



"The best high voltage design solution"

E1 SERIES, CE, UL, 1W PROGRAMMABLE REGULATED HV DC/DC CONVERTERS



- ▶ Fully Regulated Outputs to + or - 8000 Vdc
- ▶ 0-100% Programmable Output
- ▶ High Stability (<0.005%/°C)
- ▶ Low Output Noise & EMI/RFI
- ▶ External Calibration Adjustment
- ▶ Continuous Short Circuit Protection
- ▶ IEC/UL/CSA/EN 62368 & CE Certified

The E1 Series miniature regulated high voltage DC/DC converter offers a 100% programmable high voltage output using a 0-5Vdc analog signal. Their small size, low output ripple, and excellent regulation make them ideally suited for applications that demand a high degree of performance. All models will tolerate a short circuit indefinitely.

ELECTRICAL SPECIFICATIONS

Input Voltage Range	11.5V - 16Vdc	Input Filter	Low ESR Capacitor
Output Voltage Accuracy	+/- 1%	Reverse Input Protection	50Vdc
Line Regulation	<0.05%	Short Circuit Protection	Continuous
Load Regulation	<0.05%	Switching Frequency	180 - 250 kHz
Output Ripple	0.002% P-P	Calibration Adjustment	5 to 10%
Programming Voltage	0 - 5Vdc @ <100uA	Response Time	<250 ms (Full Load, full scale response)
Programming Linearity (5% to 100% Vout)	<0.5%	Programming Voltage Shutdown	> 5.2Vdc

GENERAL SPECIFICATIONS

Stability	< 0.01% / Hr.	Thermal Shock Limit	1°C / 10 Seconds
Temp. Stability	+/- 0.005%/°C	EMI/RFI	Six Sided Shield
Temp. (Operating, Case)	-10 to +60°C	Derating	None
Temp. (Storage)	-40 to +125°C	Cooling	Free-Air Convection
Humidity	0 to 95% (Non-Condensing)	Certifications	IEC/UL/CSA/EN 62368 & CE

PHYSICAL SPECIFICATIONS

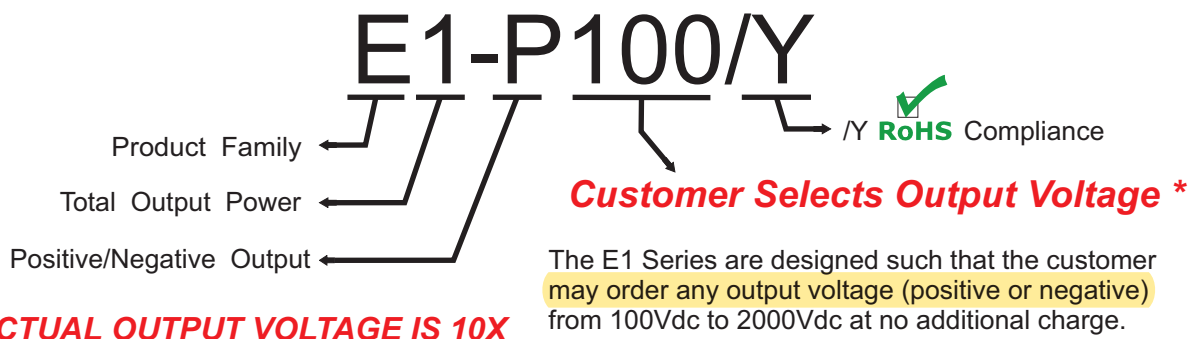
Dimensions & Weight	1.1 x 1.4 x 0.5 inches @ 1.1 Oz	Case Material	Nickle Plated Metal
Dimensions & Weight	1.1 x 1.75 x 0.5 inches @ 1.3 Oz		(With Non-Conductive Base Plate)
Dimensions & Weight	1.1 x 2.6 x 0.5 inches @ 1.8 Oz		



