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AM40EW-LPZ



2 x 1

The AM40EW-LPZ is a 40W DC/DC converter that offers a regulated output which contributes to a more stable and reliable output performance. It features a wide 4:1 input voltage range of 9-160VDC, which will benefit your new system design.

This series offers great operating temperatures, from -40°C to 85°C. Furthermore, an isolation of 1500VDC/3000VDC, continuous output short circuit protection (OSCP), over-current protection (OCP), over-voltage protection (OVP), and under voltage lock-out (UVLO) come standard with the series.

The AM40EW-LPZ is suitable for grid power, instrumentation, industrial controls, communication, and civil applications.

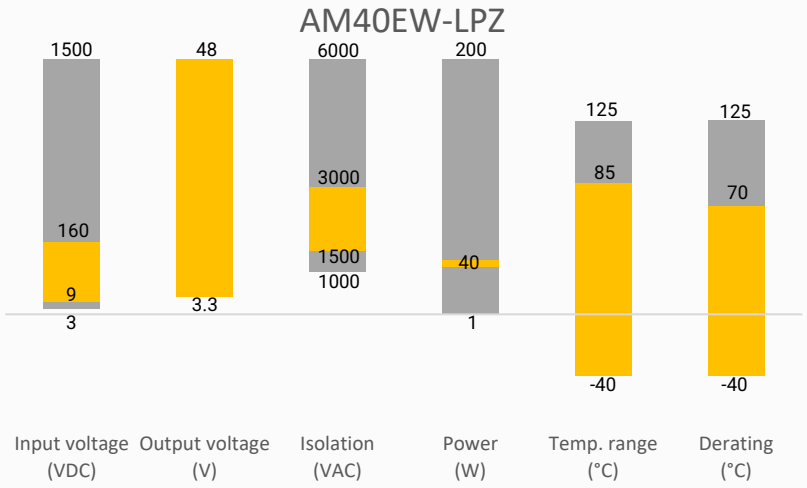
Features

- Operating Temp: -40 °C to +85 °C
- Isolation voltage: 1500VDC/3000VDC
- High efficiency: Up to 93% typ.
- Regulated single output
- Output short circuit, over-current, over-voltage
- Standard 2 x1 package

RoHS

3yr Warranty

Summary



Training

Product Training Video (click to open)

Press Release

Application Notes

Coming Soon!

Applications

Power Grid

Industrial

Telecom

Instrumentation

Models & Specifications

Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Nominal Vin Input Current Max (mA)		Output Current Max (mA)	Maximum capacitive load (µF)	Efficiency Full Load Typ (%)
			No Load	Full Load			
AM40EW-2405SLPZ	24 (9-36)	5	12	1894	8000	15000	91
AM40EW-2409SLPZ	24 (9-36)	9	12	1852	4444	4700	91
AM40EW-2412SLPZ	24 (9-36)	12	12	1852	3333	3000	92
AM40EW-2415SLPZ	24 (9-36)	15	12	1852	2666	2200	93
AM40EW-2424SLPZ	24 (9-36)	24	12	1852	1666	1300	92
AM40EW-4805SLPZ	48 (18-75)	5	12	926	8000	15000	91
AM40EW-4812SLPZ	48 (18-75)	12	12	926	3333	3000	92
AM40EW-4815SLPZ	48 (18-75)	15	12	926	2666	2200	93
AM40EW-4824SLPZ	48 (18-75)	24	12	926	1666	1300	92
AM40EW-11003SH30LPZ	110 (40-160)	3.3	5	345	10000	10000	87
AM40EW-11005SH30LPZ	110 (40-160)	5	3	413	8000	10000	88
AM40EW-11012SH30LPZ	110 (40-160)	12	3	413	3333	2700	91
AM40EW-11015SH30LPZ	110 (40-160)	15	3	413	2666	1680	91
AM40EW-11024SH30LPZ	110 (40-160)	24	3	413	1666	680	89
AM40EW-11048SH30LPZ	110 (40-160)	48	3	413	833	470	89

