aimtec
Your Power Partner

# Series AM40UW-Z
## 40 Watt | DC-DC Converter




### FEATURES:

- Ultra Wide Input 4:1 Range
- Full SMD Technology
- 1600 VDC Isolation
- Efficiency up to 92%
- Soft Start
- Adjustable Output Voltage
- Remote ON/OFF Function
- Over Current, Voltage, & Temperature Protection
- Operating temperature -40ºC to + 85ºC

RoHS CE

## Models
## Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|---|---|---|---|---|---|---|
| AM40UW-2403SZ | 9-36 | 3.3 | 10 | 1600 | 25000 | 89 |
| AM40UW-2405SZ | 9-36 | 5 | 8 | 1600 | 13000 | 91 |
| AM40UW-2412SZ | 9-36 | 12 | 3.35 | 1600 | 2300 | 90 |
| AM40UW-2415SZ | 9-36 | 15 | 2.65 | 1600 | 1500 | 90 |
| AM40UW-4803SZ | 18-75 | 3.3 | 10 | 1600 | 25000 | 89 |
| AM40UW-4805SZ | 18-75 | 5 | 8 | 1600 | 13000 | 92 |
| AM40UW-4812SZ | 18-75 | 12 | 3.35 | 1600 | 2300 | 90 |
| AM40UW-4815SZ | 18-75 | 15 | 2.65 | 1600 | 1500 | 91 |

Add suffix “-K” for optional heatsink

## Models
## Dual output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|---|---|---|---|---|---|---|
| AM40UW-2412DZ | 9-36 | ±12 | ±1.65 | 1600 | ±1200 | 89 |
| AM40UW-2415DZ | 9-36 | ±15 | ±1.35 | 1600 | ±750 | 89 |
| AM40UW-4812DZ | 18-75 | ±12 | ±1.65 | 1600 | ±1200 | 90 |
| AM40UW-4815DZ | 18-75 | ±15 | ±1.35 | 1600 | ±750 | 90 |

Add suffix “-K” for optional heatsink

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

## Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage range | 24<br>48 | 9-36<br>18-75 | | VDC |
| Filter | π(Pi) Network | | | |
| Start up time | | 25 | | ms |
| Absolute Maximum Rating | 24<br>48 | | 50<br>100 | VDC |
| Peak Input Voltage time | | | 100 | ms |
| On/Off control | ON –3.0 -12 (or open) ; OFF -0 -1.2 (or short pin 2 to pin 3)<br>Off idle current: 5mA | | | |
| No Load Input Current | | 100 | | mA |
| Under voltage lockout | 24 ON/OFF<br>48 ON/OFF | 8.6/7.9<br>17.6/16 | | VDC |
| Input reflected ripple current* | | 20 | | mA p-p |

* Measured with a 12µH inductor

## Isolation Specifications

| Parameters | Conditions | Typical | Rated | Units |
|---|---|---|---|---|
| Tested I/O voltage | 60 sec | | 1600 | VDC |
| Tested I,O/case voltage | 60 sec | | 1600 | VDC |
| Resistance | | >1000 | | MOhm |
| Capacitance | | 2500 | | pF |

## Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage accuracy | | ±1 | | % |
| Cross Regulation (Dual Output Models) | 1st output 25% to 100%, 2nd output 100% | ±5 | | % |
| Over voltage protection | Zener Diode Clamp, 3.3V output<br>Zener Diode Clamp, 5V output<br>Zener Diode Clamp, 12V output<br>Zener Diode Clamp, 15V output<br>Zener Diode Clamp, ±12V output<br>Zener Diode Clamp, ±15V output | 3.9<br>6.2<br>15<br>18<br>±15<br>±18 | | V |
| Over current protection | Full Load | 130 | | % |
| Short Circuit protection | Continuous | | | |
| Short circuit restart | Auto-Restart | | | |
| Thermal shutdown | On Case | 110 | | ºC |
| Line voltage regulation | HL-LL | | ±0.5 | % of Vin |
| Load voltage regulation (Single) | Iout=0% to 100% | | ±0.5 | % |
| Load voltage regulation (Dual) | Iout=1% to 100% | | ±1 | % |
| Temperature coefficient | | ±0.02 | | %/ºC |
| Ripple & Noise* | 3.3/5V output models<br>Dual output models<br>Other models | | 50<br>150<br>75 | mV p-p |
| Voltage adjustment range | Inclusive of trim and remote sense | | ±10 | % |
| Minimum load current | | 0 | | % of Max |

