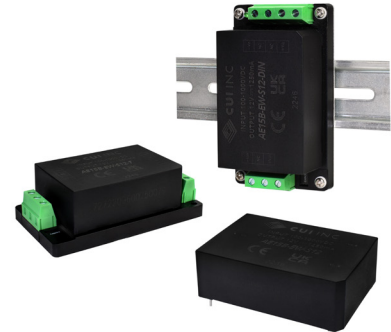


SERIES: AE15B-EW | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 15 W isolated output
- ultra-wide 10:1 input voltage range, 100~1,000 V
- 5,600 Vdc isolation
- input reverse polarity and under voltage protection
- output over voltage, over current, and short circuit protection
- reinforced insulation
- PCB, chassis and DIN-rail mounting styles available
- EN 62109 certified

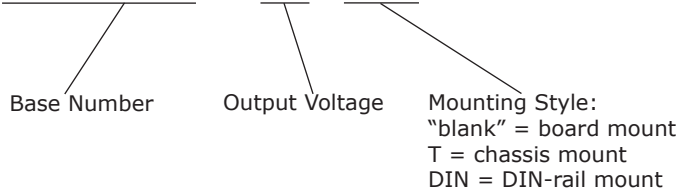


| MODEL | input voltage | output voltage | output current | output power | ripple & noise ¹ | efficiency ² |
|--------------|---------------|----------------|----------------|--------------|-----------------------------|-------------------------|
| | range (Vdc) | nom (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| AE15B-EW-S12 | 100~1000 | 12 | 1.25 | 15 | 200 | 81 |
| AE15B-EW-S15 | 100~1000 | 15 | 1.0 | 15 | 200 | 81 |
| AE15B-EW-S24 | 100~1000 | 24 | 0.625 | 15 | 200 | 83 |

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

AE15B-EW - SXX - XXX



INPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|--|----------|---------------|-----------------|----------------|
| operating input voltage | transient (60s) | 100 | | 1,000 1,200 | Vdc Vdc |
| under voltage shutdown | shut-down range turn-on range | 60 75 | | 85 95 | Vdc Vdc |
| current | at 200 Vdc at 600 Vdc at 1,000 Vdc | | | 120 40 22 | mA mA mA |
| inrush current | at 200 Vdc at 600 Vdc at 1,000 Vdc | | 7 20 30 | | A A A |
| input fuse | 2 A / 1,000 Vdc (external), required | | | | |

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 | | | ± 0.5 | ± 1 | % |
| load regulation | | | ± 0.5 | ± 1 | % |
| start-up time | 100 ~ 1,000 Vdc | | | 1 | s |
| hold-up time | at full load, 25°C 600 Vdc input 1,000 Vdc input | | 10 30 | | ms ms |
| switching frequency | | | 65 | | kHz |
| temperature coefficient | | | ± 0.02 | ± 0.15 | %/°C |

PROTECTIONS

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

SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---------------------|---|---------|-----|-----|-------|
| isolation voltage | input to output for 1 minute, 5 mA max | 5,600 | | | Vdc |
| safety approvals | certified to 62109-1: EN, BS EN | | | | |
| conducted emissions | CISPR32/EN55032 Class A (see Fig. 2 for recommended circuit) | | | | |
| radiated emissions | CISPR32/EN55032 Class A | | | | |
| ESD | IEC/EN61000-4-2 Contact +/-6KV/ Air +/-8KV, perf. Criteria B | | | | |
| radiated immunity | IEC/EN61000-4-3 10V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN61000-4-4 +/-4KV, perf. Criteria B | | | | |
| surge | IEC/EN61000-4-5 line to line +/-1KV, IEC/EN61000-4-5 line to line +/-2KV (see Fig. 2 for recommended circuit), perf. Criteria B | | | | |
| conducted immunity | IEC/EN 61000-4-6 10 Vrms, perf. Criteria A | | | | |
| MTBF | as per MIL-HDBK-217F, 25°C | 300,000 | | | hours |
| RoHS | yes | | | | |

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 | % |

SOLDERABILITY

| parameter | conditions/description | min | typ | max | units |
|----------------|------------------------|-----|-----|-----|-------|
| hand soldering | for 3~5 seconds | 350 | 360 | 370 | °C |
| wave soldering | for 5~10 seconds | 255 | 260 | 265 | °C |

MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|---|-----|-------------------|-----|-------|
| dimensions | board mount: 70.0 x 48.0 x 23.5 [2.756 x 1.890 x 0.925 inch] chassis mount: 96.1 x 54.0 x 32.0 [3.783 x 2.126 x 1.260 inch] DIN-rail mount: 96.1 x 54.0 x 36.6 [3.783 x 2.126 x 1.441 inch] | | | | mm |
| case material | black flame-retardant heat-resistant plastic (UL94V-0) | | | | |
| weight | board mount chassis mount DIN-rail mount | | 115 170 210 | | g |
| cooling | natural convection | | | | |

MECHANICAL DRAWING

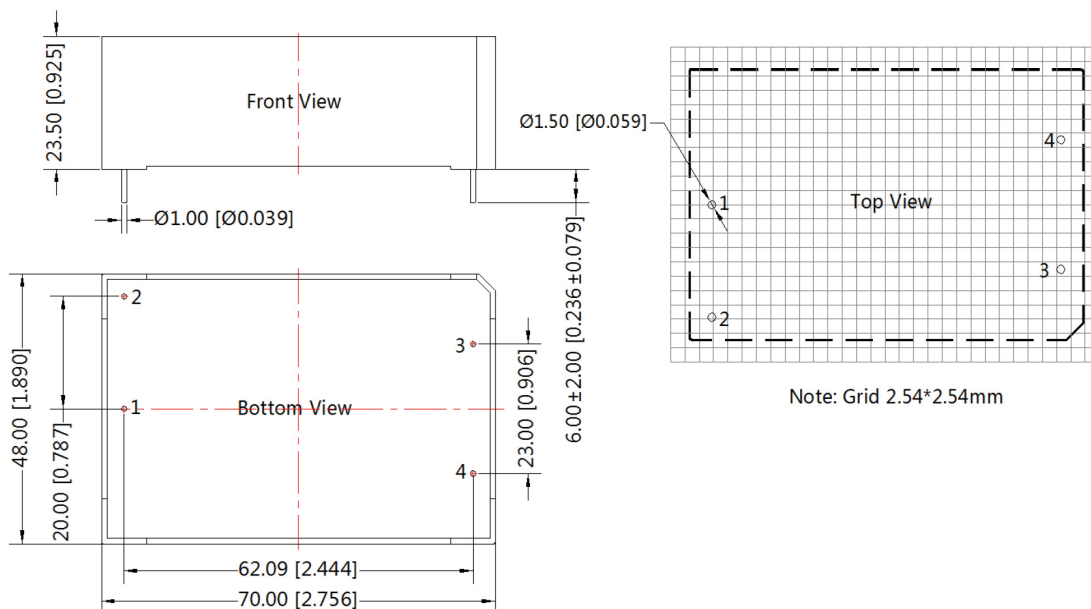
Board mount

units: mm [inch]

tolerance: ±0.50[±0.020]

pin diameter tolerance: ±0.10[±0.004]

| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | -Vin |
| 2 | +Vin |
| 3 | +Vout |
| 4 | -Vout |



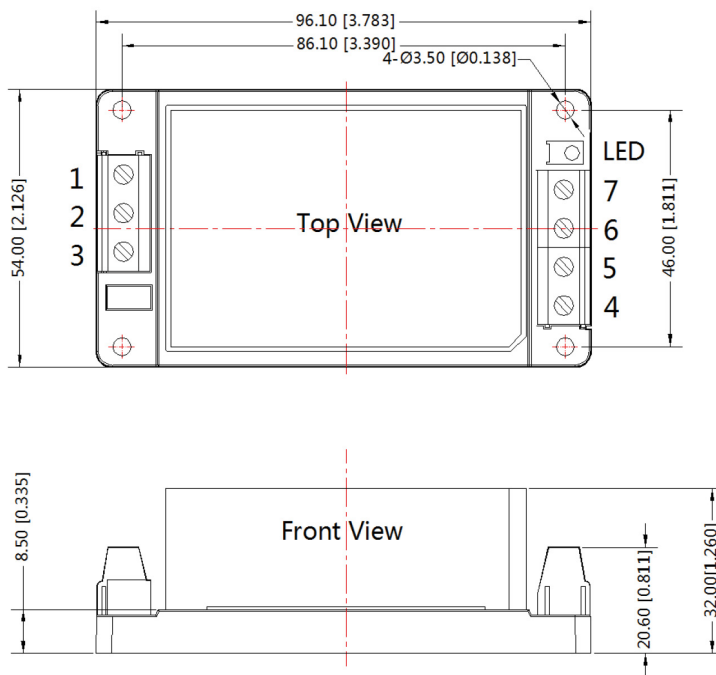
MECHANICAL DRAWING (CONTINUED)

Chassis mount

units: mm [inch]
 wire range: 24-12 AWG
 general tolerance: $\pm 1.00[\pm 0.039]$
 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

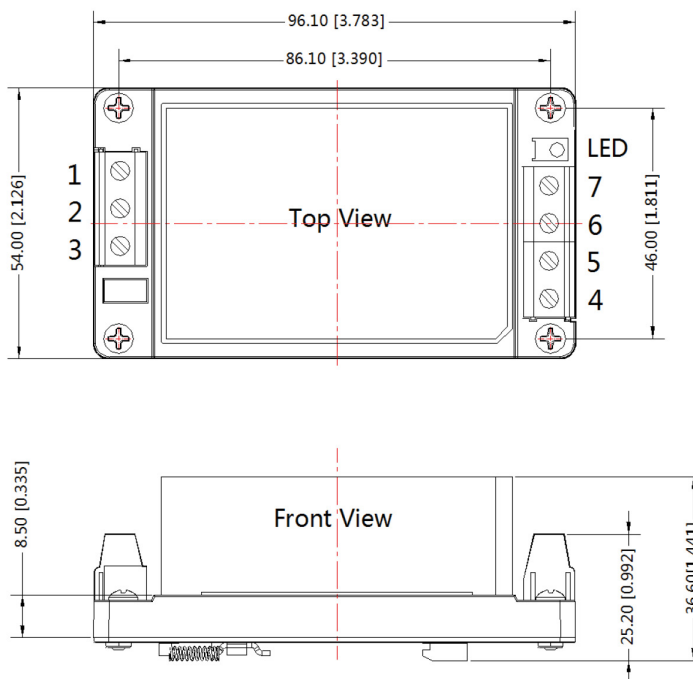


Din-rail mount

units: mm [inch]
 wire range: 24-12 AWG
 tightening torque: Max 0.4 N·m
 mounting rail: TS35, rail needs to connect safety ground
 tolerance: $\pm 1.00[\pm 0.039]$

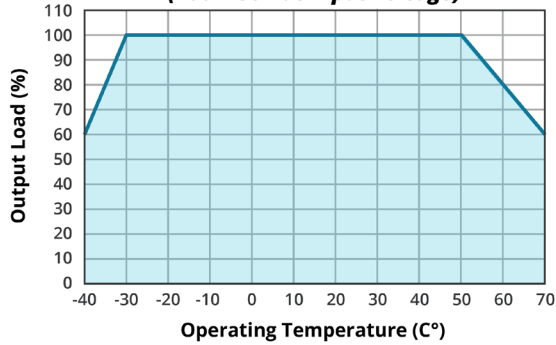
| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | -Vin |
| 2 | NC |
| 3 | +Vin |
| 4 | +Vout |
| 5 | NC |
| 6 | NC |
| 7 | -Vout |

NC=no connection

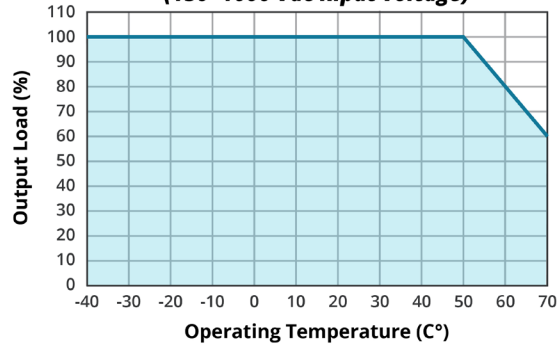


DERATING CURVES

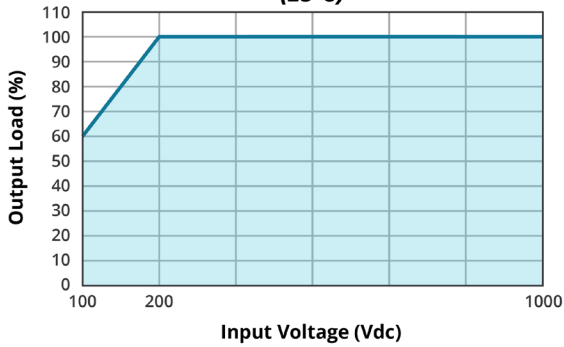
**TEMPERATURE DERATING CURVE
(100~150 Vdc Input voltage)**



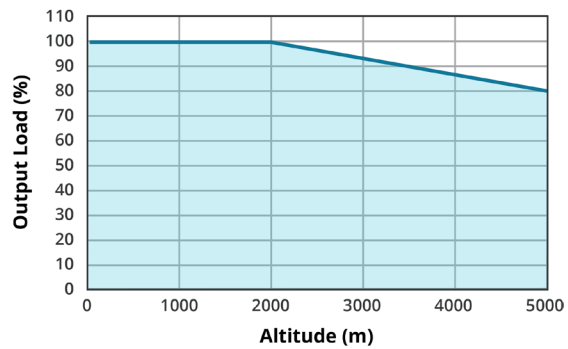
**TEMPERATURE DERATING CURVE
(150~1000 Vdc Input voltage)**



**INPUT VOLTAGE DERATING CURVE
(25°C)**



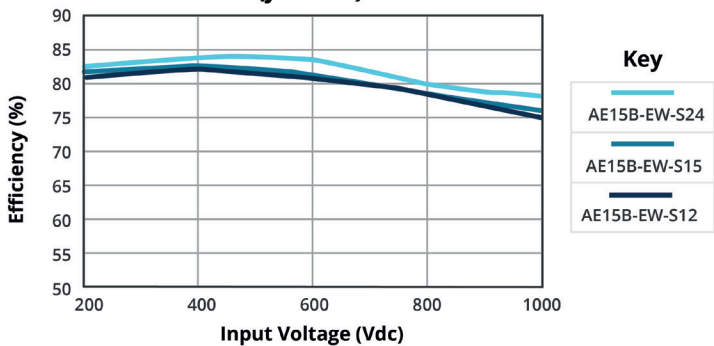
ALTITUDE DERATING CURVE



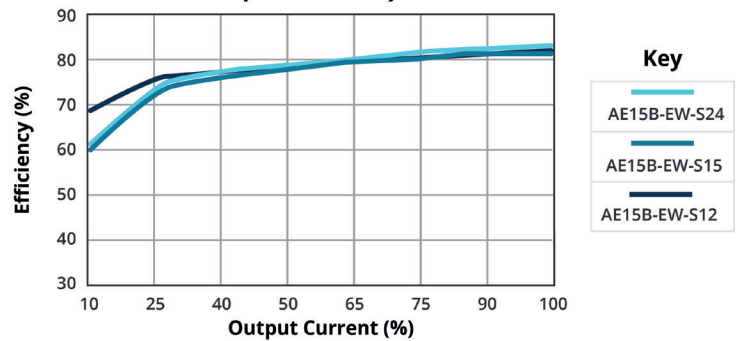
Note: 5. With an input between 100 - 200VDC, the output power must be derated as per temperature derating curves.
6. This product is suitable for use in natural air cooling environments, if in a closed environment, please contact CUI.

EFFICIENCY CURVES

**EFFICIENCY VS INPUT VOLTAGE
(full load)**



**EFFICIENCY VS OUTPUT LOAD
(Vin = 200 Vdc)**



APPLICATION CIRCUIT

Figure 1

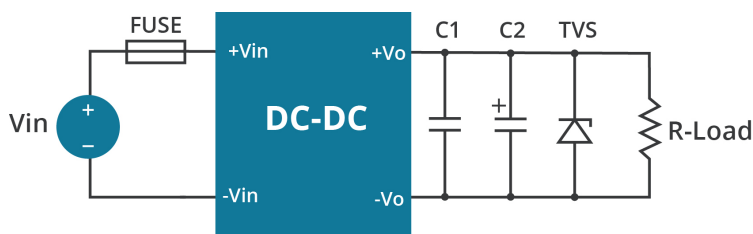


Table 1

| Vout (Vdc) | Fuse | C1 (μF) | C2 (μF) | TVS |
|------------|--------------------------|---------|---------|---------|
| 12 | 2 A / 1000 Vdc, required | 1 | 120 | SMBJ20A |
| 15 | | | | SMBJ20A |
| 24 | | | | SMBJ30A |

We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2 (refer to manufacture’s data-sheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor, used to filter high-frequency noise. TVS is a recommended suppressor diode to protect the application in case of a converter failure.

EMC RECOMMENDED CIRCUIT

Figure 2

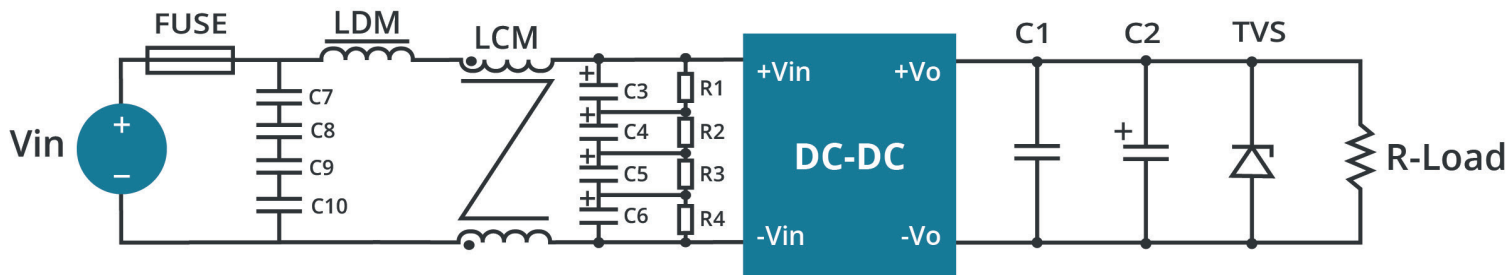


Table 2

| Recommended External Circuit Components | |
|---|------------------------|
| C3, C4, C5, C6 | 10 μF/400 Vdc |
| C7, C8, C9, C10 | 224K/275 Vac |
| R1, R2, R3, R4 | 1 MΩ/0.25 W |
| LDM | 1.2 mH/ 0.38 A |
| LCM | 10 mH |
| FUSE | 2 A/1000 Vdc, required |

Note: See also Table 1.

REVISION HISTORY

| rev. | description | date |
|------|------------------|------------|
| 1.0 | initial release | 11/23/2022 |
| 1.01 | features updated | 12/14/2022 |

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



CUI INC
a bel group

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.

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