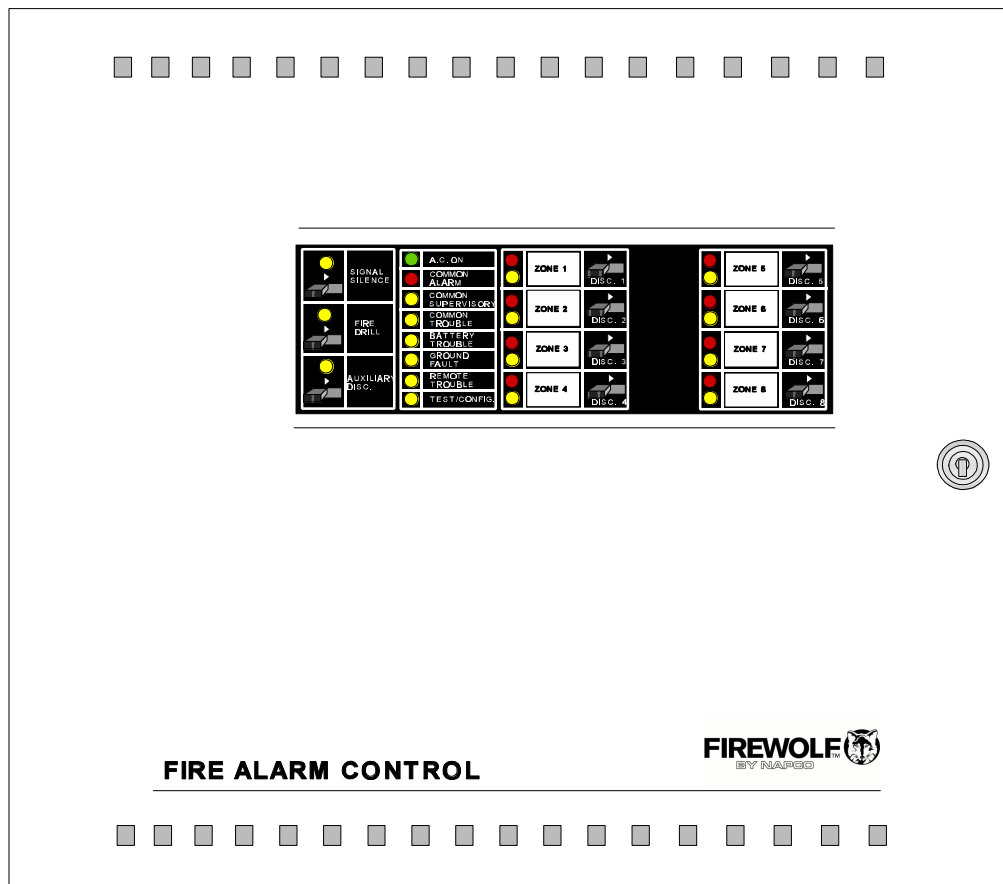




FW-C2Z, FW-C4Z and FW-C4EZ ***Microprocessor Based - Fire Alarm Control Panels***

INSTALLATION and OPERATION MANUAL



L NOTICE

All information, documentation, and specifications contained in this manual are subject to change without prior notice by the manufacturer.

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1.0 INTRODUCTION

Introduction :

NAPCO's **FW-C2Z, FW-C4Z and FW-C4EZ 24 Volt Fire Alarm Control Panels** provide 1,2, 4, or 8 supervised Class B (UL Style B) Initiating Circuits, or 1,2, 4 supervised Class A (UL Style D) Initiating Circuits, and 2 or 4 supervised Class A or B (UL Style Z or Y) Notification Circuits. All Circuits are supervised for opens and ground faults, and Notification Circuits for shorts. Optional Modules include a FW-EZM4 Zone Expansion (required for full capacity in the FW-C4EZ only), a FW-DACT Dialer or a FW-RPM Polarity Reversal & City Tie Module, and FW-RB4 or FW-RB8 Relay Modules. The two enclosures are flush or surface mountable, and can be used for retrofits and on new installations.

1.1 Overall Features:

- T The small enclosure versions, **FW-C2Z, & FW-C4Z** have 1, 2, 4 Class B (Style B) Initiating Circuits respectively. The FW-C2Z & FW-C4Z 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) Notification Circuits with individual trouble indicators.
- T The large enclosure version, **FW-C4EZ**, 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) Notification Circuits with individual trouble indicators. With a **FW-EZM4** Zone Expansion, an extra 4 Class B (2 Class A) Initiating Circuits, and 2 Class A/B Notification Circuits are added.
- T Each Initiating Circuit is configurable as a Normal or Verified Alarm. In addition, on a Class B FW-C4Z or FW-C4EZ, Initiating Circuit 3 may be a Waterflow Zone (as may Initiating Circuit 7 if a FW-EZM4 is installed), and Initiating Circuit 4 may be a Latched or Non-Latched Supervisory Zone (as may Initiating Circuit 8 if a FW-EZM4 is installed). On a Class A FW-C4EZ with a FW-EZM4, Initiating Circuit 3 may be a Waterflow Zone, and Initiating Circuit 4 may be a Latched or Non-Latched Supervisory Zone.
- T Notification 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.
- T Initiating Circuits may be individually Disconnected by a Slide-Switch.
- T Configurable Signal Silence Inhibit (disabled or 1 minute), Auto Signal Silence (disabled or 5, 10, 20 minutes), and One-Man Walk Test.
- T Subsequent Alarm, Supervisory, and Trouble operation
- T 4 wire resettable Smoke Power Supply (100 mA Max.).
- T Auxiliary relay contacts for Common Alarm and Common Supervisory (disconnectable), and a Common Trouble relay.
- T Interface for an RTI Remote Trouble Indicator.
- T RS-485 Interface for 1 to 3 of FW-RB8 Remote Multiplex Annunciators on FW-C4Z & FW-C4EZ.
- T The FW-C2Z and FW-C4Z may use one of optional FW-DACT (Dialer), FW-RPM (City Tie), FW-RB4 or FW-RB8 Relay Modules.
- T The FW-C4EZ may use one of optional FW-DACT (Dialer), FW-RPM (City Tie), and also one of FW-RB4 or FW-RB8 Relay Modules.
- T Slide Switch Controls and LED Common Indicators.
- T Easy Configuration via DIP Switches.
- T Extensive transient protection

2.0 GENERAL NOTES

Circuits and Zones:

“Circuits” refers to an actual electrical interface, **Initiating** (Detection), **Indicating** (Signal), or **Relay**.
“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:

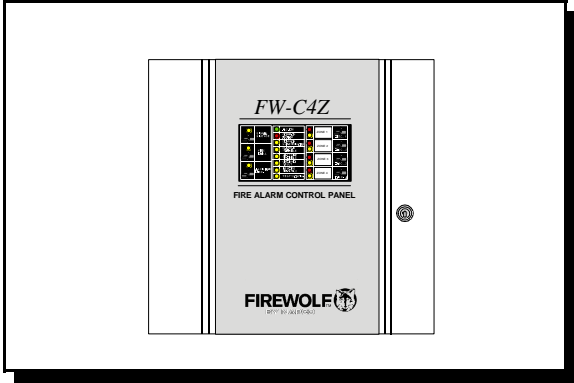
Initiating Circuits are configured by default as Class B (Style B). They may be globally (all or none) configured as Class A (Style D) as described in the Configuration Section. This operation uses odd and even pairs of two-wire Class B (Style B) circuits to make one four-wire Class A (Style D) circuit,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

Notification Circuits may be individually wired as Class A (Style Z) or Class B (Style Y) without affecting the number of circuits available (see Module wiring instructions).

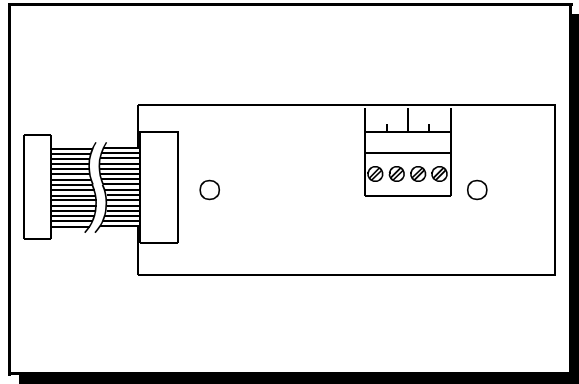
Note: All Class B (Style B) initiating circuits are 2 wire smoke detector compatible. These circuits are current limited to 100 mA max. Refer to table on page 32 for a list of compatible smoke detectors.

3.0 SYSTEM COMPONENTS

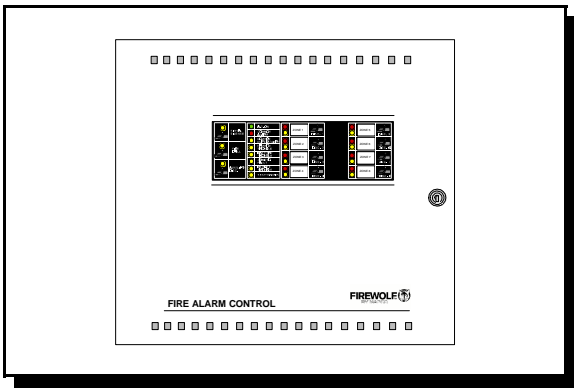
Model: **FW-C2Z,C4Z** Fire Alarm Control Panel



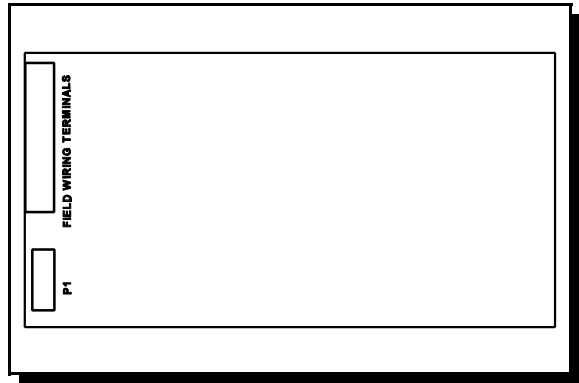
Model: **FW-RPM** City Tie Module



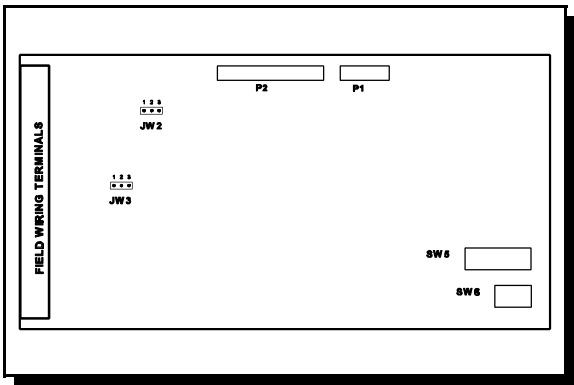
Model: **FW-C4EZ** Fire Alarm Control Panel



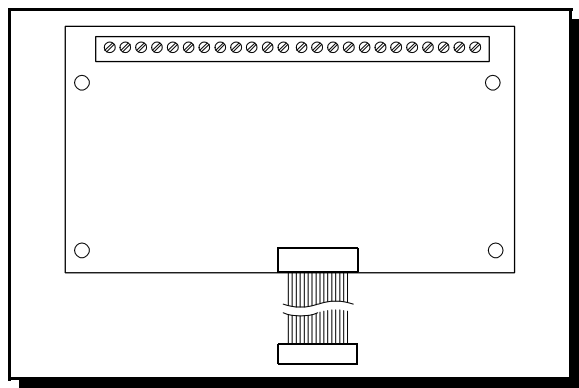
Model: **FW-DACT** Dialer Module



Model: **FW-EZM4** Zone Expansion Module



Model: **FW-RB4 & FW-RB8** 4 & 8 Relay Module



3.1 MODELS

- Model: **FW-C2Z** Small enclosure Fire Alarm Control Panel with two Class B (Style B) or one Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) Notification Circuits (1.70 amperes each, 2.4 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator. Resettable Four Wire Smoke Detector Power Supply. May have one of FW-DACT, FW-RPM, FW-RB4, or FW-RB8 installed. Can be used with 4 amp-hour or 6.5 amp-hour batteries (2 required).
- Model: **FW-C4Z** Small enclosure Fire Alarm Control Panel with four Class B (Style B) or two Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) Notification Circuits (1.70 amperes each, 2.4 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator and/or 1 to 3 of FW-RB8 Remote Multiplex Annunciators. Resettable Four Wire Smoke Detector Power Supply. May have one of FW-DACT, FW-RPM, FW-RB4, or FW-RB8 installed. Can be used with 4 amp-hour or 6.5 amp-hour batteries (2 required).
- Model: **FW-C4EZ** Large enclosure Fire Alarm Control Panel with four Class B (Style B) or two Class A (Style D) Initiating Circuits, and 2 Power Limited Class A/B (Style Z/Y) Notification 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 FW-RB8 Remote Multiplex Annunciators. Resettable Four Wire Smoke Detector Power Supply. May have one of FW-DACT or FW-RPM, and one FW-EZM4 installed. May also have one of FW-RB4 or FW-RB8 installed. Can be used with 4 amp-hour, 6.5 amp-hour, or 10 amp-hour batteries (2 required).
- Model: **FW-EZM4** Zone Expansion Module for the FW-C4EZ. Brings the total capacity to eight Class B (Style B) or four Class A (Style D) Initiating Circuits, and 4 Power Limited Class A/B (Style Z/Y) Notification Circuits (up to 1.7 amperes each, 5 amperes total).
- Model: **FW-RB8** Relay Module for the FW-C4Z or FW-C4EZ. Adds eight configurable Form-C Relays rated 1A, 28 VDC.
- Model: **FW-RB4** Relay Module for the FW-C4Z or FW-C4EZ. Adds four configurable Form-C Relays rated 1A, 28 VDC.
- Model: **FW-DACT** Digital Communicator / Dialer Module.
- Model: **FW-RPM** City Tie / Reverse Polarity Module.
- Model: **CH-429** Accessory Mounting Plate for the FW-C2Z, or FW-C4Z if one of FW-RB4, FW-RB8, FW-RPM, or FW-DACT Modules are to be used.