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

OUTPUT VOLTAGES FROM 100V TO 2000VDC

REPRESENTATIVE MODEL LISTING									
MODEL NUMBER		INPUT CURRENT		OUTPUT SPECIFICATIONS					SWITCHING FREQUENCY
Non- RoHs	RoHs	NO LOAD	FULL LOAD	VOLTAGE	RIPPLE	CURRENT	REGULATION		
							LOAD	LINE	
E1-P10	E1-P10/Y	<50 mA	<160 mA	0V to +100Vdc	<0.75% (0.75V p-p)	0 - 10mA	<0.1%	<0.1%	250 kHz
E1-N10	E1-N10/Y	<50 mA	<160 mA	0V to -100Vdc	<0.75% (0.75V p-p)	0 - 10mA	<0.1%	<0.1%	250 kHz
E1-P20	E1-P20/Y	<50 mA	<160 mA	0V to +200Vdc	<0.05% (0.1V p-p)	0 - 5mA	<0.1%	<0.1%	250 kHz
E1-N20	E1-N20/Y	<50 mA	<160 mA	0V to -200Vdc	<0.05% (0.1V p-p)	0 - 5mA	<0.1%	<0.1%	250 kHz
E1-P30	E1-P30/Y	<50 mA	<160 mA	0V to +300Vdc	<0.03% (90mV p-p)	0 - 3.3mA	<0.1%	<0.1%	250 kHz
E1-N30	E1-N30/Y	<50 mA	<160 mA	0V to -300Vdc	<0.03% (90mV p-p)	0 - 3.3mA	<0.1%	<0.1%	250 kHz
E1-P50	E1-P50/Y	<50 mA	<160 mA	0V to +500Vdc	<0.004% (20mV p-p)	0 - 2mA	<0.05%	<0.05%	250 kHz
E1-N50	E1-N50/Y	<50 mA	<160 mA	0V to -500Vdc	<0.005% (25mV p-p)	0 - 2mA	<0.05%	<0.05%	250 kHz
E1-P60	E1-P60/Y	<90 mA	<200 mA	0V to +600Vdc	<0.003% (18mV p-p)	0 - 1.67mA	<0.05%	<0.05%	200 kHz
E1-N60	E1-N60/Y	<90 mA	<200 mA	0V to -600Vdc	<0.003% (18mV p-p)	0 - 1.67mA	<0.05%	<0.05%	200 kHz
E1-P100	E1-P100/Y	<90 mA	<200 mA	0V to +1000Vdc	<0.005% (50mV p-p)	0 - 1mA	<0.05%	<0.05%	190 kHz
E1-N100	E1-N100/Y	<90 mA	<200 mA	0V to -1000Vdc	<0.002% (20mV p-p)	0 - 1mA	<0.05%	<0.05%	190 kHz
E1-P125	E1-P125/Y	<100 mA	<250 mA	0V to +1250Vdc	<0.004% (50mV p-p)	0 - 1mA	<0.05%	<0.05%	180 kHz
E1-N125	E1-N125/Y	<100 mA	<250 mA	0V to -1250Vdc	<0.003% (37mV p-p)	0 - 1mA	<0.05%	<0.05%	180 kHz
E1-P150	E1-P150/Y	<100 mA	<220 mA	0V to +1500Vdc	<0.002% (30mV p-p)	0 - 0.67mA	<0.05%	<0.05%	180 kHz
E1-N150	E1-N150/Y	<100 mA	<220 mA	0V to -1500Vdc	<0.002% (30mV p-p)	0 - 0.67mA	<0.05%	<0.05%	180 kHz
E1-P200	E1-P200/Y	<100 mA	<220 mA	0V to +2000Vdc	<0.002% (40mV p-p)	0 - 0.5mA	<0.05%	<0.05%	180 kHz
E1-N200	E1-N200/Y	<100 mA	<220 mA	0V to -2000Vdc	<0.002% (40mV p-p)	0 - 0.5 mA	<0.05%	<0.05%	180 kHz

