

# PFC-5000 Series Installation, Operation, and Instruction Manual

## 4 or 8 Zone Fire Alarm Control Panel

(All specifications subject to revision.)



PFC-5004E



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# Introduction

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## About this Manual

This installation and operation manual provides information on installing and operating the PFC-5000 Microprocessor-Based Fire Alarm Control Panel.

## About the PFC-5000

Potter's PFC-5000 Fire Alarm Control Panels provide 2, 4, or 8 supervised Class B (ULI Style B) Initiating Circuits, or 1, 2 or 4 supervised Class A (ULI Style D) Initiating Circuits, and 2 or 4 supervised Class A or B (ULI Style Z or Y) NAC Circuits. All Circuits are supervised for opens and ground faults, and NAC Circuits for shorts. Optional Modules include a ZA-42 Zone Adder (required for full capacity in the PFC-5004E only), a UDACT-9100 Digital Alarm Communicator Transmitter (DACT) or a PR-5100 Polarity Reversal & City Tie Module, and ARM-4 or ARM-8 Relay Modules. The two enclosures are flush or surface mountable, and can be used for retrofits and on new installations.

## Overall Features:

- The small enclosure versions, PFC-5002, & PFC-5004, have 2 and 4 Class B (Style B) initiating circuits respectively which may be configured as 1 or 2 Class A (Style D) Circuits respectively. These also have 2 Power Limited Class A/B (Style Z/Y) NAC circuits with individual trouble indicators.
- The large enclosure version, PFC-5004E, has 4 Class B (Style B) initiating circuits which may be configured as 2 Class A (Style D) circuits respectively. It also has 2 power limited Class A/B (Style Z/Y) NAC circuits with individual trouble indicators. With a ZA-42 Zone Adder Module, an extra 4 Class B (2 Class A) initiating circuits, and 2 Class A/B NAC circuits are added.
- Each initiating circuit is configurable as a normal or verified alarm. In addition, on a Class B PFC-5004 or PFC-5004E, Initiating Circuit 3 may be a Waterflow Zone (as may Initiating Circuit 7 if a ZA-42 is installed), and initiating circuit 4 may be a latched or non-latched supervisory zone (as may initiating circuit 8 if a ZA-42 is installed). On a Class A PFC-5004E with a ZA-42, initiating circuit 3 may be a waterflow zone and initiating circuit 4 may be a latched or non-latched supervisory zone.
- NAC circuits can be configured as audible or visual and as silenceable or non-silenceable. Audibles may be Steady, Temporal Code, California Code, or March Time.
- Initiating circuits may be individually disconnected by a slide-switch.
- Configurable signal silence inhibit (disabled or 1 minute), auto signal silence (disabled or 20 minutes), and one-man walk test.
- Subsequent alarm, supervisory, and trouble operation.
- Four-wire resettable smoke power supply (100 mA max.).
- Auxiliary relay contacts for common alarm and common supervisory (disconnectable), and a common trouble relay. If no Supervisory zones are configured then the common supervisory relay can be used as an extra common alarm relay.
- Interface for an RTI Remote Trouble Indicator.
- RS-485 Interface for 1 to 3 Remote Multiplex Annunciators (RA8F.)
- The PFC-5002, PFC-5004 may use two of optional UDACT-9100 (DACT), PR-5100 (City Tie), ARM-4 or ARM-8 Relay Modules.
- The PFC-5004E may use optional UDACT-9100 (DACT), PR-5100 (City Tie), and one of ARM-4 or ARM-8 Relay Modules.
- The PFC-5008 is the same as PFC-5004E except the ZA-42 zone adder module is factory installed and may have UDACT-9100 (DACT) factory installed.
- Slide Switch controls and LED Common indicators.
- Easy configuration via DIP switches.
- Extensive transient protection.

## Technical Support

For all technical support inquiries, please contact Potter's Technical Support Department between 8 A.M. and 5 P.M. (CDT) Monday through Friday, excluding holidays.

# Document Conventions

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## Circuits and Zones

The term **circuits** refers to an actual electrical interface, initiating (detection), NAC (signal), or relay.

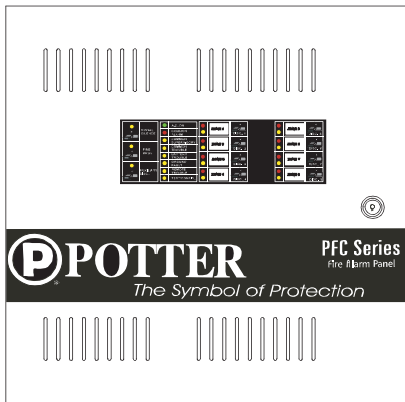
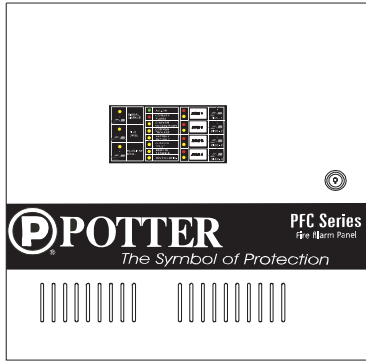
The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit.

Often the terms **zone** and **circuit** are used interchangeably, but in this manual the term circuit is used.

## Wiring Styles

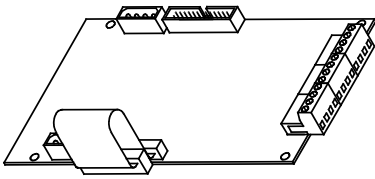
**Initiating circuits** are configured by default as Class B (Style B). They may be globally (all or none) configured as Class A (Style D) as described in System *Configuration* on page 28. This operation uses odd and even pairs of two-wire Class B (Style B) circuits to make one four-wire Class A (Style D) circuit, thus cutting in half the number of available initiating circuits.

**Indicating circuits** may be individually wired as Class A (Style Z) or Class B (Style Y) without affecting the number of circuits available (see *Field Wiring* on page 12). Indicating Circuits may also be referred to as **Notification Appliance Circuits (NAC)**.



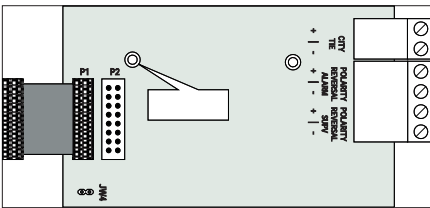
Model	Description
PFC-5002	Small enclosure fire alarm control panel with 2 Class B (Style B) or 1 Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) NAC Circuits (1.70 amperes each, 2.0 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator. Resettable Four Wire Smoke Detector Power Supply. May have two of UDACT-9100 or PR-5100, ARM-4, or ARM-8 installed. Can be used with BT-40 (4 AHr), BT-80 (8 AHr), BT-120 (12 AHr), BT-180 (18 AHr) or BA-240 (24 AHr)batteries (2 required). Note that the BT-180 and the BA-240 Batteries require a Listed Battery Cabinet.
PFC-5004	Small enclosure fire alarm control panel with 2 Class B (Style B) or 1 Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) NAC Circuits (1.70 amperes each, 2.0 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator. Resettable Four Wire Smoke Detector Power Supply. May have two of UDACT-9100 or PR-5100, ARM-4, or ARM-8 installed. Can be used with BT-40 (4 AHr), BT-80 (8 AHr), BT-120 (120 AHr), BT-180 (18 AHr) or BA-240 (24 AHr)batteries (2 required). Note that the BT-180 and the BA-240 Batteries require a Listed Battery Cabinet.
PFC-5004E	Large enclosure Fire Alarm Control Panel with 4 Class B (Style B) or 2 Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) NAC Circuits (1.70 amperes each, 5 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator and/or 1 to 3 of RA8F Remote Multiplex Annunciators. Resettable Four Wire Smoke Detector Power Supply. May have ZA-42 installed. May have UDACT-9100 or PR-5100, and one of ARM-4 or ARM-8 installed. Can be used with BT-40 (4 AHr), BT-80 (8 AHr), BT-120 (12 AHr), BT-180 (18 AHr) or BA-240 (24 AHr) batteries (2 required). Note that the BT-180 and the BA-240 Batteries require a Listed Battery Cabinet.
PFC-5008	Same as PFC-5004e except ZA-42 zone adder module is factory installed and may have UDACT-9100 factory installed.

## Circuit Adder Modules



Model	Description
ZA-42	Zone Adder Module for the PFC-5004E. Brings the total capacity to 8 Class B (Style B) or four Class A (Style D) Initiating Circuits, and 4 Power Limited Class A/B (Style Z/Y) NAC Circuits (up to 1.7 amperes each, 5 amperes total).
ARM-8	Relay Adder Module for the PFC-5002, PFC-5004, PFC-5008 or PFC-5004E. Adds eight configurable Form-C Relays rated 1A, 28 VDC.
ARM-4	Relay Adder Module for the PFC-5002, PFC-5004, PFC-5008 or PFC-5004E. Adds four configurable Form-C Relays rated 1A, 28 VDC.

## Auxiliary Models



Model	Description
PR-5100	Polarity Reversal and City Tie Module
UDACT-9100	Digital Communicator

## PFC-5000 Accessories

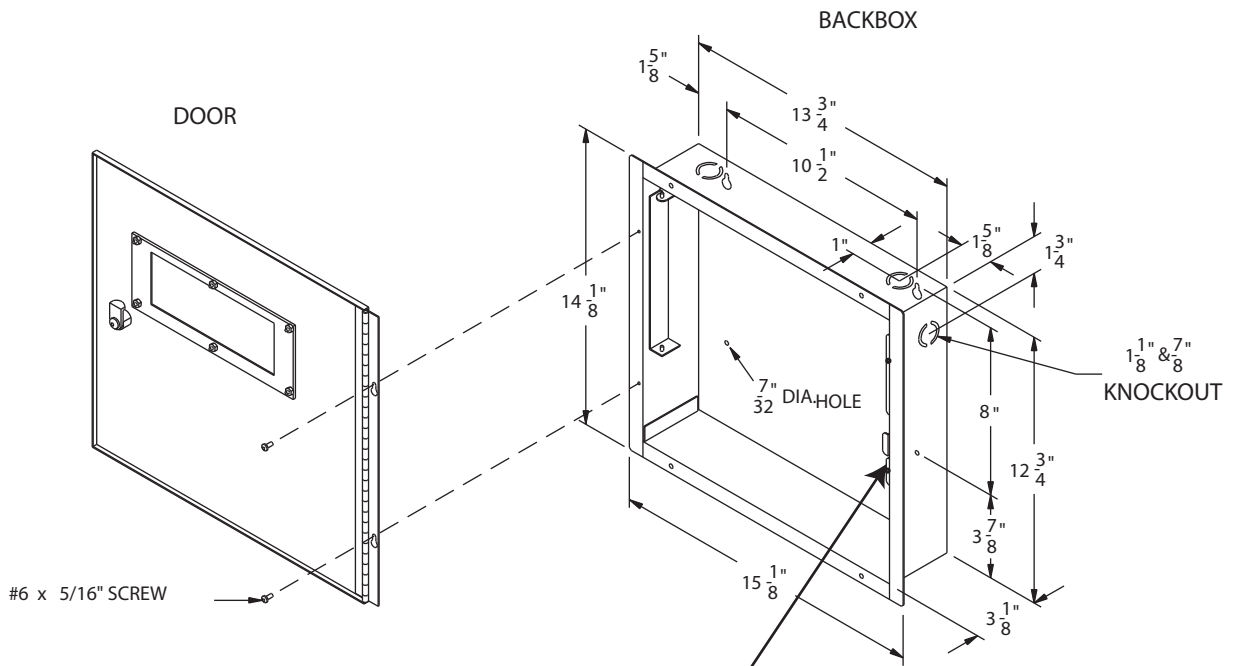
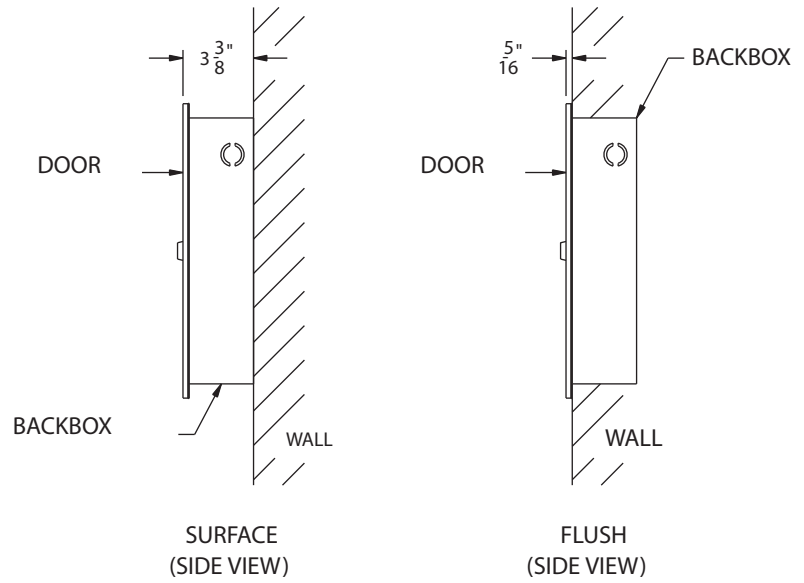
Model	Description
RA8F	Eight-Zone Remote Annunciator (ULC and ULI approved)
BC-2	External Battery Cabinet (ULC and ULI approved)
MP-300R	EOL Resistor Plate, red (ULC approved)
MP-300	EOL Resistor Plate, stainless steel finish
BC-160	External Battery Cabinet (ULC and ULI approved)



