



## **PS-1110 POWER SUPPLY OPERATION MANUAL**

*Excelitas Technologies Illumination, Inc.  
35 Congress St., Salem, MA 01970 USA  
Phone: (978)745-3200 FAX: (978)745-0894  
Toll Free: (800)950-3441 in USA only  
Website <http://www.excelitas.com>*

**WARNING!**

The PS-1110 Power Supply produces lethal voltages. Ensure that input power is disconnected and storage capacitors have been discharged before beginning any inspection or internal adjustment

**WARNUNG!**

Das Netzteil PS-1110 erzeugt lebensgefährliche Spannungen. Es muss deshalb darauf geachtet werden, dass der ankommende Strom ausgeschaltet ist und die Ladekondensatoren entladen sind, bevor Kontrollen oder Regelungen am Gerät unternommen werden!

**ATTENTION!**

L'alimentation PS-1110 fournit des tensions dangereuses. Veuillez vérifier que la prise de courant est déconnectée et les condensateurs d'accumulation sont déchargés avant d'entreprendre des inspections ou des réglages sur l'appareil.

**WARNING!**

The output voltage of the PS-1110 **MUST** be limited to match the specifications of those components to which it is connected. Exposing any system component to voltage (or any other operating condition) that exceeds its rating can result in damage to the unit and personal injury.

**WARNUNG!**

Die Ausgangsspannung des Netzteils PS-1110 muss der Leistung aller damit verbundenen Komponenten angepasst werden. Systemelemente Spannungen (oder anderen Betriebsbedingungen) auszusetzen, die die Leistungswerte jener Komponenten übertreffen, ist gefährlich und kann zu Schäden und Verletzungen führen.

**ATTENTION!**

Il faut que la tension fournie par l'alimentation PS-1110 soit limitée aux caractéristiques des composants auxquels il sera mis en contact. En exposant un composant quelconque à une tension (ou à d'autres conditions de fonctionnement), qui en dépasse la limite on pourrait endommager l'appareil ou provoquer des blessures.

**TABLE OF CONTENTS**

	PAGE
<b>1.0 INTRODUCTION</b> _____	2
<b>2.0 SPECIFICATIONS</b> _____	3
<b>3.0 INSTALLATION</b> _____	4
3.1. UNPACKING _____	4
3.2. MOUNTING _____	4
<b>4.0 OPERATION</b> _____	5
4.1. TRIGGER REQUIREMENTS _____	5
4.2. EXTERNAL ADJUSTMENT OF HV OUTPUT $V_{REF}$ _____	5
4.3. INTERCONNECTIONS _____	6
<b>5.0 MAINTENANCE</b> _____	7
5.1. REPAIRS _____	7
5.2. REPACKING AND STORAGE _____	7

**FIGURES**

<b>FIGURE 1. OPTIONAL EXCELITAS TECHNOLOGIES LITE-PACS</b> .....	2
<b>FIGURE 2. OUTLINE AND MOUNTING DIMENSIONS</b> .....	4
<b>FIGURE 3. INPUT TRIGGER CIRCUIT</b> .....	5
<b>FIGURE 4. J1 INPUT CONNECTOR</b> .....	6
<b>FIGURE 5. TYPICAL CONNECTIONS (STANDARD LITE-PAC WIRING)</b> .....	6
<b>FIGURE 6. TYPICAL CONNECTIONS (SHIELDED LITE-PAC WIRING)</b> .....	7

**TABLES**

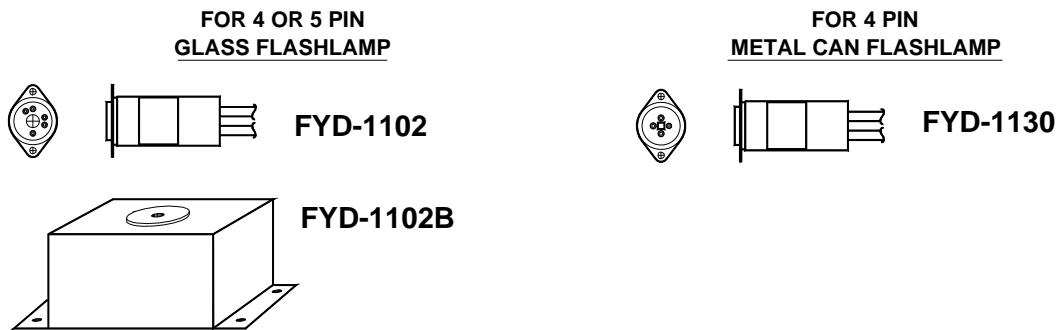
<b>TABLE 1. ELECTRICAL INPUT</b> .....	3
<b>TABLE 2. ELECTRICAL OUTPUT (DISCHARGE)</b> .....	3
<b>TABLE 3. ELECTRICAL OUTPUT (TRIGGER)</b> .....	3
<b>TABLE 4. MECHANICAL PROPERTIES</b> .....	3

**ATTENTION!**

Each PS-1110 Power Supply is factory set to operate at 600V on internal  $V_{ref}$ . For external HV reference adjustment, the unit must be connected to an external reference voltage source (see Fig. 5).

