Advanced Energy®

ULTRAVOLT® E SERIES

PRECISION HIGH VOLTAGE POWER SUPPLIES

Single-output precision high voltage power supply modules

The E series of precision high voltage power supplies has very low ripple, excellent linearity, and very stable temperature characteristics. Models in this series are offered at two levels of performance; the best delivers 10 ppm characteristics. This series is ideal for applications where system performance is directly linked to high voltage power quality and performance.

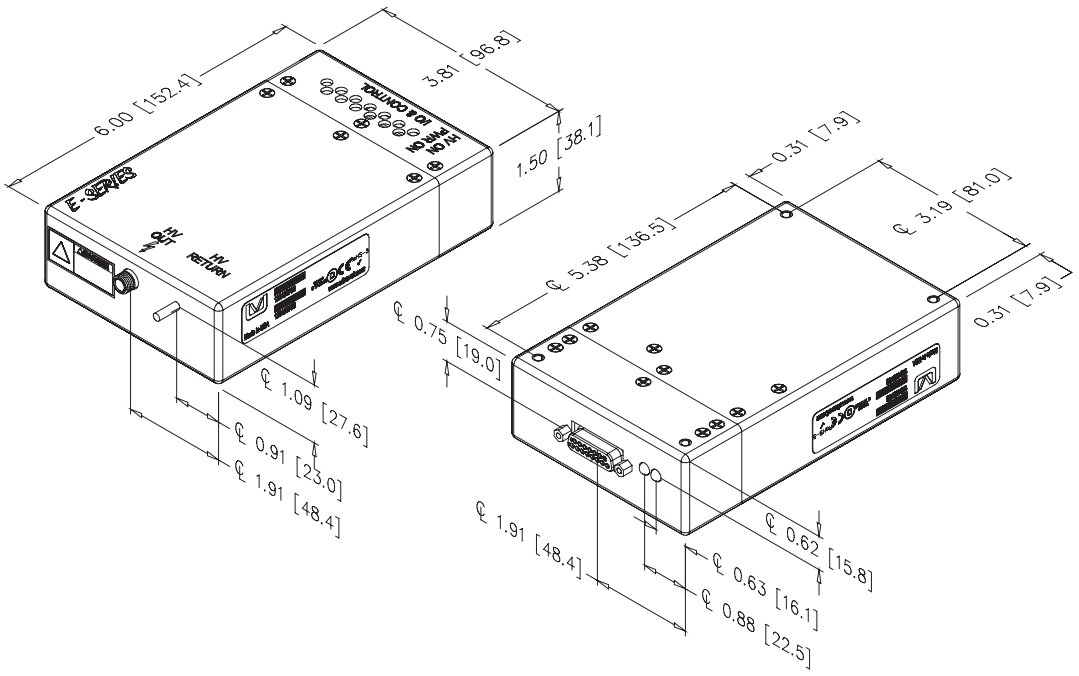
Features

- Precision output voltage from 0 to 1 kV through 0 to 15 kV
- PPM level ripple, regulation, and stability
- As low as 10 ppm temperature coefficient and reference
- 0 to 4, 15/20, or 30 W of output power
- Maximum Iout capability down to 0 V
- Voltage and current regulation/limit capability
- Precision output voltage and current monitors

Typical Applications

- Bias supplies
- Mass spectrometry
- SEM/FIB
- Electron beams
- Ion beams

PARAMETER	CONDITIONS	MODELS																	UNITS
Input		**All Types**																	
Voltage Range	Full Power	+23 to 30																	VDC
Current	Standby/Disable	< 50																	mA
Current	No Load, Max Eout	< 325																	mA
Current	Full Load, Max Eout	2.5																	A
AC Ripple Current	Nominal Input, Full Load	< 10																	mA pk to pk
Output		**1E**			**2E**			**4E**			**6E**			**10E**			**15E**		
Voltage Range	Nominal Input	0 to 1000			0 to 2000			0 to 4000			0 to 6000			0 to 10000			0 to 15000			VDC
Nominal Input Voltage/Model		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	4	15	30	4	15	30	Watts
Current	Iout Entire Output Voltage Range	4	20	30	2	10	15	1	5	7.5	0.67	3.3	5	0.4	1.5	3	0.26	1	2	mA
Voltage Monitor	Normal Operating Conditions	0 to 10 ±0.5%																	VDC
Current Monitor	Normal Operating Conditions	0 to 10 ±0.5%																	VDC
Ripple	Full Load, Max Eout	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	ppm
Line Regulation	Nom Input, Max Eout, Full Power	< 25 ppm or < 10 ppm																	VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 25 ppm or < 10 ppm																	VDC
Stability	30 Min Warmup, Per 8 h, Per Day	< 25 ppm or < 10 ppm																	VDC
Programming and Controls		**All Types**																	
Input Impedance	Nominal Input	10																	MΩ
Adjust Accuracy and Adjust Linearity	10 to 100%	±0.05%																	%
Adjust Voltage	Differential	0 to +10																	VDC
Output Voltage	T = +25°C, Initial Value	+10.00 ±0.05%																	VDC
Max Source Current	T = +25°C	5																	mA
Output Impedance	Normal Operating Conditions	Buffered, low impedance, 2 mA max for source/sink current																	-
Enable/Disable		0 to +0.8 disable, +2.5 to 10 enable (default = disable)																	VDC
Environmental		**All Types**																	
Operating	Full Load, Max Eout, Case Temp.	+10 to +45																	°C
Temperature Coefficient	Over the Specified Temperature	±25 or ±10																	ppm/°C
Thermal Shock	Mil-Std-810, Method 504, Class 2	-40 to +65																	°C
Storage	Non-Operating, Case Temp.	-55 to +105																	°C
Humidity	All Conditions, Standard Package	0 to 95%, non-condensing																	-
Altitude	Standard Package, All Conditions	Sea level through 10,000																	ft
Shock	Mil-Std-810, Method 516, Proc. 4	20																	Gs
Vibration	Mil-Std-810, Method 514, Fig. 514-3	10																	Gs



