

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

EXCELITAS
TECHNOLOGIES

PRECISION ALIGNED XENON
PULSED LIGHT SOURCE
PAX-6XX-X

USERS MANUAL

Excelitas Technologies Corp.
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

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION 2

1.1 DESCRIPTION 2
1.2 UNPACKING 2

SECTION 2 - SPECIFICATIONS 4

SECTION 3 - INSTALLATION 5

3.1 COOLING REQUIREMENTS 5
3.2 MOUNTING 7
3.3 ARC LOCATION 8
3.4 ACCESSORIES 9

SECTION 4 - OPERATION 10

4.1 POWER CONVERSION METHOD 10
4.2 INPUT CONNECTOR 10
4.3 TRIGGER REQUIREMENTS 11
4.2 INTERNAL ADJUSTMENT OF HV REFERENCE VOLTAGE 11
4.3 EXTERNAL ADJUSTMENT OF HV REFERENCE VOLTAGE 11
4.4 INTERCONNECTIONS 12

SECTION 5 - MAINTENANCE 12

5.1 REPAIRS 12
5.2 FLASHLAMP REPLACEMENT 12
5.3 REPACKING AND STORAGE 12

SECTION 6- DECLARATION OF CONFORMITY 14

FIGURES

Figure 1 – Outline 3
Figure 2 – Temperature Measurement Location 6
Figure 3 – Mounting Dimensions 7
Figure 4 – Arc Position 8
Figure 5 – Accessories 9
Figure 6 – J1 9-Pin Signal Input 10
Figure 7 – Input Trigger Circuit 11

TABLES

Table 1. Electrical Input 4
Table 2. Electrical Output to Discharge Capacitor 4
Table 3. Mechanical Properties 4
Table 4. Model Number Definition 5
Table 5. Pin Designation 10

WARNING!

The normal operation of this product produces 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 Corp. 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 and /or death, as well as severe damage to the product and/or other system components.

SECTION 1 – INTRODUCTION

1.1 DESCRIPTION

The (PAX-6xx-x) light source is a **P**recision **A**ligned **X**enon source with the flashlamp, trigger and power supply integrated into one compact package. It's intended use is as a full spectrum emission source for analytical applications.

The theoretical intersection of the anode electrode tip (See Figure 4) is pre-aligned with respect to a dowel pin center allowing true drop in field replacement. The unit requires a low voltage DC power source and a trigger gate pulse for operation. Light output can be controlled via an internal potentiometer or an external reference voltage. The flash rate is controlled with an external pulse train. There is also a low rate internal pulse generator for self test.

A fiber optic cable adapter, alternate mounting plate and L-bracket are available. Please consult Excelitas Technologies Corp.

1.2 UNPACKING

If the condition of the outer packaging suggests mishandling, examine the PAX-6™ for any signs of breakage during shipment. If there are any signs of damage contact the carrier immediately. 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.

