SERIES: AE45C-UW | DESCRIPTION: DC-DC CONVERTER

FEATURES

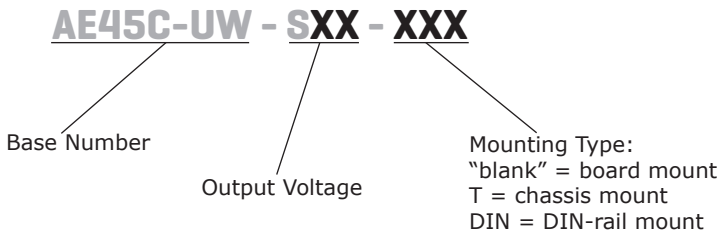
- up to 45 W isolated output
- ultra-wide 10:1 input voltage range, 150~1,500 Vdc
- 4,000 Vac / 5,600 Vdc isolation
- over current, short circuit, over-voltage and input reverse polarity protection
- certified to EN/IEC 62109
- certified to UL 1741, CSA C22.2 No. 107.1
- PCB, chassis and DIN-rail mounting styles available

MODEL

MODEL	input voltage range (Vdc)	output voltage (Vdc)	output current min (A)	output current max (A)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] typ (%)
AE45C-UW-S12	150~1500	12	0	3.75	45	120	87
AE45C-UW-S15	150~1500	15	0	3.0	45	150	88
AE45C-UW-S24	150~1500	24	0	1.87	45	150	89
AE45C-UW-S48	150~1500	48	0	0.938	45	240	90

Notes:
1. Measured at nominal input, 5 Hz to 20 MHz bandwidth oscilloscope, with 10 µF electrolytic and 0.1 µF ceramic capacitors on the output.
2. Measured at 800 Vdc input voltage.
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	continuous	150	800	1500	Vdc
under voltage lockout	turn-on threshold, full load turn-off threshold, full load lockout hysteresis voltage, full load	110 96	121 109 10	132 121	Vdc Vdc Vdc
current	at 150 Vdc, full load		400		mA
	800 Vdc, 12 Vdc output model, full load 800 Vdc, 15 Vdc output model, full load 800 Vdc, 24 Vdc output model, full load 800 Vdc, 48 Vdc output model, full load		64.6 63.9 63.2 62.5		mA mA mA mA
no load current	at 800 Vdc, 0 A		0.5		mA
inrush current	at 800 Vdc, cold start at 25°C		90	150	A
input filter	capacitive				

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	12 Vdc output model 15 Vdc output model 24 Vdc output model 48 Vdc output model			3,750 3,000 1,870 938	µF µF µF µF
voltage accuracy	at 800 Vdc, full load at 25°C		±2		%
line regulation	from high line to low line, full load			±1	%
load regulation	from 0% to full load			±1	%
switching frequency	PWM mode	25		75.6	kHz
temperature coefficient	at -40°C ~ 80°C			±0.15	%/°C
start-up time	at minimum Vin to 10% Vout_set, Power up		450		ms
rise time	10% ~ 90% of output voltage		8		ms
transient response	75%-100% step load change error band recovery time			 ±5 250	 % µs

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	IC component to clamp, auto recovery 12 Vdc output model 15 Vdc output model 24 Vdc output model 48 Vdc output model			 16 19 30 59	 Vdc Vdc Vdc Vdc
over current protection	auto recovery, hiccup	110		300	%
short circuit protection	continuous, auto recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute			4,000 5,600	Vac Vdc
isolation capacitance			1,100		pF
safety approvals	certified to 62109-1: EN, IEC certified to 1741: UL; CSA-C22.2 No.107.1				
EMI/EMC	EN 55032 Compliant (with external filter) Class A				
ESD	EN61000-4-2 Level 3: Air ±8 kV, Contact ±4 kV, perf. Criteria A				
radiated immunity	EN61000-4-3 Level 3: 80~1000 MHz, 10 V/m, perf. Criteria A				
EFT/burst	EN61000-4-4 Level 2: On power input port, ±0.5 kV, external input capacitor required, perf. Criteria A				

