

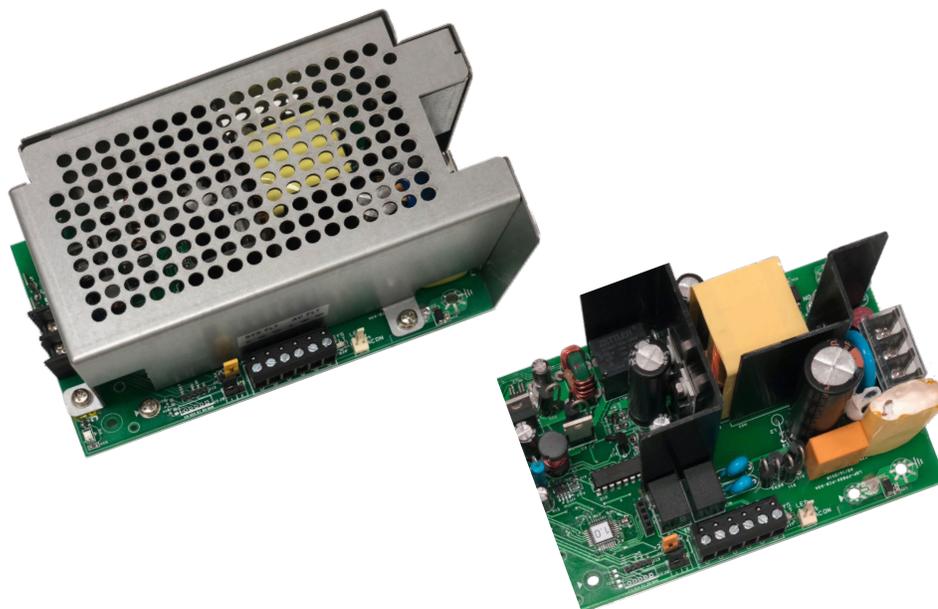


Power is knowledge.™

LifeSafety Power®



FLEXPOWER®
GLOBAL



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Table of Contents

Table of Contents	ii
Notes and Warnings	iii
Symbol Definitions	iii
Warnings	iii
Regulatory Information	iii
Conventions Used Within this Manual	iii
Power Supply Quick Start	iv
Section 1 – Installation and Operation	1
1.1 Mounting	1
1.2 Power Supply Overview	2
1.3 Typical Installation & Wire Routing	4
1.4 Power-Up and Basic System Verification Checklist	5
Section 2 – Troubleshooting and Maintenance	6
2.1 Troubleshooting Table	6
2.2 Maintenance Instructions	6
Section 3 – Specifications	7
3.1 Electrical Specifications	7
3.2 Temperature Specifications	8
3.3 Mechanical Specifications	8
3.4 Replacement Parts	9
Appendix 1 – Tamper Switch Wiring	10
Appendix 2 – User Certificate	10
Appendix 3 – UL Compliance Verification Sheet	11

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
-  Batteries (if used) should be maintained at an ambient temperature of between 32 and 120 degrees Fahrenheit (0-49 Celsius) or premature loss of battery power could occur

Regulatory Information

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

- UL294, UL603, UL1076
- ULC S318, ULC S319
- CSA C22.2 #107.1, 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.

