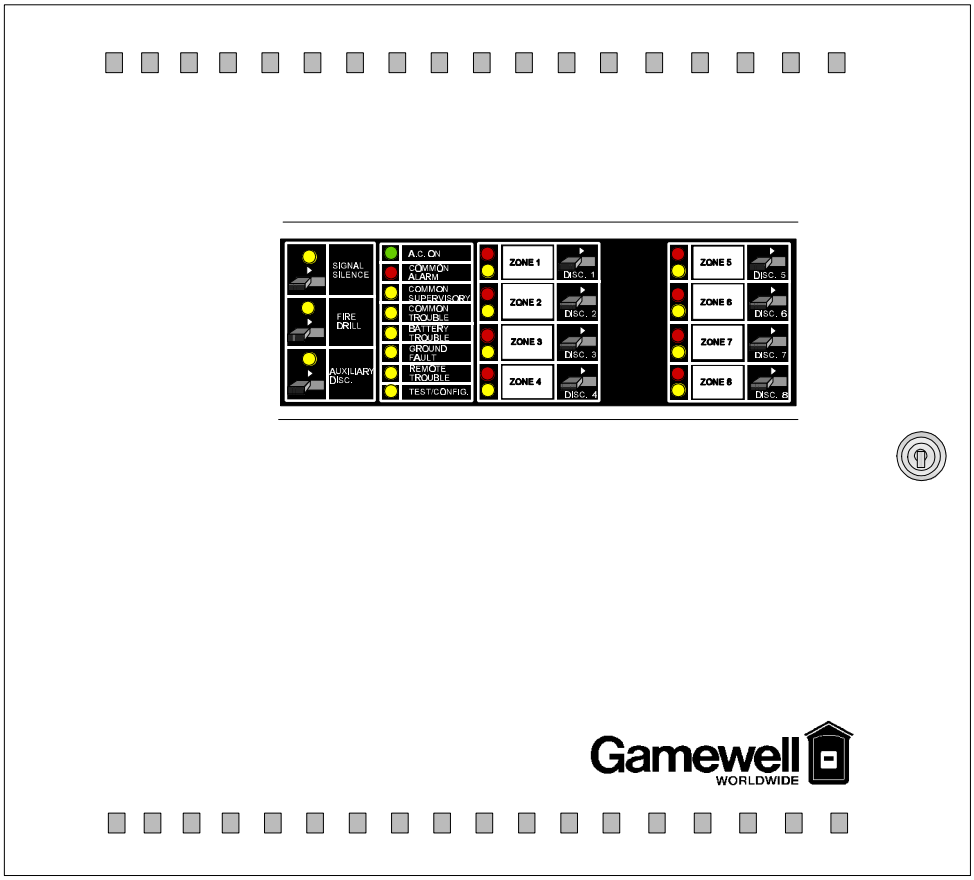
Flex 4 & Flex 8

Microprocessor Based
Fire Alarm Control Panels

INSTALLATION and OPERATION MANUAL



Notice: All information, Documentation, and Specifications contained in this manual are subject to change without prior notice by the manufacturer.

Part Number 71954
Issue B 07/19/2001

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1.0 INTRODUCTION

The **Gamewell *Flex 4* Fire Alarm Control Panel** provides four supervised Class B (Style B) Initiating Circuits, or two supervised Class A (Style D) Initiating Circuits, and two supervised Class A or B (Style Z or Y) Indicating Circuits. The **Gamewell *Flex 8* Fire Alarm Control Panel** provides eight supervised Class B (Style B) Initiating Circuits, or four supervised Class A (Style D) Initiating Circuits, and four supervised Class A or B (Style Z or Y) Indicating Circuits. All Circuits are supervised for opens and ground faults, and Indicating Circuits also for shorts.

Available options include; a Circuit Expander Module (**CEM**) to increase the ***Flex 4*** to a ***Flex 8***, a Digital Alarm Communicator Module (**DACT**) or a Polarity Reversal / City Tie Module (**PRM**), and two auxiliary relay modules, Model **RY4** and Model **RY8** that provide four or eight configurable Form C dry contacts respectively.

1.1 Overall Features:

- **T** The ***Flex 4*** has 4 Class B (Style B) Initiating Circuits which may be configured as 2 Class A (Style D) Circuits. The ***Flex 4*** has 2 power limited Class A/B (Style Z/Y) Indicating Circuits with an individual trouble indicators for each circuit. A **CEM**, Circuit Expander Module can be easily field installed to increase the circuit capacity of a Flex 4 to that of the Flex 8.

- **T** The ***Flex 8*** has 8 Class B (Style B) Initiating Circuits which may be configured as 4 Class A (Style D) Circuits. The ***Flex 8*** has 4 power limited Class A/B (Style Z/Y) Indicating Circuits with an individual trouble indicators for each circuit.

- **T** Each Initiating Circuit is configurable for Normal or Verified Alarm operation. On a ***Flex 4*** configured for Class B wiring performance (or on a ***Flex 8*** configured for Class A), Initiating Circuit 3 may be configured as a Waterflow Zone and Initiating Circuit 4 may be configured as a Latching or Non-Latching Supervisory Zone.

  On a ***Flex 8*** (also ***Flex 4*** with the optional **CEM** module installed) configured for Class B wiring operation, Initiating Circuit 3 and/or Initiating Circuit 7 may be configured as a Waterflow Zone, and Initiating Circuit 4 and/or Initiating Circuit 8 may be a Latched or Non-Latched Supervisory Zone.

- **T** Indicating Circuits may be configured as Audible or Visual and as silenceable or non-silenceable. Circuits configured for audible devices may operate for Steady, Temporal Code, California Code, or March Time.

- **T** Individual Slide-Switch provided for disconnect of each initiating circuit.

- **T** Signal Silence Inhibit (disabled or 1 minute) and Auto Signal Silence (disabled or 5, 10, 20 minutes)

- **T** Zone Annunciated Walk Test.

- **T** Subsequent Alarm, Supervisory, and Trouble Operation.

- **T** Resettable Auxiliary Power Supply (200 mA Max.) For Four Wired Smoke Detectors

- **T** Auxiliary contacts for Common Alarm and Supervisory (disconnectable), and Common Trouble relay.

- **T** RS-485 Interface for up to 3 **RA8** Multiplexed Remote Annunciators.

- **T** Remote Trouble Indicator Interface for **RTI**

- **T** Accepts an optional **DACT** (Dialler) or **PRM** (City Tie) module, and also one **RY4** or **RY8** Relay Module.

- **T** Easy Configuration via DIP Switches.

- **T** Rugged, key locked, red cabinet with ten combination knockouts, easily removeable piano hinged door and an integrated trim “ring” for surface or flush mounted installation. Uses Gamewell Key.

2.0 GENERAL NOTES and DEFINITIONS

Circuits and Zones:

"Circuits" refers to an actual electrical interface, **Initiating** (Detection), **Indicating** (Notification), 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.

Terminology:

"Indicating Circuits" are also know as Notification Appliance Circuits, Signal Circuits and Bell Circuits.

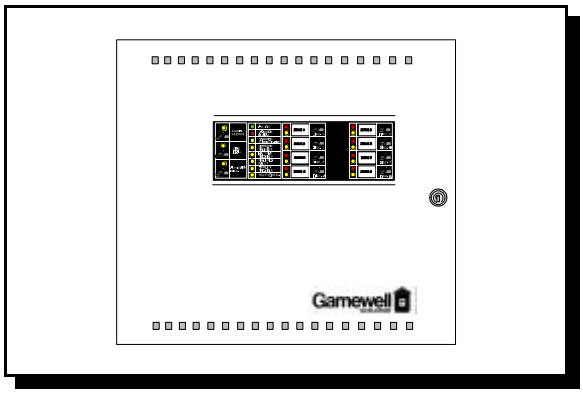
Wiring Styles:

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 halving the number of available Initiating Circuits.

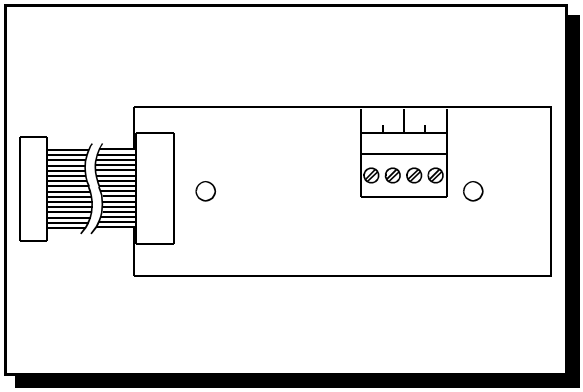
Indicating Circuits may be individually wired as Class A (Style Z) or Class B (Style Y) without affecting the number of circuits available (see Module wiring instructions).

3.0 SYSTEM COMPONENTS

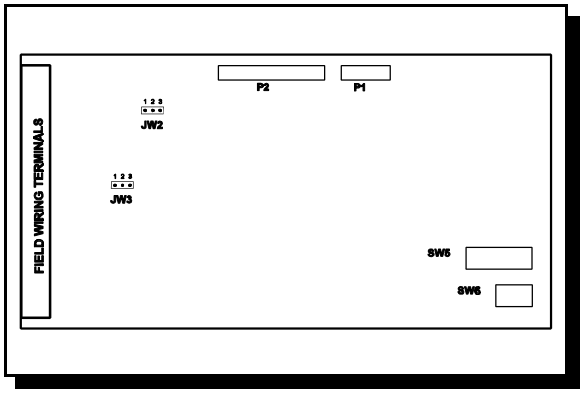
Model: ***Flex 4 & Flex 8*** Fire Alarm Control



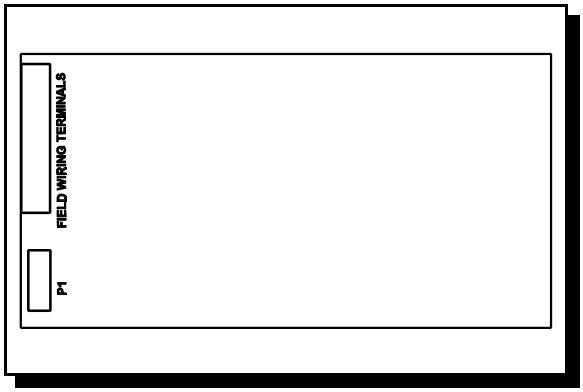
Model: **PRM** Polarity Reversal/City Tie Module



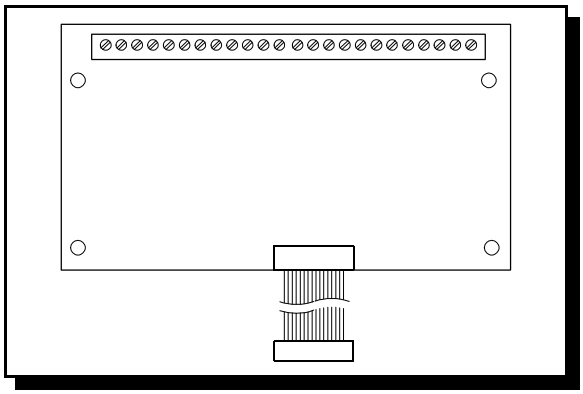
Model: **CEM** Circuit Expander Module



Model: **DACT** Digital Communicator Module



Model: **RY4 & RY8** 4 & 8 Relay Module



3.1 MODELS

Model: ***Flex 4*** Fire Alarm Control Panel with four Class B (Style B) or two Class A (Style D) Initiating Circuits, and two Power Limited Class A/B (Style Z/Y) Indicating Circuits (maximum 1.70 amperes each, 5 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator **RTI** and/or 1 to 3 of **RA8** Remote Multiplex Annunciators. Resettable Power Supply for Four Wire Smoke or Heat Detectors . May have one **DACT** or **PRM**, and one **CEM** installed. May also have one of **RY4** or **RY8** installed.