# Mechanical Installation and Dimensions

**Figure 1: PFC-5002 and PFC-5004 Enclosure Installation and Dimensions**

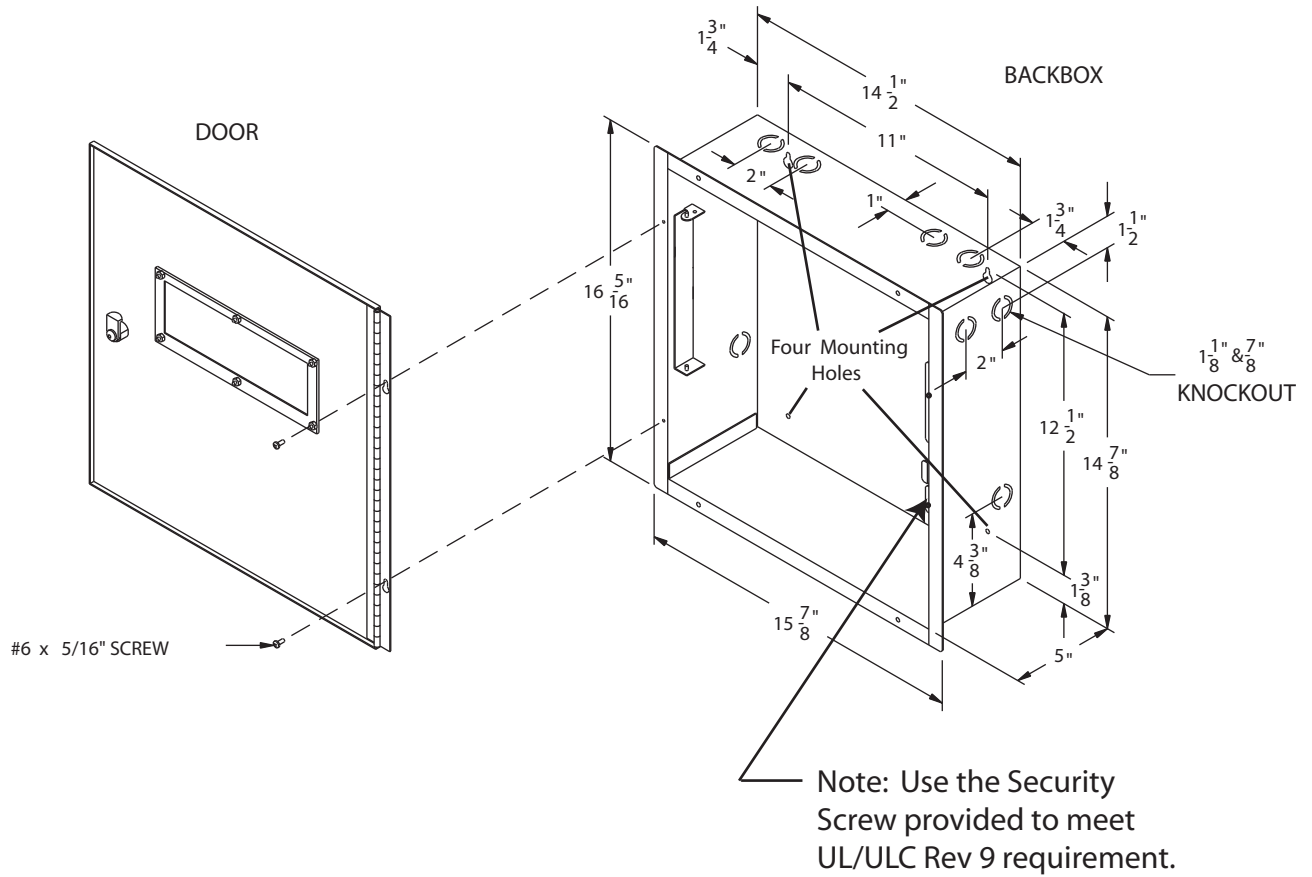
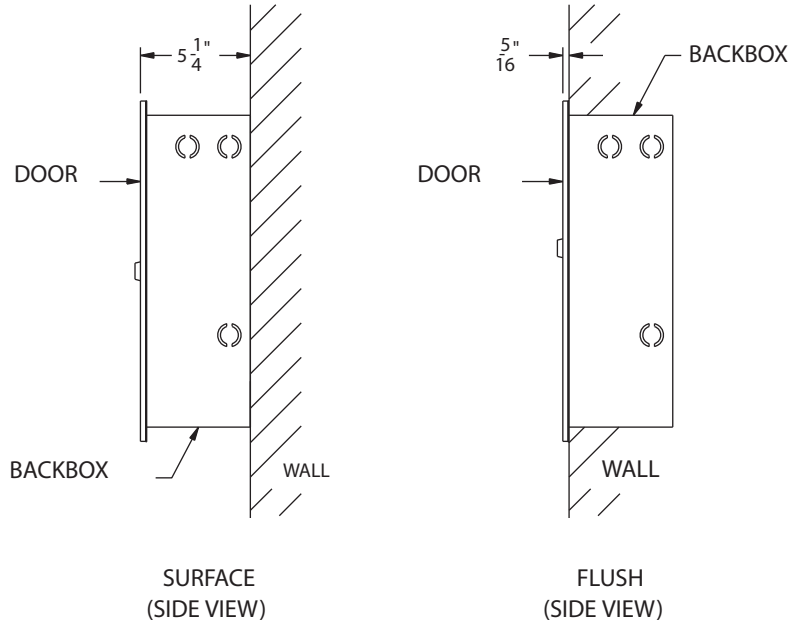
MATERIAL: 18GA (0.048") THICK  
COLD ROLLED STEEL  
FINISH: PAINTED



Note: Use Security Screw provided to meet UL 864 Rev 9 requirement.

**Figure 2: PFC-5004E/PFC-5008 Enclosure Installation and Dimensions**

MATERIAL: BACKBOX 18GA (0.048") THICK  
 DOOR 16GA (0.059") THICK  
 COLD ROLLED STEEL  
 FINISH: PAINTED

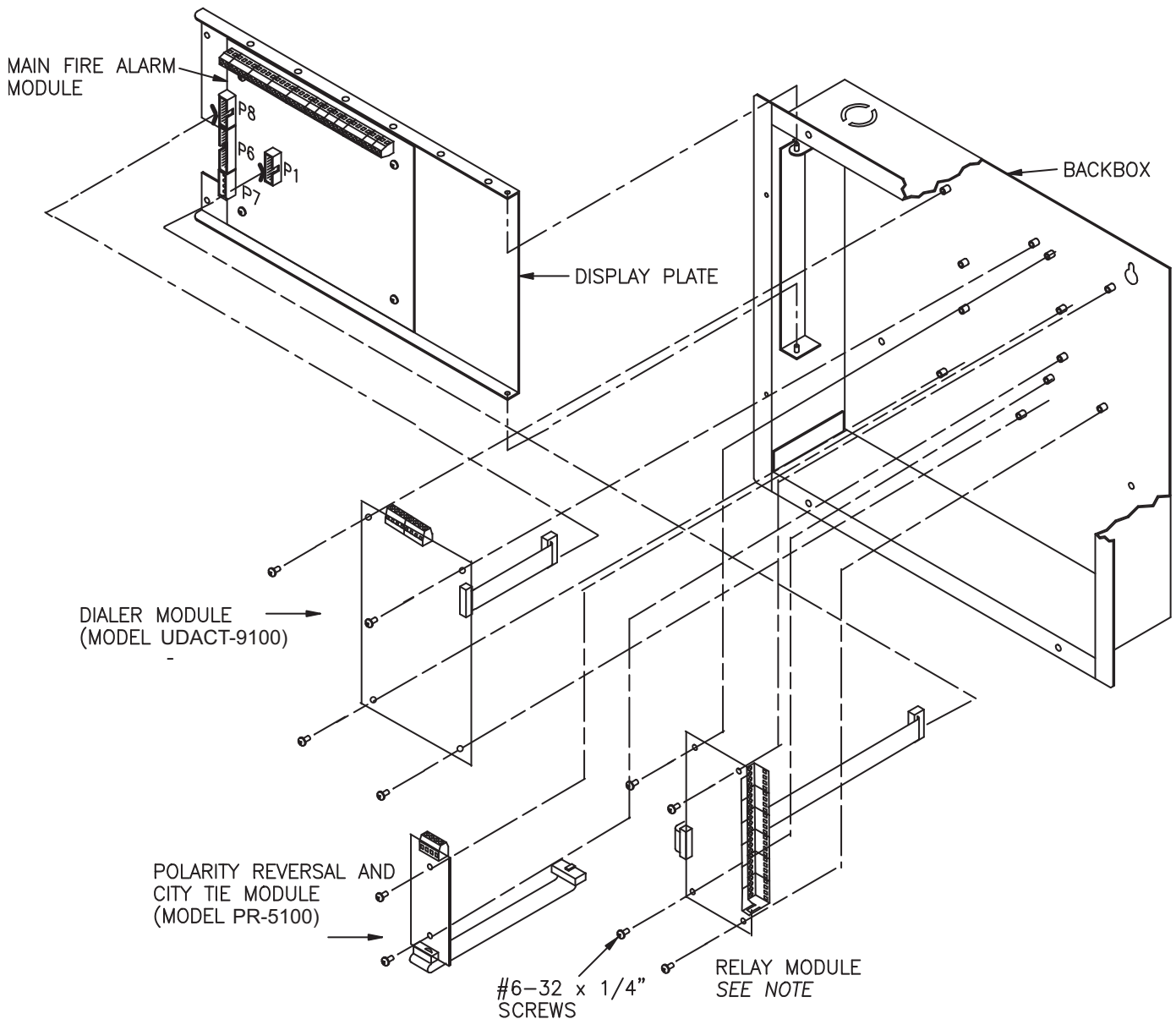


# Modules Mounting Locations

The PFC-5000 Series come pre-assembled with all components and boards, except for adder modules. Module installation locations are shown below.

Be sure to connect a solid Earth Ground (from building system ground or cold water pipe) to the Chassis Earth Ground Mounting Lug, and to connect the Earth Ground Wire Lugs from the Main Chassis to the ground screw on the backbox.

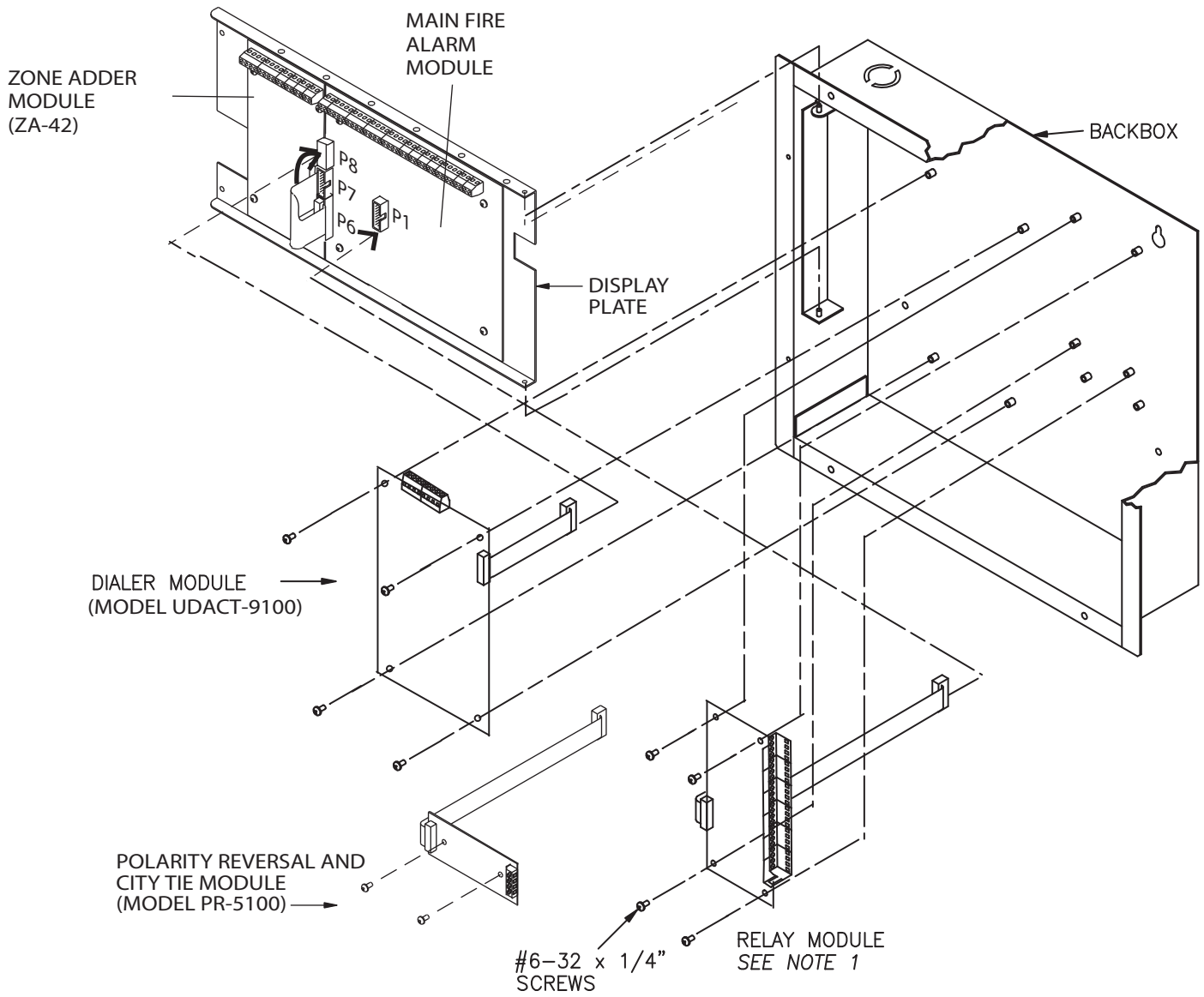
**Figure 3: PFC-5002 and PFC-5004 Module Mounting Locations**



**Note:**

- 1. Relay module may be Model ARM-4 or ARM-8.
- 2. Only two of PR-5100, UDACT-9100 or ARM-4/ARM-8 may be installed.

**Fig. 4: PFC-5004E/PFC-5008 Module Mounting Locations**



**Note**

1. Relay module may be Model ARM-4 or ARM-8.

# Module Settings

## Main Fire Alarm Module

### Class A / B Selection

On the PFC-5002, PFC-5004, PFC-5008 and PFC-5004E, to select Class B (Style B) move JW1 & JW2 to position “B.” To select Class A (Style D) move JW1 & JW2 to position “A”.

**Note:** The Class A/B selection affects all initiating circuits, and must be used with the correct Configuration DIP switch 9 #6. See **Table 3** on page 29.

**Zone Adder Module:** On an PFC-5004E only, remove the jumper on **JW4** if a ZA-42 Zone Adder Module is installed. The zone adder module is plugged into P6 & P7.

**Relay Module:** Remove the jumper on **JW3** if an ARM-4 or ARM-8 Relay Module is installed. The relay module is plugged into P1.

**Digital Communicator:** Remove the jumper on **JW6** if a UDACT-9100 Digital Communicator is installed. The digital communicator is plugged into P8.

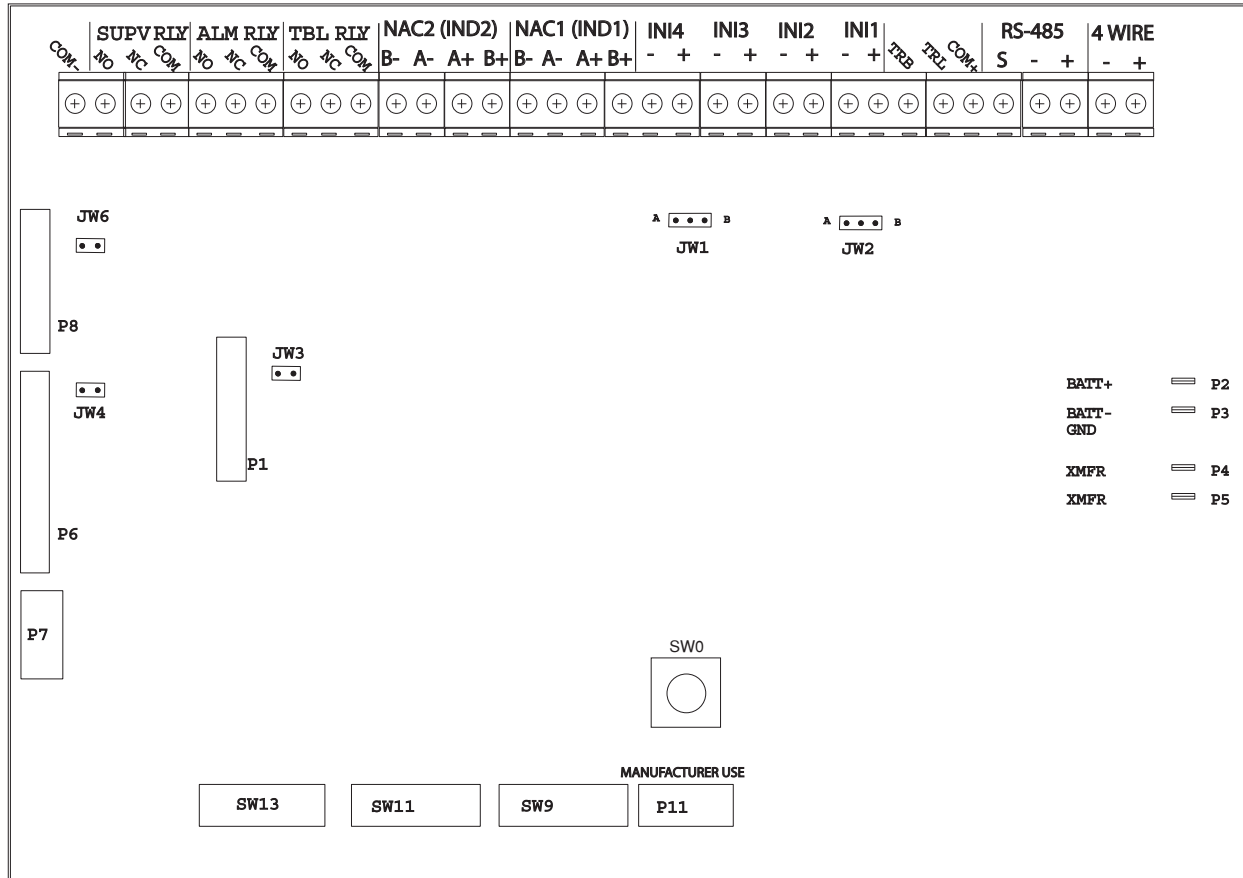
**City Tie:** Remove the jumper on **JW6** if a PR-5100 City Tie is installed. The City Tie is plugged into P8.

