applicable in Section 4.2 – Fenwal Manual
06-236529-002 – FN-6000 Configuration Software User's Guide

Page No.	X Indicates Page IS Applicable	X Indicates Page IS NOT Applicable	Notes
i - xii	X		
1-1 to 1-8	X		
2-1 to 2-42	X		The control panel is factory-programmed by UFP with a basic pre-action system program. When changes are necessary to suit field conditions, follow the instructions on these pages.
3-1 to 3-32	X		
4-1 to 4-20	X		
A-1 to A-2	X		
B-1 to B-4	X		Applicable only to clean agent suppression systems field connected to control panel. Not applicable to pre-action release factory-connected to control panel.
C-1 to C-2	X		

1.9 FM Approved Assemblies

Part Number Coding:

G2 – XX – P – X – X - D

Codes Generation II PREACTION-PAC. Future generations, incorporating major changes, will be G3, G4, etc.

Codes control panel:
D = Fenwal FN-6000

Codes valve size:
15 = 1-1/2" valve
20 = 2" valve
25 = 2-1/2" valve
30 = 3" valve
40 = 4" valve

Codes compressor size:
1 = 1/6HP
2 = 1/3HP
3 = 1/2HP

P = Preaction (Other codes reserved for future use)

Codes Single or Double Interlock:
1 = Single Interlock
2 = Double Interlock

PREACTION-PAC assemblies with indicated part numbers are FM Approved. From time to time, custom-built units are supplied upon request. The components in these custom-built units retain their individual approvals, but these custom-built units are not FM Approved.

When the Preaction-Pac is installed where FM Global is an AHJ, follow the requirements of FM Approvals Class Numbers 1011, 1012, 1013 and FM Global Property Loss Prevention Data Sheet 5-40 dated 2007, especially:

- Alarm control panels for automatic release of preaction sprinkler systems are required to have 90 hours of secondary power followed by 10 minutes of release power and alarm operation.
- Include the installation of Class A (Style D or E) initiating device circuits. All FM Approved systems / installations must be configured as Class A for Deluge and Preaction Releasing Service.
- Do not include abort switches to abort the preaction sprinkler actuation function.

Table 1.9.1 – Approved PREACTION-PAC Assemblies with Fenwal FN-6000 Control Panel

Part Number	Valve Size, in.	Valve Type	Compressor Size, HP	Control Panel
G215P11D	1-1/2"	Single Interlock	1/6	Fenwal FN-6000
G215P21D	1-1/2"	Double Interlock	1/6	Fenwal FN-6000
G220P11D	2"	Single Interlock	1/6	Fenwal FN-6000
G220P21D	2"	Double Interlock	1/6	Fenwal FN-6000
G225P11D	2-1/2"	Single Interlock	1/6	Fenwal FN-6000
G225P12D	2-1/2"	Single Interlock	1/3	Fenwal FN-6000
G225P21D	2-1/2"	Double Interlock	1/6	Fenwal FN-6000
G225P22D	2-1/2"	Double Interlock	1/3	Fenwal FN-6000
G230P11D	3"	Single Interlock	1/6	Fenwal FN-6000
G230P12D	3"	Single Interlock	1/3	Fenwal FN-6000
G230P13D	3"	Single Interlock	1/2	Fenwal FN-6000
G230P21D	3"	Double Interlock	1/6	Fenwal FN-6000
G230P22D	3"	Double Interlock	1/3	Fenwal FN-6000
G230P23D	3"	Double Interlock	1/2	Fenwal FN-6000
G240P11D	4"	Single Interlock	1/6	Fenwal FN-6000
G240P12D	4"	Single Interlock	1/3	Fenwal FN-6000
G240P13D	4"	Single Interlock	1/2	Fenwal FN-6000
G240P21D	4"	Double Interlock	1/6	Fenwal FN-6000
G240P22D	4"	Double Interlock	1/3	Fenwal FN-6000
G240P23D	4"	Double Interlock	1/2	Fenwal FN-6000

1.10. Installation.

1.10.1. Location. Locate the PREACTION-PAC assembly as shown on the system shop drawings or design plans. The location should be dry, clean, and within the Approved temperature range of the assembly (+40 deg F to +110 deg F). Refer to Figure 4 for overall dimensions.

1.10.2. Unpacking, Placement & Leveling. Unpack the PREACTION-PAC as follows:

1.10.2.1. Remove the outer carton and any other packing material surrounding the assembly.

1.10.2.2. Open the lower enclosure door.

1.10.2.3. Use a flat-bladed or Phillips screwdriver to remove the (4) bolts holding the assembly to the pallet. See Figure 5.

1.10.2.4. Close the lower enclosure door. Remove the unit from the pallet, and place in the intended installation location.

1.10.2.5. Level the unit:

1.10.2.5.1. Open the lower enclosure door.

1.10.2.5.2. Using a flat-bladed screwdriver, adjust the (4) leveling feet from inside the enclosure until all feet are firmly in contact with the floor. See Figure 5.

1.10.2.5.3. Using a spirit level, adjust the leveling feet until the assembly is level both front-to-back and side-to-side.
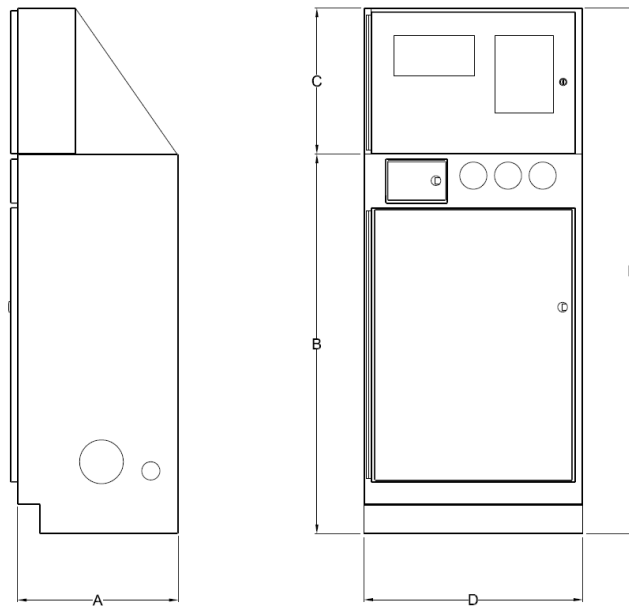
Dimension	Assemblies with 1-1/2" thru 3" Pre-Action Valves	Assemblies with 4" Pre-Action Valves
A	22.00	24.00
B	52.00	52.00
C	20.00	20.00
D	30.00	30.00
E	72.00	72.00
NOTE: All units are in inches.		

Figure 4 – Diagram - Overall Dimensions

Figure 5 – Diagram - Location of Pallet Bolts and Leveling Feet
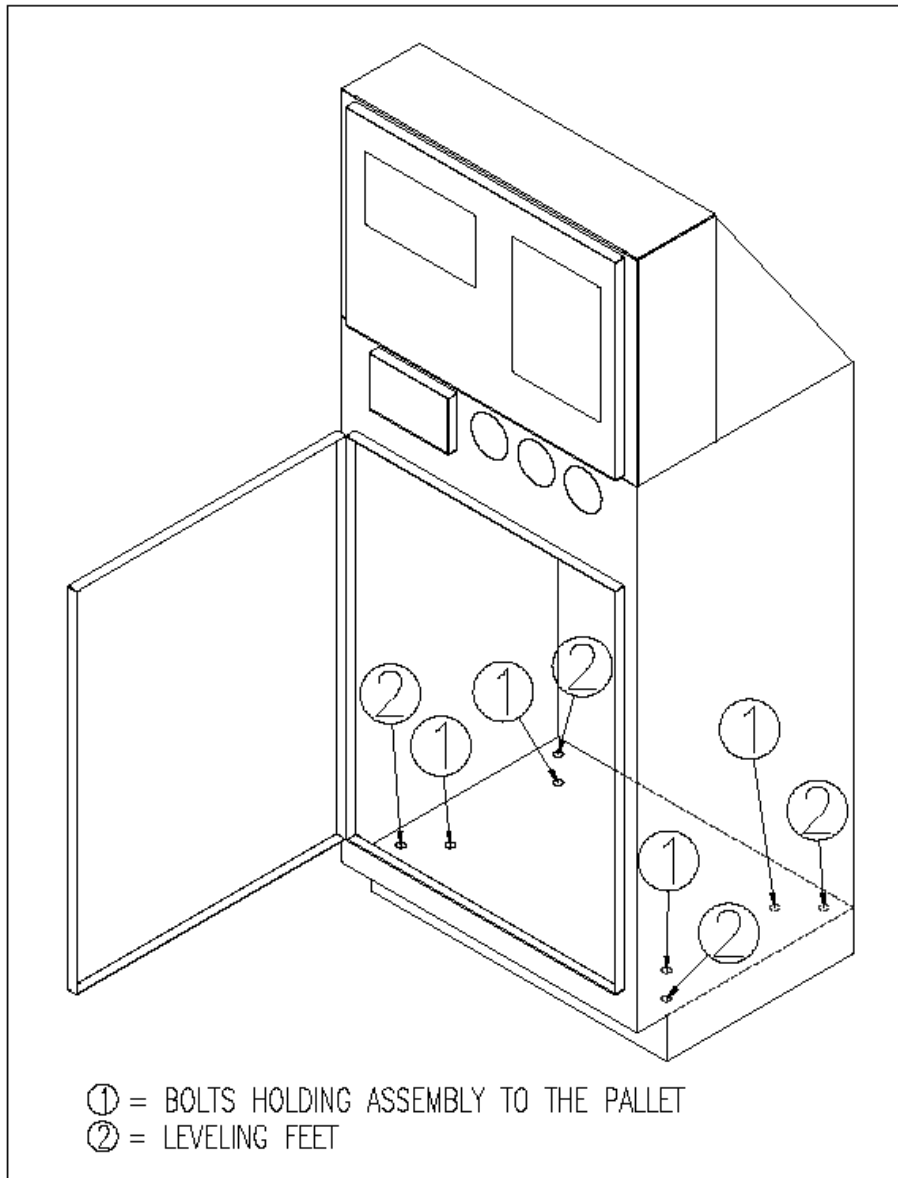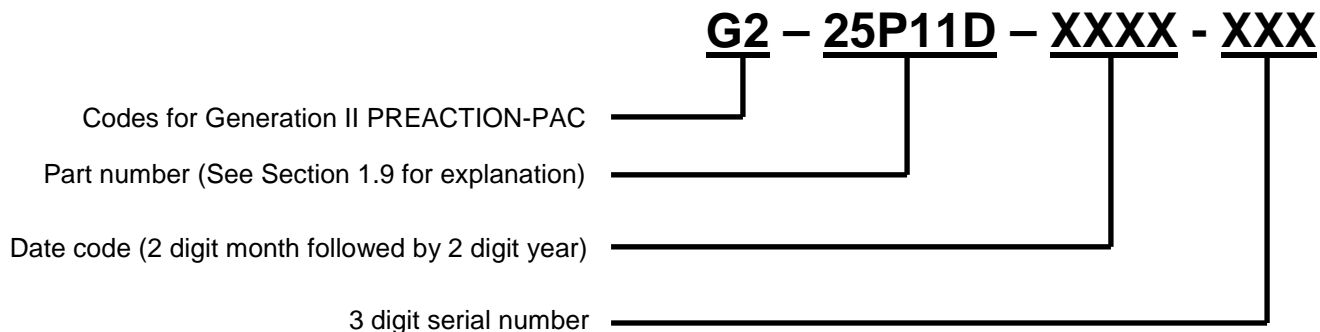
1.10.3. Serial Number. The serial number of each assembly is located on a permanent metal nameplate, located behind the upper enclosure door above the compressor disconnect switch. The serial number is coded as follows:

$$\underline{\textbf{G2}} - \underline{\textbf{25P11D}} - \underline{\textbf{XXXX}} - \underline{\textbf{XXX}}$$

Codes for Generation II PREACTION-PAC ———

Part number (See Section 1.9 for explanation) ———

Date code (2 digit month followed by 2 digit year) ———

3 digit serial number ———

Note the serial number, date of installation, and date of commissioning on the front of this manual where indicated.

1.10.4. External Attachments.
1.10.4.1. Pre-Action Valve. Use Section 2 - Victaulic manual I-769P to guide the installation of inlet, outlet, and drain piping. See Figure 6 for details.
1.10.4.1.1. Inlet Piping. Inlet piping may be attached to the PREACTION-PAC in one of three locations:

- The standard connection is at the upper right corner of the lower enclosure. The assembly is pre-piped to accept inlet piping at this location. This location is labeled INLET. (NOTE: Assemblies equipped with 1/2HP compressors do not have upper right corner inlet connection. Use either lower left center or lower right center connection as described below.) Remove the plastic protection cap from the inlet pipe, and use a field-supplied grooved coupling to make this connection.

- An optional connection at the lower left center of the lower enclosure. Remove the precut knockout from the lower left center of the lower enclosure. Remove the steel cap from the grooved coupling on the left side of the tee at the bottom of the enclosure. Attach the inlet piping to the left side of the tee using the grooved coupling. Remove the plastic protection cap from the top inlet connection, and assemble the steel cap removed from the tee to the top inlet connection using a field-supplied grooved coupling.

> ⚠ CAUTION ⚠
> Failure to assemble the steel cap to the top inlet will result in property damage due to water escaping from the top inlet.

- An optional connection at the lower right center of the lower enclosure. Remove the precut knockout from the lower right center of the lower enclosure. Remove the two grooved couplings from the elbow attached to the right side of the tee. (The elbow and one coupling may be discarded.) Attach the inlet piping to the right side of the tee using one of the grooved couplings. DO NOT attempt to remove any of the rest of the top inlet piping.
1.10.4.1.2. Outlet Piping. Outlet piping is attached to the PREACTION-PAC in one location; at the top center of the lower enclosure. This location is labeled OUTLET. Remove the plastic protection cap from the outlet pipe, and used a field-supplied grooved coupling to make this connection.

1.10.4.1.3. Drain Piping. Drain piping is attached to the PREACTION-PAC at a nipple located in the lower enclosure. The drain pipe may exit the enclosure on either the left or right side. Remove the precut knockout from the chosen side. Attach the drain pipe to the nipple with two field-supplied grooved couplings and a field-supplied grooved elbow.
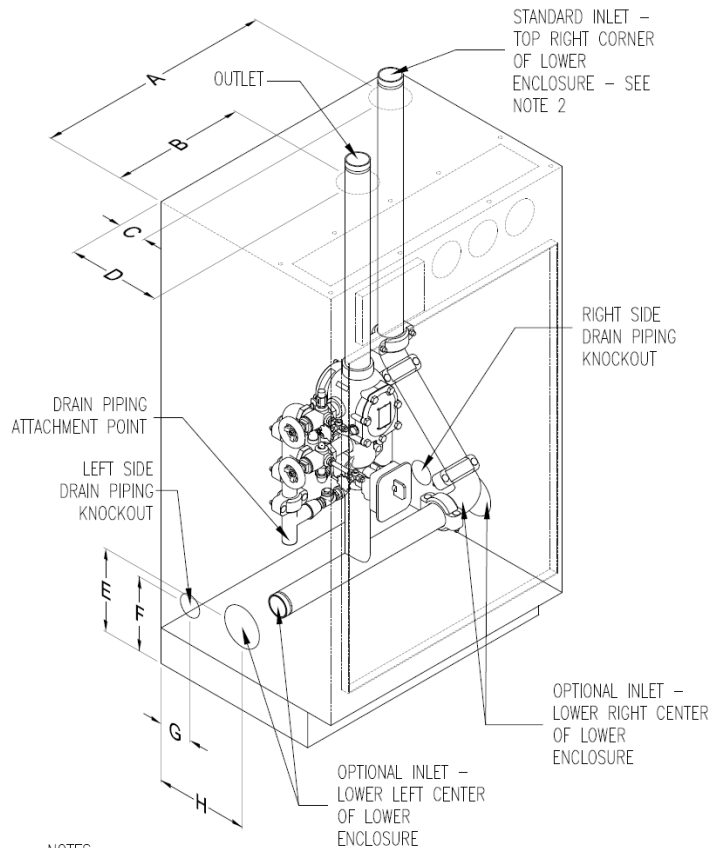
Dimension	Assemblies with 1-1/2" thru 3" Pre-Action Valves	Assemblies with 4" Pre-Action Valves
A	26.64	26.14
B	15.00	15.00
C	3.11	3.61
D	10.50	12.50
E	9.36	9.86
F	8.36	8.86
G	3.75	5.75
H	10.50	12.50
NOTE: All units are in inches.		

Figure 6 – Diagram - Piping Attachment

1.10.4.2. Terminal Strip and Control Panel. See Figure 7 for information on connection to the terminal strip in the upper enclosure. Use Section 4.1 – Fenwal manual 06-236529-001 to guide the installation of connections to the control panel. Terminals for 110VAC power accept qty. (1) 10 ga. max. conductor. NOTE: All conductors used for field wiring must comply with NFPA 70 – National Electrical Code, and control panel manufacturer's instructions (see Section 4). See Section 4, pages E-1 and E-2 for information on power-limited conductor runs.

⚠ CAUTION ⚠

DO NOT drill or punch the upper enclosure to attach conduit. Use the knockouts supplied at the lower back of the upper enclosure. Failure to follow these instructions can result in damage to the control panel. United Fire Protection Corporation will not be responsible for warranty adjustment of damaged control panels when these instructions are not followed.

⚠ CAUTION ⚠

This assembly contains static-sensitive electronic components. ALWAYS ground yourself with a proper wrist strap before handling any electronic components or circuits. Failure to do so can lead to equipment damage from static electricity.
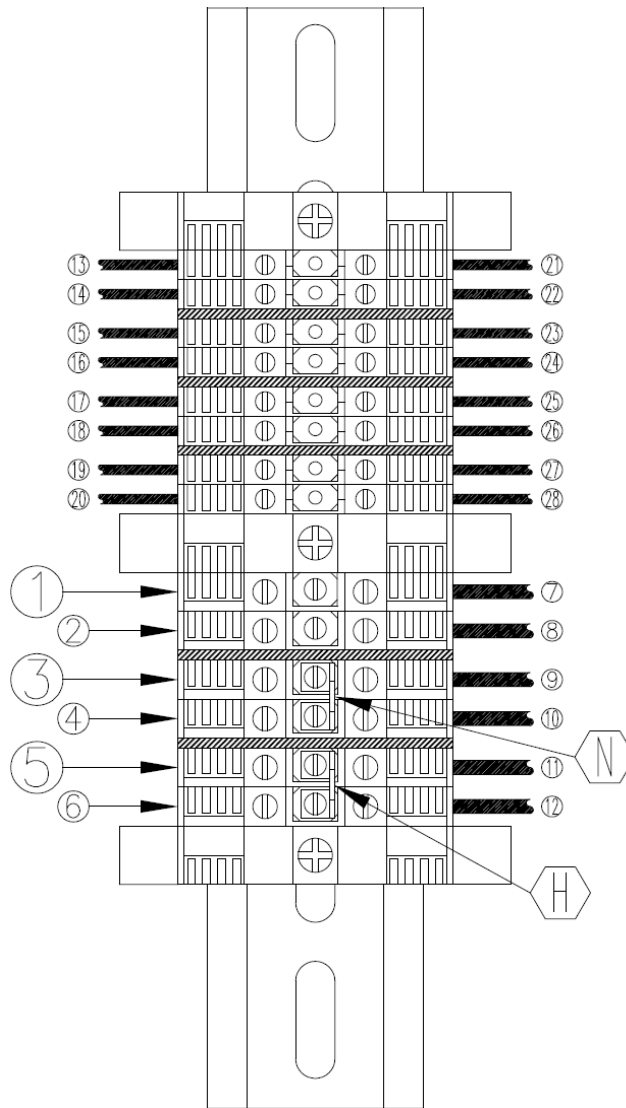
Figure 7 – Diagram - Terminal Strip Wiring Detail

LEGEND		
FIELD WIRING		
NO JUMPER USED		COLOR OF TERMINAL BLOCK
1	DEDICATED 110 VAC GROUND FOR CONTROL PANEL (COMPRESSOR WILL ALSO BE GROUNDED THROUGH THIS TERMINAL)	GREEN/YELLOW
2	DEDICATED 110 VAC GROUND FOR AIR COMPRESSOR (USE ONLY IF REQUIRED BY AHJ)	GREEN/YELLOW
WITH JUMPER (N) IN PLACE	WITH JUMPER (N) REMOVED	
3	110 VAC NEUTRAL FOR CONTROL PANEL AND COMPRESSOR	110 VAC NEUTRAL FOR CONTROL PANEL ONLY	WHITE
4	DO NOT USE	110 VAC NEUTRAL FOR COMPRESSOR ONLY	WHITE
WITH JUMPER (H) IN PLACE	WITH JUMPER (H) REMOVED	
5	110 VAC HOT FOR CONTROL PANEL AND COMPRESSOR	110 VAC HOT FOR CONTROL PANEL ONLY	BLACK
6	DO NOT USE	110 VAC HOT FOR COMPRESSOR ONLY	BLACK
FACTORY WIRING		
7	110 VAC GROUND TO CONTROL PANEL	GREEN/YELLOW
8	110 VAC GROUND TO AIR COMPRESSOR	GREEN/YELLOW
9	110 VAC NEUTRAL TO CONTROL PANEL	WHITE
10	110 VAC NEUTRAL TO AIR COMPRESSOR	WHITE
11	110 VAC HOT TO CONTROL PANEL	BLACK
12	110 VAC HOT TO AIR COMPRESSOR	BLACK
13	PREACTION SOLENOID WIRING (−) FROM LOWER ENCLOSURE	GRAY
14	PREACTION SOLENOID WIRING (+) FROM LOWER ENCLOSURE	RED
15	LOW AIR SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	GRAY
16	LOW AIR SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	GRAY
17	WATERFLOW SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	BLUE
18	WATERFLOW SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	BLUE
19	TAMPER SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	YELLOW
20	TAMPER SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	YELLOW
21	PREACTION SOLENOID (−) TO CONTROL PANEL	GRAY
22	PREACTION SOLENOID (+) TO CONTROL PANEL	RED
23	LOW AIR SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	GRAY
24	LOW AIR SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	GRAY
25	WATERFLOW SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	BLUE
26	WATERFLOW SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	BLUE
27	TAMPER SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	YELLOW
28	TAMPER SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	YELLOW
JUMPERS		
(N)	CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC NEUTRAL CONDUCTORS — REMOVE TO SEPARATE	
(H)	CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC HOT CONDUCTORS — REMOVE TO SEPARATE	

Legend for Figure 7

1.10.4.2.1. Power. 110VAC, 3-wire, single-phase power is attached to the terminal strip in the upper enclosure. See Figure 7. Terminals for 110VAC power accept qty. (1) 10 ga. max. conductor. Current draw: With 1/6HP compressor = 8.8 amps; with 1/3HP compressor = 8.8 amps; with 1/2HP compressor = 10.2 amps.

⚠ DANGER ⚠

Only qualified electricians should connect incoming power to the assembly. Failure to follow this instruction could result in death or serious personal injury.

    A. Turn off circuit breaker at the main power distribution panel.
    B. Connect service ground conductor to terminal marked GROUND.
    C. Connect primary neutral conductor to terminal marked NEUTRAL.
    D. Connect primary hot conductor to terminal marked HOT.

1.10.4.2.2. Backup Batteries. Calculate backup battery requirements, and connect backup batteries, per Section 4.1 – Fenwal manual 06-236529-001. The upper enclosure is capable of holding batteries up to 26 A-H. If larger batteries are needed, use an external battery enclosure per Section 4.1 – Fenwal manual 06-236529-001.

1.10.4.2.3. Fire Detectors (Initiating Devices). Fire detectors (initiating devices), located in the area protected by the sprinklers connected to the PREACTION-PAC, are necessary to provide the signal to open the pre-action valve. Refer to NFPA 72 for information on the number, type, and spacing of fire detectors. Install detectors, wiring, and panel connections per Section 4.1 – Fenwal manual 06-236529-001. All FM Approved systems / installations must be configured as Class A for Deluge and Preaction Releasing Service.

1.10.4.2.4. Audible / Visual Appliances (Indicating Devices). Audible / visual appliances (indicating devices), located in and around the area protected by the sprinklers connected to the PREACTION-PAC, are necessary to warn occupants that a fire has been detected. Refer to NFPA 72 for information on the number, type, and spacing of audible / visual appliances. Install audible / visual devices, wiring, and panel connections per Section 4.1 – Fenwal manual 06-236529-001.

1.10.4.2.5. Building Fire Alarm Systems. In buildings with fire alarm systems separate from the PREACTION-PAC detection system, most national and local codes and authorities having jurisdiction require the PREACTION-PAC to provide signals to the building fire alarm system. The Fenwal control panel installed in the PREACTION-PAC contains dry contacts capable of providing the necessary signals. Install audible / visual devices, wiring, and panel connections per Section 4.1 – Fenwal manual 06-236529-001.

1.10.4.2.6. Other Connections. From time to time, additional signals from the PREACTION-PAC control panel may be required. Such signals can be associated with building management systems, equipment shutdown, or security notification. Additional dry contacts may be needed to satisfy all of these requirements.

1.10.4.3. Compressor. See Figure 7. 110VAC, 3-wire, single-phase power is attached to the terminal strip in the upper enclosure. The compressor power is factory-wired to the terminal strip in the upper enclosure. In the default configuration, the same 110VAC source used for the control panel serves for the compressor. If the local authority having jurisdiction requires separate power sources for the control panel and the compressor, jumpers can be removed from the terminal strip. The compressor pressure outlet is factory-attached to the system piping within the lower enclosure.

1.10.4.4. Options – None available at this time.

1.10.5. Prior To Placing In Service. Before placing the PREACTION-PAC in service, perform the following steps. Ensure that all discrepancies are corrected before proceeding to the next step.

1.10.5.1. Ensure the entire system is installed per the latest revision of all applicable shop drawings.

1.10.5.2. Ensure all testing has been performed on the sprinkler piping per the requirements of the authority having jurisdiction and NFPA 13.

1.10.5.3. Use Sections 4.1 and 4.2 – Fenwal manuals 06-236529-001 and 06-236529-002 to perform all preliminary tests on the control panel, field wiring, and field devices.

1.10.5.4. Use Section 2 – Victaulic manual I-769P to perform all preliminary tests on the pre-action valve, trim, and sprinkler piping.

1.10.5.5. Perform all tests required to be witnessed by the authority having jurisdiction. Obtain AHJ approval of the installation.

1.10.6. Placing In Service.

1.10.6.1. Verify that the control panel is indicating POWER ON, with no alarm or trouble indicators illuminated, and no error messages on the display.

1.10.6.2. Verify that the water supply is on.

1.10.6.3. Using Section 2 – Victaulic manual I-769P, verify that all valves are in the proper position for in-service status. Verify that the three pressure gages on the front of the lower enclosure are indicating expected values within expected limits.

1.10.6.4. Ensure that the owner of the system has received adequate introductory training.

1.10.6.5. Turn over this manual and the enclosure door keys to the owner. The manual may be stored in the pocket on the inside of the lower enclosure door.

1.11. Operation.

1.11.1. Automatic. Fully automatic operation of the system will be conducted by the control panel. Power from 110VAC and / or batteries is required for the control panel to function in this way. No manual intervention is required for the control panel to perform its functions. Manual intervention to acknowledge and silence signals may be performed. Refer to Section 4.1 – Fenwal manual 06-236529-001 for information on signals.

 IMPORTANT

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of automatic fire detectors.

1.11.2. Manual. Manual operation of the pre-action valve is accomplished with the manual release valve. Open the door marked IN CASE OF FIRE OPEN DOOR AND PULL LEVER. No key is needed to open this door. Pull the lever. No power is needed to open the pre-action valve in this manner. The door may not be closed until the lever is restored to its normal position.

 IMPORTANT

Fusing of a sprinkler head by heat is necessary for water to be discharged onto a fire, even after operation of the manual station valve.

1.11.3. Restoring To Service. After automatic or manual system operation, follow instructions in Section 2 – Victaulic manual I-769P and Section 4.1 – Fenwal manual 06-236529-001 to restore the individual parts of the PREACTION-PAC to service.

1.12. Inspection, Testing, and Maintenance. Regular inspection, testing and maintenance of the PREACTION-PAC assembly is essential to the assembly's continued proper operation. Follow all instructions in the documents described in this section. Pay particular attention to the required minimum interval for each item of inspection, testing, and maintenance. The owner of the system (or their designated representative) is responsible for the overall condition of the system, and ensuring that all inspection, testing, and maintenance items are conducted as recommended.

 IMPORTANT

The United Fire Protection PREACTION-PAC sprinkler valve assembly is a vital part of the fire protection of any facility where these units are installed. Life safety and property protection depends on continuing proper operation of the assembly. The owner of the PREACTION-PAC is responsible for the condition of the assembly and its continued proper operation. United Fire Protection strongly recommends that all owners of PREACTION-PACs engage the services of qualified, trained fire protection professionals to inspect, test, maintain, and repair the assembly.

1.12.1. Inspection. Inspection involves carrying out a set of procedures to discover and note any and all discrepancies that could render the system impaired, inoperative, or ineffective. The result of an inspection is a comprehensive list of these discrepancies. Inspection does not specifically include maintenance or repair; however, maintenance and repair can be and usually is conducted at the time of inspection.

1.12.2. Testing. Testing involves carrying out procedures to discover if tested components function as intended. Testing is an integral part of performing inspection. Testing is also done after the performance of some maintenance procedures.

1.12.3. Maintenance. Maintenance involves carrying out procedures to ensure that maintained components continue to function as intended. Maintenance is usually preventive in nature. Maintenance can be conducted during inspection.

1.12.4. Repair. Repair involves carrying out procedures to correct the deficiencies found during inspection, or as a result of other events such as system actuation or control panel trouble / alarm signals.

1.12.5. Documents Relevant To Inspection, Testing, Maintenance, and Repair.

1.12.5.1. Victaulic Manual I-769P.

1.12.5.2. General Air Products Manual OILLESSINST.

1.12.5.3. Fenwal Manual 06-236529-001.

1.12.5.4. Fenwal Manual 06-236529-002.

1.12.5.5. National Fire Protection Association No. 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."

1.12.5.6. National Fire Protection Association No. 72, "National Fire Alarm Code®"

SECTION 2

Victaulic Manual I-769P

Firelock NXT Preaction Valve

FireLock NXT™ Preaction Valve

SERIES 769
NON-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR AND SERIES 753-E SOLENOID VALVE
SINGLE-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
SINGLE-INTERLOCKED, ELECTRIC RELEASE WITH SERIES 753-E SOLENOID VALVE
DOUBLE-INTERLOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ELECTRIC) RELEASE WITH SERIES 753-E SOLENOID VALVE

HANG THESE INSTRUCTIONS ON THE
INSTALLED VALVE FOR EASY FUTURE REFERENCE

WARNING

⚠ WARNING

• **Failure to follow instructions and warnings can cause product failure, resulting in serious personal injury and property damage.**

• **Read and understand all instructions before attempting to install any Victaulic piping products.**

• **Wear safety glasses, hardhat, and foot protection.**

• **Save this installation, maintenance, and testing manual for future reference.**

If you need additional copies of any literature, or if you have any questions concerning the safe installation and operation of this product, contact Victaulic, P.O. Box 31, Easton, PA 18044-0031, USA, Telephone: 1-800 PICK VIC, e-mail: pickvic@victaulic.com.

FireLock NXT™ Preaction Valve

SERIES 769

TABLE OF CONTENTS

HAZARD IDENTIFICATION

⚠ Definitions for identifying the various hazard levels are provided below. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.

⚠ WARNING

- **The use of the word "WARNING" identifies the presence of hazards or unsafe practices that could result in death or serious personal injury if instructions, including recommended precautions, are not followed.**

⚠ CAUTION

- **The use of the word "CAUTION" identifies possible hazards or unsafe practices that could result in personal injury and product or property damage if instructions, including recommended precautions, are not followed.**
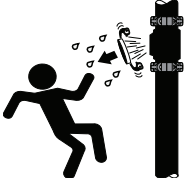
NOTICE

- **The use of the word "NOTICE" identifies special instructions that are important but not related to hazards.**

FireLock NXT™ Preaction Valve

SERIES 769

INSTALLER SAFETY INSTRUCTIONS

<table>
<tr><td colspan="2">⚠ WARNING</td></tr>
<tr><td></td><td>
• An experienced, trained installer must install this product in accordance with all instructions. These instructions contain important information.

• Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.

Failure to follow these instructions can cause product failure, resulting in serious personal injury and/or property damage.
</td></tr>
</table>

GENERAL

1. **Read and understand all instructions and refer to the trim diagrams before proceeding with the installation, maintenance, and testing of this Victaulic Series 769 FireLock NXT Preaction Valve.**

2. **Inspect the shipment.** Make sure all components are included in the shipment and that all necessary tools are available for installation.

3. **Use only recommended accessories.** Accessories and equipment that are not approved for use with this valve may cause improper system operation.

4. **Wear safety glasses, hardhat, foot protection, and hearing protection.** Wear hearing protection if you are exposed to long periods of noisy job-site operations.

5. **Prevent back injury.** Larger and pre-trimmed valves are heavy and require more than one person or mechanical lifting equipment to position and install the assembly. Always practice proper lifting techniques.

6. **Avoid using electrically powered tools in dangerous environments.** When using electrically powered tools for installation, make sure the area is moisture-free. Keep the work area well lit, and allow enough space to accommodate proper installation of the valve, trim, and accessories.

7. **Watch for pinch points.** Do not place fingers under the valve body where they could be pinched by the weight of the valve. Use caution around spring-loaded components (i.e. clapper assembly).

8. **Keep work areas clean.** Cluttered areas, benches, and slippery floors can create hazardous working conditions.

9. **PROTECT THE SYSTEM FROM FREEZING CONDITIONS. THE VALVE AND SUPPLY PIPING MUST BE PROTECTED FROM FREEZING TEMPERATURES AND MECHANICAL DAMAGE.**

10. **IF THE INLET WATER SUPPLY IS INTERRUPTED FOR ANY REASON, AND SYSTEM SUPPLY PRESSURE TO THE VALVE DECREASES, MAKE SURE THE DIAPHRAGM CHARGE LINE IS FULLY PRESSURIZED BEFORE PLACING THE SYSTEM BACK IN SERVICE.**

MAINTENANCE AND TESTING

1. **Notify the authority having jurisdiction.** Always notify the authority having jurisdiction before performing any maintenance that eliminates the fire protection provided by the system.

2. **Follow NFPA requirements for system testing and inspection schedules.** The building owner or their representative is responsible for inspecting the system in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent).

3. **Depressurize and drain the system completely before performing any maintenance.** Water under pressure can cause the cover plate to blow off during removal if the system is not depressurized and drained completely.

4. **Protect the valve from freezing temperatures, foreign matter, and corrosive atmospheres.** Any condition that might degrade the system or affect system performance must be avoided.

FireLock NXT™ Preaction Valve

SERIES 769

INTRODUCTION

The following instructions are a guide for proper installation of Victaulic Series 769 FireLock NXT Preaction Valves. These instructions involve pipe that is properly prepared and grooved in accordance with current Victaulic specifications.

NOTICE
• Drawings and/or pictures in this manual may be exaggerated for clarity.
• This product and this installation, maintenance, and testing manual contain trademarks, copyrights, and/or patented features that are the exclusive property of Victaulic.

TRIM DIMENSIONS

THE 4-INCH/114.3-MM CONFIGURATION IS SHOWN BELOW. 1 ½ – 2-INCH/48.3 – 60.3-MM CONFIGURATIONS CONTAIN ¾-INCH/19-MM DRAIN VALVES.
2 ½ – 3-INCH/73.0 – 88.9-MM CONFIGURATIONS CONTAIN 1 ¼-INCH/31-MM DRAIN VALVES. 4 – 8-INCH/114.3 – 219.1-MM CONFIGURATIONS CONTAIN 2-INCH/50-MM DRAIN VALVES.
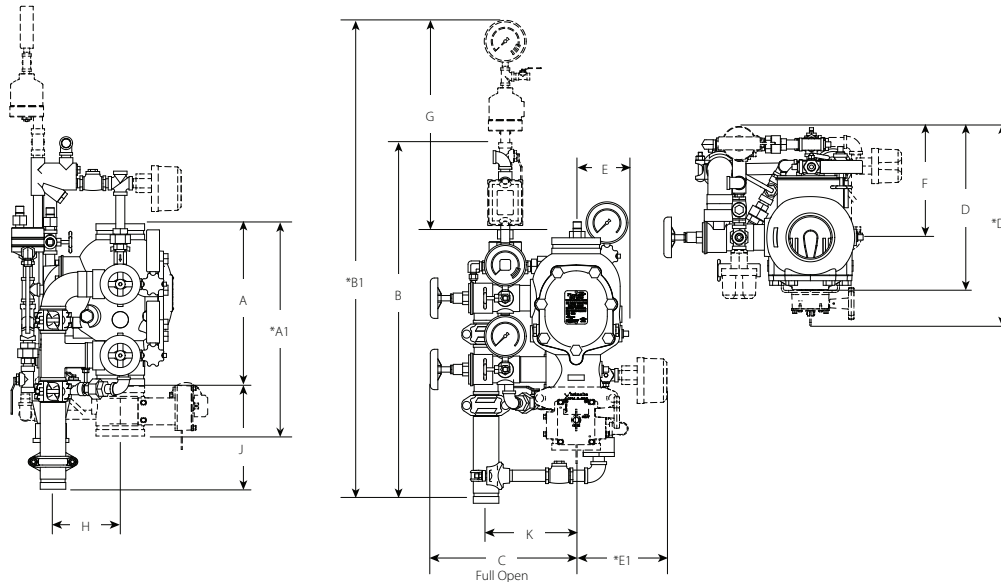
Size		Dimensions – inches/mm															Aprx. Weight Ea. lbs/kg	
Nominal Size inches mm	Actual Out. Dia. inches mm	A	A1*	B	B1*	C	D	D1*	E	E1*	F	G	H	J	K	Without Trim	With Trim
1½ 40	1.900 48.3	9.00 228.60	16.43 417.32	28.25 717	40.50 1028	13.75 349	16.00 406	—	5.25 133	8.50 215	9.50 241	22.25 565	3.04 77.21	9.17 232.91	6.98 177.29	16.7 7.6	43.0 19.5
2 50	2.375 60.3	9.00 228.60	16.43 417.32	28.25 717	40.50 1028	13.75 349	16.00 406	—	5.25 133	8.50 215	9.50 241	22.25 565	3.04 77.21	9.17 232.91	6.98 177.29	17.0 7.7	43.0 19.5
2 ½ 65	2.875 73.0	12.61 320.29	16.50 419.10	32.25 819	44.25 1123	13.50 342	16.00 406	17.50 444	5.25 133	9.00 228	9.25 234	21.25 539	3.90 99.06	10.50 266.70	6.93 176.02	41.0 18.7	65.0 29.5
76.1 mm	3.000 76.1	12.61 320.29	16.50 419.10	32.25 819	44.25 1123	13.50 342	16.00 406	17.50 444	5.25 133	9.00 228	9.25 234	21.25 539	3.90 99.06	10.50 266.70	6.93 176.02	41.0 18.7	65.0 29.5
3 80	3.500 88.9	12.61 320.29	16.50 419.10	32.25 819	44.25 1123	13.50 342	16.00 406	17.50 444	5.25 133	9.00 228	9.25 234	21.25 539	3.90 99.06	10.50 266.70	6.93 176.02	41.0 18.7	65.0 29.5
4 100	4.500 114.3	15.03 381.76	19.78 502.41	33.25 844	45.50 1155	15.00 381	15.75 400	20.50 520	5.50 139	9.00 228	10.75 273	20.75 527	6.25 158.75	9.62 244.34	8.46 214.88	59.0 26.7	95.0 43.0
165.1 mm	6.500 165.1	16.00 406.40	22.00 558.80	33.50 850	45.75 1162	15.50 393	17.00 431	22.00 558	6.00 152	8.50 215	11.50 292	20.00 508	6.20 157.48	9.62 244.34	8.84 224.53	80.0 36.2	116.0 52.6
6 150	6.625 168.3	16.00 406.40	22.00 558.80	33.50 850	45.75 1162	15.50 393	17.00 431	22.00 558	6.00 152	8.50 215	11.50 292	20.00 508	6.20 157.48	9.62 244.34	8.84 224.53	80.0 36.2	116.0 52.6
8 200	8.625 219.1	17.50 444.50	22.94 582.67	33.50 850	45.50 1155	16.75 425	20.00 508	25.25 641	7.00 177	8.75 222	12.75 323	18.50 469	6.05 153.67	9.40 238.76	10.21 259.33	122.0 55.3	158.0 71.6

NOTES:

The drawings shown above reflect the single-interlocked, pneumatic release trim with Series 776 Low-Pressure Actuator. In addition, these dimensions can be applied to single-interlocked, pneumatic release; non-interlocked, pneumatic/electric release; single-interlocked, electric release; and double-interlocked, electric (electric-pneumatic/electric) release trim.

The "A" dimension coupling is not shown for clarity.

Components shown as dotted lines denote optional equipment

* Measurements denoted with an asterisk take optional equipment into account

Optional drain connection kit is shown for reference and takeout dimensions.

FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – NON-INTERLOCKED, PNEUMATIC RELEASE TRIM
(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

 1 Series 769 FireLock NXT Preaction Valve
 2 FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 3 Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 4 Drain Swing Check Valve
 5 Drip Cup with Cap
 6 Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 7 Series 729 Drip Check Valve
 8 Diaphragm-Charge-Line Ball Valve (Normally Open)
 9 3-in-1 Strainer/Check/Restrictor Assembly
 10 Series 760 Water Motor Alarm (Optional/Sold Separately)
 11 Alarm Test Ball Valve
 12 Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
 13 Series 749 Auto Drain
 14 Series 776 Low-Pressure Actuator
 15 Air Manifold
 16 Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 17 System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
 18 Water Supply Main Drain Valve - Flow Test
 19 Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
 20 Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 21 Gauge Valve
 22 System Main Drain Valve
 23 Series 755 Manual Pull Station
 24 Series 748 Ball Check Valve

NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE TRIM
(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

1 Series 769 FireLock NXT Preaction Valve
2 FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3 Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4 Drain Swing Check Valve
5 Drip Cup with Cap
6 Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7 Series 729 Drip Check Valve
8 Diaphragm-Charge-Line Ball Valve (Normally Open)
9 3-in-1 Strainer/Check/Restrictor Assembly
10 Series 760 Water Motor Alarm (Optional/Sold Separately)
11 Alarm Test Ball Valve
12 Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13 Series 749 Auto Drain
14 Series 776 Low-Pressure Actuator
15 Air Manifold
16 Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
17 System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
18 Water Supply Main Drain Valve - Flow Test
19 Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
20 Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
21 Gauge Valve
22 System Main Drain Valve
23 Series 755 Manual Pull Station
24 Series 748 Ball Check Valve
25 Series 753-E Solenoid Valve
26 Series 746-LPA Dry Accelerator (Optional/Sold Separately)

NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

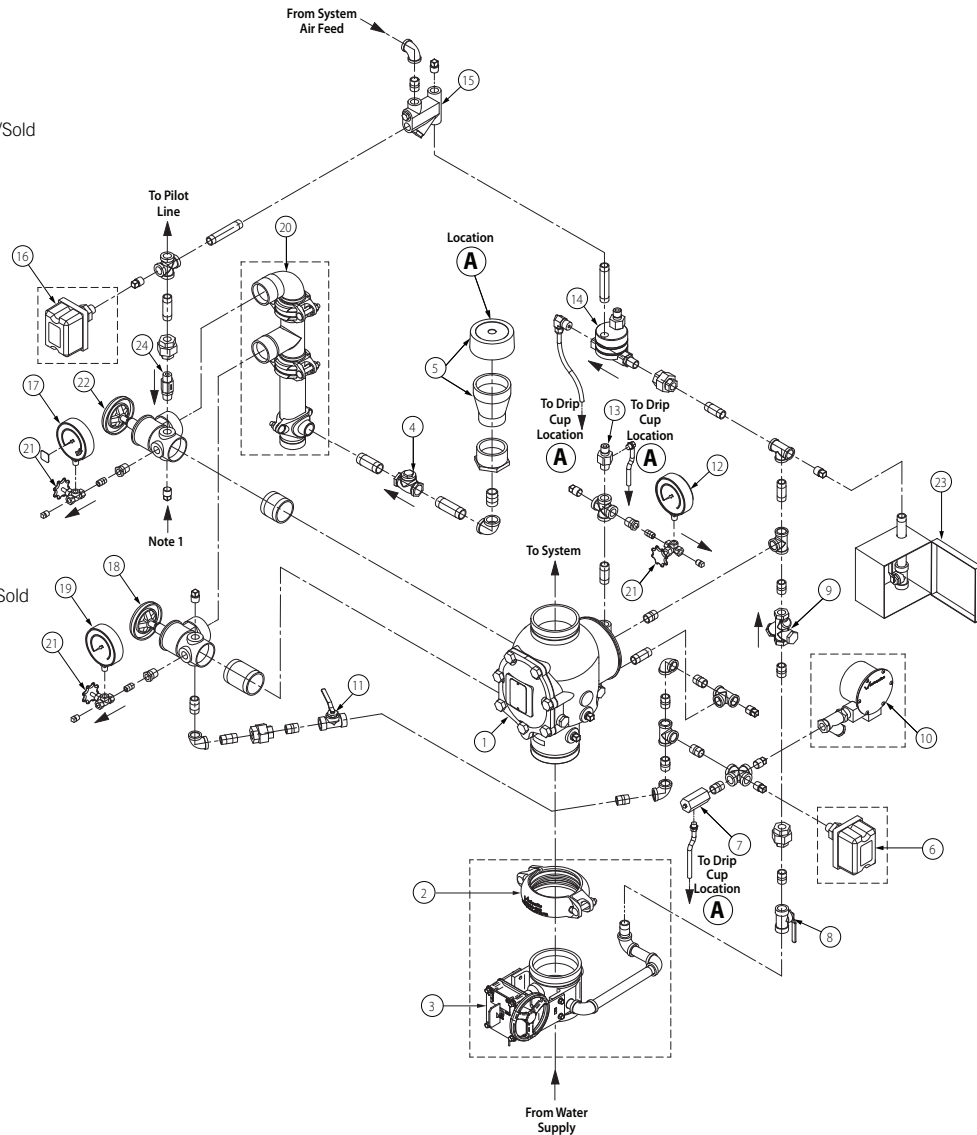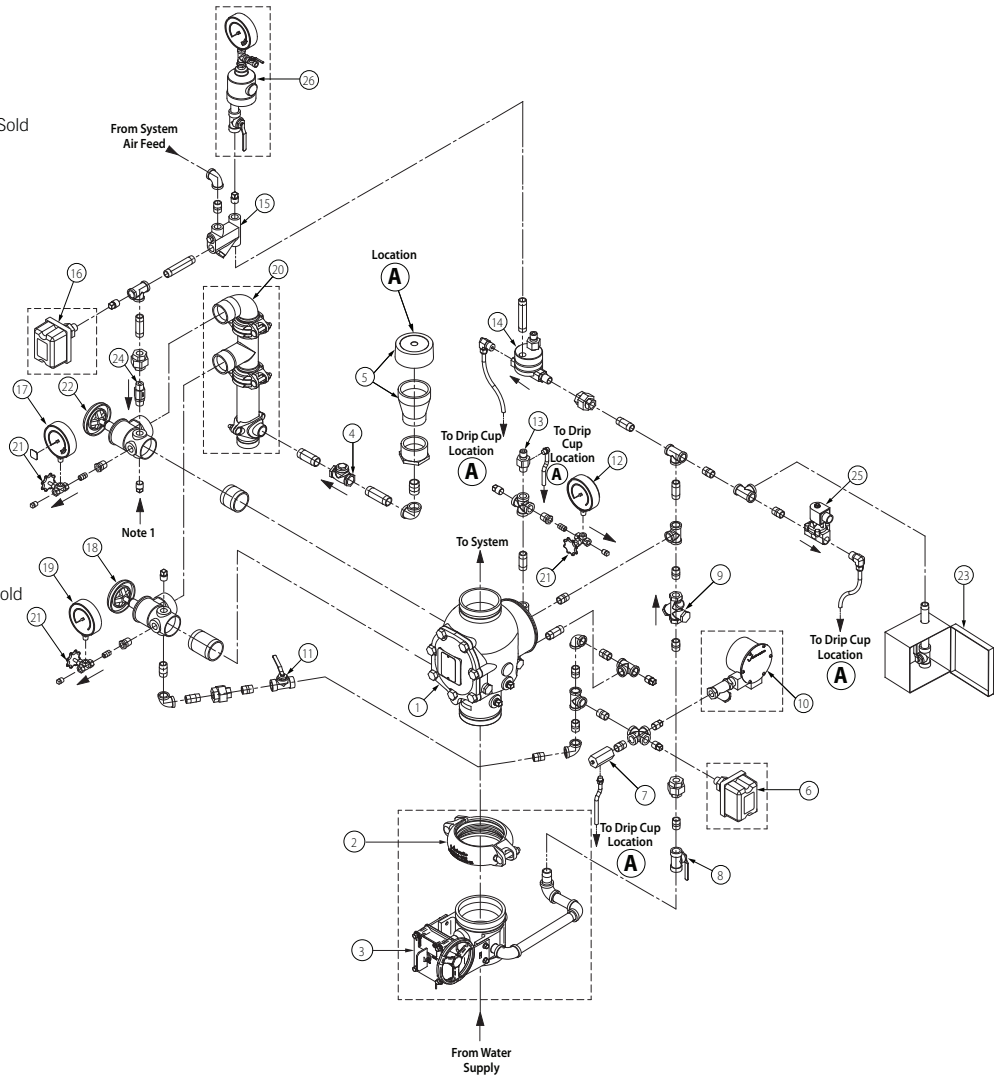# FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – SINGLE-INTERLOCKED, PNEUMATIC RELEASE TRIM
(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

  1 Series 769 FireLock NXT Preaction Valve
  2 FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
  3 Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
  4 Drain Swing Check Valve
  5 Drip Cup with Cap
  6 Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
  7 Series 729 Drip Check Valve
  8 Diaphragm-Charge-Line Ball Valve (Normally Open)
  9 3-in-1 Strainer/Check/Restrictor Assembly
 10 Series 760 Water Motor Alarm (Optional/Sold Separately)
 11 Alarm Test Ball Valve
 12 Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
 13 Series 749 Auto Drain
 14 Series 776 Low-Pressure Actuator
 15 Air Manifold
 16 Air Supervisory Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 17 System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
 18 Water Supply Main Drain Valve - Flow Test
 19 Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
 20 Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
 21 Gauge Valve
 22 System Main Drain Valve
 23 Series 755 Manual Pull Station
 24 Series 748 Ball Check Valve
 25 Series 746-LPA Dry Accelerator (Optional/Sold Separately)
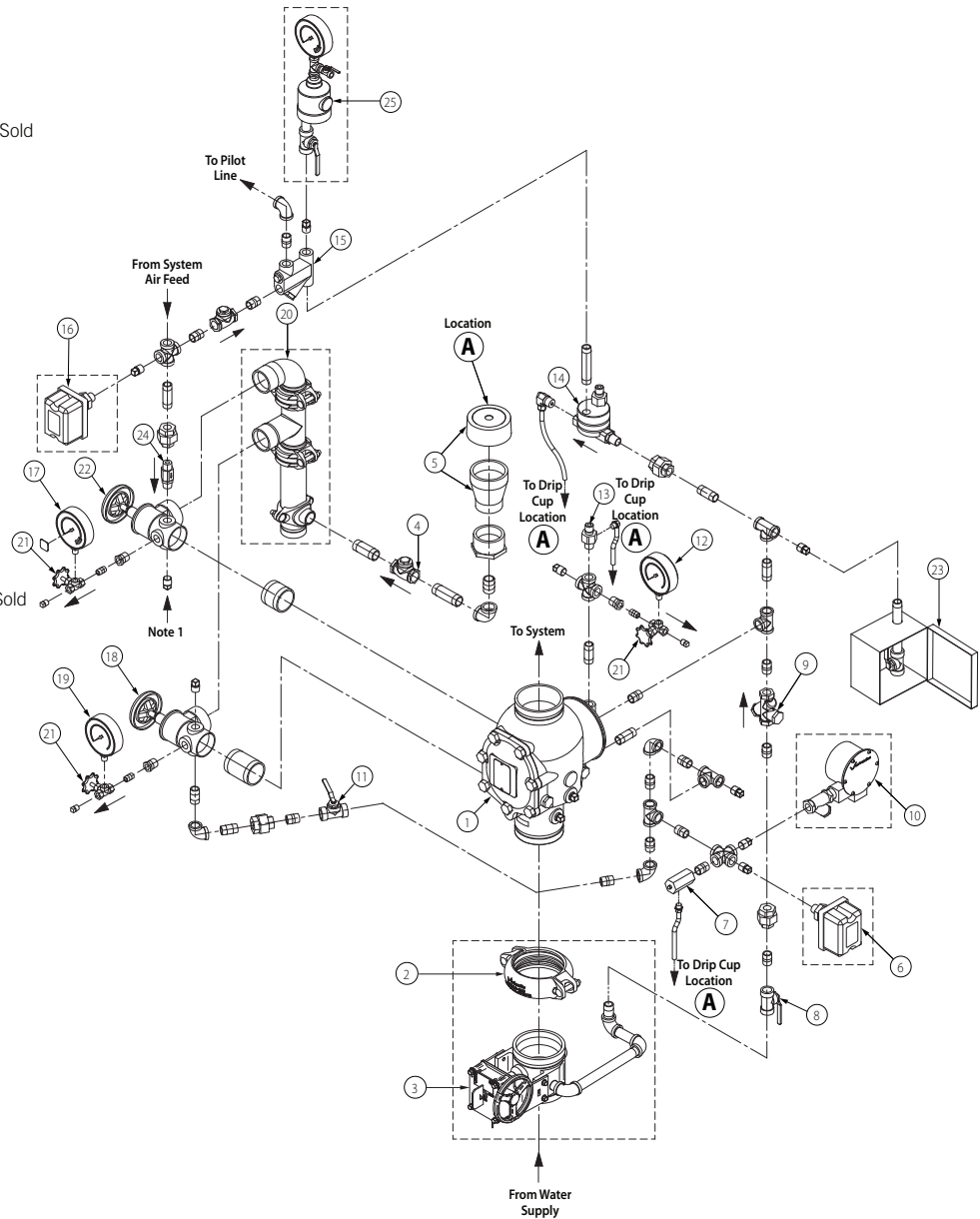
NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

www.victaulic.com

FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – TRIM COMPONENTS

SERIES 769 FIRELOCK NXT PREACTION VALVE – SINGLE-INTERLOCKED, ELECTRIC RELEASE TRIM

SERIES 769 FIRELOCK NXT PREACTION VALVE – DOUBLE-INTERLOCKED, ELECTRIC RELEASE (ELECTRIC-PNEUMATIC/ELECTRIC) TRIM

(OPTIONAL ACCESSORIES ALSO SHOWN)

Bill of Materials

1 Series 769 FireLock NXT Preaction Valve
2 FireLock Rigid Coupling (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
3 Water Supply Main Control Valve (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
4 Drain Swing Check Valve
5 Drip Cup with Cap
6 Alarm Pressure Switch (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
7 Series 729 Drip Check Valve
8 Diaphragm-Charge-Line Ball Valve (Normally Open)
9 3-in-1 Strainer/Check/Restrictor Assembly
10 Series 760 Water Motor Alarm (Optional/Sold Separately)
11 Alarm Test Ball Valve
12 Diaphragm-Charge-Line Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
13 Series 749 Auto Drain
14 Series 753-E Solenoid Valve
15 Air Supervisory Pressure Switch**
16 System Pressure Gauge (0-80 psi/0-552 kPa/0-5.5 Bar with Retard)
17 Water Supply Main Drain Valve - Flow Test
18 Water Supply Pressure Gauge (0-300 psi/0-2068 kPa/0-20.7 Bar)
19 Drain Connection Kit (Optional/Sold Separately – Comes Standard when VQR Assembly is Ordered)
20 Gauge Valve
21 System Main Drain Valve
22 Series 755 Manual Pull Station
23 Series 748 Ball Check Valve

**Item #15 is optional/sold separately (or standard when VQR assembly is ordered) for single-interlocked, electric release trim.
**Item #15 is standard for double-interlocked, electric release (electric-pneumatic/electric) trim.
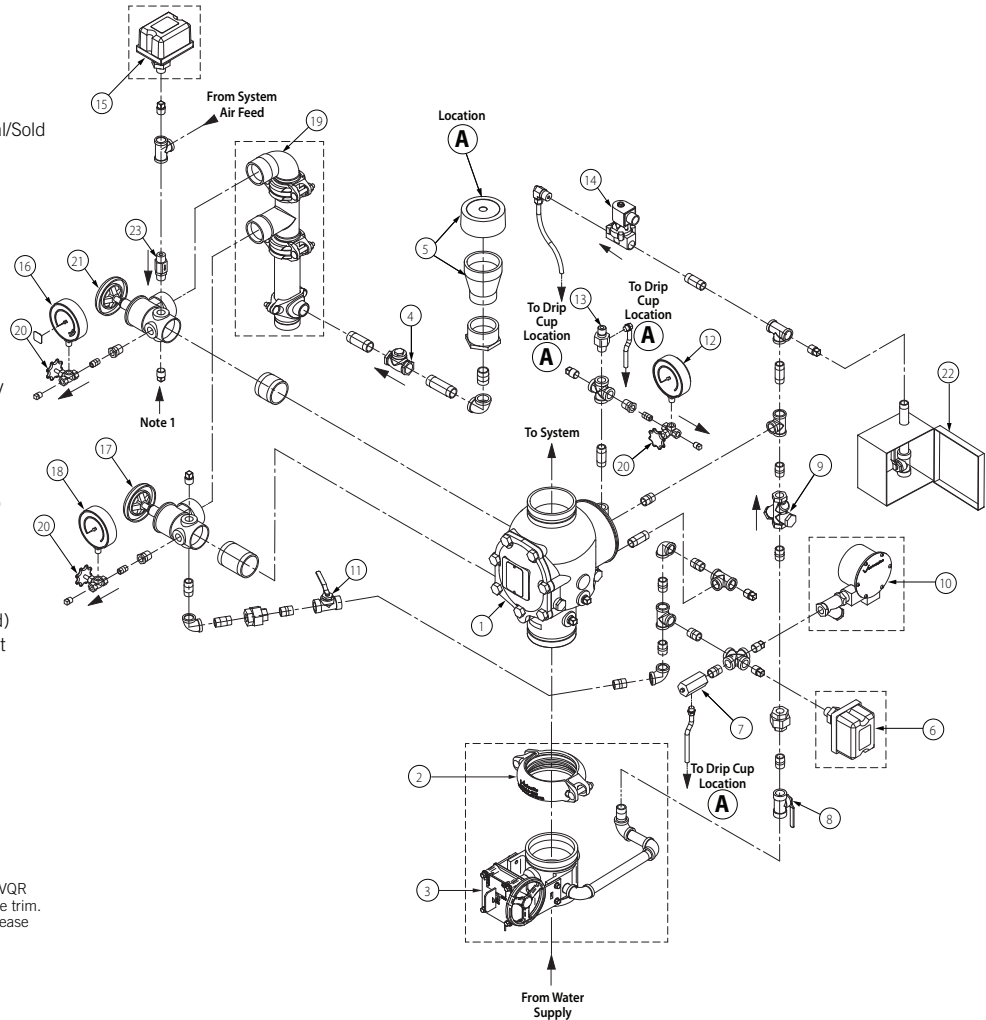
NOTE 1: Connection point for the Series 75D Water Column Device Kit

For information regarding installation of the Series 75B Supplemental Alarm Device or the Series 7C7 Air Maintenance/Compressor Assembly (not shown), refer to the instructions supplied with the product.

FireLock NXT™ Preaction Valve

SERIES 769

EXPLODED VIEW DRAWING – INTERNAL VALVE COMPONENTS
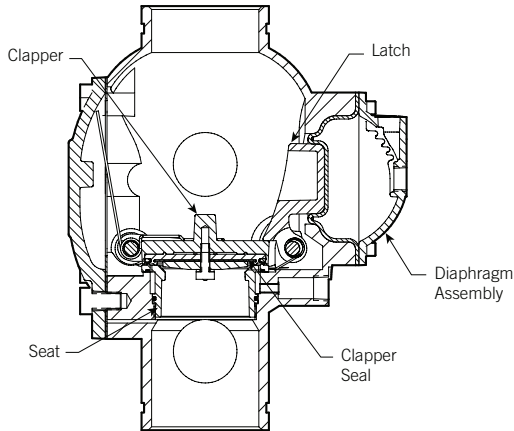
NOTE: VALVE IS SHOWN ABOVE IN THE "SET" POSITION

Exaggerated for Clarity

Bill of Materials

1	Valve Body	12	Cover Plate
2	Clapper	13	Cover Plate Gasket
3	Clapper Seal	14	Cover Plate Bolts*
4	Seal Ring	15	Latch
5	Seal Washer	16	Latch Spring
6	Seal Retaining Ring	17	Latch Shaft Bushing and O-Ring (Qty. 2)
7	Seal Assembly Bolt	18	Diaphragm
8	Bolt Seal	19	Diaphragm Cover
9	Clapper Spring	20	Diaphragm Cover Cap Screws (Qty. 8)
10	Clapper Shaft	21	Latch Shaft
11	Clapper Shaft Bushing and O-Ring (Qty. 2)		
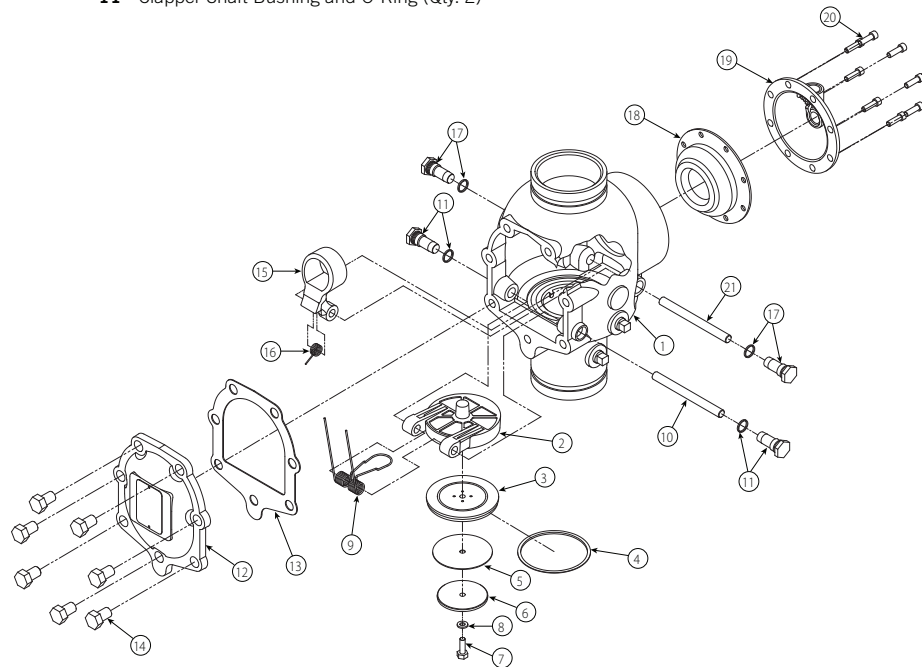
* **NOTE:** The 1½-inch/48.3-mm and 2-inch/60.3-mm valve sizes contain washers under the heads of the cover plate bolts.

FireLock NXT™ Preaction Valve

SERIES 769

SECTION VIEW DRAWING AND DESCRIPTION – SERIES 776 LOW-PRESSURE ACTUATOR

The Series 776 Low-Pressure Actuator is located in the trim of Series 769 FireLock NXT Preaction Valves and acts as the trigger for these systems.

Diaphragms separate the low-pressure actuator into three chambers. The upper air chamber controls activation, while the middle and lower chambers act as the water valve.

During setup, system air is applied to the upper chamber of the low-pressure actuator. When the Auto Vent Sleeve of the low-pressure actuator is pulled up, the upper chamber manually sets. Air pressure in the upper chamber holds the Auto Vent closed, while it exerts force on the water seal of the middle chamber.

When the diaphragm charge line is opened, water enters the lower chamber of the low-pressure actuator. Water that enters the low-pressure actuator flows to the middle chamber through the inlet eyelet, which is pressurized by system air pressure in the upper chamber.

Since the area of the lower diaphragm (exposed to water pressure in the middle chamber) is greater than the area of the lower chamber, the lower chamber seals off. Water does not flow to the outlet of the low-pressure actuator, and the supply water pressure creates the water seal.

When system air pressure decays to 7 psi/48 kPa/0.5 Bar, the force exerted by the compression spring in the Auto Vent is greater than the force exerted by air in the upper chamber. The Auto Vent opens, and all air pressure in the upper chamber evacuates.

The upper diaphragm releases water pressure in the middle chamber of the low-pressure actuator, which allows the lower diaphragm to lift and water to flow from the inlet to the outlet. This flow of water releases pressure from the diaphragm charge line of the Series 769 FireLock NXT Preaction Valve, thus allowing the diaphragm to retract. The clapper opens, and water flows into the sprinkler system.

Bill of Materials

1	Auto Vent Sleeve	**9**	Lower Diaphragm Assembly
2	Auto Vent Screw	**10**	Strainer Screen (Replaceable)
3	Auto Vent Assembly	**11**	Strainer O-Ring Seal
4	Upper Chamber	**12**	Strainer Assembly
5	Upper Diaphragm Wave Spring	**13**	Inlet Eyelet
6	Lower Diaphragm Wave Spring	**14**	Middle Chamber
7	Outlet Eyelet	**15**	Upper Diaphragm Assembly
8	Lower Chamber		

Exaggerated for Clarity
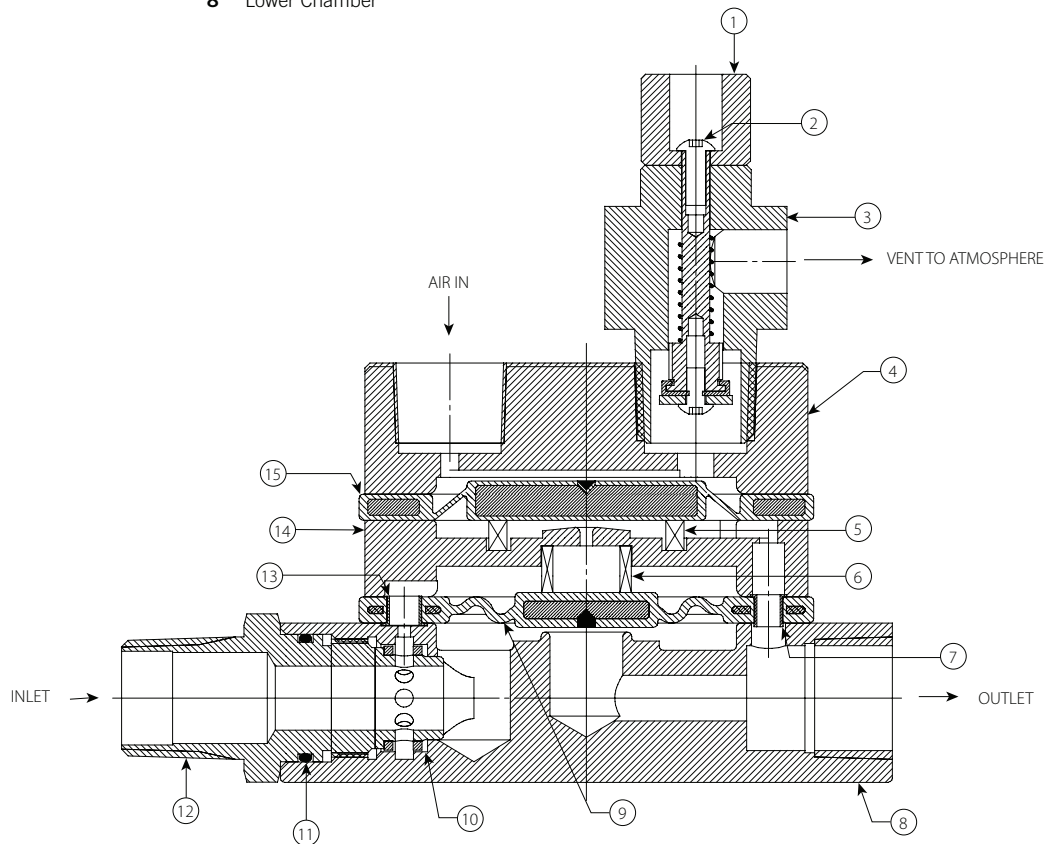
FireLock NXT™ Preaction Valve

SERIES 769

SECTION VIEW DRAWING AND DESCRIPTION – SERIES 746-LPA DRY ACCELERATOR

The Series 746-LPA Dry Accelerator is a quick-opening device, which exhausts air from the Series 776 Low-Pressure Actuator to speed valve operation.

A diaphragm separates the Series 746-LPA Dry Accelerator into two chambers. The closing chamber contains a compression spring, which maintains the chamber in the closed position. The closed position is maintained as long as the pressure differential between the opening and closing chambers is less than 3 psi/21 kPa/0.2 Bar.

When the system introduces air pressure into the dry accelerator, air enters the closing chamber and passes through a check valve to the opening chamber. The check valve, which allows flow into the opening chamber, prevents pressure from escaping the opening chamber. Therefore, air can escape only through the restrictor.

When a rapid loss of system air pressure occurs, such as an open sprinkler, air escapes from the closing chamber faster than it escapes from the opening chamber. As the sprinkler system's pressure continues to decay, a differential pressure develops across the diaphragm. When this differential pressure reaches 3 – 5 psi/21 – 34 kPa/0.2 – 0.3 Bar, the opening chamber's pressure overcomes the compression spring's closing force, causing the closing chamber to open to the atmosphere. The closing chamber opens immediately and releases pressure from the actuator, resulting in valve operation.

NOTE: The Series 746-LPA Dry Accelerator must be used only on systems operating below 30 psi/206 kPa/2.1 Bar of air. If air pressure higher than 30 psi/206 kPa/2.1 Bar is required, the Series 746 Dry Accelerator should be used.

Bill of Materials

1	Opening/Air Chamber		9	O-Ring
2	Restrictor		10	Seal Support
3	Piston		11	Closing Chamber Seal
4	O-Ring		12	Button-Head Cap Screw
5	Diaphragm		13	Washer
6	Actuator Shaft		14	Adjustable Seat
7	Closing Chamber		15	Check Valve
8	Compression Spring			
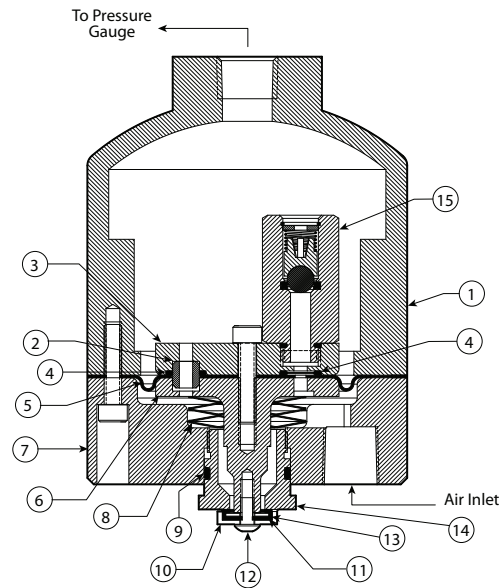
CROSS-SECTION WITH UPPER CHAMBER ROTATED
45° AND BOLT REMOVED FOR CLARITY

Exaggerated for Clarity

FireLock NXT™ Preaction Valve

SERIES 769

AIR SUPPLY REQUIREMENTS

The required air pressure for Series 769 FireLock NXT Preaction Valves is 13 psi/90 kPa/0.9 Bar minimum, regardless of the system supply water pressure. Normal air pressure should not exceed 18 psi/124 kPa/1.2 Bar. Failure to maintain air pressure within the 13 psi/90 kPa to 18 psi/124 kPa/1.2 Bar range may reduce system operation response time.

Systems with air pressure higher than 18 psi/124 kPa/1.2 Bar may require the addition of a Series 746-LPA Dry Accelerator. **NOTE:** The Series 746-LPA Dry Accelerator must be used only on systems operating below 30 psi/206 kPa/2.1 Bar of air. If air pressure higher than 30 psi/206 kPa/2.1 Bar is required, the Series 746 Dry Accelerator should be used.

If multiple Series 769 FireLock NXT Preaction Valves are installed with a common air supply, isolate the systems with a spring-loaded, soft-seated ball check valve to ensure air integrity for each system. Good practice is to include a ball valve for isolation and service of each individual system.

Set the air pressure to the required system air pressure. Air pressure differing from the required system air pressure could reduce system operation response time.

The engineer/system designer is responsible for sizing the compressor so that the entire system is charged to the required air pressure within 30 minutes. DO NOT oversize the compressor to provide more airflow. An oversized compressor will slow down or possibly prevent valve operation.

If the compressor fills the system too fast, it may be necessary to restrict the air supply. Restricting the air supply will ensure that air being exhausted from an open sprinkler or manual release valve is not replaced by the air supply system as fast as it is being exhausted.

COMPRESSOR SIZING

COMPRESSOR REQUIREMENTS

20 psi/138 kPa
13 psi/90 kPa

Required Flow Rate (CFM)

System Capacity (in gallons)
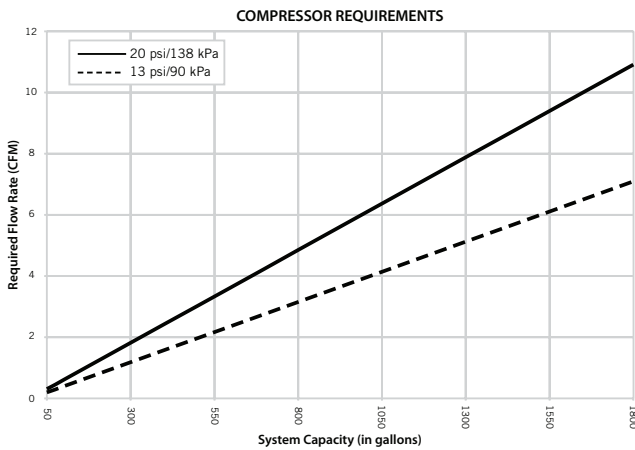
BASE OR RISER-MOUNTED AIR COMPRESSORS

For base or riser-mounted air compressors, the recommended air pressure of 13 psi/90 kPa/0.9 Bar is the "on" or "low" pressure setting for the compressor. The "off" or "high" pressure setting should be 18 psi/124 kPa/1.2 Bar.

When a base or riser-mounted air compressor supplies air to a Series 769 FireLock NXT Preaction Valve, it is not necessary to install the Victaulic Series 757 Regulated Air Maintenance Trim Assembly (AMTA). In this case, the air line of the compressor connects to the trim at the fitting where the Series 757 Regulated AMTA is normally installed (refer to the applicable trim drawing). If the compressor is not equipped with a pressure switch, the Series 757P Air Maintenance Trim Assembly with Pressure Switch should be installed.

SHOP AIR OR TANK-MOUNTED AIR COMPRESSORS

In the event a compressor becomes inoperative, a properly sized tank-mounted air compressor provides the greatest protection for systems.

When shop air or a tank-mounted air compressor is used, the Series 757 Regulated AMTA must be installed. The Series 757 Regulated AMTA provides proper air regulation from the air reservoir to the sprinkler system.

For tank-mounted air compressors, the recommended air pressure of 13 psi/90 kPa/0.9 Bar should be used as the set point for the air regulator. The "on" pressure of the compressor should be at least 5 psi/34 kPa/0.3 Bar above the set point of the air regulator.

VICTAULIC SERIES 757 REGULATED AIR MAINTENANCE TRIM ASSEMBLY (AMTA) OPTION

NOTICE
• **Victaulic recommends a maximum of two Series 769 FireLock NXT Preaction Valves per Series 757 Regulated AMTA.**

Bill of Materials

1	⅛"/3.2 mm Restrictor
2	Slow Fill Ball Valve (Normally Open)
3	Air Regulator
4	Strainer (100 Mesh)
5	Spring-Loaded, Soft-Seated Ball Check Valve
6	Fast Fill Ball Valve (Normally Closed)
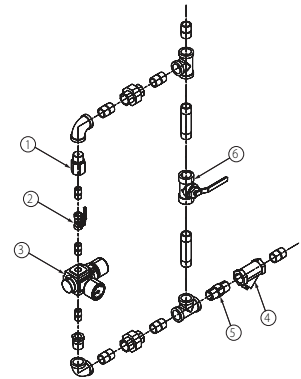
FireLock NXT™ Preaction Valve

SERIES 769

VICTAULIC SERIES 757P AIR MAINTENANCE TRIM ASSEMBLY (AMTA) WITH PRESSURE SWITCH OPTION

NOTICE

- **Victaulic recommends a maximum of two Series 769 FireLock NXT Preaction Valves per Series 757P AMTA with Pressure Switch.**
- **Refer to the I-757P Air Maintenance Trim Assembly with Pressure Switch Installation Instructions, supplied with the product, for complete installation, electrical, and pressure switch adjustment information.**

Bill of Materials

| Item	Qty.	Description
1	1	Restrictor (½-inch NPT)
2	1	Strainer (½-inch NPT)
3	1	Swing Check (½-inch NPT)
4	1	Slow-Fill Ball Valve (Normally Open)
5	1	Spring-Loaded, Soft-Seated Check Valve
6	1	Pressure Switch
7	2	Compression Fitting, Straight (¼-inch NPT x ¼-inch Tube)
8	1	Copper Tubing (¼-inch OD)
9	11	Close Nipple (½-inch NPT x 1.13)
10	1	Nipple (½-inch NPT x 4.00)
11	1	90° Female Elbow (½-inch NPT)
12	4	Female Tee (½-inch NPT)
13	3	Union (½-inch NPT)
14	2	Reducing Bushing (½-inch NPT x ¼-inch NPT)
15	1	Fast-Fill Ball Valve (Normally Closed)
16	1	Pressure Switch Isolation Ball Valve (Normally Open - Lockable)

FROM COMPRESSOR

TO SYSTEM
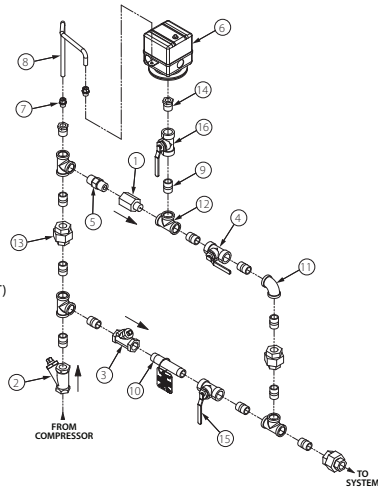
COMPRESSOR REQUIREMENTS AND SETTINGS FOR SERIES 769 FIRELOCK NXT PREACTION VALVES INSTALLED WITH SERIES 746-LPA DRY ACCELERATORS

Set the air regulator of the Series 757 Regulated AMTA to a minimum of 13 psi/90 kPa/0.9 Bar.

The Series 757P Air Maintenance Trim Assembly with Pressure Switch MUST NOT be used on a Series 769 FireLock NXT Preaction Valve installed with a Series 746-LPA Dry Accelerator, unless a tank and air regulator are added.

In the event a compressor becomes inoperative, a properly sized tank-mounted air compressor provides the greatest protection for systems installed with a Series 746-LPA Dry Accelerator. In this situation, air can be supplied continuously to the sprinkler system for an extended time period. **NOTE:** The Series 757 Regulated AMTA should be used with a tank-mounted air compressor to supply air to a Series 769 FireLock NXT Preaction Valve when the Series 746-LPA Dry Accelerator is used. The use of an air regulator with a base or riser-mounted compressor could cause short cycling, resulting in premature wear of the compressor.

The air regulator of the Series 757 Regulated AMTA is a relief-type design. Any pressure in the system that is above the set point of the air regulator will be released. Therefore, charging the air regulator above the set point could cause premature operation of a valve installed with a Series 746-LPA Dry Accelerator.

SETTINGS FOR AIR SUPERVISORY PRESSURE SWITCHES AND ALARM PRESSURE SWITCHES

1. Air supervisory pressure switches are required for preaction systems and must be set according to the following notes. **NOTE:** Switches for Vic-Quick Risers are pre-set at the factory.

    1a. Wire the air supervisory pressure switches to activate a low-pressure alarm signal. **NOTE:** In addition, the local authority having jurisdiction may require a high-pressure alarm. Contact the local authority having jurisdiction for this requirement.

    1b. Set the air supervisory pressure switches to activate at 2 – 4 psi/14 – 28 kPa/0.1 – 0.3 Bar below the minimum air pressure required (but not lower than 10 psi/69 kPa/0.7 Bar).

    1c. Wire the alarm pressure switch to activate a water flow alarm.

    1d. Set the alarm pressure switch to activate on a pressure rise of 4 – 8 psi/28 – 55 kPa/0.3 – 0.6 Bar.

REMOTE SYSTEM TEST VALVE REQUIREMENTS

The remote system test valve (inspector's test connection) should contain a UL Listed and/or FM Approved valve (normally closed), which can be opened to simulate the operation of a sprinkler.

The remote system test valve (inspector's test connection) should be located at the most hydraulically demanding location in the release system. **NOTE:** Multiple restrictions on the remote system test valve (inspector's test connection) may slow the air decay rate and cause the system to respond slower than required.

The remote system test valve (inspector's test connection) should terminate with an orifice equal to the smallest orifice in the releasing system.

The remote system test valve (inspector's test connection) is used to ensure that water reaches the most remote part of the system within 60 seconds.

FireLock NXT™ Preaction Valve
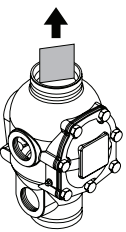
SERIES 769

IMPORTANT INSTALLATION INFORMATION

1. For proper operation and approval, the Series 769 FireLock NXT Preaction Valve must be installed in accordance with the specific trim diagrams included with the shipment. **NOTE:** Victaulic provides specific trim diagrams for installations involving a Series 746-LPA Dry Accelerator.

2. Before installing the Series 769 FireLock NXT Preaction Valve, flush the water supply piping thoroughly to remove all foreign material.

3. Series 769 FireLock NXT Preaction Valves MUST NOT be located in an area where the valve can be exposed to freezing temperatures. In addition, the Series 769 FireLock NXT Preaction Valve MUST NOT be located in an area where physical damage may occur.

4. It is the system designer's responsibility to confirm material compatibility of the Series 769 FireLock NXT Preaction Valve, trim, and associated accessories when a corrosive environment or contaminated water is present.

5. **SERIES 769 FIRELOCK NXT PREACTION VALVES MUST BE INSTALLED ONLY IN THE VERTICAL POSITION WITH THE ARROW ON THE BODY POINTING UPWARD.**

6. Air or nitrogen supply to the dry piping system must be clean, dry, and oil-free.

7. Air supplies must be regulated, restricted, and continuous.

8. When an uninterruptible water flow alarm is required, Victaulic recommends the use of a low-pressure alarm installed on the diaphragm charge line downstream of the strainer/check restrictor. Another option is to install a Series 75B Supplemental Alarm Device.

9. Per NFPA 13 requirements, piping must be pitched so that systems can drain properly. For areas that are subject to high levels of condensation, or where piping is not properly pitched, an optional Series 75D Water Column Device kit is available to assist in automatically draining water out of the riser.

VALVE/TRIM INSTALLATION

1. Make sure the trim drawing matches the system's requirements.

> ⚠️ **CAUTION**
>
>
>
> - **Make sure the foam spacer is removed from inside the valve body before attempting to install the valve.**
>
> **Failure to follow this instruction could cause improper valve operation, resulting in personal injury and/or property damage.**

2. Remove all plastic caps and foam spacers from the valve.

3. Apply a small amount of pipe joint compound or Teflon* tape to the external threads of all threaded pipe connections. DO NOT get any tape, compound, or other foreign material into the valve body, pipe nipples, or valve openings.

> ⚠️ **CAUTION**
>
> - **Make sure no foreign material gets into the valve body, pipe nipples, or valve openings.**
>
> - **If using any material other than Teflon tape, use extra caution so that no material gets into the trim.**
>
> **Failure to follow these instructions could cause improper valve operation, resulting in personal injury and/or property damage.**

4. Install the valve, trim, and accessories per the trim drawing.

TO ACTUATOR TRIM
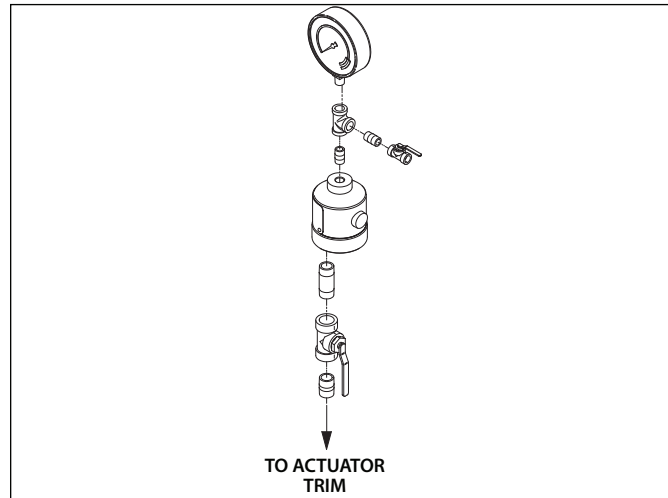
5. **FOR VALVES INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR:** Make sure the Series 746-LPA Dry Accelerator is installed in accordance with the trim drawing provided. The end with the vent seal "button" must be installed facing down (toward the trim).

6. Supply pressure to the diaphragm charge line by providing an uninterrupted source of water from upstream of the main control valve.

* Teflon is a registered trademark of the DuPont Company

FireLock NXT™ Preaction Valve

SERIES 769

COMPRESSION FITTING AND TUBE INSTALLATION

Compression Fitting and Tube Configuration
for Auto Drain and Drip Check

Compression Fitting and Tube Configuration
for Actuator
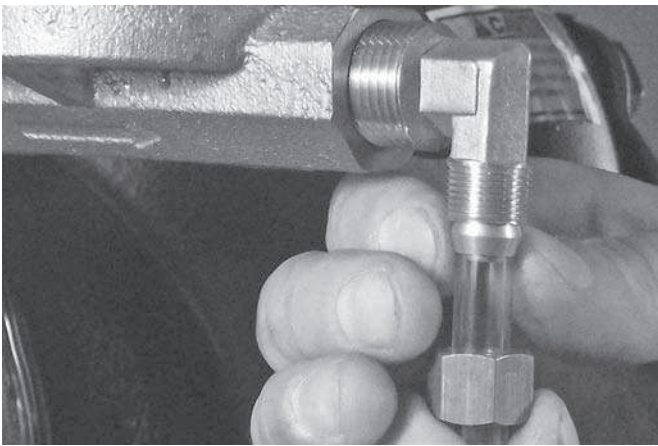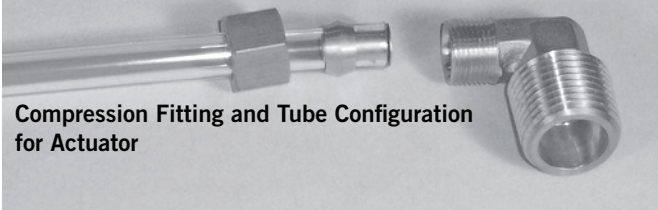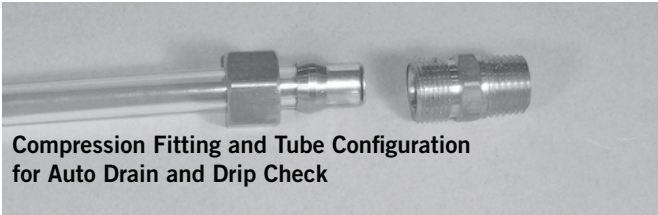
Compression fittings and tubes are provided for connection from the outlet of the auto drain, drip check, and actuator to the drip cup or drain. These compression fittings and tubes must be installed, in accordance with the trim drawing provided. **NEVER** insert a plug into the outlet of the auto drain, drip check, or actuator in place of the compression fitting/tube.

HYDROSTATIC TESTING

⚠ WARNING

- If air testing is required, DO NOT exceed 50 psi/345 kPa/3.4 Bar air pressure.

Failure to follow this instruction could result in serious personal injury and/or property damage.

The Victaulic Series 769 FireLock NXT Preaction Valve is UL Listed and FM Approved for a maximum working pressure of 300 psi/2065 kPa/20.7 Bar and is factory tested to 600 psi/4135 kPa/41.4 Bar for all sizes. The valve can be hydrostatically tested against the clapper at 200 psi/1380 kPa/13.8 Bar or 50 psi/345 kPa/3.4 Bar above the normal water supply pressure (2-hour limited time period) for acceptance by the authority having jurisdiction.

FireLock NXT™ Preaction Valve

SERIES 769

PLACING THE SYSTEM IN SERVICE

- **NON-INTERLOCKED, PNEUMATIC RELEASE**
- **NON-INTERLOCKED PNEUMATIC/ELECTRIC RELEASE**
- **SINGLE-INTERLOCKED, PNEUMATIC RELEASE**
- **SINGLE-INTERLOCKED, ELECTRIC RELEASE**
- **DOUBLE-INTERLOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ ELECTRIC) RELEASE**

> ⚠️ **CAUTION**
>
> - **Make sure the Series 769 FireLock NXT Preaction Valve is properly heated and protected from freezing temperatures and physical damage.**
>
> **Failure to follow this instruction could cause improper valve operation, resulting in personal injury and/or property damage.**

> **NOTICE**
>
> - **A non-interlocked, pneumatic release system is shown in the photos below.**
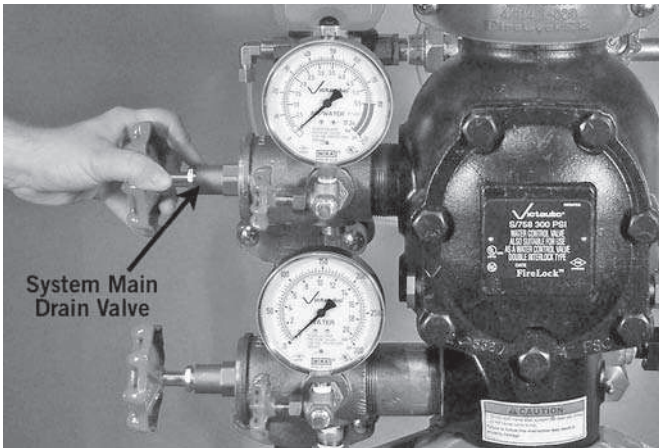
1. Open the system main drain valve. Confirm that the system is drained.
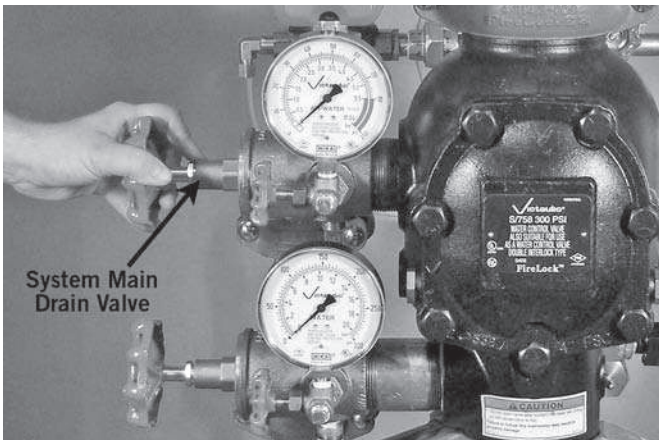
2. Close the system main drain valve.

3. Confirm that all system drains are shut and that the system is free of leaks.

   3a. Confirm that the system has been depressurized. The gauges should indicate zero pressure.
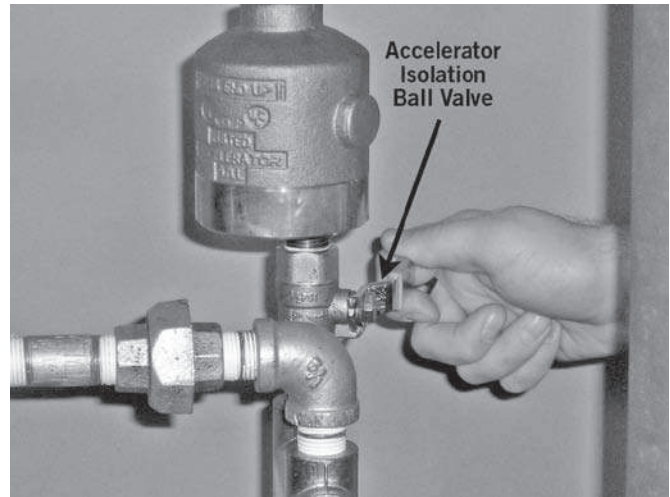
4. **FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR:** Confirm that the isolation ball valve to the accelerator is closed.
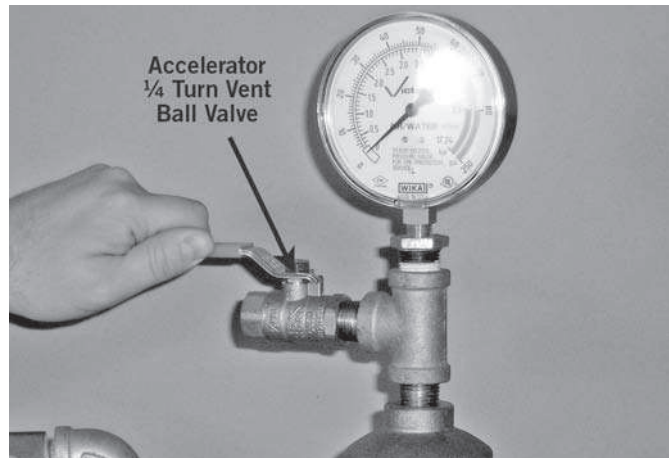
4a. **FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR**: Open the ¼-turn vent ball valve.

FireLock NXT™ Preaction Valve
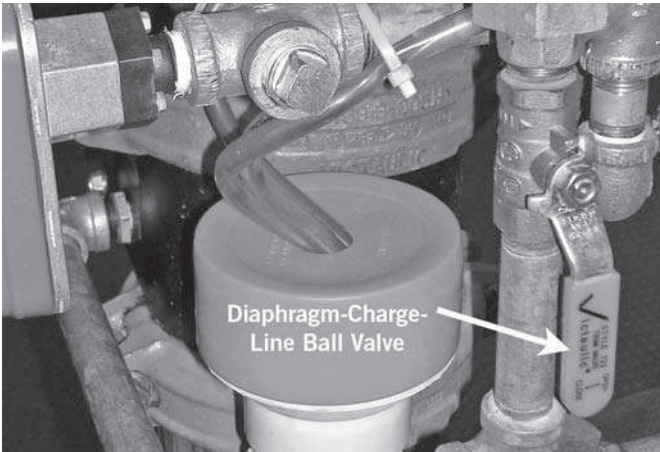
SERIES 769
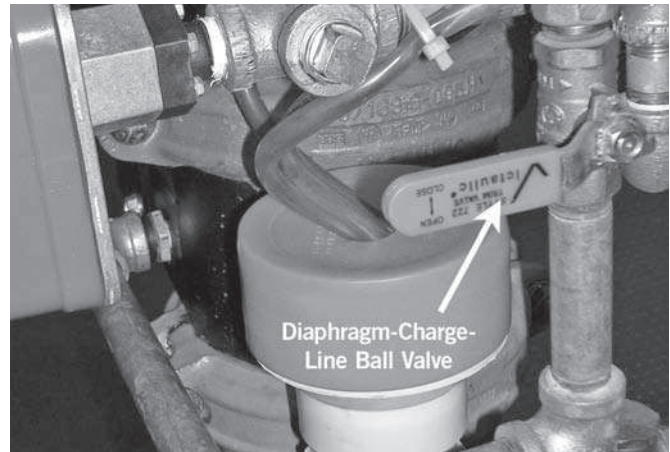
5. Open the diaphragm-charge-line ball valve.
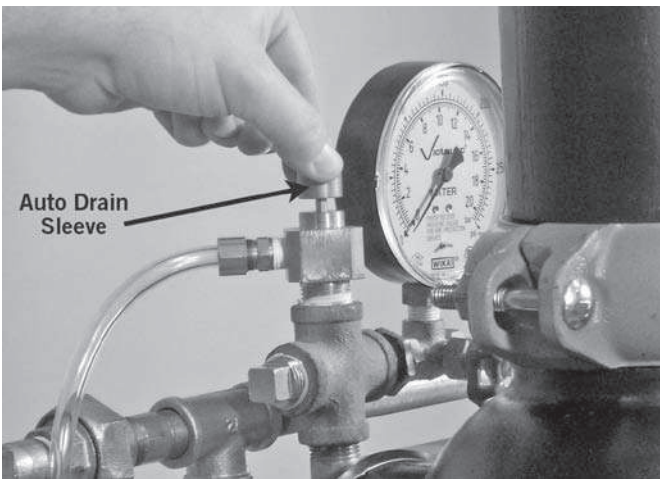
6. Confirm that water is flowing steadily from the Auto Drain. Pull up on the Auto Drain Sleeve.

7. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** Confirm that water is flowing through the Series 776 Low-Pressure Actuator after opening the diaphragm-charge-line ball valve and pulling up on the Auto Drain Sleeve.

8. **FOR SYSTEMS INSTALLED WITH A SERIES 753-E SOLENOID VALVE:** Make sure no water flows through the solenoid after opening the diaphragm-charge-line ball valve. DO NOT pull up on the Auto Drain Sleeve.

9. Close the diaphragm-charge-line ball valve.
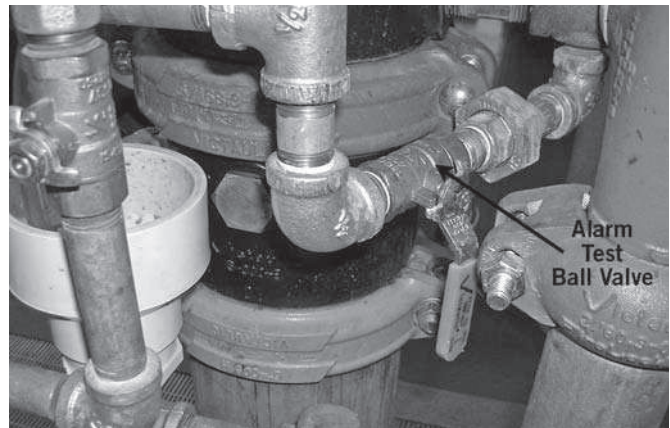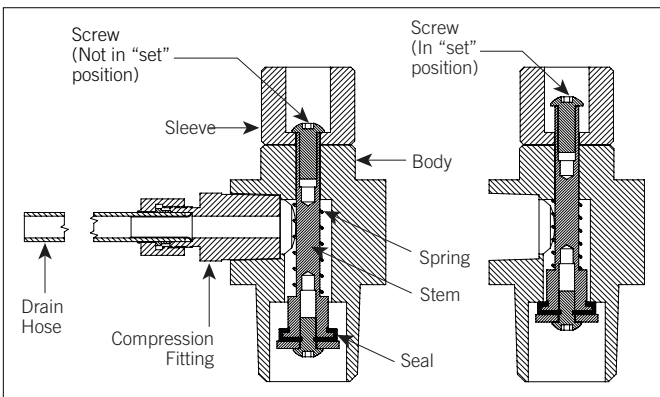
10. Confirm that the alarm test ball valve is closed.
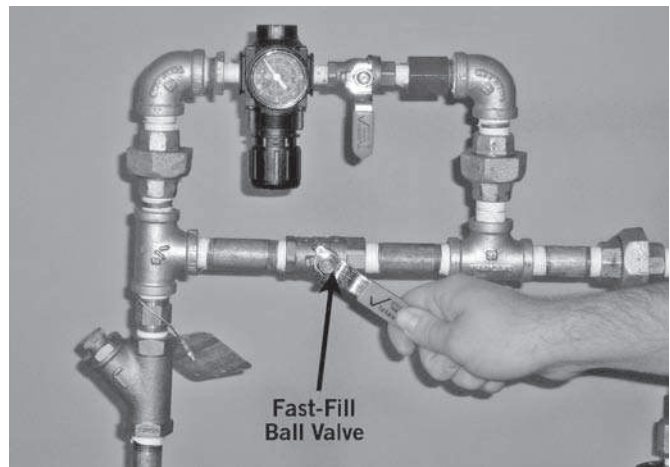
11. Charge the system with air by turning on the compressor or by opening the fast-fill ball valve on the AMTA (fast-fill ball valve is shown above). Charge the system to 13 psi/90 kPa/0.9 Bar minimum. Refer to the "Air Supply Requirements" section.

12. Confirm that the system is charging by observing the air pressure gauge. If the gauge is not showing an increase in air pressure, there is a leak or an opening in the line. Repair any leaks or openings and restart the setup procedures.

FireLock NXT™ Preaction Valve

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13. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** Confirm that no water is being exhausted from the Auto Vent of the Series 776 Low-Pressure Actuator. If water is being exhausted from the Auto Vent, continue to run air through the system in order to remove moisture from the upper chamber of the Series 776 Low-Pressure Actuator. If a Series 746-LPA Dry Accelerator is installed, make sure the accelerator is not flooded.
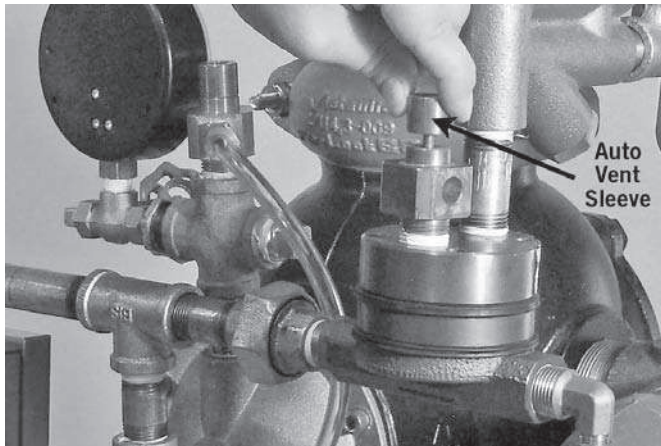
14. **FOR SYSTEMS INSTALLED WITH A SERIES 776 LOW-PRESSURE ACTUATOR:** When the system reaches approximately 10 psi/69 kPa/0.7 Bar, and no additional moisture is being released from the Auto Vent, pull up on the Auto Vent Sleeve of the Series 776 Low-Pressure Actuator. **NOTE:** The Auto Vent Screw should seal and remain in the set ("UP") position.

15. **FOR SYSTEMS INSTALLED WITH A SERIES 753-E SOLENOID VALVE:** Confirm that the solenoid is closed.
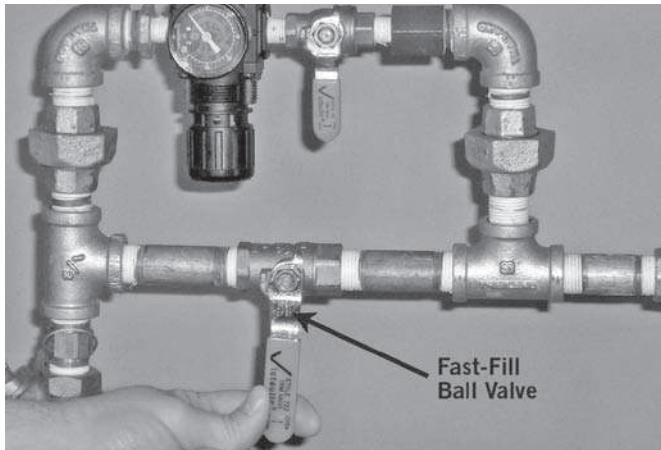
16. When system air pressure is established, close the fast-fill ball valve on the AMTA.
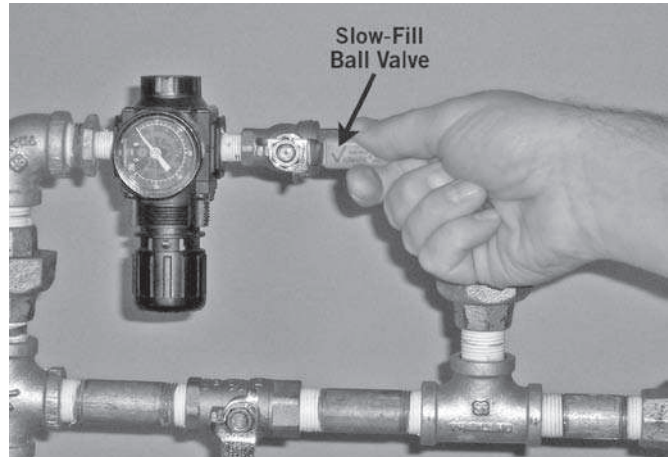
17. Open the slow-fill ball valve on the AMTA. **NOTE:** Failure to leave the slow-fill ball valve open may allow system pressure to drop, resulting in valve operation in the event of a system leak.
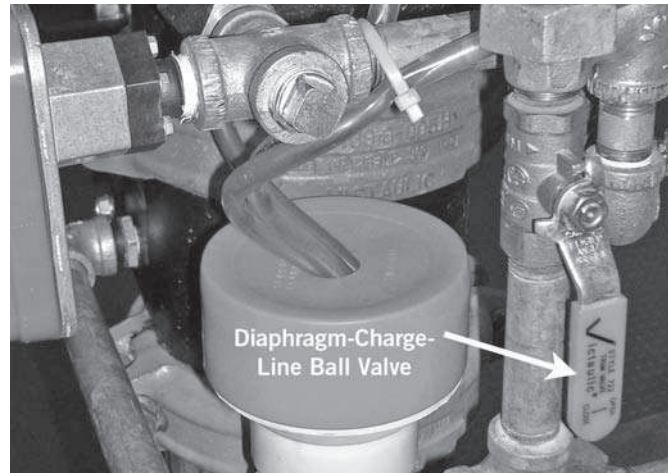
18. Open the diaphragm-charge-line ball valve. Allow water to flow through the Auto Drain tube.

19. Open the manual pull station.

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20. Close the manual pull station.
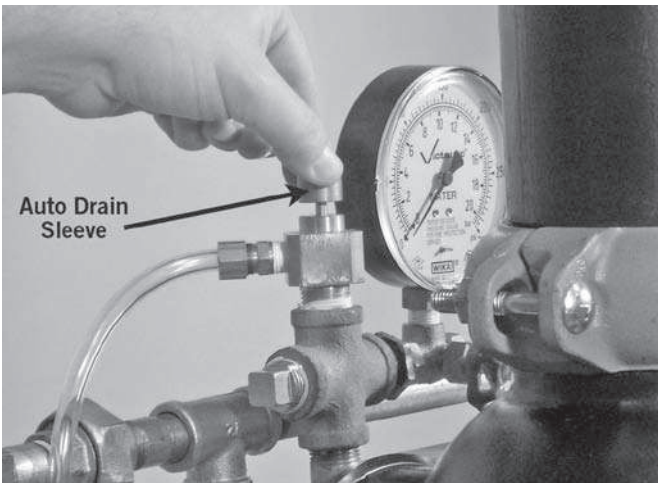
21. Pull up on the Auto Drain Sleeve until the screw is in the set ("UP") position. Verify that there is pressure on the gauge to the diaphragm charge line.
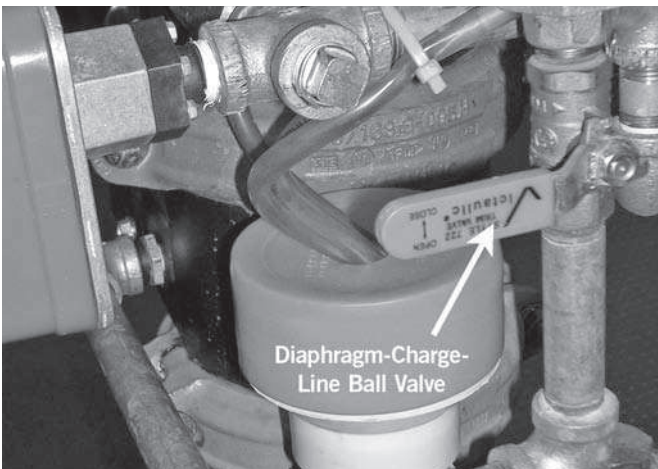
22. When the diaphragm charge line is pressurized, temporarily close the diaphragm-charge-line ball valve. Confirm that the diaphragm charge line is maintaining pressure by observing the diaphragm-charge-line pressure gauge.

22a. If pressure in the diaphragm charge line drops, the diaphragm must be replaced and/or any leaks in the diaphragm charge line must be corrected. Refer to the "Removing and Replacing the Diaphragm Assembly" section.
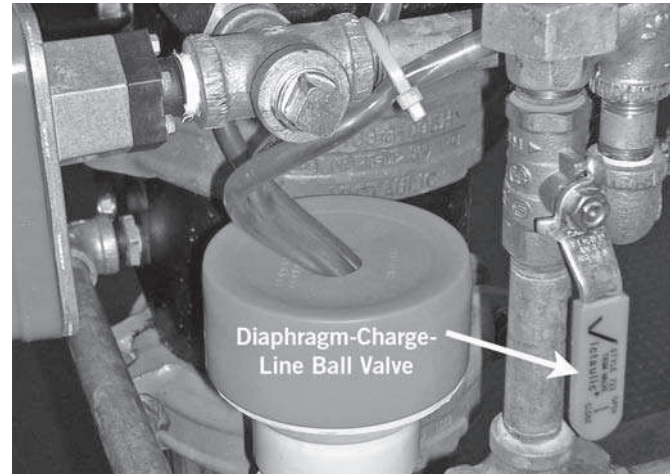
22b. If pressure in the diaphragm charge line does not drop, re-open the diaphragm-charge-line ball valve, and proceed to the following step.
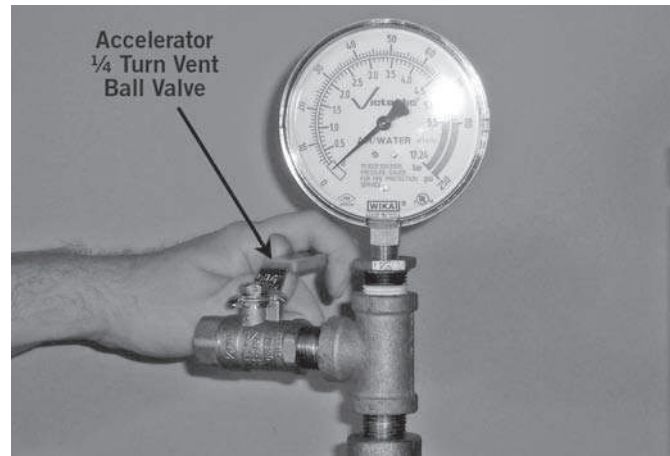
23. **FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR:** Close the ¼-turn vent ball valve on the accelerator.

FireLock NXT™ Preaction Valve
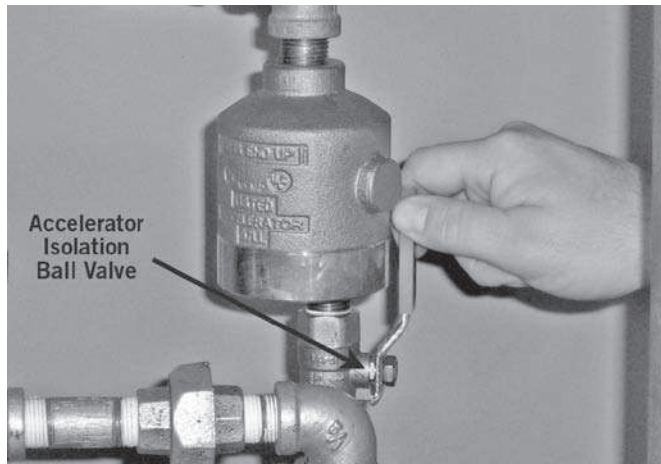
SERIES 769

24. **FOR SYSTEMS INSTALLED WITH A SERIES 746-LPA DRY ACCELERATOR:** Open the isolation ball valve. This will set the accelerator

25. Observe the system air pressure over a 24-hour period to confirm system integrity. If there is degradation in system air pressure, find and correct all leaks. **NOTE:** NFPA requires less than 1½-psi/ 14-kPa/0.1-Bar leakage in 24 hours.
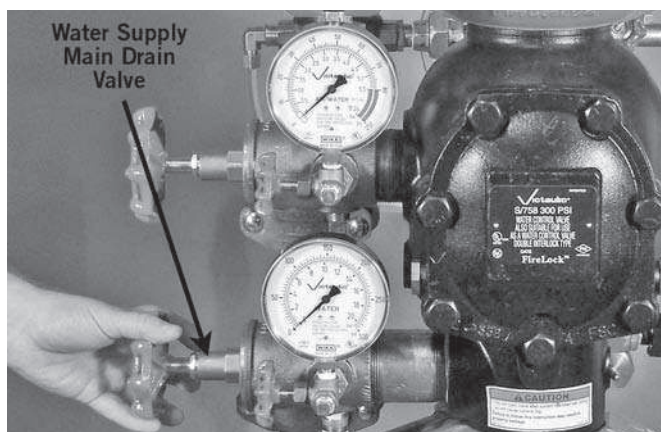
26. Open the water supply main drain valve.

⚠️ **CAUTION**

- **Take precautions when opening the water supply main control valve, since water will flow from all open system valves.**

Failure to follow this instruction could result in property damage.

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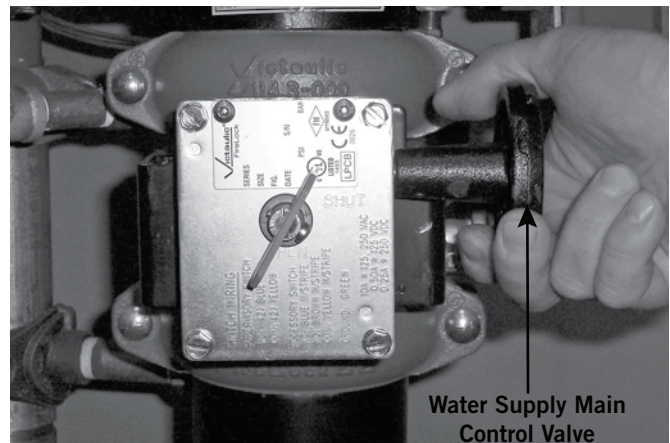
27. Open the water supply main control valve slowly until water flows steadily from the open water supply main drain valve.
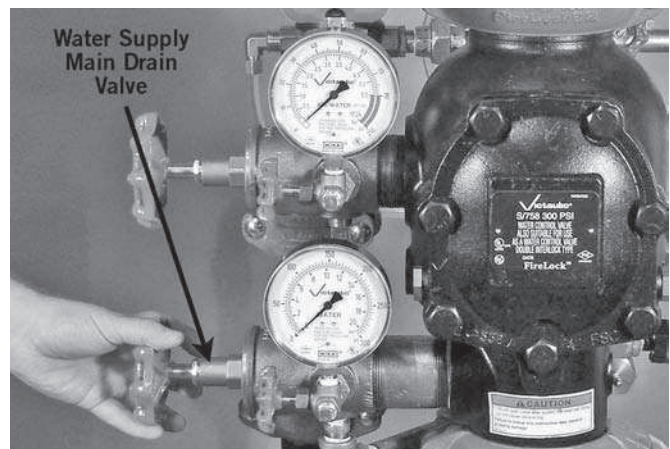
28. Close the water supply main drain valve when a steady flow of water occurs.
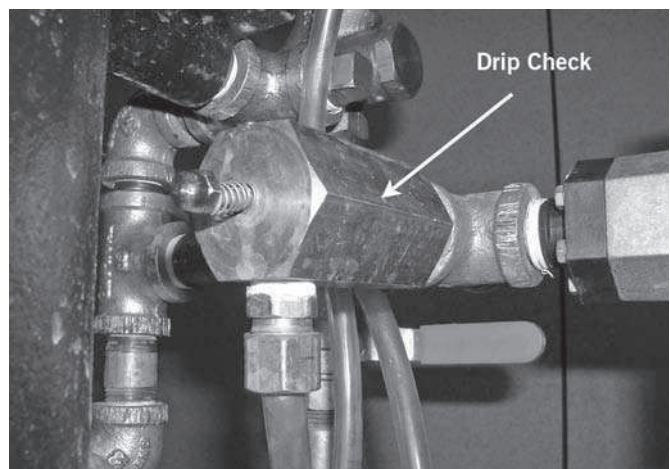
29. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

FireLock NXT™ Preaction Valve

SERIES 769
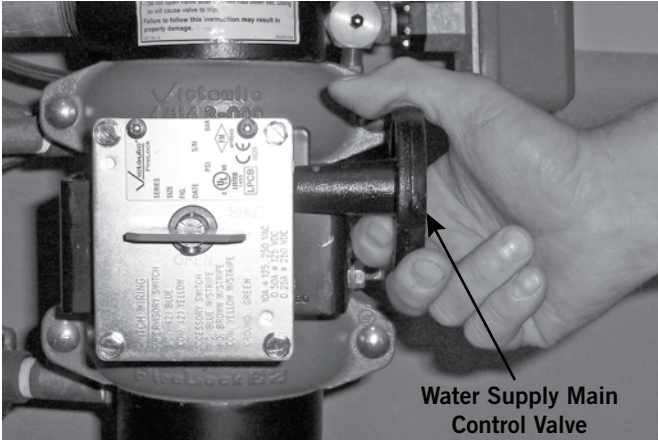
Water Supply Main Control Valve

ON A WEEKLY BASIS, WHEN THE VALVE IS RESET AFTER AN OPERATIONAL TEST (OR AFTER ANY SYSTEM OPERATION): The main drain valve and any low-point drain valves should be partially opened and then closed to drain water that might be present in the riser. Continue this procedure until all water is released. **NOTE:** The optional Series 75D Water Column Kit can be installed to automate this step.

30. If water is flowing from the drip check, close the water supply 30 control valve, and start over at step 1. Refer to the "Troubleshooting" section.
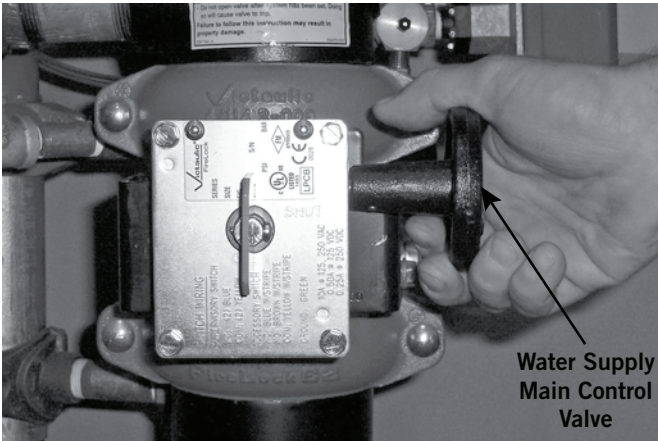
Water Supply Main Control Valve

31. Open the water supply main control valve fully.

32. Record the system air pressure and the water supply pressure.

33. Confirm that all valves are in their normal operating positions (refer to the table below).

Valve	Normal Operating Position
Diaphragm-Charge-Line Ball Valve	Open
Alarm Test Ball Valve	Closed
Water Supply Main Control Valve	Open
Water Supply Main Drain Valve	Closed
System Main Drain Valve	Closed
Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)	Open
Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)	Closed
Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Open
¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Closed

34. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the system is in service.

FireLock NXT™ Preaction Valve

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EXTERNAL INSPECTION

⚠️ **WARNING**

- **The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.**

- **To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.**

- **The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.**

- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products.**

Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.

NOTICE

- **Any activities that require taking the valve out of service may eliminate the fire protection provided.**

- **Consideration of a fire patrol should be given for the affected areas.**

- **Before servicing or testing the system, notify the authority having jurisdiction.**

WEEKLY INSPECTION

1. Perform a visual inspection on the valve and trim on a weekly basis. **NOTE:** If the preaction system is equipped with a low-pressure alarm, monthly inspections may be sufficient. Contact the local authority having jurisdiction for specific requirements.

MONTHLY INSPECTION

1. Record the system air pressure and water supply pressure. Confirm that the water supply pressure is within the range of normal pressures observed in the area. Significant loss of water supply pressure could indicate an adverse condition in the water supply. Confirm the proper water-to-air ratio is being maintained.
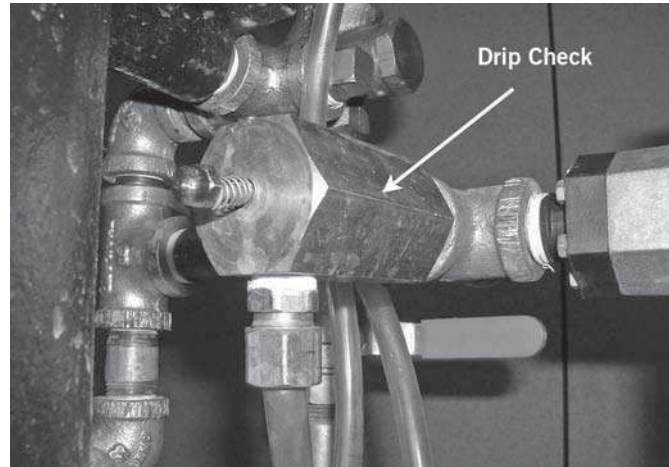
2. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

3. Inspect the valve and trim for mechanical damage and corrosion. Replace any damaged or corroded parts.

4. Confirm that the preaction valve and trim are located in an area that is not subject to freezing temperatures.

5. Confirm that all valves are in their normal operating positions (refer to the table below).

Valve	Normal Operating Position
Diaphragm-Charge-Line Ball Valve	Open
Alarm Test Ball Valve	Closed
Water Supply Main Control Valve	Open
Water Supply Main Drain Valve	Closed
System Main Drain Valve	Closed
Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)	Open
Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)	Closed
Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Open
¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Closed

6. If a Series 746-LPA Dry Accelerator is installed, record the pressure in the air chamber of the dry accelerator. The pressure in the air chamber should equal the system air pressure within the allowable tolerances of the gauges. If the air chamber's pressure is below the system air pressure, follow the "Troubleshooting" section.

FireLock NXT™ Preaction Valve

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REQUIRED TESTS

Drip Check

> ⚠ **WARNING**
>
> - **The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.**
> - **To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.**
> - **The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.**
> - **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products.**
>
> **Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.**

4. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

5. Verify that the system is at the proper air pressure for the local water supply pressure.

> ⚠ **CAUTION**
>
> - **Use caution to prevent opening the system main drain valve accidentally.**
>
> **Opening the system main drain valve will cause the valve to operate, resulting in property damage.**

> **NOTICE**
>
> - **Any activities that require taking the valve out of service may eliminate the fire protection provided.**
> - **Consideration of a fire patrol should be given for the affected areas.**
> - **Before servicing or testing the system, notify the authority having jurisdiction.**

MAIN DRAIN TEST

Perform the main drain test on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the main drain test will be performed.

2. Confirm that sufficient drainage is available.

3. Record the water supply pressure and system air pressure.

Water Supply Main Drain Valve

6. Open the water supply main drain valve fully to flush the water supply of any contaminants.

7. While the water supply main drain valve is fully open, record the water supply pressure (from the water supply gauge) as the residual pressure.

Victaulic®

FireLock NXT™ Preaction Valve

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8. Close the water supply main drain valve slowly.

9. Record the water pressure established after closing the water supply main drain valve.

10. Compare the residual pressure reading, taken above, to the residual pressure readings taken in previous main drain tests. If there is degradation in the residual water supply reading, restore the proper water supply pressure.

11. Confirm that all valves are in their normal operating positions (refer to the table below).

Valve	Normal Operating Position
Diaphragm-Charge-Line Ball Valve	Open
Alarm Test Ball Valve	Closed
Water Supply Main Control Valve	Open
Water Supply Main Drain Valve	Closed
System Main Drain Valve	Closed
Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)	Open
Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)	Closed
Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Open
¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Closed

12. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

13. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.

