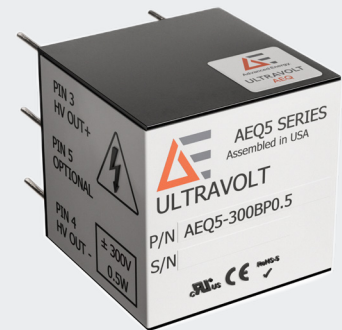


# ULTRAVOLT AEQ SERIES

## ULTRA-MINIATURE HIGH VOLTAGE POWER CONVERTERS



The UltraVolt® AEQ series of ultra-miniature UL approved isolated single or dual output DC to DC converters supply up to 600 VDC at 0.5 Watts of output power from an input voltage of +5 VDC. The small size of the units and ease of control make the AEQ series optimal for hand-held devices, portable equipment, and other small high-voltage projects.

### PRODUCT HIGHLIGHTS

- Ultra-miniature size (0.5" cube)
- Regulated 0 to  $\pm 300\text{V}$  (dual polarity units with CT), 0 to 600 V (floating/reversible units)
- 5 VDC input
- Output fully adjustable over 0 VDC to maximum rating
- $\pm 1500$  VDC input to output isolation
- Output short-circuit protection
- 0.5 W maximum output power
- Low ripple ( $<1\%$  peak to peak)
- Temperature coefficient of 500ppm/ $^{\circ}\text{C}$
- Ease of installation with PCB mount
- Reliable modular design,  $> 1,000,000$  hours MTBF per MIL-HDBK-217F
- UL/cUL recognized, CE mark (LVD and RoHS), EN-62368

### TYPICAL APPLICATIONS

- Mass spectrometry
- Gas chromatography
- Spectrometers
- PZT drivers
- Flat-panel displays
- Fiber-optic telecom detectors
- Particle physics detectors
- Laser range finder detectors
- Silicon (SiD) detectors
- Ionization chamber detectors
- Avalanche photo diodes (APD)
- Photo multiplier tubes (PMT)
- Photodiodes (PD)
- Multi-pixel photon counters (MPPC)
- Channel electron multipliers
- Silicon photomultipliers (SiPM)
- Microchannel plates (MCP)
- Biasing supplies

## ELECTRICAL SPECIFICATIONS

Parameters	Specifications	Units
Input Voltage	+5 VDC ( $\pm 5\%$ recommended)	VDC
Input Current Disabled	<3	mA
Input Current at No Load	<150 (Module in safe operating region)	mA
Input Current at Full Load	<250	mA
HV Output Range (Vout)	0 to 600	VDC
HV Turn On/Off	Turn on: Control Pin >0.1 V (+50%); Turn off: Control Pin <0.1 V (-20%)	VDC
Output Power	0.5	W
Polarity	Fixed positive or negative	-
HV Setting	Via external source 0 to 5 ( $\pm 1\%$ recommended)	VDC
Max Output Current (Iout)	See Model Table	mA
Load Voltage Regulation	30	%
Output Voltage Ripple	$\leq 1$	%
Output Voltage Tolerance	5 (At maximum Vout, full load)	%
Temperature Coefficient	200 PPM @ 25°C, 500 PPM when swept from -25 to 70°C	PPM/°C
Regulation	Unregulated, output is proportional to Vcontrol pin	-
Short Circuit Protection	2	minutes
Mean Time Between Failure	>3 (Per Bellcore TR332)	Mhrs

Note 1 - All specifications are after a 30-minute warm-up at full load at 25°C unless otherwise noted.

Note 2 - Maximum output load is available at the maximum rated output voltage, the load derates linearly as control pin voltage is decreased.

Note 3 - The AEQ output voltage is load dependent, under light load conditions it may be necessary to adjust the control pin, so the maximum rated output voltage is not exceeded.

Note 4 - Good thermal management techniques must be used to maintain the maximum case temperature when operating the AEQ at maximum load.

Note 5 - For further information please see "AEQ Application Note".

