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Gemini™ Rackmount Installation Manual

LifeSafety Power®



FLEXPOWER®



LifeSafety Power, Inc. | PH 888.577.2898 | TechSupport@LifeSafetyPower.com

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 **The Gemini Rack Mount is factory set for 120VAC input.  
See section 1.3.2 for 230VAC configuration.**

# Notes and Warnings

## Symbol Definitions

The following symbols are used throughout this manual



This symbol is intended to alert the installer of shock hazards within the enclosure. Service should only be performed by qualified service personnel.



This symbol is intended to alert the installer of important information intended to help the installer avoid personal injury or property damage.

## Warnings



Installation and service should be performed only by qualified service personnel and should conform to all local codes.



To reduce the risk of electric shock or fire, do not expose this equipment to rain or moisture.



This equipment shall be installed in a manner which prevents unintentional operation by employees, cleaning personnel, or others working in the premises, by falling objects, customers, building vibration, or similar causes.



This equipment is not intended for use within the patient care areas of a Health Care Facility.



Replace fuses only with the same type and rating as indicated in the specifications section of this manual.



To prevent impaired operation, ensure that all wiring is routed and secured to prevent accidental open or short circuit conditions.



The system and any batteries (if used) should be tested at least once per year to ensure proper operation.

## Regulatory Information

The equipment discussed within this manual has been tested to the following standards:

- UL 294 6th edition
- CAN/ULC S318, ULC S319
- CSA C22.2 #205

## FCC Information

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

## Conventions Used Within this Manual

Positional information (e.g. top, bottom, up, down, left, right, etc.) is referenced with the board or enclosure in the orientation shown in the illustrations in this manual.

# Introduction

## Product Description

The **FLEXPOWER GEMINI** rackmount enclosures are designed to provide a mechanical housing for LSP power supplies, accessory modules and access panel controllers.

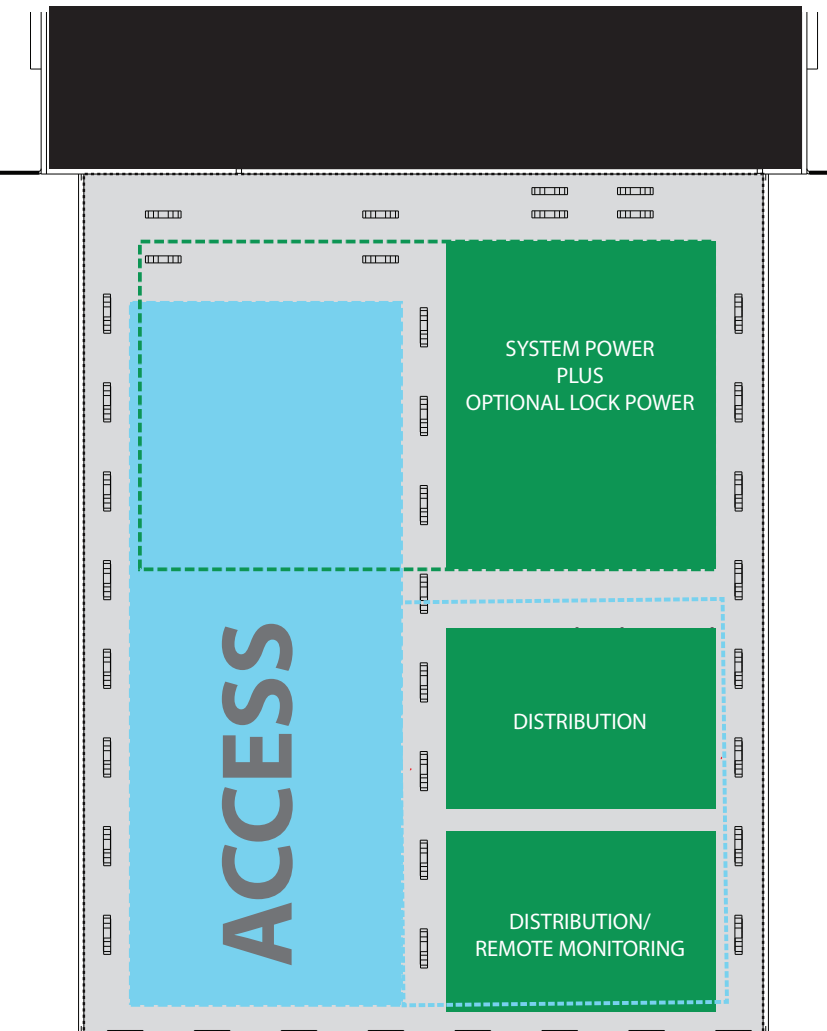
LifeSafety Power modules are provided as part of the Gemini enclosure and access controllers are provided by the integrator based on the job requirements.

Input/output wiring is intended to be through the rear knockouts using appropriate strain relief fittings such as will fit the provided knockouts and be listed for the purpose. To eliminate wire strain, it is good practice to leave a service loop at the rear of the enclosure, sufficient to accommodate the distance of travel provided by the enclosure slides.