Model: ***Flex 8*** Fire Alarm Control Panel with eight Class B (Style B) or four Class A (Style D) Initiating Circuits, and four Power Limited Class A/B (Style Z/Y) Indicating Circuits (maximum 1.70 amperes each, 5 amperes total) with individual trouble indicators. Common Alarm & Trouble Relays. Interface for Remote Trouble Indicator **RTI** and/or 1 to 3 of **RA8** Remote Multiplex Annunciators. Resettable Power Supply for Four Wire Smoke or Heat Detectors May have one **DACT** or **PRM**, and one **CEM** installed. May also have one of **RY4** or **RY8** installed.

Model: **CEM** Circuit Expander Module for the **Flex 4** to increase the system capacity to that of the **Flex 8**.

Model: **RY4** Relay Module for **Flex 4** or **Flex 8**. Adds four configurable Relays Form C rated 1A, 28 VDC.

Model: **RY8** Relay Module for **Flex 4** or **Flex 8**. Adds eight configurable Relays Form C rated 1A, 28 VDC.

Model: **DACT** Dual Line Digital Alarm Communicator Transmitter Module.

Model: **PRM** City Tie / Reverse Polarity Module.

3.2 ACCESSORIES

Model: **RA8**	8 Zone Remote Annunciator	(UL Listed)
Model: **RTI**	Remote Trouble Indicator	(UL Listed)
Model: **30177**	End of Line Resistor	(UL Listed)
Model: **CFG**	DACT programming tool	

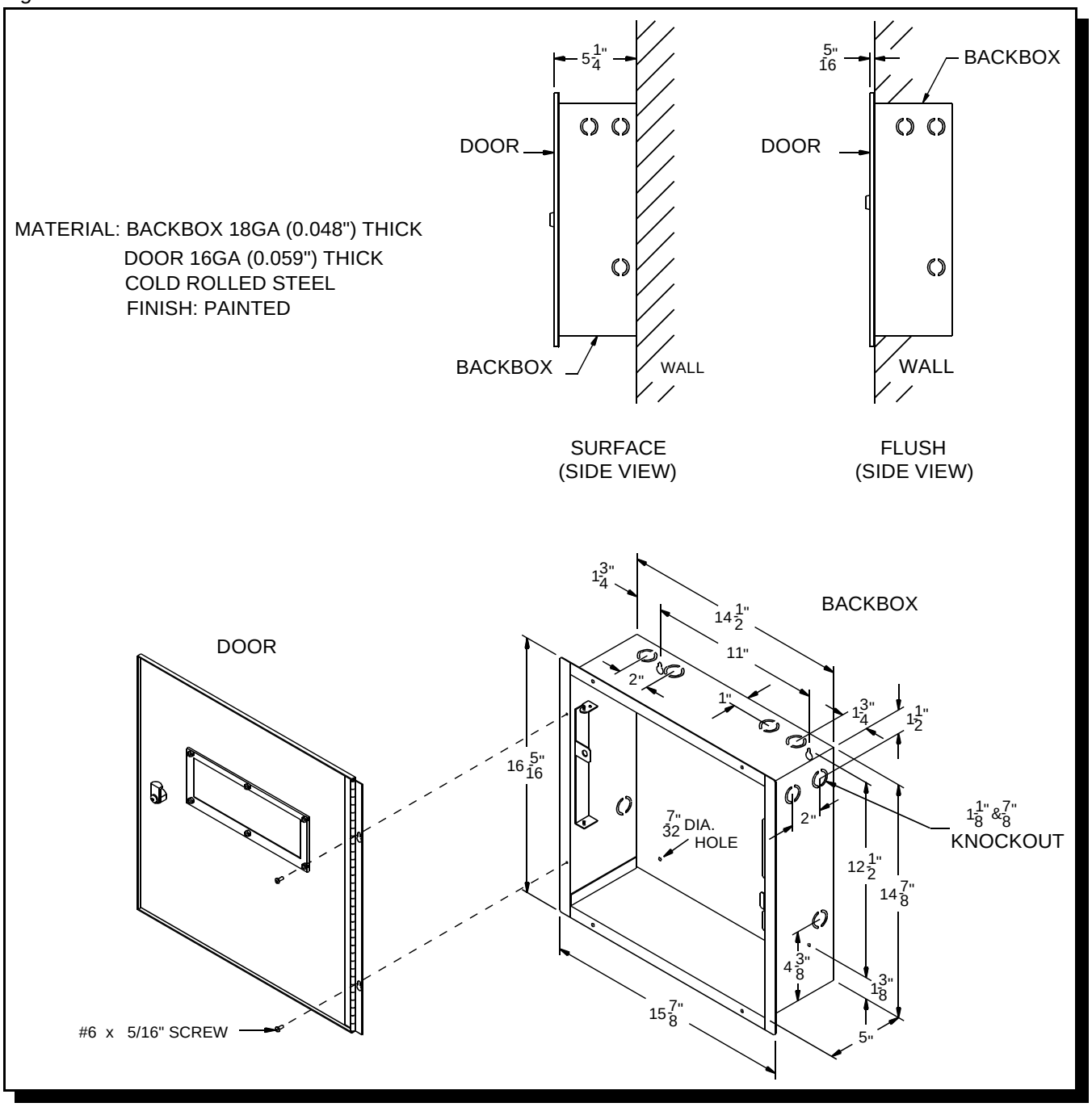
3.3 BATTERIES

Model: **B12V4**	12 Volt	4 Ampere-Hour	(2 required)
Model: **B12V7**	12 Volt	7 Ampere-Hour	(2 required)
Model: **B12V12**	12 Volt	10 Ampere-Hour	(2 required)

4.0 MECHANICAL INSTALLATION and DIMENSIONS

Install the enclosure as shown below for the ***Flex 4*** and ***Flex 8***...

Fig.1: ***Flex 4* and *Flex 8* Enclosure Installation and Dimensions**

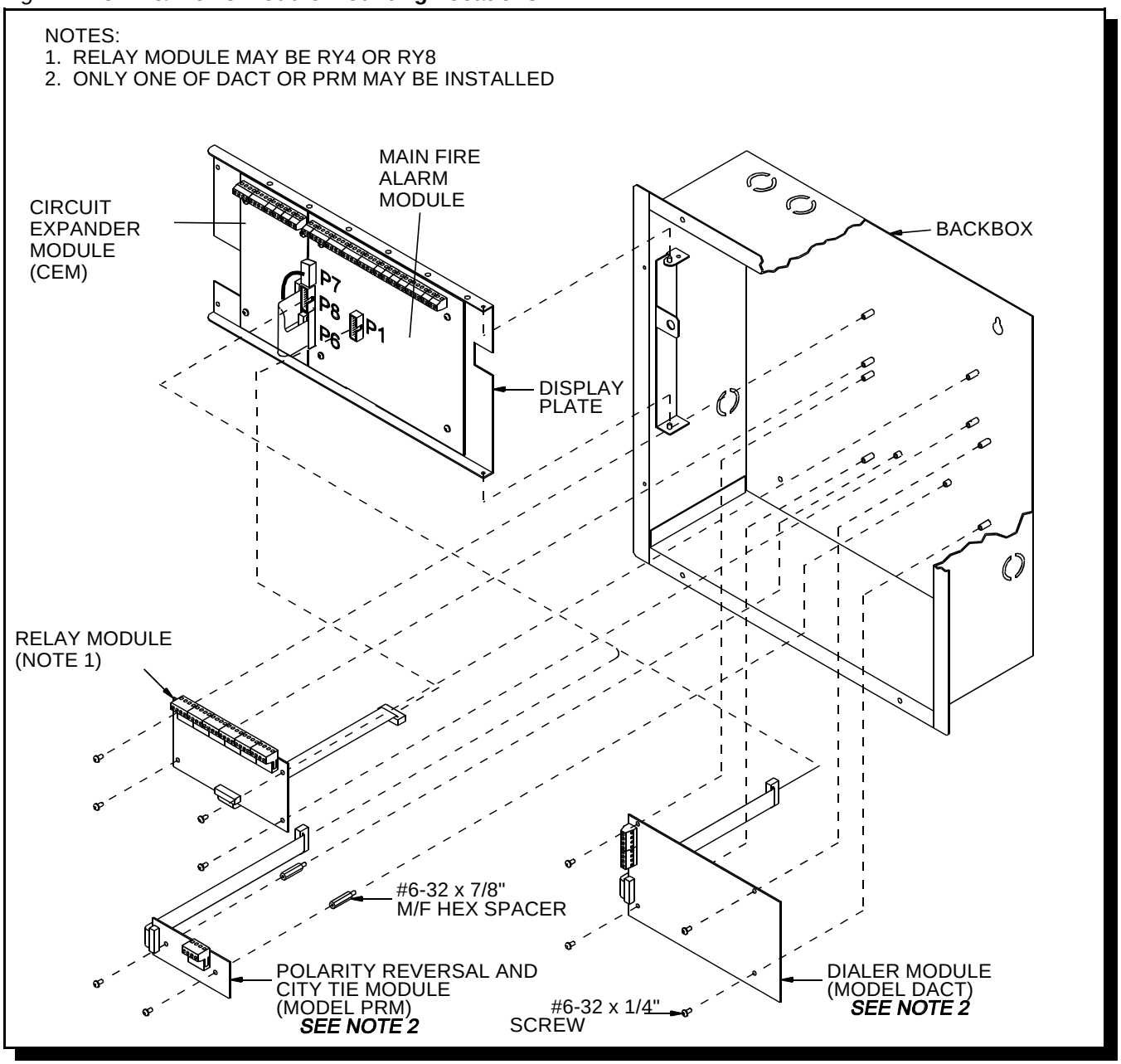


5.0 MODULES MOUNTING LOCATIONS

The ***Flex 4*** and ***Flex 8*** come pre-assembled with all components and boards, except for the following optional modules; **DACT**, **PRM**, **RY4**, **RY8** or the **CEM** when field installed to increase the circuits available with the ***Flex 4***. The modules are installed in the locations 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 back box.