***** Measured at 20MHz bandwidth a 1.0µF ceramic capacitor.

## General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Switching frequency | 100% load | 270 | | KHz |
| Operating temperature | With derating above 55 ºC (see graph below) | -40 to +85 | | ºC |
| Storage temperature | | -55 to +125 | | ºC |
| Maximum case temperature | | | 105 | ºC |
| Derating | Above 55 ºC | 2 | | %/ºC |
| Cooling | Free Air Convection | | | |
| Humidity | | | 95 | % RH |
| Case material | Nickel – coated Copper | | | |
| Weight | | 65 | | g |
| Dimensions (L x W x H) | 2.00 x 2.00 x 0.40 inches 50.81 x 50.81 10.14 mm | | | |
| MTBF | >151000 hrs Calculated using MIL-HDBK-217 F at +25 ºC | | | |
| Maximum soldering temperature | 1.5mm from case for 10 sec | | 260 | ºC |
| Transient recovery time | 25% load step change | 250 | | uS |
| Transient recovery deviation | 25% load step change | | ±3 | % |

## Safety Specifications

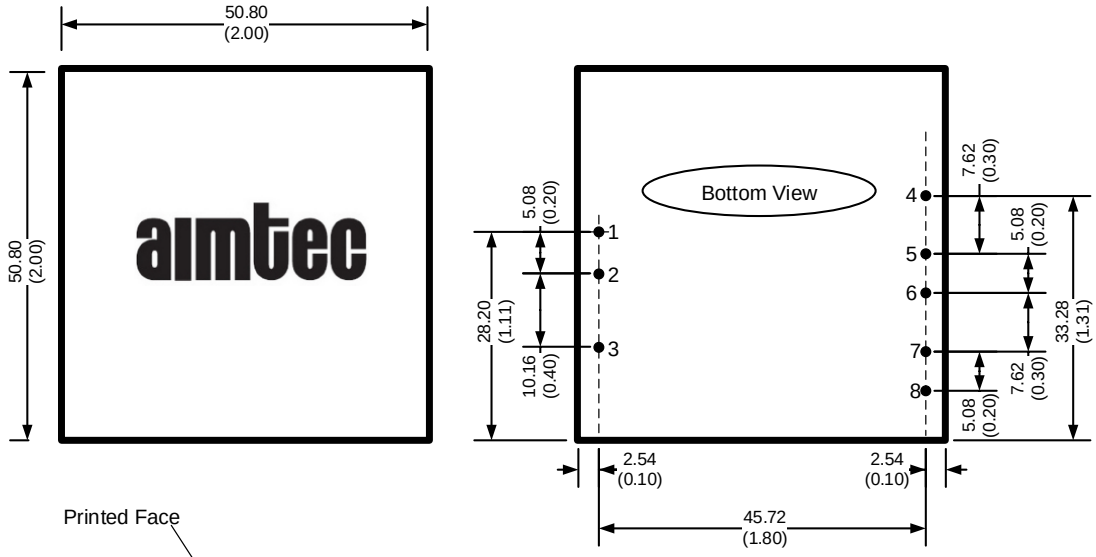
| Standards | |
|---|---|
| Safety | Design to meet IEC/EN/UL 60950, 62368 |
| | EN55032, Class A with the recommended circuit |
| | IEC61000-4-2 Perf. Criteria A |
| | IEC61000-4-3 Perf. Criteria A |
| | IEC61000-4-4 Perf. Criteria A (external 220uF/100V cap required) |
| | IEC61000-4-5 Perf. Criteria A (external 220uF/100V cap required) |
| | IEC61000-4-6 Perf. Criteria A |
| | IEC61000-4-8 Perf. Criteria A |

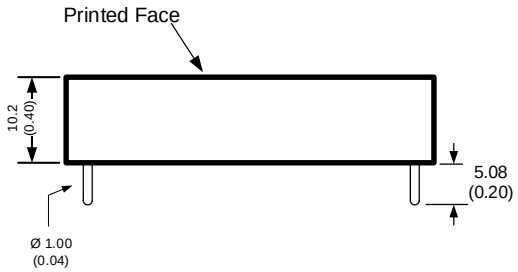
## Pin Out Specifications

| Pin | Single | Dual |
|---|---|---|
| 1 | +V Input | +V Input |
| 2 | -V Input | -V Input |
| 3 | On/Off Control | On/Off Control |
| 4 | - Sense | +V Output |
| 5 | + Sense | Common |
| 6 | +V Output | Common |
| 7 | -V Output | -V Output |
| 8 | Trim | Trim |

Note:
When not using the sense function, connect the +sence to +Vout and -sence to -Vout with the shortest possibel traces to avoid interference and minimize the voltage drop.