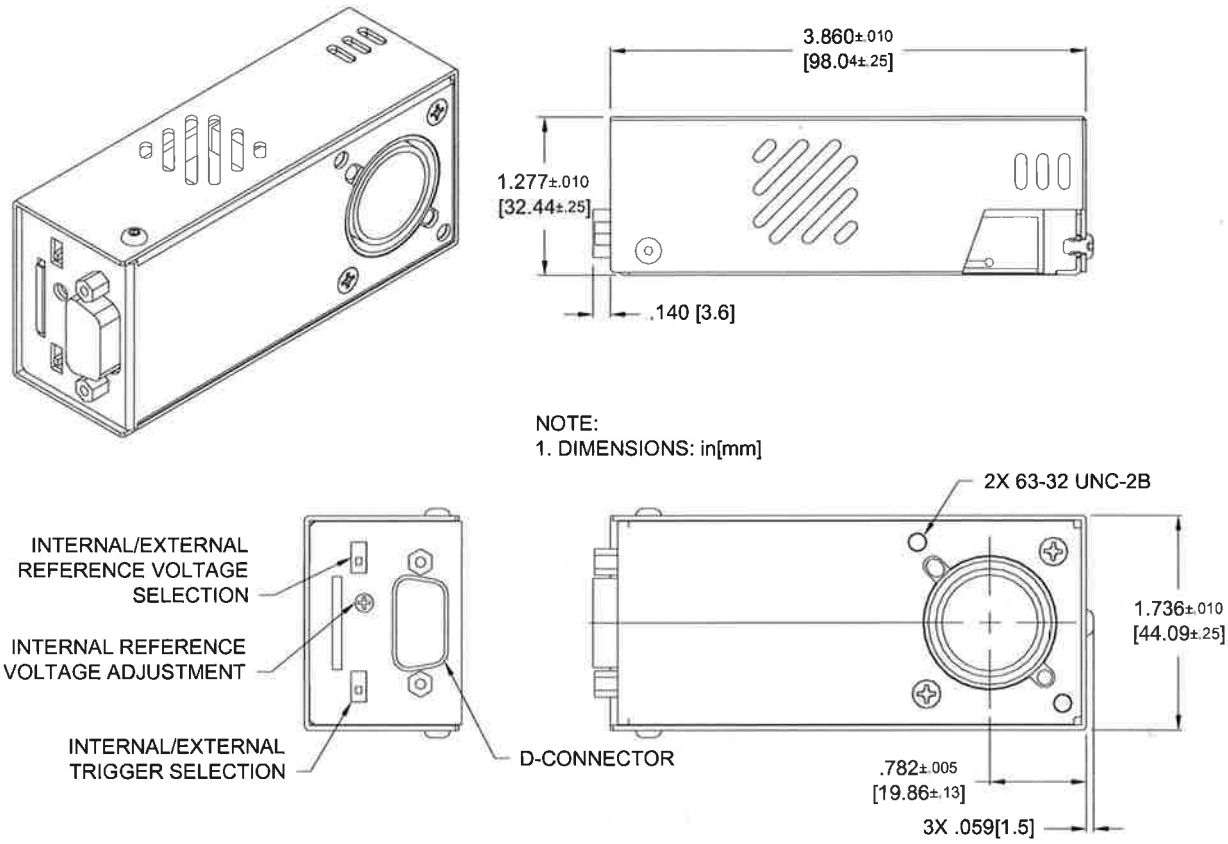


Figure 1 – Outline

SECTION 2 - SPECIFICATIONS

Table 1. Electrical Input

Voltage[3]	11 - 28VDC
Input Current	1 ADC
Inrush Current	4 ADC Peak
Trigger[1]	5 Volts, 20-50mA peak, 10-100µs pulse width Leading edge trigger
V_{ref}[2]	3.15 – 4.73VDC Ratio (V_0/V_{ref}=127)
Maximum Flash Rate	Max flash rate =6/E, where $E = ½ CV^2$ C= capacitance (F) See model definition Table 4 V= voltage (V)

[1]Optically isolated; Internal series resistor = 150Ω

[2] Where 3.15x127=400Vdc and 4.73x127=600Vdc.

[3] See Appendix for additional information.

Table 2. Electrical Output to Discharge Capacitor

Voltage (V)[1]	400 - 600VDC ±2%
Power Output[1]	6 Watts maximum

[1]See Appendix for additional information.