3.2 ACCESSORIES

- Model: **FW-RA-LED** 8 Zone Remote Annunciator (ULC and UL Approved)
- Model: **FW-RTI** Remote Trouble Indicator (ULC and UL Approved)

4.0 MECHANICAL INSTALLATION and DIMENSIONS

Install the enclosure as shown below for the **FW-C2Z** or **FW-C4Z** ...

Fig.1: FW-C2Z or FW-C4Z Enclosure Installation and Dimensions

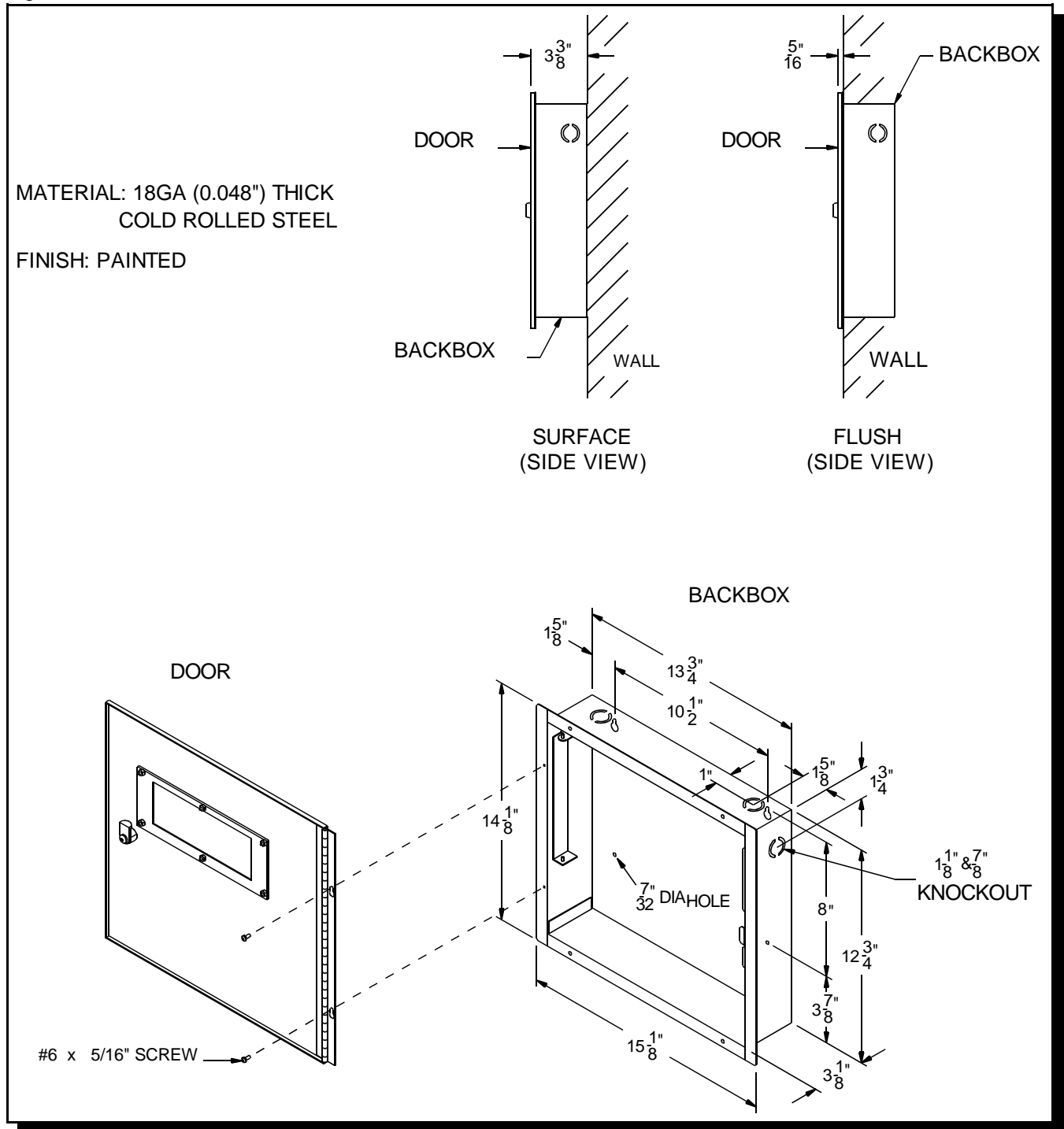
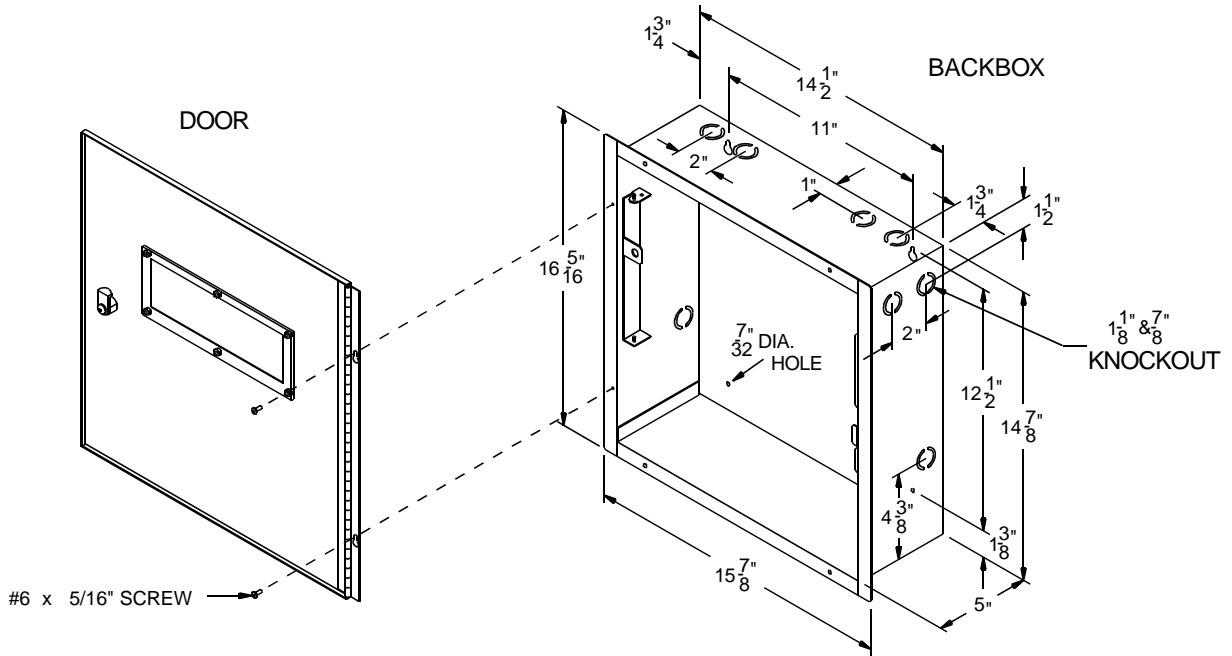
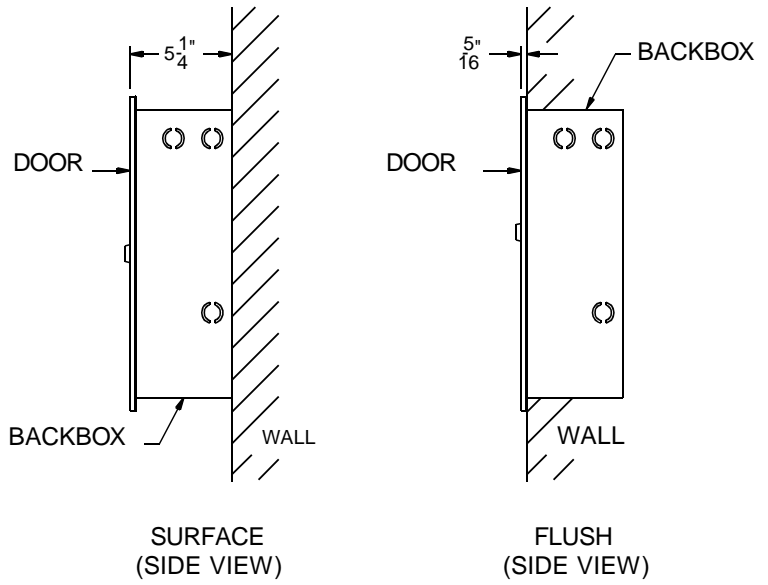


Fig.2: FW-C4EZ Enclosure Installation and Dimensions

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



5.0 MODULE MOUNTING LOCATIONS

The FW-C2Z, FW-C4Z and FW-C4EZ fire alarms 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 / to a 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.

Note that a **CH-429 Accessory Mounting Plate** is required for the FW-C2Z, or FW-C4Z if any Adder Module is to be used. Note that only one of FW-RB4, FW-RB8, FW-RPM, or FW-DACT Modules may be used. The CH-429 is installed so that the one Module being used is towards the bottom of the enclosure.

Fig.3: FW-C2Z, FW-C4Z Module Mounting Locations

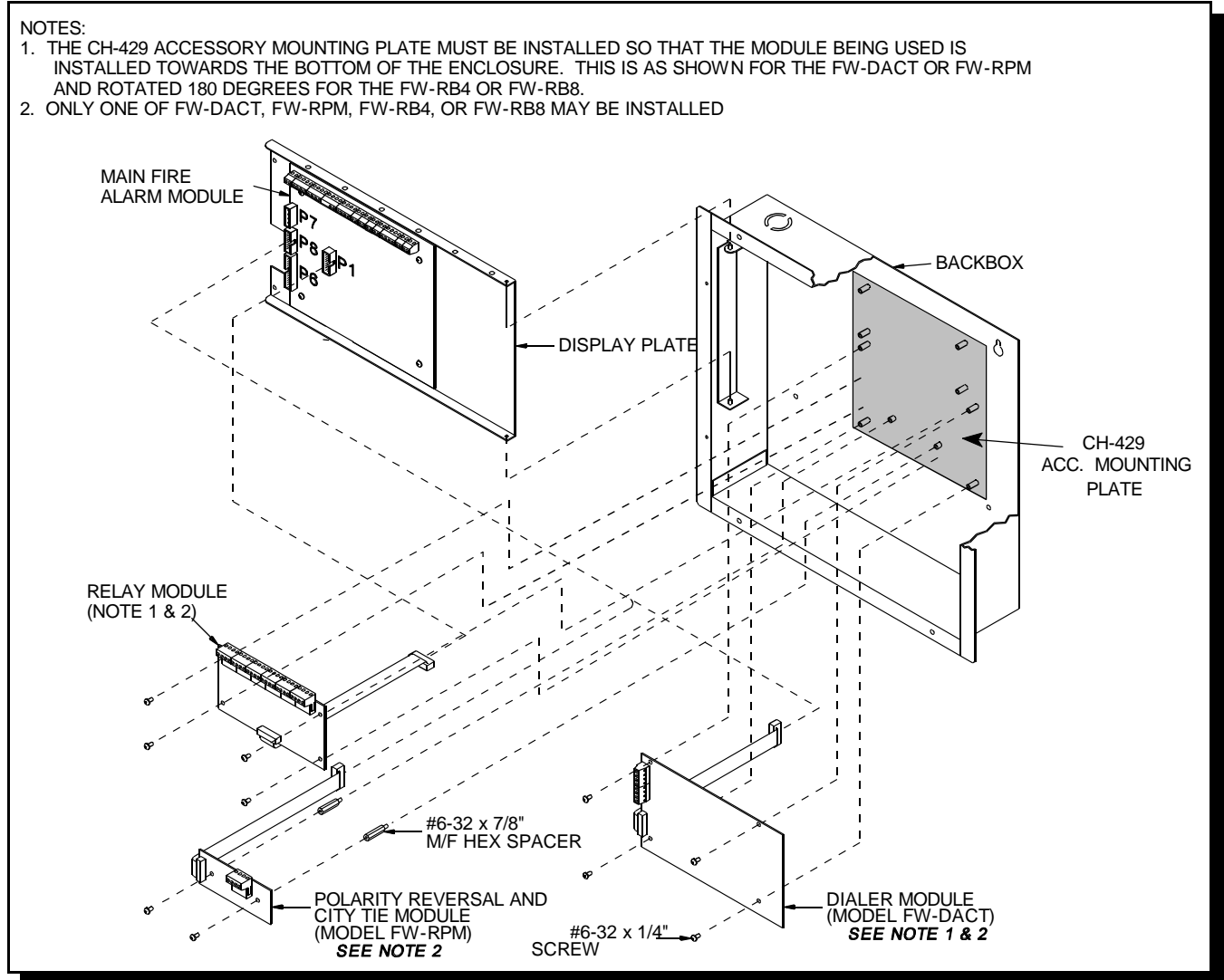
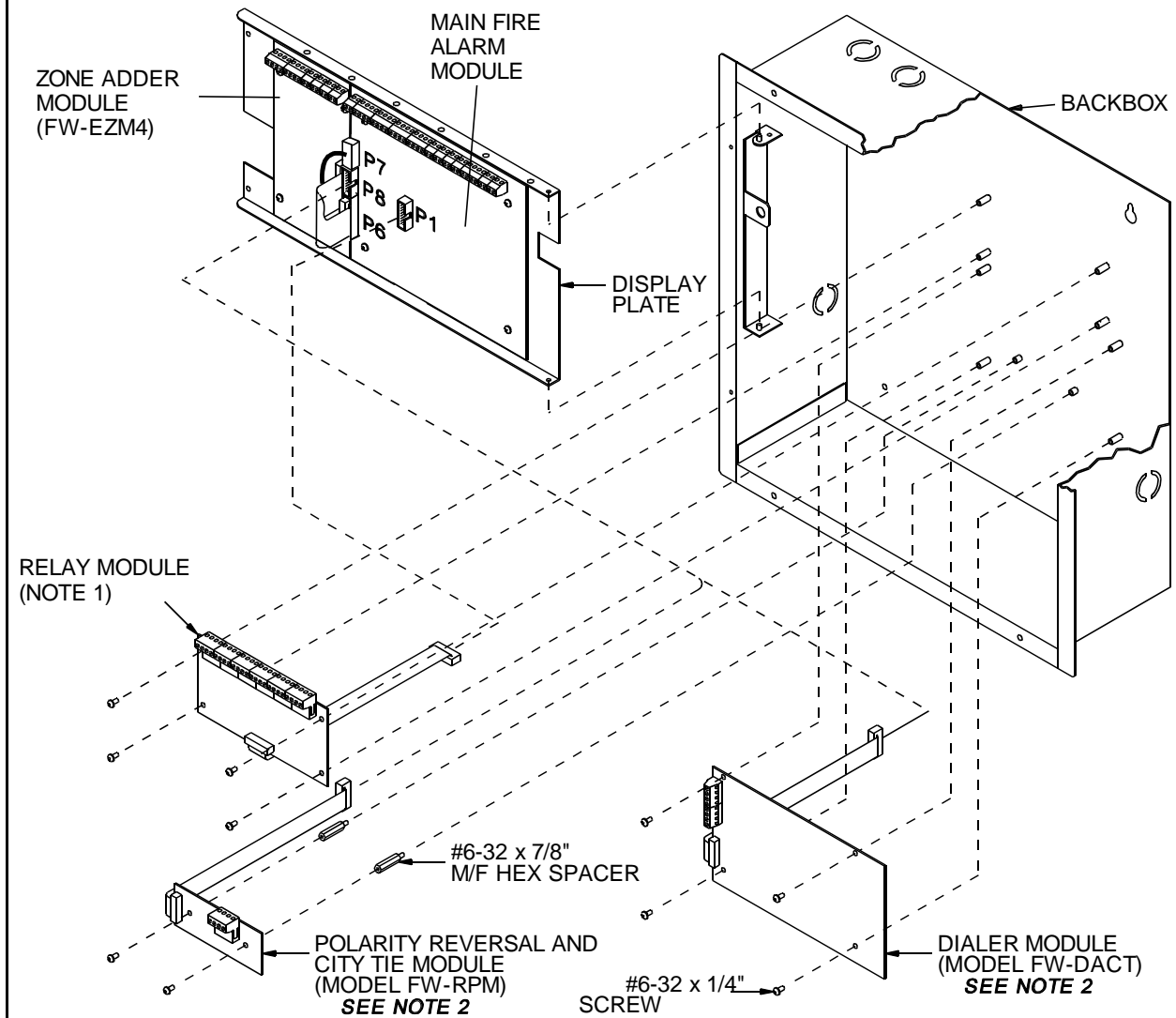