SAFETY AND COMPLIANCE (CONTINUED)

parameter	conditions/description	min	typ	max	units
surge	EN61000-4-5 Level 4: Line to line, ±2 kV (with external components), perf. Criteria A				
conducted immunity	EN61000-4-6 Level 3: 0.15~80 MHz, 10V, perf. Criteria A				
PFMF	EN61000-4-8 50/60 Hz, 3 A/m (r.m.s.), perf. Criteria A				
MTBF	as per MIL-HDBK-217F, Notice 1, GB at 25°C	300,000			hours
shock and vibration	MIL-STD-810F				
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		80	°C
storage temperature		-40		85	°C
storage humidity	non-condensing	-		95	%
operating altitude	see derating curves			2,000	m

MECHANICAL

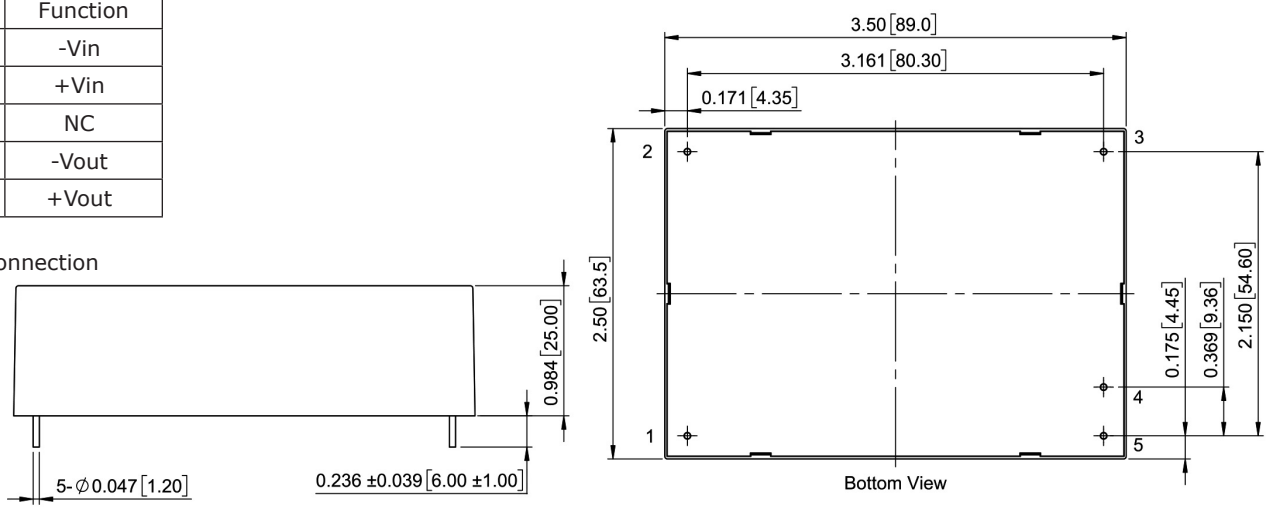
parameter	conditions/description	min	typ	max	units
dimensions	board mount: 3.50 x 2.50 x 0.984 [89.0 x 63.5 x 25.00 mm] chassis mount: 5.31 x 2.76 x 1.26 [135.0 x 70.0 x 32.00 mm] DIN-rail mount: 5.31 x 2.76 x 1.713 [135.0 x 70.0 x 43.50 mm]				inch inch inch
case material	plastic, PBT, UL 94V-0				
potting material	UL 94V-0				
pin material	base: copper plating: nickel with matte tin				
weight	board mount chassis mount DIN-rail mount		240 305 310		g g g

MECHANICAL DRAWING

units: inch [mm]
tolerance: inches: x.xx=±0.03, x.xxx=±0.020
mm: x.x=±0.7, x.xx=±0.50
pin diameter tolerance: 0.047±0.004 inch [1.20±0.1 mm]