14. Provide test results to the authority having jurisdiction, if required.

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WATER FLOW ALARM TEST

Perform the water flow alarm test on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the water flow alarm test will be performed.

> ⚠ **CAUTION**
>
> - **Use caution to prevent opening the system main drain valve accidentally.**
>
> **Opening the system main drain valve will cause the valve to operate, resulting in property damage.**
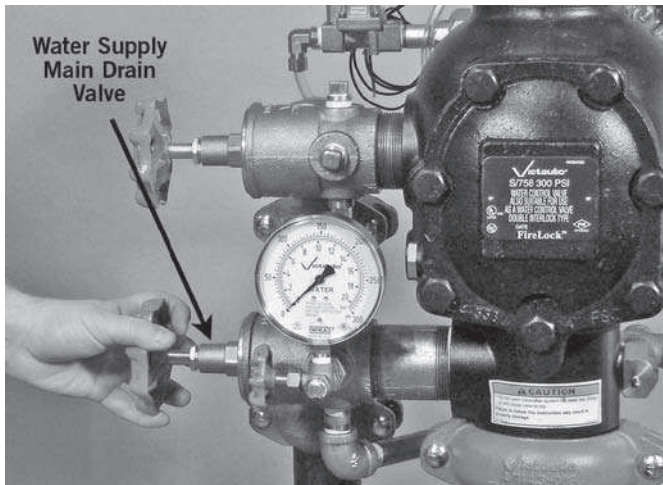
2. Open the water supply main drain valve fully to flush the water supply of any contaminants.
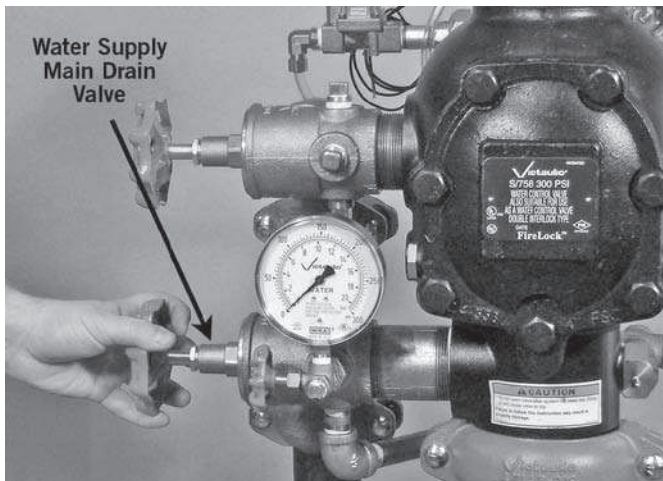
3. Close the water supply main drain valve.
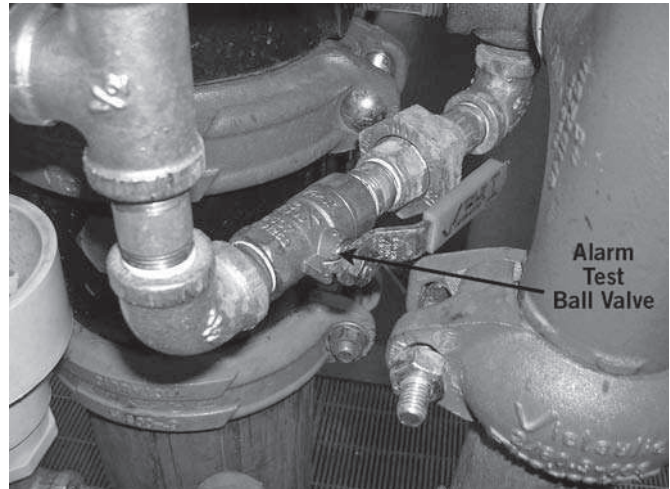
4. Open the alarm test ball valve. Confirm that mechanical and electrical alarms are activated and that remote monitoring stations, if provided, receive an alarm signal.
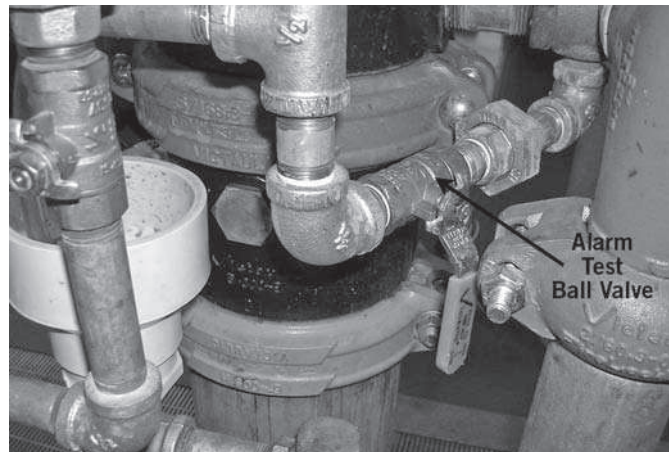
5. Close the alarm test ball valve after verifying proper operation of all alarms.
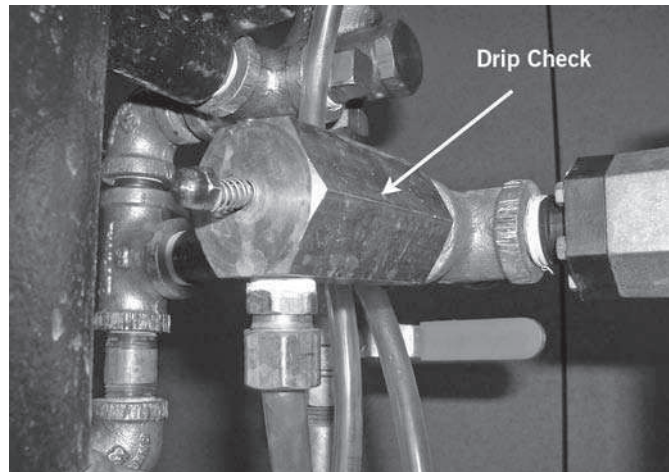
6. Push in the plunger of the drip check to verify that there is no pressure in the alarm line.

FireLock NXT™ Preaction Valve

SERIES 769

7. Verify that all alarms stopped sounding, that the alarm line drained properly, and that remote station alarms reset properly.

8. Confirm that there is no leakage from the intermediate valve chamber. The drip check in the alarm line should not be leaking water or air.

9. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.

10. Provide test results to the authority having jurisdiction, if required.

WATER LEVEL AND LOW AIR ALARM TESTS

Perform the water level and low air alarm tests on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

NOTICE
• **If a Series 746-LPA Dry Accelerator is installed, make sure the authority having jurisdiction is notified that the water level and low air alarm tests are in progress. Failure to close the isolation ball valve of the Series 746-LPA Dry Accelerator may cause the valve to trip, resulting in a false alarm.**

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the water level and low air alarm tests will be performed.
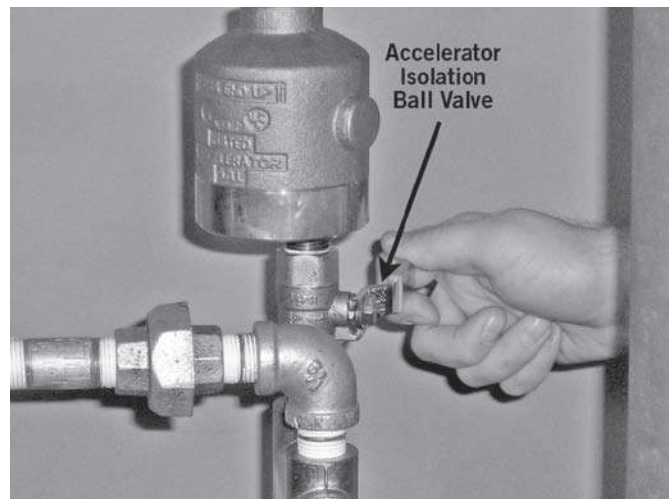
2. If a Series 746-LPA Dry Accelerator is installed, close the isolation ball valve.
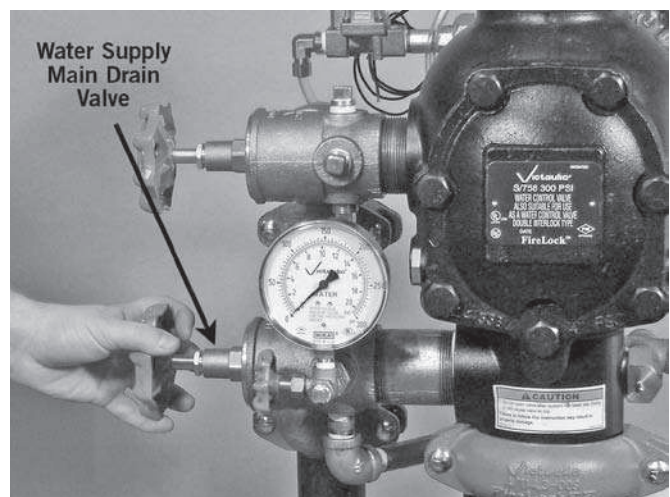
3. Open the water supply main drain valve fully to flush the water supply of any contaminants.

FireLock NXT™ Preaction Valve

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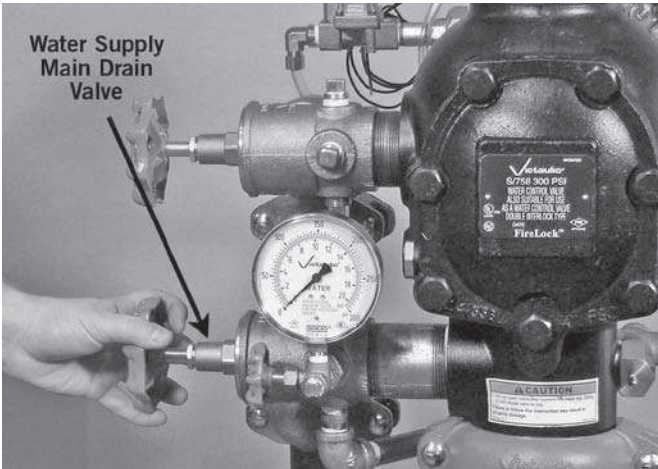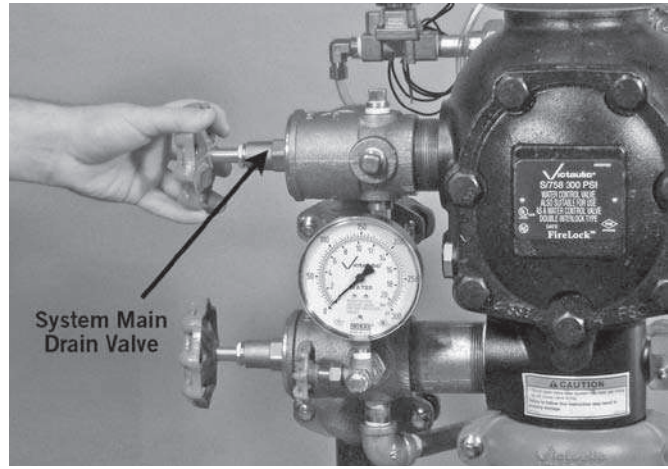
4. Close the water supply main drain valve.
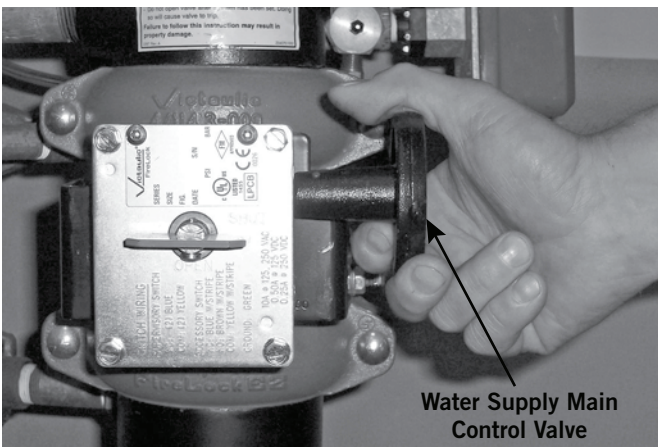
5. Close the water supply main control valve.
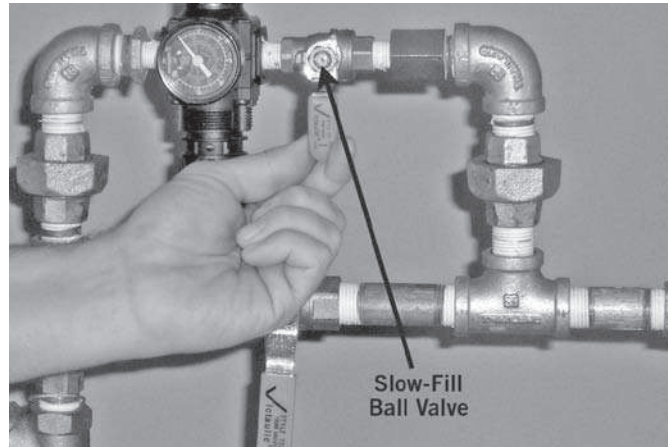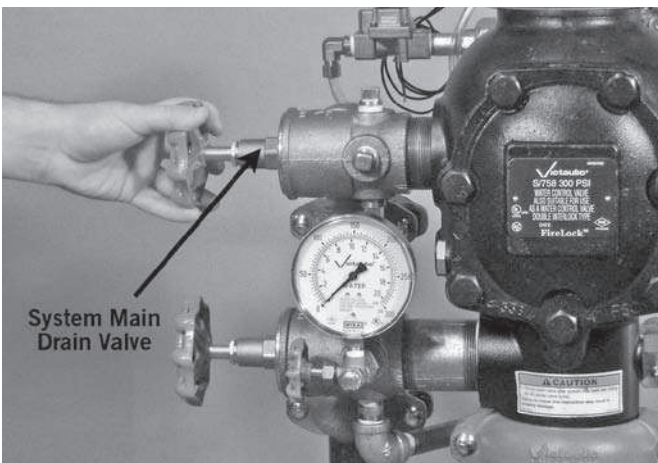
6. Partially open the system main drain valve slowly. Confirm that water is not flowing from the drain. **NOTE:** If water is flowing from the drain, the system may not have drained properly. In this case, follow all steps under the "Placing the System in Service" section.

7. Record the system air pressure at which the low air alarm activates.

8. Close the system main drain valve.

9. Close the slow-fill ball valve on the AMTA.
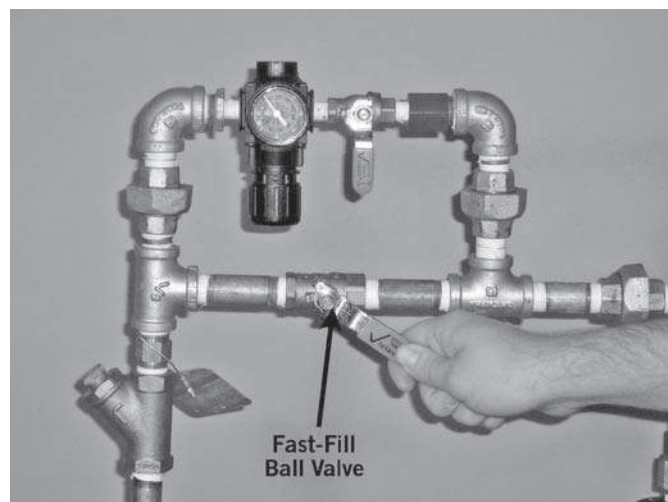
10. Open the fast-fill ball valve on the AMTA. Bring the pressure back up to the normal system pressure.

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Fast-Fill
Ball Valve
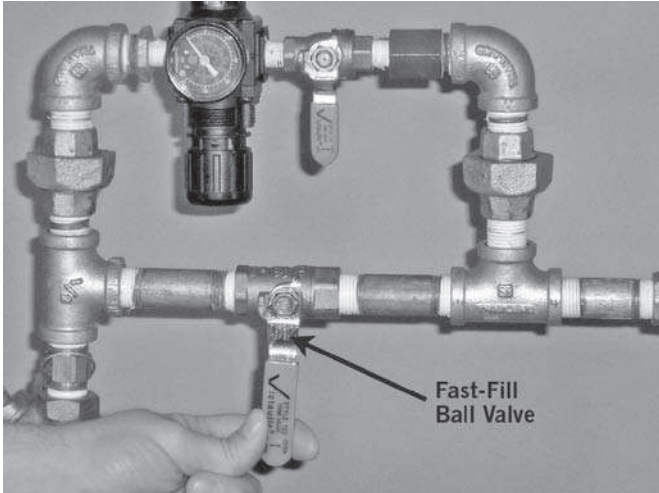
11. When the normal system air pressure is reached, close the fast-fill ball valve on the AMTA.

Slow-Fill
Ball Valve

12. Open the slow-fill ball valve on the AMTA.
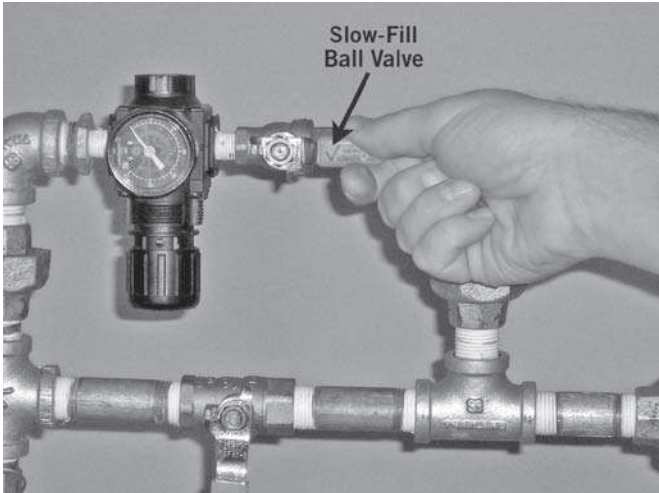
Accelerator
Isolation
Ball Valve
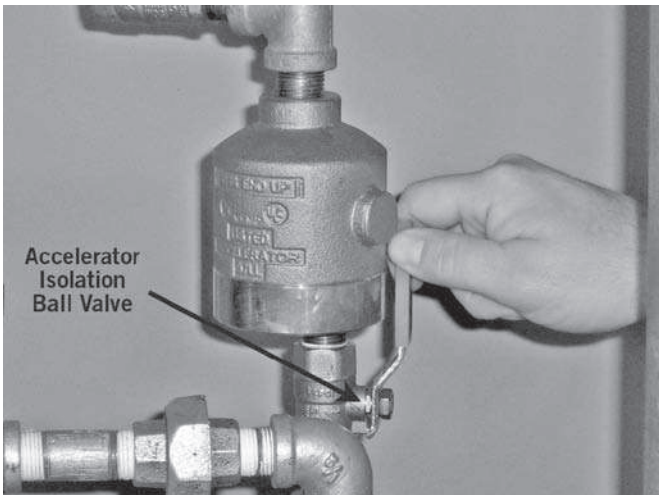
13. If a Series 746-LPA Dry Accelerator is installed, open the isolation ball valve.
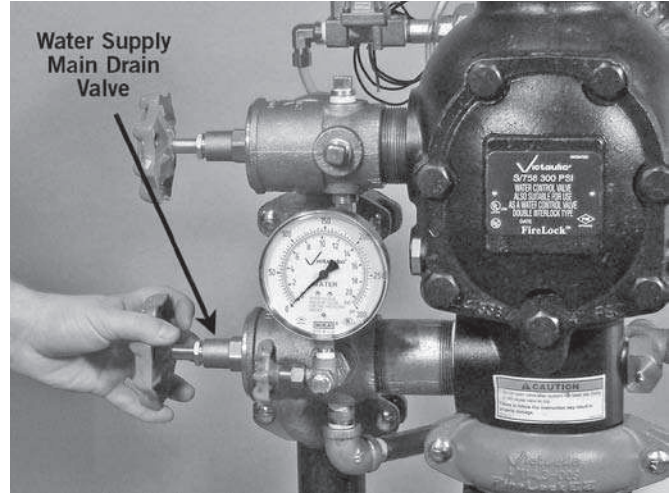
Water Supply
Main Drain
Valve

14. Open the water supply main drain valve.

> ⚠ **CAUTION**
>
> • **Take precautions when opening the water supply main control valve, since water will flow from all open system valves.**
>
> **Failure to follow this instruction could result in property damage.**

Water Supply Main
Control Valve
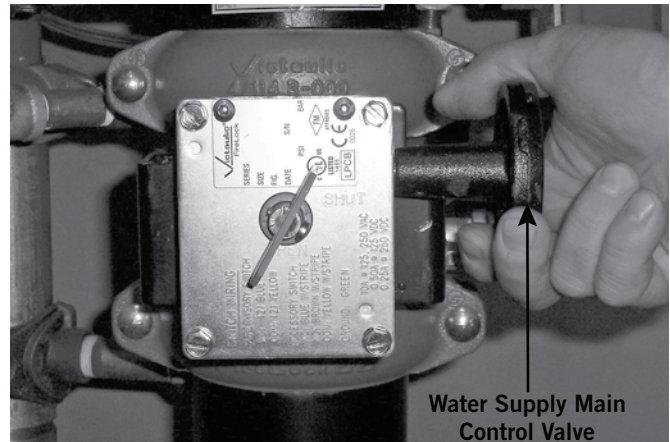
15. Open the water supply main control valve slowly until water flows steadily from the open water supply main drain valve.

FireLock NXT™ Preaction Valve

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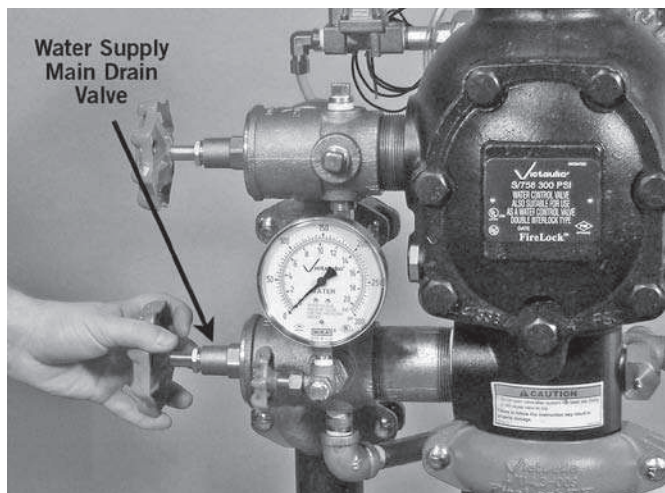
16. Close the water supply main drain valve when a steady flow of water occurs.
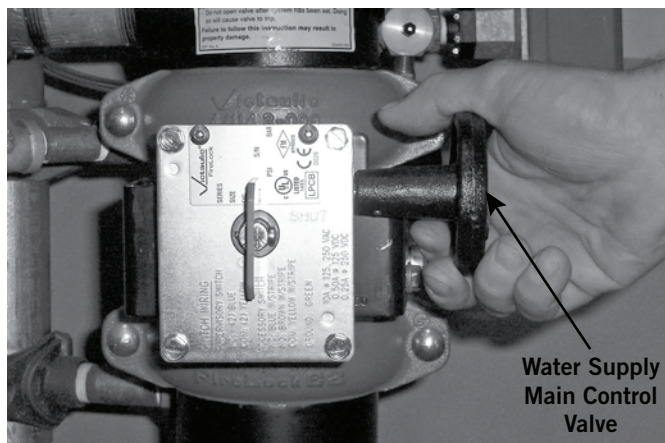
17. Open the water supply main control valve fully.

18. Confirm that all valves are in their normal operating positions (refer to the table below).

Valve	Normal Operating Position
Diaphragm-Charge-Line Ball Valve	Open
Alarm Test Ball Valve	Closed
Water Supply Main Control Valve	Open
Water Supply Main Drain Valve	Closed
System Main Drain Valve	Closed
Slow-Fill Ball Valve of the Victaulic AMTA (if applicable)	Open
Fast-Fill Ball Valve of the Victaulic AMTA (if applicable)	Closed
Isolation Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Open
¼-Turn Vent Ball Valve for Series 746-LPA Dry Accelerator (if applicable)	Closed

19. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the valve is back in service.

20. Provide test results to the authority having jurisdiction, if required.

FireLock NXT™ Preaction Valve

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REQUIRED OPERATIONAL (TRIP) TESTS

PARTIAL OPERATIONAL (TRIP) TEST

> ### ⚠ WARNING
>
> • **The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.**
>
> • **To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.**
>
> • **The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.**
>
> • **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products.**
>
> **Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.**

Partial operational (trip) tests are required to confirm proper valve operation; however, this test does not confirm full system operation. Victaulic recommends performing the partial operational (trip) test annually (at minimum). **NOTE:** The frequency of the partial operational (trip) test must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres. In addition, the authority having jurisdiction in the area may require partial operational (trip) tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the partial operational (trip) test will be performed.

2. Record the water supply pressure and system air pressure.

3. Open the water supply main drain valve fully to flush the water supply of any contaminants.
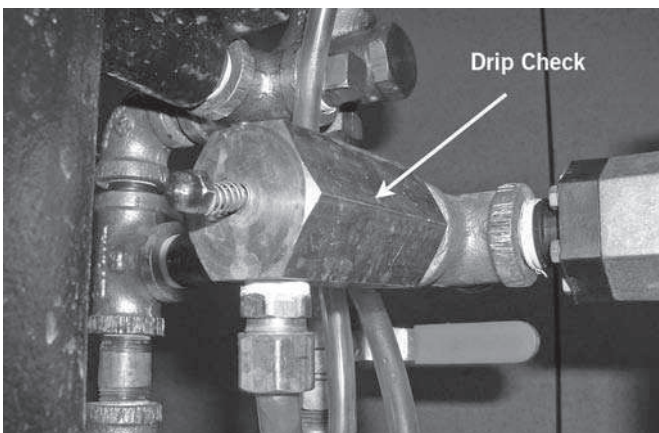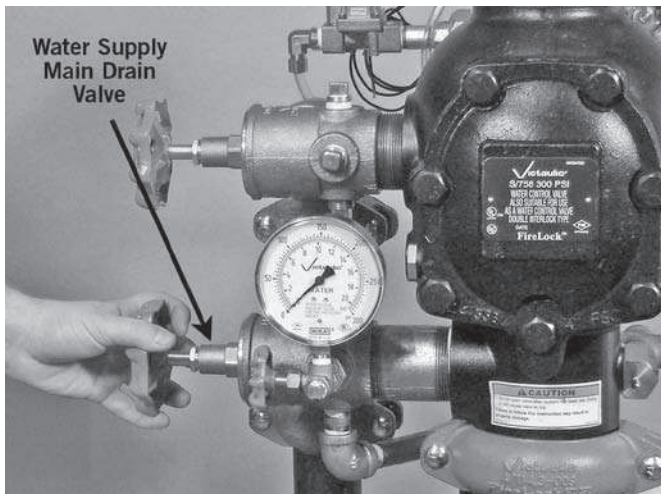

Water Supply Main Control Valve
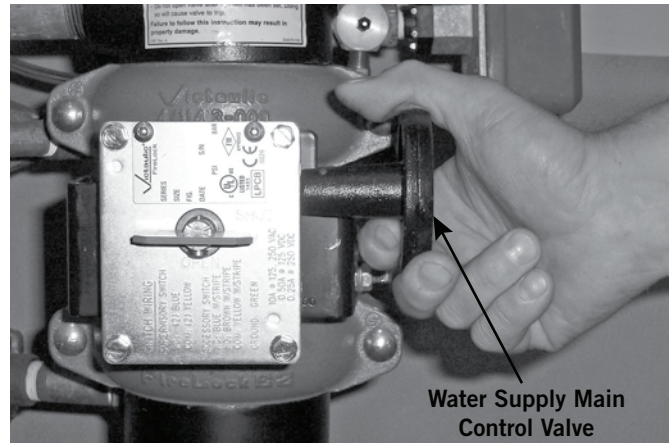
4. Close the water supply main control valve to the point where additional closure will not provide flow through the water supply main drain valve.

Water Supply Main Control Valve
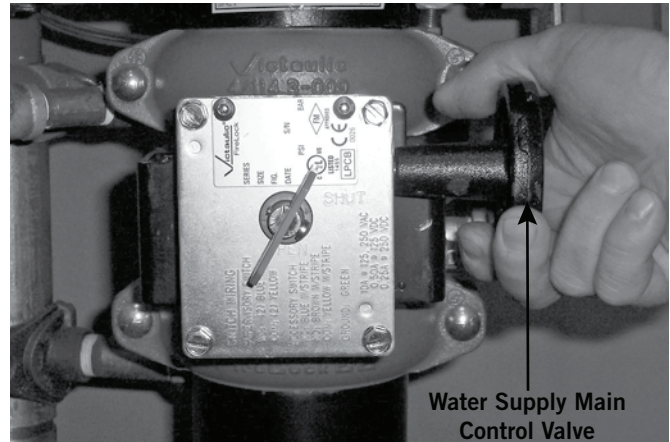
5. Open the water supply main control valve slowly until a small amount of water flows through the water supply main drain valve.
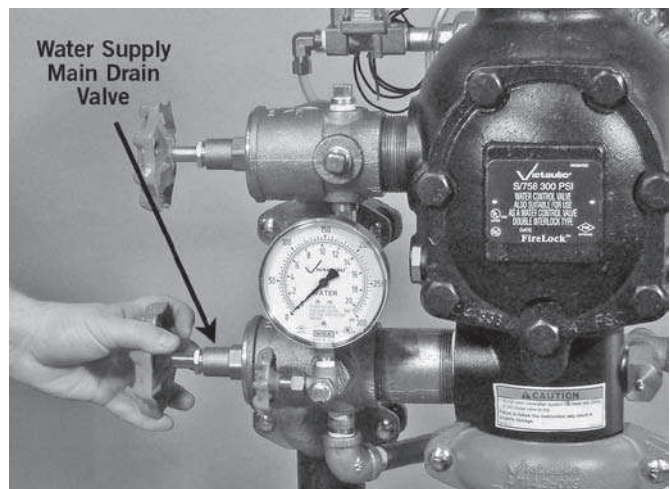
6. Close the water supply main drain valve.

FireLock NXT™ Preaction Valve

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7. **Trip the valve by doing one of the following:**

   a. Energize the solenoid valve

   b. Relieve the air pressure from the pilot line

   c. Open the manual pull station

8. Confirm that the diaphragm charge line's pressure drops to zero and that water is flowing through the auto drain to the drip cup.

Water Supply Main Control Valve

9. Close the water supply main control valve fully.

System Main Drain Valve

10. Close the remote system test valve (inspector's test connection) or the system main drain valve. **NOTE:** The system main drain valve is shown above.

11. **SHUT OFF THE AIR SUPPLY.**

Diaphragm-Charge-Line Ball Valve
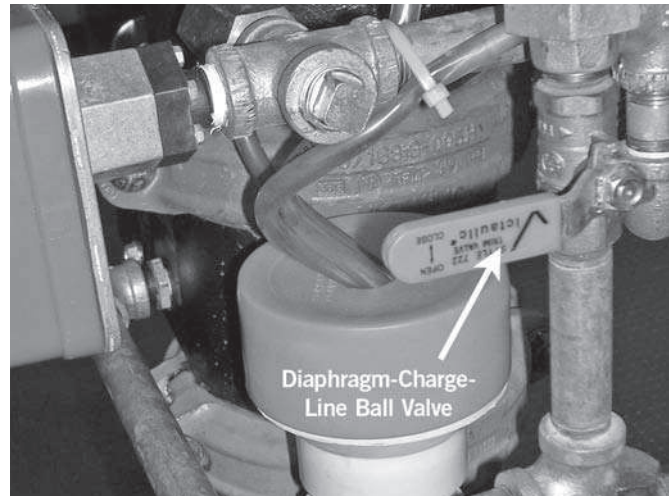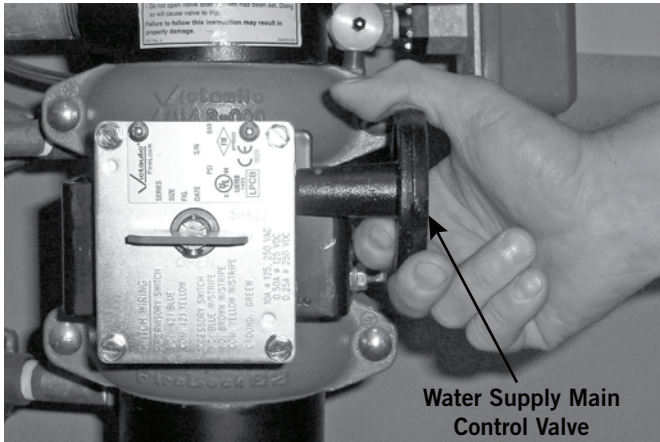
12. Close the diaphragm-charge-line ball valve.

13. Perform all steps in the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

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FULL OPERATIONAL (TRIP) TEST

⚠ WARNING

- **The building owner or their representative is responsible for maintaining the fire protection system in proper operating condition.**

- **To ensure proper system operation, valves must be inspected in accordance with current NFPA-25 requirements or in accordance with the requirements of the local authority having jurisdiction (whichever is more stringent). Always refer to the instructions in this manual for additional inspection and testing requirements.**

- **The frequency of inspections must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres.**

- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic products.**

  Failure to follow these instructions could cause system failure, resulting in death, serious personal injury, and property damage.

Victaulic recommends the full operational (trip) test every 3 years (at minimum). **NOTE:** The frequency of the full operational (trip) test must be increased in the presence of contaminated water supplies, corrosive/scaling water supplies, and corrosive atmospheres. This test allows a full flow of water into the sprinkler system; therefore, this test must be performed when there is no chance for freezing conditions. In addition, the authority having jurisdiction in the area may require full operational (trip) tests on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the full operational (trip) test will be performed.

2. Record the water supply pressure and system air pressure.
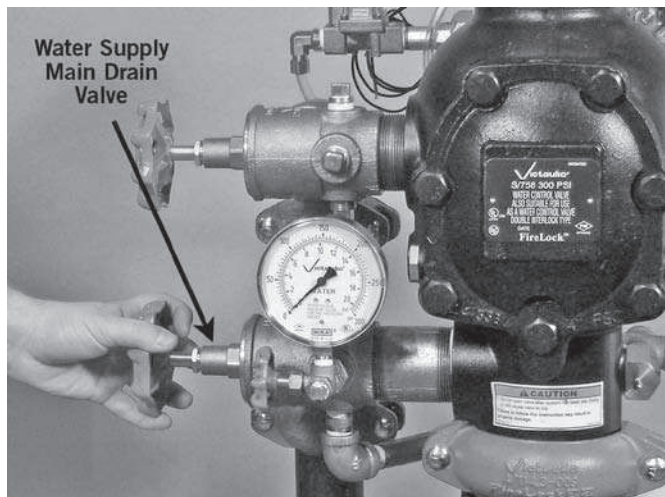

3. Open the water supply main drain valve fully to flush the water supply of any contaminants.
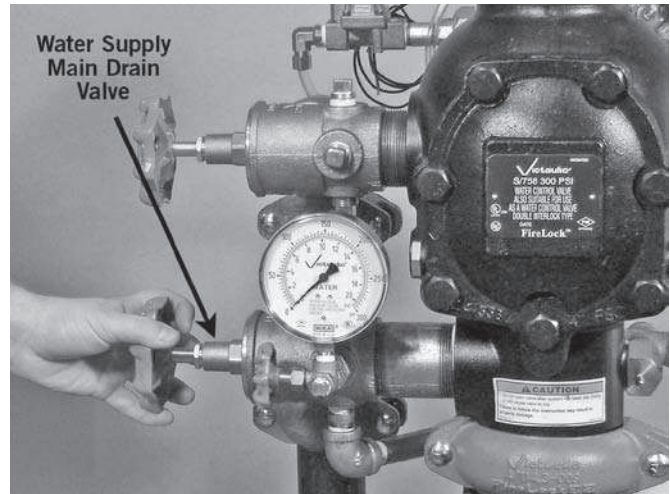
4. Close the water supply main drain valve.

5. **Trip the valve by doing one of the following:**

   a. Energize the solenoid valve

   b. Relieve the air pressure from the pilot line

   c. Open the manual pull station

6. Record the following:

   a. Time between opening the remote system test valve (inspector's test connection) to the operation of the preaction valve

   b. System air pressure when the valve operated

   c. Time from opening the remote system test valve (inspector's test connection) to when water flows from the test connection's outlet

   d. All information required by the authority having jurisdiction

7. Confirm that all alarms operate properly.

8. Continue to run water until it is clear.
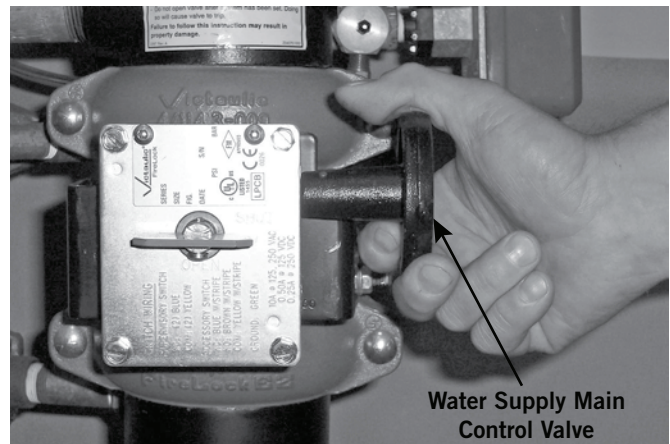
9. Close the water supply main control valve.

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Diaphragm-Charge-Line Ball Valve
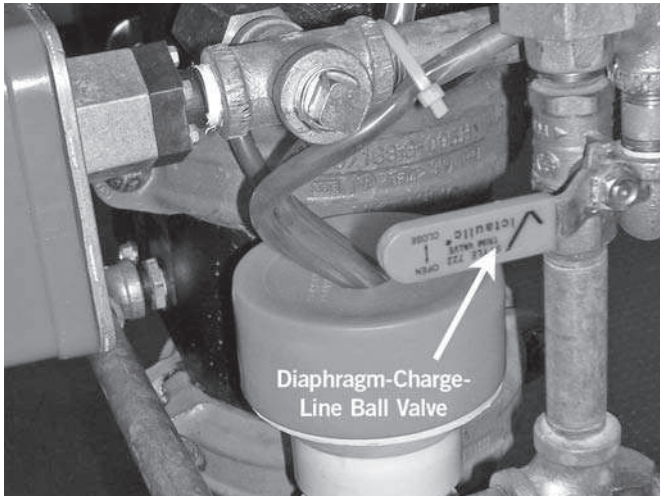
10. Close the diaphragm-charge-line ball valve.

11. **SHUT OFF THE AIR SUPPLY.**

System Main Drain Valve
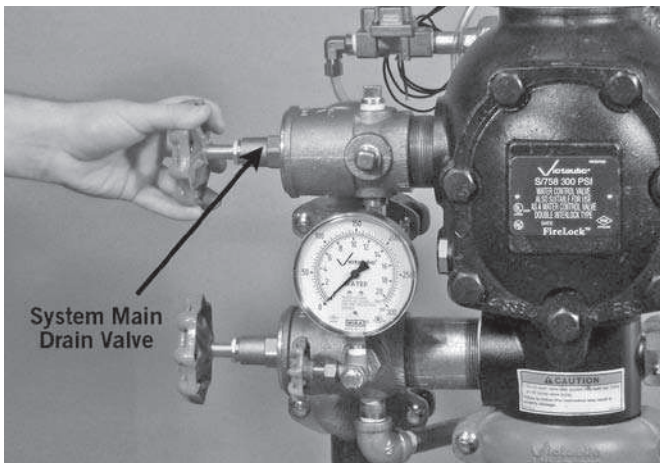
12. Open the system main drain valve to drain the system.

13. After the system is properly drained, close the remote system test valve (inspector's test connection).

System Main Drain Valve
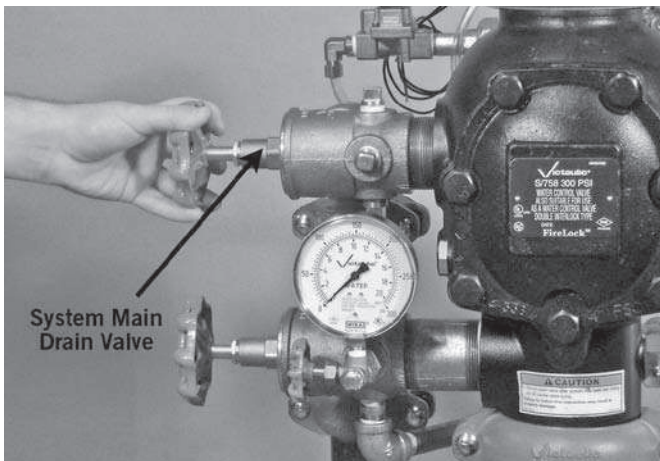
14. Close the system main drain valve.

15. Perform all steps in the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

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REQUIRED INTERNAL INSPECTION

Inspect internal components on a frequency required by the current NFPA-25 code. The authority having jurisdiction in the area may require these inspections on a more frequent basis. Verify these requirements by contacting the authority having jurisdiction in the affected area.

⚠ WARNING	
	• **Depressurize and drain the piping system before attempting to remove the cover plate from the valve.** **Failure to follow this instruction could result in serious personal injury and/or property damage.**

⚠ CAUTION	
	• **Any activities that require taking the valve out of service may eliminate the fire protection provided.** • **Before servicing or testing the system, notify the authority having jurisdiction.** • **Consideration of a fire patrol should be given in the affected areas.** **Failure to follow these instructions could result in serious personal injury and/or property damage.**

1. Notify the authority having jurisdiction, remote station alarm monitors, and those in the affected area that the system is being taken out of service.
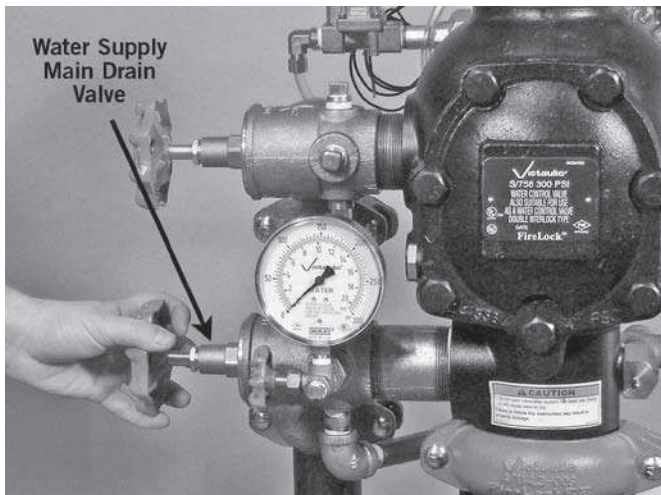
2. Open the water supply main drain valve fully to flush the water supply of any contaminants.
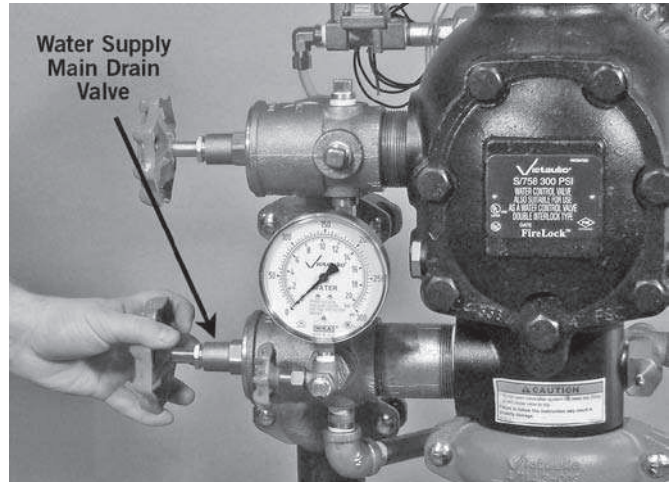
3. Close the water supply main drain valve.
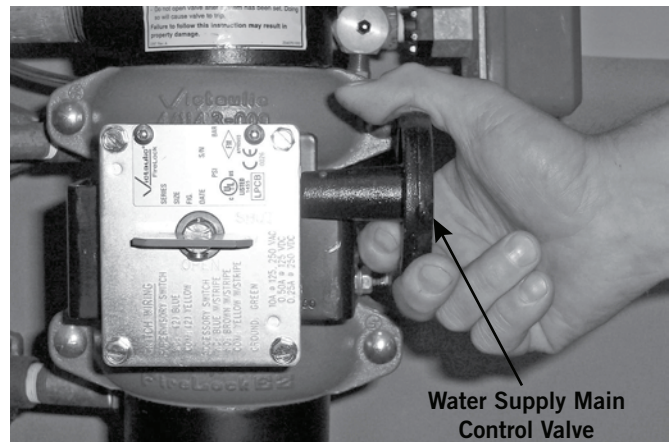
4. Close the water supply main control valve to take the system out of service.
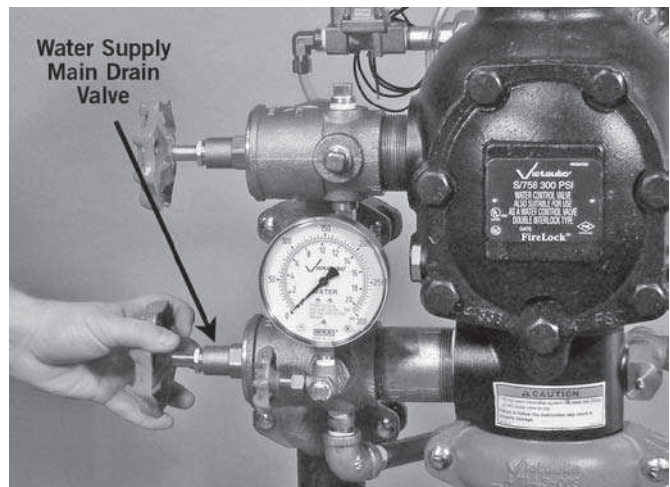
5. Open the water supply main drain valve.

6. Confirm that water is not flowing from the water supply main drain valve.

FireLock NXT™ Preaction Valve

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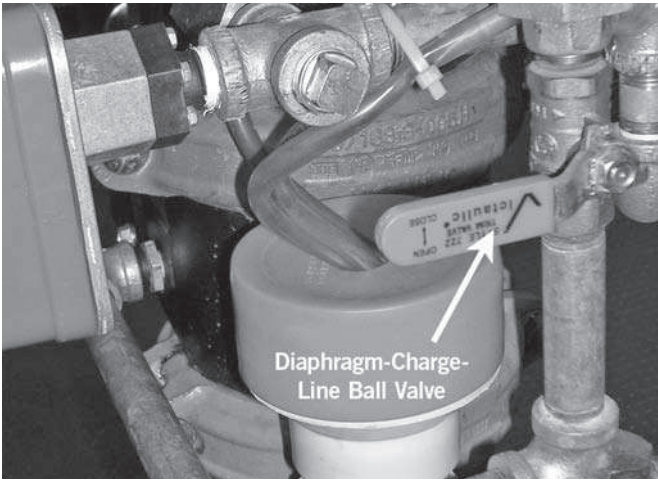
7. Close the diaphragm-charge-line ball valve.
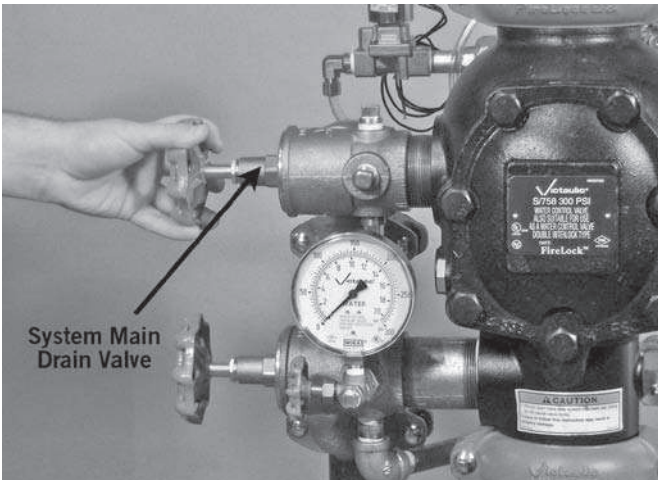
8. Open the system main drain valve to drain any water that has accumulated and to release system air pressure.

NOTE: If the system has operated, open the remote system test valve (inspector's test connection) and any auxiliary drain valves.
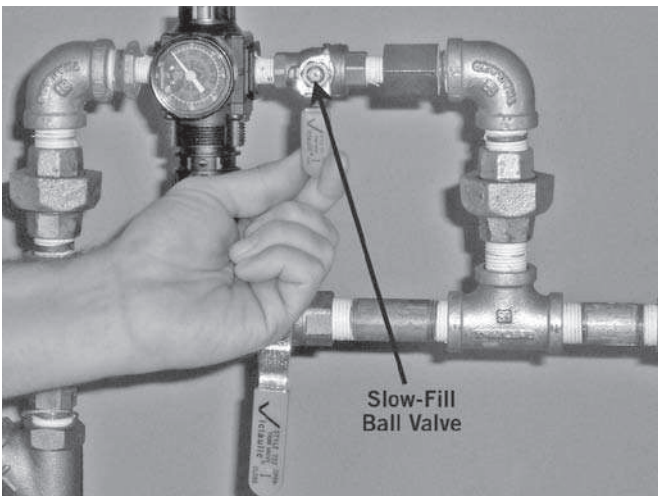
9. Close the slow-fill ball valve on the AMTA.

⚠️ **WARNING**

- **Make sure the valve is depressurized and drained completely before the cover plate bolts are removed.**

The cover plate could blow off if the cover plate bolts are removed while the valve is pressurized, resulting in serious personal injury and/or property damage.

10. **OPEN THE MANUAL PULL STATION.**
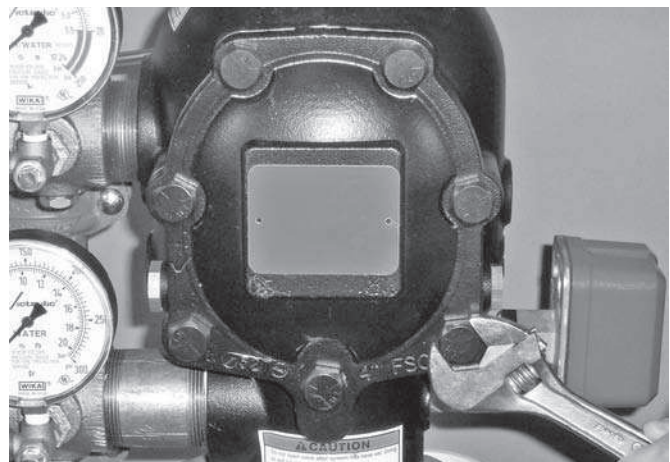
11. After all pressure is released from the system, loosen the cover plate bolts slowly. **NOTE:** DO NOT remove any cover plate bolts until all cover plate bolts are loosened.

   11a. Remove all cover plate bolts, along with the cover plate and cover plate gasket. **NOTE:** The 1 ½-inch/48.3-mm and 2-inch/60.3-mm valve sizes contain washers under the heads of the cover plate bolts. Keep these washers for re-installation.
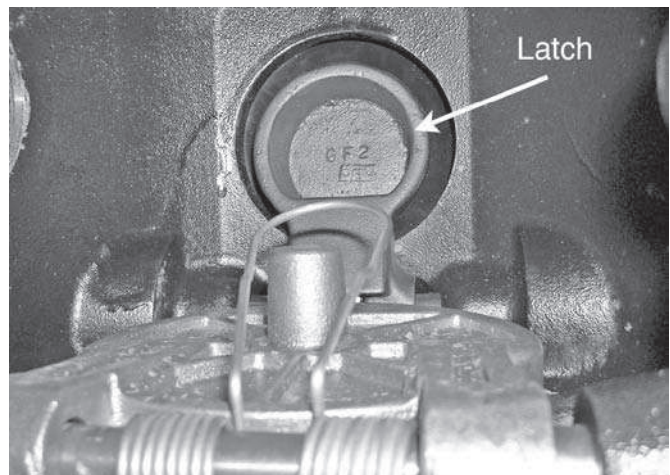
12. Push the latch back (toward the diaphragm).

FireLock NXT™ Preaction Valve

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⚠️ **CAUTION**

- **DO NOT use solvents or abrasives on or near the valve body seat ring.**

Failure to follow this instruction could prevent the clapper from sealing, resulting in improper valve operation and/or valve leakage.
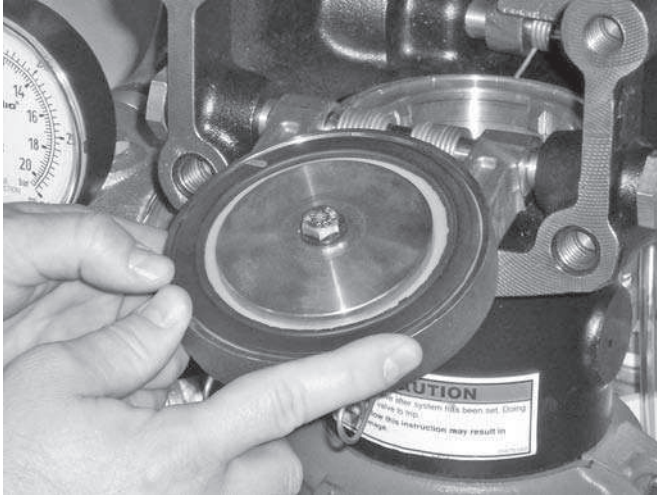
13. Rotate the clapper out of the valve body. Inspect the clapper seal and seal-retaining ring. Wipe away any contaminants, dirt, and mineral deposits. Clean out any holes that are plugged in the valve-body seat ring. **DO NOT USE SOLVENTS OR ABRASIVES.**

14. While the clapper is rotated out of the valve body, pull the latch forward to inspect the diaphragm. If the diaphragm shows any signs of wear or damage, replace it with a new, Victaulic-supplied diaphragm. Refer to the "Removing and Replacing the Diaphragm Assembly" section.

15. Inspect the clapper for freedom of movement and physical damage. Replace any damaged or worn parts by following the applicable instructions in the "Maintenance" section.

16. Re-install the cover plate by following the "Installing the Cover Plate Gasket and Cover Plate" section.

17. Place the system back in service by following the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

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MAINTENANCE

The following sections instruct on how to remove and replace internal valve components. Care must be taken to avoid damage to parts during removal and installation.

⚠ WARNING
• **Depressurize and drain the piping system before attempting to remove the cover plate from the valve.** **Failure to follow this instruction could result in serious personal injury and/or property damage.**

⚠ CAUTION
• **Any activities that require taking the valve out of service may eliminate the fire protection provided.** • **Before servicing or testing the system, notify the authority having jurisdiction.** • **Consideration of a fire patrol should be given in the affected areas.** **Failure to follow these instructions could result in serious personal injury and/or property damage.**

REMOVING AND REPLACING THE CLAPPER SEAL

1. Perform steps 1 – 12 of the "Required Internal Inspection" section.
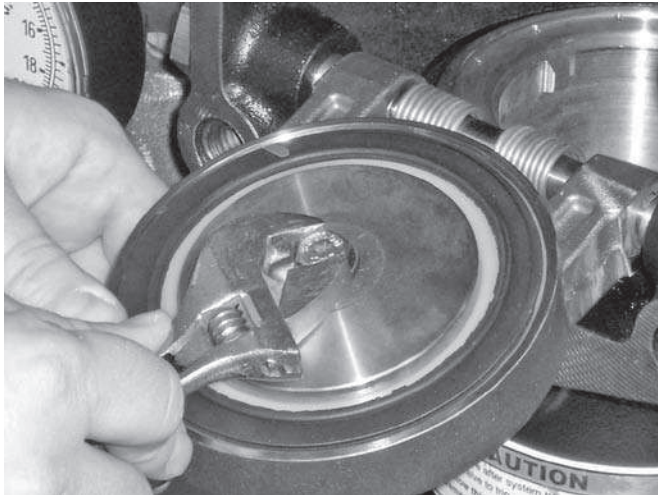
2. Remove the seal assembly bolt/bolt seal from the clapper seal.
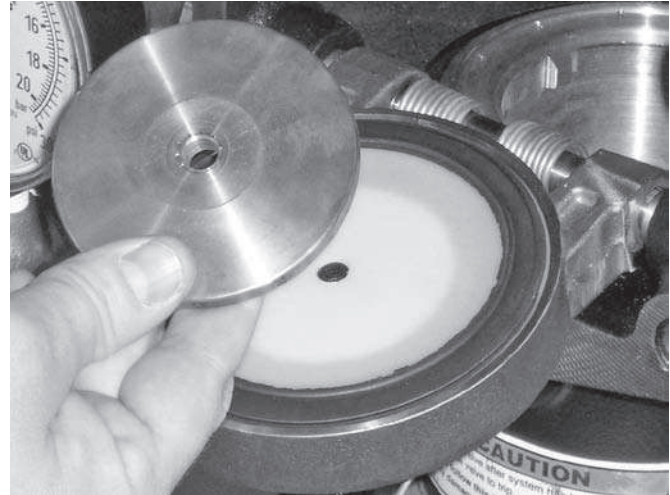
3. Remove the seal-retaining ring.

⚠ CAUTION
• **DO NOT pry the seal washer out of the clapper seal from the inner hole.** **Failure to follow this instruction could damage the seal washer, resulting in improper clapper sealing and valve leakage.**
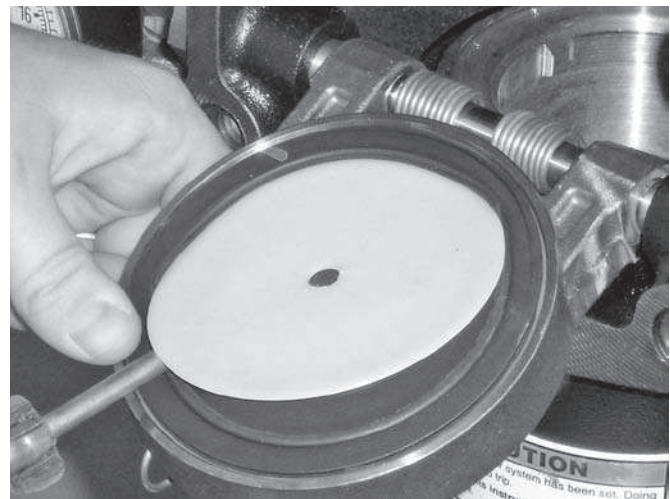
4. Pry the edge of the seal washer from inside the clapper seal, as shown above. **DO NOT PRY THE SEAL WASHER OUT FROM THE INNER HOLE.**

5. Remove the seal washer from the clapper seal. Dry up any moisture that is under the seal washer and on the clapper seal.

⚠ CAUTION
• **Use only Victaulic-supplied replacement parts.** **Failure to follow this instruction could cause improper valve operation, resulting in property damage.**

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6. Pry the clapper seal, along with the seal ring, out of the clapper. Inspect the clapper seal. If the clapper seal is torn or worn, replace it with a new, Victaulic-supplied clapper seal. If replacing the clapper seal assembly with a new assembly, skip to step 7.
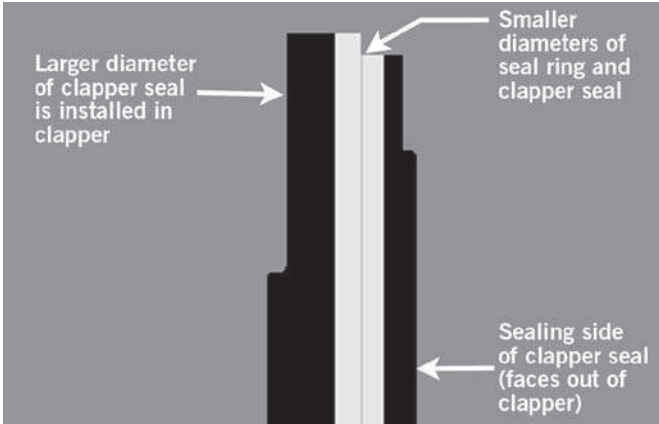
6a. **If using the same clapper seal assembly and the seal ring was removed from the clapper seal in the previous step:** Re-insert the seal ring carefully underneath the outer lip of the clapper seal. Make sure the smaller diameter of the seal ring is toward the sealing surface of the clapper seal.
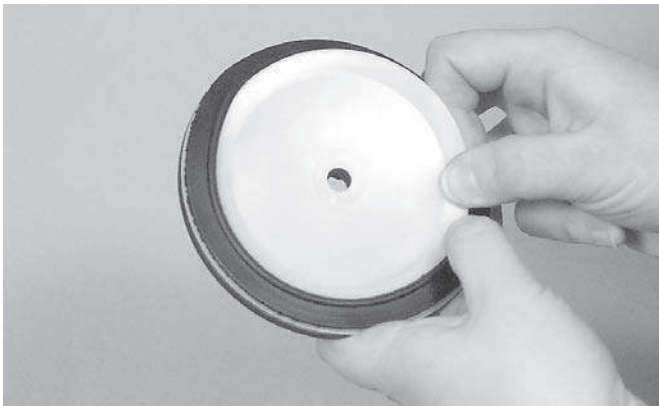
7. Insert the seal washer carefully underneath the sealing lip of the gasket.

8. Remove any contaminants, dirt, and mineral deposits from the clapper.

9. Install the clapper seal into the clapper carefully. Make sure the seal ring snaps into the clapper completely.

10. Place the seal-retaining ring onto the seal washer of the clapper seal. Install the seal-assembly bolt/bolt seal through the seal-retaining ring and clapper.

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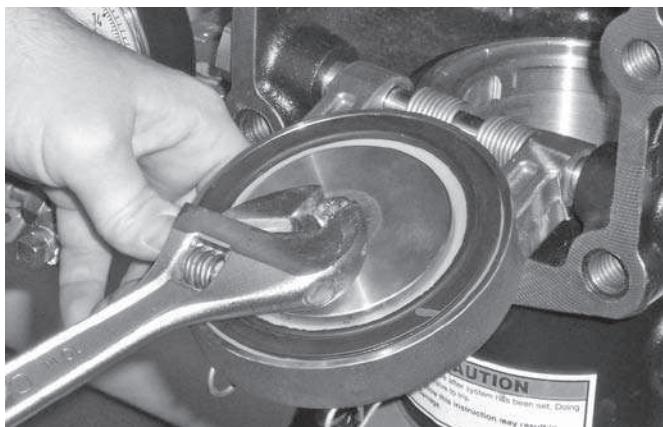
11. Tighten the seal-assembly bolt/bolt seal to the torque value, listed in the table below, to ensure a proper seal.

REQUIRED SEAL-ASSEMBLY BOLT/BOLT SEAL TORQUES

Size		Torque
Nominal Size inches	Actual Outside Diameter inches mm	inch-lbs N•m
1 ½	1.900 48.3	40 5
2	2.375 60.3	40 5
2 ½	2.875 73.0	90 10
76.1 mm	3.000 76.1	90 10
3	3.500 88.9	90 10
4	4.500 114.3	110 12
165.1 mm	6.500 165.1	160 18
6	6.625 168.3	160 18
8	8.625 219.1	160 18

12. Replace the cover plate by following the "Installing the Cover Plate Gasket and Cover Plate" section.

13. Place the system back in service by following the "Placing the System in Service" section.

REMOVING AND REPLACING THE CLAPPER ASSEMBLY

1. Perform steps 1 – 12 of the "Required Internal Inspection" section.
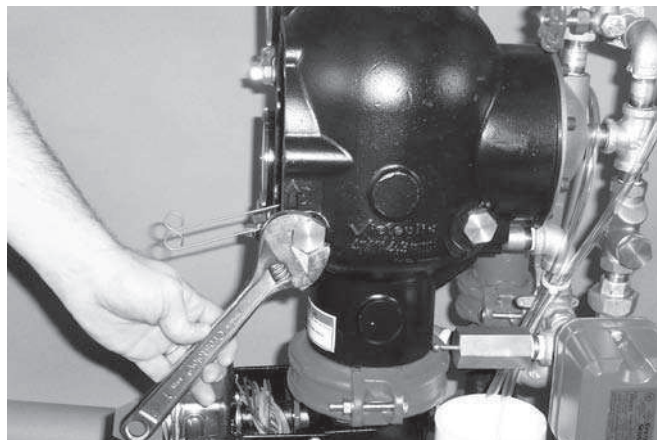
2. Remove the clapper shaft bushings from the valve body.
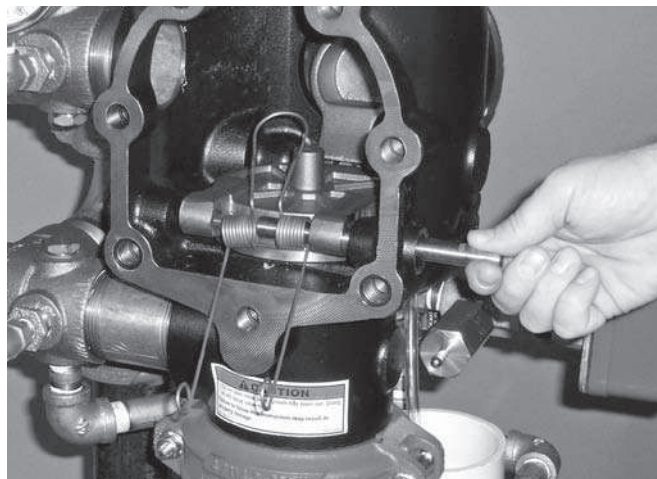
3. Remove the clapper shaft. **NOTE:** As the shaft is being removed, the clapper spring will drop out of position. Keep the clapper spring for re-installation.
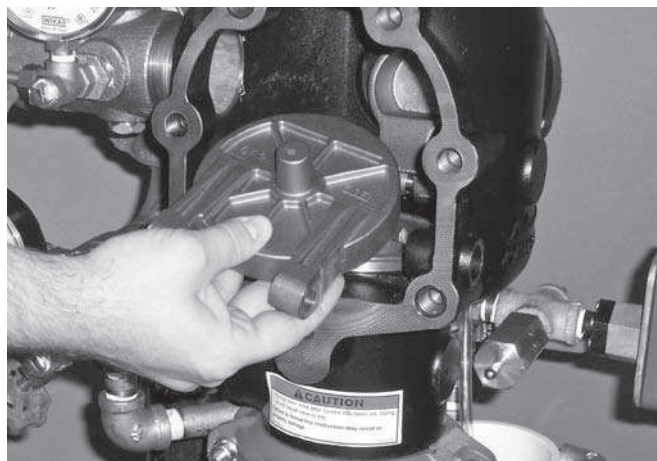
4. Remove the clapper from the valve body.

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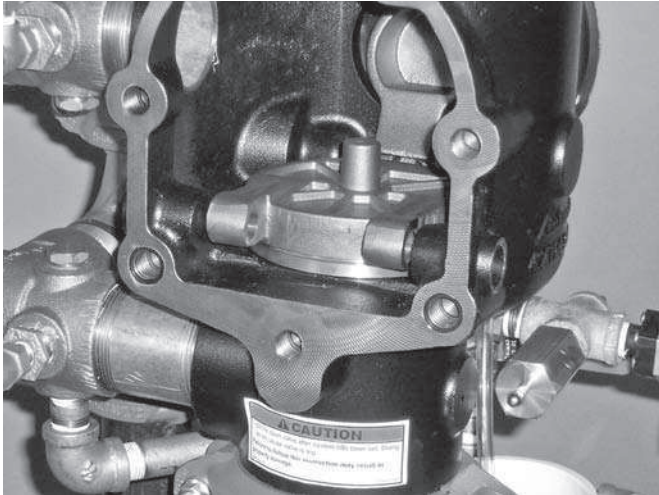
5. Place the new clapper assembly onto the valve-body seat ring. Make sure the holes in the clapper arms align with the holes in the valve body.

6. Insert the clapper shaft halfway into the valve body.

7. Install the clapper spring onto the clapper shaft. Make sure the loop of the clapper spring is facing toward the clapper, as shown above.

8. Finish inserting the clapper shaft through the clapper arm and valve body.

9. Apply thread sealant to the clapper shaft bushings. Install the clapper shaft bushings into the valve body until hand-tight.

10. Tighten the clapper shaft bushings until metal-to-metal contact occurs with the valve body.

11. Check the clapper for freedom of movement.

12. Replace the cover plate by following the "Installing the Cover Plate Gasket and Cover Plate" section.

13. Place the system back in service by following the "Placing the System in Service" section.

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INSTALLING THE COVER PLATE GASKET AND COVER PLATE

> ⚠ **CAUTION**
>
> • **Use only Victaulic-supplied replacement parts.**
>
> **Failure to follow this instruction could cause improper valve operation, resulting in property damage.**

1. Verify that the cover plate gasket is in good condition. If the gasket is torn or worn, replace it with a new, Victaulic-supplied gasket.
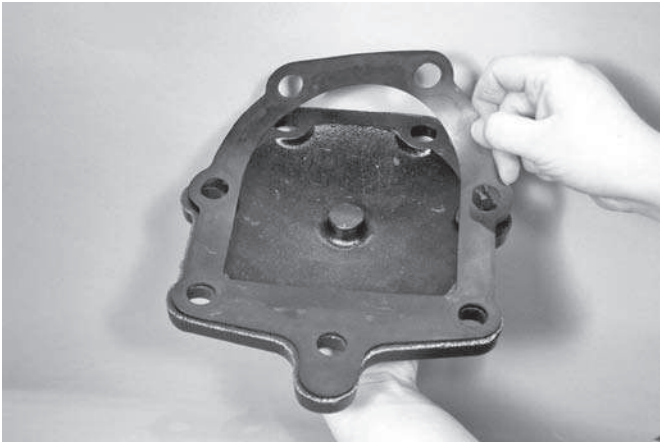
2. Align the holes of the cover plate gasket with the holes in the cover plate.
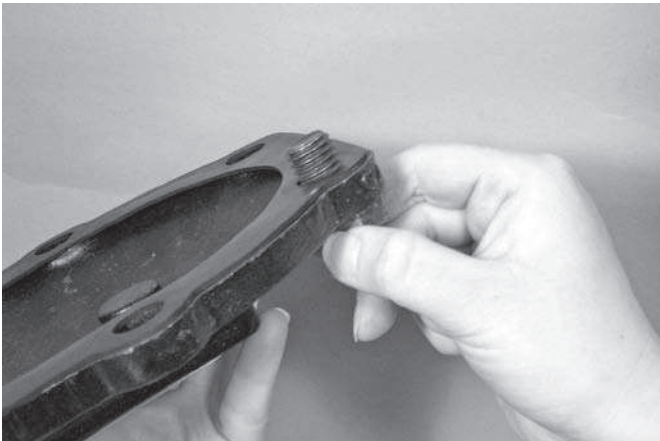
3. Insert one cover plate bolt through the cover plate and cover plate gasket to ease alignment. **NOTE:** For 1 ½-inch/48.3-mm and 2-inch/60.3-mm valve sizes, a washer must be re-installed under the head of each cover plate bolt.

> ⚠ **CAUTION**
>
> • **DO NOT over-tighten the cover plate bolts.**
>
> **Failure to follow this instruction could cause damage to the cover plate gasket, resulting in valve leakage.**
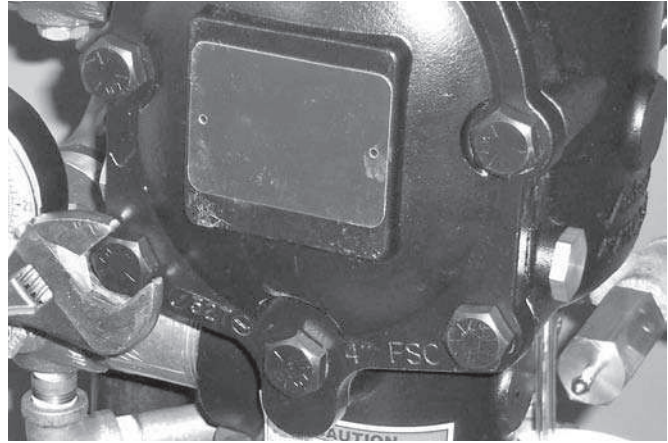
4. Align the cover plate/cover plate gasket to the valve. Make sure the clapper spring's arms are rotated to their installed position. Tighten all cover plate bolts into the cover plate/valve body.

5. Torque all cover plate bolts in an even, crossing pattern. Refer to the "Required Cover Plate Bolt Torques" table below for the required torque values. DO NOT over-tighten the cover plate bolts.

REQUIRED COVER PLATE BOLT TORQUES

Size		Torque
Nominal Size inches	Actual Outside Diameter inches mm	ft-lbs N•m
1 ½	1.900 48.3	30 41
2	2.375 60.3	30 41
2 ½	2.875 73.0	60 81
76.1 mm	3.000 76.1	60 81
3	3.500 88.9	60 81
4	4.500 114.3	100 136
165.1 mm	6.500 165.1	115 156
6	6.625 168.3	115 156
8	8.625 219.1	100 136

6. Place the system back in service by following the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

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REMOVING AND REPLACING THE DIAPHRAGM ASSEMBLY

1. Remove the system from service by following steps 1 – 11 of the "Required Internal Inspection" section.

2. Break the unions that connect the trim to the diaphragm cover. Refer to the applicable trim drawing for details.
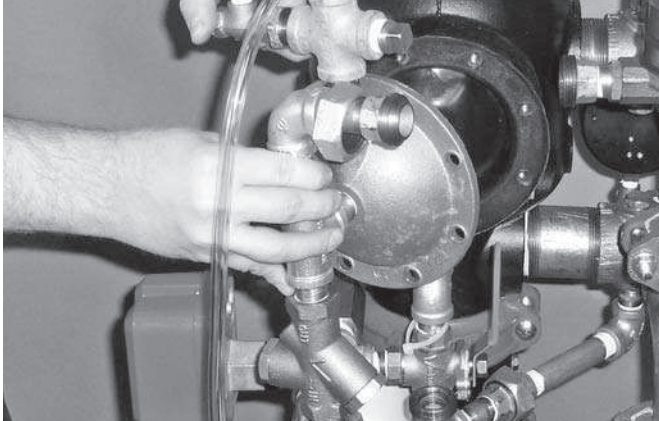
3. Remove the cap screws from the diaphragm cover, and pull the diaphragm cover/trim off the valve.
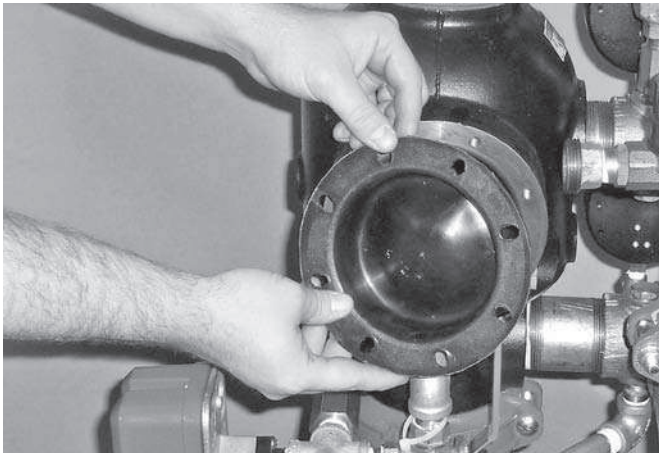
4. Remove the diaphragm from the valve body.
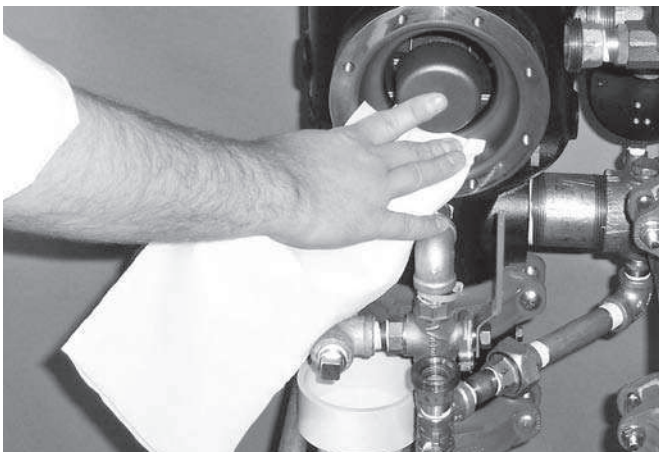
5. Clean the back of the valve body to remove any debris that may interfere with proper diaphragm seating.
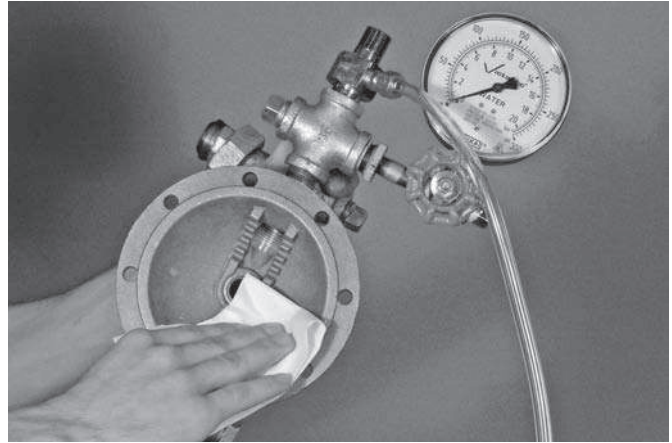
5a. Clean the inside of the diaphragm cover to remove any foreign material.

⚠ CAUTION

- **Use caution when installing a new diaphragm into the valve body.**

   Failure to follow this instruction could cause damage to the diaphragm, resulting in improper valve operation and valve leakage.

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6. Replace the diaphragm with a new, Victaulic-supplied diaphragm. Align the holes in the diaphragm with the holes in the valve body. Be careful not to damage the diaphragm during installation.
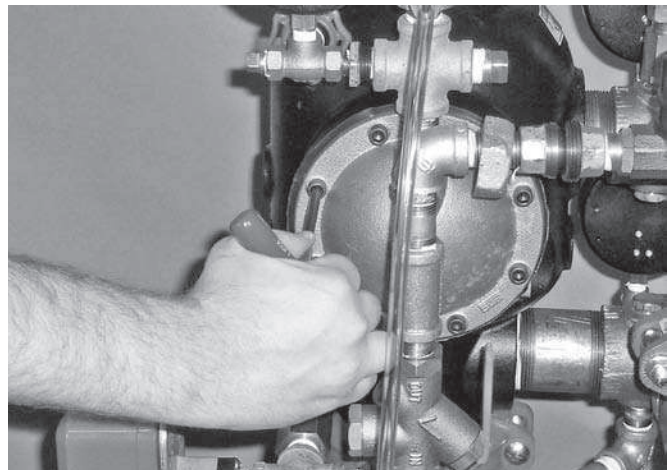
7. Align the holes of the diaphragm cover with the holes in the diaphragm/valve body. Tighten all cap screws into the diaphragm cover/valve body.

8. Re-attach the trim at the unions that were loosened in step 2. Refer to the applicable trim drawing for details. **MAKE SURE ALL UNIONS THAT WERE LOOSENED TO PERMIT ACCESS TO THE DIAPHRAGM COVER ARE RE-TIGHTENED BEFORE ATTEMPTING TO PLACE THE SYSTEM BACK IN SERVICE.**

9. Place the system back in service by following the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

SERIES 769

REPLACING THE STRAINER SCREEN FOR SERIES 776 LOW-PRESSURE ACTUATORS

1. Remove the system from service by following steps 1 – 11 of the "Required Internal Inspection" section.

2. Remove the Series 776 Low-Pressure Actuator from the trim. Refer to the applicable trim drawing for details.
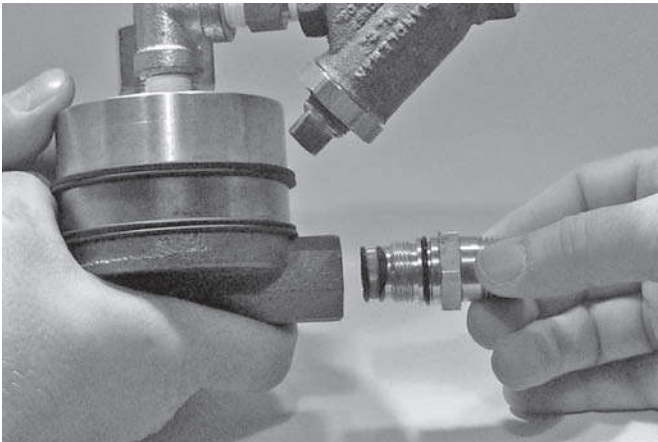
3. Remove the strainer assembly from the Series 776 Low-Pressure Actuator, as shown above. Discard the strainer screen only.

⚠ CAUTION

- **DO NOT re-use strainer screens. After removal, the old strainer screen must be replaced with a new, Victaulic-supplied screen.**

  Failure to follow this instruction could cause improper valve operation, resulting in property damage.

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4. Use only a new, Victaulic-supplied strainer screen. Insert the strainer screen into the strainer assembly.

5. Install the strainer assembly into the Series 776 Low-Pressure Actuator carefully. Avoid damage to the o-ring seals.

6. Re-install the Series 776 Low-Pressure Actuator into the trim. Refer to the applicable trim drawing for details.

7. Place the system back in service by following the "Placing the System in Service" section.

FireLock NXT™ Preaction Valve

SERIES 769

TROUBLESHOOTING – SERIES 776 LOW-PRESSURE ACTUATOR

Problem	Possible Cause	Solution
When the Auto Vent Sleeve of the Series 776 Low-Pressure Actuator is pulled up, the screw does not stay set in the "UP" position.	The Series 776 Low-Pressure Actuator is not receiving enough air.	Increase the air pressure going into the Series 776 Low-Pressure Actuator.
	The Series 776 Low-Pressure Actuator has a broken seal.	If the above procedure does not work, contact Victaulic.
Water is leaking through the Series 776 Low-Pressure Actuator.	The air chamber of the Series 776 Low-Pressure Actuator is not set.	Make sure the vent seal of the Series 776 Low-Pressure Actuator is in the set position and the air chamber is pressurized.
	The strainer on the Series 776 Low-Pressure Actuator is clogged.	Replace the strainer screen of the Series 776 Low-Pressure Actuator. Refer to the "Replacing the Strainer Screen for Series 776 Low-Pressure Actuators" section.
	The Series 776 Low-Pressure Actuator has a ripped diaphragm.	If water still leaks through the Series 776 after performing the above procedures, contact Victaulic.
No water is passing through the Series 776 Low-Pressure Actuator.	The strainer on the diaphragm charge line is clogged.	Disassemble and clean the diaphragm charge line strainer. Refer to the applicable trim drawing for details.

TROUBLESHOOTING – SERIES 753-E SOLENOID VALVE

Problem	Possible Cause	Solution
No water is passing through the Series 753-E Solenoid Valve.	The strainer on the diaphragm charge line is clogged.	Disassemble and clean the diaphragm charge line strainer. Refer to the applicable trim drawing for details.
The Series 776 Low Pressure Actuator does not open.	No power is going to the solenoid.	Check all electrical connections to make sure power is being supplied to the solenoid.

TROUBLESHOOTING – SERIES 746-LPA DRY ACCELERATOR

Problem	Possible Cause	Solution
The valve operates without sprinkler activation.	There is a loss of air pressure in the lower inlet chamber of the Series 746-LPA Dry Accelerator.	Check for air loss at the lower chamber seal. If a leak is present, turn the adjustment nut counterclockwise to seal.
		Check for any leaks in the system and trim. Confirm that the AMTA is operating properly.
The Series 746-LPA Dry Accelerator does not operate within a 5-psi/34-kPa/0.3-Bar pressure drop in system air pressure.	There is a loss of air pressure in the upper air chamber of the Series 746-LPA Dry Accelerator.	Apply soapy water to all joints around the Series 746-LPA Dry Accelerator to check for leaks. Repair any leaks and re-test.
	The air decay rate of the system is too slow.	Make sure there are no restrictions in the remote system test valve (inspector's test connection).
		If the above procedures do not work, contact Victaulic.
The Series 746-LPA Dry Accelerator does not set up properly (cannot get pressure on the upper gauge, and the button pops up immediately when pressure is introduced).	The Series 746-LPA Dry Accelerator is installed upside-down.	Remove the Series 746-LPA Dry Accelerator from the trim, and turn the unit around so that the vent seal "button" is facing down (toward the Series 776 Low-Pressure Actuator).

Victaulic®

FireLock NXT™ Preaction Valve

SERIES 769

TROUBLESHOOTING – SYSTEM

Problem	Possible Cause	Solution
The valve operates without sprinkler activation.	There is a loss of air pressure in the system or trim.	Check for any leaks in the system and trim. Confirm that the AMTA is operating properly. Consider installing a low-air supervisory switch.
	The pressure switch on the air compressor is set too low, or the compressor is not operating properly.	Increase the "ON" setting of the air compressor's pressure switch, and check the air compressor for proper operation.
Water is leaking from the drip check located in the alarm line.	Water is getting past the clapper seal and into the intermediate chamber of the valve.	Check the clapper seal and valve body seat ring for physical damage and foreign material.
	Water is under the clapper seal.	Inspect the clapper seal to make sure no water is under the seal. If water is present, remove and replace the seal. Refer to the "Removing and Replacing the Clapper Seal" section.
Air is leaking from the drip check located in the alarm line.	Air is getting past the clapper seal and into the intermediate chamber of the valve.	Check the clapper seal and valve body seat ring for physical damage and foreign material.
	Water is under the clapper seal.	Inspect the clapper seal to make sure no water is under the seal. If water is present, remove and replace the seal. Refer to the "Removing and Replacing the Clapper Seal" section.
The clapper will not latch closed.	There is no water pressure on the diaphragm.	Check the water pressure in the diaphragm charge line. Make sure the restrictor in the diaphragm charge line is clean.
	The Auto Drain is not set.	Set the Auto Drain by pulling up on the Auto Drain Sleeve.
Water is leaking from the diaphragm assembly.	The diaphragm is damaged.	Contact Victaulic.
Air is leaking from the diaphragm assembly.	The diaphragm is damaged.	Contact Victaulic.

FireLock NXT™ Preaction Valve

SERIES 769
NON-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
NON-INTERLOCKED, PNEUMATIC/ELECTRIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR AND SERIES 753-E SOLENOID VALVE
SINGLE-INTERLOCKED, PNEUMATIC RELEASE WITH SERIES 776 LOW-PRESSURE ACTUATOR
SINGLE-INTERLOCKED, ELECTRIC RELEASE WITH SERIES 753-E SOLENOID VALVE
DOUBLE-INTERLOCKED, ELECTRIC (ELECTRIC-PNEUMATIC/ELECTRIC) RELEASE WITH SERIES 753-E SOLENOID VALVE

WCAS-7EFFBU

SECTION 3

General Air Products Manual OILLESSINST

Compressor

❊ *GENERAL AIR PRODUCTS, INC.*

OIL-LESS COMPRESSOR INSTRUCTION SHEETS

NOTE

This compressor is intended for installation indoors for use on dry sprinkler systems in accordance with the Standard for Installation of Sprinkler Systems, NFPA 13 and the National Electrical Code, NFPA 70.

The compressor should be sized to restore and maintain the air pressure in the sprinkler system in accordance with the requirements in NFPA 13.

DANGER

This compressor is not equipped and should NOT be used "as is" to supply breathing quality air.

WARNING

Motors, electrical equipment and controls can cause electrical arcs that will ignite a flammable gas or vapor. Never operate or repair in or near a flammable gas or vapor. Never store flammable liquids or gases near the compressor.

WARNING

These compressors are suitable for pumping only atmospheric air. As defined in Compressed Gas Association Pamphlet G-7, page 3, atmospheric air is a mixture of elements and compounds where nitrogen and oxygen comprise more than 99% with all other trace gases comprising less than 1%. **DO NOT USE THIS COMPRESSOR IN CONTAMINATED ENVIRONMENTS OR FOR PUMPING MIXTURES OTHER THAN ATMOSPHERIC AIR**

WARNING

Compressed air contains liquid water and is saturated with water vapor, which can freeze. Do not connect compressor outlet to freezer rooms or systems exposed to temperatures below freezing. If system connects to a freezer room or area exposed to freezing temperatures, a Dry Air Pac™ should be used.

Receiving

Your compressor is inspected at the factory and packaged to protect against shipping damage. When the compressor is unpacked, inspect for damage or missing parts. All claims should be settled directly with the freight company.

> WARNING: **Do not operate this compressor if damaged during shipment, handling, or use. Damage may result in bursting and cause injury or property damage.**

Location

> NOTE: Do not connect compressor intake to freezer room. – CALL 1-800-345-8207.

Locate the compressor in a clean, well-ventilated area where the air is relatively cool, clean, and dry. A $110^{o}F$ (35 C) maximum and $40^{o}F$ (4.5 C) minimum temperature for surrounding and inlet air are recommended. Provide at least 12 to 18 inches from any wall or other obstruction that will interfere with airflow through the motor's fan built into the motor. Blocking airflow through the fan may cause the compressor to over heat. Do not place the compressor in an area of excessive heat, such as near a boiler.

Mounting

Riser mounted compressors may be mounted to a firm level floor, wall or system riser. A mounting bracket and straps are provided. Tank mounted compressors should be bolted to the floor using the bolt holes provided in the tank legs. Always shim the unit level before bolting it to the floor. Vibration isolators (P/N KVP4X4) are recommended. When using isolator pads, do not draw bolts tight. Allow the pad to absorb vibrations. When isolators are used, a flexible hose (P/N P1202MP) should be installed between the compressor and service piping.

Lubrication

> NOTE: This compressor is designed for non-lubricated service. Bearings are permanently lubricated. Do not lubricate any part of the compressor or motor.

Piping (reference "Installation Instructions" drawings)

> ### WARNING
> Compressed air contains liquid water and is saturated with water vapor, which can freeze. Do not connect compressor outlet to freezer rooms or systems exposed to temperatures below freezing. If system connects to a freezer room or area exposed to freezing temperatures, a Dry Air Pac™ should be used.

Piping between the compressor, accessory items and the sprinkler system should be at least ½" internal

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For Assistance Please Call 1-800 345-8207
Please keep these instructions for future reference.

diameter to minimize pressure drop from the compressor to system. Larger pipe size may be required by code and may be substituted with no adverse effects. Smaller line size must not be used and will restrict the compressor flow, lowering capacity and causing the compressor/motor to work harder, which shortens compressor/motor life. All piping connected to the compressor must be fully supported and not transfer any loads to the compressor.

If an AMD-1 is used, allow sufficient distance between the compressor and AMD-1 to ensure that the maximum temperature at the AMD-1 is 200°F or less. **When an AMD is used with riser mounted units, a riser mounted tank kit (p/n OLR-TK) should be installed to prevent short cycling the compressor.** All oil-less compressors include a relief valve. For riser mounted models, the relief valve is installed on the compressor outlet. For tank mounted models, an ASME Code relief valve is mounted on the compressor's tank. This valve will open at a preset value above the pressure switch setting to prevent excess tank pressure in the event of switch failure.

WARNING: Do not attempt to change the safety relief valve setting.

A manual drain is provided on the bottom of each tank mounted compressor. Moisture accumulated in the tank, must be drained weekly. An automatic drain , P/N DVA-2T, is recommended in areas of high humidity.

The compressor outlet piping should contain an accessible drain. As a minimum a manual drain may be used, but an automatic drain is recommended to remove excess water.

NOTE: Accumulation of condensed water in a system causes corrosion of components and reduces system capacity.

NOTICE: Warranty is void if a separate check valve is not installed to prevent water back flow.

Wiring (reference "Wiring Instructions" drawings)

WARNING

Have a qualified electrician wire the compressor to ensure that the supply line has the same characteristics (voltage, frequency and phasing) as the motor. Wiring must comply with all local and national codes.

CAUTION

Inadequate wiring size can cause insufficient voltage at the compressor during start-up. Overheating and damage to the motor and controls may result

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The supply wire must be of adequate size and no other equipment should be connected to the same line. The table below lists the recommended wire size for each model, based on a 100' run. Consult factory for longer runs.

MINIMUM RECOMMENDED WIRE SIZE		
MODEL	1 PHASE	3 PHASE
OL11016**	12	N/A
OL21533**	10	N/A
OL33550**	8	12
OL42575**	8	12
OL435V75**	8	12
OL525100**	8	12
OL610V100**	8	12
OL675150**	6	12
OL900V100**	8	12
OL900V150**	8	12
OL1200V200**	10	10

The motors supplied are multiple voltage motors. A label on the pressure switch cover indicates the voltage the motor is pre-wired for. If the supply voltage, on site, is different from the voltage indicated on this label, change the internal motor voltage connections to match the supply voltage. To change internal voltage connections, remove the cover plate located on the rear or side of the motor and reconnect the wire leads as shown on the motor's wiring diagram.

On all three phase and ½ Hp and ¾ Hp single phase models, an arrow on the motor indicates the direction of rotation of the compressor. If the compressor rotates in the opposite direction, reverse the rotation of the motor. On single phase units, reverse motor rotation by interchanging the red and black motor leads. Interchanging any two incoming supply wires reverses rotation of three phase motors.

NOTICE: **Single-phase oil-less compressors can not be operated at 208V. Operating the compressor at 208V voids the** warranty.

NOTICE: Single-phase motors include internal thermal overload protection, which has an automatic reset device.

WARNING: Disconnect electrical power before servicing to disable reset devices. Thermal protection can automatically start the motor when the protector resets.

On single phase models, the motor is pre-wired to the pressure switch provided, which controls starting (cut

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OILLESSINST
REV 080906

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in pressure) and stopping (cut out pressure) of the motor. The pressure switch is factory set. Standard models switch is set at 27 psig cut in and 40 psig cut out. Low pressure models ("-LP") switch is set at 13 psig cut in and 18 psig cut out. Consult General Air Products before adjusting the pressure switch.

On three-phase compressors, the motor is not pre-wired to the pressure switch. Refer to the three phase wiring instruction drawing for recommended wiring.

A magnetic starter is required, for all three phase models, to protect the motor from overload conditions. A magnetic starter is recommended, for all single phase models. Consult the National Electric Code and local codes for motor starter requirements. Refer to

the proper wiring instruction drawing for recommended wiring to a starter.

> NOTE: Do not run two phases of a three phase supply through the pressure switch. Serious damage can result.

> NOTE: Failure to use the pressure switch may result in overpressure of the compressor or other components in the system. Overpressure of the compressor may result in blown head gaskets or other damage.

Maintenance Instructions

> **WARNING**
> DISCONNECT, TAG AND LOCK OUT POWER SOURCE THEN RELEASE ALL PRESSURE FROM THE SYSTEM BEFORE ATTEMPTING TO INSTALL, SERVICE, RELOCATE OR PERFORM ANY SERVICE.

The following instructions are based on NORMAL operation. If the compressor is in an excessively dusty area, increase frequency of maintenance checks.

WEEKLY
- Drain condensate from receiver and traps.
- Check for unusual noise or vibration.
- Clean air filters. – NOTE: Do not clean filters with petroleum based products.
- Clean all external parts of the compressor and motor.

MONTHLY
- Manually test safety relief valve.
- Inspect air system for leaks and tighten nuts and cap screws as required.

QUARTERLY
- Change filters.

Limited Warranty

General Air Products, Inc. warrants its products to be free of defects in material and workmanship under normal use and service for 12 months from date of purchase. Our warranty applies only when such defective parts are returned to us, or our Authorized Service Depot, transportation prepaid, and subject to our inspection and approval. Liability is limited to repair or replacement of material found defective, free of charge, FOB our plant. Unauthorized repairs or replacements will not be subject to factory warranty. This warranty is in lieu of all other warranties, expressed or implied.

General Notes

1) Warranty can be voided if modifications or adjustments are made without consultation and approval; from factory personnel.
2) If there are any questions regarding installation or operation of this compressor, please call the 800 number listed below.

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For Assistance Please Call 1-800 345-8207
Please keep these instructions for future reference.

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Trouble Shooting Guide

Symptom	Possible Cause(s)	Corrective Action
Motor hums and runs slowly or not at all	1. Low voltage or no voltage 2. Shorted or open motor winding 3. Defective check valve 4. Defective pressure switch – contacts will not close	1. Check voltage during attempt to start. Voltage must be within +/-10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop. 2. Replace motor 3. Replace check valve 4. Repair or replace pressure switch
Reset mechanism cuts out repeatedly or fuses blow repeatedly	1. Insufficient voltage to motor 2. Pressure switch set too high 3. Wrong fuse size 4. Piping too restrictive 5. Defective motor	1. Check voltage during attempt to start. Voltage must be within +/-10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop. 2. Consult factory, adjust or replace 3. Be sure fuses and heaters are rated properly 4. Add receiver vessel or increase pipe volume after compressor. 5. Replace motor
Unit short cycles repeatedly	1. Piping too restrictive 2. Leak in line before system check valve	1. Add receiver vessel or increase pipe volume after compressor. 2. Repair leaks(s)
Compressor Overheating	1. Dirty intake filter 2. Wrong motor rotation 3. Air flow to fan on flywheel blocked	1. Clean intake filter 2. Correct rotation 3. Clear air flow to fan or relocate unit
Excessive noise in operation	1. Damaged bearings 2. Worn piston rings or skirts 3. Broken valves 4. Loose blower wheel 5. Damaged Blower baffle	1. Contact General Air Products, Inc. Service Department. 1-(800)345-8207
System pressure builds slowly	1. Compressor sized incorrectly 2. Leaks or restrictions in piping 3. Dirty intake filter 4. Blown head gasket	1. Check system size and compressor sizing 2. Correct leaks and remove restrictions 3. Clean intake filter 4. Replace head gasket

For Assistance Please Call 1-800 345-8207
Please keep these instructions for future reference.

RISER MOUNT OIL-LESS COMPRESSORS
WITH RISER TANK KIT
INSTALLATION INSTRUCTIONS

GENERAL
AIR PRODUCTS

ALL PIPING AND WIRING
TO BE IN ACCORDANCE WITH
APPLICABLE STATE, LOCAL
AND NATIONAL CODES &
SHOULD BE APPROVED BY AHJ

CONNECT TO REQUIRED
SYSTEM TRIM

MULTIPLE CHECK
VALVES IN FEED
LINES CAN RESULT
IN LOWER SYSTEM
PRESSURES DUE TO
PRESSURE DROPS

IF SYSTEM IS FEEDING FREEZER
ROOM OR AREA EXPOSED TO
TEMPERATURES BELOW FREEZING.
(SEE DRY AIR PAC INFORMATION.)

200 F MAX.

T

DPV

ACCELERATOR

TANK MOUNTED UNITS ARE
RECOMMENDED FOR USE
WITH ACCELERATORS

P/N AMD - 1
AIR MAINTENANCE DEVICE

1/2" MINIMUM,
LARGER IF REQUIRED
BY CODE.

MANUAL DRAIN
RECOMMENDED AS
MINIMUM.

FLEX HOSE
P/N P1202MP

OR

SAFETY
RELIEF
VALVE

RISER

WARNING!

DO NOT INSTALL IN
AREAS EXPOSED TO
TEMPERATURES
BELOW 40 DEGREES F
OR AREAS EXPOSED
TO WEATHER. CONSULT
FACTORY FOR
WEATHERPROOF OPTIONS.

AUTOMATIC DRAIN (P/N FD-1)
RECOMMENDED ON DRIP LEG
TO REMOVE EXCESS WATER.

COPPER TUBING OR
RUBBER HOSE NOT
RECOMMENDED DUE
TO HIGH TEMPERATURES
AND HIGH PRESSURE
DROPS WHEN USED.

PRESSURE
GAUGE

TANK
3.75 gal.

RISER TANK KIT
TANK, STRAPS, RELIEF
VALVE AND GAGE INCLUDED
P/N OLR-TK RECOMMENDED
WHEN AMD INSTALLED

MAGNETIC STARTER
REQUIRED FOR ALL
3 PHASE UNITS . STARTER
IS RECOMMENDED FOR ALL
SINGLE PHASE
COMPRESSORS. CONSULT
NEC AND LOCAL CODES
FOR SPECIFIC
REQUIREMENTS.

MOST MOTORS ARE MULTIPLE
VOLTAGE. CHECK NAMEPLATE
FOR CORRECT INTERNAL
CONNECTIONS FOR VOLTAGE
BEING SUPPLIED TO UNIT.

RISER MOUNTING KIT
INCLUDED IN COMPRESSOR
PACKAGE

PRESSURE SWITCH SETTING
IS 27# CUT IN 40# CUT OUT; FOR
HIGHER PRESSURES CONSULT
FACTORY

PART NUMBERS LISTED ARE FOR ACCESSORY ITEMS RECOMMENDED FOR COMPLETE INSTALLATION - CONSULT YOUR LOCAL DISTRIBUTOR FOR AVAILABILITY

TANK MOUNTED OIL-LESS COMPRESSORS
INSTALLATION INSTRUCTIONS

★★GENERAL
AIR PRODUCTS, INC.

ALL PIPING AND WIRING TO
BE IN ACCORDANCE WITH
APPLICABLE STATE, LOCAL
AND NATIONAL CODES &
SHOULD BE APPROVED BY AHJ

MULTIPLE CHECK VALVES
IN FEED LINES CAN RESULT
IN LOWER SYSTEM PRESSURE
DUE TO PRESSURE DROPS.

IF SYSTEM IS FEEDING FREEZER
ROOM OR AREA EXPOSED TO
TEMPERATURES BELOW FREEZING.
(SEE DRY AIR PAC INFORMATION)

CONNECT TO REQUIRED
SYSTEM TRIM.

AIR MAINTENANCE DEVICE
P/N AMD-1

200 F MAX.
(T)

ACCELERATOR
TANK MOUNTED UNITS ARE
RECOMMENDED FOR USE
WITH ACCELERATORS

DPV

1/2" MINIMUM,
LARGER IF REQUIRED
BY CODE

PRESSURE SWITCH IS FACTORY SET
27# CUT IN 40# CUT OUT; HIGHER PRESSURE
SETTINGS MAY REQUIRE A LARGER
MOTOR ON THE COMPRESSOR, CONSULT
FACTORY FOR DETAILS

WARNING!
DO NOT INSTALL IN
AREAS EXPOSED TO
TEMPERATURES
BELOW 40 DEGREES F
OR AREAS EXPOSED TO
WEATHER. CONSULT
FACTORY FOR
WEATHERPROOF OPTIONS.

MAGNETIC STARTER
REQUIRED FOR ALL
3 PHASE UNITS . STARTER
IS RECOMMENDED FOR ALL
SINGLE PHASE COMPRESSORS.
CONSULT NEC AND LOCAL
CODES FOR SPECIFIC REQUIREMENTS.

PRESSURE SWITCH MUST
BE WIRED IN CIRCUIT TO
CONTROL COMPRESSOR

INTAKES SHOULD NOT BE
CONNECTED TO FREEZER
ROOMS.
(SEE DRY AIR PAC INFORMATION)

MOST MOTORS ARE MULTIPLE
VOLTAGE. CHECK NAMEPLATE
FOR CORRECT INTERNAL
CONNECTIONS FOR VOLTAGE
BEING SUPPLIED TO UNIT.

FLEX HOSE
P/N P1202MP

General Air Products

ASME NB

MANUAL DRAIN
RECOMMENDED AS
MINIMUM.

OR

MANUAL DRAIN STANDARD.
AUTOMATIC DRAIN (P/N DVA-2T)
RECOMMENDED FOR HUMID AREAS.

AUTOMATIC DRAIN (P/N FD-1)
RECOMMENDED ON DRIP LEG
TO REMOVE EXCESS WATER
ACCUMULATION.

VIBRATION ISOLATORS
P/N KVP 4X4

PART NUMBERS LISTED ARE FOR ACCESSORY ITEMS RECOMMENDED FOR COMPLETE INSTALLATION - CONSULT YOUR LOCAL DISTRIBUTOR FOR AVAILABILITY

TNKOLIS (08/09/06)

GENERAL *AIR PRODUCTS, INC.*

OIL-LESS COMPRESSOR
SINGLE PHASE WIRING INSTRUCTIONS

NOTE: MOST MOTORS ARE MULTIPLE VOLTAGE. CHECK NAMEPLATE AND VERIFY CORRECT INTERNAL CONNECTIONS FOR VOLTAGE BEING SUPPLIED TO UNIT.

LINE

FEEDER WIRE SIZE MUST BE CAPABLE OF CARRYING CURRENT LOAD OF COMPRESSOR AT MAXIMUM PRESSURE.

PRESSURE SWITCH

LINE

FUSED DISCONNECT

FUSED DISCONNECT

MAGNETIC STARTER

FIG 1

SINGLE PHASE BUILT IN OVERLOAD PROTECTION. (NOT TO EXCEED 3/4 HP).

FOR 115V ELIMINATE FUSE IN GROUND LEG.

PRESSURE SWITCH HP RATING MUST NOT BE EXCEEDED.

OTHER WIRING VARIATIONS POSSIBLE DEPENDING ON LOCAL CODES.

PRESSURE SWITCH

M

FIG 1

FIG 2

SINGLE PHASE WITH OR WITHOUT OVERLOAD PROTECTION.

FOR 115V ELIMINATE FUSE IN GROUND LEG.

PRESSURE SWITCH TO CONTROL PILOT CIRCUIT.

OTHER WIRING VARIATIONS POSSIBLE DEPENDING ON LOCAL CODES.

CONSULT MANUFACTURER'S INSTRUCTIONS ON STARTER FOR VARIATIONS ON DIAGRAM SHOWN.

M

FIG 2

ISOLELEC 05/03/99

OIL-LESS COMPRESSOR
THREE PHASE WIRING INSTRUCTIONS

GENERAL
AIR PRODUCTS, INC.

NOTE: MOST MOTORS ARE
MULTIPLE VOLTAGE. CHECK
NAMEPLATE AND VERIFY
CORRECT INTERNAL CONNECTIONS
FOR VOLTAGE BEING
SUPPLIED TO UNIT.

FEEDER WIRE SIZE MUST BE
CAPABLE OF CARRYING
CURRENT LOAD OF COMPRESSOR
AT MAXIMUM PRESSURE.

LINE

FUSED
DISCONNECT

PRESSURE
SWITCH

MAGNETIC
STARTER

M
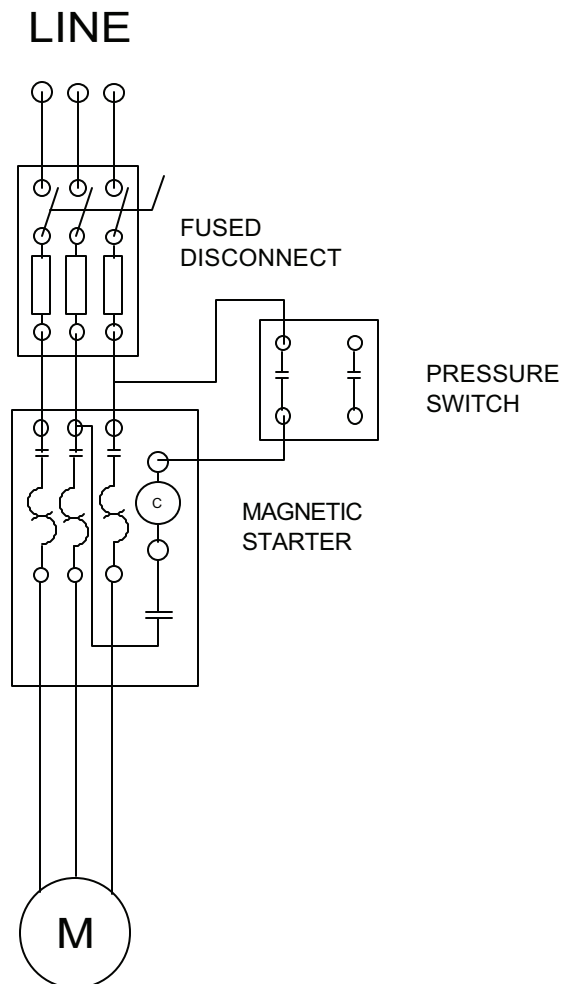
THREE PHASE

OTHER WIRING VARIATIONS
POSSIBLE DEPENDING
ON LOCAL CODES

PRESSURE SWITCH
TO CONTROL
PILOT CIRCUIT

CONSULT MANUFACTURERS
INSTRUCTIONS ON STARTER
FOR VARIATIONS ON DIAGRAM
SHOWN

ISOLELEC3PHASE 05/03/99

SECTION 4.1

Fenwal Manual 06-236529-001

FN-6000 Control Panel Installation, Operation, Maintenance

FENWAL®

FENWALNET™ 6000 Fire Alarm/Suppression Control Unit

Installation, Operation, and Maintenance Manual

UL Listing
File No.
S2422

FM Approvals
Project ID
3021638

P/N 06-236529-001
June 2006

FENWAL®

FENWALNET™ 6000
Fire Alarm/Suppression
Control Unit

Installation, Operation, and
Maintenance Manual

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FOREWORD

Note: This Manual, P/N 06-236529-001, is to be used by qualified and factory-trained personnel, knowledgeable of NFPA standards and any other applicable standards in effect.

This manual is intended to clearly and accurately describe the installation, operation and maintenance of the FENWALNET™ 6000 Fire Alarm/Suppression Control Unit.

Kidde-Fenwal assumes no responsibility for the application of any systems other than those addressed in this manual. The technical data contained herein is limited strictly for informational purposes only. Kidde-Fenwal believes this data to be accurate, but it is published and presented without any guarantee or warranty whatsoever. Kidde-Fenwal disclaims any liability for any use that may be made of the data and information contained herein by any and all other parties.

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TERMS AND ABBREVIATIONS

AAM:	Addressable Alarmline Module	LCD:	Liquid Crystal Display
AC:	Alternating Current	LED:	Light Emitting Diode
ADA:	Americans with Disabilities Act	MEA:	Materials and Equipment Acceptance Division of the City of New York
AH:	Ampere Hour	NAC:	Notification Appliance Circuit
AHJ:	Authority Having Jurisdiction	N.C.:	Normally Closed
AI:	Addressable Monitor Module	NEC:	National Electrical Code
AIM:	AnaLASER Interface Module	NFPA:	National Fire Protection Association
AO:	Addressable Relay	N.O.:	Normally Open
ASM	Addressable Signal Module	PAS:	Positive Alarm Sequence
ATM-L:	Annunciator Driver Module	PCB:	Printed Circuit Board
ATM-R:	Relay Driver Module	pF:	Pico-farads
AWG:	American Wire Gauge	P/N:	Part Number
BPM:	Beats per Minute	RAM:	Random Access Memory
CPU:	Central Processing Unit	RDCM:	Remote Display/Control Module
CSFM:	California State Fire Marshal	RF:	Radio-Frequency
DACT:	Digital Alarm Communications Transmitter	RRM	Remote Releasing Module
DC:	Direct Current	SLC:	Signaling Line Circuit
EOC:	Event Output Control	SMPS:	Switching Mode Power Supply
EOLD:	End of Line Device	TB:	Terminal Block
FCS:	FENWALNET Configuration Software	UL/ULI:	Underwriters Laboratories, Inc.
FM/FMRC:	Factory Mutual (Research Corporation)	V:	Volts
Ft.:	Feet	Vac:	Volts AC
HSD:	High Sensitivity Smoke Detector	Vdc:	Volts DC
HSSD:	High Sensitivity Smoke Detector	VRMS:	Volts Root Mean Square
Hz:	Hertz (Frequency)		
IRI:	Industrial Risk Insurers		

SAFETY SUMMARY

This entire manual must be read and understood before installation.

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 this fire alarm control unit.

Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by servicing while the unit is energized. Do not attempt to install, service, or operate this control unit until this manual is read and understood.

CAUTION

System Re-acceptance Test after Re-Programming: **To ensure proper system operation, this system must be retested in accordance with NFPA 72 Chapter 10 after any programming change. Re-acceptance testing is also required after any addition or deletion of system components, and after any modification, repair or adjustment to system hardware or wiring.**

All components, circuits and system operations 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 UL/FM requirements for operation at 32°-120°F (0 to 49°C) and at a relative humidity of 93% (non-condensing) @ 90°F (32.2°C). However, the useful life of the system's standby batteries and the electronic components may be adversely effected by continuous operation at these environmental limits. Therefore, it is recommended that this system and its peripherals be installed in an environment with a nominal room temperature of 60-80°F.

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

Do not install electronic assemblies prior to mounting and attaching conduit for field wiring to the enclosure. Before making modifications, verify that they will not interfere with battery and printed circuit board locations. Do not over tighten screw terminals. 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 control unit.

Follow the instructions in this manual. These instructions must be followed to avoid damage to the control unit and associated equipment. System 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, notification appliances, and a fire alarm control unit 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, on roofs, or on the other side of closed doors. Smoke detectors on one level 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.

Furthermore, 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 such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

SAFETY SUMMARY (CONT.)

Notification appliances, such as bells, may not alert people if these appliances 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 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 by a qualified fire protection specialist as recommended in NFPA 72, Chapter 10.

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

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.

GENERAL SAFETY NOTICES   *The following must be observed to maintain personnel safety.*

The following general safety notices supplement specific warnings and cautions appearing in the manual. The safety precautions in this section must be understood and applied during operation and maintenance. This manual is to be used by trained distributors/technicians. The entire manual should be read and fully understood prior to installation.

FIRST AID

Any injury, no matter how slight, should never go unattended. Always obtain first aid or medical attention immediately.

GENERAL PRECAUTIONS

The following general safety precautions are to be observed at all times:

1. All electrical components associated with equipment shall be installed and grounded in accordance with NEC and local regulatory requirements.
2. Special precautionary measures are essential to prevent applying power to equipment at any time maintenance work is in progress.
3. Before working on electrical equipment, use a voltmeter to ensure that system is not energized.
4. When working near electricity, do not use metal rulers, flashlights, metallic pencils, or any other objects having exposed conductive material.
5. When connecting a meter to terminals for measurement, use a voltage range higher than expected voltage to be measured.

CAUTIONS AND WARNINGS

⚠ CAUTION   **A caution identifies a procedure, practice, or statement, which, if not strictly followed, could result in programming errors, impairment of equipment operation, or equipment damage.**

⚠ WARNING   **A warning identifies an operating or maintenance procedure, practice, condition or statement, which, if not strictly followed, could result in personal injury or death.**

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION AND ALL OTHER INVOLVED PARTIES

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

Program Feature or Option	Permitted in UL 864(Y/N)	Possible Settings	Settings Permitted in UL 864
Ionization Detectors reporting as supervisory initiating devices	N	0.5 – 1.5% per foot	Report as alarm initiating devices only
Photoelectric Detectors reporting as supervisory initiating devices	N	0.5 – 3.5% per foot	Report as alarm initiating devices only
Abort switches may be set up to operate in any of the following ways: 1. Reset to initial delay setting. Resume countdown for entire delay period. 2. Count down to 10 seconds and hold. Resume countdown at 10 seconds. 3. Hold at time remaining. Resume countdown at remaining time period. 4. Same as #2, except disable abort function if countdown timer has started. 5. Special New York City operation.	Y (#2 only)	1 – 300 second delay	1 – 60 second delay
Delayed off premises trouble transmissions for AC power loss.	Y	0 – 12 hours	0 – 3 hours
Monitor module acting as a silence switch.	Y	May be used as a stand alone initiating device, or may be used with visible indication that shows when outputs are silenced.	Must have visible indication at monitor module that outputs have been silenced.
Monitor module acting as an acknowledge switch.	Y	May be used as a stand alone initiating device, or may be used with a display that shows when events are being acknowledged.	Must have visible display at monitor module that shows what is being acknowledged.
Network Settings Network Reset Event	N	'Check' to enable remote Reset. No 'Check' to disable remote Reset.	'Check' to enable remote Reset.

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CHAPTER 1
SYSTEM OVERVIEW

1-1   SYSTEM DESCRIPTION

The FENWALNET™ 6000 Control Unit is an intelligent control unit in a compact housing for fire suppression system and/or fire-alarm system applications. The control unit uses a single printed circuit board (PCB) design and a switching power supply. A keypad display membrane (hereinafter referred to as the display) is mounted to the PCB for system status and user operation.

The FENWALNET 6000 has one signaling line circuit (SLC) that can communicate with up to 255 intelligent devices.

See Figure 1-1 for a typical fire suppression system application.
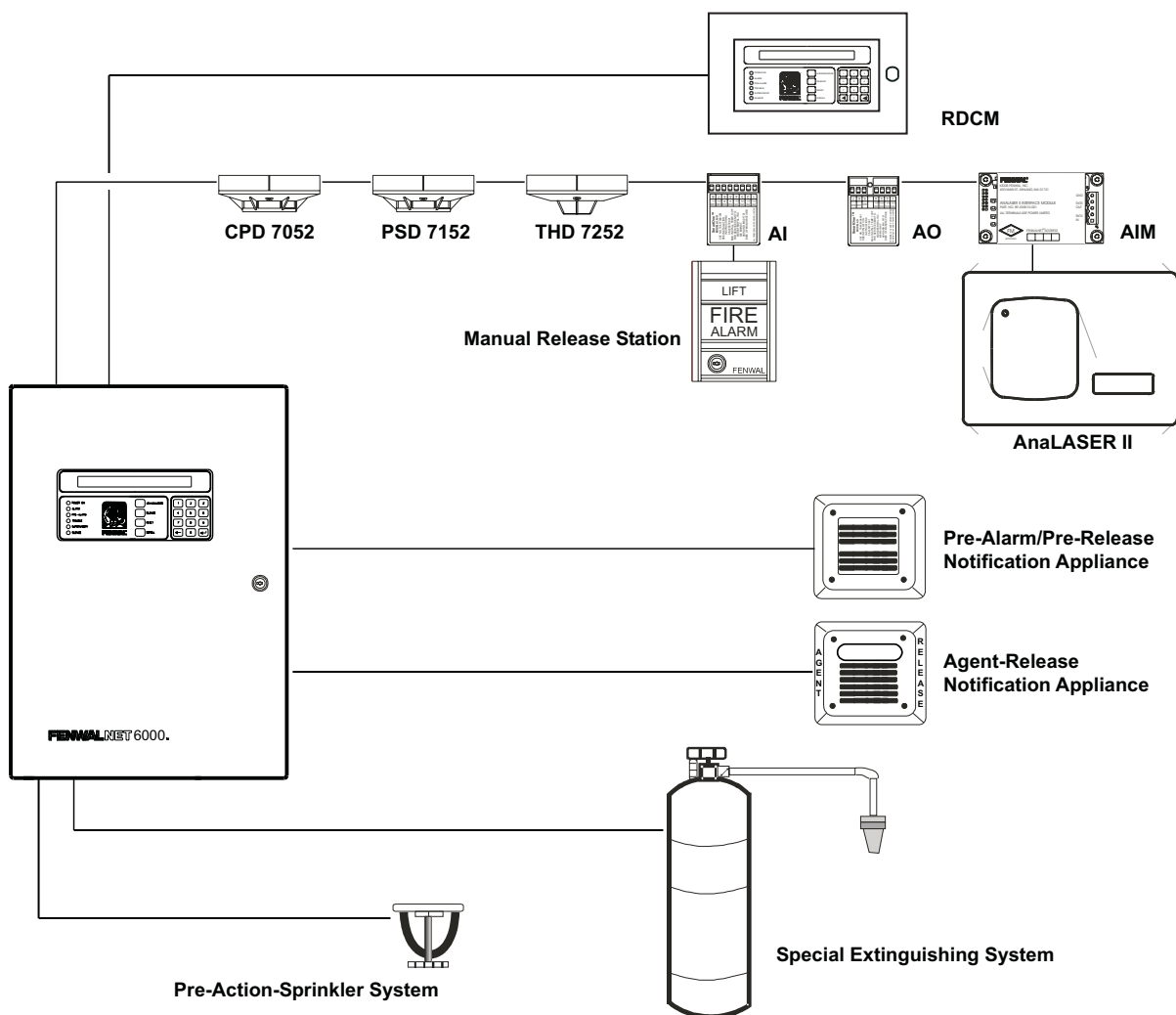
Figure 1-1. Typical FENWALNET 6000 System

The FENWALNET 6000 coordinates the operations of the varied components of a protected-premises fire protection or notification system. These operations include:

- Interpreting initiating signals from automatic detectors or monitor modules. Initiating signals can be any of the following:
  - Automatic detector pre-alarm
  - Automatic detector alarm
  - Manual alarm
  - Manual extinguishing-system release
  - Extinguishing-system abort
  - Sprinkler-system waterflow
  - Sprinkler-system supervisory
  - Point-specific trouble report
- Annunciating the initiating-device report, or any other system event, via the display and associated peripheral annunciation equipment
- Notifying the occupants of an emergency situation
- Activating control equipment to aid with building evacuation or to prepare an area for special-extinguishing-system discharge
- Discharging the special-extinguishing system, if necessary
- Actuating ancillary equipment to call the fire department
- Warning of any trouble condition that could inhibit alarm transmission or annunciation or whose occurrence could prevent the system from carrying out its mission.

1-1.1   Standard Features

The following standard features are incorporated in the control unit's single-printed-circuit-board design:

- One (1) signaling-line circuit (SLC) for Class-A, Style -6 or -7 or Class-B, Style-4 operation
- 255 intelligent-device capacity
- Two (2) notification-appliance circuits (NACs) for Class-A, Style-Z or Class-B, Style-Y operation. Each NAC is capable of creating the following master-coded patterns for audible notification appliances: 60 beats per minute (bpm), 120 bpm, temporal pattern per ANSI S3.41, and steady activation.
- Two (2) releasing circuits for electro-explosive initiators or solenoid-operated control heads and valves
- Two (2) field-configurable outputs for notification appliances or solenoid-operated control heads and valves. Each output operates in Class-A, Style-Z or Class-B, Style-Y manner when configured as a NAC, and is capable of creating the following master-coded patterns for audible notification appliances: 60 beats per minute (bpm), 120 bpm, temporal pattern per ANSI S3.41, and steady activation.
- One (1) unpowered, Form-C relay contact for trouble conditions
- Three (3) programmable, unpowered, Form-C relay contacts
- One (1) RS-485 communications circuit for remote-display units or annunciator-driver modules
- One (1) USB-style communications port for device capability
- Two (2) RS-232 serial-style communications ports
- One (1) network-interface-card connector for integration of up to 32 control units in full peer-to-peer operation
- One (1) operator interface with 80-character liquid-crystal display, status-indicating LEDs and control/numeric keys

A switching power supply is located behind the printed-circuit board and supplies 5.4 A @ 24 Vdc to support the basic control unit and its associated peripheral devices and to charge the standby battery. The switching power supply is user-configurable to operate from either 120 or 240 Vac, 50/60 Hz primary power.

1-2 CONTROL UNIT COMPONENTS

The FENWALNET 6000 System includes:

- Display
- Printed Circuit Board (PCB)
- Cabinet
- Power Supply/Battery Charger Assembly

Optional devices includes:

- Remote Display/Control Module (RDCM)
- ATM Series Driver Module (ATM-L/-R)
- Intelligent Interface Module (IIM)
- Network Interface Card (NIC)
- Fiber-Optic Converter Card (OCC)
- Trim Ring

1-2.1 Display

The display (Figure 1-2) has control switches, system status LEDs, an 80 character (2 x 40) LCD for event annunciation and an integral numeric keypad. The keypad is used for entering the security password and navigating through the user menus.
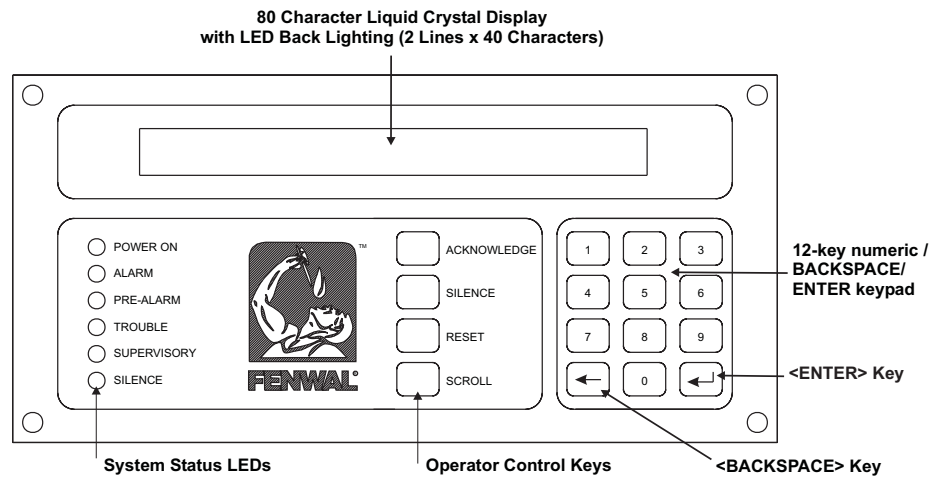
Figure 1-2. FENWALNET 6000 Display

The following paragraphs describe the different parts of the display.