Internal wiring channels with indents for wire ties have been provided for wire management and tie down. All wiring is to be secured in a manner consistent with requirements and good practice and per the LifeSafety Power manuals provided with the Gemini enclosure and the access controller manuals provided with the access board components.

The unit is intended for mounting only within a standard four post EIA 19 inch electronics rack with a maximum depth of 36 inches.

**Table - General System Layout**



| LifeSafety Power Model Number | Manual Document Number |
|-------------------------------|------------------------|
| FPO75                         | P03-040                |
| FPO150                        | P03-040                |
| FPO250                        | P03-040                |
| B100                          | P03-005                |
| D8, D8P                       | P03-007                |
| C4, C4P                       | P03-009                |
| C8, C8P                       | P03-009                |
| F8, F8P                       | P03-036                |
| M8, M8P                       | P03-036                |
| R8, R8P                       | P03-013                |
| NL2                           | P03-037                |
| NL4                           | P03-037                |
| RB2                           | P03-025                |
| RB5                           | P03-025                |
| RB8                           | P03-025                |

## Section 1 – Installation

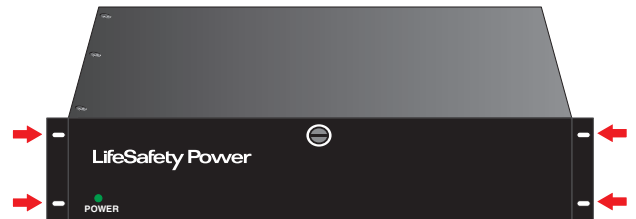
The following pages cover the installation of the Gemini series rack-mountable power supplies.

### 1.1 Mounting the Gemini Enclosure into a standard four post 19" Rack

Use the following procedure when mounting a Gemini drawer into a standard four post EIA 19" equipment rack.

1. Ensure any internal configuration (voltage selection, fault detection settings, etc) are complete before mounting. See Section 1.3 of this manual for more information.
2. Locate the rack-mounting holes in the ears of the enclosure. (Figure 1)
3. Slide the enclosure into an open 2U location in the rack
4. Center the enclosure in the rack and secure with four of the 10-32 x 3/4" screws provided.
5. Attach the rear of the adjustable rails to the rear of the rack with the remaining four 10-32 x 3/4" screws provided.
6. To mount the optional Z-Bracket wire management arm use the included hardware to attach one end to the racks's rear rail and the other end to the back panel of the Gemini enclosure. (Figure 2)

Figure 1 - enclosure mounting holes



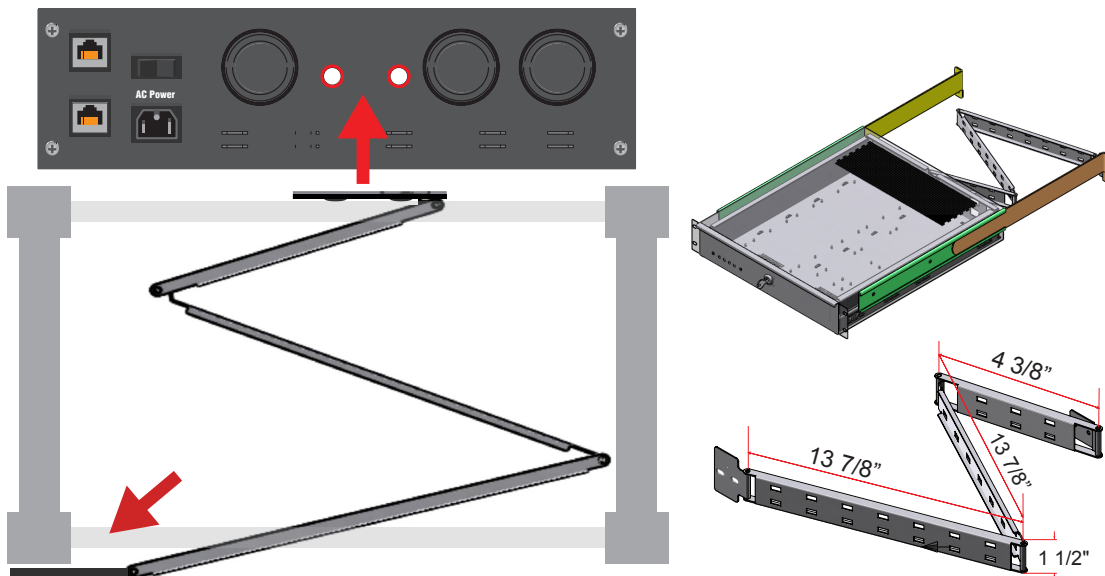
**NOTE:** Mount Gemini enclosures in a four post UL listed rack. Keep heavier components near the bottom of the rack to reduce the risk of toppling of a top-heavy rack.