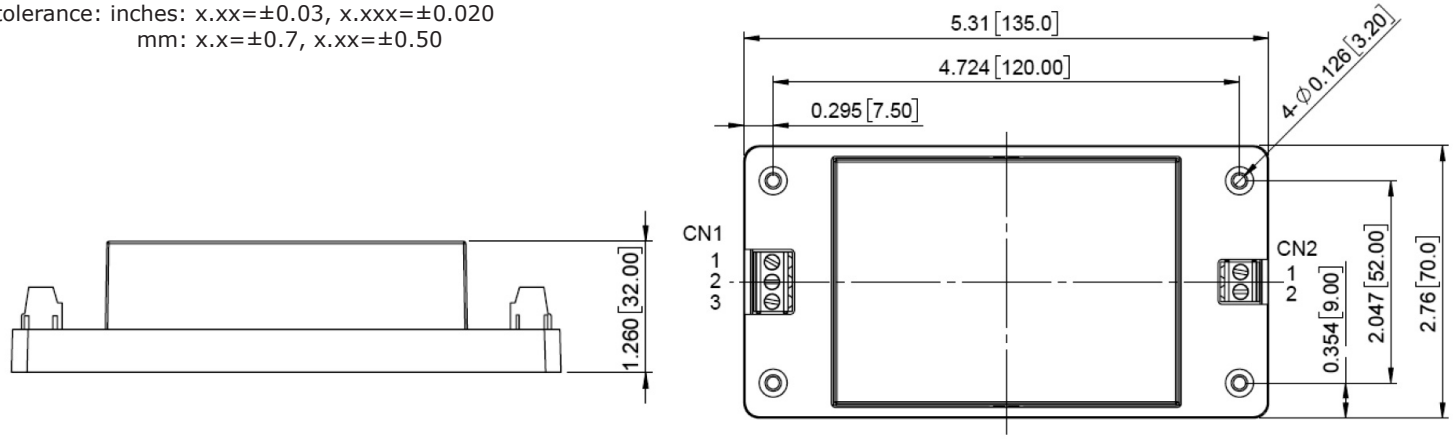
PIN CONNECTIONS	
PIN	Function
1	-Vin
2	+Vin
3	NC
4	-Vout
5	+Vout

NC=no connection



MECHANICAL DRAWING (CONTINUED)

Chassis mount
units: inch [mm]
tolerance: inches: x.xx=±0.03, x.xxx=±0.020
mm: x.x=±0.7, x.xx=±0.50



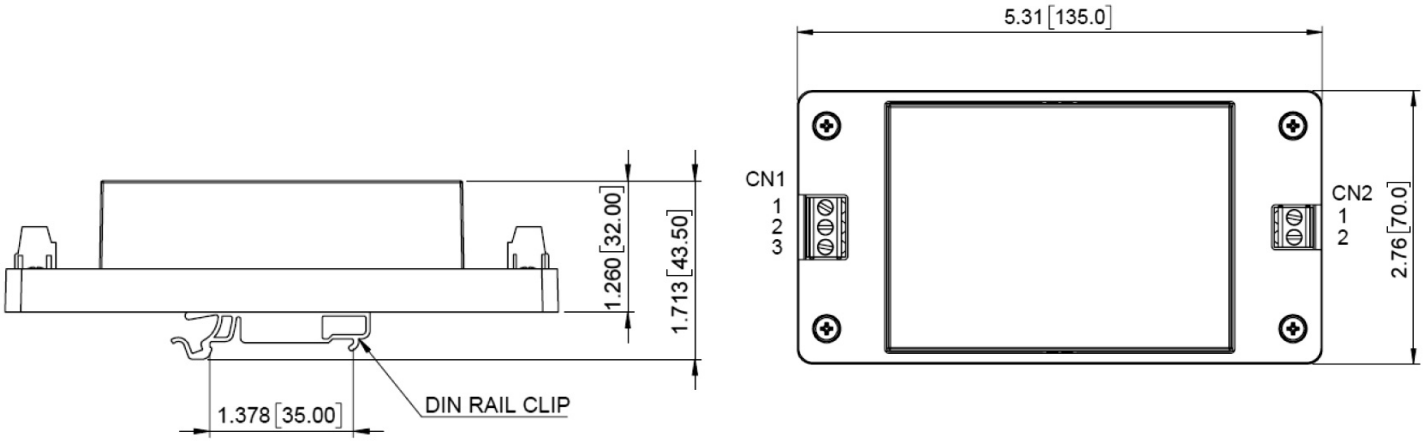
CN1 PIN CONNECTIONS AC input connector: DINKLE EK508V-03P or equivalent		
PIN	Function	Mating wire range
1	-Vin	12~24 AWG
2	NC	
3	+Vin	

NC=no connection

CN2 PIN CONNECTIONS DC input connector: DINKLE EK508V-02P or equivalent		
PIN	Function	Mating wire range
1	+Vout	12~24 AWG
2	-Vout	

Note: Recommended torque setting for terminal is 5kgf-cm.