Fig.4: FW-C4EZ Module Mounting Locations

NOTES:

1. RELAY MODULE MAY BE FW-RB4 OR FW-4B8
2. ONLY ONE OF FW-DACT OR FW-RPM MAY BE INSTALLED

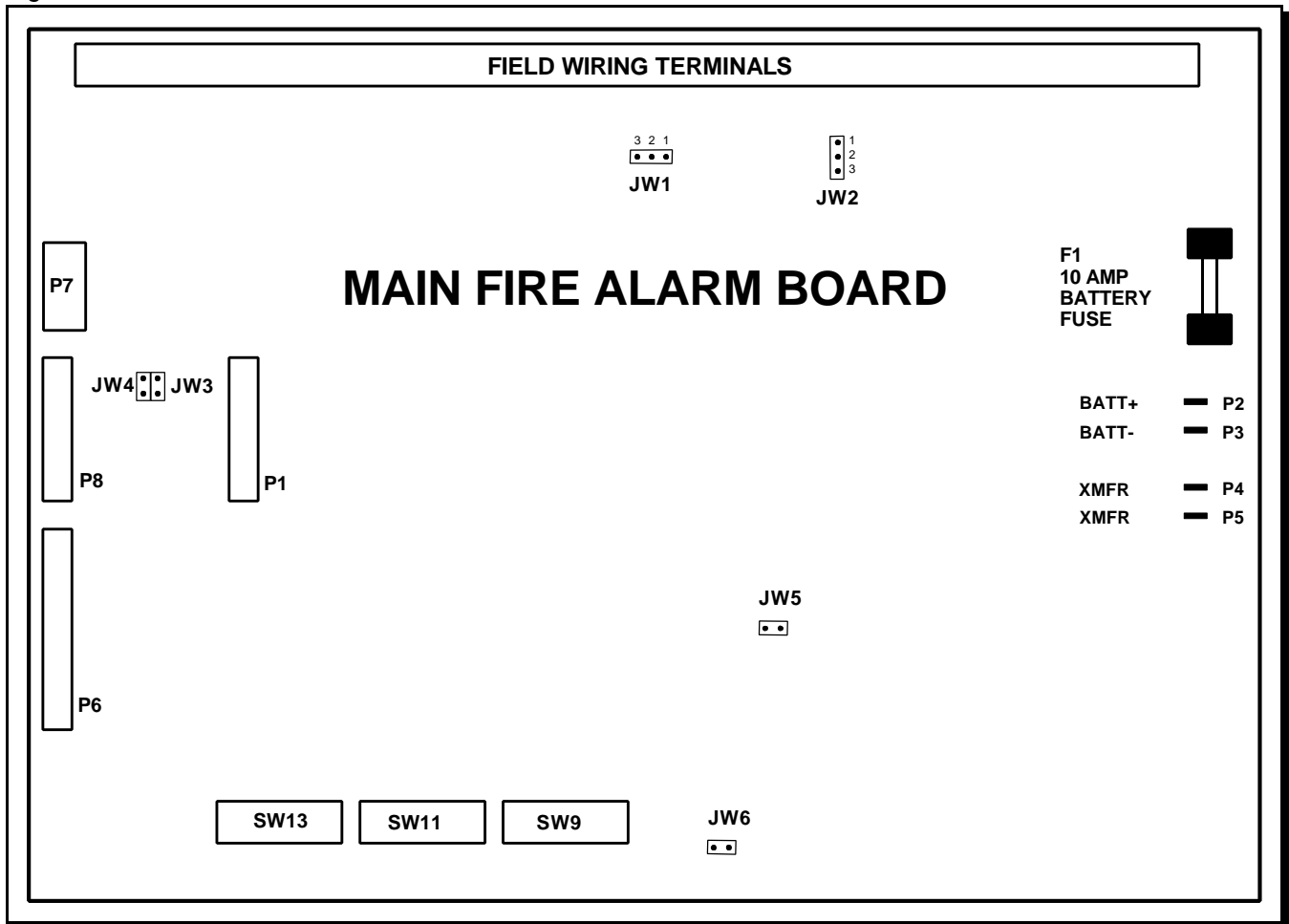


6.0 MODULE SETTINGS

6.1 MAIN FIRE ALARM MODULE

- Class A / B Selection:** On the FW-C2Z, FW-C4Z and FW-C4EZ only, **JW1 & JW2** 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**. JW2 is present on the FW-C2Z. *Note that the Class A/B selection affects all Initiating Circuits, and must be used with the correct Configuration DIP Switch Setting.*
- Zone Adder Module:** On an FW-C4EZ only, remove the jumper on **JW4** if a **FW-EZM4 Zone Expansion** is installed. The Zone Adder Module is plugged into **P6 & P7**.
- Relay Module:** Remove the jumper on **JW3** if an **FW-RB4 or FW-RB8 Relay Module** is installed. The Relay Module is plugged into **P1**.
- Digital Communicator:** Remove the jumper on **JW6** if a **FW-DACT Digital Communicator** is installed. The Digital Communicator is plugged into **P8**.
- City Tie:** Remove the jumper on **JW6** if a **FW-RPM City Tie** is installed. The City Tie is plugged into **P8**.
- Battery:** Connected to **P2(+ve) & P3(-ve)** via the factory installed cables.
- Transformer:** Factory wired to **P4 & P5**, do not disconnect.
- JW5** There should be no jumper here; do not use.
- SW9,11,13** Configuration DIP Switches.
- Battery Fuse F1:** Replace with 10 Amp, 1-1/4" Fast Acting Fuse

Fig.5: Main Fire Alarm Module



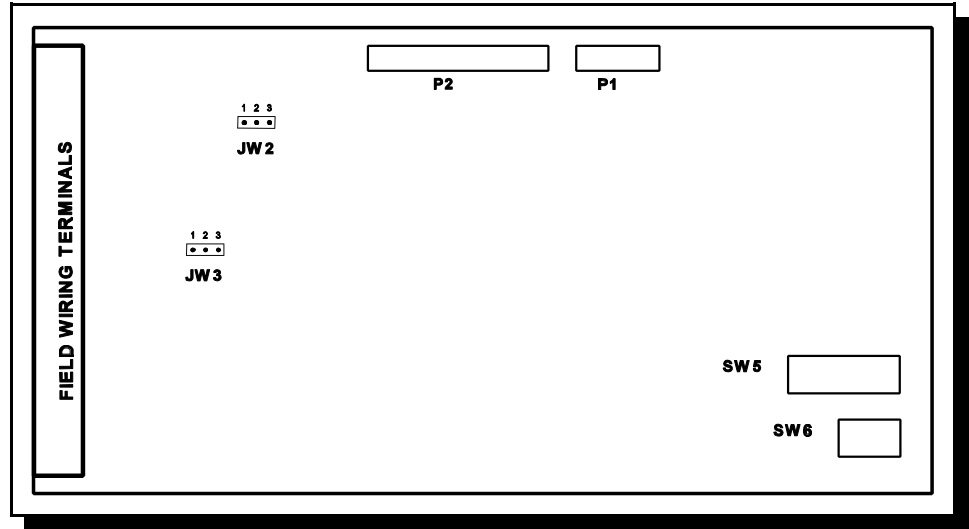
6.2 ZONE EXPANSION MODULE (Model FW-EZM4)

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 that the Class A/B selection affects all Initiating Circuits, and must be used with the correct Configuration DIP Switch Setting.**

P1 & P2: Connections to P7 & P6 respectively on the Main Fire Alarm Board.

SW5,6 Config DIP Switches.

Fig.6: FW-EZM4 Zone Expansion Module



6.3 RELAY MODULES (Models FW-RB4 or FW-RB8)

P1 Connect to P1 on the Main Fire Alarm Board.

By the factory setting, the 4 or 8 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.

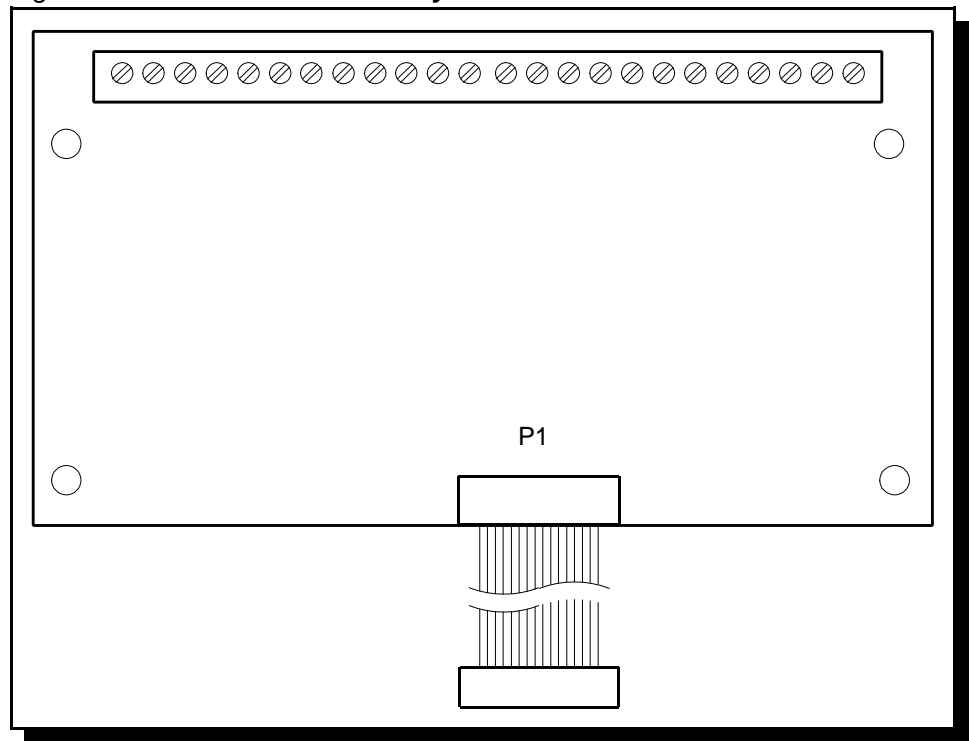
Alternately, each relay may be set as a Common Alarm or Common Supervisory Relay by removing the jumper from JW1 to JW1A, etc. These jumpers have two positions to select Alarm or Supervisory each.

JW1A Alarm or Supv. control for Relay #1.

JW2A Alarm or Supv. control for Relay #2.

JW8A Alarm or Supv. control for Relay #8.

Fig.7: FW-RB4 or FW-RB8 Relay Module



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.