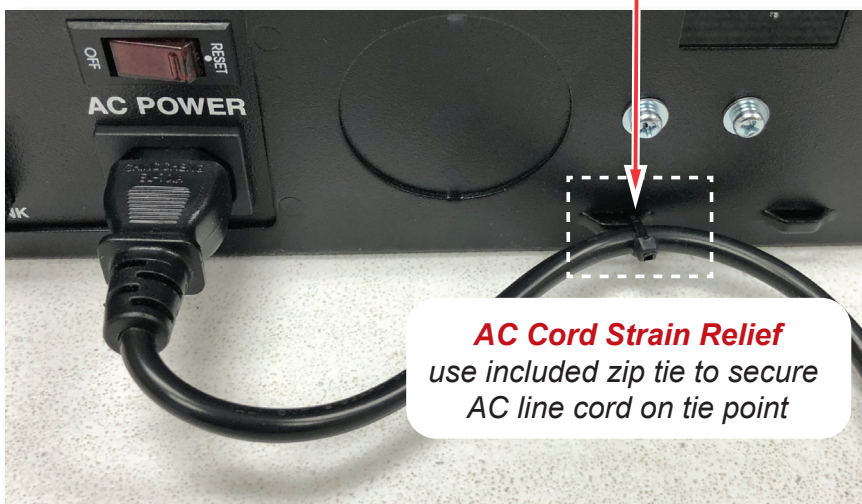
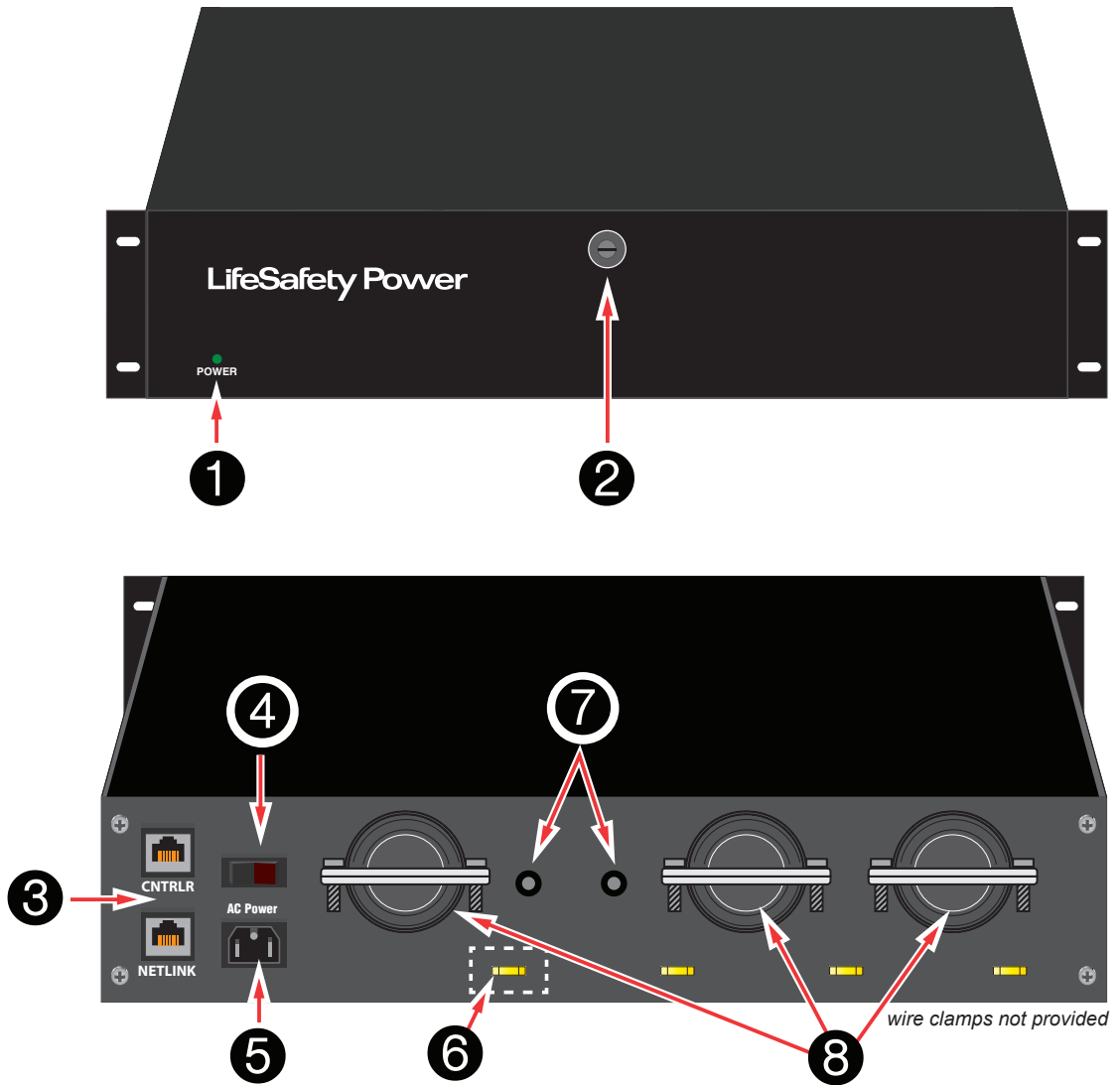
**The Gemini rack drawer is factory set for 120VAC input.**

**See section 1.3.2 for 230VAC configuration.**

Figure 2 – mounting on four post rack



## 1.2 Gemini Rackmount Overview





The following are basic descriptions. Refer to the appropriate section for more detailed information.

