



ULTRAVOLT® AA SERIES
HIGH VOLTAGE BIASING SUPPLY

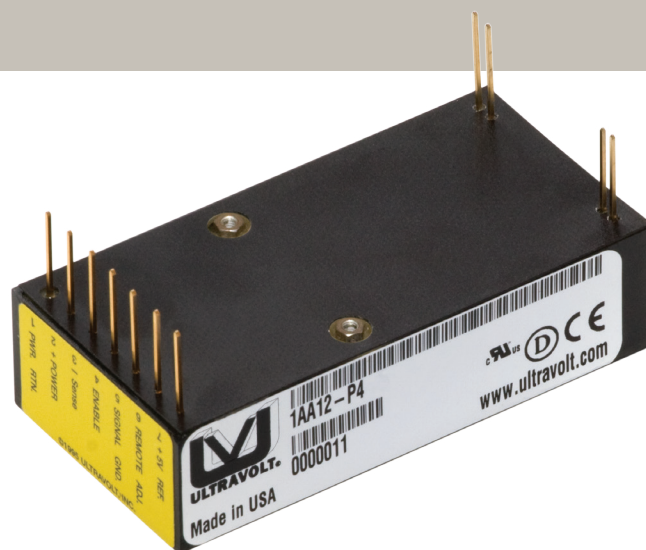




Single-output **high voltage modules**

The 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.

- › 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 I_{out} 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
- › > 1,250,000 hour MTBF at 65°C (149°F)
- › UL/cUL recognized component; CE Mark (LVD & RoHS)



Typical Applications

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

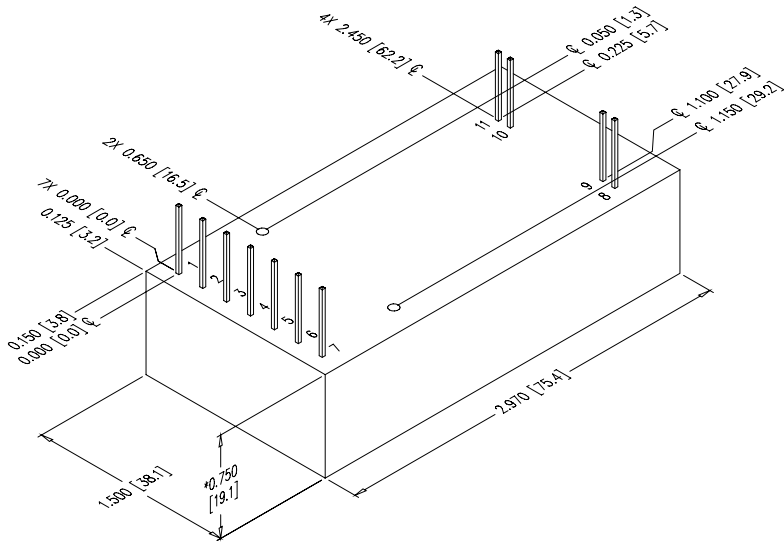


| PARAMETER | CONDITIONS | MODELS | | | | | | | | |
|---------------------------------------|---|---|--------|--------|--------------|--------|--------|--------------|--------|--------|
| Input | | 12 V | | | | | | | | |
| Voltage Range | Full Power | +11 to 16 | | | | | | | | |
| Voltage Range | Derated Power Range | +9 to 32 | | | | | | | | |
| Current | Standby/Disable | < 30 | | | | | | | | |
| Current | No Load, Max Eout | < 100 | | | | | | | | |
| Current | Max Load, Max Eout | - 400 | | | | | | | | |
| AC Ripple Current | Nominal Input, Full Load | < 80 | | | | | | | | |
| Output | | 1/16AA | | | 1/8AA | | | 1/4AA | | |
| Voltage Range | Nominal Input | 0 to 62 | | | 0 to 125 | | | 0 to 250 | | |
| Nominal Input Voltage/Model | | 12 | 24 | 24 | 12 | 24 | 24 | 12 | 24 | 24 |
| Power | Nominal Input, Max Eout | 4 | 20 | 30 | 4 | 20 | 30 | 4 | 20 | 30 |
| Current | Iout Entire Output Voltage Range | 64 | 320 | 480 | 32 | 160 | 240 | 16 | 80 | 120 |
| Current Scale Factor | Full Load | 42.67 | 969.7 | 960 | 11.64 | 237 | 258 | 3.27 | 70.48 | 72.7 |
| 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 |
| Dynamic Load Regulation | ½ to Full Load, Max Eout per 0.1 mA | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.20 | < 0.20 | < 0.20 |
| Line Regulation | Nom. Input, Max Eout, Full Power | < 0.01 % | | | | | | | | |
| Static Load Regulation | No Load to Full Load, Max Eout | < 0.01% | | | | | | | | |
| Stability | 30 Min. Warmup, Per 8 Hours/Per day | < 0.01%/< 0.02% | | | | | | | | |
| Programming and Controls | | All Types | | | | | | | | |
| Input Impedance | Nominal Input | +output models 1.1 MΩ to GND, - output models 1.1 MΩ to +5 Vref | | | | | | | | |
| Adjust Resistance | Typical Potentiometer Values | 10 to 100 K (Pot. across Vref. and signal GND, wiper to adjust) | | | | | | | | |
| 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 & 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) | | | | | | | | |
| Environmental | | All Types | | | | | | | | |
| Operating | Full Load, Max Eout, Case Temp. | -40 to +65 | | | | | | | | |
| Coefficient | Over the Specified Temperature | ±50 (±25 optional) | | | | | | | | |
| Thermal Shock | Mil-Std 810, Method 503-4, Proc. II | -40 to +65 | | | | | | | | |
| Storage | Non-Operating, Case Temp. | -55 to +105 | | | | | | | | |
| 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 | | | | | | | | |
| Vibration | Mil-Std-810, Method 514.5, Fig.514.5C-3 | 10 | | | | | | | | |