**1.0 INTRODUCTION**

The **PS-1110 Power Supply** is one of a series of units designed for high energy capacitor discharge service with any guided arc bulb-type flashlamp and Lite-Pac® including those shown below.



**Figure 1. Optional Excelitas Technologies Lite-Pacs**

The PS-1110 Power Supply performs two functions: (1) charges the flashlamp discharge capacitor to a specific voltage at a specified rate, and (2) provides trigger capacitor charging and switching functions at the required flash rate. It's well regulated, low ripple characteristics ensure excellent discharge repeatability.

**WARNING!**

The normal operation of this product involves high voltages which are potentially lethal.

Because this product is only one component of a system, and, once sold is exclusively under the control of the user, it has the potential of being used in a manner outside the intended purpose of Excelitas Technologies design.

It is essential that the operating specifications and parameters described in Excelitas Technologies literature and those accompanying other manufacturer's components be observed and not be exceeded under any conditions.

To install or operate this product in a manner for which it is not intended may cause personal injury or death, as well as severe damage to the product and/or other system components.

## 2.0 SPECIFICATIONS

**Table 1. Electrical Input**

Voltage	11 – 28VDC
Current	Less than 1.3ADC @ 12VDC, 10 watts output
Trigger	Optically isolated; 20-50mA peak input; 10-100µs pulse width; leading edge trigger. Int. series resistor = 150Ω.
$V_{ref}$ ( $V_0/V_{ref} = 100$ )	4.5 – 6VDC
Maximum Flash Rate	$10/E$ , where energy per flash, $E = \frac{1}{2}$ capacitance X voltage <sup>2</sup> ( $E = \frac{1}{2} CV^2$ ).

**Table 2. Electrical Output (Discharge)**

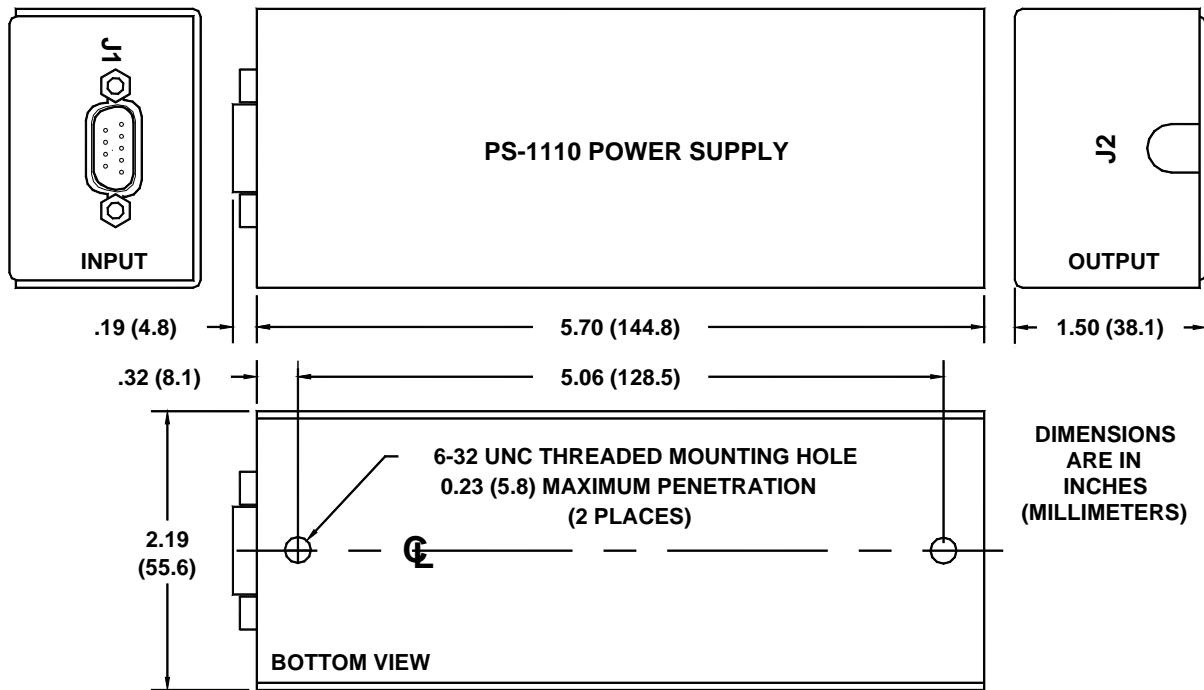
Voltage ( $V_0$ )	450 – 600VDC $\pm 2\%$
Charge Rate, min.	10j/sec (12V input , 600V output)
Power output	10 watts maximum
Line Regulation	$\pm 1\%$
Ripple with 0.1µF, 600V chg (P-P <sub>max</sub> )	0.5%
Int. Discharge Cap	0.1µF $\pm 10\%$