Dual Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Nominal Vin Input Current Max (mA)		Output Current Max (mA)	Maximum capacitive load (µF)	Efficiency Full Load Typ (%)
			No Load	Full Load			
AM40EW-2412DLPZ	24 (9-36)	±12	12	1852	±1666	1000	87
AM40EW-2415DLPZ	24 (9-36)	±15	12	1852	±1333	680	87
AM40EW-2424DLPZ	24 (9-36)	±24	12	1852	±833	470	87
AM40EW-4812DLPZ	48 (18-75)	±12	12	926	±1666	1000	87
AM40EW-4815DLPZ	48 (18-75)	±15	12	926	±1333	680	87
AM40EW-4824DLPZ	48 (18-75)	±24	12	926	±833	680	87

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage types			4:1	
Absolute maximum rating	24Vin, 1sec. max.		-0.7~50	VDC
	48Vin, 1sec. max.		-0.7~100	VDC
	110Vin, 1sec. max.		-0.7~180	VDC
Input reflected ripple current	Nominal Vin and full load, 24/48Vin models	40		mA
	Nominal Vin and full load, 110Vin models	25		mA
Start-up time	Nominal Vin and constant resistive load, 24/48Vin models	10		mS
	Nominal Vin and constant resistive load, 110Vin models	20		mS
Start-up voltage	24V input		9	VDC
	48V input		18	VDC
	110V input		40	VDC

Input under voltage lockout	24V input	5.5-6.5		VDC
	48V input	12-15.5		VDC
	110V input	28-32		VDC
Filter	π(Pi) Network			
On/Off control	ON – open or 3.5-12VDC; OFF – short to –Vin or 0-1.2VDC, Idle current: 5 - 10mA (24/48Vin models), 2 – 10mA (110Vin models)			

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested isolation voltage	Input / output, 60 sec, 1 mA, 24/48Vin models	≥1500		VDC
	Input / output, 60 sec, 1 mA, 110Vin models	≥3000		VDC
Resistance	Input / output, 500VDC	≥1000		MΩ
Capacitance	Input / output, 100KHz/0.1V, 24/48Vin models	2000		pF
	Input / output, 100KHz/0.1V, 110Vin models	2200		pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance	5%-100% load @ Vin (nom.)	±1	±3	%
Line Regulation	LL to HL at Full Load, 24/48Vin models	±0.2	±0.5	%
	LL to HL at Full Load, 110Vin models	±0.4	±1	%
Load Regulation	5% to 100% load	±0.5	±1	%
Cross Regulation	Dual, positive output 50% load, negative output 10% to 100% Load		±5	%
Transient Recovery Time	25% load step change, 24/48Vin models	250	500	µs
	25% load step change, 110Vin models	300	500	µs
Transient recovery deviation	25% load step change, 110Vin @ 12/15/24/48Vout models	±3	±5	%
	25% load step change, others	±5	±8	%
External Trim Adj. Range			±10	%
Ripple & Noise	20MHz Bandwidth, 100% load, 24/48Vin models	100	200	mV pk-pk
	20MHz Bandwidth, 100% load, 110Vin models	150	200	mV pk-pk

General Specifications

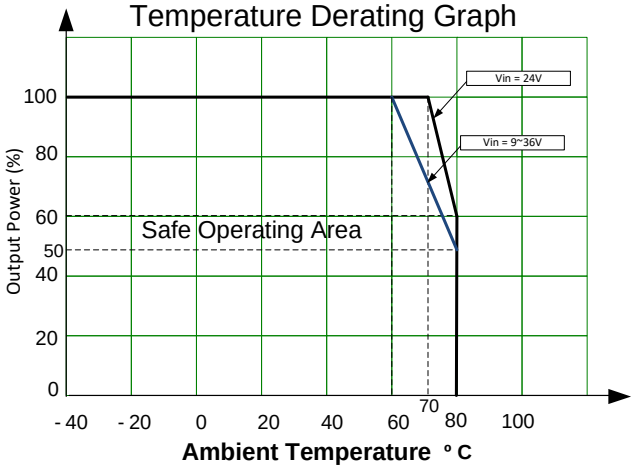
Parameters	Conditions	Minimum	Typical	Maximum	Units
Switching frequency	100% load, 24/48Vin models		330		KHz
	100% load, 110Vin models		220		KHz
Short circuit protection	Continuous, Auto recovery				
Over current protection	Nominal input	110	140	190	% of Io
Over voltage protection		110		160	%
Operating temperature	See derating curve, 24/48Vin models	-40		80	°C
	See derating curve 110Vin models	-40		85	°C
Maximum soldering temperature	1.5mm from case for 10 sec			300	°C
Storage temperature		-55		125	°C
Temperature coefficient	100% Load			± 0.03	%/ °C
Cooling	Free air convection				
Humidity			≥5	95	% RH
Weight			41		g
Dimensions (L x W x H)	2.00x 1.00 x 0.47 inches (50.8 x 25.4 x 12.0 mm)				
Case material	Aluminum alloy				
Vibration	IEC/EN61373, category 1/grade B				