## Dimensions

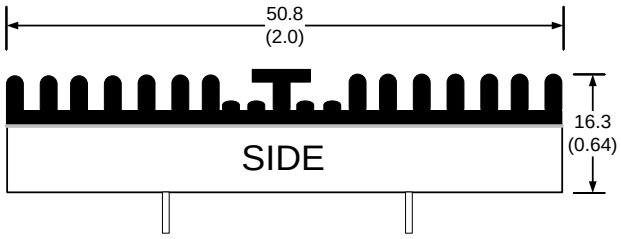



All dimensions are typical in millimeters (inches)
Pin Diameter: 1.00 ± 0.05 (0.04 ± 0.002)
Pin Pitch And Length Tolerance: ± 0.35 (±0.014)
Case Tolerance: ± 0.5 (±0.02)

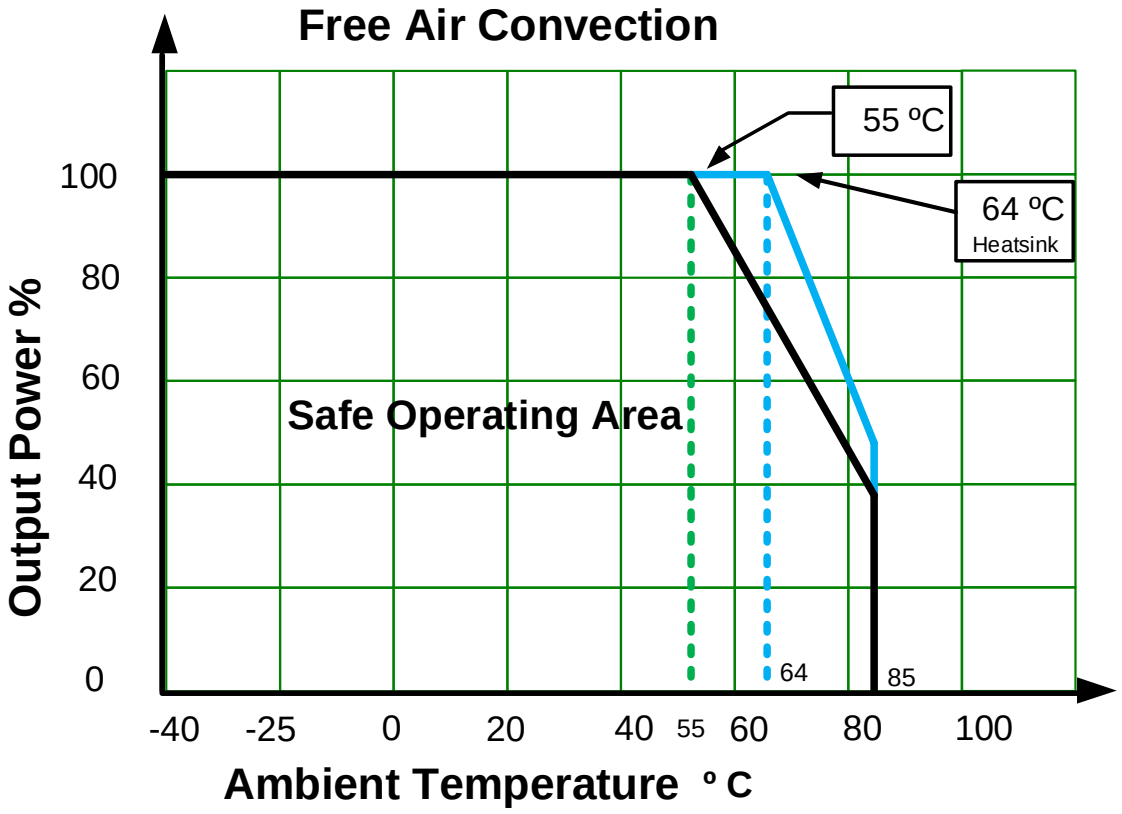
## Dimensions with Optional Heatsink





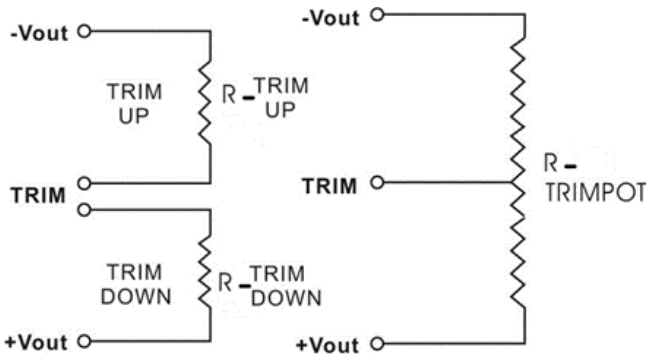

Notes: Add “-K” suffix for ordering, heatsink is affixed with thermally dissipative adhesive tape.
See derating graph for temperature performance. Heatsink material is anodized (black) aluminum, adds weight 22g to total mass (60g).

## Derating




Extended temperature performance can be achieved with optional heatsink. (add suffix "–K" to part number)

## Trimming




**AM40UW-XX03SZ**

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 3.267 | 3.234 | 3.201 | 3.168 | 3.135 | 3.102 | 3.069 | 3.036 | 3.003 | 2.97 |
| Rt down (KΩ) | 315.932 | 172.257 | 112.528 | 79.806 | 59.153 | 44.930 | 34.539 | 26.616 | 20.374 | 15.330 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 3.333 | 3.366 | 3.399 | 3.432 | 3.465 | 3.498 | 3.531 | 3.564 | 3.597 | 3.63 |
| Rt up (KΩ) | 544.612 | 184.034 | 103.305 | 67.715 | 47.676 | 34.824 | 25.880 | 19.297 | 14.249 | 10.255 |

### AM40UW-XX05SZ

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 4.95 | 4.9 | 4.85 | 4.8 | 4.75 | 4.7 | 4.65 | 4.6 | 4.55 | 4.5 |
| Rt down (KΩ) | 230.566 | 106.182 | 64.301 | 43.281 | 30.643 | 22.207 | 16.177 | 11.651 | 8.129 | 5.310 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 5.05 | 5.1 | 5.15 | 5.2 | 5.25 | 5.3 | 5.35 | 5.4 | 5.45 | 5.5 |