Specifications subject to change without notice.



| | | | | | | | | | | | | | | | | UNITS |
|----------------------|--------|--------|-----------|-------|-------|-----------|-------|-------|-----------|-------|-------|-----------|-------|-------|--------|--------|
| 24 V | | | | | | | | | | | | | | | | |
| +23 to 30 | | | | | | | | | | | | | | | | VDC |
| +9 to 32 | | | | | | | | | | | | | | | | VDC |
| < 30 | | | | | | | | | | | | | | | | mA |
| < 90 | | | | | | | | | | | | | | | | mA |
| - 1350 | | | | | | | | | | | | | | | | mA |
| < 80 | | | | | | | | | | | | | | | | mA p-p |
| 1/2AA | | | 1AA | | | 2AA | | | 4AA | | | 6AA | | | | |
| 0 to 500 | | | 0 to 1000 | | | 0 to 2000 | | | 0 to 4000 | | | 0 to 6000 | | | VDC | |
| 12 | 24 | 24 | 12 | 24 | 24 | 12 | 24 | 24 | 12 | 24 | 24 | 12 | 24 | 24 | VDC | |
| 4 | 20 | 30 | 4 | 20 | 30 | 4 | 20 | 30 | 4 | 20 | 30 | 4 | 20 | 30 | W | |
| 8 | 40 | 60 | 4 | 20 | 30 | 2 | 10 | 15 | 1 | 5 | 7.5 | 0.67 | 3.3 | 5 | mA | |
| 0.79 | 17.78 | 17.65 | 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 | |
| 100:1 ± 2% into 10MΩ | | | | | | | | | | | | | | | | - |
| 0.01 | 0.01 | 0.011 | 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 p-p | |
| < 0.50 | < 0.50 | < 0.50 | < 1.0 | < 1.0 | < 1.0 | < 2.0 | < 2.0 | < 2.0 | < 4.0 | < 4.0 | < 4.0 | < 6.0 | < 6.0 | < 6.0 | V pk | |
| | | | | | | | | | | | | | | | | VDC |
| | | | | | | | | | | | | | | | | VDC |
| | | | | | | | | | | | | | | | | VDC |
| | | | | | | | | | | | | | | | | MΩ |
| | | | | | | | | | | | | | | | | Ω |
| | | | | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | | | | VDC |
| | | | | | | | | | | | | | | | | °C |
| | | | | | | | | | | | | | | | | PPM/°C |
| | | | | | | | | | | | | | | | | °C |
| | | | | | | | | | | | | | | | | °C |
| | | | | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | | | | - |
| | | | | | | | | | | | | | | | | Gs |
| | | | | | | | | | | | | | | | | Gs |



PHYSICAL SPECIFICATIONS

| | |
|-------------------------------|---|
| Construction | Epoxy-filled DAP box certified to ASTM-D-5948 |
| Volume | 54.8 cc (3.34 in ³) |
| Weight | 114 g (4.0 oz) |
| Tolerance | |
| Overall | ±1.27 mm (0.050") |
| Pin to Pin | ±0.38 mm (0.015") |
| Mounting hole location | ±0.64 mm (0.025") |

Notes: 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.

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 & 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.

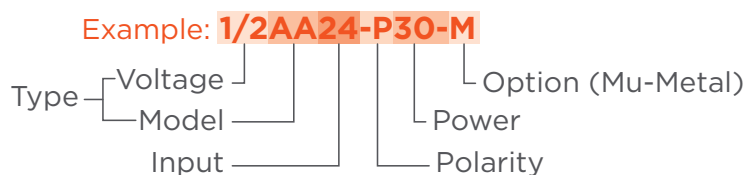


RoHS COMPLIANT Non-RoHS compliant units are available. Please contact the factory for more information.

ORDERING INFORMATION

| | | |
|--------------------|--|------------|
| 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 | Watts Output (12 V Only) | 4 |
| | Watts Output (24 V Only) | 20 |
| | Watts 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 |
| Temp. Coefficient | 25 PPM Temperature Coefficient | -25PPM |
| Enhanced Interface | 5 V Control and Monitors | -I5 |
| | 10 V Control and Monitors (24Vin only) | -I10 |

Note: 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.



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