Fig.2: ***Flex 4*** **&** ***Flex 8*** **Module Mounting Locations**



6.0 MODULE SETTINGS

6.1 MAIN FIRE ALARM MODULE

Class A / B Selection: **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.

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

Circuit Expander Module: On an **Flex 4** only, remove the jumper on **JW4** if a **CEM** Circuit Expander Module is field installed. The module is plugged into **P6 & P7**.

Relay Module: Remove jumper **JW3** if a **RY4** or **RY8** Relay Module is installed. The Relay Module is plugged into **P1**.

Digital Communicator: Remove jumper **JW6** if a **DACT** Digital Communicator is installed. The Digital Communicator is plugged into **P8**.

City Tie: Remove jumper **JW6** if a **PRM** Polarity Reversal/City Tie module is installed. The module is plugged into **P8**.

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

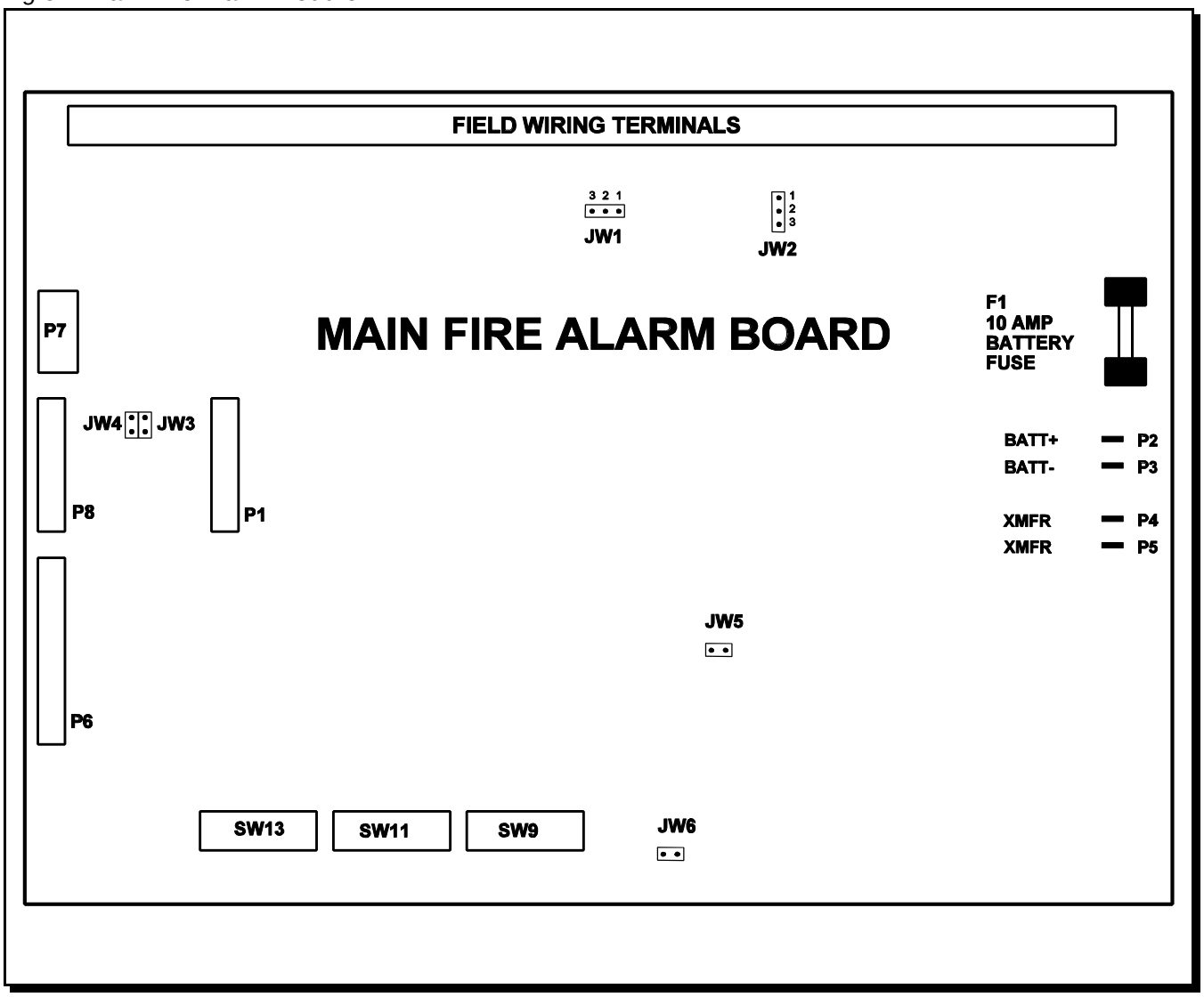
Transformer: Factory wired to **P4** & **P5**, do not disconnect.

JW5 There should be no jumper here; do not use.

SW9, SW11, SW13 Configuration DIP Switches.

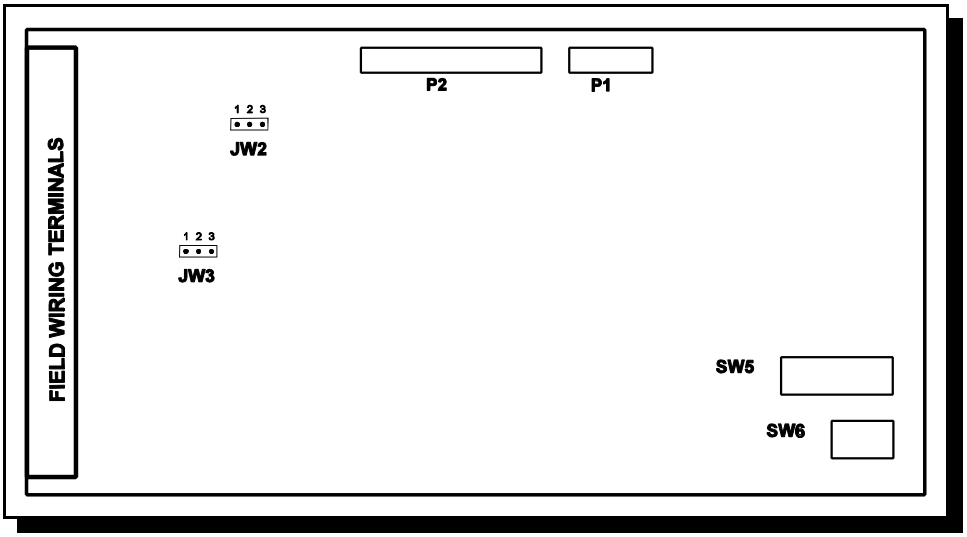
Battery Fuse F1: Replace with 10 Amp, 1-1/4" Fast Acting Fuse

Fig.3: **Main Fire Alarm Module**



6.2 CIRCUIT EXPANDER MODULE (Model CEM)

Fig.4: **CEM Circuit Expander 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.

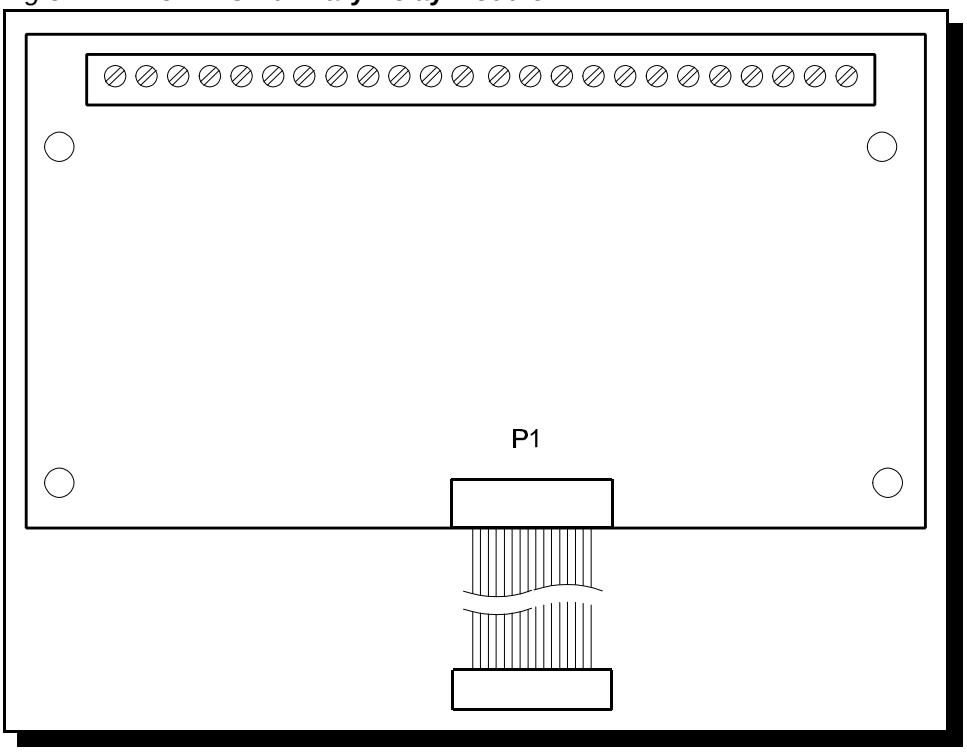
Note that the Class A/B selection affects all Initiating Circuits, and must be used with the correct Configuration DIP Switch Setting.

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

SW5,6: Configuration DIP Switches.

6.3 RELAY MODULES (Models RY4 or RY8)

Fig.5: **RY4 or RY8 Auxiliary Relay Module**



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.

