UNITED
FIRE SYSTEMS

PREACTION PAC
SPRINKLER VALVE ASSEMBLY ®

with Kidde ARIES-SLX Releasing Control Panel

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

Serial Number _____

Date of Installation _____Date of Commissioning _____

FM APPROVED

UNITED Fire Systems

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Kenilworth, NJ USA 07033
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Manual Part Number 10-500002-00E
Version 1.0
November 2020

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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 Systems** **PREACTION-PAC™** sprinkler valve assemblies. The manual contains installation, operation, and maintenance information for these assemblies.

⚠️ **IMPORTANT**

UNITED Fire Systems 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 Systems** 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 Systems** 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 Systems** **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 Systems** strongly recommends that all owners of **PREACTION-PAC™** 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 Systems **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 10-500002-00E.
- 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 Systems
1 Mark Road
Kenilworth, NJ USA 07033
908-688-0300
www.unitedfiresystems.com

LIMITED WARRANTY
PREACTION-PAC™

What Does This Warranty Cover?
This Limited Warranty covers all manufacturing defects in material and workmanship in all equipment supplied by **UNITED Fire Systems** for new **PREACTION-PAC™** sprinkler valve assemblies.

How Long Does The Coverage Last?
This Limited Warranty lasts for either eighteen (18) months from the date of shipment to the original purchaser or twelve (12) months from the date of commissioning by **UNITED Fire Systems** or a trained distributor, whichever comes first.

What Will UNITED Fire Systems Do?
UNITED Fire Systems will repair, replace, or refund the purchase price of, at its option, any defective **PREACTION-PAC™** equipment at no charge.

What Does This Warranty Not Cover?
- Equipment that is not supplied by **UNITED Fire Systems** is not covered.
- Equipment that has not been installed, commissioned, operated, and maintained per the instructions in the applicable **UNITED Fire Systems** instruction manual is not covered.
- Equipment that has been repaired, modified, or otherwise tampered with not in accordance with the applicable **UNITED Fire Systems** instruction manual is not covered.
- Any problem that is caused by abuse, misuse, or an act of God (such as a flood) is not covered.
- Transportation and shipping charges to return equipment to **UNITED Fire Systems** or for **UNITED Fire Systems** to return repaired or replacement equipment are not covered.
- Consequential and incidental damages are not covered. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion may not apply.

What Are The Customer's Responsibilities?
- Ensuring that the **UNITED Fire Systems** equipment is installed, commissioned, operated, and maintained per the instructions in the applicable **UNITED Fire Systems** instruction manual.
- Where applicable, ensuring that checklists supplied by **UNITED Fire Systems** are properly used and completed at the time of installation, commissioning, operation, and maintenance, and such checklists are retained as records of proper completion.
- Noting and recording the serial number(s) of **UNITED Fire Systems** equipment.
- Notifying **UNITED Fire Systems** or a trained distributor of the need for service under this Limited Warranty.

How Is Warranty Service Obtained?
If anything goes wrong with **UNITED Fire Systems** equipment, contact:

UNITED Fire Systems
Division of United Fire Protection Corporation
1 Mark Road
Kenilworth, NJ 07033 USA
Phone: 908-688-0300
Fax: 908-481-1131
www.unitedfiresystems.com

= OR =

Your
Trained
Distributor

Be prepared to supply the serial number(s) of the equipment requiring service, and copies of the installation, commissioning, and maintenance checklists, as applicable.

Is This Limited Warranty Transferable?
If the **PREACTION-PAC™** equipment is moved from one to another installation during the time period of Limited Warranty coverage, the **PREACTION-PAC™** equipment must be re-commissioned by **UNITED Fire Systems** or a trained distributor to be eligible for continuing coverage. There will be a quoted charge for this re-commissioning.

Is This The Entire Warranty?
This Limited Warranty is the entire warranty given by **UNITED Fire Systems** to the purchaser of new **PREACTION-PAC™** equipment. Component warranties supplied by component manufacturers to **UNITED Fire Systems** that are valid for a longer period of time than the **UNITED Fire Systems** Limited Warranty may apply. Contact **UNITED Fire Systems** for more information. There are no other warranties expressed or implied, beyond those required by law.

How Do State and Federal Laws Apply?
This Limited Warranty grants specific legal rights per Federal law. There may also be other rights which vary from state to state.

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Upper Enclosure

Operating Instructions

Upper Enclosure Door Lock

Manual Release Valve Door with Latch (No Lock)

Lower Enclosure

Lower Enclosure Door Lock

Figure 1 – PREACTION-PAC™ Shown With Enclosure Doors Closed

1. GENERAL

1.1. Introduction. The **UNITED Fire Systems PREACTION-PAC™** is a fully assembled and factory tested preaction fire suppression system, including preaction valve, trim, and control panel providing one complete zone of preaction water sprinkler fire protection. All components are contained in two steel enclosures assembled one above the other. The system pressure gauges 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. Preaction Valve. The preaction valve installed in the **PREACTION-PAC™** uses a diaphragm to separate the system water supply from the system piping. The valve uses the supply water pressure in the diaphragm chamber to hold the diaphragm closed against the water supply pressure. When the water pressure in the diaphragm chamber is released, the valve actuates. The diaphragm-style design of the preaction valve allows for external resetting. Repressurizing the diaphragm chamber resets the valve.

1.1.2. Piping. Water inlet pipe connections are located on the lower left and lower right sides of the lower enclosure. The unused inlet is 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 Kidde ARIES-SLX addressable releasing control panel is factory-installed in the upper enclosure. Programming for a basic preaction 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. Where applicable, 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. For assemblies equipped with a compressor for air pressurization of the preaction sprinkler piping, all wiring and adjustments are performed at the factory. 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.

1.1.6. Pressure Maintenance Device. Assemblies are equipped with a pressure maintenance device when the source of the supervisory gas is external of the **PREACTION-PAC™**, such as a tank-mounted air compressor or a nitrogen generator. A blank plate replaces the compressor disconnect switch.

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 gauge, while the upper enclosure is 14 gauge. 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 gauges on front of enclosure. Three pressure gauges are mounted on the front of the lower enclosure, and are visible at all times. These gauges monitor the air pressure in the system

piping, the water supply pressure up to the preaction 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 preaction 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. Water inlet connections. The water inlet piping may attach to the lower enclosure near the bottom on either side.

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.
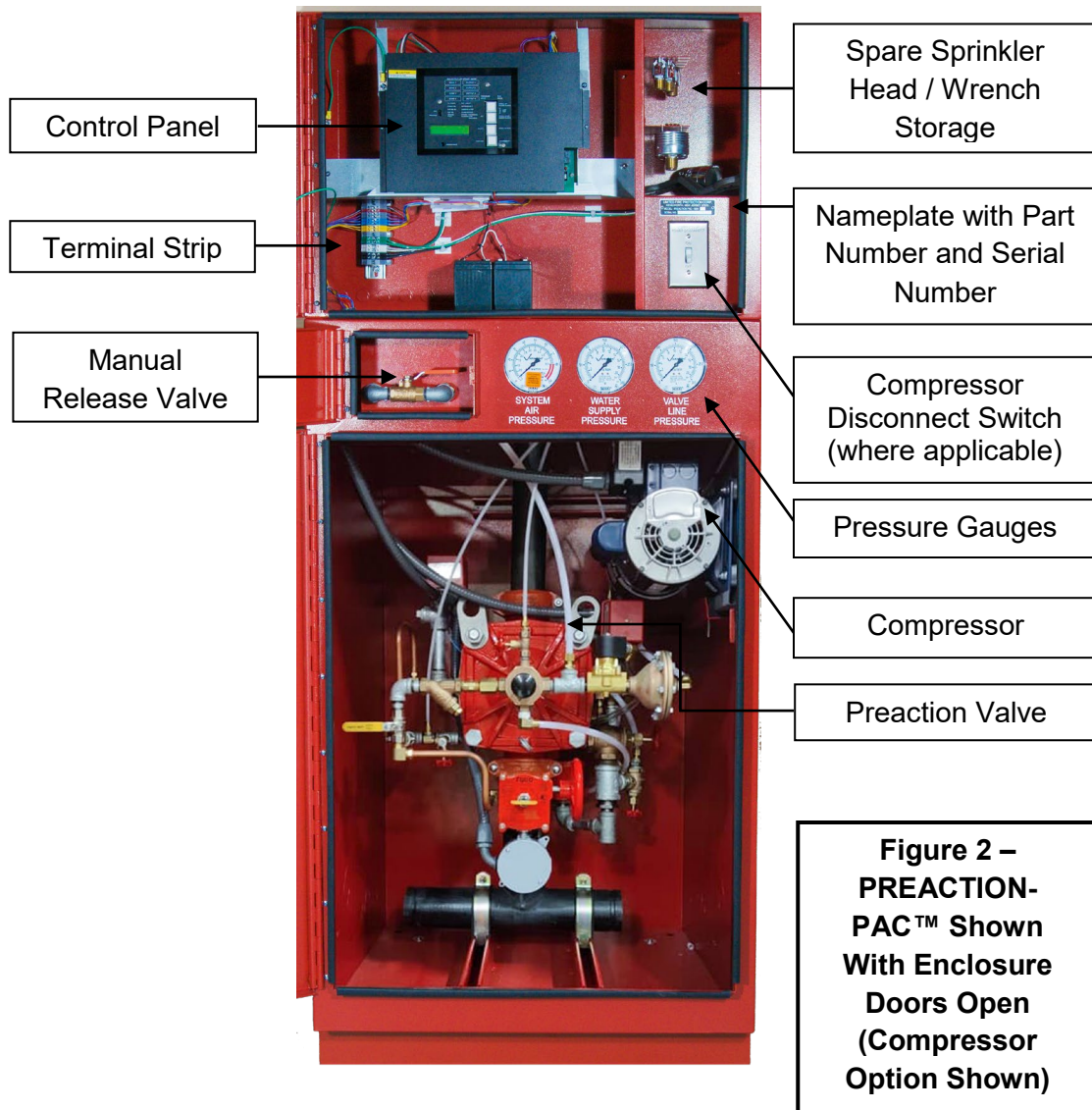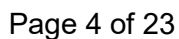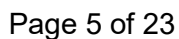

Figure 2 – PREACTION-PAC™ Shown With Enclosure Doors Open (Compressor Option Shown)

**Figure 3a – Diagram - Functional
Description with Compressor**

Figure 3b – Diagram - Functional Description
with Pressure Maintenance Device

1.3. Functional Description. Refer to Figure 3a on page 4 and Figure 3b on page 5.

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 preaction valve within the assembly. Refer to the control panel instruction manual in Section 5 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.Preaction valve (3). The preaction 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 Tyco Manual TFP1421 in Section 2 for more detailed information on the preaction valve.

1.3.4.Valve actuation solenoid (4). The valve actuation solenoid receives the signal from the control panel (1), and actuates the preaction valve (3). The FM Approved solenoid is rated at 24VDC. Refer to Tyco Manual TFP1421 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 preaction 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 preaction 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 manual in Section 5 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 preaction valve (3). The normal position of this valve when the system is in service is open. Tyco Manual TFP1421 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 manual in Section 5 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 preaction 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.Pressure Maintenance Device (8). The pressure maintenance device supplies supervisory gas pressure, from either a tank-mounted air compressor or nitrogen generator, to fill the sprinkler pipe downstream of the preaction valve (3). The sprinkler pipe is pressurized to 15 PSIG by the pressure maintenance device (8). Loss of this pressure, from damage to the pipe or a sprinkler head, results in a supervisory signal at the control panel (1).

1.3.10. High / low air pressure limit switch (9). Where applicable, 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.

1.3.11. 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 5 for details on the response of the panel to the low air pressure signal switch.

1.3.12. Compressor disconnect switch (11). Where applicable, 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.

1.3.13. 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 preaction valve (3), open the door and pull the lever on the manual station valve forward. The preaction valve (3) will open, and the sprinkler pipe will fill with water. No power is needed to manually open the preaction 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.

1.3.14. Drain valve (13). The drain valve is used to drain the sprinkler pipe after actuation of the preaction valve (3). This valve is used only during inspection, maintenance, and resetting of the assembly. Only trained personnel should use this valve. Refer to Tyco Manual TFP1421 in Section 2 for more detailed information on this valve. The normal position of this valve is closed.

1.3.15. 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, if equipped, 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.

1.3.16. Input connection for automatic fire detectors (15). Automatic fire detectors are required to provide the signal for opening the preaction valve (3). These detectors are field-connected to this connection. See Section 1.10, and refer to the control panel instruction manual in Section 4 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.

1.3.17. Water inlet connection (16). The sprinkler water supply is field-connected to this connection. One of two optional water inlet connections may be chosen. The connection may be made on the lower right of the assembly, or by removing the cap, the connection may be made on the lower left of the assembly. Refer to Section 1.10 and Section 2 – Tyco Manual TFP1421 for more detailed information on this connection.

1.3.18. 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 – Tyco Manual TFP1421 for more detailed information on this connection.

1.3.19. **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 manual in Section 5 for details on this connection.

1.3.20. **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 manual in Section 5 for details on this connection.

1.3.21. **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 – Tyco Manual TFP1421 for more detailed information on this connection.

1.4. **Configurations.**   **UNITED Fire Systems** **PREACTION-PAC™** sprinkler valve assemblies are available in the following configurations:

1.4.1. **Valve sizes:** 2" through 4".

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

1.4.3. **Supervisory gas sources:**

1.4.3.1. For 2" valves: 1/6HP compressor and pressure maintenance device available.

1.4.3.2. For 3" and 4" valves: 1/6HP, 1/3HP, and 1/2HP compressors and pressure maintenance device available.

1.4.3.3. Gas sources are capable of pressurizing piping systems up to the following limits:

1.4.3.3.1. 1/6HP compressor: maximum system capacity is 290 gallons.

1.4.3.3.2. 1/3HP compressor: maximum system capacity is 475 gallons.

1.4.3.3.3. 1/2HP compressor: maximum system capacity is 780 gallons.

1.4.3.3.4. Pressure maintenance device: Refer to the manual of the external source.

1.4.4. **Control panel:** A Kidde ARIES-SLX addressable detection control panel is factory-installed in the upper enclosure.

1.5. **Options –** None at this time.

1.6. **Approvals.** **UNITED Fire Systems** **PREACTION-PAC™** sprinkler valve assemblies, as listed in this Manual, are Approved by FM Approvals under the heading "Automatic Water Control Valves." See pages 9 and 10 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 Systems** **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 Systems** **PREACTION-PAC™** assemblies are included with this manual. In some cases, these manuals contain references that are **NOT APPLICABLE** to **PREACTION-PAC™** assemblies. 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.

1.9 FM Approved Assemblies

Part Number Coding:

$$G3 - XX - P - X - X - E$$

Codes Generation III PREACTION-PAC™. Future generations, incorporating major changes, will be G4, G5, etc.

Codes control panel:
E = Kidde ARIES-SLX

Codes valve size:
20 = 2" valve
30 = 3" valve
40 = 4" valve

Codes supervisory gas source:
1 = 1/6 HP Compressor
2 = 1/3 HP Compressor
3 = 1/2 HP Compressor
N = Pressure Maintenance Device

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 – Approved PREACTION-PAC™ Assemblies with Kidde ARIES-SLX Control Panel

Part Number	Valve Size, in.	Valve Type	Supervisory Gas Source	Control Panel
G320P11E	2"	Single Interlock	1/6 HP Compressor	Kidde ARIES-SLX
G320P1NE	2"	Single Interlock	Pressure Maintenance Device	Kidde ARIES-SLX
G330P11E	3"	Single Interlock	1/6 HP Compressor	Kidde ARIES-SLX
G330P12E	3"	Single Interlock	1/3 HP Compressor	Kidde ARIES-SLX
G330P13E	3"	Single Interlock	1/2 HP Compressor	Kidde ARIES-SLX
G330P1NE	3"	Single Interlock	Pressure Maintenance Device	Kidde ARIES-SLX
G340P11E	4"	Single Interlock	1/6 HP Compressor	Kidde ARIES-SLX
G340P12E	4"	Single Interlock	1/3 HP Compressor	Kidde ARIES-SLX
G340P13E	4"	Single Interlock	1/2 HP Compressor	Kidde ARIES-SLX
G340P1NE	4"	Single Interlock	Pressure Maintenance Device	Kidde ARIES-SLX

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.

SIDE VIEW   **FRONT VIEW**
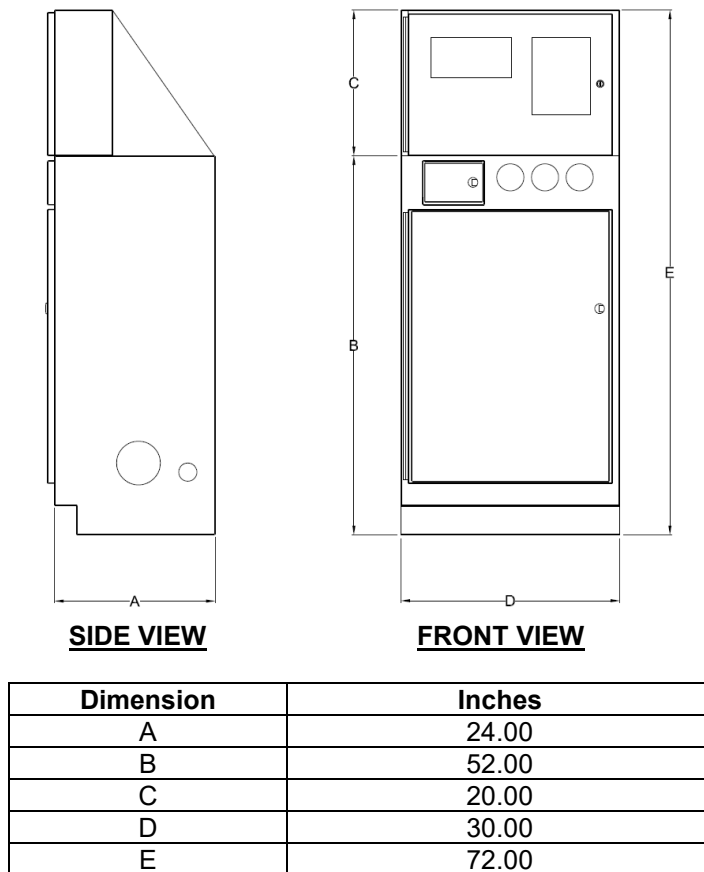
Dimension	Inches
A	24.00
B	52.00
C	20.00
D	30.00
E	72.00

Figure 4 – Diagram - Overall Dimensions
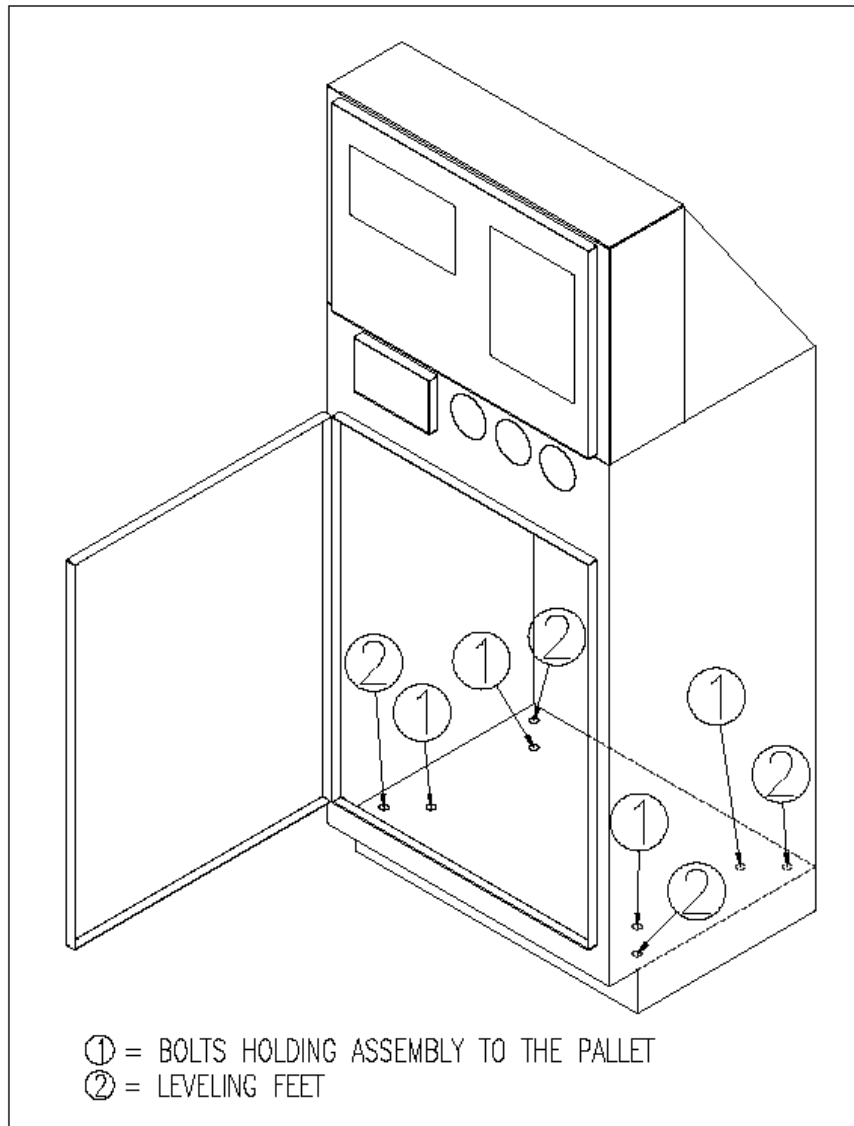
Figure 5 – Diagram - Location of Pallet Bolts and Leveling Feet

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:

G3 – 20P11E – XXXX - XXX

Codes for Generation III PREACTION-PAC ⎯⎯⎯⎯

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

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

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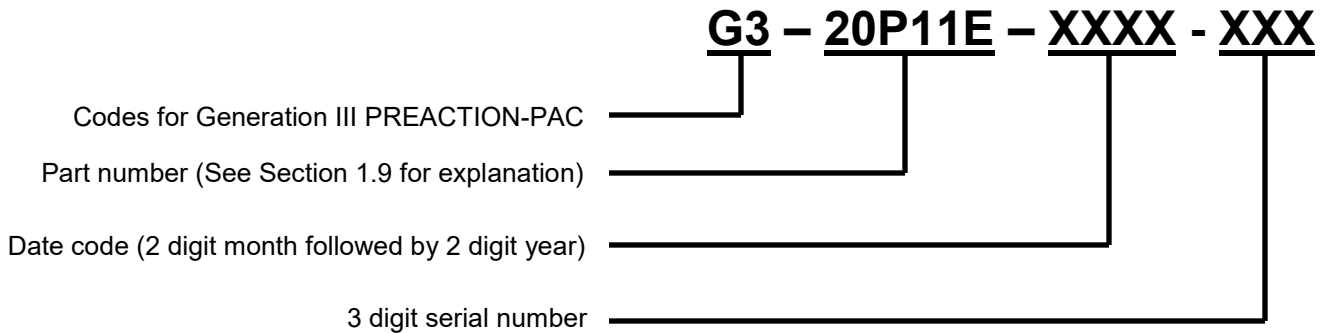
Note the serial number, date of installation, and date of commissioning on the front of this manual where indicated.

1.10.4. External Attachments.

1.10.4.1. Preaction Valve. Use Section 2 - Tyco Manual TFP1421 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 two locations:

- The standard connection is at the lower right center of the lower enclosure. The assembly is pre-piped to accept inlet piping at this location. This location is labeled INLET. 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 lower right center inlet connection, and assemble the steel cap removed from the tee to the lower right connection using a field-supplied grooved coupling.

⚠️ **CAUTION** ⚠️

Failure to assemble the steel cap to the lower right center inlet will result in property damage due to water escaping from the lower right center inlet.

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.

1.10.4.1.4. External Supervisory Gas Inlet. External supervisory gas inlet piping is attached to the **PREACTION-PAC™** in one location: the back center of the top surface of the lower enclosure. The connection point is a ½ NPT female bulkhead (through-wall) fitting. Make the field

connection by removing the red plastic plug and plumbing to the location with ½ inch pipe, typically either steel or copper.   PLEASE NOTE: This inlet option is only present on configurations with a pressure maintenance device.
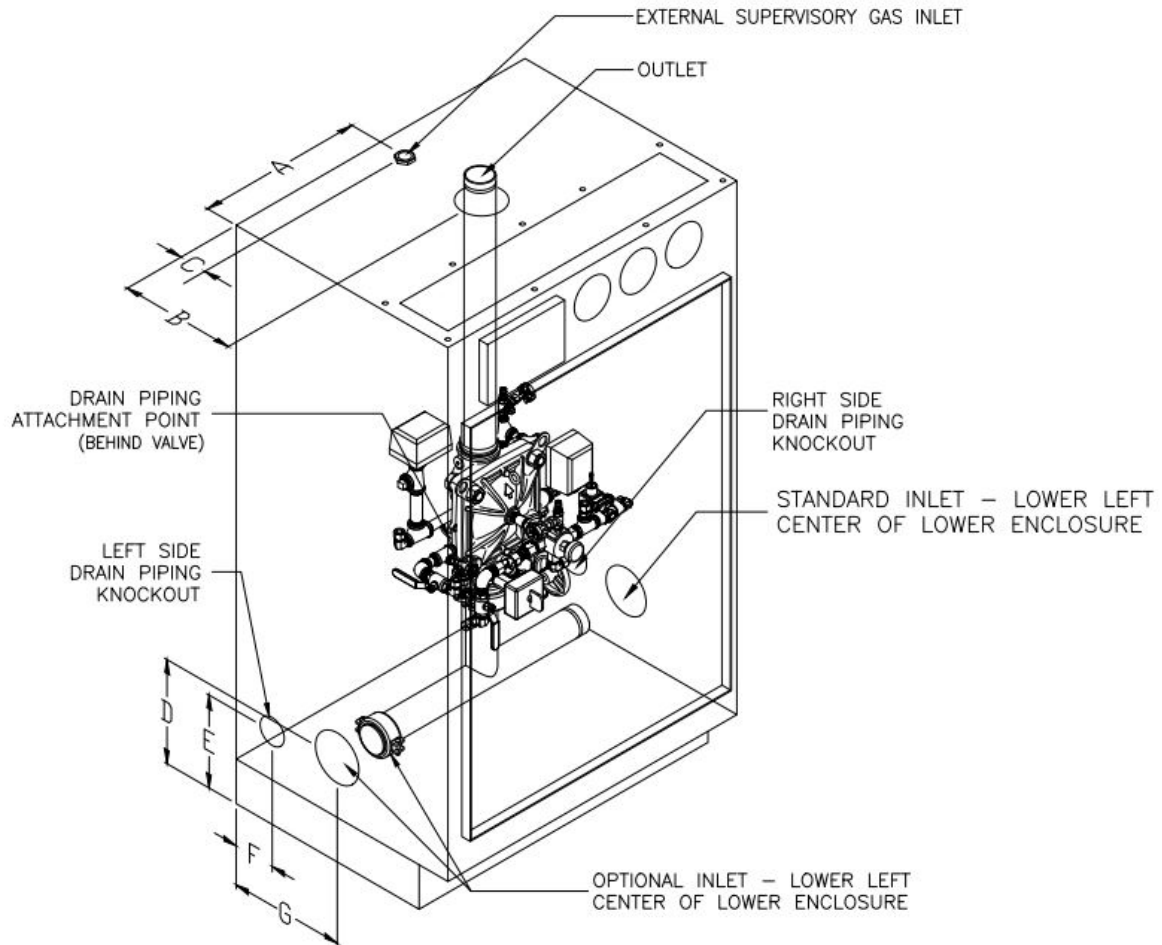
NOTES:
1. TRIM ELEMENTS AND UPPER ENCLOSURE REMOVED FOR CLARITY

Dimension	Inches
A	15.00
B	12.50
C	2.00
D	9.86
E	8.86
F	5.75
G	12.50

Figure 6 – Diagram - Piping Attachment Details

1.10.4.2. Terminal Strip and Control Panel. See Figure 7a and Figure 7b for information on connection to the terminal strip in the upper enclosure. Use Section 5.1 – Kidde manual 06-237491-001 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 5). See Section 5 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 Systems** will not be responsible for warranty adjustment of damaged control panels when these instructions are not followed.

⚠️ **CAUTION** ⚠️

This assembly contains static-sensitive 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.
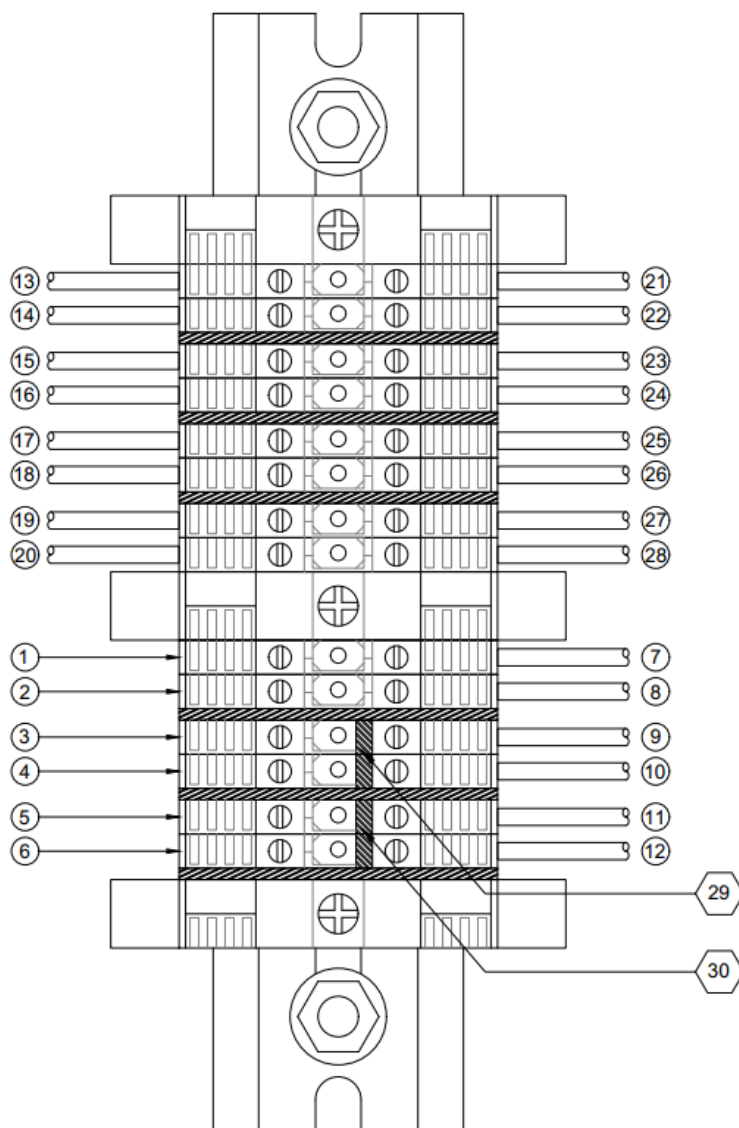
Figure 7a – Diagram –

Terminal Strip with Compressor 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 29 IN PLACE	**WITH JUMPER 29 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 30 IN PLACE	**WITH JUMPER 30 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 NEUTRALTO 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 WIRING (-) TO CONTROL PANEL		GRAY
22	PREACTION SOLENOID WIRING (+) 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		
29	CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC NEUTRAL CONDUCTORS - REMOVE TO SEPARATE		
30	CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC HOT CONDUCTORS - REMOVE TO SEPARATE		

Legend for Figure 7a
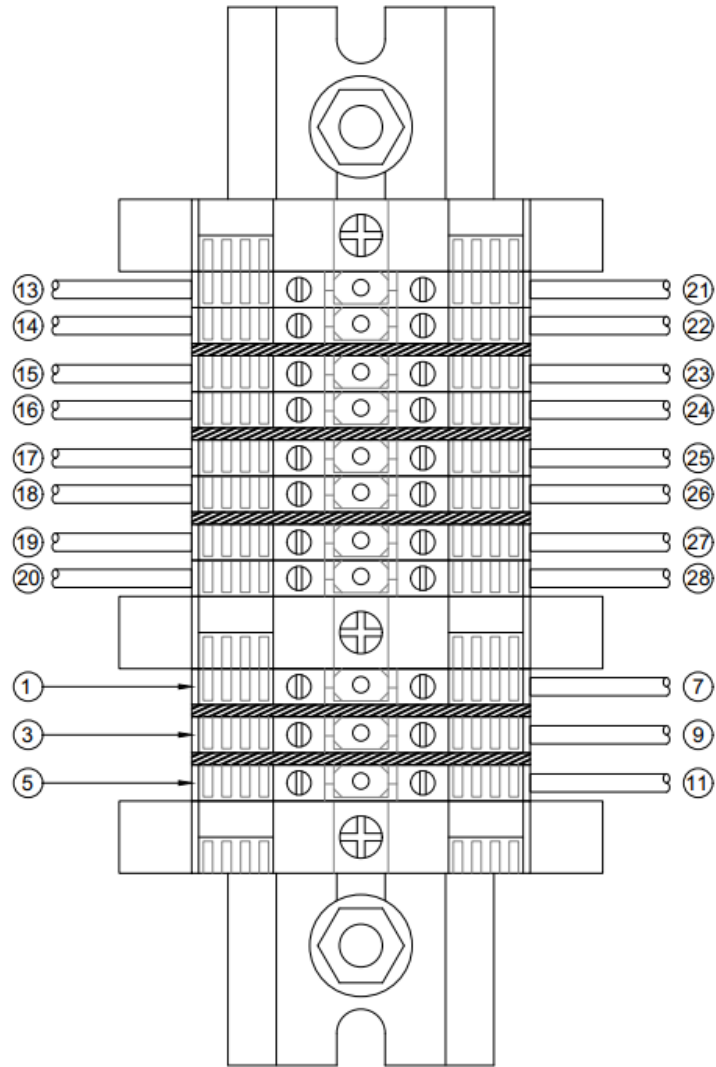
Figure 7b – Diagram –

Terminal Strip with Pressure Maintenance Device Wiring Detail

LEGEND	
FIELD WIRING	
	COLOR OF TERMINAL BLOCK
1 110 VAC GROUND FOR CONTROL PANEL	GREEN/YELLOW
3 110 VAC NEUTRAL FOR CONTROL PANEL	WHITE
5 110 VAC HOT FOR CONTROL PANEL	BLACK
FACTORY WIRING	
7 110 VAC GROUND TO CONTROL PANEL	GREEN/YELLOW
9 110 VAC NEUTRALTO CONTROL PANEL	WHITE
11 110 VAC HOT TO CONTROL PANEL	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 WIRING (-) TO CONTROL PANEL	GRAY
22 PREACTION SOLENOID WIRING (+) 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

Legend for Figure 7b

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; with pressure maintenance device = 2.2 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 5.1 – Kidde manual 06-237491-001. 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 5.1 – Kidde manual 06-237491-001. The maximum battery capacity for this control panel is 70 A-h.

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 preaction valve. Refer to NFPA 72 for information on the number, type, and spacing of fire detectors. Install detectors, wiring, and panel connections per Section 5.1 – Kidde manual 06-237491-001. 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 5.1 – Kidde manual 06-237491-001.

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 Kidde 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 5.1 – Kidde manual 06-237491-001.

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. Where applicable. See Figure 7a. 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.

1.10.5. 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 5.1 and 5.2 – Kidde manuals 06-237491-001 and 06-237492-001 to perform all preliminary tests on the control panel, field wiring, and field devices.

1.10.5.4. Use Section 2 – Tyco Manual TFP1421 to perform all preliminary tests on the preaction 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 – Tyco Manual TFP1421, verify that all valves are in the proper position for in-service status. Verify that the three pressure gauges 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 5.1 – Kidde manual 06-237491-001 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 preaction 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 preaction 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 – Tyco Manual TFP1421 and Section 5.1 – Kidde manual 06-237491-001 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 Systems 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 Systems** strongly recommends that all owners of **PREACTION-PAC™** 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. Tyco Manual TFP1421.
1.12.5.2. General Air Products Manual OILLESSINST.
1.12.5.3. United Fire Systems Instruction Sheet UFS-710.
1.12.5.4. Kidde manual 06-237491-001.
1.12.5.5. Kidde manual 06-237492-001.
1.12.5.6. National Fire Protection Association No. 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."
1.12.5.7. National Fire Protection Association No. 72, "National Fire Alarm Code®"

SECTION 2

Tyco Manual TFP1421

DV-5A Automatic Water Control Valve, Single Interlock Preaction, Electric Actuation

DV-5A Automatic Water Control Valve, Single Interlock Preaction, Electric Actuation, Fire Protection Systems 1 1/2 to 8 Inch (DN40 to DN200)

General Description

The TYCO DV-5A Automatic Water Control Valve Single Interlock Preaction Electric Actuation is a diaphragm type valve that can be used in single interlock preaction fire protection systems. When properly trimmed, the double seat design of the DV-5A Valve also provides actuation of fire alarms upon system operation.

The diaphragm style design of the DV-5A Valve allows external resetting, providing for easy resetting of a deluge system without having to open a valve handhole cover to manually reposition a clapper and/or latch mechanism. Simply re-pressurizing the diaphragm chamber resets the valve.

The DV-5A features internal and external coating of the valve to provide corrosion resistance. The external corrosion resistance of the epoxy coating permits the use of the DV-5A in corrosive atmospheres associated with many types of industrial processing plants and outdoor installations.

The DV-5A Single Interlock Preaction Electric Actuation Valve is offered with or without a System Main Control Valve.

The DV-5A Single Interlock Preaction Electric Actuation Valve utilizes automatic sprinklers and a supplemental detection system, comprised of electric detection comprised of heat detectors, smoke detectors, and manual pull stations. Actuation of the detection system automatically operates (releases) the DV-5A Valve, allowing water to flow into the sprinkler piping system and to be discharged from any sprinklers that may subsequently open.

Typically, the system designer selects the detection components for a single interlock preaction system that will respond to a fire sooner than the automatic sprinklers. Consequently, the

system will experience a minimal delay in water delivery over that for a wet pipe sprinkler system because the system will have essentially filled with water before a sprinkler operates. The DV-5A Single Interlock Preaction Electric Actuation Valve automatically supervises the integrity of the overall system. Supervision is provided by monitoring a relatively low air pressure in the system via a low pressure alarm switch so as to detect leaks in the system that otherwise would result in unwanted water discharge should the system operate in a fire condition.

Supervised single interlock preaction systems are generally used to protect areas where there is danger of serious water damage that might result from damaged automatic sprinklers or piping. Typically, such areas include computer rooms, storage areas for valuable artifacts, libraries, and archives.

Single interlock preaction systems are also effectively used to protect properties where a pre-alarm of a possible fire condition may allow time for fire extinguishment by alternate suppression means, prior to a sprinkler discharge.

IMPORTANT
Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Available End Connections and Weights — lb (kg)							
End Connection		**Nominal Valve Size ANSI Inches (DN)**					
Inlet	Outlet	1 1/2 (40)	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)
Thread	Thread	26 (11,8)	25 (11,3)	N/A	N/A	N/A	N/A
Groove	Groove	25 (11,3)	25 (11,3)	60 (27,2)	95 (43,1)	177 (80,3)	327 (148,3)
Flange	Groove	N/A	N/A	66 (30,0)	106 (48,1)	190 (86,2)	346 (157,0)
Flange	Flange	N/A	N/A	72 (32,7)	116 (52,6)	204 (92,5)	365 (165,6)

Item	Description	Qty.	Nominal Valve Size ANSI Inch (DN)					
			1 1/2 (DN40)	**2 (DN50)**	**3 (DN80)**	**4 (DN100)**	**6 (DN150)**	**8 (DN200)**
			P/N	**P/N**	**P/N**	**P/N**	**P/N**	**P/N**
1	Valve Body	1	N/R	N/R	N/R	N/R	N/R	N/R
2	Diaphragm	1	545000020	545000020	545000030	545000040	545000060	545000080
3	Diaphragm Cover	1	N/R	N/R	N/R	N/R	N/R	N/R
4	Hex Bolt, Short	2[a]	545100001	545100001	545100002	545100003	545100004	545100003
5	Hex Bolt, Long	2	545100011	545100011	545100012	545100013	545100014	545100015
6	Lift Washer	2[b]	N/A	N/A	545100021	545100022	545100023	545100022
7	Hex Nut	2	545100031	545100031	545100032	545100033	545100034	545100033
8	Hoist Ring	2	545100041	545100041	545100041	545100041	545100041	545100041
9	Flat Washer	2	N/A	N/A	545100024	545100025	545100026	545100025

NOTES:
a. Hex Bolt, Short, Qty. 6 in 6 and 8 inch (DN150 and DN200) assemblies
b. Lift Washer not used in 1 1/2 and 2 inch (DN40 and DN50) assemblies
c. N/R = Not Replaceable
d. Order replacements parts only via Part Numbers given, do not replace Hex Bolt, Hex Nut, Lift Washer or Hoist Ring with common hardware parts

FIGURE 1
DV-5A VALVE ASSEMBLY AND REPLACEMENT PARTS

1-1/2 AND 2 INCH VALVES ONLY

6 AND 8 INCH VALVES ONLY

Nominal Valve Size ANSI Inches (DN)	Flange Drilling Specification											
	Nominal Dimensions in Inches and (mm)											
	ANSI B16.1[a] (Class 125)			**ISO 7005-2 (PN16)[b]**			**JIS B 2210 (10K)**			**AS 2129 (Table E)**		
	A	B	N	A	B	N	A	B	N	A	B	N
3 (80)	6.00 (152,4)	0.75 (19,0)	4	6.30 (160,0)	0.75 (19,0)	8	5.90 (150,0)	0.59 (15,0)	8	5.75 (146,0)	0.71 (18,0)	4
4 (100)	7.50 (190,5)	0.75 (19,0)	8	7.09 (180,0)	0.75 (19,0)	8	6.89 (175,0)	0.60 (15,0)	8	7.00 (178,0)	0.71 (18,0)	8
6 (150)	9.50 (241,3)	0.88 (22,2)	8	9.45 (240,0)	0.91 (23,0)	8	9.45 (240,0)	0.75 (19,0)	8	9.25 (235)	0.87 (22,0)	8
8 (200)	11.75 (298,5)	0.88 (22,2)	8	11.61 (295,0)	0.91 (23,0)	12	11.42 (290,0)	0.75 (19,0)	12	11.50 (292,0)	0.87 (22,0)	8

Dim. A Bolt Circle Diameter
Dim. B Bolt Hole Diameter
Qty. N Number of Bolt Holes

NOTES:
a. Same drilling as for ANSI B16.5 (Class 150) and ANSI B16.42 (Class 150)
b. Same drilling as for BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16)

TABLE A
FLANGE DRILLING SPECIFICATIONS

Port	Port Description	Port Sizes, NPT Inch per ANSI B1.20.1					
		1 1/2 (DN40)	2 (DN50)	3 (DN80)	4 (DN100)	6 (DN150)	8 (DN200)
P1	Diaphragm Chamber Supply	1/2	1/2	1/2	1/2	1/2	1/2
P2	Water Supply Pressure & Alarm Test	1/2	1/2	1/2	1/2	1/2	1/2
P3	Alarm Actuation	3/4	3/4	3/4	3/4	3/4	3/4
P4	Automatic Drain Valve	1/2	1/2	1/2	1/2	1/2	1/2
P5	System Drain	3/4	3/4	3/4	3/4	3/4	3/4
P6	Main Drain	3/4	3/4	1 1/4	2	2	2
P7	System Air Supply	1/2	1/2	1/2	1/2	1/2	1/2

SYSTEM OPEN TO ATMOSPHERE

VALVE WATERWAY DIAPHRAGM SEAT

DIAPHRAGM CHAMBER

P7 SYSTEM AIR SUPPLY

P4 AUTOMATIC DRAIN VALVE OPEN TO ATMOSPHERE

P1 DIAPHRAGM CHAMBER SUPPLY FROM UPSTREAM SIDE OF SHUT-OFF VALVE

P2 WATER SUPPLY PRESSURE & ALARM TEST

WATER SUPPLY

FIGURE 2A
SET CONDITION

WATERFLOW TO SYSTEM

VALVE WATERWAY

DIAPHRAGM CHAMBER OPEN TO ATMOSPHERE

DIAPHRAGM RETRACTS OPENING VALVE WATERWAY

P3 ALARM PORT WATERFLOW TO ALARM

P4 AUTOMATIC DRAIN VALVE CLOSED

WATERFLOW FROM WATER SUPPLY

FIGURE 2B
OPERATED CONDITION

DRAIN FROM SYSTEM

VALVE WATERWAY

DIAPHRAGM CHAMBER OPEN TO ATMOSPHERE

P5 SYSTEM DRAIN OPEN

P6 MAIN DRAIN OPEN

WATER SUPPLY SHUT OFF
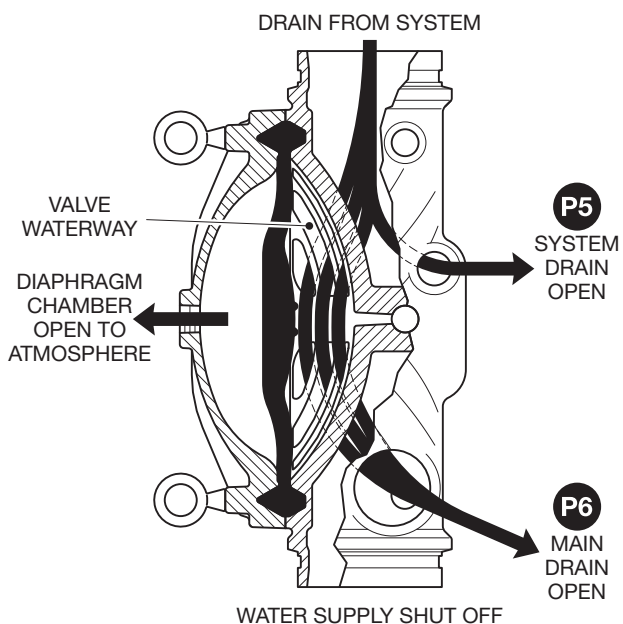
FIGURE 2C
SYSTEM DRAIN CONDITION

RESIDUAL DRAIN FROM SYSTEM

VALVE WATERWAY DIAPHRAGM SEAT

DIAPHRAGM AUTOMATICALLY FLEXES TO ITS SEATED POSTION

P1 DIAPHRAGM CHAMBER SUPPLY FROM UPSTREAM SIDE OF SHUT-OFF VALVE

P5 SYSTEM DRAIN OPEN

P6 MAIN DRAIN CLOSED

WATER SUPPLY SHUT OFF
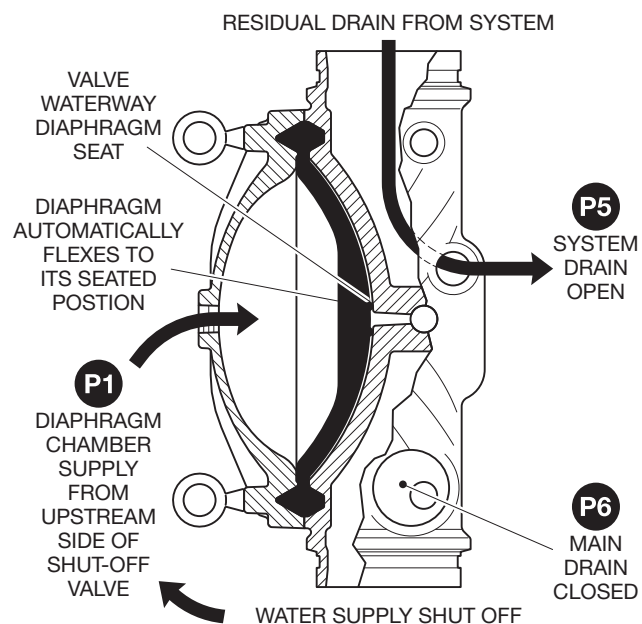
FIGURE 2D
RESIDUAL DRAIN CONDITION

FIGURE 2
DV-5A VALVE OPERATION, PREACTION SYSTEMS

DIMENSIONS SHOWN
ARE APPLICABLE TO
ALL END CONNECTION
CONFIGURATIONS
AVAILABLE PER
VALVE SIZE

10-3/16"
(260 mm)

1-1/2 Inch (DN40)

10-3/16"
(260 mm)

2 Inch (DN50)

13-3/4"
(349 mm)

3 Inch (DN80)

16-3/4"
(425 mm)

4 Inch (DN100)

22-3/8"
(569 mm)

6 Inch (DN150)

27-7/16"
(697 mm)

8 Inch (DN200)

FIGURE 3
DV-5A VALVE
TAKE-OUT DIMENSIONS
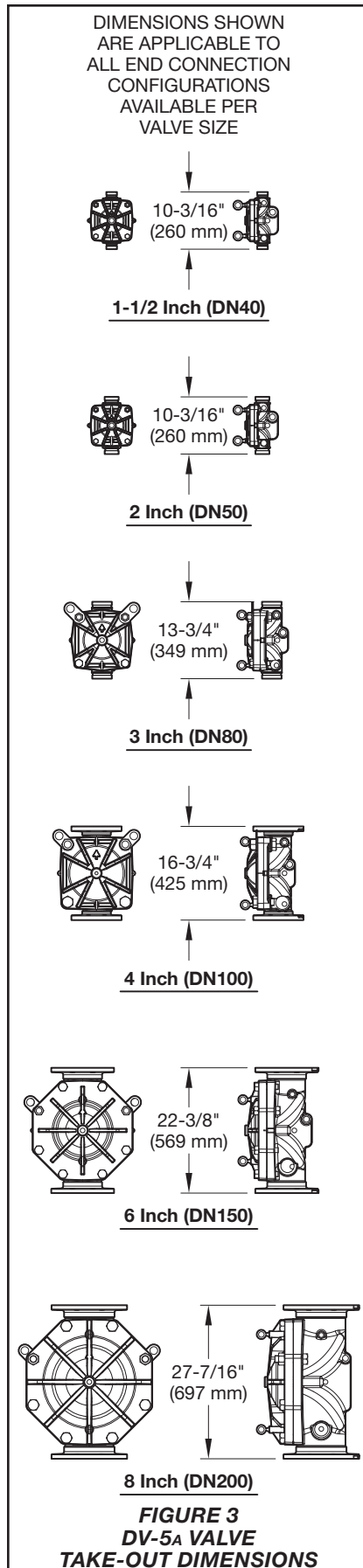
In the event the fire cannot otherwise be extinguished, the preaction sprinkler system will then perform as the primary fire protection system.

NOTICE

The DV-5A Single Interlock Preaction Electric Actuation Valve described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Technical Data

Approvals
UL and C-UL Listed
FM Approved

Listing and Approvals are based on DV-5a Single Interlock Preaction Electric Actuation Valve being trimmed as described in Figure 5.

DV-5A Valve
Components for the 1 1/2 in. to 8 in. (DN40 to DN200) DV-5A Valve are shown in Figure 1. The DV-5A Valve is for vertical installations. It is rated for use at service pressures of 20 to 300 psi (1,4 to 20,7 bar).

The take-out dimensions are shown in Figure 3, and flanged connections are available drilled per ANSI, ISO, AS, and JIS specifications (see Table A). Threaded inlet and outlet connections are available in NPT or ISO 7-1. Threaded port connections are NPT threaded.

Note: PN16 flanges are pressure rated to 16 bar.

Valve Trim
The maximum pressure rating for the Single Interlock Preaction Electric Actuation is dependent on the separately ordered solenoid valve per Technical Data Sheet TFP2180.

When the system pressure is greater than 175 psi (12,1 bar), provision is to be made to replace the standard order 300 psi (20,7 bar) Water Pressure Gauges with separately ordered 600 psi (41,4 bar) Water Pressure Gauges.

If the addition of an Alarm Control Valve is desired or required by the local AHJ, the Alarm Control Valve noted as Item H in Figure 8 is to be a separately ordered electronically supervised normally open valve.

External trim connections are NPT threaded. EMEA trim is provided with NPT x ISO 7-1 thread adapters.

Pressure Loss
See Graph A

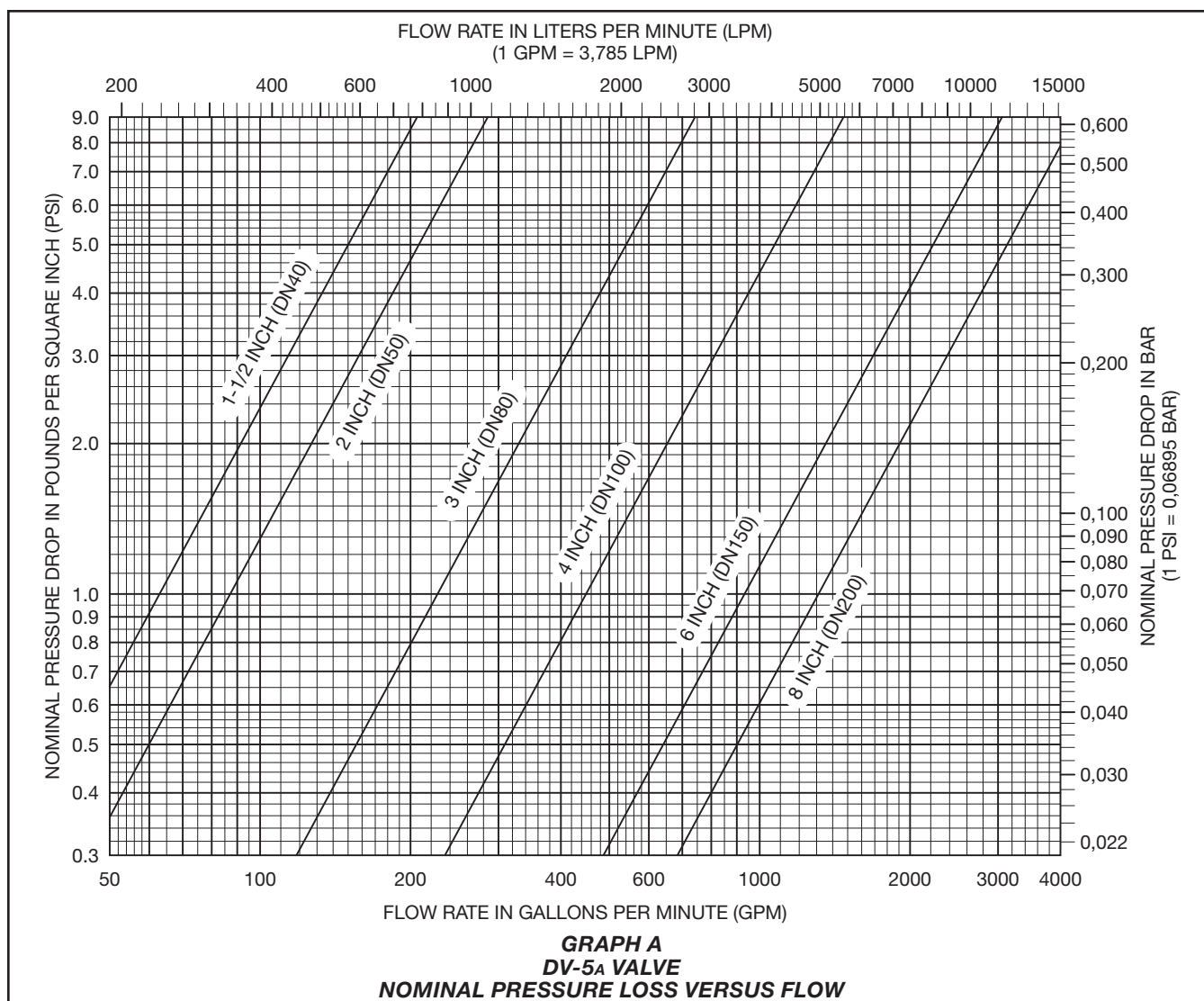### Detection System
See the Electric Actuation subsection

System Air Pressure Requirements
The supervisory air (nitrogen) pressure is to be 10 ± 2 psi (0,69 ±0,07 bar). The use of a higher supervisory pressure is subject to approval by the authority having jurisdiction, and it should be understood that the use of a higher supervisory pressure may increase water delivery time. The use of a lower supervisory pressure may prevent clearing the alarm of the Supervisory Low Pressure Switch (Item T - Figure 8), which is factory set to alarm at 5 ± 1 psi (0,34 ± 0,07 bar) on decreasing pressure. The supervisory air supply pressure of 10 ± 2 psi (0,69 ± 0,07 bar) can be provided by any of the following methods. Refer to the applicable data sheet for laboratory approval information.

• Model G16AC812 (self contained) Automatic Supervisory Air Supply described in Technical Data Sheet TFP1620.

• A maximum 200 psi (13,8 bar) plant air supply in combination with the Model AMD-1 Air Maintenance Device described in Technical Data Sheet TFP1221.

• A maximum 3000 psi (206,9 bar) nitrogen cylinder in combination with the Model AMD-3 Nitrogen Maintenance Device described in Technical Data Sheet TFP1241.

Note: The dew point of the air or nitrogen supply for a system exposed to freezing conditions must be maintained below the lowest ambient temperature to which the system piping will be exposed. Introduction of moisture into the system piping can create ice build-up that could prevent proper operation of the system.

The Supervisory Low Pressure Switch (Item T - Figure 8) is factory set at 5 ± 1 psi (0,34 ± 0,07 bar) on decreasing pressure. The Pressure Relief Valve (Item S - Figure 8) is factory set to fully open at 25 ± 2 psi (1,72 ± 0,14 bar) and it begins to crack open at a pressure of about 18 psi (1,24 bar).

FLOW RATE IN LITERS PER MINUTE (LPM)
(1 GPM = 3,785 LPM)

GRAPH A
DV-5A VALVE
NOMINAL PRESSURE LOSS VERSUS FLOW

Materials of Construction

Valve Body
Epoxy coated ductile iron per ASTM A536-77, Grade 65-45-12

Diaphragm Cover
Epoxy coated ductile iron per ASTM A536-77, Grade 65-45-12

Diaphragm
Polyester fabric reinforced, TEFLON coated, EPDM rubber per ASTM D2000

Diaphragm Cover Fasteners
Aluminum zinc coated steel

Common Hardware Trim
• Common hardware pipe fittings are galvanized or black as required and are malleable per ASME B16.3.
• Common hardware pipe nipples are galvanized or black as required and are Schedule 40 per ASTM A53 or A135.

• Common hardware compression fittings are brass per ASTM B16.
• Common hardware tubing is Type L copper per ASTM B88.

Operation

The TYCO DV-5A Valve is a diaphragm style valve that depends upon water pressure in the Diaphragm Chamber (see Figure 2A) to hold the Diaphragm closed against the water supply pressure.

When the DV-5A Valve is set for service, the Diaphragm Chamber is pressurized through the trim connections from the inlet side of the system's main control valve.

Opening the Electric Actuation Trim trips the Model MRA-1 Manual Reset Actuator. Tripping the MRA-1 releases water from the DV-5A Diaphragm Chamber faster than it can be replenished through a 1/8 in. (3,2 mm) restriction located in the Diaphragm Chamber

Supply Connection. Release of water through the MRA-1 results in a rapid pressure drop in the DV-5A Diaphragm Chamber. The force differential applied through the Diaphragm to hold the Diaphragm in the set position is then reduced below the valve trip point. The water supply pressure then forces the Diaphragm open permitting water to flow into the system piping, as well as through the Alarm Port to actuate the system alarms (see Figure 2B).

Upon opening of the DV-5A Valve, the Model MRA-1 Manual Reset Actuator opens to constantly vent the DV-5A Diaphragm Chamber to hydraulically latch the DV-5A in the tripped position until manually reset.

In standby mode, the integrity of the system piping is supervised by a low pressure alarm switch.

See the Electric Actuation section for additional information.

FIGURE 4
DV-5A VALVE - SINGLE INTERLOCK PREACTION ELECTRIC ACTUATION SCHEMATIC DIAGRAM
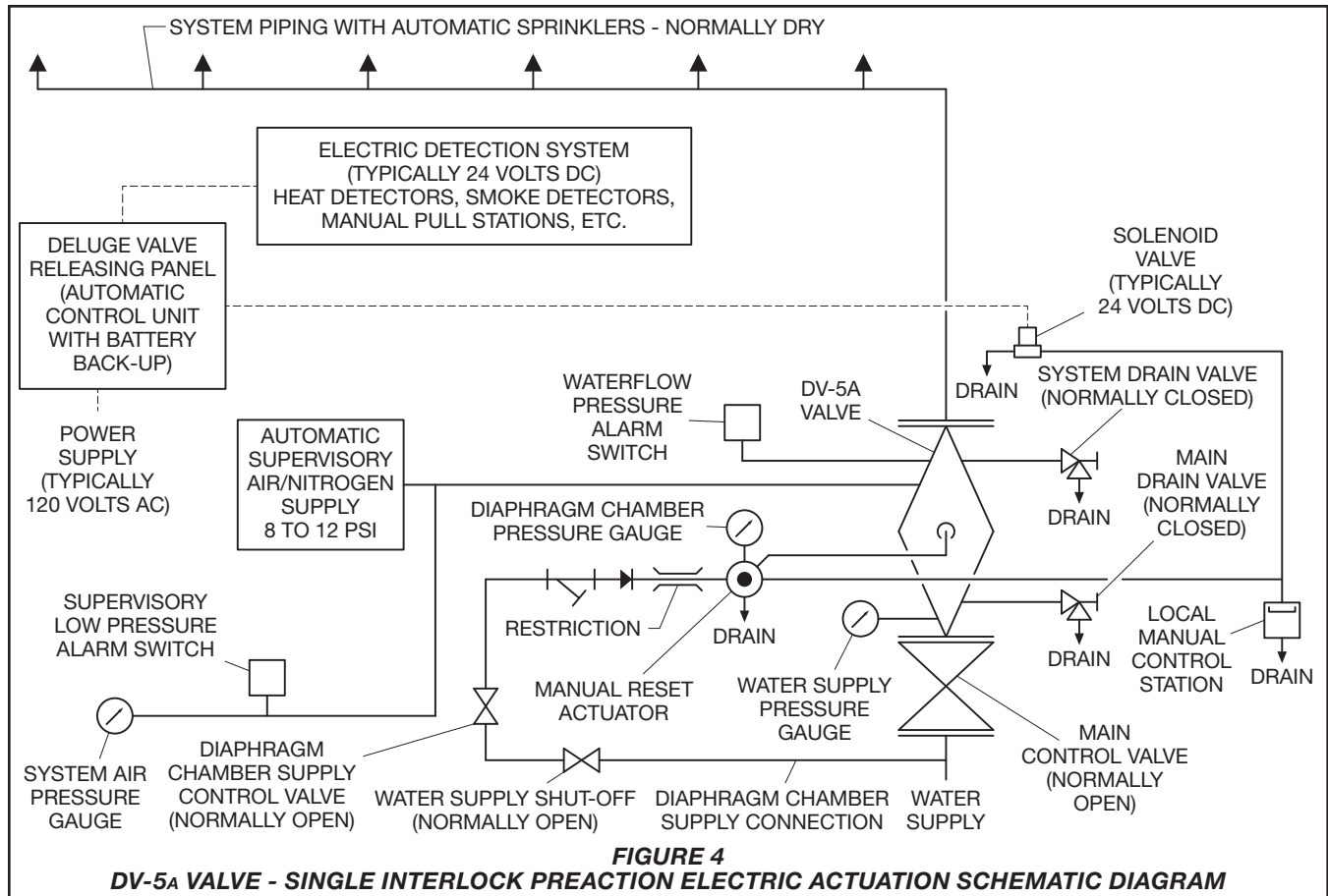
Electric Actuation

The Electric Actuation Trim forms a part of the laboratory approval of the DV-5A Valves and is necessary for their proper operation.

The Electric Actuation Trim is required for electric operation of the DV-5A Valve by a detection system consisting of electrical devices such as heat sensitive thermostats, smoke detectors, and/or electric manual pull stations as shown in Figure 4.

Note: For Single Interlock Preaction Systems with Electric Actuation, the system designer typically selects electric detection devices that will operate sooner than the automatic sprinklers chosen for use on the sprinkler piping.

Dimensions are provided in Figure 7.

Notes:

The normally closed, de-energized, Solenoid Valve is separately ordered and selected based on the required laboratory approval acceptable to the authority having jurisdiction. Refer to Technical Data Sheet TFP2180 for specific laboratory approvals.

Consult with the applicable standards of the Approval agency regarding installation criteria pertaining to electric actuation circuitry.

Due to the functionality of the Model MRA-1 Manual Reset Actuator, the release circuit of the releasing panel need only provide the typical ten minutes of alarm condition intended to energize the Solenoid Valve to open. After the ten minute duration, at which point should the Solenoid Valve become de-energized and close (especially while operating under battery back-up), the MRA-1 will have already automatically opened, thereby preventing the DV-5A Diaphragm Chamber from becoming re-pressurized, and preventing an inadvertent closing of the DV-5A during a fire event.

Installation

The TYCO DV-5A Single Interlock Pre-action Electric Actuation Trim Valve is to be installed in accordance with this section.

> **NOTICE**

DV-5A Automatic Water Control Valves are designed to be used in freshwater systems. When the supply is from an alternative source such as brackish water, saltwater, or contains additives such as foam, the limited warranty is reduced to one year from the time of installation. An increase in frequency of inspections is required when the valve is exposed to such supplies and other corrosive conditions or chemicals that could impact valve materials or the operation of the assembly. The system and all components must be designed accordingly for the increased demand. It is required to thoroughly flush the valve and trim assembly with freshwater and reset to the set condition after each operation.

Proper operation of the DV-5A Single Interlock Preaction Electric Actuation Valve depends upon their trim being installed in accordance with the instructions given in this technical data sheet. Failure to follow the appropriate trim diagram may prevent the DV-5A Valve from functioning properly, as well as void approvals and the manufacturer's warranties.

The DV-5A Valve must be installed in a readily visible and accessible location.

The DV-5A Valve and associated trim must be maintained at a minimum temperature of 40°F (4°C).

Heat tracing of the DV-5A Valve or its associated trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits that are capable of preventing proper operation.

Always open the system control valves slowly to avoid a sudden rush of water entering the system.

The DV-5A Valve is to be installed in accordance with the following criteria:

Step 1. All nipples, fittings, and devices must be clean and free of scale and burrs before installation. Use pipe thread sealant sparingly on male pipe threads only.

Step 2. The DV-5A Single Interlock Preaction Electric Actuation Valve must be trimmed in accordance with the trim illustration shown in Figure 5.

Note: *If the addition of an Alarm Control Valve is desired or required by the local AHJ, the Alarm Control Valve noted as Item H in Figure 8 is to be a separately ordered electronically supervised normally open valve.*

Step 3. Care must be taken to ensure that check valves, strainers, globe valves, etc. are installed with the flow arrows in the proper direction.

Step 4. Drain tubing to the Drip Funnel must be installed with smooth bends that will not restrict flow.

Step 5. The Main Drain and Drip Funnel Drain may be interconnected provided a check valve is located at least 12 in. (300 mm) below the Drip Funnel.

Step 6. Suitable provision must be made for disposal of drain water. Drainage water must be directed such that it will not cause accidental damage to property or danger to persons.

Step 7. Connect the Diaphragm Supply Valve to the inlet side of the System Main Control Valve in order to facilitate setting of the DV-5A Valve (see Figure 8).

Step 8. Unused Pressure Alarm Switch connections must be plugged.

Step 9. A suitable automatic supervisory air (nitrogen) supply, as described in the Technical Data section, is to be installed in accordance with the applicable technical data sheet and set for 10 ± 2 psi (0,69 ± 0,14 bar).

Step 10. A desiccant dryer, when required for the supervisory air supply, is to be installed between a drip leg and the Model AMD-1 Air Maintenance Device or between the Model G16AC812 Automatic Supervisory Air Supply and the Preaction Trim.

Step 11. The Supervisory Low Pressure Switch is to be wired to the supervisory alarm initiating circuit of an alarm panel.

Step 12. Conduit and electrical connections are to be made in accordance with the applicable standards of the approval agency.

Step 13. Before a system hydrostatic test is performed, the DV-5A Diaphragm Chamber is to be depressurized, the Automatic Drain Valve is to be temporarily replaced with a plug, and the Diaphragm Cover Bolts must be uniformly and securely tightened using a cross-draw sequence. After tightening, double-check to make certain that all of the Diaphragm Cover Bolts are securely tightened. See Table B in the Care and Maintenance section for torque specifications.
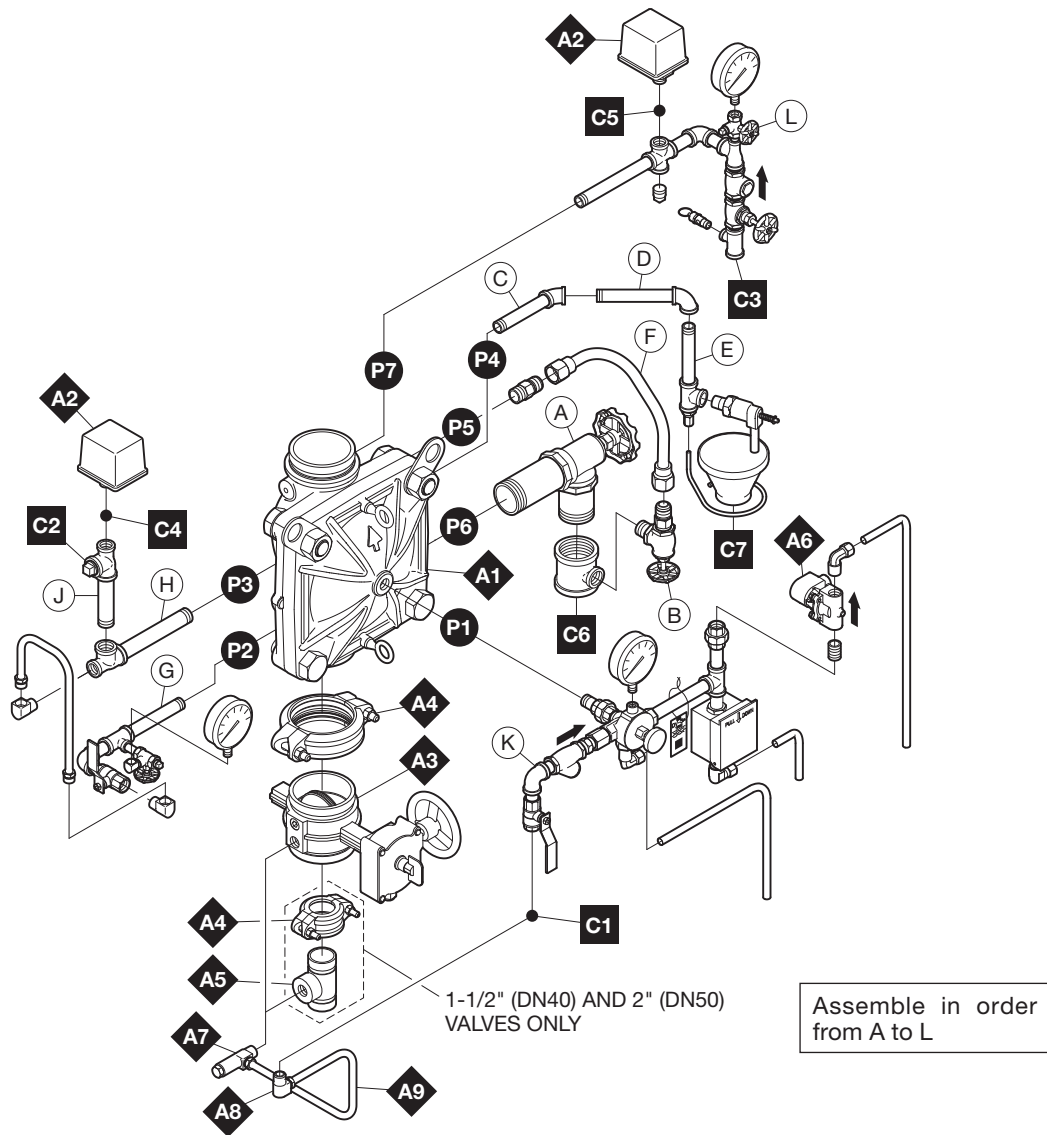
Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C5 are described in Figure 8.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Trim" or pre-assembled "DV-5A Valve with Galvanized Trim and Butterfly Valve", Items A1 through A9 are provided, as applicably related to valve size, and Item A6 is provided as P/N 52-287-1-124 described in Technical Data Sheet TFP2180.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A9 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.

FIGURE 5
DV-5A VALVES WITH SINGLE INTERLOCK PREACTION
ELECTRIC ACTUATION TRIM
SEMI-ASSEMBLED

Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C5 are described in Figure 8.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Trim" or pre-assembled "DV-5A Valve with Galvanized Trim and Butterfly Valve", Items A1 through A9 are provided, as applicably related to valve size, and Item A7 is provided as P/N 52-287-1-124 described in Technical Data Sheet TFP2180.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A9 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.

1-1/2" (DN40) AND 2" (DN50) VALVES ONLY

ITEM	QTY	DESCRIPTION	CH	1 1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
1	2	1/4" GAUGE TEST VALVE		460051003	460051003	460051003	460051003	460051003	460051003
2	1	MRA-1 MANUAL RESET ACTUATOR		545001000	545001000	545001000	545001000	545001000	545001000
3	1	MC-2 MANUAL CONTROL STATION		545002000	545002000	545002000	545002000	545002000	545002000
4	1	AD-3 AUTOMATIC DRAIN VALVE		547932004	547932004	547932004	547932004	547932004	547932004
5	1	PRIMING SUPPLY RESTRICTION		545100051	545100051	545100051	545100051	545100051	545100051
6	1	1/4" PRESSURE RELIEF VALVE, 25 PSI		923431019	923431019	923431019	923431019	923431019	923431019
7	2	1/2" BALL VALVE		460501004	460501004	460501004	460501004	460501004	460501004
8	1	1/2" GLOBE VALVE		460471005	460471005	460471005	460471005	460471005	460471005
9	1	1/2" SPRING LOADED CHECK VALVE		923221003	923221003	923221003	923221003	923221003	923221003
10	1	1/2" SWING CHECK VALVE		460491007	460491007	460491007	460491007	460491007	460491007
11	1	1/2" Y-STRAINER		523531006	523531006	523531006	523531006	523531006	523531006
12	1	3/4" ANGLE VALVE		460481010	460481010	460481010	460481010	460481010	460481010
13	1	ANGLE VALVE		460481010	460481010	460481011	460481012	460481012	460481012
14	1	DRIP FUNNEL BRACKET CONNECTOR		922111005	922111005	922111005	922111005	922111005	922111005
15	1	DRIP FUNNEL BRACKET		922111003	922111003	922111003	922111003	922111003	922111003
16	1	DRIP FUNNEL		923431007	923431007	923431007	923431007	923431007	923431007
17	2	COMP. FITTING 90° 1/2" MNPT x 1/2" OD TUBE	✓	—	—	—	—	—	—
18	1	COMP. FITTING 90° 1/2" FNPT x 1/2" OD TUBE	✓	—	—	—	—	—	—
19	2	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
20	2	FLARE FITTING 3/4" NPT x 3/4" TUBE		545100063	545100063	545100063	545100063	545100063	545100063
21	2	PIPE PLUG	✓	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
22	1	PIPE PLUG	✓	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"

FIGURE 6 (1 OF 2)
DV-5A VALVES — SINGLE INTERLOCK PREACTION ELECTRIC ACTUATION TRIM
EXPLODED VIEW

ITEM	QTY	DESCRIPTION	CH	1 1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
23	1	PIPE PLUG	✓	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
24	2	UNION	✓	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
25	1	STREET ELBOW	✓	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°
26	1	ELBOW	✓	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°
27	4	ELBOW	✓	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°
28	1	CROSS	✓	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
29	2	TEE	✓	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
30	1	REDUCING TEE	✓	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"
31	2	REDUCING TEE	✓	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"
32	2	REDUCING TEE	✓	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"
33	1	REDUCING TEE	✓	3/4" x 3/4" x 3/4"	3/4" x 3/4" x 3/4"	1 1/4" x 1 1/4" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"
34	1	PIPE NIPPLE	✓	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE
35	1	PIPE NIPPLE	✓	1/4" x 1 1/2"	1/4" x 1 1/2"	1/4" x 1 1/2"	1/4" x 1 1/2"	1/4" x 1 1/2"	1/4" x 1 1/2"
36	4	PIPE NIPPLE	✓	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE
37	4	PIPE NIPPLE	✓	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"
38	1	PIPE NIPPLE	✓	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"
39	2	PIPE NIPPLE	✓	1/2" x 2 1/2"	1/2" x 2 1/2"	1/2" x 2 1/2"	1/2" x 2 1/2"	1/2" x 2 1/2"	1/2" x 2 1/2"
40	1	PIPE NIPPLE	✓	1/2" x 4 1/2"	1/2" x 4 1/2"	1/2" x 4 1/2"	1/2" x 4 1/2"	1/2" x 4 1/2"	1/2" x 4 1/2"
41	1	PIPE NIPPLE	✓	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"
42	1	PIPE NIPPLE	✓	1/2" x 8 1/2"	1/2" x 8 1/2"	1/2" x 8 1/2"	1/2" x 8 1/2"	1/2" x 8 1/2"	1/2" x 8 1/2"
43	1	PIPE NIPPLE	✓	3/4" x 1 1/2"	3/4" x 1 1/2"	3/4" x 1 1/2"	3/4" x 1 1/2"	3/4" x 1 1/2"	3/4" x 1 1/2"
44	1	PIPE NIPPLE	✓	3/4" x 4 1/2"	3/4" x 4 1/2"	3/4" x 4 1/2"	3/4" x 4 1/2"	3/4" x 4 1/2"	3/4" x 4 1/2"
45	1	TUBING, MRA-1 DRAIN		545100065	545100065	545100066	535002140	535002160	535002180
46	1	TUBING, MC-2 DRAIN		535000220	535000220	535000230	535000240	535000260	535000280
47	1	TUBING, SOLENOID DRAIN		535001020	535001020	535000630	535000640	535000660	535000680
48	1	TUBING ASSY, ALARM TEST INTERCONNECT		535000320	535000320	535000330	535000340	535000360	535000380
49	1	TUBING ASSY, SYSTEM DRAIN		535000420	535000420	535000430	535000440	535000460	535000480
50	1	PIPE NIPPLE	✓	1/2" x 3 1/2"	1/2" x 3 1/2"	1/2" x 4 1/2"	1/2" x 5 1/2"	1/2" x 5 1/2"	1/2" x 6 3/4"
51	1	PIPE NIPPLE	✓	1/2" x 5"	1/2" x 5"	1/2" x 5 1/2"	1/2" x 5 1/2"	1/2" x 5 1/2"	1/2" x 6 1/2"
52	1	PIPE NIPPLE	✓	1/2" x 5"	1/2" x 5"	1/2" x 4 1/2"	1/2" x 5"	1/2" x 7 1/2"	1/2" x 9 1/2"
53	1	PIPE NIPPLE	✓	3/4" x 5"	3/4" x 5"	3/4" x 6"	3/4" x 7"	3/4" x 9"	3/4" x 11 1/2"
54	1	PIPE NIPPLE	✓	3/4" x 4 1/2"	3/4" x 4 1/2"	1 1/4" x 3 1/4"	2" x 3"	2" x 3"	2" x 3"
55	1	PIPE NIPPLE	✓	3/4" x 6 1/2"	3/4" x 6 1/2"	1 1/4" x 5 1/2"	2" x 5"	2" x 6"	2" x 8"
56	2	WATER PRESSURE GAUGE, 300 PSI / 2000 kPa (AMER/APAC)		923431005	923431005	923431005	923431005	923431005	923431005
	2	WATER PRESSURE GAUGE, 20 bar / 2000 kPa (EMEA)		025500013	025500013	025500013	025500013	025500013	025500013
57	1	AIR PRESSURE GAUGE, 80 PSI / 550 kPa RETARDED TO 250PSI / 1750 kPa		923431012	923431012	923431012	923431012	923431012	923431012
58	1	LABEL		545003005	545003005	545003005	545003005	545003005	545003005
59	1	LABEL WIRE		—	—	—	—	—	—
A1	1	DV-5A VALVE		SEE ORDERING PROCEDURE, SEPARATE DV-5A VALVES WITHOUT TRIM, FOR PART NUMBERS					
A2	2	WATERFLOW PRESSURE ALARM SWITCH, PS10-2 (AMER/APAC)		25710	25710	25710	25710	25710	25710
	2	WATERFLOW PRESSURE ALARM SWITCH, PS10-1 (EMEA)		0260	0260	0260	0260	0260	0260
A3	1	BUTTERFLY VALVE, G x G		51024A	51021A	—	—	—	—
	1	BFV-300 BUTTERFLY VALVE, G x G		—	—	59300G030WS	59300G040WS	59300G060WS	59300G080WS
A4	2	FIGURE 577 RIGID GROOVED COUPLING		57715ACP	57720ACP	—	—	—	—
	1	FIGURE 577 RIGID GROOVED COUPLING		—	—	57730ACP	57740ACP	57760ACP	57780ACP
A5	1	GROOVE x THREADED OUTLET WELDED TEE		545004000	545004001	—	—	—	—
A6	1	SOLENOID VALVE NORMALLY CLOSED		REFER TO TFP2180					
A7	1	INVERTED FLARE SHUT-OFF VALVE[a]		545100100	545100100	545100099	545100100	545100100	545100100
A8	1	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
A9	1	TUBING ASSY, DIAPHRAGM CHAMBER SUPPLY		540000015	540000020	540000030	540000040	540000060	540000080

NOTE:
a. Not VdS Approved
CH - Common Hardware - See Materials of Construction section for specifications.

FIGURE 6 (2 OF 2)
DV-5A VALVES — SINGLE INTERLOCK PREACTION ELECTRIC ACTUATION TRIM
EXPLODED VIEW

Nominal Valve Size ANSI Inches (DN)	Inches (mm)								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**
1 1/2 (40)	2.8 (71)	9.7 (246)	10.4 (264)	15.7 (399)	16.2 (411)	7.3 (185)	10.2 (259)	8.0 (203)	1.2 (31)
2 (50)	2.8 (71)	9.7 (246)	10.4 (264)	15.7 (399)	16.2 (411)	7.3 (185)	10.2 (259)	3.8 (97)	2.9 (74)
3 (80)	3.0 (76)	10.9 (277)	12.0 (305)	16.3 (414)	18.5 (470)	5.8 (147)	13.8 (351)	3.9 (99)	3.6 (91)
4 (100)	3.0 (76)	12.2 (310)	13.1 (333)	16.5 (419)	21.0 (533)	5.1 (130)	16.8 (427)	4.5 (114)	4.3 (109)
6 (150)	4.5 (114)	13.6 (345)	15.0 (381)	18.4 (467)	24.8 (630)	3.4 (86)	22.4 (569)	5.9 (150)	5.7 (145)
8 (200)	5.3 (135)	16.3 (414)	17.2 (437)	19.5 (495)	29.2 (742)	2.9 (74)	27.5 (699)	5.2 (132)	6.7 (170)

Notes:
1. Dimensions based on drain valves being open.
2. Dimensions do not provide installation clearance.
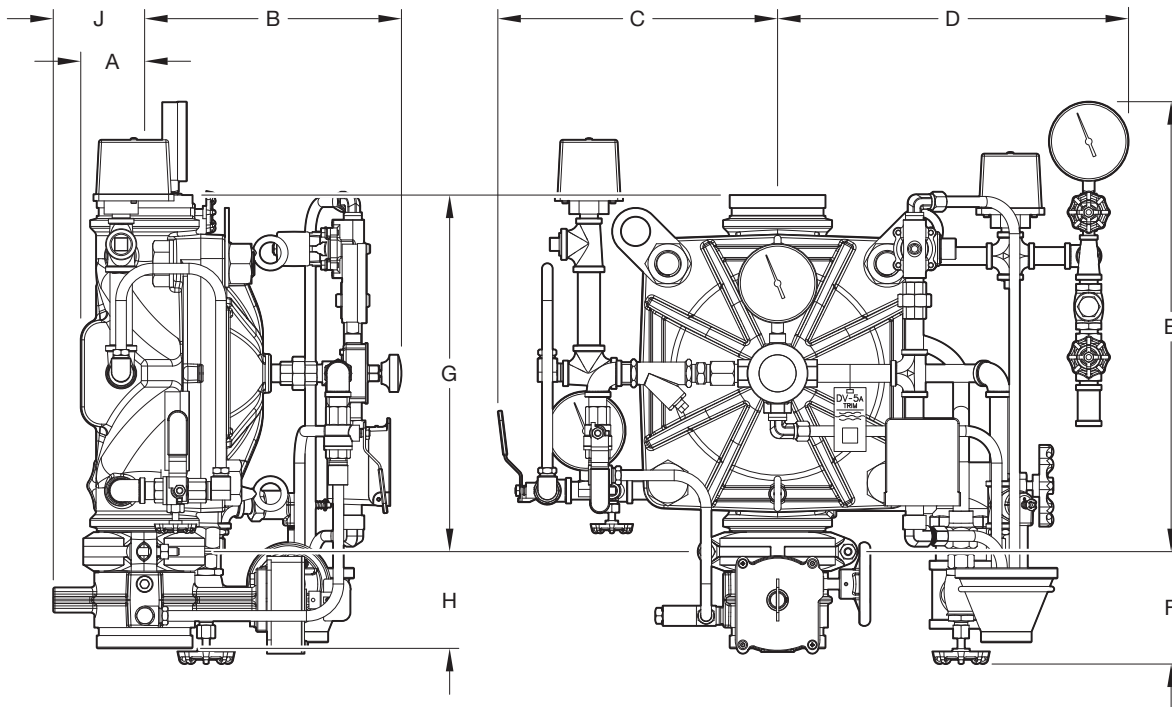
FIGURE 7
DV-5A VALVE
SINGLE INTERLOCK PREACTION ELECTRIC ACTUATION TRIM
NOMINAL DIMENSIONS

Valve Setting Procedure

Perform Steps 1 through 16 when initially setting the TYCO DV-5A Electric Actuation Valve, after an operational test of the fire protection system, or after system operation due to a fire. See Figure 8.

Step 1. Close the System Main Control Valve (B).

Step 2. Close the Diaphragm Supply Valve (P).

Step 3. Close the Supervisory Air Supply Valve (R).

Step 4. Open the Main Drain Valve (D), System Drain Valve (E), and all auxiliary drains in the system. Close the auxiliary drain valves and the System Drain Valve (E) after water ceases to discharge. Leave the Main Drain Valve (D) open.

At this time make certain that the Pressure Gauge Valves and the Alarm Control Valve (H), as applicable, are open.

Step 5. Depress the plunger of the Automatic Drain Valve (F) to verify that it is open.

Step 6. Clean the Diaphragm Supply Strainer (Q) by removing the cleanout plug and strainer basket. The Diaphragm Supply Strainer (Q) may be flushed out by momentarily opening the Diaphragm Supply Valve (P).

Step 7. Replace any operated sprinklers on the system piping, as applicable.

Step 8. Reset the automatic actuation system. Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the solenoid valve.

Step 9. Operate (open) the Manual Control Station (M) and then open the Diaphragm Supply Valve (P). After unaerated water ceases to discharge from the Manual Control Station (M) drain tube, slowly close the operating lever by pushing it up. Do not close the hinged cover at this time.

Step 10. After allowing water to flow out of the Manual Reset Actuator (N) drain tube until aerated water ceases to discharge, reset the Manual Reset Actuator (N) by pressing the Reset Knob and hold until water stops flowing from its drain tube and the pressure builds and reaches approximately 15 psi (1,0 bar) on the Diaphragm Gauge (K). Pressure will then build up in the DV-5A Diaphragm Chamber.

Step 11. Verify the ability for the DV-5A Diaphragm to hold pressure as follows:

- With the diaphragm chamber pressurized per Step 10, temporarily close the Diaphragm Supply Valve (P), and then observe the Diaphragm Gauge (K) for a drop in pressure.

- If a drop in pressure is noted, the DV-5A Diaphragm is to be replaced and/or any leaks must be corrected before proceeding to the next step.

- If the Diaphragm Gauge (K) indicates no drop in pressure, re-open the Diaphragm Supply Valve (P) and proceed to the next step.

Step 12. Open the Supervisory Air Supply Valve (R) to reestablish supervisory system air pressure at nominally 10 psi (0,68 bar).

Step 13. Partially open the System Main Control Valve (B). Slowly close the Main Drain Valve (D) as soon as water discharges from the Main Drain Valve (D). Observe the Automatic Drain Valve (F) for leaks. If there are leaks, determine/correct the cause of the leakage problem before proceeding.
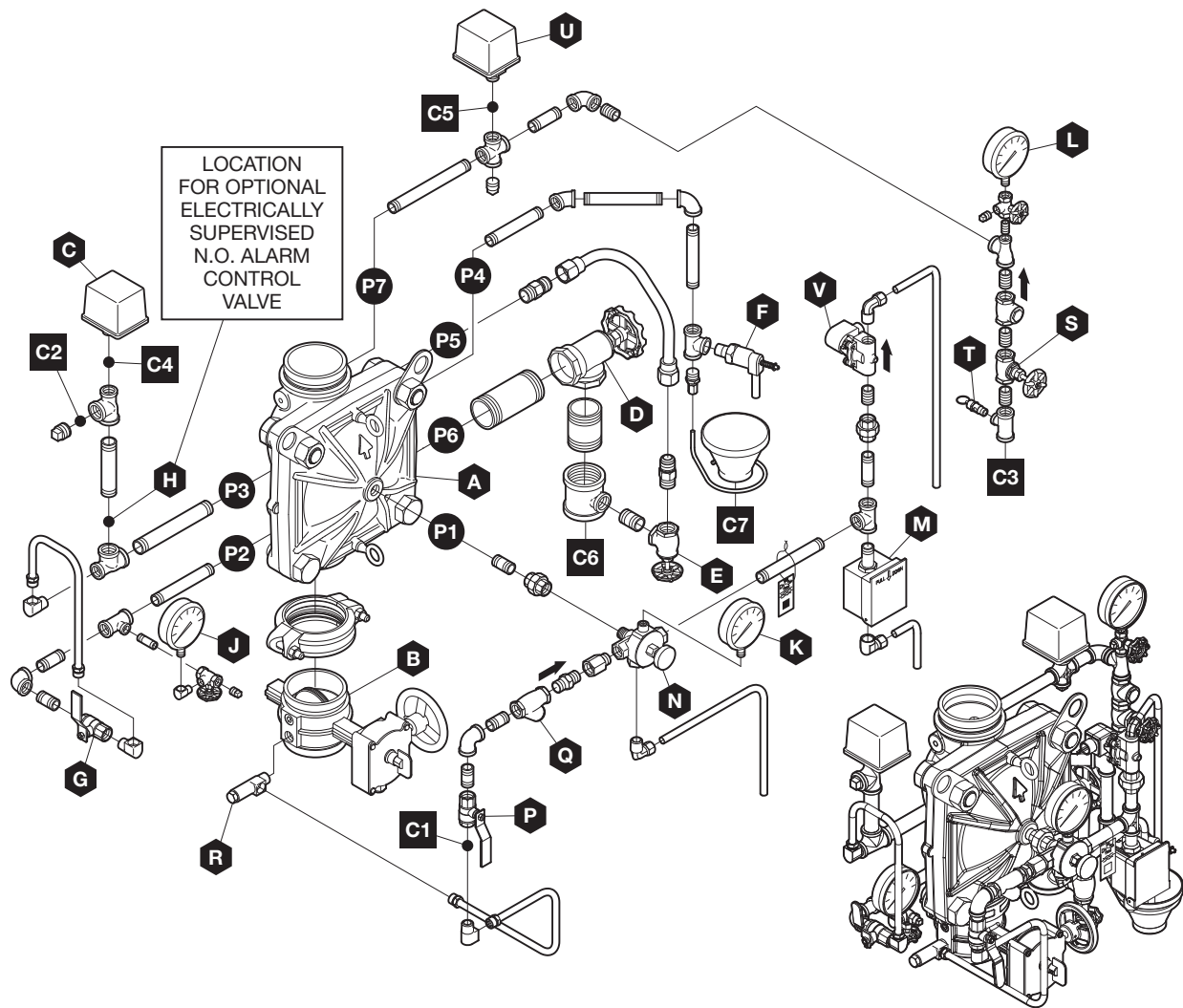
NOTICE

When the System Main Control Valve (B) is partially opened, the pressure on the DV-5A Diaphragm Chamber may increase. This increase in pressure is normal, and if the pressure is greater than 300 psi (20,7 bar), the pressure is to be relieved by partially and temporarily opening the Manual Control Station (M); however, do not allow the pressure as indicated on the Diaphragm Gauge (K) to drop below the supply pressure shown on the Water Supply Gauge (J), since this action may result in tripping of the DV-5A Valve.

Step 14. Close the hinged cover of the Manual Control Station (M) and insert a new break rod in the small hole through the top of the enclosing box.

Step 15. Fully open the System Main Control Valve (B).