1-2.1.1   LCD AND LEDS

A window for the 80-character (two lines by 40 characters each) LCD and six system-status LEDs. The six system-status LEDs are:

- Power On (green)
- Alarm (red)
- Pre-Alarm (yellow)
- Trouble (yellow)
- Supervisory (yellow)
- Silence (yellow)

1-2.1.2   OPERATOR CONTROL KEYS

The operator control keys are:

- Acknowledge
- Silence
- Reset
- Scroll

1-2.1.3   DIGIT AND FUNCTIONALITY KEYS

The 12-position keypad has the following digit and functionality keys:

- Digits, 0-9
- Backspace
- Enter

Refer to Chapter 3 for system operations using the display.

1-2.2   Printed-Circuit Board (PCB)

The FENWALNET 6000's Printed Circuit Board (PCB) contains the system's central processing unit (CPU) and all of the primary circuits. The PCB is packaged separately and shipped inside the control-unit's enclosure. Figure 1-3 shows the layout of the PCB, including terminals for external components, the operator interface, and connectors.
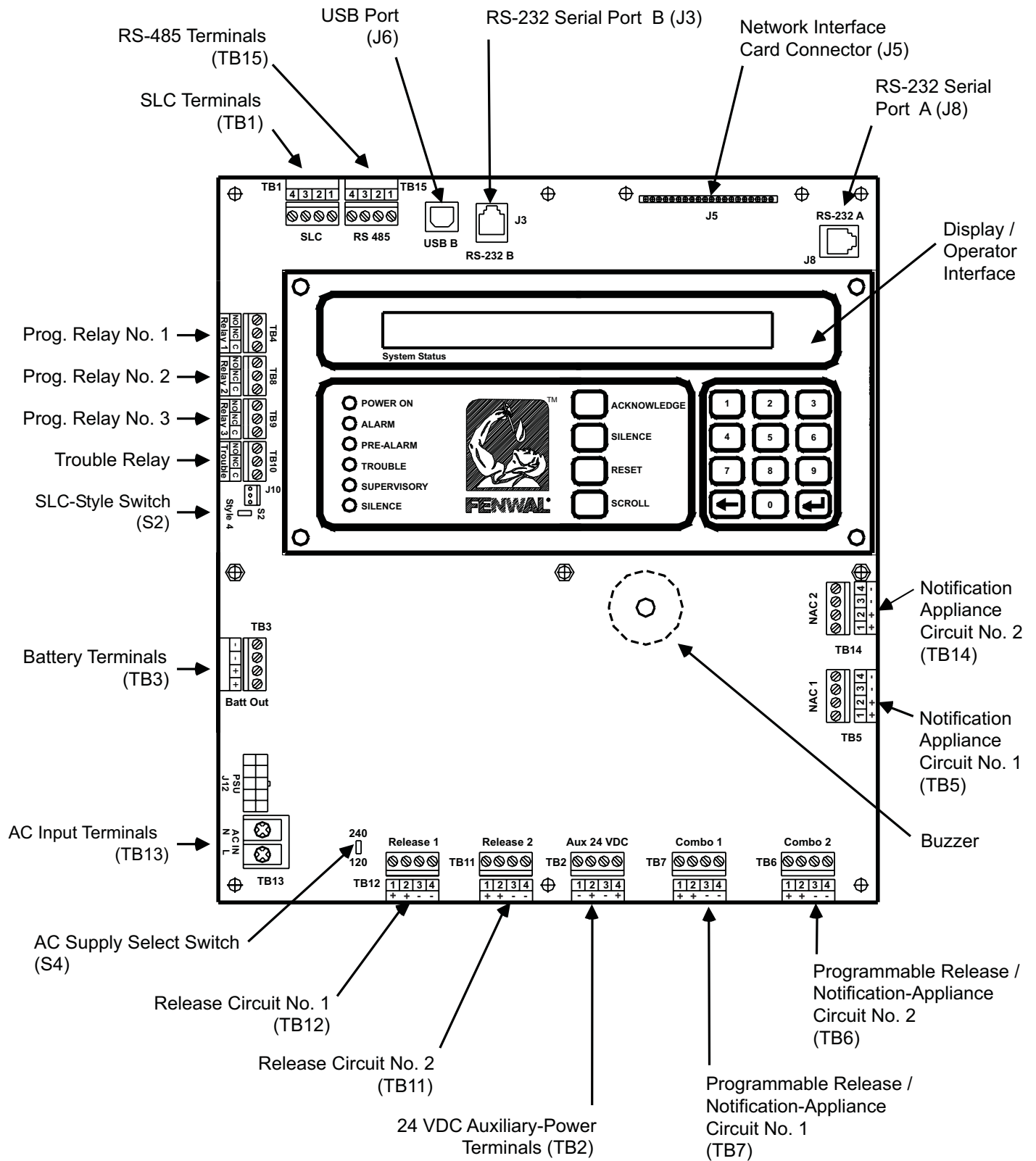
Note: Polarities shown reflect the condition when the circuit is either active or in the alarm state.

Figure 1-3. FENWALNET 6000 Control Unit Printed Circuit Board

1-2.3   **FENWALNET 6000 Cabinet**

The PCB mounts in a compact (19.50" x 14.25" x 5.00") cabinet. The cabinet is key locked, and provides space for two batteries (up to 12 AH).
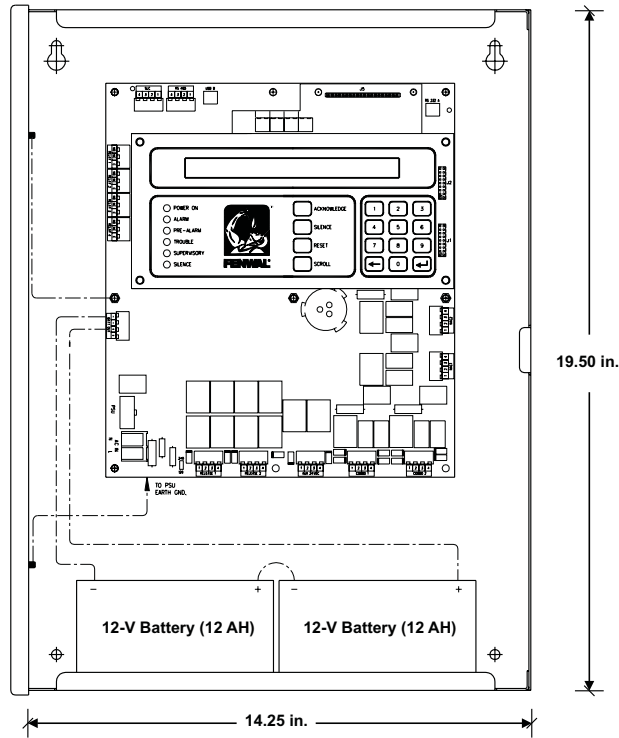
Figure 1-4. FENWALNET 6000 Cabinet

1-2.4   **Power-Supply/Battery-Charger Assembly**

The power-supply/battery-charger assembly is an AC to DC switching power-supply unit that provides a total output of 5.4 A @ 27 Vdc. The power supply unit is user configurable for either 120 Vac or220/ 240 Vac, 50/60 Hz line voltage and its DC output is both filtered and regulated. The
power supply/battery-charger assembly can charge standby batteries of up to 70 AH capacity.

The power-supply/battery-charger assembly is packaged separately and shipped inside the control unit's enclosure. Figure 1-5 shows the placement of the power-supply/battery-charger assembly in the FENWALNET 6000's back box.
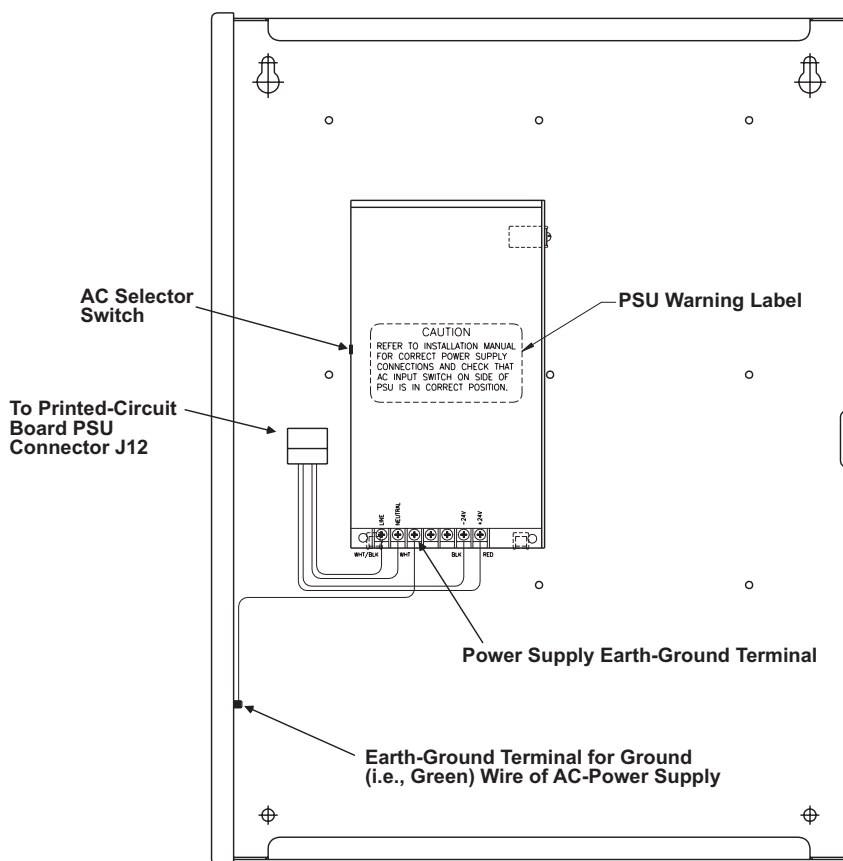
Figure 1-5. Power-Supply Assembly

1-2.4.1   BATTERIES

The cabinet provides space for two 12-AH batteries. Use a separate battery enclosure, P/N 74-600000-014 (Blue) or P/N 74-600000-514 (Red), for 17-AH or larger batteries. Batteries must be ordered separately.

1-3   OPTIONAL DEVICES

Several optional devices and modules can be used with the FENWALNET 6000.

1-3.1   Remote Display/Control Module (RDCM)

The remote display control module permits system events to be displayed, and operator intervention to be accomplished, from more than one location in a facility. Remote display control module, Model RDCM, is a duplicate of the FENWALNET 6000's Display/Control Module and allows full operator intervention and system control.
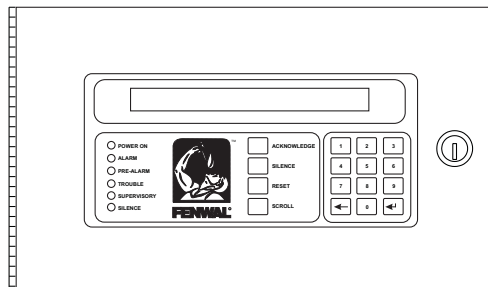
Figure 1-6. Remote Display/Control Module

1-3.2   **ATM Series Driver Modules**

The ATM Series Driver Modules permit third-party graphical annunciators and large numbers of auxiliary relays to be used with the FENWALNET 6000. Two types of driver modules can be used, Models ATM-L and ATM-R.

The FENWALNET 6000 supports up to 16 ATM-L or ATM-R Driver Modules, or any combination of these two modules, together with RDCMs, that does not exceed 31 total addresses.

1-3.2.1   MODEL ATM-L ANNUNICATOR DRIVER MODULE

The Model ATM-L Annunciator Driver Module provides the FENWALNET 6000 with up to 32 programmable, supervised LED outputs for graphical or tabular annunciators, along with 6 system-level LED outputs and 5 system-level input circuits for functional switches.

The system-level LEDs correspond to the following general conditions: Module Power, Pre-Alarm, Alarm, Alarm Silence, Supervisory, and Trouble.

The input circuits for functional switches provide for the following operator intervention: System Reset, Event Acknowledgement, Alarm Silence, Fire Drill, and Lamp Test.

1-3.2.2   MODEL ATM-R RELAY DRIVER MODULE

The Model ATM-R Relay Driver Module (Figure 1-7) can activate up to 32 programmable, supervised relays.
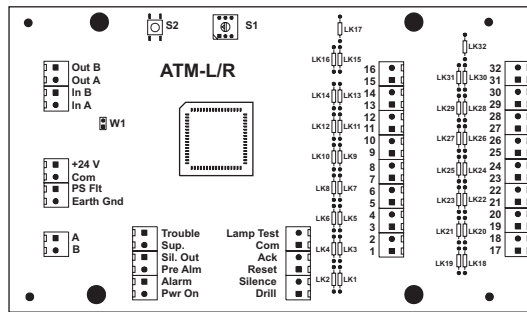
Figure 1-7. Model ATM-R Relay Driver Module

1-3.3 Intelligent Interface Module (IIM)

The Intelligent Interface Module (IIM), shown in Figure 1-8, provides a communications link to a network up to 127 AnaLASER II Detectors for centralized data exchange, alarm reporting, detector configuration, and history-log downloading.

Refer to the AnaLASER II Installation, Operation and Maintenance Manual (Part Number 89-200) for a complete description of the Intelligent Interface Module.
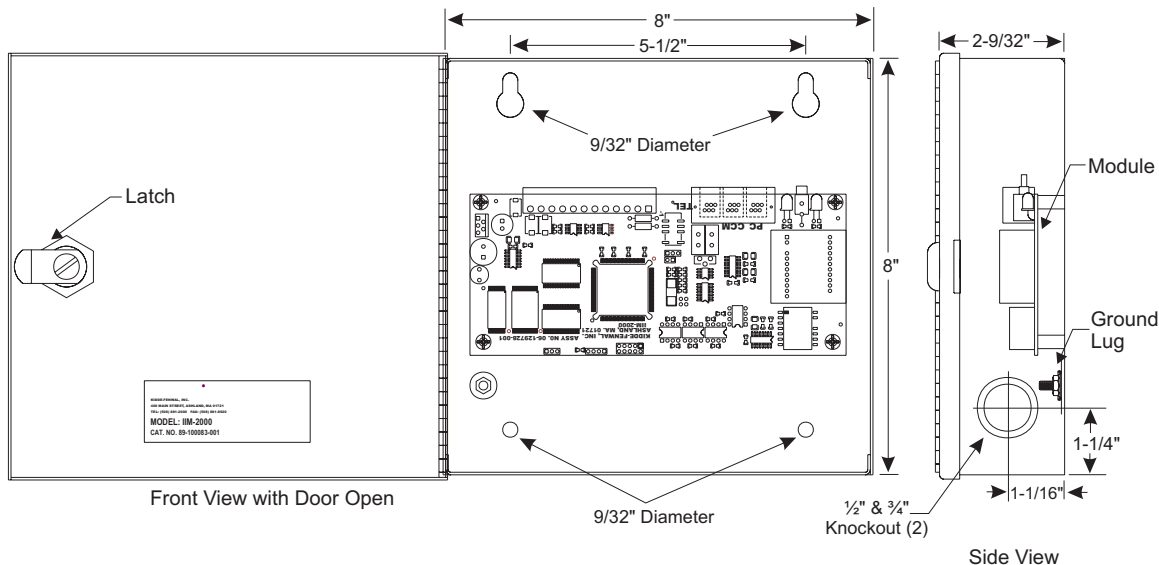
Figure 1-8. Intelligent Interface Module

1-3.4 Network Interface Card (NIC)

The Network Interface Card (NIC), shown in Figure 1-9, allows up to 32 FENWALNET 6000 Control Units to be combined into an integrated, peer-to-peer network for annunciation, event output control, and operator intervention. The NIC regenerates and boosts network communications between FENWALNET 6000 Control Units and electrically isolates the networked control units from each other.
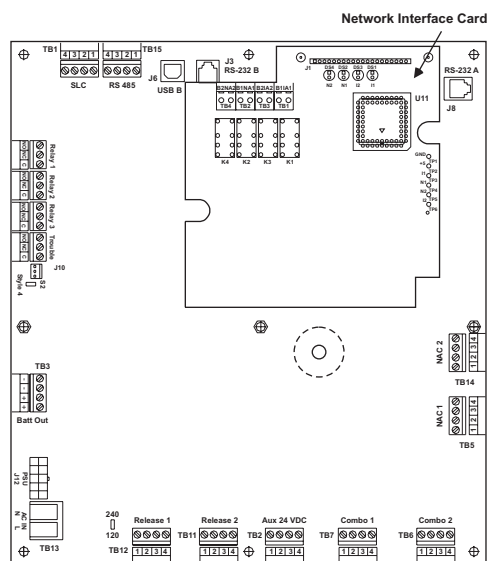
Figure 1-9. Network Interface Card (shown mounted to PCB)

1-3.5 **Fiber Optic Converter Card**

The Fiber Optic Converter Card (OCC), shown in Figure 1-10, converts electrical signals from the Network Interface Card into light pulses for data transmission over 62.5/125 μm duplex fiber optic media. The OCC permits distances of up to 1 mile (5,280 ft.) between networked FENWALNET 6000s.
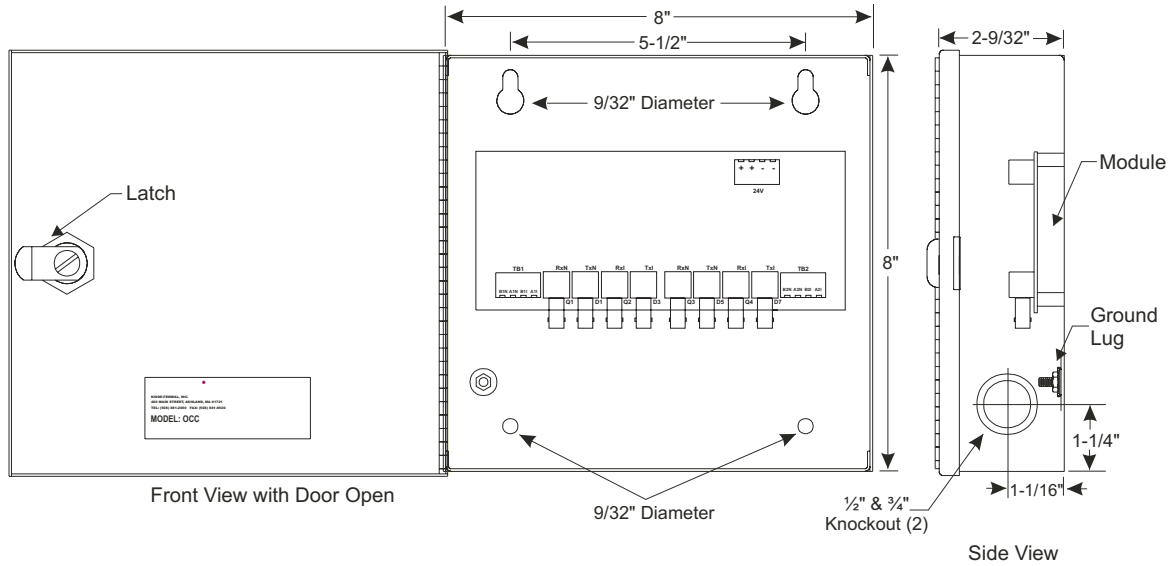
Figure 1-10. Fiber Optic Converter Card

1-3.6 **Trim Ring**

A trim ring (Figure 1-11) is available to semi-flush mount the control unit.
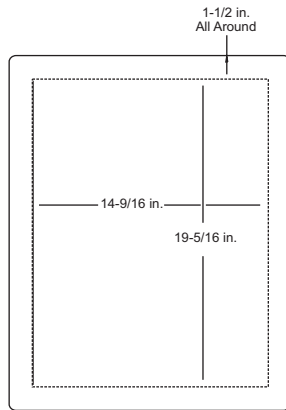
Figure 1-11. Trim Ring

1-4   **SMARTONE® DETECTORS**

The FENWALNET 6000 uses the SmartOne Series of intelligent smoke and heat detectors. These detectors have their own data transceivers, micro-controllers, micro-controller memory, and algorithms that allow the detectors to determine whether a normal, pre-alarm, alarm, or trouble condition exists at their monitoring locations. Each detector continuously transmits its current status to the FENWALNET 6000 through the signaling line circuit, and responds to control unit polling and inquiries by the address that is set in the detector using the Handheld Programmer, P/N 74-200013-001, or using the FENWALNET 6000's display. The pre-alarm and alarm thresholds are programmable for each detector.

A blinking LED on an intelligent detector indicates communications between the detector and the control unit.

1-4.1   **SmartOne Ionization Smoke Detector, Model CPD-7052**

The Model CPD-7052 Ionization Smoke Detector is a low-profile, intelligent smoke detector that uses an ionization sensing chamber. This detector can be utilized for open-area coverage or can be mounted in a duct with air velocities up to 2,000 feet per minute.

Ionization detectors respond best to small smoke particles characteristic of flaming fires, and are used primarily in areas where such fires are anticipated. They are also used in special extinguishing systems as one criterion to release the extinguishing agent. See Figure 1-12.

Note: Older-style Model CPD-7040 Ionization Detectors may be used with the FENWALNET 6000 Control Unit.
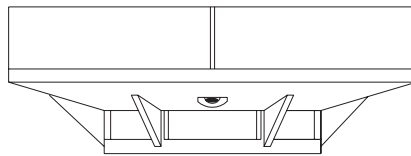
Figure 1-12. SmartOne Smoke Detector

1-4.2   **SmartOne Photoelectric Smoke Detector, Model PSD-7152**

The Model PSD-7152 Photoelectric Smoke Detector is a low-profile, intelligent smoke detector that uses a light-scattering sensing chamber. This detector can be utilized for open-area coverage or can be mounted in a duct with air velocities up to 4,000 feet per minute.

Photoelectric detectors respond best to large smoke particles characteristic of smoldering fires, and are used primarily in areas where such fires are anticipated and in high-velocity underfloor applications. They are also used in special extinguishing systems as one criterion to release the extinguishing agent. See Figure 1-12.

Note: Older-style Model PSD-7140 Photoelectric Detectors may be used with the FENWALNET 6000 Control Unit.

1-4.3   SmartOne Thermal Detector, Model THD-7252

The Model THD-7252 Thermal Detector is a low-profile, intelligent heat detector that uses a thermistor sensing chamber for fast response. This detector can be used for open-area coverage on low (< 10 ft.), flat ceilings with a spacing up to 70 ft. Smaller coverage is required for high ceilings and ceilings with structural obstructions.
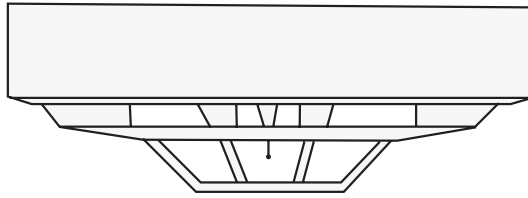
Figure 1-13. THD-7252 Thermal Detector

1-4.4   Detector Bases

Two detector bases are available.

1-4.4.1   FLANGED DETECTOR BASE, MODEL 6SB

The Model 6SB Detector Base is used in applications where the detector's installed appearance is a primary consideration. This base mounts to standard 3-, 3½-, and 4-inch electrical boxes.
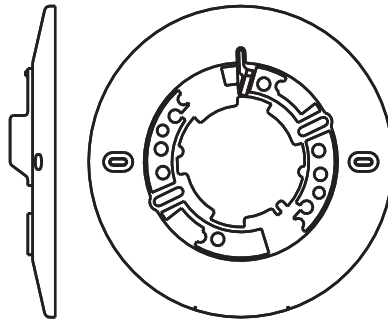
Figure 1-14. 6SB Detector Base (Flanged)

1-4.4.2   FLANGELESS DETECTOR BASE, MODEL 4SB

The Model 4SB Detector Base is used in underfloor applications, or in applications where the detector's installed appearance is not a primary consideration. This base mounts to standard 3- or 3½-inch electrical boxes.
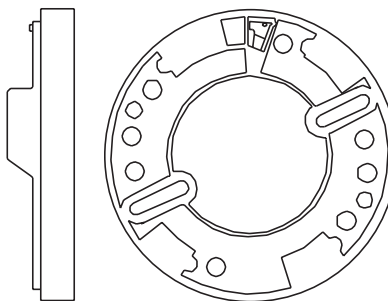
Figure 1-15. 4SB Detector Base (Flangeless)

1-4.5   Detector Base Adapter, Model MA-002

The Model MA-002 Detector Base Adapter allows the low-profile SmartOne detectors to be retrofitted into the older-style SmartOne detector base, P/N 70-400000-001.
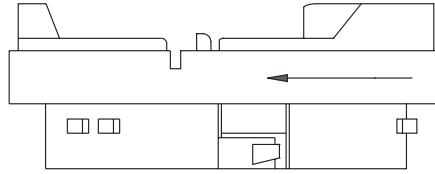
Figure 1-16. MA-002 Detector Base Adapter

1-4.6   Duct Housing, Model DH-2000

The Model DH-2000 Duct Housing is used to enclose an intelligent smoke detector that is monitoring for smoke in an air duct and is located outside of the duct. The duct housing is used with inlet and outlet tubes that allow the air in the duct to be sampled uniformly and transported to the enclosed smoke detector for obscuration-level measurement.

Note: Older-style DH-4000 Duct Housings with Model CPD-7040 Ionization Detectors or Model PSD-7140 Photoelectric Detectors may be used with the FENWALNET 6000 Control Unit.
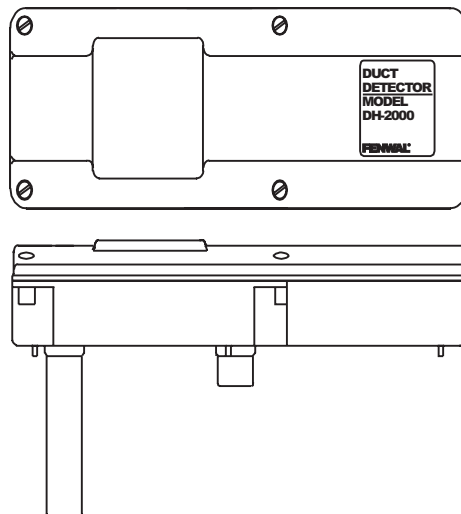
Figure 1-17. DH-2000 Duct-Detector Housing

1-5   SMARTONE ADDRESSABLE MODULES

SmartOne addressable modules are of four general types:

- Monitor Modules. These modules provide a uniquely-identifiable interface between the FENWALNET 6000 and an initiating device.
- Relay Module. This module supplies an unpowered, Form-C contact at a point-specific address.
- Control Modules. These modules provide a uniquely-identifiable interface between the FENWALNET 6000 and conventional notification appliances such as horns and strobes.
- Remote Releasing Modules. These modules provide the ability to remotely activate extinguishing-system control devices (i.e., electro-explosive initiators and solenoid valves).

Each addressable module continuously transmits its current status to the FENWALNET 6000 Control Unit via the signaling line circuit, and responds to control unit polling, inquiries, and activation commands by the address that is set in the module using the Handheld Programmer, P/N 74-200013-001, or using the FENWALNET 6000's display.

1-5.1 **Addressable Monitor Module, Model AI**

The Model AI Addressable Monitor Module is used to monitor conventional, unpowered, contact-type initiating devices through a Class-B, Style-B initiating device circuit. The AI, P/N 70-4070X8-001, is used to monitor normally-open, contact-type initiating devices such as manual stations, waterflow switches, and supervisory switches. The AI, P/N 70-4070X8-002, is used to monitor normally-closed, contact-type initiating devices such as older-style supervisory switches.

The AI Modules are designed to be mounted in the electrical box of the device being monitored.
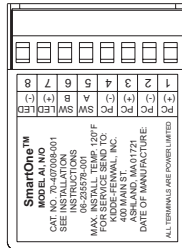
Figure 1-18. AI Monitor Module

Note: Older-style Monitor Modules, P/N 70-40700X-00X, may be used with the FENWALNET 6000 Control Unit.

1-5.2 **AnaLASER II Interface Module, Model AIM**

The Model AIM AnaLASER II Interface Module is a monitor module that enables a High Sensitivity Smoke Detector (HSSD) to report pre-alarm, alarm, and trouble signals to the FENWALNET 6000 Control Unit via its signaling line circuit. The AIM mounts inside the AnaLASER II detector housing.

Note: The AIM address cannot be set via the Handheld Programmer. Use either the LaserNET Software or the FENWALNET 6000's display to set the AIM's address.
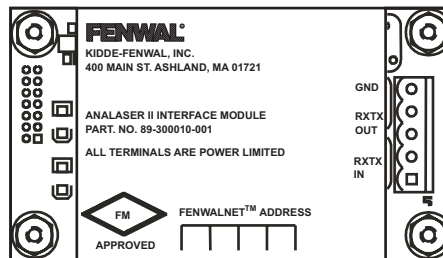
Figure 1-19. AnaLASER II Interface Module

1-5.3 **Addressable AlarmLine Module, Model AAM**

The Model AAM Addressable AlarmLine Module is a monitor module that enables an AlarmLine sensor cable to report pre-alarm and alarm or overheat events, and trouble signals to the FENWALNET 6000 through the signaling line circuit. The AAM, P/N 73-100001-001, is equipped with a metal cover plate for mounting to a 4" square electrical box. P/N 73-100003-001, is a surface-mount, NEMA-4 enclosure for the AAM.
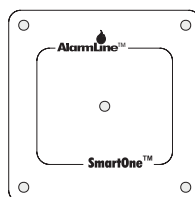
Figure 1-20. Addressable AlarmLine Module

1-5.4   Addressable Relay Module, Model AO

The Model AO Addressable Relay Module provides an unpowered, Form-C contact for remote control applications. The AO Module is designed to be mounted in the electrical box of the device being controlled.
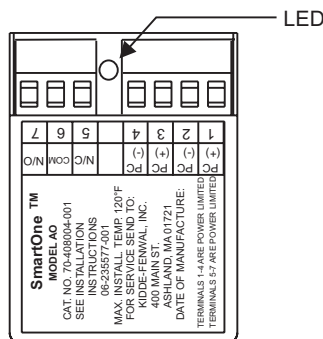
Figure 1-21. AO Relay Module

Note: Older-style Relay Modules, P/N 70-40800X-000, may be used with the FENWALNET 6000 Control Unit.

1-5.5   Addressable Signal Modules, Models ASM and ASM-6SB

The Addressable Signal Modules permit notification appliances to be controlled by commands issued via the FENWALNET 6000's SLC. The ASM is supplied in two versions; Model ASM is supplied with a thermoplastic mounting cover and Model ASM-6SB consists of an ASM connected to a Model 6SB Detector Base. Both versions are designed to mount in a standard 4-11/16" electrical box or a 4" square, extra-deep electrical box.

Note: Set the ASMs to the audio mode and install the end-of-line resistors across the trouble-monitoring and output circuits before you address the ASMs with the Handheld Programmer or the FENWALNET 6000's display. Return the module to the Auxiliary Mode before you use the ASM with the FENWALNET 6000.
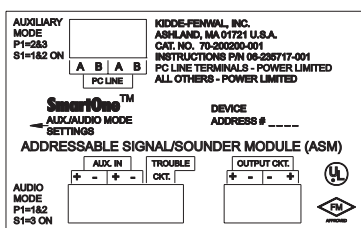
Figure 1-22. ASM Addressable Signal Module

1-5.6	**Remote Releasing Module**

The Remote Releasing Module (RRM) provides the ability to remotely activate extinguishing-system control devices (for example, electro-explosive initiators and solenoid valves). Connection is via the Smart One-compatible Control Panel's Signalling Line Circuit (SLC). The module is field-programmable using the Control Panel keypad or Hand-Held Programmer.

A maximum of 64 RRMs can be activated consecutively via the FENWALNET 6000. Up to 16 RRMs can be configured in a group for simultaneous activation. The FENWALNET 6000 SLC can support up to 4 groups.

The RRM is intended for indoor dry location use, and is available in two models, one for mounting in a standard electrical box and a second model for mounting in suitable UL-864 Listed cabinets.

P/N 70-600000-001: Standard Mounting

- North American 4-11/16 in. electrical box with a double gang plaster ring (Rayco Model 841 or equivalent), 1/2 in. raised
- 4 in. square, 2-1/8 in. deep electrical box

P/N 70-600000-002: In-Cabinet Mounting

- Any suitable UL-864 Listed enclosure with no other electronics.
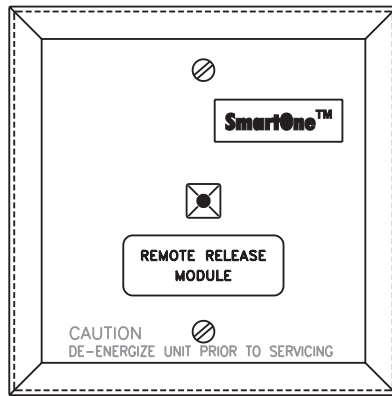
Figure 1-23. Remote Releasing Module

The following power supplies are compatible with the Remote Releasing Module.

Table 1-1. Compatible RRM Power Supplies

Description	Manufacturer	Part Number
Multi-Zone Power Supply Assembly	Fenwal	89-300020-001
24 VDC, 1A Auxiliary Power Output of FN6000 Control Unit, Qty 2 (See Note)	Fenwal	74-600000-001 and 74-600000-501
24Vdc, 3A Power Supply, red enclosure	Altronix	AL400ULXR
24Vdc, 3A Power Supply, grey enclosure	Altronix	AL400ULX
24Vdc, 6A Power Supply, red enclosure	Altronix	AL600ULXR
24Vdc, 6A Power Supply, grey enclosure	Altronix	AL600ULX
24Vdc, 8A Power Supply, red enclosure	Altronix	AL1024ULXR
24Vdc, 8A Power Supply, grey enclosure	Altronix	AL1024ULX

Note: Both auxiliary circuits may be wired together to obtain 2 A at 24 VDC, and the maximum load on the RRM output should not exceed 2 A.

Altronix power supplies may be ordered through an authorized Altronix dealer. For a list of dealers, visit www.altronix.com or call (888)-258-7669.

When installing the RRM, refer to the RRM Installation Sheet (P/N 06-236636-001). Also, see Paragraph 2-11 for the release circuit wiring instructions, and Appendix E for rating guidelines for power-limited and non power-limited wiring. For configuration instructions, refer to the FENWALNET 6000 Configuration Software User's Guide (P/N 06-236529-002).

1-6   ISOLATOR MODULES

Isolator modules are automatic switches that open a segment of the signaling line circuit when a short-circuit fault is detected in that segment. The remainder of the signaling line circuit continues to function normally and is unaffected by the short-circuit fault. The isolator modules will close and resume normal operation when the short-circuit fault is removed.

Isolator module, P/N 74-200012-002, is supplied with a plastic cover plate for mounting to a single-gang electrical box. Isolator module, P/N 74-200012-004, is designed to mount in the electrical box for the Model 6SB detector base.
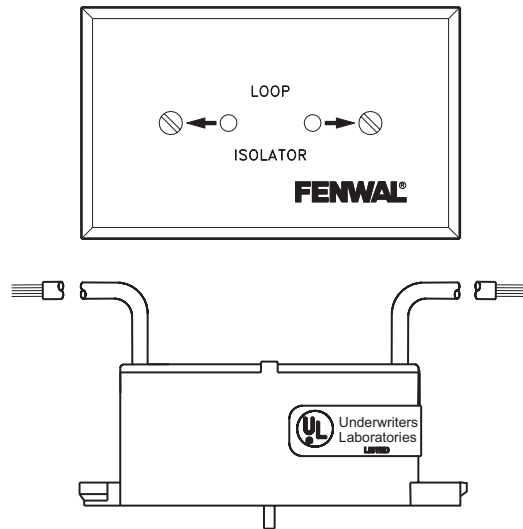
Figure 1-24. Isolator Modules

1-7   SPECIFICATIONS

1-7.1   Electrical Specifications

The electrical specifications for the FENWALNET 6000 are as follows:

1-7.1.1   PRIMARY AC POWER

Primary AC connections are made through AC input-power terminals, TB 13, on the FENWALNET 6000 main PCB. Wire size is #14 AWG minimum with 600 Vac insulation.

- 120 Vac, 50/60 Hz, 3.2 A, or
- 240 Vac, 50/60 Hz, 1.6 A

Primary power is selected by the setting of slide switch on the side of the power supply and by the setting of Switch S4 on the printed-circuit board. Refer to Paragraph 2-5 and Paragraph 2-7.

Note: Physically disconnect the standby battery and remove primary AC power if the power supply is accidentally short-circuited. Resume normal operations by restoring the AC power and physically reconnecting the standby battery after correcting the short-circuit fault.

1-7.1.2   BATTERY AND CHARGING CIRCUIT

Only use sealed, lead-acid batteries. Maximum battery charging circuit capacity is 70 AH. (Batteries larger than 12 AH require P/N 74-600000-014 (Blue) or P/N 74-600000-514 (Red) or other UL Listed battery cabinet.) Refer to Appendix A, Table A-3, for estimated standby times.

- Charging Circuit Voltage: 27.0 Vdc (nominal)
- Charging Circuit Current: 6.0 A (maximum)

1-7.1.3   SIGNALING LINE CIRCUIT

Connections between the control unit, the signaling line circuit, and the associated SmartOne peripheral devices are supervised and power-limited.

- Wiring
  - Class B, Style 4
  - Class A, Style 6
  - Class A, Style 7 (Note: Requires Isolator Modules.)
- Voltage: 24 Vdc nominal
- Maximum Resistance: 40 ohms
- Maximum Capacitance: 0.5 μF
- Maximum Current: 350 mA (short circuit)

1-7.2   Mechanical Specifications

The mechanical specifications for the FENWALNET 6000 are as follows:

- 14¼ in. wide x 19 in. high x 5 in. deep (enclosure only)
- 14¼ in. wide x 19-5/32 in. high x 5-1/16 in. deep

1-7.3   Environmental Specifications

The environmental specifications for the FENWALNET 6000 are as follows:

- Temperature: 32°F - 120°F
- Humidity: 93% at 90°F (non-condensing)

1-7.4	**Notification-Appliance and Releasing Circuits**

All circuits are power-limited except where noted.

NAC Rating	Regulated 24 Vdc
NAC Wiring	Class A, Style Z Class B, Style Y

Note: NACs suitable for synchronized and non-synchronized notification appliances.
Use polarized notification appliances only. The maximum number of synchronized devices is 25.

Max. Wiring Voltage Drop:	2 V (for NACs) Varies (for Releasing Circuits) Refer to Paragraph 2-9 through Paragraph 2-11
Operating Voltage:	24 Vdc (nominal)
Max. NAC Current:	1.5 A
Max. Rel. Ckt. Current:	2.4 A
Max. Current for all external devices:	5.0 A

Note: External devices include notification appliances, releasing solenoids, SLC initiating and control devices, and all devices powered from the 24 Vdc Auxiliary-Power Terminals (TB 2).

NAC End-of-Line Resistor:	10 K, 0.5 W
Releasing Circuits:	Releasing circuits are not power-limited when electro-explosive initiators are used or when In-Line Device is not used for solenoid valves Use In-Line Device, P/N 06-220023-001, to make a single-solenoid or dual-solenoid releasing circuit power-limited

1-7.5	**Relays**

The three programmable relays and the trouble relay can be used for either power-limited or non-power-limited circuits. Contact ratings for these relays are:

- 1.0 A @ 30 Vdc (resistive)
- 0.5 A @ 30 Vdc (inductive)
- 0.5 A @ 120 Vac (inductive).

1-7.6	**Auxiliary Outputs**

The auxiliary outputs are power limited.

- Operating Voltage Range: 18.8 - 27.6 Vdc
- Maximum Current: 1.0A (each circuit)
- Maximum Current for all external devices: 5.0A

Note: External devices include notification appliances, releasing solenoids, SLC initiating and control devices, and all devices powered from the 24 Vdc Auxiliary Power Terminals (TB 2). All applicable compatible devices contained in this manual may be used.

1-7.7	**Electrical Supervision**

- A short circuit from any field-wiring terminal (except AC-Power-Input Terminals and Form-C Relay Terminals) to earth ground will create a "Ground-Fault" trouble condition.

- An open circuit in the wiring for the SLC, the outputs (NACs, release circuits, and combination circuits), the RS-485 communications circuit, and the battery-charging circuit will create an "Open" trouble condition.

- A short circuit between conductors in the wiring for the SLC, the outputs (NACs, release circuits, and combination circuits), the RS-485 communications circuit, and the battery-charging circuit will create a "Short" trouble condition.

   Exception: Release circuits and combination circuits wired as non-power-limited.

- Impedance values for open-circuit and short-circuit conditions are:
   - open circuit: infinite ohms
   - short circuit: zero (0) ohms

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CHAPTER 2
INSTALLATION

This chapter is intended for system installers. It provides information necessary to successfully prepare for and install the FENWALNET™ 6000 Fire Alarm and Suppression System. The system design is based on the requirements of Fenwal Protection Systems, Underwriters Laboratories (UL), the Factory Mutual System (FM), and codes and standards of the National Fire Protection Association. In all cases, the installation must meet the requirements of the local Authority Having Jurisdiction (AHJ).

Refer also to the Installer's Wiring Diagram, P/N 06-236405-002, that is packaged with the FENWALNET 6000 Control Unit.

2-1   PREPARING FOR INSTALLATION

Complete the following preparation procedures before installing of the FENWALNET 6000 system.

2-1.1   Control-Unit Components

Check the contents of the FENWALNET 6000 shipping carton to ensure that you have received the following components:

- Enclosure w/Door, P/N 06-220019-001(Blue) or P/N 06-220019-004 (Red)
- Power Supply, P/N 06-118394-001
- Circuit-Board Assembly with Display, P/N 74-600000-004
- Hardware Kit, P/N 06-220024-001
- Operating Instructions, P/N 06-236405-001
- Installation/Configuration Kit, P/N 74-600000-008, containing
    - User Disk, P/N 06-220075-001, that includes
        - Installation, Operation, and Maintenance Manual
        - Configuration Program User's Guide
        - Application Drawing
    - Installer's Wiring Diagram, P/N 06-236405-002

2-1.2   Materials/Tools Required

The materials listed below are not supplied with the system, but are required for installation.

- The FCS 6000 Configuration Software is provided on a separate CD, P/N 06-330109-001.
- No. 10 or 1/4" mounting bolts to mount the control unit cabinet
- Electrical conduit for AC input power and field circuits
- Electrical junction boxes (as required)
- Wire-nuts and crimp-on terminals (as required)
- Wrist ground strap

2-1.3   Determining Installation Location

Choose a location in an area that allows easy access for operation and maintenance of the system. If a location has been designated by an architect and/or fire-prevention authority, plan your installation according to that location. It is important that the location of the system be clean, dry, vibration-free, and maintained within the operating limits.

2-2   **CODES AND STANDARDS**

Use the following codes, standards and practices when installing the FENWALNET 6000 System:

- NFPA 70, National Electric Code, Articles
  - 250 Grounding
  - 300 Wiring Methods
  - 725 Remote Control, Signaling, and Power-Limited Circuits
  - 760 Fire Protective Signaling Systems
  - 800 Communications Circuits
- NFPA 72, National Fire Alarm Code
- NFPA 12, Standard on Carbon Dioxide Extinguishing Systems
- NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection
- NFPA 16, Standard for the Installation of Foam Water Sprinkler and Foam Water Spray Systems
- NFPA 17, Standard for Dry Chemical Extinguishing Systems
- NFPA 17A, Standard for Wet Chemical Extinguishing Systems
- NFPA 2001, Standard for Clean Agent Fire Extinguishing Systems
- Local building codes
- Insurance requirements
- Requirements of local AHJ

2-3   INSTALLATION OVERVIEW

The following paragraphs provide an overview of installation steps once the system is unpacked and site preparation is completed.

2-3.1   Step One: Installing the Control Unit Back Box and Preparing Electrical Wiring

The control unit back box can be either surface or semi-flush mounted. For full mounting and installation procedures, see Paragraph 2-4.

In addition to back box mounting, the site must be prepared with appropriate electrical wiring before system installation can begin.

- **Removing knockouts**.

  Knockouts must be removed from the control-unit back box to enable the connection between the conduit and the back box. Consult approved electrical installation drawings for connection information.

- **Installing conduit**.

  Route properly-sized conduit from the control-unit back box to locations designated on the approved layout drawings for peripheral devices. Refer to the locations of the automatic and manual initiating devices, notification appliances, remote display/control modules, control heads for the extinguishing system, and addressable relay modules on the system drawings.

- **Electrical Boxes**.

  Install an electrical box at each designated location for peripheral devices such as automatic and manual initiating devices, notification appliances, control heads for the extinguishing system, and addressable relay modules. Refer to the installation instructions included with the peripheral devices for the proper types of electrical boxes.

- **Electrical wiring**

  Route the properly-sized and required wiring through conduit from the control unit to the field devices. Observe the wiring manufacturer's recommended minimum bending radii for all internal-control-unit and external wiring. Use appropriate equipment to check and record the wiring for insulation resistance to earth ground. Measure and record the wiring resistance for all external circuits. Also measure and the record the SLC wiring capacitance. Refer to the approved electrical installation drawings and to the recommendations in this manual.

- **Wiring Connections and SmartOne® Devices**.

  Mount and make wiring connections to the peripheral devices as shown in their installation instructions. Be sure that all SLC-based SmartOne devices have been electronically addressed prior to installation.

2-3.2   Step Two: Installing the FENWALNET 6000 Power Supply and Main PCB

- Install the FENWALNET 6000 power supply and main printed-circuit board.
- Dress and connect field wiring to the FENWALNET 6000 Control Unit's main printed-circuit board as shown on the approved system drawings and as illustrated in this manual.

2-3.3   Step Three: Connecting AC Power and Standby Battery

Apply AC power, then connect the standby battery.

2-3.4   Step Four: Auto-Configuring the System

Auto-configure the system as directed in Paragraph 3-2.5.2.4.28, or run the AutoLearn Procedure as shown in Paragraph 3-2.5.2.4.26. Print out the list of SLC-based initiating devices and addressable control and/or relay modules detected by these procedures and compare this list to the approved set of SLC devices. Correct any inconsistencies and/or trouble messages.

2-3.5   **Step Five: Uploading the Application Program and Performing the Pre-Test**

Upload the site-specific application program, and pre-test the system in accordance with the approved sequence of operation. Be sure that extinguishing-system actuation devices are not connected to the extinguishing system during pre-testing.

2-3.6   **Step Six: Performing Final System Test and Commissioning the System**

Final test and commission the system in the presence of the owner and the authority having jurisdiction. Be sure that extinguishing-system actuation devices are not connected to the extinguishing system during final testing.

2-3.7   **Step Seven: Installing the Actuation Devices and Extinguishing System**

Connect the actuation devices to the extinguishing system per the procedures in the applicable agent-storage-container installation manual.

2-3.8   **Step Eight: Performing Final Installation Procedures**

Install the front door when testing is completed, all appropriate occupancy certificates have been secured, the end user has been thoroughly trained in the system operation, and the system is armed and ready for service. Lock the front door and give the key to the end user's designated personnel.

2-4   MOUNTING THE CABINET/ENCLOSURE

The control unit can be surface or semi-flush mounted. Figure 2-1 shows the control-unit-enclosure dimensions. All dimensions are in inches.

Top View

1/2" (0.875 Dia) 3/4" (1.125 Dia)
Combination Knockouts
(4) Located on Top
(3) Located In-Line on Two Sides

0.500
Cover Outside

Side View

0.281 Dia. Holes
Typ (2) Places

1/2" (0.875 Dia) 3/4" (1.125 Dia)
Combination Knockout

Bottom View
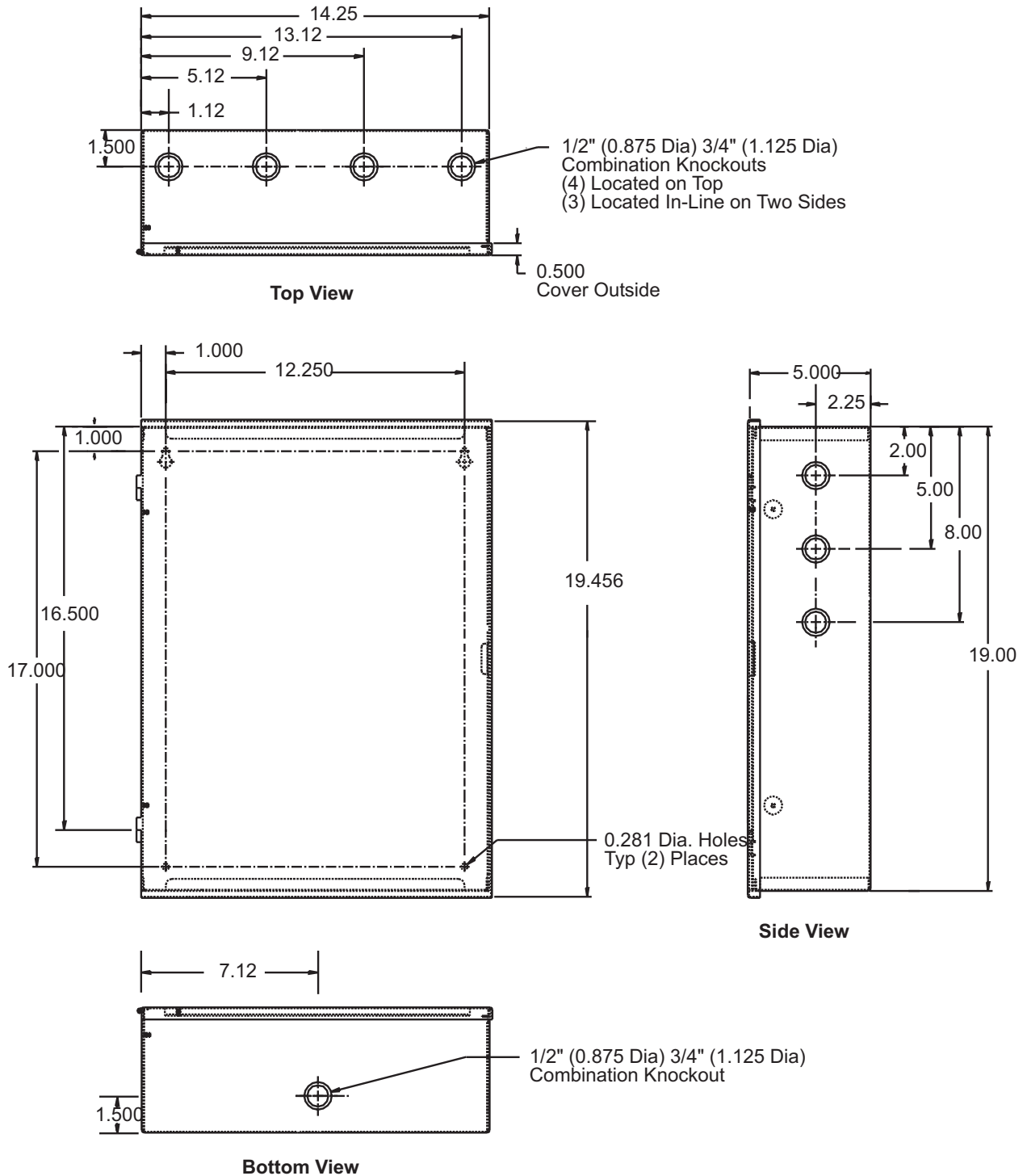
Note: All dimensions are in inches.

Figure 2-1. Enclosure Dimensions

2-4.1   Preparing the Enclosure for Wall Mounting

For either mounting configuration:

1. Remove the keys from the envelope taped to the top of the enclosure and open the door to the control unit.

2. Disconnect the ground wire that connects the enclosure door to the back box.

3. Remove the control unit front door first by unlocking it and rotating the door approximately 90° from its closed position.

4. Lift up the door to allow the door's hinge pins to clear the mating-hinge sockets on the back box.

5. Remove the separately packaged power supply, printed-circuit board, and plastic bag (i.e., ship kit) containing installation hardware, and set them and the front door aside in a safe location to prevent damage.

6. Locate the top of the cabinet approximately 66" above the floor so that the control unit's display is positioned at a convenient height for viewing system events and for entering operator commands.

2-4.2   Surface Mounting

To surface mount the control unit:

1. Mark and pre-drill holes for four mounting bolts using the dimensions shown in Figure 2-2. The installer must supply the mounting bolts (up to size 1/4-20). There are two holes and two keyhole slots in the enclosure's rear panel that serve as a template for surface mounting.
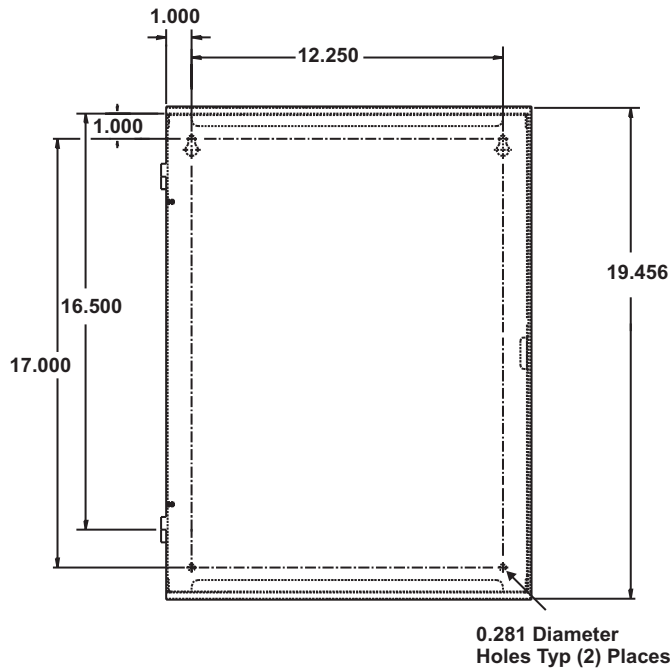
Figure 2-2. Back Box Mounting Dimensions

2. Insert the upper two fasteners in the wall. Leave approximately 1/4" protruding for both screws.

3. Slip upper keyholes of the back box over the two protruding screws. Tighten the screws.

4. Insert and tighten the two lower screws.

5. Attach wiring conduit to the enclosure via the enclosure knockouts, and pull the required number of wires through the conduit to the enclosure. Leave approximately 2 to 3 feet of wire length in the enclosure for future internal connections.

2-4.3   Semi-Flush Mounting

To semi-flush mount the control unit:

1. Cut and plumb an opening approximately 14.25" wide by 19" high in the wall on which the control unit will be semi-flush mounted.
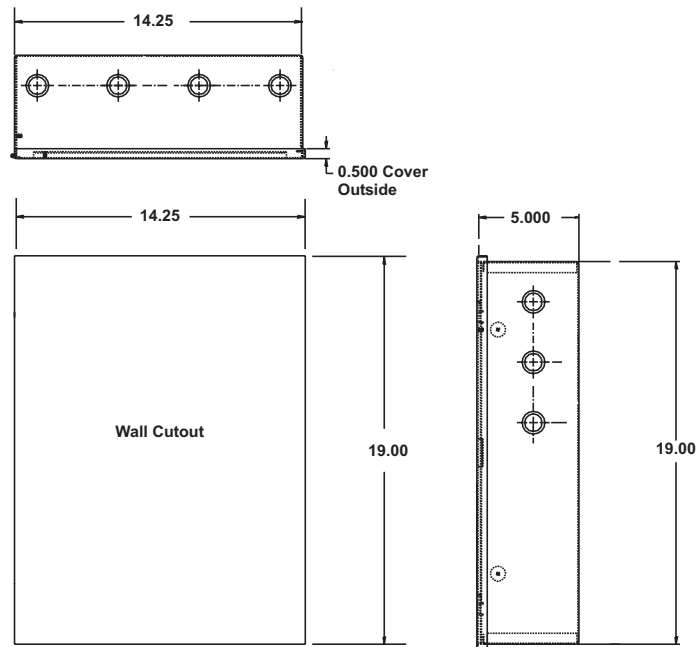
Figure 2-3. Semi-Flush Mounting Dimensions

2. Position and plumb the back box in the opening made in Step 1. Ensure that the front edge of the back box is at least 3/4 inches from the surface of the wall. Refer to Figure 2-3. Secure the back box to the wall with appropriate mounting bolts (up to size 1/4-20).

3. Attach wiring conduit to the enclosure through the enclosure knockouts, and pull the required number of wires through the conduit to the enclosure. Leave approximately 2 to 3 feet of wire length in the enclosure for future internal connections.

2-5   INSTALLING THE POWER SUPPLY

⚠ CAUTION   **Use a ground strap to prevent static discharge that could damage the power supply.**

Note: Make sure the control unit location is dry and that the enclosure is free of construction dust and metal shavings prior to installing the power supply.

1. Remove the power supply unit from its shipping carton.

2. Connect the wire harness that is packaged in the installation kit. Next connect the fork end of the green ground wire that is also part of the installation kit to the earth-ground terminal of the power supply. Refer to Figure 2-4 for wire harness and earth-ground connections.

Wiring-Harness Connections

CAUTION
REFER TO INSTALLATION MANUAL
FOR CORRECT POWER SUPPLY
CONNECTIONS AND CHECK THAT
AC INPUT SWITCH ON SIDE OF
PSU IS IN CORRECT POSITION.

LINE NEUTRAL GND - 24 V + 24 V

WHT/BLK
WHT
BLK
RED
GRN

Ground Wire from Installation Kit

Connect to lower earth-ground stud on left-hand side of enclosure.

Or

Wiring-Harness Connections

CAUTION
REFER TO INSTALLATION MANUAL
FOR CORRECT POWER SUPPLY
CONNECTIONS AND CHECK THAT
AC INPUT SWITCH ON SIDE OF
PSU IS IN CORRECT POSITION.

LINE NEUTRAL GND - V - V + V + V

WHT/BLK
WHT
BLK
RED
GRN

Ground Wire from Installation Kit

Connect to lower earth-ground stud on left-hand side of enclosure.

POWER SUPPLY

Fastening Tab for Screw

Retention Tabs Typ (2)

Threaded hole for 3 x 10 mm mounting screw.

ATTENTION !

The Control Unit is supplied with one of two equivalent power supplies. Compare the terminal block wiring legend on the provided power supply with the diagrams at left and connect the wiring harness as shown in the applicable diagram.

Figure 2-4. Power Supply Unit

3. Locate the 3 x 10 mm mounting screw in the installation kit and thread it part way into the lower of the two threaded holes of the power supply unit. See Figure 2-4.

4. Ensure that the power supply unit AC-input-voltage selector switch is set to the proper position for either 120 Vac or 220/240 Vac. See Figure 2-5.
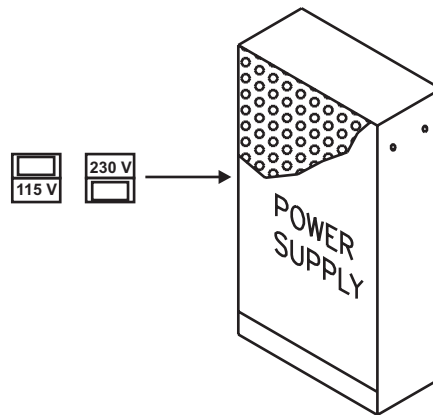
Figure 2-5. Primary Power Selection Switch

5. Locate the two power-supply-unit retention tabs and the fastening tab in the enclosure's back panel.

6. Position the power-supply unit with the wire harness down, and then slide it onto the retention tabs. The 3 x 10 mm mounting screw should slide into the slot of the fastening tab at the same time.

7. Tighten the screw onto the fastening tab.

8. Connect the ring end of the power supply's green ground wire to the lower earth-ground stud on the left side of the enclosure.

2-6   INSTALLING THE PRINTED CIRCUIT BOARD (PCB)

CAUTION   **Use a ground strap to prevent static discharge that could damage sensitive components on the main PCB.**

Refer to Figure 2-6 before you unpack and install the PCB within the enclosure.

Note: Make sure the control unit location is dry and that the enclosure is free of construction dust and metal shavings prior to installing the PCB.
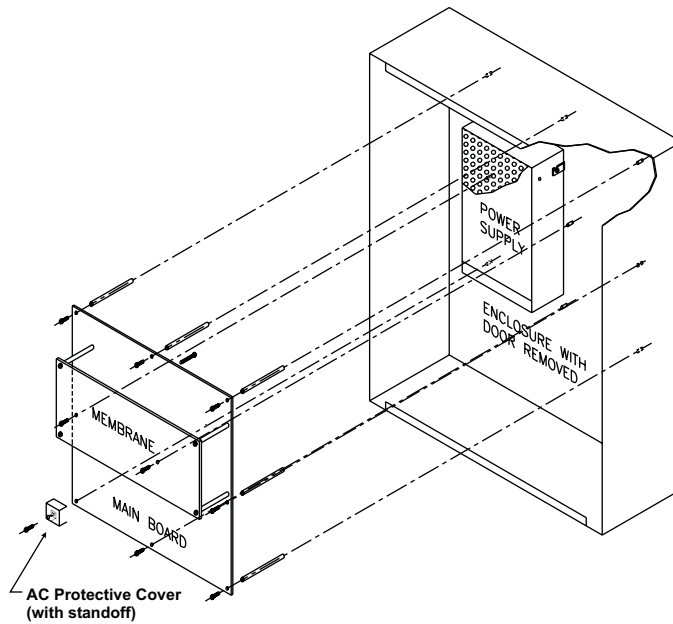
Figure 2-6. PCB Installation

1. Locate the nine (9) 2-1/4 in. aluminum standoffs in the installation kit and screw one securely into each of the nine (9) threaded PEMs in the back surface of the enclosure.

2. Slip on a wrist ground strap and clip the ground strap to the earth ground in the enclosure. Do not remove the PCB from its shipping carton unless you have established a common earth-ground potential among yourself, the enclosure, and the PCB's shipping carton.

3. Remove the PCB from its shipping carton and position each of its nine (9) mounting holes over one of the aluminum standoffs so that the AC-input terminal block is in the lower-left corner.

4. Secure the PCB to the standoffs using the eight (8) short washer-and-screw assemblies supplied in the installation kit.

Note: Do not tighten the screws at this time.

The PCB mounting hole in the lower left corner utilizes a longer nylon screw that also holds the AC Safety Cover in place. See Section 2-7.1.

5. Refer to Figure 2-7 and place the free end of the longer of the two factory-installed Earth-Ground wires under the screw assembly of the main printed-circuit board as shown before tightening. Tighten the remaining eight screws. Be careful not to over-tighten.

6. Plug the harness from the power-supply unit into Connector J12 in the lower-left-hand corner of the PCB.
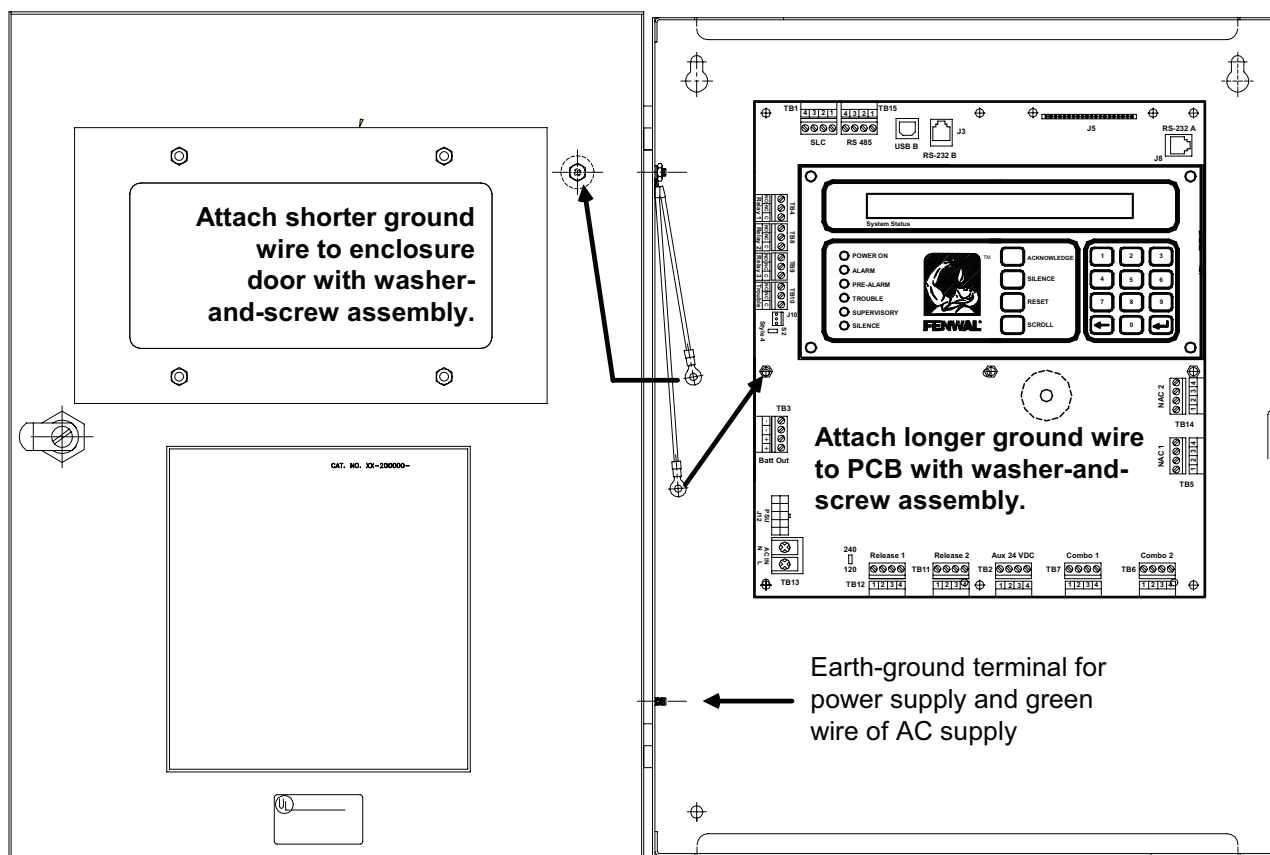
Figure 2-7. PCB-to-Cabinet Grounding Diagram

2-7   AC AND DC POWER CONNECTIONS

The control unit uses commercially- or end-user-provided AC power as the primary power source, together with a 24 Vdc standby battery (when required by local codes and/or Authority Having Jurisdiction [AHJ] requirements).

⚡ WARNING

Two different sources of power can be connected to the control unit. Disconnect both sources of power and critical components such as control heads for special extinguishing systems and addressable pilot relays controlling facility-power shutoff before servicing the control unit. The control unit and associated equipment may be damaged by connecting wiring while the control unit is energized.

⚡ WARNING

Use caution when connecting power. High-voltage and AC-powered circuits are present in the control unit. Be sure to adequately ground the control unit to reduce the risk of electrical shock.

2-7.1   AC Power Connection

The primary AC power for the FENWALNET 6000 Control Unit is 120 Vac, 50/60 Hz, 3.2 A or 220/240 Vac, 50/60Hz, 1.6A. The default power configuration is 120 Vac and will require resetting for 220/240 Vac operation. Configuration of primary AC power requires that the power-selection switch on the side of the power supply be set correctly before the power supply

is installed in the enclosure, and that Switch S4 in the lower-left corner of the printed-circuit board be set to agree with the primary AC power being used. Refer to Paragraph 2-5.

Over-current protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or the local electrical code. Use a grounded power cord of #14 AWG or larger wire with 600 Vac rating to make the AC power connection to the control unit. Follow the procedure below to make AC power connections.

1. Disconnect all power sources from the control unit and the AC power cord

2. Run AC-input wiring to the left side of the enclosure, and preferably, use the lowest of the three knock-outs on the left-hand side as the entry point for primary power.

3. Connect the primary power earth-ground (green) wire to the lower Earth Ground stud on the left inside of the enclosure.

4. Connect the neutral (white) wire to the Main Circuit Board Terminal Block TB13 labeled 'N' (Neutral).

5. Connect the hot (black) wire to the Main Circuit Board Terminal Block TB13 labeled 'L' (Line).

6. Remove the AC Safety Cover, 3/4" nylon spacer, and 1-1/8" nylon screw from the installation kit. Fold the cover along its scored lines and install it over the AC power input terminals, as shown in Figure 2-8.
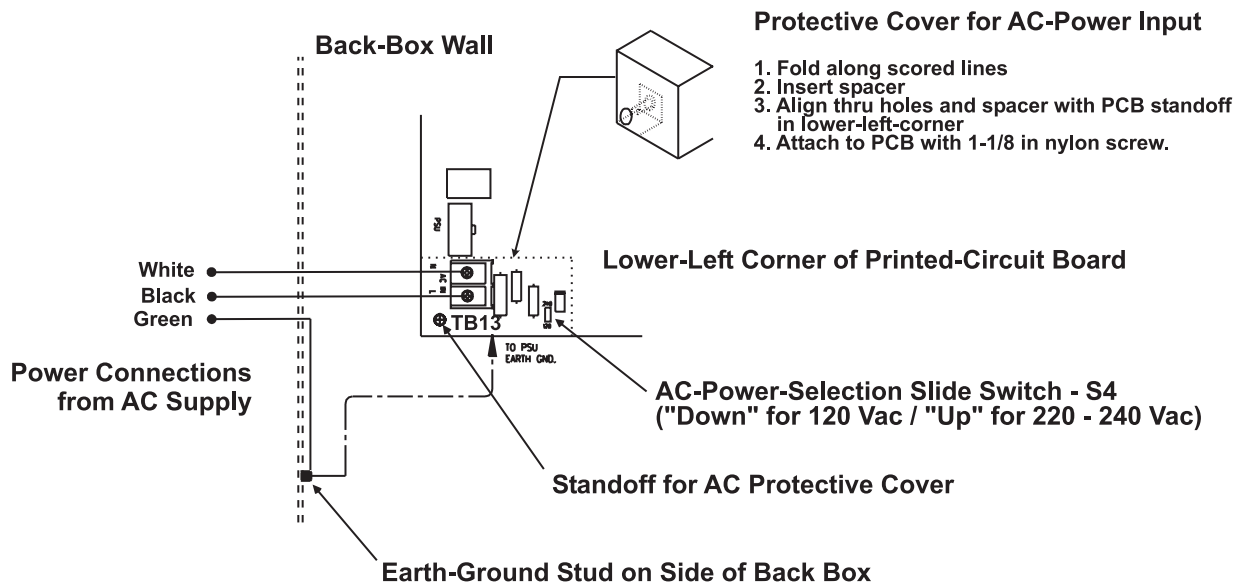
Figure 2-8. Primary-Power Connections

7. Set AC-Power-Selection Switch S4 on the main printed-circuit board to correspond to the AC input power (120 Vac, 50/60 Hz, or 220/240 Vac, 50/60 Hz) being used.

2-7.2   DC Power Connection

⚡ **WARNING**

Batteries contain sulfuric acid that can cause severe burns to the skin and eyes and can damage clothing. Immediately flush areas of the skin or eyes that have been contacted with sulfuric acid for 15 minutes with water and seek medical attention promptly.

Note: Observe polarity when connecting the battery to the control unit.

To connect the standby battery to the control unit:

1. Calculate the size of the battery required for the application. Refer to Appendix A for the proper procedure.

2. Connect two 12-volt, series-wired batteries of the required ampere-hour (AH) capacity to printed-circuit board Terminals TB3 using the battery cable. See Figure 2-9.
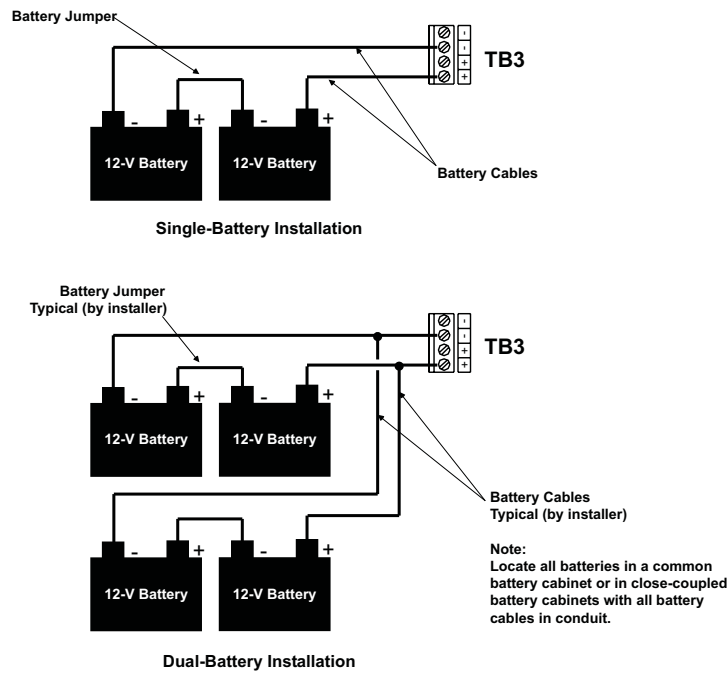
Figure 2-9. Standby Battery Connections

2-8   SIGNALING LINE CIRCUIT

The signaling line circuit (SLC) is the communications path between the FENWALNET 6000 Control Unit and the SmartOne field devices. The SLC can be wired to meet NFPA 72 Class-A, Style-6 and -7 or Class-B, Style-4 requirements.

The SLC can accommodate any combination of up to 255 devices, which include SmartOne automatic initiating devices, monitor modules, relay modules, and control modules.

2-8.1   SLC Wiring Requirements

All SLC wiring must be twisted, unshielded, low-capacitance, fire-alarm-system wire. Refer to Appendix B for recommended wire types.

2-8.1.1   CLASS-B, STYLE-4 WIRING REQUIREMENTS

The total wiring resistance from the control unit to the end of each individual branch line cannot exceed 40 ohms. Use the following procedure to determine the wiring resistance.

1. Short the ends of each branch line one at a time. Measure the resistance from the terminating points at the control unit to the end of the branch line. See Figure 2-10.

2. Remove the shorting jumper after each branch-line resistance measurement.
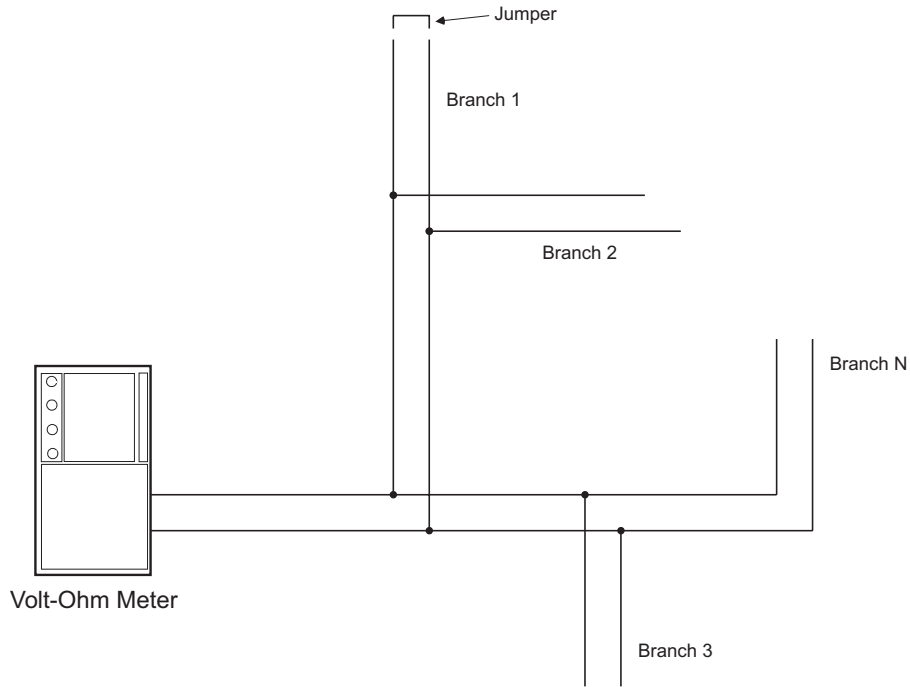
Figure 2-10. Measuring Class-B SLC Wiring Resistance

The total wiring capacitance cannot exceed 0.5 μF. Use the following procedure to determine the wiring capacitance.

1. Ensure that the ends of each branch line are open circuited.

2. Measure the capacitance from the terminating points at the control unit using a capacitance meter. See Figure 2-11.
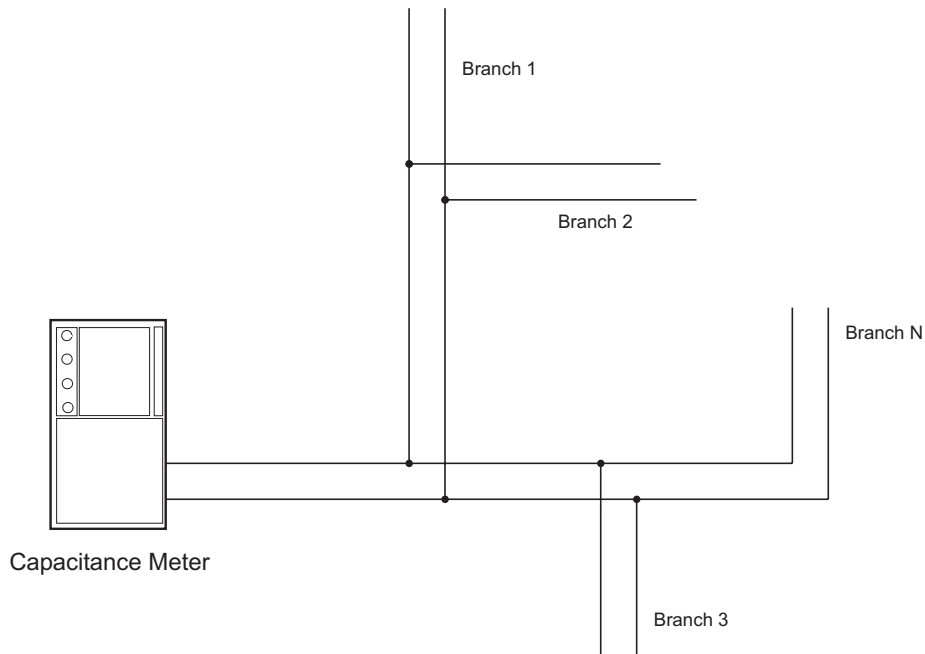
Figure 2-11. Measuring Class-B SLC Wiring Capacitance

Figure 2-12 shows typical wiring for a Class-B, Style-4 signaling line circuit. Make sure that the SLC-Selector Switch S2 is moved to the left into the Style-4 position. Refer to Figure 1-3.

Figure 2-12. Class-B, Style-4 Signaling Line Circuit

Note: Isolator modules are not required for a Class-B, Style-4 signaling line circuit. A maximum of 30 SmartOne devices can be installed between a pair of isolator modules.

Installation

AO Relay Module

To Next Device

AAM AlarmLine Module

To Next Device

AI Monitor Module

ASM Signal Module

To Next Device

AIM Monitor Module

Detector Base

Detector Base

Isolator Module (Single-Gang Mount)

OUT IN
RET | 24 V | RET | 24 V

Caution:

Do not use looped wire under terminals of detector bases. Break SLC wire run to provide supervision of connections.

Isolator Module (Single-Gang Mount)

OUT IN
RET | 24 V | RET | 24 V

Isolator Module (Single-Gang Mount)

OUT IN
RET | 24 V | RET | 24 V

Branch 2

Branch 1

Branch N

SLC Terminals on Printed-Circuit Board (TB1)

4 | 3 | 2 | 1

Notes:

1. Move SLC-Style Switch S2 to the left into the Style-4 position.
2. Each isolator module creates a 0.12-V voltage drop.

2-8.1.2   CLASS-A, STYLE-6 WIRING REQUIREMENTS

Note: The following resistance reading MUST be taken PRIOR to the installation of any peripheral device.

The total wiring resistance from the start of the "Out" leg to the end of the "Return" leg cannot exceed 40 ohms. Use the following procedure to determine the wiring resistance.

1. Short the "Out" and "Return" legs as shown in Figure 2-13. Measure the resistance using the other two terminating points at the control unit

2. Remove the shorting jumper after the resistance measurement.

Jumper

Return Leg

Out Leg
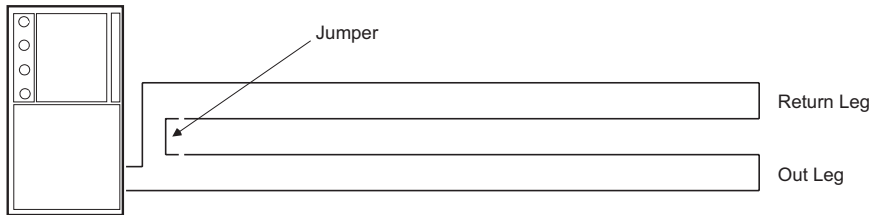
Volt-Ohm Meter

Figure 2-13. Measuring Class-A SLC Wiring Resistance

The total wiring capacitance cannot exceed 0.5 µF. Use the following procedure to determine the wiring capacitance.

Note: The following capacitance reading MUST be taken PRIOR to the installation of any peripheral device.

1. Measure the capacitance using the wiring that will connect to control unit terminals TB1-1 and TB1-3 (Terminals TB1-2 and TB1-4 MUST remain disconnected from the control unit) as shown in Figure 2-14.

Return Leg

Out Leg
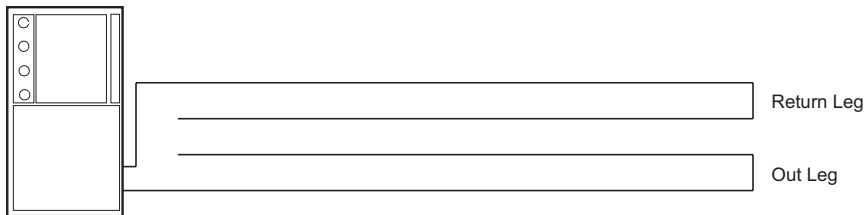
Capacitance Meter

Figure 2-14. Measuring Class-A SLC Wiring Capacitance

Figure 2-15 shows typical wiring for a Class-A, Style-6 signaling line circuit. Make sure that the SLC-Selector Switch S2 is moved to the right into the Style-6 position. Refer to Figure 1-3

Note: Isolator modules are not required for a Class-A, Style-6 signaling line circuit. A maximum of 30 SmartOne devices can be installed between a pair of isolator modules.

Installation

Figure 2-15. Class-A, Style-6 Signaling Line Circuit
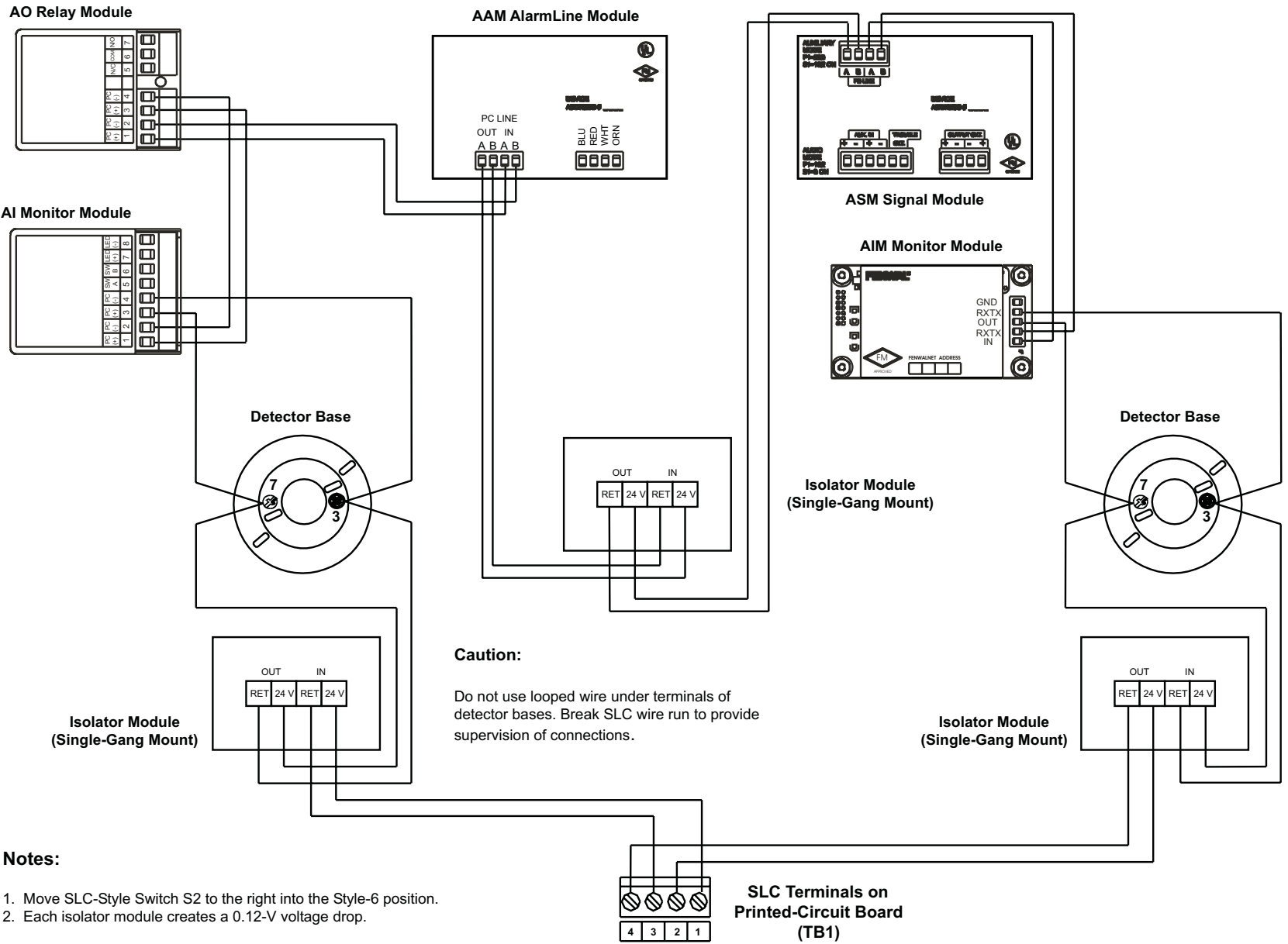
AO Relay Module

NC COM NO
7
6
5

PC PC
+ −
4
3

PC PC
+ −
2
1

AI Monitor Module

LED LED
+ −
8
7

SW SW
A B
6
5

PC PC
+ −
4
3

PC PC
+ −
2
1

AAM AlarmLine Module

PC LINE

OUT   IN

A B A B

BLU RED WHT ORN

ASM Signal Module

PC LINE

A B A B

AIM Monitor Module

FENWAL

GND
RXTX
OUT
RXTX
IN

FM
APPROVED

FENWALNET ADDRESS

Detector Base

7

3

Detector Base

7

3

**Isolator Module
(Single-Gang Mount)**

OUT   IN

RET | 24 V | RET | 24 V

**Isolator Module
(Single-Gang Mount)**

OUT   IN

RET | 24 V | RET | 24 V

**Isolator Module
(Single-Gang Mount)**

OUT   IN

RET | 24 V | RET | 24 V

Caution:

Do not use looped wire under terminals of
detector bases. Break SLC wire run to provide
supervision of connections.

Notes:

1. Move SLC-Style Switch S2 to the right into the Style-6 position.
2. Each isolator module creates a 0.12-V voltage drop.

**SLC Terminals on
Printed-Circuit Board
(TB1)**

4 | 3 | 2 | 1

2-8.1.3   SPECIAL CLASS-A, STYLE-7 REQUIREMENTS

A Class-A, Style-7 signaling line circuit requires a pair of isolator modules for each SmartOne device as shown in Figure 2-16. Make sure that the SLC-Selector Switch S2 is moved to the right into the Style-6 position. Refer to Figure 1-3.
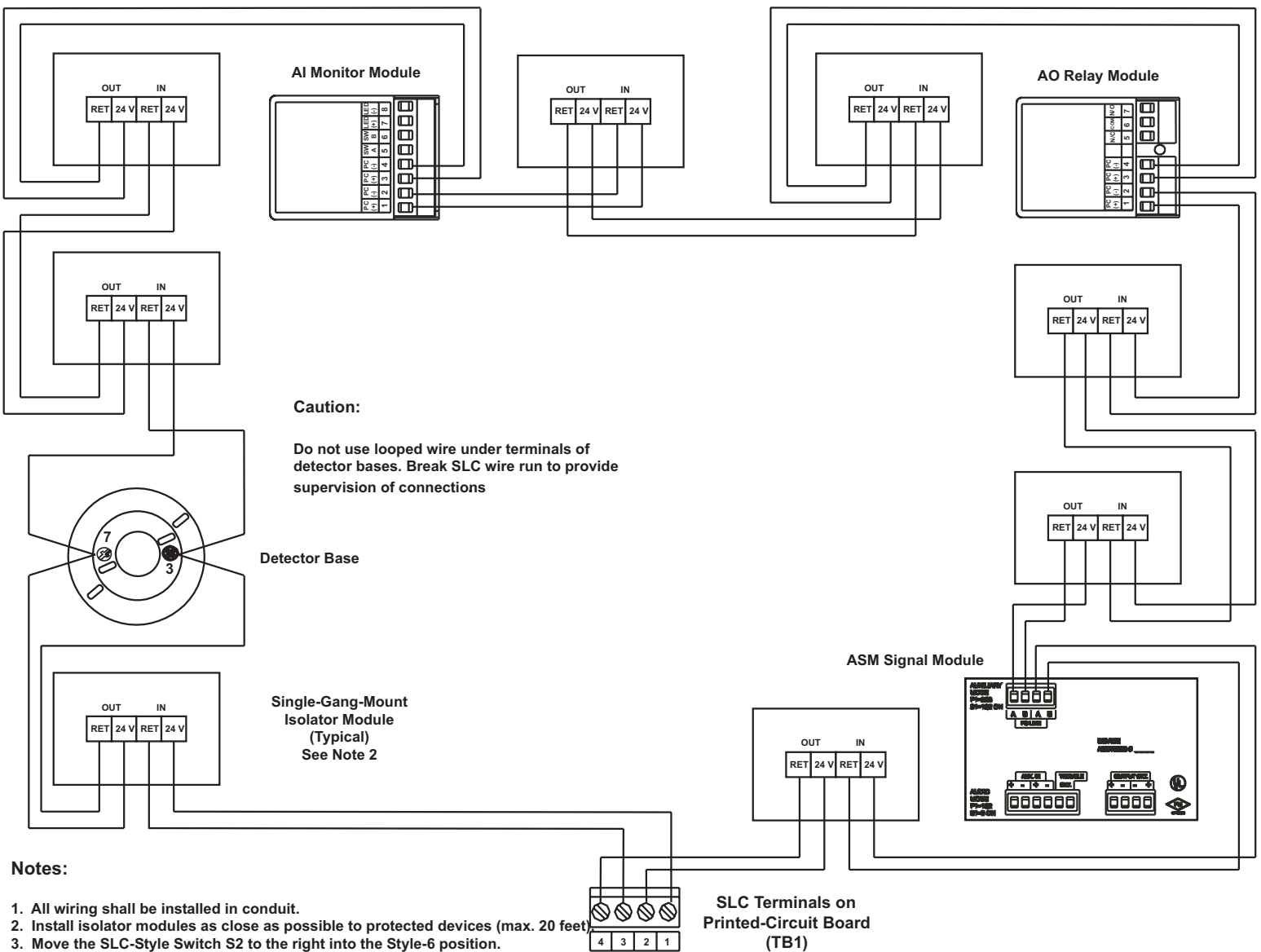
Figure 2-16. Class-A, Style-7 Signaling Line Circuit

AI Monitor Module

AO Relay Module

OUT   IN
RET 24 V RET 24 V

ASM Signal Module

Caution:

Do not use looped wire under terminals of detector bases. Break SLC wire run to provide supervision of connections

Detector Base

Single-Gang-Mount
Isolator Module
(Typical)
See Note 2

SLC Terminals on
Printed-Circuit Board
(TB1)

Notes:

1. All wiring shall be installed in conduit.
2. Install isolator modules as close as possible to protected devices (max. 20 feet).
3. Move the SLC-Style Switch S2 to the right into the Style-6 position.
4. Each isolator module creates a 0.12-V voltage drop.

2-9   NOTIFICATION APPLIANCE CIRCUITS

The FENWALNET 6000 Control Unit has two notification-appliance circuits (NACs) that are labeled NAC1 and NAC2. These circuits have field-wiring connections that terminate at TB5 and TB14, respectively. Each NAC can supply up to 1.5 A of current at a nominal 24 Vdc for polarized notification appliances. Total current output of the FENWALNET 6000 power supply must not exceed 5.4 A.

Both circuits are supervised, power limited, and are compatible with conventional, UL-Listed, 24-Vdc notification appliances. They can also be used with the following Fenwal synchronizable horns and strobes:

- MT Series Multi-Tone Horns and Horn/Strobes
- NS Series Horn/Strobes
- NH Series Horns
- RSS(P) Series Strobes

The NS Series notification appliances provide the option to use silenceable horns and non-silenceable strobes on the same NAC. Refer to the FENWALNET 6000 Programmer's Guide to configure one or both NACs for use with the NS Series notification appliances.

Figure 2-17 shows typical wiring for a Class-A, Style-Z notification appliance circuit.
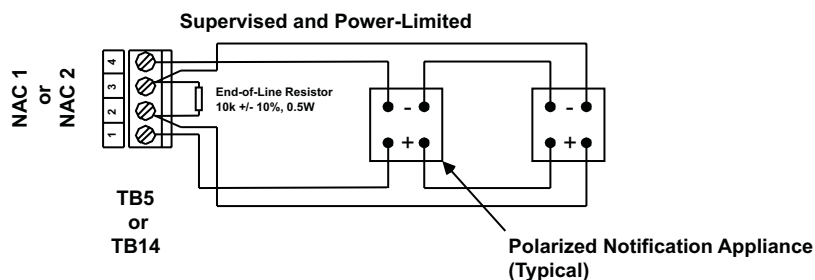
Figure 2-17. Class-A, Style-Z Notification-Appliance Circuit

Figure 2-18 shows typical wiring for a Class-B, Style-Y notification appliance circuit.
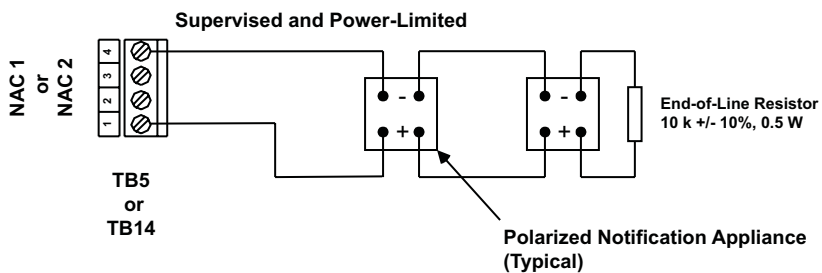
Figure 2-18. Class-B, Style-Y Notification-Appliance Circuit

Use Figure 2-19 to estimate the maximum length of wire as a function of notification-appliance current for both NACs.
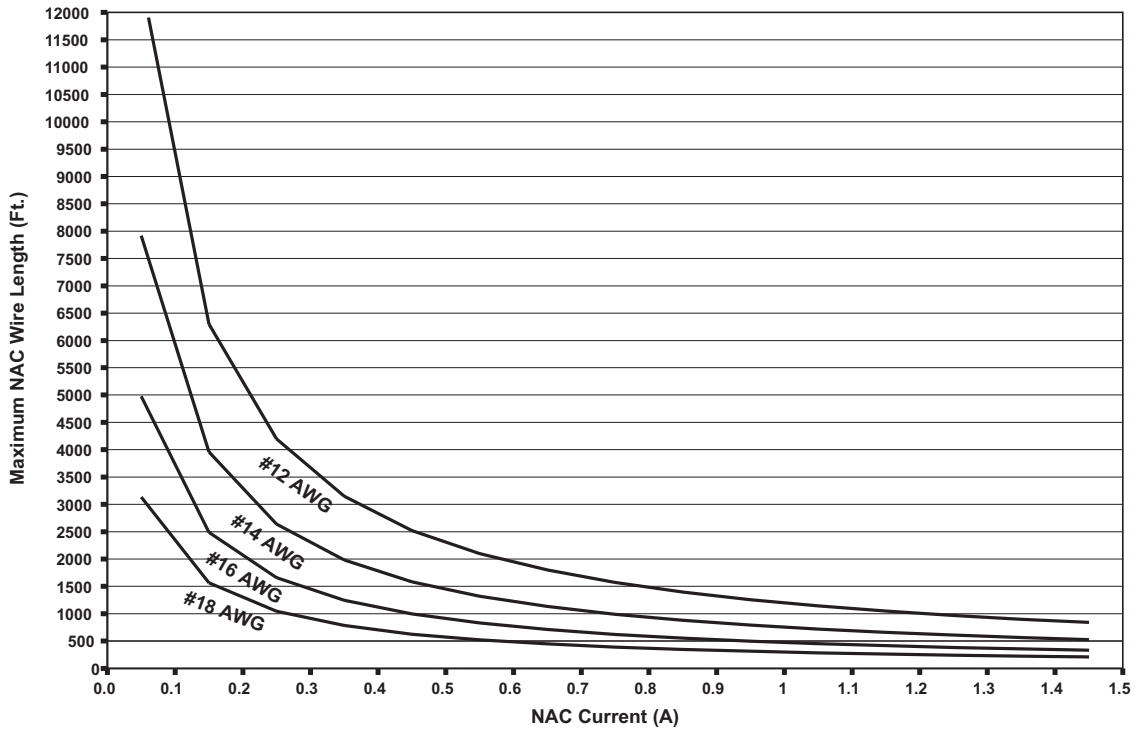
Figure 2-19. Wiring Length vs. Notification-Appliance Current

2-10   COMBINATION CIRCUITS

The FENWALNET 6000 Control Unit has two combination circuits that can be used either as notification-appliance circuits (NACs) or as releasing circuits for solenoid valves. The combination circuits are labeled Combo1 and Combo2. These circuits have field-wiring connections that terminate at TB7 and TB6, respectively.

2-10.1   Combination Circuits used as NACs

Each combination circuit can supply up to 1.5 A of current at a nominal 24 Vdc for polarized notification appliances when configured as a NAC. Total current output of the FENWALNET 6000 power supply must not exceed 5.4 A.

Both combination circuits are supervised and power limited when configured as NACs. They are compatible with conventional, UL-Listed, 24-Vdc notification appliances. They can also be used with the following Fenwal horns and strobes:

- MT Series Multi-Tone Horns and Horn/Strobes
- NS Series Horn/Strobes
- NH Series Horns
- RSS(P) Series Strobes

The NS Series notification appliances provide the option to use silenceable horns and non-silenceable strobes on the same NAC. Refer to the FENWALNET 6000 Programmer's Guide to configure one or both combination circuits as NACs and to configure them for use with the Fenwal NS Series notification appliances.

Figure 2-20 shows typical wiring for a combination circuit wired as a Class-A, Style-Z notification appliance circuit.
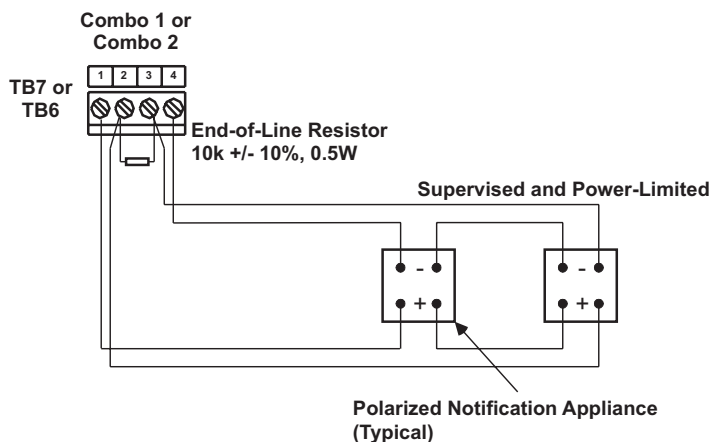
Figure 2-20. Combination Circuit used as Class-A, Style-Z NAC

Figure 2-21 shows typical wiring for a combination circuit wired as a Class-B, Style-Y notification appliance circuit.
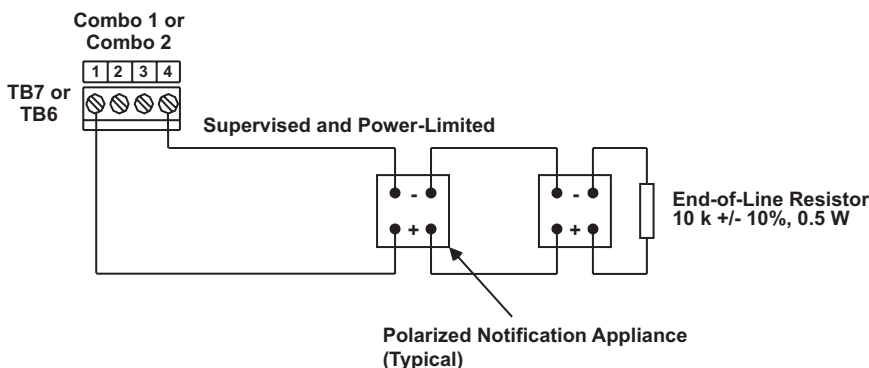
Figure 2-21. Combination Circuit used as Class-B, Style-Y NAC

Use Figure 2-19 to estimate the maximum length of wire as a function of notification-appliance current for a combination circuit used as a NAC.

2-10.2   Combination Circuits used as Releasing Circuits

Each combination circuit can be configured as a releasing circuit to activate either one Fenwal control head or one pre-action-sprinkler or deluge-sprinkler valve. Total current output of the FENWALNET 6000 power supply must not exceed 5.4 A.

Both combination circuits are supervised and power limited when configured as releasing circuits and when the in-line device, P/N 06-220023-001, is wired in series with the solenoid valve. The compatible control heads and solenoid valves are listed in Appendix C. Refer to the FENWALNET 6000 Programmer's Guide to configure one or both combination circuits as releasing circuits.

Route non-power limited wiring at least 1/4 inch away from all power-limited wiring.

WARNING

Ensure that all releasing devices are physically disconnected from the releasing circuits before performing any system testing or maintenance.

Figure 2-22 shows a combination circuit wired for releasing. Refer to Appendix C for further information.
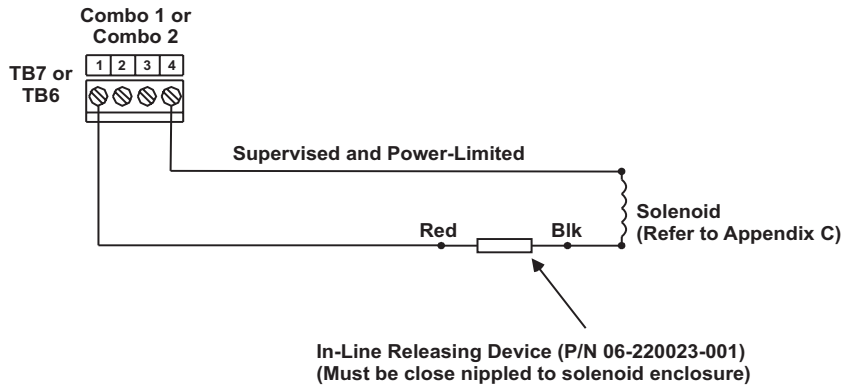
Figure 2-22. Combination Circuit used as Releasing Circuit

2-11   RELEASING CIRCUITS

The FENWALNET 6000 has two releasing circuits that can be configured to actuate extinguishing systems through any of the following ways:

- Series-wired initiator assemblies
- Single control head or solenoid valve
- Two series-supervised, parallel-actuated control heads or solenoid valves.

The release circuits are labeled Release1 and Release2 and have field-wiring connections that terminate at TB12 and TB11, respectively.

⚡ WARNING   **Ensure that all releasing devices are physically disconnected from the releasing circuits before performing any system testing or maintenance.**

2-11.1   Releasing Circuits for Series-Wired Initiator Assemblies

⚡ WARNING   **Initiator assemblies are Class-C explosives. Always use safety glasses or a face shield when handling them. Do not remove the shorting cap from the initiator assembly until the assembly is installed in the agent-storage container. Physical abuse or static-electricity discharge could cause inadvertent initiator actuation and personnel injury. The installer must establish a common electrical potential with the initiator assembly and the agent-storage container before either removing or inserting the shorting cap.**

Figure 2-23 shows series-wired initiators connected to a releasing circuit. Each releasing circuit is capable of either one of the following two arrangements:

- A maximum of 12 P/N 31-199932-004 initiators, connected in series, with a total-circuit resistance of 10 ohms +/- 1 ohm.
- A maximum of 6 P/N 93-191001-001 initiators, connected in series, with a total-circuit resistance of 10 ohms+/- 1 ohm.

These two types of initiators must not be mixed together on the same release circuit. A releasing circuit is supervised and non-power-limited when used with series-wired initiators. Refer to the FENWALNET 6000 Programmer's Guide to configure one or both releasing circuits to actuate series-wired initiator assemblies.

Route non-power-limited wiring at least 1/4 inch away from all power-limited wiring.

⚡ WARNING

Do not measure the total resistance of the initiator circuit with any instrument other than a blasting galvanometer or similar device with a maximum current output of 50 mA. Do not use a megohmeter with a current output greater than 50 mA to check the initiator-circuit wiring for low impedance paths to earth ground.

Note: Choose compensating resistor so that total initiator-circuit resistance is 10 ohms +/- 1 ohm. Use resistor rated for 1/2 watt. Contact Fenwal Technical Support for information about ordering the correct compensating resistor.
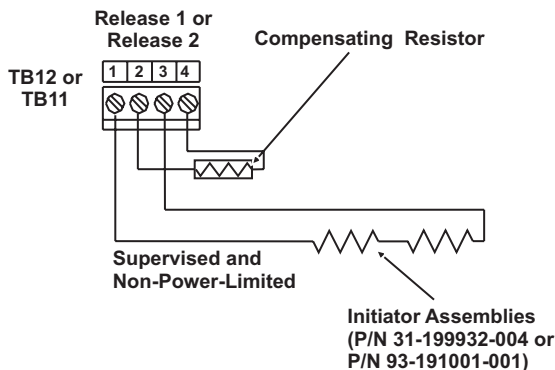
Figure 2-23. Releasing-Circuit Wiring for Initiators

2-11.2   **Releasing Circuits for Single Control Head or Solenoid Valve**

Each releasing circuit can be configured to activate either one Fenwal control head or one pre-action-sprinkler or deluge-sprinkler valve. Total current output of the FENWALNET 6000 power supply must not exceed 5.4 A. Figure 2-24 shows a releasing circuit wired for single-control-head or single-solenoid-valve actuation.
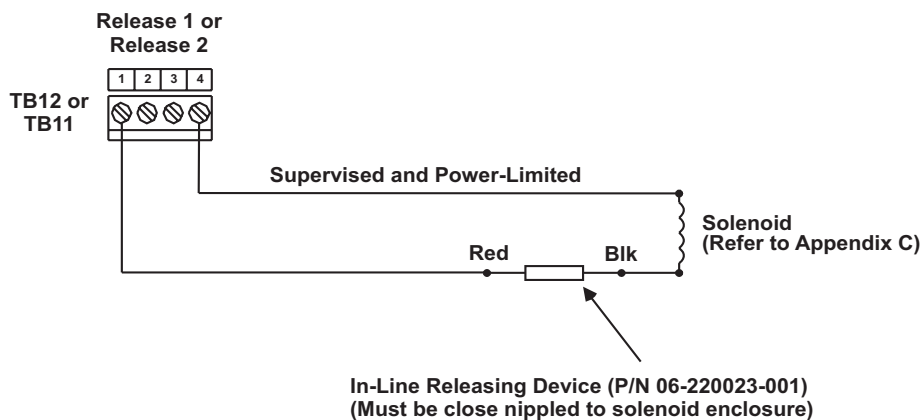
Figure 2-24. Releasing-Circuit Wiring for Single Solenoid

A releasing circuit is supervised and power limited when the in-line device, P/N 06-220023-001, is wired in series with the single control head or solenoid valve. See Appendix C for compatible control heads and solenoid valves. Refer to the FENWALNET 6000 Programmer's Guide to configure the releasing circuits for single-control-head or single-solenoid-valve actuation.

Route non-power-limited wiring at least 1/4 inch away from all power-limited wiring.

| 2-11.3 | Releasing Circuits for Dual Control Heads or Solenoid Valves |

Each releasing circuit can be configured to activate either dual Fenwal control heads or dual pre-action-sprinkler or deluge-sprinkler valves that do not exceed the maximum release circuit current of 2.4A. It can also activate combinations of Fenwal control heads and/or pre-action/deluge sprinkler valves that do not exceed the maximum release circuit current of 2.4A. Total current output of the FENWALNET 6000 power supply must not exceed 5.4 A. Figure 2-25 shows a releasing circuit wired for dual-control-head or dual-solenoid-valve actuation.

Note: Total combined control head and/or solenoid current must not exceed 2.4A (continuous output).
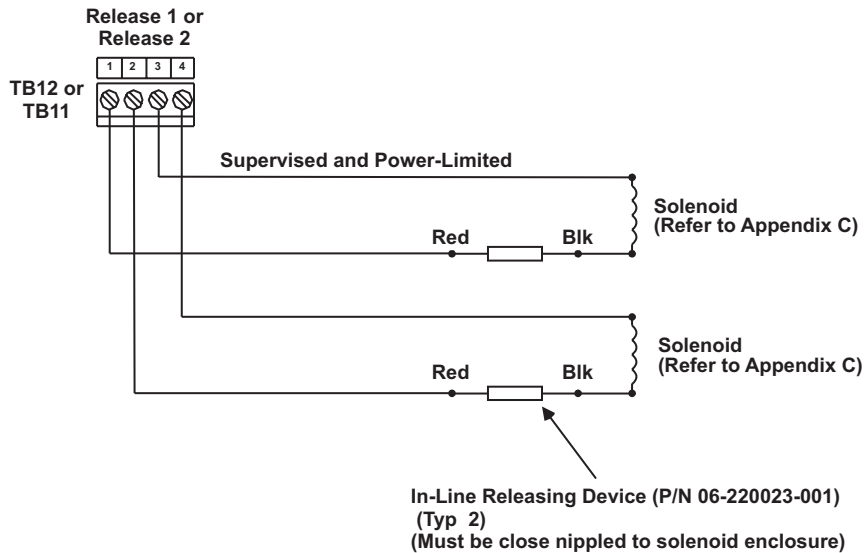
Figure 2-25. Releasing-Circuit Wiring for Dual Solenoids

A releasing circuit is supervised and power limited when the in-line device, P/N 06-220023-001, is wired in series with each of the two control heads or solenoid valves. See Appendix C for compatible control heads and solenoid valves. Refer to the FENWALNET 6000 Programmer's Guide to configure the releasing circuits for dual-control-head or dual-solenoid-valve actuation.

Route non-power-limited wiring at least 1/4 inch away from all power-limited wiring. Do not attach power-limited and non-power-limited wiring to the same terminal block.

| 2-12 | **AUXILIARY POWER OUTPUTS** |

Figure 2-26 shows the auxiliary-power terminals on the main printed-circuit board. Both outputs are configurable for either resettable or non-resettable operation. Refer to the FENWALNET 6000 Programmer's Guide to configure the auxiliary-power outputs.

Both auxiliary-power outputs are power-limited.

Note: Each output 1.0 A (max.) @ 24 Vdc (nominal)

TB2

| 1 | 2 | 3 | 4 |

Output No. 2   Output No. 1
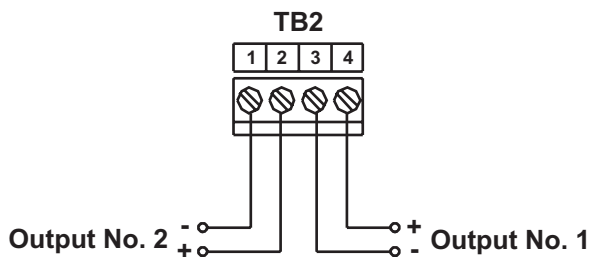
Figure 2-26. Auxiliary-Power Terminals

2-13   RS-485 COMMUNICATIONS CIRCUIT

The FENWALNET 6000 Control Unit can communicate with up to 31 peripheral devices via its RS-485 communications circuit. The peripheral devices are listed below, along with the maximum numbers for each particular type of device. The total number of peripheral devices cannot exceed 31.

Table 2-1. FENWALNET 6000 Control Unit Maximum Peripheral Devices

Device	Maximum Number
Model RDCM Remote Display Control Module	15
Model ATM-L Annunciator Driver Module	16
Model ATM-R Relay Driver Module	16

The RS-485 communications circuit is power-limited. Figure 2-27 shows typical interconnections among the FENWALNET 6000 Control Unit and the peripheral devices using a single communications channel.

Maximum Length: 4,000 Ft.
(Twisted, Shielded, Low-Capacitance Wire)

Install Jumper

RDCM Circuit Board

SW1 W1 VR1 VR2

TB1

JK2

JK1

W2

Remove W2   DS1

Connect wires for shields together at each
intermediate remote annunciator. Do not connect
wires for shields to the earth-ground screw in
remote enclosures.

Connect wire for shield to earth-ground
screw in upper-edge of PCB.

Leave shield wire floating at last remote annunciator. Do not
connect wire for shield to the earth-ground screw in last
remote enclosure. Trim shield wire as much as possible.

TB1 TB15
SLC RS 485 J6 USB B RS-232 B J3 J5 RS-232 A J8

SLC

S2 S1

ATM-L

LK17

Out B
Out A
In B
In A

LK16 LK15 LK32
LK14 LK13 16 LK31 LK30 32
15 31
14 30
13 29
LK12 LK11 12 LK29 LK28 28
11 27
10 26
LK10 LK9 9 LK27 LK26 25
8 24
LK8 LK7 7 LK25 LK24 23
6 22
LK6 LK5 5 LK23 LK22 21
4 20
3 19
LK4 LK3 2 LK21 LK20 18
1 17
LK2 LK1 LK19 LK18

Install W1

+24 V
Com
PS Flt

A
B

Trouble Lamp Test
Sup. Com
Sil. Out Ack
Pre Alm Reset
Alarm Silence
Pwr On Drill

POWER ON ACKNOWLEDGE
ALARM SILENCE
PRE-ALARM
TROUBLE RESET
SUPERVISORY
SILENCE SCROLL

FENWAL™

1 2 3
4 5 6
7 8 9
← 0 ↵

Relay 1 Relay 2 Relay 3 Trouble

Style 4 J10 S2

NAC 2
TB14

TB3

Batt Out

NAC 1
TB5

PSU J7

AC IN N L

240
120

Release 1 Release 2 Aux 24 VDC Combo 1 Combo 2
TB13 TB12 TB11 TB2 TB7 TB6
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

Refer to Figure 2-29 for maximum-length estimation.
Note: All wiring is power-limited and supervised.

Figure 2-27. Single-Channel RS-485 Wiring to Peripheral Devices

Figure 2-28 shows typical interconnections among the FENWALNET 6000 Control Unit and the peripheral devices using a dual-channel communications circuit.

Maximum Length: 4,000 Ft.
(Twisted, Shielded, Low-Capacitance Wire)

Install Jumper

RDCM Circuit Board

SW1 W1 VR2 VR1

TB1 1 2 3 4 5 6 7 8

JK2

JK1

W2
Remove W2

DS1

Connect wires for shields to earth-ground screw in upper-edge of PCB.

Connect wires for shields together at each intermediate remote annunciator. Do <u>not</u> connect wires for shields to the earth-ground screw in remote enclosures.

Leave shield wires floating at last remote annunciator. Do <u>not</u> connect wires for shields to the earth-ground screw in last remote enclosure. Trim shield wires as much as possible.

TB1 4 3 2 1 TB15 4 3 2 1
SLC RS 485 J6 USB B J3 RS-232 B J5 RS-232 A J8

SLC

Relay 1 Relay 2 Relay 3 Trouble

POWER ON ALARM PRE-ALARM TROUBLE SUPERVISORY SILENCE

FENWAL™

ACKNOWLEDGE SILENCE RESET SCROLL

1 2 3 4 5 6 7 8 9 ← 0 ↵

J10 S2 Style 4

TB3 Batt Out

PSU JP2 AC IN N L

240 120 TB13

Release 1 TB12 1 2 3 4
Release 2 TB11 1 2 3 4
Aux 24 VDC TB2 1 2 3 4
Combo 1 TB7 1 2 3 4
Combo 2 TB6 1 2 3 4

NAC 2 TB14 1 2 3 4
NAC 1 TB5 1 2 3 4

S2 S1

ATM-L

Out B Out A In B In A

W1
Install W1

+24 V Com PS Flt

A B

Trouble Sup. Sil. Out Pre Alm Alarm Pwr On

Lamp Test Com Ack Reset Silence Drill

LK17
LK16 LK15
LK14 LK13
LK12 LK11
LK10 LK9
LK8 LK7
LK6 LK5
LK4 LK3
LK2 LK1

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

LK32
LK31 LK30
LK29 LK28
LK27 LK26
LK25 LK24
LK23 LK22
LK21 LK20
LK19 LK18

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

Refer to Figure 2-29 for maximum-length estimation.

Note: All wiring is power-limited and supervised.

Figure 2-28. Dual-Channel RS-485 Wiring to Peripheral Devices

Use Figure 2-29 to estimate the maximum length of wire that can be connected to an Auxiliary-Power Output as a function of RS-485 peripheral-devices current.
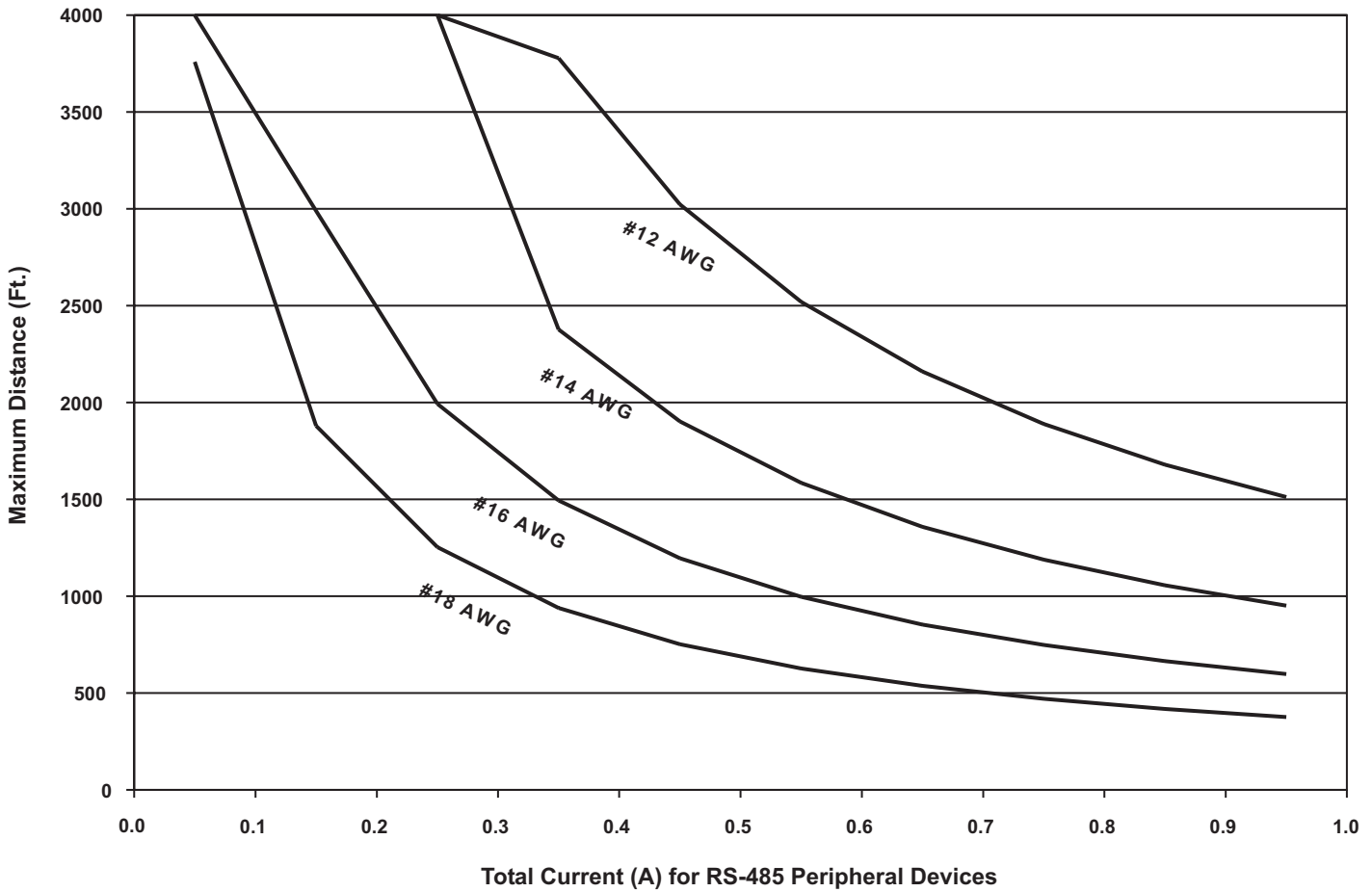
Figure 2-29. 24 Vdc-Power Wiring Length vs. Peripheral-Devices Current

Refer to the installation manuals for the remote display module and driver modules for address selection and additional point-to-point-connection details. The numbers of peripheral devices for a particular application are specified via the FENWALNET 6000 Programmer's Guide.

2-14   RELAYS

The FENWALNET 6000 Control Unit has three Form-C, programmable relays and one Form-C, trouble relay as shown in Figure 2-30. All of these relays have the following contact ratings:

- 1.0 A @ 30 Vdc (resistive)
- 0.5 A @ 30 Vdc (inductive)
- 0.5 A @ 120 Vac (inductive)
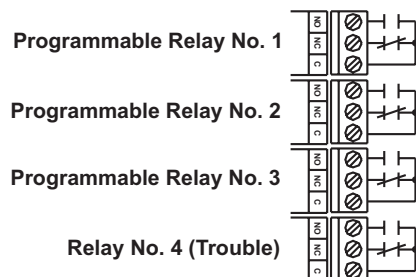
Figure 2-30. Programmable and Trouble Relays

2-15   RS-232 COMMUNICATIONS PORT

The FENWALNET 6000 Control Unit has two RS-232 communications ports (J3/RS232B and J8/RS232A) to connect to the Intelligent Interface Module (IIM) and various third-party supplementary devices such as serial printers and graphical monitoring systems.

Note: It is recommended that the RS232B port (J3) be used when only a single RS232 port is necessary.

The default parameters for these communications ports are:

- 9600 Baud Rate
- No Parity
- 8 Bit Word Length
- 1 Start Bit
- 1 Stop Bit

The RS-232 connection to the main printed-circuit board is via an RJ12 socket. The following signals are communicated via the RJ12 socket's pins:

Table 2-2. RJ12 Socket Pin Signals

Signal	Designation	Pin No.
Transmit Data	TX	1
Signal Ground	Gnd	5
Request to Send	RTS	3
Clear to Send	CTS	4
Receive Data	RX	6

Note: Pin No. 2 is not used.