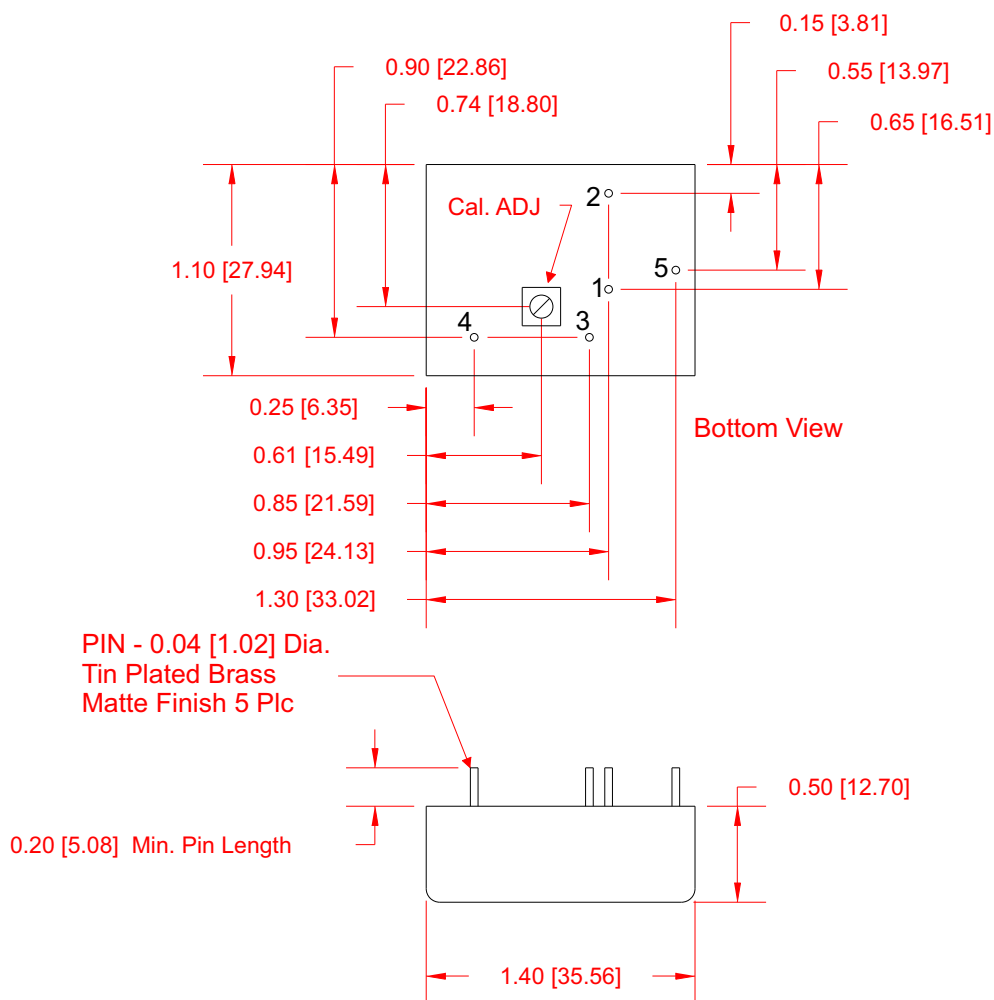


Output Voltage Restriction applies to 1.1 x 1.4 x 0.5 inch Case Only



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

OUTPUT VOLTAGES FROM 100V TO 2000VDC



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

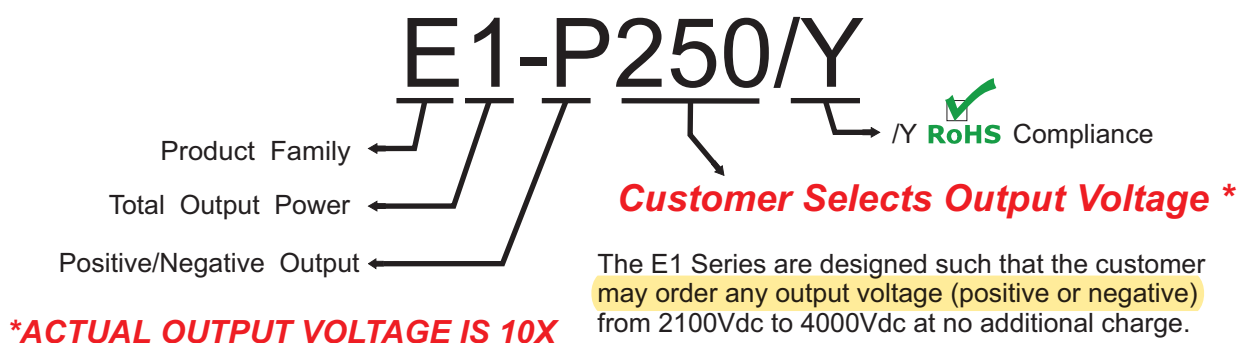
Dimensions are in Inches
[Metric equivalents in brackets]



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

OUTPUT VOLTAGES FROM 2100V TO 4000VDC

REPRESENTATIVE MODEL LISTING									
MODEL NUMBER		INPUT CURRENT		OUTPUT SPECIFICATIONS					SWITCHING FREQUENCY
Non-RoHs	RoHs	NO LOAD	FULL LOAD	VOLTAGE	RIPPLE	CURRENT	REGULATION		
							LOAD	LINE	
E1-P250	E1-P250/Y	<100 mA	<250 mA	0V to +2500Vdc	<0.1% (2.5V p-p)	0 - 0.4mA	<0.05%	<0.05%	190 kHz
E1-N250	E1-N250/Y	<100 mA	<250 mA	0V to -2500Vdc	<0.2% (5.0V p-p)	0 - 0.4mA	<0.05%	<0.05%	190 kHz
E1-P300	E1-P300/Y	<100 mA	<250 mA	0V to +3000Vdc	<0.1% (3.0V p-p)	0 - 0.33mA	<0.05%	<0.05%	190 kHz
E1-N300	E1-N300/Y	<100mA	<250 mA	0V to -3000Vdc	<0.2% (6.0V p-p)	0 - 0.33mA	<0.05%	<0.05%	190 kHz
E1-P400	E1-P400/Y	<100 mA	<250 mA	0V to +4000Vdc	<0.1% (4.0V p-p)	0 - 0.25mA	<0.05%	<0.05%	190 kHz
E1-N400	E1-N400/Y	<100 mA	<250 mA	0V to -4000Vdc	<0.1% (4.0V p-p)	0 - 0.25mA	<0.05%	<0.05%	190 kHz