DIN-rail mount
units: inch [mm]
tolerance: inches: x.xx=±0.03, x.xxx=±0.020
mm: x.x=±0.7, x.xx=±0.50



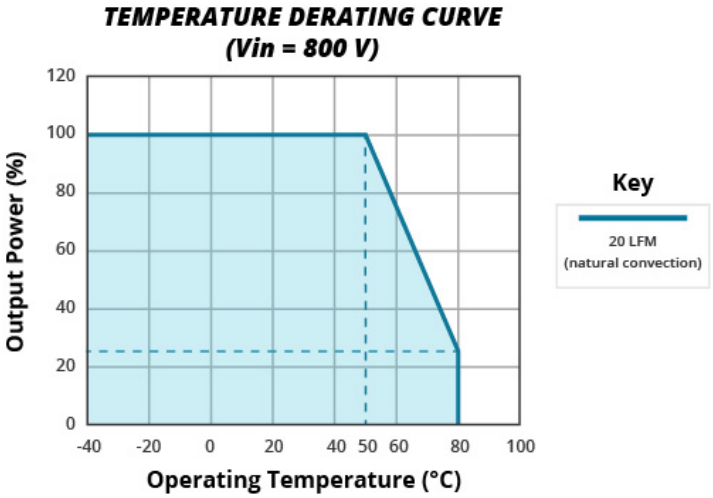
CN1 PIN CONNECTIONS AC input connector: DINKLE EK508V-03P or equivalent		
PIN	Function	Mating wire range
1	-Vin	12~24 AWG
2	NC	
3	+Vin	

NC=no connection

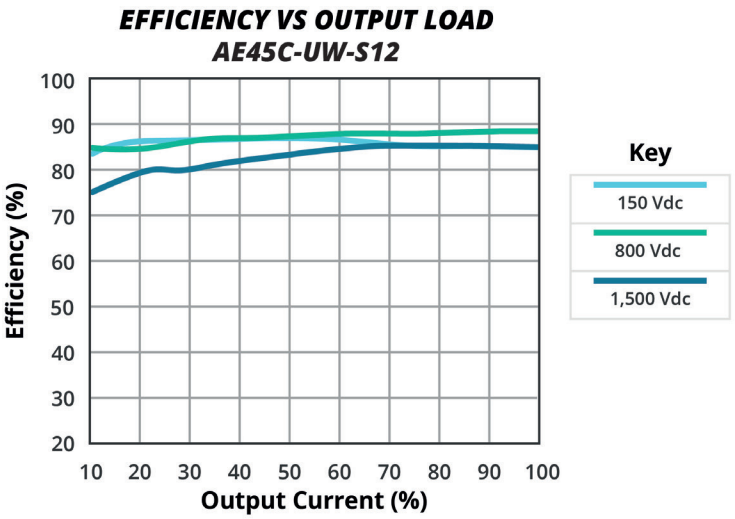
CN2 PIN CONNECTIONS DC input connector: DINKLE EK508V-02P or equivalent		
PIN	Function	Mating wire range
1	+Vout	12~24 AWG
2	-Vout	

