

# PFC-9000 Series Installation, Operation, and Instruction Manual

## Analog/Addressable Fire Alarm Control Panel

All specifications subject to revision.



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LT-659POT  
Manual #5403535 - Rev G  
9/08

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## Quick Start – Manual Programming

File Menu: Backup Database, Restore Database, Compact Database, Print Reports, User Preferences, Exit

Item Menu: Add (Devices, Circuits, Conventional Adder Card, Loop Controllers, Annunciators, Display Adder), Delete, Modify, Correlations, Status Flags

Link Menu: Validate, Connect, Send Job, Get Job, Panel Information, Link Statistics

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**ORDERING INFORMATION**

<b>Model Number</b>	<b>Stock No.</b>
PFC-9000 Fire Alarm Panel	3992150
PFC-9100 Fire Alarm Panel (9000 with UDACT)	3992155
PFC-9000TR Flush Trim Ring	3992040
RA-LCD Annunciator	3992055
RA-LED 32 Annunciator	3992045
RA-LED 48 Annunciator	3992050
PGD-32 Master Remote Graphic Driver	3992060
PGD-48 Remote Graphic Adder	3992050
BB-1 Annunciator Back box (Red)	3992075
BB-2 Annunciator Back box (Red)	3992080
BB-3 Annunciator Back box (Red)	3992085
BB-1 Annunciator Back box (White)	3992100
BB-2 Annunciator Back box (White)	3992105
BB-3 Annunciator Back box (White)	3992110
BT-180 18 AH Battery	5130086
BT-260 26 AH Battery (requires battery cabinet)	5130097

<b>Peripherals Model Numbers</b>	<b>Stock No.</b>
UDACT-9100	3992500
SLA-127P Single Loop Adder	3992200
DLA-254P Dual Loop Adder	3992195
AHD Heat Detector	1430002
AIS Ionization Smoke	1430003
APS Photoelectric Smoke	1430004
ASB-6 –6” Analog Base	1430005
ADSD-P Duct Smoke	1430001
ADSD-PR Duct Smoke w/ Relay	1430020
STS - 2.5 Sampling Tube	1000266
STS - 5 Sampling Tube	1000468
STS - 10 Sampling Tube	1000263
FRCM-2 Mini Contact Module	1430022
FRCM-4 Contact Module	1430023
DRM-4 Dual Relay Module	1430021
SOM-4 Supervised Output Module	1430025
PSCI Short Circuit Isolater	1430024
ZA-9008 Conventional Zone Adder Card	3002160
IDC-9004 Notification Adder Card	3002165

ARM-9008 Relay Adder Card	3002170
P32-1T Single Action Pull Station	1000447
P32-1T-LP Dual Action Pull Station	1000476
AH-24R Red Selectable Horn	1430203
H24WW White Selectable Horn	4560002
MH-12/24R Red Mini Horn	4560041
MH-12/24W White Mini Horn	4560042
HP-25TR Red Temporal Terminal	4550014
HP-25TW White Temporal Terminal	4550015
SL24-153075R Red Selectable Strobe	1430204
SL24-75110R Red Selectable Strobe	1430205
SL24W-153075W White Wall Mount Strobe	4560018
SL24W-75110W White Wall Mount Strobe	4560020
SL24C-3075110R Red Ceiling Mount Strobe	1430228
SL24C-3075110W White Ceiling Mount Strobe	1430229
SL24C-177R Red Ceiling Mount Strobe	1430230
SL24C-177W White Ceiling Mount Strobe	1430231
ASH24-153075R Red Selectable Horn Strobe	1430200
ASH24-70110R Red Selectable Horn Strobe	1430201
SH24C-3075110R Red Ceiling Mount Horn/Strobe	1430224
SH24C-3075110W White Ceiling Mount Horn/Strobe	1610228
SH24C-177R Red Ceiling Mount Horn/Strobe	1430225
SH24C-177W White Ceiling Mount Horn/Strobe	1610229
SASH-24 Strobe/Horn/Sign Combo 24VDC	1000555
SASH-120 Strobe/Horn/Sign Combo 110VAC	1000560
SLB-12075R Indoor/Outdoor Strobe 120VAC	1430207
SHB24-75C Outdoor Strobe Horn 24VDC	4700007
SLB24-75C Outdoor Strobe 24VDC	4700015

**Replacement Parts**

PFC-9000-12 Single Loop Chassis	3992030
PFC-9000CAB Cabinet Only	3992035

**Programming Tools**

CFG-LCD Dialer Configuration Tools	3992505
TCH-B100 Handheld Programmer	1430028
UIMA Universal Programming Kit with Software	3992090

## CHAPTER 1 INTRODUCTION

This manual is designed to help with the specification, design and installation of the Potter PFC-9000 series fire alarm control panel. It is imperative that the manual be completely read and understood before beginning the installation of the fire alarm panel. The manual is broken down to give an overview of components and ordering information, installation guidelines and programming directions. Only qualified individuals should install the fire alarm panel and check the integrity of the installation and programming.

### WARNING

Failure to read and understand these directions may result in system malfunction or operation as not intended. Further, installers should be trained on the PFC-9000 system as well as meet the minimum requirements of NFPA 72 National Fire Alarm Code.

#### General Description

The PFC-9000 series fire alarm control panels are listed, microprocessor based, analog/addressable systems that allow for very flexible applications for use in mid sized addressable applications. The panel and the sensors communicate giving the user the address, location and level of alarm status utilizing a Signaling Line Circuit (SLC). The system offers a wide variety of modules and features that allow for even the most difficult applications. The panel has a powerful 12 amps power supply, 10 amps which are available for notification circuits.

The PFC-9000 base panel consists of one intelligent analog SLC loop capable of supporting 127 analog/addressable sensors and addressable modules which can be wired in Class A (Style 6 or 7) or Class B (Style 4). The system may be expanded to three loops using the loop expansion cards, bringing the system to a total of 381 addressable points.

The Main Display has a large 4 line 20 character alphanumeric LCD display and the common indicators with LED's. The PFC-9000 utilizes a simple menu system with a keypad to operate commands in the system.

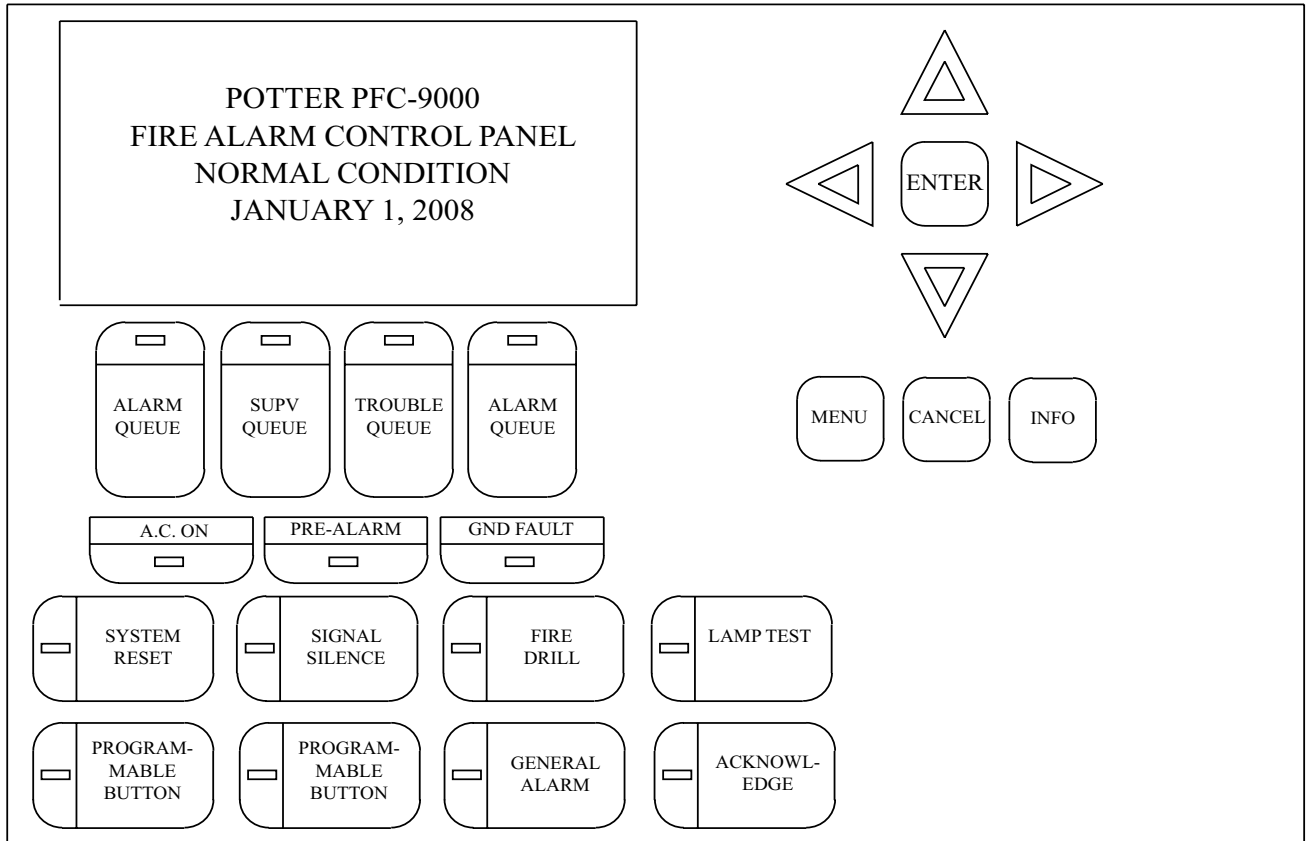
In addition the base panel supports 3 adder circuit cards that provide a wide variety of features. Each of the Conventional Hardwire Circuit adder modules allow for eight Class B (Style 4) circuits or four Class A (Style 6 or 7) circuits. The Notification Hardwire Circuit adder module provides four additional notification circuits, each rated at 1.7 amps each in addition to the base panel four notification circuits. The Relay Hardwire Circuit provides eight fully configurable form C contacts that may be correlated to any input of the system.

The PFC-9000 series fire alarm control panel offers three methods for communicating a fire alarm to the proper authorities; the Polarity Reversal/City Tie Connection, the form C alarm relay and a digital communicator.

#### System Features

- 127 Addressable Points per Loop which can be wired Class A or Class B
- Up to Three Loops per Panel – 381 Points
- Any Combination of Sensors and Modules
- Four Notification Circuits rated at 1.7 Amps each
- Up to 10 amps available to Notification Circuits
- Multiple Audible tones available; Steady, Temporal Code, California Code, March Time
- Silent or Audible Walk Test Feature
- 1000 Alarm History Buffer
- 2000 All Event History Buffer
- Resettable output for Four Wire Smoke Detector Power
- Three Levels of Password Protection
- RS-485 Interface for Remote Annunciators
- RS-232 Port for CRT or Printer
- Surface or Flush Mount Cabinet with Removable Door
- Removable Terminal Blocks
- Smoke Sensor Sensitivity Selection Drift Compensation
- Form C Contacts for Common Alarm, Trouble and Supervisory Conditions
- Front Panel Auto Configure/ Computer Based User Configuration
- Loop, Circuit, Zone or Device Bypass
- Large LCD Display
- Automatic or Manual Signal Silence
- Selectable Two-Stage Operation

**INDICATORS, CONTROLS, & OPERATION**



DWG# PFC-9000-4

*Note:* The two Programmable Buttons, General Alarm, and Acknowledge buttons are not labeled. Slide labels are provided in the event these buttons are used.

The main display for the PFC-9000 Series Fire Alarm Panel consist of a four-line, twenty character liquid crystal display (LCD) that interfaces with the user to operate, program and diagnose the panel. The LCD will display information from each of the queues as well as reporting and programming messages.

The panel has four queues where the different inputs are grouped based on the type. The queues are **ALARM**, **SUPV** (supervisory), **TROUBLE** and **MONITOR** and the information of the status of the panel and devices will fall under one of the queues. Each queue has an associated LED with it. The PFC-9000 will illuminate a red LED only when an alarm condition is present. All other conditions including ground fault, supervisory and trouble conditions will be visually indicated on the panel with a yellow (amber) LED and a corresponding message on the LCD screen.

The PFC-9000 panel has six buttons that control basic operations of the panel. Two of these buttons are programmable in the computer software and the others are standard. The standard buttons are SYSTEM RESET, SIGNAL SILENCE, FIRE DRILL and LAMP TEST.

The SYSTEM RESET is used to restart the panel after initial power up and used to reset any alarm condition or latching supervisory condition. The System Reset will turn off the Fire Drill, reset 4-wire smoke power, reset timers and begin to process inputs as new events. The SYSTEM RESET will also clear any Pre-alarm condition that exists on the panel. When the system is restarted and reset, a time and date stamp is logged in the Alarm and Event history buffer.

The SIGNAL SILENCE is used to silence/deactivate the notification circuits that are programmed as silencable/deactivate capable. Upon receipt of subsequent alarms, the silenced/deactivated circuits will be reactivated. If the Signal Silence Inhibit is programmed, the Signal Silence will not operate until the timer has expired. In Two Stage operations, if the Auto General Timer has timed out, the Signal Silence will operate the same as the Acknowledge button.

**⚠ WARNING**

Do not silence the system prior to investigating source of the alarm. All occupants may not have evacuated if the system is silenced prematurely.

The FIRE DRILL is used to activate the notification circuits that are programmed as part of the fire drill. These circuits are configured in the computer software and by default are the four base notification circuits. The fire drill only activates the notification circuits, and other outputs such as relays. The DACT and City Ties remain idle. The fire drill is turned on and off by pressing the FIRE DRILL button. The fire drill is cancelled if an alarm condition is received.

The LAMP TEST feature illuminates all of the LED's on the main display as well as blocks in the entire LCD display. If the Lamp Test is left on for more than 10 seconds, a trouble will be displayed on the display.

When the Two-Stage operation is programmed in the panel, two additional buttons are active on the main display of the panel. These are GENERAL ALARM and ACKNOWLEDGE. Two-stage operation operates by the programming of devices as first stage Alert Inputs or second stage General Alarm Inputs. When the panel reaches a General Alarm condition (either by the Two-Stage timer expiring, a General Alarm Input activating or pushing the General Alarm Button) all of the programmed notification outputs are activated.

When a first stage input is received at the panel, a timer begins to allow investigation before the General Alarm activates. After the receipt of the first stage alarm, pushing the ACKNOWLEDGE button will suspend the timer and prevent the General Alarm from activating. After pushing the ACKNOWLEDGE button the yellow (amber) LED will illuminate steady and will extinguish when the panel is reset or the General Alarm button is pushed.

Once the panel has received a first stage alarm, pushing the GENERAL ALARM button will automatically send the panel into the second stage and activate all notification circuits. In addition, pushing the GENERAL ALARM will reactivate any silenced/deactivated circuits and illuminate the red GENERAL ALARM LED.

Two buttons are programmable from the computer configuration software. These buttons may be configured as any of the following:

Buzzer Silence	Auxiliary Disconnect	Audible Walktest
Silent Walktest	Manual Day/Night	Automatic Day/Night
Undefined		

The programmable buttons cannot be programmed the same as other switches that are present such as fire drill or system reset.

The Menu and scrolling buttons used for the on board panel programming are found in the upper right hand corner of the PFC-9000 panel. The MENU button accesses the Command Menu. The CANCEL button cancels the current operation and returns to the previous screen. The INFO button provides more information about status of the panel. The INFO button is particularly helpful in diagnosing items that appear in one of the queues. The arrow keys scroll up and down through the different menus and items in the queues. The ENTER button confirms the operation or selection within the Command Menu.

## COMMON INDICATORS:

### Buzzer:

The buzzer will activate when the panel is powering up until the initial set-up is complete. The buzzer also sounds at a steady pace whenever an Alarm or Supervisory condition exists. The buzzer will sound intermittently when a Trouble or Monitor condition exists. The buzzer will silence when the operator scrolls through all of the events or if the programmable switch is used as a buzzer silence. The buzzer silence switch will not function during the initialization.

### A.C. On LED:

The A.C. On Indicator turns on steady green when the main AC power is within acceptable levels. It is turned off when the level falls below the power-fail threshold and the panel is switched to standby (battery) power. When AC power is applied to the panel, a green LED will be illuminated on the main panel. If the LED is not illuminated, either AC power is lost or is below 102 VAC.

## WARNING

When AC power is remove, panel must have sufficient battery back-up to operate. Failure to maintain batteries may result in premature panel power-down. Panel and connected devices will not operate without power.

### Pre-Alarm Led:

The Pre-Alarm Indicator flashes red at the Trouble Flash Rate if there is a Sensor Pre-Alarm condition detected. The panel will indicate a PRE-ALARM condition whenever a device reaches 70% of alarm threshold. The Pre-Alarm is not a trouble nor supervisory condition, it is merely a notification that a device is near its point of going into alarm. If a device is in pre-alarm and another device reaches pre-alarm, the panel will process the two events as a general alarm.

## DANGER

A ground fault may render a circuit inoperable. Ground faults should be located and corrected promptly.

**Ground Fault LED:**

The Ground Fault Indicator flashes amber at the Trouble Rate when the Ground Fault Detector detects a Ground Fault on any field wiring. It is turned off when the Ground Fault is cleared. The GND FAULT is a yellow (amber) LED which illuminates whenever a ground fault is present on the system. Pushing the INFO button will give further information as the location of the ground fault (i.e. negative side of loop 1, etc.).

**Alarm Queue LED:**

The Common Alarm Indicator turns on steady red whenever the Panel is in Alarm as a result of an alarm on any Initiating Circuit or activation of the manual red General Alarm Button (if the Panel is set for Two-Stage Operation). Since all Alarms are latched until the Panel is reset, the Indicator will remain on until then.

**Supervisory Queue LED:**

The Common Supervisory Indicator turns on steady yellow (amber) when there is a Supervisory Condition in the Panel, as the result of any Latching or Non-Latching Supervisory Circuit. The Indicator is turned off if all Non-Latching Supervisory Circuits are restored and there are no Latching Supervisory Circuits active. Latching Supervisory Conditions remain active until the Panel is reset.

**Trouble Queue LED:**

The Common Trouble Indicator flashes yellow (amber) at the Trouble Flash Rate when there is any Trouble condition being detected on the panel. It is turned off when all Non-Latching Troubles are cleared.

<b>⚠ WARNING</b>
A Trouble condition indicates that there is a fault in the system. Failure to investigate and mitigate a Trouble condition could render part or all of the system inoperable.

**Monitor Queue LED:**

The Monitor Trouble Indicator flashes yellow (amber) at the Trouble Flash Rate when there is any Monitor condition being detected on the panel. It is turned off when all Monitors are cleared.

**Fire Drill LED:**

The Fire Drill Indicator turns on steady yellow (amber) while Fire Drill is active.

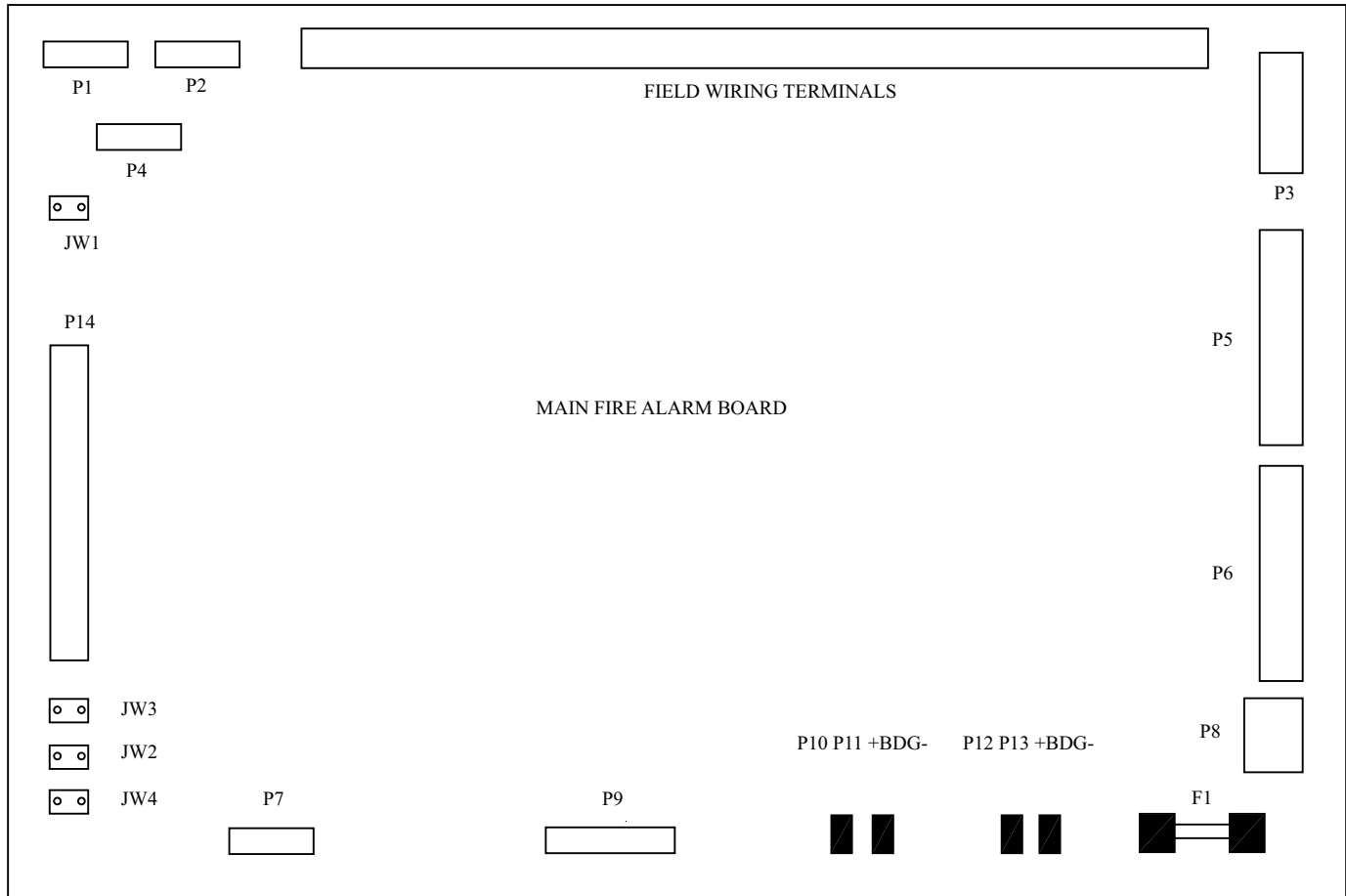
**Signal Silence LED:**

The Signal Silence indicator flashes yellow (amber) at the trouble rate when Notification Circuits are Silenced either by the Signal Silence button, or by the Auto Signal Silence Timer. It is turned off when the Signals are re-sounded by a subsequent Alarm.

LED Indicators may be Yellow (amber), Red, or Green, and will illuminate continuously (steady), or at one of two Flash Rates based on the type of signal

- Fast Flash** - **120 flashes per minute, 50% duty cycle**
- Trouble Flash** - **20 flashes per minute, 50% duty cycle**

## PFC-9000 Fire Alarm Main Board Connections



DWG# PFC-9000-13

### Jumpers

- JW 1 - Used when a PR-5000 or UDACT-9100 is installed. Remove the jumper any time one of these devices is added.
- JW 2 - For factory programming only, not for field use, DO NOT MODIFY
- JW 3 - For factory programming only, not for field use, DO NOT MODIFY
- JW 4 - For factory programming only, not for field use, DO NOT MODIFY

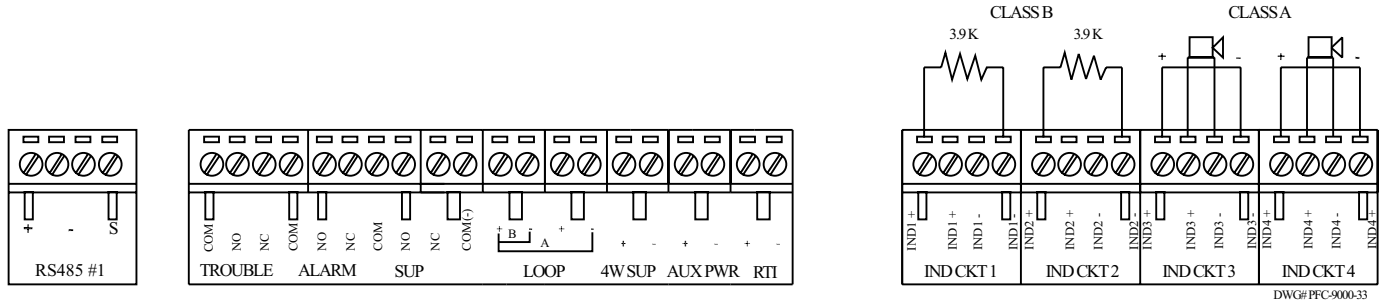
### Plug Connections

- P1 - Not Used
- P2 - RS-485 connection for computer programming connection
- P3 - Not Used
- P4 - Port for connecting PR-5000 or UDACT-9100
- P5 - Loop Adder connection port
- P6 - Circuit adder card communication connection
- P7 - Factory use only
- P8 - Power connection for adder cards
- P9 - RS-232 connection for printer or CRT
- P10&11 - Power connection to bridge rectifier
- P12&13 - Connection for 24VDC batteries
- P14 - Connection for LCD display board

F1 – 20 Amp AGC or equivalent battery fuse

## Field Wiring Terminations

Below is the terminal list from left to right as they appear on the main FACP board. All terminals are removable and are power limited. The relays are rated for 28 VDC at 1 Amp.



**⚠ WARNING**

Wire all Class A or Class B.  
Do not mix.

## Terminal Definitions

- RS485#1      RS-485 communication connection for the Remote Annunciators
- Trouble      Form C relay that activates upon any trouble condition
- Alarm        Form C relay that activates upon any alarm condition
- Sup          Form C relay that activates upon any supervisory condition
- Loop (B)     Terminals for wiring a Class B SLC loop
- Loop (A)     Terminal for wiring a Class A SLC loop, + - (out) + - (return)
- 4W Sup        Four Wire Smoke Detector Power (+ left, - right)
- AUX PWR      24 volts DC at 1.7 Amps Auxiliary Power (+ left, - right)
- RTI          Remote Trouble Indicator (+ left, - right)
- IND CKT 1    First Notification Circuit (Loop 0, Address 0)
- IND CKT 2    Second Notification Circuit (Loop 0, Address 1)
- IND CKT 3    Third Notification Circuit (Loop 0, Address 2)
- IND CKT 4    Fourth Notification Circuit (Loop 0, Address 3)

**⚠ WARNING**

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

## INSTALLATION REQUIREMENTS

### CHAPTER 2

The minimum requirements will differ based on the type of installation involved (Central Station, Local Service etc.). In addition, the system shall be wired to meet the minimum requirements of NFPA 70 the National Electric Code, article 760. Also, all federal, state, provincial and local codes shall be followed to meet the minimum requirements of the Authority Having Jurisdiction.

- All field wiring shall be in accordance with the NEC and all applicable local and state requirements. In addition, all field wiring shall be power limited.
- All wiring for SLC, initiating device and notification appliance circuits shall be separated from conductors of electric light, power, class 1, and NPLFA conductors by a minimum of 3”.
- All initiating devices and addressable modules shall be installed a minimum of 18” away from any fluorescent light or ballast.
- The SLC loop resistance shall be a maximum of 50 ohms.
- Any T taps on the SLC loop shall have a maximum resistance of 10 ohms.
- Line capacitance shall not exceed .5uF.
- Line inductance shall not exceed 1mH
- Only UL listed notification appliances as listed in Appendix C should be installed with the panel.
- The smoke sensors, heat sensors and modules shall be of the type described in the following portions of the manual. Failure to use the appropriate devices will render the system inoperable.
- Only the conventional smoke detectors listed in compatibility chart in the Appendix shall be installed with the conventional zones. The compatibility chart is recognized by UL as the devices approved for operation.
- PSCI short circuit isolators should be used to prevent the loss of communication due to wiring problems. See the section on PSCI (Page 47).

### Monitoring and Notification requirement of Underwriters Laboratories (UL)

#### Central Station

When a system is required to be connected to a Central Station, both phone lines of the UDACT must be connected and configured. The UDACT should be connected upstream of all other connections (i.e. PBX, network phone systems, fax machines, etc.) in order to seize the line. In addition, the UDACT cannot be connected to party lines or ground start lines.

When a loss of AC power occurs, the UDACT must be configured to send a trouble between 6 and 12 hours.

The UDACT must be programmed with the correct time and to send an automatic test report each day to the Central Station.

The UDACT must be configured for a minimum of 5 dialing attempts and a maximum of 10. For more information on programming the UDACT, see pages 32-33.

#### Remote Supervising Station Service

The UDACT must be configured for a minimum of 15 hours to report a loss of AC power.

The phone lines must be configured to contact the alarm signal receiving station and to contact the trouble and supervisory receiving station.

#### Local Service

When the PFC-9000 panel serves for local notification, a minimum of one (1) UL listed notification appliance must be used.

### WARNING

Failure to connect operating phone lines for a PR-5000 or UDACT-9100 will result in the panel not transmitting an alarm to a constantly manned facility. Local Service systems will sound notification appliances at the building only. Regular testing of the fire alarm control panel is required to ensure proper operation and notification.

#### Mounting Recommendations

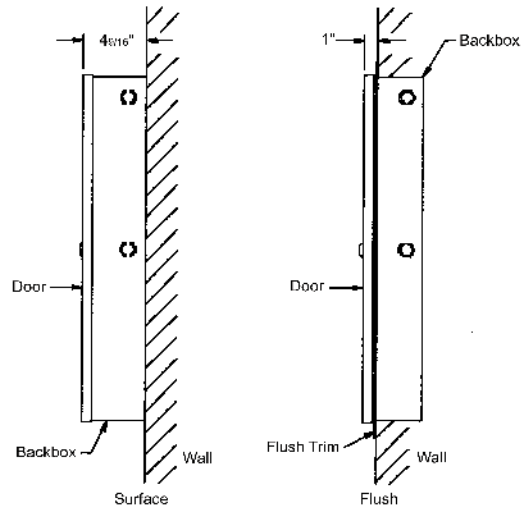
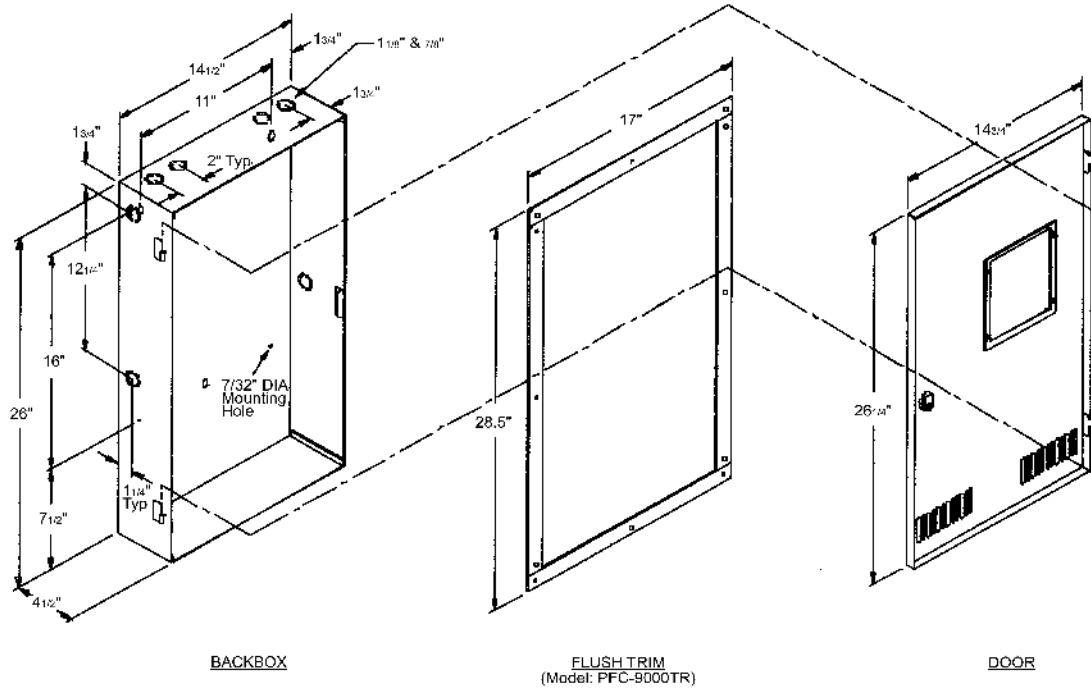
As with all electrical products, the PFC-9000 will not operate properly when in contact with water or a humid atmosphere. As a guide the following locations are **NOT** recommended areas for installation:

- Directly mounted to exterior walls, particularly masonry (condensation), or on exterior walls below grade
- In the vicinity of plumbing where possible, especially large sinks
- In sprinkler system riser rooms where a splash potential exists from drains and valves
- In rooms where humidity producing equipment is also installed (i.e. dryers, air conditioning equipment, etc.)
- Outdoors

The panel should be mounted on an interior wall where it is not subjected to vibration or shock. In addition, the temperature range should be between 32° F and 120° F. Also, the relative humidity should not exceed 85%.

### Cabinet Specifications

The cabinet is constructed of 18 gauge (0.048") cold rolled steel. The cabinet is black in color with a red or white door and black trim. An optional white cabinet is also available. The door is hinged, keyed and removable. Combination 1/2" / 3/4" knockouts are available on the top and side of the cabinet. The cabinet includes five stand-offs for mounting the main chassis and a ground terminal. The overall dimensions of the cabinet are 26" tall x 14 1/2" wide x 4 1/2" deep.



## Electrical Specifications

### *Input Power*

The PFC-9000 operates on a nominal 120 or 240 VAC with a minimum and maximum line voltage of 102 VAC and 132 VAC or 204 VAC and 264 VAC respectively. A resettable 4-Amp fuse is installed on the primary side of the transformer-input power. The transformer is a 24-volt transformer that provides 12 Amps of power to the panel. For more detailed information on power consumption refer to the battery calculation sheet.