Table 3. Mechanical Properties

Input Connector	9 pin "D" subminiature. See **Table 5** for pin assignment
Enclosure	Material: 0.04" CRS Finish: ASTM-B663 Type II
Dimensions	Length 3.86" (98mm), Width 1.74" (44mm), Height 1.29" (33mm)
Weight	202g
Operating[1] Temperature	0°C to +40°C
Storage Temperature	-40°C to +90°C

[1]See Section 3.1 for cooling requirements

Table 4. Model Number Definition

PAX-6*AB*-*C*

Where	
A= Arc Orientation	**0** - See Figure 4 **1** - See Figure 4
B = Lamp Type	**1** - 1.5 mm arc length, 225-1100+ nm **2** - 1.5 mm arc length, 190-1100+ nm **3** - 1.5 mm arc length, 120-1100+ nm **4** - 3.0 mm arc length, 225-1100+ nm **5** - 3.0 mm arc length, 190-1100+ nm **6** - 3.0 mm arc length, 120-1100+ nm
C = Discharge Capacitor	**1** - 0.047 µF **2** - 0.10 µF **3** - 0.22 µF **4** - 0.27 µF



WARNING!
Avoid looking directly at the high intensity light flash, whether at the unit itself or at the end of a fiber-optic cable, as this can result in damage to the eyes

SECTION 3 - INSTALLATION

3.1 COOLING REQUIREMENTS

The PAX-6 ™should be securely mounted in a protected position that does not restrict air flow around or through its ventilation openings. Forced air cooling may be required to maintain the case temperature below 50˚C. See Figure 2 for case temperature measurement location.

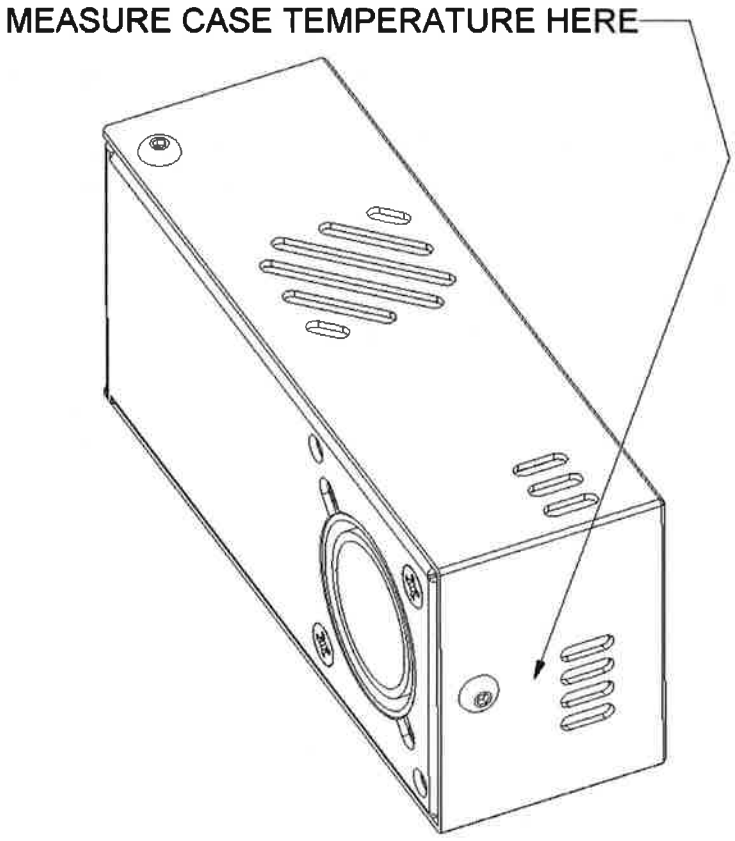


Figure 2 – Temperature Measurement Location

3.2 MOUNTING

Alignment is provided by the use of a slot and hole pattern that receives ground dowel pins and is secured by two (2) 6-32 fasteners (See Figure 3). The user must select fasteners that will not penetrate the unit by more than 0.300". It is recommended that the mounting surface be machined flat and that mounting pins be press fit to maintain repeatability of arc position.

Mounting kits with an L-bracket or a Faceplate are available for easy integration (Figure 5). An SMA-905 fiber optic cable adapter is also available.

CAD models (STEP, DXF, ACIS) for the PAX-6™ and its accessories are available upon request. Custom mounting and repackaging can be quoted on request. Please consult Excelitas Technologies, Corp.