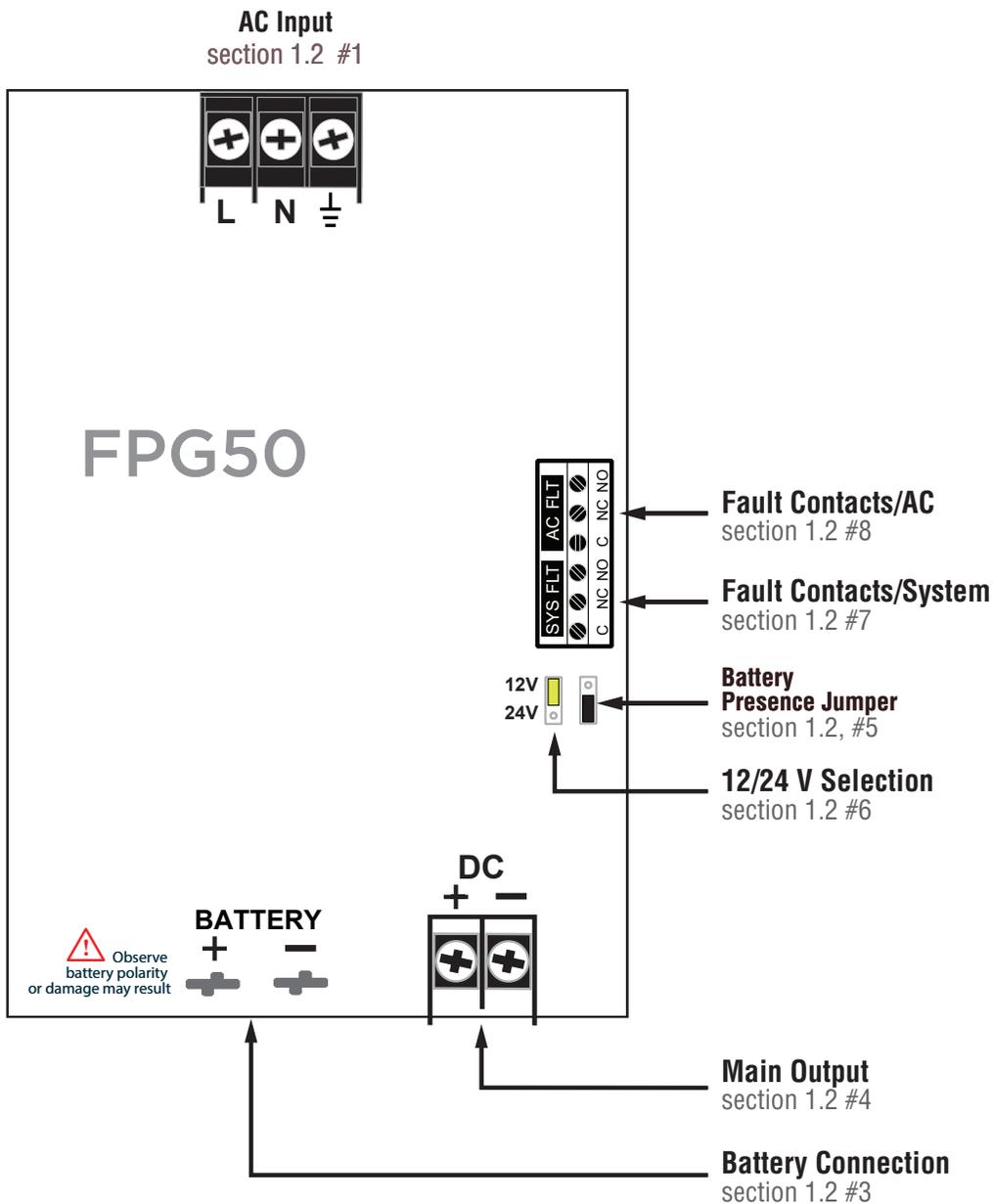
Conventions Used Within this Manual

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.

Power Supply Quick Start

This section gives a quick visual guide of installation connections and settings for installers already familiar with the Flex-Power line of power supplies. For full information, please read this entire manual before installing.

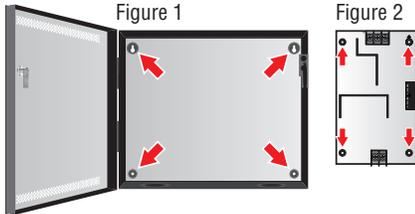
QUICK INSTAL - SECTION FINDER



Section 1 – Installation and Operation

The following pages cover the installation, setup, and basic operation of the FPG series power supplies.

1.1 Mounting



Mounting an Enclosure

Use the following procedure when mounting a wall-mount enclosure (figure 1).

1. (Optional) Remove the enclosure's cover.
2. Locate the top keyhole mounting holes in the back of the enclosure.
3. Mark and pre-drill the locations for the keyholes in the mounting surface.
4. Partially install two fasteners appropriate for the surface on which the enclosure is being installed. Leave the heads of the fasteners approximately $\frac{1}{4}$ " out from the surface. Minimum fastener size should be #10 or larger.
5. Hang the enclosure on the two fasteners and mark the locations of the remaining mounting holes.
6. Remove the enclosure and pre-drill the locations for the remaining mounting holes.
7. Re-hang the enclosure on the top mounting fasteners, start the remaining fasteners and tighten all fasteners.
8. Reinstall the enclosure's cover, if removed in step 1.

⚠ It is the installer's responsibility to determine the appropriate fastening system for use with the surface the enclosure is being mounted to.

⚠ For UL1076 applications, after installation is complete, the installer must install the two supplied 1" long screws to the edge of the enclosure's cover for additional security.

Mounting an FPG PS Board to an Enclosure

Use the following procedure when mounting an FPG power supply to a LifeSafety Power enclosure (figure 2).

1. Locate the appropriate mounting holes in the enclosure and snap the four standoffs provided into the holes.
2. Align the board mounting holes (mounting hole locations are indicated in the drawing above) with the standoffs and snap the board onto the standoffs. Be sure the board is properly oriented before snapping the board onto the standoffs (Figure 3).
3. When two FPG/FPO/FPV boards are installed, the larger shall be located on top (figure 4).

Figure 3

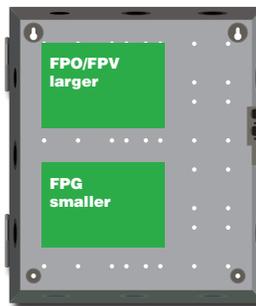
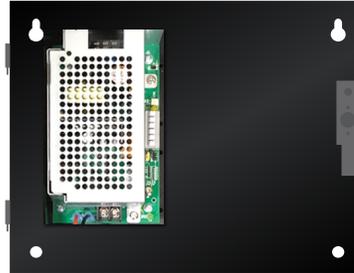


Figure 4

Mounting a Sub Assembly to an Enclosure

Third Party sub assemblies will be mounted in one of three methods based on the supplied mounting hardware (figure 5).

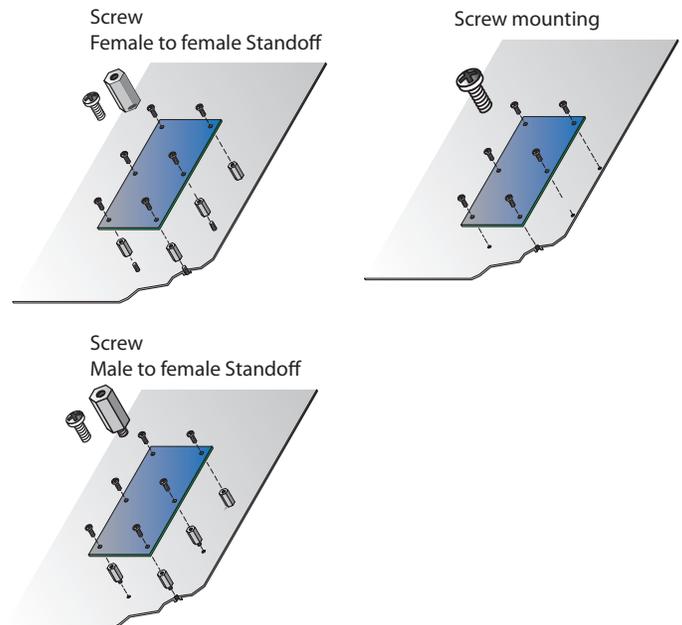
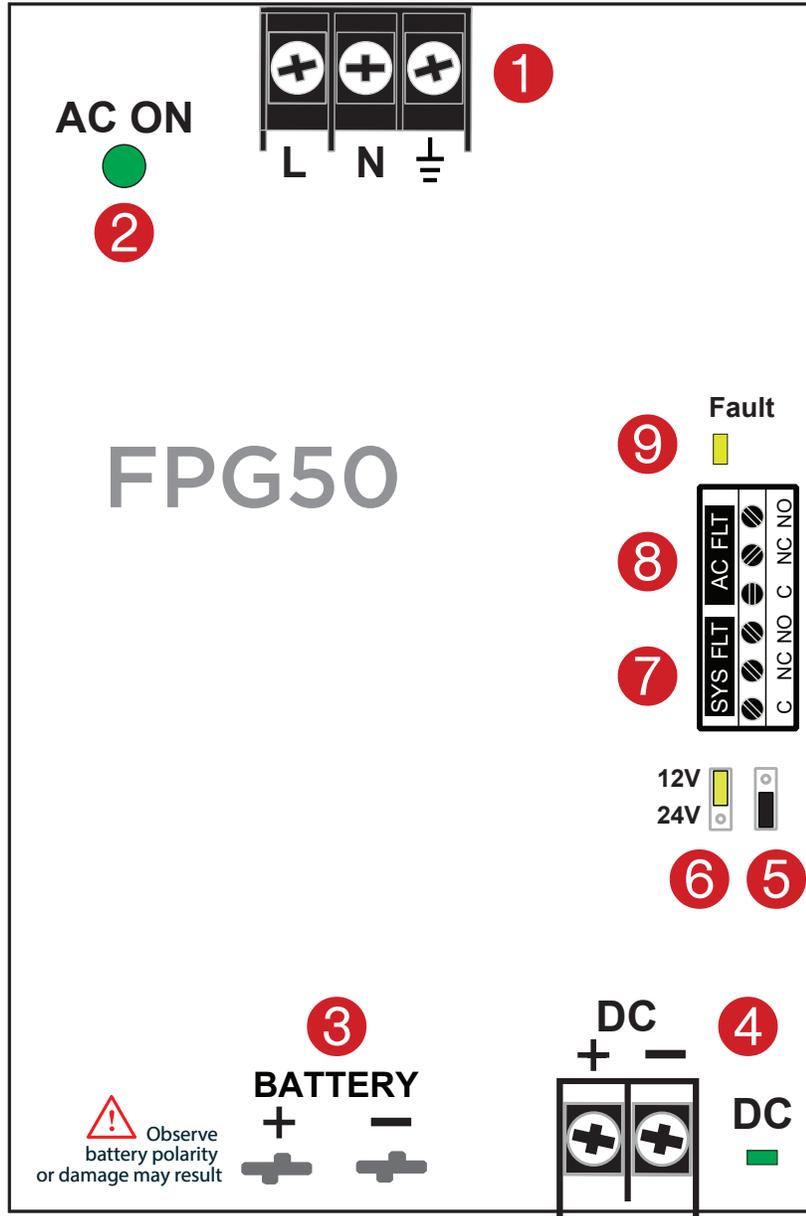


Figure 5

1.2 Power Supply Overview

⚠ ALWAYS DISCONNECT POWER BEFORE CHANGING OUTPUT VOLTAGE TO PREVENT PS DAMAGE



⚠ The FPG50 board is available with or without a metal cover to shield the user from high voltage.



1.2 Power Supply Overview

1 AC Input Primary AC connection

FPG accepts a universal AC input voltage between 100-240 VAC at 50/60Hz, 1.7A Max.

2 AC ON – Green LED

This LED lights when AC voltage is present on the AC input. Missing or low AC is indicated by this LED extinguishing.

 Always confirm the absence of AC power with a meter before servicing to prevent electric shock.

3 Battery Termini Connection

For the optional battery backup. Battery set voltage must match the DC output voltage setting. Maximum charging current is 0.5A.

4 Main DC Power Supply Output

These terminals supply 12.5V or 25.0V at 2A maximum.

The DC LED will be illuminated with voltage present. The DC LED is dual color and will indicate the output voltage setting as follows:

- Green - 12VDC Output
- Blue - 24VDC Output

5 Battery Presence Detection

The BAT DET jumper enables or disables Battery Presence (BP) fault detection as follows:

- Position 1 (jumper ON) Enable Battery Fault Detection
- Position 2 (jumper OFF) Disable Battery Fault Detection

 Enabled (Position 1) is the factory default position which will cause a fault to occur if a battery is not connected.

Place this jumper in position 2 to disable battery detection when a battery is not being used.

6 Output Voltage Selection

This jumper selects the output voltage of the FPG power supply. Voltage settings are labeled on the PC board as follows:

- 12 12VDC nominal out
- 24 24VDC nominal out

 Remove power before changing output voltage or damage to the power supply could occur.

7 System Fault Contact

System fault labeling is adjacent to the terminals and is shown in the unpowered (FAULT) condition.

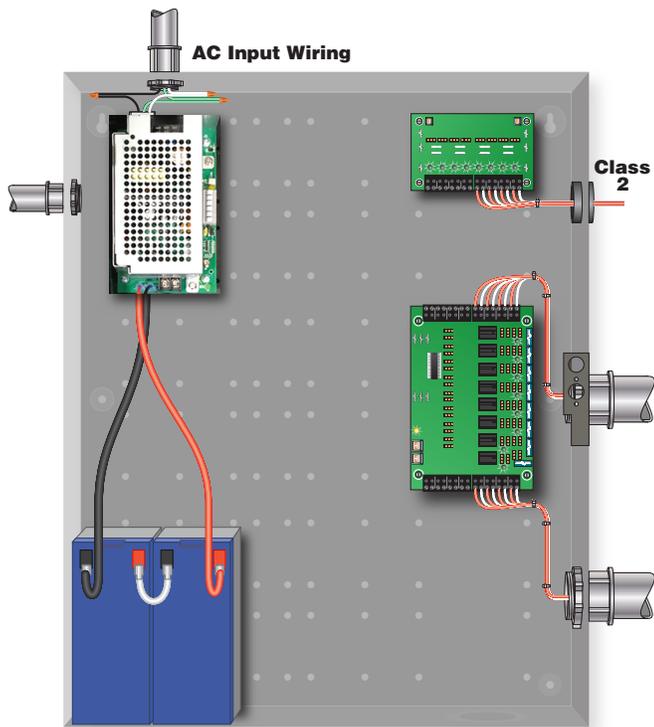
8 AC Fault Contact

AC fault labeling is adjacent to the terminals and is shown in the unpowered (FAULT) condition. AC fault is indicated on a missing AC Input voltage.

9 System Fault Yellow LED

Indicates a system fault condition when illuminated.

1.3 Typical Installation & Wire Routing



The drawing above shows a typical installation. Actual configuration and wire routing will vary based on the components installed in your system.

The following guidelines should be followed for installation:

- Class 2 Power limited wiring must be separated from non-power limited wiring by a minimum of 1/4 inch and must use separate knockouts.
- The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes.
- The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes. For ULC compliance, installation and all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Part I, Section 32.
- Any wiring passing through knockouts in the bottom or top surfaces of the enclosure must be enclosed in rigid or flexible metal conduit.
- For **Canadian Installations** - For permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment. Output circuits not connected to removable terminal strips shall also utilize a readily accessible disconnect device.



1.4 Power-Up and Basic System Verification Checklist

- 1.** Ensure proper configuration of all jumpers and switches.
- 2.** Apply AC power to the FPG power supply.
- 3.** Ensure the “AC ON” and “DC” LEDs are lit.
- 4.** Verify DC output voltage with a meter.
 - a. If set for the 12V nominal setting, the voltage should be approximately 12.5VDC
 - b. If set for the 24V nominal setting, the voltage should be approximately 25.0VDC
- 5.** Connect battery, if required for the installation.
- 6.** Verify that the yellow fault LED is not lit on the FPG power supply.
- 7.** If the battery presence jumper is enabled, remove one lead from the battery – verify that the yellow “Fault” LED lights. Reconnect the battery and the “Fault” LED should extinguish.
- 8.** When a standby battery set is used, remove AC power from the FPG power supply. Verify that the “DC” LED remains lit and that the “AC” LED extinguishes. Reconnect AC power and verify that the “AC” LED illuminates.

Section 2 – Troubleshooting and Maintenance

2.1 Troubleshooting Table

Symptom	Possible Problem	Information / Possible Solution
Fault LED lit and SYS FLT relay indicating a trouble condition	Battery Disconnected	<ul style="list-style-type: none"> Verify that the battery is connected to the FPG. Check all crimp connections on the battery leads Verify that the battery set being used is charged and in good condition If no battery will be used in the installation, move the BAT DET jumper to position 2
	Low Battery Voltage	<ul style="list-style-type: none"> Battery discharged or damaged– Allow the battery to charge or replace the battery
	High Battery Voltage	<ul style="list-style-type: none"> Incorrect battery set– Ensure the battery set is configured properly for the output voltage setting Problem with battery charging circuit– Contact LifeSafety Power
	High or Low Output Voltage	<ul style="list-style-type: none"> Measure the output voltage at the DC terminals. The voltage should be 12.50V for the 12V setting or 25.00V for the 24V setting ($\pm 10\%$). Contact LifeSafety Power if the voltage is outside of this range
	Battery Overcurrent	<ul style="list-style-type: none"> Remove the battery for 30 seconds. Verify the polarity of the battery and the integrity of the output wiring and powered devices before reconnecting.
	Internal Problem	<ul style="list-style-type: none"> Contact Lifesafety Power
AC LED Extinguished and AC FLT relay indicating a trouble condition	Primary AC Voltage Low or Missing	<ul style="list-style-type: none"> Verify that the AC input voltage is between 100 and 240VAC (+10%, -15%) with a meter. The green AC ON LED indicates the presence of a valid AC voltage on the input.
	Internal problem	<ul style="list-style-type: none"> Contact LifeSafety Power
No DC Output DC LED Extinguished	Power Supply Shut Down	<ul style="list-style-type: none"> Verify DC output voltage, AC power, and backup battery voltage (if used) Check output load integrity and current draw Contact LifeSafety Power
Missing Battery Not Detected	Improper setting of BAT DETECT Jumper	<ul style="list-style-type: none"> The BAT DETECT jumper must be ON to detect a missing battery