The fire alarm panel must be connected to a dedicated circuit and should be wired using 12 AWG wire through the side conduit entrance. The black (hot) must be connected to the line, the white to the neutral (N) and the green to the ground. An earth ground must also be connected to the cabinet.

### **NOTICE**

Per the National Electrical Code, the fire alarm circuit breaker should be marked red and labeled.

## Battery Backup Requirement

The PFC-9000 is capable of charging standby batteries from 17 to 40 amp-hours. The batteries should be sized according to the battery calculation performed that accounts for all standby currents and power requirements when the panel is in alarm.

### **⚠ WARNING**

Permanent installations require AC power and battery backup to be supplied to the panel. Failure to properly size batteries could result in the panel prematurely shutting down when there is a loss of AC power.

17 AH batteries are the minimum capacity batteries allowed in the PFC-9000 series. The installation of batteries with a capacity less than 17 AH will damage the batteries and panel.

When the panel communicates to a Central Station, a minimum of 24 hours of stand-by current and five minutes of alarm current is required. When communicating to a Remote Supervising Station, a minimum of 24 hours of battery stand-by is required followed by five minutes of alarm current.

The cabinet will house up to 18 amp-hour batteries; larger batteries will need to be housed in a separate cabinet.

A 20-amp fuse on the main board protects the battery circuit. If the panel is showing a trouble condition of missing batteries, and the batteries are connected and meter to the correct voltages, then the fuse should be replaced.

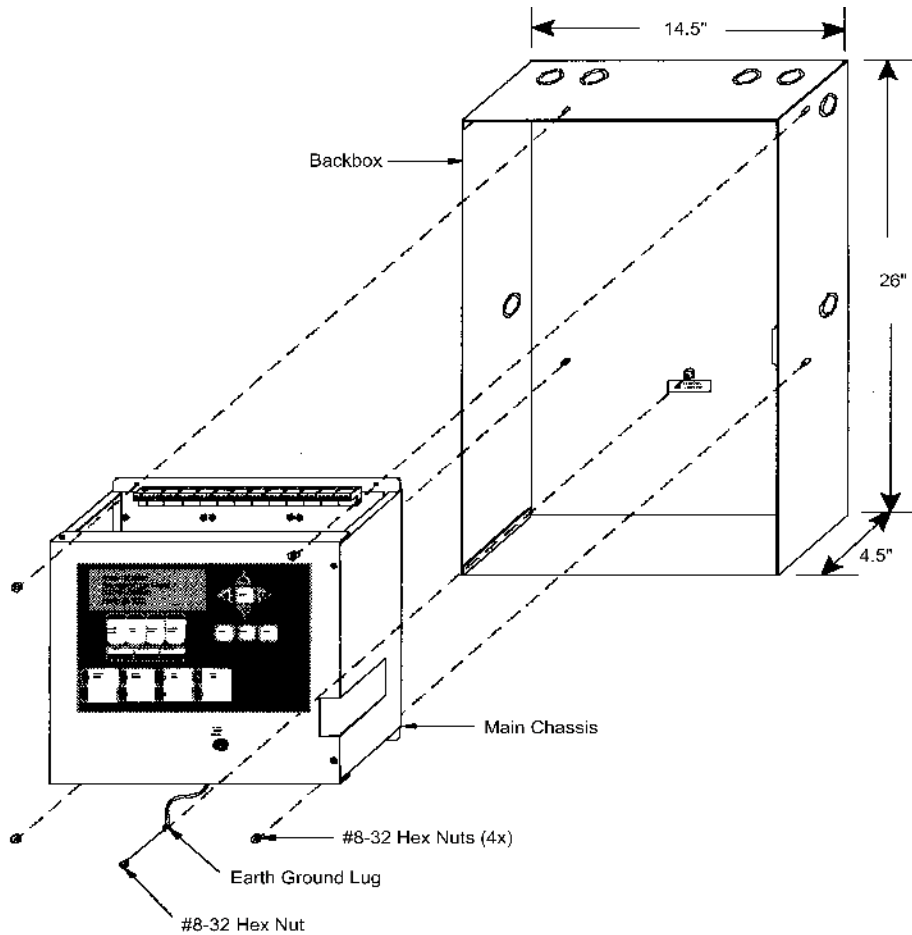
### **⚠ WARNING**

Connect AC power to panel followed by batteries. Observe polarity when connecting batteries. Failure to do so may result in damage to the batteries, battery leads, or panel.

## CHAPTER 3: CABINET INSTALLATION

### Step 1 Remove Chassis from Cabinet

The chassis is included in every PFC-9000 series fire alarm panel when it leaves the factory. It is recommended that the chassis be removed from the cabinet before installing the cabinet to reduce the possibility of foreign debris being introduced on the circuit boards. The chassis is connected to the cabinet using five #8-32 hex nuts. The main body of the chassis connects in each of the four corners and the fifth nut connects to a ground terminal. The furthest right removable terminal block must be removed to install the top right nut.

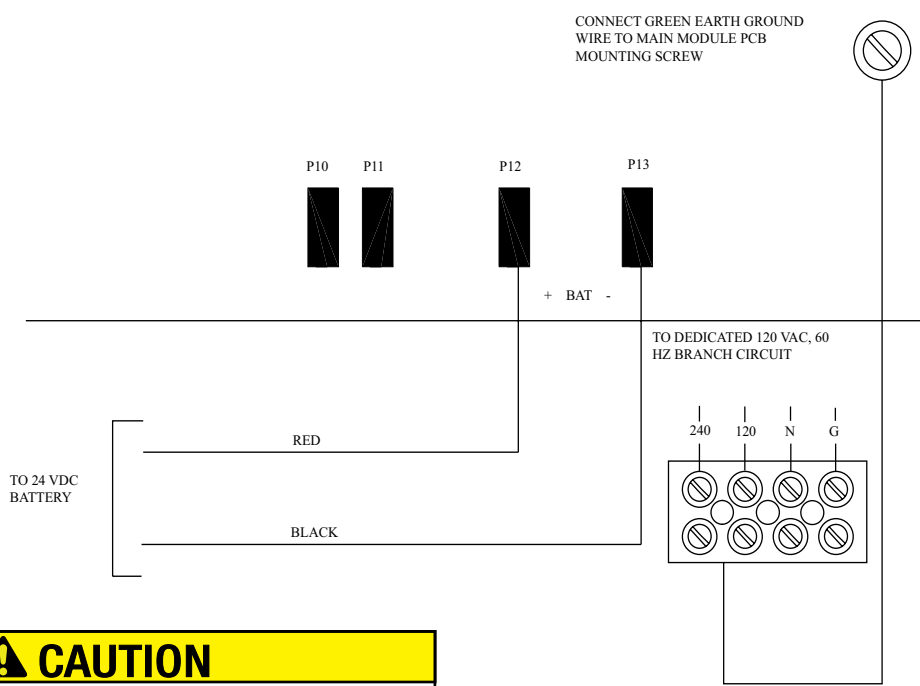


### Step 2 Install Cabinet

Install the cabinet in either a surface or flush mount orientation. Allow necessary clearance for all necessary field wiring. The PFC-9000 cabinet has knockouts located on the sides and top for bringing the wire to and from the panel. The different wiring should be isolated to prevent electrical noise and induced voltages. The wiring should be separated by the type of circuit: AC voltage input, notification circuits, signalling line circuit, telephone communication, annunciator communication and relays. Failure to do so could increase the chances of a false alarm.

### Step 3 Power Connections

- Connect panel ground terminal to EARTH GROUND (cold water pipe)
- With the dedicated circuit breaker in the OFF position, connect the black (hot) to the line (L), the white to the neutral (N) and the green to the ground (G).



**CAUTION**

To prevent sparking, connect batteries after the systems main A.C. Power is turned on.

**Step 4 Initial System Checkout  
Before Powering Up the Panel:**

It is recommended that the PFC-9000 is powered up before any field wiring or modules are connected to it. The following directions will guide the user through the initial set-up and step by step process of the initial start-up.

1. To prevent sparking, **do not connect** the batteries first. Connect the batteries after powering the system from the main AC supply.
2. Check all Jumpers and Switches for proper setting (Refer to page 10)
3. Check the AC power wiring for proper connection
4. Check that the chassis is connected to **EARTH GROUND** (cold water pipe)
5. Make sure to close the front cover plate before powering the system from main AC supply

**Step 5 Initial Power Up Procedure:**

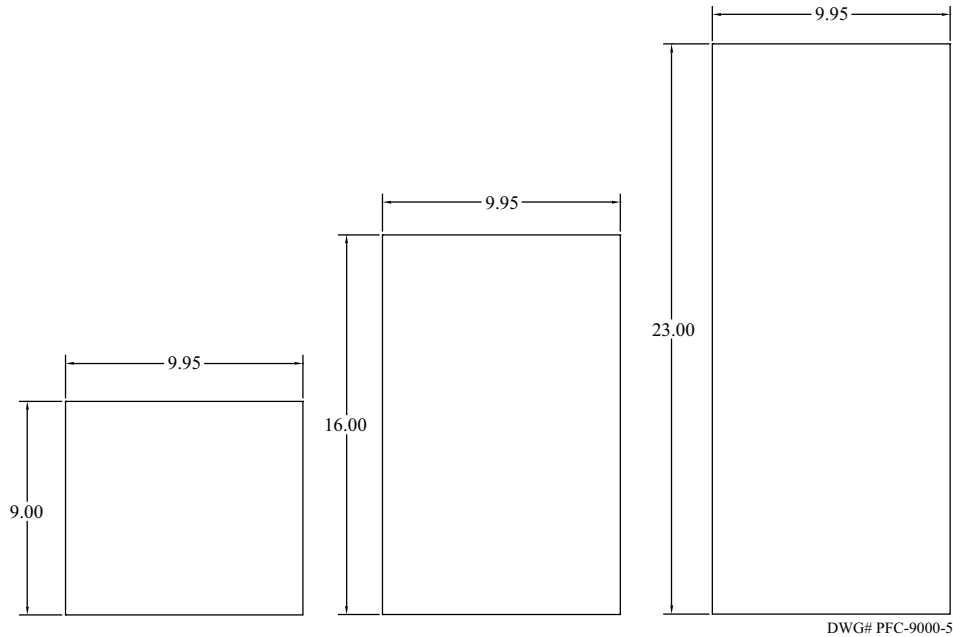
1. Turn on dedicated Circuit Breaker.
2. Once power is supplied to the panel, the “Trouble Queue” LED will light and the LCD will display “Initial system self checks in progress...” This will last between 30 and 90 seconds. The trouble buzzer will sound.
3. After completing the System Checkout procedures the “A.C. ON” green LED will light, the “Trouble Queue” LED will light, the buzzer will sound, and the LCD Display will display “System Restart, TRB Trouble 001 of 002...” (001 of 003 for the PFC-9100 series because the phone line voltage is not present). Press the “SYSTEM RESET” button to clear the first trouble.
4. Since the batteries are not connected, “Battery trouble active TRB 001 of 001” will be displayed on the LCD, and the trouble buzzer will sound intermittently and the Trouble Queue LED will flash.
5. Connect the batteries while observing correct polarity; the red wire is positive (+) and black wire is negative (-). **Connect the red wire to the positive terminal of battery #1 and the black wire to the negative terminal of battery #2. Use the short black jumper wire on the wiring harness to connect the negative terminal of battery #1 to the positive terminal of battery #2. By connecting the two 12 Volt batteries, a 24 Volt battery backup will be generated.**
6. All indicators should extinguish except for normal power “A.C. ON” green LED, and the LCD should show a normal status condition. If the panel does not follow the preceding steps, please contact Potter Technical Support.
7. Power the panel down by removing the battery power and the main A.C. power.

## CHAPTER 4 ANNUNCIATOR INSTALLATION

### Annunciator Overview

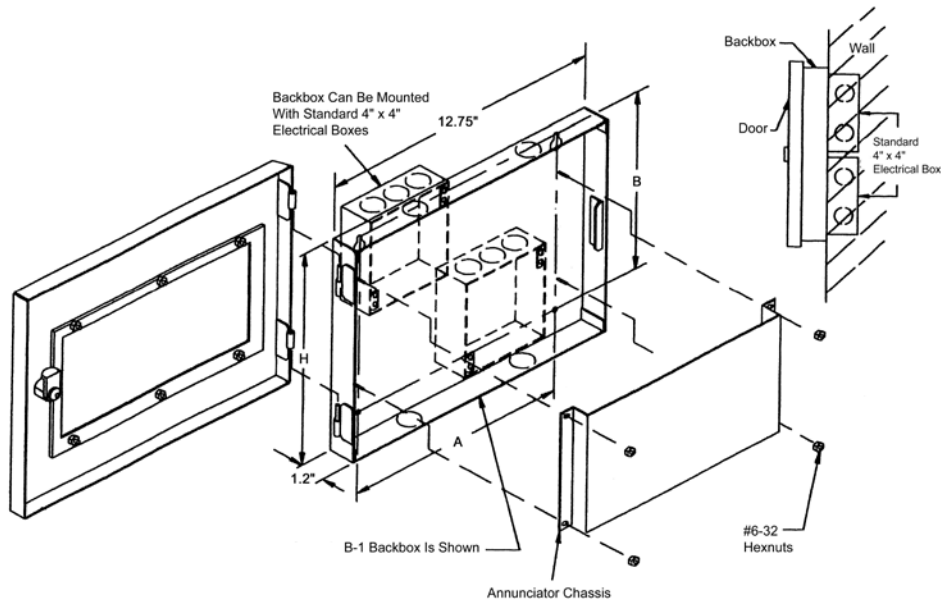
The PFC-9000 may be connected in any order to three types of annunciators, liquid crystal display (LCD), light emitting diodes (LED's) and graphic annunciation. A maximum of 272 points can be annunciated on the LED annunciator or graphic driver.

The annunciators must be mounted in a backbox and the number of needed LED's will determine the backbox size. Sizes are available for one to three annunciators per backbox, and each annunciator occupies one space. The backbox must be mounted flush on the wall utilizing either one or two electrical boxes.

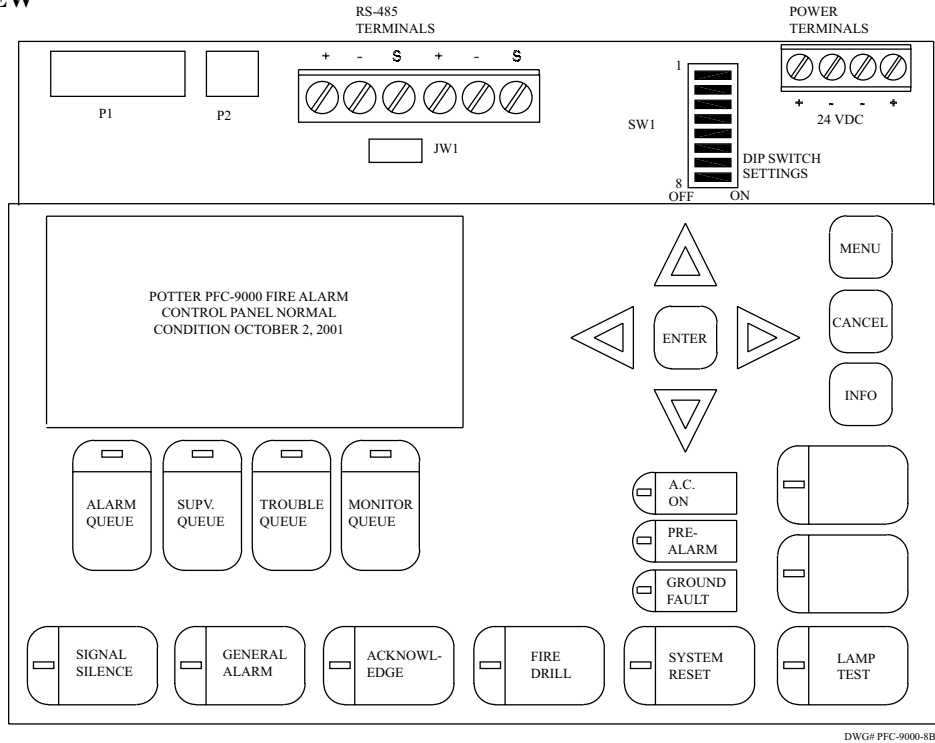


The communication wiring must be two conductor twisted shielded cable from the panel or previous annunciator. A maximum of eight RA-LCD or RA-LED32 annunciators may be connected to a PFC-9000. In addition to the communication wire, the annunciators must be powered from the auxiliary power supply from the panel. The communication wires and power wires must be in separate cables.

**Note:** If an existing annunciator must be replaced, the program must be reloaded into the panel for the panel to communicate with the annunciator.



**RA-LCD OVERVIEW**



DWG# PFC-9000-8B

**Field Wiring Terminations**

P1: LED Expansion Plug-Connects to the main annunciator chassis, or to the previous RA-LED48

P2: BDM Port: For factory use only.

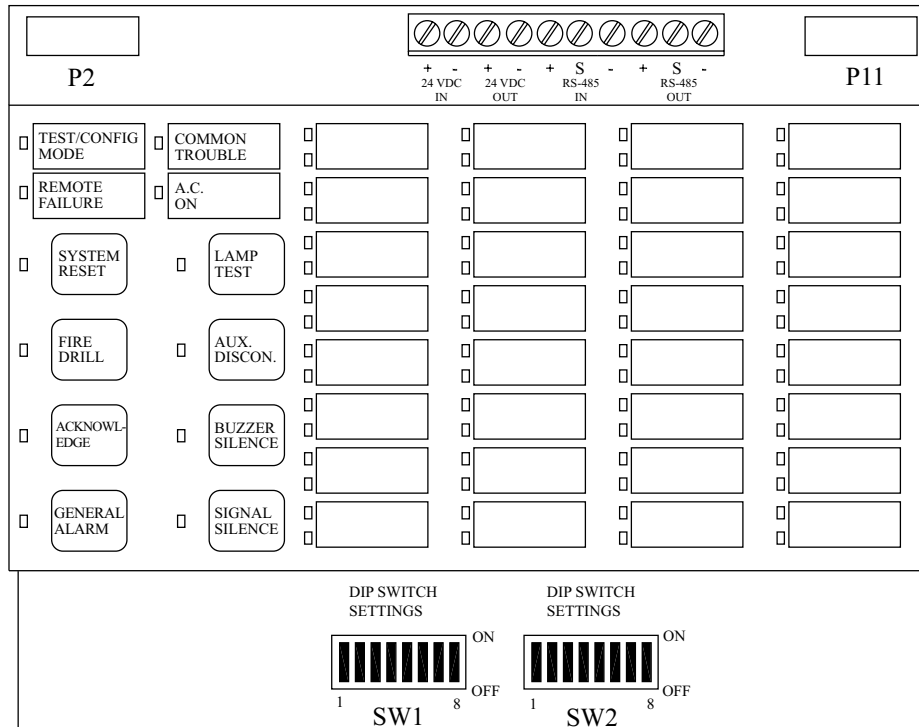
RS-485 Connection: Communication cable connection from main panel

SW1: Dip Switch Setting for Annunciator Address-Refer to page 21.

24 VDC: Power terminals from main panel

JW1: Jumper that is removed from RA-LCD annunciator unless it is the last RA-LCD in the series.

**RA-LED 32 OVERVIEW** (See field wiring Termination and Dip Switch information on page 20.)



DWG# PFC-9000-8

Field Wiring Terminations

P2: Connects to the first adder annunciator chassis.

24 VDC IN and OUT: In terminals for 24 VDC Aux. power from PFC-9000 and out terminals for power to next annunciator.

RS485 IN and OUT: In terminals for RS-485 communication from PFC-9000 and out terminals for RS-485 to next annunciator.

P11: Not used

SW1: See page 22

SW2: See page 22

- Note:**
- RS-485 wiring must be twisted and shielded
  - Separate cables must be used for power and the RS-485
  - Maximum RS-485 wire distance is 8,000 ft of 18 Awg
  - Power Requirements:
 

LCD	100ma Standby
	150ma Alarm
LED-32	50ma Standby
	150ma Alarm

The 24VDC field wiring must be of an appropriate gauge for the number of annunciators and the total wire length.

**Annunciator Wiring Instructions**

Step 1: Install Backbox

Step 2: Connect Field Wiring for First Annunciator

- Attach two conductor twisted shielded cable from RS-485 terminals on panel to RS-485 “IN” terminals on annunciator. The “S” terminal is for the cable shielding.
- Attach two conductor power cable from 24VDC Aux Power terminals on main panel to 24VDC “IN” terminals on annunciator.

**⚠ CAUTION**

Do not use 4 Wire Resettable Smoke power from main terminal.

- If **not** the last annunciator in the series, remove jumper JW1. (RA-LCD only)
- Assign address as described below.

Step 3: Attach Field Wiring to Subsequent Annunciators

- Attach two conductor twisted shielded cable from RS-485 “OUT” terminals on previous annunciator to RS-485 “IN” terminals on next annunciator. The “S” terminal is for the cable shielding.
- Attach two conductor power cable from 24VDC “OUT” Power terminals on previous annunciator to 24VDC “IN” terminals on next annunciator.
- If **not** the last annunciator in the series, remove jumper JW1.
- Assign address as described below.
- Continue until all annunciators are installed.

**⚠ WARNING**

Accidentally connecting the 24 VDC Power connection to the Communication or vice versa will result in annunciator and/or panel damage!

**Annunciator Address Programming**

Each annunciator must be addressed uniquely and sequentially in order for the panel to recognize the device. The addressing is completed using the dipswitches on the annunciator. Both the RA-LCD and the RA-LED32 utilizes the SW1 switch for the address. The RA-LED32 has an additional set of dipswitches, SW2, for disabling the common features (i.e. System Reset, Signal Silence, etc.) as described below.

The RA-LCD is addressable by address, beginning with Address 33, whereas the RA-LED32 is addressed by the number the annunciator is in the system.

**EXAMPLE:** If a system had an RA-LCD and RA-LED32 annunciator the RA-LCD would be addressed 33 and the RA-LED32 would be addressed as 2 for being the second annunciator in the series. Use the following tables for Dip Switch Positions.

RA-LCD Dip Switch Position

The “OFF” setting is the active setting for the RA-LCD annunciator and all of the dipperswitches are binary. The following table indicates the dip switch position for each address for the RA-LCD, switches 7 and 8 are not used:

DIP Switch Positions	Display Annunciator "Address"														
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
SW1-1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SW1-2	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW1-3	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW1-4	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW1-5	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
SW1-6	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

DIP Switch Positions	Display Annunciator "Address"															
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
SW1-1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SW1-2	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW1-3	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW1-4	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW1-5	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW1-6	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

The RA-LCD has a continuity jumper (JW1) that is removed on all annunciators except the last one.

The RA-LED32 must be addressed as the number of annunciator as it is in the system. The table below is the switch setting necessary for addressing the annunciator.

The “ON” setting is active for the RA-LCD annunciator.

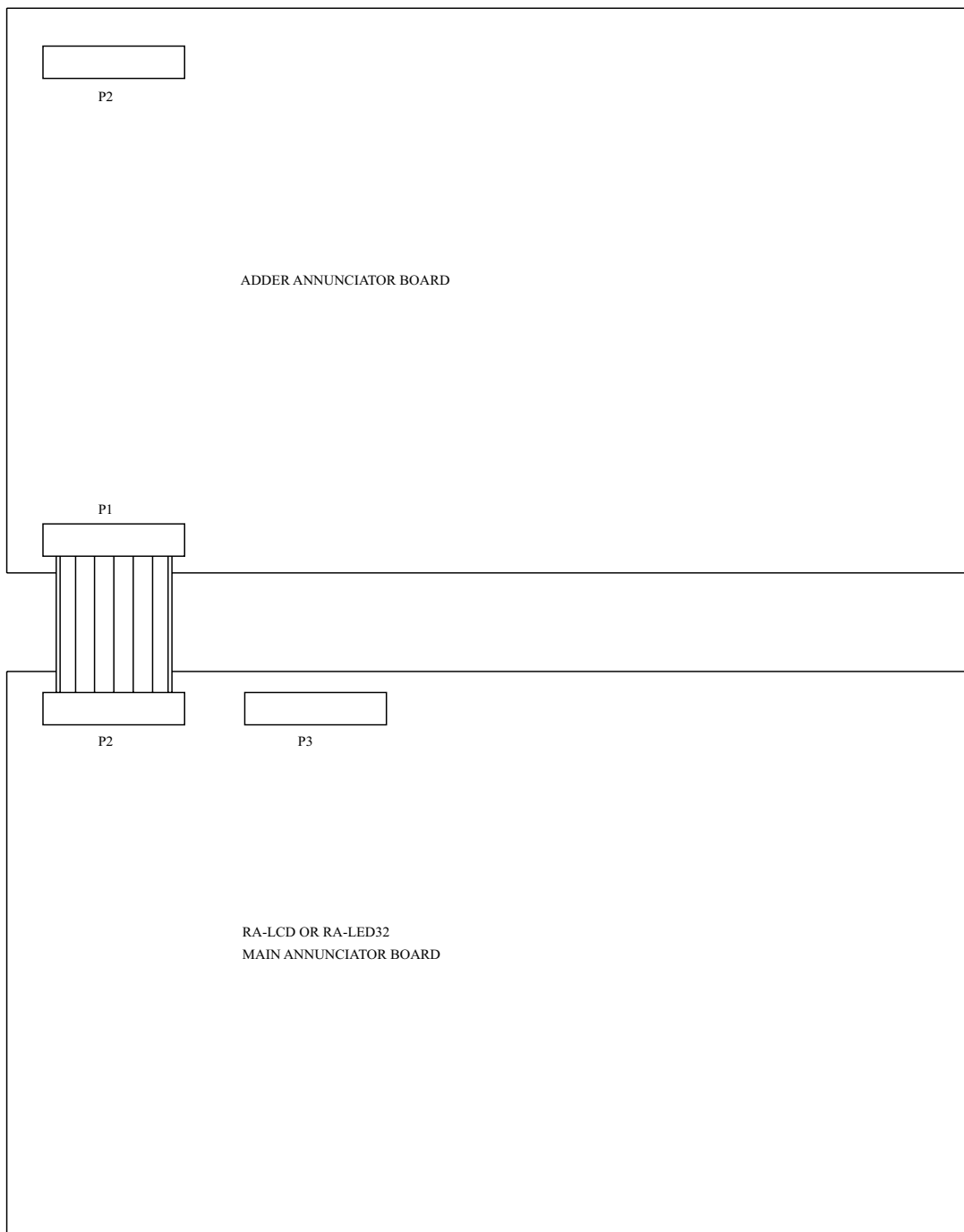
DIP Switch Positions	RA-LED Annunciator "Address"														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SW1-1(A0)	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
SW1-2(A1)	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW1-3(A2)	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SW1-4(A3)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON

The SW2 is the switch that enables/disables the common push buttons of the RA-LED32. The following switches will disable the common features.

- |   |                    |
|---|--------------------|
| SW2-1 = Disable System Reset Button         | SW1-1 = Address A0 |
| SW2-2 = Disable Fire Drill Button           | SW1-2 = Address A1 |
| SW2-3 = Disable Acknowledge Button          | SW1-3 = Address A2 |
| SW2-4 = Disable General Alarm Button        | SW1-4 = Address A3 |
| SW2-5 = Not Used                            | SW1-5 = Not Used   |
| SW2-6 = Disable Auxiliary Disconnect Button | SW1-6 = Not Used   |
| SW2-7 = Not Used                            | SW1-7 = Not Used   |
| SW2-8 = Disable Signal Silence Button       | SW1-8 = Not Used   |

**RA-LED 48**

An adder display may be added to provide additional LED's to either the RA-LCD or the RA-LED32. The RA-LED48 is installed above the main annunciator in either the BB-2 or BB-3 back box. The RA-LED48 connects to the other annunciator via a ribbon cable on plug P1.



DWG# PFC-9000-12

### PGD-32 and PGD-48 Graphic Drivers

The PGD-32 graphic driver provides the link between the PFC-9000 and large graphic annunciators. Other manufacturers supply the actual display, but the lights are illuminated using the graphic driver. The PGD-32 is essentially a large switch that turns on LED's or lamps that are correlated to a specific input. In addition, the graphic driver provides outputs for the common indicators as well as the common controls. The PGD-32 has inputs for common control buttons and outputs for the common indicators and thirty-two configurable outputs for lamps or LED's. The graphic driver requires a nominal 24 VDC to operate, 24 VDC for the lamp power and the RS-485 communication. A single PGD-32 will support up to 224 circuit display points using up to four of the PGD-48 expansion boards. Jumpers on the PGD-32 control all of the features including supervision of the outputs.

The system may be expanded to have a maximum of five PGD-48 connected to any one main annunciator. Terminal P1 on the expansion board will have a ribbon cable that will plug into P2 of the preceding board. The PGD-48 is an expansion of the main annunciator and therefore does not count as one of the eight annunciators.

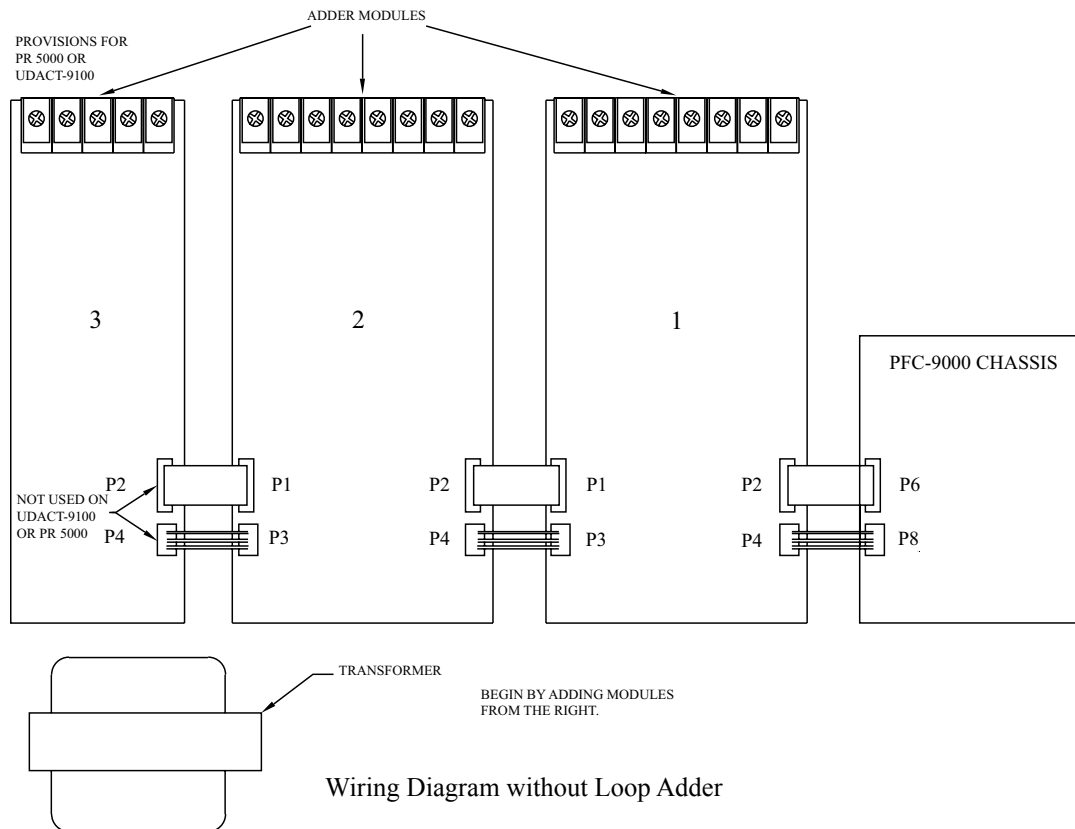
The PGD-32 is connected to panel through the RS-485 annunciator output and is programmed essentially in the same way as the RA-LED32 LED annunciator. The PGD-32 is considered the same as an annunciator and therefore occupies one of the eight-annunciator points. Each lamp point is correlated to an input and the panel activates the particular circuit when the input activates. In addition, the addressing for the graphic driver is the same as the RA-LED32 in that the driver is given an address in accordance with what number of annunciator in line it is. For further information, refer to the PGD-32 and PGD-48 Wiring and Installation Instruction manual included with the graphic drivers.

## CHAPTER 5 MODULE ADDER CIRCUIT CARDS

### Overview

The circuit adder cards are attached directly to the PFC-9000 chassis using screws and stand-offs. The stand-offs are factory installed for the ease of adding modules in the field. The circuit adder cards must be installed from the right to the left due to the plug connection for power and communication. A few exceptions do exist. The UDACT-9100 must be installed in the far-left spot due to plug connections. Also, the loop adders must be installed in the far-right spot due to plug and power connections.

**Note:** Circuit adder cards must be installed in the PFC-9000 panel in the same order as they are loaded into the system configuration software.

