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AM80EW-LPZ



2 x 1"

The AM80EW-LPZ is an 80W 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 9-75VDC, which will benefit your new system design.

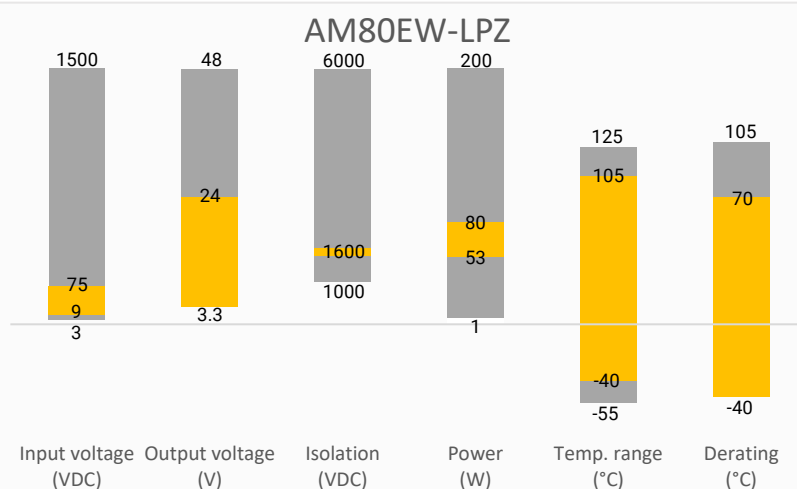
This series offers great operating temperatures, from -40°C to 105°C. Furthermore, an isolation of 1600VDC, continuous output short circuit protection (OSCP), over-current protection (OCP), over-voltage protection (OVP), and under voltage lock-out (UVLO) come standard with the series.

The AM80EW-LPZ is suitable for grid power, instrumentation, industrial controls, communication, and civil applications.

Features

- Operating Temp: -40 °C to +105 °C
- Isolation voltage: 1600VDC
- High efficiency: Up to 91% typ.
- Regulated output
- Input under voltage, output short circuit, over-current, over-voltage protection
- Standard 2 x1 package

Summary



Training



Product Training Video
(click to open)



Press Release

Coming Soon!

Application Notes

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 (A)	Maximum capacitive load (μF)	Efficiency Full Load Typ (%)
			No Load	Full Load			
AM80EW-2403SLPZ	24 (9-36)	3.3	30	2558	16	20000	88
AM80EW-2405SLPZ	24 (9-36)	5	30	3788	16	20000	90
AM80EW-2412SLPZ	24 (9-36)	12	30	3745	6.66	6000	91
AM80EW-2415SLPZ	24 (9-36)	15	30	3745	5.33	4000	91
AM80EW-2424SLPZ	24 (9-36)	24	30	3745	3.33	2000	91
AM80EW-4803SLPZ	48 (18-75)	3.3	15	1279	16	20000	88
AM80EW-4805SLPZ	48 (18-75)	5	15	1894	16	20000	90
AM80EW-4812SLPZ	48 (18-75)	12	15	1873	6.66	5000	91
AM80EW-4815SLPZ	48 (18-75)	15	15	1873	5.33	3500	91
AM80EW-4824SLPZ	48 (18-75)	24	15	1873	3.33	2000	91

Note: Add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN rail screw terminal bottom plate. Add suffix “-K” for optional heatsink, “-K-ST” for optional heatsink and screw terminal bottom plate or “-K-STD” for optional heatsink and DIN rail screw terminal bottom plate. Models with terminal bottom plates include input reverse polarity protection. Due to the input reverse polarity protection, models with “-ST”, “-STD”, “-K-ST” and “-K-STD” option have their minimum input and start-up voltage increased by 1VDC and efficiency decreased by 2%.

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Absolute maximum rating	24Vin, 1sec. max.	> -0.7	50	VDC
	48Vin, 1sec. max.	> -0.7	100	VDC
Input reflected ripple current	Nominal Vin and full load-	30	--	mA
Start-up time	Nominal Vin and constant resistive load	10	--	mS
Start-up voltage	24V input	--	9	VDC
	48V input	--	18	VDC
Input under voltage lockout	24V input	5.5-6.5	--	VDC
	48V input	12-15.5	--	VDC
On/Off control	ON	Pin open or logic high (2.7V ~ 12V)		
	OFF	Pin grounded or logic low (0V ~ 1.2V)		
Filter	π (Pi) Network			

