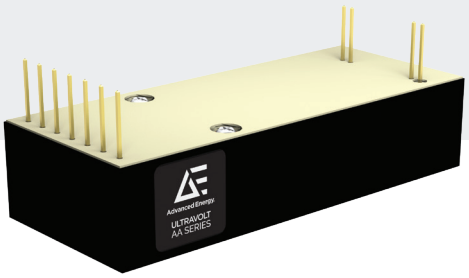
HVP
High Voltage Products. High Voltage Experts.

Advanced Energy

ULTRAVOLT AA SERIES

HIGH VOLTAGE BIASING SUPPLIES



The UltraVolt® AA series consists of high voltage, miniature PCB-mount, regulated DC-DC converters. Designed and built utilizing state-of-the-art power-conversion topology, these units feature surface-mount technology and encapsulation techniques that provide high reliability and performance.

PRODUCT HIGHLIGHTS

- 22% smaller than standard A series
- Eight models from 0 to 62 V through 0 to 6 kV
- 4, 20, or 30 W of output power
- Maximum Iout capability down to 0 V
- Wide input voltage range
- Indefinite output short circuit protection
- Output current and voltage monitors
- Fixed-frequency, low-stored-energy design
- UL/cUL recognized component; CE mark (LVD and RoHS)

TYPICAL APPLICATIONS

- Bias supplies
- Detectors
- Piezos
- Amplifiers
- Photomultiplier tubes (PMT)

ELECTRICAL SPECIFICATIONS

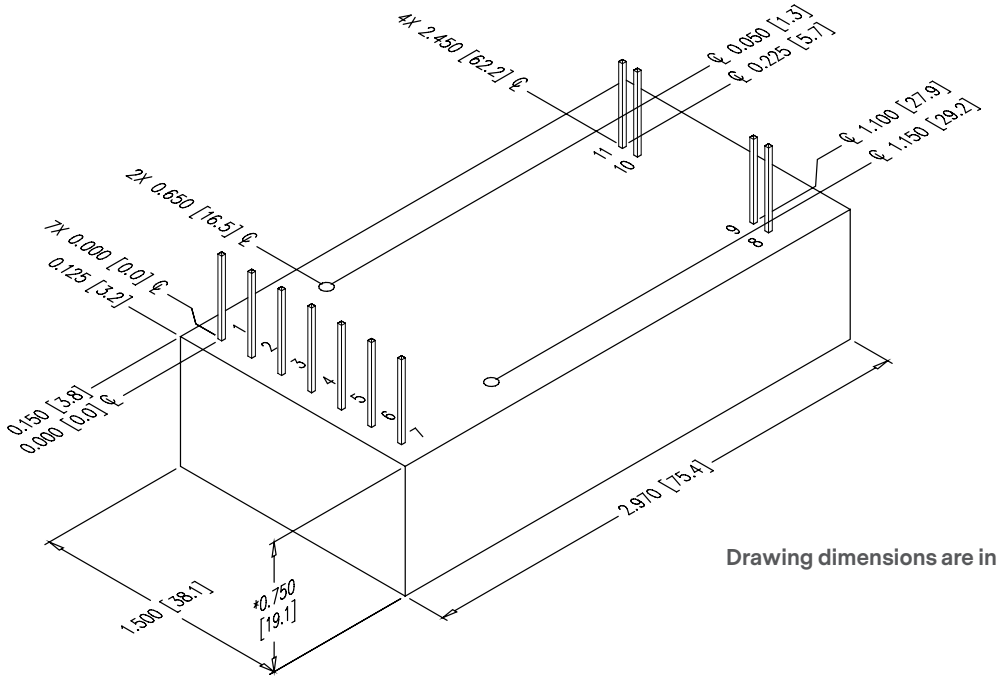
Parameter	Conditions	Models												Units
Input		**12 V**						**24 V**						
Voltage Range	Full Power	+11 to 16						+23 to 30						VDC
Voltage Range	Derated Power Range	+9 to 32						+9 to 32						VDC
Current	Standby/Disable	< 30						< 30						mA
Current	No Load, Max Eout	< 100 (4 W)						150 (20 and 30 W)						mA
Current	Max Load, Max Eout	< 450 (4 W)						< 1000 (20 W) < 1500 (30 W)						mA
AC Ripple Current	Nominal Input, Full Load	< 80						< 80						mA pk to pk
Output		**1/16AA**			**1/8AA**			**1/4AA**			**1/2AA**			
Voltage Range	Nominal Input	0 to 62			0 to 125			0 to 250			0 to 500			VDC
Nominal Input Voltage/Model		12	24	24	12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	W
Current	Iout Entire Output Voltage Range	64	320	480	32	160	240	16	80	120	8	40	60	mA
Current Scale Factor	Full Load	42.67	969.7	960	11.64	237	258	3.27	70.48	72.7	0.79	17.78	17.65	mA/V
Voltage Monitor Scaling		10:1 ±2% into 10 MΩ												-
Ripple	Full Load, Max Eout	0.03	0.06	0.15	0.03	0.038	0.038	0.023	0.04	0.05	0.01	0.01	0.011	%V pk to pk
Line Regulation	Nom. Input, Max Eout, Full Power	< 0.01%												VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 0.01%												VDC
Stability	30 Min Warmup, Per 8 h, Per Day	< 0.01%/< 0.02%												VDC