**Battery:** Connected to P2(+) & P3(-) via the factory installed cables.

**Transformer:** Factory wired to P4 & P5, do not disconnect.

**SW9,11,13:** Configuration DIP switches.

**Figure 5: Main Fire Alarm Module**



## Zone Adder Module (Model ZA-42)

**Figure 6: ZA-42 Zone Adder Module**

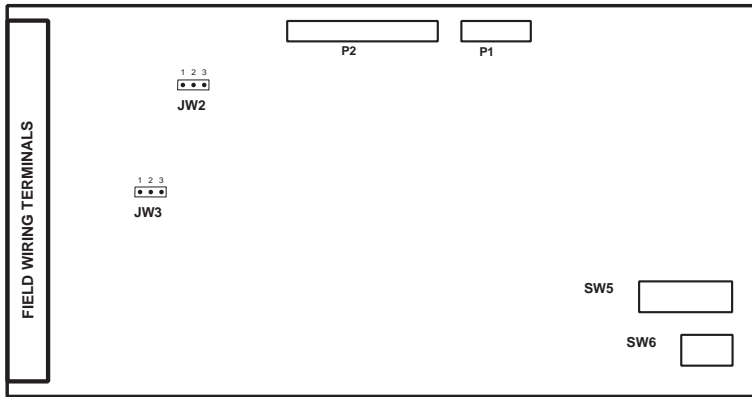
**Class A / B Selection:** JW2 & JW3 are connected from 1 to 2 for initiating circuit Class B (Style B) operation, and from 2 to 3 for Class A (Style D) operation.

**Note:**

The Class A/B selection affects all initiating circuits, and must be used with the correct Configuration DIP switch 9 #6.

**P1 & P2:** Connections to P7 & P6 respectively on the main fire alarm board.

**SW5,6:** Config DIP switches.



## Relay Modules (Models ARM-4 or ARM-8)

**Figure 7: ARM-4 or ARM-8 Relay Adder Module (Zone Operated)**

**P1:** Connect to P1 on the main fire alarm board.

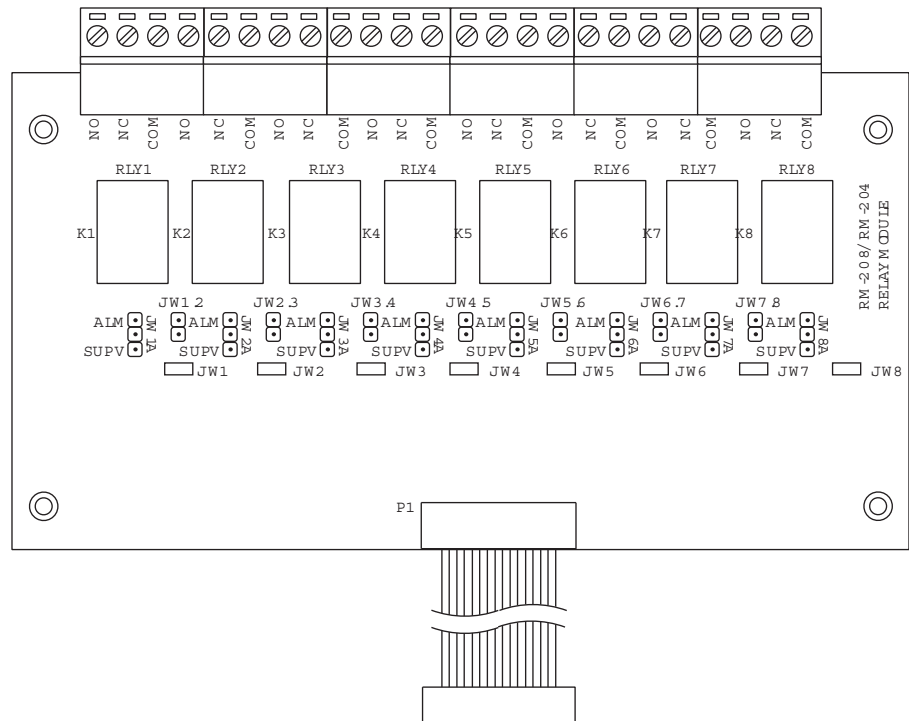
By the factory setting, the four or eight relays are controlled by initiating circuits 1 to 8 respectively. This is configured by selecting:

- **JW1:** Initiating Circuit #1 controls Relay #1.
- **JW2:** Initiating Circuit #2 controls Relay #2.
- **JW8:** Initiating Circuit #8 controls Relay #8.

Alternately, each relay may be set as a Common Alarm or Common Supervisory Relay by removing the jumper from JW1 to JW1A, etc. These jumpers have two positions to select Alarm or Supervisory each.

- **JW1A:** Alarm or supervisory control for Relay #1.
- **JW2A:** Alarm or supervisory control for Relay #2.
- **JW8A:** Alarm or supervisory control for Relay #8.

Finally, there are jumpers **JW1.2**, **JW2.3**, up to **JW7.8** that allow a relay to have the same control as an adjacent relay. For example, starting with the factory default setting, moving the jumper from JW2 to JW1.2 will make both relays 1 & 2 operate with Initiating Circuit #1. Contact Potter Technical Support for assistance if required.

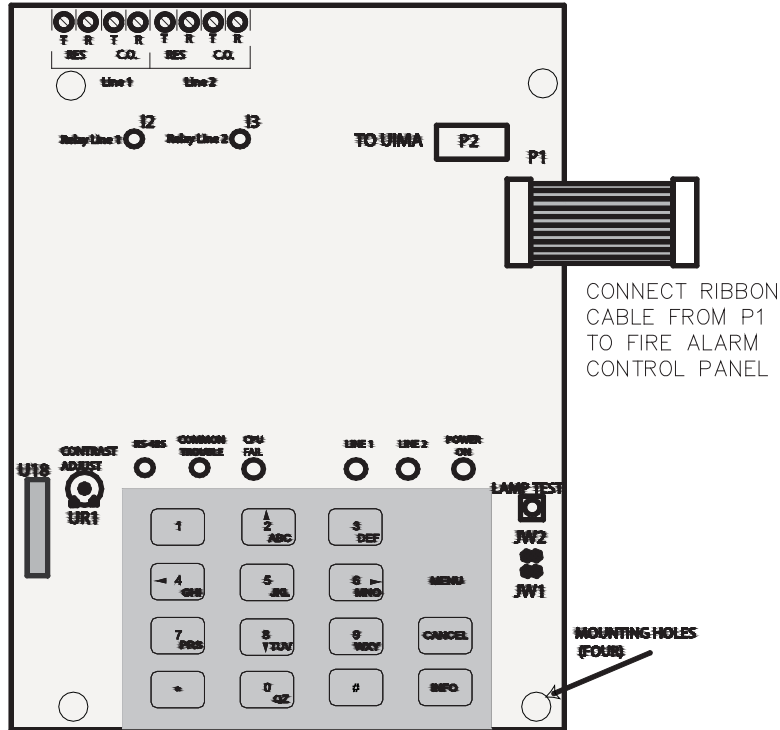


## UDACT / DACT (Model UDACT-9100)

**P1:** Cable to P8 on the main fire alarm board.

Jumper JW6 on the main fire alarm module must be removed if a UDACT-9100 is installed. Note that this module cannot be installed if a polarity reversal and city tie module is used.

**Figure 8: UDACT-9100 DACT Module**



**Note:** The UDACT is Tip & Ring sensitive. If any of the two LEDs are illuminated amber, reverse the wiring, then wait 30 seconds for the LED to clear.

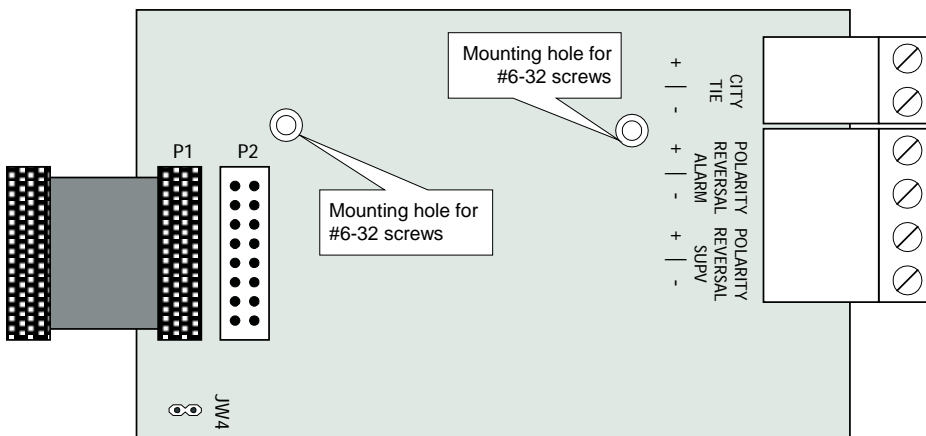
Please see the UDACT-9100 Manual (LT-888POT) for more information.

## Polarity Reversal and City Tie Module (Model: PR-5100)

**P1:** Cable to P8 on the main fire alarm module.

Jumper JW6 on the main fire alarm panel must be removed if a polarity reversal and city tie module is installed.

**Figure 9: PR-5100 Polarity Reversal and City Tie Module**

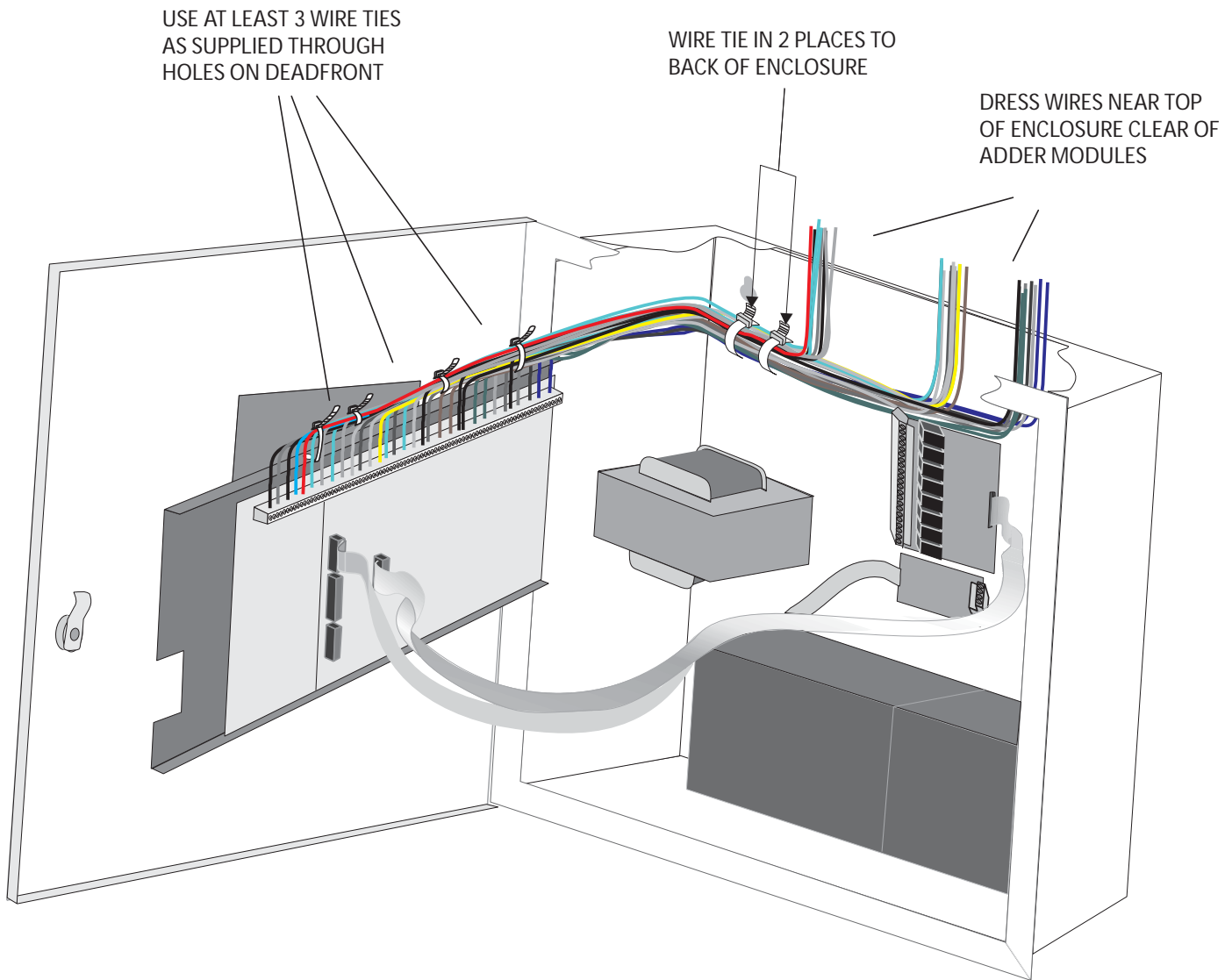


# Field Wiring

## General Field Wiring Considerations

Because most of the Field Wiring on the PFC-5000's is to the Main Boards on the swinging dead front, it is very important to properly dress the wires so as not to place stress on either their connection to the boards, or runs to conduit. The Figure below shows the required wiring techniques.

**Figure 10: General Field Wiring Considerations**



### **⚠ WARNING**

Do not run panel line voltage in the same conduit as initiating circuits. Undesired transient voltage could cause faults on initiating circuits.