## ENVIRONMENTAL SPECIFICATIONS

Parameters	Specifications
Operation Case Temperature	-25 to +70 °C, case temperature
Storage Temperature	-55 to +105 °C
Humidity	5 to 95%, non-condensing
Cooling	Conduction/Convection (Case temperature must be maintained within specified limits)
Operating Altitude	$\leq 2000$ meters

## GENERAL SPECIFICATIONS

Parameters	Specifications
Input to Output Isolation	$\pm 1500$ VDC, input pins to output pins
Construction	Solid vacuum encapsulation
RoHS	RoHS 2 and 3 Directive (2011/65/EU)
IP Protection class	IPX0
Weight	4.0 $\pm$ 0.5 g
Warranty	1 year

## SAFETY APPROVALS

Safety Agency	Safety Standard
UL cULus	IEC/UL/CSA/EN-62368
CE	CE Directive, RoHS and LVD

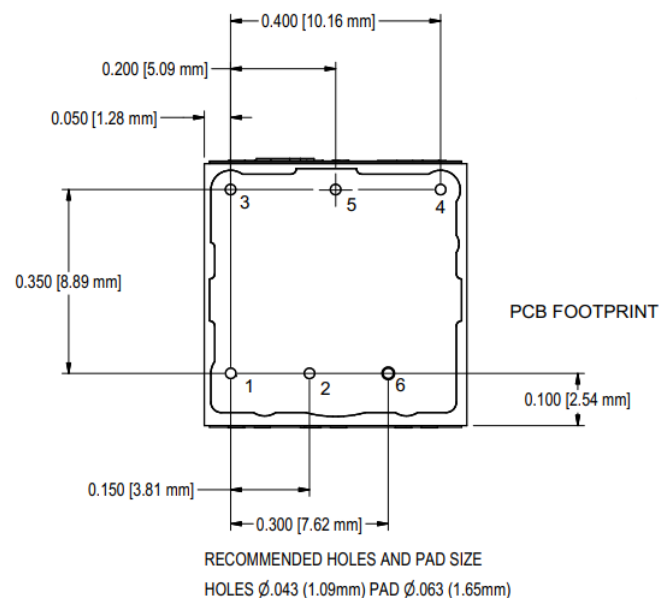
## MODEL TABLE

Item#	Model Number	Description	Input	Output	Output Power (W)
1	AEQ5-100FL0.5	Floating / Reversible	5.0 V (<250 mA)	100 V (5.00 mA)	0.5
2	AEQ5-200FL0.5	Floating / Reversible	5.0 V (<250 mA)	200 V (2.5 mA)	0.5
3	AEQ5-300FL0.5	Floating / Reversible	5.0 V (<250 mA)	300 V (1.67 mA)	0.5
4	AEQ5-400FL0.5	Floating / Reversible	5.0 V (<250 mA)	400 V (1.25 mA)	0.5
5	AEQ5-500FL0.5	Floating / Reversible	5.0 V (<250 mA)	500 V (1.00 mA)	0.5
6	AEQ5-600FL0.5	Floating / Reversible	5.0 V (<250 mA)	600 V (0.833 mA)	0.5
7	AEQ5-50BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±50 V (5.00 mA)	0.5
8	AEQ5-100BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±100 V (2.5 mA)	0.5
9	AEQ5-150BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±150 V (1.67 mA)	0.5
10	AEQ5-200BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±200 V (1.25 mA)	0.5
11	AEQ5-250BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±250 V (1.00 mA)	0.5
12	AEQ5-300BP0.5	Dual polarity with CT	5.0 V (<250 mA)	±300 V (0.833 mA)	0.5

## MECHANICAL SPECIFICATIONS

## PIN ASSIGNMENT

PIN 1	Input (-)
PIN 2	Input (+)
PIN 3	Output (+)
PIN 4	Output (-)
PIN 5	Center Tap
PIN 6	Control Pin





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Since 1981, Advanced Energy (AE) has perfected how power performs for its customers. For both end users and OEMs, AE's comprehensive portfolio of standard and custom high voltage components precisely match system specifications to deliver unparalleled energy, quality, and performance. Through close customer collaboration, design expertise, application insight, and world-class support, AE creates successful partnerships and enables customers to push the boundaries of innovation and stay ahead of evolving market needs.

PRECISION | POWER | PERFORMANCE | TRUST



**CAUTION:**  
High Voltage

Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.

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