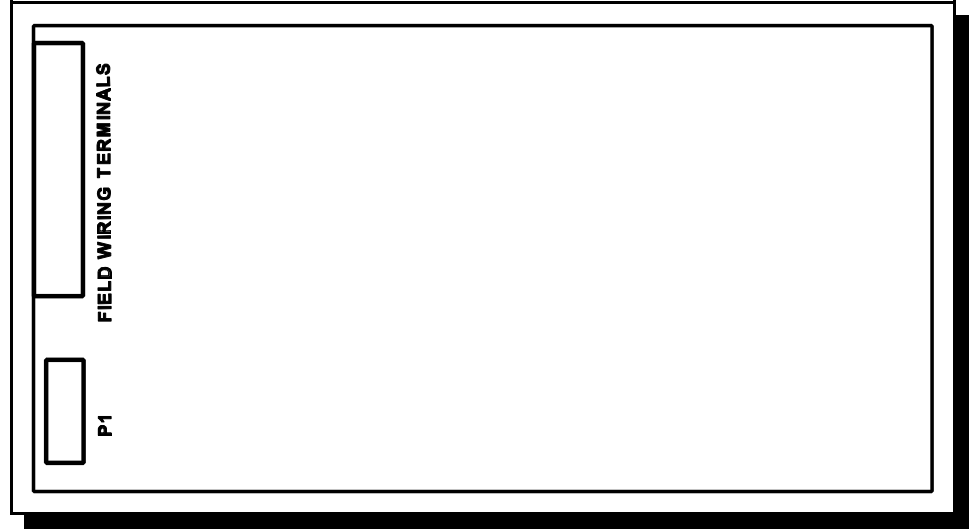
6.4 DACT / Dialer MODULE (Model FW-DACT)

Fig.8: FW-DACT Dialer Module

P1 Cable to P8 on the Main Fire Alarm Board.

Jumper **JW6** on the Main Fire Alarm Module must be removed if a **FW-DACT** is installed. Note that this module cannot be installed if a **City Tie Module** is used.

Please see LT-639NAP, the FW-DACT Manual for more information.



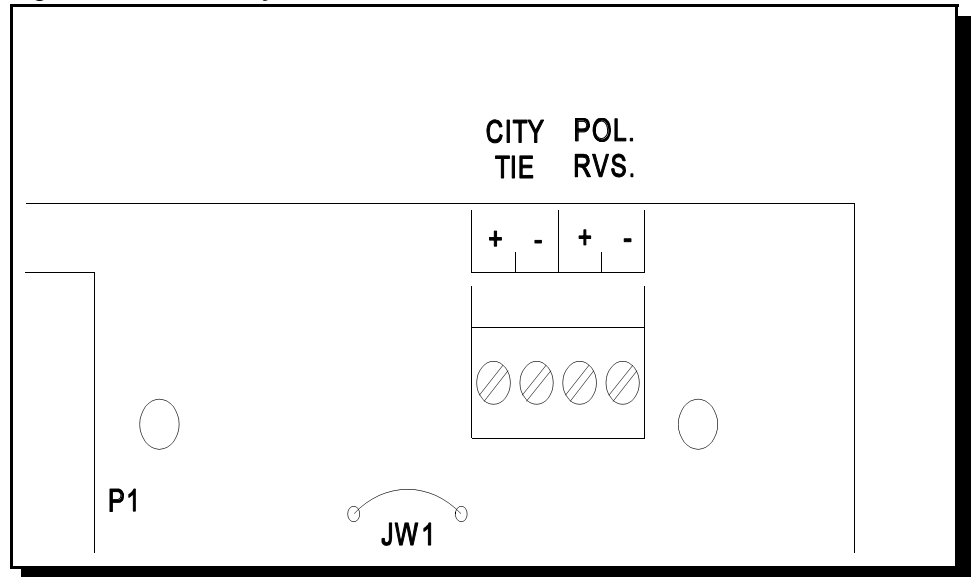
6.5 POLARITY REVERSAL and CITY TIE MODULE (MODEL: FW-RPM)

Fig.9: FW-RPM City Tie Module

P1 Cable to P8 on the Main Fire Alarm Module.

JW1 Cut this jumper for Trouble transmission. When this jumper is cut and a system trouble occur, the designated terminals will transmit a "zero volts" or "open" circuit. Please note that at normal condition, the terminals polarity is read exactly as labelled on the circuit board.

Jumper **JW6** on the Main Fire Alarm Module must be removed if a **City Tie Module** is installed. Note that this module cannot be installed if a **FW-DACT / Dialer Module** is used.

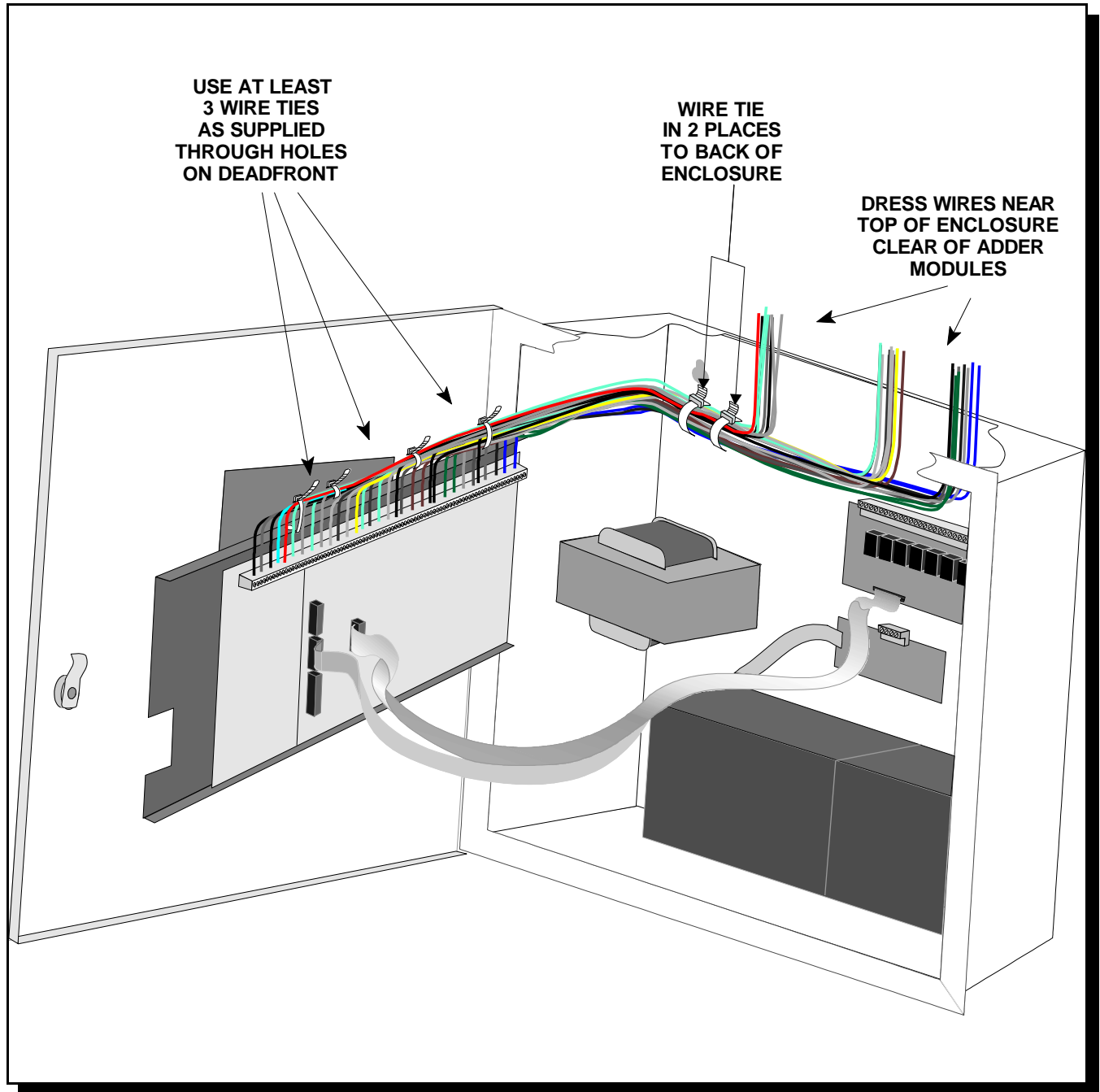


7.0 FIELD WIRING

7.1 GENERAL FIELD WIRING CONSIDERATIONS

Because most of the Field Wiring is to the Main Board on the swinging DeadFront, it is very important to properly dress the wires so as not to place stress on either their connection to the boards, or running to conduit. The Figure below shows the required wiring techniques.

Fig.10: General Field Wiring Considerations



7.2 MAIN FIRE ALARM MODULE TERMINAL CONNECTIONS

Wire devices to terminals as shown. See wiring tables and **Appendix A** for compatible devices and **Appendix C** for specifications.

Caution: Do not exceed power supply ratings: **FW-C2Z, FW-C4Z**, total current for Notification Circuits is 2.4 A max.
FW-C4EZ, total current for Notification Circuits is 5 A max.

Fig.11: Main Fire Alarm Module Terminal Connections

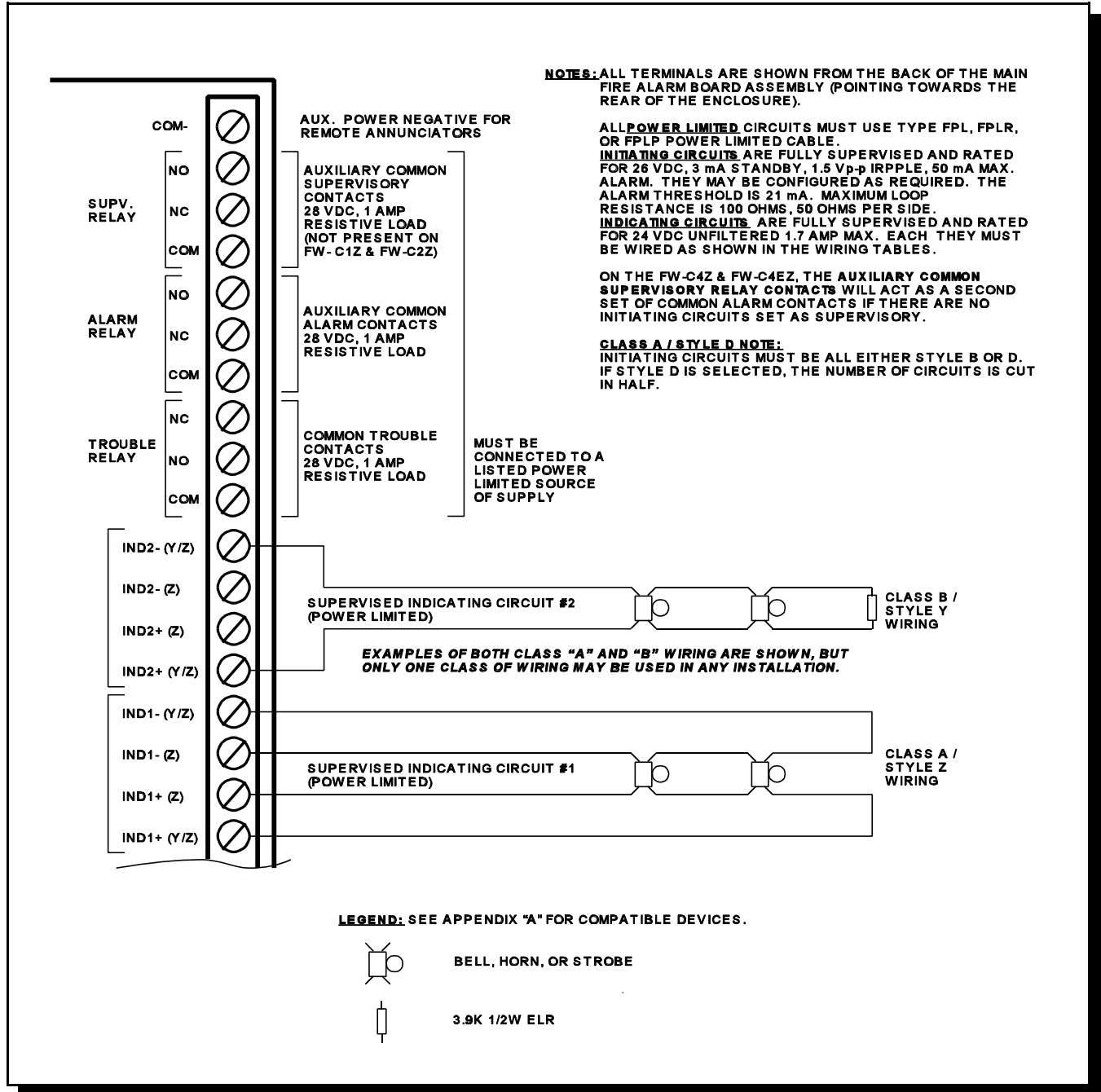
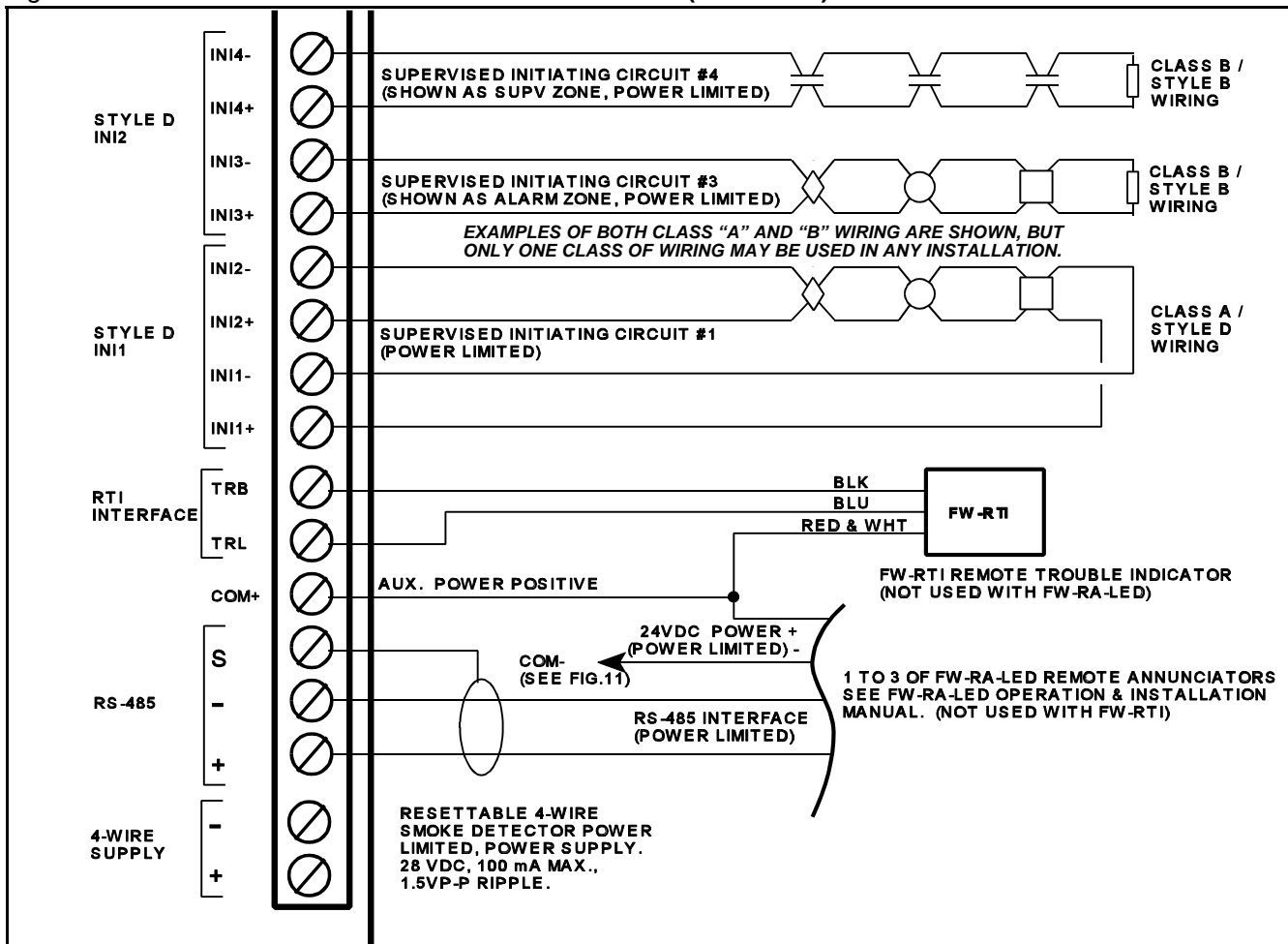
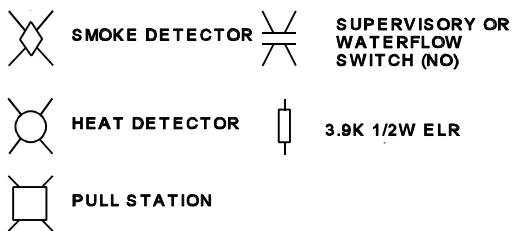