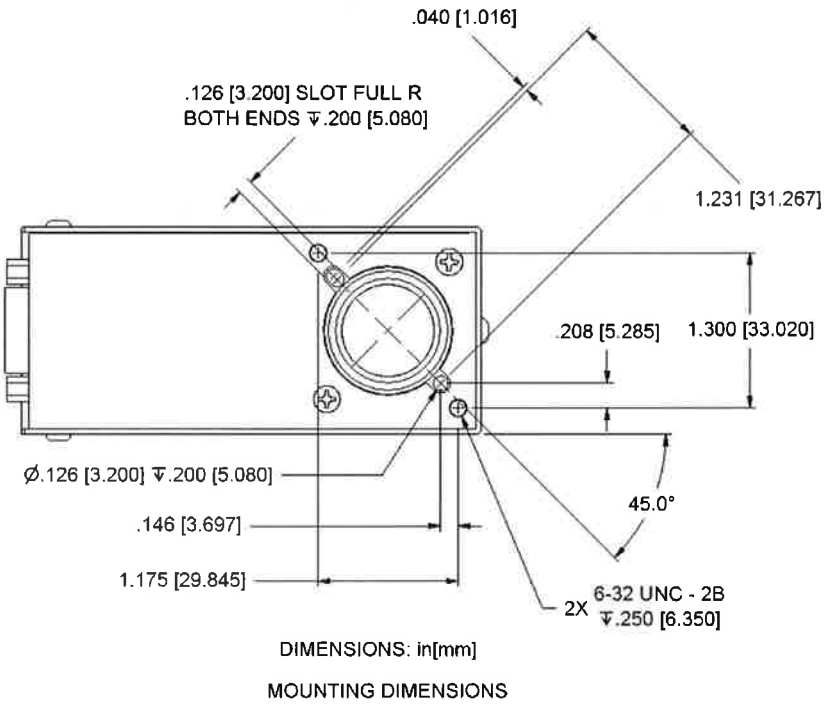


Figure 3 – Mounting Dimensions

3.3 ARC LOCATION

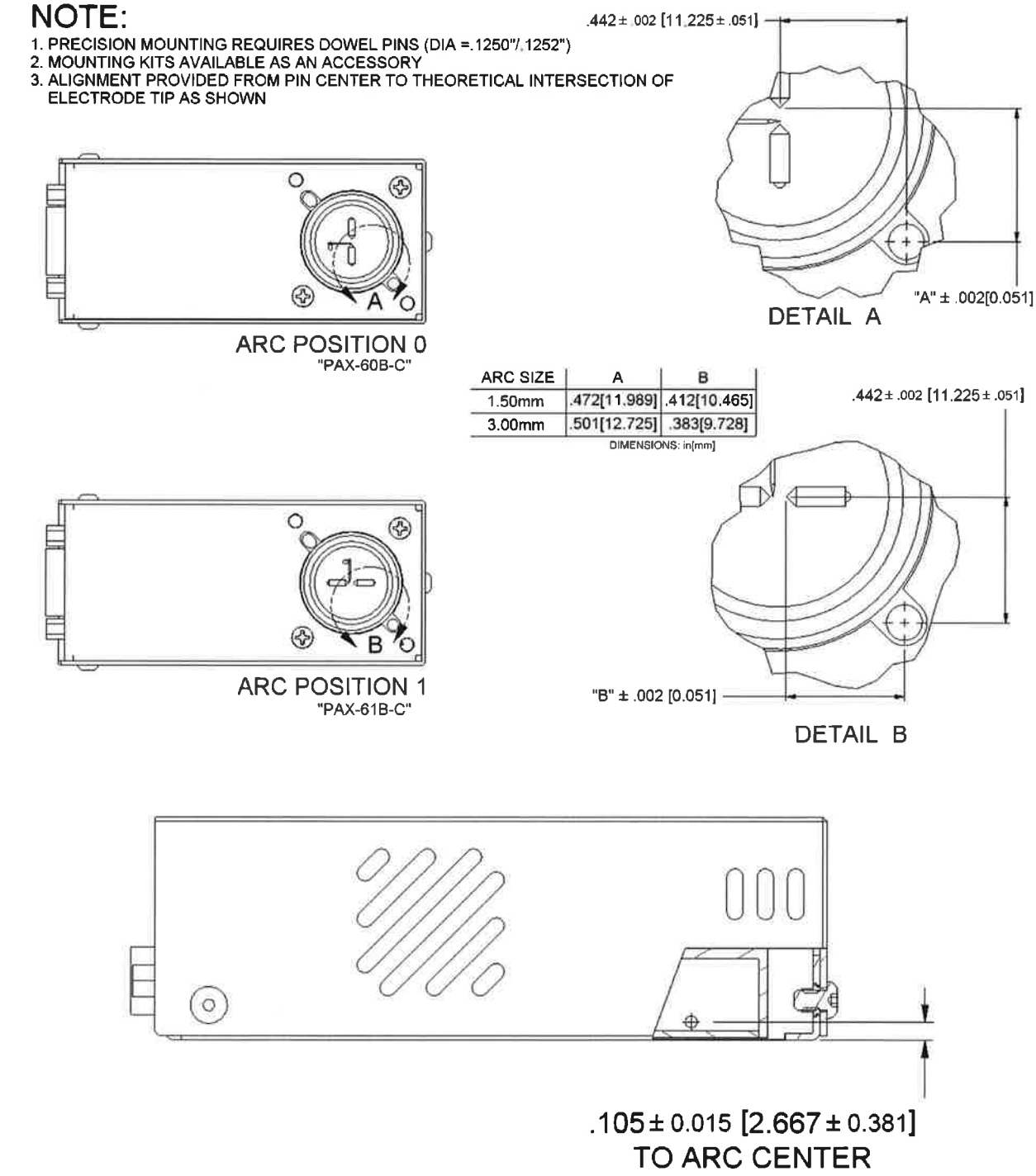


Figure 4 – Arc Position

3.4 ACCESSORIES

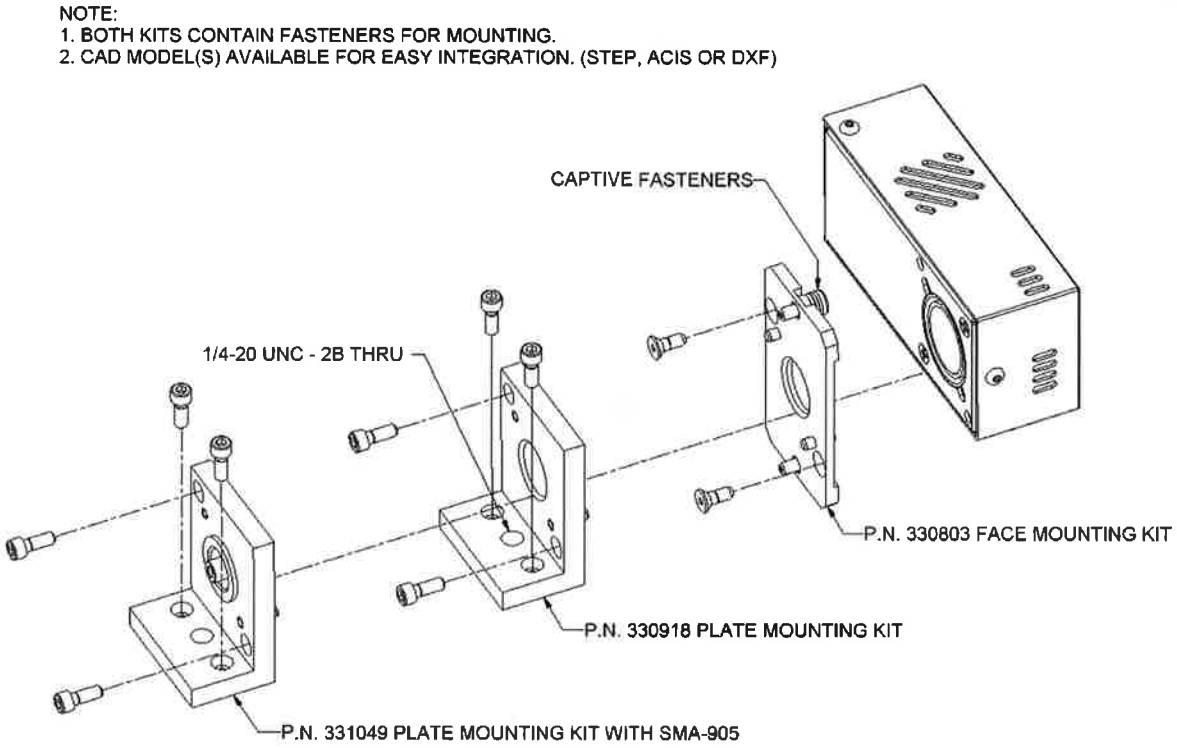


Figure 5 – Accessories

SECTION 4 - OPERATION

4.1 POWER CONVERSION METHOD

The PAX-6™ **P**recision **A**ligned **X**enon light source converts the DC input to 400-600VDC to charge a capacitor connected in parallel with the lamp. The leading edge of the trigger gate initiates a high voltage