Step 16. After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Item	Description
A	DV-5A Valve
B	System Main Control Valve
C	Waterflow Pressure Switch
D	Main Drain Valve
E	System Drain Valve
F	Automatic Drain Valve
G	Alarm Test Valve
H	Alarm Control Valve (Optional)
J	Water Supply Gauge
K	Diaphragm Gauge

Item	Description
L	System Gauge
M	Manual Control Station
N	Manual Reset Actuator
P	Diaphragm Supply Valve
Q	Diaphragm Supply Strainer
R	Inverted Flare Shut-Off Valve
S	Supervisory Air Supply Valve
T	Supervisory Air Pressure Relief Valve
U	Supervisory Low Pressure Switch
V	Solenoid Valve

External Trim Connections	
C1	Diaphragm Supply Connection
C2	Water Motor Alarm Connection
C3	Supervisory Air Supply Connection
C4	Waterflow Pressure Alarm Switch Connection
C5	Low Air Pressure Alarm Switch Connection
C6	Main Drain Connection
C7	Drip Funnel Drain Connection

LOCATION FOR OPTIONAL ELECTRICALLY SUPERVISED N.O. ALARM CONTROL VALVE

Note:
Port Connections P1 through P7 are described in Figure 2.

FIGURE 8
DV-5A VALVE - SINGLE INTERLOCK PREACTION ELECTRIC ACTUATION
(See Figure 6 for specific Bills of Materials)

Care and Maintenance

The following procedures and inspections must be performed as indicated, in addition to any specific requirements of the NFPA and any applicable standards recognized by the Approval agency. Any impairment must be immediately corrected. See Figure 8.

> **NOTICE**
>
> *If the water supply needs to be shut off to the DV-5A valve and trim and cannot be shut off upstream of the system, close the System Main Control Valve (B), the Diaphragm Supply Valve (P), and the Inverted Flare Shut-Off Valve (R). This will allow any trim above the System Main Control Valve (B) to be taken apart for service if necessary.*
>
> *The frequency at which the following procedures and inspections are to be performed are to be in accordance with the NFPA and any applicable specific requirements of the standards recognized by the Approval agency.*
>
> *Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection systems must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.*
>
> *The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the NFPA and any applicable standards recognized by the Approval agency. Contact the installing contractor or product manufacturer with any questions.*
>
> *Some procedures in this section result in the operation of the associated alarms. Notify the owner and the fire department, central station, or other signal station to which the alarms are connected before performing the tests.*
>
> *It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with the NFPA and any applicable standards recognized by the Approval agency.*

Drop in Water Supply Pressure Below Normal Range

> **NOTICE**
>
> *If the water supply pressure is significantly reduced below the normally expected static pressure range (as could occur in the case of a water main break or repair), and there is a subsequent drop in the diaphragm chamber water pressure below its normal range (for example, due to a leak in a piping connection to or from the diaphragm chamber or, a leak in the diaphragm chamber check valve caused by dirt or debris in the check valve seal area), a deluge valve such as the DV-5A could inadvertently trip, if its water supply pressure is quickly restored.*

A drop in the water supply pressure to below its normal range (as in the case of an interrupted water supply condition) constitutes an emergency impairment.

Should this condition occur, immediately close the System Main Control Valve (B) and use the following procedure to reset the system:

Step 1. Prior to the water supply pressure being restored to the closed System Main Control Valve (B), note the pressure indicated by the Diaphragm Gauge (K) and determine if the pressure is within the normally expected range.

Step 2. If the diaphragm chamber pressure is below the normal range, check for and correct any source of leakage from the diaphragm chamber prior to resetting the system.

Step 3. After the water supply pressure is restored to the System Main Control Valve (B), reset the DV-5A Valve in accordance with the Valve Setting Procedure section.

> **NOTICE**
>
> *For fire protection systems subject to an emergency impairment caused by an interrupted water supply condition, it is recommended that consideration be given to installing a low water supply pressure switch with the appropriate alarm/indications to monitor the water supply pressure.*

Waterflow Alarm Test Procedure

To test the waterflow alarm, open the Alarm Test Valve (G), which will allow a flow of water to the Waterflow Pressure Switch (C) and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve (G).

To ensure drainage of the alarm line, depress the plunger on the Automatic Drain Valve (F).

Supervisory Low Pressure Alarm Test Procedure

Proper operation of the Supervisory Low Pressure Switch (U) must be performed as follows:

Step 1. Open the System Drain Valve (E) just enough to slowly relieve supervisory air pressure from the system. Verify that the Supervisory Low Pressure Switch (U) is operational and that the low pressure set point is approximately 5 psi (0,34 bar).

Step 2. Close the System Drain Valve (E) and allow the system supervisory pressure of 10 ± 2 psi (0,69 ± 0,14 bar) to be automatically re-established. The Supervisory Low Pressure Switch (U) should return to its normal condition.

Pressure Relief Valve Maintenance

Over pressurization of the system piping with air will result in the opening of the Supervisory Air Pressure Relief Valve (T). If the Supervisory Air Pressure Relief Valve (T) continues to bleed air after the system pressure has been reduced to its normal supervisory pressure range of 10 ± 2 psi (0,69 ± 0,14 bar), most likely debris became lodged in the seating area. To help clean the seating area, slowly pull up on the ring at the top of the Supervisory Air Pressure Relief Valve (T) to allow a full flow of air through the Supervisory Air Pressure Relief Valve (T), and then release the ring to allow the Supervisory Air Pressure Relief Valve (T) to snap closed. Repeat the cleaning procedure as necessary.

Electric Actuation Solenoid Valve Test Procedure

Proper operation of the Solenoid Valve (V) for electric actuation must be verified at as follows:

Step 1. Close the System Main Control Valve (B).

Step 2. Open the Main Drain Valve (D).

Step 3. Test the deluge releasing panel in accordance with the manufacturer's instructions to energize the solenoid valve.

Step 4. Verify that there is a flow of water from the Solenoid Valve drain connection.

Step 5. Verify that the Diaphragm Chamber pressure has decreased to below 25% of the water supply pressure.

Step 6. Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the Solenoid Valve (V), and proceed as follows:

- Water should cease draining from the Solenoid Valve (V) but remain draining from the Manual Reset Actuator (N).

- Press the Reset Knob on the Manual Reset Actuator (N) and hold it a few seconds until water stops flowing from its drain tube.

- Pressure will then build up in the DV-5A Diaphragm Chamber.

- After system pressure is restored in the DV-5A Diaphragm Chamber, inspect the Solenoid Valve (U) and Manual Reset Actuator (N) for leaks at the drain tube. Any leaks must be corrected before proceeding to the next step.

Step 7. Partially open the System Main Control Valve (B). Slowly close the Main Drain Valve (D) as soon as water discharges from the Main Drain Valve (D). Observe the Automatic Drain Valve (F) for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the DV-5A Valve is ready to be placed in service and the System Main Control Valve (B) must then be fully opened.

Internal Valve Inspection
Once every five years during the annual operational test procedure and prior to the DV-5A Valve being reset and with the DV-5A Valve de-pressurized, the interior of the DV-5A Valve must be cleaned and inspected for wear and damage. Damaged or worn parts must be replaced. (Replacement of the Diaphragm every ten years is recommended, or more frequently if inspections and/or wear and tear warrant more frequent replacement.)

NOTICE

The Diaphragm Cover may be removed between Steps 4 and 5 of the resetting instructions, since at that point the DV-5A Valve should be de-pressurized as evident by a zero gauge reading on the Diaphragm Gauge (K) and Water Supply Gauge (J), as well as no water discharging from the Automatic Drain Valve (F).

To perform internal valve inspection between Steps 4 and 5 of the Valve Setting Procedure remove the Diaphragm cover as follows:

Step 1. Close the Inverted Flare Shut-Off Valve (R).

Step 2. Remove the Copper Tube Fitting between the Diaphragm Supply Valve (P) and the Inverted Flare Shut-Off Valve (R).

Step 3. Loosen the union securing the Electric Actuation Trim and remove the Electric Actuation Trim.

Step 4. Loosen and remove the union between the Diaphragm Cover and the MRA-1 Manual Reset Actuator (N) and remove the MRA-1 Manual Reset Actuator (N) subassembly.

Step 5. Remove the Diaphragm Valve Cover hardware, then slowly remove the Diaphragm Cover and perform internal valve inspection. Clean the valve interior and replace parts as necessary.

After cleaning and inspecting valve interior, and replacing parts as necessary, reinstall the Diaphragm Cover by completing the following steps to assure the Diaphragm Cover Fasteners are uniformly and securely tightened.

Step 1. With reference to Figure 1, ensure that the Diaphragm is properly oriented and that the proper hardware arrangement is utilized when assembling the Diaphragm Covers. The hardware arrangements differ depending on the size of the DV-5A Valve.

Step 2. By first using the Long Hex Bolts, support of the Diaphragm Cover will be provided before installing the Short Hex Bolts. Align Diaphragm in proper orientation with Valve Body, and then align Diaphragm Cover in proper orientation with Valve Body. Hand-tighten all fasteners.

Step 3. Using crossdraw sequence to assure uniformity, wrench-tighten Long Hex Bolts and Short Hex Bolts to appropriate torque values. Repeat crossdraw sequence two to three times at incremental torque valves until reaching the torque valves found in Table B.

Step 4. Inspect to assure all Hex Bolts are securely tightened.

Step 5. Using the union, secure the MRA-1 Manual Reset Actuator (N) to the Diaphragm Cover.

Step 6. Using the union, secure the Electric Actuation Trim.

Step 7. Replace the Copper Tube Fitting between the Diaphragm Supply Valve (P) and the Inverted Flare Shut-Off Valve (R).

Nominal Valve Sizes ANSI Inches (DN)	Torque lb-ft (N·m)	
	Nuts	Short Hex Bolts
1 1/2 (40)	44 (59,7)	35 (47,5)
2 (50)	44 (59,7)	35 (47,5)
3 (80)	188 (254,9)	150 (203,4)
4 (100)	396 (536,9)	316 (428,4)
6 (150)	265 (359,3)	212 (287,4)
8 (200)	545 (738,9)	436 (591,1)

***TABLE B
DIAPHRAGM COVER BOLTS
MINIMUM TORQUE***

Step 8. Ensure that the unions and flare fittings are securely tightened.

Step 9. With the Diaphragm Supply Valve (P) closed, fully open the Inverted Flare Shut-Off Valve (R) stainless steel screw (approximately 1/2 in.) until resistance is met so as not to break the internal roll-pin. The internal roll-pin stops the removal of the Inverted Flare Shut-Off Valve (R) stainless steel screw.

Step 10. Proceed with Step 5 of the Valve Setting Procedures section in this data sheet.

NOTICE

If the water supply contains chemicals which tend to attack a polyester fabric-reinforced, EPDM rubber or the five year inspection indicates a build-up of debris within the DV-5A Valve that could affect its proper operation, then the frequency of the internal valve inspection procedure must be appropriately increased.

With reference to Figure 1, make certain that the Diaphragm is correctly oriented; otherwise, the DV-5A Valve cannot be properly set.

Under-tightening the Diaphragm Cover Bolts can result in internal and external leakage.

Use only TYCO replacement fasteners as specified in Figure 1.

Do not apply adhesives, lubricants, or other substances to the Diaphragm Valve Body.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

The TYCO DV-5A Automatic Water Control Valves may be ordered as follows:

Pre-Assembled Valves with Trim

DV-5A Valves with Galvanized Trim and Butterfly Valve

Specify: Size (specify), DV-5A Automatic Water Control Valve, G x G connections with assembled galvanized Americas Single Interlock Preaction Electric Actuation Trim, complete with assembled Model BFV-300 Butterfly Valve, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 551011315
2 in. (DN50) 551011320
3 in. (DN80) 551011330
4 in. (DN100). 551011340
6 in. (DN150). 551011360
8 in. (DN200) 551011380

Notes:
AMERICAS DV-5A Valve with Trim and Butterfly Valve: Americas pressure switches, P/N 52-287-1-124 solenoid valve, and psi/kPa water pressure gauges are provided.

This arrangement is available for EMEA and APAC upon request. Contact your local distributor.

AMERICAS

DV-5A Valves with Galvanized Trim

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized Americas Single Interlock Preaction Electric Actuation Trim, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 550011315
2 in. (DN50) 550011320
3 in. (DN80) 550011330
4 in. (DN100). 550011340
6 in. (DN150). 550011360
8 in. (DN200) 550011380

Flange x Flange ANSI
3 in. (DN80) 550021330
4 in. (DN100). 550021340
6 in. (DN150). 550021360
8 in. (DN200) 550021380

Flange x Grove ANSI
3 in. (DN80) 550031330
4 in. (DN100). 550031340
6 in. (DN150). 550031360
8 in. (DN200) 550031380

T x T NPT
1 1/2 in. (DN40) 550061315
2 in. (DN50) 550061320

Separate DV-5A Valves without Trim
See Table A for flange drilling specifications.

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 530010015
2 in. (DN50) 530010020
3 in. (DN80) 530010030
4 in. (DN100). 530010040
6 in. (DN150). 530010060
8 in. (DN200) 530010080

Flange x Flange ANSI
3 in. (DN80) 530020030
4 in. (DN100). 530020040
6 in. (DN150). 530020060
8 in. (DN200) 530020080

Flange x Grove ANSI
3 in. (DN80) 530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530030080

T x T NPT
1 1/2 in. (DN40) 530060015
2 in. (DN50) 530060020

Notes:
Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

DV-5A Valve Trim

Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5A Automatic Water Control Valves used in Single Interlock Preaction Fire Protection System, P/N (specify):

Galvanized
1 1/2 in. (DN40) 540001320
2 in. (DN50) 540001320
3 in. (DN80) 540001330
4 in. (DN100). 540001340
6 in. (DN150). 540001360
8 in. (DN200) 540001380

Black
1 1/2 in. (DN40) 542001320
2 in. (DN50) 542001320
3 in. (DN80) 542001330
4 in. (DN100). 542001340
6 in. (DN150). 542001360
8 in. (DN200) 542001380

Note:
Pressure switches and/or solenoid valves for electric actuation are separately ordered.

EMEA

DV-5A Valves with Galvanized Trim

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized EMEA Single Interlock Preaction Electric Actuation Trim, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 550111315
2 in. (DN50) 550111320
3 in. (DN80) 550111330
4 in. (DN100). 550111340
6 in. (DN150). 550111360
8 in. (DN200) 550111380

Flange x Flange ANSI
3 in. (DN80) 550121330
4 in. (DN100). 550121340
6 in. (DN150). 550121360
8 in. (DN200) 550121380

Flange x Groove ANSI
3 in. (DN80) 550131330
4 in. (DN100). 550131340
6 in. (DN150). 550131360
8 in. (DN200) 550131380

Flange x Flange ISO
3 in. (DN80) 550141330
4 in. (DN100). 550141340
6 in. (DN150). 550141360
8 in. (DN200) 550141380

Flange x Groove ISO
3 in. (DN80) 550151330
4 in. (DN100). 550151340
6 in. (DN150). 550151360
8 in. (DN200) 550151380

T x T ISO
1 1/2 in. (DN40) 550171315
2 in. (DN50) 550171320

Notes:
Pressure switches, P/N 52-287-1-124 solenoid valve, bar/psi water pressure gauges, and NPT to ISO threaded trim adaptors for external connections are provided.

Separate DV-5A Valves without Trim
See Table A for flange drilling specifications.

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 530010015
2 in. (DN50) 530010020
3 in. (DN80) 530010030
4 in. (DN100). 530010040
6 in. (DN150). 530010060
8 in. (DN200) 530010080

Flange x Flange ANSI
3 in. (DN80) 530020030
4 in. (DN100). 530020040
6 in. (DN150). 530020060
8 in. (DN200) 530020080

Flange x Grove ANSI
3 in. (DN80) 530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530030080

T x T NPT
1 1/2 in. (DN40) 530060015
2 in. (DN50) 530060020

Flange x Flange ISO
3 in. (DN80) .530040030
4 in. (DN100). 530040040
6 in. (DN150). 530040060
8 in. (DN200) 530040080

Flange x Groove ISO
3 in. (DN80) .530050030
4 in. (DN100). 530050040
6 in. (DN150). 530050060
8 in. (DN200) 530050080

T x T ISO
1 1/2 in. (DN40) 530070015
2 in. (DN50) .530070020

Notes:
Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

DV-5A Valve Trim
Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5A Automatic Water Control Valves used in Single Interlock Preaction Fire Protection System, P/N (specify):

Galvanized
1 1/2 in. (DN40) 540101320
2 in. (DN50) .540101320
3 in. (DN80) .540101330
4 in. (DN100). 540101340
6 in. (DN150). 540101360
8 in. (DN200) 540101380

Black
1 1/2 in. (DN40) 542101320
2 in. (DN50) .542101320
3 in. (DN80) .542101330
4 in. (DN100). 542101340
6 in. (DN150). 542101360
8 in. (DN200) 542101380

Note: Pressure switches, solenoid valves for electric actuation, water pressure gauges, and BFV-300 Butterfly Valve are separately ordered. NPT to ISO threaded adaptors are provided for External Trim Connections (drains, pressure switches, water motor alarms, etc.).

APAC

DV-5A Valves with Galvanized Trim
Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized APAC Single Interlock Preaction Electric Actuation Trim, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 550011315
2 in. (DN50) .550011320
3 in. (DN80) .550011330
4 in. (DN100). 550011340
6 in. (DN150). 550011360
8 in. (DN200) 550011380

Flange x Flange ANSI
3 in. (DN80) .550021330
4 in. (DN100). 550021340
6 in. (DN150). 550021360
8 in. (DN200) 550021380

Flange x Groove ANSI
3 in. (DN80) .550031330
4 in. (DN100). 550031340
6 in. (DN150). 550031360
8 in. (DN200) 550031380

T x T NPT
1 1/2 in. (DN40) 550061315
2 in. (DN50) .550061320

Flange x Flange ISO
3 in. (DN80) .550041330
4 in. (DN100). 550041340
6 in. (DN150). 550041360
8 in. (DN200) 550041380

Flange x Groove ISO
3 in. (DN80) .550051330
4 in. (DN100). 550051340
6 in. (DN150). 550051360
8 in. (DN200) 550051380

Note: Pressure switches, P/N 52-287-1-124 solenoid valve, and psi/kPa water pressure gauges are provided.

Separate DV-5A Valves without Trim
See Table A for flange drilling specifications.

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection, P/N (specify):

Groove x Groove
1 1/2 in. (DN40) 530010015
2 in. (DN50) .530010020
3 in. (DN80) .530010030
4 in. (DN100). 530010040
6 in. (DN150). 530010060
8 in. (DN200) 530010080

Flange x Flange ANSI
3 in. (DN80) .530020030
4 in. (DN100). 530020040
6 in. (DN150). 530020060
8 in. (DN200) 530020080

Flange x Grove ANSI
3 in. (DN80) .530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530030080

T x T NPT
1 1/2 in. (DN40) 530060015
2 in. (DN50) .530060020

Flange x Flange ISO
3 in. (DN80) .530040030
4 in. (DN100). 530040040
6 in. (DN150). 530040060
8 in. (DN200) 530040080

Flange x Groove ISO
3 in. (DN80) .530050030
4 in. (DN100). 530050040
6 in. (DN150). 530050060
8 in. (DN200) 530050080

T x T ISO
1 1/2 in. (DN40) 530070015
2 in. (DN50) .530070020

Notes:
Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

DV-5A Valve Trim
Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5A Automatic Water Control Valves used in Single Interlock Preaction Fire Protection System, P/N (specify):

Galvanized
1 1/2 in. (DN40) 540001320
2 in. (DN50) .540001320
3 in. (DN80) .540001330
4 in. (DN100). 540001340
6 in. (DN150). 540001360
8 in. (DN200) 540001380

Black
1 1/2 in. (DN40) 542001320
2 in. (DN50) .542001320
3 in. (DN80) .542001330
4 in. (DN100). 542001340
6 in. (DN150). 542001360
8 in. (DN200) 542001380

Note: Pressure switches and/or solenoid valves for electric actuation are separately ordered.

DV-5A Valve Trim Accessories (for separately ordered valve trim)
Specify: Specify Accessory Description), P/N (specify):

Waterflow Pressure Alarm Switch, Potter PS10-2 (America/APAC) 25720
Waterflow Pressure Alarm Switch PS10-1 (EMEA) 0260
Supervisory Air Pressure Alarm Switch, Potter PS40-2 (America/APAC) 25710
Supervisory Air Pressure Alarm Switch PS40-1 (EMEA) 0262
Model WMA-1 Water Motor Alarm (America/APAC) 526301001P
Model WMA-1 Water Motor Alarm (EMEA) 526301021R
Model G16AC812 Automatic Supervisory Air Supply 521201001
Model AMD-1 Air Maintenance Device Supervisory Air Supply 523242002
Model AMD-3 Nitrogen Maintenance Device Supervisory Air Supply 523282001
Water Gauges with bar/psi 025500013
600 psi Water Gauge psi/kPa (service pressure over 300 psi) 923431004
Solenoid Valve for Releasing Service . . . . Refer to Technical Data Sheet TFP2180

DV-5A Valve Replacement Parts
Specify: (Description) for use with (specify size) DV-5A Automatic Water Control Valve, P/N (See Figure 1)

DV-5A Valve Trim Replacement Parts
Specify: (Description) for use with DV-5A Valve Trim, P/N (See Figure 6)

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TEFLON is a registered trademark of DuPont

Johnson Controls

SECTION 3

General Air Products Manual

Riser and Tank Mounted Oilless Air Compressors Installation, Operation and Maintenance Manual

OL *Plus*
& OLT *Plus* Series

Riser and Tank Mounted Oilless Air Compressors

Installation, Operation and Maintenance Manual

Table of Contents

If there are any questions regarding installation, operation, or maintenance of this compressor, please call 800-345-8207

IMPORTANT: ALL INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE. Consult factory for the most up to date version of this manual - 1-800-345-8207.

Section 1 - Safety & Warnings

1.1 Safety Guidelines

This manual contains information that is very important to know and understand. This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS. To help recognize this information, observe the following symbols.

| ⚠ DANGER | - Danger indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury. |

| ⚠ WARNING | - Warning indicates a potentially hazardous situation which, if not avoided COULD result in death or serious injury. |

| ⚠ CAUTION | - Caution indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. |

| ⚠ NOTICE | - Notice indicates important information, that if not followed may cause damage to equipment. |

1.2 General Information

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.

1.3 General Safety Information

1. Read all manuals included with this product carefully. Be thoroughly familiar with the controls and the proper use of the equipment.
2. Follow all local electrical and safety codes as well as National Electrical Codes (NEC), Occupational Safety and Health Act (OSHA), and National Fire Protection Association (NFPA).
3. Only persons familiar with these rules of safe operation should be allowed to use the equipment.
4. Keep visitors away and NEVER allow children in the work area.
5. Wear safety glasses and use hearing protection when operating the unit.
6. Do not stand on or use the unit as a handhold.
7. **Periodic inspection and test of this equipment is required.** Consult your installer and local codes to meet all requirements.
8. Check all fasteners at frequent intervals for proper tightness.

1.4 Safety Notes

| ⚠ 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 flammable gas or vapor. Never operate or repair in or near flammable gas or vapor. Never store flammable liquids or gasses 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 gasses 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 when surrounding temperatures are lower than 32°F (0°C). Component selection to minimize the effects of water vapor must be considered. |

Section 2 - 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. Any damage may result in failure and cause injury or property damage.

Section 3 - Installation Location

Locate the compressor in a clean, well ventilated area where air is relatively cool, clean and dry. A 110°F (43°C) maximum and 40°F (4.5°C) minimum temperature for surrounding and inlet air are recommended. Provide at least 12 to 18 inches of clearance from any wall or other obstruction that will interfere with airflow over and through the compressor. Blocking airflow through the fan may cause the compressor to overheat. Do not place the compressor in an area of excessive heat, such as near a boiler.

Section 4 - Mounting

OL Plus Series (Riser mounted units) may be mounted to a firm level floor, wall or system riser. A mounting bracket and straps are provided. Tank mounted units must be leveled and anchored to the floor; the vibration isolators (P/N KVP4X4) supplied with the unit must be used. Both tank and riser mounted units are shipped with a flex hose and union. The flex hose (P/N P3002MP) is recommended to be installed between the compressor or tank outlet and service piping.

Section 5 - Lubrication

⚠️ **NOTICE** - This compressor is designed for non-lubricated service. Bearings are permanently lubricated. **Do not lubricate any part of the compressor or motor**.

Section 6 - Piping

6.1 Piping Instructions

⚠ WARNING	- Compressed air contains liquid water and is saturated with water vapor, which can freeze when surrounding temperatures are lower than 32°F (0°C). Component selection to minimize the effects of water vapor must be considered.

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

⚠ NOTICE	- 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.

⚠ NOTICE	- When an AMD is used with riser mounted units, a riser mounted tank kit (P/N OLR-TK) is recommended to prevent short cycling the compressor.

All oilless compressors include a relief valve. For riser mounted models, the relief valve is installed on the compressor. For tank mounted models, an ASME Code relief valve is mounted on the compressor tank. This valve will open at a preset value above the pressure switch setting to prevent excess tank pressure in the event of a 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.

⚠ NOTICE	- Accumulation of condensed water in the system can cause corrosion of components and reduction of system capacity.

⚠ NOTICE	- Warranty is void if a separate check valve is not installed to prevent water backflow to compressor.

Section 6 - Piping

6.2 OL Plus Series Riser Mounted Oilless Air Compressor Installation Drawing

PIPE INSIDE DIAMETER IS 1/2" MINIMUM OR EXCESSIVE PRESSURE DROP CAN RESULT.

MANUAL DRAIN RECOMMENDED AS MINIMUM.

AUTOMATIC DRAIN (P/N CDF2000) RECOMMENDED ON DRIP LEG TO REMOVE EXCESS WATER

OR

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

DRAWING FILE:GAP OILLESS COMPRESSOR:OILLESS RISER MOUNT:G-211073 REV 3 OILLESS COMPRESSOR WITH RISER TANK INSTR

CONNECT TO REQUIRED SYSTEM TRIM

200 F MAX.

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

PRESSURE SWITCH SETTING:
STANDARD IS 27 TO 30 PSIG CUT -IN /40 TO 44 PSIG CUT- OUT. LOW PRESSURE IS 13 PSIG CUT-IN/18 PSIG CUT-OUT. HIGH PRESSURE IS 80 PSIG CUT-IN/ 100 PSIG CUT -OUT.

RISER TANK KIT TANK, STRAPS, RELIEF VALVE AND GAGE INCLUDED P.N OR .TK RECOMMENDED WHEN AND INSTALLED

30" FLEX HOSE P/N P3002MP

AIR MAINTENANCE DEVICE

PRESSURE GAUGE

SAFETY RELIEF VALVE

TANK

1/2" UNION P/N 4712UNION

RISER

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

DPV

ACCELERATOR

TANK MOUNTED UNITS ARE RECOMMENDED FOR USE WITH ACCELERATORS

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

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

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS DECIMALS ANGLES
±1/4   .XX ±   ±

	REASONS			
ZONE	REV	DESCRIPTION	DATE	APPROVED
1	1	ECN #0146; FLEX HOSE PART NUMBER	2/5/15	RM
2	2	ECN #0160; RELOCATED FLEX HOSE	4/7/15	RM
3	3	ECN #0421: ADDED UNION	7/17/19	DPH

APPROVALS
DRAWN E.IR
CHECKED DPH
SCALE 03-28-11

SHEET 1 OF 1
SIZE C
DATE 03-28-11

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

DWG NO. G-211073
REV 3

GENERAL AIR PRODUCTS

Section 6 - Piping

6.3 OLT Plus Series Tank Mounted Oilless Air Compressor Installation Drawing

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

DRAWING FILE\GAP OIL LESS COMPRESSORS\OL TANK MOUNT\G-211086 REV 2 Installation Instructions Tank Mtd OL Compressors

MANUAL DRAIN RECOMMENDED AS MINIMUM.

AUTOMATIC DRAIN (P/N CDF2000) RECOMMENDED ON DRIP LEG TO REMOVE EXCESS WATER.

OR

PIPE SIZE 1/2" MINIMUM. LARGER IF REQUIRED BY CODE

1/2" UNION P/N 4712UNION

30" FLEX HOSE P/N P3002MP

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

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 SETTING: STANDARD IS 27 TO 30 PSIG CUT-IN /40 TO 44 PSIG CUT-OUT, LOW PRESSURE IS 13 PSIG CUT-IN/18 PSIG CUT-OUT, HIGH PRESSURE IS 80 PSIG CUT-IN/100 PSIG CUT-OUT.

200° F MAX

CONNECT TO REQUIRED SYSTEM TRIM

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

AIR MAINTENANCE DEVICE

PRESSURE SWITCH MUST BE WIRED IN CIRCUIT TO TO CONTROL COMPRESSOR

DPV

ACCELERATOR TANK MOUNTED UNITS ARE RECOMMENDED FOR USE WITH ACCELERATORS

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

WARNING:
DO NOT INSTALL IN AREAS EXPOSED TO TEMPERATURES BELOW 40 DEGREES F OR AREAS EXPOSED TO WEATHER CONSULT FACTORY.

VIBRATION ISOLATORS P/N KVP 4X4

ASME NAME PLATE

MANUAL DRAIN STANDARD. AUTOMATIC DRAIN RECOMMENDED (P/N APCX51-02-000)

GENERAL AIR PRODUCTS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES ±1/4 .XY ± ±

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	ZONE	REV	DESCRIPTION	DATE	APPROVED
		1	ECN #0146: FLEX HOSE PART NUMBER	2/5/15	RM
		2	ECO #0421: ADDED UNION	7/17/19	DPH

REASONS

APPROVALS DATE
DRAWN EJR 04-04-11
CHECKED DPH 04-04-11

TITLE
INSTALLATION INSTRUCTIONS
TANK MOUNTED
OILLESS COMPRESSORS

SHEET 1 OF 1
SCALE
SIZE C
DWG NO. G-211086
REV 2

Section 7 - Wiring

7.1 Wiring Instructions

⚠ **WARNING**

- Wiring should be in accordance with the national electrical code and any local codes or regulations. Have a licensed and competent electrician ensure that the voltage supplied matches the compressor voltage.

⚠ **CAUTION**

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

⚠ **NOTICE**

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

⚠ **NOTICE**

- Grounding Instructions: This product must be connected to a grounded, metallic, permanent wiring system, or an equipment grounding terminal or lead on the product.

The supply wire must be of adequate size and no other equipment should be connected to the same line. The adjacent table lists the recommended wire size for each model based on a 100' run and lowest operating voltage. Consult factory for longer runs. 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 compressors an arrow on the motor indicates the required direction of rotation of the compressor. If the compressor rotates in the opposite direction, reverse the rotation of the motor. Interchanging any two incoming supply wires reverses rotation of three phase motors.

Minimum Recommended Wire Size		
Model #	1 Phase	3 Phase
OL(T)12516**	12	N/A
OL(T)25033**	12	N/A
OL(T)36550**	12	12
OL(T)43075**	10	12
OL(T)615100**	6	12
OL(T)915150**	6	12
OL(T)1225200**	10	10
OL(T)32016**-LP	12	N/A
OL(T)55033**-LP	12	N/A
OL(T)86050**-LP	12	12
OL(T)99075**-LP	10	12

⚠ **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 in pressure) and stopping (cut out pressure) of the motor. The pressure switch is factory set. Standard models switch is set at 27 to 30 psig cut in and 40 to 44 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 motor starter is required, for all three phase models, to protect the motor from overload conditions to meet NEC, NFPA70, Article 430. A motor 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.

⚠ **NOTICE**

- Do not run two phases of a three phase supply through the pressure switch. Serious damage can result. Warranty is voided if connected this way.

Convert Pressure Switch from 115V to 230V

Motor NEUTRAL

HOT wire placeholder

Motor contact jumper and motor HOT

Line contact jumper
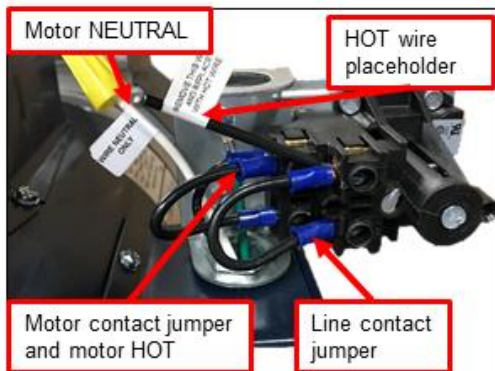
1. Identification of wires.

Remove line contact jumper
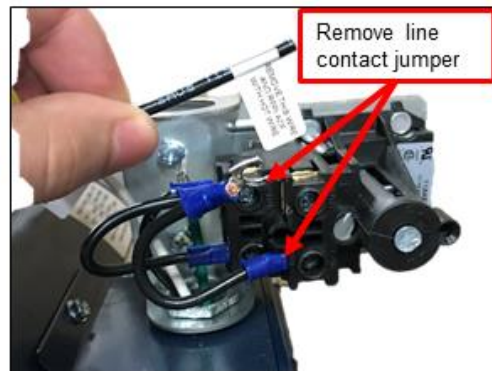
2. Remove line contact jumper and HOT wire placeholder.

Remove motor contact jumper
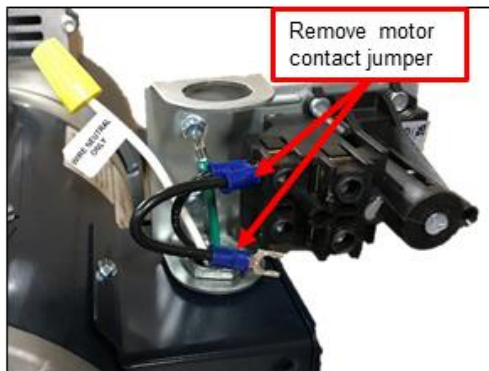
3. Remove motor contact jumper, leaving motor HOT in terminal. Retighten motor HOT wire in terminal.

4. Remove yellow wire nut from motor NEUTRAL.

5. Crimp a spade connector onto NEUTRAL wire.

6. Insert spade connector into other motor terminal. Use wiring diagram on side of motor to wire it for 230V.
7. Wire supply line 1 and line 2 to line contacts of pressure switch.

Section 7 - Wiring

7.2 Oilless Air Compressor Single & 3 Phase Wiring Drawing

FIG 1
1 PHASE BUILT IN
OVERLOAD PROTECTION.

FOR 115V, 1 PHASE,
60HZ (1 POLE)
PRESSURE SWITCH ONLY

MOTOR

PRESSURE
SWITCH

SEPARATE
FUSED
DISCONNECT
(BY OTHERS)

LINE

NEUTRAL

L1

PRESSURE
SWITCH
PRESSURE
SWITCH
RATING
MUST NOT
BE
EXCEEDED

FIG 1A

FOR 115V, 1 PHASE,
60HZ (1 POLE)
WITH MOTOR STARTER

MOTOR

PRESSURE
SWITCH

CONTACTOR
AND
OVERLOADS

SEPARATE
FUSED
DISCONNECT
(BY OTHERS)

LINE

NEUTRAL

L1

FIG 2
1 PHASE BUILT IN
OVERLOAD PROTECTION.

FOR 208-230V, 1 PHASE,
60HZ (2 POLE)
PRESSURE SWITCH ONLY

MOTOR

PRESSURE
SWITCH

SEPARATE
FUSED
DISCONNECT
(BY OTHERS)

PRESSURE
SWITCH
PRESSURE
SWITCH
RATING
MUST NOT
BE
EXCEEDED

LINE

L1

L2

FIG 2A

FOR 208V-230V, 1 PHASE,
60HZ (2 POLE)
WITH MOTOR STARTER

MOTOR

PRESSURE
SWITCH

CONTACTOR
AND
OVERLOADS

SEPARATE
FUSED
DISCONNECT
(BY OTHERS)

LINE

L1

L2

FIG 3

3 PHASE
WITH MOTOR STARTER

MOTOR

CONTACTOR
AND
OVERLOADS

SEPARATE
FUSED
DISCONNECT
(BY OTHERS)

LINE

PRESSURE
SWITCH

NOTES:
1) MOST MOTORS ARE MULTIPLE VOLTAGE. VERIFY MOTOR
INTERNAL CONNECTIONS ARE CORRECT FOR SUPPLY VOLTAGE.
2) FEEDER WIRE SIZE MUST BE CAPABLE OF CARRYING START-UP
CURRENT LOAD AND CURRENT LOAD AT MAXIMUM PRESSURE.
3) PRESSURE SWITCH TO CONTROL COIL CIRCUIT, IF A MOTOR STARTER IS USED.
4) OTHER WIRING VARIATIONS ARE POSSIBLE, ALWAYS CONSULT
LOCAL AND / OR BUILDING CODES FOR REQUIREMENTS.
5) DASHED LINES INDICATE FIELD CONNECTIONS.

N:\Work\Engineering\Drawing File\GAP Oilless Compressors (Cyclone)\OIL RISER MOUNT\INSTRUCTIONS\E-211087 REV 2 WRG INSTRUCT 1Ø & 3Ø OL CMPSRS

Section 8 - 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 (only with non-petroleum based products)
- Clean all external parts of the compressor and motor

Monthly:
- Manually test safety relief valve
- Inspect air system for leaks
- Tighten fitting, nuts, and screws as required

Quarterly:
- Change filters

Warranty can be voided if modifications or adjustments are made without consultation and approval from factory personnel.

If there are any questions regarding installation, operation, or maintenance of this compressor, please call 800-345-8207

Section 9 - Troubleshooting Guide

Symptom	Possible Cause(s)	Corrective Action
Motor hums and runs slowly or not at all.	1. Low 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 start. Voltage must be within +/- 10% of nominal voltage to start motor. Increase wire size if necessary, to lower voltage drop. 2. Replace compressor 3. Replace check valve 4. Repair or replace pressure switch
Reset mechanism cuts out 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 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, heaters and/or overloads are properly rated or set 4. Add receiver vessel or increase pipe volume after compressor 5. Consult factory
Unit short cycles repeatedly	1. Piping too restrictive 2. Air leaks	1. Add receiver vessel or increase pipe volume after compressor 2. Repair leaks
Compressor overheating	1. Dirty intake filter 2. Wrong motor rotation 3. Air flow to fan blocked	1. Clean intake filter 2. Correct rotation 3. Clean air flow to fan or relocate unit
Excessive noise in operation	1. Damaged bearings 2. Worn piston cup 3. Broken valves 4. Loose fan 5. Damaged fan guard	Contact General Air Products for technical support by calling 1-800-345-8207
System pressure builds slowly	1. Compressor sized incorrectly 2. Leaks or restrictions in piping 3. Dirty intake filter	1. Check system size and compressor sizing 2. Correct leaks and remove restrictions 3. Clean intake filter

Section 10 - Warranty Policy

GENERAL PROVISIONS & LIMITATIONS

General Air Products, Inc. (the "Company") warrants to each original purchaser ("Purchaser") of its new products from the Company or its Authorized Distributor that such products are, at the time of delivery to the Purchaser, made with good materials and workman- ship. No warranty is made with respect to:

1. Any product, which has been repaired or altered in such a way, in the Companies judgment, as to affect the product adversely.
2. Any product, which has, in the Companies judgment been subjected to negligence, accident, improper storage, improper installation or application.
3. Any product, which has not been operated or maintained in accordance with the recommendations of the Company.
4. Components or accessories manufactured, warranted and serviced by others.
5. Any reconditioned or prior owned product.

Claims for items described in 4. above should be submitted directly to the manufacturer.

WARRANTY PERIOD

The Company's obligation under this Warranty is limited to repair or, at its option, replacing during normal business hours at the designated facility of the Company, any part that in its judgment proved not to be as warranted within the applicable Warranty Period as follows.

COMPONENTS

All non-consumable components are warranted for 12 months from the date of purchase. Consumables are not covered under warranty. The unit must have been installed by either a factory authorized distributor or agent in accordance with the factory recommendations taking into account all other local site conditions not originally noted to the factory. The unit must be operated and maintained in accordance with the Factory recommendations and original design conditions. Failure to provide such proof of the above may void warranty.

LABOR TRANSPORTATION & INSPECTION

The Company will repair or replace any product or part thereof which in the Companies judgment is proved to be not as warrant- ed. Labor costs are not covered under warranty.

All costs of transportation of product, labor or parts claimed not to be as warranted and, of repaired or replaced parts to or from factory shall be borne by purchaser. The Company may require the return of any part claimed not to be as warranted to one of its facilities as designated by the Company, transportation prepaid by Purchaser, to establish a claim under this warranty.

Replacement parts provided under the terms of the warranty are warranted for the remainder of the Warranty Period of the product upon which installed to the same extent as if such parts were original components.

DISCLAIMER

THE FOREGOING WARRANTY IS EXCLUSIVE AND IT IS EXPRESSLY AGREED THAT, EXCEPT AS TO TITLE, THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY.

THE REMEDY PROVIDED UNDER THIS WARRANTY SHALL BE THE SOLE, EXCLUSIVE AND ONLY REMEDY AVAILABLE TO THE PURCHASER AND IN NO CASE SHALL THE COMPANY BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES. UNDER NO CIRCUMSTANCES SHALL THE COMPANY BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EXPENSES, LOSSES OR DELAYS HOWSOEVER CAUSED.

No statement, representation, agreement, or understanding, oral or written, made by any agent, distributor, representative or employee of the Company which is not contained in this Warranty will be binding upon the company unless made in writing and executed by an officer of the Company.

This warranty shall not be effective as to any claim which is not presented within 30 days after the date upon which the product is claimed not to have been as warranted. Any action for breach of this warranty must be commenced within one year after the date upon which the cause of action occurred.

Any adjustment made pursuant to this warranty shall not be construed as an admission by the Company that any product was not as warranted.

PROMPT DISPOSITION & RETURNS POLICY

The Company will make a good faith effort for prompt correction or other adjustment with respect to any product, which proves to be defective within the warranty period. Before returning any product, write or call the distributor, agent or authorized company from which the product was purchased, describing defect and giving date and number of original invoice, as well as proof of Factory supplied consumables and proof of scheduled maintenance. No products will be accepted for return without the Company issuing a "Returned Goods Authorization" (RGA) to the Purchaser and unless accompanied by a properly authorized RGA request form initiated by the Purchaser. Return freight must be prepaid and each returned product must have the RGA number clearly marked on the product. Title and risk of loss pass to buyer upon delivery to the common carrier.

PRODUCT SUITABILITY

Many States, Localities and Countries have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While General Air Products, Inc. attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used? Before purchase and use of a product, please review the product application, and national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

REV: 4/22/11

General Air Products, Inc.
118 Summit Drive
Exton, PA 19341
P: 610-524-8950
F: 610-524-8965

SECTION 4

United Fire Systems UFS-710

NAMD-1 Instruction Sheet
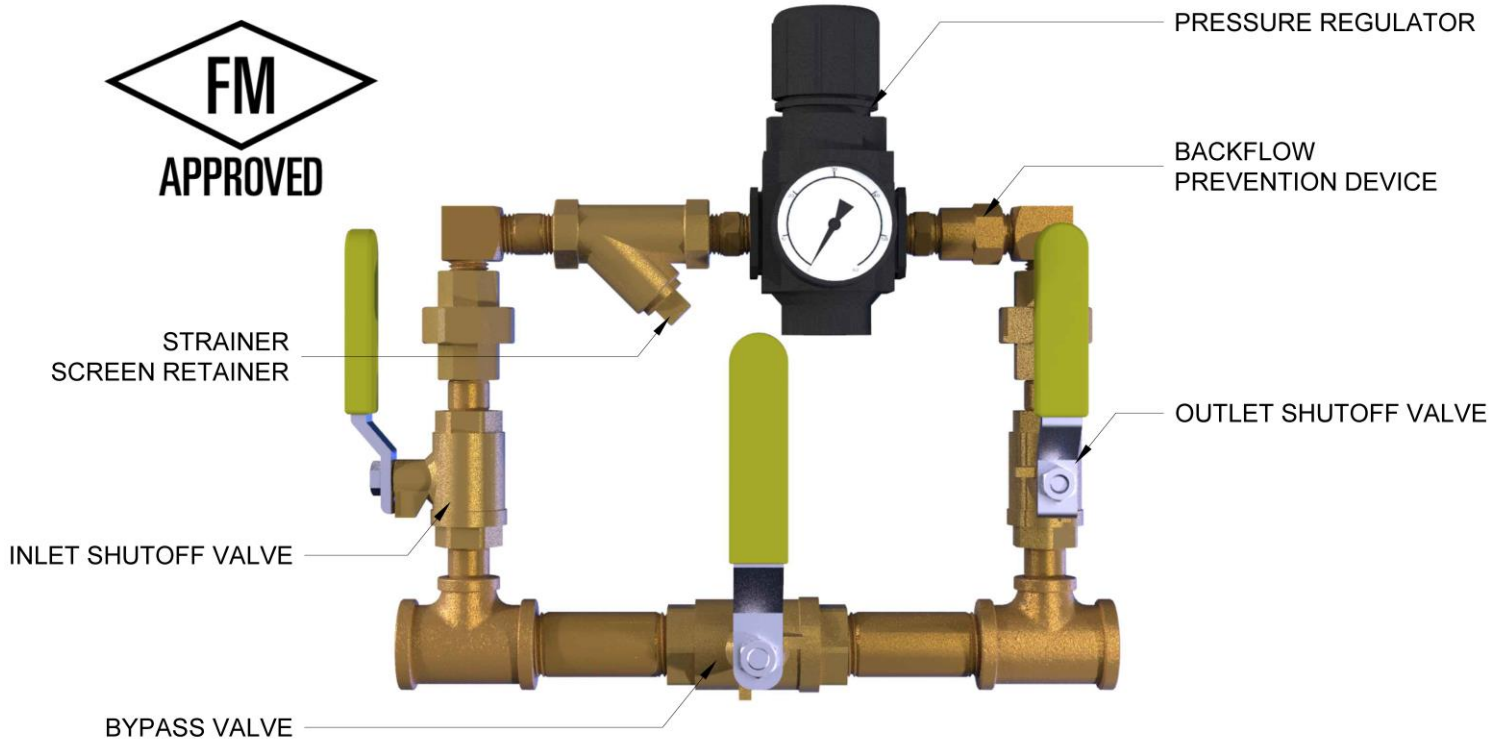
Figure 1

DESCRIPTION

The **UNITED Fire Systems** **Model NAMD-1** is an FM Approved device for controlling the nitrogen and / or air pressure in preaction and dry-pipe fire sprinkler piping. The device is equipped with a high-precision pressure regulator capable of providing accurate regulation over a wide range of inlet pressures and gas flows. This is especially important for sprinkler corrosion inhibiting systems supplying nitrogen to the sprinkler system, since most nitrogen systems provide less gas flow that a conventional air compressor.

SPECIFICATIONS

Model No.:	NAMD-1
Material (other than regulator):	Brass
Material (regulator body):	Zinc
Inlet:	1/2" NPT Female
Outlet:	1/2" NPT Female
Inlet Pressure Range:	0-175 PSIG (0-1200 kPa gauge)
Outlet Pressure Range:	15-60 PSIG (100-410 kPa gauge)
Maximum Pressure:	175 PSIG (1200 kPa)
Temperature Range:	-30°F to +150°F (-34°C to +65°C)
Dimensions (approx.):	9.75" L x 8.25" H (248 mm x 210 mm)
Weight (approx.):	7 lbs. (3.2 kg)

1. INSTALLATION INSTRUCTIONS – READ AND UNDERSTAND BEFORE INSTALLATION

IMPORTANT ⚠️
DO NOT disassemble the **Model NAMD-1** device!

1.1. Install the **Model NAMD-1** device in the nitrogen / air pressure supply line to the sprinkler valve trim.
1.2. **UNITED Fire Systems** highly recommends installing one (1) **Model NAMD-1** device for each sprinkler valve.
1.3. The device may be installed in any orientation.
1.4. Install the device as close as possible to the sprinkler valve receiving the pressure.
1.5. Locate the device in as a convenient place as possible, where the ball valves may be easily operated and the pressure gauge observed.
1.6. If the rigidity of the inlet and outlet piping is sufficient, no additional bracketing should be necessary. Otherwise, use standard split ring hangers and hardware to attach the device to the wall or other solid mounting location.

IMPORTANT ⚠️

The **Model NAMD-1** device is designed to operate in one direction only. Refer to **Figure 1** to positively identify the **INLET** and **OUTLET** ports of the device.

1.7. Attach the piping from the pressure source to the **INLET** of the device. Piping shall be 1/2" nominal pipe size minimum. Use Teflon tape on the male pipe threads of the pipe only. DO NOT permit pipe thread sealant to enter the device.
1.8. Attach the piping from the **OUTLET** of the device to the proper connection point on the sprinkler valve trim. Piping shall be 1/2" nominal pipe size minimum. Use Teflon tape on the male threads of the pipe only. DO NOT permit pipe thread sealant to enter the device.
1.9. Proceed to the **COMMISSIONING** instructions below.

2. COMMISSIONING

2.1. Ensure all three (3) ball valves on the **Model NAMD-1** device are **CLOSED**.
2.2. Determine proper supervisory pressure for the sprinkler valve which the device is connected to.
2.3. Pull pressure regulator adjustment knob UP.
2.4. Turn pressure regulator adjustment knob COUNTERCLOCKWISE to remove all force from the regulating spring.
2.5. Apply nitrogen pressure from sprinkler corrosion inhibiting system to the device inlet.
2.6. Leak check the piping from the pressure source to the Model NAMD-1 device. Piping should be as leak-free as possible. Correct all leaks before proceeding.
2.7. Gradually open inlet shutoff valve. Pressure gauge on the device pressure regulator should indicate pressure.

IMPORTANT ⚠️
When adjusting pressure regulator, always approach the desired adjustment from a LOWER to a HIGHER pressure.

A. If pressure adjustment (as indicated on device pressure gauge) is LOW, turn pressure regulator adjustment knob CLOCKWISE to increase pressure to desired setting.

B. If pressure adjustment (as indicated on the device pressure gauge) is HIGH, turn pressure regulator adjustment knob COUNTERCLOCKWISE to reduce pressure 3-5 PSIG below desired setting, then turn knob CLOCKWISE to increase pressure to desired setting.

---

2. COMMISSIONING (continued)

2.8. Turn pressure regulator adjustment knob clockwise until pressure gauge indicates 2-3 PSIG above the desired supervisory pressure determined in step 2.2.

2.9. Gradually open outlet shutoff valve. Nitrogen pressure will reach the sprinkler valve trim.

2.10. Leak check the piping from the **Model NAMD-1** device to the sprinkler valve trim. Piping should be as leak-free as possible. Correct all leaks before proceeding.

2.11 Check that pressure gauge continues to indicate 2-3 PSIG above supervisory pressure. Adjust if necessary.

2.12. Push pressure regulator adjustment knob DOWN.

3. OPERATION

Table 1 – Valve Positions			
MODE	**INLET** Shutoff Valve	**OUTLET** Shutoff Valve	**BYPASS** Valve
No Gas Supply To Sprinkler Valve	Closed	Closed	Closed
Initial-Fill With Air	Closed	Closed	**OPEN**
Supply System With Nitrogen	**OPEN**	**OPEN**	Closed
DO NOT Operate	**OPEN**	**OPEN**	**OPEN**

4. INSPECTION AND MAINTENANCE

4.1 Monthly

4.1.1 Inspect the **Model NAMD-1** device valve position. Use Table 1 to verify that valve position is in accordance with desired MODE.

4.1.2 Inspect the pressure gauge. Verify that indicated pressure is 2-3 PSI above the desired supervisory pressure of the connected sprinkler valve. Refer to **2. COMMISSIONING** if regulator adjustment is required.

4.2 Annual At least annually, inspect and clean the device strainer screen.

⚠️ DANGER ⚠️

Ensure that **Model NAMD-1** device is completely depressurized before inspecting and cleaning the strainer screen. Failure to do so can result in death or serious personal injury!

IMPORTANT ⚠️

When ball valves have been CLOSED, the nitrogen / air supply is not available to pressurize the sprinkler system piping. Take required precautions to prevent inadvertent sprinkler valve operation. Notify applicable personnel of possible "low air" signals.

---

4. INSPECTION AND MAINTENANCE (Continued)

4.2 Annual (Continued)

4.2.1 Ensure there is no pressure present in the **Model NAMD-1** device.

4.2.2 Hold device so that torque applied to strainer screen retainer does not move the device.

4.2.3 Refer to **Figure 1.** Apply suitable wrench to HEX on strainer screen retainer. Do NOT remove square plug.

4.2.4 Remove strainer screen retainer. Retain for replacement.

4.2.5 Examine rubber seal on strainer screen retainer. If damaged during removal, leakage may occur.

4.2.6 Remove strainer. Empty any loose material, and then flush with clean water. If necessary, use a wire brush to remove trapped particles. Dry strainer screen thoroughly before replacement.

4.2.7 If strainer screen is damaged, replace with new strainer screen UFS P/N 30-500003-401.

4.2.8 Insert strainer screen.

4.2.9 Replace strainer screen retainer, tightening wrench-tight.

4.2.10 See 2. COMMISSIONING to return Model NAMD-1 device to service.

4.2.11 Leak check the strainer screen retainer / strainer body connection. Correct leak if necessary.

SECTION 5.1

Kidde Manual
06-237491-001

ARIES-SLX Control Panel Installation, Operation, and Maintenance Manual

ARIES®-SLX
Fire Alarm/Suppression Control Unit

Installation, Operation, and Maintenance Manual

Meets the requirements of Underwriters Laboratories Standard 864 for Control Units and Accessories for Fire Alarm Systems, 10th Edition.

UL LISTED

FM APPROVED

STATE FIRE MARSHAL

California Office of State Fire Marshal
Certificate of Approval

New York City Fire Department
Certificate of Approval

Kidde
Fire Systems

FOREWORD

Note: This Manual, P/N 06-237491-001, 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 ARIES®-SLX 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
ACT:	ARIES Configuration Tool	MEA:	Materials and Equipment Acceptance Division of the City of New York
ADA:	Americans with Disabilities Act	µF	microfarads
AH:	Ampere Hour	µm	micrometers
AHJ:	Authority Having Jurisdiction	NAC:	Notification Appliance Circuit
AI:	Addressable Monitor Module	N.C.:	Normally Closed
AO:	Addressable Relay	NEC:	National Electrical Code
ASM	Addressable Signal Module	NFPA:	National Fire Protection Association
ATM-L:	Annunciator Driver Module	N.O.:	Normally Open
ATM-R:	Relay Driver Module	PALM:	PEGAsys Addressable Loop Module
AWG:	American Wire Gauge	PAS:	Positive Alarm Sequence
BPM:	Beats per Minute	PCB:	Printed Circuit Board
CPU:	Central Processing Unit	pF:	Picofarads
CSFM:	California State Fire Marshal	P/N:	Part Number
DAC:	Digital Alarm Communicator	RAM:	Random Access Memory
DACT:	Digital Alarm Comm. Transmitter	RDCM:	Remote Display/Control Module
DC:	Direct Current	RRM:	Remote Release Module
EOC:	Event Output Control	RF:	Radio-Frequency
EOLD:	End of Line Device	SLC:	Signaling Line Circuit
FM/FMRC:	Factory Mutual (Research Corporation)	SMPS:	Switching Mode Power Supply
Ft.:	Feet	TB:	Terminal Block
HSD:	High Sensitivity Smoke Detector	UL/ULI:	Underwriters Laboratories, Inc.
HSSD:	High Sensitivity Smoke Detector	V:	Volts
Hz:	Hertz (Frequency)	Vac:	Volts AC
IRI:	Industrial Risk Insurers	Vdc:	Volts DC
		VRMS:	Volts Root Mean Square

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

⚠

Initial Commissioning of System: **To ensure proper system operation, the system must be initially tested in accordance with NFPA 72. All system components and circuits must be 100-percent tested and proper system operation verified before the system is put in service.**

CAUTION

⚠

System Re-acceptance Test after Re-Programming: **To ensure proper system operation, this system must be retested in accordance with NFPA 72 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.

SAFETY SUMMARY (CONT.)

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 not respond to a fire event if configured incorrectly:

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.

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.

Off-premises notification 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.

CODES AND STANDARDS

The ARIES-SLX control unit shall be installed, commissioned and maintained according to the following:

- 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, Standard for National Fire Alarm and Signaling 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

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CHAPTER 1
SYSTEM OVERVIEW

1-1   SYSTEM DESCRIPTION

The ARIES®-SLX Fire Alarm/Suppression 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 ARIES-SLX 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.
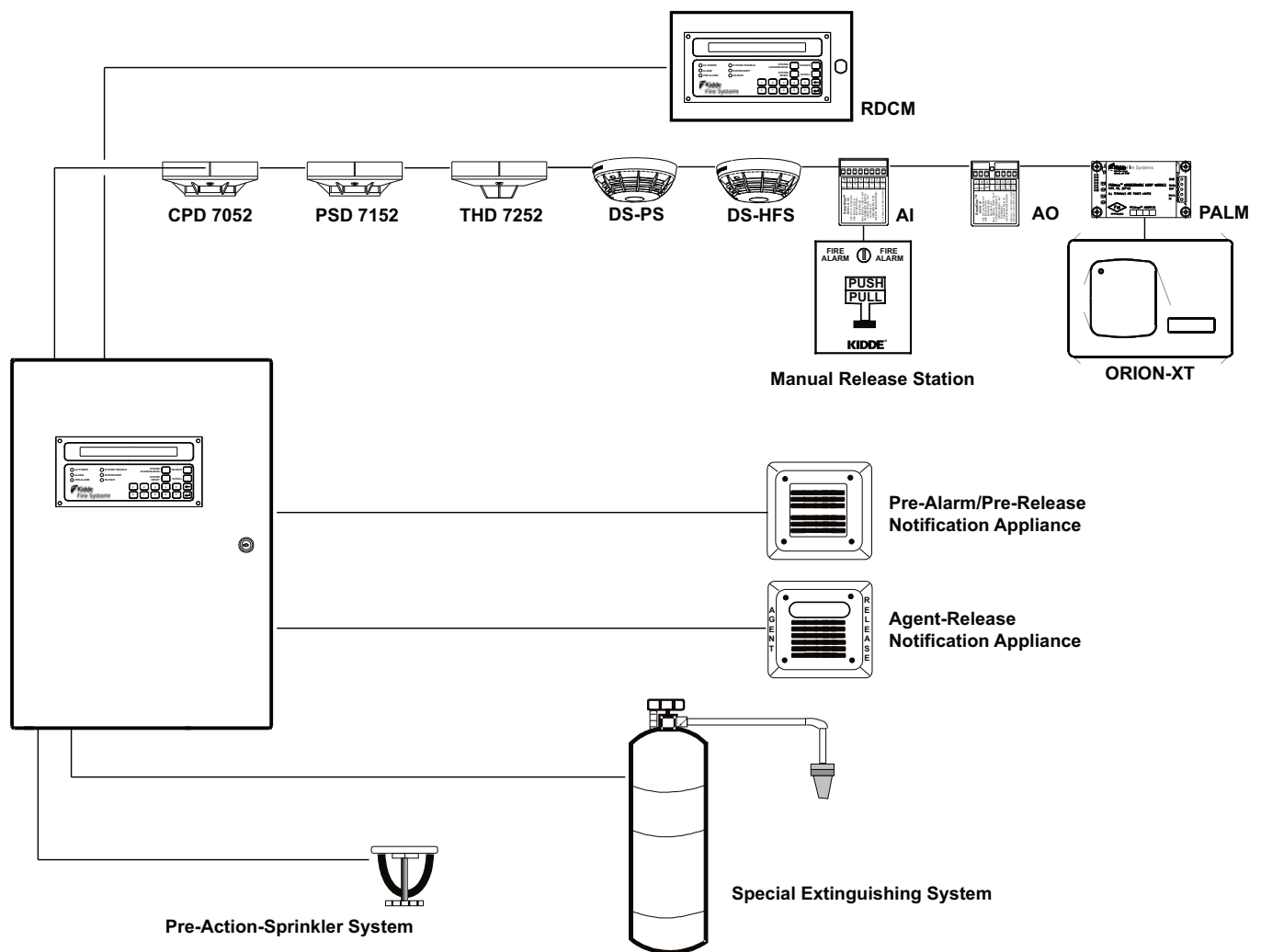
Figure 1-1. Typical ARIES-SLX System

The ARIES-SLX 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 , Class X or Class B operation
- 255 intelligent-device capacity (limitations apply)
- Two (2) notification-appliance circuits (NACs) for Class A or Class B 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 actuators, 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 or Class B 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 ARIES-SLX 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)
- 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.
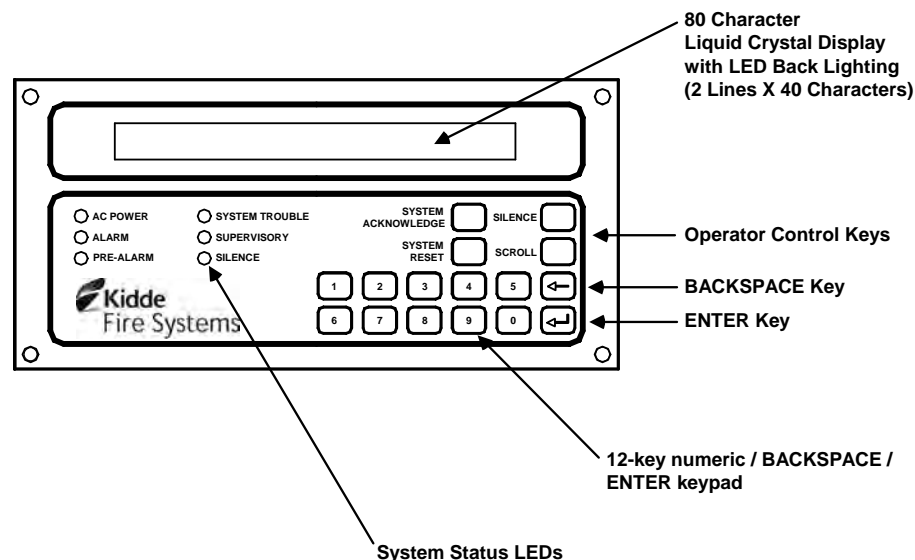
Figure 1-2. ARIES-SLX Display

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 ARIES-SLX'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.

RS-485 Terminals
(TB15)

USB Port
(J6)

RS-232 Serial Port B (J3)

Network Interface
Card Connector (J5)

SLC Terminals
(TB1)

RS-232 Serial
Port A (J8)

Display /
Operator
Interface

Prog. Relay No. 1

Prog. Relay No. 2

Prog. Relay No. 3

Trouble Relay

SLC Class Operation
Type Switch (S2)

NOTE: For Class B operation,
move switch to the left (Style 4
position). For Class A and Class X
operation, move switch to the right
position.

Battery Terminals
(TB3)

Notification
Appliance
Circuit No. 2
(TB14)

Notification
Appliance
Circuit No. 1
(TB5)

Buzzer

AC Input Terminals
(TB13)

AC Supply Select Switch
(S4)

Release Circuit No. 1
(TB12)

Release Circuit No. 2
(TB11)

24 VDC Auxiliary-Power
Terminals (TB2)

Programmable Release /
Notification-Appliance
Circuit No. 1
(TB7)

Programmable Release /
Notification-Appliance
Circuit No. 2
(TB6)

Note: Polarities shown reflect the condition when the circuit is either active or in the alarm state.

Figure 1-3. ARIES-SLX Control Unit Printed Circuit Board

1-2.3　ARIES-SLX 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).
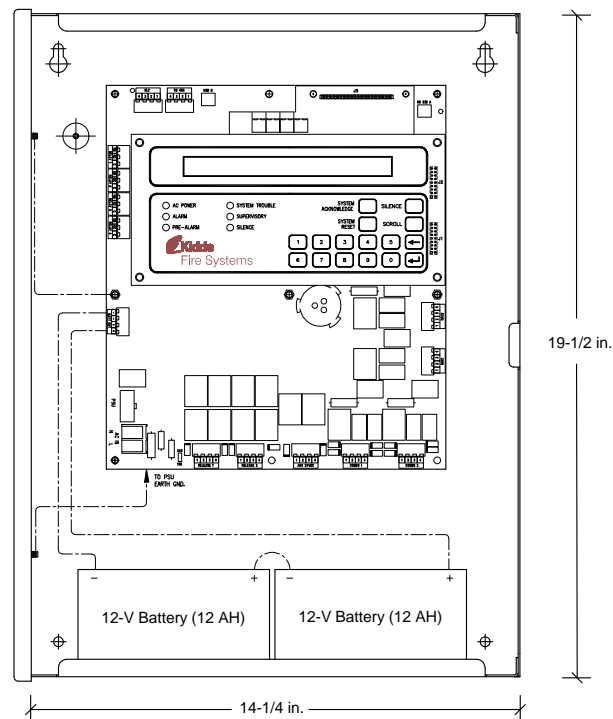
Figure 1-4.　ARIES-SLX Cabinet

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 or 220/240 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 ARIES-SLX's back box.

1-2.5　Batteries

The cabinet provides space for two 12-AH batteries. Use a separate battery enclosure, P/N 76-100010-001, for 17-AH or larger batteries. Batteries must be ordered separately.
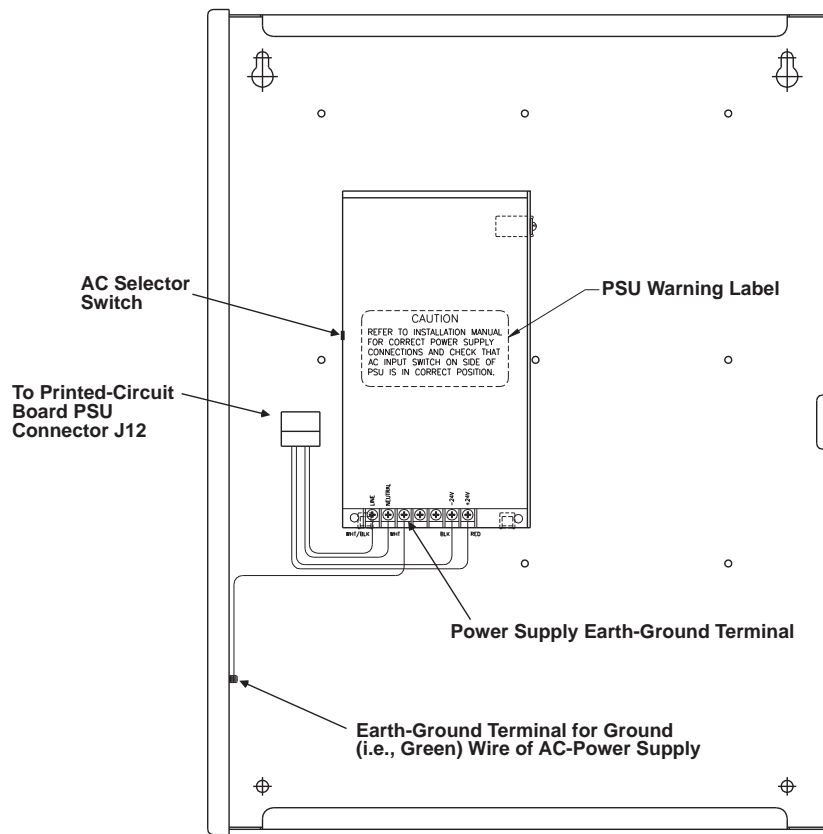
Figure 1-5. Power-Supply Assembly

1-3   OPTIONAL DEVICES

Several optional devices and modules can be used with the ARIES-SLX.

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 ARIES-SLX's Display/Control Module and allows full operator intervention and system control.
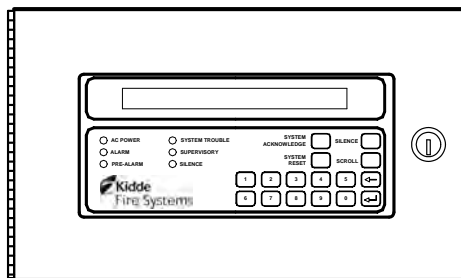
Figure 1-6. Remote Display/Control Module

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 ARIES-SLX. Two types of driver modules can be used, Models ATM-L and ATM-R.

The ARIES-SLX 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 ANNUNCIATOR DRIVER MODULE

The Model ATM-L Annunciator Driver Module provides the ARIES-SLX 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 Acknowledgment, 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.
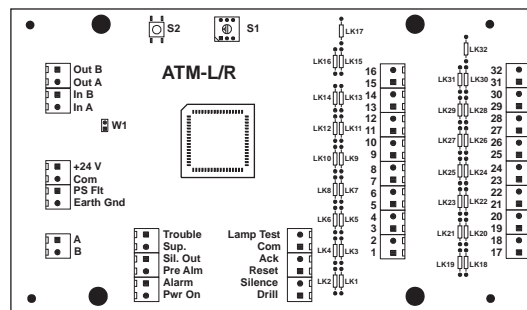
Figure 1-7. Model ATM-R Relay Driver Module

1-3.3 Network Interface Card (NIC)

The Network Interface Card (NIC), shown in Figure 1-8, allows up to 32 Kidde® ARIES®-SLX, Kidde® ARIES®, Fenwal® FENWALNET™ 6000, and Chemetron® MICRO SLX 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 control units and electrically isolates the networked control units from each other.

Note: The ARIES-SLX can be networked with the following addressable control units:

CONTROL UNIT	MCB FIRMWARE VERSION
Kidde ARIES-SLX	2.1.0 or later
Kidde ARIES	1.2.12 or later
Fenwal FENWALNET 6000	1.2.12 or later
Chemetron MICRO SLX	1.2.12 or later
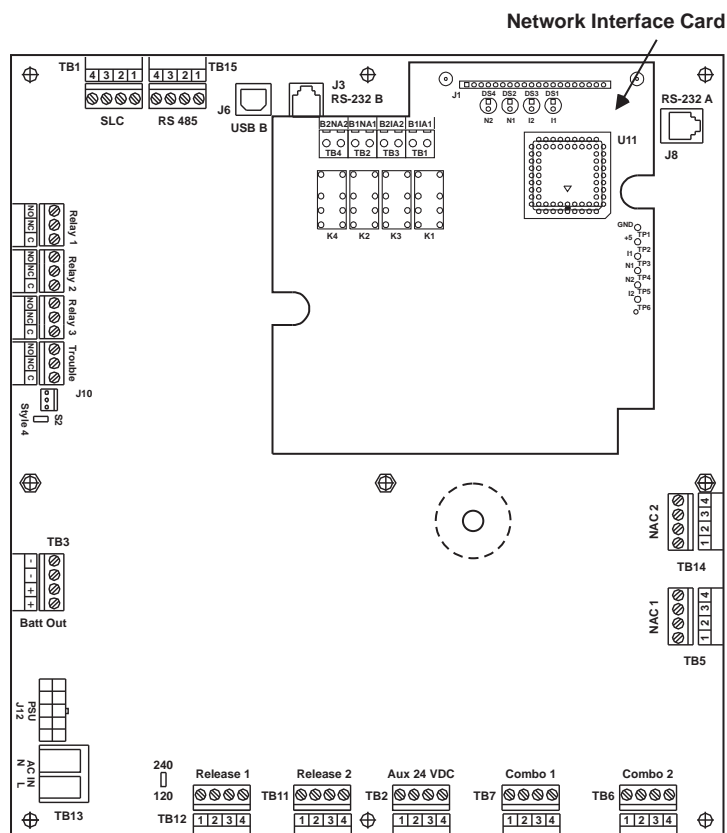
Figure 1-8. Network Interface Card (shown mounted to PCB)

1-3.4   Intelligent Interface Module (IIM)

The Intelligent Interface Module (IIM), shown in Figure 1-9, provides a communications link to a network up to 127 ORION-XT or AnaLASER-II Detectors for centralized data exchange, alarm reporting, detector configuration, and history-log downloading.

Refer to the ORION-XT Installation, Operation and Maintenance Manual (Part Number 77.100) or AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001) for a complete description of the Intelligent Interface Module.
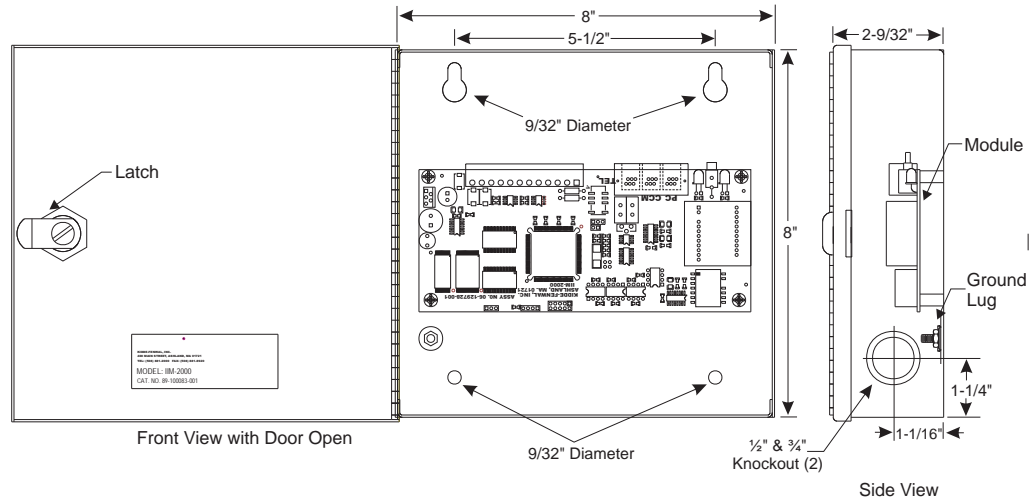
Figure 1-9. Intelligent Interface Module

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 control units.

Note: The ARIES-SLX can be networked with the following addressable control units:

CONTROL UNIT	MCB FIRMWARE VERSION
Kidde ARIES-SLX	2.1.0 or later
Kidde ARIES	1.2.12 or later
Fenwal FENWALNET 6000	1.2.12 or later
Chemetron MICRO SLX	1.2.12 or later
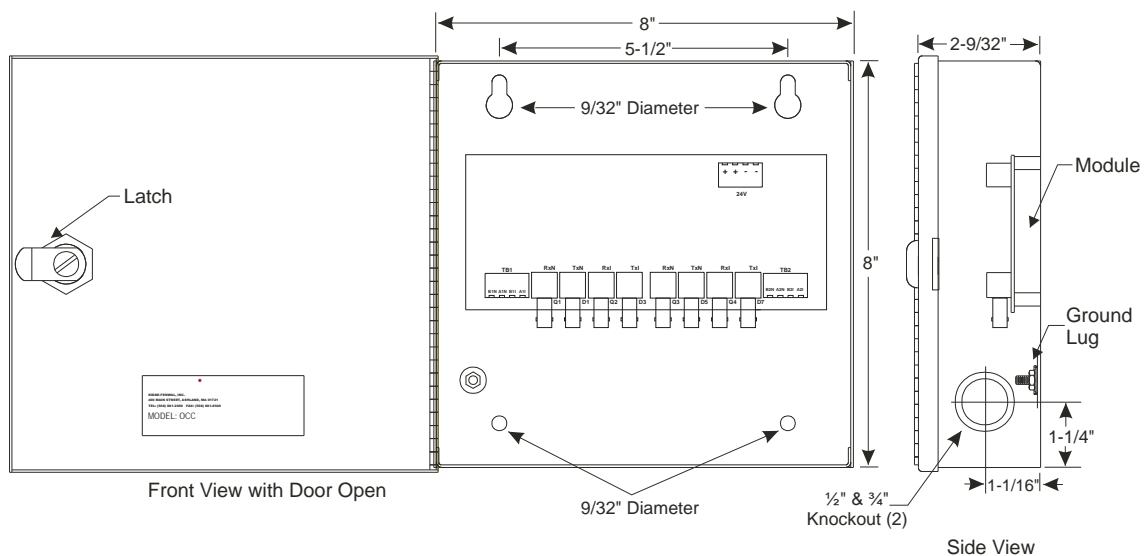
Figure 1-10. Fiber Optic Converter Card

1-3.6   Trim Ring

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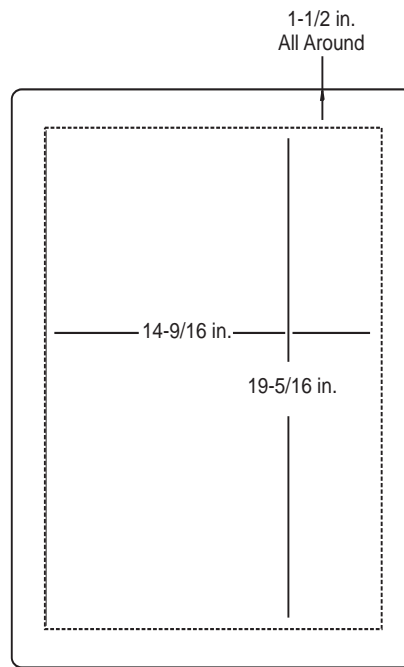
Figure 1-11. Trim Ring

1-4 SMARTONE AND DS SERIES DETECTORS

The ARIES-SLX uses both the SmartOne and DS 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 ARIES-SLX through the Signaling Line Circuit, and responds to control unit polling and inquiries by the address that is set in the detector using the Hand-held Programmer, P/N 70-600000-100, or using the ARIES-SLX's display.

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 ARIES-SLX Control Unit.
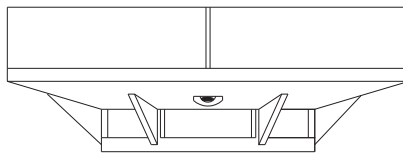
Figure 1-12. SmartOne Smoke Detector

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 ARIES-SLX 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.
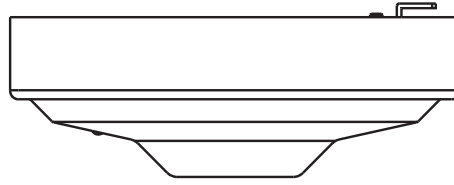
Figure 1-13. THD-7252 Thermal Detector

1-4.4 Model DS-PS Photoelectric Smoke Detector

The Model DS-PS Photoelectric Smoke Detector is an intelligent device that uses an optical sensing chamber to detect smoke. The detector analyzes its sensor data to determine whether to initiate an alarm. The detector is constructed of a high impact polymer. Each detector features an optional base-locking tab, a two-color LED and a field-replaceable smoke chamber. The detector head fits onto a standard Model DS-SB or Model DS-RB relay base.

1-4.5 Model DS-HFS Heat Detector

The Model DS-HFS Heat Detector is an intelligent fixed temperature device that contains a fixed-temperature heat sensor to detect heat from fire. The heat sensor monitors the temperature of the air in its surroundings and the detector analyzes the data and determines whether to initiate an alarm. The detector is constructed of a high impact polymer. Each detector features an optional base-locking tab and a two-color LED. The detector head fits onto a standard Model DS-SB or Model DS-RB relay base.
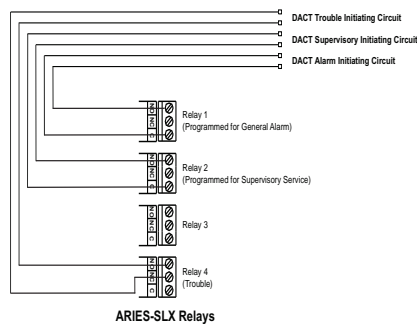
Figure 1-14. DS Series Intelligent Detectors

1-4.6 SmartOne Detector Bases

Two detector bases are available.

1-4.6.1 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.
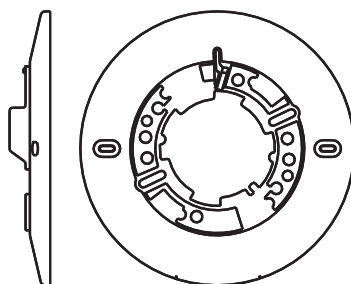
Figure 1-15. 6SB Detector Base (Flanged)

1-4.6.2 FLANGELESS DETECTOR BASE, MODEL 4SB

The Model 4SB Detector Base is used in underfloor applications or in applications where mounting space is limited. This base mounts to standard 3- or 3½-inch electrical boxes.
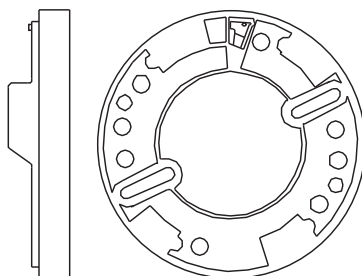
Figure 1-16. 4SB Detector Base (Flangeless)

1-4.7 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.
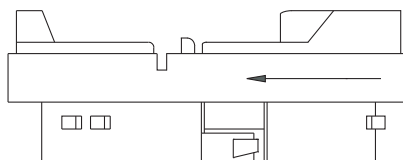
Figure 1-17. MA-002 Detector Base Adapter

1-4.8   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 ARIES-SLX Control Unit.
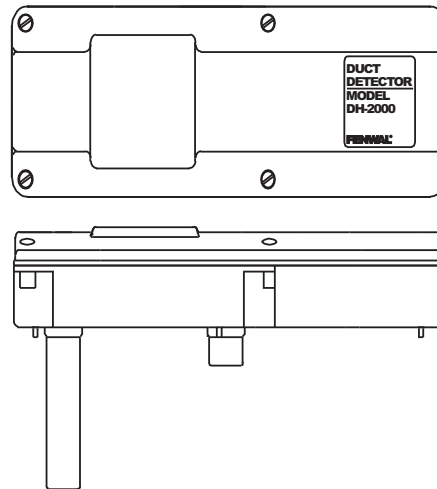
Figure 1-18.   DH-2000 Duct-Detector Housing

1-4.9   Duct Detector, Model DS-SD

The Model DS-SD Duct Detector is an intelligent smoke detector that monitors smoke in an air duct. The DS-SD is located outside of the duct. The duct housing has 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.
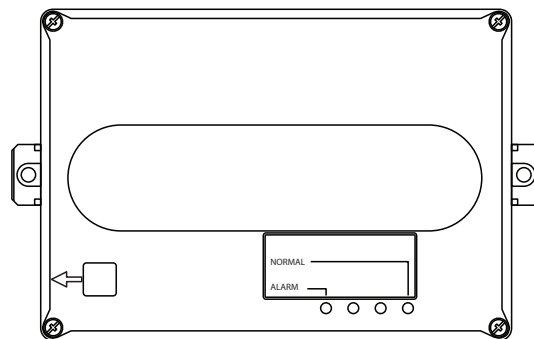
Figure 1-19.   DS-SD Duct Detector Front View

1-4.10   DS Series Detector Bases

Two detector bases are available for DS Series detectors.

Note: Older CPD, PSD and THD addressable SmartOne detectors use the Model 6SB or Model 4SB detector bases.

1-4.10.1   MODEL DS-SB STANDARD DETECTOR BASE

The Model DS-SB is the standard base for DS Series detectors. It connects the detector to the Signaling Line Circuit.
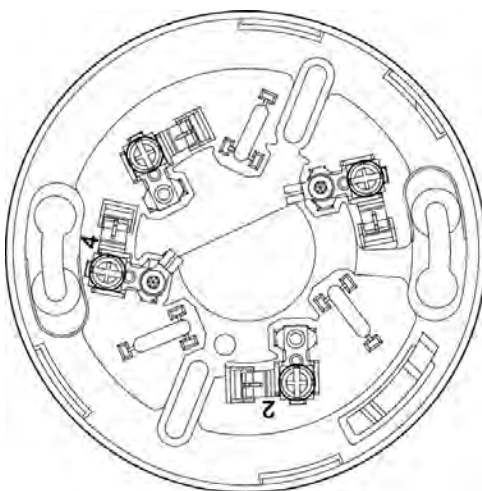
Figure 1-20. Standard Detector Base for DS Series Detectors

1-4.10.2   MODEL DS-RB RELAY DETECTOR BASE

The Model DS-RB is another base available for DS Series detectors. It connects the detector to the Signaling Line Circuit and adds relay functionality.
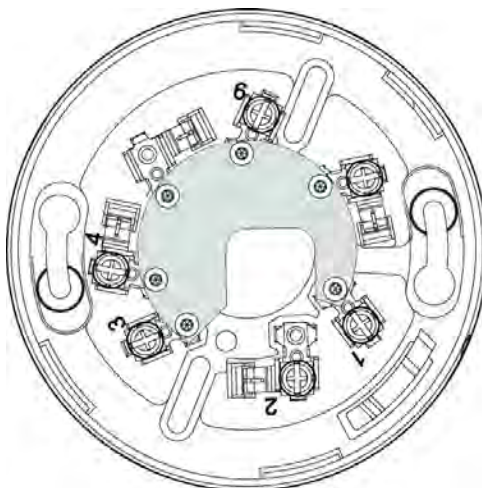
Figure 1-21. Relay Base for DS Series Detectors

Note: The DS-RB relay will briefly change state (turn on) when power is supplied or the detector is removed and replaced.

Note: The relay in the DS-RB base cannot be used to control or initiate signals for emergency control functions.

1-5   HIGH SENSITIVITY SMOKE DETECTORS

1-5.1   Kidde ORION-XT or Fenwal AnaLASER-II

The ORION-XT® or AnaLASER-II High Sensitivity Smoke Detectors are designed for early warning smoke detection applications such as telecommunications facilities, data processing rooms, museum, warehouses and cleanrooms. The detectors consist of a laser particle counter detector head, a high efficiency fan module and a termination board. When connected to an air sampling pipe network, the detector provides coverage for an area up to 20,000 square feet.

A Kidde ORION-XT can be connected to the Signaling Line Circuit using a PEGAsys™ Addressable Loop Module (PALM), P/N 77-297103-000, which mounts inside the detector housing. An AnaLASER-II can be connected to the Signaling Line Circuit using an AnaLASER Interface Module (AIM), P/N 89-300010-001, which mounts inside the detector housing.

Additionally, up to 127 ORION-XT or AnaLASER-II detectors can be networked together with the use of an Intelligent Interface Module (IIM). This external module is available with or without a built-in modem in a red case.

- P/N 77-297114-002   Intelligent Interface Module w/ Modem, Red
- P/N 77-297114-001   Intelligent Interface Module w/o Modem, Red

1-5.2   AIR-Intelligence Model ASD-160H

The AIR-Intelligence™ ASD-160H is a highly sophisticated "next generation" detector that provides high sensitivity smoke detection with very early warning. The ASD-160H incorporates a patented "artificial intelligence" known as ClassiFire®, which allows the detector to configure itself to optimum sensitivity, alarm thresholds, and minimum nuisance alarms for various environments. The ASD-160H offers protection for an air sampling pipe network up to 164 feet (50 meters) total.

An ASD-160H can be connected to the Signaling Line Circuit using an Addressable Protocol Interface Card (APIC), P/N 76-333002-001, which mounts inside the detector housing. Up to 127 AIR-Intelligence detectors can be networked together using an AIR-Intelligence Command Module.

1-5.3   AIR-Intelligence Model ASD-320

The AIR-Intelligence ASD-320 offers protection for a larger area than the ASD-160H and supports an air sampling pipe network up to 328 feet (100 meters) total.

An ASD-320 can be connected to the Signaling Line Circuit using an Addressable Programmable Interface Card (APIC), P/N 76-333002-001, which mounts inside the detector housing. Up to 127 AIR-Intelligence detectors can be networked together using an AIR-Intelligence Command Module.

1-5.4   AIR-Intelligence Model ASD-640

The AIR-Intelligence ASD-640 offers protection for a larger area than the ASD-320 and supports an air sampling pipe network up to 656 feet (200 meters) total.

An ASD-640 can be connected to the Signaling Line Circuit using an Addressable Protocol Interface Card (APIC), P/N 76-333002-001, which mounts inside the detector housing. Up to 127 AIR-Intelligence detectors can be networked together using an AIR-Intelligence Command Module.

1-6   SMARTONE ADDRESSABLE MODULES

SmartOne addressable modules are of four general types:

- Monitor Modules. These modules provide a uniquely-identifiable interface between the ARIES-SLX 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 ARIES-SLX 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., initiators/actuators and solenoid valves).

Each addressable module continuously transmits its current status to the ARIES-SLX 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 Hand-held Programmer, P/N 70-600000-100, or using the ARIES-SLX display.

More information is available about addressable modules in the corresponding Installation Instructions for that module (available on website or found in packaging).

1-6.1   Addressable Monitor Module, Model AI

AI Modules are designed to be mounted in the electrical box of the device being monitored. Two styles of Model AI Addressable Monitor Modules are available:

- The Model AI (Normally Open), P/N 70-417008-001, is used to monitor conventional, unpowered, normally-open contact-type devices such as manual stations, waterflow switches and supervisory switches through a Class B initiating device circuit. A silicone-free module, P/N 70-417018-001, is available for applications where silicone is not desired.

- The Model AI (Normally Closed), P/N 70-417008-002, is intended for use within control equipment providing the normally closed trouble contact and is not considered an initiating device circuit.

  Additionally, the ARIES-SLX supports the use of older-style Addressable Monitor Modules (which have a white label):

  1. P/N 70-407008-001 (N.O.)
  2. P/N 70-407018-001 (N.O. silicone-free)
  3. P/N 70-407008-002 (N.C.)
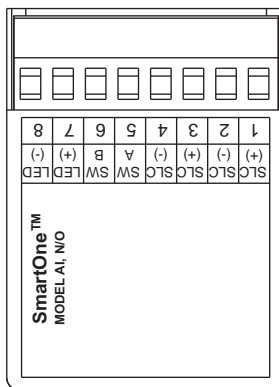
Figure 1-22. AI Monitor Module

Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for instructions on how to configure these devices/switches with an AI Module:

- **Alarm:** The unpowered alarm contact can be either normally-open or normally-closed.

- **Manual Alarm Station**: The unpowered alarm station is normally-open.

- **Manual Release Station**: The unpowered release station is normally-open.

- **Abort Station**: The unpowered abort switch can be either normally-open or normally-closed and can be programmed to abort in different ways.

- **Supervisory Switch**: The unpowered supervisory switch can be either normally-open or normally-closed.

- **Waterflow Contact**: The unpowered waterflow contact can be either normally-open or normally-closed.

- **Spurt Device**: The unpowered spurt device must be a normally-open, dead-man type switch. It is similar in functionality to a manual release station with the exception that its associated extinguishing system will de-energize when the spurt device is released.

- **Squirt Device**: The unpowered squirt device must be a normally-open, dead-man type switch. It is used to reactivate an extinguishing system after it is automatically deactivated following the expiration of the initial time-limit cutoff interval (ITLCO). The extinguishing system will reactivate when the squirt switch is manually operated and remain active as long as the user maintains the squirt switch in the active position. The extinguishing system will de-energize when the operation of the squirt device ceases.

- **Normal Device**: A normal device is a non-latching initiating device. Point-specific outputs can be assigned to a normal device in the Event Output Control section of the configuration program. The unpowered normal device can be either normally-open or normally-closed.

- **Trouble Input:** A trouble input creates a trouble condition and is a non-latching initiating device. The unpowered trouble input can be either normally-open or normally-closed.

- **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 addressable relays must be configured for fan-restart operation. The unpowered fan-restart switch must be a non-Latching, normally-open contact.

- **Drill:** A drill switch is used to initiate a fire drill via an external, field-installed switch. The fire drill will begin when the drill switch is activated and will stop when the drill switch is de-activated. The unpowered drill switch must be a latching, normally-open contact.

- **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 will de-activate silenceable outputs when the alarm silence switch is activated, and will re-activate silenced outputs when the alarm silence switch is de-activated. The unpowered alarm silence switch must be a non-latching, normally-open contact. 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.

- **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. NOTE: This feature does not meet UL requirements unless there is a visible display at the acknowledge switch that indicates what is being acknowledged.

1-6.2 ORION-XT Interface Module, Model PALM

The Model PALM ORION™-XT Interface Module is a monitor module that enables a High Sensitivity Smoke Detector (HSSD) to report pre-alarm, alarm, and trouble signals to the ARIES-SLX Control Unit via its Signaling Line Circuit. The PALM mounts inside the ORION-XT detector housing.

Note: The PALM address cannot be set via the Hand-held Programmer. Use either the OCS Software or the ARIES-SLX' display to set the PALM's address.
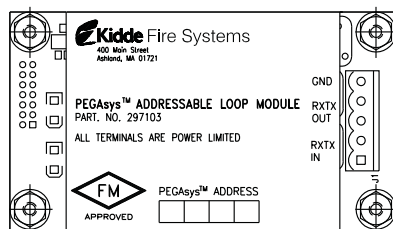
Figure 1-23. ORION-XT Interface Module, Model PALM

1-6.3 AnaLASER-II Interface Module, Model AIM

The Model AIM AnaLASER®-II Addressable Interface Module is a monitor module that enables a High Sensitivity Smoke Detector (HSSD) to report pre-alarm, alarm, and trouble signals to the ARIES-SLX Control Unit via its Signaling Line Circuit. The AIM mounts inside the AnaLASER-II detector housing. Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).

