UNITED FIRE SYSTEMS

PREACTION PAC
SPRINKLER VALVE ASSEMBLY®

with Potter PFC-4410G3 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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Manual Part Number 10-500003-00G
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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 10-500003-00G.
- 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.

LIMITED WARRANTY
PREACTION-PAC™

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.

UFS-113 Rev. 2.01 Nov 2020

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 are 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™** is a low-differential, latched clapper valve that uses a unique direct-acting diaphragm to separate the system water supply from the system piping. The positive latching system uses the supply water pressure to hold the clapper shut. When the water pressure in the diaphragm chamber is released, the latch retracts from the clapper and the valve actuates. The low differential and unique latch and actuator design of the valve allows the valve to be self-resetting.

1.1.2. Piping. Water inlet pipe connections are located on the lower left and lower right sides 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 Potter 4410G3 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.

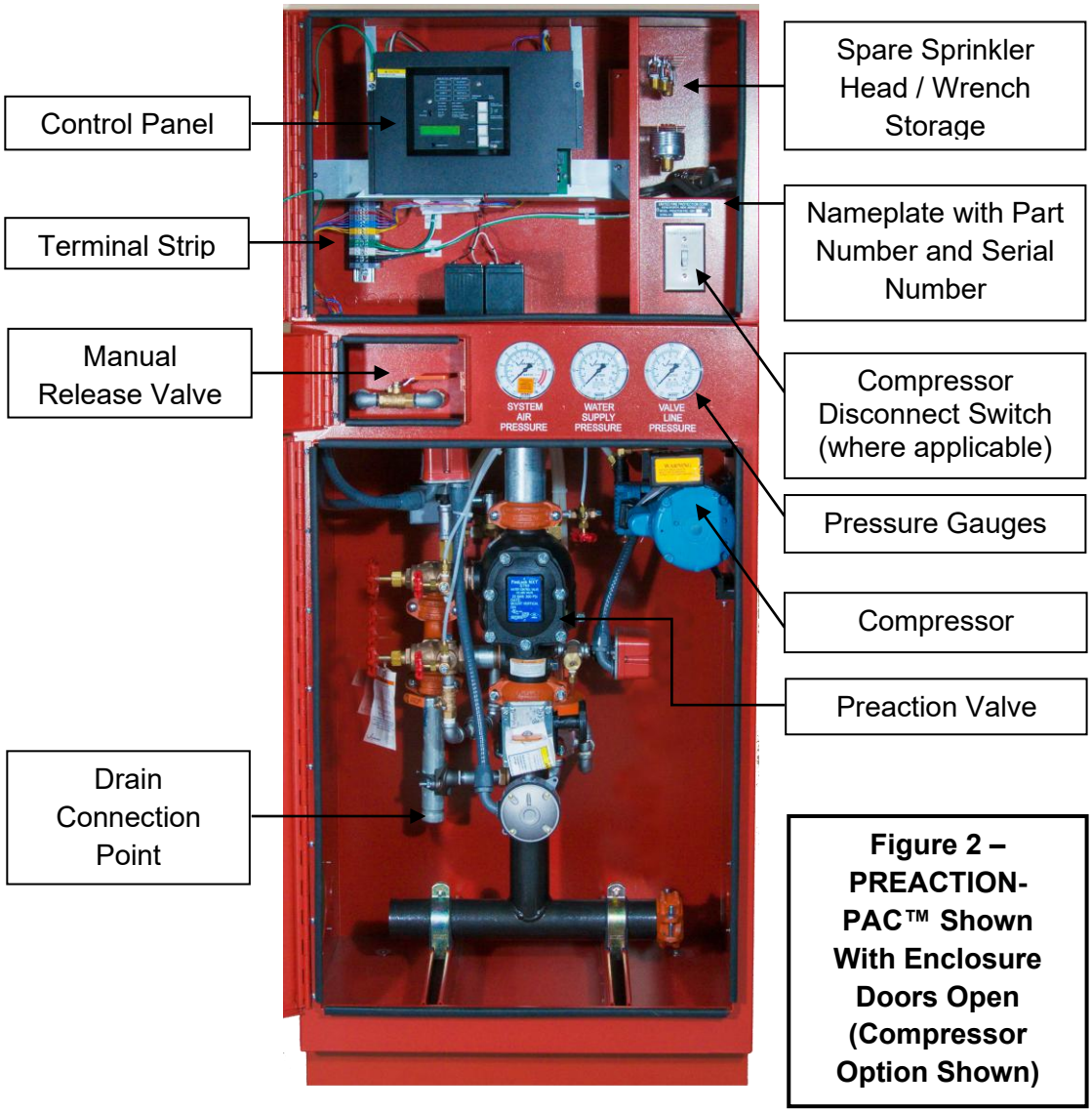


Figure 2 – PREACTION-PAC™ Shown With Enclosure Doors Open (Compressor Option Shown)

Figure 3a – Diagram - Functional Description with Compressor

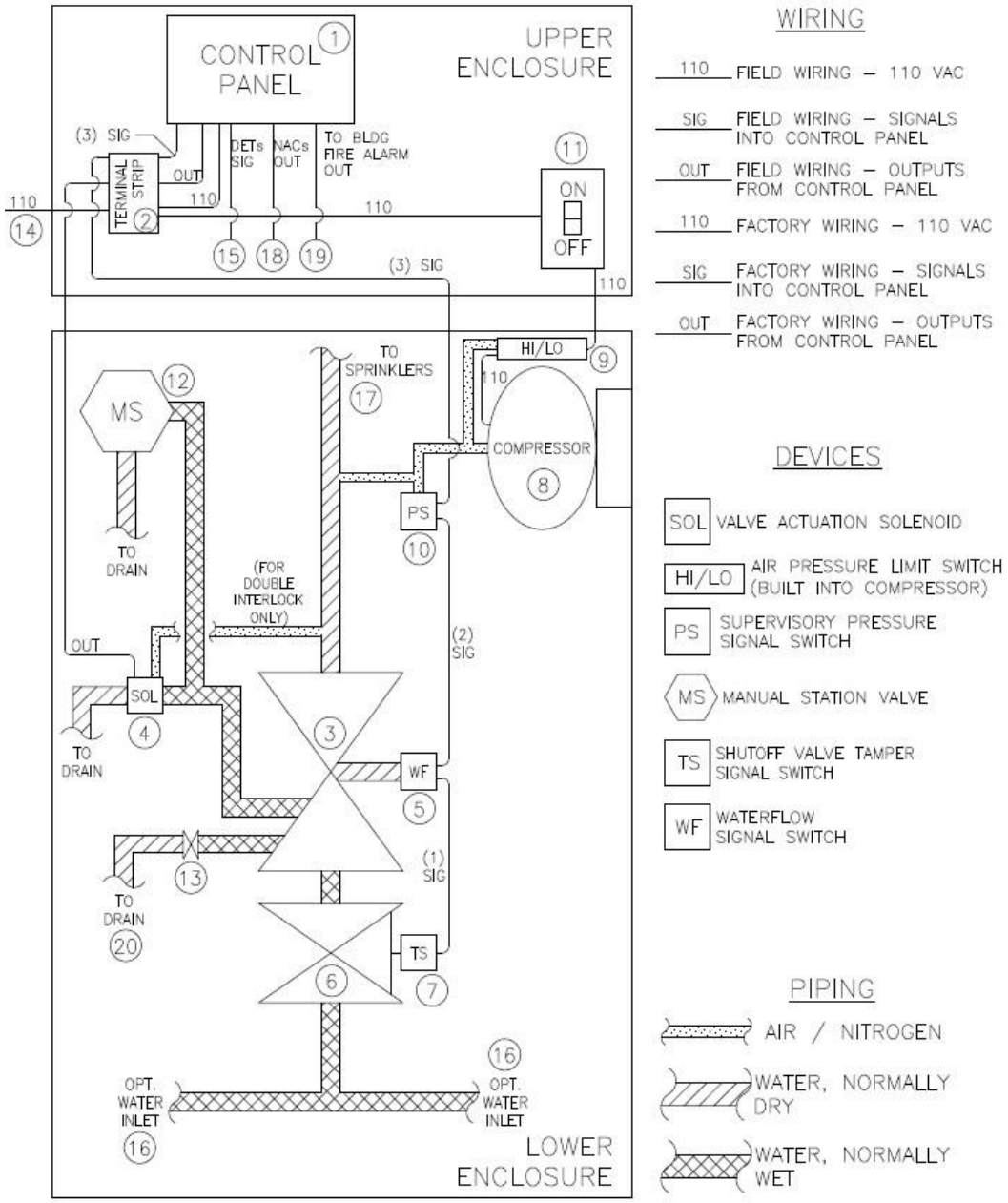
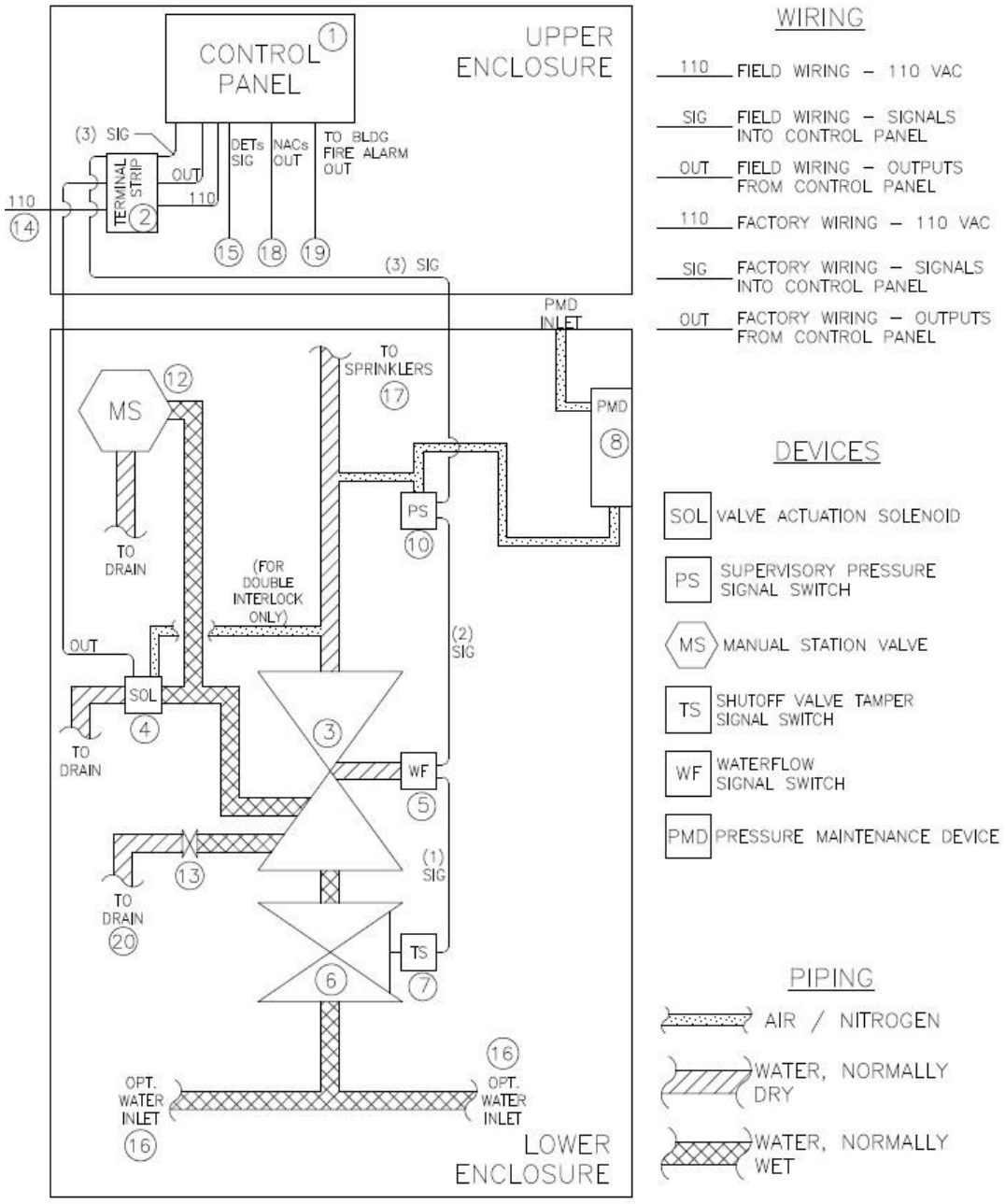


Figure 3b – Diagram - Functional Description
with Pressure Maintenance Device



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 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 TFP1461 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 Tyco solenoid valve 52-287-1-124 is rated at 24VDC, 0.83 amps, 22 watts. The solenoid valve is FM Approved as a trim component for the release of the Model DV-5a valve. Refer to Tyco Manual TFP1461 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 two SPDT (Form C) contacts, rated at 10A-125/250VAC, 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. Refer to Tyco Manual TFP1461 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 two SPDT (Form C) contacts, 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 into 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. Supervisory pressure signal switch (10). The supervisory pressure signal switch sends the supervisory signal for low and high system pressure to the control panel (1). The switch contains two SPDT (Form C) contacts, rated at 10.1A-125/250VAC, 2.0A-30VDC. Low pressure contacts

transfer when pressure in the piping falls below 10PSIG. High pressure contacts transfer when pressure in the piping exceeds 25PSIG. Contacts automatically restore when system pressure is within normal range. Both contacts are 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 supervisory 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 TFP1461 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 5 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 TFP1461 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 TFP1461 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 TFP1461 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 type: Double Interlock.

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 Potter 4410G3 conventional 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.”

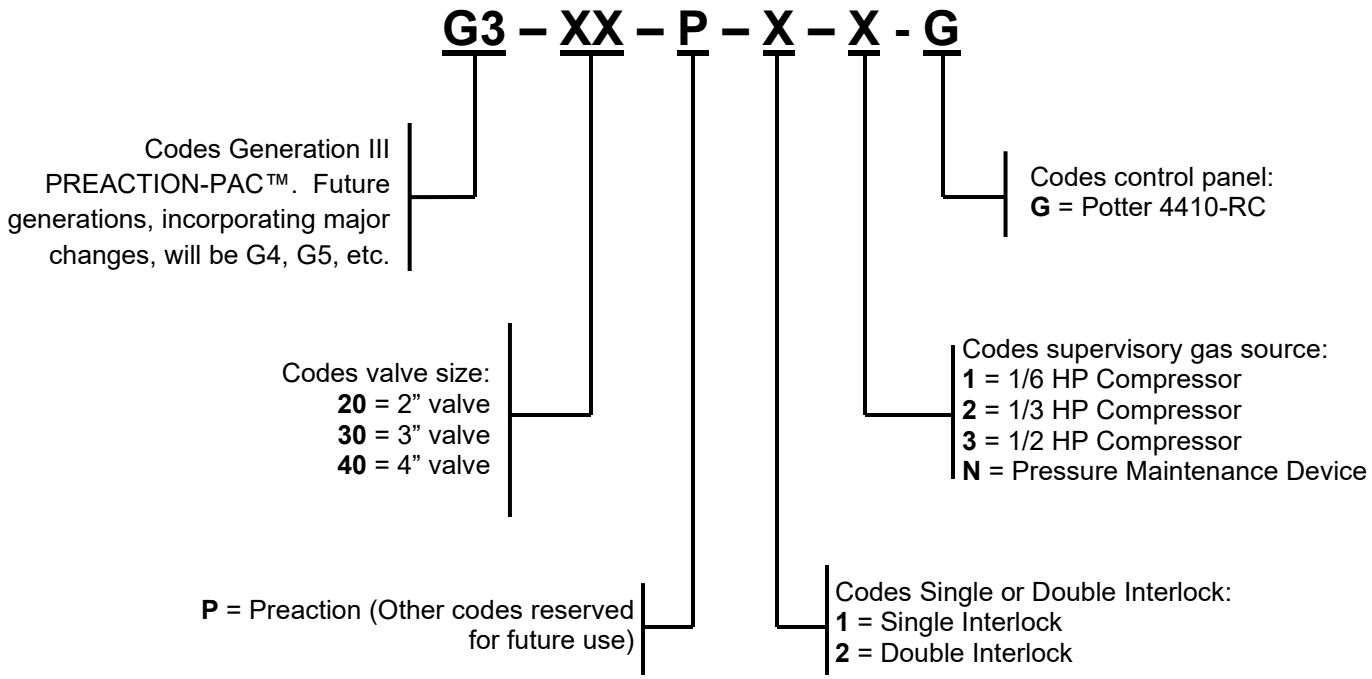
1.7.3. National Fire Protection Association No. 70, “National Electrical Code®”.

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:



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 Potter 4410G3 Control Panel

Part Number	Valve Size, in.	Valve Type	Supervisory Gas Source	Control Panel
G320P21G	2”	Double Interlock	1/6 HP Compressor	Potter 4410G3
G320P2NG	2”	Double Interlock	Pressure Maintenance Device	Potter 4410G3
G330P21G	3”	Double Interlock	1/6 HP Compressor	Potter 4410G3
G330P22G	3”	Double Interlock	1/3 HP Compressor	Potter 4410G3
G330P23G	3”	Double Interlock	1/2 HP Compressor	Potter 4410G3
G330P2NG	3”	Double Interlock	Pressure Maintenance Device	Potter 4410G3
G340P21G	4”	Double Interlock	1/6 HP Compressor	Potter 4410G3
G340P22G	4”	Double Interlock	1/3 HP Compressor	Potter 4410G3
G340P23G	4”	Double Interlock	1/2 HP Compressor	Potter 4410G3
G340P2NG	4”	Double Interlock	Pressure Maintenance Device	Potter 4410G3

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.

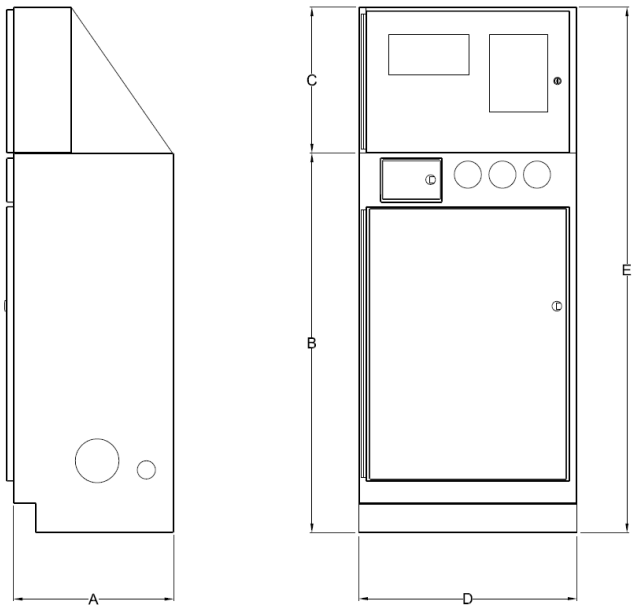
1.10.2.4. Close the lower enclosure door. Remove the unit from the pallet, and place in the intended installation location.

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

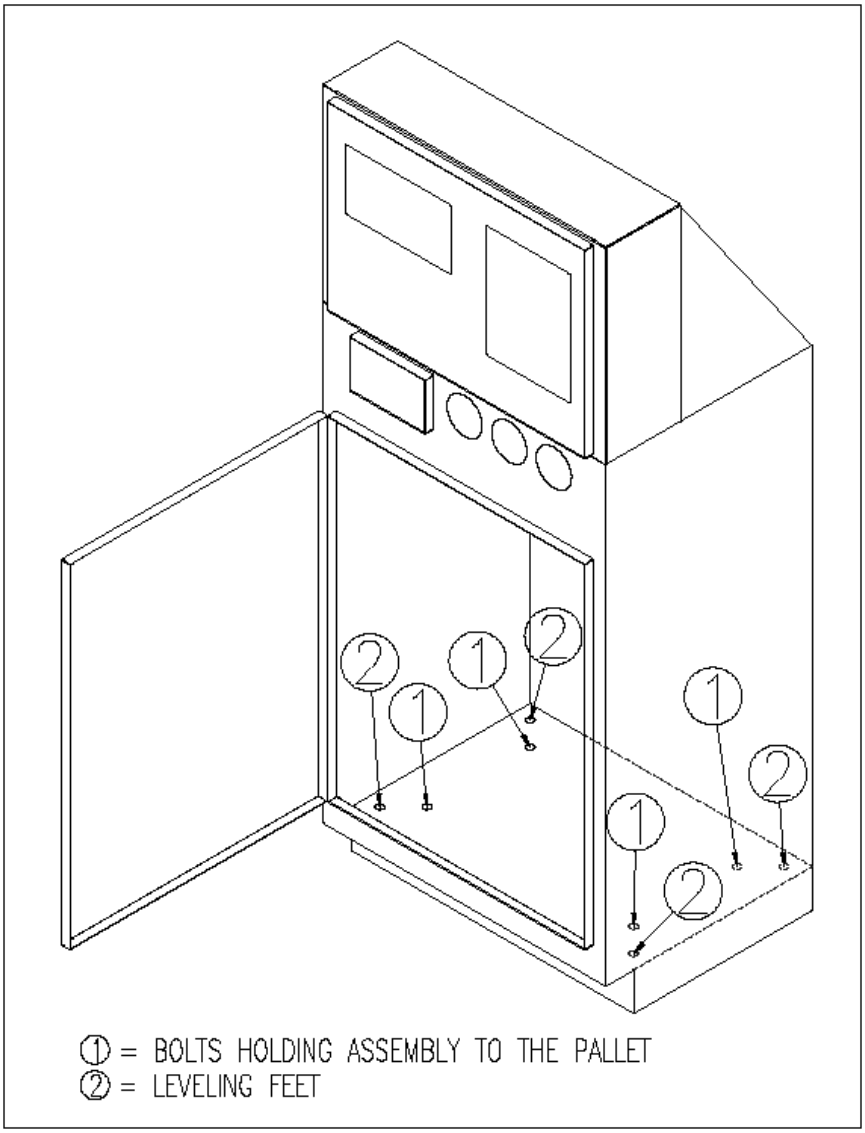
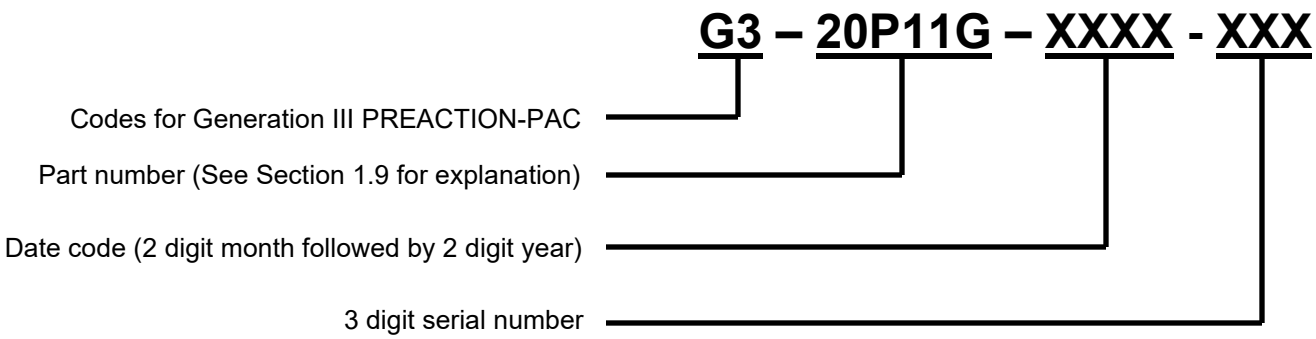


Figure 5 – Diagram - Location of Pallet Bolts and Leveling Feet

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:



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 TFP1461 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

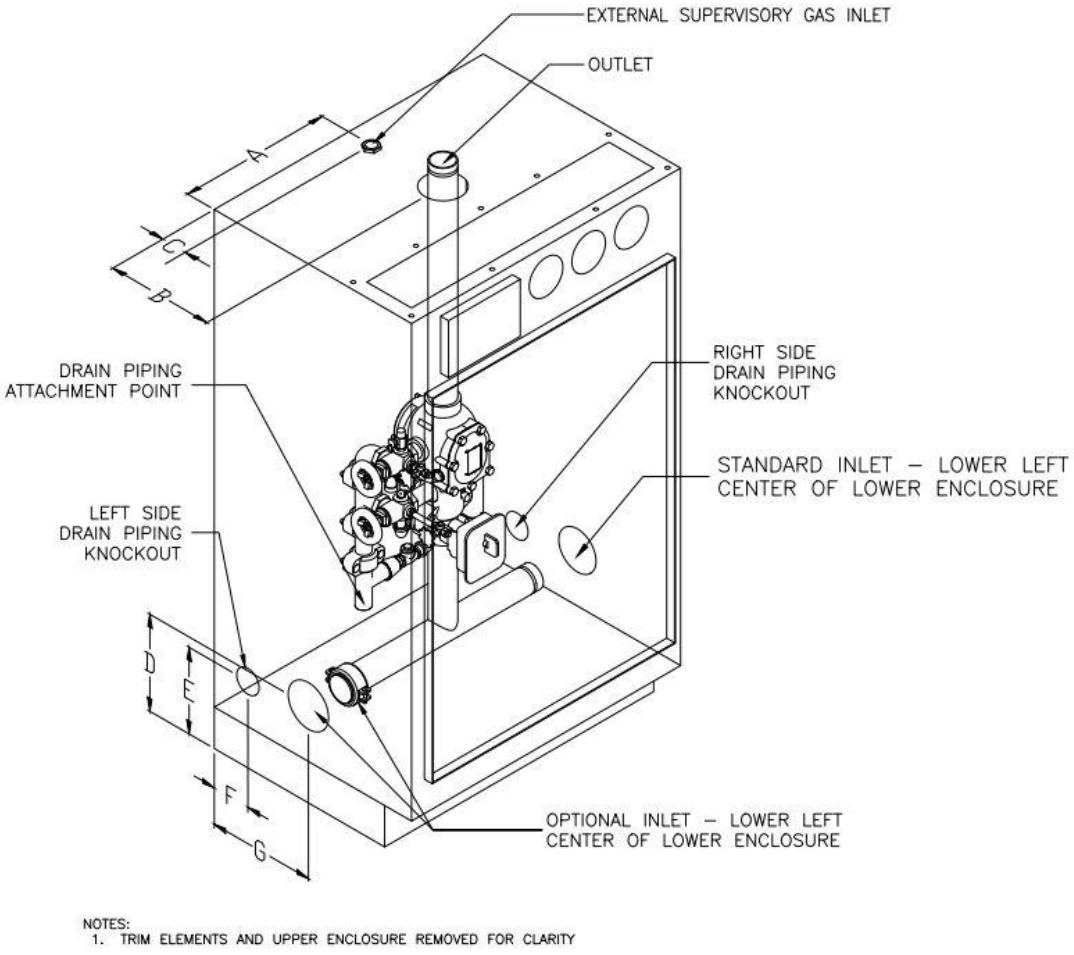
Failure to assemble the steel cap to the lower right center inlet will result in property damage due to water escaping from the lower right center inlet.

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.



Dimension	Inches
A	15.00
B	12.50
C	9.86
D	8.86
E	5.75
F	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 – Potter manual 5403751 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.

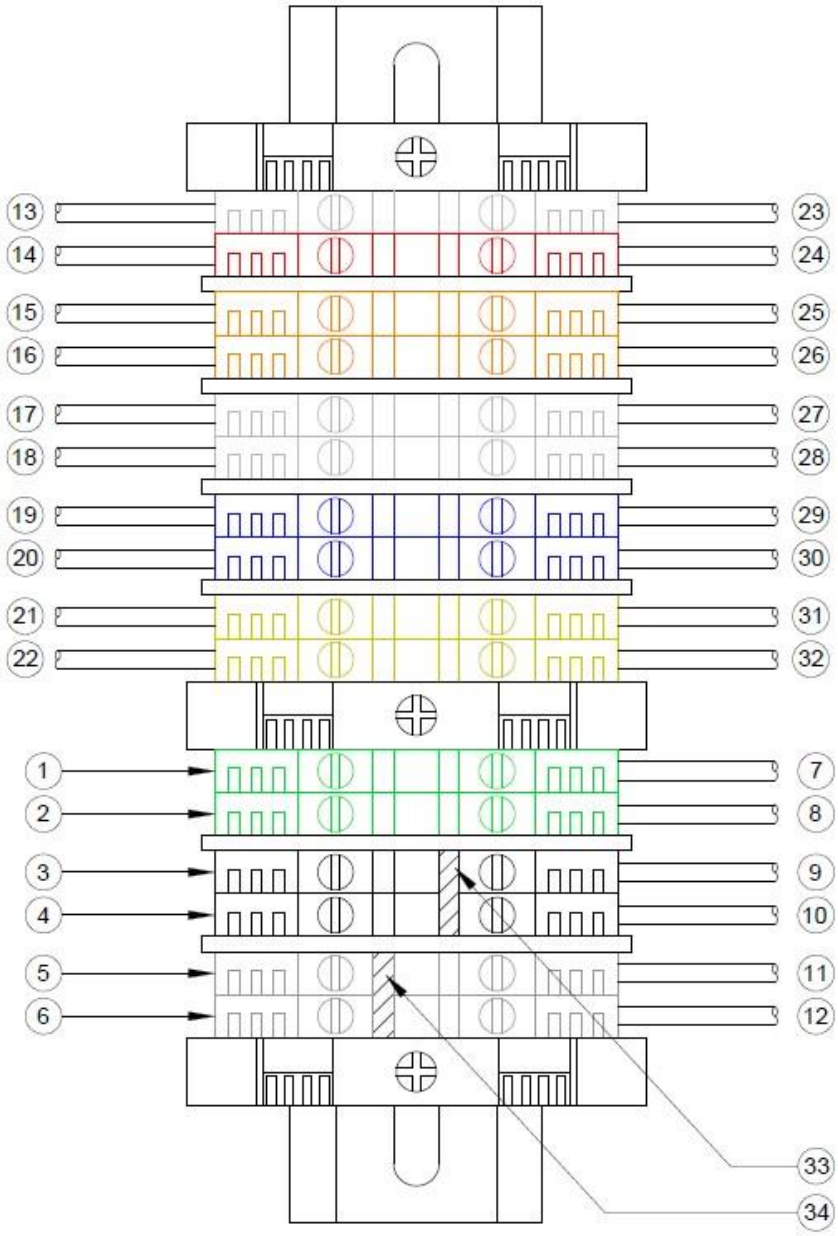


Figure 7a – Diagram –

Terminal Strip with Compressor Wiring Detail

LEGEND			
FIELD WIRING			
			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 33 IN PLACE	**WITH JUMPER 33 REMOVED**	
3	110 VAC NEUTRAL FOR CONTROL PANEL & COMPRESSOR	110 VAC NEUTRAL FOR CONTROL PANEL ONLY	WHITE
4	DO NOT USE	110 VAC NEUTRAL FOR COMPRESSOR ONLY	WHITE
	WITH JUMPER 34 IN PLACE	**WITH JUMPER 34 REMOVED**	
5	110 VAC HOT FOR CONTROL PANEL & 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	HIGH AIR SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE		ORANGE
16	HIGH AIR SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE		ORANGE
17	LOW AIR SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE		GRAY
18	LOW AIR SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE		GRAY
19	WATERFLOW SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE		BLUE
20	WATERFLOW SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE		BLUE
21	TAMPER SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE		YELLOW
22	TAMPER SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE		YELLOW
23	PREACTION SOLENOID WIRING (-) TO CONTROL PANEL		GRAY
24	PREACTION SOLENOID WIRING (+) TO CONTROL PANEL		RED
25	HIGH AIR SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL		ORANGE
26	HIGH AIR SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL		ORANGE
27	LOW AIR SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL		GRAY
28	LOW AIR SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL		GRAY
29	WATERFLOW SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL		BLUE
30	WATERFLOW SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL		BLUE
31	TAMPER SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL		YELLOW
32	TAMPER SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL		YELLOW
33	JUMPER - CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC NEUTRAL CONDUCTORS		**REMOVE BOTH JUMPERS TO SEPARATE CIRCUITS**
34	JUMPER - CONNECTS CONTROL PANEL & COMPRESSOR 110 VAC HOT CONDUCTORS		

Legend for Figure 7a

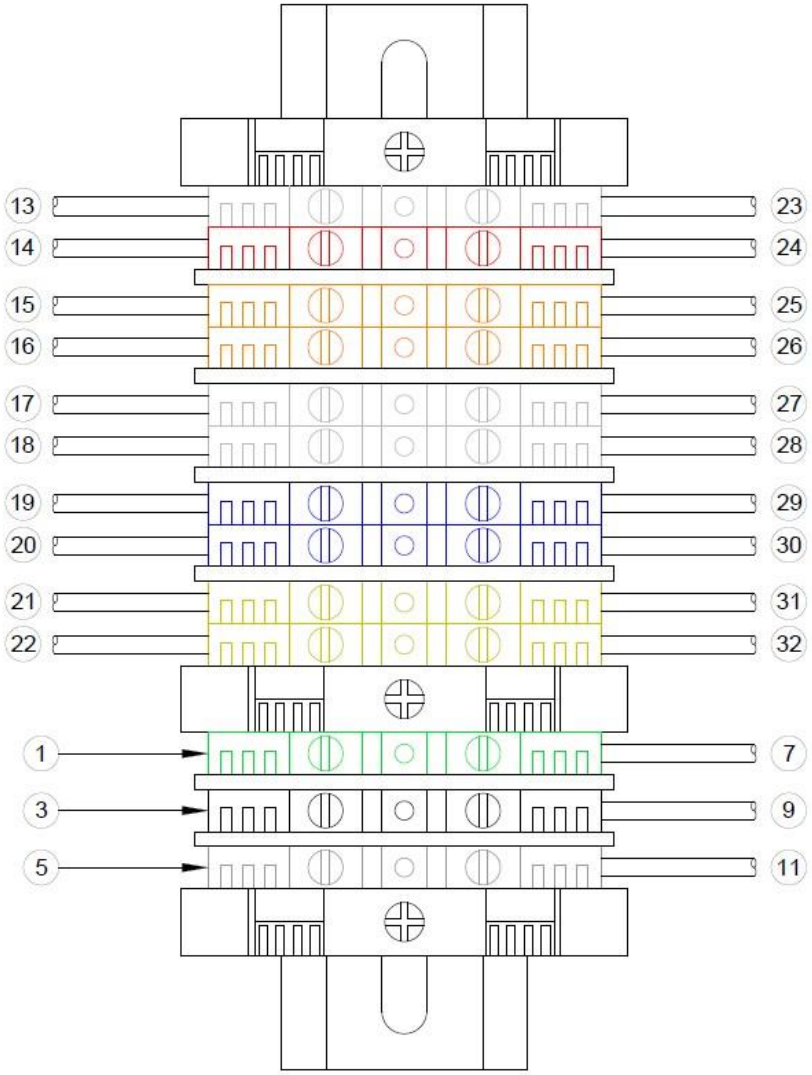


Figure 7b – Diagram –

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	HIGH AIR SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	ORANGE
16	HIGH AIR SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	ORANGE
17	LOW AIR SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	GRAY
18	LOW AIR SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	GRAY
19	WATERFLOW SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	BLUE
20	WATERFLOW SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	BLUE
21	TAMPER SIGNAL SWITCH WIRING (NO) FROM LOWER ENCLOSURE	YELLOW
22	TAMPER SIGNAL SWITCH WIRING (COM) FROM LOWER ENCLOSURE	YELLOW
23	PREACTION SOLENOID WIRING (-) TO CONTROL PANEL	GRAY
24	PREACTION SOLENOID WIRING (+) TO CONTROL PANEL	RED
25	HIGH AIR SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	ORANGE
26	HIGH AIR SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	ORANGE
27	LOW AIR SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	GRAY
28	LOW AIR SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	GRAY
29	WATERFLOW SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	BLUE
30	WATERFLOW SIGNAL SWITCH WIRING (COM) TO CONTROL PANEL	BLUE
31	TAMPER SIGNAL SWITCH WIRING (NO) TO CONTROL PANEL	YELLOW
32	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 1/6 HP compressor = 8.0 amps; with 1/3 HP compressor = 10.4 amps; with 1/2 HP compressor = 13.0 amps; with pressure maintenance device = 3.0 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 – Potter manual 5403751. 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 – Potter manual 5403751. The maximum battery capacity for this control panel is 55 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 – Potter manual 5403751. All FM Approved systems / installations must be configured as Class A for Deluge and Preaction Releasing Service. The Potter Class A Module is factory-installed on the control panel.

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 – Potter manual 5403751.

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 Potter 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 – Potter manual 5403751.

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 Section 5 – Potter manual 5403751 to perform all preliminary tests on the control panel, field wiring, and field devices.

1.10.5.4. Use Section 2 – Tyco Manual TFP1461 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 TFP1461, 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 – Potter manual 5403751 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 TFP1461 and Section 5 – Potter manual 5403751 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 TFP1461.

1.12.5.2. General Air Products Manual OILLESSINST.

1.12.5.3. United Fire Systems Instruction Sheet UFS-710.

1.12.5.4. Potter Manual 5403751.

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

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

SECTION 2

Tyco Manual TFP1461

DV-5A Automatic Water Control Valve, Double Interlock Preaction, Electric/Pneumatic Actuation

DV-5A Automatic Water Control Valve, Double Interlock Preaction Electric/Pneumatic Actuation Fire Protection Systems, 1 1/2–8 in. (DN40–DN200)

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

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp1461

Available End Connections and Weights

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

General Description

The TYCO DV-5A Automatic Water Control Valves are diaphragm type valves that can be used in double 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 Valves are offered with the DV-5A Valve and separately ordered semi-assembled trim shown in Figures 6 and 7, or, for ease of installation, with DV-5A Valve completely trimmed with or without a System Main Control Valve.

Double interlock preaction systems are designed for use in applications, such as refrigerated areas, requiring the maximum degree of protection against inadvertent flooding of the sprinkler system piping. In order for a double interlock preaction system to automatically activate, two independent events must occur. First, the electric detection system must operate, and secondly, an automatic sprinkler on the system piping must operate. Typically, the electric detection system is designed to operate before any automatic sprinkler. Operation of just the electric detection, or just the opening of a sprinkler will not allow the DV-5A Valve to open and permit water to flow into the normally dry sprinkler system piping. However, operation of just the electric detection system or the opening of a sprinkler (loss of system air pressure) will result in a supervisory alarm to notify the building occupants of a condition

Item	Description	Qty.	Nominal Valve Size ANSI Inch (DN)					
			1 1/2 (DN40)	2 (DN50)	3 (DN80)	4 (DN100)	6 (DN150)[e]	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.
e. Also applicable to metric 165,1 mm size.

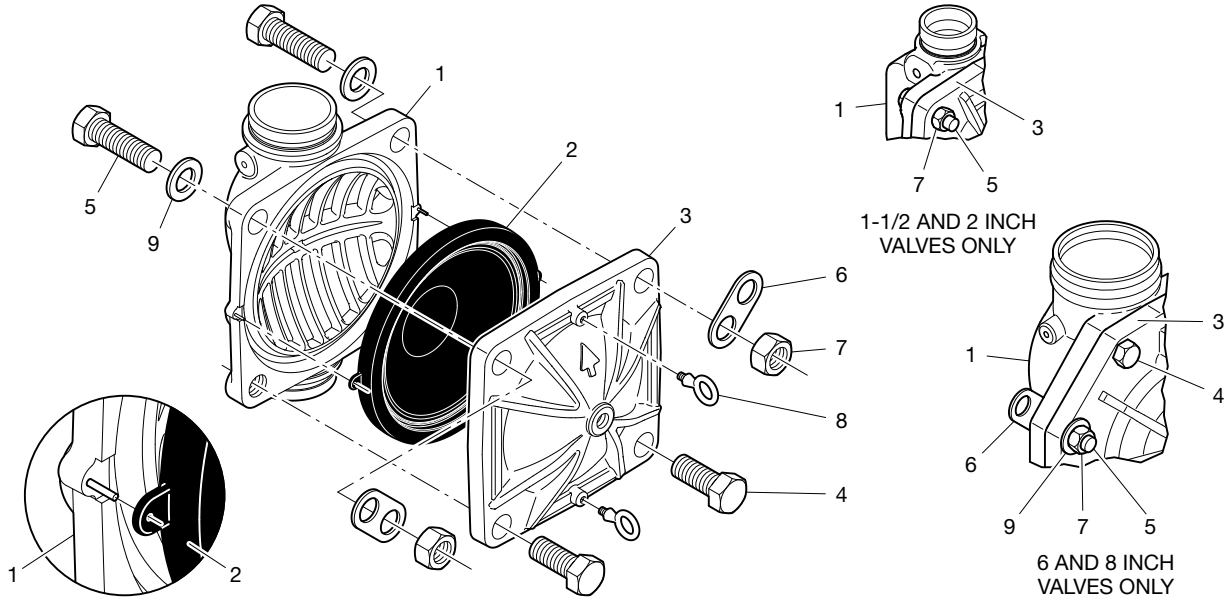
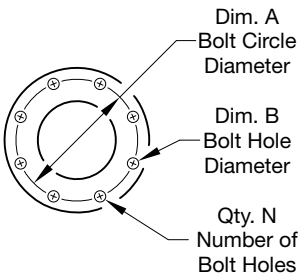


FIGURE 1
DV-5A VALVE ASSEMBLY AND REPLACEMENT PARTS

Nominal Valve Size ANSI Inches (DN)	Flange Drilling Specification											
	Nominal Dimensions in Inches and (mm)											
	ANSI B16.42[a] (Class 150)			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



NOTES:
a. Flat face flange; Same drilling as for ANSI B16.1 (Class 125)
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)[a]	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

NOTES
a. Also applicable to metric 165,1 mm size.

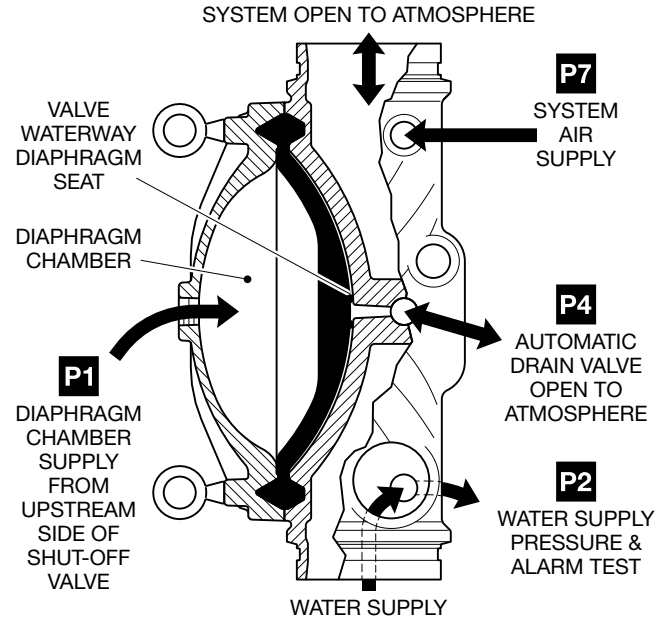


FIGURE 2A
SET CONDITION

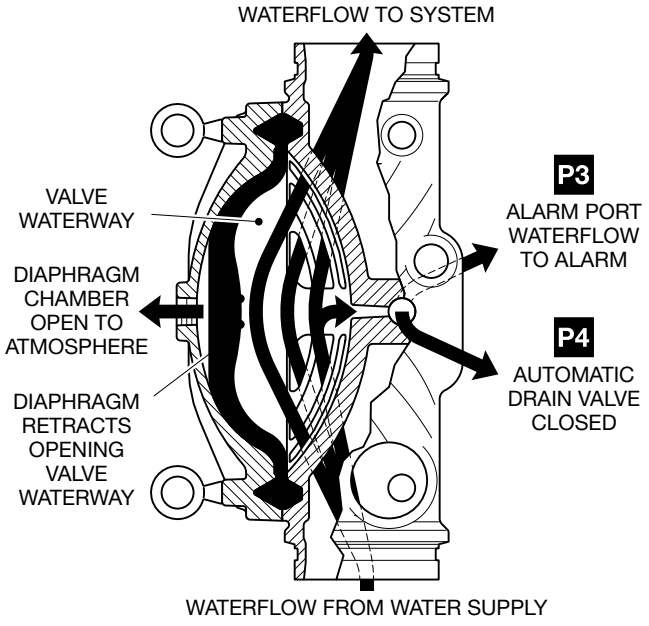


FIGURE 2B
OPERATED CONDITION

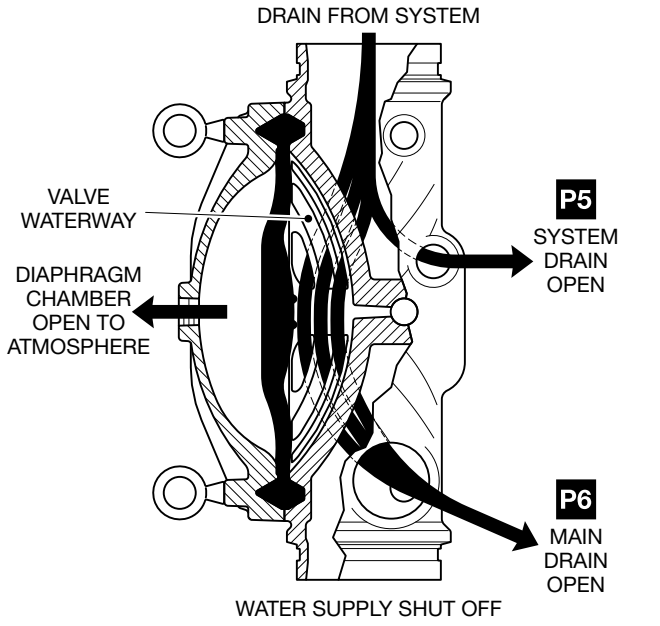


FIGURE 2C
SYSTEM DRAIN CONDITION

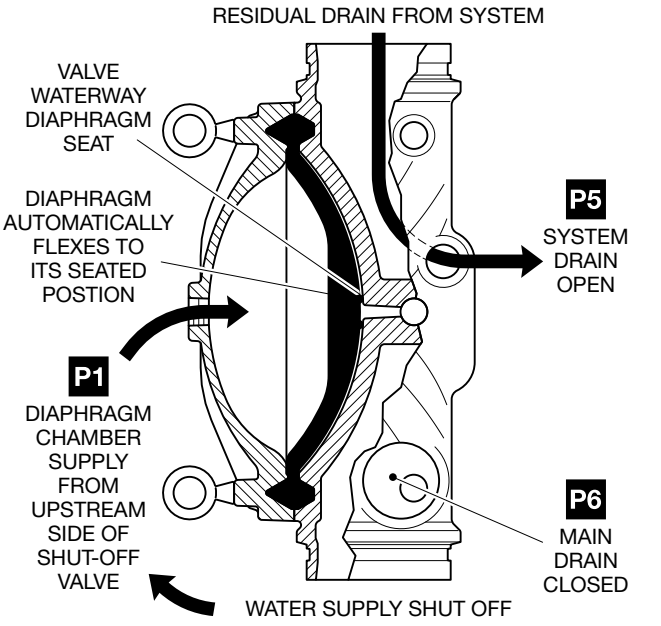


FIGURE 2D
RESIDUAL DRAIN CONDITION

FIGURE 2
DV-5A VALVE OPERATION, PREACTION SYSTEMS

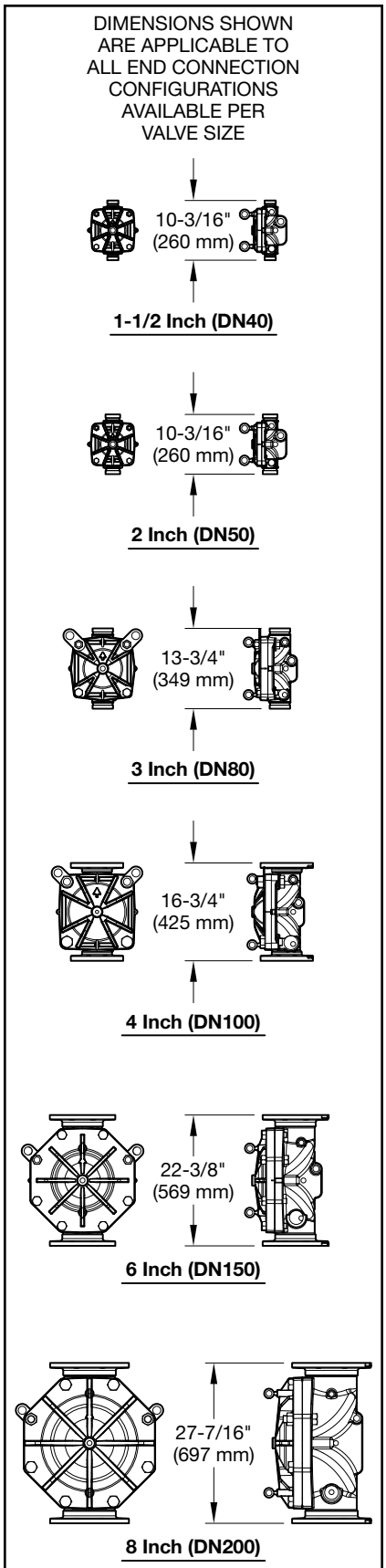


FIGURE 3
DV-5A DELUGE VALVE
TAKE-OUT DIMENSIONS

needing attention so as to avoid inadvertent flooding of the system piping.

In the case of Electric/Pneumatic Actuation, a solenoid valve and a dry pilot actuator connected in series is used to hold the DV-5A Valve closed by locking pressure in the diaphragm chamber of the DV-5A Valve. In the event of a fire, a releasing panel is initiated by a fire detection or electric manual pull station, which opens the solenoid valve. The heat from the fire will activate sprinkler head(s) which causes a loss of system air pressure that results in opening of the dry pilot actuator. Opening of both the solenoid valve and dry pilot actuator results in operation of the DV-5A Valve.

NOTICE

The DV-5A Valves 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/C-UL Listed
FM Approved

Listings and Approvals are based on DV-5A being trimmed as described in this technical data sheet.

DV-5A Valve
Components for the 1 1/2 thru 8 Inch (DN40 thru DN200) DV-5A Valves are shown in Figure 1. The DV-5A Valves are for vertical installations. They are rated for use at a 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.

Valve Trim
The maximum pressure rating for the electric pneumatic double interlock preaction trim is limited by the solenoid valve. For more information about the solenoid valve, see 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
Refer to Graph A

Actuation Options
Refer to subsections for Electric/Electric Actuation or Electric/Pneumatic Actuation

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

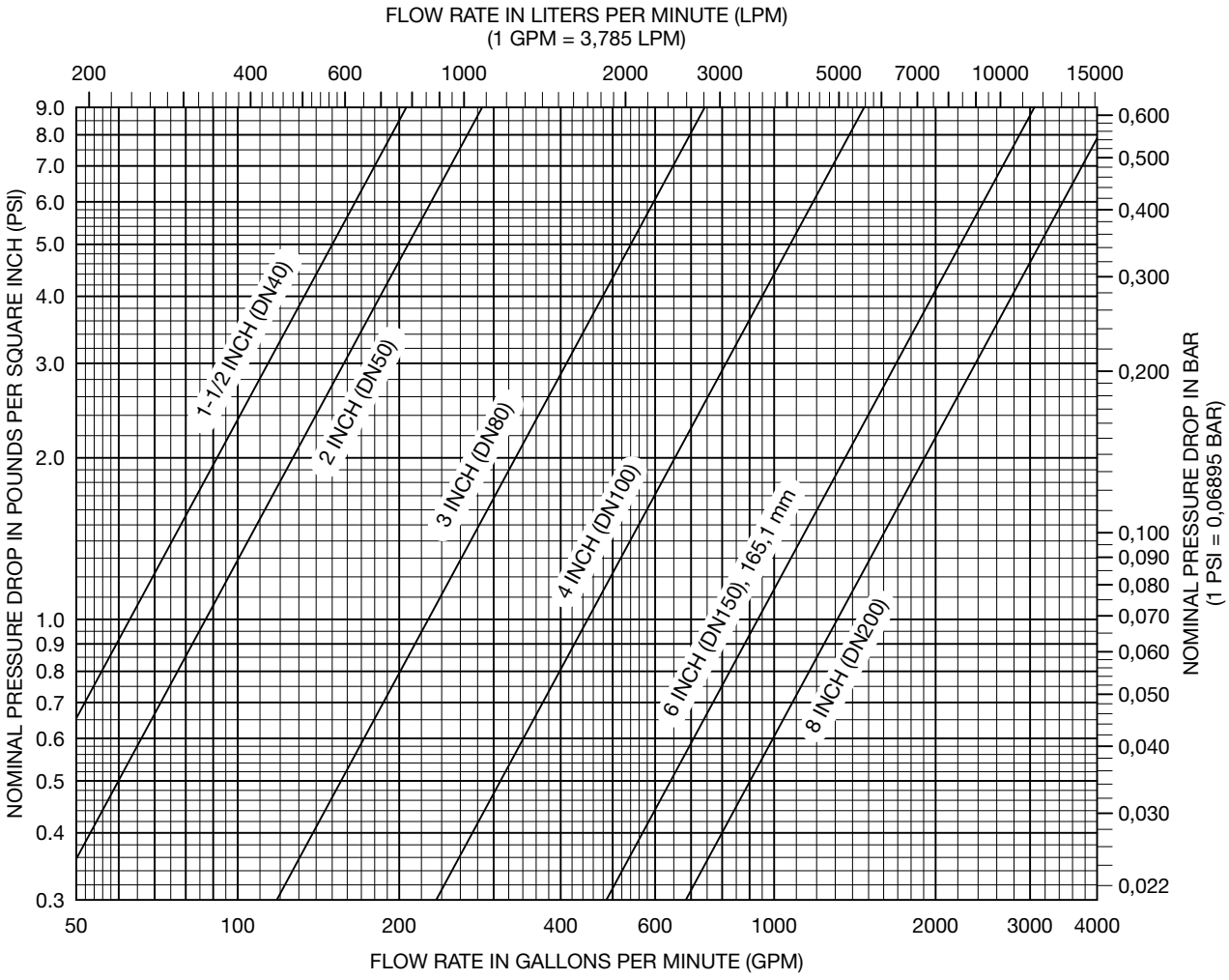
Common Hardware Trim
- Common hardware pipe fittings are galvanized or black as required and are malleable per ASME B16.3.
- Common hardware pipe nipples are galvanized or black as required and are Schedule 40 per ASTM A53 or A135.
- Common hardware compression fitting are brass per ASTM B16
- Common hardware tubing is Type L 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 of a solenoid valve for electric/pneumatic actuation (see Figure 4) trips the Model MRA-1 manual reset actuator. Tripping the MRA-1 releases water from the DV-5A diaphragm chamber faster than it



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

can be replenished through the 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.