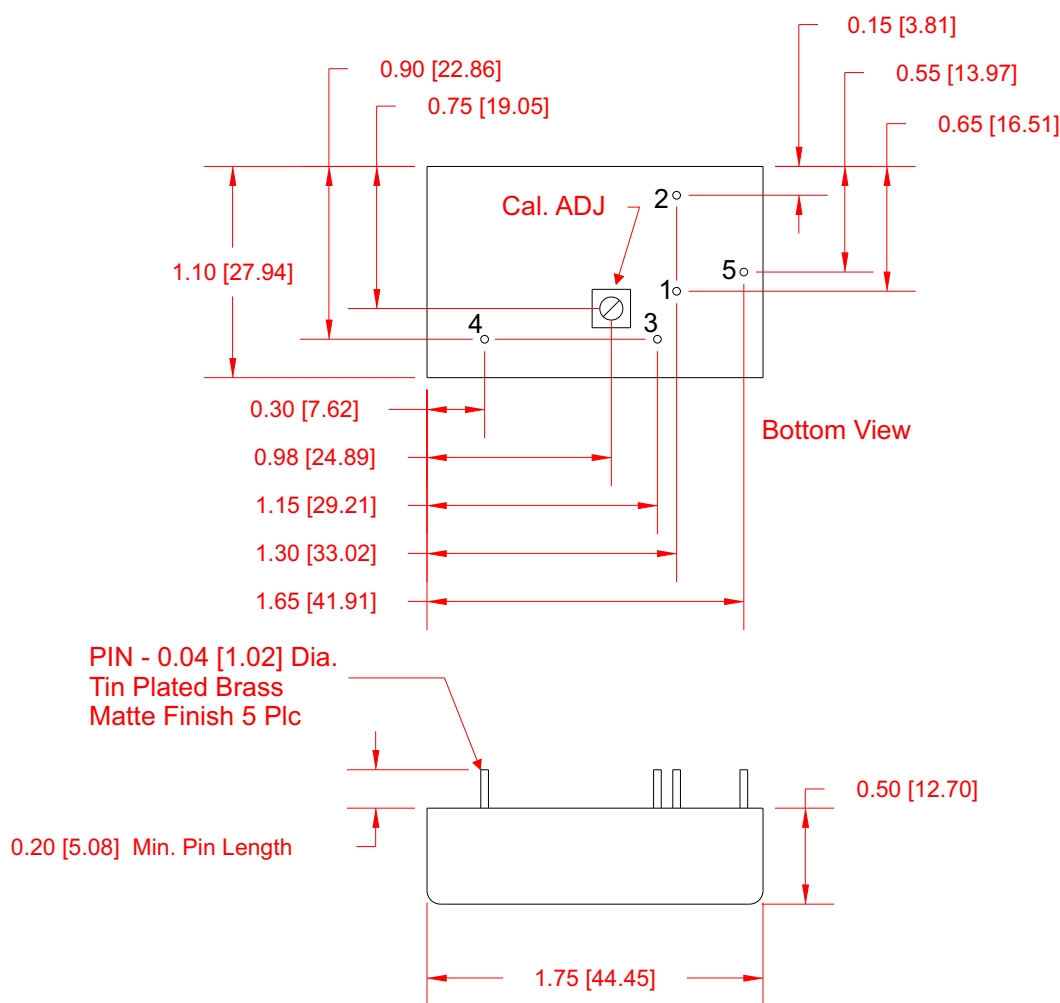


Output Voltage Restriction applies to 1.1 x 1.75 x 0.5 inches Case Only



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

OUTPUT VOLTAGES FROM 2100V TO 4000VDC



Dimensions are in Inches
[Metric equivalents in brackets]

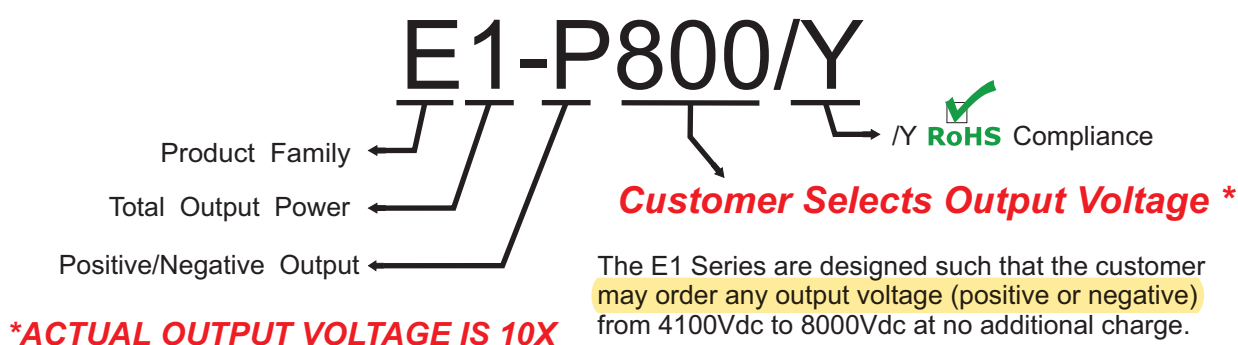
PIN #	FUNCTION
1	+ Input
2	Gnd
3	Control / Programming Voltage
4	HV Output
5	Case Gnd



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

OUTPUT VOLTAGES FROM 4100V TO 8000VDC

REPRESENTATIVE MODEL LISTING									
MODEL NUMBER		INPUT CURRENT		OUTPUT SPECIFICATIONS					SWITCHING FREQUENCY
Non- RoHs	RoHs	NO LOAD	FULL LOAD	VOLTAGE	RIPPLE	CURRENT	REGULATION		
							LOAD	LINE	
E1-P500	E1-P500/Y	<100 mA	<230 mA	0V to +5000Vdc	<0.1% (5.0V p-p)	0 - 0.2mA	<0.05%	<0.05%	180 kHz
E1-N500	E1-N500/Y	<100 mA	<230 mA	0V to -5000Vdc	<0.1% (5.0V p-p)	0 - 0.2mA	<0.05%	<0.05%	180 kHz
E1-P600	E1-P600/Y	<100 mA	<230 mA	0V to +6000Vdc	<0.1% (6.0V p-p)	0 - 0.166mA	<0.05%	<0.05%	180 kHz
E1-N600	E1-N600/Y	<100mA	<230 mA	0V to -6000Vdc	<0.1% (6.0V p-p)	0 - 0.166mA	<0.05%	<0.05%	180 kHz
E1-P800	E1-P800/Y	<150 mA	<230 mA	0V to +8000Vdc	<0.15% (12V p-p)	0 - 0.125mA	<0.05%	<0.05%	180 kHz
E1-N800	E1-N800/Y	<150 mA	<230 mA	0V to -8000Vdc	<0.15% (12V p-p)	0 - 0.125mA	<0.05%	<0.05%	180 kHz



Output Voltage Restriction applies to 1.1 x 2.6 x 0.5 inches Case Only



E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

APPLICATION NOTES

INRUSH CURRENT

The inrush current of the E1 Series 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

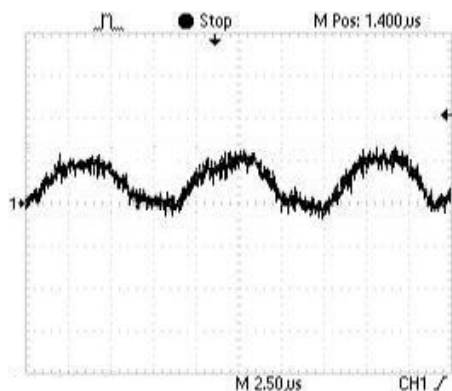
The E1 Series is equipped diode placed in series with the + Input (Pin 1) of the converter, this allows current to flow only if the correct polarity is applied.

SHORT CIRCUIT PROTECTION

The E1 Series is equipped with 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

Figure below shows a typical output voltage ripple waveform, measured at full rated load current with no additional output filtering. External low ESR capacitors may be added across output to further reduce ripple.



STARTUP TRANSIENT

Figure below shows a typical output voltage during turn-on, measured at no load current with no additional output filtering.

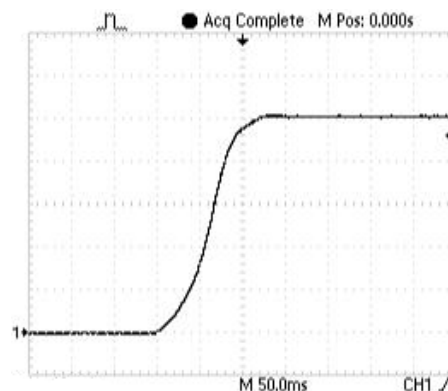
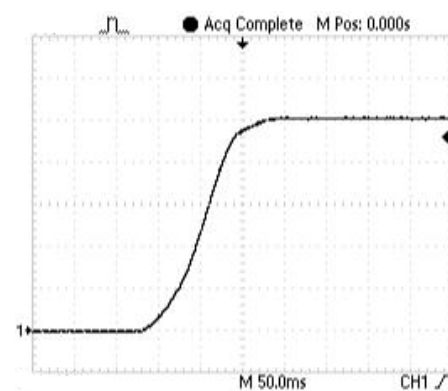


Figure below shows a typical output voltage during turn-on, measured at full rated load current with no additional output filtering.





E1 SERIES, CE, UL, 1W PROGRAMMABLE REGULATED HV DC/DC CONVERTERS

APPLICATION NOTES

LOAD TRANSIENT

Figure below shows a typical output voltage response, measured during a transition from full rated load current to no load current with no additional output filtering.

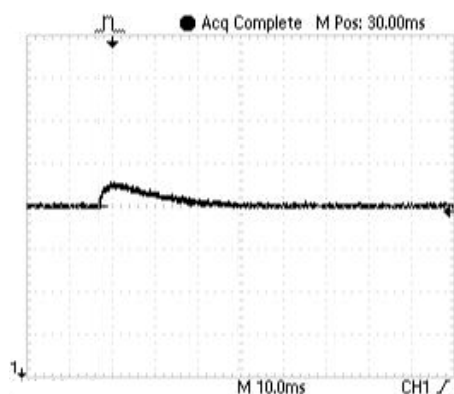
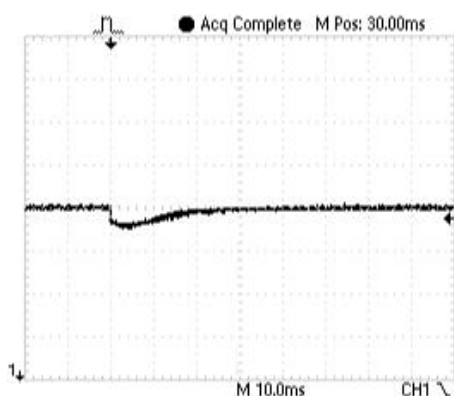


Figure below shows a typical output voltage response, measured during a transition from no load current to full rated load current with no additional output filtering.



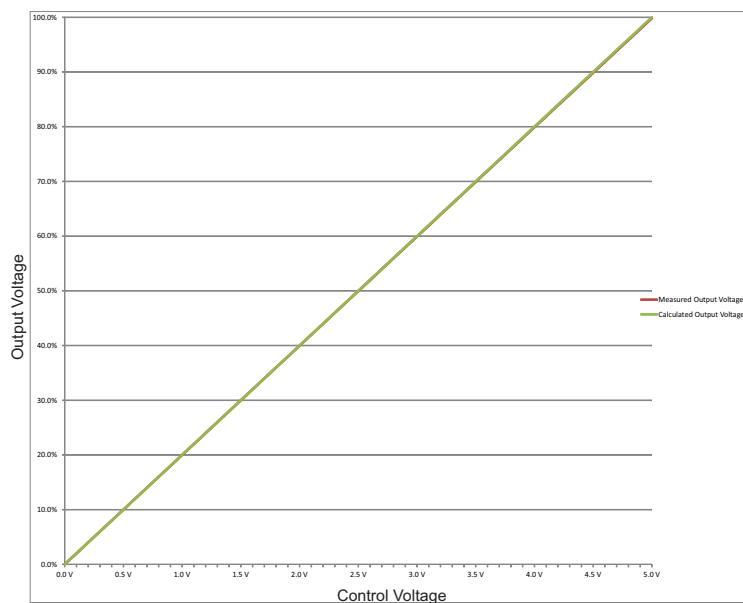
PROGRAMMING VOLTAGE

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)



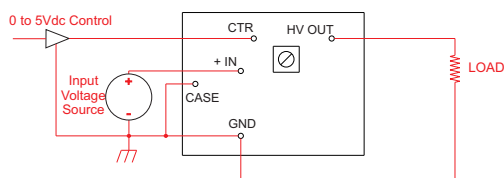
E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

APPLICATION NOTES

Connection Diagrams

The figures below show standard configurations for the E1 Series converter with output voltages up to 2kV.

Single Output Configuration



NOTE:

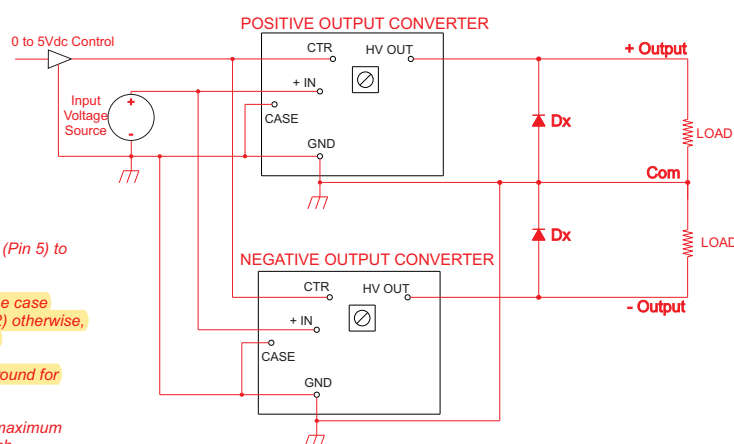
An internal RC network connects the Case (Pin 5) to Gnd (Pin 2).