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

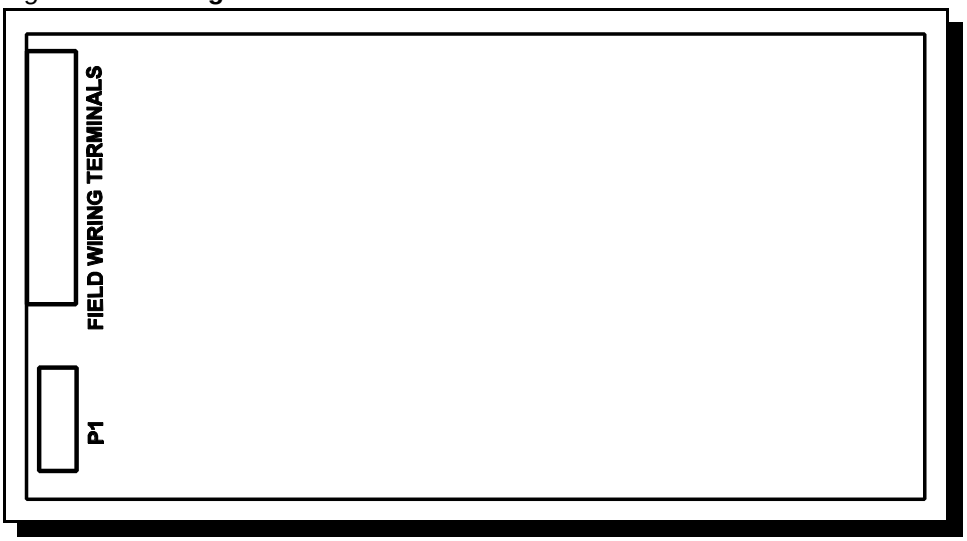
JW1A Alarm or Supv. control for Relay #1.
JW2A Alarm or Supv. control for Relay #2.
|
|
JW8A Alarm or Supv. control for Relay #8.

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 GAMEWELL Technical Services for assistance if required.

6.4 DIGITIAL ALARM COMMUNICATOR MODULE (Model DACT)

Fig.6: **DACT Digital Alarm Communicator Transmitter Module**



P1 Cable to P8 on the Main Fire Alarm Board.

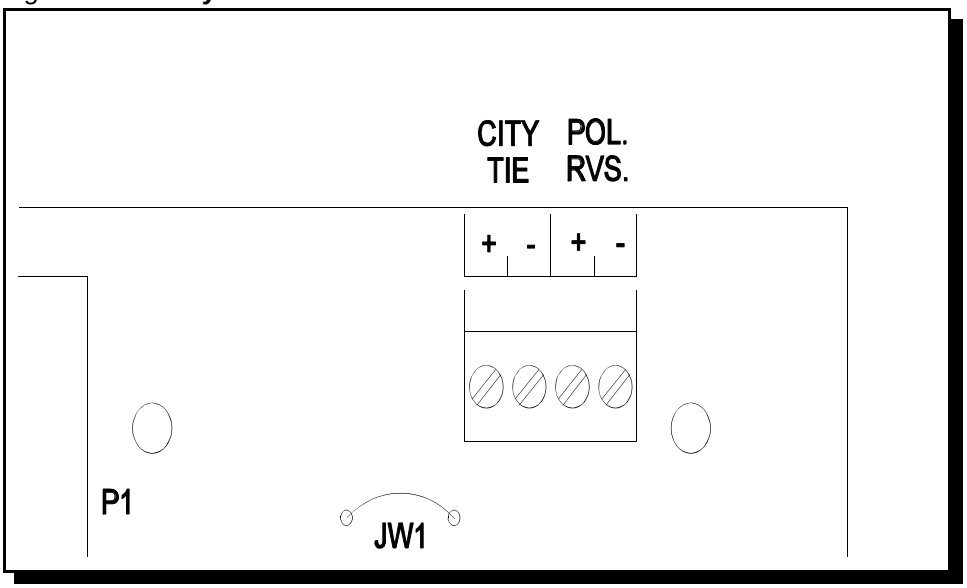
Jumper **JW6** on the Main Fire Alarm Module must be removed if a **DACT** is installed.

Note that this module cannot be installed if a **PRM** (Polarity Reversal/City Tie Module) is used.

Please see the **DACT** Installation instructions for more information.

6.5 POLARITY REVERSAL and CITY TIE MODULE (MODEL: PRM)

Fig.7: **PRM 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 occurs, 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.

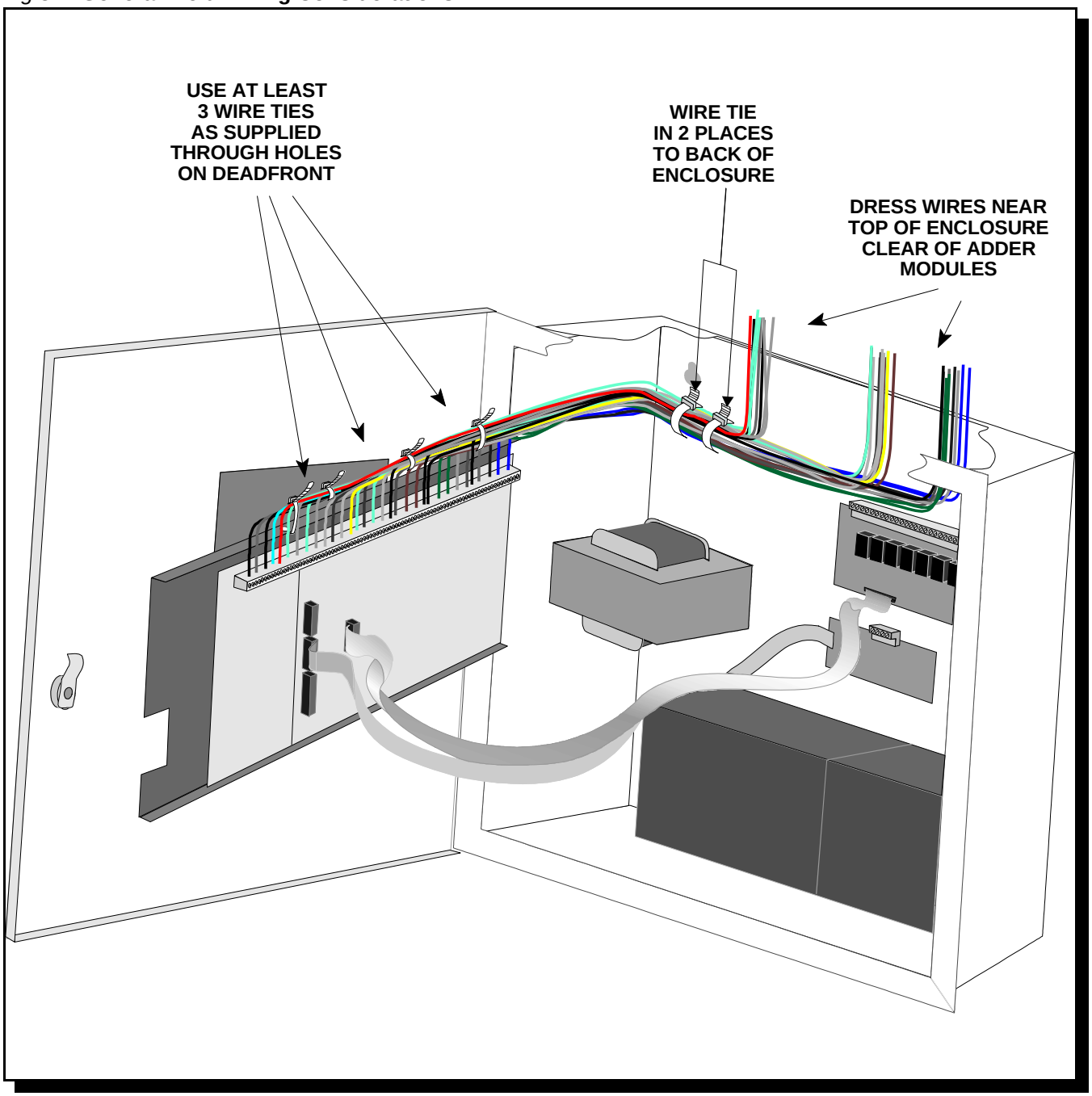
Note that this module cannot be installed if a **DACT** module is used.

7.0 MODULE FIELD WIRING

7.1 GENERAL FIELD WIRING CONSIDERATIONS

Because most of the Field Wiring on the ***Flex 4*** and ***Flex 8*** is to the Main Board(s) on the swinging Dead Front panel, 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.8: **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: Total current for Indicating Circuits is 5 A max.

