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AM15E-LPZ



2 x 1

The AM15E-LPZ is a 15W DC/DC converter that offers a regulated output which contributes to a more stable and reliable output performance. It features a wide 2:1 input voltage range of 18-75VDC, which will benefit your new system design.

This series offers great operating temperatures, from -40°C to 85°C. Furthermore, an isolation of 1500VDC, a high MTBF of 1,000,000h, 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.

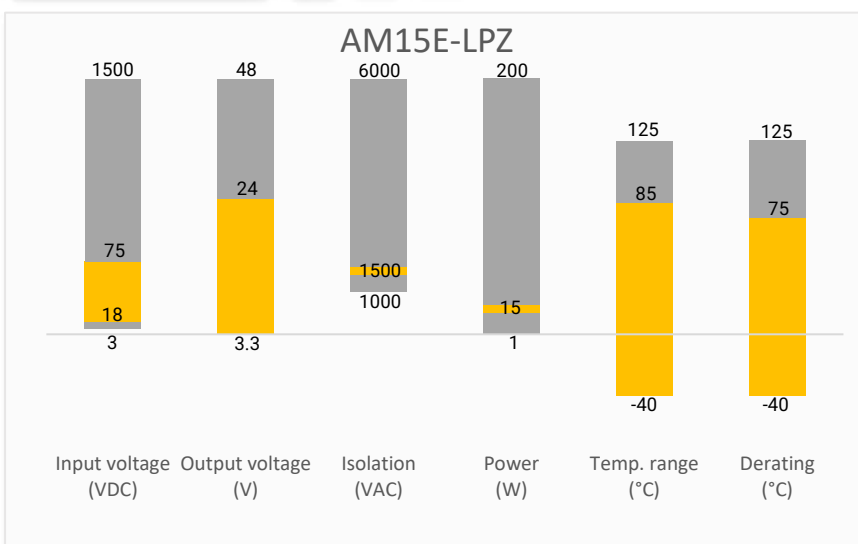
The AM15E-LPZ is suitable for grid power, instrumentation, industrial controls, communication, and civil applications.

Features

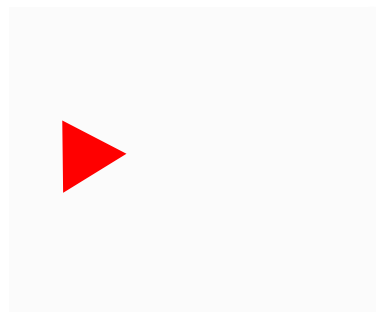
- Operating Temp: -40 °C to +85 °C
- Isolation voltage: 1500VDC
- High efficiency: Up to 90% typ.
- Regulated single output
- Output short circuit, over-current, over-voltage, input under voltage protection
- Standard 2 x1 package



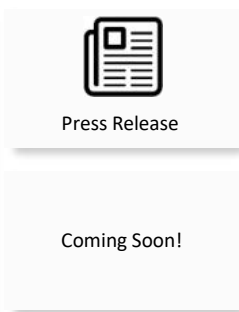
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



Power Grid



Industrial



Telecom



Instrumentation

Models & Specifications



Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Nominal Vin Input Current Typ (mA)		Output Current Max (mA)	Maximum capacitive load (μF)	Efficiency Full Load Typ (%)
			No Load	Full Load			
AM15E-2403SLPZ	24 (18-36)	3.3	30	663	4000	4700	83
AM15E-2405SLPZ	24 (18-36)	5	30	702	3000	4700	89
AM15E-2412SLPZ	24 (18-36)	12	5	702	1250	1000	89
AM15E-2415SLPZ	24 (18-36)	15	5	702	1000	820	89
AM15E-2424SLPZ	24 (18-36)	24	5	702	625	270	90
AM15E-4803SLPZ	48 (36-75)	3.3	20	355	4000	4700	83
AM15E-4805SLPZ	48 (36-75)	5	20	355	3000	4700	88
AM15E-4812SLPZ	48 (36-75)	12	5	351	1250	1000	88
AM15E-4815SLPZ	48 (36-75)	15	5	351	1000	820	89
AM15E-4824SLPZ	48 (36-75)	24	5	351	625	270	89