| Rt up (KΩ) | 244.547 | 113.776 | 70.631 | 49.142 | 36.274 | 27.707 | 21.592 | 17.010 | 13.447 | 10.598 |

### AM40UW-XX12SZ

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 11.88 | 11.76 | 11.64 | 11.52 | 11.4 | 11.28 | 11.16 | 11.04 | 10.92 | 10.8 |
| Rt down (KΩ) | 327.351 | 142.100 | 83.928 | 55.470 | 38.591 | 27.418 | 19.477 | 13.542 | 8.939 | 5.264 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 12.12 | 12.24 | 12.36 | 12.48 | 12.6 | 12.72 | 12.84 | 12.96 | 13.08 | 13.2 |
| Rt up (KΩ) | 371.425 | 183.645 | 117.623 | 83.929 | 63.489 | 49.767 | 39.919 | 32.508 | 26.728 | 22.094 |

### AM40UW-XX15SZ

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 14.85 | 14.7 | 14.55 | 14.4 | 14.25 | 14.1 | 13.95 | 13.8 | 13.65 | 13.5 |
| Rt down (KΩ) | 433.811 | 174.916 | 100.946 | 65.907 | 45.468 | 32.077 | 22.625 | 15.596 | 10.165 | 5.842 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 15.15 | 15.3 | 15.45 | 15.6 | 15.75 | 15.9 | 16.05 | 16.2 | 16.35 | 16.5 |
| Rt up (KΩ) | 347.293 | 178.523 | 115.235 | 82.084 | 61.683 | 47.863 | 37.882 | 30.336 | 24.430 | 19.682 |

### AM40UW-XX12DZ

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 11.88 | 11.76 | 11.64 | 11.52 | 11.4 | 11.28 | 11.16 | 11.04 | 10.92 | 10.8 |
| Rt down (KΩ) | 231.849 | 106.217 | 63.546 | 42.058 | 29.116 | 20.468 | 14.280 | 9.634 | 6.017 | 3.122 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 12.12 | 12.24 | 12.36 | 12.48 | 12.6 | 12.72 | 12.84 | 12.96 | 13.08 | 13.2 |
| Rt up (KΩ) | 229.254 | 103.827 | 62.826 | 42.473 | 30.309 | 22.218 | 16.449 | 12.128 | 8.769 | 6.085 |