---

**1 Front Panel Power On LED Indicator**

This LED indicates presence of AC voltage.

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**2 Drawer Camlock**

This is the lock to secure the Gemini drawer into the case. Unlocking this lock allows the drawer to be pulled out from the rack for installation and servicing.

---

**3 Ethernet Connection** There are two Ethernet jacks provided on the rear of the Gemini drawer. The connector marked CNTRLR is intended for use by the access controller and a cable may be internally connected between the access controller and the rear side of the jack. The second is intended for use when an optional LSP Netlink Communications module is used and a cable will be connected from the Netlink module to the rear side of the jack marked NETLINK. See Section 1.4.2 and the corresponding NetLink manual for more information.

---

**4 AC Line Input**

This is the connector for the AC line cord. Plug the included computer-style line cord into this connector. Connect the other end of the cord to the power strip inside the rack or another suitable AC power receptacle. The cord should be secured to the back of the enclosure with the included wire tie. See #6 below.

 *The rack drawer is factory set for 120VAC input - see section 1.3.2 for 230VAC configuration*

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**5 Main AC Power Switch / Circuit Breaker**

This is the main AC power switch for the enclosure. This switch lights when power is on and also has a built-in circuit breaker rated at 8A. If the circuit breaker trips, reset it by cycling the switch to off then back to on.

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**6 Strain Relief Tie Point to Secure AC Line Cord**

This loop is provided to secure the AC line cord with a wire tie as shown in the photo to prevent the cord from coming loose from the AC Line Input when the drawer is opened.

---

**7 Wire Management Z-bracket Mounting Point**

The mounting point for the optional Z-bracket used for wire management. The tapped holes accept the hardware included with the bracket.

---

**8 Field Wiring - Pass Throughs**

These are the openings to pass the field wiring to and from the internal components. Slots are also provided for securing wiring for strain relief.

### 1.3 Internal Configuration

For full wiring and configuration information on the FPO power supply and accessory boards in the Gemini enclosure, consult the appropriate manual(s). Ensure all power is disconnected before performing this initial configuration.

| LifeSafety Power Model Number | Manual Document Number |
|-------------------------------|------------------------|
| FPO75                         | P03-040                |
| FPO150                        | P03-040                |
| FPO250                        | P03-040                |
| B100                          | P03-005                |
| D8, D8P                       | P03-007                |
| C4, C4P                       | P03-009                |
| C8, C8P                       | P03-009                |
| F8, F8P                       | P03-036                |
| M8, M8P                       | P03-036                |
| NL2                           | P03-037                |
| NL4                           | P03-037                |
| RB2                           | P03-025                |
| RB5                           | P03-025                |
| RB8                           | P03-025                |

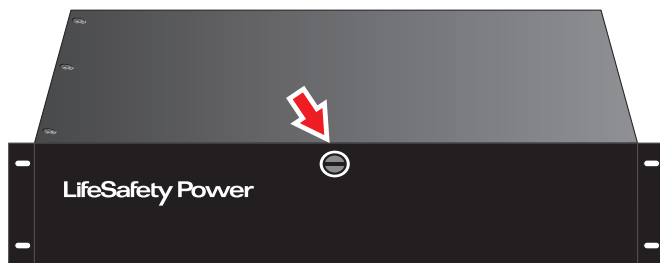
#### 1.3.1 Opening the Drawer of the Enclosure

Use the following steps to open the front of the rackmount enclosure and gain access to the configurable settings. (Figure 2)

1. Lay the enclosure flat on its bottom surface
2. Use enclosed key set to unlock front camlock
3. Slide the internal drawer out from the outer case of the Gemini enclosure.

When configuration is complete, reverse the procedure to relock the drawer.

Figure 2 - Unlocking Drawer



#### 1.3.2 Configuring for a 230VAC Input Voltage

The Gemini drawer is factory set for a 120VAC input. If the Gemini is to be used with a 230VAC input, jumper JP1 must be cut on the FPO power supply(s) internal to the Gemini drawer. (Figures 3 and 4). See the FPO manual for more information.

**⚠** Failure to cut JP1 on both supplies when connecting to a 230VAC input will damage the system and void the warranty.

#### 1.3.3 Setting the Output Voltages

Set the output voltage of the FPO power supply by moving SW1 to either 12V or 24V (See #3 in Figure 3). See the FPO manual for more information on setting the output voltage.

#### 1.3.4 Enabling or Disabling Battery Presence Detection

The FPO power supply may be set to detect a missing battery set. To enable battery presence detection, place the BATDET jumper ON. To disable battery presence detection, remove the BATDET jumper, or place it on only one pin. (See #2 in Figure 3)

#### 1.3.5 Enabling or Disabling Earth Ground Detection

Each FPO power supply is able to detect earth ground faults. To enable earth ground fault detection, place the EARTH GND DET jumper ON. To disable earth ground fault detection, remove the EARTH GND DET jumper or place it on only one pin. (See #1 in Figure 3)

**NOTE:** Only one device in a system should have earth ground fault detection enabled or conflicts may occur. In addition, only ONE FPO power supply in a dual-supply Gemini system should have earth ground fault detection enabled or a conflict may occur.