Note: Downloadable drawings (complete with mounting and pin information) and 3D models are available online.

PHYSICAL SPECIFICATIONS

Construction	
Material	Aluminum alloy 5052-H32
Finish	Anodize MIL-A-8625E blue
Size	
Volume	561.9 cc (34.29 in^3)
Weight	1.1 kg (2.4 lb)
Tolerance	
Overall	±1.27 mm (0.030″)
Pin to Pin	±0.38 mm (0.015″)
Mounting Hole Location	±0.64 mm (0.025″)
Connections	
D-Sub	15-pin, female
HV Connector	LGH1/2L
HV Return	#6-32 x 0.437 long threaded post

E SERIES INPUT CONNECTOR PINOUT AND FUNCTIONS

Pin	Description	Function
1	Reference Voltage	(+)10.00 V PRECISION REFERENCE
2	Voltage Programming -	0 TO 10 V TO PROGRAM FULL OUTPUT VOLTAGE
3	Voltage Programming +	PROGRAMMING INPUT IS DIFFERENTIAL BETWEEN PINS 2 AND 3.
4	Voltage Monitor	0 TO +10 V REPRESENTS 0 TO FULL OUTPUT VOLTAGE
5	Voltage Mode Indicator	OPEN DRAIN ACTIVE LOW WHEN IN VOLTAGE CONTROL
6	Signal Ground	REFERENCE ALL CONTROL SIGNALS HERE.
7	Input Power	+23 TO +30 V
8	Input Power	
9	Power Ground	INPUT POWER RETURN
10	Power Ground	
11	Enable	TTL HIGH TO ENABLE, LOW TO DISABLE, DEFAULT IS OFF
12	Current Monitor	0 TO +10 V REPRESENTS 0 TO FULL OUTPUT CURRENT
13	Current Programming	0 TO +10 V SETS CURRENT FROM 0 TO FULL RATED OUTPUT CURRENT
14	Current Mode Indicator	OPEN DRAIN ACTIVE LOW WHEN IN CURRENT CONTROL
15	Signal Ground	REFERENCE ALL CONTROL SIGNALS HERE.

NOTE: Use stud next to high voltage output connector as HV return. A secure ground connection here is critical to safety and proper operation.

ORDERING INFORMATION

Type	0 to 1000 VDC Output	1E
	0 to 2000 VDC Output	2E
	0 to 4000 VDC Output	4E
	0 to 6000 VDC Output	6E
	0 to 10,000 VDC Output	10E
	0 to 15,000 VDC Output	15E
Input	24 V Input	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	4 W Output	4
	15 W Output (10 and 15 kV only)	15
	20 W Output (1 to 6 kV only)	20
	30 W Output	30
Performance		
Level	10 ppm Line/Load Regulation, Stability, and Temp. Coefficient	-10 ppm
	25 ppm Line/Load Regulation, Stability, and Temp. Coefficient	-25 ppm
Connectors	LGH	(Standard)
	5 kV, SHV Type	-SHV-5 kV
	10 kV, BNC Type	-BNC-10 kV

Popular accessories ordered with this product include our full range of high voltage output connectors. (See Accessories and Connectors datasheet.)

RoHS COMPLIANT

Non-RoHS compliant units are available. Please contact the factory for more information.

CE c UL us

IEC-60950-1

For international contact information, visit
advanced-energy.com.

ENG-HV-ESeries-230-I 5.16

Specifications are subject to change without notice. ©2016 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy®, AE®, and UltraVolt® are U.S. trademarks of Advanced Energy Industries, Inc.