

BPS-1100

Signal Booster Power Supply

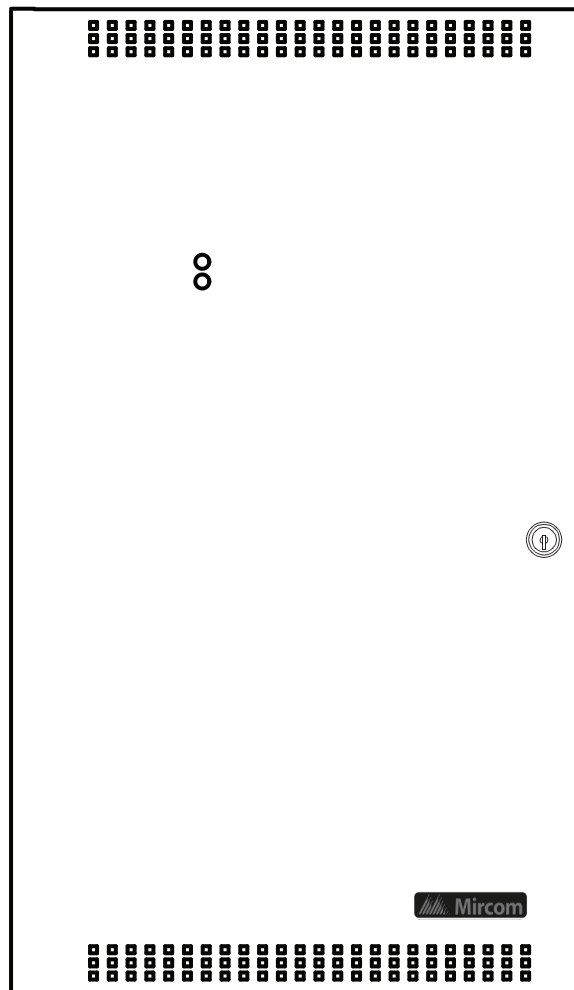


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1.0 Introduction

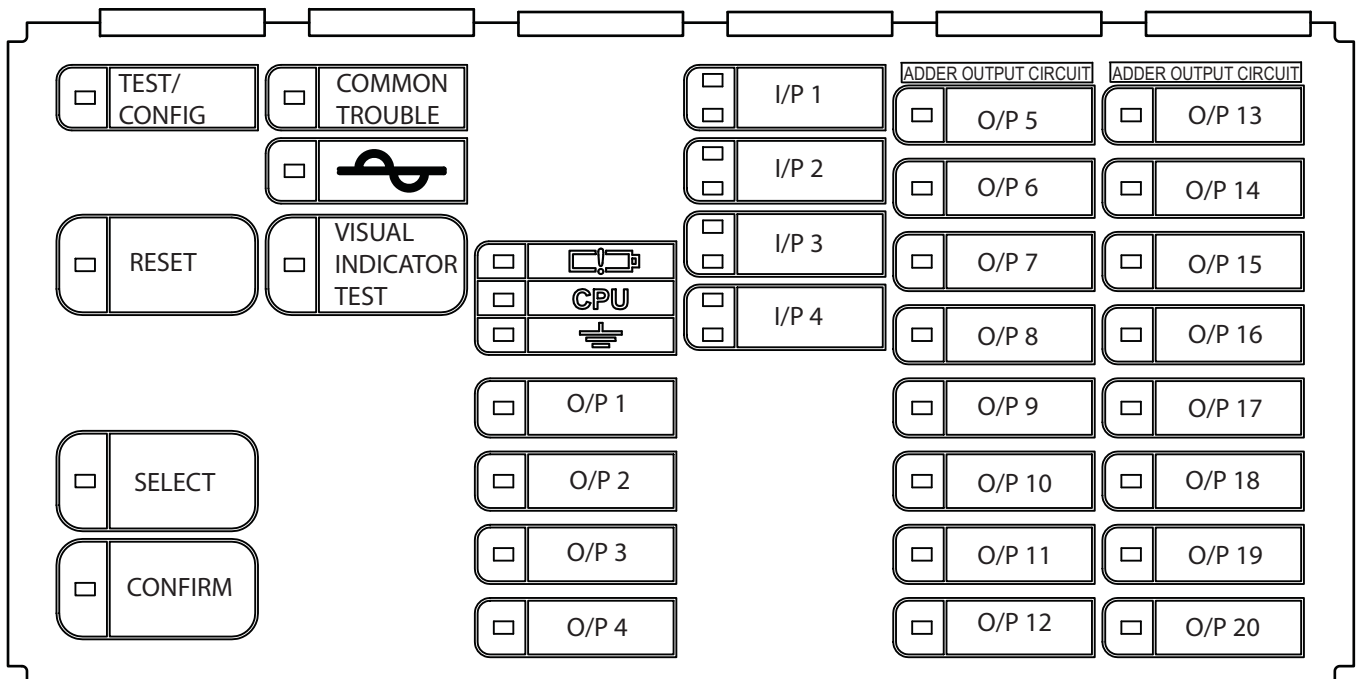
Mircom's BPS-1100 Signal Booster Power Supply provides up to 20 fully supervised Class A or B (UL Style Z or Y) Indicating Circuits. All Indicating Circuits are fully supervised for opens, shorts and grounds. Optional Adder Modules include additional Indicating Circuits and Relay Circuits. Flush or surface mountable enclosures can be used for retrofits and on new installations.

1.1 Overall Features:

- 120V AC, 24V DC, 12 Amps Max
- Basic unit has 4 Power Limited Class A/B (Style Z/Y) Indicating Circuits with individual trouble indicators (1.7A Max per circuit).
- 4 supervised programmable inputs
- Optional 3 Adder Modules for additional Indicating and Relay Circuits. Indicating Circuits expandable by 16 (with 3 SGM-1004As) and Relay Circuits by 16 (with 2 RM-1008As).
- Supports supervised and unsupervised suite isolators
- Space for 10 to 17 Amp Hour Batteries
- Each Indicator Circuit can be configured as Audible or Visual. Audibles may be steady, Temporal Code, California Code, or March Time.
- Indicating Circuits may be individually Disconnected by a DIP Switch.
- Auxiliary Relay Contacts for Common Ground and Common Trouble.
- Easy Configuration via Pushbuttons and Switches.
- Extensive transient protection
- Surface Mountable Enclosures, Flush Trims Available

1.2 Controls and Indicators

4 Pushbuttons, 7 Common Indicators, provision for up to 4 Inputs and 20 Output Points.



2.0 General Notes

Number Of Adders That May Be Installed

The maximum number of Adder Modules that may be physically installed in a BPS-1100 is 3 Adder Modules, a combination of the following:

SGM-1004A Signal Adder Module (maximum of 16 NACs in a system, including 4 NACs on main board)

RM-1008A Relay Adder Module (maximum of 16 Relay Circuits in a system)

Circuits And Zones

Circuits refers to an actual electrical interface, **Input** (Detection), **Indicating** (NAC), or **Relay**.

Display Points

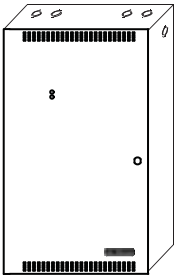
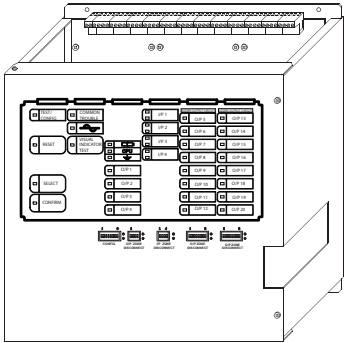
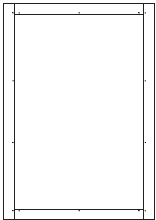
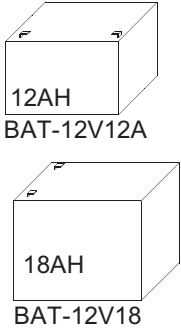
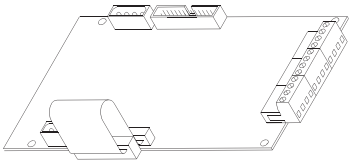
On the BPS-1100 an important concept is **Display Points**. Unlike some products the available LED Displays and matching Circuit Disconnect Switches are not hard-wired to the Circuit Adder Modules. The Main Chassis provides a fixed number of Display Points on their attached Display Boards. These are assigned during the Configuration **Adder Module Number and Type** operation (see Configuration Section) as required in the cabling order in which Adder Modules are installed. In any system setup, there must be at least as many Display Points available, as those required by the Circuits.

Wiring Styles

Input Circuits are configured as Class B (Style B).

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

3.0 System Components

	Model	Description
 <p>BPS-1100</p>	BB-1024	Surface Enclosure
	MCC-1100-12	12 A Main Chassis which contains the MAM-1100 Front Display Module
	FA-1024TR	Flush Trim Ring (add another suffix R for Red Enclosure)
 <p>12AH BAT-12V12A</p> <p>18AH BAT-12V18</p> <p>W= 5.94" H= 3.94" D= 3.86"</p> <p>W= 7.13" H= 6.58" D= 2.29"</p>	12 VOLT Batteries (10 to 17AH) (2 required for 24 volts)	Use battery Models: BAT-12V12A (12 AH) and BAT-12V18A (18AH).
	SGM-1004A RM-1008A	Circuit Adder Modules

3.1 Chassis Type

MCC-1100-12

Main Chassis with 4 Style Y or Z Indicating

Circuits, and a 12 ampere Power Supply. See Module Specifications *Appendix A - Module Specifications And Features on page 30* for more details.

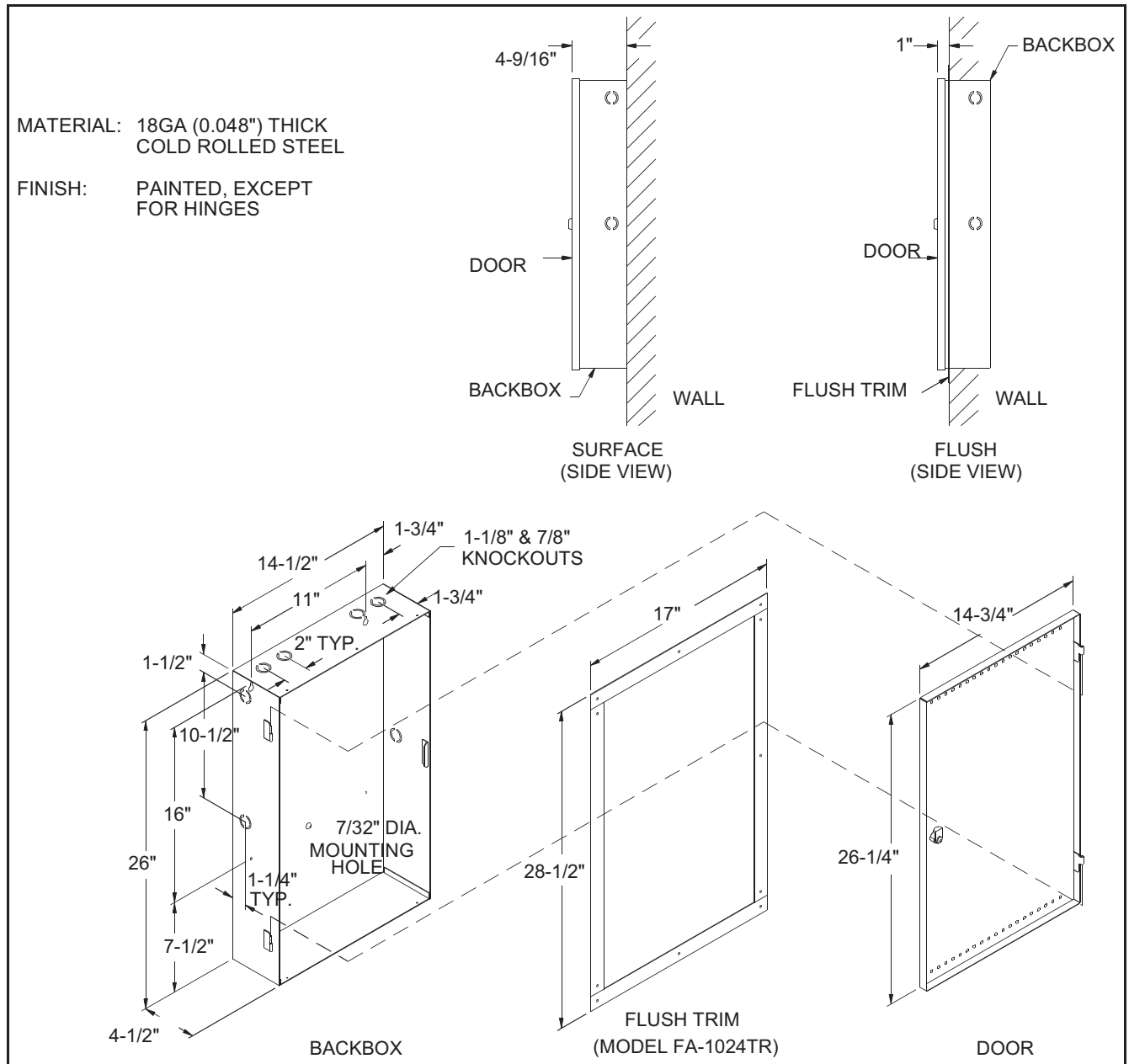
3.2 BPS-1100 Accessories

MP-300	EOL Resistor Plate
MP-300R	EOL Resistor Plate, Red
MP-300S	EOL Resistor Plate, Stainless steel finish

4.0 Mechanical Installation and Dimensions

Install the BPS-1100 enclosure as shown below in Figure 1.

Figure 1: BPS-1100 Flush or Surface Enclosure Installation and Dimensions



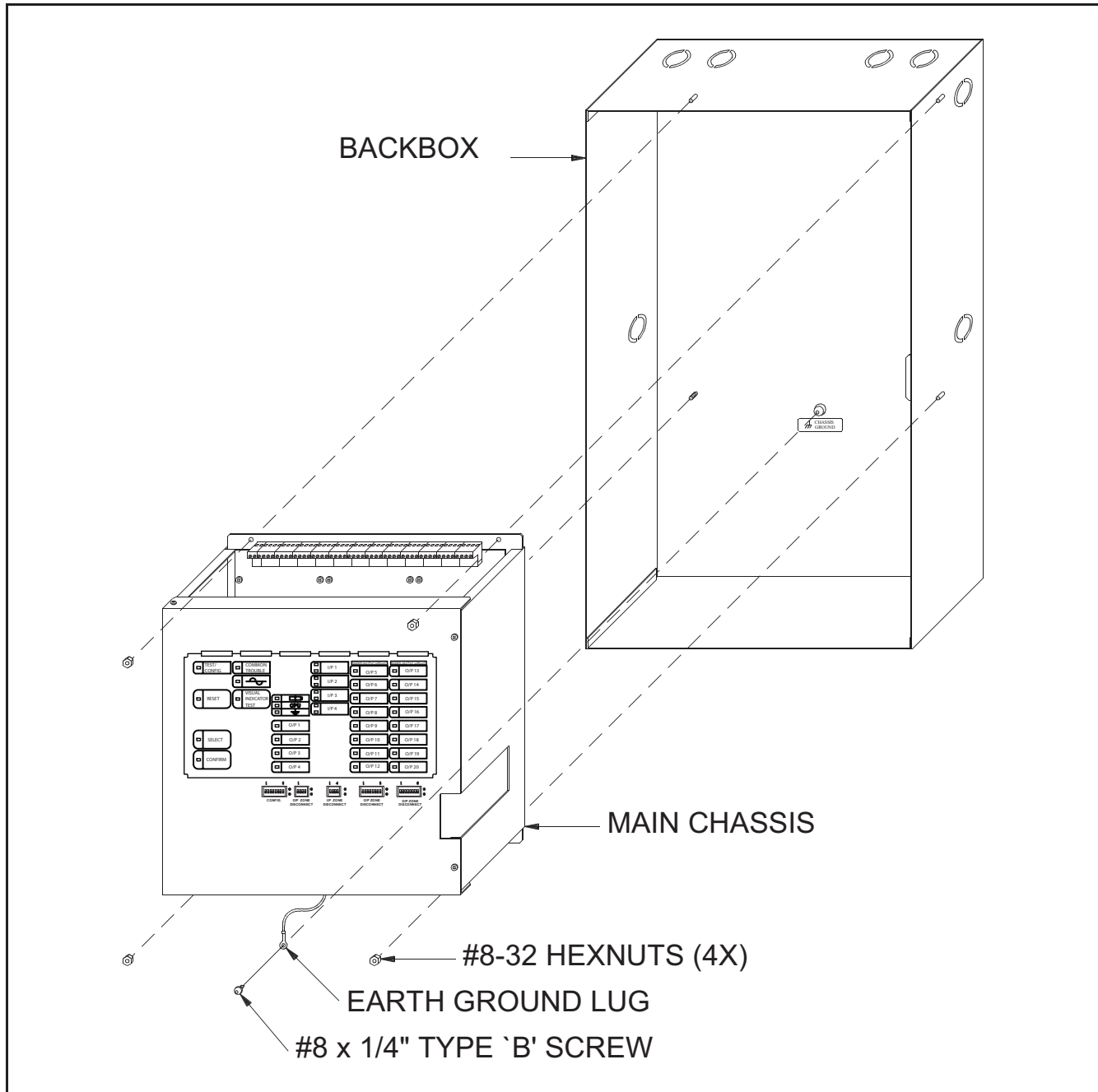
4.1 Main Chassis Installation

The Main Chassis is pre-installed in the BPS-1100 Enclosure as shown. Group the incoming wires through the top of the enclosure to prepare it for wiring to the Modules. Do not run the wires in-between the Modules since it could cause a short circuit. Use a wire tie to group wires for easy identification and neatness. 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: DO NOT install cable through bottom of the box. This space is reserved for Batteries.

Figure 2: Main Chassis Installation



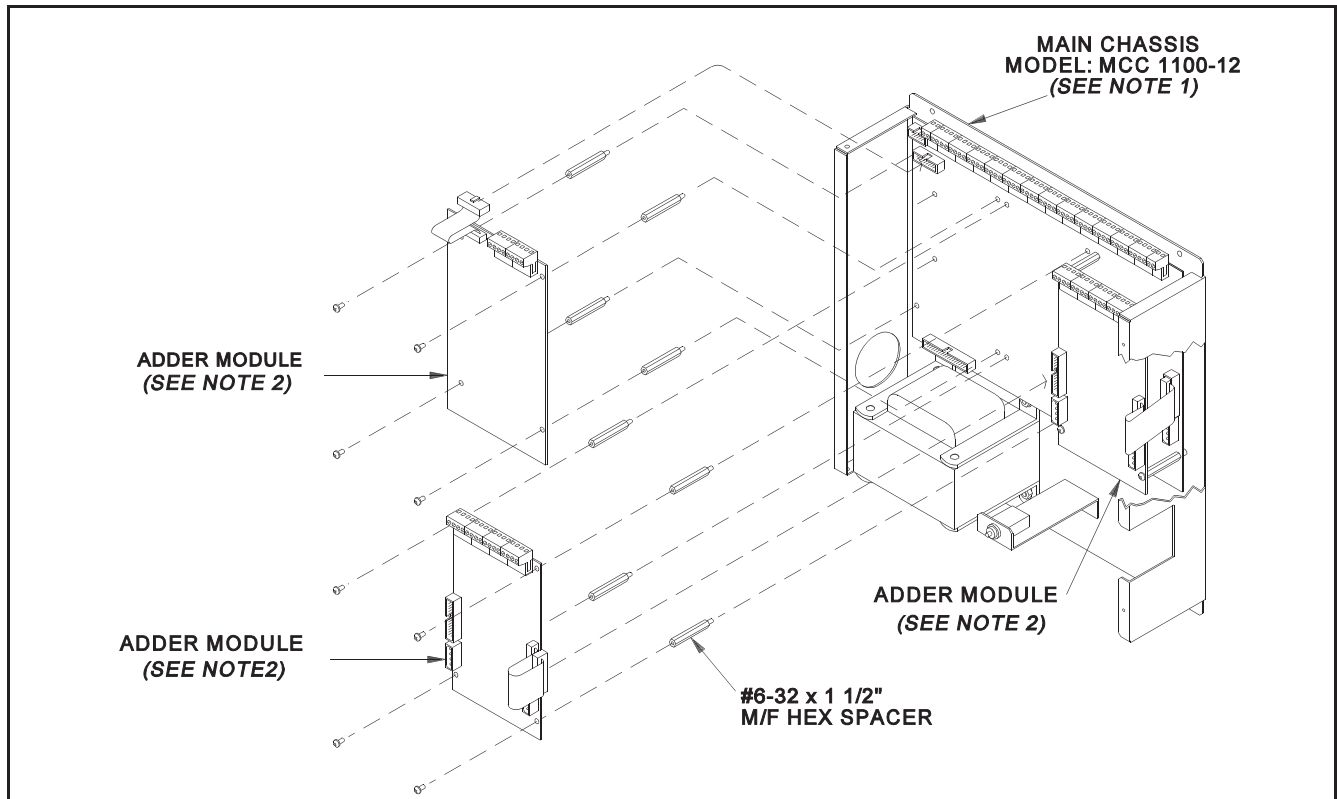
5.0 Modules Mounting Locations

The Main Chassis in a BPS-1100 enclosure comes pre-assembled with all power supply, main panel, and display components and boards. Signal Adder Modules are installed from right to left using the supplied stand-offs, as shown in the figure below, with the first Module plugging its 26 pin ribbon cable into P5 on the Main BPS-1100 Board, and using the included MD-579 four wire power cable as described in the Module Settings section. A second Signal Adder Module would connect by plugging its 26 pin cable into the matching socket on the previous module to the right, and by installing the supplied MD-579 four wire power cable as described in the appropriate Module Settings section.

To enable communication from the Main BPS-1100 Board to all of the Circuit Adder Modules, it is necessary to remove the Continuity Jumper on JW6 (near P5, the Signal Adder Module Connector) on the Main BPS-1100 Board. This jumper plug must be installed on the Continuity Jumper on the last installed Signal Adder Module (see the appropriate Module Settings section to verify the location of the Continuity Jumper on a particular Signal Adder Module). Only the LAST Signal Adder Module should have a jumper plug on its Continuity Jumper; all others must be left without a jumper plug.

There needs to be enough Display Points for each circuit on an Adder Module, and these are assigned during Configuration (see System Configuration Section) in the order in which the Adders are electrically installed (the order in which they have their cables connected to each other). Both the number of points available for each Display Type, and the number required for each Circuit Adder Module Type are described in the Module Settings Section.