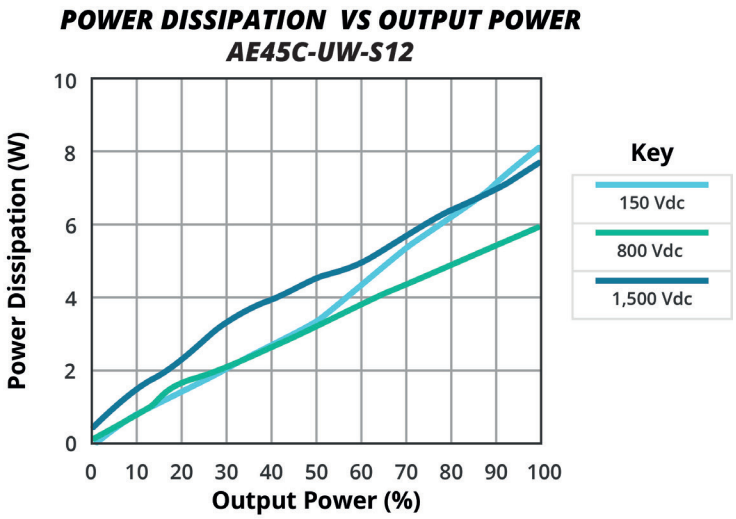
Note: Recommended torque setting for terminal is 5kgf-cm.