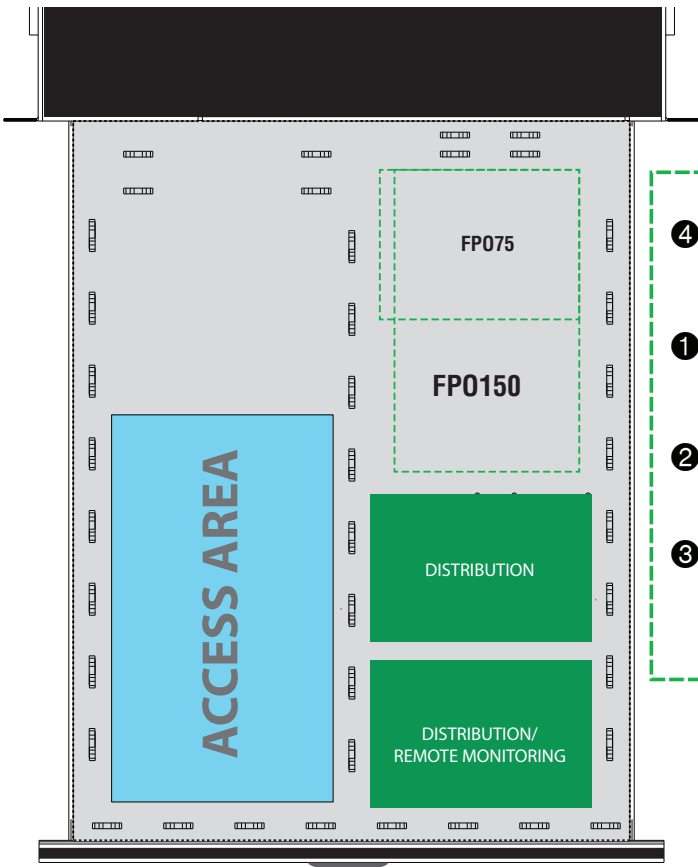


Figure 3 - Configuring the Internal FPO Power Supply in a Gemini Rackmount Drawer

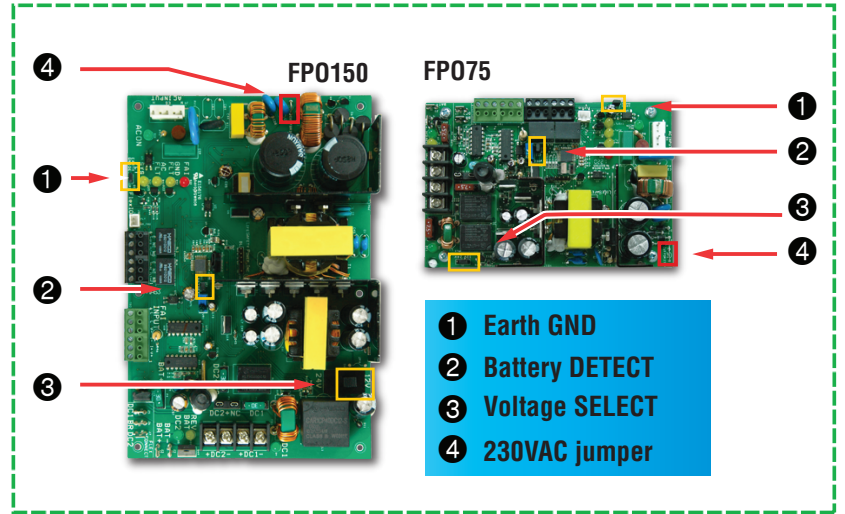
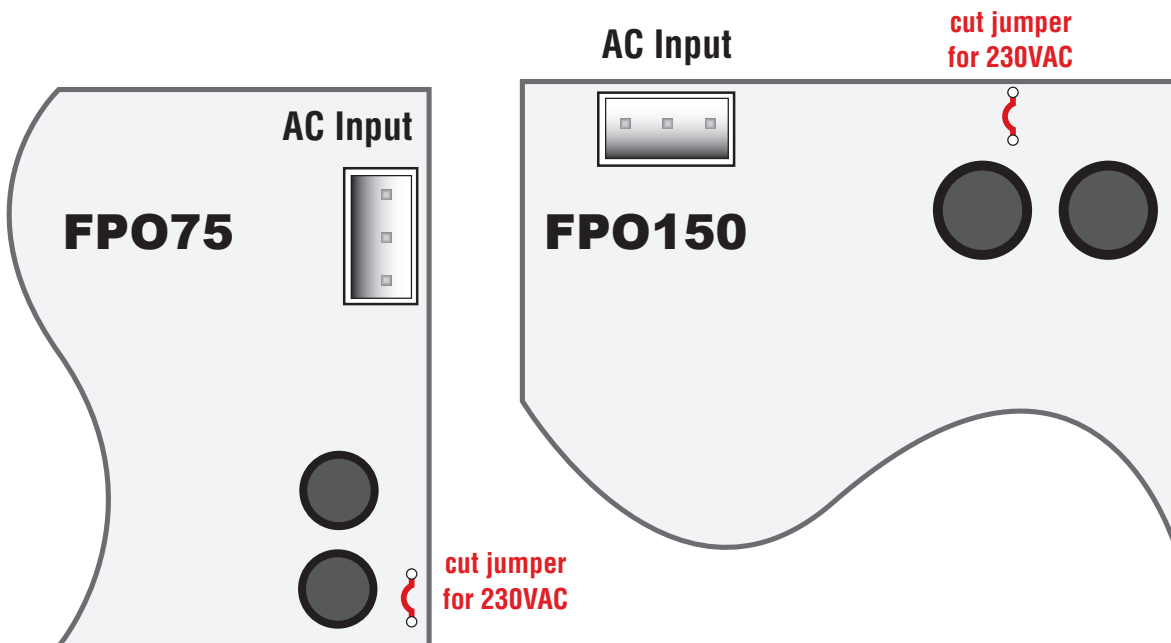