Figure 3: Module Mounting Locations

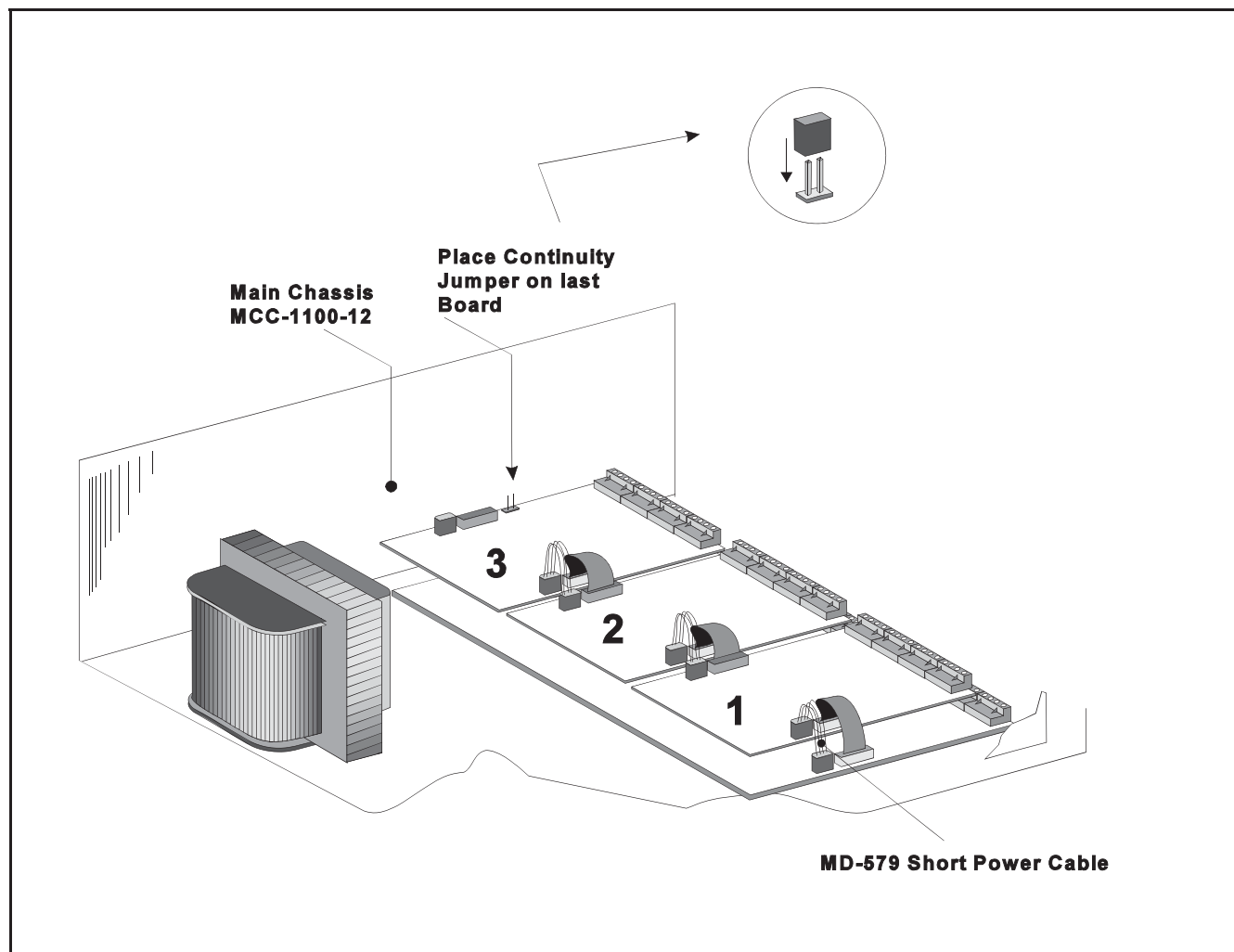


Notes: 1. Front plate is not shown.

2. Adder modules may be:

- A) Model SGM-1004A
- B) Model RM-1008A

Figure 4: Adder Module Mounting Details

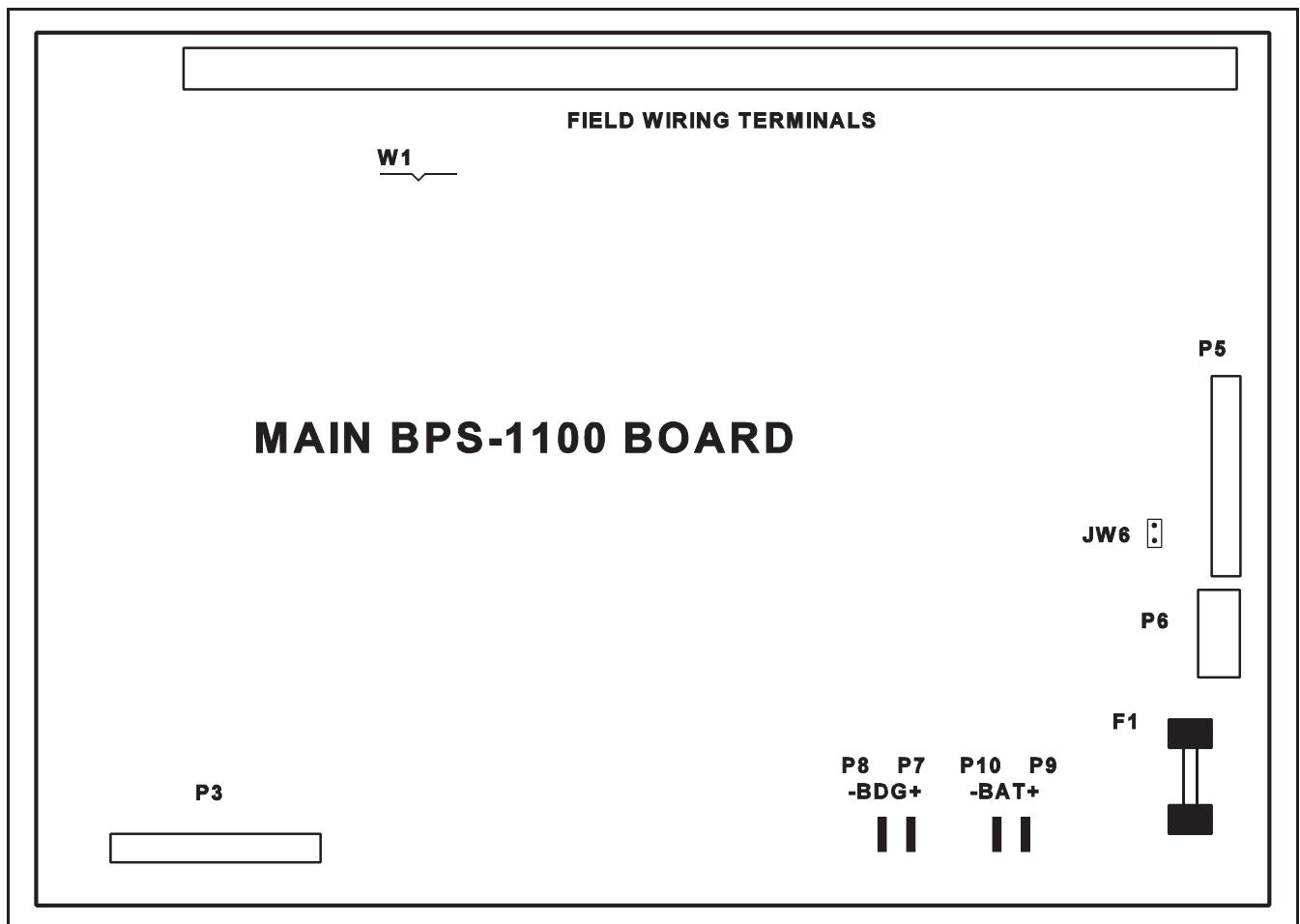


6.0 Module Settings

6.1 Main Chassis Board of the BPS-1100

- JW6** This Continuity Jumper is removed if there are any Adder Modules (Signal and Relay) installed, and installed on the last Adder Module.
- W1** Cut this jumper to disable ground fault detection on the BPS-1100. Therefore, there will be no ground fault detection other than from the Fire Alarm Panel.
- P3** Connector for front Display Module (part of MCC-1100).
- P5** Connector for Adder Modules.
- P6** Power Connector for Adder Modules.
- P7,8** Factory connection to Bridge Rectifier.
- P9,10** Connection to 24 VDC Battery.
- F1** 20 Amp 1.25" Fast Blow Battery Charge Fuse

Figure 5: Main Chassis board of the BPS-1100



6.2 Main Display Module (Part of Main Chassis)

- P1

Cable connects to P3 of Main Chassis Board of the BPS-1100.
- SW1

Dip Switch used for configuration of input and output circuits.
- SW2, SW4, SW5

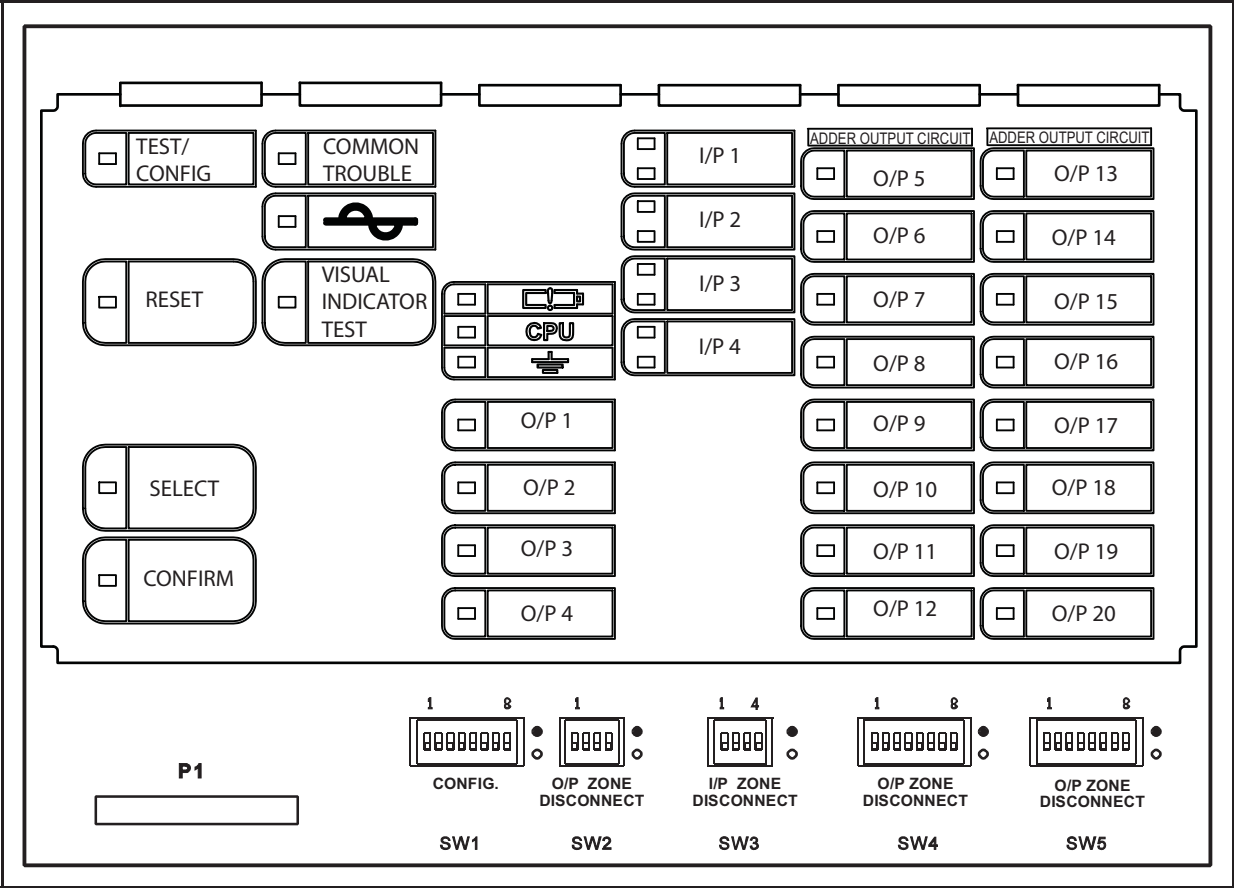
Dip Switches used for output circuit disconnect (labelled O/P Zone Disconnect). See 10.0 System Configuration on page 24.
- SW3

Dip Switch used for input circuit disconnect (labelled I/P Zone Disconnect). See 10.0 System Configuration on page 24.

The Main Display Module provides 4 dedicated Display Points for the 4 Indicating Circuits on the Main BPS-1100 Module. It also provides the following general purpose Display Points.

Chassis	Type	Display Points
MCC-1100-12		There are 4 Display Points dedicated to the 4 Main Board Indicating Circuits. The next 4 are dedicated to the 4 Main Board Input Circuits and the next 16 for the Adder Indicating.

Figure 6: Main Display Module (For Service Personnel)



6.3 Signal Adder Module (Model SGM-1004A)

- P2** Data Cable to P5 of Main BPS-1100 Module or to previous Adder Module.
- P1** Data Connector for next Adder Module.
- P4** Power Connector to P6 of Main BPS-1100 Module or to previous Adder Module.
- P3** Power Connector for next Adder Module.
- JW1** Continuity Jumper removed if there are any more Adder Modules installed.
- JW2** Leave Jumper as packed for this BPS-1100.
- JW3** Leave Jumper as packed for this BPS-1100.
- JW4** Leave Jumper as packed for this BPS-1100.
- JW5** Leave Jumper as packed for this BPS-1100.
- J11** NOT USED for BPS-1100.

