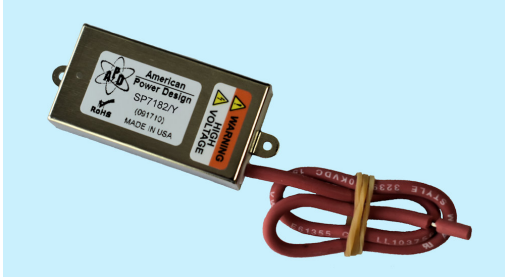




**SP7182, 3W, REGULATED ( V<sub>progr.</sub> = 0 to +5V, V<sub>out</sub> = 0 to +5kV ), SPEC. SHEET**



**Standard Model Number : SP7182**

**RoHs Model Number : SP7182/Y**

*Standard Model is NOT RoHs Compliant*

**ELECTRICAL SPECIFICATIONS**

Input Voltage .....	11.5V - 16Vdc	Programming Voltage .....	0 - 5Vdc
Input Current .....	<150mA (No Load)	Programming Current .....	< 100uA
Input Current .....	<420mA (Full Load)	Programming Linearity .....	<0.5% (5% to 100% Vout)
Output Voltage .....	0V to +5kVdc (Programmable)	Input Filter .....	Low ESR Capacitor
Output Current .....	0.6mA	<b>Reverse Input Protection .....</b>	<b>50Vdc</b>
Voltage Accuracy .....	+/- 1%	<b>Short Circuit Protection .....</b>	<b>Continuous</b>
Line Regulation .....	< 0.05%	Switching Frequency .....	180 kHz
Load Regulation .....	<0.1%	Gain Adjustment .....	5 to 10%
Output Ripple .....	< 0.1% P-P	Response Time .....	<250 ms (Full Load, full scale response)
		<b>Programming Voltage Shutdown .....</b>	<b>&gt; 5.2Vdc</b>

**GENERAL SPECIFICATIONS**

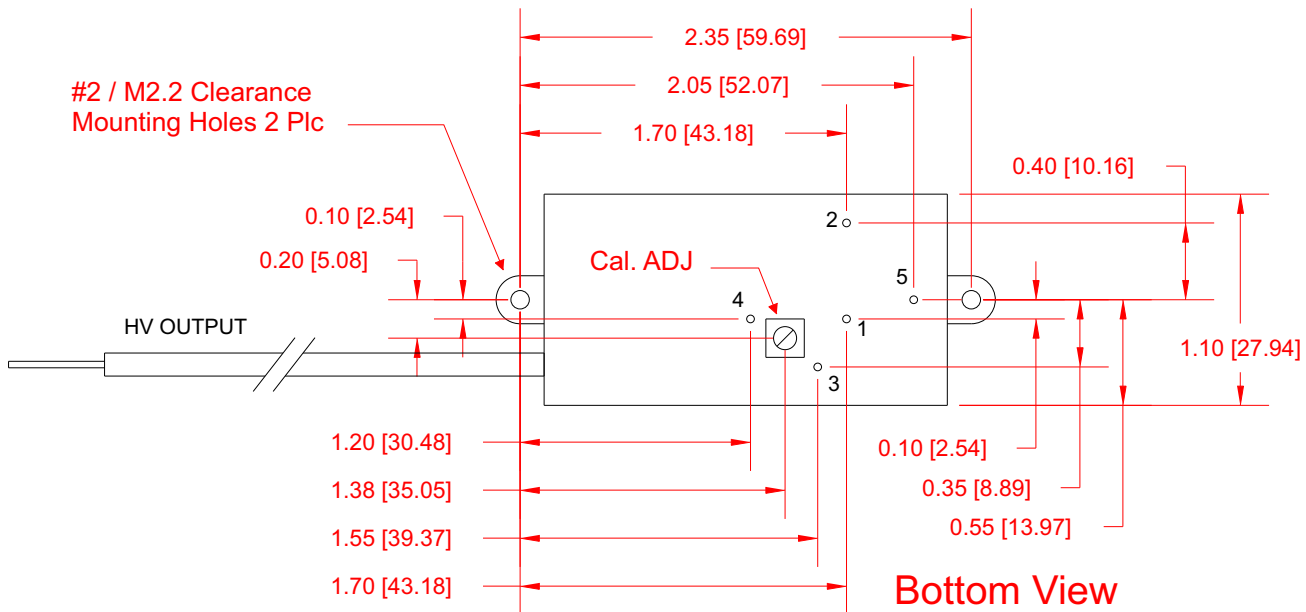
Stability .....	< 0.01% / Hr.	<b>EMI/RFI .....</b>	<b>Six-Sided Shield</b>
Temp. Stability .....	+/- 0.005%/°C	Derating .....	None
Temp. (Operating, Case) .....	-10 to +60°C	Cooling .....	Free-Air Convection
Temp. (Storage) .....	-40 to +125°C		
Humidity .....	0 to 95% (Non-Condensing)		
Thermal Shock Limit .....	1°C / 10 Seconds		