Fig.11a.Main Fire Alarm Module Terminal Connections (continued)



LEGEND: SEE APPENDIX "A" FOR COMPATIBLE DEVICES.



NOTES: 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.

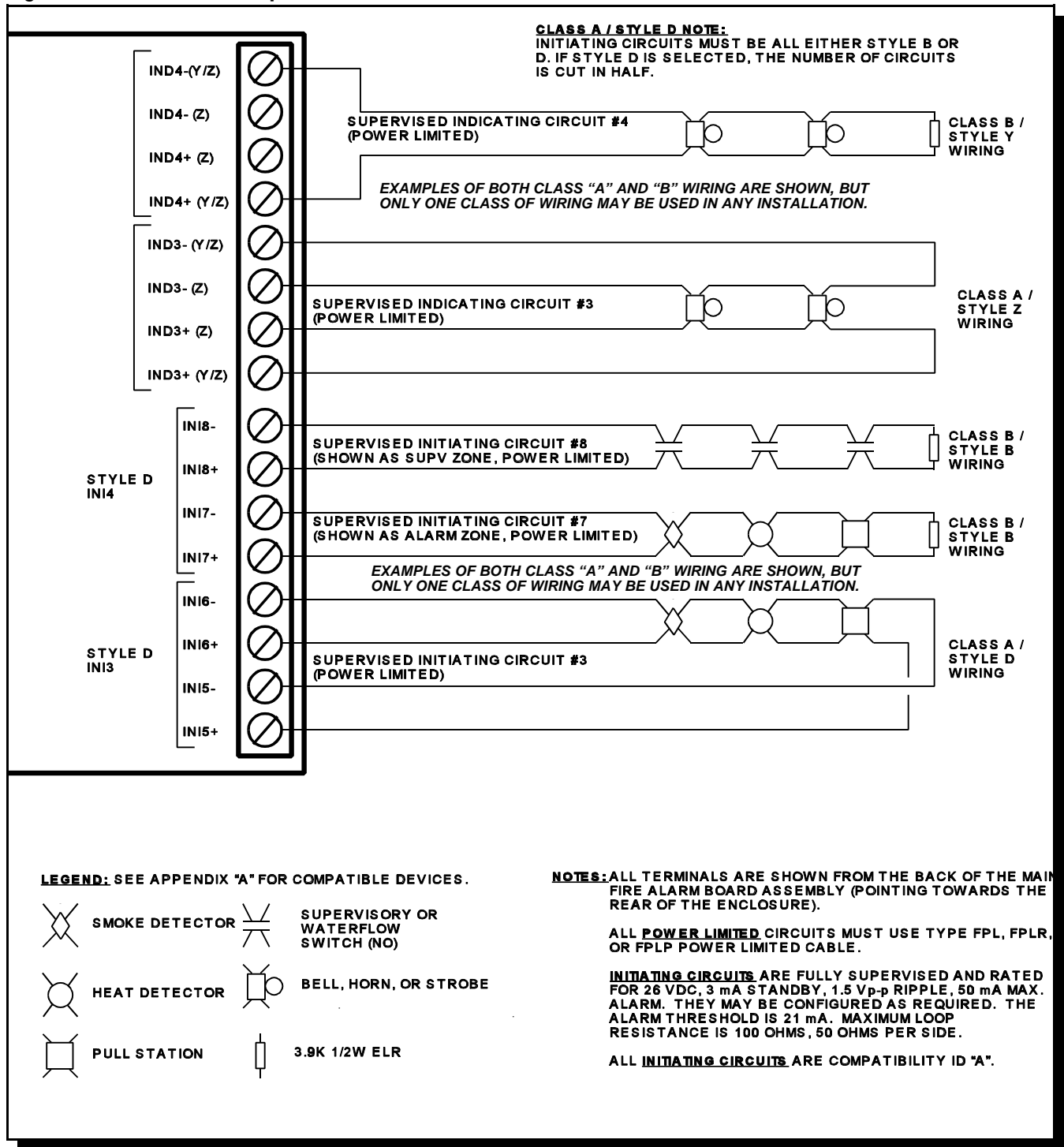
INITIATING CIRCUITS ARE FULLY SUPERVISED AND RATED FOR 26 VDC, 3 mA STANDBY, 1.5 Vp-p RIPPLE, 50 mA MAX. ALARM. THEY MAY BE CONFIGURED AS REQUIRED. THE ALARM THRESHOLD IS 21 mA. MAXIMUM LOOP RESISTANCE IS 100 OHMS, 50 OHMS PER SIDE.

ALL **INITIATING CIRCUITS** ARE COMPATIBILITY ID "A".

7.3 ZONE EXPANSION MODULE (FW-EZM4) TERMINAL CONNECTIONS

Wire devices to terminals as shown. See wiring tables and appendix "A" for compatible devices. See appendix "C" for Module specifications.

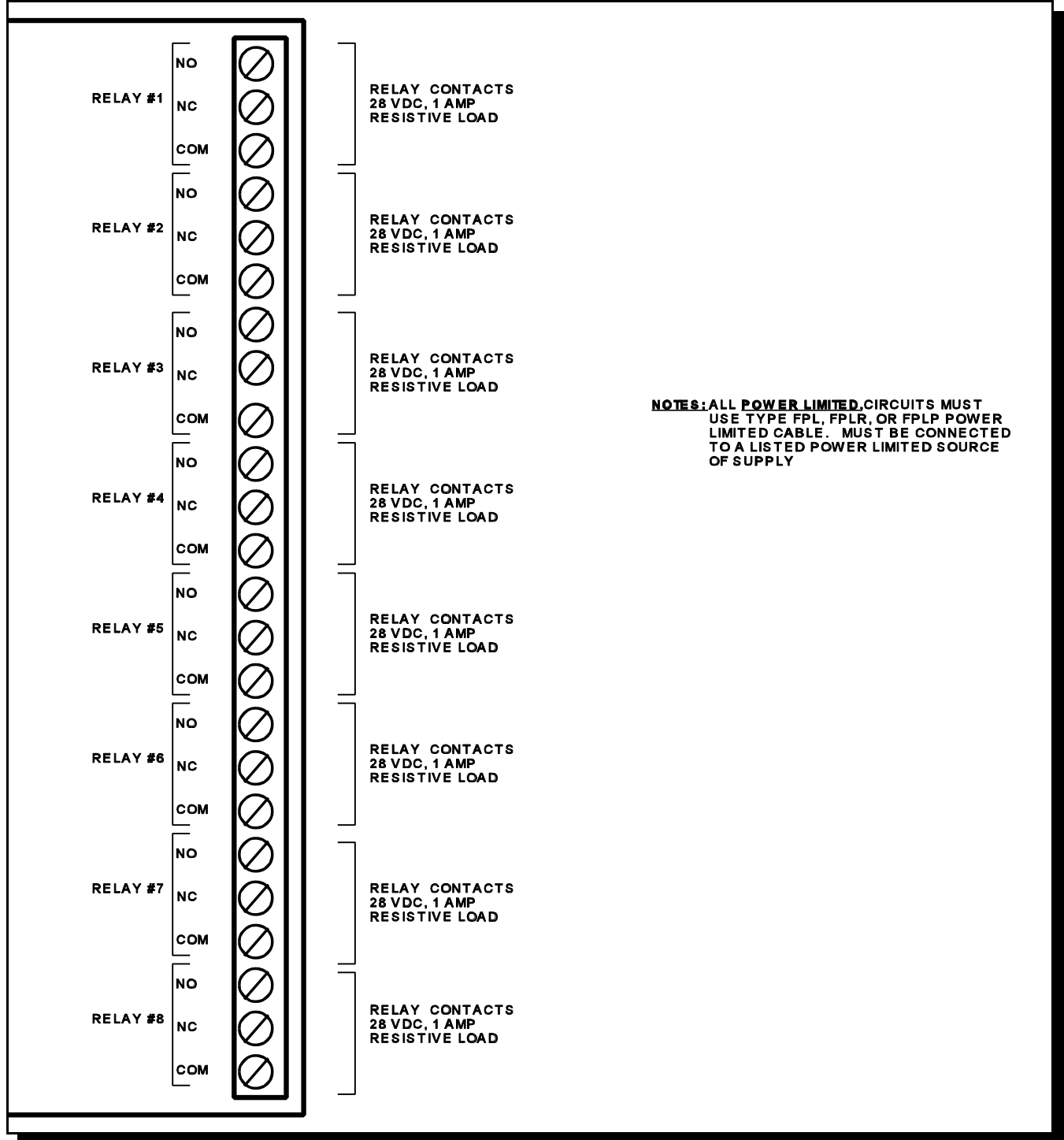
Fig. 12: FW-EZM4 Zone Expansion Module Terminal Connections



7.4 RELAY MODULE (FW-RB4 or FW-RB8) TERMINAL CONNECTIONS

Note that only Relays #1 to #4 are present on the FW-RB4.

Fig.13: FW-RB4 / FW-RB8 Relay Terminal Connections



7.5 DACT / Dialer MODULE (FW-DACT) TERMINAL CONNECTIONS

See the FW-DACT Manual (LT-639NAP) for connection information.

7.6 POLARITY REVERSAL and CITY TIE MODULE (MODEL: FW-RPM) TERMINAL CONNECTIONS

See Appendix for Module specifications. Wire as shown using proper wire gauges.