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage types			2:1	
Absolute maximum rating	24Vin, 1sec. max.		-0.7~50	VDC
	48Vin, 1sec. max.		-0.7~100	VDC
Input reflected ripple current		30		mA
Start-up time	Nominal Vin and constant resistive load	10		mS
Start-up voltage	24V input		18	VDC
	48V input		36	VDC
Input under voltage lockout	24V input	12-16.5		VDC
	48V input	26-30		VDC
Filter	π (Pi) Network			
On/Off control	ON – open or 3.5-12VDC; OFF – short to –Vin or 0-1.2VDC, Idle current: 4 - 7mA			

Isolation Specification				
Parameters	Conditions	Typical	Maximum	Units
Tested isolation voltage	Input / output, 60 sec, 1 mA	≥1500		VDC
Resistance	Input / output, 500VDC	≥1000		MΩ
Capacitance	Input / output, 100KHz/0.1V, 24Vout models	2050		pF
	Input / output, 100KHz/0.1V, others	1050		pF

Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance	100% load @ Vin (nom.)	±1	±3	%
Line Regulation	LL to HL at Full Load	±0.2	±0.5	%
Load Regulation	5% to 100% load	±0.5	±1	%
Transient Recovery Time	25% load step change	300	500	μs
Transient recovery deviation	25% load step change, 3.3Vout models	±5	±8	%

	25% load step change, others	±3	±5	%
External Trim Adj. Range			±10	%
Ripple & Noise	20MHz Bandwidth, 100% load	50	100	mV pk-pk

General Specifications

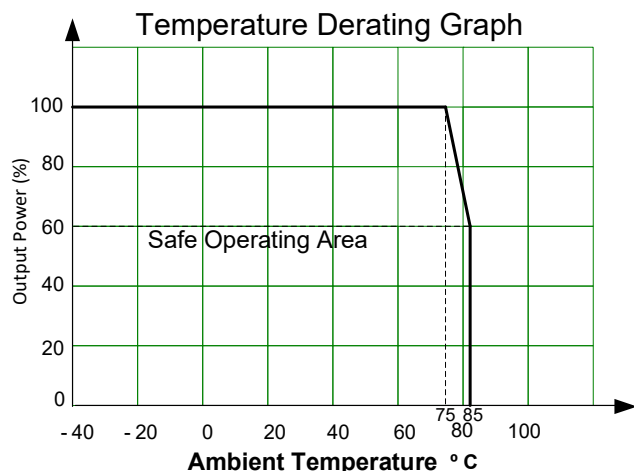
Parameters	Conditions	Minimum	Typical	Maximum	Units
Switching frequency	100% load		270		KHz
Short circuit protection	Continuous, Auto recovery				
Over current protection		110		190	% of Io
Over voltage protection	Input voltage range	110		160	%Vo
Operating temperature	See derating curve	-40		85	°C
Maximum 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			26		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	10-55Hz, 2G, 30 minutes, along all axis				
MTBF	≥ 1 000 000 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.

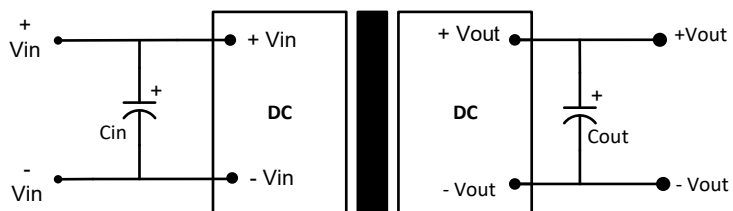
Safety Specifications

Parameters		
Standards	Information technology Equipment	Designed to meet UL/EN/IEC 62368-1
	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

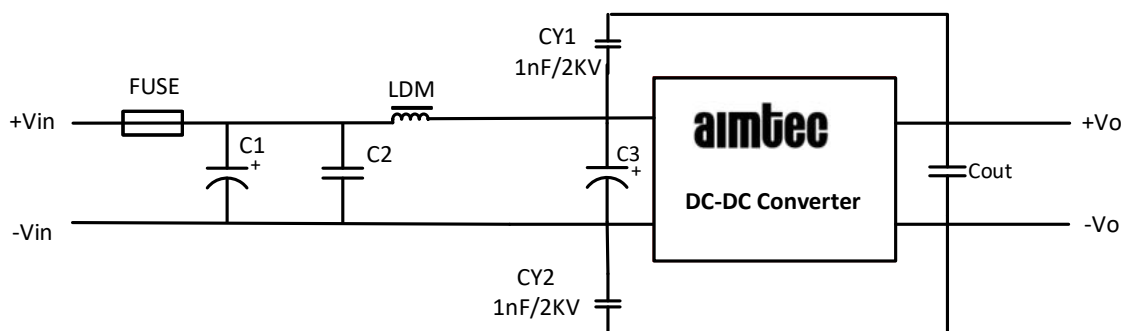


Typical Application Circuit



Vin	Cin	Vout	Cout
24Vin	100μF, 50V	3.3Vout	470μF
48Vin	100μF, 100V	5Vout	470μF
		12Vout	220μF
		15Vout	220μF
		24Vout	100μF