Fig.9: **Main Fire Alarm Module Terminal Connections**

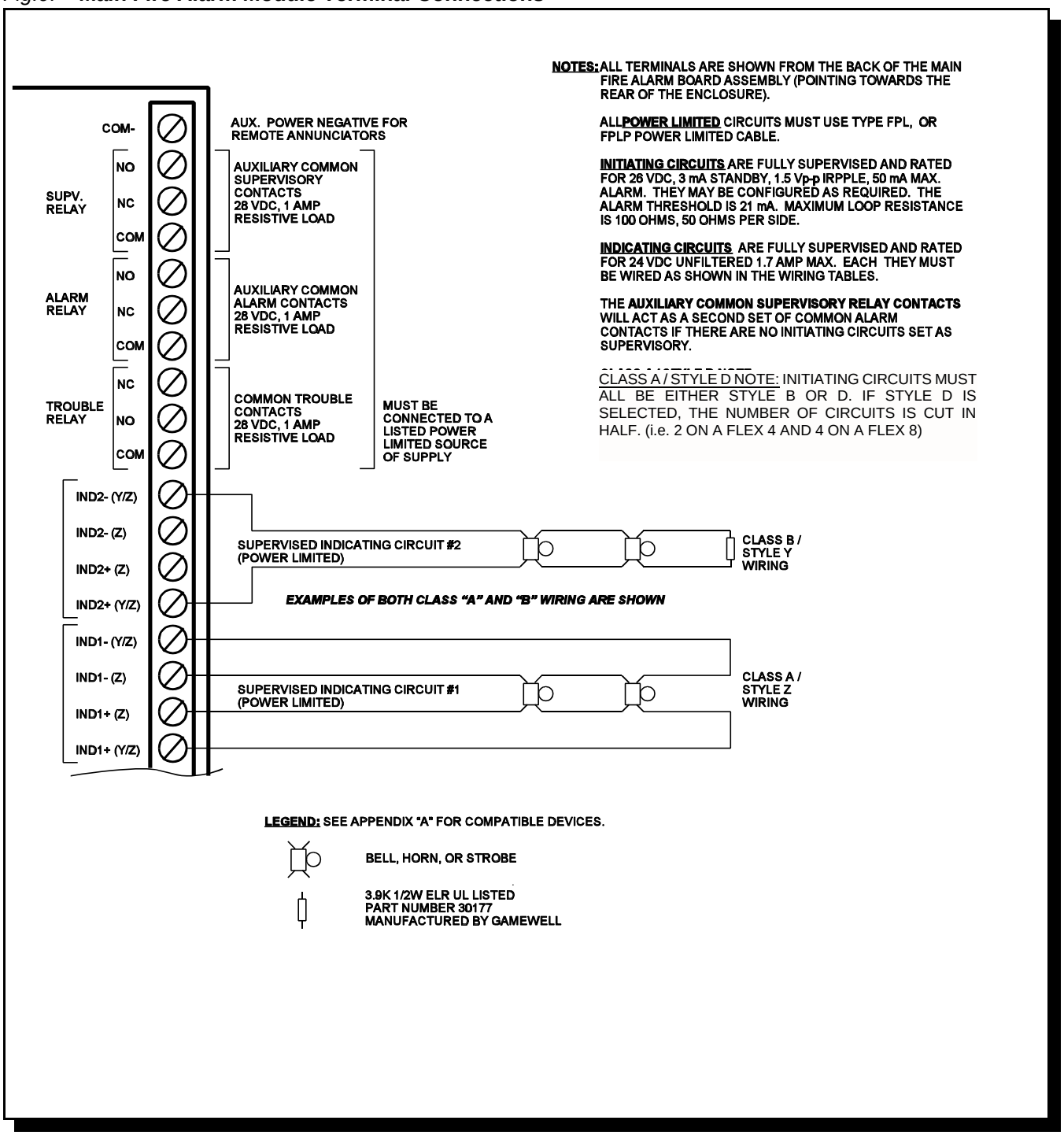
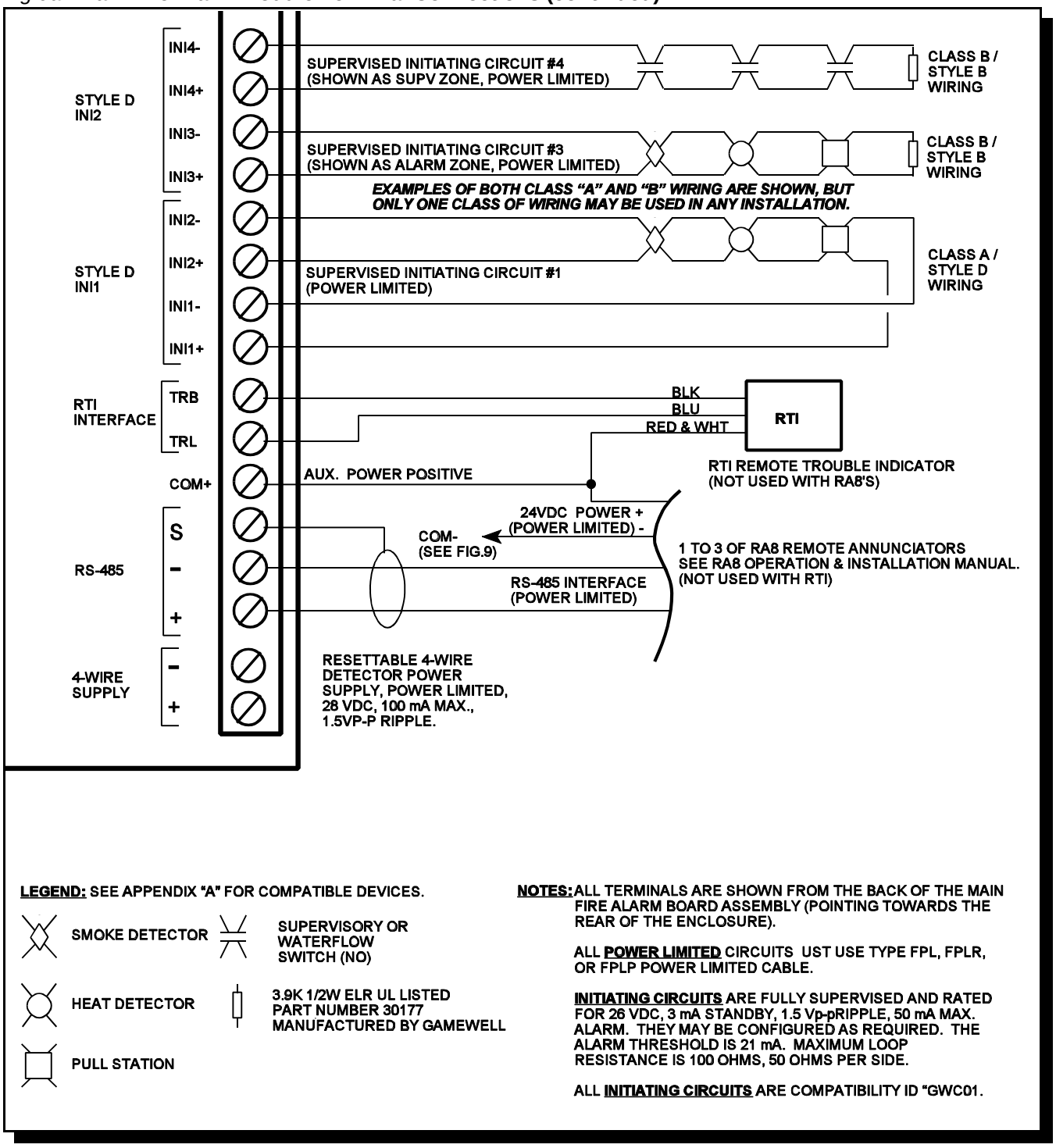


Fig.9a: **Main Fire Alarm Module Terminal Connections (continued)**



LEGEND: SEE APPENDIX "A" FOR COMPATIBLE DEVICES.

SMOKE DETECTOR

SUPERVISORY OR
WATERFLOW
SWITCH (NO)

HEAT DETECTOR

3.9K 1/2W ELR UL LISTED
PART NUMBER 30177
MANUFACTURED BY GAMEWELL

PULL STATION

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 UST 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-pRIPPLE, 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.

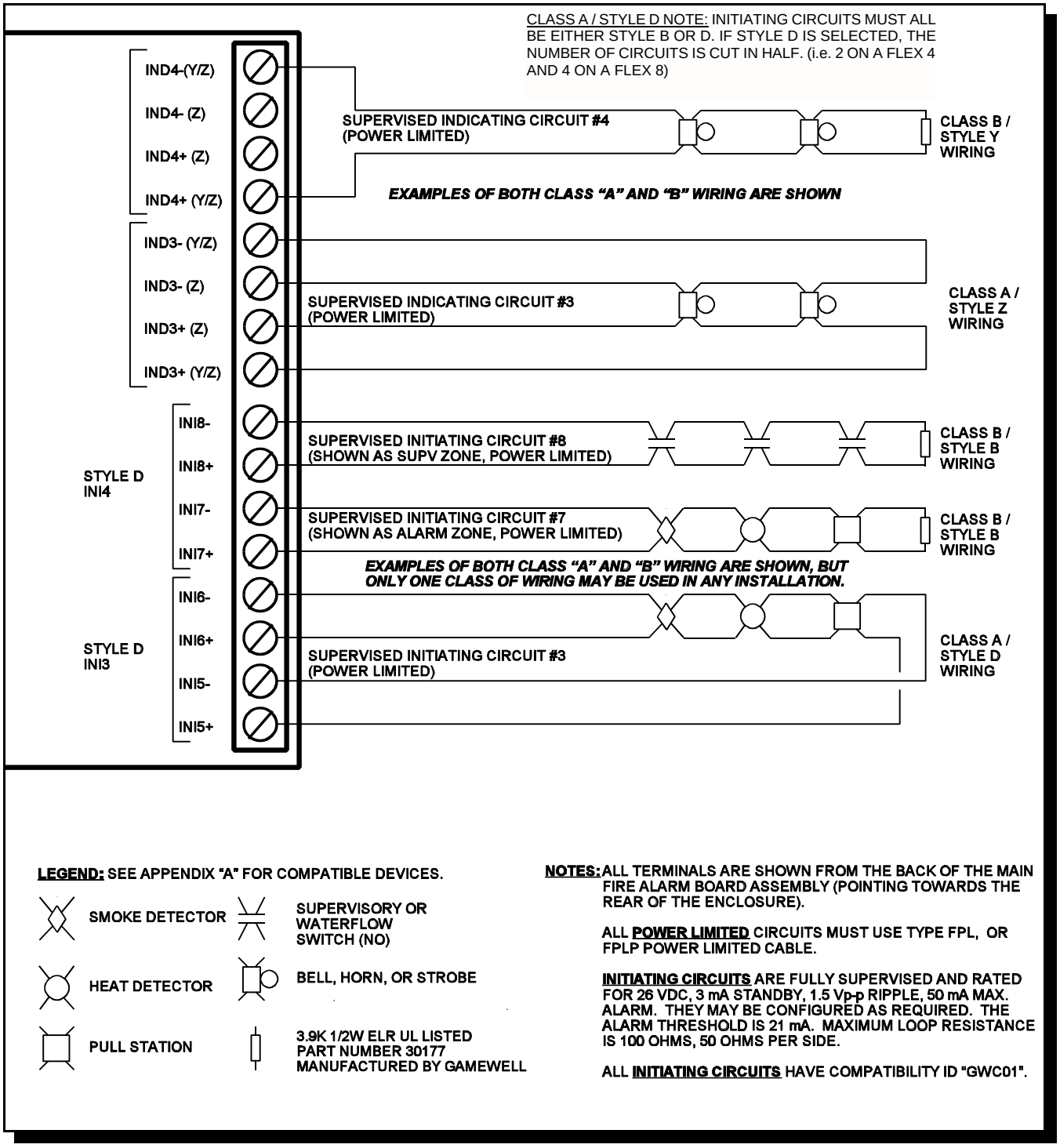
ALL **INITIATING CIRCUITS** ARE COMPATIBILITY ID "GWC01.

7.3 CIRCUIT EXPANDER MODULE (CEM) TERMINAL CONNECTIONS

Initiating circuits 5 through 8 and Indicating circuits 3 and 4 are standard with the **Flex 8** Control Panel. A **Flex 4** Control Panel may be easily expanded to 8 initiating circuits and 4 indicating circuits with the field installation of a Circuit Expander Module (**CEM**). When configured for Class "A" wiring performance, the control will provide four initiating circuits. All circuits may be used for normal or verified alarm operation or circuits three and four may be configured for Waterflow alarm and Supervisory Service respectively.