**PHYSICAL SPECIFICATIONS**

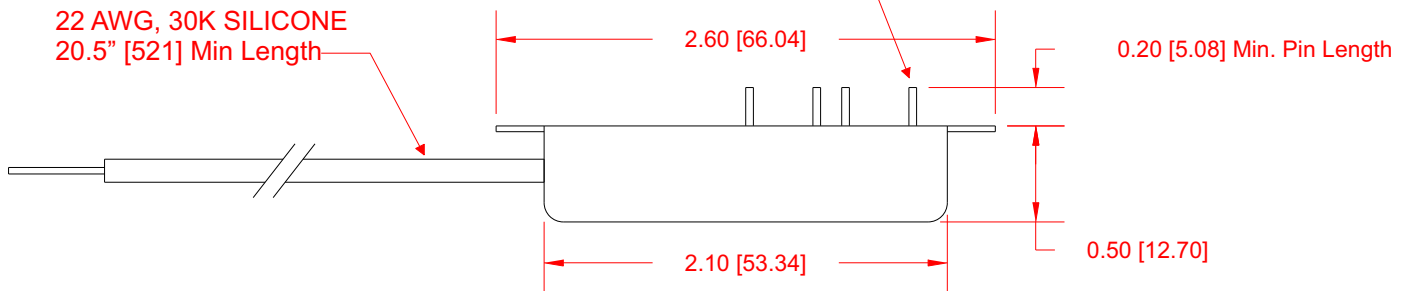
Dimensions .....	1.1 x 2.6 x 0.50 inches	Case Material .....	Nickel Plated Steel
Weight .....	1.8 Oz		



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PIN - 0.04 [1.02] Dia.  
Tin Plated Brass  
Matte Finish 5 Plc



PIN #	FUNCTION
1	+ Input
2	Gnd
3	Control / Programming Voltage
4	HV Return
5	Case Gnd

*Dimensions are in Inches  
[Metric equivalents in brackets]*



**SP7182, 3W, REGULATED (  $V_{prog.} = 0$  to  $+5V$ ,  $V_{out} = 0$  to  $+5kV$  ), SPEC. SHEET**

**APPLICATION NOTES**

**INRUSH CURRENT**

The inrush current has been kept as low as possible. However, a series resistor may be inserted in the input line to limit this current further.

**REVERSE INPUT PROTECTION**

The SP7182 is equipped diode placed in series with the + Input (Pin 1) of the converter, this allows current to flow only if the correct polarity is applied.

**SHORT CIRCUIT PROTECTION**

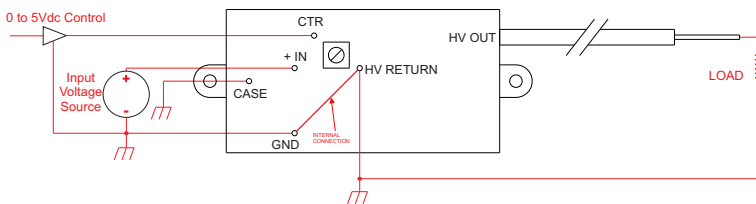
The converter will fold-back the input power whenever a short circuit is applied to its output and automatically recover after the overload condition is removed.

**RIPPLE AND NOISE**

External low ESR capacitors may be added across output to further reduce ripple.