The RS-232 communications port can be connected to its associated supplementary device with a standard RS-232 cable of up to 50 feet in length.
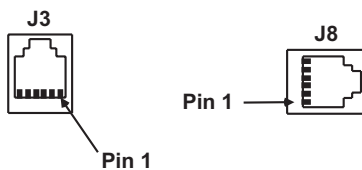
Figure 2-31. RS-232 Communications Ports

2-16   USB COMMUNICATIONS PORT

The FENWALNET 6000 Control Unit has one USB communications port to act as a device for a laptop computer being used to upload and download a system configuration or to download the event logs.

The USB port connects to the laptop computer via a standard USB cable.

Note: When using the USB port, the ground fault circuitry is not functional. The USB port is to be used to download configurations and operating system software only. It is not intended to be used on a permanent basis. A ground fault will be reported if the USB cable is connected and no communications activity has occurred for 30 minutes. Do not connect or disconnect the USB cable while the control unit is powering up on system startup or initializing after a new configuration upload.
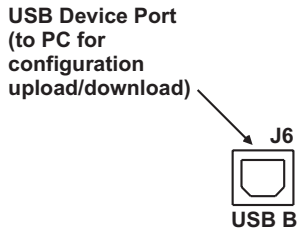
Figure 2-32. USB Communications Port

2-17   NETWORK INTERFACE CARD

The Network Interface Card (NIC) contains the circuitry for data communications between networked FENWALNET 6000 Control Units. One NIC is required for each networked control unit, and the control units transmit and receive messages via the RS-485 format.

The NIC supports Class-B, Style-4 or Class-A, Style-7 interconnecting wiring, and acts as a repeater to boost and regenerate the communications signals. One wire on each communications channel is an isolated, floating RS-485 transceiver and the other wire is a non-isolated, grounded RS-485 transceiver. This isolates the chassis of the networked control units to enable ground-fault detection and to eliminate ground loops.

Specifications for the NIC are provided in Table 2-3.

Table 2-3. Network Interface Card Specification

Description	Specification
Part Number	74-600000-009
Weight	.34 lb./.15 Kg
Input Voltage (From Main PCB)	5.0 VDC
Input Current	300 mA Max @ 5 VDC, 70 mA from 24 VDC Supply
Electrical Field Connections	UL Recognized Terminal Blocks for wire size 26 – 12 AWG
Data Ports	EIA/TIA-485
Baud Rate	9600 Baud
Temperature Range	0 – 50 Deg C
Humidity Range	0 – 93% RH, non-condensing

2-17.1   How to Install a NIC

Refer to Figure 2-33 before you install the NIC and perform the following procedure to install the NIC on the FENWALNET 6000's printed-circuit board.

⚠️
CAUTION   **Remove AC and DC power from the control unit before you install a NIC.**

1. Slip on a wrist ground strap and connect the clip to the earth ground in the enclosure. Do not remove the NIC from its shipping carton unless you have established a common earth-ground potential among yourself, the enclosure, and the NIC's shipping carton.

2. Remove the four screws holding the keypad / display to the main PCB. Carefully pull out the keypad/display from its connectors to the PCB and set aside in a clean, dry location.

3. Remove the NIC from its shipping carton and locate the three plastic standoffs included in the installation kit. Insert these standoffs into the three mounting holes in the PCB as shown in Figure 2-33.

4. Carefully insert the NIC into the 20-pin connector J5 and attach it to the three plastic standoffs.

5. Secure the upper left-hand corner of the NIC with the long screw and spacer supplied with the installation kit. The spacer will separate the NIC and the PCB and the screw will connect to the chassis. Do not over-tighten the screw.

6. Carefully plug the display into its receptacles on the PCB and re-attached with the four screws. Be sure that the display pins and the PCB receptacles are properly aligned.

7. Connect network wiring as shown in Paragraph 2-17.2.

Figure 2-33. NIC Installation

2-17.2   **Network Wiring**

Typical Class-B, Style-4 and Class-A, Style-7 wiring are shown in Figure 2-34 and Figure 2-35, respectively.

Note: Do not T-Tap the network wiring. Use serial wiring style only. Do not run wiring back from Node N to Node 1.

Connect wire for shield to earth-ground screw
in upper-left-hand corner of NIC.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 TB2 TB3 TB1

Node 1

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 TB2 TB3 TB1

Node 2

Maximum 4,000 Ft of Wire (#18 AWG or larger) between Control Units
(Twisted, Shielded, Low-Capacitance Wire)

Leave shield wire floating at last NIC. Do not connect wire for
shield to the earth-ground screw in upper-left-hand
corner of last NIC. Trim shield wire as much as possible.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 TB2 TB3 TB1

Node N

Note: All wiring is power-limited and supervised.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 TB2 TB3 TB1

Connect wires for shields together at each
intermediate NIC. Do not connect wires for
shields to the earth-ground screw in
upper-left-hand corner of intermdiate NICs.

Node 3

Notes:

1. Do not T-Tap the network wiring. Use
   diasy-chained wiring style only.

2. Do not daisy chain wiring back from
   Node N to Node 1.

Figure 2-34. Class-B, Style-4 Network Wiring

Channel 2   Channel 1

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 | TB2 | TB3 | TB1

Connect wires for both shields to earth-ground screw in upper-left-hand corner of NIC.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 | TB2 | TB3 | TB1

Node 1

Node 2

Maximum 4,000 Ft of Wire (#18 AWG or larger) per channel between Control Units (Twisted, Shielded, Low-Capacitance Wire)

Leave shield wires floating at last NIC. Do not connect wires for both shields to the earth-ground screw in upper-left-hand corner of last NIC. Trim shield wires as much as possible.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 | TB2 | TB3 | TB1

Note: All wiring is power-limited and supervised.

B2 N A2 | B1 N A1 | B2 I A2 | B1 I A1
TB4 | TB2 | TB3 | TB1

Connect wires for shields together for each channel at every intermediate NIC. Do not connect wires for shields to the earth-ground screw in the upper-left-hand corner of intermdiate NICs.

Node N

Node 3

Notes:

1. Do not T-Tap the network wiring. Use diasy-chained wiring style only.

2. Do not daisy chain wiring back from Node N to Node 1.

Figure 2-35. Class-A, Style-7 Network Wiring

Installation

2-18   FIBER-OPTIC CONVERTER CARD

The Fiber-Optic Converter Card allows networked FENWALNET 6000 Control Units to be interconnected using fiber-optic medium. Use one OCC to terminate each end of a fiber-optic communications-channel(s) segment. The FENWALNET 6000 networking structure supports a mixture of fiber-optic and twisted-wire interconnections among networked control units.

Specifications for the Fiber-Optic Converter Card are provided in Table 2-4.

Table 2-4. Fiber-Optic Converter Card Specification

Description	Specification
Part Number	74-600000-006
Weight	3.3 lb./1.5 Kg
Finish	Dark Blue (Color 35044 of Fed Std 595A)
Input Voltage	24 VDC Nominal, 18 VDC Min, 28 VDC Max **NOTE**: Must be connected to a power supply listed for fire-protective signaling use only.
Input Current	200 mA Max
Electrical Connections	UL Recognized Terminal Blocks for wire size 26 – 12 AWG
Fiber-Optic Connections	Type 'ST'
Data Ports	EIA/TIA-485
Baud Rate	9600 Baud
Optical Link Distance	5280 ft. (With no more than 4 dB/km cable attenuation)
Temperature Range	0 – 50 Deg C
Humidity Range	0 – 93% RH, non-condensing

The OCC Cabinet should be located as required in the same room as its parent Control Unit for convenient wiring connections (24 VDC and RS485 communications).

Typical Class-B, Style-4 and Class-A, Style-7 interconnections using a mixture of media are shown in Figures 2-36 through 2-39.

Figure 2-36 shows a typical single-channel system using 62.5/125 μm duplex fiber-optic media.

Figure 2-36. Typical Single-Channel System using 62.5/125 μm Duplex Fiber-Optic Media

OCC (Node 1)

24V

Channel 1   Channel 2

TB1   RxN   TxN   RxI   TxI   RxN   TxN   RxI   TxI   TB2

B1N A1N B1I A1I   Q1   D1   Q2   D3   Q3   D5   Q4   D7   B2N A2N B2I A2I

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

OCC (Node 2)

24V

Channel 1   Channel 2

TB1   RxN   TxN   RxI   TxI   RxN   TxN   RxI   TxI   TB2

B1N A1N B1I A1I   Q1   D1   Q2   D3   Q3   D5   Q4   D7   B2N A2N B2I A2I

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Max. 1 Mile of Fiber (62.5/125 um duplex) between Control Units

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

Node 1

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4   TB2   TB3   TB1

NIC Terminals (Node 1)

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

Node 2

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4   TB2   TB3   TB1

NIC Terminals (Node 2)

Installation Notes:
1. Do not T-Tap the network fiber. Use daisy-chained interconnections.
2. Daisy chain fiber back from Node N to Node 1.
3. Use twisted, shielded wire for NIC - OCC interconnections.

Key

Ch1 Twisted, Shielded Wire Pair ———

Ch1 62.5/125um Duplex Fiber Optics (ST Connectors) – –

OCC (Node N)

24V

Channel 1   Channel 2

TB1   RxN   TxN   RxI   TxI   RxN   TxN   RxI   TxI   TB2

B1N A1N B1I A1I   Q1   D1   Q2   D3   Q3   D5   Q4   D7   B2N A2N B2I A2I

OCC (Node 3)

24V

Channel 1   Channel 2

TB1   RxN   TxN   RxI   TxI   RxN   TxN   RxI   TxI   TB2

B1N A1N B1I A1I   Q1   D1   Q2   D3   Q3   D5   Q4   D7   B2N A2N B2I A2I

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Node N

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4   TB2   TB3   TB1

NIC Terminals (Node N)

Node 3

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4   TB2   TB3   TB1

NIC Terminals (Node 3)

Note: All wiring is power-limited and supervised.

Installation

Figure 2-37 shows the same single-channel system, but using a combination of 62.5/125 μm duplex fiber-optic media and twisted, shielded, low-capacitance wiring.

OCC (Node 1)

24V

TB2

| 1 | 2 | 3 | 4 |

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Channel 1

Channel 2

TB1 RxN TxN RxI TxI RxN TxN RxI TxI TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7 B2N A2N B2I A2I

OCC (Node 2)

24V

TB2

| 1 | 2 | 3 | 4 |

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Channel 1

Channel 2

TB1 RxN TxN RxI TxI RxN TxN RxI TxI TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7 B2N A2N B2I A2I

Max. 1 Mile of Fiber (62.5/125 um duplex) between Control Units

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

Node 1

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4 TB2 TB3 TB1

NIC Terminals (Node 1)

Node 2

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4 TB2 TB3 TB1

NIC Terminals (Node 2)

Installation Notes:
1. Do not T-Tap the network fiber. Use daisy-chained interconnections.
2. Daisy chain fiber back from Node N to Node 1.
3. Use twisted, shielded wire for NIC - OCC and NIC - NIC interconnections.

Key

Ch1 Twisted, Shielded Wire Pair

Ch1 62.5/125um Duplex Fiber Optics (ST Connectors)

OCC (Node N)

24V

OCC (Node 3)

24V

Channel 1

Channel 2

TB1 RxN TxN RxI TxI RxN TxN RxI TxI TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7 B2N A2N B2I A2I

Channel 1

Channel 2

TB1 RxN TxN RxI TxI RxN TxN RxI TxI TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7 B2N A2N B2I A2I

TB2

| 1 | 2 | 3 | 4 |

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Connect wires for shields to earth-ground screw in upper-left-hand corner of NIC.

TB2

| 1 | 2 | 3 | 4 |

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Connect wire for shield to ground screw in upper-left-hand corner of NIC.

Node N

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4 TB2 TB3 TB1

NIC Terminals (Node N)

Node 3

B2 N A2 B1 N A1 B2 I A2 B1 I A1

TB4 TB2 TB3 TB1

NIC Terminals (Node 3)

Note: All wiring is power-limited and supervised.

Figure 2-37. Typical Single-Channel System using Combination Twisted, Shielded and Fiber-Optic Media

Figure 2-38. Typical Dual-Channel System using 62.5/125 μm Duplex Fiber Optic Media

Figure 2-38 shows a typical dual-channel system using 62.5/125 μm duplex fiber-optic media.

Installation Notes:
1. Do not T-Tap the network fiber. Use daisy-chained interconnections.
2. Daisy chain fiber back from Node N to Node 1.
3. Use twisted, shielded wire for NIC - OCC interconnections.

Max. 1 Mile of Fiber (62.5/125 um duplex) between Control Units

Note: All wiring is power-limited and supervised.

Key

Ch1 Twisted, Shielded Wire Pair

Ch2 Twisted, Shielded Wire Pair

Ch1 62.5/125um Duplex Fiber Optics (ST Connectors)

Ch2 62.5/125um Duplex Fiber Optics (ST Connectors)

Figure 2-39 shows the same dual-channel system, but using a combination of 62.5/125 µm duplex fiber-optic media and twisted, shielded, low-capacitance wiring.

Use ST connectors to attach the fiber-optic media to the OCCs.

OCC (Node 1)

24V

TB2

Aux. Power Terminals Control Unit PCB (Non-Resettable)

1 2 3 4

Channel 1   Channel 2

TB1   RxN TxN RxI TxI   RxN TxN RxI TxI   TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7   B2N A2N B2I A2I

OCC (Node 2)

24V

TB2

Aux. Power Terminals Control Unit PCB (Non-Resettable)

1 2 3 4

Channel 1   Channel 2

TB1   RxN TxN RxI TxI   RxN TxN RxI TxI   TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7   B2N A2N B2I A2I

Connect wires for shields to ground screw in upper-left-hand corner of NIC.

Connect wires for shields to ground screw in upper-left-hand corner of NIC

Node 1

B2 N A2   B1 N A1   B2 I A2   B1 I A1
TB4   TB2   TB3   TB1

NIC Terminals (Node 1)

Node 2

B2 N A2   B1 N A1   B2 I A2   B1 I A1
TB4   TB2   TB3   TB1

NIC Terminals (Node 2)

Max. 1 Mile of Fiber (62.5/125 um duplex) between Control Units

Installation Notes:
1. Do not T-Tap the network fiber. Use daisy-chained interconnections.
2. Daisy chain fiber back from Node N to Node 1.
3. Use twisted, shielded wire for NIC - OCC and NIC - NIC interconnections.

Key

Ch1 Twisted, Shielded Wire Pair

Ch2 Twisted, Shielded Wire Pair

Ch1 62.5/125um Duplex Fiber Optics (ST Connectors)

Ch2 62.5/125um Duplex Fiber Optics (ST Connectors)

OCC (Node N)

24V

Channel 1   Channel 2

TB1   RxN TxN RxI TxI   RxN TxN RxI TxI   TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7   B2N A2N B2I A2I

OCC (Node 3)

24V

Channel 1   Channel 2

TB1   RxN TxN RxI TxI   RxN TxN RxI TxI   TB2

B1N A1N B1I A1I   Q1 D1 Q2 D3 Q3 D5 Q4 D7   B2N A2N B2I A2I

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Connect wires for shields to ground screw in upper-left-hand corner of NIC

Leave shield wire floating at Node 3. Do not connect wire for shield to the earth-ground screw in upper-left-hand corner of last NIC. Trim shield wire as much as possible.

Connect wires for shields to ground screw in upper-left-hand corner of NIC.

TB2

1 2 3 4

Aux. Power Terminals Control Unit PCB (Non-Resettable)

Node N

B2 N A2   B1 N A1   B2 I A2   B1 I A1
TB4   TB2   TB3   TB1

NIC Terminals (Node N)

Node 3

B2 N A2   B1 N A1   B2 I A2   B1 I A1
TB4   TB2   TB3   TB1

NIC Terminals (Node 3)

Note: All wiring is power-limited and supervised.

Figure 2-39. Typical Dual-Channel System using Combination Twisted, Shielded and Fiber Optic Media

The interconnection of the Intelligent Interface Module to the FENWALNET 6000 Control Unit is shown in Figure 2-40. Refer to the AnaLASER II Installation, Operation and Maintenance Manual (Publication 89.200) for additional details.

RS-232 Communications Cable

Connect from IIM Port labeled "CCM" to control-unit port J8 (RS-232 A). Configure Port J8 for operation with IIM. Refer to Paragraph 3-2.5.2.4.5

Control-Unit PCB

IIM PCB

Auxiliary Power Terminals
(Non re-settable)
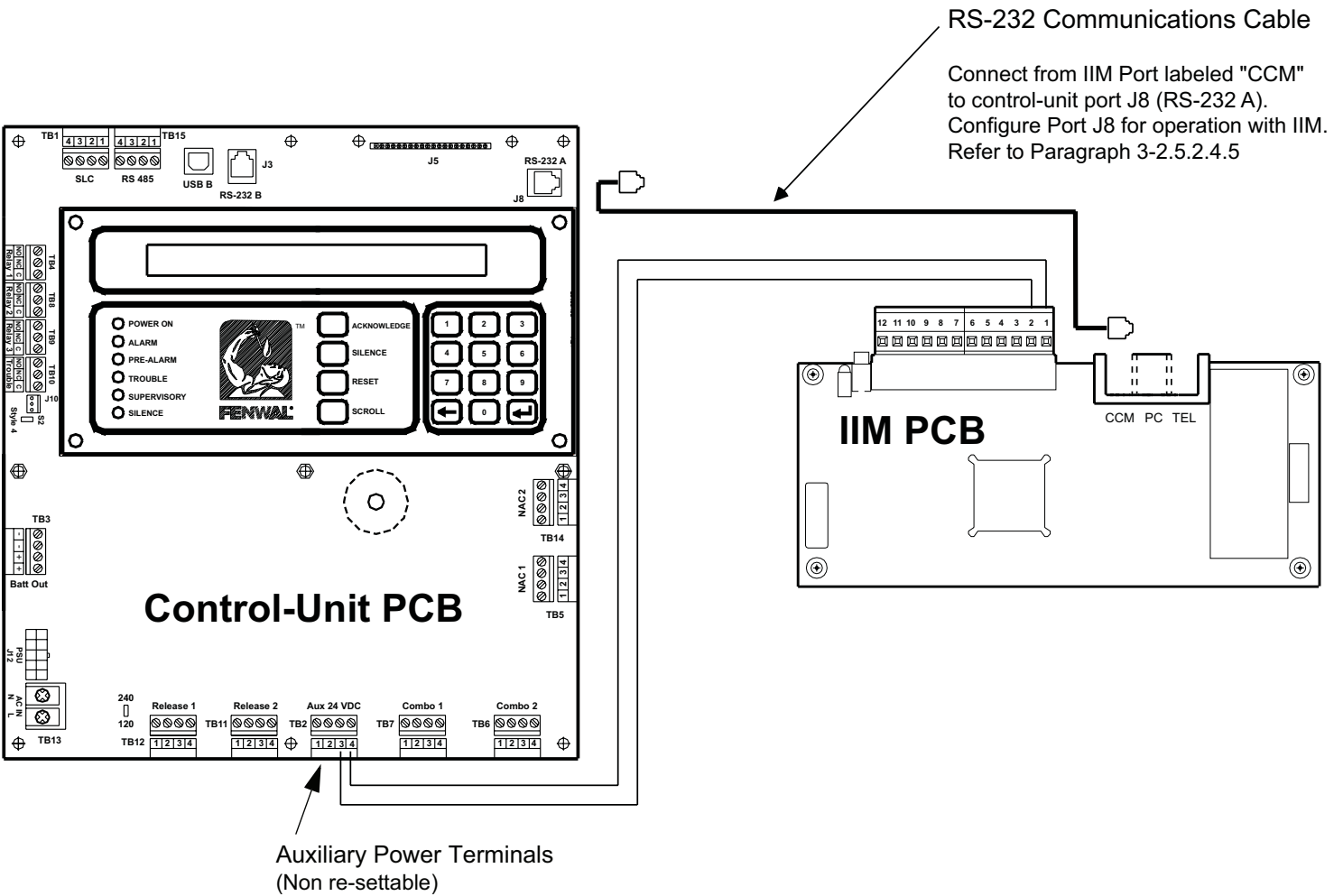
Figure 2-40. Interconnection of IIM

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CHAPTER 3
SYSTEM OPERATIONS

3-1 **FENWALNET 6000 SYSTEM OPERATIONS OVERVIEW**

This chapter addresses operation of individual and networked FENWALNET 6000 systems.

The FENWALNET 6000 System uses field-programmable software. Refer to the Configuration Software User's Guide in P/N 74-600000-008 for instructions on how to program the FENWALNET 6000 System.

3-2 **SYSTEM OPERATION**

This section instructs the end-user how to operate a FENWALNET 6000 System, including how to distinguish the different operating states, how to use the operator keys, and what the status indicating LEDs mean.

Refer also to the Operating Instructions, P/N 06-236405-001, that are packaged with the FENWALNET 6000 Control Unit.

3-2.1 **Operating States**

The FENWALNET 6000 system has two operating modes: Normal and Off-Normal. Normal Mode is characterized by the absence of any initiating signals from either automatic detectors or monitor modules, and by the absence of trouble conditions. Off-Normal Mode is triggered by system events or operator interrogation via the keypad. Off-Normal Mode operating states are listed in Table 3-1.

Table 3-1. Off-Normal Mode Operating States

Operating State	Triggering Event(s)
Access-Via-Menu	A operator uses the keypad to isolate initiating devices and/or outputs, list configuration settings and the application program, adjust configuration settings, or manually initiate testing procedures.
Trouble	A report of a problem that could prevent the FENWALNET 6000 System from proper operation. Typical trouble signals include: Lack of response from a configured device on the signaling line circuit; Internal fault reported by a SmartOne® detector; Loss of monitoring integrity of the installation conductors; Power-supply fault; and/or Loss of primary AC power.
Alarm	An automatic spot-type smoke or heat detector or a high-sensitivity smoke detector senses a fire signature that is greater than the detector's programmable alarm threshold, or when a monitor module programmed as a manual-alarm, manual-release, waterflow or general-alarm point activates.
Pre-Alarm	An automatic spot-type smoke, heat detector or a high-sensitivity smoke detector senses a fire signature that is greater than a programmable, lower-level warning threshold but less than the detector's programmable alarm threshold.
Supervisory	A monitor module detects a condition such as gate-valve closure, low air pressure or water level, or pump failure that could impair the operation of a building's sprinkler system. It also enters this state when an operator isolates any initiating or control devices or control-unit-based output circuits. This mode is primarily event-driven.

3-2.2 **Outputs Activation**

The FENWALNET 6000 System operation is control by events. Control-unit-based or signaling-line-circuit-based outputs are activated by user-specified operating instructions contained in the system's event output control (EOC) program. The EOC program is triggered by any event that transitions the system from the Normal Mode to an event-driven, Off-Normal operating state.

Note: All alarm events must be annunciated by public-mode notification.

3-2.3 **Operator Keys**

Operator keys for the FENWALNET 6000 System are located on the display inside the control unit. The control unit door must be open to access the operator keys.

Figure 3-1 shows the location of the operator keys and status indicating LEDs on the display. Table 3-2 lists the names and functions of the operator keys on the display.
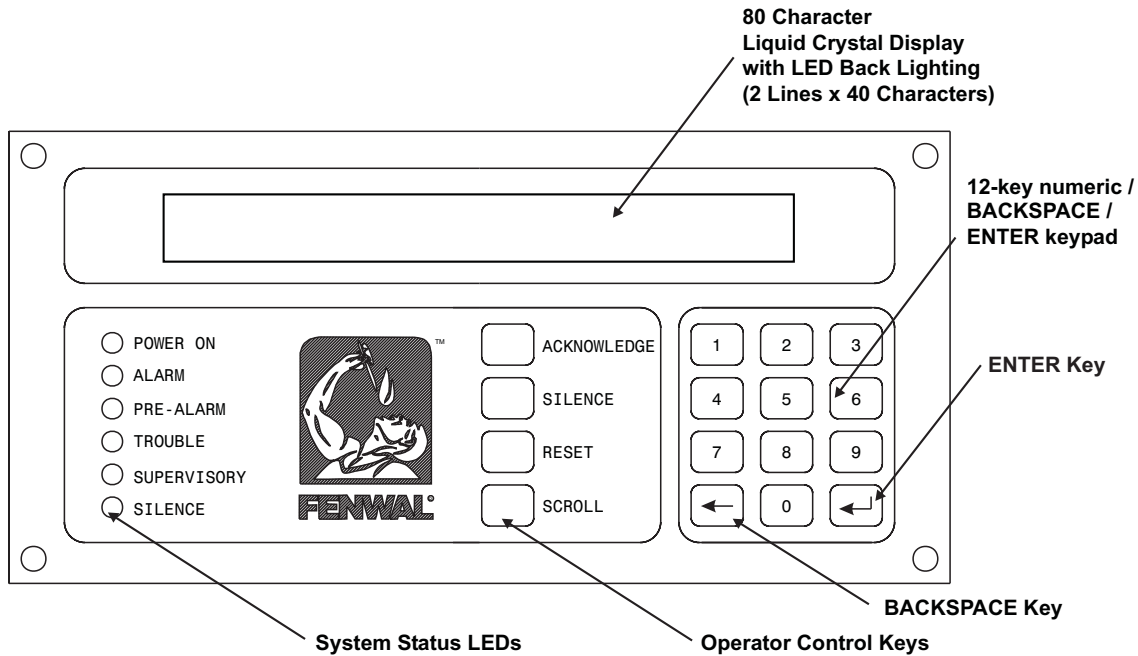
Figure 3-1. Display Panel

Table 3-2. Operator Control Keys and Functions

BUTTON	FUNCTION
<ACKNOWLEDGE>	The <ACKNOWLEDGE> Key allows the operator to signal the FENWALNET 6000 System Control Unit that a new event currently being displayed is understood. The control unit's audible notification appliance will silence and all flashing Pre-Alarm, Alarm, Supervisory, or Trouble LEDs will light steadily when all active events have been acknowledged.
<SILENCE>	Pressing the <SILENCE> Key after all current alarm events have been acknowledged shuts off any active, silenceable control-unit-based or signaling-line-circuit-based outputs, such as notification-appliance circuits or control modules. **Note:** There is a 10-second buffer period during which subsequent presses of the <SILENCE> Key are intentionally ignored. A subsequent key press will only be acted upon after at least 10 seconds have elapsed since the previous key press.
<RESET>	The <RESET> Key restores the FENWALNET 6000 System to Normal Mode after all alarm system events have been acknowledged and have ceased reporting alarm conditions.
<SCROLL>	The <SCROLL> Key allows the operator to view all currently-active events by time of occurrence. Also used to navigate through the menu options.
NUMERIC KEYPAD (0-9)	Used to enter passwords, navigate through the menu options, and specify numeric operating data.
<BACKSPACE>	Used to exit the menu system and to delete incorrect entries.
<ENTER>	Used as the <ENTER> Key for the menu system.

3-2.4   Status Indicating LEDs

Table 3-3 lists the names and functions of the system status LEDs on the display.

Table 3-3. System Status LEDs and Functions

LED	COLOR	FUNCTION
Power On	Green	A steady LED indicates primary AC power is on at acceptable levels. An unlit LED indicates unacceptable AC power levels or AC power is disconnected.
Alarm	Red	A flashing LED indicates one or more unacknowledged alarm events, or that a previously-acknowledged non-latching alarm device has issued an alarm-off report. A steady LED indicates all alarm events and alarm-off reports have been acknowledged. The LED turns off when the control unit is reset if all current alarm events and alarm-off messages have been acknowledged and none of the alarm-initiating devices are reporting alarms.
Pre-Alarm	Yellow	A flashing LED indicates unacknowledged pre-alarm events. A steady LED indicates all current pre-alarm events have been acknowledged. The LED turns off when the control unit receives pre-alarm-off messages from all alarm-initiating devices that had reported a pre-alarm.
Trouble	Yellow	A flashing LED indicates unacknowledged trouble events. A steady LED indicates all trouble events have been acknowledged. The LED turns off when the control unit receives trouble-off messages from all SLC or IIM devices or control-unit monitoring circuitry that had reported trouble conditions.
Supervisory	Yellow	A flashing LED indicates one or more unacknowledged supervisory events. A steady LED indicates all supervisory events have been acknowledged. The LED turns off when the control unit receives supervisory-off messages from all initiating devices that had reported supervisory conditions.
Silence	Yellow	A steady LED indicates the Silence Key has been pressed after all current alarm events have been acknowledged. The LED turns off when 1) the control unit is reset, or 2) the Silence key is pressed to toggle on any previously-silenced NACs and SLC-based modules. The Silence key will repeatedly toggle the NACs and SLC-based modules off and on and the Silence LED will track the activation state of the NACs and modules until the control unit is reset.

3-2.5   **Operating Instructions**

The following paragraphs give general operating instructions for a stand-alone system.

3-2.5.1   NORMAL OPERATION

There are no active events such as alarms or troubles during Normal Mode operation. The control unit continuously monitors all initiating devices and supervised circuits for any changes of state.

The LCD display shows the "System Status Normal" message, the time and date, and an optional user-defined custom message as shown in Figure 3-2.

System Normal
Message

```
┌────────────────────────────────────────┐
│ SYSTEM STATUS NORMAL  02:15 PM  07/02/04│
│ North Communications Center             │
└────────────────────────────────────────┘
```

Site-Specific
Custom Message
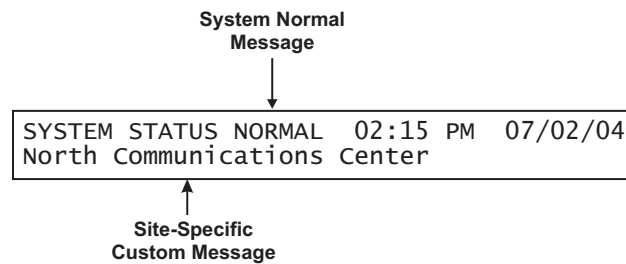
Figure 3-2. Normal Operation Display

3-2.5.2   MENU OPERATION

The FENWALNET 6000 has a built-in menu structure. This menu structure has been implemented to aid users with system operating functions. The following paragraphs describe the menu structure, how to access the menu, menu functions, and how to exit the menu.

An operator can use menu operation to:

- Isolate initiating devices and/or outputs
- List configuration settings and the application program
- Adjust configuration settings
- Initiate manual testing procedures

An operator cannot use menu operation if:

- He is attempting to access the main menu via an RDCM while another operator already has access to the system
- Another operator already has access to the system through the configuration program's terminal-emulation mode (Refer to the FENWALNET 6000 Programming Guide for information on terminal-emulation mode.)

Any of the following events cancel Menu operation:

- An alarm signal
- An operator presses the <Backspace> Key at the main menu.
- A period of 60 seconds elapses from the last pressed key.

3-2.5.2.1   Menu Functions

Note: The control unit continuously monitors all initiating devices and outputs for any state change while in menu operation.

The main menu functions are shown in Figure 3-3.

Most functions will require additional data to be entered to implement the function, such as a device address or desired alarm threshold.

```
1: ISOLATE      2: LIST
3: SET          4: TEST
```

Figure 3-3. Main Menu Functions

Table 3-4 lists and provides a brief description of typical functions that can be performed using the FENWALNET 6000 System's menus. Figure 3-4 contains the FENWALNET 6000 main menu functions and top-level displays.

Table 3-4. Main Menu Functions and Descriptions

Menu	Function	Description
Isolation	Device and Circuit Isolation	The isolation commands prevent the FENWALNET 6000 Control Unit from acting upon signals from initiating devices or from issuing activation commands to control-unit-based and SLC-based outputs. The initiating devices and outputs remain operational, but are disconnected from the control unit in the sense that events reported by isolated initiating devices are ignored by the control unit and commands to activate are ignored by isolated outputs and control modules.
List	Listing of Events and System Settings	The list commands are used to view the set of isolated initiating devices and control-unit-based and SLC-based outputs. These commands are also used to display configuration settings for automatic initiating devices, to display the list of devices on the SLC and on the Intelligent Interface Module, and to view lower-level events that are not displayed due to the occurrence of higher-level events.
Set	Change Operating Parameters	The set commands allow the installer to change the sensitivity settings for Smart-One automatic initiating devices, to address and register initiating and control devices, to activate a set of networked control units or to define global operating parameters such as Global Acknowledgement of trouble and supervisory events. These commands are also used to trigger automatic configuration routines such as AutoLearn and AutoSetup.
Test	Confirming Proper Operation	The test commands enable service personnel to test the SmartOne initiating devices for the ability to transmit alarm signals. You can also perform alarm-simulation tests for the system's application program and can command on control modules connected to the SLC.

Figure 3-4. FENWALNET 6000 Menu Functions and Top-Level Displays

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Enter Password ← Press "0" Key

1. Isolate

1. SLC Devices
  1. SLC Inputs *
    Isolate SLC Devices
    Devices from * _ _ to _ _ _
      1: Isolate   2: De-Isolate *
  2. SLC Outputs *
    Isolate SLC Devices
    Devices from * _ _ to _ _ _
      1: Isolate   2: De-Isolate *

2. Outputs
  1. NACs
     SG * to SG
      1: Isolate   2: De-Isolate *
  2. Release Circuits
     AR * to AR
      1: Isolate   2: De-Isolate *
  3. Combo Circuits
     Combo * to Combo
      1: Isolate   2: De-Isolate *
  4. Relays
     Relay * to Relay
      1: Isolate   2: De-Isolate *

3. Control Modules
  1. ATM
     Isolate / De-Isolate ATMs
     Enter the ATM Number (01 - 16) *
      1: Isolate   2: De-Isolate *
  2. RDCM
     Isolate / De-Isolate ATMs
     Enter the ATM Number (01 - 15) *
      1: Isolate   2: De-Isolate *

4. Global Isolate
  1. Inputs *
     Global Isolation of Inputs
      1. Isolate   2: De-Isolate *
  2. Outputs *
     Global Isolation of Outputs
      1. Isolate   2: De-Isolate *

5. Isolate Macro 1
   Isolation Macro 1
   1. Isolate   2: De-Isolate *

6. Isolate Macro 2
   Isolation Macro 2
   1. Isolate   2: De-Isolate *

7. HSDs
   Isolate HSDs
   HSD * _ _ to _ _ _
     Isolate HSDs
     1. Isolate   2: De-Isolate *

2. List

1. Isolated Devices
   1. SLC Devices
   2. Outputs
   3. Control Modules
   4. HSDs

2. Event Logs
   1. All System Events
   2. Range of Events
      Enter Begin and End Dates for Range
      Date Range * _ _-_ _ to _ _-_ _-_ _ (MMDDYY)
   3. SLC Test Results
      SLC Test Results Listing
      SLC Devices From * _ _ to _ _ _   (1 - 255)
   4. Walk-Test Results
      SLC Test Results Listing
      SLC Devices From * _ _ to _ _ _   (1 - 255)

3. Detector Levels
   SLC Detector Levels
   SLC Devices from * _ _ to _ _ _   (1 - 255)

4. Active Events
   1. Pre-Alarm Events
   2. Alarm Events
   3. Supervisories
   4. Troubles

5. EOC Program

6. SLC Assignments
   Addr   Type   Owner Location

7. Voltages
   1. Line Voltage
      SLC Device Line Voltage
      SLC Devices From * _ _ to _ _ _   (1 - 255)
   2. 9 Volts
      Detector 9 Volt Reading
      SLC Devices From * _ _ to _ _ _   (1 - 255)
   3. Battery Charge

8. HSD Assignments

9. More Options
   1. Onboard Circuits
      1. NACs
      2. Release
      3. Combos
      4. Enter Relay Number:
         RY *
   2. Control Modules
      List Control / Display Modules
      1. ATM   2. RDCM *
   3. General Alarm
   4. Network Settings
      1. This Node
      2. Network Nodes
   5. RRM PSU Status
      RRM Extended Status
      RRM Devices From * _ _ to _ _ _   (1 - 255)
   6. RRM Memory Status
      RRM Extended Status
      RRM Devices From * _ _ to _ _ _   (1 - 255)
   7. List Versions
      1. Main CPU
      2. SLC Version
      3. Main CPU Boot
      4. SLC Version

3. Set   See Figure 3-6

4. Test

1. SLC Devices
   Start Device Test
   SLC Devices From * _ _ to _ _ _   (1 - 255)

2. Fire Drill
   Activate - (1)   Deactivate - (0)

3. Battery Test

4. Lamp Test

5. Walk Test ★
   1. Start Walk Test
      SLC Devices From * _ _ to _ _ _   (1 - 255)
   2. Stop Walk Test
   3. Silent Walk Test
      SLC Devices From * _ _ to _ _ _   (1 - 255)

6. Alarm Sim Test ★
   1. SLC Alarm Sim
      Enter SLC Address * _ _ _   (1 - 255)
      Activate - (1)   Deactivate - (2)
   2. HSD Alarm Sim
      Enter HSD Address * _ _ _   (1 - 127)
      Activate - (1)   Deactivate - (2)

7. Outputs Test ★
   1: NAC 1 *
      Activate - (1)   Deactivate - (0)
   2: NAC 2 *
      Activate - (1)   Deactivate - (0)
   3: Combo 1 *
      Activate - (1)   Deactivate - (0)
   4: Combo 2 *
      Activate - (1)   Deactivate - (0)
   5: Release 1 *
      Activate - (1)   Deactivate - (0)
   6: Release 2 *
      Activate - (1)   Deactivate - (0)
   7: Relays *
      1: Relay 1 *
         Activate - (1)   Deactivate - (0)
      2: Relay 2 *
         Activate - (1)   Deactivate - (0)
      3: Relay 3 *
         Activate - (1)   Deactivate - (0)
      4: Trouble Relay *
         Activate - (1)   Deactivate - (0)
   8: SLC Outputs *
      Activate - (1)   Deactivate - (0)
      SLC Outputs Test
      SLC Devices From * _ _ to _ _ _   (1 - 255)
   9: RRM Group *
      Activate - (1)   Deactivate - (0)
      Enter RRM Group Number * (1-4)

8. SLC Resistance ★

9. More Options ★
   1. Find Dup Address
      SLC Double Address Detector LED Utility
      Enter SLC Address * _ _ _   (1 - 255)
      Press Backspace to Exit
   2. SLC Comm Value
      SLC Communication Value
      SLC Devices From * _ _ To _ _ _   (1 - 255)

Legend

★ Level-2 (Installer) Password required.

Figure 3-5. Menu Functions

Figure 3-6.   Menu Functions Cont.

3-2.5.2.2   Isolate Menu Functions

The Isolate functions prevent the FENWALNET 6000 Control Unit from acting upon signals from initiating devices or from issuing activation commands to control unit-based and SLC-based outputs. The initiating devices and outputs remain operational, but are disconnected from the control unit in the sense that events reported by isolated initiating devices are ignored by the control unit and commands to activate are ignored by isolated outputs and control modules.

A Supervisory signal will occur after each Isolation command is executed, and will remain in effect until all Isolation commands are subsequently cancelled by their corresponding De-Isolation commands.

For Top-Level Isolate Menu Functions, refer to Figure 3-4. For the complete Isolate-Menu tree, refer to Figure 3-5.

The following paragraphs list the Isolate Menu functions.

3-2.5.2.2.1   How to Isolate SLC Devices

Purpose: To prevent initiating and trouble signals from selected SmartOne automatic detectors and monitor modules from being processed and acted upon by the FENWALNET 6000 Control Unit. Also to prevent selected SmartOne control and relay modules from carrying out activation instructions issued by the FENWALNET 6000 Control Unit.

Note: An SLC device can only be isolated if it is not in either a trouble or alarm condition.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 1 Key	Select "SLC Devices" option
5	Press 1 Key for SLC inputs or 2 Key for SLC outputs. Press "Enter" Key to confirm selection.	Select "SLC Inputs" or "SLC Outputs."
6	Use keypad to enter single device or range of devices to isolate. Press "Enter" Key to confirm selection.	Get prompt to Isolate or De-Isolate
7	Press 1 Key and then press "Enter" Key to confirm selection.	Execute Isolation Routine for single device or range of devices entered in Step 6.
8	Press "Backspace" Key (as required)	Exit Menu System
9	Press "Acknowledge" Key.	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.2.2   How to De-Isolate SLC Devices

Purpose: To enable the FENWALNET 6000 Control Unit to process initiating and trouble signals from previously-isolated SmartOne automatic detectors and monitor modules. Also to enable previously-isolated SmartOne control and relay modules to execute activation instructions issued by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 1 Key	Select "SLC Devices" option
5	Press 1 for SLC inputs or 2 for SLC outputs. Press "Enter" Key to confirm selection	Select "SLC Inputs" or "SLC Outputs."
6	Use keypad to enter single device or range of devices to de-isolate. Press "Enter" Key to confirm selection.	Get prompt to Isolate or De-Isolate
7	Press 2 Key and then press "Enter" Key to confirm selection.	Execute De-Isolation Routine for single device or range of devices entered in Step 6.
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.3   How to Isolate Control-Unit-Based Outputs

Purpose: To prevent selected control-unit-based outputs from carrying out activation instructions issued by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 2 Key	Select "Outputs" option
5	Press 1 Key for NACs or Press 2 Key for Release Circuits or Press 3 Key for Combo Circuits or Press 4 Key for Relays	Select output to isolate
6	Use keypad to enter single output or range of outputs to isolate. Press "Enter" Key to confirm selection.	Get prompt to Isolate or De-Isolate
7	Press 1 Key and then press "Enter" Key to confirm selection	Execute Isolation Routine for single output or range of outputs entered in Step 6.
8	Press "Backspace" Key (as required)	Exit Menu System
9	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady.

3-2.5.2.2.4   How to De-Isolate Control-Unit-Outputs

Purpose: To enable previously-isolated control-unit-based outputs to execute activation instructions issued by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 2 Key	Select "Outputs" option
5	Press 1 Key for NACs or Press 2 Key for Release Circuits or Press 3 Key for Combo Circuits or Press 4 Key for Relays	Select output to de-isolate
6	Use keypad to enter single output or range of outputs to de-isolate. Press "Enter" Key to confirm selection.	Get prompt to Isolate or De-Isolate
7	Press 2 Key and then press "Enter" Key to confirm selection	Execute De-isolation Routine for single relay or range of relays entered in Step 6.
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.5   How to Isolate High-Sensitivity Smoke Detectors (HSSDs)

Purpose: To prevent initiating and trouble signals from selected HSSDs connected to an IIM from being processed and acted upon by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 7 Key	Select "HSDs" option
6	Use keypad to enter single HSSD or range of HSSDs to isolate. Press "Enter" Key to confirm selection	Get prompt to Isolate or De-Isolate
7	Press 1 Key and then press "Enter" Key to confirm selection.	Execute Isolation Routine for single HSSD or range of HSSDs entered in Step 6.
8	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.6   How to De-Isolate High-Sensitivity Smoke Detectors (HSSDs)

To enable initiating and trouble signals from previously-isolated HSSDs connected to an IIM to be processed and acted upon by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 7 Key	Select "HSDs" option
6	Use keypad to enter single HSSD or range of HSSDs to de-isolate. Press "Enter" Key to confirm selection	Get prompt to Isolate or De-Isolate
7	Press 2 Key and then press "Enter" Key to confirm selection.	Execute De-Isolation Routine for single HSSD or range of HSSDs entered in Step 6.
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.7   How to Isolate Remote-Annunciator Modules

Purpose: To prevent selected remote-annunciator modules from displaying messages or from carrying out activation instructions issued by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 3 Key	Select "Control Modules" option
5	Press 1 Key for ATMs or Press 2 Key for RDCMs Press "Enter" Key to confirm selection.	Select module to isolate
6	Use keypad to enter module to isolate. Press "Enter" Key to confirm selection.	Execute Isolation Procedure for module
7	Press 1 Key	Select Isolation Routine
8	Press "Backspace" Key (as required)	Exit Menu System
9	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.2.8   How to De-Isolate Remote-Annunciator Modules

Purpose: To enable previously-isolated remote-annunciator modules to display messages or to execute activation instructions issued by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press 3 Key	Select "Control Modules" option
5	Press 1 Key for ATMs or Press 2 Key for RDCMs Press "Enter" Key to confirm selection.	Select module to de-isolate
6	Use keypad to enter module to de-isolate. Press "Enter" Key to confirm selection.	Execute De-Isolation Procedure for module
7	Press 2 Key	Select De-Isolation Routine
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.9   How to Globally Isolate Initiating Devices

Purpose: To prevent initiating and trouble signals from all SLC-based and IIM-based initiating devices from being processed and acted upon by the FENWALNET 6000 Control Unit

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Global Isolate" option
6	Press 1 Key and then press "Enter" Key to confirm selection.	Select "Inputs"
7	Press 1 Key and then press "Enter" Key to confirm selection.	Execute Isolation Routine for all initiating devices
8	Press "Backspace" Key (as required)	Exit Menu System
9	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.2.10   How to Globally De-Isolate Initiating Devices

Purpose: To enable the FENWALNET 6000 Control Unit to process initiating and trouble signals from all previously-isolated SLC-based and IIM-based initiating devices

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Global Isolate" option
6	Press 1 Key and then press "Enter" Key to confirm selection.	Select "Inputs"
7	Press 2 Key and then press "Enter" Key to confirm selection.	Execute De-Isolation Routine for all initiating devices
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.11   How to Globally Isolate System Outputs

Purpose: To prevent all SLC-based and control-unit-based outputs (including relays) from being activated by the FENWALNET 6000 Control Unit

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Global Isolate" option
6	Press 2 Key and then press "Enter" Key to confirm selection.	Select "Outputs"
7	Press 1 Key and then press "Enter" Key to confirm selection.	Execute Isolation Routine for all output devices and circuits
8	Press "Backspace" Key (as required)	Exit Menu System
9	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.2.12   How to Globally De-Isolate System Outputs

Purpose: To enable the FENWALNET 6000 Control Unit to activate all previously-isolated SLC-based and control-unit-based outputs (including relays)

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Global Isolate" option
6	Press 2 Key and then press "Enter" Key to confirm selection.	Select "Outputs"
7	Press 2 Key and then press "Enter" Key to confirm selection.	Execute De-Isolation Routine for all output devices and circuits
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.13   How to Execute a User-Defined Inputs/Outputs Isolation Routine

Purpose: To perform multiple input and/or output isolations via a single menu selection. The inputs and/or outputs to be isolated are assigned to an "isolation macro" that is defined via the FENWALNET 6000 Configuration Program. The FENWALNET 6000 Configuration Program permits two "isolation macros" to be defined. Each macro can process up to ten separate isolation commands. The specific isolation commands are executed when either the "Isolation Macro 1" or "Isolation Macro 2" menu options are selected. The isolation lists can include any of the following: initiating devices, control modules, or control-unit-based outputs individually or by address range. This includes automatic initiating devices, monitor modules, control modules, releasing circuits, notification-appliance circuits, combination notification-appliance / releasing circuits, and programmable relays. Refer to the FENWALNET 6000 Programming Guide for the procedure to assign initiating devices, control modules, or control-unit-based outputs to either "Isolation Macro 1" or "Isolation Macro 2".

Note: Selecting the isolation-macro option for a second time will execute a de-isolation routine for all the devices and/or circuits that were isolated by the execution of the isolation macro. The isolation macros toggle the devices in the command lists between the isolated and non-isolated states.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press the "Enter" Key	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key or Press 6 Key	Select "Isolation Macro 1", or Select "Isolation Macro 2"
6	Press 1 Key and then press "Enter" Key to confirm selection.	Execute isolation of Macro 1 or Isolation of Macro 2
7	Press "Backspace" Key (as required)	Exit Menu System
8	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.2.14   How to De-Isolate Isolation Macro 1 or Isolation Macro 2

Purpose: To de-isolate the multiple input and/or output isolations performed via Isolation Macro 1 or Isolation Macro 2.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 1 Key	Enter Isolate-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key or Press 6 Key	Select "Isolation Macro 1" Select "Isolation Macro 2"
6	Press 2 Key and then press "Enter" Key to confirm selection.	Execute de-isolation of Isolation Macro 1 or de-isolation Macro 2
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3   List Menu Functions

The List functions are used to view the set of isolated initiating devices and control unit-based and SLC-based outputs. These functions are also used to display configuration settings for automatic initiating devices, to display the list of devices on the SLC and on the Intelligent Interface Module, and to view lower-level events that are not displayed due to the occurrence of higher-level events.

For Top-Level List Menu Functions, refer to Figure 3-4. For the complete List-Menu tree, refer to Figure 3-5.

The following paragraphs describe the List Menu functions.

3-2.5.2.3.1   How to List Isolated Devices

Purpose: To view the list of isolated devices and output circuits.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 1 Key	Access "Isolated Devices" option
5	Press 1 Key for "SLC Devices" or Press 2 Key for "Outputs" or Press 3 Key for "Control Modules" or Press 4 Key for HSDs	Select devices or circuits to view
6	Press "Scroll" Key (As Required)	Move through list of isolated devices or circuits
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.2   How to List the Entire Contents of the System Event Log

Purpose: To view the history of system events.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 2 Key	Access "Event Logs" option
5	Press 1 Key	Select All System Events
6	Press "Scroll" Key (as required)	Move through list of system events
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.3   How to To List the Contents of the System Event Log by Dates

Purpose: To view the history of system events by selected dates.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 2 Key	Access "Event Logs" option
5	Press 2 Key and then press "Enter" Key to confirm selection	Select Range of Events
6	Enter Start Date and End Date. Use month-day-year format. Press "Enter" Key to confirm selection.	Specify date range
7	Press "Scroll" Key (as required)	Move through list of selected system events
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.4   How to List the Most-Recent Test Results for the Initiating Devices on the SLC

Purpose: To view the most-recent test results for the initiating devices on the SLC. These tests confirm the abilities of the initiating devices to create and transmit alarm signals that can be properly interpreted and processed by the FENWALNET 6000 Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
5	Press 2 Key	Access "Event Logs"
6	Press 3 Key	Select SLC Test Results
7	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range.	View most-recent test results Report format is: Addr TP Date/Time Pass/Fail where: "Addr" is the device address "TP" is the device type "Date/Time" is test time "Pass/Fail" shows test result.
8	Press "Scroll" Key	Move through test results
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.5   How to List Most-Recent Walk-Test Results for the Initiating Devices on the SLC

Purpose: To view the most-recent walk-test results for the initiating devices on the SLC.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 2 Key	Access "Event Logs"
5	Press 4 Key	Select "Walk Test Results"
6	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range.	View most-recent test results Report format is: Addr TP Date/Time Pass/Fail where: "Addr" is the device address "TP" is the device type "Date/Time" is test time "Pass/Fail" shows walk-test result.
7	Press "Scroll" Key	Move through walk-test results
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.6   How to List a Range of Automatic Detector Sensitivity Settings

Purpose: To view the pre-alarm and alarm thresholds for a range of automatic detectors and to view the fire signatures being currently measured by the detectors. This procedure fulfills the intent of NFPA 72 (2002) Paragraph 10.4.3.2.4, Part (4) as a test to ensure that each smoke detector is within its listed and marked sensitivity range.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 3 Key	Access "Detector Level" option
5	Enter Start Address and End Address. Use XXX format for address. Press "Enter" Key to confirm address selection.	View detectors' pre-alarm and alarm thresholds and levels of fire signatures being measured. Format for smoke detectors is: Addr TP Pre-Alm Alm Level Format for heat detectors is: Addr. TP Pre-Alm Alm Level where: "Addr" is the device address "TP" is the device type "Pre-Alm" is pre-alarm setting in either %/Ft. or °F "Alm" is alarm setting in either %/Ft. or °F "Level" is current reading in either %/Ft. or °F
6	Press "Scroll" Key (as required)	Move through list of selected detectors
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.7   How to List Active Events

Purpose: To view the list of active events by event type. Use this option to view lower-level events such as trouble events whose display is suppressed by the concurrent occurrence of higher-level events.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Access "Active Events" option
6	Press 1 Key for Pre-Alarm Events or Press 2 Key for Alarm Events or Press 3 Key for Supervisory Events or Press 4 Key for Trouble Events.	Select event type to view
7	Press "Scroll" Key (as required)	Move through list of selected events
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.8   How to List the Application Program

Purpose: To view the Event-Output-Control (EOC) part of the system configuration file.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key	Access "EOC Program" option
6	Press "Scroll" Key	Move through EOC lines
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.9   How to List the Devices on the SLC

Purpose: To view the registered devices on the SLC

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Access "SLC Assignments" option
6	Press "Scroll" Key (as required)	Move through SLC devices Format for display is: Addr Type Owner Location Where: "Addr" is the device address "Type" is the device type "Owner Location" is the device location
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.10 How to List a Range of SLC Device Voltages

Purpose: To view the SLC line voltages for a range of initiating and/or control devices.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key Twice	Access additional options
5	Press 7 Key	Access "Voltages" option
6	Press 1 Key	Select "Line Voltage"
7	Enter Start Address and End Address. Use XXX format for address. Press "Enter" Key to confirm address selection.	View devices' line voltages Format for devices is: Addr Type Voltage
8	Press "Scroll" Key (as required)	Move through selected devices
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.11 How to List a Range of SLC Devices' 9-Volt Levels

Purpose: To view the internal power-supply voltages for a range of SLC initiating and/or control devices.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key Twice	Access additional options
5	Press 7 Key	Access "Voltages" option
6	Press 2 Key	Select "9 volt"
7	Enter Start Address and End Address. Use XXX format for address. Press "Enter" Key to confirm address selection.	View devices' 9-Volt levels Format for devices is: Addr Type 9-Volt Level
8	Press "Scroll" Key	Move through selected devices
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.12   How to View the Values of the Battery Voltage and Current

Purpose: to view the latest current and voltage values of the battery.

Note: This command can only be used if battery supervision is enable. See Paragraph 3-2.5.2.4.61.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key Twice	Access additional options
5	Press 7 Key	Access "Voltages" option
6	Press 3 Key	Select "Battery Charge" The battery voltage and current readings display.
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.13   How to Ascertain that the Standby-Battery is being Recharged

Purpose: To determine if the standby battery is being recharged

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 7 Key	Access "Voltages" option
6	Press 3 Key	Determine if the standby-battery is being recharged
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.14   How to List the HSSDs on the IIM

Purpose: To view the registered High-Sensitivity Smoke Detectors (HSSDs) on the Intelligent Interface Module (IIM)

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 8 Key	Access "HSD Assignments"
6	Press "Scroll" Key (as required)	Move through HSSDs on IIM Format for display is: Address Location Where: "Address" is the HSSD address "Location" is the HSSD location
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.15   How to List the Control Units in a Network

Purpose: To view the members (i.e., nodes) of a networked system.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Access "More Options"
6	Press 4 Key and then press "Enter" Key to confirm selection.	Access "Network Settings"
7	Press 2 Key	Access "Network Nodes"
8	Press "Scroll" Key (as required)	Scroll through comma separated lists.
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.16   How to List the Control Units Network Settings

Purpose: To view the settings for members (i.e., nodes) of a networked system.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press 9 Key	Access "More Options"
5	Press "Scroll" Key	Access additional options.
6	Press 4 Key	Access "Network Settings"
7	Press 1 Key	Access "This Node"
8	Press "Scroll" Key (as required)	Move through the various settings for this node
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.17 How to View the Configurable Parameters for the Control Unit's On-Board Outputs

Purpose: To determine how the control unit's on-board outputs are programmed.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Access "More Options"
6	Press 1 Key	Access "Onboard Circuits" option
7	Press 1 Key for NACs, or Press 2 Key for Release Circuits, or Press 3 Key for Combo Circuits, or Press 4 Key for Programmable Relays	Select on-board output type
8	Enter on-board output number	View output's configurable parameters
9	Press "Backspace" Key, and repeat Step 7	View another output of the type selected in Step 7
10	Press "Backspace" Key twice, and repeat Steps 7 and 8	View another output type
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.18 How to List the Remote Display Modules Connected to the Control Unit

Purpose: To view the list of remote-display modules connected to a FENWALNET 6000 Control Unit

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Access "More Options"
6	Press 2 Key	Select "Control Modules"
7	Press 1 Key for ATM or Press 2 Key for RDCM. Press "Enter" Key to confirm selection.	Select display modules to view
8	Press "Scroll" Key (as required)	Move through list of selected modules
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.19   How to View the PSU Status of Remote Release Modules

Purpose: To get diagnostic information concerning the power supply unit status of RRM modules. Contact Fenwal Technical Support if RRM units are not functioning properly.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Select "More Options"
6	Press 5 Key	Select "RRM PSU Status"
7	Use keypad to enter single module or range of modules Press "Enter" Key to confirm selection.	Specify the RRM modules to view
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.20   How to View the Memory Status of Remote Release Modules

Purpose: To get diagnostic information concerning the memory status of RRM modules. Contact Fenwal Technical Support if RRM units are not functioning properly.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Select "More Options"
6	Press 6 Key	Select "RRM Memory Status"
78	Use keypad to enter single module or range of modules Press "Enter" Key to confirm selection.	Specify the RRM modules to view
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.21 How to List General Alarms

Purpose: To acess the General Alarm output list.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Select "More Options"
6	Press 3 Key	Select "General Alarm"
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.22 How to Determine the Control-Unit Firmware Versions

Purpose: To determine the firmware versions resident in the control unit.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 2 Key	Enter List-Menu branch
4	Press "Scroll" Key twice	Access additional Menu options
5	Press 9 Key	Select "More Options"
6	Press "Scroll" Key	Access additional Menu options
7	Press 7 Key	Access "List Versions" options
8	Press 1 Key for Main CPU, or Press 2 Key for SLC Version, or Press 3 Key for Main CPU Boot, or Press 4 Key for SLC Boot	View installed version of firmware
9	Press "Backspace" Key (optional)	Return to Step 8 and make another selection
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4   Set Menu Functions

The Set functions allow the installer to change the sensitivity settings for SmartOne automatic initiating devices, to address and register initiating and control devices, or to define global operating parameters such as Global Acknowledgment of trouble and supervisory events. These commands are also used to trigger automatic configuration routines such as AutoLearn and AutoSetup.

For Top-Level Set Menu Functions, refer to Figure 3-4. For the complete Set-Menu tree, refer to Figure 3-6.

The following paragraphs list the Set Menu functions.

3-2.5.2.4.1   How to Set the Time

Purpose: To set the correct time for a FENWALNET 6000 Control Unit. (Use either Steps 6a or 6b in table).

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 1 Key	Access "Time / Date" option
5	Press 1 Key	Access "Set Time" option
6a	Press 1 Key	Select "AM/PM" format
6a.1	Enter correct time in HH:MM format where HH is hour (0 - 12) MM is minute (0 - 59).	Set time
6a.2	Press "Enter" Key to confirm selection	
6a.3	Press 1 Key for "AM or 2 Key for "PM	Specify AM or PM
6a.4	Press "Enter" Key to complete time entry	
6b	Press 2 Key and then press "Enter" Key to selection Military Time	Select Military format
6b.1	Enter correct time in HH:MM format where: HH is hour (0 - 24) MM is minute (0 - 59)	Set time
6b.2	Press "Enter" Key to confirm selection	
7	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.2   How to Set the Date

Purpose: To set the correct date for a FENWALNET 6000 Control Unit

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 1 Key	Access "Time / Date" option
5	Press 2 Key	Access "Set Date" option
6	Enter correct date in MM-DD-YY format where: MM is month (1 - 12) DD is day (1 - 31) YY is year (00 - 99)	Set date
7	Press "Enter" Key to confirm selection	
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.3   How to Set the Display to Show the Standby-Battery Condition

Purpose: To replace the "System Status Normal" message on the display with the standby-battery charging voltage and current. The display will have the following typical appearance:

```
PS: 25.5 V  1 mA          02:15 PM   07/02/04
        North Communications Center
```

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 9 Key (Installer) or Press 3 Key (Owner)	Access "Battery" option
5	Press 1 Key	Enable battery-charging display
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.4   How to Set the Display to Not Show the Standby-Battery Condition

Purpose: To replace the standby-battery charging voltage and current with the "System Status Normal" message on the display.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 9 Key (Installer) or Press 3 Key (Owner)	Access "Battery" option
5	Press 2 Key	Disable battery-charging display
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.5   How to Configure the Communications Ports

Purpose: To change the RS-232 communications ports for use with a serial printer, laptop or desktop computer (PC), and/or terminal emulator. Both RS-232 communications ports default to interface with either a PC or a terminal emulator with the following communications settings: 9600 Baud Rate, No Parity, 8-Bit Word Length, 1 Start Bit, 1 Stop Bit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 2 Key	Access "Port Control" option
5	Press 1 Key for Port J8 (RS-232 A) or Press 2 Key for Port J3 (RS-232 B)	Select port to configure
6	Press 1 Key for a Printer or Press 2 Key for IIM or Press 3 Key for ICM Press "Enter" Key to confirm selection.	Select optional device being used
7	Press "Backspace" Key (as required)	Exit Menu System
8	Wait until "Initializing Configuration" message disappears from the display.	

3-2.5.2.4.6   How to Change an SLC Device Address

Purpose: To create or change an SLC device address using the FENWALNET 6000 keypad. All SLC devices are shipped with the default address of 000. This address must be changed to a valid address in the range 1 to 255 before the device can be used on the SLC. Only one device with address 000 can be connected to the SLC when using this procedure to initially address a new device. This procedure can also be used to re-address a previously addressed device. Be sure to de-register the previous address after the device is re-addressed.

Note: An SLC device can only have its address changed if it is not in either a trouble or alarm condition.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 1 Key	Select "Device Address Change"
6	Use keypad to enter default address 000 for new device or enter existing address to be changed. Press "Enter" Key to confirm selection.	Specify address to be changed
7	Use keypad to enter target address for new device or enter altered address for existing device. Press "Enter" Key to confirm selection.	Specify target address
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	

3-2.5.2.4.7   How to Change an Ionization Detector's Pre-Alarm and Alarm Thresholds

Purpose: To change the pre-alarm and alarm thresholds of one or more ionization detectors. The ionization detector is UL Listed and FM Approved for alarm reporting anywhere within the obscuration range of 0.5 to 1.5 percent per foot when used for an open-area application. Alarm thresholds can be set in 0.1 percent-per-foot increments. A pre-alarm threshold can also be set anywhere within the obscuration range of 0.5 to 1.4 percent per foot, but must be less than the detector's alarm threshold. Two additional alarm-reporting ranges are defined for special applications. The in-duct range refers to detector placement in an air duct. The DH-2000 range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct. The alarm ranges for these special applications are as follows:

Application	Pre-Alarm/Alarm Range (%/foot)
Induct	0.5 - 1.0
DH-2000	0.5 - 1.0

Ionization detectors can be automatically programmed to change alarm thresholds by time of day if they are configured for day/night operation. The night alarm thresholds must be less than the corresponding day thresholds.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 1 Key	Select Ionization Detectors
7	Press 1 Key	Select alarm thresholds
8	Press 1 Key for Fixed or Press 2 Key for Day/Night Settings.	Select fixed (i.e., not variable) thresholds or select day/night (i.e. variable by time of day) thresholds
9	Use keypad to enter single detector or range of detectors to change pre-alarm/alarm thresholds. Press "Enter" Key to confirm selection.	Specify detectors to change
10	Press 1 Key for Open Area or Press 2 Key for Induct or Press 3 Key for DH-2000 Press "Enter" Key to confirm selection.	Specify detector application
11	Use keypad to enter pre-alarm threshold. Press "Enter" Key to confirm selection.	Set pre-alarm threshold
12	Use keypad to enter alarm threshold. Press "Enter" Key to confirm selection.	Set alarm threshold. This is the day alarm threshold when using day/night settings.
12A	Use keypad to enter night alarm threshold. Press "Enter" Key to confirm selection.	Set night alarm threshold (day/night only)
13	Wait until "Updated Thresholds for Devices" message disappears from the display.	
14	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.8   How to Change an Ionization Detector's Supervisory Alarm Threshold

⚠️
CAUTION   **This application is not UL Listed or FM Approved**

Purpose: To change the alarm threshold of one or more ionization detectors reporting as supervisory initiating devices. The ionization detector can be programmed to report a supervisory condition anywhere within the obscuration range of 0.5 to 1.5 percent per foot when used in an open-area application. Supervisory alarm thresholds can be set in 0.1 percent-per-foot increments. One additional supervisory-reporting range is defined for a special application. The Induct/DH-2000 range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct or to detector placement in a duct. The supervisory-alarm range for this special application is 0.5 to 1.0 percent per foot.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 1 Key	Select Ionization Detectors
7	Press 2 Key	Select supervisory thresholds
8	Use keypad to enter single detector or range of detectors to change supervisory alarm threshold. Press "Enter" Key to confirm selection	Specify detectors to change
9	Press 1 Key for Open Area or Press 2 Key for In-duct/DH-2000. Press "Enter" Key to confirm selection.	Specify detector application
10	Press 1 Key for "Fixed" or Press 2 Key for "Day/Night" settings. Press "Enter" Key to confirm selection	Select fixed (i.e., not variable) thresholds or select day/night (i.e., variable by the time of day) thresholds
11	Use keypad to enter supervisory-alarm threshold. Press "Enter" Key to confirm selection.	Set supervisory-alarm threshold. This is the day alarm threshold when using day/night settings.
11A	Use keypad to enter night supervisory-alarm threshold. Press "Enter" Key to confirm selection.	Set night supervisory-alarm threshold (day/night only).
12	Wait until "Updated Thresholds for Devices xx" message disappears from the display.	
13	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.9   How to Change a Photoelectric Detector's Pre-Alarm and Alarm Thresholds

Purpose: To change the pre-alarm and alarm thresholds of one or more photoelectric detectors. The photoelectric detector is UL Listed and FM Approved for alarm reporting anywhere within the obscuration range of 0.5 to 3.5 percent per foot when used for an open-area application. Alarm thresholds can be set in 0.1 percent-per-foot increments. A pre-alarm threshold can also be set anywhere within the obscuration range of 0.2 to 3.4 percent per foot, but must be less than the detector's alarm threshold. Two additional alarm-reporting ranges are defined for special applications. The in-duct range refers to detector placement in an air duct. The DH-2000 range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct. The alarm ranges for these special applications are as follows:

Application	Pre-Alm Range (%/ft.)	Alm Range (%/ft.)
In-duct	0.2 - 1.9	0.5 - 2.0
DH-2000	0.2 - 1.9	0.5 - 2.0

Photoelectric detectors can be automatically programmed to change alarm thresholds by time of day if they are configured for day/night operation. The night alarm thresholds must be less than the corresponding day thresholds.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 2 Key	Select Photoelectric Detectors
7	Press 1 Key	Select alarm thresholds
8	Press 1 Key for Fixed or Press 2 Key for Day/Night Settings.	Select fixed (i.e., not variable) thresholds or select day/night (i.e. variable by time of day) thresholds
9	Use keypad to enter single detector or range of detectors to change pre-alarm/alarm thresholds. Press "Enter" Key to confirm selection	Specify detectors to change
10	Press 1 Key for Open Area or Press 2 Key for In-duct or Press 3 Key for DH-2000 Press "Enter" Key to confirm selection.	Specify detector application
11	Use keypad to enter pre-alarm threshold. Press "Enter" Key to confirm selection.	Set pre-alarm threshold
12	Use keypad to enter alarm threshold. Press "Enter" Key to confirm selection.	Set alarm threshold. This is the day alarm threshold when using day/night settings.
12A	Use keypad to enter night alarm threshold. Press "Enter" Key to confirm selection.	Set night alarm threshold (day/night only)
13	Wait until "Updated Thresholds for Device x" message disappears from the display.	
14	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.10   How to Change a Photoelectric Detector's Supervisory Alarm Threshold

⚠️
CAUTION   **This application is not UL Listed or FM Approved**

Purpose: To change the alarm threshold of one or more photoelectric detectors reporting as supervisory initiating devices. The photoelectric detector can be programmed to report a supervisory condition anywhere within the obscuration range of 0.5 to 3.5 percent per foot when used in an open-area application. Supervisory alarm thresholds can be set in 0.1 percent-per-foot increments. One additional supervisory-reporting range is defined for a special application. The in-duct/DH-2000 range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct or to detector placement in a duct. The supervisory-alarm range for this special application is 0.5 to 2.0 percent per foot.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 2 Key	Select Photoelectric Detectors
7	Press 2 Key	Select supervisory threshold
8	Use keypad to enter single detector or range of detectors to change supervisory alarm threshold. Press "Enter" Key to confirm selection	Specify detectors to change
9	Press 1 Key for Open Area or Press 2 Key for In-duct/DH-2000 Press "Enter" Key to confirm selection.	Specify detector application
10	Press 1 Key for "Fixed" or Press 2 Key for "Day/Night" settings. Press "Enter" Key to confirm selection	Select fixed (i.e., not variable) thresholds or select day/night (i.e., variable by the time of day) thresholds
11	Use keypad to enter supervisory-alarm threshold. Press "Enter" Key to confirm selection.	Set supervisory-alarm threshold. This is the day alarm threshold when using day/night settings.
11A	Use keypad to enter night supervisory-alarm threshold. Press "Enter" Key to confirm selection.	Set night supervisory-alarm threshold (day/night only).
12	Wait until "Updated Thresholds for Devices xx" message disappears from the display.	
13	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.11   How to Change a Thermal Detector's Pre-Alarm and Alarm Thresholds

Purpose: To change the pre-alarm and alarm thresholds of one or more thermal detectors. The thermal detector is UL Listed and FM Approved for alarm reporting anywhere in the range of 135° F to 155°F when used with a 50-foot spacing, or anywhere in the range of 135°F to 145°F when used with a 70-foot spacing. Alarm thresholds can be set in 1F° increments. A pre-alarm threshold can also be set anywhere within the temperature range of 80°F to 135°F, but must be less than the detector's alarm threshold.

The alarm ranges for the thermal detectors are summarized below:

Spacing (ft.)	Pre-Alarm Range (°F)	Alarm Range (°F)
50	80 - 135	135 - 155
70	80 - 135	135 - 145

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 3 Key	Select Thermal Detectors
7	Use keypad to enter single detector or range of detectors to change pre-alarm/alarm thresholds. Press "Enter" Key to confirm selection.	Specify detectors to change
8	Press 1 Key for 50-ft. Spacing or Press 2 Key for 70-ft. Spacing. Press "Enter" Key to confirm selection.	Specify detector application
9	Use keypad to enter pre-alarm threshold. Press "Enter" Key to confirm selection.	Set pre-alarm threshold
10	Use keypad to enter alarm threshold. Press "Enter" Key to confirm selection.	Set alarm threshold
11	Wait until "Updated Thresholds for Device x" message disappears from the display.	
12	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.12   How to Change the Configuration of an Addressable AlarmLine Module

Purpose: To change one or more of the following Addressable AlarmLine Module (AAM) operating characteristics for a single module or range of modules: pre-alarm and alarm thresholds as defined by the module's variable-threshold-setting switch; pre-alarm reporting; alarm or overheat reporting

Note: The AAM will create an "Overheat" message on the display if its alarm threshold is exceeded and it is configured for overheat reporting. The control unit buzzer will also activate.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press 4 Key	Select AlarmLine
7	Use keypad to enter single module or range of modules to change configuration settings. Press "Enter" Key to confirm selection.	Specify modules to change
8	Use keypad to enter variable-alarm-threshold switch setting. Press "Enter" Key to confirm selection.	Specify pre-alarm/alarm thresholds based upon footage and ambient conditions.
9	Press 1 Key to enable pre-alarm reporting or Press 2 Key to disable pre-alarm reporting. Press "Enter" Key to confirm selection.	Enable/Disable pre-alarm reporting
10	Press 1 Key to enable alarm reporting or Press 2 Key to select overheat reporting. Press "Enter" Key to confirm selection.	Select type-of-event reporting
11	Wait until "Updated Thresholds for Device x" message disappears from the display.	
12	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.13   How to Configure a Remote Release

Purpose: To change one or more of the following Remote Release Module (RRM) operating characteristics for a single or range of modules: solenoid and initiator.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 2 Key	Select "Configuration"
6	Press "Scroll" Key	Access additional options
7	Press 5 Key	Select "Remote Release"
8	Use keypad to enter single module or range of modules to change configuration settings. Press "Enter" Key to confirm selection.	Specify modules to change
9	Press 1 Key for solenoid or Press 2 Key for initiator	Specify Remote Release application.
10	Wait until "x RRM(s) Updated" message disappears from the display.	Enable/Disable pre-alarm reporting
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.14   How to Manually Register SLC Devices

Purpose: The FENWALNET 6000 Control Unit needs to know which SLC addresses (of the 255 possible addresses) will be occupied by a SmartOne detector, monitor module, relay module or control module. The Registration Procedure enters an occupied address into the control-unit's configuration memory for each SLC device that it encounters during execution. The SLC devices must be uniquely addressed prior to execution of the Registration Procedure.

The SLC devices are assigned the following default-operating parameters:

SLC Device	Default Operating Parameters
Ionization Detectors	0.8% per foot Pre-alarm Threshold 1.0% per foot Alarm Threshold Latching Operation Activates General-Alarm List
Photoelectric Detectors	1.5% per foot Pre-alarm Threshold 2.0% per foot Alarm Threshold Latching Operation Activates General-Alarm List
Heat Detectors	120°F Pre-Alarm Threshold 135°F Alarm Threshold Latching Operation Activates General-Alarm List ITLCO/CTLCO Off
Monitor Modules (AIs)	Alarm-Initiating Device Latching Operation Activates General-Alarm List
Monitor Modules (AIMs)	Alarm-Initiating Device Latching Operation Activates General-Alarm List
Monitor Modules (AAMs)	Alarm-Initiating Device Latching Operation Activates General-Alarm List
Relay Modules (AOs)	Non-Silenceable Operation In General-Alarm List
Control Modules (ASMs)	Non-Silenceable Operation Enabled for Drill Activation Activates in Walk Test
Remote Release Modules (RRMs)	Solenoid, On Until Reset

The activation of any initiating device will activate the outputs in the general-alarm list.

Note: SLC devices are also automatically registered and configured for operation by the AutoLearn or AutoSetup Routines, or by a configuration upload via the FENWALNET 6000 Configuration Program.

Exception: AIMs require additional configuration via the LASERNet Program, and AAMs require additional configuration via the SET Menu or the FCS-6000 Configuration Program after an AutoLearn Procedure. Refer to Paragraph 3-2.5.2.4.12 to configure AAMs via the SET Menu.

⚠ **CAUTION**

The Registration Procedure shall not be used to configure a system. It is primarily a procedure to create a database of SLC devices. Owner locations are not assigned during the Registration Procedure.

Note: Wait for each SLC device to report a "Not-Registered" trouble message and ensure that all these trouble messages have been acknowledged before proceeding with the Registration Procedure.

Execute the De-Registration Procedure before re-registering any previously-registered addresses.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press 3 Key	Select "Registration"
6	Use keypad to select address or range of addresses to register. Press "Enter" Key to confirm selection.	Specify addresses to register
7	Wait until "Device Registration" message disappears from the display.	Devices register or fail
8	Exit Menu System	

3-2.5.2.4.15 How to Manually De-Register SLC Devices

Purpose: To remove one or more SLC devices from the FENWALNET 6000 Control Unit's configuration memory. The de-registered device(s) must be physically removed from the SLC prior to or following the execution of the De-Registration Procedure.

⚠ **CAUTION**

Remove all references to the de-registered devices from the system's application (i.e., EOC) program.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press "Scroll" Key	Access additional options
6	Press 4 Key	Select "De-Registration"
7	Use keypad to select address or range of addresses to de-register. Press "Enter" Key to confirm selection.	Specify addresses to de-register
8	Wait until "Device DeRegistration" message disappears from the display.	Devices de-register or fail
9	Exit Menu System	

3-2.5.2.4.16   How to Disable the Flashing LEDs on SmartOne Detectors

Purpose: To prevent one or more SmartOne detector LEDs from flashing in standby operation. LEDs will only illuminate in alarm condition. The detectors' default-LED operation is flashing.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press "Scroll" Key	Access additional options
6	Press 5 Key	Select "Blink Control"
7	Use keypad to select address or range of addresses to disable LED flashing. Press "Enter" Key to confirm selection.	Specify addresses to disable flashing LEDs in normal operation
8	Press 1 Key and then press "Enter" Key to confirm selection.	Disable flashing LEDs
9	Wait until the message appears on the display, completed or failed.	Number of detectors are shown.
10	Exit Menu System	

3-2.5.2.4.17   How to Enable the Flashing LEDs on SmartOne Detectors

Purpose: To enable one or more SmartOne detector LEDs to resume flashing in standby operation. The flashing LEDs were disabled in a prior blink-control operation.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press "Scroll" Key	Access additional options
6	Press 5 Key	Select "Blink Control"
7	Use keypad to select address or range of addresses to re-enable detector-LED flashing. Press "Enter" Key to confirm selection.	Specify addresses to enable flashing LEDs in normal operation
8	Press 2 Key and then press "Enter" Key to confirm selection.	Re-enable flashing LEDs
9	Wait until the message appears on the display, completed or failed.	Number of detectors are shown.
10	Exit Menu System	

3-2.5.2.4.18   How to Replace an SLC Device

Purpose: To replace an existing device on an SLC with a new device.

Note: Before performing the following procedure, remove the "old" device and connect the "new" device to the SLC. The "old" device must report as "trouble open" and the "new" device must report as "unregistered" to ensure that the devices have different addresses.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press 3 Key	Access "SLC Devices" option
5	Press "Scroll" Key	Access additional options
6	Press 6 Key	Select "Replace Device"
7	Enter the address of the device being replaced and then press "Enter" Key to confirm selection.	Specify "Address to be Replaced (1-255)"
8	Enter the address of the new device being added and then press "Enter" Key to confirm selection.	Specify "Address of Replacement Device (0-255)"
9	Press 1 key to keep the current settings for the new device or press 2 key to use the default settings.	Select "Use Existing" or "Set Default" for the settings of the new device.
10	Exit Menu System	

3-2.5.2.4.19   How to Activate Day/Night Operation for SmartOne Smoke Detectors

Purpose: To enable one or more SmartOne smoke detectors to automatically adjust alarm thresholds by time of day.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Programming" option
6	Press 1 Key	Select "Day/Night" option
7	Press 1 Key	Select option to specify range of smoke detectors to operate in "Set Detectors".
8	Use keypad to enter single address or range of smoke-detector addresses to operate via day/night mode. Press "Enter" Key to confirm selection.	Specify addresses to operate in day / night mode.
9	Press 1 Key and then press "Enter" Key to confirm selection.	Enable "Day / Night" mode
10	Wait until "Detectors Deactivated" message appears on the display.	Number of detectors deactivated shown.
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.20   How to De-Activate Day/Night Operation for SmartOne Smoke Detectors

Purpose: To disable one or more SmartOne smoke detectors from automatically adjusting alarm thresholds by time of day.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Programming" option
6	Press 1 Key	Select "Day/Night" option
7	Press 1 Key	Select option to specify range of smoke detectors to operate in "Set Detectors".
8	Use keypad to enter single address or range of smoke-detector addresses to operate with fixed alarm thresholds. Press "Enter" Key to confirm selection.	Specify addresses to operate in day mode only.
9	Press 2 Key and then press "Enter" Key to confirm selection.	Disable "Day / Night" mode
10	Wait until "Detectors Deactivated" message appears on the display.	Number of detectors deactivated shown.
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.21   How to Change the Day/Night Periods for Smoke Detectors

Purpose: To change daytime and nighttime periods for smoke detectors.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Access "Programming" option
6	Press 1 Key	Select "Day/Night" option
7	Press 2 Key	Select "Set Periods" option
8	Enter daytime start in military format (HH:MM) Press "Enter" Key to confirm day-start time.	Specify day-start time
9	Enter nighttime start in military format (HH:MM) Press "Enter" Key to confirm night-start time.	Specify night-start time
10	Wait until "Day/Night Periods Programmed" message disappears from display.	
11	Press "Backspace" Key (as required)	Exit Menu System
12	Wait until "Initializing Configuration" message disappears from display	Resume normal operations

3-2.5.2.4.22   How to Activate Day/Night Alarm Thresholds for Smoke Detectors

Purpose: To activate daytime and nighttime alarm thresholds for smoke detectors.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Access "Programming" option
6	Press 1 Key	Select "Day/Night" option
7	Press 3 Key	Select "Activate" option
8	Press 1 Key and then press "Enter" Key to confirm selection	Activate day/night settings for weekdays
9	Press 1 Key and then press "Enter" Key to confirm selection	Activate day/night settings for weekends
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from display	Resume normal operations

3-2.5.2.4.23   How to De-Activate Day/Night Alarm Thresholds for Smoke Detectors

Purpose: To de-activate daytime and nighttime alarm thresholds for smoke detectors.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Access "Programming" option
6	Press 1 Key	Select "Day/Night" option
7	Press 3 Key	Select "Activate" option
8	Press 2 Key and then press "Enter" Key to confirm selection	De-activate day/night settings for weekdays
9	Press 2 Key and then press "Enter" Key to confirm selection	De-activate day/night settings for weekends
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from display	Resume normal operations

3-2.5.2.4.24   How to Change the Owner's Password

Purpose: To change the owner's password from its current setting. The factory-default setting is 973480.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password 973480; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press 2 Key	Select "Passwords" option
7	Press 1 Key	Select Owner's option
8	Use keypad to enter new password. Press "Enter" Key to confirm selection.	Specify new owner's password
9	Use keypad to re-enter new password. Press "Enter" Key to confirm selection	Confirm new owner's password
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing-Configuration" message disappears from the display.	Resume Normal Operation

3-2.5.2.4.25   How to Change the Installer's Password

Purpose: To change the installer's password from its current setting. The factory-default setting is 186591.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password 186591; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press 2 Key	Select "Passwords" option
7	Press 2 Key	Select Installer's option
8	Use keypad to enter new password. Press "Enter" Key to confirm selection.	Specify new installer's password
9	Use keypad to re-enter new password. Press "Enter" Key to confirm selection	Confirm new installer's password
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing-Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.26   How to Obtain the Manufacturer's Code

Purpose: If the owner's or installer's code for the panel is lost, the installer or owner must use this command to obtain the manufacturer's code. They must then contact Fenwal Technical Support and recite this code to the Technical Support Representative in order to receive a temporary password. The installer or owner can login with this password for up to 5 days and should change the password immediately.

Step	Action	Result
1	Press and hold down the 4 key	The Manufacturer's Code displays. Write down this code and contact Fenwal Technical Support.

3-2.5.2.4.27   How to Run the AutoLearn Procedure

Purpose: The primary purpose of the AutoLearn Procedure is to execute a Registration Procedure for all currently unregistered SLC devices.

This option registers any currently unregistered SLC devices, and if no Event-Output-Control programming exists in the control unit's memory, will update the general-alarm list by adding all on-board NACs and Combination Circuits (if configured as NACs) and all SLC-based AOs and ASMs. All general-alarm outputs are configured for silenceable operation.

Note: The dedicated releasing circuits and combination circuits, when programmed as releasing circuits, are never included in the general-alarm list.

![CAUTION]

CAUTION   **The AutoLearn Procedure shall not be used to configure a system. It is primarily a procedure to create a database of SLC devices and to build a general-alarm list of outputs. Owner locations are not assigned during the AutoLearn Procedure.**

Note: Wait for each SLC device to report a "Not-Registered" trouble message and ensure that all these trouble messages have been acknowledged before proceeding with the AutoLearn Procedure.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press 3 Key	Activate "AutoLearn"
7	Wait until "AutoLearning Devices on SLC" message disappears from the display.	Exit Menu System and Resume Normal Operations.

3-2.5.2.4.28   How to Run the AutoSetup Procedure

Purpose: The AutoSetup Procedure executes a Registration Procedure for all unregistered SLC devices and, in addition, configures the system for operation as a waterless fire-suppression system. The following operating characteristics are assigned to the FENWALNET 6000 Control Unit and its associated SLC devices.

1. SLC Device Assignments

    Automatic activation of the extinguishing system will be via crossed-zoned alarm-initiating signals generated by combinations of automatic initiating devices assigned to any of the first 100 addresses on the SLC. One half of the crossed-zoned alarm-initiating system will consist of any automatic initiating device addressed within the range of 001 through 050. The other half of the crossed-zoned automatic-initiating system will consist of any automatic initiating device addressed within the range of 051 through 100.

    Spot-type detectors from each half of the crossed-zoned detection system must be alternated throughout the protected area.

    The extinguishing system will be manually activated by monitor modules (i.e., AIs) configured as manual-release stations. Operation of a manual-release station will cause all alarm and shutdown devices to operate as if the system had operated automatically and will cause an immediate activation of the fire-extinguishing system. Operation of a manual-release station will override the operation of all abort switches. Each monitor module with address within the range of 101 through 105 will be assigned as a manual-release station.

    Abort switches will, when operated, interrupt the countdown delay for the activation of the extinguishing system and prevent the operation of any alarms and control functions associated with the discharge of the extinguishing agent. The abort switches must be momentary, dead-man-type devices that require a constant force to remain engaged and active. Abort switches will be configured to reset the countdown timer to the full delay period. Each monitor module with address within the range of 106 through 110 will be assigned as an abort station.

    Each AO output module with address within the range of 111 to 115 will be assigned as a pre-alarm output point.

    Each AO output module with address within the range of 116 to 120 will be assigned as a pre-release output point.

    Each AO output module with address within the range of 121 to 125 will be assigned as a release output point.

2. Sequence of Operation

    The FENWALNET 6000 will progress through the pre-alarm, pre-release, and release states as defined in Paragraph 3-2.5.8.1. The time delay between the pre-release and the release states will be 30 seconds.

3. Control-Unit-Based Outputs Assignments

    Control-unit-based outputs will be assigned to the pre-alarm, pre-release, and release states as follows:

    Pre-Alarm State

    –   NAC No. 1 (steady activation)

    –   programmable Relay No. 1

    –   the owner-location field on the LCD will display the word "Pre-Alarm"

Pre-Release State

- NAC No. 2 (steady activation)
- programmable Relay No. 2
- the owner-location field on the LCD will display the word "Pre-Release" concurrently with the continuously-decremented countdown timer
- deactivate NAC No. 1

Release State

- Release Circuit No. 1
- Release Circuit No. 2
- Combination NAC/Releasing Output No. 1 as a NAC (steady activation)
- Combination NAC/Releasing Output No. 2 as a release circuit
- programmable Relay No. 3
- the owner-location field on the LCD will display the word "Agent Release"

⚠ CAUTION   **Owner locations are not assigned during the AutoSetup Procedure. The Abort operation in this setup is not UL Listed.**

Note: Wait for each SLC device to report a "Not-Registered" trouble message and ensure that all these trouble messages have been acknowledged before proceeding with the AutoSetup Procedure.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select "Programming"
6	Press "Scroll" Key	Access additional options
7	Press 4 Key	Activate "AutoSetup"
8	Wait until "Configuring Basic Suppression System and Initializing Configuration" messages disappear from the display.	Exit Menu System and Resume Normal Operations.

3-2.5.2.4.29 How to Activate Alarm Verification for Smoke Detectors

Purpose: To activate alarm-verification for one or more smoke detectors. Refer to Paragraph 3-2.5.5.3.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key	Access additional options
7	Press 5 Key	Select "Alarm-Verification" option
8	Press 1 Key and then press "Enter" Key to confirm selection.	Activate alarm verification
9	Use keypad to enter single address or range of smoke-detector addresses to be verified. Press "Enter" Key to confirm selection.	Specify addresses to be verified
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.30 How to De-Activate Alarm Verification for Smoke Detectors

Purpose: To de-activate alarm-verification for one or more smoke detectors. See Paragraph 3-2.5.5.3 for the description of alarm verification.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key	Access additional options
7	Press 5 Key	Select "Alarm-Verification" option
8	Press 2 Key and then press "Enter" Key to confirm selection.	De-activate alarm verification
9	Use keypad to enter single address or range of smoke-detector addresses for verification to be de-activated. Press "Enter" Key to confirm selection.	Specify addresses for verification to be de-activated
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.31   How to Activate Positive-Alarm Sequence for Smoke Detectors

Purpose: To activate positive-alarm sequence for one or more smoke detectors. See Paragraph 3-2.5.5.1 for the description of positive-alarm sequence.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key	Access additional options
7	Press 6 Key	Select "Positive-Alarm Sequence"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Activate positive-alarm sequence
9	Use keypad to enter single address or range of smoke-detector addresses for positive-alarm sequence. Press "Enter" Key to confirm selection.	Specify addresses for Positive-Alarm Sequence
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.32   How to De-Activate Positive-Alarm Sequence for Smoke Detectors

Purpose: To de-activate positive-alarm sequence for one or more smoke detectors. See Paragraph 3-2.5.5.1 for the description of positive-alarm sequence.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key	Access additional options
7	Press 6 Key	Select "Positive-Alarm Sequence"
8	Press 2 Key and then press "Enter" Key to confirm selection.	De-activate positive-alarm sequence
9	Use keypad to enter single address or range of smoke-detector addresses for PAS to be de-activated. Press "Enter" Key to confirm selection.	Specify addresses for positive-alarm sequence to be de-activated
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.33   How to Clear the System Event Log

Purpose: To remove all previously recorded system events from the FENWALNET 6000 event log.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key twice	Access additional options
7	Press 7 Key	Select "Clear Events"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Select and clear system event log
9	Wail until "Event Log Clear in Progress" message disappears from the display.	
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.34   How to Clear the Contents of the SLC-Initiating Devices Test Log

Purpose: To remove the most-recently recorded results of initiating devices tests from the SLC Test Log. All initiating devices are tested once per day to confirm that they can transmit an acceptable event-detection signal. The results of the most-recently-transmitted event signal are recorded in the SLC Test Log.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional Set-Menu options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key twice	Access additional Programming-Menu options
7	Press 8 Key	Select "Clear Tests" option
8	Press 1 Key	Select Clear SLC Tests
9	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range to clear.	Specify range of SLC initiating devices to have test results cleared
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.35   How to Clear the Contents of the Walk-Test Log

Purpose: To remove the most-recently recorded results of initiating-devices walk tests from the Walk-Test Log. The results of the most-recently-conducted walk tests are recorded in the Walk-Test Log.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional Set-Menu options
5	Press 4 Key	Select "Programming" option
6	Press "Scroll" Key twice	Access additional Programming-Menu options
7	Press 8 Key	Select "Clear Tests" option
8	Press 2 Key	Select Clear Walk Tests
9	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range to clear.	Specify range of SLC initiating devices to have walk-test results cleared
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.36   How to Resynchronize the Network

Purpose: To restore uniformity of event display among the members of a networked FENWALNET 6000 system.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Men branch
4	Press "Scroll" Key	Access additional options
5	Press 4 Key	Select Programming option
6	Press "Scroll" Key twice	Access additional options
7	Press 9 Key	Select "Resynchronize Network"
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.37   How to Activate Global Acknowledge

Purpose: To enable the "Acknowledge" Switch to process any combination of up to 30 unacknowledged supervisory or trouble events.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key	Select "Globals"
6	Press 1 Key	Select "Global Acknowledge"
7	Press 1 Key and then press "Enter" Key to confirm selection.	Activate global acknowledge
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.38   How to Change the Smoke-Detectors' Alarm-Verification-Delay Period

Purpose: To change the period of time that the FENWALNET 6000 Control Unit will wait for a second, confirming signal from a smoke detector (or any other alarm-initiating device) that an alarm condition exists.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key	Select "Globals"
6	Press 2 Key	Select "Alarm Verification"
7	Use the keypad to enter the new verification time and press "Enter" Key to confirm selection.	Set verification time (max.120 seconds)
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	

3-2.5.2.4.39   How to Change the Smoke-Detectors' Positive-Alarm-Sequence
Investigation Period

Purpose: To change the period of time that the FENWALNET 6000 Control
Unit will wait for the occupants to investigate a smoke-detector's positive-
alarm-sequence report before it executes the smoke-detector's programmed
alarm actions. The operator must reset the control unit before this time
period expires or the programmed alarm actions will occur.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 5 Key	Select "Globals"
6	Press 3 Key	Select "PAS"
7	Use the keypad to enter the new investigation time and press "Enter" Key to confirm selection.	Set investigation time (max. 180 seconds)
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operation

3-2.5.2.4.40   How to Configure the Control Unit for Central-Station Operation

Purpose: To allocate the programmable relays for off-premises signal
transmission to a central station. Programmable Relay No. 1 is
automatically configured to activate for any alarm condition, and
Programmable Relay No. 2 is automatically configured to activate for any
supervisory condition. Refer to Appendix F.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional Set-Menu options
5	Press 5 Key	Select "Globals" option
6	Press "Scroll" Key	Access additional Globals-Menu options
7	Press 4 Key	Select "Central Station" option
8	Press 1 Key, then press "Enter" Key to confirm selection.	Activate Central-Station option
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.41   How to Configure the Global Alarm Acknowledge

Purpose: When this feature is enabled, when the operator presses the "Acknowledge" key, all current alarms are acknowledged. If this feature is disabled, the operator must acknowledge each alarm individually.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional Set-Menu options
5	Press 5 Key	Select "Globals" option
6	Press "Scroll" Key	Access additional Globals-Menu options
7	Press 5 Key	Select "Global Alarm Ack" option
8	Press 1 Key to turn on Global Alarm Acknowledgement or Press 2 Key to turn off Global Alarm Acknowledgement, then press "Enter" Key to confirm selection.	Activate or Deactivate Global Alarm Acknowledge option
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.42   How to Set the Nightly Test Time

Purpose: To set the time, once per night, when the panel performs a SLC device test.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional Set-Menu options
5	Press 5 Key	Select "Globals" option
6	Press "Scroll" Key	Access additional Globals-Menu options
7	Press 6 Key	Select "Nightly Test Time" option
8	Enter the nightly test time in HH:MM format where: HH is hour (0 - 24) MM is minute (0 - 59)	Set the nightly test time
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.43   How to Configure Networked Control Units for Style-7 Communications

Purpose: To enable networked control units to utilize the redundant communications channel (Channel 2) for Style-7 operation.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press 1 Key	Select "Style" option

7	Press one of the following:
	  1 Key
	  2 Key
	  3 Key
		Selects Channel 1
		Selects Channel 2
		Selects both Channel 1 and 2

8	Press 1 Key	Enable channel(s) selected in Step 7
9	Press "Enter" Key to confirm enabling selection.	Selected channel(s) enabled
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.44   How to Disable Style-7 Communications for Networked Control Units

Purpose: To prevent networked control units from utilizing the redundant communications channel (Channel 2) for Style-7 operation.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press 1 Key	Select "Style" option

7	Press one of the following:
	  1 Key
	  2 Key
	  3 Key
		Selects Channel 1
		Selects Channel 2
		Selects both Channel 1 and 2

8	Press 2 Key	Disable channel(s) selected in Step 7
9	Press "Enter" Key to confirm selection.	Selected channel(s) disabled
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.45   How to Change a Networked Control Unit's Node Number

Purpose: To change a control unit's network-node-number assignment.

⚠️
CAUTION

Ensure that this procedure does not introduce a duplicate-node address. Also check the system programming to ensure that all other control units in the network reference the changed node number correctly. For example, if the node number was changed from 2 to 3, be sure that all other control units in the network that react to initiating signals from this control unit have this node number changed from 2 to 3 in their event-output-control programs. See the Configuration Program User's Guide for event-output-control programming.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press 2 Key	Select "Node Number"
7	Use keypad to enter new node number and press "Enter" Key to confirm selection.	Specify new node number
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.46   How to Change a Networked Control Unit's Group Number

Purpose: To change a control unit's network-group-number assignment.

CAUTION

Ensure that this procedure does not introduce an incorrect network grouping. For example, if the group number was changed from 2 to 3, be sure that it operates correctly with all other control units in Group 3.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press 3 Key	Select "Group"
7	Use keypad to enter new group number and press "Enter" Key to confirm selection.	Specify new group number
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.47   How to Add One or More Control Units to a Network

Purpose: To include additional control units in an existing network or to start initial network communications between two or more control units.

Note: This procedure must be performed to start network operations. Network communications will not begin after all configurations have been uploaded unless this procedure is performed. Use Node No. 1 to start initial network communications.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 4 Key	Select "Add/Remove Nodes"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Select Add Node
9	Use keypad to enter single node or range of nodes and press "Enter" Key to confirm selection.	Specify node(s) to be added and execute procedure
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.48   How to Remove One or More Control Units from a Network

Purpose: To permanently remove control units from an existing network.

⚠
CAUTION

Check the system programming to ensure that all other networked control units do not reference the removed control unit(s). For example, if Node 2 was removed, be sure that all other networked control units that reacted to initiating signals from this control unit have this node number removed from their event-output-control programs. See Configuration Program User's Guide for event-output-control programming.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 4 Key	Select "Add/Remove Nodes"
8	Press 2 Key and then press "Enter" Key to confirm selection.	Select Remove Node
9	Use keypad to enter single node or range of nodes and press "Enter" Key to confirm selection.	Specify node(s) to be removed and execute procedure
10	Press "Backspace" Key (as required)	Exit Menu System
11	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.49   How to Enable a Networked Control Unit to be Remotely Reset by Another Control Unit

Purpose: To allow a networked control unit to be remotely reset by other control units in the network. This procedure enables the control unit to be reset as follows:

1. By any other control unit when no sub-groups are used
2. By any other control unit in its group when sub-groups are used
3. By the master mode (i.e., Group 0)

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 5 Key	Select "Reset"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Select "Enable"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.50   How to Prevent a Networked Control Unit from Being Remotely Reset by Another Control Unit

Purpose: To prevent a networked control unit from being remotely reset by other control units in the network. This procedure restricts control unit reset to the control unit itself.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 5 Key	Select "Reset"
8	Press 2 Key and then press "Enter" Key to confirm selection.	Select "Disable"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.51   How to Enable Outputs on a Networked Control Unit to be Remotely Silenced by Another Control Unit

Purpose: To allow the silenceable outputs on a networked control unit to be silenced by other control units in the network. This procedure enables the outputs to be silenced as follows:

1. By any other control unit when no sub-groups are used
2. By any other control unit in the group when sub-groups are used
3. By the master mode (i.e., Group 0)

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 6 Key	Select "Silence"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Select "Enable"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.52   How to Prevent the Outputs on a Networked Control Unit from Being Remotely Silenced by Another Control Unit

Purpose: To prevent the silenceable outputs on a networked control unit from being silenced by other control units in the network. This procedure restricts silencing of the outputs to the control unit itself.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key	Access additional options
7	Press 6 Key	Select "Silence"
8	Press 2 Key and then press "Enter" Key to confirm selection.	Select "Disable"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.53   How to Enable a Networked Control Unit to Process Event Messages Broadcast by other Networked Control Units

Purpose: To allow a networked control unit to process and act upon event messages broadcast from other networked control units. This procedure enables the control unit to process messages as follows:

1. From any other control unit when no sub-groups are used

2. From any other control unit in the group when sub-groups are used

⚠ CAUTION

Check the system programming to ensure that all other network control units that react to specific initiating signals from this control unit have this node number referenced in their event-output-control programs. See the Configuration Program User's Guide for event-output-control programming.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key twice	Access additional options
7	Press 7 Key	Select "Log Events"
8	Press 1 Key	Select "Log All Events"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.54   How to Prevent a Networked Control Unit from Processing Event Messages Broadcast by other Networked Control Units

Purpose: To prevent a networked control unit from processing and acting upon event messages broadcast by other control units in the network. This procedure restricts event display and output control to events monitored by the control unit itself.

>
> **CAUTION**
>
> **Check the system programming to ensure that all other network control units that react to specific initiating signals from this control unit have this node number removed from their event-output-control programs. See the Configuration Program User's Guide for event-output-control programming.**

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key twice	Access additional options
7	Press 7 Key	Select "Log Events"
8	Press 2 Key and then press "Enter" Key to confirm selection.	Select "Log Group Events"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.55   How to Configure a Network Time Synch Period

Purpose: Sets how often the master panel performs a time sync with the slave panels.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key twice	Access additional options
7	Press 8 Key	Select "Time Sync Period"
8	Enter a valid time sync period ans then press "Enter" Key to confirm selection.	Specify Time Sync Period.
9	"Change Time Sync Time Sync Updated" message displays.	Time Sync setting complete
10	Press "Backspace" Key	Exit Menu System

3-2.5.2.4.56   How to Isolate a Networked Control Unit

Purpose: To prevent a networked control unit from broadcasting event messages and control commands to other networked control units and to prevent the control unit from processing and acting upon event messages and control commands broadcast from other networked control units.

A Supervisory signal will occur after each Isolation command is executed, and will remain in effect until all Isolation commands are subsequently cancelled by their corresponding De-Isolation commands.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key twice	Access additional options
7	Press 9 Key	Select "Isolate/De-Isolate Node"
8	Press 1 Key and then press "Enter" Key to confirm selection.	Select "Isolate"
9	Press "Backspace" Key (as required)	Exit Menu System
10	Press "Acknowledge" Key	Silence buzzer and change Supervisory LED from flashing to steady

3-2.5.2.4.57 How to De-Isolate a Networked Control Unit

Purpose: To enable a networked control unit to broadcast event messages and control commands to other networked control units and to enable the control unit to process and act upon event messages and control commands broadcast from other networked control units.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Network" option
6	Press "Scroll" Key twice	Access additional options
7	Press 9 Key	Select "Isolate/De-Isolate Node"
8	Press 2 Key and then press "Enter" Key to confirm selection.	Select "De-Isolate"
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.58   How to Register Remote-Annunciator Modules

Purpose: To add one or more remote-annunciator modules

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 7 Key	Select "Control Modules" option
6	Press 1 Key	Select Registration Routine
7	Press 1 Key for ATMs or Press 2 Key for RDCMs. Press "Enter" Key to confirm selection.	Select module type to register
8	Use keypad to enter single module or range of modules to register. Press "Enter" Key to confirm selection.	Execute Registration Procedure for single module or range of modules entered in this step
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.59   How to De-Register Remote-Annunciator Modules

Purpose: To remove one or more remote-annunciator modules

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 7 Key	Select "Control Modules" option
6	Press 2 Key	Select De-Registration Routine
7	Press 1 Key for ATMs or Press 2 Key for RDCMs. Press "Enter" Key to confirm selection.	Select module type to de-register
8	Use keypad to enter single module or range of modules to de-register. Press "Enter" Key to confirm selection.	Execute De-Registration Procedure for single module or range of modules entered in this step
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Resume Normal Operations

3-2.5.2.4.60   How to Reset Remote-Annunciator Modules

Purpose: To remove any off-normal indications from remote-annunciator modules that did not clear after a reset command

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 7 Key	Select "Control Modules" option
6	Press 3 Key	Select Reset ATM/RDCM
7	Press 1 Key	Execute reset command
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.61   How to Enable Battery Supervision

Purpose: To restore battery supervision that was disabled by the procedure in Paragraph 3-2.5.2.4.62.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key three times	Access additional Set-Menu options
5	Press 9 Key (Installer))	Select "Battery" option
6	Press 3 Key	Select "Disable Battery" option
7	Press 1 Key, then press "Enter" Key	Select "Enable Battery" Connection
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.62   How to Disable Battery Supervision

Purpose: To disable battery supervision for systems that are not using a standby battery for secondary power.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 3 Key	Enter Set-Menu branch
4	Press "Scroll" Key three times	Access additional Set-Menu options
5	Press 9 Key (Installer)	Select "Battery" option
6	Press 3 Key	Select "Disable Battery" option
7	Press 2 Key, then press "Enter" Key	Select "Disable Battery" Connection
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.63   How to Register an Intelligent Interface Module (IIM)

Purpose: To inform the FENWALNET 6000 Control Unit that it will be configured with an Intelligent Interface Module. The IIM must be registered in the control unit's configuration memory to work correctly.

Note: The IIM is also automatically registered when included in a configuration upload via the FENWALNET 6000 Configuration Program.

⚠ **CAUTION**

The IIM Registration Procedure shall not be used to configure the HSSDs connected to the IIM. This is primarily a procedure to store the IIM in the FENWALNET 6000's configuration memory. The HSSDs connected to the IIM shall be configured with the LaserNET Configuration Program.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Select the local node then press "Enter" or a select a remote node number, press "Enter" then enter the remote node's password.	Access applicable control unit (if networked system)
4	Press 3 Key	Enter Set-Menu branch
5	Press "Scroll" Key twice	Access additional options
6	Press 8 Key	Select "HSDs" option
7	Press 1 or 2 Key to select the port the IIM is connected to and then press "Enter"	Select "RS232A" or "RS232B" Assign port to IIM
8	Press "Backspace" Key (as required)	Exit Menu System
9	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.64   How to De-Register an Intelligent Interface Module (IIM)

Purpose: To remove an Intelligent Interface Module from the FENWALNET 6000 Control Unit's configuration memory.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Select the local node then press "Enter" or a select a remote node number, press "Enter" then enter the remote node's password.	Access applicable control unit (if networked system)
4	Press 3 Key	Enter Set-Menu branch
5	Press "Scroll" Key twice	Access additional options
6	Press 8 Key	Select "HSDs" option
7	Press 2 Key"	Select "De-register IIM"
8	Press 1 Key then press "Enter"	Confirm de-registration of IIM
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.65   How to Register High-Sensitivity Smoke Detectors (HSSDs)

Purpose: To inform the FENWALNET 6000 Control Unit of the quantity and addresses of the HSSDs that will be connected to the IIM.

Note: The HSSDs are also automatically registered when included with the IIM in a configuration upload via the FENWALNET 6000 Configuration Program.

⚠️
CAUTION   **This Registration Procedure shall not be used to configure the HSSDs. This is primarily a procedure to store these detectors in the FENWALNET 6000's configuration memory. The HSSDs shall be configured with the LaserNET Configuration Program.**

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Select the local node then press "Enter" or a select a remote node number, press "Enter" then enter the remote node's password.	Access applicable control unit (if networked system)
4	Press 3 Key	Enter Set-Menu branch
5	Press "Scroll" Key twice	Access additional options
6	Press 8 Key	Select "HSDs" option
7	Press 3 Key	Select register HSDs
8	Use keypad to enter single HSSD or range of HSSDs to register. Press "Enter" Key to confirm selection.	Specify single HSSD or range of HSSDs to be registered
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.4.66   How to De-Register High-Sensitivity Smoke Detectors (HSSDs)

Purpose: To remove HSSDs connected to an IIM from the FENWALNET 6000 Control Unit's configuration memory.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Select the local node then press "Enter" or a select a remote node number, press "Enter" then enter the remote node's password.	Access applicable control unit (if networked system)
4	Press 3 Key	Enter Set-Menu branch
5	Press "Scroll" Key twice	Access additional options
6	Press 8 Key	Select "HSDs" option
7	Press 4 Key	Select de-registerHSDs
8	Use keypad to enter single HSSD or range of HSSDs to de-register. Press "Enter" Key to confirm selection.	Specify single HSSD or range of HSSDs to be de-registered
9	Press "Backspace" Key (as required)	Exit Menu System
10	Wait until "Initializing Configuration" message disappears from the display.	Initialization complete

3-2.5.2.5   Test Menu Functions

The Test functions enable service personnel to test the SmartOne initiating devices for the ability to transmit alarm signals. You can also perform alarm-simulation tests for the system's application program and can command on control modules connected to the SLC.

Test Commands are used to initiate a walk test.

Refer to Figure 3-4 for the Top-Level Test-Menu Functions. Refer to Figure 3-5 for the complete Test-Menu tree.

3-2.5.2.5.1   How to Test SLC Initiating Devices

Purpose: To manually test the capability of one or more SmartOne initiating devices (i.e., detectors and monitor modules) to generate and transmit alarm signals that can be properly interpreted and processed by the FENWALNET 6000 Control Unit.

Note: The FENWALNET 6000 Control Unit automatically runs this test once a day for all the configured initiating devices on the SLC. The most current test results for all initiating devices are stored in the SLC Test Results log.

⚠ **CAUTION**

Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits and activate the global-isolate-outputs routine before testing any SLC initiating devices. Restore the system to normal operating condition at the conclusion of these tests and any other functional tests that were performed.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 1 Key	Select "SLC Devices" option
5	Use keypad to enter single device or range of devices to test. Press "Enter" Key to confirm selection.	Specify single device or range of devices to be tested and initiate test. Initiating devices being tested appear sequentially on the display. A summary of the numbers of the devices that successfully passed the test and failed the test is displayed at the end of this procedure. **Note:** All test results are logged in the SLC-Test Results Log. Refer to Paragraph 3-2.5.2.3.4 and list the contents of the SLC-Test Results Log to determine the addresses of any initiating devices that failed this test procedure. Repeat the SLC-Initiating-Devices test for any devices that failed this test and functionally test those devices to confirm that they are operational. Replace any initiating devices that do not pass the functional test.
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.2   How to Run an Audible Walk Test

Purpose: To suspend normal system operation for functional testing of one or more SmartOne initiating devices.

The FENWALNET 6000 Control Unit will not display and act upon alarm reports from initiating devices selected for walk testing. There is no need for the operator to acknowledge, silence, or reset an event initiated during a walk test. The control unit will only energize outputs programmed for walk-test activation for a period of one second following the receipt of an alarm signal from any of the devices selected for walk testing.

Outputs programmable for walk testing include control unit-based NACs and combination circuits configured as NACs and SLC-based output modules (such as ASMs and AOs).

The most-current walk-test results for all initiating devices are stored in the walk-test log. The walk-test mode will automatically end after 30 minutes of inactivity. It can also be ended by a system reset or by the procedure in Paragraph 3-2.5.2.5.4.

Any initiating devices not selected for walk testing will report events as normal. Any alarm reported during a walk test will end the walk-test mode and cause the alarm report to be processed as described in Paragraph 3-2.5.4.

⚠️
CAUTION

Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits before walk testing any SLC initiating devices. Restore the system to normal operating condition at the conclusion of these tests and any other functional tests that were performed.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 5 Key	Select "Walk Test" option
5	Press 1 Key	Select Start Walk Test option
6	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range to walk test.	Specify range of SLC initiating devices to be walk tested.
7	Press "Backspace" Key (as required)	Exit Menu System
8	Press "Acknowledge" Key	Make "Trouble" LED light steadily and silence buzzer
9	Message "Walk Test: On Normal Operation Test" appears on the display	System is ready for walk test
10	Initiate an alarm from every device specified in Step 6. Warning: Do not initiate more than one alarm from any initiating device during a walk test. The address and device type of each initiating device momentarily appears on the display after it is walk tested.	Conduct walk test
11	Conclude walk test after every initiating device specified in Step 6 has been alarmed. Press the "Reset" Switch or refer to Paragraph 3-2.5.2.3.4	
12	List the results of the Walk Test by referring to Paragraph 3-2.5.2.3.5	A successful device test will be indicated by a "Passed" message in the "Walk-Test" Log. An unsuccessful device test will be indicated by a "Failed" message. Functionally test any devices that report a failure to confirm whether or not they are operational. Replace any devices that fail a functional test.

3-2.5.2.5.3   How to Run a Silent Walk Test

Purpose: To suspend normal system operation for functional testing of one or more SmartOne initiating devices.

The FENWALNET 6000 Control Unit will operate identically as described in Paragraph 3-2.5.2.5.2 when in a silent walk-test mode, except that it will not energize the outputs programmed for walk-test activation.

⚠ **CAUTION**

Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits before walk testing any SLC initiating devices. Restore the system to normal operating condition at the conclusion of these tests and any other functional tests that were performed.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 5 Key	Select "Walk Test" option
5	Press 3 Key	Select Silent Walk Test option
6	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range to walk test.	Specify range of SLC initiating devices to be walk tested.
7	Press "Backspace" Key (as required)	Exit Menu System
8	Press "Acknowledge" Key	Make "Trouble" LED light steadily and silence buzzer
9	Message "Walk Test: On Normal Operation Test" appears on the display	System is ready for walk test
10	Initiate an alarm from every device specified in Step 6. Warning: Do not initiate more than one alarm from any initiating device during a walk test. The address and device type of each initiating device momentarily appears on the display after it is walk tested.	Conduct walk test
11	Conclude walk test after every initiating device specified in Step 6 has been alarmed. Press the "Reset" Switch or refer to Paragraph 3-2.5.2.5.4	
12	List the results of the Walk Test by referring to Paragraph 3-2.5.2.3.5	A successful device test will be indicated by a "Passed" message in the "Walk-Test" Log. An unsuccessful device test will be indicated by a "Failed" message. Functionally test any devices that report a failure to confirm whether or not they are operational. Replace any devices that fail a functional test.

3-2.5.2.5.4   How to End Walk Test

Purpose: To terminate a walk test.

Note: The walk-test mode will automatically end after 30 minutes of inactivity. It can also be stopped by a system reset.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 5 Key	Select "Walk Test" option
5	Press 2 Key	End walk test
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.5   How to Activate a Fire Drill

Purpose: To manually activate one or more NACs and/or control modules that are programmed for operation during a fire drill.

Note: Each NAC or control module must be programmed for drill operation via the FENWALNET 6000 Configuration Program. The fire drill must be ended via a menu operation or a system reset before the system can be returned to normal operating condition.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 2 Key	Select "Fire Drill"
5	Press 1 Key, then Press "Enter" Key	Initiate fire drill
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.6   How to End a Fire Drill

Purpose: To manually conclude a fire drill.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 2 Key	Select "Fire Drill"
5	Press "Enter" Key	Stop fire drill
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.7   How to Run a Battery Test

Purpose: To measure the standby battery's open-circuit voltage and the power-supply unit's output voltage.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press 3 Key	Run battery test. The following voltages are measured: (1) battery open-circuit (2) power-supply output
5	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.8   How to Run an Alarm-Simulation Test

Purpose: To activate system outputs by simulating an initiating-device event during system testing. The initiating device is not activated. The FENWALNET 6000 system outputs are activated as if the simulated initiating device had actually reported an alarm condition.

The simulated alarm report causes execution of the control unit's application program and activates any outputs in the general-alarm list. Event acknowledgment, alarms silencing, and a system reset are required to return the system to normal operating condition.

Note: The simulated alarm report must be manually de-activated via a menu operation before the system can be reset and returned to normal operating condition.

The alarm-simulation test can be run concurrently for multiple devices to test counting and crossed-zoned applications. Subsequent alarm acknowledgment and silencing are required. Each simulated initiating device must be manually de-activated via the menu before the control unit can be reset.

⚠️
CAUTION

Isolate all releasing outputs using the Isolate function and physically disconnect the wiring to all agent-release, pre-action-sprinkler and auxiliary control circuits before running any alarm-simulation test(s). Restore the system to normal operating condition at the conclusion of these tests and any other functional tests that were performed.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Alarm Sim Test"
6	Press 1 Key to select SLC Alarm Simulation or Press 2 Key to select HSD Alarm Simulation	Specify device type to be alarm simulated
7	Enter the SLC or HSD Address of the device to test. Use XXX format for address. Press "Enter" Key to confirm address selection.	Specify the address of the device being tested
8	Press 1 Key and Press "Enter" Key	Initiate simulation
9	Press "Acknowledge" and "Silence" Keys (as appropriate)	Execute proper operator procedures
10	Repeat Steps 7 to 9 (as required)	Simulate multiple-device actuations
11	De-activate all simulated initiating devices	See Paragraph 3-2.5.2.5.9
12	Press "Backspace" Key (as required)	Exit Menu System
13	Press "Reset" Switch	Resume Normal Operations

3-2.5.2.5.9   How to De-Activate an Alarm-Simulation Test

Purpose: To report an "alarm-off" message from an initiating device whose activation was simulated.

Note: Each simulated alarm report must be manually de-activated via this menu operation before the system can be returned to normal operating condition.

⚠
CAUTION

Isolate all releasing outputs using the Isolate function and physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits and auxiliary control circuits before running any alarm-simulation test(s). Restore the system to normal operating condition at the conclusion of all simulated alarm tests and any other functional tests that were performed.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional options
5	Press 6 Key	Select "Alarm Simulation Test"
6	Press 1 Key to select SLC Alarm Simulation or Press 2 Key to select HSD Alarm Simulation	Select the type of device to issue "alarm-off" message.
7	Use keypad to enter initiating device to report "alarm off." Press "Enter" Key to confirm selection.	Specify the address of the device to issue "alarm-off" message
8	Press 2 Key and Press "Enter" Key	Initiate "alarm-off" message
9	Press "Acknowledge" Key	Make Alarm LED flash steadily
10	Repeat Steps 6 to 9 (as required)	Report "alarm-off" for all simulated initiating devices
11	Press "Backspace" Key (as required)	Exit Menu System
12	Press "Reset" Switch	Return to Normal Operating Condition

3-2.5.2.5.10   How to Activate Control-Unit-Based Outputs

Purpose: To manually activate control-unit outputs during system testing to confirm proper operation.

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

⚠
CAUTION

Ensure that the outputs will not activate suppression systems or critical facility operations such as computer power. Physically disconnect all agent-release and pre-action-sprinkler circuits and bypass all affected power-off circuits before activating any outputs if the outputs are activating suppression systems or are shutting off power. Restore the system to normal operating condition at the conclusion of all output activation and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output Test" option
6	Press 1 Key for NAC 1, or Press 2 Key for NAC 2, or Press 3 Key for Combo 1, or Press 4 Key for Combo 2, or Press 5 Key for Release 1, or Press 6 Key for Release 2, or Press 7 Key for Relays, or Press 8 Key for SLC Outputs, or Press 9 Key for RRM Group	Specify output to activate
6a	Press 1 Key for Relay 1, or Press 2 Key for Relay 2, or Press 3 Key for Relay 3, or Press 4 Key for Trouble Relay (if Relays selected in Step 6)	Specify relay to activate
7	Press 1 Key and then press "Enter" Key	Initiate output activation specified in Step 6 and 6a
8	Return to Step 6 and make another selection (optional)	Activate additional outputs
9	De-activate all outputs after confirming proper operation	See Paragraph 3-2.5.2.5.11
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.11   How to De-Activate Control-Unit-Based Outputs

Purpose: To manually de-activate control-unit outputs that were activated during system testing.

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

CAUTION

Ensure that the outputs will not activate suppression systems or critical facility operations such as computer power. Physically disconnect all agent-release and pre-action-sprinkler circuits and bypass all affected power-off circuits before activating any outputs if the outputs are activating suppression systems or are shutting off power. Restore the system to normal operating condition at the conclusion of all output activation and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output Test" option
6	Press 1 Key for NAC 1, or Press 2 Key for NAC 2, or Press 3 Key for Combo 1, or Press 4 Key for Combo 2, or Press 5 Key for Release 2, or Press 6 Key for Release 2, or Press 7 Key for Relays, or Press 8 Key for SLC Outputs, or Press 9 Key for RRM Group	Specify output to de-activate
6a	Press 1 Key for Relay 1, or Press 2 Key for Relay 2, or Press 3 Key for Relay 3, or Press 4 Key for Trouble Relay (if Relays selected in Step 6)	Specify relay to de-activate
7	Press 0 Key and then press "Enter" Key	Initiate output de-activation specified in Step 6 and 6a
8	Return to Step 6 and make another selection (optional)	De-activate additional outputs
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.12   How to Activate Control Modules (i.e., as AO, ASM or RRM)

Purpose: To manually activate one or more control modules during system testing to confirm the proper operation of control functions via AOs, NAC operation via ASMs or RRMs.

Note: All control modules must be manually de-activated via a menu operation or a system reset before the system can be returned to normal operating condition.

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

CAUTION

Ensure that the control modules are not activating suppression systems or controlling critical facility operations such as computer power. Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits and bypass all affected power-off circuits before activating any control modules if the control modules are activating suppression systems or are shutting off power. Restore the system to normal operating condition at the conclusion of all control-module activations and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output" Test" option
6	Press "Scroll" Key twice	Access additional Outputs-Test options
7	Press 8 Key	Select "SLC Outputs"
8	Press 1 Key and then press "Enter" Key	Select "Activate"
9	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range of control modules to activate.	Specify range of control modules to activate.
10	Return to Step 8 and make another selection (optional)	Activate additional control modules
11	De-activate all control modules after confirming proper operation	See Paragraph 3-2.5.2.5.13
12	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.13   How to De-Activate Control Modules (i.e., AO or ASM)

Purpose: To manually de-activate one or more control modules that were activated during system testing.

Note: Each control module must be manually de-activated via this menu operation or a system reset before the system can be returned to normal operating condition.

⚠ CAUTION

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

Ensure that the control modules are not activating suppression systems or controlling critical facility operations such as computer power. Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits and bypass all affected power-off circuits before activating any control modules if the control modules are activating suppression systems or are shutting off power. Restore the system to normal operating condition at the conclusion of all control-module activations and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output" Test" option
6	Press "Scroll" Key twice	Access additional Outputs-Test options
7	Press 8 Key	Select "SLC Outputs"
8	Enter starting SLC address and ending SLC address. Use XXX format for addresses. Press "Enter" Key to confirm address range of control modules to de-activate.	Specify range of control modules to de-activate.
9	Press 2 Key and then press "Enter" Key	Initiate control-module de-activation specified in Step 8
10	Return to Step 8 and make another selection (optional)	De-activate additional control modules
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.14   How to Activate Remote Release Modules

Purpose: To manually activate one or more remote release modules during system testing to confirm the proper operation.

Note: All remote release modules must be manually de-activated via a menu operation or a system reset before the system can be returned to normal operating condition.

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

⚠️
CAUTION

Ensure that the remote release modules are not activating suppression systems. Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits if the control modules are activating suppression systems. Restore the system to normal operating condition at the conclusion of all RRM activations and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output Test" option
6	Press "Scroll" Key twice	Access additional Outputs-Test options
7	Press 9 Key	Select "RRM Group"
8	Press 1 Key and then press "Enter" Key	Activate "RRM Group Devices"
9	Press 1, 2, 3 or 4 Key for the RRM group and then press "Enter" Key.	Select the applicable RRM group.
10	De-activate all control modules after confirming proper operation	See Paragraph 3-2.5.2.5.15
11	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.15   How to De-Activate Remote Release Modules

Purpose: To manually de-activate one or more RRMs that were activated during system testing.

Note: Each RRM must be manually de-activated via this menu operation or a system reset before the system can be returned to normal operating condition.

CAUTION

There is no indication at the control unit that an output is activated. Be sure to de-activate the output after proper operation has been confirmed.

Ensure that the remote release modules are not activating suppression systems. Physically disconnect the wiring to all agent-release and pre-action-sprinkler circuits if the control modules are activating suppression systems. Restore the system to normal operating condition at the conclusion of all rrm activations and any other functional tests.

Step	Action	Result
1	Press 0 Key	Initiate Menu Access
2	Enter Password; press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key	Access additional Test-Menu options
5	Press 7 Key	Select "Output Test" option
6	Press "Scroll" Key twice	Access additional Outputs-Test options
7	Press 9 Key	Select "RRM Group"
8	Press 2 Key and then press "Enter" Key	De-activate "RRM Group Devices"
9	Press 1, 2, 3 or 4 Key for the RRM group and then press "Enter" Key.	Select the applicable RRM group and deactivate.
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.16   How to Run a Lamp Test

Purpose: To test the LEDs on the keypad/display.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key Twice	Access additional "Test-Menu" options
5	Press 4 Key	Run LED test. Confirm that all LEDs illuminate.
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.17   How to Measure SLC Resistance

Purpose: To measure the SLC line resistance.

Note: The SLC line resistance cannot be measured for Class-B SLCs with T-Tapping.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key Twice	Access additional "Test-Menu" options
5	Press 8 Key	Select "SLC Resistance" option. Record resistance reading that appears in the display. Resistance cannot exceed 40 ohms.
6	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.5.18   How to Find a Duplicate Address

Purpose: To clear the trouble message that appears when two SLC devices have been accidentally assigned the same address. The location of the affected SLC devices can be found by instructing the control unit to modify the doubly addressed devices LED pulse pattern.