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

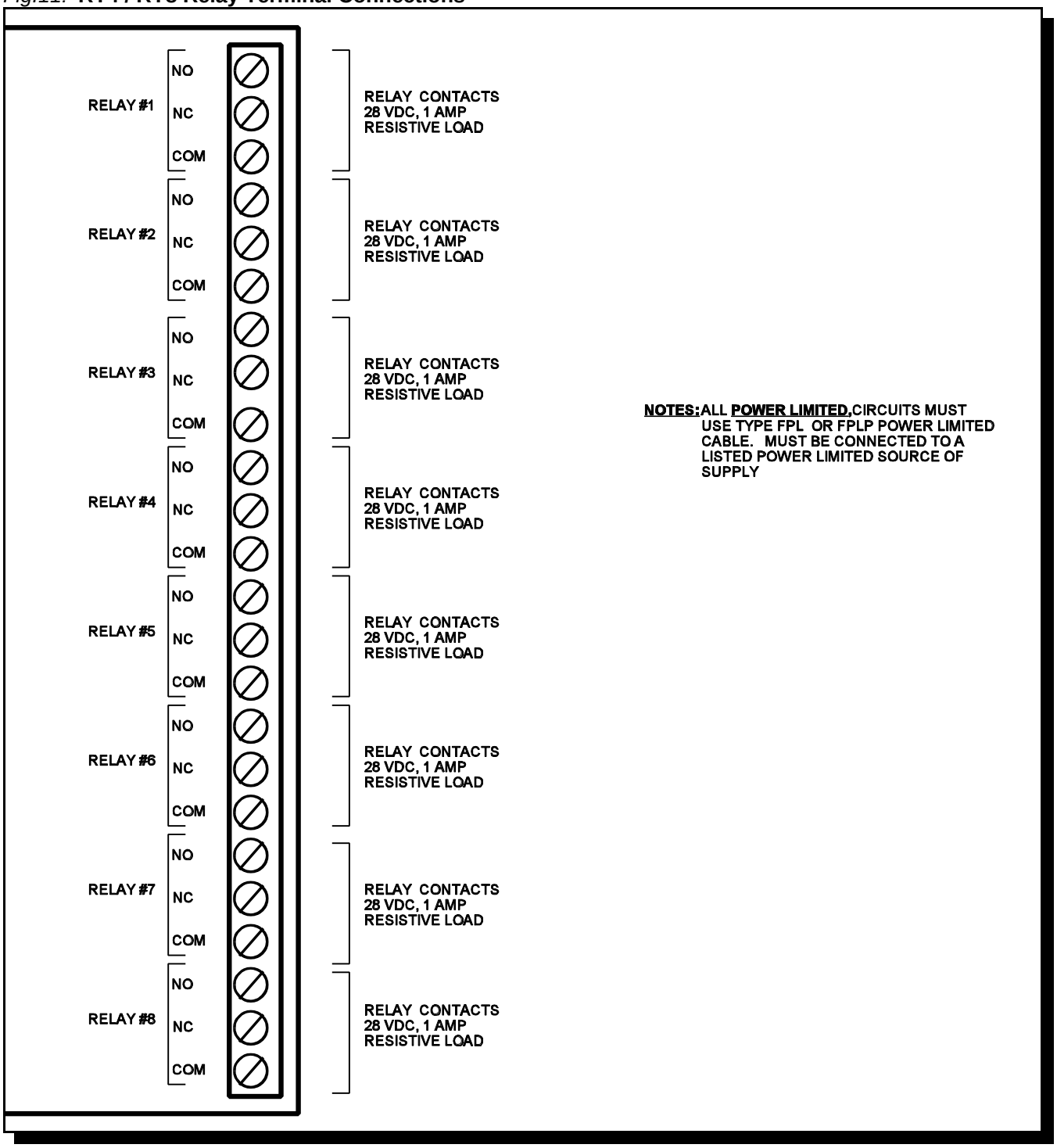
Fig.10: **CEM Circuit Expander Module Terminal Connections**



7.4 RELAY MODULE (RY4 or RY8) TERMINAL CONNECTIONS

Note that only Relays #1 to #4 are present on the **RY4**.

Fig.11: **RY4 / RY8 Relay Terminal Connections**



7.5 DACT / DIGITAL ALARM COMMUNICATOR MODULE TERMINAL CONNECTIONS

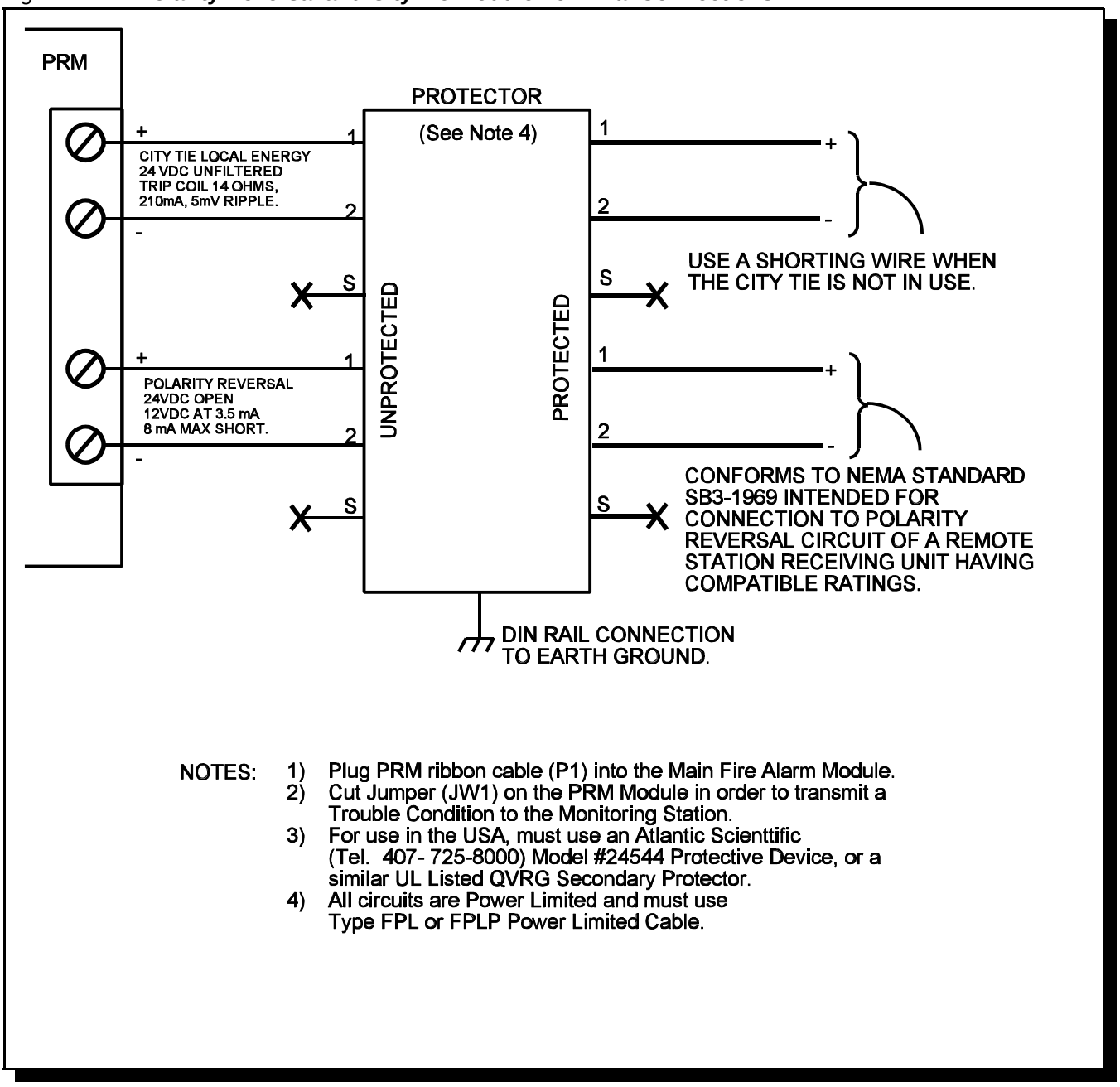
For DACT connection information, see the Installation Instruction Manual Part Number 71954-01.

7.6 POLARITY REVERSAL and CITY TIE MODULE (MODEL: PRM) 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 a similar ***UL Listed QVRG Secondary Protector***, as shown.

Note: The Terminal Blocks are "pluggable" for ease of wiring.
The City Tie Interface is Not Power Limited.
Either the City Tie or Reverse Polarity Interface may be used, but not both.

Fig.12: **PRM Polarity Reversal and City Tie Module Terminal Connections**



NOTES:
1) Plug PRM ribbon cable (P1) into the Main Fire Alarm Module.
2) Cut Jumper (JW1) on the PRM Module in order to transmit a Trouble Condition to the Monitoring Station.
3) For use in the USA, must use an Atlantic Scienttific (Tel. 407- 725-8000) Model #24544 Protective Device, or a similar UL Listed QVRG Secondary Protector.
4) All circuits are Power Limited and must use Type FPL or FPLP Power Limited Cable.

7.7 POWER SUPPLY CONNECTIONS

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

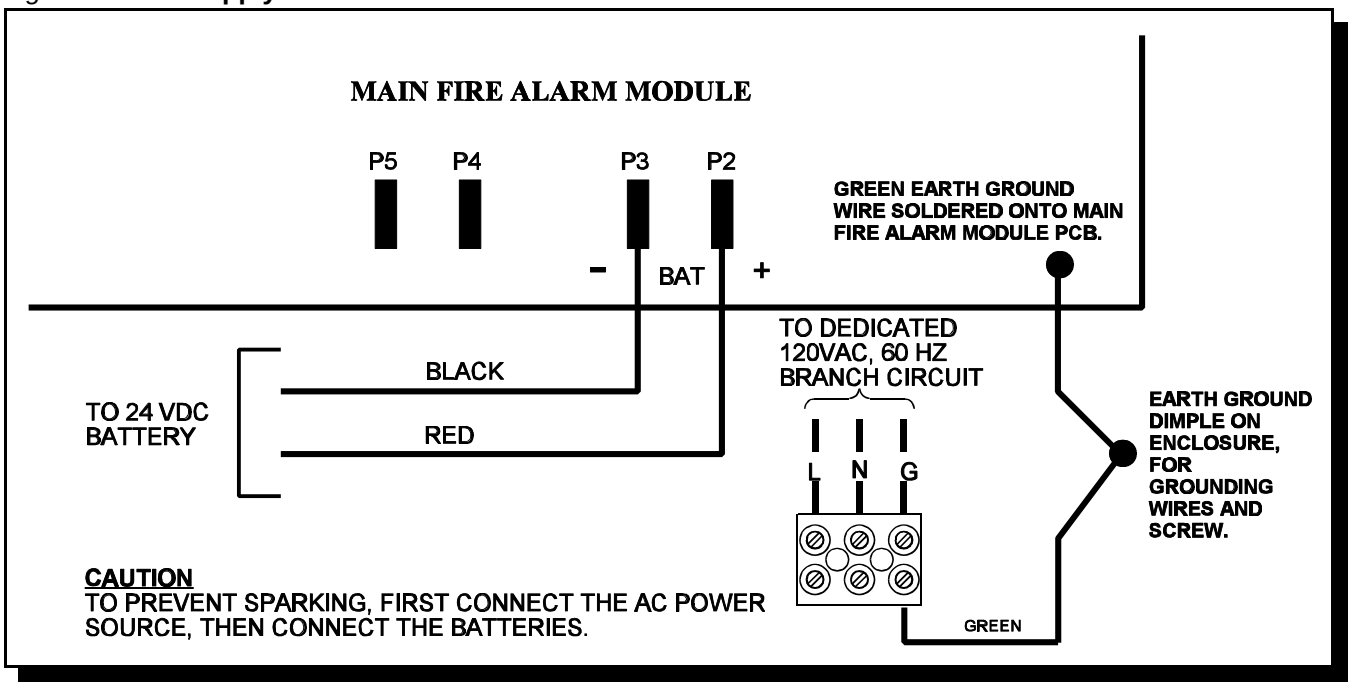
Flex 4 and Flex 8:

Electrical input ratings:	120 VAC, 60 Hz, 2 A main primary circuit breaker
Power supply total current:	6 A maximum
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.13: **Power Supply Connections**



7.8 WIRING TABLES

Fig.14: **WIRING TABLE FOR INITIATING CIRCUITS**

WIRE GAUGE	MAXIMUM WIRING RUN TO LAST DEVICE (ELR)	
(AWG)	ft	m
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

NOTE: MAXIMUM INITIATING LOOP RESISTANCE SHALL NOT EXCEED 100 OHMS

Fig.15: **WIRING TABLE FOR INDICATING (NOTIFICATION APPLIANCE) 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.