Jumper JW6 on the Main BPS-1100 Module must be removed if there are any Adder Modules installed.

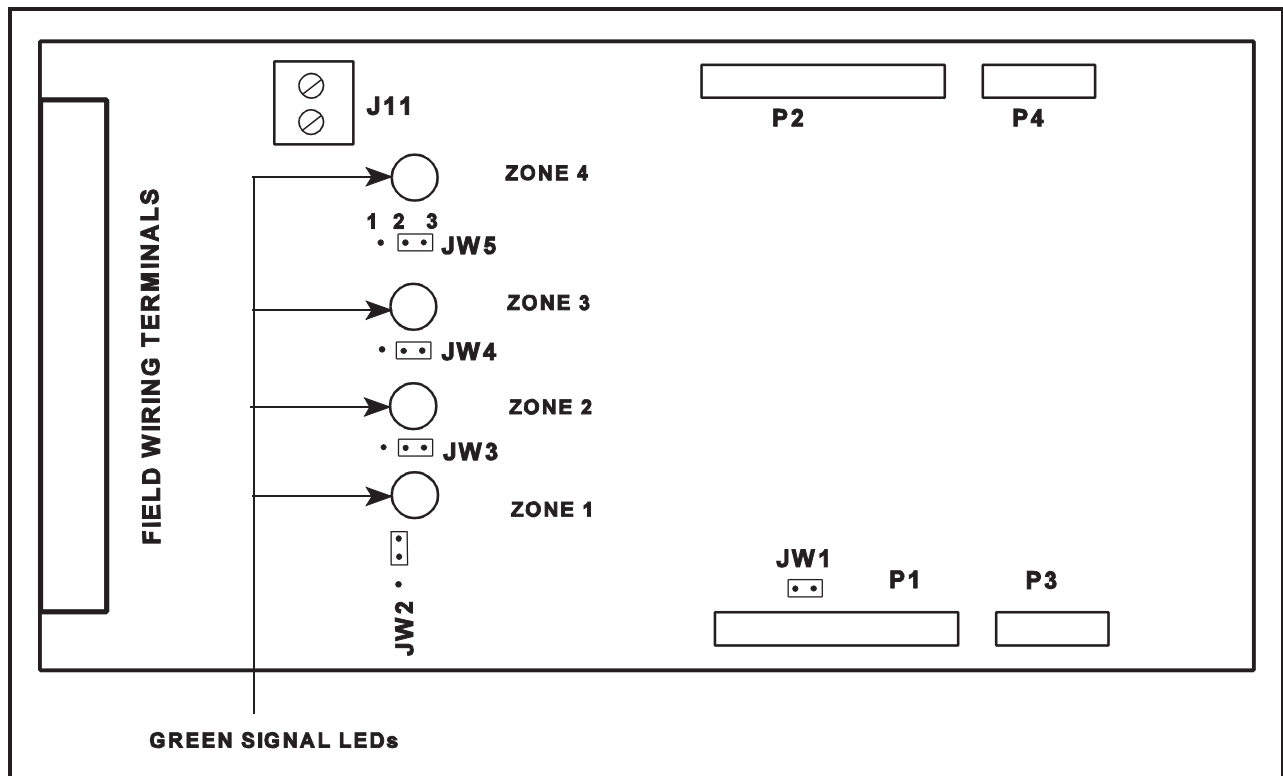


Note: The SGM-1004A requires 4 display points.

Components

There are 4 green LEDs on the board, one for each signal zone. The LED will illuminate or flash following the signal rate sent to its zone. It will be off when the system is normal and they will illuminate when a signal zone is activated. The LED does not reflect what is happening on the signal zone, just that it is receiving data to activate that signal zone. Jumpers JW2, JW3, JW4 and JW5 are positioned on pins 2 and 3 (right two pins with board orientation as shown above) from factory. Leave as is for BPS-1100.

Figure 7: Signal Adder Module



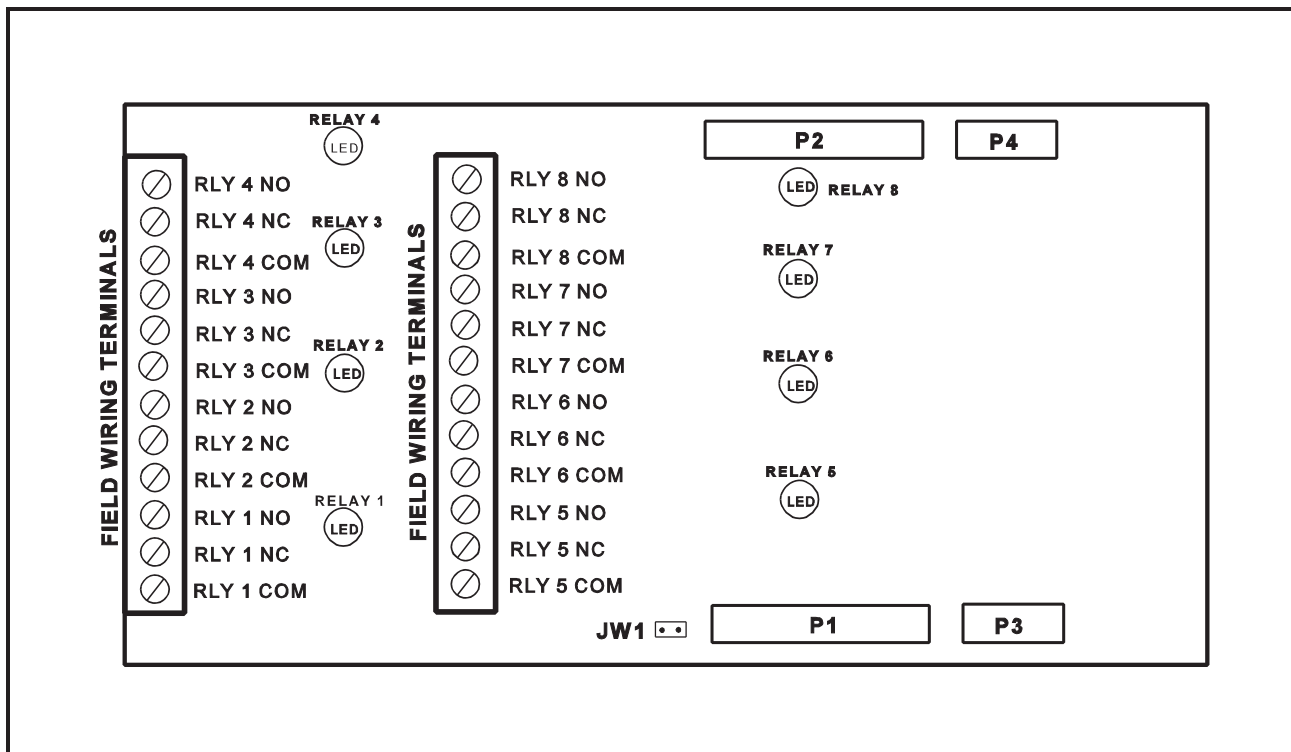
6.4 Relay Adder Module (Model RM-1008A)

- P2** Data Cable to P5 of Main BPS-1100 Module or to previous Adder Module.
- P1** Data Connector for next Adder Module.
- P4** Power Connector to P6 of Main BPS-1100 Module or to previous Adder Module.
- P3** Power Connector for next Adder Module.
- JW1** Continuity Jumper removed if there are any more Adder Modules installed.

Jumper JW6 on the Main BPS-1100 Module must be removed if there are any Adder Modules installed.

There is one green LED per each relay (total of eight on each board), which illuminates steadily when the corresponding relay is active.

Figure 8: Relay Adder Module



7.0 Field Wiring

7.1 Main Board Terminal Connections

Wire devices to terminals as shown below. See *7.5 Wiring Tables & Information on page 18* and *Appendix A - Module Specifications And Features on page 30* for specifications.



Caution: Do not exceed power supply ratings: Main Chassis, total current for Indicating Circuits is 11A max.



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

All power limited circuits must use type FPL, FPLR, or FPLP power limited cable

Figure 9: Main BPS-1100 Module Terminal Connections

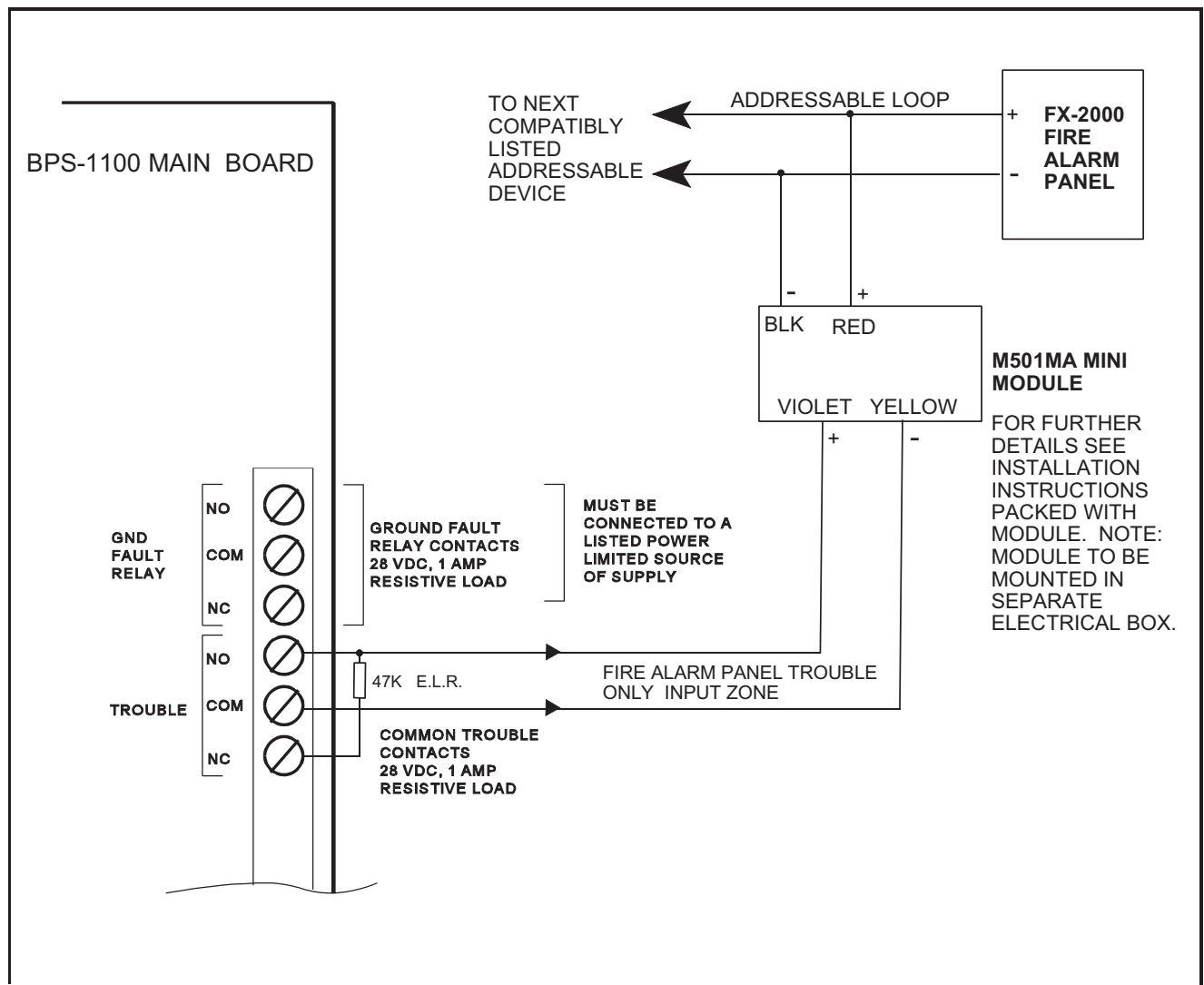
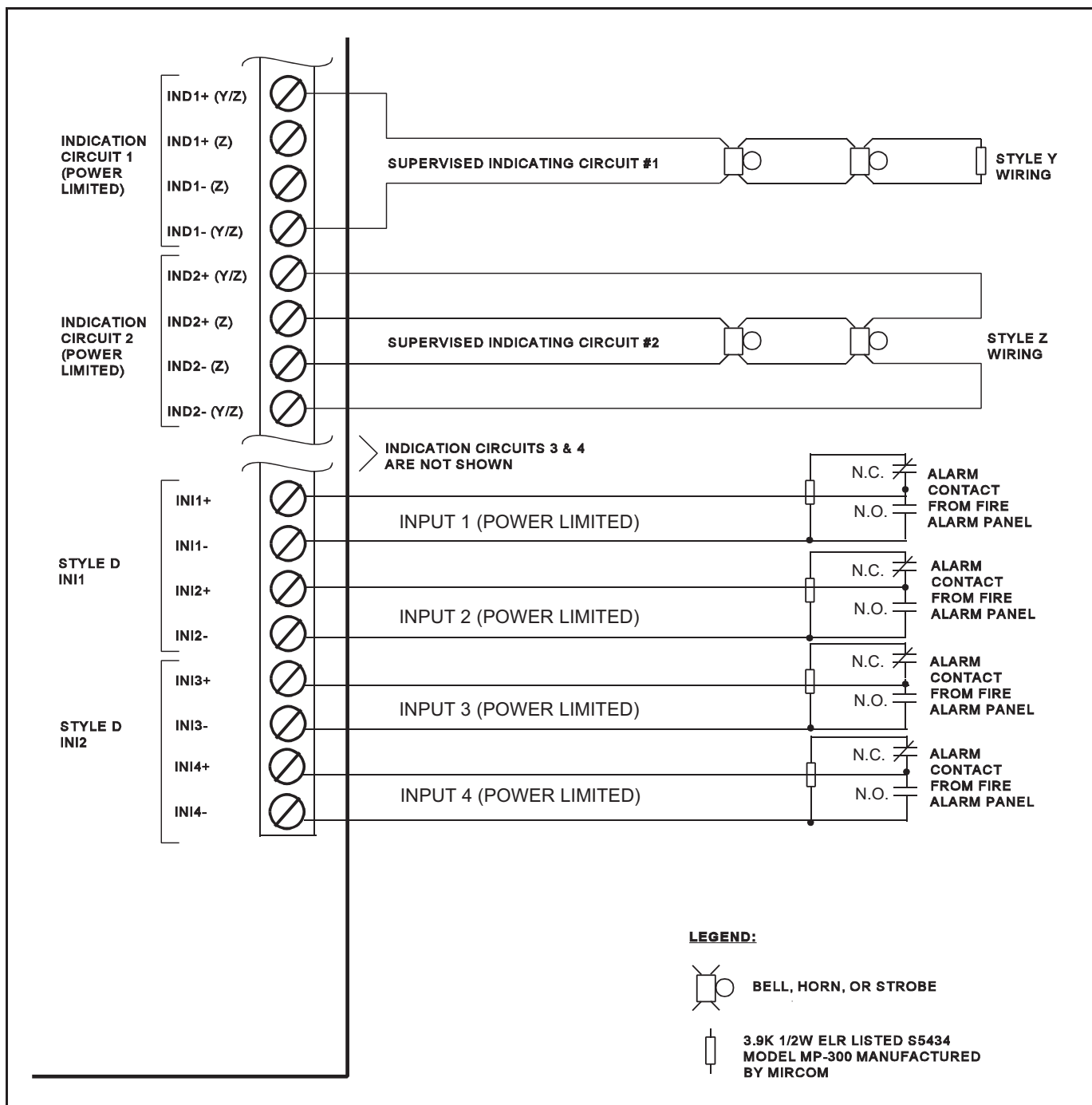


Figure 10: Main BPS-1100 Module Terminal Connections (continued)

Note: All power limited circuits must use type FPL, FPLR, or FPLP power limited cable

Initiating Circuits are fully supervised and rated for 22 VDC, 3mA standby, 5 mV ripple, 50mA max. alarm. They may be configured as required. The alarm threshold is 21mA. Maximum loop resistance is 100 ohms, 50 ohms per side.

Indicating Circuits are fully supervised and rated for 24 VDC unfiltered 1.7 amp Max. They must be wired as shown in the wiring tables.



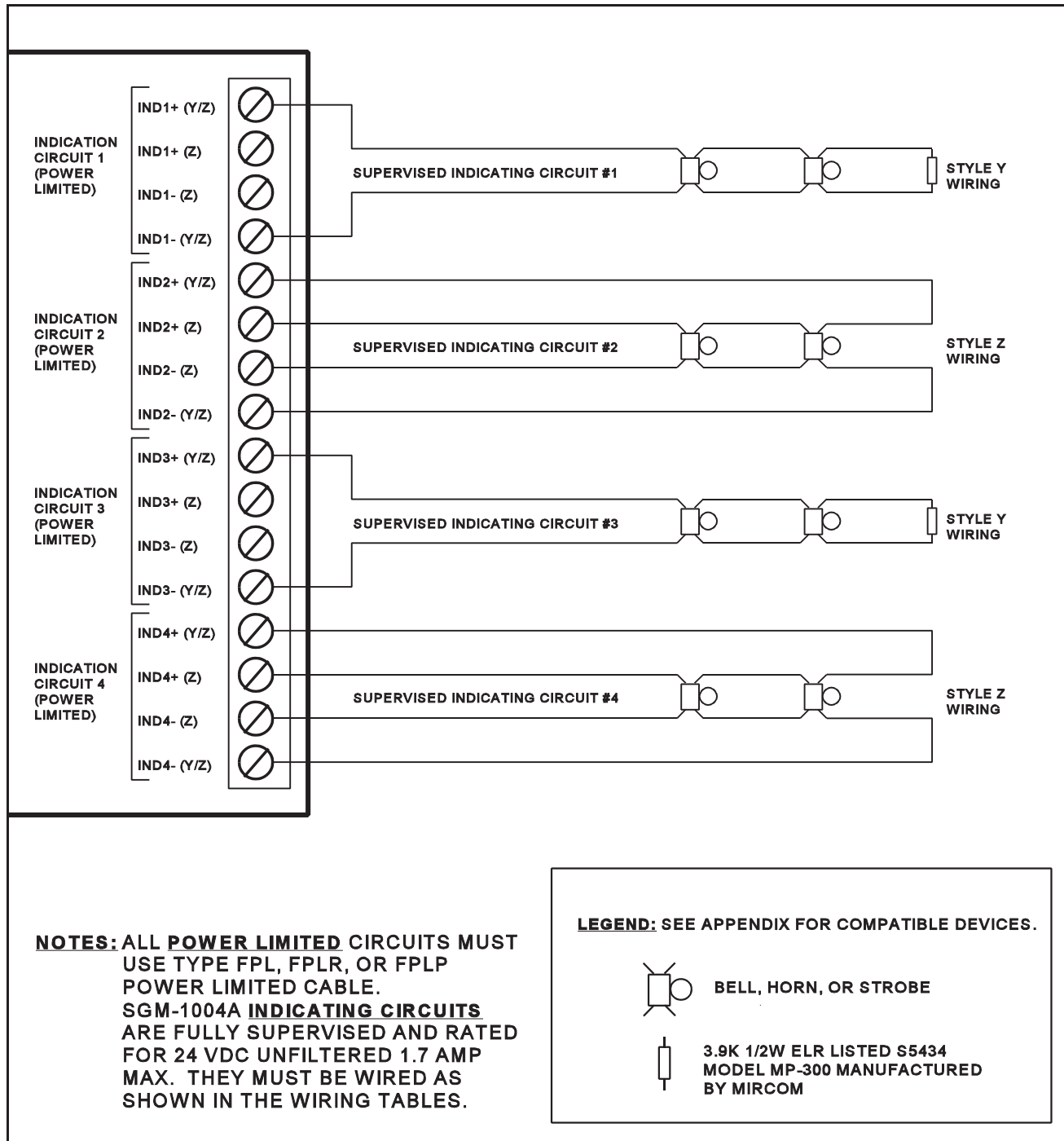
7.2 Signal Adder Module (SGM-1004A) Terminal Connections

The Signal Adder Module provides 4 supervised indicating (signal) circuits, Class A (Style Z) or Class B (Style Y). Wire devices to terminals as shown below. See 7.5 *Wiring Tables & Information* on page 18 and Appendix A - *Module Specifications And Features* on page 30 for specifications.




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

Figure 11: Signal Module Terminal Connections



7.3 Relay Adder Module (RM-1008A) Terminal Connections

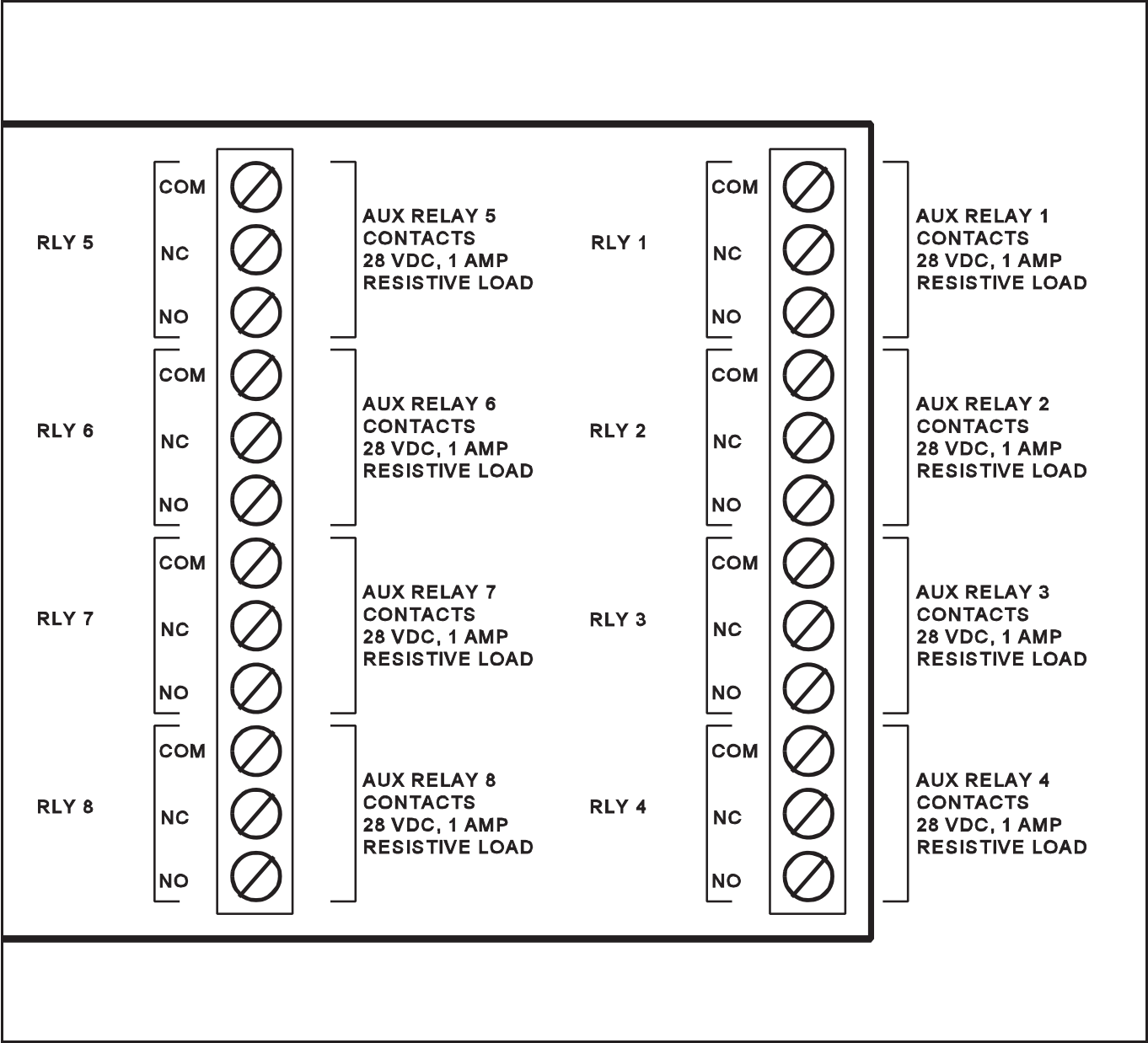
The Relay Adder Module provides 8 relay contacts. Wire devices to terminals as shown below. See 7.5 *Wiring Tables & Information on page 18* and *Appendix A - Module Specifications And Features on page 30* for specifications.



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

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

Figure 12: Relay Adder Module Terminal Connections



7.4 Power Supply Connections

The power supply is part of the Main Chassis. The ratings are:

Electrical input ratings 120 VAC, 60 Hz, 3.6 A

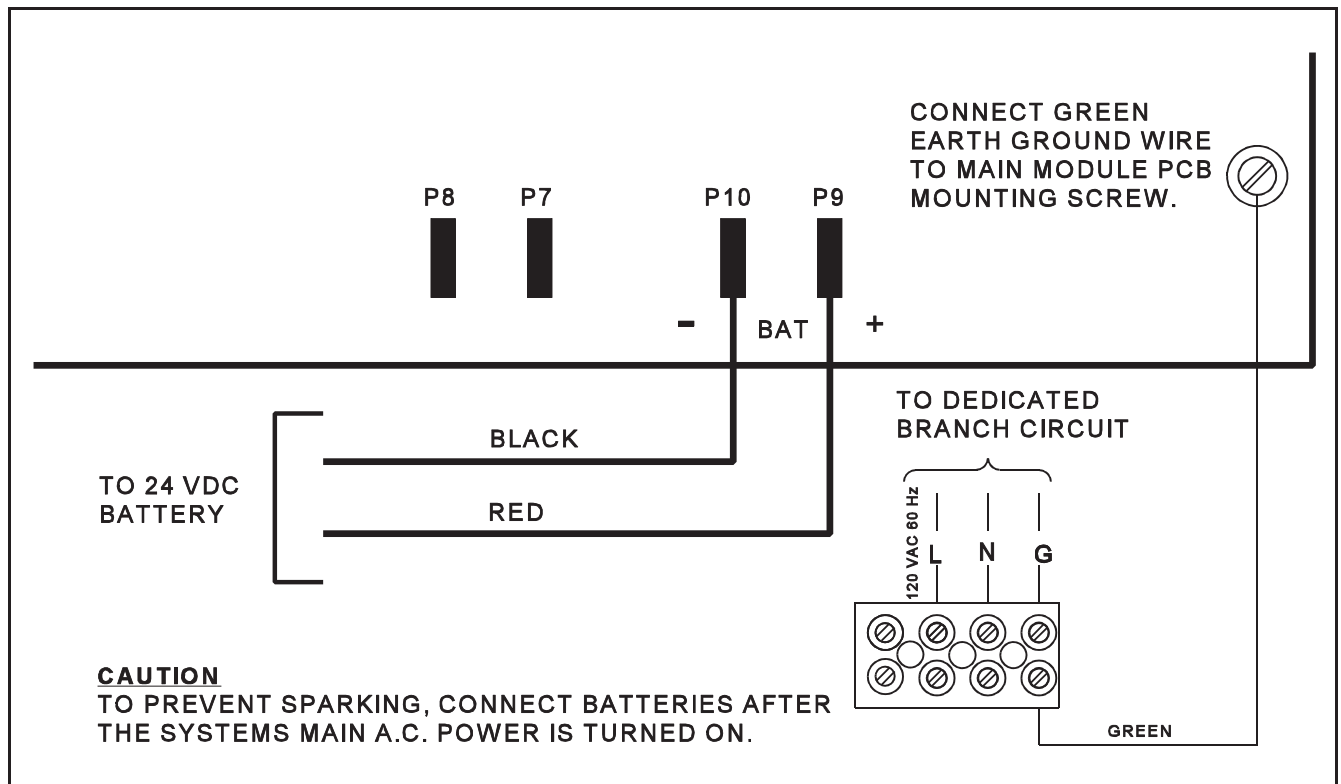
Power supply total current 11 A maximum

Battery Fuse on Main Module Replace with 20 Amp, 1-1/4" Fast Acting Fuse



Caution: Do not exceed power supply ratings. See *Appendix A - Module Specifications And Features* on page 30 for specifications. Wire as shown using proper wire gauges.

Figure 13: Power Supply Connections



7.5 Wiring Tables & Information

Table 1: Wiring Table for Input 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

Table 2: Wiring Table for Indicating 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



Note: Main Board Indicating Circuits are rated for 1.7 Amperes each. SGM-1004A Indicating Circuits are rated for 1.7 Amperes each.



Note: Maximum Voltage Drop Should Not Exceed 1.8 Volts

Auxiliary Power Wiring

Use Table 2: Wiring Table for Indicating Circuits 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 Adder Modules are installed in the proper location with the proper connections.
3. Check all field (external) wiring for opens, shorts, and ground.
4. Check that all interconnection cables are secure, and that all connectors are plugged-in properly.
5. Check all Jumpers and Switches for proper setting.
6. Check the AC power wiring for proper connection.
7. Check that the chassis is connected to EARTH GROUND (cold water pipe).
8. Make sure to close the front cover plate before powering the system from main AC supply.

8.2 Power-up Procedure

1. After completing the System Checkout procedures, power-up the panel. The green "AC-ON" LED should illuminate, the "Common Trouble" LED should illuminate.
2. Since the batteries are not connected, the "Battery Trouble" LED should illuminate, the "Common Trouble" LED should flash and the Trouble Relay (on the main BPS-1100 board) will be active.
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.

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 common trouble relay will be active. To correct the fault, check for open wiring on that particular Circuit loop or if the Circuit Disconnect Switch is in the on or closed position.



Note: Disconnecting a Circuit will cause a system trouble (off-normal position).

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 as soon as possible.

Configuration. Mode

If the Test/Config LED is illuminated steady, the system is in Configuration Mode. If it is flashing then the Configuration has been corrupted, and has been reset to defaults; it is then necessary to review / re-enter your Configuration.

Common Trouble

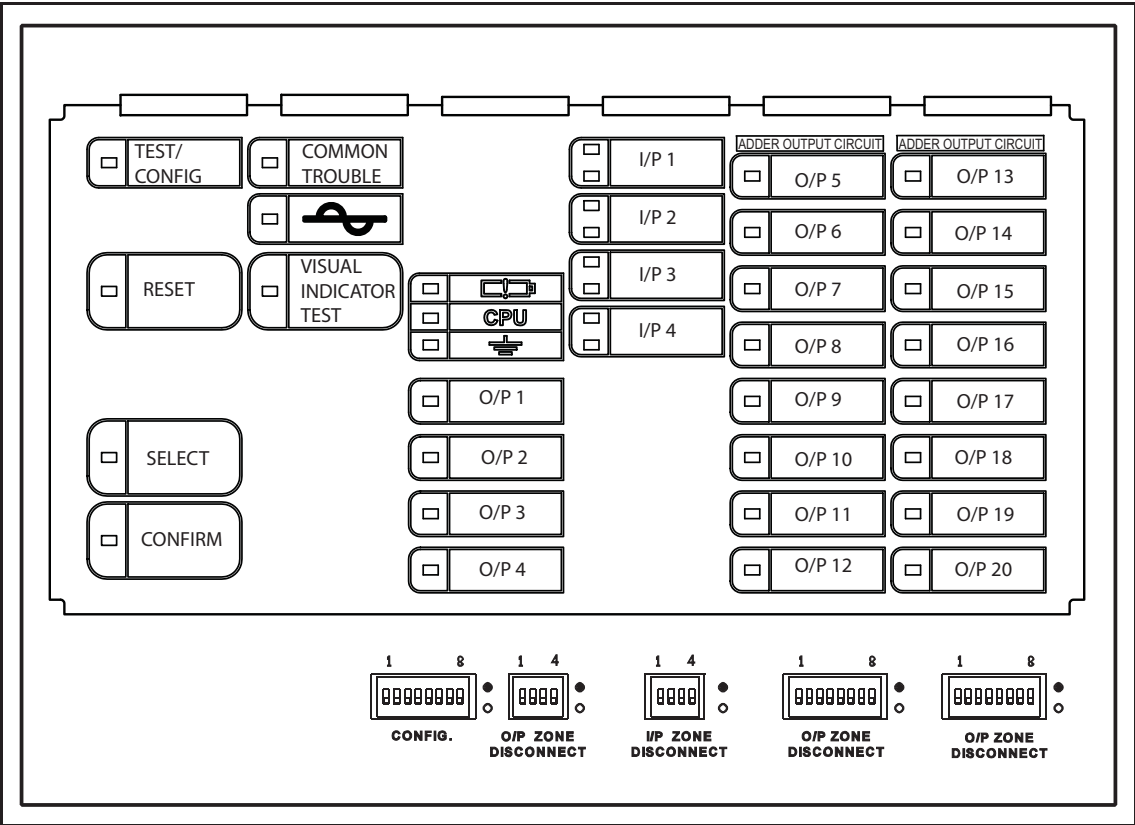
If only a common trouble is indicated on the main panel and none of those above confirming trouble indicators are on, then check the following for possible fault:

- i) Check for any missing interconnection wiring.
- ii) Check for any Adder Module missing that was part of the Configuration.
- iii) Check jumper positions; particularly ensure that the Continuity Jumper is installed only on the LAST Adder Module in the system.
- iv) Check for improperly secured cabling.

9.0 Indicators, Controls, & Operation

Refer to the following LED Indicators and Control Buttons and Switches locations.

Figure 14: Indicators and Control Location



The Main Display Panel on the BPS-1100 Signal Booster Power Supply consists of the following.

7 common LED Indicators	Test/Config, Common Trouble, A.C. ON, Reset, Lamp Test, Battery Trouble and Ground Fault.
2 Common Buttons	Reset and Lamp Test
2 Configuration Buttons	Select and Confirm
2 Configuration LED Indicators	Select and Confirm
8 Input Indicators	1 red and 1 amber per each Input Zone 1 to 4.
20 Output Indicators:	1 amber LED per each Output Zone 1 to 20.
20 Output (O/P) Disconnect DIP Switches	1 DIP switch for each Output Zone 1 to 20.
Configuration DIP Switch (marked CONFIG.)	8 DIP switches for programming.

LED Indicators may be Amber, Red, or Green, and may illuminate continuously (steady), or at one of two Flash Rates.

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

9.1 Common Indicators

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 Trouble LED

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

Select LED

This LED is used for selection in the configuration mode.

Confirm LED

This LED is for confirmation of configuration selections.

Configuration / Test Mode LED

The Configuration / Test Mode Indicator is turned on steady amber to indicate that the Panel is in Configuration Mode. If the Panel is left in Configuration Mode for over an hour with no operator activity, this Indicator will flash at the Trouble Rate.

Battery Trouble LED

The Battery Trouble Indicator flashes amber at the Trouble Rate when the Battery is either low (below 20.4 VDC), or disconnected.

Ground Fault LED

The Ground Fault Indicator flashes amber at the Trouble Rate when the Ground Fault Detector detects a Ground Fault on any field wiring. It is turned off when the Ground Fault is cleared.

Lamp Test LED

The Lamp Test amber illuminates steadily as long as the Lamp Test Button is pressed and indicates a Lamp Test is in progress.

Reset LED

The Reset amber LED illuminates steadily when the Reset Button is pressed and as long as the reset is in progress.

9.2 Common Controls

Reset Button

This button is used for Configuration only.

Select Button

This button is used to select features in the configuration mode, otherwise it does nothing.

Confirm Button

This button is used to confirm selected features in the configuration mode, otherwise it does nothing.

Lamp Test Button

Activation of the Lamp Test button turns all front panel Indicators on steady. If Lamp Test is active for more than 10 seconds, Common Trouble is activated.

9.3 Circuit Status Indicators

There are two LEDs for each Input Circuit and one LED for each Indicating and Relay Circuit. For the 4 Input Circuits, they are labelled Input 1, 2, 3, and 4. For the first four Indicating Circuits on the Main Board, these are labelled Output 1, 2, 3 and 4. For all other Adder Modules these are arranged in columns of eight indicators numbered from 5 to 12 - top to bottom and 13 to 20. Each Circuit Status LED for the input circuits is red and is on steadily to indicate active input. Each Circuit Trouble LED (for both input and indicating) is Amber and in general flashes at the Trouble Flash Rate when active.



Note: Indicating and output terms are used interchangeably.

Input Circuit Status Indicators

This operation applies to Input Circuits configured as alarm. The Circuit Trouble Indicator flashes at the Trouble Rate to indicate circuit trouble (open circuit) or if the circuit is Disconnected. The Trouble LED is always turned off when the Input Circuit is active. The Circuit Status Indicator is activated steady red when the Input Circuit is active. This Circuit Status Indicator will illuminate at the Fast Flash rate while an active circuit is reconnected (after being Disconnected).



Note: Inputs must be steady for BPS-1100 outputs to be active. The BPS-1100 will not respond to pulsing input contacts.

Output Circuit Indicators

This operation applies to Output Circuits of any type. The Circuit Trouble Indicator flashes amber at the Trouble Rate to indicate short-circuit or open-circuit trouble, or if the circuit is Disconnected.

Relay Circuit Indicators

Relay Circuit Trouble Indicators flash amber at the Trouble Rate while the circuit is Disconnected.

9.4 Circuit (Zone) Disconnect Switches

Circuit (Zone) Disconnect Switches are provided for all Indicating and Relay Circuits on the BPS-1100. For the first four Indicating Circuits on the Main Board, the Disconnect Switches consist of a bank of DIP Switches. For DIP Switches, numbers 1 to 8 correspond to the Circuits indicated in the Indicator column from top to bottom. Changing a Circuit Disconnect Switch to the ON position bypasses the associated Circuit and turns on its Trouble Indicator, also activating Common Trouble. While a Circuit is Disconnected, all changes in status (Troubles) on that Circuit are ignored. Disconnected Indicating Circuits are not activated by the Input Circuits. Disconnecting an active Indicating Circuit immediately deactivates the Circuit. Note: indicating and output terms are used



Note: indicating and output terms are used interchangeably.

These Disconnect Switches are also used during Configuration Mode as described in those sections.

9.5 Circuit Types

Input Circuits Types

Alarm Input

This is a “Normal” type of Alarm which may have an alarm contact attached to it. Any activation of this contact will immediately result in an Alarm condition. An Alarm condition causes the associated Input Circuit Status LED to illuminate Red. All output circuits configured to this input will activate at alert rate. De-activation of this input will turn off all of the outputs configured to this input.

General Alarm Input

This input follows the Fire Alarm Panel set to two stage operation. In single stage these inputs act the same as Alarms, but if Correlations are enabled, General Alarm Input Circuits are correlated to ALL Indicating Circuits. General Alarm Inputs activate outputs at configured evacuation rate.

Indicating (Output) Circuits Types

Signal

For audible devices such as bells and piezo mini-horns. 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.

Strobe

For visual devices such as strobes that use no code pattern (they are continuous) and follow input contact.

Evacuation Codes

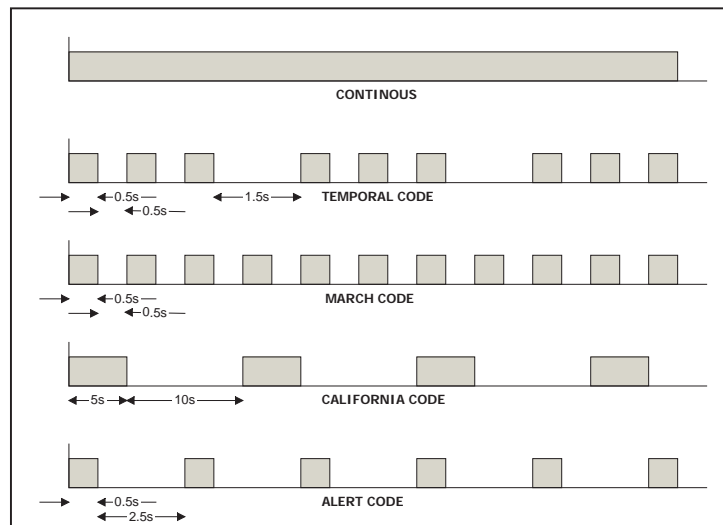
Single stage codes

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

Two-stage codes:

Alert Code	0.5 second on, 2.5 seconds off
General Alarm	Evacuation code as selected from above.

Figure 15: Evacuation Codes



10.0 System Configuration

10.1 Introduction To Configuration

Configuration of the BPS-1100 is performed by a combination of Configuration DIP Switch settings and button presses. Circuit (Zone) related operations are correlated to their respective Disconnect Switches.

The Configuration DIP Switches are accessible from the Main Display Module after removing a protective Lexan cover with two screws, and are labeled as CONFIG. 1 to 8. The Circuit (Zone) Disconnect Switches are re-defined as Circuit (Zone) Select during Configuration. Caution should be used to reset the Zone Disconnect Switches back to the desired settings before exiting configuration mode. Normal system operation is suspended while Configuration Mode is active. Configuration Mode is entered whenever any of the Configuration DIP Switches are set as per functions listed in the Configuration DIP Switch Function Table and exited by turning them all OFF (put switches in the bottom or OFF positions), then performing a RESET.



While in Configuration Mode the BPS-1100 Is Not Operating!

Two buttons and LED indicators are used in Configuration Mode.

Select

This is a "Select Setting" button and the LED indicator may show current status of a function.

Confirm

This is a "Confirmation" button for some functions, used together with the Select button.



All other buttons are non-functional during Configuration Mode.

Figure 16 below shows the positions of the Configuration DIP Switch and the Select and Confirm Buttons.

Configuration Functions are selected by the Configuration DIP Switches, as shown on *Table 3: Configuration Dip Switch Function Table on page 25*



Note: A Switch position of "0" is "OFF" (bottom position) and "1" is "ON" (top position).

Figure 16: Configuration Indicators and Controls

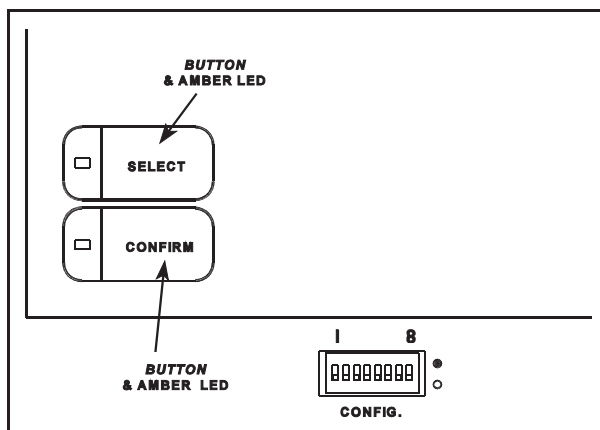


Table 3: Configuration Dip Switch Function Table

Configuration Dip Switch Function Table				
Dip Switch Position (1-8)	Function Number	Button Operations	Description	
0000 0000	00	None	Normal Operation (Not in Configuration Mode)	
0000 0100	04	Select	Two Stage Operation	Features
0000 0110	06	Select	Output Circuit Correlations Enabled	
0000 1101	0D	Select	Evacuation Code Selection	
0001 0010	12	Select	Signal Circuit Isolator Option	
0010 0000	20	Select	Alarm	Input
0010 0110	27	Select	General Alarm	
0011 0000	30	Select	Signal	Indicating Circuits/ Signal Zones
0011 0010	32	Select	Strobe	
0011 1000	38	None	Show Relay Circuits	Relays
0100 0000	40	Select & Confirm	Set Circuit Adder Module Number & Type	Resize System
0100 0001	41	Select	Correlation by Input Circuit	Correlations
0100 0010	42	Select	Correlation by Output Circuit	
0111 1111	7F	Select & Confirm	Restore to Default Configuration	Default

10.2 Entering Configuration Mode

The System enters Configuration Mode whenever any of the Configuration DIP Switches 2 to 8 are set to a "1" or ON position (top position). The TEST / CONFIG MODE and COMMON TROUBLE LEDs will turn ON.



The BPS-1100 is not operating as a Signalling System while in Configuration Mode.

If there is no activity (no buttons pressed or switches changed) for one hour, the System will return to normal operation, but will remain in trouble.

As Configuration DIP Switches are changed to select different functions, wait for a few seconds for the appropriate LEDs to change as the System recognizes the change.



Note: Configuration changes take effect immediately as they are made; there is no "undo" function.

10.3 Exiting Configuration Mode

To exit Configuration Mode, after all desired changes are made, all Configuration DIP Switches must be returned to a "0" or OFF position (bottom position). Wait about five seconds, then press the RESET button. The System should now be back in Normal Operation.

10.4 Factory Default Configuration

The system as shipped from the factory is configured with no Adder Modules, and with certain set defaults. The Default settings are below.

- All Input Circuits are Style B (Class B) Alarms (any Alarm on any input circuit activates all output circuits)
- Indicating Circuits are all Common Alarm and set as Signal, Temporal Code. If shorts exist on any indicating circuits, then they will not activate on alarms
- All Indicating and Relay correlations are set to Common Alarm activation
- Aux Disconnect will disconnect correlated relays
- Relay Adder(s) activate only on Common Alarm
- System assumes there are no Adder Modules

10.5 Restore To Default / Resize

Restoring the System to the Default Configuration is performed whenever it is desirable to restore the Factory Default Configuration, and also whenever Circuit Adder Modules (Signal or Relay) are added, removed, or rearranged.

Restore Defaults - Style B / Class B

- Set Config DIP Switch to 0111 1111 (Restore Defaults).
- Wait 5 seconds.
- Press Select & Confirm Buttons together for 5 seconds.
- Wait 5 seconds.
- Set Config DIP Switch to 0100 0000 (Resize System *).
- Wait 5 seconds.
- Press Select & Red Buttons together for 5 seconds.
- Wait 10 seconds.

10.6 Resize System (Set Adder Module Number & Type)

Resizing the System without performing a full Restore to Defaults may be done if the only change is adding an Adder Module. It should not be performed other than as part of a full Restore to Defaults, if Adder Modules are removed, or inserted between existing Modules, otherwise Circuit specific Configuration may be mis-assigned.

For Adder Modules added after existing Modules, in order to Resize

- Set Config DIP Switch to 0100 0000 (Resize System *).
- Wait 5 seconds.
- Press Select & Confirm Buttons together for 5 seconds.
- Wait 10 seconds.

The System is now ready for further Configuration, or Configuration Mode may be exited if the Default Settings for the added Modules are acceptable.

* During the Resize (Set Adder Module Number & Type) part of the operation, the Select LED flashes to indicate how many Display Modules and Adder Modules (including the main board) are found. The Select LED flashes for the number of Display Modules first, followed by the number of Circuit Adder Modules. If no Adder Modules are found the LED flashes once for the main board, if one Adder Module is found it flashes twice, etc. For example if a BPS-1100 system has two Adder Modules, the Select LED will flash once for the Main Display Module, pause, flash three times (once for the main BPS-1100 board and once for each of the adder modules), long pause and repeat.



Note: The Select LED indicates how many Adders (plus the main board) are found, not how many the System is Configured to accept. If the number of Adders found is different from the number the System is Configured for, the system will be in trouble.

10.7 Configuring Features

There are two types of Features; those which are just turned ON and OFF, and those with Multiple Settings. For ON and OFF Features, the Select LED is lit for ON, and not lit for OFF, and the Select Button is pressed to change the ON / OFF setting. For Multiple Setting Features, the Select LED flashes a number of times to indicate the setting, then pauses; the Select Button is used to change the selected setting. Be sure to pause for about 3 seconds after changing the Configuration DIP Switches, or pressing the Select Button to see the results.

Table 4: Feature Configuration Dip Switch Table

DipSwitchPosition (1-8)	Feature	Description
0000 0100	Two Stage Operation Enabled	Select LED lit indicates that the System is set for Two Stage which means the normal alarm will activate the outputs at the Alert Rate and the general alarm will activate the outputs at the Evac rate.
0000 0110	Output Circuit Correlations Enabled	Select LED lit indicates that Output Circuits (Indicating Circuits and Relays) operate according to any set Correlations (see Correlation section). If the Select LED is not lit (default), all Output Circuits are Common Alarm; all outputs turn on for any Alarm Input.
0001 0010	Signal Circuit Isolator Option	Select LED lit indicates that if there exists a short circuit on any Indicating Circuit and an alarm condition follows, then those Indicating Circuits will be activated anyway. If Select LED is not lit (default), then under same conditions, the Indicating Circuits will not be activated to prevent wasting power. This feature is needed when Signal Isolator Devices are employed so that Indicating Circuits will be activated even under shorted conditions.
0011 1000	Show Relay Circuits	All Display Points assigned to Relay Circuits will be lit.
0000 1101	Audible Indicating Circuit Evacuation Code	Select LED flashes 1 time = Continuous Select LED flashes 2 times = March Time Select LED flashes 3 times = Temporal Code (default) Select LED flashes 4 times = California Code

10.8 Configuring Indicating Circuits:

Indicating Circuits (Signal Zones) are Configured by using the Configuration DIP Switches to select the desired Circuit Type Function, along with the Circuit Trouble LED and Disconnect Switches. When a Circuit Type is selected by the Configuration DIP Switch setting, the Amber Trouble LED for each Circuit currently configured as that type will light. To configure Circuits to be of that selected Circuit Type, all of the desired Circuit Disconnect Switches are turned ON (up position) and the Select Button is pressed for about one second. After a short pause, the Input Circuit Amber Trouble LED will be updated to show the new configuration.



Notes: Any subsequent selection of a particular Circuit as a different Circuit Type will supercede the previous selection.

The physical Circuit Type must be appropriate for the selected Circuit Type; for example only Indicating Circuits can be configured as Strobes.



Be sure to reset Circuit Disconnect Switches To Off (Down Position) before attempting to configure any other Circuits!

As an example, if in a System with four Indicating Circuits (Main Board only), we wanted Class B operation, and the last Indicating Circuit as a Strobe, the following sequence would be used.

- Turn off all Disconnect Switches for the first four outputs.
- Set Config DIP Switch to 0011 0000; all four Output Amber Trouble LEDs should light.
- Set Config DIP Switch to 0011 0010; all four Indicating Amber Trouble LEDs should go out.
- Set only Indicating Circuit Output 4 Disconnect Switch ON.
- Press the Select Button for one second; after a pause the Amber Trouble LED for Output 4 should light.
- Turn OFF all Disconnect Switches, wait 5 seconds.
- Exit Configuration Mode by pressing Reset button.

10.9 Configuring Circuit Correlations:

As a working definition for Correlations, Circuits can be defined as listed below.

Input Circuits = Input contacts

Output Circuits = Indicating Circuits (Signal Zones), and Relay Circuits.

With the Factory Default Configuration, all Outputs are configured to activate with any **Inputs** configured as **Alarms**. If **Output Circuit Correlations** are enabled (see the Configure Features section), Outputs must be configured to one or more Inputs to activate at all. This configuration is referred to as a **Correlation**. There are two configuration options; correlated individual Outputs to one or more Inputs, or correlating individual Inputs to one or more Outputs. **Output Circuits** may be correlated to as many **Input Circuits** as desired, and vice-versa.

Correlation by Input Circuit

- Set Config DIP Switch to 0100 0001; pause for about three seconds.
- One and only one Input Circuit's Disconnect Switch is turned ON (up position). This function will not operate if more than one Input Circuit Disconnect Switch is turned ON at one time. The selected Input Circuit's Amber Trouble LED will light, as well as the Amber Trouble LEDs of any Output Circuits (Indicating / Signal Circuit or Relay Circuit) that are already Correlated to that Input. If only a check of Correlations is desired, then this is the only step required, and you may step through from one Input Circuit to another, one at a time.
- If it is desired to set new Correlations for the selected Input Circuit, then the Disconnect Switch for desired Output Circuits are turned ON (up position). The Select Button is pressed for one second; after a pause the Amber Trouble LEDs for the newly Correlated Output Circuits will be lit.

Correlation by Output Circuit

- Set Config DIP Switch to 0100 0010; pause for about three seconds.
- One and only one Output Circuit's (Indicating Circuit / Signal Zone, or Relay Circuit) Disconnect Switch is turned ON (up position). This function will not operate if more than one Output Circuit Disconnect Switch is turned ON at one time. The selected Output Circuit's Amber Trouble LED will light, as well as the Amber Trouble LED's of any Input Circuits (Initiating Circuit / Detection Zone) that are already Correlated to that Output. If only a check of Correlations is desired, then this is the only step required, and you may step through from one Output Circuit to another, one at a time.
- If it is desired to set new Correlations for the selected Output Circuit, then the Disconnect Switch for desired Input Circuits are turned ON (up position). The Select Button is pressed for one second; after a pause the Amber Trouble LEDs for the newly Correlated Input Circuits will be lit.

At present, only the following types of **Circuit Correlations** are possible.

- Input Circuits to Indicating Circuits or Relays.
- Confirm Circuits to Relays (they are automatically Correlated to ALL Indicating Circuits).



IMPORTANT: The Feature Output Circuit Correlations Enabled must be ON for Indicating Circuit Correlations to operate (see the Configure Features section), otherwise all Indicating Circuits will be "Common Alarm"; they will all activate with any Input Circuits. Relay Circuits are always Enabled for Correlations.

10.10 Display Configuration

The Main Display Module on the front panel is automatically updated to display all circuits found whenever the function Resize - Adder Module Number & Type Configuration is performed. The Main Display Module has dedicated Trouble LEDs for the four Indicating Circuits on the Main BPS-1100 Module. Any Adder Module circuits are displayed after the base system input circuits in the same order as the Adder Modules have been installed (that is from right to left). For example, if there is one 8 Relay Adder module and one 4 Signal Adder module, the Main Display will annunciate 8 Relay Circuits followed by 4 Indicating Circuits. Refer to the Figure shown under the Indicators, Controls, & Operation section.

Appendix A - Module Specifications And Features

Main Chassis

General

4 supervised Style B (Class B) Initiating Circuits; fully configurable. Terminals are labelled "INI".

Power limited: 22 VD, 3mA standby, 5mV ripple, 50mA max. (alarm)

4 Style Y or Z (Class B or A) Indicating Circuits; configurable as strobes or audibles. Terminals are labelled "IND".

Power limited: 24 VDC unfiltered
1.7 A @ 49° C per Circuit

Up to **3 Circuit Adders** may be added.

Displays and Disconnect Switches for up to 24 Circuits. 4 Inputs & 20 Outputs

Auxiliary relays: (resistive loads)

Must be connected to a Listed Power Limited Source of Supply. Terminals are labelled "GROUND" and "TROUBLE".

Common Ground: Form C, 1 Amp, 28 VDC

Common Trouble: Form C, 1 Amp, 28 VDC

Micro-controller based design.

Fully Configurable from Front Panel.

Electrical Ratings

AC Line Voltage: 120V 60Hz

3.6 Amps (primary)

Power Supply ratings: 12 Amps. max. (secondary)

For Indicating Circuits: 24VDC unfiltered, Power Limited
11 Amps. max. (6.0 Amps for main board fully loaded)

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

Charging capability: 10-18 AH batteries

Current Consumption: standby: 200 mA

alarm: 350 mA

Signal Adder Module (SGM-1004A)

4 Style Y or Z (Class B or A) Indicating Circuits; configurable as strobes or audibles (NOT synchronized). Terminals are labelled "IND".

Power limited: 24 VDC unfiltered
Max. 1.7 A @ 49° C per Circuit

Current Consumption: standby: 35 mA
alarm: 150 mA

Relay Adder Module (RM-1008A) (resistive loads)

Must be connected to a Listed Power Limited Source of Supply. Terminals are labelled "RLY".

8 fully Configurable **Form C Relays**.

Form C, 1 Amp., 28 VDC (resistive loads)

Current Consumption: standby: 25 mA
alarm: 150 mA

Compliance

System Model: BPS-1100 Signal Booster Power Supply

Applicable Standards: NFPA 72, ULC-S527-99, ULC-S525, ULC-526, ULC-S318

Appendix B - Power Supply & Battery Calculations (Selection Guide)

Use the form below to determine the required Main Chassis and 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 <i>Appendix A - Module Specifications And Features</i> on page 30 for specifications.							
Power Requirements (All currents are in amperes)							
Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
MCC-1100-12	Main Chassis (12 Amp)		X	0.200	=	0.350	=
SGM-1004A	4 Indicating Circuit Module		X	0.035	=	0.150	=
RM-1008A	8 Relay circuit Module		X	0.025	=	0.150	=
Signal Load (bells, horns, strobes, and etc.)			X				=
Auxiliary Power Supply					=		=
Total currents (Add above currents)				STANDBY	(A)	Alarm	(B)

Total Current Requirement:

ALARM (B)_____ Amps.

Battery Capacity Requirement:

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

Battery Selection:

Multiply (C) by 1.20 to derate battery.

Batteries: BAT-12V12(12AH), BAT-12V18(18AH) will fit into the BPS-1100.

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

Warranty & Warning Information

Warning Please Read Carefully

Note to End Users: This equipment is subject to terms and conditions of sale as follows:

Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure.

System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, such as fire or other types of emergencies where it may not provide protection. Alarm systems of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some reasons for system failure include:

•*Inadequate Installation*

A Fire Alarm system must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. An inspection and approval of the initial installation, or, after any changes to the system, must be conducted by the Local Authority Having Jurisdiction. Such inspections ensure installation has been carried out properly.

•*Power Failure*

Control units, smoke detectors and many other connected devices require an adequate power supply for proper operation. If the system or any device connected to the system operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a fire alarm system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

•*Failure of Replaceable Batteries*

Systems with wireless transmitters have been designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

•*Compromise of Radio Frequency (Wireless) Devices*

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent radio signal interference.

•*System Users*

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

•*Automatic Alarm Initiating Devices*

Smoke detectors, heat detectors and other alarm initiating devices that are a part of this system may not properly detect a fire condition or signal the control panel to alert occupants of a fire condition for a number of reasons, such as: the smoke detectors or heat detector may have been improperly installed or positioned; smoke or heat may not be able to reach the alarm initiating device, such as when the fire is in a chimney, walls or roofs, or on the other side

of closed doors; and, smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building.

•*Software*

Most MGC products contain software. With respect to those products, MGC does not warranty that the operation of the software will be uninterrupted or error-free or that the software will meet any other standard of performance, or that the functions or performance of the software will meet the user's requirements. MGC shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising out of, or caused by, the software.

Every fire is different in the amount and rate at which smoke and heat are generated. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector or heat detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

•*Alarm Notification Appliances*

Alarm Notification Appliances such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If notification appliances are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.

•*Telephone Lines*

If telephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also the telephone lines may be compromised by such things as criminal tampering, local construction, storms or earthquakes.

•*Insufficient Time*

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.

•*Component Failure*

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

•*Inadequate Testing*

Most problems that would prevent an alarm system from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested as required by national standards and the Local Authority Having Jurisdiction and immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

•*Security and Insurance*

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

IMPORTANT NOTE: End-users of the system must take care to ensure that the system, batteries, telephone lines, etc. are tested and examined on a regular basis to ensure the minimization of system failure.

Limited Warranty

Mircom Technologies Ltd., MGC Systems Corp. and MGC System International Ltd. together with their subsidiaries and affiliates (collectively, MGC) warrants the original purchaser that for a period of three years from the date of shipment, proprietary manufactured product shall be free of defects in materials and workmanship, under normal use. During the warranty period, MGC shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Non-proprietary, third party or OEM product shall be warranted in accordance with the warranty period of the manufacturer. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original owner must promptly notify MGC in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, MGC shall not be responsible for any customs fees, taxes, or VAT that may be due.

Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of MGC such as excessive voltage, mechanical shock or
- water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by MGC);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to MGC must first obtain an authorization number. MGC will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from MGC management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. MGC will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: MGC's liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty.

Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) and of all other obligations or liabilities. MGC neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, or to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

Out of Warranty Repairs

MGC will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to MGC must first obtain an authorization number. MGC will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which MGC determines to be repairable will be repaired and returned. A set fee which MGC has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which MGC determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

The foregoing information is accurate as of the date of publishing and is subject to change or revision without prior notice at the sole discretion of the Company

WARNING: MGC recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

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