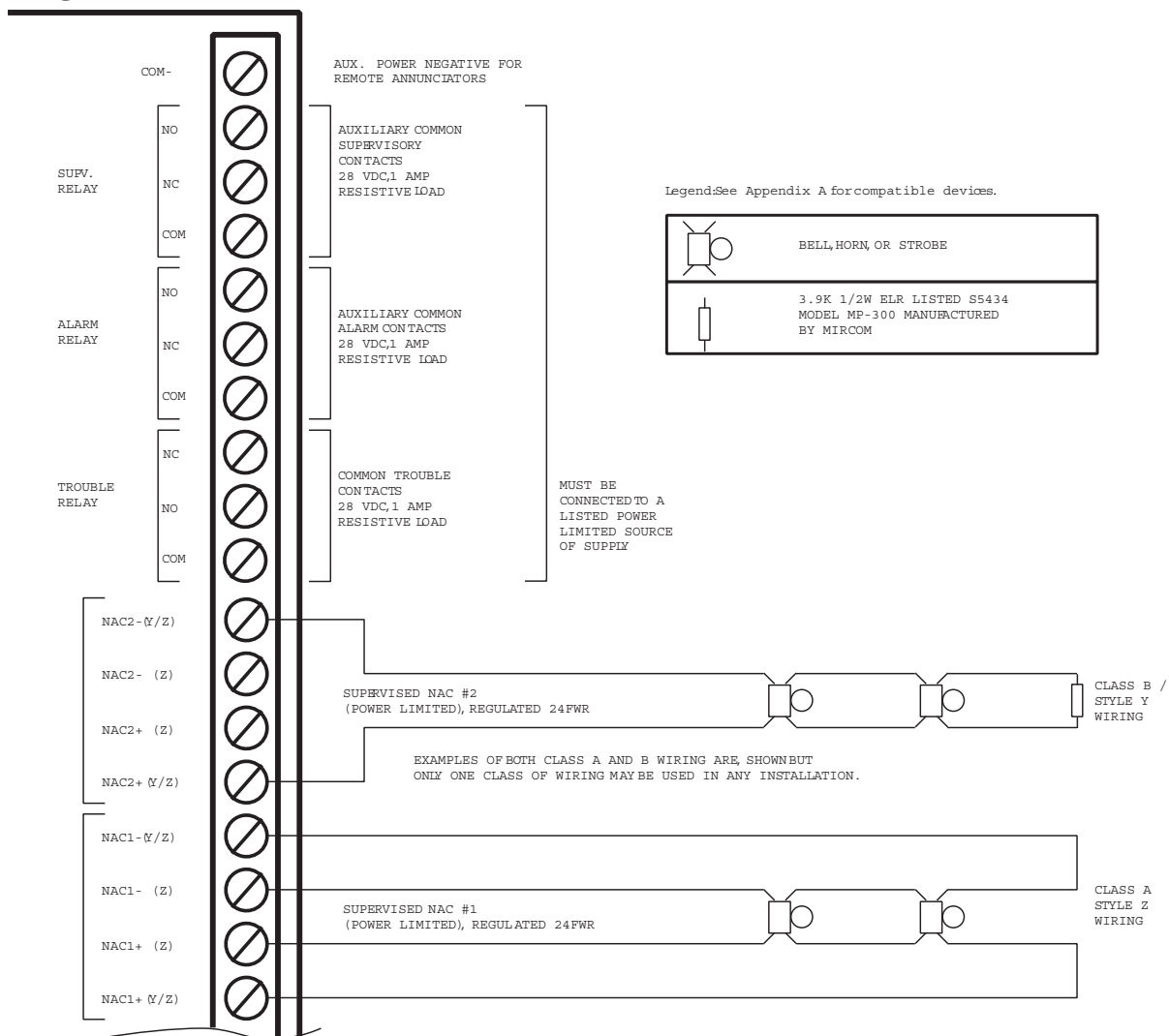
## Main Fire Alarm Module Terminal Connections

Wire devices to terminals as shown in *Figure 11* below. See *Wiring Tables* on page 20 for wiring instructions, *Appendix A* on page 33 for compatible devices, and *Appendix C* on page 37 for specifications.

**⚠ WARNING**

Do not exceed power supply ratings:  
 PFC-5002, PFC-5004, total current for NAC circuits is 2A max.  
 PFC-5004E/PFC-5008, total current for NAC circuits is 5A max.

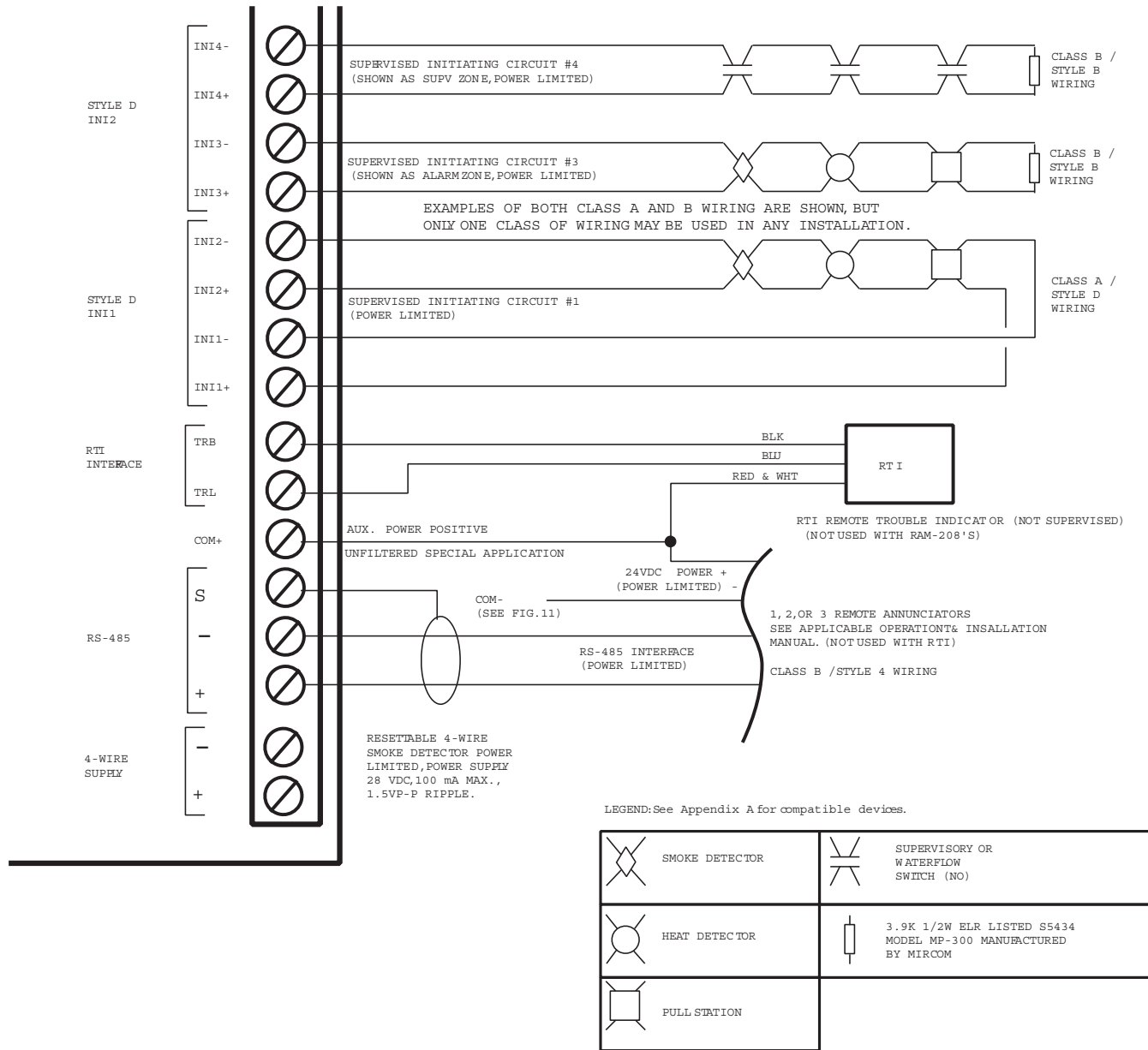
**Figure 11A: Main Fire Alarm Module Terminal Connections**



**When wiring devices, please keep in mind the following:**

- All terminals are shown from the back of the main fire alarm board assembly (pointing towards the rear of the enclosure).
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Initiating circuits are fully supervised and rated for 26 VDC, 3 ma standby, 2.2 Vp-p ripple, 50 mA max. alarm. They may be configured as required. Maximum loop resistance is 100 ohms, 50 ohms per side.
- NAC circuits are fully supervised and rated for 24 FWR 1.7 amp max. each. They must be wired as shown in the wiring tables on page 20.
- On the PFC-5004 & PFC-5004E/PFC-5008, the auxiliary common supervisory relay contacts will act as a second set of common alarm contacts if there are no initiating circuits set as supervisory.
- Initiating circuits must be all either Style B or D. If Style D is selected, cut the number of circuits in half.

**Figure 11B: Main Fire Alarm Module Terminal Connections (cont'd)**

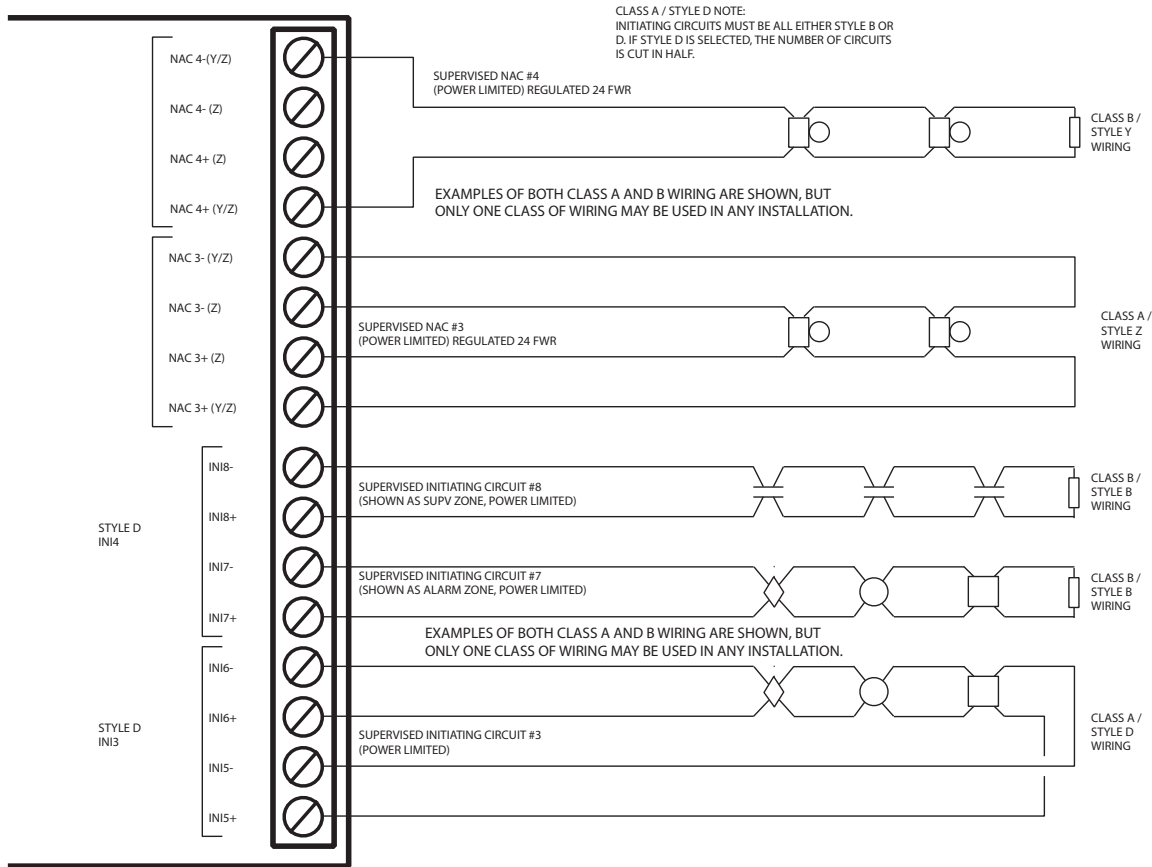


**When wiring devices, please keep in mind the following:**







- All terminals are shown from the back of the main fire alarm board assembly (pointing towards the rear of the enclosure).
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Initiating circuits are fully supervised and rated for 26 VDC, 3 ma standby, 1.5 Vp-p ripple, 50 mA max. alarm. They may be configured as required. Maximum loop resistance is 100 ohms, 50 ohms per side.
- Initiating circuits are compatibility ID “A”.

## Figure 12: Zone Adder Module (ZA-42) Terminal Connections

Wire devices to terminals as shown below in *Figure 12*. See *Wiring Tables* on page 20 for wiring instructions, *Appendix A* on page 33 for compatible devices, and *Appendix C* on page 37 for Module specifications.



LEGEND: See Appendix A for compatible devices.

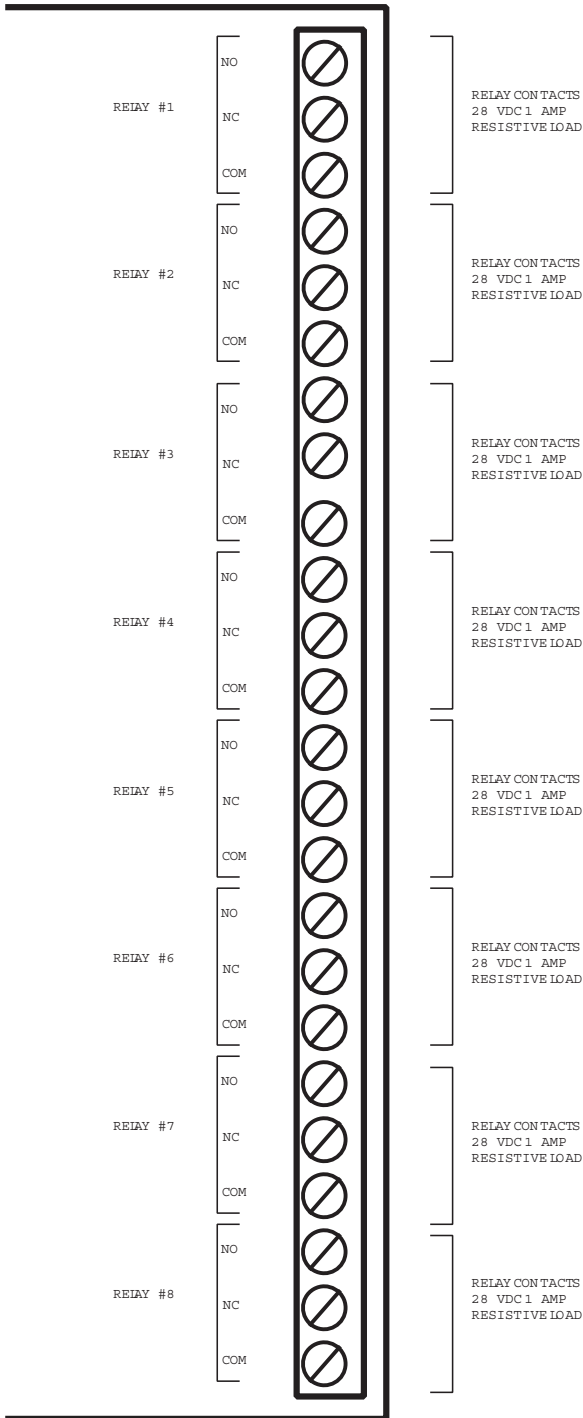
 SMOKE DETECTOR	 SUPERVISORY OR WATERFLOW SWITCH (NO)
 HEAT DETECTOR	 BELL, HORN, OR STROBE
 PULL STATION	 3.9K 1/2W ELR LISTED 55434 MODEL MP-300 MANUFACTURED BY MIRCOM

### Note:

- All terminals are shown from the back of the main fire alarm board assembly.
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Initiating circuits are fully supervised and rated for 26 VDC, 3 ma standby, 2.2 Vp-p ripple, 50 mA max. alarm. They may be configured as required. Maximum loop resistance is 100 ohms, 50 ohms per side.
- Initiating circuits are compatibility ID “A”.