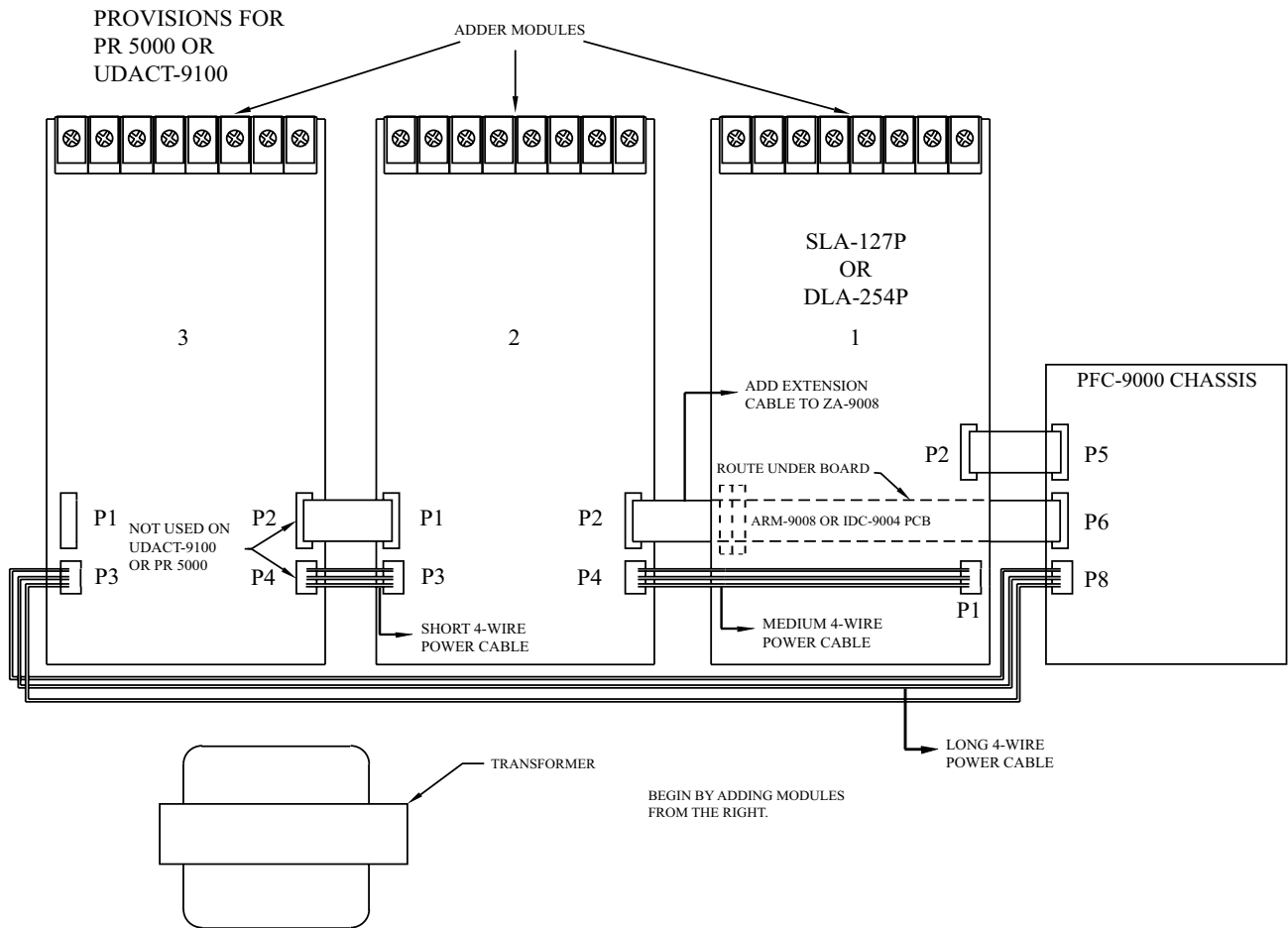


The PFC-9100 has the UDACT-9100 factory installed in the left adder location. If more than three cards are needed, contact Potter Technical Support.

**⚠ WARNING**

Care must be taken to ensure that the proper terminals and plugs are connected. Failure to observe plug keys and proper plug locations can result in circuit card and main panel damage. Make all connections from the circuit adder cards to the main panel with the panel powered down and batteries disconnected.

When a loop adder, either the SLA-127P or the DLA-254P, is installed in the PFC-9000 the wiring configuration must be such that each module receives power and the proper communication. The loop adder must be installed in the farthest most right spot and the ribbon cable must plug directly into P5 on the main chassis. If other boards are also being installed, they should be installed first starting with the middle slot. The long ribbon cable included with the loop adder must be plugged into P6 on the main board and connected to the ribbon cable on the first adder board other than the loop adder. In addition, the long power cable connects from P8 on the PFC-9000 to P3 on the last adder card to the left. The long power cable and ribbon cable are included with the SLA or DLA.



Wiring Diagram with Loop Adder

**SLA-127P Single Loop Intelligent Adder Card**

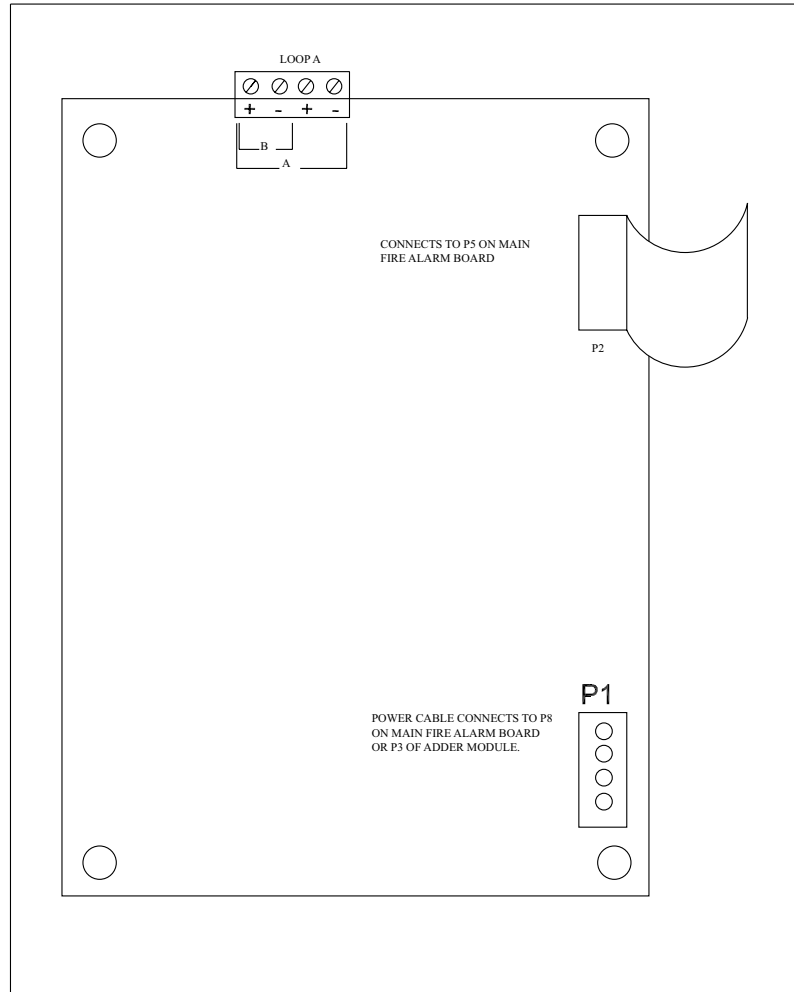
The Single Loop Adder provides an additional 127 addressable points to the base 127 addressable points standard with the PFC-9000. The addressable loop is fully analog/addressable and can be any combination of sensors and modules. Only one loop adder module, either the SLA-127P or the DLA-254P (Dual Loop Intelligent Adder Card) can be installed to a PFC-9000 system.

The SLA-127P mounts in the far right adder location in the PFC-9000 and connects directly to the main fire alarm board. The stand-offs are factory installed in the chassis and the SLA-127P screws directly to the stand-offs. Power down the system and connect the plugs to the main fire alarm panel before fastening the adder card to the panel chassis. The SLA-127P is Loop 2 in the Configuration Software.

The P2 ribbon cable from the adder card is connected to P5 on the main fire alarm panel. The yellow loop expansion sticker will have to be removed before connecting the loop adder to the main board. If additional adder cards will be installed, plug the long ribbon cable that comes with the DLA into P6 on the PFC-9000 board. This cable will connect to P2 on the next adder card to the left. The loop adder receives power from the main fire alarm control panel. If just a SLA 127P is added the cord will plug into the main board (P8). If Adder Modules are installed, a longer cable is used to connect P3 of the furthest left module to P8 of the 9000 chassis. P4 of the adder module next to the SLA-127P then connects to P1 of the Loop Adder.

All of the loops must be wired either Class A or Class B, the mixing of wire combination is not possible. If shielded cable is used as the loop conductor, only wire one leg to the “Shield” terminal on the loop adder board. As with the main panel, the terminals are marked for Class A and Class B wiring.

SLA-127P SINGLE LOOP CONTROLLER MODULE



DWG# PFC-9000-15

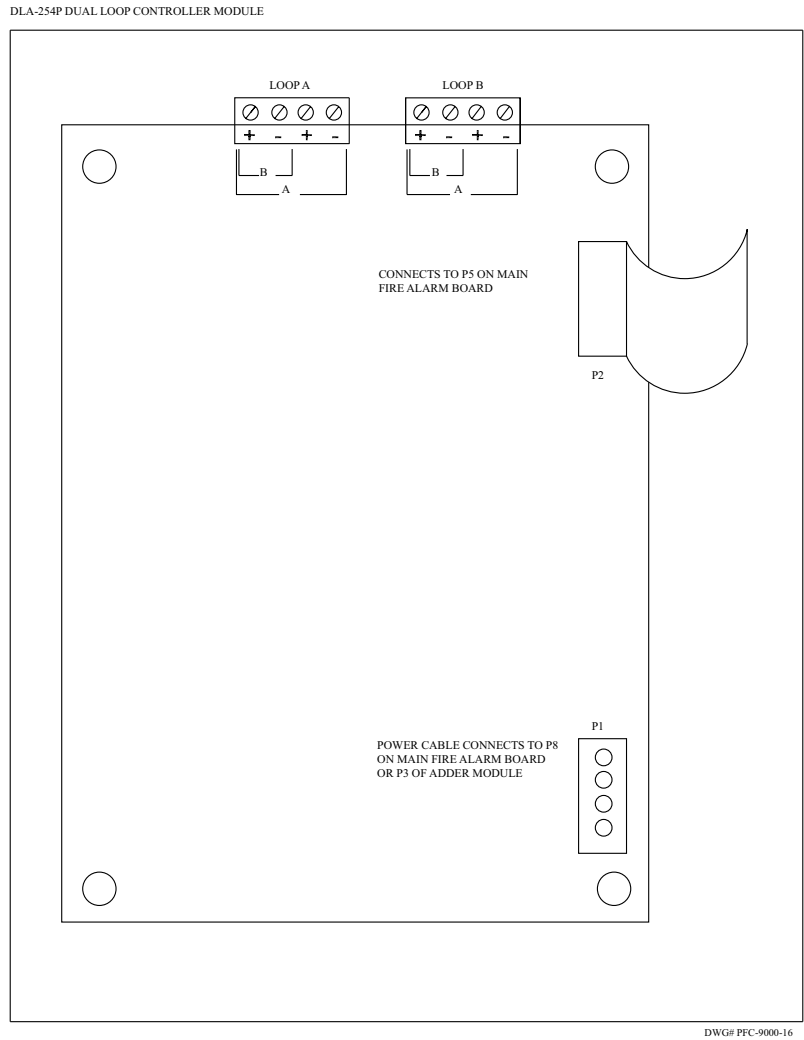
**DLA-254P Dual Loop Intelligent Adder Card**

The Dual Loop Adder provides two additional loops with 127 addressable points per loop in addition to the base 127 addressable points standard with the PFC-9000. The addressable loops are fully analog/addressable and can be any combination of sensors and modules. Only one loop adder, either a SLA-127P or DLA-254P can be installed in a PFC-9000.

The DLA-254P mounts in the far right adder location in the PFC-9000 and connects directly to the main fire alarm board. The stand-offs are factory installed in the chassis and the DLA-254P screws directly to the stand-offs. Power down the system and connect the plugs to the main fire alarm panel before fastening the adder card to the panel chassis. The DLA-254P is Loop 2 and Loop 3 in the Configuration Software.

The ribbon cable from the panel is connected to P5 on the main fire alarm panel. The yellow loop expansion sticker will have to be removed before connecting the loop adder to the main board. If additional adder cards will be installed, plug the long ribbon cable that comes with the DLA into P6 on the PFC-9000 board. This cable will connect to P2 on the next adder card to the left. The loop adder receives power from the main fire alarm control panel. If just a DLA-254P is added the cord will plug into the main board (P8). If Adder Modules are installed, a longer cable is used to connect P3 of the furthest left module to P8 of the 9000 chassis. P4 of the adder module next to the DLA-254P then connects to P1 of the Loop Adder.

All of the loops must be wired either Class A or Class B, the mixing of wire combination is not possible. If shielded cable is used as the loop conductor, only wire one leg to the “Shield” terminal on the loop adder board. As with the main panel, the terminals are marked for Class A and Class B wiring.



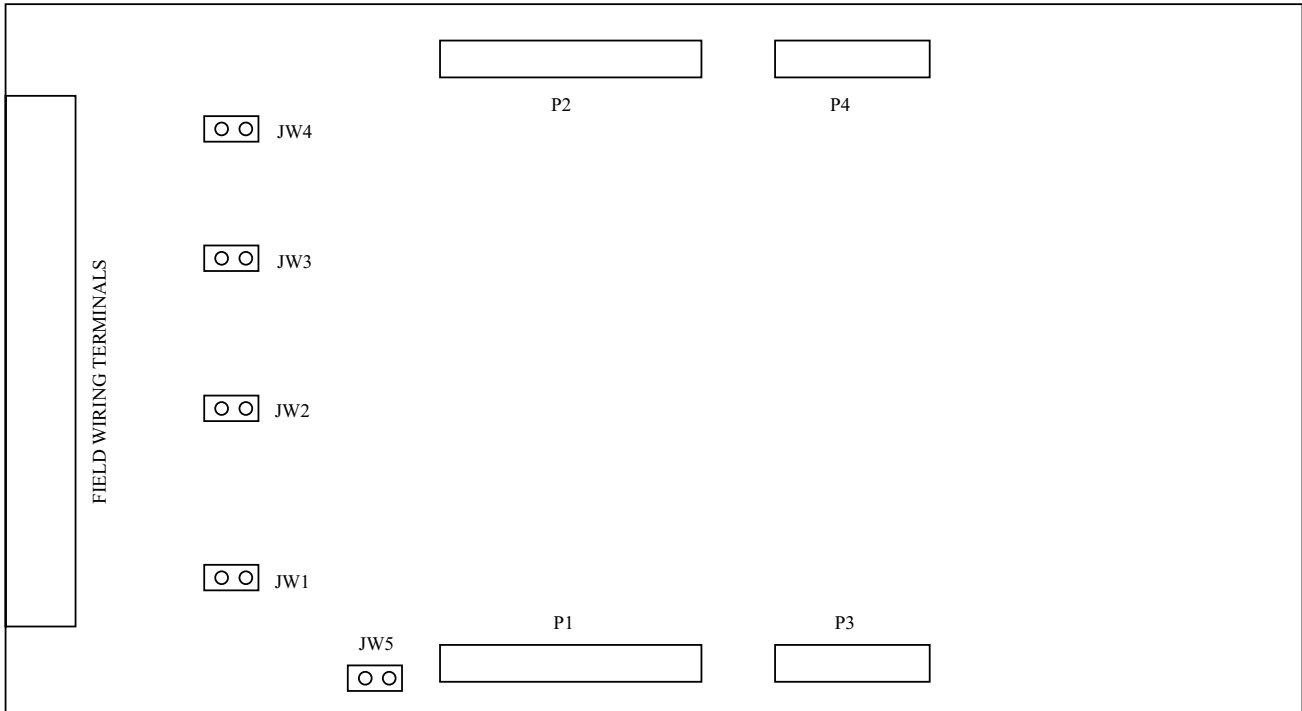
ZA-9008 Conventional Circuits Card

The ZA-9008 provides either eight Class B conventional circuits or four Class A conventional circuits in addition to the addresses on the loop. The zones may be selected as a number of different input types as allowed in the Configuration Software. Any of the conventional inputs may be correlated to any of the outputs. All field-wiring terminals are removeable for ease of wiring. The ZA-9008 can be installed on top of the UDACT-9100 card in the left space, or in any available space from right to left.

The list for compatible devices is in Appendix C.

**⚠ WARNING**

Failure to use tested and listed compatible powered devices may result in system not operating or false activations.



DWG# PFC-9000-17

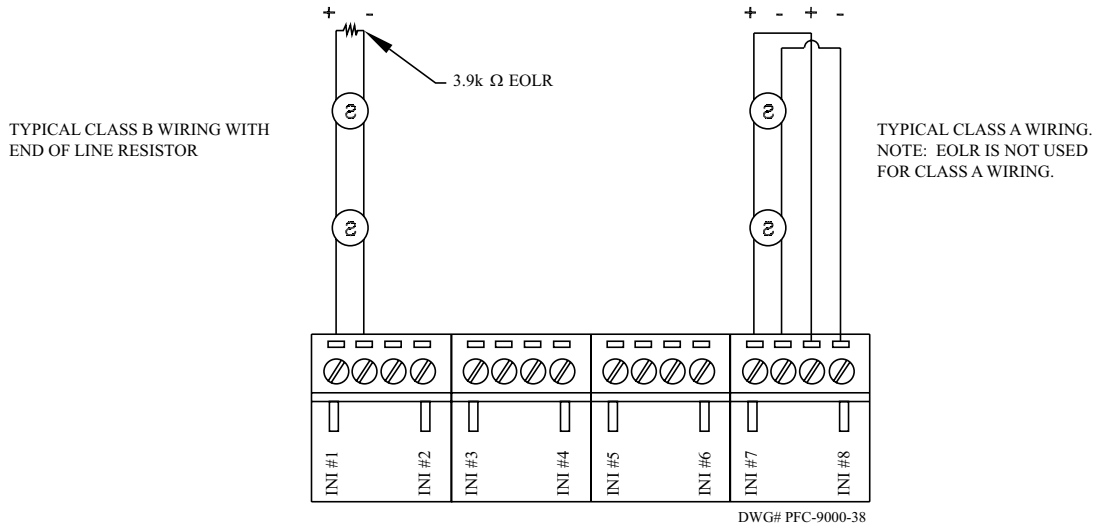
Jumpers

- JW1 Jumper installed for Class A (Style D) initiation of Circuits 1 & 2
- JW2 Jumper installed for Class A (Style D) initiation of Circuits 3 & 4
- JW3 Jumper installed for Class A (Style D) initiation of Circuits 5 & 6
- JW4 Jumper installed for Class A (Style D) initiation of Circuits 7 & 8
- JW5 Continuity Jumper installed only if device is the last circuit adder installed

Plugs

- P1 Data cable for next circuit adder
- P2 Data cable attached to previous circuit adder or main fire alarm
- P3 Power connector to next circuit adder
- P4 Power connector to P8 of fire alarm board or previous circuit adder module

ZA-9008 Conventional Zone Wire Terminations



**Field Wiring Terminals**

Note: All devices must be either wired Class A or Class B. The combination of Class A and B wiring is for demonstration purposes only.

WIRE SIZE (GAUGE)	MAXIMUM WIRING RUN TO LAST DEVICE (ELR)		OHMS PER 1,000FT
	FEET	METERS	
22	2990	910	16.0
20	4760	1450	10.0
18	7560	2300	6.4
16	12000	3600	4.0
14	19000	5800	2.5
12	30400	9200	1.6

*NOTE : MAXIMUM LOOP RESISTANCE SHOULD NOT EXCEED 100 OHMS*

**4-WIRE Smoke Wiring:**

The maximum allowable current is 0.2 Amperes. The maximum allowed Voltage Drop is 1 Volt.

Volt drop:  $E_d = I_t \cdot R_l$

$E_d$  = starting voltage,  $I_t$  = Total current,  $R_l$  = Resistance

- All jumpers are shipped installed over only 1 pin. If a class A wiring is chosen, the jumper for the corresponding circuit must be removed over both pins.

- If this is the last circuit adder card installed, move JW5 over both pins.

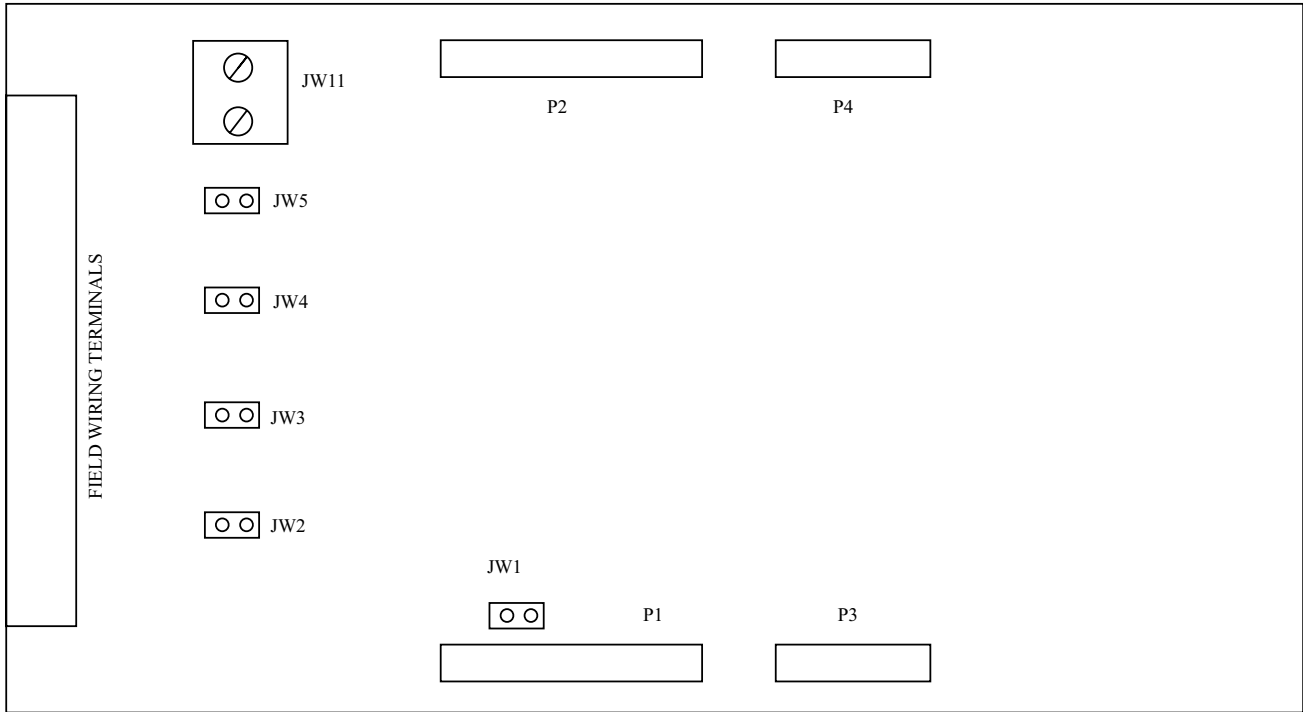
**IDC-9004 4 Zone Notification Circuit Adder Card**

The IDC-9004 provides four additional zones of Class A (Style Z) or Class B (Style Y) notification circuits. The IDC-9004 is programmed in the configuration software as either a strobe or signal circuit. When programmed as a signal circuit, that circuit will operate at the same rate as programmed in the configuration software.

Each circuit of the IDC-9004 are power limited and have a maximum of 1.7 Amps. Each circuit can be programmed to be silenceable (deactivated) or nonsilenceable. All terminals are removeable for easy wiring.

**⚠ WARNING**

Failure to connect notification circuits to notification appliances will result in occupants not being notified to evacuate or relocate.



DWG# PFC-9000-18

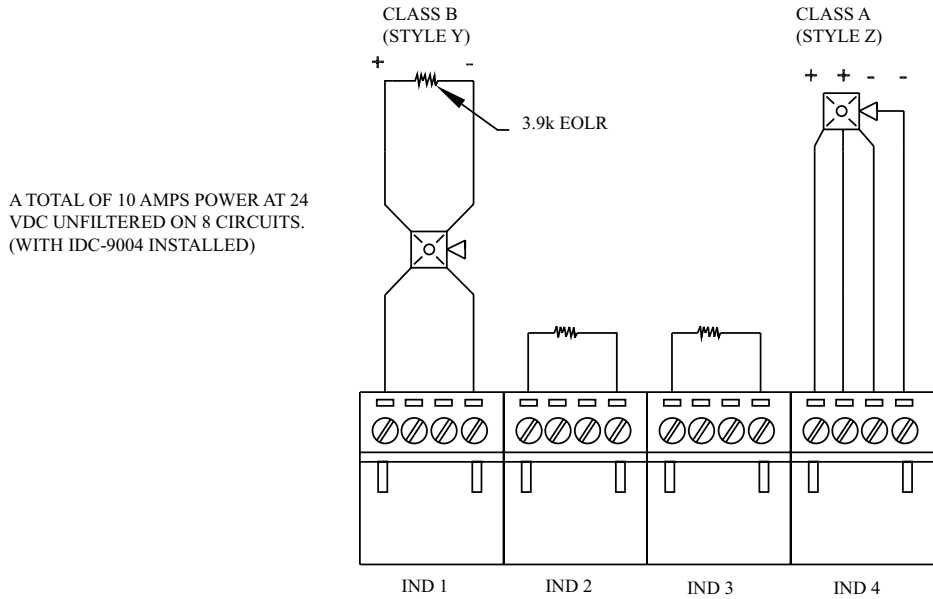
**Jumpers**

- JW1 Continuity Jumper installed only if device is the last circuit adder installed
- JW2 Jumper for ability to deactivate the bells on Circuit 1
- JW3 Jumper for ability to deactivate the bells on Circuit 2
- JW4 Jumper for ability to deactivate the bells on Circuit 3
- JW5 Jumper for ability to deactivate the bells on Circuit 4
- JW11 Terminals for Bell Cut Relay

**Plugs**

- P1 Data cable for next circuit adder
- P2 Data cable attached to previous circuit adder or main fire alarm
- P3 Power connector to next circuit adder
- P4 Power connector to P8 of fire alarm board or previous circuit adder module

Notification Circuits Wire Terminations



**Note:**  
**All devices must be wired either Class A or Class B.**  
**Refer to IDC-9004 bulletin for settings.**  
**The combination of Class A and B wiring shown is for demonstration purposes only.**

DWG# PFC-9000-39

Field Wiring Terminals

**Notification Appliance Wiring Chart**

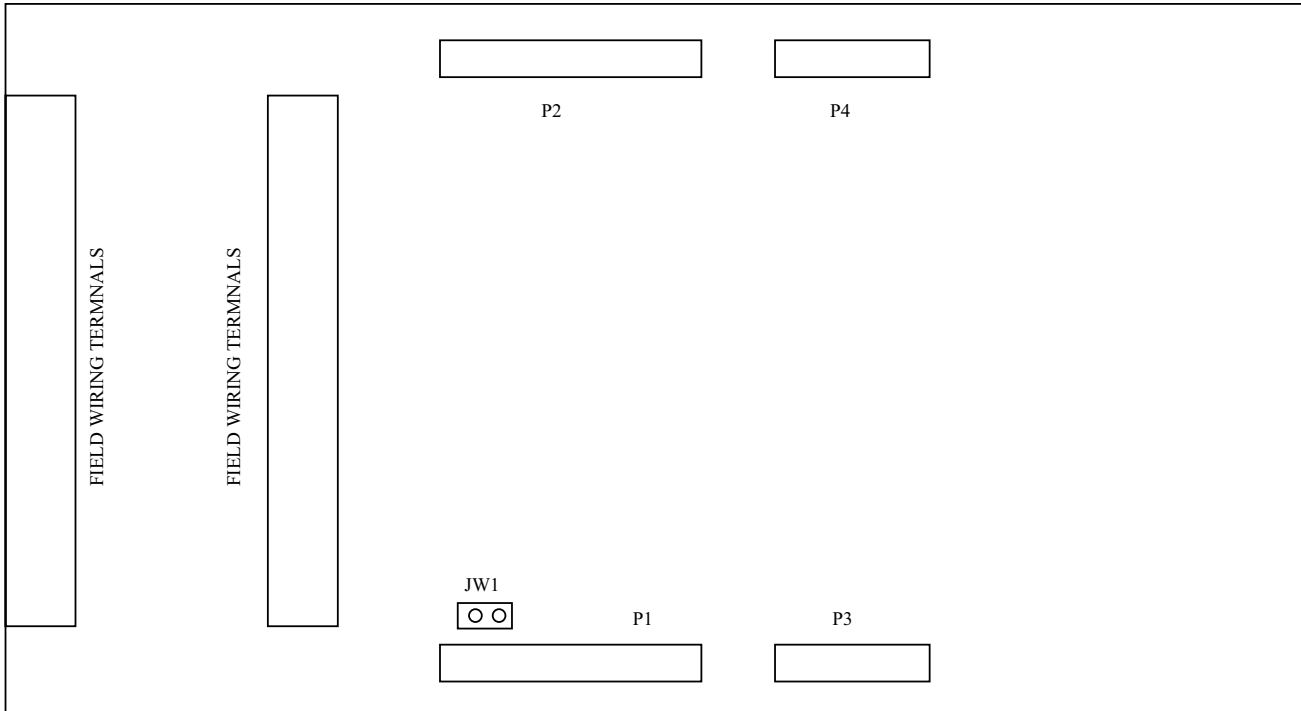
Main Board Notification Circuits are rated for 1.7 Amps each, IDC-9004 Notification Circuits are rated for 1.7 Amps each.

TOTAL SIGNAL LOAD	MAXIMUM WIRING RUN TO LAST DEVICE (ELR)								MAX. LOOP RESISTANCE
	18AWG		16AWG		14AWG		12AWG		
Amps	ft	m	ft	m	ft	m	ft	m	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1269	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.70	78	24	125	38	200	61	285	87	1.0

**NOTE :** MAXIMUM VOLTAGE DROP SHOULD NOT EXCEED 1.8 VOLTS AND THIS TABLE ASSUMES TOTAL LOAD AT END OF THE LINE

**ARM-9008 Relay Circuits Adder Card**

The ARM-9008 is a relay card that allows the user to program eight form C relays to any of the inputs in the Configuration Program. Each relay is rated for 1 Amp at 28VDC. The ARM-9008 occupies one space in the PFC-9000 chassis and can be stacked on top of the UDACT-9100 card in the left space.



DWG# PFC-9000-19

**Jumper**

JW1 Continuity Jumper installed only if device is the last circuit adder installed

**Plugs**

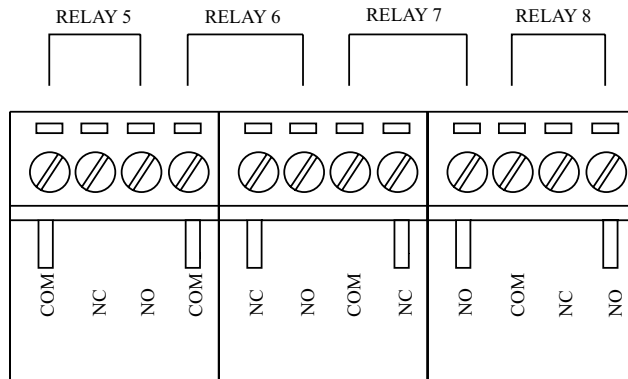
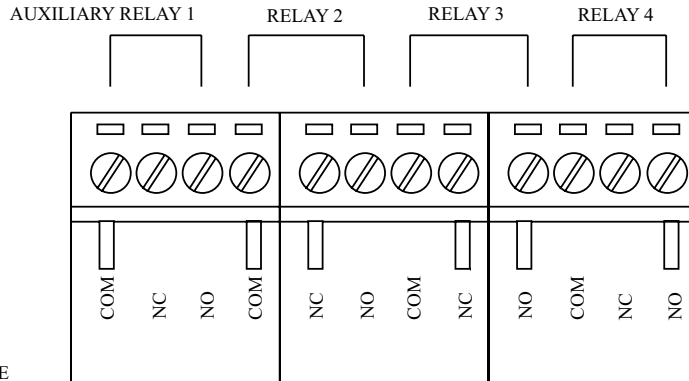
- P1 Data cable for next circuit adder
- P2 Data cable attached to previous circuit adder or main fire alarm
- P3 Power connector to next circuit adder
- P4 Power connector to P8 of fire alarm board or previous circuit adder module

ARM-9008 Relay Module Wiring Terminations

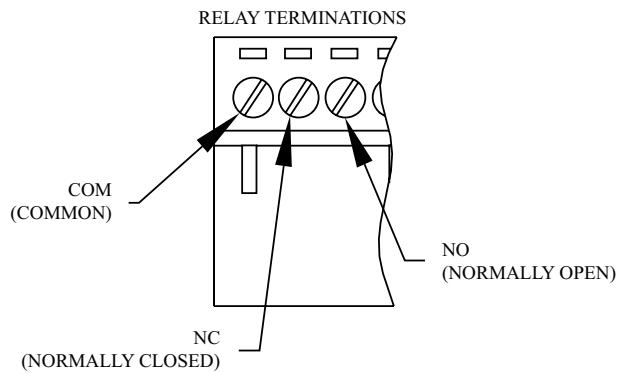
**⚠ CAUTION**

Do not connect AC power directly to relays. Damage to relay board and panel will result.

ALL RELAYS ARE POWER LIMITED AND SHOULD HAVE POWER LIMITED CABLING. ONLY CONNECT TO A LISTED POWER SOURCE.



CONTACT RATING  
1 AMP AT 28 VDC



DWG# PFC-9000-40

Field Wiring Terminals

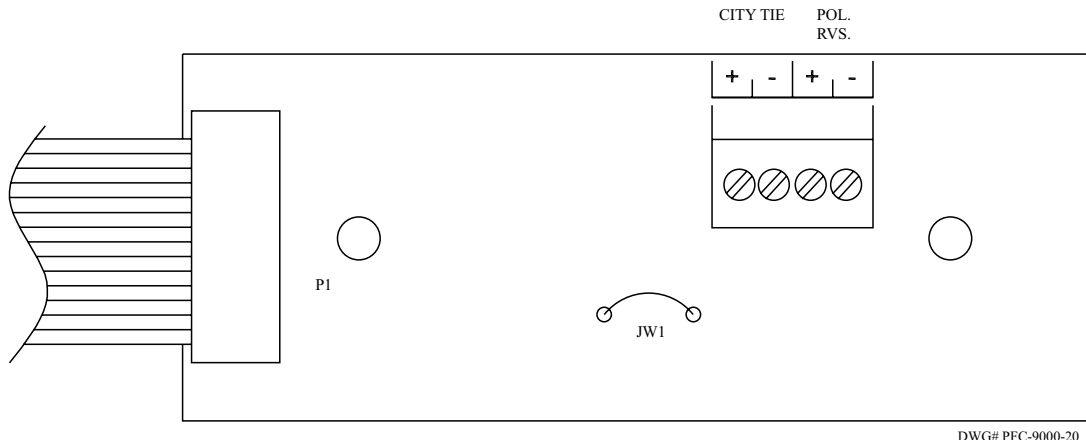
**PR-5000 Polarity Reversal/City Tie Module**

The PFC-9000 can communicate directly through a hardwire connection. The PR-5000 is a module that will operate by reversing the polarity or supply power to a fire alarm box.