MTBF	24/48Vin models	≥ 1 000 000 hrs (MIL-HDBK -217F, t=+25°C)
	110Vin models	≥ 500 000 hrs (MIL-HDBK -217F, t=+25°C)
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.		

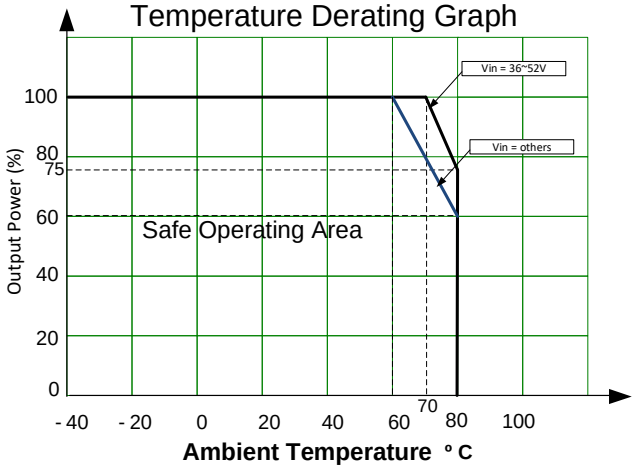
Safety Specifications		
Parameters		
Standards	Designed to meet EN55016-2-1 (110Vin models)	
	Information technology Equipment	Designed to meet UL/EN/IEC 62368-1
	Electronic equipment in railway application	Designed to meet EN50155 (110Vin models)
	EMI - Conducted and radiated emission	CISPR32/EN 55032, Class B, with the recommended EMC circuit
	Electrostatic Discharge Immunity	EN61000-4-2
	RF, Electromagnetic Field Immunity	EN61000-4-3
	Electrical Fast Transient/Burst Immunity	EN61000-4-4
	Surge Immunity	EN61000-4-5
	RF, Electromagnetic Field Immunity	EN61000-4-6