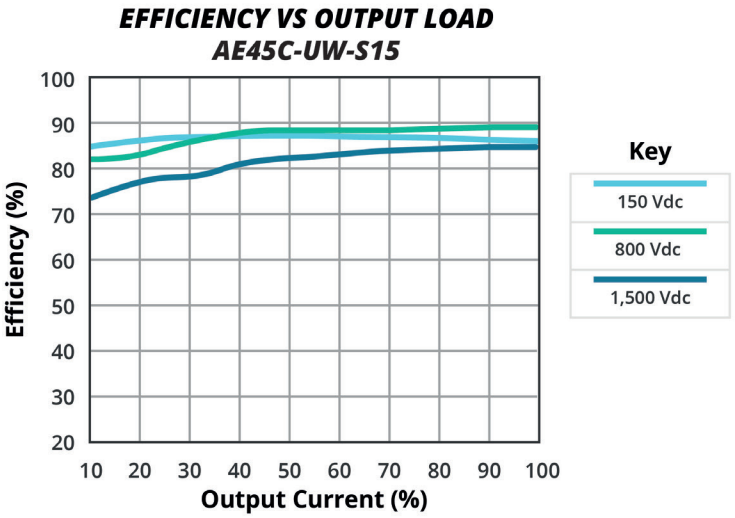
DERATING CURVE

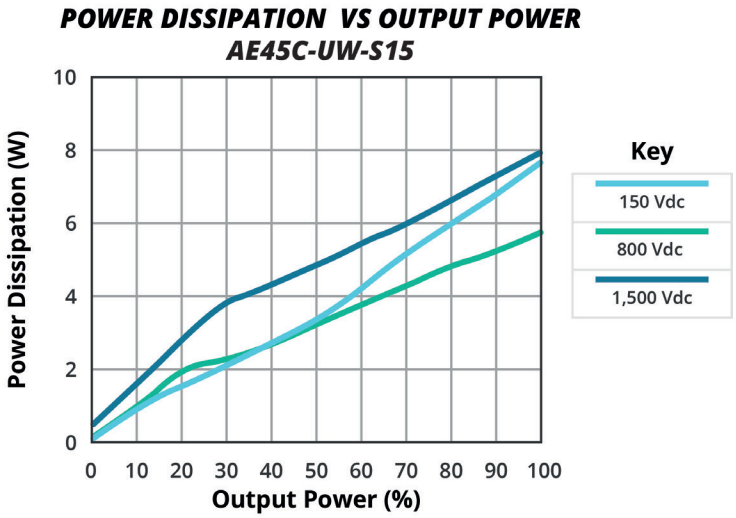


EFFICIENCY CURVES

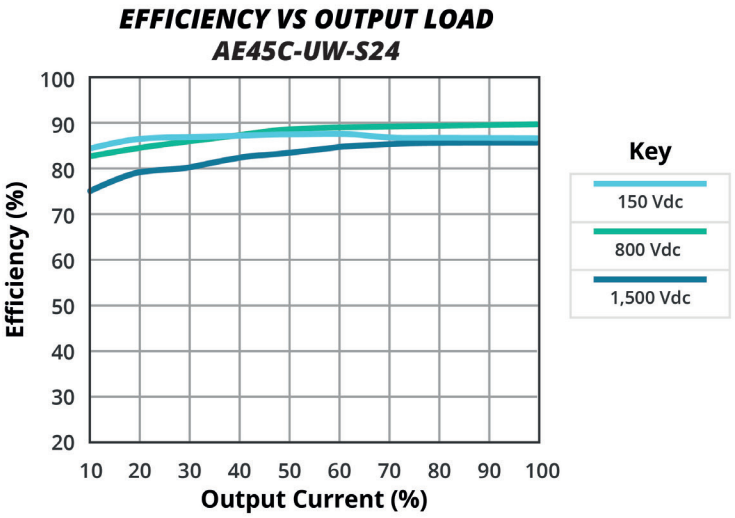


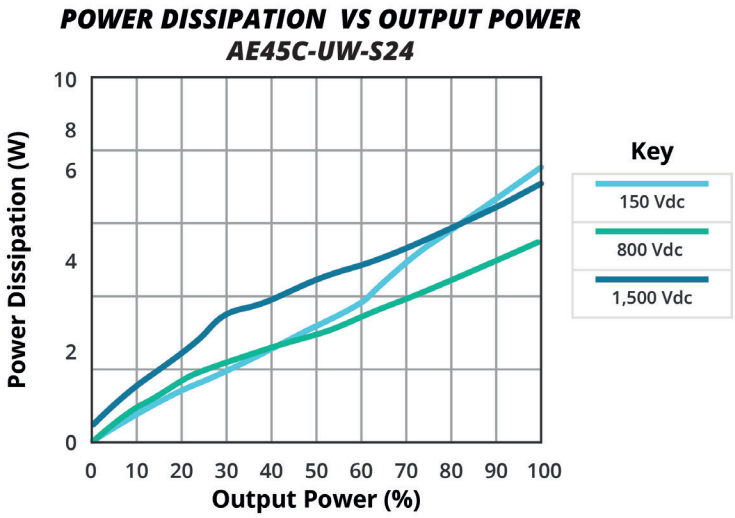


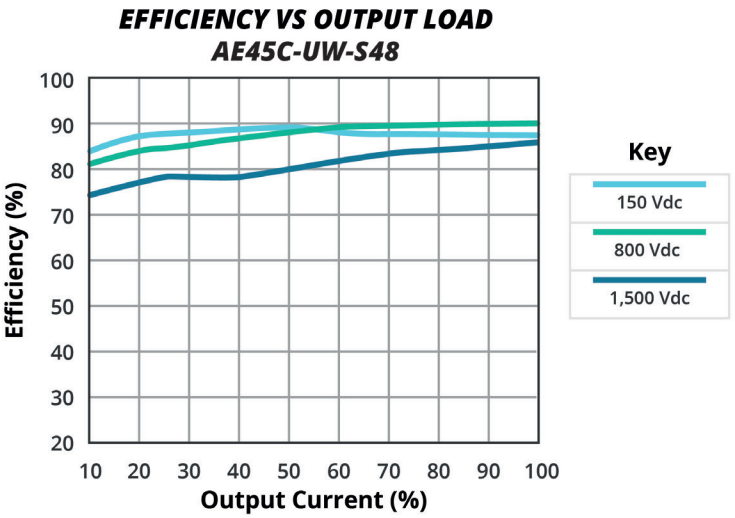


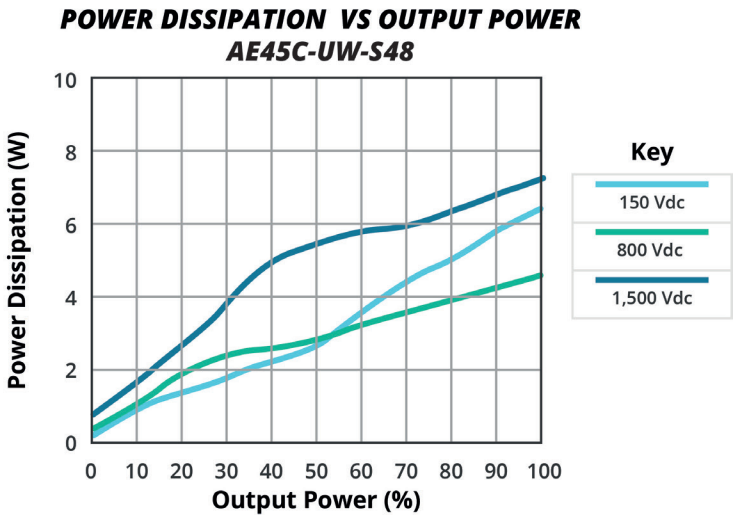


EFFICIENCY CURVES (CONTINUED)