See the Electric/Pneumatic section for additional information.

Electric/ Pneumatic Actuation

System Design Considerations
Because a double interlock preaction system requires time for a drop in system air pressure to occur (concurrently with the response time for the separate fire detection system) before it will allow water to enter the system piping, this system has characteristics similar to a dry pipe sprinkler system. Therefore, the system design considerations for a dry pipe system are normally applied to a double interlock preaction system — including a 30% increase in design area; a maximum 1 minute water delivery time for system capacities of 500 gallons (1890 liters) or more; and, prohibition of gridded system piping.

In order to readily perform the System Inspection Procedure described in the Care and Maintenance section, it is recommended that a system shut-off Valve be installed above the DV-5A valve, as shown in Figure 4. The system shut-off valve should be a listed or approved (as appropriate) indicating valve with a supervisory switch to monitor the normally open position.

Detection System
The double interlock preaction system with electric/pneumatic actuation trim provides 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. Information on the various types of separately ordered solenoid valves that may be used with this trim package is given in Technical Data Sheet TFP2180. Nominal installation dimensions for the double interlock preaction system with electric/

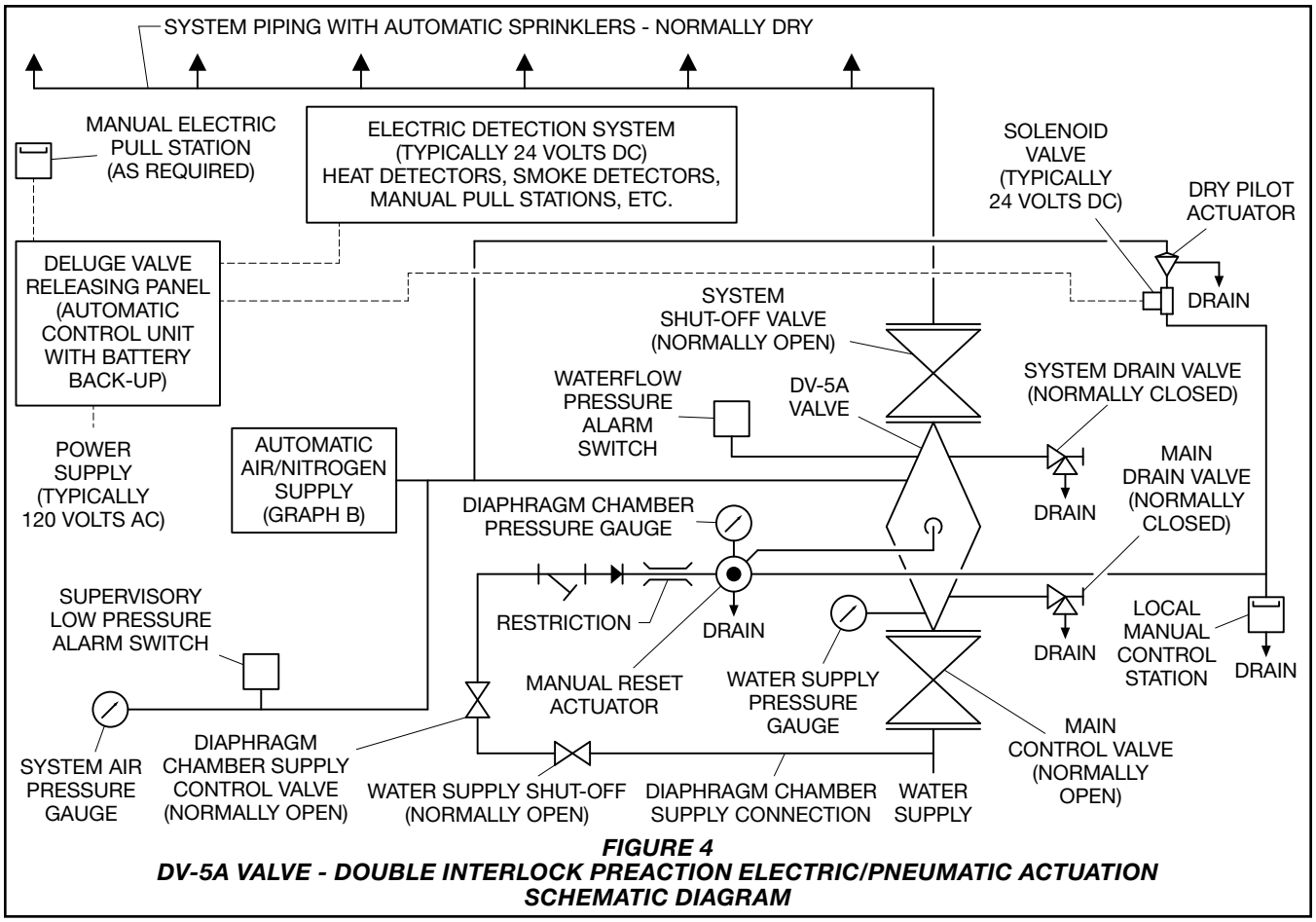


FIGURE 4
DV-5A VALVE - DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC ACTUATION SCHEMATIC DIAGRAM

pneumatic actuation trim are shown in Figure 5.

The deluge valve releasing panel (automatic control unit) with battery back-up, fire detection devices, manual pull stations, and signaling devices that are utilized with the double interlock preaction system with electric/pneumatic actuation must be UL Listed, ULC Listed, C-UL Listed, or FM Approved, as applicable.

NOTICE

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 authority having jurisdiction 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 minimum 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.

WARNING

If the delay between electric actuation and subsequent sprinkler activation is anticipated to be greater then 10 minutes, adjust the battery back-up calculation accordingly. Inadequate battery back-up may result in failure of the system to operate in the event of a fire during a power failure.

System Air Pressure Requirements

The required system air pressure for the double interlock preaction system with electric/pneumatic actuation is shown in Graph B as a function of the anticipated water supply pressure. It is recommended that the system air pressure be maintained by one of the following methods:

- 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 dedicated air compressor in combination with the Model AMD-2 Air Maintenance Device described in Technical Data Sheet TFP1231.
- 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.

NOTICE

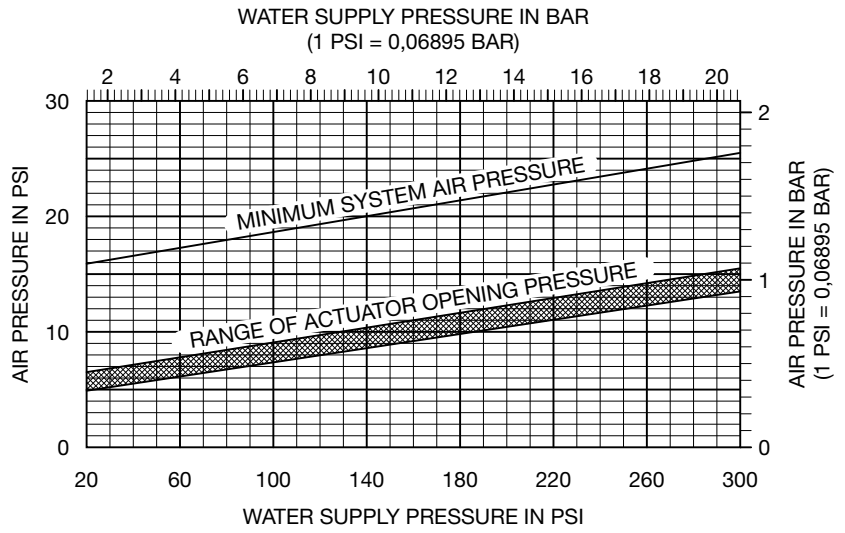
The dew point of the air or nitrogen supply, for a system exposed to freezing conditions, must be maintained below the lowest ambient temperature to which the system piping will be exposed. Introduction of moisture into the system piping can create ice build up which could prevent proper operation of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

Installation

The TYCO DV-5A 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



NOTES:

1. The dew point of the pilot line air pressure must be maintained below the lowest ambient temperature to which the dry pilot actuation system will be exposed. Accumulation of water in the pilot line connection to the Actuator will lower the air pressure at which the actuator will open and possibly prevent proper operation. Also, introduction of moisture into the pilot lines exposed to freezing temperatures can create an ice buildup that could prevent proper operation of the Actuator.
2. An air dryer must be installed where the moisture content of the air supply is not properly controlled at less than the required value.
3. It is recommended that an AMD-3 Nitrogen Maintenance Device be utilized in dry pilot actuation system applications where the dew point must be maintained below -20°F (-29°C). Refer to Technical Data Sheet TFP1241.

GRAPH B
DV-5A VALVE
DRY PILOT LINE AIR PRESSURE REQUIREMENTS (DP-2)

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.

When installing the valve in a corrosive environment, including outdoor locations, protection from moisture, chemicals or fumes is highly recommended. Galvanic corrosion can result from joining unprotected dissimilar metals. For example, exposed steel pipe threads can become corroded if unprotected by painting or other coating methods. Where coating such exposed surfaces is impractical or unwanted, construct a rain-resistant roof or enclosure over the valve and trim.

Proper operation of the DV-5A valves 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 valve must be trimmed in accordance with one of the trim illustrations shown in Figures 6 or 7, as applicable.

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).

Note: In Figure 8, Item R is a hexhead on-off valve that must be open in order to set the valve.

Step 8. An inspector's test connection is to be located on the sprinkler system at the most hydraulically demanding location.

Step 9. A suitable automatic air (nitrogen) supply, as described in the electric/pneumatic actuation sub-section, is to be installed in accordance with the applicable technical data sheet. The minimum air pressure is to be in accordance with the referenced sub-sections.

Step 10. A desiccant dryer, when specified, is to be installed between a drip leg and the air maintenance device.

Step 11. The low air pressure alarm switch (U) in Figure 8 in the electric/pneumatic actuation is to be adjusted so that the low pressure alarm setting is set at approximately 6 psi (0,4 bar) below the minimum system service pressure requirement shown in Graph B.

Step 12. Unused pressure alarm switch connections must be plugged.

Step 13. The pressure relief valve (T) in Figure 8 is to be at 5 psi (0,34 bar) higher than the required system air pressure, or be reset in accordance with the requirements of the authority having jurisdiction.

To reset the pressure relief valve, first loosen the jam nut and then adjust the cap accordingly, clockwise for a higher pressure setting or counter clockwise

for a lower pressure setting. After verifying the desired pressure setting, tighten the jam nut.

Note: *The maximum pressure is 70 psi (4,83 bar).*

Step 14. Conduit and electrical connections are to be made in accordance with the applicable standards of the approval agency.

Step 15. 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.

Valve Setting Procedure

Perform Steps 1 through 20 when initially setting the TYCO DV-5A 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 2a. Close the diaphragm supply valve (P) and air supply valve (S).

Step 2b. Verify all pressure gauges valves are open.

Step 3a. Open the main drain valve (D), system drain valve (E), and all auxiliary drains in the system.

At this time make certain that the pressure gauge Valves and the alarm control valve (H), as applicable, are open.

Step 3b. Open the system shut-off valve (X), as will be the case when resetting a system after performing an operational test.

NOTICE

Do not open the inspector's test connection and auxiliary drains if resetting after a system test; otherwise, system air pressure will be relieved unnecessarily.

Step 4. Close the auxiliary drain valves and the system drain valve (E) after water ceases to discharge. Leave the main drain valve (D) open. Depress the plunger of the automatic drain valve (F) to verify that it is open.

Step 5. Clean the diaphragm supply strainer (Q) by removing the clean-out plug and strainer basket. The diaphragm supply strainer (Q) may be flushed out by momentarily opening the diaphragm supply valve (P).

Step 6. Inspect for and clear all ice plugs where system piping has been exposed to freezing conditions and when there has been a flow of water into the system.

Step 7. Replace all damaged or operated sprinklers. Replacement sprinklers must be of the same type and temperature rating as those that operated.

NOTICE

In order to prevent the possibility of a subsequent operation of an overheated solder type sprinkler, any solder type sprinklers possibly exposed to a temperature greater than their maximum rated ambient must also be replaced.

Step 8. Service the air dryer, if applicable, in accordance with the manufacturer's instructions.

Step 9. De-energize the solenoid valve (V) by resetting the electric detection system in accordance with the manufacturer's instructions.

Step 10. 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.

NOTICE

If water is not flowing flowing from the manual control station, ensure the inverted flare shut-off valve (R) is open.

Step 11. 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 12. Inspect the actuation device drain connections. Any leaks must be corrected before proceeding to the next step. Electric/pneumatic actuation drain connection to be inspected are from the manual control station (M) and dry pilot actuator (W) shown in Figure 4.

Step 13. Verify the ability for the DV-5A diaphragm to hold pressure as follows:

- With the diaphragm chamber pressurized per Step 11, 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 14. Open the air supply valve (S) and allow the system to automatically re-establish its nominal system air pressure. Observe the automatic drain valve (F) for leaks. If there are leaks, determine/correct the cause of the leakage problem.

- Nominal system air pressure for electric/pneumatic actuation is per Graph B.

Step 15. 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.

Step 16. Verify the water supply pressure gauge (J) test valve is open, and the gauge is reading the correct system pressure. Verify the DP-2 valve (W) is not leaking from the drain line.

Note: It is normal to have some water discharge from the DP2 valve when opening the main control valve (B).

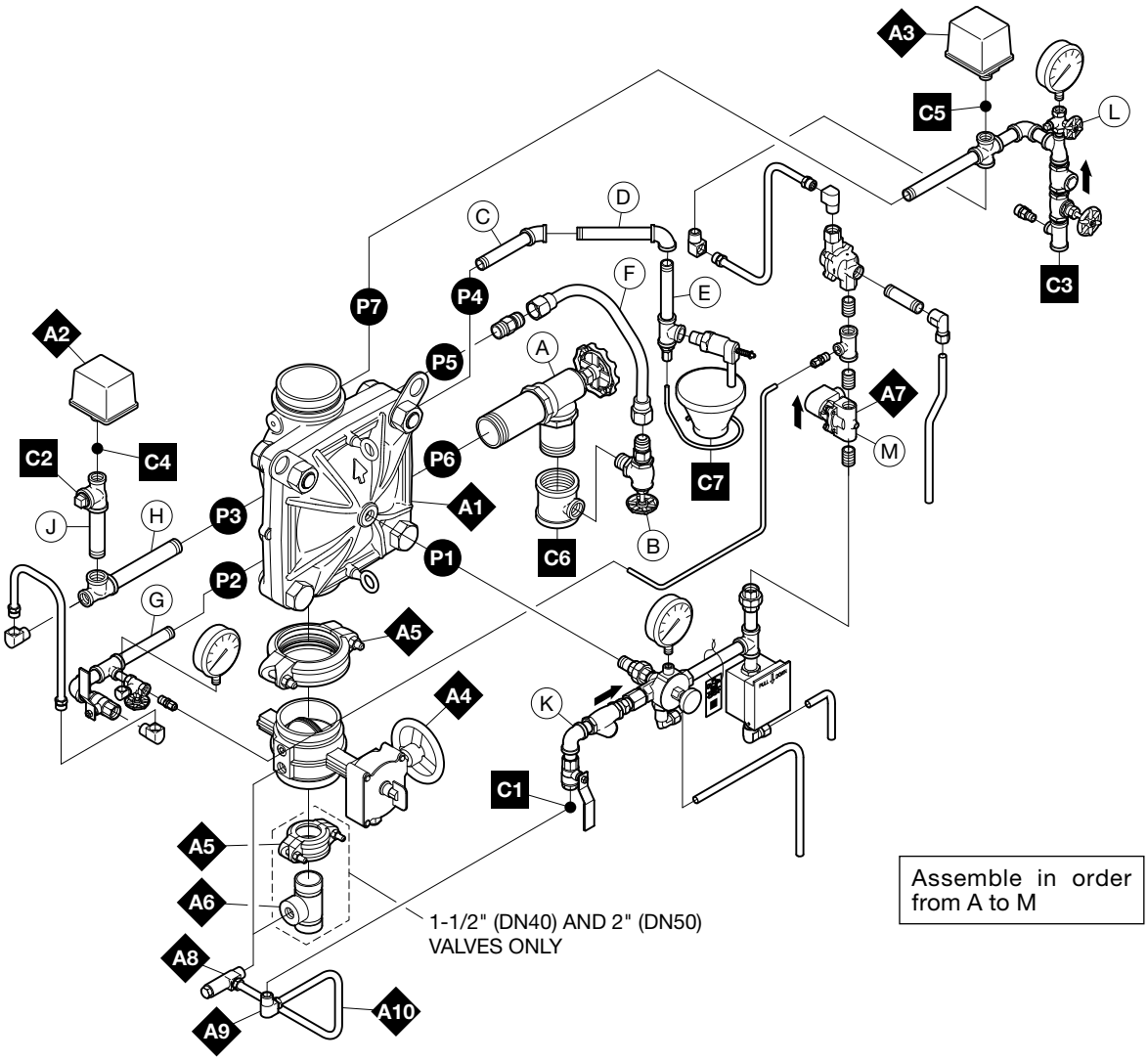
NOTICE

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 17. Open the manual control station (M) slightly to vent any excess pressure in the diaphragm trim after opening the system main control valve (B). Close the hinged cover on the manual control station (M) and insert a new break rod in the small hole through the top of the enclosing box.

Step 18. Fully open the system main control valve (B).

Step 19. After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.



NOTES
1. Port Connections P1 to P7 are shown in Figure 2.
2. External Trim Connections C1 through C7 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 A10 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 A10 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
DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC ACTUATION TRIM
SEMI-ASSEMBLED

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.

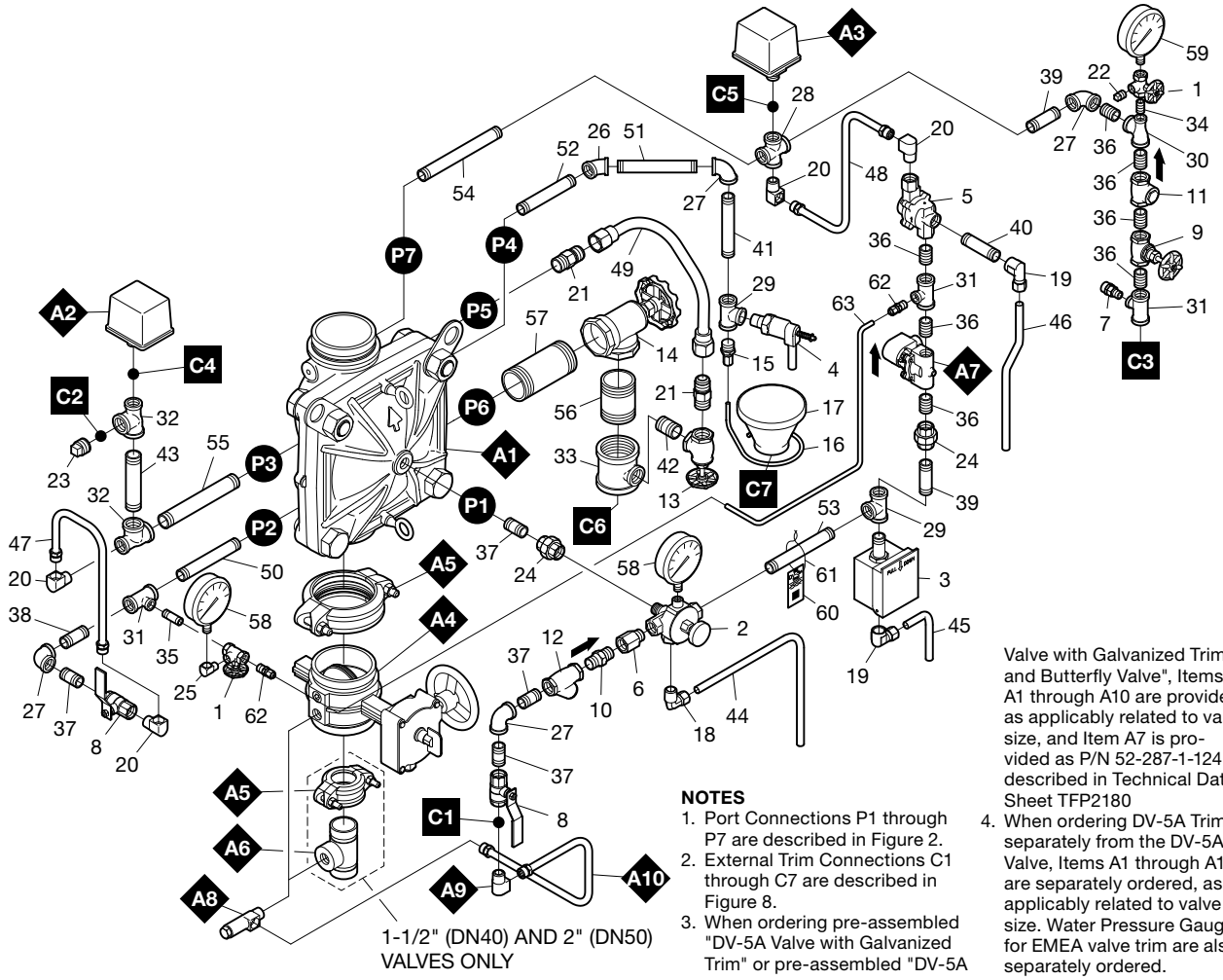
NOTICE

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 water supply 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



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4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A10 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.

ITEM	QTY.	DESCRIPTION	CH	1 1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)[b]	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	DP-2 DRY PILOT ACTUATOR		522801001	522801001	522801001	522801001	522801001	522801001
6	1	PRIMING SUPPLY RESTRICTION		545100051	545100051	545100051	545100051	545100051	545100051
7	1	1/4" PRESSURE RELIEF VALVE		923431020	923431020	923431020	923431020	923431020	923431020
8	2	1/2" BALL VALVE		460501004	460501004	460501004	460501004	460501004	460501004
9	1	1/2" GLOBE VALVE		460471005	460471005	460471005	460471005	460471005	460471005
10	1	1/2" SPRING LOADED CHECK VALVE		923221003	923221003	923221003	923221003	923221003	923221003
11	1	1/2" SWING CHECK VALVE		460491007	460491007	460491007	460491007	460491007	460491007
12	1	1/2" Y-STRAINER		523531006	523531006	523531006	523531006	523531006	523531006
13	1	3/4" ANGLE VALVE		460481010	460481010	460481010	460481010	460481010	460481010
14	1	ANGLE VALVE		460481010	460481010	460481011	460481012	460481012	460481012
15	1	DRIP FUNNEL BRACKET CONNECTOR		922111005	922111005	922111005	922111005	922111005	922111005
16	1	DRIP FUNNEL BRACKET		922111003	922111003	922111003	922111003	922111003	922111003
17	1	DRIP FUNNEL		923431007	923431007	923431007	923431007	923431007	923431007
18	1	COMP. FITTING 90° 1/2" MNPT x 1/2" OD TUBE		1001253-01	1001253-01	1001253-01	1001253-01	1001253-01	1001253-01
19	2	COMP. FITTING 90° 1/2" FNPT x 1/2" OD TUBE		1001420-01	1001420-01	1001420-01	1001420-01	1001420-01	1001420-01
20	4	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
21	2	FLARE FITTING 3/4" NPT x 3/4" TUBE		545100063	545100063	545100063	545100063	545100063	545100063
22	2	PIPE PLUG	✓	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
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"

FIGURE 6 (1 OF 2)
DV-5A VALVES
DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC 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)[b]	8 IN. (DN200)
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	6	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 3"	1/2" x 3"	1/2" x 3"	1/2" x 3"	1/2" x CLOSE	1/2" x 3"
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	✓	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"
43	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"
44	1	TUBING, MRA-1 DRAIN		545100065	545100065	545100066	535002140	535002160	535002180
45	1	TUBING, MC-2 DRAIN		535000220	535000220	535000230	535000240	535000260	535000280
46	1	TUBING, DP-2 DRAIN		535001220	535001220	535001230	535001240	535001260	535001280
47	1	TUBING ASSY, ALARM TEST INTERCONNECT		535000320	535000320	535000330	535000340	535000360	535000380
48	1	TUBING ASSY, ACTUATION INTERCONNECT		535001320	535001320	535001330	535001340	535001360	535001380
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	✓	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"
54	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"
55	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"
56	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"
57	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"
58	2	WATER PRESSURE GAUGE, 300 PSI / 2000 kPa (AMER/APAC)		923431005	923431005	923431005	923431005	923431005	923431005
58	2	WATER PRESSURE GAUGE, 20 bar / 2000 kPa (EMEA)		025500013	025500013	025500013	025500013	025500013	025500013
59	1	AIR PRESSURE GAUGE, 80 PSI / 550 kPa RETARDED TO 250PSI / 1750 kPa		923431012	923431012	923431012	923431012	923431012	923431012
60	1	LABEL		545003005	545003005	545003005	545003005	545003005	545003005
61	1	LABEL WIRE		—	—	—	—	—	—
62	2	3/32" VENT FITTING		920321002	920321002	920321002	920321002	920321002	920321002
63	1	1/4" OD COPPER TUBE		1/4" x 24"	1/4" x 24"	1/4" x 29"	1/4" x 32-1/4"	1/4" x 36"	1/4" x 41-13/16"
A1	1	DV-5A VALVE		SEE ORDERING PROCEDURE, SEPARATE DV-5A VALVES WITHOUT TRIM, FOR PART NUMBERS					
A2	1	WATERFLOW PRESSURE ALARM SWITCH, DOUBLE CONTACTS (APAC)		25710 or 100102	25710 or 100102	25710 or 100102	25710 or 100102	25710 or 100102	25710 or 100102
	1	WATERFLOW PRESSURE ALARM SWITCH, SINGLE CONTACTS (EMEA)		0260 or 100101	0260 or 100101	0260 or 100101	0260 or 100101	0260 or 100101	0260 or 100101
	1	WATERFLOW PRESSURE ALARM SWITCH, DOUBLE CONTACTS (AMER)		25710	25710	25710	25710	25710	25710
A3	1	LOW AIR PRESSURE ALARM SWITCH, DOUBLE CONTACTS (APAC)		25730 or 100402	25730 or 100402	25730 or 100402	25730 or 100402	25730 or 100402	25730 or 100402
	1	LOW AIR PRESSURE ALARM SWITCH, DOUBLE CONTACTS (AMER)		25730	25730	25730	25730	25730	25730
	1	LOW AIR PRESSURE ALARM SWITCH, SINGLE CONTACTS (EMEA)		0262 or 100401	0262 or 100401	0262 or 100401	0262 or 100401	0262 or 100401	0262 or 100401
A4	1	BUTTERFLY VALVE, G x G		51024A	51021A	—	—	—	—
	1	BFV-300 BUTTERFLY VALVE, G x G		—	—	59300G030WS	59300G040WS	59300G060WS	59300G080WS
A5	2	FIGURE 577 RIGID GROOVED COUPLING		57715ACP	57720ACP	—	—	—	—
	1	FIGURE 577 RIGID GROOVED COUPLING		—	—	57730ACP	57740ACP	57760ACP	57780ACP
A6	1	GROOVE x THREADED OUTLET WELDED TEE		545004000	545004001	—	—	—	—
A7	1	SOLENOID VALVE NORMALLY CLOSED (SEPARATELY ORDERED)		SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180
A8	1	INVERTED FLARE SHUT-OFF VALVE[a]		545100100	545100100	545100099	545100100	545100100	545100100
A9	1	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
A10	1	TUBING ASSY, DIAPHRAGM CHAMBER SUPPLY		540000015	540000020	540000030	540000040	540000060	540000080

NOTES
a. Not VdS Approved.
b. Also applicable to metric 165,1 mm size.
CH - Common Hardware - See Materials of Construction section for specifications.

FIGURE 6 (2 OF 2)
DV-5A VALVES
DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC 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)	13.6 (345.4)	9.8 (249)	15.7 (399)	19.3 (490,2)	7.4 (188)	10.2 (259)	8.02 (204)	1.2 (31)
2 (50)	2.8 (71)	13.6 (345.4)	9.8 (249)	15.7 (399)	19.3 (490,2)	7.4 (188)	10.2 (259)	8.09 (205)	2.9 (74)
3 (80)	4.0 (102)	15.0 (381)	11.5 (292)	16.3 (414)	21.1 (535,9)	6.2 (158)	13.8 (351)	3.79 (96)	3.6 (91)
4 (100)	4.5 (114)	16.2 (411)	12.6 (320)	16.5 (419)	23.5 (596,9)	5.5 (140)	16.8 (427)	4.54 (115)	4.3 (109)
6[3] (150)	5.7 (145)	15.7 (399)	14.5 (368)	18.4 (467)	27.3 (693,4)	3.8 (97)	22.4 (569)	5.83 (148)	5.7 (145)
8 (200)	6.8 (174)	20.0 (508)	16.7 (424)	19.5 (495)	31.7 (805,2)	3.3 (84)	27.5 (699)	5.24 (133)	6.7 (170)

NOTES
1. Dimensions based on drain valves being open.
2. Dimensions do not provide installation clearance.
3. Also applicable to metric 165,1 mm size.

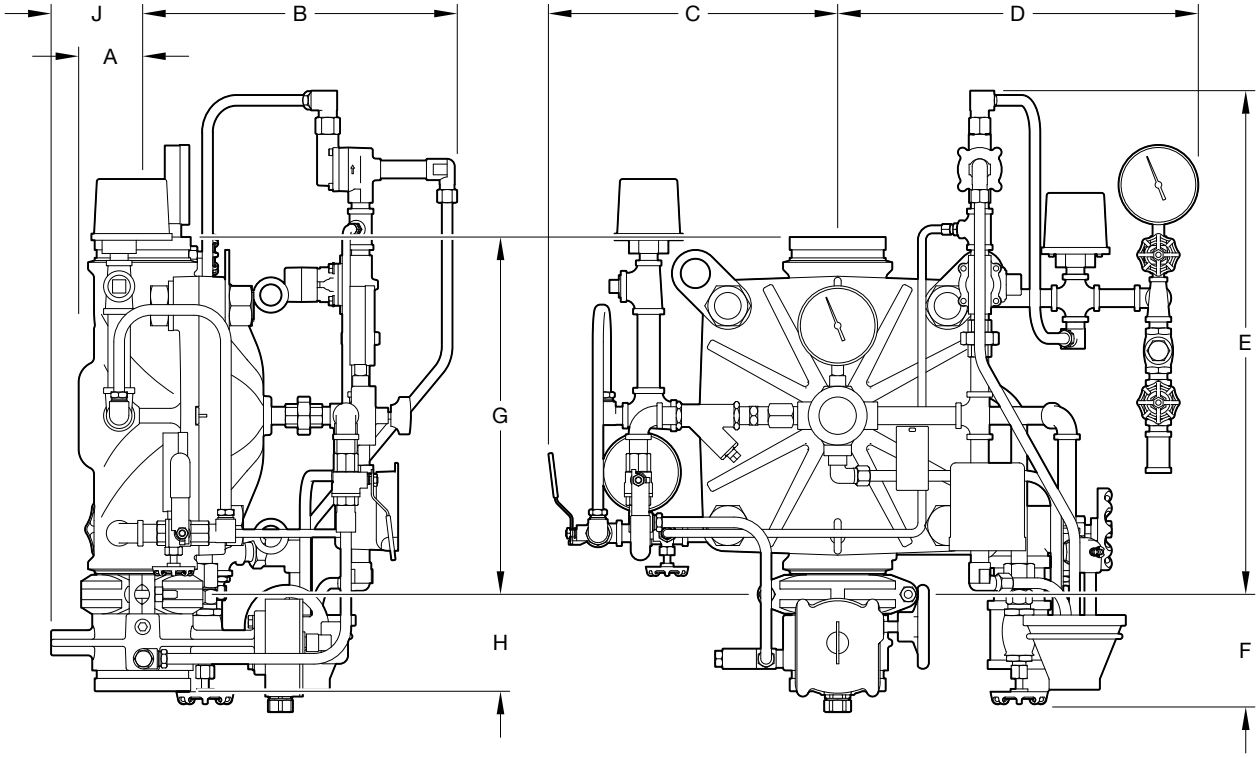


FIGURE 7
DV-5A VALVE
DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC ACTUATION TRIM
NOMINAL DIMENSIONS

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.

It is recommended that the System Inspection Procedure be performed at least semi-annually by a qualified Inspection Service. The double Interlock Preaction System Inspection Procedure may be followed in lieu of performing any of the operational tests recommended in the Technical Data Sheets for the 24 VDC solenoid valve, dry pilot actuator, and Model MC-1 manual control station.

It is recommended that the individuals responsible for the care and maintenance of the double interlock preaction system develop a working understanding of the system, in general, prior to performing inspection and/or maintenance procedures. These instructions, as well as individual instructions for the solenoid valve, dry pilot actuator, manual control station, switches, and pressure maintenance device should be reviewed.

The following procedures pertain to the automatic control valve portion of the double interlock preaction system. Refer to the manufacturer's instructions and NFPA 25 for care and maintenance procedures for all other devices (e.g., electric detection, main control and system shut-off valves, supervisory devices, sprinklers, etc.).

Before performing the System Inspection Procedure or Waterflow Alarm Test Procedure, which will result in operation of alarms, notify the proper authorities and all personnel who may be affected.

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).

Electric/Pneumatic Actuation System Operation Procedure
Proper operation of the DV-5A valve for both opening of the DV-5A valve in a fire condition, or not opening the DV-5A valve in a non-fire condition, must be verified as follows:

Step 1. Close the system main control valve (B) and then open the main drain valve (D).

Step 2. Manually operate the releasing panel and verify the following:

- The operation of the releasing panel and its associated alarms
- That there is no leakage from the dry pilot actuator (W)

NOTICE

During this procedure, the solenoid valve (V) is opened; however, the dry pilot actuator (W) should remain closed and the DV-5A valve diaphragm chamber should remain pressurized.

This procedure is used to verify that the DV-5A valve will remain set if the electric detection system operates but the sprinkler system remains in its normally pressurized condition.

Step 3. Open the inspector's test connection but be prepared to close it immediately after verifying that the low air pressure alarm switch (U) and its associated alarms operate properly. The low air pressure alarm switch (U) should operate at the previously established pressure (see Installation section, Step 9).

Step 4. Close the inspector's test connection.

Step 5. Close the system shut-off valve (X) after the system air pressure has been restored to normal.

Step 6. Manually restore the electric fire detection system to a normal condition in accordance with the manufacturer's instructions. The solenoid valve (V) will then be de-energized and returned to its normally closed position.

Step 7. Open the system main control valve (B) one turn beyond the position at which water just begins to flow from the main drain valve (D).

Step 8. Close the main drain valve (D).

Step 9. Close the air supply valve (S).

Step 10. Open the dry pilot actuator (W) by partially opening the system drain valve (E) to relieve air pressure at the inlet to the dry pilot actuator (W). The dry pilot actuator will flow water from its priming line, however the DV-5A valve will not trip. Verify there is no leakage from the automatic drain valve (F).

NOTICE

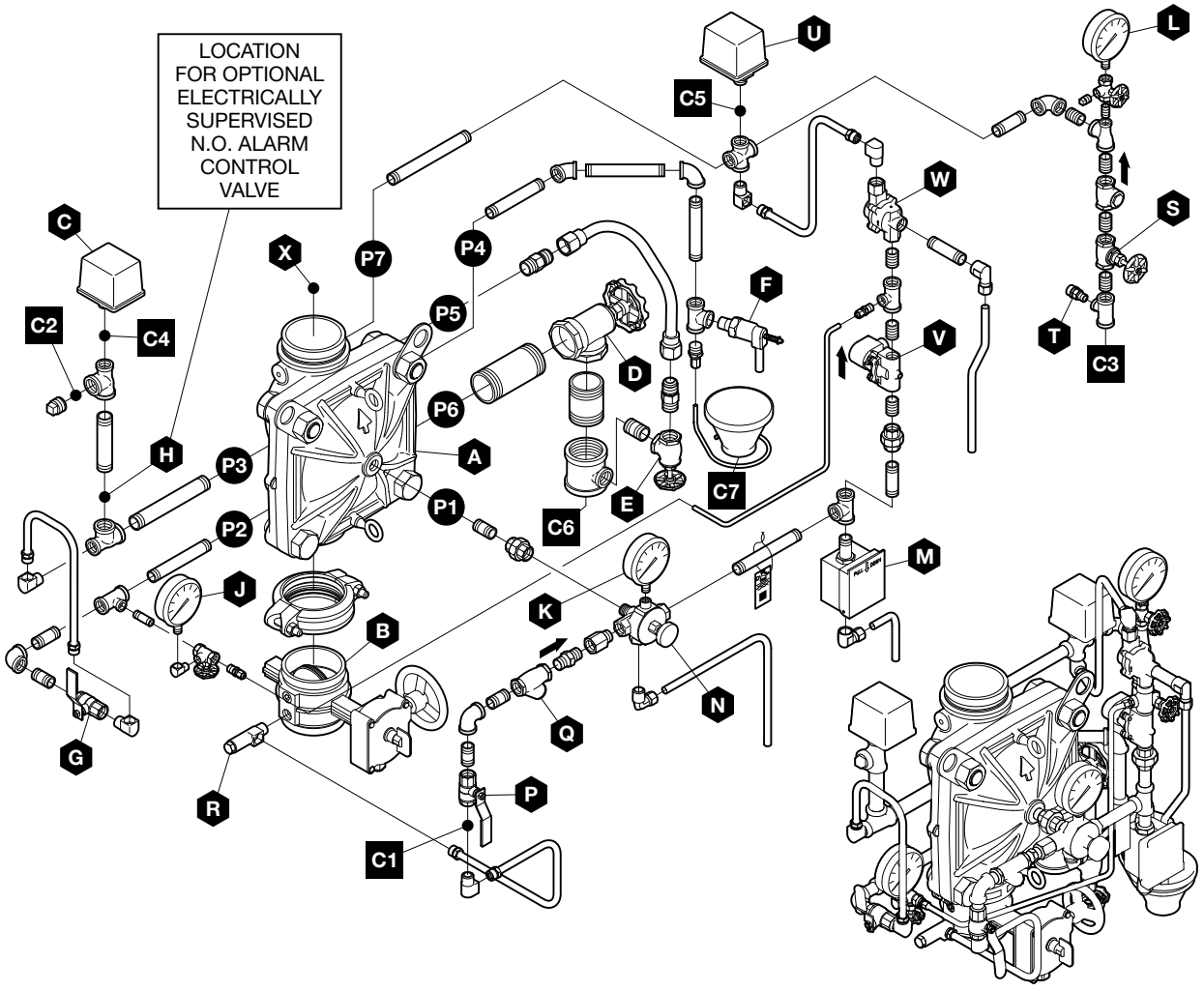
During this procedure, the dry pilot actuator (W) is opened; however, the solenoid valve (V) should remain closed and the DV-5A valve diaphragm chamber should remain pressurized.

This procedure is used to verify that the DV-5A valve will remain set if the dry pilot actuator (W) operates due to loss of system air pressure and the electric detection system remains in a normal condition.

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
L	System Gauge
M	Manual Control Station

Item	Description
N	Manual Reset Actuator
P	Diaphragm Supply Valve
Q	Diaphragm Supply Strainer
R	Inverted Flare Shut-Off Valve
S	Air Supply Valve
T	Air Pressure Relief Valve
U	Low Air Pressure Alarm Switch
V	Solenoid Valve
W	Dry Pilot Actuator
X	System Shut-Off Valve (Shown in Figure 5)

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



Notes:
- Port Connections P1 to P7 are shown in Figure 2.
- Before changing the state of the inverted flare shut-off valve (R), close the diaphragm supply valve (P).

FIGURE 8
DV-5A DOUBLE INTERLOCK PREACTION VALVE ELECTRIC/PNEUMATIC ACTUATION
(REFER TO FIGURES 6 FOR SPECIFIC BILLS OF MATERIALS)

Step 11. Open (energize) the solenoid valve by operating the releasing panel and verify the following:

- That the DV-5A valve operates as is indicated by a discharge of water from the system drain valve (E) and the automatic drain valve (F). The automatic drain valve (F) may or may not close depending on the flow past the partially open system main control valve (B)
- That the Model MRA-1 manual reset actuator (N) has operated as is indicated by water discharging into the drip funnel from the 1/2 in. drain tube connected to the Model MRA-1 manual reset actuator (N)
- That the waterflow pressure switch (C) and its associated alarms properly operate
- That the water motor alarm, if applicable, properly operates

NOTICE

This procedure simulates opening of both the dry pilot actuator (W) (loss of system air pressure) and solenoid valve (V) (operation of the valve releasing panel) to verify automatic system operation.

Step 12. Reset the double interlock preaction system in accordance with the valve setting procedure section.

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/pneumatic actuation trim and remove the electric/pneumatic 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/pneumatic actuation trim.

Step 7. Replace the copper tube fitting between the diaphragm supply valve (P) and the inverted flare shut-off valve (R).

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

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)	125 (169,5)	125 (169,5)
4 (100)	150 (203,4)	150 (203,4)
6[1] (150)	150 (203,4)	150 (203,4)
8 (200)	188 (254,9)	188 (254,9)

NOTES
1. Also applicable to metric 165.1 mm size.

TABLE B
DIAPHRAGM COVER BOLTS MINIMUM TORQUE

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 Double Interlock Preaction Electric/Pneumatic Actuation Trim, complete with assembled Model BFV-300 Butterfly Valve, P/N (specify):

1 1/2 in. (DN40) 551011415
2 in. (DN50) 551011420
3 in. (DN80) 551011430
4 in. (DN100). 551011440
6 in. (DN150). 551011460
8 in. (DN200) 551011480

Note: *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, Double Interlock Preaction Electric/Pneumatic Actuation Trim, P/N (specify):

Grooved x Grooved
1 1/2 in. (DN40) 550011415
2 in. (DN50) 550011420
3 in. (DN80) 550011430
4 in. (DN100). 550011440
6 in. (DN150). 550011460
8 in. (DN200) 550011480

Flange x Flange ANSI
3 in. (DN80) 550021430
4 in. (DN100). 550021440
6 in. (DN150). 550021460
8 in. (DN200) 550021480

Flange x Grooved ANSI
3 in. (DN80) 550031430
4 in. (DN100). 550031440
6 in. (DN150). 550031460
8 in. (DN200) 550031480

Thread x Thread NPT
1 1/2 in. (DN40) 550061415
2 in. (DN50) 550061420

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 Groove ANSI
3 in. (DN80) 530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530020080

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

Note: *Valves are typically provided with flange drilling per ANSI B16.42 (Class 150) 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/Pneumatic Actuation Trim for DV-5A Automatic Water Control Valves used in Double Interlock Preaction Fire Protection System, P/N (specify):

Galvanized
1 1/2 in. (DN40) 540001420A
2 in. (DN50) 540001420A
3 in. (DN80) 540001430A
4 in. (DN100). 540001440A
6 in. (DN150). 540001460A
8 in. (DN200) 540001480A

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, Double Interlock Preaction Electric/Pneumatic Actuation Trim, P/N (specify):

Grooved x Grooved
1 1/2 in. (DN40) 550111415
2 in. (DN50) 550111420
3 in. (DN80) 550111430
4 in. (DN100). 550111440
6 in. (DN150). 550111460
165,1 mm 550111466
8 in. (DN200) 550111480

Flange x Flange ANSI
3 in. (DN80) 550121430
4 in. (DN100). 550121440
6 in. (DN150). 550121460
8 in. (DN200) 550121480

Flange x Grooved ANSI
3 in. (DN80) 550131430
4 in. (DN100). 550131440
6 in. (DN150). 550131460
8 in. (DN200) 550131480

Flange x Flange ISO
3 in. (DN80) 550141430
4 in. (DN100). 550141440
6 in. (DN150). 550141460
8 in. (DN200) 550141480

Flange x Grooved ISO
3 in. (DN80) 550151430
4 in. (DN100). 550151440
6 in. (DN150). 550151460
8 in. (DN200) 550151480

Thread x Thread ISO
1 1/2 in. (DN40) 550171415
2 in. (DN50) 550171420

Note: *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
165,1 mm 530010066
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 Groove ANSI
3 in. (DN80) 530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530030080

Thread x Thread 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

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

Note: *Valves are typically provided with flange drilling per ANSI B16.42 (Class 150) 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), Double Interlock Preaction Electric/ Pneumatic Actuation Trim for DV-5A Automatic Water Control Valves used in Deluge Fire Protection System, P/N (specify):

Galvanized

1 1/2 in. (DN40) 540101420
2 in. (DN50) 540101420
3 in. (DN80) 540101430
4 in. (DN100). 540101440
6 in. (DN150). 540101460
8 in. (DN200) 540101480

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, Double Interlock Preaction Electric/Pneumatic Actuation Trim, P/N (specify):

Grooved x Grooved

1 1/2 in. (DN40) 550011415
2 in. (DN50) 550011420
3 in. (DN80) 550011430
4 in. (DN100). 550011440
6 in. (DN150). 550011460
165,1 mm 550011466
8 in. (DN200) 550011480

Flange x Flange ANSI

3 in. (DN80) 550021430
4 in. (DN100). 550021440
6 in. (DN150). 550021460
8 in. (DN200) 550021480

Flange x Grooved ANSI

3 in. (DN80) 550031430
4 in. (DN100). 550031440
6 in. (DN150). 550031460
8 in. (DN200) 550031480

Thread x Thread NPT

1 1/2 in. (DN40) 550061415
2 in. (DN50) 550061420

Flange x Flange ISO

3 in. (DN80) 550041430
4 in. (DN100). 550041440
6 in. (DN150). 550041460
8 in. (DN200) 550041480

Flange x Grooved ISO

3 in. (DN80) 550051430
4 in. (DN100). 550051440
6 in. (DN150). 550051460
8 in. (DN200) 550051480

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
165,1 mm 530010066
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 Groove ANSI

3 in. (DN80) 530030030
4 in. (DN100). 530030040
6 in. (DN150). 530030060
8 in. (DN200) 530020080

Thread x Thread 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

Thread x Thread ISO

1 1/2 in. (DN40) 530070015
2 in. (DN50) 530070020

Note: *Valves are typically provided with flange drilling per ANSI B16.42 (Class 150) 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/Pneumatic Actuation Trim for DV-5A Automatic Water Control Valves used in Double Interlock Preaction Fire Protection System, P/N (specify):

Galvanized

1 1/2 in. (DN40) 540001420
2 in. (DN50) 540001420
3 in. (DN80) 540001430
4 in. (DN100). 540001440
6 in. (DN150). 540001460
8 in. (DN200) 540001480

ALL REGIONS

DV-5A Valve Trim Accessories (for separately ordered valve trim)

Specify: (Specify Accessory Description), P/N (specify):

Waterflow Pressure Alarm Switch, PS10-2 (America). 25710
Waterflow Pressure Alarm Switch (APAC) . . . . . 25710 or 100102
Waterflow Pressure Alarm Switch (EMEA) . . . . . 0260 or 100101
Supervisory Air Pressure Alarm Switch, PS40-2 (America). 25730
Supervisory Air Pressure Alarm Switch (APAC) . . . . . 25730 or 100402
Supervisory Air Pressure Alarm Switch (EMEA) . . . . . 0262 or 100401
Model WMA-1 Water Motor Alarm (America/APAC) 526301001P
Model WMA-1 Water Motor Alarm (EMEA) 526301021R
Model AMD-1 Air Maintenance Device 523242002
Model AMD-2 Air Maintenance Device 523262001
Model AMD-3 Nitrogen Maintenance Device 523282001
Model MC-1 Manual Control Station. 522892001
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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DV-5A Appendix A Poster Printing Instructions

General Description

The appendix found at the end of this document provides valve setting and testing/inspection procedures summarized from the Care and Maintenance section.

Some jurisdictions require a copy of the Summary Instructions appendix to be displayed in proximity to a DV-5A Automatic Control Valve riser supplying a fire protection system.

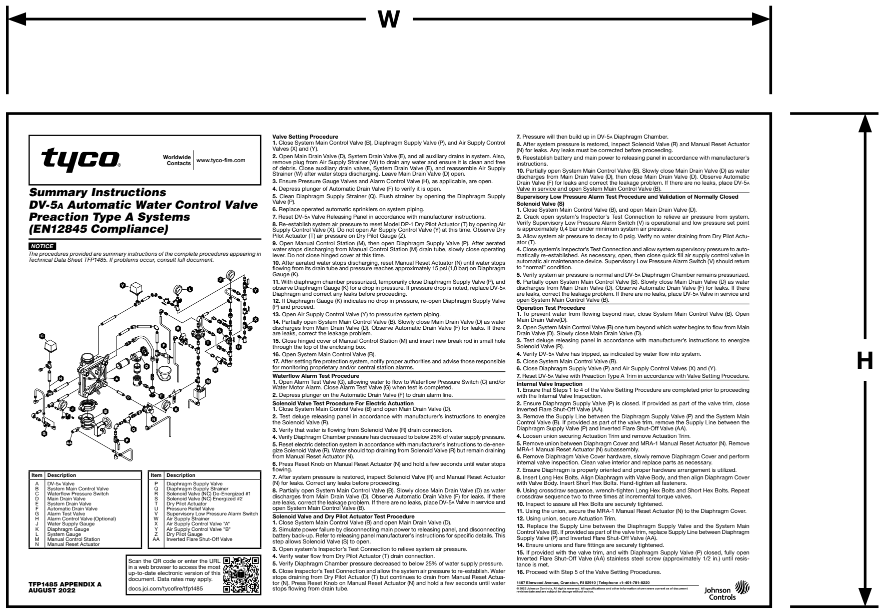
Reproduce as an individual poster by printing on appropriate media.

A form of protection is recommended to prevent damage which could render the poster illegible. Conditions to avoid include moisture infiltration, fading, mutilation, etc.. Protective measures may include lamination, placement within an impact- and water-resistant frame, etc.

The format shown in this document is landscape orientation on US Tabloid size, also known as ANSI B drawing format, both roughly comparable to ISO A3 size format.

To avoid potential cropping of content when printing to A3 format, select options such as print to fit or scale to fit. Depending on printer capability content will be slightly reduced but should remain readable.

See Print Format Dimensions Table for details.



Format	Imperial in.		Metric mm	
	W	H	W	H
US Tabloid / ANSI B	17	11	—	—
ISO A3	—	—	420	297

PRINT FORMAT DIMENSIONS

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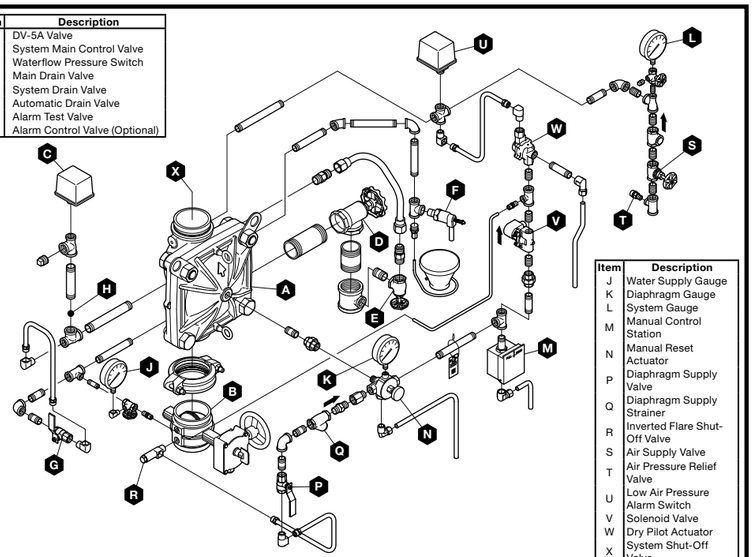
Summary Instructions DV-5A Automatic Water Control Valve Double Interlock Preaction Electric/ Pneumatic Actuation Fire Protection System

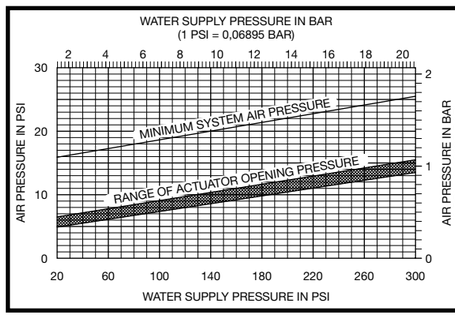
NOTICE

The procedures provided are summary instructions of the complete procedures appearing in Technical Data Sheet TFP1461. If problems occur, consult full document.