### Figure 13: Relay Module (ARM-4 or ARM-8) Terminal Connections

Note that only relays #1 to #4 are present on the ARM-4.



**Note:**

- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Must be connected to a listed power limited source of supply.

## UDACT / DACT (UDACT-9100) Terminal Connections

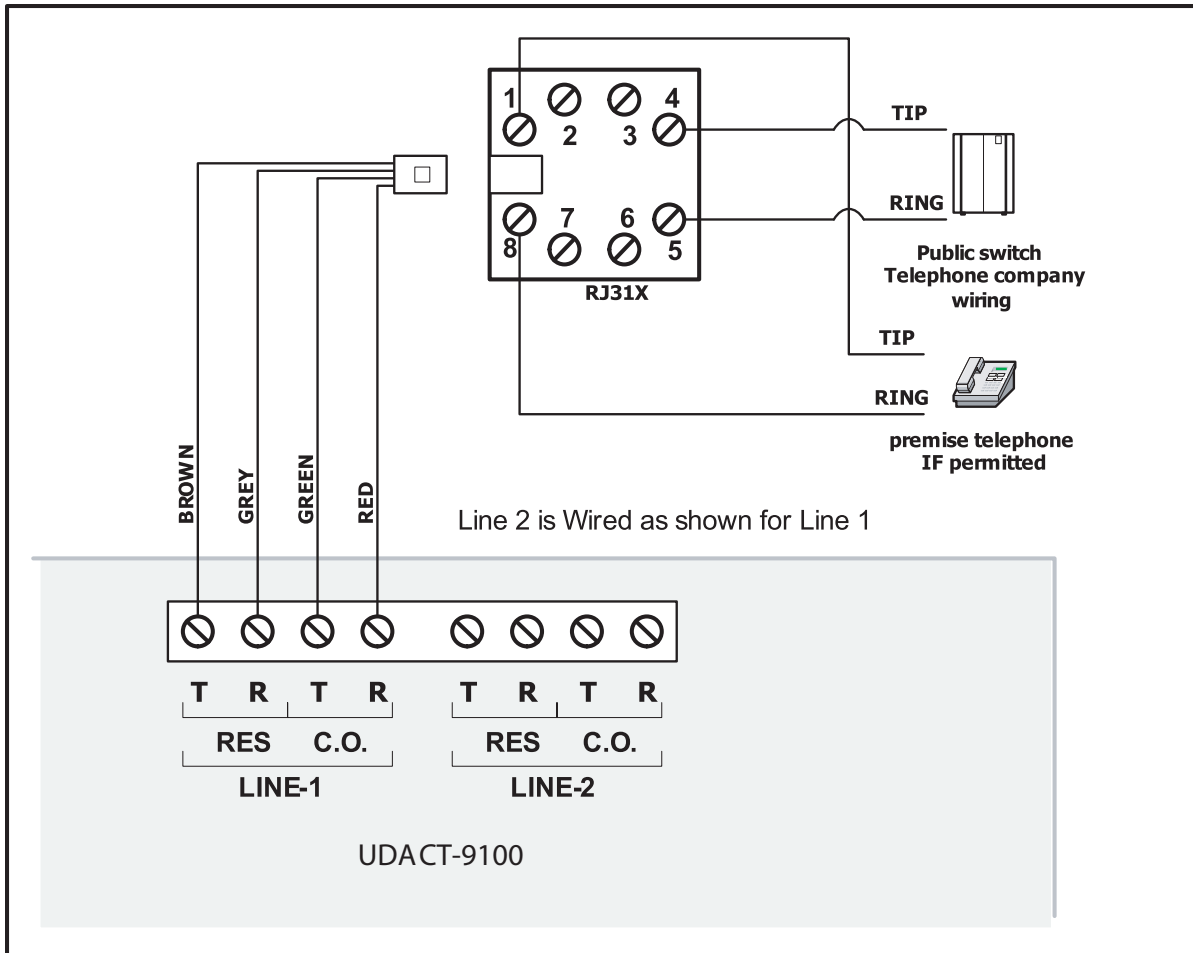
The following diagram shows the wiring connection for the UDACT-9100, refer to LT-888POT for more details.

Wire the two telephone lines to RJ31X Connector terminals as shown in Figure 14 below. The UDACT-9100 terminals are located on the top left hand corner of the board. If using a cellular or wireless service, use the Line interface connection only.

**Note:**

Most AHJs do not allow the connection of premise telephones. See *Wiring Tables* on page 20 and *Appendix C* page 37 for more information.

**Figure 14: UDACT-9100 Wiring Diagram**



## Polarity Reversal and City Tie Module (Model:PR-5100) Terminal Connections

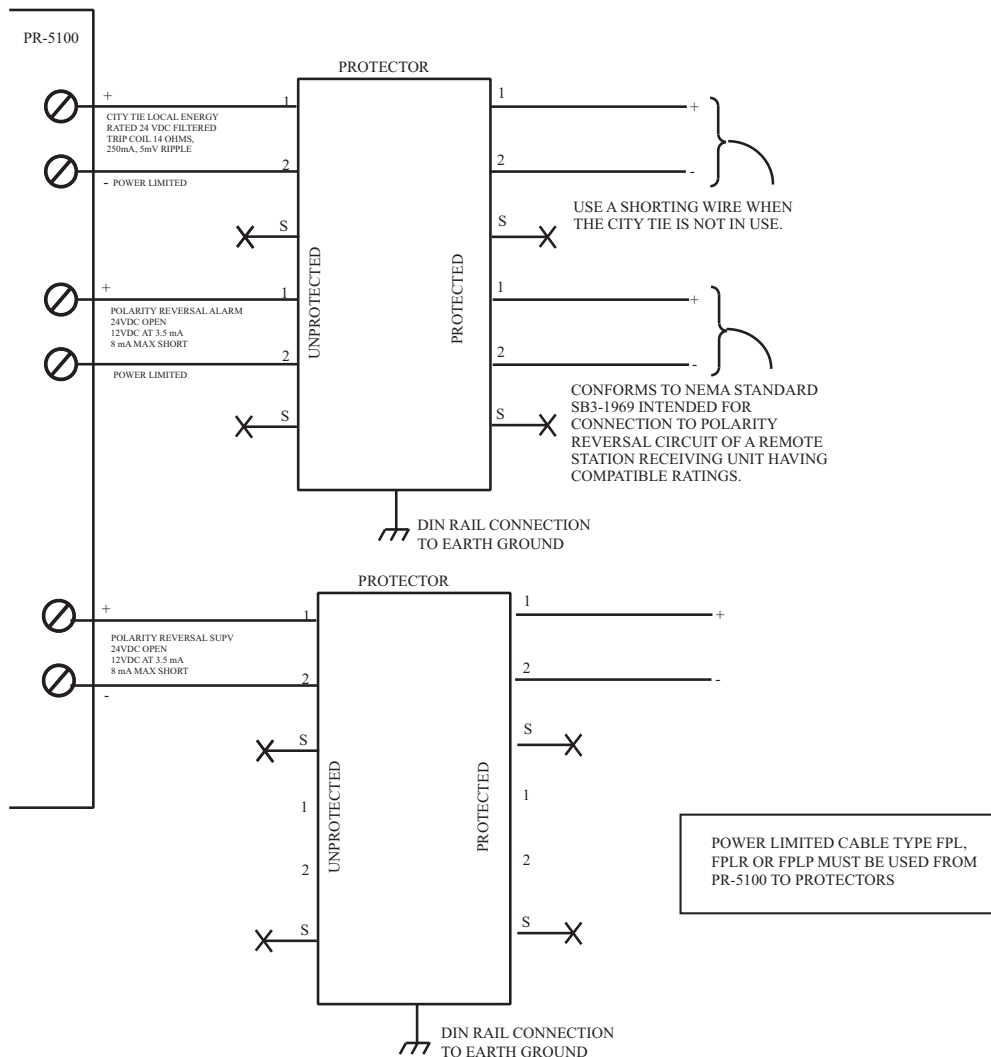
See *Appendix C* on page 37 for module specifications. Wire as shown in *Figure 15* below using proper wire gauges. Refer to LT-877POT for more details.

Note that for use in the USA, the installer *must* add an Atlantic Scientific (Tel. 407-725-8000) Model #24544 Protective Device, or similar ULI-Listed QVRG Secondary Protector, as shown. For use in Canada, the protective device is still recommended, but the PR-5100 may be connected directly to polarity reversal and city tie wiring. If UDACT-9100 and PR-5100 are used then Protector not needed. UDACT-9100 has integral protector and PR-5100 is plugged into it.

### Notes:

- The terminal blocks are “depluggable” for ease of wiring.
- The city tie interface is *not* power limited.
- Use either the PR-5100’s City Tie or Reverse Polarity Interface Module - not both.

**Figure 15: PR-5100 Polarity Reversal and City Tie Module Terminal Connections**



### When wiring devices, please keep in mind the following:

- Plug PR-5100 ribbon cable (P1) into the main fire alarm module.
- All circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
- For polarity reversal operation, short the city tie connection.

## Power Supply Connections

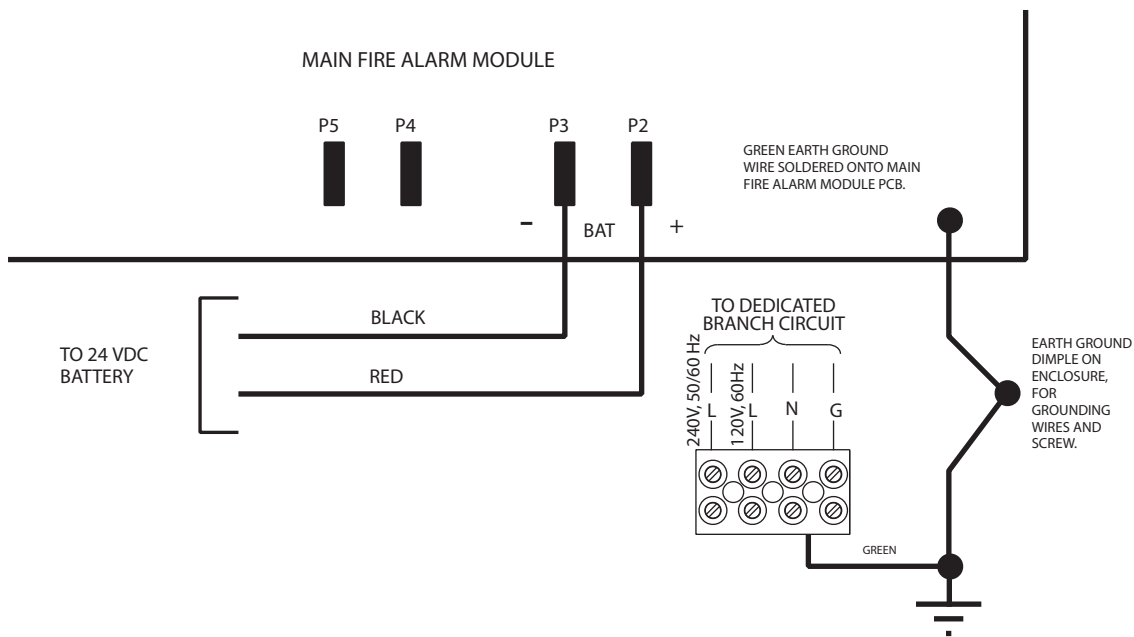
The power supply is part of the main fire alarm module and the chassis. The ratings are:

Model	Branch Circuit Ratings
PFC-5002, PFC-5004	120 V 60Hz 1A / 240V 50 Hz 0.5A
PFC-5004E, PFC-5008	120 V 60Hz 2.0A / 240V 50 Hz 1.0A

### **⚠ WARNING**

- Do not exceed power supply ratings:
- To prevent sparking, connect batteries after the systems main A.C. power is turned on.

**Figure 16: Power Supply Connections**



## Wiring Tables

**Table 1: Wiring Table for Initiating Circuits**

Wire Gauge (AWG)	Maximum Wiring Run to Last Device (ELR)	
	ft.	m
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

**Note:**

Maximum loop resistance should not exceed 100 Ohms. Wire size less than 18AWG is not recommended for initiating or notification circuits.

**Table 2: Wiring Table for NAC Circuits**

Main board and ZA-42 NAC circuits are rated for 1.7 amps each.

Total Signal Load Amperes	Maximum Wiring Run to Last Device (ELR)								Max Loop Resistance Ohms
	ft.	m	ft.	m	ft.	m	ft.	m	
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	150	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
1.7	78	24	125	38	200	61	285	87	1.0

**Note:**

Maximum voltage drop should not exceed 1.8 volts.

**RS-485 Wiring:** See the wiring information for the remote annunciator being used.

**4-Wire Smoke Wiring:** The maximum allowable current is 0.1 amperes. The maximum allowed voltage drop is 1 volt. Refer to *Table 2: Wiring for NAC Circuits* above.



# System Checkout

## Before Turning The Power On...

1. To prevent sparking, *do not connect* the batteries. Connect the batteries after powering the system from the main AC supply.
2. Check that all modules are installed in the proper location with the proper connections.
3. Check all field (external) wiring for opens, shorts, and ground.
4. Check that all interconnection cables are secure, and that all connectors are plugged-in properly.
5. Check all jumpers and switches for proper setting.
6. Check the AC power wiring for proper connection.
7. Check that the chassis is connected to Earth Ground (cold water pipe).
8. Make sure to *close the front cover plate* before powering the system from main AC supply.

## Power-up Procedure

1. After completing the System Checkout procedures, power-up the panel. The “AC-ON” green LED should illuminate, the “Common Trouble” LED should illuminate, and the buzzer should sound.
2. Press the System Reset button. Since the batteries are not connected, the “Battery Trouble” LED should illuminate, and the buzzer should sound intermittently, and the Common Trouble LED should flash.
3. Connect the batteries while observing correct polarity; the red wire is positive (+) and black wire is negative (-). All indicators should extinguish except for normal power “AC-ON” green LED.
4. Configure the fire alarm control panel as described in the *System Configuration* section on page 28.