No more than 50 volts potential between the case ground (Pin 5) and the circuit ground (Pin 2) otherwise, the supply may be permanently damaged.

Case pin (Pin 5) should be connected to ground for optimum operation.

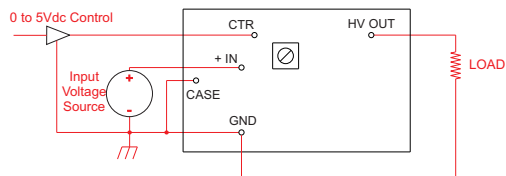
The ratings of Dx should be 1.5 times the maximum current and voltage expected in each branch.

Dual Output Configuration



The figures below show standard configurations for the E1 Series converter with output voltages from 2.1kV to 4kV.

Single Output Configuration



NOTE:

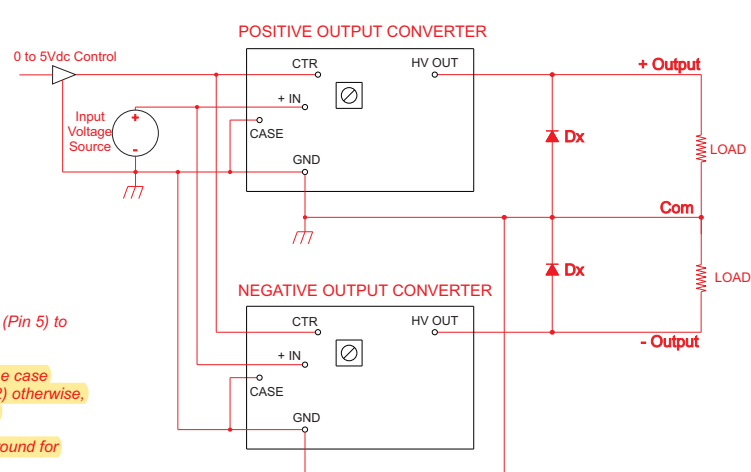
An internal RC network connects the Case (Pin 5) to Gnd (Pin 2).

No more than 50 volts potential between the case ground (Pin 5) and the circuit ground (Pin 2) otherwise, the supply may be permanently damaged.

Case pin (Pin 5) should be connected to ground for optimum operation.

The ratings of Dx should be 1.5 times the maximum current and voltage expected in each branch.

Dual Output Configuration





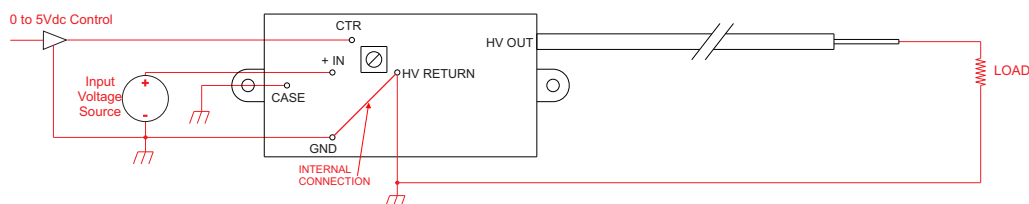
E1 SERIES, CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

APPLICATION NOTES

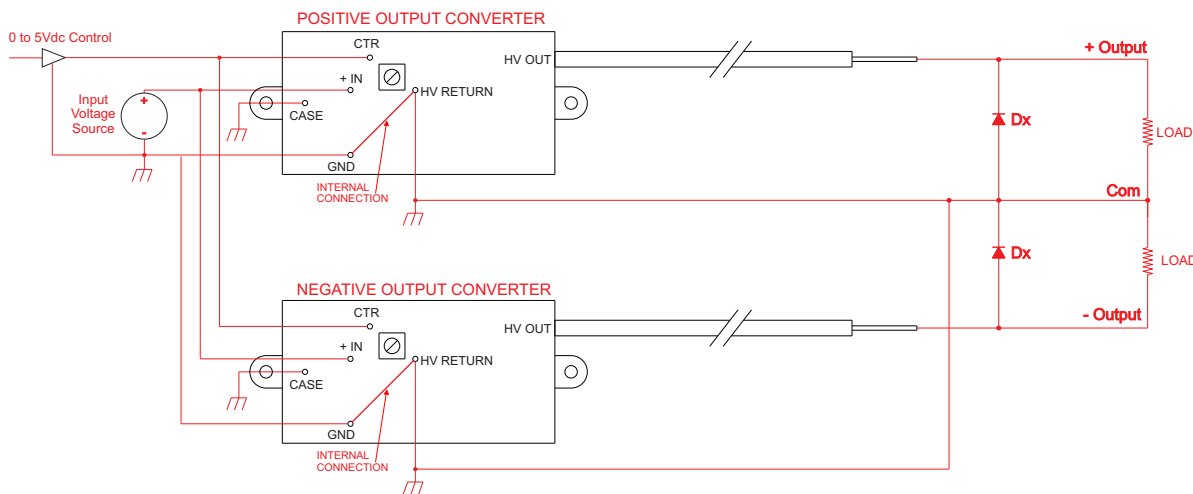
Connection Diagrams

The figures below show standard configurations for the E1 Series converter with output voltages from 4.1kV to 8kV.