trigger pulse that ionizes the gas in the lamp and changes the impedance of the lamp from a high to a low value. The energy stored in the capacitor is then discharged into the lamp producing a short duration high intensity light pulse. The energy delivered to the lamp per flash is determined by the relationship of $E=\frac{1}{2}CV^2$. Average power is determined by (E x flash rate).

4.2 INPUT CONNECTOR

The input connector is a 9-pin Male D-subminiature type with the pin assignment per Table 5 below. This connector is used for power, trigger and Vref input.

Table 5. Pin Designation

PIN	INPUT
1	+VDC INPUT POWER
2	+VDC INPUT POWER
3	Vref
4	TRIGGER RETURN
5	+TRIGGER
6	POWER RETURN
7	POWER RETURN
8	NO CONNECTION
9	Vref RETURN

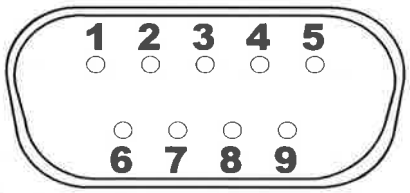


Figure 6 – 9-Pin D-sub

4.3 TRIGGER REQUIREMENTS

Apply trigger input pulse to J1-4 and J1-5 per specifications shown in Table 1. The lamp will flash on the rising edge of the pulse after a short propagation delay of approximately 2.5 µSec.