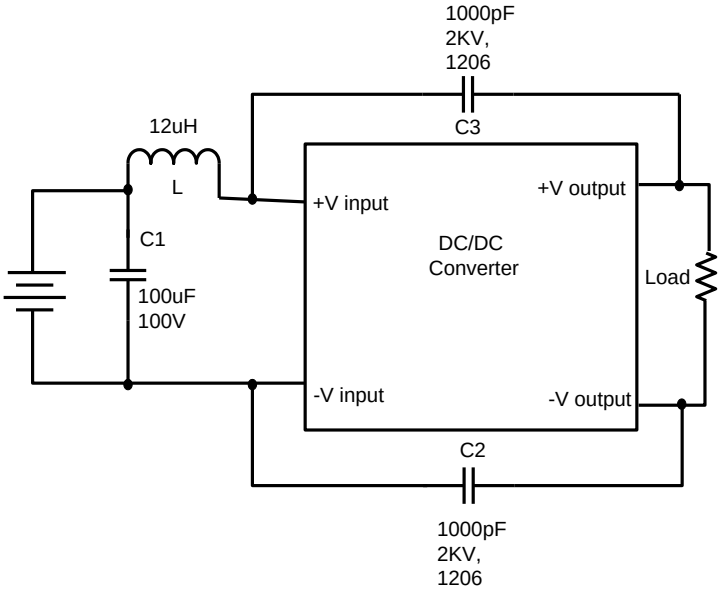
### AM40UW-XX15DZ

| Trim down % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|
| Vout (VDC) | 14.85 | 14.7 | 14.55 | 14.4 | 14.25 | 14.1 | 13.95 | 13.8 | 13.65 | 13.5 |
| Rt down (KΩ) | 351.590 | 146.987 | 85.137 | 55.280 | 37.693 | 26.101 | 17.886 | 11.760 | 7.015 | 3.232 |
| Trim up % | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
| Vout (VDC) | 15.15 | 15.3 | 15.45 | 15.6 | 15.75 | 15.9 | 16.05 | 16.2 | 16.35 | 16.5 |
| Rt up (KΩ) | 239.820 | 116.162 | 71.431 | 48.344 | 34.251 | 24.754 | 17.919 | 12.765 | 8.740 | 5.509 |

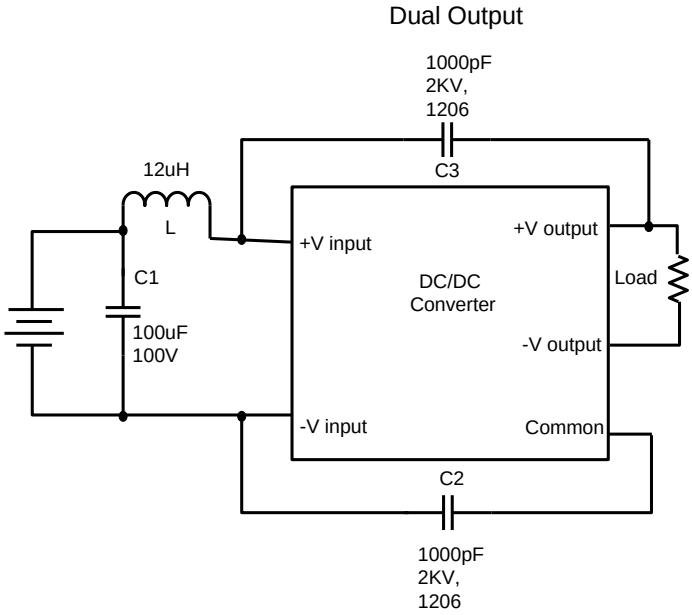
## Recommended Circuits

### Conducted and Radiated Emissions

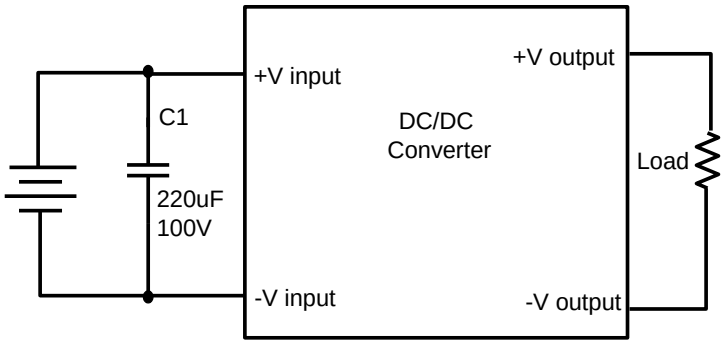
Single Output




Dual Output




### EFT/Surge




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