Figure 4 - FPO 230VAC jumper location



## 1.4 Making the Wiring Connections

### 1.4.1 Main AC Power Connection

To connect the Gemini drawer to the main AC power source, plug one end of the included computer-style AC cord into the AC Power connector on the back of the enclosure. Connect the other end of the AC cord into a suitable AC power outlet.

If connecting the Gemini to a 230VAC source, cut JP1 on the internal FPO power supply - See section 1.3.2

**⚠** Failure to cut JP1 jumper on the FPO power supply when connecting to a 230VAC input will damage the system and void the warranty.

### 1.4.2 Ethernet Connections

To make the ethernet connection, connect one end of a standard (RJ45) ethernet cable to the connector on the back of the Gemini drawer power supply. Connect the other end of the ethernet cable to a live network connection (See Figure 5).

The connector marked CNTRLR is intended for use by the access controller and a cable may be internally connected between the controller and the rear side of the jack.

Gemini models with a model number ending in "N" contain a Netlink communication ethernet module. The Netlink allows access to the Gemini models via the internet or local intranet. Functionality varies by model type. The internal Netlink communication module must be configured before connecting to a network. See the included Netlink manual for more information.

Figure 5 - Ethernet Network Connection





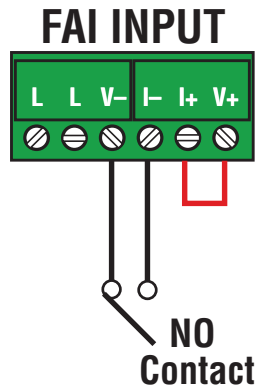
## 1.4 Making the Wiring Connections

### 1.4.3 Fire Alarm Input Wiring

This section provides more detailed information on the connection and usage of the FAI input.

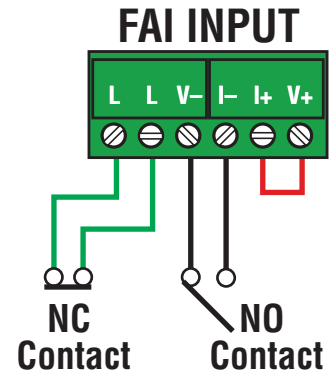
#### Activation with a Normally Open Relay Contact

FAI Activates when the NO contact CLOSES.  
FAI Deactivates when the NO contact OPENS.



#### Latching the FAI Input

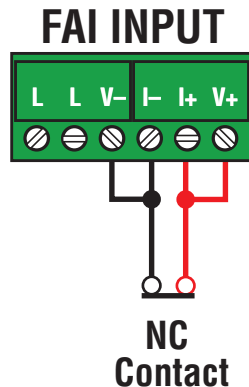
Latching of the FAI Input is achieved by placing a NC contact across the two 'L' terminals. The FAI may be activated by any of the methods listed. FAI Deactivates when the input is deactivated AND the NC Latching contact is momentarily OPENED.



Example – NO Contact activation with latching

#### Activation with a Normally Closed Relay Contact

FAI Activates when the NC contact OPENS.  
FAI Deactivates when the NC contact CLOSES.

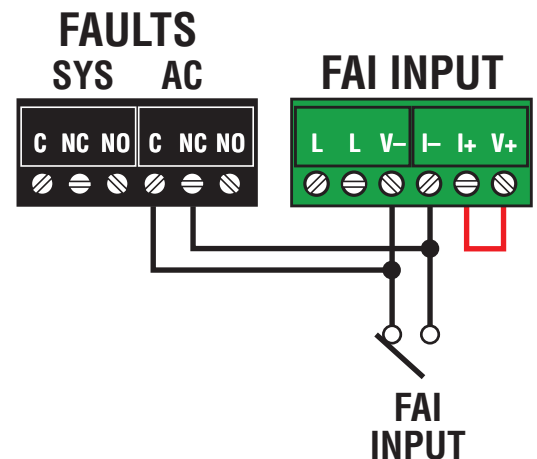


**Note:** FAI with a NC contact cannot be tested by removing the terminal strip, as this will remove the jumper wires from V+ and V- as well. To test, remove one wire going to the NC Contact.