Derating

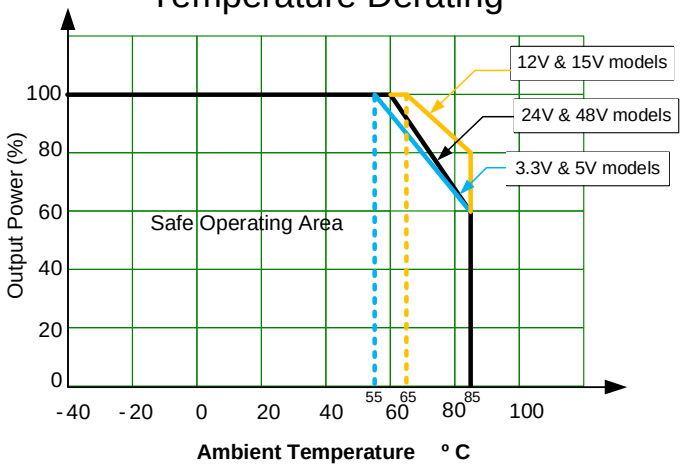
24Vin models
Temperature Derating Graph



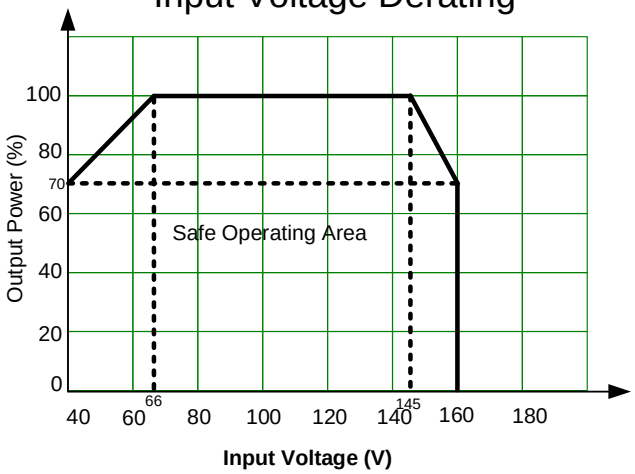
48Vin models
Temperature Derating Graph



110Vin models
Temperature Derating

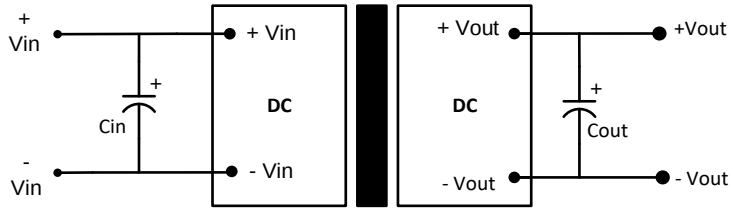


110Vin models
Input Voltage Derating



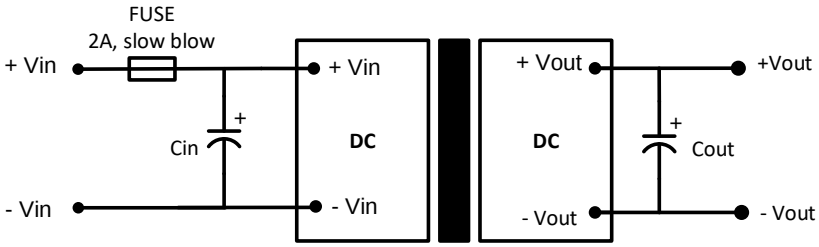
Typical Application Circuit

Single Output 24/48Vin models



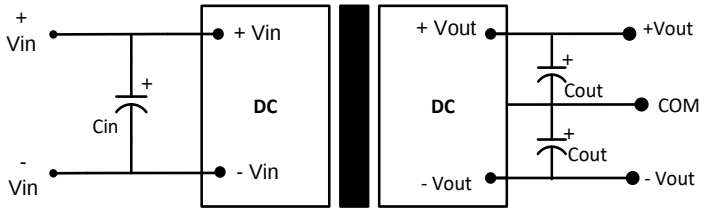
Single outputs			
Vin	Cin	Vout	Cout
24VDC	100µF/50V	5VDC	100µF,24V
48VDC	100µF/100V	9VDC	100µF,24V
		12VDC	100µF,24V
		15VDC	100µF,24V
		24VDC	47µF,50V

Single Output 110Vin models



Single outputs			
Vin	Cin	Vout	Cout
110VDC	100µF/100V	3.3VDC	470µF,50V
		5VDC	470µF,50V
		12VDC	220µF,50V
		15VDC	220µF,50V
		24VDC	100µF,100V
		48VDC	100µF,100V