ELECTRICAL SPECIFICATIONS (CONTINUED)

Parameter	Conditions	Models												Units
Output		**1AA**			**2AA**			**4AA**			**6AA**			
Voltage Range	Nominal Input	0 to 1000			0 to 2000			0 to 4000			0 to 6000			VDC
Nominal Input Voltage/Model		12	24	24	12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	W
Current	Iout Entire Output Voltage Range	4	20	30	2	10	15	1	5	7.5	0.67	3.3	5	mA
Current Scale Factor	Full Load	0.37	4.60	4.62	0.192	1.52	1.52	0.090	0.752	0.76	0.066	0.490	0.50	mA/V
Voltage Monitor Scaling		100:1 ±2% into 10 MΩ												-
Ripple	Full Load, Max Eout	0.026	0.048	0.073	0.01	0.011	0.046	0.042	0.050	0.070	0.035	0.024	0.046	%V pk to pk
Line Regulation	Nom. Input, Max Eout, Full Power	< 0.01%												VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 0.01%												VDC
Stability	30 Min Warmup, Per 8 h, Per Day	< 0.01%/< 0.02%												VDC
Programming and Controls		**All Types**												
Input Impedance	Nominal Input	+output models 1.1 MΩ to ground, - output models 1.1 MΩ to +5 vRef.												MΩ
Adjust Resistance	Typical Potentiometer Values	10 to 100 K (potentiometer across vRef. and signal ground, wiper to adjust)												Ω
Adjust Logic	0 to +5 for +Out, +5 to 0 for - Out	+4.64 VDC for +output or +0.36 for -output = nominal Eout												-
Output Voltage and Impedance	T = +25°C	+5.00 VDC ±2%, Zout = 464 Ω ±1%												-
Enable/Disable		0 to +0.5 disable, +2.4 to 32 enable (default = enable)												VDC

Environmental		All Types	
Operating	Full Load, Max Eout, Case Temperature	-40 to +65	°C
Coefficient	Over the Specified Temperature	±50 (±25 optional)	PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65	°C
Storage	Non-Operating, Case Temperature	-55 to +105	°C
Humidity	All Conditions, Standard Package	0 to 95%, non-condensing	-
Altitude	Standard Package, All Conditions	Sea level through vacuum	-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20	Gs
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10	Gs

MECHANICAL SPECIFICATIONS



Drawing dimensions are in mm (in).

Volumes and Weights		
	cm³	in³
Volume	54.8	3.34
	g	oz
Weight	114	4.0

Tolerance	
Overall	±1.27 mm (0.050")
Pin to Pin	±0.38 mm (0.015")
Mounting Hole Location	±0.64 mm (0.025")

Construction	
Case	RTV silicone-filled DAP box certified to ASTM-D-5948

20 and 30 W versions are an additional 1.57 mm (0.062") in height.

-M equipped units are an additional 0.76 mm (0.030") for all dimensions.

Contact AE for drawings of models equipped with -E or -H options.

INTERFACE

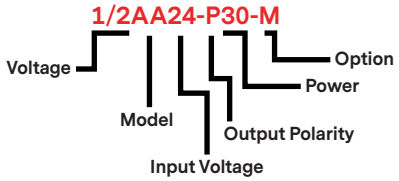
Connections	
Pin	**Function**
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5 VDC Reference Output
8	HV Ground Return
9	Eout Monitor
10 and 11	HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by > 100 kΩ, 0.01 uF/50 V (max) on all models except -M (20 W and above), -M-E, and -M-H configurations, which are 0 Ω.

ORDERING INFORMATION

Options		
Type	0 to 62 VDC Output	1/16AA
	0 to 125 VDC Output	1/8AA
	0 to 250 VDC Output	1/4AA
	0 to 500 VDC Output	1/2AA
	0 to 1000 VDC Output	1AA
	0 to 2000 VDC Output	2AA
	0 to 4000 VDC Output	4AA
	0 to 6000 VDC Output	6AA
Input	12 VDC Nominal	12
	24 VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	W Output (12 V Only)	4
	W Output (24 V Only)	20
	W Output (24 V Only)	30
Case	Plastic Case: - Diallyl Phthalate	(Standard)
	"Eared" Chassis Mounting Plate	-E
Heat Sink	0.500" High (Sized to Fit Case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Temperature Coefficient	25 PPM Temperature Coefficient	-25 PPM
Enhanced Interface	5 V Control and Monitors	-I5
	10 V Control and Monitors (24 Vin Only)	-I10

For more information on the enhanced interface options, download the I5/I10 option datasheet.



Popular accessories ordered with this product include CONN-KIT and BR-18 mounting bracket kit.