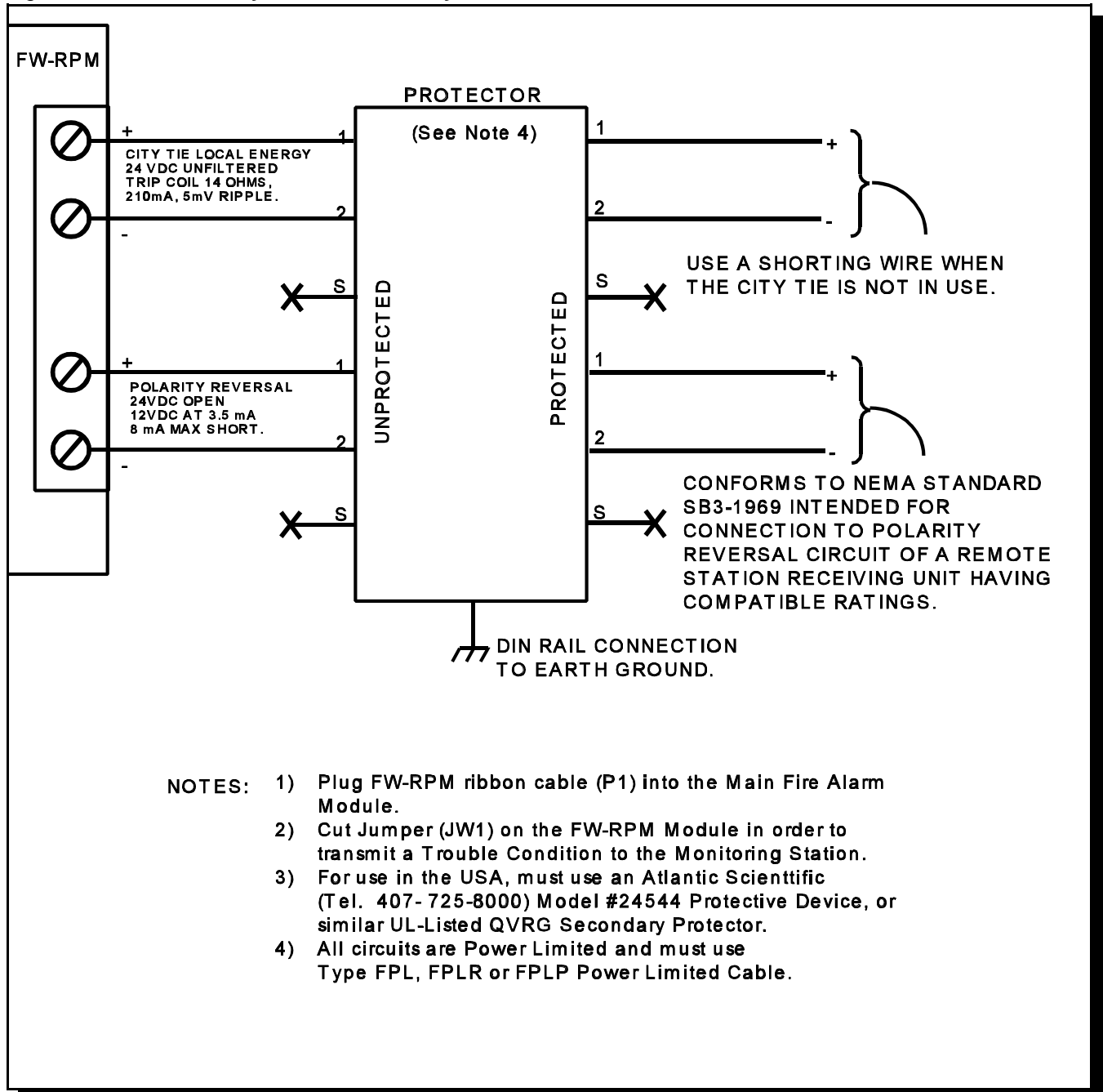
Note that for use in the USA, the installer MUST add an Atlantic Scientific (Tel. 407-725-8000) Model #24544 Protective Device, or similar **ULI-Listed QVRG Secondary Protector**, as shown.

Note: The Terminal Blocks are "depluggable" for ease of wiring.

The City Tie Interface is **Not Power Limited**.

Either the FW-RPM's City Tie or Reverse Polarity Interface may be used, but not both.

Fig.14: FW-RPM Polarity Reversal and City Tie Module Terminal Connections



7.7 POWER SUPPLY CONNECTIONS

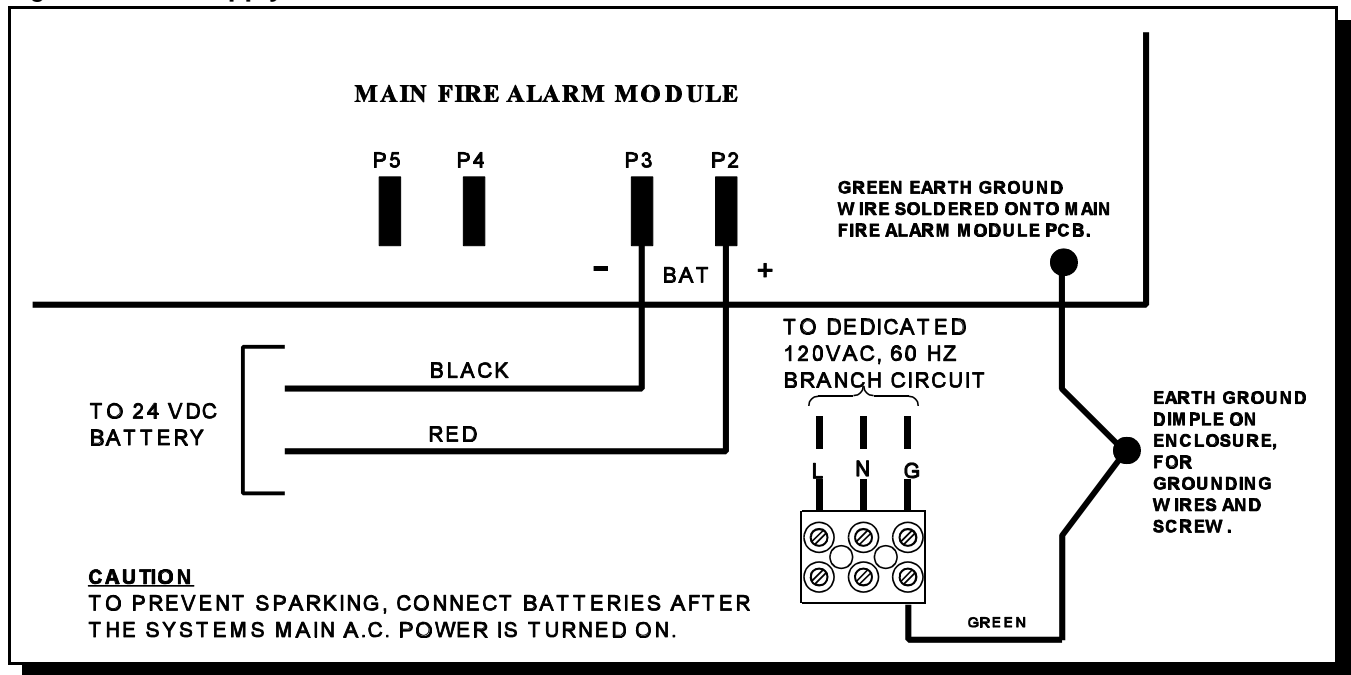
The power supply is part of the Main Fire Alarm Module and the Chassis. The ratings are:

Model	FW-C2Z, FW-C4Z:	120 VAC, 60 Hz, 2.0A (Uses 3A in line time delay fuse)
	Electrical input ratings:	2.75 A maximum
	Power supply total current:	
	Battery Fuse on Main Module:	F1: Replace with 10 Amp, 1-1/4" Fast Acting Fuse
Model	FW-C4EZ:	120 VAC, 60 Hz, 2.5A (Uses a 4.0A circuit breaker)
	Electrical input ratings:	6 A maximum
	Power supply total current:	
	Battery Fuse on Main Module:	F1: Replace with 10 Amp, 1-1/4" Fast Acting Fuse

CAUTION: Do not exceed power supply ratings.

See appendix "C" for specifications. Wire as shown using proper wire gauges.

Fig. 15: Power Supply Connections



7.8 WIRING TABLES

Fig.16: 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

Fig.17: WIRING TABLE FOR Notification Circuits

TOTAL SIGNAL LOAD	MAXIMUM WIRING RUN TO LAST DEVICE (ELR)								MAX. LOOP RESISTANCE
	18AWG		16AWG		14AWG		12AWG		
Amperes	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	1296	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

RS-485 WIRING: See the Connection Diagram.

4-WIRE SMOKE WIRING: The maximum allowable current is 0.15 Amperes. The maximum allowed Voltage Drop is 1 Volt. Refer to the Indicating Circuit Wiring Table above.

8.0 SYSTEM CHECKOUT

8.1 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.
6. Check all Jumpers and Switches for proper setting.
7. Check the AC power wiring for proper connection.
8. Check that the chassis is connected to **EARTH GROUND** (cold water pipe).
9. Make sure to close the front cover plate before powering the system from main AC supply.

8.2 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. Press the "System Reset" button.
2. 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 (-).
4. All indicators should extinguish except for normal power "AC-ON" green LED.
5. Configure the Fire Alarm Control Panel as described in the Configuration section.

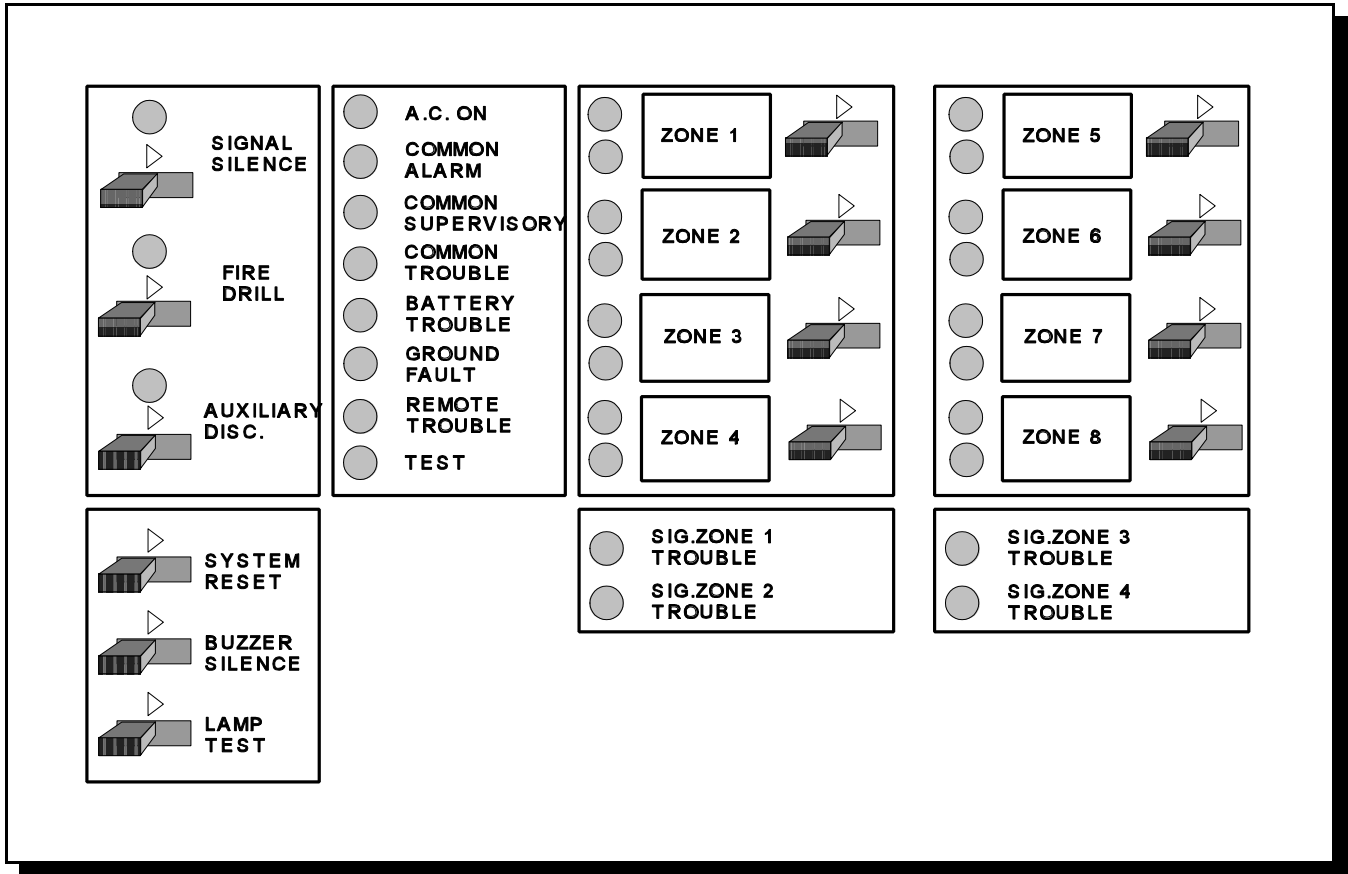
8.3 TROUBLESHOOTING:

Circuit Trouble	Normally when a Circuit trouble occurs, its designated trouble indicator will be <i>illuminated</i> , as well as the Common Trouble Indicator and the Buzzer. To correct the fault, check for open wiring on that particular Circuit loop or if the Circuit Disconnect Switch is on. <i>Please note: Disconnecting a Circuit will cause a system trouble (off-normal position).</i>
Remote Fail	A <i>Remote Trouble</i> will be indicated on the main panel display for any failure reported by, or failure to communicate with a Remote Annunciator, FW-DACT, or FW-RPM.
Ground Fault	This panel has a <u>common ground fault detector</u> . 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. If battery trouble condition persists, replace batteries as soon as possible.

9.0 INDICATORS, CONTROLS, & OPERATION

Refer to the following LED Indicators and Control Switch locations ...

Fig.18: Indicators and Control Location



9.1 INDICATORS:

Buzzer:

The Buzzer is activated by any of the following ...

Fire Alarm	-	Steady
Supervisory Alarm	-	Steady
Trouble	-	On and off at a rate of 20 per minute.

If the Buzzer is turned 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 AC On Indicator is activated steady green while 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.

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 (FW-C4Z or FW-C4EZ only):

The Common Supervisory Indicator turns on steady amber when there is a Supervisory Alarm 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 Alarms remain active until the Panel is reset.

Common Trouble LED:

The Common Trouble Indicator flashes Amber (at 20 flashes per minute) when there is any Trouble condition being detected on the panel. It is turned off when all Non-Latching Troubles are cleared.

Remote Trouble LED (FW-C4Z or FW-C4EZ only):

The Remote Failure Indicator is steady Amber if there is trouble detected at a City Tie or Dialer Module, or if there is communication trouble detected with a Remote Annunciator or if a Remote Annunciator reports a local trouble. It is turned off if these conditions go away.

Fire Drill LED:

The Fire Drill Indicator turns on steady Amber while Fire Drill is active.