**Table 3. Electrical Output (Trigger)**

Trigger Voltage	165 – 180V
Trigger Capacitor	0.1µF

**Table 4. Mechanical Properties**

Input Connector	9 pin “D” subminiature
Output Connector	Terminal Block, Vertical Screw Clamp
Enclosure	Steel Case
Dimensions	5.75”L x 2.19”W x 1.50”H
Weight	14.5 oz. (410g)
Operating Temp.	0° - 50° C



**Figure 2. Outline and Mounting Dimensions**

### 3.0 INSTALLATION

#### 3.1. UNPACKING

If the condition of the outer packaging suggests mishandling has occurred, examine the PS-1110 Power Supply for any signs of breakage during shipment. If there are any obvious signs of damage, contact the carrier immediately and do not proceed with the installation.

It is recommended that the packaging material be retained and stored in the event that the unit has to be reshipped.

#### 3.2. MOUNTING

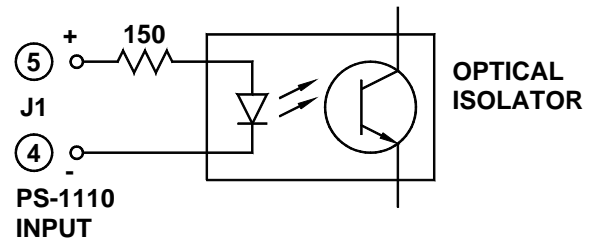
Two 6-32 UNC threaded holes in the base of the PS-1110 enclosure are provided for mounting the unit (see Figure 2). Mounting hardware is user-supplied.

## 4.0 OPERATION

Once operating conditions have been determined, proceed as follows:

### 4.1. TRIGGER REQUIREMENTS

Triggering is accomplished by connecting J1-5 to +5V and sinking J1-4 to ground. Other logic voltages may be accommodated by including a series resistor. See specifications (Section 2) for additional information.



**Figure 3. Input Trigger Circuit**

### 4.2. EXTERNAL ADJUSTMENT OF HV OUTPUT $V_{REF}$

The high voltage (HV) is factory set at 600VDC on the internal voltage reference ( $V_{ref}$ ).

To adapt the PS-1110 for external HV adjustment:

1. Make sure the unit is off.
2. Open the cover by removing its mounting screws.
3. Move jumper JP1 to the EXT position.
4. Close cover and replace screws.

The output HV can be programmed from 450 to 600 volts by varying the external  $V_{ref}$  input from 4.5 to 6.0 volts DC (100V output per volt input).

The output of any source such as a digital to analog converter (<5K ohms) may be used as a reference supply. A divider network from the main DC Power may also be used

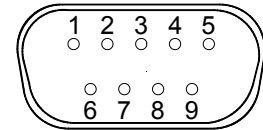
Note: The Power Return and  $V_{ref}$  Return are joined internally.

#### **WARNING!**

The output voltage of the PS-1110 MUST be limited to match the specifications of those components to which it is connected. Exposing any system component to voltage (or any other operating condition) that exceeds its rating can result in damage to the unit and personal injury.