Note: The AIM address cannot be set via the Handheld Programmer. Use either the LaserNET Software or the ARIES-SLX display to set the AIM's address.
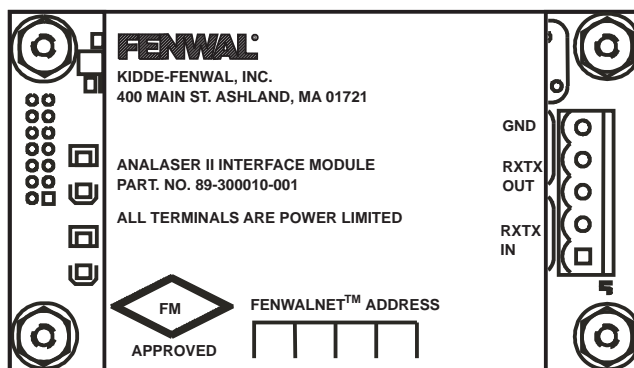
Figure 1-24. AnaLASER-II Interface Module (AIM)

1-6.4 AIR-Intelligence SmartOne Addressable Protocol Interface Card (APIC)

The AIR-Intelligence SmartOne APIC is an interface module which integrates AIR-Intelligence High Sensitivity Smoke Detectors (HSSDs) with the ARIES-SLX control unit via its Signaling Line (SLC) Circuit. The APIC mounts inside the AIR-Intelligence detector housing.

Note: Device addresses cannot be set via the Hand-held Programmer; addresses must be set by moving switches on either the APIC or Command Module.
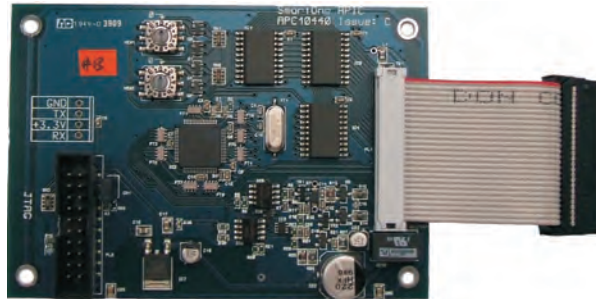
Figure 1-25. AIR-Intelligence Interface Card (APIC)

1-6.5 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 ARIES-SLX through the Signaling Line Circuit. The AAM, P/N 73-100001-003, 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.
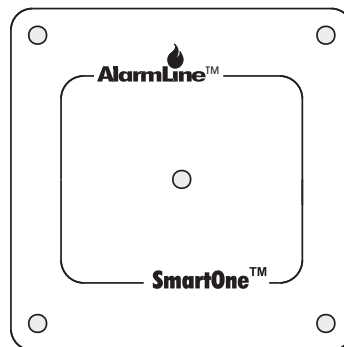
Figure 1-26. Addressable AlarmLine Module

1-6.6 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.
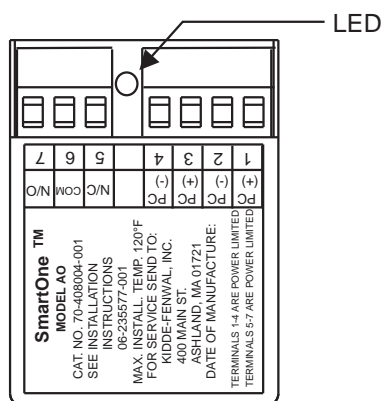
Figure 1-27. AO Relay Module

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

1-6.7 Addressable Signal Module, Model ASM

The Addressable Signal Module permits notification appliances to be controlled by commands issued via the ARIES-SLX's SLC. The ASM is supplied with a thermoplastic mounting cover and is designed to mount in a standard 4-11/16″ electrical box or a 4″ square, extra-deep electrical box.

Set the ASM to the audio mode and install the end-of-line resistors across the trouble-monitoring and output circuits before you address the ASM with the Hand-held Programmer or the ARIES-SLX's display. Return the module to the Auxiliary Mode before you use the ASM with the ARIES-SLX.

Note: The ASM cannot be programmed to synchronize with NAC and Combo outputs and does not support 60 or 120 BPM operation or Temporal Code 3.
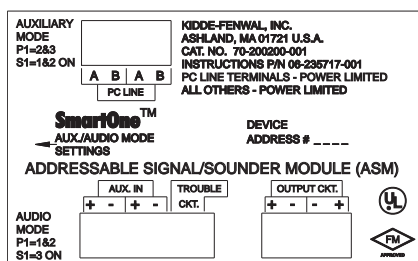
Figure 1-28. ASM Addressable Signal Module

1-6.8 Remote Releasing Module

The Remote Releasing Module (RRM) provides the ability to remotely activate extinguishing-system control devices (for example, actuators and solenoid valves). Connection is via the control unit's Signaling Line Circuit (SLC). The module is field-programmable using the control unit keypad or Hand-held Programmer.

A maximum of 64 RRMs can be activated consecutively via the ARIES-SLX Control Panel. Up to 16 RRMs can be configured in a group for simultaneous activation. The ARIES-SLX 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.
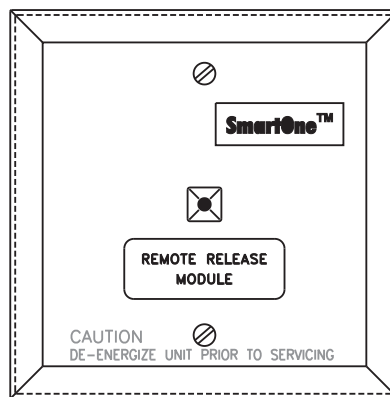
Figure 1-29. Remote Releasing Module

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 (used with P/N: 77-297107-000 enclosure and cables)	Kidde	77-297106-000
24 VDC, 1 A Auxiliary Power Ouput of ARIES-SLX Control Unit, qty 2 (See Note)	Kidde	76-600000-901
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
24 Vdc, 8A POWERPATH Power Supply	Eaton Wheelock	PS-8-LP

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. Also, see Paragraph 2-10 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 ARIES-SLX Configuration Software User's Guide (P/N 06-237492-001).

1-7   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.
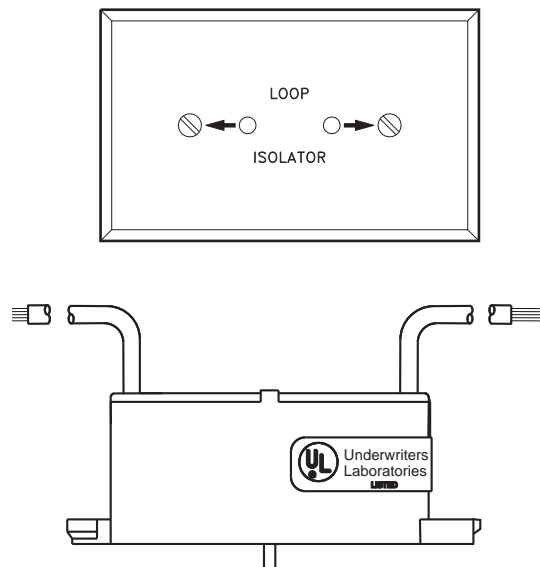
Figure 1-30. Isolator Modules

1-8 SPECIFICATIONS

1-8.1 Electrical Specifications

The electrical specifications for the ARIES-SLX are as follows:

1-8.1.1 PRIMARY AC POWER

Primary AC connections are made through AC input-power terminals, TB 13, on the ARIES-SLX 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 2-6.

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.

1-8.1.2 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 76-100010-001 or other UL Listed battery cabinet.) Refer to Appendix A for estimated standby times.

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

1-8.1.3 SIGNALING LINE CIRCUIT

Connections between the control unit, the Signaling Line Circuit, and the associated SmartOne (including DS Series) devices are supervised and power-limited.

- Wiring
    – Class B
    – Class A
    – Class X (Note: Requires Isolator Modules.)
- Voltage: 24 Vdc nominal
- Maximum Resistance: 40 Ohms
- Maximum Conductor-to-Conductor Capacitance: 0.5 µF
- Maximum SLC Loop Capacitance to Earth Ground: 0.5 µF
- Maximum Current: 350 mA (short circuit)

1-8.2 Mechanical Specifications

The mechanical specifications for the ARIES-SLX 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

1-8.3 Environmental Specifications

The environmental specifications for the ARIES-SLX are as follows:

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

1-8.4 Notification-Appliance and Releasing Circuits

All circuits are power-limited except where noted.

NAC Rating	Regulated 24 Vdc
NAC Wiring	Class A Class B

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 2-8 through Paragraph 2-10
Operating Voltage:	24 Vdc (nominal)
Max. NAC Current:	1.5 A

Note: All notification appliance devices must be rated for "Regulated 24 DC" operation. All notification appliance devices must be listed by UL to one or more of the following UL standards:

- UL 464 Audible Signaling Devices for Fire Alarm and Signaling Systems
- UL 1638 Visible Signaling Device for Fire Alarm and Signaling Systems
- UL 1971 Signaling Devices for the Hearing Impaired

Refer to Section 2-8 for more information on compatible notification appliance devices.

Peak Surge/Inrush Current:	15 A per circuit, maximum
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 actuators or 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.

1-8.5 RS485 Wiring (Input/Output)

EIA/TIA-485, AWG 18, twisted **shielded** pair recommended.

Use low capacitance cable – maximum 15pF per ft.

1-8.6 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)

1-8.7 Auxiliary Outputs

The auxiliary outputs are power limited.

- Operating Voltage Range: 18.8 - 27.6 Vdc
- Maximum Current: 1.0A (each auxiliary output circuit)
- Maximum Capacitance to Earth Ground: 0.5 microfarad total for both outputs (See Note below)
- Maximum Current for all system external devices: 5.0A

Note:

Each auxiliary power output can provide 1 Amp of current at 24 Vdc nominal. The Capacitance to Earth Ground between the power inputs (+ and -) and Earth Ground of all powered devices on both auxiliary power outputs must be less than 0.5 microfarads. Capacitance measurements should be taken on each device to be powered. The measurement should be taken from both the positive and negative 24 Vdc input to the device chassis ground or dedicated Earth Ground connection, with the device unpowered. The higher of the two readings should be used and added to other devices powered by the auxiliary outputs. The total cannot exceed 0.5 microfarads.

The capacitance must be measured with a good quality multi-meter capable of accurately measuring capacitance. Most Fluke meters that have the capacitance function will be adequate. Measurement is not required for device(s) being powered by the auxiliary power outputs that do not have an earth ground connection and the chassis of the device is not connected to Earth Ground. Typically, simple devices such as relays or solenoids will have little or no capacitance to Earth Ground. Devices with active electronics circuits (such as UV or IR detectors, or other complex devices) may have larger capacitance.

1-8.8 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

CHAPTER 2
INSTALLATION

This chapter is intended for system installers. It provides information necessary to successfully prepare for and install the ARIES®-SLX Fire Alarm/Suppression Control Unit. The system design is based on the requirements of Kidde Fire 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 ARIES-SLX Installer's Wiring Diagram, P/N 06-237490-001, available on the distributor extranet site.

2-1   PREPARING FOR INSTALLATION

Complete the following preparation procedures before installing the control unit.

2-1.1   Control-Unit Components

Check the contents of the ARIES-SLX shipping carton to ensure that you have received the following components:

- Enclosure w/Door, P/N 06-220019-006
- Power Supply, P/N 06-118394-001
- Circuit-Board Assembly with Display, P/N 76-600000-904
- Hardware Kit, P/N 06-220024-001
- Operating Instructions, P/N 06-237489-001

2-1.2   Materials/Tools Required

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

- 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   INSTALLATION OVERVIEW

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

2-2.1   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 2-3.

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/DS Series Devices**.

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

2-2.2   Step Two: Installing the ARIES-SLX Power Supply and Main PCB

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

2-2.3   Step Three: Connecting AC Power and Standby Battery

Apply AC power, then connect the standby battery.

2-2.4   **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 3-2.5.2.4.27. 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.

2-2.5   **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.

Note: A USB Isolator must be used in series with the USB cable when connecting to port J6 as shown in Figure 2-34. This connection is typically used when sending or receiving information between the panel and a PC running the panel configuration software.

2-2.6   **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.

2-2.7   **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.

2-2.8   **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.

2-3   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
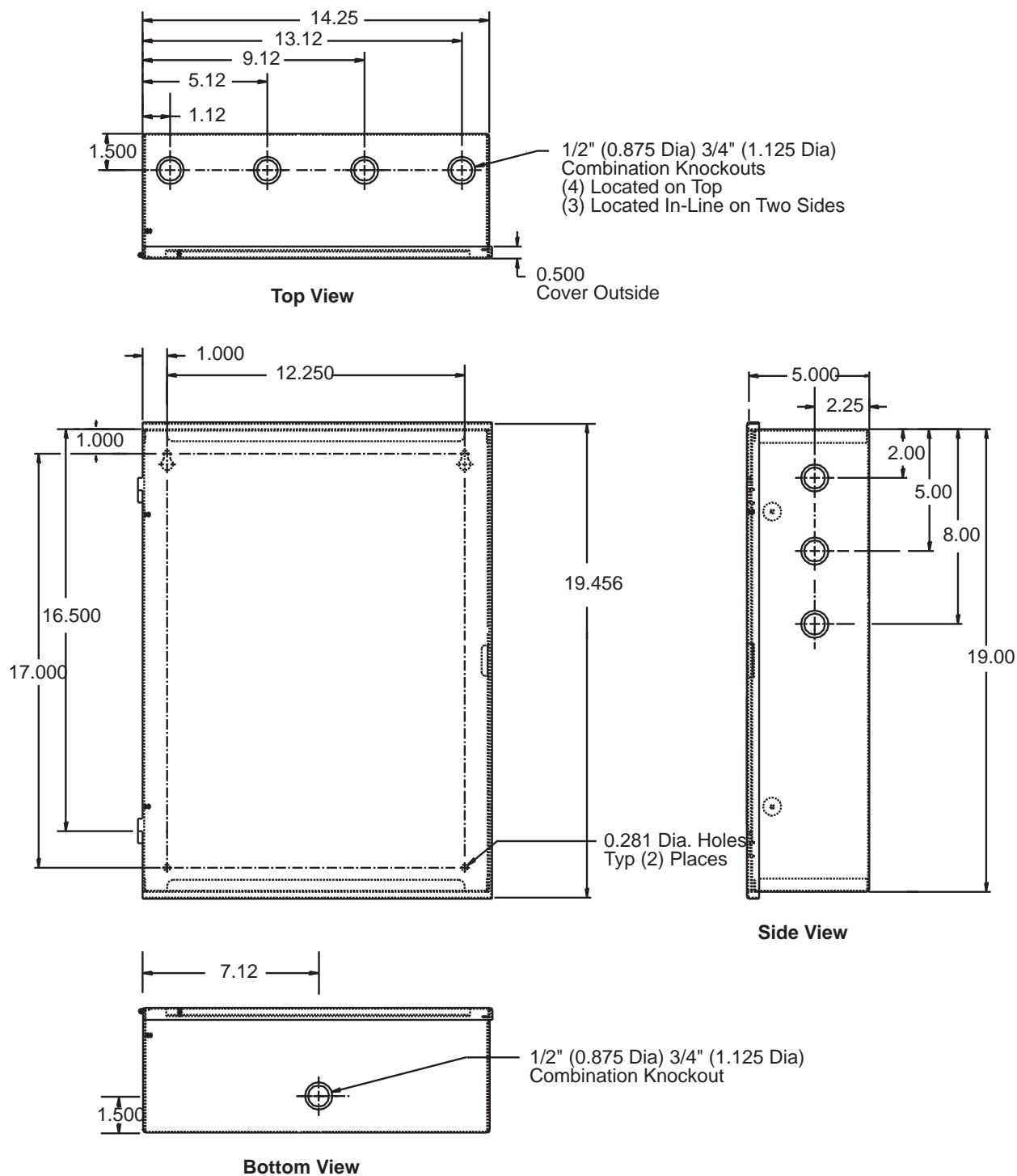
Note: All dimensions are in inches.

Figure 2-1. Enclosure Dimensions

2-3.1 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.

2-3.2 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.
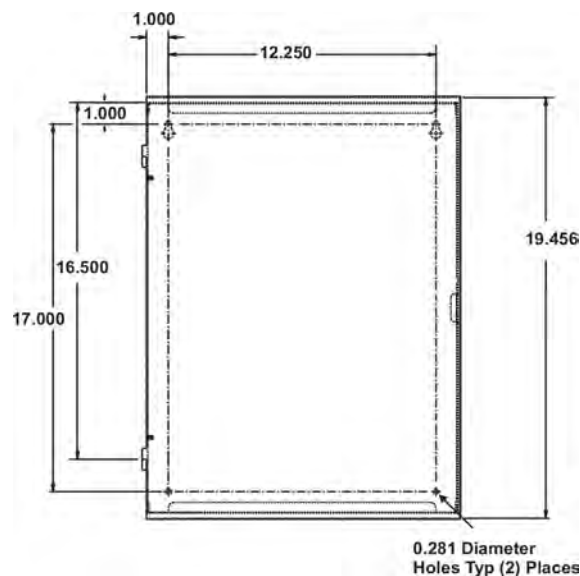
Figure 2-2. Back Box Mounting Dimensions

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.

2-3.3   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.
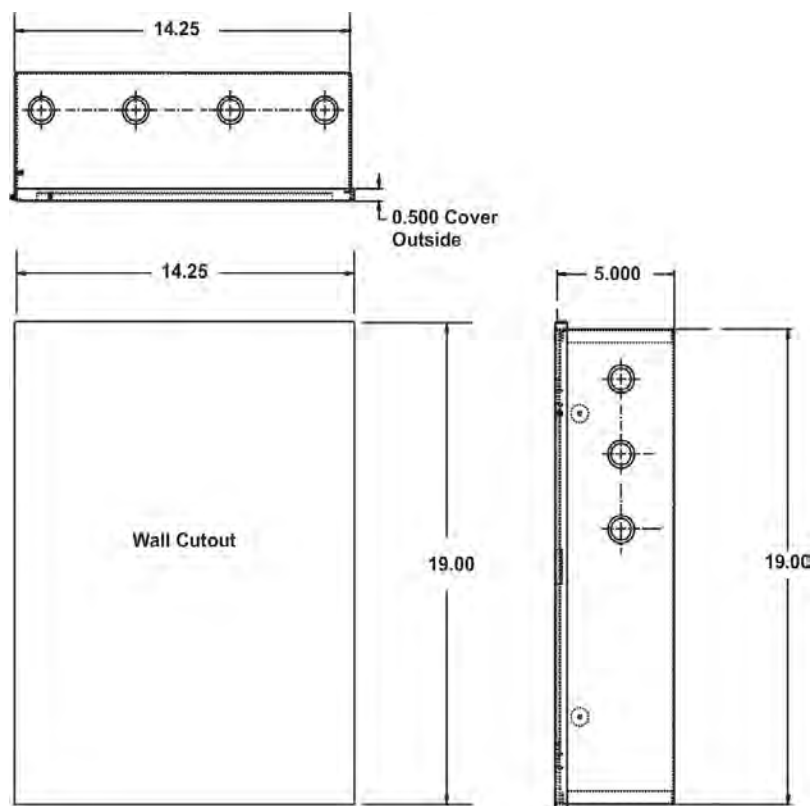
Figure 2-3. Semi-Flush Mounting Dimensions

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.

2-4   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.

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

Wiring-Harness Connections

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

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

Wiring-Harness Connections

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.
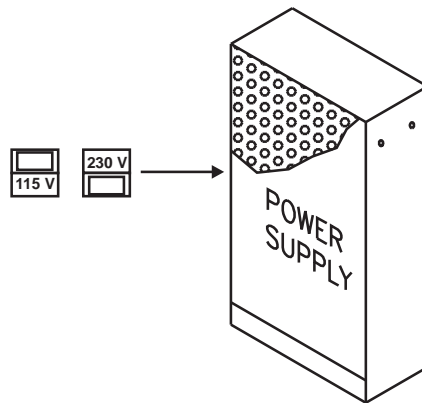
Figure 2-5. Primary Power Selection Switch

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.

2-5   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.

**AC Protective Cover
(with standoff)**
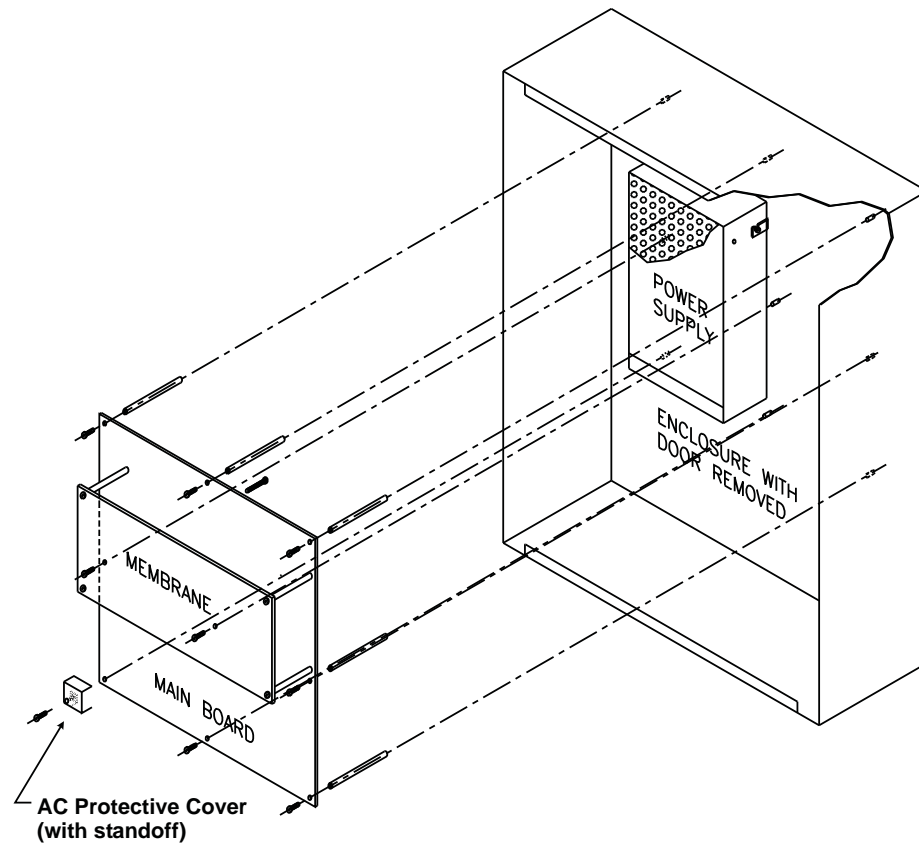
Figure 2-6. PCB Installation

1. Locate the nine (9) 2-1/4" 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 2-6.1.

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.

Attach shorter ground wire to enclosure door with washer-and-screw assembly.

Attach longer ground wire to PCB with washer-and-screw assembly.

Earth-ground terminal for power supply and green wire of AC supply
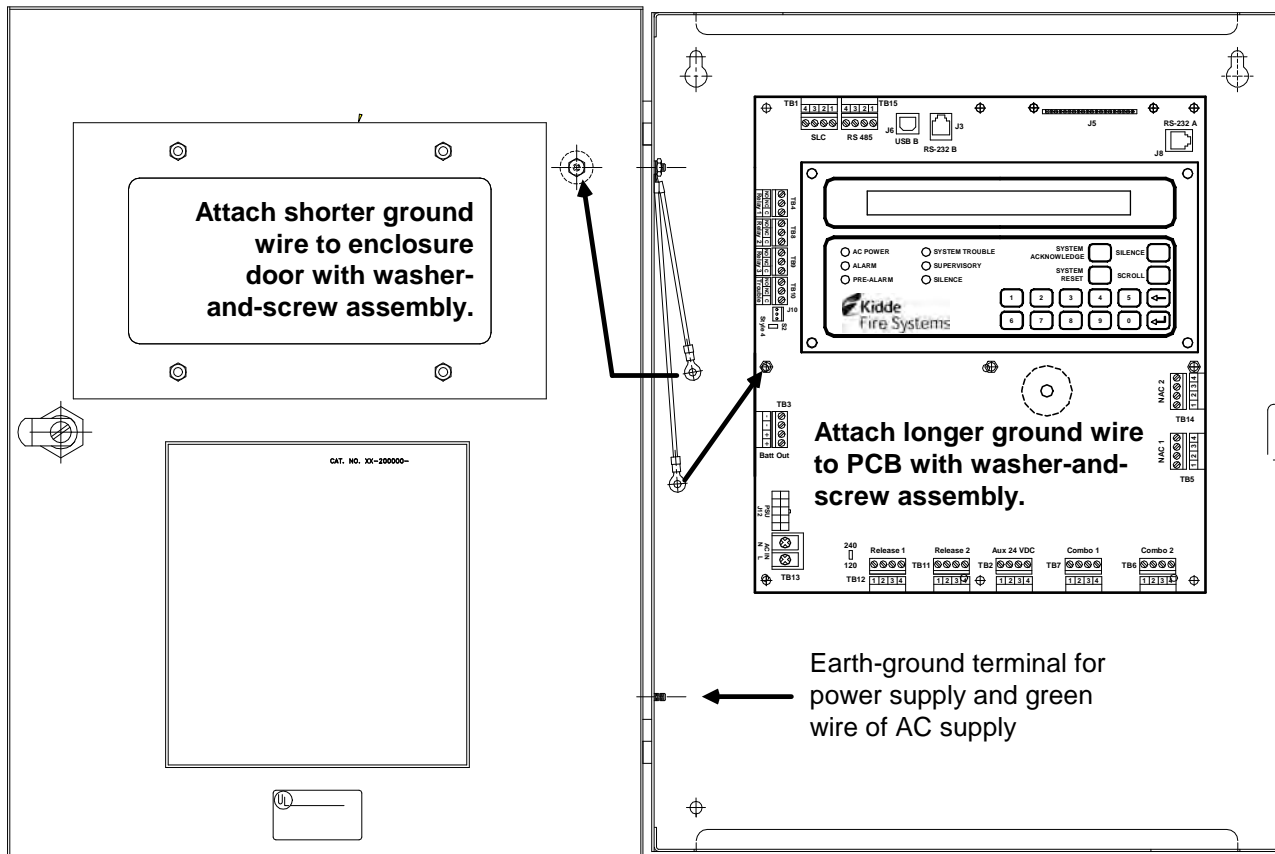
Figure 2-7. PCB-to-Cabinet Grounding Diagram

2-6   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.

2-6.1   AC Power Connection

The primary AC power for the ARIES-SLX 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 2-4.

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.
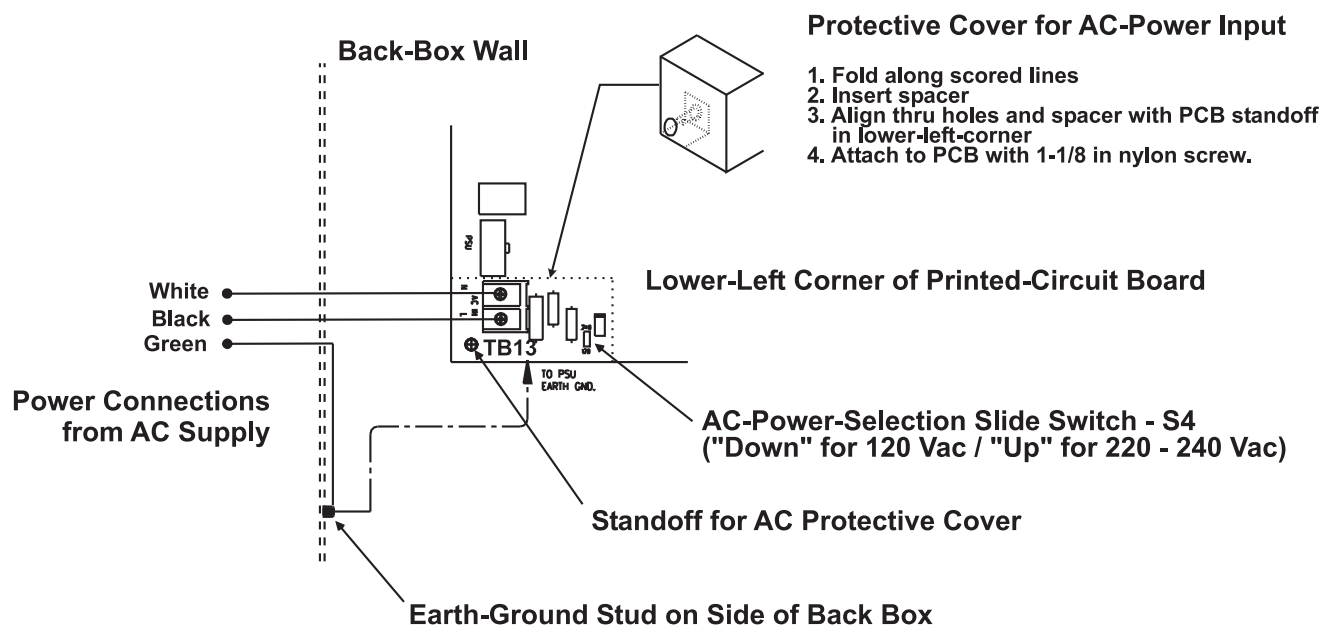
Figure 2-8. Primary-Power Connections

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.

2-6.2 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.
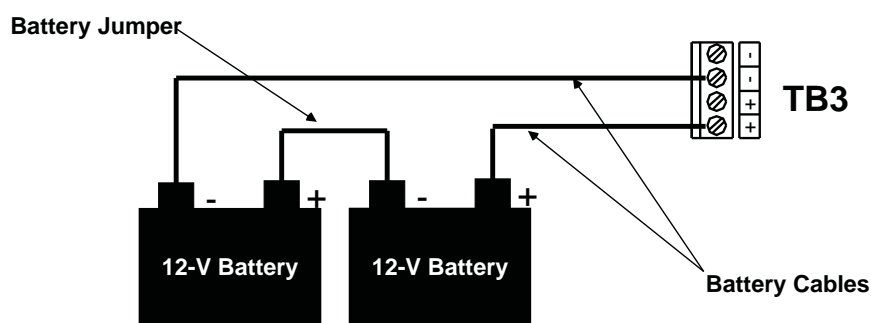
Single-Battery Installation
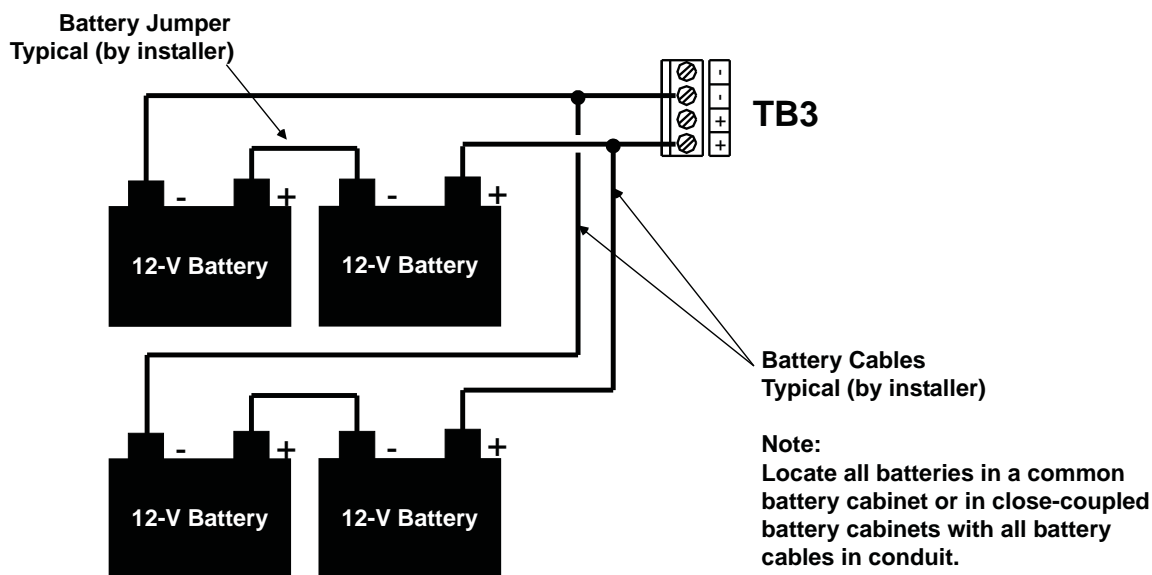
Dual-Battery Installation

Figure 2-9. Standby Battery Connections

2-7   SIGNALING LINE CIRCUIT

The Signaling Line Circuit (SLC) is the communications path between the ARIES-SLX Control Unit and the SmartOne (including DS Series) field devices. The SLC can be wired to meet:

- NFPA 72 Class A
- NFPA 72 Class B
- NFPA 72 Class X (Note: Requires Isolator Modules.)

The SLC can accommodate up to 255 devices (limitations apply), which include SmartOne/DS Series initiating devices, monitor modules, relay modules, and control modules.

2-7.1   SLC Specifications

Connections between the control unit, the Signaling Line Circuit, and the associated SmartOne (including DS Series) peripheral devices are supervised and power-limited.

- Voltage: 24 VDC nominal
- Maximum Line Resistance: 40 Ohms
- Maximum Conductor-to-Conductor Capacitance: 0.5 µF
- Maximum SLC Loop Capacitance to Earth Ground: 0.5 µF
- Maximum Current: 350 mA (short circuit)
- Maximum Number of Devices: 255 (Limitations apply—Refer to Appendix B, Wiring and Configuration Requirements for Signaling Line Circuits.)

2-7.2   SLC Wiring Requirements

All SLC wiring must be twisted, unshielded, low-capacitance, fire-alarm wire. For best results use wiring with a nominal conductor-to-conductor capacitance of approximately 20 picofarads (or 20×10^{-12} farads) per foot. Typical wire types that meet these criteria are indicated in Appendix B, Wiring and Configuration Requirements for Signaling Line Circuits.

The use of shielded wire is not allowed except for very short runs or splices in total not exceeding 200 feet on any SLC loop. This length excludes any shielded wire that may have been used for IDC, NAC, 24 VDC power circuits, Release, Trouble input circuits and field wiring on AIs, ASMs and RRMs respectively.

If using shielded wire on the AI, ASM and RRM external circuits including the IDC, NAC, 24 VDC Power circuits, release or trouble input circuits, this field wiring shall be limited to 50 feet per SLC module such as Addressable Input Module, Remote Release Module and Addressable Signal Module. When multiple modules on the SLC are using shielded field wire on circuits other than the SLC, the total combined shielded field wire on all modules must not exceed 200 feet.

Refer to Appendix B for more information on SLC loop electrical characteristics and configurations.

2-7.3   SLC Installation Notes

When installing Signaling Line Circuits, please note the following:

- Maximum of one #12 AWG wire per terminal.

- SLC devices may utilize T-tap wiring method in CLASS B configuration only.

- Class X wiring requires the use of Loop Isolators as shown in Figure 2-15.

- Maximum of 20 Loop Isolators permitted on Signaling Line Circuit

- No more than 30 SLC devices are allowed between two adjacent Loop Isolators.

- For Class X, the wiring between devices and each adjacent Loop Isolator must be in conduit and no further than 20 feet from Loop Isolator.

- Loop Isolator devices are polarized. Refer to wiring diagrams.

- SmartOne (including DS Series) Detectors are not polarized.

- For connections to SmartOne/DS Series devices, refer to the wiring diagram for that particular device.

2-7.4   SLC Devices

The ARIES-SLX control unit supports the SmartOne protocol series of intelligent smoke and heat detectors (including DS Series) and monitor/control modules. These devices have their own data transceivers, micro-controllers, micro-controller memory, and decision-making algorithms to report whether a normal, pre-alarm, alarm, or trouble condition exists at their monitoring locations.

Refer to the Parts List in Chapter 6 for a list of SLC devices for use with the ARIES-SLX control unit.

2-7.4.1   CLASS B SLC WIRING RESISTANCE

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.
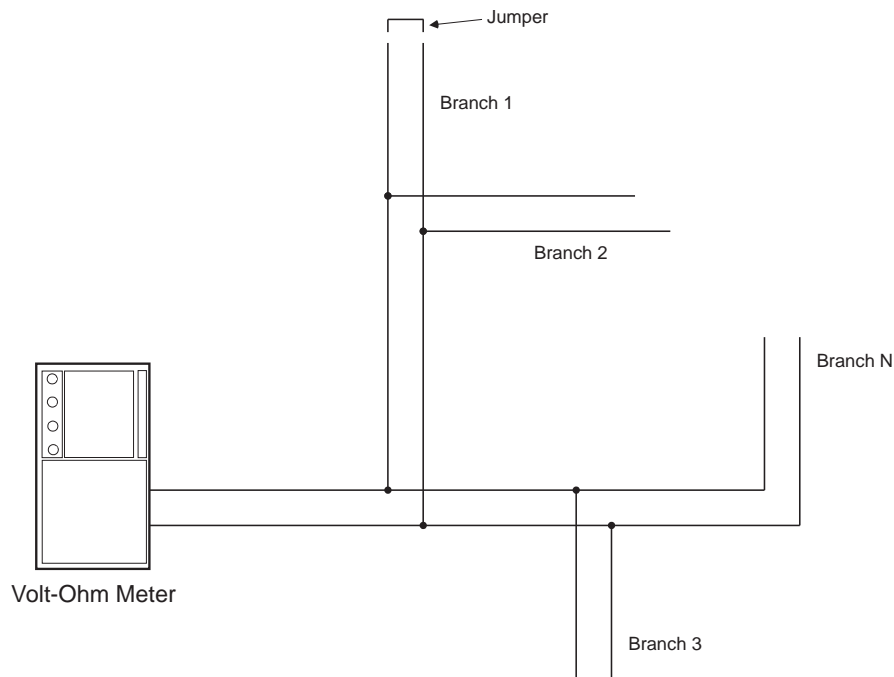
Figure 2-10. Measuring Class B SLC Wiring Resistance

2-7.4.2   CLASS B SLC WIRING CAPACITANCE

The total wiring conductor-to-conductor capacitance cannot exceed 0.5 μF. To determine the conductor-to-conductor capacitance of the SLC loop, refer to Appendix B, section B-6.2.

2-7.4.3   CLASS B WIRING DIAGRAM

Figure 2-11 shows typical wiring for a Class B Signaling Line Circuit. Make sure that the SLC-Selector Switch S2 is moved to the LEFT into the Class B position labeled "Style-4". Refer to Figure 1-3 for switch location.

Note: Loop Isolators are not required for a Class B Signaling Line Circuit. If installed (optional), a maximum of 30 SmartOne (including DS Series) devices can be installed between a pair of Loop Isolators.
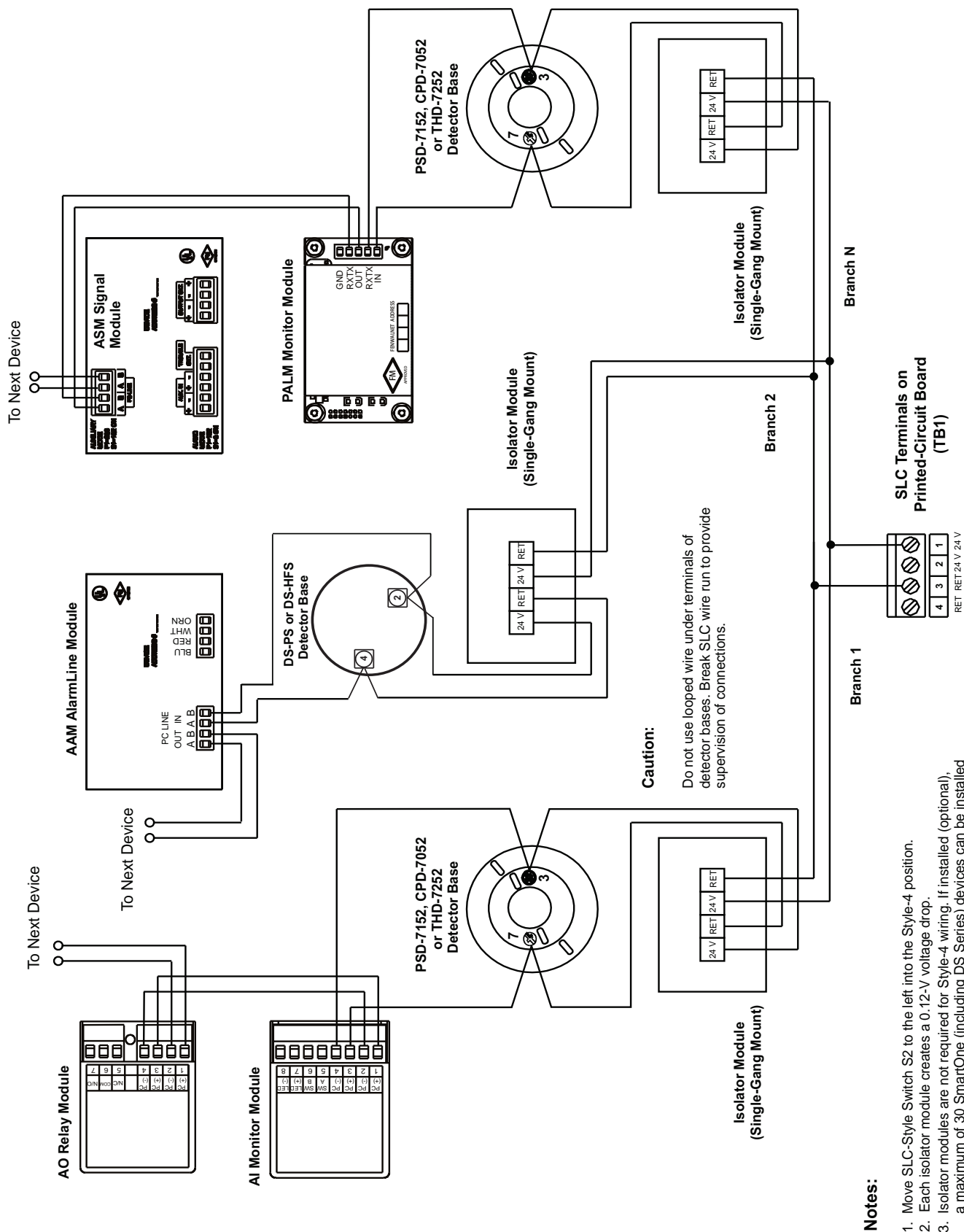
Figure 2-11.   Class B Signaling Line Circuit

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.

3. Isolator modules are not required for Style-4 wiring. If installed (optional), a maximum of 30 SmartOne (including DS Series) devices can be installed between a pair of Loop Isolators.

Caution:

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

2-7.4.4   CLASS A SLC WIRING RESISTANCE

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 2-12. Measure the resistance using the other two terminating points at the control unit

2. Remove the shorting jumper after the resistance measurement.
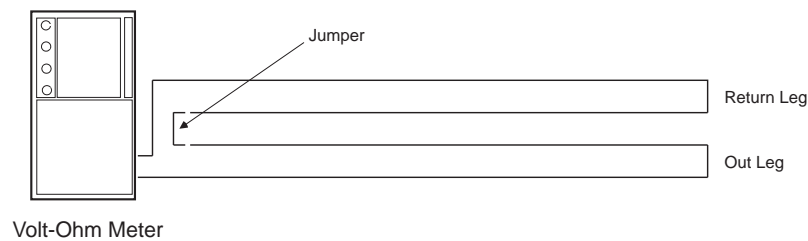
Figure 2-12. Measuring Class A SLC Wiring Resistance

2-7.4.5   CLASS A SLC WIRING CAPACITANCE

The total wiring conductor-to-conductor capacitance cannot exceed 0.5 μF. To determine the conductor-to-conductor capacitance of the SLC loop, refer to Appendix B, section B-6.2.

2-7.4.6   CLASS A SLC WIRING DIAGRAM

Figure 2-13 shows typical wiring for a Class A Signaling Line Circuit. Make sure that the SLC-Selector Switch S2 on the control unit PCB is moved to the RIGHT into the Class A position. (opposite from "Style 4" label). Refer to Figure 1-3 for switch location.

Loop Isolators are not required for a Class A Signaling Line Circuit. If installed (optional), a maximum of 30 SmartOne (including DS Series) devices can be installed between a pair of Loop Isolators.
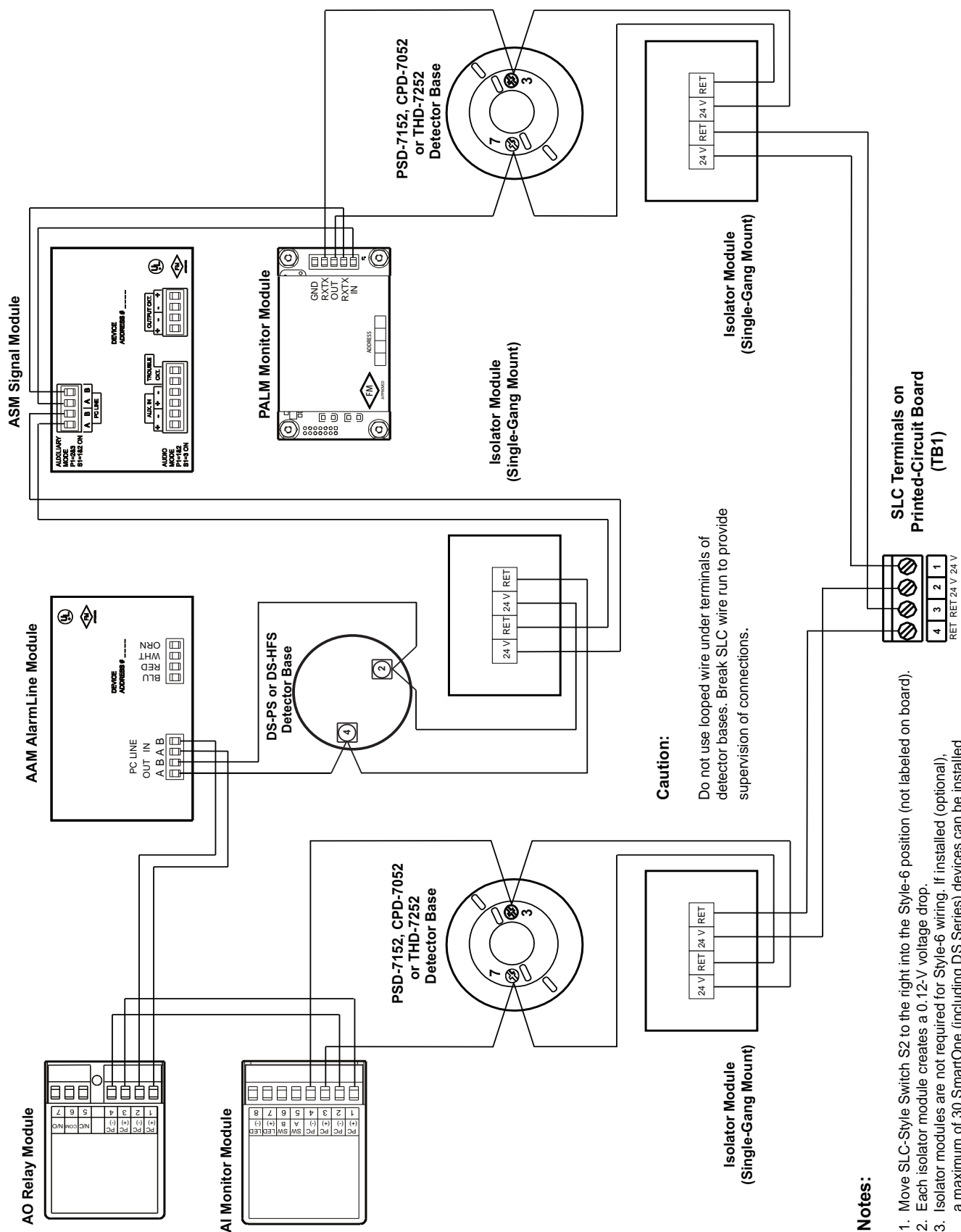
Figure 2-13. Class A Signaling Line Circuit

Notes:

1. Move SLC-Style Switch S2 to the right into the Style-6 position (not labeled on board).

2. Each isolator module creates a 0.12-V voltage drop.

3. Isolator modules are not required for Style-6 wiring. If installed (optional), a maximum of 30 SmartOne (including DS Series) devices can be installed between a pair of Loop Isolators.

Caution:

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

SPECIAL CLASS X SLC WIRING REQUIREMENTS

A Class X Signaling Line Circuit requires a pair of Loop Isolator modules for each SmartOne/DS Series device as shown in Figure 2-14. Make sure that the SLC-Selector Switch S2 on control unit PCB is moved to the RIGHT into the Class A position (opposite from "Style 4" label). Refer to Figure 1-3 for switch location.

Notes:
1. Move SLC-Style Switch S2 to the right (not labeled on board).
2. All wiring shall be installed in conduit.
3. Isolator modules are required for Class X wiring.
4. Install isolator modules as close as possible to protected devices (max. 20 feet).
5. Each isolator module creates a 0.12-V voltage drop.
6. A maximum of 30 SmartOne (including DS Series) devices can be installed between a pair of Loop Isolators.

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

Figure 2-14. Class X Signaling Line Circuit

2-8 NOTIFICATION APPLIANCE CIRCUITS

The ARIES-SLX 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 ARIES-SLX power supply must not exceed 5.4 A.

Both circuits are supervised and power limited. All notification appliance devices must be rated for "Regulated 24 DC" operation. All notification appliance devices must be listed by UL to one or more of the following UL standards:

- UL 464 Audible Signaling Devices for Fire Alarm and Signaling Systems
- UL 1638 Visible Signaling Device for Fire Alarm and Signaling Systems
- UL 1971 Signaling Devices for the Hearing Impaired

Note: Peak surge current and inrush current must not exceed 15 amps per circuit.

The notification appliance circuits support the following Wheelock horns and strobes:

- MT Series Multi-Tone Horns and Horn/Strobes
- NS Series Horn/Strobes (See Note)
- NH Series Horns
- RSS(P) Series Strobes (See Note)
- Exceder Series Horns, Strobes, and Horn/Strobes (Xenon flashtube models only)

Note: Wheelock NS Series Horn/Strobes and Wheelock NH Series Horns cannot be programmed for synchronization.

Horn/strobe combination devices utilizing the appropriate synch protocol have the option to use silenceable horns and non-silenceable strobes. Refer to the horn/strobe manufacturer's installation sheet for details. Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to program the associated NAC circuit for this function.

⚠ **WARNING** **All strobes are designed to flash with continuous applied voltage. Strobe notification appliances cannot be used on pulsing signaling (NAC or Combination) circuits. You must use a separate notification circuit if the application requires a pulsing signaling circuit for horns. Failure to adhere to this warning may cause system malfunction.**

For industrial locations that require a higher SPL or for hazardous locations, the 12 to 48 Vdc version of the "MEDC DB3B UL" horn may be used. This device is suitable for "24 VDC regulated" Notification Appliance Circuits and has been compatibility tested by Kidde Fire Systems for use on the ARIES-SLX panel.

Figure 2-15 shows typical wiring for a Class A notification appliance circuit.
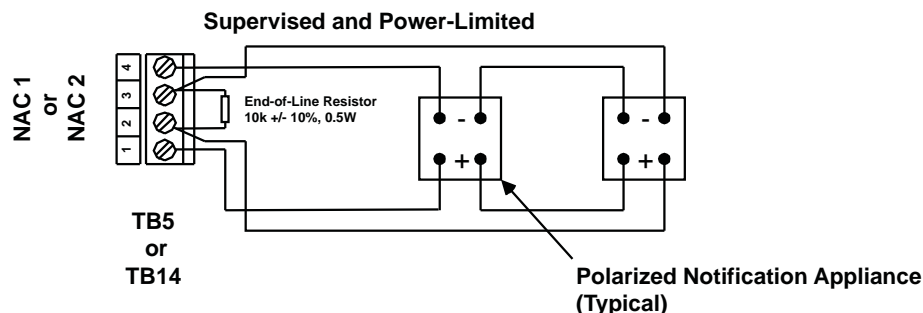
Figure 2-15. Class A Notification-Appliance Circuit

Figure 2-16 shows typical wiring for a Class B notification appliance circuit.
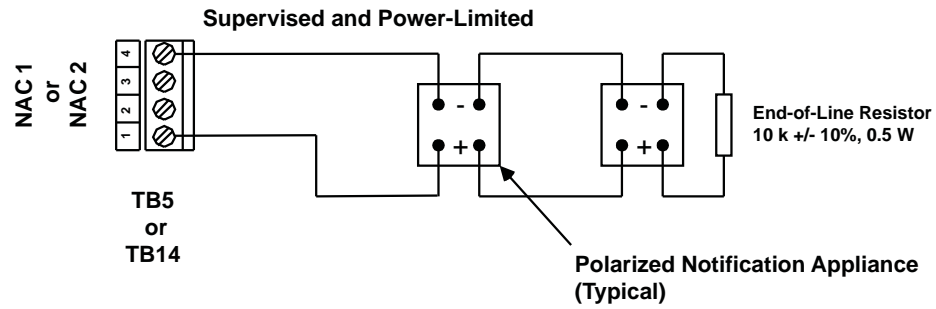
Figure 2-16. Class B Notification-Appliance Circuit

Use Figure 2-17 to estimate the maximum length of wire as a function of notification-appliance current for both NACs.
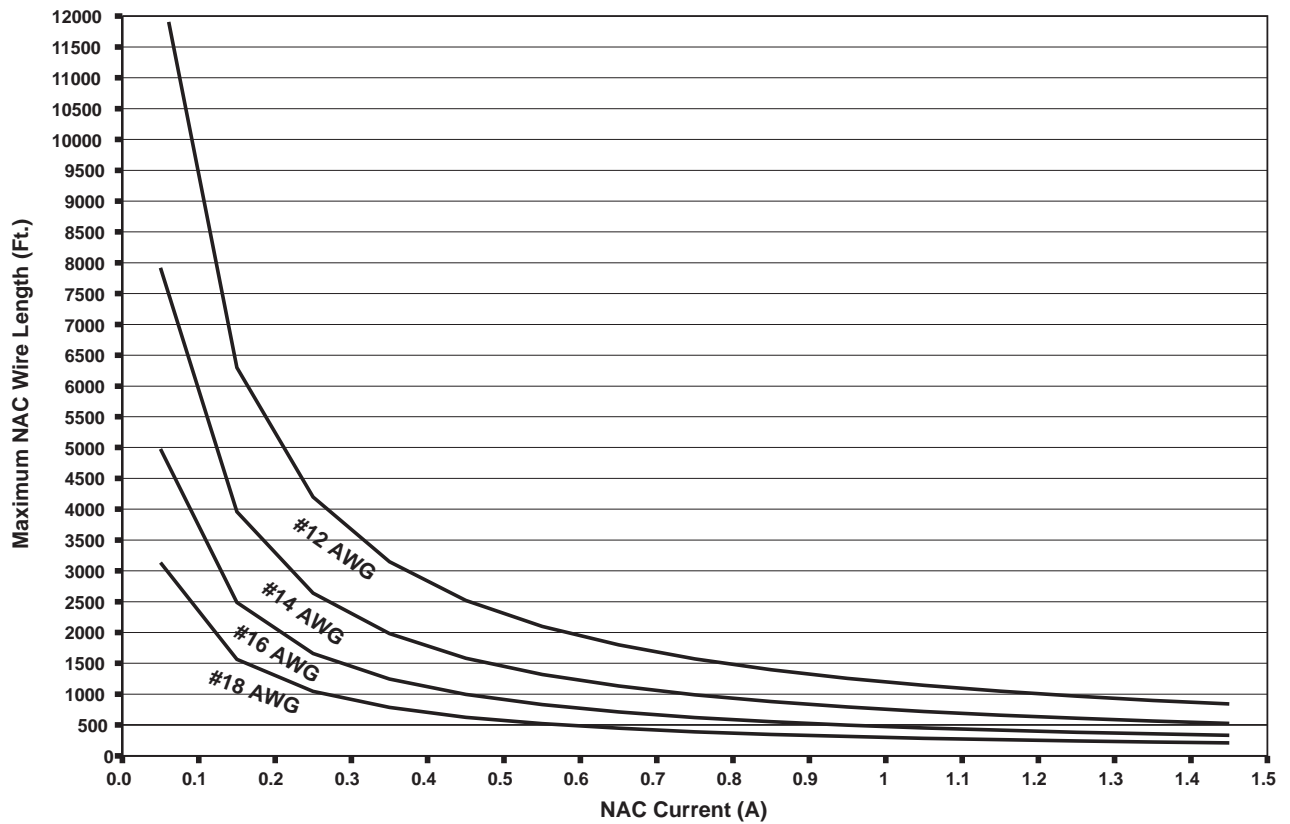
Figure 2-17. Wiring Length vs. Notification-Appliance Current

2-9   COMBINATION CIRCUITS

The ARIES-SLX 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.

2-9.1   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 ARIES-SLX power supply must not exceed 5.4 A.

Both circuits are supervised and power limited. All notification appliance devices must be rated for "Regulated 24 DC" operation. All notification appliance devices must be listed by UL to one or more of the following UL standards:

- UL 464 Audible Signaling Devices for Fire Alarm and Signaling Systems
- UL 1638 Visible Signaling Device for Fire Alarm and Signaling Systems
- UL 1971 Signaling Devices for the Hearing Impaired

Note: Peak surge current and inrush current must not exceed 15 amps per circuit.

The notification appliance circuits support the following Wheelock horns and strobes:

- MT Series Multi-Tone Horns and Horn/Strobes
- NS Series Horn/Strobes (See Note)
- NH Series Horns
- RSS(P) Series Strobes (See Note)
- Exceder Series Horns, Strobes, and Horn/Strobes (Xenon flashtube models only)

Note: Wheelock NS Series Horn/Strobes and Wheelock NH Series Horns cannot be programmed for synchronization.

Horn/strobe combination devices utilizing the appropriate synch protocol have the option to use silenceable horns and non-silenceable strobes. Refer to the horn/strobe manufacturer's installation sheet for details. Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to program the associated NAC circuit for this function.

⚠️
WARNING

All strobes are designed to flash with continuous applied voltage. Strobe notification appliances cannot be used on pulsing signaling (NAC or Combination) circuits. You must use a separate notification circuit if the application requires a pulsing signaling circuit for horns. Failure to adhere to this warning may cause system malfunction.

For industrial locations that require a higher SPL or for hazardous locations, the 12 to 48 Vdc version of the "MEDC DB3B UL" horn may be used. This device is suitable for "24 VDC regulated" Notification Appliance Circuits and has been compatibility tested by Kidde Fire Systems for use on the ARIES-SLX panel.

Figure 2-18 shows typical wiring for a combination circuit wired as a Class A notification appliance circuit.
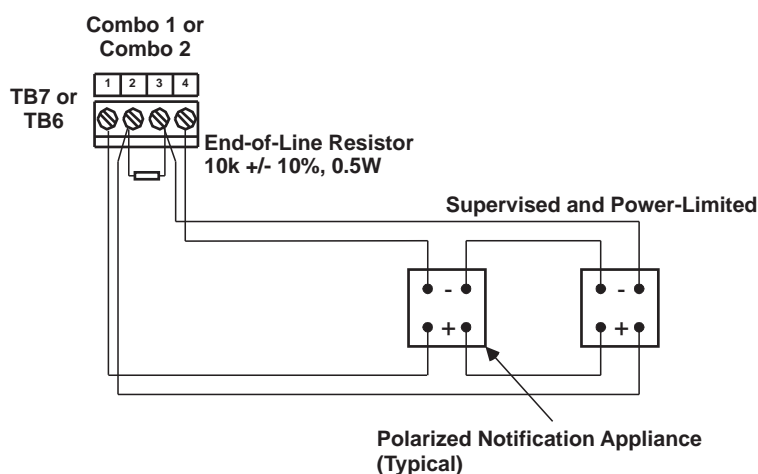
Figure 2-18. Combination Circuit used as Class A NAC

Figure 2-19 shows typical wiring for a combination circuit wired as a Class B notification appliance circuit.
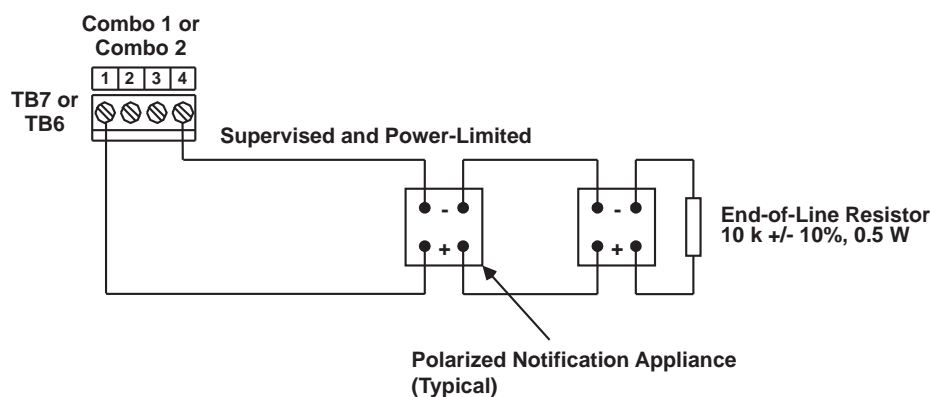
Figure 2-19. Combination Circuit used as Class B NAC

Use Figure 2-17 to estimate the maximum length of wire as a function of notification-appliance current for a combination circuit used as a NAC.

2-9.2   Combination Circuits used as Releasing Circuits

Each combination circuit can be configured as a releasing circuit to activate either one Kidde control head or one pre-action-sprinkler or deluge-sprinkler valve. Total current output of the ARIES-SLX 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, 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.**

⚠ WARNING **Failure to install the In-Line Releasing Device correctly or improper panel release circuit programming may result in failure of the release circuit to actuate.**

Per NFPA 72, all functionality must be tested on commissioning and all affected circuits must be tested after a change in configuration or programming.

Figure 2-20 shows a combination circuit wired for releasing. Refer to Appendix C for further information.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
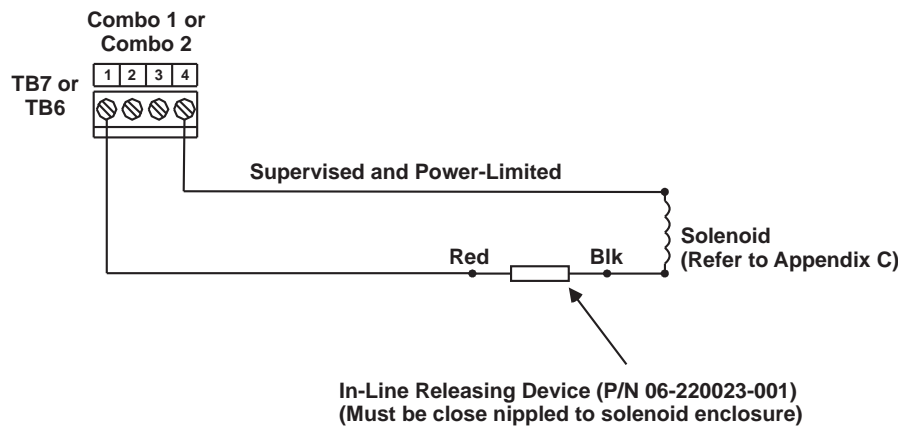
Figure 2-20. Combination Circuit used as Releasing Circuit

Note: In-line releasing device is for power-limited applications and is polarity-sensitive.

2-10 RELEASING CIRCUITS

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

- Single actuator assembly
- 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.

2-10.1 Releasing Circuits for Actuator Assembly

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

⚡ WARNING **Per NFPA 72, all functionality must be tested on commissioning and all affected circuits must be tested after a change in configuration or programming.**

⚡ WARNING **Actuator assembly is a non-explosive device. Do not remove the short from the cable connector until the field-wiring connections are to be made. Physical abuse or static-electricity discharge could cause inadvertent actuator actuation. The installer must establish a common electrical potential with the actuator assembly before either removing or inserting the short.**

Figure 2-21 shows an actuator assembly connected to a releasing circuit. Each releasing circuit is capable of actuating one actuator assembly.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
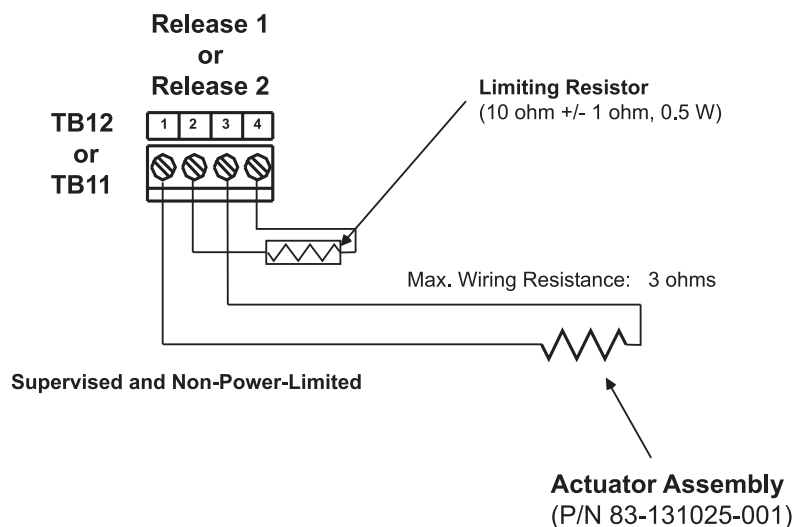
Figure 2-21. Releasing-Circuit Wiring for Actuator

2-10.2 Releasing Circuits for Series-Wired Initiator Assemblies

⚠ **WARNING**

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

⚠ **WARNING**

Per NFPA 72, all functionality must be tested on commissioning and all affected circuits must be tested after a change in configuration or programming.

⚠ **WARNING**

Initiator assemblies are Class-C explosives. Always use safety glasses or a face shield when handling them. Do not remove the short 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 short.

⚠ **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.

Figure 2-22 shows series-wired initiators connected to a releasing circuit. Each releasing circuit is capable of either one of the following arrangements:

- A maximum of 12 P/N 31-199932-004 initiators, connected in series, with a total-circuit resistance (including field wiring) of 10 ohms +/- 1 ohm.
- A maximum of 8 P/N 31-199932-012 initiators, connected in series, with a total-circuit resistance (including field wiring) of 10 ohms +/- 1 ohm.
- A maximum of 6 P/N 93-191001-001 initiators, connected in series, with a total-circuit resistance (including field wiring) of 10 ohms+/- 1 ohm.
- A maximum of 8 P/N 93-002009-004 initiators, connected in series, with a total-circuit resistance (including field wiring) of at least 10 ohms, not to exceed 13.6 ohms.

Different 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, 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.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
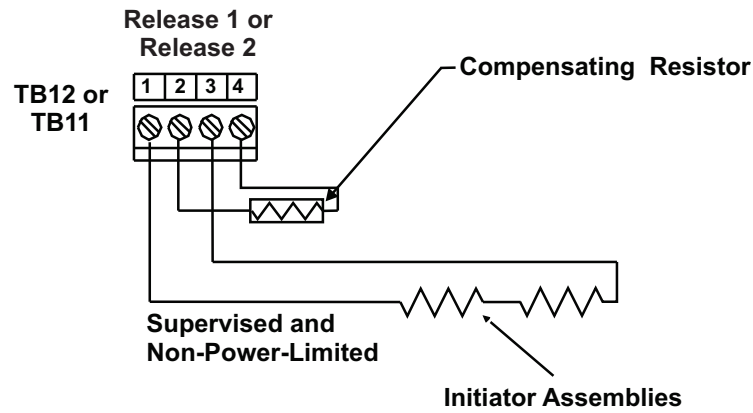
Figure 2-22. Releasing Circuit Wiring for Initiators in Series

NOTES:

1. Polarities must be observed.

2. Must be close-nippled to the junction box.

3. The Releasing Circuit is Non-Powered-Limited when wired for initiators.

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. Different types of initiators must **NOT** be mixed on the same circuit.

6. Use a compensating resistor to make the total initiator circuit resistance (including field wiring) in accordance with Table 2-1. The resistor must have a rating of 1 watt minimum. Contact Kidde Fire Systems Technical Support for information about ordering the correct resistor.

Table 2-1. Electrical Characteristics of Initiator-Based Releasing Devices

Device	I (Min.) Amps	Resistance (Max.) Ohms	On Time	Max. Number per Circuit	Agency
31-199932-004	*	—	Momentary	12	UL, FM
31-199932-012	*	—	Momentary	8	UL, FM
93-191001-001	*	—	Momentary	6	UL, FM
93-002009-004	**	—	Momentary	8	FM

 * The maximum circuit resistance for this device must be 10 ohms, regardless of the number used. The firing current will be 2.5 Amps.

** The circuit resistance for this device shall be between 10 ohms (minimum) to 13.6 ohms (maximum).

2-10.3 Releasing Circuits for Single Control Head or Solenoid Valve

Each releasing circuit can be configured to activate either one Kidde control head or one pre-action-sprinkler or deluge-sprinkler valve. Total current output of the ARIES-SLX power supply must not exceed 5.4 A. The compatible control heads and solenoid valves are listed in Appendix C.

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.

Note: Ensure proper installation when using the In-Line Releasing Device, including polarity orientation. Refer to Figure 2-23 below for installation and polarity orientation. The panel release circuit must also be programmed for "Power-Limited" operation. Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, 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.

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

⚡ **WARNING** **Failure to install the In-Line Releasing Device correctly or improper panel release circuit programming may result in failure of the release circuit to actuate.**

Per NFPA 72, all functionality must be tested on commissioning and all affected circuits must be tested after a change in configuration or programming.

Figure 2-23 shows a releasing circuit wired for single-control-head or single-solenoid-valve actuation.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
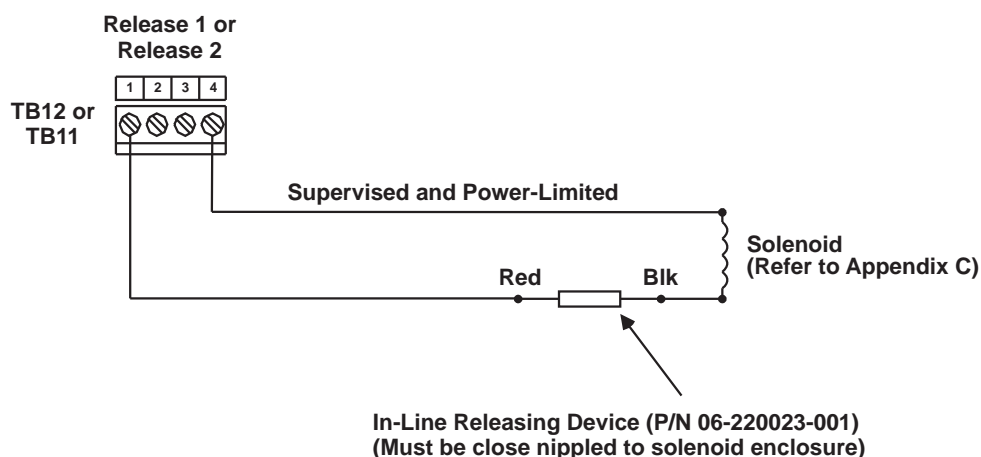
Figure 2-23. Releasing-Circuit Wiring for Single Solenoid

Note: In-line releasing device is for power limited applications and is polarity sensitive.

2-10.3.1   CONTROL HEADS USED WITH XV CONTROL SYSTEM/CXV CONTROL SYSTEM

Control Heads listed in Table 2-2 must include Solenoid P/N 83-100034-001 and Microswitch P/N 87-120039-001.   Refer to Figure 2-24 below.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
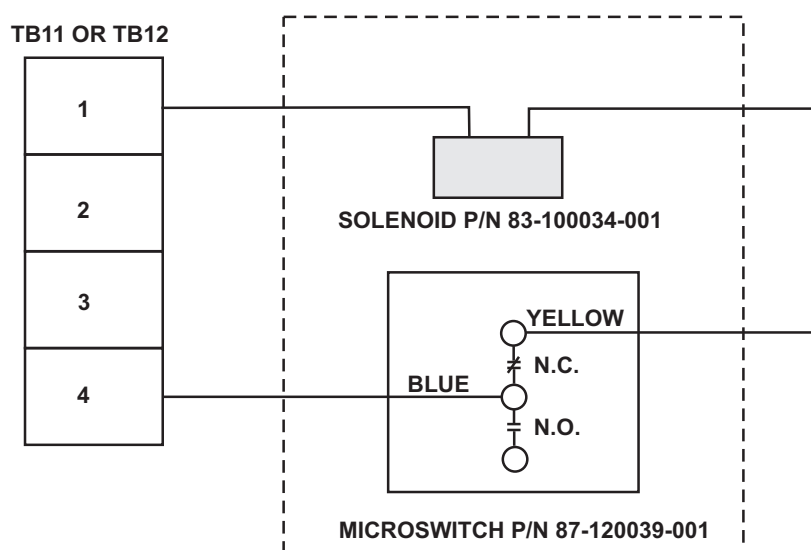
Figure 2-24. Release Circuit Wiring for Control Heads 87-120099-001
and 87-120099-002 (Used with XV Control System)
and 93-487100-001 (Used with CXV Control System)

Table 2-2. Control Heads Used with XV/CXV Control Systems

Device	I (max.) A	Resistance (min.) ohms	"On" Time	Wire Length (Ft.)				Comment
				12 AWG	14 AWG	16 AWG	18 AWG	
87-120099-001*	2.00	12.0	Momentary*	360	240	140	—	Max. One (1) per System
87-120099-002*	2.00	12.0	Momentary*	360	240	140	—	Max. One (1) per System
93-487100-001*	2.00	12.0	Momentary*	360	240	140	—	Max. One (1) per System

* Must be used in conjunction with microswitch P/N 87-120039-001 for momentary operation.

2-10.4   Releasing Circuits for Dual Control Heads or Solenoid Valves

Each releasing circuit can be configured to activate either dual Kidde control heads or dual pre-action-sprinkler or deluge-sprinkler valves that do not exceed the maximum release circuit current of 2.5A. The compatible control heads and solenoid valves are listed in Appendix C. Total current output of the ARIES-SLX power supply must not exceed 5.4 A.

A releasing circuit is supervised and power limited when the In-Line Releasing Device, P/N 06-220023-001, is wired in series with each of the two control heads or solenoid valves.

Note: Ensure proper installation when using the In-Line Releasing Device, including polarity orientation. Refer to Figure 2-25 below for installation and polarity orientation. The panel release circuit must also be programmed for "Power-Limited" operation. Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, 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.

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

⚡ WARNING   **Failure to install the In-Line Releasing Device correctly or improper panel release circuit programming may result in failure of the release circuit to actuate.**
Per NFPA 72, all functionality must be tested on commissioning and all affected circuits must be tested after a change in configuration or programming.

Figure 2-25 shows a releasing circuit wired for dual-control-head or dual-solenoid-valve actuation.

Note: A Key Maintenance Bypass Switch (P/N 76-600000-200) must be used on all non-water based Agent Release Circuits.
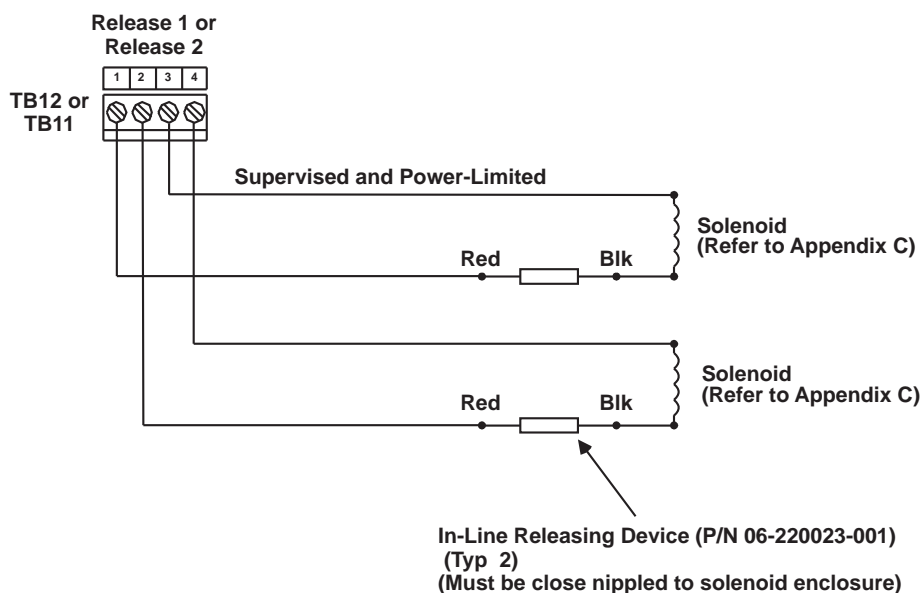
Figure 2-25. Releasing-Circuit Wiring for Dual Solenoids

Note: Total combined control head and/or solenoid current must not exceed 2.5A (continuous output).

2-10.5 Supervision of Control Head Monitors on Cylinders

Kidde offers a Control Head Monitor (CHM) for monitoring of control head placement, P/N 85-100000-100. The CHM is placed between the discharge valve and an electric or electric/cable operated cylinder control head. The CHM is wired into an AI module which is configured as Supervisory.

Refer to the illustration below.
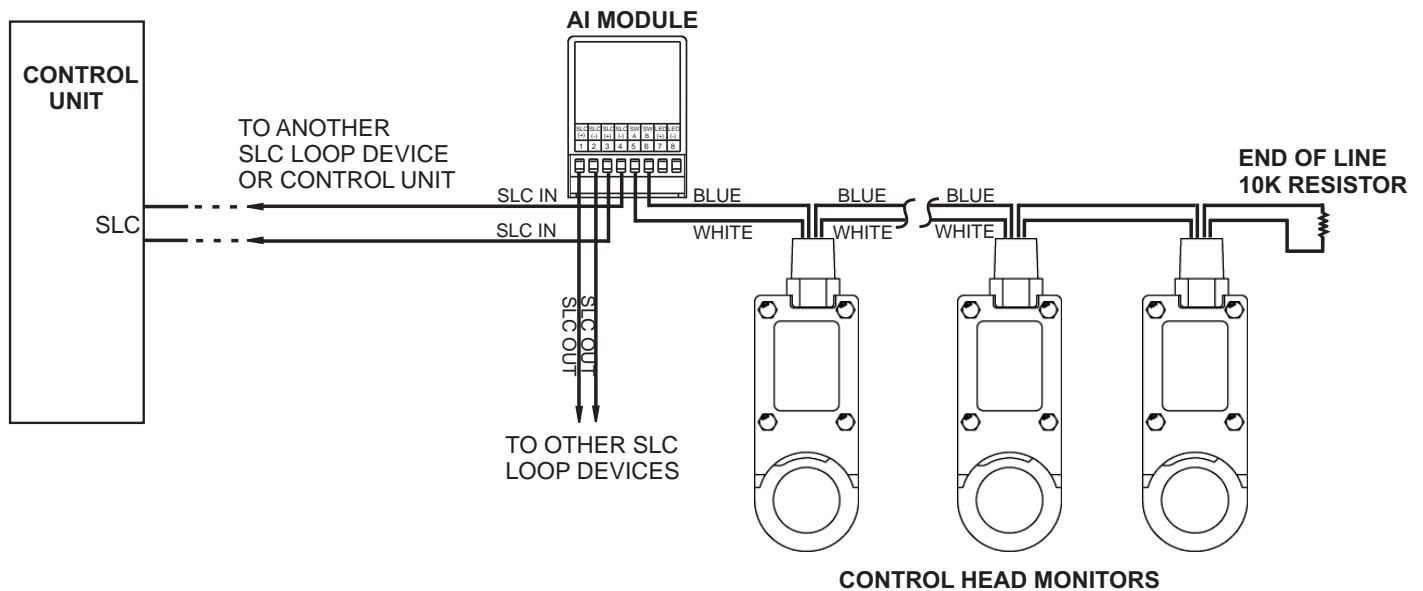
NOTES:
1. MULTIPLE CONTROL HEAD MONITORS CAN BE INSTALLED ON A SINGLE AI MODULE IDC (PINS 5 AND 6).
2. THE WIRE RESISTANCE OUT AND BACK TO THE 10K EOL RESISTOR MUST NOT EXCEED 50 OHMS.
3. AI MODULE WILL BE CONFIGURED AS SUPERVISORY.
4. THE CONTROL UNIT CANNOT IDENTIFY WHICH MONITOR IS THE SOURCE OF THE SUPERVISORY.
5. TO CONFIGURE THE CONTROL HEAD MONITOR TO A UNIQUE ADDRESS, USE ONE AI MODULE WITH EACH CONTROL HEAD MONITOR.
6. CONNECTIONS 1-6 ON THE AI MODULE ARE NOT POLARITY-SENSITIVE.

Figure 2-26. Connecting Control Head Monitors to an AI Module for Supervision from Control Unit

2-11   AUXILIARY POWER OUTPUTS

Figure 2-27 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to configure the auxiliary-power outputs.

Both auxiliary-power outputs are Class B power-limited.

- Operating Voltage Range: 18.8 - 27.6 Vdc
- Maximum Current: 1.0A (each auxiliary output circuit)
- Maximum Capacitance to Earth Ground: 0.5 microfarad total for both outputs
- Maximum Current for all system external devices: 5.0 A
- Both auxiliary circuits may be wired together to obtain 2 A at 24 VDC
- Maximum load on the RRM output should not exceed 2 A.

Note: If AUX power is used as the 24 VDC source for any 4-wire detection circuits, both the power and initiating circuits must be wired as Class B.
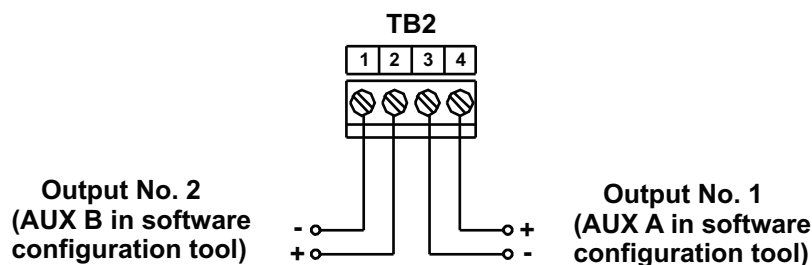
Figure 2-27. Auxiliary-Power Terminals

2-12   RS-485 COMMUNICATIONS CIRCUIT

The ARIES-SLX 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 2-3. ARIES-SLX 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 2-28 shows typical interconnections among the ARIES-SLX Control Unit and the peripheral devices using a single communications channel.
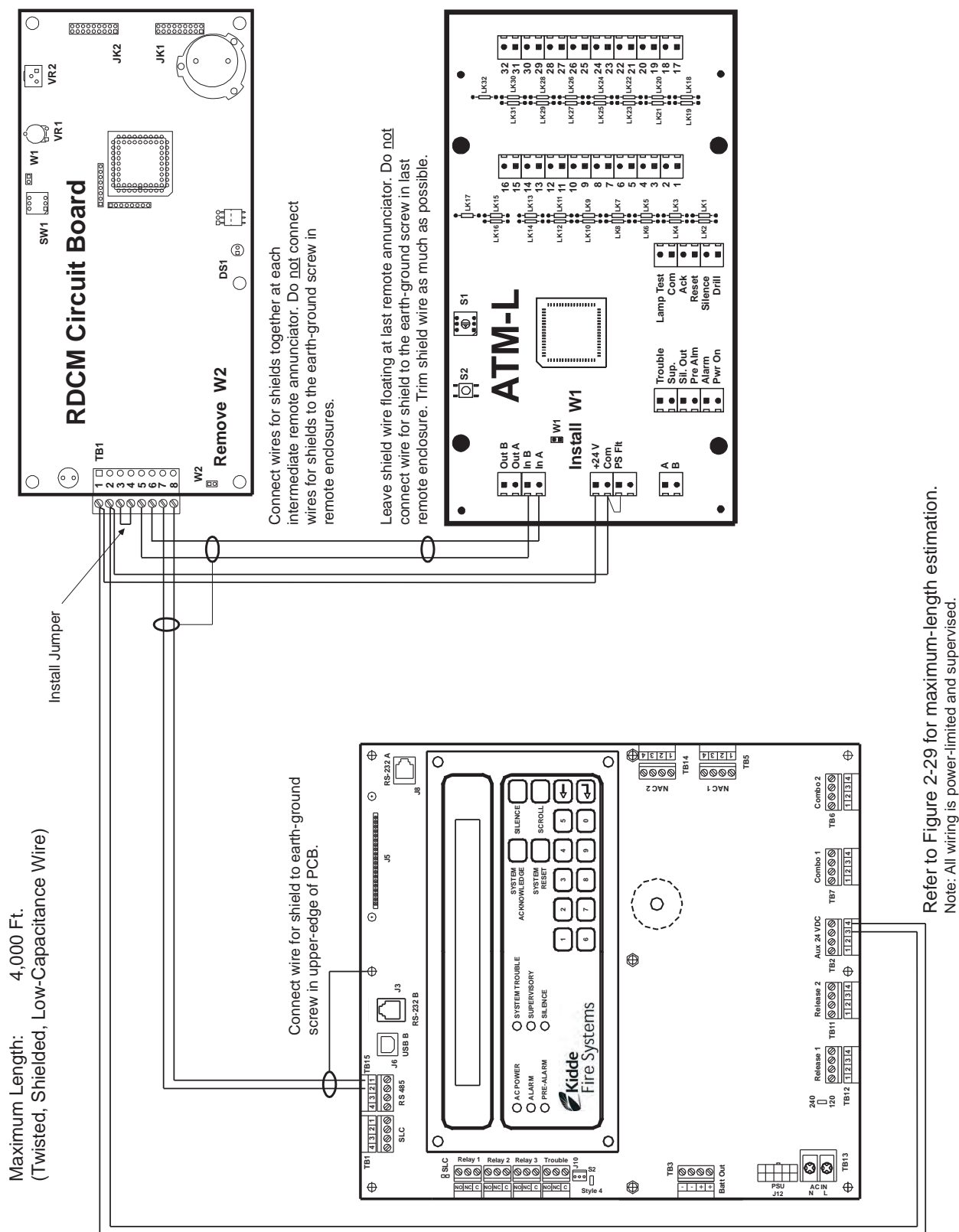
Figure 2-28.   Single-Channel RS-485 Wiring to Peripheral Devices

Figure 2-29 shows typical interconnections among the ARIES-SLX Control Unit and the peripheral devices using a dual-channel communications circuit.
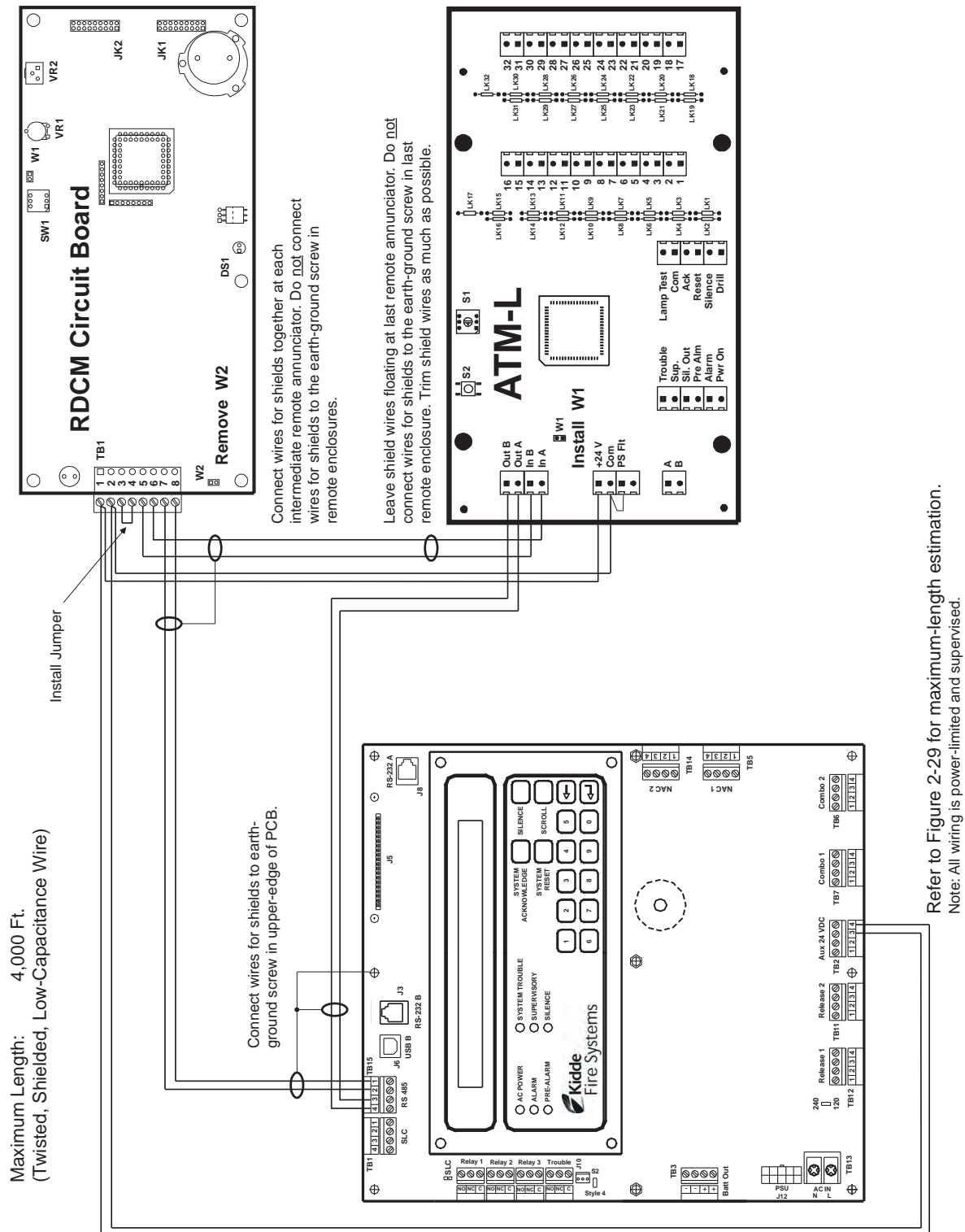
Figure 2-29. Dual-Channel RS-485 Wiring to Peripheral Devices

Use Figure 2-30 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.
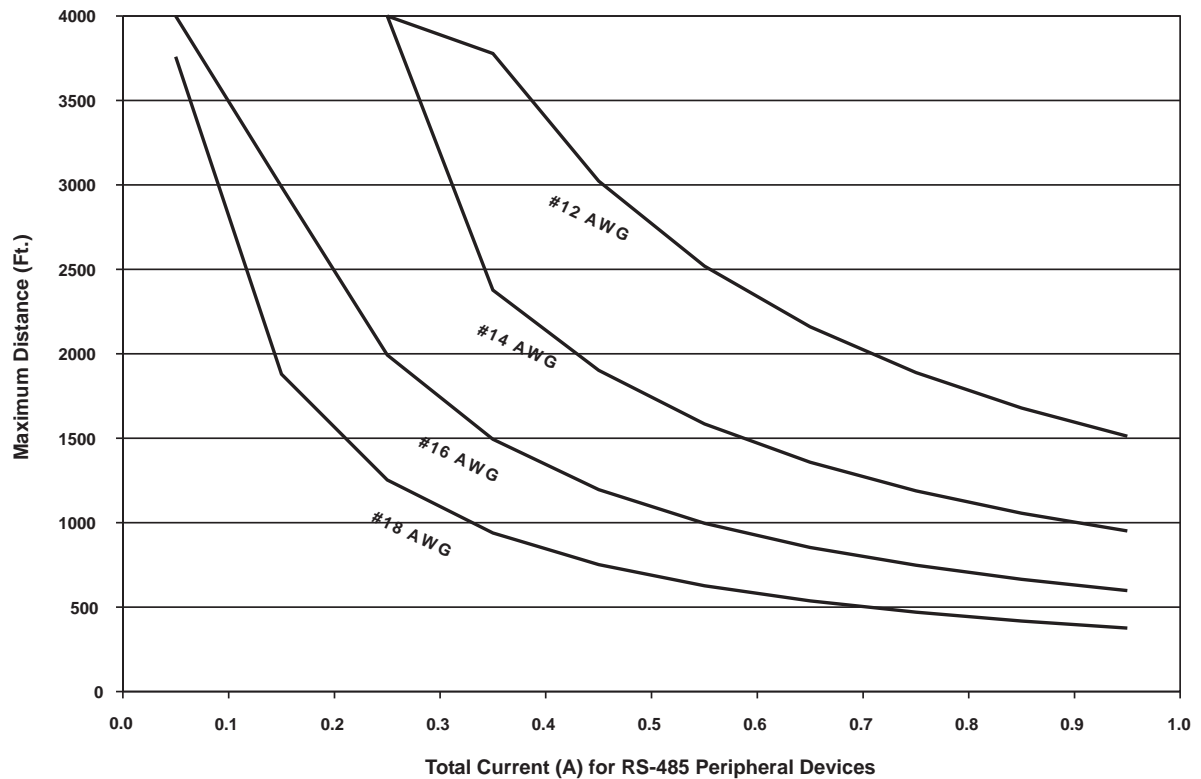
Figure 2-30. 24 Vdc-Power Wiring Length vs. Peripheral-Devices Current

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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001.

2-13   RELAYS

The ARIES-SLX Control Unit has three Form-C, programmable relays and one Form-C, trouble relay as shown in Figure 2-31. 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)
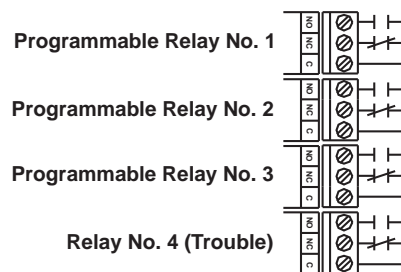
Figure 2-31. Programmable and Trouble Relays (All Shown in De-energized State)

The three independent, programmable relays are all in a de-energized state during normal operation and will not energize (change state) until they are programmed to do so. The trouble relay is energized upon startup and de-energizes (changes state) for any Trouble event, including loss of power.