Single Output Configuration



Dual Output Configuration



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.

The ratings of Dx should be 1.5 times the maximum current and voltage expected in each branch.



"The best high voltage design solution"



E1 SERIES,CE, UL, 1W PROGRAMABLE REGULATED HV DC/DC CONVERTERS

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.

TECHNICAL REVISIONS

The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

SAFETY REQUIREMENTS

The converters meet North American and International safety regulatory requirements per CAN/CSA C22.2 No 62368-1:2014 / UL 62368-1:2014 / EN62368-1:2014/A11:2017. To comply with safety agencies requirements, an input line fuse must be used external to the converter. The table below provides the recommended fuse rating for use with this family of products.

Input Voltage Range	Fuse Rating
11.5-16Vdc	0.5A (fast-acting)

If one input fuse is used for a group of modules, the maximum fuse rating should not exceed 10A (fast-acting).

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.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	RELEASED	ON FILE	ON FILE

A schematic diagram of a rectangular loop. The loop is drawn with a thick orange line. It has a long horizontal top segment, a long horizontal bottom segment, and two vertical segments on the left and right. The right vertical segment is highlighted with a thicker orange line. An arrow points from the label "PIN" to this right vertical segment. At the top right corner, there is a small circle with a crosshair, and a line extends from the top right corner of the loop through this circle.

1



American Power Design, Inc.



Declaration of Conformity

DIR 2014/35/EU, Low Voltage Directive

August 7, 2020

We hereby declare under our sole responsibility that the E1 & E3 Series Is in compliance with the following:

CAN/CSA C22.2 No 62368-1:2014

UL62368-1:2014

EN 62368-1:2014/A11:2017

IEC 62368-1:2014

American Power Design power supplies are to be used exclusively in accordance with the published data sheets provided on our website.

Randy Normandin
President
American Power Design, Inc.



America

CERTIFICATE

No. U8V 107546 0002 Rev. 00

Holder of Certificate: **American Power Design, Inc.**
3 Industrial Dr. Unit 8
Windham NH 03087
USA

Certification Mark:



Product: Audio/Video, Information and Communication technology
equipment
HV DC-DC Converter

This product was voluntarily tested to the relevant safety requirements referenced on this certificate. It can be marked with the certification mark above. The mark must not be altered in any way. This product certification system operated by TÜV SÜD America Inc. most closely resembles system 3 as defined in ISO/IEC 17067. Certification is based on the TÜV SÜD "Testing and Certification Regulations". TÜV SÜD America Inc. is an OSHA recognized NRTL and a Standards Council of Canada accredited Certification body.

Test report no.: 72155858-000

Date, 2020-08-07

(Glenn H. McLaughlin)

CERTIFICATE

No. U8V 107546 0002 Rev. 00

Model(s): E1, E3 Series;
SP7164

Brand Name: APD

Tested according to: CAN/CSA C22.2 No 62368-1:2014
UL 62368-1:2014
EN 62368-1:2014/A11:2017

Production Facility(ies): 107546

Parameters:

Rated Input Voltage:	11.5 – 16.0 VDC
Rated Input Current:	<420mA
Rated Output Voltage:	0 to +8000 V DC
Rated Output Current:	0 to 0.375 A max
Protection Class:	III
Degree of Protection:	IPX0

Model Matrix

E	1 or 3	-P	XXX	/Y
Product Family	Total Output Power	Positive/ Negative Output	Customer Selects Output Voltage XXX = 10, 20, 30, 50, 60, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800	ROHS Compliance

CERTIFICATE

No. U8V 107546 0002 Rev. 00

E1-P100/Y

E1 Series: HV DC/DC Converters
1 WATT Total Output Power
Dimensions: 27.9 x 35.6 x 12.7 mm, 0.03 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 100V to 2000 VDC

Model Number		Input Current		Output Specifications		Switching Frequency kHz
Non-RoHs	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E1-P10	E1-P10/Y	<50	<160	0V to +100	0-10	250
E1-N10	E1-N10/Y	<50	<160	0V to +100	0-10	250
E1-P20	E1-P20/Y	<50	<160	0V to +200	0-5	250
E1-N20	E1-N20/Y	<50	<160	0V to -200	0-5	250
E1-P30	E1-P30/Y	<50	<160	0V to +300	0-3.3	250
E1-N30	E1-N30/Y	<50	<160	0V to -300	0-3.3	250
E1-P50	E1-P50/Y	<50	<160	0V to +500	0-2	250
E1-N50	E1-N50/Y	<50	<160	0V to -500	0-2	250
E1-P60	E1-P60/Y	<90	<200	0V to +600	0-1.67	200
E1-N60	E1-N60/Y	<90	<200	0V to -600	0-1.67	200
E1-P100	E1-P100/Y	<90	<200	0V to +1000	0-1	190
E1-N100	E1-N100/Y	<90	<200	0V to -1000	0-1	190
E1-P125	E1-P125/Y	<100	<250	0V to +1250	0-1	180
E1-N125	E1-N125/Y	<100	<250	0V to -1250	0-1	180
E1-P150	E1-P150/Y	<100	<220	0V to +1500	0-0.67	180
E1-N150	E1-N150/Y	<100	<220	0V to -1500	0-0.67	180
E1-P200	E1-P200/Y	<100	<220	0V to +2000	0-0.5	180
E1-N200	E1-N200/Y	<100	<220	0V to -2000	0-0.5	180

CERTIFICATE

No. U8V 107546 0002 Rev. 00

E1-P250/Y

E1 Series: HV DC/DC Converters
1 WATT Total Output Power
Dimensions 27.9 x 44.5 x 12.7 mm, 0.04 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 2100 V to 4000 VDC