AUXILIARY POWER FOR FOUR WIRE TYPE DETECTORS The maximum allowable current is 0.15 Amperes. The maximum allowed Voltage Drop is 1 Volt. Refer to the Indicating Circuit Wiring Table above for wire run information. Be certain to verify the voltage at the last powered initiating device is within its' Listed operating voltage range. Use only devices rated for operation on a 24 volt DC power source.

8.0 SYSTEM CHECKOUT

8.1 BEFORE TURNING THE POWER "ON":

1. Check that all modules are installed in the proper location with the proper connections.
2. Check all field (external) wiring for opens, shorts, and ground.
3. Check that all interconnection cables are secure, and that all connectors are plugged-in properly.
4. Check all Jumpers and Switches for proper setting.
5. Check the AC power wiring for proper connection.
6. Check that the chassis is connected to **EARTH GROUND** (cold water pipe).
7. Make sure to close and secure the front cover plate before powering the system from main AC supply.
8. To prevent sparking, connect the main AC power supply first. Then connect the batteries. **DO NOT CONNECT THE BATTERIES FIRST.** Follow the power-up procedure.

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. Observe 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.

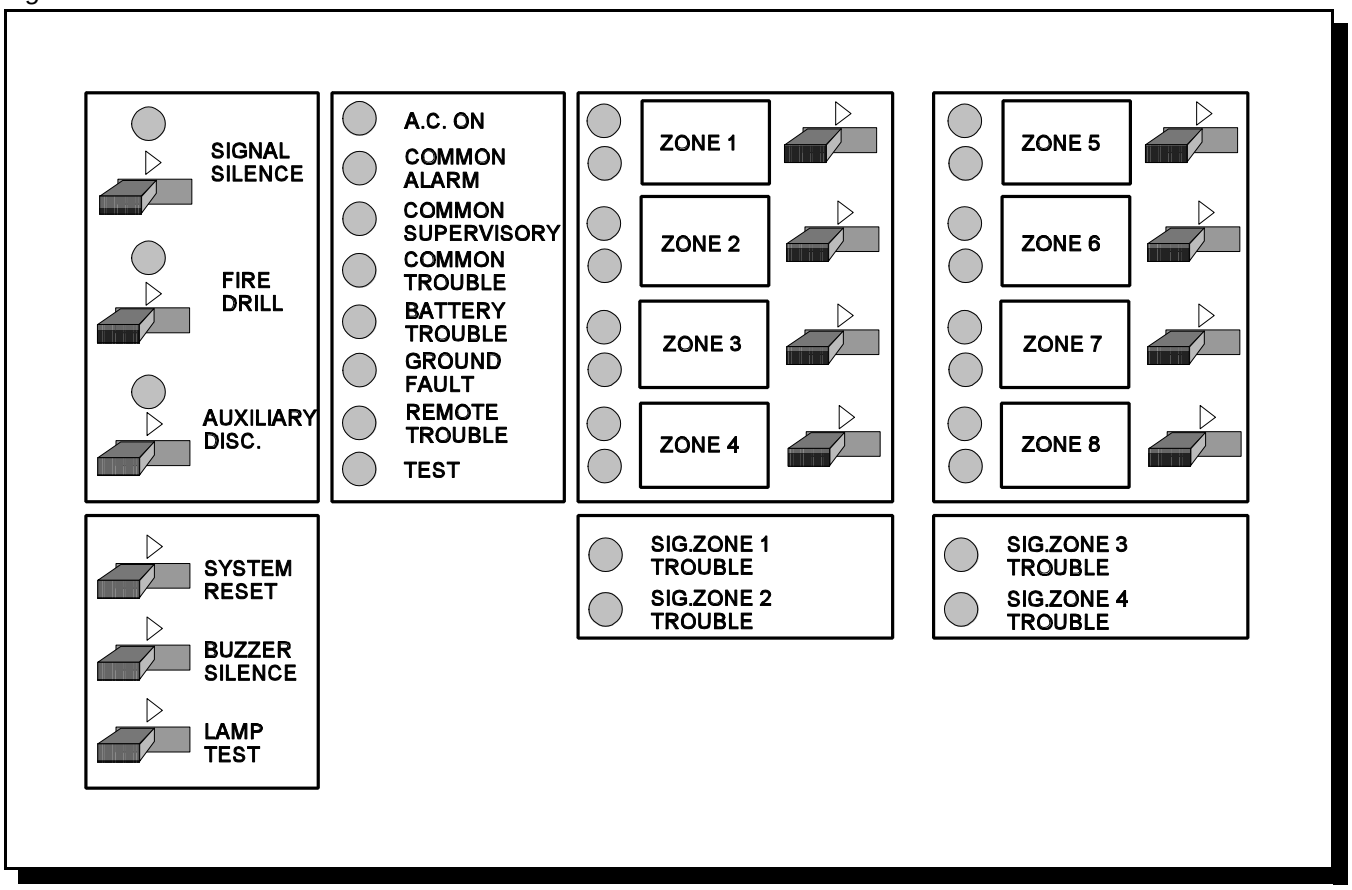
8.3 TROUBLESHOOTING:

Circuit Trouble	Normally when a Circuit trouble occurs, its designated trouble indicator will be *illuminated*, 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. *Please note: Disconnecting a Circuit will cause a system trouble (off-normal position).*
Remote Fail	A *Remote Trouble* will be indicated on the main panel display for any failure reported by, or failure to communicate with an **RA8** Remote Annunciator, **DACT**, or **PRM**.
Ground Fault	This 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. If battery trouble condition persists, replace batteries promptly.

9.0 INDICATORS, CONTROLS, & OPERATION

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

Fig.16: **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:
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:
The Remote Failure Indicator is steady Amber if there is trouble detected at a City Tie (**PRM**) or Digital Alarm Communicator (**DACT**) Module, or if there is communication trouble detected with a Remote Annunciator (**RA8**)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 **RY4** or **RY8** Relays are not activated. The Trouble Relay is activated. Digital Alarm Communicator (**DACT**) or City Tie (**PRM**) 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 Indicating 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
Interrupts the 4-Wire Detector Supply
Turns off Signal Silence Indicator
Stops and resets all Timers
Aux Disconnect not affected
Resets all Initiating Circuits
Turns off all Indicating 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 Indicating 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 Indicating Circuits are active as the result of a Fire Drill.

Fire Drill Switch:
The Fire Drill momentary switch activates all non-Disconnected Indicating Circuits, but does not transmit any Alarms via the Dialler, City Tie, or Common Alarm Relay, nor are any **RY4** or **RY8** 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 **RY4** / **RY8** Relays are not activated. The Trouble Relay is activated. Digital Alarm Communicator (**DACT**) or City Tie Modules (**PRM**) 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:

- 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
- RY4 / RY8 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

9.4 CIRCUIT TYPES:

"Circuits" refers to an actual electrical interface, either **Initiating** (Detection) or **Indicating** (Also referred to as Notification Appliance, Signal or Bell).

"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-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 = 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 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-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.

Water-Flow Alarm = For Water-flow Sensors (Circuits 3 & 7 only). These alarms are identical to normal Non-Verified Alarms except that Indicating 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 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 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 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 <u>not</u> 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 MODULE SYSTEM CONFIGURATION

Configuration of the **Flex 4** and **Flex 8** Control Panels is easily accomplished 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/Horn)	Visual Device (Strobe)
# Remote Annunciators	Switch 13, #4 Switch 13, #5	5 off, 4 off = None 5 on, 4 off = Two	5 off, 4 on = One 5 on, 4 on = Three
Manual Signal Silence	Switch 13, #6	Disabled	Enabled
Fire Drill	Switch 13, #7	Disabled	Enabled
Auxiliary 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 Switch 9, #2	2 off, 1 off = Temporal Code 2 on, 1 off = March Time	2 off, 1 on = Continuous 2 on, 1 on = California Code
Auto Signal Silence	Switch 9, #3 Switch 9, #4	4 off, 3 off = Disabled 4 on, 3 off = 10 Minutes	4 off, 3 on = 5 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)
Auxiliary 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) Indicating Circuits is only a matter of how they are wired. No Programming is necessary See Connection Information (*Figures 9 & 10*).

& If Class A (Style D) Initiating Circuits are selected, 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.
In Class A operation, the DIP Switches for Circuits 3 & 4 are ignored except for an ***Flex 4*** with a **CEM** Circuit Expander Module. LED Indicators for Circuits 3 & 4 are non-functional except for an ***Flex 4*** with a **CEM** Circuit Expander Module.

On the **CEM Circuit Expander Module** of a ***Flex 8***...

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) Indicating Circuits is only a matter of how they are wired. No Programming is necessary See Connection Information.(*Figures 9 & 10*).

& 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. In Class A operation, 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 test initiating devices and verify the initiating circuit wiring in a system.

Walk Test mode 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 Indicating 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 Indicating 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 Indicating 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 and, one half a second off, corresponding to the Circuit being tested. 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 Indicating Circuits, the Initiating Circuit is reset and tested again. If it is still active (in alarm) the pattern will be reoccur.

Trouble on any Initiating Circuit selected for Walk Test causes the Indicating Circuits to be activated continuously for 5 seconds.