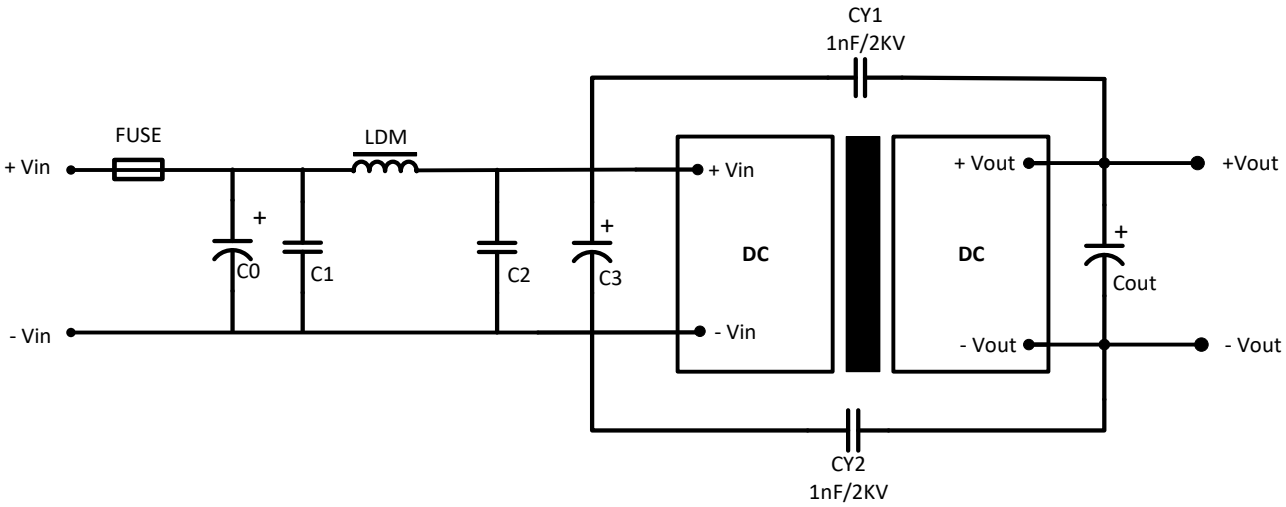
Dual Output 24/48Vin models



Dual outputs			
Vin	Cin	Vout	Cout
24VDC	100µF/50V	±12VDC	100µF,24V
48VDC	100µF/100V	±15VDC	100µF,24V
		±24VDC	47µF,50V

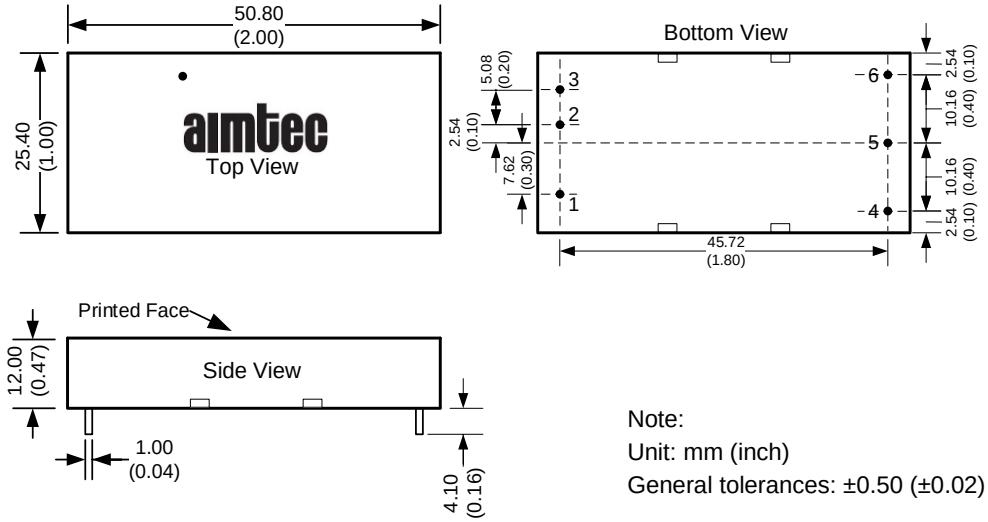
Recommended EMC Circuit

24/48Vin models



Component	24Vin	48Vin
C0, C3	330µF, 50V	330µF, 100V
C1, C2	4.7µF, 50V	4.7µF, 100V
Cout	Refer to Cout in Typical Application Circuit	
LDM	2.2µH, 4A	2.2µH, 2A

Dimensions



Note:
Unit: mm (inch)
General tolerances: ±0.50 (±0.02)

Pin Out Specifications		
Pin	Single	Dual
1	On/off control	On/off control
2	-Vin	-Vin
3	+Vin	+Vin
4	Trim	-Vout
5	-Vout	Common
6	+Vout	+Vout

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