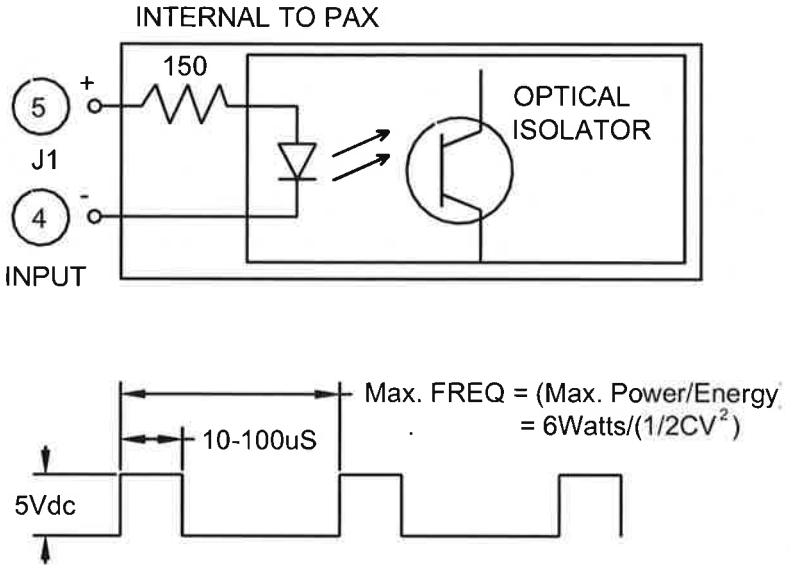


Figure 7 – Input Trigger Circuit

4.2 INTERNAL ADJUSTMENT OF HV REFERENCE VOLTAGE

The discharge capacitor voltage level of the PAX-6™ is controlled by a reference voltage (V_{ref}) which may be applied externally or generated internally. The internal or external mode is selected by the position of the Vref switch located adjacent to the D-sub input connector.

When the unit is configured to use the internal reference voltage, the discharge capacitor voltage can be adjusted over the full 400-600V range via a potentiometer which is accessed through the hole adjacent to the Vref switch (see Figure 1). All units are shipped with Vref set to internal and adjusted for maximum output (600VDC).

4.3 EXTERNAL ADJUSTMENT OF HV REFERENCE VOLTAGE

With the Vref switch set to EXT the discharge capacitor voltage can now be adjusted from 400 to 600 volts by applying an external reference voltage of 3.15-4.73VDC to J1-3. This reference voltage can be the output of any source such as a digital-to-analog converter (<5K ohms) or a divider network from the main DC power source.

Note: The power and V_{ref} returns are connected internally.

4.4 INTERCONNECTIONS

Make input connections according to Table 5. Use #22 AWG or larger wire for the DC power input. A #22-26 AWG shielded pair to the trigger input is recommended. All lead wire shall have insulation rated for at least 100 Vdc. When using an external switch, it shall be rated for 28Vdc minimum and 2 Adc. It should be located as close as is possible (within 15 inches) to the unit .

The power input cable and fiber optic output cable (where applicable) should be positioned and supported to prevent strain on the case and connectors.

SECTION 5 - MAINTENANCE

5.1 REPAIRS

The PAX-6™ requires no routine maintenance and has no user serviceable parts. Field repairs or customer modifications are not authorized, and if attempted, will void the warranty. Repairs must be made by Excelitas Technologies trained personnel only.

5.2 FLASHLAMP REPLACEMENT

Over a period of time, depending on usage, the xenon flashlamp will gradually deteriorate and need to be replaced. The lamp is not user replaceable. The module should be returned to Excelitas Technologies, Corp. for lamp replacement. Please contact Customer Service.

Excelitas Technologies Corp.
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

5.3 REPACKING AND STORAGE

If the PAX-6™ is to be stored for a prolonged period, shipped to another location, or returned to Excelitas Technologies Corp. for repair or lamp replacement, it should be repacked in the original packaging material. If the material has been discarded, the unit should be enclosed 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.