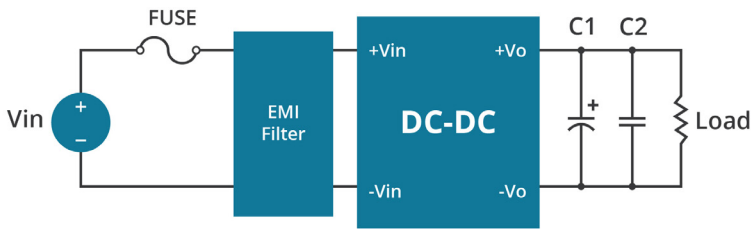




APPLICATION NOTES

The AE45C-UW series converters lack an internal fuse. To ensure maximum safety and system protection, always use an input line fuse. We recommend a 4A/1500Vdc fuse for all modules, as shown below.

Figure 1



EMC RECOMMENDED CIRCUIT

EMI Test standard: EN 55032 Conducted & Radiated Emission
To use AE45C-UW series, connection shown below and external components are required to meet EN 55032 Class A.

Figure 2

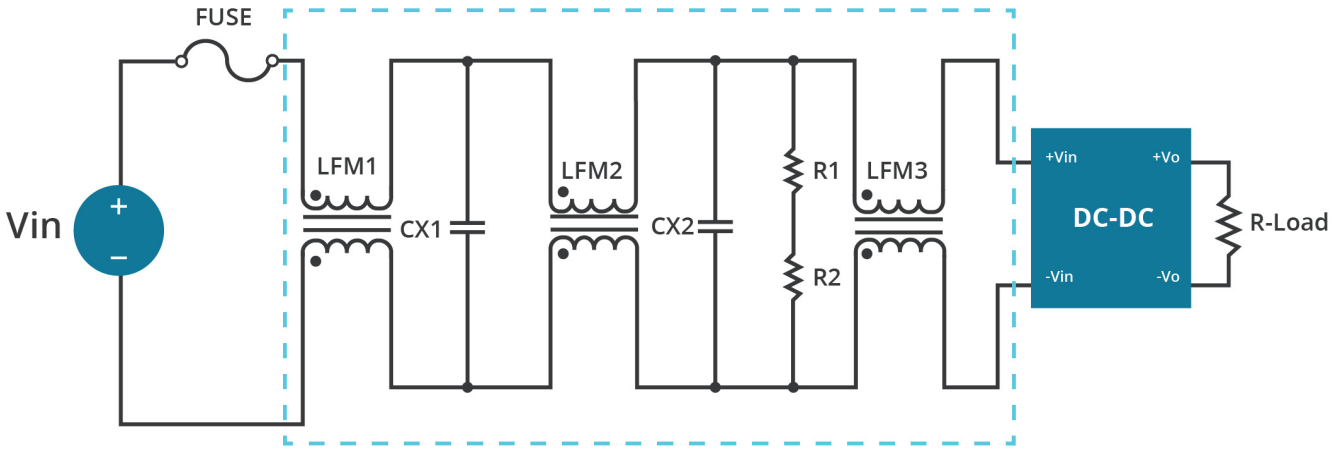


Table 1

Recommended External Circuit Components	
FUSE	4 A/1500 Vdc
LFM1, LFM2, LFM3	20 mH SQ 1515
Cx1, Cx2	0.33 µF/1,500 Vdc
R1, R2	1/2W 3M/≥800V

REVISION HISTORY

rev.	description	date
1.0	initial release	03/31/2025
1.01	chassis and DIN-rail mount options added	07/07/2025

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

CUI INC
a bel group

15575 SW Sequoia Pkwy #100
Portland, OR 97224
800.275.4899

Fax 503.612.2383
Belfuse.com
powersupport@belf.com