Note: Only one address can be selected at a time if more than one double-address trouble exists.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password; Press "Enter" Key	Gain access to menus
3	Press 4 Key	Enter Test-Menu branch
4	Press "Scroll" Key twice	Access additional "Test-Menu" options
5	Press 9 Key	Select "More Options"
6	Press 1 Key	Select "Find Dup Address" option
7	Enter duplicate SLC address when message "SLC DOUBLE ADDRESS LED SELECTION UTILITY" is displayed. Use XXX format for address. Press "Enter" Key to confirm duplicate address. The lower line of the display changes to "PRESS BACKSPACE TO EXIT"	Specify duplicate address and initiate double-address LED-selection utility. The devices with the duplicate address will flash their LEDs twice every 2 to 3 seconds. Locate the devices and correct the addressing problem. The control unit will continuously execute the double-address LED-selection utility until manually cancelled by a press of the "Backspace" Key.
8	Press "Backspace" Key at the prompt "PRESS BACKSPACE TO EXIT".	End double-address LED-selection utility after the devices with duplicate addresses have been located and addresses corrected.
9	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.6   System Passwords

Password entry is required for all menu operations.

The FENWALNET 6000 System provides two distinct levels of program protection, as required by UL Standard 864. The user can only access the menu system by entering a valid password. Typical valid passwords consist of six digits, but may be up to eight characters in length.

There are two security levels:

- Level One, reserved for the system owner. This is the lowest-level security.
- Level Two, reserved for the system installer. This is medium-level security.

Passwords can consist of up to eight numeric characters (0 - 9) which allows access from the display. Alphanumeric characters can only be used with the FCS program; however, if used, they will lock out any possible entry to the menus from the display. Refer to the FENWALNET 6000 Programming Guide for the procedure to create alphanumeric passwords. Table 3-5 describes the different password levels and their functions.

Table 3-5. Password Levels and Descriptions

Password Level	Description
1	Level 1 passwords permit the owner to isolate devices and circuits, view events and system configuration, set certain parameters such as the time and date, and run low-level tests such as a battery-voltage check.
2	Level 2 passwords permit the installer to access to all of the options available to the owner, plus many more options that include changes to device configuration such as smoke-detector sensitivity settings and expanded testing capabilities such as alarm-simulation testing.

If alphanumeric passwords are necessary for a particular application, it is recommended that the Level One password be numeric and the Level Two password be alphanumeric so as to allow the user to retrieve system information (system information lists) and also to prevent a user from changing any programmed system parameters.

The FENWALNET 6000 System provides protection from unauthorized entry to the system menus by utilizing two levels of default passwords–Level One and Level Two. This feature provides two separate passwords which increases the security of the system. Default passwords are set when the system is shipped from Fenwal. Table 3-6 lists the default passwords.

Table 3-6. FENWALNET 6000 Password Levels

Level	Description	Password
1	Owner	973480
2	Installer	186591

Passwords can be changed following installation. Each password can be up to eight alphanumeric characters in length. Use the menu to select the "Set Programming Password" option to change the default numeric passwords.

3-2.5.3   TROUBLE STATE

The FENWALNET 6000 enters the Trouble State when an event occurs such as an open in a supervised installation conductor or a Level-1 or -2 Pre-Alarm reported by a high-sensitivity smoke detector (HSSD) communicating through the Intelligent Interface Module (IIM).

The upper line of the LCD display shows the trouble event by the device or circuit address, the type of trouble event and its state change, and the device or circuit type. The lower line indicates the up-to-40-character message assigned to the device or circuit using the FENWALNET 6000 configuration program.

Type of Fault

Device Address 062

Device Type with Fault

```
062    OPEN ON       THERMAL
FIRST FLOOR POWER ROOM
```

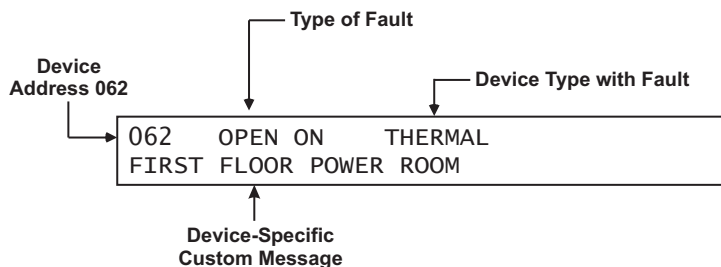**Device-Specific Custom Message**

Figure 3-7. Typical Trouble Message Display

The following actions also occur when any trouble condition is reported:

- The Trouble LED on the display flashes
- The internal buzzer pulses
- The Trouble Relay de-energizes to transfer the Trouble contacts
- The trouble event is stored in the event log
- The trouble message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
- The trouble message is communicated via the RS-232 ports.
- Point- or group-specific and general trouble outputs activate, including previously silenced outputs.

3-2.5.3.1   What to Do When a Trouble Occurs

Press the <ACKNOWLEDGE> Key to change the Trouble LED from flashing to steady and to silence the internal buzzer.

It will be necessary to press the <ACKNOWLEDGE> Key once for each trouble report if multiple unacknowledged trouble events are present and the multiple-trouble-event-acknowledgment-option has not been selected. (See Paragraph 3-2.5.2.4.37 to enable the multiple trouble event acknowledgment options.)

Each acknowledged trouble event (or block of events when the multiple-trouble-event-acknowledgment option is used) will disappear from the display. The display changes to indicate the next unacknowledged trouble event in the case of multiple trouble events. The active troubles can be manually displayed in order of occurrence using the <SCROLL> Key at this time, after all trouble events have been acknowledged. A summary of the number of active trouble events will be displayed as shown in Figure 3-8 at the conclusion of each manual scroll cycle.

Number of Troubles

```
003 ACTIVE TROUBLES REMAIN
   PRESS SCROLL TO VIEW
```
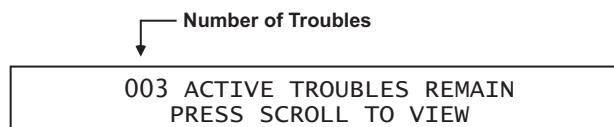
Figure 3-8. Typical Message After Manual Trouble Scroll Cycle

A trouble event that occurs after all previous trouble events are acknowledged will re-initialize the Trouble State as defined in Paragraph 3-2.5.3.

3-2.5.3.2   Trouble Resound

The internal buzzer will resound if one or more acknowledged trouble conditions are still active 24 hours after they were acknowledged. The display will show the following message:

```
┌──────────────────────────────────────────┐
│         24-HOUR TROUBLE REMINDER         │
│   PRESS ACKNOWLEDGE TO SILENCE BUZZER    │
└──────────────────────────────────────────┘
```

Figure 3-9. 24-Hour Trouble Reminder Message

Press the <ACKNOWLEDGE> Key to silence the buzzer. The resound trouble signal will also be automatically retransmitted to the supervising station. Retransmission is accomplished by energizing the trouble relay for one minute and then de-energizing it.

3-2.5.3.3   How to Reset the Control Unit After a Trouble Condition

Trouble conditions are non-latching, except for an open circuit in an SLC configured for Class-A, Style-6 or -7 operation. There is no indication that a trouble event has cleared when multiple, acknowledged troubles are present. The only indication will be that the trouble event as depicted in Figure 3-7 has disappeared from the set of manually scrolled events and that the total number of troubles displayed in Figure 3-8 has decreased.

The system will automatically return to normal operations when all of the trouble events have cleared if events were non-latching troubles.

Press the <Reset> switch to return to normal operations after an open circuit in an SLC configured for Class-A wiring has been repaired.

3-2.5.4   ALARM STATE

The Alarm State occurs when the FENWALNET 6000 receives an emergency signal from an alarm-initiating device such as a smoke detector, a manual release station, or a waterflow switch, or a Level-2 Alarm signal reported by a high-sensitivity smoke detector (HSSD) communicating through the Intelligent Interface Module (IIM)

The upper line of the LCD display shows the event by the device address, the change of state, and the device type. The lower line indicates the up-to-40-character message assigned to the initiating device using the FENWALNET 6000 configuration program.
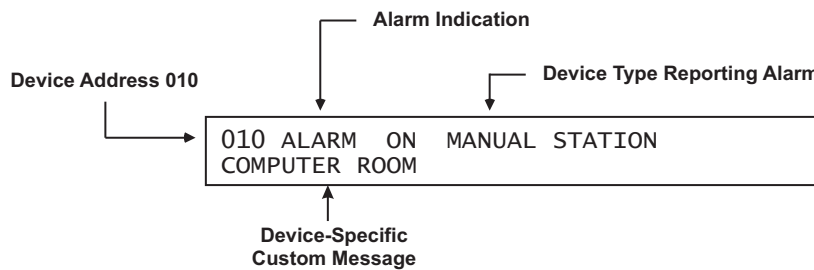

Figure 3-10. Typical Alarm Message Display

The following actions also occur when any alarm condition is reported:

- The Alarm LED on the display flashes
- The internal buzzer sounds continuously
- The alarm event is stored in the event log
- The alarm message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable

- The alarm message is communicated via the NIC and RS-232 ports, as applicable
- Point- or group-specific and general-alarm outputs will activate, including previously-silenced outputs.

3-2.5.4.1   What to Do When an Alarm Occurs

Press the <ACKNOWLEDGE> Key to change the Alarm LED from flashing to steady illumination and to silence the internal buzzer.

It will be necessary to press the <ACKNOWLEDGE> Key once for each device in alarm if multiple unacknowledged alarm events are present. All alarm acknowledgments are logged.

The display changes to indicate the next unacknowledged alarm event in the case of multiple alarm events.

The active alarms and acknowledged alarm-initiating devices can then be manually displayed, in the format of Figure 3-10, in order of occurrence using the <SCROLL> Key. A summary of the number of active alarm events will be displayed as shown in Figure 3-11 at the conclusion of each manual scroll cycle.

```
            ┌── Number of Alarms
            │
            ▼
┌──────────────────────────────────┐
│     003 ACTIVE ALARMS REMAIN     │
│       PRESS SCROLL TO VIEW       │
└──────────────────────────────────┘
```
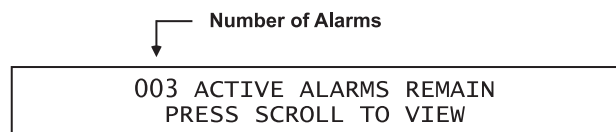
Figure 3-11. Typical Message After Alarm Manual Scroll Cycle

3-2.5.4.2   Alarm Silencing

Press the <Silence> Key to de-activate any silenceable outputs such as NACs and SLC-based signal or relay modules after all alarms have been acknowledged. Outputs are made silenceable through the FENWALNET 6000 configuration program. The control unit will display the following message for 5 to 10 seconds.

```
┌──────────────────────────────────┐
│          OUTPUTS SILENCED        │
│                                  │
└──────────────────────────────────┘
```

Figure 3-12. Outputs Silenced Message

You may then manually scroll through the list of active and acknowledged alarm-initiating devices by using the <SCROLL> Key after the message in Figure 3-12 is displayed. A summary of the number of active alarm events will be displayed as shown in Figure 3-11 at the conclusion of each manual scroll cycle.

The Silence LED will illuminate when the <Silence> Key is pressed after all alarms have been acknowledged. A subsequent press of the <SILENCE> Key will re-activate any outputs that were silenced if no new alarm events have been reported since the outputs were silenced. The Silence LED will also go out. This toggling capability will remain in effect until the control unit is reset.

Note: The toggling capability is only available for stand-alone panels.

A silence command that caused all silenceable outputs to de-activate will be overridden by a subsequent alarm report. All silenced outputs associated with the subsequent alarm-initiating device will reactivate, and the Silence LED will go out. You will need to press the <SILENCE> Key again to de-activate any active, silenceable outputs.

Note: There is a 10-second buffer period during which subsequent presses of the <SILENCE> Key are intentionally ignored. A subsequent key press will only be acted upon after at least 10 seconds have elapsed since the previous key press.

3-2.5.4.3   Non-Latching Operation

Some SmartOne alarm devices can be configured for non-latching operation. Non-latching operation refers to the special way that Alarm Off messages from initiating devices are processed by the FENWALNET 6000 Control Unit.

Each SmartOne alarm-initiating device (such as a smoke detector) transmits an Alarm On message when it detects a fire signature in excess of its configured threshold value. An AI Monitor Module monitoring a normally-open contact detects a contact closure from the contact.

The SmartOne automatic alarm-initiating devices and monitor modules also transmit Alarm Off messages when the detected fire signature drops below the configured threshold value and when the contact closure is removed, respectively. The FENWALNET 6000 Control Unit always displays every Alarm On message, but will not display an Alarm Off message unless the alarm device is configured for non-latching operation. Each Alarm Off message from a non-latching initiating device is treated as a system event that requires operator intervention.

3-2.5.4.4   FENWALNET 6000 Alarm-Off Messages

The FENWALNET 6000 Control Unit will only display an Alarm Off message from an alarm-initiating device such as a smoke detector if the device is configured for non-latching operation.

The upper line of the LCD display shows the event by the device address, the change of state, and the device type. The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.
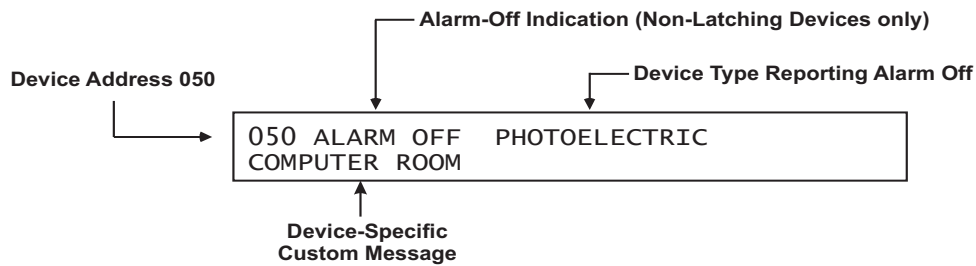

Figure 3-13. Typical Alarm Off Message

The following actions also occur when any Alarm Off condition is reported by a non-latching, alarm-initiating device:

- The Alarm LED on the display flashes
- The internal buzzer pulses
- The Alarm Off event is stored in the event log

Note: All Alarm Off messages are logged, regardless of whether the initiating device is configured for non-latching or latching operation.

- The Alarm Off message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
- The Alarm Off message is communicated via the RS-232 ports

3-2.5.4.5   What to Do When an Alarm-Off Message is Displayed

Press the <ACKNOWLEDGE> Key to change the Alarm LED from flashing to steady and to silence the internal buzzer.

It will be necessary to press the <ACKNOWLEDGE> Key once for each alarm off report if multiple unacknowledged Alarm Off events are present. All Alarm Off acknowledgments are logged. Each corresponding Alarm On message will be removed from the list of active, manually scrolled alarm messages after its Alarm Off message is acknowledged.

The display will show the following message if all the alarm devices are configured for non-latching operation, each activated alarm device has transmitted an Alarm Off message that has been acknowledged, and no releases are being reported:

```
NO ACTIVE ALARMS REMAIN
PRESS RESET TO RETURN TO NORMAL
```

Figure 3-14. Message After All Alarm-Off Reports are Acknowledged

The system will then resume normal latching-alarm-event annunciation. You may manually scroll through the list of active and acknowledged latching-alarm-initiating devices using the <SCROLL> Key if both latching and non-latching alarm reports have been received. They will be displayed using the format of Figure 3-10. A summary of the number of active latching alarm events will be displayed as shown in Figure 3-11 at the conclusion of each manual scroll cycle.

3-2.5.4.6   When to Use Non-Latching Initiating Devices

Use non-latching alarm-initiating devices to prevent an inadvertent release of an extinguishing system as the result of a transitory event that can mimic a fire signature such as an air-conditioning-system leak or the initial start-up of a heating system in the fall. The real or mimicked fire signatures that trigger a countdown to release for an extinguishing system must be present for the entire countdown-delay period in order to release the extinguishing system when non-latching alarm-initiating devices are used. The extinguishing-system release will be aborted if a non-latching device reports an Alarm Off message prior to the expiration of the countdown timer.

3-2.5.4.7   Alarm Display Limitation

The FENWALNET 6000 Control Unit can display a maximum of 64 active alarm messages by manually scrolling through them. All alarms in excess of 64 will be processed by the Control Unit even though they are not displayed, and all outputs will be activated as programmed in the Control Unit's application program.

The LCD will display the following message if a new alarm report is received and the alarm-display limitation has been exceeded:

```
MORE THAN 64 ALARMS
PRESS SCROLL TO VIEW
```

Figure 3-15. Alarm Events Buffer Full Message for New Alarm Event

The normal control unit actions will also occur when any non-displayed alarm condition is reported. These actions include:

- Flashing Alarm LED on the display
- Continuously sounding internal buzzer
- Logging of the alarm event
- Transmittal of the buffer-full message to peripheral devices such as RDCMs, if applicable
- Communication of the alarm message via the RS-232 ports
- Activation of point- or group-specific and general-alarm outputs, including previously-silenced outputs.

Press the <ACKNOWLEDGE> Key to resume normal alarm-event manual scrolling.

The following message will appear at the end of each manual scroll cycle when more than 64 alarm events are active:

```
              MORE THAN 64 ALARMS
              PRESS SCROLL TO VIEW
```

Figure 3-16. Alarm Events Buffer Full Message After Manual Scroll Cycle

3-2.5.4.8   How To Reset the Control Unit After an Alarm Condition

The FENWALNET 6000 Control Unit will not reset and resume normal operations unless it has received Alarm Off messages from all previously alarmed initiating devices. This means, for example, that:

- All automatic initiating devices such as smoke detectors are measuring obscuration levels below their programmed alarm thresholds
- All manual stations have been reset and are in non-activated positions
- Sprinkler system water has been shut off and all waterflow switches have stopped reporting discharge conditions

Press the <RESET> Key to resume normal operations after all alarm-initiating devices have transmitted Alarm Off messages.

Note: It is possible that one or more trouble and/or supervisory messages will be reported after the system-reset operation is performed. For example, a special extinguishing system may need to be recharged or a sprinkler gate valve may be in an off-normal position. Servicing personnel must take prompt action to restore the system to normal operating conditions.

3-2.5.5 SPECIAL ALARM CONDITIONS

⚡
WARNING

Do not use the following special smoke-detector configurations for releasing applications.

Two special alarm states are positive alarm sequence and alarm verification.

3-2.5.5.1 Positive Alarm Sequence

The Positive Alarm Sequence (PAS) is designed to give on-site personnel time to investigate a fire-alarm report from a smoke detector and to prevent an evacuation signal from being generated in the event of a spurious fire-signature detection or an inconsequential fire-alarm report. See Chapter 6 of NFPA 72, National Fire Alarm Code, 2002 Edition, for further details. Refer to the FENWALNET 6000 User's Programming Guide to configure a smoke detector for PAS operation.

The PAS State occurs when the FENWALNET 6000 Control Unit receives an emergency signal from a smoke detector configured for PAS.

The upper line of the LCD display shows the event by the device address, the change of state, and the device type. The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.

PAS Indication On (Smoke Detectors only)

Device Address 200

Device Type Reporting PAS On

```
200    PAS ON    PHOTOELECTRIC
FIRST FLOOR LIBRARY
```
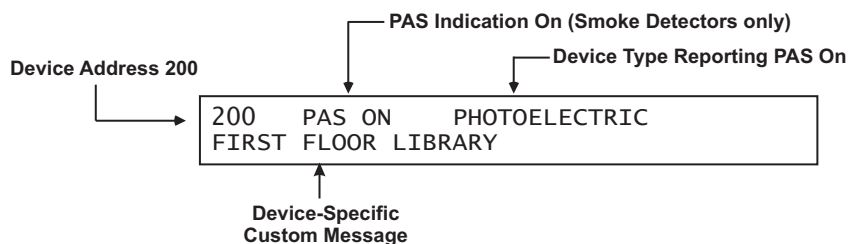
**Device-Specific
Custom Message**

Figure 3-17. Typical PAS Message Display

The following actions also occur when any PAS event is reported:

- The internal buzzer pulses
- The PAS event is stored in the event log
- The PAS message is transmitted to peripheral devices such as RDCMs, if applicable
- The PAS message is communicated via the RS-232 ports

3-2.5.5.2   What to Do When PAS Occurs

You must press the <ACKNOWLEDGE> Key within 15 seconds of receipt of the PAS report to prevent a PAS condition from changing to an alarm condition as described in Paragraph 3-2.5.5.1. The internal buzzer will silence and the display will change to the appearance in Figure 3-18 if the <ACKNOWLEDGE> Key is pressed within 15 seconds of receipt of the PAS report. PAS acknowledgments are logged.
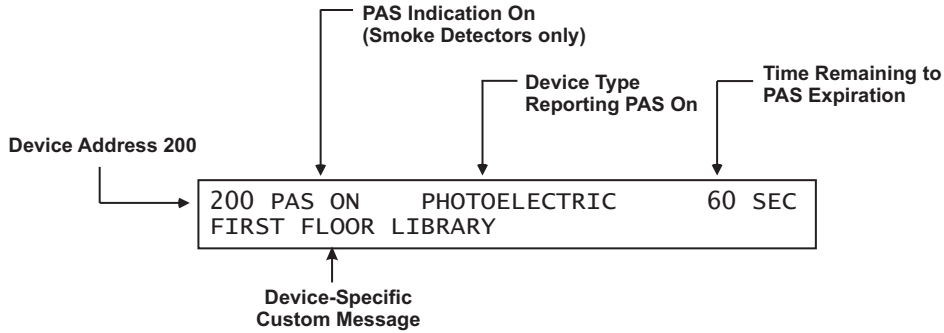

Figure 3-18. PAS Acknowledgment Message

The upper line of the LCD display shows the time remaining to investigate the PAS report before the PAS event transitions to an alarm condition. The investigation time will continually decrease in one-second intervals. The control unit will return to Normal Operation if you press the <RESET> Key or the smoke detector reports an Alarm Off message at any time prior to the expiration of the investigation period. A PAS de-activation event is stored in the event log if an Alarm Off message is reported.

3-2.5.5.3   Alarm Verification

Alarm verification allows a fire-alarm system to delay generating an evacuation signal when an alarm report is received from a smoke detector. The fire-alarm system will wait for a second alarm report from the smoke detector that issued the initial alarm report or another alarm signal from any other alarm-initiating device before it generates the evacuation signal. The fire-alarm system will resume normal operations if it does not receive a second alarm report from the smoke detector or another alarm signal within the user-defined alarm-verification period. See Chapter 6 of NFPA 72, National Fire Alarm Code, 2002 Edition for details. Refer to the FENWALNET 6000 User's Programming Guide to configure a smoke detector for alarm verification.

The Alarm Verification State occurs when the FENWALNET 6000 Control Unit receives an emergency signal from a smoke detector configured for alarm verification.

The upper line of the LCD display shows the event by the device address, the change of state, and the device type. The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.
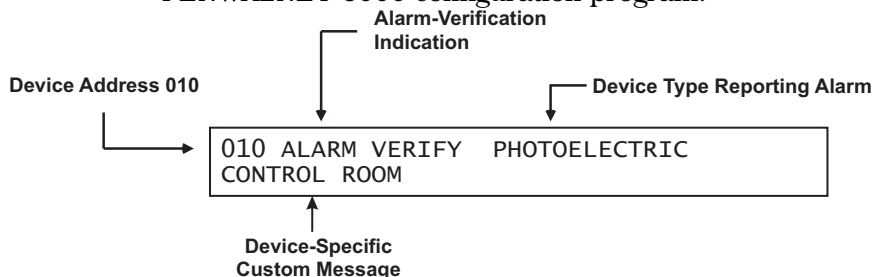

Figure 3-19. Typical Alarm Verification Message Display

The following actions also occur when an alarm verification is reported:

- The internal buzzer pulses
- The alarm verification event is stored in the event log
- The alarm verification message is transmitted to peripheral devices such as RDCMs, if applicable
- The alarm verification message is communicated via the RS-232 ports

3-2.5.5.4   What to Do When Alarm Verification Occurs

Press the <ACKNOWLEDGE> Key to silence the internal buzzer. The display will change to the appearance in Figure 3-20. Acknowledgments of alarm verifications are logged.

Alarm-Verification Indication On (Smoke Detectors only)

Device Type Reporting
Alarm-Verification On

Time Remaining for
Alarm Verification

Device Address 010

```
010 ALARM VERIFY  PHOTOELECTRIC  60 SEC
CONTROL ROOM
```
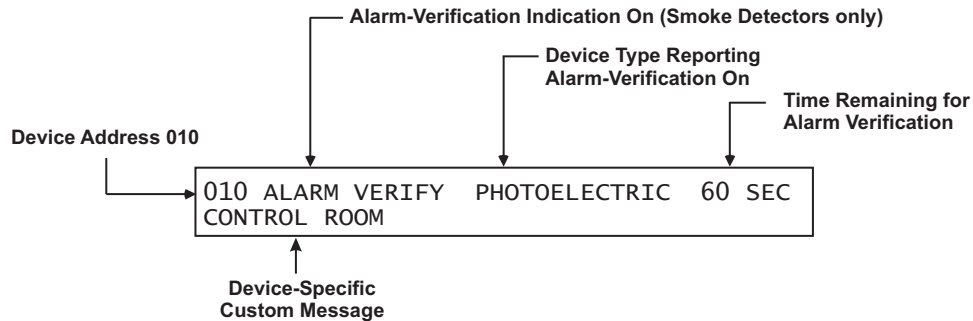
Device-Specific
Custom Message

Figure 3-20. Alarm Verification Acknowledgment Message

The upper line of the LCD display shows the verification time remaining to receive an alarm confirmation signal from the smoke detector. The verification time will continually decrease in one-second intervals. The control unit will return to Normal Mode if the smoke detector does not reconfirm the alarm condition or if no other alarm-initiating device reports at any time prior to the expiration of the verification period. A verification off event is stored in the event log if neither an alarm reconfirmation nor a secondary-alarm message is reported.

3-2.5.6   SUPERVISORY STATE

The FENWALNET 6000 Control Unit enters the Supervisory State when an initiating event occurs such as a monitor module report of a low-air-pressure condition in a pre-action-sprinkler system. It also occurs when any SLC-based initiating or control device, an IIM initiating device, or any control unit based output circuit, is isolated.

The upper line of the LCD display shows the supervisory event by the device address, the state change, and the device type. The lower line indicates the up-to-40-character message assigned to the supervisory device using the FENWALNET 6000 configuration program.

Supervisory On Indication

Device Address 070

Device Type

```
070 SUPERVISORY ON  MONITOR MODULE
FIFTH-FLOOR GATE VALVE
```
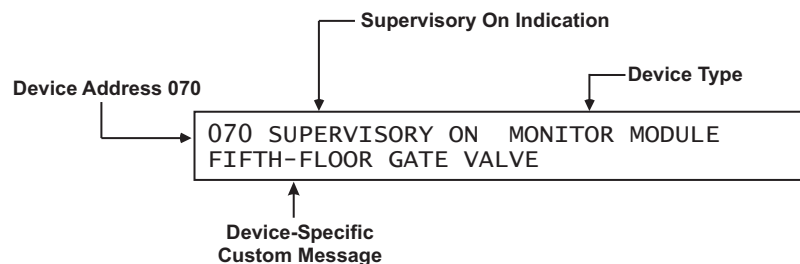
Device-Specific
Custom Message

Figure 3-21. Typical Supervisory Message Display

The following actions also occur when any supervisory condition is reported:

- The Supervisory LED flashes
- The internal buzzer pulses
- The supervisory event is stored in the event log
- The supervisory message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
- The supervisory message is communicated via the RS-232 ports
- Point- or group-specific and general supervisory outputs will activate, including previously-silenced outputs.

3-2.5.6.1   What to Do When a Supervisory Event Occurs

Press the <ACKNOWLEDGE> Key to change the Supervisory LED from flashing to steady and to silence the internal buzzer.

It will be necessary to press the <ACKNOWLEDGE> Key once for each supervisory event if multiple unacknowledged supervisory events are present and the multiple-supervisory-event-acknowledgment option has not been selected. See Paragraph 3-2.5.2.4.37 to enable the multiple-supervisory-event-acknowledgment option.

Each acknowledged supervisory event (or block of supervisory events when multiple event acknowledgment is used) will disappear from the display after acknowledgment. The display changes to indicate the next unacknowledged supervisory event in the case of multiple supervisory events. The active supervisory events can be manually displayed in order of occurrence using the <SCROLL> Key at this time after all supervisory events have been acknowledged. A summary of the number of active supervisory events will be displayed as shown in Figure 3-22 at the conclusion of each manual scroll cycle.

Number of Supervisory Events

```
┌─────────────────────────────────────┐
│   002 ACTIVE SUPERVISORIES REMAIN    │
│          PRESS SCROLL TO VIEW        │
└─────────────────────────────────────┘
```
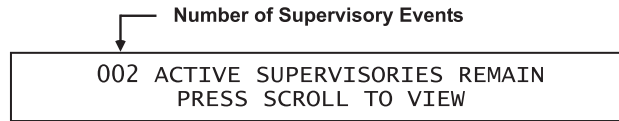
Figure 3-22. Message After Manual Supervisory Scroll Cycle

A supervisory event that occurs after all previous supervisory events have been acknowledged will re-initialize the Supervisory State as defined in Paragraph 3-2.5.6.

3-2.5.6.2   How To Reset the Control Unit After a Supervisory Condition

Supervisory conditions are user configurable to be non-latching or latching. There is no indication that a supervisory event has cleared when multiple, acknowledged supervisory events are present regardless of whether the supervisory event is configured for latching or non-latching operation. The only indication will be that the supervisory event as depicted in Figure 3-21 has disappeared from the set of manually scrolled events and that the total number of supervisory events displayed in Figure 3-22 has decreased.

The system will automatically return to the Normal Mode when all of the supervisory events have cleared if the monitor modules that reported the events were configured to be non-latching, or if all isolated SLC and IIM devices and control-unit-based circuits are restored to normal-operating condition.

Press the <RESET> switch to resume normal operations after a latching supervisory event has cleared.

3-2.5.7   PRE-ALARM STATE

The Pre-Alarm State occurs when a SmartOne automatic initiating device (such as a smoke detector) senses a fire signature that is below its configured alarm-threshold

value but above a lower-threshold value called the "pre-alarm" threshold. The FENWALNET 6000 can also enter the Pre-Alarm State if it receives a Pre-Alarm Level-1 or -2 signal reported by a high-sensitivity smoke detector (HSSD) communicating through the Intelligent Interface Module (IIM).

The upper line of the LCD display shows the pre-alarm event by the device address, the change of state, and the device type. The lower line indicates the up-to-40-character message assigned to the alarm device using the FENWALNET 6000 configuration program.
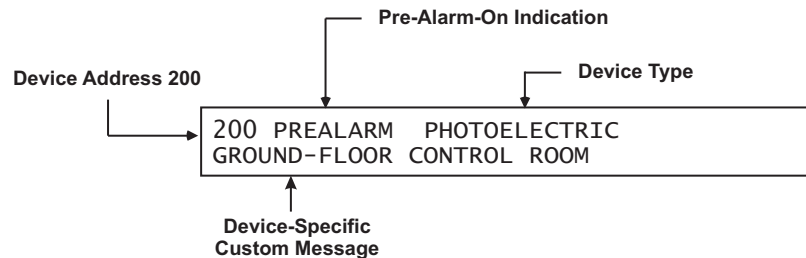
Figure 3-23. Typical Pre-Alarm-Message Display

The following actions also occur when any pre-alarm condition is reported:

- The Pre-Alarm LED flashes
- The internal buzzer pulses
- The pre-alarm event is stored in the event log
- The pre-alarm message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
- The pre-alarm message is communicated via the RS-232 ports
- Point- or group-specific and general pre-alarm outputs will activate, including previously-silenced outputs.

3-2.5.7.1   What to Do When a Pre-Alarm Occurs

Press the <ACKNOWLEDGE> Key to change the Pre-Alarm LED from flashing to steady illumination and to silence the internal buzzer. It will be necessary to press the <ACKNOWLEDGE> Key more than once to change the Pre-Alarm LED from flashing to steady illumination and to silence the internal buzzer if multiple unacknowledged pre-alarm events are present. All pre-alarm acknowledgments are logged.

The display changes to indicate the next unacknowledged pre-alarm event in the case of multiple pre-alarm events.

The system will then continue pre-alarm-event annunciation. You may manually scroll through the list of active and acknowledged pre-alarm-initiating devices in order of occurrence by using the <SCROLL> Key. They will be displayed using the format of Figure 3-23.

3-2.5.7.2   Pre-Alarm Silencing

Press the <SILENCE> Key to de-activate any silenceable outputs such as control unit-based notification-appliance circuits and SLC-based signal or relay modules after all pre-alarms have been acknowledged. Outputs are made silenceable through the FENWALNET 6000 configuration program. The control unit will display the following message for 5 to 10 seconds:

```
            OUTPUTS SILENCED
```

Figure 3-24. Outputs-Silenced Message

You may then manually scroll through the list of active and acknowledged pre-alarm-initiating devices after the outputs silenced message in Figure 3-24 is displayed.

The Silence LED will illuminate when the <SILENCE> Key is pressed after all pre-alarm events have been acknowledged. A subsequent press of the <SILENCE> Key will re-activate any outputs that were silenced if no new pre-alarm events were reported. The Silence LED will also go out. This toggling capability will remain in effect until the control unit is reset.

A silence command that caused all silenceable outputs to de-activate will be overridden by a subsequent pre-alarm report. All silenced outputs associated with the subsequent pre-alarm initiating device will reactivate, and the Silence LED will go out. The <SILENCE> Key must be pressed again to de-activate any active, silenceable outputs.

3-2.5.7.3   How to Reset the Control Unit After a Pre-Alarm Condition

The FENWALNET 6000 Control Unit resumes normal operations when it receives "Pre-Alarm Off" messages from all previously-alarmed automatic initiating devices unless one or more latching outputs such a control unit based notification appliance circuit has been turned on. This mode of operation ensues regardless of whether the automatic alarm-initiating devices are configured for latching or non-latching operation.

Press the <RESET> switch to resume normal operations if latching outputs have been activated.

3-2.5.8   CONCURRENT STATES

It is possible for the FENWALNET 6000 system to be in more than one of the event-driven, Off-Normal Mode states concurrently. In general, any new event, regardless of its type, is prioritized for immediate display, and the control unit's application program runs to activate the outputs, if any, associated with the new event. The FENWALNET 6000's hierarchy for displaying events will determine whether the details associated with the new event will continue to be displayed after acknowledgment or whether its display will be suppressed due to the presence of other higher-priority events.

The general hierarchy for the display of events is as follows:

- Alarm
- Pre-Alarm
- Supervisory and Trouble

3-2.5.8.1   Alarm Events

An alarm event is a signal indicating an emergency situation that requires an immediate response. However, there are varying degrees of alarm signals, depending on whether the system's primary objective is property protection and mission continuity or whether it is occupant notification and building evacuation.

1. Property Protection/Mission Continuity Alarm Events

A property-protection/mission continuity system is usually installed to suppress a fire in the area that it is protecting. Waterless fire-suppression systems typically progress through multiple, sequential alarm states before the extinguishing system is discharged. The automatic detection system is either crossed-zoned or arranged in a counting zone to ensure that a flaming fire is present at the time of extinguishing-system discharge and for added reliability.

The typical alarm stages of a FENWALNET 6000 System designed for property protection/mission continuity are summarized in Table 3-7.

Note: There must be at least two detectors in the protected area when either crossed-zoned or counting-zone automatic detection is used.

Table 3-7. Progressive Alarm States of a FENWALNET 6000 System
(Designed for Property Protection/Mission Continuity)

State	When Occurs
Pre-Alarm State	The pre-alarm state occurs when any automatic detector that is a member of a crossed-zoned or counting-zone detection system issues an alarm report. The pre-alarm state for a property-protection/mission-continuity system with waterless fire suppression typically refers to the receipt of an alarm signal from a spot-type smoke detector or an HSSD. The pre-alarm state described in Paragraph 3-2.5.7 dealt with essentially a warning signal from an automatic detector that the fire signature at a specific location had exceeded a user-configurable, low-level threshold value. That pre-alarm signal did not create an actual alarm. The pre-alarm state discussed here should not be confused with the pre-alarm state discussed in Paragraph 3-2.5.7. The pre-alarm state must be annunciated by distinctive public-mode notification.
Pre-Release State	The pre-release state occurs when two automatic detectors (one detector from each of the two crossed zones or any two detectors in a counting zone) issue an alarm report. The discharge criterion for the waterless fire-suppression system is attained when the pre-release state occurs. The pre-release state is also referred to as the countdown state because it typically triggers a time-delay period that precedes the discharge of the waterless fire-suppression system. The pre-release state must be annunciated by public-mode notification different from the pre-alarm state public notification mode.
Release State	The release state occurs when the waterless fire-suppression system discharges at the conclusion of the time-delay period. The release state can also be triggered without a time delay by a manual-release station. It is also common practice to trigger a pre-action-sprinkler system concurrently with the discharge of the waterless suppression system. The release state must be annunciated by public-mode notification different from both the pre-alarm-state and pre-release-state public notification modes.
Abort State	The abort state occurs when an abort switch is manually activated to interrupt or prevent the start of the countdown timer whose expiration will trigger the discharge of the waterless fire-suppression system.

2. Occupant Notification/Building-Evacuation Alarm Events

An occupant-notification/building-evacuation system is usually installed as required by fire codes to warn the occupants of a building to evacuate because of a fire. This system enters the alarm state when devices such as an automatic detector, a manual-alarm station, or a waterflow switch reports as an alarm event. The FENWALNET 6000 System uses temporal-coded horns and strobes (or other method of non-voice-messaging, public notification acceptable to the authority having jurisdiction) to notify the occupants to evacuate the building.

An occupant-notification/building-evacuation system has two sub-alarm states that are designed to delay the building-evacuation signals or to prevent a transient, non-fire signature from activating the building-evacuation signals. These two sub-alarm states are Positive-Alarm Sequence and Alarm Verification, described previously.

3-2.5.8.2   Hierarchy for Display of Concurrent Events

The hierarchy for the display of concurrent events, from highest to lowest priority, is as follows:

Table 3-8. Priority Levels for Different Types of Concurrent Events

Priority Level	Types of Events
1	Countdown-to-Release Events
2	Release, Alarm, Abort, and PAS-Countdown Events
3	Pre-Alarm Events (per Paragraph 3-2.5.7)
4	Alarm-Verification-Countdown Events
5	Supervisory and Trouble Events, including HSSD warnings reported via the IIM

Lower-level events will not be automatically displayed if higher-level events are active.

3-2.5.8.3   How Concurrent Events Are Displayed

The information shown on the FENWALNET 6000 display will change if the system is in more than one state concurrently.

1. Level-1 Event Display

The upper line of the LCD display shows the time to release for the first suppression zone that has begun to count down after you acknowledge the alarm event (or events) that have triggered the countdown. The time to release will continually decrease in one-second intervals until the expiration of the time-delay period. The lower line indicates the numbers of concurrently-active events for the following Level-1 and Level-2 event types:

– Discharges

– Countdowns to Release

– Aborts

– Alarms

– PAS Countdowns in Progress

Level-2 and lower-level events will not appear on the display as long as any Level-1 event is active and is in process.

Figure 3-25 shows the appearance of the display when a suppression zone has begun to count down.
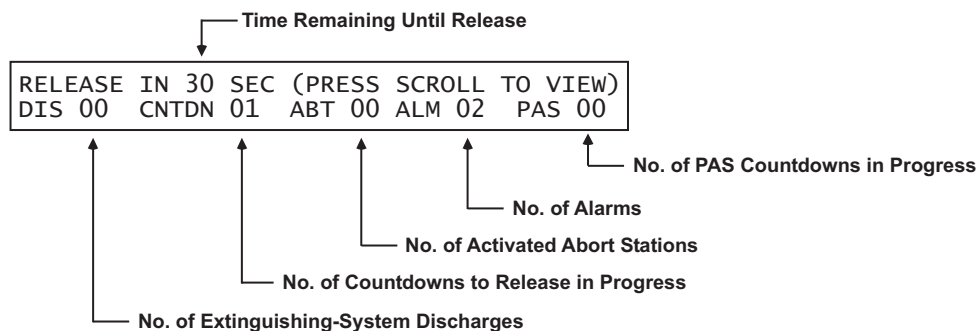

Figure 3-25. Typical Countdown-to-Release Display

The display will show the following message when an extinguishing system has been released:

Release Circuit

Release Message

```
AR2   SYSTEM RELEASE
POWER  ROOM
```

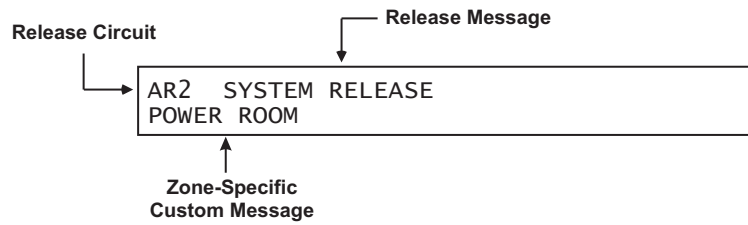**Zone-Specific
Custom Message**

Figure 3-26. Typical Release Message

Press the <ACKNOWLEDGE> Key when the message in Figure 3-26 appears to silence the buzzer. The display will change as shown in Figure 3-27. You may then manually scroll the display using the <SCROLL> Key to show any other suppression zones (successively by order of occurrence, if applicable) that have begun to count down after the release in the first suppression zone. Otherwise, you may manually scroll the display to show the completed Level-1 events and active Level-2 events which will appear as shown in Figure 3-29.

Alarm Indication

Device Address 010

Device Type Reporting Alarm

```
010 ALARM ON PHOTOELECTRIC (SCROLLTOVIEW)
DIS 01  CNTDN 00  ABT 00 ALM 02  PAS 00
```

**No. of PAS
Countdowns in Progress**

No. of Alarms

No. of Activated Abort Stations

No. of Countdowns to Release in Progress
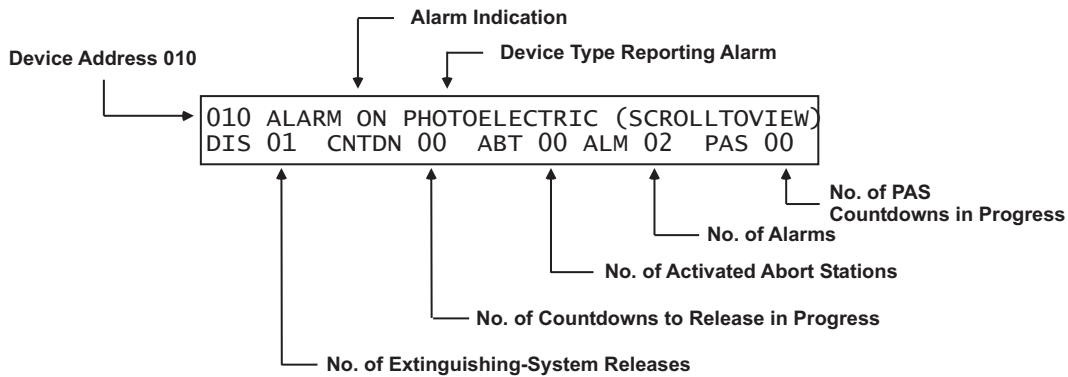
No. of Extinguishing-System Releases

Figure 3-27. Typical Display after Acknowledgment of Release Message

A new event will not automatically override the appearance of the display when a countdown to release is in progress. The appropriate LED on the display will flash and the buzzer will sound when any new system event is reported, and the new event will be logged. The new event will only be displayed when the <ACKNOWLEDGE> Key is pressed.

3-2.5.8.4   What to Do When a Level-1 Message is Displayed

Press the <SCROLL> Key to display the details about the impending special extinguishing system release. There is only the time remaining in the countdown to abort and halt the extinguishing-system release. A successful abort-switch activation will display the following message:
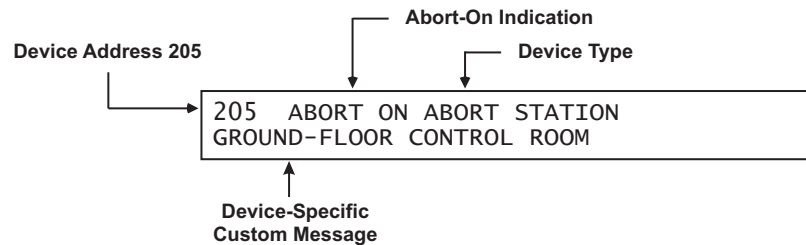
Abort-On Indication

Device Address 205   Device Type

```
205   ABORT ON ABORT STATION
GROUND-FLOOR CONTROL ROOM
```

Device-Specific
Custom Message

Figure 3-28. Typical Display After Abort-Switch Operation

Press the <ACKNOWLEDGE> key when the message in Figure 3-28 appears to silence the buzzer.

Press the <SCROLL> Key to display the information for the next highest-priority and subsequent events. The display will show the 1st event or "More than 64 Alarms" when all of current Level-2 events have been manually displayed. The upper line of the display will revert to showing the highest-priority event approximately 5 seconds after the last press of the <SCROLL> Key. You may then manually scroll the display among the active Level-2 events.

The appearance of the display when manually scrolling through the completed Level-1 and active Level-2 events is shown in Figure 3-29.
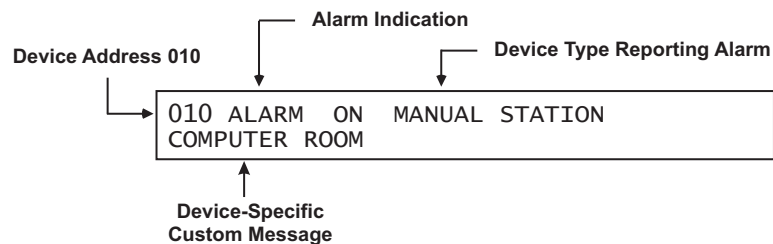
Alarm Indication

Device Address 010   Device Type Reporting Alarm

```
010 ALARM  ON   MANUAL STATION
COMPUTER ROOM
```

Device-Specific
Custom Message

Figure 3-29. Typical Display When Manually Scrolling Through Level-1/-2 Events

3-2.5.8.5   Level-2 Event Display

The upper line of the LCD display shows the activated device or circuit address, the change of state, and the device type that reported the event or the release circuit that has activated. The lower line indicates the following numbers of active or completed Level-1 events and active Level-2 events:

• Discharges
• Countdowns to Release
• Aborts
• Alarms
• PAS Countdowns in Progress

Level-3 and lower-level events will not appear on the display as long as any Level-2 event is active.

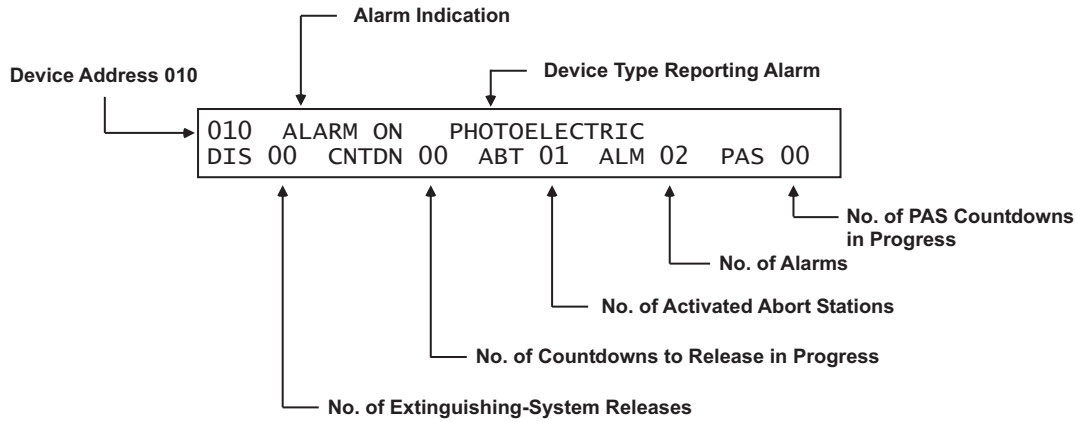Figure 3-30 shows the appearance of the display when more than one type of Level-2 event is active.

Alarm Indication

Device Address 010

Device Type Reporting Alarm

```
010   ALARM ON    PHOTOELECTRIC
DIS 00   CNTDN 00   ABT 01   ALM 02   PAS 00
```

No. of PAS Countdowns in Progress

No. of Alarms

No. of Activated Abort Stations

No. of Countdowns to Release in Progress

No. of Extinguishing-System Releases

Figure 3-30. Typical Multiple Level-2 Event-Type Display

You may manually scroll the display among the active Level-2 events and completed Level-1 events by using the <SCROLL> Key.

3-2.5.8.6   What to Do When Level-2 Messages are Displayed

Press the <SCROLL> Key to display the information for the highest-priority and subsequent events. The display will show the 1st event or "More than 64 Alarms" when all of current Level-2 and completed Level-1 events have been manually displayed. The upper line of the display will revert to showing the highest-priority event approximately 5 seconds after the last press of the <SCROLL> Key. You may then manually scroll the display among the active Level-2 and completed Level-1 events.

The appearance of the display when manually scrolling through the active

Level-2 events is shown in Figure 3-31.

Alarm Indication

Device Address 010

Device Type Reporting Alarm

```
010 ALARM  ON   MANUAL STATION
COMPUTER ROOM
```

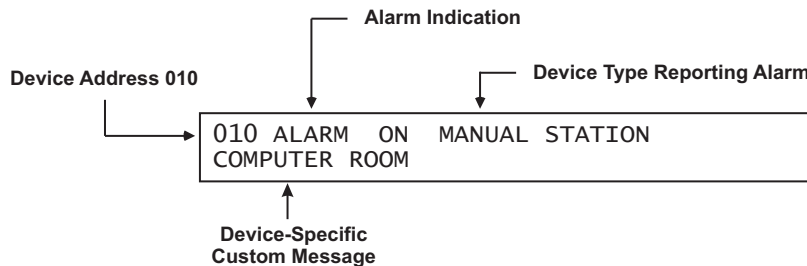**Device-Specific Custom Message**

Figure 3-31. Typical Display When Manually Scrolling Through Level-2 Events

3-2.5.8.7   Level-3 and Lower-Level Event Display

The upper line of the LCD display shows the activated device or circuit address, the change of state, and the device or circuit type that reported the event. The lower line indicates the numbers of concurrently-active events for the following Level-3 through Level-5 event types:

- Pre-Alarms
- Alarm-Verification Countdowns
- Supervisory Events
- Troubles

Figure 3-32 shows the appearance of the display when more than one type of Level-3 through Level-5 event is active.
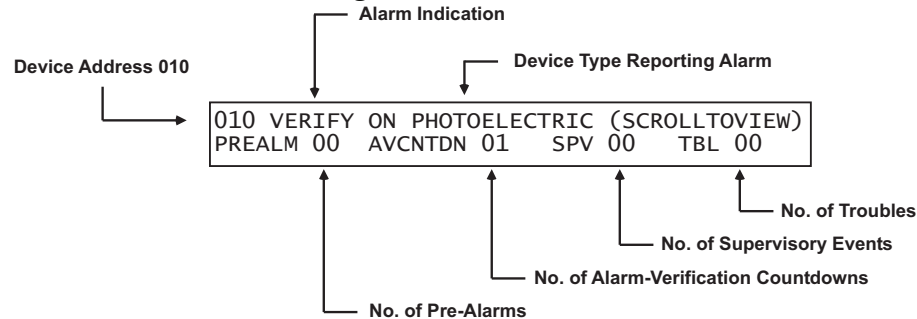
Figure 3-32. Typical Multiple Lower-Level Event Display

You may manually scroll the display among the active lower-level events, according to the priority of events as shown in Figure 3-32, by using the <SCROLL> Key. Only Level-3 events will scroll if present. Level-4 events scroll if there are no Level-3 events. Supervisory and trouble events scroll if there are no active pre-alarms or alarm verifications.

3-2.5.8.8   What to Do When Level-3 and Lower-Level Messages are Displayed

Press the <SCROLL> Key to display the information for the highest-priority and subsequent events. The display will show 1st Event when all of current Level-3 and lower-level events have been manually displayed. The upper line of the display will revert to showing the highest-priority event approximately 5 seconds after the last press of the <SCROLL> Key. You may then manually scroll the display among the active Level-3 through Level-5 events.

The appearance of the display when manually scrolling through the currently-active Level-3 and lower-level events is shown in Figure 3-33.
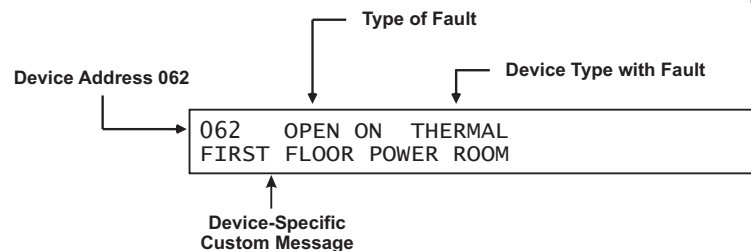

Figure 3-33. Typical Level-3 and Lower-Level Events Display

3-2.5.8.9   Level-3 Display Limitations

The FENWALNET 6000 can display a maximum of 300 active trouble, supervisory, pre-alarm, and alarm-verification messages. However, new events in excess of the 300 active reports will be processed by the control unit, and all outputs associated with the 300th (or higher) event will be activated as programmed in the control unit's application program.

The LCD will show the following message if a new trouble, supervisory, pre-alarm, or alarm-verification report is received and the display limitation has been exceeded:

```
> 300 PREALMS/AVCTNDNS/TBLS/SPVS
      PRESS SCROLL TO VIEW
```

Figure 3-34. Lower-Level-Events-Buffer-Full Message for New Event

The normal control unit actions will occur when any non-displayed event is reported. These actions include:

- Flashing of the appropriate LED
- Pulsing of the internal buzzer
- Logging of the event
- Transmittal of the buffer-full message to peripheral devices such as RDCMs, if applicable
- Communication of the event via RS-232 ports
- Activation of point- or group-specific and general state outputs, including previously-silenced outputs

Press the <ACKNOWLEDGE> Key to resume normal manual concurrent-event scrolling. The following message will be displayed at the end of each manual scroll cycle when more than 300 Level-3 and lower-level events are active:

```
> 300 PREALMS/AVCNTDNS/TBLS/SPVS
      PRESS SCROLL TO VIEW
```

Figure 3-35. Lower Level Events Buffer Full Message After Manual Scroll Cycle

3-2.6   **System Start-Up**

⚠️
CAUTION
Do not connect or disconnect the USB cable while the control unit is powering up on system startup or is initializing after a new configuration upload.

The following paragraphs describe system start-up procedures following a successful installation.

3-2.6.1   PRELIMINARY PROCEDURES

Ensure that the following tasks were successfully completed:

- The FENWALNET 6000 Control Unit is securely mounted in a clean and dry area that has a normal range of environmental temperatures.
- The power supply unit has been configured correctly for the AC supply voltage.
- All field wiring has been checked for continuity, earth grounds, and short circuits. Wiring resistance and capacitance values have been measured and recorded, where appropriate.
- All SLC-based initiating devices and relay/control modules are electronically addressed, or will be addressed shortly after the control unit is powered up. SLC wiring is not connected to the control unit.
- The initiating circuits for all AI Monitor Modules are terminated with 10 k Ohms end-of-line resistors.
- Peripheral devices such as RDCMs and ATMs have their address switches correctly set.
- Field wiring for all control unit-based NACs is terminated with 10 kOhm end-of-line resistors.
- All control heads for special-extinguishing systems, if used, are removed from the agent storage containers.
- All initiator circuits have been replaced by simulated loads.
- Pre-Action/deluge solenoids are removed from the valves that control the distribution of water to the sprinkler heads.

3-2.6.2   INITIAL POWER-UP AND CONTROL-UNIT CHECKOUT

The FENWALNET 6000 power-up procedure is as follows:

1. Close the circuit breaker to apply AC power to the control unit. Verify that the green "Power On" LED illuminates and the display shows this message for approximately 15 seconds:

```
SYSTEM STARTUP          BOOT VERSION 1.0.0
```

Figure 3-36. Initial Power-Up Message

2. Confirm that the yellow Trouble LED is lit and that the following message appears for 10 to 20 seconds.

```
SYSTEM INITIALIZING
FENWALNET 6000 VER 1.0.0/1.0.0
```

Figure 3-37. Initialization Message

3. Connect the standby batteries as shown in Figure 2-9. The display will indicate the following messages:

```
DATE/TIME MUST BE SET TROUBLE ON
NORMAL OPERATION TEST
```

```
 SLC NOT MONITORING ON
  NORMAL OPERATION TEST
```

```
002 ACTIVE TROUBLES REMAIN
PRESS SCROLL TO VIEW
```

Figure 3-38. Boot-Up Message

Press the <ACKNOWLEDGE> Key to silence the buzzer and change the Trouble LED from flashing to steady illumination.

These messages will scroll for several minutes.

Proceed to Step 4 after the "SLC Not Monitoring On" message disappears and the number of active troubles changes from 002 to 001.

4. Set the time and date as follows:

   a. Press the 0 Key. This display will show this message:

```
PLEASE ENTER PASSWORD
* * * * * *
```

Figure 3-39. Password Prompt

   b. Press the default Level-1 Password (973480) keys and press the <Enter> Key. The top-level menu will appear:

```
1: ISOLATE    2: LIST
3: SET        4: TEST
```

Figure 3-40. Top-Level Menu Selections

   c. Press the 3 Key to select "SET"

```
1: TIME/DATE     2: PORT CONTROL
3: SLC DEVICES     SCROLL FOR MORE
```

Figure 3-41. Set Menu

   d. Press the 1 Key to select "TIME/DATE"

```
1: SET TIME     2: SET DATE
3: BATTERY
```

Figure 3-42. Time/Date Sub-Menu

   e. Press the 1 Key again to select "SET TIME"

```
1: AM/PM              2: MILITARY
```

Figure 3-43. Sub-Menu for Time-Display Format

   f. Press the 1 Key again to select "AM/PM" format

```
SET TIME (AM/PM)
ENTER THE TIME  *_:_ _ (HH:MM)
```

Figure 3-44. Sub-Menu to Enter Current Time

    g.   Enter the time (HH = hours, 0-12; MM = minutes, 0-59) using the digits keys. Press the <Enter> Key to finish your entry.

    h.   Press the 1 Key for AM or the 2 Key for PM as indicated below, and then press the <Enter> Key to enter your selection:

```
SET TIME (AM/PM)
1: AM           2: PM  *
```

Figure 3-45. Sub-Menu to Complete Current-Time Entry

The display will return to the sub-menu below when you press the <BACKSPACE> Key:

```
1: SET TIME       2: SET DATE
3: BATTERY
```

Figure 3-46. Time/Date Sub-Menu

    i.   Press the 2 Key to select "SET DATE"

```
SET DATE
ENTER THE DATE  *_-_ _-_ _ (MM-DD-YY)
```

Figure 3-47. Sub-Menu to Enter Current Date

    j.   Enter the date (MM = month, 0-12; DD = day, 0-31, YY = year, 00-99) using the digits keys.

    k.   Press the <ENTER> Key to finish your entry.

5.   Press the <BACKSPACE> Key three times to exit from the menu operating state. Confirm that no new trouble messages have appeared on the display.

6.   Remove all power from the control unit by disconnecting the standby battery first and then disconnecting the AC power in anticipation of initially configuring the signaling line circuit.

Note: It will be necessary to enter the date and time each time that the FENWALNET 6000 Control Unit is completely powered down.

3-2.6.3   INITIAL SIGNALING-LINE-CIRCUIT CONFIGURATION

Note: The following procedure assumes that all SmartOne devices have been addressed with the Handheld Programmer or via the FENWALNET 6000 keypad. Refer to Appendix D to address SmartOne devices through the Handheld Programmer or to Paragraph 3-2.5.2.4.6 to address SmartOne devices via the FENWALNET 6000 control unit's keypad.

Use this procedure to initially configure and check the number of SmartOne devices connected to the SLC.

1.   Connect the wiring for the SLC to Terminal Block TB1. Refer to Figure 1-3. See also Figures 2-12, 2-15, and 2-16 for typical SLC wiring.

2.   Power the control unit, and set the time and date, using the procedure outlined in Paragraph 3-2.6.2.

3.   All of the SmartOne devices connected to the SLC will report a not-registered trouble message similar to the message shown in Figure 3-48:

Trouble Not-Registered Indication

Device Address 205

Device Type Not Known at This Time

```
205 NOT REGISTERED ON UNKNOWN TYPE
UNUSED SLC DEVICE
```
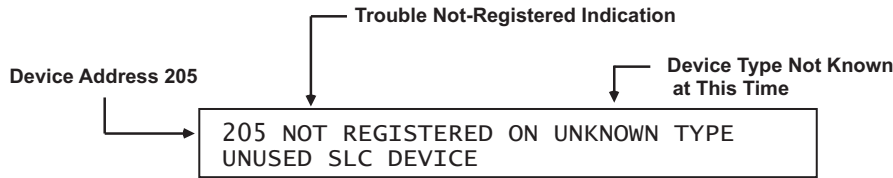
Figure 3-48. Typical Device Not Registered Message

4. Wait for all of the device-not-registered troubles to report. Press the <ACKNOWLEDGE> Key one or more times to silence the control unit buzzer.

5. Confirm that no more trouble messages have been reported.

6. Record the number of currently-active troubles. The number of troubles should be equal to the number of SmartOne devices connected to the SLC.

7. Run the AutoLearn Routine as follows:

   a. Press the 0 Key. This display will show this message:

```
PLEASE ENTER PASSWORD
* * * * * *
```

Figure 3-49. Password Prompt

   b. Press the default Level-2 Password keys (186591) and then press the <Enter> Key. The top-level menu selections will be displayed:

```
1: ISOLATE          2: LIST
3: SET              4: TEST
```

Figure 3-50. Top-Level Menu Selections

   c. Press the 3 Key to select "SET"

```
1: TIME/DATE        2: PORT CONTROL
3: SLC DEVICES         SCROLL FOR MORE
```

Figure 3-51. Set Menu

   d. Press the <SCROLL> Key and then the 4 Key to select "PROGRAMMING"

```
4: PROGRAMMING       5: GLOBALS
6: NETWORK (FUTURE)    SCROLL FOR MORE
```

Figure 3-52. Additional Set-Menu Selections

   e. Press 3 to select "AUTOLEARN"

```
1: DAY/NIGHT        2: PASSWORDS
3: AUTOLEARN           SCROLL FOR MORE
```

Figure 3-53. Programming Sub-Menu

Figure 3-54 shows a typical message that displays when the AutoLearn routine is running.

```
AUTO-LEARNING DEVICE ON SLC
AUTO-LEARNING DEVICE 031
```

Figure 3-54. Typical Auto-Learn In-Process Display

The AutoLearn Routine will register and assign a default operating configuration to each device on the SLC. Refer to Paragraph 3-2.5.2.4.26 for a detailed description of the AutoLearn Routine.

f. The control unit will display the following message when the AutoLearn Routine is finished.

```
AUTO-LEARNING DEVICES ON SLC
REGISTERED XXX DEVICES ON SLC
```

Figure 3-55. Typical Auto-Learn Complete Display

g. Press the <Backspace> Key as required to exit from the menu operating mode. Wait until the "Initializing Configuration Message" disappears from the display. Confirm that no new trouble messages have appeared on the display.

The FENWALNET 6000 Control Unit is now ready for site-specific programming.

3-2.6.4   SITE-SPECIFIC PROGRAMMING

Each FENWALNET 6000 System must be uniquely configured for the specific end-user application. System configuration involves assigning an address and operating characteristics to each SmartOne initiating, relay, or control device. It also involves defining what initiating events or combinations of initiating events will activate the various control unit-based output circuits and SLC-based relay and control devices. A site-specific application program can be created in the following two ways.

3-2.6.4.1   System Configuration via the Auto-Setup Routine

The Auto-Setup Routine sets operating parameters for SLC-based devices by the combination of the device's type and address on the SLC. It assigns fixed activation sequences for each control unit-based output circuit and each SLC-based relay and control device by specific-initiating-device report and combinations-of-initiating-device reports.

See Paragraph 3-2.5.2.4.28 for a complete discussion of system configuration through the Auto-Setup Routine.

3-2.6.4.2   System Configuration via the FCS Configuration Program

You can also configure the FENWALNET 6000 System via the FCS-6000 Configuration Program for individual site-specific applications. The FCS-6000 Configuration Program allows you to set the operating parameters for the SmartOne initiating devices and to create activation sequences for each control unit-based output circuit and each SLC-based relay and control device by specific-initiating-device report and combinations-of-initiating-device reports.

Refer to the FENWALNET 6000 Programming Guide for an explanation of system configuration through the FCS-6000 Configuration Program.

3-3   NETWORK SYSTEM OPERATION

Multiple FENWALNET 6000 systems can be networked together to form a larger, integrated system for common event reporting, operator control, and outputs activation. A peer-to-peer network can be created for up to thirty-two (32) FENWALNET 6000 control units. These units perform the following networked fire alarm and/or suppression system operations:

- Event initiation
- Protected premises local and/or remote event annunciation
- Occupant notification by audible and visible signaling appliances
- Process and equipment control to activate safety procedures
- Fire extinguishing system release

- Off-premises transmissions to a central station or a fire department

Each networked control unit supervises its own initiating devices and output circuits. It also manages the input point to output circuit operations specific to its local protected area(s). These operations occur with or without network inter-control unit communications, lack of network communications due to catastrophic fault, or irrespective of the condition of any other control unit in the network.

A typical networked FENWALNET 6000 system is shown in Figure 3-56.

Figure 3-56. Typical Networked FENWALNET 6000 System
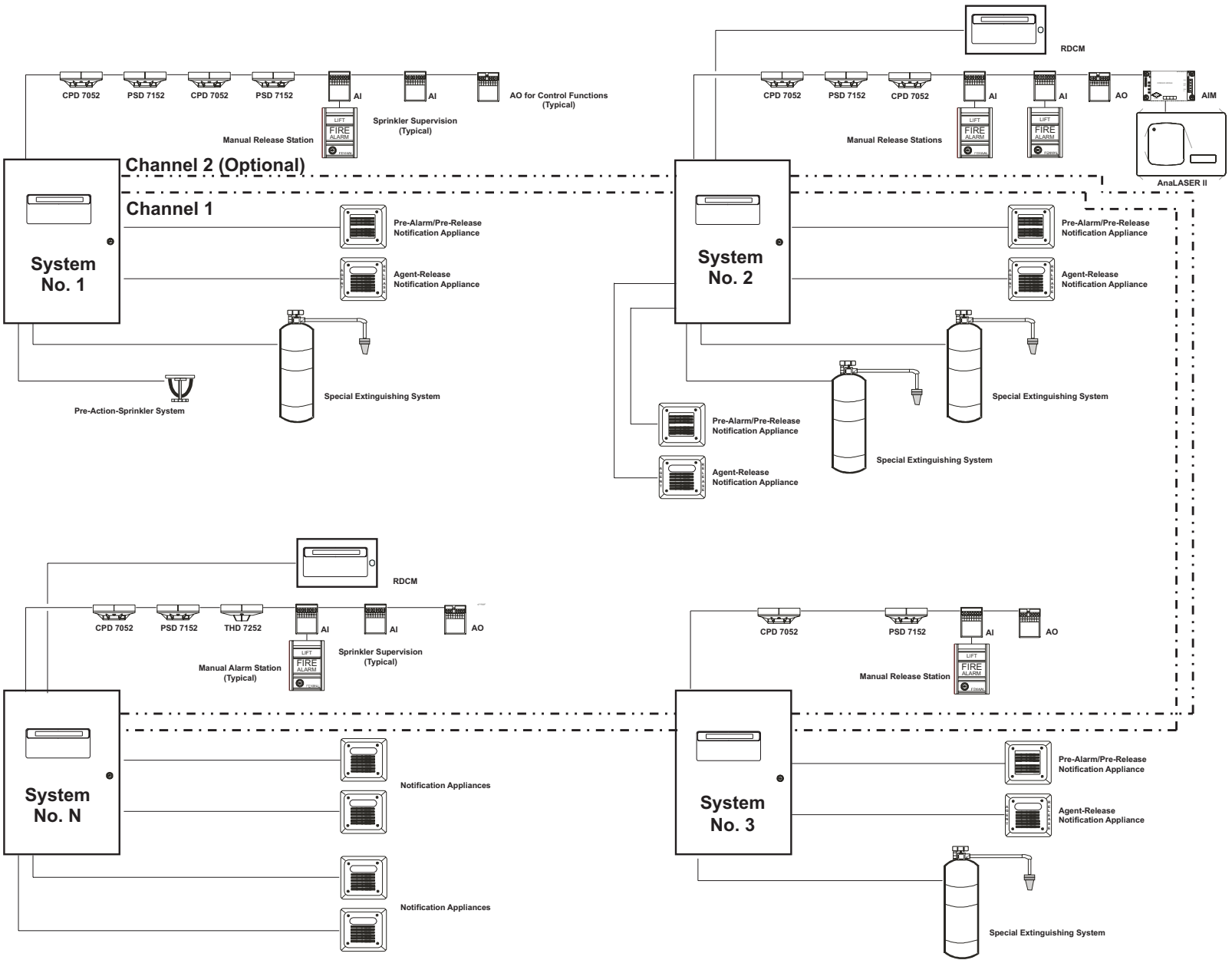
3-3.1 Communications

Each networked control unit can communicate with every other control unit in the network. Control unit communication is peer-to-peer via a token-passing protocol. This method ensures that only one control unit is broadcasting at any one time. Network Interface Cards (NICs) integrate two or more control units in a networked configuration.

Networked control units are interconnected using shielded, twisted-wire pair, fiber-optic medium, or mixed transmission media (combination fiber optic or twisted wire pair media). Each NIC regenerates the network communications, and enables control units to be up to 4,000 feet apart when using shielded, twisted-wire pair, and up to 1 mile (5,280 feet) when using a 62.5/125 μm duplex fiber-optic medium.

Network messages and broadcasts are transmitted over either single- or dual-channel communications connections. Dual-channel connections offer a redundant communications path that allows network broadcasting and inter-control-unit functionality with an open- or short-circuit fault or ground fault on one of the channels. Any fault in either a single- or dual-channel communications channel creates a network trouble condition.

3-3.2 Network Event Broadcasts

Each networked control unit can be configured to broadcast any event associated with its initiating devices or monitored output circuits:

- Locally to the control unit-of-origin only
- Selectively to a subset of networked control units
- Globally to every control unit within the network.

Network broadcasts extend to all ancillary equipment such as Remote Display Control Modules (RDCMs) and Annunciator Terminal Modules (ATMs) associated with a designated subset of control units when selective event broadcasting is chosen. Network broadcasts extend to all such equipment associated with every control unit when the network is configured for global-event broadcasting.

The default operation for event broadcast is globally to all control units in the network.

3-3.3 Operator Control

Operators can acknowledge events, silence notification appliances, and perform resets in three different configurations:

- Locally to the control unit-of-origin only
- Selectively to a subset of the networked control units
- Globally to all control units in the network.

Operator-intervention capability extends to all ancillary equipment such as Remote Display Control Modules (RDCMs) and Annunciator Terminal Modules (ATMs) associated with a designated subset of control units when selective operator control is used. It extends to all such equipment associated with every control unit when the network is configured for global operator control.

3-3.4 Event Recording

Each control unit is configurable to record and display events as follows:

- Locally from its directly-monitored peripheral devices and output circuits only
- Selectively from a subset of networked control units
- Globally from all control units in the network

The default operation for event recording and display is globally from all control units in the network.

3-3.5 **Event Output Control (EOC)**

A confirmed event at any control unit can create output control, including extinguishing-system activation, in any of the following ways:

- Locally to its directly controlled peripheral devices and output circuits only
- Selectively to peripheral devices and output circuits controlled by a subset of networked control units

    Note: This requires EOC code on the remote control units to activate their local outputs.

- Globally to peripheral devices and output circuits controlled by all control units in the network.

    Note: This requires EOC code on the remote control units to activate their local outputs.

The default operation for event-output control is globally to all control units in the network.

Any control unit can create local output control, including extinguishing system activation, only to its directly controlled peripheral devices and output circuits. Refer to the FENWALNET 6000 Configuration Software User's Guide for information on configuring the EOC for network events.

3-3.6 **Configuration Uploads/Downloads**

The FENWALNET 6000 Configuration Program can upload and download configuration settings and application programs via one control unit to and from any other control unit in the network.

Refer to the FENWALNET 6000 Configuration Software User's Guide for information on configuring the different network settings.

3-3.7 **Menu Routines**

Menu routines for a control unit can be activated:

- Directly from its keypad/display
- Selectively from a subset of the networked control units
- Globally from all control units in the network

3-3.7.1 ACCESSING REMOTE NODE MENUS VIA KEYPAD

When a password is entered on an active network system, the prompt shown in Figure 3-57 is displayed.

```
PRESS ENTER TO SELECT THE LOCAL NODE
OR ENTER NETWORK NODE NO. (1 – 32)
```

Figure 3-57. Network Node Prompt

Local Node Access - Press the <Enter> key to select the local node; the response shown in Figure 3-58 is displayed.

```
1: ISOLATE      2: LIST
3: SET          4: TEST
```

Figure 3-58. Top-level Menu Selections

Remote Node Access - Enter the node number then press the <Enter> key; in response, the password prompt for the remote node is displayed.

3-3.8 **Network Groups**

Autonomous sub-networks or groups can be created within a network of FENWALNET 6000 Control Units. These groups can be programmed to selectively interact as separate entities for event reporting, event output control, acknowledgment of events, alarm silencing, and system resets. There are 32 possible groupings, numbered 0 to 31. By default, all control units in the network have no pre-assigned group number.

Note: A network is configured for global operations when no groups are defined.

3-3.8.1 CONTROL UNITS WITH A NON-ZERO GROUP NUMBER

A group of networked control units will operate as described below when they are assigned a non-zero group number. Each control unit in a group will be able to:

- Display and log all events that take place in any control unit in the group
- Issue an event-acknowledgment command to all control units in the group for any event that occurs in the group
- Send alarm-silence commands to all control units in the group to de-energize any silenceable outputs that have been activated within the group
- Send reset commands to all control units in the group once all activated initiating devices have transmitted an "alarm-off" message(s) to the affected control unit(s)
- Transmit output-activation commands to any or all other control units in the group for activation of remotely-controlled outputs

3-3.8.2 NETWORK GROUP 0

One control unit in the network can be assigned to Network Group 0. This control unit serves as the master control unit for the network, and is capable of the following interactions with all sub-groups in a selectively-signaling network:

- Displaying and logging all network events from all network groups
- Issuing acknowledge, silence, and reset commands to all control units in all network groups
- Activating its outputs upon any initiating event from all control units in all network groups

Figure 3-59 shows the possible interactions among the various members of a selectively-signaling networked system with groupings and with one control unit designated as the master control unit.
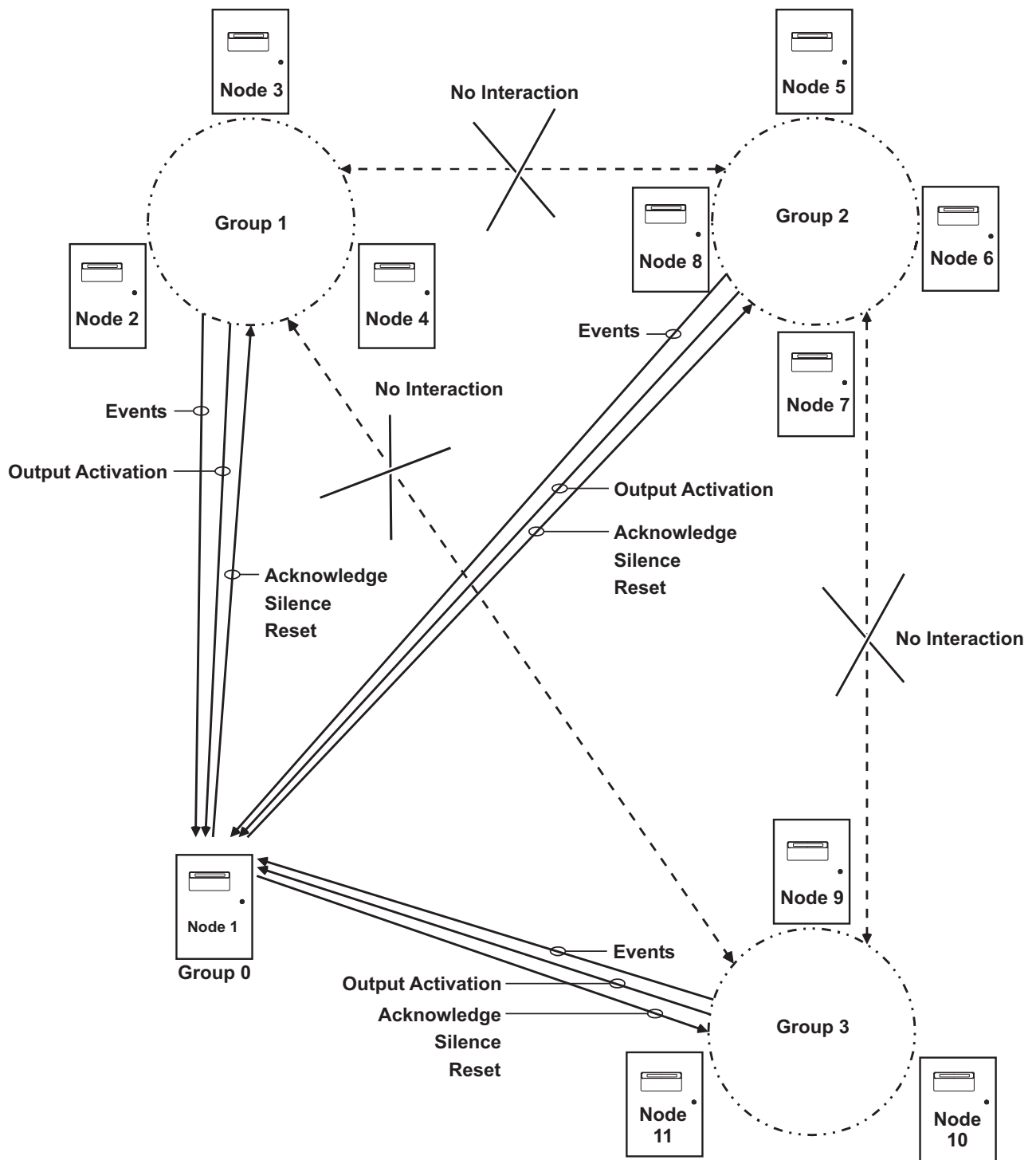
Figure 3-59. Networked Control-Unit Interactions

Refer to the FENWALNET 6000 Programming Guide to create network groups.

3-3.9   Operating States

A network of FENWALNET 6000 Systems has the five distinct Off-Normal operating states discussed in Paragraph 3-2.1. The normal network message display when there are no active system events is as follows:
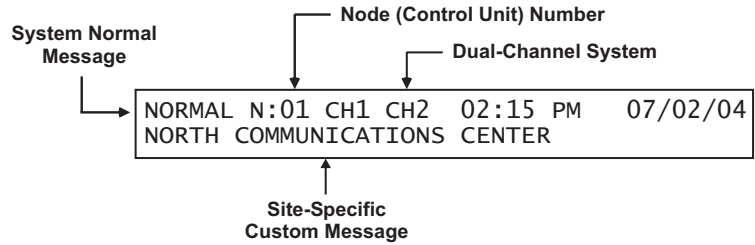

Figure 3-60. Network Normal Message Display

3-3.9.1   OPERATOR-DRIVEN MENU STATE

The system enters the Menu State when an operator presses the 0 Key and enters the appropriate password as described in Paragraph 3-2.5.2.6. The operator will be prompted to enter a network node number. The requested menu will be accessible if the node number corresponds to:

- The control unit whose display is being utilized
- Another control unit in the same group as the control unit whose display is being utilized
- Any control unit in a network configured for global operation
- The control unit whose display is being utilized is defined as Group 0

3-3.9.2   EVENT-DRIVEN STATES

A networked control unit will enter one of the event-driven states (pre-alarm, alarm, supervisory, or trouble) when it is configured as Group 0 or when the event that occurs is:

- Resident in the control unit or its associated peripheral devices
- From another control unit in the same group as the control unit
- From any control unit in a network configured for global operation

3-3.10   Network Outputs Activation

Control unit or SLC outputs activate when commanded on by operating instructions contained in each networked control unit's event output control (EOC) program. The EOC program for a particular control unit is triggered by any event that transitions it from the Normal Mode to any of the event-driven, Off-Normal operating states discussed in Paragraph 3-2.1. The control unit must be configured to selectively receive and respond to the event as described Paragraph 3-3.8, or the network must be configured for global operation.

3-3.11   Operator Control Keys

The operator control keys are used to:

- Acknowledge receipt of initiating or monitoring-circuitry reports
- Silence alarm-notification appliances
- Transition one or more control units back to the Normal Mode.

These keys are functional if the control unit is configured as Group 0 or if the event and/or activated appliances are:

- Resident in the control unit or in its associated peripheral devices
- From or connected to another control unit in the same group as the control unit
- From or connected to a control unit in a network configured for global operation

3-3.12   **Status-Indicating LEDs**

The five status-indicating LEDs (alarm, pre-alarm, trouble, supervisory, and alarm silence) will light when the control unit is configured as Group 0 or when the event is:

- Resident in the control unit or its associated peripheral devices
- From another control unit in the same group as the control unit
- From any control unit in a network configured for global operation

3-3.13   **Network Display Messages**

Display messages will appear as described in Section 3-2, System Operation, for the control unit in which the events occur. Remote control unit events will be displayed as described in the following paragraphs.

3-3.14   **Remote Trouble Events**

Remote trouble events from a networked control unit are shown in the upper line of the LCD display by:

- Node-of-origin
- Device or circuit address
- Type of trouble event and its state change
- Device or circuit type

The lower line indicates the up-to-40-character message assigned to the device or circuit using the FENWALNET 6000 configuration program.
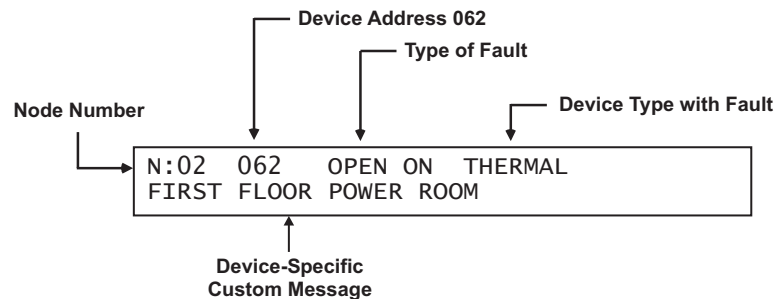
Figure 3-61. Typical Remote-Trouble-Message Display

The following actions also occur when the control unit is configured as Group 0 or when the trouble event is either from another control unit in the same group as the control unit or from any control unit in a network configured for global operation.

1. The Trouble LED on the display flashes
2. The internal buzzer pulses
3. The Trouble Relay de-energizes to transfer the Trouble contacts
4. The trouble event is stored in the event log
5. The trouble message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
6. The trouble message is communicated via the NIC and RS-232 ports, as applicable
7. Point- or group- specific and general trouble outputs activate, including previously silenced outputs.

Refer to Paragraph 3-2.5.3.1 for what to do when a remote trouble message is received.

3-3.15   **Remote Alarm Events**

Remote alarm events from a networked control unit are shown in the upper line of the LCD display by:

- Node-of-origin
- Device address
- Change of state
- Device type

The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.
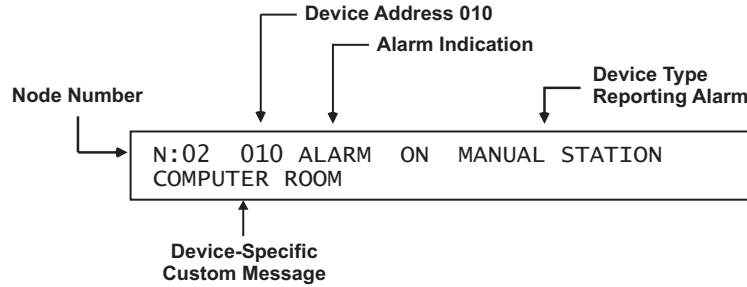

Figure 3-62. Typical Remote Alarm Message Display

The following actions also occur when the control unit is configured as Group 0 or when the alarm event is either from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation.

1. The Alarm LED on the display flashes
2. The internal buzzer sounds continuously
3. The alarm event is stored in the event log
4. The alarm message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
5. The alarm message is communicated via the NIC and RS-232 ports, as applicable
6. Point- or group-specific and general-alarm outputs activate, including previously-silenced outputs.

Refer to Paragraph 3-2.5.4.1 for what to do when a remote alarm message is received.

3-3.16   **Remote Positive-Alarm-Sequence (PAS) Events**

Remote PAS events from a networked control unit are shown in the upper line of the LCD display by:

- Node-of-origin
- Device address
- Change of state
- Device type

The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.

Device Address 200

PAS Indication On (Smoke Detectors only)

Device Type Reporting PAS On

Node Number

```
N:01  200 PAS ON     PHOTOELECTRIC
FIRST FLOOR LIBRARY
```

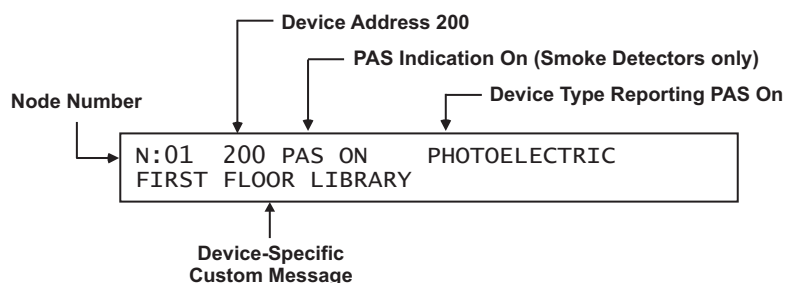**Device-Specific
Custom Message**

Figure 3-63. Typical Remote PAS Message Display

The following actions also occur when the control unit is configured as Group 0 or when the PAS event is either from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation.

1. The internal buzzer pulses

2. The PAS event is stored in the event log

3. The PAS message is transmitted to peripheral devices such as RDCMs, if applicable

4. The PAS message is communicated via the NIC and RS-232 ports, as applicable

Refer to Paragraph 3-2.5.5.2 for what to do when a Remote PAS Message is Received.

Note: The time remaining on the PAS countdown timer will only appear on the display of the control unit that received the PAS report from the smoke detector. Remote, networked control units will not display the PAS countdown timer.

3-3.17   **Remote Alarm-Verification Events**

Remote alarm-verification events from a networked control unit are shown in the upper line of the LCD display by:

•   Node-of-origin

•   Device address

•   Change of state

•   Device type

The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.

Device Address 010

**Alarm-Verification Indication On
(Smoke Detectors only)**

**Device Type Reporting
Alarm-Verification On**

Node Number

```
N:04  010 VERIFY ON PHOTOELECTRIC
CONTROL ROOM
```

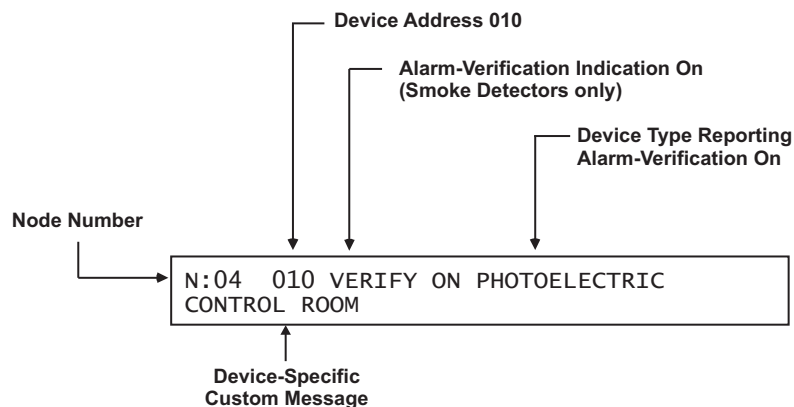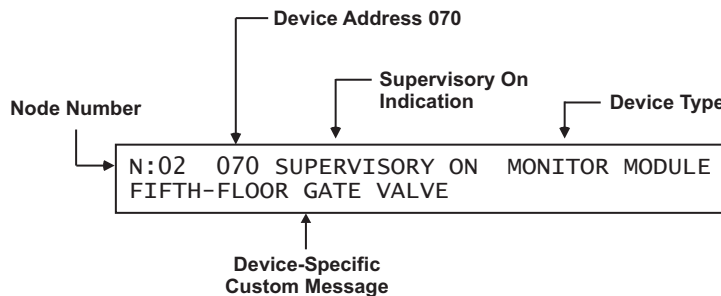**Device-Specific
Custom Message**

Figure 3-64. Typical Remote Alarm-Verification Message Display

The following actions also occur when a control unit is configured as Group 0 or when the alarm-verification event is either from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation.

1. The internal buzzer pulses

2. The alarm-verification event is stored in the event log

3. The alarm-verification message is transmitted to peripheral devices such as RDCMs, if applicable

4. The alarm-verification message is communicated via the NIC and RS-232 ports, as applicable

Refer to Paragraph 3-2.5.5.4 for what to do when a remote alarm-verification message is received.

Note: The time remaining on the alarm-verification timer will only appear on the display of the control unit that received the verification report from the smoke detector. Remote, networked control units will not display the alarm-verification timer.

3-3.18 Remote Supervisory Events

Remote supervisory events from a networked control unit are shown in the upper line of the LCD display by:

- Node-of-origin

- Device address

- State change

- Device type

The lower line indicates the up-to-40-character message assigned to the device using the FENWALNET 6000 configuration program.

Figure 3-65. Typical Remote Supervisory Message Display

The following actions also occur when the control unit is configured as Group 0 or when the supervisory event is either from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation.

1. The Supervisory LED on the display flashes

2. The internal buzzer pulses

3. The supervisory event is stored in the event log

4. The supervisory message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable

5. The supervisory message is communicated via the NIC and RS-232 ports, as applicable

6. Point- or group-specific and general-supervisory outputs activate, including previously-silenced outputs.

Refer to Paragraph 3-2.5.6.1 for what to do when a remote supervisory message is received.

3-3.19   **Remote Pre-Alarm Events**

Remote pre-alarm events from a networked control unit are shown in the upper line of the LCD display by:

- Node-of-origin
- Device address
- Change of state
- Device type

The lower line indicates the up-to-40-character message assigned to the alarm-initiating device using the FENWALNET 6000 configuration program.
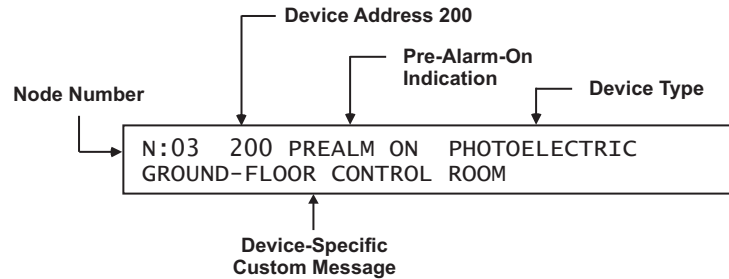

Figure 3-66. Typical Remote Pre-Alarm Message Display

The following actions also occur when the control unit is configured as Group 0 or when the pre-alarm event is either from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation.

1. The Pre-Alarm LED on the display flashes
2. The internal buzzer pulses
3. The pre-alarm event is stored in the event log
4. The pre-alarm message is transmitted to peripheral devices such as RDCMs and ATM-Ls, if applicable
5. The pre-alarm message is communicated via the NIC and RS-232 ports, as applicable
6. Point- or group-specific and general pre-alarm outputs activate, including previously-silenced outputs.

Refer to Paragraph 3-2.5.7.1 for what to do when a remote pre-alarm message is received.

3-3.20   **How Concurrent Remote Events Will Be Displayed**

The information shown on the FENWALNET 6000 display will change if the system is in more than one Off-Normal state concurrently. Remote events will be displayed when a control unit is configured as Group 0 or when the events that occur are from another control unit in the same group as the control unit or from any other control unit in a network configured for global operation

3-3.20.1   REMOTE LEVEL-1 EVENT DISPLAY

Remote countdowns to release from a networked control unit are shown in the upper line of the LCD display by node of origin.

The lower line indicates the numbers of active or completed network events for the following event types:

- Discharges
- Countdowns to Release
- Aborts
- Alarms
- PAS countdowns in progress

Level-2 and lower-level events will not appear on the display as long as any Level-1 event is active.

Figure 3-67 shows a typical display when a suppression zone has begun to count down.
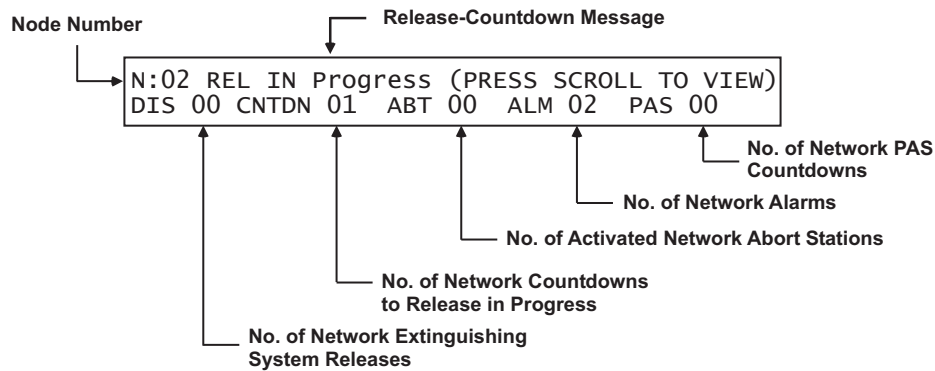
Node Number — **Release-Countdown Message**

```
N:02 REL IN Progress (PRESS SCROLL TO VIEW)
DIS 00 CNTDN 01  ABT 00  ALM 02  PAS 00
```

- No. of Network PAS Countdowns
- No. of Network Alarms
- No. of Activated Network Abort Stations
- No. of Network Countdowns to Release in Progress
- No. of Network Extinguishing System Releases

Figure 3-67. Typical Network Countdown to Release Display

Press the <SCROLL> Key to view the 40-character description associated with the suppression zone that is currently in countdown-to-release mode.

Figure 3-68 shows a typical display when an extinguishing system has been released:

Release Circuit — **Release Message**

Node Number

```
N:02 REL2  SYSTEM RELEASE
POWER ROOM
```

Zone-Specific Custom Message
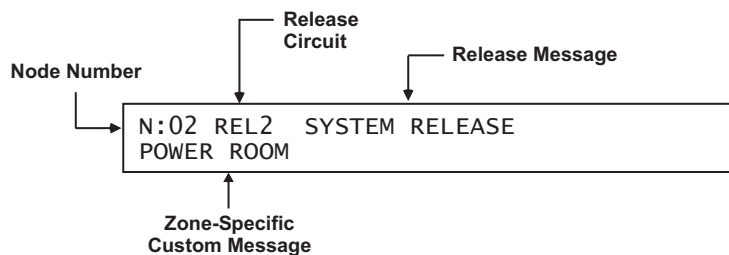
Figure 3-68. Typical Network Release Message

Press the <Acknowledge> key when the message in Figure 3-65 appears to silence the buzzers on all control units that have displayed the above messages. The displays will now show any other suppression zones (successively by order of occurrence, if applicable) that have begun to count down after the release in the first suppression zone. Otherwise, its possible to resume scrolling among the completed Level-1 and active Level-2 event displays as shown in Figure 3-69.

Device Address

Alarm Indication

Device Type Reporting Alarm

Node Number

```
N:04 010 ALARM ON Photo (Scroll to View)
DIS 01 CNTDN 00 ABT 00  ALM 02   PAS 00
```

- No. of Network PAS Countdowns
- No. of Network Alarms
- No. of Activated Network Abort Stations
- No. of Network Countdowns to Release in Progress
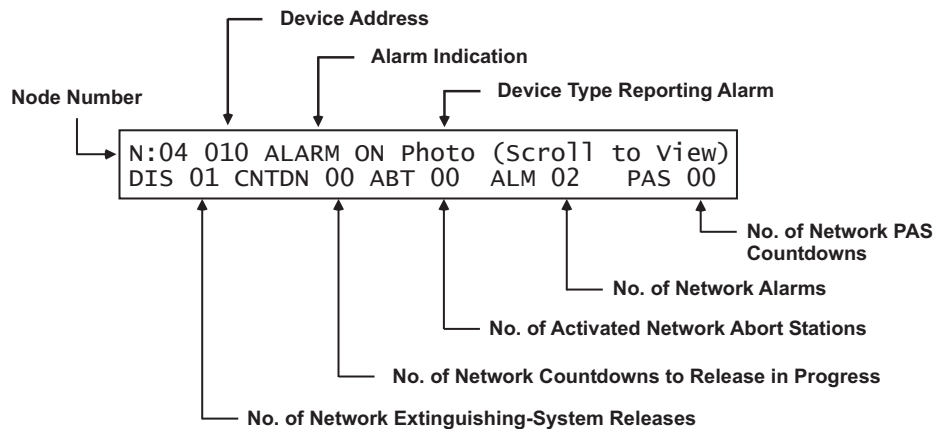- No. of Network Extinguishing-System Releases

Figure 3-69. Typical Display After Acknowledgment of Remote-Release Message

A new event will not automatically override the appearance of the displays when a countdown to release is in progress. The appropriate LEDs on the display will flash and the buzzer will sound when any new system event is reported, and the new event will be logged. The new event will only be displayed when the <ACKNOWLEDGE> Key or <SCROLL> Key is pressed on one of the affected control units.

Refer to Paragraph 3-2.5.8.4 for what to do when a remote Level-1 message is displayed.

3-3.20.2   REMOTE LEVEL-2 EVENT DISPLAY

Remove Level-2 events from a networked control unit are shown in the upper line of the LCD display by the node-of-event origin, the activated device or circuit address, the change of state, and the device type that reported the event or the release circuit that has activated.

The lower line indicates the numbers of active or completed events for the following Level-1 and Level-2 event types:

- Discharges
- Countdowns to Release
- Aborts
- Alarms
- PAS Countdowns

Level-3 and lower-level events will not appear on the display as long as any Level-2 event is active. Figure 3-70 shows the display when more than one type of Level-2 event is active.
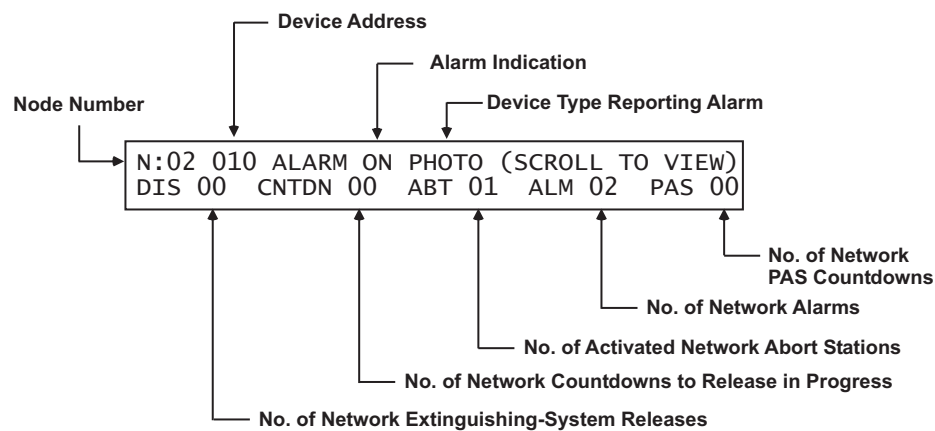
Figure 3-70. Typical Multiple Level-2 Event-Type Display

The upper line will display the active Level-2 events. The lower line will summarize the numbers of completed Level-1 and active Level-2 events.

Refer to Paragraph 3-2.5.8.6 for what to do when Level-2 events are reported.

3-3.20.3   REMOTE LEVEL-3 AND LOWER-LEVEL EVENT DISPLAY

Remote Level-3 and lower-level events from a networked control unit are shown in the upper line of the LCD display by the node-of-event origin, the activated device or circuit address, the change of state, and the device or circuit type that reported the event. The lower line indicates the numbers of active events for the following Level-3 through Level-5 event types:

- Pre-Alarms
- Alarm-Verification Countdowns
- Supervisory Events
- Troubles

Figure 3-71 shows the appearance of the display when more than one type of Level-3 through Level-5 event is active.

```
Device Address
    Event Indication
        Device Type Reporting Alarm
Node Number

N:04 010 VERIFY ON PHOTO (SCROLL TO VIEW)
PREALM 00  AVCNTDN 01  SPV 00   TBL 02

    No. of Network                    No. of Network Troubles
    Pre-Alarms
              No. of Network Supervisory Events
        No. of Network Alarm-Verification Countdowns
```
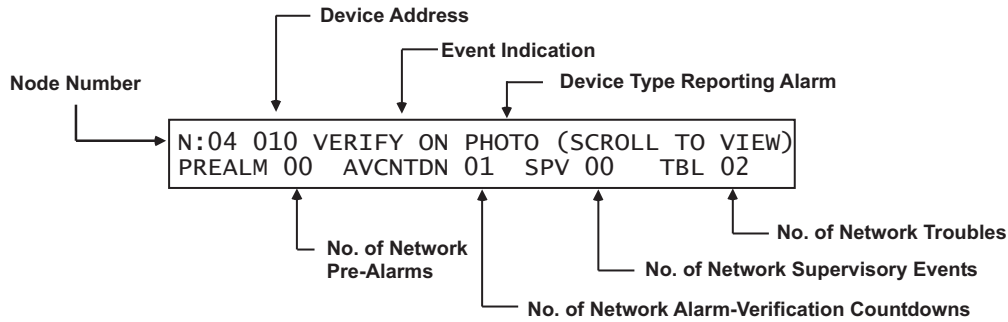
Figure 3-71. Typical Multiple Lower-Level Event Display

The upper line will display the active lower-level events according to the priority of events as described in Paragraph 3-2.5.8.7

Only Level-3 events will scroll, if present. Level-4 events will scroll if there are no Level-3 events. Supervisory and trouble events will scroll if there are no active pre-alarms or alarm verifications. The lower line will summarize the numbers of active Levels-3 through Level-5 events as shown in Figure 3-71.

Refer to Paragraph 3-2.5.8.8 for what to do when Level-3 and lower-level events are displayed.

3-3.21   Network Start-Up

Note: Refer to Paragraph 3-2.6 for the recommended sequence of steps to properly start up the individual nodes of a networked FENWALNET 6000 System.

It is important to proceed in a step-by-step manner when you start up, test, and commission a networked FENWALNET 6000 System. The objective is to have all the individual control units that comprise the network clear of all Off-Normal events, and fully tested as stand-alone control units, before any attempt is made to network them. Network operations, and testing to confirm proper EOC operations among the various network control units, should only begin when all the control units show the "System Status Normal" message.

3-3.21.1 SPECIAL PROCEDURES FOR NETWORKED SYSTEMS

The following paragraphs describe how a networked FENWALNET 6000 system must be configured, initialized, tested, and commissioned.

3-3.21.1.1 Network-Interface-Card (NIC) Installation and Wiring

Follow the instructions in Paragraph 2-17.1 to install each NIC. Make the wiring interconnections among all the networked control units as shown in Paragraph 2-17.2 for shielded, twisted-wire pair or as shown in Paragraph 2-18 for fiber-optic medium. The maximum wiring run between nodes is 4,000 feet of twisted, shielded, #18 AWG (or heavier) wire or 1 mile (5,280 feet) of 62.5/125 μm duplex fiber-optic cabling. Remove all power from the control units while you are installing the NICs and making the wiring interconnections.

3-3.21.1.2 Initial Configuration

Apply power (AC first, then batteries) to Node No. 1 and set the time and date as directed in Paragraph 3-2.6.2. Refer to the FENWALNET 6000 Configuration Software User's Guide and upload this Node's configuration using your laptop computer and the FENWALNET 6000 Configuration Software (FCS) Program. The configuration program can include lines of EOC for output control to/from other network nodes. The inter-node control statements can also be added at a later time.

Pay particular attention to the structure of the inter-node control statements as shown in the FENWALNET 6000 Configuration Software User's Guide. There are significant differences in sentence structure between an EOC statement for a standalone control unit and an EOC statement that references initiating points on another network node. The configuration file must also include the node's network settings, such as node number, group number, and wiring style.

Clear all trouble and supervisory conditions from Node No. 1, if present. Test Node No. 1 for proper operation in accordance with the job specifications and/or local fire codes. Verify proper operation for each initiating device and output circuit.

Repeat this procedure for each additional network control unit.

3-3.21.1.3 Activating the Network

Begin configuring the individual control units for networked operation. Start with the lowest group number if the network consists of specific sub-groups. Add and test one group at a time. If specific sub-groups are not used, configure Nodes No. 1 and No. 2 for networked communications and test these nodes for proper inter-node input/output operations. Use the following procedure to activate Nodes 1 and 2 for networked operations:

1. Press the 0 Key on Node No. 1. This display will show this message:

```
PLEASE ENTER PASSWORD
*  *  *  *
```

Figure 3-72. Password Prompt

2. Enter the Level-2 Password and then press the <Enter> Key. The network-node prompt will appear as follows:

```
PRESS ENTER TO SELECT THE LOCAL NODE
OR ENTER NETWORK NODE NO. (1 – 32)*
```

Figure 3-73. Network Node Prompt

3. Select the local node by pressing the <Enter> Key. The top-level menu selections will be displayed.

```
1: ISOLATE         2: LIST
3: SET             4: TEST
```

Figure 3-74. Top-Level Menu Selections

4. Press the 3 Key to select the Set menu and the following options will appear:

```
1: TIME/DATE       2: PRINTER CONTROL
3: SLC DEVICES     SCROLL FOR MORE
```

Figure 3-75. Set Menu Selections

5. Press the <SCROLL> Key to display additional SET-Menu options. Then press the 6 Key to select NETWORK

```
4: PROGRAMMING     5: GLOBALS
6: NETWORK         SCROLL FOR MORE
```

Figure 3-76. Set Menu Options

6. Press the <Scroll> Key and then the 4 Key to select ADD/REMOVE NODES

```
7: CLEAR EVENTS        8:CLEAR TESTS
9: RESYNC NETWORK      [<-] to return
```

Figure 3-77. Add/Remove Nodes

7. The display will indicate the following; press backspace to exit from the menus.

```
NETWORK EVENT RESYNCHRONIZATION
IN PROGRESS...
```

Figure 3-78. Prompt to Add/Remove Network Nodes

8. Press the <Backspace> Key multiple times as required to exit the Menu mode of operation. Nodes 1 and 2 will now begin communications with each other.

Confirm EOC programming for Nodes 1 and 2. Add successive network nodes one at a time as outlined in the procedure above and continue to confirm proper networked operations. Use Node 1 as the point for adding more control units to the network. Repeat this procedure until all the nodes have been successfully added. Use a consecutive range of network node addresses to simplify the process of bringing the network on line. Be sure that each node being added shows "System Status Normal" before you add it to the network.

Test the entire network for proper operation in accordance with the job specifications and/or local fire codes. Verify proper operation for each initiating device and output circuit.

3-3.21.1.4   Network Maintenance

A control unit must be isolated from the network before any maintenance is performed. The other network control units will ignore all alarm, supervisory, and trouble reports from the isolated control unit, and they will report it as a network supervisory condition subject to the operating rules discussed in Paragraph 3-3.8.

Any networked control unit can be isolated by a control unit designated as Group 0, or by

- Another control unit in the same group as the control unit to be isolated
- Any control unit in a network configured for global operation
- The control unit itself

Use the following procedure to isolate a networked control unit:

1. Press the 0 Key on the keypad of the control unit being used to do the isolation. The display will show this message:

```
PLEASE ENTER PASSWORD
*  *  *  *
```

Figure 3-79. Password Prompt

2. Enter the Level-2 Password and then press the <Enter> Key. The network-node prompt will appear as follows:

```
PRESS ENTER TO SELECT THE LOCAL NODE
OR ENTER NETWORK NODE NO. (1 – 32)*
```

Figure 3-80. Network Node Prompt

3. Select the local node by pressing the <Enter> Key, or enter a remote node number then press the <Enter> Key. The top-level menu selections will be displayed.

```
1: ISOLATE          2: LIST
3: SET              4: TEST
```

Figure 3-81. Top-Level Menu Selections

4. Press the 3 Key to select the Set sub-menu

```
1: TIME/DATE        2: PRINTER CONTROL
3: SLC DEVICES      SCROLL FOR MORE
```

Figure 3-82. Set Sub-Menu

5. Press the <SCROLL> Key to display additional Set-Menu options, then press the 6 Key to select NETWORK

```
4: PROGRAMMING      5: GLOBALS
6: NETWORK          SCROLL FOR MORE
```

Figure 3-83. Additional Set Menu Options

6. Press the <Scroll> Key twice and then press the 8 Key to select "ISOLATE/DE-ISOLATE"

```
7: ISOLATE         8: DE-ISOLATE   *
```

Figure 3-84. Isolate/De-Isolate Nodes

7. Press the 1 Key to select the Isolate Option, then press the <Enter> Key to confirm your selection when the following prompt appears:

```
ISOLATE/DE-ISOLATE NETWORK NODES
1: ISOLATE         2: DE-ISOLATE   *
```

Figure 3-85. Isolate Node Selection

8. Insert the node number for the first entry on the following line and also insert it for the second entry. Press the <Enter> Key to isolate the node.

```
ISOLATE/DE-ISOLATE NETWORK NODES
NODES:   *_ TO __
```

Figure 3-86. Prompt for Node to be Isolated

9. Press the <Backspace> Key multiple times as required to exit from the Menu operational mode. The selected node will now be isolated from the network.

3-3.21.1.5   Removing Power from a Control Unit

A networked control unit should not to be powered down if it is on line. Any changes that occurred among the other control units while it was powered down may not be transmitted to the control unit when it is powered up again. This will lead to reporting discrepancies on the displays of control units that are configured to log and display all network events. Use the procedure in Paragraph 3-3.21.1.4 to isolate a control unit first if it is necessary to power it down. Do not isolate a control unit from the network if it is inadvertently powered down. Wait for control unit to restart and be recognized again by the network.

3-3.21.1.6   Resynchronizing the Network

Some networked control units may occasionally retain alarm, supervisory or trouble events from other control units in the network even if the events have cleared from the other control units. This can be corrected by the "Resynch Network" function that resynchronizes all messages across the network.

Network events can be resynchronized by using a control unit configured as Group 0, or by using

- Another control unit in the same group as the control unit retaining events
- Any control unit in a network configured for global operation
- The control unit itself

Use the following procedure to resynchronize the network:

1. Press the 0 Key on the keypad of the control unit being used to resynchronize the network. This display will show this message:

```
PLEASE ENTER PASSWORD
* * * *
```

Figure 3-87. Password Prompt

2. Enter the Level-2 Password and then press the <Enter> Key. The network-node prompt will appear as follows:

```
PRESS ENTER TO SELECT THE LOCAL NODE
OR ENTER NETWORK NODE NO. (1 – 32)*
```

Figure 3-88. Network Node Prompt

3. Select the local node by pressing the <Enter> Key, or enter a remote node number then press the <Enter> Key. The top-level menu selections will be displayed.

```
1: ISOLATE          2: LIST
3: SET              4: TEST
```

Figure 3-89. Top-Level Menu Selection

4. Press the 3 Key to select the Set sub-menu.

```
1: TIME/DATE        2: PRINTER CONTROL
3: SLC DEVICES      SCROLL FOR MORE
```

Figure 3-90. Set Sub Menu

5. Press the <SCROLL> Key, and then press the 4 Key to select PROGRAMMING

```
4: PROGRAMMING      5: GLOBALS
6: NETWORK          SCROLL FOR MORE
```

Figure 3-91. Additional Set Menu Options

6. Press the <Scroll> Key twice and then press the 9 Key to select RESYNCH NETWORK.

```
7: CLEAR EVENTS    8: RESYNCH NETWORK   *
```

Figure 3-92. Resynch Network Option

7. Press the 1 Key when no groups are used or press the 2 Key when groups are being used, then press the <ENTER> Key when prompted by the message below.

```
RESYNCH NETWORK
1: NO GROUPS            2: GROUPS       *
```

Figure 3-93. Resynch Network Display

8. Enter the network group number as indicated below when groups are being used:

```
ENTER GROUP NUMBER                    *_
```

Figure 3-94. Network Group Prompt

9. Press the <Backspace> Key multiple times as required to exit from the Menu State.

The events being displayed on the control unit will now be consistent with the events being displayed on all of the networked control units.
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CHAPTER 4
INSPECTION, TESTING AND MAINTENANCE

4-1   SCHEDULED SYSTEM MAINTENANCE

The FENWALNET 6000 System must be inspected, tested and maintained in accordance with the requirements of NFPA 72 (2002), Chapter 10, or in accordance with the inspection, testing and maintenance schedule mandated by the Authority Having Jurisdiction (AHJ).

Follow the required inspection, testing, and maintenance procedures for the associated extinguishing system(s) as directed by the manufacturer and by the standards and codes that apply to those systems.

WARNING   **Do not attempt any testing or maintenance of the FENWALNET 6000 System until you have:**
- **Isolated all onboard releasing outputs via the Isolate function.**
- **Ensure that all RRMs are connected to the control unit.**
- **Physically disconnected the wiring to initiator assemblies (if used) from the release-circuit terminals, shorted the leads together, and wrapped the leads in insulating tape**
- **Physically disconnected all control heads (if used) from their associated agent-storage-container discharge valves**
- **Physically disconnected the wiring to solenoid valves (if used) for pre-action/deluge sprinkler systems**
- **Ensured that emergency operations controlled by this system such as facility power shutoff are bypassed**
- **Notified personnel in the facility and at off-premises monitoring locations that you are working on the system and that you will inform them when system servicing has ended.**

4-2   SEMI-ANNUAL AND ANNUAL TESTING

Perform the following tests as part of each semi-annual or annual system inspection:

4-2.1   Lamp Test

Test the LEDs on the control unit's display by using the procedure in Paragraph 3-2.5.2.5.16. Replace the display's membrane if any LED fails to illuminate.

4-2.2   Battery Test

Test the standby batteries by using the procedure in Paragraph 3-2.5.2.5.7. Replace all batteries if either the charging voltage or current do not fall within the specified ranges.

Replace batteries every three years, or more frequently as recommended by the battery manufacturer. Fenwal provides the following batteries:

Part Number	Capacity (AH)
06-115915-047	12
06-115915-046	17
89-100052-001	35

4-2.3   **Initiating-Devices Test**

The FENWALNET 6000 Control Unit automatically tests all of the initiating devices connected to the signaling line circuit on a daily basis.

You should re-test the initiating devices by using the procedure in Paragraph 3-2.5.2.5.1. Investigate any "Device-Failed" messages and replace any defective initiating devices as appropriate.

4-2.4   **Walk Test**

Confirm acceptable fire-signature-entry characteristics for all automatic initiating devices by using the procedure in either Paragraph 3-2.5.2.5.2 or Paragraph 3-2.5.2.5.3. Use these procedures to confirm that all monitor modules are also working correctly.

4-3   **SEQUENCE OF OPERATION**

Verify that the system continues to operate in accordance with its approved sequence of operation. Figure 4-1 and Figure 4-2 show a typical sequence of operation for a waterless fire-suppression system.

Note: These figures are for example only. Every system is unique and requires its own approved sequence of operation.

Device/Circuit Assignments

	Photoelectric Detectors	Ionization Detectors	Monitor Modules	Control Modules	NAC 1	NAC 2	Combo 1	Combo 2	Release 1	Release 2	Relay 1	Relay 2	Relay 3	Trouble Relay
SLC Device Addresses														
Control-Unit Outputs														
Head-End Room (Zone 1)														
Photoelectric Detectors	1-5													
Ionization Detectors		6-10												
Manual Release Stations			11-12											
Abort Switches			13-14											
Audible NAC					X									
Visible NAC						X								
Waterless Extinguishing System Release Circuit							X		X					
Pre-Action-Sprinkler Release Circuit							X		X					
Power Room (Zone 2)														
Photoelectric Detectors	15-18													
Ionization Detectors		19-21												
Manual Release Stations			22											
Abort Switches			23											
Audible NAC							X							
Visible NAC								X						
Waterless Extinguishing System Release Circuit									X	X				
Pre-Action-Sprinkler Release Circuit									X	X				
Facility Equipment Interlocks														
HVAC Shutdown				24										
Power Shutoff				25										
Off-Premises Reports														
Major Alarm to Central Station											X			
Critical Alarm to Central Station												X		
Waterflow Alarm to Central Station				26										
Pre-Action-Valve to Central Station				27										
Supervisory to Central Station													X	
Trouble to Central Station														X

Figure 4-1. Device/Circuit Assignments

Sequence of Operation

Sequence of Operation	Waterflow Switch	Sprinkle Tamper Switch	One Area Smoke Detector — Head-End Room (Zone 1)	One Area Smoke Detector — Power Room (Zone 2)	Two Area Smoke Detectors Alarm (Immediate Response) — Head-End Room (Zone 1)	Two Area Smoke Detectors Alarm (Immediate Response) — Power Room (Zone 2)	Two Area Smoke Detectors (30-Sec. Delayed Response) — Head-End Room (Zone 1)	Two Area Smoke Detectors (30-Sec. Delayed Response) — Power Room (Zone 2)	Manual Station (Immediate Response) — Head-End Room (Zone 1)	Manual Station (Immediate Response) — Power Room (Zone 2)	Abort Station — Head-End Room (Zone 1)	Abort Station — Power Room (Zone 2)	Auxiliary Supervisory / Low FM-200 Pressure Sw. — Head-End Room (Zone 1)	Auxiliary Supervisory / Low FM-200 Pressure Sw. — Power Room (Zone 2)	Low Air (Pre Action Sys)	Trouble — Any Condition
Room-of-Origin Alarms/Actions																
Activate/De-Activate Horns @ 60 BPM			A	A			D		D		D	D				
Activate/De-Activate Horns @ 120 BPM			A	A	D		D		A		D	D				
Activate/De-Activate Temporal-Coded Horns			A	A	A		A		A		A	A				
Activate/De-Activate Strobes			A	A	A		A		A		A	A				
Activate Waterless Extinguishing System					A		A		A		A	A				
Interrupt Impending Waterless System Discharge											A	A				
Open Pre-Action-Sprinkler Valve					A		A		A		A	A				
Facility Equipment Interlocks																
HVAC Shutdown			A		A		A		A		A	A				
Power Shutoff			A		A		A		A		A	A				
Off-Premises Reports																
Major Alarm to Central Station			A		A				A							
Critical Alarm to Central Station			A		A		A		A							
Waterflow Alarm to Central Station	A															
Pre-Action-Valve to Central Station			A		A		A									
Supervisory to Central Station		A											A	A	A	
Trouble to Central Station																A

Figure 4-2. Sequence of Operation

A = Activate Output
D = De-Activate Output

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CHAPTER 5
TROUBLESHOOTING

5-1 INTRODUCTION

This chapter lists all the error messages, their probable causes, and suggested procedures to return the FENWALNET 6000 System to proper operating condition.

⚡ **WARNING**

Do not attempt any of the corrective actions listed in this chapter until you have:

- **Physically disconnected the wiring to initiator assemblies (if used) from the release-circuit terminals, shorted the leads together, and wrapped the leads in insulating tape**
- **Physically disconnected all control heads (if used) from their associated agent storage container discharge valves**
- **Physically disconnected the wiring to solenoid valves (if used) for pre-action/deluge-sprinkler systems**
- **Ensured that emergency operations controlled by this system such as facility power shutoff are bypassed**
- **Notified personnel in the facility and at off-premises monitoring locations that you are working on the system and that you will inform them when system servicing has ended.**

Table 5-1. General System Events

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`AC Supply Fault On`	Loss or degradation of primary power from commercial light and power company. Message will appear if AC supply voltage drops to 85% or less of the normal operating voltage. Accompanied by message "System Changed Over to Battery Power" if standby battery used.	• Notify commercial light and power company of loss of service. • Check connections to main circuit board TB13. Use voltmeter to check for nominal 120/240 Vac at TB13. • Check for proper setting of printed-circuit-board AC Selection Switch. Refer to Figure 2-8 • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to initiators (if applicable) • Ensure AC Selector Switch on power supply is correctly set for line voltage. Refer to Figure 2-5 • Re-install printed-circuit board, connect field wiring, and apply primary and secondary power if incorrect AC Selector-Switch setting. Perform functional tests as necessary

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`Battery Charging Fault On`	Failure of the battery-supervision circuitry	• Check battery connections to main circuit board TB3. Refer to Figure 2-9. • Disconnect battery leads from main circuit board TB3 and use digital volt-ohm meter to measure battery open-circuit voltage. Replace batteries if open-circuit voltage is less than 19.5 Vdc. • Replace the power supply assembly. See Figure 2-4 • Replace printed-circuit board. See Figure 2-6
`Battery Disconnected Fault On`	Faulty battery connection **Note:** Battery disconnected-fault messages do not disappear immediately when corrected. The control unit only rechecks the battery connection once per minute.	• Check battery connections to main circuit board TB3. Refer to Figure 2-9. • Disconnect battery leads from main circuit board TB3 and use digital volt-ohm meter to measure battery open-circuit voltage. Replace batteries if open-circuit voltage is less than 19.5 Vdc.
`Configuration Memory Checksum Failure`	Internal software fault	• Re-upload applications program • Re-test the system for proper functionality
`Configuration Memory Write Failure`	Faulty upload of applications program or improper execution of a configuration change via the menu system	• Re-upload applications program if message occurs after configuration upload • Re-execute configuration change via menu operation if message appears after menu operation
`Control Unit Ground Fault –Vdc ON`	Low impedance path between negative field conductor and earth ground. Normal earth-ground offset voltage is 6.6 Vdc (nom.) relative to system common (e.g., main circuit board TB2-1 or TB2-3).	• Continuously monitor DC voltage between earth-ground stud on left side of back box and main circuit board TB2-1. Voltage should be 6.6 (nom.) Vdc. Earth ground is positive relative to system common. • Remove field circuits one at a time until earth-ground offset voltage restores to 6.6 (nom.) Vdc. • Check for connections to earth ground on field circuit whose removal restored proper earth-ground offset voltage.
`Control Unit Ground Fault +Vdc On`	Low impedance path between positive field conductor and earth ground. Normal earth-ground offset voltage is 6.6 (nom.) Vdc relative to system common (e.g., main circuit board TB2-1 or TB2-3).	• Continuously monitor DC voltage between earth-ground stud on left side of back box and main circuit board TB2-1. Voltage should be 6.6 (nom.) Vdc. Earth ground is positive relative to system common. • Remove field circuits one at a time until earth-ground offset voltage restores to 6.6 (nom.) Vdc. • Check for connections to earth ground on field circuit whose removal restored proper earth-ground offset voltage.

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`Control Unit PSU Trouble On`	The power-supply output is too low	• Check the power-supply connector, J12, from the power supply to the main printed-circuit board • Check for proper setting of printed-circuit-board AC Selection Switch. Refer to Figure 2-8. • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to initiators (if applicable) • Remove main printed-circuit board by reversing the steps in Paragraph 2-6. Inspect connections of power-supply-connector flying leads to power supply. Tighten if necessary. • Ensure AC Selector Switch on power supply is correctly set for line voltage. Refer to Figure 2-5. • Re-install printed-circuit board, connect field wiring, and apply primary and secondary power if loose connection(s) or incorrect AC Selector-Switch setting. Perform functional tests as necessary • Replace power supply if no loose connections or AC Selector-Switch problem.
`Event Memory Checksum Failure On`	Internal software fault	• Use the control unit configuration program to download the event log and forward an electronic copy to Fenwal Technical Services. Refer to the configuration program user's guide. • Re-initialize the control unit by first removing, and then re-applying, primary and secondary power sources • Functionally test the system
`Event Memory Write Failure On`	Internal software fault	• Use the control unit configuration program to download the event log and forward an electronic copy to Fenwal Technical Services. Refer to the configuration program user's guide. • Re-initialize the control unit by first removing, and then re-applying, primary and secondary power sources • Functionally test the system

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`Low Battery Fault On`	Discharged battery. Open-circuit voltage of two series-wired batteries must be greater than 19.5 Vdc. **Note:** Low-battery fault messages do not disappear immediately when corrected. The control unit only rechecks the battery voltage once per minute.	• Disconnect battery leads from main circuit board TB3 and use digital volt-ohm meter to measure battery open-circuit voltage. Replace batteries if open-circuit voltage is less than 19.5 Vdc. • Reconnect batteries to TB3 if open-circuit voltage is greater than 19.5 Vdc. Let batteries re-charge for 48 hours. Re-place batteries if fault remains after 48 hours.
`Main Board Voltage Reference Fault On`	The control unit has detected system-common reference fault	• Check the power-supply connector, J12, from the power supply to the main printed-circuit board • Check for proper setting of printed-circuit-board AC Selection Switch. Refer to Figure 2-8. • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to initiators (if applicable) • Remove main printed-circuit board by reversing the steps in Section 2-6. Inspect connections of power-supply connector flying leads to power supply. Tighten if necessary. • Ensure AC Selector Switch on power supply is correctly set for line voltage. Refer to Figure 2-5. • Re-install printed-circuit board, connect field wiring, and apply primary and secondary power if loose connection(s) or incorrect AC Selector-Switch setting. Perform functional tests as necessary • Replace power supply if no loose connections or AC Selector-Switch problem. • Replace printed-circuit board if fault remains after replacement of the power supply.
`Printer Supervision Fault`	Communications problem between printer and the control unit or printer port enabled but no printer is connected	• Check RS-232 cable between main printed circuit board and printer • Make sure printer is powered and connected • Verify that the RS-232 port assigned to the printer via the menu is correct. Refer to Paragraph 3-2.5.2.4.5 • Disable printer port if no printer is used

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`Program Memory Corrupt On`	Program memory self-test failure.	• Use the control unit configuration program to download the event log and forward an electronic copy to Fenwal Technical Services. Refer to the configuration program user's guide. • Re-initialize the control unit by first removing, and then re-applying, primary and secondary power sources • Functionally test the system
`SLC Communications Fault On`	This indicates that there has been a communication problem between the two processors on the control unit and the SLC is not being monitored.	• Use the control unit configuration program to download the event log and forward an electronic copy to Fenwal Technical Services. Refer to the Configuration Program User's Guide. • Re-initialize the control unit by first removing, and then re-applying, primary and secondary power sources • Functionally test the system.
`SLC Open Circuit On`	Open circuit in the field wiring connected to main circuit board TB1. Applies to Class-A wiring only	• Look for discontinuity in SLC wiring.
`SLC Short Circuit On`	Short circuit in the field wiring connected to main circuit board TB1	• Troubleshoot SLC wiring by breaking-up circuit to isolate short circuit to specific branch or leg.
`Date/Time Must Be Set Trouble On`	Message appears each time the control unit is re-initialized by applying AC and then DC power.	• Set the date and time as instructed in Paragraph 3-2.6.2.

Table 5-2. Control-Unit-Based-Output Events

Control-Unit-Based-Output Events		
Error Message	**Probable Cause**	**Corrective Action**
AR1 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB12	• Look for discontinuity in Release-1 field wiring. Refer to Paragraph 2-11.
AR1 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB12	• Troubleshoot Release-1 wiring by breaking-up circuit to isolate short circuit to specific leg.
AR2 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB11	• Look for discontinuity in Release-2 field wiring. Refer to Paragraph 2-11.
AR2 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB11	• Troubleshoot Release-2 wiring by breaking-up circuit to isolate short circuit to specific leg.
AR3 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB7. Combo-1 Circuit is configured as a release circuit.	• Look for discontinuity in Combo-1 field wiring. Refer to Paragraph 2-10.2.
AR3 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB7. Combo-1 Circuit is configured as a release circuit.	• Troubleshoot Combo-1 wiring by breaking-up circuit to isolate short circuit to specific leg.
AR4 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB6. Combo-2 Circuit is configured as a release circuit.	• Look for discontinuity in Combo-2 field wiring. Refer to Paragraph 2-10.2.
AR4 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB6. Combo-2 Circuit is configured as a release circuit.	• Troubleshoot Combo-2 wiring by breaking-up circuit to isolate short circuit to specific leg.
SG1 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB5	• Check for missing 10k end-of-line resistor. • Look for discontinuity in NAC1 field wiring.
SG1 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB5	• Troubleshoot NAC1 wiring by breaking-up circuit to isolate short circuit to specific leg.
SG2 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB14	• Check for missing 10k end-of-line resistor. • Look for discontinuity in NAC2 field wiring.
SG2 Short Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB14	• Troubleshoot NAC2 wiring by breaking-up circuit to isolate short circuit to specific leg.
SG3 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB7. Combo-1 Circuit is configured as a NAC.	• Check for missing 10k end-of-line resistor. • Look for discontinuity in Combo-1 field wiring.
SG3 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB7. Combo-1 Circuit is configured as a NAC.	• Troubleshoot Combo-1 wiring by breaking-up circuit to isolate short circuit to specific leg.

Table 5-2. Control-Unit-Based-Output Events (Continued)

Control-Unit-Based-Output Events		
Error Message	**Probable Cause**	**Corrective Action**
SG4 Open Circuit Trouble On	Open circuit in field wiring connected to main circuit board TB6. Combo-2 Circuit is configured as a NAC.	• Check for missing 10k end-of-line resistor. • Look for discontinuity in Combo-2 field wiring.
SG4 Short Circuit Trouble On	Short circuit in field wiring connected to main circuit board TB6. Combo-2 Circuit is configured as a NAC.	• Troubleshoot Combo-2 wiring by breaking-up circuit to isolate short circuit to specific leg.

Table 5-3. SLC Events

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Switch Not Set On *AlarmLine Module*	An incorrect configuration for the AAM at address *Addr*	• Check the configuration settings for the AAM. Re-configure and upload the correct configuration. • Refer to AlarmLine Installation, Operation, and Maintenance Manual, P/N 73.04
Addr 24 Vdc Failure *Signal/ Sounder*	Failure of the DC to DC converter in the ASM at address *Addr*	• Refer to ASM Installation Instructions, P/N 06-235717-001. • Check 24 Vdc power connections to ASM. • Ensure that the ASM's Jumper P1 and Switch S1 are set for 24 Vdc operation • Replace the ASM if steps above are unsuccessful
Addr 9V DC Fault On *Device Type*	A failure of the internally generated 9-Volt power supply for the SmartOne smoke or heat detector at address *Addr.*	• Check SLC wiring. Refer to Paragraph 2-8 Ensure that wiring-resistance and -capacitance limitations have not been exceeded. • Visually inspect the detector to ensure that its red LED is flashing. Use Handheld Programmer to test the device if the LED is not flashing. Refer to Appendix D. Replace the detector if it fails the Handheld-Programmer test. • List the automatic initiating device's 9-Volt level. Refer to Paragraph 3-2.5.2.3.11. Replace the device if the 9-Volt level varies by + / - 1.0 (nom.) Vdc volts. • Conduct an initiating device test on the automatic detector. See Paragraph 3-2.5.2.4.5 • Activate and confirm a proper alarm response from the detector. • Replace the device if any of the above tests are unsuccessful.
Addr Abort Trouble On *Monitor Module*	The abort switch being monitored by the AI at address *Addr* is activated and the system is not in alarm	• Check abort switch for mechanical failure

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Alarm Test Fail *Device Type*	An initiating device (i.e., automatic detector or monitor module) at address *Addr* failed a device test. The initiating device was unable to send an acceptable alarm-test signal when requested by the control unit.	• Globally isolate all outputs. See Paragraph 3-2.5.2.2.9. • Disconnect device from SLC and visually inspect for damage. Clean if automatic detector. • Use Handheld Programmer to test the device. Refer to Appendix D. Reconnect device to SLC. • Conduct an initiating device test on the initiating device. Repeat this procedure at least 3 times. See Paragraph 3-2.5.2.4.5. Check SLC wiring if test results are inconsistent. Refer to Paragraph 2-8. Ensure that wiring-resistance and -capacitance limitations have not been exceeded. • Activate and confirm a proper alarm response from the initiating device • Replace device if any of above tests is unsuccessful. • Globally de-isolate all outputs. See Paragraph 3-2.5.2.2.9.
Addr Communication Fault On	A loss of communications between the SLC's driver circuit and the device at address *Addr*.	• Check device connections to SLC wiring • Ensure that device has not been removed • Check SLC wiring for excessive capacitance and/or resistance if the device LED is blinking. Refer to Paragraph 2-8.1. Rewire SLC using recommended wire in Appendix B. • Replace the device if above procedures are unsuccessful.
Addr Detector Tbl On AnaLASER Interface Module	A problem in a high-sensitivity smoke detector (HSSD) being monitored by an AIM	• Check the AIM-to-HSSD connections • Use LaserNET to troubleshoot the HSSD. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Drift Fault On Device Type	The inability of a SmartOne smoke detector to further compensate for reference signal variation	• Globally isolate all outputs. See Paragraph 3-2.5.2.2.9. • Disconnect smoke detector from SLC and visually inspect for damage. Clean the detector as recommended. • Use Handheld Programmer to test the device. Refer to Appendix D. Reconnect device to SLC. • Measure the detector sensitivity. See Paragraph 3-2.5.2.3.6. Replace the detector if the clean-air reference value is more than one half of the alarm-threshold value. • Conduct an initiating device test on the detector. See Paragraph 3-2.5.2.5.1. • Activate and confirm a proper alarm response from the detector. • Replace device if any of above tests is unsuccessful. • Globally de-isolate all outputs. See Paragraph 3-2.5.2.2.9.
Addr Duplicate Address Fault On	There is more than one SLC device with address Addr. Refer to Paragraph 3-2.5.2.5.18	• Find all SLC devices with rapidly-pulsing LEDs. Monitor modules require an external LED to be installed. • Check the approved layout drawing for the correct address corresponding to each device location • Remove the incorrectly-addressed device(s) and re-address with the Handheld Programmer. Refer to Appendix D. Alternatively, • Remove the correctly-addressed device and all but one incorrectly-addressed device. Use the procedure in Paragraph 3-2.5.2.4.6 to change the incorrect device address. • Add one more incorrectly-addressed device and re-address using the procedure in Paragraph 3-2.5.2.4.6. Repeat as necessary until all incorrectly-addressed devices have been correctly addressed. • Reconnect the original correctly-addressed device
Addr EEPROM Fault ON	The device at address Addr is reporting an internal software fault	• Replace the device

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr High Airflow On AnaLASER Interface Module	A problem in a high-sensitivity smoke detector (HSSD) being monitored by an AIM. Excessively high air flow through the piping system	• Look for leaks in the HSSD's piping system • Use LaserNET to troubleshoot the HSSD. The airflow may need to re-normalized. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
Addr Input Trouble On Monitor Module	An open circuit in a monitor module's initiating device circuit	• Refer to AI Installation Instructions, P/N 06-235578-001. • Look for discontinuity in initiating device circuit. • Check for missing 10k end-of-line resistor.
Addr Line Volt Fault On Device Type	A failure of the DC to DC converter in the device type at address Addr.	• Check SLC wiring. Refer to Paragraph 2-8. Ensure that wiring-resistance and -capacitance limitations have not been exceeded. • Visually inspect the device to ensure that its red LED is flashing (if applicable). Use Handheld Programmer to test the device. Refer to Appendix D. Replace the device if it fails the Handheld-Programmer test. • List the device's line-voltage level. Refer to Paragraph 3-2.5.2.3.10. Line-voltage level must be a minimum 18 Vdc. Consider using larger wire gauge if line voltage is too low. • Conduct an initiating device test if the device is an initiating device. See Paragraph 3-2.5.2.5.1. Be sure to observe the warnings called out in this chapter. • Conduct an output device test if the device is a control module. See Paragraph 3-2.5.2.6. Be sure to observe the warnings called out in these paragraphs. • Activate and confirm a proper operation for the device. • Replace the device if any of the above tests are unsuccessful.
Addr Low Airflow On AnaLASER Interface Module	A problem in a high-sensitivity smoke detector (HSSD) being monitored by an AIM Low air flow through the piping system	• Look for blockages in the HSSD's piping system • Use LaserNET to troubleshoot the HSSD. The airflow may need to re-normalized. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Not Registered On Device Type	The control unit has not been set up to expect the device at address "addr".	• Register the device if part of system configuration. See Paragraph 3-2.5.2.4.14. If this procedure is insufficient, try one of the following procedures: • Run the AutoLearn Procedure. Refer to Paragraph 3-2.5.2.4.26. • Upload a new application program that includes the previously unregistered device.
Addr Offset Trouble On AnaLASER Interface Module	The AIM at address Addr is reporting an offset problem with the HSSD that it is monitoring. This is probably a problem with the background obscuration level in the area of the HSSD.	• Work with the end user to improve the air quality in the HSSD location. • Check the AIM-to-HSSD connections • Use LaserNET to troubleshoot the HSSD • Refer to HSSD Installation/ Maintenance Manual, P/N 89.200, for guidance.
Addr Output Relay Fault Addressable Relay	The AO at address Addr failed to activate upon receipt of an activation command	**Caution:** Be sure to bypass the shutoff to equipment controlled by the AO before functionally testing this device. • Check SLC wiring. Refer to Paragraph 2-8. Ensure that wiring-resistance and -capacitance limitations have not been exceeded. • Visually inspect the AO to ensure that its red LED is flashing. Use Handheld Programmer to test the device if the LED is not flashing. Refer to Appendix D. Replace the AO if it fails the Handheld-Programmer test. • Functionally test the existing or replaced AO via the procedure in Paragraph 3-2.5.2.6. Replace the AO if it fails the functional test. • Functionally re-test the AO for all configured actuation scenarios.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Output Relay Fault Signal/Sounder	The ASM at address Addr failed to activate upon receipt of an activation command	• Check SLC wiring. Refer to Paragraph 2-8. Ensure that wiring-resistance and capacitance limitations have not been exceeded. • Visually inspect the ASM to ensure that its red LED is flashing. Use Handheld Programmer to test the device if the LED is not flashing. Refer to Appendix D. Replace the ASM if it fails the Handheld-Programmer test. • Functionally test the existing or replaced ASM via the procedure in Paragraph 3-2.5.2.6. Replace the ASM if it fails the functional test. • Functionally re-test the ASM for all configured actuation scenarios.
Addr Output Trouble On Signal/Sounder	Open or short circuit in notification-appliance circuit for ASM at address Addr. See Paragraph 1-5.5	• Refer to ASM Installation Instructions, P/N 06-235717-001. • Look for discontinuity in NAC wiring to find open circuit. • Check for missing 47k end-of-line resistor. • Troubleshoot NAC wiring by breaking-up circuit to isolate short circuit to specific leg.
Addr Overheat On Alarmline Module	An AlarmLine cable being monitored by an AAM and configured for overheat detection is reporting an overheat condition. This is not an error message. The control unit's buzzer will sound but no LED on the membrane will illuminate. Notification will only occur if programmed via an EOC statement.	• Check the monitored area for excessively-high temperature. • Start air-conditioning units to lower temperature in monitored area.
Addr PSU Open Circuit On Signal/Sounder	Loss of 24 Vdc signal to power-input circuit of ASM at address Addr. See Paragraph 1-5.5.	• Refer to ASM Installation Instructions, P/N 06-235717-001. • Check 24 Vdc power connections to ASM. • Ensure that the ASM's Jumper P1 and Switch S1 are set for 24 Vdc operation • Check auxiliary power supply for faults.
Addr PSU Short Circuit On Signal/Sounder	Appearance of 0 Vdc signal at power-input circuit of ASM at address "Addr". See Paragraph 1-5.5.	• Refer to ASM Installation Instructions, P/N 06-235717-001. • Check 24 Vdc power connections to ASM. • Ensure that the ASM's Jumper P1 and Switch S1 are set for 24 Vdc operation • Check auxiliary power supply for faults.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr RAM Fault ON	The device at address Addr is reporting an internal software fault	• Replace the device
Addr Sensor Fault On AlarmLine Module	A problem in the AlarmLine cable being monitored by an AAM.	• Check the AlarmLine wiring connections to the AAM. • Refer to AlarmLine Installation, Operation, and Maintenance Manual, P/N 73.04
Addr Trouble Open On Device Type	Loss of communications to device at address Addr	• Check device connections to SLC wiring • Ensure that device has not been removed • Check SLC wiring for excessive capacitance and/or resistance if the device LED is blinking. Refer to Paragraph 2-8.1. Rewire SLC using recommended wire in Appendix B. • Use the procedure in Paragraph 3-2.5.2.4.15 to de-register the address if no device should occupy that address.
Addr Type Error On Device Type	The device at address Addr is reporting a device type that is different from the type of device that is configured for that address	• Ensure that the device installed at address Addr matches the device type configured for that address. Install corrected device or correct configuration file and re-upload application. • Use Handheld Programmer to test the device if the device type matches the entry in the configuration file. Refer to Appendix D. Replace the device if it fails the test or if the error message returns when the device is re-installed. • Intermittent type errors could be a symptom of SLC wiring problems. Check SLC wiring if random errors are reported. Refer to Paragraph 2-8. Ensure that wiring-resistance and -capacitance limitations have not been exceeded.

Table 5-4. IIM Events

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
HSD*Addr* Auto Offset Trouble On	The HSSD at address *Addr* is reporting an offset problem. This is probably a problem with the background obscuration level in the area of the HSSD.	• Work with the end user to improve the air quality in the HSSD location. • Check the IIM-to-HSSD wiring connections • Use LaserNET to troubleshoot the HSSD • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
HSD*Addr* Detector Trouble On	A fault in the HSSD with IIM address Addr	• Use LaserNET to troubleshoot the HSSD • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
HSD*Addr* High AirFlow On	A problem in the HSSD with IIM address *Addr*. Excessively high air flow through the piping system	• Look for leaks in the HSSD's piping system • Use LaserNET to troubleshoot the HSSD. The airflow may need to be re-normalized. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
HSD*Addr* Low AirFlow On	A problem in the HSSD with IIM address *Addr*. Low air flow through the piping system	• Look for blockages in the HSSD's piping system • Use LaserNET to troubleshoot the HSSD. The airflow may need to be re-normalized. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
HSD*Addr* Missing On	Loss of communications to HSSD at IIM address *Addr*	• Check the IIM-to-HSSD wiring connections • Ensure that HSSD has not been removed • Use the procedure in Section 3-2.5.2.4.15 to de-register the address if no HSSD should occupy that address. • Check IIM wiring for excessive capacitance and/or resistance. • Use LaserNET to troubleshoot the HSSD. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
HSD*Addr* Not Registered On	The control unit has not been set up to expect the HSSD at IIM address *Addr*.	• Register the device if part of system configuration. See Section 3-2.5.2.5.13 This procedure is insufficient. The following two procedures must also be conducted. • Use the LaserNET Program to configure the previously unregistered HSSD • Upload a new application program that includes the previously unregistered HSSD.
HSD*Addr* PSU Trouble On	A fault in the 24 Vdc power being supplied to HSSD with IIM address *Addr*	• Check IIM-to-HSSD wiring connections • Check 24 Vdc power connections to HSSD • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
HSD*Addr* Reference Trouble On	A fault in the HSSD with IIM address *Addr* being used as a reference detector for group of HSSDs.	• Verify the HSSD's referencing configuration via LaserNET. There could be no reference HSSD specified. • Verify the air quality in the vicinity of the reference HSSD. • Use LaserNET to troubleshoot the reference HSSD • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
IIM Communication Failure On	The IIM has failed to respond to control-unit communication messages	• Check the RS-232 cable connection between the control unit and the IIM. Refer to Figure 2-40. • Verify that the control-unit communications port connected to the IIM's CCM Port is configured for IIM communications. Refer to Section 3-2.5.2.4.5. • Ensure that the IIM is powered and that its green LED is illuminated. There is a problem with the IIM if its red LED is on. • Use LaserNET to troubleshoot the IIM • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
IIM Auxiliary Alarm Supervision Fault On	The end-of-line resistor is not installed on the Auxiliary-Alarm input of the IIM.	• Check for opens in the wiring between the IIM and the unpowered alarm contact that it is monitoring. • Confirm that the end-of-line resistor on the IIM's alarm initiating circuit is 5.6 kOhm. • Disable this feature via LaserNET if not used.
IIM Auxiliary Trouble Supervision Fault On	The end-of-line resistor is not installed on the Auxiliary-Trouble input of the IIM.	• Check for opens in the wiring between the IIM and the unpowered trouble contact that it is monitoring. • Confirm that the end-of-line resistor on the IIM's trouble initiating circuit is 5.6 kOhm. • Disable this feature via LaserNET if not used.
IIM Dial Tone Supervision Fault On	The IIM has been configured to monitor its modem connection for a telephone line and it has failed to detect a dial tone	• Confirm that the IIM's Modem Port is connected to an active telephone line • Disable this feature via LaserNET if not used. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
IIM Memory Checksum Failure On	The IIM memory is corrupt due to faulty power up, a configuration-upload problem, or an internal software problem	• Press the IIM's Reset Button • Upload configuration again. Refer to LaserNET Software Guide, Version 3.X. • Use LaserNET to troubleshoot the IIM
IIM Modem Missing On	The IIM does not have a modem but is incorrectly configured for one, or the modem is inoperative	• Disable the modem option via LaserNET if not used. • Dial into the modem to confirm whether it is operative or not. Replace IIM if it is inoperable. • Use LaserNET to troubleshoot the IIM
IIM RS485 Channel 2 Failure On	The IIM's RS-485 wiring is programmed for two channels and there is a fault in Channel 2 (Terminals TB1-7 and TB1-8).	• Look for discontinuity in IIM wiring (Terminals TB1-7 and TB1-8). • Troubleshoot IIM wiring (Terminals TB1-7 and TB1-8) by breaking-up circuit to isolate short circuit to specific branch or leg. • Disable this wiring style via LaserNET if not used. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
IIM Style6 Network Failure On	An open or short circuit in the RS-485 field wiring from the IIM to the HSSDs. Class-A wiring only	• Look for discontinuity in IIM wiring. • Troubleshoot IIM wiring by breaking-up circuit to isolate short circuit to specific branch or leg. • Disable this wiring style via LaserNET if not used. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
IIM HSD Supervision Failure On	The IIM has lost communications with one or more HSSDs. Communications problems prevent the HSSD from being identified by specific address.	• Check all HSSD connections to IIM wiring • Ensure that no HSSD has been removed • Use the procedure in Paragraph 3-2.5.2.4.15 to de-register an address if no HSSD should occupy that address. • Check IIM wiring for excessive capacitance and/or resistance. • Use LaserNET to troubleshoot all HSSDs. • Refer to AnaLASER II Installation, Operation, and Maintenance Manual, P/N 89.200.
IIM Auxiliary Trouble Present On	The IIM is programmed as a standalone unit and a trouble signal has been reported via its auxiliary-trouble initiating circuit. This is not an IIM fault. It is a fault associated with the equipment being monitored by the IIM.	• Investigate and correct the problem associated with the equipment being monitored via the IIM's auxiliary-trouble initiating circuit. • Disable this feature via LaserNET if not used.

Table 5-5. Remote-Display/Annunciator Events

Remote-Display/Annunciator Events		
Error Message	**Probable Cause**	**Corrective Action**
ATM*Addr* Acknowledge Input Fault On	An open circuit in wiring from the ATM-L's "Acknowledge" input terminal to the associated annunciator's acknowledge switch. ATM-L address is *Addr*.	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to acknowledge switch • Check for missing 10k end-of-line resistor.
ATM*Addr* Communication Fault On	A communications fault between the main printed circuit board and the ATM at address *Addr*.	• Check the RS-485 wiring from main printed circuit board Terminal Block TB15 to ATM Terminal Blocks TB1 and TB2. Refer to Figures 2-27 and 2-28. • Check for a discontinuity in the RS-485 field wiring (Terminal Blocks TB1 and TB2). • Troubleshoot wiring to ATM Terminal Blocks TB1 and TB2 by breaking-up the circuits to isolate short circuit to specific leg or legs. • Check for 24 Vdc power at ATM Terminal Block TB3. • Ensure that the ATM's RS-485 Termination Jumper W1 is set correctly • Ensure that the ATM Address Switch S1 is set correctly. • Refer to ATM Installation Manual, P/N 06-236179-001
ATM*Addr* Drill Input Fault On	An open circuit in wiring from the ATM-L's "Drill" input terminal to the associated annunciator's drill switch. ATM-L address is *Addr*.	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to drill switch • Check for missing 10k end-of-line resistor.
ATM*Addr* Monitored Output Fault On	An open circuit in any connection from the ATM to the LEDs (ATM-L) or relays (ATM-R) being driven	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to LEDs (ATM-L) or relays (ATM-R) • Ensure that the correct supervision link corresponding to the number of outputs being used has been removed

Table 5-5. Remote-Display/Annunciator Events

Remote-Display/Annunciator Events		
Error Message	**Probable Cause**	**Corrective Action**
ATM*Addr* Not Registered On	The control unit has not been set up to expect the ATM at ATM RS-485 circuit address *Addr*.	• Register the ATM if part of system configuration. See Paragraph 3-2.5.2.4.58. If this procedure is insufficient, The following procedure must also be conducted: • Upload a new application program that includes the previously unregistered ATM. • De-register the ATM if not part of system configuration. See Paragraph 3-2.5.2.4.59. • Check the 24 Vdc power (Terminal Block TB3)and RS-485 communications wiring (Terminal Blocks TB1 and TB2) from the control unit to the ATM • Ensure that the ATM Address Switch S1 is set correctly. • Refer to ATM Installation Manual, P/N 06-236179-001.
ATM*Addr* PSU Fault On	A loss of 24 Vdc power at Terminal Block TB3 or an open circuit in the monitoring circuit from the ATM's "PS Flt" and "Com" terminals to the normally-closed trouble contacts of its associated remote power supply	• Refer to ATM Installation Manual, P/N 06-236179-001. • Check for 24 Vdc power at ATM Terminal Block TB3. • Look for discontinuity in wiring to remote-power-supply trouble contacts. Jumper these terminals if you are using the FENWALNET 6000 Control Unit to power the ATM. • Check for trouble with third-party remote power supply
ATM*Addr* Reset Input Fault On	An open circuit in wiring from the ATM-L's "Reset" input terminal to the associated annunciator's reset switch. ATM-L address is *Addr*	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to reset switch • Check for missing 10k end-of-line resistor.
ATM*Addr* Silence Input Fault On	An open circuit in wiring from the ATM-L's "Silence" input terminal to the associated annunciator's alarm-silence switch. ATM-L address is *Addr*	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to alarm-silence switch • Check for missing 10k end-of-line resistor.
ATM*Addr* Silenced Output Fault On	An open circuit in wiring from the ATM-L's "Silence" output terminal to the associated annunciator's alarm-silence LED. ATM-L address is *Addr*	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to alarm-silence LED (if used) • Check for missing 20k supervising resistor if alarm-silence LED not used.

Table 5-5. Remote-Display/Annunciator Events

Remote-Display/Annunciator Events		
Error Message	**Probable Cause**	**Corrective Action**
ATM*Addr* Test Lamps Input Fault On	An open circuit in wiring from the ATM-L's "Lamp Test" input terminal to the associated annunciator's lamp-test switch. ATM-L address is *Addr*.	• Refer to ATM Installation Manual, P/N 06-236179-001. • Look for discontinuity in wiring to lamp-test switch • Check for missing 10k end-of-line resistor.
RDCM*Addr* Communication Fault On	A communications fault between the main printed circuit board and the RDCM at address *Addr*.	• Check the RS-485 wiring from main printed circuit board Terminal Block TB15 to RDCM Terminal Block TB1. Refer to Figures 2-27 and 2-28. • Check for a discontinuity in the RS-485 field wiring to RDCM (TB1, Terminals 5 and 6 and 7 and 8). • Troubleshoot wiring to RDCM TB1, Terminals 5 and 6 and 7 and 8, by breaking-up the circuits to isolate short circuit to specific leg or legs. • Check for 24 Vdc power at RDCM TB1, Terminals 1 and 2. • Ensure that the RDCM's RS-485 Termination Jumper W2 is set correctly. • Ensure that the RDCM Address Switch S1 is set correctly. • Check for duplicate addressed RDCMs.
RDCM*Addr* Not Registered On	The control unit has not been set up to expect the RDCM at RDCM RS-485 circuit address *Addr*.	• Register the RDCM if part of system configuration. See Paragraph 3-2.5.2.4.58. • De-register the RDCM if not part of system configuration. See Paragraph 3-2.5.2.4.59. • Check the 24 Vdc power (TB1, Terminals 1 and 2) and RS-485 communications wiring (TB1, Terminals 5 and 6 and 7 and 8) from the control unit to the RDCM • Ensure that the RDCM Address Switch S1 is set correctly.
RDCM*Addr* PSU Fault On	A loss of 24 Vdc power at TB1, Terminals 1 and 2 or an open circuit in the RDCM's monitoring circuit from TB1, Terminals 3 and 4 to the normally-closed trouble contacts of its associated remote power supply	• Check for 24 Vdc power at RDCM Terminals 1 and 2. • Look for discontinuity in wiring from Terminals 3 and 4 to remote-power-supply trouble contacts. Jumper these terminals if you are using the FENWALNET 6000 Control Unit to power the RDCM. • Check for trouble with third-party remote power supply

Table 5-6. Network Events

Network Events		
Error Message	**Probable Cause**	**Corrective Action**
Network Card Missing On	The control unit does not recognize its NIC.	• Check connection of NIC to main printed circuit board Header J5. See Figure 1-9 and Section 2-17.
Network Node*XX* Channel *Y* Failure On	The networked system has lost communications with Node *XX* via Channel *Y*	• Check wiring to NIC in Node XX. See Section 2-17. Ensure that network wiring is daisy-chained and not T-Tapped. • Check network wiring for excess resistance or capacitance. • Check connection of NIC to main printed circuit board Header J5. See Figure 1-9 and Section 2-17. • Review network settings in applications program. Correct parameters via the control-unit menu options or re-upload corrected configuration again to Node XX. Perform either of these operations at Node XX
N*XX* Bad Style or Node Number On	Node *XX* is not configured properly	• Review network settings in applications program. Correct parameters via the control-unit menu options or re-upload corrected configuration again to Node XX. Perform either of these operations at Node XX.
Token Not Received On CH. *Y* On	Network communications problems or the node reporting this message is not active on the network	• Check wiring to NIC in node reporting the fault. See Section 2-17. Ensure that network wiring is daisy-chained and not T-Tapped. • Check network wiring for excess resistance or capacitance. • Check connection of NIC to main printed circuit board Header J5. See Figure 1-9 and Section 2-17. • Review network settings and required interactions among control units in the applications program. Make any necessary corrections and re-upload configurations again to all effected nodes.

Table 5-6. Network Events (Continued)

Network Events		
Error Message	**Probable Cause**	**Corrective Action**
Unmapped Network Node *XX* on CH. *Y* On	Node *XX* is connected to and communicating on the network via Channel *Y* but is not registered	• Add node to network. Refer to Section 3-2.5.2.4.45. This is not sufficient by itself. See next step. • Review network settings and required interactions among control units in the applications program. Make any necessary corrections and re-upload configurations again to all effected nodes. • Check wiring to NIC in Node XX. See Section 2-17. Ensure that network wiring is daisy-chained and not T-Tapped. • Check network wiring for excess resistance or capacitance. • Check connection of NIC to main printed circuit board Header J5. See Figure 1-9 and Section 2-17.

WARNING

Do not leave a facility after performing any of the corrective actions listed in this chapter until you have:

· **Performed sufficient system testing to ensure that the problem(s) has (have) been corrected and that the system is in proper working condition**

· **Physically re-connected the wiring to initiator assemblies (if used) to the release-circuits from which they were removed**

· **Physically re-connected all control heads (if used) to the associated agent-storage-container discharge valves from which they were removed**

· **Physically re-connected the wiring to solenoid valves (if used) for pre-action/deluge sprinkler systems**

· **Ensured that emergency operations controlled by this system such as facility power shutoff are restored**

· **Notified personnel in the facility and at off-premises monitoring locations that you have finished working on the system, that system servicing has ended, and that the system has been restored to proper working conditions.**

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CHAPTER 6
PARTS LIST

6-1   INTRODUCTION

The complete assemblies, sub-assemblies, and compatible peripheral devices associated with the FENWALNET™ 6000 Control Unit are listed in the following tables.

Table 6-1. FENWALNET 6000 Control Unit and Replacement Sub-Assemblies

Model No.	Part Number	Description
FENWALNET 6000	74-600000-001	Control Unit (Blue) (complete assembly)
N/A	74-600000-007	Trim Ring (Blue)
FENWALNET 6000	74-600000-510	Control Unit (Red) (complete assembly)
N/A	74-600000-517	Trim Ring (Red)
N/A	74-600000-002	Enclosure w/ Door (Blue)
N/A	74-600000-511	Enclosure w/ Door (Red)
N/A	06-118394-002	Power Supply
N/A	74-600000-104	Printed-Circuit Board
N/A	06-220024-002	Installation/Hardware Kit
N/A	74-600000-011	Keypad/Display Assembly
N/A	06-220023-001	In-Line Releasing Device

Table 6-2. External Modules

Model No.	Part Number	Description
RDCM	74-300000-502	Rem. Display/Control Mod. (Beige)
RDCM	74-600000-005	Rem. Display/Control Mod. (Blue)
RDCM	74-600000-515	Rem. Display.Control Mod. (Red)
ATM-L	74-300004-032	Annun. Driver Module
ATM-R	74-300005-032	Relay Driver Module
N/A	74-600000-010	RDCM Trim Ring (Blue)
N/A	76-300000-510	RDCM Trim Ring (Red)
IIM	74-600000-012	Intelligent Interface Module w/ Modem (Blue)
IIM	74-600000-013	Intelligent Interface Module w/o Modem (Blue)
IIM	74-600000-512	Intelligent Interface Module w/ Modem (Red)
IIM	74-600000-513	Intelligent Interface Module w/o Modem (Red)
NIC	74-600000-009	Network Interface Card
OCC	74-600000-006	Fiber-Optic Converter Card (Blue)
OCC	74-600000-516	Fiber-Optic Converter Card (Red)

Table 6-3. SLC Initiating and Control Devices

Model No.	Part Number	Description
PSD-7152	71-402001-100	Photoelectric Detector
PSD-7140	71-401001-000	Photoelectric Detector (retrofit only)
PSD-7140	71-401004-000	Photo. Det. w/ Relay (retrofit only)
CPD-7052	70-402001-100	Ionization Detector
CPD-7040	70-401001-000	Ionization Detector (retrofit only)
CPD-7040	70-401004-000	Ion. Det. w/ Relay (retrofit only)
THD-7252	70-404001-100	Heat Detector
6SB	70-400001-100	Flanged Detector Base
4SB	70-400001-101	Detector Base
MA-002	70-400001-200	Det.-Base Adapter
N/A	70-400001-000	Detector Base (retrofit only)
DH-2000 PSDI	70-403001-152	Duct Hous. w/ Photo. Det.
DH-2000CPDI	70-403001-052	Duct Hous. W/ Ion. Det.
DH-4000	70-403000-000	Duct Housing (retrofit only)
AI	70-407008-001	Monitor Module (N/O)
AI	70-407008-002	Monitor Module (N/C) (UL only)
AI	70-407018-001	Monitor Module (N/O) (non-silicone)
AI	70-407018-002	Monitor Module (N/C) (non-silicone; UL only)
AI	70-407004-001	Monitor Module (N/O) (retrofit only)
AO	70-408004-001	Control Module
AO	70-408014-001	Control Module (non-silicone)
AO	70-408001-000	Cont. Mod. w/o Mtg. Plate (retrofit only)
AO	70-408002-000	Cont. Mod. w/ Mtg. Plate (retrofit only)
AO	70-408003-000	Cont. Mod. w/ SS Mtg. Pl. (retrofit only)
AIM	89-300010-001	AnaLASER II Inter. Mod.
AAM	73-100003-001	Addr. Alarmline Mod. (in NEMA-4 enclosure)
ASM	70-200200-001	Addr. Signal Module
ASM-6SB	70-200200-002	Addr. Signal Module (on 6SB Detector Base)
N/A	74-200012-002	Isolator Module (single-gang mount)
N/A	74-200012-004	Isolator Module (detector-base mount)
RRM	70-600000-001	Remote Releasing Module (standard mount)
RRM	70-600000-002	Remote Releasing Module (in-cabinet mount)

Table 6-4. Notification Appliances

Model No.	Part Number	Description
MT-12/24	75-000010-001	Multi-Tone Horn
MT-24 Series	75-000015-001	Multi-Tone Horn w/15-75 cd Strobe (FIRE)

Table 6-4. Notification Appliances

Model No.	Part Number	Description
	75-000015-002	Multi-Tone Horn w/15-75 cd Strobe (AGENT)
	75-000016-001	Multi-Tone Horn w/75 cd Strobe (FIRE)
	75-000016-002	Multi-Tone Horn w/75 cd Strobe (AGENT)
	75-000017-001	Multi-Tone Horn w/75 cd Strobe (FIRE) Weatherproof
MIZ Series	75-000020-001	Mini Horn-Steady (Red)
	75-000020-002	Mini Horn-Steady (White)
	75-000025-001	Mini Horn-Steady/Temporal (Red)
	75-000025-002	Mini Horn-Steady/Temporal (White)
NH-12/24	75-000080-001	Steady / Temporal Horn
NS-24 Series	75-000082-001	Steady/Temp. Horn w/15-75 cd Strobe (FIRE)
	75-000082-002	Steady/Temp. Horn w/15-75 cd Strobe (AGENT)
	75-000086-001	Steady/Temp. Horn w/15-30-75-110 cd Strobe (FIRE) Red
	75-000086-002	Steady/Temp. Horn w/15-30-75-110 cd Strobe (AGENT) Red
	75-000087-001	Steady/Temp. Horn w/15-30-75-110 cd Strobe (FIRE) Wht
	75-000087-002	Steady/Temp. Horn w/15-30-75-110 cd Strobe (AGENT) Wht
RSS(P) Series	75-000002-011	15-75 cd Strobe (FIRE)
	75-000002-012	Retrofit 15-75 cd Strobe (FIRE)
	75-000002-013	15-75 cd Strobe (AGENT)
	75-000005-021	15-30-75-110 cd Strobe (FIRE)-Red
	75-000005-022	15-30-75-110 cd Strobe (AGENT)-Red
	75-000005-023	Retrofit 15-30-75-110 cd Strobe (FIRE)-Red
	75-000005-024	Retrofit 15-30-75-110 cd Strobe (AGENT)-Red
	75-000005-031	15-30-75-110 cd Strobe (FIRE)-White
	75-000005-032	15-30-75-110 cd Strobe (AGENT)-White
	75-000005-033	Retrofit 15-30-75-110 cd Strobe (FIRE)-White
	75-000005-034	Retrofit 15-30-75-110 cd Strobe (AGENT)-White
	75-000005-041	75 cd Strobe (FIRE)-Weatherproof
	75-000005-042	75 cd Strobe (AGENT)-Weatherproof

Table 6-5. Batteries and Battery Enclosures

Model No.	Part Number	Description
N/A	06-115915-047	12-V, 12-AH
N/A	06-115915-046	12-V, 17-AH
N/A	89-100052-001	12-V, 35-AH
N/A	74-600000-014	FENWALNET 6000 Battery Enclosure (Blue)
N/A	74-600000-514	FENWALNET 6000 Battery Enclosure (Red)

Table 6-6. Miscellaneous

Model No.	Part Number	Description
N/A	70-411001-005	EOL Resistor Kit
N/A	74-200013-001	Device Programmer
N/A	06-129025-003	EOL Resistor-10K,0.5W

APPENDIX A
BATTERY CALCULATIONS

A-1   AC BRANCH CIRCUIT

The FENWALNET 6000 System requires a separate, dedicated connection to an AC branch circuit (120 Vac, 50/60 Hz, 3.2 A or 220/240 Vac, 50/60 Hz, 1.6 A) that must be labeled "Fire Alarm." This branch circuit must connect to the line side of the main power connection for the premises. No other equipment can be powered from the fire-alarm branch circuit.

The branch-circuit wire must run continuously, without any disconnection devices, from the source of AC power to the FENWALNET 6000 Control Unit. Over-current protection for this branch circuit must comply with Article 760 of the National Electric Code and any other local electrical codes. Use a minimum wire size of #14 AWG, with 600-volt insulation, for this branch circuit

A-2   CALCULATING THE STANDBY BATTERIES

Calculate the system operating current and alarm load using the template in Table A-1.

Table A-1. Calculating Operating System Current Load

Qty	Unit	Unit Standby Current (A)	$^+$Ext. Standby Current (A)	Alm Qty	Pre-Rel. Qty	Rel Qty	Unit Alarm Current (A)	$^\#$Ext. Alm Current (A)	$^\&$Ext. Pre-Rel. Current (A)	^{S}Ext. Rel. Current (A)
1	FENWALNET 6000	0.2	0.2	1	1	1	0.650			
-	RDCM	0.064	-	-	-	-	0.085	-	-	-
-	ATM-L	0.045	-	-	-	-	0.045	-	-	-
-	LEDS*	-	-	-	-	-	0.012	-	-	-
-	ATM-R	0.045	-	-	-	-	0.045	-	-	-
-	Relays*	-	-	-	-	-	0.025	-	-	-
-	PSD-7152	0.000405	-	-	-	-	0.000445	-	-	-
-	CPD-7052	0.000400	-	-	-	-	0.000440	-	-	-
-	THD-7252	0.000400	-	-	-	-	0.000440	-	-	-
-	DH-2000 PSDI	0.000405	-	-	-	-	0.000445	-	-	-
-	DH-2000 CPDI	0.000400	-	-	-	-	0.000440	-	-	-
-	N/O AI	0.000450	-	-	-	-	0.000450	-	-	-
-	N/C AI	0.000450	-	-	-	-	0.000450	-	-	-
-	AIM	0.000450	-	-	-	-	0.000450	-	-	-
-	AAM	0.000450	-	-	-	-	0.000450	-	-	-
-	AO	0.000400	-	-	-	-	0.000440	-	-	-
-	ASM	0.000500	-	-	-	-	0.000500	-	-	-
-	ASM-6SB	0.000500	-	-	-	-	0.000500	-	-	-
-	Single-gang Isolator	-	-	-	-	-	-	-	-	-
-	Det.-base Isolator	-	-	-	-	-	-	-	-	-
-	NIC	0.070	-	-	-	-	0.070	-	-	-
-	OCC	0.200	-	-	-	-	0.200	-	-	-
-	IIM (without modem)	0.070	-	-	-	-	0.080	-	-	-
-	IIM (with modem)	0.070	-	-	-	-	0.200	-	-	-
	RRM	0.000410					0.000410			
-	MT-12/24 *	-	-	-	-	-	0.024	-	-	-
-	MT-241575 *	-	-	-	-	-	0.089	-	-	-
-	MT-2475 *	-	-	-	-	-	0.157	-	-	-

Qty	Unit	Unit Standby Current (A)	$^+$Ext. Standby Current (A)	Alm Qty	Pre-Rel. Qty	Rel Qty	Unit Alarm Current (A)	$^\#$Ext. Alm Current (A)	$^\&$Ext. Pre-Rel. Current (A)	$^\$$Ext. Rel. Current (A)
-	MIZ-24 *	-	-	-	-	-	0.012	-	-	-
-	MIZ-TC24 *	-	-	-	-	-	0.017	-	-	-
-	NH-12/24 *	-	-	-	-	-	0.015	-	-	-
-	NS-241575 *	-	-	-	-	-	0.079	-	-	-
-	NS-24MC (Horn only) *	-	-	-	-	-	0.015	-	-	-
-	NS-24MC (w/15 cd) *	-	-	-	-	-	0.058	-	-	-
-	NS-24MC (w/30 cd) *	-	-	-	-	-	0.082	-	-	-
-	NS-24MC (w/75 cd) *	-	-	-	-	-	0.140	-	-	-
-	NS-24MC (w/110 cd) *	-	-	-	-	-	0.174	-	-	-
-	MB-G6-24 *	-	-	-	-	-	0.030	-	-	-
-	MB-G10-24 *	-	-	-	-	-	0.030	-	-	-
-	RSS-241575 *	-	-	-	-	-	0.065	-	-	-
-	RSS-24MC (15 cd) *	-	-	-	-	-	0.050	-	-	-
-	RSS-24MC (30 cd) *	-	-	-	-	-	0.081	-	-	-
-	RSS-24MC (75 cd) *	-	-	-	-	-	0.133	-	-	-
-	RSS-24MC (110 cd) *	-	-	-	-	-	0.161	-	-	-
-	SM Synch. Module *	-	-	-	-	-	0.025	-	-	-
-	DSM Synch. Module *	-	-	-	-	-	0.038	-	-	-
-	897494	-	-	-	-	-	1.500	-	-	-
-	486500-01	-	-	-	-	-	0.240	-	-	-
-				-	-	-		-	-	-
-	FM Solenoid (Group A)	-	-	-	-	-	0.458	-	-	-
-	FM Solenoid (Groups B,D)	-	-	-	-	-	0.700	-	-	-
-	FM Solenoid (Groups E,G)	-	-	-	-	-	0.420	-	-	-
	Total Standby Current (A)		_____		Total Alarm Current (A)			_____	_____	_____
	Standby Hours		_____		Alm Minutes			_____	_____	_____
	Standby AH		_____		Alarm AH			_____	_____	_____
					Total AH			_____	_____	_____
					Battery Size (AH)			_____	_____	_____
				Battery Capacity for Calculations(AH) (10% De-rating)						_____
					Max. Alarm Current (A)					5.400

+ (Qty) X (Unit Standby Current)
\# (Alm Qty) X (Unit Alm Current)
& (Pre-Rel. Qty) X (Unit Alm Current)
$ (Rel. Qty) X (Unit Alm Current)
* Typical currents. Refer to specific product information sheets.

A-3   EXAMPLE

Consider a FENWALNET 6000 Control Unit that is monitoring a waterless extinguishing system for a data-processing center. The automatic detection system consists of ten (10) Model PSD-7152 Photoelectric Detectors and ten (10) Model CPD-7052 Ionization Detectors, crossed-zoned in such a manner that the activation of at least one photoelectric detector and one ionization detector is required to automatically discharge the waterless extinguishing system. The initiating system also includes eight Model AI Monitor Modules for manual-release, abort, and sprinkler-supervisory requirements. Four (4) Model AO Relay Control Modules are being utilized for remote control function such as airflow shutoff and power shutdown. One AO activates at pre-alarm, two additional AOs activate at pre-release, and the final AO activates upon extinguishing-system discharge.

Six (6) Model NS-24MC combination horn/strobes (75 cd) are used for occupant notification. The horns are activated during the pre-alarm condition. The strobes are activated at pre-release, and remain on until the system is reset.

A Model 486500-01 Control Head is being used to activate the waterless extinguishing system. A pre-action sprinkler system, controlled by an FM-Approved, Group B solenoid, will be activated concurrently with the waterless extinguishing system.

The system is using a Model RDCM Remote-Display Module for additional event annunciation. The standby-battery calculation is shown in Table A-2.

Table A-2. Standby Battery Calculation

Qty	Unit	Unit Standby Current (A)	Ext. Standby Current (A)	Alm Qty	Pre-Rel. Qty	Rel Qty	Unit Alarm Current (A)	Ext. Alm Current (A)	Ext. Pre-Rel. Current (A)	Ext. Rel. Current (A)
1	FENWALNET 6000	0.200	0.200	1	1	1	0.650	0.650	0.650	0.650
1	RDCM	0.064	0.064	1	1	1	0.085	0.085	0.085	0.085
10	PSD-7152	0.000405	0.004	1	1	1	0.000445	0.000	0.000	0.000
10	CPD-7052	0.000400	0.004		1	1	0.000440	0.000	0.000	0.000
8	N/O AI	0.000450	0.004				0.000450	0.000	0.000	0.000
4	AO	0.000400	0.002	1	2	4	0.000440	0.000	0.001	0.002
	NS-24MC (Horn only) *	-	0.000	6			0.015	0.090	0.000	0.000
6	NS-24MC (w/75 cd) *	-	0.000		6	6	0.140	0.000	0.840	0.840
1	486500-01	-	0.000			1	0.240	0.000	0.000	0.240
1	FM Solenoid (Groups B,D)	-	0.000			1	0.700	0.000	0.000	0.700
	Total Standby Current (A)		0.277				Total Alarm Current (A)	0.839	1.590	2.531
	Standby Hours		24				Alm Minutes	5	5	5
	Standby AH		6.654				Alarm AH	0.070	0.133	0.211
	* Typical currents. Refer to specific product information sheets.						Total AH	6.72	6.79	6.86
							Battery Size (AH)			12
							Battery Capacity for Calculations(AH) (10% De-rating)			10.8
							Max. Alarm Current (A)			5.400

Round up to next whole number (7 AH) using the largest-calculated battery capacity (6.86 AH) for the required standby-battery size.

Use Table A-3 to determine the maximum standby currents that can be used as a function of the required standby hours and the size of the battery used.

Table A-3. Maximum Standby Currents vs. Standby Duration and Battery Size

Standby Duration (hrs.)	Alarm Duration (min.)	Max. Standby Current (A)	Max. Alarm Current (A)	Max. Battery (AH)
4	5	1.4	5.4	7
4	5	2.5	5.4	12
24	5	0.4	5.4	12
24	5	1.2	5.4	35
60	5	0.5	5.4	35
90	10	0.3	5.4	35
24	5	2.6	5.4	70
60	5	1.0	5.4	70
90	10	0.6	5.4	70

APPENDIX B
WIRING REQUIREMENTS FOR FENWALNET 6000 SIGNALING LINE CIRCUIT

B-1   RECOMMENDED WIRE TYPES

For best results, use twisted, unshielded, low-capacitance, addressable-fire-alarm wire with a nominal wire-to-wire capacitance of approximately 20 pf (picofarads, where 1 pf = 10^{-6} μF) per foot for the signaling-line circuit. Typical wire types that meet these criteria are indicated below:

Table B-1. Typical Wire Types - 18 AWG

Manufacturer	Part Number	Rating	Cap (pf/ft.)
Atlas Wire and Cable Corp.	228-18-1-1TP	FPL	12.5
West Penn Wire	D980	FPL	16.0
West Penn Wire	60980B	FPLP	29.0
Coleman Cable	98181	FPL	19.0
Coleman Cable	98820	FPLR	26.0
Clifford of Vermont, Inc.	1P18 B1 FPL-M	FPL	15.0
Comtran Corporation	4184	FPLR	20.0
Belden Wire and Cable Co.	5320UJ	FPL	12.5
Belden Wire and Cable Co.	9571	FPLR	22.0
Belden Wire and Cable Co.	6320UJ	FPLP	25.0
BSCC	341802E	FPLP	25.0
Genesis Cable Systems	4050	FPL	15.0
Genesis Cable Systems	4431	FPLR	15.0
Genesis Cable Systems	4631	FPLP	16.0

Table B-2. Typical Wire Types - 16 AWG

Manufacturer	Part Number	Rating	Cap (pf/ft.)
Atlas Wire and Cable Corp.	228-16-1-1TP	FPL	12.5
West Penn Wire	D990	FPL	18.0
Coleman Cable	98161	FPL	20.0
Coleman Cable	98620	FPLR	27.0
Clifford of Vermont, Inc.	1P16 B1 FPL-M	FPL	19.0
Comtran Corporation	4234	FPLR	20.0
Belden Wire and Cable Co.	5220UJ	FPL	13.5
Belden Wire and Cable Co.	9572	FPLR	29.0
Belden Wire and Cable Co.	6220UJ	FPLP	27.0
BSCC	341602E	FPLP	18.0
Genesis Cable Systems	4051	FPL	17.0
Genesis Cable Systems	4432	FPLR	17.0
Genesis Cable Systems	4632	FPLP	18.0

Table B-3. Typical Wire Types - 14 AWG

Manufacturer	Part Number	Rating	Cap (pf/ft.)
Atlas Wire and Cable Corp.	228-14-1-1TP	FPL	14.5
Coleman Cable	98141	FPL	20.0
Coleman Cable	98420	FPLR	25.0
Comtran Corporation	4240	FPLR	21.0
Belden Wire and Cable Co.	9580	FPLR	27.0
Belden Wire and Cable Co.	6120UJ	FPLP	25.9
BSCC	341402E	FPLP	20.0
Genesis Cable Systems	4052	FPL	19.0
Genesis Cable Systems	4433	FPLR	19.0
Genesis Cable Systems	4633	FPLP	20.0

Table B-4. Typical Wire Types - 12 AWG

Manufacturer	Part Number	Rating	Cap (pf/ft.)
Coleman Cable	98121	FPL	27.0
Coleman Cable	98200	FPLR	29.0
Genesis Cable Systems	4054	FPL	21.0
Genesis Cable Systems	4434	FPLR	22.0

B-2   EXAMPLE NO. 1

Determine the recommended wire size for a daisy-chained, Class-B, Style-4 SLC with 160 devices and a total wire length of 7,500 feet. The total wire length is the sum of wiring for the positive and negative SLC legs, and is not the linear distance from the control unit to the most-remote device.

Try #14 AWG wire. The total SLC wiring resistance is:

7,500 ft. x 2.525 ohms / 1,000 ft. = 18.9 ohms.

If Coleman Cable wire is selected, P/N 98141 (from Recommended Wire Listing), the total SLC wiring capacitance is:

3,750 ft x 20 x 10^{-12} farads / ft. = 0.075 x 10^{-6} farads (or, 0.075 μF).

Coleman Cable wire, PN 98141, is acceptable.

Note: Capacitance values correspond to a pair of wires as compared to resistance values that correspond to a single conductor. The wire-pair length for this SLC is 3,750 feet, and this value is used for the SLC's capacitance calculation.

B-3   EXAMPLE NO. 2

Determine the proper wire size for a Class-A, Style-6 SLC with 100 devices and a total wire length 7,000 feet. The total wire length is the sum of wiring for the positive and negative SLC legs for both the primary and redundant communications circuits, and is not the linear distance from the control unit to the most remote device.

Try #18 AWG wire first. The total SLC wiring resistance is using #18 AWG is:

7,000 ft. x 6.385 ohms / 1,000 ft. = 44.7 ohms.

The total SLC wiring resistance (44.7 ohms) when using #18 AWG wire exceeds the maximum SLC wiring resistance of 40.0 ohms. Use larger wire.

Try #16 AWG next. The total SLC wiring resistance using #16 AWG is:

7,000 ft. x 4.016 ohms / 1,000 ft. = 28.1 ohms.

The total SLC wiring resistance (28.1 ohms) when using #16 AWG wire is less than the maximum SLC wiring resistance of 40 ohms. The SLC wiring resistance using #16 AWG wire is acceptable.

If Coleman Cable wire is selected, P/N 98161 (from Recommended Wire Listing), the total SLC wiring capacitance is:

3,500 ft x 20 x 10^{-12} farads / ft. = 0.07 x 10^{-6} farads (or, 0.07 μF).

Coleman Cable wire, P/N 98161, is acceptable.

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APPENDIX C
LISTED AND APPROVED RELEASING DEVICES

C-1   RELEASING CIRCUIT ELECTRICAL CHARACTERISTICS

The following electrical characteristics apply to the dedicated releasing circuits, Release 1 and Release 2.

Table C-1. Release 1 and 2 Circuit Electrical Characteristics

Characteristic	Solenoids	Initiators
Maximum Devices.	2	12
Minimum Peak Firing Current	2.8 A / 30 ms	1.5 A / 10 ms
Maximum Steady Firing Current	2.4 A	---
Max. Open-Circuit Term. Voltage	28.0	28.0
Min. Open-Circuit Term. Voltage	20.0	20.0
Maximum Supervision Current	5 ma	5 ma
Dummy Load	10 k Ohms	---

C-2   COMBINATION CIRCUIT ELECTRICAL CHARACTERISTICS FOR RELEASING

The following electrical characteristics apply to the combination circuits, Combo 1 and Combo 2.

Table C-2. Combo 1 and 2 Circuit Electrical Characteristics

Characteristic	Solenoids	Initiators
Maximum Devices	1	Do Not Use
Minimum Peak Firing Current	2.8 A / 30 ms	---
Maximum Steady Firing Current	2.4 A	---
Max. Open-Circuit Term. Voltage	28.0	---
Min. Open-Circuit Term. Voltage	20.0	---
Maximum Supervision Current	5 ma	---
Dummy Load	10 k Ohms	---

C-3   UL LISTED AND FM APPROVED SOLENOIDS

The solenoids in Table C-3 are UL Listed and FM Approved as noted.

Table C-3. UL Listed and FM Approved Solenoids

Device	I (max.) A	Resistance (min.) ohms	"On" Time	Wire Length (Ft.)				Comment
				12 AWG	14 AWG	16 AWG	18 AWG	
890181	2.40	10.0	Momentary	300	200	120	—	
897494	1.50	15.9	Continuous	380	240	150	—	Max. One (1) per System
486500-01	0.240	103.0	Continuous	3000	2000	1200	800	
81-100000-001	0.440	59.0	Continuous	2300	1460	915	570	
06-118329-001	0.225	108.0	Continuous	3000	2000	1200	800	FM Approved; Not UL Listed
06-118384-001	0.520	46.0	Continuous	1440	760	480	340	UL Listed; Not FM Approved
38-509837-001	0.400	60.0	Continuous	2300	1460	915	570	
38-509834-001	0.632	38.0	Continuous	1050	550	330	240	
93-487100-001*	2.00	12.0	Momentary	360	240	140	—	Max. One (1) per System
FM Group A	0.458	52.0	Continuous	1440	760	480	340	
FM Groups B,D	0.700	34.0	Continuous	940	500	300	220	
FM Groups E,G	0.420	57.0	Continuous	1570	760	525	370	

* Must be used in conjunction with microswitch P/N 87-120039-001 for momentary operation.

See Figure C-1 and Figure C-2.
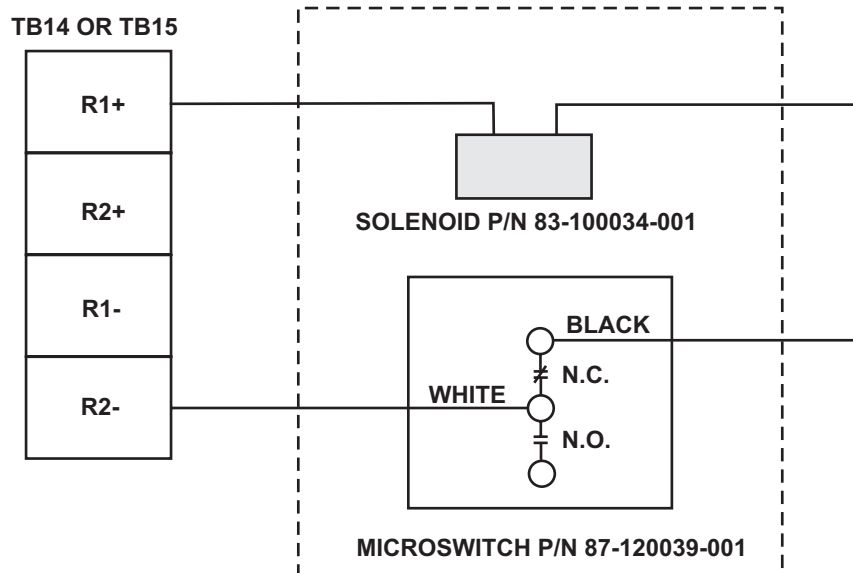
Figure C-1. Agent Release Circuits for CXV Control System (P/N 93-487100-001)

TB14 OR TB15

R1+ **R2+** **R1-** **R2-**

10 OHM LIMITING RESISTOR

INITIATOR

MAXIMUM WIRE RESISTANCE: 3 OHMS

⚠ **MAXIMUM CURRENT UNDER FAULT CONDITIONS: 5A**
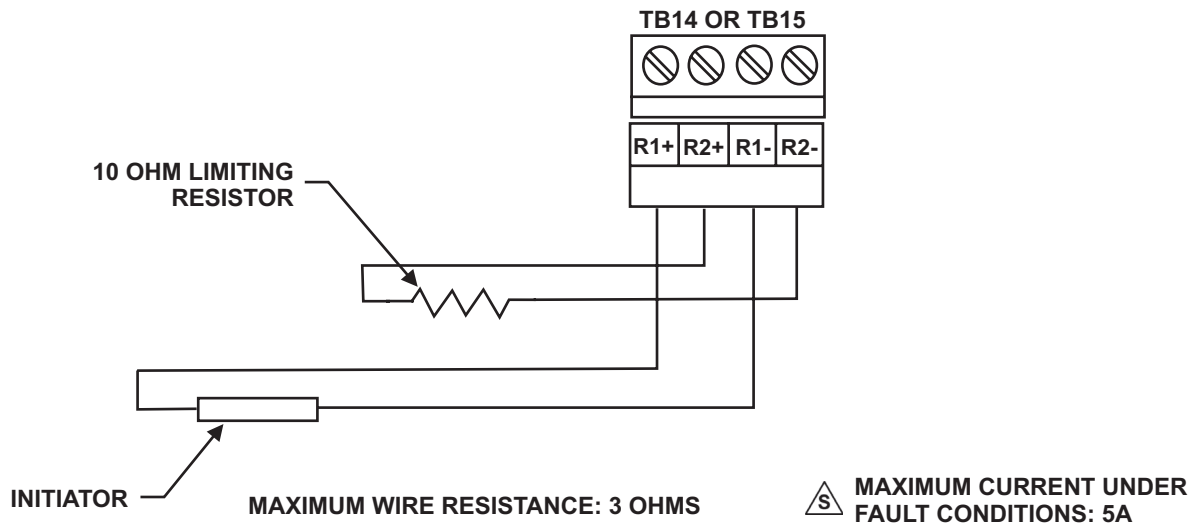
Figure C-2. Agent Release Circuit Wiring - Initiators, Non-Power-Limited

Note: 1. Polarities must be observed.
2. Must be close nippled to Solenoid enclosures.
3. The ARC is Non-Power-Limited when in-line device not used.
4. Route Non-Powered-Limited wiring at least 1/4-inch away from all Power-Limited wiring. Do not attach Power-Limited wiring to the same terminal block.
5. When using initiators, different types of initiators must **NOT** be mixed on the same circuit. The limiting resistor is used to make the total circuit resistance equal to ± 1 ohm. The resistor must have a rating of 1 watt minimum.

C-4 UL LISTED AND FM APPROVED ACTUATOR ASSEMBLY

The following initiator assemblies are UL Listed and FM Approved.

Table C-4. UL Listed and FM Approved Actuator Assembly

Part Number	Max. No. per Release Ckt.	Max. Rel. Ckt. Resistance
31-199932-004	12	10 ohms +/- 1 ohm
93-191001-001	6	10 ohms +/- 1 ohm

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APPENDIX D
HANDHELD-PROGRAMMER OPERATING INSTRUCTIONS

D-1   **DESCRIPTION**

The Handheld Programmer (hereinafter referred to as the Programmer) provides the system installer/service person with a convenient means to assign device address information and test device operation.

D-2   **GENERAL NOTE**

Prior to using the Programmer, you need to ensure that you have the supplied accessories, listed in the table below:

D-2.1   **Accessory List**

Part No.	Description
74-200013-001	Device Programmer (complete Unit)
06-117999-001	AC/DC Power Pack*
06-118003-001	AC Cord*
06-117998-001	Battery Pack (installed in device)*

* All supplied in top level Part No. 74-200013-001

D-3   **DEVICES SUPPORTED**

The Programmer is designed to support all SmartOne® intelligent/addressable devices. A table of supported devices accompanies these instructions.

Prepare the Programmer for Operation with AC Adapter

1. Connect Device Interface Cable to the SLC connector on the top of the Programmer.
2. Connect the small plug of the power pack to the DC IN connector on the top of the Programmer, and then plug the line cord into a 120 Vac, 60Hz outlet.
3. Verify that the green "DC Input" LED is lit. The yellow "Bat. Charger" LED will also light if the batteries are not fully charged.
4. Set the power switch to the "on" position (up direction).
5. Verify that the green "Power On" LED is lit and that the display is flashing each of the segments used to display characters.
6. After 30 seconds ensure the top row of the display is flashing (---). The bottom row of the display should be blank.

Table D-1. Trouble Code Table

Code	Trouble
E00	Programmer Trouble - An internal trouble condition has been detected within the Programmer. Remove all power. Re-energize and allow the Programmer to re-initialize. If it does not operate (Programmer Trouble remains), return Programmer to factory for repair.
E01	Alarm Test Fail - The connected device has failed Alarm Test. Remove device and allow Programmer to clear. Re-attach failed device. Change address of device. Allow Programmer to complete entire process before disconnecting leads from the device. If device fails test again, return device for repair.
E02	Addressable Set Trouble - The Programmer has detected a trouble condition during address setting of connected device. Disconnect Programmer and allow it to clear. Reattach device and set address in device. If device fails again, return device for repair.
E95	Internal Device Open - The Programmer has received a trouble condition from the connected device. Verify connected device has E.O.L. resistor connected (AI/ASM only). If the E.O.L. is not connected, connect it to the device as required. Disconnect device from Programmer and allow it to clear. Reattach unit to Programmer and set address on device.
E96	Device Open - Programmer has detected the connected device as being disconnected. Verify SLC connection to Programmer and allow it to clear. Reattach and retry.
E99	SLC Short - SLC leads of Programmer have became shorted together.

D-4 **PREPARE THE PROGRAMMER FOR OPERATION WITH INTERNAL BATTERIES**

1. Connect Interface Cable to the SLC connector on the top of the Programmer.
2. Set the power switch to the "On" position (up direction).
3. Verify that the green "Power On" LED is lit and that the display is flashing each of the segments used to display characters.
4. If the "Bat. Failure" LED is lit or no LEDs are lit, charge the batteries according to the Battery Charging procedure.

D-5 **BATTERY CHARGING**

If the "Bat. Failure" LED lights on the Programmer, go to AC operation to charge the batteries as described below:

1. Ensure that the power switch is in the "Off" position (down direction).
2. Connect the small plug of the power pack to the DC IN connector on the top of the Programmer.
3. Plug the line cord into a 120 Vac, 60Hz outlet.
4. Verify that the "DC Input" and "Bat. Charger" LEDs are lit.
5. Charge batteries for at least one hour. If the "Bat. Failure" LED is illuminated after the charge, replace the Programmer's batteries.

D-6 **CHANGE OR SET THE ADDRESS OF A DEVICE**

1. Connect the alligator clips of the interface cable to the terminals of an addressable device.
2. After about 17 seconds, the top row of the display should indicate the device address (000 to 255), and shortly after, the bottom row of the display should indicate "000."

Note: All new addressable devices should have an address of 000.

3. Refer to the Trouble Code Table if the Trouble LED lights, if the Programmer beeps, or if a trouble code is displayed.
4. To change the address, enter a value between 001 and 255 into the keypad. The entered value will appear in the bottom row of the display. Press the <ENTER> key.
5. After about 10 seconds, the entered address will be displayed on the top row of the display.
6. Repeat Steps 1 through 5 for each device to be addressed.

D-7   BATTERY REPLACEMENT

1. Ensure that the power switch is off (down position) and that the power cord is disconnected.
2. Remove the four Phillips-head screws from the back panel of the Programmer.
3. Lift the rear panel from the unit carefully, preventing tension to the wiring connected to the rear panel PC board. Place rear panel on the side of the unit. Do not disconnect interconnecting wiring.
4. Remove the two Phillips-head screws securing the battery bracket. Lift out the bracket.
5. Remove battery pack and disconnect battery connector.
6. Insert new battery pack by reversing the steps above.

Table D-2. Supported Devices

Supported Devices	Part Number
Ionization Detectors	70-402001-100
	70-401001-000
	70-401002-000
	70-401004-000
Photoelectric Detectors	71-402001-100
	71-401001-000
	71-401002-000
	71-401004-000
Thermistor Heat Detector	70-404001-100
Addressable Contact Input Devices	70-407002-00X
	70-407003-001
	70-407004-001
	70-4070x8-00x
Relay Devices	70-408001-000
	70-408003-000
	70-4080x4-001
Addressable Signal Module	70-200200-00X

D-8   POWER SPECIFICATIONS ADDRESSABLE SIGNAL MODULE

AC Input Rating: 120Vac, 1.0A (Max.)

DC Output Rating: 12Vdc, 1.75A (Max.)

Battery Rating: 7.2Vdc, 700 mAH

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APPENDIX E
ROUTINGS FOR POWER-LIMITED AND NON-POWER-LIMITED WIRING

This appendix provides guidelines for power-limited and non-power-limited wiring requirements. The following wiring requirements shall be observed:

- Power-limited and non-power-limited wiring must be physically separated within the control-unit enclosure
- All power-limited wiring must be separated by at least ¼-inch (6.35 mm) from any non-power-limited wiring
- Power-limited and non-power-limited wiring cannot enter and exit the control-unit enclosure through the same knockout or conduit.

Figure E-1 shows typical wiring for power-limited and non-power-limited circuits.

Use left-side gutter for non-power-limited wiring.

Use right-side gutter for power-limited wiring.

Non-power-limited wiring

Power-limited wiring

1/4-in. (min.)

1/4-in. (min.)

Maintain 1/4-in. separation as shown between power-limited and non-power-limited wiring in this area.

A - A

Non-power-limited wiring

Power-limited wiring

A - A
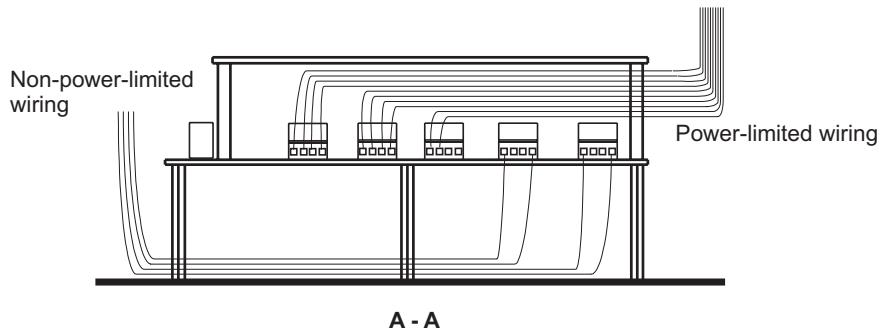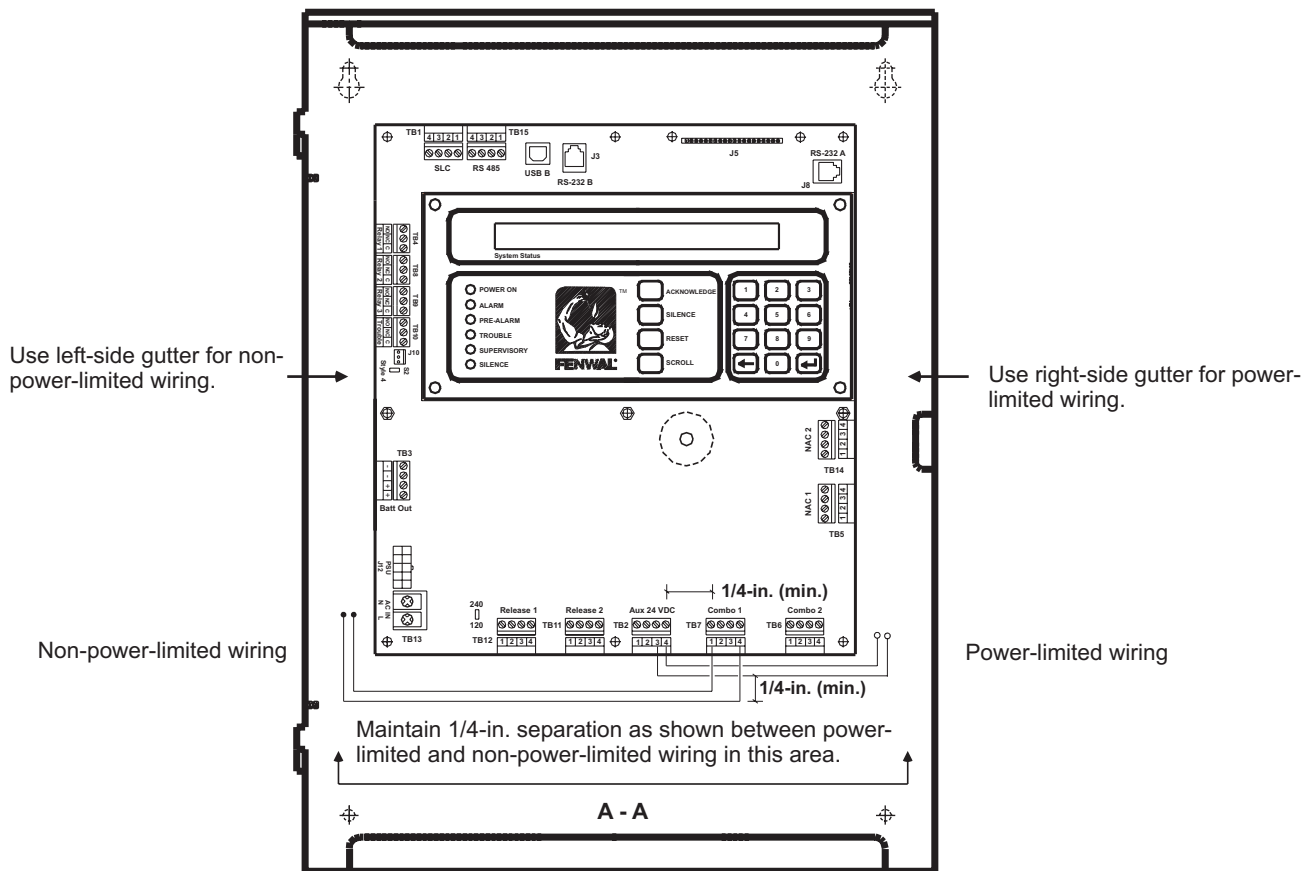
Note:

Route wiring as shown when combination power-limited and non-power-limited circuits are used.

Direct all non-power-limited wiring to the rear and then to the left-hand side of the enclosure. Tie wrap this wiring to the back of the enclosure to maintain a minimum 1/4-inch separation from all power-limited wiring.

Direct all power-limited wiring outward and then to the right-hand side of the enclosure. Also tie wrap this wiring as necessary to maintain a minimum 1/4-inch separation from all non-power-limited wiring.

Figure E-1. Power-Limited and Non-Power-Limited Wiring

APPENDIX F
CENTRAL-STATION OPERATION

The FENWALNET 6000 Control Unit can be programmed for central-station operation through the application-specific configuration software. Refer to the FENWALNET 6000 Programmer's Guide to set up a control unit or a networked system for central-station operation.

Use a UL Listed and compatible digital alarm communicator/transmitter (DACT) to transmit the alarm, supervisory, and trouble signals off-premises to the central station. The typical interconnections between the FENWALNET 6000 Control Unit and the DACT are shown in Figure F-1.

Refer to the DACT installation manual to interface the DACT to the FENWALNET 6000 Control Unit and to connect this equipment to the public switched telephone network for off-premises signal transmissions.
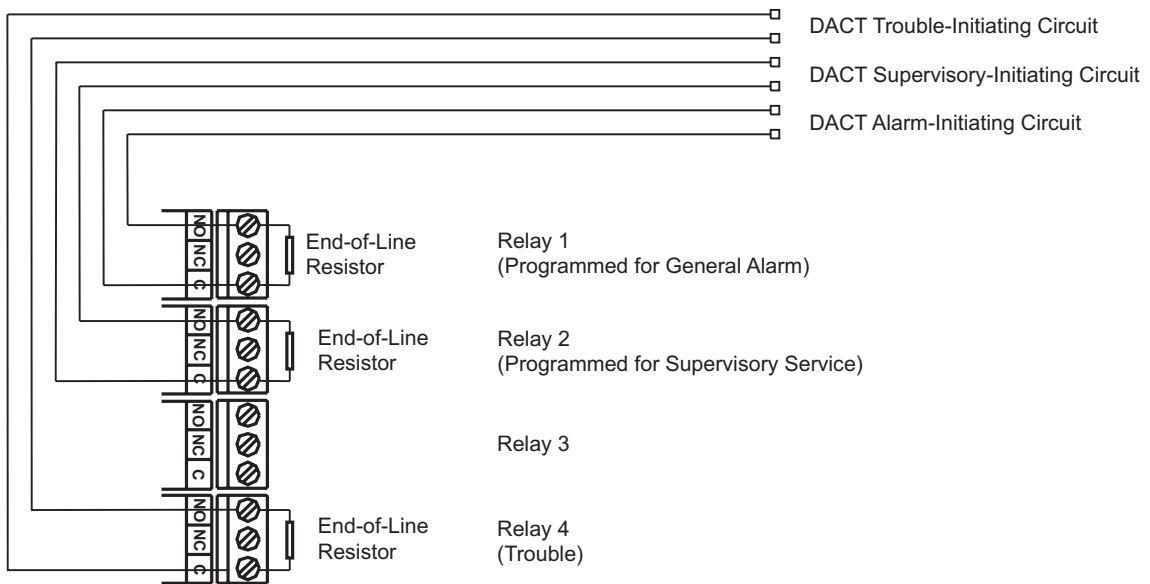
FENWALNET 6000 Relays

Note:

Model AO Addressable Relays may be substituted for control-unit relays.

Figure F-1. Typical FENWALNET 6000 and DACT Interconnections

Figure F-2 shows the interconnection between the FENWALNET 6000 Control Unit and the Silent Knight Model 5104 DACT as a specific example.
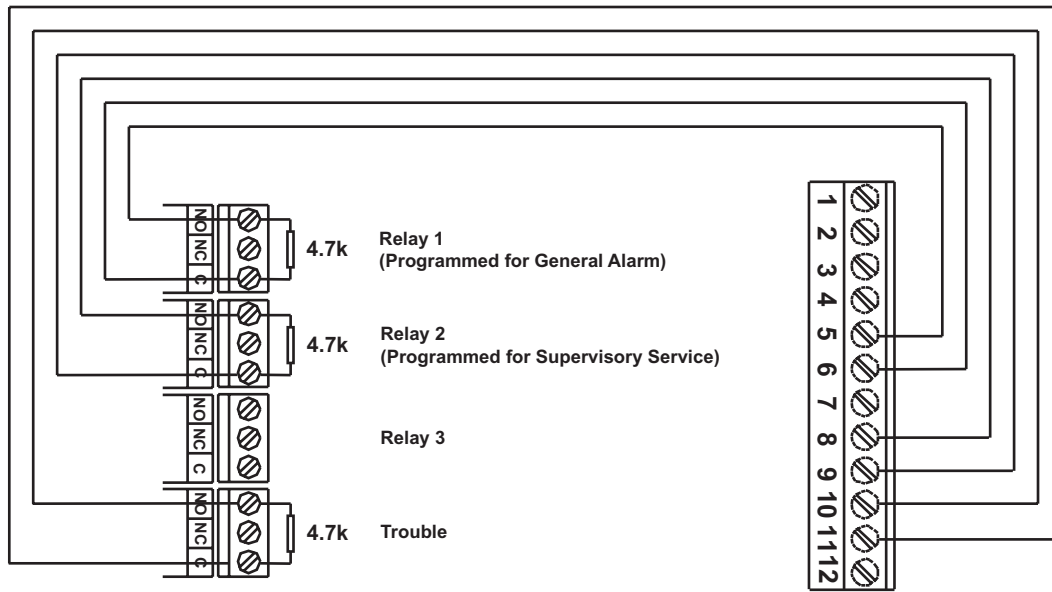
FENWALNET 6000 Relays

Silent Knight 5104 DACT Initiating Device Circuits

Note:

Model AO Addressable Relays may be substituted for control-unit relays.

Figure F-2. FENWALNET 6000 and Silent Knight Model 5104 DACT Interconnections

APPENDIX G
FACTORY MUTUAL REQUIREMENTS FOR PRE-ACTION AND DELUGE SPRINKLER SYSTEMS

FENWALNET 6000 system applications that require Factory Mutual (FM) Approval of pre-action and deluge sprinkler systems must conform to the following guidelines:

- SmartOne® Thermal Detectors, Model THD-7252, must be installed at 20 ft. spacings. The pre-alarm and alarm setpoint ranges are as follows:
    - Pre-Alarm: 80° to 155° F
    - Alarm: 135° to 155° F
- The signaling line circuit must be configured for Style 6 wiring. Refer to Figure 2-14.
- Provide 90 hours of standby battery and 10 minutes of alarm operation. Refer to Appendix A.
- Each release circuit is required to be configured for solenoid activation. The solenoid output on-time period should be set to either "90 seconds" or "on until reset".

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TECHNICAL MANUAL USER FEEDBACK FORM

(Use this report to indicate deficiencies, user remarks and recommendations relating to the publication. Fold on dotted line, tape and mail to **KIDDE-FENWAL, Inc., 400 Main Street, Ashland, MA 01721, Attn. Documentation Manager** or FAX to 508-881-8920)

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These instructions do not purport to cover all the details or variations in the equipment described, nor do they provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to KIDDE-FENWAL INC., Ashland, Masssachusetts

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SECTION 4.2

Fenwal Manual 06-236529-002

FN-6000 Control Panel Configuration Software

FENWAL ®

**FENWALNET 6000
Configuration Software
(FCS 6000)**

User's Guide

FENWAL ®

FENWALNET 6000 Configuration Software (FCS 6000)

User's Guide

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FOREWORD

Note: This Manual, P/N 06-236529-002, is to be used by qualified and factory-trained personnel, knowledgeable of NFPA standards and all local codes in effect.

This manual is intended to clearly and accurately reflect the FENWALNET 6000 Configuration Software (FCS 6000). This publication describes the operation of the FCS 6000 software.

Kidde-Fenwal assumes no responsibility for the application of any systems other than those addressed in this manual. The technical data contained herein is limited strictly for informational purposes only. Kidde-Fenwal believes this data to be accurate, but it is published and presented without any guarantee or warranty whatsoever. Kidde-Fenwal disclaims any liability for any use that may be made of the data and information contained herein by any and all other parties.

Any questions concerning the information presented in this manual should be addressed to:

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Fax: (508) 881-8920

TERMS AND ABBREVIATIONS

AAM	Addressable AlarmLine Module		I/O	Inputs/Outputs
AC	Alternating Current		IRI	Industrial Risk Insurers
AHJ	Authority Having Jurisdiction		ITLCO	Initial Time Limit Cutoff Interval
AI	Addressable Input (Monitor Module)		MHz	Mega Hertz
AIM	AnaLASER Interface Module		NAC	Notification Appliance Circuit
ASM	Addressable Signal Module		NIC	Network Interface Card
AO	Addressable Output		NFPA	National Fire Protection Association
ATM	Annunciator Terminal Module		PAS	Positive Alarm Sequence
AUX	Auxiliary		PC	Personal Computer
bpm	beats per minute		RAM	Random Access Memory
CD	Compact Disc		RDCM	Remote Display Control Module
CTLCO	Cyclical Time Limit Cutoff Interval		SLC	Single Line Circuit
EOC	Event Output Control		SUPV	Supervisory
FCS	FenwalNET Configuration Software		UL	Underwriters Laboratory
FM	Factory Mutual		Vdc	Volts (Direct Current)
GAO	General Alarm Outputs			
HSD	High-Sensitivity Smoke Detector			
HSSD	High-Sensitivity Smoke Detector			

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CHAPTER 1
GENERAL INFORMATION

1-1   **INTRODUCTION**

FENWALNET 6000 Configuration Software, or FCS 6000, is a Microsoft® Windows-based application that is used for creating specific applications for FENWALNET 6000 systems.

FCS 6000 enables the user to create a complete system configuration, including details for initiating devices, output control and text messages. This User's Guide describes the operation of FCS 6000.

1-2   **PC REQUIREMENTS**

Minimum computer requirements for the FCS 6000 Configuration Software are listed below. System requirements vary between operating systems. Refer to the appropriate section.

For computers with Microsoft Windows XP installed:

- PC with 300 MHz or higher processor clock speed recommended; 233 MHz minimum required (single or dual processor system); Intel® Pentium®/Celeron® family, or AMD® K6®/Athlon®/ Duron® family, or compatible processor recommended.
- 128 MB of memory (RAM) or higher recommended (64 MB minimum supported; may limit performance and some features).

For computers with Microsoft Windows 2000 installed:

- 133 MHz or higher Pentium-compatible CPU.
- A minimum of 64 MB of RAM.

For computers with Microsoft Windows NT 4.0, 95, 98 and ME installed:

- 90 MHz or higher Pentium-compatible CPU.
- A minimum of 32 MB of RAM.

1-3   **INSTALLING FCS 6000**

1. Insert the CD-ROM into drive.
2. If AutoRun is enabled on the computer, InstallShield® begins automatically. If InstallShield® does not begin automatically, locate the drive and find the file titled "Setup.exe". Double-click on the file to begin the InstallShield® Wizard.
3. After the InstallShield® Wizard is finished processing, it displays the InstallShield Welcome Screen (Figure 1-1). Select the **<Next>** button to proceed to the next screen.
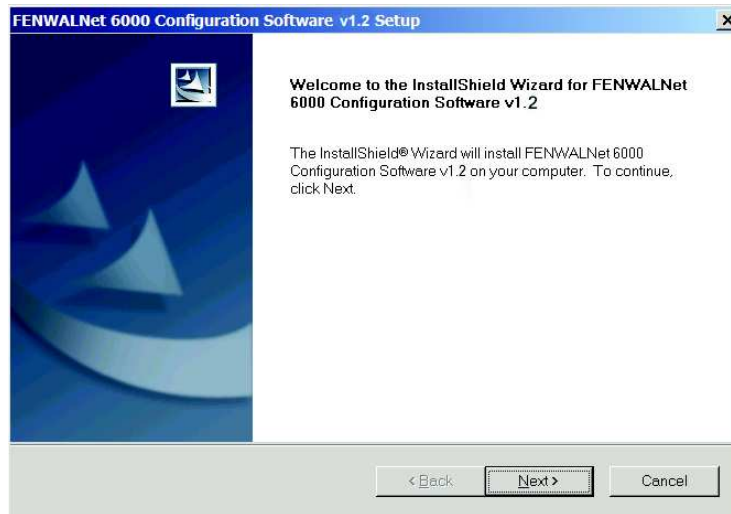
Figure 1-1. FCS 6000 Welcome Screen

4. Choose Destination Location screen (Figure 1-2). Setup automatically defaults to place the program in the C: drive. To choose another location to place the program, click on the **<Browse>** button. The Choose Directory screen displays (Figure 1-3) to allow the user to place the program in a specified location. Click on the **<Next>** button to continue with installation after the destination for FCS 6000 has been chosen.
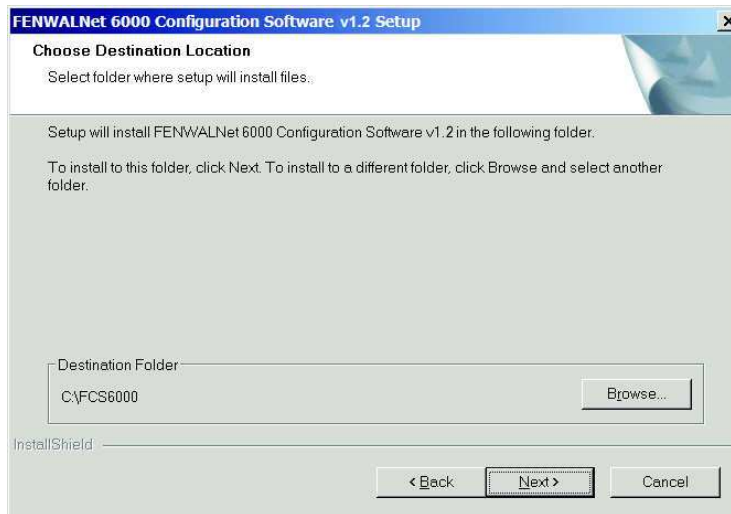
Figure 1-2. Choose Destination Location Screen
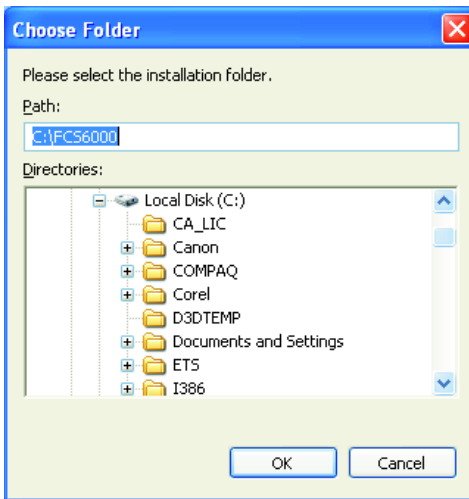
Figure 1-3. Choose Folder Screen

5. Select Program Folder (Figure 1-4). The system automatically defaults to create a new folder for FCS 6000. To choose another folder, scroll down the list and double-click on the folder in which FCS 6000 should be placed, or type in a new folder name.
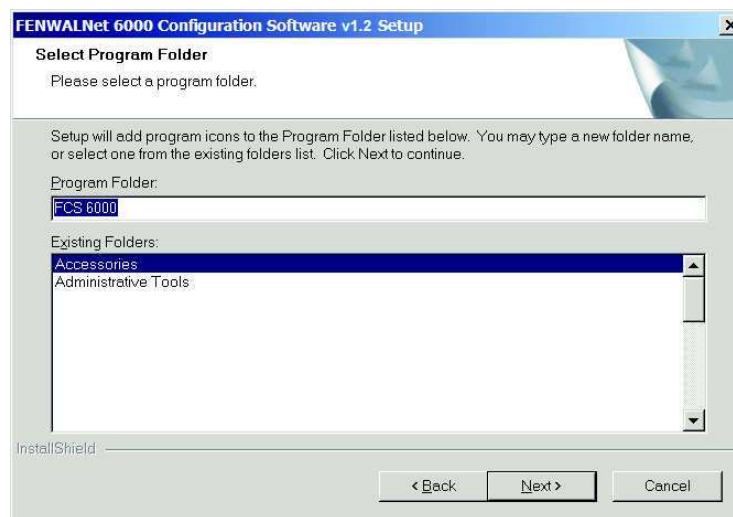
Figure 1-4. Select Program Folder Screen

6. Desktop Shortcut Screen (Figure 1-5). Select **<Yes>** to add a shortcut to FCS 6000 on the Windows® desktop.
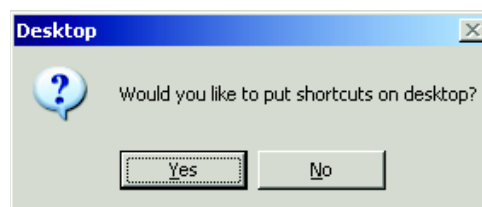
Figure 1-5. Desktop Shortcut Screen

7. InstallShield Wizard Complete Screen (Figure 1-6). Setup of FCS 6000 is complete. Select the "I would like to launch FENWALNET 6000 Configuration Software" radio button to start the software, then select **<FINISH>**.
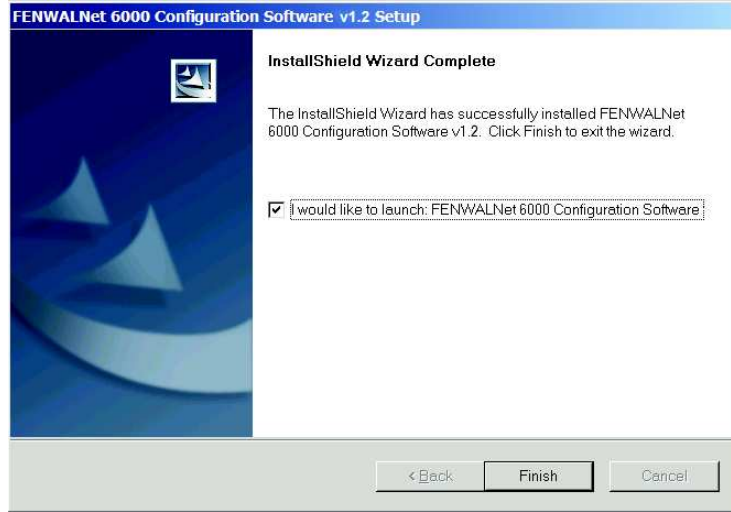
Figure 1-6. InstallShield Wizard Complete Screen

1-4   **STARTING FCS 6000**

Select **Start>Programs>**FCS 6000**>**FCS 6000 from the Start menu or double-click on the Fenwal FCS 6000 icon on the desktop (the icon displays on the desktop if "Yes" was selected during the Place Shortcuts on Desktop option during software installation). The following screen displays.

Tool Menu
(Access to Program Utilities.
Refer to Paragraph 4-1)

View Menu
(Show Tool/Status Bar)

File Menu
(New/Open/Exit File)

Toolbar
(Activated Via View Menu,
Refer to Paragraph 4-1 for
More Information)

Status Bar
(Activated Via View Menu)

Figure 1-7. Main Screen

Figure 1-8 defines each of the icons located on the tool bar on the Main Screen (Figure 1-7). The operation of the tool bar icons is described in Chapter 4.

Receive Network Node Map

Verify Configuration

Print File

Compare Configuration

Save File

About

Open File

New File

Help

Send Configuration

Receive Configuration

Clear Event Log

Online

Receive Event Log

Figure 1-8. Toolbar Icon Definitions

1-5   INSTALLING THE USB DRIVER FOR CONNECTION TO CONTROL UNIT

The computer with FCS 6000 installed is not able to communicate via USB with the control unit until a USB driver has been installed. Instructions to install a USB driver are li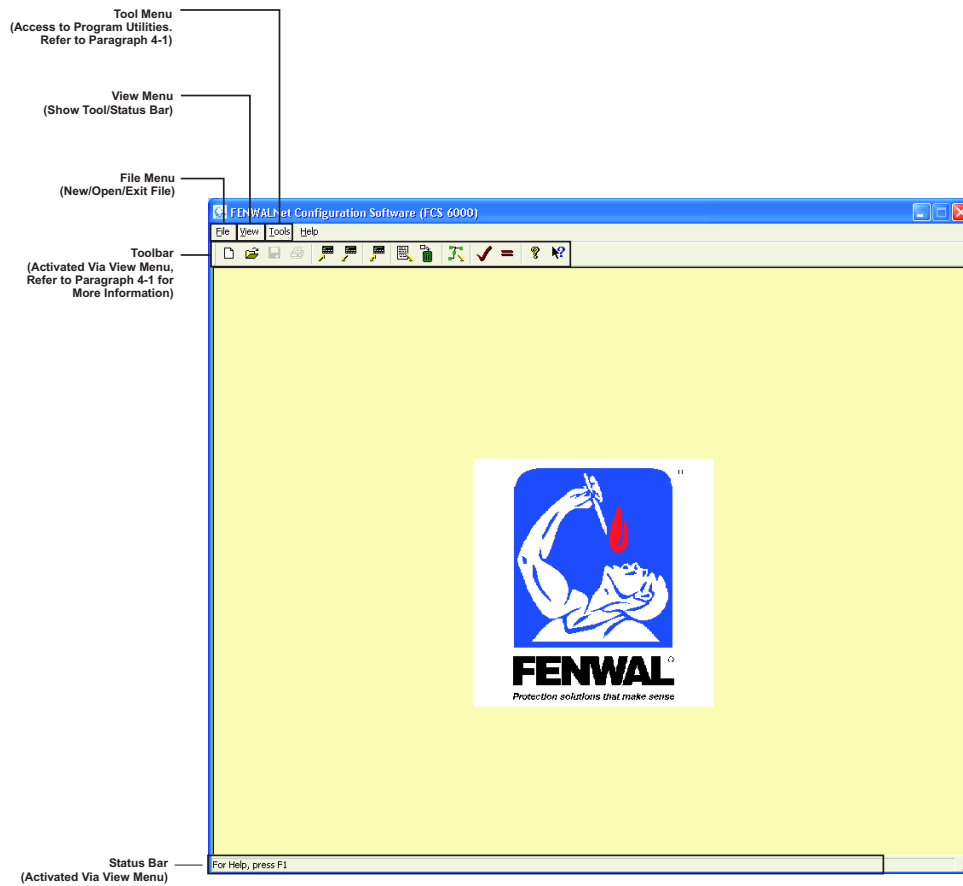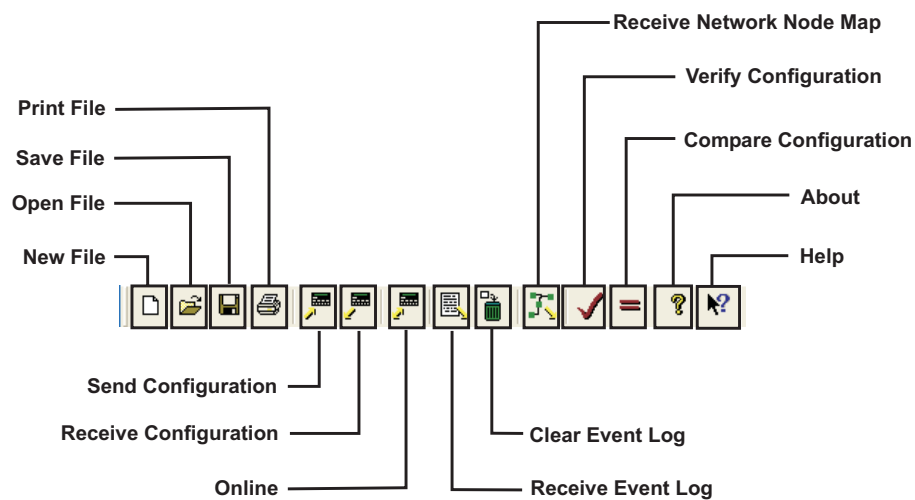sted below. For proper installation, the computer must be equipped with Microsoft Windows 2000 or Microsoft Windows XP. Operating systems prior to Microsoft Windows 2000 should use the computer's RS-232 serial port to communicate with the control unit.

1-5.1   Microsoft Windows 2000 Installation

To install the drivers for the FENWALNET 6000 on Microsoft Windows 2000:

1. Insert the supplied FCS 6000 Configuration Software install disk into the CD-ROM drive.
2. Connect the USB Cable to any available USB port.
3. Connect the FENWALNET 6000 control unit to the USB cable with the control unit power ON.
4. A "Found New Hardware" screen opens the "Found New Hardware Wizard" screen on the computer. Click **<Next>**.
5. Select "Search for a suitable driver for my device (recommended)". Click **<Next>**.
6. Check "CD-ROM drives". De-select all other boxes. Click **<Next>**.
7. The "Windows found a driver for this device. To install the driver Windows found, click Next" screen displays. The driver name: USBPCM.inf should be displayed. Click **<Next>**.
8. When the file copy is complete, a screen saying "Windows has finished…" displays.
9. Click **<Finish>** to complete the installation.
10. If Microsoft Windows prompts for a reboot after installation, do so.

1-5.2   Microsoft Windows XP Installation

1. Insert the supplied FCS 6000 Configuration Software install disk into the CD-ROM drive.
2. Connect the USB Cable to any available USB port.
3. Connect the FENWALNET 6000 control unit to the USB cable with the control unit power ON.
4. A "Found New Hardware—USB Device" balloon displays followed by the "Found New Hardware Wizard" screen.
5. Select: "Install from a list or specific location (Advanced)" and click **<Next>**.
6. In the screen that displays, select: "Search for the best driver in these locations". Select "Search removable media...". De-select all other boxes. Click **<Next>**.
7. The next screen displays "Please wait while the wizard installs the software..." accompanied by a prompt to install the driver even though it has not passed Windows Logo testing. Select **<Continue Anyway>**.
8. Select **<Finish>** to complete the installation.
9. A "Found New Hardware: Your new hardware is installed and ready to use" balloon should display indicating that installation was performed successfully.

1-5.3   **Verifying the Installation of USB Drivers (with the Panel Connected to the PC)**

1. Open the "System" applet in "Control Panel", click the "Hardware" tab and open the "Device Manager".

2. In the device tree locate the "Ports (COM and LPT)" item and expand it. If "USB Serial Ports Driver" does not display in the device list, or if it has an exclamation point next to it, then it is not installed properly.

3. Verify there are no other Ports configured with the same COM#. If there are, that device's port designation must be changed. (The Control Panel uses the Windows enumerator to find the first available port. Port selection is beyond our control, and the conflict occurred because the other device did not enumerate itself properly in the Windows registry.)

4. After installing the PC configuration software open it and open the "Communications Settings" dialog by choosing the "Tools>Communications Setup" menu option.

5. With the panel still connected via USB, the annotation: "[PANEL]" should accompany one of the COM ports in the dialog. Otherwise the PC software doesn't recognize the port that the panel is connected on. Call Technical Support if this is the case.

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CHAPTER 2
CREATING A SYSTEM APPLICATION

2-1   **INTRODUCTION**

The tasks required to create an FCS 6000 application are as follows:

- Assign an address and define the operating characteristics for each device on the single-line circuit (SLC).
- Define the operating characteristics for each on-board output circuit.
- Identify and assign an address to all associated peripheral components such as Remote Display and Control Modules (RDCM) and Annunciator Terminator Modules (ATM).
- Indicate whether or not an Intelligent Interface Module (IIM) will be used
- Assign a network node address and define the operating characteristics of the control unit in a networked system (if applicable)
- Create the required initiating device to output circuit/device relationships via Event Output Control (EOC). These relationships must be created for all initiating devices and outputs associated with each FENWALNET 6000 system. In addition, all inter control unit initiating device to output circuit/device relationships for networked systems must be defined in the EOC of the affected control units. EOC configuration is described in Chapter 3.

Note: All alarm events must be annunciated by public-mode notification.

The following requirements apply to special extinguishing systems:

- The pre-alarm state must be annunciated by distinctive public mode notification.
- The pre-state must be annunciated by public mode notification different from the pre-alarm state public notification mode.
- The release state must be annunciated by public mode notification different from both the pre-alarm state and the pre-release public notification modes.

Each task is invoked via a tab-control selection. Figure 2-1 gives a definition of the tabs and the paragraph numbers in which information for each tab can be found.
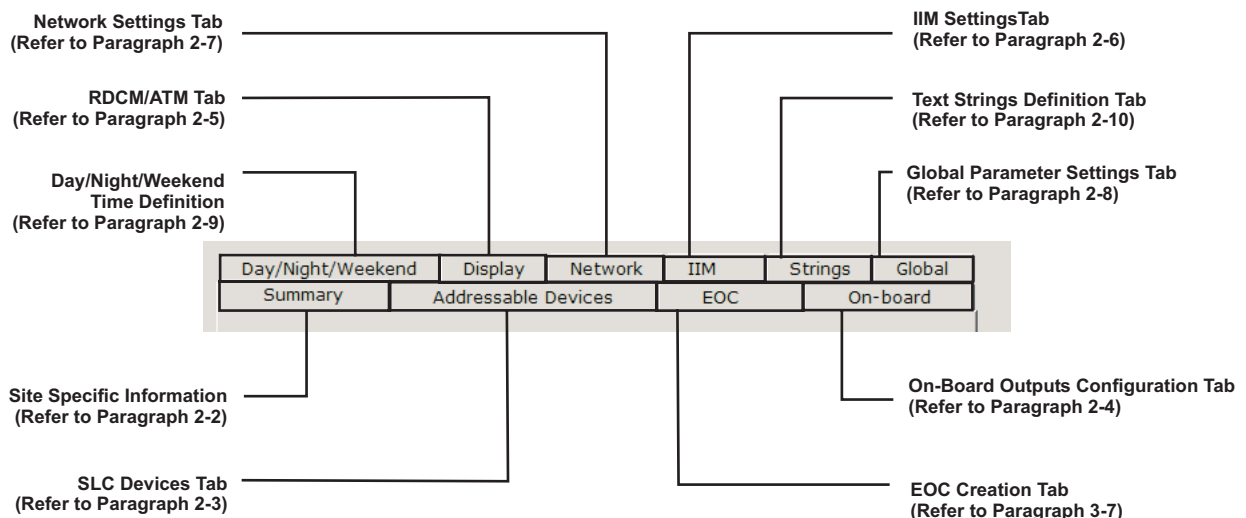
Figure 2-1. Definition of Tabs

2-1.1 Versions

The configuration software version must match the control unit software version in the first two digits. For example, if the control unit version is 1.2.0, the configuration software version must be 1.2.x where 'x' is 0 to 9. It is possible to open files saved with older version configuration programs. It is not possible to communicate with or open saved configuration files for a control unit version that is newer than the configuration software version. Refer to Appendix C for instructions for upgrading the control unit version.

2-2 CREATE A NEW FILE OR OPEN AN EXISTING FILE (SUMMARY TAB)

- To create a new file: Select **File>New** or select the New File Icon on the toolbar (🗋); Figure 2-2 displays.

- To open an existing file: Select **File>Open** or select the Open File Icon on the toolbar (📂). Select a file and click on **<Open>**; Figure 2-2 displays.
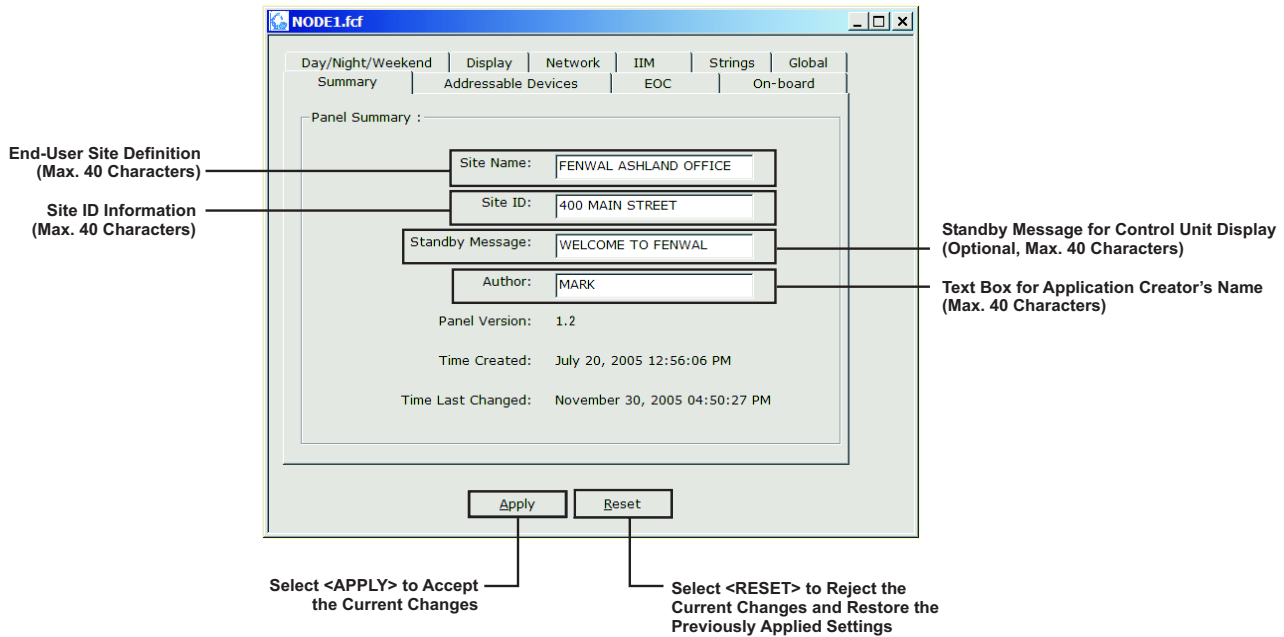
Figure 2-2. Summary Screen

2-3 **CONFIGURING SLC DEVICES (ADDRESSABLE DEVICES TAB)**

1. Select the "Addressable Devices" tab; Figure 2-3 displays.
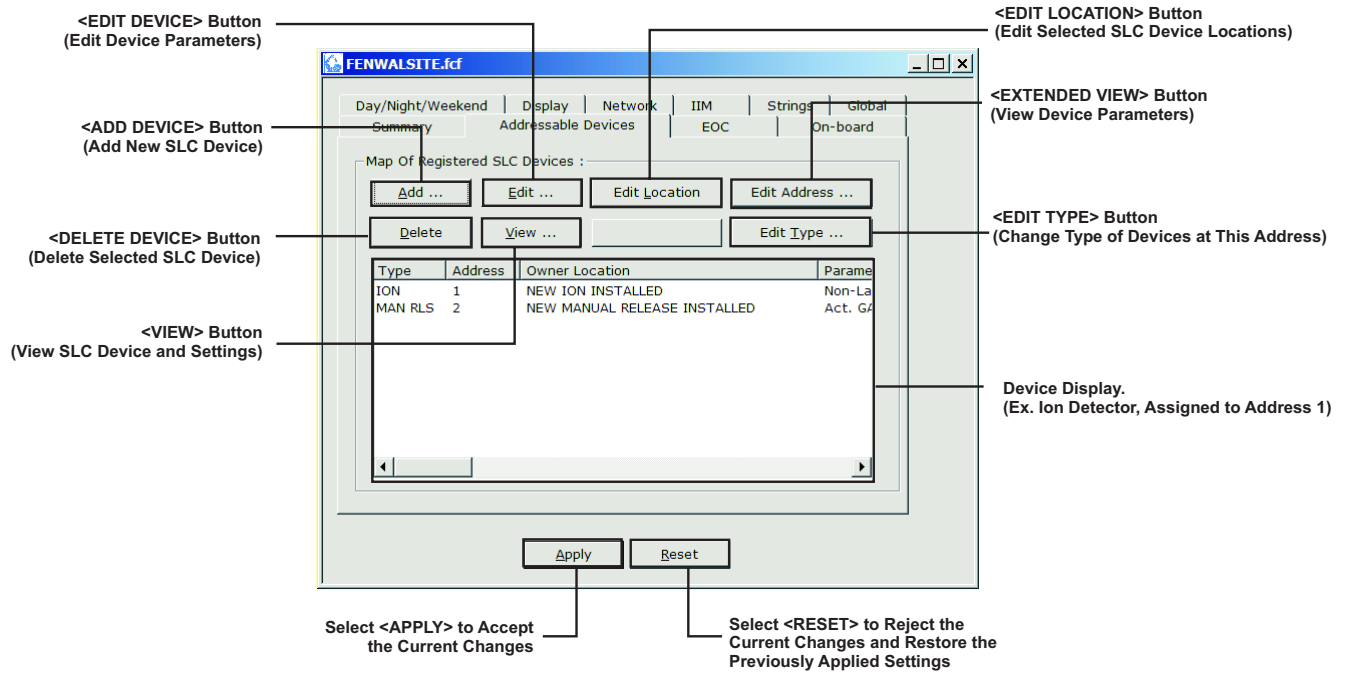
Figure 2-3. Addressable Devices Screen

2. Select the **<Add Devices>** button; Figure 2-4 displays.
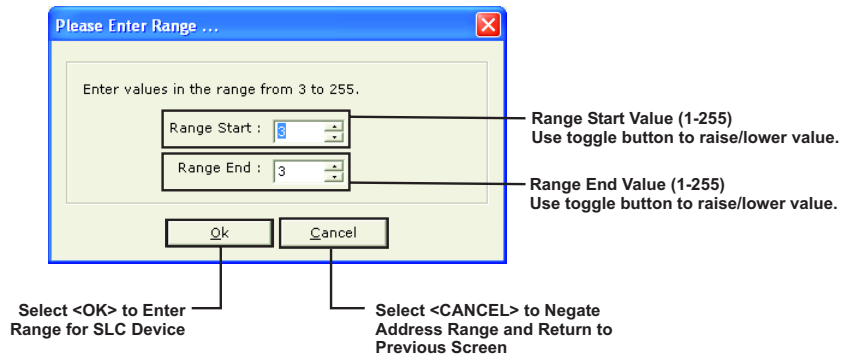
Figure 2-4. SLC Address Box Screen

3. Enter the starting and ending device address(es), then select **<OK>**. Figure 2-5 displays showing the list of SLC devices.
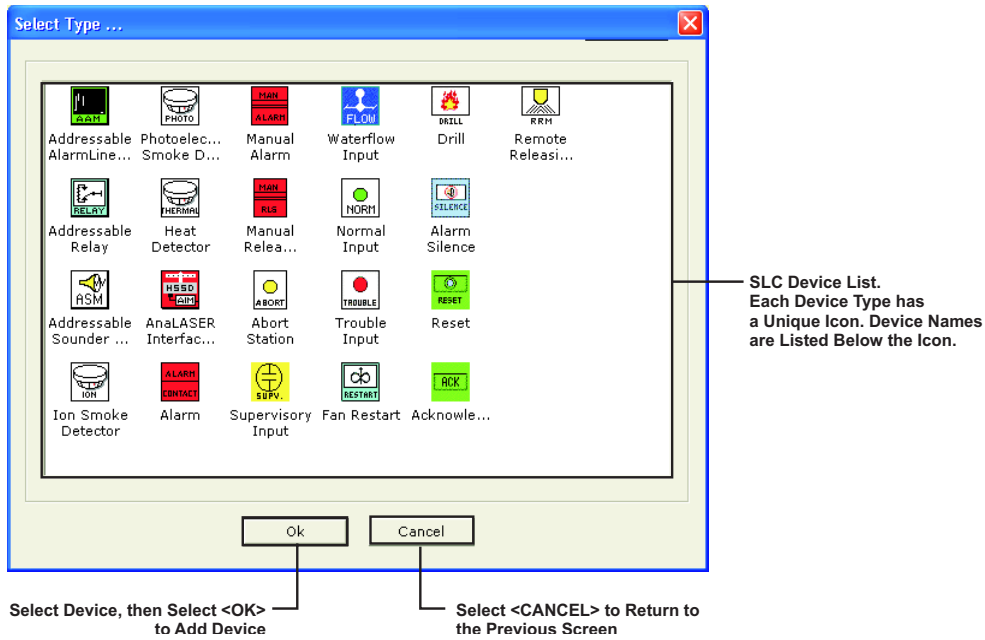
Figure 2-5. SLC Device List

4. Select the appropriate device by either highlighting the icon of the device, then selecting **<OK>**, or double-clicking on the icon. The appropriate screen for that device displays. Paragraphs 2-3.1 through 2-3.16 give detailed information about each device. See Table 2-6 for an explanation of the configurable parameters found in the SLC device screens.

2-3.1   Addressable AlarmLine™ Module (AAM) Screen
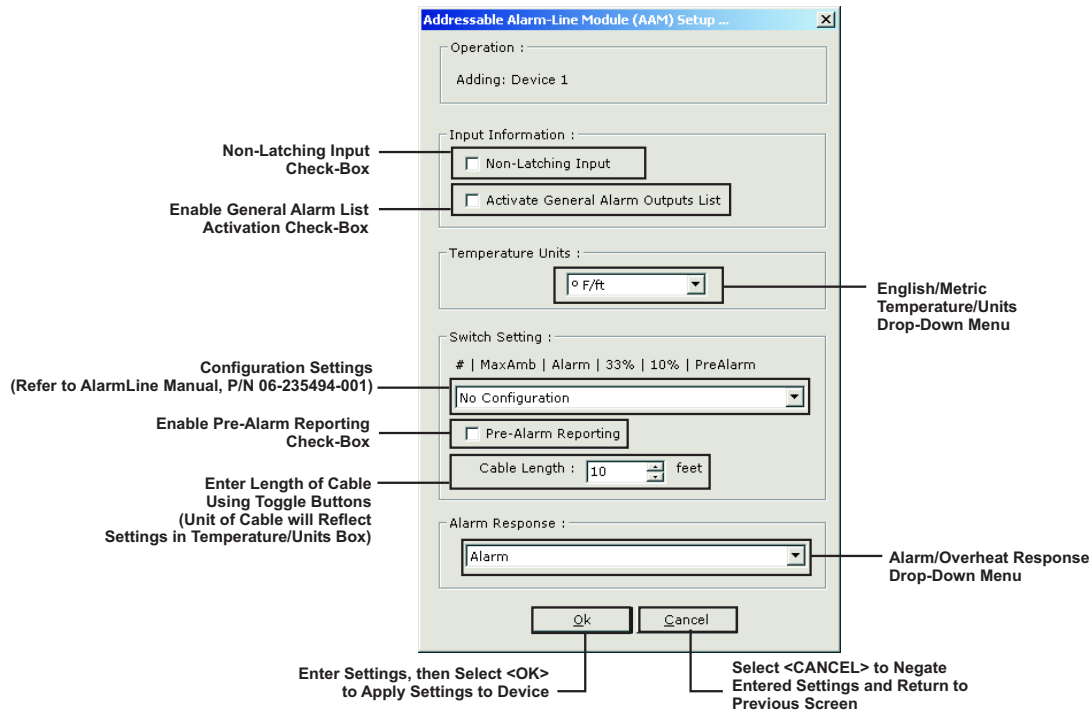
Figure 2-6. Addressable AlarmLine Module Screen

Note: The AAM initiates an "Overheat" message on the control unit display when it is configured for an "Overheat" response. The control unit buzzer sounds, but no LEDs illuminate.

2-3.2   Addressable Relay (AO) Screen
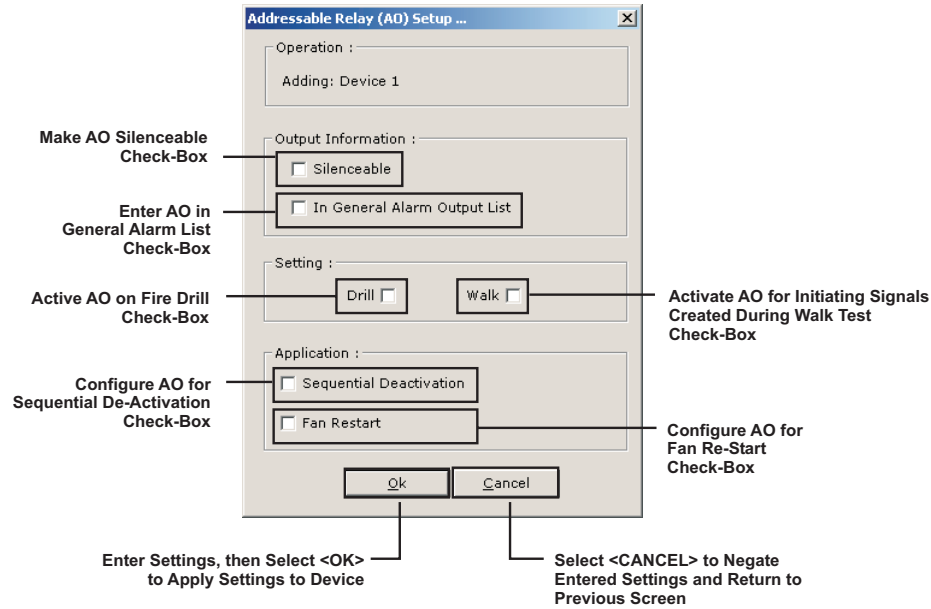
Figure 2-7. Addressable Relay (AO) Screen

Note: Multiple AOs configured for "Sequential De-Activation" have a delay of up to 15 seconds between successive de-activations. The delay interval is set in the "Globals" tab. Up to 16 AOs can be programmed for sequential de-activation.

An AO configured for "Fan Re-Start" only de-activates after the FENWALNET 6000 Control Unit is reset following an alarm condition and after an AI Monitor Module configured for "Fan Re-Start" is activated.

2-3.3   Addressable Sounder Module Screen

Figure 2-8. Addressable Sounder Module (ASM) Screen

2-3.4 **Model CPD-7052 Ionization Smoke Detector Screen**

Figure 2-9. Ionization Smoke Detector Screen

2-3.4.1 APPLICATION DEFINITIONS VIA DROP-DOWN MENU

- **Open-area.** The ionization detector is UL Listed and FM Approved for alarm reporting anywhere within the obscuration range of 0.5 to 1.5 percent per foot when used for an open-area application. Alarm thresholds can be set in 0.1 percent-per-foot increments. A pre-alarm threshold can also be set anywhere within the obscuration range of 0.5 to 1.4 percent per foot, but must be less than the detector's alarm threshold.

- **In-Duct.** The In-Duct setting refers to detector placement in an air duct. The pre-alarm/alarm ranges for this special application are listed in Table 2-1.

- **DH-2000.** The DH-2000 setting refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct. The pre-alarm/alarm ranges for this special application are listed in Table 2-1.

Table 2-1. Model CPD-7052 Ionization Smoke Detector Pre-Alarm/Alarm Ranges

Application	Pre-Alarm/Alarm Range (%/foot)
In-Duct	0.5 - 1.0
DH-2000	0.5 - 1.0

- **Day/Night/Weekend Setting.** Ionization detectors can be automatically programmed to change alarm thresholds by time of day if they are configured for day/night/weekend operation. The night alarm thresholds must be less than or equal to the corresponding day thresholds.

- **Supervisory Service (Open-Area).** The ionization detector can also be programmed to report a supervisory condition anywhere within the obscuration range of 0.5 to 1.5 percent per foot when used in an open-area application. Supervisory alarm thresholds can be set in 0.1 percent-per-foot increments.
- **Supervisory Service (DH-2000/In-Duct).** The DH-2000/In-Duct range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct or to detector placement directly in an air duct. The supervisory alarm range for these special applications is 0.5 to 1.0 percent per foot.

Table 2-2. Ionization Detector Supervisory Alarm Range

Application	Alarm Range (%/foot)
Open-Area	0.5 - 1.5
DH-2000/In-Duct	0.5 - 1.0

2-3.5   Model PSD-7152 Photoelectric Smoke Detector Screen
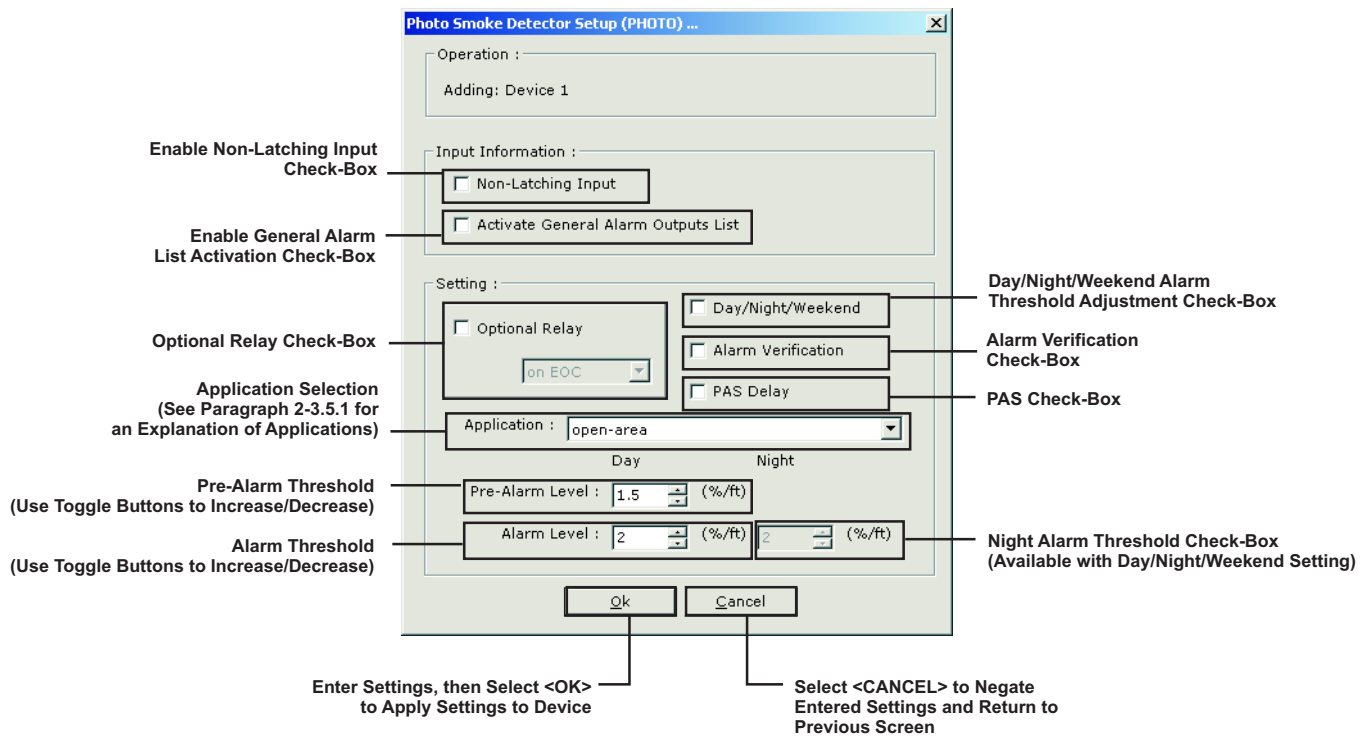
Figure 2-10. Photoelectric Smoke Detector Screen
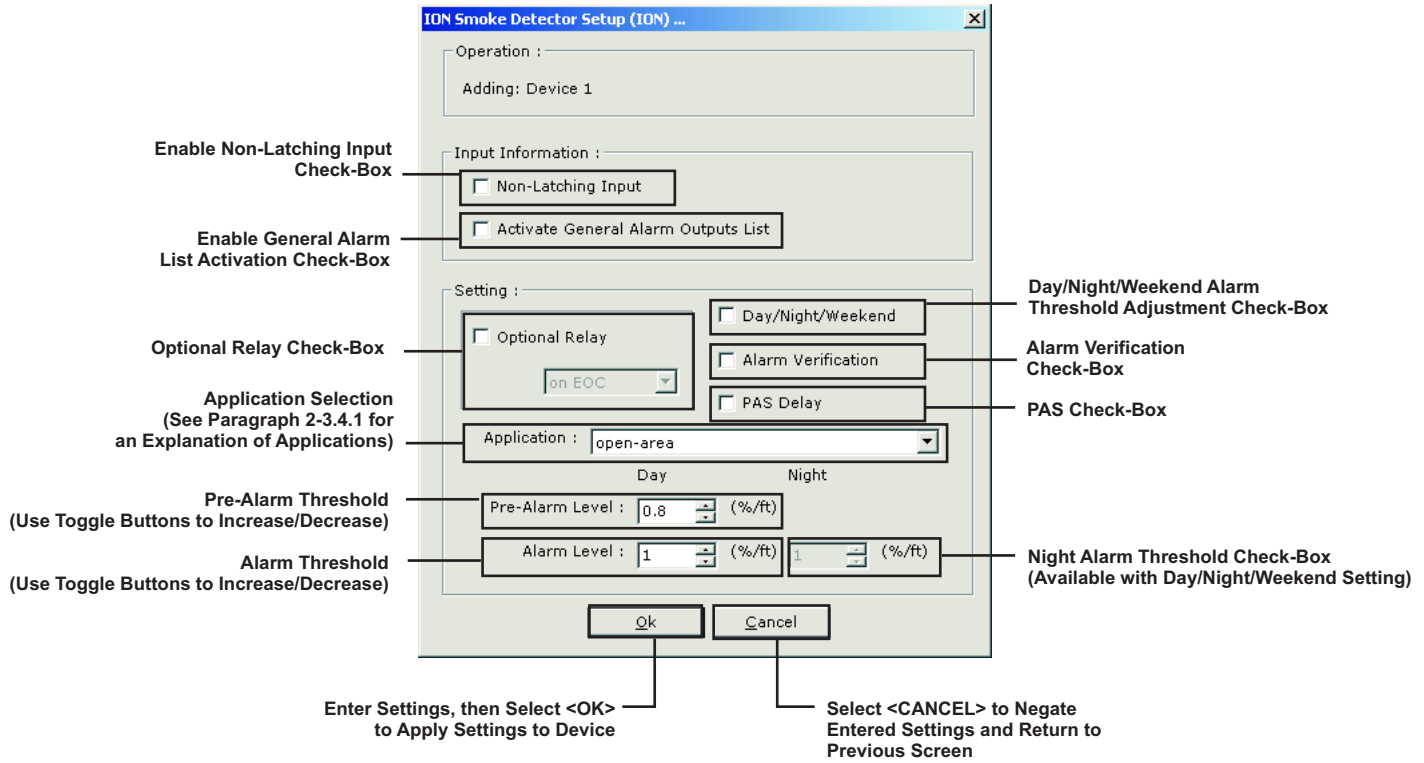
2-3.5.1   APPLICATION DEFINITIONS VIA DROP-DOWN MENU

- **Open Area.** The photoelectric detector is UL Listed and FM Approved for alarm reporting anywhere within the obscuration range of 0.5 to 3.5 percent per foot when used for an open-area application. Alarm thresholds can be set in 0.1 percent-per-foot increments. A pre-alarm threshold can also be set anywhere within the obscuration range of 0.2 to 3.4 percent per foot, but must be less than the detector's alarm threshold.
- **In-Duct.** The In-Duct setting refers to detector placement in an air duct. The pre-alarm/alarm ranges for this special application are listed in Table 2-3.

- **DH-2000.** The DH-2000 setting refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct. The pre-alarm/alarm ranges for this special application are listed in Table 2-3.

Table 2-3. Model PSD-7152 Photoelectric Smoke Detector Pre-Alarm/Alarm Range

Application	Pre-Alm Range (%/ft.)	Alm Range (%/ft.)
In-Duct	0.2 - 1.9	0.5 - 2.0
DH-2000	0.2 -1.9	0.5 - 2.0

- **Day/Night/Weekend Setting.** Photoelectric detectors can be automatically programmed to change alarm thresholds by time of day if they are configured for day/night/weekend operation. The night alarm thresholds must be less than or equal to the corresponding day thresholds.

- **Supervisory Service (Open-Area).** The photoelectric detector can also be programmed to report a supervisory condition anywhere within the obscuration range of 0.5 to 3.5 percent per foot when used in an open-area application. Supervisory alarm thresholds can be set in 0.1 percent-per-foot increments.

- **Supervisory Service (DH-2000/In-Duct).** The DH-2000/In-Duct range refers to detector placement in a DH-2000 Duct Housing with associated sampling tubes to monitor the air in either a supply- or return-air duct or to detector placement directly in an air duct. The supervisory-alarm range for this special application is 0.5 to 2.0 percent per foot.

Table 2-4. Photoelectric Smoke Detector Supervisory Alarm Range

Application	Supervisory Alarm Range
Open-Area	0.5-3.5
DH-2000/In-Duct	0.5-2.0

2-3.6   Model THD-7252 Heat Detector Screen
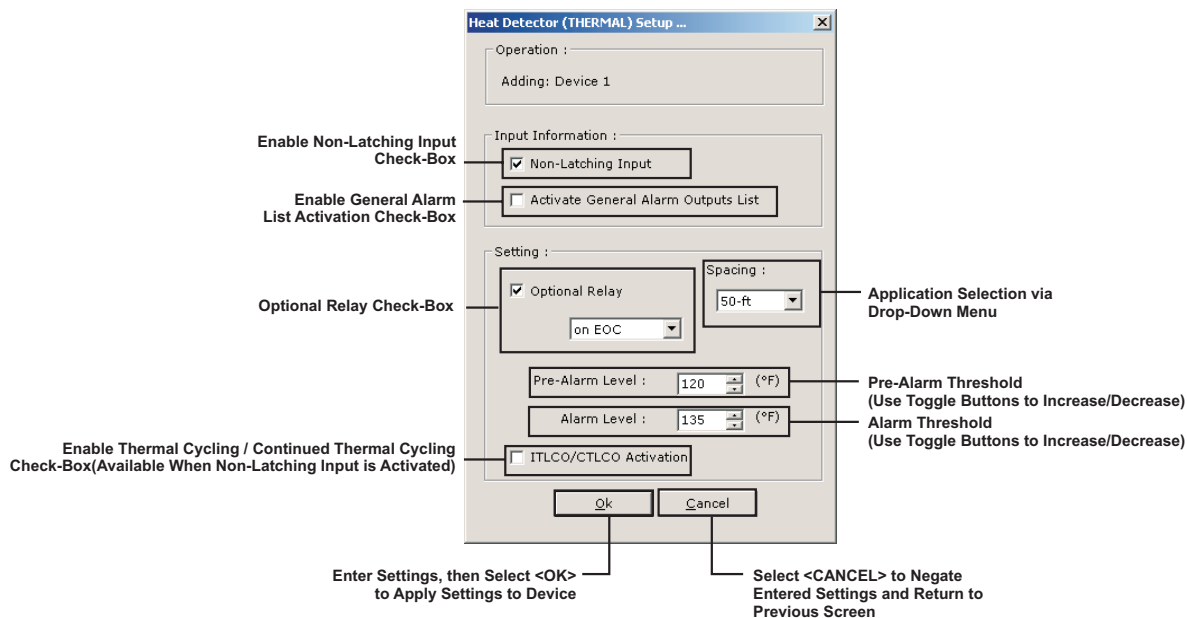
Figure 2-11. Heat Detector Screen

The thermal detector is UL Listed and FM Approved for alarm reporting anywhere in the range of 135°F to 155°F when used with a 50-foot spacing, or anywhere in the range of 135°F to 145°F when used with a 70-foot spacing. Alarm thresholds can be set in 1F° increments. A pre-alarm threshold can also be set anywhere within the temperature range of 80°F to 135°F, but must be less than the detector's alarm threshold.

The pre-alarm/alarm ranges for the thermal detectors are listed in Table 2-5.

Table 2-5. Thermal Detector Pre-Alarm/Alarm Ranges

Spacing (ft.)	Pre-Alarm Range (°F)	Alarm Range (°F)
50	80-135	135-155
70	80-135	135-145

A heat detector is configurable for thermal cycling as shown in Figure 2-12. The first alarm signal from a heat detector is used to activate control unit-based outputs for a user-configurable period of time known as the Initial Time Limit Cutoff Interval (ITLCO). The outputs silence or de-energize upon expiration of the ITLCO interval. The outputs reactivate using the ITLCO time cycle if the system has not been reset and at least one heat detector remains in the alarm state. If no heat detectors are in the alarm state when the ITLCO time expires, the programmed outputs shall deactivate. If a heat detector subsequently registers a temperature in excess of its alarm-threshold and the system has not yet been reset, the outputs reactivate. The reactivated outputs silence or deactivate again after the expiration of a second user-configurable period of time known as the Cyclical Time Limit Cutoff (CTLCO)

The outputs only cycle and reactivate if the temperature at a heat detector subsequently exceeds the detector's alarm threshold after the outputs silence or de-activate. All subsequent reactivation occur for the CTLCO duration.

Valid entries for the ITLCO and CTLCO time periods are 0 to 180 seconds or 0 to 180 minutes, configurable in either 1-second or 1-minute increments, respectively. These time periods are specified in the screens that configure the various control unit-based outputs.

ITLCO CTLCO CTLCO CTLCO CTLCO

0

Ext. Sys & Outputs
Subseq. Shutoff

Heat Detector
Subsequent Alarm

Ext. System &
Outputs Initial Shutoff

Heat Detector
Initial Alarm

Ext. Sys & Outputs
Subsequent Shutoff

Heat Detector
Subsequent Alarm

Ext. System & Outputs
Subsequent Shutoff

Heat Detector
Subsequent Alarm

Ext. Sys &
Out. Shutoff

Heat Detector
Subsequent Alarm

System Reset

Time
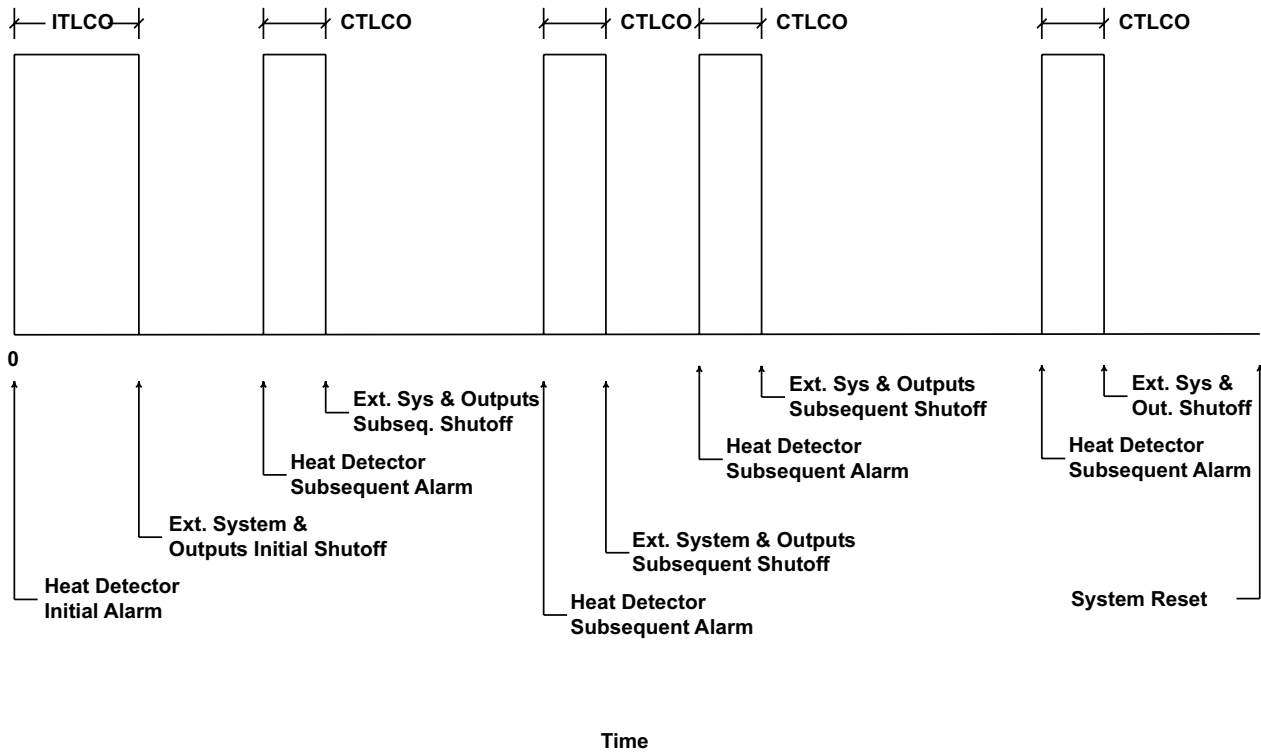
Figure 2-12. Typical Thermal Cycling System

2-3.7   AnaLASER II Interface Module (AIM) Screen

Enable Non-Latching Input
Check-Box

Enable General Alarm
List Activation Check-Box
(Not Available if
'Supervisory Initiating Device'
is Selected)

Configure AIM
for Alarm Reporting
Radio Button

Configure AIM
for Supervisory Reporting
Radio Button
(Not UL Listed or FM Approved)

Enter Settings, then Select <OK>
to Apply Settings to Device

Select <CANCEL> to Negate
Entered Settings and Return to
Previous Screen

Figure 2-13. AIM Screen

2-3.8   Alarm Initiating (AI) Contact Screen

The screen to configure an Alarm Initiating (AI) Monitor Module that is monitoring an unpowered contact for alarm purposes is shown below:

Figure 2-14. Alarm Contact Screen

Note: The unpowered alarm contact can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.

2-3.9   **Manual Alarm Station Screen**

Figure 2-15. Manual Alarm Station Screen

Note: Address all manual-alarm stations within the range of 1 to 32 (if possible)

2-3.10   **Manual Release Station Screen**
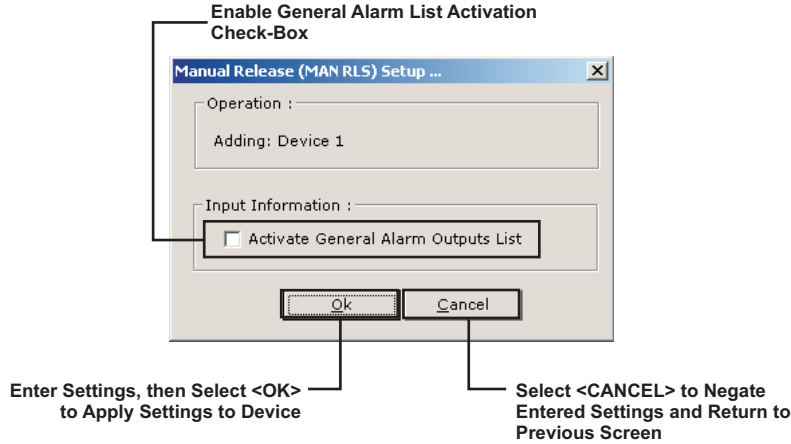
Figure 2-16. Manual Release Station Screen

Note: Address all manual-release stations within the range of 1 to 32 (if possible).

2-3.11   **Abort Station Screen**
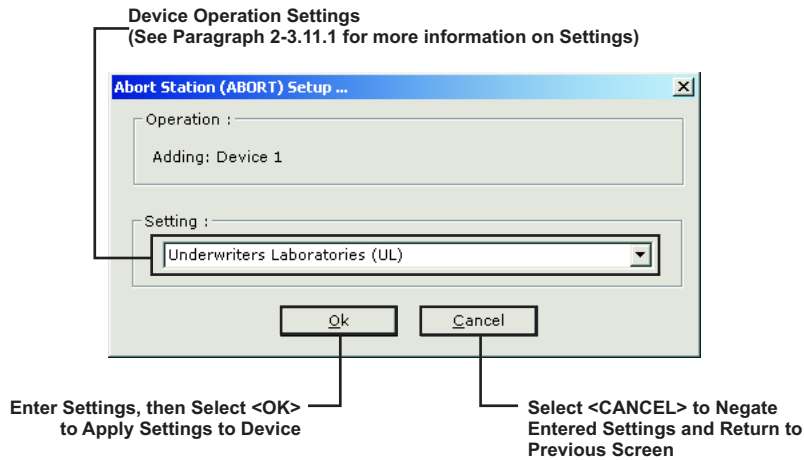
Figure 2-17. Abort Station Screen

Note: Address all abort stations within the range of 1 to 32 (if possible).

The unpowered abort switch can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.

2-3.11.1   ABORT STATION SETTING DEFINITIONS

An AI Monitor Module configured as an abort station can be programmed to operate in any of the following ways:

- **Reset to Full Time Delay (Non-UL Listed)**
  The countdown timer restores to the full delay period after the abort station is activated. The timer resumes the full countdown if the abort station is de-activated. The timer restores to the full delay period if the abort station is re-activated with any time remaining in the countdown. A system reset is required to clear the countdown timer.

Note: The following abort-station operations are available, and are to be utilized at the discretion of, and with the approval of, the applicable Authority Having Jurisdiction.

- **Underwriters Laboratories Style**
  The countdown timer continues to count down after the abort station is activated, and halts with 10-seconds remaining. The timer resumes the countdown from 10 seconds if the abort station is de-activated. The timer restores to 10 seconds if the abort station is activated or re-activated with less than 10 seconds remaining in the countdown. A system reset is required to clear the countdown timer.

- **New York City (Not UL Listed)**
  The countdown timer restores to the full delay period, plus 90 seconds, after the abort station is activated. The timer resumes the countdown from the full delay period, plus the 90 seconds, if the abort station is de-activated. The timer restores to the full delay period plus 90 seconds if the abort station is re-activated with any time remaining in the countdown. A system reset is required to clear the countdown timer.

Note: EOC programming is required to implement the New York City abort station operation. Refer to Appendix B.

- **Freeze and Hold at Time Remaining (Non-UL Listed)**
  The countdown timer halts at the time remaining to expiration after the abort station is activated. The timer resumes the countdown at the time remaining to expiration if the abort station is de-activated. The timer again halts at the time remaining to expiration if the abort station is re-activated with any time remaining in the countdown. A system reset is required to clear the countdown timer.

- **Industrial Risk Insurers (Non-UL Listed)**
  This option functions in a similar manner to the Underwriters Laboratories style, except that countdown timer interruption is not allowed after the countdown timer has begun to count down.

2-3.12   Supervisory Screen
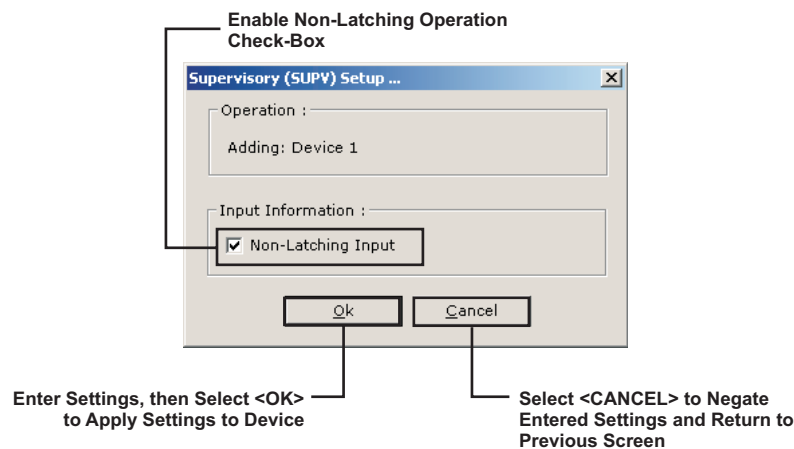
Figure 2-18. Supervisory Screen

Note: The unpowered supervisory switch can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.
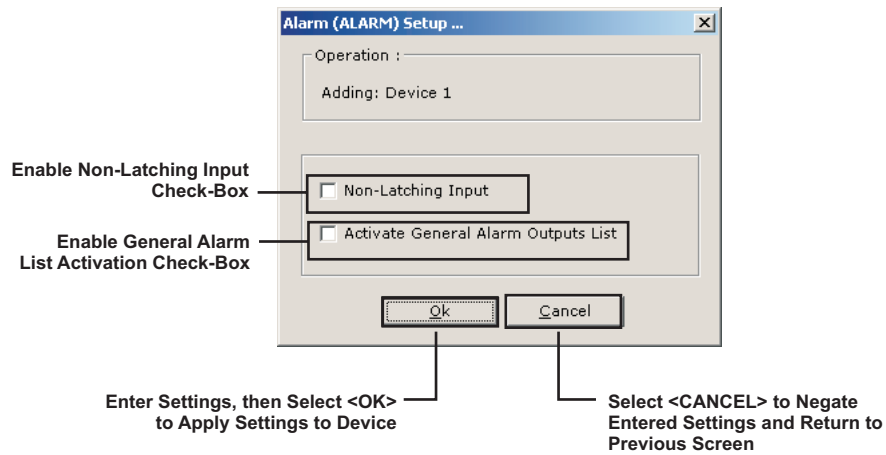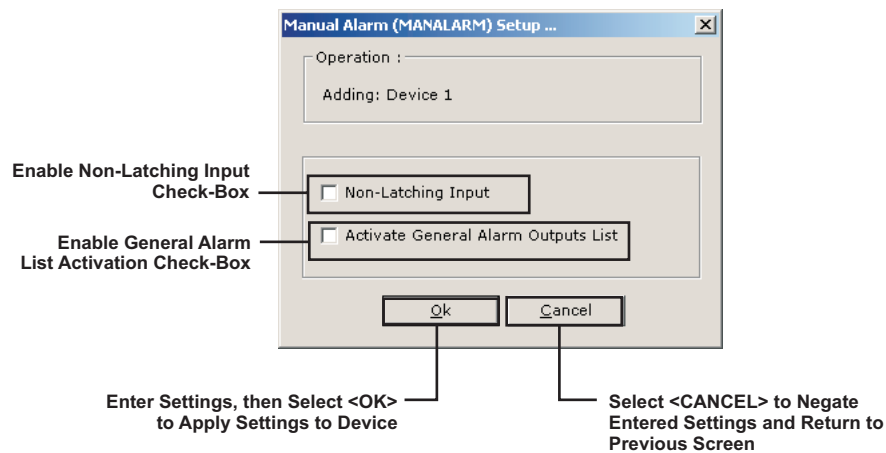
2-3.13 **Waterflow Screen**
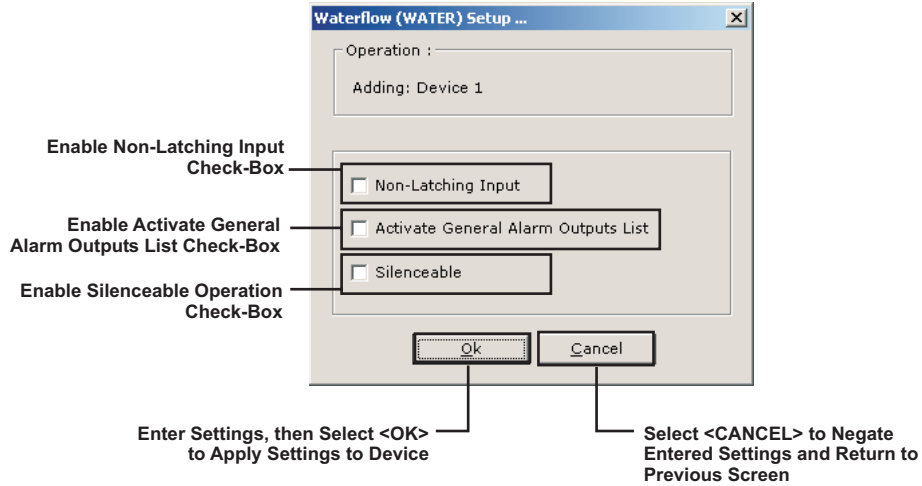
Figure 2-19. Waterflow Screen

Note: The unpowered waterflow contact can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.

2-3.14 **Remote Releasing Module Screen**

Figure 2-20, Figure 2-21 and Figure 2-22 illustrate how to configure the remote-releasing module.

2-3.14.1 CONFIGURING AN RRM WITH AN INITIATOR RELEASING DEVICE
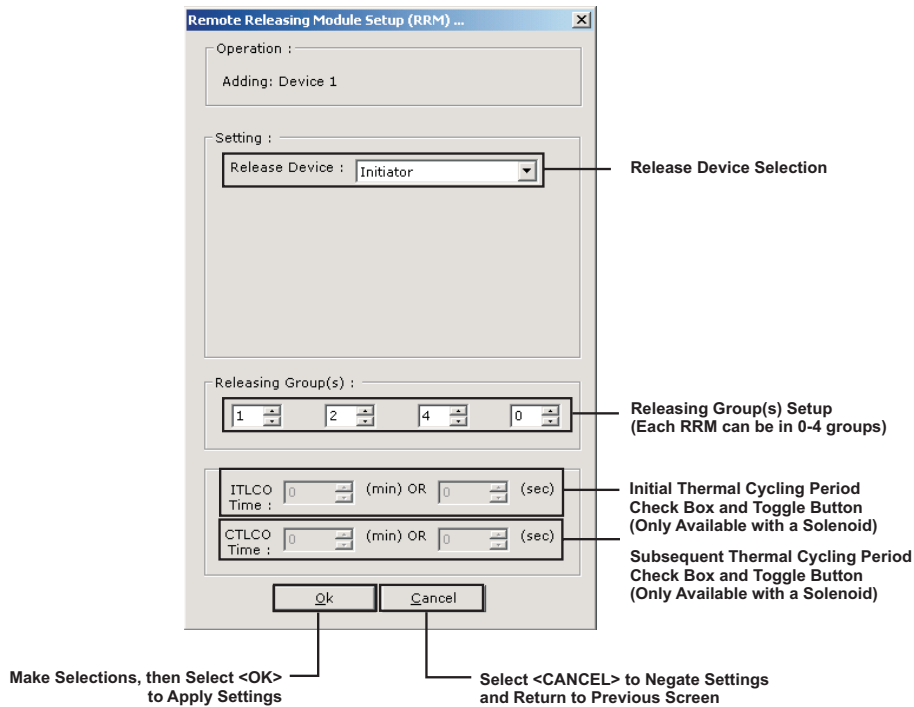
Figure 2-20. Remote Release Module Screen (Using an Initiator as a Releasing Device)

1. In the "Releasing Device" dropdown menu, select "Initiator".

2. If required, use the "Releasing Group(s)" menu to add the RRM to up to 4 groups.

2-3.14.2   CONFIGURING AN RRM WITH A SOLENOID RELEASING DEVICE
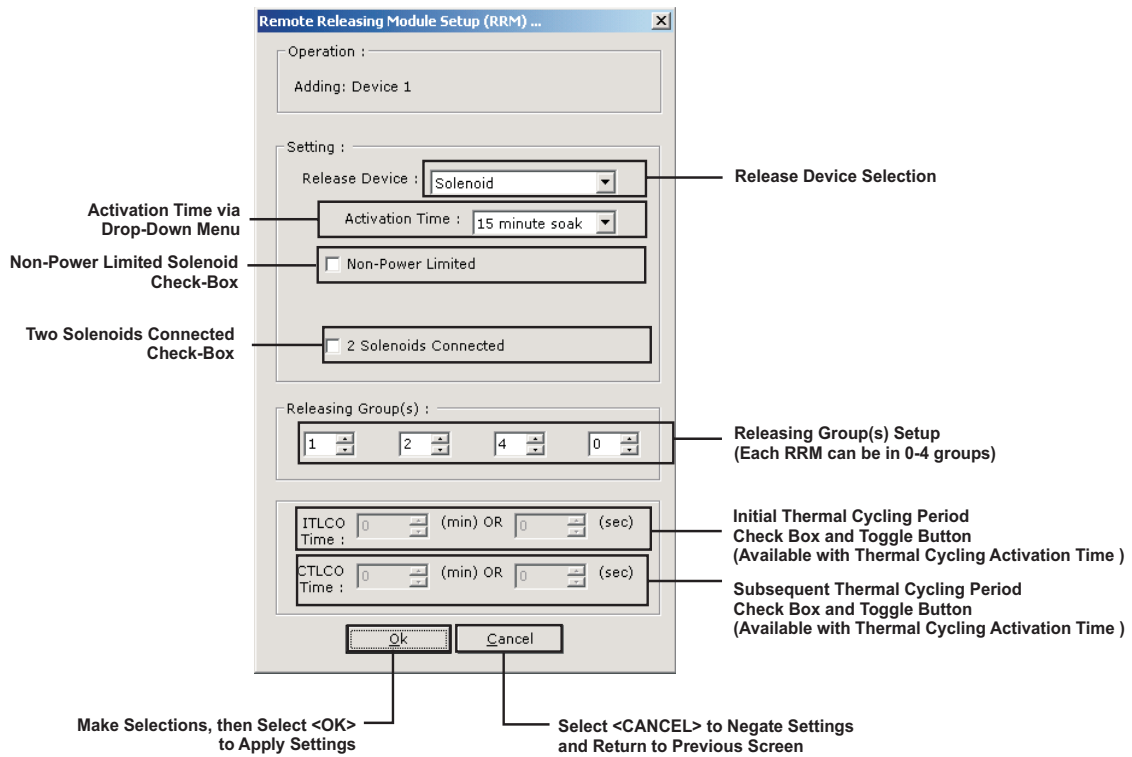
Figure 2-21. Remote Releasing Module Screen (Using a Solenoid as a Releasing Device and Multiple Groups)
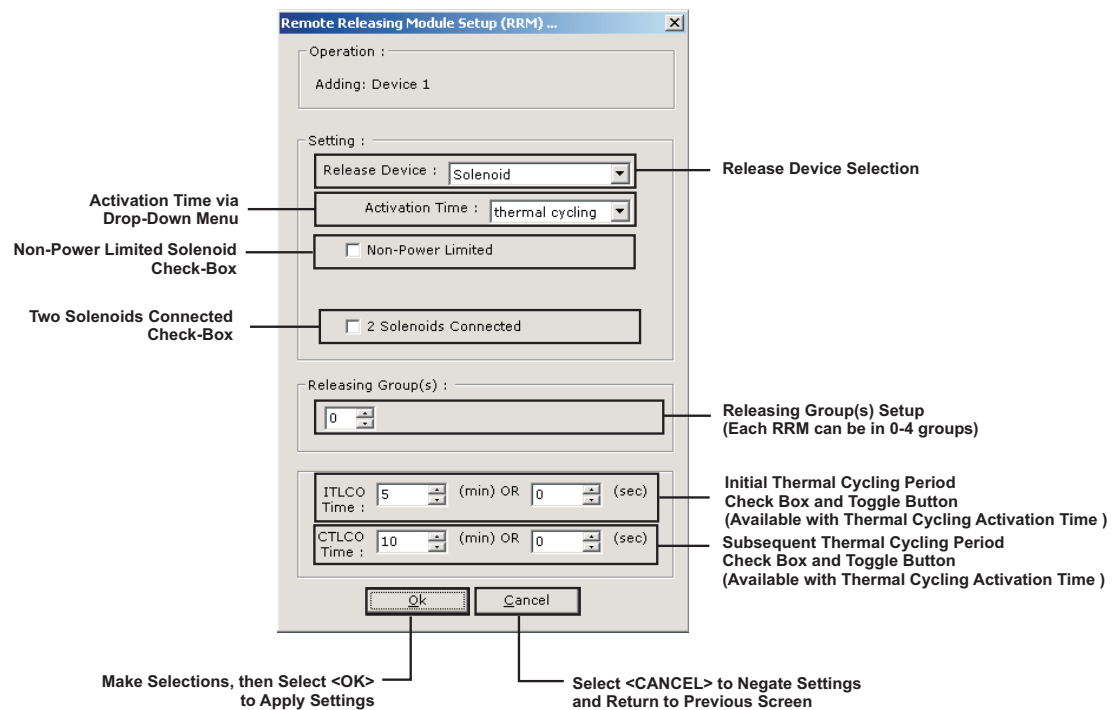
Figure 2-22. Remote Releasing Module Screen (Using a Solenoid as a Releasing Device and Thermal Cycling)

1.   In the "Releasing Device" Selection drop-down menu, select "Solenoid".

2. In the "Activation-Time" Drop-Down Menu, choose one of the following to apply to solenoid-activated discharge valves:
   – 90 seconds
   – 10 minutes
   – 15 minutes
   – Continuous activation (i.e., on until reset).
   – Thermal Cycling

3. If applicable, select "Non-Power Limited" and/or "Two Solenoids Connected" .

4. If required, use the "Releasing Group(s)" menu to add the RRM to up to 4 groups. A maximum of 16 RRMs may be placed in each group.

5. If applicable, the release circuit is configurable for thermal cycling according to the alarm or non-alarm states of its associated automatic heat detectors. Refer to Paragraph 2-3.6 for a description of thermal cycling via a Model THD-7252 Heat Detector. A thermal-cycling release circuit is configured by selecting "Thermal Cycling" from the Activation Time drop-down menu.

Note: The cyclical release-circuit activation is overridden by an alarm signal from any associated alarm-initiating device other than a heat detector configured for thermal cycling. The release circuit then latches into the activated state and remains activated until it is deactivated by another alarm condition or until the control unit is reset.

2-3.15   Other SLC Initiating Devices

The following SLC initiating devices do not have specific screens to further define functionality. They are all represented by an AI Monitor Module that is monitoring an unpowered switch.

- **Normal Device.** A normal is a Non-Latching initiating device. Point-specific outputs can be assigned to a normal device in the EOC section of the configuration program. The unpowered normal device can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.

- **Trouble Input.** A trouble input creates a trouble condition and is a Non-Latching initiating device. Point-specific outputs can be assigned to the trouble input in the EOC section of the configuration program. The unpowered trouble input can be either normally-open or normally-closed. Use P/N 70-4070X8-001 for normally-open contacts and P/N 70-4070X8-002 for normally-closed contacts.

- **Fan Restart.** A fan-restart point is used to de-activate specific addressable relays (i.e., AOs) after the control unit has been reset. The AOs must be configured for fan-restart operation. The unpowered fan-restart switch must be a Non-Latching, normally-open contact. Use P/N 70-4070X8-001 to monitor the fan-restart switch.

- **Drill.** A drill switch is used to initiate a fire drill via an external, field-installed switch. The fire drill begins when the drill switch is activated, and stops when the drill switch is de-activated. The unpowered drill switch must be a latching, normally-open contact. Use P/N 70-4070X8-001 to monitor the drill switch.

- **Alarm Silence.** An alarm silence switch is used to duplicate the functionality of the control unit's alarm silence switch via an external, field installed switch. The alarm silence switch de-activates silenceable outputs when the alarm silence switch is activated, and re-activates silenced outputs when the alarm silence switch is de-activated. The unpowered alarm silence switch must be a Non-Latching, normally-open contact. Use P/N 70-4070X8-001 to monitor the alarm silence switch.

Note: This feature does not meet UL requirements unless there is a visible display at the alarm silence switch to indicate that the alarms are silenced.

- **Reset.** A reset switch is used to duplicate the functionality of the control unit's reset switch via an external, field installed switch. The unpowered reset switch must be a Non-Latching, normally-open contact. Use P/N 70-4070X8-001 to monitor the reset switch.

- **Acknowledge.** An acknowledge switch is used to duplicate the functionality of the control unit's acknowledge switch via an external, field installed switch. The unpowered acknowledge switch must be a Non-Latching, normally-open contact. Use P/N 70-4070X8-001 to monitor the acknowledge switch.

Note: This feature does not meet UL requirements unless there is a visible display at the acknowledge switch that indicates what is being acknowledged.

Table 2-6. Configurable Parameters

Alarm Initiating Device	A device such as a smoke detector or manual station configured to create an alarm condition in the system when it activates.
Alarm Verification	Alarm verification allows a fire alarm system to delay an evacuation signal from being generated as the result of an alarm report from a smoke detector. The fire alarm system waits for a second alarm report from the smoke detector that issued the initial alarm report or from any other alarm-initiating device before it generates the evacuation signal. The fire alarm system resumes normal operations if it does not receive a second alarm report within the alarm configuration time period. See Chapter 6 of NFPA 72, National Fire Alarm Code, 2002 Edition, for details.
Day/Night/Weekend	The periods of time during which smoke detector sensitivities can be automatically adjusted by the control unit. Day and night periods are defined in the Globals Tab.
Drill	A manually initiated test of the system's notification appliance circuits. The test can be initiated via the control-unit's Test sub-menu or via a monitor module configured as a drill switch.
Fan Restart	A switch connected to a monitor module designed to de-energize control modules that do not resume normal operation after a system reset. The monitor module and control modules must be configured for fan-restart operation. The control modules only de-energize and resume normal operation after the fan restart switch is activated.
General Alarm List	The set of outputs that are activated by any alarm initiating device.
Non-Latching Input	Some SmartOne alarm initiating devices can be configured for Non-Latching operation. Non-Latching operation refers to the special way that "Alarm-Off" messages from initiating devices are processed by the FENWALNET 6000 Control Unit. Each SmartOne alarm initiating device transmits an "Alarm-On" message when, in the case of an automatic initiating device, it detects a fire signature in excess of its configured threshold value, and, in the case of an AI Monitor Module for a normally-open contact, it detects a contact closure from the switch that it is monitoring. The SmartOne automatic alarm-initiating devices and monitor modules also transmit "Alarm-Off" messages when the detected fire signature drops below the configured threshold value and when the contact closure is removed, respectively. The FENWALNET 6000 Control Unit always displays every "Alarm-On" message, but does not display an "Alarm-Off" message unless the alarm-initiating device is configured for Non-Latching operation. Each "Alarm-Off" message from a Non-Latching initiating device is treated as a system event that requires operator intervention. Use Non-Latching alarm initiating devices to prevent an inadvertent release of an extinguishing system as the result of a transitory event that can mimic a fire signature such as an air conditioning-system leak or the initial start-up of a heating system in the fall. The real or mimic fire signatures that trigger a countdown to release for an extinguishing system must be present for the entire countdown-delay period in order to release the extinguishing system when Non-Latching alarm-initiating devices are used. The extinguishing system release is aborted if a Non-Latching initiating device reports an "Alarm-Off" message prior to the expiration of the countdown timer.

Table 2-6. Configurable Parameters

PAS	Positive Alarm Sequence (i.e., PAS) allows a fire-alarm system to delay an evacuation signal from being generated as the result of an alarm report from a smoke detector. The operator must acknowledge the initial alarm report within 15 seconds of its receipt, or the normal evacuation signals activate. Personnel have a user-programmable period of up to 3 minutes to investigate the nature of the alarm and reset the system if they acknowledge the initial alarm within 15 seconds. The evacuation signal activate if the system is not reset during the investigation period. The fire-alarm system also generates the evacuation signal if a second smoke detector configured for PAS or any other initiating device transmits an alarm signal during either the initial-acknowledgement period or the investigation period. The fire-alarm system resumes normal operations if it is reset within the investigation period. See Chapter 6 of NFPA 72, National Fire Alarm Code, 2002 Edition, for details.
Pre-Alarm Reporting	The Pre-Alarm State occurs when a SmartOne automatic initiating device such as a smoke detector senses a fire signature that is below its configured alarm threshold value but above a lower threshold value called the "pre-alarm" threshold.
Sequential Deactivation	A method of scheduling the de-activations of control modules that have been activated as the result of an alarm condition. The system can be programmed to insert a delay of up to 15 seconds between the de-activation times of control modules that resume normal operations following either a system reset or a fan-restart command. The control modules must be configured for sequential deactivation and the delay period is defined in the Globals Tab. Up to 16 control modules can be programmed for sequential deactivation.
Silenceable	An output that changes its state of activation upon commands issued by the control unit's SILENCE Switch. The output de-energizes if an alarm condition exists and if it is activated when the SILENCE Switch is pressed, and re-activates if the alarm condition still exists and it is de-energized when the SILENCE Switch is pressed.
Walk Test	A test mode in which the control unit responds to alarm-initiating signals by pulsing designated notification-appliance circuits for one second and recording the alarm-initiating device's alarm report in the Walk Test Log. This is referred to as a normal walk test. The alarm-initiating devices must be activated for Walk Test via the control unit's Test sub-menu, and the NACs must be configured for Walk Test activation. A Silence Walk Test does not activate the NACs, but records each alarm-initiating device's alarm report in the Walk Test Log.

2-3.16   Assigning SLC-Device Locations

The following screen displays after each SLC device is assigned an address, a device type and has its functionality further defined via an auxiliary screen (if applicable).
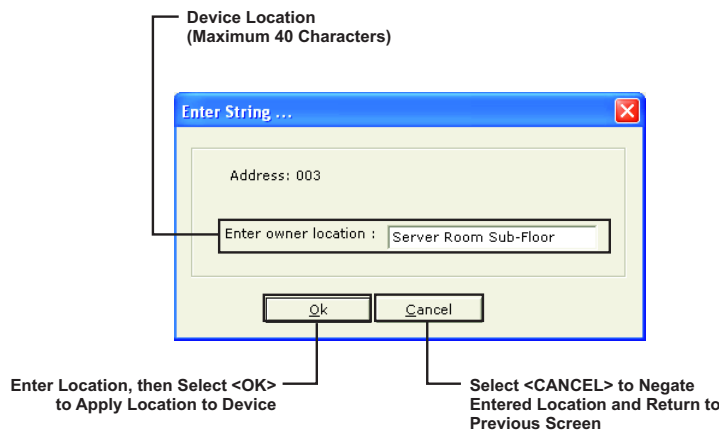
Figure 2-23. Location Entry Box

Note: Forty alphanumeric characters can be entered for each device location.

The **Ctrl + C** and **Ctrl + V** keyboard shortcuts are available for copying and pasting owner locations for initiating devices in a common room or area.

2-3.17   Delete Single/Multiple SLC Device(s)

To delete one or more SLC device(s), select the device in the Addressable Devices tab (you can select multiple device using by holding down the <**CTRL**> button on the keyboard and clicking on the devices to delete) and click the <**Delete**> button.

2-3.18   Editing Device Parameters for a Single or Multiple SLC Device(s)

Follow the applicable procedure to edit a single or multiple SLC devices

2-3.18.1   EDITING A SINGLE SLC DEVICE

1. Select the device to edit in the Addressable Devices tab.
2. Click the **<Edit>** button.
3. The applicable screen displays with the parameters for the device. Change the parameters as required and click the **<OK>** button.

2-3.18.2   EDITING MULTIPLE SLC DEVICES

1. Select the devices to edit in the Addressable Devices tab by holding down the **<Ctrl>** button and selecting the necessary SLC devices.
2. Click the **<Edit>** button.
3. If the selected devices are not all the same type, the following screen displays.
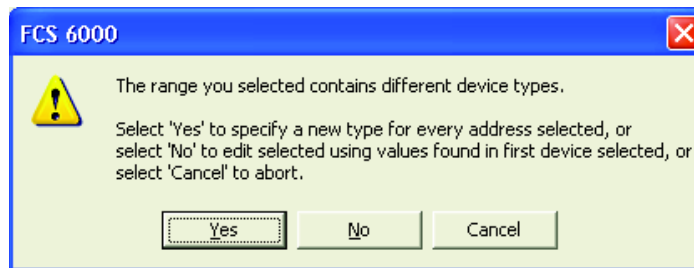
Figure 2-24. Multiple Device Edit Screen (Different Device Types)

To specify a new type for all selected devices, click the <Yes> button; to change all of the selected devices to the type of the first device selected, click the <No> button. To cancel, click the <Cancel> button.

If the selected devices are all the same type, the following screen displays.
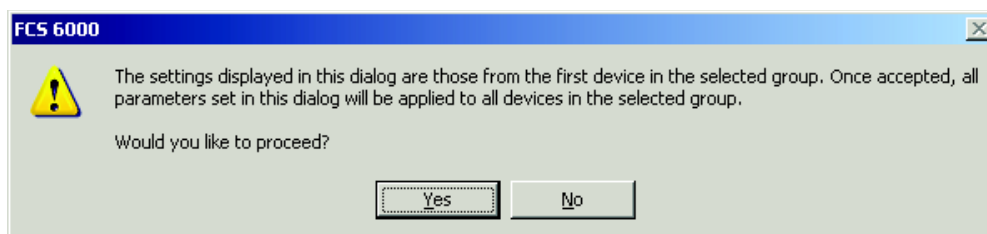
Figure 2-25. Multiple Device Edit Screen (Same Device Type)

Click the **<Yes>** button.

4. The applicable screen displays with the parameters for the device. Change the parameters as required and click the **<OK>** button.

2-3.19   **Editing the Address of an SLC Device**

1. Select the applicable device in the Addressable Devices tab.
2. Click the **<Edit Address>** button. The following screen displays.
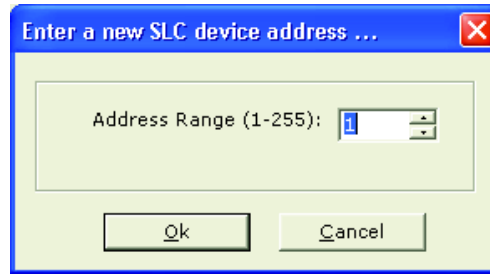
Figure 2-26. Edit Address Screen

3. Enter the new address using the keyboard or toggle buttons. Click **<OK>** to apply the new address.

2-3.20   **Edit the Type of an SLC Device**

1. Select the applicable device in the Addressable Devices tab. The SLC Device List displays, see Figure 2-5.
2. Select the appropriate device by either highlighting the icon of the device, then selecting **<OK>**, or double-clicking on the icon.

2-4 **CONFIGURING CONTROL UNIT-BASED OUTPUTS (ON-BOARD TAB)**

1. Select the "On-Board" tab. Figure 2-27 displays.

On-Board Outputs Selection List

Select <APPLY> to Accept
the Current Changes

Select <RESET> Reject the
Current Changes and Restore the
Previous Settings
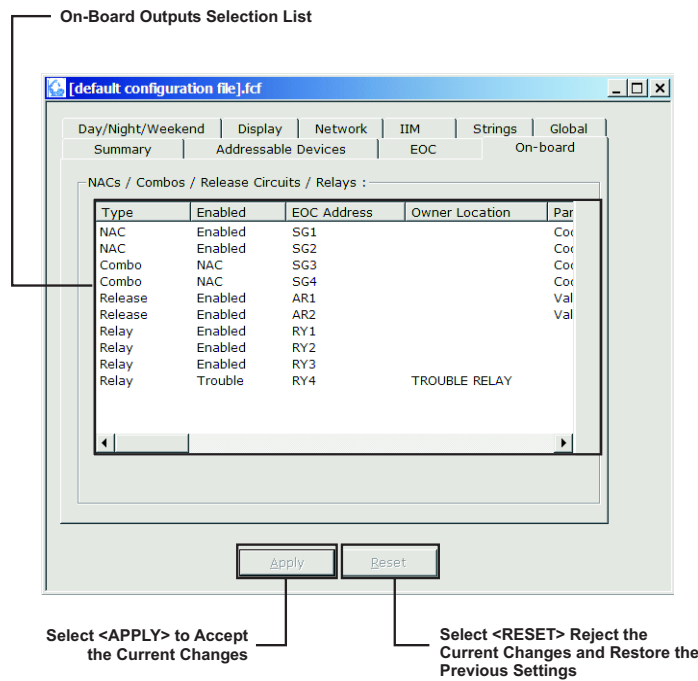
Figure 2-27. Control Unit-Based Outputs Screen

2. Select the circuit by double-clicking on the circuit name in the type column. Figure 2-28 displays. Circuit types are as follows:

– **NAC.** Notification Appliance Circuit.

– **Combo.** Combination circuits.

– **Release.** Release Circuits

– **Relay.** Relay Circuits.

Enable/Disable Selection
(Double-Click to Configure Selected Output, or
Highlight and Select <OK>)

Select "Enabled" to Access Options
or Select "Disabled" to Not Use Output,
Then Select <OK>

Select <CANCEL> to
Return to Previous Screen
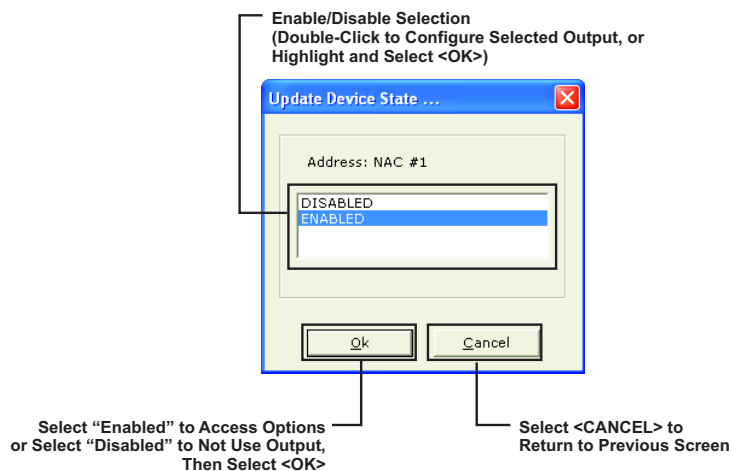
Figure 2-28. Access Options Screen for Control Unit-Based Outputs

3. Select either "Enabled" or "Disabled", then select **<OK>**. The appropriate circuit screen displays for NACs, Combos, Release or Relays when the "Enabled" option is selected (see Paragraph 2-4.1 through Paragraph 2-4.2). The output is not used if the "Disabled" option is selected. End-of-line resistors are not required for disabled outputs.

2-4.1 Notification Appliance Circuits (NAC) Screen

Figure 2-29 illustrates how to configure a control unit-based Notification Appliance Circuit (NAC).

Circuit Description (Max. 40 Characters)

Enter NAC in General Alarm Output List Check-Box

Enable Intelligent NAC Check-Box

Enable NAC Silenceable Mode Check-Box

Enter NAC in Walk Test Check-Box

Enter NAC into Outputs List Activated by Fire Drill Check-Box

Thermal-Cycling Activation Check-Box (Activated When "Silenceable" Mode is Selected)

NAC Coded Pattern Drop-Down Men

NAC Silence Inhibit Period Drop-Down Menu

NAC Automatic Silencing Period Drop-Down Menu

Initial Thermal-Cycling Period Check Box and Time Toggle Buttons (Maximum 180 minutes or seconds; Activated when Silenceable Mode is Selected)

Subsequent Thermal-Cycling Period Check Box and Time Toggle Button (Maximum 180 minutes or seconds; Activated when Silenceable Mode is Selected)

Make Selections, then Select <OK> to Apply Settings

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen

Figure 2-29. NAC Screen (Conventional NAC Selected)

1. Check the "Intelligent-NAC" Box to use the built-in synchronization features of the following series of notification appliances:
   – MT Series Multi-Tone Horns and Horn/Strobes
   – NS Series Horn/Strobes
   – NH Series Horns
   – RSS(P) Series Strobes

Circuit Description (Max. 40 Characters)

Enter NAC in General Alarm Output List Check-Box

Enable Intelligent NAC Check-Box

Enable NAC Silenceable Mode Check-Box

Sil Horn/Non-Sil Strobe Check-Box

Enter NAC in Walk Test Check-Box

Enter NAC into Outputs List Activated by Fire Drill Check-Box

Thermal-Cycling Activation Check-Box (Activated When "Silenceable" Mode is Selected)

NAC Silence Inhibit Period Drop-Down Menu

NAC Cutoff Delay Drop-Down Menu (The Silenceable option must be selected to use this option)

Initial Thermal-Cycling Period Check Box and Time Toggle Buttons (Maximum 180 minutes or seconds; Activated when Silenceable Mode is Selected)

Subsequent Thermal-Cycling Period Check Box and Time Toggle Button (Maximum 180 minutes or seconds; Activated when Silenceable Mode is Selected)

Make Selections, then Select <OK> to Apply Settings

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen

Figure 2-30. NAC Screen (Intelligent NAC Selected)

2. Check the "Sil Horn/Non-Sil Strobe" Box to use the silenceable horn or non-silenceable strobe features of the NS- Series Horns and Strobes. This option is only available if the "Intelligent NAC" box is checked.

    The "Silenceable" field must be checked to activate the following optional selections:

    –   **Silence Inhibit.** A NAC is non-silenceable for the period of time specified in the "Silence-Inhibit" Drop-Down Menu. Valid entries for the "Silence-Inhibit" time period are 1, 3 and 5 minutes.
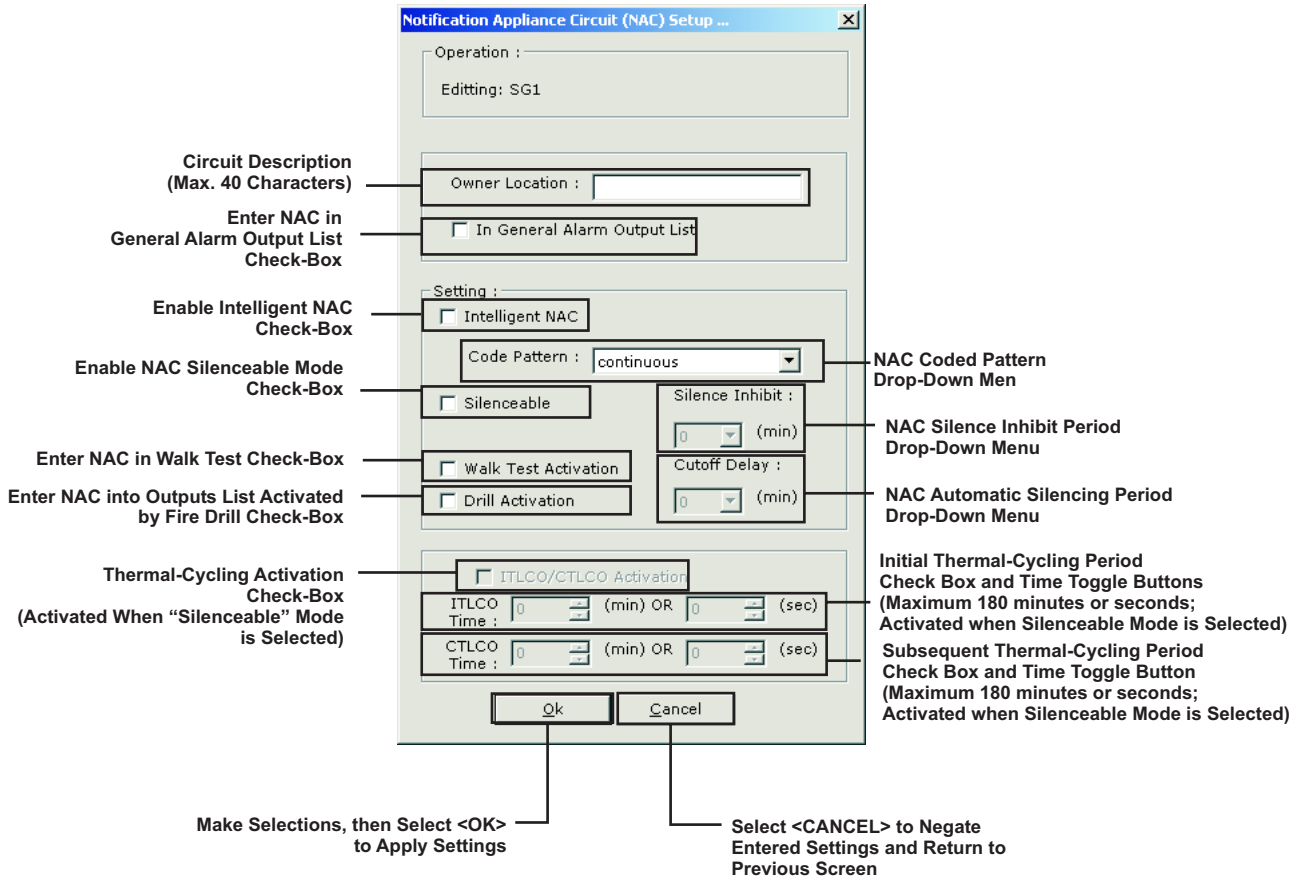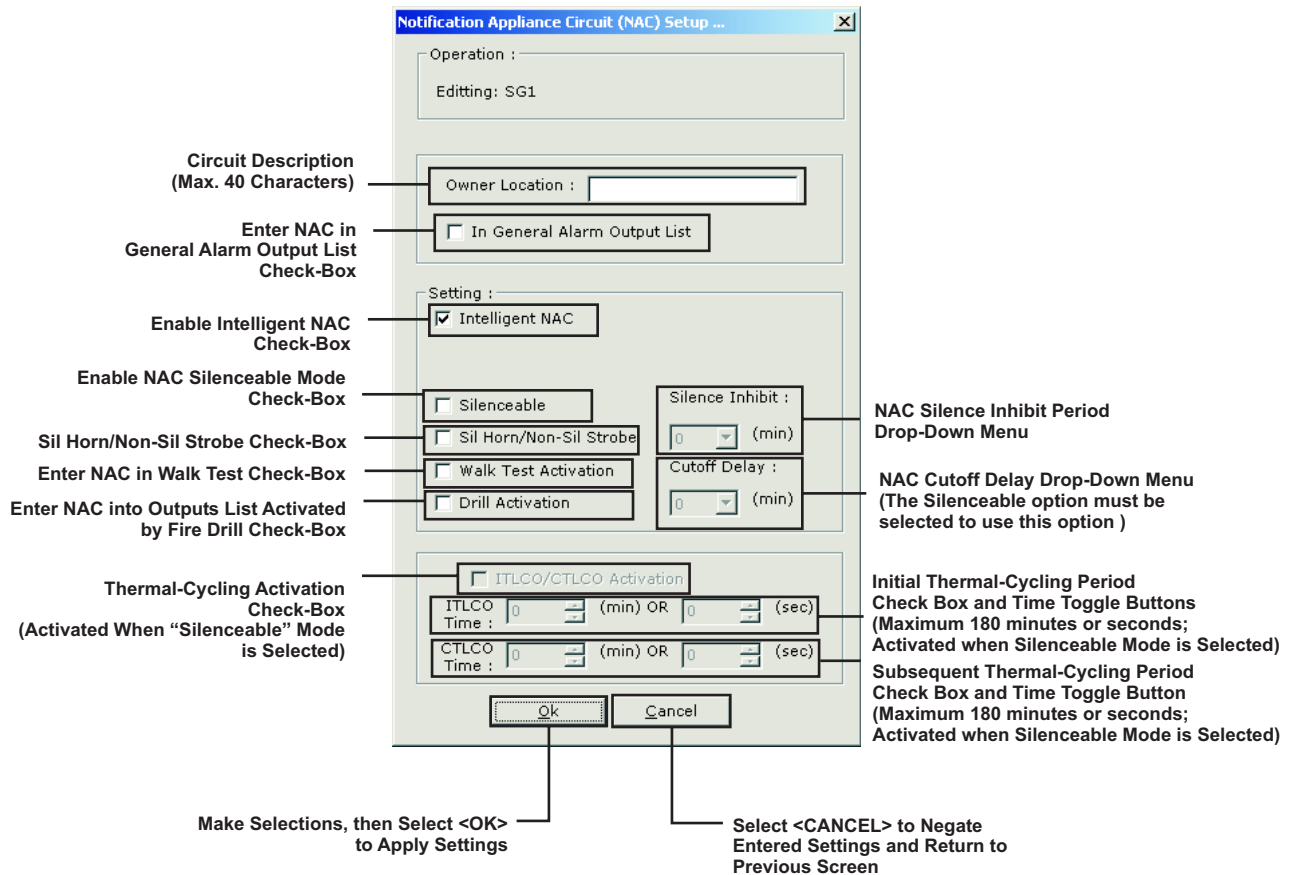
    –   **Cutoff Delay.** A NAC automatically silences after the period of time specified in the "Cutoff-Delay" Drop-Down Menu. Valid entries for the "Cutoff-Delay" time period are 5, 10 and 15 minutes.

Note: A NAC configured for Cutoff Delay turns off and remain off until a new alarm event causes it to resound. The NAC cannot be manually resounded via the Silence Key on the display.

    –   **Thermal Cycling.** A NAC is configurable for thermal cycling according to the alarm or non-alarm states of its associated heat detectors. Refer to Paragraph 2-3.6 for a description of thermal cycling via Model THD-7252 Heat Detectors.
        The cyclical NAC activation is overridden by an alarm signal from any associated alarm-initiating device other than a heat detector configured for thermal cycling. The NAC then latches into the activated state, and remain activated until it is subsequently silenced, deactivated by another alarm condition or the control unit is reset.

    –   The following coded patterns can be selected from the "Code-Pattern" Drop-Down Menu (Cannot be used with Intelligent Notification Appliances):

        • 60 beats per minute (bpm)

- 120 bpm
- Temporal per ANSI S3.41
- Steady (i.e., non-coded).

2-4.2   **Combination Circuits Screen**

Figure 2-31 displays when the "Combo" option is selected.
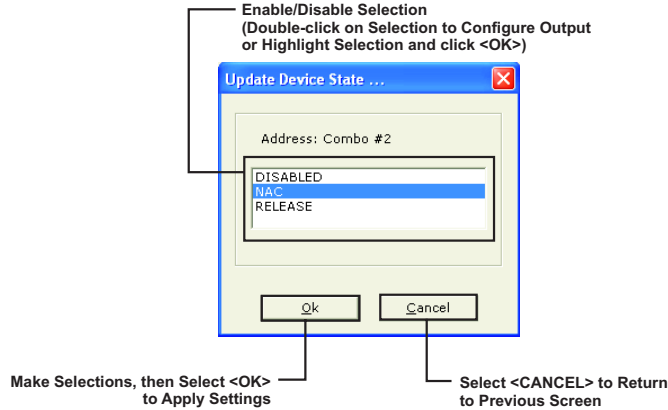
Figure 2-31. Combo Box for Combination Circuits

Note: Combo circuits can only drive solenoids when configured as a Release circuit.

Either double-click on the desired output type, or select the output type, then select **<OK>**.

The appropriate screen displays when either "NAC" or "Release" is selected. Configure the combination circuit as directed in Paragraph 2-4.1 (if the "NAC" option was selected) or Paragraph 2-4.3 (if the "Release" option was selected). The output is not be used if the "Disabled" option is selected.

2-4.3   Release Circuit Screen

Figure 2-32 illustrates how to configure a control unit-based release circuit.
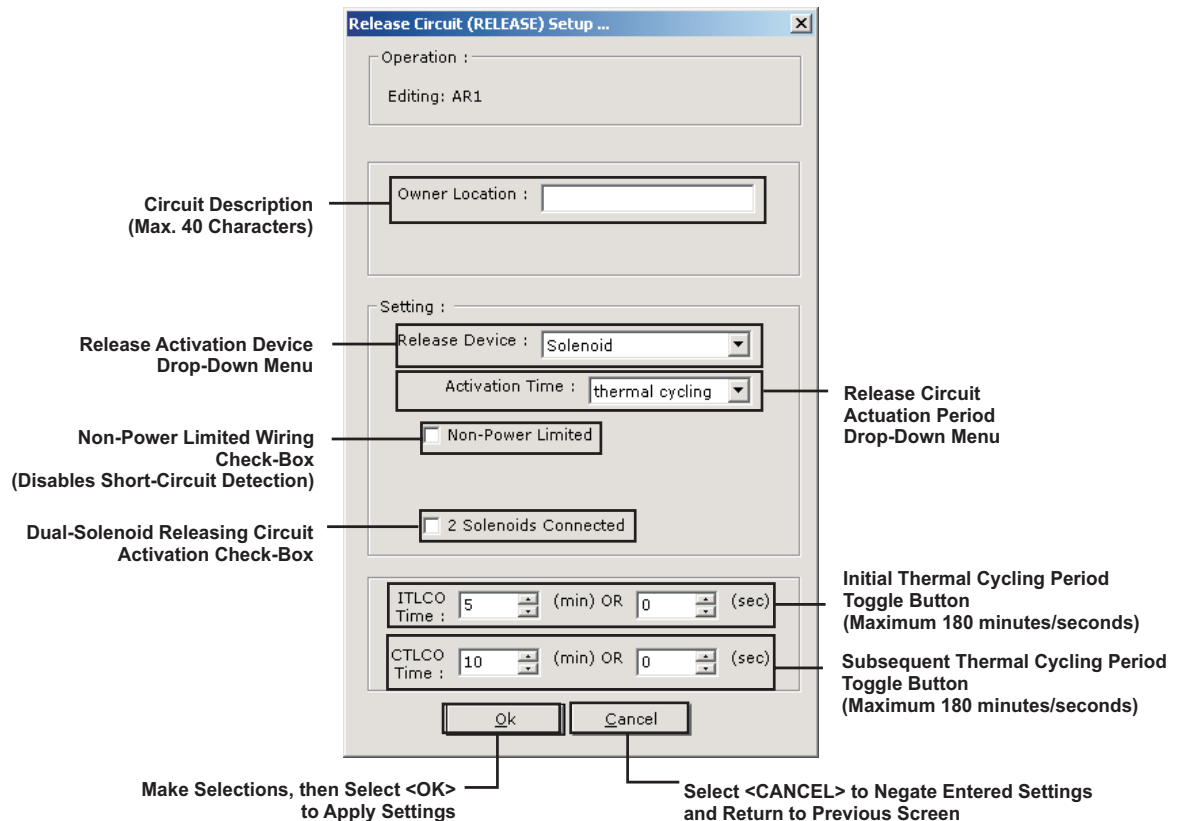
Figure 2-32. Release Circuit Screen

- Use the "Releasing-Devices" drop-down menu to select either initiator assemblies or solenoid-activated discharge valves. The fixed activation times in the "Activation-Time" Drop-Down Menu apply to solenoid-activated discharge valves and can be any of the following:
  - 90 seconds
  - 10 minutes
  - 15 minutes
  - Continuous activation (i.e., on until reset).
  - Thermal Cycling

- A release circuit is configurable for thermal cycling according to the alarm or non-alarm states of its associated automatic heat detectors. Refer to Paragraph 2-3.6 for a description of thermal cycling via a Model THD-7252 Heat Detector. A thermal-cycling release circuit is configured by selecting "Thermal Cycling" from the Activation Time drop-down menu.

- The cyclical release-circuit activation is overridden by an alarm signal from any associated alarm-initiating device other than a heat detector configured for thermal cycling. The release circuit then latches into the activated state and remains activated until it is deactivated by another alarm condition or until the control unit is reset.

2-4.4   Form-C Relays Screen

Figure 2-33 illustrates how to configure a programmable control unit-based relay.
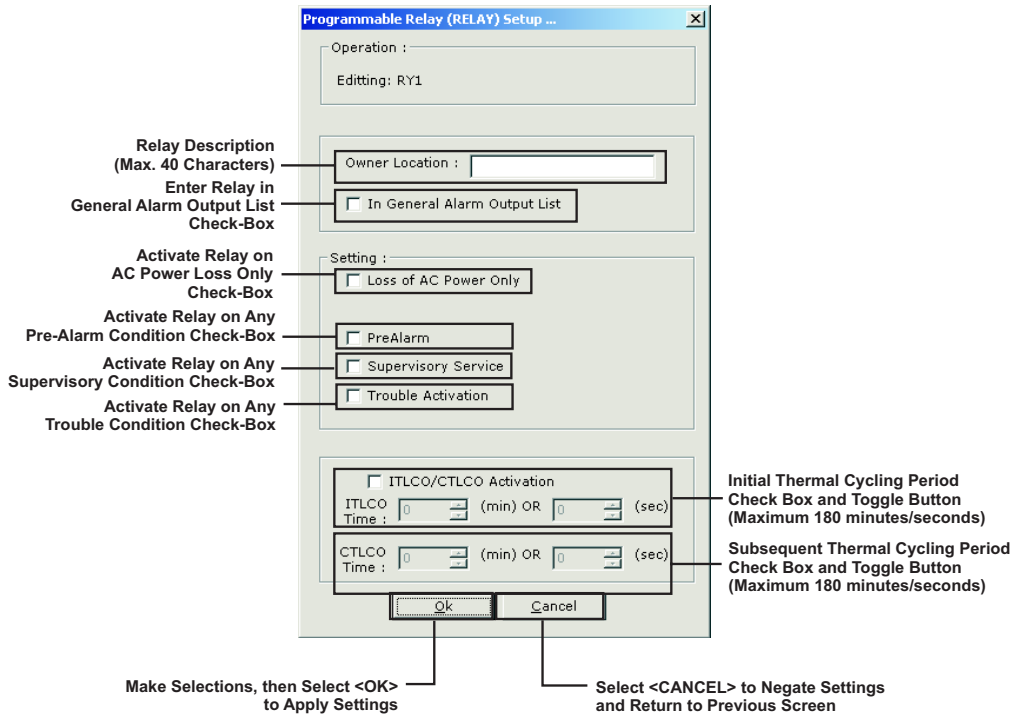
Figure 2-33. Programmable Relay Screen

- A relay configured to activate on "Loss of AC Power only" activates 150 seconds after the loss of AC power. It de-activates immediately when AC power is restored.

- A programmable relay is configurable for thermal cycling according to the alarm or non-alarm states of its associated automatic heat detectors. Refer to Paragraph 2-3.6 for a description of thermal cycling via a Model THD-7252 Heat Detector.

- The cyclical programmable-relay activation can be overridden by an alarm signal from any associated alarm-initiating device other than a heat detector configured for thermal cycling. The relay then latches into the activated state and remains activated until it is deactivated by another alarm condition or until the control unit is reset.

2-5   **CONFIGURING PERIPHERAL COMPONENTS (DISPLAY TAB)**

Select the "Display" Tab; Figure 2-34 displays.
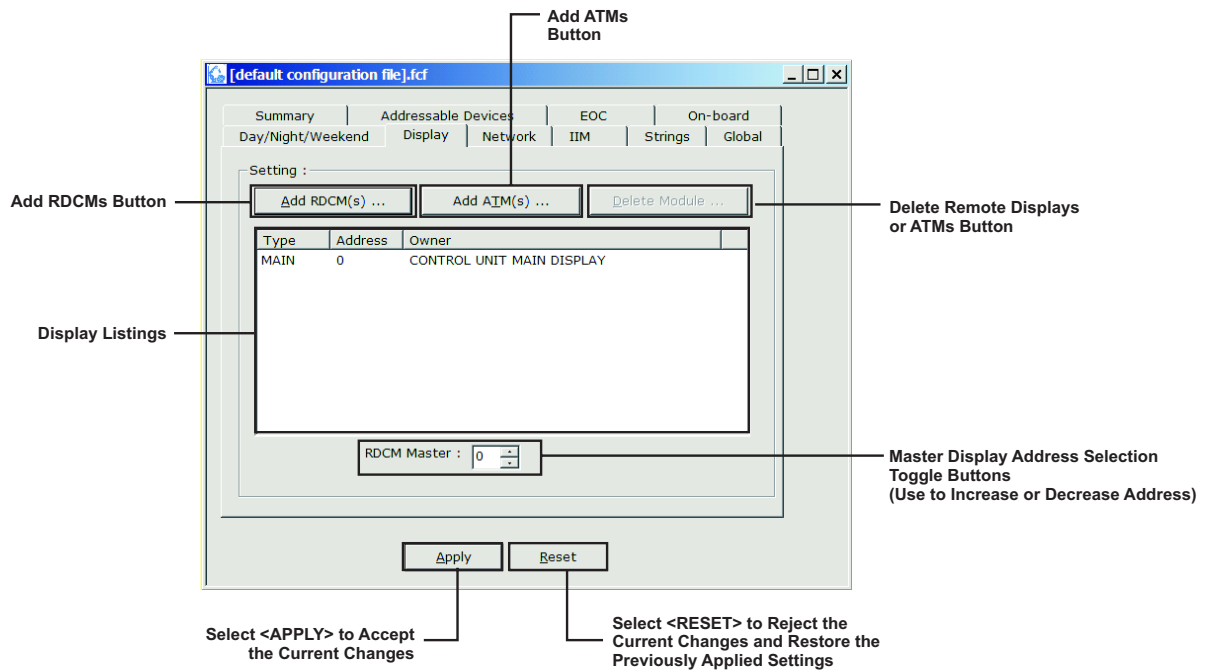
Figure 2-34. Peripheral-Devices Main Configuration Screen

2-5.1   **Add RDCM or ATM**

1. Select either the **<Add RDCM(s)>** or **<Add ATM(s)>**. Figure 2-35 displays.
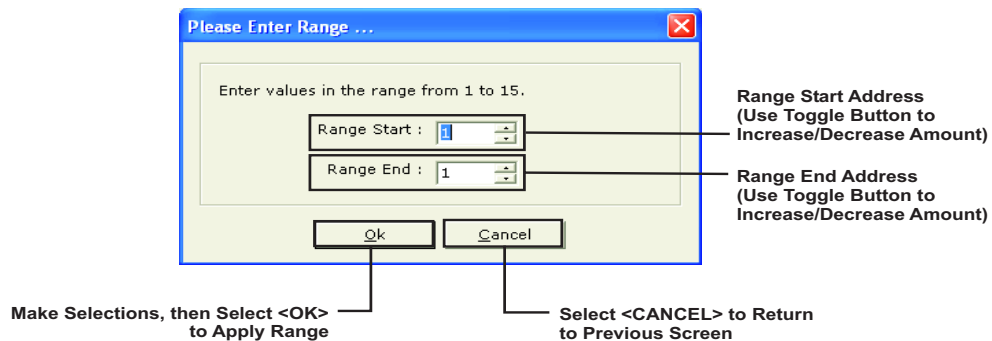
Figure 2-35. Peripheral-Devices Address-Range Selection

2. Enter the range of either RDCM(s) (1 to 15) or ATM(s) (1 to 16) being used, then click **<OK>**. Figure 2-36 displays (if ATM is being used, the dialogue in the screen reflects ATM).

RDCM Location
(Maximum 40 Characters)

Enter String ...

Module: RDCM 01

Enter owner location :   RDCM #1

Ok   Cancel

Type Location, then Select <OK>
to Apply Location

Select <CANCEL> Return
to Previous Screen
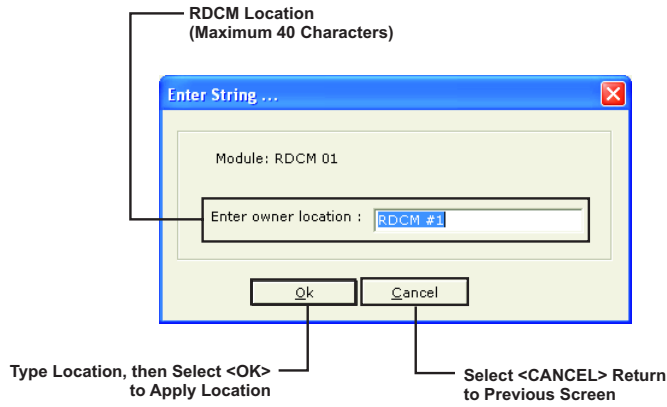
Figure 2-36. RDCM Location Screen

3.   Enter the location of the RDCM or ATM, then select **<OK>**.

2-5.2   Delete Module

1.   Highlight the device in the listings area of the Display Screen (Figure 2-34).

2.   Select **<DELETE MODULE>**.

2-5.3   Creating an RDCM Master

Ordinarily the FENWALNET 6000 is the master user interface. Operator intervention via the Master RDCM always takes priority over operator-control commands issued from any other user interface, including the FENWALNET 6000.

To make an RDCM Master:

1.   On the Display Screen, enter the number of the RDCM to be master.

2.   Select **<APPLY>**.

2-6   ENTERING AN INTELLIGENT INTERFACE MODULE (IIM TAB)

Select the "IIM" tab; Figure 2-37 displays:

[default configuration file].fcf

Summary   Addressable Devices   EOC   On-board
Day/Night/Weekend   Display   Network   IIM   Strings   Global

Setting :

Enable IIM Usage
Check-Box

✔ IIM Enabled

Enable Non-Latching Alarms
Check-Box

☐ Non Latching Alarms

Registered HSDs:

Add ...   Edit ...   Delete ...

Address   Setting

Registered HSDs
View Box

Apply   Reset

Select <APPLY> to Accept
the Current Changes

Select <RESET> to Reject the
Current Changes and Restore the
Previously Applied Settings

Figure 2-37. IIM Specification Screen

1. Check the "IIM Enabled" checkbox.

2. Click <Add> and enter the range of the HSSD addresses to be registered.

3. Select "Non-Latching Alarms" if applicable.

4. Click <Apply> to enter the IIM and its settings into the system configuration.

2-7 NETWORKING (NETWORK TAB)

Multiple FENWALNET 6000 Systems can be networked together to form a larger, integrated system for common event reporting, operator control, and outputs activation. A peer-to-peer network of up to thirty-two (32) FENWALNET 6000 Control Units can be created. That network is then capable of performing the following fire-alarm and/or suppression system operations on a network-wide basis:

- Event initiation
- Protected-premises local and/or remote event annunciation
- Occupant notification via audible and visible signaling appliances
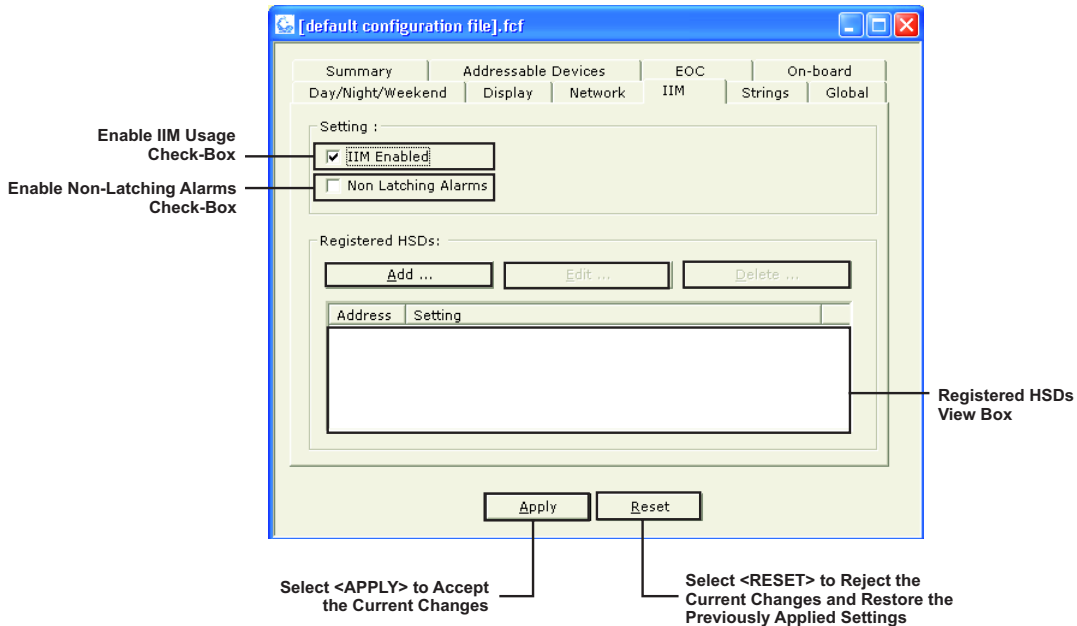- Process/equipment control to activate safety procedures
- Fire extinguishing system release
- Off-premises transmissions to central station or fire department via a third-party digital communicator and programmable relays.

Every control unit on the network supervises its own initiating devices and output circuits and manages the input-point to output-circuit operations specific to its local protected area(s). These operations occur without regard to inter control unit communications, lack of network communications due to catastrophic fault, or irrespective of the condition of any other control unit in the network.

A separate application file must be created via FCS 6000 for each control unit in the network.

2-7.1 Communications

Every control unit is capable of communicating with every other control unit in the network. The method of communication is peer-to-peer via a token-passing protocol to ensure that only one control unit is broadcasting at any time. Network Interface Cards (NIC) permit the integration of two or more control units into a networked system.

Network messages and broadcasts are transmitted over either single- or dual-channel communications connections. Dual-channel connections offer a redundant communications path that allows all network broadcasting and inter-control-unit functionality to continue with an open- or short-circuit fault or ground fault on one of the channels. Any fault in either a single- or dual-channel communications channel creates a network trouble condition.

2-7.2 Network Event Processing

Networked control units are programmed to listen to messages from other nodes but are not configured to identify where to send messages. Thus, a node can be programmed to process events as follows:

- Locally (i.e., in the control unit of origin only)
- Selectively from a subset of networked control units
- Globally from all control units in the network.

Processing of network events extends to all ancillary equipment such as Remote Display Control Modules (RDCMs) and Annunciator Terminal Modules (ATMs) associated with a designated subset of control units when selective event broadcasting is chosen. Network event processing extends to all such equipment associated with every control unit when the network is configured for global-event broadcasting.

The configuration of event processing is accomplished by the Group parameter and the 'Log All Network Events' parameter described in later sections.

The default operation for a control unit's event processing is globally from all control units in the network.

2-7.3   Operator Control

Operator intervention to acknowledge events, silence notification appliances and perform resets is configurable to operate:

- Locally in the control unit of origin only
- Selectively in a subset of the networked control units
- Globally in all control units in the network.

Operator intervention capability extends to all ancillary equipment such as Remote Display Control Modules (RDCMs) and Annunciator Terminal Modules (ATMs) associated with a designated subset of control units when selective operator control is used. It extends to all such equipment associated with every control unit when the network is configured for global operator control.

The configuration of acknowledge button processing is accomplished by the Group parameter and the 'Log All Network Events' parameter described in Paragraph 2-7.7. The configuration of silence button processing is accomplished by the Group parameter and the 'Network Silence Event' parameter described in Paragraph 2-7.7. The configuration of reset button processing is accomplished by the Group parameter and the 'Network Reset Event' parameter described in Paragraph 2-7.7.

The default operation for operator control is globally to all control units in the network.

2-7.4   Event Recording

Each control unit is configurable to record events as follows:

- Locally from its directly-monitored peripheral devices and output circuits only
- Selectively from a subset of networked control units
- Globally from all control units in the network.

The default operation for event recording is globally from all control units in the network.

2-7.5   Event Output Control (EOC)

A control unit within a network shall only have the capability of defining output control and subsequently activating the outputs that are physically a part of the control unit. However, the output control can be based on inputs that reside on other control units within the network. These inputs can be:

- Local SLC based detectors and inputs
- Selected from a subset of networked control units' SLC- and IIM-based detectors and inputs
- Global from all networked control units' SLC- and IIM-based detectors and inputs.

Configuring networked EOC is accomplished using EOC programming, the Group 'Log All Network Events' and (to a limited extent) the 'Network Reset Event' as well as 'Network Silence Event' parameters described in Paragraph 2-7.7.

The default operation for event-output control is global from all control units in the network.

Note: Only alarms originating on the local control unit and configured to activate the General Alarm List Outputs can activate General Alarm List Outputs.

2-7.6   Network Groups

The network group concept is used to create autonomous sub-networks within the overall set of networked control units. These groups may be programmed to respond selectively as separate entities in terms of event reporting, event output control, acknowledgement of events,

alarm silencing, and system resets. There are 32 possible groupings, numbered 0 to 31. By default, all control units in the network have no pre-assigned group number.

A sub-network group operates as described below when it is assigned a non-zero group number. Each control unit in a group is able to:

- Display and log all events that take place in any control unit in the group
- Process an event-acknowledgement command from any control unit in the group for any event that occurs in the group when the acknowledge button is pressed on any control unit in the group
- Process an alarm-silence command from any control unit in the group and de-energize any silenceable outputs on the control unit
- Process a reset command from any control unit in the group once all activated initiating devices have been cleared of their alarm condition(s)
- Execute local output-activation commands based on events from any or all other control units in the group

A network is configured for global operations when no network sub-groups are defined.

2-7.7   Network Group 0

Group 0 can be used to create a 'master' type controlling node in the control unit network. Depending on how many masters are needed, one or more control units in the network should be assigned to Network Group 0 and 'Log All Network Events' should be enabled. Disable 'Network Silence Event' and 'Network Reset Event' on the master node(s) unless the master node(s) can be reset by non-master nodes. All non-master nodes should be assigned group numbers and 'Network Silence Event' and 'Network Reset Event' enabled. 'Log All Network Events' should be disabled on the non-master nodes.

The master control unit is capable of the following interactions with all sub-groups in a selectively-signaling network:

- Displaying and logging all network events from all network groups
- Issuing acknowledge, silence, and reset commands to all control units in all network groups
- Activating its outputs upon any initiating event from all control units in all network groups

Figure 2-38 shows the possible interactions among the various members of a selectively-signaling networked system with groupings and with one control unit designated as the master control unit.
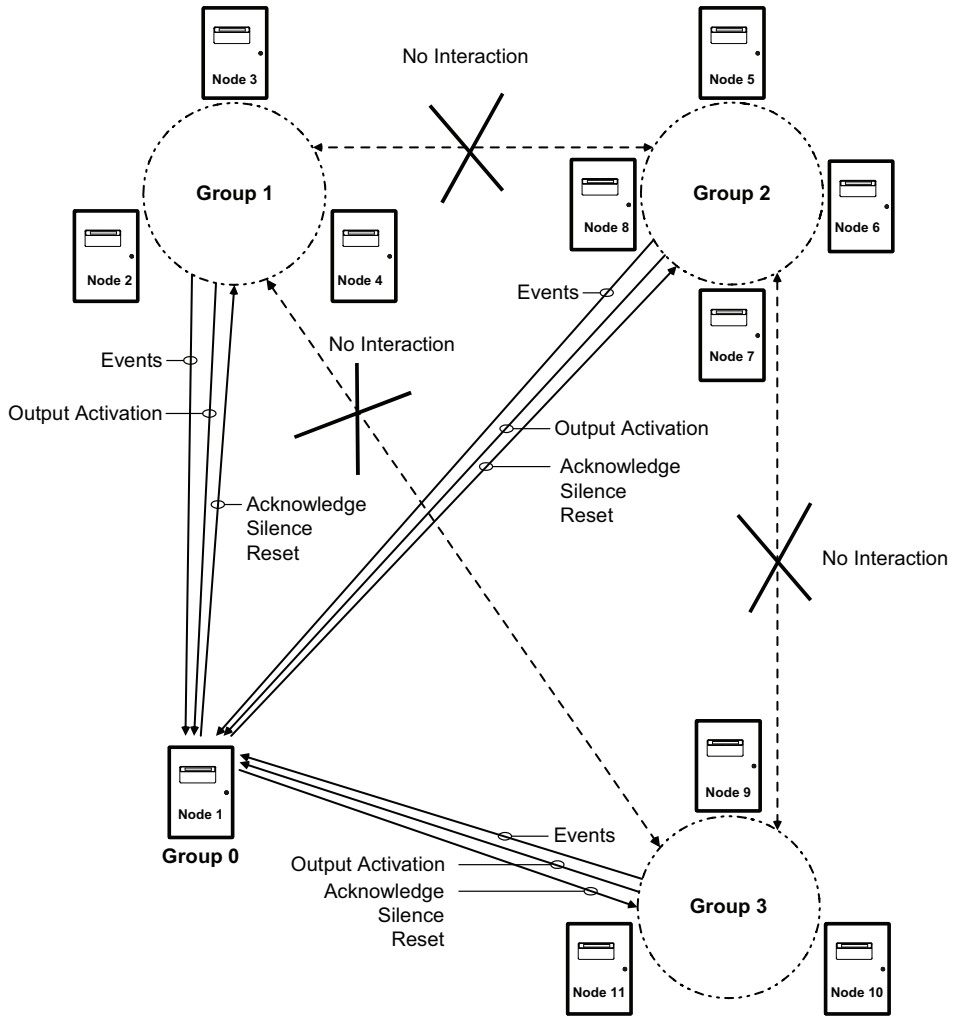
Figure 2-38. Typical Network with Groups and Master Node in Group 0

2-7.8   **Network Settings**

Select the "Network" tab to define the operating characteristics of each control unit in the network; Figure 2-39 displays.

Node Number - sets the unique idenitifer to each panel on the network . Valid settings are 1-32. A value of "0" disables netowrking on this node.

Channel - set the communication channel(s) that the control unit uses to communicate. The entire network should use the same channel configuration.

Time Synch Period – the periodic interval where the time and date on all nodes is synchronized. The time is entered in seconds. Valid settings are 0 (for disabled) or any value from 10 minutes (600 seconds) to 32767 seconds.

Network Reset Event – defines whether or not a control unit can be reset remotely by another node on the network.

Network Silence Event – defines whether or not a control unit can be silenced remotely by another node on the network.

Log All Network Events – defines whether or not a control unit processes events and key presses from any remote node on the network. If this parameter is not set, the control unit only processes events from nodes in the same group.
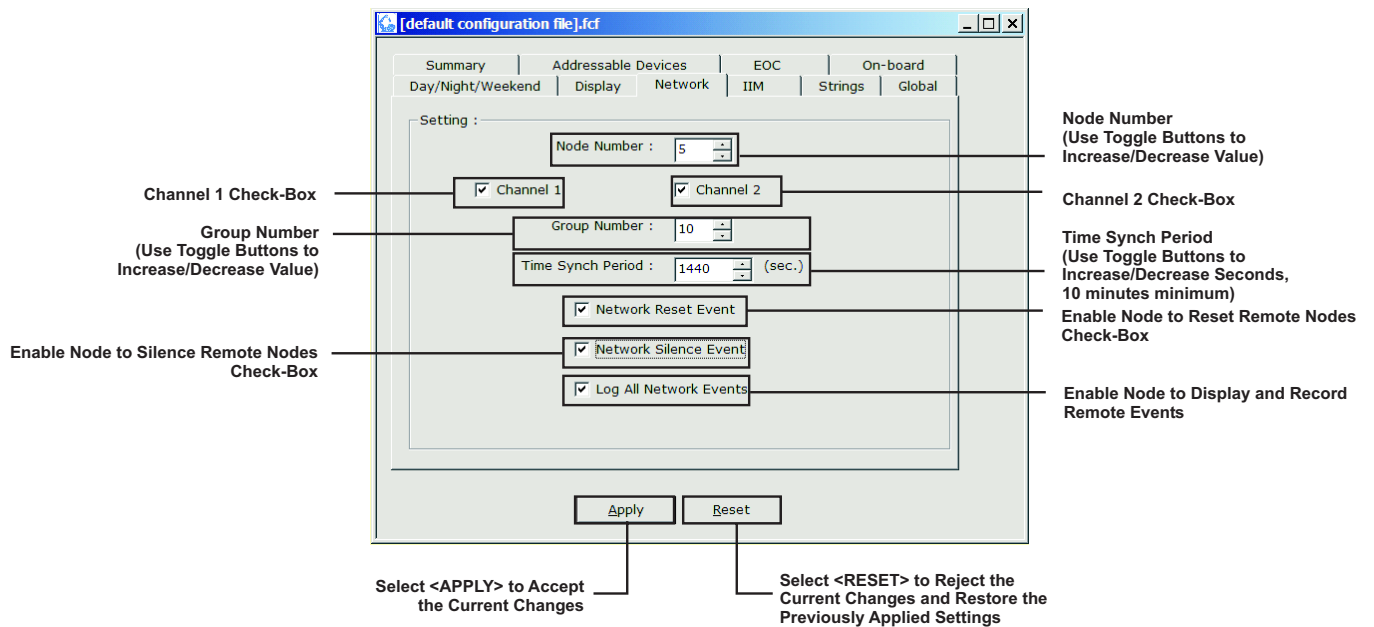
Figure 2-39. Network Node Settings

2-8   GLOBAL SETTINGS (GLOBAL TAB)

Select the "Global" tab; Figure 2-40 displays.
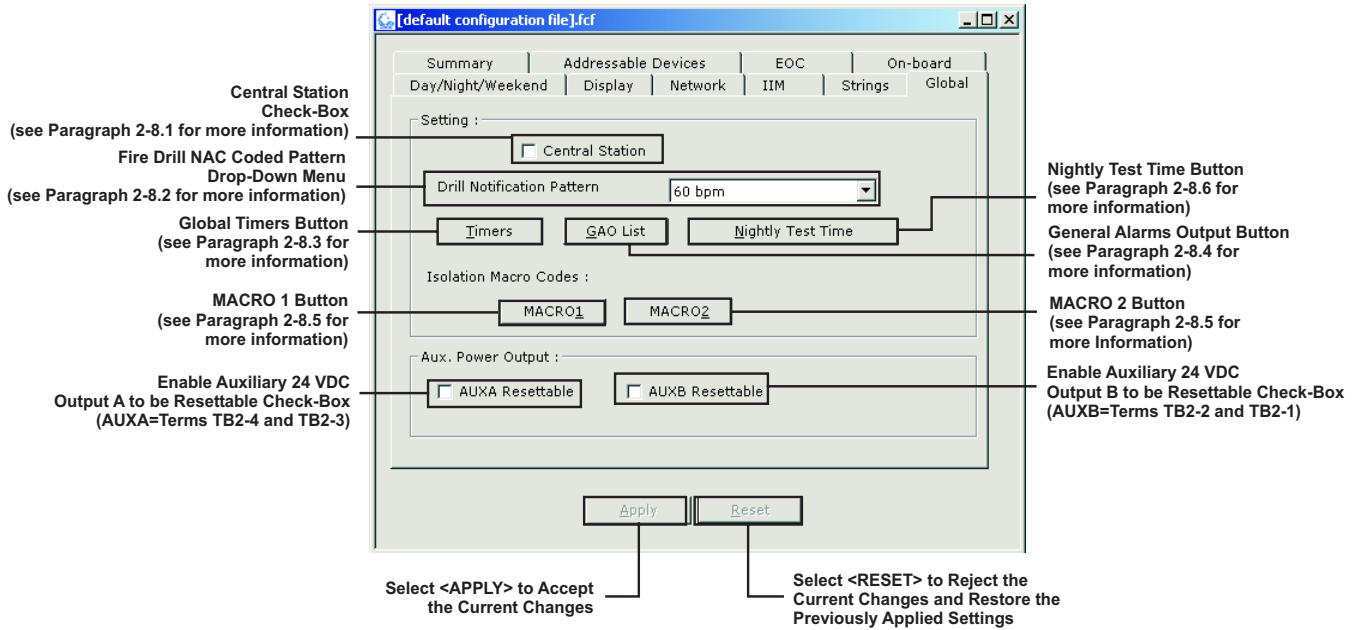
Figure 2-40. Global Settings Screen

2-8.1   Central Station

The operations of the programmable relays default to the following off-normal states when the Central Station option is selected:

Programmable Relay No.	Off-Normal State
1	Alarm
2	Supervisory

The transmission of a loss of AC-power trouble signal to the central station can be delayed for up to 12 hours when the Central Station option is enabled.

2-8.2   Drill Notification Pattern

The following coded patterns can be selected from the "Drill Notification Pattern" drop-down menu:
Note: These patterns are not available for intelligent NACs.

- 60 beats per minute (bpm)
- 120 bpm
- Temporal per ANSI S3.41
- Steady (i.e., non-coded).

All control unit based NACs programmed for a coded drill signal utilizes the pattern that is selected from this drop-down menu.

Note: The same drill notification pattern should be used for all control units in a networked system.

2-8.3   **Timers**

1. Select the **<Timers>** button; Figure 2-41 displays.

AO Sequential Deactivation Timer, 5 to 15 seconds
(Use Toggle Buttons to Increase/Decrease Value)

AC Failure Delay, 0 to 180 minutes or 0-12 hours
(Use Toggle Buttons to Increase/Decrease Value;
Fail Delay is Enabled when Central Station Mode is
Selected via the Global Screen)

Alarm Verification Timer, 60 to 180 seconds
(Use Toggle Buttons to Increase/Decrease Value)

PAS Investigation Timer, 0 to 180 seconds
(Use Toggle Buttons to Increase/Decrease Value)

Make Selections, then Select <OK>
to Apply Settings

Select <CANCEL> to Negate
Entered Settings and Return to
Previous Screen

Figure 2-41. Global Timers Screen

The timing options on this screen are:

- **AC Fail Delay.**

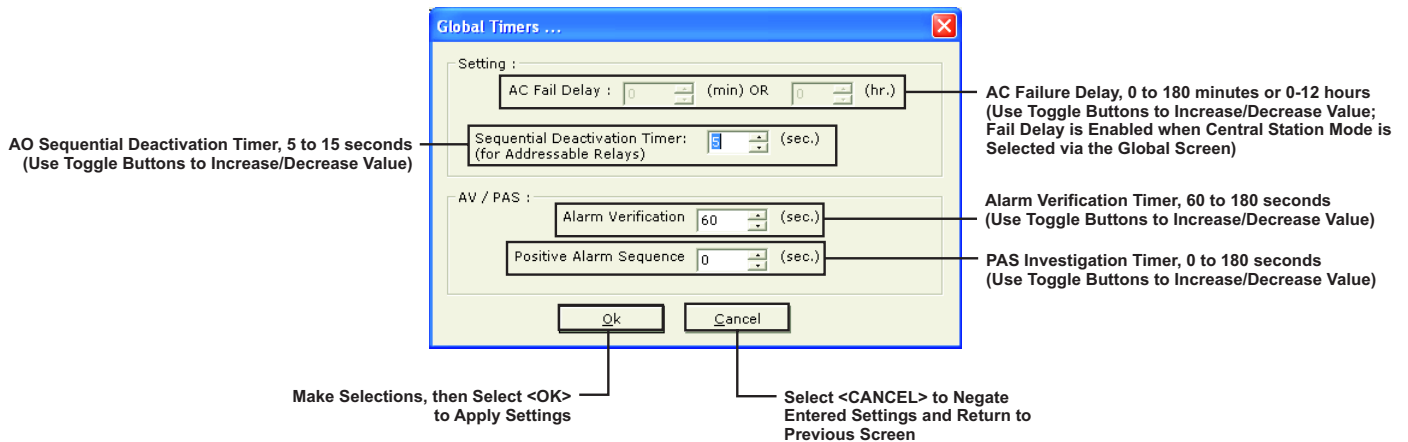   The off-premises transmission of an AC-power failure to a central station via the trouble relay can be delayed by selecting the "Central Station" option on the Global Tab. The delay period is programmable from 0 to 180 minutes or from 0 to 12 hours in one-unit increments.

- **Sequential Deactivation Timer.**

    A delay from 5 to 15 seconds can be inserted between successive deactivations of AOs configured for "Sequential Deactivation". Refer to Paragraph 2-3.2.

- **Alarm Verification Timer**

Note: Do not use alarm verification for special extinguishing system applications.

    The period of time (after an initial alarm report) that a smoke detector attempts to verify that the smoke signature at its location actually exceeds its alarm threshold can be programmed to confirm that the initial alarm report was valid. The alarm verification period is programmable from 60 to 180 seconds in one-second increments.

Note: Use the same global timers for all control units in a networked system.

- **Positive Alarm Sequence (PAS) Timer**

Note: Do not use PAS for special extinguishing system applications.

    The PAS investigation period can be programmed from 0 to 180 seconds in one-second increments. The initial PAS alarm report must be acknowledged within 15 seconds to activate the investigation period.

Note: Use the same global timers for all control units in a networked system.

| 2-8.4 | **General Alarm Outputs (GAO) List Screen** |

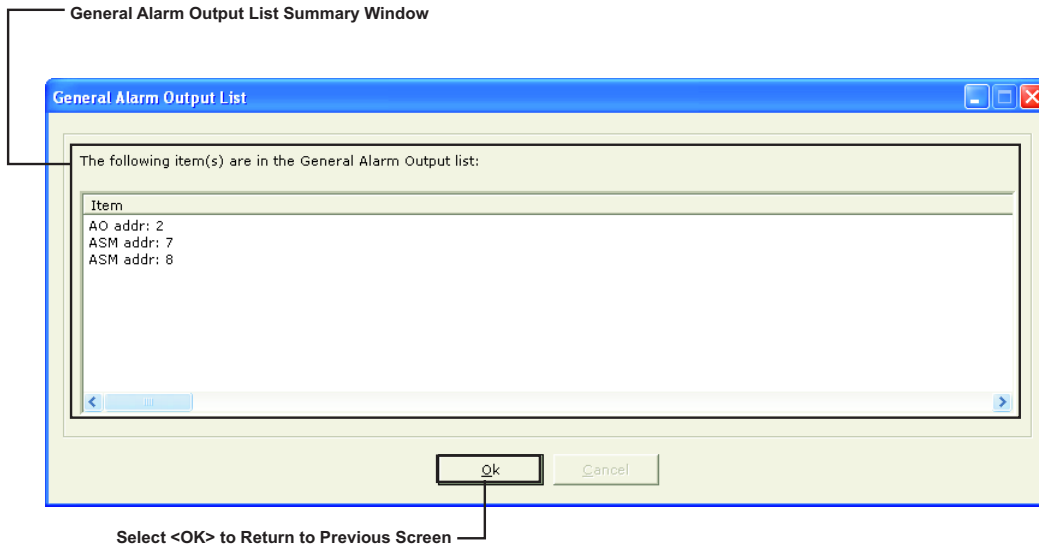The General Alarm Outputs (GAO) list can be viewed by selecting the **<GAO List>** button. Figure 2-42 displays.

Figure 2-42. Typical General Alarm Outputs List Screen

| 2-8.5 | **Isolation Macros** |

Two lists of initiating devices and/or output control devices/circuits can be created which can be isolated via a single menu selection. The list of inputs and/or outputs to be isolated are assigned to isolation macros that are created when either the "Macro 1" or "Macro 2" button is selected. The "Macro 1" button creates one list of isolation commands and the "Macro 2" button creates a second list that is independent of the first list. Each macro can process up to ten separate isolation commands. The specific isolation commands are executed when either the "Isolation Macro 1" or "Isolation Macro 2" menu option is selected. Refer to the FenwalNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001 for more information.

The isolation lists can include any of the following initiating devices, control modules or control unit based outputs individually or by address range:

- Automatic initiating devices
- Monitor modules
- Control modules
- Releasing circuits
- Notification-appliance circuits
- Combination notification appliance/releasing circuits
- Programmable relays
- HSSDs reporting via an IIM.
- Isolate the control unit from the network

Selecting the **<MACRO1>** button creates one list of isolation commands; selecting the **<MACRO2>** button creates a second list. Figure 2-43 displays.
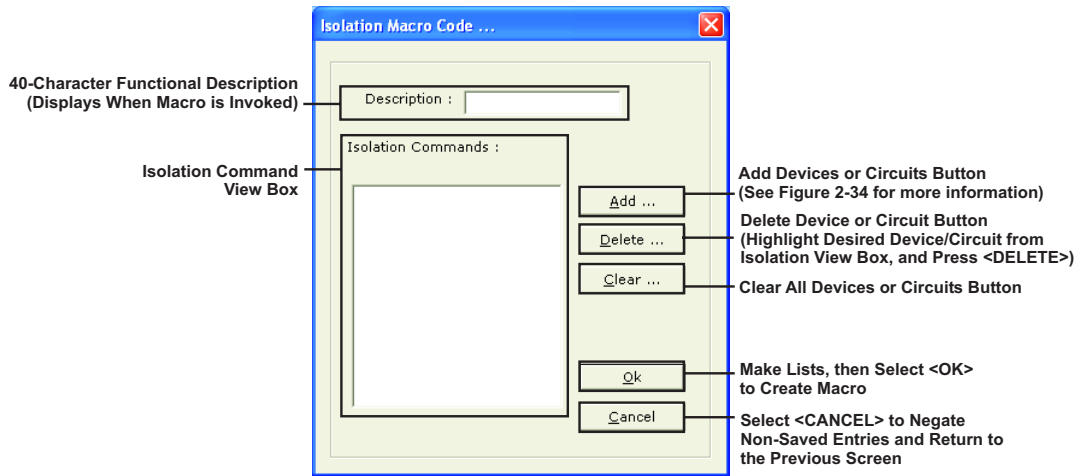
Figure 2-43. Typical MACRO Screen

1. Select the **<Add>** button. Choose the initiating devices and/or output devices/circuits from the list shown in Figure 2-44.
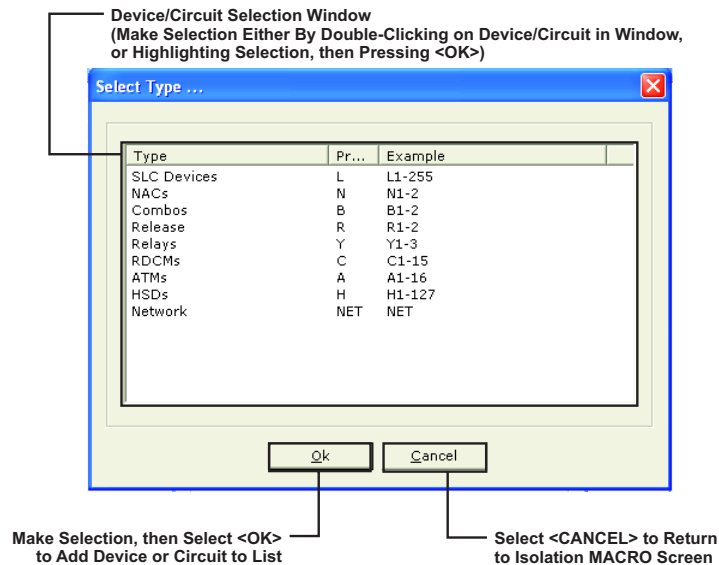
Figure 2-44. List of Selections for MACROs Screen

2. Select a device by either double-clicking on the device name or by highlighting the device name, and selecting **<OK>**. Figure 2-45 displays.
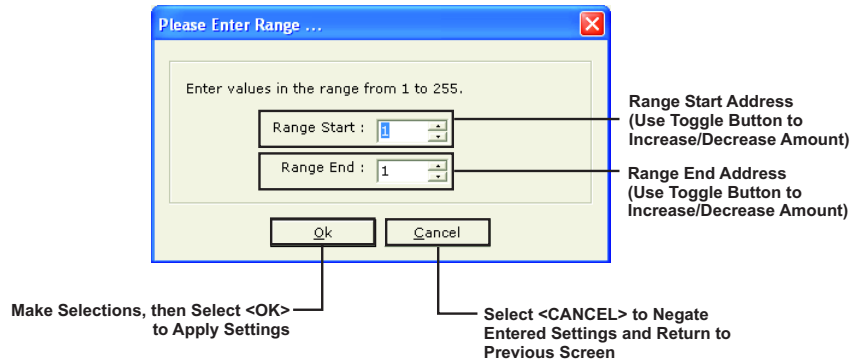
Figure 2-45. Device Range Definition for MACROs Screen

3. Enter the range of devices and/or circuits to be added. Select **<OK>** when complete.

2-8.6 Nightly Test Time

The Nightly Test Time screen sets the time that the control unit performs a daily test on all of the configured testable SLC devices (inputs).

Select the Nightly Test Time button on the Globals tab. Figure 2-46 displays.
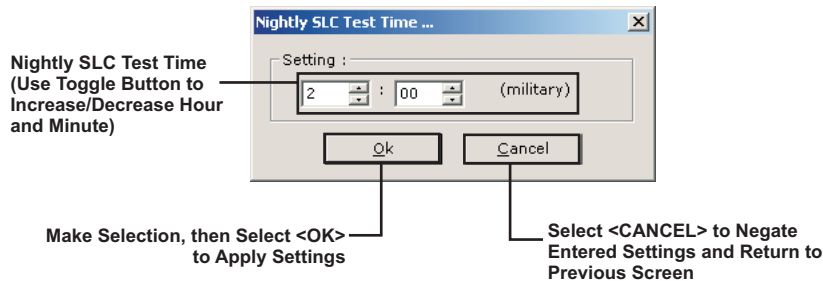
Figure 2-46. Nightly Test Time Screen

1. Using the toggle buttons, select the hour and minute for the Nightly SLC Test to be performed (military time format).

2. Select **<OK>** to assign the Nightly SLC Test time.

2-9 DAY/NIGHT/WEEKEND

Select "Day/Night/Weekend" to determine the times that smoke detectors configured for day/night/weekend operation adjusts alarm thresholds; Figure 2-47 displays:
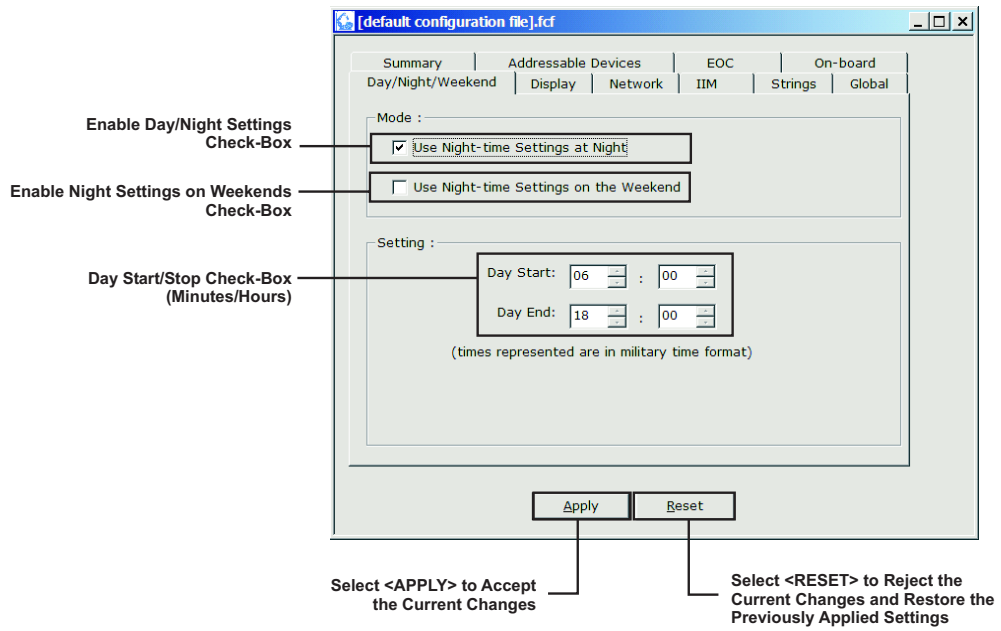
Figure 2-47. Day/Night Time Definition Tab

2-10   STRINGS (STRINGS TAB)

A string is an alphanumeric text output that is activated by an event output control (EOC) execution statement (refer to Chapter 3 for information on EOC). The text in the string can be up to 40 alphanumeric characters in length, and displays on the second line of the control unit's display in lieu of the normal event message that would ordinarily be displayed as a result of the system event. The string variable is placed on the output side of the EOC statement, like any other physical or virtual output.

String variables are defined in the Strings tab, as shown in Figure 2-48. To enter a string:

1. Double-click on the string variable name.
2. Enter the alphanumeric text in the screen that displays.
3. Select **<OK>** to assign the text to the string variable.
4. Enter the string in the EOC statement, as required. See Chapter 3 for more information on EOC statements.
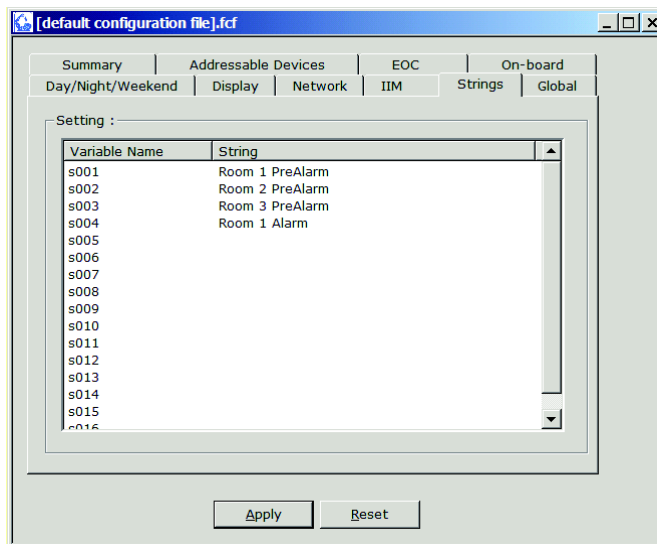
Figure 2-48. Strings Tab

The 16 possible strings are prioritized for display by the string's number (i.e., String #16 is the highest priority and String #1 is the lowest priority). The active string with the highest string number is the only string displayed on the second line of the display. A string becomes inactive via a subsequent "NOT" operator, via the subsequent clearing of the non-latching initiating condition that triggered it, or via a system reset.

The next highest priority string that is active is displayed whenever a currently-displayed string is deactivated by a subsequent EOC statement (by using NSx on the right-hand side of an EOC line), or by the clearing of the initiating condition that triggered it.

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CHAPTER 3
EVENT OUTPUT CONTROL (EOC)

3-1 INTRODUCTION

The procedures in Chapter 2 discussed defining the scope of a specific application and assigning operating characteristics and functionality to SLC-based initiating and control devices and to control unit based output circuits. Chapter 3 discusses how to create the operating sequence (i.e., the initiating point to output device/circuit relationships) for a FENWALNET 6000 system.

3-1.1 Event Output Control

Event Output Control (EOC) is the set of instructions that are be executed in response to point specific alarm, supervisory, or trouble events. The objective is to trigger physical outputs (i.e., notification appliance circuits, release circuits and control modules) as the result of one or more initiating event(s) in accordance with the approved sequence of operations.

The general form of an EOC instruction is "expression=designated outputs".

If the expression is True, or non-zero, then activate "designated outputs".

An expression can be a simple argument (see Paragraph 3-2.1) or an compound argument (see Paragraph 3-2.2).

3-2 CONSTRUCTING ARGUMENTS

The constituents (i.e., variables) of the "expression" are of two general types:

- Independent variables that consist of physical initiating devices (automatic detectors or monitor modules). The types of physical initiating devices that are supported were discussed in Chapter 2.

- Dependent variables (i.e., Counting Identifiers or State Variables) that assume values during program execution. Dependent variables are incremented or change state as the result of some prior independent variable activation. They are placeholders either for the arguments that incremented them or for the execution of a specific EOC command.

Table 3-1 summaries the types of initiating devices and their effects on the system's physical and virtual outputs.

Table 3-1. Initiating Devices

Initiating Device			Physical Outputs		Virtual Outputs	
Device Type	Event Created	Latching Initiating Device	Latching*	Non-Latching**	Counting Logical Identifier** (Ix)	State Variable* (Cx)
Ion. Det.	Pre-Alarm	No	No	Yes	Yes	Yes
Ion. Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
Ion. Det.	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
Photo. Det.	Pre-Alarm	No	No	Yes	Yes	Yes
Photo. Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
Photo. Det.	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
Heat Det.	Pre-Alarm	No	No	Yes	Yes	Yes
Heat Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes

Table 3-1. Initiating Devices

Initiating Device			Physical Outputs		Virtual Outputs	
Device Type	Event Created	Latching Initiating Device	Latching*	Non-Latching**	Counting Logical Identifier** (Ix)	State Variable* (Cx)
Heat Det.	Cycling	No	No	Yes	Yes	Yes
CPDI Duct Det.	Pre-Alarm	No	No	Yes	Yes	Yes
CPDI Duct Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
CPDI Duct Det.	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
PSDI Duct Det.	Pre-Alarm	No	No	Yes	Yes	Yes
PSDI Duct Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
PSDI Duct Det.	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
AIM (HSD L2)	Pre-Alarm	No	No	Yes	Yes	Yes
AIM (HSD L4)	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
AIM (HSD L4)	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
Manual Station	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
Manual Release	Alarm	Yes	Yes	No	Yes	Yes
Alarm Contact	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
Abort Station	Abort	No	No	Yes	Yes	Yes
Waterflow Switch	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
Supv. Switch	Supv.	Prog (Y/N)	No	Yes	Yes	Yes
Normal	None	No	No	Yes	Yes	Yes
Trouble	Trouble	No	No	Yes	Yes	Yes
AAM	Pre-Alarm	No	No	Yes	Yes	Yes
AAM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
AAM	Overheat.	No	No	Yes	Yes	Yes
HSD (L1) via IIM	Pre-Alarm	No	No	Yes	Yes	Yes
HSD (L2) via IIM	Pre-Alarm	No	No	Yes	Yes	Yes
HSD (L3) via IIM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
HSD (L4) via IIM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
* Does not track initiating devices. ** Tracks initiating devices.						

3-2.1   Simple Arguments

A simple argument consists of a single independent or dependent variable. The physical initiating devices are represented by their SLC address or IIM address. The designator "HSD" prefixes HSSD addresses when an IIM is used.

3-2.2   Compound Arguments

A compound argument consists of a combination of two or more simple arguments. Both independent and dependent variables can be combined in a compound argument.

The combining operators used to create compound arguments are shown in Table 3-2.

Table 3-2. Combining Operators for Initiating Arguments

Operator	Symbol
And	*
Or	+
THRU	#

Each simple argument component of a compound argument constructed with "OR" or "THRU" Operators is capable of causing execution (or re-execution) of a particular EOC instruction. The 'OR' and '#' operators actually perform addition operations with the result being the sum of all terms that are active. This type of EOC instruction is executable or re-executable until all the simple argument components become true if the initiating devices are programmed for latching operation. Virtual outputs are capable of triggering the activation of physical outputs in another EOC statement when their value is changed. They are also capable of continuously reactivating these outputs when their value subsequently changes again if the outputs have been deactivated or silenced.

All simple argument components of a compound argument constructed with "AND" Operators must be true for the compound argument to be true.

The truth or falsehood of a compound argument follows the rules ordinary Algebra. More than one type of combining operator can be used to construct a particular compound argument. The hierarchy for operator execution is as follows:

- "THRU" operators
- Compound arguments in parenthesis
- "NOT" operators
- "AND" operators
- "OR" operators

Note: The "THRU" operator is the most tightly bound, even more than parentheses (i.e., one cannot code 3#(…) or (…)#4 in an EOC line).

Compound arguments are evaluated sequentially from left to right on an EOC statement when all operators are of equal hierarchy.

3-2.2.1   "AND" OPERATOR

In previous versions of the control unit, the '*' "AND" operator was strictly a logical operator resulting in a TRUE (1) or FALSE (0) value.

The "AND" operator has been modified and enhanced to provide support for resounding. The result of the 'X*Y' operation shall be the value of the greater of the two factors as long as both factors are non-zero. If more than two factors are involved, the factors are read and processed from left to right. For example,

1#10=I1

20#30=I2

50#60=C3

I1*I2*C3=SG1,I4

If detector 1 activates, detectors 25 and 26 activate and device 52 activates, then SG1 turns ON and I4 is set to 2. I2 is the greatest of the 3 non-zero variables.

Subsequently if detector 5 alarms, only the outputs of line 1 are processed, and I1 is set to 2. The result of line 4 remains equal to 2, so SG1 does not reactivate once it has been silenced.

If an additional device from the range 50#60 activates, the C3 variable remains TRUE (equal to 1), so the right hand side of line 4 again does not get processed.

Should another detector from 1#10 or 20#30 alarm, then line 4 result, and I4, becomes 3 and SG1 re-activates if it had been silenced.

When there's no change in state on the left hand side of the equation, the right hand side does not get processed. In order to assure processing of every change of state, additional 'C' variables and extra lines of EOC are necessary.

The 'C' variables are limited to values of 0(FALSE) or 1(TRUE), while I variables are set to values representing the result of evaluating the left hand side. These concepts along with the new "AND" definition are used to provide support for resounding crossed-zone applications.

Refer to the following example, using non-latching initiating devices.

1. 1#10=I1,C1
2. 20#30=I2,C2
3. 50#60=I3,C3
4. NI1=NC1 $ necessary to set C1 to zero when I1 goes to zero
5. NI2=NC2 $ necessary to set C2 to zero when I2 goes to zero
6. NI3=NC3 $ necessary to set C3 to zero when I3 goes to zero
7. I1*C2*C3=SG1,I4
8. C1*I2*C3=SG1,I5
9. C1*C2*I3=SG1,I6

Since the C variables can only be 0 or 1, lines 7, 8 and 9 result in the value of I1, I2 and I3 respectively, when all three are non-zero. Therefore, any changes of state in the three ranges are processed and SG1 resounded whenever necessary.

3-3   OUTPUTS

An output can be a physical output or a virtual output.

3-3.1   Physical Outputs

Physical outputs can be any of the following types:

- **Control Unit-Based Circuits**. The types of outputs that are supported, with symbolic representations, are listed in Table 3-3.

Table 3-3. Control Unit-Based Outputs

Output Type	Symbolic Representation
Release Circuit No. 1	AR1
Release Circuit No. 2	AR2
NAC No. 1	SG1
NAC No. 2	SG2
Combo Number 1:	
Release Circuit	AR3
NAC	SG3
Combo Number 2:	
Release Circuit	AR4
NAC	SG4
Programmable Relay No. 1	RY1
Programmable Relay No. 2	RY2
Programmable Relay No. 3	RY3

- **SLC-Based Modules.** The types of modules that are supported are as follows:
    - Addressable Control Modules (AOs)
    - Addressable Signal Modules (ASMs)
    - Remote Releasing Modules (RRMs)

Note: Each SLC-based module is referenced by its signaling line circuit address.

- **Remote, ATM Series Driver Modules.** A specific ATM output is referenced as follows:

    AM*y:z*

    where:

    y is the module address, 1 to 16

    z is the specific output, 1 to 32.

Refer to Table 3-1 for how physical outputs track or do not track the activation states of their associated initiating devices.

3-3.2   Virtual Outputs

Virtual outputs consist of State Variable and Counting Identifiers. Counting Identifiers(Ix) follow the result of evaluating the left hand side of the EOC equation which can include being set to zero. Saved Variables (C) are zeroed ONLY at reset and system initialization or when a subsequent "NOT" operation is executed to reset them.

3-3.2.1   COUNTING IDENTIFIERS (IX)

A Counting Identifier, symbolized by Ix, is initially activated by the execution of a specific EOC statement. The Counting Identifier becomes a placeholder for the argument that activated it. It can then be used as a substitute for its triggering argument in a subsequent EOC statement to activate additional physical outputs or to operate on other dependent variables. It can also be used as a substitute for its triggering argument in an EOC function (see Paragraph 3-6). Counting Identifiers assume the initiating device type identities of the arguments that activated them and track the activation or non-activation states of their associated initiating device type arguments as shown in Table 3-1.

The values assigned to a Counting Identifier depend upon the type of argument that activated it. It assumes the value of a counter when it is associated with a compound argument constructed with "OR" or "THRU" Operators. It assumes the value of "One" ("TRUE) or "Zero" ("FALSE") when it is associated with a simple argument, with an argument constructed exclusively with Save State Variables (see Paragraph 3-3.2.2) or with an argument constructed exclusively with the Initiating Event Counting Function (see Paragraph 3-6.15).

Consider the following example of the use of a Counting Identifier as a substitute for a set of 100 alarm initiating devices addressed from 1 to 100, and therefore used as a counter:

$$1\#100=I1 \tag{3-1}$$

The value of I1 could range anywhere from 0 to 100 depending upon the number of concurrent and active alarm initiating events that occur within the set of 100 alarm initiating devices. Equation 3-1 represents a common application for a Counting Identifier where it triggers the initial activation and subsequent resounding of a notification appliance circuit via a statement like the following upon the receipt of one or more alarm initiating events:

$$I1=SG1 \tag{3-2}$$

Any subsequent alarm increments the Counting Identifier, which creates the ability to resound notification appliance circuit SG1 if silenced.

Now consider the following example of the use of a Counting Identifier as a substitute for the activation of two groups of alarm initiating devices, one in the address range 1 to 50 and the other in the address range 51 to 100:

$$1\#50*51\#100=I1 \tag{3-3}$$

The value of I1 shall be "zero"', "one", or more depending on how may detectors in the ranges of 1#50 and 51#100 are in alarm. This equation is not sufficient to handle resounding, please refer to section 3-2.2.1 for proper programming. Equation 3-3 represents a common application for a Counting Identifier where it triggers the activation of a Delay Function (see Paragraph 3-6.3 or Paragraph 3-6.4) for subsequent activation of outputs:

$$D(I1,30)=AR1 \tag{3-4}$$

The output AR1 is not activated by the Delay Function in Equation 3-4 if I1 becomes "Zero" prior to the expiration of the 30-second delay period. I1 returns to "Zero" if and when there are no longer detectors in alarm in the range 1#50 or the range 51#100.

It is good practice to use a separate Counting Identifier as a substitute for one and only one expression. A Counting Identifier being used as a counter and activated and incremented by multiple expressions is separately and independently incremented by each expression.

Increments for the Counting Identifier triggered by different expressions are not cumulative. A Counting Identifier's current value is determined by the value assigned to it on the most recently executed EOC command. Likewise, the truth or falsehood assigned to a Counting Identifier is the value assigned to it on the most recently executed EOC command. It is a dangerous practice to use a Counting Identifier as a logical variable for two or more expressions, particularly where fire extinguishing systems and critical process control interlocks are concerned.

All Counting Identifiers are re-initialized either to zero or "FALSE" upon a system reset.

3-3.2.2   STATE VARIABLE (CX)

A State Variable, symbolized by Cx, is a binary, true or false variable that is initialized to the "FALSE" (equals 0) value upon EOC file upload. It can be subsequently set to the "TRUE" (equals 1) value by the execution of a particular EOC statement. Like the Counting Identifier, the State Variable becomes a placeholder for the argument that activated it. Accordingly, it can then be used as a substitute for its triggering argument in a subsequent EOC statement to activate additional physical outputs or to operate on other dependent variables. It can also be used as a substitute for its triggering argument in an EOC function (see Paragraph 3-6).

State Variables assume the initiating device type identities of the arguments that activated them, but do not track the activation or non-activation states of their associated initiating device type arguments as shown in Table 3-1. A State Variable, once activated and assigned a "TRUE" value, can only be re-assigned to its initial "FALSE" value by the subsequent execution of another EOC statement that re-initializes it to "FALSE" via the "NOT" Operator (see Paragraph 3-5) or a successful system reset operation.

Do not use State Variables as counters to be associated with a compound argument constructed with "OR" or "THRU" Operators. They do not count, but only become "TRUE" (1).

Consider the following example of the use of a State Variable as a substitute for the activation of two alarm initiating devices anywhere in the address range 1 to 100 (see Paragraph 3-6.15 for a description of the Initiating Event Counting Function):

$$(1\#100)>1=C1 \tag{3-5}$$

The value of C1 is either "TRUE" or "FALSE" depending upon the truth or falsehood of the left hand side of Equation 3-5. The equation represents a common application for a State Variable where it triggers the activation of a Delay Function (see Paragraph 3-6.3 or Paragraph 3-6.4) for subsequent activation of outputs:

$$D(C1,30)=AR1 \tag{3-6}$$

The output AR1 is activated unconditionally by the Delay Function in Equation 3-6 unless the State Variable C1 is re-initialized to "FALSE" by the execution of a subsequent EOC statement with an output "NC1" prior to the expiration of the 30-second delay period. See Paragraph 3-5 for a description of the "NOT" Operator.

All State Variables are re-initialized to "FALSE" upon a system reset.

3-4   MULTIPLE OUTPUTS

A simple output consists of the activation or de-activation of one physical or virtual output. A compound output consists of the activation or de-activation (or some combination of both operations) of two or more physical or virtual outputs.

The operators used to create compound outputs are listed in Table 3-4.

Table 3-4. Combining Operators for Outputs

Operator	Symbol
And	,
THRU	#

Outputs activated by alarm events latch into the activated state regardless of whether the initiating device is configured for latching or Non-Latching operation, except when they are programmed for thermal cycling or time limit cutout operation. Outputs activated by either supervisory or trouble events follow the activation state of the initiating device or fault condition that activated them (i.e., they de-activate when the initiating device restores or the fault condition is corrected).

Exception: Cyclical alarm outputs can only be activated for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.6.

3-5   THE "NOT" OPERATOR

Physical outputs can be deactivated with the "NOT" (N) Operator triggered subsequently by the execution of another EOC statement. An activated (i.e., set to "TRUE") State Variable (Cx) can also be de-activated (i.e., re-initialized to "FALSE") by the "NOT" (N) Operator. A Counting Identifier (Ix), when used as a counter, can only be incremented in an EOC statement. It can never decrement, and therefore cannot be used with the "NOT" Operator as a negated virtual output.

The "NOT" Operator can be used in an argument where it checks for the absence of an initiating signal from a physical device or for the falsehood of a Counting Identifier (Ix) or a State Variable (Cx).

3-6   FUNCTIONS

An EOC Function activates outputs for a particular set of initiating conditions, delays execution of outputs for a certain period of time, modifies automatic initiating device thresholds, or alters outputs in a specific way when an argument activates. The following EOC functions are available:

3-6.1   Alarm Threshold Adjustment Function (Smoke Detectors Only)

The Alarm Threshold Adjustment Function changes the alarm thresholds of one group (*arg2*) of smoke detectors as the result of an alarm signal from any smoke detector in a second group (*exp1*) of detectors. The format of this function is:

> *exp1=x.y=Aarg2*

> > where:

> > *exp1* is an alarm initiating event or a combination of alarm initiating events

> > *x.y* is the new alarm threshold in percent per foot obscuration

> > *arg2* is the range of smoke detectors whose alarm thresholds are to be adjusted

The adjusted alarm thresholds revert to programmed, standby thresholds upon system reset, or when *exp1* is a Non-Latching initiating device(s) or a Counting Identifier that subsequently goes false.

3-6.2 **Pre-Alarm Threshold Adjustment Function (Smoke Detectors Only)**

The Pre-Alarm Threshold Adjustment Function changes the pre-alarm thresholds of one group (*arg2*) of smoke detectors as the result of a pre-alarm signal from any smoke detector in a second group (*exp1*) of detectors. The format of this function is:

exp1=x.y=P*arg2*

where:

exp1 is a pre-alarm initiating event or a combination of pre-alarm initiating events

x.y is the new pre-alarm threshold in percent-per-foot obscuration

arg2 is the range of smoke detectors whose pre-alarm thresholds are to be adjusted

The adjusted pre-alarm thresholds revert to programmed, standby thresholds upon system reset or when *exp1* subsequently goes false.

3-6.3 **Delayed Output Activation Function**

The Delayed Output Activation Function delays the activation of *outputs* being activated by an alarm initiating condition (*exp*) for a specified period of time (*delay*). The format of this function is:

D(exp,delay)= outputs   (non-repeatable)

where:

exp is an initiating event or a combination of initiating events

delay is the delay in seconds before outputs are activated

Note: The control unit automatically adds 3 seconds to the period of time specified in the *delay* parameter.

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The Delayed Output Activation Function tracks the validity of the expression (*exp*) and interrupt its countdown, reset the delay period, and perform no actions if the argument becomes either "Zero" (in the case of a Counting Identifier) or "FALSE" (in the case of a State Variable or of an explicit argument).

An alarm argument latches the physical outputs associated with the Delayed Output Activation Function when the time delay period expires. Virtual Outputs and all other physical outputs not activated by alarm initiating events track the validity of the expression, and either are "Zero" or "FALSE" in the case of Virtual Outputs or de-energize in the case of physical outputs if the argument becomes either non-incremental (e.g., in the case of tracking non-latching supervisory events) or "FALSE" (e.g., in the case of an explicit simple or compound trouble argument).

3-6.4 **Delayed Output Activation Function (with Abort Interruption)**

The Delayed Output Activation Function with Abort Interruption delays the activation of *outputs* being activated by an alarm initiating condition (*exp*) for a specified period of time (*delay*). The activation of any abort switch (*abort addresses*) interrupts the countdown delay and prevent outputs activation while the abort switch is active (see Paragraph 2-3.11.1 for exception when IRI Abort Option is selected). The format of this function is:

D(exp, delay, abort addresses)=outputs

where:

exp is an alarm initiating event or a combination of alarm initiating events

delay is the delay in seconds before outputs are activated

Note: The control unit automatically adds 3 seconds to the period of time specified in the *delay* parameter.

abort addresses is the comma delimited list of abort switch addresses

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The Delayed Output Activation Function (with Abort Interruption) tracks the validity of the expression (*exp*) and interrupts its countdown, reset the delay period, and perform no actions if the expression becomes "FALSE".

The activation of any abort switch in the abort switch list prior to the expiration of the countdown timer interrupts the countdown of the timer in accordance with the operating characteristics of the abort switch. Refer to Paragraph 2-3.11.1 for abort switch operating instructions.

Note: Countdown timer interruption is not allowed after the countdown timer has begun to count down if the IRI option is selected.

All outputs associated with the Delayed Output Activation Function (with Abort Interruption) latch upon expiration of the time delay period.

3-6.5 Trouble Function for Initiating Devices

The Trouble Function for Initiating Devices activates *outputs* when a trouble condition occurs as defined in *exp*.

T(exp)=outputs

where:

exp is a trouble report from an initiating device or a combination of trouble reports from initiating devices

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The Trouble Function for Initiating Devices tracks the validity of the expression (*exp*) and de-energizes its associated outputs if the expression becomes "FALSE".

3-6.6 General Trouble Function

The General Trouble Function activates *outputs* when any system trouble condition occurs.

GT=outputs

where:

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The General Trouble Function tracks the Trouble State of the control unit and de-energizes its associated outputs when the Trouble State clears.

3-6.7 General Supervisory Function

The General Supervisory Function activates *outputs* when any system supervisory condition occurs.

GS=outputs

where:

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The General Supervisory Function tracks the Supervisory State of the control unit and de-energizes its associated outputs when the Supervisory State clears.

3-6.8   **Pre-Alarm Function for Initiating Devices**

The Pre-Alarm Function for Initiating Devices activates *outputs* when a pre-alarm condition occurs as defined in *exp*.

     P(exp)=outputs

         where:

           exp is an pre-alarm initiating event or a combination of pre-alarm initiating events.

           (These are Level-2 Pre-Alarm events for AnaLASER IIs reporting via the IIM.)

           outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

The Pre-Alarm Function for Initiating Devices tracks the validity of the expression (*exp*) and de-energizes its associated outputs if the expression becomes "FALSE".

3-6.9   **Warning Function for AnaLASER IIs reporting via the IIM**

The Warning Function for AnaLASER IIs reporting via the IIM activates *outputs* when a Level-1 Pre-Alarm condition occurs as defined in *arg*.

     W(arg)=outputs

         where:

           arg is an AnaLASER II Level-1 Pre-Alarm initiating event or a combination of AnaLASER II Level-1 Pre-Alarm initiating events

           outputs are SLC-based modules, control unit-based circuits or virtual outputs.

The Warning Function for AnaLASER IIs reporting via the IIM tracks the validity of the argument (*arg*) and de-energizes its associated outputs if the argument becomes either non-incremental (e.g, in the case of tracking warning signals from HSSDs via a counting identifier) or "FALSE" (e.g., in the case of an explicit compound argument representing an HSSD warning event).

3-6.10   **Level-2 Alarm Function for AnaLASER IIs reporting via the IIM**

The Level-2 Alarm Function for AnaLASER IIs reporting via the IIM activates *outputs* when a Level-2 Alarm condition occurs as defined in *arg*.

     X(arg)=outputs

         where:

           arg is an AnaLASER II Level-2 Alarm initiating event or a combination of AnaLASER II Level-2 Alarm initiating events

           outputs are SLC-based modules, control unit-based circuits or virtual outputs.

The Level-2 Alarm Function for AnaLASER IIs reporting via the IIM latches the physical outputs associated it. Virtual outputs track the validity of the argument and is non-incremental or "FALSE" in the case of Non-Latching Identifiers if the argument becomes either non-incremental (e.g., in the case of tracking non-latching HSSDs) or "FALSE" (e.g., in the case of an explicit simple or compound argument or a Non-Latching Identifier substituting for a non-latching, compound HSSD Level-2 alarm event).

3-6.11   **Notification Appliance Pattern Change Function to 60 BPM**

This function changes a NAC's signal pattern to 60 beats per minute.

SGx/60

where:

SGx is a control unit-based notification appliance circuit.

An alarm event or an irrevocable event such as the expiration of a delayed-alarm output activation function (with abort interruption) latches the associated notification appliance circuit to 60 BPM via the Notification Appliance Pattern Change Function. The NAC in all other cases tracks the validity of the argument and de-energizes if the argument becomes either non-incremental (e.g., in the case of tracking non-latching supervisory events) or "FALSE" (e.g., in the case of an explicit simple or compound argument or a Virtual Output substituting for a compound trouble argument).

Exception: Cyclical alarm outputs activate only for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.6.

Note: Do Not use this function for Intelligent NACs.

3-6.12   **Notification Appliance Pattern Change Function to 120 BPM**

This function changes a NAC's signal pattern to 120 beats per minute.

SGx/120

where:

SGx is a control unit-based notification appliance circuit.

An alarm event or an irrevocable event such as the expiration of a delayed-alarm output activation function (with abort interruption) latches the associated notification appliance circuit to 120 BPM via the Notification Appliance Pattern Change Function. The NAC in all other cases tracks the validity of the argument and de-energizes if the argument becomes either non-incremental (e.g., in the case of tracking non-latching supervisory events) or "FALSE" (e.g., in the case of an explicit simple or compound argument or a Virtual Output substituting for a compound trouble argument).

Exception: Cyclical alarm outputs are activated only for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.6.

Note: Do Not use this function for Intelligent NACs.

3-6.13   **Notification Appliance Pattern Change Function to Temporal Coding**

This function changes a NAC's signal pattern to the temporal code.

SGx/T

where:

SGx is a control unit-based notification appliance circuit.

An alarm event or an irrevocable event such as the expiration of a delayed-alarm output activation function (with abort interruption) latches the associated notification appliance circuit to temporal coding via the Notification Appliance Pattern Change Function. The NAC in all other cases tracks the validity of the argument and de-energizes if the argument becomes either non-incremental (e.g., in the case of tracking non-latching supervisory events) or "FALSE" (e.g., in the case of an explicit simple or compound argument or a Virtual Output substituting for a compound trouble argument).

Exception: Cyclical alarm outputs are activated only for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.6.

Note: Do Not use this function for Intelligent NACs.

3-6.14   Notification Appliance Pattern Change Function to Continuous Output

This function changes a NAC's signal pattern to a steady (i.e., non-coded) output.

SGx/C

where:

SGx is a control unit-based notification appliance circuit.

An alarm event or an irrevocable event such as the expiration of a delayed-alarm output activation function (with abort interruption) latches the associated notification appliance circuit to continuous output via the Notification Appliance Pattern Change Function. The NAC in all other cases tracks the validity of the argument and de-energize if the argument becomes either non-incremental (e.g., in the case of tracking non-latching supervisory events) or "FALSE" (e.g., in the case of an explicit simple or compound argument or a Virtual Output substituting for a compound trouble argument).

Exception: Cyclical alarm outputs are activated only for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.6.

Note: Do Not use this function for Intelligent NACs.

3-6.15   Initiating Event Counting Function

A special EOC Function is the Counting Function for Initiating Devices and Counting Variables ($>n$) whose general form is illustrated below. Outputs activate when the number of single or combinations of alarm initiating events as defined in *exp* exceeds *n*.

(exp)>n=outputs

where:

exp is an initiating event, a combination of initiating events or a virtual output.

n is the number of initiating events required to activate the outputs.

outputs are SLC-based modules, control unit-based circuits, a string or virtual outputs.

Note: The above initiating expression, i.e., (*exp*)>*n*, can be used with other simple arguments and the "OR" and "AND" Operators discussed in Paragraph 3-2.2 to create compound arguments. It can also be used as all or part of the arguments described in Paragraph 3-6.1 through Paragraph 3-6.5. Refer to Table 3-5 for special requirements when creating compound arguments with the Initiating Event Counting Function.

An alarm argument latches the physical outputs associated with the Initiating Event Counting Function when the designated count is exceeded.

3-7   CONSTRUCTING ARGUMENTS FOR INITIATING EVENTS FROM REMOTE, NETWORKED CONTROL UNITS

Arguments that consist of initiating events from remote, networked control units must be prefixed with the letter F, the network node number, and a colon (i.e., :).

3-7.1   Remote-Node Simple Arguments

A remote-node simple argument consists of the network-node prefix and the three-digit SLC or HSSD address of the initiating device on the remote node. For example, a simple argument using the initiating device at Address 21 on Node 3 would be referenced in any other node as follows:

- F3:021

    The designator "HSD" prefixes HSSD addresses when an IIM is used for the remote node.

3-7.2   Remote-Node Compound Arguments

A remote-node compound argument consists of a combination of two or more simple arguments. However, there is one instance where it is not necessary to prefix all the simple arguments with the letter F, the network node number, and a colon. The "THRU" Combining Operator should be used as follows to reference all initiating points at addresses 1 through 20 on Node 2 in any other node:

- F2:1#20.

All other compound arguments that reference remote-node initiating devices require that all the remote-node initiating devices be prefixed with the letter F, the network node number, and a colon. For example, references to initiating points 8, 12, and 15 on Node 1 would be entered in any other node as follows:

- F1:8+F1:12+F1:15.
- F1:8*F1:12*F1:15.

A complete summary of EOC operators and functions, with specific examples of usage, is presented in Table 3-5.

3-7.3   Remote State Variable (Fy:Cx)

The Cx State Variables described above can be used across networked control units. The proper usage of this feature is an operator 'Fy:Cx', where 'y' is a valid node number and 'x' is a valid 'C' variable number used on the 'y' node. These network state variables are processed the same way non-networked state variables are processed by the control unit. Whenever the state variable changes on the originating node, a network message is generated with the new value, "TRUE" or "FALSE", of the variable. When control units receive the C variable network messages, the local EOC is processed.

There is no verification between control unit configurations, so it is imperative that the EOC programs for different nodes sharing state variables are manually and thoroughly reviewed to be sure there are no errors.

'Fy:Cx' cannot be used on the right hand side of EOC equations. Control units cannot change state variables originating on other nodes. Networked state variables are read only.

Table 3-5. EOC Operators and Functions

Operator or Function	Symbol or General Form	Typical Examples	Description
"AND" for Initiating Devices and/or Initiating Conditions	* (i.e., "multiplication" symbol)	1*3	1 and 3 **Note:** Arguments may be enclosed within parentheses if used with other operators (e.g., "+" or "#") in a compound conditional activation statement. Arguments in parenthesis are evaluated first. For example: (1*3)+10=SG1 This statement translates to "Turn on SG1 if 1 and 3 activate or if 10 activates".
"OR" for Initiating Devices and/or Initiating Conditions	+ (i.e., "addition" symbol)	10+12	10 or 12 **Note:** Arguments may be enclosed within parentheses if used with other operators (e.g., "*" or "#") in a compound conditional activation statement. Arguments in parenthesis are evaluated first. For example: (1+3)*10=SG1 This statement translates to "Turn on SG1 if 1 or 3 activates and if 10 also activates".
"THRU" for Initiating Devices, Counting Identifiers and Outputs	# (i.e., "pound" symbol)	1#20 SG1#SG4	Any initiating device 1 through 20. All outputs SG1 through SG4. **Note:** Arguments for initiating devices may be enclosed within parentheses if used with other operators (e.g., "*" or "+") in a compound conditional activation statement. Arguments in parenthesis are evaluated first. For example: (1#20)+50=SG1,SG4 This statement translates to "Turn on SG1 and SG4 if any address 1 through 20 activates or if address 50 activates".
Execution	= (i.e., "equal" symbol)	45=SG1	Turn on SG1 if initiating device 45 activates.
"AND" for Outputs	, (i.e., comma)	4=AR1,SG1	Turn on AR1 and SG1 if initiating device 4 activates.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Alarm Threshold Adjustment (smoke detectors only)	*exp1=x.y=Aarg2* where: *exp1* is an alarm initiating event or combination of alarm initiating events *x.y* is the new alarm threshold for each detector in *arg2*. *arg2* is the range of smoke detectors whose alarm thresholds are to be adjusted.	1#20=1.0=A21#40	Change the alarm threshold to 1.0% per foot for each detector in the address range 21 through 40 if any detector in the address range 1 through 20 reports an alarm. **Note:** The alarm initiating condition (i.e., *exp1*) and the adjusted smoke detector range (i.e., *arg2*) can be any valid simple or compound arguments using multiple operators or types of operators. Commas are required to delimit the simple or compound outputs for alarm threshold adjustment. For example: 1+10#20=1.0=A2,1.0=A21#30 This statement translates to "Change the alarm threshold to 1.0% per foot for the detector at address 2 and for each detector in the address range 21 through 30 if the detector at address 1 or any detector in the address range 10 through 20 reports an alarm".
Delayed Output Activation	*D(exp,delay)= outputs* where: *exp* is an initiating event or combination of initiating events *delay* is the delay is seconds before outputs are activated (max. 300 seconds) *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	D(2*3,30)=RY1	Turn on RY1 after a 30-second delay if both initiating devices 2 and 3 activate. **Note:** Parentheses as shown are required. The initiating condition (i.e., *exp*) for the delay operator can be any valid simple or compound argument using one or more operator types such as "+", "#", or ">n". EOC continuously loops back to the initial program statement and rerun entirely until the last activated delayed output activation statement has successfully executed.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Counting Identifier (Max. 255 identifiers)	*Ix* where: *x* is any number from 1 to 255	5#10=I1 I1=RY1,RY3	Counting Identifier I1 increments its current value and cause execution or re-execution of any subsequent statement using it as a conditional input trigger if any initiating device 5 through 10 activates. Counting Identifiers must be assigned to specific initiating expressions before they can trigger outputs in subsequent execution statements. Relay 1 and Relay 3 activate if any initiating device in the address range 5 to 10 activates. **Note:** Use one Counting Identifier for each unique initiating expression. Counting Identifiers cannot be used with the NOT Operator on the output side of an EOC statement.
NOT	N	1*N2=SG1 (1) 5=NSG1,SG4 (2)	Checks for the absence of an initiating signal in a conditional execution statement as in Example (1). Turns off previously activated outputs in a conditional execution statement as in Example (2). **Note:** The negated initiating condition can be any valid simple or compound argument using multiple operators or types of operators. Parentheses are required to delimit the argument. For example on the left input side: N(1+5) is equivalent to N1+N5.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Pre-Alarm Threshold Adjustment (smoke detectors only)	*exp1=x.y=Parg2* where: *exp1* is a pre-alarm initiating event or combination of pre-alarm initiating events *x.y* is the new pre-alarm threshold for each detector in *arg2* *arg2* is the range of smoke detectors whose pre-alarm thresholds are to be adjusted	1#20=1.0=P21#40	Change the pre-alarm threshold to 1.0% per foot for each detector in the address range 21 through 40 if any detector in the address range 1 through 20 reports a pre-alarm condition. **Note:** The initiating condition (i.e., *exp1*) and the adjusted smoke detector range (i.e., *arg2*) can be any valid expression using multiple operators or types of operators. Commas are required to delimit the simple or compound outputs for pre-alarm threshold adjustment. For example: 1+10#20=1.0=P2,1.0=P21#30 This statement translates to "Change the pre-alarm threshold to 1.0% per foot for the detector at address 2 and for each detector in the address range 21 through 30 if the detector at address 1 or any detector in the address range 10 through 20 reports a pre-alarm condition".
State Variable (Max. 255 Variables)	*Cx* where: *x* is any number from 1 to 255	5#10=C1 C1=RY1,RY3,NC1	State Variable C1 is "TRUE" and causes execution of any subsequent statement using it as a conditional input trigger if any initiating device 5 through 10 activates. All State Variables are initially "FALSE" until changed to "TRUE" by the execution of a program statement. A State Variable can be re-initialized to "FALSE" by the NOT Operator during the execution of a subsequent program statement. Relays 1 and 3 activate and C1 is re-initialized to "FALSE" in this example. **Note:** Use one State Variable for each unique system state condition.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Delayed Output Activation (with Abort Interruption)	*D(exp,delay,abort addresses)=outputs* where: *exp* is an alarm initiating event or a combination of alarm initiating events *delay* is the delay is seconds before outputs are activated (max. 300 seconds) *addresses* is the comma delimited list of abort switch addresses (including remote) *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	D(2*3,30,9,10)= AR1,SG1	Turn on AR1 and SG1 after a 30-second delay if both initiating devices 2 and 3 activate. Interrupt the countdown if either 9 or 10 activate before the expiration of the time delay. **Note:** Parentheses as shown are required. Counting Identifiers, State Variables and Saved Incrementing Variables can be used for the delay function's initiating condition. The initiating condition (i.e., *exp*) for the delay function can be a compound argument using the "+", "#", or ">n" Operators. Do not use the "+" or "#" Operators in the Abort Field. EOC continuously loops back to the initial program statement and rerun entirely until the last activated delayed output activation statement has successfully executed.
Counting Zone for Initiating Devices	*(exp)>n=outputs* where: *exp* is an initiating event or a combination of initiating events *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs N is the threshold above which the function activates.	(5#15)>1=SG1	Turn on SG1 if more than one of the alarm initiating devices in the address range 5 through 15 activates. **Note:** Parentheses as shown are required. The alarm initiating condition (i.e., *exp*) for the Counting Zone Function can be any valid simple or compound argument using one or more operator types such as "+" or "*". The Counting Zone Function can be combined with other operators (e.g., "+" or "#") to create a compound conditional activation statement. For example: I1+(5#15)>1=AR1 Counting Zone operations should be enclosed in parenthesis, for clarity, but it is not necessary. For example: ((5#15)>1)+I1=AR1 The above statements are equivalent, and translate to "Turn on AR1 if Counting Identifier I1 becomes "TRUE" or if any two initiating devices in the address range 5 through 15 activate".

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Notification Appliance Pattern Change to 60 BPM	*SGx/60* where: *SGx* is a control unit-based notification appliance circuit.	1#20=SG1/60	Turn on SG1 with a 60 BPM pattern (and override the current pattern, if activated) when any device in the address range 1 through 20 activates. **Note:** Do Not use this function for Intelligent NACs.
Notification Appliance Pattern Change to 120 BPM	*SGx/120* where: *SGx* is a control unit-based notification appliance circuit.	1#20=SG1/120	Turn on SG1 with a 120 BPM pattern (and override the current pattern, if activated) when any device in the address range 1 through 20 activates. **Note:** Do Not use this function for Intelligent NACs.
Notification Appliance Pattern Change to Temporal Coding	*SGx/T* where: *SGx* is a control unit-based notification appliance circuit.	1#20=SG1/T	Turn on SG1 with the temporal pattern (and override the current pattern, if activated) when any device in the address range 1 through 20 activates. **Note:** Do Not use this function for Intelligent NACs
Notification Appliance Pattern Change to Continuous Output	*SGx/C* where: *SGx* is a control unit-based notification appliance circuit.	1#20=SG1/C	Turn on SG1 with a continuous output (and override the current pattern, if activated) when any device in the address range 1 through 20 activates. **Note:** Do Not use this function for Intelligent NACs
Trouble for Initiating Devices	*T(exp)=outputs* where: *exp* is a trouble report or a combination of trouble reports from initiating devices *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	T(1#20)=100	Activate Addressable Output (AO) 100 if any initiating device in the address range 1 through 20 issues a trouble report. **Note:** Parentheses as shown are required. The initiating condition (i.e., *exp*) for the Trouble Operator can be any valid simple or compound argument using one or more operator types such as "+", "#", or "*" Do not use the Trouble for Initiating Devices Function for an AI Monitor Module programmed as a trouble initiating device.
General Trouble	*GT=outputs* where: *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	GT=100	Activate Addressable Output (AO) 100 if any system trouble event occurs.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
General Supervisory	*GS=outputs* where: *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	GS=100	Activate Addressable Output (AO) 100 if any system supervisory event occurs.
Pre-Alarm	*P(exp)=outputs* where: *exp* is a pre-alarm initiating event or a combination of pre-alarm initiating events *outputs* are SLC-based modules, control unit-based circuits, a string or virtual outputs	P(1#20)=SG1	Activate SG1 if any initiating device in the address range 1 through 20 issues a pre-alarm report. **Note:** Parentheses as shown are required. The initiating condition (i.e., *exp1*) for the Pre-Alarm Function can be any valid simple or compound argument using one or more operator types such as "+", "#", or "*".
Mapping a Single Annunciator	AM*x:y*	GT=AM2:3 GS=NAM16:32	Annunciator circuit #3 on ATM module #2 becomes active when the General Trouble activates. Annunciator circuit #32 on ATM module #16 deactivates when the General Supervisory activates.
Mapping Annunciators	MAP *list=* AM*w:x*#AM*y:z*	MAP C2,GT,1#3=AM2:30#AM3:2$ maps C2 to AM2:30, GT to AM2:31, 1 to AM2:32, 2 to AM3:1, and 3 to AM3:2	These mapping lines would normally be at the end of an EOC program, but could appear anywhere, especially if one wanted to find out the intermediate value of a Counting Identifier or State Variable (possibly for EOC debugging purposes). Single annunicator setting continues to be done as before.
Warning for AnaLASER IIs Reporting via IIM.	*W(arg)=outputs* where: *arg* is an AnaLASER II Level-1 Pre-Alarm initiating event or a combination of AnaLASER II Level-1 pre-alarm initiating events *outputs* are SLC-based modules, control unit-based circuits or virtual outputs	W(HSD1#HSD5)=SG1	Activate SG1 if any AnaLASER II in the address range 1 through 5 issues a warning report. This is a Pre-Alarm Level 1 for AnaLASER IIs). **Note:** Parentheses as shown are required. The initiating condition (i.e., *arg*) for the Warning Function can be any valid simple or compound argument using one or more operator types such as "+", "#", or "*".

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Alarm Level 2 for AnaLASER IIs Reporting via IIM.	*X(arg)=outputs* where: *arg* is an AnaLASER II Level-2 Alarm initiating event or a combination of AnaLASER II Level-2 Alarm initiating events *outputs* are SLC-based modules, control unit-based circuits or virtual outputs	X(HSD1#HSD5)=SG1	Activate SG1 if any AnaLASER II in the address range 1 through 5 issues a high-level-alarm report. This is an Alarm Level 2 for AnaLASER IIs). **Note:** Parentheses as shown are required. The initiating condition (i.e., *arg*) for the Level-2 Alarm Function can be any valid simple or compound argument using one or more operator types such as "+", "#", or "*".
Remote Control Unit Initiating Event	*Fx:arg=outputs* where: *x* is the remote control unit node number from 1 to 32 *arg* is an alarm-initiating event or a combination of alarm-initiating events from the remote control unit of the following generalized types: start address#end address or, The "OR" Operator (+) cannot be used to construct a compound argument as shown above. The "OR" Operator creates separate terms that must be prefixed with Fx:. *outputs* are outputs activated by the F5:001#050=SG1 F3:007*010=AR1 Control unit that received the remote initiating event(s)	F5:001#050=SG1 F3:007*010=AR1	Activate SG1 if any initiating device in the address range 1 through 50 on Node No. 5 issues an alarm report. Note: Do not use the parentheses to reference a remote control unit initiating event or compound events are being "anded" with initiating devices or an identifier in the local control unit. (F1:5#15)*I1=AR1 The above statement translates to "Turn on AR1 if Non-Latching Identifier I1 in the local system increments and if any initiating device in the address range 5 through 15 on Node No. 1 activates".

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Networked Saved Stae Variable (Max. 255 Variables for each node)	Fy:Cx Where: *x* is any number from 1 to 255 and *y* is any number from 1 to 32	F15:C1=RY1,RY3	If the State Variable C1 defined on node 15 becomes "TRUE", then RY1 and RY2 shall activate. **Note**: A networked State Variable cannot be changed and as such cannot be used on the right hand side of EOC equations.
Network General Supervisory	Fy:GS	F8:GS = S2	
Network General Trouble	Fy:GT	F9: GT = SG1	
Comment	$	$ General Alarm Condition or (any of the above) $ comment	Used to indicate a non-operational program line or end of statement on a line. **Note:** Use the minimum number of comment lines to properly document the flow and logic of the EOC application. Each comment line counts toward the limit of 256 EOC lines, and slightly extends the time required to execute the specific application.
RRM Grouping Activation	RGx Where: RG is the release group in which RRM's are assigned to via the configuration software x is the group number between 1 and 4	100*200=RG1	Activate Release Group 1 when addresses 100 and 200 report an alarm condition.

3-8   CREATING EVENT OUTPUT CONTROL (EOC TAB)

The section of the program that stores EOC execution statements is invoked when the "EOC" tab is selected; Figure 3-1 displays.

Select <EDIT> to Enter EOC Code

Edit Release Group
Owner Locations

EOC Summary Window

Select <APPLY> to Accept
the Current Changes

Select <RESET> to Reject the
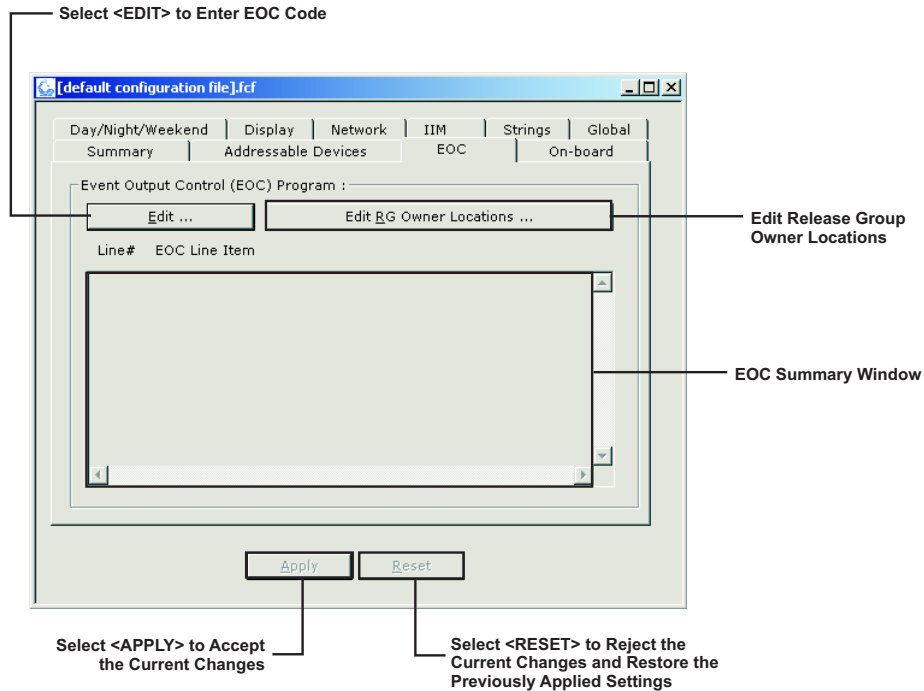Current Changes and Restore the
Previously Applied Settings

Figure 3-1. EOC Creation Screen

1. Enter EOC execution statements in free-form format just as if using a standard word processing program. It is not necessary to create line numbers for EOC statements.

   Figure 3-2 shows lines of EOC code that have been entered via the program's free-form text editor.

Find Menu
(Searches EOC Code)

Verify Menu
(Verifies EOC Code)

Edit Menu
(Undo, Cut, Copy, Paste Text)

Help Menu
(Opens PDF file of FCS User's Guide)

File Menu
(Save As Text, Print, Exit)

EOC Toolbar
Save, Print, Cut, Copy, Paste,
Find and Verify Icons)

EOC
Statements

```
$ HEAD END ROOM PRE-ALARM
1#3=SG1,AM1:1,I1
$ ADJUST ION DETECTOR ALARM THRESHOLDS
1#3=1.5=A4#6
4#6=SG1,AM1:1,I2
$ ADJUST PHOTO DETECTOR ALARM THRESHOLDS
4#6=3.O=A1#3
$ POWER ROOM PRE-ALARM
14#15=SG3,AM1:7,I3
$ ADJUST ION DETECTOR ALARM THRESHOLDS
14#15=1.5=A16#17
16#17=SG3,AM1:7,I4
$ ADJUST PHOTO DETECTOR ALARM THRESHOLDS
16#17=3.O=A14#15
$ HEAD END ROOM WATERFLOW
11=SG4,AM1:12,RY3
$ POWER ROOM WATERFLOW
20=SG4,AM1:12,RY3
$ HEAD END ROOM TAMPER
12=AM1:5,25
$ POWER ROOM TAMPER
```

Line[21], Position[20]

Enter Code, then Select <OK>
to Save Application Program

Select <CANCEL> to Negate
Non-Saved Lines and Return to
Previous Screen

Figure 3-2. EOC Text Editor Screen

2. Select **<OK>**. Figure 3-3 shows the saved EOC code. If the program detects an undefined SLC device or a syntax error, Figure 3-4 displays after exiting the text editor. Edit the EOC code as necessary to remove all errors and warnings.
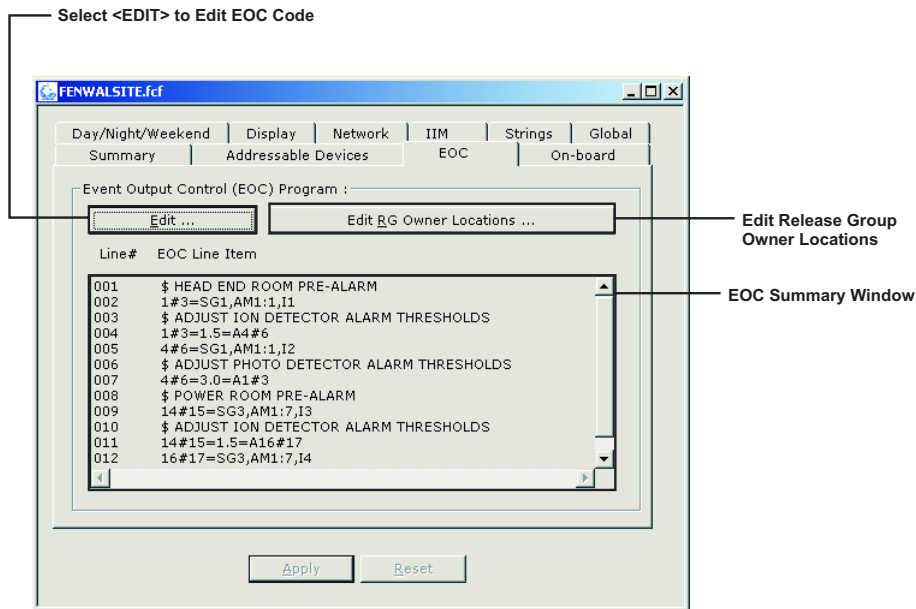
Figure 3-3. Saved EOC Code Screen
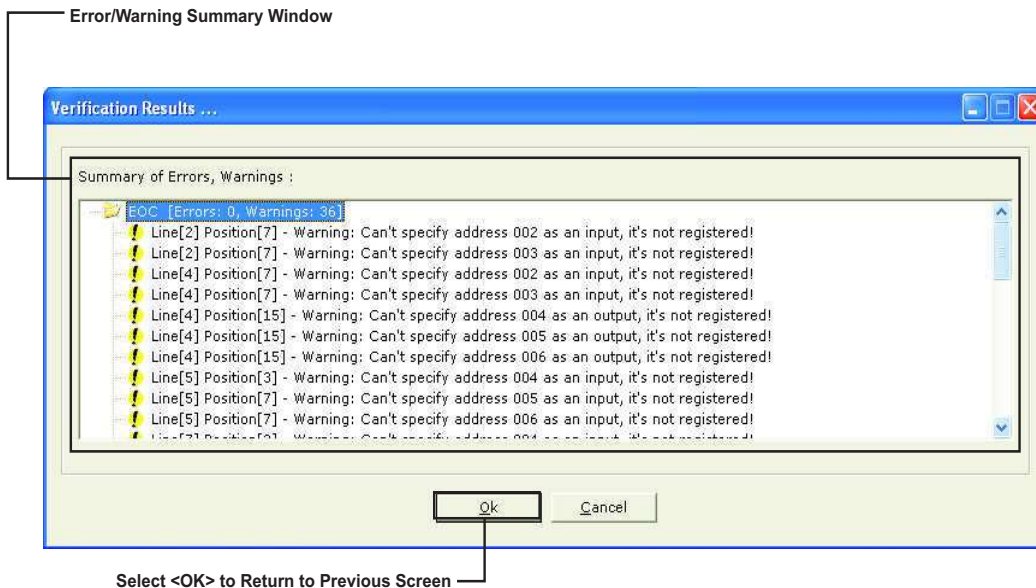
Figure 3-4. EOC Error and/or Warning Screen

3. If Release Groups are used, select the **<Edit RG Owner Locations>**. Figure 3-5 displays. Enter the location of each release group and select **<OK>**.
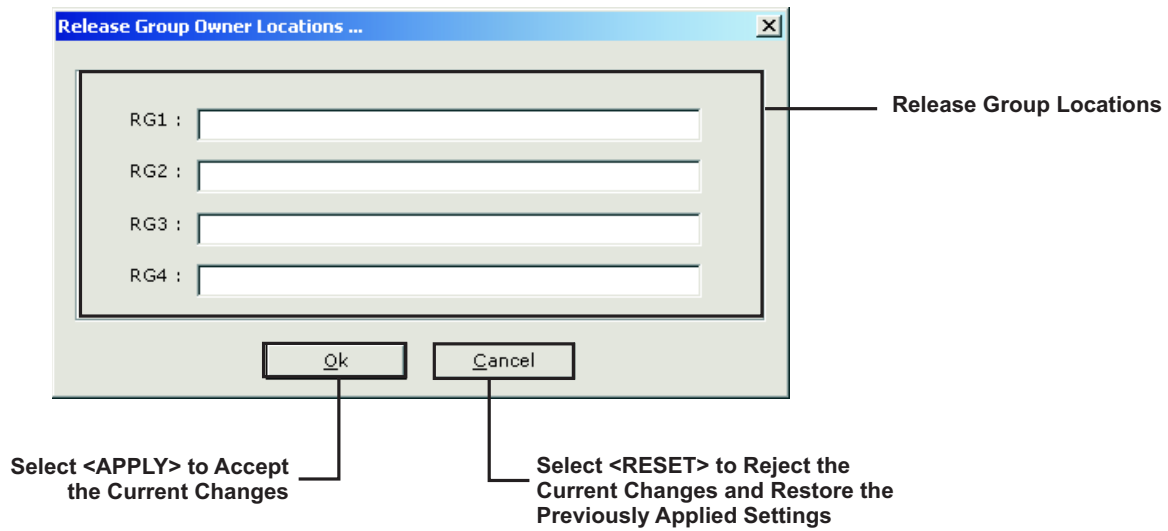
Figure 3-5. Release Group Owner Location Screen

3-9   STRUCTURING EVENT OUTPUT CONTROL

In general, one EOC statement needs to be written for each input-to-output operating sequence required for the specific application. Up to 256 EOC statements can be used for any application, and an EOC statement can have up to 128 characters. Use the following guidelines to construct an EOC application:

1. Arrange the sequence of EOC statements from the start to the end of the application according to the following event priority:

   – Alarm

   – Supervisory

   – Trouble

   Note: All alarm events must be annunciated by public mode notification.

2. Put the most likely to be executed statements at the start of the prioritized segments above. This means that statements with simple arguments or compound arguments constructed with either "OR" (+) or "THRU" (#) Operators should be entered first in each prioritized segment.

3. Use a separate Counting Identifier or State Variable for each compound argument that is used on more than one EOC statement.

4. Never use a Counting Identifier to trigger outputs unless it has been defined first in a prior EOC statement.

5. If possible, activate physical and virtual outputs in the same EOC statement to keep the number of statements to as few as possible.

6. Write the pre-release, release, and post-release EOC statements on consecutive lines for each special extinguishing system. A separate pre-release statement is typically required because release outputs are not activated until after the expiration of a time delay. Enter these statements in ascending order according to the more progressively serious alarm condition (i.e., write the pre-alarm statement first, the pre-release statement second, and the release statement third).

   Note: The following requirements apply to special extinguishing systems:

      – The pre-alarm state must be annunciated by distinctive public mode notification.

      – The pre-release state must be annunciated by public mode notification different from the pre-alarm state public notification mode.

      – The release state must be annunciated by public mode notification different from both the pre-alarm state and pre-release state public notification modes.

7. The manual release station(s) for a special extinguishing system must appear in the arguments of the pre-alarm, pre-release, and release statements for the system if required interlocks such as door closures, airflow shutoff, and power down procedures are distributed throughout these three alarm stages.

8. Place the least likely to be executed statements at the end of the prioritized segments in 1). For example, open area smoke detectors are more likely to activate before duct detectors because of the high smoke dilution factors associated with duct detection. Therefore statements associated with duct detectors should be entered after the statements associated with open area detectors and after any special extinguishing system execution statements.

9. Add in remote alarm-initiating events from other networked control units according to the guidelines 2) through 7), but add them after the control unit's local events. Arrange remote alarm-initiating events in ascending order by network node number.

10. It is recommended that the terms involved in contiguous "ANDing" be limited to only one term that can have a value of more than 1, and the rest limited to logical "TRUE" or "FALSE" only.
    For example, 'I1 * NI2 * N(10#40)' is good because only I1 can have a value greater than 1 (NI2 and N(10#40) is always "TRUE" or "FALSE"). However, '10#40 * I3' is not acceptable because both factors can be greater than 1.
    Refer to section 3-2.2.1 for more information.

3-10   EVENT OUTPUT CONTROL EXAMPLES

Table 3-6 illustrates specific example of event output control. This is a two-zone waterless suppression system with associated pre-action sprinkler systems. Refer to Appendix A for the sequence of operation and device/circuit configuration associated with this application.

Table 3-6. EOC, Example 1

$ Head End Room Pre-Alarm
1#3=SG1,AM1:1,I1, C1
NI1=NC1
1#3=1.5=A4#6
4#6=SG1,AM1:1,I2, C2
NI2=NC2
4#6=3.0=A1#3
$ Power Room Pre-Alarm
14#15=SG3,AM1:4,I3, C3
NI3=NC3
14#15=1.5=A16#17
16#17=SG3,AM1:4,I4, C4
NI4=NC4
16#17=3.0=A14#15
$ Head End Room Waterflow
11=SG2,AM1:6,RY3
$ Power Room Waterflow
20=SG4,AM1:12,RY3
$ Head Room Tamper
12=AM1:5,25
$ Power Room Tamper
21=AM1:11,25
$ Head End Room Low Pressure
13=AM1:4
$ Power Room Low Pressure
22=AM1:10
$ Pre-Action System Low Air
26=AM1:13
$ Head End Room Pre-Release
I1*C2 + 7 + 8= SG1/120,23
C1*I2 + 7 + 8=SG1/120,23
$ Head End Room Release
D(I1*I2,30,9,10)+7+8=NSG1,NAM1:1,AR1,SG2,24,RY2,AM1:3
9+10=AM1:2
$ Power Room Pre-Release

Table 3-6. EOC, Example 1

I3*C4+18= SG3/120, 23
C3 * I4+18=SG3/120, 23
$ Power Room Release
D(I3*I4,30,19)+18=NSG3,NAM1:7,AR2,SG4,24,RY2,AM1:8
19=AM1:8

Table 3-7 is an example of a networked fire-alarm system monitoring three school buildings. The sequence of operations for all three buildings is shown in Appendix A. The details are shown in Table 3-6 and Table 3-7 for the first building. The specifics for Buildings No. 2 and 3 are similar.

Table 3-7. EOC, Example 2

$ Building No. 2 Smoke Detectors
F2:1#15=SG4,S1
$ Building No. 2 Manual Stations
F2:16#23=SG4,S2
$ Building No. 2 Waterflow
F2:24#27=SG4,S2
$ Building No. 2 Kitchen Hood
F2:28=SG4,S4
$ Building No. 3 Smoke Detectors
F3:1#15=SG4,S6
$ Building No. 3 Manual Stations
F3:16#23=SG4,S7
$ Building No. 3 Waterflow
F3:24#27=SG4,S8
$ Building No. 3 Kitchen Hood
F3:28=SG4,S9
$ Building No. 2 Supervisory
F2:29#32=S5
$ Building No. 3 Supervisory
F3:29#32=S1

3-11   ADDITIONAL EVENT OUTPUT CONTROL EXAMPLES

The examples in this section illustrate special EOC topics of interest.

3-11.1   Limited Water Supply

A four-zone deluge sprinkler system is being designed according to the following water supply constraints:

Active Zone	Allowable Subsequent Zone Activation	Disallowable Subsequent Zone Activation
1	2	3 and 4
2	1 or 3	4
3	2 or 4	1
4	3	1 and 2

No more than two deluge sprinkler zones can be active concurrently. Figure 3-6 illustrates the application.
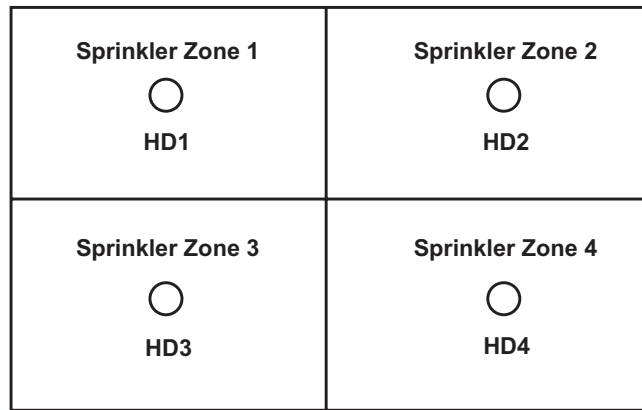
Figure 3-6. Limited Water Supply

State Variable are used in the code that follows to signify the activation of each zone and to apply the required constraints:

$$1*NC3*NC4*NC5=AR1,C1$$
$$2*NC4*NC5=AR2,C2$$
$$3*NC1*NC5=AR3,C3$$
$$4*NC1*NC2*NC5=AR4,C4$$
$$C1*(C2+C3+C4)=C5$$
$$C2*(C1+C3+C4)=C5$$
$$C3*(C1+C2+C4)=C5$$
$$C4*(C1+C2+C3)=C5.$$

3-11.2   NAC that Tracks AnaLASER II Alarm State

The system shown in Figure 3-7 is to be designed according to the following criteria:

• Activate NAC if either one of AnaLASER IIs alarm

• Deactivate NAC if all alarmed HSSDs issue alarm off reports

• Latch the NAC into the active state if any spot type smoke detector alarms.
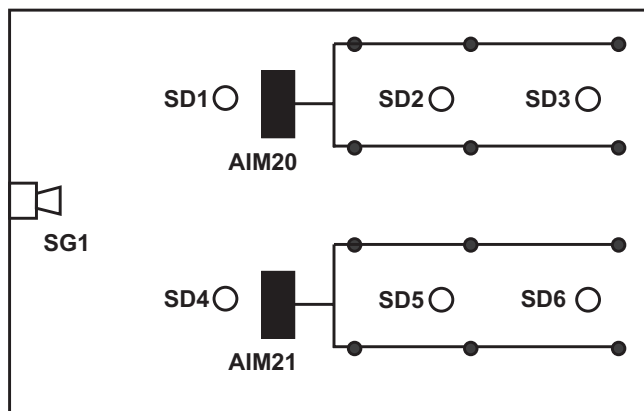
Figure 3-7. Tracking NAC

The EOC code required to accomplish this design requirement is shown below:

    20+21=SG1
    N20*N21*NC1=NSG1
    1#6=SG1,C1.

3-11.3   **External Maintenance Bypass Switch Example**

An end user wants to provide service personnel with a simplistic way to prevent the activation of notification appliances during facility maintenance periods. The user wants to use an externally mounted switch to accomplish this requirement. The necessary sequence of operation is as follows:

- The NAC shall activate if an automatic detector alarms and the maintenance bypass switch has not been activated
- The NAC shall not activate if an automatic detector alarms subsequently to the activation of the maintenance bypass switch
- The NAC shall deactivate if the maintenance bypass switch is activated subsequently to an automatic detector alarm.

The AI monitor module for the maintenance bypass switch is configured as a non-latching supervisory initiating device. Figure 3-8 illustrates the application.
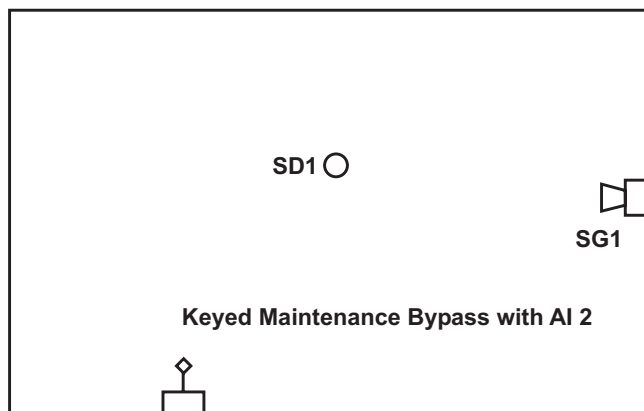
Figure 3-8. Maintenance Bypass Switch

The required lines of EOC code are as follows:

    1*N2=SG1
    1*2=NSG1.

CHAPTER 4
COMMUNICATIONS TO CONTROL UNIT

4-1   INTRODUCTION

An application created via the procedures described in Chapters 2 and 3 must be uploaded to the FENWALNET 6000 Control Unit to establish a working fire protection system. The utility programs in the Tools Menu are used to communicate with the FENWALNET 6000 Control Unit. Figure 4-1 shows the selections in the Tools Menu.
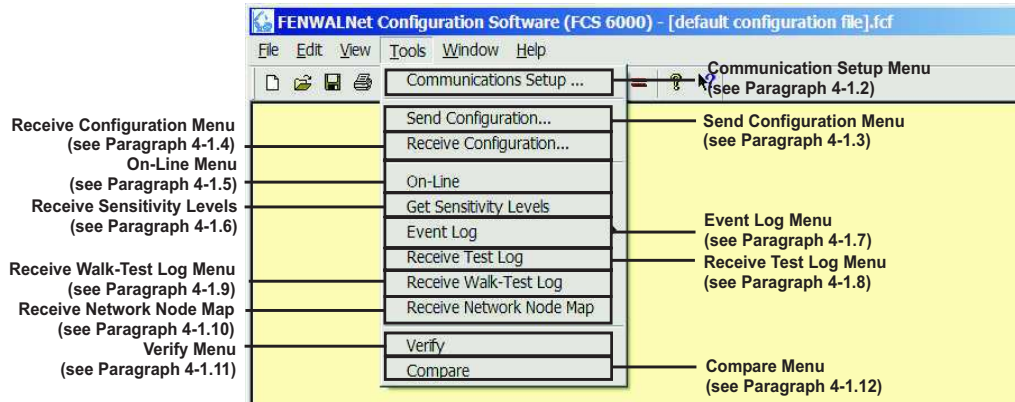
Figure 4-1. Tools Menu

Most of the utilities in the Tools Menu can also be accessed via the toolbar on the main screen. Figure 4-2 defines each of the icons.
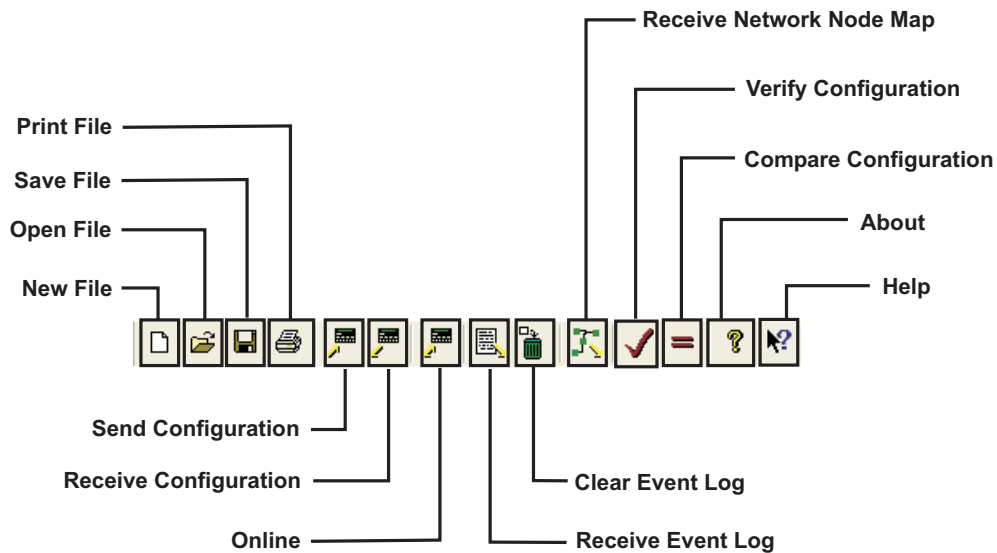
Figure 4-2. FCS Main Toolbar

4-1.1 Hardware Connections

Use either a laptop or desktop computer to upload the applications program to the FENWALNET 6000 Control Unit. The computer must have a USB or RS232 communications port.

Set the serial-port baud rate to 9600, and use communications cable P/N 74-100016-003 to communicate with the FENWALNET 6000 Control Unit via the computer's serial port.

Use a standard USB communications cable to connect to the FENWALNET 6000 Control Unit via the computer's USB port.

Figure 4-3 illustrates a typical control unit-to-laptop configuration.
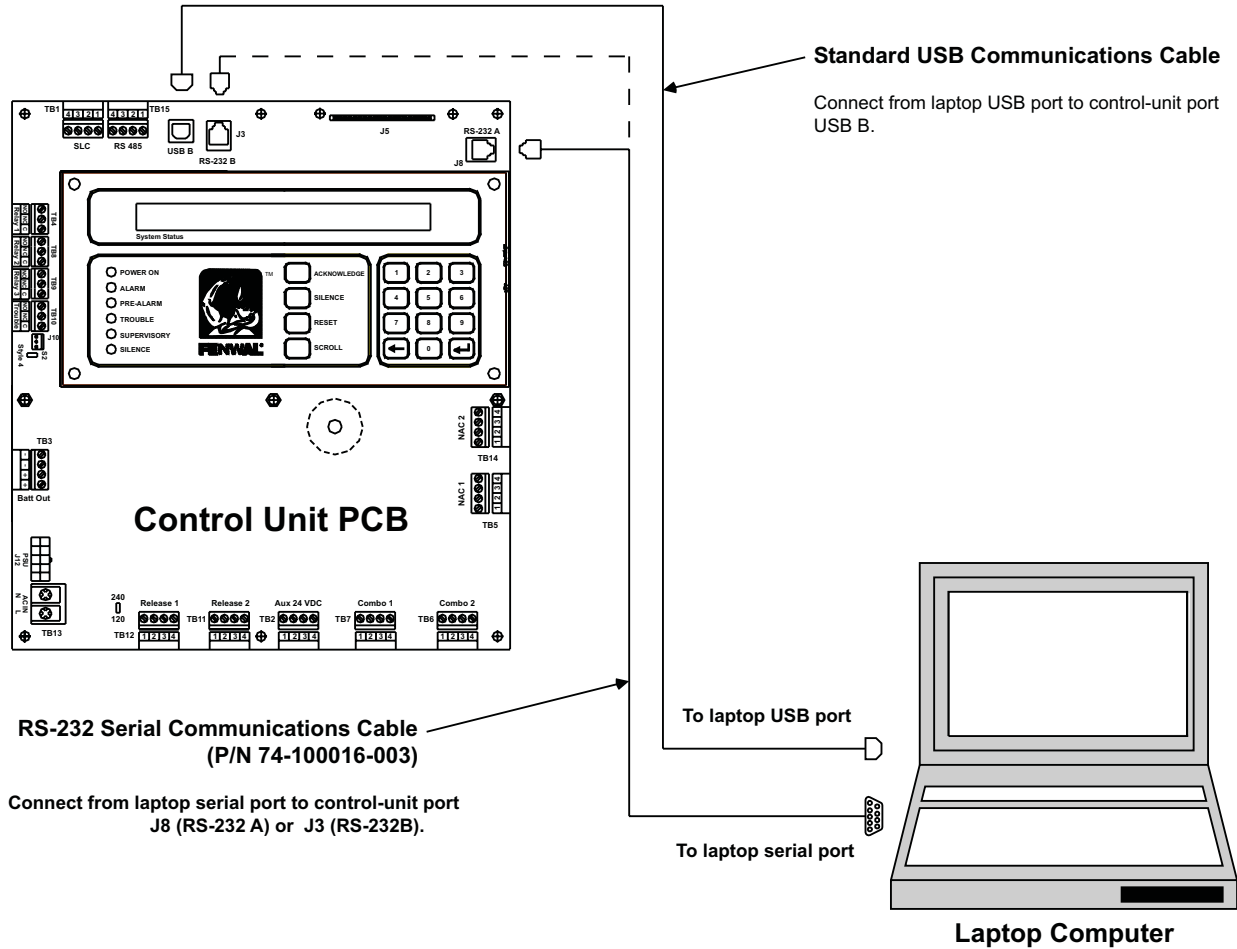
Figure 4-3. Hardware Connection from FENWALNET 6000 Control Unit to Laptop Computer

4-1.2 **Communications Setup**

Select **Tools>Communication Setup** from the main screen to select the communication port and define options when selecting an RS-232 serial port on the computer to transfer data to the FENWALNET 6000 Control Unit. In response, the communication settings (Figure 4-4) are displayed.
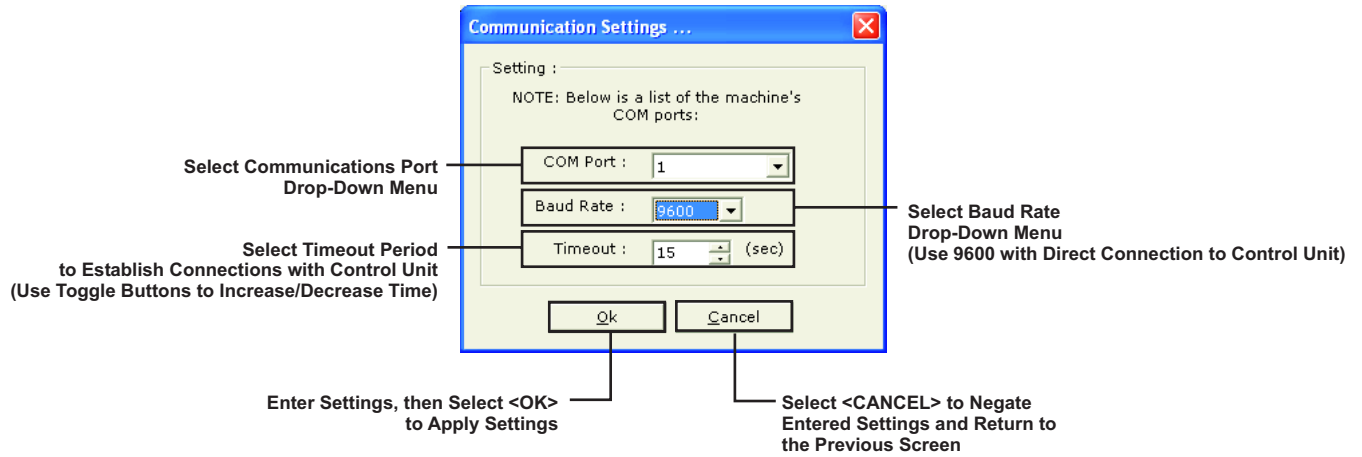
Figure 4-4. Communications Settings

4-1.3 **Sending a Configuration**

Select **Tools>Send Configuration** to send a particular application (that was created via the methodology described in Chapter 2 and Chapter 3) to the FENWALNET 6000 Control Unit. The FENWALNET 6000 Control Unit then assumesthe responsibility of monitoring the SLC and other peripheral devices that have been specified in the application file, and carries out the instructions that are encoded in the EOC statements. Alternatively, select the Send Configuration Icon ( ).

If only one configuration file is open, the password prompt (Figure 4-7) is displayed; if more than one configuration file is open, the select configuration dialog box (Figure 4-5) is displayed and the appropriate configuration file to upload must be selected.
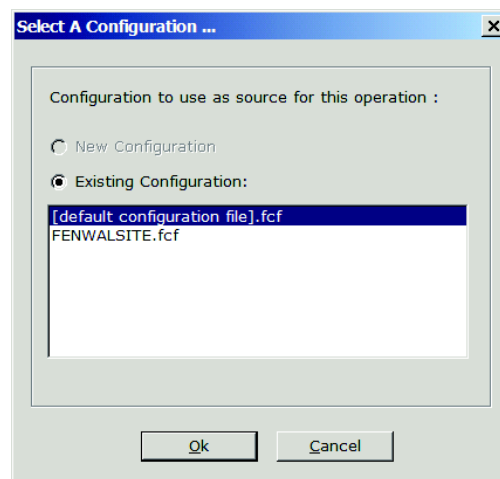

Figure 4-5. Select Send Configuration

After FCS retrieves the node map for **Network Installations**, the selection dialog box (Figure 4-6) is displayed.
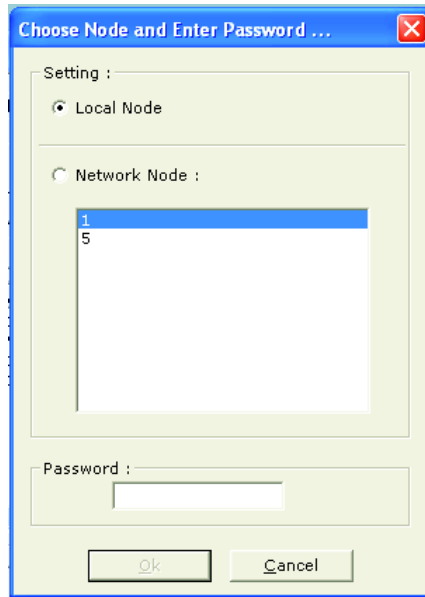
Figure 4-6. Select Node and Enter Password - Send Configuration

1. Select a remote or locally connected node as follows:

    Note: A configuration can be sent to a remote node via the directly-connected control unit.

2. Select the correct node that matches the selected configuration file and enter the password for that node to initiate the upload. (Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.)

3. Select <**OK**>. In response, the progression of the configuration upload from the control unit is displayed (Figure 4-8). After the upload is complete, Figure 4-9 displays.

    Note: When sending/receiving configurations to/from remote networked control units, the time to complete the operation is considerably longer than a direct upload/ download. When a networked node is executing a local upload or download with FCS, it does not communicate on the network. Network communication troubles annunciate on other nodes during the process.

Following selection of the configuration file, FCS immediately displays the password prompt (Figure 4-7) for **Single Control Unit** installations.
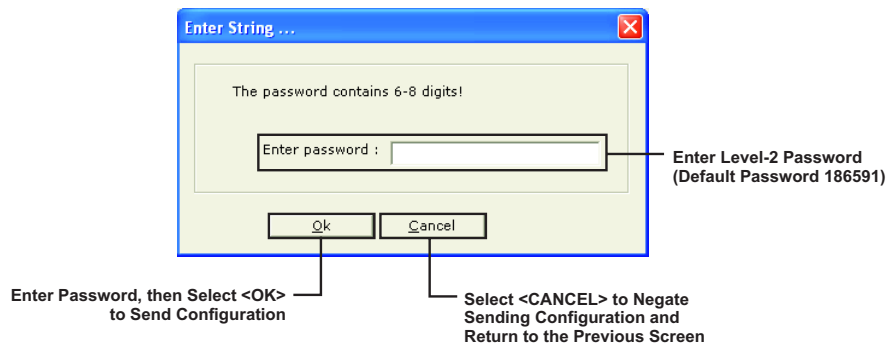

Figure 4-7. Send Configuration Password

1. Enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.

2. Select **<OK>**. In response, the progression of the configuration upload to the control unit is displayed (Figure 4-8). After the upload is completed, a notification (Figure 4-9) is displayed.
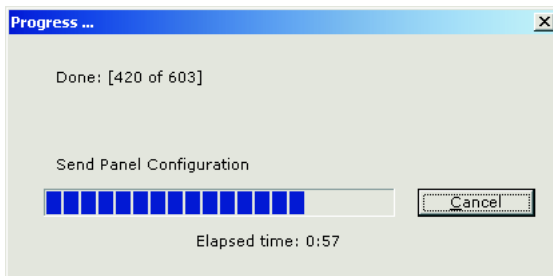

Figure 4-8. Send Configuration Progress

Figure 4-9. Send Configuration Complete

4-1.4   **Receive a Configuration**

Select **Tools>Receive Configuration** to retrieve a particular application from a FENWALNET 6000 Control Unit for review, analysis and/or modification as necessary. Alternatively, select the Receive Configuration Icon ( ). In response, the prompt shown in Figure 4-12 is displayed.

Receiving a configuration is similar to sending. Selecting 'Receive Configuration' results in a prompt (Figure 4-10) to select a file in which to store the configuration data

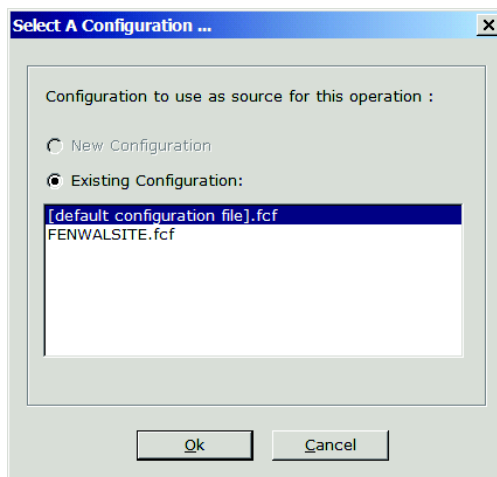**Note:**   A configuration file must be open before the process can proceed.

Figure 4-10. Select Receive Configuration

After FCS retrieves the node map for **Network Installations,** the selection dialog box (Figure 4-11) is displayed.
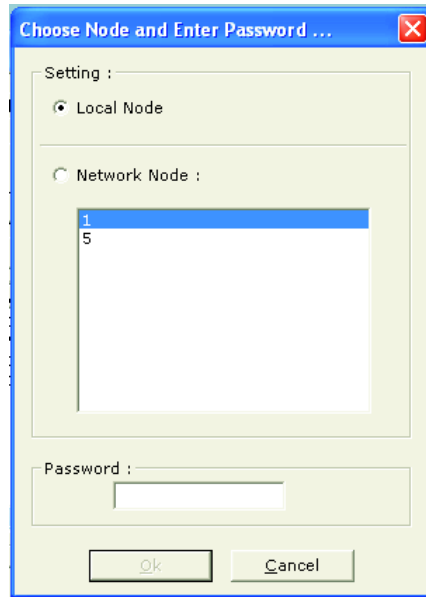
Figure 4-11. Select Node and Enter Password - Receive Configuration

1. Select a remote or locally connected node as follows:

    Note: A configuration can be received from a remote node via the directly connected control unit.

2. Select the correct node that matches the selected configuration file and enter the password for that node to initiate the download. (Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.)

3. Select <**OK**>. In response, the progression of the configuration download from the control unit is displayed (Figure 4-13). After the download is completed, a notification (Figure 4-14) is displayed.

    Note: When sending/receiving configurations to/from remote networked control units, the time to complete the operation is considerably longer than a direct upload/ download. When a networked node is executing a local upload or download with FCS, it does not communicate on the network. Network communication troubles annunciate on other nodes during the process.

Following selection of the configuration file, FCS immediately displays the password prompt (Figure 4-12) for **Single Control Unit** installations.
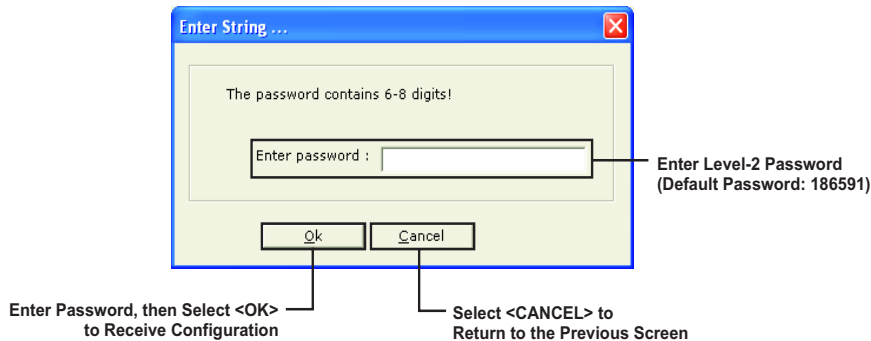

Figure 4-12. Receive Configuration Password

1. Enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.

2. Select **<OK>**. In response, the progression of the configuration download (Figure 4-13) is displayed. After the download has finished, a notification (Figure 4-14) is displayed.
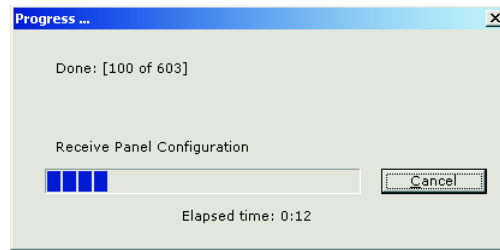

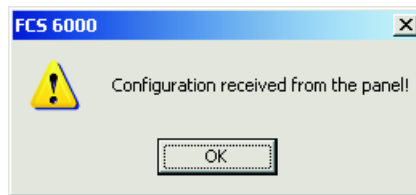Figure 4-13. Receive Configuration Progress

Figure 4-14. Receive Configuration Complete

4-1.5 Online

Select **Tools>Online** to connect FCS 6000 to the control unit via a terminal-emulation mode. The control unit can then be run as if it were being accessed via its keypad/display. Refer to the FENWALNET 6000 Design, Installation and Operation Manual for information on navigating the control unit menus.

After FCS initially retrieves the node map for **Network Installations**, select a remote or locally connected node using the dialog similar to the preceding dialog. In response, the node's online status (Figure 4-15) is displayed.

Note: Menus can be accessed just as if FCS was connected directly to the selected node. Setting of Network configuration items is prohibited when the menu of a remote node is accessed.
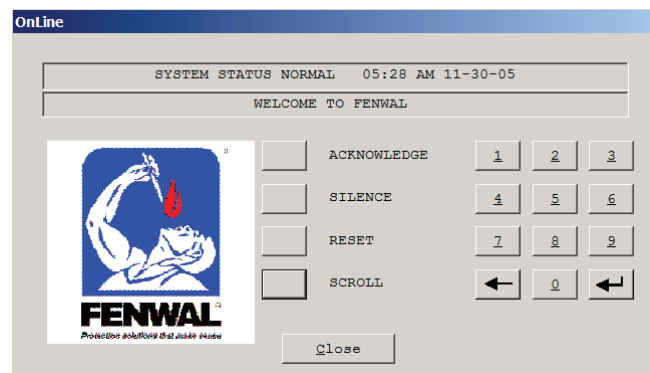

Figure 4-15. Online

Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual (P/N 06-236529-001) for a complete explanation of display messages and for guidance in navigating through the control unit.

4-1.6 **Get Sensitivity Levels**

Select **Tools>Get Sensitivity Levels** to retrieve the current reading of photos, ions, thermals, etc. from the control unit. The results are populated in the 'sensitivity levels' dialog.

4-1.6.1 RETRIEVE SENSITIVITY LEVELS

1. Select **Tools>Get Sensitivity Levels.** The selection dialog box (Figure 4-16) is displayed.
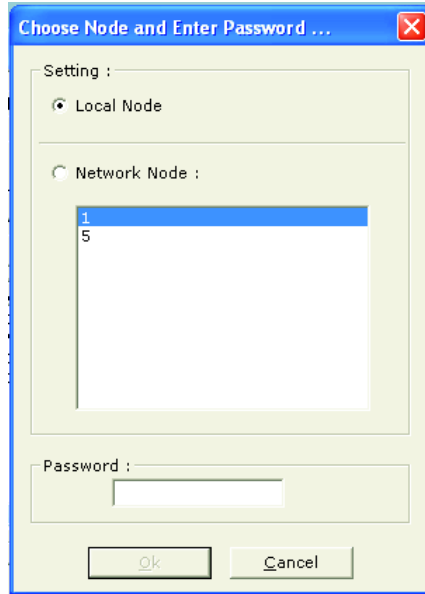

Figure 4-16. Select Node and Enter Password - Get Sensitivity Levels

2. Select the node to retrieve the sensitivity levels from and password for that node to initiate the retrieval.

3. Select **<OK>**. Enter the range of sensitivity desired.

4. Select **<OK>**. The following 'Sensitivity Levels' dialog is displayed. In response, the Sensitivity Levels' dialog announcing the retrieval of the sensitivity levels (Figure 4-17) is displayed. After the query has finished, the sensitivity levels (Figure 4-18) are displayed. Within the 'Sensitivity Levels' screen, there are two menu options: Save As and Print.

   – Select "Save As" to save the test log as a .txt file.

   – Select "Print" to print the test log to a printer.
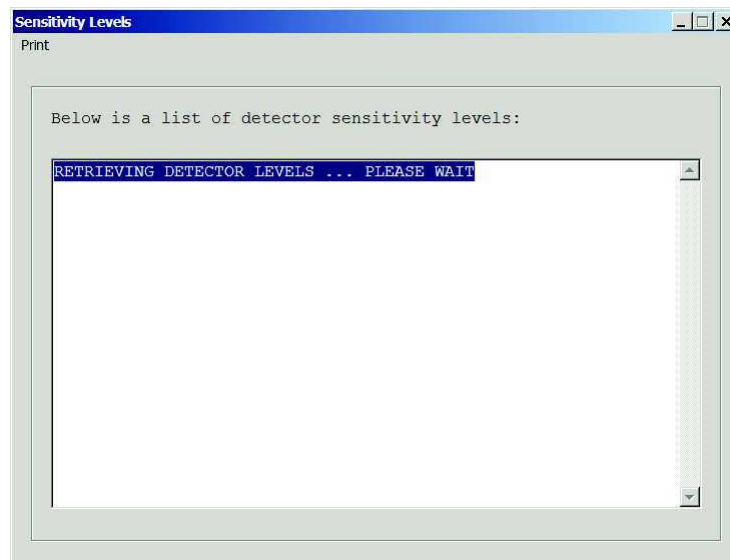
Figure 4-17. Retrieving Sensitivity Levels
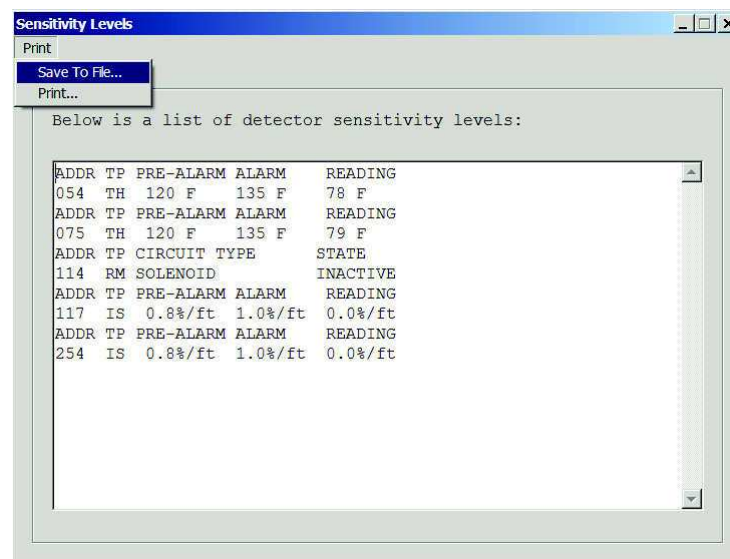
Figure 4-18. Displayed Sensitivity Levels

4-1.7 Event Log

Select **Tools>Event Log** to transfer the contents of the log of system events to a text file. There are three options: Clear, Receive and Open Log File.

4-1.7.1 CLEAR EVENT LOG

1. Select **Tools>Event Log>Clear** to remove all currently recorded events from the system event log. In response, a password request (Figure 4-20) is displayed.

2. After FCS retrieves the node map for **Network Installations,** select a remote or locally connected node.

    Note: An event log can be cleared from a remote node via the directly connected control unit.

   After the node map is retrieved, the selection dialog box (Figure 4-19) is displayed.
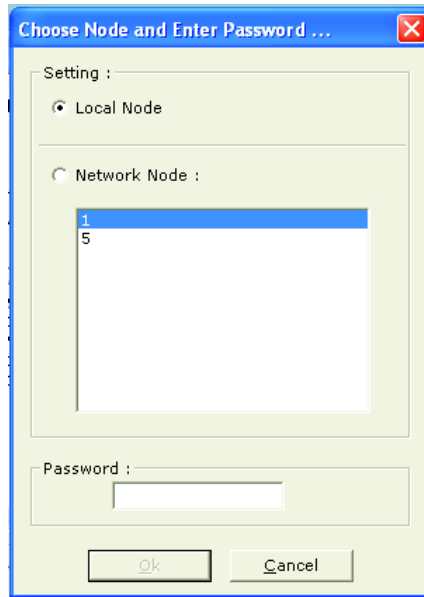
Figure 4-19. Select Node and Enter Password - Clear Event Log

3. Select the desired node and enter the installer level password for that node to clear the event log on that node.

Following selection of the Clear Event Log option, FCS immediately displays the password prompt (Figure 4-20) for **Single Control Unit** installations,
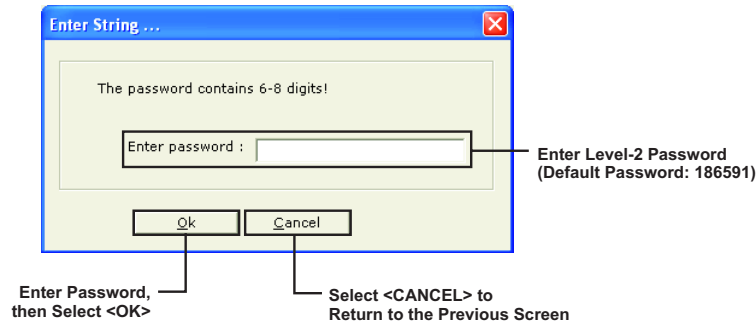
Figure 4-20. Enter Password

4. Enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.

5. Select **<OK>**. In response, the progression of the clearance procedure is displayed (Figure 4-21). After the event log has been cleared, a notification (Figure 4-22) is displayed.

   Note: If the control unit is in alarm, trouble or supervisory condition, clearing the event log is aborted and a notification (Figure 4-23) is displayed.
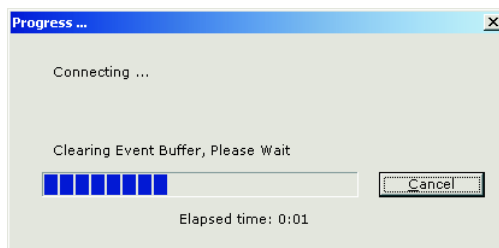
Figure 4-21. Clear Event Log Progression

Figure 4-22. Clear Event Log Complete
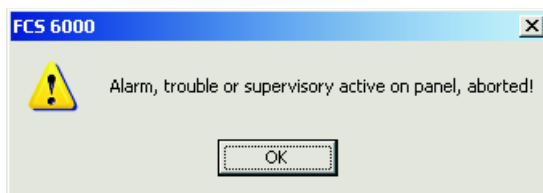
Figure 4-23. Clear Event Log Abort

4-1.7.2   RECEIVE EVENT LOG

1. Select **Tools>Event Log>Receive** to copy the entire contents of the system
    event log to a text file or a range of system events within the log based on
    occurrence dates. In response, a the prompt shown in Figure 4-24 is
    displayed.
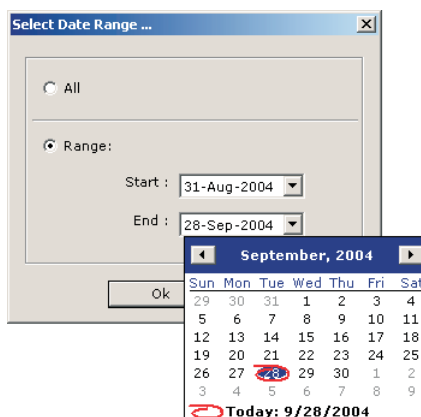
Figure 4-24. Event Log Data Range

2. Select either the "All" or "Range" radio button. If "Range" is selected, enter the range of
    dates to receive. Select **<OK>**. In response, the prompt for a password ()Figure 4-25)
    is displayed.
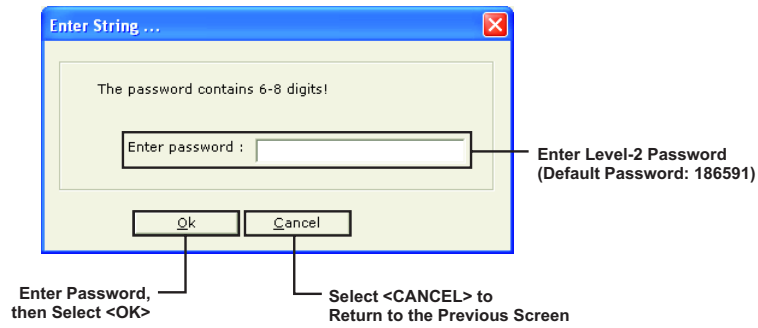
Figure 4-25. Enter Password

3. For single unit installations, enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords.

4. After FCS retrieves the node map for **Network Installations**, select a remote or the locally connected node.

   Note: An even log can be downloaded from a remote node via the directly connected control unit.

   After the node map is retrieved, the selection dialog box (Figure 4-26) is displayed.
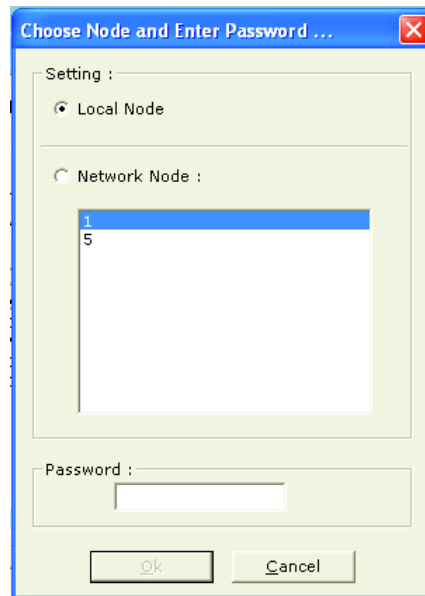
Figure 4-26. Select Node and Enter Password - Receive Event Log

5. Select the desired node and enter the password for that node.

6. Select <**OK**> to download the event log from that node. In response, the progression of the download (Figure 4-27) is displayed. When it is complete, the Event Log Retrieved Confirmation Screen displays (Figure 4-28).
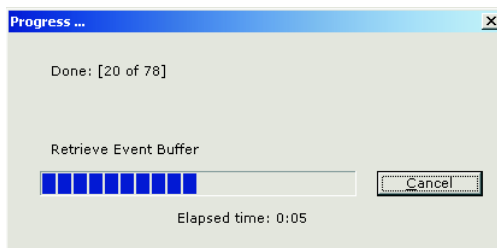
Figure 4-27. Receive Event Log Progression

Figure 4-28. Event Log Received Confirmation

7. Select **<OK>**. In response, the event log (Figure 4-29) is displayed. Within the Event log, there are four menu options: Open, Save, Save As and Print.

- Select "Open" to open an existing saved event log

Note: Do not select "Open" to retrieve an existing event log before saving or printing the current retrieved event log.

- Select "Save" to save the event log as a .log file
- Select "Save As" to save the event log as a .txt file
- Select "Print" to print the event log to a printer.
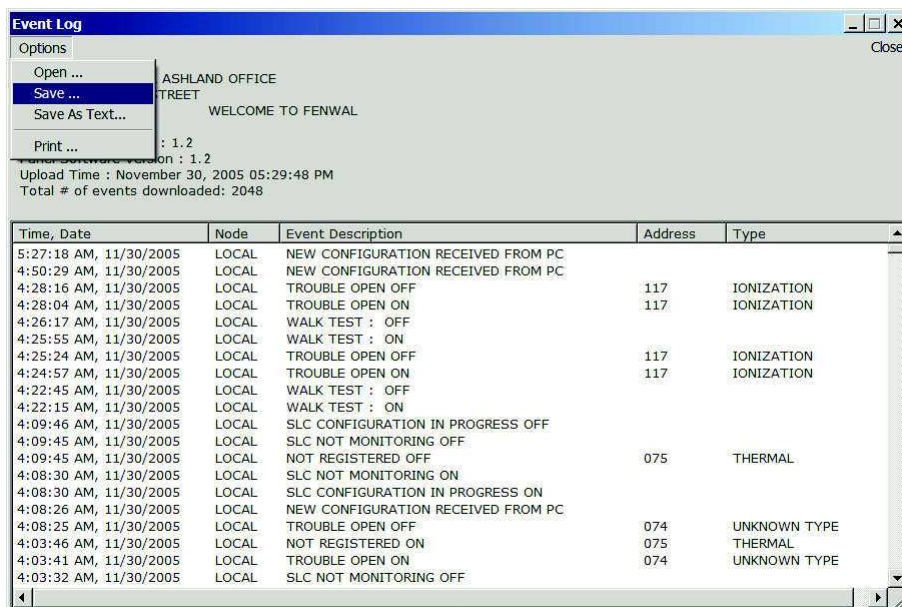
Figure 4-29. Event Log

4-1.7.3 VIEW EVENT LOG

Select **Tools>Event Log>Open Log File** to view a previously downloaded event log offline. All event log options are available when viewing previously downloaded event logs offline.

4-1.8   Receive Test Log

1. Select **Tools>Receive Test Log** to copy the contents of the most recent log of initiating device test events to a text file. In response, the prompt for a password (Figure 4-31) is displayed.

    FCS retrieves the node map for **Network Installations** and the user can select a remote node or the locally connected node.

    Note: The test log can be received from a remote node via the directly connected control unit.

    After the node map is retrieved, the selection dialog box (Figure 4-30) is displayed.

Figure 4-30. Select Node and Enter Password - Receive Test Log

2. Select the desired node, enter the password for that node, then select <**OK**> to download the test log from that node.

   Following selection of the Test Log option, FCS immediately displays the password prompt (Figure 4-31) for **Single Control Unit** installations.
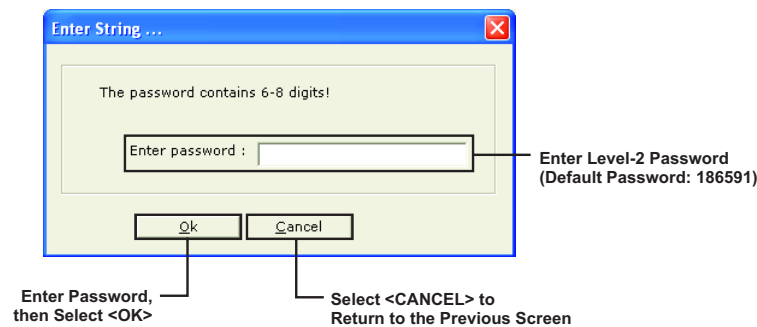
Figure 4-31. Enter Password

3. Enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords and for a description of the initiating devices test.

4. Select <**OK**>. In response, progression the test log download (Figure 4-32) is displayed. When download is complete, the test log (Figure 4-33) is displayed. Within the test log, there are two menu options: Save As and Print.

- Select "Save As" to save the test log as a .txt file.
- Select "Print" to print the test log to a printer.
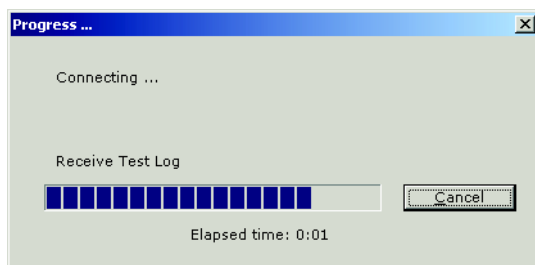
Figure 4-32. Receive Test Log Progress
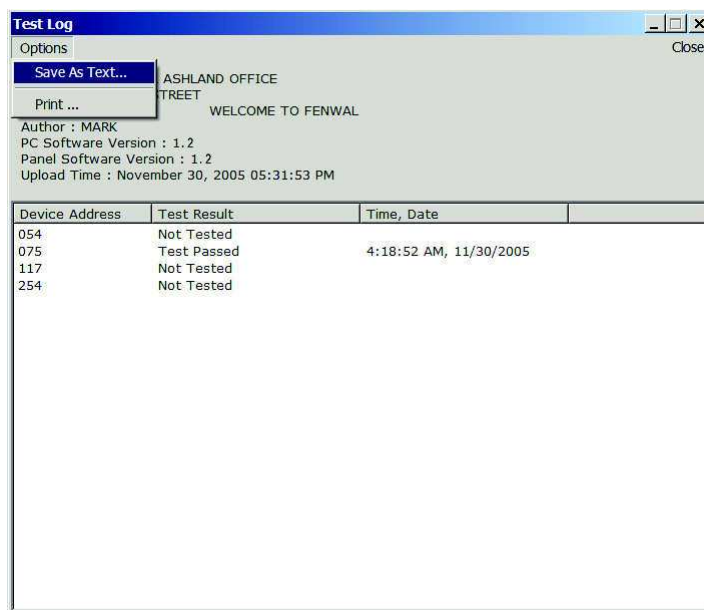
Figure 4-33. Test Log Screen

4-1.9   **Receive Walk Test Log**

1. Select **Tools>Receive Walk Test Log** to copy the contents of the log of walk-test events created via the "Walk-Test" procedure in the "Test" Menu to a text file. In response, the prompt for a password (Figure 4-34) is displayed.

   FCS retrieves the node map for **Network Installations** and the user can select a remote node or the locally connected node.

   Note: The walk test log can be received from a remote node via the directly connected control unit.

   After the node map is retrieved, the selection dialog box (Figure 4-35) is displayed.
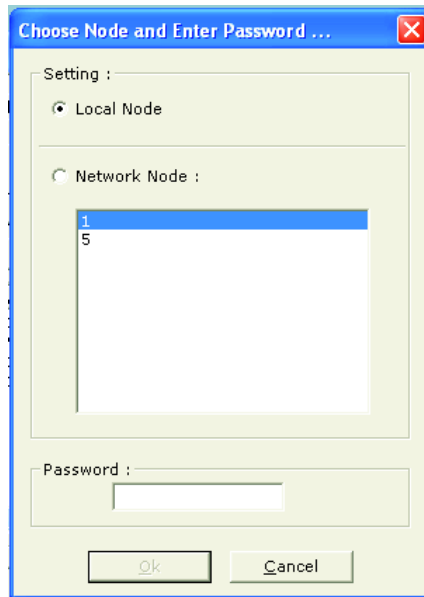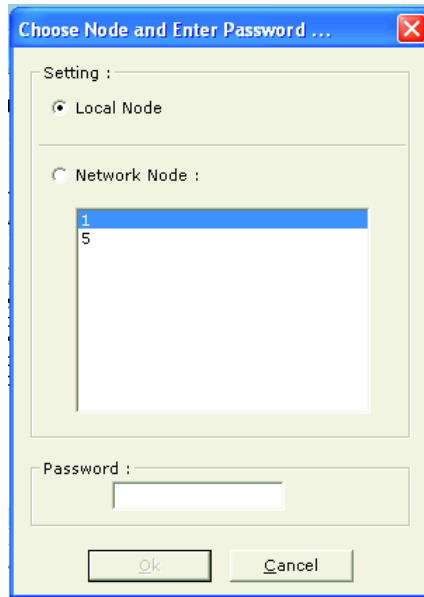
Figure 4-34. Select Node and Enter Password - Receive Walk Test Log

2. Select the desired node and enter the password for that node to download the test log from that node.

   Following selection of the Walk Test Log option, FCS immediately displays the password prompt (Figure 4-35) for **Single Control Unit** installations.
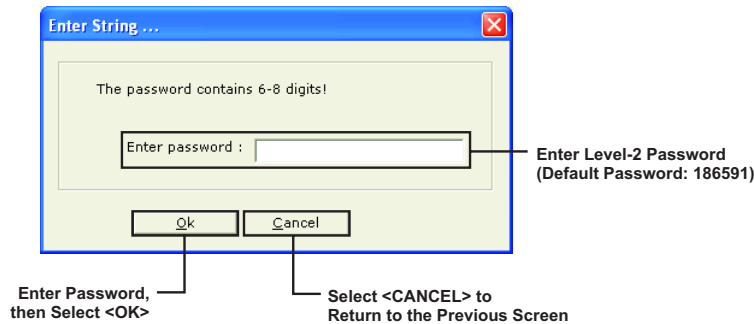
Figure 4-35. Enter Password

3. Enter the password. Refer to the FENWALNET 6000 Installation, Operation and Maintenance Manual, P/N 06-236529-001, for an explanation on setting passwords and for the Walk Test procedure.

4. Select **<OK>**. In response, progression of the walk test log reception (Figure 4-36) is displayed. When it is complete, the walk test log (Figure 4-37) is displayed. Within the Walk Test log, there are two menu options: Save As and Print.

   • Select "Save As" to save the walk test log as a .txt file.

   • Select" Print" to print the walk test log to a printer.
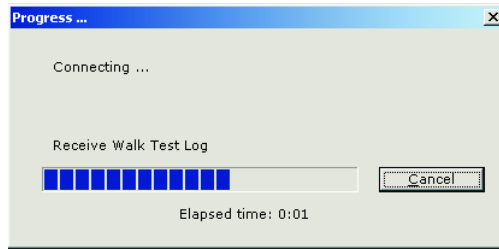
Figure 4-36. Receive Walk Test Log Progress
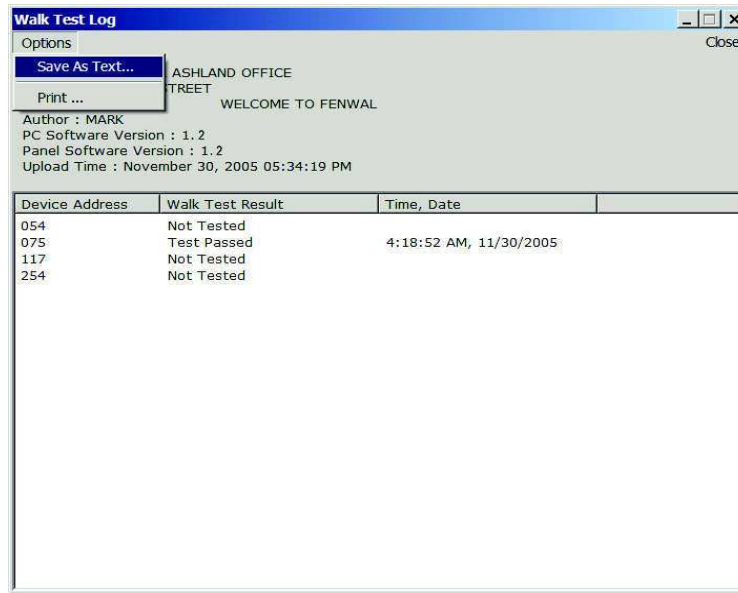
Figure 4-37. Walk Test Log

4-1.10   Network Node Map

The node map (Figure 4-38) is retrieved when Node map download option is selected. The node map is presented as a series of check boxes which are used to indicate the control units that are active on the network.
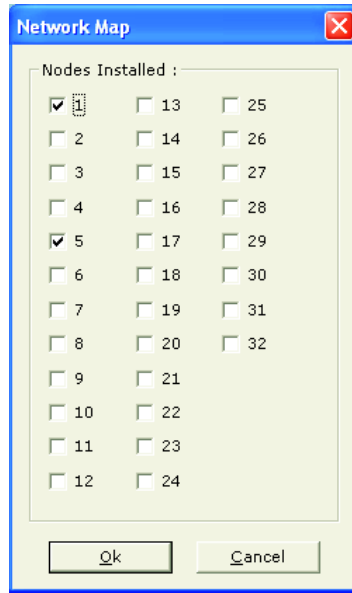
Figure 4-38. Node Map

4-1.11   Verify

Select **Tools>Verify** to check the syntax of EOC code verify that the device and circuit addresses are used properly. Alternatively, select the Verify Icon from the toolbar (✔). In response, the verification summary (Figure 4-39) is displayed.
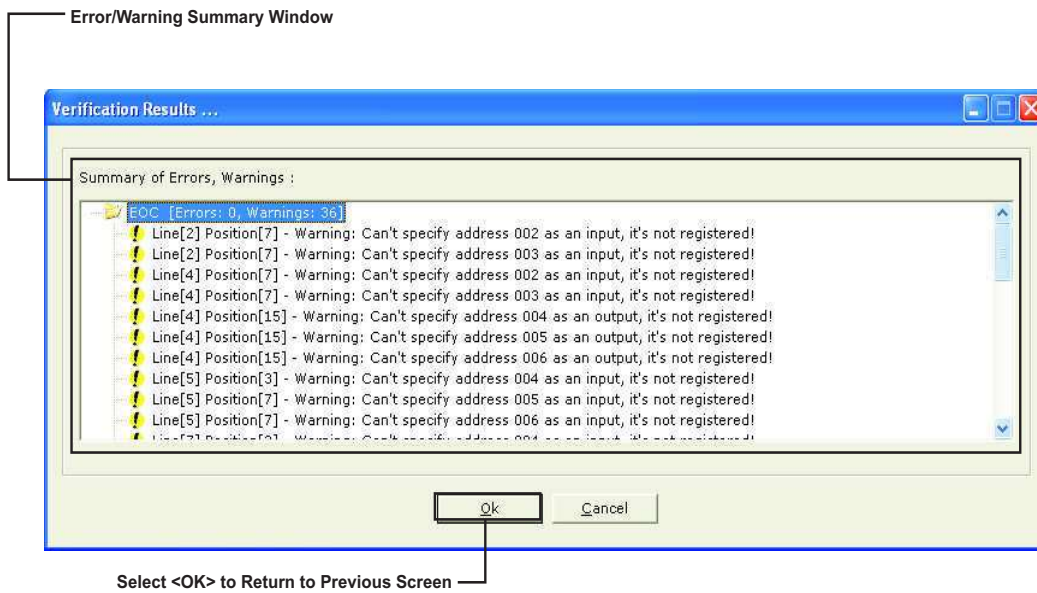
Figure 4-39. Verification Summary

Note: Remove errors and warnings where possible. For help removing as many as possible, contact Fenwal Technical Support.

4-1.12 Compare

Select **Tools>Compare** to compare two different configuration files; both files must be open to compare them. Alternatively, select the Compare Icon (≡) from the toolbar. An example of the comparison results is shown in Figure 4-40.

Configuration Compare Summary Window

**Select <OK>
to Return to the Previous Screen**

Figure 4-40. Configuration Compare

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APPENDIX A
SYSTEM EXAMPLE

A-1 INTRODUCTION

This appendix is intended to provide an example of a typical system and sequence of operation.

Sequence of Operation

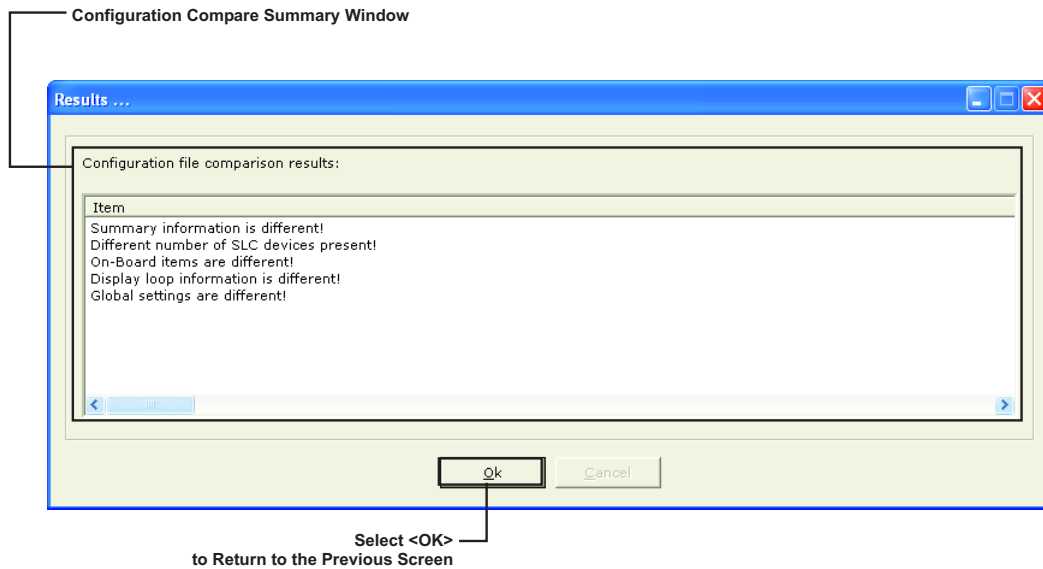| Room-of-Origin Alarms/Actions	Activate / De-Activate Horns @ 60 BPM	Activate / De-Activate Horns @ 120 BPM	Activate / De-Activate Temporal-Coded Horns	Activate / De-Activate Strobes	Activate Waterless Extinguishing System	Interrupt Impending Waterless System Discharge	Open Pre-Action-Sprinkler Valve	Activate / De-Activate Smoke-Detector LED	Activate / De-Activate Abort-Station LED	Activate / De-Activate Release LED	Activate / De-Activate Low-Pressure LED	Activate / De-Activate Tamper LED	Activate / De-Activate Waterflow LED	Facility Equipment Interlocks	HVAC Shutdown	Power Shutoff	Activate / De-Activate Low-Air LED	Activate / De-Activate Trouble LED	Off-Premises Reports	Major Alarm to Central Station	Critical Alarm to Central Station	Waterflow Alarm to Central Station
Waterflow Switch																						A
Head-End Room (Zone 1)			A	A									A									
Power Room (Zone 2)			A	A									A									
Sprinkler Tamper Switch																						
Head-End Room (Zone 1)												A										
Power Room (Zone 2)												A										
One Area Smoke Detector																						
Head-End Room (Zone 1)	A							A													A	
Power Room (Zone 2)	A							A													A	
Two Area Smoke Detectors Alarm (Immediate Response)																						
Head-End Room (Zone 1)	D	A													A							
Power Room (Zone 2)	D	A													A							
Two Area Smoke Detectors (30-Sec. Delayed Response)																						
Head-End Room (Zone 1)		D	A	A	A		A	D	D	A					A						A	
Power Room (Zone 2)		D	A	A	A		A	D	D	A					A						A	
Manual Station (Immediate Response)																						
Head-End Room (Zone 1)	D	D	A	A	A		A	D	D	A					A	A					A	
Power Room (Zone 2)	D	D	A	A	A		A	D	D	A					A	A					A	
Abort Station																						
Head-End Room (Zone 1)						A			A													
Power Room (Zone 2)						A			A													
Auxiliary Supervisory																						
Low FM-200 Pressure Sw.																						
Head-End Room (Zone 1)											A											
Power Room (Zone 2)											A											
Low Air (Pre-Action Sys)																	A					
Trouble																						
Any Condition																		A				
Control-Unit Outputs																						
NAC 1	Z-1	Z-1																				
NAC 2			Z-1	Z-1																		
Combo 1	Z-2	Z-2																				
Combo 2			Z-2	Z-2																		
Release 1					Z-1		Z-1															
Release 2					Z-2		Z-2															
Relay 1																				X		
Relay 2																					X	
Relay 3																						X
Trouble Relay																						
SLC Outputs																						
AO															X	X						
ATM Outputs																						
Output No. 1								Z-1														
Output No. 2									Z-1													
Output No. 3										Z-1												
Output No. 4											Z-1											
Output No. 5												Z-1										
Output No. 6													Z-1									
Output No. 7								Z-2														
Output No. 8									Z-2													
Output No. 9										Z-2												
Output No. 10											Z-2											
Output No. 11												Z-2										
Output No. 12													Z-2									
Output No. 13																	X					

A = Activate Output
D = De-Activate Output

Figure A-1. Example of Sequence of Operation

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System Outline

Signaling-Line-Circuit Configuration

Section groupings: Application | Initiating and Control Points | Alarm / Supervisory / Trouble Outputs | Associated Releasing-Zone | Execution Statements

N	Addr.	Owner Location	Type	App'n	Pre-Alm (Level 1)	Pre-Alm (Level 2)	Alarm (Level 1)	Alarm (Level 2)	Verify	PAS	D/N	L/N-L	ITLCO (sec/min)	CTLCO (sec/min)	Gen Alarm	Drill	Sil.	Walk	Seq. De-Act	Fan Re-Start	Group Alm/Sup/Tr	Gen. Alm	Pt. Sp. Outputs	Gr. Sp. Outputs	Gen. Tbl.	Gen. Supv.	Iden.	Release Zone	Rel. Zn. Pre-Alm	Rel. Zn. Pre-Rel	Counting	Crossed Group	Iden.	Rel. Zn. Release	Iden.	Concurrent Rel. Zn.
---	1	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I1	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action
---	2	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I1	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action
---	3	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I1	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action
---	4	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I2	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action
---	5	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I2	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action
---	6	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I2	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action
---	7	Head-End-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	No	No	-----	-----	-----	Yes	-----	Z-1 Pre-Action
---	8	Head-End-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	No	No	-----	-----	-----	Yes	-----	Z-1 Pre-Action
---	9	Head-End-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-2	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
---	10	Head-End-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-2	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
---	11	Head-End-Room Waterflow	AI	Waterflow	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-6	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
---	12	Head-End-Room Tamper	AI	Supervisory	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-5	-----	-----	Y	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
---	13	Head-End-Room Low Press	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-4	-----	Y	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
---	14	Power-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2A	-----	-----	ATM-7	-----	-----	I3	2	Yes	Yes	No	AI-2B	-----	Yes	-----	Z-2 Pre-Action
---	15	Power-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2A	-----	-----	ATM-7	-----	-----	I3	2	Yes	Yes	No	AI-2B	-----	Yes	-----	Z-2 Pre-Action
---	16	Power-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2B	-----	-----	ATM-7	-----	-----	I4	2	Yes	Yes	No	AI-2A	-----	Yes	-----	Z-2 Pre-Action
---	17	Power-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2B	-----	-----	ATM-7	-----	-----	I4	2	Yes	Yes	No	AI-2A	-----	Yes	-----	Z-2 Pre-Action
---	18	Power-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	No	No	-----	-----	-----	Yes	-----	Z-2 Pre-Action
---	19	Power-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-8	-----	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----
---	20	Power-Room Waterflow	AI	Waterflow	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-12	-----	-----	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----
---	21	Power-Room Tamper	AI	Supervisory	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-11	-----	-----	Y	-----	2	-----	-----	-----	-----	-----	-----	-----	-----
---	22	Power-Room Low Press	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-10	-----	Y	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----
---	23	HVAC Shutdown	AO	-----	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	-----	-----	1 and 2	-----	-----	Yes	-----	-----	-----	-----	-----
---	24	Power Shutdown	AO	-----	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	-----	-----	1 and 2	-----	-----	-----	-----	-----	Yes	-----	-----
---	25	Supervisory to Central Station	AO	-----	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	Y	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
---	26	Pre-Action Low Air	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-13	-----	Y	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Execution Statements

```
$ Head-End-Room Pre-Alarm
1#3=SG1,AM1:1,I1
1#3=1,5=A4#6
4#6=SG1,AM1:1,I2
4#6=3,0=A1#3
$ Power-Room Pre-Alarm
14#15=SG3,AM1:7,I3
14#15=1,5=A16#17
16#17=SG3,AM1:7,I4
16#17=3,0=A14#15
$ Head-End-Room Waterflow
11=SG2,AM1:6,RY3
$ Power-Room Waterflow
20=SG4,AM1:12,RY3
$ Head-End-Room Tamper
12=AM1:5,25
$ Power-Room Tamper
21=AM1:11,25
$ Head-End-Room Low Pressure
13=AM1:4
$ Power-Room Low Pressure
22=AM1:10
$ Pre-Action-System Low Air
26=AM1:13
$ Head-End-Room Pre-Release
(I1*I2)+7+8=SG1/120,23
$ Head-End-Room Release
D(I1*I2,30,9,10)+7+8=NSG1,NAM1:1,AR1,SG2,24,RY2,AM1:3
9+10=AM1:2
$ Power-Room Pre-Release
(I3*I4)+18=SG3/120,23
$ Power-Room Release
D(I3*I4,30,19)+18=NSG3,NAM1:7,AR2,SG4,24,RY2,AM1:8
19=AM1:8
```

APPENDIX B
NEW YORK CITY ABORT SEQUENCE

B-1   INTRODUCTION

The following EOC program example demonstrates a typical method of supporting the unique N.Y.C. suppression system abort sequence. Use of this program negates the need for any external equipment to control the notification appliances.

B-2   GENERAL DISCUSSION

This discussion is based on a typical single suppression zone, as illustrated in Figure B-1. The room contains: six smoke detectors, one manual release station, one abort station, one power shutdown and one HVAC shutdown.

B-2.1   Sequence of Operation

- Any detector–Activate the bell.
- Second smoke detector alarm–Turn off bell, turn on horn (pulsing), turn on strobe (steady), begin (30 second) discharge delay, shut down power, shut down HVAC.
- When timer counts down–Discharge agent, turn on strobes (steady) and horn/strobe (steady).
- Abort Active–Turn off horn, turn off strobe, turn on bell and add 90 seconds to initial time delay.

B-2.2   System Configuration

The configuration of the system depicted in Figure B-1 contains the following hardware with assigned addresses:

- Six Smoke Detectors (1 through 6)
- One Abort Station (7)
- One Manual Release Station (8)
- One Bell (SG1)
- One Horn Circuit (SG2)
- Two Strobes on one circuit (SG3)
- Two Release Devices on one circuit (AR1)

B-2.3	**Program for N.Y.C. Abort Sequence**

Note: The programming has been updated and simplified from previous software versions. When using N.Y.C. Abort, all initiating devices must be set to the default of latching. Non-Latching must not be used or improper operation of this sequence results.

STATEMENT 1
- (1#6)=C1
  - C1 GOES TRUE ONLY ONCE, DUE TO THE FIRST ALARM.

STATEMENT 2
- C1=SG1
  - SG1 TURNS ON DUE TO THE FIRST ALARM ONLY.

STATEMENT 3
- (1#6)>1=C2
  - PRE-RELEASE STATE.
  - C2=SET WITH THIS STATE.

STATEMENT 4
- C2=NSG1,SG2/60,SG3,9,10
  - PRE-RELEASE STATE.
  - SG2 AND SG3 ARE NACS ACTIVATED WITH THIS STATE.
  - NSG1=SHUTOFF OF SG1 THAT WAS ENABLED WHEN ONE ALARM ACTIVATED.
  - 9 AND 10 ARE ADDRESSABLE SHUTDOWNS.

STATEMENT 5
- D(C2*N7*NC3*NC4,30,7)=C4,AR1,SG2/C
  - D=30 SECOND DELAY TO RELEASE.
  - C2=THE CONDITION MET IF AT LEAST TWO ALARMS REPORT.
  - N7=THE ABORT TO STOP THE COUNTDOWN IS NOT ACTIVE.
  - NC3=THE ABORT HAS NOT BEEN PREVIOUSLY ACTIVE AND RELEASED.
  - NC4= THE SYSTEM HAS NOT ALREADY RELEASED.
  - 30=THE AMOUNT OF SECONDS TO DELAY.
  - 7=THE ABORT TO STOP THE DISCHARGE OF THE AGENT AR1.
  - C4=SYSTEM HAS RELEASED.
  - AR1=THE RELEASE CIRCUIT.
  - /C=SETS SG2 AS A CONTINUOUS SIGNAL AND OVERRIDES CURRENT PATTERN.

STATEMENT 6
- 7*C2*NC4=C3,SG1,NSG2,NSG3
  - 7=ABORT ACTIVATED
  - C2=TWO OR MORE ALARMS ARE ACTIVATED.
  - NC4= THE SYSTEM HAS NOT ALREADY RELEASED.
  - C3=THE ABORT WAS PRESSED AND C2 IS STILL ACTIVE.
  - SG1= RETURN TO FIRST ALARM SIGNALLING.
  - NSG2,NSG3=SHUT OFF HORN AND STROBE.

STATEMENT 7
- D(C3*NC4*N7,90,7)+8=NSG1,SG2/60,SG3
  - C3= TWO OR MORE ALARMS ARE ACTIVATED AND THE ABORT HAS BEEN PRESSED
  - NC4=THE SYSTEM HAS NOT RELEASED YET.
  - N7=THE ABORT IS NOT ACTIVE.
  - 8=THE MANUAL RELEASE.
  - NSG1=ENTER PRERELEASE STATE.
  - SG2/60,SG3=ENTER PRERELEASE STATE.

Note: The time delay of 90 seconds was added to count down simultaneously with the time delay in the next step. Since the system turns the notification outputs back to first alarm bells, this turns the second alarm back on once the 90 seconds expire. This implies that the system has 30 seconds before discharge.

STATEMENT 8

• D(C3*NC4,120,7)+8=C4,AR1,SG2/C,SG3,9,10
  – C3= TWO OR MORE ALARMS ARE ACTIVATED AND THE ABORT HAS BEEN
     PRESSED AND RELEASED
  – NC4=THE SYSTEM HAS NOT RELEASED YET.
  – 7=THE ABORT SWITCH.
  – 8=THE MANUAL RELEASE.
  – AR1=SYSTEM RELEASE.
  – SG2/C,SG3=ENTER PRERELEASE STATE.
  – 9 AND 10 ARE ADDRESSABLE SHUTDOWNS.

Note: The 120 second time delay in this statement was achieved by taking the original value of the time delay (in this case, 30 seconds), and adding 90 seconds to it. For an original time delay of 60 seconds, the value in this statement for time delay duration would be 150 seconds.
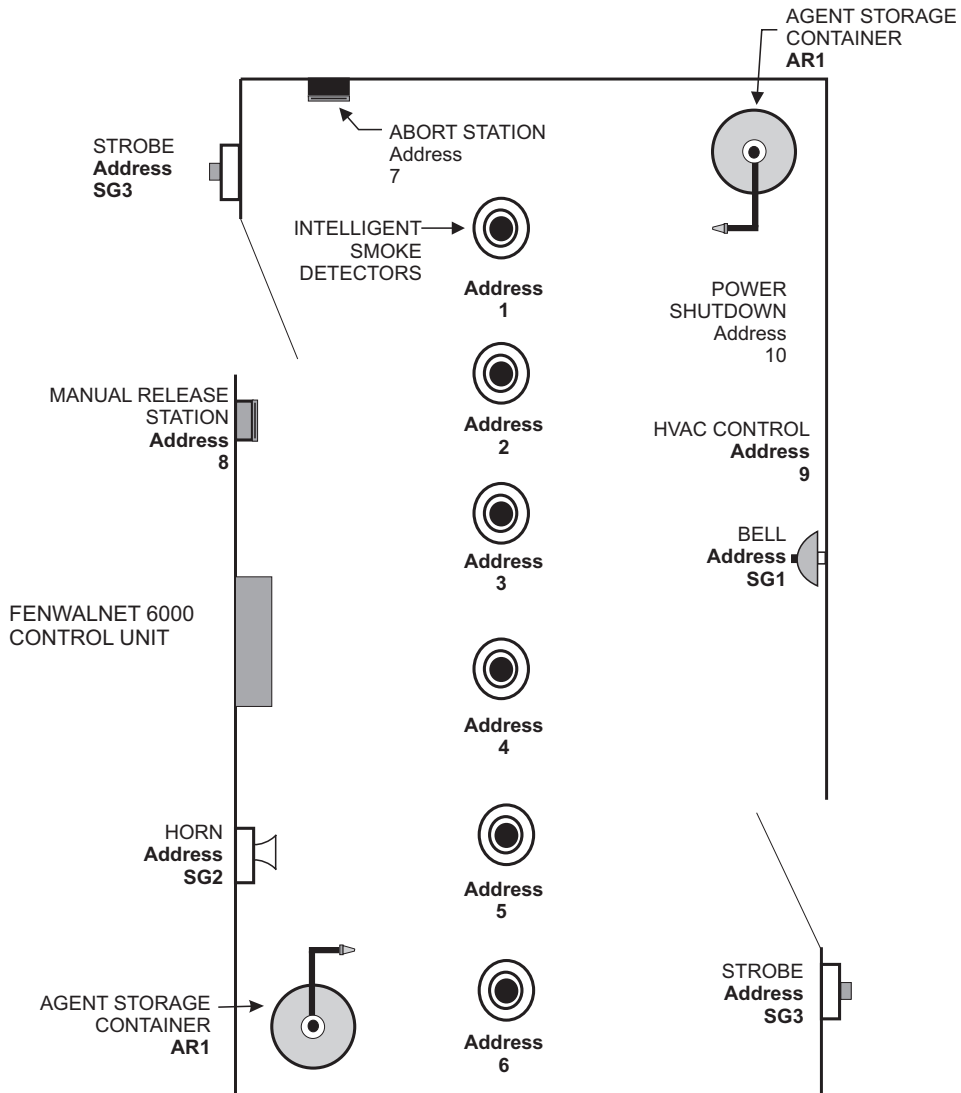

Figure B-1. New York City Installation

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APPENDIX C
FN6000 FIRMWARE UPGRADE INSTRUCTIONS

C-1 INTRODUCTION

Follow the procedures below to upgrade the FN6000 Control Unit firmware.

If you experience any problems when executing these procedures, please call Fenwal Technical Support, (866) 287-2531.

C-2 PREPARATION

1. Download your current configuration from the control unit to the PC using the latest PC Configuration Software. Save the file.
2. Download the event log and save as a text file.
3. In order to use USB for this operation, make sure the USB driver has been previously installed. (see the User CD for instructions to install the driver).

C-3 UPGRADE THE CONTROL UNIT

1. With the control unit powered down, connect your PC to the panel via a USB or RS232 cable.
2. Insert the Upgrade CD into the CD ROM drive.
3. Browse, locate, and execute 'loadSLCC.bat' on the CD.

    Note: Perform steps 4 through 6 quickly, as you only have 10-15 seconds to start the load.
4. Connect Power to the panel.
5. Pause a moment and select 'Program" (if using USB, allow time for the PC to detect the panel as a USB device)
6. Select the appropriate COM port and click "Ok".
7. After a few seconds, the Control Unit displays "ERASING OLD CODE'".
8. The Control Unit display indicates 'LOADING COMPLETED' along with confirmation from the PC
9. Observe the LCD display on the Control Unit until you see "SYSTEM" "INITIALIZING'" on the top line and the versions "y.y.y/1.2.0" on the bottom line (where y.y.y is the existing version of the FN6000).
10. Allow the panel to continue its boot, and it will eventually report "Date and Time Not Set" and "SLC Not Monitoring" faults.
11. The Control Unit is now upgraded. Exit the PCISP program.

The Control Unit configuration will be set to defaults by the upgrade operation. You must now upload the saved configuration using the newest version of the FCS 6000 Configuration Software.

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TECHNICAL MANUAL USER FEEDBACK FORM

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4. CHANGE NO. OR REV. DATE	5. SYSTEM/EQUIPMENT	6. PRIORITY OF COMMENT

7. USER EVALUATION

MANUAL IS: ❑ EXCELLENT ❑ GOOD ❑ FAIR ❑ POOR ❑ COMPLETE ❑ INCOMPLETE

8. ❑ PROBLEM ❑ QUESTION ❑ SUGGESTION ❑ COMMENT: (check one)

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PAGE NO.	PARAGRAPH NO.	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Use Blank Continuation Sheets as Required)

10. ORIGINATOR	11. COMPANY NAME

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