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)

Item	Description
J	Water Supply Gauge
K	Diaphragm Gauge
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	Air Supply Valve
T	Air Pressure Relief Valve
U	Low Air Pressure Alarm Switch
V	Solenoid Valve
W	Dry Pilot Actuator
X	System Shut-Off Valve



NOTES:

1. The dew point of the pilot line air pressure must be maintained below the lowest ambient temperature to which the dry pilot actuation system will be exposed. Accumulation of water in the pilot line connection to the Actuator will lower the air pressure at which the actuator will open and possibly prevent proper operation. Also, introduction of moisture into the pilot lines exposed to freezing temperatures can create an ice buildup that could prevent proper operation of the Actuator.
2. An air dryer must be installed where the moisture content of the air supply is not properly controlled at less than the required value.
3. It is recommended that an AMD-3 Nitrogen Maintenance Device be utilized in dry pilot actuation system applications where the dew point must be maintained below -20°F (-29°C). Refer to Technical Data Sheet TFP1241.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

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TFP1461 APPENDIX A
MARCH 2025

Valve Setting Procedure

1. Close system main control valve (B), diaphragm supply valve (P), and air supply valve (S).

2. Open main drain valve (D), system drain valve (E), and all auxiliary drains in the system. Close auxiliary drain valves and system drain valve (E) after water stops discharging. Leave main drain valve (D) open.

3. Depress plunger of automatic drain valve (F) to verify it is open.

4. Clean diaphragm supply strainer (Q). Flush strainer by opening the diaphragm supply valve (P).

5. Inspect for and clear all ice plugs where system piping has been exposed to freezing conditions.

6. Replace operated sprinklers.

7. Service air dryer, if applicable, in accordance with the manufacturer's instructions.

8. De-energize solenoid valve (V) via potter RCDS-1 releasing circuit disable switch, or equivalent.

9. Open manual control station (M), then open diaphragm supply valve (P). After aerated water stops discharging, slowly close operating lever. Do not close hinged cover at this time.

10. After aerated water stops discharging, reset manual reset actuator (N) until water stops flowing from the drain tube and the pressure builds and reaches approximately 15 psi (1,0 bar) on diaphragm gauge (K).

11. Inspect electric/electric actuation drain connection from manual control station (M) and solenoid valve (V). Correct any leaks before proceeding.

12. With diaphragm chamber pressurized, temporarily close diaphragm supply valve (P), and observe diaphragm gauge (K) for a drop in pressure. If a pressure drop is noted, correct any leaks before proceeding. If diaphragm gauge (K) indicates no drop in pressure, re-open diaphragm supply valve (P) and proceed.

13. Open air supply valve (S) and allow system to automatically re-establish nominal system air pressure - see air pressure requirements graph shown below. Observe automatic drain valve (F) for leaks. If there are leaks, correct leaks before proceeding.

14. Open system shut-off valve (X), as will be the case when resetting a system after performing an operational test.

15. Proceed to reset electric detection system in accordance with the manufacturer's instructions. After setting releasing panel, return potter RCDS-1 to "green light - releasing circuit system normal".

16. Partially open system main control valve (B). Slowly close main drain valve (D) as water discharges from main drain valve (D). Observe automatic drain valve (F) for leaks. If there are leaks, correct the leakage problem. Vent off express pressure through the manual control station (M).

17. Close hinged cover on manual control station (M) and insert a new break rod in small hole through top of enclosing box.

18. Fully open system main control valve (B).

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

Drop in Water Supply Pressure Below Normal Range

1. Note water supply pressure by the diaphragm gauge (K) and determine if the pressure is within normally expected range.

2. If below normal range, correct any leakage from diaphragm chamber prior to resetting the system.

3. When water supply pressure is restored, reset DV-5A valve in accordance with the Valve Setting Procedure.

Waterflow Alarm Test Procedure

1. Open alarm test valve (G), allowing water to flow to waterflow pressure switch (C) and/or water motor alarm. Close the alarm test valve (G) when test is completed.

2. Depress plunger on automatic drain valve (F) to drain alarm line.

Electric/Pneumatic Actuation System Operation Procedure

1. Close system main control valve (B), then open main drain valve (D).

2. Manually operate releasing panel and verify operation of releasing panel and its associated alarms, ensuring no leakage from dry pilot actuator (W)

3. Open inspector's test connection and close it immediately after verifying low air pressure alarm switch (U) and its associated alarms operate properly. Low air pressure alarm switch (U) should operate at previously established pressure.

4. Close inspector's test connection, then close system shut-off valve (X) after system air pressure has been restored to normal.

5. Manually restore electric fire detection system to a normal condition in accordance with manufacturer's instructions. Solenoid valve (V) will then be de-energized and returned to its normally closed position.

6. Open system main control valve (B) one turn beyond which water just begins to flow from main drain valve (D).

7. Close main drain valve (D) and air supply control valve (S).

8. Open dry pilot actuator (W) by partially opening system drain valve (E) to relieve air pressure at inlet to dry pilot actuator (W). Verify there is no leakage from dry pilot actuator (W).

9. Open solenoid valve by operating releasing panel. Verify DV-5A valve operates as indicated water discharging from system drain valve (E) and automatic drain valve (F). Automatic drain valve (F) may or may not close depending on flow past partially open system main control valve (B).

10. Verify Model MRA-1 manual reset actuator (N) has operated as indicated by water discharging into drip funnel drain tube connected to Model MRA-1 manual reset actuator (N), and waterflow pressure switch (C) and its associated alarms properly operate, and water motor alarm, if applicable, properly operates.

11. Reset double interlock preaction system in accordance with Valve Setting Procedure section.

Internal Valve Inspection

1. Ensure that Steps 1 to 4 of the Valve Setting Procedure are completed prior to proceeding with the Internal Valve Inspection.

2. Ensure diaphragm supply valve (P) is closed. If provided as part of the valve trim, close inverted flare shut-off valve (R).

3. Remove the supply line between the diaphragm supply valve (P) and the system main control valve (B). If provided as part of the valve trim, remove the supply line between the diaphragm supply valve (P) and inverted flare shut-off valve (R).

4. Loosen union securing actuation trim and remove actuation trim.

5. Remove union between diaphragm cover and MRA-1 manual reset actuator (N). Remove MRA-1 manual reset actuator (N) subassembly.

6. Remove diaphragm valve cover hardware, slowly remove diaphragm cover and perform internal valve inspection. Clean valve interior and replace parts as necessary.

7. Ensure diaphragm is properly oriented and proper hardware arrangement is utilized.

8. Insert long hex bolts. Align diaphragm with valve body, and then align diaphragm cover with valve body. Insert short hex bolts. Hand-tighten all fasteners.

9. Using crossdraw sequence, wrench-tighten long hex bolts and short hex bolts. Repeat crossdraw sequence two to three times at incremental torque valves.

10. Inspect to assure all hex bolts are securely tightened.

11. Using the union, secure the MRA-1 manual reset actuator (N) to the diaphragm cover.

12. Using union, secure actuation trim.

13. Replace the supply line between the diaphragm supply valve and the system main control valve (B). If provided as part of the valve trim, replace supply line between diaphragm supply valve (P) and inverted flare shut-off valve (R).

14. Ensure unions and flare fittings are securely tightened.

15. If provided with the valve trim, and with diaphragm supply valve (P) closed, fully open inverted flare shut-off valve (R) stainless steel screw (approximately 1/2 in.) until resistance is met.

16. Proceed with Step 5 of the Valve Setting Procedures.

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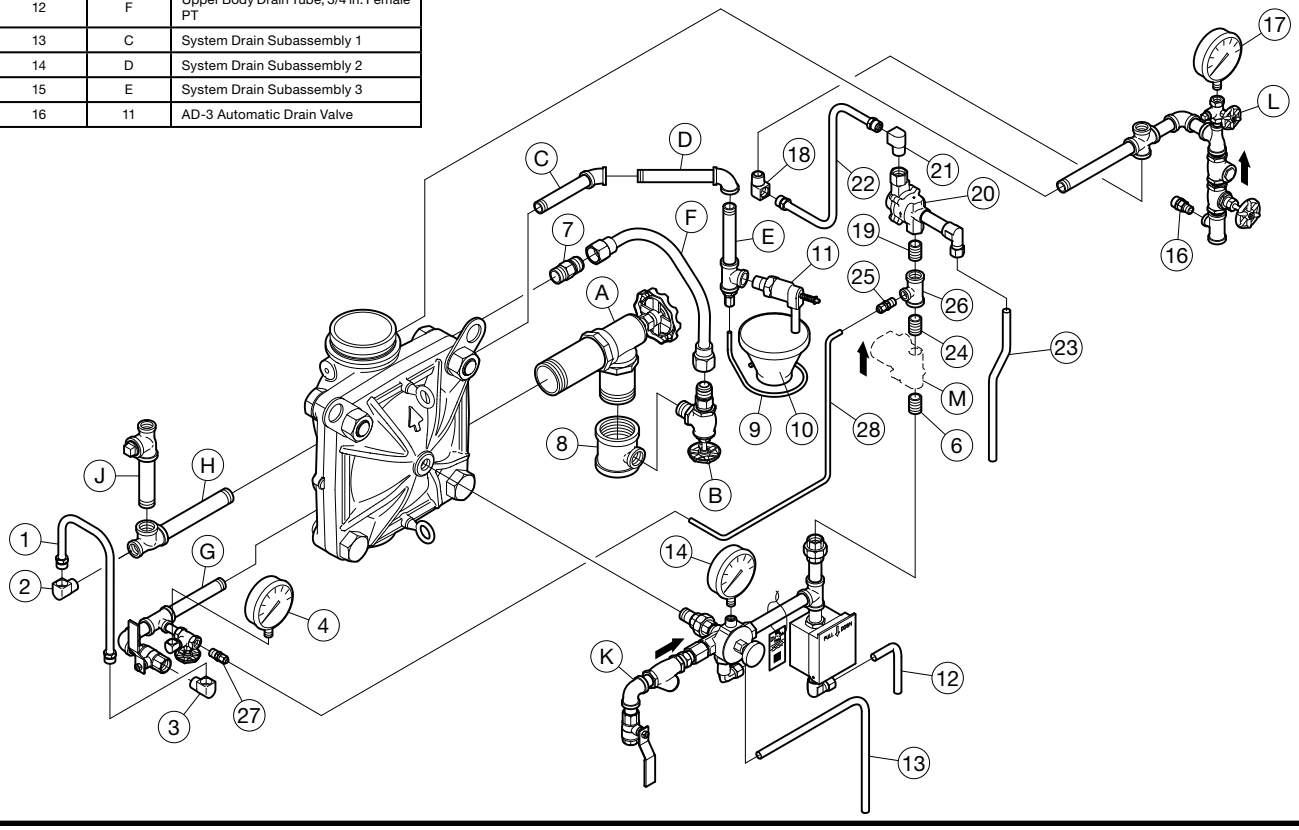
DV-5A Automatic Water Control Valve Double Interlock Preaction Electric/Pneumatic Actuation Fire Protection Systems Trim Assembly

Assembly Sequence	Item Number	Item Description
1	G	Lower Alarm Line Subassembly
2	H	Upper Alarm Line Subassembly 1
3	J	Upper Alarm Line Subassembly 2
4	2	90° Elbow, 1/2 in. Male PT x 1/2 in. Female Tube
5	3	90° Elbow, 1/2 in. Male PT x 1/2 in. Female Tube
6	4	System Water Supply Pressure Gauge (Included with ANSI kit only)
7	1	Alarm Bypass Tube, 1/2 in.
8	7	Adapter Nipple, 3/4 in. Male PT x 3/4 in. Female Tube
9	A	Main Drain Valve Subassembly
10	8	Reducing Tee
11	B	Upper Body Drain Valve Subassembly
12	F	Upper Body Drain Tube, 3/4 in. Female PT
13	C	System Drain Subassembly 1
14	D	System Drain Subassembly 2
15	E	System Drain Subassembly 3
16	11	AD-3 Automatic Drain Valve

Assembly Sequence	Item Number	Item Description
17	9	Drip Funnel Bracket
18	10	Drip Funnel
19	L	Supervisory Air Subassembly
20	16	1/4 in. Air Pressure Relief Valve, P/N 923431020
21	17	Supervisory Air Pressure Gauge (Included with ANSI kit only)
22	18	90° Elbow, 1/2 in. Male PT x 1/2 in. Female Tube
23	K	Diaphragm Chamber Supply and Actuation Connection Subassembly
24	6	Nipple, 1/2 in. x Close
25	M	Solenoid Valve (sold separately)
26	24	Nipple, 1/2 in. x Close
27	26	Reducing Tee, 1/2 in. x 1/2 in. x 1/4 in.
28	19	Nipple, 1/2 in. x Close

Assembly Sequence	Item Number	Item Description
29	20	Dry Pilot Actuation Subassembly
30	23	DP-2 Drain Tube, 1/2"
31	21	90° Elbow, 1/2 in. Female PT x 1/2 in. Female Tube
32	22	Actuation Supervisory Air Interconnect Tube, 1/2 in. Female PT
33	25	Vent Fitting, 3/32 in. x 1/4 in. Male Pt x 1/4 in. Female Tube
34	27	Vent Fitting, 3/32 in. x 1/4 in. Male Pt x 1/4 in. Female Tube
35	28	System Water Supply Actuation Interconnect Tube, 1/4 in.
36	12	MC-1 Drain Tube, 1/2 in.
37	13	MRA-1 Drain Tube, 1/2 in.
38	14	Diaphragm Chamber Water Supply Pressure Gauge (Included with ANSI kit only)



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TFP1461 APPENDIX B
MARCH 2025

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Johnson Controls

SECTION 3

General Air Products Manual

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

GENERAL AIR PRODUCTS

OL *Plus*
& OLT *Plus* Series

Riser and Tank Mounted Oilless Air Compressors

Installation, Operation and Maintenance Manual

Call **1-800-345-8207**
or visit our web site for our complete product listing
www.GeneralAirProducts.com

version 2.3
07-2019

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

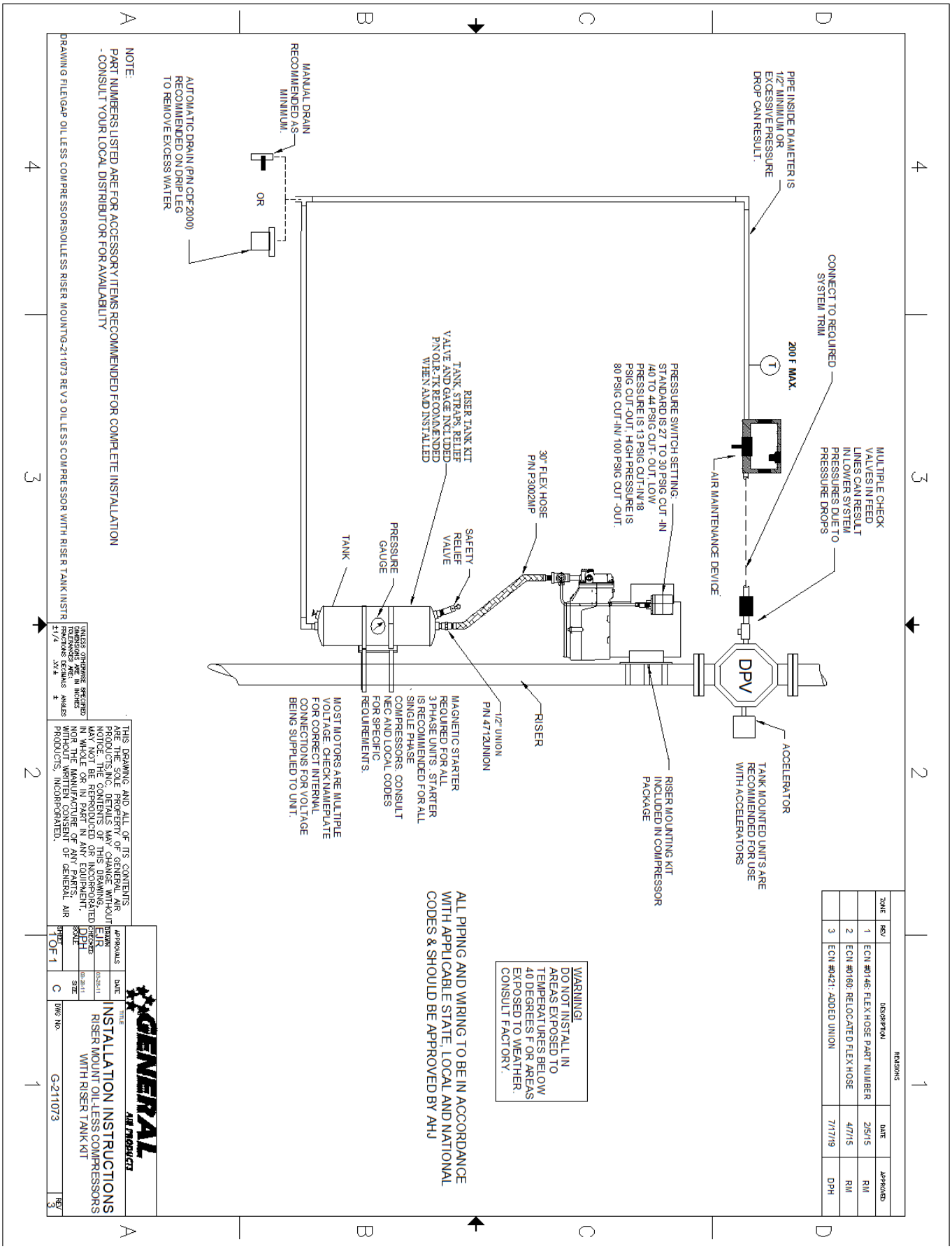
- Accumulation of condensed water in the system can cause corrosion of components and reduction of system capacity.

NOTICE

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

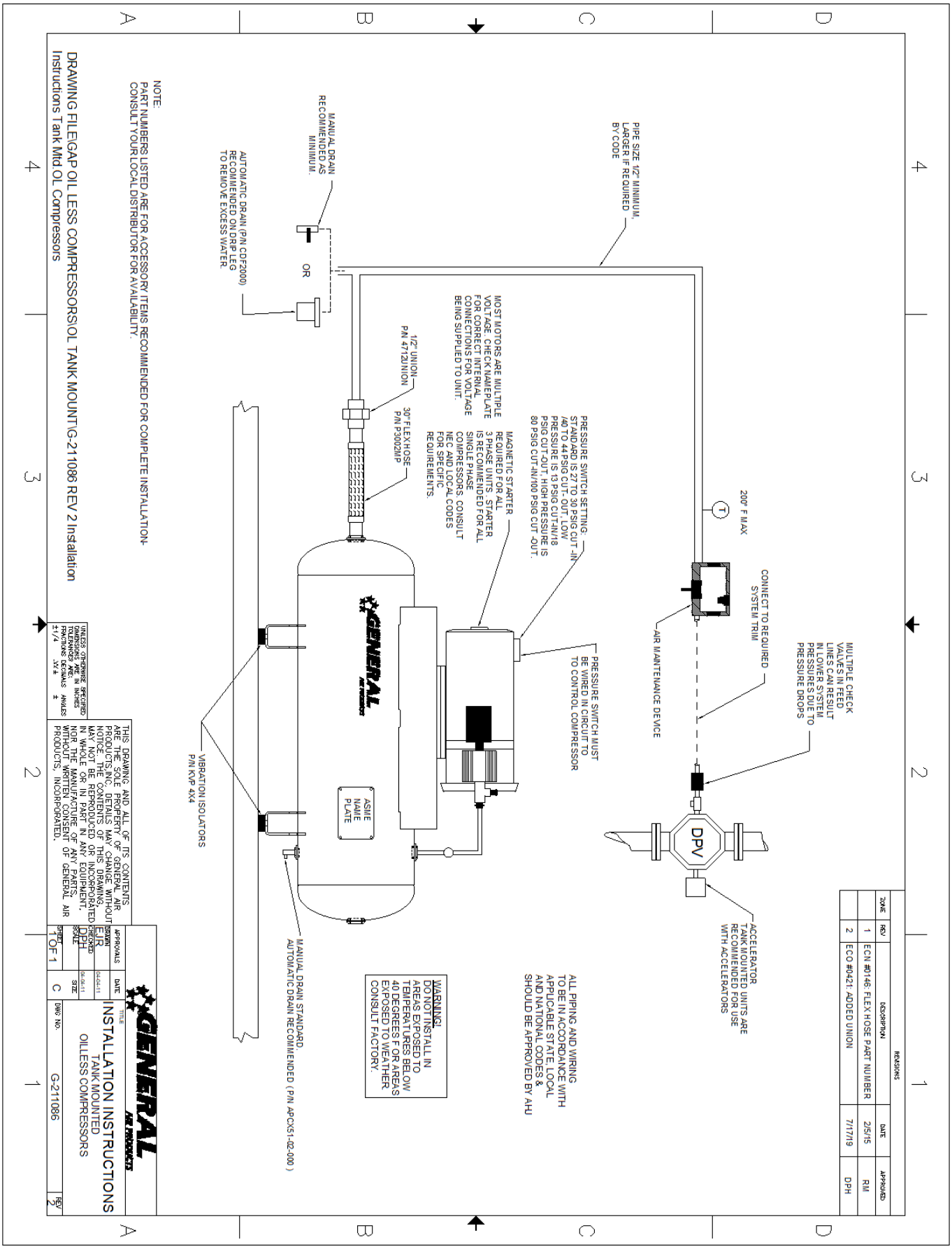
Section 6 - Piping

6.2 OL Plus Series Riser Mounted Oilless Air Compressor Installation Drawing



Section 6 - Piping

6.3 OLT Plus Series Tank Mounted Oilless Air Compressor Installation Drawing



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.

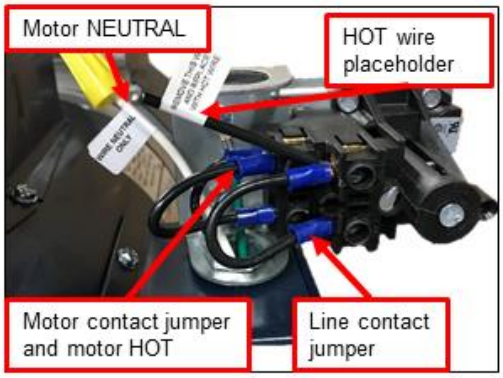
On three-phase compressors, the motor is not pre-wired to the pressure switch. Refer to the three phase wiring instruction drawing for recommended wiring. **A motor starter is required, for all three phase models, to protect the motor from overload conditions to meet NEC, NFPA70, Article 430. A motor 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

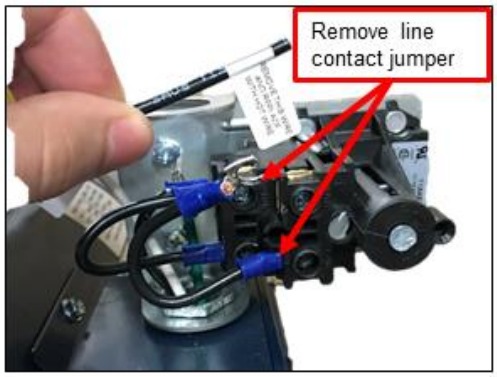
- Do not run two phases of a three phase supply through the pressure switch. Serious damage can result. Warranty is voided if connected this way.

Section 7 - Wiring

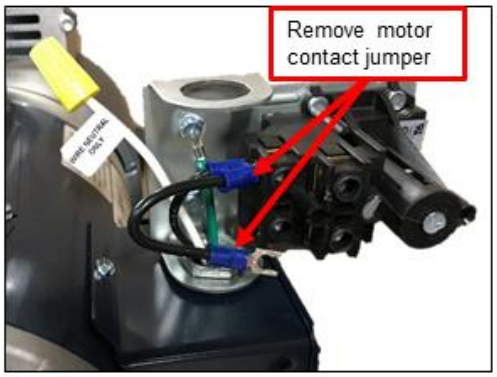
Convert Pressure Switch from 115V to 230V



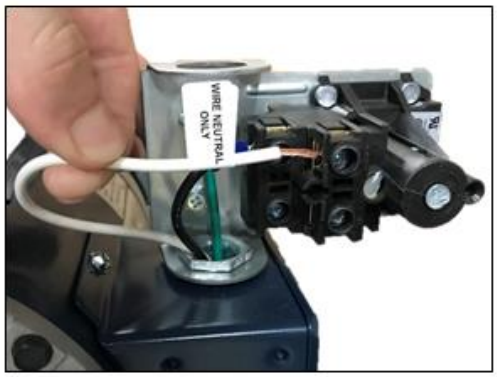
1. Identification of wires.



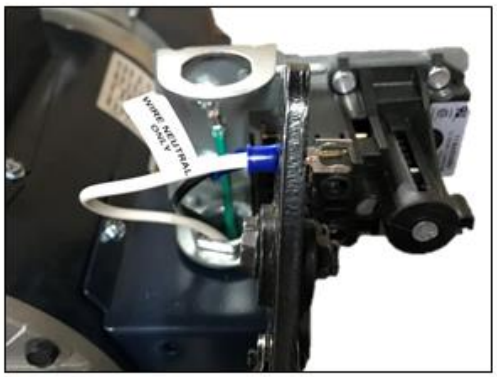
2. Remove line contact jumper and HOT wire placeholder.



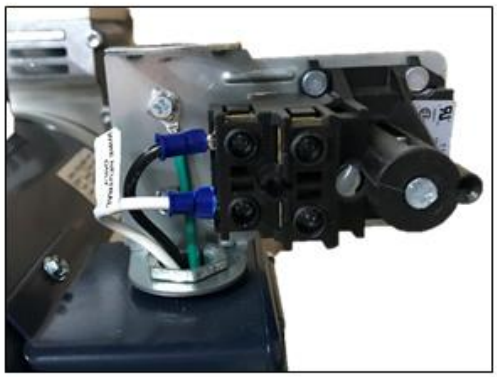
3. Remove motor contact jumper, leaving motor HOT in terminal. Retighten motor HOT wire in terminal.



4. Remove yellow wire nut from motor NEUTRAL.



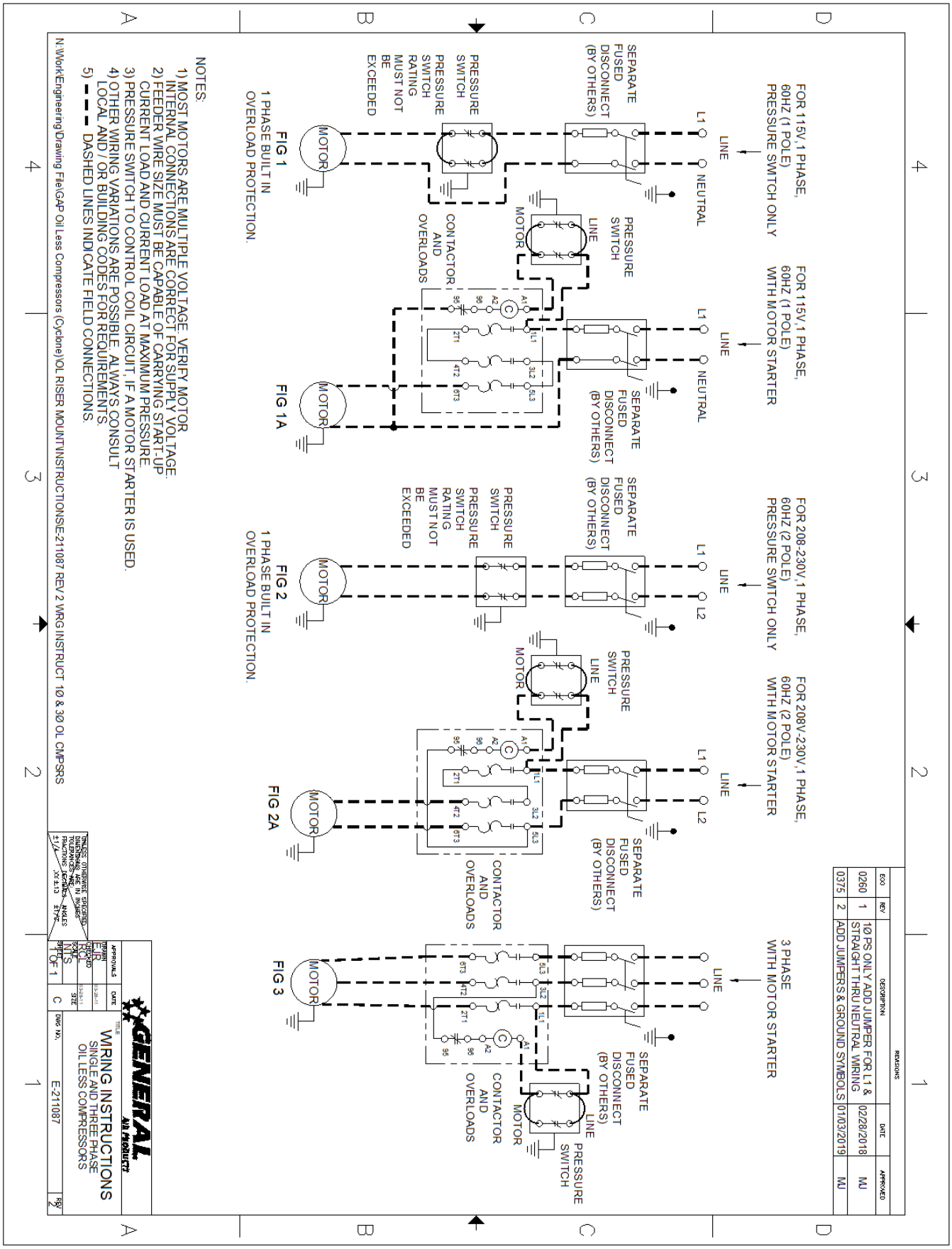
5. Crimp a spade connector onto NEUTRAL wire.



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



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

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SECTION 4

United Fire Systems UFS-710

NAMD-1 Instruction Sheet

INSTRUCTION SHEET

Pressure Maintenance Device for Fire Sprinkler Systems
Model **NAMD-1**

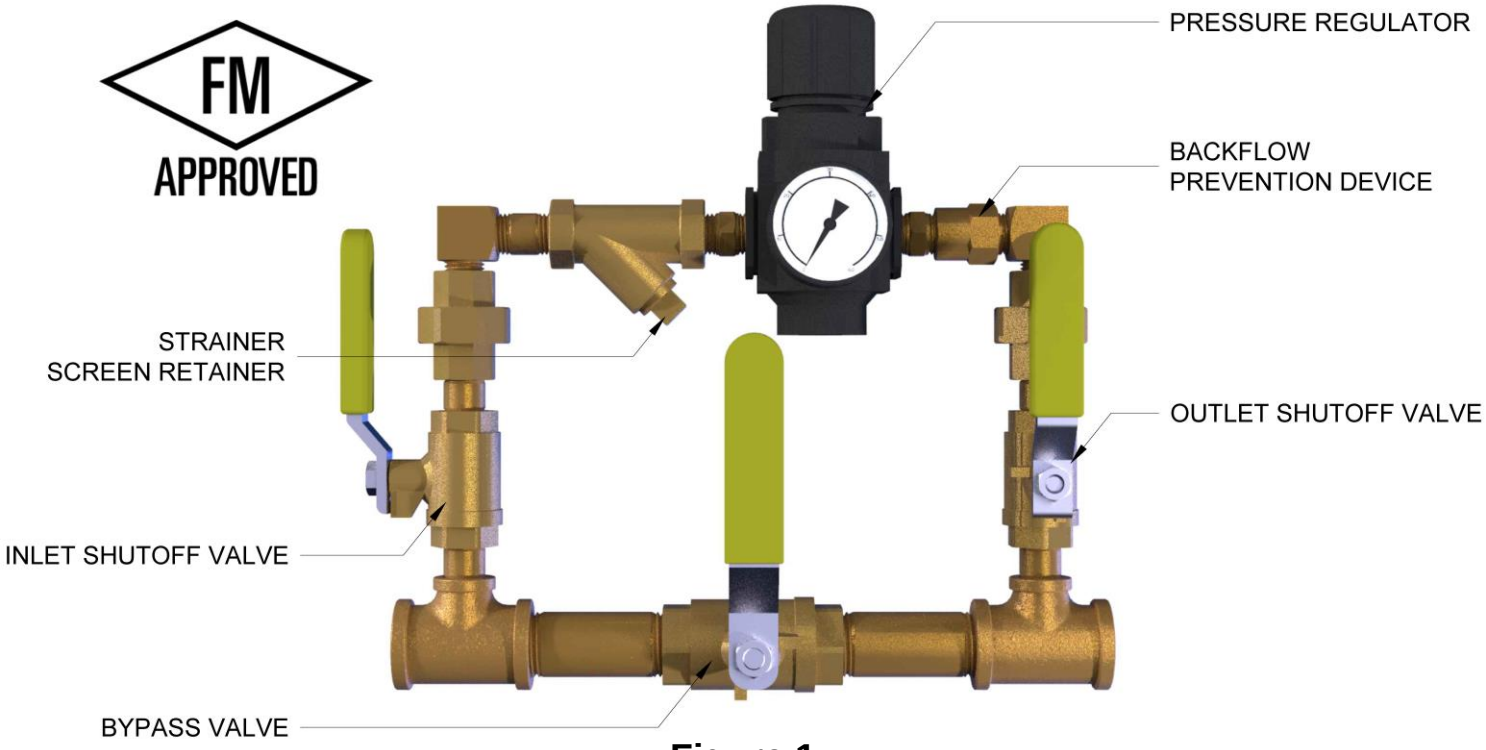

Figure 1

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)

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unitedfiresystems.com

INSTRUCTION SHEET

Pressure Maintenance Device for Fire Sprinkler Systems
Model **NAMD-1**

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.

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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.

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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.

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SECTION 5

Potter Manual 5403751

PFC-4410G3 Control Panel Installation, Operation, and Instruction Manual

PFC-4410G3
Conventional Releasing Panel

Installation, Operations & Programming Manual

POTTER
The Symbol of Protection

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St. Louis, MO
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www.pottersignal.com

Manual #5403751–REV E
7/24

POTTER
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WARRANTY INFORMATION

The essential purpose of any sale or contract for sale of any of the products listed in the POTTER catalog or price list is the furnishing of that product. It is expressly understood that in furnishing said product, POTTER does not agree to insure the Purchaser against any losses the Purchaser may incur, even if resulting from the malfunction of said product.

POTTER warrants that the equipment herein shall conform to said descriptions as to all affirmation of fact and shall be free from defects of manufacture, labeling and packaging for a period of one (1) or five (5) year(s), depending on the product, from the invoice date to the original purchaser, provided that representative samples are returned to POTTER for inspection. The product warranty period is stated on the exterior of the product package. Upon a determination by POTTER that a product is not as warranted, POTTER shall, at its exclusive option, replace or repair said defective product or parts thereof at its own expense except that Purchaser shall pay all shipping, insurance and similar charges incurred in connection with the replacement of the defective product or parts thereof. This Warranty is void in the case of abuse, misuse, abnormal usage, faulty installation or repair by unauthorized persons, or if for any other reason POTTER determines that said product is not operating properly as a result of causes other than defective manufacture, labeling or packaging.

The Aforesaid Warranty Is Expressly Made In Lieu Of Any Other Warranties, Expressed Or Implied, It Being Understood That All Such Other Warranties, Expressed Or Implied, Including The Warranties Of Merchantability And Fitness For Particular Purpose Are Hereby Expressly Excluded. In No Event Shall Potter Be Liable To Purchaser For Any Direct, Collateral, Incidental Or Consequential Damages In Connection With Purchaser's Use Of Any Of The Products Listed Herein, Or For Any Other Cause Whatsoever Relating To The Said Products. Neither Potter Nor Its Representatives Shall Be Liable To The Purchaser Or Anyone Else For Any Liability, Claim, Loss, Damage Or Expense Of Any Kind, Or Direct Collateral, Incidental Or Consequential Damages Relative To Or Arising From Or Caused Directly Or Indirectly By Said Products Or The Use Thereof Or Any Deficiency, Defect Or Inadequacy Of The Said Products. It Is Expressly Agreed That Purchaser's Exclusive Remedy For Any Cause Of Action Relating To The Purchase And/or Use Of Any Of The Products Listed Herein From Potter Shall Be For Damages, And Potter's Liability For Any And All Losses Or Damages Resulting From Any Cause Whatsoever, Including Negligence, Or Other Fault, Shall In No Event Exceed The Purchase Price Of The Product In Respect To Which The Claim Is Made, Or At The Election Of Potter, The Restoration Or Replacement Or Repair Of Such Product.

Potter Electric Signal Company, LLC
13723 Riverport Drive, St. Louis, MO 63043 • 314-595-6900 • 800-325-3936

Table of Contents

Section 1: Introduction

Safety Guidelines

This manual contains safety information that is important to know and understand. This information is provided for the safety of installers, operators, and users of the Potter releasing panel as well as equipment. 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 or property.

⚠ WARNING

The detection and suppression system employing this release panel must be designed by people trained and competent in the design and layout of fire alarm and/or suppression systems for special hazard locations. The system shall be designed and installed in accordance with all local and national codes and ordinances as well as the approval of the Authority Having Jurisdiction. Only trained, qualified and competent individuals should install, program and/or service the PFC-4410G3. Competent people would be aware of these warnings, limitations, and requirements.

An unqualified person is someone who has not received the specific training to perform the tasks set in this manual, is unable to recognize that a hazard exists and how to avoid that hazard, or who has not shown the demonstrated ability needed to install this device. An employee qualified to perform a specific task may be unqualified to perform other tasks. The characteristics of being qualified and unqualified are task-dependent.

NOTICE

The default programming does not allow the abort circuit to abort the release or stop the pre-discharge timer activated by zones programmed as MANUAL RELEASE. This can be changed in the programming to allow MANUAL RELEASE zones to be aborted.

⚠ WARNING

High voltage electrocution hazard. Do not handle live AC wiring or work on the device while AC power is active.

This manual is designed to help with the specification, installation, and programming of the PFC-4410G3 Release Panel. It is imperative that this manual be completely read and understood before the installation or programming of the panel. Save this manual for future reference.

Zones programmed as MANUAL RELEASE will override any cross zoning features. If it is desired to not have a manual station override the cross zoning, program the zone as DETECTION and map accordingly. That detection zone shall have a maximum 30 second pre-discharge time delay

Per ULC requirements; if this equipment is running on battery power only, it will shut off and cease to operate when the battery voltage reaches approximately 19-20 volts.

⚠ CAUTION

Locate the panel and all system components in the following nominal environment:
* Temperature 32-120°F, Humidity 93% non-condensing.
* Verify that the wire sizes are adequate for all initiating, notification, and release circuits.
* Make certain the panel is properly grounded.
* Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible make all cable entries from the sides, bottom, or rear of the cabinet. Verify that they will not interfere with the batteries or other components.
* The panel and system must be tested and maintained in accordance with all local and national codes and ordinances.

NOTICE

Operating Instructions Form

Fill in the name, address and telephone number of the servicing agency on the instruction sheet provided and frame and place adjacent to control panel at eye level.

The following documentation shall be delivered to the owner or their representative upon final acceptance of the system:

- An owners manual and installation instructions covering all system equipment.
- Wiring diagrams
- A detailed description of the programming and operating sequence of the system Cadence and Temporal Patterns
- Programmable to activate on a Supervisory condition

⚠ WARNING

Fire Alarm System Limitations

Smoke detectors may not detect smoke when the smoke does not reach the detector. Such as smoke within walls, on the other side of walls, on other floors, behind closed doors, explosions, etc. Smoke detectors will not operate if they are not properly connected to the fire/release panel. The detectors and bases must be UL listed as being compatible with the panel. The detectors have a visible flashing light that indicates power is supplied to the detectors.

Notification appliances may not alert people if the people are not able to hear or see the appliances such as if they are in separate areas of the building or room.

A fire alarm/release panel will not operate without electrical power. The panel must have sufficient backup battery capability to power the panel for a specified amount of time in the event of an AC power failure. The batteries and release panel shall be tested and maintained in accordance with the testing and maintenance requirements of NFPA 72.
In order for emergency forces, (Fire departments, etc.), to respond to events associated with this panel, the panel must transmit trouble, supervisory, and alarm signals to a monitoring facility either directly or through a main building fire panel.

A problem in an audible or visual device may not be apparent when the panel is in a normal condition.

F.C.C.

This device has been verified to comply with FCC part 15, Class A. Operation is subject to the following conditions:

1. This device may not cause radio interference
2. This device must accept any interference received including any that may cause undesired operation

CAN ICES-001 (A) / NMB-001 (A)

Design Guidelines

People trained in the design of special hazard systems shall determine the selection and placement of the initiating devices and notification appliances connected to the PFC-4410G3. This responsible party shall also be familiar with the premises being protected.

The equipment shall be installed in accordance with the manufacturers instructions, the applicable version of NFPA 72 and all local codes and ordinances. For systems employing cross zoning of two smoke detectors for the activation of the release circuit, this can include but is not limited to the installation of photoelectric and ionization types of detectors on separate zones. One of each type of detector on separate zones shall be installed in the coverage area selected for a single detector (not to exceed 0.7 times the linear spacing). The detectors would be installed in close proximity to each other.

The responsible party shall also determine the theory of operation regarding the programming sequence.

General Description

The Model PFC-4410G3 is a listed and approved, microprocessor based fire control/releasing panel. It is primarily designed for use as a releasing panel for pre-action and deluge, water based extinguishing systems or for agent extinguishing systems. The PFC-4410G3 may also be used as a stand alone fire control panel. This unit shall be installed in accordance with NFPA-12, NFPA-12A, NFPA-13, NFPA-15, NFPA -16, NFPA-17, NFPA-17A, NFPA-72, NFPA-750, NFPA-2001, NFPA 2010 and Canadian Electrical Code Part 1 C22.1, ULC-S524.

The PFC-4410G3 complies with UL Standard 864, ULC S527, FM, CSFM, FDNY, and is RoHS Compliant.

System Features

The PFC-4410G3 has seven (7) conventional programmable initiating zones and is expandable to thirty-one (31) using four (4) IDC-6 cards, each providing six (6) additional programmable input circuits.

- 3.0 Amp (24VDC) power supply
- Four (4) output circuits rated at 3.0A maximum each, 3 Amps total
  - Power Limited
  - Built in Sync
  - Cadence and Temporal Patterns
  - Programmable to activate on a Supervisory or Trouble condition
- Two (2) auxiliary 24VDC Special Application output, rated 19.7-27.2 volts 1A each Power limited, current limited, non-supervised. One programmable, (Resettable for 4-wire smoke detectors), one continuous
  NOTE: Continuous AUX output also serves as P-Link power.

- Support for all major synchronization patterns.
  - Gentex®
  - AMSECO®
  - Wheelock®
  - System Sensor®
- Built in standard program templates in panel memory plus custom programing available
- Releasing Zones can be set up for either normal or cross zoning operation
- Auto Silence and Silence Inhibit.
- Built-in Ethernet port for programming and non-listed communication.
- Built-in Email support to communicate system status and event information.
- Customizable Reminder Emails.
- P-Link RS-485 bus supports system accessories.
- 4,000 event non-volatile history buffer
- 99 Software Zones
- 4 X 20 character LCD display
- Four (4) Form C System Relays (Alarm, Supervisory, Trouble, Waterflow/Releasing) rated 3A at 30 VDC resistive
- Dead-front Cabinet Design

P-Link Accessories

- IDC-6 – Up to four (4) per system that provides six (6) additional conventional Class B inputs or three (3) Class A inputs.
- CA-4064 Class A converter module – Limit of one (1) per system allows for Class A wiring of the P-Link communication bus and the four (4) built-in Output circuits.
- RA-4410G3 Remote Annunciator – Up to 31 per system
- LED-4410G3 Annunciator module – Up to 10 total per system. Each allows for up to 16 zones alarm, supervisory and trouble conditions to display, and five (5) non-programmable system LEDs that display system's overall condition.
- RLY-5 Relay Board module – Up to 31 total per system provides five (5) programmable Form-C relay outputs.
- PSN-1000 Power Supply Expander - The panel can be programmed to support up to one (1) PSN-1000 Power Expanders (installed in a single zone).

Optional Accessories

- CA2Z – Converts Zone 5-6 from Class B initiating device circuits to two Class A circuits. Not to be used for 4-wire smoke detectors unless approved by local AHJ.
- RCDS-PM1 – Provides physical means of disconnecting 1 release circuit in compliance with NFPA 72
- RCDS-PM2 – Provides physical means of disconnecting 2 release circuits in compliance with NFPA 72
- ARM-1 – Activated by 24VDC Indicating and/or Releasing, polarity reversing circuits. The module provides a non-supervised DPDT Relay that can be used for fan shutdown, door release, elevator recall, etc.
- eMatch Protection Assembly 3005020

How to Use this Manual

Refer to this manual before contacting Technical Support. The information in this manual is the key to a successful installation and will assist you in understanding proper wire routing, system requirements, and other guidelines specific to the PFC-4410G3 system.

Common Terminology

The following table provides you with a list of terms and definitions used with the PFC-4410G3 system:

Table 1: Terminology

Term	Definition
PFC-4410G3 Cabinet	Enclosure
EOLR	End of Line Resistor Assembly
EOLD	End of Line Diode Assembly
Remote Annunciator	LCD type Remote Annunciator
Output	Output, Notification Appliance Circuit, Releasing Circuit
P-Link	Proprietary RS-485 communication bus
PFC-4410G3 PCB	Board Assembly for complete unit
RCDS-PM	Release Circuit Disconnect Switch, Panel Mount

Section 2: Before You Start Installation

This section addresses information that will help you in completing a successful installation, such as the PFC-4410G3 cabinet layout, specifications, and environmental considerations.

System Specifications

Cabinet Description

- Eighteen (18) gauge sheet steel with hinged, lockable, removable door and removable full dead-front that can be hung off the bottom of the cabinet when servicing
- Enclosure dimensions – 18-1/2" x 14-1/4" x 4-3/4"

Visual Indicators

- 4 x 20 alphanumeric character display showing applicable condition, status, and circuit for all alarm, supervisory, and trouble conditions
- 37 LED indicators (Red, Green, Amber)

LCD Description

- Alarm, Supervisory and Trouble conditions display applicable condition, status and circuit for each correlating condition
- Provides menu driven programming information

Environmental Specifications

- Mount indoors only.
- Temperature 32° to 120°F, humidity 93% non-condensing.
- Verify panel is properly grounded.
- Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides, bottom, or rear of the cabinet. Verify that they will not interfere with the batteries or other components.
- The panel and system must be tested and maintained in accordance with all local and national codes and ordinances.
- Panel shall be installed so the display is easily readable and the door shall have adequate clearance to access the controls.

Model / Available Cabinet Colors

- 3006735 – RED PFC-4410G3 Conventional Releasing Panel

System Configurations / Appliances

Table 2: System Configurations / Appliances

Model	Description	Local	Remote Station	Central Station	Releasing Service
PFC-4410G3	Main Board/Panel Assembly	Y	Y	Y	Y
CA-4064	Class A Expander	O	O	O	O
RA-4410G3	Remote annunciator.	O	O	O	O
PSN-1000	Intelligent Power Supply Expander	O	O	O	O
CA2Z	Class A Expander	O	O	O	O
IDC-6	Initiating Device Circuit	O	O	O	O
LED-4410G3	LED Annunciator	O	O	O	O
RLY-5	Relay Expander	O	Y	Y	O
3005013	End of line resistor assembly	Y	Y	Y	Y
3005012	End of line resister and diode	N	N	N	Y
EOLP-D	End of Line Plate f/Diode Assy	O	O	O	O
EOLP-R	End of Line Plate f/Resistor	O	O	O	O

Y = Yes, required for applicable section
N = No, not required for applicable section
O = Optional, may or may not be used, has no affect on the applicable section.

Electrical Specifications

Please refer to the table below for electrical specifications:

Table 3: System Panel Electrical Specifications

Panel	# Outputs	Rating per Output	Class
PFC-4410G3	4 Outputs	3.0 Amps	Inputs – Class A* or B Outputs – Class A* or B P-Link – Class A* or B All are Low Voltage and Power Limited

*With optional equipment

System Size Specifications

Please refer to the table below for system size specifications:

Table 4: System Size Specifications

Accessories/Subassemblies	Maximum System Size
PFC-4410G3	• Seven (7) input circuits on the main board • Four (4) output circuits on the main board* • One (1) auxiliary power output* • One (1) P-Link connection* • One (1) P-Comm (ethernet)
***Note:** The Outputs, P-Link and AUX Out combined are **not** to exceed 3.0A. The P-Link 24VDC and AUX Out each are not to exceed 1.0A.	

Main Board Wiring Specifications

There are several wiring requirements to consider **before** connecting circuits to the main board: (1) the circuit separation, and (2) wiring types. All wiring should be sized and installed to comply with NFPA 70, NFPA 72, and local codes and ordinances.

Circuit Separation

Proper separation between the different types of circuits must be maintained between Power Limited, Non-Power Limited, and High Voltage wiring to reduce electrical interferences, transient voltage or voltage ratings.

- Separations between the different wiring types **must** be maintained by at least ¼ inch and the wire insulation **must** be for the higher voltage.
- The control panel cabinet has sufficient knockouts located around the periphery allowing the installer to maintain separation between power limited and non-power limited connections.
- Refer to table 5 for wiring types and Figure 1 wire routing diagram

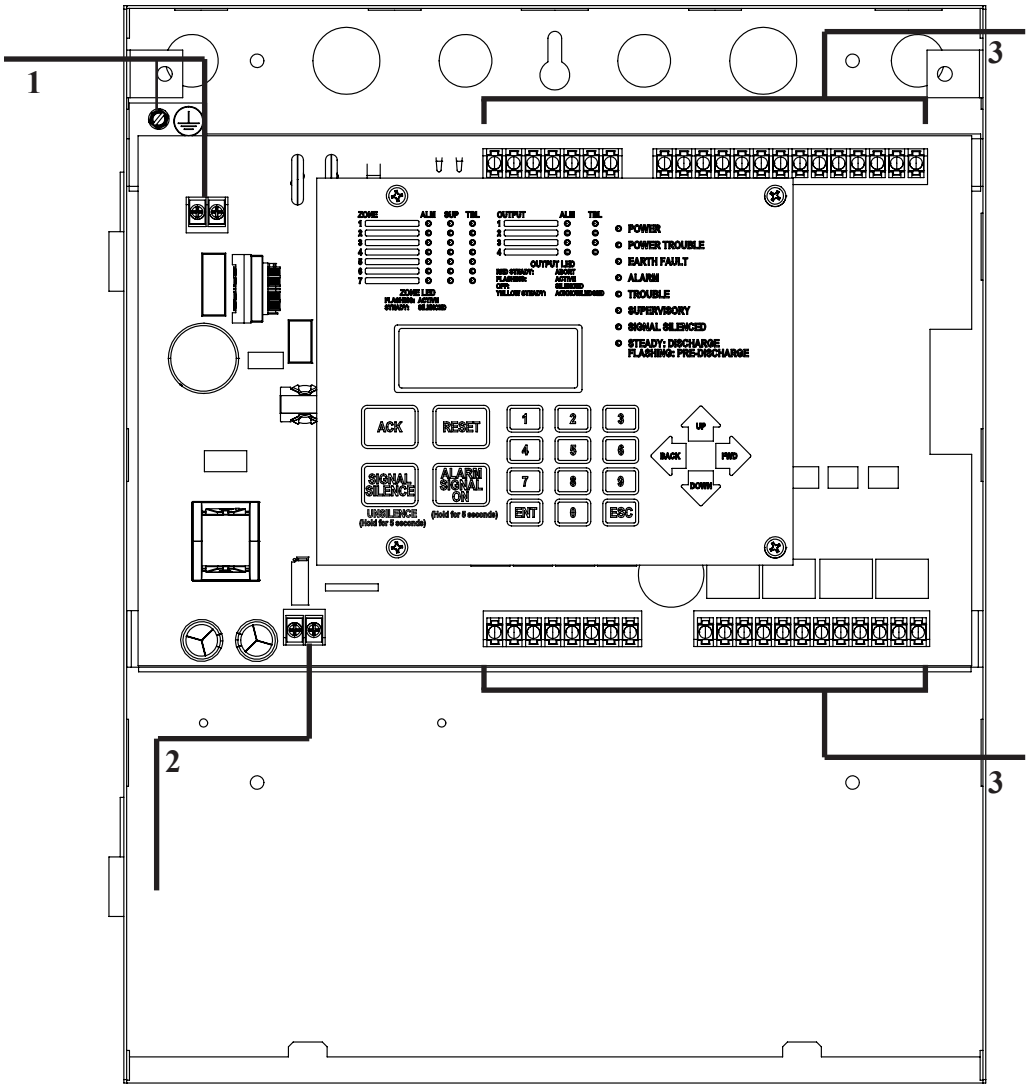
Wiring Types

Wiring specifications must be followed to prevent damage or other consequences.