**Connection Diagrams**

The figure below shows how to connect The SP7182 converter.



**NOTE:**

- An internal RC network connects the Case (Pin 5) to Gnd (Pins 2 and 4).
- No more than 50 volts potential between the case ground (Pin 5) and the circuit ground (Pins 2 and 4) otherwise, the supply may be permanently damaged .
- Case pin (Pin 5) should be connected to ground for optimum operation.

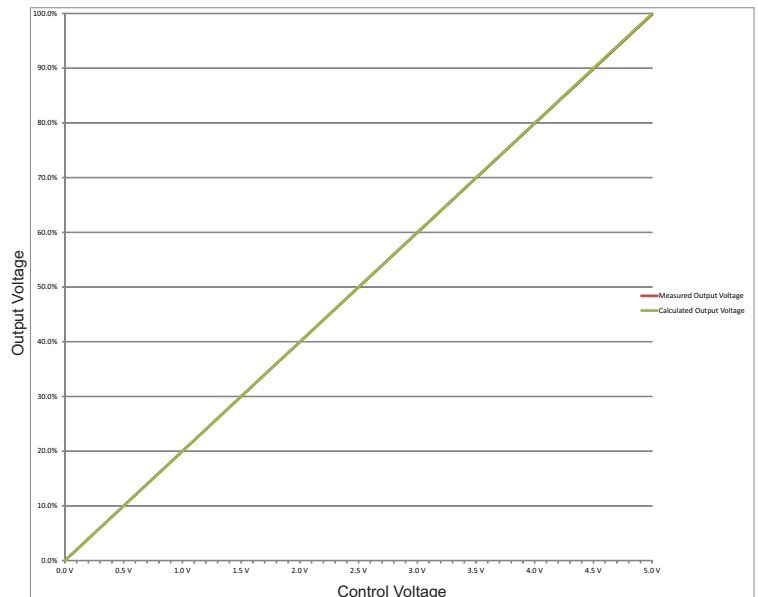
**PROGRAMMING VOLTAGE**

A 0V to +5V signal will program the power supply for 0 to 100% rated output voltage. The input impedance for this control pin is typically 100KΩ. If the programming signal exceeds 5.2Vdc the converter will shutdown and automatically recover when the programming signal returns to within normal operating range.

**OUTPUT VOLTAGE TRACKING**

The output voltage tracks the Control pin (Pin 3) within 0.5% from 5% to 100% of output voltage.

Figure below show a typical plot of both the actual and calculated output voltage as a function of control voltage.



**Operating Conditions:**

- Nominal Input Voltage = Fixed
- Output Load = Resistive (fixed at full output current @ 100% output voltage)



## SP7182, 3W, REGULATED ( $V_{\text{progr.}} = 0$ to $+5V$ , $V_{\text{out}} = 0$ to $+5kV$ ), SPEC. SHEET

### APPLICATION NOTES

#### CLEANING AGENTS

In order to avoid possible damage, any penetration of cleaning fluids must be prevented, since the power supplies are not hermetically sealed.

#### NUCLEAR AND MEDICAL APPLICATIONS

American Power Design products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of American Power Design, Inc.

#### SAFETY REQUIREMENTS

The converters are designed to meet North American and International safety regulatory requirements per UL 60950-1/CSA 22.2 No. 60950-1-07 Second Edition, IEC 60950-1:2005, and EN 60950-1:2006. Basic Insulation is provided between input and output. To comply with safety agencies requirements, an input line fuse (1A SB) must be used external to the converter.

If one input fuse is used for a group of modules, the maximum fuse rating should not exceed 20A.

#### WARRANTY

All products manufactured by American Power Design, Inc. (APD) are warranted to be free of defects due to material or workmanship for a period of one year from date of shipment. At our option, APD will repair or replace any non-conforming product.

APD expressly disclaims any liability for consequential or incidental damages resulting from the use or misuse of its products by the purchaser or others.

This warranty is in lieu of all warranties expressed or implied, including the warranties of merchantability. No other warranties, obligations, or liabilities are expressed or implied.

All products being returned for repair require a return material authorization(RMA) assigned by APD prior to return shipment.