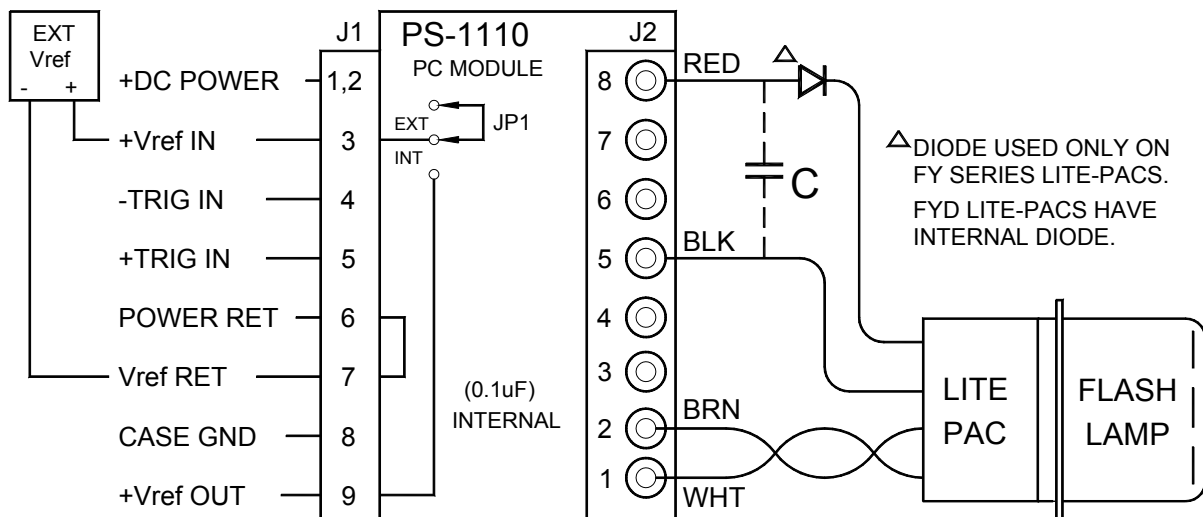
**4.3. INTERCONNECTIONS**

1. Make input connections according to Figures 4 and 5 or 6. Use #22 AWG or heavier wire for the DC power input. A shielded pair to the trigger input is recommended.



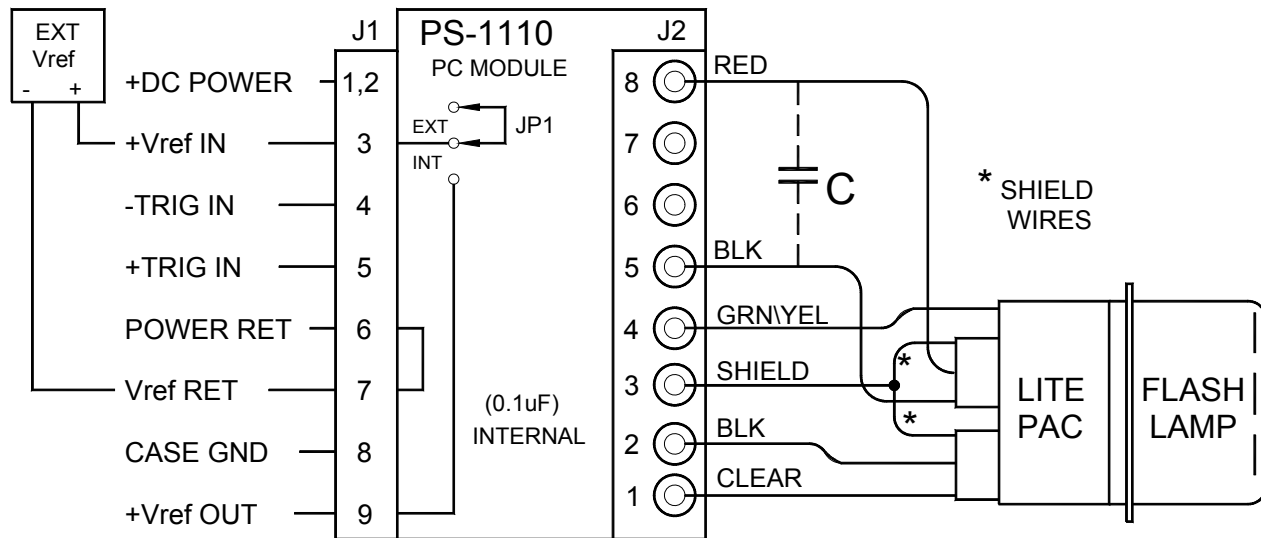
**Figure 4. J1 Input Connector**

2. Make output connections according to Figures 5 or 6 (whichever is appropriate). When using a *standard* wiring Lite-Pac, twist together the brown and white Lite-Pac trigger leads and connect them to the appropriate terminals on the output terminal block.
3. Add external capacitor(s) and trigger diode, if required, to the Lite-Pac **discharge** circuit.
4. Turn on the power supply.
5. Set the high voltage by adjusting the reference voltage.
6. Trigger as required.



**Figure 5. Typical Connections (Standard Lite-Pac Wiring)**





**Figure 6. Typical Connections (Shielded Lite-Pac Wiring)**

## 5.0 MAINTENANCE

### 5.1. REPAIRS

The PS-1110 Power Supply is, generally speaking, a trouble-free unit. No routine maintenance or repair is required.

In the event that the unit fails or does not function properly, it is strongly suggested that no attempt be made to troubleshoot. Field repairs or customer modifications are not authorized, and, if attempted, will void the warranty. Repairs must be made only by factory-trained personnel.

### 5.2. REPACKING AND STORAGE

If the PS-1110 is to be stored for a prolonged period, shipped to another location, or returned to the factory for repair, it should be repacked in the original packaging material. If the packaging material has been discarded, the unit should be put in a suitable container with sufficient protective material to ensure that the unit cannot move within the package and is protected from damage that could occur from improper handling.

Any storage area used for the unit should be dry, at a temperature of  $-40^{\circ}\text{F}$  to  $+194^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$ ).