



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 load 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.)



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





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[2E24-N20-10PPM-SHV-5KV](#) [4E24-P4-10PPM-SHV-5KV](#) [4E24-N30-10PPM](#) [1E24-N4-10PPM](#) [6E24-P4-10PPM-BNC-10KV](#) [2E24-N4-25PPM-SHV-5KV](#) [4E24-P20-25PPM](#) [2E24-N20-25PPM](#) [15E24-P30-25PPM](#) [10E24-N15-10PPM](#) [1E24-P4-25PPM](#) [15E24-P4-10PPM](#) [6E24-P30-25PPM-BNC-10KV](#) [2E24-P4-10PPM](#) [4E24-N4-10PPM-SHV-5KV](#) [2E24-P20-25PPM](#) [15E24-N30-10PPM](#) [10E24-P4-10PPM-BNC-10KV](#) [4E24-P30-10PPM](#) [15E24-N4-25PPM-WS](#) [4E24-N30-25PPM](#) [2E24-P20-10PPM](#) [2E24-P4-25PPM-SHV-5KV](#) [10E24-N4-10PPM](#) [6E24-N20-10PPM](#) [15E24-P15-25PPM](#) [6E24-P30-10PPM-BNC-10KV](#) [2E24-P30-25PPM](#) [10E24-P30-10PPM](#) [15E24-P15-10PPM](#) [10E24-P4-10PPM](#) [4E24-P4-25PPM-SHV-5KV](#) [1E24-P30-10PPM](#) [2E24-P30-10PPM](#) [2E24-N20-10PPM](#) [10E24-N4-25PPM](#) [1E24-P20-10PPM-BNC-10KV](#) [1E24-P30-25PPM-SHV-5KV](#) [1E24-P20-10PPM](#) [6E24-N4-25PPM](#) [6E24-N4-10PPM](#) [10E24-N4-10PPM-BNC-10KV](#) [1E24-P4-10PPM](#) [2E24-N4-10PPM](#) [1E24-P4-10PPM-SHV-5KV](#) [1E24-N20-10PPM](#) [2E24-P4-25PPM](#) [1E24-N4-10PPM-SHV-5KV](#) [2E24-N30-10PPM](#) [1E24-P4-25PPM-SHV-5KV](#) [4E24-P4-10PPM](#) [15E24-N4-10PPM](#) [10E24-P30-25PPM](#) [6E24-P30-25PPM](#) [4E24-P4-25PPM](#) [15E24-N15-10PPM](#) [4E24-P30-10PPM-BNC-10KV](#) [6E24-P30-10PPM](#) [6E24-P4-25PPM](#) [1E24-N4-25PPM](#) [6E24-N30-10PPM](#) [6E24-P20-10PPM](#) [10E24-P4-25PPM](#) [6E24-P4-10PPM](#) [2E24-N30-10PPM-SHV-5KV](#) [10E24-P4-10PPM-WS](#) [1E24-P20-10PPM-SHV-5KV](#) [15E24-P30-10PPM](#) [1E24-N30-10PPM](#) [4E24-N4-10PPM](#) [1E24-P20-25PPM](#) [4E24-P30-10PPM-SHV-5KV](#) [4E24-P20-10PPM](#) [10E24-P15-10PPM](#) [15E24-N30-10PPM-WS](#)