2-14 RS-232 COMMUNICATIONS PORT

The ARIES-SLX 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.

- 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 2-4. 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.
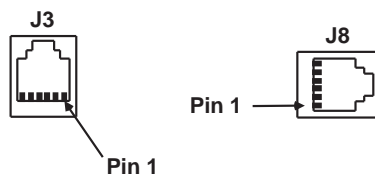
Figure 2-32. RS-232 Communications Ports

2-15   USB COMMUNICATIONS PORT

The ARIES-SLX 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. 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.
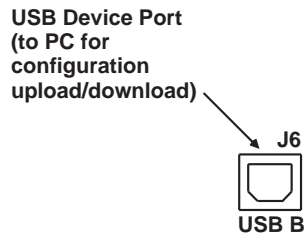
Figure 2-33. USB Communications Port

A USB Isolator must be used in series with the USB cable when connecting to port J6 as shown in Figure 2-34. This connection is typically used when sending or receiving information between the panel and a PC running the panel configuration software.

Kidde Fire Systems has tested and recommends the USB Isolator P/N 10000071.
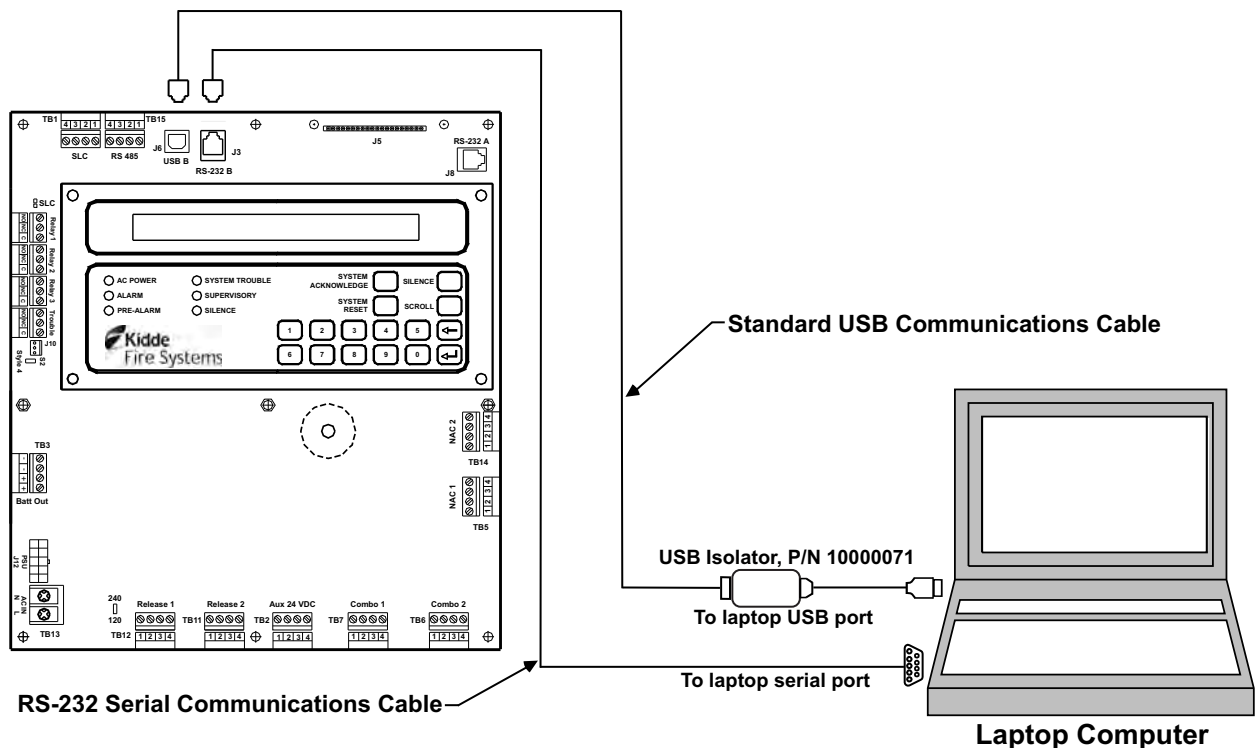
Figure 2-34. USB and RS-232 Connections to Laptop Computer

2-16 NETWORK INTERFACE CARD

The Network Interface Card (NIC) contains the circuitry for data communications between networked Kidde® ARIES®-SLX, Kidde® ARIES®, Fenwal® FENWALNET™ 6000, and Chemetron® MICRO SLX 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 or Class X 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.

Note: The ARIES-SLX can be networked with the following addressable control units:

CONTROL UNIT	MCB FIRMWARE VERSION
Kidde ARIES-SLX	2.1.0 or later
Kidde ARIES	1.2.12 or later
Fenwal FENWALNET 6000	1.2.12 or later
Chemetron MICRO SLX	1.2.12 or later

Specifications for the NIC are provided in Table 2-5.

Table 2-5. Network Interface Card Specification

Description	Specification
Part Number	76-600000-009
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

⚡ **WARNING**

On a networked system, outputs that are configured to activate via the "General Alarm Output List" will only activate from an alarm originating on the node to which they are attached.

Inputs configured to "Activate General Alarm Output List" will only activate outputs configured to activate via the "General Alarm Output List" on their own node (not across network).

Refer to the *ACT-SLX Configuration Tool User's Guide* for more information.

2-16.1   How to Install a NIC

Refer to Figure 2-35 before you install the NIC and perform the following procedure to install the NIC on the ARIES-SLX'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 2-35.

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 2-16.2.
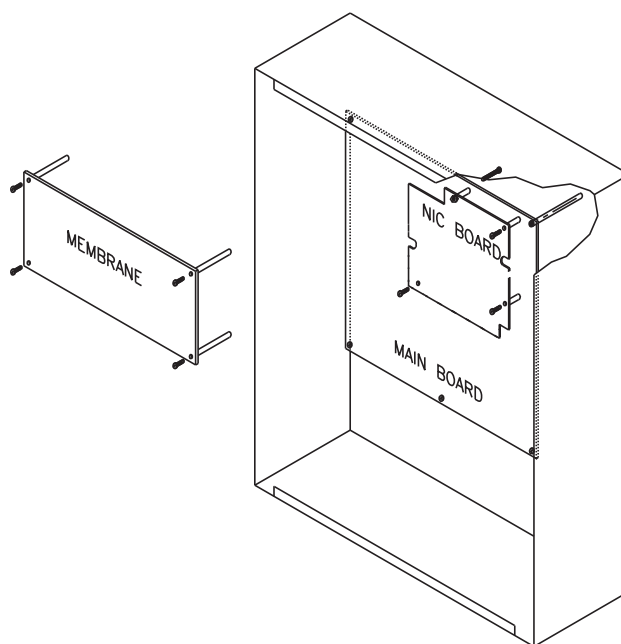
Figure 2-35. NIC Installation

2-16.2   Network Wiring

Typical Class B and Class X wiring are shown in Figure 2-36 and Figure 2-37, 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.
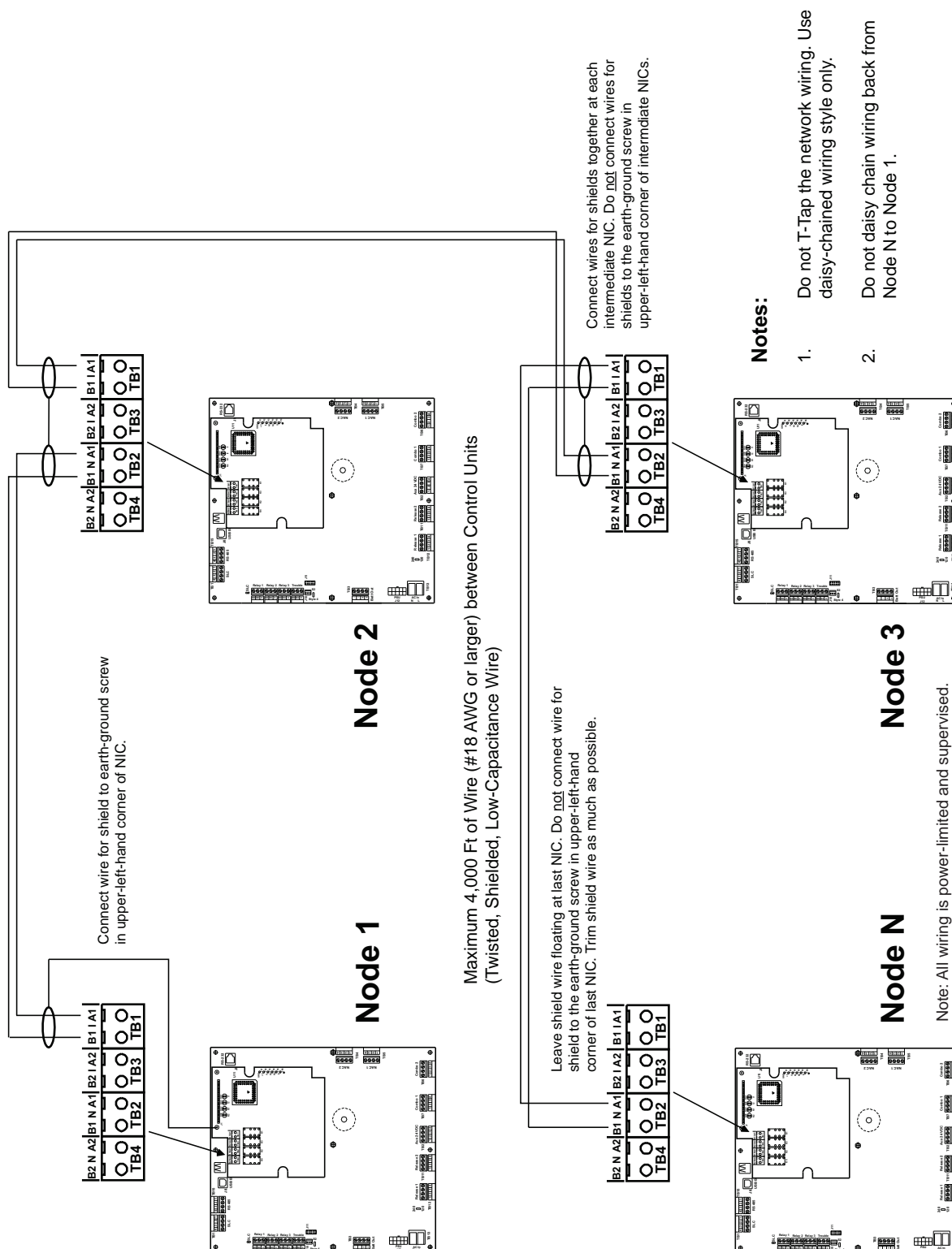
Figure 2-36. Class B Network Wiring
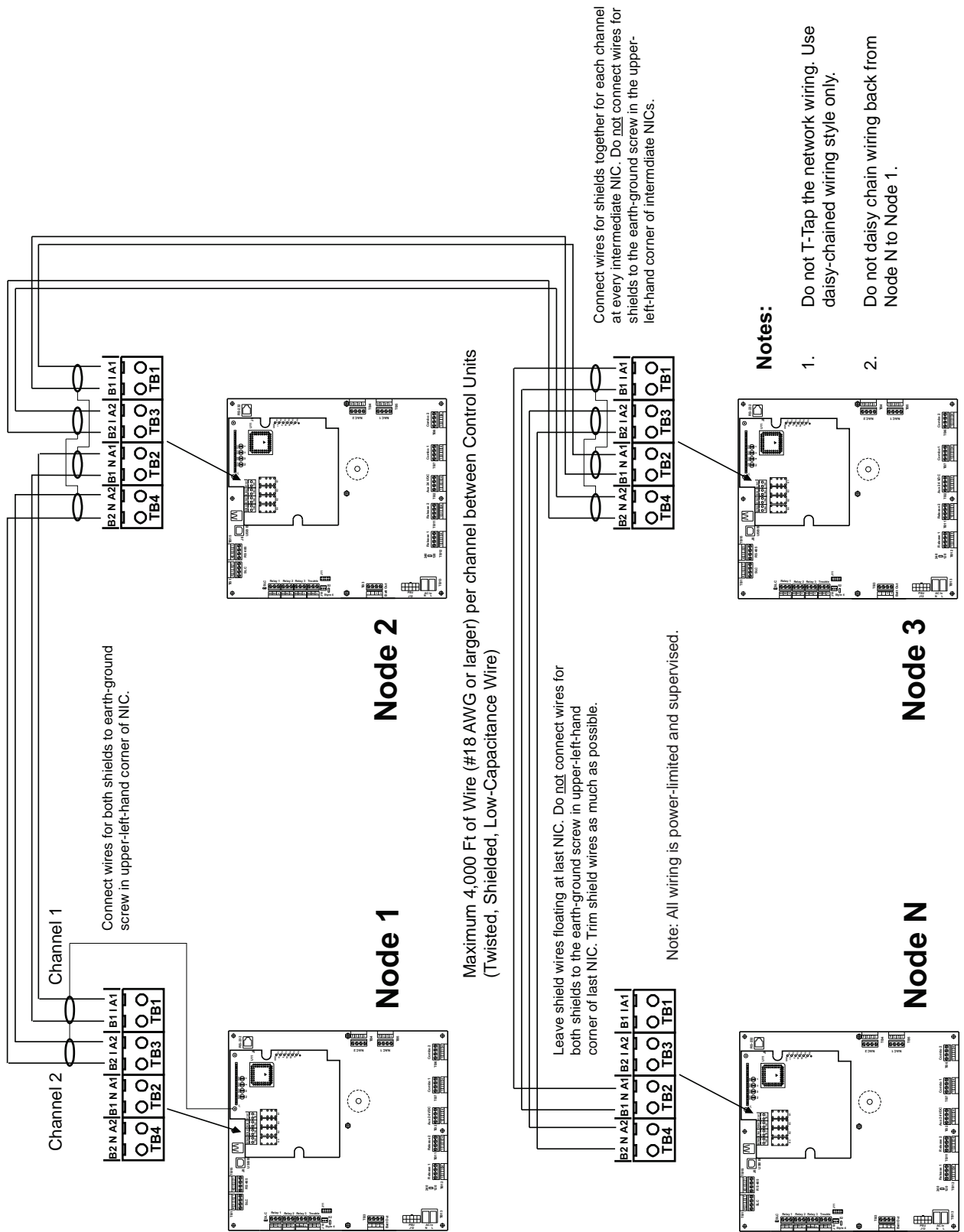
Figure 2-37. Class X Network Wiring

Node 1

Node 2

Node 3

Node N

Channel 1

Channel 2

Connect wires for both shields to earth-ground screw in upper-left-hand corner of NIC.

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.

Note: All wiring is power-limited and supervised.

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.

Notes:

1. Do not T-Tap the network wiring. Use daisy-chained wiring style only.

2. Do not daisy chain wiring back from Node N to Node 1.

2-17 FIBER-OPTIC CONVERTER CARD

The Fiber-Optic Converter Card allows networked Kidde® ARIES®-SLX, Kidde® ARIES®, Fenwal® FENWALNET™ 6000, and Chemetron® MICRO SLX 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 ARIES-SLX networking structure supports a mixture of fiber-optic and twisted-wire interconnections among networked control units.

Note: The ARIES-SLX can be networked with the following addressable control units:

CONTROL UNIT	MCB FIRMWARE VERSION
Kidde ARIES-SLX	2.1.0 or later
Kidde ARIES	1.2.12 or later
Fenwal FENWALNET 6000	1.2.12 or later
Chemetron MICRO SLX	1.2.12 or later

Specifications for the Fiber-Optic Converter Card are provided in Table 2-6.

Table 2-6. Fiber-Optic Converter Card Specification

Description	Specification
Part Number	76-600000-006
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).

Figures 2-38 through 2-41 show single and dual channel systems with either all fiber-optic connections or mixed media connections between the OCCs. Dual channel operation can be used to provide fault tolerant operation. If one of the fiber-optic or mixed media communication channels fails, full network communication will be maintained on the working channel and a trouble will be generated for the failed channel.

Note: All configurations are considered CLASS B circuits because the power provided to the OCC is Class B.

Figure 2-38 shows a typical single-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.

Key

Ch1 Twisted, Shielded Wire Pair

Ch1 62.5/125um Duplex Fiber Optics (ST Connections)

Note: All wiring is power-limited and supervised.

Max. 1 Mile of Fiber (62.5/125 um duplex) between Control Units
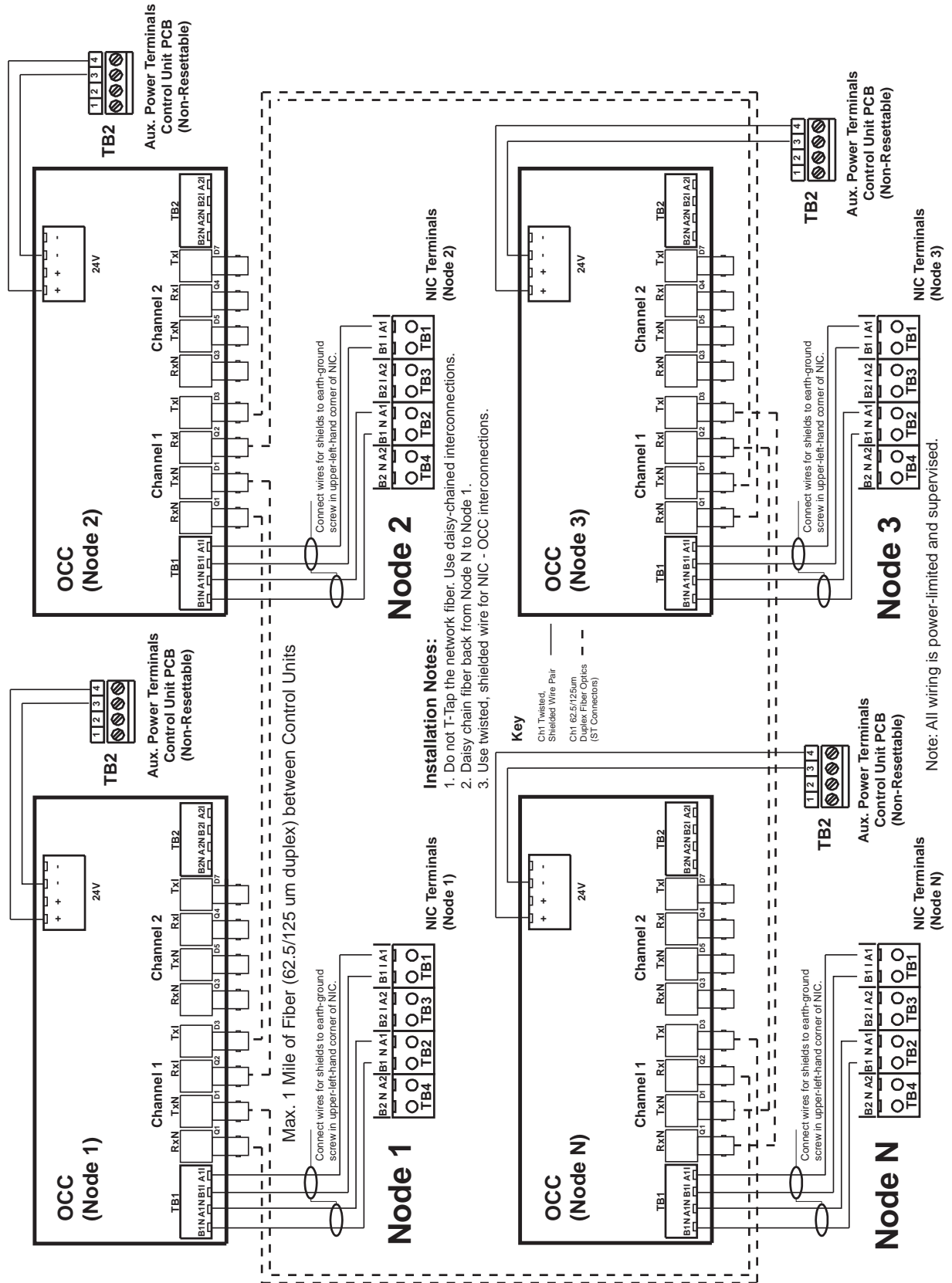
Figure 2-38. Typical Single-Channel System using 62.5/125 µm Duplex Fiber-Optic Media, Class B
(See Note on Page 2-42)

Figure 2-39 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.
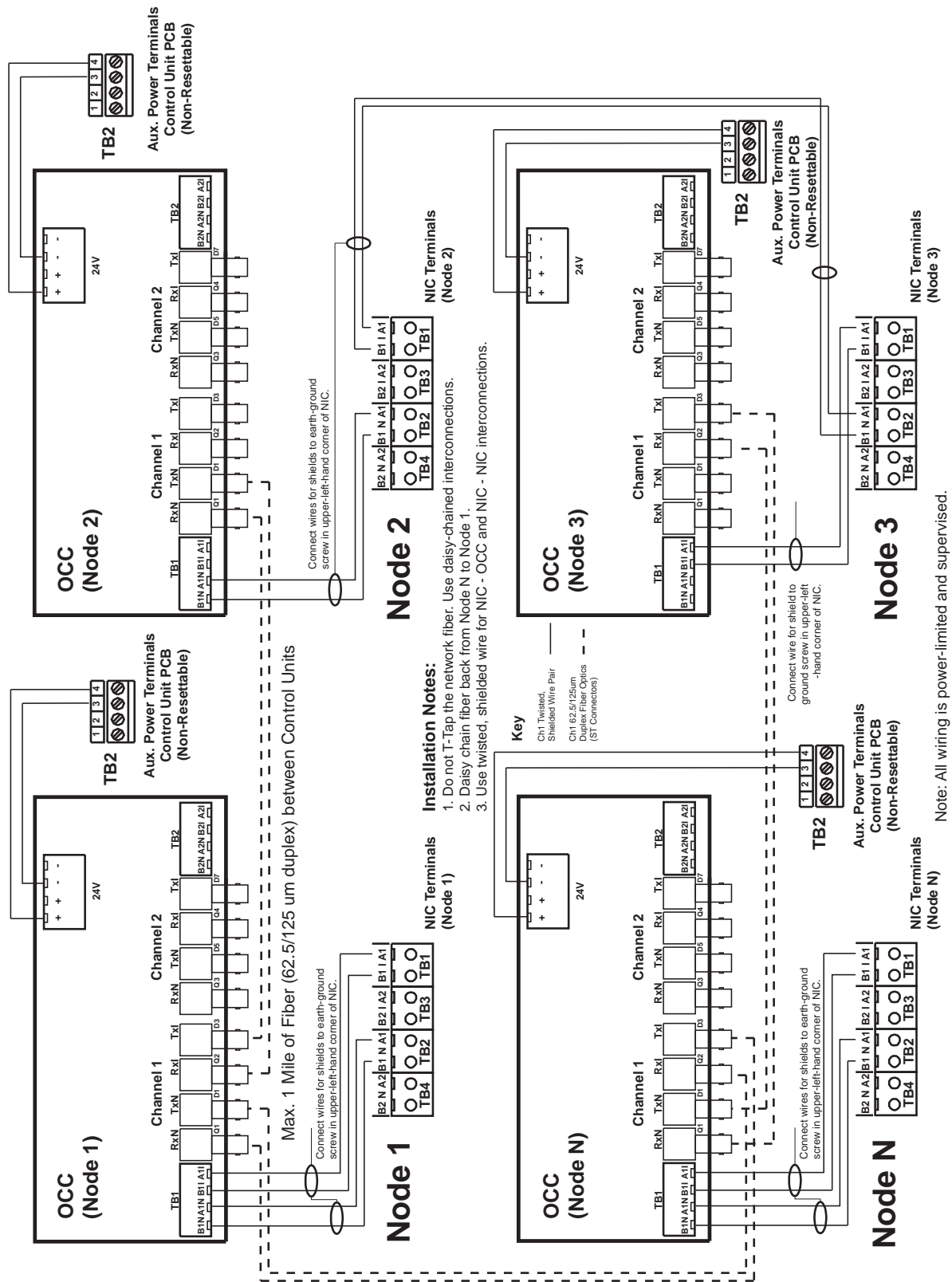
Figure 2-39. Typical Single-Channel System using Combination Twisted, Shielded and Fiber-Optic Media, Class B (See Note on Page 2-42)

Figure 2-40 shows a typical dual-channel system using 62.5/125 µm duplex fiber-optic media.
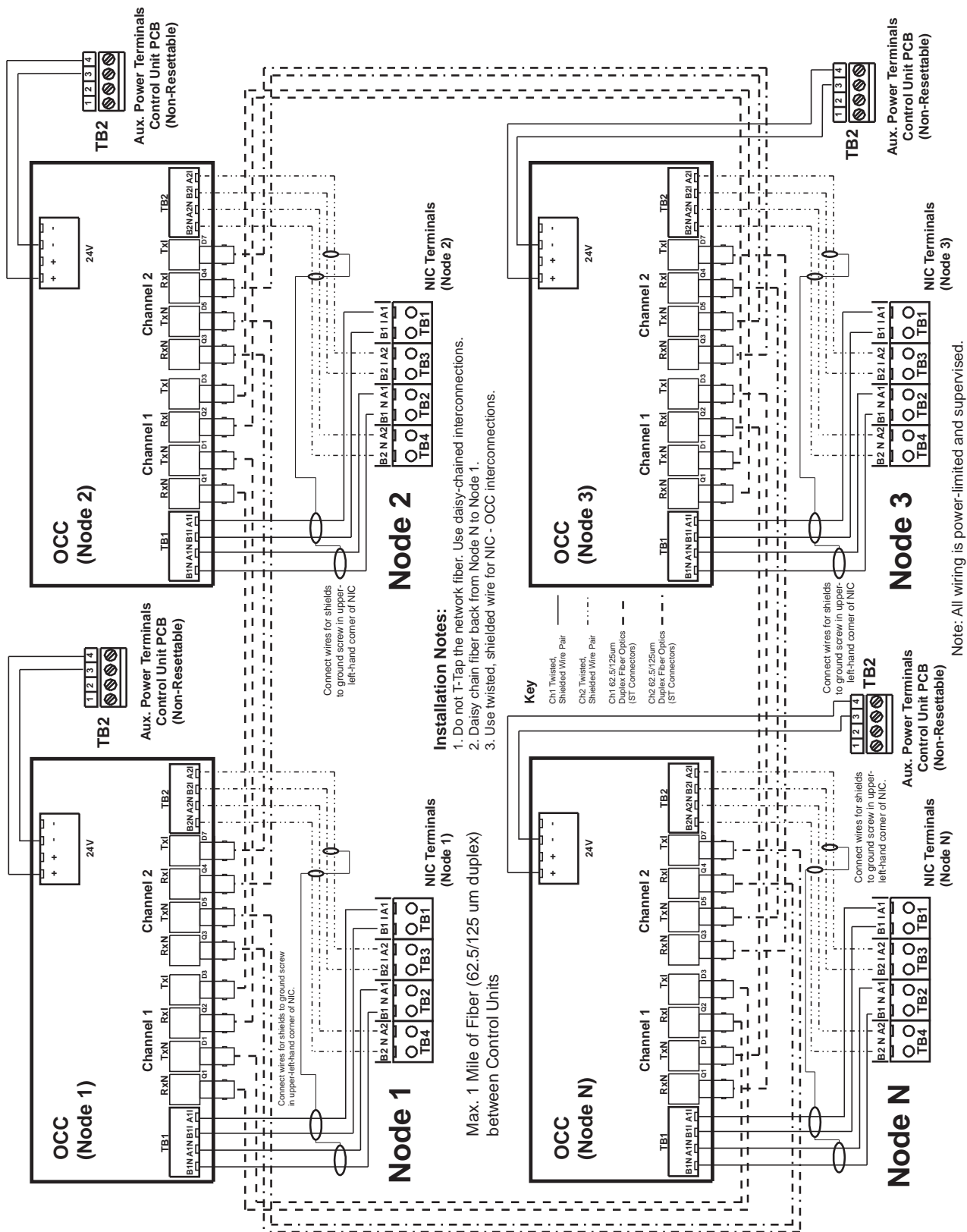
Figure 2-40. Typical Dual-Channel System using 62.5/125 µm Duplex Fiber Optic Media, Class B
(See Note on Page 2-42)

Figure 2-41 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.
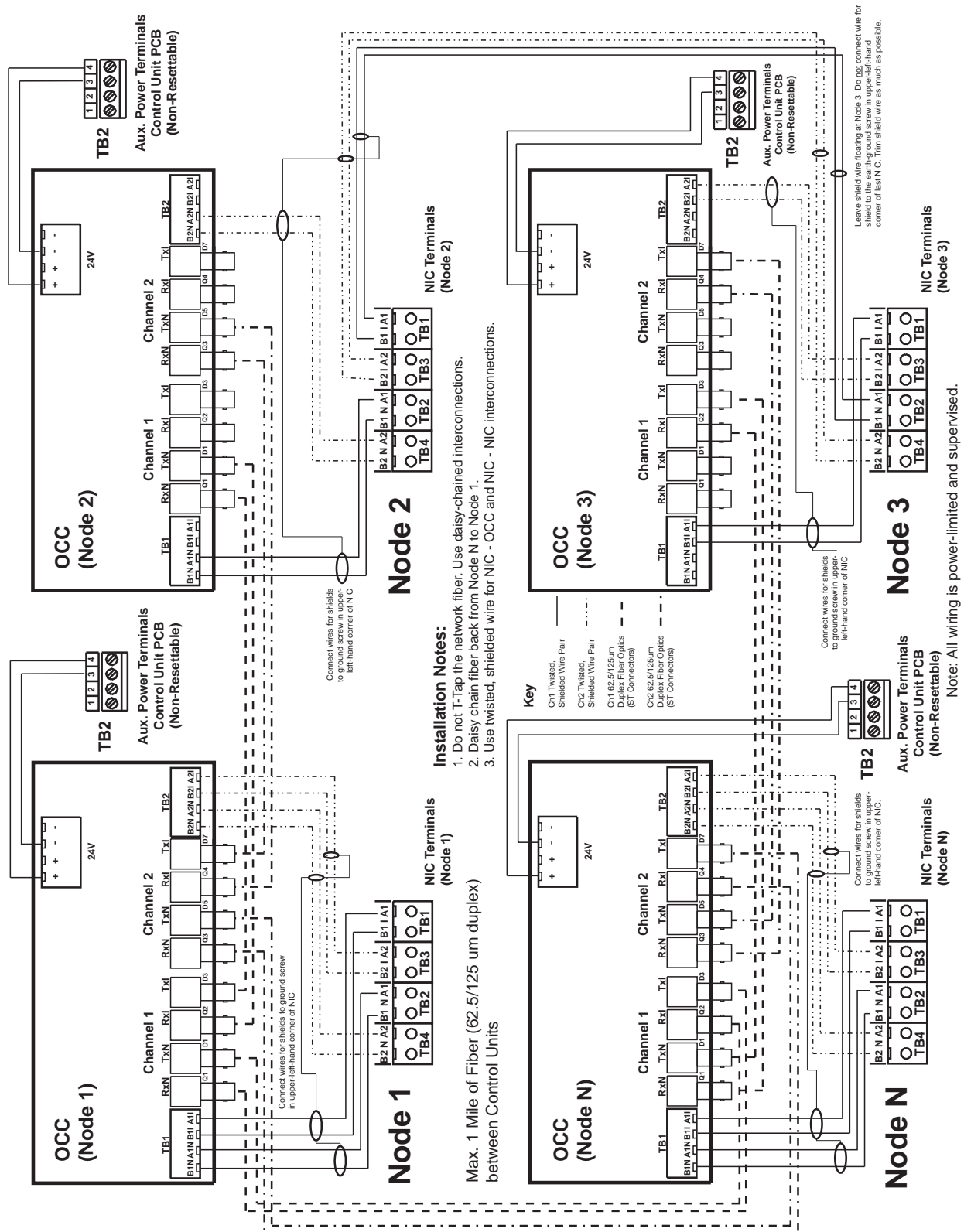
Figure 2-41. Typical Dual-Channel System using Combination Twisted, Shielded and Fiber Optic Media, Class B (See Note on Page 2-42)

2-18 INTELLIGENT INTERFACE MODULE

The interconnection of the Intelligent Interface Module to the ARIES-SLX Control Unit is shown in Figure 2-42. Refer to the ORION™-XT Installation, Operation and Maintenance Manual (Publication 77.100) for additional details.
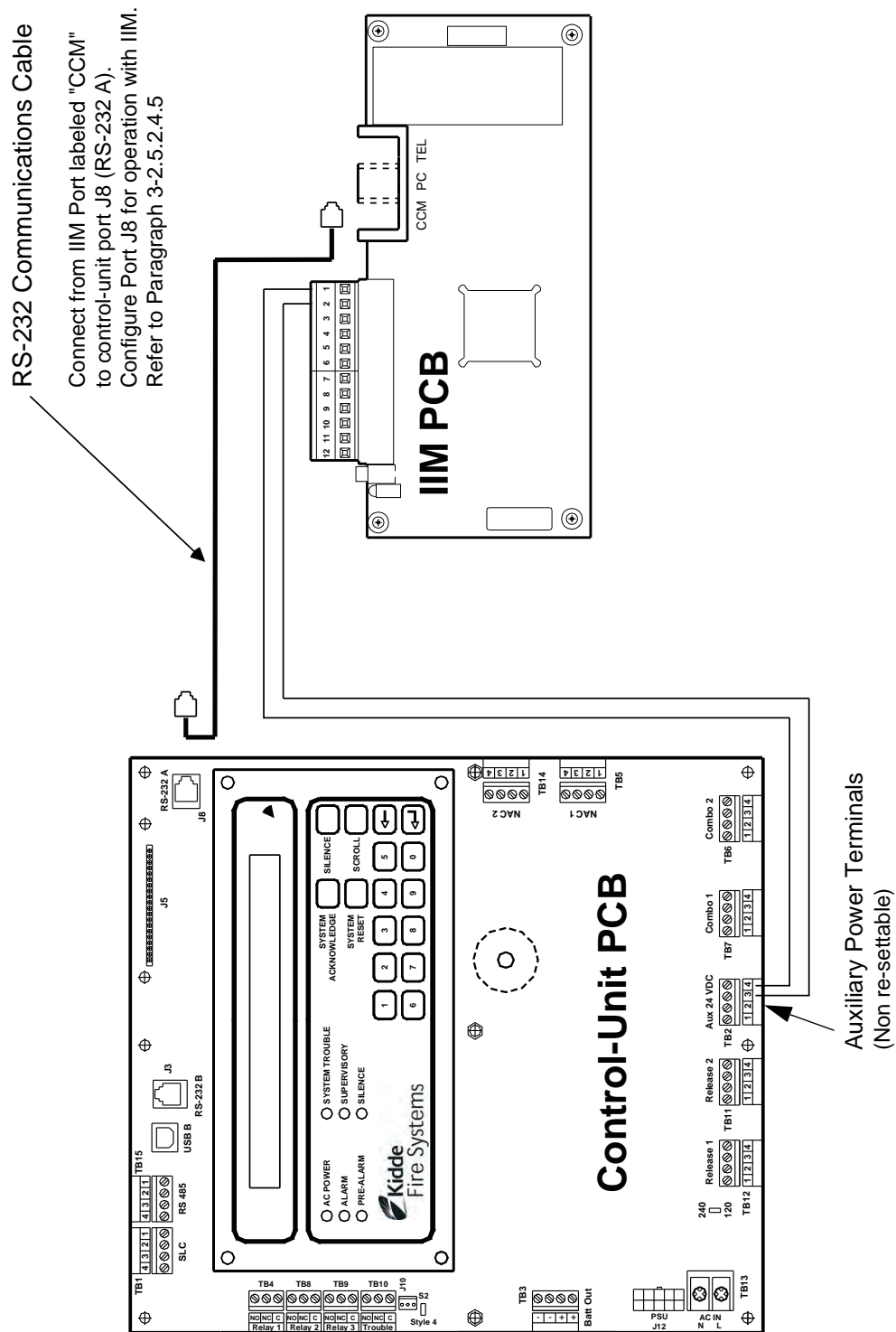
Figure 2-42. Interconnection of IIM

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CHAPTER 3
SYSTEM OPERATIONS

3-1   OVERVIEW

This chapter addresses operation of individual and networked ARIES®-SLX Fire Alarm/Suppression Control Units.

The control unit uses field-programmable software. Refer to the *ARIES-SLX Configuration Tool (ACT-SLX) User's Guide,* P/N 06-237492-001, for instructions on how to program the ARIES-SLX System.

3-2   SYSTEM OPERATION

This section instructs the end-user how to operate an ARIES-SLX Control Unit, 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 06-237489-001, that are packaged with the control unit.

3-2.1   Operating States

The control unit 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 ARIES-SLX 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/DS Series 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 ARIES-SLX 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 ARIES-SLX 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.
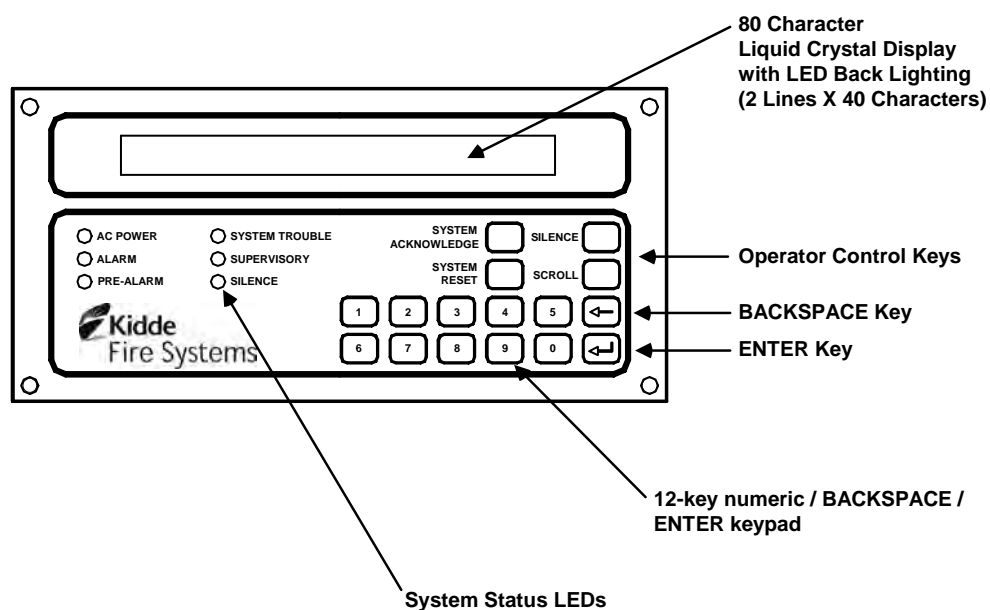
Figure 3-1. Display Panel

Table 3-2. Operator Control Keys and Functions

BUTTON	FUNCTION
<ACKNOWLEDGE>	The <ACKNOWLEDGE> Key allows the operator to signal the ARIES-SLX 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. Within twenty-four hours after acknowledgment of the event, the control unit will revert the Pre-Alarm, Alarm, Supervisory, or Trouble condition to the "unacknowledged" state. The internal buzzer will re-sound and the corresponding LED will flash in accordance with the unacknowledged state.
<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 ARIES-SLX 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
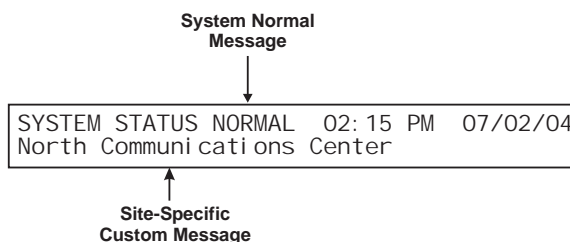
Figure 3-2. Normal Operation Display

3-2.5.2 MENU OPERATION

The ARIES-SLX 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:

- 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, 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 ARIES-SLX System's menus. Figure 3-4 contains the ARIES-SLX 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 ARIES-SLX 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. Refer also to the Isolation Caution note on Page 3 -17.
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 (including DS Series) 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.

Please Enter Password			
1:ISOLATE	2:LIST	3:SET	4:TEST
1. SLC Devices	1. Isolated Devices	1. Time / Date	1. SLC Devices
2. Outputs	2. Event Logs	2. Port Control	2. Fire Drill
3. Control Modules	3. Device Readings	3. SLC Devices (Installer) 3. Battery (Owner)	3. Battery Test
4. Global Isolate	4. Active Events	4. Programming ★	4. Lamp Test
5. Isolate Macro 1	5. EOC Program	5. Globals ★	5. Walk Test ★
6. Isolate Macro 2	6. SLC Assignments	6. Network ★	6. Alarm Sim Test ★
7. HSDs	7. Voltages	7. Control Modules ★	7. Ouput Test ★
8. RRM Groups	8. HSD Assignments	8. HSDS ★	8. SLC Resistance ★
	9. More Options	9. Battery ★	9. More Options ★

★ Level-2 (Installer) Password required.

Figure 3-4. ARIES-SLX 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 *
        - If detectors with relay bases present
          - For DET W/RLY base both DET & RLY Isoltd
            1: Continue 2: Cancel *
  - 2. SLC Outputs *
    - Isolate SLC Devices
      Devices from * _ _ to _ _ _ _
      - 1: Isolate 2:De-Isolate *
        - If detectors with relay bases present
          - For DET W/RLY base both DET & RLY Isoltd
            1: Continue 2: Cancel *

- 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
      - If detectors with relay bases present
        - For DET W/RLY base both DET & RLY Isoltd
          1: Continue 2: Cancel *
  - 2. Outputs *
    - Global Isolation of Outputs
      1: Isolate 2: De-Isolate *
      - If detectors with relay bases present
        - For DET W/RLY base both DET & RLY Isoltd
          1: Continue 2: Cancel *

- 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 *

- 8. RRM GROUPS
  - RRM Group Isolation
    Enter RRM Group Number* (1-4)

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. Device Readings
  - SLC Device Readings
    SLC Devices from *_ _ to _ _ _ (1 - 255)

- 4. Active Events
  - 1. Pre-Alarm Events
  - 2. Alarm Events
  - 3. Supervisories
  - 4. Troubles
  - 5. Current Time/Date

- 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. Relays:
      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 Boot

3. Set → See Figure 3-6

4. Test

- 1. SLC Devices
  - Start Device Test
    SLC Devices From *_ _ to _ _ _ (1 - 255)

- 2. Fire Drill
  - 1. Activate 2. De-Activate

- 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)
    - 1. Activate 2. De-Activate
  - 2. HSD Alarm Sim
    Enter HSD Address *_ _ (1 - 127)
    - 1. Activate 2. De-Activate

- 7. Outputs Test ★
  - 1: NAC 1 *
    - 1. Activate 2. De-Activate
  - 2: NAC 2 *
    - 1. Activate 2. De-Activate
  - 3: Combo 1 *
    - 1. Activate 2. De-Activate
  - 4: Combo 2 *
    - 1. Activate 2. De-Activate
  - 5: Release 1 *
    - 1. Activate 2. De-Activate
  - 6: Release 2 *
    - 1. Activate 2. De-Activate
  - 7: Relays *
    - 1: Relay 1 *
      - 1. Activate 2. De-Activate
    - 2: Relay 2 *
      - 1. Activate 2. De-Activate
    - 3: Relay 3 *
      - 1. Activate 2. De-Activate
    - 4: Trouble Relay *
      - 1. Activate 2. De-Activate
  - 8: SLC Outputs *
    - 1. Activate 2. De-Activate
    - SLC Outputs Test
      SLC Devices From *_ _ to _ _ _ (1 - 255)
  - 9: RRM Group *
    - 1. Activate 2. De-Activate
    - 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 *_ _ (0 - 255)
      - Press Backspace to Exit
  - 2. SLC Comm Value
    - SLC Communication Value
      SLC Devices From *_ _ To _ _ _ (1 - 255)

Legend

★ Level-2 (Installer) Password required.

3. Set

1. Time / Date

- 1. Set Time
  - 1. AM / PM ↵
    - System Time (AM / PM 1 - 12 Hrs)
      Enter the Time *_:_ _ (HH:MM)
      - 1: AM   2: PM * ↵
  - 2. Military ↵
    - Set Time (Mil 1 - 24 Hrs)
      Enter the Time *_:_ _ ↵ (HH:MM)
- 2. Set Date
  - Set Date
    Enter the Date *_-_-_ _ (MM-DD-YY)

2. Port Control

- 1. RS232 A * ↵
  - 1: PRINTER   2: IIM
    3: ICM   0: NOT USED * ↵
- 1. RS232 B * ↵
  - 1: PRINTER   2: IIM
    3: ICM   0: NOT USED*↵

3. SLC Devices ★

- 1. Device Addr Change
  - Set SLC Device Address
    Present SLC Device Address *_ _ _ ↵ (0 - 255)
    Set Target SLC Device Address _ _ _ ↵(1 - 255)
- 2. Configuration
  See Figure 3-8
- 3. Registration
  - Device Registration
    SLC Devices From *_ _ to _ _ _ (1-255)
- 4. De-Registration
  - Device De-Registration
    SLC Devices From *_ _ to _ _ _ (1-255)
- 5. Blink Control
  - Program Device Blink Control
    SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)
    - Set Blink Control
      1: Blink Off   2: Blink On ↵
- 6. Replace Device
  - Address To Be Replaced *_ _ ↵ (1 - 255)
    - Address of Replacement Device *_ _ ↵ (0 - 255)
      - 1: Keep Current Settings   2: Set Default ↵

4. Programming ★   **5. Globals ★**   **6. Network ★**   **7. Control Modules**   **8. HSDs ★**   **9. Battery**

See Figure 3-7

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2. Configuration

1. Ionization

- 1. Alarm
  - 1. Fixed Settings
    - Set Detector Sensitivity
      SLC Devices From *_ _ to _ _ _ _ ↵ (1 - 255)
      - Set Detector Sensitivity
        1: Open Area   2: In Duct   3: Duct Det. *
        - Set Detector Sensitivity
          Pre-Alarm Level *._ _ _ ↵ (0.5 - 1.4) %/Ft.
          - Set Detector Sensitivity
            Alarm Level*._ _ ↵ (0.5 - 1.5) %/Ft.
        - Set Detector Sensitivity
          Pre-Alarm Level *._ _ ↵ (0.5 - 0.9) %/Ft.
          - Set Detector Sensitivity
            Pre-Alarm Level *._ _ ↵ (0.5 - 1.0) %/Ft.
  - 2. Day/Night Settings
    - Set Detector Sensitivity
      SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)
      - Set Detector Sensitivity
        1: Open Area   2: In Duct   3: Duct Det.* ↵
        - Set Detector Sensitivity
          Pre-Alarm Level *._ _ _ ↵ (0.5 - 1.4) %/Ft.
          - Set Detector Sensitivity
            Day Alarm Level *._ _ _ ↵ (0.5 - 1.5) %/Ft.
            - Set Detector Sensitivity
              Night Alarm Level *._ _ _ ↵ (0.5 - 1.4) %/Ft.
        - Set Detector Sensitivity
          Pre-Alarm Level *._ _ _ ↵ (0.5 - 0.9) %/Ft.
          - Set Detector Sensitivity
            Day Alarm Level *._ _ _ ↵ (0.5 - 1.0) %/Ft.
            - Set Detector Sensitivity
              Night Alarm Level *._ _ _ ↵ (0.5 - 0.9) %/Ft.
- 2. Supervisory
  - Set Detector Sensitivity
    SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)
    - Set Detector Sensitivity
      1: Open Area   2: In-Duct / Duct Det. * ↵
      - 1. Fixed Settings
        - Set Detector Sensitivity
          Alarm Level *._ _ ↵ (0.5 - 1.5) %/Ft.
      - 2. Day / Night Settings
        - Set Detector Sensitivity
          Day Alarm Level *._ _ ↵ (0.5 - 1.5) %/Ft.
          - Set Detector Sensitivity
            Night Alarm Level *._ _ ↵ (0.5 - 1.4) %/Ft.
      - 1. Fixed Settings
        - Set Detector Sensitivity
          Alarm Level *._ _ ↵ (0.5 - 1.0) %/Ft.
      - 2. Day / Night Settings
        - Set Detector Sensitivity
          Day Alarm Level *._ _ ↵ (0.5 - 1.0) %/Ft.
          - Set Detector Sensitivity
            Night Alarm Level *._ _ ↵ (0.5 - 0.9) %/Ft.

2. Photoelectric

- 1. Alarm
- 2. Supervisory

3. Thermal

- Set Detector Sensitivity
  SLC Devices From *_ _ to _ _ _ _ ↵ (1 - 255)
  - Set Detector Sensitivity
    DS Series   1:ON   2:OFF *
    - Set Detector Sensitivity
      Pre-Alarm 1:ON 2:OFF *
    - Set Detector Sensitivity
      Spacing 1:50-ft   2:70-ft *
      - Set Detector Sensitivity
        Pre-Alarm Level *_ _ ↵ (80-135)
        - Set Detector Sensitivity
          Pre-Alarm Level *_ _ ↵ (135-155)
      - Set Detector Sensitivity
        Pre-Alarm Level *_ _ ↵(80-135)
        - Set Detector Sensitivity
          Pre-Alarm Level *_ _ ↵(135-145)

4. Alarmline

- Set AAM Configuration
  SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)
  - Set AAM Configuration
    Switch Setting   1 to 16 *_ ↵
    - Set AAM Configuration
      Pre-Alarm 1: ON   2: OFF * ↵
      - Set AAM Configuration
        Alarm 1: Normal 2: Overheat * ↵

5. Remote Release

- Set RRM Configuration
  SLC Devices From *_ _ to _ _ _ ↵(1 - 255)
  - Set RRM Configuration
    1: Solenoid 2: Initiator 3: Actuator* ↵

Legend

★   **Level-2 (Installer) Password required.**

4. Programming ★

1. Day / Night
- **1. Set Detectors**
  - Set Day / Night / Weekend Mode — SLC Devices from *_ _ to _ _ _ ↵ (1-255)
    - Set Day / Night / Weekend Mode — 1: Enable 2:Disable *
- **2. Set Periods**
  - 1. Set Day Period (Now 08:00) — Day Period Start *_:__ ↵ (24 hour clock)
    - 1. Set Day End (Now 18:00) — Day Period End *_:__ ↵ (24 hour clock)
- **3. Activate**
  - Night time Settings at Night — 1. Activate 2. De-Activate *
    - Night time Settings on Weekend — 1. Activate 2. De-Activate *

2. Passwords
- **1. Owner's**
  - Change Owner Password — Enter New Password *_____ ↵
    - Re-Enter New Password *_____ ↵
- **2. Installer's**
  - Change Installer Password — Enter New Password *_____ ↵
    - Re-Enter New Password *_____ ↵
- **3. Get MFG Code**

3. AutoLearn

4. AutoSetup

5. Alarm Verification
- Assign Alarm Verification — 1: Enable 2: Disable

6. Positive Alarm Sequence
- Assign Positive Alarm Sequence — 1: Enable 2: Disable

7. Clear Events
- Event Log Clear — 1: Clear Events 2: Exit *

8. Clear Tests
- **1. Clear SLC Tests ***
  - Clearing SLC Test Results — SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)
- **2. Clear Walk Tests ***
  - Clearing Walk Test Results — SLC Devices From *_ _ to _ _ _ ↵ (1 - 255)

9. Resynch. Network

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5. Globals ★

1. Global Acknowledge
- Global Acknowledge of Trouble/Supv — 1. Enable 2. Disable ↵

2. Alarm Verification
- Assign Alarm Verification — Verification Period *_ (060 - 180 Seconds)

3. PAS
- Assign Positive Alarm Sequence — Investigation Period *_ _ _ (000-180 Seconds) ↵

4. Central Station
- Central Station Operation — 1. Enable 2. Disable*

5. Global Alarm Ack
- Global Acknowledge of Alarms — 1. Enable 2. Disable* ↵

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6. Network ★

1. Class
- Change Class — 1: Ch1 2: Ch2 3: Both ↵
  - Change Class — 1: Enable 2: Disable ↵

2. Node Number
- Change Node Number — Range: (1 to 32) 0: Standalone _ _ ↵

3. Group
- Change Group — Group (1 to 32) 0: Not Grouped ↵

4. Add/Remove Nodes
- Add/Remove Network Nodes — 1: Add 2: Remove
  - Add/Remove Network Nodes — Nodes: *_ to _ _ ↵

5. Reset Event
- Change Network Reset — 1: Enable 2: Disable ↵

6. Silence Event
- Change Network Silence — 1: Enable 2: Disable ↵

7. Log Events
- Log All Events or Only Log Group Events — 1: Log All Events 2: Log Group Events

8. Time Synch Period
- Change Time Synch — Period: 0 (Off) or 600-32767 Sec _____ ↵

9. Isolate
- Isolate/De-isolate Node — 1: Isolate 2: De-isolate ↵

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7. Control Modules ★

1. Register
- Register Control / Display Module — 1: ATM 2: RDCM * ↵
  - 1: Enter the ATM Number to Register — ATM: *_ ↵
  - 2: Enter the RDCM Number to Register — RDCM: *_ ↵

2. De-Register
- De-Register Control / Display Module — 1: ATM 2: RDCM *
  - 1. Enter the ATM Number to De-Register — ATM: *_ ↵
  - 2. Enter the RDCM Number to De-Register — RDCM: *_ ↵

3. Reset ATM / RDCM
- Reset Display/ Control Module — 1: Reset 2: Cancel * ↵

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8. HSDs ★

1. Register IIM
- Register IIM On Port — 1: RS232A 2: RS232B ↵

2. De-register IIM
- Disable IIM On Port — 1: Confirm 2: Cancel ↵

3. Register HSDs
- HSD Registration — HSD Devices From ___ to ___ (1 - 127) ↵

4. De-register HSDs
- HSD De-registration — HSD Devices From ___ to ___ (1 - 127) ↵

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9. Battery ★

1. Battery Disp Enable ↵

2. Battery Disp Disable ↵

3. Disable Battery ↵

Legend

★ Level-2 (Installer) Password required.

2. Photoelectric

- **1. Alarm**
  - **1. Fixed Settings**
    - Set Detector Sensitivity
      SLC Devices From * _ _ to _ _ _ ↵ (1 - 255)
      - Set Detector Sensitivity
        1: Open Area   2: In Duct   3: Duct det. * ↵
        - **1: Open Area** — Set Detector Sensitivity
          Pre-Alarm Level *._ ↵ (0.2 - 3.4) %/Ft.
          - If entered value is <0.7
          - DS Series Invalid Below 0.7
            1. Continue, Not a DS-PS
            2. Cancel*
          - Set Detector Sensitivity
            Alarm Level * ._ ↵ (0.5 - 3.5) %/Ft.
            - If entered value is <0.9
            - DS Series Invalid Below 0.9
              1. Continue, Not a DS-PS 2. Cancel *
        - **2: In Duct** — Set Detector Sensitivity
          Pre-Alarm *._ ↵ (0.2 - 1.9) %/Ft.
          - If entered value is <0.7
          - DS Series Invalid Below 0.7
            1. Continue, Not a DS-PS
            2. Cancel*
          - Set Detector Sensitivity
            Alarm Level *._ ↵ (0.5-2.0)%/Ft.
            - If entered value is <0.9
            - DS Series Invalid Below 0.9
              1. Continue, Not a DS-PS 2. Cancel *
        - **3: Duct det.** — Duct Detector Type
          1: DS-SD 2:DH-2000 *
          - Duct Detector Sensitivity
            Pre-Alarm Level *._ ↵ (0.2-1.9)%/Ft.
          - Duct Detector Sensitivity
            Alarm Level *._ ↵ (0.5-2.0)%/Ft.
  - **2. Day/Night Settings**
    - Set Detector Sensitivity
      SLC Devices From * _ _ to _ _ _(1 - 255) ↵
      - Set Detector Sensitivity
        1: Open Area   2: In Duct   3: Duct det. * ↵
        - **1: Open Area** — Set Detector Sensitivity
          Pre-Alarm Level *._ ↵ (0.2 - 3.4) %/Ft.
          - If entered value is <0.7
          - DS Series Invalid Below 0.7
            1. Continue, Not a DS-PS
            2. Cancel*
          - Set Detector Sensitivity
            Day Alarm Level * ._ ↵ (0.5-3.5)%/Ft.
            - If entered value is <0.9
            - DS Series Invalid Below 0.9
              1.Continue, Not a DS-PS 2.Cancel *
            - Set Detector Sensitivity
              Night Alarm Level*._ ↵ (0.5-3.4)%/Ft.
              - If entered value is <0.9
              - DS Series Invalid Below 0.9
                1.Continue, Not a DS-PS 2.Cancel *
        - **2: In Duct** — Set Detector Sensitivity
          Pre-Alarm Level *._ ↵ (0.2 - 1.9) %/Ft.
          - DS Series Invalid Below 0.7
            1. Continue, Not a DS-PS
            2. Cancel*
          - If entered value is <0.7
          - Set Detector Sensitivity
            Day Alarm Level *._ ↵ (0.5 - 2.0)%/Ft.
            - If entered value is <0.9
            - DS Series Invalid Below 0.9
              1.Continue, Not a DS-PS
              2.Cancel *
            - Set Detector Sensitivity
              Night Alarm Level *._ ↵ (0.5 - 1.9) %/Ft.
              - If entered value is <0.9
              - DS Series Invalid Below 0.9
                1.Continue, Not a DS-PS 2.Cancel *
        - **3: Duct det.** — Duct Detector Type
          1: DS-SD 2:DH-2000 *
          - Duct Detector Sensitivity
            Pre-Alarm Level *._ ↵ (0.2-1.9)%/Ft.
          - Duct Detector Sensitivity
            Day-Alarm Level *._ ↵ (0.5-2.0)%/Ft.
          - Duct Detector Sensitivity
            Night-Alarm Level *._ ↵ (0.5-1.9)%/Ft.

2. Supervisory

- Set Detector Sensitivity
  SLC Devices From * _ _ to _ _ _ ↵ (1 - 255)
  - Set Detector Sensitivity
    1: Open Area   2: In Duct   3: Duct det. * ↵
    - **1: Open Area**
      - **1. Fixed Settings**
        - Set Detector Sensitivity
          Alarm Level *._ ↵ (0.5 - 3.5) %/Ft.
          - DS Series invalid below 0.9
            1. Continue, Not a DS-PS,
            2. Cancel *
      - **2. Day / Night Settings**
        - Set Detector Sensitivity
          Day Alarm Level *._ ↵ (0.5 - 3.5) %/Ft.
          - If entered value is <0.9
          - DS Series invalid below 0.9
            1. Continue, Not a DS-PS, 2. Cancel *
          - Set Detector Sensitivity
            Night Alarm Level *._ ↵ (0.5 - 3.4) %/Ft.
            - If entered value is <0.9
            - DS Series invalid below 0.9
              1. Continue, Not a DS-PS,
              2. Cancel *
    - **2: In Duct**
      - **1. Fixed Settings**
        - Set Detector Sensitivity
          Alarm Level *._ ↵ (0.5 - 2.0) %/Ft.
          - DS Series invalid below 0.9
            1. Continue, Not a DS-PS
            2. Cancel
      - **2. Day / Night Settings**
        - Set Detector Sensitivity
          Day Alarm Level *. _ _ ↵ (0.5 - 2.0) %/Ft.
          - If entered value is <0.9
          - DS Series invalid below 0.9
            1. Continue, Not a DS-PS,
            2. Cancel *
          - Set Detector Sensitivity
            Night Alarm Level *. _ _ ↵ (0.5 - 1.9) %/Ft.
            - If entered value is <0.9
            - DS Series invalid below 0.9
              1. Continue, Not a DS-PS,
              2. Cancel *
    - **3: Duct det.** — Duct Detector Type
      1: DS-SD   2. DH-2000 *
      - **1: DS-SD** — Duct Detector Type
        1: Fixed Settings 2: Day/Night Settings

        NOTE: Selecting either "1" or "2" here displays a failure message because sensitivity is fixed and day/night settings are not variable.
      - **2. DH-2000**
        - **1. Fixed Settings**
          - Duct Detector Sensitivity
            Alarm Level *._ ↵ (0.5-2.0)%/Ft.
        - **2. Day/Night Settings**
          - Duct Detector Sensitivity
            Alarm Level *._ ↵ (0.5-2.0)%/Ft.
          - Duct Detector Sensitivity
            Night Alarm Level *._ (0.5-1.9)%/Ft.

3-2.5.2.2   Isolate Menu Functions

The Isolate functions prevent the ARIES-SLX 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.

Note: SLC devices that are detectors with a relay base have both an input (detector) and an output (relay) associated with the same address. When these devices are isolated, either by an input or an output isolation, <u>both</u> the detector input and relay output will be isolated. The same is also true for de-isolation.

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.

⚠️
CAUTION

The Isolate function is software based and does not physically disconnect the wires to the release solenoids, actuators or initiators. Therefore, it does not qualify as a release circuit disconnect or disable method as specified in NFPA 12, 72 or 2001 standards. The Kidde Fire Systems Key Maintenance Bypass Switch (part number 76-600000-200) *does* **meet NFPA requirements and must always be used to disconnect the release circuits. Refer to Section 4-1 in Chapter 4 of this manual,** *Inspection, Testing and Maintenance*, **for the full procedure on how to disable outputs.**

The following pages 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 (including DS Series) detectors and monitor modules from being processed and acted upon by the ARIES-SLX Control Unit. Also to prevent selected SmartOne control and relay modules from carrying out activation instructions issued by the ARIES-SLX 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 5.
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 ARIES-SLX Control Unit to process initiating and trouble signals from previously-isolated SmartOne (including DS Series) detectors and monitor modules. Also to enable previously-isolated SmartOne control and relay modules to execute activation instructions issued by the ARIES-SLX 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 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 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.
	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 ARIES-SLX Control Unit.

Refer also to the Isolation Caution note on Page 3 -17.

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 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-Based Outputs

Purpose: To enable previously-isolated control-unit-based outputs to execute activation instructions issued by the ARIES-SLX 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
45	Press 1 Key for NACs or Press 2 Key for Release Circuits or Press 3 Key for Combo Circuits 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 output or range of outputs 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 ARIES-SLX 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 ARIES-SLX 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 Programmable Control-Unit-Based Relays

Purpose: To prevent selected control-unit-based relays from carrying out activation instructions issued by the ARIES-SLX Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Enter network node number (if applicable) of control unit with relays to be isolated. Press "Enter" Key to confirm selection.	Access correct control unit (if networked system)
4	Press 1 Key	Enter Isolate-Menu branch
5	Press 3 Key	Select "Relays" option
6	Use keypad to enter single relay or range of relays to isolate. Press "Enter" Key to confirm selection. Note: Use numbering for relays as follows: **No. Relay** 1 Programmable Relay No. 1 2 Programmable Relay No. 2 3 Programmable Relay No. 3	Get prompt to Isolate or De-Isolate
7	Press 1 Key and then press "Enter" Key to confirm selection	Execute Isolation Routine for single relay or range of relays 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

Note: SLC devices that are detectors with a relay base have both an input (detector) and an output (relay) associated with the same address. When these devices are isolated, either by an input or an output isolation, <u>both</u> the detector input and relay output will be isolated. The same is also true for de-isolation.

3-2.5.2.2.8 How to De-Isolate Programmable Control-Unit-Based Relays

Purpose: To enable previously-isolated control-unit-based relays to execute activation instructions issued by the ARIES-SLX Control Unit.

Step	Action	Result
1	Press 0 Key	Initiate menu access
2	Enter Password	Gain access to menus
3	Enter network node number (if applicable) of control unit with relays to be de-isolated. Press "Enter" Key to confirm selection.	Access correct control unit (if networked system)
4	Press 1 Key	Enter Isolate-Menu branch
5	Press 3 Key	Select "Relays" option
6	Use keypad to enter single relay or range of relays to de-isolate. Press "Enter" Key to confirm selection. Note: Use numbering for relays as follows: **No. Relay** 1 Programmable Relay No. 1 2 Programmable Relay No. 2 3 Programmable Relay No. 3	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 7.
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.2.9 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 ARIES-SLX 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

3-2.5.2.2.10 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 ARIES-SLX 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

3-2.5.2.2.11 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 ARIES-SLX Control Unit.

Refer also to the Isolation Caution note on Page 3 -17.

Note: SLC devices that are detectors with a relay base have both an input (detector) and an output (relay) associated with the same address. When these devices are isolated, either by an input or an output isolation, <u>both</u> the detector input and relay output will be isolated. The same is also true for de-isolation.

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

3-2.5.2.2.12 How to Globally De-Isolate Initiating Devices

Purpose: To enable the ARIES-SLX 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

3-2.5.2.2.13 How to Globally Isolate System Outputs

Purpose: To prevent all SLC-based and control-unit-based outputs (including relays) from being activated by the ARIES-SLX Control Unit.

Refer also to the Isolation Caution note on Page 3 -17.

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

Note: SLC devices that are detectors with a relay base have both an input (detector) and an output (relay) associated with the same address. When these devices are isolated, either by an input or an output isolation, <u>both</u> the detector input and relay output will be isolated. The same is also true for de-isolation.

3-2.5.2.2.14 How to Globally De-Isolate System Outputs

Purpose: To enable the ARIES-SLX 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

3-2.5.2.2.15 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 ARIES-SLX Configuration Program. The ARIES-SLX 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for the procedure to assign initiating devices, control modules, or control-unit-based outputs to either "Isolation Macro 1" or "Isolation Macro 2".

Refer also to the Isolation Caution note on Page 3 -17.

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 (Installer) or Press 6 Key or 7 Key (Owner)	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

3-2.5.2.2.16 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 pages 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	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 ARIES-SLX 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 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 3-2.5.2.4.60.

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 4 Key	Access "Network Settings"
6	Press 1 Key	Access "This Node"
7	Press "Scroll" Key (as required)	Move through the various settings for this node
8	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" option
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 8	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 this Control Unit

Purpose: To view the list of remote-display modules connected to a ARIES-SLX 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 Kidde 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 Set-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 Kidde 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 Set-Menu branch
4	Press "Scroll" Key twice	Access additional options
5	Press 9 Key	Select "More Options"
6	Press 5 Key	Select "Configuration"
7	Press "Scroll" Key	Access additional options
8	Press 6 Key	Select "RRM Memory Status"
9	Use keypad to enter single module or range of modules Press "Enter" Key to confirm selection.	Specify the RRM modules to view
10	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.3.21 How to List General Alarms

Purpose: To access 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 Set-Menu branch
4	Press "Scroll" Key	Access additional Menu options
5	Press 9 Key	Select "Globals" option
6	Press "Scroll" Key	Access additional Globals-Menu options
7	Press 7 Key	Select "List Versions" option
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 (including DS Series) 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 pages list the Set Menu functions.

3-2.5.2.4.1 How to Set the Time

Purpose: To set the correct time for an ARIES-SLX 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 an ARIES-SLX 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 1 Key	Access "Time / Date" 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	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, The 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 ARIES-SLX 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

⚠️
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. Alarm thresholds can be set in 0.1 percent-per-foot increments. Default setting is 1.5%/ft for pre-alarm and 2.0%/ft for alarm.

PRE-ALARM SENSITIVITY:

For the PSD-7152 detector: A pre-alarm threshold can 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.

For the DS-PS detector: A pre-alarm threshold can be set anywhere within the obscuration range of 0.7 to 3.4 percent per foot, but must be less than the detector's alarm threshold.

Note: The DS-PS detector does NOT support configurable alarm settings below 0.9%/ft. If a DS-PS is configured with a threshold below 0.9%/ft. for Alarm or 0.7%/ft. for Pre-Alarm, the detector will operate at the lowest allowable setting.

Any time that the Pre-Alarm sensitivity is set below 0.7 % obscuration/ft, a message will automatically display which reads:

> DS SERIES INVALID BELOW 0.7%/FT
> 1: CONTINUE, NOT DS SERIES   2: CANCEL

If the detector is a PSD-7152 detector, select 1 to continue use. If the detector is a DS-PS detector, select Cancel and re-enter a threshold above 0.7%/ft.

ALARM SENSITIVITY:

For the PSD-7152 detector: An Alarm threshold can be set anywhere within the obscuration range of 0.2 to 3.4 percent per foot.

For the DS-PS detector: An Alarm threshold can be set anywhere within the obscuration range of 0.9 to 3.4 percent per foot.

Any time that the Alarm sensitivity is set below 0.9% obscuration/ft, a message will automatically display which reads:

> DS SERIES INVALID BELOW 0.9%/FT
> 1: CONTINUE, NOT DS SERIES   2: CANCEL

If the detector is a PSD-7152 detector, select 1 to continue use. If the detector is a DS-PS detector, select Cancel and re-enter threshold above 0.9%/ft.

SPECIAL APPLICATIONS:

Three 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 DS-SD Duct Detector sensitivity is fixed. Its sensitivity range cannot be programmed. The alarm ranges or fixed sensitivity for these special applications are as follows:

Application	Pre-Alm Range (%/ft.)	Alm Range (%/ft.)
In-duct (DS-PS detector)	0.7 - 1.9	0.9 - 2.0
In-duct (PSD-7152 detector)	0.2 - 1.9	0.5 - 2.0
DH-2000	0.2 - 1.9	0.5 - 2.0
DS-SD *	Fixed at 75% of Alarm	Fixed at 1.3 - 2.2

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.

* DS-SD detector Pre-Alarm and Alarm sensitivity is fixed and cannot be programmed for settable sensitivities nor can it be programmed for different day and night sensitivities.

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 Duct Detector * 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

⚠
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. Model DS-SD Duct Detector sensitivities are fixed and are not programmable.

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 Press 3 for Duct Det ***** 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

* DS-SD detector Pre-Alarm and Alarm sensitivity is fixed and cannot be programmed for settable sensitivities nor can it be programmed for different day and night sensitivities.

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. Alarm thresholds can be set in 1F° increments.

<u>**PRE-ALARM SENSITIVITY**</u>:

For the THD-7252 detector: A pre-alarm threshold can be set anywhere within the temperature range of 80°F to 135°F, but must be less than the thermal detector's alarm threshold.

For the DS-HFS detector: A pre-alarm threshold can be set only to 110°F. To disable Pre-Alarm reporting, set the pre-alarm threshold to "OFF". Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for additional information.

<u>**ALARM SENSITIVITY**</u>:

For the THD-7252 detector: An alarm threshold can be set anywhere within the temperature range of 135°F to 155°F (at 50 ft. spacing) or 135°F to 145°F (at 70 ft. spacing).

For the DS-HFS detector: The DS-HFS detector does NOT have a configurable Alarm threshold and is always set to 135°F.

Note: When replacing a THD-7252 detector with the DS-HFS, ensure that the Alarm threshold and spacing are set to default settings, 135 degrees and 50 feet. If a DS-HFS detector is configured for any setting other than default, the detector will still operate at the 135 degree threshold. The DS-HFS is not agency approved for 70 ft. spacing, so any 70 ft. THD-7252 replacements will require repositioning of the detector.

The pre-alarm and alarm ranges for the thermal detectors are summarized below:

Table 3-5. Model THD-7252 Thermal Detector Ranges

Spacing (ft.)	Pre-Alarm Range (°F)	Alarm Range (°F)
50	80 - 135	135 - 155
70	80 - 135	135 - 145

Table 3-6. Model DS-HFS Thermal Detector Ranges

Spacing (ft.)	Pre-Alarm Range (°F)	Alarm Range (°F)
50	110	135

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. Set the thermal detector type: Press 1 for DS Series. Press 2 for THD-7252. If "1" is selected for DS Series, press "1" to turn Pre-Alarm on or press "2" to disable Pre-Alarm. If "2" is selected for THD-7252, proceed to Step 8.	Specify detectors to change and turn on/off Pre-Alarm
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 actuator or 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 actuator/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 ARIES-SLX Control Unit needs to know which SLC addresses (of the 255 possible addresses) will be occupied by a SmartOne/DS Series 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 (PALMs)	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 ARIES-SLX Configuration Tool.

Exception: PALMS require additional configuration via the ORION Configuration Software (OCS), AIMs require additional configuration via the LaserNET software and AAMs require additional configuration via the SET Menu or the ARIES-SLX Configuration Tool 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 ARIES-SLX 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 (including DS Series) Detectors

Purpose: To prevent one or more SmartOne/DS Series 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 in 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 (including DS Series) Detectors

Purpose: To enable one or more SmartOne/DS Series 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 in 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 (including DS Series) Smoke Detectors

Purpose: To enable one or more SmartOne/DS Series 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 the "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 (including DS Series) Smoke Detectors

Purpose: To disable one or more SmartOne/DS Series 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 the "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 Kidde 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 Kidde 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

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 ARIES-SLX 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 ARIES-SLX 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 ARIES-SLX 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 ARIES-SLX system.

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 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 ARIES-SLX 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 ARIES-SLX 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 Se-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 Acknowledgment or Press 2 Key to turn off Global Alarm Acknowledgment, 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 Configure Networked Control Units for Class X Communications

Purpose: To enable networked control units to utilize the redundant communications channel (Channel 2) for Class X 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 "Class" 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

3-2.5.2.4.43 How to Disable Class X Communications for Networked Control Units

Purpose: To prevent networked control units from utilizing the redundant communications channel (Channel 2) for Class X 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 "Class" 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

3-2.5.2.4.44 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 *ACT-SLX Configuration Tool User's Guide*, P/N 06-237492-001, 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

3-2.5.2.4.45 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

3-2.5.2.4.46 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

3-2.5.2.4.47 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

3-2.5.2.4.48 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

3-2.5.2.4.49 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

3-2.5.2.4.50 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

3-2.5.2.4.51 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

3-2.5.2.4.52   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

3-2.5.2.4.53 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

3-2.5.2.4.54 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 and 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

3-2.5.2.4.55 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 canceled 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

3-2.5.2.4.56 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

3-2.5.2.4.57 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

3-2.5.2.4.58 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

3-2.5.2.4.59 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

3-2.5.2.4.60 How to Enable Battery Supervision

Purpose: To restore battery supervision that was disabled by the procedure in 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 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

3-2.5.2.4.61 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 "Disable-Battery" option
6	Press 2 Key, then press "Enter" Key	Select Disable Battery Connection
7	Press "Backspace" Key (as required)	Exit Menu System
8	Press "Backspace" Key (as required)	Exit Menu System

3-2.5.2.4.62 How to Register an Intelligent Interface Module (IIM)

Purpose: To inform the ARIES-SLX 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 ARIES-SLX 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 ARIES-SLX'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

3-2.5.2.4.63 How to De-Register an Intelligent Interface Module (IIM)

Purpose: To remove an Intelligent Interface Module from the ARIES-SLX 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 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

3-2.5.2.4.64 How to Register High-Sensitivity Smoke Detectors (HSSDs)

Purpose: To inform the ARIES-SLX 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 ARIES-SLX 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 ARIES-SLX'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

3-2.5.2.4.65 How to De-Register High-Sensitivity Smoke Detectors (HSSDs)

Purpose: To remove HSSDs connected to an IIM from the ARIES-SLX 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-register HSDs
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 (including DS Series) 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 (including DS Series) initiating devices (i.e., detectors and monitor modules) to generate and transmit alarm signals that can be properly interpreted and processed by the ARIES-SLX Control Unit.

Note: The most current test results for all initiating devices are stored in the SLC Test Results log.

⚠
CAUTION

Before testing any SLC initiating devices, place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). Activate the global-isolate-outputs routine. 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 5 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

3-2.5.2.5.2   How to Run an Audible Walk Test

Purpose: To suspend normal system operation for functional testing of one or more SmartOne (including DS Series) initiating devices.

The ARIES-SLX 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

Before walk testing any SLC initiating devices, place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). Isolate or otherwise disable other critical outputs such as power shutdown control relays and AHU shutdown relays. 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 (including DS Series) initiating devices.

The ARIES-SLX 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**

Before walk testing any SLC initiating devices, place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). Isolate or otherwise disable other critical outputs such as power shutdown control relays and AHU shutdown relays. 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 ARIES-SLX 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 5 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 ARIES-SLX 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

Before running any alarm-simulation test(s), place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). Physically disconnect the wiring to any other critical outputs such as power shutdown control relays and AHU shutdown relays. 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 "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

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   **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 Simulation Test"
6	Use keypad to enter initiating device to report "alarm off." Press "Enter" Key to confirm selection.	Specify device to issue "alarm-off" message
7	Press 0 Key and Press "Enter" Key	Initiate "alarm-off" message
8	Press "Acknowledge" Key	Make Alarm LED flash steadily
9	Repeat Steps 6 to 8 (as required)	Report "alarm-off" for all simulated initiating devices
10	Press "Backspace" Key (as required)	Exit Menu System
11	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.

⚠️ **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 outputs will not activate suppression systems or critical facility operations such as power shutdown control relays and AHU shutdown relays.

Place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). 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 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.

⚠️ **CAUTION**   **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 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.

⚠️ **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 outputs will not activate suppression systems or critical facility operations such as power shutdown control relays and AHU shutdown relays.

Place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). 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 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	
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 and 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 3-2.5.2.5.14
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**   **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 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.

⚠ 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 outputs will not activate suppression systems or critical facility operations such as power shutdown control relays and AHU shutdown relays.

Place the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits. Physically remove all control heads (if used) from their associated agent-storage-container discharge valves. Physically disconnect the wiring to solenoid valves (if used) for pre-action/deluge sprinkler and watermist systems. Physically disconnect the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, short the leads together, and wrap the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit). 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 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** **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 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 ARIES-SLX 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 ACT-SLX program; however, if used, they will lock out any possible entry to the menus from the display. Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for the procedure to create alphanumeric passwords. Table 3-7 describes the different password levels and their functions.

Table 3-7. 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 ARIES-SLX 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 Kidde Fire Systems. Table 3-8 lists the default passwords.

Table 3-8. ARIES-SLX 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.

TROUBLE STATE

The ARIES-SLX 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 ACT-SLX configuration tool.
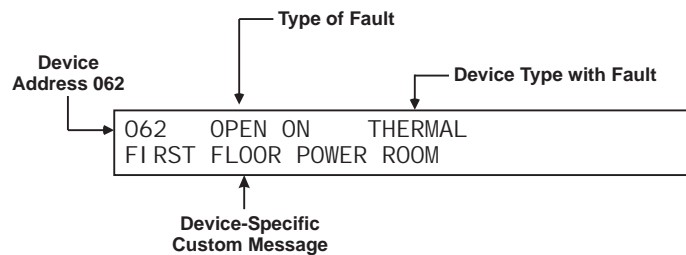
Figure 3-9. Typical Trouble Message Display

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 associated with the trouble.

Note: Previously silenced outputs initiated by a trouble or other event will not automatically resound on a new trouble or other event. Only silenced outputs associated with the new trouble or other event in the EOC program will reactivate. If your application requires that silenced outputs resound on a subsequent event, the EOC will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

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 3-10 at the conclusion of each manual scroll cycle.

```
                  ┌── Number of Troubles
                  │
                  ↓
  ┌─────────────────────────────────────┐
  │  003 ACTIVE TROUBLES REMAIN          │
  │      PRESS SCROLL TO VIEW            │
  └─────────────────────────────────────┘
```
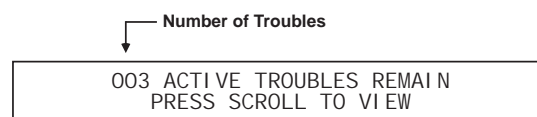
Figure 3-10. Typical Message After Trouble Manual Scroll Cycle

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 within 24 hours after they were acknowledged. Press the <ACKNOWLEDGE> Key to silence the buzzer.

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 or Class X 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 3-9 has disappeared from the set of manually scrolled events and that the total number of troubles displayed in Figure 3-10 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 ARIES-SLX 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 ACT-SLX configuration tool.
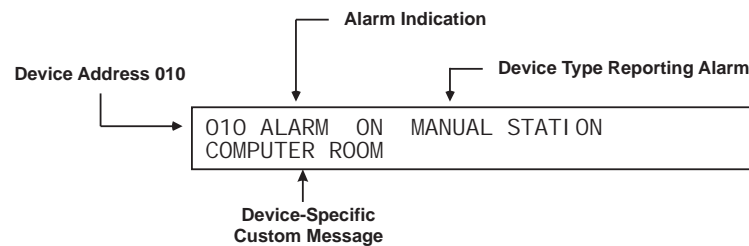
Figure 3-11. Typical Alarm Message Display

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 associated with the alarm. (See Note in Section 3-2.5.4.3 for more information.)

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 3-11, in order of occurrence using the <SCROLL> Key. A summary of the number of active alarm events will be displayed as shown in Figure 3-12 at the conclusion of each manual scroll cycle.
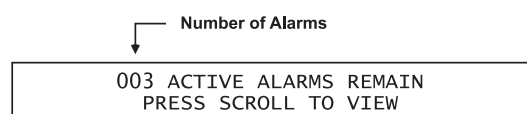
Figure 3-12. Typical Message After Manual Alarm Scroll Cycle

3-2.5.4.2   Alarm Resound

The internal buzzer will resound within 24 hours if one or more of the acknowledged alarms are still active or not reset, if the alarm is no longer active. Press the <ACKNOWLEDGE> key to silence the buzzer.

3-2.5.4.3   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 ACT-SLX configuration tool. The control unit will display the following message for 5 to 10 seconds.

```
┌──────────────────────────────────┐
│         OUTPUTS  SILENCED        │
└──────────────────────────────────┘
```

Figure 3-13. 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 3-13 is displayed. A summary of the number of active alarm events will be displayed as shown in Figure 3-12 at the conclusion of each manual scroll cycle.
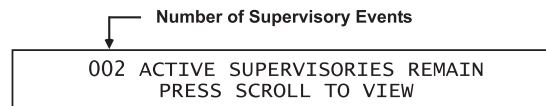
The Silence LED will illuminate when the <Silence> Key is pressed after all alarms have been acknowledged. A subsequent press of the <SILENCE> Key will re-activate any outputs that were silenced if no new alarm events have been reported since the outputs were silenced. The Silence LED will also go out. 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: Previously silenced outputs initiated by an alarm or other event will not automatically resound on a new alarm or other event. Only silenced outputs associated with the new alarm or other new event in the EOC program will reactivate. If the application requires that silenced outputs resound on a subsequent event, the EOC will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

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.

3-2.5.4.4   Non-Latching Operation

Some SmartOne (including DS Series) 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 ARIES-SLX Control Unit.

Each SmartOne (including DS Series) 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 (including DS Series) 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 ARIES-SLX 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.

3-2.5.4.5   ARIES-SLX Alarm-Off Messages

The ARIES-SLX 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 ACT-SLX configuration tool.
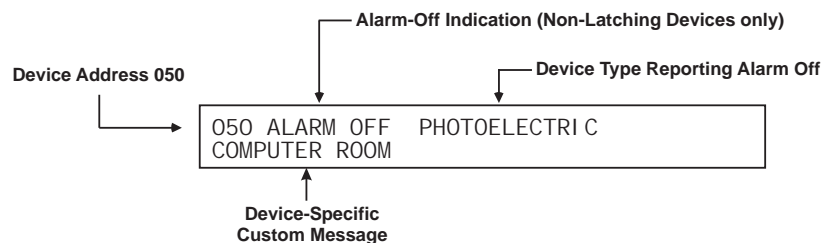

Figure 3-14. Typical Alarm Off Message

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

3-2.5.4.6   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 3-15. 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 3-11. A summary of the number of active latching alarm events will be displayed as shown in Figure 3-12 at the conclusion of each manual scroll cycle.

3-2.5.4.7   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.

3-2.5.4.8   Alarm Display Limitation

The ARIES-SLX 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 3-16. 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 associated with the alarm. (See Note in Section 3-2.5.4.3 for more information.)

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 3-17. Alarm Events Buffer Full Message After Manual Scroll Cycle

3-2.5.4.9   How To Reset the Control Unit After an Alarm Condition

The ARIES-SLX 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.

⚠️ **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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to configure a smoke detector for PAS operation.

The PAS State occurs when the ARIES-SLX 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 ACT-SLX configuration tool.

PAS Indication On (Smoke Detectors only)

Device Type Reporting PAS On

Device Address 200

```
200    PAS ON     PHOTOELECTRIC
FIRST FLOOR LIBRARY
```

**Device-Specific
Custom Message**
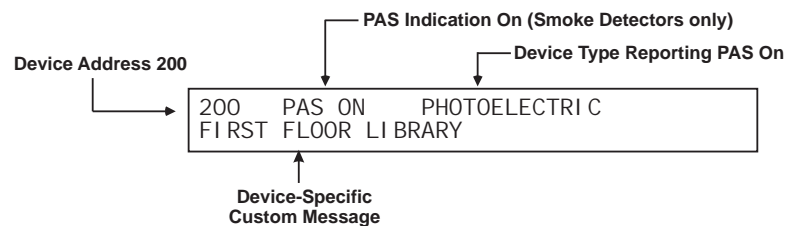
Figure 3-18. Typical PAS Message Display

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 3-19 if the <ACKNOWLEDGE> Key is pressed within 15 seconds of receipt of the PAS report. PAS acknowledgments are logged.

PAS Indication On
(Smoke Detectors only)

Device Type
Reporting PAS On

Time Remaining to
PAS Expiration

Device Address 200

```
200 PAS ON    PHOTOELECTRIC    60 SEC
FIRST FLOOR LIBRARY
```

Device-Specific
Custom Message
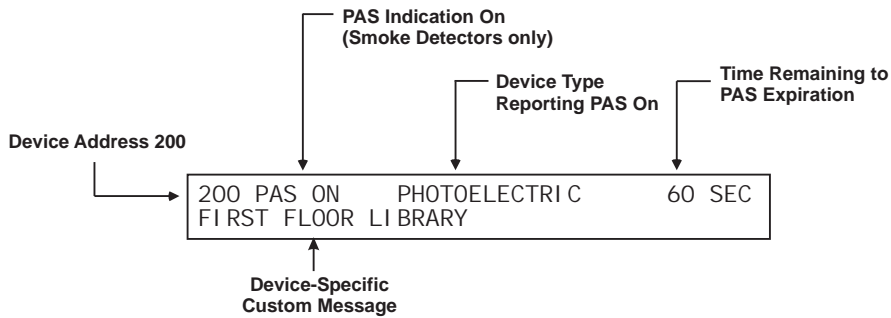
Figure 3-19. PAS Acknowledgment Message

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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to configure a smoke detector for alarm verification.

How It Works:

The Alarm Verification Sequence occurs when the ARIES-SLX Control Unit receives an emergency signal from a smoke detector configured for alarm verification. Immediately following the receipt of the emergency signal, the control unit will initiate a wait state of up to 60 seconds. No change of status occurs on the control unit display or buzzer during this wait state. During the wait state, the device that sent the original emergency signal may remain in alarm or go out of alarm. If, during this wait state period, a second detector activates, the control unit terminates the wait state and initiates an alarm condition. Following the wait state, the control unit will start the Alarm Verification Period. The display will appear as shown in Figure 3-21 and the buzzer will activate. During the Alarm Verification Period, if the originating detector is still in alarm or re-alarms, or another detector reports an alarm, the control unit terminates the Alarm Verification Period and goes into alarm. If the originating detector is not in alarm, does not re-alarm, and no other detector alarms during the Alarm Verification Period, the control unit reverts back to Normal Mode when the Alarm Verification Period expires.

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 ACT-SLX configuration tool.
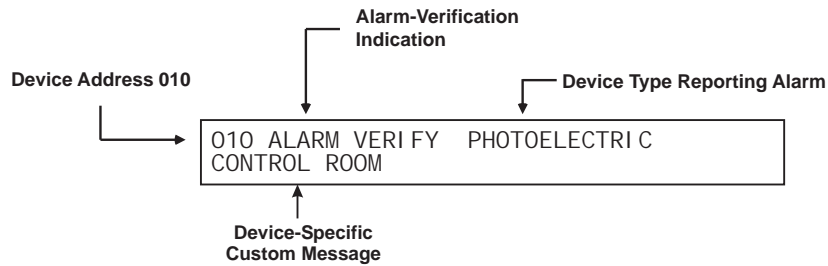
Figure 3-20. Typical Alarm Verification Message Display

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 briefly change to the appearance in Figure 3-20 and then will revert back to the appearance in Figure 3-21. Acknowledgments of alarm verifications are logged.
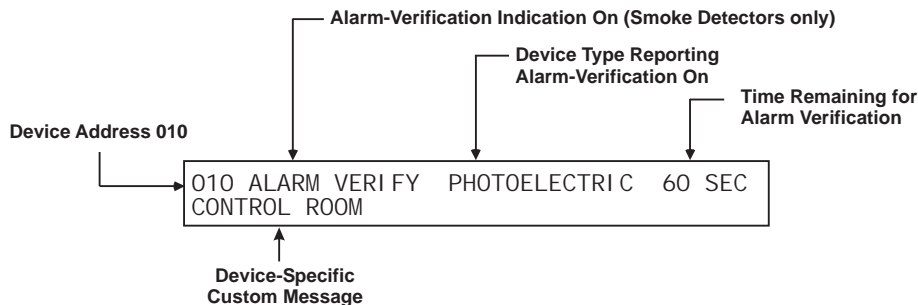
Figure 3-21. Alarm Verification Acknowledgment Message

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 ARIES-SLX 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 ACT-SLX configuration tool.
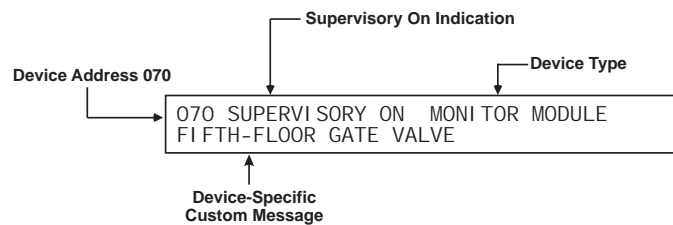
Figure 3-22. Typical Supervisory Message Display

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 associated with the supervisory event.

Note: Previously silenced outputs initiated by a supervisory or other event will not automatically resound on a new supervisory or other event. Only silenced outputs associated with the new supervisory or other event in the EOC program will reactivate. If the application requires that silenced outputs resound on a subsequent event, the EOC will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

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 3-23 at the conclusion of each manual scroll cycle.

```
            ┌── Number of Supervisory Events
            ↓
  ┌─────────────────────────────────────┐
  │  002 ACTIVE SUPERVISORIES REMAIN     │
  │        PRESS SCROLL TO VIEW          │
  └─────────────────────────────────────┘
```

Figure 3-23. Message After Supervisory Manual 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   Supervisory Resound

The internal buzzer will resound within 24 hours if one or more of the acknowledged supervisory conditions are still active or not reset (if the supervisory is set to latching). Press the <ACKNOWLEDGE> key to silence the buzzer.

3-2.5.6.3   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 3-22 has disappeared from the set of manually scrolled events and that the total number of supervisory events displayed in Figure 3-23 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 (including DS Series) 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 ARIES-SLX 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 ACT-SLX configuration tool.
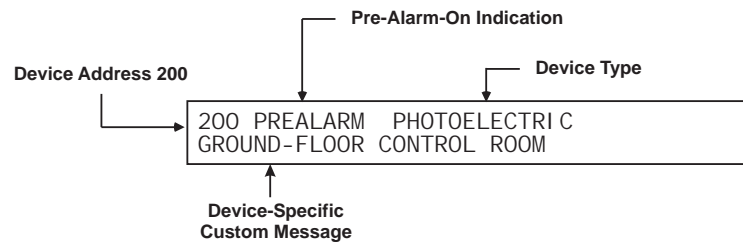
Figure 3-24. Typical Pre-Alarm-Message Display

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 associated with the pre-alarm. (See Note in Section 3-2.5.7.3 for more information.)

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 3-24.

3-2.5.7.2   Pre-Alarm Resound

The internal buzzer will resound if one or more acknowledged Pre-Alarms is still active within 24 hours after being acknowledged. Press the <ACKNOWLEDGE> Key to silence the buzzer. A Pre-Alarm is not a latching state.

3-2.5.7.3   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 ACT-SLX configuration tool. The control unit will display the following message for 5 to 10 seconds:

```
OUTPUTS SILENCED
```

Figure 3-25. 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 3-25 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.

Note: Previously silenced outputs initiated by a pre-alarm or any other event will not automatically resound on a new pre-alarm or other event. Only silenced outputs associated with the new pre-alarm in the EOC program will reactivate. If the application requires that silenced outputs resound on a subsequent event, the EOC will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

3-2.5.7.4   How to Reset the Control Unit After a Pre-Alarm Condition

The ARIES-SLX 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 ARIES-SLX 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 ARIES-SLX'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 ARIES-SLX System designed for property protection/mission continuity are summarized in Table 3-9.

Note: There must be at least two detectors in the protected area when either crossed-zoned or counting-zone automatic detection is used.

Table 3-9. Progressive Alarm States of a ARIES-SLX 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 ARIES-SLX 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 3-10. 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 ARIES-SLX 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 3-26 shows the appearance of the display when a suppression zone has begun to count down.

Time Remaining Until Release

```
RELEASE IN 30 SEC (PRESS SCROLL TO VIEW)
DIS 00  CNTDN 01  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 Discharges
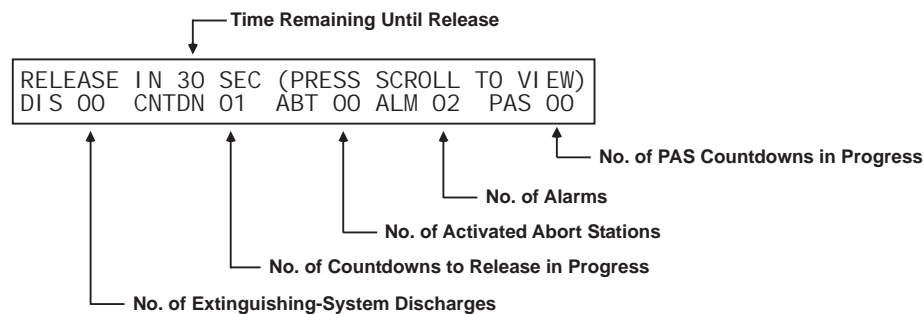
Figure 3-26. Typical Countdown-to-Release Display

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
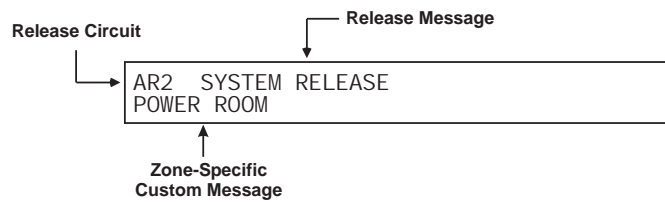
Figure 3-27. Typical Release Message

Press the <ACKNOWLEDGE> Key when the message in Figure 3-27 appears to silence the buzzer. The display will change as shown in Figure 3-28. 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 3-30.

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
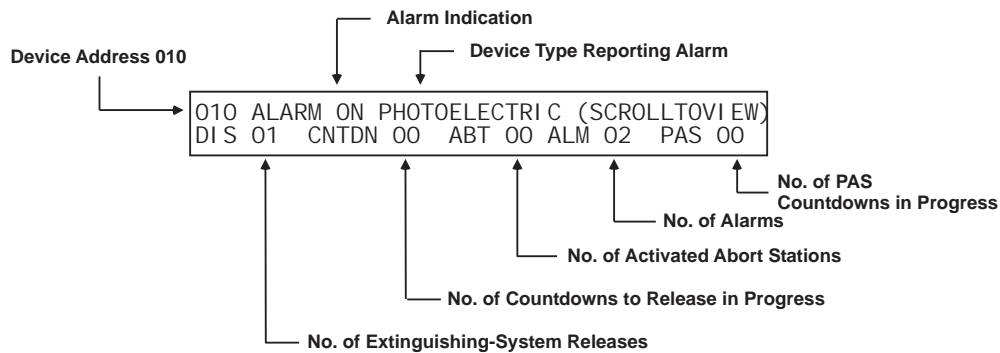
Figure 3-28. Typical Display after Acknowledgment of Release Message

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:
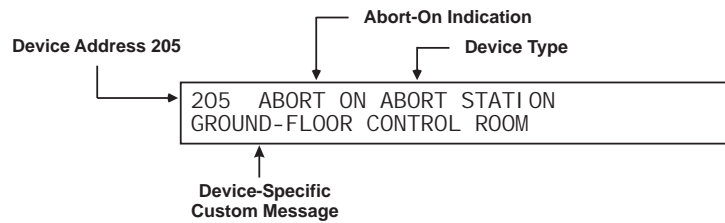
Figure 3-29. Typical Display After Abort-Switch Operation

Press the <ACKNOWLEDGE> key when the message in Figure 3-29 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 3-30.
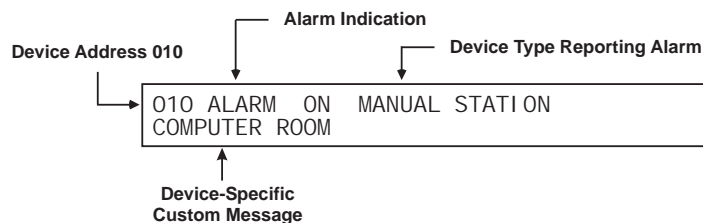
Figure 3-30. Typical Display When Manually Scrolling Through Level-1/-2 Events

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 3-31 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
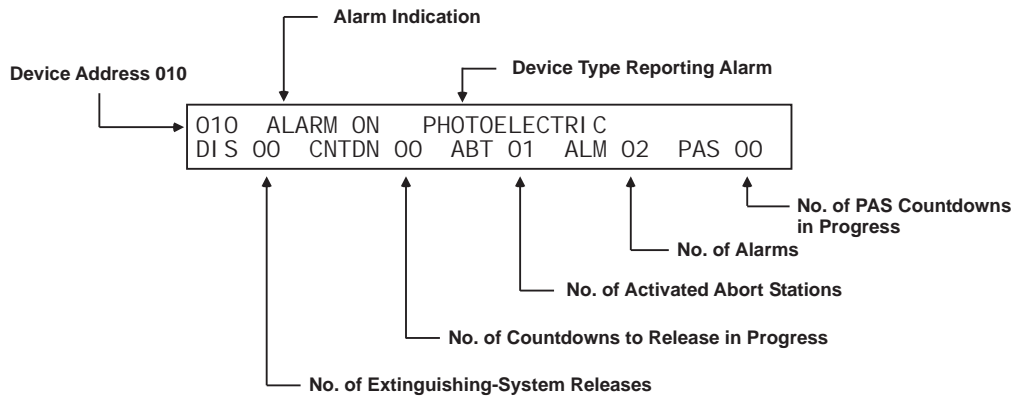
Figure 3-31. Typical Multiple Level-2 Event-Type Display

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 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 3-32.

Alarm Indication

Device Address 010

Device Type Reporting Alarm

```
010 ALARM  ON   MANUAL STATION
COMPUTER ROOM
```

Device-Specific
Custom Message
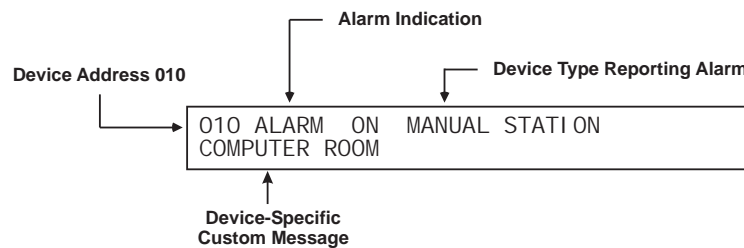
Figure 3-32. Typical Display When Manually Scrolling Through Level-2 Events

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 3-33 shows the appearance of the display when more than one type of Level-3 through Level-5 event is active.
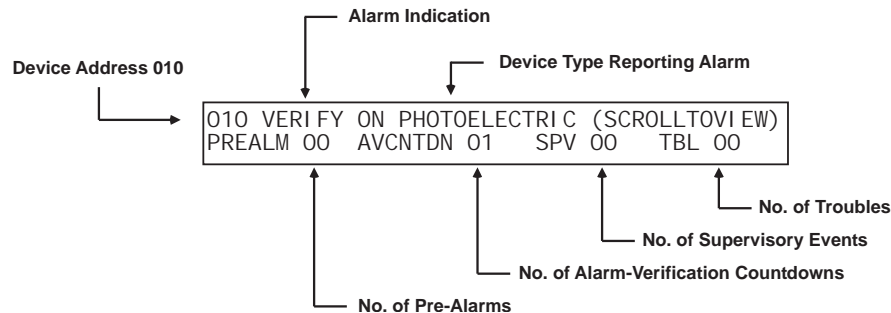
Figure 3-33. Typical Multiple Lower-Level Event Display

You may manually scroll the display among the active lower-level events, according to the priority of events as described in Paragraph 3-2.5.8.7 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 the 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 3-34.
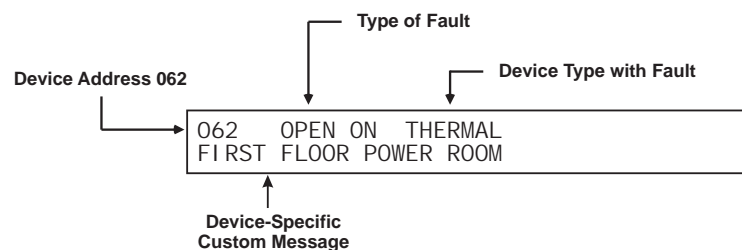
Figure 3-34. Typical Level-3 and Lower-Level Events Display

3-2.5.8.9   Level-3 Display Limitations

The ARIES-SLX 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 3-35. 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 associated with the event.

Note: Previously silenced outputs will not automatically resound on a new event. Only silenced outputs associated with the new event in the EOC program will reactivate. If the application requires that silenced outputs resound on a new event, the EOC will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

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 3-36. 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 ARIES-SLX 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 actuator or 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 ARIES-SLX 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 1.0.1
```

Figure 3-37. 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
KIDDE ARIES-SLX VER 2.0.0/1.1.6
```

Figure 3-38. 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 3-39. 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 3-40. 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 3-41. 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 3-42. Set Menu

   d. Press the 1 Key to select "TIME/DATE"

```
1: SET TIME     2: SET DATE
3: BATTERY
```

Figure 3-43. Time/Date Sub-Menu

   e. Press the 1 Key again to select "SET TIME"

```
1: AM/PM                2: MILITARY
```

Figure 3-44. 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 3-45. 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 3-46. 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 3-47. Time/Date Sub-Menu

i.   Press the 2 Key to select "SET DATE"

```
SET DATE
ENTER THE DATE  *_-_ _-_ _  (MM-DD-YY)
```

Figure 3-48. 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 ARIES-SLX Control Unit is completely powered down.

3-2.6.3   INITIAL SIGNALING-LINE-CIRCUIT CONFIGURATION

Note: The following procedure assumes that all SmartOne (including DS Series) devices have been addressed with the Hand-held Programmer or via the ARIES-SLX keypad. Refer to Appendix D to address SmartOne (including DS Series) devices through the Hand-held Programmer or to Paragraph 3-2.5.2.4.6 to address SmartOne (including DS Series) devices via the ARIES-SLX control unit's keypad.

Use this procedure to initially configure and check the number of SmartOne/DS Series devices connected to the SLC.

1. Connect the wiring for the SLC to Terminal Block TB1. Refer to Figure 1-3. See also Figures 2-11, 2-13, and 2-14 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/DS Series devices connected to the SLC will report a not-registered trouble message similar to the message shown in Figure 3-49:


```
205 NOT REGISTERED ON UNKNOWN TYPE
UNUSED SLC DEVICE
```
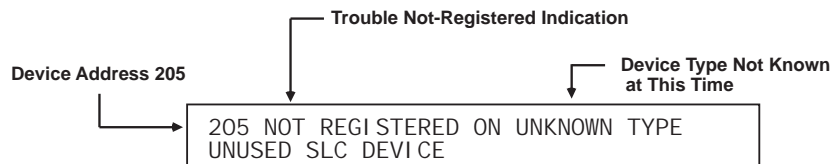
Figure 3-49. Typical Device Not Registered Message

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/DS Series 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 3-50. 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 3-51. 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 3-52. Set Menu

d. Press the <SCROLL> Key and then the 4 Key to select "PROGRAMMING"

```
4: PROGRAMMING      5: GLOBALS
6: NETWORK             SCROLL FOR MORE
```

Figure 3-53. Additional Set-Menu Selections

e. Press 3 to select "AUTOLEARN"

```
1: DAY/NIGHT        2: PASSWORDS
3: AUTOLEARN          SCROLL FOR MORE
```

Figure 3-54. Programming Sub-Menu

Figure 3-55 shows a typical message that displays when the AutoLearn routine is running.

```
AUTO-LEARNING DEVICE ON SLC
AUTO-LEARNING DEVICE O31
```

Figure 3-55. 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 3-2.5.2.4.27 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 3-56. 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 ARIES-SLX Control Unit is now ready for site-specific programming.

3-2.6.4   SITE-SPECIFIC PROGRAMMING

Each ARIES-SLX System must be uniquely configured for the specific end-user application. System configuration involves assigning an address and operating characteristics to each SmartOne (including DS Series) 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 ACT Configuration Program

You can also configure the ARIES-SLX System via the ACT-SLX configuration tool for individual site-specific applications. The ACT-SLX configuration tool allows you to set the operating parameters for the SmartOne (including DS Series) 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for an explanation of how to configure your system.

3-3   NETWORK SYSTEM OPERATION

Multiple control units 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) Kidde® ARIES®-SLX, Kidde® ARIES®, Fenwal® FENWALNET™ 6000, and Chemetron® MICRO SLX 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.

Note: The ARIES-SLX can be networked with the following addressable control units:

CONTROL UNIT	MCB FIRMWARE VERSION
Kidde ARIES-SLX	2.1.0 or later
Kidde ARIES	1.2.12 or later
Fenwal FENWALNET 6000	1.2.12 or later
Chemetron MICRO SLX	1.2.12 or later

A typical networked ARIES-SLX system is shown in Figure 3-57.
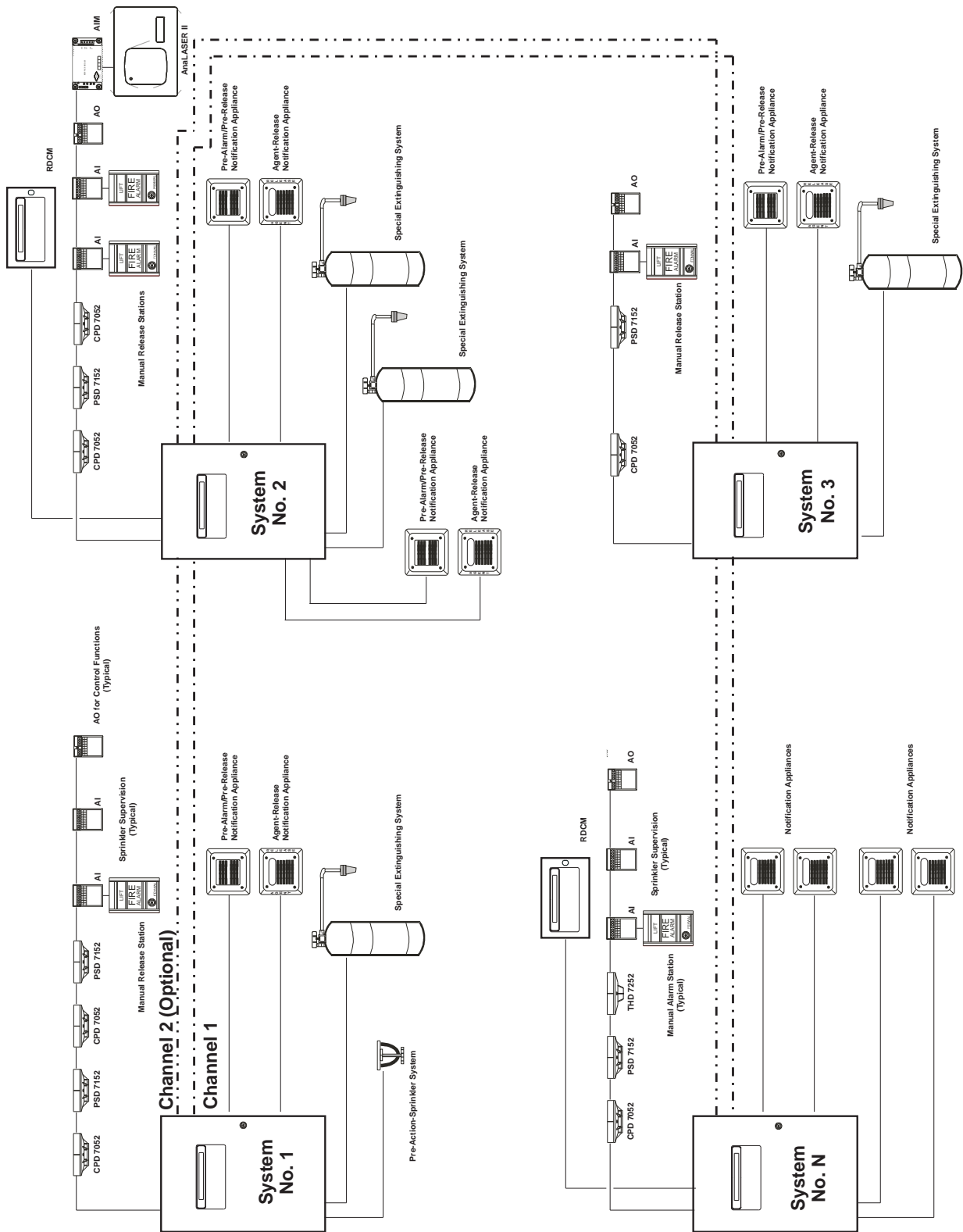
Figure 3-57. Typical Networked ARIES-SLX System

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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for information on configuring the EOC for network events.

3-3.6   Configuration Uploads/Downloads

The ACT-SLX configuration tool 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for information on configuring the different network settings.

⚡
WARNING

On a networked system, when isolating a node that has inputs which can activate release circuits on other nodes, all affected release circuits must be disabled using the Key Maintenance Bypass Switch (part number 76-600000-200). This includes disabling outputs on the node being isolated as well as disabling release circuits on other nodes which the isolated node could affect.

Refer to Section 4-1 in Chapter 4 of this manual, *Inspection*, *Testing and Maintenance*, for the full procedure on how to disable outputs.

Refer also to the Isolation Caution note on Page 3 -17.

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 3-58 is displayed.

```
PRESS ENTER TO SELECT THE LOCAL NODE
OR ENTER NETWORK NODE NO. (1 - 32)
```

Figure 3-58. Network Node Prompt

Local Node Access - Press the <Enter> key to select the local node; the response shown in Figure 3-59 is displayed.

```
1: ISOLATE          2: LIST
3: SET              4: TEST
```

Figure 3-59. 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 ARIES-SLX 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 3-60 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.
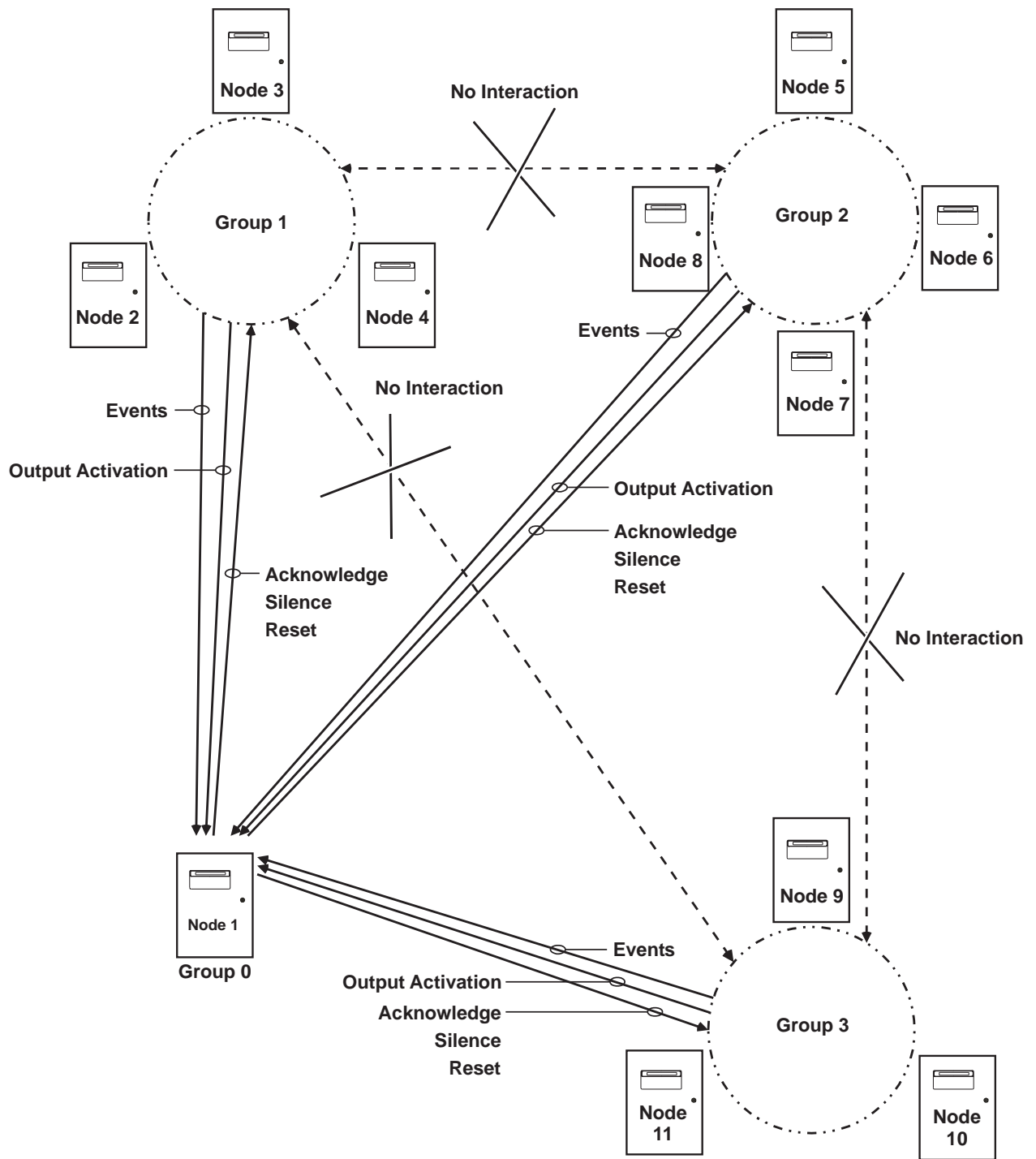
Figure 3-60. Networked Control-Unit Interactions

Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, to create network groups.

3-3.9 Operating States

A network of control units 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:
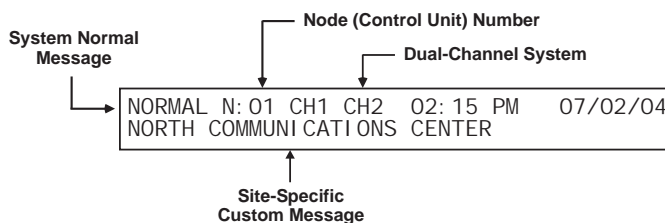
Figure 3-61. Network Normal Message Display

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.

⚡ **WARNING**

On a networked system, outputs that are configured to activate via the "General Alarm Output List" will only activate from alarm inputs configured to "Activate General Alarm Output List" attached to the originating node. The General Alarm input and output functions do not work across the network. Refer to the *ACT-SLX Configuration Tool User's Guide* for more information.

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 ACT-SLX configuration tool.

```
                              Device Address 062

                                     Type of Fault

                                              Device Type with Fault
         Node Number

                      N:02  062   OPEN ON   THERMAL
                      FIRST FLOOR POWER ROOM


                   Device-Specific
                   Custom Message
```
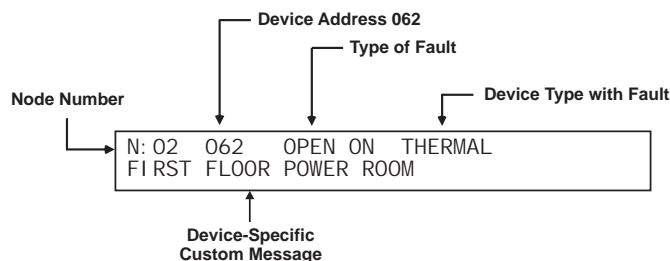
Figure 3-62. Typical Remote-Trouble-Message Display

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 associated with the trouble.

Note: Previously silenced outputs initiated by a trouble or other event will not automatically resound on a new trouble or other event. Only silenced outputs associated with the new trouble or other event in the EOC will resound. If the application requires that silenced outputs resound on a subsequent event, the EOC of all affected nodes will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide*, P/N 06-237492-001, for more information on EOC programming.)

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 ACT-SLX configuration tool.
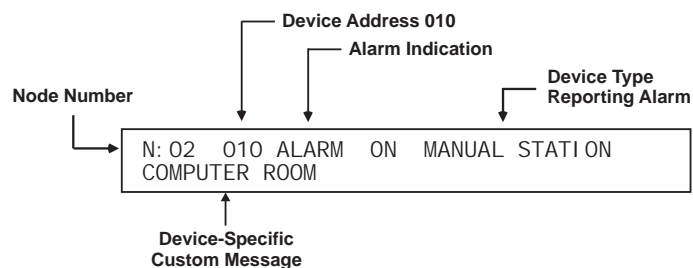
Figure 3-63. Typical Remote Alarm Message Display

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 associated with the alarm.

Note: Previously silenced outputs initiated by an alarm or other event will not automatically resound on a new alarm or other event. Only silenced outputs associated with the new alarm or other event in the EOC will resound. If the application requires that silenced outputs resound on a subsequent alarm or other event, the EOC of all affected nodes will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide*, P/N 06-237492-001, for more information on EOC programming.)

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 ACT-SLX configuration tool.
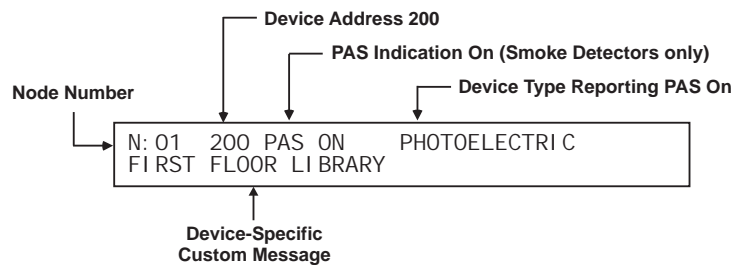
Figure 3-64. Typical Remote PAS Message Display

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 ACT-SLX configuration tool.
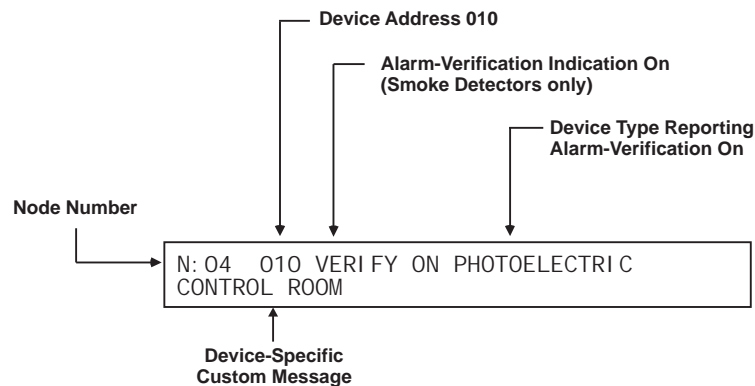
Figure 3-65. Typical Remote Alarm-Verification Message Display

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 ACT-SLX configuration tool.
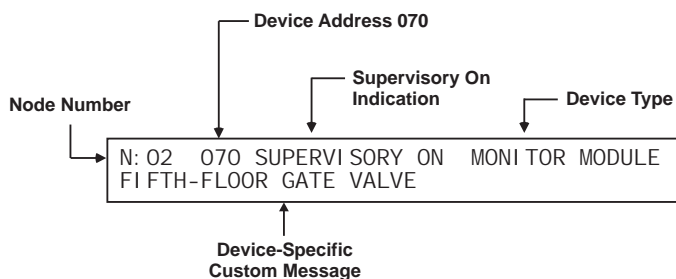
Figure 3-66. Typical Remote Supervisory Message Display

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 associated with the supervisory.

Note: Previously silenced outputs initiated by a supervisory or other event will not automatically resound on a new supervisory or other event. Only silenced outputs associated with the supervisory or other event in the EOC will resound. If the application requires that silenced outputs resound on a subsequent supervisory or other event, the EOC of all affected nodes will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide*, P/N 06-237492-001, for more information on EOC programming.)

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 ACT-SLX configuration tool.
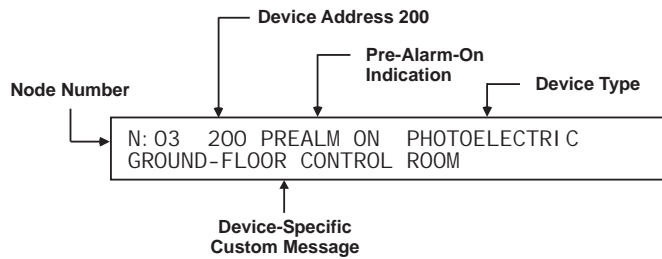
Figure 3-67. Typical Remote Pre-Alarm Message Display

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 associated with the pre-alarm.

Note: Previously silenced outputs initiated by a pre-alarm or other event will not automatically resound on a new pre-alarm or other event. Only silenced outputs associated with the new pre-alarm or other event in the EOC will resound. If the application requires that silenced outputs resound on a subsequent pre-alarm or other event, the EOC of all affected nodes will need to be configured to accomplish this requirement. (Refer to the *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, for more information on EOC programming.)

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 ARIES-SLX 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 3-68 shows a typical display when a suppression zone has begun to count down.
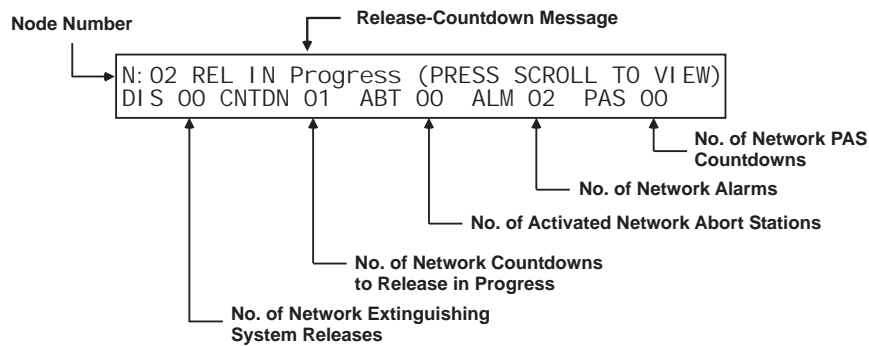
Figure 3-68. Typical Network Countdown to Release Display

Press the <SCROLL> Key to view the 40-character description associated with the suppression zone that is currently in countdown-to-release mode.

Figure 3-69 shows a typical display when an extinguishing system has been released:
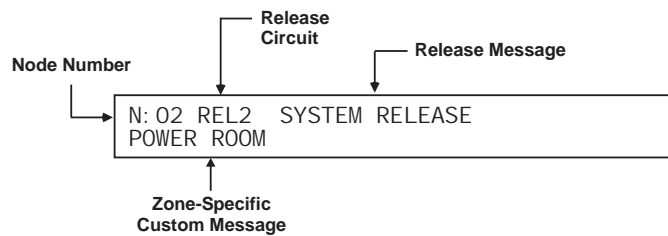
Figure 3-69. Typical Network Release Message

Press the <Acknowledge> key when the message in Figure 3-66 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 3-70.
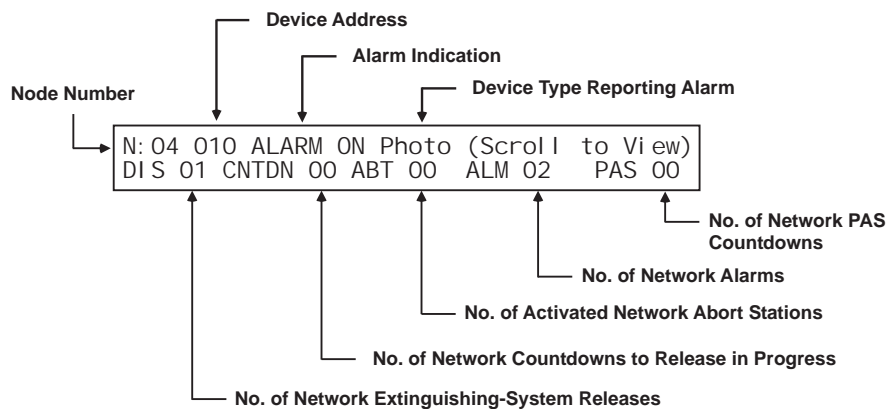
Figure 3-70. Typical Display After Acknowledgment of Remote-Release Message

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 3-71 shows the display when more than one type of Level-2 event is active.
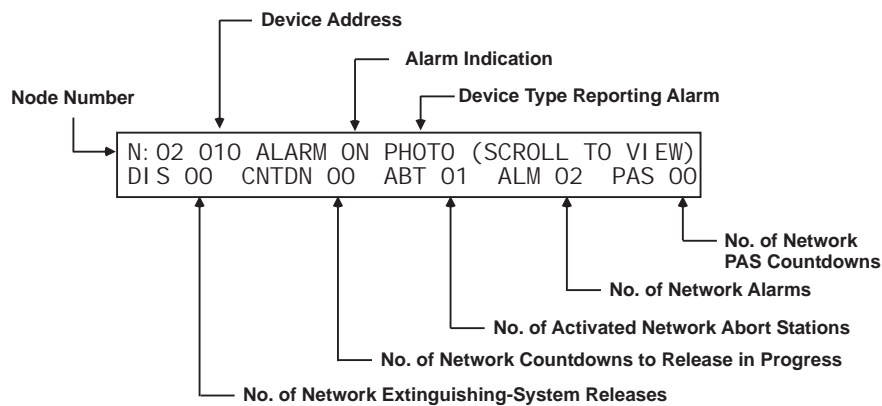
Figure 3-71. Typical Multiple Level-2 Event-Type Display

The upper line of the display will be scrolling among 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 3-72 shows the appearance of the display when more than one type of Level-3 through Level-5 event is active.
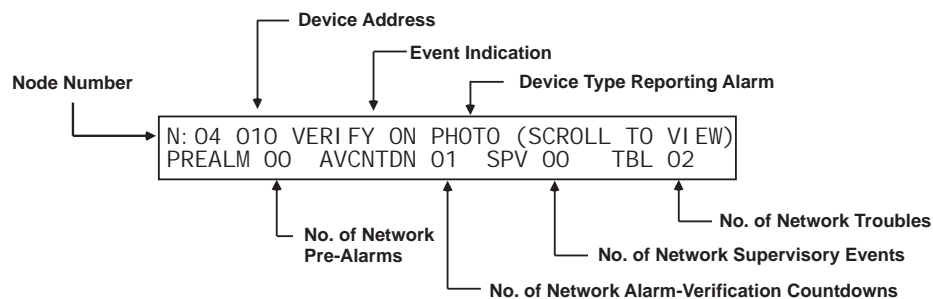
Figure 3-72. Typical Multiple Lower-Level Event Display

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 3-72.

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 system.

It is important to proceed in a step-by-step manner when you start up, test, and commission a networked 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 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 2-16.1 to install each NIC. Make the wiring interconnections among all the networked control units as shown in Figure 2-35 for shielded, twisted-wire pair or as shown in Figure 2-38 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 *ACT-SLX Configuration Tool User's Guide,* P/N 06-237492-001, and upload this node's configuration using your laptop computer and the ACT-SLX configuration tool. 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 *ACT-SLX Configuration Tool 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 (Class B or Class X).

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 3-73. 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 3-74. 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 3-75. 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 3-76. 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 3-77. 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 3-78. Add/Remove Nodes

7. The display will indicate the following; press backspace to exit from the menus.

```
NETWORK EVENT RESYNCHRONIZATION
IN PROGRESS...
```

Figure 3-79. 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.

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.

⚠ **WARNING**

On a networked system, when isolating a node that has inputs which can activate release circuits on other nodes, all affected release circuits must be disabled using the Key Maintenance Bypass Switch (part number 76-600000-200). This includes disabling outputs on the node being isolated as well as disabling release circuits on other nodes which the isolated node could affect.

Refer to Section 4-1 in Chapter 4 of this manual, *Inspection, Testing and Maintenance*, for the full procedure on how to disable outputs.

Refer also to the Isolation Caution note on Page 3 -17.

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 3-80. 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 3-81. 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 3-82. 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 3-83. Set Sub-Menu

```
4: PROGRAMMING      5: GLOBALS
6: NETWORK          SCROLL FOR MORE
```

Figure 3-84. 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 3-85. 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 3-86. 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 3-87. 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 online. 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 3-88. 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 3-89. 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 3-90. 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 3-91. 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 3-92. 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 3-93. 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 3-94. Resynch Network Display

8. Enter the network group number as indicated below when groups are being used:

```
ENTER GROUP NUMBER                  *_
```

Figure 3-95. 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 ARIES®-SLX Fire Alarm/Suppression Control Unit must be inspected, tested and maintained in accordance with the requirements of NFPA 72 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 to cycle AC power to the control unit or perform any testing or maintenance of the control unit until you have:

- **Isolated all onboard releasing outputs and RRMs via the Isolate function.**
- **Placed the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits.**
- **Physically removed 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 and watermist systems**
- **Physically disconnected the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, shorted the leads together, and wrapped the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit).**
- **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.**
- **Reviewed Section 2-15 on recommended use of USB Isolator (if sending or receiving information between the control unit and a PC running the configuration software).**

4-2   OFF-NORMAL TROUBLE MAINTENANCE

4-2.1   Panel Trouble Conditions

A System Trouble LED indicator on the front display and the panel trouble relay will activate whenever a system trouble is present indicating that there are one or more trouble conditions on the system.

⚡ WARNING   **A system trouble is an indication that some or all of the fire panel functions may be in an inoperable state and must be addressed with urgency.**

4-2.2   Ground Fault Trouble Conditions

A Ground Fault message will appear on the display, the System Trouble LED indicator will light and the panel trouble relay will activate indicating that there are one or more ground faults present in the system.

⚡ WARNING   **A system ground fault message is an indication that action is required to ensure that the panel is not currently in an inoperable state or does not enter an inoperable state. Ground fault troubles must be resolved with the same urgency as a general panel trouble.**

⚡ WARNING   **Critical fire safety functions including fire detection, fire notification and fire suppression functions may be inoperable during a panel trouble condition resulting in equipment loss, injury and possible loss of life in the event of a fire.**

4-3   SEMI-ANNUAL AND ANNUAL TESTING

Perform the following tests as part of each semi-annual or annual system inspection:

4-3.1   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.

4-3.2   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. Kidde provides the following batteries:

Part Number	Capacity (AH)
06-115915-047	12
06-115915-046	17
89-100052-001	35

4-3.3   Initiating-Devices Test

Test the initiating devices by using the SLC Loop Device Test procedure from the Test Menu. Refer to Paragraph 3-2.5.2.5.1 in Chapter 3, *Configuration*. Investigate any "Device-Failed" messages and replace any defective initiating devices as appropriate.

4-3.4   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.

4-4   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

	Head-End Room (Zone 1)	Photoelectric Detectors	Ionization Detectors	Manual Release Stations	Abort Switches	Audible NAC	Visible NAC	Waterless Extinguishing System Release Circuit	Pre-Action-Sprinkler Release Circuit	Power Room (Zone 2)	Photoelectric Detectors	Ionization Detectors	Manual Release Stations	Abort Switches	Audible NAC	Visible NAC	Waterless Extinguishing System Release Circuit	Pre-Action-Sprinkler Release Circuit	Facility Equipment Interlocks	HVAC Shutdown	Power Shutoff	Off-Premises Reports	Major Alarm to Central Station	Critical Alarm to Central Station	Waterflow Alarm to Central Station	Pre-Action-Valve to Central Station	Supervisory to Central Station	Trouble to Central Station
SLC Device Addresses																												
Photoelectric Detectors		1-5									15-18																	
Ionization Detectors			6-10									19-21																
Monitor Modules				11-12	13-14								22	23														
Control Modules																				24	25					26	27	
Control-Unit Outputs																												
NAC 1						X																						
NAC 2							X																					
Combo 1															X													
Combo 2																X												
Release 1								X	X																			
Release 2																	X	X										
Relay 1																							X					
Relay 2																								X				
Relay 3																											X	
Trouble Relay																												X

Figure 4-1. Device/Circuit Assignments

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	Facility Equipment Interlocks	HVAC Shutdown	Power Shutoff	Off-Premises Reports	Major Alarm to Central Station	Critical Alarm to Central Station	Waterflow Alarm to Central Station	Pre-Action-Valve to Central Station	Supervisory to Central Station	Trouble to Central Station
Waterflow Switch				A	A										A			
Sprinkle Tamper Switch																	A	
One Area Smoke Detector																		
Head-End Room (Zone 1)		A											A					
Power Room (Zone 2)		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			A			A		A		
Power Room (Zone 2)			D	A	A	A		A			A			A		A		
Manual Station (Immediate Response)																		
Head-End Room (Zone 1)		D	D	A	A	A		A		A	A			A		A		
Power Room (Zone 2)		D	D	A	A	A		A		A	A			A		A		
Abort Station							A											
Head-End Room (Zone 1)							A											
Power Room (Zone 2)																		
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

A = Activate Output
D = De-Activate Output

Figure 4-2. Sequence of Operation

CHAPTER 5
TROUBLESHOOTING

5-1   **INTRODUCTION**

This chapter lists all the error messages, their probable causes, and suggested procedures to return the ARIES®-SLX Fire Alarm/Suppression Control Unit to proper operating condition.

WARNING

Do not attempt to cycle AC power to the control unit or perform any of the corrective actions listed in this chapter until you have:

- **Placed the Key Maintenance Bypass Switch into the "System Inactive" position for all non-water based Agent Release Circuits.**
- **Physically removed 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 and watermist systems**
- **Physically disconnected the wiring to actuator or initiator assemblies (if used) from the release-circuit terminals, shorted the leads together, and wrapped the leads in insulating tape (only necessary if a Key Maintenance Bypass Switch is not installed on circuit).**
- **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.**
- **Reviewed Section 2-15 on recommended use of USB Isolator (if sending or receiving information between the control unit and a PC running the configuration software).**

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 2-5 • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to actuators (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
`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

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**

`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.

`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 2-5. • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to actuators or initiators (if applicable) • Remove main printed-circuit board by reversing the steps in Paragraph 2-5. 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.

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`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 Kidde 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 Kidde 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
`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.

Table 5-1. General System Events (Continued)

General System Events		
Error Message	**Probable Cause**	**Corrective Action**
`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 2-5. • Remove secondary and primary power. Label and disconnect all field wiring. **Caution:** Disconnect all electrical control heads and short together and tape wiring to actuators or initiators (if applicable) • Remove main printed-circuit board by reversing the steps in Paragraph 2-5. 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
`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 Kidde 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
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 Kidde 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 time and date as instructed in Paragraph 3-2.5.2.4.1 and Paragraph 3-2.5.2.4.2

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 2-10.
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 2-10.
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 2-9.2.
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 2-9.2.
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.

Table 5-2. Control-Unit-Based-Output Events (Continued)

Control-Unit-Based-Output Events		
Error Message	**Probable Cause**	**Corrective Action**
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.
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 06-235717-003. • 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

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	Probable Cause	Corrective Action
Addr 9V DC Fault On *Device Type*	A failure of the internally generated 9-Volt power supply for the SmartOne or DS Series smoke or heat detector at address *Addr*.	• Check SLC wiring. Refer to Paragraph 2-7. 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 3-2.5.2.5.1 • 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
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 3-2.5.2.5.1. Check wiring if test results are inconsistent. Refer to Paragraph 2-7. 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 3-2.5.2.2.10.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Communication Fault On	A loss of communications between the SLC's driver circuit and the device at address *Addr*.	• Check device connections to 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 2-7.2. Rewire using recommended wire in Appendix B. • Replace the device if above procedures are unsuccessful.
Addr Detector Tbl On ORION-XT or AnaLASER Interface Module	A problem in a high-sensitivity smoke detector (HSSD) being monitored by a PALM or AIM	• Check the PALM-to-HSSD connections or AIM-to-HSSD connections • Use OCS to troubleshoot the HSSD. • Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200.
Addr Drift Fault On Device Type	The inability of a SmartOne or DS Series 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 3-2.5.2.2.10.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
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 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
Addr High Airflow On ORION-XT or AnaLASER Interface Module	A problem in a high-sensitivity smoke detector (HSSD) being monitored by a PALM or AIM. Excessively high air flow through the piping system	• Look for leaks in the HSSD's piping system • Use OCS to troubleshoot the HSSD. The airflow may need to re-normalized. • Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
Addr Input Trouble On Monitor Module	An open circuit in a monitor module's initiating device circuit	• Refer to AI Installation Instructions, P/N 06-237580-001. • Look for discontinuity in initiating device circuit. • Check for missing 10k end-of-line resistor.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
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 2-7. 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 3-2.5.2.5.5. 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 ORION-XT or AnaLASER-II	A problem in a high-sensitivity smoke detector (HSSD) being monitored by a PALM or AIM Low air flow through the piping system	• Look for blockages in the HSSD's piping system • Use OCS to troubleshoot the HSSD. The airflow may need to re-normalized. • Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).

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 3-2.5.2.4.27. • Upload a new application program that includes the previously unregistered device.
Addr Offset Trouble On LaserNET Interface Module	The PALM or 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 PALM-to-HSSD connections • Use OCS to troubleshoot the HSSD • Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 2-7. 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 3-2.5.2.5.12. 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 2-7. 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 3-2.5.2.5.12. 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.	• Refer to ASM Installation Instructions, P/N 06-235717-003. • 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.	• Refer to ASM Installation Instructions, P/N 06-235717-003. • 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 PSU Short Circuit On Signal/Sounder	Appearance of 0 Vdc signal at power-input circuit of ASM at address "Addr".	• Refer to ASM Installation Instructions, P/N 06-235717-003. • 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 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 wiring for excessive capacitance and/or resistance if the device LED is blinking. Refer to Paragraph 2-7.2. Rewire 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.

Table 5-3. SLC Events (Continued)

SLC Events		
Error Message	**Probable Cause**	**Corrective Action**
Addr Illegal Type Stored 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. • Ensure that detector installed at the address has the correct configuration for the base type (relay base vs. non-relay base). If this is confirmed to be correct, remove the detector from the base and wait for the open trouble to report. After the open trouble reports, de-register the detector via the panel keypad menus. Ensure that the detector has been removed from its base for a minimum of 4 minutes, then re-install the detector and wait for the unregistered trouble to report. Run an Auto-Learn on the SLC loop. The device will now be registered and the Illegal Type Stored message will clear. Using the configuration software, download the panel configuration to your laptop and complete the configuration for the corrected detector. • 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 wiring problems. Check wiring if random errors are reported. Refer to Paragraph 2-7. 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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
HSD*Addr* Detector Trouble On	A fault in the HSSD with IIM address Addr	•Use LaserNET to troubleshoot the HSSD •Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
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 Paragraph 3-2.5.2.4.14 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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 Paragraph 3-2.5.2.4.14 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 the IIM-to-HSSD wiring connections •Check 24 Vdc power connections to HSSD •Refer to ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	Probable Cause	Corrective Action
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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 2-41. •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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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.

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
IIM Class A 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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).
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 the IIM-to-HSSD wiring connections •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 ORION-XT Installation, Operation, and Maintenance Manual, P/N 89.200. • Refer to the AnaLASER-II Installation, Operation and Maintenance Manual (Part Number 06-236005-001).

Table 5-4. IIM Events (Continued)

IIM Events		
Error Message	**Probable Cause**	**Corrective Action**
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 06-236179-002. • 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 2-28 and 2-29. • 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 06-236179-002
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 06-236179-002. • Look for discontinuity in wiring to drill switch • Check for missing 10k end-of-line resistor.

Table 5-5. Remote-Display/Annunciator Events (Continued)

Remote-Display/Annunciator Events		
Error Message	Probable Cause	Corrective Action
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 06-236179-002. • 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
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 3-2.5.2.4.57. 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 3-2.5.2.4.58. • 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 06-236179-002.
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 06-236179-002. • 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 ARIES-SLX 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 06-236179-002. • Look for discontinuity in wiring to reset switch • Check for missing 10k end-of-line resistor.

Table 5-5. Remote-Display/Annunciator Events (Continued)

Remote-Display/Annunciator Events		
Error Message	**Probable Cause**	**Corrective Action**
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 06-236179-002. • 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 06-236179-002. • Look for discontinuity in wiring to alarm-silence LED (if used) • Check for missing 20k supervising resistor if alarm-silence LED not used.
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 06-236179-002. • 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 2-28 and 2-29. • 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.

Table 5-5. Remote-Display/Annunciator Events (Continued)

Remote-Display/Annunciator Events		
Error Message	**Probable Cause**	**Corrective Action**
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 3-2.5.2.4.57. • De-register the RDCM if not part of system configuration. See Paragraph 3-2.5.2.4.58. • 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 ARIES-SLX 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 1-8 and Section 2-16.
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 2-16. 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 1-8 and Section 2-16. • 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

Table 5-6. Network Events (Continued)

Network Events		
Error Message	**Probable Cause**	**Corrective Action**
N*XX* Bad Class 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 2-16. 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 1-8 and Section 2-16. • 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.
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 3-2.5.2.4.46. 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 2-16. 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 1-8 and Section 2-16.

Do not leave a facility after performing any of the corrective actions listed in this chapter until you have:

WARNING

- Performed sufficient system testing to ensure that the problem(s) has (have) been corrected and that the system is in proper working condition
- Returned the Key Maintenance Bypass Switch to the "System Active" position for all non-water based Agent Release Circuits.
- Physically re-installed all control heads (if used) to the associated agent-storage-container discharge valves from which they were removed
- Physically re-connected initiator or actuator assembly wiring to the release circuits if they were removed.
- Physically re-connected the wiring to solenoid valves (if used) for pre-action/deluge sprinkler or watermist 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.
- Disconnected computer running ACT-SLX configuration tool and removed USB Isolator, if used.

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CHAPTER 6
PARTS LIST

6-1 INTRODUCTION

The complete assemblies, sub-assemblies, and compatible peripheral devices associated with the ARIES®-SLX Fire Alarm/Suppression Control Unit are listed in the following tables. Note that not all parts listed here may be available for the entire life of the control unit. Part numbers denoted with an asterisk (*) may not be available. Please check the latest Kidde Fire Systems price list for availability.

Table 6-1. ARIES-SLX Control Unit and Replacement Sub-Assemblies

Model No.	Part Number	Description
ARIES-SLX	76-600000-901	Control Unit (complete assembly)
N/A	76-600000-007	Trim Ring
N/A	76-600000-902	Replacement/Spare Enclosure w/Door
N/A	06-118394-002	Power Supply
N/A	76-600000-904	Printed-Circuit Board
N/A	76-600000-011	Keypad/Display Assembly
N/A	06-220023-001	In-Line Releasing Device

Table 6-2. External Modules

Model No.	Part Number	Description
RDCM	76-300000-502 *	Remote Display/Control Module
RDCM	76-600000-005	Remote Display/Control Module
ATM-L	76-200004-032	Annunciator Driver Module
ATM-R	76-200005-032	Relay Driver Module
N/A	76-600000-010	RDCM Trim Ring
IIM	77-297114-002 *	Intelligent Interface Module w/ Modem (IIM)
IIM	77-297114-001 *	Intelligent Interface Module w/o Modem (IIM)
NIC	76-600000-009	Network Interface Card
OCC	76-600000-006	Fiber-Optic Converter Card

Table 6-3. Batteries

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	76-100010-001	ARIES-SLX Battery Enclosure

Table 6-4. Miscellaneous

Model No.	Part Number	Description
N/A	70-411001-005	EOL Resistor Kit
N/A	70-600000-100	Hand-Held Device Programmer (includes DS Series Adapter)
N/A	70-600000-110	Hand-Held Programmer Adapter for DS Series
N/A	06-129025-003	EOL Resistor–10K, 0.5W
N/A	10000071	USB Isolator (For use with USB Cable, used to connect PC to panel USB port)
N/A	84-802398-000	Main-to-Reserve Switch
N/A	SIGA-DMP	Duct Mounting Plate for DS-PS Photoelectric Smoke Detector
N/A	2-SPRC1	Replacement Smoke Chamber for DS-PS Photoelectric Smoke Detector
N/A	85-100000-100	Control Head Monitor for monitoring of control head placement (requires AI Module)
N/A	76-600000-200	Key Maintenance Bypass Switch

Table 6-5. SLC Devices

Model No.	Part Number	Description
DS-PS	DS-PS	Intelligent SmartOne Protocol Photoelectric Smoke Detector, head only
DS-HFS	DS-HFS	Intelligent SmartOne Protocol 135°F (57°C) Fixed- Temperature Heat Detector, head only
DS-SB	DS-SB	Standard Base for DS Series Detectors
DS-RB	DS-RB	Relay Base for DS Series Detectors
CPD-7052	70-402001-100 *	SmartOne Ionization Smoke Detector
PSD-7152	71-402001-100 *	SmartOne Photoelectric Smoke Detector
THD-7252	70-404001-100	SmartOne Thermal Detector
6SB	70-400001-100 *	SmartOne Flanged Universal Detector Base (for CPD-7052, PSD-7152 and THD-7252)
4SB	70-400001-101	SmartOne Flangeless Universal Detector Base (for CPD-7052, PSD-7152 and THD-7252)
MA-002	70-400001-200 *	SmartOne Detector Base Adapter

Table 6-5. SLC Devices

Model No.	Part Number	Description
DS-SD	DS-SD	Intelligent SmartOne Protocol Photoelectric Duct Detector
DH-2000PSDI	70-403001-152 *	SmartOne Duct Housing w/Photoelectric Detector
DH-2000CPDI	70-403001-052 *	SmartOne Duct Housing w/Ionization Detector
DH-2000	70-403001-100	SmartOne Duct Housing Assembly, without Detector
ORION-XT	77-297101-000	ORION-XT High Sensitivity Smoke Detector
AnaLASER-II	89-300001-001	AnaLASER-II High Sensitivity Smoke Detector
AIR-Intelligence ASD-160H	33-30671A	Small-Area Air Sampling Detector w/Docking Station
AIR-Intelligence ASD-160H	33-30760A	Small-Area Air Sampling Detector w/Docking Station and Input Relay Card
AIR-Intelligence ASD-320	33-30672A	Medium-Area Air Sampling Detector w/Docking Station
AIR-Intelligence ASD-320	33-30764A	Medium Area Air Sampling Detector w/Docking Station and Input Relay Card
AIR-Intelligence ASD-640	33-30621A	Large-Area Air Sampling Detector in molded plastic case
AIR-Intelligence ASD-640	33-30620A	Large-Area Air Sampling Detector with Command Module in molded plastic case
AIR-Intelligence ASD-640	33-30706A	Large-Area Air Sampling Detector in steel case
AIR-Intelligence ASD-640	33-30707A	Large-Area Air Sampling Detector with Command Module in steel case
AIR-Intelligence ASD-640	33-30710A	Large-Area Air Sampling Detector with Minimum Display in steel case
AIR-Intelligence Command Module	33-30624A	Stand-Alone Command Module in molded plastic case
AIR-Intelligence Command Module	33-30709A	Stand-Alone Command Module in steel case

Table 6-5. SLC Devices

Model No.	Part Number	Description
AI	70-417008-001	SmartOne Addressable Input Monitor Module (for N/O initiating devices)
AI	70-417008-002	SmartOne Addressable Input Monitor Module (for N/C initiating devices)
AI	70-417018-001	SmartOne Addressable Input Monitor Module (for N/O initiating devices), non-silicone
AI	70-407008-001 *	SmartOne Addressable Input Monitor Module (for N/O initiating devices), older-style
AI	70-407008-002 *	SmartOne Addressable Input Monitor Module (for N/C initiating devices), older-style
AI	70-407018-001 *	SmartOne Addressable Input Monitor Module (for N/O initiating devices), non-silicone, older-style
AAM	73-100001-003	SmartOne AlarmLine Addressable Linear Heat Detector Module
AO	70-408004-001	SmartOne Addressable Output Relay/Control Module
AO	70-408014-001	SmartOne Addressable Output Relay/Control Module, non-silicone
ASM	70-200200-003	SmartOne Addressable Signal Module
RRM	70-600000-001	SmartOne Remote Releasing Module, w/standard mounting bracket
RRM	70-600000-002	SmartOne Remote Releasing Module, w/cabinet mounting bracket
3300	84-330002-001	Addressable Dual Action Pull Station with integral SmartOne AI Module
--	74-200012-002	Loop Isolator Module, standard
--	74-200012-004	Loop Isolator Module (on 6SB detector base)
PALM	77-297103-000	PEGAsys Addressable Loop Module (PALM) for ORION-XT detector
AIM	89-300010-001	AnaLASER-II Addressable Interface Module
APIC	76-333002-001	SmartOne AIR-Intelligence Addressable Protocol Interface Card (APIC)

Table 6-5. SLC Devices

Model No.	Part Number	Description
APIC	74-333002-001 *	Fenwal AIR-Intelligence Address-able Protocol Interface Card (APIC)
--	84-878752-010	Suppression Abort Station (requires a Model AI Addressable Monitor Module)
--	70-401001-000	Ionization Detector (no longer available)
--	70-401004-000	Ionization Detector with Relay (no longer available)
--	71-401001-000	Photoelectric Detector (no longer available)
--	71-401004-000	Photoelectric Detector with Relay (no longer available)
--	70-407002-00X	Addressable Input, AI (no longer available)
--	70-407003-001	Addressable Input, AI, with adapter plate (no longer available)
--	70-407004-001	Addressable Input, AI, with custom adapter plate (no longer available)
--	70-408002-000	Addressable Output, AO (no longer available)
--	70-408003-000	Alarm Indicator (AO with LED) (no longer available)

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APPENDIX A
BATTERY CALCULATIONS

A-1   AC BRANCH CIRCUIT

The ARIES®-SLX Fire Alarm/Suppression Control Unit 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 ARIES-SLX 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)	$^\$$Ext. Rel. Current (A)
1	ARIES-SLX	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	-	-	-
-	DS-PS	0.000150	-	-	-	-	0.000220			
-	DS-HFS	0.000150	-	-	-	-	0.000220			
-	DS-SD (includes LEDs)	0.000150	-	-	-	-	0.000220	-	-	-
-	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	0.000580	-	-	-	-	0.000580	-	-	-
-	N/C AI	0.000580	-	-	-	-	0.000580	-	-	-
-	PALM	0.000450	-	-	-	-	0.000450	-	-	-
-	AAM	0.000450	-	-	-	-	0.000450	-	-	-
-	AO	0.000500	-	-	-	-	0.000500	-	-	-
-	ASM	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	-	-	-
1	Key Maintenance Switch	0.0105	-	-	-	-	0.0105	-	-	-

Table A-1. Calculating Operating System Current Load (Continued)

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)
-	MT-12/24 *	-	-	-	-	-	0.024	-	-	-
-	MT-241575 *	-	-	-	-	-	0.089	-	-	-
-	MT-2475 *	-	-	-	-	-	0.157	-	-	-
-	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 Release Panel Group 2 Solenoid Valve, 16.8W	-	-	-	-	-	0.750	-	-	-

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) (20% 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 an ARIES-SLX 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. Three AOs activate at Pre-alarm 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.

The ARIES Control Unit will support up to a 16.8 watt control head. At 24 volts, a 16.8 watt load will draw a current of approximately 0.750 amps. The values in the table below represent the maximum current draw for the Control Head. To get a more accurate battery calculation for your system, replace the 0.750 amps with the actual current draw of the Control Head in your system. If your actual current draw is less than 0.750 amps, the calculation will result in a lower amp-hour requirement.

The system is using a Model RDCM Remote-Display Module for additional event annunciation.

Unit Description	Qty	Unit Standby Current (A)	Unit Pre-Alarm, Alarm or Release Current (A)	Total Standby Current (A)	Total Pre-Alarm, Alarm or Release Current (A)
ARIES-SLX Control Unit	1	0.200	0.650	0.200	0.650
RDCM	1	0.064	0.085	0.064	0.064
PSD-7152 Detector	10	0.000405	0.000445	0.004	0.0045
CPD-7152 Detector	10	0.000400	0.000440	0.004	0.0044
N/O AI	8	0.000580	0.000580	0.004	0.0046
AO	4	0.000500	0.000500	0.002	0.002
NS-24MC (Horn Only) *	6	--	0.015	--	0.09
NS-24MC (w/75 cd) *	6	--	0.140	--	0.84
Control Head, 16.8W	1	--	0.750	--	0.750
Key Maintenance Bypass Switch	1	0.0105	0.0105	0.0105	0.0105
ENTER TOTAL STANDBY CURRENT (Sum of column)=				**0.289**	
ENTER TOTAL ALARM CURRENT (Sum of column)=					**2.42**

Calculations:

ENTER **STANDBY TIME REQUIRED** (in hours) = <u>**24** hours</u>
ENTER **ALARM TIME REQUIRED** (in minutes) = <u>**5** mins.</u>
CONVERT **ALARM TIME REQUIRED** TO HOURS (using formula below): (minutes)/60 = <u>**0.083** hours</u>
CALCULATE **TOTAL AMPERE HOURS** (using formula below): **((TOTAL STANDBY CURRENT) x (STANDBY TIME REQUIRED** in hours**))** + **((TOTAL ALARM CURRENT x ALARM TIME REQUIRED** in hours**))** = _____**TOTAL AMPERE HOURS** **(0.289 x 24) + (2.42 x 0.083) =** **6.936 + 0.2009 = 7.137** <u>Ampere Hours</u>
CALCULATE **BATTERY CAPACITY** WITH A DE-RATING FACTOR OF 20% (using formula below): **1.2 x 7.137 AH = 8.56 AH BATTERY CAPACITY** = <u>**12-AH** Batteries</u>

A-4   SELECTING BATTERY SIZE

The maximum battery capacity that can be charged per UL 864, ULC S527-11 and FM requirements is 70-AH, which should be de-rated per applicable country, NFPA code and local requirements.

After de-rating, round up to the next available battery size using the largest-calculated battery capacity.

APPENDIX B
WIRING AND CONFIGURATION REQUIREMENTS FOR SIGNALING LINE CIRCUITS

B-1 SLC WIRING AND CONFIGURATION SUMMARY

The SLC loop shall be designed, configured and installed per the requirements in this appendix. This appendix describes how to calculate required information, and provides guidance and examples of wiring recommendations.

The requirements for the system are:

- Maximum Number of SLC Devices: 255 (limitations apply)
- Maximum Number of Output Modules To Be Activated Within 10 Secs: calculated as described in Section B-2
- Maximum SLC Loop Resistance: 40 Ohms
- Maximum SLC Conductor-to-Conductor Capacitance: 0.5 µf
- Maximum SLC Loop Capacitance to Earth Ground: 0.5 µf

B-2 USE OF OUTPUT MODULES ON SIGNALING LINE CIRCUIT

Please use the configurations and rules of this section to ensure compliance with UL 864 Clause 33.1.2, which requires that an alarm or supervisory event should cause all associated outputs and countdown functions to become active within 10 seconds of the event.

B-2.1 Calculating the Output Time

The output activation time for output modules on an SLC loop for stand-alone or networked panels can be calculated with the formula below:

Output Activation Time = 2.26 + (0.54 x N) + (1.6 x G) + ppA

Where:

N = the number of ASMs, AOs, RRMs and detector bases containing relays not assigned to a group

G = the number of Releasing Groups

ppA = a constant based on the number of nodes in the network (see Table B-1 below)

Note: When determining the number of outputs (N) and the number of Releasing Groups (G), only consider those that are going to be programmed to activate on the initiating alarm or supervisory. Outputs that are not associated with the initiating alarm or supervisory do not need to be counted. However, the number of nodes on a network always need to be counted.

Table B-1. ppA Factor per Number of Nodes

Number of Nodes	ppA Factor
stand-alone	0
up to 4 nodes	0.321
5 to 8 nodes	0.495
9 to 12 nodes	0.687
13 to 16 nodes	0.895
17 to 20 nodes	1.120
21 to 24 nodes	1.361
25 to 28 nodes	1.619
29 to 32 nodes	1.894

B-3   USE OF GROUPING

- Using Releasing Groups can shorten output activation time and/or increase the number of output modules that activate within 10 seconds.
- RRMs can be assigned to a Releasing Group of up to sixteen (16) RRMs that activate simultaneously.
- Four (4) Releasing Groups are supported per node.

For reference, Table B-2 details the maximum number of devices that can be activated within 10 seconds for stand-alone panels. For networked panels, the formula must be used to calculate the output activation time.

Table B-2. Configurations For Standard-Alone and Networked Panels

Panel/System Configuration	RRMs Grouped?	Maximum Number of Output Modules	SLC Output Activation Time Formula (in seconds)
Stand-Alone Panel	No	14 individual outputs	$= 2.26 + 0.54 \times N$
Stand-Alone Panel	Yes	64 RRMs (using 4 groups) plus 2 individual outputs	$= 2.26 + (0.54 \times N) + (1.6 \times G)$
Networked Panel	Non-Grouped or Grouped RRMs	Must use formula	$= 2.26 + (0.54 \times N) + (1.6 \times G) + ppA$

B-4   RECOMMENDED WIRE TYPES

All SLC wiring must be twisted, unshielded, low-capacitance, fire-alarm wire. For best results, use wiring with a nominal conductor-to-conductor capacitance of approximately 20 picofarads (or 20 x 10^{-12} farads) per foot. Typical wire types that meet these criteria are indicated in Table B-3, Table B-4, Table B-5 and Table B-6.

The use of shielded wire is not allowed except for very short runs or splices in total not exceeding 200 feet on the SLC loop. This length excludes any shielded wire that may have been used for the IDC, NAC, 24 VDC power circuits, release, trouble input circuits field wiring of AIs, ASMs and RRMs.

If using shielded wire on the AI, ASM and RRM external circuits including the IDC, NAC, 24 VDC Power circuits, release or trouble input circuits, this field wiring shall be limited to 50 feet per AI, ASM and RRM module. When multiple modules on the SLC loop are using shielded field wire on circuits other than the SLC, the total combined shielded field wire (non-SLC) on all modules must not exceed 200 feet.

Table B-3. Typical Wire Types - 18 AWG

Manufacturer	Part Number	Rating	Conductor-to-Conductor Capacitance (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-4. Typical Wire Types - 16 AWG

Manufacturer	Part Number	Rating	Conductor-to-Conductor Capacitance (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-5. Typical Wire Types - 14 AWG

Manufacturer	Part Number	Rating	Conductor-to-Conductor Capacitance (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-6. Typical Wire Types - 12 AWG

Manufacturer	Part Number	Rating	Conductor-to-Conductor Capacitance (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-5   ESTIMATING THE SLC LOOP CAPACITANCE TO EARTH GROUND

The maximum allowable capacitance to Earth Ground is 0.5 microfarads per SLC loop. In order to ensure that this capacitance limitation is not exceeded, the Capacitance Worksheets provided in this section MUST be completed for an SLC loop that meets the criteria in Table B-7 below.

Table B-7. Criteria for Capacitance to Earth Ground Calculation Required

1	Loop exceeds 7500 feet total in length (including all T-Tap lengths)
2	Loop has a combination of 5 or more PALMs and AAMs installed
3	Loop has a combination of 10 or more ASMs, RRMs, APICs, PALMs and AAMs installed
4	Loop has 140 or more Smoke or Heat Detectors installed
5	Loop has 35 or more AI modules installed

Note: If none of the criteria in Table B-7 exist, filling out the Capacitance Worksheets is not required.

Table B-8. Capacitance Worksheet - Part 1 (SLC Devices)

SLC Device Type	Capacitance of Each Device (nF)	Quantity *Enter number of each type of device in this column*	Total Device Capacitance (nF) *Multiply Qty by provided capacitance value for each type of device*
PALM Module	20		
AAM Module	20		
ASM Module	8		
ASM-6SB	8		
RRM Module	6		
APIC Card	7		
AI Module, Normally Open	2		
AI Module, Normally Closed	2		
AO Module	0.8		
DS-PS Photoelectric Detector	0.8		
DS-HFS Thermal Detector	0.8		
PSD-7152 Photoelectric Detector	0.8		
CPD-7052 Ionization Detector	0.8		
THD-7252 Thermal Detector	0.8		
DH-2000 Duct Detector	0.8		

Add up the entries in the Total Device Capacitance column and enter here   ➡

Continue to Part 2 of Worksheet

Total SLC <u>Device</u> Capacitance To Ground (nF)

Table B-9. Capacitance Worksheet - Part 2 (SLC Wiring)

SLC Wire Type** (*see Note 2 for device field wiring*)	Estimated Capacitance To Earth Ground (pF/ft) *For unshielded wire, 9 pF is typical. For shielded wire, enter conductor capacitance to shield-See Note 1*	Length of SLC Loop *Enter Total Length of SLC Loop Wire in feet (include all T-Taps)*	Total Wire Capacitance for One Conductor (pF) *Multiply capacitance per foot by length of SLC Loop Wire*	Total Wire Capacitance for Two Conductors (pF) *Multiply entry at left by 2 to account for both SLC conductors*	Total Wire Capacitance for Two Conductors (nF) *Divide entry at left by 1000 to convert to Nanofarads*
Unshielded Wire	9				
Shielded Wire* (*see Note 1*)					

Note 1:
The conductor to shield capacitance can be obtained from the wire manufacturer's technical data sheet and will be listed in Picofarads as "Capacitance from conductor to shield with other conductor(s) tied to shield."

Note 2:
This example assumes that the SLC device field wiring (non-SLC wiring) restrictions on the use of shielded wire have been adhered to. Refer to 2-7.1 SLC Wiring Requirements in Chapter 2.

Add up the entries in the Total Wire Capacitance for Two Conductors column and enter here

Continue to Part 3 of Worksheet

➡

Total SLC Wire Capacitance To Ground (nF)

Table B-10. Capacitance Worksheet - Part 3 (Summary)

Total SLC Device Capacitance To Ground (nF) from Part One	*enter here* ➡	
Total SLC Wire Capacitance To Ground (nF) from Part Two	*enter here* ➡	
Add together the entries for Total SLC Device Capacitance to Ground and Total SLC Wire Capacitance to Ground (nF)	*enter here* ➡	
Divide the Nanofarad value by 1000 to convert to Microfarads This is an estimate of Total SLC Loop Capacitance to Earth Ground. **Maximum allowable is 0.5 microfarads.**	*enter here* ➡	**Total SLC Device and Wire Capacitance To Ground (μF)**

B-6 EXAMPLE 1

The following example illustrates how to calculate parameters to ensure SLC requirements are met and has the following configuration:

- The SLC is on a networked panel and the network has 4 nodes.
- Class B Wiring
- Wire is 14 AWG, Coleman cable P/N 98141 (see Table B-5 above)
- SLC total loop length is 3750 feet, with no T-Taps, using unshielded wire
- 3 PALMs
- 5 ASMs
- 40 AIs
- 5 AOs
- 100 Smoke Detectors
- 10 RRMs
- The 10 RRMs are in one Releasing Group
- The Releasing Group, the 5 AOs and the 5 ASMs are programed to activate without a time delay from the same inputs.

B-6.1 Calculating SLC Loop Resistance

For Class B loops, the sum of the total wire resistance for the positive and negative SLC loop legs from the panel to the last device must not exceed 40 Ohms. If "T" taps are used, the total wire resistance from the panel to the end of each "T" tap must not exceed 40 Ohms.

For this example, the SLC loop is a Class B loop with no "T" taps. The total length of the SLC loop is 3750 ft. The total wire length to the last device is the sum of wire (in feet) for the positive and negative SLC legs.

If #14 AWG wire is used in Example 1, the total wiring resistance is:

3750 feet x 2 = 7500 feet   #14 AWG wire is 2.525 Ohm/1000 ft
                                   (Reference American Wire Gauge Resistance
                                    Per 1000 Feet Table)

7500 feet x 2.525 Ohms/1000 ft = 18.9 Ohms

Conclusion: 18.9 Ohms is less than 40 Ohms, so #14 AWG wire is **acceptable** for resistance.

B-6.2 Calculating SLC Loop Conductor-to-Conductor Capacitance

If Coleman cable is selected (P/N 98141 from Table B-5), the total SLC conductor-to-conductor capacitance is:

Cable specification is 20 picofarads/ft

20 pf = 20×10^{-12} farads

3750 ft x 20×10^{-12} farads/ft = 0.075×10^{-6} farads (or 0.075 microfarads)

Conclusion: 0.075 microfarads is less than 0.5 microfarads, so #14 AWG Coleman cable (P/N 98141) is **acceptable** for conductor-to-conductor capacitance.

B-6.3 Calculating SLC Loop Capacitance To Earth Ground

Referring to Table B-7, Criteria for Capacitance to Earth Ground Calculation, the system meets Criteria 3 and Criteria 5.

1	Loop exceeds 7500 feet total in length (including all T-Tap lengths)	NO
2	Loop has a combination of 5 or more PALMs and AAMs installed	NO
3	Loop has a combination of 10 or more ASMs, RRMs, APICs, PALMs and AAMs installed	YES
4	Loop has 140 or more Smoke or Heat Detectors installed	NO
5	Loop has 35 or more AI modules installed	YES

Conclusion: Because any one of the criteria in Table B-7 are met, the Capacitance Worksheets must be filled in and the associated requirements met. See worksheets below.

SLC Device Type	Capacitance of Each Device (nF)	Quantity *Enter number of each type of device in this column*	Total Device Capacitance (nF) *Multiply Qty by provided capacitance value for each type of device*
PALM Module	20	3	60
ASM Module	8	5	40
AI Module, Normally Open	2	40	80
AO Module	0.8	5	4
Remote Releasing Module	6	10	60
PSD-7152 Detector	0.8	50	40
CPD-7052 Detector	0.8	50	40
			324

SLC Wire Type (*see Note 2 for device field wiring*)	Estimated Capacitance To Earth Ground (pF/ft) *For unshielded wire, 9 pF is typical. For shielded wire, enter conductor capacitance to shield-See Note 1*	Length of SLC Loop *Enter Total Length of SLC Loop Wire in feet (include all T-Taps)*	Total Wire Capacitance for One Conductor (pF) *Multiply capacitance per foot by length of SLC Loop Wire*	Total Wire Capacitance for Two Conductors (pF) *Multiply entry at left by 2 to account for both SLC conductors*	Total Wire Capacitance for Two Conductors (nF) *Divide entry at left by 1000 to convert to Nanofarads*
Unshielded Wire	9	3750	33750	67500	67.5

Note 1:
The conductor to shield capacitance can be obtained from the wire manufacturer's technical data sheet and will be listed in Picofarads as "Capacitance from conductor to shield with other conductor(s) tied to shield."

Note 2:
This example assumes that the SLC device field wiring (non-SLC wiring) restrictions on the use of shielded wire have been adhered to. Refer to 2-7.1 SLC Wiring Requirements in Chapter 2.

67.5

Summary:

Total SLC Device Capacitance To Ground (nF) from Part One	324.0
Total SLC Wire Capacitance To Ground (nF) from Part Two	67.5
Add together the entries for Total SLC Device Capacitance to Ground and Total SLC Wire Capacitance to Ground (nF) Total in Nanofarards (nF)	391.5
Divide the Nanofarad value by 1000 to convert to Microfarads Estimated Total SLC Loop Capacitance to Earth Ground (microfarads)	**0.3915**

Conclusion: 0.3915 microfarads is less than 0.5 maximum allowable, so this combination of SLC devices and SLC wire length is **acceptable** for SLC Loop Capacitance to Earth Ground.

B-6.4   Output Modules Calculation

In this example, this SLC is on a panel that is part of a 4-node network. There are 10 RRMs assigned to 1 Releasing Group and there are 5 AOs and 5 ASMs.

Output activation time = 2.26 + (0.54 x N) + (1.6 x G) + ppA

Where:

N   = the number of AOs, ASMs, detector bases containing relays, and the number of RRMs not assigned to a group

G   = the number of Releasing Groups

ppA   = a constant based on the number of nodes in the network (see Table B-1)

$$2.26 + (0.54 \text{ x } 10) + (1.6 \text{ x } 1) + 0.321 = 9.581$$

N   = There are 5 AOs and 5 ASMs for a total of 10 outputs. There are no RRMs not assigned to a group.

G   = There is 1 Releasing Group

ppA   = Since there are 4 nodes, the constant from Table B-1 is 0.321

Conclusion: 9.581 seconds is the output activation time for this SLC loop. 9.581 seconds is less than 10 seconds, so the output activation time meets the UL requirement of 10 seconds for this SLC loop and is **acceptable**.

B-7   EXAMPLE 2

The following example illustrates how to calculate parameters to ensure SLC requirements are met and has the following configuration:

- The SLC is on a networked panel and the network has 21 nodes.
- Class A Wiring
- SLC total loop length is 4500 feet using unshielded wire
- 2 PALMs
- 2 ASMs
- 5 AOs
- 50 AIs
- 160 Smoke Detectors
- 5 Duct Detectors
- 5 RRMs
- All 5 RRMs are in 1 Releasing Group
- The Releasing Group, the 5 AOs and the 2 ASMs are programed to activate without a time delay from the same inputs.

B-7.1   Calculating SLC Loop Resistance

The total wire length is the sum of wire (in feet) for the positive and negative SLC legs, so for Class A loops, it is double the total loop length.

First try #18 AWG wire. The total SLC wiring resistance is:

4500 feet x 2 = 9000 feet   #18 AWG wire is 6.385 Ohm/1000 ft
                                                                    (Reference American Wire Gauge Resistance
                                                                      Per 1000 Feet Table)

9000 feet x 6.385 Ohms/1000 ft = 57.5 Ohms

Conclusion: 57.5 Ohms is greater than 40 Ohms, so using #18 AWG wire exceeds the maximum allowed SLC wiring resistance and is **not acceptable**. Larger wire must be used.

Next try #16 AWG wire. The total SLC wiring resistance is:

4500 feet x 2 = 9000 feet   #16 AWG wire is 4.016 Ohm/1000 ft
                                                                    (Reference American Wire Gauge Resistance
                                                                      Per 1000 Feet Table)

9000 feet x 4.016 Ohms/1000 ft = 36.14 Ohms

Conclusion: 36.14 Ohms is less than 40 Ohms, so using #16 AWG wire is **acceptable**.

B-7.2   Calculating SLC Loop Conductor-to-Conductor Capacitance

If Coleman cable is selected (P/N 98161 from Table B-4), the total SLC conductor-to-conductor capacitance is:

Cable specification is 20 picofarads/ft

$20 \text{ pf} = 20 \times 10^{-12}$ farads

$4500 \text{ ft} \times 20 \times 10^{-12}$ farads/ft $= 0.09 \times 10^{-6}$ farads (or 0.09 microfarads)

<u>Conclusion</u>: 0.09 microfarads is less than 0.5 microfarads, so #16 AWG Coleman cable (P/N 98161) is **acceptable** for conductor-to-conductor capacitance.

B-7.3   Calculating SLC Loop Capacitance To Earth Ground

Referring to Table B-7, Criteria for Capacitance to Earth Ground Calculation, the system meets Criteria 3, Criteria 4 and Criteria 5.

1	Loop exceeds 7500 feet total in length (including all T-Tap lengths)	NO
2	Loop has a combination of 5 or more PALMs and AAMs installed	NO
3	Loop has a combination of 10 or more ASMs, RRMs, APICs, PALMs and AAMs installed	NO
4	Loop has 140 or more Smoke or Heat Detectors installed	YES
5	Loop has 35 or more AI modules installed	YES

<u>Conclusion</u>: Because any one of the criteria in Table B-7 are met, the Capacitance Worksheets must be filled in and the associated requirements met. See worksheets below.

SLC Device Type	Capacitance of Each Device (nF)	Quantity *Enter number of each type of device in this column*	Total Device Capacitance (nF) *Multiply Qty by provided capacitance value for each type of device*
PALM Module	20	2	40
ASM Module	8	2	16
AI Module, Normally Open	2	50	100
AO Module	0.8	5	4
Remote Releasing Module	6	5	30
PSD-7152 Detector	0.8	80	64
CPD-7052 Detector	0.8	80	64
DH-2000 Duct Detector	0.8	5	4
			322

SLC Wire Type (*see Note 2 for device field wiring*)	Estimated Capacitance To Earth Ground (pF/ft) *For unshielded wire, 9 pF is typical. For shielded wire, enter conductor capacitance to shield-See Note 1*	Length of SLC Loop *Enter Total Length of SLC Loop Wire in feet (include all T-Taps)*	Total Wire Capacitance for One Conductor (pF) *Multiply capacitance per foot by length of SLC Loop Wire*	Total Wire Capacitance for Two Conductors (pF) *Multiply entry at left by 2 to account for both SLC conductors*	Total Wire Capacitance for Two Conductors (nF) *Divide entry at left by 1000 to convert to Nanofarads*
Unshielded Wire	9	4500	40500	81000	81

Note 1: The conductor to shield capacitance can be obtained from the wire manufacturer's technical data sheet and will be listed in Picofarads as "Capacitance from conductor to shield with other conductor(s) tied to shield."	**Note 2**: This example assumes that the SLC device field wiring (non-SLC wiring) restrictions on the use of shielded wire have been adhered to. Refer to 2-7.1 SLC Wiring Requirements in Chapter 2.			81

Summary:

Total SLC Device Capacitance To Ground (nF) from Part One	322
Total SLC Wire Capacitance To Ground (nF) from Part Two	81
Add together the entries for Total SLC Device Capacitance to Ground and Total SLC Wire Capacitance to Ground (nF) Total in Nanofarards (nF)	403
Divide the Nanofarad value by 1000 to convert to Microfarads Estimated Total SLC Loop Capacitance to Earth Ground (microfarads)	**0.403**

Conclusion: 0.403 microfarads is less than 0.5 maximum allowable, so this combination of SLC devices and SLC wire length is **acceptable** for SLC Loop Capacitance to Earth Ground.

B-7.4   **Output Modules Calculation**

In this example, this SLC is on a panel that is part of a 21-node network. There are 5 RRMs assigned to 1 Releasing Group and there are 5 AOs and 2 ASMs.

Output activation time = 2.26 + (0.54 x N) + (1.6 x G) + ppA

Where:

N   = the number of AOs, ASMs, detector bases containing relays, and the number of RRMs not assigned to a group

G   = the number of Releasing Groups

ppA   = a constant based on the number of nodes in the network (see Table B-1)

$$2.26 + (0.54 \times 7) + (1.6 \times 1) + 1.361 = 9.001$$

N   = There are 5 AOs and 2 ASMs for a total of 7 outputs. There are no RRMs not assigned to a group.

G   = There is 1 Releasing Group

ppA   = Since there are 21 nodes, the constant from Table B-1 is 1.361

Conclusion: 9.001 seconds is the output activation time for this SLC loop. 9.001 seconds is less than 10 seconds, so the output activation time meets the UL requirement of 10 seconds for this SLC loop and 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	Actuator
Maximum Devices.	2	1
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	Actuator
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   AGENCY LISTED COMPATIBLE SOLENOIDS

Table C-3. Solenoids

Device	I (max.) Amps	Resistance (min.) ohms	"On" Time	Wire Length (Ft.) Note: Wire length is total wire [A]				No. per Combo Circuit configured as Release (TB6 or TB7)	No. per Release Circuit (TB11 or TB12) / No. per RRM	Agency
				12 AWG	14 AWG	16 AWG	18 AWG			
890181	2.40	10.0	Momentary	300	200	120	—	1	1 or 2	UL, FM
897494[C]	1.50	15.9	90 seconds	380	240	150	—	1	1	UL, FM
486500-01	0.240	103.0	Continuous	3000	2000	1200	800	1	1 or 2	UL, FM
81-100000-001	0.440	59.0	Continuous	2300	1460	915	570	1	1 or 2	UL, FM
06-118329-001	0.225	108.0	Continuous	3000	2000	1200	800	1	1 or 2	FM
06-118384-001	0.520	46.0	Continuous	1440	760	480	340	1	1 or 2	UL
38-509837-001	0.400	60.0	Continuous	2300	1460	915	570	1	1 or 2	FM
38-509834-001	0.632	38.0	Continuous	1050	550	330	240	1	1 or 2	FM
83-100034-001[B]	2.00	12.0	Momentary	360	240	140	—	1	1 or 2	UL, FM
10610707	0.393	61.0	Continuous	2300	1460	915	570	1	1 or 2	UL, FM
70610006	0.393	61.0	Continuous	2300	1460	915	570	1	1 or 2	UL, FM
70610343	0.393	61.0	Continuous	2300	1460	915	570	1	1 or 2	UL, FM
70610412	0.393	61.0	Continuous	2300	1460	915	570	1	1 or 2	UL, FM
70610630	0.51	47.0	Continuous	1440	760	480	340	1	1 or 2	UL, FM
70610632	0.51	47.0	Continuous	1440	760	480	340	1	1 or 2	UL, FM
70985008	0.63	38.0	Continuous	1050	550	330	240	1	1 or 2	FM
70985017	0.635	38.0	Continuous	1050	550	330	240	1	1 or 2	FM
70985065	0.545	44.0	Continuous	1440	760	480	340	1	1 or 2	FM
D01550.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D01500	0.83	29	Continuous	750	475	300	185	1	1	FM
D01510	0.83	29	Continuous	750	475	300	185	1	1	FM
D01535	0.83	29	Continuous	750	475	300	185	1	1	FM
D00050.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D00052.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D00060	0.83	29	Continuous	750	475	300	185	1	1	FM
D00062	0.83	29	Continuous	750	475	300	185	1	1	FM
2000238815	0.83	29	Continuous	750	475	300	185	1	1	FM
D01021.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D01022.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D01023.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D01023.2	0.83	29	Continuous	750	475	300	185	1	1	FM
D-0001292	0.83	29	Continuous	750	475	300	185	1	1	FM

Table C-3. Solenoids

Device	I (max.) Amps	Resistance (min.) ohms	"On" Time	Wire Length (Ft.) Note: Wire length is total wire [A]				No. per Combo Circuit configured as Release (TB6 or TB7)	No. per Release Circuit (TB11 or TB12) No. per RRM	Agency
				12 AWG	14 AWG	16 AWG	18 AWG			
2000203619	0.83	29	Continuous	750	475	300	185	1	1	FM
2000217978	0.83	29	Continuous	750	475	300	185	1	1	FM
2000217979	0.83	29	Continuous	750	475	300	185	1	1	FM
D21070.1	0.83	29	Continuous	750	475	300	185	1	1	FM
D21070	0.83	29	Continuous	750	475	300	185	1	1	FM
D21072	0.83	29	Continuous	750	475	300	185	1	1	FM
D21073	0.83	29	Continuous	750	475	300	185	1	1	FM
D21074	0.83	29	Continuous	750	475	300	185	1	1	FM
D01550.5	0.83	29	Continuous	750	475	300	185	1	1	FM
FM Release Panel Group 2	Any FM Approved Solenoid Valve rated 16.8W and below Consult FM Approvals for solenoid valve power ratings.							1	1	FM

Notes:

[A] To determine the total wire length, you must calculate both the to and from distance. For example, a 300 foot length of wire means a total length of 600 feet as travel down the wire and back must be taken into account.

[B] This solenoid and Microswitch P/N 87-120039-001 are used in control heads 87-120099-001, 87-120099-002, 90-487100-001 and 93-487100-001.

[C] Must configure releasing output for 90 second "on" time.

C-4 AGENCY LISTED COMPATIBLE INITIATOR AND ACTUATOR ASSEMBLIES

Table C-4. Initiator-Based Releasing Devices

Device	I (Min.) Amps	Resistance (Max.) Ohms	On Time	Max. Number per Circuit	Agency
31-199932-004	*	—	Momentary	12	UL, FM
31-199932-012	*	—	Momentary	8	UL, FM
93-191001-001	*	—	Momentary	6	UL, FM
93-002009-004	**	—	Momentary	8	FM

  * The maximum circuit resistance for this device must be 10 ohms, regardless of the number used. The firing current will be 2.5 Amps.
** The circuit resistance for this device shall be between 10 ohms (minimum) to 13.6 ohms (maximum).

Table C-5. Actuator-Based Releasing Devices

Device	I (Min.) Amps	Resistance (Max.) Ohms	On Time	Max. Number per Circuits	Agency
83-131025-001	*	3	Momentary	1	FM

APPENDIX D
HAND-HELD PROGRAMMER OPERATING INSTRUCTIONS

D-1　DESCRIPTION

The Hand-held Programmer (hereinafter referred to as the Programmer) provides the system installer/service person with a convenient means to assign device address information. This Appendix D provides basic operating information; for detailed information on the Programmer, refer to its "User's Guide" (P/N 06-236798-001).

Prior to using the Programmer, you need to ensure that you have the supplied accessories, listed below. The following are included with the complete Device Programmer (P/N 70-600000-100):

- AC/DC Power Pack
- AC Cord
- Battery Pack (installed in device)
- AI/AO Module Adapter
- SLC Interface Adapter
- DS Series Detector Programming Adapter

  (Adapter may be purchased separately, S/N 70-600000-110)

D-1.1　Devices Supported

The Programmer is designed to support all SmartOne® and DS Series intelligent addressable devices. A table of supported devices accompanies these instructions.

D-2　TURNING ON THE PROGRAMMER

To turn the Programmer on:

1. Press the button labeled "**ON**."
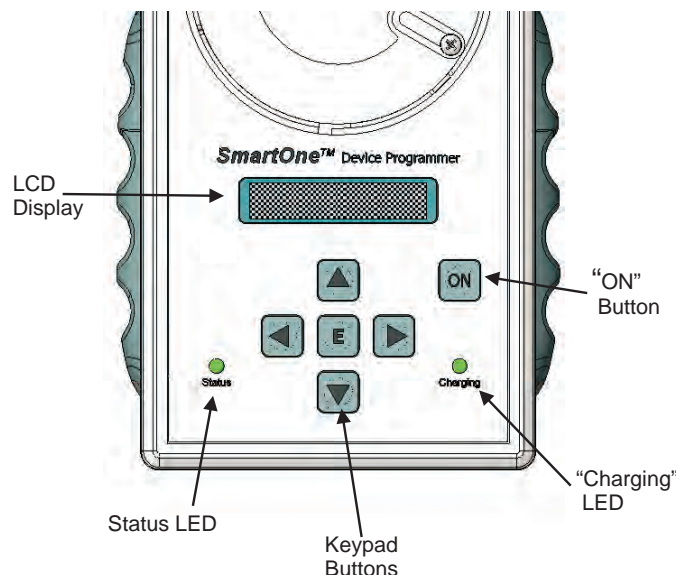
Figure D-1. Controls and Indicators

2. Verify that the green "Status" LED is lit, and the LCD display message reads "**SLC Programmer**."
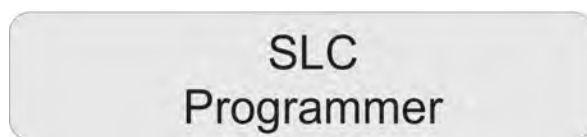
Figure D-2. LCD Display Message

After approximately 4 seconds, the LCD display should show the first Main Menu level option, "**Single Addressing**."

D-3   TURNING OFF THE PROGRAMMER

To turn the Programmer off:

From the Main Menu, press **<←>** or **<→>** until the LCD display reads "**Power Off**"; then press **< E > (Enter)**, and the Programmer will turn off.

Note: If you leave the Programmer idle, the Automatic Power Off feature will turn the Pro- grammer off after the pre-set default time of 5 minutes. You can adjust the Power Off time to between 1 and 10 minutes.

D-4   GENERAL MENU NAVIGATION

General menu navigation rules include the following keypad instructions:
1. Press the **<↑>** and **<↓>** buttons to navigate the menu **levels**.
2. Press **<E>** (**Enter**) to enter any **sub-menu** from any higher level.
3. Press the **<←>** button to return to a **previous menu**.

Note: The instructions in this section, for the purposes of illustration, assume that the con- nected device is an ionization smoke detector with an initial address of 000.

D-5   MAIN MENU LEVEL SELECTIONS

To access Main Menu selections, press the **<↑>** and **<↓>** buttons until the LCD display shows the desired selection, then press **<E>**. There are four Main Menu selections, as illustrated:

Main Menu Level
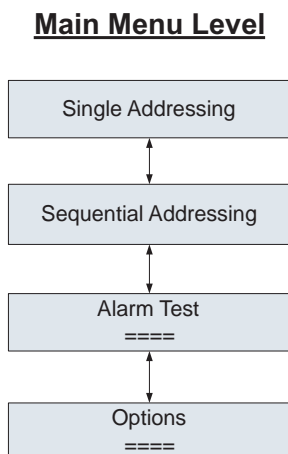
Figure D-3. Four Main Menu Selections

- **Single Addressing** - Set an address for a single device at a time.
- **Sequential Addressing** - Set an address __range__ (with a start address and end address), and give each device a unique address within that range. Program multiple devices quickly, and reduce the possibility of setting duplicate addresses.
- **Alarm Test** - Test the alarm initiating responses of initiating devices. A device that fails the Alarm Test should not be installed.
- **Options** - Adjust LCD settings; show current firmware version; adjust the Power-Off timer.

Note: Additional operational details are covered in the Programmer's "User's Guide."

D-6   CONNECTING THE PROGRAMMER TO VARIOUS ADDRESSABLE DEVICES

(The power may be ON or OFF when connecting the various Addressable devices.) There are three types of Addressable devices that connect to the Programmer:

- Smoke/Heat Detectors
- Addressable Input/Addressable Output Modules
- Other Devices

D-6.1   SmartOne Smoke/Heat Detectors

To connect SmartOne ionization, photoelectric, and heat detectors to the Programmer:

1. Snap the detector into the detector base that is mounted to the Programmer.
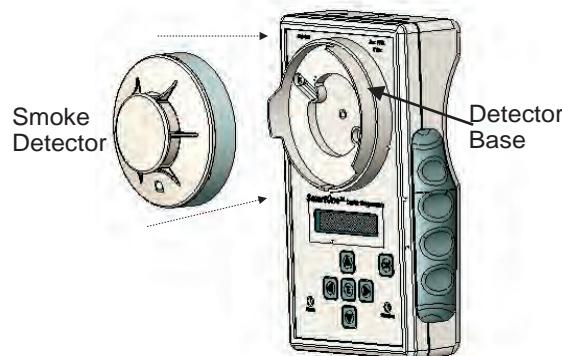
Figure D-4. Smoke Detector Fits Into Detector Base

2. Orient the index marker on the device to approximately the five o'clock position, then rotate clockwise until it snaps snugly into the Detector Base.
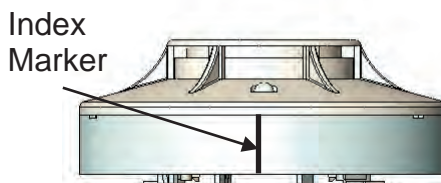
Figure D-5. Index Marker on Smoke Detector

D-6.2   **Connecting A DS Series Detector to the Programmer**

The DS Series Detector Programming Adapter is a fixture that allows DS-PS and DS-HFS detectors to be programmed via the Programmer.

1. Connect the DS Series Detector Programmer Adapter to the programmer by inserting the jack into the SLC Out Adapter Connector. Refer to illustration which follows.
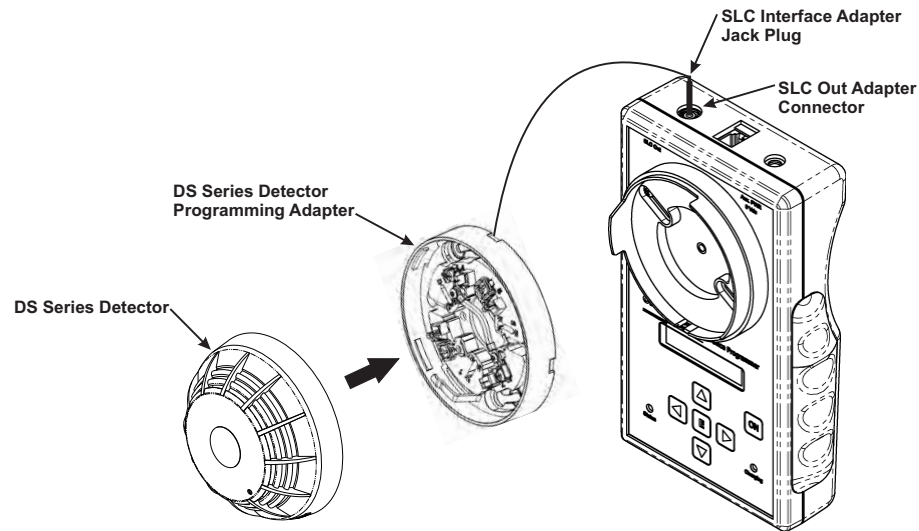
Figure D-6. Connecting a DS Series Detector to the Programmer

D-6.3   **Addressable Input/Addressable Output Modules**

To connect AI or AO modules to the Programmer:

1. Connect the AI/AO Module Adapter to the detector base that is mounted to the Programmer.
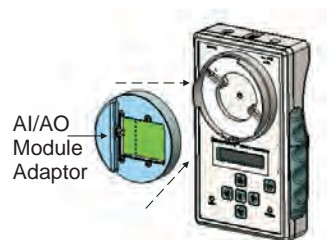
Figure D-7. Connect AI/AO Module Adapter to Detector Base

2. Orient the index marker on the device to approximately the five o'clock position, then rotate clockwise until it snaps snugly into the Detector Base.

3. Insert the AI or AO module so that the terminal block is facing to the left side.
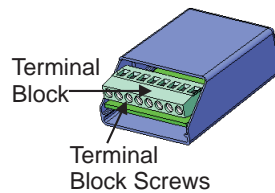
Figure D-8. AI or AO Module

4. Tilt the AI or AO module into the recess of the AI/AO Module Adapter, so that the terminal block screws make contact with the spring-loaded probes.

Note: To ensure good electrical contact with the spring-loaded probes, it may be necessary to tighten the terminal block screws on the AI or AO Module.
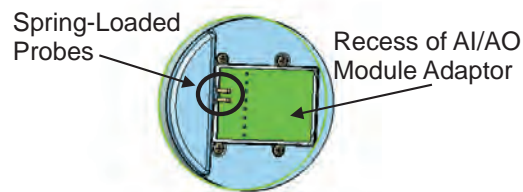
Figure D-9.   Recess of AI/AO Module Adapter

5. Snap the back of the module into the right half of the recess.

D-6.4   Other Devices

Other devices must use the SLC Interface Adapter. To connect devices with the SLC Interface Adapter:

1. Plug the jack plug of the SLC Interface Adapter into the SLC Interface Adapter Connector marked "**SLC OUT**" on the top of the Programmer.
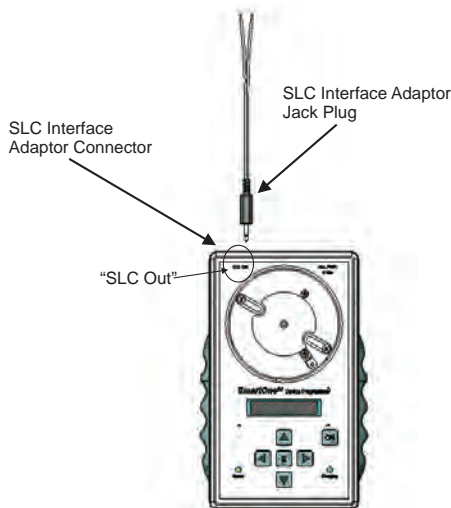
Figure D-10.   SLC Interface Adapter

2. Locate the terminal blocks on the device that are labeled "**SLC**" or "**PC Line**."

3. Connect one wire of the SLC Interface Adapter to the Terminal marked "**A**," and the other wire to the terminal marked "**B**" (the connection is not polarity-sensitive).

D-7   TROUBLE CODES

Code	Meaning
Low Battery	Batteries need recharging or replacing
Short Circuit on SLC	Flying leads shorted, or internal short on device under test
Flash Error!	Programmer's Internal Memory failure*
Unknown Type	Programmer does not support device*
Active Troubles in Alarm	Normally Closed Addressable Contact Input Device requires that input terminal blocks SWA and SWB be jumpered together before addressing.
- Unassigned Type - In Alarm - In Pre-Alarm - Contact Failure - Drift Error - Relay Fault - Memory Fault - Alarm Fault - Device Test Mode	Internal fault on device being tested*
* Remove the device and allow the Programmer to clear. Then re-attach the device being tested. If the device fails again, do not install the device.	

D-8   SUPPORTED DEVICES

- Ionization Detectors
- Photoelectric Detectors
- Heat Detectors
- AIs
- AOs
- ASMs

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.

1/4-in. (min.)

Non-power-limited wiring

Power-limited wiring

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
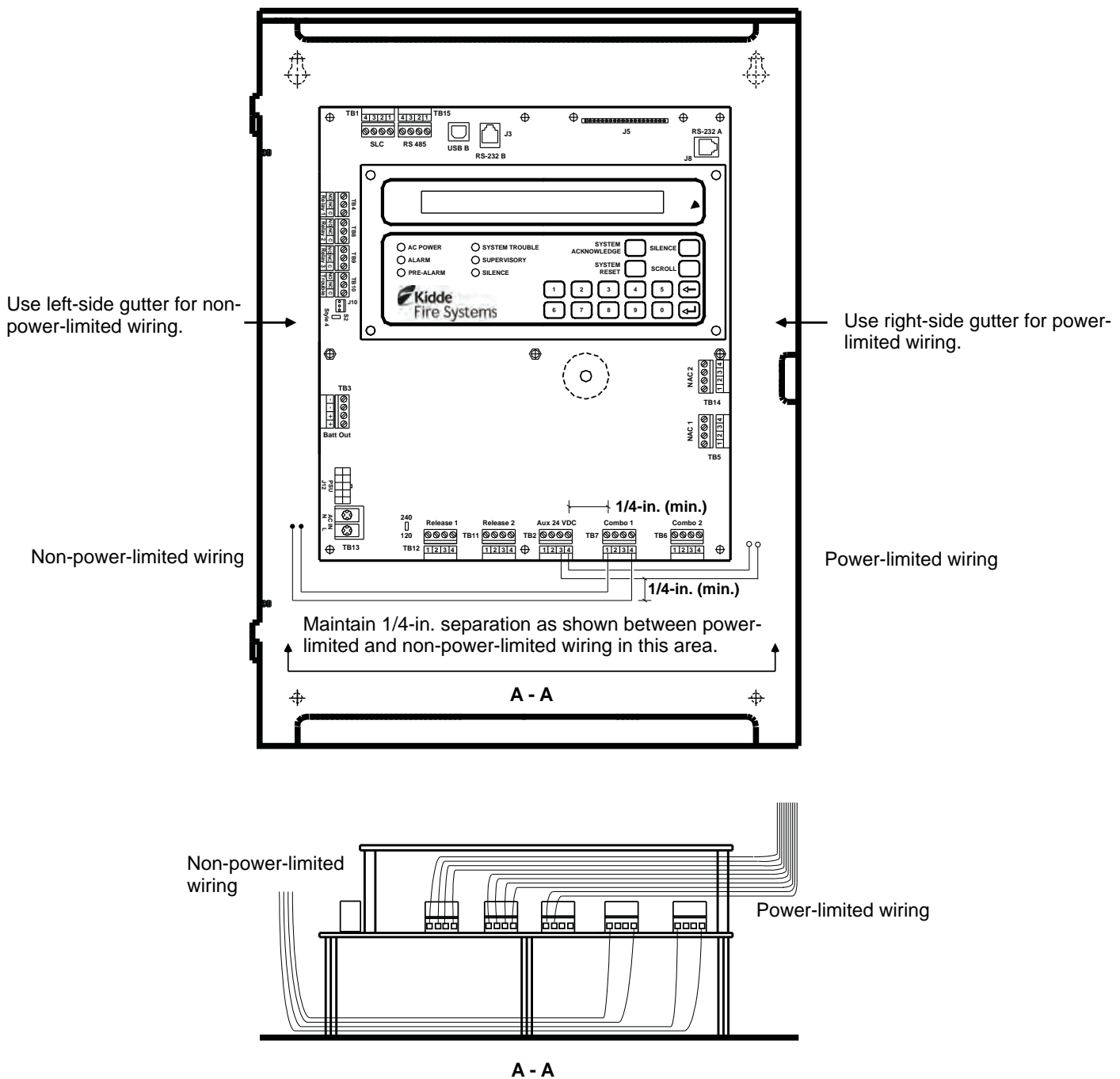
Note:

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

When the ARIES®-SLX control unit is required to report status to a central station, a Digital Alarm Communicator (DACT) listed to the 10th edition of UL 864 must be connected to the control unit. The selected DACT must accept dry contact inputs for alarm, trouble and supervisory.

The selected DACT must have its own local trouble signal or the ARIES-SLX control unit must monitor the DACT for trouble (causing the ARIES-SLX control unit to be in trouble whenever the DACT is in trouble). The off-premises reporting will be as a single zone panel with this configuration.

The ARIES-SLX configuration must be as follows:

Note: Refer to the *ARIES-SLX Configuration Tool (ACT-SLX) User's Guide,* P/N 06-237492-001, for instructions on how to program the ARIES-SLX System.

1. Set the ARIES-SLX control unit for Central Station Operation. When set for Central Station operation, Relay 1 will activate whenever an alarm is present on the panel and will be designated as a General Alarm Relay. Relay 2 will activate whenever a Supervisory condition is active on the panel and will be designated as a General Supervisory Relay. Relay 4 is a dedicated trouble relay. When the control unit is set to Central Station operation, the trouble relay (Relay 4) will automatically be set for a 6-hour activation delay on loss of AC power.

Note: The 6-hour delay on loss of AC power must be manually changed to a 3-hour or less delay in the configuration settings for UL applications.

2. The General Alarm (Relay 1), General Supervisory (Relay 2) and Trouble (Relay 4) must be connected to the DACT independently.

3. For DACTs that use initiating circuits that are not supervised, all interconnecting wires from the DACT to the ARIES-SLX relay contacts must be less than 20 feet in length and all the interconnecting wires must be in conduit. See Figure F-2.

4. For DACTs that use initiating circuits that are supervised, an End-of-Line wiring harness (supplied by the DACT manufacturer) must be used to terminate the circuit at the monitored relay contact of the ARIES-SLX control unit. See Figure F-1.

⚠
CAUTION
The End-of-Line resistor cannot be placed in the same relay connector terminals with the wires going back to the DACT. An End-of-Line wiring harness that is UL listed by the DACT manufacturer and is suitable for terminating supervised circuits on single wire termination connectors must be used and configured as shown in Figure F-1.

Note: Refer to the DACT installation manual to determine the input terminals to interface into the ARIES-SLX relays and also how to configure the DACT for UL 864 10th edition compliant off-premises signal transmissions.
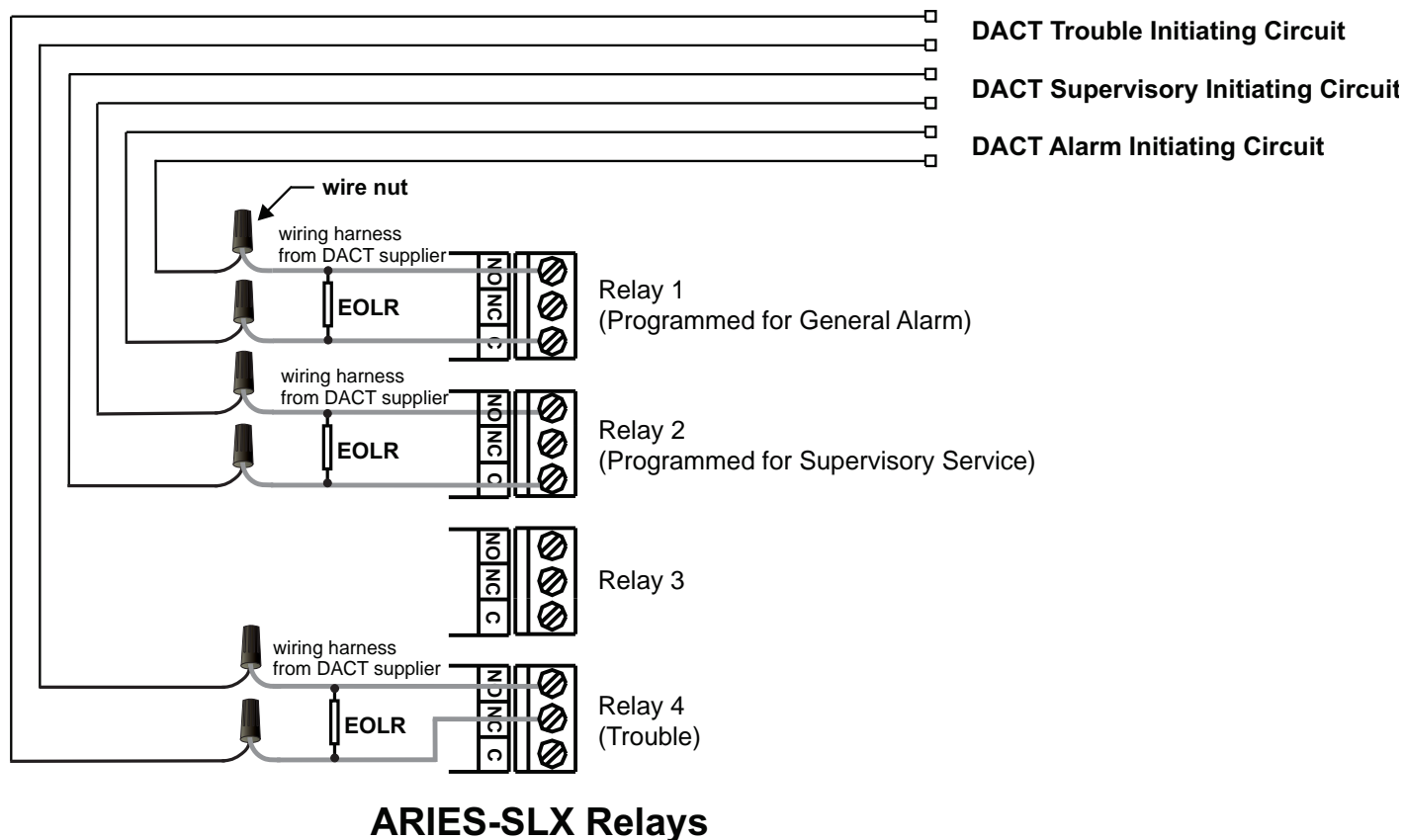
ARIES-SLX Relays

NOTE:
An End-of-Line Resistor (EOLR) Wiring Harness (supplied by the DACT manufacturer) must be used to terminate the supervised DACT initiating circuits at the ARIES-SLX control unit relay terminals.

Figure F-1. ARIES-SLX and DACT Interconnections, shown with End-of-Line Resistors

DACT Trouble Initiating Circuit

DACT Supervisory Initiating Circuit

DACT Alarm Initiating Circuit

Relay 1
(Programmed for General Alarm)

Relay 2
(Programmed for Supervisory Service)

Relay 3

Relay 4
(Trouble)

ARIES-SLX Relays
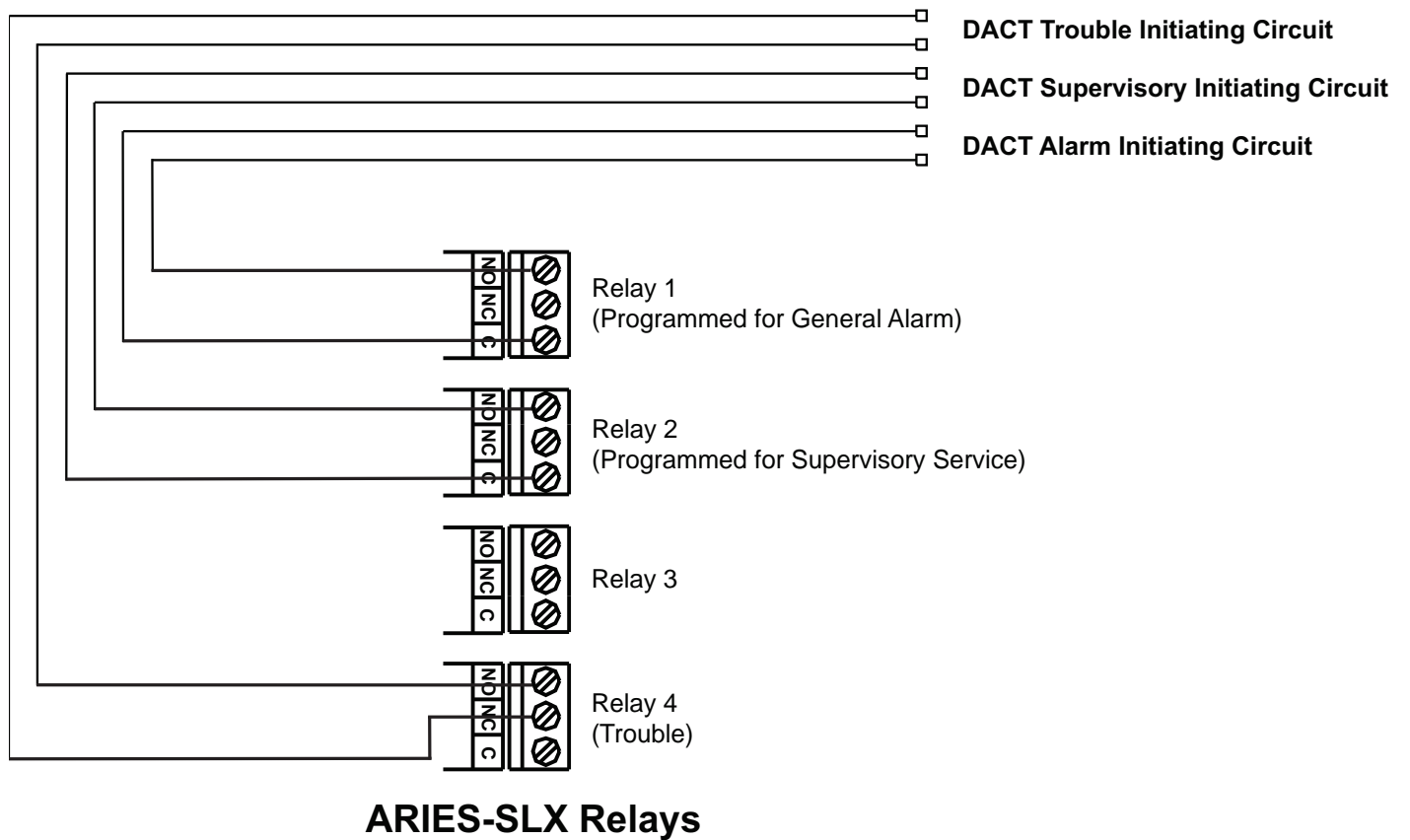
Figure F-2. ARIES-SLX and DACT Interconnections, shown without End-of-Line Resistors

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APPENDIX G
FACTORY MUTUAL REQUIREMENTS FOR PRE-ACTION AND DELUGE SPRINKLER SYSTEMS

ARIES®-SLX Fire Alarm/Suppression Control Unit applications that require Factory Mutual (FM) Approval of pre-action and deluge sprinkler systems must conform to the following guidelines:

- The Model THD-7252 Thermal Detector 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 DS-HFS Thermal Detector must be installed at 15 ft. spacings. The pre-alarm and alarm setpoint ranges are as follows:
    - Pre-Alarm: 110° F
    - Alarm: 135° F

- The Signaling Line Circuit must be configured for Class A wiring. Refer to Figure 2-13.

- 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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SECTION 5.2

Kidde Manual
06-237492-001

ARIES-SLX Control Panel
Configuration Tool
User's Guide

ARIES®-SLX
Configuration Tool

User's Guide

Kidde
Fire Systems

FOREWORD

Note: This Manual, P/N 06-237492-001, 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 describe how to use the ARIES®-SLX Configuration Tool (ACT-SLX).

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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Toll Free: (800) 872-6527
Fax: (508) 881-8920

TERMS AND ABBREVIATIONS

AAM	Addressable AlarmLine Module		I/O	Inputs/Outputs
AC	Alternating Current		IRI	Industrial Risk Insurers
ACT	ARIES Configuration Tool		ITLCO	Initial Time Limit Cutoff Interval
ACT-SLX	ARIES-SLX Configuration Tool		MHz	Mega Hertz