#### FAI Activation with a Normally Open Relay Contact and FPO AC Fault Lock Over Ride

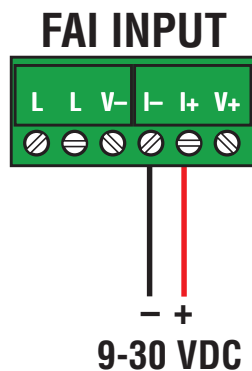
FAI Activates either, when the Fire Alarm NO contact CLOSES, **or** when the AC Fault NC contact CLOSES

FAI Deactivates either, when the Fire Alarm NO contact OPENS, **or** when the FPO AC Fault NC contact OPENS



#### Activation with a Voltage Input

FAI Activates when voltage is APPLIED in the correct polarity.  
FAI Deactivates when voltage is REMOVED or the polarity of the voltage is REVERSED. Polarity shown in the ACTIVATED state



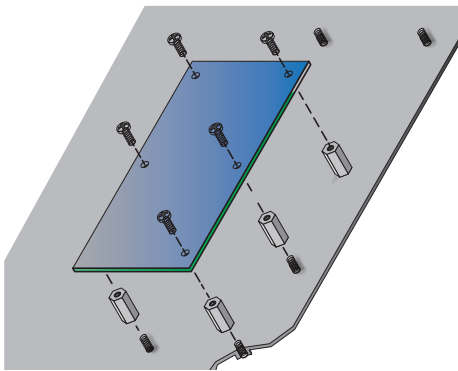
## Section 2 – Adding Access Boards

This section describes the installation procedure for mounting access subassemblies into the Gemini chassis.

### 2.1 Access Panel Mounting Detail

Mounting of all access panel subassemblies is by means of the supplied hardware consisting of ½ inch Female to Female hex standoff secured to 6-32 studs provided on the bottom surface of the rack mount drawer door (See Figure 4).

Figure 4 - Mounting Access Boards



### 2.2 Wiring Information

Refer to the appropriate access controller or LifeSafety Power installation manual for information on wiring the boards.

### 2.3 Connecting the Back Panel CNTRLR Ethernet Jack

Using a short Ethernet cable, connect between the access controller's board's RJ45 connector and the interior RJ45 connection of the CNTRLR Ethernet Pass-through connector (See Figure 5).

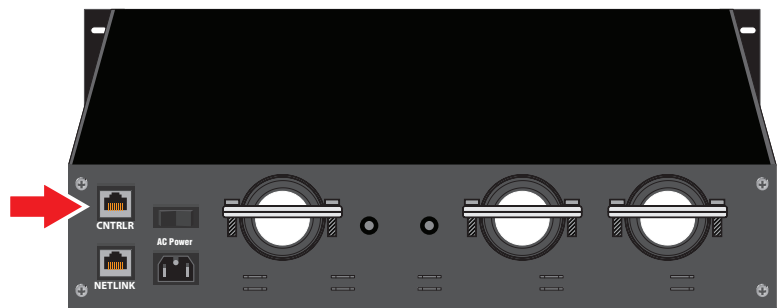
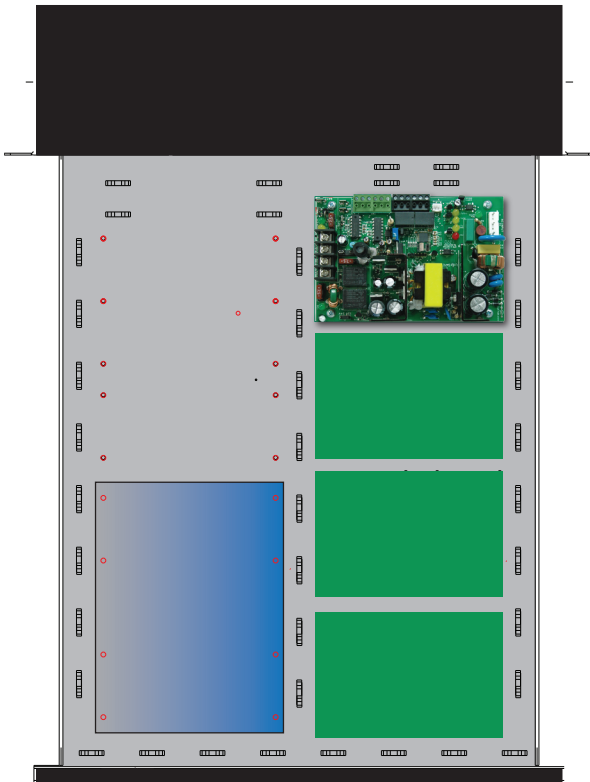