2.2 Maintenance Instructions

The following are the maintenance instructions for the FPG Series power supply system

- Disconnect AC power prior to servicing
- Verify that there are no fault conditions displayed on any of the yellow fault LEDs as indicated in this instruction manual
- Verify the integrity of all fuses and replace as necessary using the fuse ratings supplied in the Specifications section of this manual
- The battery set (if used) should be checked and replaced if found to be defective or if more than 4 years old (or as required by local code)
- Verify that all output voltages are within range as specified in the Specifications section of this document



Section 3 – Specifications

3.1 Electrical Specifications

FPG Power Supplies

Specifications	FPG50	
AC Input	Voltage	100VAC to 240VAC +/-10% 50-60Hz
	Current	1.7A Max
Standby	Current	100mA
DC Output at 12V Setting	Voltage	12.5V ±5%
	Max Current	2A
	Ripple	120mV
	Regulation	±2%
	Efficiency	79% Typical
DC Output at 24V Setting	Voltage	25V ±5%
	Max Current	2A
	Ripple	120mV
	Regulation	±2%
	Efficiency	81% Typical
Battery	Size & Type	4-20AH Lead Acid or Gel Cell
	Charge Current	0.50A (±10%) Maximum
BTU Dissipation	BTU/Hr	43
Fault Setpoints	Output Voltage	±10% of nominal
	Batt Voltage	±10% of nominal
	Batt Presence	6–15V (12V Setting), 11–29V (24V Setting)
Fault Relay Contacts	AC FLT	1A at 24VDC
	SYS FLT	1A at 24VDC

Section 3 – Specifications

3.2 Temperature Specifications

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 for AutoCAD files.

Power Supply Board - FPG50

Size	6.00" L x 3.75" W x 2.375" H (152mm L x 95mm W x 60mm H) (With Cover)
Approximate Weight	0.75 lbs. (0.340 kg)

Enclosure E1; A, B, C, D, F, G, BL, H, I, G, K, L, M, N, P, R, S, SO, T, V, W, X, 1, 2, 3

Size	14" H x 12" W x 4.5" D (356mm H x 305mm W x 114mm D)
Approximate Weight (base cabinet)	8 lbs. (3.5 kg) empty

Enclosure E2; A, B, C, D, F, G, BL, H, I, G, K, L, M, N, P, R, S, SO, T, V, W, X, 1, 2, 3

Size	20" H x 16" W x 4.5" D (508mm H x 406mm W x 114mm D)
Approximate Weight (base cabinet)	18 lbs. (8.0 kg) empty

Enclosure E5

Size	8.63" H x 11" W x 3" D (286mm H x 219mm W x 76mm D)
Approximate Weight (base cabinet)	4 lbs. (2.0 kg) empty

Enclosure E4; A, B, C, D, F, G, BL, H, I, G, K, L, M, N, P, R, S, SO, T, V, W, X, 1, 2, 3

Size	24" H x 20" W x 4.5" D (508mm H x 508mm W x 114mm D)
Approximate Weight (base cabinet)	21 lbs. (9.5 kg) empty

Enclosure E6; A, B, C, D, F, G, BL, H, I, G, K, L, M, N, P, R, S, SO, T, V, W, X, 1, 2, 3

Size	30" H x 23" W x 6.5" D (762mm H x 584mm W x 165mm D)
Approximate Weight (base cabinet)	45 lbs. (21.0 kg) empty

Enclosure E8; A, B, C, D, F, G, BL, H, I, G, K, L, M, N, P, R, S, SO, T, V, W, X, 1, 2, 3

Size	36" H x 30" W x 4.5" D (910mm H x 760mm W x 114mm D)
Approximate Weight (base cabinet)	55 lbs. (25.0 kg) empty