AHJ	Authority Having Jurisdiction		NAC	Notification Appliance Circuit
AI	Addressable Input (Monitor Module)		NIC	Network Interface Card
ASM	Addressable Signal Module		NFPA	National Fire Protection Association
AO	Addressable Output		PALM	PEGAsys Addressable Loop Module
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		RRM	Remote Releasing Module
EOC	Event Output Control		SLC	Signaling Line Circuit
FM	Factory Mutual		SUPV	Supervisory
GAO	General Alarm Outputs		UL	Underwriters Laboratory
HSD	High-Sensitivity Smoke Detector		Vdc	Volts (Direct Current)
HSSD	High-Sensitivity Smoke Detector			

NOTICE TO USERS, INSTALLERS, AUTHORITY 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	No	0.5 – 1.5% per foot	Report as alarm initiating devices only
Photoelectric Detectors reporting as supervisory initiating devices	No	0.5 – 3.5% per foot (PSD-7152 detector) or 0.9 - 3.5% per foot (DS-PS detector)	Report as alarm initiating devices only
Delay Operator D()	Yes	1 - 3600 seconds	1 - 60 seconds
Abort switches may be set up to operate within Delay, D(), operators.	Yes	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.	#2 only
Delayed off premises trouble transmissions for AC power loss.	Yes	0 – 12 hours	0 – 3 hours
Monitor module acting as a silence switch.	Yes	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.	Yes	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.
PALM reporting as supervisory device	No	N/A	Report as alarm initiating device only.
Configuring a control unit that is part of a network system as non-resettable via the network.	No	Resettable or Non-resettable via the network (section 2-7.8)	If configured for non-resettable, the control unit must be in a different group and must be configured to not 'log All Events'
Network Setting Network Reset Event	No	'Check' to enable remote Reset. No 'Check' to disable remote Reset.	'Check' to enable remote Reset.

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CHAPTER 1
GENERAL INFORMATION

1-1   INTRODUCTION

Versions of configuration tools, Kidde® ARIES®-SLX Configuration Tool (ACT-SLX) and ARIES Configuration Tool (ACT), are deployed within an application called the "Configuration Software Launcher". This launcher provides the user with one point of access to any version of ACT-SLX and ACT.

ACT-SLX and ACT are Microsoft® Windows®-based applications that are used to create specific applications for ARIES-SLX and ARIES control units respectively. They enable the user to create a complete system configuration, including details for initiating devices, output control and display messages. Details on how to select the appropriate application from within the Configuration Software Launcher are provided in section 1-4.

This manual guides the user on how to set up and configure an ARIES-SLX control unit using ACT-SLX software.

1-2   PC REQUIREMENTS

Minimum computer requirements for ACT-SLX are listed below. System requirements vary between operating systems. Refer to the appropriate section.

For computers with Windows 7 or 8.1 installed:
- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)

For computers with Windows XP installed:
- 300 MHz or faster Pentium-compatible CPU
- 128 MB (RAM) or more

Note: Administrator privileges for the PC are required in order to install the Configuration Software Launcher and Configuration Software.

1-3   INSTALLING THE CONFIGURATION SOFTWARE LAUNCHER AND THE ACT-SLX SOFTWARE

1. Download the configuration software from the Distributor Extranet on **www.kiddefiresystems.com** and save it to a location on your computer.
2. Unzip the downloaded file.
3. Run the file "setup.msi" to start the Setup Wizard.
4. After the Setup Wizard is finished processing, the Setup Wizard Welcome Screen displays.

    Note: The version that is shown in Figure 1-1 (v1.0.5.4) is the version of Launcher, not the version of the ACT-SLX software.

5. Select the **<Next>** button to proceed to the next screen.
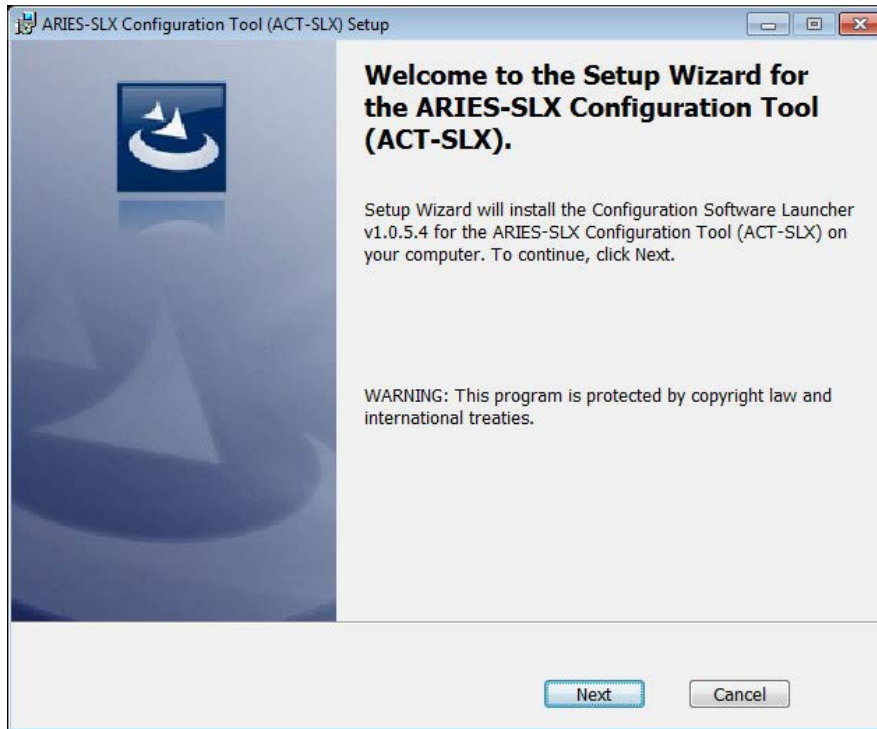
Figure 1-1. Setup Wizard Welcome Screen

6. The Ready to Install the Program screen displays (Figure 1-2). Setup automatically defaults to place the program in the C: drive. Click on the <Install> button to continue with installation.
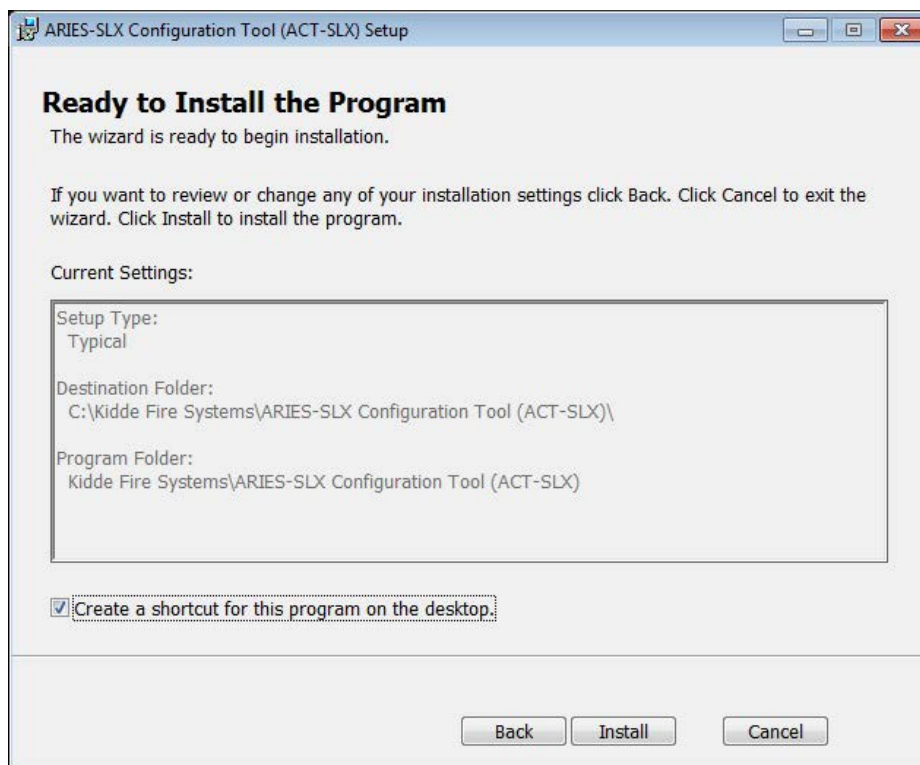
Figure 1-2. Ready to Install Screen

A progress bar displays as the software is being installed.
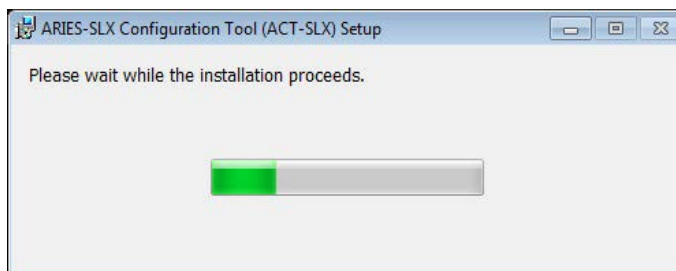
Figure 1-3. Installation Progress Bar

7. The Setup Wizard Complete screen displays (Figure 1-4). Setup of ACT-SLX is complete. If you have rebooted the computer after installing ACT-SLX software previously, there is no need to reboot now. You can select "Launch the Configuration Software Launcher for the ARIES-SLX Configuration Tool (ACT-SLX)" radio button to start the software, then select <Finish>.
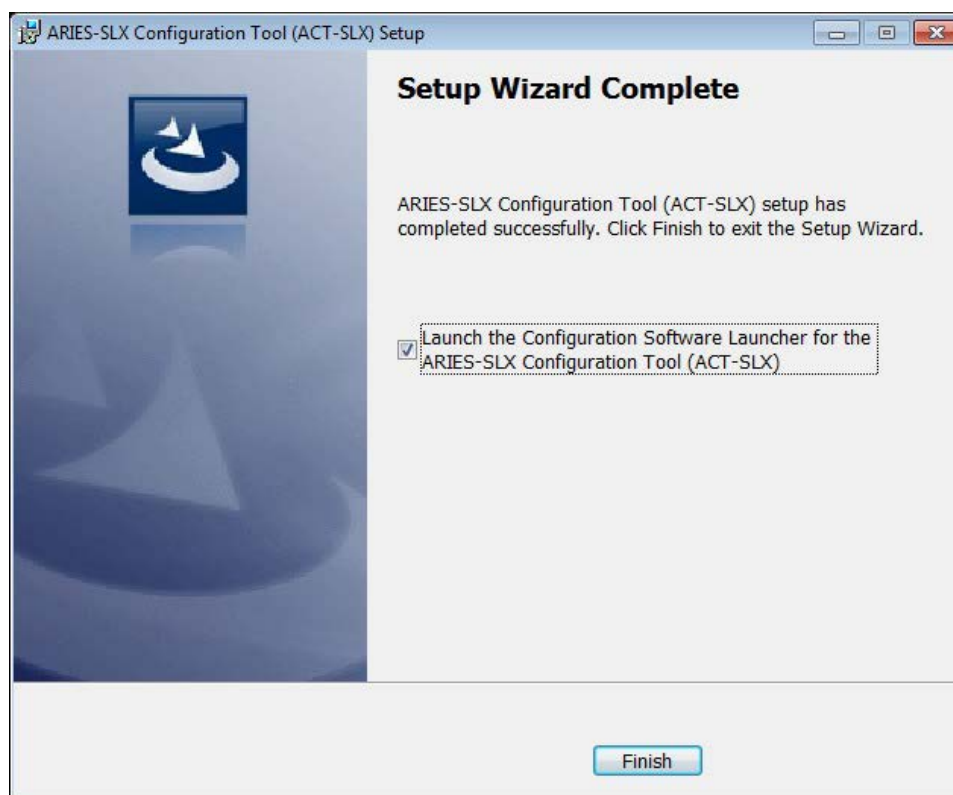
Figure 1-4. Setup Wizard Complete Screen

8. If you have not installed ACT-SLX software previously, please follow the prompts to reboot.
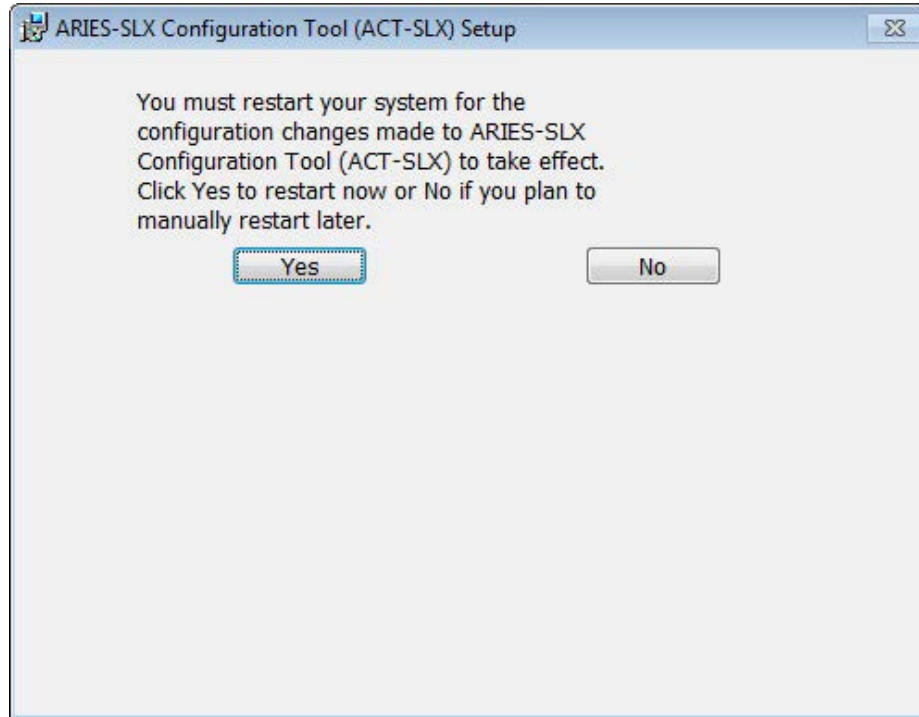
Figure 1-5. Optional Reboot Prompt

1-4   STARTING ACT-SLX

1. From the desktop, double-click the Kidde ACT-SLX icon (the icon displays on the desktop if "Yes" was selected during the installation process when prompted for "Create a shortcut for the program on the desktop?").

2. Alternatively, from the Start menu, select "All Programs". Then, select the "Kidde Fire Systems" folder. Select the "Kidde ARIES-SLX Configuration Tool" folder. Select "Launch Kidde ARIES-SLX Configuration Tool".

    The following screen will display before ACT-SLX starts. This screen allows the user to launch previously-released configuration software versions, enabling communication to older versions of the panel.

    •   Select the desired Control Unit and associated firmware version for the Main Controller Board (MCB) and SLC firmware on the MCB. Click <OK> to launch the configuration tool for the specific Control Unit and MCB/SLC firmware versions. For example, selecting ARIES-SLX MCB_200/SLC_116 – ACT-SLX_200.exe and clicking <OK> launches the ACT-SLX Configuration Tool for ARIES-SLX control units that have MCB firmware version 2.0.0 and SLC firmware version 1.1.6 (for SLCs located on the MCB).

3. Click <Documentation> to access technical manuals and user guides for the specific control unit and MCB/SLC firmware versions.
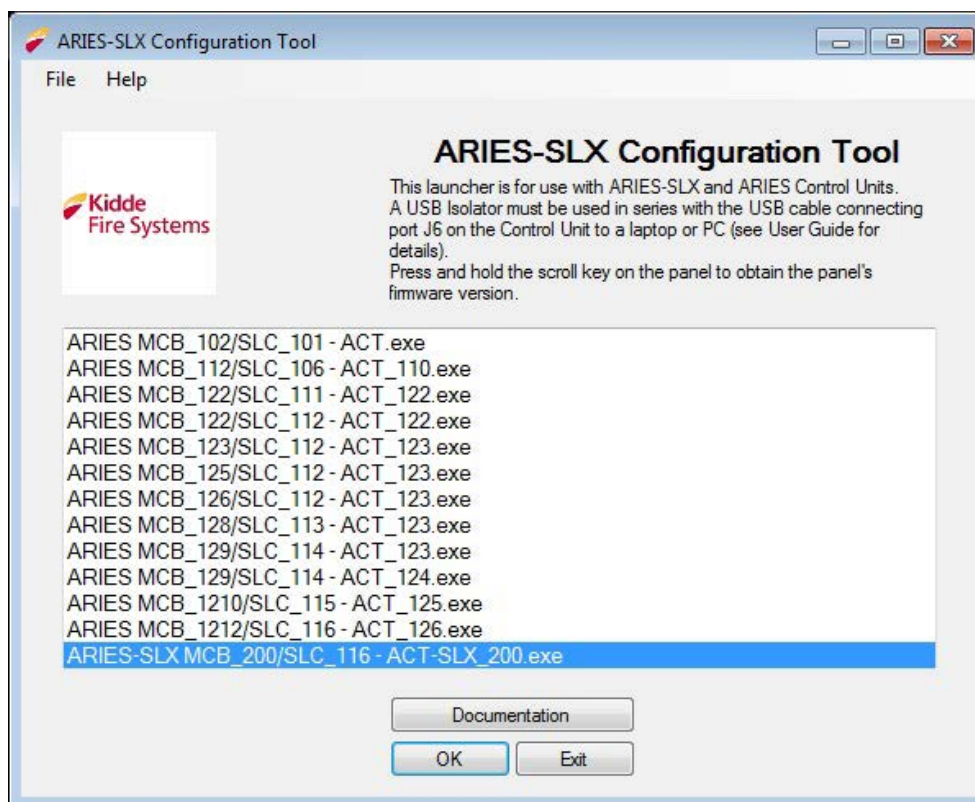
Figure 1-6. Select Firmware Version Screen

The ACT-SLX Welcome Screen displays next:
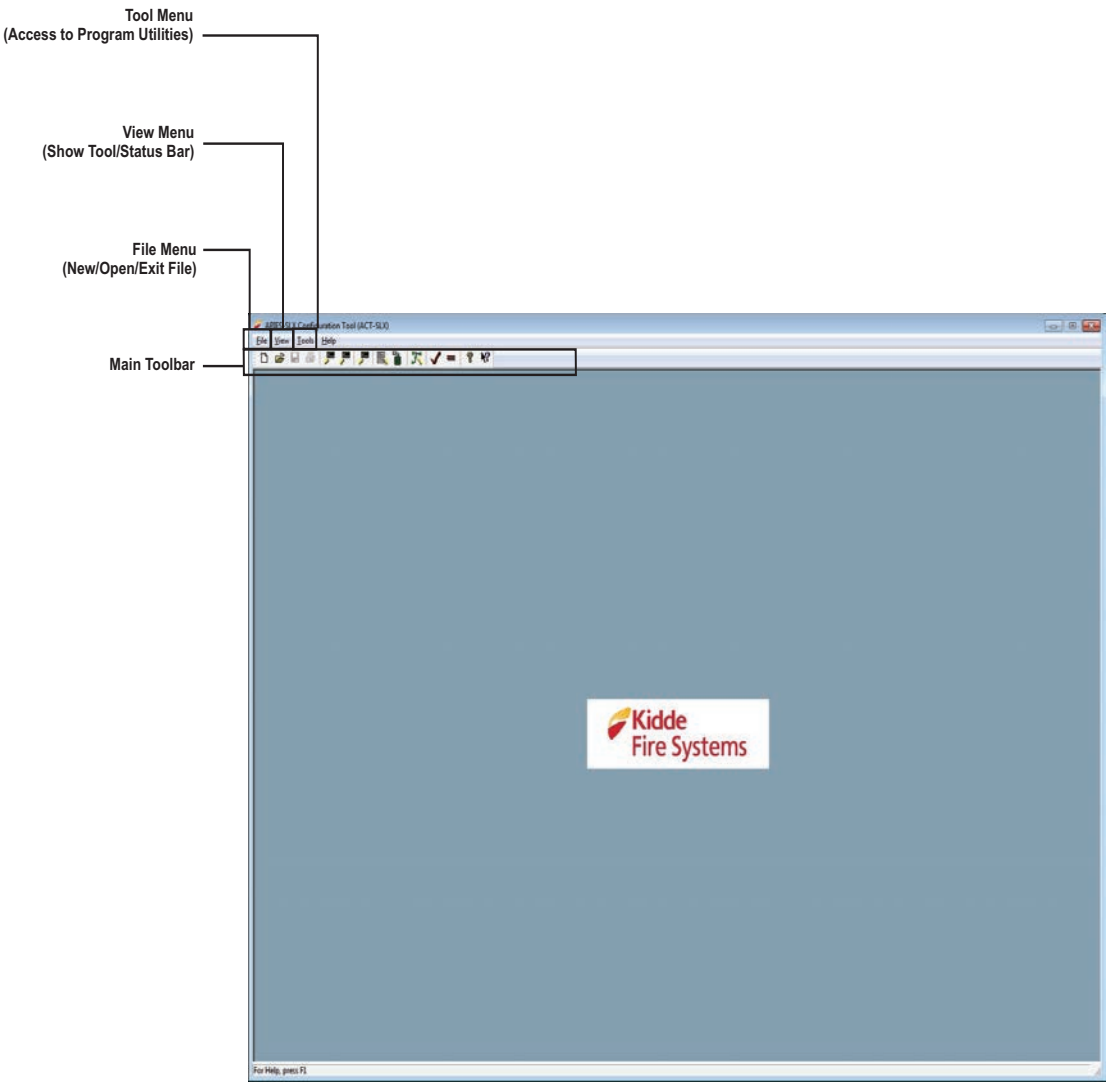
Figure 1-7. Main Screen

Figure 1-8 defines each of the icons located on the toolbar on the Main Screen (Figure 1-7). The operation of the toolbar icons is described in Chapter 4.
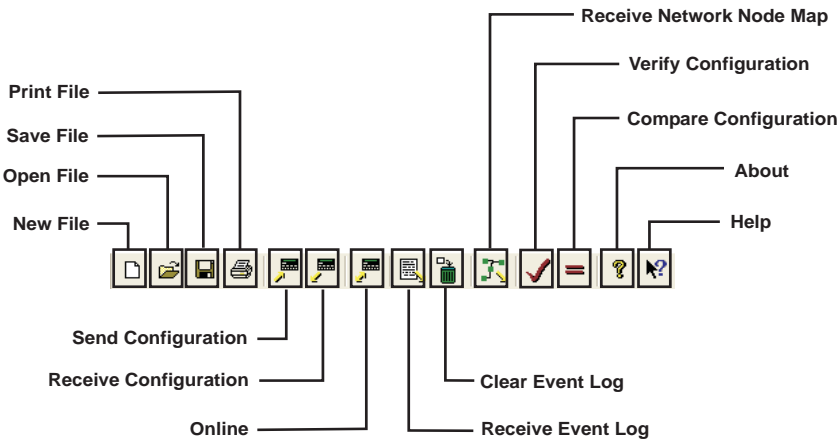
Figure 1-8. Toolbar Icon Definitions

1-5   INSTALLING THE USB DRIVER FOR CONNECTION TO CONTROL UNIT

The computer with ACT-SLX installed cannot communicate via USB with the control unit until a USB driver has been installed. Instructions to install a USB driver are listed below. For proper installation, the computer must be equipped with Microsoft Windows XP, 7, or 8.1.

Note: If you've installed a prior version of the driver, perform the steps in the section entitled: "Section 1-5.3, *Uninstalling the Prior Version of the USB Driver*". Then proceed with this section below.

Note: If you're running Windows 8.1, you should perform the steps in the section entitled: "Section 1-5.5, *Digital Signature Check on Windows 8.1*", then proceed with this section below.

1-5.1   Installing USB Drivers for ACT-SLX on Microsoft Windows XP, 7, or 8.1

1. With the ACT-SLX software installed on your computer, use Windows Explorer to locate the USB driver by browsing to the location where the ACT-SLX software was installed. Example: C:\Kidde Fire Systems\ARIES-SLX Configuration Tool (ACT-SLX)\Data\Drivers

2. Locate the compressed USB driver file that has a name which corresponds to your computer hardware and operating system. For example, the "SLIC_WIN8_64" driver is for a 64-bit computer running Windows 8.1.

3. Extract the contents of the compressed driver file to a temporary folder that you create. For example: C:\Temp\SLIC. **Make a note of the folder location for later use.**

Note: It is recommended that all devices attached to your computer are installed properly (i.e. no yellow exclamation marks are next to any devices in Device Manager).

4. Power on the ARIES-SLX control unit and, after 30 seconds, connect it to your computer using an USB A-to-B type cable.

5. Windows may attempt to automatically install the driver but will not be successful. When it fails or, if it does not attempt to automatically install the driver, open the Device Manager.

6. In Device Manager, locate the entry under "Other devices" entitled "Unknown device". If there are multiple such entries, follow the instructions in the next step to find the correct one. Otherwise, skip the next two steps.

7. To identify the correct "Unknown device", right-click on the device, and select "Properties". Click on the "Details" tab and from "Property", select "Hardware IDs".The correct device will have the following value: "USB\VID_045B&PID_0020&REV_0100"

8. If you cannot find an entry that has the proper values (specified in the prior step), then either you have: 1) a prior version of the driver installed, or 2) you should unplug, reboot your computer, and replug the USB cable and see if the entry shows up. If the latter doesn't work: perform the steps in the section entitled: "Section 1-5.3, *Uninstalling the Prior Version of the USB Driver*", and then restart this section.

9. With the correct "Unknown device" identified, right-click on it, and select "Properties".

10. Select the Driver tab, and click "Update Driver…".

11. An "Update Driver Software" screen opens. Click "Browse my computer for driver software".

12. Click the <Browse> button and go to the location that the extracted USB driver file was saved to in Step 3. Click <Next>.

13. Windows will prompt you to proceed. Click "Install this driver software anyway".

14. At the end of the installation, you should see a prompt indicating that "Windows has successfully updated your driver software". Click <Close> to close Device Manager. If installation fails, please consult Kidde Technical Support.

15. Reboot your computer after installing the driver.

16. To validate that the drivers are installed properly, perform the steps in the section entitled: "Section 1-5.2, *Verifying the Installation of the USB Drivers*".

1-5.2   Verifying the Installation of the USB Drivers

1. With the ARIES-SLX control unit powered on and connected to your computer with the USB cable, open Device Manager.

2. Expand the "Ports (COM & LPT)" entry.

3. If you see a "SLIC (COM##)" entry without a yellow exclamation point, the driver is installed properly. Skip the following steps.

4. If you don't see a "SLIC (COM##)" entry, expand the "Other devices" entry to see if there is an "Unknown device" entry. If there is not, remove the USB cable and reboot your computer. After rebooting, reconnect the USB cable, open Device Manager, and see if either "SLIC (COM##)" or "Unknown device" appears. If it does not appear, you likely have a prior version of the driver installed. Follow the instructions in the section entitled "Section 1-5.3, *Uninstalling the Prior Version of the USB Driver*".

5. If you see an "Unknown Device" entry under "Other devices," follow the steps in the section entitled "Section 1-5.1, *Installing USB Drivers for ACT-SLX on Microsoft Windows XP, 7, or 8.1*", and then repeat this section.

6. If you see a "SLIC (COM##)" entry with a yellow exclamation mark next to it, then the driver isn't installed properly. **A yellow exclamation mark indicates an error with the driver installation**. Follow the instructions in the sections entitled: "Section 1-5.4, *Uninstalling the USB Driver*", "Section 1-5.1, *Installing USB Drivers for ACT-SLX on Microsoft Windows XP, 7, or 8.1*", and then repeat this section.

⚡ **WARNING**   **The following steps must be followed precisely and in order. It is recommended that a Computer Specialist perform or be available while these steps are being performed. If you have any questions, please contact Kidde Fire Systems Technical Support.**

1-5.3   Uninstalling the Prior Version of the USB Driver

1. Using Windows Explorer, locate all temporary folders created to receive the decompressed USB driver files. Remove these folders and the driver files they contain.

2. Disconnect the USB cable between the control unit and your computer.

3. Open a command prompt with Administrator privileges.

4. Type "set devmgr_show_nonpresent_devices=1", and hit enter.

5. Type "start devmgmt.msc", and hit enter. This will open Device Manager.

6. Inside Device Manager select "View>Show Hidden Devices".

7. Locate the "Ports (COM & LPT)" item, and expand it.

8. You will see quite a few entries. For each entry that contains "SLIC Driver (COM##)," follow the instructions in the next step.

9. Select the entry, right-click it, and select <Uninstall>. Check the box that says "Delete the driver software for this device.", and click <OK>. The driver is now uninstalled.

10. Reboot your computer and follow the instructions in the section entitled: "Section 1-5.1, *Installing USB Drivers for ACT-SLX on Microsoft Windows XP, 7, or 8.1*".

1-5.4   **Uninstalling the USB Driver**

1. With your computer connected to the control unit using the USB cable, open the Device Manager.

2. Locate "Ports (COM & LPT)", and expand it.

3. Locate the "SLIC (COM##)" entry and right-click on it.

4. Select "Uninstall".

5. If you can't locate the entry, select each entry under "Ports (COM & LPT)" one at a time, right-click each, and select "Properties".

6. Click on the "Details" tab, then select "Hardware IDs" from the Property pulldown menu.

7. The correct value for the SLIC USB driver is: "USB\VID_045B&PID_0020&REV_0100"

8. When you find the port with the correct Hardware ID, click on the "Driver" tab, and click the "Uninstall" button.

9. When the dialog box appears, check the box that says "Delete the driver software for this device.", and click <OK>. The driver is now uninstalled. Close Device Manager.

1-5.5   **Digital Signature Check on Windows 8.1**

Note: Windows 8 is not supported. Please install the update to Windows 8.1, and then continue with this section.

1. While holding the "Shift" key down, click "Restart".

2. Once your computer has rebooted, select "Troubleshoot", then "Advanced Options", and "Startup Settings".

3. Finally, click on "Restart".

4. After the computer restarts, select option 7.

5. If you performed this section, after leaving another section, go back and repeat the steps in that other section.

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CHAPTER 2
CREATING A SYSTEM APPLICATION

2-1   INTRODUCTION

The tasks required to create an ACT-SLX application are as follows:

- Assign an address and define the operating characteristics for each device on the signaling-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 Terminal 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 ARIES®-SLX 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-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 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.
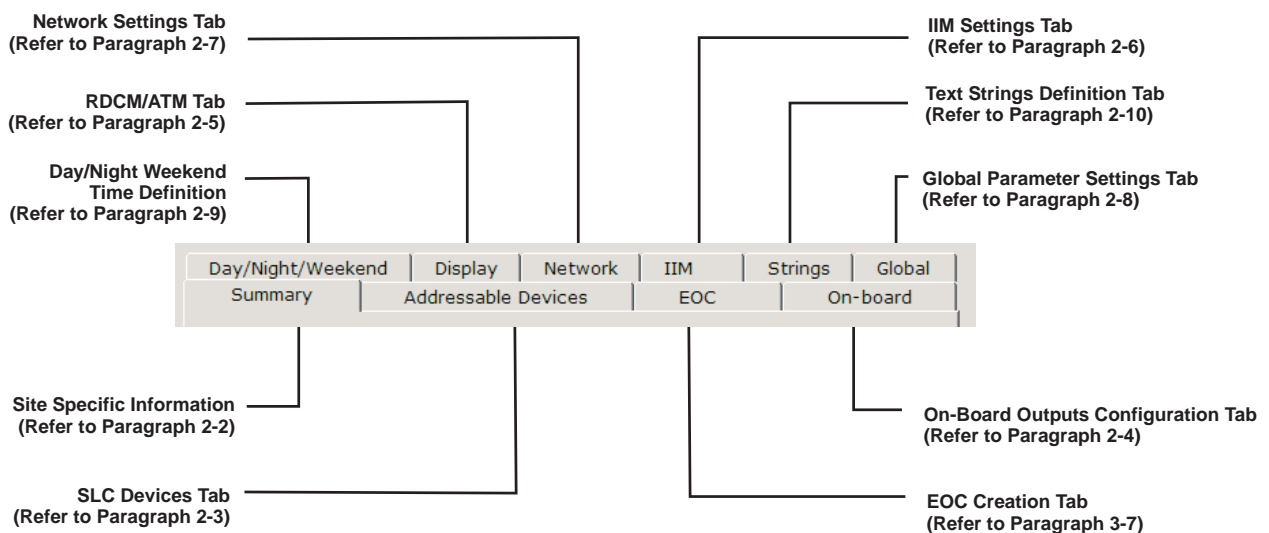
Figure 2-1. Definition of Tabs

2-1.1   Before You Begin - Version Compatibility

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 an older version of the program.

Note: 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.

ACT-SLX software is currently at version 2.0.0.

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.
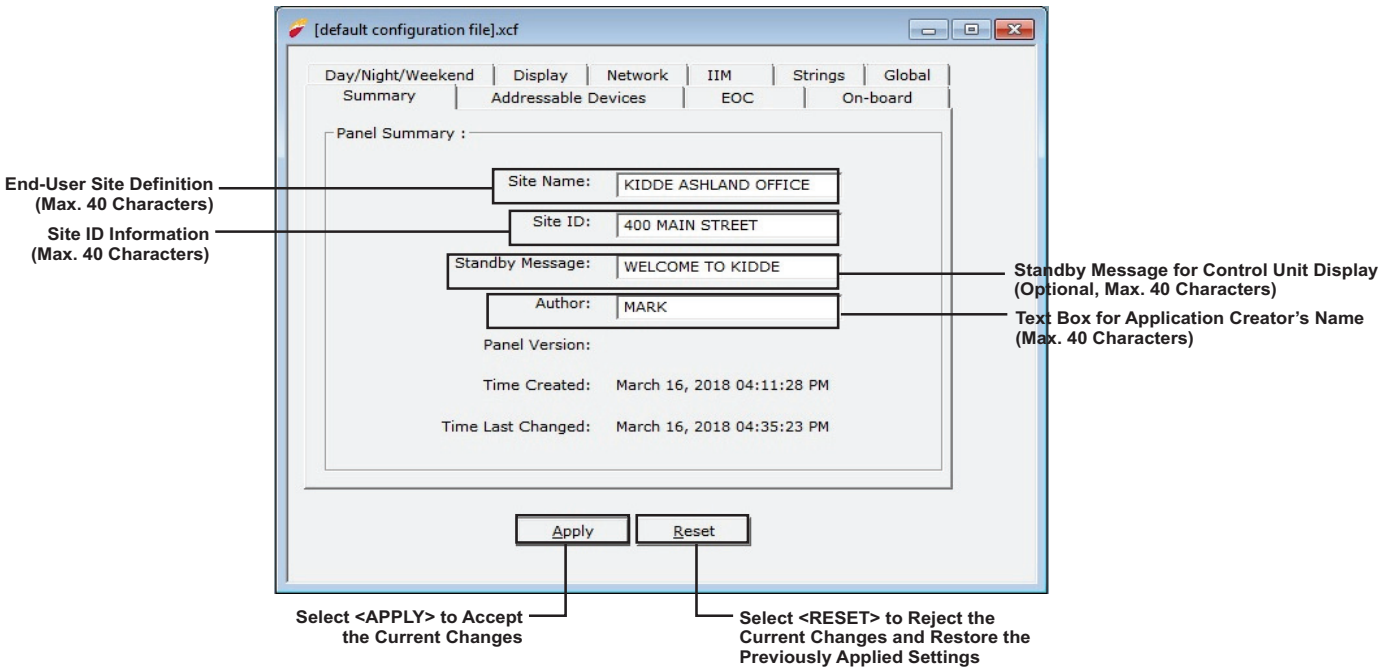
Figure 2-2. Summary Screen

2-3   CONFIGURING SLC DEVICES (ADDRESSABLE DEVICES TAB)

    1. Select the "Addressable Devices" tab; Figure 2-3 displays.
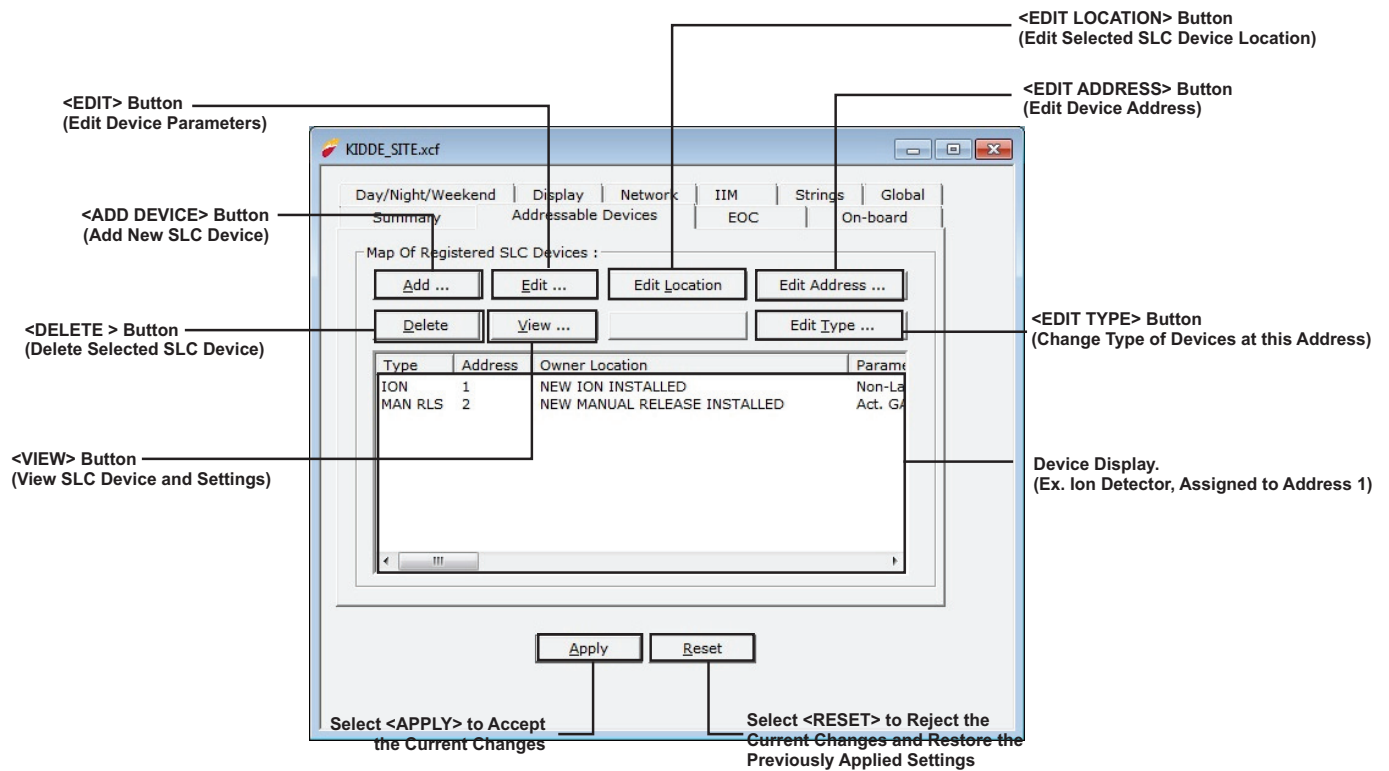
Figure 2-3. Addressable Devices Screen

    2. Select the **<Add Devices>** button; Figure 2-4 displays.
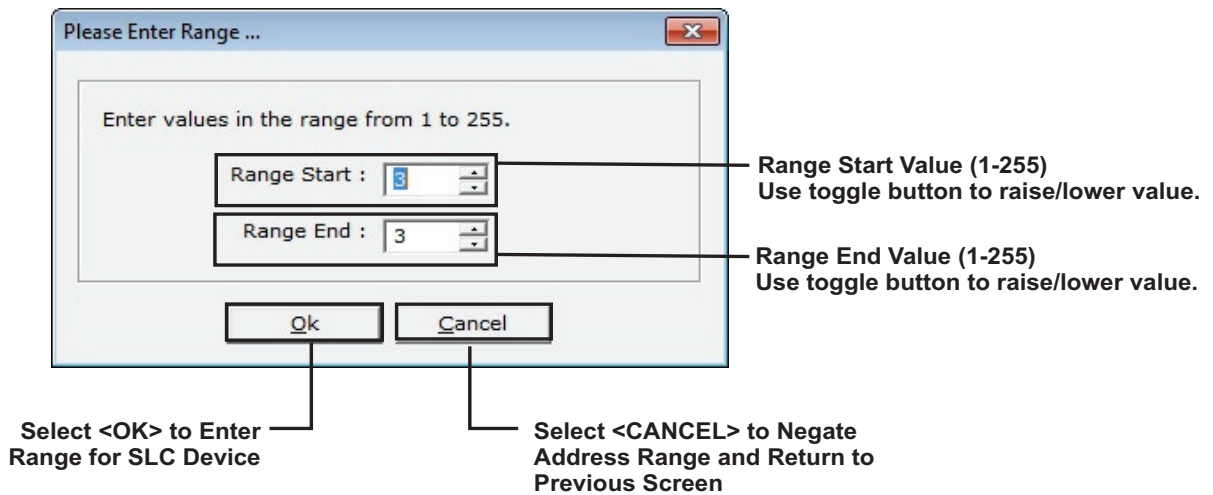
Figure 2-4. SLC Address Box Screen

3. Enter the starting and ending device address(es), then select **<OK>**. Figure 2-5 displays showing the list of SLC devices.
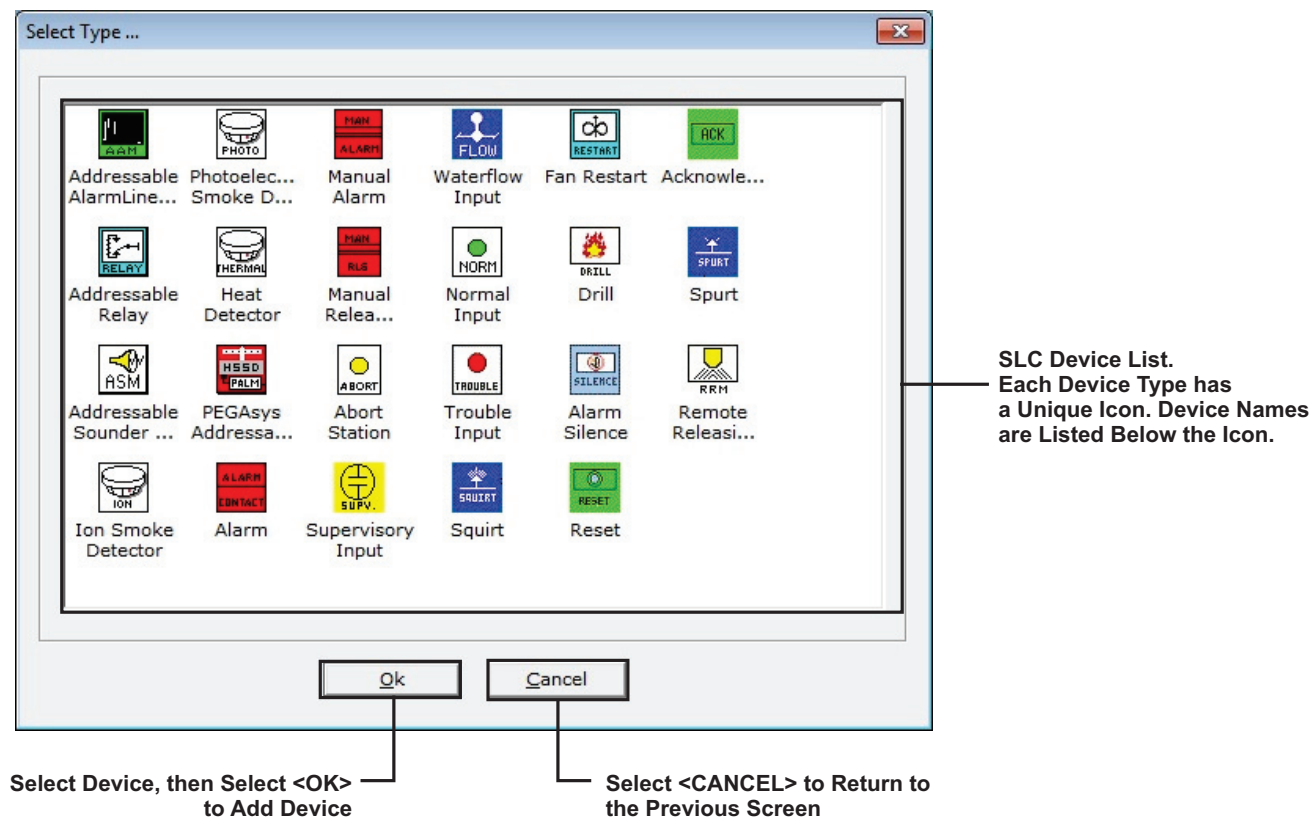
Figure 2-5. SLC Device List

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 2-3.21 give detailed information about each device. See Table 2-7 for an explanation of the configurable parameters found in the SLC device screens.

2-3.1 Addressable AlarmLine™ Module (AAM) Screen
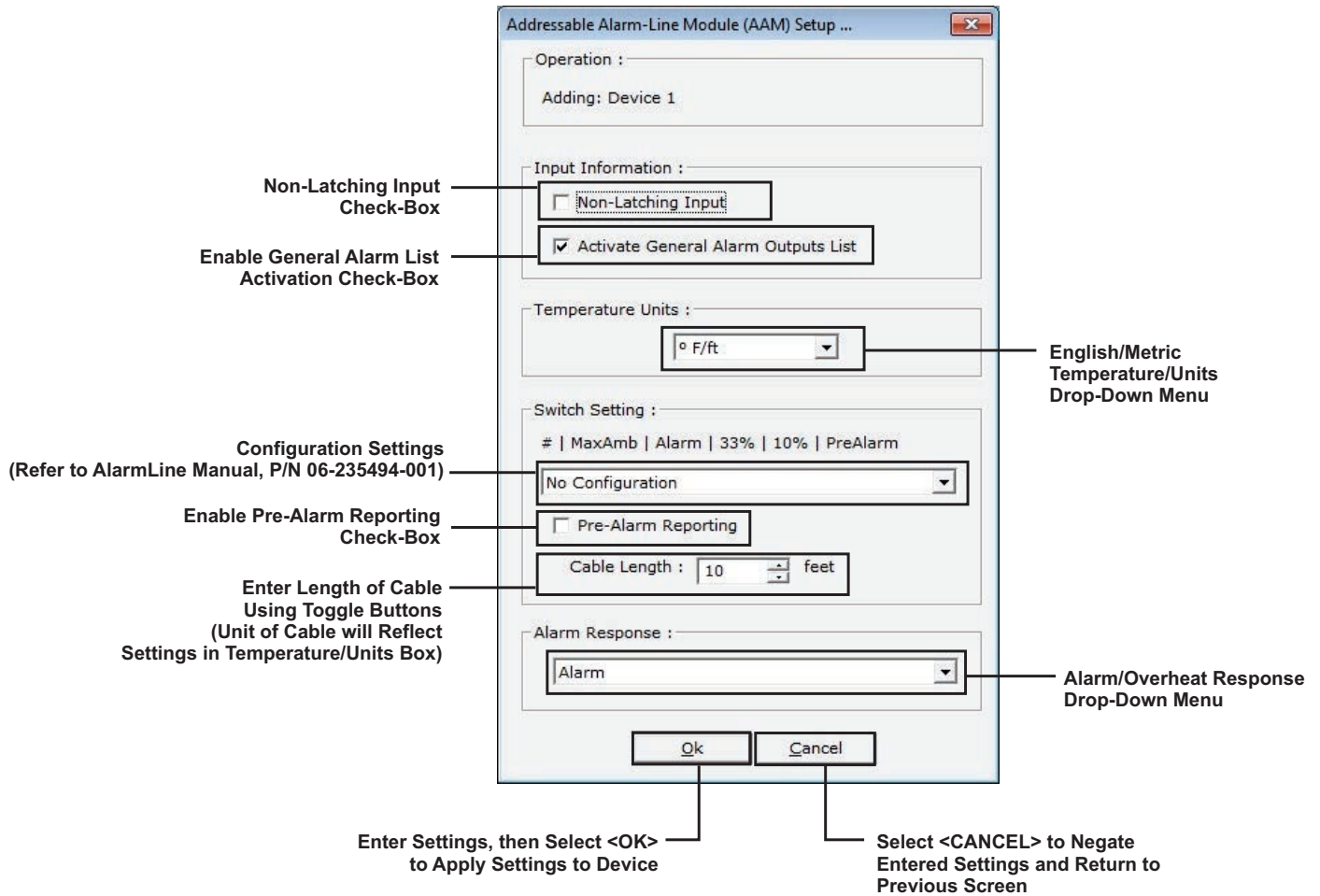
Figure 2-6. Addressable AlarmLine Module Screen

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

Make AO Silenceable Check-Box

Enter AO in General Alarm List Check-Box

Active AO on Fire Drill Check-Box

Configure AO for Sequential De-Activation Check-Box

Activate AO for Initiating Signals Created During Walk Test Check-Box

Configure AO for Fan Re-Start Check-Box

Enter Settings, then Select <OK> to Apply Settings to Device

Select <CANCEL> to Negate Entered Settings and Return to Previous 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 ARIES-SLX 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 Signal Module Screen

Make ASM Silenceable Check-Box

Enter ASM Into General Alarm List Check-Box

Activate ASM on Fire Drill Check-Box

Activate ASM for Initiating Signals Created During Walk Test Check-Box

Enter Settings, then Select <OK> to Apply Settings to Device

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen
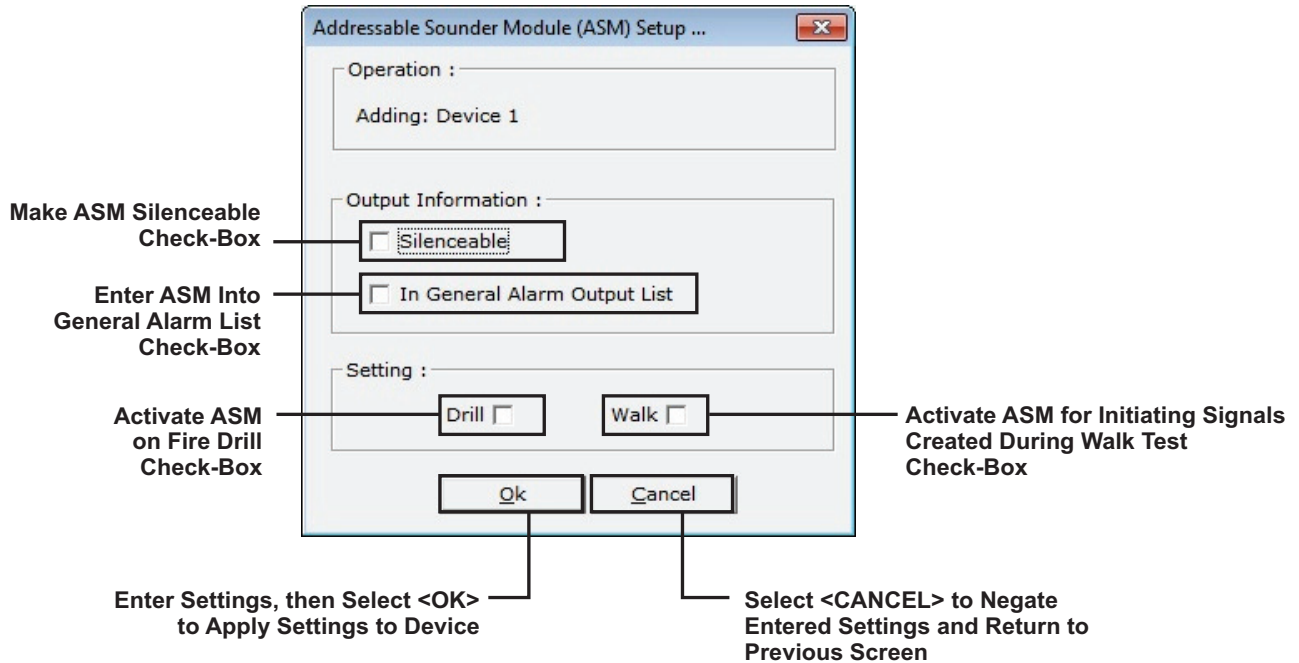
Figure 2-8. Addressable Signal Module (ASM) Screen

2-3.4 Model CPD-7052 Ionization Smoke Detector Screen

Enable Non-Latching Input Check-Box

Enable General Alarm List Activation Check-Box

Optional Relay Check-Box

Application Selection (See Paragraph 2-3.4.1 for an Explanation of Applications)

Pre-Alarm Threshold (Use Toggle Buttons to Increase/Decrease)

Alarm Threshold (Use Toggle Buttons to Increase/Decrease)

Day/Night/Weekend Alarm Threshold Adjustment Check-Box

Alarm Verification Check-Box

PAS Check-Box

Night Alarm Threshold Check-Box (Available with Day/Night/Weekend Setting)

Enter Settings, then Select <OK> to Apply Settings to Device

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen

Figure 2-9. Module CPD-7052 Ionization Smoke Detector Screen

2-3.4.1   APPLICATION DEFINITIONS VIA DROP-DOWN MENU

- **Open-area.** The CPD-7052 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. CPD-7052 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
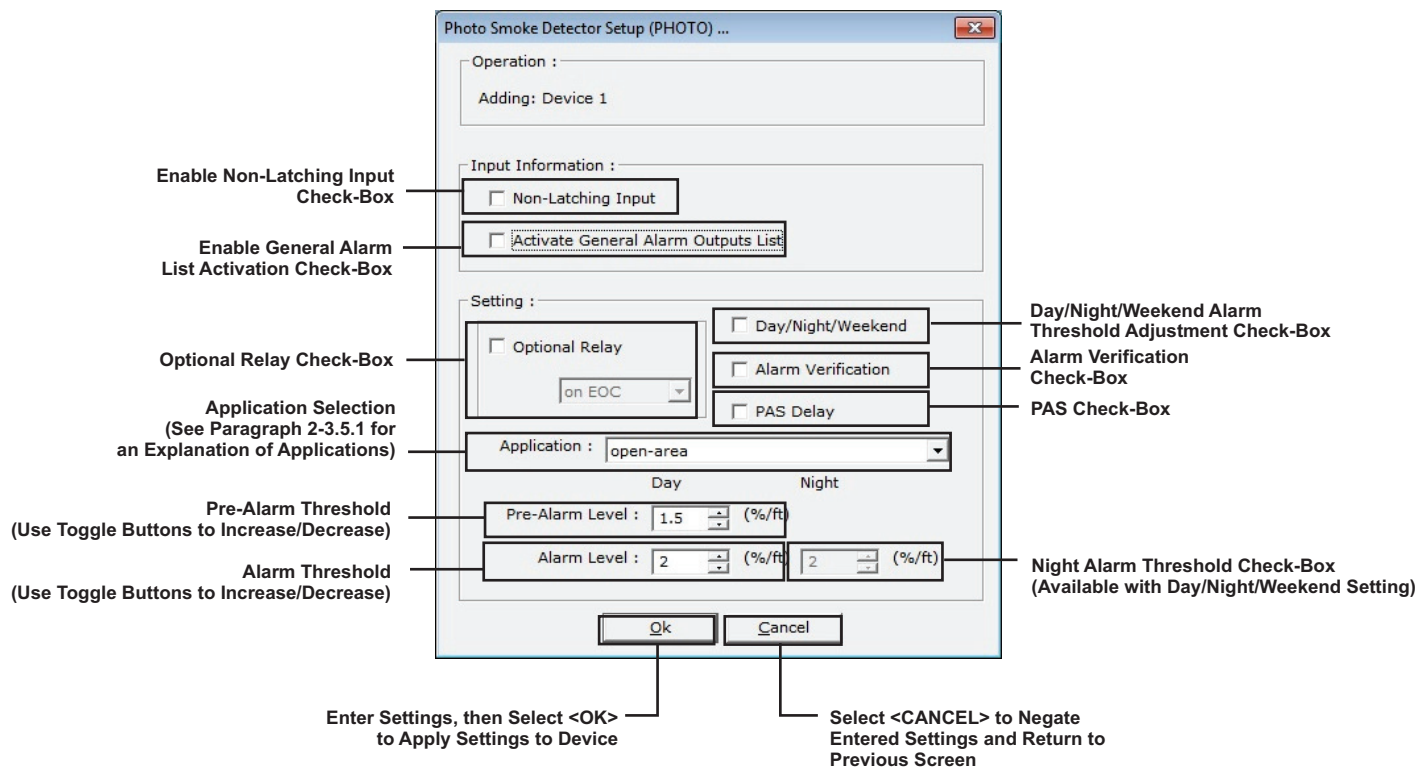
Figure 2-10. Model PSD-7152 Photoelectric Smoke Detector Screen

2-3.5.1   APPLICATION DEFINITIONS VIA DROP-DOWN MENU

- **Open Area.** The PSD-7152 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-Alarm Range (%/ft.)	Alarm 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.** PSD-7152 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 PSD-7152 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. PSD-7152 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 DS-PS Photoelectric Smoke Detector Screen

Figure 2-11. Model DS-PS Smoke Detector Screen

2-3.6.1   APPLICATION DEFINITIONS VIA DROP-DOWN MENU

- **open-area.** The DS-PS photoelectric detector is UL Listed and FM Approved for alarm reporting anywhere within the obscuration range of 0.9-3.5 percent per foot when used for an open-area application. Alarm thresholds can be set in 0.1 percent-per-foot increments. Alarm default value is 2.0 percent per foot.
  A Pre-Alarm threshold can also be set anywhere within the obscuration range of 0.7 to 3.4 percent per foot, but must be less than the detector's alarm threshold. Pre-Alarm default value is 1.5 percent per foot.

- **in-duct.** The In-Duct setting refers to detector placement in an air duct. 0.7 to 1.9 percent per foot is recommended for In-Duct use.

Table 2-5. DS-PS Photoelectric Smoke Detector Pre-Alarm, Alarm, Night Ranges

Application	Pre-Alarm Range (%/foot)	Alarm Range (%/foot)	Night Range (%/foot)
Open Area	0.7 to 3.4	0.9 to 3.5	0.9 to 3.5
In-Duct	0.7 to 1.9	0.9 to 2.0	0.9 to 2.0
Supervisory Service (Open-Area)	0.7 to 3.4	0.9 to 3.5	0.9 to 3.5
Supervisory Service (In-Duct)	0.7 to 1.9	0.9 to 2.0	0.9 to 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 or In-Duct).** The photoelectric detector can also be programmed to report a supervisory condition anywhere within the obscuration range of 0.9 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.

Note: If the installer enters a pre-alarm below 0.7% or alarm below 0.9%, the following prompt appears:
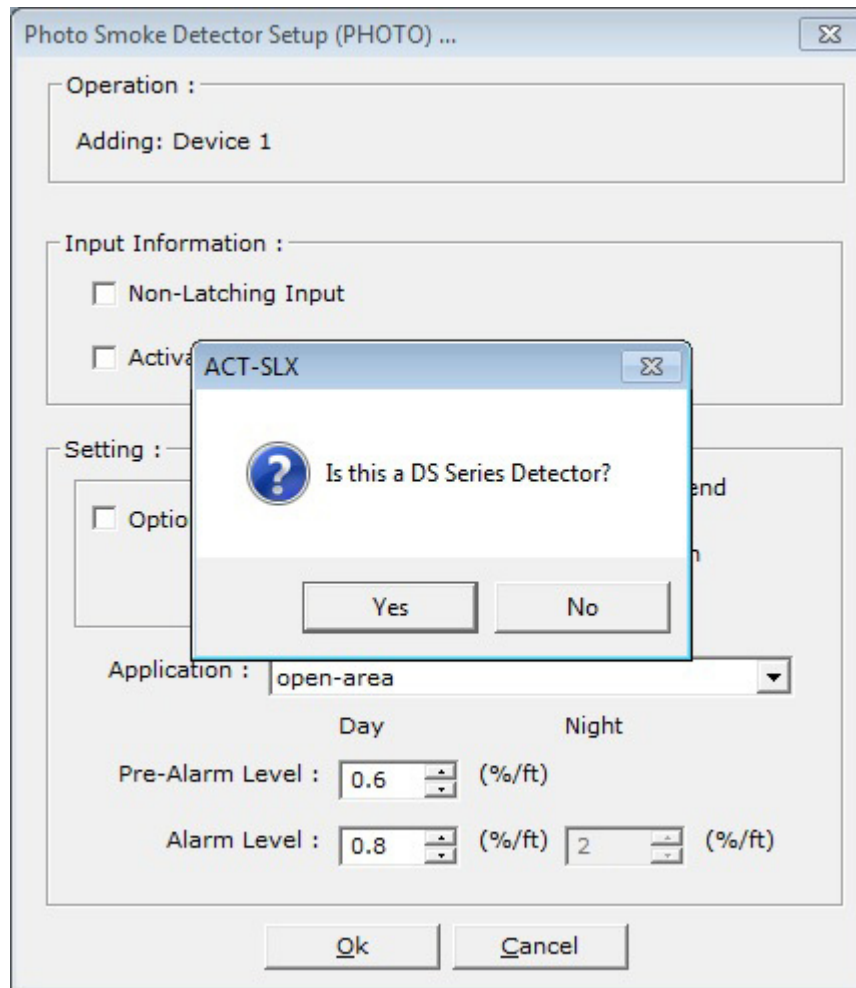
Figure 2-12. DS-PS Photoelectric Smoke Detector Screen with prompt

- Answering <**Yes**> cancels the edit dialog and sets the threshold to the lowest possible setting (for DS Series detector use).
- Answering <**No**> allows the setting and keeps the configuration edit dialog box open (for legacy detector use).

2-3.7　　Model THD-7252 Heat Detector Screen
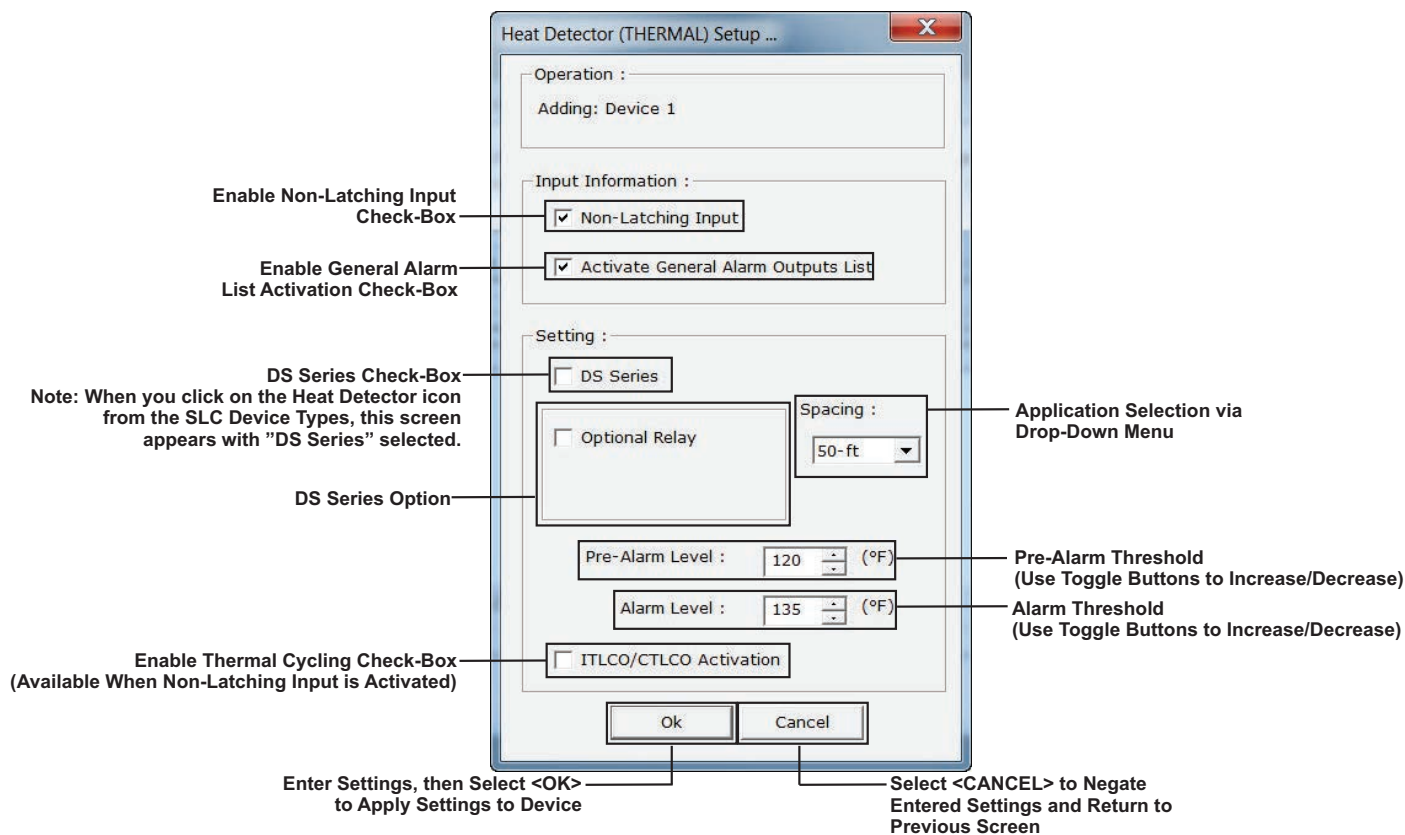
Figure 2-13. Model THD-7252 Heat Detector Screen

The THD-7252 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 1°F increments. Alarm default value is 135°F. 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. Pre-alarm default value is 120°F.

The pre-alarm/alarm ranges for the Model THD-7252 are listed in Table 2-6.

Table 2-6. THD-7252 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

2-3.8   Model DS-HFS Heat Detector Screen
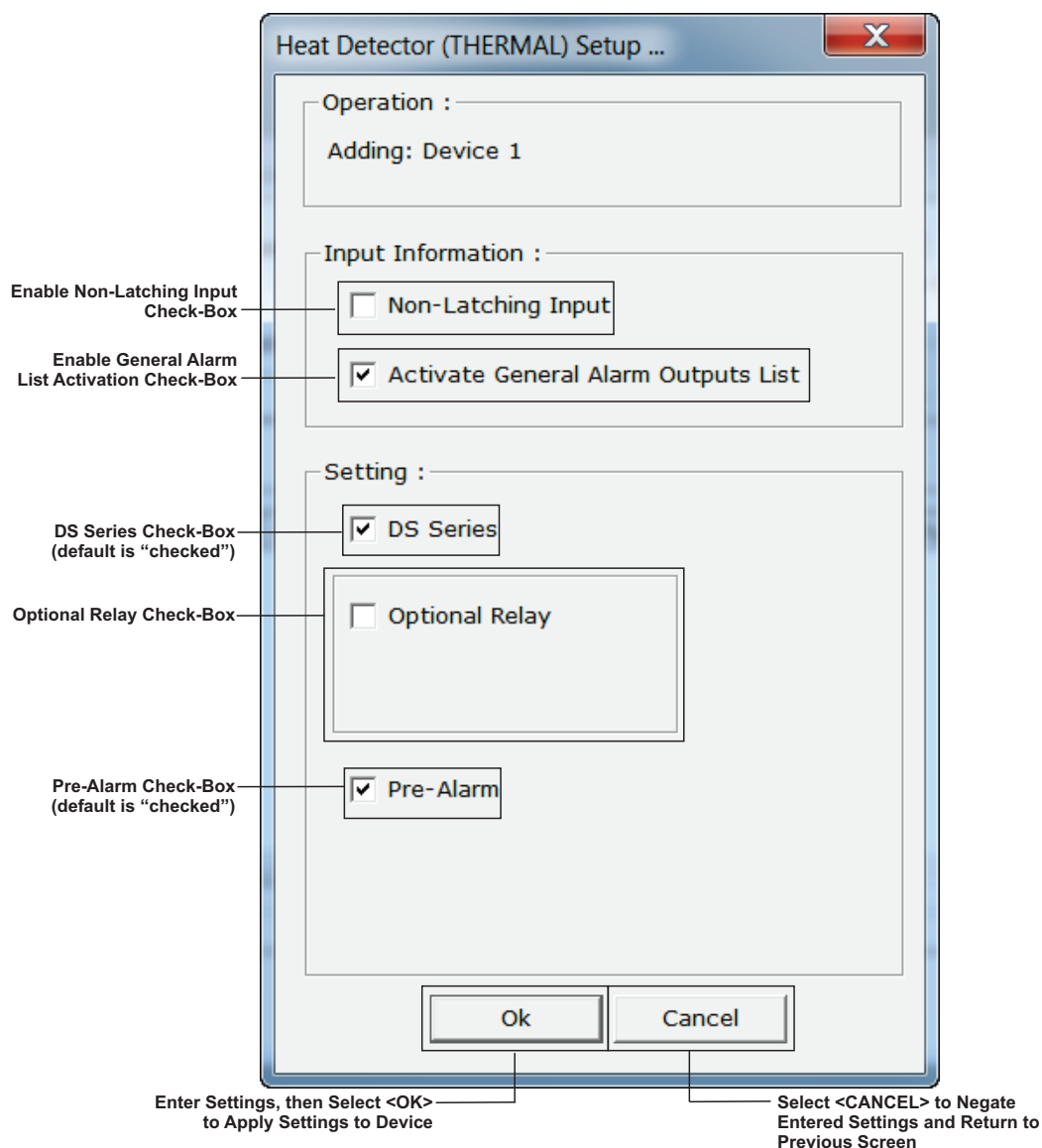
Figure 2-14. Model DS-HFS Heat Detector Screen

- The DS-HFS thermal detector is UL Listed and FM Approved for alarm reporting at 135°F. The DS-HFS does <u>NOT</u> have a configurable Alarm threshold.
- The Alarm value is 135°F at 50 feet spacing. Spacing at 70 feet is not permitted for a DS-HFS detector.
- If Pre-Alarm is checked, the Pre-Alarm value is set to 110°F.

2-3.9   **Heat Detector Thermal Cycling**

A heat detector is configurable for thermal cycling as shown in Figure 2-15. Non-Latching Input checkbox must be checked. 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.
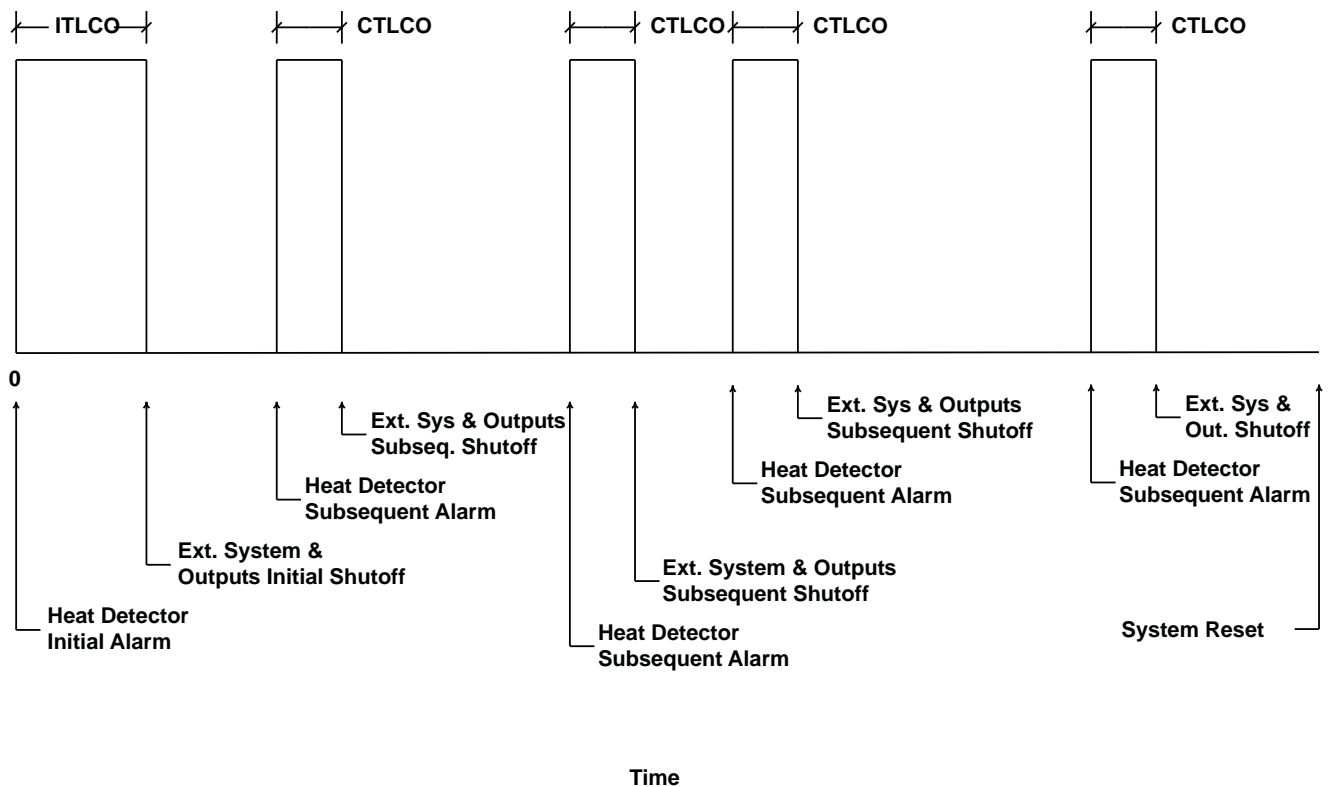
Figure 2-15. Typical Thermal Cycling System

2-3.10 PEGAsys Addressable Loop Module (PALM) Screen

Enable Non-Latching Input Check-Box

Enable General Alarm List Activation Check-Box (Not Available if 'Supervisory Initiating Device' is Selected)

Configure PALM for Alarm Reporting Radio Button

Configure PALM for Supervisory Reporting Radio Button

Enter Settings, then Select <OK> to Apply Settings to Device

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen

Figure 2-16. PALM Screen

2-3.11 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:

Enable Non-Latching Input Check-Box

Enable General Alarm List Activation Check-Box

Enable Thermal Cycling Check-Box (Available When Non-Latching Input is Activated)

Enter Settings, then Select <OK> to Apply Settings to Device

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen
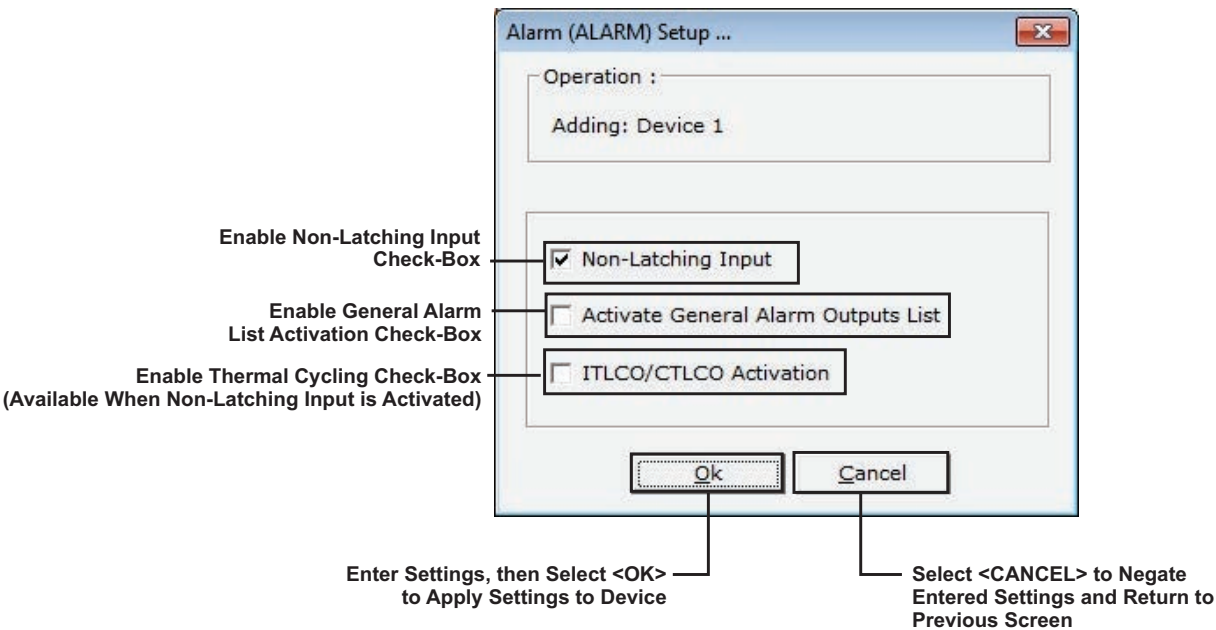
Figure 2-17. Alarm Contact Screen

Note: The unpowered alarm contact can be either normally-open or normally-closed. Order P/N 70-4X70X8-001 for normally-open contacts and P/N 70-4X70X8-002 for normally-closed contacts.

2-3.12   Manual Alarm Station Screen
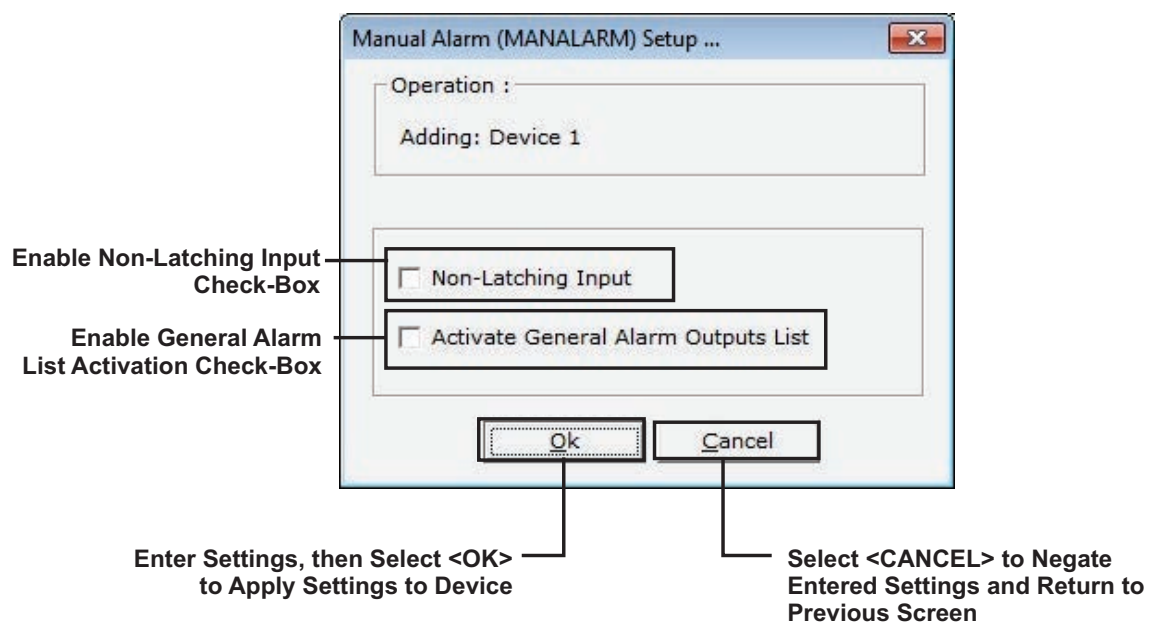
Figure 2-18. Manual Alarm Station Screen

Note: Address all manual-alarm stations within the range of 1 to 32 (if possible).

2-3.13   Manual Release Station Screen
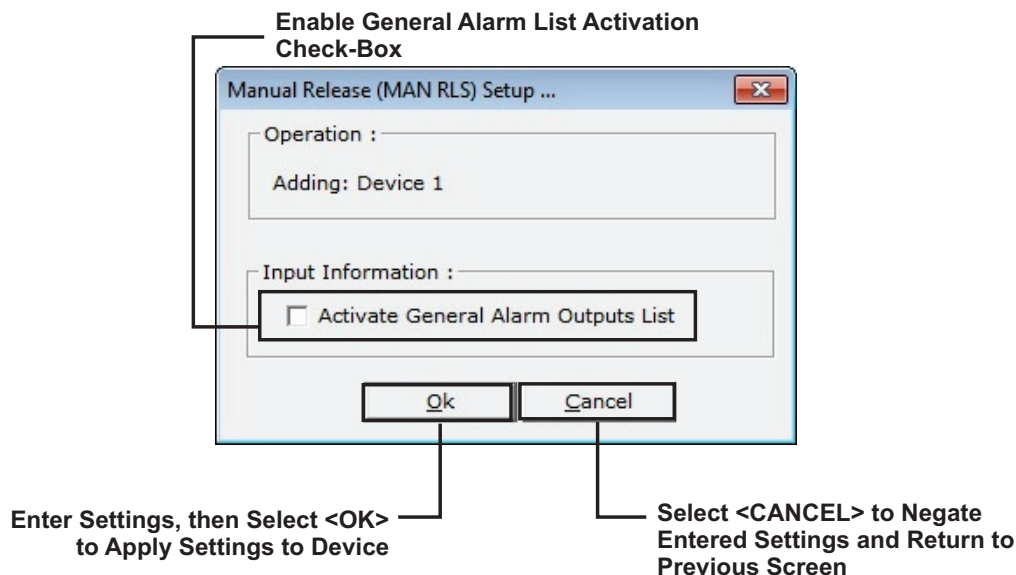
Figure 2-19. Manual Release Station Screen

Note: Address all manual-release stations within the range of 1 to 32 (if possible).

2-3.14   Abort Station Screen
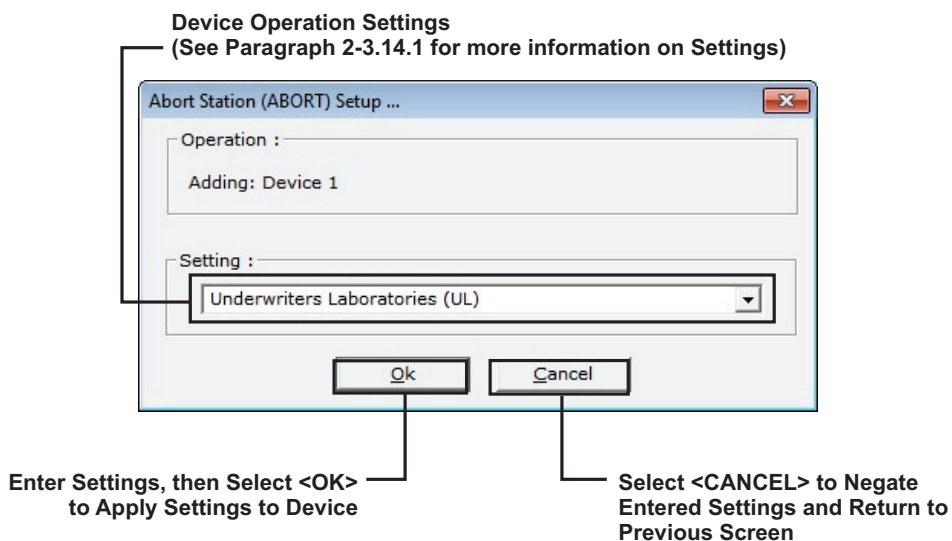
Figure 2-20. Abort Station Screen

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. Order P/N 70-4X70X8-001 for normally-open contacts and P/N 70-4X70X8-002 for normally-closed contacts.

2-3.14.1   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.

2-3.15   Supervisory Screen
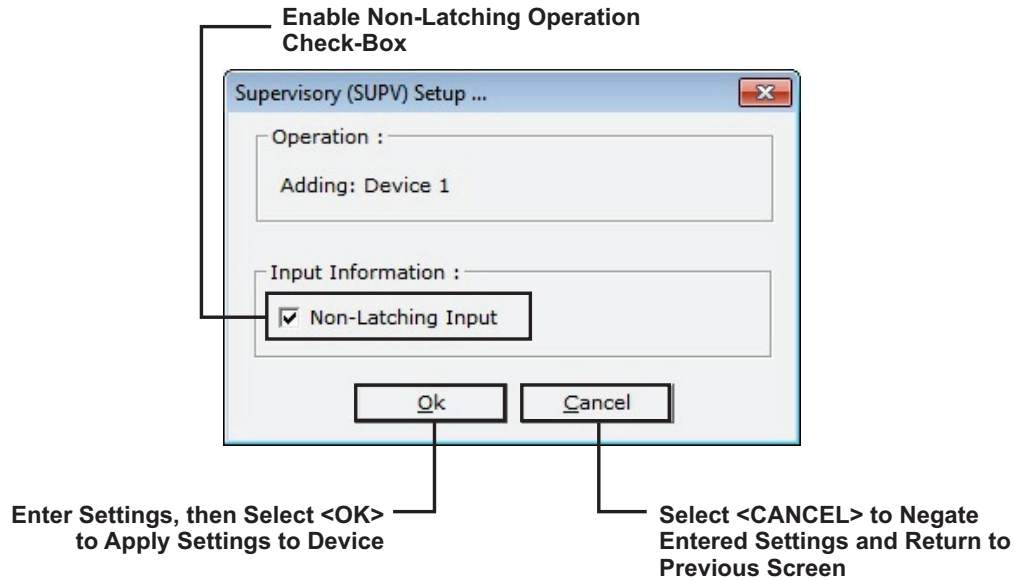
Figure 2-21. Supervisory Screen

Note: The unpowered supervisory switch can be either normally-open or normally-closed. Order P/N 70-4X70X8-001 for normally-open contacts and P/N 70-4X70X8-002 for normally-closed contacts.

2-3.16   Waterflow Screen
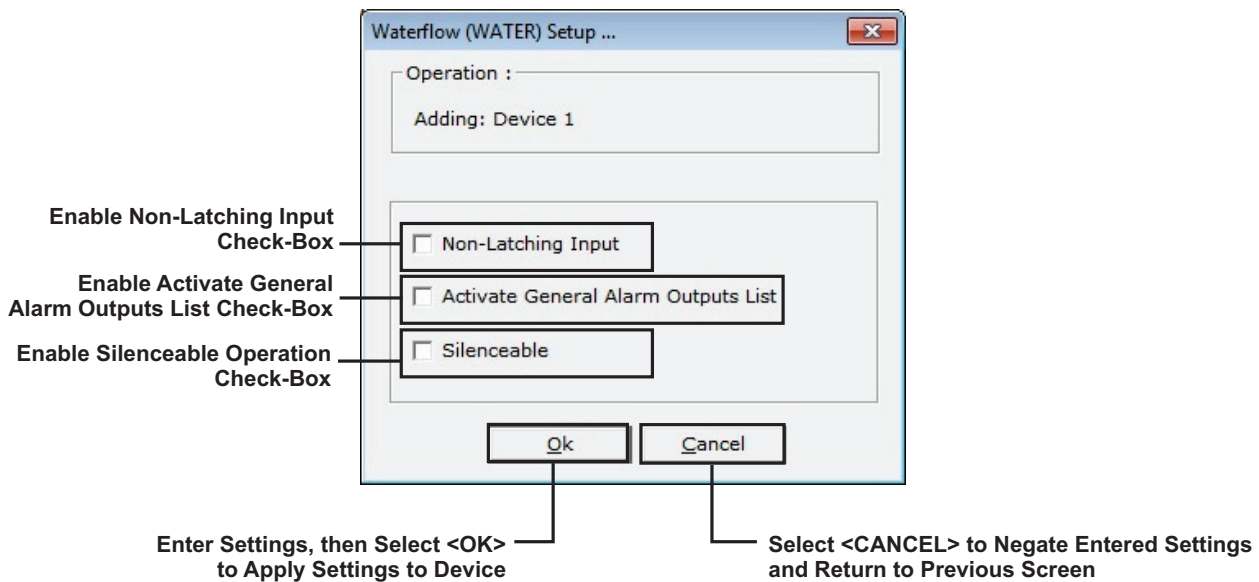
Figure 2-22. Waterflow Screen

Note: The unpowered waterflow contact can be either normally-open or normally-closed. Order P/N 70-4X70X8-001 for normally-open contacts and P/N 70-4X70X8-002 for normally-closed contacts.

2-3.17   Squirt Device Screen
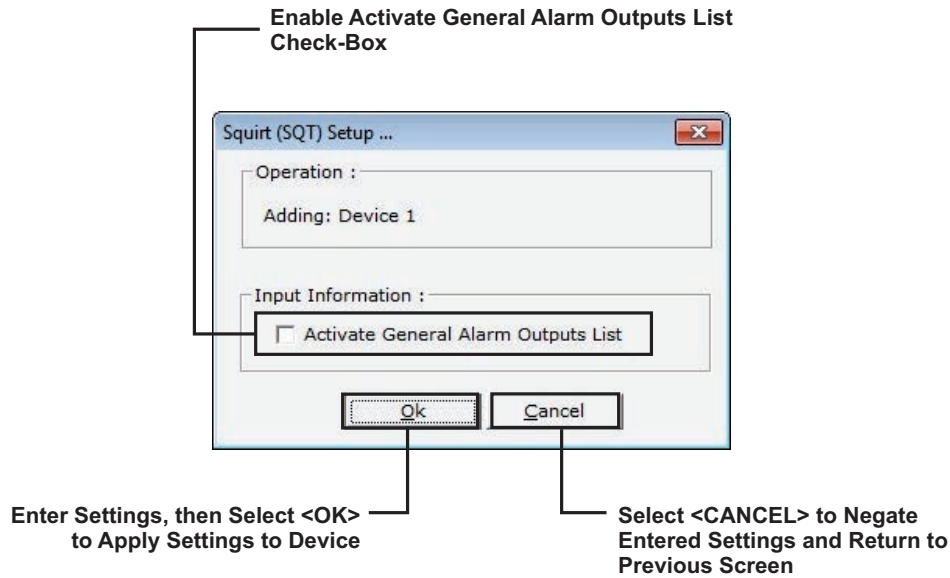
Figure 2-23. Squirt Device Screen

A Squirt Device is a manually-operated switch that is used to reactivate an extinguishing system after it is automatically deactivated following the expiration of the initial-time-limit-cutoff interval (ITLCO). The extinguishing system will reactivate when the squirt switch is operated and remain active as long as the user maintains the squirt switch in the active position. The extinguishing system will de-energize when the operation of the squirt device ceases.

The unpowered squirt device must be a normally-open, dead-man type switch. Order P/N 70-4X70X8-001 for normally-open contacts.

2-3.18   Spurt Device Screen
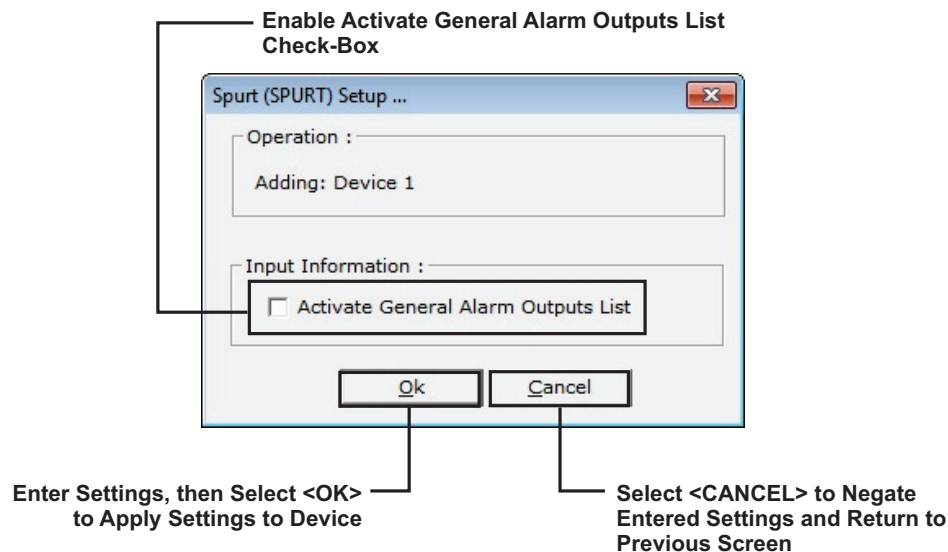
Figure 2-24. Spurt Device Screen

A Spurt Device is a manually-operated switch which is similar in functionality to a manual-release station with the exception that its associated extinguishing system will de-energize when the Spurt Device is released. The unpowered spurt device must be a normally-open, dead-man type switch. Order P/N 70-4X70X8-001 for normally-open contacts.

2-3.19 Remote Releasing Module Screen

This section is divided into three parts:

- Configuring an RRM with an **Actuator** releasing device
- Configuring an RRM with an **Initiator** releasing device
- Configuring an RRM with a **Solenoid** releasing device

Figure 2-25, Figure 2-26, Figure 2-27 and Figure 2-28 illustrate how to configure the Remote-Releasing Module.

2-3.19.1 CONFIGURING THE RRM WITH AN ACTUATOR RELEASING DEVICE
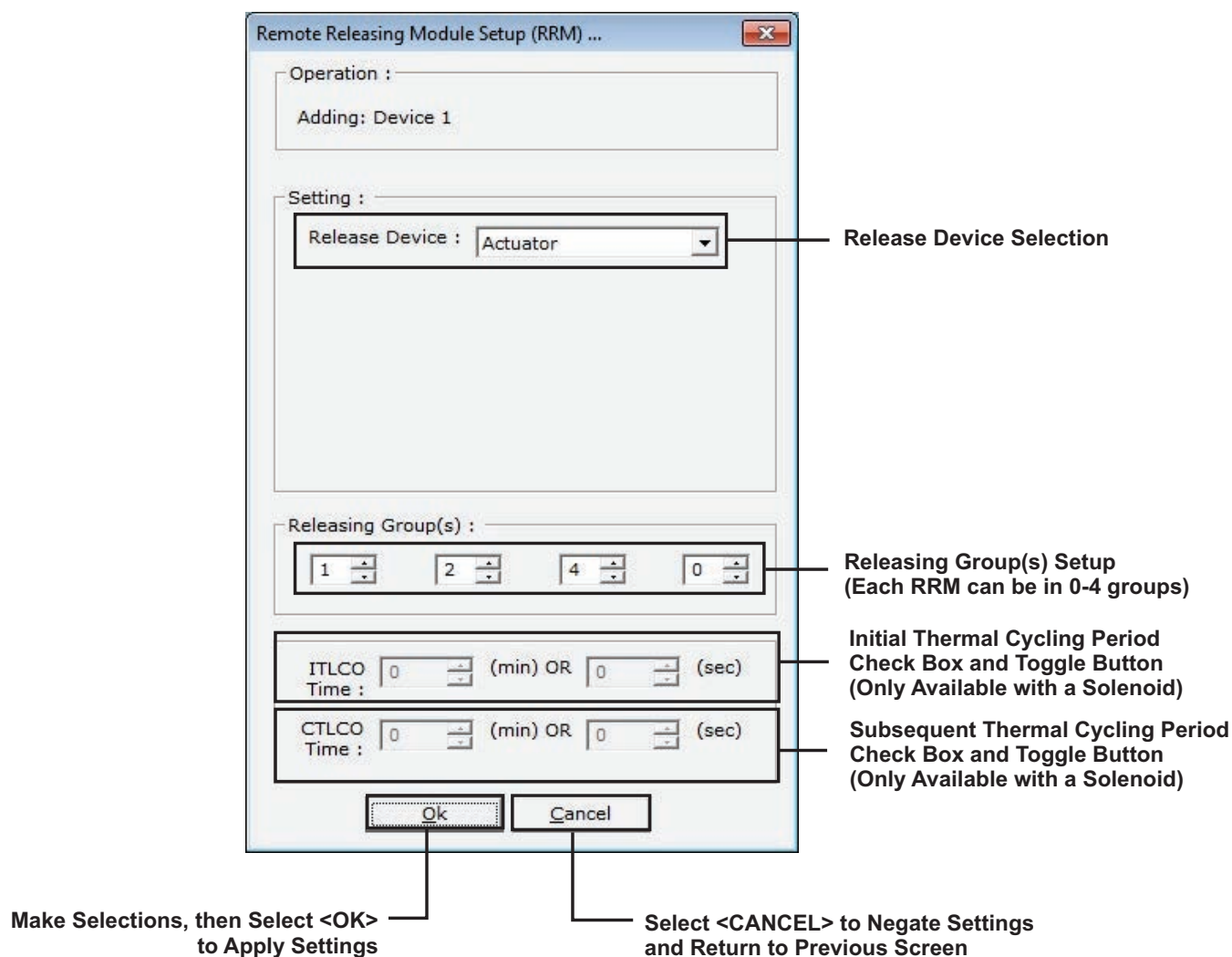
Figure 2-25. Remote Releasing Module Screen (Using an Actuator as a Releasing Device)

1. In the "Releasing Device" dropdown menu, select "Actuator".
2. If required, use the "Releasing Group(s)" menu to add the RRM to up to 4 groups.

2-3.19.2   CONFIGURING THE RRM WITH AN INITIATOR RELEASING DEVICE
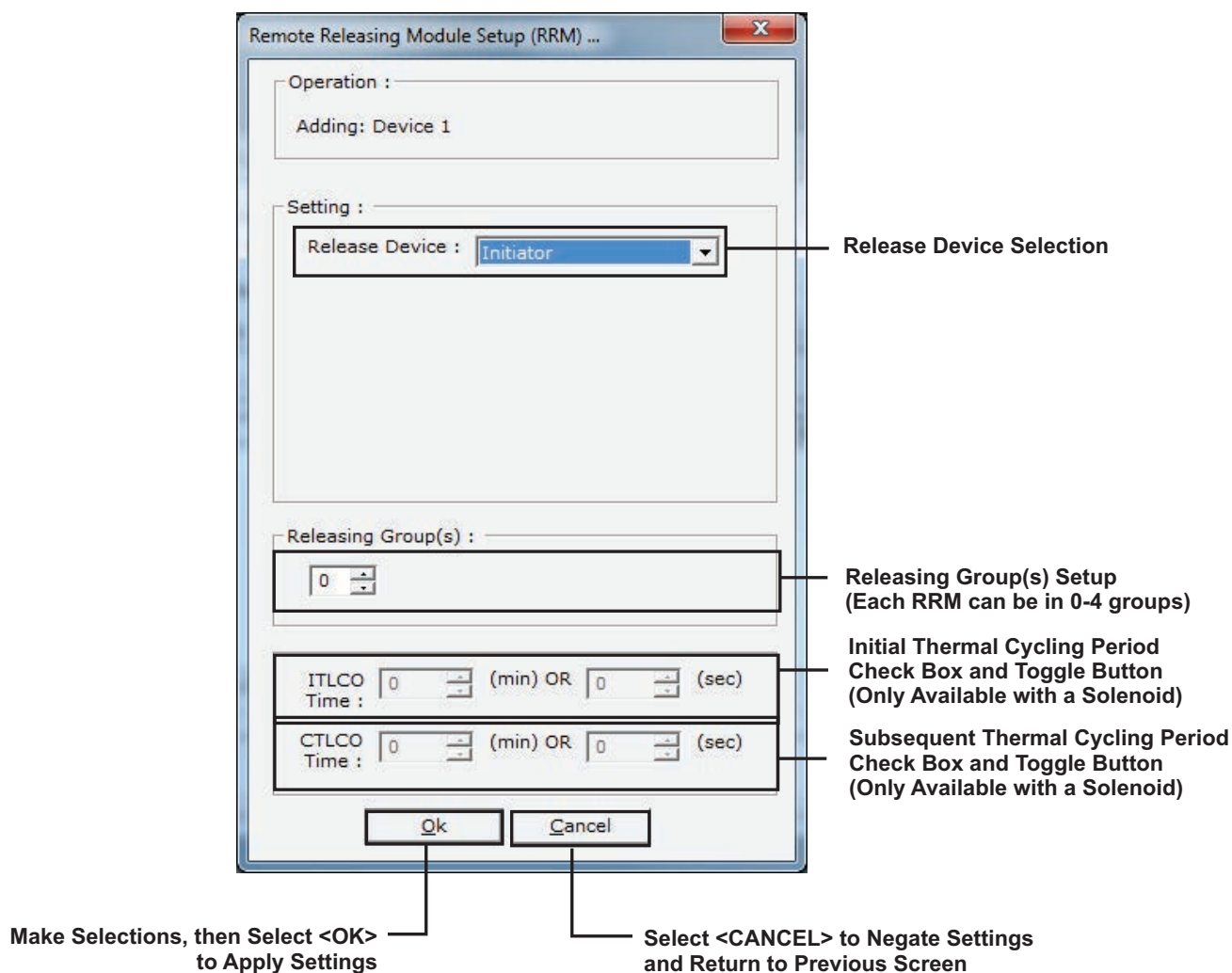
Figure 2-26. Remote Releasing Module Screen (Using an Initiator as a Releasing Device)

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.

2-3.19.3   CONFIGURING AN RRM WITH A SOLENOID RELEASING DEVICE
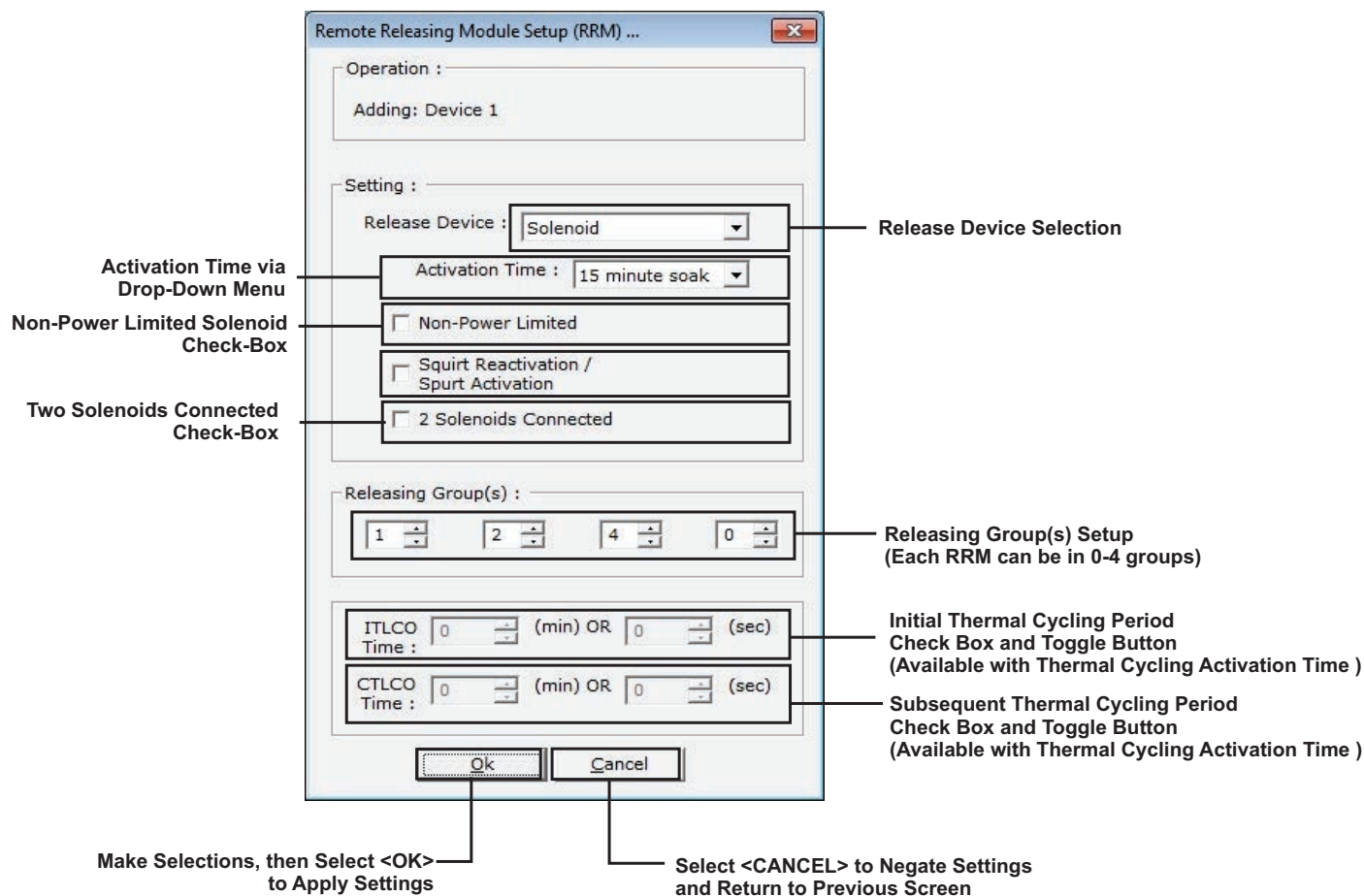
Figure 2-27. Remote Releasing Module Screen
(Using a Solenoid as a Releasing Device and Multiple Groups)
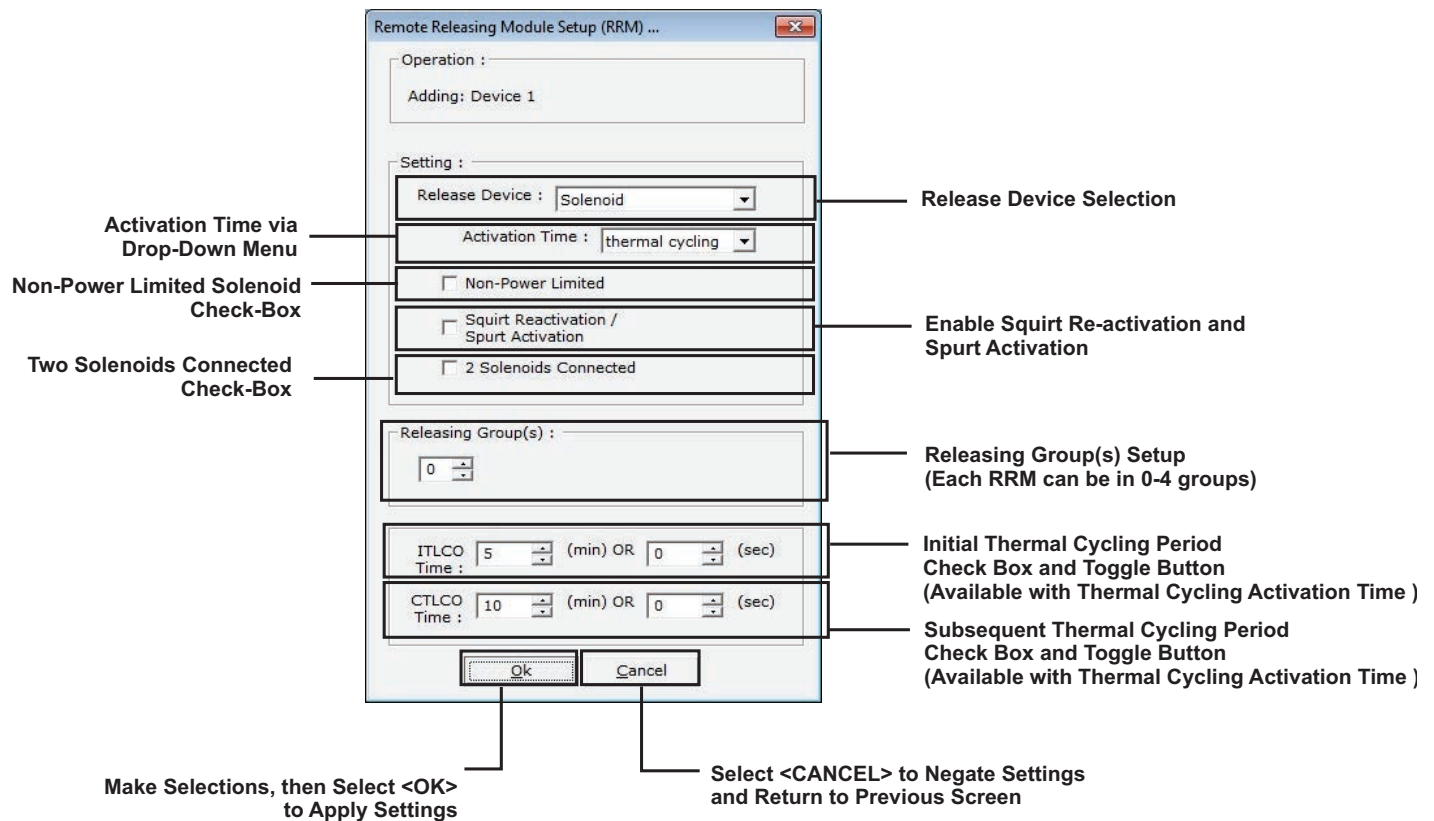
Figure 2-28. Remote Releasing Module Screen
(Using a Solenoid as a Releasing Device and Thermal Cycling)

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.

2-3.20 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 device momentarily reports via the ARIES-SLX display and 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 70-4X70X8-001 for normally-open contacts and P/N 70-4X70X8-002 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 70-4X70X8-001 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 70-4X70X8-001 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 70-4X70X8-001 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 70-4X70X8-001 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 70-4X70X8-001 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 70-4X70X8-001 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 2-7. 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 confirmation 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 ARIES-SLX 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 ARIES-SLX 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 aborts if a Non-Latching initiating device reports an "Alarm-Off" message prior to the expiration of the countdown timer.

Table 2-7. 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 activates 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.

2-3.21   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).
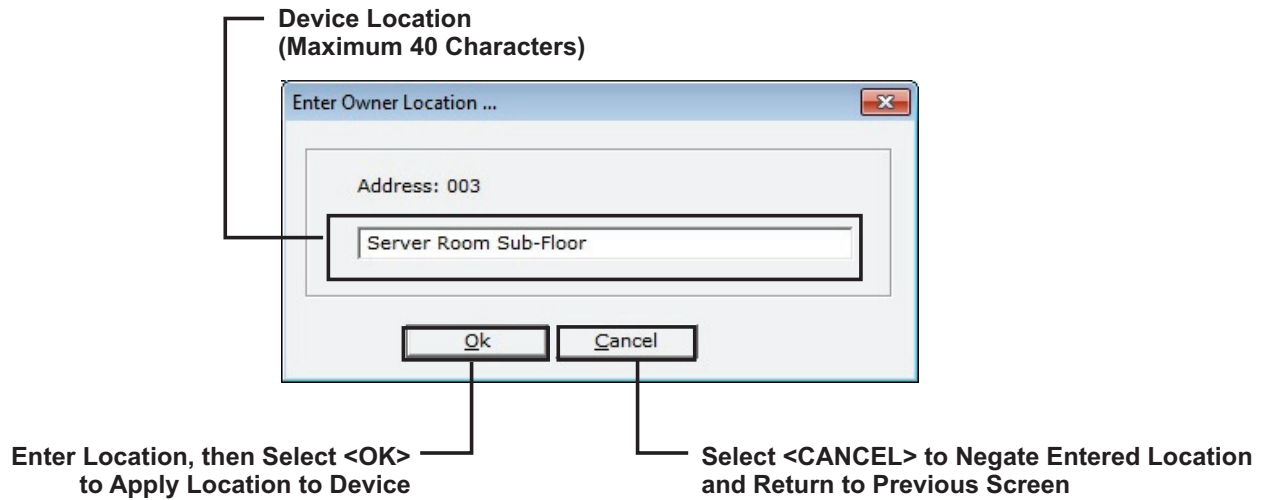
**Device Location
(Maximum 40 Characters)**

Enter Owner Location ...

Address: 003

Server Room Sub-Floor

Ok   Cancel

**Enter Location, then Select <OK>
to Apply Location to Device**

**Select <CANCEL> to Negate Entered Location
and Return to Previous Screen**

Figure 2-29. 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.

2-3.22   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.

2-3.23 **Editing Device Parameters for a Single or Multiple SLC Device(s)**

Follow the applicable procedure to edit a single or multiple SLC devices

2-3.23.1 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.

2-3.23.2 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. The following screen displays.

Figure 2-30. Multiple Device Edit Screen

3. 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.

4. The applicable screen displays with the parameters for the device. Change the parameters as required and click the **<OK>** button.

2-3.24 **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.
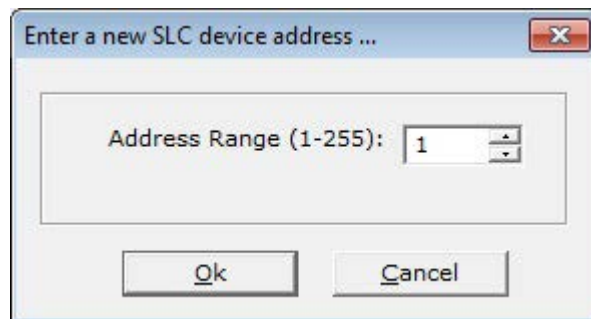
Figure 2-31. Edit Address Screen

3. Enter the new address using the keyboard or toggle buttons. Click **<OK>** to apply the new address.

2-3.25   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 2-32 displays.
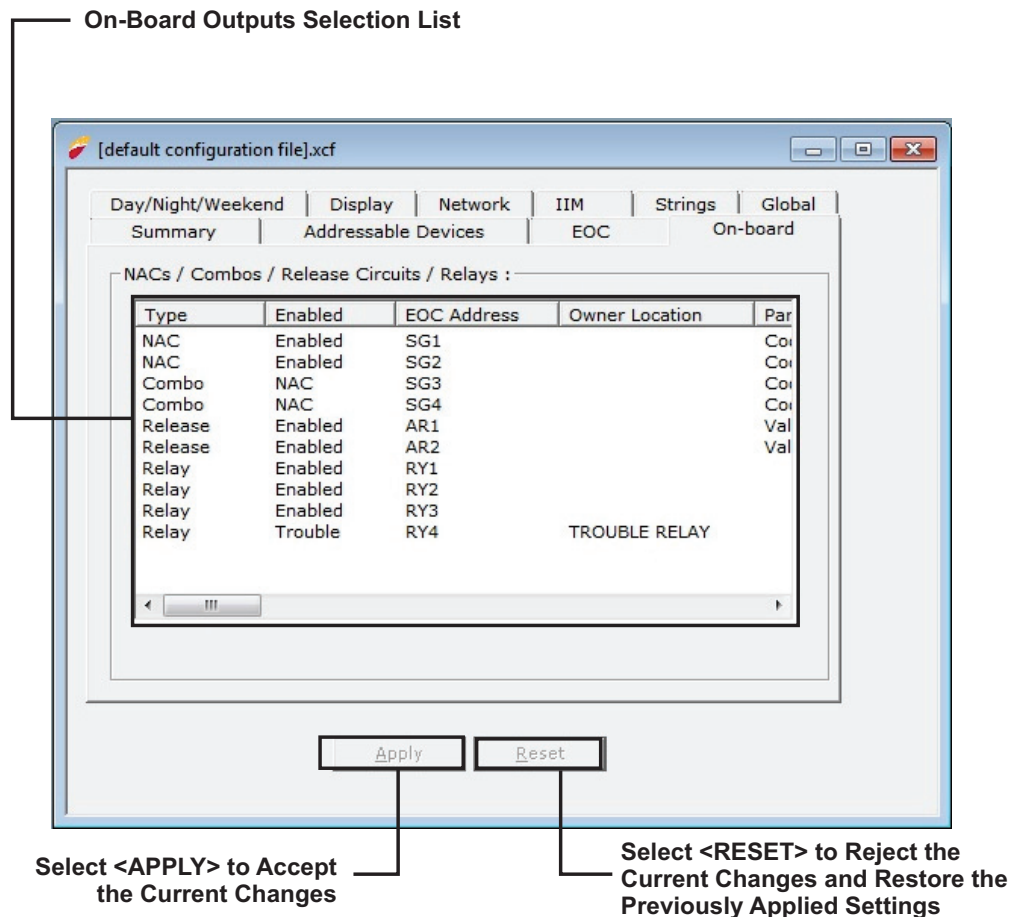
Figure 2-32. Control Unit-Based Outputs Screen

2.   Select the circuit by double-clicking on the circuit name in the type column. Figure 2-33 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>)**

Update Device State ...

Address: NAC #1

DISABLED
ENABLED

Ok   Cancel

**Highlight Enabled to Access Options
or Disabled to Not Use Output,
then Select <OK>**

**Select <CANCEL> to
Return to Previous Screen**
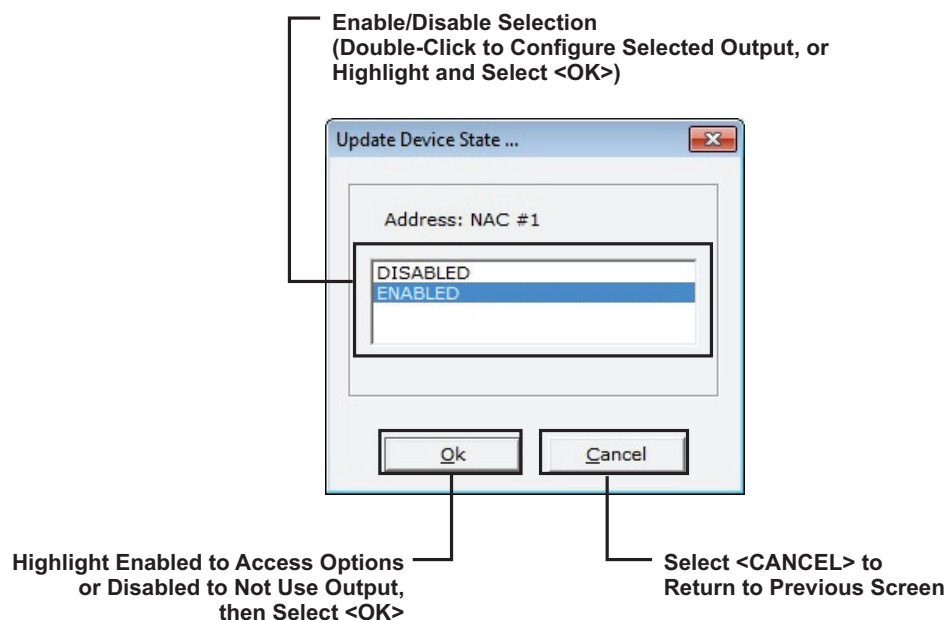
Figure 2-33. Access Options Screen for Control Unit-Based Outputs

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 2-34 illustrates how to configure a control unit-based Notification Appliance Circuit (NAC).

Figure 2-34. NAC Screen (Conventional NAC Selected)

Check the "Intelligent-NAC" Box to use the built-in synchronization features of the following series of notification appliances:

– Wheelock® MT Series Multi-Tone Horns and Horn/Strobes

– Wheelock NS Series Horn/Strobes (see Note)

– Wheelock NH Series Horns (see Note)

– Wheelock RSS(P) Series Strobes

– Exceder Series Horns, Strobes, and Horn/Strobes (Xenon flashtube models only)

NOTE: Wheelock NS Series Horn/Strobes and Wheelock NH Series Horns cannot be programmed for synchronization.

Horn/strobe combination devices utilizing the appropriate synch protocol have the option to use silenceable horns and non-silenceable strobes. Refer to the horn/strobe manufacturer's installation sheet for details.
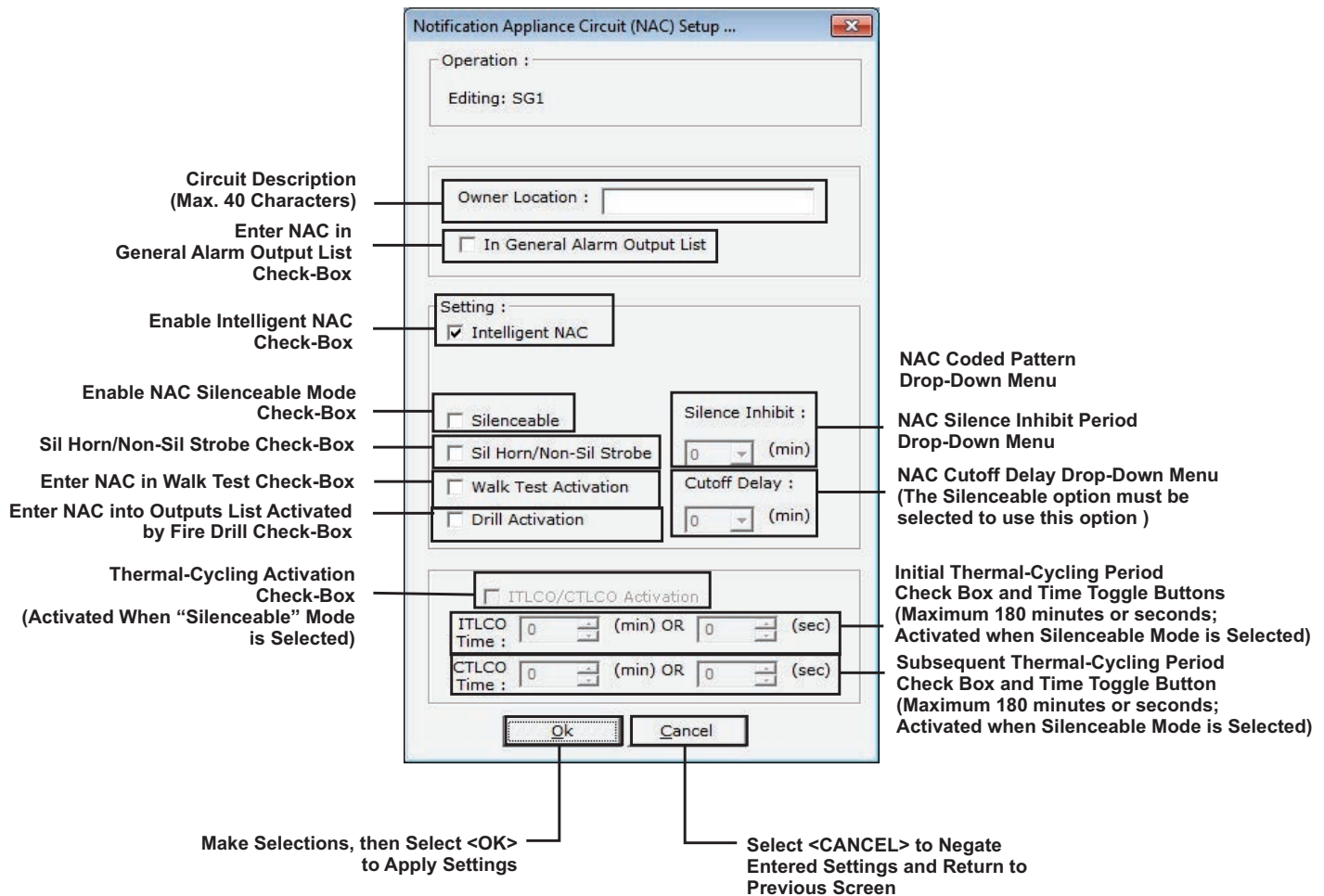
Figure 2-35. NAC Screen (Intelligent NAC Selected)

- Check the "Sil Horn/Non-Sil Strobe" Box to use the silenceable horn or non-silenceable strobe features. This option is only available if the "Intelligent NAC" box is checked.

  Note: Wheelock NS Series Horn/Strobes and Wheelock NH Series Horns cannot be programmed for synchronization.

  Horn/strobe combination devices utilizing the appropriate synch protocol have the option to use silenceable horns and non-silenceable strobes. Refer to the horn/strobe manufacturer's installation sheet for details.

- 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

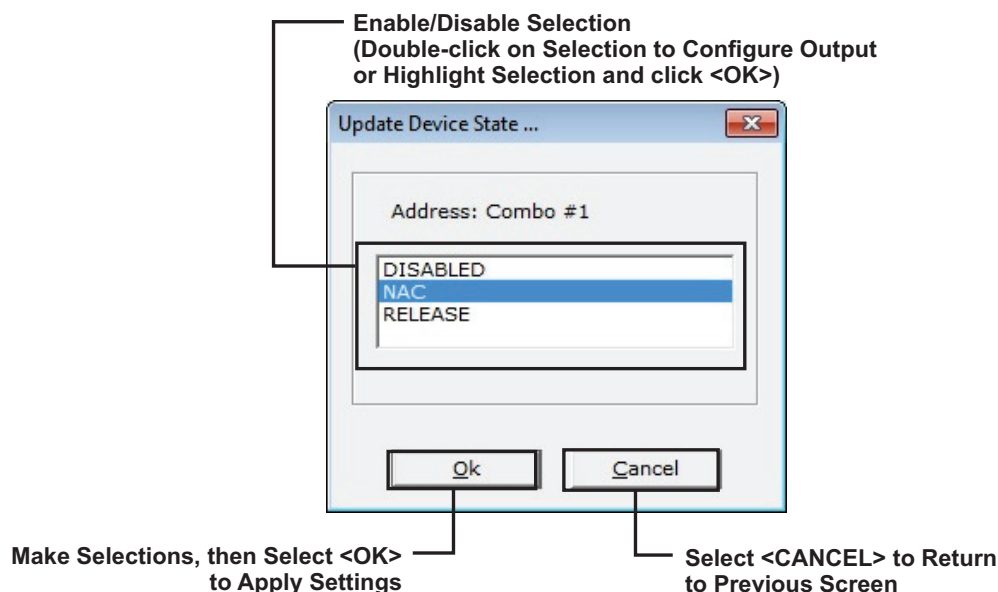Figure 2-36 displays when the "Combo" option is selected.

Figure 2-36. Combo Box for Combination Circuits

Combo circuits can only drive solenoids when configured as a Release circuit.

1. Either double-click on the desired output type, or select output type, then select **<OK>**. The appropriate screen displays when either "NAC" or "Release" is selected. Configure the combination circuit as directed in Paragraphs 2-4.1 (if the "NAC" option is selected) or Paragraph 2-4.3 (if the "Release" option is selected). The output is not used if the "Disabled" option is selected.

2-4.3   Release Circuit Screen

Figure 2-37 illustrates how to configure a control unit-based release circuit.

Figure 2-37. Release Circuit Screen

- Use the "Releasing-Devices" drop-down menu to select either **Initiator**, **Actuator** 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 2-38 illustrates how to configure a programmable control unit-based relay.

Figure 2-38. 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 is 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 2-39 displays.

Figure 2-39. Peripheral-Devices Main Configuration Screen
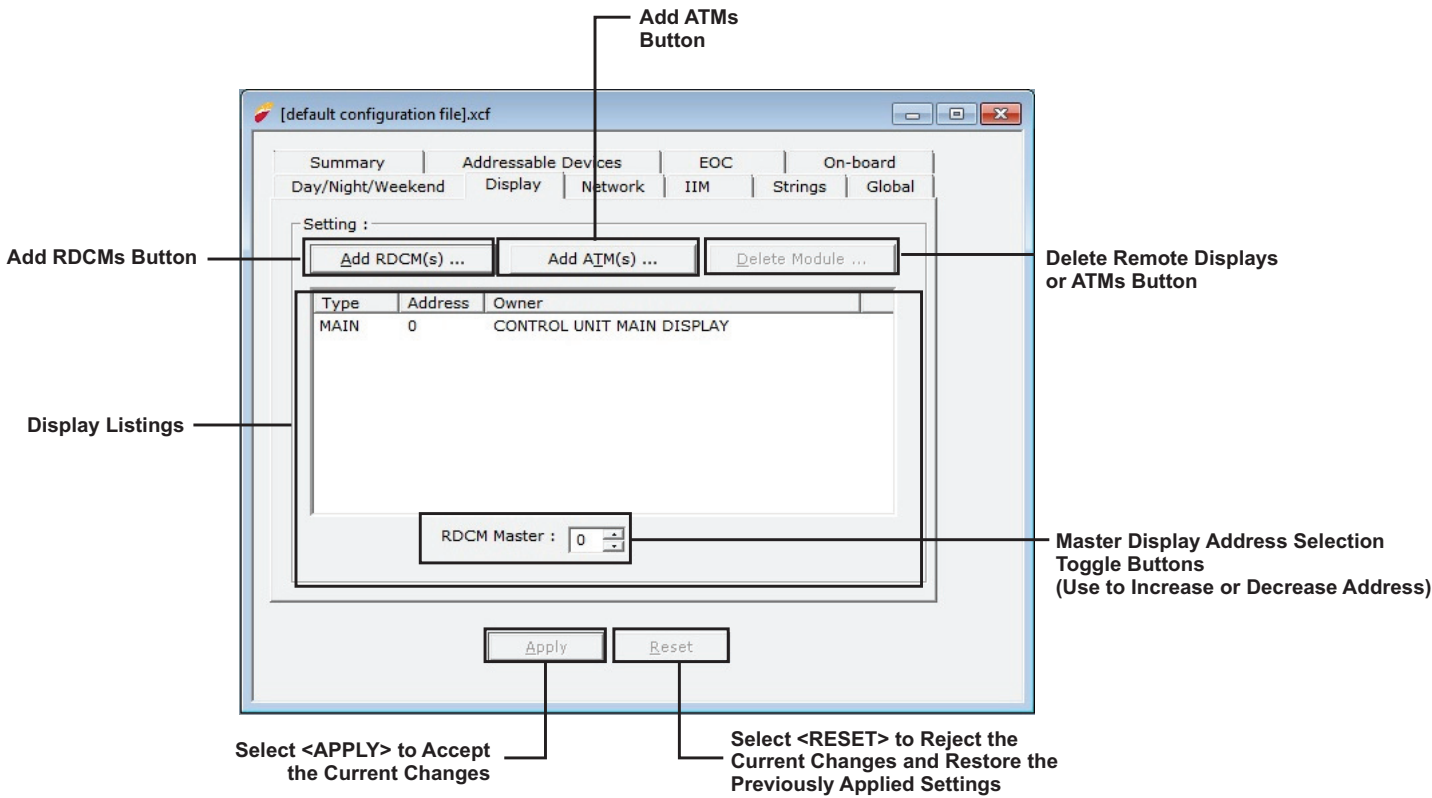
2-5.1 Add RDCM or ATM

1. Select either the **<Add RDCM(s)>** or **<Add ATM(s)>**. Figure 2-40 displays.

Figure 2-40. Peripheral-Devices Address-Range Selection
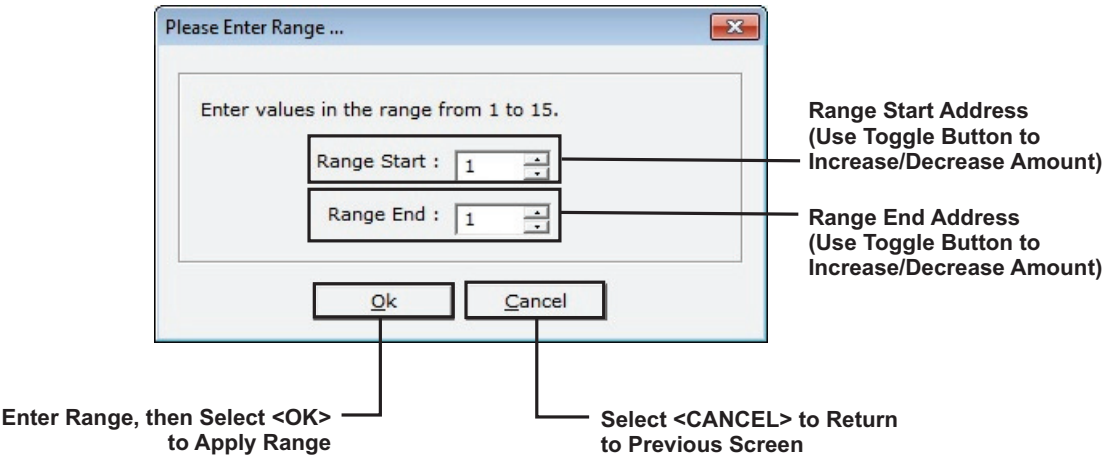
2. Enter the range of either RDCM(s) or ATM(s) being used, then click <OK>. Figure 2-41 displays (if ATM is being used, the dialogue in the screen reflects ATM).

**RDCM Location
(Maximum 40 Characters)**

Enter Owner Location ...

Module: RDCM 01

RDCM #1

Ok   Cancel

**Enter Location, then Select <OK>
to Apply Location**

**Select <CANCEL> Return
to Previous Screen**
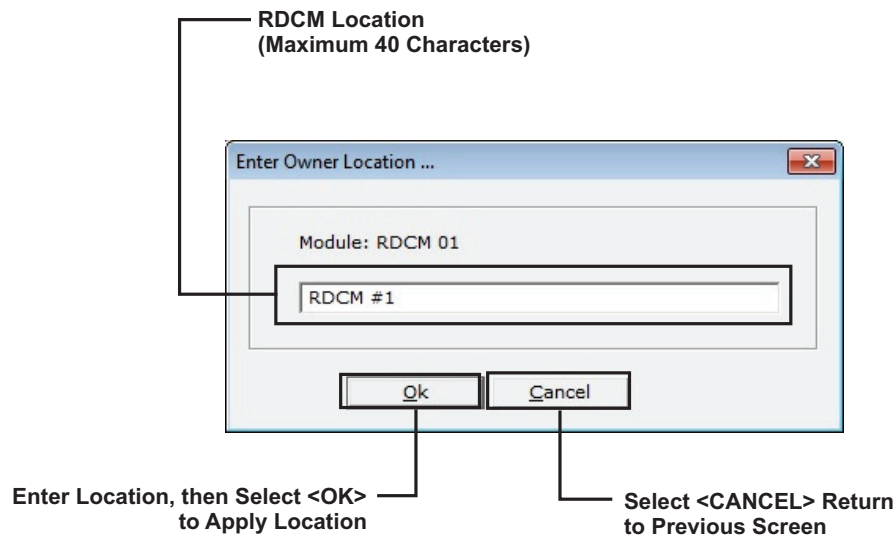
Figure 2-41. RDCM Location Screen

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 2-39).

2. Select **<DELETE MODULE>**.

2-5.3   **Creating an RDCM Master**

Ordinarily the ARIES-SLX control unit 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 ARIES-SLX.

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 2-42 displays:
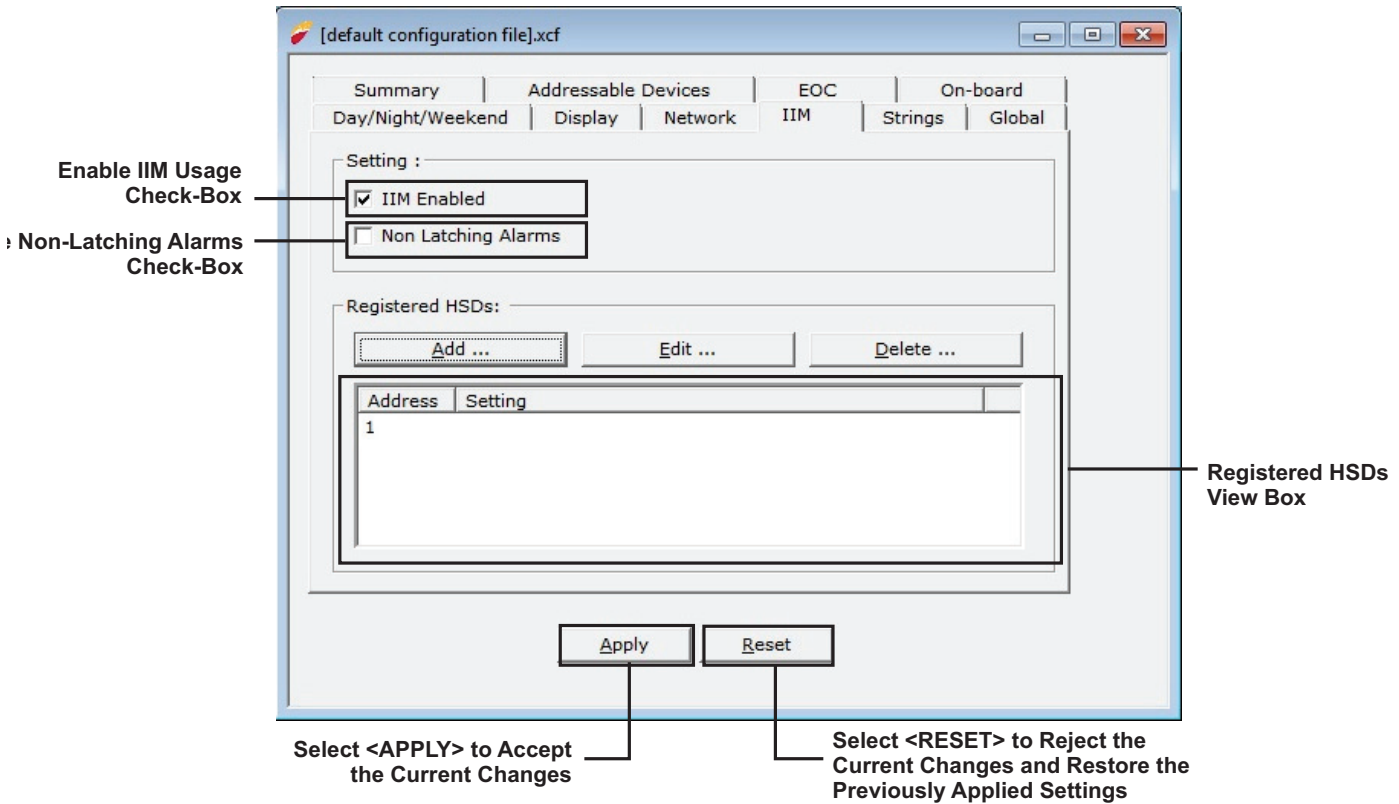
Figure 2-42. IIM Specification Screen

1. Check the 'IIM Enabled' checkbox.

2. Click 'Add' and enter the range of HSSD addresses to be registered (from 1 to 127).

3. Select 'Non-Latching Alarms' if applicable.

4. Click 'Apply' to enter the IIM and its settings into the system configuration. The IIM tab registry reflects the newly added HSSD configuration settings.

- Settings for a particular HSSD may be edited by selecting the desired HSSD in the IIM tab registry and clicking <Edit>. Select <Apply> when done.

- A particular HSSD may be deleted by selecting the desired HSSD in the IIM tab registry and clicking <Delete>. Select <Apply> when done.

2-7   NETWORKING (NETWORK TAB)

Multiple ARIES-SLX 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) ARIES-SLX 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 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 ACT-SLX 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 event broadcast is globally to 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 and IIM 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 activate the 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, 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.

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-acknowledgment 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 2-43 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.
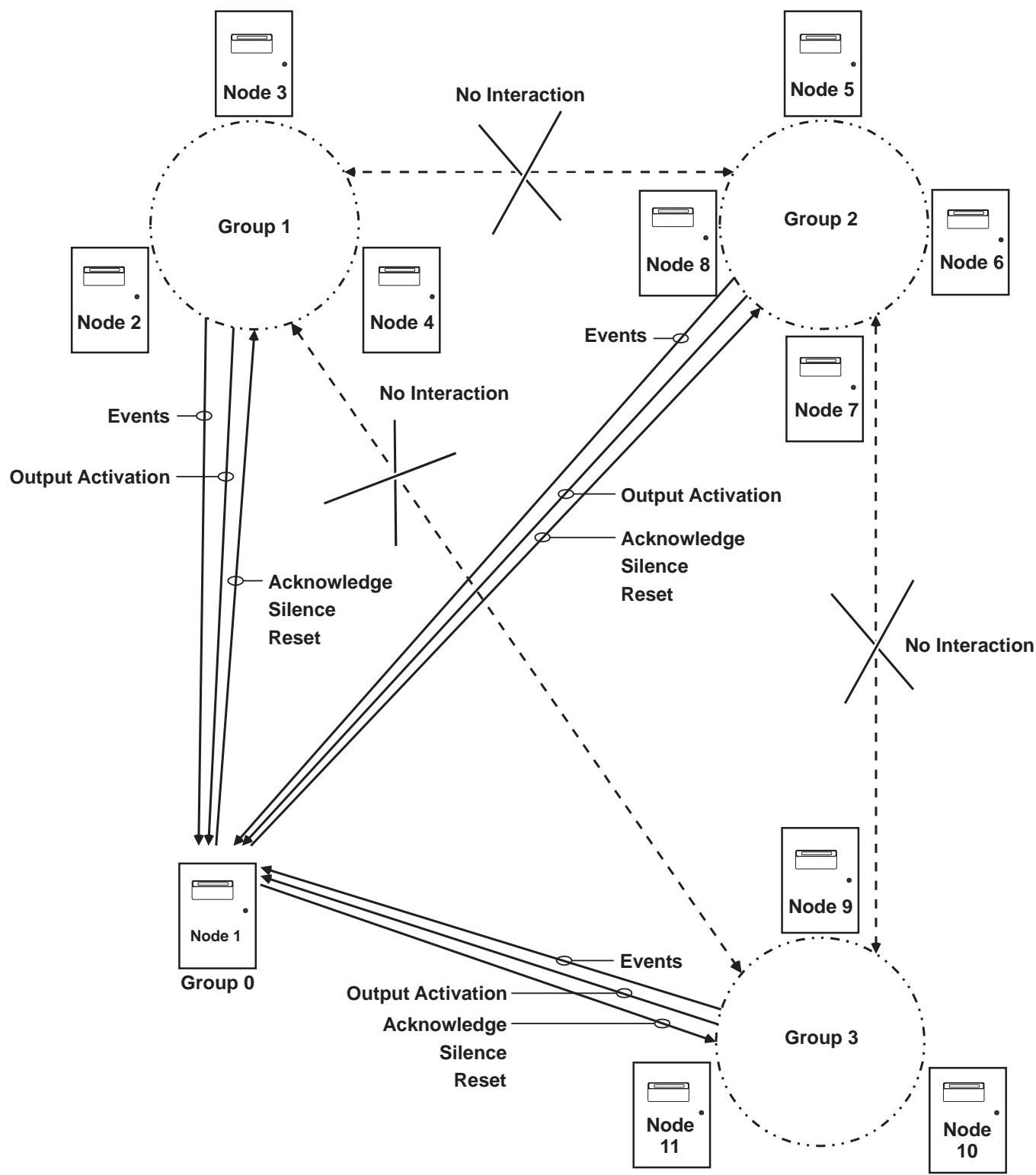
Figure 2-43. Typical Network with Groups and Master Node in Group 0

2-7.8 Network Settings

Select the "Network" tab to define the operating characteristics of each control unit in the network; Figure 2-44 displays:

Node Number - sets the unique identifier to each panel on the network. Valid settings are 1-32. A value of "0" disables networking on this node.

Channel - sets 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.
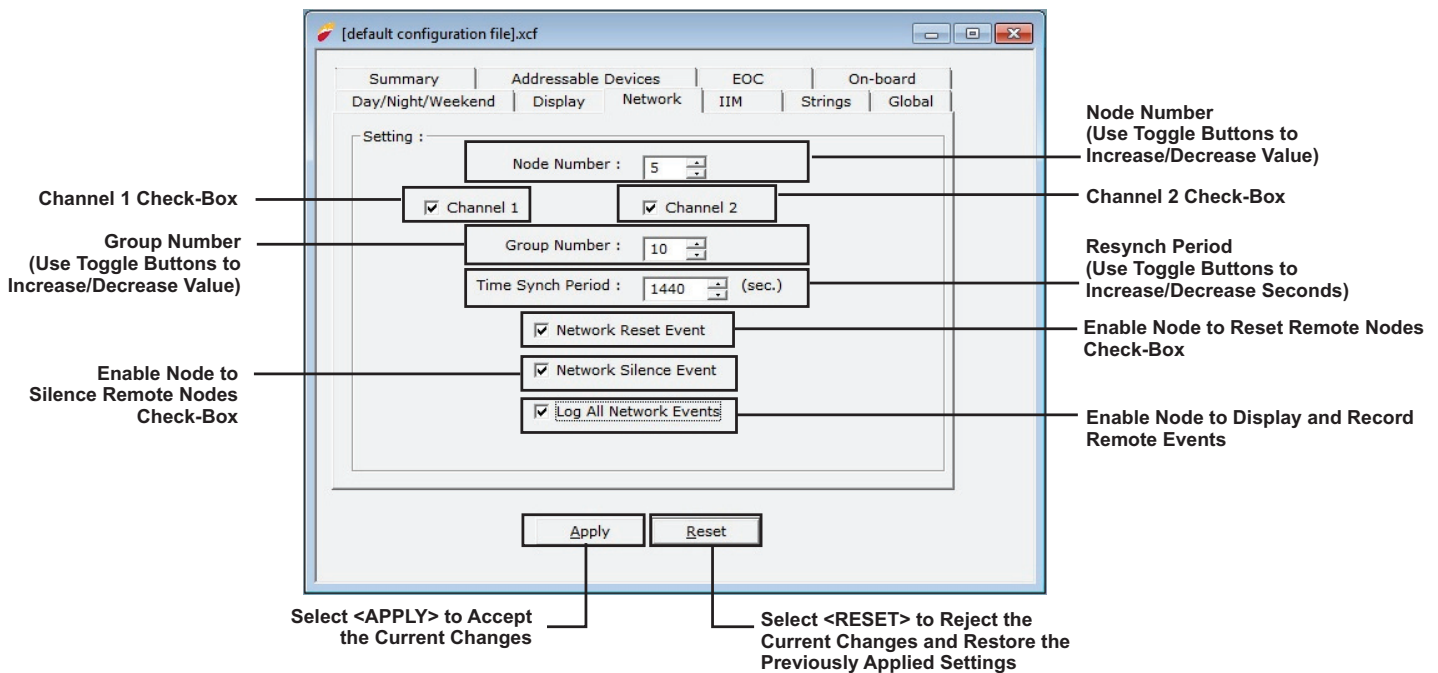
Figure 2-44. Network Node Settings

2-8   GLOBAL SETTINGS (GLOBAL TAB)

Select the "Global" tab; Figure 2-45 displays.
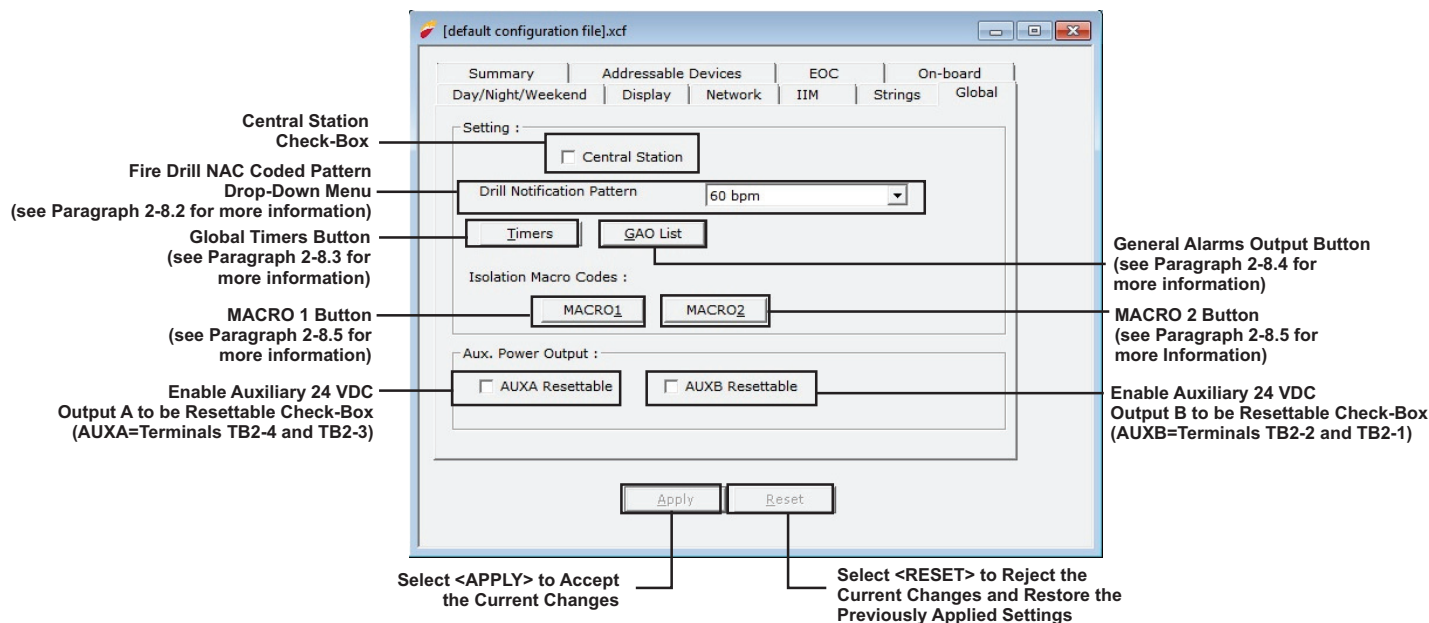
Figure 2-45. Global Settings Screen

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 (cannot be used 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 2-46 displays.
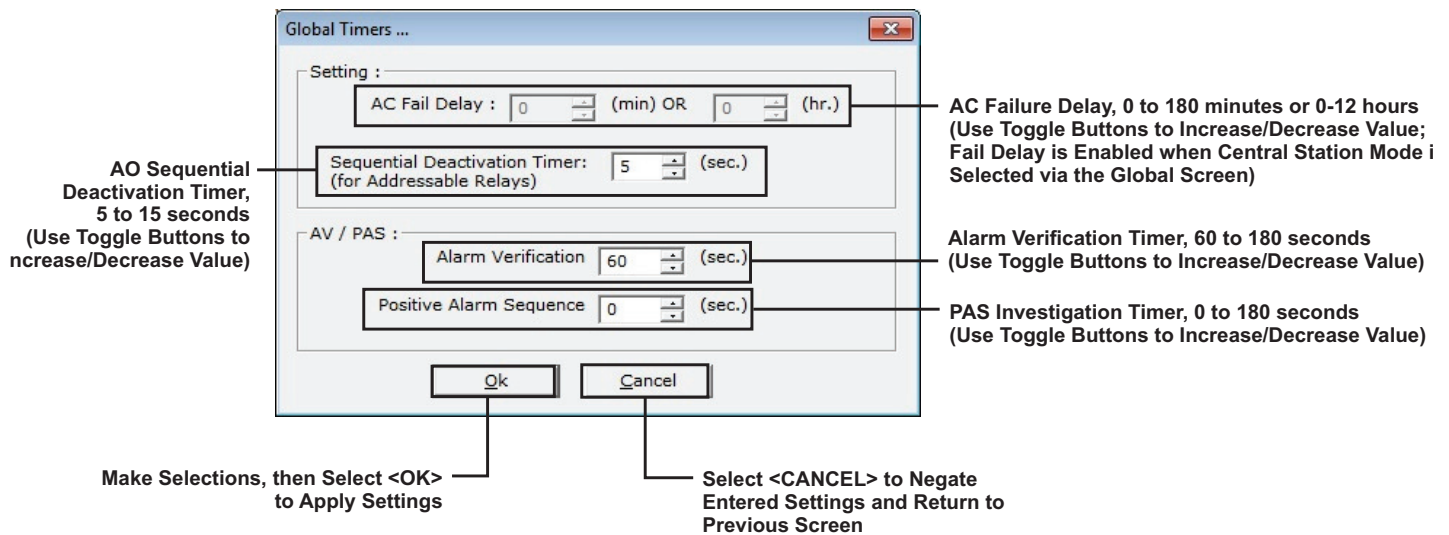
Figure 2-46. Global Timers Screen

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 2-47 displays.

General Alarm Output List Summary Window
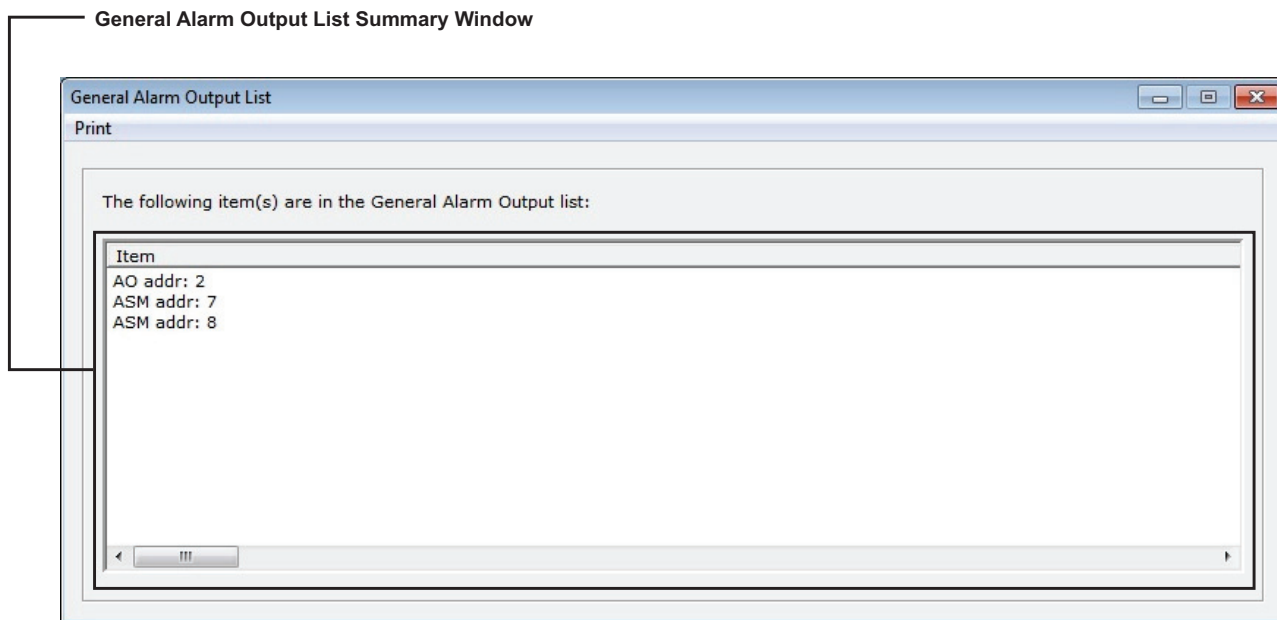
Figure 2-47. Typical General Alarm Outputs List Screen

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. 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 *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001 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 2-48 displays.
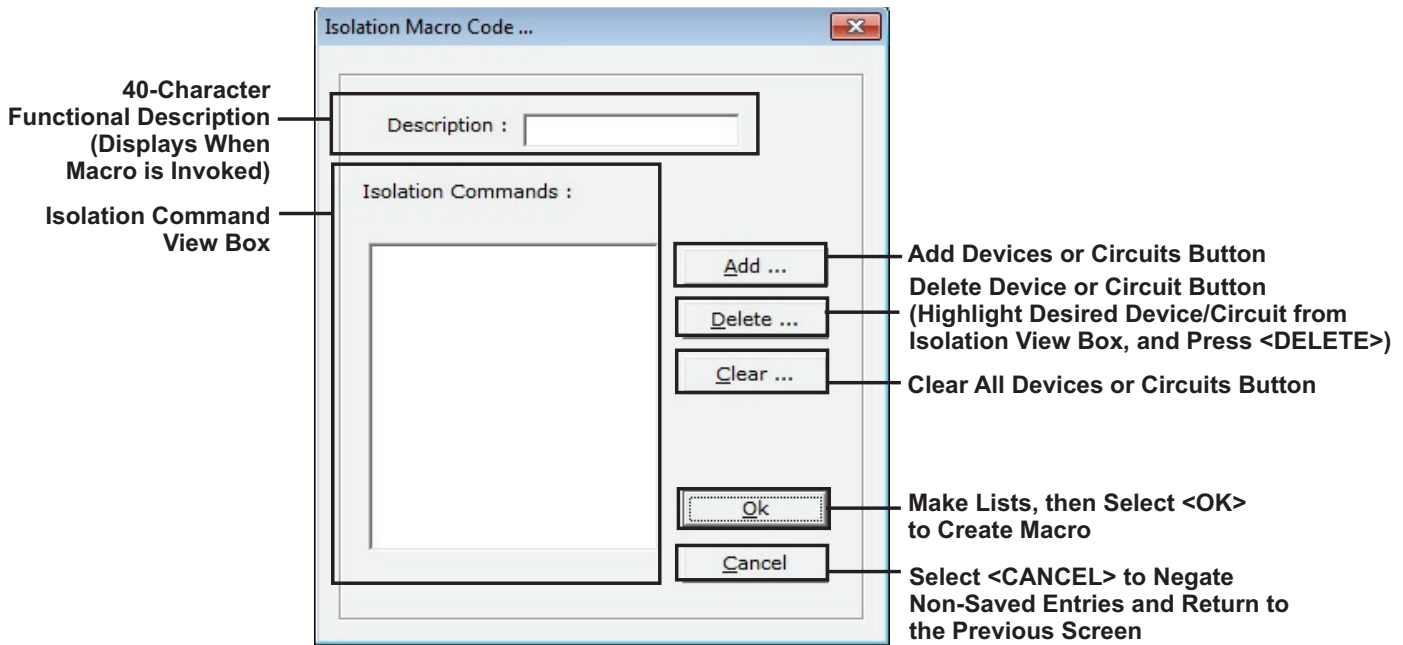
Figure 2-48. Typical MACRO Screen

1. Select the **<Add>** button. Choose the initiating devices and/or output devices/ circuits from the list shown in Figure 2-49.
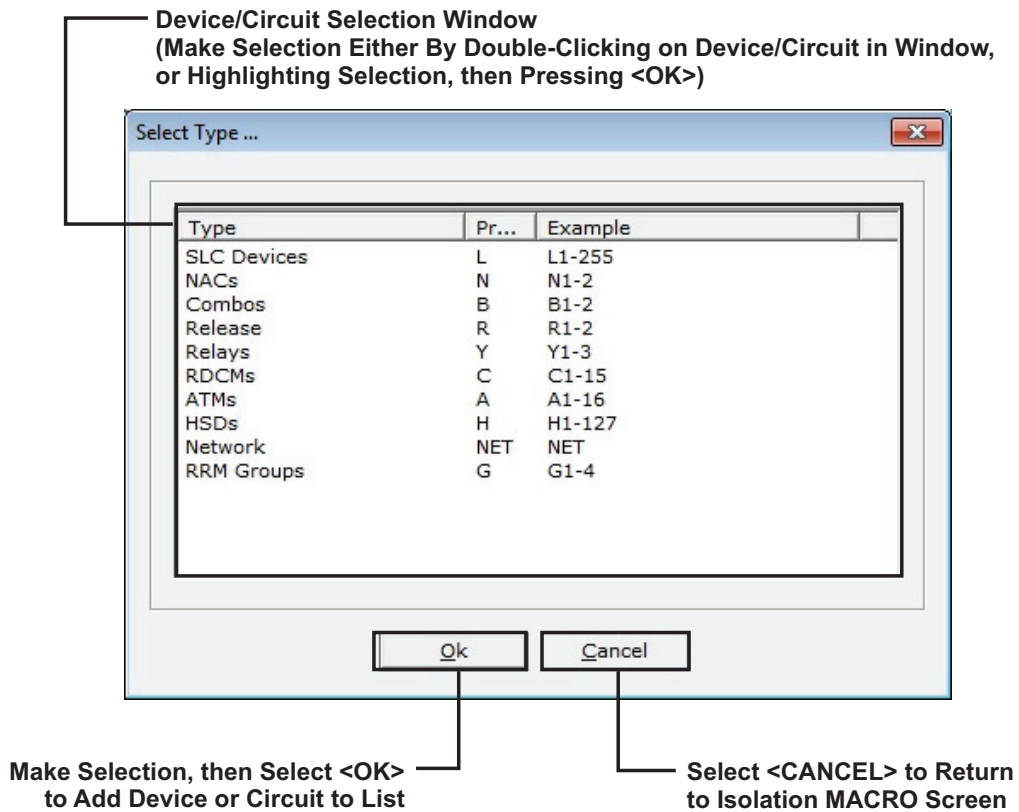
Figure 2-49. List of Selections for MACROs Screen

2. Select a device by either double-clicking on the device name or by highlighting the device name, and selecting **<OK>**. Figure 2-50 displays.

Range Start Address (Use Toggle Button to Increase/Decrease Amount)

Range End Address (Use Toggle Button to Increase/Decrease Amount)

Make Selections, then Select <OK> to Apply Settings

Select <CANCEL> to Negate Entered Settings and Return to Previous Screen
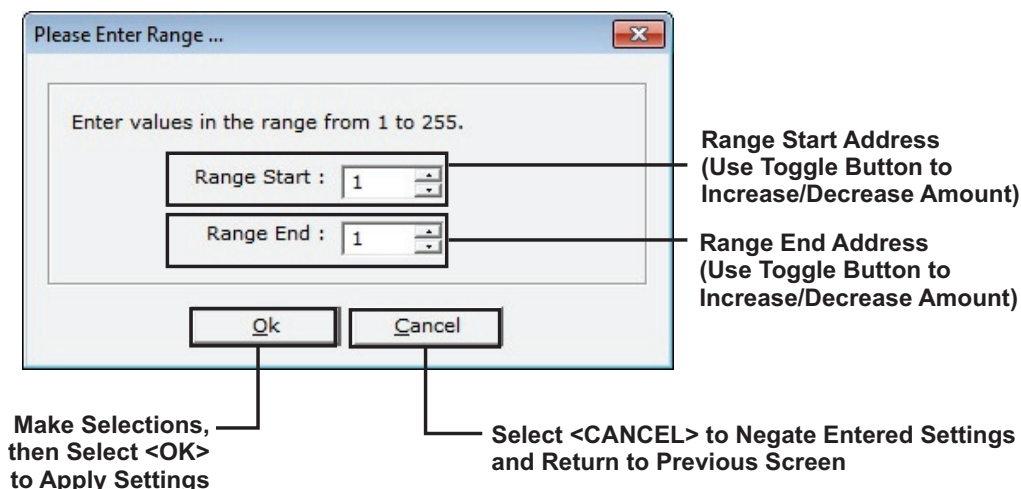
Figure 2-50. Device Range Definition for MACROs Screen

3.   Enter the range of devices and/or circuits to be added. Select **<OK>** when complete.

2-9   DAY/NIGHT/WEEKEND TIME DEFINITION TAB

Select "Day/Night/Weekend" to determine the times that smoke detectors configured for day/ night/ weekend operation adjusts alarm thresholds. Figure 2-51 displays:

Enable Day/Night Settings Check-Box

Enable Night Settings on Weekends Check-Box

Day Start/Stop Check-Box (Minutes/Hours)

Select <APPLY> to Accept the Current Changes

Select <RESET> to Reject the Current Changes and Restore the Previous Settings
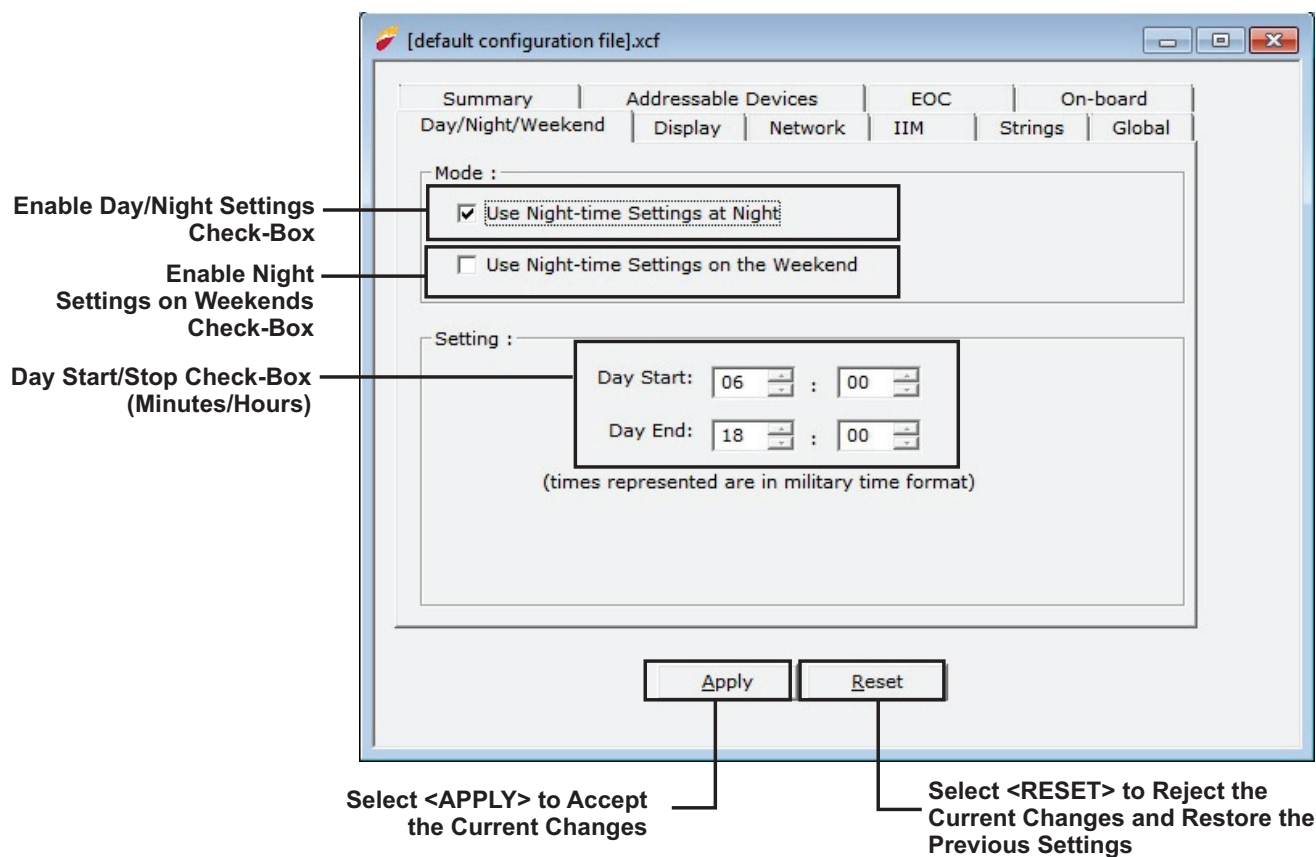
Figure 2-51. Day/Night Time Definition Tab

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 2-52. 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.
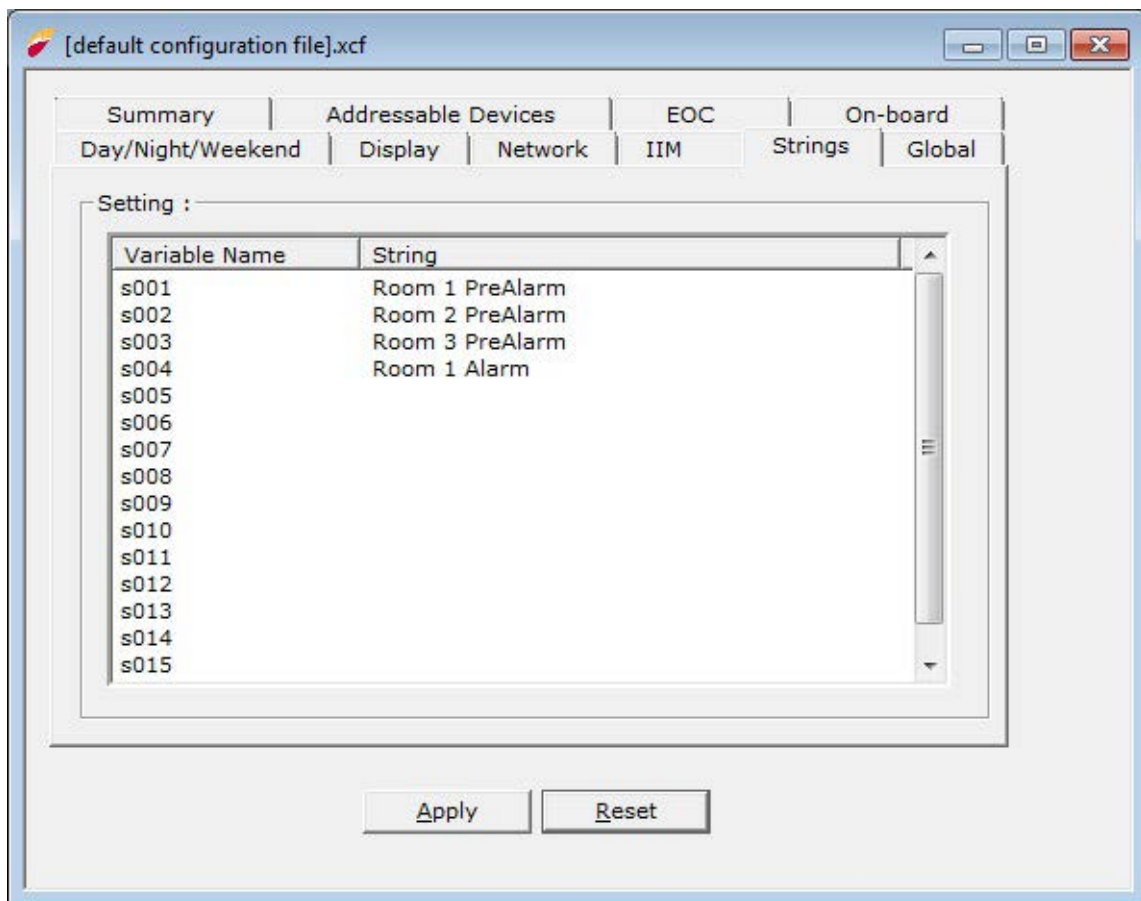
Figure 2-52. Strings Tab

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.

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 an ARIES®-SLX system.

3-1.1 Event Output Control

Event Output Control (EOC) is the set of instructions that is 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 a 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**	Logical Counting 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

Table 3-1. Initiating Devices

Initiating Device			Physical Outputs		Virtual Outputs	
Device Type	Event Created	Latching Initiating Device	Latching*	Non-Latching**	Logical Counting Identifier** (Ix)	State Variable* (Cx)
Heat Det.	Pre-Alarm	No	No	Yes	Yes	Yes
Heat Det.	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
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
HSD with PALM/AIM	Pre-Alarm	No	No	Yes	Yes	Yes
HSD with PALM/AIM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
HSD with PALM/AIM	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 (Level 1) via IIM	Pre-Alarm	No	No	Yes	Yes	Yes
HSD (Level 2) via IIM	Pre-Alarm	No	No	Yes	Yes	Yes
HSD (Level 3) via IIM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
HSD (Level 4) via IIM	Alarm	Prog (Y/N)	Yes	No	Yes	Yes
* Does not track initiating devices. ** Tracks initiating devices.						

3-2.1   Simple Argument

A simple argument consists of a single independent or dependent variable. The physical initiating devices are represented by their SLC addresses. The designator "HSD" prefixes HSSD addresses when an IIM is used to network AnaLASER®-II or ORION XT smoke detectors.

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 they change their value. They are also capable of continuously re-activating these outputs when they subsequently change their value again if the outputs have been de-activated 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 if 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)

Note: Each SLC-based module is referenced by its three-digit 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 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:

$$1\#100 = I1 \qquad\qquad (3\text{-}1)$$

The value of I 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:

$$I1 = SG1 \qquad\qquad (3\text{-}2)$$

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:

$$(1\#50)*(51\#100) = I1 \qquad\qquad (3\text{-}3)$$

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:

$$D(I1,30) = AR1 \qquad\qquad (3\text{-}4)$$

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 Non-Saved 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.

WARNING **The "C" state variable cannot be used for activating silenceable outputs. The "C" state variable is not a counting variable and, therefore, will not reactivate or resound silenceable outputs on subsequent alarms after the control unit or system has been silenced.**

The following examples show correct and incorrect methods for activating silenceable outputs on a single node and a networked system:

Single Node Silenceable Output Activation:	
Correct Method: 1#10=I1 I1=SG1	**Incorrect Method**: 1#10=C1 C1=SG1
Remote Node Silenceable Output Activation:	
Correct Method: Node 1 EOC Code: 1#10=SG1 Node 2 EOC Code: F1:1#10=SG1	**Incorrect Method**: Node 1 EOC Code: 1#10=SG1,C1 Node 2 EOC Code: F1:C1=SG1

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 are only activated for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.9.

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 (*exp2*) of smoke detectors as the result of an alarm signal from any smoke detector in a second group (*arg1*) 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 (*arg*) for a specified period of time (*delay*). The format of this function is:

D(exp,delay)= outputs

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 will be "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*) interrupt the countdown delay and prevent outputs activation while the abort switch is active (see Paragraph 2-3.14.1 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 interrupt 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 count down of the timer in accordance with the operating characteristics of the abort switch. Refer to Paragraph 2-3.14.1 for abort-switch operating characteristics).

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®-II or ORION XTs 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-II or ORION XTs reporting via the IIM**

The Warning Function for AnaLASER or ORION XTs 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/ORION XT Level-1 Pre-Alarm initiating event or a combination of AnaLASER-II/ORION XT Level-1 Pre-Alarm initiating events
> >
> > *outputs* are SLC-based modules, control unit-based circuits or virtual outputs.

The Warning Function for AnaLASER-IIs or ORION XTs 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) 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-II or ORION XTs reporting via the IIM**

The Level-2 Alarm Function for AnaLASER-II or ORION XTs 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/ORION XT Level-2 Alarm initiating event or a combination of AnaLASER-II/ORION XT Level-2 Alarm initiating events
> >
> > *outputs* are SLC-based modules, control unit-based circuits or virtual outputs.

The Level-2 Alarm Function for AnaLASER-II or ORION XT reporting via the IIM latches the physical outputs associated with it. Virtual outputs track the validity of the argument and are 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-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 2-3.9.

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-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 2-3.9.

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-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 only activated for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.9.

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 only activated for the ITLCO and CTLCO periods as discussed in Paragraph 2-3.9.

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 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.

'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.

Note: 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.

WARNING **The "C" state variable cannot be used for activating silenceable outputs across a network. Refer to Section 3-3.2.2 for further information and EOC code examples.**

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	Any initiating device 1 through 20. **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 activates 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 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. Parentheses 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 oneState 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 and State Variable 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 Ni 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., *exp*) 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 becomes active 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.

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
Warning for AnaLASER-II/ORION XTs Reporting via IIM	*W(arg)=outputs* where: *arg* is an AnaLASER-II/ORION XT Level-1 Pre-Alarm initiating event or a combination of AnaLASER-II/ORION XT Level-1 pre-alarm initiating events *outputs* are SLC-based modules, control unit-based circuits or virtual outputs	W(HSD001#HSD005)=SG1	Activate SG1 if any AnaLASER-II/ORION XT in the address range 1 through 5 issues a warning report. (This is a Pre-Alarm Level 1 for AnaLASER-II/ORION XTs). **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 "*".
Alarm Level 2 for AnaLASER-II/ORION XTs Reporting via IIM	*X(arg)=outputs* where: *arg* is an AnaLASER-II/ORION XT Level-2 Alarm initiating event or a combination of AnaLASER-II/ORION XT Level-2 Alarm initiating events *outputs* are SLC-based modules, control unit-based circuits or virtual outputs	X(HSD001#HSD005)=SG1	Activate SG1 if any AnaLASER-II/ORION XT in the address range 1 through 5 issues a high-level-alarm report. (This is an Alarm Level 2 for AnaLASER-II/ORION XTs). **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 "*".

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
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 F5:1#50=SG1 F3:7*10=AR1 Control unit that received the remote initiating event(s)	F5:001#50=SG1 F5:2 = SG1 F3:007*F3:10=AR1	Activate SG1 if any initiating device in the address range 1 through 50 on Node No. 5 issues an alarm report. Activate AR1 if initiating devices at addresses 7 and 10 on Node No. 3 both issue an alarm report. Note: Do not use the parenthesis to reference a remote control unit initiating event or compound events unless these 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 is the local system increments and if any initiating device in the address range 5 through 15 on Node No. 1 activates.
Networked Saved Stage 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:G5 = SG2	
Network General Trouble	Fy:GT	F9: GT = SG1	

Table 3-5. EOC Operators and Functions (Continued)

Operator or Function	Symbol or General Form	Typical Examples	Description
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 Save Entries

Select <RESET> to Delete All Non-Saved Information
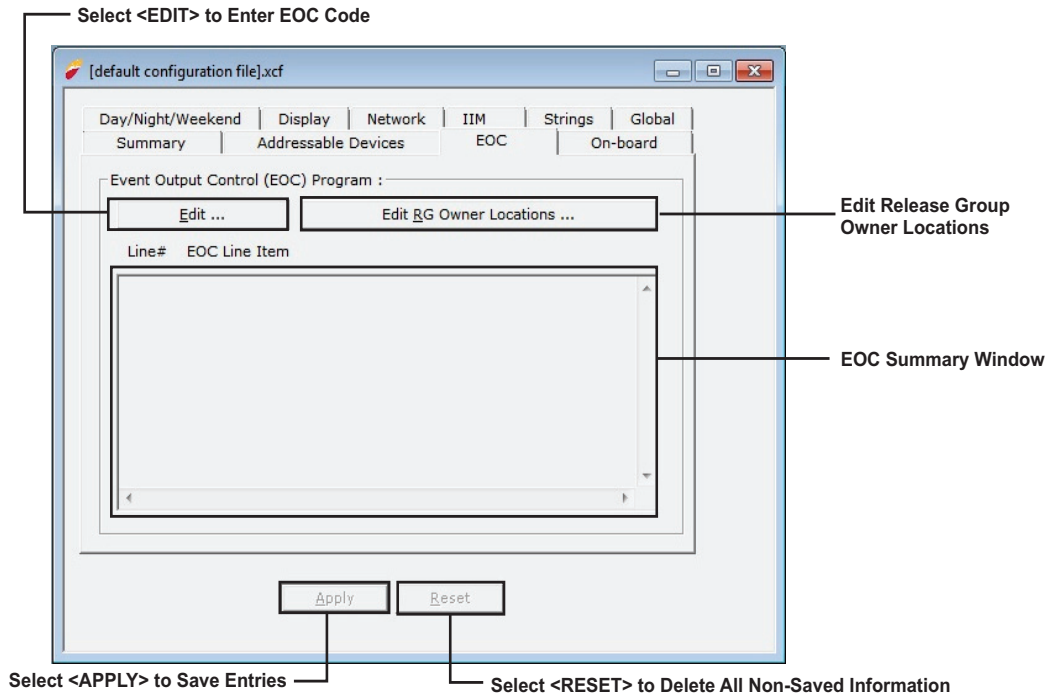
Figure 3-1. EOC Creation Screen

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 EOC code that has 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

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=3.0=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=3.0=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 after **<APPLY>** has been selected. If the program detects an undefined SLC device or a syntax error, Figure 3-4 displays when exiting the EOC tab. Edit the EOC code as necessary to remove all errors and warnings.

Select <EDIT> to Edit EOC Code
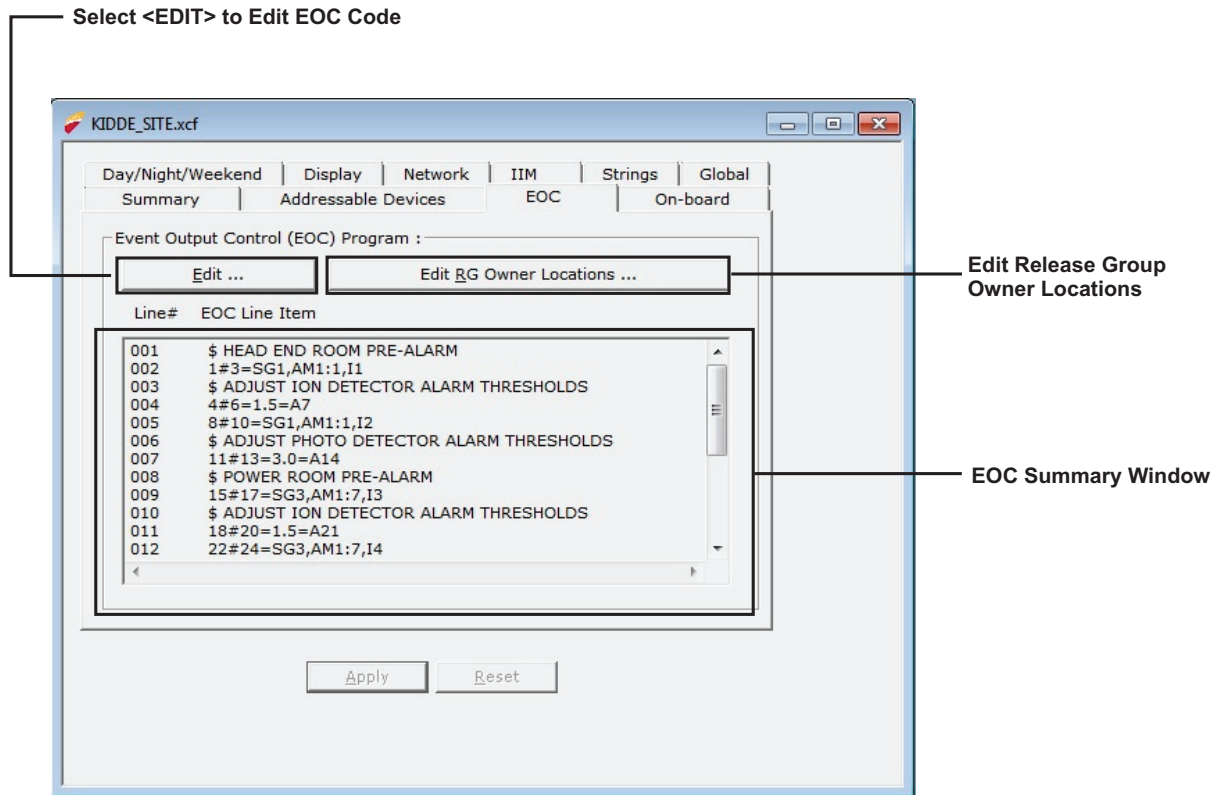
Figure 3-3. Saved EOC Code Screen

Error/Warning Summary Window
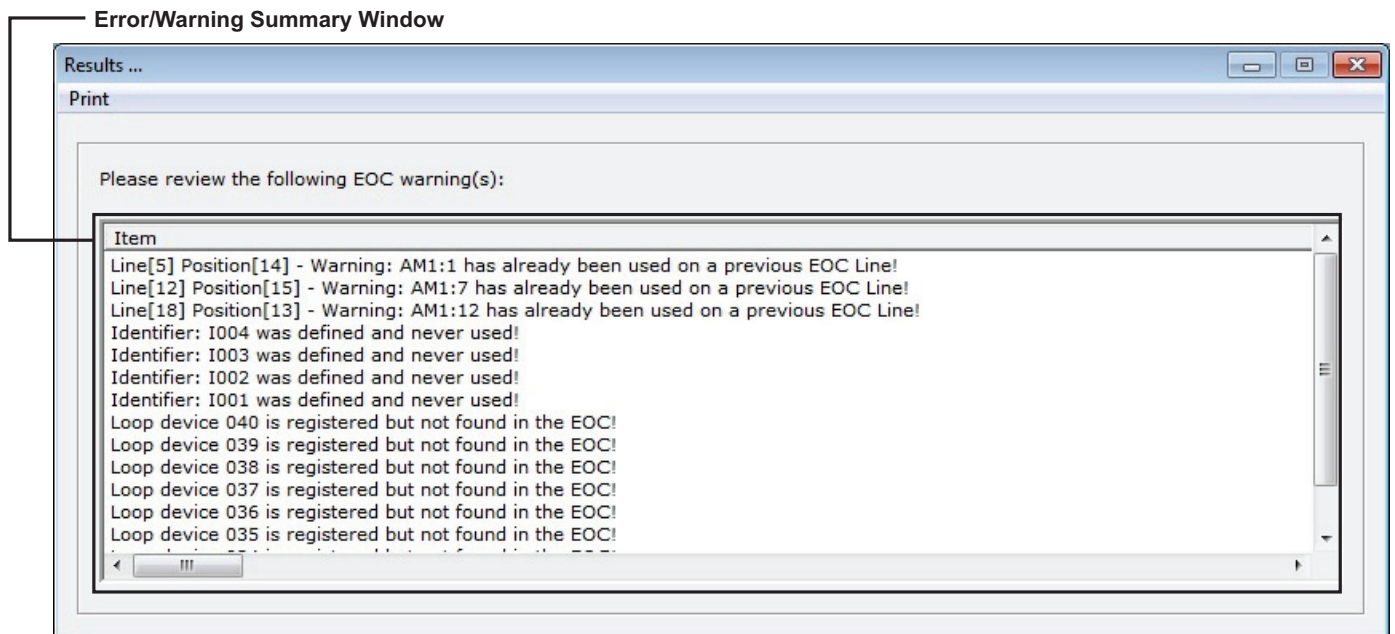
Figure 3-4. EOC Error and/Warning Screen

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 but '10#40 * I3' is not. Refer to Paragraph 3-2.2.1 for more information.

11. Outputs should be dedicated to a single notification or function type and should, therefore, not be shared by alarm and non-alarm notifications.

12. When configuring a system for ITLCO/CTLCO cycling, program the ITLCO/CTLCO inputs and outputs on a dedicated line(s) of EOC. Do not include other non-ITLCO/CTLCO inputs or outputs on the same line of EOC.

13. When using the "AND" operator with ITLCO/CTLCO inputs, the "AND" condition is required to get the cycling started— both conditions of the "AND" must be true. However, the cycling will continue if either of the "AND" conditions becomes false and at least one ITLCO/CTLCO input remains active.

14. Squirt and Spurt inputs and outputs should always be programmed on a dedicated line(s) of EOC code. Do not include other non-Squirt/Spurt inputs or outputs on the same line of EOC.

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

Table 3-6. EOC, Example 1

$ 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
I3*C4 + 7 + 8=SG3/120,23
C3*I4 + 7 + 8=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
F2:001#15=SG4,S1
$ Building No. 2 Manual Stations
F2:016#23=SG4,S2
$ Building No. 2 Waterflow
F2:024#27=SG4,S002
$ Building No. 2 Kitchen Hood
F2:028=SG4,S4
$ Building No. 3 Smoke Detectors
F3:001#15=SG4,S006
$ Building No. 3 Manual Stations
F3:016#23=SG4,S7
$ Building No. 3 Waterflow
F3:024#27=SG4,S8
$ Building No. 3 Kitchen Hood
F3:28=SG4,S9
$ Building No. 2 Supervisory
F2:29#32=S5
$ Building No. 3 Supervisory
F3:029#32=S10

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 3-5 illustrates the application.
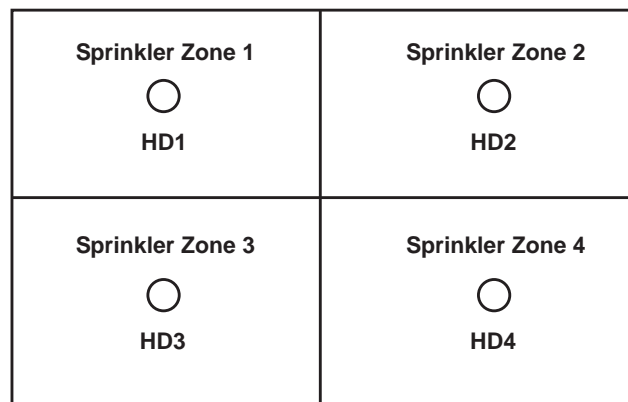

Figure 3-5. Limited Water Supply

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 or ORION XT Alarm State

The system shown in Figure 3-6 is to be designed according to the following criteria:

- Activate NAC if either one of AnaLASER-II or ORION XTs 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.
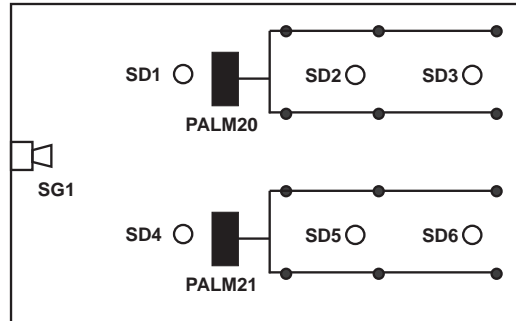
Figure 3-6. Tracking NAC

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 a 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 3-7 illustrates the application.
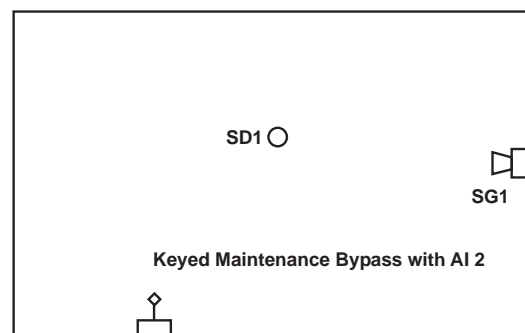
Figure 3-7. Maintenance Bypass Switch

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 ARIES®-SLX Control Unit to establish a working fire protection system. The utility programs in the Tools Menu are used to communicate with the ARIES-SLX Control Unit. Figure 4-1 shows the selections in the Tools Menu.
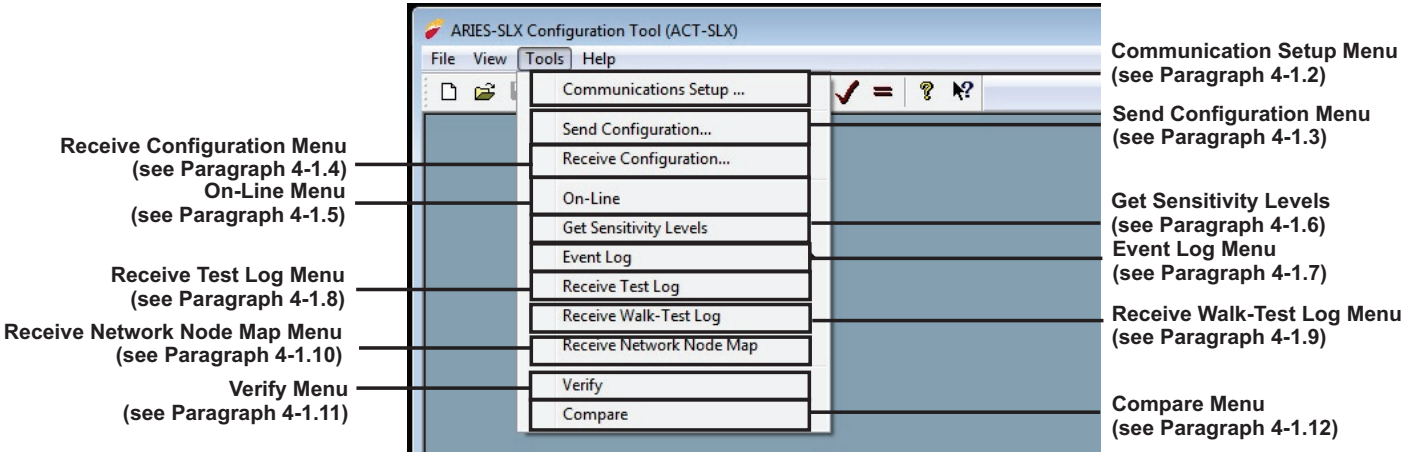
Figure 4-1. Tools Menu

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.
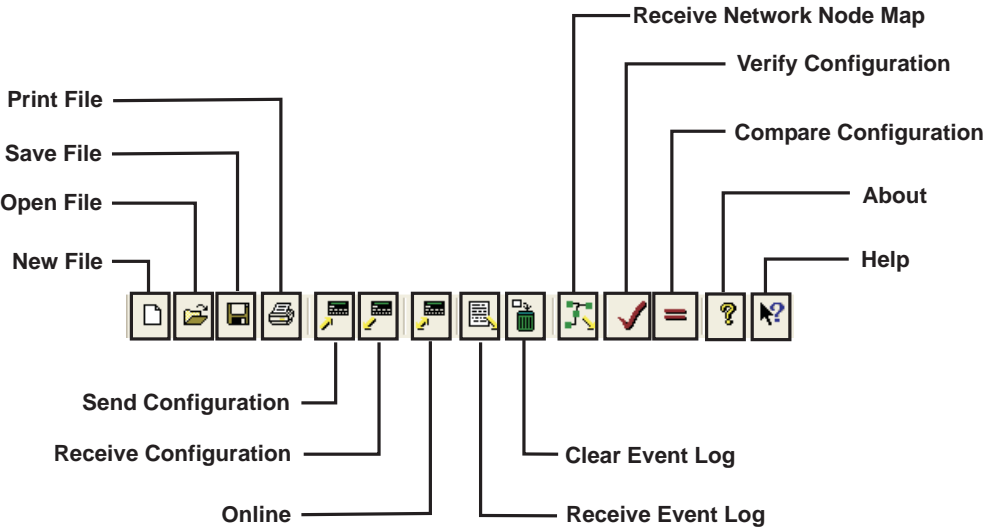
Figure 4-2. ACT-SLX Main Toolbar

4-1.1 Hardware Connections

Use either a laptop or desktop computer to upload the applications program to the ARIES-SLX 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 ARIES-SLX Control Unit via the computer's serial port.

Use a standard USB communications cable to connect to the ARIES-SLX Control Unit via the computer's USB port.

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. 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.

A USB Isolator must be used in series with the USB cable when connecting to port J6 as shown in Figure 4-3. This connection is typically used when sending or receiving information between the panel and a PC running the panel configuration software.

Kidde Fire Systems has tested and recommends the USB Isolator P/N 10000071.

Figure 4-3 illustrates a typical control unit-to-laptop configuration.
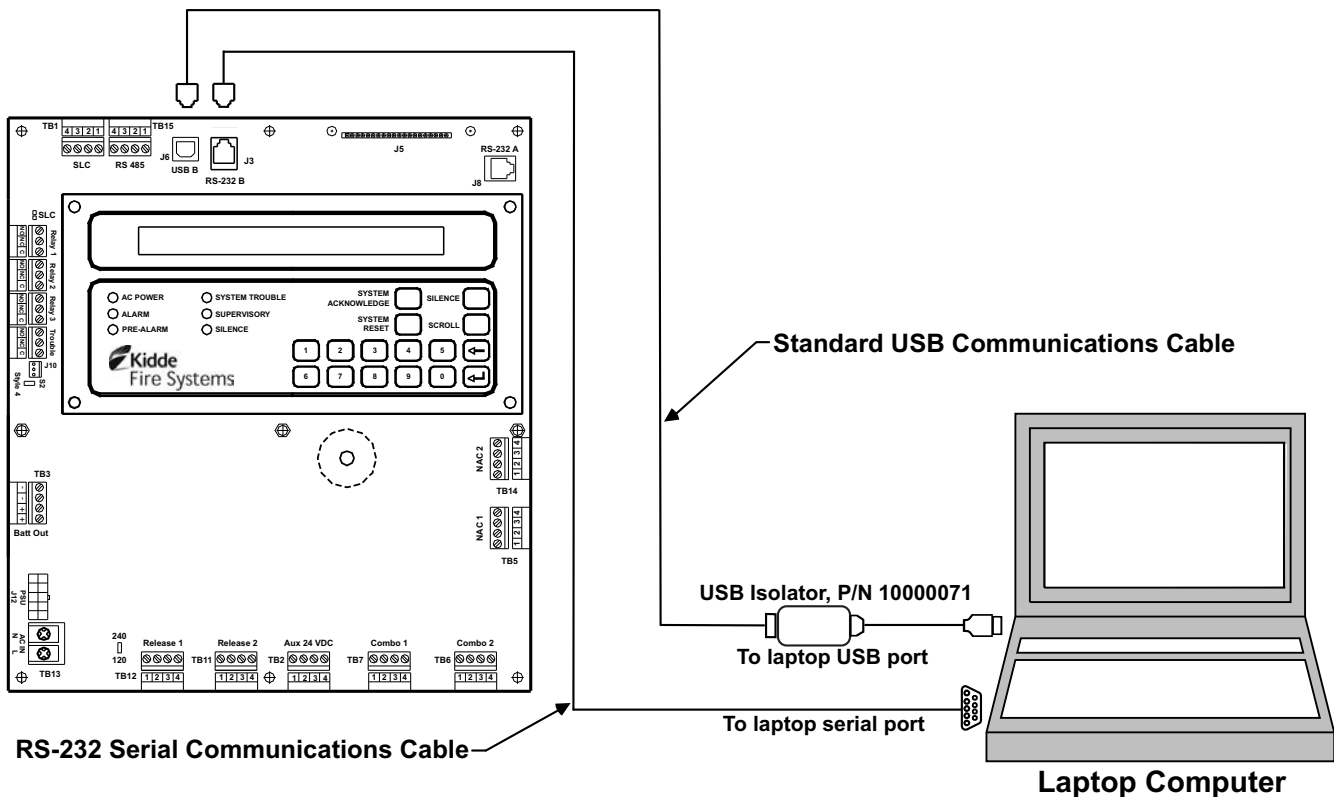
Figure 4-3. Hardware Connection from ARIES-SLX Control Unit to Laptop Computer

4-1.2   Communications Setup

Select **Tools>Communication Setup** from the main screen to define options when selecting a RS-232 serial port on the computer to transfer data to the ARIES-SLX Control Unit. Figure 4-4 displays.
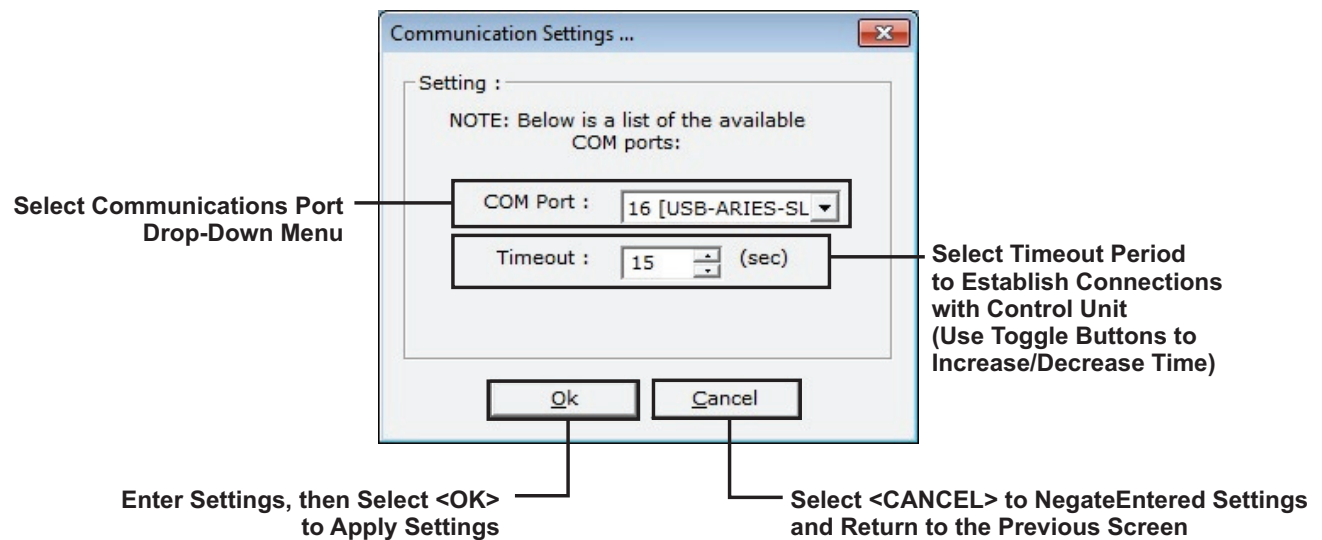
Figure 4-4. Communications Settings

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 ARIES-SLX Control Unit. The ARIES-SLX Control Unit then assumes the 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 ACT-SLX 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 *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, 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 ACT-SLX, it does not communicate on the network. Network communication troubles annunciate on other nodes during the process.

Following selection of the configuration file, ACT-SLX immediately displays the password prompt (Figure 4-7) for **Single Control Unit** installations.

Figure 4-7. Send Configuration Password

4. Enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, for an explanation on setting passwords.

5. 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.
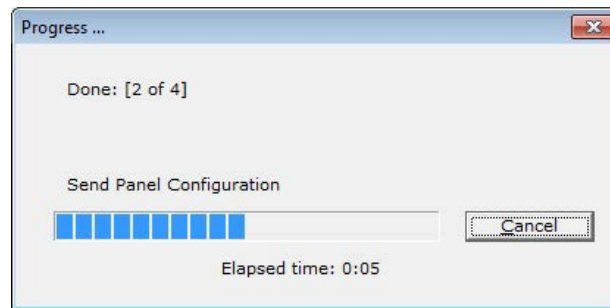
Figure 4-8. Send Configuration Progress
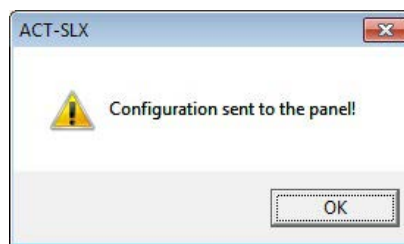
Figure 4-9. Send Configuration Complete

4-1.4   Receive a Configuration

Select **Tools>Receive Configuration** to retrieve a particular application from a ARIES-SLX 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

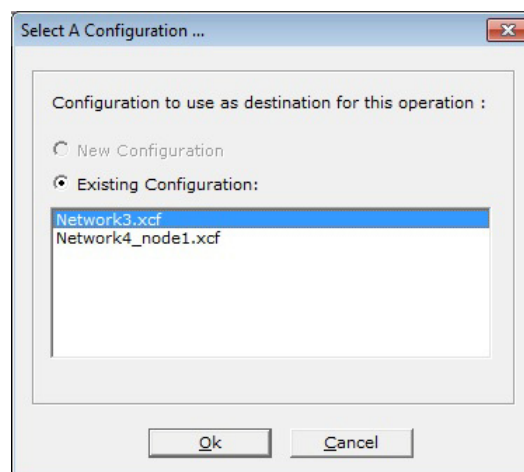**Note:** A configuration file must be open before the process can proceed.
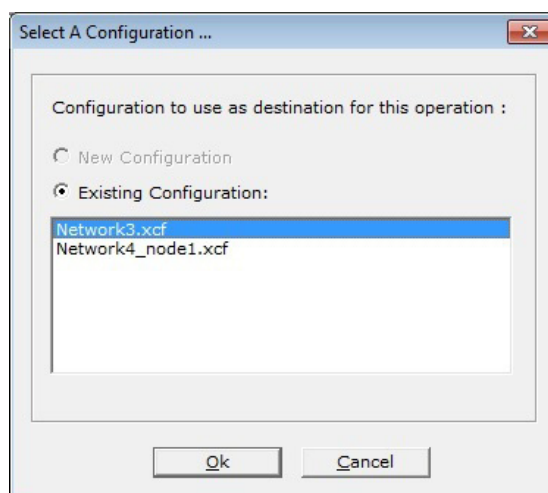
Figure 4-10. Select Receive Configuration

After ACT-SLX retrieves the node map for **Network Installations,** the selection dialog box (Figure 4-11) is displayed.
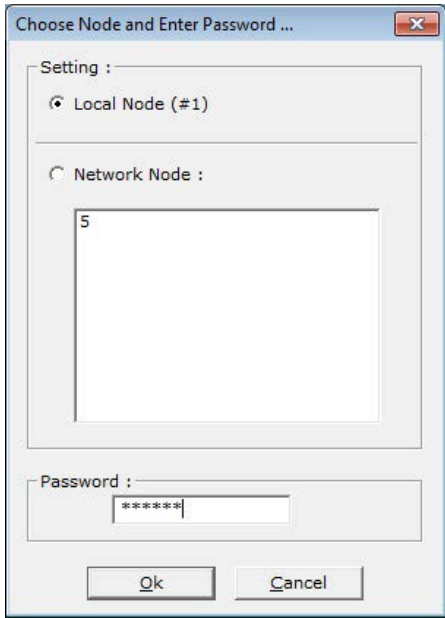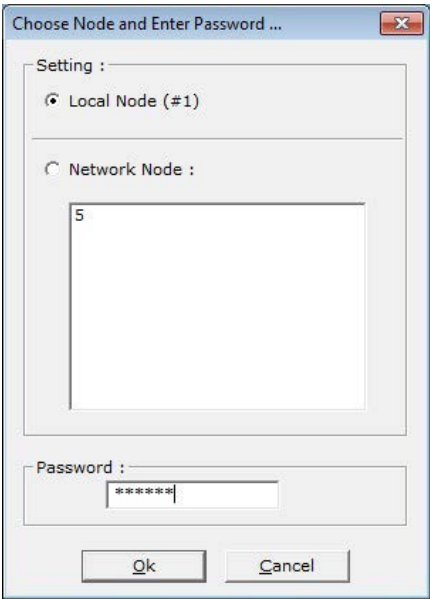

Figure 4-11. Select Node and Enter Password - Receive Configuration

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 *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, 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 ACT-SLX, it does not communicate on the network. Network communication troubles annunciate on other nodes during the process.

Following selection of the configuration file, ACT-SLX immediately displays the password prompt (Figure 4-12) for **Single Control Unit** installations.
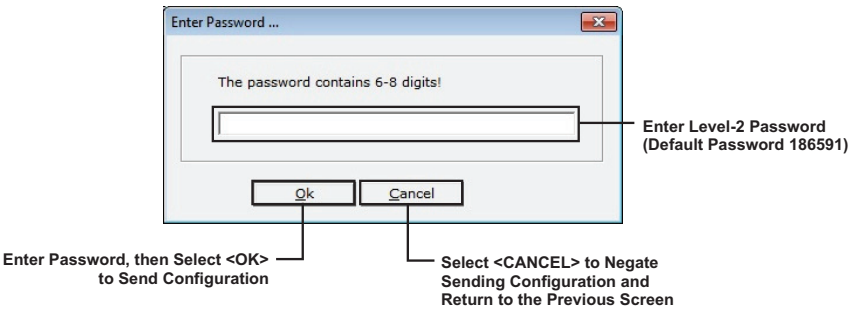

Figure 4-12. Receive Configuration Password

1. Enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, 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.
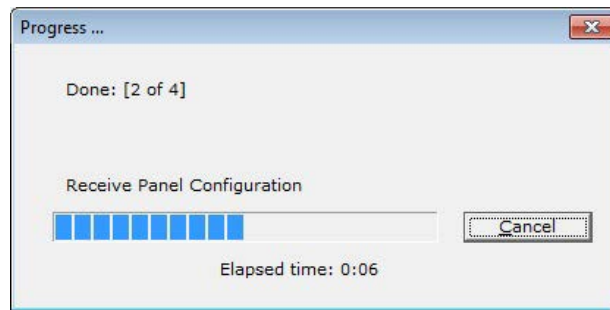
Figure 4-13. Receive Configuration Progress
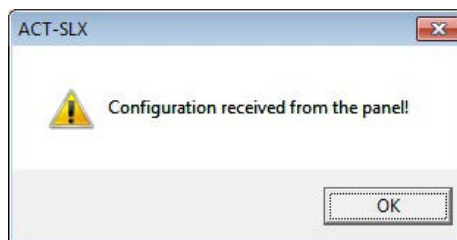
Figure 4-14. Receive Configuration Complete

4-1.5   Online

Select **Tools>Online** to connect ACT-SLX to the control unit via terminal-emulation mode. The control unit can then be run as if it were being accessed via its keypad/display. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, for information on navigating the control unit menus.

After ACT-SLX 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 ACT-SLX was connected directly to the selected node. Setting of Network configuration items is prohibited when the menu of a remote node is accessed.
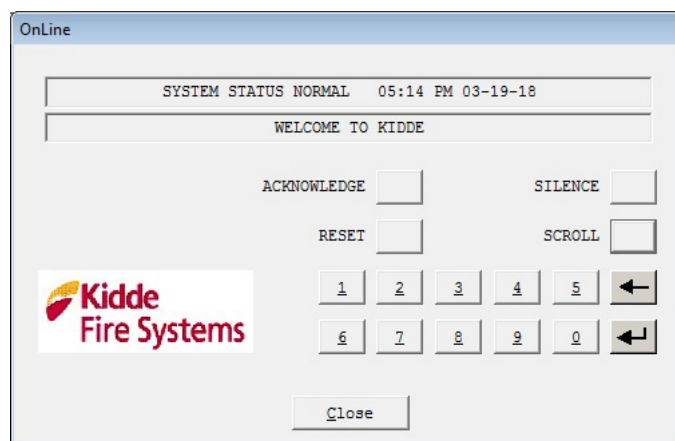
Figure 4-15. Online Screen

Note: Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, 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.
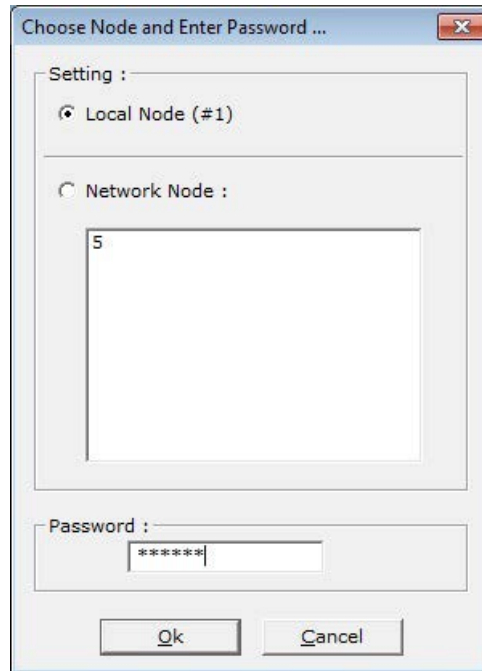
Figure 4-16. Select Node and Enter Password - Get Sensitivity Levels

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.
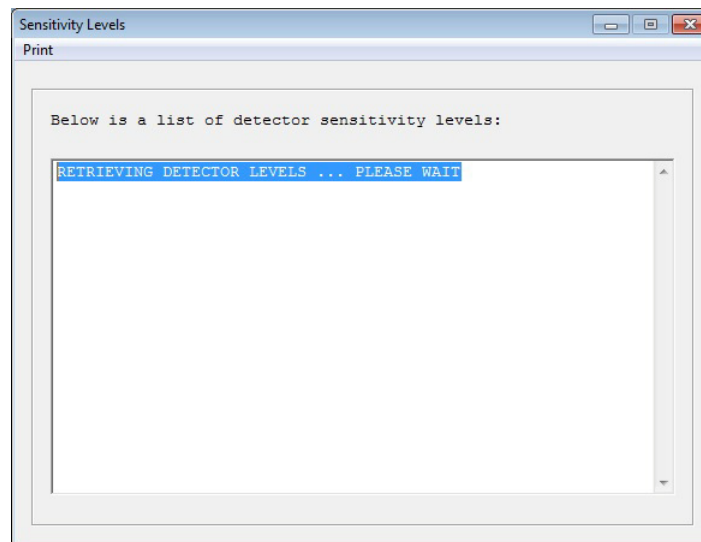
Figure 4-17. Retrieving Sensitivity Levels
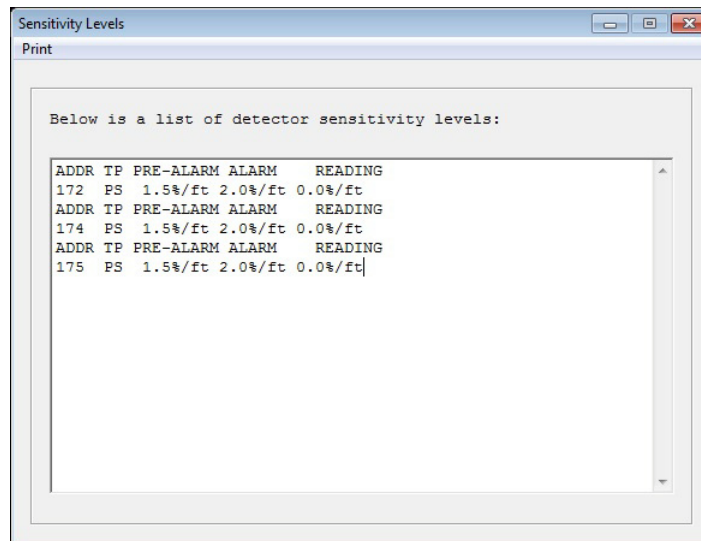
Figure 4-18. Displayed Sensitivity Levels

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 ACT-SLX 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.
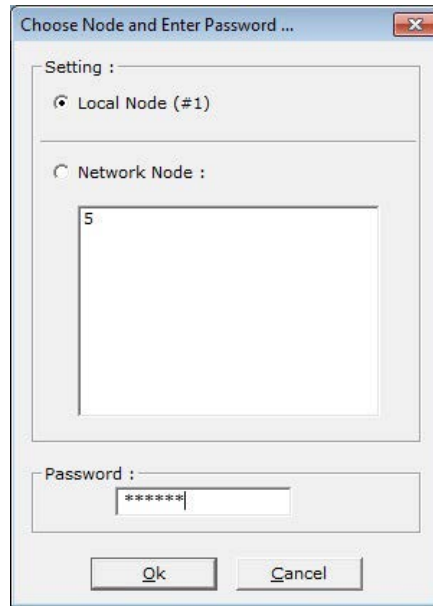
Figure 4-19. Select Node and Enter Password - Clear Event Log

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, ACT-SLX immediately displays the password prompt (Figure 4-20) for **Single Control Unit** installations.
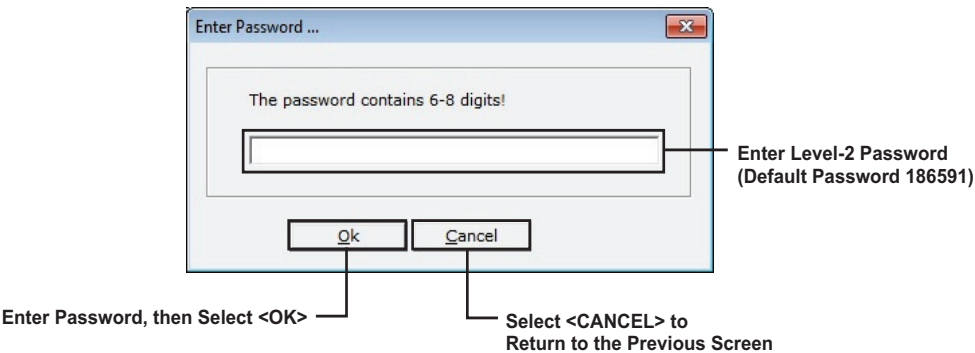

Figure 4-20. Enter Password

4. Enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, for an explanation on setting passwords.

5. Select **<OK>**. In response, a prompt asks to confirm clearing the event log (Figure 4-21). If **<Yes>** is selected, the progression of the clearance procedure is displayed (Figure 4-22). After the event log has been cleared, a notification (Figure 4-23) is displayed.

Note: If the control unit is in alarm, trouble or supervisory condition, clearing the event log is aborted and a notification (Figure 4-24) is displayed.
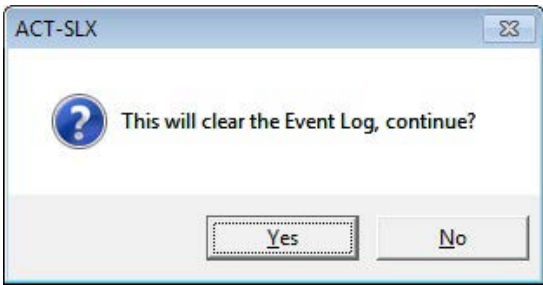
Figure 4-21. Confirm Clear Event Log Prompt
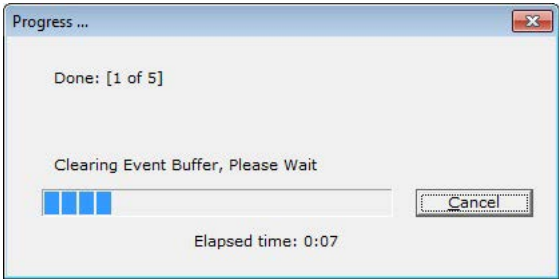
Figure 4-22. Clear Event Log Progression

Figure 4-23. Clear Event Log Complete
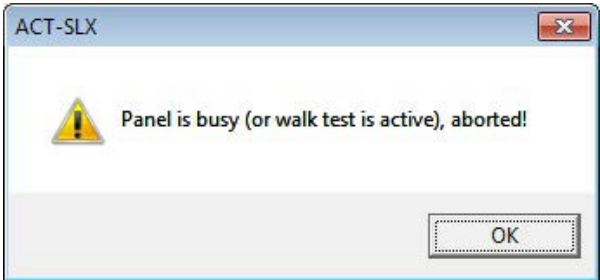
Figure 4-24. Clear Event Log Abort

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 4-25 is displayed.
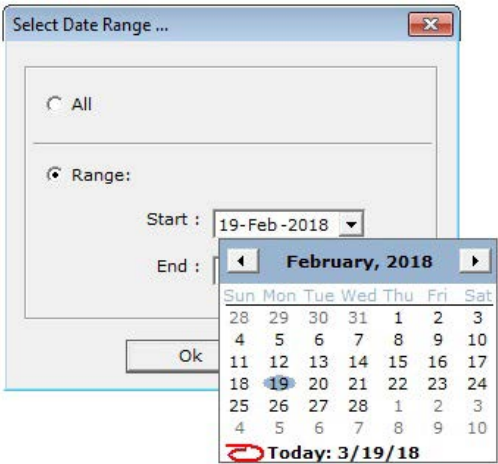
Figure 4-25. Event Log Date Range

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 4-26) is displayed.

Enter Level-2 Password
(Default Password 186591)

Enter Password,
then Select <OK>

Select <CANCEL> to
Return to the Previous Screen
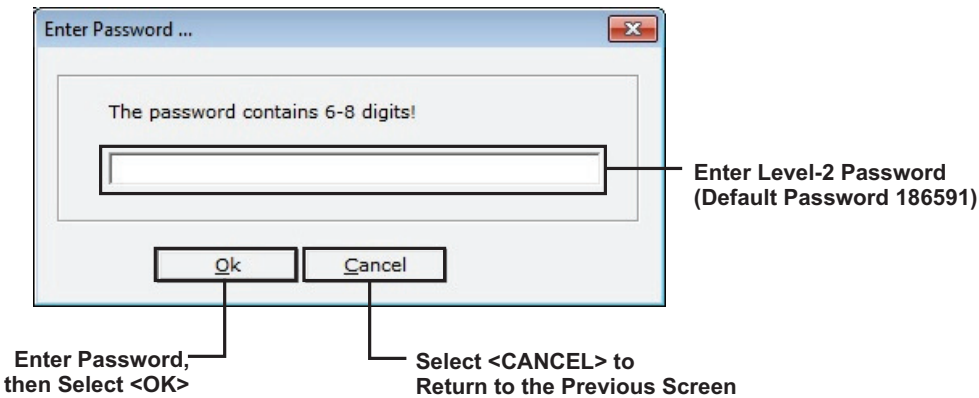
Figure 4-26. Enter Password

3. For single unit installations, enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, for an explanation on setting passwords.

4. After ACT-SLX 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 4-27) is displayed.
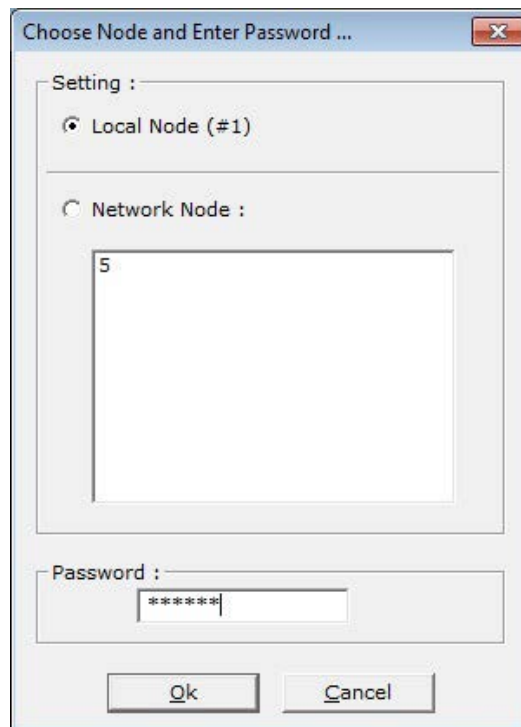
Figure 4-27. Select Node and Enter Password - Receive Event Log

    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 4-28) is displayed. When it is complete, the Event Log Retrieved Confirmation Screen displays (Figure 4-29).
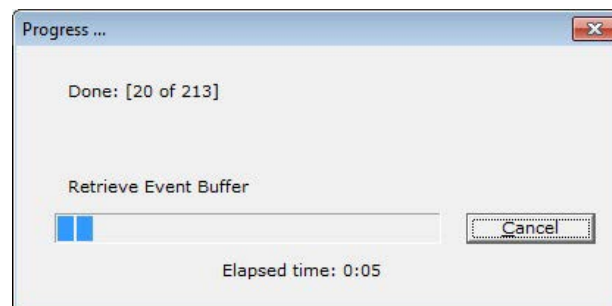
Figure 4-28. Receive Event Log Progression Screen

Figure 4-29. Event Log Received Confirmation Screen

7. Select **<OK>**. In response, the event log (Figure 4-30) 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.
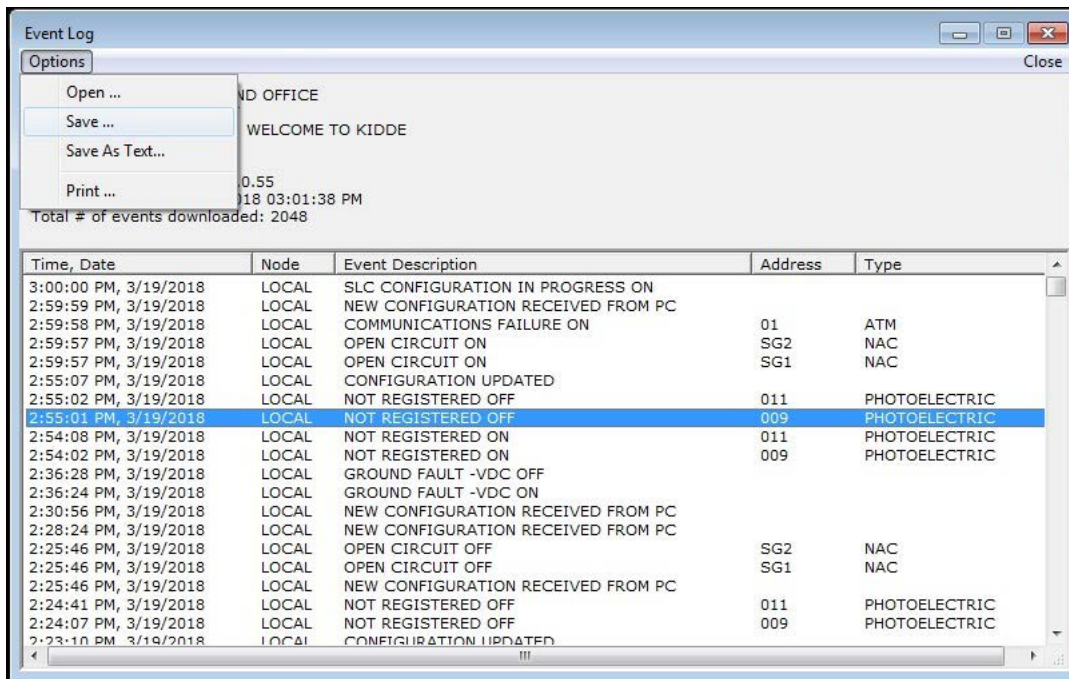
Figure 4-30. Event Log Screen

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 4-32) is displayed.

ACT-SLX 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 4-31) is displayed.
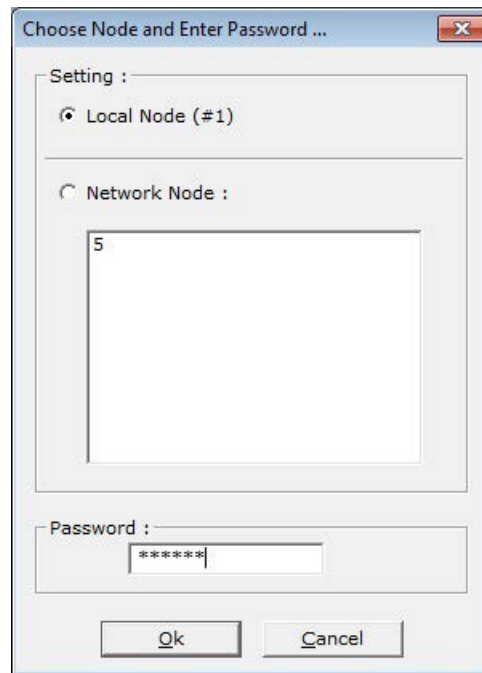
Figure 4-31. Select Node and Enter Password - Receive Test Log

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, ACT-SLX immediately displays the password prompt (Figure 4-32) for **Single Control Unit** installations.
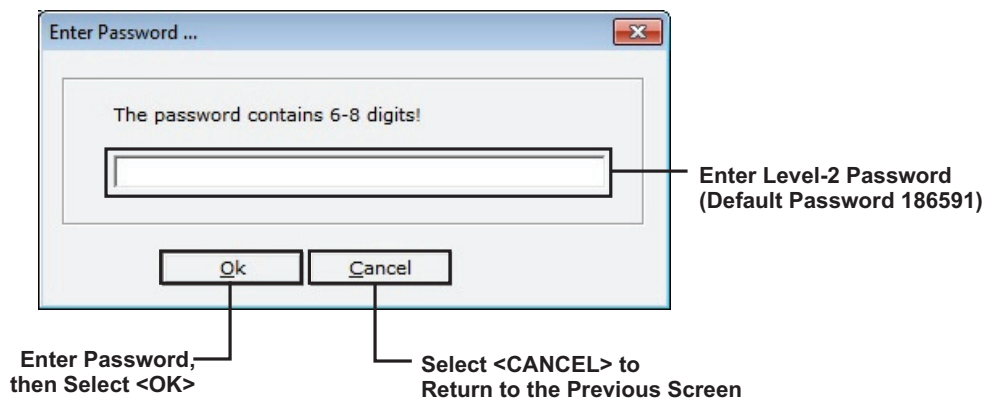
Figure 4-32. Enter Password

3. Enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, for an explanation on setting passwords and for a description of the initiating devices test.

4. Select **<OK>**. In response, progression of the test log download (Figure 4-33) is displayed. When download is complete, the test log (Figure 4-34) 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.
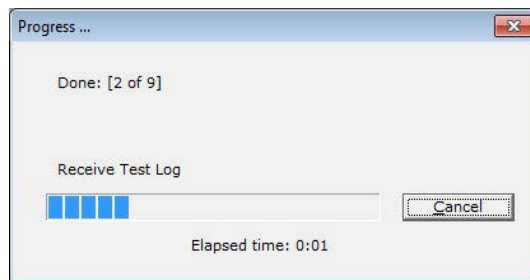
Figure 4-33. Receive Test Log Progress
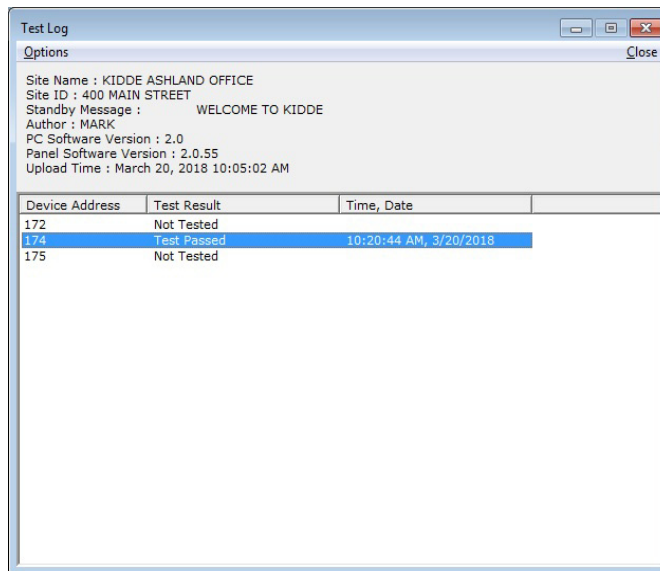
Figure 4-34. Test Log Screen

4-1.9   Receive Walk Test Log

1. Select Tools-> Verify to check syntax of the EOC code and verify that device and circuit addresses are used properly. In response, the prompt for a password (Figure 4-35) is displayed.

   ACT-SLX 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 4-36) is displayed.
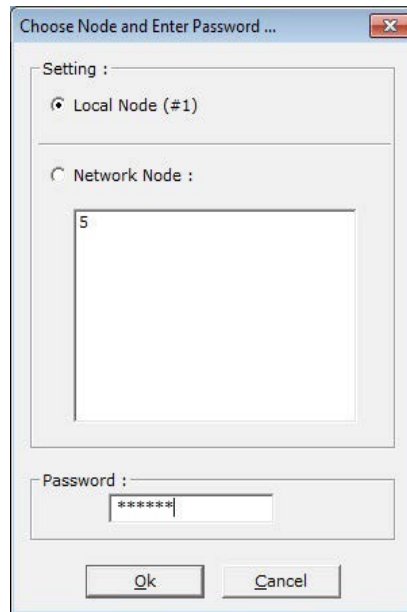
Figure 4-35. Select Node and Enter Password - Receive Walk Test Log

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, ACT-SLX immediately displays the password prompt (Figure 4-36) for **Single Control Unit** installations.
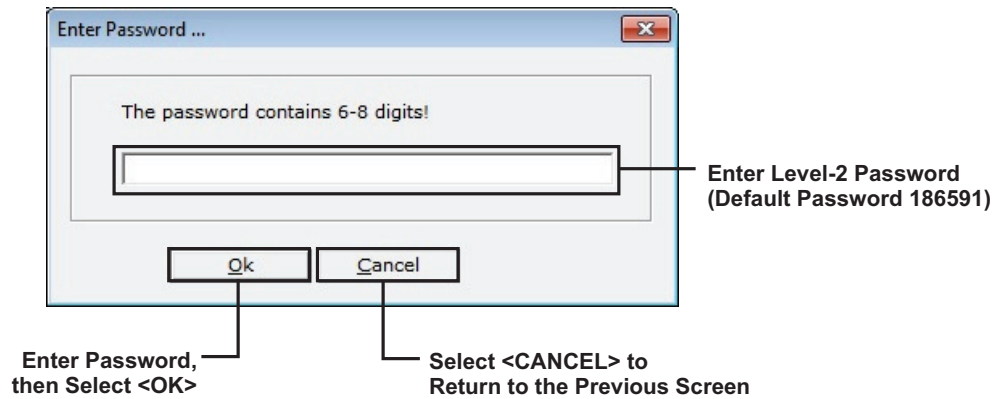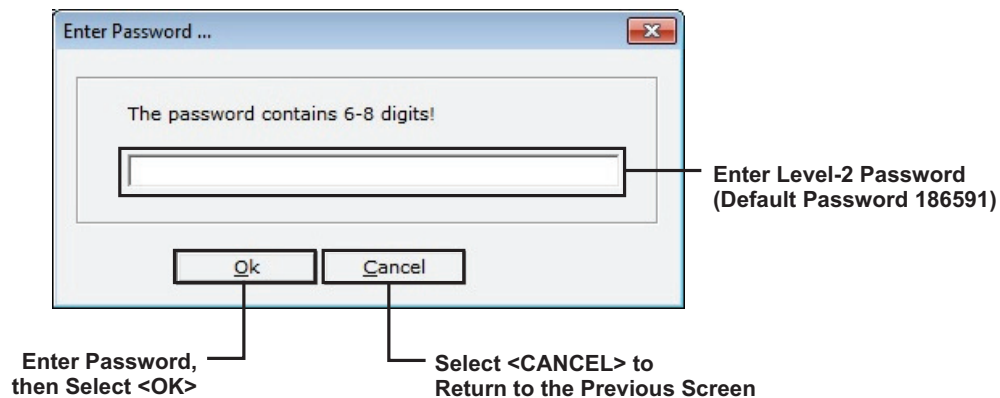

Figure 4-36. Enter Password Screen

3. Enter the password. Refer to the *ARIES-SLX Installation, Operation and Maintenance Manual*, P/N 06-237491-001, 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 4-37) is displayed. When it is complete, the walk test log (Figure 4-38) 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.
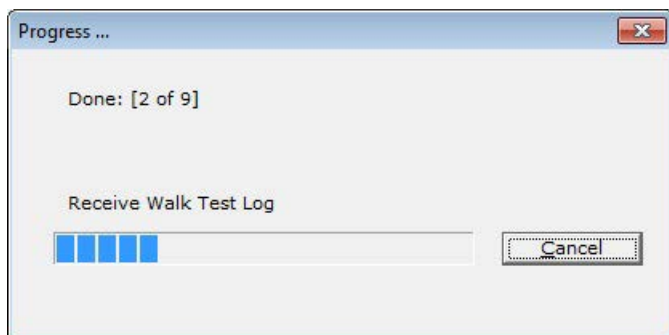
Figure 4-37. Receive Walk Test Log Progress
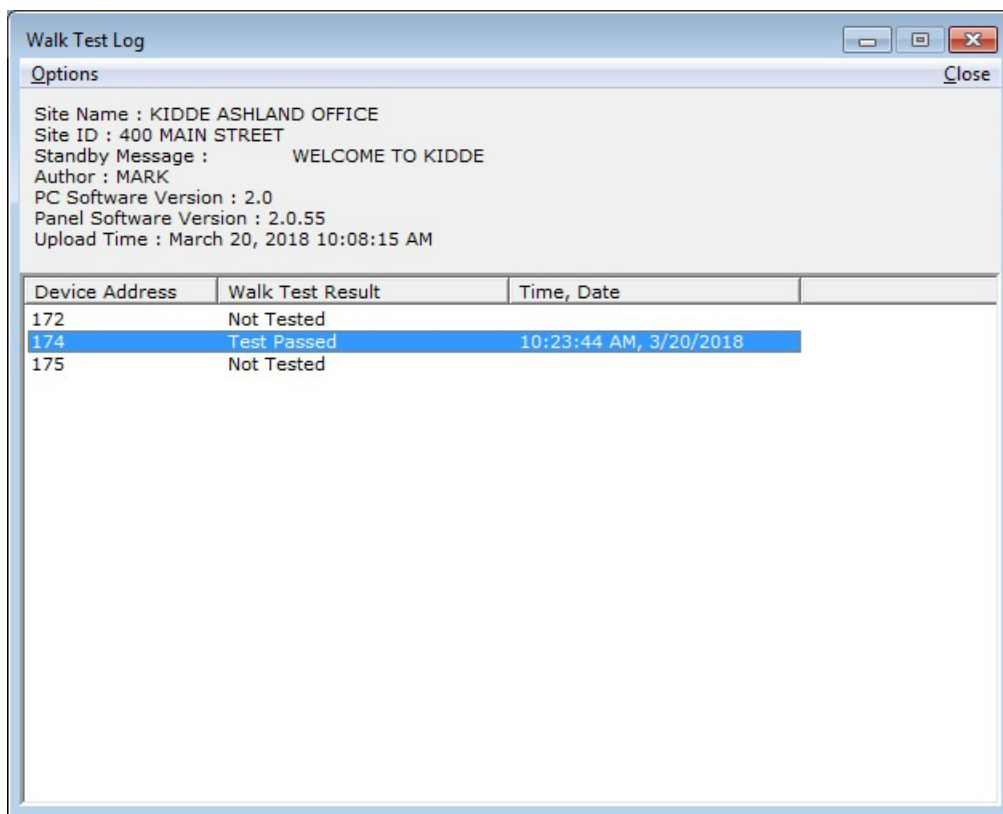
Figure 4-38. Walk Test Log

4-1.10   Receive Network Node Map

The node map (Figure 4-39) is retrieved when Receive Network Node Map 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.
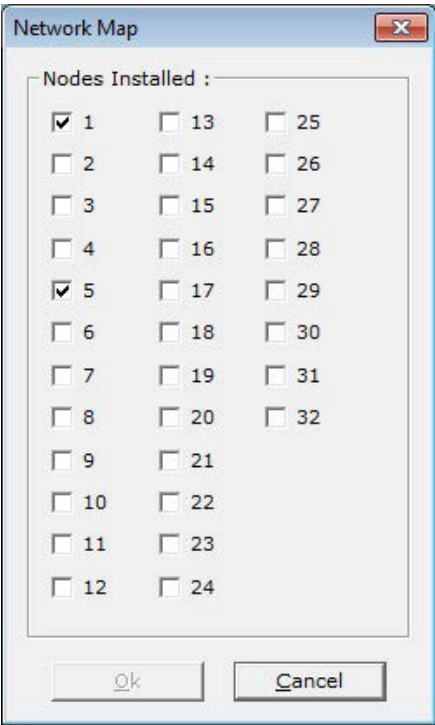
Figure 4-39. Node Map

4-1.11   Verify

Select **Tools>Verify** to check the syntax of EOC code and to check for unregistered SLC addresses. Alternatively, select the Verify Icon from the toolbar ( ). In response, the verification summary (Figure 4-40) is displayed.
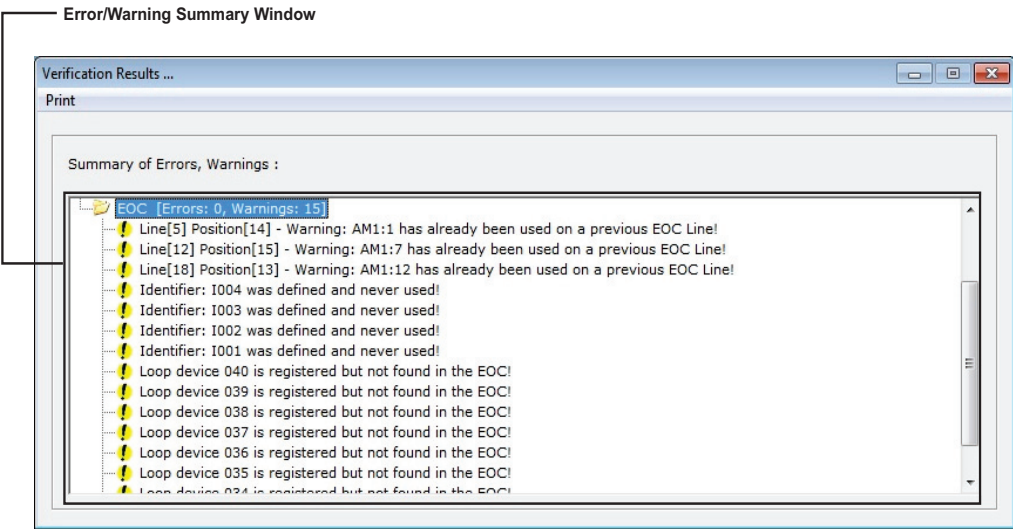
Figure 4-40. Verification Summary

Note: Remove errors and warnings where possible. For help removing as many as possible, contact Kidde 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 4-41.

Configuration Compare Summary Window
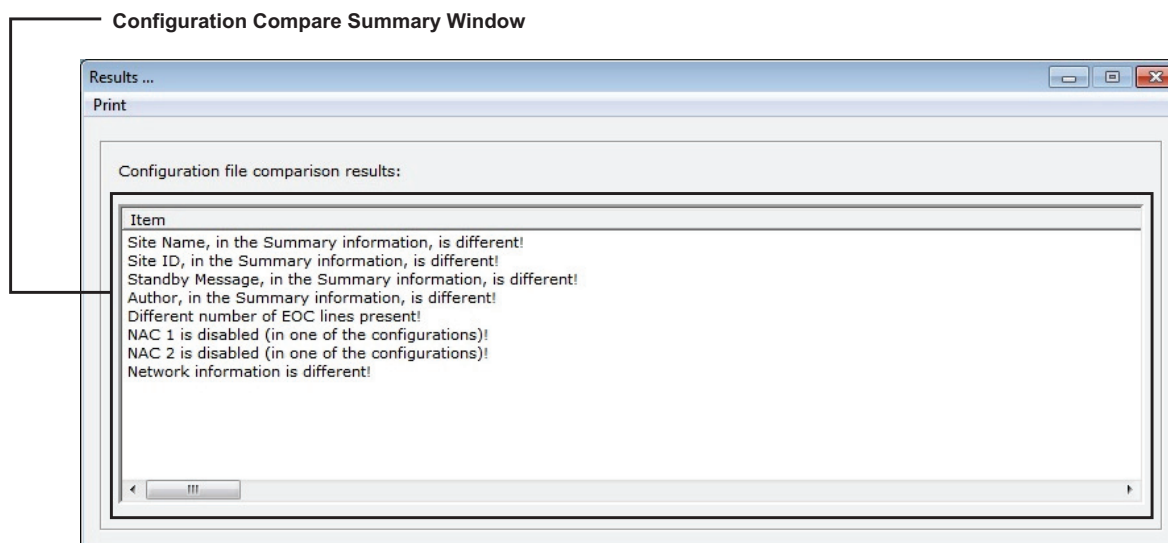
Figure 4-41. Configuration Compare

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

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.	Execution Statements
																																					$ Head-End-Room Pre-Alarm
																																					001#003=SG1,AM1:1,I001
																																					001#003=004#006A=1.5
---	1	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I001	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action	004#006=SG1,AM1:1,I002
---	2	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I001	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action	004#006=001#003A=3.0
---	3	Head-End-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1A	-----	-----	ATM-1	-----	-----	I001	1	Yes	Yes	No	AI-1B	-----	Yes	-----	Z-1 Pre-Action	$ Power-Room Pre-Alarm
---	4	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I002	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action	014#015=SG3,AM1:7,I003
---	5	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I002	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action	014#015=016#017A=1.5
---	6	Head-End-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-1B	-----	-----	ATM-1	-----	-----	I002	1	Yes	Yes	No	AI-1A	-----	Yes	-----	Z-1 Pre-Action	016#017=SG3,AM1:7,I004
---	7	Head-End-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	No	No	-----	-----	-----	Yes	-----	Z-1 Pre-Action	016#017=014#015A=3.0
---	8	Head-End-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	No	No	-----	-----	-----	Yes	-----	Z-1 Pre-Action	$ Head-End-Room Waterflow
---	9	Head-End-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-2	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	011=SG2,AM1:6,RY3
---	10	Head-End-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-2	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	$ Power-Room Waterflow
---	11	Head-End-Room Waterflow	AI	Waterflow	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-6	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	020=SG4,AM1:12,RY3
---	12	Head-End-Room Tamper	AI	Supervisory	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-5	-----	Y	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	$ Head-End-Room Tamper
---	13	Head-End-Room Low Press	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-4	-----	Y	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	012=AM1:5,025
---	14	Power-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2A	-----	-----	ATM-7	-----	-----	I003	2	Yes	Yes	No	AI-2B	-----	Yes	-----	Z-2 Pre-Action	$ Power-Room Tamper
---	15	Power-Room Photo	Photo	Open-Area	-----	1.5	2.0	3.0	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2A	-----	-----	ATM-7	-----	-----	I003	2	Yes	Yes	No	AI-2B	-----	Yes	-----	Z-2 Pre-Action	$ Head-End-Room Low Pressure
---	16	Power-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2B	-----	-----	ATM-7	-----	-----	I004	2	Yes	Yes	No	AI-2A	-----	Yes	-----	Z-2 Pre-Action	013=AM1:4
---	17	Power-Room Ion	Ion	Open-Area	-----	0.8	1.0	1.5	No	No	No	N-L	-----	-----	Y	-----	-----	-----	-----	-----	AI-2B	-----	-----	ATM-7	-----	-----	I004	2	Yes	Yes	No	AI-2A	-----	Yes	-----	Z-2 Pre-Action	$ Power-Room Low Pressure
---	18	Power-Room Man Rel	AI	Man. Rel	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	No	No	-----	-----	-----	Yes	-----	Z-2 Pre-Action	022=AM1:10
---	19	Power-Room Abort	AI	Abort/UL/30 sec	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	-----	ATM-8	-----	-----	-----	2	No	No	-----	-----	-----	-----	-----	-----	$ Pre-Action-System Low Air
---	20	Power-Room Waterflow	AI	Waterflow	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-12	-----	-----	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	026=AM1:13
---	21	Power-Room Tamper	AI	Supervisory	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-11	-----	-----	Y	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	$ Head-End-Room Pre-Release
---	22	Power-Room Low Press	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-10	-----	Y	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	(I001*I002)+007+008=SG1/120,023
---	23	HVAC Shutdown	AO	-----	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	-----	-----	1 and 2	-----	-----	Yes	-----	-----	-----	-----	-----	$ Head-End-Room Release
---	24	Power Shutdown	AO	-----	-----	-----	-----	-----	-----	-----	-----	L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	-----	-----	1 and 2	-----	-----	-----	-----	Yes	-----	-----	-----	D(I001*I002,30,009,010)+007+008=NSG1,NAM1:1,AR1,SG2,024,RY2,AM1:3
---	25	Supervisory to Central Station	AO	-----	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	N	-----	-----	-----	Y	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	009+010=AM1:2
---	26	Pre-Action Low Air	AI	Trouble	-----	-----	-----	-----	-----	-----	-----	N-L	-----	-----	N	-----	-----	-----	-----	-----	-----	-----	ATM-13	-----	Y	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	$ Power-Room Pre-Release
																																					(I003*I004)+018=SG3/120,023
																																					$ Power-Room Release
																																					D(I003*I004,30,019)+018=NSG3,NAM1:7,AR2,SG4,024,RY2,AM1:8
																																					019=AM1:8

APPENDIX B
NEW YORK CITY ABORT SEQUENCE

B-1   INTRODUCTION

The following EOC program examples demonstrate typical methods of supporting the unique N.Y.C. suppression system abort sequence. Use of these sample programs 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 for 3 NAC solution

- 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 for 3 NAC solution

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	**Sample Programs for N.Y.C. Abort Sequence**

Note: 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.

Sample Program 1:

```
$ EOC program for NYC Abort, using one NAC (SG2, a Horn)


1+2+3#4=I3                     $ check for any NYC Aborts going Active (make your changes
                                 to the left of the equals sign)
11+12+13#14=C5                 $ check Manual Release Pulls going Active (make your
                                 changes to the left of the equals sign)
101+102+103#255=C1,I1          $ First Alarm: check for any alarms going Active (make
                                 your changes to the left of the equals sign)
                               $ also on any of the above 3 lines, possibly set any
                                 Output(s), at the end, if desired


$ Copy the following lines exactly as is, with no modifications:


NC5*I1>1=C2,NC1                $ Second Alarm State reached; stop signaling the First
                                 Alarm
NC5*I3=C3,C6                   $ start the Aborting State (if any Abort is Active)
NI3=NC3                        $ stop the Aborting State (if all Aborts are Inactive)
C5=NC3                         $ stop the Aborting State (if Release has happened)
C6*NC3*NI1=NC6                 $ if stopping the Aborting State and NO Alarms are Active,
                                 then same as Abort has never happened
D(NC5*NC6*C2,30)+C5=C5,AR2     $ Release in 30 seconds, if an Abort has never happened
D(NC5*C6*C2*NC3,90)=C4         $ after 90 seconds, then Re-signal the Second Alarm State
                                 (Pre-Release)
C3=NC4                         $ stop signaling the First Alarm State or Second Alarm
                                 State, if presently aborting
D(NC5*C6*C2*NC3,120)+C5=C5,AR2 $ Release in 120 seconds, as long as no more Aborts go
                                 Active


$ now handle the NAC signaling
NC5*C3=NSG2                    $ stop signaling the First Alarm State and/or Second Alarm
                                 State, if presently aborting
NC5*NC6*NC2*C1=SG2/60          $ signal First Alarm, if an Abort has never happened
NC5*NC3*NC4*C6=SG2/60          $ signal First Alarm, if not presently aborting, but if an
                                 Abort has previously happened
NC5*NC6*C2=SG2/120            $ signal Second Alarm (Pre-Release) while doing 30 second
                                 countdown, if an Abort has never happened
NC5*C4=SG2/120                $ signal Second Alarm (Pre-Release), after the 90 second
                                 countdown, if an Abort previously happened
C5=AR2,SG2/C                  $ signal that the Release has happened
$
```

Sample Program 2:

```
$ EOC program for NYC Abort, using two NACs (SG1, a Bell; and SG2, a Horn)

1+2+3#4=I3                      $ check for any NYC Aborts going Active (make your changes
                                  to the left of the equals sign)
11+12+13#14=C5                  $ check Manual Release Pulls going Active (make your
                                  changes to the left of the equals sign)
101+102+103#255=C1,I1           $ First Alarm: check for any alarms going Active (make
                                  your changes to the left of the equals sign)
                                $ also on any of the above 3 lines, possibly set any
                                  Output(s), at the end, if desired


$ Copy the following lines exactly as is, with no modifications:

NC5*I1>1=C2,NC1                 $ Second Alarm State reached; stop signaling the First
                                  Alarm
NC5*I3=C3,C6                    $ start the Aborting State (if any Abort is Active)
NI3=NC3                         $ stop the Aborting State (if all Aborts are Inactive)
C5=NC3                          $ stop the Aborting State (if Release has happened)
C6*NC3*NI1=NC6                  $ if stopping the Aborting State and NO Alarms are Active,
                                  then same as Abort has never happened
D(NC5*NC6*C2,30)+C5=C5,AR2      $ Release in 30 seconds, if an Abort has never happened
D(NC5*C6*C2*NC3,90)=C4          $ after 90 seconds, then Re-signal the Second Alarm State
                                  (Pre-Release)
C3=NC4                          $ stop signaling the First Alarm State or Second Alarm
                                  State, if presently aborting
D(NC5*C6*C2*NC3,120)+C5=C5,AR2  $ Release in 120 seconds, as long as no more Aborts go
                                  Active


$ now handle the NAC signaling
NC5*C3=NSG1,NSG2                $ stop signaling the First Alarm State and/or Second Alarm
                                  State, if presently aborting
NC5*NC6*NC2*C1=SG1/C            $ signal First Alarm, if an Abort has never happened
NC5*NC3*NC4*C6=SG1/C            $ signal First Alarm, if not presently aborting, but if an
                                  Abort has previously happened
NC5*NC6*C2=NSG1,SG2/60          $ signal Second Alarm (Pre-Release), while doing 30 second
                                  countdown, if an Abort has never happened
NC5*C4=NSG1,SG2/60              $ signal Second Alarm (Pre-Release), after the 90 second
                                  countdown, if an Abort previously happened
C5=AR2,NSG1,SG2/C               $ signal that the Release has happened
$
```

Sample Program 3:

```
$ EOC program for NYC Abort, using two NACs (SG2, a Horn; and SG3 a Strobe)


1+2+3#4=I3                      $ check for any NYC Aborts going Active (make your changes
                                  to the left of the equals sign)
11+12+13#14=C5                  $ check Manual Release Pulls going Active (make your
                                  changes to the left of the equals sign)
101+102+103#255=C1,I1           $ First Alarm: check for any alarms going Active (make
                                  your changes to the left of the equals sign)
                                $ also on any of the above 3 lines, possibly set any
                                  Output(s), at the end, if desired


$ Copy the following lines exactly as is, with no modifications:

NC5*I1>1=C2,NC1                 $ Second Alarm State reached; stop signaling the First
                                  Alarm
NC5*I3=C3,C6                     $ start the Aborting State (if any Abort is Active)
NI3=NC3                         $ stop the Aborting State (if all Aborts are Inactive)
C5=NC3                          $ stop the Aborting State (if Release has happened)
C6*NC3*NI1=NC6                  $ if stopping the Aborting State and NO Alarms are Active,
                                  then same as Abort has never happened
D(NC5*NC6*C2,30)+C5=C5,AR2      $ Release in 30 seconds, if an Abort has never happened
D(NC5*C6*C2*NC3,90)=C4          $ after 90 seconds, then Re-signal the Second Alarm State
                                  (Pre-Release)
C3=NC4                          $ stop signaling the First Alarm State or Second Alarm
                                  State, if presently aborting
D(NC5*C6*C2*NC3,120)+C5=C5,AR2  $ Release in 120 seconds, as long as no more Aborts go
                                  Active


$ now handle the NAC signaling
NC5*C3=NSG2,NSG3                $ stop signaling the First Alarm State and/or Second Alarm
                                  State, if presently aborting
NC5*NC6*NC2*C1=SG2/60           $ signal First Alarm, if an Abort has never happened
NC5*NC3*NC4*C6=SG2/60           $ signal First Alarm, if not presently aborting, but if an
                                  Abort has previously happened
NC5*NC6*C2=SG2/120,SG3/C        $ signal Second Alarm (Pre-Release), while doing 30 second
                                  countdown, if an Abort has never happened
NC5*C4=SG2/120,SG3/C            $ signal Second Alarm (Pre-Release), after the 90 second
                                  countdown, if an Abort previously happened
C5=AR2,SG2/C,SG3/C              $ signal that the Release has happened
$
```

Sample Program 4:

```
$ EOC program for NYC Abort, using three NACs (SG1, a Bell; SG2, a Horn; and SG3 a Strobe)

1+2+3#4=I3                      $ check for any NYC Aborts going Active (make your changes
                                  to the left of the equals sign)
11+12+13#14=C5                  $ check Manual Release Pulls going Active (make your
                                  changes to the left of the equals sign)
101+102+103#255=C1,I1           $ First Alarm: check for any alarms going Active (make
                                  your changes to the left of the equals sign)
                                $ also on any of the above 3 lines, possibly set any
                                  Output(s), at the end, if desired


$ Copy the following lines exactly as is, with no modifications:

NC5*I1>1=C2,NC1                 $ Second Alarm State reached; stop signaling the First
                                  Alarm
NC5*I3=C3,C6                    $ start the Aborting State (if any Abort is Active)
NI3=NC3                         $ stop the Aborting State (if all Aborts are Inactive)
C5=NC3                          $ stop the Aborting State (if Release has happened)
C6*NC3*NI1=NC6                  $ if stopping the Aborting State and NO Alarms are Active,
                                  then same as Abort has never happened
D(NC5*NC6*C2,30)+C5=C5,AR2      $ Release in 30 seconds, if an Abort has never happened
D(NC5*C6*C2*NC3,90)=C4          $ after 90 seconds, then Re-signal the Second Alarm State
                                  (Pre-Release)
C3=NC4                          $ stop signaling the First Alarm State or Second Alarm
                                  State, if presently aborting
D(NC5*C6*C2*NC3,120)+C5=C5,AR2  $ Release in 120 seconds, as long as no more Aborts go
                                  Active


$ now handle the NAC signaling
NC5*C3=NSG1,NSG2,NSG3           $ stop signaling the First Alarm State and/or Second Alarm
                                  State, if presently aborting
NC5*NC6*C2*C1=SG1/C             $ signal First Alarm, if an Abort has never happened
NC5*NC3*NC4*C6=SG1/C            $ signal First Alarm, if not presently aborting, but if an
                                  Abort has previously happened
NC5*NC6*C2=NSG1,SG2/60,SG3/C    $ signal Second Alarm (Pre-Release), while doing 30 second
                                  countdown, if an Abort has never happened
NC5*C4=NSG1,SG2/60,SG3/C        $ signal Second Alarm (Pre-Release), after the 90 second
                                  countdown, if an Abort previously happened
C5=AR2,NSG1,SG2/C,SG3/C         $ signal that the Release has happened
$
```
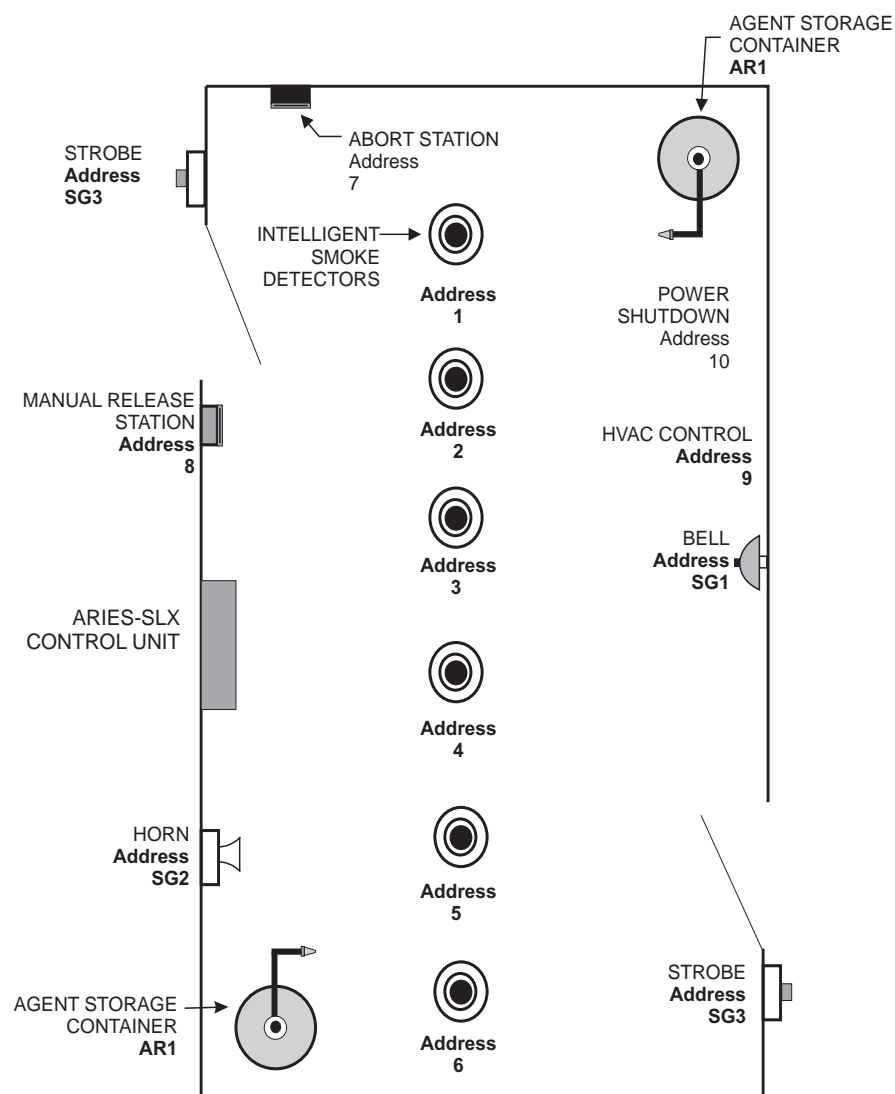
Figure B-1. New York City Installation

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