Refer to table below for a breakout of the different wiring requirements shown by circuit type:

Table 5: Main Board Circuit Wiring Types		
	Wiring Type	
Type of Circuit	**Voltage**	**Power**
AC Connection	High Voltage	Non-Power Limited
Battery Connection	Low Voltage	Non-Power Limited
Input Circuits	Low Voltage	Power Limited
Notification Appliance Circuits (Output)	Low Voltage	Power Limited
P-Link/Connection	Low Voltage	Power Limited
AUX Power	Low Voltage	Power Limited

Figure 1. PFC-4410G3 Wire Routing



1. AC Power Leads
2. Battery Leads
3. Route all wiring away from AC power wiring and from non-power limited wiring such as battery leads. Use cable clamps if necessary (not included).

Cabinet Dimensions

Figure 2. PFC-4410G3 Cabinet Dimensions

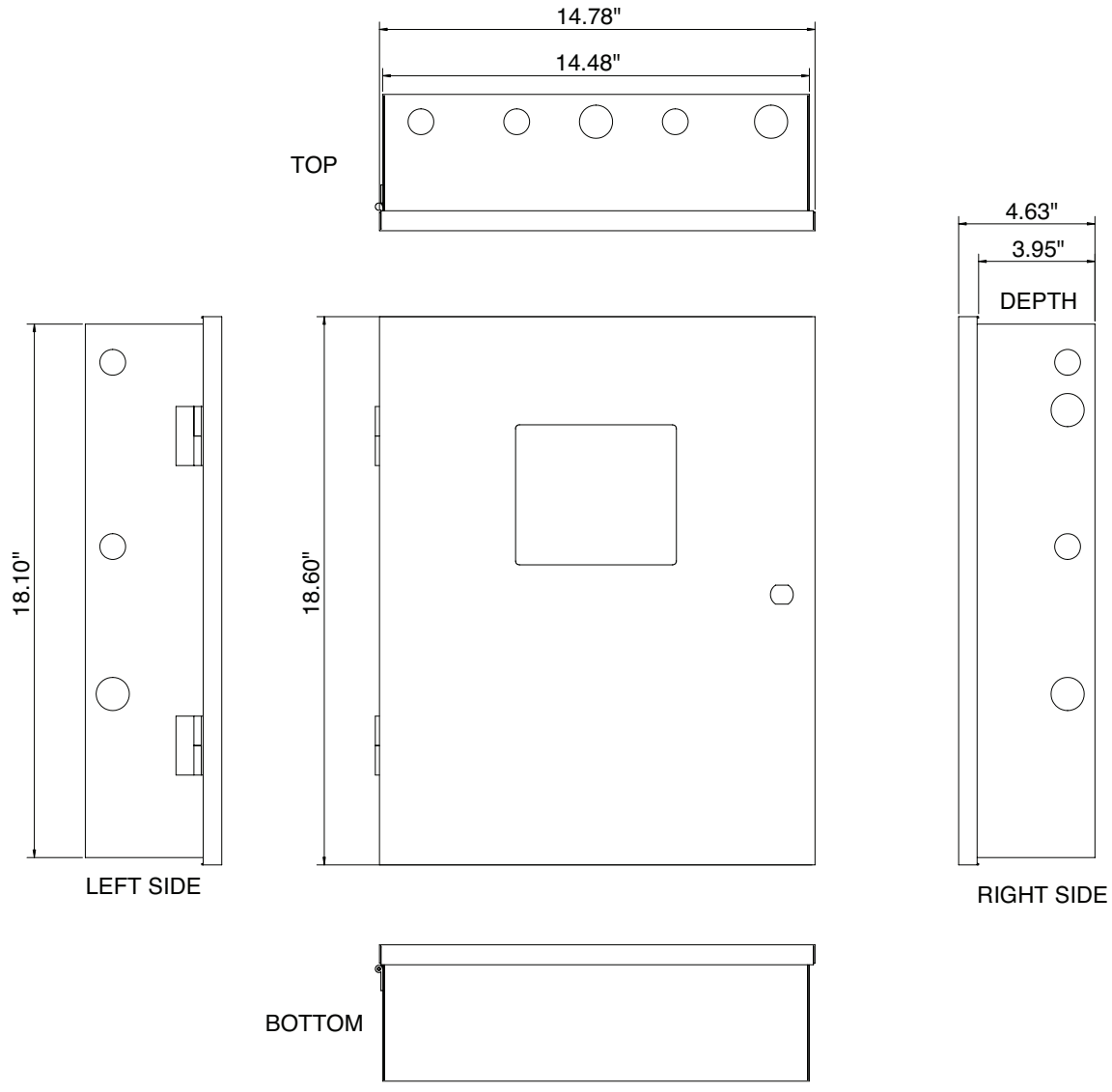
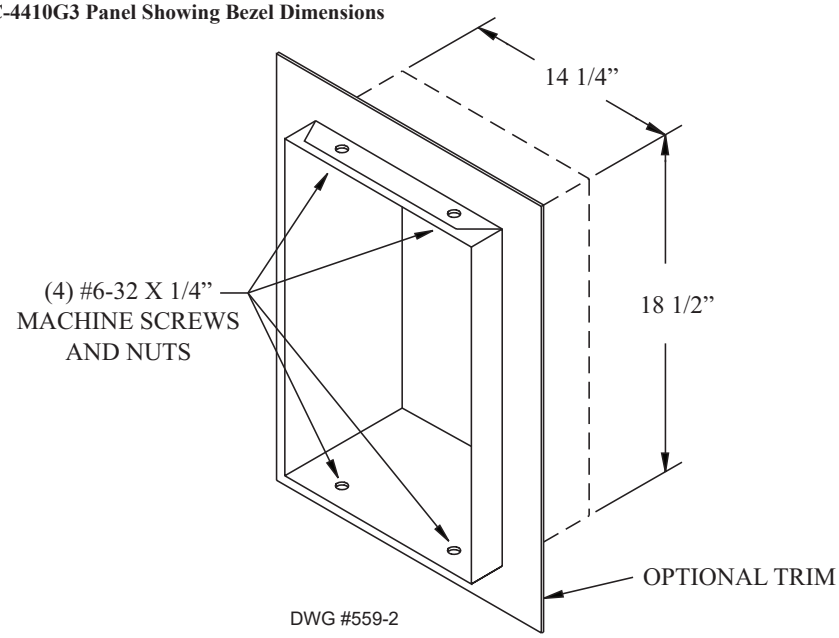


Figure 3. PFC-4410G3 Panel Showing Bezel Dimensions



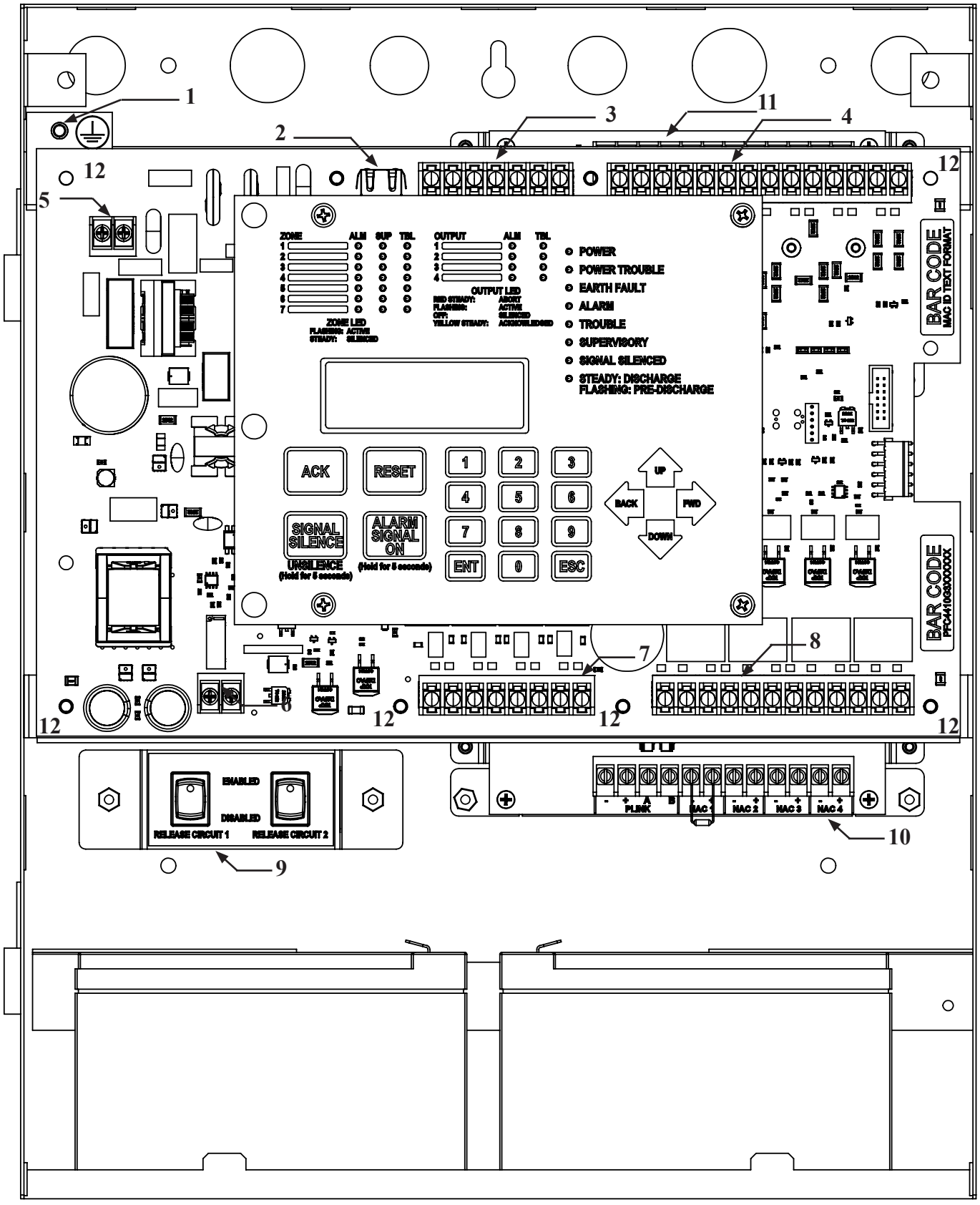
Cabinet Mounting Instructions

To mount the cabinet:

1. The unit should be mounted in a convenient location, approximately 5 feet from the floor where it will be accessible for testing and servicing.
2. The main circuit board module should be removed before attempting to mount the cabinet. Remove deadfront. Disconnect the AC power from TB1. To remove the module, remove the four corner screws and two bottom center screws (see 12 on Fig. 4) holding the main PCA assembly to the cabinet. Remove the module and set aside (refer to appendix D)
3. The PFC unit may be surface mounted or semi-flush mounted using the optional trim bezel (*refer to Fig.3*). For semi-flush installations mount the housing so that the front edge protrudes 1" from the finished wall surface. After all conduits and wiring are in place and the wall surface is completely finished, slide the trim bezel in place and fasten with 4 #6-32 x 1/4" machine screws and nuts.
4. Install all required conduits, external wiring and points and make all connections that are external to the panel. Replace the module. With the AC power still turned off at the circuit breaker panel, connect the AC line and neutral to terminal block TB1. Connect ground wire to the green ground screw on bracket. See all indicated locations on Fig. 4 *PFC-4410G3 Cabinet Wiring* on page 2-10.
5. Connect all the other wiring to the terminals as shown in the connection drawings. Turn the AC power on and connect the standby batteries with the cable provided, polarity must be observed.
6. Replace dead front panel and secure with mounting screws.
7. Verify the operation of the complete system as outlined in the test procedure section.

Cabinet Wiring Connections

Figure 4. PFC-4410G3 Cabinet Wiring --



Wiring Connection Terminal Points

1 - Earth Ground

2 - Ethernet Connection

3 - P-Link, AUX power, power limited

4 - Initiating Device Circuits, power limited

5 - AC Supply 120-240 VAC 50/60 Hz

6 - Battery Connection

7 - NAC output circuits, power limited

8 - Relay Contacts to power limited circuit, 30 VDC @ 1A max

9 - RCDS-PM (optional)

10 - CA-4064 Zone Expander (Optional)

11 - IDC-6 Initiating Device Circuit Expander (Optional)

Mounting Hardware

12- PFC-4410G3 PCB Mounting Screws

Battery Circuit Calculations

Before selecting the battery, it is important to determine the minimum size batteries for standby and alarm times desired for each application. If the wrong batteries are installed in a specific application or incorrect current draw used, the proper standby and minimum alarm time will not be present.

The battery circuit is rated for 8 to 55 AH batteries and shall be sized to operate the panel for at least 24 hours in standby and 5 minutes in alarm per NFPA 72, (30 minutes in alarm for ULC). The cabinet will house up to two (2) 12 AH batteries. Larger batteries can be installed in SSU-00500 Battery Cabinet (1000015). Please use the battery calculation worksheet to calculate the battery size and current draw required for each application. The worksheet includes a 20% efficiency factor as required by NFPA 72.

Battery Calculation Worksheet

Description	Quantity	Standby (mA)	Total Standby (mA)	Alarm (mA)	Total Alarm (mA)
Main board (PFC-4410G3)	1	100	**100**	215	**215**
RA-4410G3		20		30	
CA2Z for Zones 5 & 6		5		20	
CA-4064 Class A Expander		15		60	
PSN-1000 Power Expander		15		15	
LED-4410G3 P-Link Current LED-Current (if applicable, see Note 5)		31 15		35 210	
RLY-5 Relay-Current (if applicable, see Note 5)		25 10		35 135	
IDC-6		20		20	
AUX					
P-Link					
Output 1					
Output 2					
Output 3					
Output 4					
		Total (ma)		Total (ma)	
		Convert to Amps	x 0.001	Convert to Amps	x 0.001
		(*Refer to maximum allowable standby current) Total A:		Total A:	
		Multiply by standby hours required. Typically 24 hours for UL/ULC and 90 hours for FM	x____	60 minutes per hour Alarm time (minutes) *Example:* UL 5 minute alarm: enter 12 FM 10 minute alarm: enter 6 ULC 30 minute alarm: enter 2	÷ ____
		Total Standby AH		Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

*Maximum Allowable Standby Current

	24-Hour Standby Time	
	UL	ULC
8AH	0.16A	0.10A
12AH	0.29A	0.23A
18AH	0.49A	0.43A
33AH	0.99A	0.93A
55AH	1.72A	1.67A

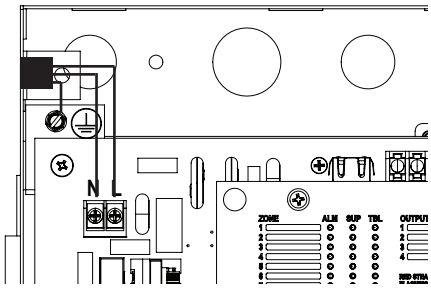
Important Notes:

1) FACP enclosure can house up to two (2) 12 AH batteries. Larger batteries require accessory cabinet enclosure. Part number 1000015/SSU00500
2) NFPA 72 requires 24 hours of standby power followed by 5 minutes of alarm activation (30 minutes of alarm activation for ULC). FM and others may require 90 or more hours of standby.
3) Door holder circuits configured to disconnect upon AC loss need not be included in the battery standby calculation since they will not draw power during that time. Door holders will contribute to standby current draw when AC is present.
4) Total current must not exceed power supply rating (3A on PFC-4410G3).
5) Attached P-Link and AUX OUT devices must be accounted for in the battery calculation for the supplying source.
6) Mark the purchase date on the batteries. Test batteries at least semi annually in accordance to the test methods in NFPA 72 or battery manufacturers instructions. Replace batteries if they fail the test or within 4 years of purchase date.

Main Supply Circuit

The AC terminals are located in the upper left hand portion of the main board. The main board supervises the main AC power and provides indication that the AC power is absent. The terminals are rated at 120/240 VAC 50/60 Hz and are labeled "AC POWER" on the board.

Figure 5. PFC-4410G3 AC Terminals



The earth ground connection is marked as **"** ⏚ **"** and is separate from the two terminals for Line (L) and Neutral (N) connections.

The AC input power rating is: Maximum of 3.0A at the nominal 120/240V VAC rating.

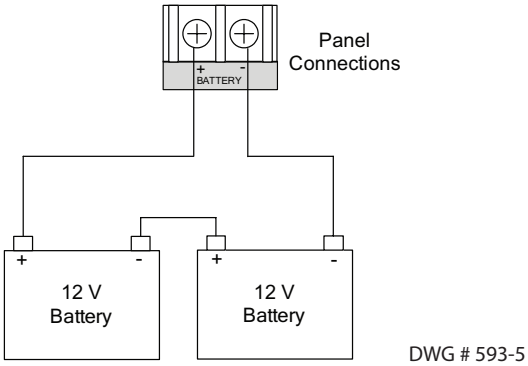
Battery Connections

The battery charging circuit is located on the main panel in the lower left portion of the board. The battery charging current is 1.0 amp typical; the charging voltage is approximately 27.3 VDC and is supervised.

Note: The battery should be clearly labeled as *"Sealed Lead Acid Battery"* or equivalent UL listed or UL Recognized.

Connect the battery wire leads to the terminal connections, as shown, observing proper polarity

Figure 6. PFC-4410G3 Battery Connections



Section 3: Installation

This section covers how to install Input Circuits (IDCs), Notification Appliance Circuits (Outputs) and P-Link modules. Wiring requirements and configuration examples are included throughout this section. Please read this section carefully before installing detectors and accessories to insure proper installation.

Initiating Device Circuit Installation

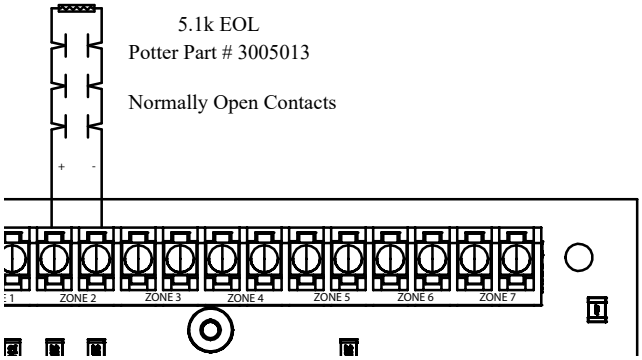
The panel is equipped with seven (7) programmable contact inputs or Initiating Device Circuits (IDC). They are power-limited and supervised. All inputs are suitable to monitor 2-wire smoke detectors. Smoke detectors shall be installed in compliance with NFPA 72. Inputs can also be used for automatic, manual, waterflow or supervisory service.

Input Wiring Specification

- Maximum short circuit current = 47 mA
- Maximum wiring resistance = 100 Ohms except Linear heat detection cable, 700 ohms per zone
- Maximum wiring capacitance = 30 uF
- Maximum wire length in feet = 10,000 feet
- Normal standby current = 2.5 mA
- Normal standby voltage = 15-29V

IDC Wiring Configuration

Figure 7. IDC Class B Wiring Example



Notes:

1. The Potter part number for the listed end of line assembly is #3005013 EOL Resistor Assembly.
2. The panel has ground fault detection on the input circuits. The impedance to ground for ground fault detection is 0 ohms.
3. The end of line resistor is a 5.1K ohm resistor.

Output Circuits Installation

There are four (4) Output circuits provided on the PFC-4410G3, each rated 3.0 amps continuous at 24VDC. The Output circuits may be configured for Class A or Class B. Class A wiring requires a Class A expansion board (CA-4064). Outputs may be programmed to provide steady (constant) voltage, a cadence pattern, releasing service or synchronized strobes. Full synchronization is maintained system-wide. The Outputs may be programmed as silenceable or non-silenceable.

An Output can be programmed for continiuous power while the panel is not in an Alarm condition, such as required for energizing a Door Holder. The Output is considered a special application type, with a maximum output current of 3A.

Output Wiring Characteristics

- Output is supervised and regulated.
- Circuit is power limited.
- Maximum Output current is 3.0 Amps

Note: Type of Output is selectable, and may be configured for strobe synchronization with Gentex®, AMSECO®, Wheelock®, or System Sensor®. Refer to the listing of compatible devices located in the *"Output Compatibility Document"*, Potter *#5403592*, for this information.

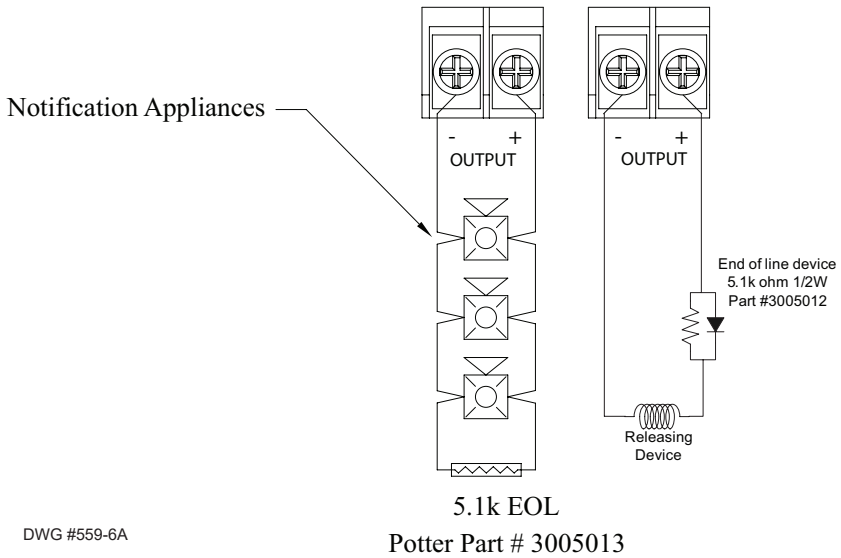
Output Maximum Wiring Impedance Formula

The maximum impedance is a *function* of the *load* placed on the circuit. To calculate the maximum line current impedance, use the following formula:

(Alarm Current of Notification Appliance) x (Wire Resistance) < 3.0 Volts

Output Wiring Configuration

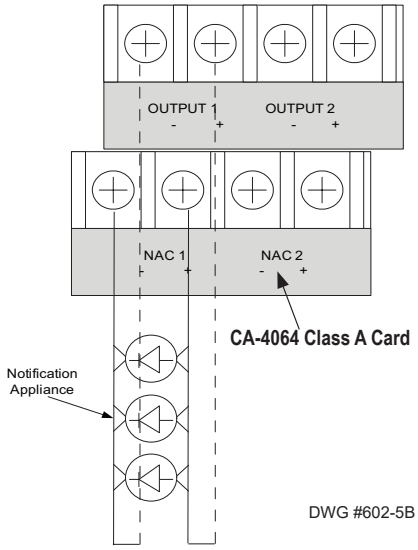
Figure 8. Output Class B Wiring Example



Notes:

1. The Potter part number for the listed end of line assembly is #3005013 EOL Resistor Assembly.
   Note: When a NAC is used as a releasing circuit, a Potter End of Line Diode (EOLD) assembly must be installed. The EOLD is Potter part number 3005012 and must be installed in accordance with the installation manual
2. The panel has ground fault detection on the Output circuits. The impedance to ground for ground fault detection is 0 ohms.

Figure 9. Class A Output Wiring Example (Requires the CA-4064 Expansion Board)



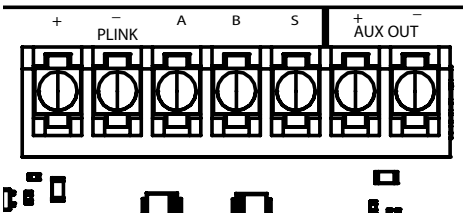
Auxiliary Power

The Auxiliary Power is a Class B 24 VDC special application output rated at a maximum of 1.0 Amp. The auxiliary power may be programmed as continuous or resettable 24VDC power.

Aux Power Characteristics

- The impedance to ground for ground fault detection is 0 ohms.
- Supervised and power-limited.
- Circuit is provided with battery back-up.
- 19.7-27.2 V
- Resettable for 4-wire smoke detectors

Figure 10. Auxiliary Connections Example



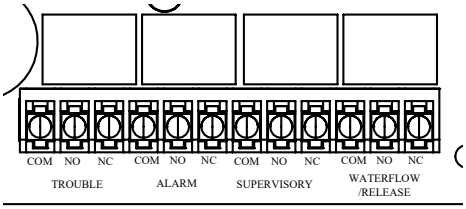
Relay Output Wiring

The panel has four (4) form C system relays: alarm, trouble, supervisory and waterflow. The trouble relay is a fail safe relay that changes position anytime a trouble condition occurs.

Relay Characteristics

- Relays have a contact rating of 3.0 A at 30 VDC Resistive.
- All wiring between relays and the remote device shall be limited to same room installation.

Figure 11. Relay Output Wiring



Class A Expander Installation (CA-4064)

Class A wiring configurations require the use of the CA-4064 expander board. Once the card is installed, the CA-4064 provides the return terminals for Outputs and P-Link devices. Refer to the figures below for examples of installing and wiring a Class A expander card.

Figure 12. Example of a Class A Expander Cards Shown Installed

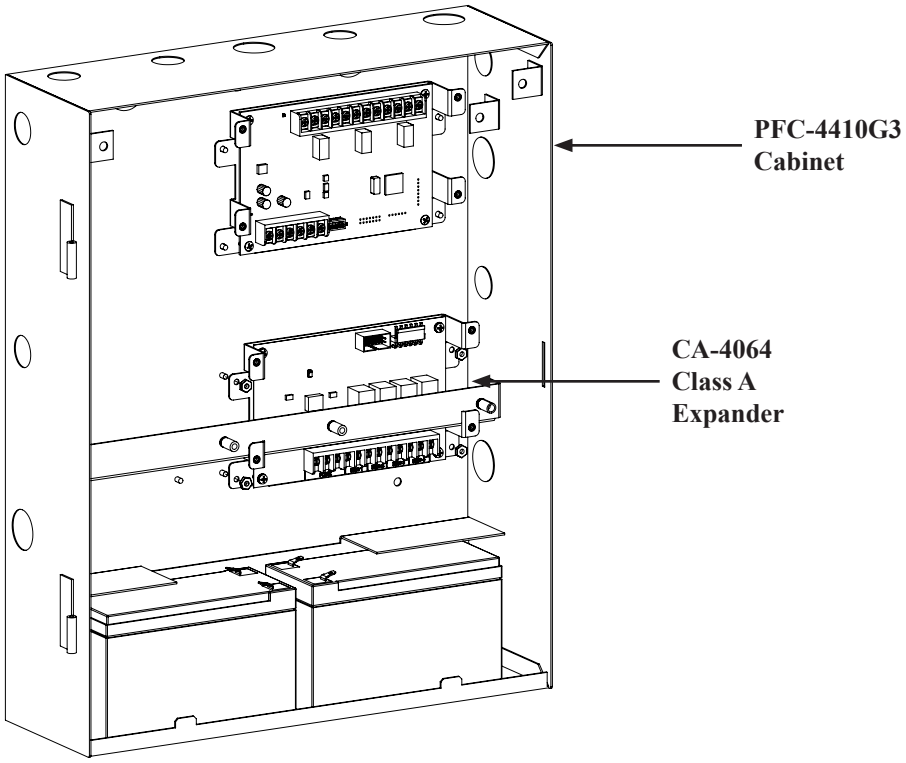


Figure 13. Example of Installing and Wiring a Class A Expander Card

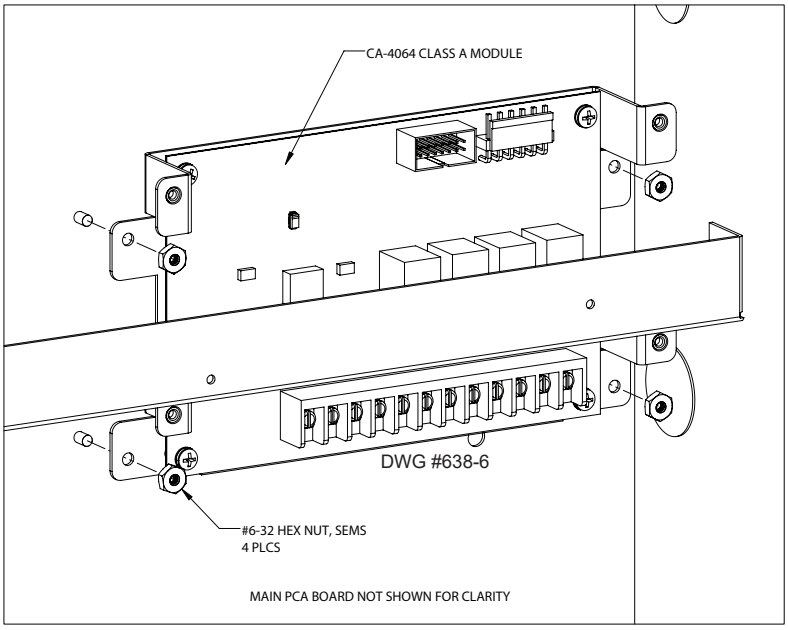


Figure 14. Installed Class A Card

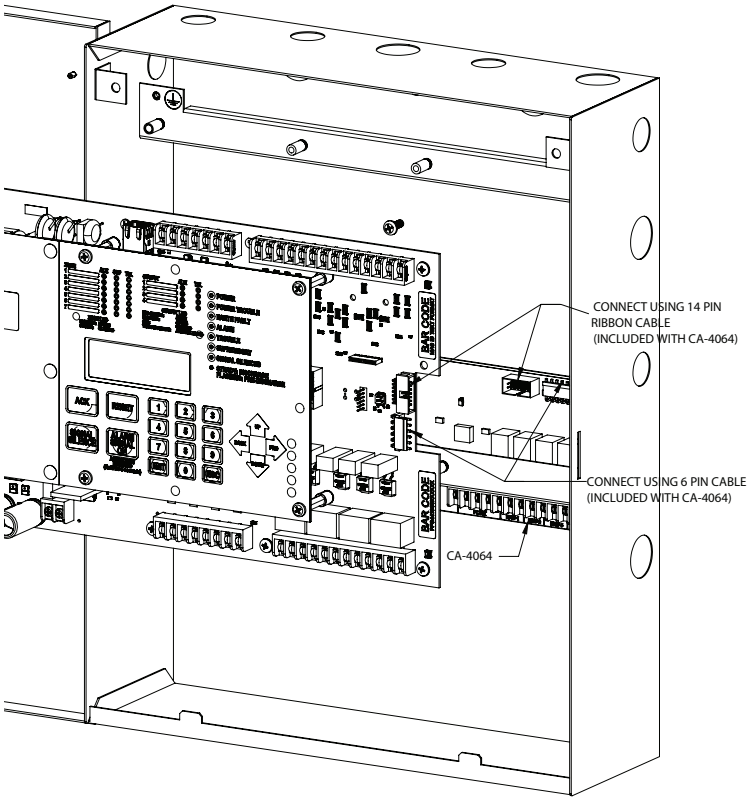
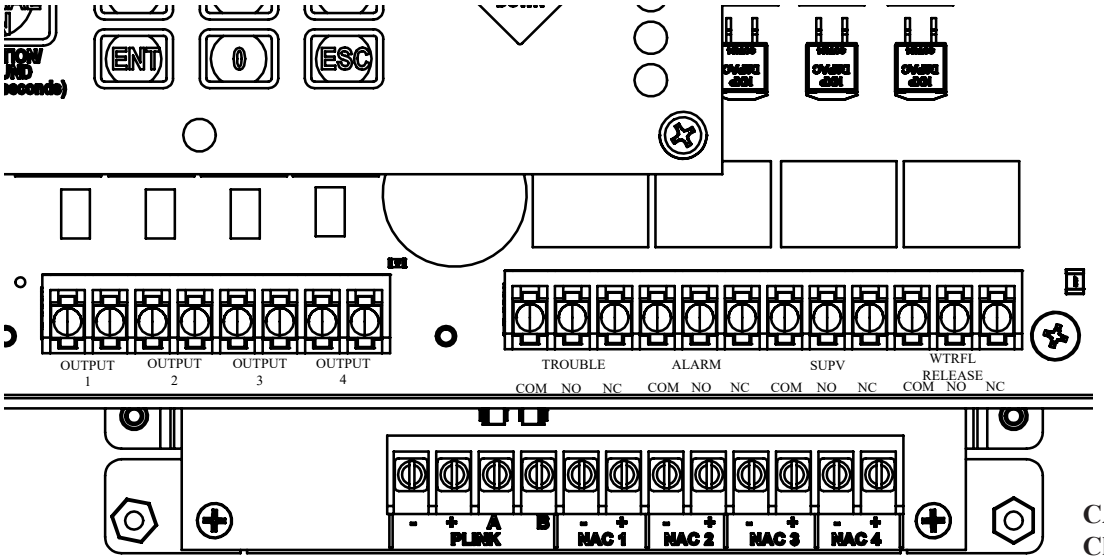


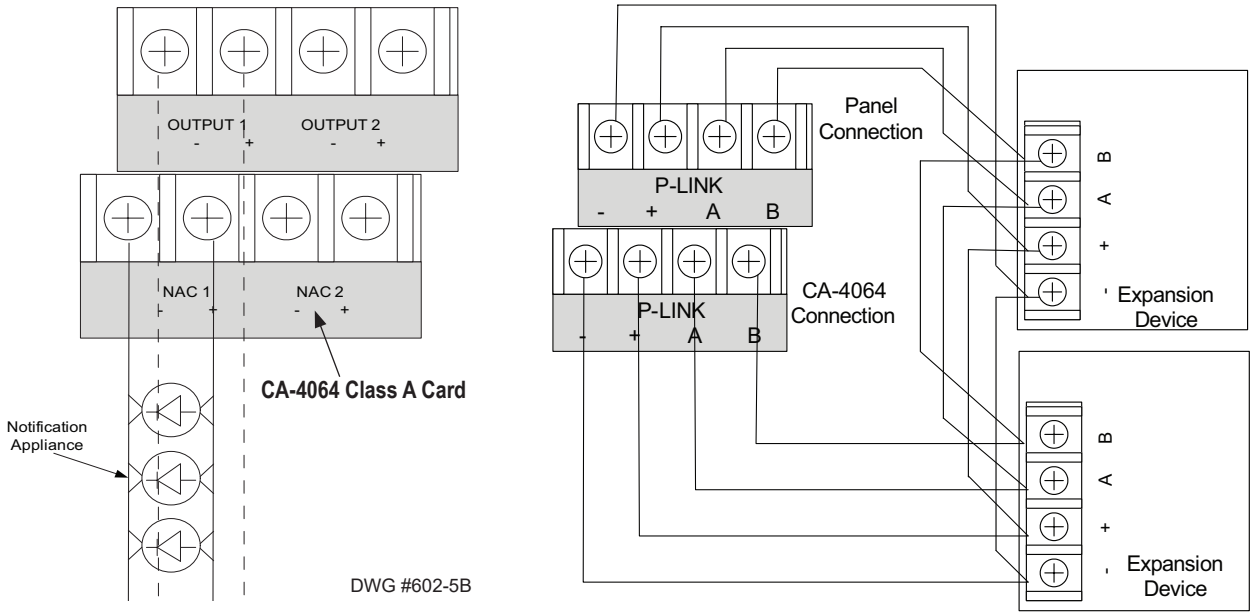
Figure 15. Example of CA-4064 Module Installed Behind Main PCA



PFC-4410G3 Main PCA

CA-4064 Class A Expander

Figure 16. Example of Output Wiring for CA-4064 and Class A P-Link Wiring



Installation Notes:

1. One (1) CA-4064 Class A expander may be installed per panel.
2. The CA-4064 provides the terminals for Outputs and P-Link.

P-Link Modules

P-Links modules such as the IDC-6, remote annunciators, and relay expansion boards (RLY-5) are connected to the main control panel utilizing the four-wire P-Link bus for power and communication. This panel supports a maximum of thirty-one (31) P-Link modules, which can be connected using a Class B or Class A wiring *(examples are provided throughout this topic).*

Note: P-Link Class A wiring requires the installation of a Class A Expander board (CA-4064). Instructions on installing the CA-4064 are included in this section.

Configuration Characteristics

- P-Link maximum current is 1A.
- P-Link voltage rating is 16VDC - 27.2VDC Continuous
- P-Link circuit is supervised and power-limited.
- The maximum wire length is 6,500 feet.

Maximum Wire Resistance Formula

The maximum resistance is based on the *load* placed on the circuit. To calculate the maximum wire resistance, use the following formula:

(Total P-Link Devive Current) x (Wire Resistance) < 3 Volts

The worst case P-Link current draw cannot exceed the 1 amp. P-Link wiring gauges and lengths are calculated using the worst-case current draw values from the table below. The worst case current draw numbers are used only for wiring calculations, refer to the battery calculation worksheet for normal standby and alarm currents.

Table 6: P-Link Accessories Worst Case Current Draw (mA)

P-Link Accessory	Worst Case Current Draw (mA)
PSN-1000	15
LED-4410G3	25
RLY-5	35
RA-4410G3	31
IDC-6	20

Figure 17. P-Link Device Class B, Wiring Example

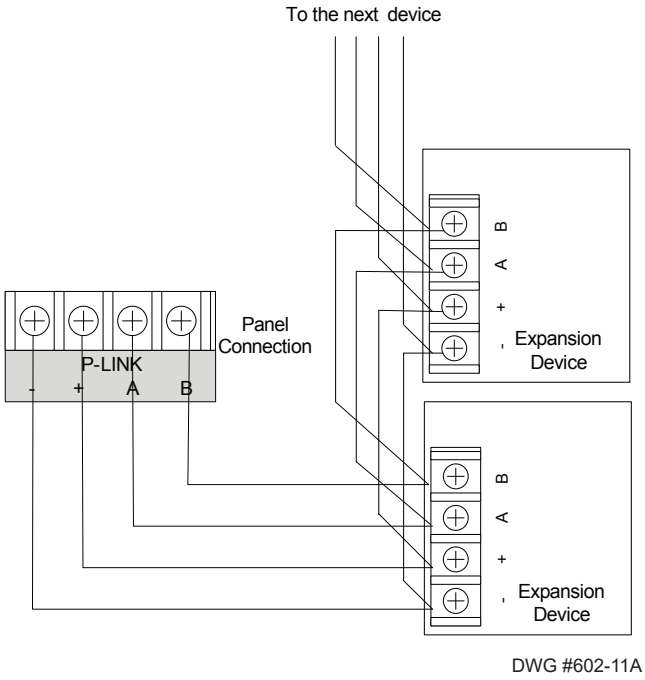
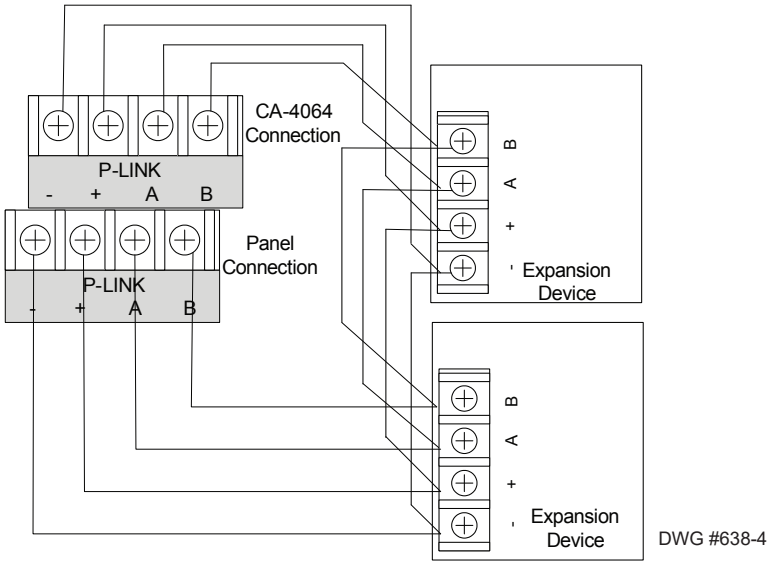


Figure 18. P-Link Device Class A Wiring Example (Requires CA-4064)



Addressing P-Link Modules

P-Link modules' addresses are set by changing the dip switches located on each device.

P-Link Addresses

Every P-Link device has a five position dip switch which is used to program the device address ranging from one (1) to thirty-one (31). Use the table below to reference Dip Switch Settings:

Address	Dip Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
1	On	Off	Off	Off	Off
2	Off	On	Off	Off	Off
3	On	On	Off	Off	Off
4	Off	Off	On	Off	Off
5	On	Off	On	Off	Off
6	Off	On	On	Off	Off
7	On	On	On	Off	Off
8	Off	Off	Off	On	Off
9	On	Off	Off	On	Off
10	Off	On	Off	On	Off
11	On	On	Off	On	Off
12	Off	Off	On	On	Off
13	On	Off	On	On	Off
14	Off	On	On	On	Off
15	On	On	On	On	Off
16	Off	Off	Off	Off	On

Address	Dip Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
17	On	Off	Off	Off	On
18	Off	On	Off	Off	On
19	On	On	Off	Off	On
20	Off	Off	On	Off	On
21	On	Off	On	Off	On
22	Off	On	On	Off	On
23	On	On	On	Off	On
24	Off	Off	Off	On	On
25	On	Off	Off	On	On
26	Off	On	Off	On	On
27	On	On	Off	On	On
28	Off	Off	On	On	On
29	On	Off	On	On	On
30	Off	On	On	On	On
31	On	On	On	On	On

Note: When assigning dip switch addresses, each device must have a unique number within each device type group. For example, a group of LCD annunciators may be assigned 1-10, and PSN-1000 power expansion boards may also be assigned 1-10.

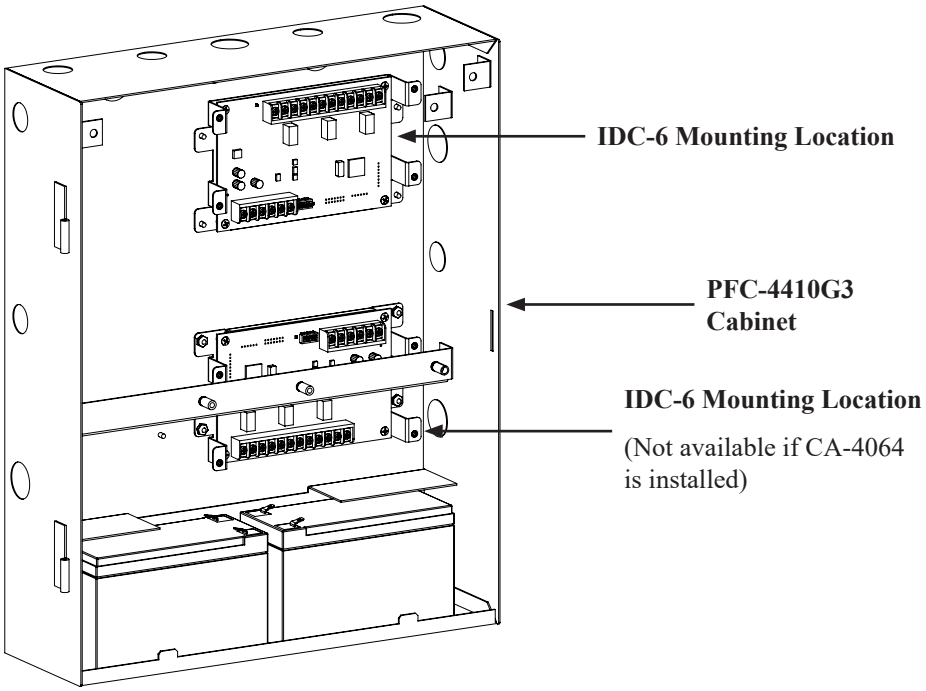
Module Installation

Initiating Device Circuit Module - IDC-6

The panel supports up to four (4) IDC-6 modules. The IDC-6 is controlled over the 4 wire P-Link connection. The IDC-6 mounts in the panel cabinet (up to two (2)) as shown below. It also can be mounted in the AE-2, AE-8 or AE-14 accessory cabinets..

Note: When using an accessory cabinet, the cabinet MUST be mounted within 20 feet of the panel or power supply

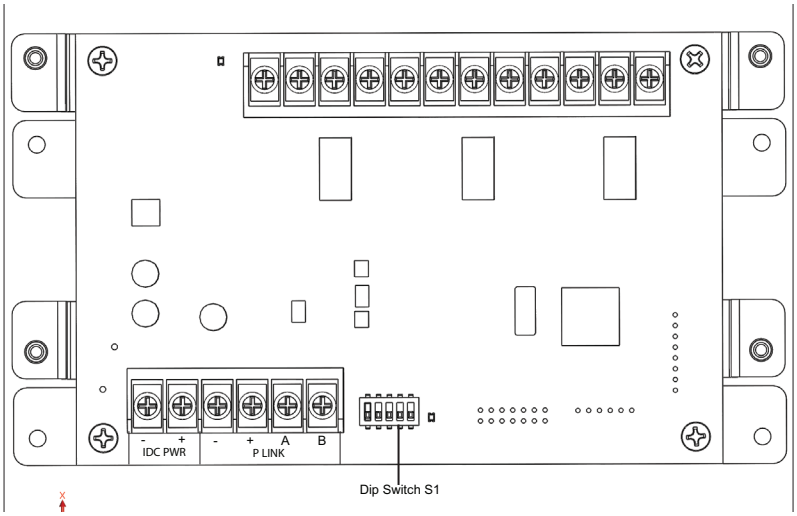
Figure 19. IDC-6 Module locations



Setting Address

The IDC-6's address is set by **dip switch S1** (*as shown below*). The address must be set in the range of one to thirty-one (1–31) to be recognized by the panel. (*Refer to the "P-Link Addresses" table shown earlier in this section for DIP switch programming.*)

Figure 20. IDC-6 Dip Switch locations



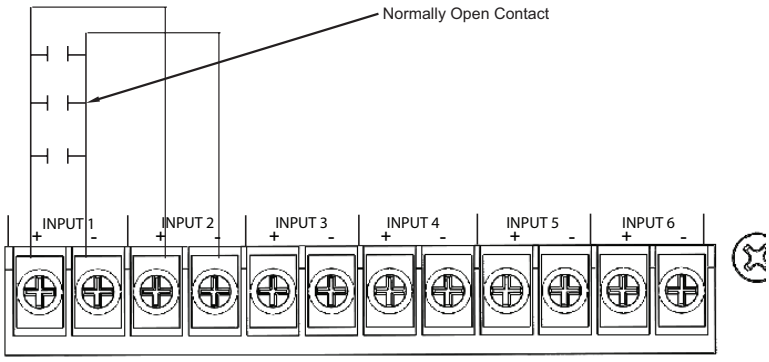
Input Wiring Specification

- Maximum short circuit current = 47mA
- Maximum wiring resistance = 100 Ohms
- Maximum wiring capacitance = 1 mF
- Maximum wire length in feet = 10,000 feet
- Normal standby current = 2.5 mA
- IDC operating voltage range = 15VDC – 28VDC

IDC-6 Wiring Configuration

The IDC-6's may be configured and installed as Class B or Class A. Please refer to the following examples:

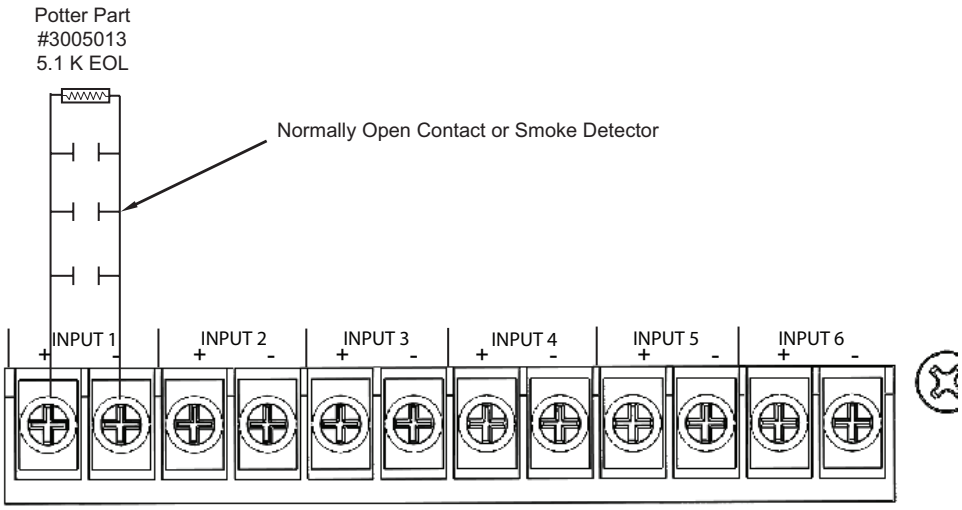
Figure 21. Example of IDC-6 Class A Wiring



Input Circuit Class A Notes:

1. Maximum wiring resistance must not exceed 100 ohms.
2. The input has ground fault detection with 0 ohm impedance to ground.

Figure 22. Example of IDC-6 Class B Wiring



Input Circuit Class B Notes:

1. Maximum wiring resistance must not exceed 100 ohms.
2. The input has ground fault detection with 0 ohm impedance to ground.
3. The Potter part number for the listed end of line assembly is #3005013 EOL Resistor Asssembly.

IDC PWR can be provided by any listed source

Figure 23. Class B P-Link and IDC Power Wiring

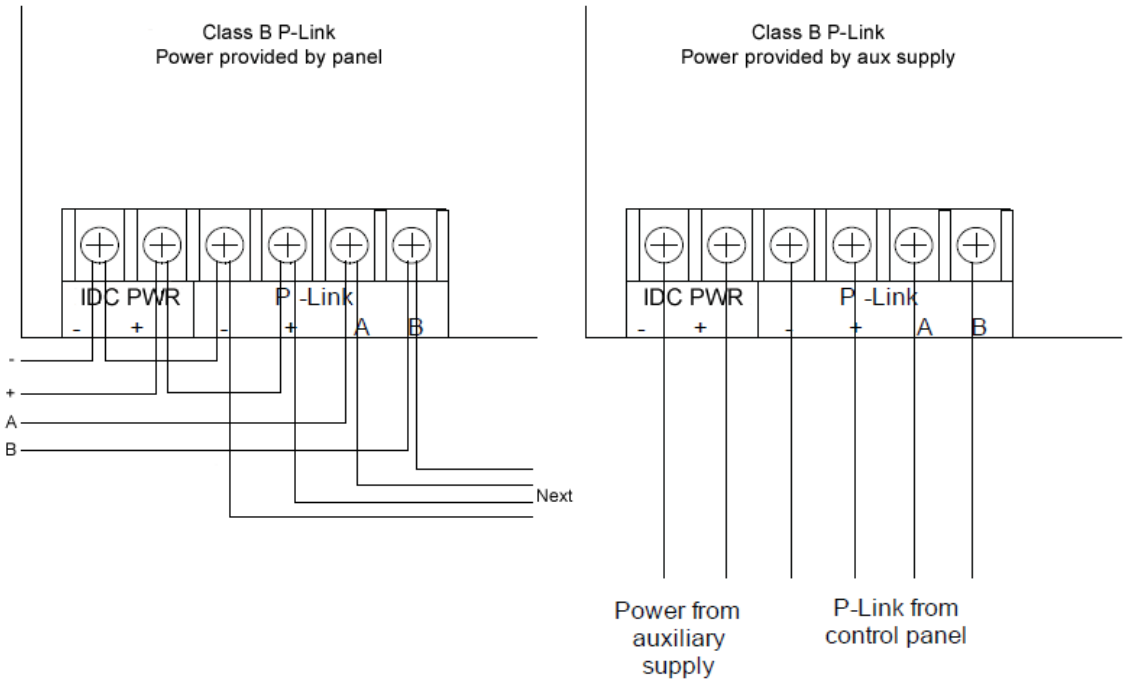
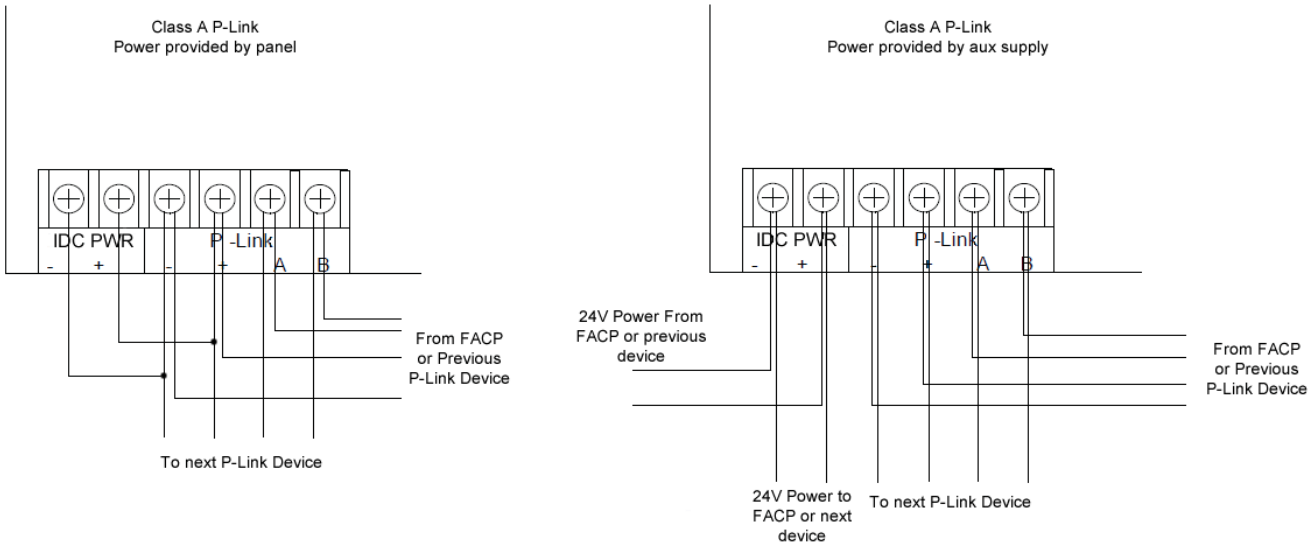


Figure 24. Class A P-Link and IDC Power Wiring



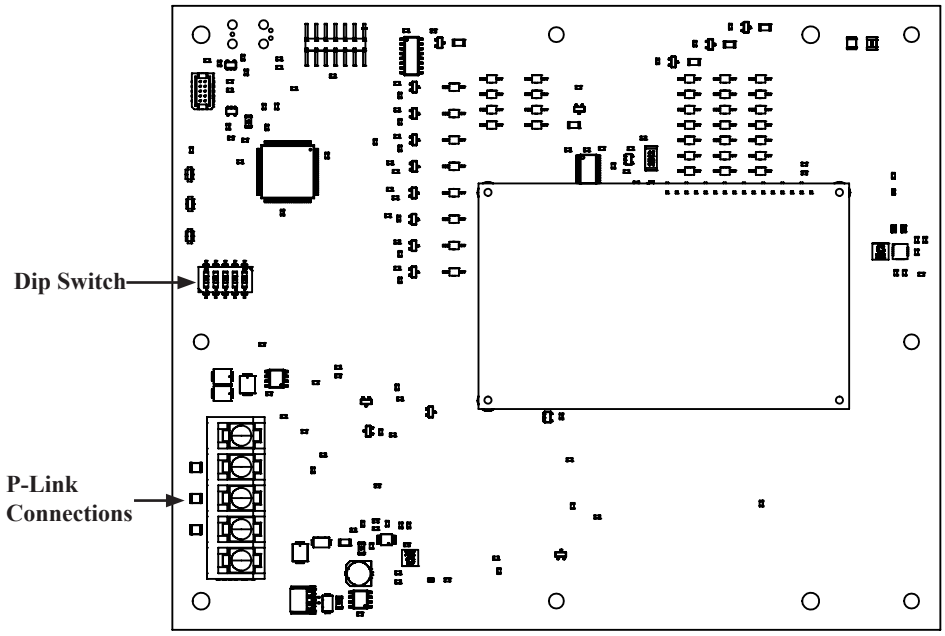
Remote Annunciators Installation

Up to 31 RA-4410G3 annunciators can be connected to the PFC-4410G3. The RA-4410G3 provides the same user interface including the same LED and LCD display and keypad as the main panel.

Setting Addresses

An annunciator's address is set by **dip switch S21**, which is located on the back of the annunciator. The address must be set in the range of one to thirty one (1–31) to be recognized by the panel. *(Refer to the "P-Link Addresses" table)*

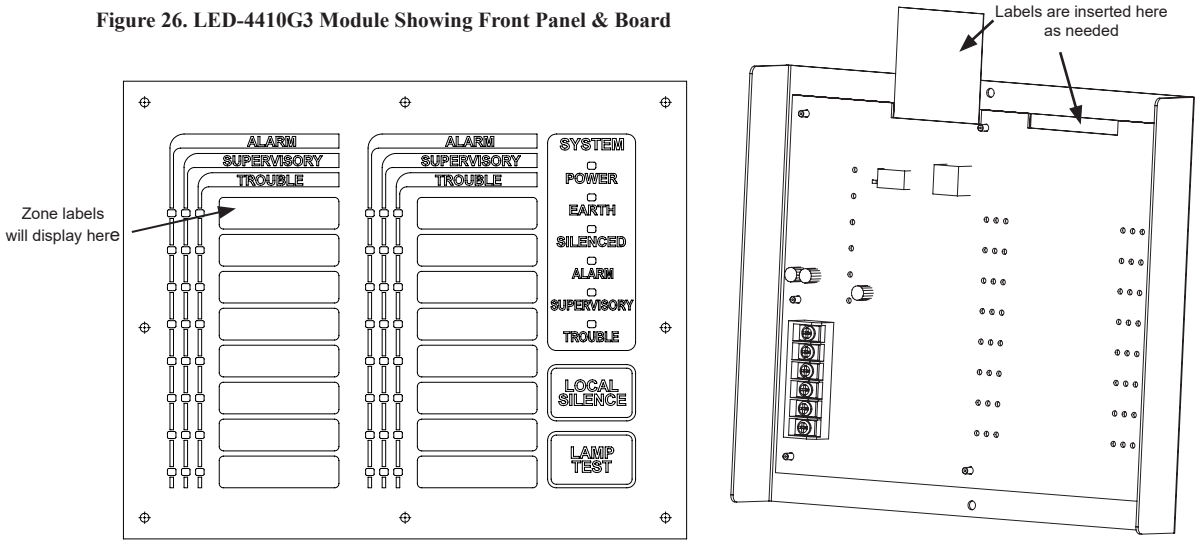
Figure 25. Annunciator Back Panel View



LED Annunciator Installation (LED-4410G3)

The panel supports up to ten (10) LED-4410G3 Annunciators.The LED-4410G3 displays alarm, supervisory, and trouble conditions for up to16 zones per annunciator. They also provide *Local Silence and Lamp Test* functionality. Blank zone labels are provided for use with the LED annunciators to label each zone name or identifier. The labels may be printed or written on the supplied card-stock, and then inserted into the back of the front panel as shown in the right-most figure below.

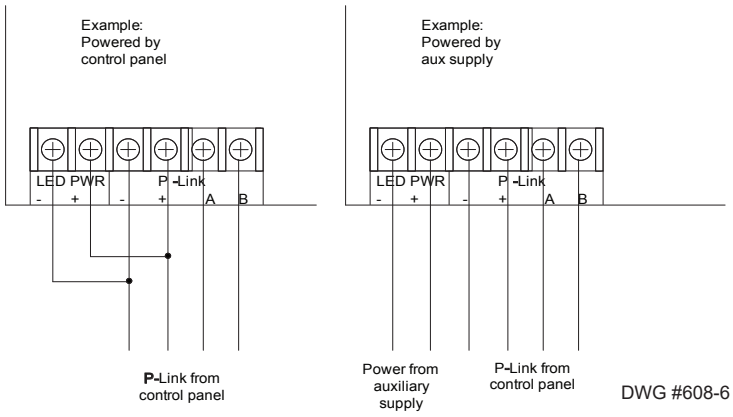
Figure 26. LED-4410G3 Module Showing Front Panel & Board



DWG # FIG 2 DWG #608-5

The LED-4410G3 is controlled over the 4-wire P-Link connection. The higher current required for the LED outputs can be provided by the panel, or from an auxiliary power source as shown below. The auxiliary power can be any 24VDC source, and is fully supervised.

Figure 27. Examples of Wiring LED-4410G3 Module to Control Panel or Auxiliary Power Supply

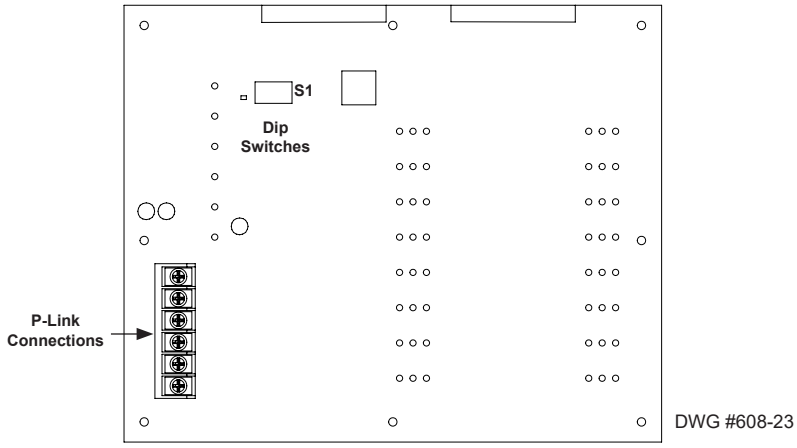


DWG #608-6

Setting Addresses

The LED-4410G3 address is set by **dip switch S1.** The address must be set in the range of one to thirty-one (1–31) to be recognized by the panel. *(Refer to the **"P-Link Addresses" table**)*

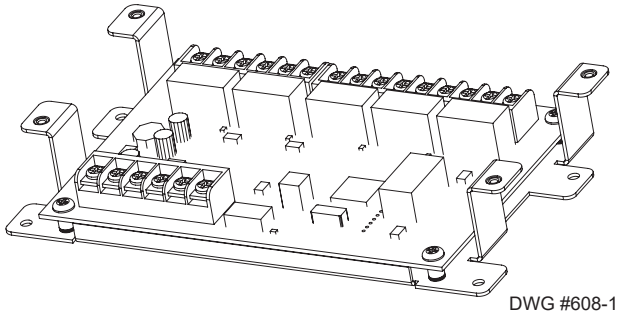
Figure 28. LED-4410G3 Panel Showing Dip Switch Location



Relay Board Installation (RLY-5)

The panel supports up to thirty-one (31) RLY-5 (Relay Board) modules. Each RLY-5 provides 5 programmable output relays, which can be individually mapped to any zone. The RLY-5 is controlled over the 4-wire P-Link connection. The RLY-5 mounts in a mounting bracket as shown below, and then installed into the panel cabinet, or in either of theAE-2, AE-8 or AE-14 accessory cabinets.

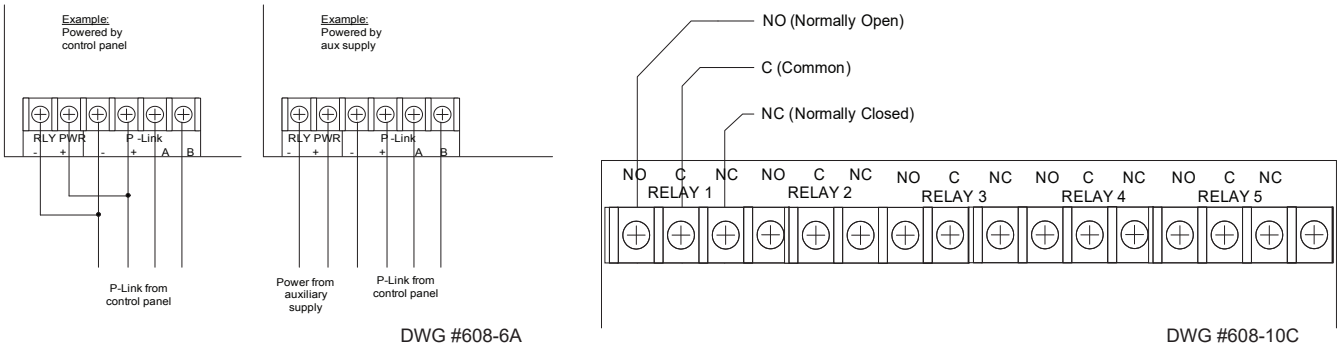
Figure 29. RLY-5 Board Showing Mounting Bracket



DWG #608-10

The RLY-5 higher current required for the relay outputs can be provided by the panel, or from an auxiliary power source as shown below. The auxiliary power can be any listed 24VDC source, and is fully supervised.

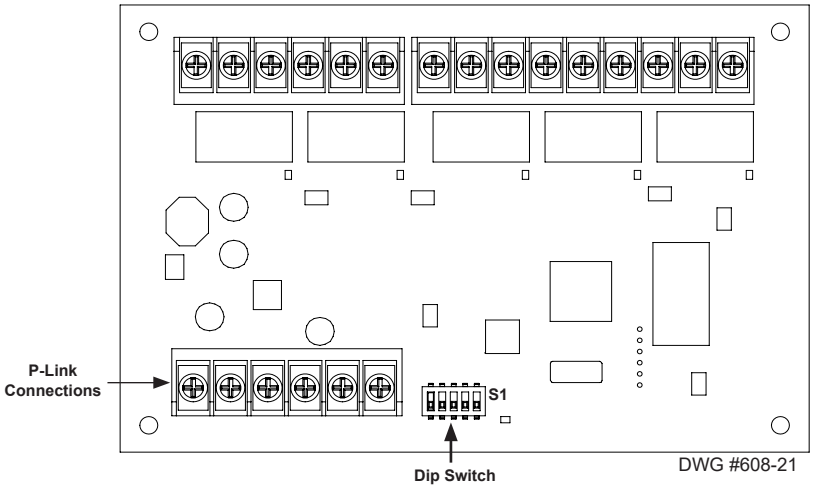
Figure 30. RLY-5 Wiring to Control Panel /Auxiliary Power Supply Examples & RLY-5 Showing Normally Open/Normally Closed Contacts



Setting Addresses

The RLY-5's address is set by **dip switch S1**. The address must be set in the range of one to thirty-one (1–31) to be recognized by the panel. *(Refer to the "**P-Link Addresses" table)***

Figure 31. Relay Board Panel View Showing Dip Switch Location



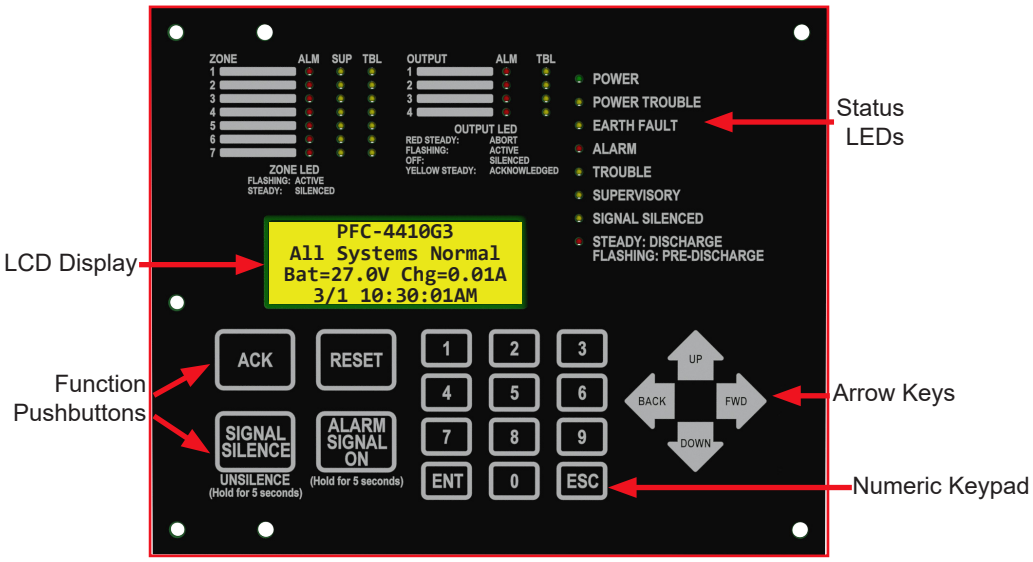
Section 4: Operation

This section provides an overview of the control panel's basic operations, which includes the status LEDs, function pushbuttons, and a Control Panel Menu Tree quick reference sheet.

Control Panel Basic Operation

The control panel is comprised of a four (4) line x 20-character LCD display panel, arrow keys, push button function keys, status LEDS, and the numeric keypad. A description of each component is included in this section; please refer to the figure shown below.

Figure 32. PFC-4410G3 Control Panel Display

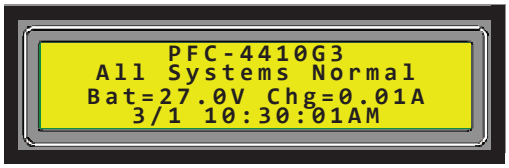


Note: Authorized system operators must use a key to open the outer door of the cabinet.

LCD Display

The LCD panel displays the standard *Start-up menu* as shown below. The LCD displays up to eighty (80) characters of information, providing important feedback to system users, *i.e., system messages, status information, trouble conditions, or input changes*. The LCD also provides access to the Main Menu for daily system operations and specific programming functions.

Figure 33. LCD Start-Up Screen



Note: You may customize the Start-up screen to display a specific job site name or other relevant descriptive text.

- LCD brightness adjustment: Press ZERO and FWD ARROW will increase LCD brightness after reaching full brightness LCD will go to its lowest setting and continue increasing.

Menu Navigation Keys

The **arrow keys** allow you to scroll or move through the control panel menus. The **Ent** and **Esc** keys may also be used to navigate through menus; they are located on the numeric keypad. The table shown below provides a summary of the navigation keys.

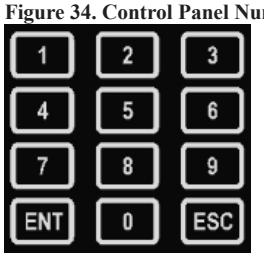
Table 7: Menu Navigation Keys

Push button	Description
UP DOWN	Moves/scrolls up or down through menus and events
FWD BACK	Scrolls to the left or right to display details, if any, of current menu item. **Note:** When the LCD panel displays a LEFT and/or RIGHT arrow, this indicates more information may be viewed.
ENT	Displays the Main Menu or selects the current menu option. **Note:** The blinking "→" indicates the current menu option.
ESC	Returns to previous menu or backs up to previous screen.

Numeric Keypad

The numeric keypad allows you to enter user codes when required to access restricted functions. Alternatively, the numbers may be used to quickly select menu options vs. using the arrow and Ent keys to select a function.

Figure 34. Control Panel Numeric Keypad



Function Pushbuttons

The four (4) function push buttons are used when system alarm / trouble conditions occur. Refer to the table below for a brief summary of the pushbuttons:

Table 8: Control Panel Pushbuttons

Pushbutton	Description
ACK	Press to *acknowledge* the currently displayed condition. The panel buzzer will automatically silence after all trouble and supervisory events have been acknowledged
SIGNAL SILENCE	Press to *silence* all outputs programmed as *silenceable* and buzzer. Press and hold for 5 seconds to Unsilence outputs.
RESET	Press to *reset* panel to *normal condition*.
ALARM SIGNAL ON	Press and hold for 5 seconds to activate alarm signal output circuits Note: Alarm signal activation does not activate outputs classified as second alarms.

Status LEDs

The control panel's LEDs communicate system conditions by illuminating and/or flashing the applicable **green**, **red** or **amber** indicators. These are described in the table below.

Figure 35. Control Panel System Status LEDs

Table 9: System Status LEDs

LED Type	LED Color/Action	Description
POWER ON	Steady Green	AC Power is Present **Note:** If AC power is absent for more than 5 seconds, LED will extinguish.
POWER TROUBLE	Flashing Amber	Flashes to indicate loss of or low AC power or battery trouble
EARTH FAULT	Flashing Amber	A ground fault is present.
ALARM	Flashing Red	An alarm device is active.
ALARM	Steady Red	All alarm conditions have been silenced
TROUBLE	Flashing Amber	A fault condition is present
TROUBLE	Steady Amber	All fault conditions have been acknowledged
SUPERVISORY	Flashing Amber	A Supervisory condition is present
SUPERVISORY	Steady Amber	All supervisory conditions have been acknowledged
SIGNAL SILENCED	Flashing Amber	An activated Output has been silenced
DISCHARGE	Steady Red	Release output has been activated
PREDISCHARGE	Flashing Red	Predischarge timer is counting down to discharge/release

Figure 36. Control Panel Zone / Output Status LED

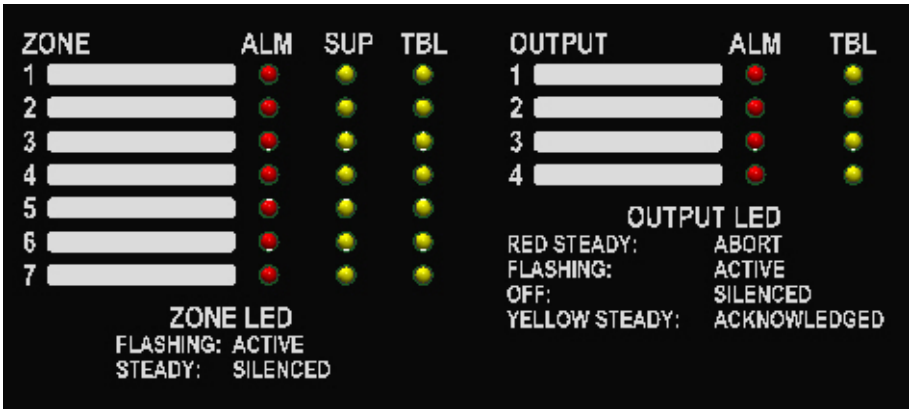


Table 10: System Status LEDs

LED Type	LED Color/Action	Description
TBL	Flashing Amber	Fault condition present
TBL	Steady Amber	Fault condition acknowledged
SUP	Flashing Amber	Supervisory condition present
SUP	Steady Amber	Supervisory condition acknowledged
Zone ALM	Flashing Red	Alarm zone active
Zone ALM	Steady Red	Alarm zone silenced
Output ALM	Flashing Red	Output active
Output ALM	Steady Red	Output aborted **Available in Agent Release Mode only*

Section 5: Programming

PFC-4410G3 Standard Program Information

The PFC-4410G3 has 28 standard program templates which are detailed on the following pages. Selecting one of these programs will automatically program every function of the panel except custom zone and banner messages.
NOTE:
The release soak time defaults to continuous for all programs.
In the Agent suppression programs, the predischarge timer for detectors defaults to 60 seconds. The predischarge timer for manual stations defaults to 30 seconds. The abort mode defaults to UL.

Default programming allows the activation of a zone programmed as, Manual Release, to override any cross zoning and abort to activate the release output it is mapped to. Abort override can be changed in the panel programming by allowing manual release zones to be aborted.

Default programming does not allow zones programmed as Manual Release to be aborted. This can be changed in the panel programming.

PFC-4410G3 Standard Program Information

Press ENT to enter program mode.
Scroll down to see the various menu options. A blinking arrow ⟶ indicates the current option.
Users can also simply enter the option number. See the Menu Tree for a complete list and location of options
Follow the on-screen instructions
NOTE: Some options have YES/NO selections. Use the up/down arrows to change selection.

To enter one of the standard programs:

1. Press ENT
2. Enter 6 or scroll down to PROGRAMMING, indicated by a flashing ⟶ and press ENT.
3. Enter the password. Factory default password is, 1111.
4. Press 1 OR ENT to select PRORGAM NUMBER.
5. Enter the desired program number
6. Press ENT
7. Press 1 to accept the new program
8. Press ENT to accept the change and update the panel

All zones and outputs are now programmed and all mapping of zones to correlating outputs is complete.
For abort functionality (available in Agent Release Mode only), pre-discharge or soak timers are required, repeat steps 1-3. Then select the desired option and follow the on-screen instructions.
Modifications to standard programs can only be accomplished using the Potter programming tool.

The following is an explanation of how the various programs operate and information about the types of devices that are to be connected to the input (Initiating) zones and output (NAC) circuits.
If none of the standard programs are acceptable for the operation required, selecting program 0 allows the user to create a custom program. Standard programs can also me modified to create custom programs. Simply select the standard program that is closest to the operation needed. Then selecting program 0 allows the user to make changes to the previously selected program as necessary.

If zone characteristics need to be modified, including latching, output paterns, manual/auto silence behiavior. Repeat steps 1-6 above and select program 0. After the panel restarts to edit zone characteristics repeat steps 1-3 and select 6 ZONES.

The water based extinguishing programs are numbered 1-15 and 30-34. The agent extinguishing programs are numbered 20-24.

To enable Class A on zones 3 or 4:

1. Install IDC-6 with address 16 as described on pg. 3-23
2. Press ENT
3. Enter 8 or scroll down to PANEL SETUP, indicated by a flashing → and press ENT
4. Enter the password. Factory default is 1111.
5. Enter 2 or scroll down to LEARN MENU, indicated by a flashing → and press ENT
6. Press 1 OR ENT to select LEARN ALL

The panel will search for connected devices

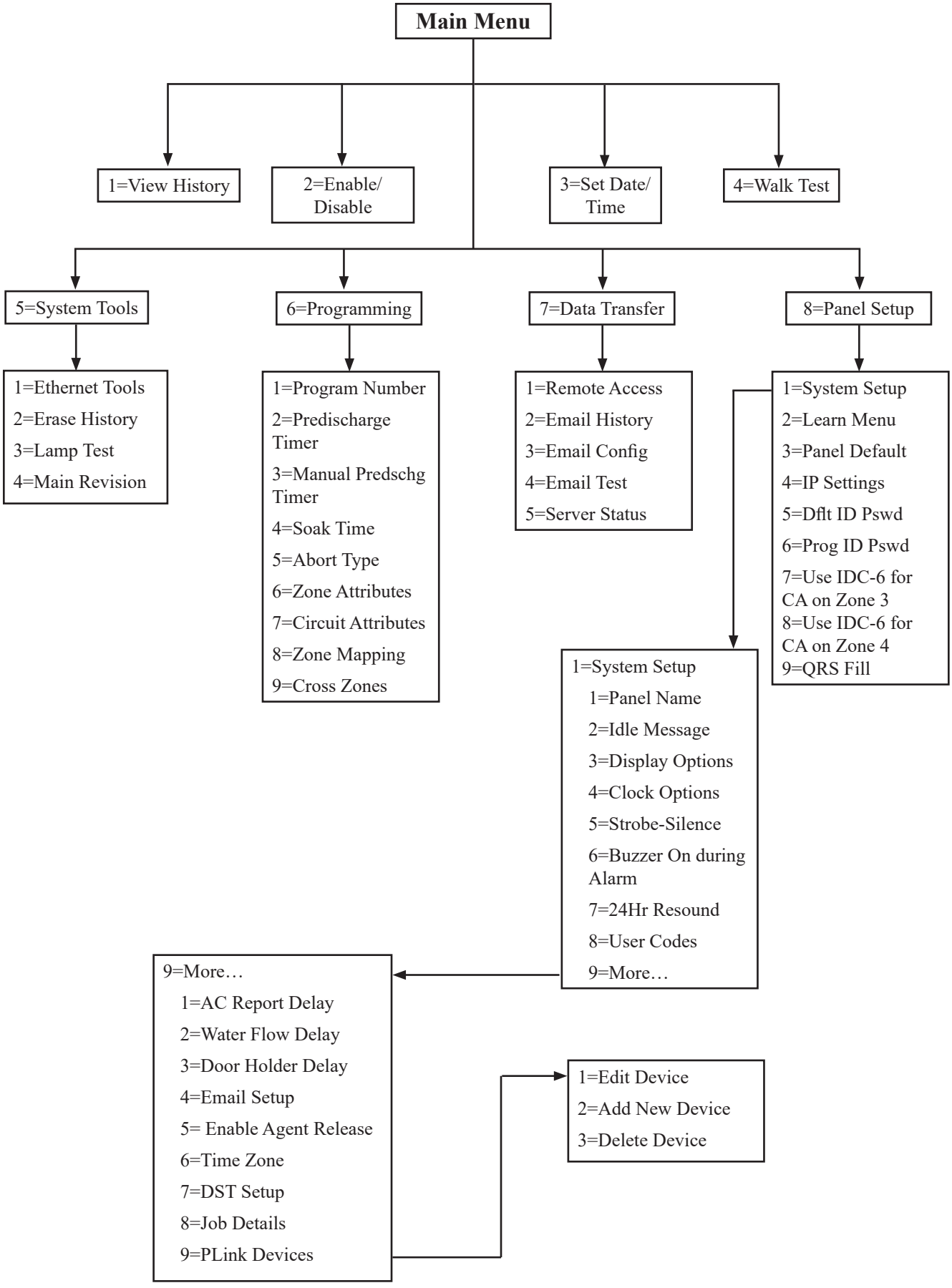
7. Press 1 or ENT to select P-LINK FOUND to review devices

Addr 16 (IDC-6)

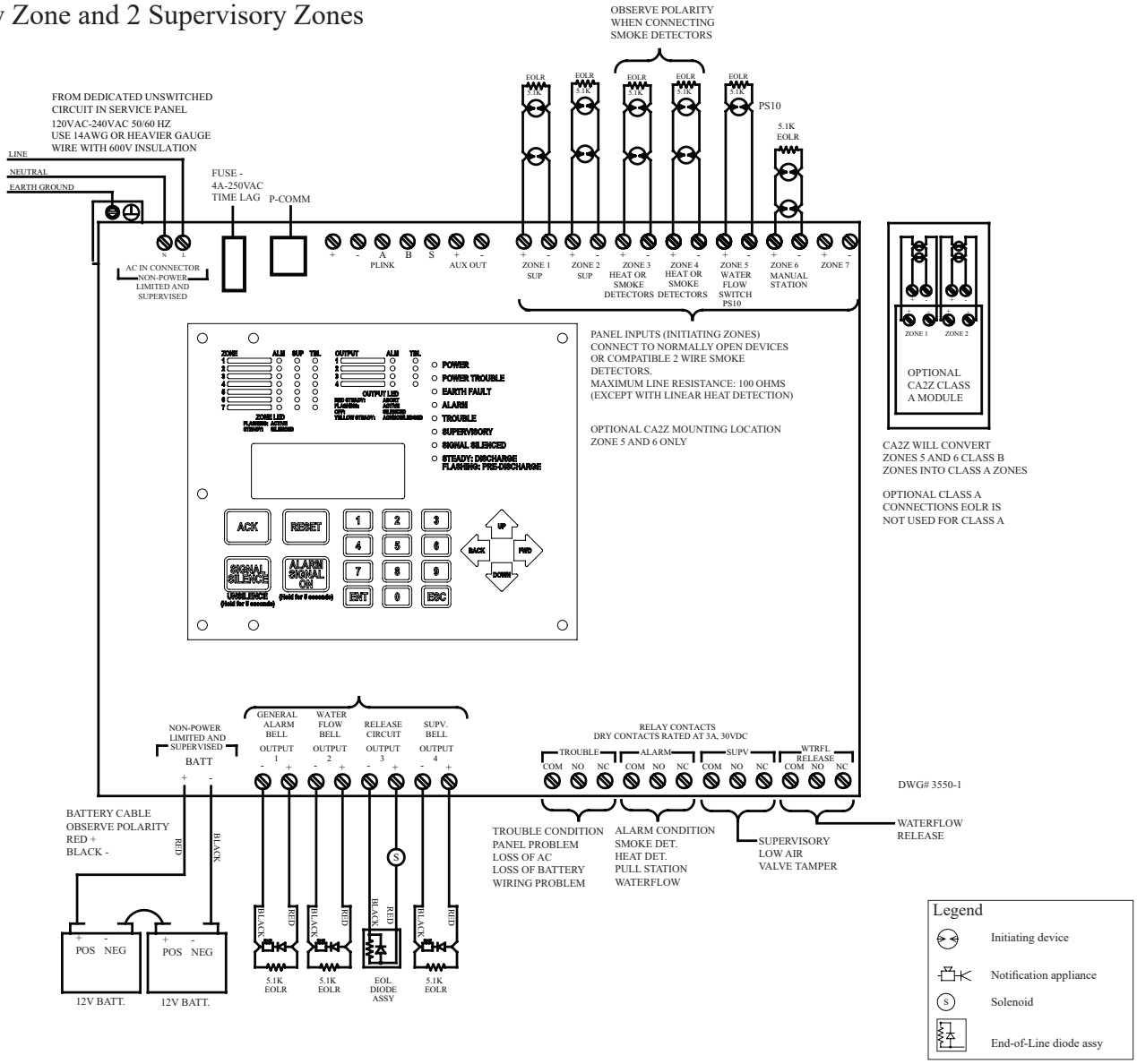
8. Press ESC to exit learn all menu
9. Press 1 to Accept the new devices
10. Press ENT to accept the change and update the panel
11. Press ENT
12. Enter 8 or scroll down to PANEL SETUP, indicated by a flashing → and press ENT
13. Enter the password. Factory default is 1111.
14. Enter 7 or scroll down to IDC6 F/CA ZONE 3, indicated by a flashing → and press ENT
15. Press any key to accept
16. Press ESC to exit PANEL SETUP menu
17. Press 1 to Accept
18. Press ENT to accept the change and update the panel

Repeat steps 11 – 18 using 8 or scroll down to IDC6 F/CA ZONE 4 to enable class A for zone 4. Zone 3 class A wiring to INPUT 3 / INPUT 4 on IDC-6 address 16 as shown on page 3-24. Zone 4 class A wiring to INPUT 5 / INPUT 6 on IDC-6 address 16. When using standard program templets IDC-6 address 16 INPUTS 1 and INPUT 2 are unused.

Menu Tree


Main Menu
1=View History
2=Enable/ Disable
3=Set Date/ Time
4=Walk Test
5=System Tools
1=Ethernet Tools
2=Erase History
3=Lamp Test
4=Main Revision
6=Programming
1=Program Number
2=Predischarge Timer
3=Manual Predschg Timer
4=Soak Time
5=Abort Type
6=Zone Attributes
7=Circuit Attributes
8=Zone Mapping
9=Cross Zones
7=Data Transfer
1=Remote Access
2=Email History
3=Email Config
4=Email Test
5=Server Status
8=Panel Setup
1=System Setup
2=Learn Menu
3=Panel Default
4=IP Settings
5=Dflt ID Pswd
6=Prog ID Pswd
7=Use IDC-6 for CA on Zone 3
8=Use IDC-6 for CA on Zone 4
9=QRS Fill
1=System Setup
1=Panel Name
2=Idle Message
3=Display Options
4=Clock Options
5=Strobe-Silence
6=Buzzer On during Alarm
7=24Hr Resound
8=User Codes
9=More…
9=More…
1=AC Report Delay
2=Water Flow Delay
3=Door Holder Delay
4=Email Setup
5= Enable Agent Release
6=Time Zone
7=DST Setup
8=Job Details
9=PLink Devices
1=Edit Device
2=Add New Device
3=Delete Device

Wiring Diagram Program #1
Single Hazard, 3 Alarm Zones with 1 Waterflow Zone and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33 VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information.
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #1 Mode

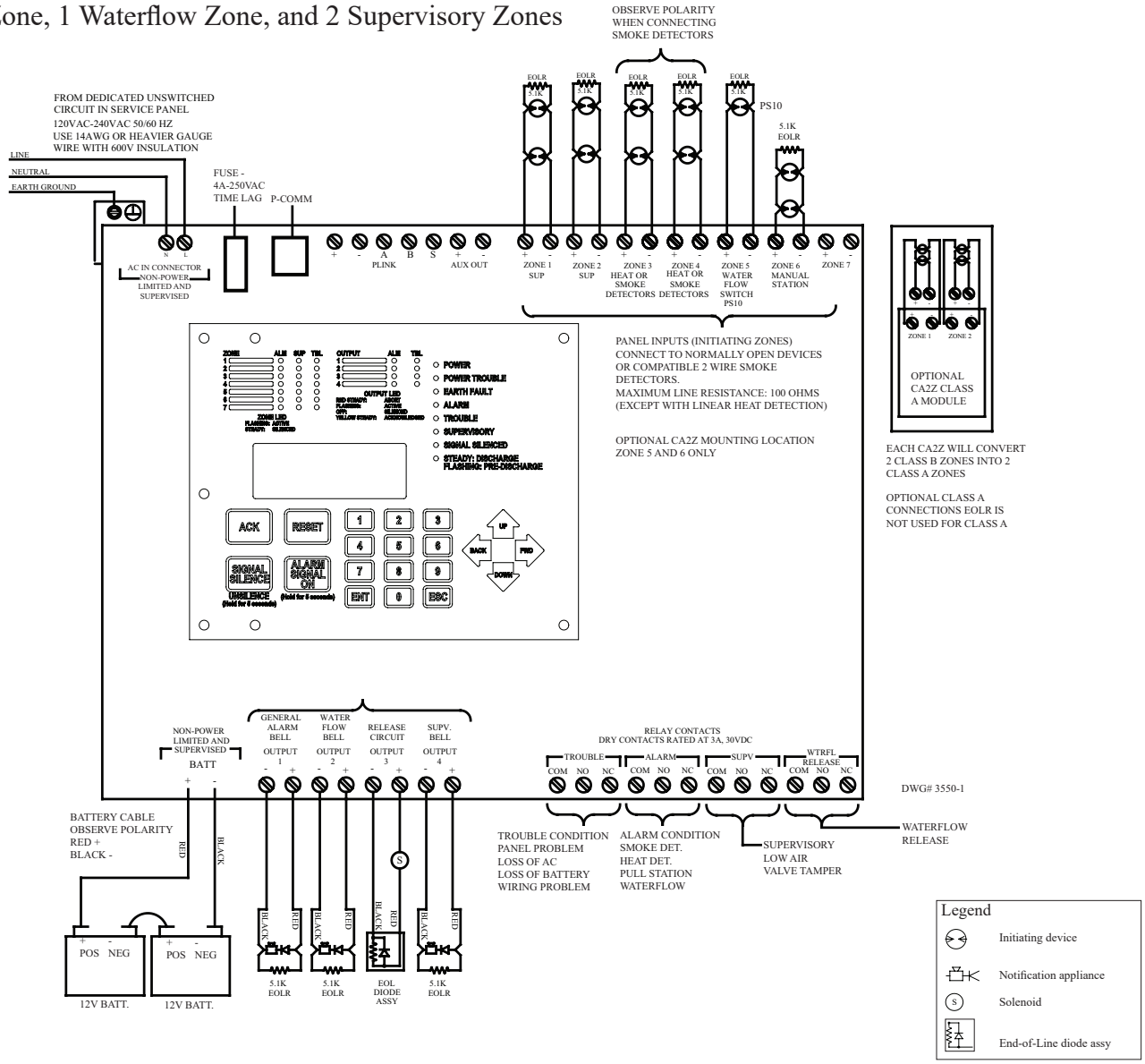
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 1 to change to program 1. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Non-Interlock or Single Interlock	PROGRAM #1						
Single Hazard, 3 Alarm Zones with 1 Waterflow Zone and 2 Supervisory Zones	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Manual Release	Unused
#1 ALARM INDICATING			X	X		X	
#2 ALARM INDICATING					X		
#3 RELEASE			X	X		X	
#4 SUPERVISORY	X	X					

Description: Single hazard - 3 zone
Inputs: 2 detection zones, 1 waterflow zone, 1 manual release zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 waterflow bell, 1 solenoid release circuit, 1 supervisory bell
Operation: Activation of either detection zone or the manual release zone will operate the release circuit and general alarm output.
Activation of the waterflow zone will operate the waterflow bell output.
Activation of the supervisory zone will operate the supervisory bell output.

When either zone 3, 4, or 6 is in alarm - output #1 (general alarm) and output #3 (solenoid release) will operate.
When zone 5 is in alarm - output #2 will operate (waterflow bell).
When the supervisory zone is activated - output #4 will operate (supervisory bell).

Wiring Diagram Program #2
Single Hazard, 2 Alarm Zones (Cross-Zoned), 1 Manual Station Zone, 1 Waterflow Zone, and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #2 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 2 to change to program 2. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Alarm Zones (Cross-Zoned), 1 Manual Station Zone, 1 Waterflow Zone and 2 Supervisory Zones	PROGRAM #2							
	Conventional Input Zones							Software Zone
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Manual Release	Unused	Release Zone Type
#1 ALARM INDICATING			X	X		X		X
#2 ALARM INDICATING					X			
#3 RELEASE			XX	XX		X		XX*
#4 SUPERVISORY	X	X						

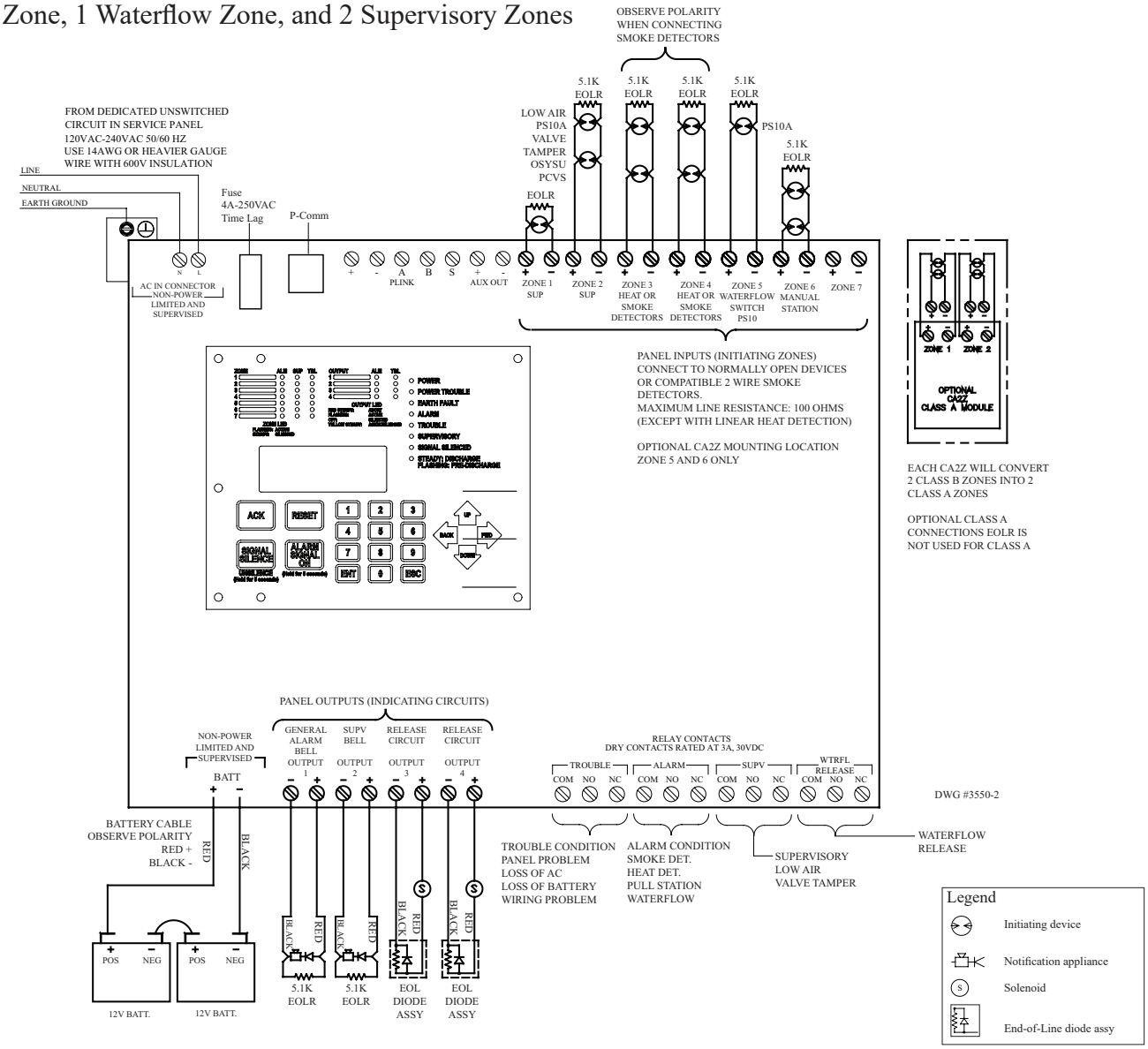
* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Single hazard, cross zone with manual station override.
Inputs: 2 detection zones (cross zoned), 1 waterflow zone, 1 manual release zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 waterflow bell, 1 solenoid release circuit, 1 supervisory bell
Operation: Activation of both detection zones at the same time, or activation of the manual release zone will operate the release output and the general alarm output.
Activation of one detection zone will operate the general alarm output.
Activation of the waterflow zone will operate the waterflow bell output.
Activation of the supervisory zone will operate the supervisory bell output.

When zone 3, 4 or 6 is in alarm - output #1 will operate (general alarm bell).
When zone 5 is in alarm - output #2 will operate (waterflow bell).
When both zones 3 and 4 are in alarm at the same time - output #3 will operate (solenoid release).
When zone 6 is in alarm - outputs #3 (solenoid release) and #1 (general alarm) will operate.

Wiring Diagram Program #3
Dual Hazard, Combined Release - 2 Alarm Zones, 1 Manual Station Zone, 1 Waterflow Zone, and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #3 Mode

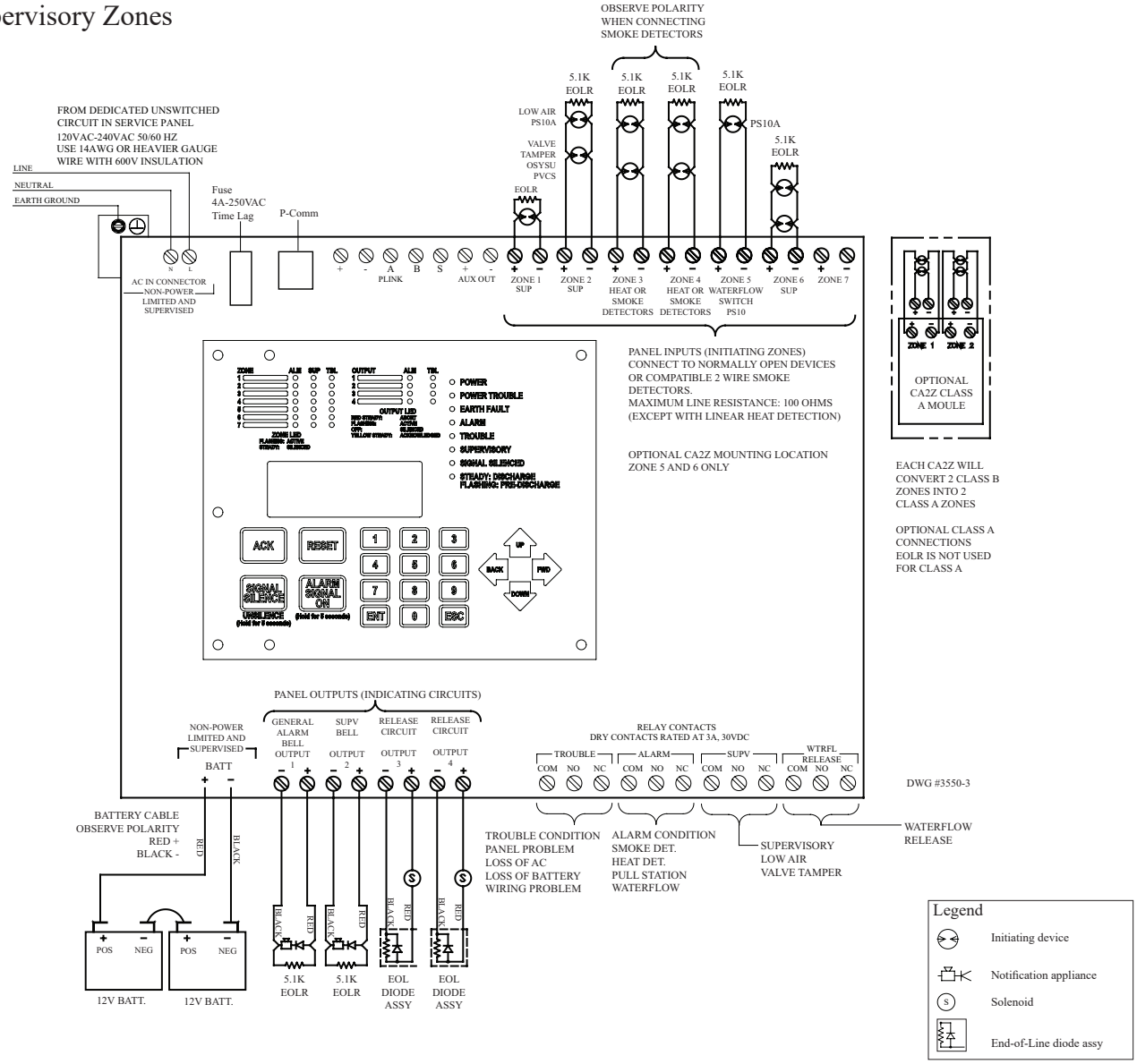
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 3 to change to program 3. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Dual Hazard, Combined Release - 2 Alarm Zones with 1 Manual Release Station, 1 Waterflow Zone and 2 Supervisory Zones	PROGRAM #3						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Manual Release	Unused
#1 ALARM INDICATING			X	X	X	X	
#2 SUPERVISORY	X	X					
#3 RELEASE			X	X		X	
#4 RELEASE			X	X		X	

Description: Dual hazard, combined release.
Inputs: 2 detection zones, 1 waterflow zone, 1 manual release zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 supervisory bell, 2 solenoid release circuits
Operation: Activation of either detection zone or the manual release zone will activate both solenoid release outputs and the general alarm bell.
Activation of the waterflow zone will operate the general alarm bell.
Activation of the supervisory zone will operate the supervisory bell output.

When either zone 3, 4 or 6 is in alarm - outputs #1 (general alarm), #3 and #4 (solenoid release) will operate.
When zone 5 is in alarm - output #1 (general alarm) will operate.
When zones 1 or 2 are activated - output #2 (supervisory bell) will operate.

Wiring Diagram Program #4
Dual Hazard, Split-Release - 2 Alarm Zones, 1 Waterflow Zone, and 3 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #4 Mode

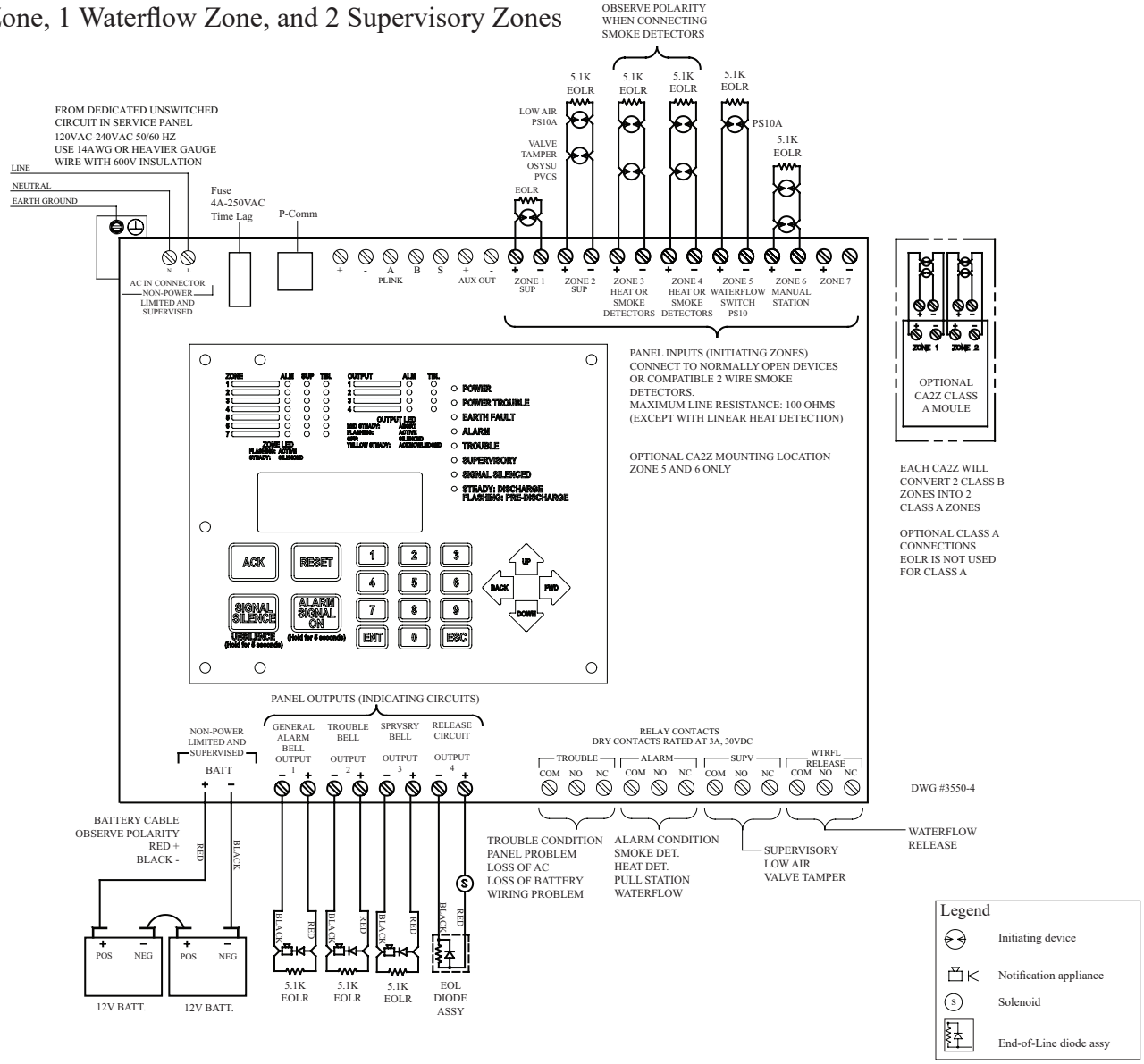
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 4 to change to program 4. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Dual Hazard, Split-Release -2 Alarm Zones, 1 Waterflow Zone and 3 Supervisory Zones	PROGRAM #4						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Supervisory	Unused
#1 ALARM INDICATING			X	X	X		
#2 SUPERVISORY	X	X				X	
#3 RELEASE			X				
#4 RELEASE				X			

Description: Dual hazard, split release.
Inputs: 2 detection zones, 1 waterflow zone, 3 supervisory zones
Outputs: 1 general alarm bell, 1 supervisory bell, 2 solenoid release circuits
Operation: Activation of detection zone #3 will operate solenoid release circuit #1 (output #3) and the general alarm bell.
Activation of detection zone #4 will operate solenoid release circuit #2 (output #4) and the general alarm bell.
Activation of zone #5 (Waterflow) will operate output #1 (General Alarm).
Activation of either supervisory zone will operate the supervisory bell.

When zone 3 is in alarm - output #1 (general alarm) and output #3 (solenoid release #1) will operate.
When zone 4 is in alarm - output #1 (general alarm) and output #4 (solenoid release #2) will operate.
When zones 1, 2, or 6 are activated - output #2 (supervisory bell) will operate.

Wiring Diagram Program #5
Single Hazard with Trouble Bell - 2 Alarm Zones, 1 Manual Station Zone, 1 Waterflow Zone, and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #5 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 5 to change to program 5. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

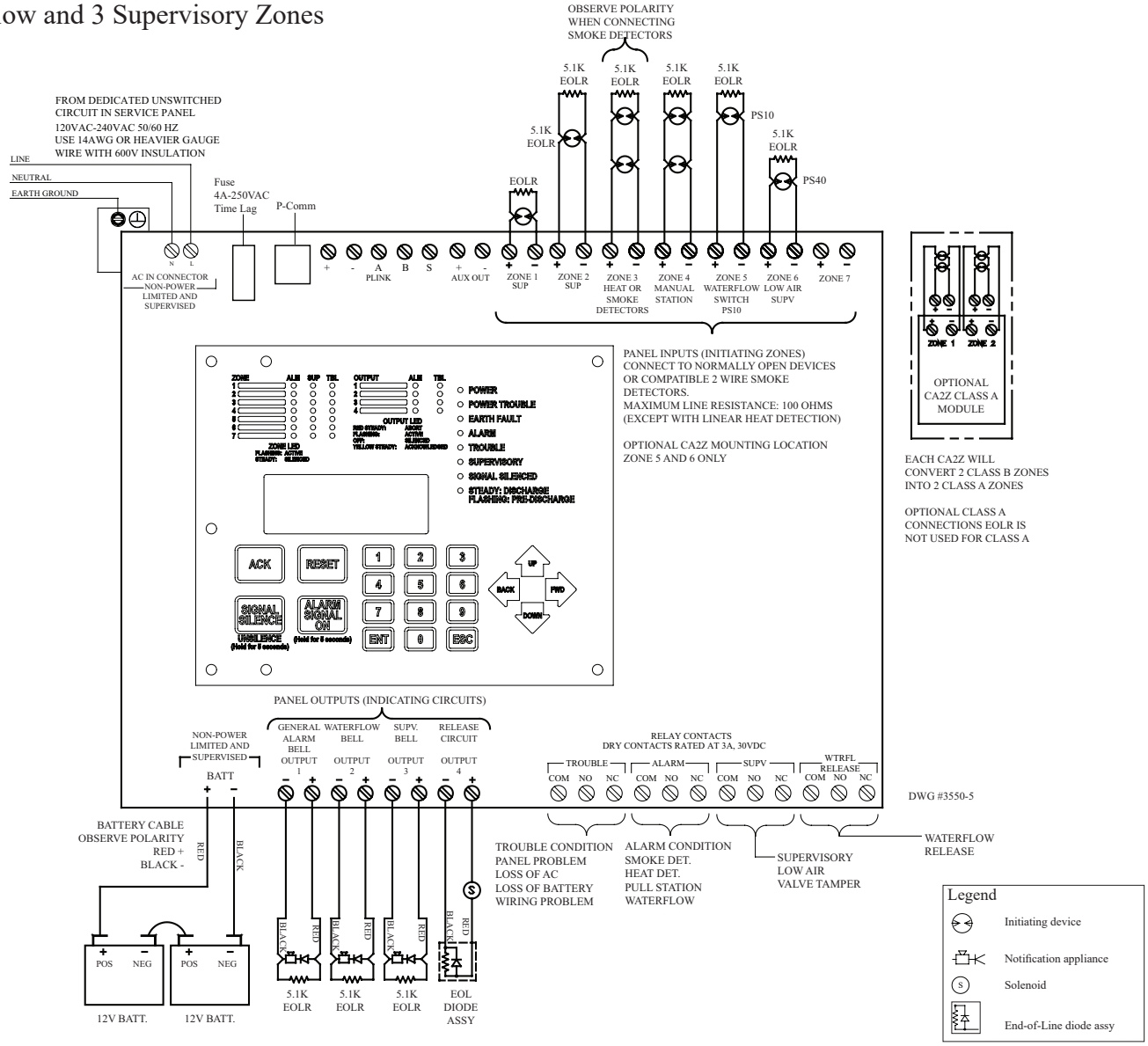
Single Hazard with Trouble Bell - 2 Alarm Zones (Cross-Zoned), 1 Manual Station Zone, 1 Waterflow Zone and 2 Supervisory Zones	PROGRAM #5							
	Conventional Input Zones							Software Zone
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Manual Release	Unused	Trouble Zone Type
#1 ALARM INDICATING			X	X	X	X		
#2 TROUBLE								X*
#3 SUPERVISORY	X	X						
#4 RELEASE			X	X		X		

* Trouble Output need a Software Trouble Zone Type in order to work properly.

Description: Single hazard, 3 zone with trouble bell.
Inputs: 2 detection zones, 1 waterflow zone, 1 manual release zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 trouble bell, 1 supervisory bell, 1 solenoid release circuit
Operation: Activation of either detection zone or the manual release zone will operate the solenoid release circuit and the general alarm bell.
Activation of the waterflow zone will operate the general alarm bell.
Activation of the supervisory zone will operate the supervisory bell.
A trouble condition (low battery, wire problem, etc.) will operate the trouble bell.

When either zone 3, 4 or 6 is in alarm - outputs #1 (general alarm) and #4 (solenoid release) will operate.
When zone 5 is in alarm - output #1 (general alarm) will operate.
When the supervisory zone is activated - output #3 (supervisory bell) will operate.
When the panel is in a trouble condition - output #2 (trouble bell) will operate.

Wiring Diagram Program #6
Single Hazard, 2 Alarm Zones with 1 Waterflow and 3 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #6 Mode

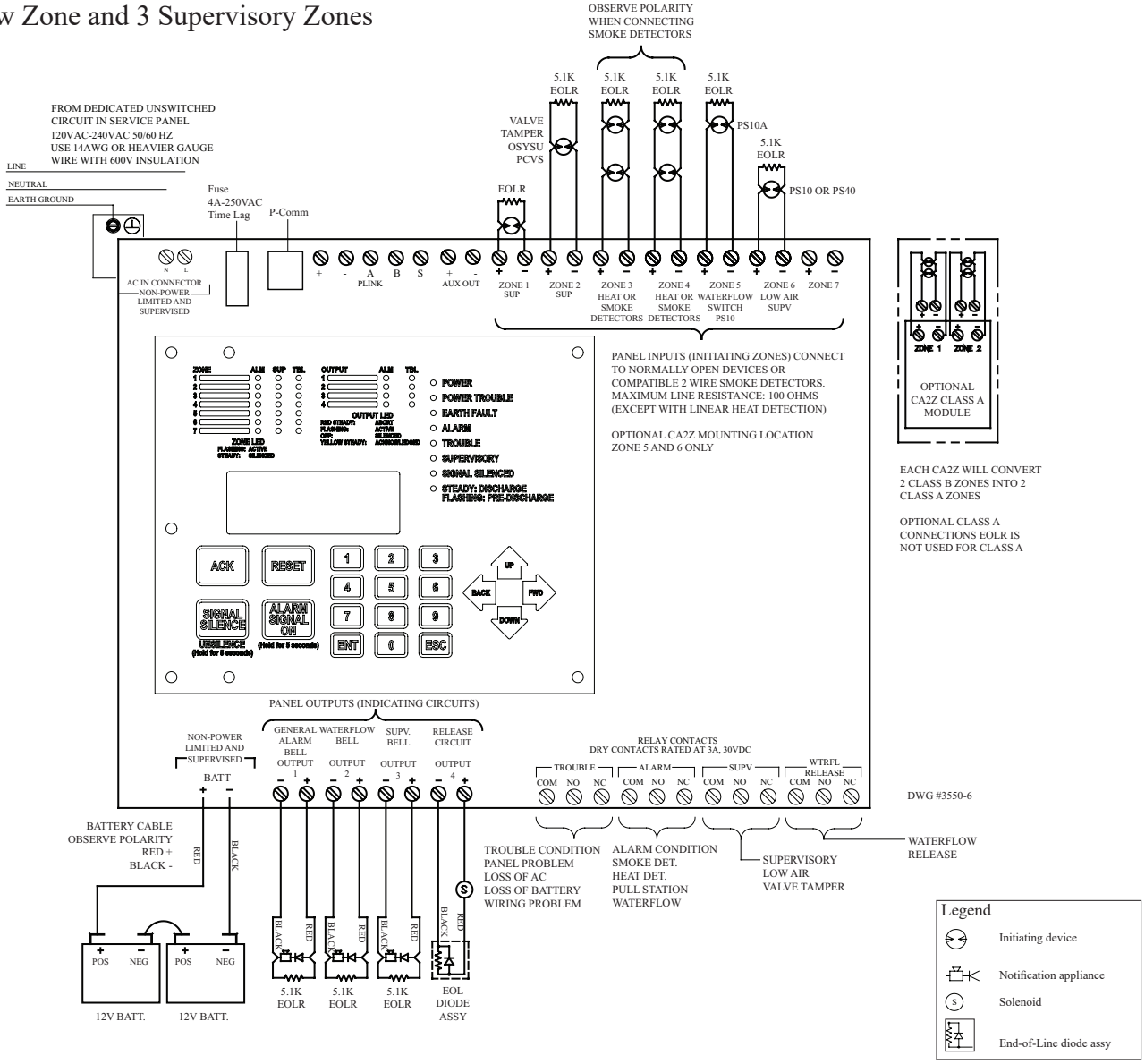
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 6 to change to program 6. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Alarm Zones with 1 Waterflow Zone and 3 Supervisory Zones	PROGRAM #6						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Supervisory	Detection	Manual Release	Waterflow	Low Air Supervisory	Unused
#1 ALARM INDICATING			X	X			
#2 ALARM INDICATING					X		
#3 SUPERVISORY	X	X				X	
#4 RELEASE			X	X			

Description: Single hazard, 2 zones and 2 supervisory zones.
Inputs: 1 detection zone, 1 manual release zone, 1 waterflow zone, 1 low air zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 waterflow bell, 1 supervisory bell, 1 solenoid release circuit
Operation: Activation of either the detection zone or the manual release zone will operate the solenoid release circuit and the general alarm bell.
Activation of the waterflow zone will operate the waterflow bell.
Activation of either the low air zone or the supervisory zone will operate the supervisory bell.

When either zone 3 or 4 is in alarm - output #1 (general alarm) and output #4 (solenoid release) will operate.
When zone 5 is in alarm - output #2 (waterflow bell) will operate.
When either zone 1, 2, or 6 is activated - output #3 (supervisory bell) will operate.

Wiring Diagram Program #7
Single Hazard Cross-Zoned, 2 Alarm Zones, 1 Waterflow Zone and 3 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #7 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 7 to change to program 7. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard Cross-Zoned, 2 Alarm Zones, 1 Waterflow Zone and 3 Supervisory Zones	PROGRAM #7							
	CONVENTIONAL INPUT ZONES							Software Zone
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Low Air Supervisory	Unused	Release Zone Type
#1 ALARM INDICATING			X	X				X
#2 ALARM INDICATING					X			
#3 SUPERVISORY	X	X				X		
#4 RELEASE			XX	XX				XX*

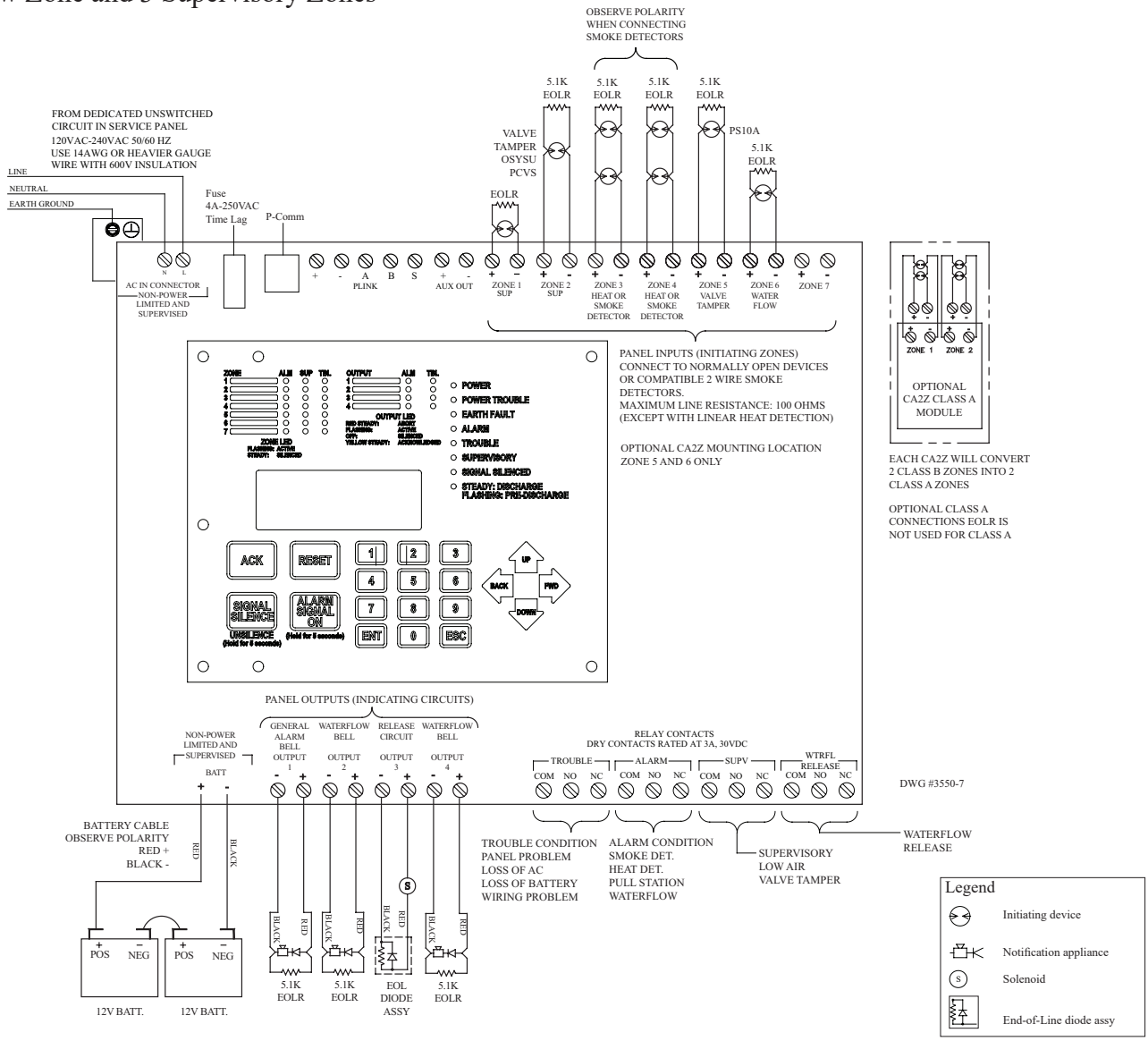
* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Single hazard, 2 zones and cross zoned with 2 supervisory zones.
Inputs: 2 detection zones (cross zoned), 1 waterflow zone, 1 low air zone, 2 supervisory zones
Outputs: 1 general alarm bell, 1 waterflow bell, 1 supervisory bell, 1 solenoid release circuit
Operation: Activation of both detection zones at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of either detection zone will operate the general alarm bell.
Activation of the waterflow zone will operate the waterflow bell.
Activation of either the low air zone or the supervisory zone will operate the supervisory bell.

When either zone 3 or 4 is in alarm - output #1 (general alarm) will operate.
When zones 3 and 4 are in alarm at the same time - output #4 (solenoid release) and output #1 (general alarm) will operate.
When zone 5 is in alarm - output #2 (waterflow bell) will operate.
When zone 1, 2, or 6 is activated - output #3 (supervisory bell) will operate.

Wiring Diagram Program #8
Single Hazard Two Detection Zones with 1 Waterflow Zone and 3 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #8 Mode

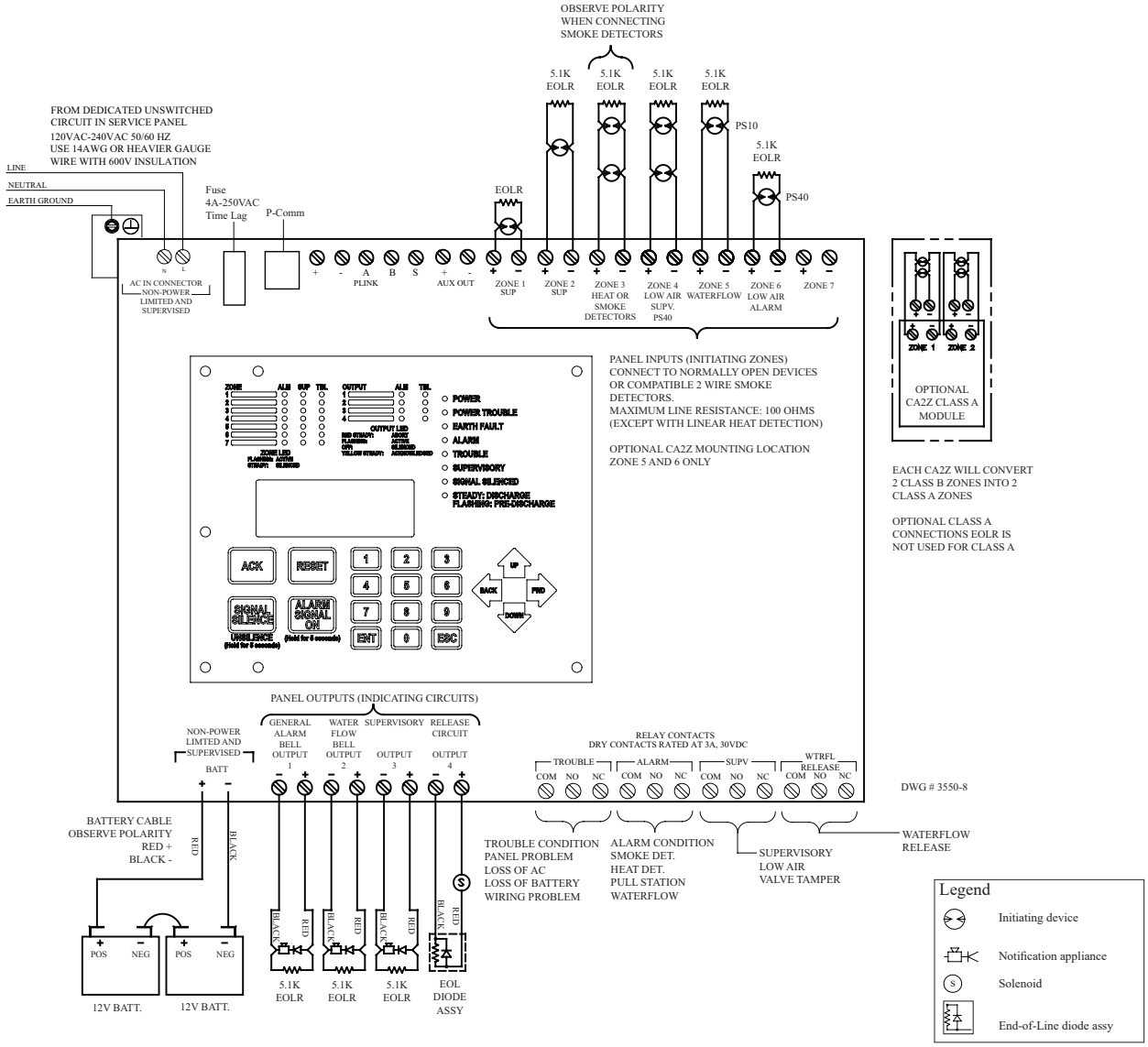
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 8 to change to program 8. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Alarm Zones with 1 Waterflow Zone and 3 Supervisory Zones	PROGRAM #8						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Low Air Supervisory	Detection	Detection	Value Tamper	Waterflow	Unused
#1 ALARM INDICATING			X	X		X	
#2 ALARM INDICATING						X	
#3 RELEASE			X	X			
#4 ALARM INDICATING						X	

Description: Single hazard, dual zone.
Inputs: 1 supervisory zone, 1 low air supervisory zone, 2 detection zones, 1 tamper switch zone, 1 waterflow zone
Outputs: 1 general alarm output, 2 waterflow outputs, 1 solenoid release circuit
Operation: Activation of either detection zone will operate the general alarm bell and the solenoid release circuit.
Activation of the waterflow zone will operate the general alarm bell and both of the waterflow bell outputs.

When zone 3 or 4 is in alarm - output #1 (general alarm) and output #3 (solenoid release) will operate.
When either zone 1, 2, or 5 is activated - the panel will be in a supervisory condition, no outputs will be activated.
When zone 6 is in alarm - output #1 (general alarm) and outputs #2 and #4 (both waterflow bells) will operate.

Wiring Diagram Program #9
Single Hazard Cross-Zoned, 1 Detection Zone with Low Air Alarm Zone, 1 Waterflow, 1 Low Air Supervisory, and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #9 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 9 to change to program 9. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard Cross-Zoned, 1 Detection Zone with Low Air Alarm Zone, 1 Waterflow, 1 Low Air Supervisory and 2 Supervisory Zones	PROGRAM #9							
	CONVENTIONAL INPUT ZONES							Software Zones
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Low Air Supervisory	Waterflow	Low Air Alarm	Unused	Release Zone Type
#1 ALARM INDICATING			X					X
#2 ALARM INDICATING					X			
#3 SUPERVISORY	X	X		X		X		
#4 RELEASE			XX			XX		XX*

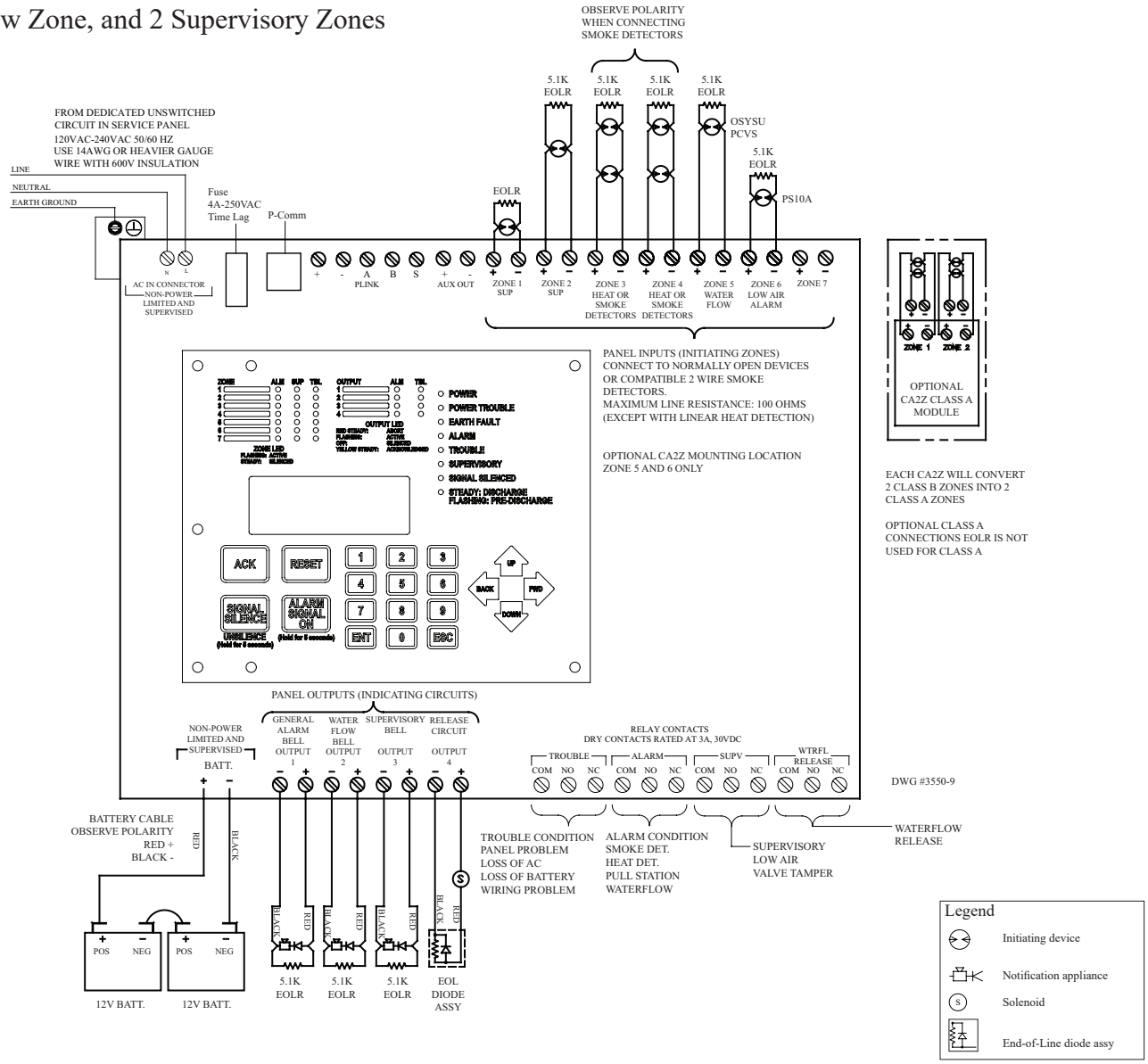
* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.
XX = Cross-Zoned

Description: Single Hazard, detection and low air alarm zones cross-zoned**.
Inputs: 2 supervisory zones, 1 detection zone, 1 low air supervisory zone, 1 waterflow zone, 1 low air alarm zone.
Outputs: 1 general alarm, 1 supervisory, 1 waterflow, 1 solenoid release circuit
Operation: Activation of the detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of the detection zone only will operate the general alarm output
Activation of the low air supervisory zone will operate the supervisory bell output.
Activation of the waterflow zone will operate the waterflow bell output
Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay

When zone 3 is in alarm, output 1 will operate
When zone 4 is activated, output 3 will operate
When zone 5 is in alarm, output 2 will operate
When zone 6 is activated, output 3 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When both zones 3 & 6 are activated at the same time, the solenoid release circuit will operate.

**Cross Zoning acceptable for NFPA 13, 15, and 16 type extinguishing systems.

Wiring Diagram Program #10
Single Hazard Cross-Zoned, 2 Detection Zones with 1 Low Air Alarm Zone 1 Waterflow Zone, and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information.
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #10 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 10 to change to program 10. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard Cross-Zoned, 2 Detection Zone with 1 Low Air Alarm Zone, 1 Waterflow Zone and 2 Supervisory Zones	PROGRAM #10							
	CONVENTIONAL INPUT ZONES							Software Zones
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Waterflow	Low Air Alarm	Unused	Release Zone Type
#1 ALARM INDICATING			X	X				X
#2 ALARM INDICATING					X			
#3 SUPERVISORY	X	X				X		
#4 RELEASE			XX	XX		XX		XX*

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

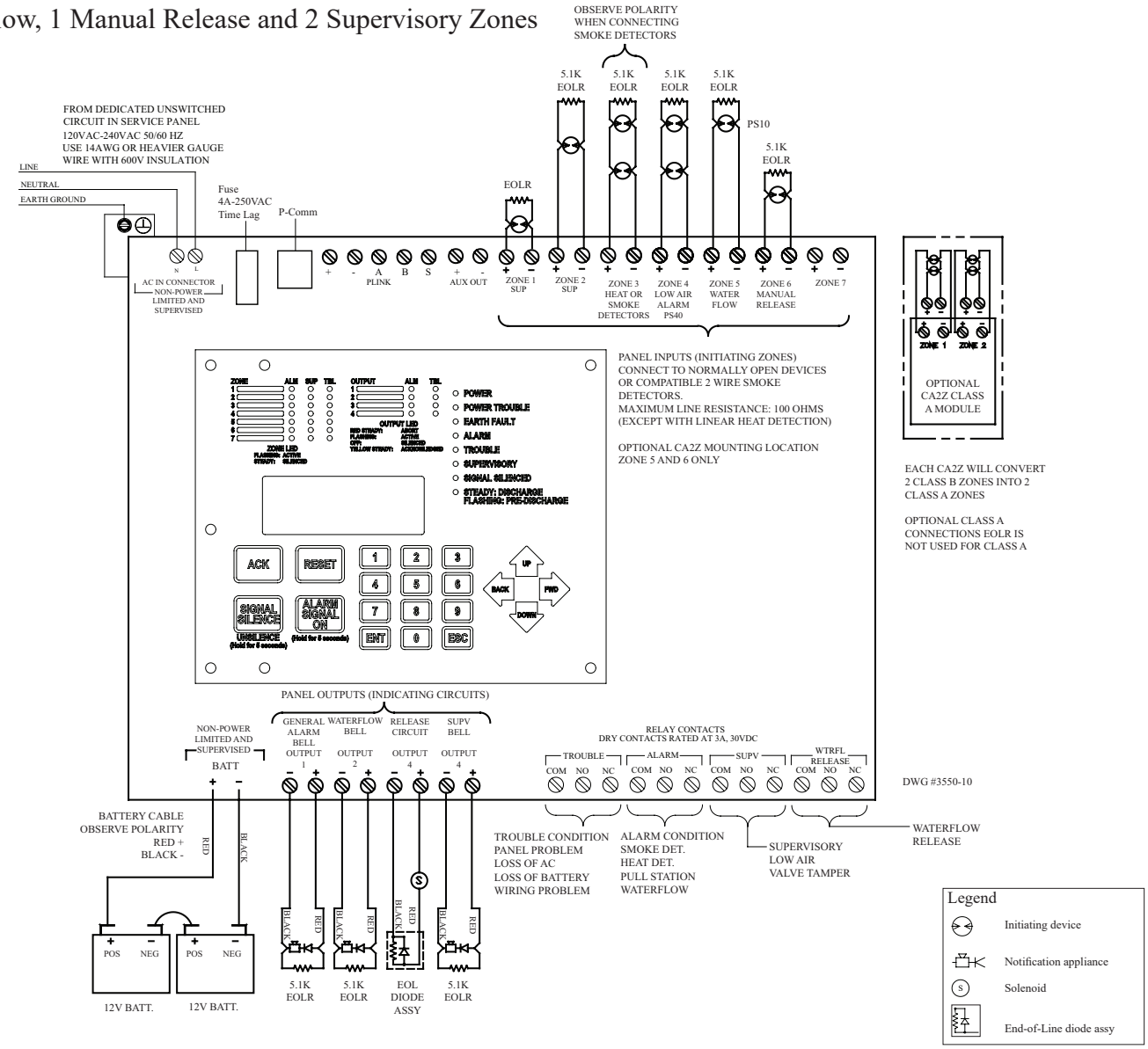
XX = Cross-Zoned

Description: Single Hazard, 2 detection and low air alarm zones cross-zoned**.
Inputs: 2 supervisory zones, 2 detection zone, 1 waterflow zone, 1 low air alarm zone.
Outputs: 1 general alarm, 1 supervisory, 1 waterflow, 1 solenoid release circuit
Operation: Activation of both detection zones and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of either detection zone only will operate the general alarm output
Activation of the waterflow zone will operate the waterflow bell output
Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay

When either zone 3 or 4 is in alarm, output 1 will operate
When zone 5 is in alarm, output 2 will operate
When zone 6 is activated, output 3 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zones 3, 4 & 6 are activated at the same time, the solenoid release circuit will operate.

**Cross Zoning acceptable for NFPA 13, 15, and 16 type extinguishing systems.

Wiring Diagram Program #11
Single Hazard Cross-Zoned, 1 Detection Zone with Low Air Alarm Zone 1 Waterflow, 1 Manual Release and 2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #11 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 11 to change to program 11. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard Crossed-Zoned with 1 Low Air Alarm Zone, 1 Manual Release and 2 Supervisory Zones	PROGRAM #11							
	CONVENTIONAL INPUT ZONES							Software Zones
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Low Air Alarm	Waterflow	Manual Release	Unused	Release Zone Type
#1 ALARM INDICATING			X			X		X
#2 ALARM INDICATING					X			
#3 RELEASE			XX	XX		X		XX*
#4 SUPERVISORY	X	X		X				

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

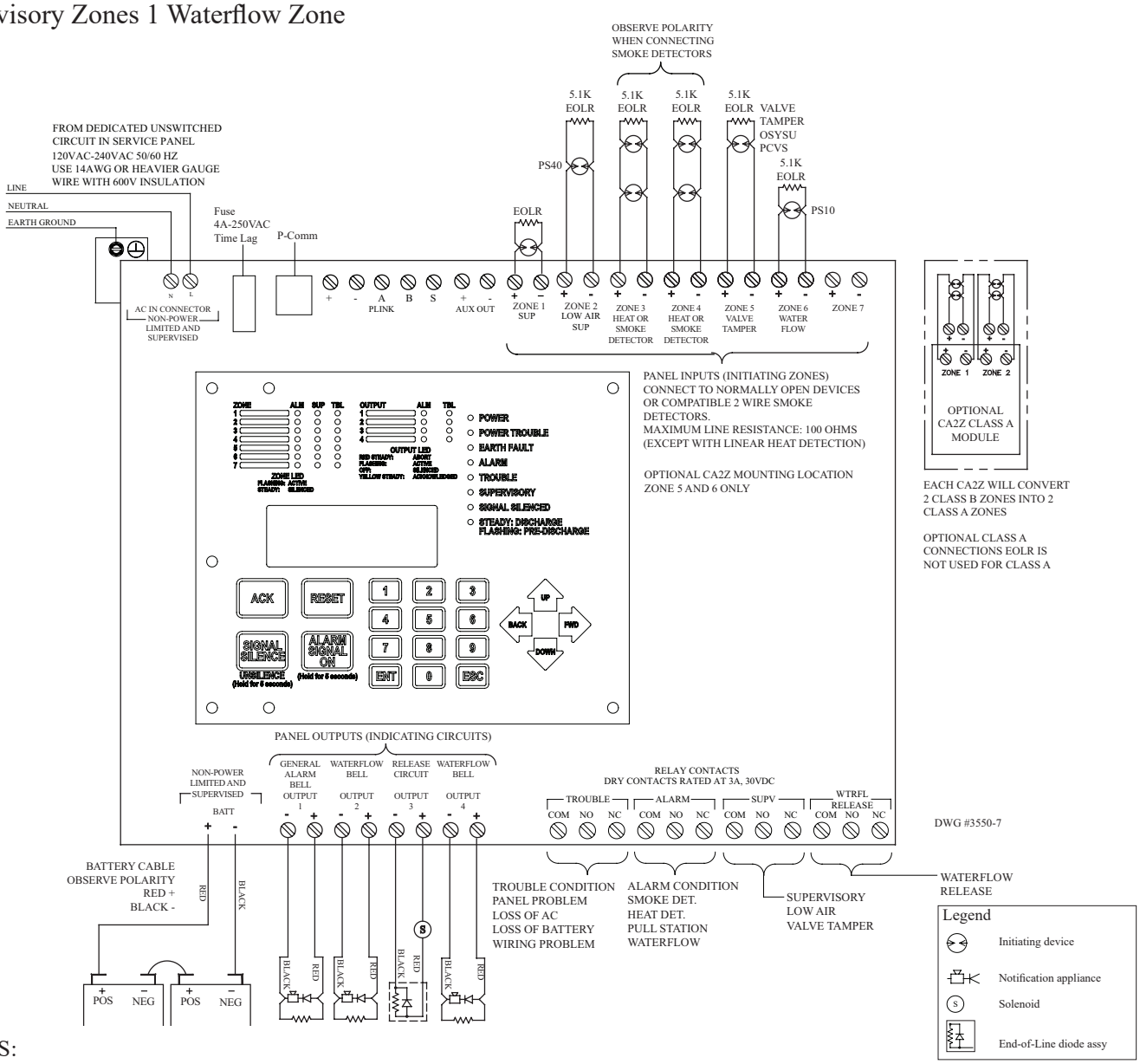
XX = Cross-Zoned

Description: Single Hazard, detection and low air alarm zones cross-zoned**. Also 1 waterflow and 1 manual release zone. Manual release overrides cross zoning.
Inputs: 2 supervisory zones, 1 detection zone, 1 low air alarm zone, 1 waterflow zone, 1 manual release zone.
Outputs: 1 general alarm, 1 supervisory, 1 waterflow, 1 solenoid release circuit
Operation: Activation of the detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of the waterflow zone will operate the waterflow bell output
Activation of the low air alarm zone will operate the supervisory bell output. It will not operate the alarm relay.

When zone 3 is in alarm, output 1 will operate
When zone 4 is activated, output 4 will operate. This will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zone 5 is in alarm, output 2 will operate
When zone 6 is in alarm, outputs 1 & 3 will operate
When both zones 3 & 4 are activated at the same time, the solenoid release circuit, output 3, will operate.

**Cross Zoning acceptable for NFPA 13, 15, and 16 type extinguishing systems.

Wiring Diagram Program #12
Single Hazard, 2 Detection Zones, 3 Supervisory Zones 1 Waterflow Zone



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #12 Mode

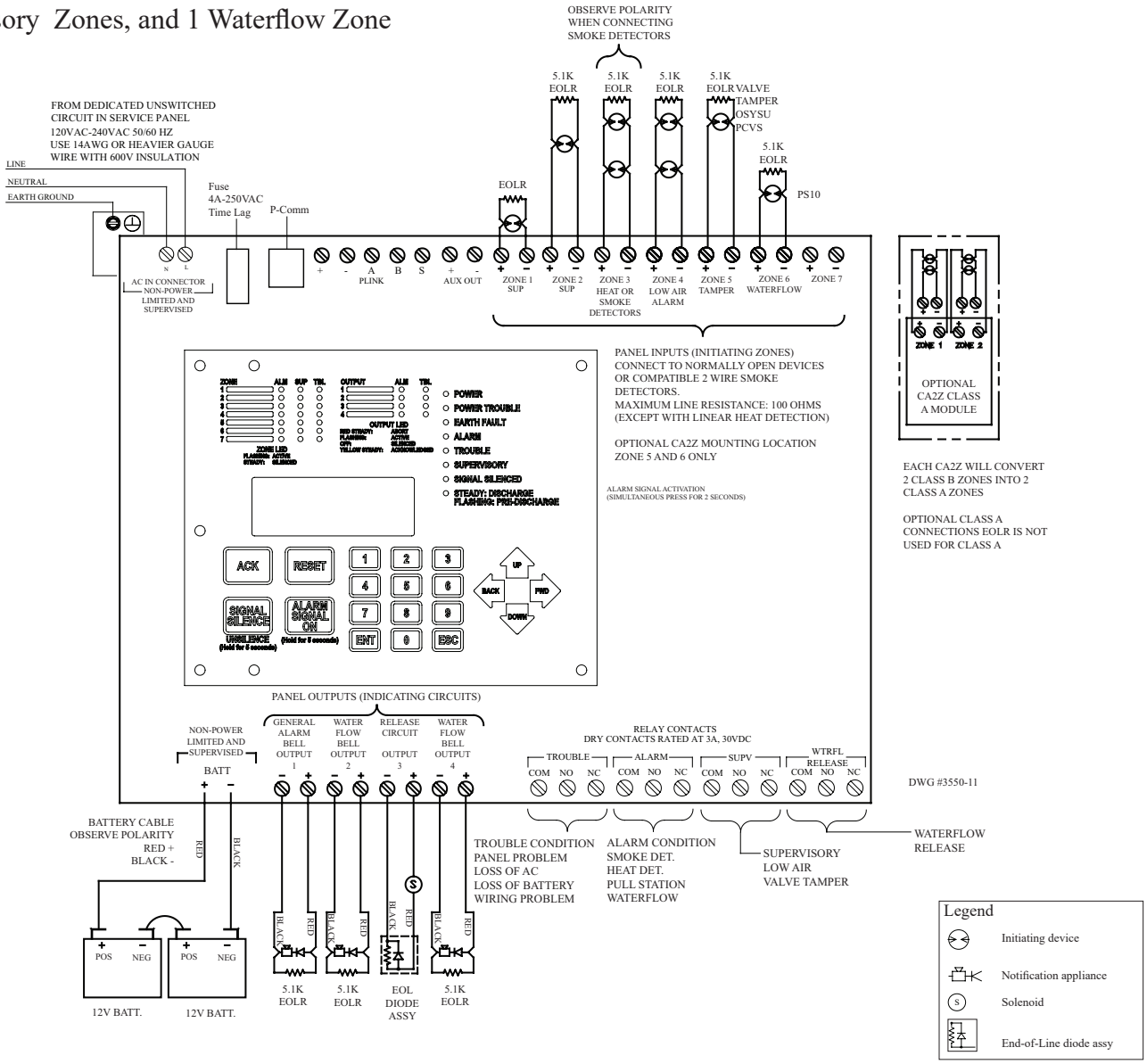
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 12 to change to program 12. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Detection Zones, 3 Supervisory Zones and 1 Waterflow Zone	PROGRAM #12						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Low Air Supervisory	Detection	Detection	Value Tamper	Waterflow	Unused
#1 ALARM INDICATING			X	X		X	
#2 ALARM INDICATING						X	
#3 RELEASE			X	X			
#4 ALARM INDICATING						X	

Description: Single Hazard, 2 detection zones,1 waterflow, and 3 supervisory zones.
Inputs: 1 supervisory zone, 1 low air supervisory zone, 2 detection zone, 1 waterflow zone, 1 tamper switch zone.
Outputs: 2 general alarm, 1 waterflow, 1 solenoid release circuit
Operation: Activation of either detection zone will operate the release and the general alarm bell outputs. Activation of the waterflow zone will operate the waterflow and both general alarm bell outputs. Activation of either the tamper or supervisory zones will operate the supervisory relay only.

When either zone 3 or 4 is in alarm, outputs 1 & 3 will operate
When zone 5 or the supervisory zone is activated, only the supervisory relay operates
When zone 6 is in alarm, outputs 1, 2 & 4 will operate

Wiring Diagram Program #13
Single Hazard Cross-Zoned, 1 Detection Zone with Low Air Alarm Zone, 3 Supervisory Zones, and 1 Waterflow Zone



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #13 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 13 to change to program 13. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard Cross-Zoned, 1 Detection Zone with Low Air Alarm Zone, 3 Supervisory Zones and 1 Waterflow Zone	PROGRAM #13							
	CONVENTIONAL INPUT ZONES							Software Zones
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	Supervisory	Supervisory	Detection	Low Air Alarm	Valve Tamper	Waterflow	Unused	Release Zone Type
#1 ALARM INDICATING			X			X		X
#2 ALARM INDICATING						X		
#3 RELEASE			XX	XX				XX*
#4 ALARM INDICATING						X		

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Single Hazard, detection and low air alarm zones cross-zoned**. Also 1 waterflow, 1 tamper and 1 supervisory zone

Inputs: 2 supervisory zones, 1 detection zone, 1 low air alarm zone, 1 tamper switch zone, 1 waterflow zone,

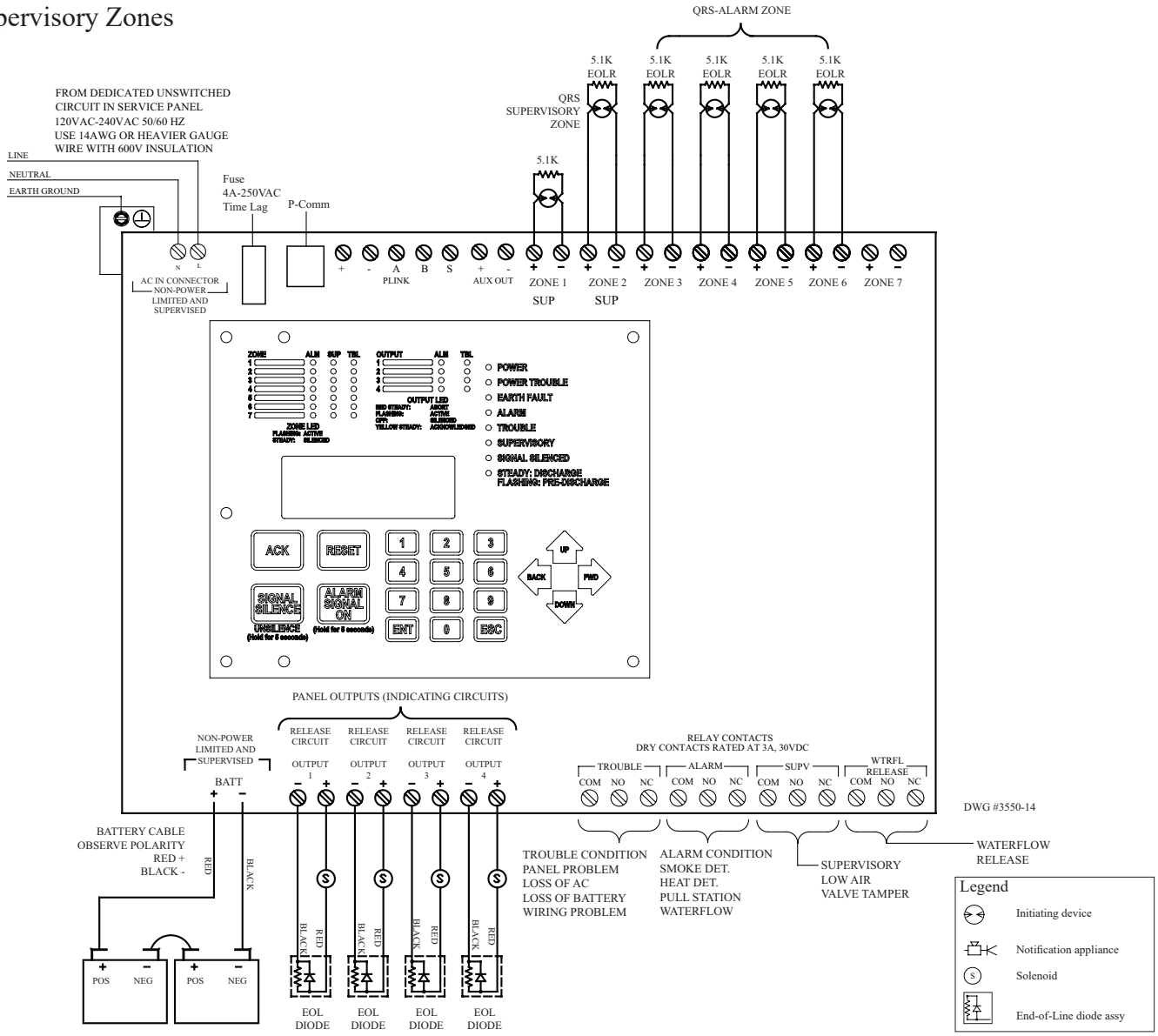
Outputs: 1 general alarm, 2 waterflow, 1 solenoid release circuit

Operation: Activation of the detection zone and the low air alarm zone at the same time will operate the solenoid release circuit and the general alarm bell.
Activation of the waterflow zone will operate both waterflow bell outputs
Activation of the low air alarm zone will not operate the alarm relay, only the supervisory relay.

When zone 3 is in alarm, output 1 will operate
When zone 4 is activated, it will create a supervisory condition not an alarm condition. The alarm relay will not operate, the supervisory relay will.
When zone 5 is activated, only the supervisory relay will operate.
When zone 6 is in alarm, outputs 1, 2 & 4 will operate.
When both zones 3 & 4 are activated at the same time, the solenoid release circuit, output 3, will operate.

**Cross Zoning acceptable for NFPA 13, 15, and 16 type extinguishing systems.

Wiring Diagram Program #14
4 Alarm Zones and 4 Release Circuits mapped 1 to 1.
2 Supervisory Zones



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #14 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 14 to change to program 14. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

4 Alarm Zone and 4 Release Circuits mapped 1 to 1, 2 Supervisory Zones	PROGRAM #14						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Supervisory	Supervisory	Detection	Detection	Detection	Detection	Unused
#1 RELEASE			X				
#2 RELEASE				X			
#3 RELEASE					X		
#4 RELEASE						X	

Description: QRS System 4 Manual Station zones and 4 Release Outputs mapped 1 to 1
Inputs: 4 Manual Station zones, 2 Supervisory zones
Outputs: 4 release circuits
Operation: Activation of detection zone 3 will activate release output #1
Activation of detection zone 4 will activate release output #2
Activation of detection zone 5 will activate release output #3
Activation of detection zone 6 will activate release output #4

NOTE: TO CHARGE SYSTEM

After initially setting the PFC-4410G3 to program 14 and the panel resets

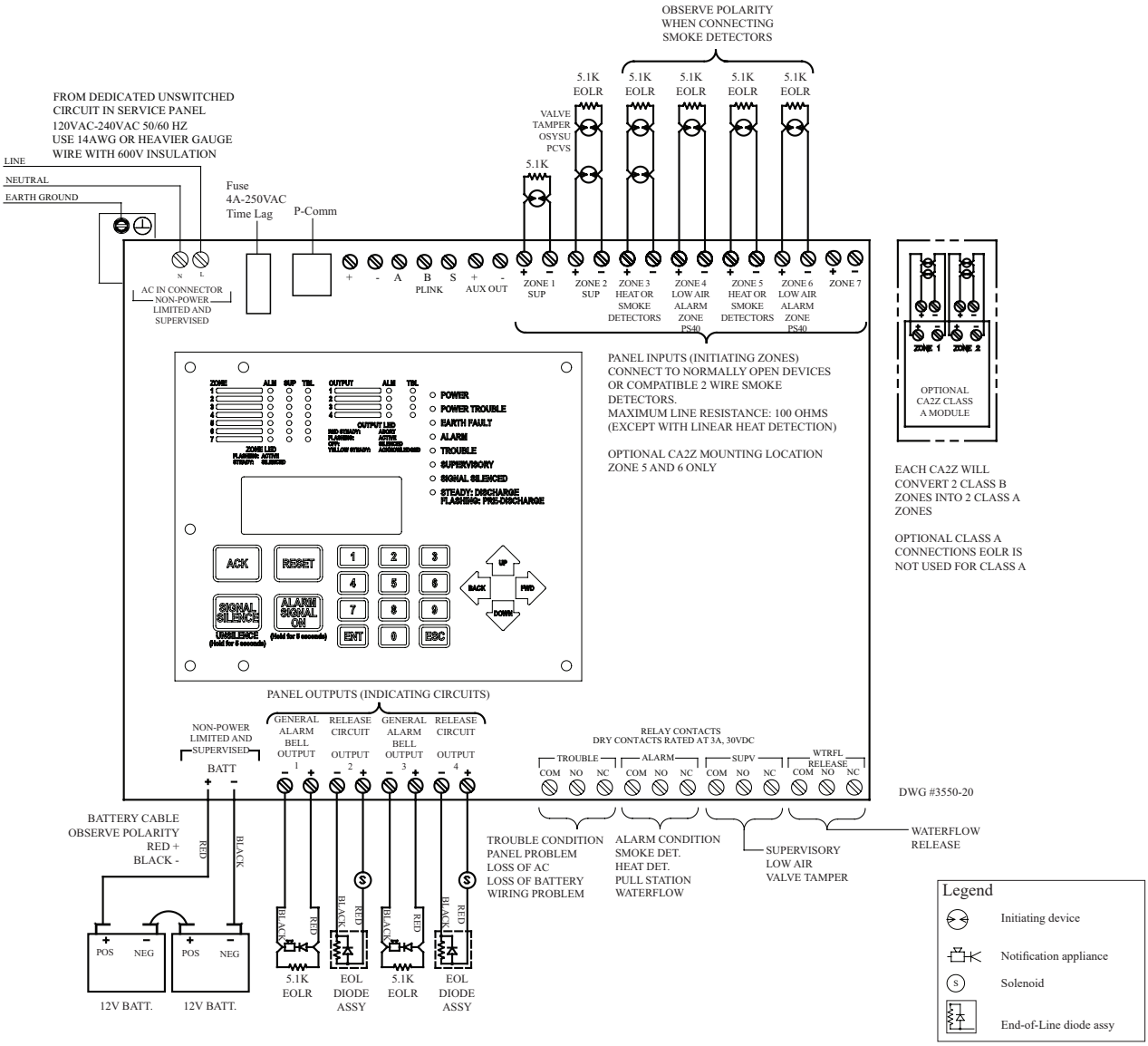
1. Press ENT to enter PROGRAM mode
2. Press 8 or scroll down to #8 Panel Setup and press ENT (The selection is indicated by a flashing arrow next to the number)
3. Enter the password (Factory is 1111)
4. Press 9 or scroll down to #9 QRS Fill and press ENT (The selection is indicated by a flashing arrow next to the number)
   NOTE: The display will read: When Fill Completed Press ESC 2X to Exit and the remaining time till timeout
5. Charge the system to normal operating pressure.
6. Press ESC twice to exit QRS Fill
   NOTE: Wait 60 seconds after the system reaches normal operating pressure before testing the QRS

⚠ CAUTION

When in QRS Fill, the panel is inoperative. None of the outputs or inputs will operate. No QRS will operate. The sprinkler system will operate as a regular dry pipe system.