Auxiliary Disconnect LED:

The Auxiliary Disconnect Indicator is flashed Amber (20 flashes per minute) when the Auxiliary Disconnect switch is activated. It is turned off when the switch is activated a second time. When on, it indicates that Common Alarm and Common Supervisory Relays, and any FW-RB4 / FW-RB8 Relays are not activated. The Trouble Relay is activated. Dialer or City Tie Modules are also inactive if installed, except that a Trouble condition is transmitted.

Signal Silence LED:

The Signal Silence indicator is flashed Amber (20 flashes per minute) when Indication Circuits are Silenced either by the Signal Silence switch, or by the Auto Signal Silence Timer. It is turned off when the Signals are re-sounded by a subsequent Alarm.

Battery Trouble LED:

The Battery Trouble Indicator is steady Amber when the Battery is either low (below 20.4 VDC), or disconnected.

Ground Fault LED:

The Ground Fault Indicator is Amber when the Ground Fault Detector detects a Ground Fault on any field wiring. It is turned off when the Ground Fault is cleared.

Test LED:

Indicates steady Amber when the Fire Alarm Panel is in Walk Test Mode.

Circuit Status LED's:

These LED's 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 Controls) :	Fast Flashing Red (120 flashes per minute)
Supervisory :	Steady Amber

Circuit Trouble LED's:

These LED's indicate Trouble for Initiating and Notification Circuits. They illuminate Slow Flashing Amber (20 flashes per minute) for any field wiring fault, or if the circuit has been Disconnected.

9.2 CONTROLS:

System Reset Switch:

The System Reset momentary switch causes the Fire Alarm Control Panel, and all Circuits, to be reset ...

Resets all Latching Trouble Conditions
Resets the 4-Wire Smoke Supplies
Turns off Signal Silence Indicator
Stops and resets all Timers
Aux Disconnect not affected

Resets all Initiating Circuits
Turns off all Notification Circuits
Turns off Fire Drill
Processes inputs as new events

Signal Silence Switch:

Activation of the Signal Silence momentary switch when the Panel is in Alarm turns on the Signal Silence Indicator and deactivates any Silenceable Notification 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 Notification Circuits are active as the result of a Fire Drill.

Fire Drill Switch:

The Fire Drill momentary switch activates all non-Disconnected Notification Circuits, but does not transmit any Alarms via the Dialer, City Tie, or Common Alarm Relay, nor are any FW-RB4 or FW-RB8 Relays activated. 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 FW-RB4 / FW-RB8 Relays are not activated. The Trouble Relay is activated. Dialer or City Tie Modules are also inactive if installed, except that a Trouble condition is transmitted.

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.

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.

9.3 OPERATION:

All Alarm inputs are treated in a similar manner. Alarm inputs include Non-Verified or Verified Alarms, and Water-flow Alarms. Any of these Alarm inputs occurring when the Panel is not already in Alarm cause the following:

- Ž The Buzzer sounds steadily
- Ž If Fire Drill is active, it is cancelled
- Ž The Common Alarm Indicator turns on
- Ž The Common Alarm Relay activates if Aux Disconnect is not active
- Ž The Auto Signal Silence Timer, if configured, starts
- Ž The Signal Silence Inhibit Timer, if configured, starts
- Ž FW-RB4 / FW-RB8 Relays are activated as configured, provided that Aux Disconnect is not active
- Ž Signals and Strobes are activated

Subsequent Alarms when the Panel is already in Alarm, cause the following:

- Ž The Buzzer sounds steadily
- Ž 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
- Ž Signals and Strobes are activated

9.4 CIRCUIT TYPES:

“**Circuits**” refers to an actual electrical interface, either **Initiating** (Detection) or **Indicating** (Signal). “**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:

- Non-Verified Alarm** = This is a “Normal” type of Alarm which may have Pull-Station, 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** = These Alarms are verified by a reset and timing procedure, and may have Pull-Station, Smoke Detectors, or Heat Detectors attached. Any activation of Pull-Station or Heat Detectors will result in an Alarm condition in the Fire Alarm Control Panel within 4 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 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 the associated Circuit Status LED and the Common Alarm LED to illuminate Red.
- Water-Flow Alarm** = For Water-flow Sensors (Circuits 3 & 7 on FW-C4Z / FW-C4EZ only). These alarms are identical to normal Non-Verified Alarms except that Notification Circuits are Non-Silenceable. Water-Flow Retard Operation is enabled if “Verified” is selected. With Retard active, these circuits are sampled every one second; if 10 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. **Note: Do not use Retard Operation with any external Retarding device; maximum Retard may not exceed 120 seconds.**
- Non-Latching Supervisory** = For Supervisory Devices (Circuits 4 & 8 on FW-C4Z / FW-C4EZ only). 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 clear (so long as there are no other Supervisory conditions in the system) and the Circuit Status LED will extinguish.
- Latching Supervisory** = For Supervisory Devices (Circuits 4 & 8 on FW-C4Z / FW-C4EZ only). 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 NOT clear.

Indicating (Signal) Circuits Types:

- Silenceable Audible** = 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 Two-Stage's Alert (First) Stage.
- Non-Silenceable Audible** = 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 Two-Stage'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.

The possible Audible Signal Codes are ...

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]

10.0 SYSTEM CONFIGURATION

Configuration of the FW-C2Z, FW-C4Z and FW-C4EZ is accomplished simply by DIP Switch and Jumper Settings. For DIP Switches, 0 = switch "off", 1 = Switch "on"). On the **Main Fire Alarm Board** ...

Function	DIP Switch	Switch "Off"	Switch "On"
Indicating Circuit #1 Audible Device (Bell) Only	Switch 13, #1	Silenceable	Non-Silenceable
Indicating 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)
Not Used	Switch 11, #8	-----	-----
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
Auto Signal Silence	Switch 9, #3	4 off, 3 off = Disabled	4 off, 3 on = 5 Minutes
	Switch 9, #4	4 on, 3 off = 10 Minutes	4 on, 3 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

Notes:

- & **After any Configuration Switches are changed, it is necessary to perform a System Reset !!**
- & Only Indicating Circuit 2 may be configured for Visual Devices.
- & If Initiating Circuit 3 is configured as Waterflow, the corresponding Verified selection becomes a Retard selection.
Note: Do not use Retard Operation with any external Retarding device; maximum Retard may not exceed 120 seconds.
- & 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) Notification Circuits is only a matter of how they are wired. See Connection Info.
- & If Class A (Style D) Initiating Circuits are selected (FW-C2Z, FW-C4Z, FW-C4EZ only), the appropriate Board Jumpers must also be set. Class B Initiating Circuits 1&2 combine to create Class A Circuit #1, and Class B Initiating Circuits 3&4 combine to create Class A Circuit #2. DIP Switches for Circuits 3&4 are ignored except for an FW-C4EZ with a FW-EZM4 Expansion. LED Indicators for Circuits 3&4 are non-functional except for an FW-C4EZ with a FW-EZM4 Expansion.

On the **FW-EZM4 Zone Expansion Module ...**

Function	DIP Switch	Switch "Off"	Switch "On"
Indicating Circuit #3 Audible Device (Bell) Only	Switch 6, #1	Silenceable	Non-Silenceable
Indicating 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 Supv.)
	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	-----	-----

Notes:

- & **After any Configuration Switches are changed, it is necessary to perform a System Reset !!**
- & Only Indicating Circuit 4 may be configured for Visual Devices.
- & If Initiating Circuit 7 is configured as Waterflow, the corresponding Verified selection becomes a Retard selection.
Note: Do not use Retard Operation with any external Retarding device; maximum Retard may not exceed 120 seconds.
- & 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) Notification Circuits is only a matter of how they are wired. See Connection Info.
- & If Class A (Style D) Initiating Circuits are selected the appropriate Board Jumpers must also be set. Class B Initiating Circuits 5&6 combine to create Class A Circuit #3, and Class B Initiating Circuits 7&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.

11.0 WALK TEST OPERATION

Walk-Test allows an installer to verify the Initiating Circuit wiring in a system. Walk-Test is entered by pressing and holding the **Buzzer Silence and Lamp Test Momentary Switches for at least 5 seconds**. Circuits to be tested are identified using the Circuit Disconnect Slide Switches. Activation of any Initiating Circuit which has been selected for Walk-Test will cause the Audible Notification 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 Indicating Circuit only once. If another Initiating Circuit is activated then the Audible Notification Circuits will activate for a number of short bursts corresponding to the Circuit number of the new zone being walk-tested, and so on.

If Initiating Circuit #3 is first activated, the Indication Circuits will sound for three bursts, with additional activations sounding for one burst, etc. The initial burst interval denoting the count of the Circuit number is one second on half a second off. The subsequent burst interval denoting additional activations on the same Initiating Circuit is one half second on then off. After the sounding pattern has been sent on the Notification 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 selected for Walk-Test causes the Notification Circuits to be activated continuously for 5 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. 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

UNDERWRITER'S LABS CANADA (ULC) CANADIAN: 2-WIRE SMOKE DETECTOR CONTROL PANEL COMPATIBILITY

NOTES:

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.

SMOKE DETECTOR		
MAKE MODEL / BASE	MAKE MODEL / BASE	MAKE MODEL / BASE
<u>HOCHIKI</u>	<u>EDWARDS</u>	<u>FENWAL</u>
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	6270C-003	PSD-7130 / 70-201000-005
SIJ-24/HSC-220R		PSD-7128 / 70-201000-001
SLR-24/NS6-220	<u>CERBERUS PYROTRONICS</u>	PSD-7126 / 70-201000-002
SLR-24/NS4-220	D1-2	PSD-7126 / 70-201000-003
SLR-24/HSC-220R	D1-3 / DB-3S	PSD-7126 / 70-201000-005
SLR-24H/NS6-220		PSD-7129 / 70-211002-000
SLR-24H/NS4-220	<u>MIRCOM</u>	PSD-7125 / 70-201000-001
SLR-24H/HSC-220R	MIR-525	PSD-7126 / 70-201000-002
SLR-835/NS6-220	MIR-525T	PSD-7125 / 70-201000-003
SLR-835/NS4-220		PSD-7125 / 70-201000-005
SLR-835/HSC-220R	<u>MIRTONE</u>	CPD-7021 / 70-201000-001
SLR-835B-2	73471	CPD-7021 / 70-201000-002
	73494	CPD-7021 / 70-201000-003
<u>SYSTEM SENSOR</u>	73575	CPD-7021 / 70-201000-005
1400-A	73495/73486	
2400-A	73495/73487	<u>NAPCO</u>
1451-A / B401B	73595/73486	FW-2
1451-A / B406B	73595/73497	
2451-A / B401B	73594/73400	<u>SIMPLEX</u>
2451-A / B406B	73405/73400	2098-9110
1451DH / DH400A	73594/73401	
2451-A / DH400A	73405/73401	

UNDERWRITER'S LABS INC. (UL)
UNITED STATES: 2-WIRE SMOKE DETECTOR CONTROL PANEL COMPATIBILITY

NOTES:

- 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".

SMOKE DETECTOR MAKE MODEL / BASE	COMPATIBILITY IDENTIFIER HEAD / BASE	RATED STANDBY CURRENT	SMOKE DETECTOR MAKE MODEL / BASE	COMPATIBILITY IDENTIFIER HEAD / BASE	RATED STANDBY CURRENT
HOCHIKI			2451 / B406B	A - A	0.12 mA
DCD-190/HSC-220R	HD-3/HB-72	0.035mA	2451 / DH400	A - A	0.12 mA
DCD-190/NS6-220	HD-3/HB-3	0.035mA	2451TH / B401	A - A	0.12 mA
DCD-190/NS4-220	HD-3/HB-3	0.035mA	2451TH / B401B	A - A	0.12 mA
DCD-135/HSC-220R	HD-3/HB-3	0.035mA	2451TH / B406B	A - A	0.12 mA
DCD-135/NS6-220	HD-3/HB-3	0.035mA	4451HT / B401	A - A	0.12 mA
DCD-135/NS4-220	HD-3/HB-3	0.035mA	4451HT / B401B	A - A	0.12 mA
SIJ-24/HSC-220R	HD-3/HB-72	0.040mA	4451HT / B406B	A - A	0.12 mA
SIJ-24/NS6-220	HD-3/HB-3	0.040mA	5451 / B401	A - A	0.12 mA
SIJ-24/NS4-220	HD-3/HB-3	0.040mA	5451 / B401B	A - A	0.12 mA
SLR-24/HSC-220R	HD-3/HB-72	0.045mA	5451 / B406B	A - A	0.12 mA
SLR-24/NS6-220	HD-3/HB-3	0.045mA			
SLR-24/NS4-220	HD-3/HB-3	0.045mA	SENTROL - ESL		
SLR-24H/NS6-220	HD-3/HB-3	0.045mA	429C	S10A - N/A	0.10 mA
SLR-24H/NS4-220	HD-3/HB-3	0.045mA	429CT	S10A - N/A	0.10 mA
SLR-24H/HSC-220R	HD-3/HB-72	0.045mA	429CST	S11A - N/A	0.10 mA
SLR-835/NS6-220	HD-3/HB-3	0.045mA	429CRT	S11A - N/A	0.10 mA
SLR-835/NS4-220	HD-3/HB-3	0.045mA	711U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
SLR-835/HSC-220R	HD-3/HB-72	0.045mA	712U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
SLR-835B-2	HD-6	55uA @ 24VDC	713-5U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
			713-6U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
			721U / 702E, 702U	S10A - S00	0.10 mA
			721UT / 702E, 702U	S10A - S00	0.10 mA
SYSTEM SENSOR			722U / 702E, 702U	S10A - S00	0.10 mA
1100	A - N/A	0.12 mA	731U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA
1151 / B110LP	A - A	0.12 mA	732U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA
1151 / B116LP	A - A	0.12 mA			
1400	A - N/A	0.10 mA	DETECTION SYSTEMS INC.		
1451 / B401	A - A	0.12 mA	DS250	B - N/A	0.10 mA
1451 / B401B	A - A	0.12 mA	DS250TH	B - N/A	0.10 mA
1451 / B406B	A - A	0.12 mA	DS282	B - N/A	0.10 mA
1451DH / DH400	A - A	0.12 mA	DS282TH	B - N/A	0.10 mA
2100	A - N/A	0.12 mA			
2100T	A - N/A	0.12 mA			
2151 / B110LP	A - A	0.12 mA	MIRCOM		
2151 / B116LP	A - A	0.12 mA	MIR-525U	FDT-1	0.10 mA
2400	A - N/A	0.12 mA	MIR-525TU	FDT-1	0.10 mA
2400TH	A - N/A	0.12 mA			
2451 / B401	A - A	0.12 mA			
2451 / B401B	A - A	0.12 mA	NAPCO		

			FW-2	HD-6	55uA @ 24VDC
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**UNDERWRITER'S LABS INC. (UL)
UNITED STATES: 4-WIRE SMOKE DETECTOR CONTROL PANEL COMPATIBILITY**

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	

**UNDERWRITER'S LABS INC. (UL)
UNITED STATES: SIGNALLING DEVICE CONTROL PANEL COMPATIBILITY**

System Sensor - SpecrAlert				
P2415	P2415W	P241575	P241575W	P2475
P2475W	P24110	P24110W	S2415	S2415W
S241575	S241575W	S2475	S2475W	S24110
S24110W	H12/24	H12/24W	MDL	MDLW
Wheelock				
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				
Gentex				
ST24-15	ST24-15/75	ST24-30	ST24-60	ST24-75
ST24-110				
HS24-15	HS24-15/75	HS24-30	HS24-60	HS24-75
HS24-110				

APPENDIX "B" - FW-RB8 REMOTE ANNUNCIATOR

The FW-RB8 Eight Zone Remote Annunciator mounts in an electrical box. It provides annunciation for the FW-C4Z or FW-C4EZ's full complement of 8 Initiating circuits.