Figure 5 - Controller Ethernet Jack



## Section 3 – Specifications

### 3.1 Electrical Specifications

#### FPO Power Supplies

| Specifications   |                | FP075  | FP0150   | FP0250   |
|--|----------------|--|--|--|
| <b>AC Input</b>  | Voltage        | 120VAC or 230VAC<br>±15% at 50-60Hz                  | 120VAC or 230VAC<br>±15% at 50-60Hz                  | 120VAC or 230VAC<br>±15% at 50-60Hz                  |
|  | Current        | 1.6A   | 2.5A   | 3.2A   |
| <b>Standby</b>   | Current        | 100mA  | 100mA  | 100mA  |
| <b>Rated Current for UL603 Proprietary Alarm Installations</b> | Current        | 1.25A maximum from all circuits in system            | 2.5A maximum from all circuits in system             | 2.5A maximum from all circuits in system             |
| <b>DC Output at 12V Setting</b>                                | Voltage        | 11.3 -12.0V  | 11.3 -12.0V  | 11.3 -12.0V  |
|  | Max Current    | 6A Alarm 4.5A Nominal Supervisory                    | 12A Nominal Supervisory                              | 12A Nominal Supervisory                              |
|  | Ripple         | 120mV  | 120mV  | 120mV  |
|  | Regulation     | ±2%  | ±2%  | ±2%  |
|  | Efficiency     | 85% (120VAC 60Hz In, Full Load, No Batt)             | 88% (120VAC 60Hz In, Full Load, No Batt)             | 89% (120VAC 60Hz In, Full Load, No Batt)             |
| <b>DC Output at 24V Setting</b>                                | Voltage        | 23.5-24.0  | 23.5-24.0  | 23.5-24.0  |
|  | Max Current    | 3A   | 6A   | 10A  |
|  | Ripple         | 120mV  | 120mV  | 120mV  |
|  | Regulation     | ±2%  | ±2%  | ±2%  |
|  | Efficiency     | 85% (120VAC 60Hz In, Full Load, No Batt)             | 88% (120VAC 60Hz In, Full Load, No Batt)             | 89% (120VAC 60Hz In, Full Load, No Batt)             |
| <b>Battery</b>   | Size & Type    | 4-40AH Lead Acid or Gel Cell                         | 4-80AH Lead Acid or Gel Cell                         | 4-80AH Lead Acid or Gel Cell                         |
|  | Charge Current | 1A (±10%) Maximum (Adjustable via PowerCom Software) | 2A (±10%) Maximum (Adjustable via PowerCom Software) | 2A (±10%) Maximum (Adjustable via PowerCom Software) |
| <b>Fuse Ratings</b>  | DC1            | ATM 7.5A   | ATM 15A  | ATM 30A  |
|  | DC2            | ATM 7.5A   | ATM 15A  | ATM 30A  |
|  | Battery        | ATM 7.5A   | ATM 15A  | ATM 30A  |
| <b>BTU Output</b>  | BTU            | 33   | 66   | 109  |
| <b>Fault Setpoints</b>   | Low AC         | 95V (±6%)  | 95V (±6%)  | 95V (±6%)  |
|  | Earth GND      | 2000 Ohms  | 2000 Ohms  | 2000 Ohms  |
|  | Output Voltage | ±10% of nominal                                      | ±10% of Nominal                                      | ±10% of Nominal                                      |
|  | Batt Voltage   | ±10% of nominal                                      | ±10% of Nominal                                      | ±10% of Nominal                                      |
|  | Batt Presence  | 6–15V (12V Setting), 11–29V (24V Setting)            | 6–15V (12V Setting), 11–29V (24V Setting)            | 6–15V (12V Setting), 11–29V (24V Setting)            |
| <b>Fault Relay Contacts</b>                                    | AC FLT         | 1A at 24VDC  | 1A at 24VDC  | 1A at 24VDC  |
|  | SYS FLT        | 1A at 24VDC  | 1A at 24VDC  | 1A at 24VDC  |

## Section 3 – Specifications

### 3.2 Temperature Specifications

#### All Models

|                     |                                |
|---------------------|--------------------------------|
| Ambient Temperature | 0°C to 49°C (32°F to 120°F)    |
| Ambient Humidity    | 93% at 32°C (90°F) maximum     |
| Storage Temperature | -30°C to 70°C (-22°F to 158°F) |

### 3.3 Mechanical Specifications

Visit [www.lifesafetypower.com](http://www.lifesafetypower.com) for AutoCAD files.

#### 2U Enclosure

|                    |  |
|--------------------|--|
| Size               | 17.00" W x 3.50" H x 20.50" D (445mm W x 89mm H x 521mm D) |
| Approximate Weight | 20 lbs but can vary based on configuration                 |

### UL COMPLIANCE:

#### GENERAL - ALL APPLICATIONS:

1. The RG- enclosure must be installed in a UL Listed rack assembly. The assembly must be installed inside the protected area.
2. Connections to the SYS FLT, AC FLT and FAI inputs shall not exceed 3m.
3. Do not connect equipment to an AC power source that is controlled by a switch.
4. Trouble contacts shall be monitored by a Listed alarm system.
5. Any locking device shall be configured for fail safe operation upon occurrence of an alarm as shown in Activation with a Normally Closed Relay Contact in Section 1.4, FAI Input Usage.
6. A suitable tamper switch shall be employed to monitor enclosure opening.
7. The combination of supplies cannot exceed 400W (For example, two FPO250 supplies cannot be employed)

#### IMPORTANT

All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their particular application. LifeSafety Power makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. LifeSafety Power's only obligations are those in the LifeSafety Power Standard Terms and Conditions of Sale for this product, and in no case will LifeSafety Power or its distributors be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Specifications are subject to change without notice. In addition, LifeSafety Power reserves the right to make changes—without notification to Buyer—to processing or materials that do not affect compliance with any applicable specification.