Section 3 – Specifications

3.4 Replacement Parts

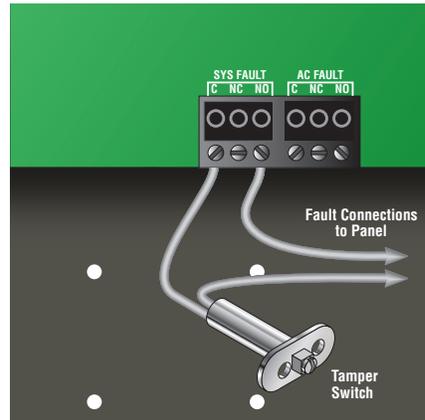
Board Kits	Order #	Description
FPG50	A01-008	FPG50 replacement board
B100	A03-009	DC-DC Convertor (12VDC or adjustable 5 to 18VDC) replacement board
D8	A02-001	Simple distribution replacement board
D8P	A02-002	Simple distribution (Class 2) replacement board
F8	A02-003	FAI controlled distribution replacement board
F8P	A02-004	FAI controlled distribution (Class 2) replacement board
C4	A02-005	Four zone power control replacement board
C4P	A02-006	Four zone power control (Class 2) replacement board
C8	A02-007	Eight zone power control replacement board
C8P	A02-008	Eight zone power control (Class 2) replacement board
M8	A02-009	Eight zone managed power control replacement board
M8P	A02-010	Eight zone managed power control (Class 2) replacement board
R8	A02-013	Eight zone relay power control replacement board
R8P	A02-014	Eight zone relay power control (Class 2) replacement board
NL2	A11-001	NetLink network communication board (used in FPG/FPG systems)
NL4	A11-002	NetLink network communication board (used in FPG/FPG systems)

Hardware	Order #	Description
DL1	A05-001	DataLink USB cable
AC Cable	A05-005	AC Input Cable for FPG Power Supply
Battery Cable	A05-002	Battery Harness – 24"
Module Cable - 12"	A05-003	Accessory board cable set – 12"
Module Cable - 18"	A05-004	Accessory board cable set – 18"
Fuse - 3A	A05-201	ATM-3A Fuse – Bag of 25
Fuse - 5A	A05-202	ATM-5A Fuse – Bag of 25
Fuse - 7.5A	A05-203	ATM-7.5A Fuse – Bag of 25
Fuse - 10A	A05-204	ATM-10A Fuse – Bag of 25
Fuse - 15A	A05-205	ATM-15A Fuse – Bag of 25
Fuse - 30A	A05-206	ATM-30A Fuse – Bag of 25
Standoffs	A05-301	Nylon Standoffs – Bag of 25
Camlock Set	A05-302	Key and Lock fits LSP "E" enclosure
Tamper Switch	A05-304	Tamper Switch for LSP "E" enclosure

Appendix 1 – Tamper Switch Wiring

All FlexPower DC systems with an enclosure include a normally closed tamper switch for monitoring by the host panel. The tamper switch can either be brought into a dedicated input in the panel (see the panel's instructions), to the Event 1 input of a Netlink Network Module (See the Netlink's Instruction Manual), or the tamper switch may be series connected into the System Fault relay in the FPG supply as shown in the illustration.

Any UL1076 installation must use the tamper switch to indicate the opening or removal of the front door of the enclosure.



Appendix 2 – User Certificate

Below is a certificate required for UL603 installations, to be cut out, framed and hung adjacent to the FlexPower Power Supply system after installation. It contains the required battery information, as specified in UL603.



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Specifications for the following model numbers:

FPG50

Maximum Charging Current:	0.5A
Maximum Battery Capacity:	20AH
Battery Type:	Sealed Lead Acid or Gel Cell

Appendix 3 – UL Compliance Verification Sheet

General - All Applications:

1. The power supply must be installed within the protected area.
2. Connections to the SYS FLT and AC FLT relays shall be completed within the same room, not exceeding a length of 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.

The following sections cover specific requirements based on application:

UL1076, Proprietary Burglar Alarm Applications

1. The LifeSafety Model TS-20 tamper switch must be employed to monitor the power supply and EB-80 enclosures.
2. To achieve four hours of standby at full load current, 20Ah min. battery capacity is required for the FPG50.

S319, Access Control Applications

The LifeSafety Model TS-20 tamper switch must be employed to monitor the power supply enclosure.

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.