APPENDIX "C" - MODULE SPECIFICATIONS and FEATURES

Fire Alarm Control Panel (FW-C2Z)

General: In smaller Enclosure ...

- M 1 supervised **Style B** (Class B) Initiating Circuit; configurable (Normal or Verified). [Compatibility ID "A"]
Power Limited: 26VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)
 - M 2 **Style Y/Z** (Class A/B) Notification Circuits; configurable as strobes or audibles.
Power Limited: 24 VDC unfiltered
1.7 A @ 49C per Circuit (2.4 A Total)
 - M 2 supervised **Style B** (Class B) or 1 **Style D** (Class A) Initiating Circuits; configurable (Normal or Verified).
[Compatibility ID "A"]
 - M **Initiating Circuit Disconnect Switch.**
 - M Optional **FW-DACT** or **City Tie Adder.**
 - M Optional **FW-RB4 / FW-RB8 Relay Module.**
 - M Resettable **4-Wire Smoke Detector Power Supply.**
Power Limited: 28VDC, 100mA max, 1.5Vp-p ripple
 - M **Aux Power Supply.**
Power Limited: 24VDC, 300mA max, unfiltered for RTI or Remote Annunciators
 - M **Auxiliary relays:** (resistive loads)
Common Alarm: Form C, 1Amp, 28VDC
Common Trouble: Form C, 1Amp, 28VDC
 - M **Micro-controller Based Design.**
 - M **DIP Switch Configurable.**
 - M **Walk-Test** function.
- Electrical ratings:**
- M *AC Line Voltage:* 102 to 132 VAC.
2 Amps (primary, transformer inline fuse)
 - M *Pwr Supp. ratings:* 2.75 Amps. max. (secondary)
 - M For Notification Circuits: 24VDC unfiltered
2.40 Amps. max.
 - M *Battery:* 24VDC, Gel-Cell/Sealed Lead-Acid
Charging capability: 4 to 6.5 AH batteries
Fuse on Main Board: 10 Amps.
 - M *Current Consumption:* Standby: 110 mA, Alarm: 220 mA

Fire Alarm Control Panel (FW-C4Z)

General: Same as FW-C2Z, plus ...

- M 4 supervised **Style B** (Class B) or 2 **Style D** (Class A) Initiating Circuits; configurable (Normal or Verified, and for Style B there may be one Waterflow and one Supervisory).
[Compatibility ID "A"]
- M Optional **FW-RB4** or **FW-RB8 Relay Module.**
- M 1 **RS-485 Connection** for up to 3 **FW-RB8** Remote Annunciators.
- M **Auxiliary relays:** (resistive loads)
Common Alarm, Supervisory, Trouble
All are Form C, 1Amp, 28VDC

DACT / Dialer Module (FW-DACT)

- M *DACT - "Digital Alarm Communicator Transmitter"*
Using Ademco Contact ID and SIA-DCS Protocols.
- M *Current Consumption:* Standby: 45 mA, Alarm: 120 mA

Polarity Reversal and City Tie Module (FW-RPM)

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

Model: FW-RB4 / FW-RB8 Relay Module

- M Four or Eight Relays: Form C, 1A (resistive), 28 VDC per contacts
- M Each individual relay can be:
Relay per Zone, Common Alarm, Common Supervisory
- M *Current Consumption:* Standby: 5 mA, Alarm: 160 mA

Fire Alarm Control Panel (FW-C4EZ)

General: In larger Enclosure ...

- M 4 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)
 - M 2 **Style Y/ Z** (Class A/B) Notification Circuits; configurable as strobes or audibles.
Power Limited: 24 VDC unfiltered
1.7 A @ 49C per Circuit (5A Total)
 - M One **FW-EZM4 Zone Expansion** may be added.
 - M **Initiating Circuit Disconnect Switches.**
 - M Optional **FW-DACT** or **City Tie Adder.**
 - M Optional **FW-RB4 / FW-RB8 Relay Module.**
 - M Resettable **4-Wire Smoke Detector Power Supply.**
Power Limited: 28VDC, 100mA max, 1.5Vp-p ripple
 - M **Aux Power Supply.**
Power Limited: 24VDC, 300mA max, unfiltered for RTI or Remote Annunciators
 - M 1 **RS-485 Connection** for up to 3 **FW-RB8** Remote Annunciators.
 - M **Auxiliary relays:** (resistive loads)
Common Alarm, Supervisory, Trouble
All are Form C, 1Amp, 28VDC
 - M **Micro-controller Based Design.**
 - M **DIP Switch Configurable.**
 - M **Walk-Test** function.
- Electrical ratings:**
- M *AC Line Voltage:* 102 to 132 VAC.
2.5 Amps (Uses 4A circuit breaker)
 - M *Pwr Supp. ratings:* 6 Amps. max. (secondary)
 - M For Notification Circuits: 24VDC unfiltered
5 Amps. max.
 - M *Battery:* 24VDC, Gel-Cell/Sealed Lead-Acid
Charging capability: 10 to 24 AH batteries
Fuse on Main Board: 10 Amps.
 - M *Current Consumption:* Standby: 110 mA, Alarm: 220 mA

Zone Expansion Module (FW-EZM4)

- M May be added to **FW-C4EZ.**
- M 4 supervised **Style B** (Class B) or 2 **Style D** (Class A) Initiating Circuits; configurable. [Compatibility ID "A"]
Power Limited: 22VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)
- M 2 **Style Y or Z** (Class B or A) Notification Circuits; configurable as strobes or audibles.
Power Limited: 24 VDC unfiltered, 1.7A @49C per Circuit
- M *Current Consumption:* Standby: 45 mA, Alarm: 120 mA

8 Zone Remote Annunciator (FW-RB8)

- M RS-485 Interface, up to 3 per FA-200 Panel.
- M *Current Consumption:* Standby: 35 mA, Alarm: 90 mA

System Model: SERIES FW-CZ, Fire Alarm Control Panel

System Type: Local, Auxiliary (using FW-RPM), Remote Station Protected Premises (using FW-DACT or FW-RPM), Central Station Protected Premises (using FW-DACT).

Type of Service: A, M, WF, SS (SS is only Local or with DACT)

Type of Signalling: Non-Coded

Applicable Standards: NFPA 70 and 72, UL-864, ULC S-524, ULC S-527

APPENDIX "D" - POWER SUPPLY & BATTERY CALCULATIONS (SELECTION GUIDE)

Use the form below to determine the required Secondary Power Supply (batteries).

IMPORTANT NOTICE

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" for specifications.

POWER REQUIREMENTS (ALL CURRENTS ARE IN AMPERES)

Model Number	Description	Qty		STANDBY	TOTAL STANDBY	ALARM	TOTAL ALARM
FW-C2Z, FW-C4Z, FW-C4EZ	Fire Alarm Control Panel	1	X	0.110	=	0.220	=
FW-EZM4	Zone Expansion		X	0.045	=	0.120	=
FW-RB4 / FW-RB8	Relay Module		X	0.005	=	0.160	=
FW-RPM	City Tie Module		X	0.035	=	0.300	=
FW-DACT	DACT / Dialer Module		X	0.045	=	0.120	=
FW-RB8	Remote Annunciator		X	0.035	=	0.090	=
FW-RTI	Remote Trouble Indicator		X	0.035	=	0.035	=
2-Wire Smoke Detectors			X	* 0.0001	=	* 0.090	= 0.090
4-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)							=
Auxiliary Power Supply for Annunciators, etc.					=		=
Total currents (Add above currents)					STANDBY	ALARM	
					(A)		(B)

Total Current Requirement: ALARM (B) _____ Amps.

Battery Capacity Requirement:

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

Total Alarm Current: Must be 2.75 amperes or less for FW-C2Z, and FW-C4Z. Notification Circuits not to exceed 2.4 amperes. Must be 6 amperes or less for FW-C4EZ. Notification Circuits not to exceed 5 amperes.

Battery Selection: Multiply (C) by 1.20 to derate battery.
 Use 6.5AH Batteries for the **FW-C2Z, FW-C4Z**.
 Use 10AH Batteries for the **FW-C4EZ**.
 The **FW-C4EZ** will charge up to 24AH Batteries if they are in an external **Battery Cabinet**.

* Assuming three Initiating Circuits in alarm.

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

* Using the **1400-A** 2-wire smoke detector. See Appendix "A", for other available smoke detectors .

Examples:	<u>Configuration</u>	<u>24 Hrs Standby, 5 Min Alarm</u>	<u>60 Hrs Standby, 5 Min Alarm</u>
	FW-C2Z/4 Basic	4 AH Batteries	Not Possible
	FW-C2Z/4, FW-DACT, FW-RB8, RTI	6.5 AH Batteries	Not Possible
	FW-C4EZ, FW-EZM4	10 AH Batteries	12 AH Batteries
	FW-C4EZ, FW-EZM4, FW-DACT, FW-RB8, 3 of FW-RB8	10 AH Batteries	24 AH Batteries

Always use the Selection Guide Chart to verify actual Battery Requirements.

WARRANTY

NAPCO SECURITY SYSTEMS, INC. (NAPCO) warrants its products to be free from manufacturing defects in materials and workmanship for 12 months following the date of manufacture. NAPCO will, within said period, at its option, repair or replace any product failing to operate correctly without charge to the original purchaser or user.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to acts of God, or on which any serial numbers have been altered, defaced or removed. Seller will not be responsible for any dismantling or reinstallation charges.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF NAPCO.

Any action for breach of warranty, including but not limited to any implied warranty of merchantability, must be brought within the six months following the end of the warranty period.

IN NO CASE SHALL NAPCO BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

In case of defect, contact the security professional who installed and maintains your security system. In order to exercise the warranty, the product must be returned by the security professional, shipping costs prepaid and insured to NAPCO. After repair or replacement, NAPCO assumes the cost of returning products under warranty. NAPCO shall have no obligation under this warranty, or otherwise, if the product has been repaired by others, improperly used, abused, altered, damaged, subjected to accident, nuisance, flood, fire or acts of God, or on which any serial numbers have been altered, defaced or removed. NAPCO will not be responsible for any dismantling, reassembly or reinstallation charges.

This warranty contains the entire warranty. It is the sole warranty and any prior agreements or representations, whether oral or written, are either merged herein or are expressly cancelled. NAPCO neither assumes, nor authorizes any other person purporting to act on its behalf to modify, to change, or to assume for it, any other warranty or

liability concerning its products.

In no event shall NAPCO be liable for an amount in excess of NAPCO's original selling price of the product, for any loss or damage, whether direct, indirect, incidental, consequential, or otherwise arising out of any failure of the product. Seller's warranty, was herein above set forth, shall not be enlarged, diminished or affected by and no obligation or liability shall arise or grow out of Seller's rendering of technical advice or service in connection with Buyer's order of the goods furnished hereunder.

NAPCO RECOMMENDS THAT THE ENTIRE SYSTEM BE COMPLETELY TESTED WEEKLY.

Warning: Despite frequent testing, and due to, but not limited to, any or all of the following; criminal tampering, electrical or communications disruption, it is possible for the system to fail to perform as expected. NAPCO does not represent that the product/system may not be compromised or circumvented; or that the product or system will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; nor that the product or system will in all cases provide adequate warning or protection. A properly installed and maintained alarm may only reduce risk of burglary, robbery, fire or otherwise but it is not insurance or a guarantee that these events will not occur. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. Therefore, the installer should in turn advise the consumer to take any and all precautions for his or her safety including, but not limited to, fleeing the premises and calling police or fire department, in order to mitigate the possibilities of harm and/or damage.

NAPCO is not an insurer of either the property or safety of the user's family of employees, and limits its liability for any loss or damage including incidental or consequential damages to NAPCO's original selling price of the product regardless of the cause of such loss or damage.

Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusions or limitation of incidental or consequential damages, or differentiate in their treatment of limitations of liability for ordinary or gross negligence, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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