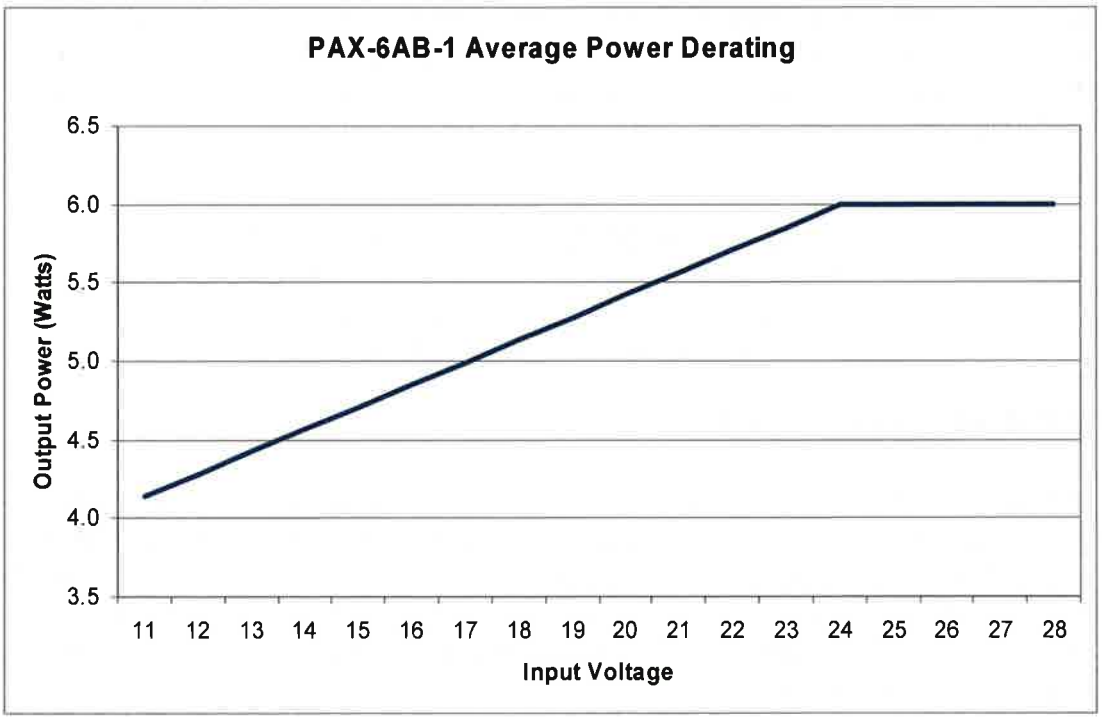
If the unit is to be stored for a prolonged period, the storage area should be dry and at a storage temperature specified in Table 3.

Appendix

Table 6. Operating Conditions

Part No.	Main Discharge Capacitor (µF)	Main Discharge Voltage (V)	Maximum Input Energy per Flash (mJ)	Maximum Repetition Rate (Hz)	Maximum Average Power (W)
PAX-6AB-1	0.047	400	3.8	1579*	6*
		500	5.9	1016	6
		600	8.5	705	6
PAX-6AB-2	0.10	400	8.0	750	6
		500	12.5	480	6
		600	18.0	333	6
PAX-6AB-3	0.22	400	17.6	341	6
		500	27.5	218	6
		600	39.6	151	6
PAX-6AB-4	0.27	400	21.6	278	6
		500	33.7	178	6
		600	48.6	123	6

*Conditions for input voltage range from 24-28Vdc. Output power is derated for input voltages below 24Vdc on the PAX-6AB-1 only when operating at 400Vdc output voltage. See Graph below for details. All other units/conditions can operate up to 6 watts with input voltage from 11-28Vdc.



SECTION 6: DECLARATION OF CONFORMITY

MANUFACTURER:
Excelitas Technologies Corp.
35 Congress Street
Salem, Massachusetts 01970 U.S.A.

EUROPEAN REPRESENTATIVE
Excelitas Technologies **GmbH:**
Wenzel-Jaksch-Str. 31
D-65199 Wiesbaden Germany

We, Excelitas Technologies Corp., at 35 Congress Street, Salem, Massachusetts, U.S.A., declare that the product described in Table 4 above is in conformity with ***EU Low Voltage Directive 73/23/EEC*** using the relevant sections of the following standards and other normative documents:

EN61010-1:2001-02
Safety requirements for electrical equipment for measurement, controls and laboratory use. Part 1.

It is the responsibility of the end user to insure EMI compliance.

This product has been manufactured in compliance with Excelitas Technologies Corp. I.S. EN ISO 9001: 2008, Quality System, Certification Number 19.1679.

Stewart Tuttle, Quality Assurance

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP