CUI INC
a bel group

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

FEATURES

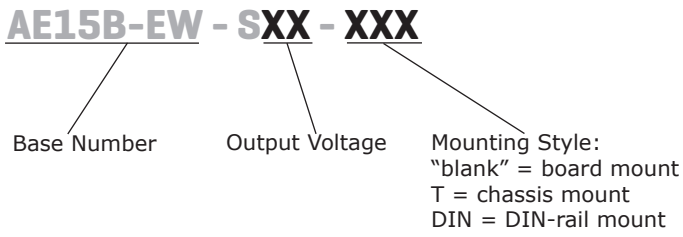
- 15 W isolated output
- ultra-wide 10:1 input voltage range, 100~1,000 V
- 5,600 Vac isolation
- input reverse polarity and under voltage protection
- output over voltage, over current, and short circuit protection
- reinforced insulation
- PCB, chassis and DIN-rail mounting styles available
- EN 62109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

RoHS CE UKCA

MODEL	input voltage range (Vdc)	output voltage nom (Vdc)	output current max (A)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] 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



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	µF µF µF
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 outuput model, clamp 24 Vdc ouput 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

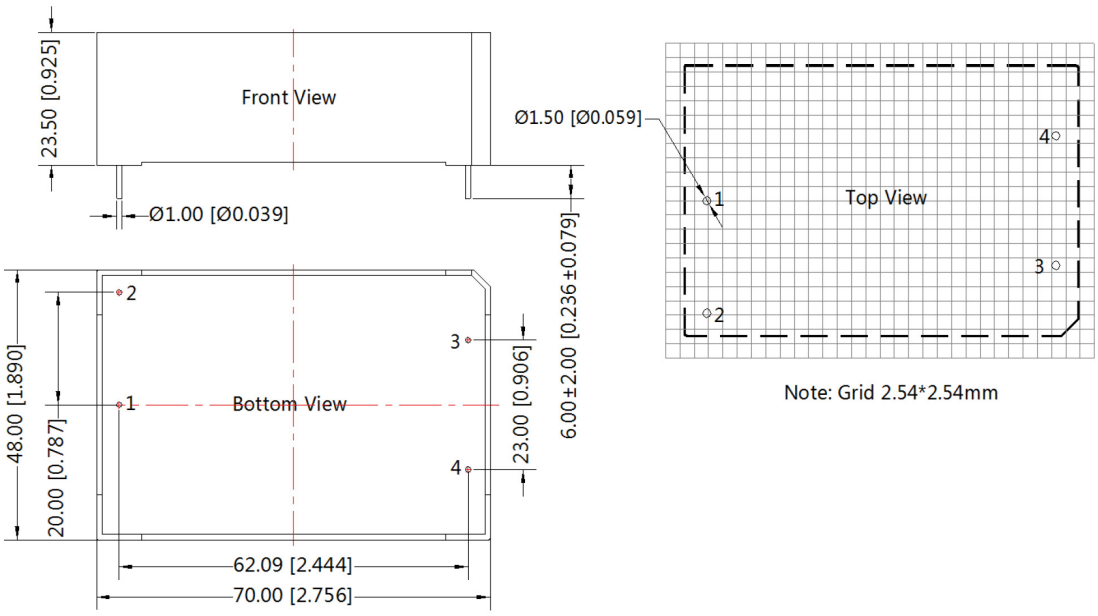
parameter	conditions/description	min	typ	max	units
dimensions	board mount: 70.0 x 48.0 x 23.5 [2.756 x 1.890 x 0.925 inch] chassis mount: 96.1 x 54.0 x 32.0 [3.783 x 2.126 x 1.260 inch] DIN-rail mount: 96.1 x 54.0 x 36.6 [3.783 x 2.126 x 1.441 inch]				mm mm mm
case material	black flame-retardant heat-resistant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



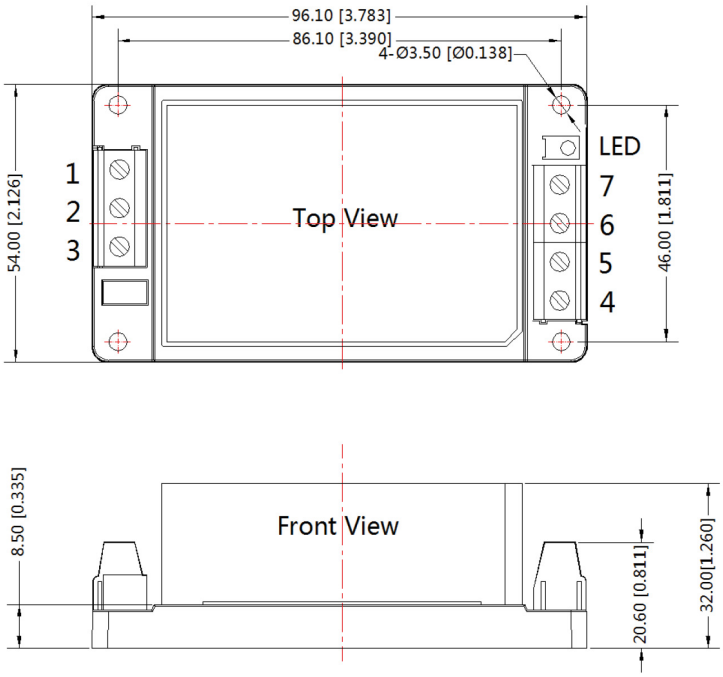
MECHANICAL DRAWING (CONTINUED)

Chassis mount

units: mm [inch]
wire range: 24-12 AWG
general tolerance: ±1.00[±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

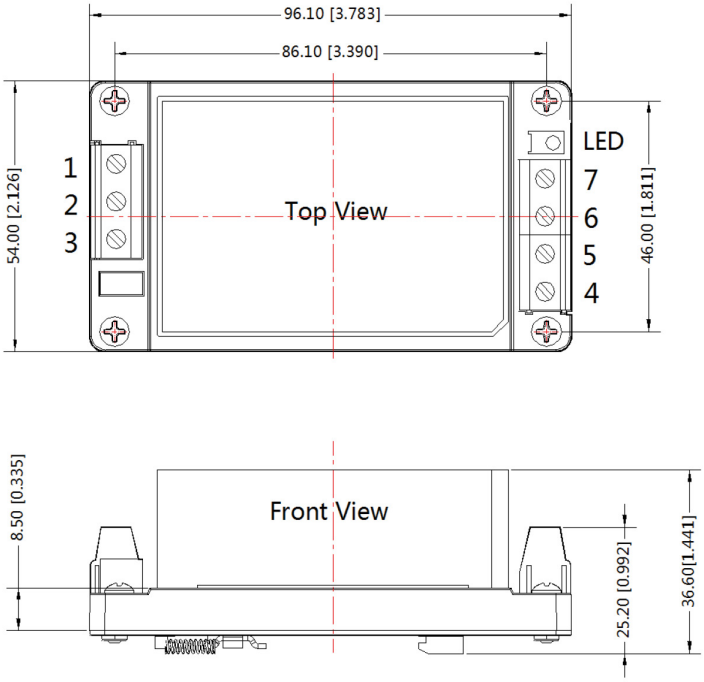


Din-rail mount

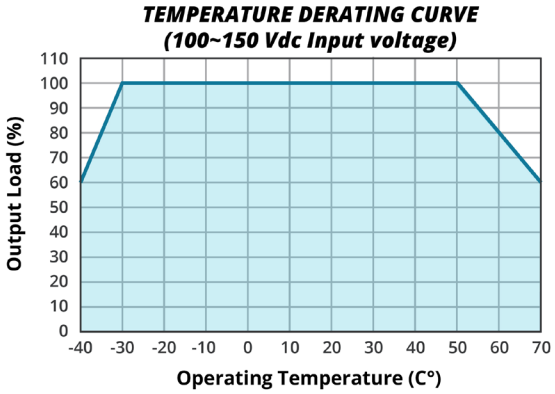
units: mm [inch]
wire range: 24-12 AWG
tightening torque: Max 0.4 N·m
mounting rail: TS35, rail needs to connect safety ground
tolerance: ±1.00[±0.039]

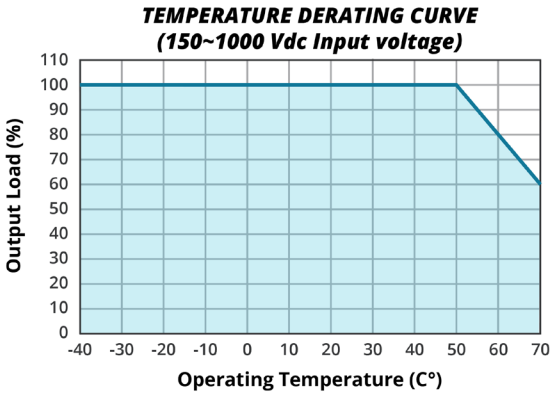
PIN CONNECTIONS	
PIN	Function
1	-Vin
2	NC
3	+Vin
4	+Vout
5	NC
6	NC
7	-Vout

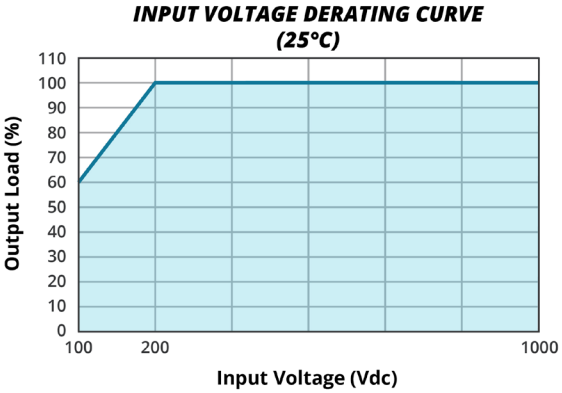
NC=no connection

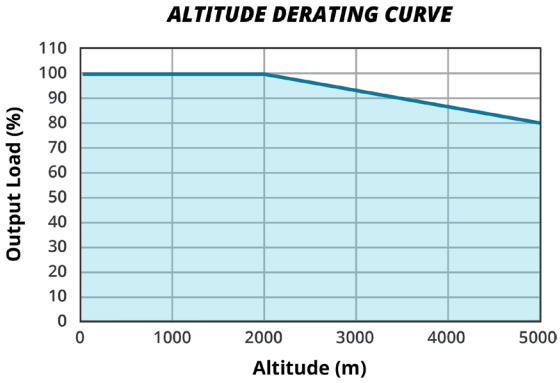


DERATING CURVES



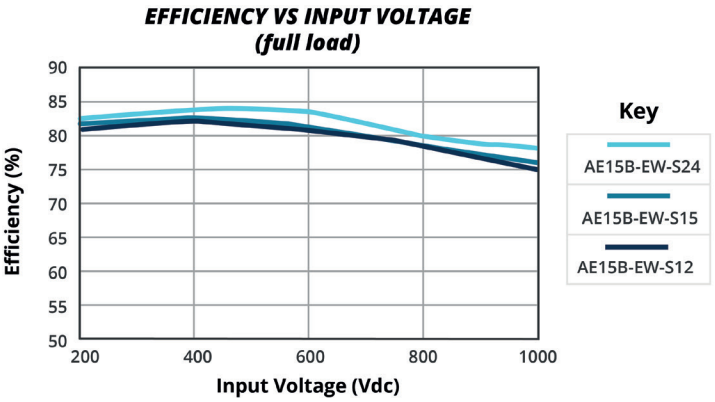


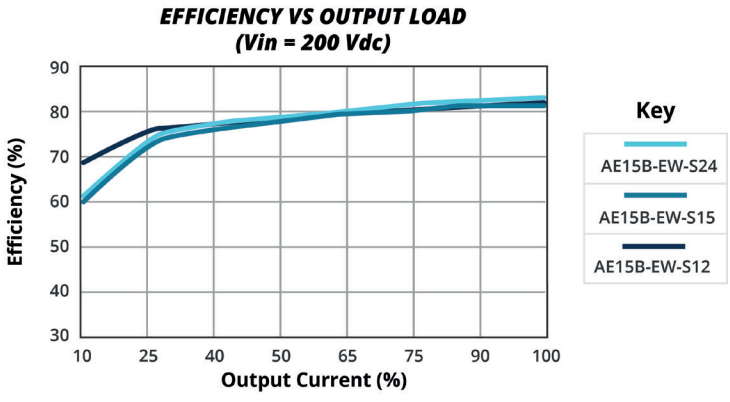




Note: 5. With an input between 100 - 200VDC, the output power must be derated as per temperature derating curves.
6. This product is suitable for use in natural air cooling environments, if in a closed environment, please contact CUI.

EFFICIENCY CURVES





APPLICATION CIRCUIT

Figure 1

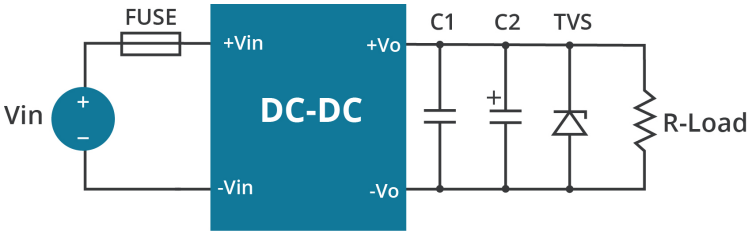


Table 1

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

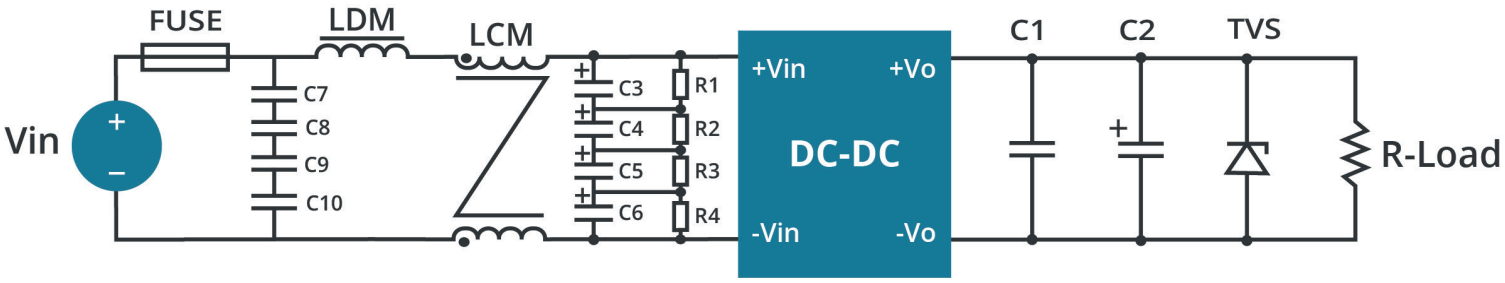


Table 2

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

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

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