The polarity reversal is used for a direct connection to a fire department or communication center. The Polarity Reversal provides a polarity reversal when the panel reaches an alarm state. The contacts on the PR-5000 are marked for the normal condition.

The City Tie is supervised and provides 200 mAmps at 24VDC. If Jumper 1 is removed the PR-5000 will transmit an open when a trouble occurs.

The PR-5000 must be installed in the left adder location. When the PR-5000 is installed, other communication boards cannot be installed. The panel will only support one communication board.



P1 Plugs into the main fire alarm board plug P4

JW1 Jumper for a Trouble Condition, cut the jumper to enable an open circuit or zero voltage when a trouble occurs

**UDACT-9100 Universal Digital Alarm Communicator Transmitter**

The UDACT-9100 is the most common method of connecting the PFC-9000 to a monitoring station. The UDACT-9100 will communicate using two phone lines with either the Ademco Contact ID or Security Industries Association DCS protocols to a Central Station or Remote Supervising Station. The UDACT-9100 connects directly to the PFC-9000 chassis and plugs into the main fire alarm board P4.

The UDACT-9100 is powered and communicates with the PFC-9000 using a single ribbon cable through an RS-485 data link. The UDACT-9100 is capable of reporting multiple events to a single Account number during a single call session. The device reports events in the order in which they are received and recognized. The UDACT-9100 will attempt to communicate up to three times during a single call. The UDACT-9100 is programmed using the CFG-LCD Configuration Tool.

The UDACT-9100 constantly (about once a minute) supervises the integrity of phone lines connected. Any communication failure will be reported on the other line and a trouble signal will display on the main fire alarm panel.

**UDACT-9100 MAIN BOARD:**

- P1** Ribbon Cable for connecting to Potter Fire Alarm Control Panel (FACP).
- P2** RS-485 Connection for future expansion.
- P3** Not used.
- U18** Connector for CFG-LCD Configuration Module.

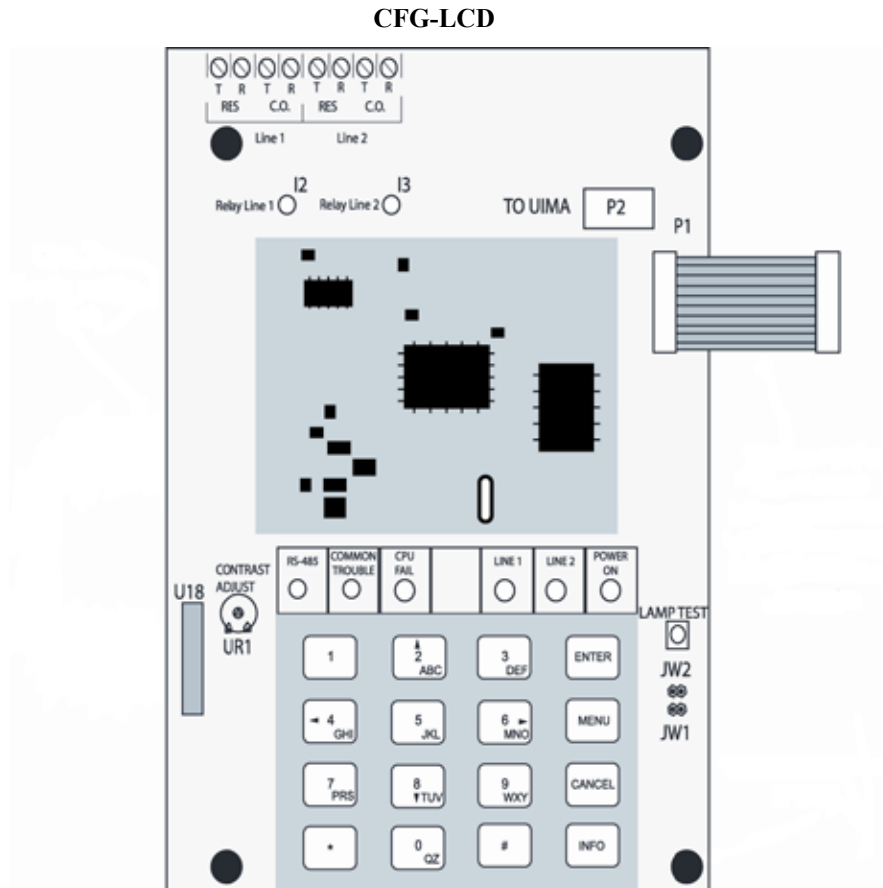
**Programming the UDACT-9100**

The UDACT-9100 is programmed using the CFG-LCD Configuration Tool. The tool is powered directly from the UDACT-9100 and interfaces using a ribbon cable to the U18 plug on the UDACT-9100 as displayed in the UDACT drawing. The configuration tool utilizes an LCD display to program the account number, phone number of the receiving station, etc. The Configuration Tool has two levels of password protection, which may be changed. In addition, the UDACT-9100 can be reset to the factory defaults by using a jumper setting. The exact codes for programming the UDACT-9100 are included in Appendix E. Detailed programming instructions come with the CFG-LCD Configuration Tool.

**UDACT-9100 Main Board Terminal Connections**

Wire the two telephone lines devices to terminals as shown.

- Line 1 Input (Tip/Ring):** To the first Telephone Line via the required RJ31X Connector.
- Line 1 Output (Tip/Ring):** To an optional Premise Telephone on the first Telephone Line via the required RJ31X Connector.
- Line 2 Input (Tip/Ring):** To the second Telephone Line via the required RJ31X Connector.
- Line 2 Output (Tip/Ring):** To an optional Premise Telephone on the second Telephone Line via the required RJ31X Connector.



Note that most Authorities Having Jurisdiction do not allow the connection of Premise Telephones. Terminal blocks are “removeable” for ease of wiring.

## CHAPTER 6 SLC LOOP DEVICES AND WIRING

### SLC Loop Overview

Unlike conventional panels that utilize an initiating circuit, addressable and analog/addressable fire panels use a Signaling Line Circuit or SLC. The recognized definition of an SLC is a circuit or path between any combination of circuit interfaces, control units or transmitters over which multiple system input signals or output signals or both are carried.

The conventional systems are a simple pair of wires that is supervised with an end of line resistor. If the first device shorts the pair and puts the zone in alarm, the rest of the zone is unrecognized. A SLC does not operate with a short and end of line supervision. The panel communicates with every device, therefore the end of line supervision is not required. In addition, the communication allows the panel to recognize additional inputs as well as communicating to outputs.

The PFC-9000 is flexible in the wiring materials and methods used. The panel will accept up to 12 AWG wire on the terminals. In addition, the wire may be stranded or solid, twisted pair or straight lay, shielded or non-shielded so long as the total wire resistance does not exceed 50 ohms, the line capacitance does not exceed 0.5 microfarads and the inductance does not exceed 1 micro Henry. The table below indicates the maximum loop length based on the wire size.

### Analog Loop Wiring

The analog addressable loop is flexible in the variety of wiring mechanisms that can be employed as well as wiring lengths. The wire lengths for total loop length are described in the table below.

WIRE SIZE (GAUGE)	LOOP TOTAL WIRE RUN	
	FEET	METERS
12	15700	4790
14	9950	3030
16	6225	1895
18	3900	1190

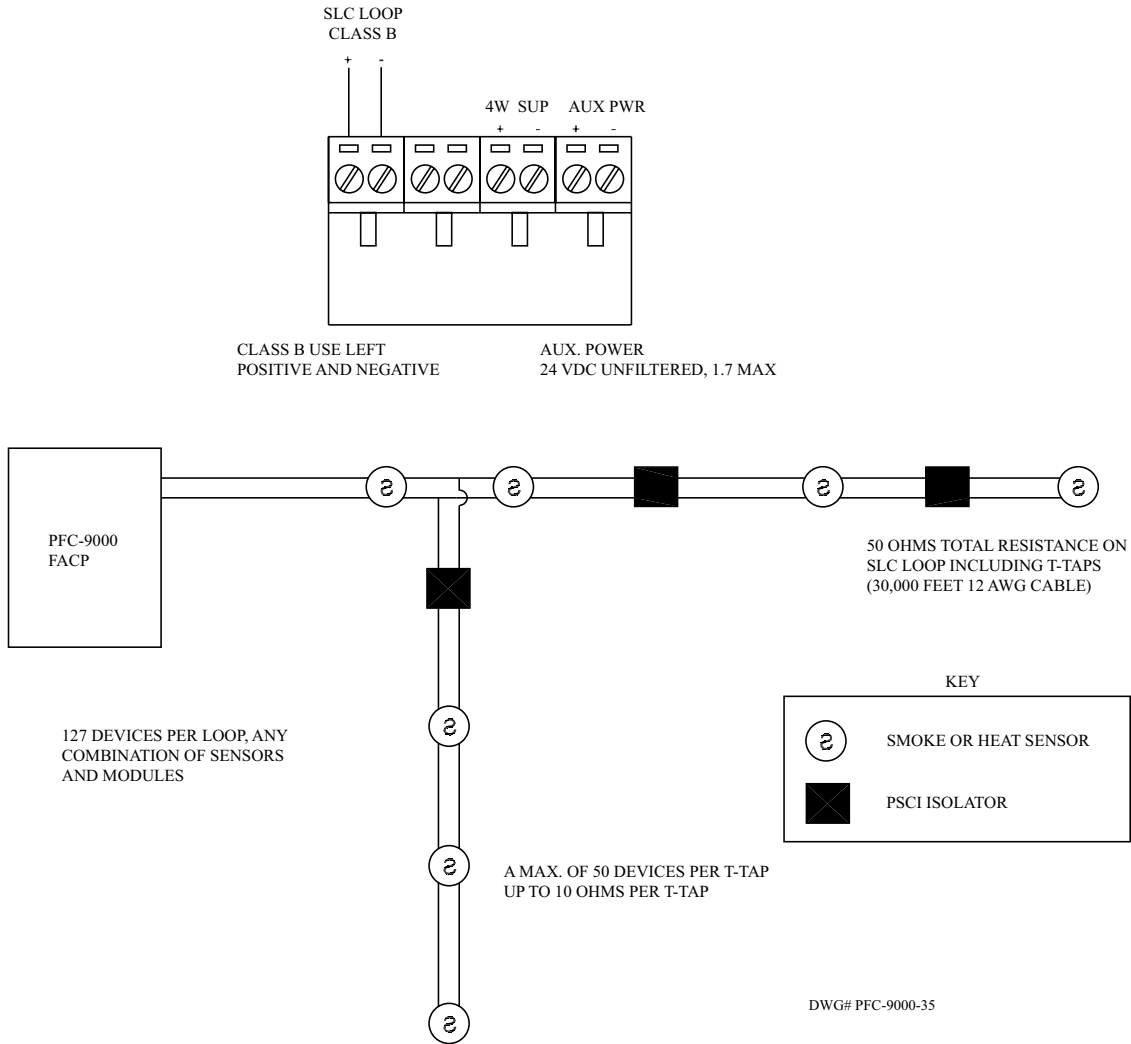
### WARNING

The maximum loop resistance cannot exceed 50 ohms. The line capacitance cannot exceed 0.5uF and the inductance can not exceed 1mH. Failure to ensure these values are not exceeded will result in frequent trouble conditions and possible failure of initiating devices.

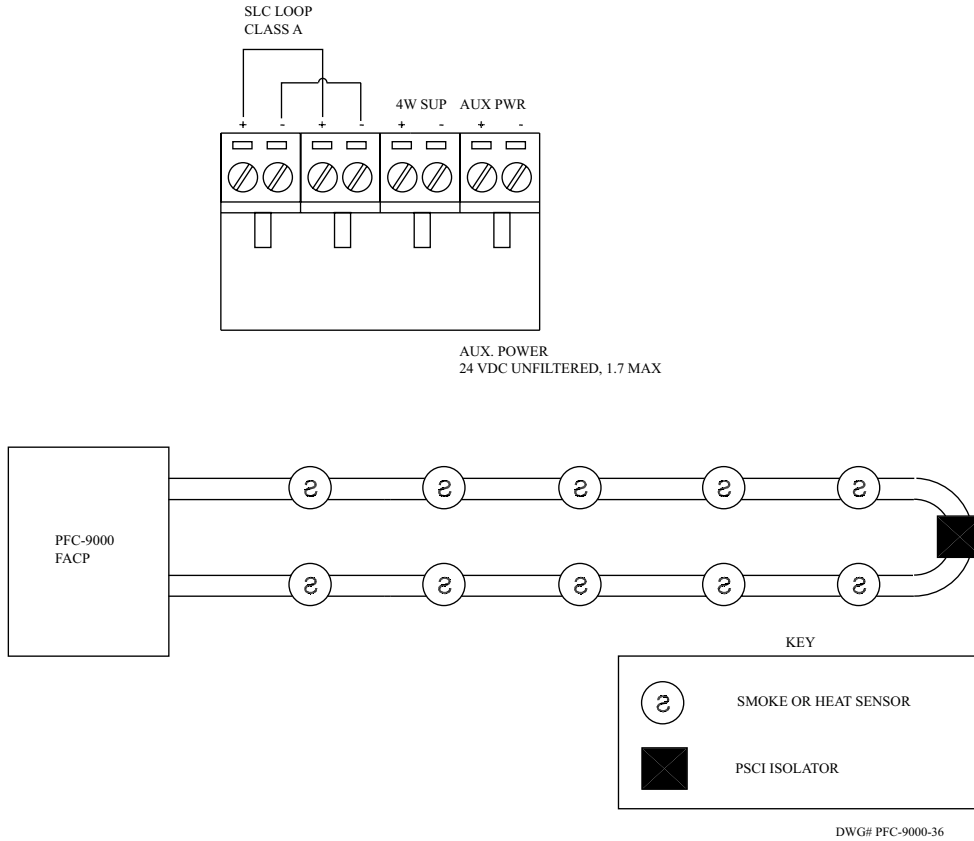
SLC Wiring Styles

The National Fire Code defines the minimum requirements for Signaling Line Circuits and the respective operating parameters with a fault condition. Consult the local AHJ to determine which class and style of wiring is required.

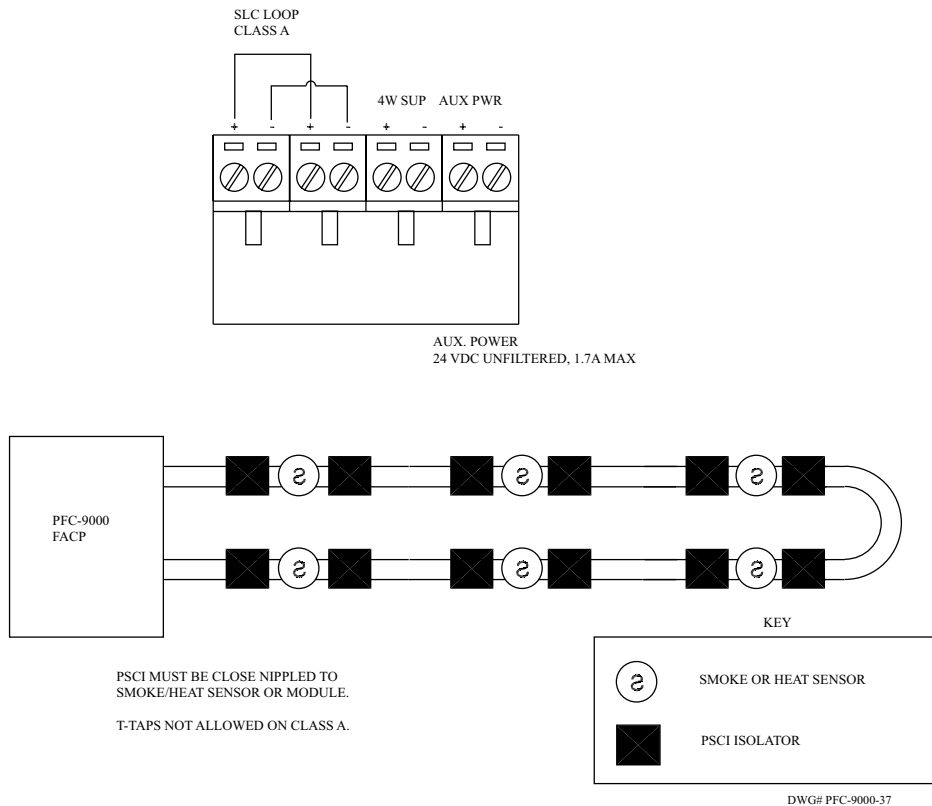
Class B (Style 4) Addressable Loop Wire Terminations



Class A (Style 6) Addressable Loop Wire Terminations



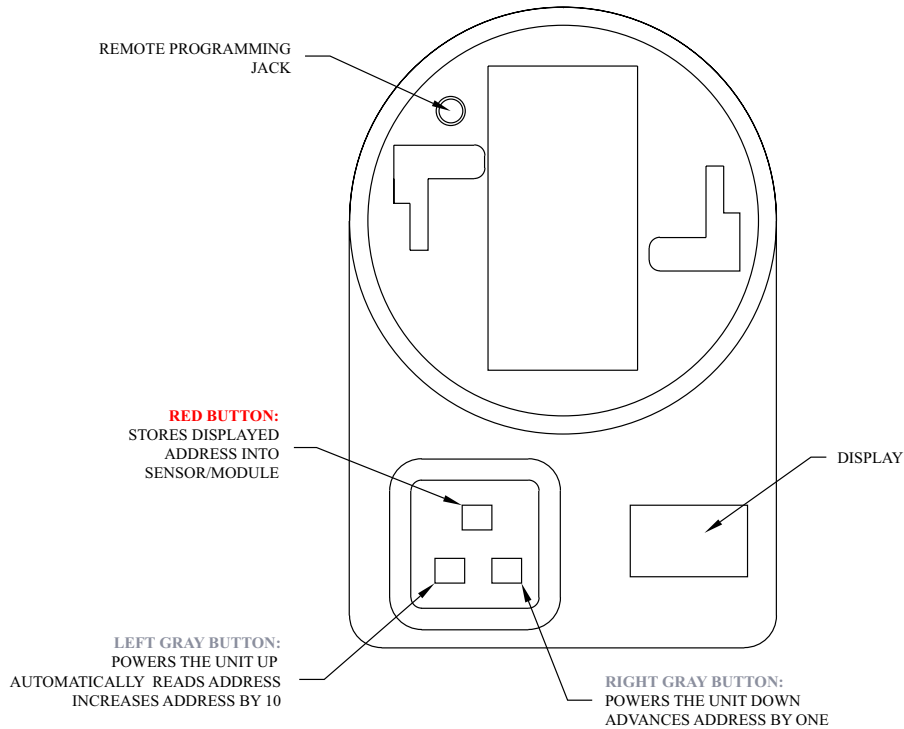
Class A (Style 7) Addressable Loop Wire Terminations



### Programming Analog/Addressable Devices

The PFC-9000 panel has a full line of addressable peripheral devices that may be connected to the SLC. All of the peripherals must have the EEPROM programmed. All new devices are addressed at 127. These devices must be addressed using the Hochiki TCH-B100 hand held programmer. Also, the sensors are analog/addressable and can be diagnosed using the hand held programmer for their analog value. The hand held programmer is powered from a conventional 9VDC battery that is provided. **Note:** Before operating the device, ensure the battery is connected and when completed with the programming disconnect the battery. Each device must be individually and uniquely addressed in order for the PFC-9000 to operate and recognize the device connected to the SLC loop. The ionization and photoelectric smoke sensors and the fixed temperature heat sensor simply slide onto the programmer to be programmed.

Once the address is set on a device, mark the address on the label area on the device for future reference.



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### Testing a Sensor

The TCH-B100 has the capability of reading the analog value of the smoke and heat sensors. Slide the sensor on to programmer and turn the programmer on by pressing the left gray button as outlined above. Once the unit is powered up, the address will be displayed. Press the red button and the letter "A" will appear. The analog value will then be displayed. Allow the ionization detectors to stabilize for at least 30 seconds for an accurate reading. The programmer will continue to be updated for three minutes or until the programmer is turned off.

The programmer has eight error codes that can be displayed if the sensor or module is having a problem reading.

Bat-On upon power-up (battery check). Also on when the battery is low. A battery is good for about 3,000 address setting operations.

E0-Attempting to set an address beyond 127

E1-Attempting to program an address with no device connected

E2-Can not fire device after power up

E3-Invalid sensor response

E4-Can not find the device program

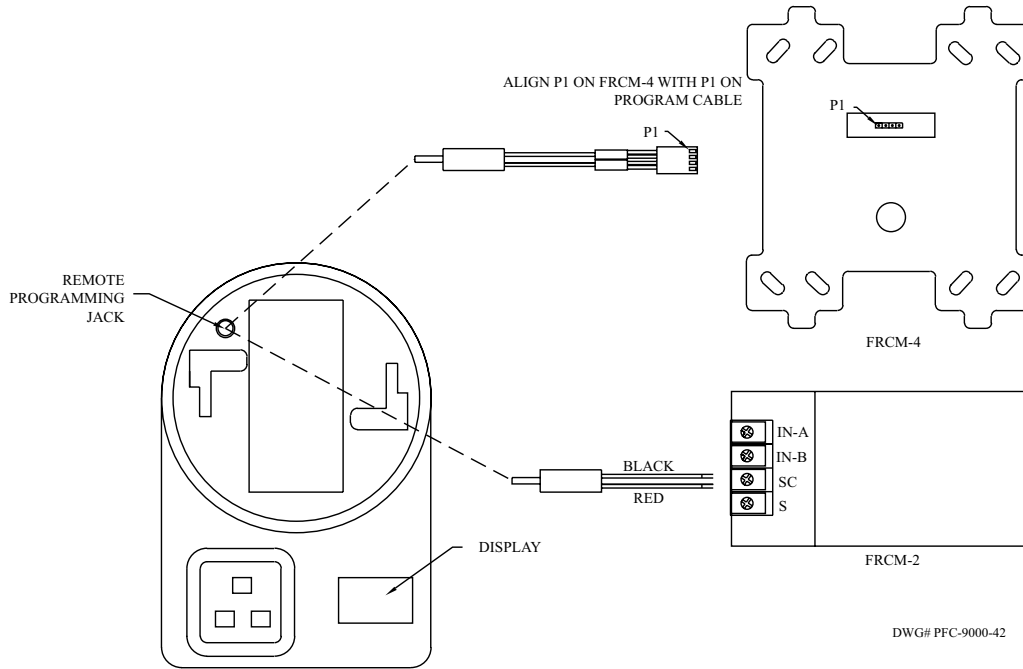
E5-Device read error

E6-Fail during Analog value reading

### Programming A/A Modules

The FRCM-4, SOM and DRM utilize a remote programming cable that plugs into the module. The cable plug is marked with a number 1 and that must coincide with the plug 1 on the module. The FRCM-2 utilizes the cable without the plug for programming. When programming the modules, at least one of the SLC wires must be removed.

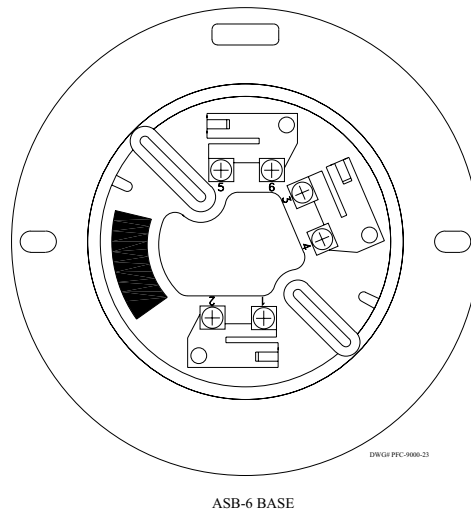
To program modules, the device must be isolated from the loop by removing at least one of the SLC loop wires. The TCH-B100 has a programming jack that the remote cable is plugged into for programming the modules. Powering the unit up and programming is identical for the sensors.



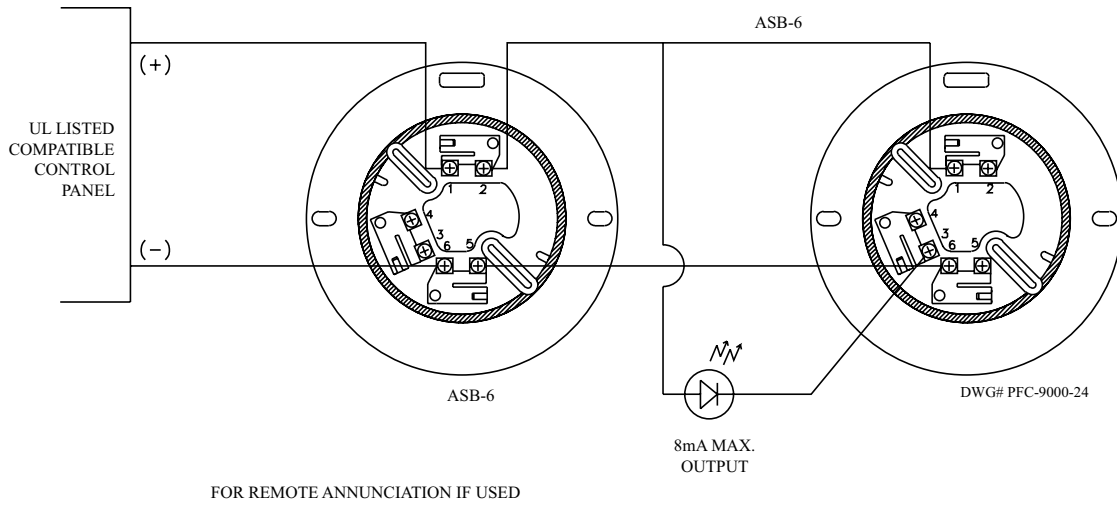
### SLC Analog Device Wiring

#### AIS, APS, AHD, Smoke Sensors, and Heat Detectors

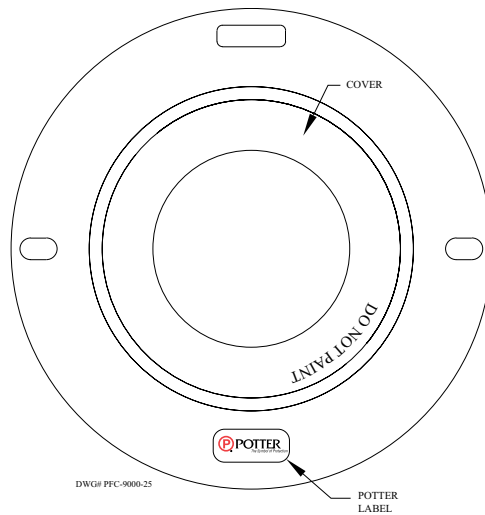
All of the sensors are essentially wired the same way. The AIS, APS and AHD sensors must be connected to an ABS-6 or equivalent base. The base must be secured to a back box and all of the field wiring is connected to the base.



The SLC loop, the sensors and the bases are polarity sensitive. The panel will have the terminals marked for positive and negative for both Class A and Class B. The base has three sets of terminals. Terminals number 1 and 2 are for the positive, terminals 5 and 6 are for the negative and terminals 3 and 4 are for a remote annunciation. The remote annunciation has a maximum output of 8 mAmps per base.



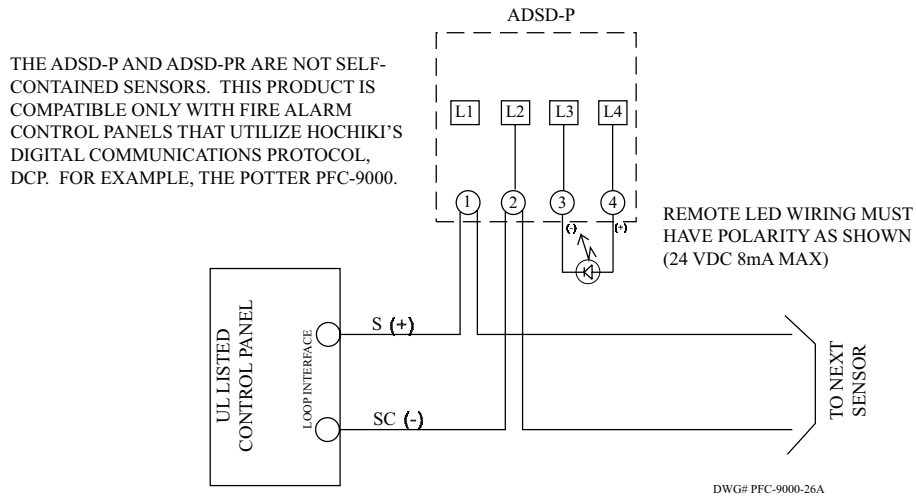
The sensors will only slide onto the base one way. The “DO NOT PAINT” that is embossed on the sensor should line to the right of the Potter on the base and turn clockwise onto the base.



### ADSD Duct Smoke Detector

The ADSD is the duct smoke detector designed to easily mount on the side of an HVAC duct and monitor for smoke conditions in the duct. A template and mounting hardware is provided with the unit for mounting. The device mounts without the removal of the outer cover. The devices are designed to operate without screens and filters, therefore the amount of maintenance needed for the device is minimal. The fire alarm panel controls the sensitivity of the smoke sensor.

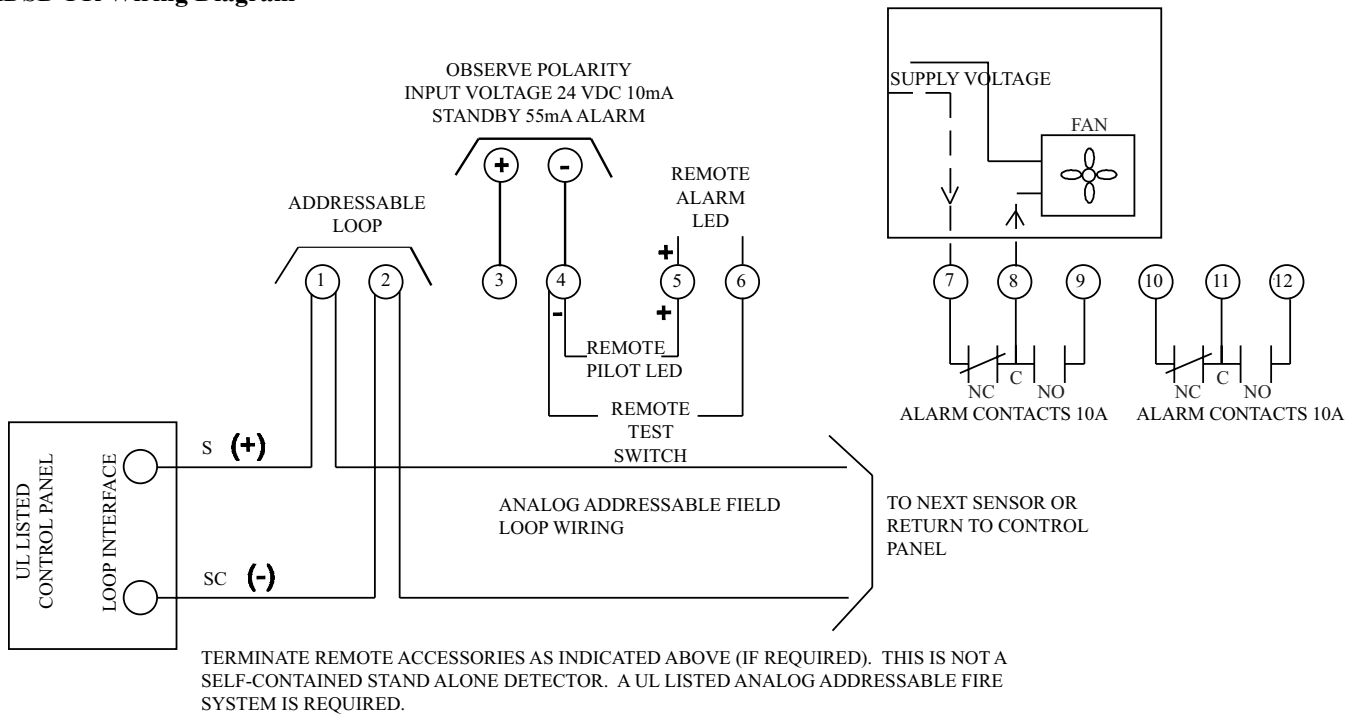
Both the ADSD-P and ADSD-PR utilize a photoelectric smoke sensor. The ADSD-P has four terminals, two for the SLC loop and two for remote output of an LED. The ADSD-PR has terminals for two form C relays that are rated for 10 amps at 125/250 VAC. The ADSD-PR requires 24 VDC to operate. Failure to provide 24 VDC power will result in the panel showing a missing device. The ADSD will monitor airflow between 300 and 4,000 feet per minute and require that the user purchase air-sampling tubes in order to achieve proper airflow through the unit. Sampling tubes are available in 3, 5 and 10-foot lengths.



### ADSD-P Wiring Diagram

The ADSD is addressed in one of two ways and both require the removal of the cover to access the smoke head. The head can be removed and inserted on the hand held programmer and addressed like all of the other sensors. The other option is to use the FRCM-2 cable and connect to the SLC terminal strip on the ADSD. The programming of the device is the same as if it was connected.