Recommended EMC Circuit



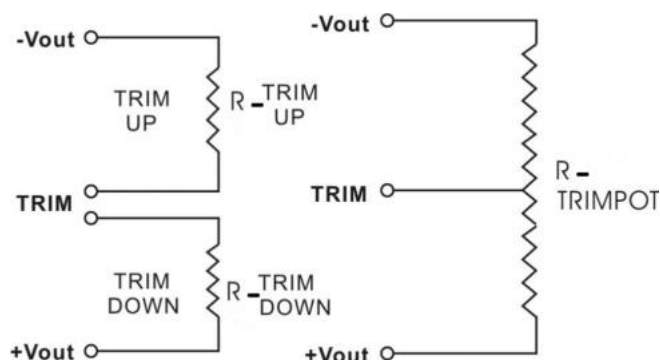
Component	24Vin	48Vin
C1	330μF, 50V	330μF, 100V
C2	1μF, 50V	4.7μF, 100V
C3	330μF, 50V	330μF, 100V
Cout	Refer to Cout in Typical Application Circuit	
LDM	4.7μH, 2.2A	

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor

Variable Potentiometer



Leave open if not used.

3.3V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.267	3.234	3.201	3.168	3.135	3.102	3.069	3.036	3.003	2.970
Rt down (KΩ)	195.198	107.438	70.997	51.044	38.453	29.785	23.453	18.625	14.822	11.749
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.333	3.366	3.399	3.432	3.465	3.498	3.531	3.564	3.597	3.630
Rt up (KΩ)	298.695	101.771	57.515	37.984	26.983	19.925	15.012	11.395	8.622	6.428

5V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.950	4.900	4.850	4.800	4.750	4.700	4.680	4.600	4.550	4.500
Rt down (KΩ)	110.182	53.582	32.644	21.738	15.047	10.524	9.100	4.798	2.871	1.323
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.060	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
Rt up (KΩ)	130.380	68.870	40.959	27.639	19.840	14.718	11.096	8.401	6.316	4.655

12V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800
Rt down (KΩ)	496.092	301.452	212.527	161.585	128.573	105.442	88.332	75.164	64.716	56.223
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200
Rt up (KΩ)	706.435	158.920	83.879	54.075	38.077	28.095	21.274	16.317	12.552	9.595

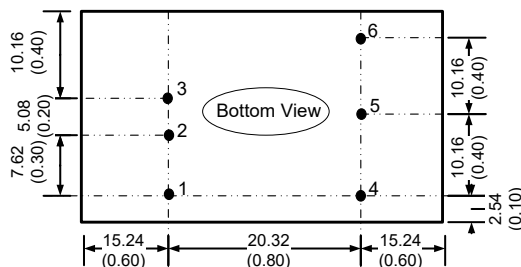
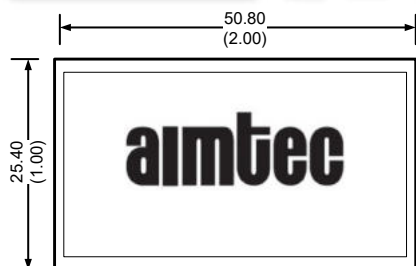
15V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500
Rt down (KΩ)	262.901	208.934	171.762	144.601	123.887	107.568	94.380	83.500	74.370	66.601
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.500
Rt up (KΩ)	--	--	--	418.986	143.221	81.746	54.675	39.441	29.674	22.878

24V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600
Rt down (KΩ)	1291.721	794.249	566.971	436.771	352.397	293.276	249.546	215.890	189.186	167.481
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.240	24.480	24.720	24.960	25.200	25.440	25.680	25.920	26.160	26.400
Rt up (KΩ)	797.750	178.809	93.978	60.286	42.201	30.917	23.206	17.602	13.346	10.003

Dimensions



Notes:
All dimensions are typical in millimeters (inches).
Pin diameter Tolerance ± 0.10 (± 0.014)
Case Tolerance ± 0.50 (± 0.02)

Pin Out Specifications

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

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