Model Number		Input Current		Output Specifications		Switching Frequency kHz
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E1-P250	E1-P250/Y	<100	<250	0V to +2500	0-0.4	190
E1-N250	E1-N250/Y	<100	<250	0V to -2500	0-0.4	190
E1-P300	E1-P300/Y	<100	<250	0V to +3000	0-0.33	190
E1-N300	E1-N300/Y	<100	<250	0V to -3000	0-0.33	190
E1-P400	E1-P400/Y	<100	<250	0V to +4000	0-0.25	190
E1-N400	E1-N400/Y	<100	<250	0V to -4000	0-0.25	190

E1-P800/Y

E1 Series: HV DC/DC Converters
1 WATT Total Output Power
Dimensions 27.9 x 66.0 x 12.7 mm, 0.05 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 4100 V to 8000 VDC

Model Number		Input Current		Output Specifications		Switching Frequency kHz
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E1-P500	E1-P500/Y	<100	<230	0V to +5000	0-0.2	180
E1-N500	E1-N500/Y	<100	<230	0V to +5000	0-0.2	180
E1-P600	E1-P600/Y	<100	<230	0V to +6000	0-0.166	180
E1-N600	E1-N600/Y	<100	<230	0V to +6000	0-0.166	180
E1-P800	E1-P800/Y	<150	<230	0V to +8000	0-0.125	180
E1-N800	E1-N800/Y	<150	<230	0V to +8000	0-0.125	180

CERTIFICATE

No. U8V 107546 0002 Rev. 00

E3-P100/Y

E1 Series: HV DC/DC Converters
3 WATT Total Output Power
Dimensions 27.9 x 35.6 x 12.7 mm, 0.03 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 100V to 2000 VDC

Model Number		Input Current		Output Specifications		Switching Frequency KHZ
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E3-P10	E3-P10/Y	<60	<360	0V to +100	0-30	250
E3-N10	E3-N10/Y	<60	<360	0V to +100	0-30	250
E3-P20	E3-P20/Y	<60	<360	0V to +200	0-15	250
E3-N20	E3-N20/Y	<60	<360	0V to +200	0-15	250
E3-P30	E3-P30/Y	<60	<360	0V to +300	0-9.9	250
E3-N30	E3-N30/Y	<60	<360	0V to +300	0-9.9	250
E3-P50	E3-P50/Y	<60	<360	0V to +500	0-6	250
E3-N50	E3-N50/Y	<60	<360	0V to +500	0-6	250
E3-P60	E3-P60/Y	<105	<380	0V to +600	0-5	200
E3-N60	E3-N60/Y	<105	<380	0V to +600	0-5	200
E3-P100	E3-P100/Y	<105	<380	0V to +1000	0-3	190
E3-N100	E3-N100/Y	<105	<380	0V to +1000	0-3	190
E3-P125	E3-P125/Y	<110	<390	0V to +1250	0-2.4	180
E3-N125	E3-N125/Y	<110	<390	0V to +1250	0-2.4	180
E3-P150	E3-P150/Y	<110	<400	0V to +1500	0-2	180
E3-N150	E3-N150/Y	<110	<400	0V to +1500	0-2	180
E3-P200	E3-P200/Y	<110	<400	0V to +2000	0-1.5	180
E3-N200	E3-N200/Y	<110	<400	0V to +2000	0-1.5	180

CERTIFICATE

No. U8V 107546 0002 Rev. 00

E3-P250/Y

E3 Series: HV DC/DC Converters
3 WATT Total Output Power
Dimensions 27.9 x 44.5 x 12.7 mm, 0.04 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 2100V to 4000 V DC

Model Number		Input Current		Output Specifications		Switching Frequency kHz
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E3-P250	E3-P250/Y	<140	<410	0V to +2500	0-1.2	190
E3-N250	E3-N250/Y	<140	<410	0V to +2500	0-1.2	190
E3-P300	E3-P300/Y	<140	<410	0V to +3000	0-1	190
E3-N300	E3-N300/Y	<140	<410	0V to +3000	0-1	190
E3-P400	E3-P400/Y	<140	<410	0V to +4000	0-0.75	190
E3-N400	E3-N400/Y	<140	<410	0V to +4000	0-0.75	190

E3-P800/Y

E3 Series: HV DC/DC Converters
3 WATT Total Output Power
Dimensions 27.9 x 66 x 12.7 mm, 0.05 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 4100V to 8000 V DC

Model Number		Input Current		Output Specifications		Switching Frequency kHz
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	
E3-P500	E3-P500/Y	<150	<420	0V to +5000	0-0.6	180
E3-N500	E3-N500/Y	<150	<420	0V to +5000	0-0.6	180
E3-P600	E3-P600/Y	<150	<420	0V to +6000	0-0.5	180
E3-N600	E3-N600/Y	<150	<420	0V to +6000	0-0.5	180
E3-P800	E3-P800/Y	<150	<420	0V to +8000	0-0.375	180
E3-N800	E3-N800/Y	<150	<420	0V to +8000	0-0.375	180

CERTIFICATE

No. U8V 107546 0002 Rev. 00

SP7164

SP7164: HV DC/DC Converters
3 WATT Total Output Power
Dimensions 31.8 x 76.2 x 15.2 mm, 0.06 kg
Input Voltage Range 11.5 – 16 Vdc
Output Voltages from 0V to 8000 V DC

Model Number		Input Current		Output Specifications		Switching Frequency
Non-RoHS	RoHS	No Load mA	Full Load mA	Voltage Vdc	Current mA	kHZ
SP7164	SP7164/Y	<150	<250	0V to -8000	0-0.125	180