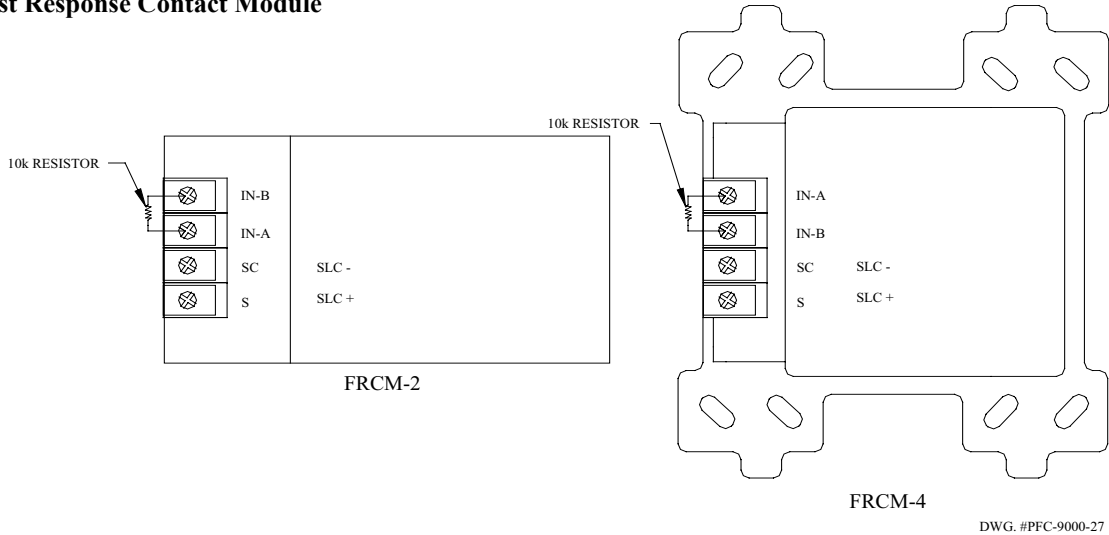
### ADSD-PR Wiring Diagram



**Modules**

All of the SLC modules, except for the FRCM-2, mount in 4” square electrical boxes and have an off white cover plate that allows the LED on the module to be seen. In addition, all of the modules have the same foot print. All of the modules, except the PSCI, require addressing in order to operate as part of the system. The FRCM-4, SOM and DRM utilize a remote programming cable that plugs into the module. The cable plug is marked with a number 1 and that must coincide with the plug 1 on the module. The FRCM-2 utilizes the cable without the plug for programming. When programming the modules, at least one of the SLC wires must be removed.

**FRCM Fast Response Contact Module**

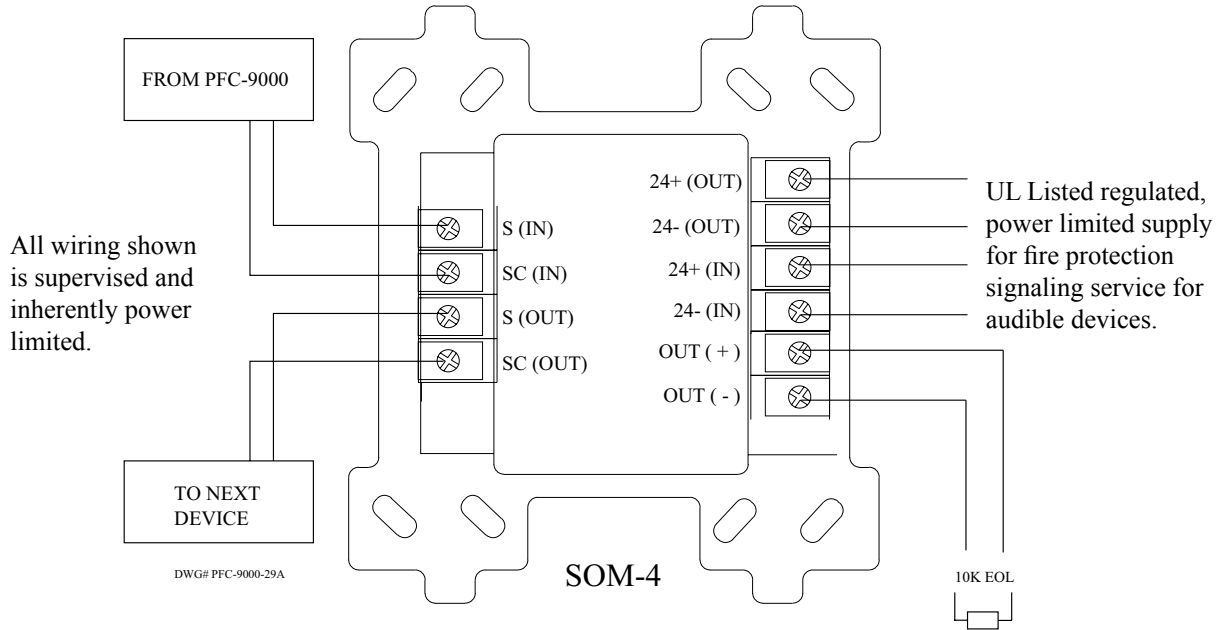


The Fast Response Contact Modules, the FRCM-2 and FRCM-4, are essentially the same device because of the way they function. The main difference is the mounting used for each device and the FRCM-4 has a status LED. The FRCM-2 mounts into a single gang electrical box behind a pull station or in a sprinkler-monitoring device. The FRCM-4 will only mount in a four-inch square electrical box. The FRCM’s both operate on the SLC loop and utilize an end-of-line resistor for supervision of the dry contact. In addition, the FRCM’s will only monitor normally open contacts.

**SOM Supervised Output Module**

The SOM is a supervised output module designed to provide an output that is controlled by the fire alarm panel through the SLC loop and can be put anywhere on the loop. The SOM must have 24VDC power from a listed regulated power supply. Failure to provide power will result in the module being a missing device on the SLC loop. The SOM utilizes an end of line resistor to fully supervise the wiring to the notification appliance. The wiring to the notification appliance cannot exceed 50 ohms. When the SOM is activated the red LED will latch on the device. The LED will flash when the device is being polled by the loop.

**Notification Appliance Circuit (NAC)**  
 NAC installation wiring shall not exceed 50 Ohms



**⚠ WARNING**

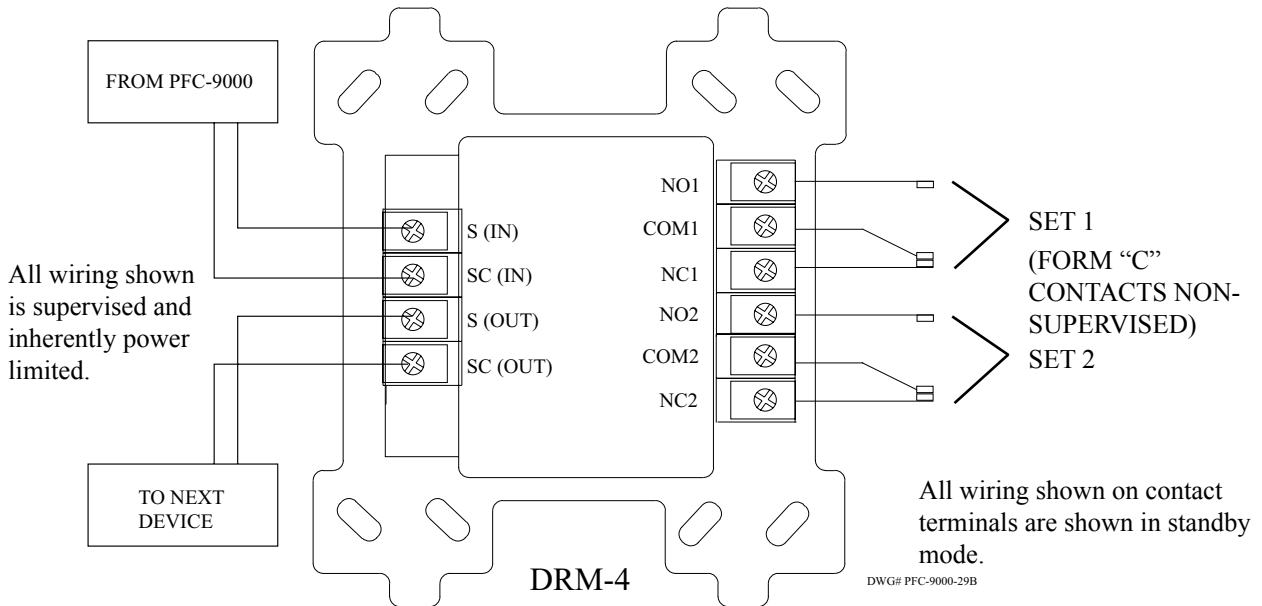
Use only FPL, FPLR, or FPLP wiring in accordance with Article 760 of the National Electrical Code.

**DRM Relay Module**

The DRM is a relay module that is controlled by the fire alarm panel and correlated to the inputs of the system. The DRM has two independent form C relays that activate simultaneously. Both relays must be wired either power limited or non-power limited. When the device is activated the red LED will latch on and the relays will change position. When the device is being polled the LED will flash. Contacts are rated 2 Amps at 30 VDC.

**⚠ CAUTION**

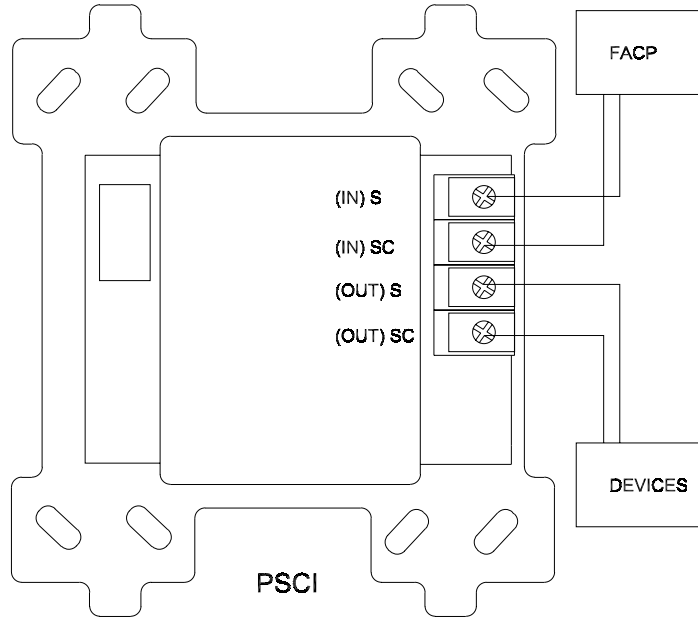
Inputs to both sets of Form “C” contacts must be either Power Limited or Non-Power Limited. Do not mix Power Limited wiring with Non-Power Limited wiring on contact side.



**PSCI Short Circuit Isolater**

When a short circuit or direct wire to wire short occurs on the SLC loop, the communication on the entire loop will be lost and the panel will have numerous trouble conditions because of the missing devices. The PSCI is a short circuit isolater that will isolate a short circuit to a portion of the SLC loop and keep a portion of the loop operational instead of losing the entire SLC. The PSCI is self-restoring, therefore when the short is removed the device will automatically reset. The PSCI is not addressable. Therefore, it does not require addressing.

Potter recommends that at a minimum, a PSCI is installed in Class A (Style 6) and Class B (Style 4) loops at the start of every floor or wing, the start of every T-Tap, and at least one after every 20 devices. Class A (Style 7) installations require a PSCI close nipped to each side of the smoke sensor or module.



DWG. #PFC-9000-31

The SLC loop has a maximum loop resistance of 50 ohms. As each device on the SLC loop reaches an alarm condition, the LED's will latch on and the loop will support a maximum of 15 LED's in alarm. The LED on the device is particularly important for the ADSD-PR because the LED's latch the relays on the device.

Each PSCI added will reduce the total allowable resistance of the loop. As the LED's on the loop are powered, the current of the loop increases and thus reduces the amount of resistance. The following table indicates the number of PSCI's that can be installed on the loop and the maximum loop resistance.

Number of Isolators	Maximum 15 LED's	Maximum of 5 LED's
20 PSCI	50 Ω	50 Ω
40 PSCI	44 Ω	50 Ω
60 PSCI	36 Ω	50 Ω
80 PSCI	28 Ω	50 Ω
100 PSCI	20 Ω	50 Ω
128 PSCI	10 Ω	36 Ω

## CHAPTER 7: PANEL OPERATION

### Panel Power Up:

After connecting all field wiring:

1. Check all field (external) wiring for opens, shorts, and grounds.
2. Check that all Modules are installed in the proper location with the proper connections.
3. Check that all interconnection cables are secure, and that all connectors are plugged-in properly.
4. Check that the communication and power to the annunciators are connected to the proper terminals, if the wires are crossed and the panel is powered-up, damage to the annunciator and panel will occur.
5. Check all Jumpers and Switches for proper setting. **(Refer to page 10)**
6. Make sure to close the front cover plate.
7. Turn on dedicated Circuit Breaker.
8. Once power is supplied to the panel, the “Trouble Queue” LED will light and the LCD will display “Initial system self checks in progress...” This will last between 30 and 90 seconds. The trouble buzzer will sound.
9. After completing the System Checkout procedures the “A.C. ON” green LED will light, the “Trouble Queue” LED will light, the buzzer will sound, and the LCD Display will display “System Restart, TRB Trouble) 001 of 002...” (001 of 003 for the PFC-9100 series because the phone line voltage is not present). Press the “SYSTEM RESET” button to clear the first trouble.
10. Since the batteries are not connected, “Battery trouble active TRB 001 of 001” will be displayed on the LCD, and the trouble buzzer will sound intermittently and the Trouble Queue LED will flash.
11. Connect the batteries while observing correct polarity; the red wire is positive (+) and black wire is negative (-). Connect the red wire to the positive terminal of battery #1 and the black wire to the negative terminal of battery #2. Use the short black jumper wire on the wiring harness to connect the negative terminal of battery #1 to the positive terminal of battery #2. By connecting the two 12 Volt batteries, a 24 Volt battery backup will be generated.
12. Use either the Auto Program Feature or Computer Software to program the panel for the inputs and outputs, as described in the following sections.

### **NOTICE**

**If the Auto Program feature is used, remove the RS-485 wiring terminal block from the panel until the configuration program is sent from the computer to the panel. The Auto Program feature will not work with a remote annunciator added.**

Once the panel is powered up with the field wiring connected, a number of troubles will appear (the more devices connected to the panel, the more troubles). If the panel has been programmed and trouble messages still appear, please refer to the Appendix for simple troubleshooting measures.

### **CAUTION**

Failure to properly check out system before applying power will result in damage to control panels, modules, and devices.

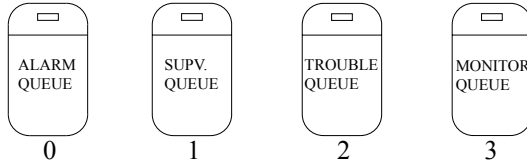
### Passcodes

The panel has four levels of pass code with up to twenty characters each for access control to provide over 1 trillion different pass code combinations. The pass code must be composed of a combination of the numbers 0, 1, 2, or 3. **Potter recommends using a pass code with four to six characters.** Once the Command Menu is activated, if the submenu has a pass code it must be entered before the user can access it. The Level 0 pass code is the same as not having a pass code. The submenus that have a Level 0 will not require a pass code to access. The different submenus have different factory default pass codes. The factory default pass codes are as follows:

- Level 1 – 1111 User
- Level 2 – 2222 Installer
- Level 3 – 3333 Programmer

The pass code is changed either through the Command Menu or the configuration software. In order to change the pass code using the Command Menu the user must first know the existing pass code.

When required to enter a pass code, press the queue buttons that correspond with the pass code. For example, the pass code of 0123 would be:



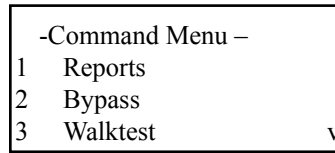
The default pass codes for each submenu are:

Reports	0
Aux Bypass	0 (Auxiliary Bypass)
Device Bypass	1
Loop Bypass	1
Walk Test	1
Set After Hours	0
Clear Event Log	2
Clear Verif Count 2 (Clear Verification Count)	2
Auto Program	2

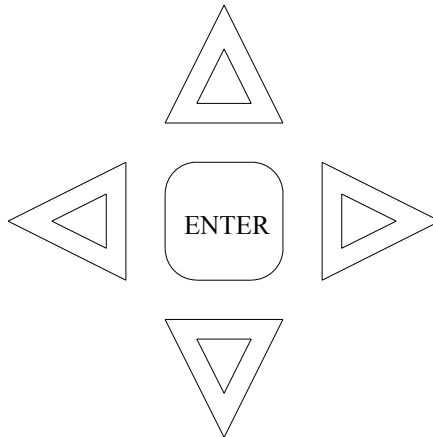
**Front Panel Overview**

The PFC-9000 series panel has viewing and programming features incorporated into the Command Menu. The Command Menu is accessed from the front panel utilizing the MENU button. Once the panel is powered up and operating, the Command Menu can be accessed and the user can view or modify settings.

With the panel up and running, push the MENU button.  This will access the Command Menu. The display will read:



The “v” indicates that there are additional items below. The arrow keys allow the user to scroll up and down, left and right.



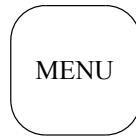
Nine submenus are accessed by scrolling down using the arrow keys. They are listed as follows:

- 1 Reports
- 2 Bypass
- 3 Walktest
- 4 Change Passcode
- 5 Day/night mode
- 6 Set Time/Date
- 7 Clear Event Log
- 8 Clr Verif Count (Clear Verification Count)
- 9 Auto Program

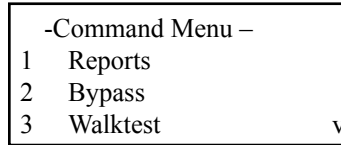
Pushing the INFO button with this screen will display the configuration software version.

## Reports

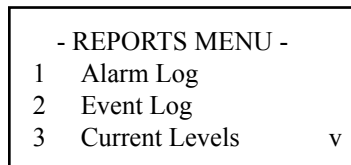
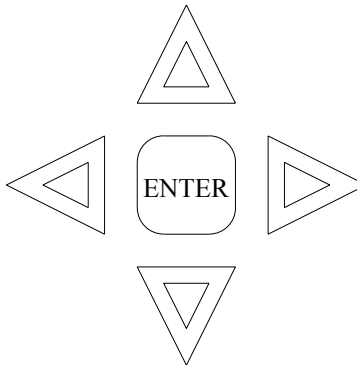
The Reports portion of the Command Menu is composed of five parts. To access the Reports section follow the following directions: push the menu button to access the Command Menu



The panel will display the following:



A cursor will be blinking on the number one, now push the Enter Button.



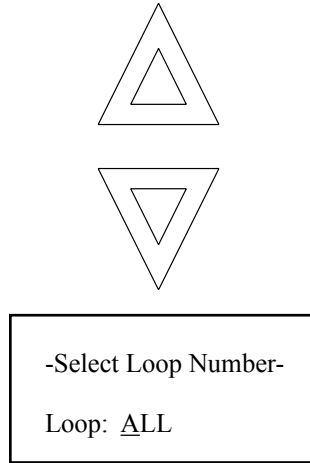
The Reports Menu is composed of five history logs and reports. These are Alarm Log, Event Log, Current Levels, Verif (Verification) Counts and Maintenance Reports. Scroll through the menu using the arrow cursor keys to access these different logs and reports. When the desired report or log menu is selected, press the ENTER button to access that menu further. In some cases there may be additional options to choose in order to view a particular loop or device.

The Alarm Log records every panel Start-up, System Reset and device in Alarm. The Alarm Log has the capacity of 1,000 events and the panel will automatically delete the earliest 500 when the 1,001 event is logged. The events in the Alarm Log are in chronological order starting with most recent and all events are time and date stamped.

The Event Log records every event that the panel receives including the events that would appear in the Alarm Log. The Event Log has the capacity of 2,000 events and the panel will automatically delete the earliest 1,000 when the 2,001 event is recorded. All events are in chronological order starting with the most current.

### Current Level

The Current Levels report indicates the level of alarm of each analog sensor on each loop. The Current Level indicates the Current Level and the Percentage of Alarm. The Current Level is a true analog value, a reading of approximately 60 is a clean detector. The Percentage of Alarm is a comparison of the level a sensor is in alarm compared to a “clean environment.” Once the Current Level is selected, the panel will require that the user either look at all devices or one particular loop. The “A” of ALL will be flashing and the user can scroll using the arrows to select the loop desired and then press the ENTER button.



After the loop is selected the sensor with the lowest address on the particular loop will be displayed. The display will have the loop, the address and the type of sensor. Pressing the arrow keys scroll to the next sensor until all sensors have been viewed, it then goes back to the beginning. If a printer is attached, the device address, type of sensor and percentage of alarm will be displayed on the print out.

Loop 1	Address 001
	Ion Detector
Current Level:	65
Percent Alarm:	6%

### Verification Count

The Verification Count is the report that indicates the number of times that a verified device reached a level of alarm as well as giving the device address and loop. You can select the loop or review all loops for the verified alarms that were received.

### Maintenance

The last report in the Reports menu is the Maint (Maintenance) Report. The Maintenance Report indicates the sensors that have reached a level that is beyond acceptable range and needs to be serviced or replaced. The panel will have a trouble condition when the device is considered dirty, which is 80% obscuration over a period exceeding 24 hours. The panel will check the sensor twice before issuing a trouble condition.

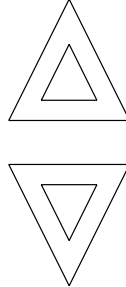
Bypass

Item 2 in the Command Menu is the Bypass Menu, which allows the user to bypass a single device, circuit, loop or disconnect the common relays. When the Bypass Menu is activated the screen will require the user to select the area to bypass.

```

-BYPASS MENU-
 1 Device/Circuit
 2 Loop
 3 Relay Disc
    
```

Selecting number 1 or the Device/Circuit portion, the user may have to enter a password if the Bypass Menu is pass code protected. The user will then have to select which loop the device is on that will be bypassed. The loop is selected using the arrow keys until the desired loop is displayed.



```

- SELECT DEVICE -
LOOP: 0
    
```


Similarly, the address that is desired to be bypassed is selected using the arrow keys. (Each digit must be selected using the left and right arrows.)

```

- Select Device -
Loop: 0
Device: 001
    
```

```

Signal Output
L0 001not bypassed
Bypass? Y
    
```

Push the ENTER key after selecting the device and then the confirmation. That address is then bypassed. The yellow trouble LED will be illuminated and pushing the  will display the device/circuit that is bypassed. Follow the same procedure for unbypassing the device/circuit. In addition, the loop and relay disconnect are operated using the same procedure as outlined above.

### Walktest

The PFC-9000 has a walk test that can be programmed as audible or silent. When the audible walk test is activated, the panel will automatically reset after about two seconds when a device is put into alarm or a trouble is created. The silent walk test records all of the events into a history buffer and when finished, the buffer can be reviewed. If the panel is programmed for a printer to be attached, the information can either be displayed on the screen or printed to the printer.

- Select Test Type -

1 Audible

2 Silent

All walk Test information is recorded in the Event History Buffer when in walk test mode. The panel will remain in a Trouble condition. The UDACT and relays are automatically disabled. Once the Walk Test has been activated, the main LCD display will indicate that a Walk Test is active and indicate the number of alarm and trouble signals received. To terminate the Walk Test, press the ENTER button again.

- Walktest Active -

Alarms: 120

Troubles: 10

Press ENTER to end

After the Walk Test is complete, the display will indicate the numbered event out of the total number of events recorded during the Walk Test as well as give a time and date stamp. The CANCEL button must be pressed to clear the LCD screen to the normal message.

### Change Passcode

The PFC-9000 offers the user the ability to change the pass code utilizing the Command Menu. In order to change the pass code, the user must first know the existing pass code. Select the pass code level to change and enter the pass code for that level or higher and press the ENTER button. Enter a new pass code and press ENTER. Then verify the new pass code and press the ENTER button again. The panel will automatically return to the Command Menu. Refer to page 49 for Passcode button locations.

### Day/Night Mode

The day/night mode allows the user to manually set the panel in the day or night mode. The panel must be programmed for a day/night mode in the configuration software. The day/night mode allows the panel to have different sensitivities for different times of day.

### Set Time/Date

The only way to set the time and date for the front panel display is using the Command Menu. Once the change time and date is selected, a blinking cursor will appear in the display on the date line. The date and time must be scrolled through using the arrow keys. The right/left arrow keys move the cursor right and left. The up/down arrow keys change the field up or down.

- Change Time/Date -

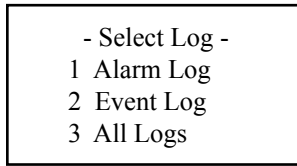
Date: Aug 10, 2002

TIME: 03:12 PM

In the above screen pushing up will cause the date to change to Sep 10, 2002. Once the desired fields are changed, press the ENTER button and the changes will be made to the internal clock. The events in the history buffers will not be changed.

### Clear Event Log

This control allows the user to select the log that they wish to clear: Alarm, Event or All. Select the Clear Event Log and enter the pass code if necessary.



Once the log is selected push the ENTER button. The panel will query the user to verify that they want to clear that log. If you are sure, push the ENTER button, if not push the CANCEL button.

### Clear Verification Count


The Clear Verification Count clears the log of the verified alarms received. The Clear Verification Count may require a pass code if one is installed.

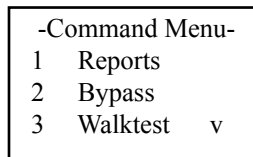
### Auto Program

Once all of the devices have been uniquely addressed and installed, the user can utilize the Auto Program feature to quickly program all of the devices into the panel, or when new devices are added to the system they can quickly be added. In addition, the Auto Program creates a fail-safe system in which every new input is configured as an alarm input and they are automatically correlated to every output including notification circuits and the alarm relay. The panel can be auto programmed and then the program downloaded to a computer for device mapping and sensor adjustment.


The Auto Program feature will not program the annunciators into the system. **The annunciators must be programmed using the computer software.** If the panel has a trouble that includes an annunciator with a data link trouble or version mismatch, the Auto Program will abort.

**Potter strongly recommends that the Auto Program feature have at least a level 2 pass code protection.**

Press the  button, the display will read



Press the Scroll Up arrow until #9 “Autoprogram”

Press the  button, the display will ask for a passcode of level 2 or higher. The factory default

passcode is 2222 which is the TROUBLE QUEUE button four times.

The display will indicate X number of new devices found on loop Y, add with default programming? Y

Press the  button.

The display will read WARNING System must be Thoroughly Rechecked When Done, Continue? Y

Press the  button.

The display will indicate that autoprogramming is in process.

NOTE: When the panel is finished all addressable modules that have been added to the panel through the autoprogram feature default to a general alarm signal and are automatically mapped to all notification circuits.

## CHAPTER 8: COMPUTER SOFTWARE INSTALLATION

The power in the PFC-9000 lies in the simplistic programming software. The programming software allows the user to program any input with any output through the ease of Windows® based software. In addition, devices are correlated or mapped by device. There is no need for creating zones or groups of devices.

The National Fire Protection Association (NFPA) Standard 72, National Fire Alarm Code, does not allow remote dialing into a panel for programming. Therefore, the Potter PFC-9000 series fire alarm control panel is not capable of remote programming.

### Computer Requirements

The PFC Configuration Software is designed for a Windows 95B operating platform or higher. The software will not fully operate with some of the newer platforms. The PFC Configuration Software will operate with Windows XP and ME, however, the Reports will not work. In order to get the reports section to function using Windows XP, change the properties of the configuration software to windows 98.

Right click on the PFC Config. Icon

Select “properties”

Select “Compatibility”

Check the box that allows different versions of windows

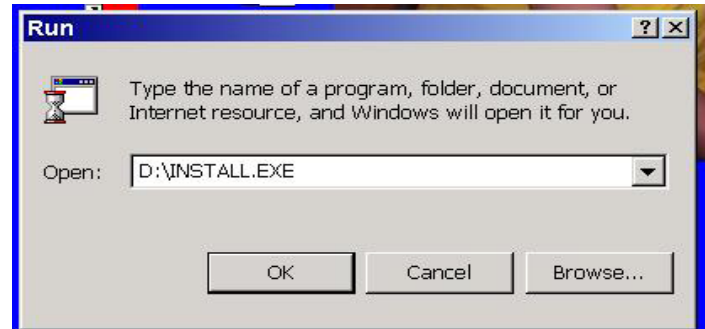
The configuration software will operate on most computers. The processor needs to be at least 100 mHz. In addition, the hard drive needs at least 50 megabytes of space and 16 megabytes of RAM memory. Also, the computer must have a CD-ROM drive.

### Hardware Requirements

The PFC-9000 fire alarm system has components that are unique from all other systems. Therefore, besides the installation software the user will need to have some devices that support the system. These include the hand held device programmer and the UIMA. The hand held programmer is used to program all of the analog/addressable devices. In addition, the UIMA is an interface box that allows the user to plug a cable into the serial port of a computer and then plug a ribbon cable into the panel for sending and receiving programs from the panel. If a PFC-9100 is installed or a panel with a UDACT-9100, the CFG-LCD dialer configuration tool will be needed to program the UDACT-9100.

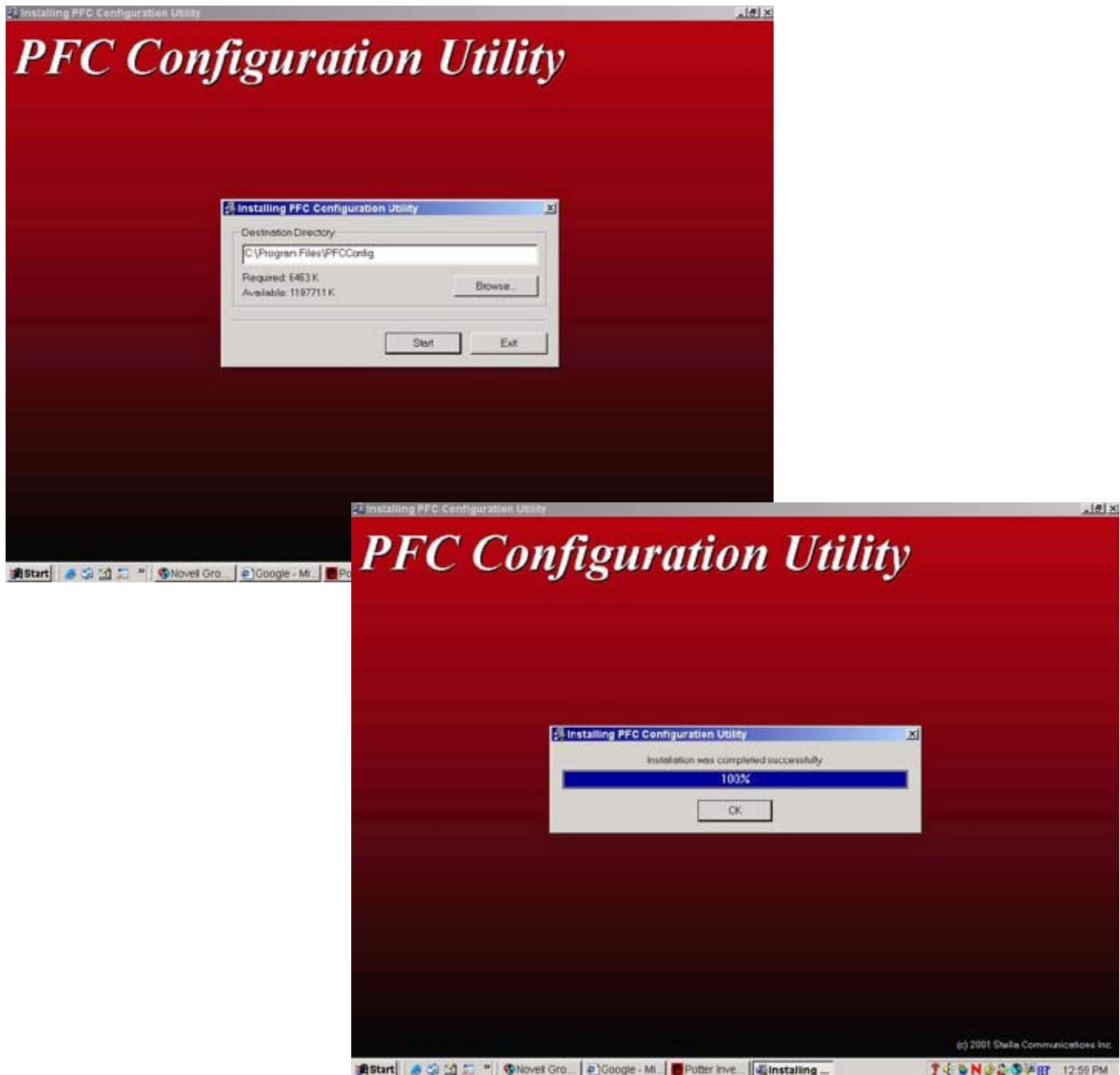
### Installation of Software

Close all programs that are running so the PFC Configuration Software can load. Insert the PFC Fire System CD into the CD-ROM and click on the Start Menu and then click on Run.

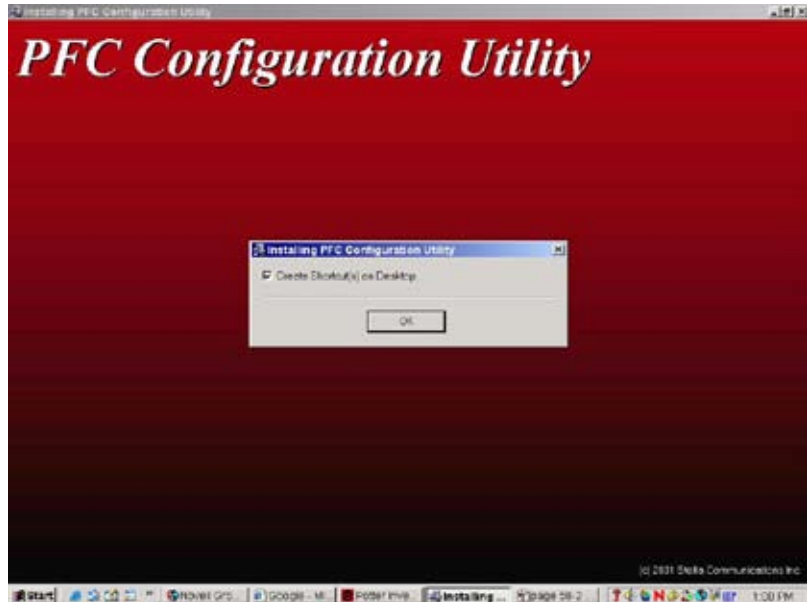


The Run menu will bring up a dialog box similar to the picture on the previous page. Select browse and select the drive that corresponds with CD ROM. Double click on the Configuration Software folder and open the Install.exe file. This will begin the installation of the PFC Configuration Software onto the computer. The install.exe is only half of the set-up that is required to fully load the PFC-Configuration Software.

The picture below is the screen that will be displayed when the install.exe file is executed. Click on the Start button and the program will begin to load into the computer. In some cases the software will prompt the user and ask if they want to replace files. Click on the “No To All” button and the software will finish loading. When the software is finished loading the bottom screen will be displayed. Click on the OK and the software will prompt the user to create a shortcut on the desktop.

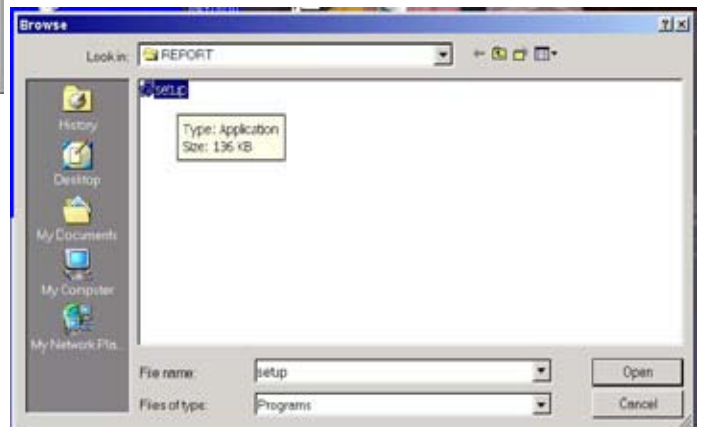
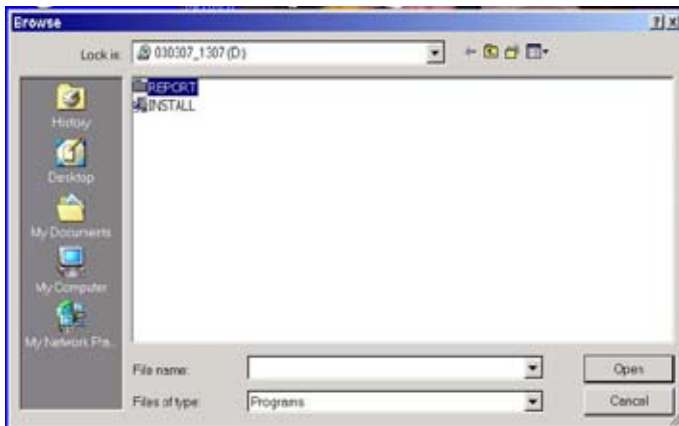


Click the OK if you desire to create a short cut on the computer desktop. The software will automatically close and the second half must be started.



Once the install portion of the software is completed, the second half of the configuration software must be completed. In the Report folder there is a file called setup.exe that completes the second half of the software installation.

Double click on setup and the software will begin to load and the system will start to locate files. Be sure that all other programs are closed before beginning the installation. Once the setup is initiated, the software will begin copying files, and then ask the user if they have all of the other programs closed. Click the OK button and the next screen will be displayed.

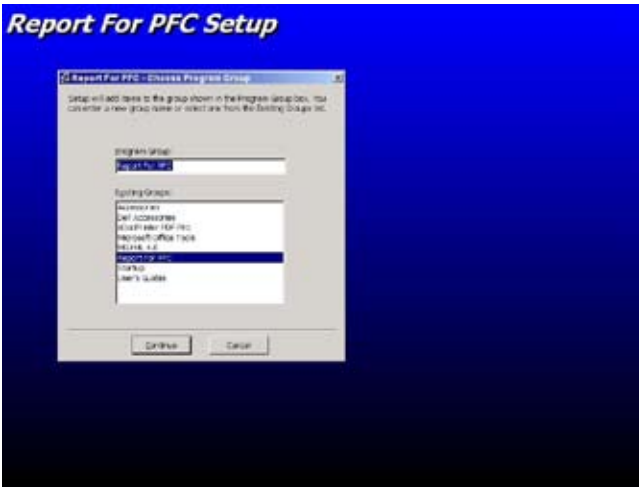


**Report For PFC Setup**



The screen on the left will be displayed before the software begins to load. The program needs to load in the Program Files portion of the Windows® software. Push the button with computer and the software will begin to load.

**Report For PFC Setup**

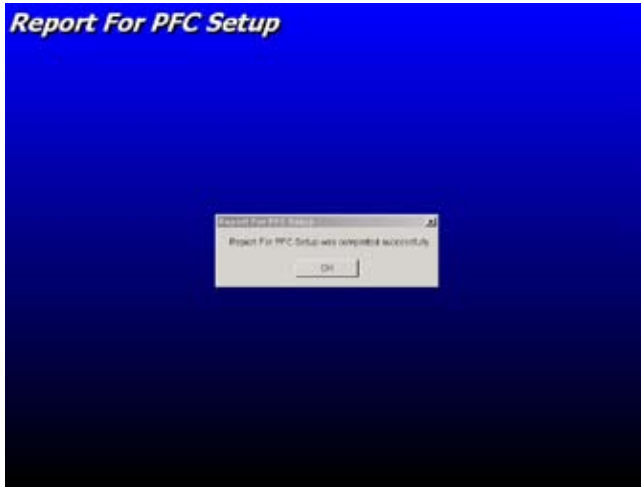


The software will ask the installer what name is to be added to the Program Group Box. The default is “Report For PFC.” Simply press the Continue button and continue the installation. The user may opt to change the name that appears in the Program files.

**Report For PFC Setup**



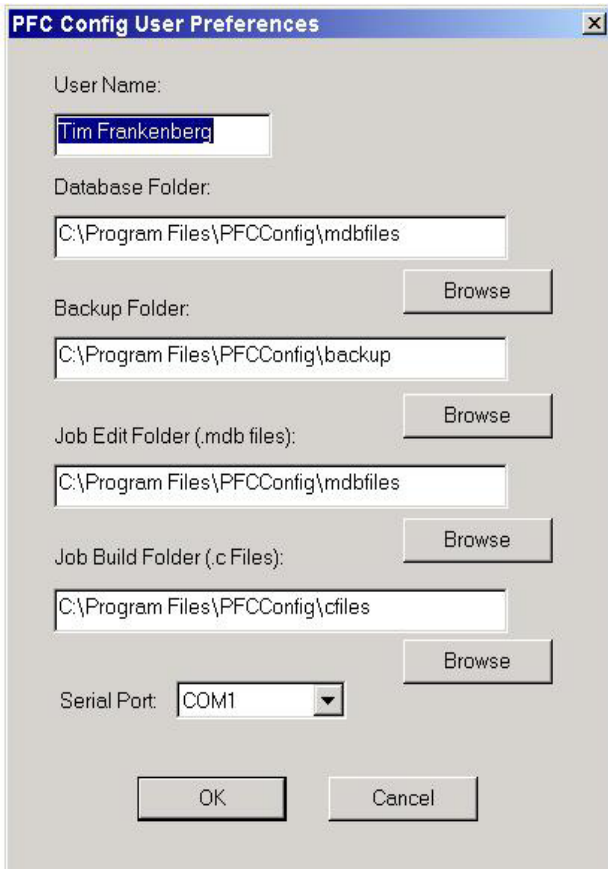
As the program loads, the software and the operating system may have duplicate files. When this occurs, the installer should decline it since the files are already installed.



When the Reports for the PFC is finished loading, the software will prompt the user to press the OK button. The software is completely loaded and ready to use. Unlike many other programs, the PFC Config does not require a computer restart to finish loading. Once the program installation is complete, the software is ready.

**CAUTION**

It is important to note that the all other devices such as network cards, modems and palm pilot programs must be exited or removed for the Com 1 port to operate.



The first time the PFC Configuration software is opened (or executed) the screen on the left will be displayed. The software is in a database format and therefore requires that certain parts are backed up to folders as well as where the main database is stored. In addition, user name and communication ports must be selected during the initial set-up. The set-up is only required the first time the software is installed.

If the preferences do not automatically populate, enter the user name, up to fifteen characters, and then click on the Browse button. This will allow the user to select the drive and folder for the files. Double click on the C: drive folder and then double click on the Program Files folder. When in the Program Files find the PFCCconfig folder and double click on it. There will be three folders labeled backup, cfiles and mdbfiles.

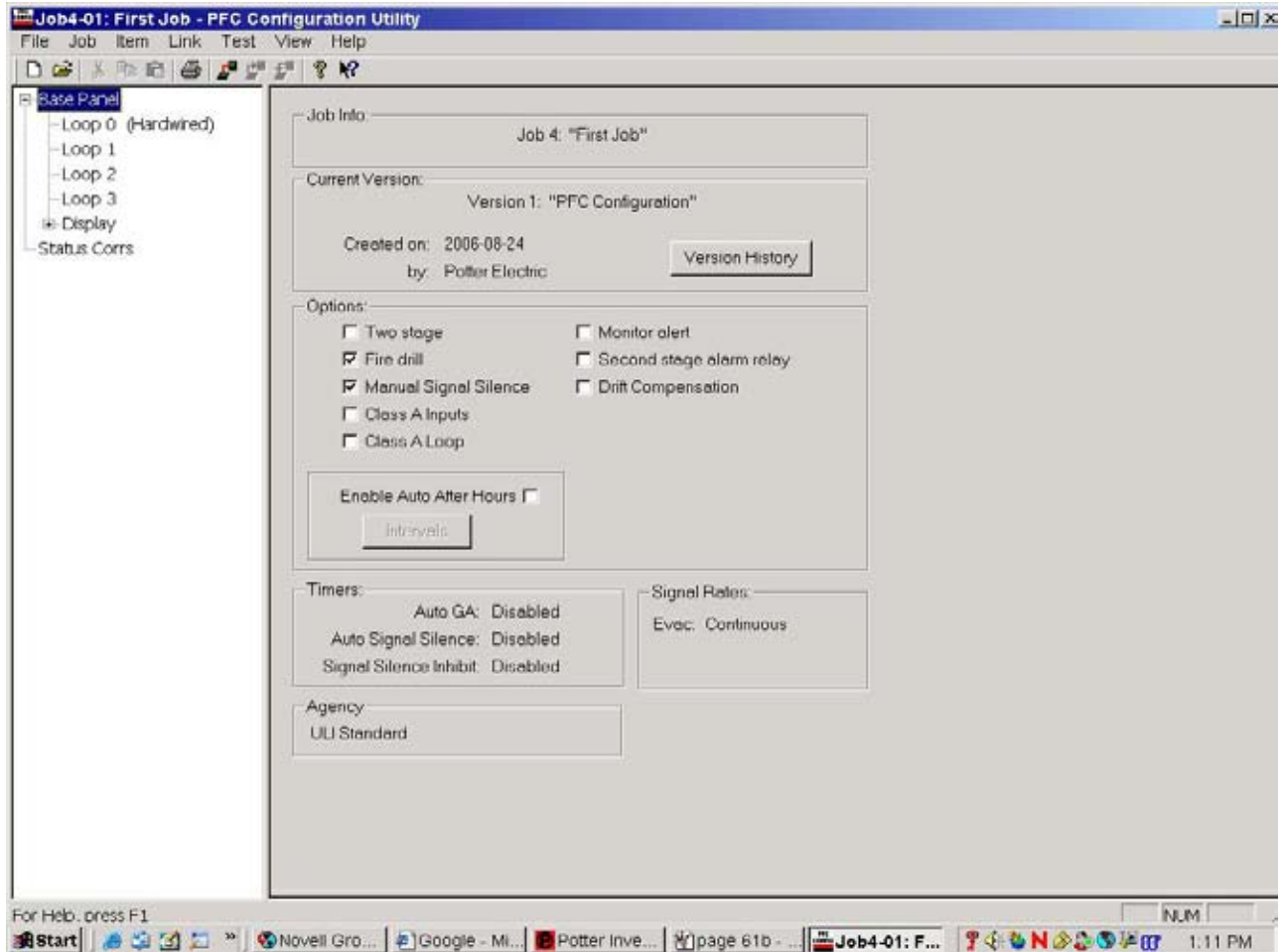
When the desired file is located, click on it and the file folder will open. When the file folder is open click the OK button and the folder will be mapped. The Database Folder is mapped to the mdbfiles, the Backup Folder to the backup, the Job Edit Folder to the mdbfiles and the Job Build Folder to the cfiles. The serial port will generally always be Com 1. A completed example is on the right.

When all of the files have been mapped to the Program Files, click the OK. The PFC Config program will open and the user can begin to work with the software.



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## CHAPTER 9: CONFIGURATION SOFTWARE



When the configuration software is opened for the first time, the screen above will be displayed. The right side of the screen shows the portion of the programming that is particular for the portion selected on the left. The column on the left side are groups that contain the programming for the rest of the panel. The Base Panel is the entire panel and all of the other operations fall under the base. Loop 0 is the hardwired devices that are connected to the panel. These include the annunciators, conventional zone adder card, notification adder card and relay adder card. Loop 1 is the base SLC loop in the panel. This loop is the base 127 points that are hardwired in the main terminal strip. Loop 2 and Loop 3 are the single and dual loop adders respectively. The Control/Annunciation allows the user to configure programmable buttons for the walk test, buzzer silence, etc. The Status Corrs is correlations that are programmed when ordinary features are activated. The user can configure outputs to provide constant power when the AC is on as an example.

This manual will go through each menu choice item by item to describe the programming. The software, as mentioned earlier, is a database format. Therefore, the data storage and mapping of inputs to outputs behave similar to common database formats. The first menu is the file menu and this menu contains controls that affect the overall database structure. In addition, the file menu contains the area to print reports, change user preferences and exiting.

**Quick Start – Auto Programming**

The Auto Programming feature of the panel can be used to establish an initial program in the panel. This initial program can then be downloaded into the configuration software and modified. The following steps are followed for this procedure. The detail for each step can be found in the corresponding section of the programming manual later in this chapter.

1. Follow the Auto Programming steps on the PFC-9000 described in the previous chapter (If remote annunciators are connected to the system they must be removed for autoprogramming. This can be accomplished by unplugging the RS485 terminal block on the PFC-9000 panel)
2. Create a New Job (Job Menu – New Job)
3. Connect the UIMA programming cable to the serial port on the panel and to P2 on the panel. (Refer to page 8 of the manual for plug locations.)
4. Connect to the panel (click on the LINK Menu, then click on CONNECT)
5. Get the current program from the panel (Click on the LINK Menu – then click on Get Job)
6. When the program has been retrieved, disconnect from the panel (Link Menu connect)
7. Make the necessary changes to the configuration on the computer by working through each section in the Item Menu. Refer to pages 72-84 for programming information. It may be easier to program the panel in the following order:
  - A) Base panel
  - B) Loop 0 which is the 4 base NAC's
  - C) Add any adder modules to loop 0 and program them.
  - D) Loop 1, (if a loop adder was installed program it now).
  - E) The display
  - F) Add an annunciator if required
8. If an annunciator is installed in the hardware and has been added to the configuration, power the system down and reconnect the annunciator to the system
9. Validate the program to ensure the job is complete (Link Menu – Validate)
10. Connect to the panel (Link Menu – Connect)
11. Send the revised configuration to the panel (Link Menu – Send Job)
12. Disconnect from the panel (Link Menu – Connect)
13. Disconnect the UIMA Module from the panel
14. Validate the program is operating as designed

**⚠ WARNING**

System must be checked and tested after any Auto Program or Program Changes are completed. Failure to do so may result in a sensor or modules programming to be removed, and the system will not work as intended.

**Quick Start – Manual Programming**

If you choose to program the panel without the aid of the Auto Programming function, the following steps should be followed.

1. Create a New Job (Job Menu – New Job)
2. Work through each section of the Item Menu to build the complete job. Refer to pages 72-84 for programming information. It may be easier to program the panel in the following order:
  - A) Base panel
  - B) Loop 0 which is the 4 base NAC's
  - C) Add any adder modules to loop 0 and program them.
  - D) Loop 1, (if a loop adder was installed program it now).
  - E) The display
  - F) Add an annunciator if required
3. If an annunciator is installed in the hardware and has been added to the configuration, connect the annunciator to the panel
4. Validate the program to ensure the job is complete (Link Menu – Validate)
5. Connect to the panel (Link Menu – Connect)
6. Send the revised configuration to the panel (Link Menu – Send Job)
7. Disconnect from the panel (Link Menu – Connect)
8. Disconnect the UIMA Module from the panel
9. Validate the program is operating as designed

File Menu



Backup Database

The Backup Database copies all of the files in the main database and puts a copy in the backup folder. Potter recommends that the database be backed up at least weekly and store the backup somewhere other than the computer used to build the programs. Back up copies may be stored on CD's or network drives.

<b>⚠ CAUTION</b>
Failure to create a back-up may result in the installer losing programs in operating systems.

Restore Database

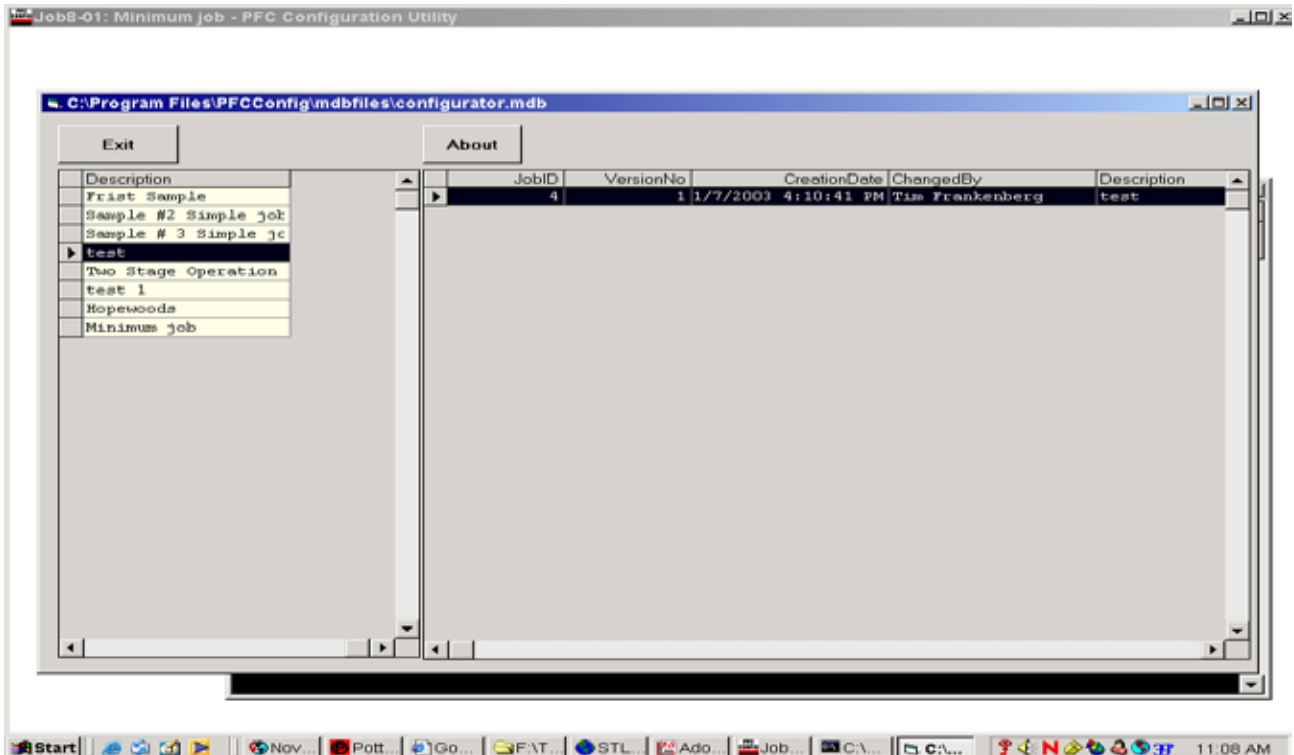
The Restore Database restores the main database from either the back up or an outside source.

Compact Database

The Compact Database removes the blank spots that are created in the database. When job and versions of jobs are deleted the database is left with "holes" in it that use up memory space. Compacting the database removes the "holes" created.

Print Reports

The Print Reports is a program that runs on top of the main PFC configuration software. The reports include input to output correlations, input message tags and UDACT-9100 mapping. When the print report is executed by clicking on Print Reports from the File Menu, the screen will flash black for an instant and then the screen below will be displayed. When the reports screen pops up, the different jobs are on the left and the versions specific to that job are on the right. Choose the job from the list and then choose the version for the reports that are desired.



## Print Reports - Input Messages

From the previous screen, double clicking on the version of the report selected will bring up the input message screen shown below. The reports include input to output correlations, input message tags, duplicate inputs and outputs and UDACT-9100 mapping.

CPUNo	CktNo	LoopNo	DevAddr	DevType	SysProcType	Message
0	0	1	1	50	1	1 Selby
0	1	1	2	50	1	Room 1
0	2	1	3	50	1	Room 2
0	3	1	4	50	1	Room 3
0	4	1	5	50	1	Room 4
0	5	1	6	50	1	Hallway
0	6	1	7	50	1	Room 5
0	7	1	8	50	1	Room 6
0	8	1	9	50	1	Room 7
0	9	1	10	50	1	Electrical Room
0	10	1	11	50	1	Storage

Below is a description of the various buttons and columns on the screen.

- The Print button prints the current screen
- The Preview button displays how the report will look
- The Close button will close that particular report and return to the section displaying the various jobs with the job versions
- The Dup Inputs and Dup Outputs are devices that have been programmed with duplicate addresses. Similarly, the Dup inputs show the duplicate inputs and the outputs that are correlated to them.
- The input message gives the messages of the inputs in the system
- LED Groups displays the correlation of the LED's on the LED annunciator adds
- CPU No column refers to the internal process address in the system. CPU No. 0 is the main fire alarm panel. CPU No. 33 is an RA-LCD annunciator.
- Ckt No is the circuit number for the internal addressing in the system. The panel selects the circuit number automatically and chronologically in the order that the equipment was entered into the configuration software. The circuit numbers start at number 0.
- LoopNo is the Loop Number as described earlier
- DevAddr is the address for the device
- SYSDev Types tag is the type of device the address is assigned to such as Hochiki Ion
- SYSProc Types tag is the type of signal an address is programmed to send to the panel such as Alarm

**I/O Correlation JobID = 4 VersionNo = 1**

LoopNo	InputCircuits.DevAddr	MsgNo	Message	tCircuits.DevAddr	Tag
1	1	0	Lobby	0	Base Signal 0
1	1	1	Lobby	2	Base Signal 2
1	2	1	Room 1	0	Base Signal 0
1	2	1	Room 1	2	Base Signal 2
1	3	2	Room 2	0	Base Signal 0
1	3	2	Room 2	2	Base Signal 2
1	4	3	Room 3	0	Base Signal 0
1	4	3	Room 3	2	Base Signal 2
1	5	4	Room 4	0	Base Signal 0
1	5	4	Room 4	2	Base Signal 2
1	6	5	Hallway Between 4 & 5	0	Base Signal 0
1	6	5	Hallway Between 4 & 5	2	Base Signal 2
1	7	6	Room 5	0	Base Signal 0
1	7	6	Room 5	2	Base Signal 2
1	8	7	Room 6	0	Base Signal 0
1	8	7	Room 6	2	Base Signal 2
1	9	8	Room 7	0	Base Signal 0
1	9	8	Room 7	2	Base Signal 2
1	10	9	Electrical Room	0	Base Signal 0
1	10	9	Electrical Room	2	Base Signal 2
1	11	10	Storage	0	Base Signal 0
1	11	10	Storage	2	Base Signal 2

Hochiki Photo Alarm Input 0 1 9 N 22 Room 7 ||  
 Hochiki Photo Alarm Input 0 1 10 N 22 Electrical Room ||

The above report is the mapping of the inputs to the output and is called the I/O Correlation report. The report presents the inputs mapped to the outputs in a chronological order based on the address number. For every input, the report will have a new line for the output. Other than the four base signals, the outputs cannot be given a custom tag.

C:\Program Files\PFConfig\mdbfiles\configurator.mdb

Print Preview Dup Inputs Dup Ipts Outputs LED Groups UDACT MapIP

Close Dup Outputs Input Messages I/O Correlation UDACT MapOP Sort Sort

UDACT MapIP JobID = 4 VersionNo = 1

CktNo	UDACTRef	LoopNo	DevAddr	Message
0	1	1	1	Lobby
1	2	1	2	Room 1
2	3	1	3	Room 2
3	4	1	4	Room 3
4	5	1	5	Room 4
5	6	1	6	Hallway Between 4 & 5
6	7	1	7	Room 5
7	8	1	8	Room 6
8	9	1	9	Room 7
9	10	1	10	Electrical Room
10	11	1	11	Storage

The above report is the UDACT Map IP report that illustrates how the UDACT 9000 will report to the monitoring station. The Ckt No is the circuit number for the internal addressing in the system. The panel selects the circuit number automatically and chronologically in the order that the equipment was entered into the configuration software. The circuit numbers start at number 0. Since the communication protocols require a zone number associated with each event, Potter chose to assign all common system troubles as zone 0. Since number 0 is used as a common trouble and since the circuit numbers start at number 0, a 1 had to be added to the circuit number that is transmitted to the monitoring station. The circuit number plus 1 is the UDACT Ref number. This is the number that is sent to the monitoring station, not the address number. Notification circuit information is treated and transmitted the same way. Therefore the monitoring station needs the UDACT MapIP and UDACT MapOP reports to be able to cross reference the information received into the actual address of the activated device. A copy of these reports should also be left in or posted near the fire panel.



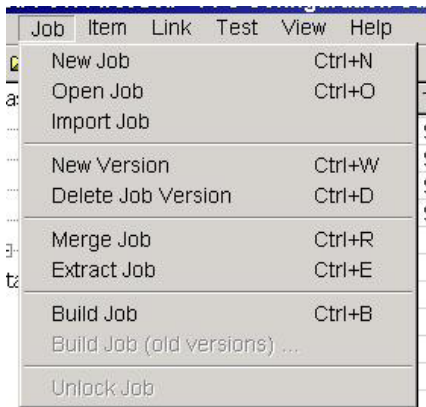
User Preferences

Under the File Menu the User Preferences section shows the mapping of the database to the different folders in the Program Files file folder. The User Preferences would only need to be changed if the name was changed or the files were mapped to different folders.

Exit

The Exit command exits the PFC Config program. When the program is opened the next time, the program will open exactly where it was left off.

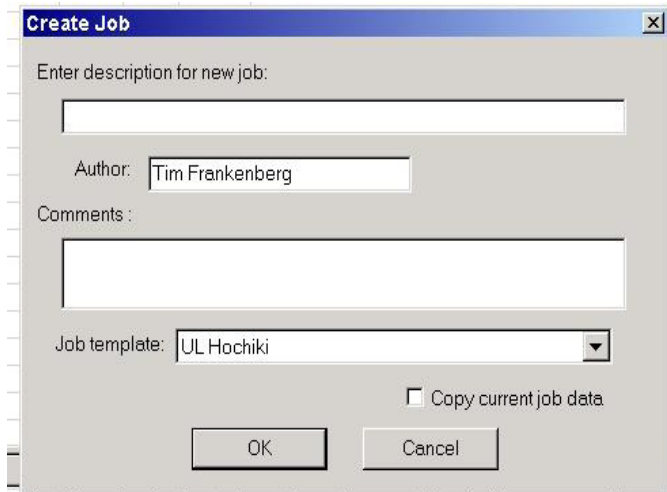
JOB MENU



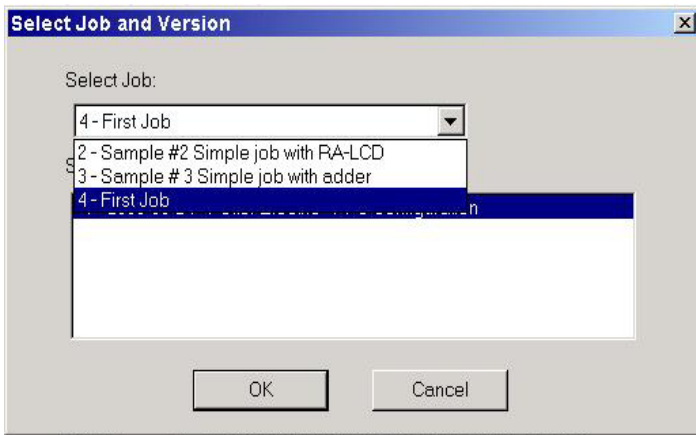
The Job Menu is the start of every program that is built and sent to the panel. The Job Menu has three main parts that a user will need, New Job, Open Job and New Version.

New Job

The New Job begins a job as a blank job that does not have any inputs, but has the four base outputs. The job must be completely built to a finished product.



When the new job is created, the software will automatically insert the author from the User Preferences. The remaining fields, description for new job and comments, must be filled in. Due to the differences in the Standard with Underwriters Laboratories and the Canadian Underwriters Laboratories the program will have different options. For example, the smoke detector sensitivities are different in the US and Canada, therefore the template must be selected in respect to what country the panel is being installed. The program automatically defaults to the UL Hochiki, which is the US version. The last field is the check box in the lower right hand corner. Checking that box will copy the entire job that is currently open and create a new one with the exact information.



#### Open Job

The Open Job opens an existing job that is in the main database. Once the user selects the Open Job, the display will require the user to click on the drop down box and select the job that is desired. The Import Job allows the user to open a job from a different source other than the main database. When the job is imported, it will create a new version of the currently selected job and then be part of the main database.

#### New Version

Clicking the New Version will create a new version of an existing job. Anytime a program has been sent to the panel, any modifications should be done on a new version. The new version will require that the comments field has at least one character added to it. This allows a record to be kept on any changes made to the program. The New Version will copy the existing job and unlock that job if it has been sent to a panel.

#### Delete Job Version

When a job has a number of versions, the unnecessary ones may be deleted using the Delete Job Version. Deleting the jobs will create holes in the database structure that will eventually require the database to be compacted. To delete a job version, open the job and version that is to be deleted and then click the Delete Job Version. The software will ask for a confirmation and the job will be deleted.

#### Extract Job

This is used to copy a job from the computer to another medium such as a network CD. After the job is built, click Job, Extract. The Pop up box shows the job to be saved in mdbfiles, click Save. Look in Program Files/PFC Config/mdbfiles and find the job. Copy this job to the other medium.

#### Merge Job

This is used to get a job from another medium to a computer. The job must first be saved to your hard drive and be converted to NOT Read Only.

- Load the file into the computer
- Open My Computer
- Locate the saved file
- Right click on the job icon, scroll down to Properties, left Click
- Scroll down to Attributes at the bottom of the screen. The Read Only box will be checked. Click on it to make the file NOT read only. Click on Apply, Close. Close My Documents.
- Open the PFC Config software
- Click Job, Merge
- Look in My Documents for the job, click open
- Enter comments for the new job

#### Build Job

The Build Job is a diagnostic feature that is used for troubleshooting the job at the factory. If a user is having difficulty with a particular job, Tech Support may request a Build Job be sent in for evaluation.

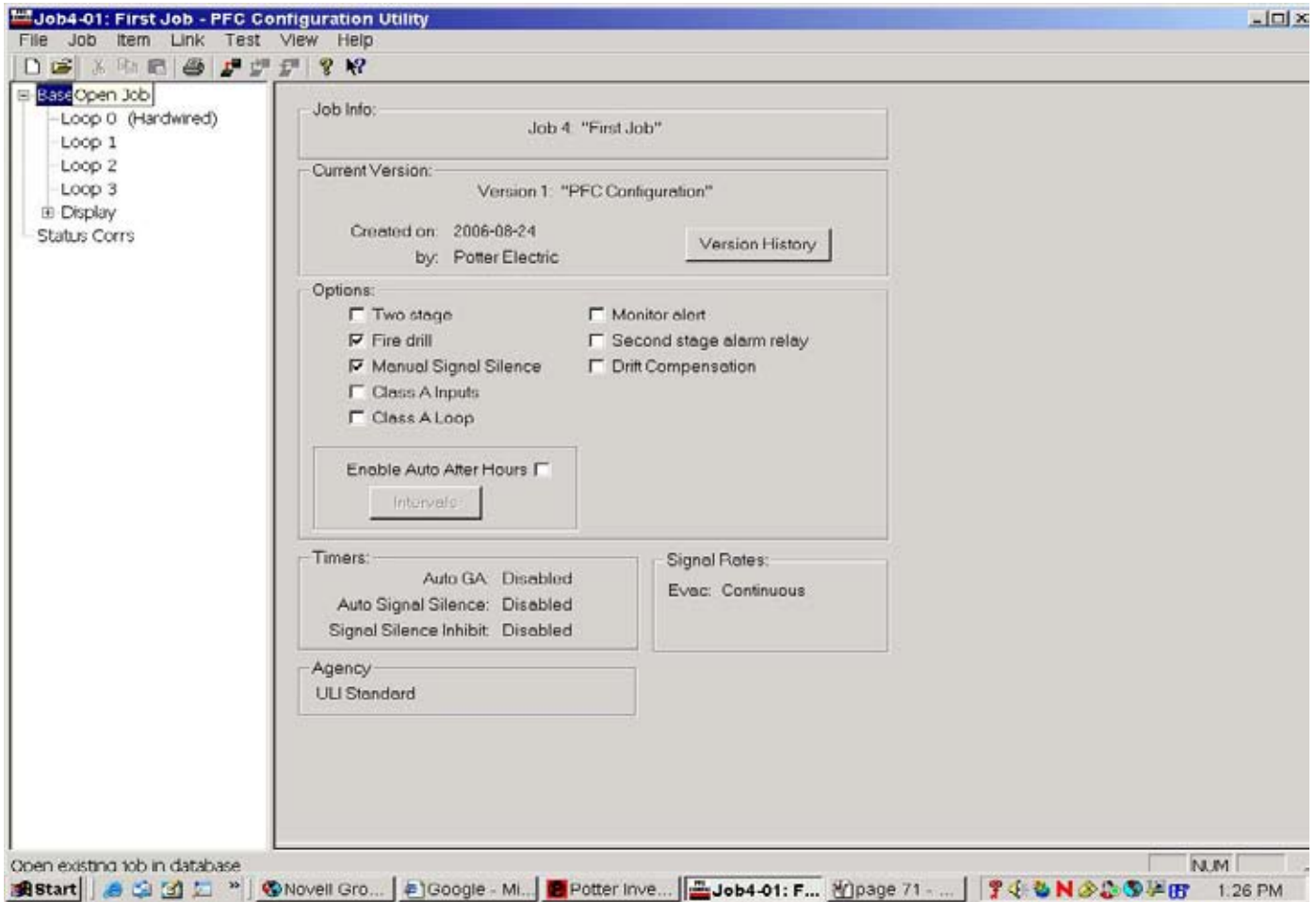
After a job is sent to a panel, the job is locked and cannot be modified. Any modifications should have a new version created and then downloaded into the panel. However, if a small error is made such as a spelling error on a banner message, the job may be unlocked by clicking on unlock in the file menu. **Anytime modifications are made, a new job version should be created.**

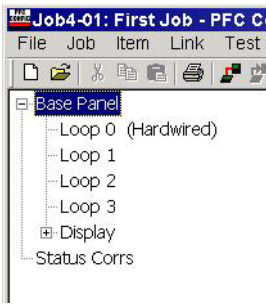
Item Menu

The Item Menu is where about 80-90% of all the programming will occur. The Item Menu is where the user will add and modify devices and adder cards, configure annunciators and add loop adders. The Item Menu configures the area of the panel that is selected.

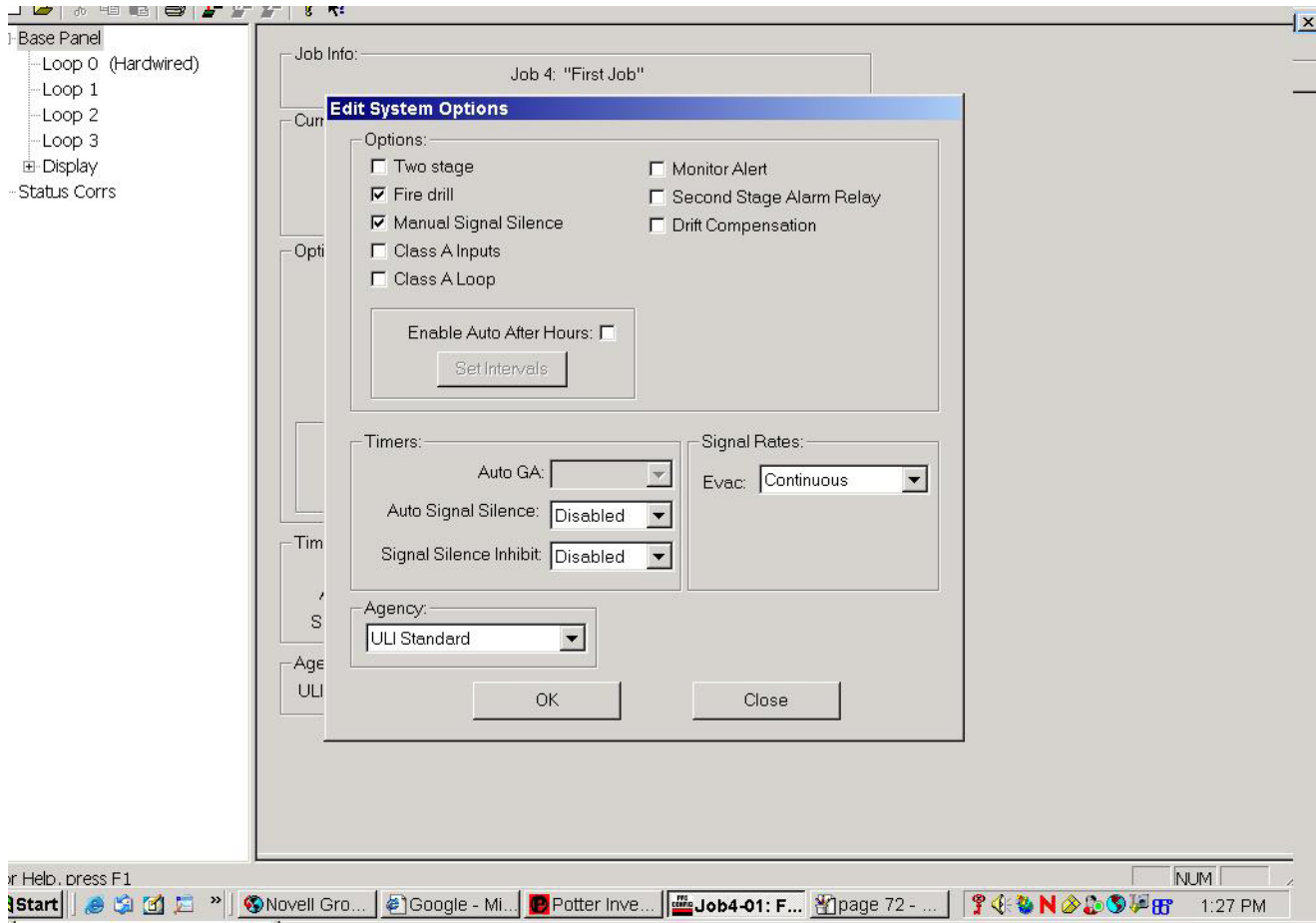
Base Panel Modification

The Base Panel is the where the basic system design begins. The Base Panel must be highlighted, the Item Menu selected then Modify. The screen below will display and the system base features can be modified. In the default programming the Fire Drill and Manual Signal Silence are selected. In addition, the evacuation signal rate is defaulted at a continuous rate. If the fire system is a Class A wiring, then those boxes will need to be selected. Potter recommends that the Monitor Alert and smoke sensor Drift Compensation is selected as well.



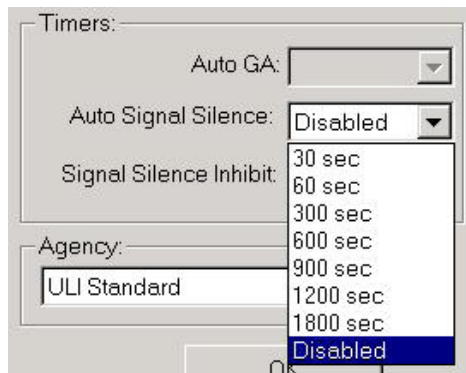


The picture on the right shows the different areas that can be selected for adding and modifying. The area highlighted is the area that can be added, modified or deleted. If an area is not highlighted, then nothing can be changed. Once the desired section is highlighted, click on Item from the toolbar and select the necessary function, such as Add, Modify, etc.



Enabling the Enable Auto After Hours will allow the user to set different smoke sensor sensitivities during the day and then after hours. The after hours start time and days must be selected for when the after hours are to begin and end. In addition, the holidays must be selected. If specific holidays are selected, an option is to notify the user, through a trouble condition, when the last holiday has occurred.

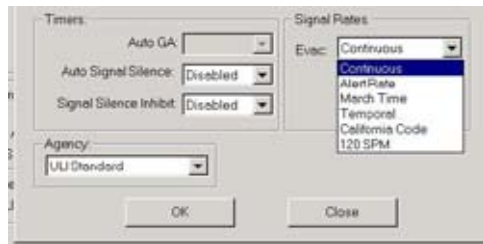
The holidays would then have to be reset and programmed into the panel. The number of holidays that can be programmed in is limitless.



The panel can be programmed to automatically silence the notification circuits after a given amount of time has passed. The picture indicates the times that can be selected. The default is disabled which require either a manual signal or a system reset to silence the notification appliances.

In addition, the panel can be programmed to prevent the silencing of the notification appliances until a set time has passed. The Canadian Standards require a minimum amount of time in the signal silence inhibit.

When the job is created, if the standard, ULI for the US Underwriters Laboratories or ULC for the Canadian Underwriters Laboratories, was selected it will automatically appear in the Agency screen. If the standard is incorrect during the initial job creation, it can be changed in the Base Panel modification.



The notification circuits on the PFC-9000 can be programmed as either Signal or Strobe. When programmed as Strobe the NAC circuit will provide continuous steady power for proper operation of the strobes.

If Signal is selected, there are six different operating modes from which to choose. The default Signal mode is continuous. If both strobes and horns are to be connected to the same NAC circuit, in order for the strobes to operate properly, the NAC circuit must be programmed as either Strobe, or signal continuous. If it is necessary for the horns to operate in a manor other than continuous, multitone horns must be used.

**Evacuation Codes:**

- Continuous: [On 100% of the time]
- Temporal Code: [3 of .5 second on, .5 second off, 1.5 second pause]
- March Code: [.5 second on, .5 second off]
- California Code: [5 second on, 10 second off]
- Alert Rate: [Need to define]

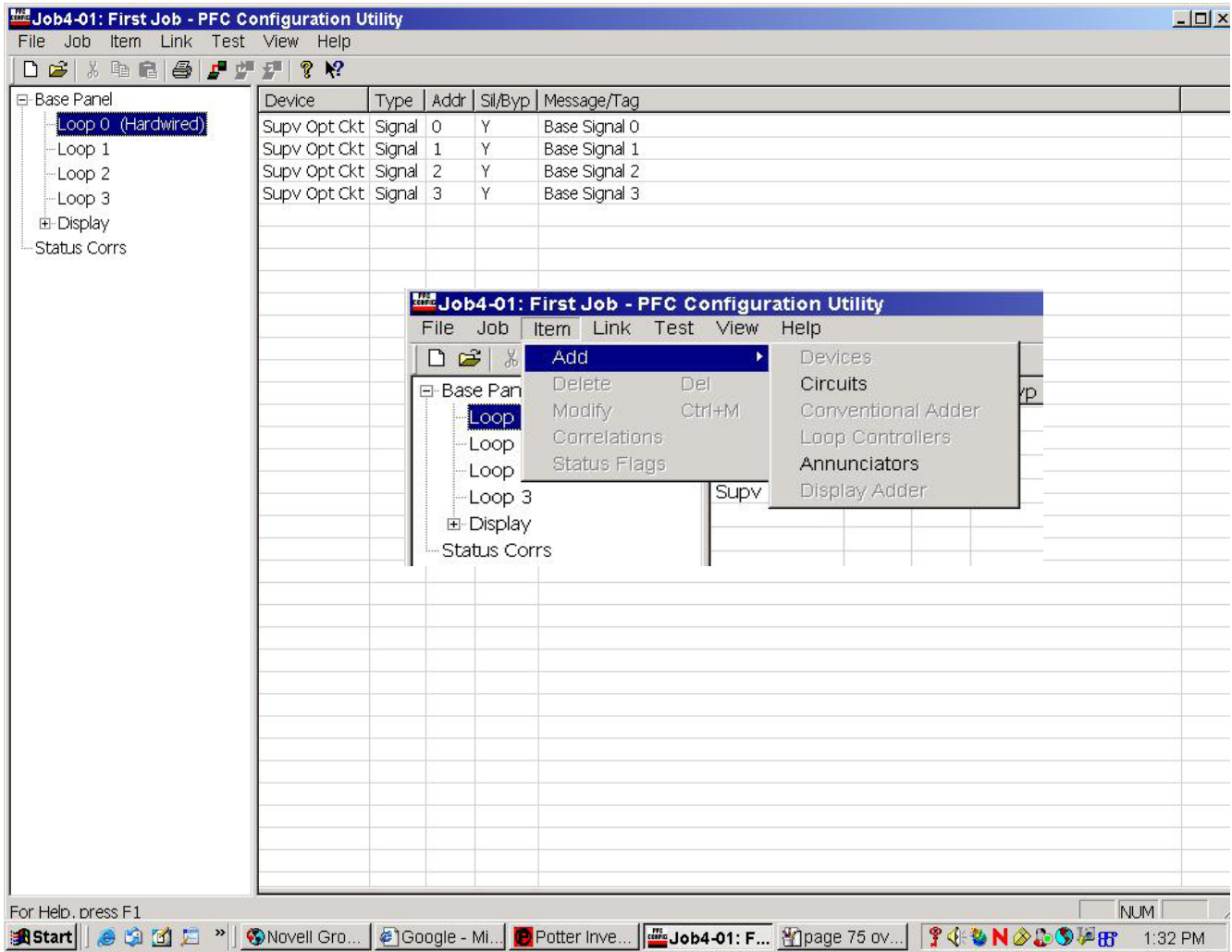
Loop 0 is the hardwired, (non-addressable), loop that contains the four base NAC circuits and all of the programming for the hardwired devices.

### Adding Circuits

Click on the Loop 0 to highlight it, now click on Item in the toolbox at the top of the page and scroll down to Add. The inset screen is what will be displayed under the Add selection. The only equipment that can be added to loop 0 is Circuits, (ZA-9008, IDC-9004, ARM-9008), and Annunciators, (RA-LCD or RA-LED).

CAUTION

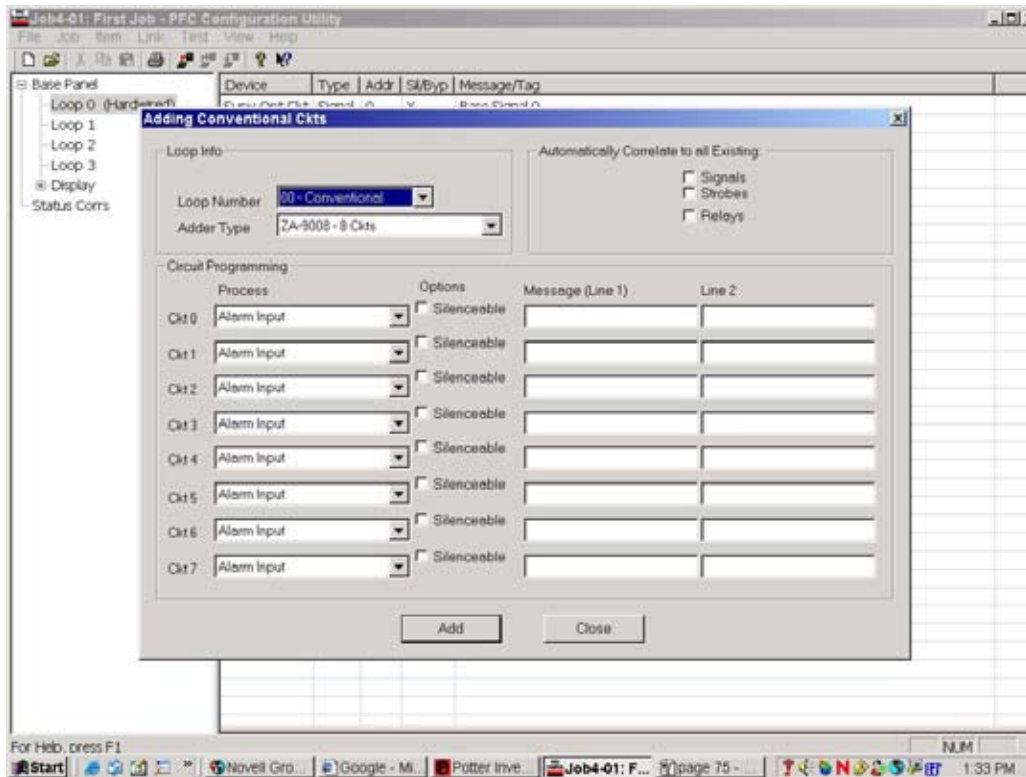
The circuits must be added into the program in the same order that they are installed in the PFC-9000 cabinet. Panel from right to left.



The screen below shows how to add a circuit to Loop 0. The user will have to choose the type of circuit to add. The ZA-9008, like the analog/addressable devices, can be one of a number of different types of inputs. In addition, when adding the circuit, the user can automatically map the inputs to all of the existing signals, strobes and relays. The check box between the input type and the message will allow the circuit to be silenceable/deactivable. In addition, the message can be added per circuit. When all of the modifications are made, click the add button. The Adding Conventional Circuit screen will refresh and the user can add the next circuit. The devices will not display in the background until the screen is closed.

**CAUTION**

Do not double click on the Add button because that will add two circuits to Loop 0.

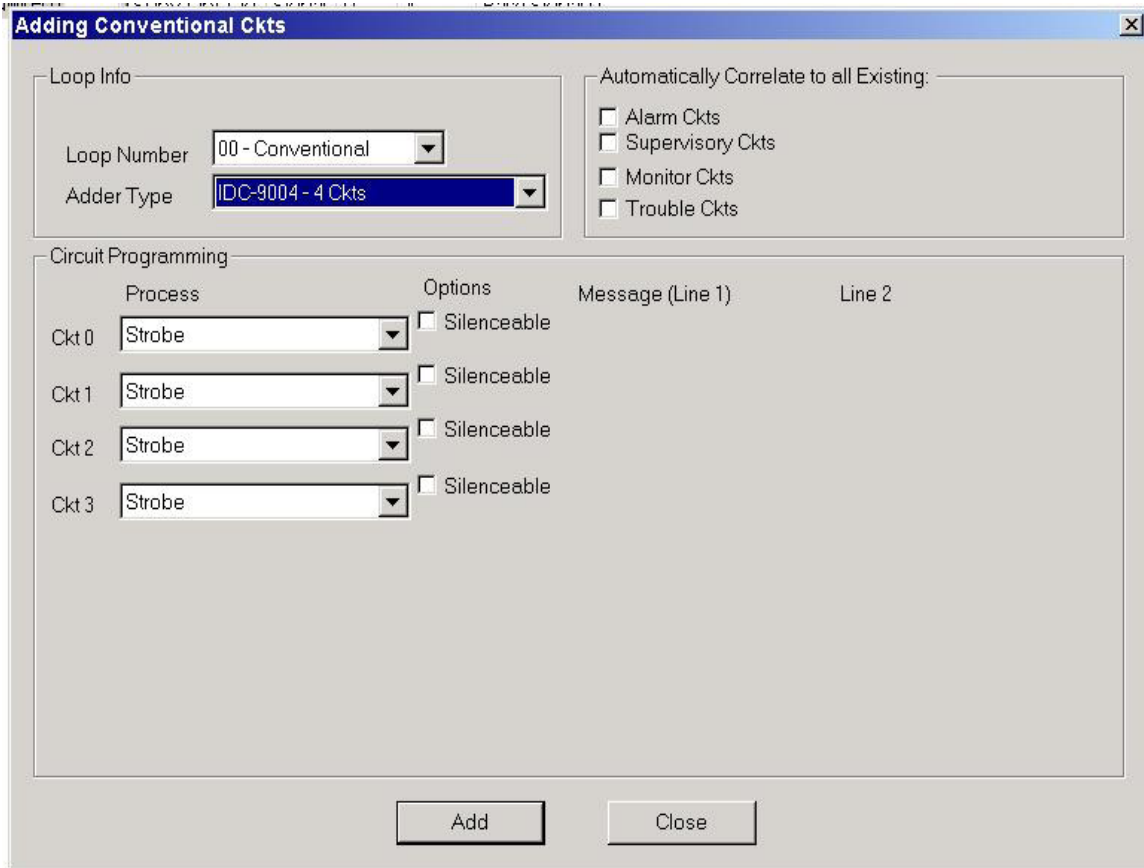


**Deleting Adder Cards and Devices**

If a device or adder card is incorrect or not needed it can easily be deleted. Click on the loop and device to be deleted. The adder cards will bring up all of the added cards and the user must choose the device to be deleted. Under the Item Menu is the Delete, select it and the software will ask for a confirmation before deleting any circuit or device.

Deleting a circuit adder card or device will remove it and all of the associated mapping to notification devices, relays etc. Once a device is deleted, it cannot be undone or reverted.

Similar to the ZA-9008, the notification and relay circuit adder cards are easily added and modified during the initial set-up. The notification card must have the inputs selected as strobe or signal. In addition, each circuit should be selected as silenceable/deactivatable during installation. The output circuit adder cards, IDC-9004 and the AMR-9008, can be correlated to the input circuits in the correlations section on pages 81 and 82.



### Adding Annunciators



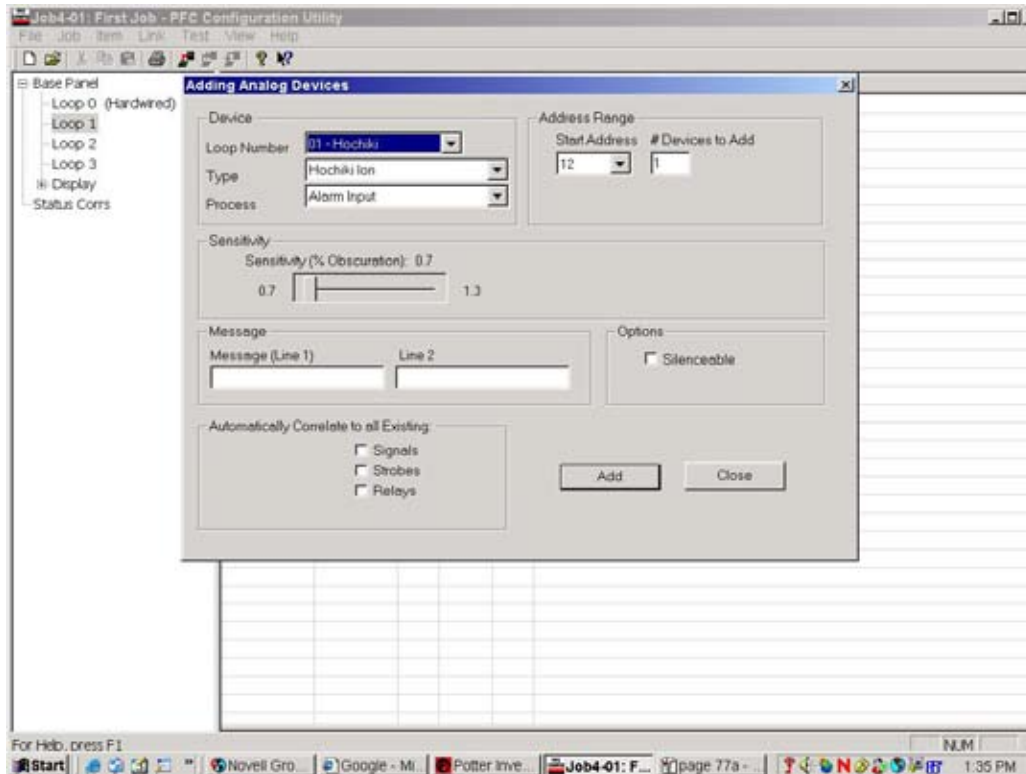
The annunciators must be added to Loop 0. The Loop 0 must be highlighted and then select add from the Item menu. The annunciator will default for the RA-LCD, however the RA-LED is available in the drop down box. The Tag line is to put a tag on the device to differentiate it in the configuration software. The tag line can only be added when the annunciator is added, it cannot be changed once the annunciator is added. When an annunciator is added it is displayed under the base panel as either LCD Annunciator or Remote Annunciator.

The system can support up to eight annunciators of either RA-LCD, RA-LED 32, PGD 32 or a combination thereof.

To modify the Display or Access Levels, highlight Annunciator and select Modify.

### Adding, Modifying Analog/Addressable Devices

The analog/addressable devices are added on Loop 1, Loop 2 and Loop 3. The method for adding, modifying, correlating and deleting devices on these loops are identical. As before, the Loop 1 must be highlighted then select add, delete, modify or correlate from the Item Menu. When a loop is highlighted, the devices that are included on that loop are displayed on right side of the screen. Double clicking on the device will automatically open the screen that allows the user to modify the device.



The picture above is the screen that is displayed when a device is added or modified. Select the Loop the device is supposed to be on, select the type of device and select the type of process. The sensitivity is adjustable for the full range of the listed sensitivity of the sensor. A message of two lines may be added with twenty characters each. When inputs are added, they can automatically be correlated to all of the existing signals, strobes and relays. Also if the device is a silenceable/deactivateable device, then the silenceable box needs to be checked. The system automatically adds the device and assigns the lowest address available. Individually, the addresses on the devices can be changed to a unique address. The software removes the addresses that are already used by other devices. In addition, the user can add from 1 to 127 devices at one time using the # Devices to Add, however custom messages must be added individually. When adding multiple devices, the input type, device type, sensitivity and automatic correlations for all of the devices will be the same.

The types of devices that can be added are the three sensors, input modules, relay output modules and supervised output modules. The address and type of sensor must match when the program is loaded in the panel. If not the panel will be in a trouble condition for missing and unconfigured devices. The device types are as follows:

Hochiki Ion, AIS	- Ionization Smoke Sensor
Hochiki Photo, APS	- Photoelectric Smoke Sensor
Hochiki Heat, AHD	- 135° Fixed Temperature Heat Sensor
Hochiki Duct, ADSD	- Duct Smoke Sensor with or without relay
FRCM-2, FRCM-4 (IPT Mod)	- Single Address Input Module
DRM, Dual Relay Mod	- Output Module with Dual Form C Relays
SOM, Supv Output Mod	- Output Module with End of Line Supervision

The Process refers to how the panel will process the signal from a particular device. Listed below are the types of processes and a description of what they do.

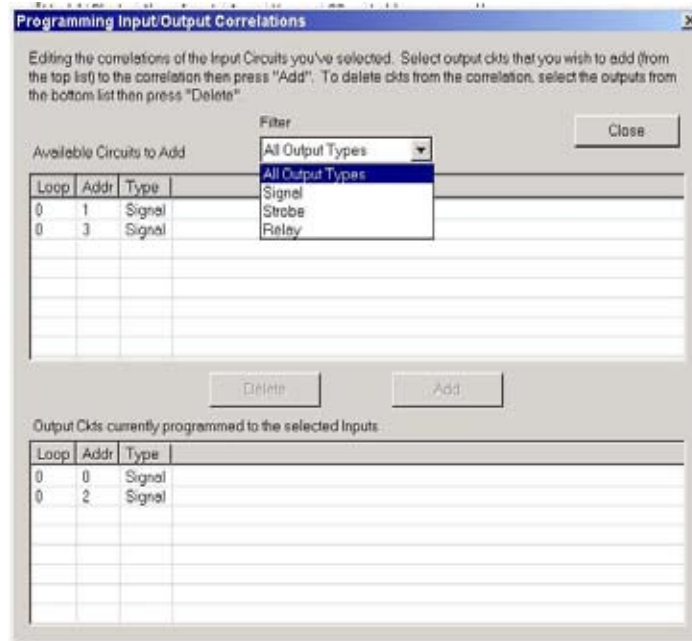
Initiating (Detection) Circuit Types:

Non-Verified Alarm	This is a “Normal” type of Alarm which may have Pull-Station, Smoke Sensors or Heat Sensors attached. Any activation of these devices will immediately result in an Alarm condition in the Fire Alarm Control Panel. An Alarm condition causes any associated Zone Status LED and the Common Alarm LED to illuminate Red.
Verified Alarm	These Alarms are verified by a reset and timing procedure, and may have Pull-Station, Smoke Sensors or Heat Sensors attached. Any activation of Pull-Station or Heat Sensors will result in an Alarm condition in the Fire Alarm Control Panel within 4 seconds. Smoke Sensors will be verified for a real Alarm within 60 seconds depending upon the start-up time of the Smoke Sensors being used. If 4 seconds is too long a response time for Pull-Station, then they should be wired separately on a Non-Verified Alarm Circuit. An Alarm condition causes any associated Zone Status LED and the Common Alarm LED to illuminate Red.
Water-Flow Alarm	Water-flow Alarms are for FRCM’s monitoring waterflow switches on sprinkler systems. When this type of alarm is selected a 15-second delay, (Retard), is automatically introduced to that circuit. The circuit is sampled once a second, if an alarm condition exists on the circuit for 10 samples in a fifteen second period an alarm signal is sent. An alarm condition causes any associated Zone Status LED and the common Alarm LED to illuminate as well as any NAC or relays correlated to that address. The 15 second retard time cannot be changed or disabled. If it is desired to not have a retard time associated with a waterflow device simply select Non-Verified Alarm as the circuit type.
General Alarm	To provide Remote General Alarm, such as for remote key-switches. In a Single Stage System, these inputs act the same as Non-Verified Alarms, but if Correlations are enabled, General Alarm Notification Circuits are correlated to ALL Notification Circuits.
Non-Latching Supervisory	Supervisory devices that are not required to have the system reset may be configured as non-latching. An activation on these circuits will cause any associated Zone Status LED and the Common Supervisory LED to illuminate Amber. The buzzer will sound continuously. If the circuit activation is removed, the Supervisory condition will clear (so long as there are no other Supervisory conditions in the system) and the Zone Status LED will extinguish.
Latching Supervisory	Supervisory devices that are required to latch on the control panel must be configured as latching. Activation on these circuits will cause any associated Zone Status LED and the Common Supervisory LED to illuminate Amber. The buzzer will sound continuously. If the circuit activation is removed, the Supervisory condition will NOT clear until the panel is reset.
Monitor	This is a supervised general purpose non-latching input used mainly for correlating to a Relay Circuit. No other system condition occurs as a result of its activation (short-circuit), although it is supervised for Trouble (open-circuit).
Trouble-Only	This is for monitoring a Trouble Condition from an external device. Both open and short circuits generate a non-latching Trouble condition.



The correlating of devices is accomplished by selecting the loop and device that is to be correlated. In order to correlate a particular device, select the device then click on the Item Menu, Correlations. The screen below will appear for the devices that are already correlated and the devices that are available. The top group of devices are the devices available that have not been correlated. The bottom list is the devices that are currently correlated. Multiple circuits can be correlated simultaneously by using the SHIFT and arrow keys or CTRL and clicking on the devices. The latter method will allow the user to select specific devices, whereas the SHIFT will only pick a block of devices that are together. When the desired devices are picked, click on the Add button and the device will be correlated. The same process for adding devices correlated is used for deleting unwanted devices.

The user may specify the type of devices that can be correlated. The outputs can be filtered by strobe, signal, relay or all. The inputs can be filtered by Alarm, Supervisory, Trouble and Monitor.



### Two Stage Operation

Slide in labels are included for General Alarm and Acknowledge. See page 7 for label locations.

Two stage operation requires at least 2 addresses, 1 for the first stage and the other for the second stage. Every address that is not selected as Second Stage will activate the General Alarm timer.

When the first stage is activated, whatever NAC circuits are correlated to that address will operate in the Alert mode. (If that NAC circuit was programmed as STROBE, it will operate continuously for proper strobe operation). If the General Alarm time delay expires, the panel will go into General Alarm and any NAC circuits correlated to the Evac Active signal will operate in the General Alarm mode. If an address programmed as Second Stage is activated before the General Alarm delay expires, any NAC circuits correlated to that address will operate in the General Alarm mode.

If the Acknowledge button on the panel is pressed before the General Alarm timer expires or before a Second Stage address is activated, the Yellow Acknowledge LED lights to indicate that the alarm has been acknowledged. The signals remain in Pre-Alert. The system will not generate an automatic General Alarm. Any subsequent alarm will restart the Pre-Alert timer. The system cannot be acknowledged once it is in the evacuation mode.

Pressing the General Alarm button at **anytime** will initiate a General Alarm. Signals will sound with the selected activation tone.

### Two Stage Programming:

- Two stage operation is selected when the base panel is modified. Check the Two Stage box then select a General Alarm time from the Auto GA box. See page 73.
- The individual zones of the ZA9008 can also be programmed for Second Stage Input. See page 76
- To program an address as the second stage, check the Second Stage Input box to make that module activate a General Alarm condition. See page 78
- Correlate the addresses/zones to the appropriate NAC circuits.
- Highlight Status Corrs on the main screen, then highlight Evac Active, click Item Correlations, Highlight the NAC's to be operated when the General Alarm Timer Expires and add them.

### Send Job

The panel does not have an upload and download, it has Get and Send. Sending information to and from the panel is in respect to the computer. The user **sends** information and programming **to** the panel, and the computer **gets** information **from** the panel. Therefore, when a job is complete, validated and the computer is connected to the panel, the Send Job command is used to send the job to the panel.

### Get Job

The Get Job can be used in conjunction with the Auto Program. Once the panel has been Auto Programmed, the user can get the job from the panel, make the needed modifications and then send the new job to the panel. The user will need to create a New Job and then get the job from the panel. This will save the job as a new job and not a version of an existing job.

Once the computer is connected to the panel, the Panel Information will display the version of the software that the panel is operating with and the Job name that is currently programmed into the panel.

### Link Statistics

The Link Statistics will display the number of times the panel has connected, transmitted and received information. The Link Statistics is a useful tool for diagnosis and it may be requested by Technical Support when problems of linking to the panel occur.

### Status Correlations

Status Correlations allows NAC's or relays to be mapped to various panel functions. Such as correlating a relay to operate whenever the alarm verification feature activated. Or correlating which NAC's and relays operate during a fire drill. Highlight Status Corrs, then highlight the appropriate panel function, click on Item, correlations and add or delete circuits as described on the previous page.

### Status Flags

This allows any of the status correlations described above to be silenceable/bypassable.

### Link Menu

The Link Menu is the part of the program that is used to verify that the program will not corrupt the panel, connect the computer to the panel, and send to or get programs from the panel.

### Validate

The first choice under the link menu is Validate. **Every job that is completed and is ready to be sent to the panel MUST first be validated.** The validation ensures that the job is complete and will work in the panel. In addition, validation will check to make sure that at least one NAC is correlated to at least one initiating address. Validation does not check for duplicate addresses.

### Connect the Computer to the PFC-9000 Panel

The Connect feature is used to electronically connect the computer to the panel through the UIMA interconnection cable. The UIMA interface cable connects to the serial port of the computer and the P2 port on the panel. (See pg 8 for P2 location). The cable can be connected to the panel with power applied. The panel will go through a restart and re-initialization process that takes about one minute, the trouble buzzer will sound during this process. Once the panel has finished the restart process, Click Link, Connect.

**Test Menu**

The Test Menu allows the user to transfer the entire database as well as validate the entire database with a single command. The Extract All Db allows the user to copy the entire database and transfer it to a multimedia device or another drive. The Validate All will validate every job and every version that is currently in the software. Depending on the size of the database, the Validate All command could require a substantial amount of time.

The Log Send, Log Get and Trace are future commands that are not currently available.

**View Menu**

The View Menu enables the tool bar at the top of the page and the status bar at the lower part of the page. The tool bar contains all of the common file commands such as create a new job, open an existing job, cut, copy, paste and print reports. The other buttons are shortcuts for connecting to the panel, sending jobs to the panel and getting jobs from the panel.

**Help Menu**

There is currently not a written help menu for the PFC Config program. The help menu under the About PFC Config will give the version of the software and when it was installed.

**Fan shutdown/Restart**

**Equipment required:**

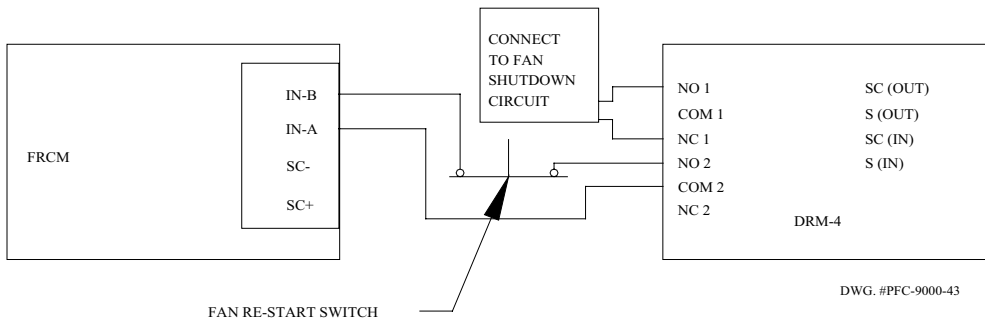
Qty.	Model #.	Description
1	DRM-4	Dual relay module
1	FRCM	Fast Response Contact Module
1		Fan Re-start switch

**Wiring Procedure**

- Connect DRM-4 to loop.
- Connect relay #1 of DRM to fan shutdown circuit.
- Connect N.O. #2 of DRM to the N.C. contact of the Fan Re-start switch
- The Common of the Re-start switch is connected to IN-B of the FRCM-2.
- Connect COM #2 of DRM to the IN-A terminal of the FRCM-2.
- Connect FRCM-2 to the loop

**Programming Information**

- Correlate the devices that will be used to shut down the fan to the DRM-4.
- Program FRCM-2 a monitor point
- Correlate the FRCM-2 to the DRM-4.



## Appendix A - Module Specifications and Features

### *Main Fire Alarm Chassis PFC-9000*

#### **ELECTRICAL RATINGS:**

- AC Line Voltage: 102 to 132 VAC 4 Amps or 204 to 264 VAC (primary)
- Power Supply ratings: 12 Amps. max. (secondary)
- For Notification Circuits: 24VDC unfiltered 10 Amps. max.
- Charging capability: 17-40 AH batteries

#### **GENERAL:**

- One Analog Loop capable of monitoring 127 Sensors and Modules.  
Power Limited: 40 VDC, 400 mA max, max loop resistance 50 ohms.
- 4 **Style Y or Z** (Class B or A) Indicating Circuits; configurable as strobes or audibles. Terminals are labeled “**IND**”.  
Power Limited: 24 VDC unfiltered 1.7 A @ 49°C per Circuit
- **Displays and Controls** for all Common Functions
- Optional **PR-5000 City Tie Module, UDACT-9100**
- **Aux. Power Supply** (for Remote Annunciators). Terminals are labeled “**AUX PWR**”.  
Power Limited: 24 VDC unfiltered 1.7 A @ 49°C
- Resettable **4-Wire Smoke Supplies**. Terminals are labeled “**4-WIRE**”.  
Power Limited: 22 VDC, 400 mA max., 5mV ripple
- 1 **RS-485 Connection** for Remote Annunciators or graphic drivers. Power Limited to 300 mA. Terminals are labeled “**RS485**”.
- **SLA-127P** Single Loop Adder provides an additional 127 points.
- **DLA-254P** Dual Loop Adder provides an additional 254 points.
- **Auxiliary relays:** (resistive loads)  
Must be connected to a Listed Power Limited Source of Supply. Terminals are labeled “**ALARM, TROUBLE, SUPV**”.  
Common Alarm: Form C, 1 Amp, 28 VDC  
Common Supv: Form C, 1 Amp, 28 VDC  
Common Trouble: Form C, 1 Amp, 28 VDC
- **Micro-controller** Based Design.
- **Fully Configurable** with PC Software.
- Full **Walk-Test** function, Silent and Audible

**HARDWIRE DETECTION ADDER MODULE (ZA-9008)**

- 8 supervised **Style B** (Class B) or 4 **Style D** (Class A) Initiating Circuits; fully configurable. Terminals are labeled “**INI**”. Initiating Circuits are Compatibility ID “**A**”.  
Power Limited: 22VDC, 3 mA standby, 5mV ripple, 50 mA max. (alarm)
- Current Consumption: Standby: 80 mA, Alarm: 100 mA

**HARDWIRE SIGNAL ADDER MODULE (IDC-9004)**

- 4 **Style Y or Z** (Class B or A) Notification Circuits; configurable as strobes or audibles. Terminals are labeled “**IND**”.  
Power Limited: 24 VDC unfiltered 1.25 A @ 49°C per Circuit
- Current Consumption: Standby: 35 mA, Alarm: 150 mA

**HARDWIRE RELAY ADDER MODULE (ARM-9008)** (resistive loads)

- Must be connected to a Listed Power Limited Source of Supply. Terminals are labeled “**RLY**”.
- 8 fully Configurable **Form C Relays**.  
Form C, 1 Amp., 28 VDC (resistive loads)
- Current Consumption: Standby: 25 mA, Alarm: 150 mA

**POLARITY REVERSAL AND CITY TIE MODULE (PR-5000)**

- Supervised City Tie Not Power Limited  
24VDC unfiltered, 210 mA max., Trip coil: 14 ohms.  
Terminals are labeled “**City Tie**”.
- Polarity Reversal Power Limited  
Terminals are labeled “**Polarity Reversal**”.  
24VDC open  
12VDC @ 3.5 mA, 8 mA max. (shorted)
- Current Consumption: Standby: 35 mA, Alarm: 300 mA

<b><u>System Model:</u></b>	<b>SERIES PFC-9000</b> , Fire Alarm Control Panel
<b><u>System Type:</u></b>	Local, Auxiliary (using PR-5000), Remote Protected Premise Station (using PR-5000 or UDACT-9100), Central Station Protected Premises (using DACT-5000 or UDACT-9100)
<b><u>Type of Service:</u></b>	A, M, WF, SS (with UDACT-9100)
<b><u>Type of Signalling:</u></b>	Non-Coded
<b><u>Applicable Standards:</u></b>	NFPA 70 and 72, UL-864, ULC S-524, ULC S-527.

**Appendix B - Battery Calculation and Current Draw**

POWER REQUIREMENTS (ALL CURRENTS ARE IN MILIAMPERES)							
MODEL NUMBER	DESCRIPTION	QTY		STDBY	TOTAL STDBY	ALARM	TOTAL ALARM
PFC-9000	Main Chassis (12 Amp)	1	X	230	= 230	380	= 380
SLA-127P	Single Loop Adder		X	35	=	50	=
DLA-254P	Dual Loop Adder		X	35	=	50	=
ZA-9008	4 Zone NAC Card		X	80	=	100	=
IDC-9004	4 Zone NAC Card		X	35	=	150	=
ARM-9008	8 Relay Circuit Module		X	25	=	150	=
UDACT-9100	Dialer Module		X	40	=	60	=
PR-5000	City Tie Module		X	35	=	300	=
2-Wire Smoke Detectors			X		=	*0.090	=
4-Wire Smoke Detectors			X		=		=
APS Photoelectric Smoke Sensor			X	.390	=	.390	=
AHD Heat Sensor			X	.350	=	.350	=
AIS Ionization Smoke Sensor			X	.350	=	.350	=
ADSD-P Duct Detector			X	2	=	8	=
ADSD-R Duct Detector with Relay			X	10	=	55	=
FRCM-2/-4 Fast Response Contact Module			X	.550	=	30	=
SOM-4 Supervised Output Module			X	.220	=	300	=
PSCI Short Circuit Isolator			X	.270	=		= 10
DRM Dual Relay Module			X	.150	=	150	=
Alarm LED Current for Analog Devices						135	= 135
Signal Load (bells, horns, and strobes)			X				=
Auxiliary Power Supply for Remote Annunciators. Add 150mA for each RA-LCD and RA-LED32. Add 50mA for each RA-LED48 annunciator.					=		=
Total currents (add above currents) then multiply to convert to Amperes STANDBY					x.001 (A)	Alarm	x.001 (B)

**Current Requirement:** Standby (A) \_\_\_\_\_ Amps. Alarm (B) \_\_\_\_\_ Amps.

**Battery Capacity Requirement:**

$$[(\text{STANDBY (A)} \text{ _____}] \times [(24 \text{ or } 60 \text{ Hours}) \text{ _____}] + [(\text{ALARM (B)} \text{ _____}] \times [\% \text{ Alarm in Hr.}] \text{ _____}] = (\text{C})$$

<b>⚠ WARNING</b>
Do not use batteries with a capacity of less than 17 AH. Using batteries with a capacity of less than 17 AH may damage the batteries and panel.

\_\_\_\_\_ AH

X1.20

Total Standby Power

\_\_\_\_\_ AH

\* Assuming three Initiating Circuits in alarm.

% Use **0.084** for five minutes of alarm or **0.5** for thirty minutes of alarm as a multiplier figure.

See Appendix C, for other available smoke detectors .

Electronic version available at [www.pottersignal.com](http://www.pottersignal.com)

## Appendix C - Compatible Devices

**Underwrites Laboratories Inc (UL)**  
**UNITED STATES: 2-Wire Smoke Detector Control Panel Compatibility**  
**Analog and Addressable Device Compatibility for Loops 1,2, and 3.**

<b>Model Number</b>	<b>Description</b>
Potter APS	Photoelectric Smoke Sensor
Potter AHD	Heat Sensor
Potter AIS	Ionization Smoke Sensor
Potter ADSD	Analog Duct Sensor
Potter FRCM-2, FRCM-4	Fast Response Contact Monitoring Module
Potter SOM-4	Supervised Output Module
Potter PSCI	Short Circuit Isolator Module
Potter DRM	Dual Relay Module
Potter ASB-6	Analog Base

**Hardwire 2-Wire Smoke Detector Compatability (United States):**

- 1) The below listed Smoke Detectors are compatible with Initiating Circuits having Compatibility Identifier “A”.

**⚠ WARNING**

Do not mix different brands of smoke detectors on the same initiating circuit.

Smoke Detector Make/Model Base	Compatibility Identifier Head/Base	Rated Standby Current
<b>POTTER</b>		
IS-24/SB-93	HD-3/HB-3	0.040mA
PS-24/SB-93	HD-3/HB-3	0.045mA
PS-24H/SB-93	HD-3/HB-3	0.045mA
BPS-2/NA	HD-6	55uA@24 VDC
<b>HOCHIKI</b>		
DCD-190/HSC-220R	HD-3/HB-72	0.035mA
DCD-190/NS6-220	HD-3/HB-3	0.035mA
DCD-190/NS4-220	HD-3/HB-3	0.035mA
DCD-135/HSC-220R	HD-3/HB-3	0.035mA
DCD-135/NS6-220	HD-3/HB-3	0.035mA
DCD-135/NS4-220	HD-3/HB-3	0.035mA
SIJ-24/HSC-220R	HD-3/HB-72	0.040mA
SIJ-24/NS6-220	HD-3/HB-3	0.040mA
SIJ-24/NS4-220	HD-3/HB-3	0.040mA
SLR-24/HSC-220R	HD-3/HB-72	0.045mA
SLR-24/NS6-220	HD-3/HB-3	0.045mA
SLR-24/NS4-220	HD-3/HB-3	0.045mA
SLR-24H/NS6-220	HD-3/HB-3	0.045mA
SLR-24H/NS4-220	HD-3/HB-3	0.045mA
SLR-24H-HSC-220R	HD-3/HB-72	0.045mA
SLR-835/NS6-220	HD-3/HB-3	0.045mA
SLR-835/NS4-220	HD-3/HB-3	0.045mA
SLR-835/HSC-220R	HD-3/HB-72	0.045mA
SLR-835B-2	HD-6	55uA@24 VDC
<b>SENTROL - ESL</b>		
429C	S10A-N/A	0.10mA
429CT	S10A-N/A	0.10mA
429CST	S11A-N/A	0.10mA
429CRT	S11A-N/A	0.10mA
711U/701E, 701U, 702E, 702U	S10A-S00	0.10mA
712U/701E, 701U, 702E, 702U	S10A-S00	0.10mA
7135U/701E, 701U, 702E, 702U	S10A-S00	0.10mA
7136U/701E, 701U, 702E, 702U	S10A-S00	0.10mA
721U/702E, 702U	S10A-S00	0.10mA
721U/702E, 702U	S10A-S00	0.10mA
722U, 702E, 702U	S10A-S00	0.10mA
731U/702E, 702U, 702RE, 702RU	S11A-S00	0.10mA
732U/702E, 702U, 702RE, 702RU	S11A-S00	0.10mA

**Hardwire 2-Wire Smoke Detector Compatibility United States (Continued):**

Smoke Detector Make Model/Base	Compatibility Identifier Head/Base	Rated Standby Current
<b>SYSTEM SENSOR</b>		
1100	A-N/A	0.12mA
1151/B110LP	A-A	0.12mA
1151/B116LP	A-A	0.12mA
1400	A-N/A	0.10mA
1451/B401	A-A	0.12mA
1451/B401B	A-A	0.12mA
1451/B406B	A-A	0.12mA
1451DH/DH400	A-A	0.12mA
2100	A-N/A	0.12mA
2100T	A-N/A	0.12mA
2151/B110LP	A-A	0.12mA
2151/B116LP	A-A	0.12mA
2400	A-N/A	0.12mA
2400TH	A-N/A	0.12mA
2451/B401	A-A	0.12mA
2451/B401B	A-A	0.12mA
2451/B406B	A-A	0.12mA
2451/DH400	A-A	0.12mA
2451TH/B401	A-A	0.12mA
2451TH/B401B	A-A	0.12mA
2451TH/B406B	A-A	0.12mA
4451HT/B401	A-A	0.12mA
4451HT/B401B	A-A	0.12mA
4451HT/B406B	A-A	0.12mA
5451/B401	A-A	0.12mA
5451/B401B	A-A	0.12mA
5451/B406B	A-A	0.12mA
<b>DETECTION SYSTEMS</b>		
DS250	B-N/A	0.10mA
DS250TH	B-N/A	0.10mA
DS282	B-N/A	0.10mA
DS282TH	B-N/A	0.10mA
<b>MIRCOM</b>		
MIR-525U	FDT-1	0.10mA
MIR-525TU	FDT-1	0.10mA
<b>NAPCO</b>		
FW-2	HD-6	55uA@24 VDC

**UNDERWRITER’S LABORATORIES OF CANADA (ULC)**

**Canadian: 2-Wire Smoke Detector Control Panel Compatibility**

**Compatibility:**

Potter APS  
 Potter AHD  
 Potter AIS  
 Potter ADSD  
 Potter FRCM-2, FRCM-4  
 Potter SOM-4  
 Potter PSCI  
 Potter DRM  
 Potter ASB-6

**Analog Loop Device**

Photoelectric Smoke Sensor  
 Heat Sensor  
 Ionization Smoke Sensor  
 Analog Duct Sensor  
 Fast Response Contact Monitoring Module  
 Supervised Output Module  
 Short Circuit Isolator Module  
 Dual Relay Module  
 Analog Base

⚠ WARNING
Do not mix different brands of smoke detectors on the same initiating circuit.

Smoke Detector		
Make Model/Base	Make Model/Base	Make Model/Base
<b>HOCHIKI</b>	<b>EDWARDS</b>	<b>FENWAL</b>
DCD-135/NS6-220	6249C	PSD-7131/70-201000-001
DCD-135/NS4-220	6250C	PSD-7131/70-201000-002
DCD-135/HSC-220R	6264C	PSD-7131/70-201000-003
DCD-190/NS6-220	6266C	PSD-7131/70-201000-005
DCD-190/NS4-220	6269C	PSD-7130/70-201000-001
DCD-190/HSC-220R	6270C	PSD-7130/70-201000-002
SIJ-24/NS6-220	6269C-003	PSD-7130/70-201000-003
SIJ-24/NS4-220	6270-003	PSD-7130/70-201000-005
SIJ-24/HSC-220R		PSD-7128/70-201000-001
SLR-24/NS6-220	<b>CERBERUS PYROTRONICS</b>	PSD-7126/70-201000-002
SLR-24/NS4-220	D1-2	
SLR-24/HSC-220R	D1-3/DV3S	PSD-7126/70-201000-003
SLR-24H/NS6-220		PSD-7126/70-201000-005
SLR-24H/NS4-220	<b>NAPCO</b>	PSD-7129/70-211002-000
SLR-24H/HSC-220R	FW-2	PSD-7125/70-201000-001
SLR-835/NS6-220		PSD-7126/70-201000-002
SLR-835/NS4-220	<b>SIMPLEX</b>	PSD-7215/70-201000-003
SLR-835/HSC-220R	2098-9110	PSD-7125/70-201000-005
SLR-835B-2		CPD-7021/70-201000-001
	<b>MIRCOM</b>	CPD-7021/70-201000-002
	MIR-525	CPD-7021/70-201000-003
	MIR-525T	CPD-7021/70-201000-005

**Canadian: 2-Wire Smoke Detector Control Panel Compatibility (Continued)**

Smoke Detector	
Make Model/Base	Make Model/Base
<b>SYSTEM SENSOR</b>	<b>MIRTONE</b>
1400-A	73471
2400-A	73494
1451-A/B401B	73575
1451-A/B406B	73495/73486
2451-A/B401B	73495/73487
2451-A/B406B	73595/73486
1451DH/400A	73595/73497
2451-A/DH400A	73594/73400
	73405/73400
<b>POTTER</b>	73594/73401
IS-24/SB-93	73405/73401
PS-24/SB-93	D1-3/DV3S
PS-24H/SB-93	
BPS-2/NA	

**Hardwire 4-Wire Smoke Detector Compatibility (Canada)**

- 1) Whether mixing different models of compatible smoke detectors, or using the same model on the same Circuit, total standby current of all detectors must not exceed 3 mA.
- 2) The below listed Smoke Detectors are compatible with Initiating Circuits having Compatibility Identifier “A”.

MIRCOM	MIR-545U	MIR-545TU		
SENTROL-ESL	541C	541CXT	709-MV-21	709-24V-21
	741U WITH 702U OR 702E BASE	449AT, 449C, 449CT, 449CRT, 449CST, 449CSTE, 449CSRT, 449CSRH, 449CSST, 449CSSTE, 449CTE, 449CLT, 449CSLT		
SYSTEM SENSOR	1424	6424	6424A	A77-716B
	DH400ACDCI	DH400ACDCP	DH400ACDCIHT	

## Appendix D – Troubleshooting Tips

### Quick Troubleshooting Guide:

The LCD and individual LED Indicators will give a concise description of any Panel or Wiring Faults detected. The Queue buttons can be used to select a type of event, and the cursor buttons to select individual events. Additional details are available by pressing and holding the “INFO” button.

**A.C. ON** If the green LED is not illuminated, check that 110 VAC (nominal) power is connected. If less than 102VAC is present, the panel will indicate a loss of A.C. power.

**PRE-ALARM** The Pre-Alarm feature indicates that a smoke or heat sensor reaches 70% of threshold of alarm within a given time set.

**GND FAULT** This panel has a common ground fault detector. Pushing the “INFO” button will give a better indication of where the ground fault is in the system.

### TROUBLE QUEUE

#### Battery Trouble

Check for the presence of batteries and their conditions. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace batteries as soon as possible.

#### Unconfigured Device

Message will appear when a device is added on the loop and the device is not included in the software or when duplicate addresses are connected to the loop. Check the loop for devices with duplicate address. Pushing the “INFO” button will help indicate which device is unconfigured by device type.

#### Missing Device

Message will appear when a device that is programmed in the software does not appear to be connected to the loop. The device must be connected to the loop or deleted from the configuration software. If multiple devices are missing, check the loop wiring for a break or open condition.

#### I/O Adder Mismatch

This message will appear if the adder modules are installed in the panel in a different order than what is programmed in the panel. The panel must be powered down and the module order changed or the software changed to match the installation in the panel.

#### I/O Adder Missing

This message will appear when the software indicates that an adder module should be installed and is missing. A common problem is a continuity jumper left on an adder module other than that last one. Also, ensure that the adder modules in the software match the adder modules that are installed in the panel.

#### Datalink Failure

This message will appear when an annunciator is operating and an interruption of power or communication occurs. If a data link failure occurs, it is imperative that the panel be powered down before the lost communication or power is reconnected. Failure to power the panel down may result in damage to the panel, annunciator or both.

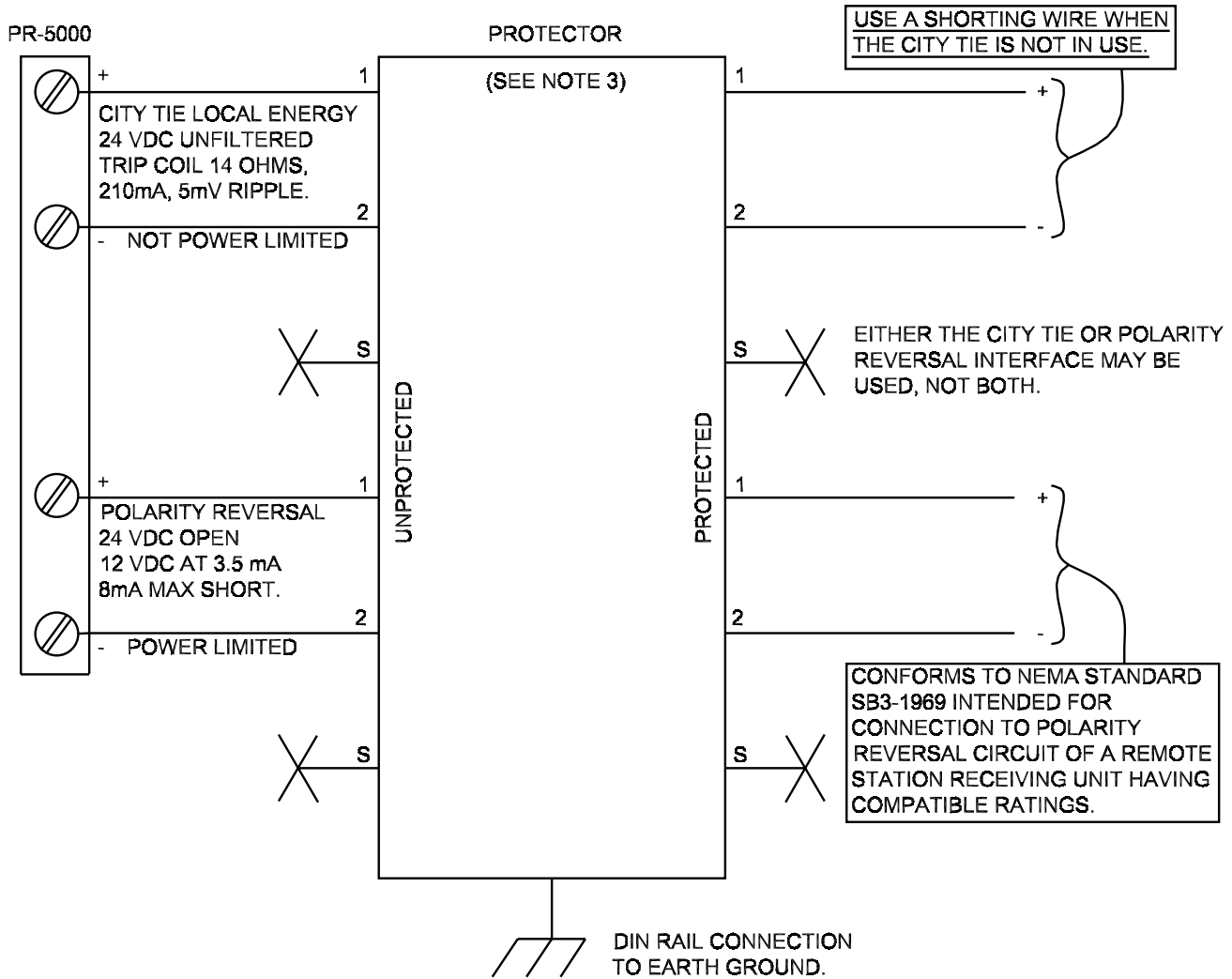
#### Print Reports does not work

The print reports will not work with Windows XP. You must change the operating characteristics to an earlier version of Windows. Close the configuration program, Right click on the PFC config Icon, select PROPERTIES, COMPATIBILITY, check the box that allows different versions of windows.

#### Node 33 Not Found, Operation Aborted

An annunciator is loaded in the program but not installed on the RS-485 or visa versa. If an annunciator is in the program it must be installed on the loop. Likewise if an annunciator is on the loop, it must be in the program or the panel will not accept the program. Node 33 is a remote annunciator.

### Appendix E - City Tie/ Polarity Reversal Module



- NOTES: 1) Plug PR-5000 ribbon cable (P1) into connector (P4) of the Main Fire Alarm Module.  
 2) Cut Jumper (JW1) on the PR-5000 Module in order to transmit a Trouble Condition to the Monitoring Station.  
 3) For use in the USA, must use an Atlantic Scientific (Tel. (407) 725-8000) Model #24544 Protective Device, or similar UL-Listed QVRG Secondary Protector.  
 4) The Polarity Reversal interface is Power Limited and must use Type FPL, FPLR or FPLP Power Limited Cable.  
 5) For Polarity Reversal operation, short out city tie connection.

DWG. #PFC-9000-60

#### Polarity Reversal and City Tie Module (Model: PR-5000) Terminal Connections

Wire as shown using proper wire gauges.

Note that for use in the USA, the installer MUST add an Atlantic Scientific (Tel. 407-725-8000) Model #24544 Protective Device, or similar *UL-Listed QVRG Secondary Protector*, as shown. For use in Canada, the Protective Device is still recommended, but the PR-5000 may be connected directly to Polarity Reversal or City Tie wiring.

- Notes: 1) *Either the PR-5000's City Tie or Polarity Reversal interface may be used, but not both.*  
 2) *The City Tie interface is Not Power Limited.*

## Appendix F – Programming the UDACT-9100

**Note:** Command Menu feature 9 can only be accessed if jumper JW2 is placed on the main board, see Table 3.

### Dialer Config (Command-Menu):

The following illustration shows the dialer configuration menu. Each item in this menu is described below in detail. Use the Up and Down keys to scroll through the menu and press the Enter key to make a selection. To exit from the menu, select the Exit menu option and then press either the Enter or Cancel key. Once a menu feature has been selected, use the Left and Right keys to change values or the numerical keys to enter account numbers.

```

- Dialer Config -
1 Account Info
2 Telephone Line
3 Report Options
4 Time Parameter
5 Enable/Disable
6 Ring Detection
    
```

#### 1. Account Info Menu

```

- Account Info -
1 Account#1 ID
2 Account#1 Tel
3 Accnt#1 Format
4 Account#2 ID
5 Account#2 Tel
6 Accnt#2 Format
    
```

<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>1.Account# 1 Identification</b></p> <pre> Account#1 ID: 123456         </pre>	<p>123456-&gt;Default</p>	<p>Use this function to set the Account ID for the monitoring station to which the dialer reports events. The maximum number of digits allowed is six. For contact ID, only the first four digits are used; the last two are truncated.</p> <p>If you are using the Contact ID protocol, the allowed digits for the account ID are simple digits 0 to 9 and hexadecimal digits A to F. The SIA protocol only allows digits 0 to 9.</p> <p>To enter hexadecimal digits, press the INFO button. The letter "A" will appear. To scroll through the rest of the letters, press INFO repeatedly. Press # key to move the cursor to the right or press * key to move it to the left.</p>
<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>2.Account#1 Telephone Number</b></p> <pre> Account#1 Telnum: 101         </pre>	<p>101 -&gt;Default</p>	<p>Use this function to set the telephone number of the monitoring station. The maximum number of digits allowed is 19 including commas "," and numerals. The commas will be treated as 1 sec delay. To enter a comma ",", press the INFO button. Press the # key to move the cursor to the right or press the * key to move it to the left. An example of a typical telephone number is 9,,1234567008, 9 being the dial out where required.</p>

<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>3.Account#1 Reporting Format</b></p> <p>ACCNT#1 Format:  <input checked="" type="checkbox"/> Contact ID</p>	<p><input checked="" type="checkbox"/> CONTACT ID-Default  <input type="checkbox"/> SIA 300 Baud  <input type="checkbox"/> SIA 110 Baud</p>	<p>Set the reporting format that is recognized or preferred by the monitoring station.</p>
<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>4. Account# 2 Identification</b></p> <p>Account#2 ID:          654321</p>	<p>654321-&gt;Default</p>	<p>Same as Account#1.</p>
<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>5.Account# 2 Telephone Number</b></p> <p>Account#2 Telnum:          101</p>	<p>101 -&gt;Default</p>	<p>Same as Account#1.</p>
<p><i>Command Menu/Dialer Config/Account Info</i></p> <p><b>6.Account# 2 Reporting Format</b></p> <p>ACCNT#2 Format:  <input checked="" type="checkbox"/> Contact ID</p>	<p><input checked="" type="checkbox"/> Contact ID-&gt;Default  <input type="checkbox"/> SIA 300 Baud  <input type="checkbox"/> SIA 110 Baud</p>	<p>Same as Account#1.</p>

### Dialer Test Messages

The following messages will display during the test processes of Lines #1 and #2. The messages that will appear depend on the status of the dialer and the test results that are found.

Dialer idle now	The dialer is checking the line for voltage. This message automatically displays when Manual Test is selected.
No DC Volt	No DC line voltage. The line is dead or no phone line is connected or the phone line operates at abnormal voltage.
Waiting for Dialtone	The dialer is waiting for a dial tone.
Failed: No Dialtone	This message may indicate a noisy telephone line.
Dialing Receiver Now	The dial tone was detected and telephone number dialing is in process.
No DTMF tone	This message indicates that the dialer failed to send a DTMF tone.
Waiting for Acktone	Waiting for availability of the receiver. The receiver confirms the availability by sending an Ack tone.
Failed No Acktone	Dialer failed to detect Ack tone. This message indicates that either the telephone number may be wrong or the receiver is not available.
Reporting Event Now	Sending events to the receiver.

## Appendix G – **WARNING**

The input power is high voltage and can cause electrical shock and poses an electrocution hazard.

The PFC-9000 fire alarm control panel must be connected to a 120 VAC power supply. The 220 VAC models must be connected to a 220 VAC power supply. The system will not operate nor is it designed to operate solely on batteries.

The electrical connections and wiring methods should follow the guidelines of NFPA 70, the National Electrical Code. Failure to follow the NEC can result in equipment malfunctions or shock and fire hazards.

A qualified person should do the programming and installation of the fire alarm control panel. Incorrect installation and/or programming will result in the system not operating properly.

Smoke and Heat sensors will not operate without power and being connected to the analog/addressable loop. The sensors must be installed with a base. High velocity circulating air will increase the response times of smoke and heat sensors. The proper smoke and heat sensors must be installed.

If smoke does not reach the smoke chamber of the smoke sensors or if the amount of smoke is below the percentage of obscuration, the device will not activate an alarm.

Smoke sensors must be placed and installed per the National Fire Alarm Code. Smoke sensors will only notify of smoke in a particular area in the building, therefore smoke detection must be provided throughout.

Smoke and Heat sensors are electromechanical devices and require periodic testing and maintenance by a qualified person. The integrity of the system to respond correctly to input, process the inputs and provide notification must be maintained and tested by qualified persons in accordance with the test and inspections chapter of NFPA 72, 2002 or newer.

Notification devices require power to operate. Bells, horns, strobes, etc. receive power from the fire alarm control panel or controlled listed power source. The Audible devices installed must be UL listed. The audible devices may not notify a person in altered state of consciousness or a person outside the immediate area of the device. In addition, ambient noise such as machinery or traffic may drown out the audible notification. The Visual devices must be UL listed and should meet the criteria of the Americans with Disabilities Act (ADA). When more than two visual devices are installed in a line of site, the devices should be synchronized to prevent seizures from rapidly pulsing light.

The PFC-9000 will not notify the fire department without a communicator that is connected to a constantly attended location. The PFC-9000 does not have a built in communicator, it is an option. The PFC-9100 has a built in communicator and must be connected to either a Central Receiving Station or Remote Supervisory Station. The UDACT or City Tie/Polarity Reversal must be connected on a dedicated line. The UDACT must be ahead of switchboards and other ancillary equipment. Failure to do so could result in a delay of notification.

If there is a Trouble condition with the system, it may prevent normal operation. Therefore, it is imperative that any and all trouble conditions are corrected as soon as possible.

The panel will only operate as programmed. It is essential that complete testing of the entire system is performed prior to turning the system over to the building owner or representative.