Wiring Diagram Program #15

Dual Hazard, 1 Detection Zone and 1 Low Air Alarm Zone Cross-Zoned to 1 Release Circuit, 1 Other Detection and 1 other Low Air Alarm Zone Cross-Zoned to a Separate Release Circuit, and Supervisory Zones.



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #15 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 15 to change to program 15. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Dual Hazard, 1 Detection Zone and 1 Low Air Alarm Zone Cross-Zoned to 1 Release Circuit, 1 other Detection and 1 other Low Air Alarm Zone Cross-Zoned to a Separate Release Circuit and Supervisory Zone.	PROGRAM #15								
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES	
	#1	#2	#3	#4	#5	#6	#7	#8	#9
OUTPUTS	Supervisory	Supervisory	Detection	Low Air Alarm	Detection	Low Air Alarm	Unused	Release Zone Type	Release Zone Type
#1 ALARM INDICATING			X	X				X	
#2 RELEASE			XX	XX				XX*	
#3 ALARM INDICATING					X	X			X
#4 RELEASE					XX	XX			XX*

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Dual Hazard, 2 detection zones cross-zoned** to 1 release circuit and 2 other detection zones cross zoned to another release circuit

Inputs: 2 supervisory zones, 4 detection zones

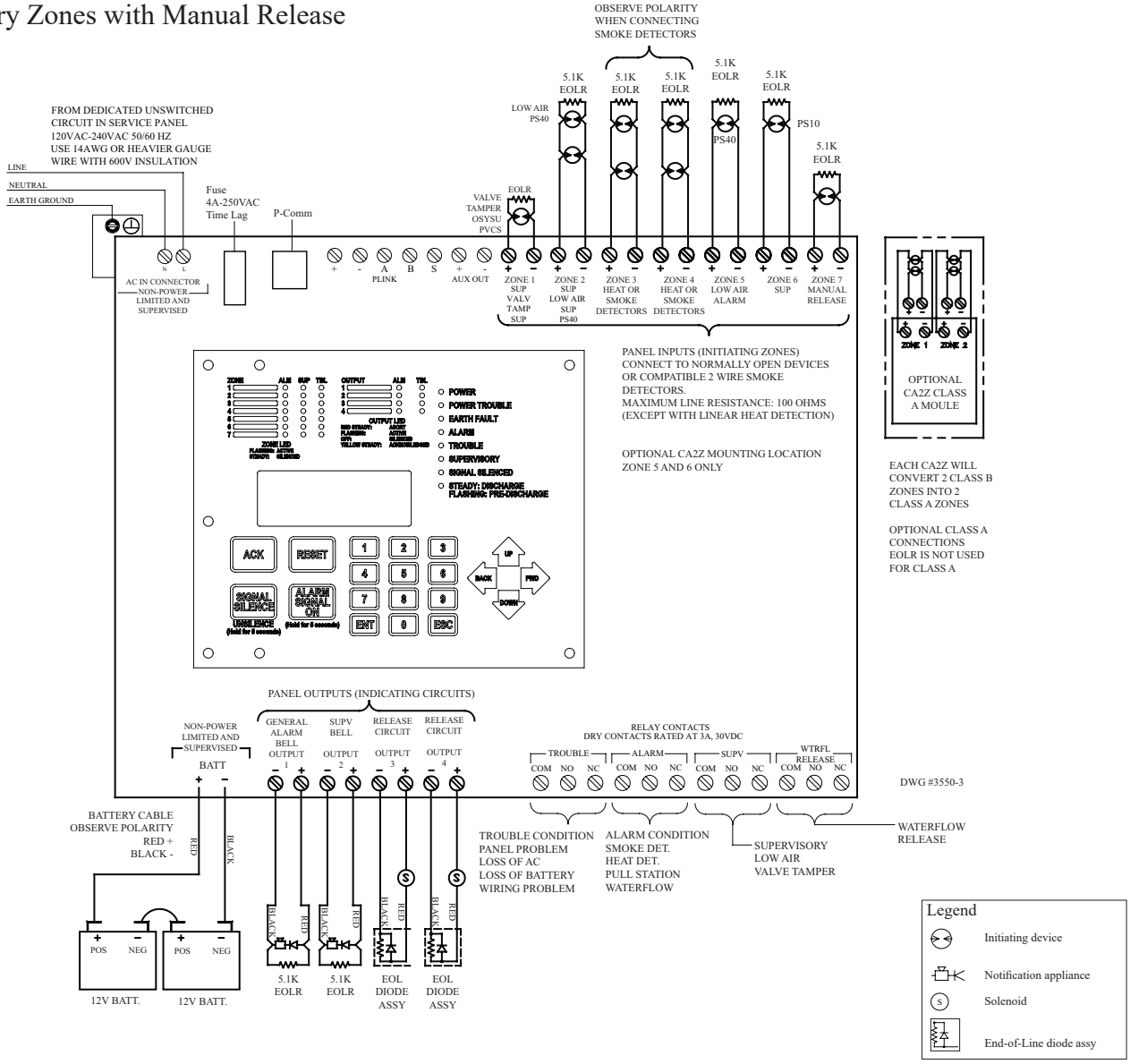
Outputs: 2 general alarm, 2 release circuit

Operation: Activation of either detection zones 3 and 4 will activate the alarm output #1
Activation of both detection circuits 3 and 4 at the same time will release circuit output #2 as well as activate the alarm output #1
Activation of either detection zones 5 or 6 will activate the alarm output #3
Activation of both detection circuits 5 and 6 at the same time will release circuit output #4 as well as activate the alarm output #3

When either zone 3 or 4 is in alarm, output 1 will operate
When both zones 3 and 4 are in alarm at the same time, output #2 will operate
When either zone 5 or 6 is in alarm, output 3 will operate
When both zones 5 and 6 are in alarm at the same time, output #4 will operate

**Cross Zoning acceptable for NFPA 13, 15, and 16 type extinguishing systems.

Wiring Diagram Program #16
Failsafe Single Hazard, -2 Alarm Zones, 1 Waterflow Zone, 2 Supervisory Zones with Manual Release



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #16 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 16 to change to program 16. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Failsafe Single Zoned activation with Normally Open and Normally Closed Solenoid	PROGRAM #16						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Valve Tamper Supervisory	Low Air Supervisory	Conventional Detection	Conventional Detection	Low Air Alarm	Waterflow	Manual Release
#1 GENERAL ALARM			X	X		X	X
#2 SUPERVSIORY BELL	X	X			X		
#3 RELEASE SOLENOID			X	X			X
#4 N/O SOLENOID					X		

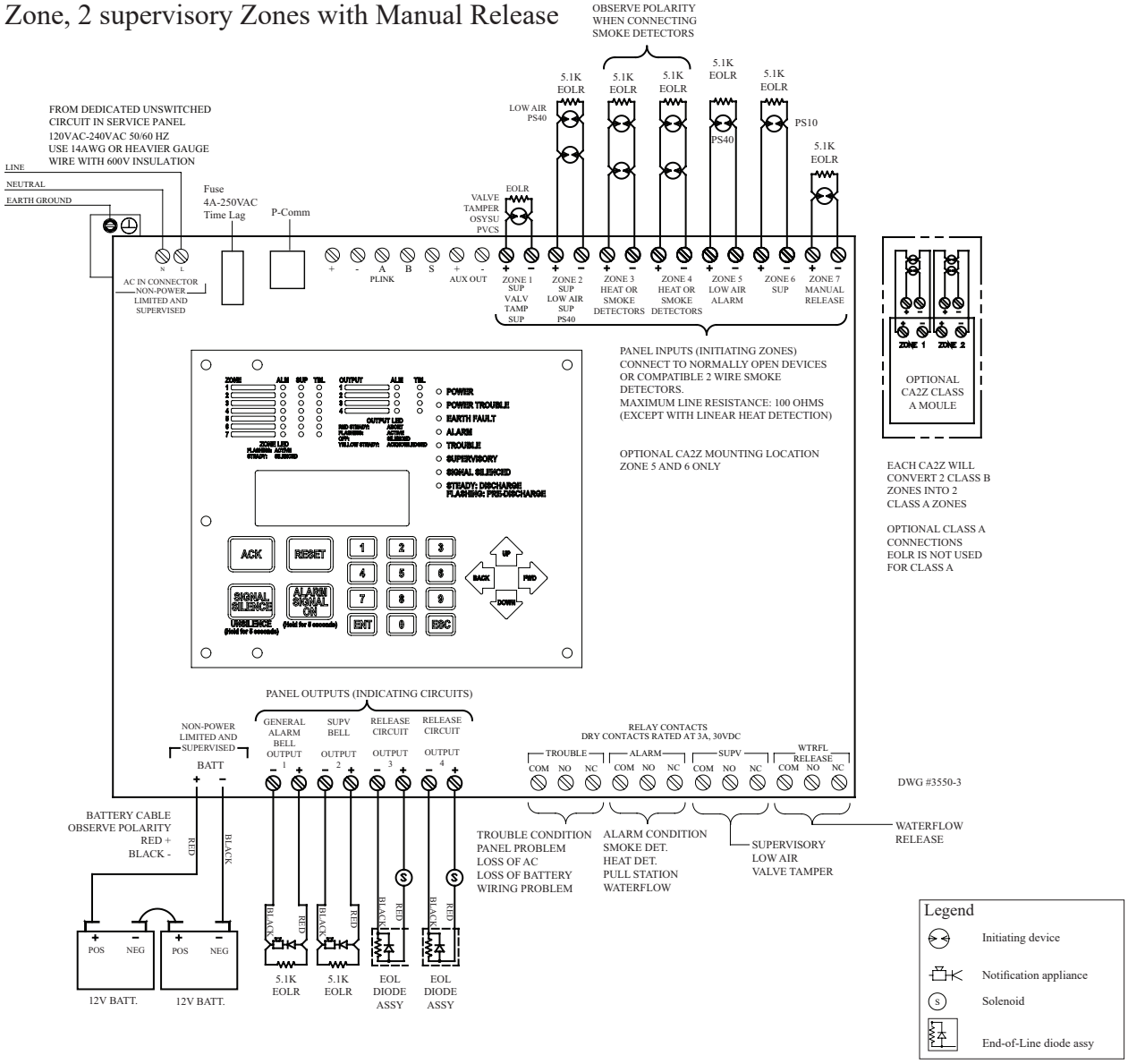
Description: Failsafe Single Zoned activation with Normally Open and Normally Closed Solenoid

Inputs: 2 Supervisory zones, 2 conventional detection zones, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual release zone,

Outputs: 1 General alarm Indicating, 1 Supervisory Bell output, 1 Release Circuit Normally Closed when not Energized, 1 Release Circuit: Normally Open when Not Energized

Operation: Activation of Supervisory zones 1 or 2 will create a supervisory condition on the panel and activate output 2.
Activation of Conventional Detection zone 3 or 4 will activate General alarm output 1 and Release output 3.
Activation of Low Air Alarm zone 5, will create supervisory condition on the panel and activate output 2 and the Normally Open solenoid output 4.
Activation of waterflow zone 6 will activate general alarm output 1.
Activation of Manual Release zone 7 will activate General alarm output 1 and Release output 3.
A trouble condition will prevent output 4 from operating .

Wiring Diagram Program #17
Failsafe Single Hazard Cross Zoned, -2 Alarm Zones, 1 Waterflow Zone, 2 supervisory Zones with Manual Release



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #17 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 17 to change to program 17. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Failsafe Cross Zoned Activation With Normally Open and Normally Closed Solenoid	PROGRAM #17							
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	VALVE TAMPER SUPERVISORY	LOW AIR SUPERVISORY	CONVENTIONAL DETECTION	CONVENTIONAL DETECTION	LOW AIR ALARM	WATER FLOW	MANUAL RELEASE	RELEASE ZONE TYPE
#1 GENERAL ALARM			X	X		X	X	X
#2 SUPERVISORY BELL	X	X			X			
#3 RELEASE SOLENOID			XX	XX	XX* Either zones 3 & 5 or 4 & 5		X	XX*
#4 N/O SOLENOID					X			

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

Inputs: 2 Supervisory zones, 2 conventional detection zones, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual release zone

Outputs: 1 General alarm Indicating, 1 Supervisory Bell output, 1 Release Circuit Normally Closed when not Energized, 1 Release Circuit: Normally Open when Not Energized

Operation: Activation of Supervisory zones 1 or 2 will create a supervisory condition on the panel and activate Supervisory Bell output 2.
Activation of Conventional Detection zone 3 or 4 will activate General alarm output 1
Activation of Conventional Detection zone 3 OR 4 AND activation of Low Air Alarm zone 5 will activate General alarm output 1 and Release output 3.
Activation of Low Air Alarm zone 5, will create supervisory condition on the panel and activate Supervisory Bell output 2 and the Normally Open solenoid output 4
Activation of Waterflow zone 6 will activate General alarm output 1
Activation of Manual Release zone 7 will activate General alarm output 1 and Release output 3.

NOTICE

The following programs are for agent or gas extinguishing systems. Selecting the Agent Releasing mode allows the use of a pre-discharge timer and an abort circuit. The timer defaults to 60 seconds for all alarm zones programmed as other than MANUAL RELEASE. The MANUAL RELEASE default timer is 30 seconds. The system offers the programmer the ability to change the default timers to shorter times.

Systems intended for the release of Halon 1301 as described in NFPA 12A, water mist systems as described in NFPA 750 clean agents as described in NFPA 2001 ,or fixed aerosol as described in NFPA 2010, or shall have provision for a pre-discharge notification circuit. If this signal is required to be separate and/or distinct from the evacuation signal, this can be accomplished by using the legacy method of using first and second alarms on separate zones. One shall be programmed as FIRST ALARM. It will provide a steady output upon activation of any initiating zone programmed as an alarm zone. This is the evacuation signal. If a temporal signal is required, the output pattern can be changed using the zone menu. The other notification circuit shall be programmed as SECOND ALARM. It will provide a steady output upon activation of a second initiating zone programmed as an alarm zone (cross zoned). This is when the pre-discharge timer would start and would be the predischarge signal. If a temporal signal is required, the output pattern can be changed using the zone menu (output pattern and pre release pattern need to be changed). If a separate signal for discharge were required, the second alarm pre discharge pattern can be changed in the zone menu. Zones programmed as MANUAL RELEASE will activate outputs programmed as SECOND ALARM, even if the MANUAL RELEASE zone is the first alarm zone activated. SECOND ALARM is intended to be used as a pre-discharge signal for cross zone applications.

The PFC-4410G3 allow for 3 patterns using 1 notification circuit. The evacuation signal pattern can be set in the zone menu for the detection zones mapped to the alarm indicating output. To set the pre discharge pattern and discharge pattern select the pattern in the zone menu for the software zone for the cross zoned output.

⚠ CAUTION

The default programming does not allow the abort circuit to abort the release or stop the pre-discharge timer activated by zones programmed as MANUAL RELEASE. This can be changed in the programming to allow MANUAL RELEASE zones to be aborted.

NFPA 12 prohibits the use of abort circuits on suppression systems deploying carbon dioxide.

Systems designed and installed in accordance with NFPA 2001, NFPA-750, NFPA-2010, NFPA 12 A shall be provided with a mechanical manual release system.

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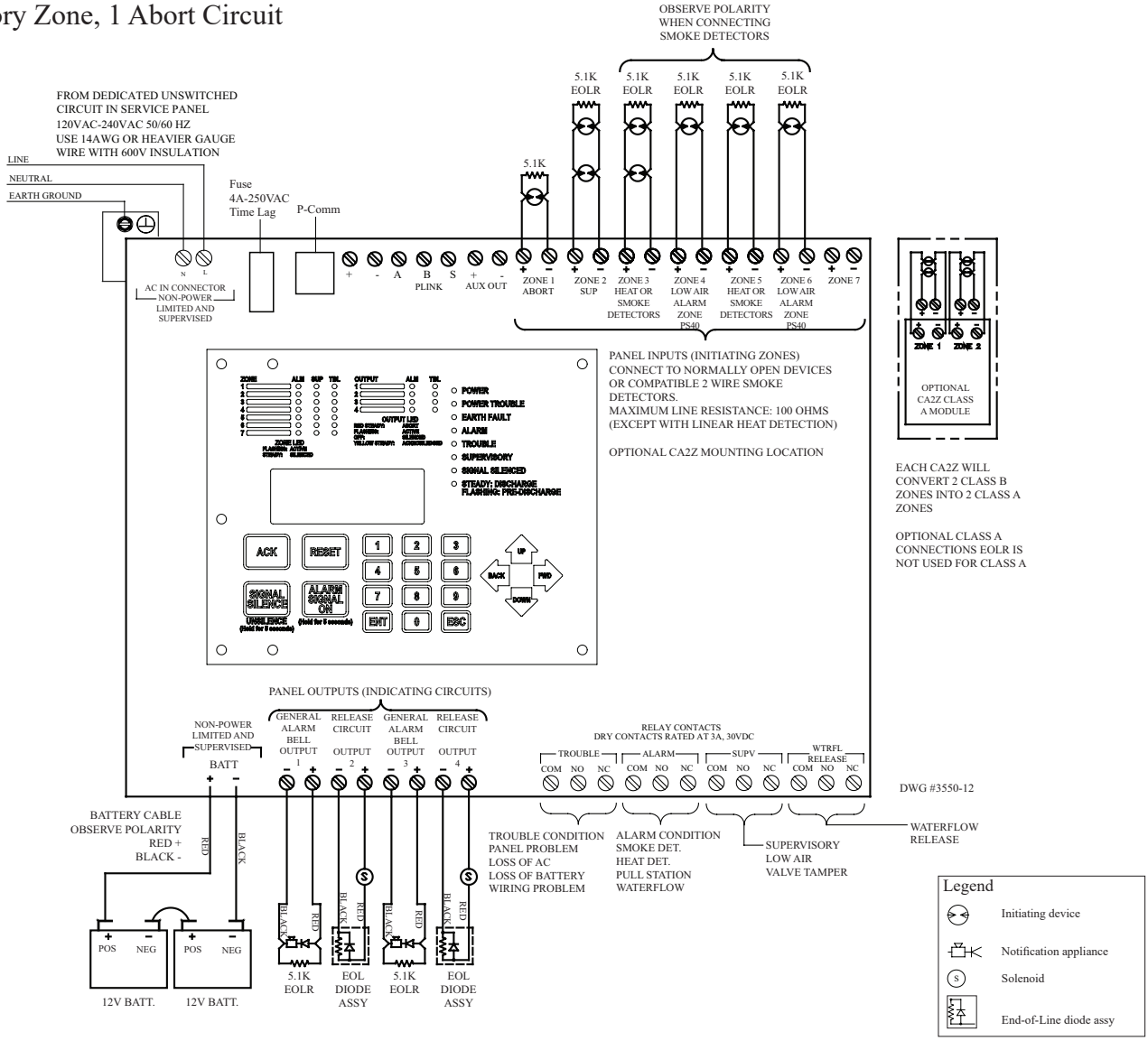
Wiring Diagram Program #20
Dual Hazard, 2 Detection Zones Cross-Zoned to 1 Release Circuit, 2 Other Detection Zones Cross-Zoned to A Separate Release Circuit, 1 Supervisory Zone, 1 Abort Circuit



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #20 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 20 to change to program 20. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Dual Hazard, 2 Detection Zones Cross-Zoned to 1 Release Circuit, 2 Other Detection Zones Cross-Zoned to a Separate Release Circuit, 1 Supervisory Circuit, 1 abort circuit	PROGRAM #20								
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES	
	#1	#2	#3	#4	#5	#6	#7	#8	#9
OUTPUTS	Abort	Supervisory	Detection	Detection	Detection	Detection	Unused	Release Zone Type	Release Zone Type
#1 ALARM INDICATING			x	x				X	
#2 RELEASE			xx	xx				XX*	
#3 ALARM INDICATING					x	x			X
#4 RELEASE					xx	xx			XX*

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Dual Hazard, 2 detection zones cross-zoned to 1 release circuit and 2 other detection zones cross zoned to another release circuit

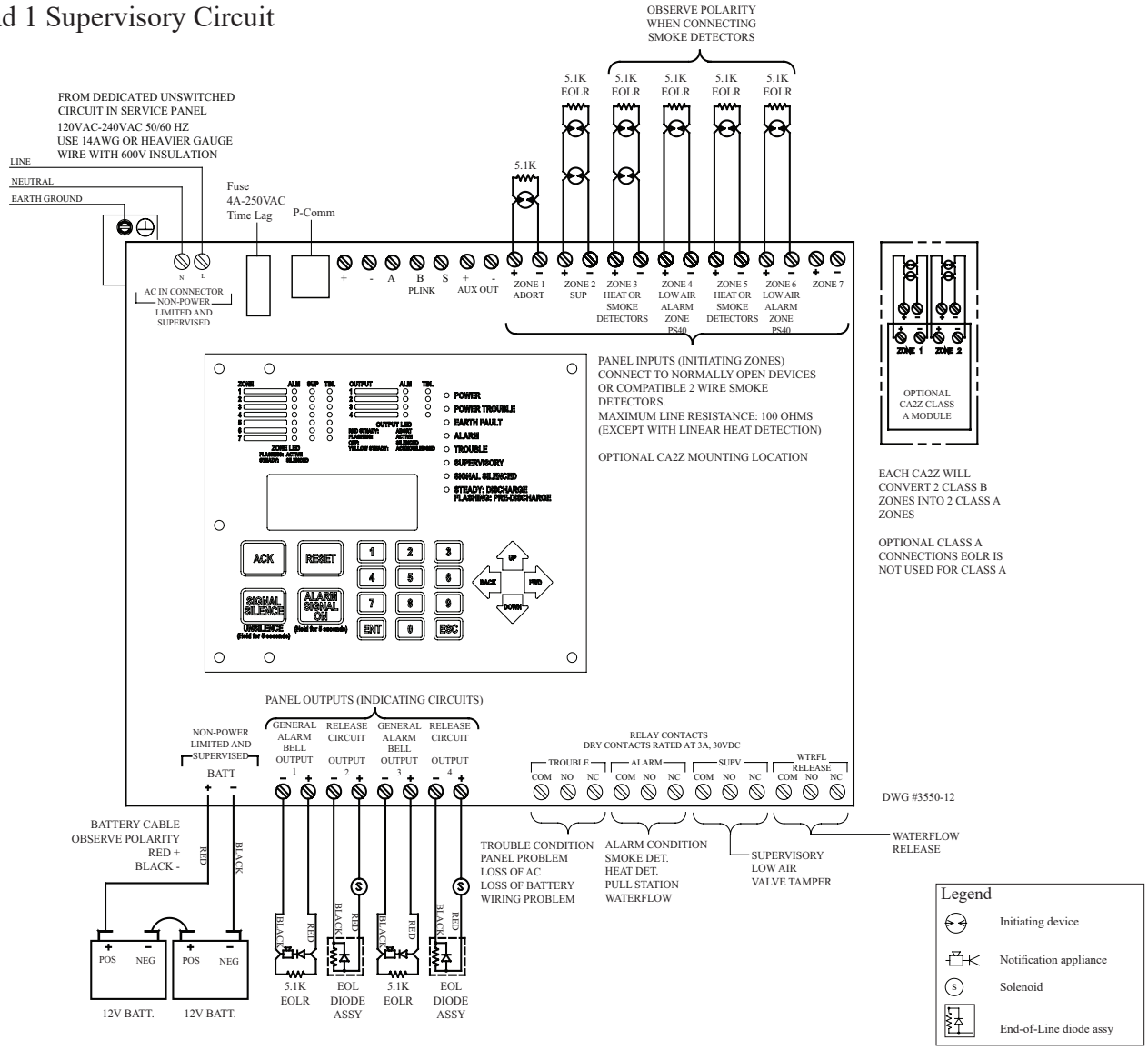
Inputs: 1 supervisory zone, 4 detection zones, 1 abort circuit

Outputs: 2 general alarm, 2 release circuit

Operation: Activation of either detection zones 3 or 4 will activate the alarm output #1
Activation of both detection circuits 3 and 4 at the same time will start the pre-discharge timer for release circuit output #2 as well as activate the alarm output #1
Activation of either detection zones 5 or 6 will activate the alarm output #3
Activation of both detection circuits 5 and 6 at the same time will start the pre-discharge timer for release circuit output #4 as well as activate the alarm output #3

When either zone 3 or 4 is in alarm, output 1 will operate
When both zones 3 and 4 are in alarm at the same time, the pre-discharge timer for output #2 will operate
When either zone 5 or 6 is in alarm, output 3 will operate
When both zones 5 and 6 are in alarm at the same time, the pre-discharge timer for output #4 will operate

Wiring Diagram Program #21
Dual Hazard, 2 Detection Zones Mapped to 1 Release Circuit and 2 Other Detection Zones Mapped to A Separate Circuit, 1 Abort Circuit, and 1 Supervisory Circuit



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #21 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 21 to change to program 21. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Dual Hazard, 2 Detection Zones Mapped to 1 Release Circuit and 2 Other Detection Zones Mapped to a Separate Release Circuit, 1 Supervisory Circuit, 1 Abort Circuit	PROGRAM #21						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Abort	Supervisory	Detection	Detection	Detection	Detection	Unused
#1 ALARM INDICATING			x	x			
#2 RELEASE			x	x			
#3 ALARM INDICATING					x	x	
#4 RELEASE					x	x	

Description: Dual Hazard, 2 detection zones mapped to 1 release circuit and 2 other detection zones mapped to another release circuit

Inputs: 1 supervisory zone, 4 detection zones, 1 abort circuit

Outputs: 2 general alarm, 2 release circuit

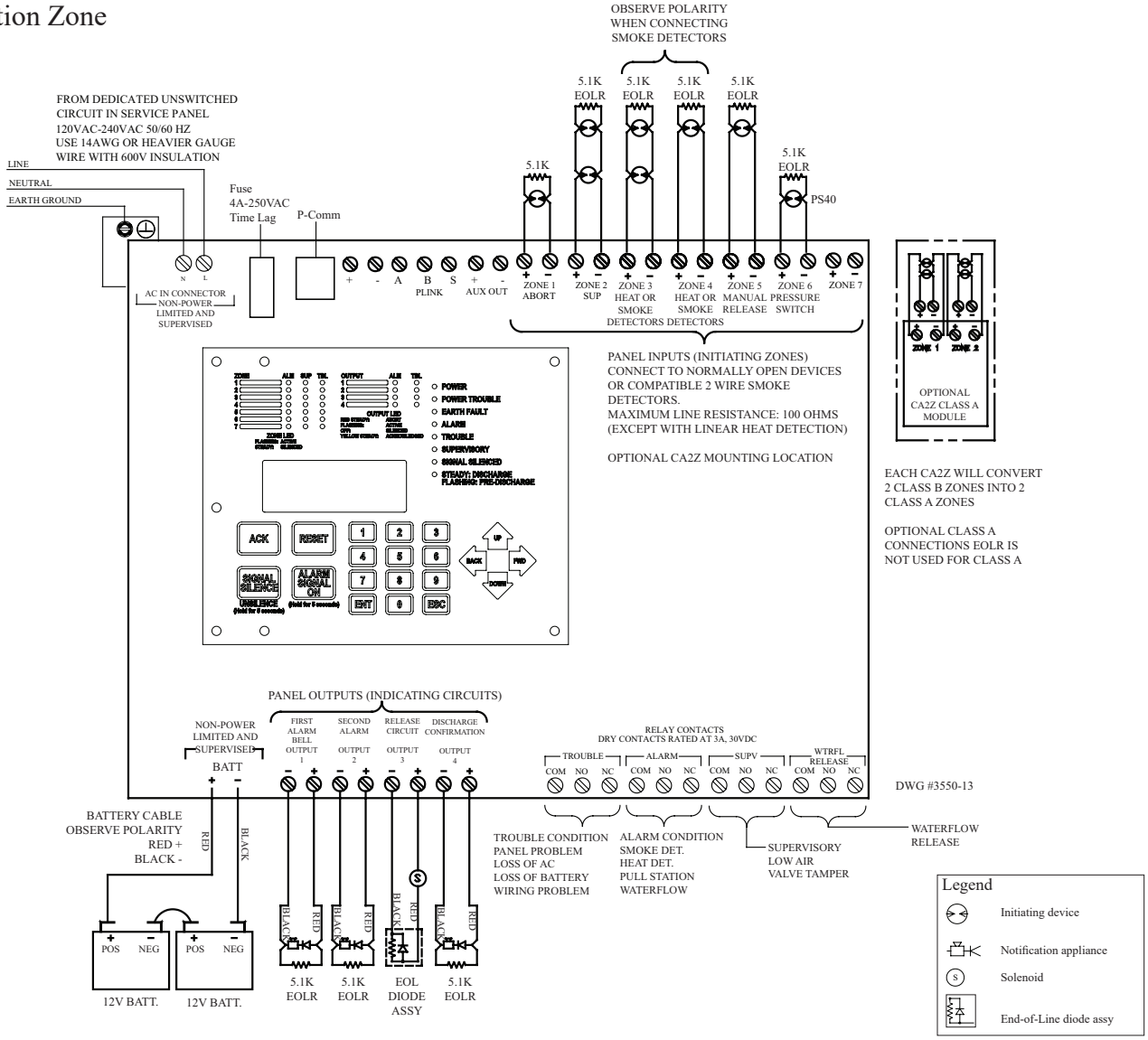
Operation: Activation of either detection zone 3 or 4 will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #2

Activation of either detection zone 5 or 6 will activate the alarm output #3 and start the pre-discharge timer for the release circuit output #2

When either zone 3 or 4 is in alarm, outputs 1 & 2 will operate

When either zone 5 or 6 is in alarm, outputs 3 & 4 will operate

Wiring Diagram Program #22
Single Hazard, 2 Detection Zones Cross-zoned to 1Release Circuit, 1 Manual Station and A Discharge Confirmation Zone



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #22 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 22 to change to program 22. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Detection Zones Cross-Zoned to 1 Release Circuit, 1 Manual Station and a Discharge Confirmation Zone	PROGRAM #22								
	CONVENTIONAL INPUT ZONES							Software Zones	
	#1	#2	#3	#4	#5	#6	#7	#8	#9
OUTPUTS	Abort	Supervisory	Detection	Detection	Manual Release	Detection	Unused	Alarm	Release Zone Type
#1 1st ALARM			x	x					
#2 2nd ALARM			xx	xx	x			XX*	X
#3 RELEASE			xx	xx	x				XX*
#4 ALARM INDICATING						x			

* Release Outputs which are Cross-Zoned and 2nd alarm need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

XX = Cross-Zoned

Description: Single Hazard, 2 detection zones cross-zoned to 1 release circuit. A manual station zone and a discharge confirmation zone. Also first and second alarm notification circuits.

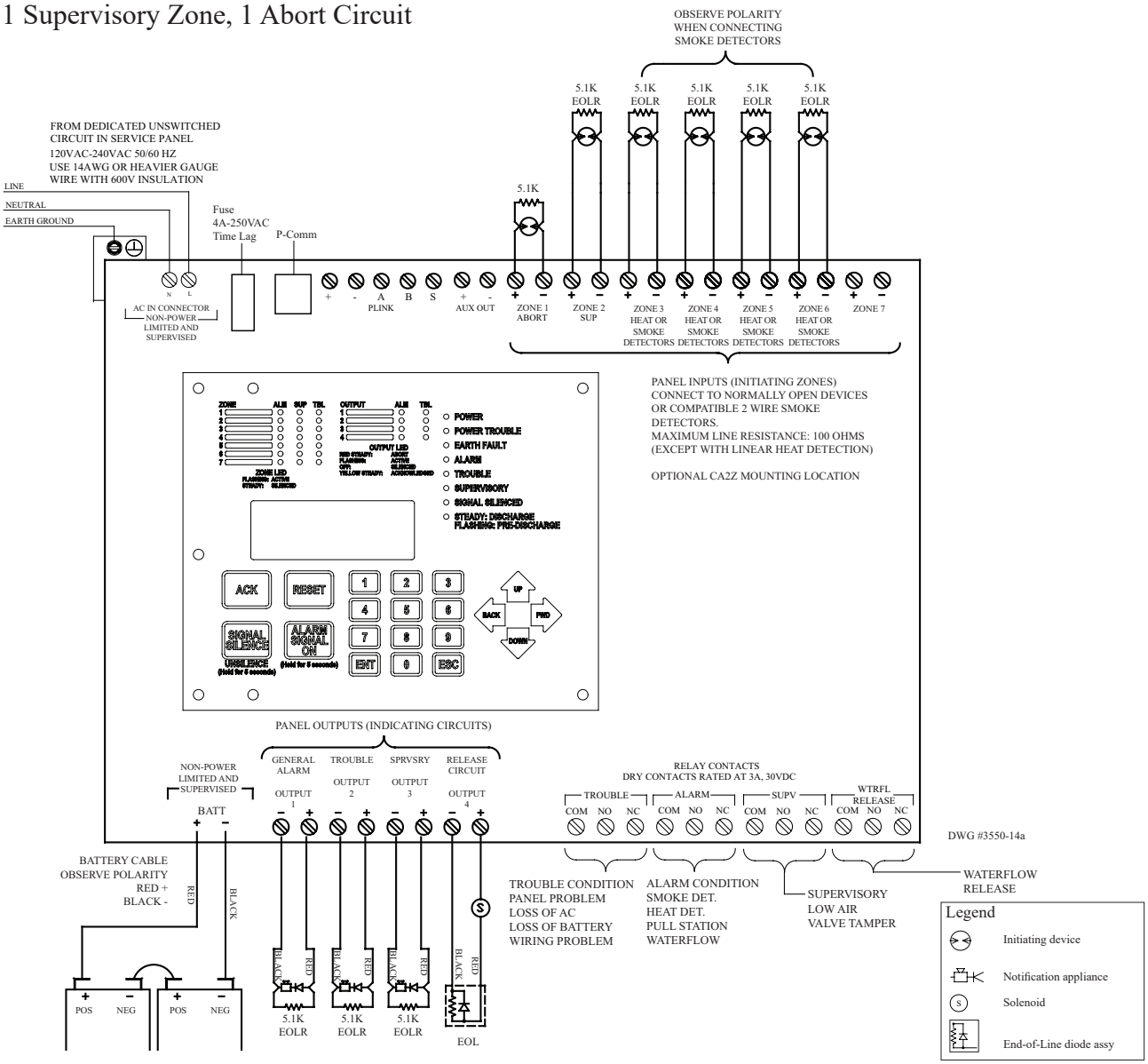
Inputs: 1 supervisory zone, 3 detection zones, 1 manual station zone, 1 abort circuit

Outputs: 3 general alarm, 1 release circuit

Operation: Activation of either detection zones 3 or 4 will activate the alarm output #1
Activation of both detection circuits 3 and 4 at the same time will activate the alarm outputs #1, #2 and start the pre-discharge timer for the release circuit output #3
Activation of the manual release zone #5 will activate the alarm output #2 and start the manual release pre-discharge timer for release circuit output #3
Activation of zone 6 will operate output #4

When either zone 3 or 4 is in alarm, output 1 will operate
When both zones 3 and 4 are in alarm at the same time, outputs #1,2 will operate and the pre-discharge timer for output #3 will start
When zone 5 is in alarm, output 2 will operate and the manual release pre-discharge timer for output #3 will start
When zone 6 is in alarm, output #4 will operate

Wiring Diagram Program #23
Single Hazard, 4 Detection Zones Mapped to 1 Release Circuit, 1 Supervisory Zone, 1 Abort Circuit



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #23 Mode

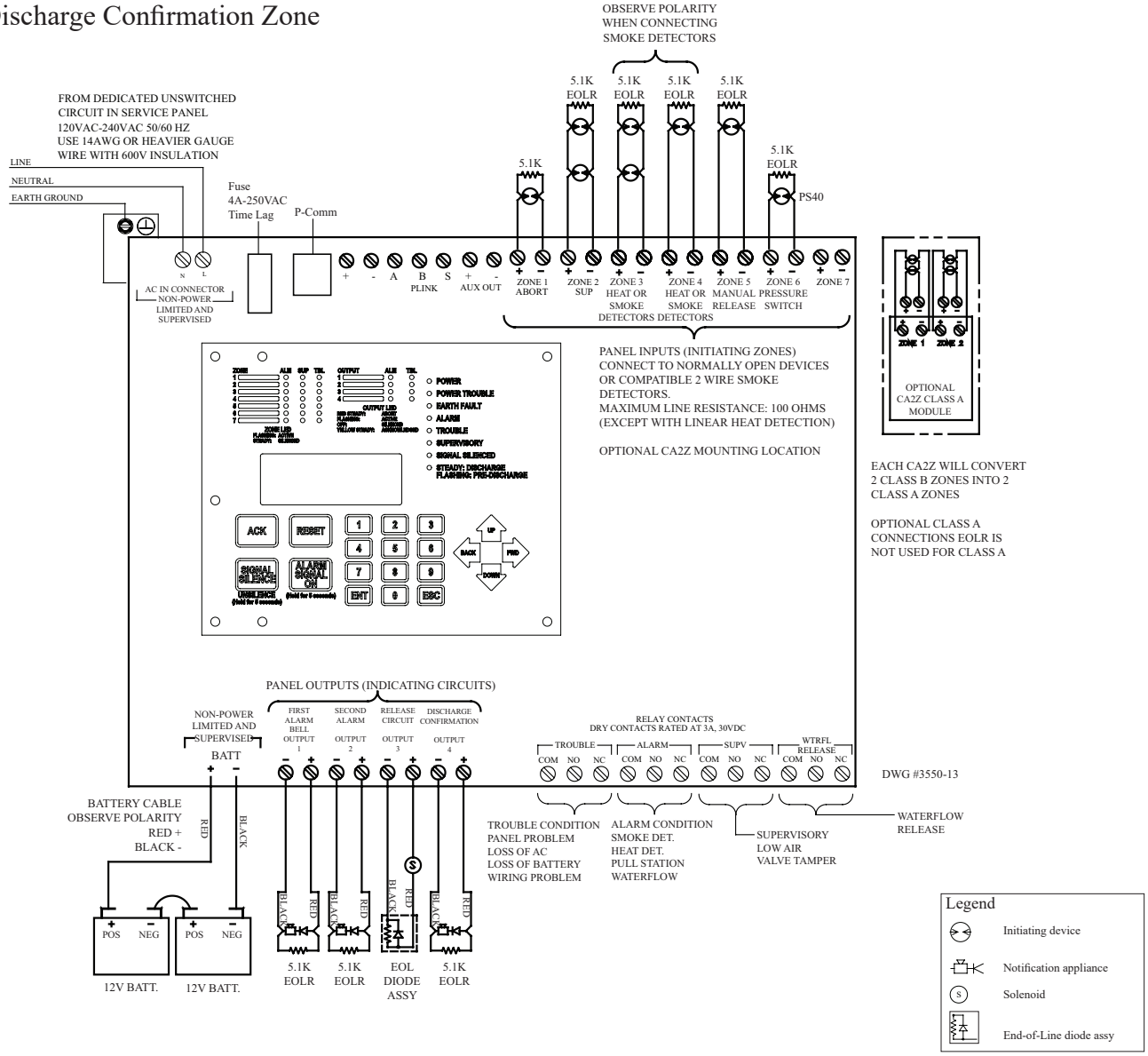
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 23 to change to program 23. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 4 Dectection Zones Mapped to 1 Release Circuit 1 Supervisory Circuit, 1 Abort Circuit	PROGRAM #23						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Abort	Supervisory	Detection	Detection	Detection	Detection	Unused
#1 ALARM INDICATING			X	X	X	X	
#2 TROUBLE							
#3 SUPERVISORY		X					
#4 RELEASE			X	X	X	X	

Description: Single Hazard, 4 detection zones mapped to 1 release
Inputs: 1 supervisory zone, 4 detection zones, 1 abort circuit
Outputs: 1 general alarm, 1 trouble, 1 supervisory, 1 release circuit
Operation: Activation of any detection zone will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #4.
Activation of the supervisory zone will operate the supervisory bell.
A trouble condition (low battery, wire problem, etc.) will operate the trouble bell.

When either zone 3, 4, 5, or 6 is in alarm, outputs 1 & 4 will operate
When the zone 6 supervisory zone is activated - output #3 (supervisory bell) will operate.
When the panel is in a trouble condition - output #2 (trouble bell) will operate.

Wiring Diagram Program #24
Single Hazard, 2 Detection Zones 1 Manual Station Zone and A Discharge Confirmation Zone



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #24 Mode

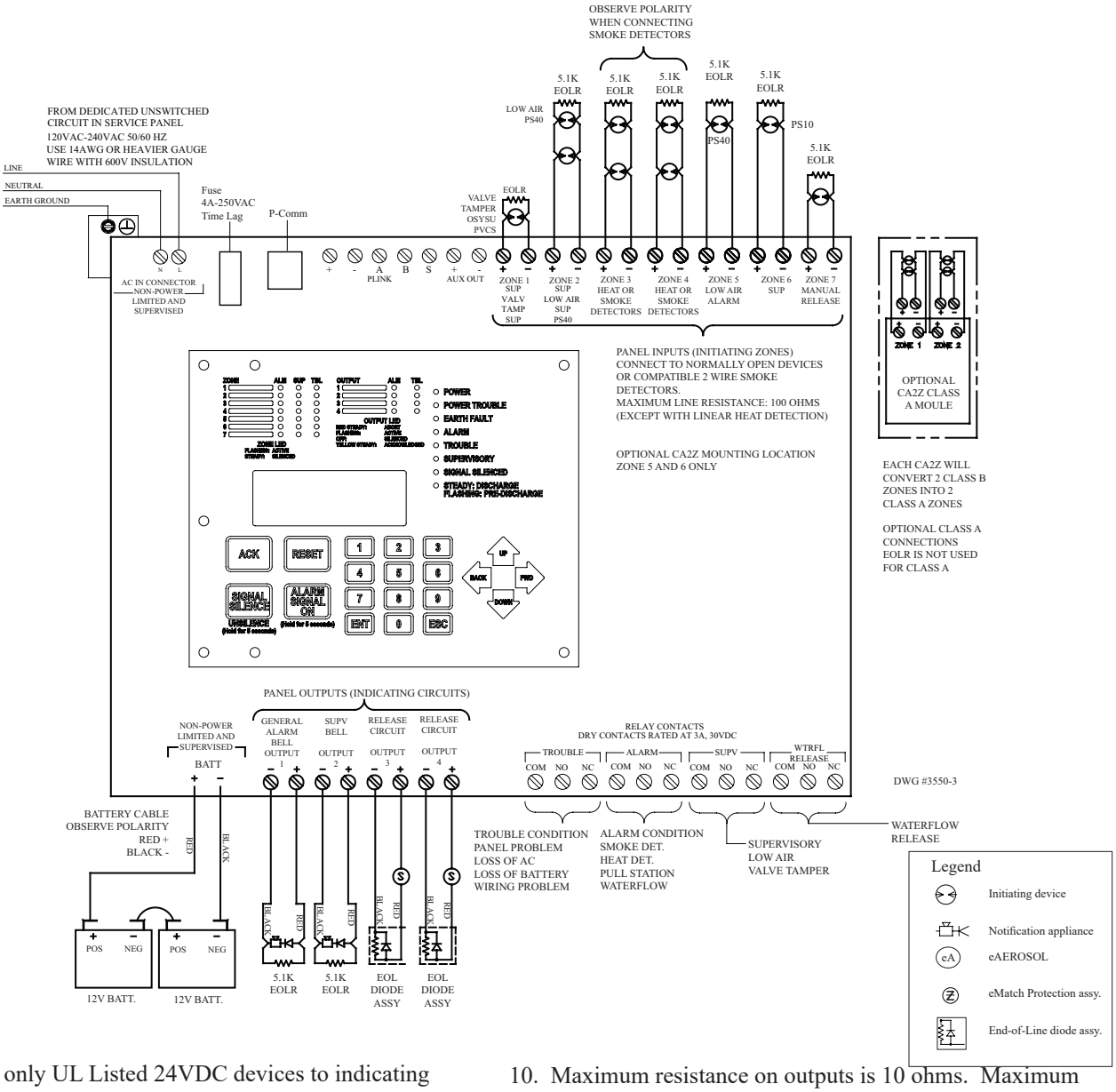
1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 1 to change to program 1. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Single Hazard, 2 Dectection Zones, 1 Manual Release Zone and A Discharge Confirmation Zone	PROGRAM #24						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Abort	Supervisory	Detection	Detection	Manual Release	Low Air Supervisory	Unused
#1 ALARM INDICATING			X	X			
#2 ALARM INDICATING					X		
#3 RELEASE			X	X	X		
#4 SUPERVISORY		X				X	

Description: Single Hazard, 2 detection zones, a manual station zone and a discharge confirmation zone.
Inputs: 1 supervisory zone, 1 low air zone, 2 detection zones, 1 manual station zone, 1 abort circuit
Outputs: 2 general alarm, 1 release circuit, 1 supervisory
Operation: Activation of either detection zones 3 or 4 will activate the alarm output #1 and start the pre-discharge timer for the release circuit output #3
Activation of the manual release zone #5 will activate the alarm output #2 and start the manual release pre-discharge timer for release circuit output #3
Activation of zone 6 will operate output #4

When either zone 3 or 4 is in alarm, output 1 will operate and the pre-discharge timer for output #3 will start
When zone 5 is in alarm, output 2 will operate and the manual release pre-discharge timer for output #3 will start.
When zone 6 is activated, output #4 will operate

Wiring Diagram Program #30
Failsafe Single Hazard Cross Zoned, -2 Alarm Zones, 1 Waterflow Zone, 2 supervisory Zones with Manual Release



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #30 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 30 to change to program 30. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Failsafe Cross Zoned Activation With Normally Open and Normally Closed Solenoid	PROGRAM #30							
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	VALVE TAMPER SUPERVISORY	LOW AIR SUPERVISORY	CONVENTIONAL DETECTION	CONVENTIONAL DETECTION	LOW AIR ALARM	WATER FLOW	MANUAL RELEASE	RELEASE ZONE TYPE
#1 ALARM INDICATING (General Alarm)			X	X		X	X	X
#2 RELEASE NORMALLY ENERGIZED (Failsafe Solenoid, Drops Out on Any System Trouble)			X	X			X	
#3 RELEASE			XX	XX	XX Either Zone 3 & 5 or 4 & 5		X	XX*
#4 ALARM (waterflow alarm)						X		

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

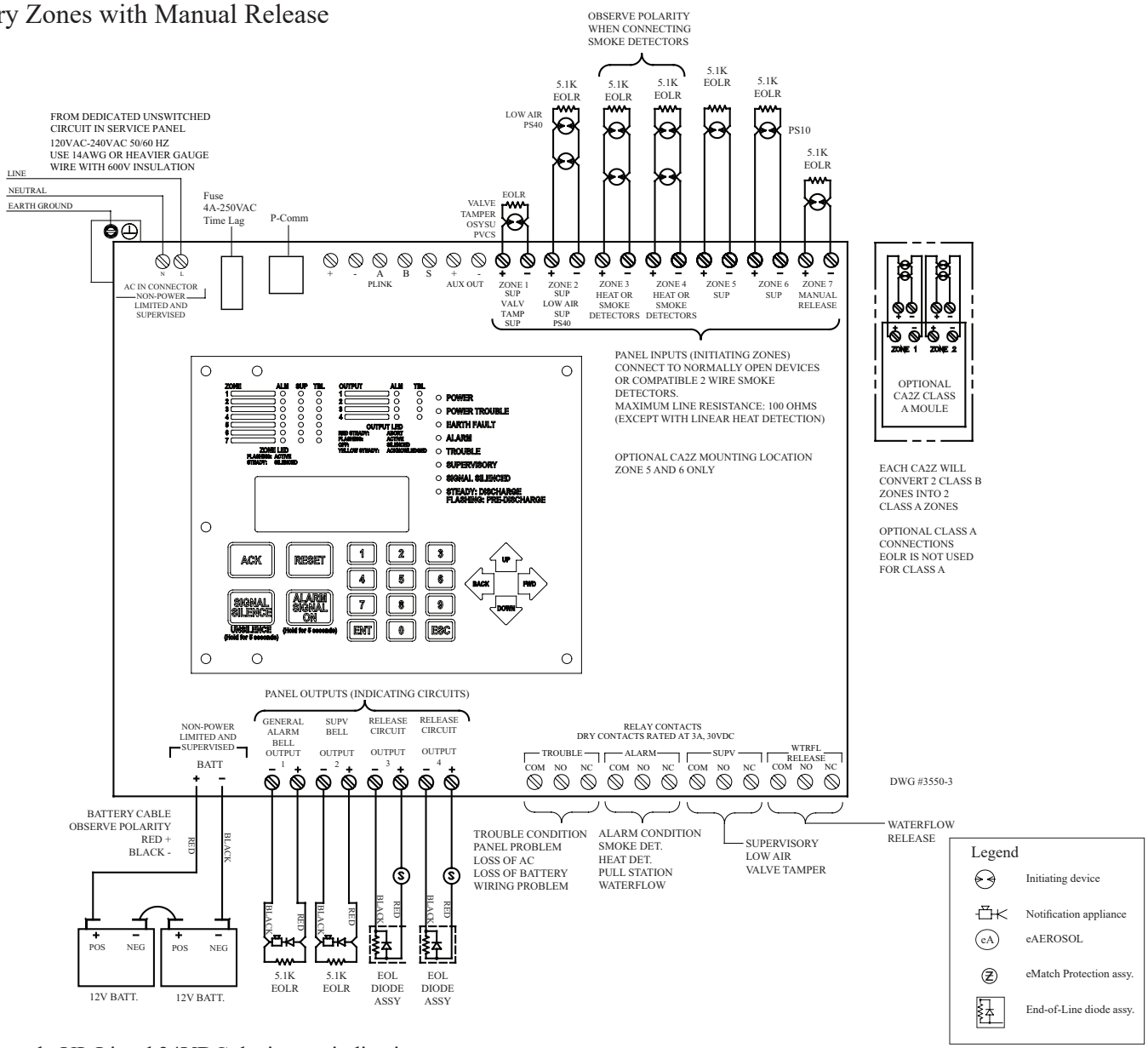
SUP 1 defaults to abort
XX = Cross-Zoned

Inputs 2 Supervisory zones, 2 conventional detection zones, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual release zone.

Outputs: 1 General alarm Indicating, 1 Failsafe Release Circuit: Normally Energized. de-energizes on any system trouble, 1 Release Circuit: Normally Not Energized, 1 Waterflow alarm output.

Operation: Output 2 is constantly energized. Any trouble condition on the panel will de-energize output 2.
Activation of supervisory zone 1 or 2 or activation of Low Air Alarm zone 5, will only create supervisory condition on the panel.
Activation of Conventional Detection zone #3 and/or zone 4 will activate General alarm output 1 and De-energize output 2 .
Activation of either Conventional Detection zone #3 OR zone 4, AND activation of Low Air Alarm zone 5, will energize/activate release output #3.
Activation of Manual Release zone #7 will activate General alarm output 1, de-energize failsafe release output 2 and energize/activate release output #3.

Wiring Diagram Program #31
Failsafe Single Hazard, -2 Alarm Zones, 1 Waterflow Zone, 3 supervisory Zones with Manual Release



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #31 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 31 to change to program 31. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

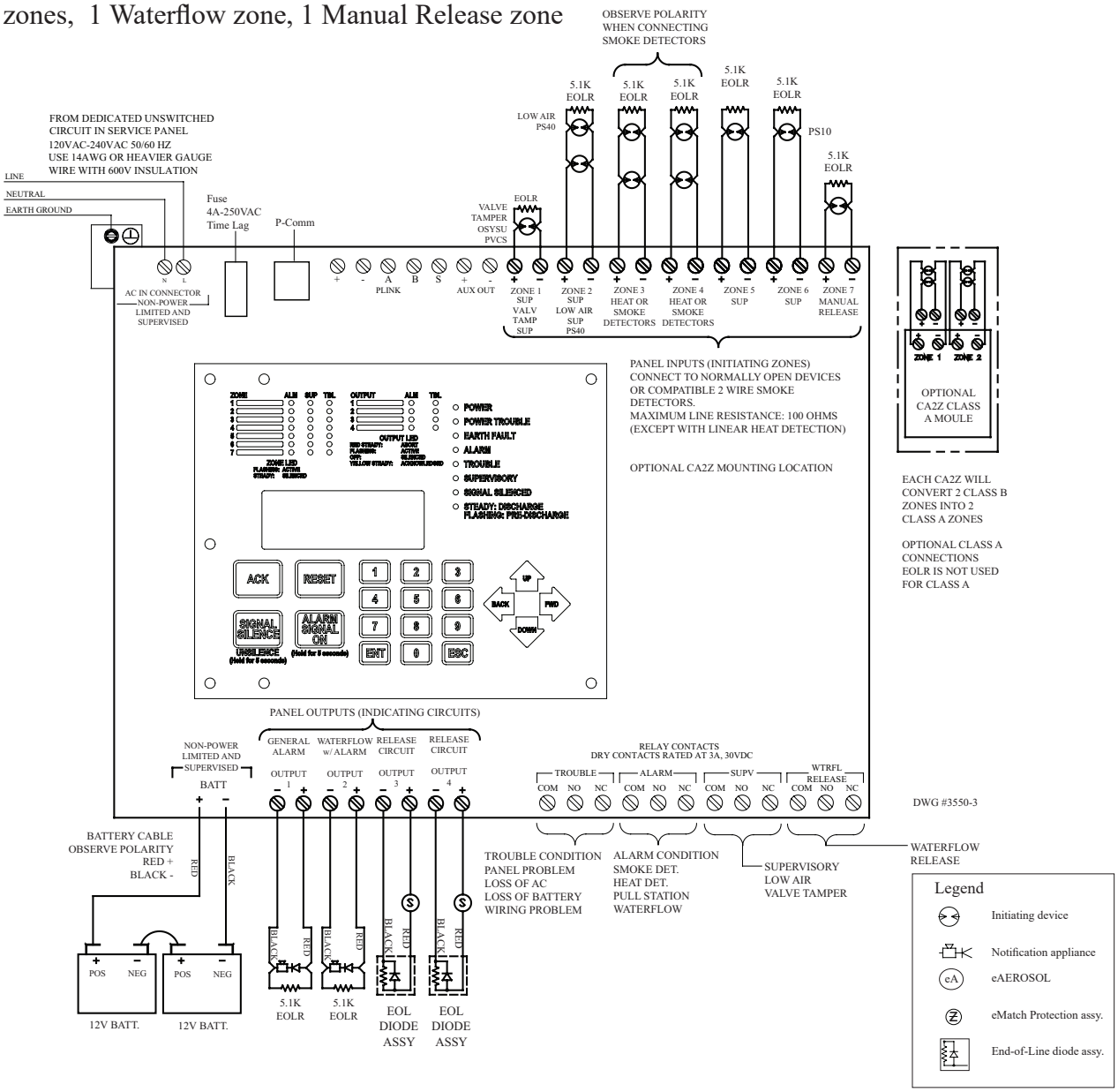
Failsafe Operation Single zone activation Two solenoids, one is Normally Energized	PROGRAM #31						
	CONVENTIONAL INPUT ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	VALVE TAMPER SUPERVISORY	LOW AIR SUPERVISORY	CONVENTIONAL DETECTION	CONVENTIONAL DETECTION	SUPERVISORY	WATER LOW	MANUAL RELEASE
#1 ALARM INDICATING (General Alarm)			X	X		X	X
#2 RELEASE NORMALLY ENERGIZED (Failsafe Solenoid, Drops Out on Any System Trouble)			X	X			X
#3 RELEASE (Solenoid)			X	X			X
#4 ALARM (waterflow alarm)						X	

Inputs: 3 Supervisory zones, 2 conventional detection zones, 1 Waterflow zone, 1 Manual release zone

Outputs: 1 General alarm Indicating, 1 Release Circuit: Normally Energized. Failsafe, De-energizes on any system trouble, 1 Release Circuit: Normally Not Energized, 1 Waterflow alarm output.

Operation: Output 2 is constantly energized. Any trouble condition on the panel will de-energize output 2. Activation of Supervisory zone 1, zone 2 or Low Diaphragm water Pressure zone 5, will create a supervisory condition on the panel.
Activation of Conventional Detection zone 3 or zone 4, or Manual Release zone 7 will activate General alarm output 1, De-energize output 2 and energize/activate release output 3.
Activation of Waterflow zone 6 will activate General alarm output 1 and Waterflow alarm output 4.
Activation of Manual Release zone #7 will activate General alarm output 1, de-energize failsafe release output 2 and energize/activate release output #3.

Wiring Diagram Program #32
Double Interlock with Redundant Solenoids Crossed Zone - 3 Supervisory zones, 2 Detection zones, 1 Waterflow zone, 1 Manual Release zone



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #32 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 32 to change to program 32. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

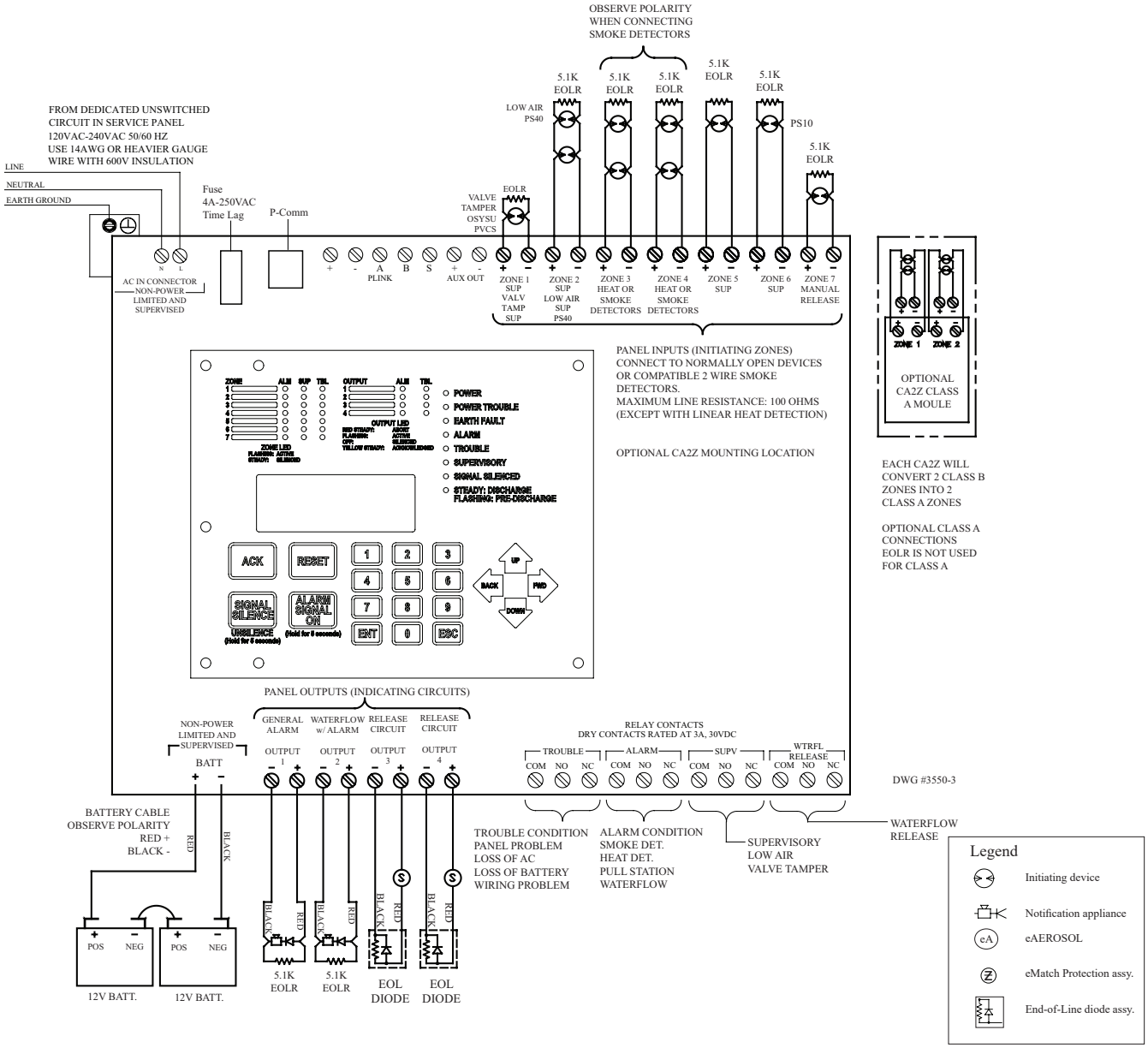
Double Interlock with Redundant Solenoids Cross Zoned Activation	PROGRAM #32								
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES	
	#1	#2	#3	#4	#5	#6	#7	#8	#9
OUTPUTS	Low Air Supervisory	Valve Tamper	Conventional Detection	Conventional Detection	Low Air Alarm	Waterflow	Manual Release	Release Zone Type	Release Zone Type
#1 GENERAL ALARM			X	X		X	X	X	X
#2 WATERFLOW ALARM						X			
#3 RELEASE SOLENOID			XX	XX	XX Either Zones 3 &5 or 4&5		X	XX*	XX*
#4 RELEASE SOLENOID			XX	XX	XX Either Zones 3 &5 or 4&5		X	XX*	XX*

* Release Outputs which are Cross-Zoned need a Software Zone in order to work properly. The Software Zone Number will be displayed upon a release.

SUP 1 defaults to abort
XX = Cross-Zoned

Inputs: 3 Supervisory zones, 2 Detection zones, 1 Waterflow zone, 1 Manual Release zone
Outputs: 1 General Alarm, 1 Waterflow, 2 Release Solenoids
Operation: Activation of any supervisory zone or Low Air Alarm zone will create a supervisory condition on the panel, no outputs will activate
Activation of Conventional Detection zone 3 and/or 4 will activate General Alarm output 1
Activation of either Conventional Detection zone 3 OR 4 AND Low Air Alarm zone 5 will activate General Alarm output 1 and Release Solenoid outputs 3 and 4.
Activation of Waterflow zone 6 will activate General alarm output 1 and Waterflow output 2.
Activation of Manual Release zone #7 will activate General Alarm output 1 and Release Solenoid outputs 3 and 4.

Wiring Diagram Program #33
Redundant Solenoids Single Interlock with Single Zone Activation



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

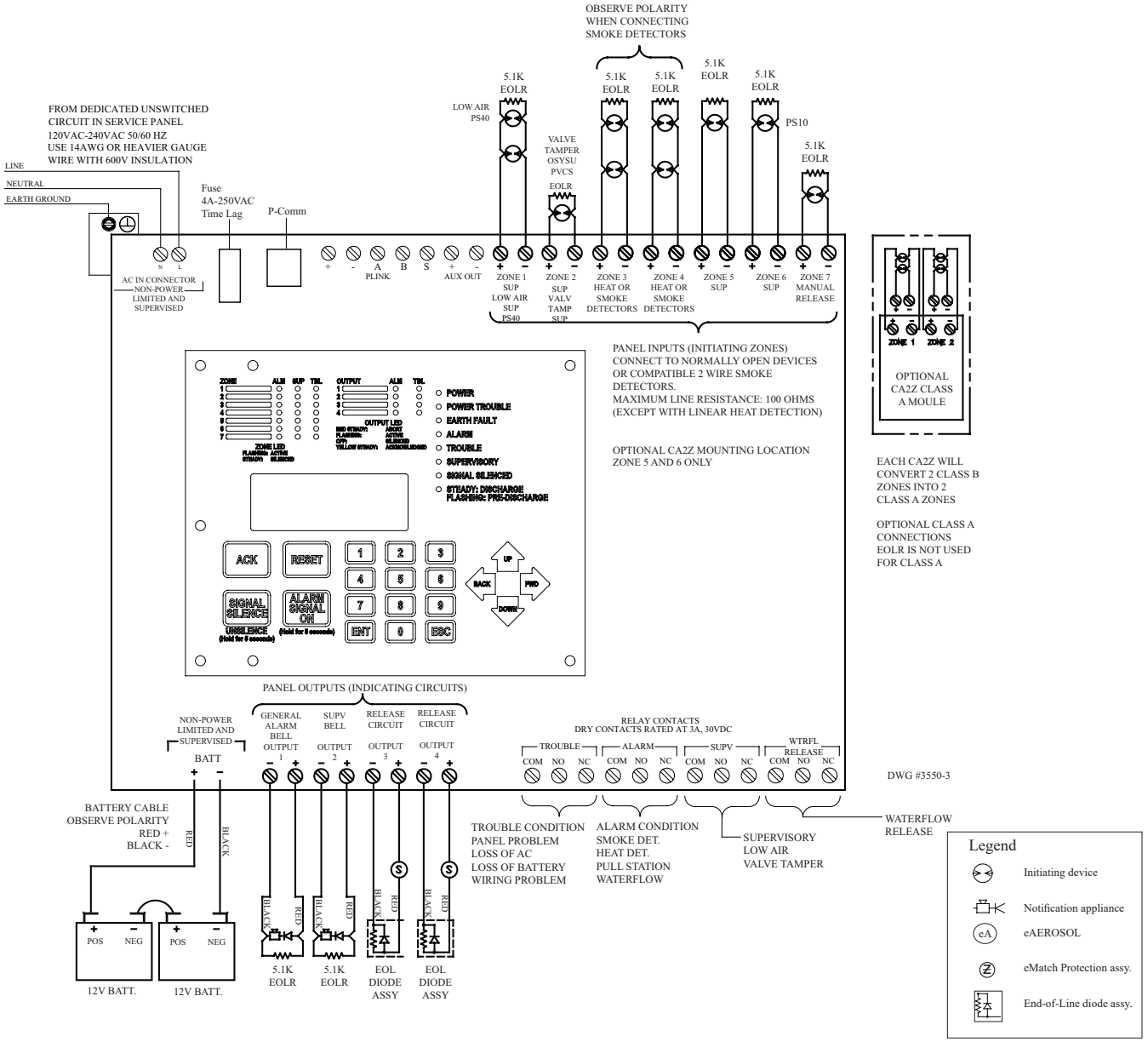
Program #33 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 33 to change to program 33. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Redundant Solenoids Single Interlock with Single Zone Activation	PROGRAM #33						
	ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Low Air Supervisory	Valve Tamper	Conventional Detection	Conventional Detection	Low Air Alarm	Waterflow	Manual Release
#1 GENERAL ALARM			X	X		X	X
#2 WATERFLOW ALARM						X	
#3 RELEASE SOLENOID			X	X			X
#4 RELEASE SOLENOID			X	X			X

Inputs: 3 Supervisory zones, 2 Detection zones, 1 Waterflow zone, 1 Manual Release zone
Outputs: 1 General Alarm, 1 Waterflow, 2 Release Solenoids
Operation: Activation of any supervisory zone or Low Air Alarm zone will create a supervisory condition on the panel, no outputs will activate
Activation of Conventional Detection zone 3 and/or 4 and/or Manual Release zone 7 will activate General Alarm output 1 and Release Solenoid outputs 3 and 4
Activation of Waterflow zone 6 will activate General alarm output 1 and Waterflow output 2

Wiring Diagram Program #34
Single Hazard Latching Solenoid with Remote reset



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #34 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 1 to change to program 1. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

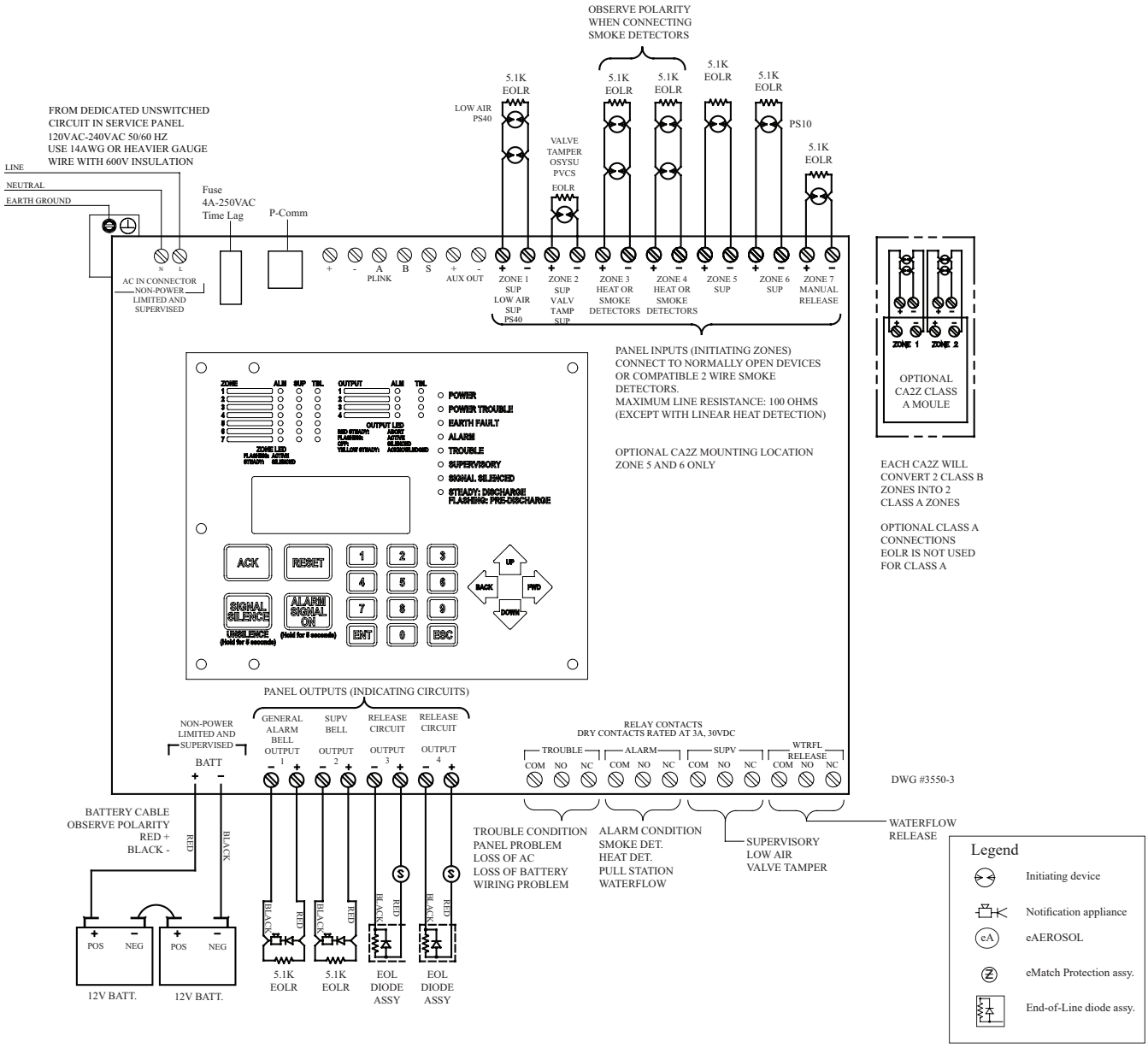
Single Zone Activation: Latching Solenoid Remote Solenoid Reset	PROGRAM #34						
	ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS	Low Air Supervisory	Valve Tamper	Conventional Detection	Conventional Detection	Valve Reset Supervisory	Waterflow	Manual Release
#1 GENERAL ALARM			X	X			X
#2 RELEASE SOLENOID (2 second pulse)			X	X			X
#3 SOLENOID RESET (2 second pulse)					X		
#4 WATERFLOW BELL						X	

Inputs: 2 Supervisory zones, 2 conventional detection zones, 1 Waterflow zone, 1 Manual release zone, 1 Valve Reset zone

Outputs: 1 General alarm Indicating, 1 Release circuit, 1 Valve Reset circuit, 1 Waterflow Bell

Operation: Activation of Supervisory zone 1 or 2 will create a supervisory condition on the panel
Activation of Conventional Detection zone 3 or 4 will activate General alarm output 1 and temporarily activate release output 2 for two seconds
Activation of Valve Reset zone 5 will temporarily activate release output 3 to reset the solenoid on the preaction valve and create a supervisory condition
Activation of Waterflow zone 6 will activate the waterflow bell output 4
Activation of Manual Release zone #7 will activate General alarm output 1 and temporarily energize release output #2

Wiring Diagram Program #35
Single Hazard Latching Solenoid Cross Zoned with Remote reset



NOTES:

1. Connect only UL Listed 24VDC devices to indicating circuits.
2. Connect EOL Diode assembly IN SERIES with solenoid on release circuit
3. Install EOLR (provided) on all unused circuits.
4 Polarity is shown on indicating circuits in an activated (off-normal) condition.
5. Polarity reverses when output is activated.
6. Maximum current per output is 3 Amp. Maximum voltage is 33VDC.
7. Outputs identified as Release are Special Application. All other outputs are Regulated 24 VDC, Rated 3 Amp each, 3 Amp total for all 4 circuits.
8. All initiating and NAC/Release circuits are supervised and power limited. See Main Board Wiring Specifications for wire routing instructions. All frequencies are continuous.
9. Refer to Appendix A for test and maintenance information
10. Maximum resistance on outputs is 10 ohms. Maximum resistance on outputs programmed as releasing, is 1 divided by current requirements of solenoid.

See Appendix C for smoke detector compatibility data.

See Battery Calculation Worksheet for battery information.

Program #35 Mode

1. Apply power to panel.
2. Press ENT to enter PROGRAM mode
3. Press 6 or scroll down to #6 and press ENT, (The selection is indicated by a flashing arrow next to the number.
4. Enter the password. (Factory default is 1111)
5. Press 1 or press ENT. (1 should be the highlighted selection)
6. The display shows the current program number. Press 1 to change to program 1. Press ENT.
7. Press 1 to accept the change.
8. Press ENT to accept the change.

Latching Solenoid Cross Zoned	PROGRAM #35							
	CONVENTIONAL INPUT ZONES							SOFTWARE ZONES
	#1	#2	#3	#4	#5	#6	#7	#8
OUTPUTS	VALVE TAMPER SUPERVISORY	LOW AIR SUPERVISORY	CONVENTIONAL DETECTION	LOW AIR ALARM	VALVE RESET SUPERVISORY	WATER FLOW	MANUAL RELEASE	RELEASE ZONE TYPE
#1 GENERAL ALARM			X				X	X
#2 RELEASE SOLENOID (2 second pulse)			XX	XX			X	XX*
#3 SOLENOID RESET (2 second pulse)					X			
#4 WATERFLOW BELL						X		

* Release Outputs which are Cross-Zoned need a Pseudo Zone in order to work properly. The Pseudo Zone Number will be displayed upon a release.

SUP 1 defaults to abort
XX = Cross-Zoned

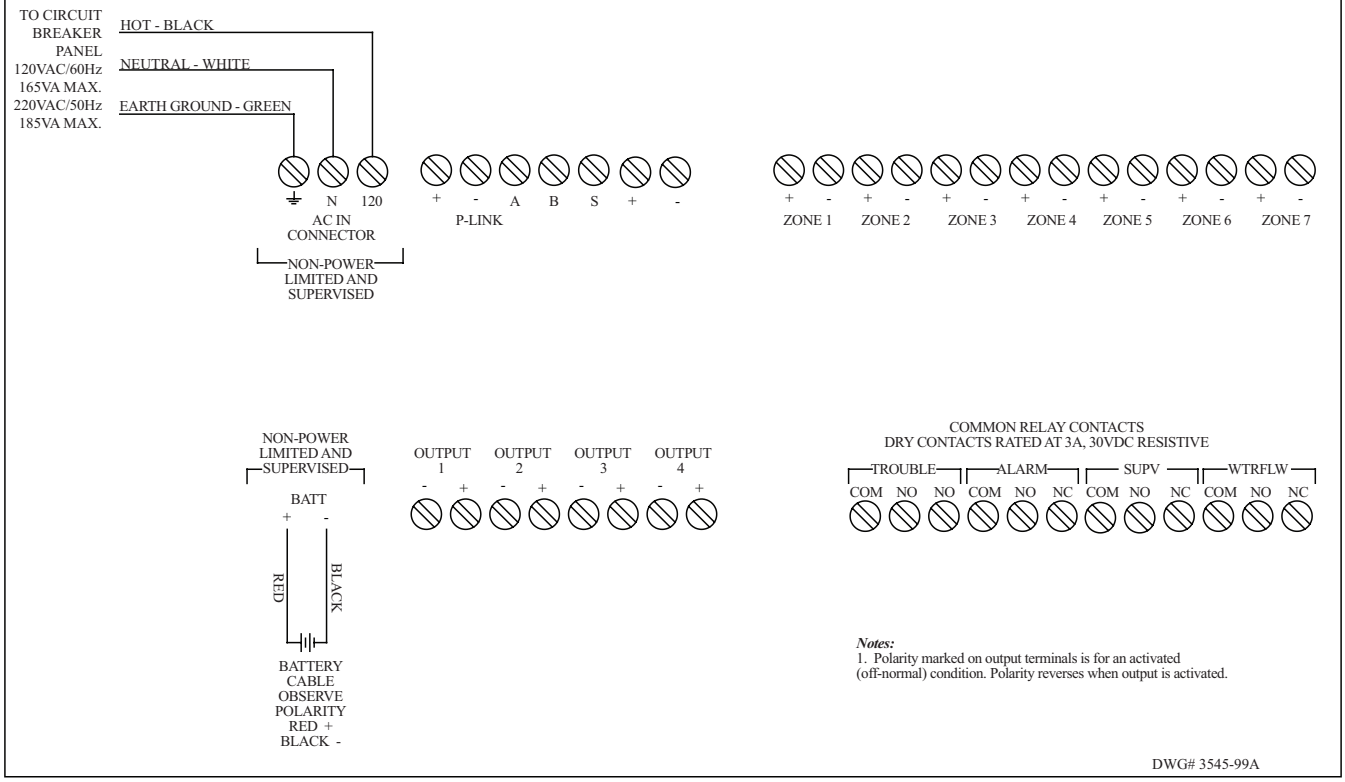
Inputs: 2 Supervisory zones, 1 conventional detection zone, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual release zone, 1 Valve reset zone

Outputs: 1 General alarm Indicating, 1 Release circuit, 1 Valve Reset circuit, 1 Waterflow Bell

Operation: Activation of Conventional Detection zone #3 and Low Air Alarm zone #4 at the same time or activation of Manual Release zone #7 will activate and energize release output #2
Activation of Low Air Alarm zone 4 will create a supervisory condition on the panel
Activation of Valve Reset zone 5 will reset the solenoid on the preaction valve for two seconds
Activation of Waterflow zone 6 will activate the waterflow bell output 4

CUSTOM PROGRAM							
	CONVENTIONAL ZONES						
	#1	#2	#3	#4	#5	#6	#7
OUTPUTS							
#1							
#2							
#3							
#4							

Wiring Diagram Custom Program



Section 6: Programming Options

The control panel can be configured using the on-board keypad or PC based programming tool. The panel stores the site specific configuration data in non-volatile memory.

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

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 and ULC S527, certain programming features or options must be limited to specific values or not used at all as indicated below.

Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864 / S527	Comment
Misc	Idle LCD Message	Y	Yes/No	All Settings Allowed	
Misc	Display Events	Y	Initial Event Newest Event	Initial Event	Auto display first event
Misc	Waterflow Delay	Y	0-255 Sec	0-90 sec	
Misc	AC Report Delay	Y	0 Minutes, 5-30 Hours	1-3 Hours	
Misc	Door Holder Low AC Dropout Delay	Y	No delay, 15 Sec, 1 minute, 5 minute	All Settings Allowed	
Misc	Strobes Active When Silenced	Y	Yes/No	All Settings Allowed	
Misc	Disable 24 hours PZT Resound	Y	Yes/No	No	
Misc	Display AM/PM	Y	Yes/No	All Settings Allowed	No = 24hour clock
Misc	Synchronize to Network Time	Y	Yes/No	All Settings Allowed	
Misc	SNTP Server	Y	North-America.Pool.NTP.org	All Settings Allowed	
Misc	Time Zone	Y	24 Time Zone Selections	All Settings Allowed	
Misc	DST Enabled	Y	Yes/No	All Settings Allowed	
Misc	DST Start	Y	Month/Day	All Settings Allowed	
Misc	DST End	Y	Month/Day	All Settings Allowed	
Zone	Zone Style	Y	Alarm Supervisory Waterflow Trouble Releasing Releasing Confirmation Unused System Alarm System Supervisory	All Settings Allowed	
Zone	Silenceable	Y	Yes/No	All Settings Allowed	
Zone	Silence Inhibit	Y	0-60 minutes	All Settings Allowed	
Zone	Auto Silence	Y	3-360 minutes	3-60 UL864 S527 (see comment)	Shall be set in accordance with section 3.2.4.6 of the National Building Code of Canada
Zone	Auto Unsilence	Y	0-60 minutes	All Settings Allowed	

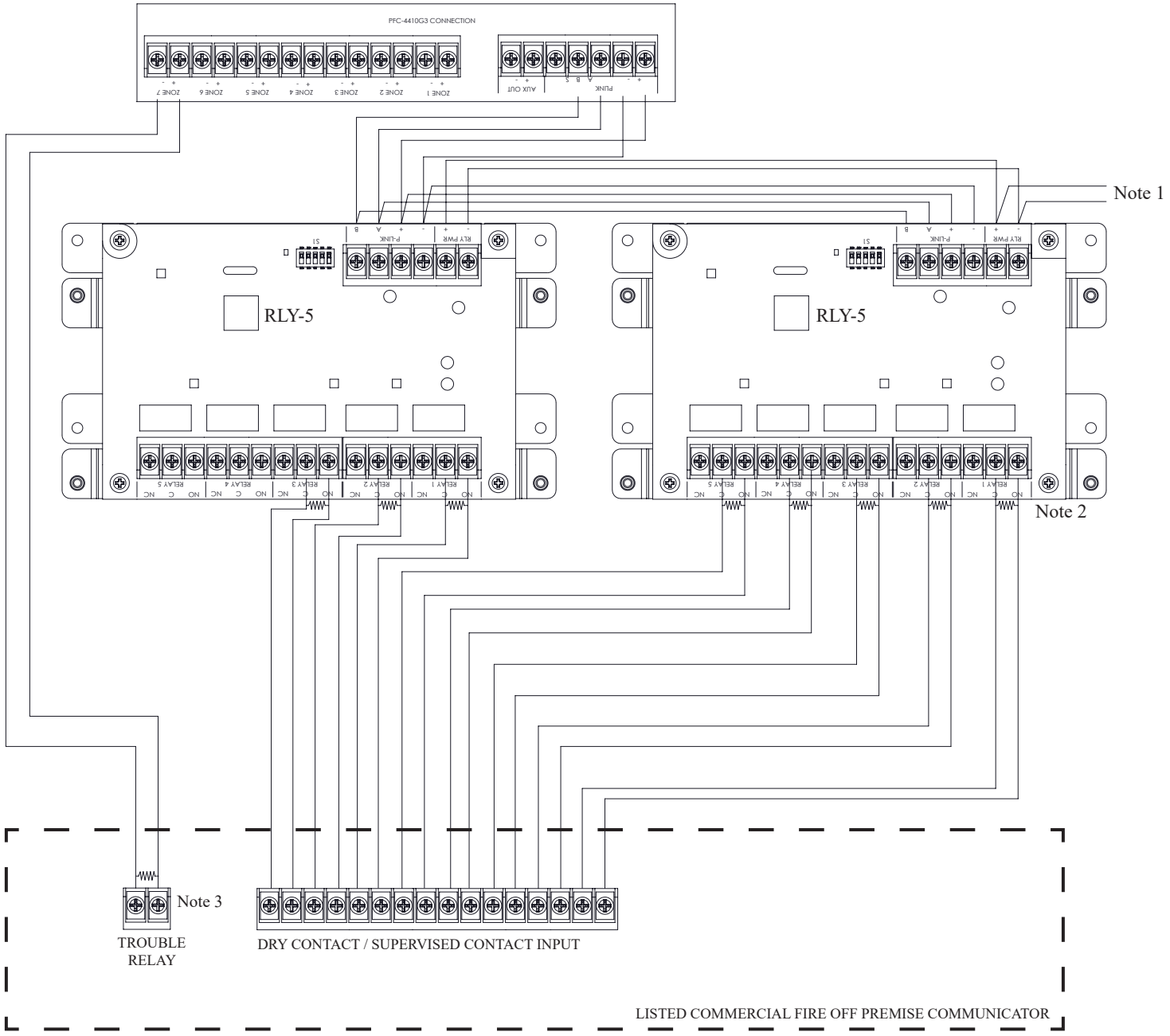
Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864 / S527	Comment
Zone	Restore Delay	Y	0-300 Sec	Full range allowed	Delay to reactivate devices that turn off on troubles or alarm on panel restoration to normal
Zone	Latching	Y	Yes/No	All Settings Allowed	
Zone	Output Pattern	Y	Constant ANSI Temp 3 March Code Double Time	All Settings Allowed	
IDC	Dry Contact Input Functions	Y	Unused Detection Waterflow Linear Heat Manual Release Smoke Detector Heat Detector Input Abort Low Air Alarm Supervisory Valve Tamper Low Air Supervisory High Air Supervisory Remote Reset Remote Silence Valve Reset Release Confirmation	All Settings Allowed Exception: Remote reset, remote silence and valve reset functions allowed when used with a keyed switch. Abort & Release Confirmation: Available in Agent Release Mode only. Abort on a water-based extinguishing system is not a UL Listed function.	Applies to built in IDCs and optional IDC-6
Outputs	Function	Y	General Purpose AMSECO Sync Gentex Sync System Sensor Sync Wheelock Sync Door Holder Output Door Holder Low AC Drop Release Supervisory Unused Alarm Indicating Trouble Normally Energized Release Pulse Reset Pulse First Alarm Second Alarm		Specifies use of Output circuit(s)
AUX PWR	Function	Y	Constant Output Resettable Output	All Settings Allowed	
E-Mail	Email Status Reports	N	Alarms Troubles Supervisory Test History & Status Reports		

Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864 / S527	Comment
Releasing	Abort Type	Y	**Mode 1- IRI:** Abort must be activated before pre-discharge timer starts	Yes	Abort has no affect after second alarm is received by the panel. Requires cross zoning. Not repeatable. Does not abort manual release.
			Mode 2-ULI: Stops Predischarge timer at 10 seconds while abort circuit is active.	Yes	If less than 10 seconds is remaining, the timer restores to 10 seconds. Deactivating Abort circuit starts timer at 10 seconds. Repeatable..
			Mode 3 - NYC One time operation that adds 90 seconds to time remaining on discharger when activated	No	Predischarge timer stops at time remaining plus 90 seconds while abort is active.This abort is not repeatable
			Mode 4 -AHJ: Stops Predischarge timer at 30 seconds while abort circuit is active.	No	If less than 30 seconds is remaining, the timer restores to 30 seconds. Deactivating Abort circuit starts timer again. Repeatable.
			Mode - 5 PRA Post Release Abort. Used after the release circuit has activated.	No	De-energizes the release circuit, allowing the suppression agent to stop discharging without resetting the panel Abort circuit maybe on zone 2-7
			Mode - 6 IRI & PRA Provides both the IRI abort mode and the PRA abort mode	No	Requires 2 abort inputs to operate. IRI abort shall be on Zone 1. PRA may be on Zone 2-7.
			Mode 7 - ULI & PRA Provides both the ULI abort mode and the PRA abort mode	No	Requires 2 abort inputs to operate. ULI abort shall be on Zone 1. PRA may be on Zone 2-7.
			Mode 8 - NYC & PRA Provides both the NYC abort mode and the PRA abort mode	No	Requires 2 abort inputs to operate. NYC abort shall be on Zone 1. PRA may be on Zone 2-7.
			Mode 9 - AHJ & PRA Provides both the AHJ abort mode and the PRA abort mode	No	Requires 2 abort inputs to operate. AHJ abort shall be on Zone 1. PRA may be on Zone 2-7.
Releasing	Pre-Release timer	Y	0-60 Sec	Full range	Length of time of pre-release

Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864 / S527	Comment
Releasing	Pre-Release Timer - Manual Station	Y	0-30Seconds	Full Range	Length of time of pre-release
Releasing	Pre-Release Pattern	Y	Constant ANSI Temp 3 March Code Double Time	ANSI not allowed	NAC Output Pattern during pre-release
Releasing	Manual Release Abort Allowed	Y	Yes/No	All settings allowed	Specifies if manual Release can be aborted. Default is No
Releasing	Soak Timer	Y	0-30 Minutes (0.1 min increments) 0-300 Minutes (1 min increments)	All settings allowed	Length of Time the Release circuit is active post-release

Section 7: Communication Options

Connection Drawing for Central Station and Remote Station Operation of PFC-4410G3 to Listed Commercial Fire Off Premise Communicator



Note 1: Refer to Figure 30. for RLY-5 power wiring options

Note 2: EOLR as required by listed commercial fire off premise communicator

Note 3: Potter EOLR (3005013)

Installation Requirements	• Installation and programing of Listed commercial fire off premise communicator shall be in accordance with manufacturer documentation and applicable local codes and standards. Consult listed commercial fire off premise communicator documentation for communication pathways and transmitter/receiver compatibility • Each RLY-5 relay shall be wired to a dry contact / supervised contact input of the listed commercial fire off premise communicator. Consult commercial fire off premise communicator installation documentation for wiring restrictions. • Commercial fire off premise communicator shall have at least one trouble relay and shall be wired to a TROUBLE input on the PFC 4410G3. Relay may be programmed for primary power trouble transmission delay if required. • Commercial fire off premise communicator shall have an input for each alarm zone • Commercial fire off premise communicator shall have 2 additional inputs for trouble and supervisory • Commercial fire off premise communicator shall have its own primary and secondary power sources or may be connected to PFC-4410G3's continuous Auxiliary Power if voltage and current ratings are compatible. Refer to Figure 10 for connections and voltage / current compatibility.
PFC-4410G3 Programing Requirements	• 1 relay shall be mapped to each alarm input zone. • 1 relay shall be mapped to a trouble zone • 1 relay shall be mapped to a SYS. Supervisory zone • 1 Input shall be a TROUBLE type and shall be wired to commercial fire off premise communicator trouble contact

NOTICE

For US installations the commercial fire off premise communicator shall be Listed to 10th Edition UL864

For Canada installations the commercial fire off premise communicator shall be listed to CAN/ULC-S559

Section 8: Appendices

Appendix A: System Maintenance and Testing

⚠ CAUTION

Testing the panel or associated devices may result in a discharge of the suppression system. All necessary precautions shall be taken to prevent an unwanted activation of the suppression system. Read, understand and follow all testing instructions as well as all cautions, warnings and notices associated with the suppression system and this panel before beginning any testing or servicing.

Acceptance Test

The control panel is required to be installed in accordance with local and state building codes and NFPA 72 (For Canada: ULC Standard CAN/ULC-S536). At the conclusion of each original installation or modification of this system, the control panel and related system is required to be inspected and tested in accordance with NFPA 72 (For Canada: ULC Standard CAN/ULC-S536) to verify compliance with the applicable standards.

Testing shall be conducted by personnel trained in the operation of this panel and the suppression system it is operating. Testing shall be conducted in in the presence of a representative of the Authority Having Jurisdiction (AHJ) and the building owners representative. Refer to NFPA 72 *(National Fire Alarm Code*), Inspection Testing and Maintenance chapter. For Canada refer to ULC Standard CAN/ULC-S536

Periodic Testing and Service

Periodic testing and maintenance of the control panel, all initiating points, all notification appliances and any other associated equipment is essential to ensure the system will operate as designed in emergency situations. Service and test the control panel according to the schedules and procedures outlined in the following documents:

- NFPA 72, Inspection, Testing and Maintenance chapter. (For Canada refer to ULC Standard CAN/ULC-S536)
- Service manuals and instructions for any and all peripheral points installed in the system. It is very important that any and all trouble conditions (or faults) be corrected immediately.

Operational Checks

During interim periods between formal testing and at regular intervals the control system should be subjected to the following operational performance checks. The Authority Having Jurisdiction (AHJ) should be consulted for requirements on frequency of system testing.

- Check that the green AC power LED is lit.
- Check that all amber LED's are off.
- Using the system menus, perform a Lamp Test function. Verify that all LED's operate.
- Before proceeding: (1) Disable the suppression system to prevent an unwanted discharge of the suppression system. (2) Notify the fire department and the central alarm receiving station if transmitting alarm status conditions; (3) Notify facility personnel of the test so that alarm-indicating points are disregarded during the test period; and (4) When necessary, bypass activation of alarm notification appliances and speakers (if installed) to prevent sounding of evacuation signals.
- Activate an input device (*i.e., manual station, heat or smoke detector*), and check that all notification appliances function.
- Notify Fire Department, central alarm receiving station and /or building personnel when finished with testing the system.
- The test of ground fault must be measured in below 10k ohms impedance.
- Make certain that the panel and all releasing devices are in a non-alarm/unactivated condition.
- Restore the suppression system back to service

Replacement and Testing Recommendations

The batteries are to be replaced at least once every four years or more frequently if specified by local AHJ and manufacturer recommendations. Batteries should be dated at the installation. Minimal replacement battery capacity displays on the control panel marking label. The batteries are required to be UL Recognized batteries with a date of manufacture permanently marked on the battery. The battery is to be tested at least annually and if the battery is showing signs of failure, it should be replaced. Immediately replace a damaged or leaking battery, and always replace batteries in pairs.

Proper Handling / First Aid Procedures

- In the event a battery leaks and contact is made with the Sulfuric Acid, immediately wash skin with water for at least 15 minutes. Water and household baking soda provides a good neutralizing solution for Sulfuric Acid.
- If Sulfuric Acid makes contact with eyes, flush with water for 15 minutes and seek immediate medical attention.
- Ensure proper handling of the battery to prevent short-circuits.
- Take care to avoid accidental shorting of the leads from uninsulated work surfaces, tools, jewelry and coins.
- If a battery is shorted, the battery and any connected equipment may be damaged. Additionally, a short may injure personnel.

Appendix B: Compatibility Table

This section provides a listing of all Output appliances, two-wire (2-wire) smoke detectors, and remote annunciator device compatibilities.

Table 11: Device Compatibilities

Module/Device	Compatibilities
Output Appliances	Refer to Potter document *"5403592 Output Compatibility Document".*
Two-Wire (2-Wire) Smoke Detectors	Refer to **Appendix C** for a complete listing of 2-wire smoke detectors.
P-Link	RA-4410G3 - LCD Remote Annunciator PSN-1000 – Intelligent Power Supply Expander LED-4410G3 Annunciator RLY-5 – Relay Board IDC-6 - Initiating Device Circuit Module
Class A Expander	CA-4064 Class A Expander
Releasing Device	Refer to Potter document 5403615 Releasing device capability

Appendix C: Compatible Conventional Smoke Detectors & Bases Table Compatibility List ID A

Table 12: Smoke Detector & Bases Compatibilities			
Detector Model	**Identifier**	**Base Model**	**Identifier**
SYSTEM SENSOR (Brk) (Max. No. Of Detectors Per Zone Is 20)			
1400*	A	N/A	N/A
2400*	A	N/A	N/A
2400TH*	A	N/A	N/A
2W-B	A	N/A	N/A
C2W-BA (ULC Listed Only),	A	N/A	N/A
C2WT-BA (ULC Listed Only)	A	N/A	N/A
DETECTION SYSTEM (Max. No. Of Detectors Per Zone Is 25)			
DS250	A	MB2W/MB2WL	A
DS250TH	A	MB2W/MB2WL	A
ESL (Max. No. Of Detectors Per Zone Is 25)			
611U	S10	601U	S00
611UD	S10	601U	S00
611UT	S10	601U	S00
612U	S10	601U	S00
612UD	S10	601U	S00
613U5	S10	601U	S00
611UD	S10	609U10	S00
612UD	S10	609U10	S00
425C	S10	N/A	N/A
425CT	S10	N/A	N/A
HOCHIKI (Max. No. Of Detectors Per Zone Is 25)			
SLR-24*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-2211	HB-54
		NS6-221	
		NS4-221	
		NS6-220	HB-3
SLR-24H*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-2211	HB-54
		NS6-221	
		NS4-221	
SIJ-24*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
		NS4-221	
Detector Model	**Identifier**	**Base Model**	**Identifier**
HOCHIKI (Max. No. Of Detectors Per Zone Is 25)			
SOC-24V*	HD-3	HSB-221	HB-54
		NS6-221	HB-4

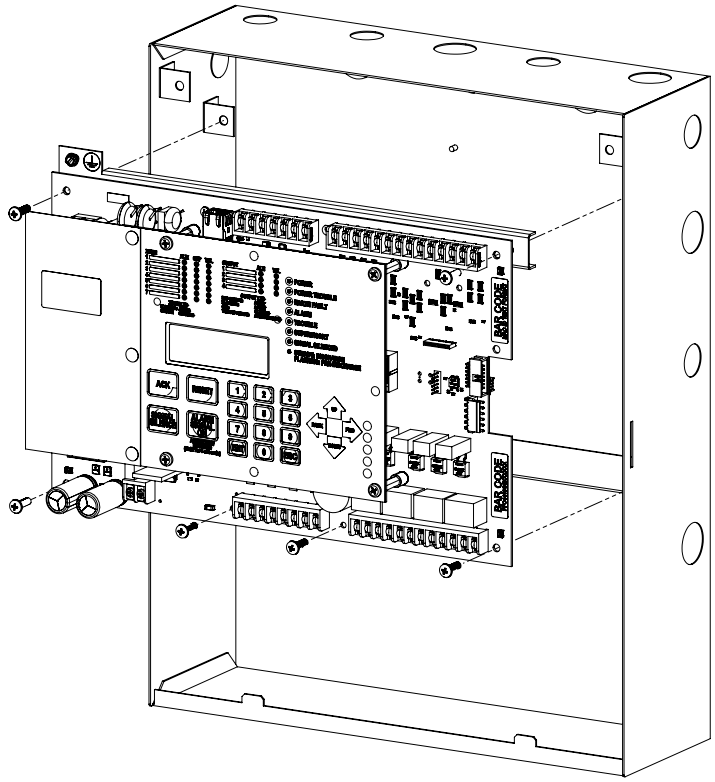
Detector Model	Identifier	Base Model	Identifier
		NS4-221	HB-4
		NS6-220	HB-3
SOC-24VN*	HD-3	HSB-221	HB-54
		NS6-221	HB-4
		NS4-221	HB-4
		NS6-22o	HB-3
SOE-24V	HD-3	NS4-100 and NS6-100	HB-55
		NS4-220 and NS6-200	HB-3
		NS4-221 and NS6-221	HB-4
		NS4-224 and NS6-224	HB-5
SOE-24H	HD-3	NS4-100 and NS6-100	HB-55
		NS4-220 and NS6-200	HB-3
		NS4-221 and NS6-221	HB-4
		NS4-224 and NS6-224	HB-5
FENWAL (Max. No. Of Detectors Per Zone Is 25)			
CPD-7051*	I51FE1	2-WIRE	FE51A
POTTER (Max. No. Of Detectors Per Zone Is 25)			
PS-24*	HD-3 (HOCHIKI)	SB-46	HB-71(HOCHIKI)
			HB-54 (HOCHIKI)
		SB-93	HB-3 (HOCHIKI)
PS-24H	HD-3 (HOCHIKI)	SB-46	HB-71 (HOCHIKI)
			HB-54 (HOCHIKI)
IS-24*	HD-3 (HOCHIKI)	SB-46	HB-71 (HOCHIKI)
			HB-54 (HOCHIKI)
CPS-24	HD-3 (HOCHIKI)	SB-46	HB-4 (HOCHIKI)
		SB-93	HB-3 (HOCHIKI)
CPS-24N	HD-3 (HOCHIKI)	SB-46	HB-4 (HOCHIKI)
		SB-93	HB-3 (HOCHIKI)
CPSD-24V	HD-3 (HOCHIKI)	SB-46	HB-3 (HOCHIKI)
		SB-93	HB-4 (HOCHIKI)
CPSHD-24H	HD-3 (HOCHIKI)	SB-46	HB-3 (HOCHIKI)
		SB-93	HB-4 (HOCHIKI)
PC-2P	PES	PC-6DB	PES
		PC-4DB	PES
PC-2H	PES	PC-6DB	PES
		PC-4DB	PES
PC-2PH	PES	PC-6DB	PES
		PC-4DB	PES
PC-2PN	PES	PC-6DB	PES
		PC-4DB	PES

*** UL and ULC Listed**

NOTE: If using a mix of System Sensor and other smoke detectors, a maximum of 20 detectors shall be permitted.

Appendix D: Installation Notes

Circuit board assembly is mounted in the cabinet using six (6) fasteners as shown in the illustration below.



Operating Instructions for PFC-4410G3 Releasing Panel

Normal Standby	User defined custom message, date and time and ALL SYSTEMS NORMAL displayed on LCD. Green power LED on. All indicators other than power are off.
Alarm Condition	Zone, or user specified description and “ALARM” is displayed with input type and input number on LCD. Red ALARM LED flashes. Audible/Visual indicators on.
To Abort System (Only available on Agent Suppression Systems. See description of Abort at Abort station)	If display reads “ALARM" or "Pre Release", immediately check the protected area. If no emergency condition is apparent, it is possible to stop the system (dependent on program type) by operating the abort switch. Pressing and holding the abort switch may prevent the pre-discharge timer from starting. This allows for a more thorough investigation of the area. Releasing the abort button will resume the countdown to discharge. If a zone programmed as MANUAL RELEASE has been activated, the abort may not be allowed to stop the system from activating.
To Silence Alarm	Do not silence an alarm until it has been determined that an emergency condition does not exist. To silence, open door and press SIGNAL SILENCE button.
To Reset Alarm	After the condition that caused an alarm has been corrected, press the RESET button. **Do not press RESET until the alarm event has been fully investigated and an All-Clear signal has been given by authorized personnel.**
Trouble Condition	Yellow System Trouble indicator flashes and buzzer is on. The display indicates the specific trouble condition and circuit.
To Silence Trouble	Open door, use up/down arrow keys to view and ACK button to acknowledge all trouble conditions. The panel will not silence until all events have been acknowledged. For most trouble conditions the panel automatically restores to normal when the trouble condition has been corrected. Some trouble conditions require operation of the RESET button for restoration. *Note: The problem must be corrected as soon as possible as this may make the system inoperative. Contact your service organization if necessary.*
Supervisory Condition	The display will show the particular supervisory condition, “SUPERVISORY”, “TAMPER”, “LOW AIR”, “HIGH AIR”, LOW AIR, and the circuit. The Amber supervisory LED flashes. The local buzzer will sound. Any indicating appliance which has been described as “SUPERVISORY” will also sound.
To Silence Supervisory	Open door, use up/down arrow keys to view and ACK button to acknowledge all supervisory conditions.
To Reset Supervisory	After the supervisory condition has been restored, press the RESET button. This may vary depending on the program used.
Alarm Signal Activation	Press and hold ALARM SIGNAL ON for up to 5 seconds
Fuse Replacement	Use only 4 Amp 250 VAC Time-Lag fuse. The fuse is for protection of the batteries and charging circuit.

Testing and Maintenance:

Test this system monthly or more frequently if required by the AHJ. Before testing notify the monitoring facility and/or building personnel if applicable. Take care not to activate the release circuit during testing. Test all initiating zones and notification circuits as described in the test procedure in the Potter PFC-4410G3 manual #5403751. Test in accordance with NFPA 72 Inspection, Testing and Maintenance chapter (For Canada: ULC Standard CAN/ULC-S536) and any local requirements. Test batteries in accordance with battery manufacturer instructions or with battery tester acceptable to the AHJ such as Stone Technologies model STC612A. Mark date of installation on batteries and replace every 4 years or sooner depending on test results or if panel indicates Low Battery. Contact the agency listed below for service.

For Service Call:_____
Address:_____
Telephone:_____

Installer: Frame and place adjacent to control panel and at eye level.

A copy of the applicable Abort description on pg 6-99 of manual 5403571 should also be framed and hung at the panel and at every abort station.

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