

SERIES: AE15-EW-T | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 15 watts
- high operating temp -40 to +70°C
- 4,000 Vac isolation
- extra wide input voltage 10:1
- input voltage up to 1 kVdc
- OVP protection
- output short circuit protection
- chassis mounted
- EN 62109 approved

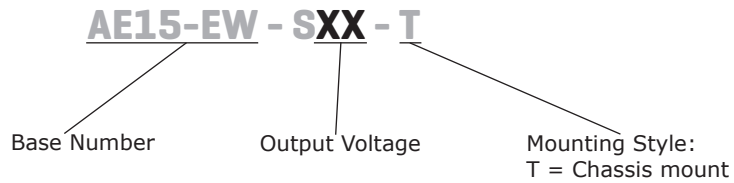


MODEL

| MODEL | input voltage range (Vdc) | output voltage (Vdc) | output current | | output power max (W) | ripple & noise ¹ max (mVp-p) | efficiency ² typ (%) |
|---------------|---------------------------|----------------------|----------------|---------|----------------------|---|---------------------------------|
| | | | min (A) | max (A) | | | |
| AE15-EW-S12-T | 100~1000 | 12 | 0 | 1.25 | 15 | 200 | 77 |
| AE15-EW-S15-T | 100~1000 | 15 | 0 | 1.00 | 15 | 200 | 78 |
| AE15-EW-S24-T | 100~1000 | 24 | 0 | 0.625 | 15 | 200 | 80 |

Notes: 1. Measured at nominal input, 20 MHz bandwidth oscilloscope, with 10 µF electrolytic and 1 µF ceramic capacitors on the output.
 2. Measured at 200 Vdc input voltage, full load.
 3. All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|---|-----|---------------|-----------------|----------------|
| operating input voltage | | 100 | | 1000 | Vdc |
| current | at 200 Vdc at 600 Vdc at 1000 Vdc | | | 120 40 22 | mA mA mA |
| inrush current | at 200 Vdc at 600 Vdc at 1000 Vdc | | 7 20 30 | | A A A |
| input fuse | 2 A / 1000 Vdc (external) | | | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|---|-----|------------|-----------------------|-------------------------------|
| maximum capacitive load | 12 Vdc output model 15 Vdc output model 24 Vdc output model | | | 2,000 1,200 470 | μ F μ F μ F |
| voltage accuracy | | | ± 1 | ± 2 | % |
| line regulation | from low line to high line, full load | | ± 0.5 | ± 1 | % |
| load regulation | from 0% to full load | | ± 0.5 | ± 1 | % |
| delay time | from $V_{in} = 0$ V to 90% of rated output voltage | | | 1 | s |
| switching frequency | | | | 75 | kHz |
| temperature coefficient | at full load | | ± 0.02 | | %/°C |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|---|-----|-----|----------------|-------------------|
| over voltage protection | 12 Vdc output model 15 Vdc output model 24 Vdc output model | | | 15 19 28 | Vdc Vdc Vdc |
| over current protection | automatic recovery | 110 | | | % |
| short circuit protection | continuous, automatic recovery | | | | |

SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---------------------|--|---------|-----|-----|-------|
| isolation voltage | input to output for 1 minute | 4,000 | | | Vac |
| safety approvals | EN 62109 | | | | |
| conducted emissions | CISPR22/EN55022, class A (external circuit required, see Figure 2) | | | | |
| radiated emissions | CISPR22/EN55022, class A (external circuit required, see Figure 2) | | | | |
| ESD | IEC/EN61000-4-2, contact ± 6 kV/air ± 8 kV, class B | | | | |
| radiated immunity | IEC/EN61000-4-3, 10V/m, class A | | | | |
| EFT/burst | IEC/EN61000-4-4, ± 4 kV, class B (external circuit required, see Figure 2) | | | | |
| surge | IEC/EN61000-4-5, ± 2 kV, class B (external circuit required, see Figure 2) | | | | |
| conducted immunity | IEC/EN61000-4-6, 10 Vr.m.s, class A | | | | |
| MTBF | as per MIL-HDBK-217F, 25°C | 300,000 | | | hours |
| RoHS | 2011/65/EU | | | | |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|------|-------|
| operating temperature | see derating curves | -40 | | 70 | °C |
| storage temperature | | -40 | | 105 | °C |
| storage humidity | non-condensing | | | 95 | % |
| altitude | | | | 2000 | m |

MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|--|-----|-----|-----|-------|
| dimensions | 96.10 x 54.00 x 32.00 [3.783 x 2.126 x 1.260 inch] | | | | mm |
| case material | black flame-retardant heat-proof plastic (UL94V-0) | | | | |
| weight | | | 150 | | g |

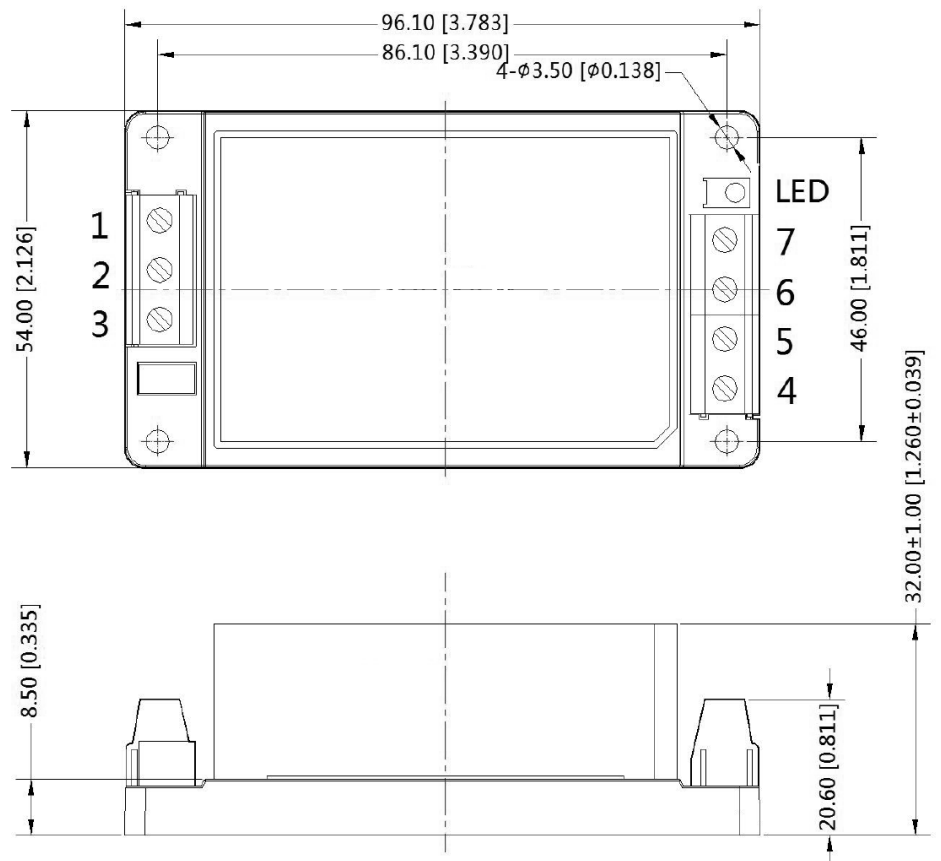
MECHANICAL DRAWING

units: mm [inch]
tolerance: ±0.50[±0.020]

wire range: 24~12 AWG
tightening torque: max 0.4 N*m

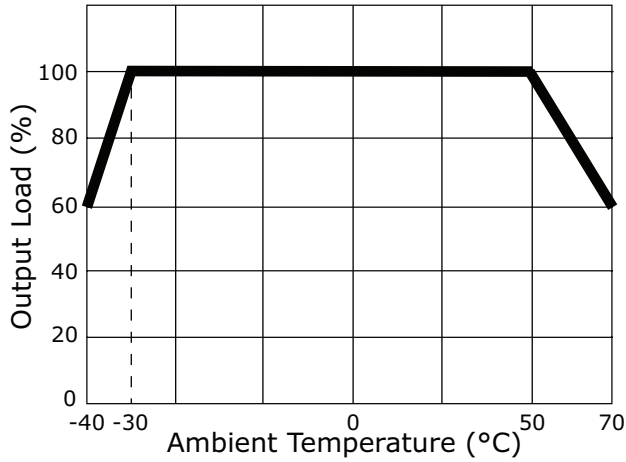
| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | -Vin |
| 2 | NC |
| 3 | +Vin |
| 4 | +Vout |
| 5 | NC |
| 6 | NC |
| 7 | -Vout |

NC=no connection

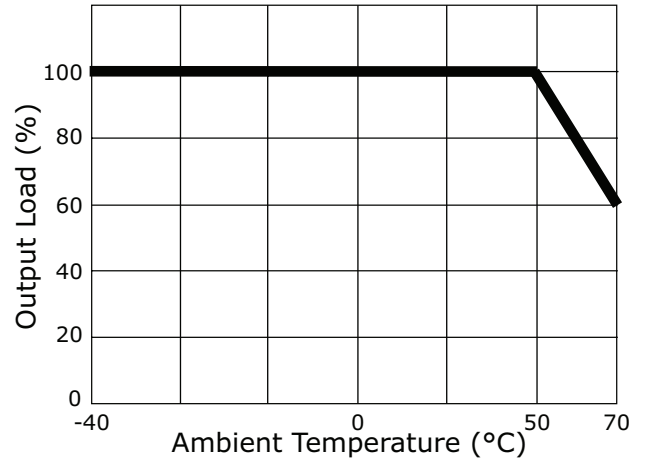


DERATING CURVES

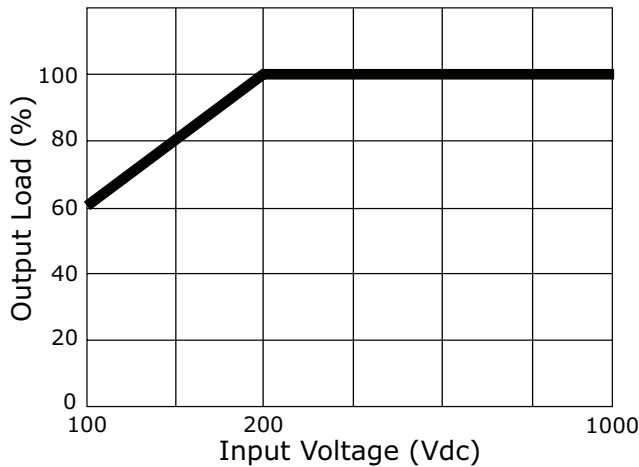
Temperature Derating Curve
(100~150 Vdc input voltage)



Temperature Derating Curve
(150~1000 Vdc input voltage)

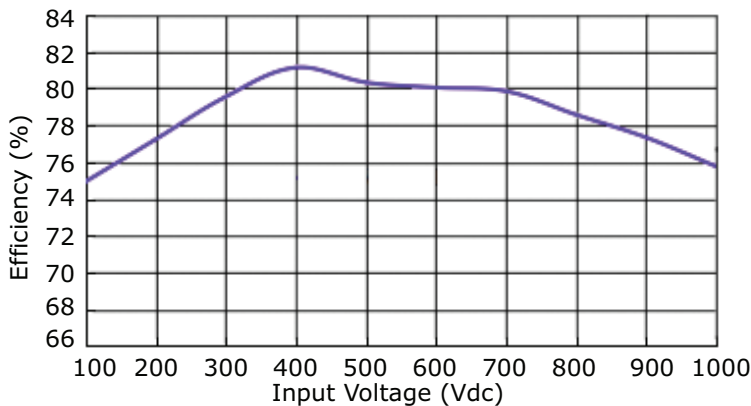


Load vs. Input Voltage Derating Curve
(at 25°C)

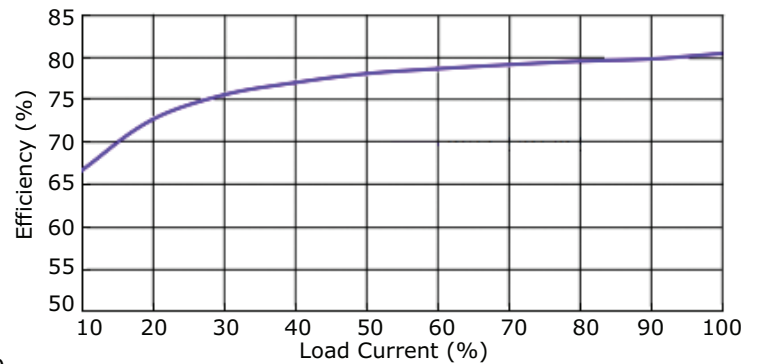


EFFICIENCY CURVES

AE15-EW-S12-T Efficiency Curve
Efficiency vs. Input Voltage

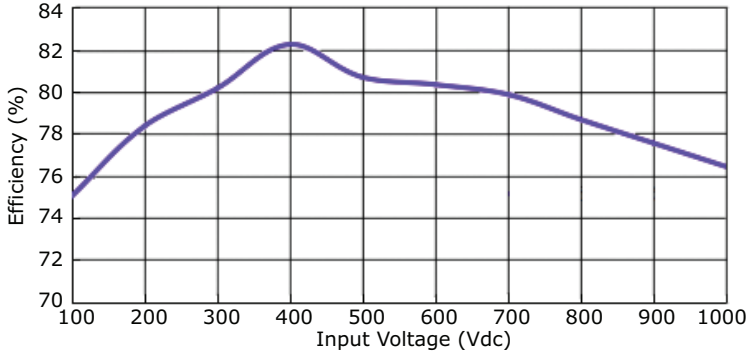


AE15-EW-S12-T Efficiency Curve
Efficiency vs. Load Current

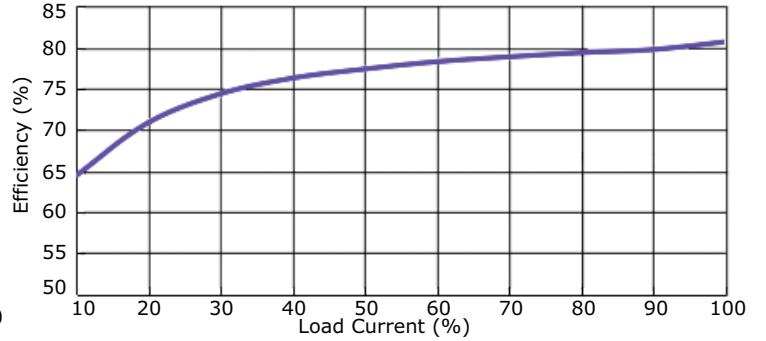


EFFICIENCY CURVES (CONTINUED)

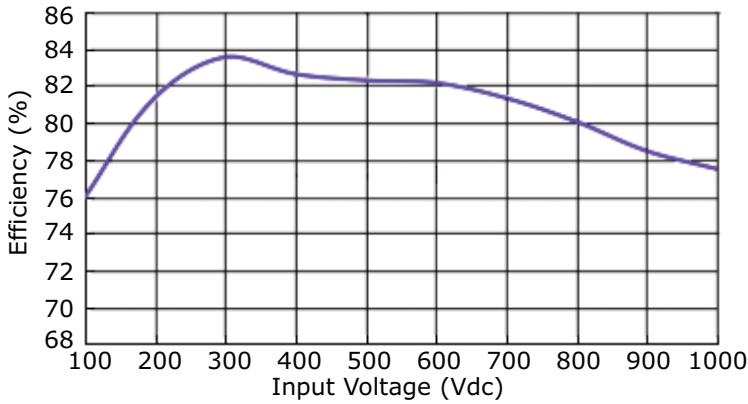
AE15-EW-S15-T Efficiency Curve
Efficiency vs. Input Voltage



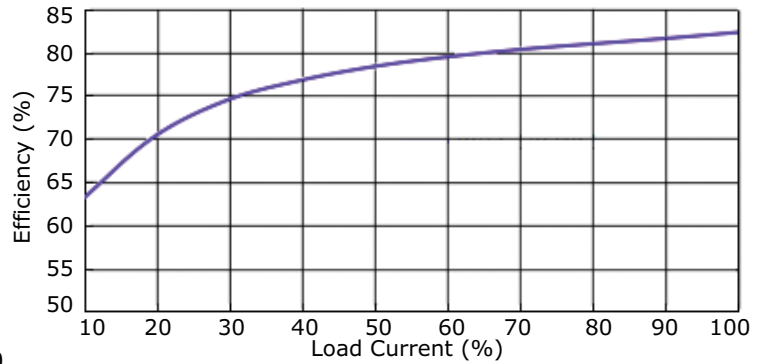
AE15-EW-S15-T Efficiency Curve
Efficiency vs. Load Current



AE15-EW-S24-T Efficiency Curve
Efficiency vs. Input Voltage



AE15-EW-S24-T Efficiency Curve
Efficiency vs. Load Current



APPLICATION CIRCUIT

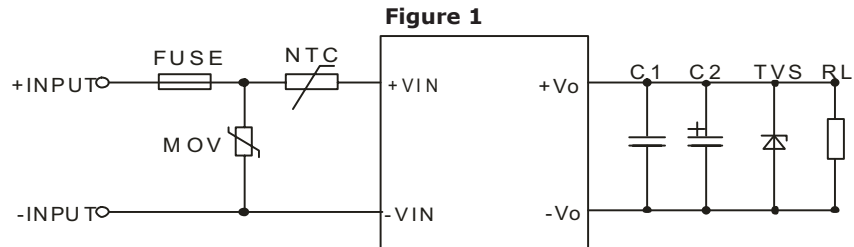


Table 1

| Vout (Vdc) | Fuse | MOV | NTC | C1 (μF) | C2 (μF) | TVS |
|------------|----------------|---------|--------|---------|---------|---------|
| 12 | 2 A / 1000 Vdc | S14K880 | 10D-11 | 1 | 120 | SMBJ15A |
| 15 | 2 A / 1000 Vdc | S14K880 | 10D-11 | 1 | 120 | SMBJ20A |
| 24 | 2 A / 1000 Vdc | S14K880 | 10D-11 | 1 | 68 | SMBJ33A |

EMC RECOMMENDED CIRCUIT

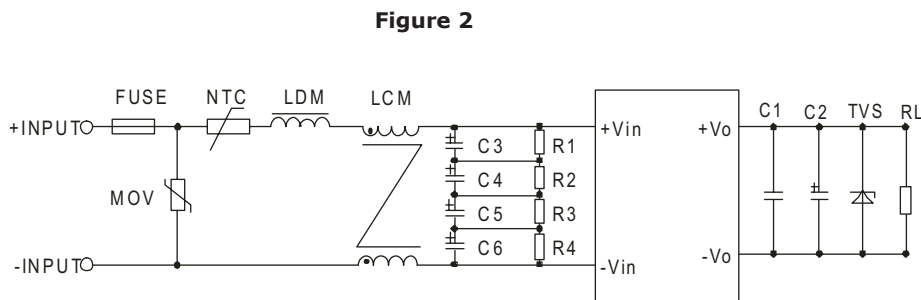


Table 2

| Recommended External Circuit Components | |
|---|---------------|
| FUSE | 2 A/1000 Vdc |
| MOV | S14K880 |
| C3, C4, C5, C6 | 47 μF/400 Vdc |
| R1, R2, R3, R4 | 1 MΩ/2 W |
| NTC | 10D-11 |
| LDM | 4.7 mH/0.38 A |
| LCM | 10 mH |

Note: See also Table 1.

- Notes:
1. C1 is a ceramic capacitor used to filter high frequency noise.
 2. C2 is electrolytic and is recommended to be high frequency and low resistance. For capacitance and current of the capacitor, refer to the datasheet provided by the manufacturer. Capacitance withstand voltage derating should be 80% or above.

REVISION HISTORY

| rev. | description | date |
|------|-----------------|------------|
| 1.0 | initial release | 09/13/2017 |

The revision history provided is for informational purposes only and is believed to be accurate.



CUI INC[®]

Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.