Alarm Verification and Water-flow Alarm Retard Operations are disabled on Circuits while 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

2-WIRE DETECTOR CONTROL PANEL COMPATIBILITY

The **Underwriter's Laboratories Inc. (UL)** Listed 2 Wire Initiating Devices identified below have been verified by UL to be electrically compatible with **Flex 4**/**Flex 8** Initiating Device Circuits with Compatibility Identifier "GWC01". Do NOT exceed 3 millianperes of total detector standby current whether mixing different models of compatible detectors, or using the same model on the same Circuit,

GAMEWELL MODEL	COMPATIBILITY IDENTIFIER	STANDBY CURRENT	GAMEWELL MODEL	COMPATIBILITY IDENTIFIER	STANDBY CURRENT
60 Series(Head/Base)			**60 Series(Head/Base)**		
71033/71036	71033/71036	0.110mA	**71035-160/71036**	71035-160/71036	0.057 mA
71033/71086	71033/71086	0.110mA	**71035-160/71086**	71035-160/71086	0.057 mA
71033/71086-LOW	71033/71086-LOW	0.110mA	**71035-160/71086-LOW**	71035-160/71086-LOW	0.057 mA
71034/71036	71034/71036	0.081mA	**71035-210/71036**	71035-210/71036	0.057 mA
71034/71086	71034/71086	0.081mA	**71035-210/71086**	71035-210/71086	0.057 mA
71034/71086-LOW	71034/71086-LOW	0.081mA	**71035-210/71086-LOW**	71035-210/71086-LOW	0.057 mA
71035/71036	71035/71036	0.057mA	**71443/71036**	71443/71036	0.185 mA
71035/71086	71035/71086	0.057mA	**71443/71086**	71443/71086	0.185 mA
71035/71086-LOW	71035/71086-LOW	0.057mA	**71443/71086-LOW**	71443/71086-LOW	0.185 mA
30954	30954	0.081mA	**30955**	30955	0.110 mA

Additions to the device compatibility list for the Gamewell Flex 4 and Flex 8 control panel are frequently being investigated. Please contact Gamewell for the latest information if the Gamewell device you desire is not included in the preceding tables.

4-WIRE DETECTOR CONTROL PANEL COMPATIBILITY

Any **Underwriter's Laboratories Inc. (UL)** Listed separately powered alarm initiating device (e.g.smoke or heat detector) having an operating voltage range equal to or exceeding the output of the Flex 4 or Flex 8 and having a dry contact for alarm initiating is electrically compatible. Be certain to install a end of line, Listed power supervision module after the electrically last initiating device on each circuit. For ease in trouble determination, use one supervision module per Initiating Circuit in which 4 wire type powered initiating devices are installed with a separate power run for each initiating circuit. Operation for alarm of any contact type initiating device installed on the same circuit with two wire type (loop powered) device(s) will cause any previously operated two wire to reset and prevent operation for alarm of any other loop powered device on that circuit.

60 Series	71033/71393	71034/71393	71035/71393	71035-160/71393	71035-210/71393

NOTIFICATION APPLIANCE CONTROL PANEL COMPATIBILITY

Any **Underwriter's Laboratories Inc. (UL)** Listed Notification Appliance with 20 - 30 volts DC or FWR operating voltage range is electrically compatible with the Flex 4 and Flex 8.

GAMEWELL offers many Notification Appliances compatible with the Flex 4 and the Flex 8 including; All model PH Series wall mounted Horns, PHS Series wall mounted Horn/Strobes, PS Series wall mounted Strobes, PSS Series wall mounted Speaker/Strobes, PCHS Series ceiling mounted Horn/Strobes, PCS Series ceiling mounted Strobes, PCSS Series ceiling mounted Speaker/Strobe and Sync-Circuit modules MDL or MDLW.

APPENDIX "B" - RA8 REMOTE ANNUNCIATOR

The **RA8** Eight Zone Remote Annunciator mounts in an electrical box. It provides annunciation for the **Flex 4** or **Flex 8**'s full complement of 8 Initiating circuits.

For wiring connection information refer to the installation and operation manual part number 71954-02.

Fire Alarm Control Panel (Flex 4)
General:

- **M** 4 Style B (Class B) or 2 Style D (Class A) Supervised Initiating Circuits; configurable. [Compatibility ID "GWC01"]
  Power Limited: 26VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)
- **M** One **CEM** Circuit Expander Module may be added.
- **M** 2 Style Y or Z (Class A/B) Indicating Circuits; configurable for strobes or audibles.
  Power Limited: 24 VDC unfiltered
  1.7 A @ 49C per Circuit
- **M** Initiating Circuit Disconnect Switches.
- **M** Optional **DACT** Digital Alarm Communicator or **PRM** City Tie Module.
- **M** Optional **RY4 / RY8** Relay Module.
- **M** Resettable 4-Wire Detector Supply.
  Power Limited: 28VDC, 100mA max, 1.5Vp-p ripple
- **M** Auxiliary Power Supply.
  Power Limited: 24VDC, 300mA max, unfiltered for RTI or Remote Annunciators
- **M** 1 RS-485 Connection for up to 3 **RA8** Remote Annunciators.
- **M** 1 Interface for connection to an **RTI** Remote Trouble Indicator.
- **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.
  4 Amps (primary, 4A circuit breaker)
- **M** *Pwr Supp. ratings:* 6 Amps. max. (secondary)
- **M** For Indicating 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

***Circuit Expander Module* CEM)**

- **M** May be added to **Flex 4**.
- **M** 4 Style B (Class B) or 2 Style D (Class A) Supervised Initiating Circuits; configurable. [Compatibility ID "GWC01"]
  Power Limited: 22VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)
- **M** 2 Style Y or Z (Class B or A) Indicating Circuits; configurable for 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 (RA8)

- **M** RS-485 Interface, up to 3 per Flex 4 or Flex 8 Panel.
- **M** *Current Consumption:* Standby: 35 mA, Alarm: 90 mA

Remote Trouble Indicator (RTI)

- **M** Trouble LED and Trouble Buzzer
- **M** *Current Consumption:* Standby: 35 mA, Alarm: 35 mA

End-of-Line Resistor (30177)

- **M** UL Listed 3.9 Kohm, 1/2 Watt, 5% Resistor. Spade Lugs

DACT / Digital Alarm Communicator (DACT)

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

Fire Alarm Control Panel (Flex 8)
General:

- **M** 8 Style B (Class B) or 4 Style D (Class A) Supervised Initiating Circuits; configurable. [Compatibility ID "GWC01"]
  Power Limited: 26VDC, 3 mA standby, 1.5Vp-p ripple, 50 mA max. (alarm)
- **M** 4 Style Y or Z (Class A/B) Indicating Circuits; configurable for strobes or audibles.
  Power Limited: 24 VDC unfiltered
  1.7 A @ 49C max per Circuit 5 Amperes maximum per control panell
- **M** Initiating Circuit Disconnect Switches.
- **M** Optional **DACT** Digital Alarm Communicator or **PRM** City Tie Module.
- **M** Optional **RY4 / RY8** Relay Module.
- **M** Resettable 4-Wire Detector Supply.
  Power Limited: 28VDC, 100mA max, 1.5Vp-p ripple
- **M** Auxiliary Power Supply.
  Power Limited: 24VDC, 300mA max, unfiltered for RTI or Remote Annunciators
- **M** 1 RS-485 Connection for up to 3 **RA8** Remote Annunciators.
- **M** 1 Interface for connection to an **RTI** Remote Trouble Indicator.
- **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.
  4 Amps (primary, 4A circuit breaker)
- **M** *Pwr Supp. ratings:* 6 Amps. max. (secondary)
- **M** For Indicating 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

Model:* RY4 and RY8 *Relay Module

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

***Polarity Reversal and City Tie Module* (PRM)**

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

System Model: **Flex 4 and Flex 8** Fire Alarm Control Panels

System Type: Local, Auxiliary (using **PRM**), Remote Station Protected Premises (using **DACT** or **PRM**), Central Station Protected Premises (using **DACT**).

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

Type of Signalling: Non-Coded

Applicable Standards: National Electrical Code NFPA 70
National Fire Code NFPA 72
UL Standard 864

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
Flex 4	Fire Alarm Control Panel		X	0.110	=	0.220	=
Flex 8 or Flex 4 with CEM	Fire Alarm Control Panel or Fire Alarm Control Panel w/ Circuit Expander Module		X	0.155	=	0.340	=
RY4 / RY8	Relay Module		X	0.005	=	0.160	=
PRM	City Tie Module		X	0.035	=	0.300	=
DACT	Digital Alarm Communicator Module		X	0.045	=	0.120	=
RA8	Remote Annunciator		X	0.035	=	0.090	=
RTI	Remote Trouble Indicator		X	0.035	=	0.035	=
71033 or 30955 Photo Smoke Detector			X	0.000110	=	0.052	=
71034 or 30954 Ion Smoke Detector			X	0.000081	=	0.052	=
71035 or 71035-160 or 71035-210 Heat Detector			X	0.000057	=	0.052	=
71443 Combination Photo/Heat Detector			X	0.000185	=	0.052	=
Signal Load (bells, horns, strobes, and etc.)					=		=
Auxiliary Power Supply for Annunciators, etc.					=	ALARM	=
Total currents (Add above currents)				STANDBY	(**A**)		(**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

Total Alarm Current: Must be 6 amperes or less. Indicating Circuits not to exceed 5 amperes.

Battery Selection: Multiply (**C**) by 1.20 to derate battery.
The control panel will charge up to 24AH Batteries in a separate Listed enclosure.

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

Examples:	**Configuration**	**24 Hrs Standby, 5 Min Alarm**	**60 Hrs Standby, 5 Min Alarm**
	Flex 4 Basic (2A alarm)	4 AH Batteries	8 AH Batteries
	Flex 4, DACT, RY8 (2A alarm)	7.0 AH Batteries	12 AH Batteries
	Flex 8 (**Flex 4** with **CEM**) (4A alarm)	12 AH Batteries	12 AH Batteries
	Flex 8 (**Flex 4** with **CEM**) , **DACT**, **RY8**, 3 x **RA8** (4A alarm)	12 AH Batteries	24 AH Batteries

WARRANTY

The Gamewell Company warrantees this manufactured equipment is to be free of defects in material and workmanship for a period of one (1) year from the date of original shipment. Gamewell will repair or replace, at its option, any equipment which it determines to contain defective material or workmanship. Said equipment must be shipped to Gamewell prepaid. Return freight will be prepaid by Gamewell. We shall not be responsible to repair or replace equipment which has been repaired by others, abused, improperly installed, altered or otherwise misused or damaged in any way. Unless previously contracted by Gamewell, Gamewell will assume no responsibility for determining the defective or operative status at the point of installation, and will accept no liability beyond the repair or replacement of the product at our factory authorized service depot.

The Gamewell Company
60 Pleasant Street
Ashland, MA 01721-1171

Phone: (508) 231-1400
FAX: (508) 231-0900
Web Page: http://www.gamewell.com