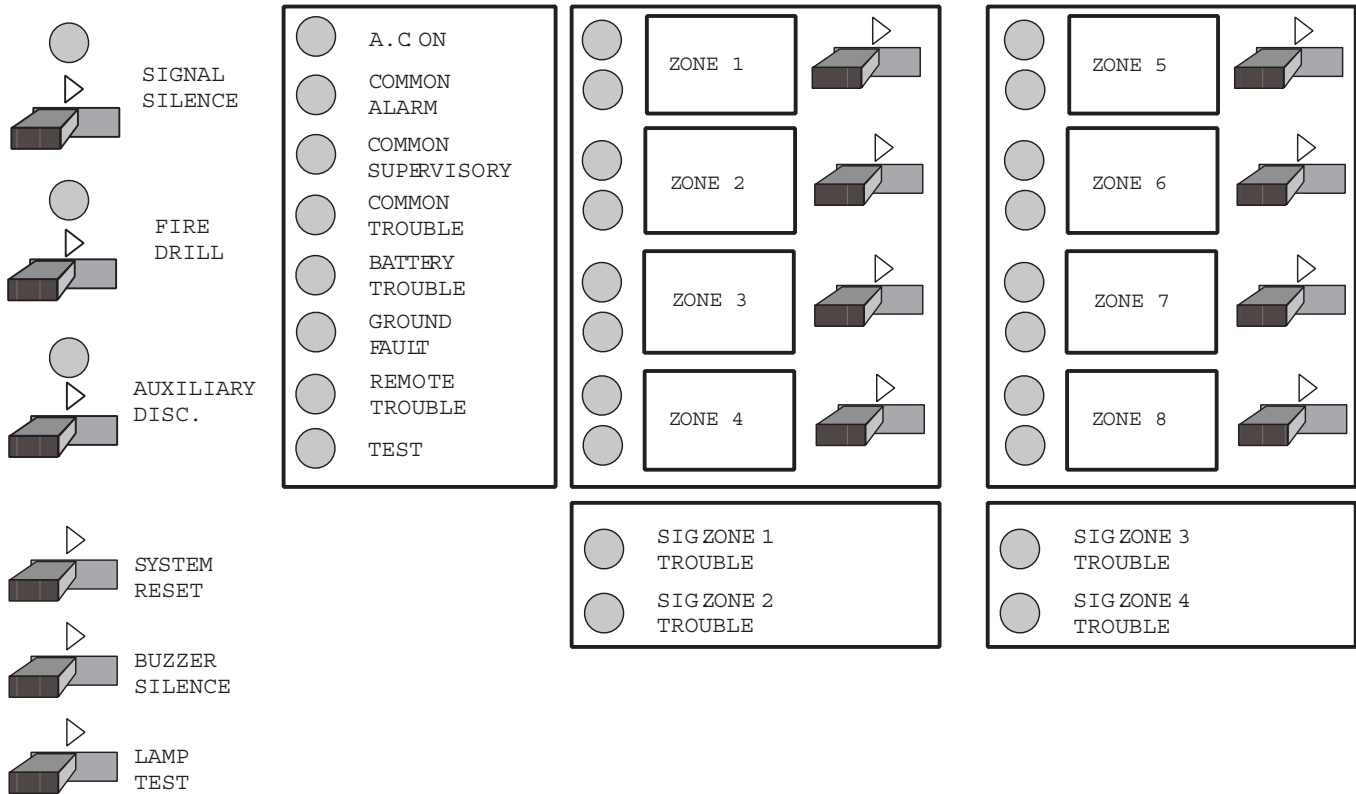
## Troubleshooting

Message	Description
Circuit Trouble	Normally when a circuit trouble occurs, its designated trouble indicator will be illuminated, as well as the Common Trouble indicator and Trouble buzzer. To correct the fault, check for open wiring on that particular circuit loop or see if the circuit disconnect switch is in the ON or CLOSED position. <i>Note: disconnecting a circuit will cause a system trouble (off-normal position).</i>
Remote Fail	The panel will display a Remote Fail for any failure reported by, or failure to communicate with a remote annunciator, UDACT-9100, or PR-5100.
Ground Fault	The PFC-5000 panel has a Common Ground Fault Detector. To correct the fault, check for any external wiring touching the chassis or other earth ground connection.
Battery Trouble	Check for the presence of batteries and their conditions. Low voltage (below 20.4V) will cause a battery trouble with steady yellow illumination of “Battery Trouble” indicator. If battery trouble condition persists, replace the batteries as soon as possible.
Charger Trouble	Internal Battery Charger fault is indicated with a slow flash of “Battery Trouble” indicator. This fault will require factory repair.
Common Trouble	Initiating Circuit, Auxiliary power, or 4-wire positive terminal shorts to negative power supply will result in a common trouble only. There are no individual indicators for these trouble types. If UDACT is used only common trouble is reported, there are no unique UDACT reporting codes.

# Indicators, Controls, & Operation

Refer to *Figure 17* below for LED Indicators and control switch locations.

**Figure 17: Indicators and Control Location**



## Indicators

### Buzzer

The buzzer is activated by any of the following:

- **Fire alarm:** steady
- **Supervisory alarm:** fast flash rate of 120 beeps per minute
- **Trouble:** slow flash rate of 20 beeps per minute

If the buzzer turns on in response to a non-latching trouble or supervisory, it will be turned off if the condition causing it goes away and there is no other reason for it to be on.

### AC On LED

The green AC On LED illuminates steadily while the main AC power is within acceptable levels. It turns off when the level falls below the power-fail threshold and the panel switches to standby (battery) power.

### Common Alarm 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. Since all alarms are latched until the panel is reset, the indicator will remain on until reset.

### **Common Supervisory LED (PFC-5004 or PFC-5004E/PFC-5008 only)**

The amber Common Supervisory LED illuminates steadily when there is a supervisory alarm in the panel resulting from any latching or non-latching supervisory circuit. The LED turns off if all non-latching supervisory circuits are restored and there are no active latching supervisory circuits. Latching supervisory alarms remain active until the panel is reset.

### **Common Trouble LED**

The Common Trouble indicator flashes amber (at 20 flashes per minute) when the panel detects any trouble condition. It turns off when all non-latching troubles are cleared.

### **Remote Trouble LED (PFC-5004 or PFC-5004E/PFC-5008 only)**

The Remote Failure indicator illuminates amber if the panel detects trouble at a city tie or DACT module, or communication or local trouble with a remote annunciator. It turns off once these conditions return to normal.

### **Fire Drill LED**

The amber Fire Drill LED illuminates steadily while fire drill is active.

### **Auxiliary Disconnect LED**

The Auxiliary Disconnect Indicator flashes amber (20 flashes per minute) when the Auxiliary Disconnect switch is activated. It turns off when the switch is activated a second time. When on, the Auxiliary Disconnect LED indicates that common alarm and common supervisory relays, and any ARM-4 / ARM-8 relays are not activated. The trouble relay is activated. If installed, DACT or polarity reversal and city tie modules are also inactive, causing a trouble condition.

### **Signal Silence LED**

The amber Signal Silence LED flashes at the trouble flash rate when indication circuits are silenced either by the Signal Silence button or by the Auto Signal Silence timer. It turns off when the signals are re-sounded by a subsequent alarm.

### **Battery Trouble LED**

The Battery Trouble LED turns on steady when the battery is either low (below 20.4 VDC) or disconnected. It flashes amber at the trouble flash rate if there is a Battery Charge trouble.

### **Ground Fault LED**

The Ground Fault LED flashes amber at the trouble flash rate when the Ground Fault Detector detects a ground fault on any field wiring. It turns off when the ground fault is cleared.

### **Test LED**

The Test LED illuminates amber when the fire alarm panel is in walk test mode.

### **Circuit Status LEDs**

These LEDs indicate the status of initiating circuits. They illuminate

- **Alarm:** Steady red
- **Alarm Verification or waterflow retard in progress:** fast flashing red (120 flashes per minute)
- **Pending Alarm:** (see *Circuit Disconnect Switches* on the following page) fast flashing red (120 flashes per minute)
- **Supervisory:** Steady amber

### **Circuit Trouble LEDs**

These LEDs indicate trouble for initiating and NAC circuits. They flash (20 flashes per minute) for any field wiring fault, or if the circuit has been disconnected.

## Controls

### System Reset Switch

The System Reset momentary switch resets the fire alarm control panel and all circuits:

- Resets all latching trouble conditions
- Resets all initiating circuits
- Resets four-wire smoke supply
- Turns off all NAC circuits
- Turns off Signal Silence
- Turns off Fire Drill
- Stops and resets all timers
- Processes inputs as new events
- Aux Disconnect is not affected

### Signal Silence Switch

Activating the Signal Silence momentary switch when the panel is in alarm turns on the signal silence indicator and deactivates any silenceable NAC circuits. Non-silenceable circuits are unaffected. Signals will re-sound upon any subsequent alarm. This switch does not function during any configured Signal Silence Inhibit timer period. It also does not function if the NAC circuits are active as the result of a fire drill.

### Fire Drill Switch

The Fire Drill momentary switch activates all non-disconnected NAC circuits, but does not transmit any alarms via the DACT, city tie, or common alarm relay, nor are any ARM-4 or ARM-8 relays activated. The fire drill is cancelled by activating the switch again, or if the panel goes into a real alarm.

### Auxiliary Disconnect Switch

Activating the Auxiliary Disconnect momentary switch activates the auxiliary disconnect function. Activating the switch again de-activates the function. When auxiliary disconnect is active, common alarm and common supervisory relays, and any ARM-4 / ARM-8 relays are not activated. The trouble relay is activated. If installed, DACT or polarity reversal and city tie modules are also inactive, causing a trouble condition.

### Lamp Test Switch

Activation of the Lamp Test momentary switch turns all front panel Indicators and the buzzer on.

### Buzzer Silence Switch

Activation of the Buzzer Silence momentary switch while the Buzzer is sounding silences the Buzzer. The Buzzer will resound if there is a subsequent event. Switch activation will also silence the buzzer on all attached annunciators.

### Circuit Disconnect Switches

Activation of these non-momentary switches disconnects the respective Initiating Circuit, and causes a Circuit Trouble for that Initiating Circuit while active. If the disconnect switch is turned off (to its normal position) while there is an Alarm condition in that circuit, the respective circuit Status LED will flash at a rate of 120 flashes per minute to indicate a Pending Alarm, for 5 seconds. If the disconnect switch is not turned back on, an Alarm will be processed normally. To enable Circuit Disconnect feature, configuration DIP switch 9 #3 must be set to "ON".

## Operation

All alarm inputs are treated in a similar manner. Alarm inputs include non-verified or verified alarms, and water-flow alarms. Activation of any alarm input when the panel is not already in alarm cause the following:

- The buzzer sounds steadily
- If fire drill is active, it is cancelled
- The Common Alarm indicator turns on
- The common alarm relay activates if aux disconnect is not active
- The Auto Signal Silence timer, if configured, starts
- The Signal Silence Inhibit timer, if configured, starts
- ARM-4 / ARM-8 relays are activated as configured, provided that aux disconnect is not active
- Signals and strobes are activated

Subsequent Alarms when the panel is already in alarm, cause the following:

- The buzzer sounds steadily
- If signals have been silenced as a result of the signal silence button or the auto signal silence timer, signals are resounded as they were before signal silence, the signal silence indicator is turned off, and the auto signal silence timer, if configured, is restarted
- Signals and strobes are activated

## Circuit Types

The term **circuits** refers to an actual electrical interface, either initiating (detection) or NAC (signal). The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit. Often the terms zone and circuit are used interchangeably, but in this manual the term circuit is used.

## Initiating (Detection) Circuit Types

Circuit Type	Description
Non-Verified Alarm	This is a “normal” type of alarm which may have pull stations, smoke detectors, or heat detectors attached. Any activation of these devices will immediately result in an alarm condition in the fire alarm control panel. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.
Verified Alarm	<p>These alarms are verified by a reset and timing procedure, and may have pull stations, smoke detectors, or heat detectors attached. Any activation of pull stations or heat detectors will result in an alarm condition in the fire alarm control panel within four seconds. Smoke detectors will be verified for a real alarm within 60 seconds depending upon the startup time of the smoke detectors being used. If four seconds is too long a response time for pull stations, then they should be wired separately on a non-verified alarm circuit. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.</p> <p>Any subsequent alarms on other circuits (whether verified or not) is deemed a “verification” on the first activation of a verified circuit and will result in immediate panel alarm, bypassing any remaining verification time.</p> <p>Any open troubles that occur on a Verified Alarm circuit after initial activation will cause that circuit to alarm immediately. This is a fail-safe operation that handles any fire induced wiring faults.</p>
Water-Flow Alarm	<p>An alarm for water-flow sensors. These alarms are identical to normal non-verified alarms except that any NAC circuits programmed to these circuits (all are by default) are non-silenceable. Also, if waterflow retard operation is enabled, then these circuits are sampled every one second; if ten samples are active within any 15 second interval, the water-flow alarm is confirmed and processed. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.</p> <p><b>Note: Do not use the retard operation with any external retarding device; maximum retard may not exceed 90 seconds.</b></p>
Non-Latching Supervisory	These alarms are for supervisory devices. An activation on these circuits will cause the Circuit Status LED and the Common Supervisory LED to illuminate amber. The buzzer will sound at fast buzzer rate. 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 circuit Status LED will extinguish.
Latching Supervisory	These alarms are for supervisory devices. An activation on these circuits will cause the Circuit 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 <i>not</i> clear. Installations according to ULC-S524 should be set for Latching Supervisory.

## NAC (Signal) Circuits Types

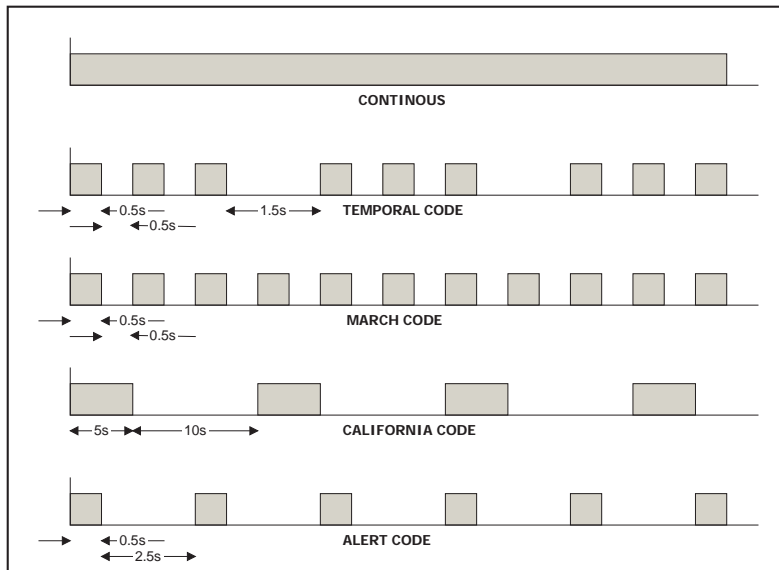
Circuit Type	Description
Silenceable Signal	For audible devices such as bells and piezo mini-horns that may be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm, or two stage general alarm, or the alert code during a two stage system's alert (first) stage.
Non-Silenceable Signal	For audible devices such as bells and piezo mini-horns that may not be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm, or two-stage general alarm, or the alert code during a two stage system's alert (first) stage.
Silenceable Visual	For visual devices such as strobes that use no code pattern (they are continuous).
Non-Silenceable Visual	Same as previous, but is non-silenceable.

## Evacuation Codes

### Single stage codes

Continuous	On 100% of the time
Temporal Code	3 of 0.5 second on, 0.5 second off then, 1.5 second pause
March Code	0.5 second on, 0.5 second off
California Code	5 seconds on, 10 seconds off

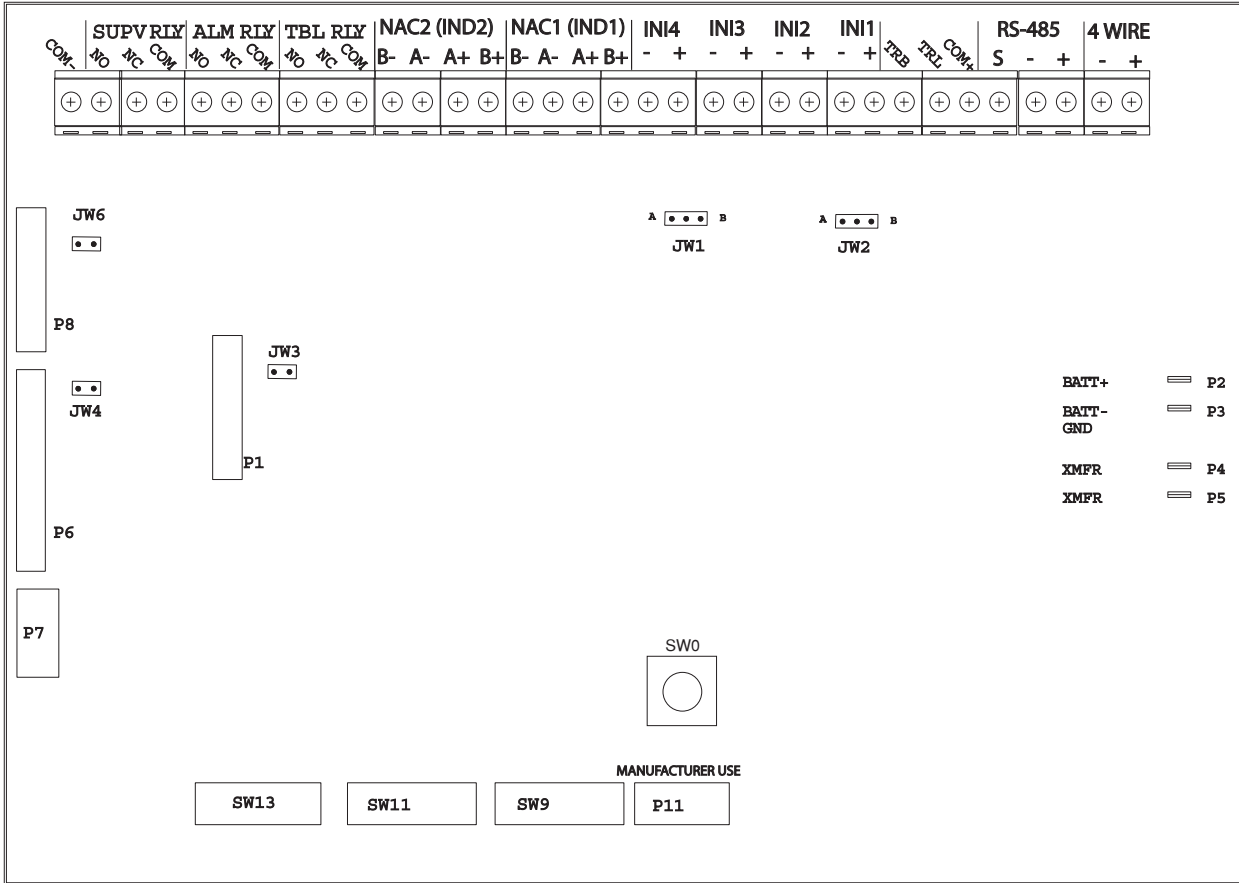
**Figure 18: Evacuation Codes**



# System Configuration

## Main Fire Alarm Board

Configuration of the PFC-5000 Series is accomplished simply by DIP Switch Settings on the Main Fire Alarm Board. For DIP Switches, 0 = switch “off”, 1 = Switch “on”). The DIP switches are located on the bottom left side of the main fire alarm board.





**Table 3: Configuration DIP Switch Functions on Main Fire Alarm Board**

Function	DIP Switch	Switch "Off"	Switch "On"
NAC Circuit #1 Audible Device (Bell) Only	Switch 13, #1	Silenceable	Non-Silenceable
NAC Circuit #2 Audible or Visual Device	Switch 13, #2	Silenceable	Non-Silenceable
	Switch 13, #3	Audible Device (Bell)	Visual Device (Strobe)
# Remote Annunciators	Switch 13, #4	5 off, 4 off = None 5 off, 4 on = One	
	Switch 13, #5	5 on, 4 off = Two 5 on, 4 on = Three	
Manual Signal Silence	Switch 13, #6	Disabled	Enabled
Fire Drill	Switch 13, #7	Disabled	Enabled
Aux. Disconnect	Switch 13, #8	Disabled	Enabled
Initiating Circuit #1 Alarm Only	Switch 11, #1	Normal Alarm	Verified Alarm
Initiating Circuit #2 Alarm Only	Switch 11, #2	Normal Alarm	Verified Alarm
Initiating Circuit #3 Alarm or Waterflow	Switch 11, #3	Normal	Verified Alarm / Retarded Waterflow
	Switch 11, #4	Alarm	Waterflow
Initiating Circuit #4 Alarm or Supervisory	Switch 11, #5	Normal	Verified Alarm (no effect on Supv.)
	Switch 11, #6	Alarm	Supervisory
	Switch 11, #7	Non-Latching Supervisory (No effect on Alarm)	Latching Supervisory (No effect on Alarm)
Application of AC Power Fail Delay	Switch 11, #8	No AC Power Fail Delay	Apply AC Power Fail Delay
Signal Code	Switch 9, #1	2 off, 1 off = Temporal Code 2 off, 1 on = Continuous	
	Switch 9, #2	2 on, 1 off = March Time 2 on, 1 on = California Code	
Zone Disc Switches	Switch 9, #3	3 off = Disabled 3 on = Enabled	
Auto Signal Silence	Switch 9, #4	4 off = Disabled 4 on = 20 Minutes	
Signal Silence Inhibit	Switch 9, #5	None	1 Minute
Initiating Circuit Style / Class	Switch 9, #6	Class B (Style B)	Class A (Style D)
Aux. Devices	Switch 9, #7	Non-Silenceable	Silenceable
AC Power Fail Delay to Aux. Devices	Switch 9, #8	24 Hour Standby Standard	60 Hour Standby Standard

**Note:**

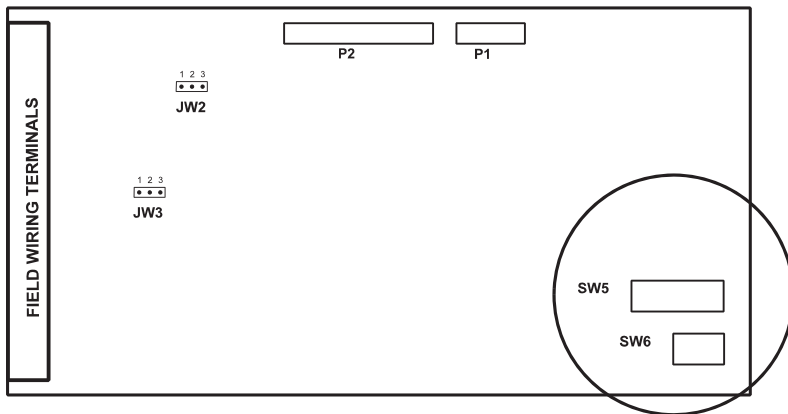
- **After you change any configuration switches, perform a system hard reset or power off/on sequence. If this is not done, then a Switch Tamper Trouble will occur. Perform a hard reset by pressing SW0 push button switch on back of main panel pcb.**
- **Do not use retard operation with any external retarding device; maximum retard may not exceed 90 seconds.**

## When configuring the PFC-5000 main board, keep in mind the following information:

- Only NAC circuit 2 may be configured for visual devices.
- If initiating circuit 3 is configured as waterflow, the corresponding verified selection becomes a retard selection.
- If initiating circuit 4 is configured as alarm, the corresponding latching selection has no effect.
- If initiating circuit 4 is configured as supervisory, the corresponding verified selection has no effect.
- The selection of Class A/B (Style Z/Y) NAC circuits is only a matter of how they are wired. See connection information on page 13.
- If Class A (Style D) initiating circuits are selected, JW1 and JW2 jumpers must also be set. Class B initiating circuits 1 and 2 combine to create Class A Circuit #1, and Class B initiating circuits 3 and 4 combine to create Class A Circuit #2. DIP switches for circuits 3 and 4 are ignored except for an PFC-5004E with a ZA-42 Adder Module. LED indicators for circuits 3 and 4 are non-functional except for an PFC-5004E with a ZA-42 Adder Module.

## ZA-42 Module

On the ZA-42 Zone Adder Module the DIP switches are located on the bottom right-hand corner.



**Table 4: Configuration DIP Switch Functions on ZA-42 Module**

Function	DIP Switch on ZA-42 Module	Switch "Off"	Switch "On"
NAC Circuit #3 Audible Device (Bell) Only	Switch 6, #1	Silenceable	Non-Silenceable
NAC Circuit #4 Audible or Visual Device	Switch 6, #2	Silenceable	Non-Silenceable
	Switch 6, #3	Audible Device (Bell)	Visual Device (Strobe)
Not Used	Switch 6, #4	-----	-----
Initiating Circuit #5 Alarm Only	Switch 5, #1	Normal Alarm	Verified Alarm
Initiating Circuit #6 Alarm Only	Switch 5, #2	Normal Alarm	Verified Alarm
Initiating Circuit #7 Alarm or Waterflow	Switch 5, #3	Normal	Verified Alarm / Retarded Waterflow
	Switch 5, #4	Alarm	Waterflow
Initiating Circuit #8 Alarm or Supervisory	Switch 5, #5	Normal	Verified Alarm (No effect on Supervisory)
	Switch 5, #6	Alarm	Supervisory
	Switch 5, #7	Non-Latching Supervisory (No effect on Alarm)	Latching Supervisory (No effect on Alarm)
Not Used	Switch 5, #8	-----	-----

**Note:**

- After you change any configuration switches, perform a system hard reset or power off/on sequence. If this is not done, then a Switch Tamper Trouble will occur. Perform a hard reset by pressing SW0 push button switch on back of main panel pcb.
- Do not use retard operation with any external retarding device; maximum retard may not exceed 90 seconds.

**When configuring the ZA-42, keep in mind the following information:**

- Only NAC Circuit #4 may be configured for visual devices.
- If Initiating Circuit #7 is configured as waterflow, the corresponding verified selection becomes a retard selection.
- If Initiating Circuit #8 is configured as alarm, the corresponding latching selection has no effect.
- If Initiating Circuit #8 is configured as supervisory, the corresponding verified selection has no effect.
- The selection of Class A/B (Style Z/Y) NAC circuits is only a matter of how they are wired. See connection information on page 15.
- If Class A (Style D) initiating circuits are selected, JW2 and JW3 jumpers must also be set. Class B initiating circuits 5 and 6 combine to create Class A Circuit #3, and Class B initiating circuits 7 and 8 combine to create Class A Circuit #4. DIP switches for circuits 5 to 8 are ignored, and led indicators for circuits 5 to 8 are non-functional.

## Walk Test Operation

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A walk test allows an installer to verify the Initiating Circuit wiring in a system. To enter walk test, press and hold both the Buzzer Silence and Lamp Test momentary switches for at least one second. You can identify circuits to be tested using the Circuit Disconnect slide switches. Configuration SW9 #3 Zone Disconnect Enable/Disable must be set to “ON” to allow Walk Test Operation. Activation of any initiating circuit that has been selected for the walk test will cause the audible NAC circuits to activate briefly for a number of short bursts corresponding to the circuit number. Any subsequent activations on the same initiating circuit will activate the audible NAC circuit only once. If another initiating circuit is activated then the audible NAC circuits will activate for a number of short bursts corresponding to the circuit number of the new zone being walk-tested, and so on.

For example, if Initiating Circuit #3 is first activated, the indication circuits will sound for three bursts. Any subsequent activations of Initiating Circuit #3 will sound for one burst. The initial burst interval denoting the count of the circuit number is one second on followed by 1/2 second off. The subsequent burst interval denoting additional activations on the same initiating circuit is 1/2 second on then off. After the sounding pattern has been sent on the NAC circuits, the initiating circuit is reset and tested again. If it is still active (in alarm) the pattern will be re-sent. Trouble on any initiating circuit when in walk test mode causes all NAC circuits to be activated continuously for five seconds.

Alarm verification and water-flow alarm retard operations are disabled on circuits being walk tested. All circuits not selected for walk-test continue to function normally. The walk test operation is disabled if the fire alarm control panel is in alarm or goes into alarm while walk-test is active. It will also time out after 60 minutes of no activity.

# Appendix A: Compatible Devices

## (ULC) Canadian: Two-wire Smoke Detector Control Panel Compatibility

**Note:**

Whether mixing different models of compatible smoke detectors or using the same model on the same circuit, the total standby current of all detectors must not exceed 3 mA.

<b>Make Model/Base</b>	<b>Make Model / Base</b>	<b>Make Model / Base</b>
<b>Potter</b>	1451-A/B406B	73405/73400
PS-24 / SB93	2451-A/B401B	73594/73401
IS-24 / SB93	2451-A/B406B	73405/73401
PS-24H / SB93	1451DH/DH400A	<b>Fenwal</b>
BPS-2	2451-A/DH400A	PSD-7131/70-201000-001
<b>Hochiki</b>	<b>Edwards</b>	PSD-7131/70-201000-002
DCD-135/NS6-220	6249C	PSD-7131/70-201000-003
DCD-135/NS4-220	6250C	PSD-7131/70-201000-005
DCD-135/HSC-220R	6264C	PSD-7130/70-201000-001
DCD-190/NS6-220	6266C	PSD-7130/70-201000-002
DCD-190/NS4-220	6269C	PSD-7130/70-201000-003
DCD-190/HSC-220R	6270C	PSD-7130/70-201000-005
SIJ-24/NS6-220	6269C-003	PSD-7128/70-201000-001
SIJ-24/NS4-220	6270C-003	PSD-7126/70-201000-002
SIJ-24/HSC-220R	<b>Cerberus Pyrotronics</b>	PSD-7126/70-201000-003
SLR-24/NS6-220	D1-2	PSD-7126/70-201000-005
SLR-24/NS4-220	D1-3/DB-3S	PSD-7129/70-201000-000
SLR-24/HSC-220R	<b>Mircom</b>	PSD-7125/70-201000-001
SLR-24H/NS6-220	MIR-525	PSD-7126/70-201000-002
SLR-24H/NS4-220	MIR-525T	PSD-7125/70-201000-003
SLR-24H/HSC-220R	<b>Mirtone</b>	PSD-7125/70-201000-005
SLR-835/NS6-220	73471	CPD-7021/70-201000-001
SLR-835/NS4-220	73494	CPD-7021/70-201000-002
SLR-835/HSC-220R	73575	CPD-7021/70-201000-003
SLR-835B-2	73495/73486	CPD-7021/70-201000-005
<b>System Sensor</b>	73495/73487	<b>Napco</b>
1400-A	73595/73486	FW-2
2400-A	73595/73497	<b>Simplex</b>
1451-A/B401B	73594/73400	2098-9110

## (UL) United States: Two-Wire Smoke Detector Control Panel Compatibility

### Note:

- 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.
- The below listed smoke detectors are compatible with initiating circuits having Compatibility Identifier “A”.

Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current	Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current
<b>Potter</b>			<b>System Sensor</b>		
PS-24	HD-3/HB-72	0.045mA	1100	A - N/A	0.12 mA
IS-24	HD-3/HB-72	0.040mA	1151/B110LP	A - A	0.12 mA
PS-24H	HD-3/HB-3	0.045mA	1151/B116LP	A - A	0.12 mA
			1400	A - N/A	0.10 mA
BPS	HD-3/HB-3	0.045mA	1451/B401	A - A	0.12 mA
<b>Hochiki</b>			1451/B401B	A - A	0.12 mA
DCD-135/NS6-220	HD-3/HB-72	0.035mA	1451/B406B	A - A	0.12 mA
DCD-135/NS4-220	HD-3/HB-3	0.035mA	1451DH/DH400	A - A	0.12 mA
DCD-135/HSC-220R	HD-3/HB-3	0.035mA	2100	A - N/A	0.12 mA
DCD-190/NS6-220	HD-3/HB-3	0.035mA	2100T	A - N/A	0.12 mA
DCD-190/NS4-220	HD-3/HB-3	0.035mA	2151/B110LP	A - A	0.12 mA
DCD-190/HSC-220R	HD-3/HB-3	0.035mA	2151/B116LP	A - A	0.12 mA
SIJ-24/NS6-220	HD-3/HB-72	0.040mA	2400	A - N/A	0.12 mA
SIJ-24/NS4-220	HD-3/HB-3	0.040mA	2400TH	A - N/A	0.12 mA
SIJ-24/HSC-220R	HD-3/HB-3	0.040mA	2400AT	A - N/A	0.12 mA
SLR-24/NS6-220	HD-3/HB-72	0.045mA	2400AIT	A - N/A	0.12 mA
SLR-24/NS4-220	HD-3/HB-3	0.045mA	2451 / B401B	A - A	0.12 mA
SLR-24/HSC-220R	HD-3/HB-3	0.045mA	2451 / B406B	A - A	0.12 mA
SLR-24H/NS6-220	HD-3/HB-3	0.045mA	2451 / DH400	A - N/A	0.12 mA
SLR-24H/NS4-220	HD-3/HB-3	0.045mA	2451TH / B406B	A - A	0.12 mA
SLR-24H/HSC-220R	HD-3/HB-72	0.045mA	2451 / B401	A - A	0.12 mA
SLR-835/NS6-220	HD-3/HB-3	0.045mA	2451TH / B401	A - A	0.12 mA
SLR-835/NS6-220	HD-3/HB-3	0.045mA	4451HT / B401B	A - A	0.12 mA
SLR-835/NS4-220	HD-3/HB-3	0.045mA	4451HT / B406B	A - A	0.12 mA
SLR-835/HSC-220R	HD-3/HB-72	0.045mA	4451HT / B401	A - A	0.12 mA
SLR-835B-2	HD-6	55ua @ 24VDC	5451 / B401B	A - A	0.12 mA
429CRT	S11A - N/A	0.10 mA	5451 / B401	A - A	0.12 mA
711U/701E, 701U, 702E, 702U	S10A - S00	0.10 mA	5451 / B406B	A - A	0.12 mA
712U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA	<b>Sentrol - ESL</b>		
713-5U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA	429C	S10A - N/A	0.10 mA
713-6U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA	429CT	S10A - N/A	0.10 mA
721U / 702E, 702U	S10A - S00	0.10 mA	429CST	S11A - N/A	0.10 mA
721UT / 702E, 702U	S10A - S00	0.10 mA	<b>Detection Systems</b>		
722U / 702E, 702U	S10A - S00	0.10 mA	DS250	B - N/A	0.10 mA
731U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA	DS250TH	B - N/A	0.10 mA
732U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA	DS282	B - N/A	0.10 mA
<b>Mircom</b>			DS282TH	B - N/A	0.10 mA
MIR-525U	FDT-1	0.10 mA	<b>Napco</b>		
MIR-525TU	FDT-1	0.10 mA	FW-2	HD-6	55ua @ 24VDC

**(UL) United States: 4-Wire Smoke Detector Control Panel Compatibility**

<b>Mircom</b>	MIR-545U	MIR-545TU		
<b>Sentrol - ESL</b>	541C	449AT, 449C, 449CT, 449CRT, 449CST, 449CSTE, 449CSRT, 449CSRH, 449CSST, 449CSSTE, 449CTE, 449CLTCSLT		
	741U WITH 702U or 702E Base			
<b>System Sensor</b>	1424	6424	6424A	A77-716B
	DH400ACDCI	DH400ACDCP	DH400ACDCIHT	

**(UL) United States: Signalling Device Control Panel Compatibility**

<b>System Sensor - SpecrAlert</b>				
P2415	P2415W	P241575	P241575W	P2475
P2475W	P24110	P24110W	S2415	S2415W
S241575	S241575W	S2475	S2475W	S24110
S24110W	H12/24	H12/24W	MDL	MDLW
<b>Wheelock</b>				
AS-2415W-24-FR	AS-241575W-FR	AS-2430W-FR	AS-2475W-FR	AS-24110W-FR
AS-2415C-FW	AS-2430C-FW	AS-2475C-FW	AS-24100C-FW	AH-24-R
AH-24-WP-R	NS-2415W-FR	NS-241575W-FR	NS-2430W-FR	NS-2475W-FR
NS-24110W-FR	NS4-2415W-FR	NS4-241575W-FR	NS4-2430W-FR	NS4-2475W-FR
NS4-24110W-FR	RS-2415W-FR	RSS-241575W-FR	RSS-2415W-FR	RSS-241575W-FR
RSS-2430W-FR	RSS-2475W-FR	RSS-24110W-FR	RSS-2415C-FW	RSS-2430C-FW
RSS-2475C-FW	RSS-24100C-FW	MT-12/24-ULC	MT-24-LS-VFR-ULC	MT-24-WS-VFR-ULC
AMT-12/24-R-ULC	AMT-24-LS-VFR-ULC	MB-G6-24-R	MB-G10-24-R	SM-12/24-R
DSM-12/24-R				
<b>Gentex</b>				
AVP-4-15-1	AVP-4-15/75	AVP-4-30/75	AVP-4-110-1	GXS-4-15-1
GXS-4-15/75-W	GXS-4-30/75-W	GXS-4-15/75-C	GXS-4-110-1	GX90S-4-15-1
GX90S-4-15/75-W	GX90S-4-30/75W	GX90S-4-15/75-C	GX90S-4-110-1	SHG24-15-1
SHG15/75-W	SHG24-30/75-W	SHG24-15/75-C	SHG24-110-1	GOT24
GOS24-15-1	GOS24-15/75	GOS24-15/75	GOS24-30/75	GOS24-110-1
GMH-24	GMS-24-15-1	GMS-24-15/75-W	GMS-24-30/75-W	GMS-24-15/75-C
GMS-24-110-1	WGMS-4/75			

## Appendix B: Remote Annunciators

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The RA8F Eight Zone Remote Annunciator mounts in an electrical box. It provides annunciation for the PFC-5004, PFC-5008, or PFC-5004E's full complement of 8 Initiating circuits.

For more detailed information see Potter Document #8900103 PFC-5004 bulletin, #8900104 PFC-5004E/PFC-5008 bulletin, #8910202 RA8F bulletin.



# Appendix C: Module Specifications And Features

## PFC-5002 Fire Alarm Control Panel

### General

Two supervised Class B (Style B) or one Class A (Style D) Initiating circuits; configurable (normal or verified, and for Class B there may be one waterflow and one supervisory). [Compatibility ID "A"]

Two Class A/B (Style Y/Z) NAC circuits; configurable as strobes or audibles.

Power limited: 24 VDC unfiltered

1.7 A per circuit (2.0 a total)

Initiating circuit disconnect switch.

Optional UDACT or city tie adder module.

Optional ARM-4 / ARM-8 Relay Module.

Resettable four-wire smoke supply.

Power Limited: 28VDC, 100mA max, 1.5Vp-p ripple

Aux power supply.

Power limited: 24VDC, 300mA max, special application for RTI or remote annunciators.

1 RTI Interface for connection to an RTI Remote Trouble Indicator.

Auxiliary relays (resistive loads):

*Common Alarm:* Form C, 1Amp, 28VDC

*Common Trouble:* Form C, 1Amp, 28VDC

DIP switch configurable.

Walktest function.

### Electrical ratings

AC Line Voltage: 120V 0.74A 60Hz / 240V 0.34A 50/60Hz

Two amps (inline fuse on transformer primary)

Power supply ratings: 2.4 amps. max. (secondary)

For NAC circuits: 24VDC unfiltered 2.0 amps. max.

Battery: 24VDC, gel-cell/sealed lead-acid

Charging capability: 4 to 24 AHr batteries (cabinet will hold up to 8AH)

Current consumption: *standby:* 110 mA / *alarm:* 220 mA

## PFC-5004 Fire Alarm Control Panel

### Same as PFC-5002, except ...

Only has four supervised Class B (Style B) or two Class A (Style D) initiating circuits; configurable (normal or verified). [Compatibility ID "A"]

Zone 3 configurable as Waterflow

Zone 4 configurable as Supervisory

## PFC-5004E/PFC-5008 Fire Alarm Control Panel

### General

Four supervised Style B (Class B) or 2 Style D (Class A) initiating circuits; configurable. [Compatibility ID "A"]  
Power limited: 26VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)

Two Class A/B (Style Y/ Z) NAC circuits; configurable as strobes or audibles.

Power limited: 24 VDC unfiltered

1.7 A per circuit (5A total)

One ZA-42 Zone Adder Module may be added.

Initiating circuit disconnect switches.

Optional DACT or city tie adder module.

Optional ARM-4 / ARM-8 Relay Module.

Resettable four-wire smoke supply.

Power limited: 28VDC, 100mA max, 1.5Vp-p ripple

Aux power supply.

Power limited: 24VDC, 300mA max, special application for RTI or Remote Annunciators

1 RS-485 connection for up to 3 RA8F Remote Annunciators.

1 RTI interface for connection to an RTI Remote Trouble Indicator.

Auxiliary relays (resistive loads):

*Common Alarm:* Form C, 1Amp, 28VDC

*Common Trouble:* Form C, 1Amp, 28VDC

*Common Supervisory:* Form C, 1Amp, 28VDC

DIP switch configurable.

Walktest function.

### Electrical ratings:

AC Line Voltage: 120V 1.65A 60Hz / 240V 0.64A 50/60Hz

Power supply ratings: 6 amps max. (secondary)

For NAC circuits: 24VDC unfiltered, 5 amps max.

Battery: 24VDC, Gel-Cell/Sealed Lead-Acid

Charging capability: 4 to 24 AH batteries (cabinet will hold up to 12AH)

Current consumption: standby: 110 mA / alarm: 220 mA

## ZA-42 Zone Adder Module

May be added to PFC-5004E.

4 supervised Class B (Style B) or 2 Class A (Style D) initiating circuits; configurable. [Compatibility ID "A"]  
Power limited: 22VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)

2 Class B or A (Style Y or Z) NAC circuits; configurable as strobes or audibles.

Power limited: 24 VDC unfiltered, 1.7A per Circuit

Current consumption:

*standby*: 45 mA

*alarm*: 120 mA

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## ARM-4/ARM-8 Relay Module

Four or eight relays: Form C, 1A (resistive), 28 VDC per contacts

Each individual relay can be relay per zone, common alarm, common supervisory

Current Consumption:*standby*: 5 mA

*alarm*: 160 mA

## Polarity Reversal and City Tie Module (PR-5100)

Supervised city tie: not power limited

24VDC unfiltered, 210 mA max., Trip coil: 14 ohms

Polarity reversal: power limited

24VDC open, 12VDC @ 3.5 mA, 8 mA max. (shorted)

Current consumption: *standby*: 35 mA

*alarm*: 300 mA

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## Miscellaneous

Remote Trouble Indicator (RTI-1)

Trouble LED and Buzzer

End-of-line resistor plates (MP-300, MP-300R).

Internal 3.9 Kohm, ½ Watt, 5% resistor.

Ground Fault Impedance = 13.5 Kohm

**System model:** PFC-5000 Fire Alarm Control Panel

**System type:** Local, auxiliary (using PR-5100), remote station protected premises (using UDACT-9100 or PR-5100), central station protected premises (using UDACT-9100).

**Type of service:** A, M, WF, SS (SS is only local or with UDACT-9100)

**Type of signalling:** Non-Coded

**Equipment standards:** UL-864 - Rev.9, ULC S-527-99

**Installation Standards:** NFPA 70 and 72, ULC-S524, CEC Part-1 C22.1

**Inspection and Testing Standard:** ULC-S536

# Appendix D: Power Supply & Battery Calculations

Use the form below to determine the required main chassis and secondary power supply (batteries).

**⚠ WARNING**

The main AC branch circuit connection for Fire Alarm Control Unit must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes. Refer to *Appendix C* on page 38 for specifications.

Power Requirements (All currents are in amperes)							
Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
PFC-5002, PFC-5004, PFC-5004E PFC-5008	Fire Alarm Control Panel		X	0.110	=	0.220	=
ZA-42	Zone Adder Module		X	0.045	=	0.120	=
ARM-4/ ARM-8	Relay Module		X	0.005	=	0.160	=
PR-5100	Polarity Reversal and City Tie Module			0.035	=	0.300	=
UDACT-9100	DACT Module			0.045	=	0.120	=
RA8F	Remote Annunciator			0.035	=	0.090	=
RTI-1	Remote Trouble Indicator			0.035	=	0.035	=
Two-Wire Smoke Detectors				*0.0001	=	* 0.090	= 0.090
Four-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)							=
Auxiliary Power Supply for Remote Annunciators						Alarm	=
Total currents (Add above currents)				STANDBY	<b>(A)</b>		<b>(B)</b>

### Total Current Requirement

ALARM **(B)** \_\_\_\_\_ Amps.

### Battery Capacity Requirement

([STANDBY **(A)** \_\_\_\_\_] X [(24 or 60 Hours) \_\_\_\_]) + ([ALARM **(B)** \_\_\_\_\_] X [\*Alarm in Hr.] \_\_\_\_\_) = **(C)** \_\_\_\_\_ AH

\* Assuming two NAC circuits in alarm.

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

\* Using the 1400-A 2-wire smoke detector. See *Appendix A* on page 33 for other available smoke detectors.

### Total Alarm Current

- Must be 2.4 amperes or less for PFC-5002, and PFC-5004. NAC Circuits not to exceed 2.0 amperes.
- Must be 6 amperes or less for PFC-5004E/ PFC-5008. NAC Circuits not to exceed 5 amperes.

### Battery Selection

- Multiply **(C)** by 1.20 to derate battery.
- The PFC-5000 Series will charge BT-40 (4 AHr), BT-80 (8 AHr), BT-120 (12 AHr), BT-180 (18 AHr) or BA-240 (24 AHr) batteries (2 required)
- The BT-180 and the BA-240 require a Listed Battery Cabinet.



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The Symbol of Protection

## WARRANTY INFORMATION

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

POTTER warrants that the equipment herein shall conform to said descriptions as to all affirmation of fact and shall be free from defects of manufacture, labeling and packaging for a period of one (1), one and one half (1.5), three (3), or five (5) year'(s), depending on the product, from the invoice date to the original purchaser, provided that representative samples are returned to POTTER for inspection. The product warranty period is stated on the exterior of the product package. Upon a determination by POTTER that a product is not as warranted, POTTER shall, at its exclusive option, replace or repair said defective product or parts thereof at its own expense except that Purchaser shall pay all shipping, insurance and similar charges incurred in connection with the replacement of the defective product or parts thereof. This Warranty is void in the case of abuse, misuse, abnormal usage, faulty installation or repair by unauthorized persons, or if for any other reason POTTER determines that said product is not operating properly as a result of causes other than defective manufacture, labeling or packaging.

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

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