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested isolation voltage	Input to Output, 60 sec, leakage current ≤1mA	≥ 1600	--	VDC
	Input/Output to case 60 sec, , leakage current ≤1mA	≥1000	--	VDC
Resistance I/O	500VDC	≥ 100	--	MΩ
Capacitance I/O	100KHz/0.1V	2200	--	pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage Accuracy	5~100% load	± 1	± 2	%
	0~5% load	± 2	± 5	%
Line Regulation	LL to HL at Full Load	± 0.2	± 0.5	%
Load Regulation	5~100% load	± 0.5	± 1	%
	0~5% load	± 1.5	± 3	%
Transient Recovery Time	25% load step change	250	500	μS
Transient recovery deviation	25% load step change	±5	±10	% of Vout
External Trim Adj. Range	--	--	±10	% of Vout
Ripple & Noise	20MHz Bandwidth, 5~100% load	100	--	mV pk-pk
	20MHz Bandwidth, 0~5% load	--	5	% of Vout

* Ripple and Noise are measured at 20MHz bandwidth by using a 12" twisted pair-wire terminated with a 0.1μF (M/C) and 47μF (E/C) parallel capacitor.

General Specifications

Parameters	Conditions	Minimum	Typical	Maximum	Units
Switching frequency	100% load	--	300	--	KHz
Short circuit protection	Continuous, Auto recovery				
Over current protection	--	110	140	--	% of Iout
Over voltage protection	--	110	--	160	% of Vout
Storage temperature	--	-55	--	125	°C
Operating temperature	See derating curve	-40	--	105	°C
Soldering temperature	1.5mm from case for 10 sec	--	--	300	°C
Temperature coefficient	100% Load	--	--	± 0.03	%/°C
Humidity	None condensing	5	--	95	% RH
Vibration	IEC/EN61373, category 1/grade B				
Cooling	Free air convection				
Case material	Aluminum alloy				
MTBF	≥ 1 000 000 hrs (MIL-HDBK -217F, t=+25°C)				
Weight	PCB mountable models	--	25	--	g
	with optional heatsink	--	39	--	g
	with optional -ST mounting plate	--	45	--	g
	with optional -STD mounting plate	--	65	--	g
	with optional heatsink and -ST mounting plate	--	59	--	g
	with optional heatsink and -STD mounting plate	--	79	--	g
Dimensions (L x W x H)	PCB mountable models	2.00 x 1.00 x 0.47 inches (50.8 x 25.4 x 11.8 mm)			
	with optional heatsink	2.00 x 1.00 x 0.73 inches (50.8 x 25.4 x 18.6 mm)			
	with optional -ST mounting plate	2.99 x 1.24 x 0.84 inches (76.0 x 31.5 x 21.2 mm)			
	with optional -STD mounting plate	2.99 x 1.24 x 1.02 inches (76.0 x 31.5 x 25.8 mm)			
	with optional heatsink and -ST mounting plate	2.99 x 1.24 x 1.08 inches (76.0 x 31.5 x 27.4 mm)			
	with optional heatsink and -STD mounting plate	2.99 x 1.24 x 1.26 inches (76.0 x 31.5 x 32.0 mm)			

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

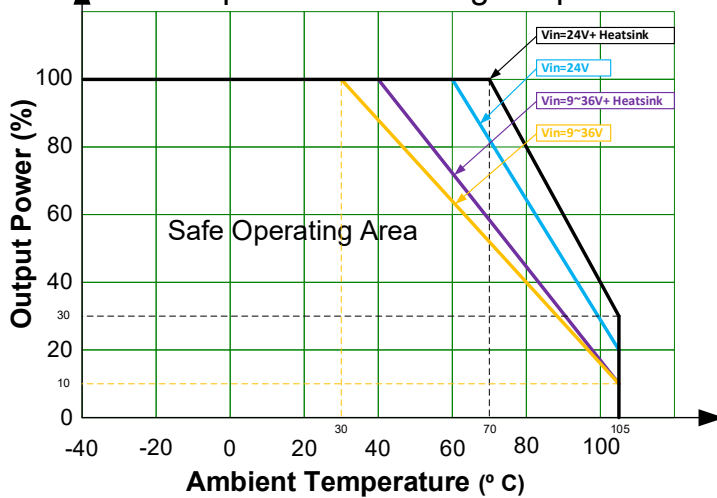
Standards	Information technology Equipment	Designed to meet IEC/EN/UL 62368-1
	EMC - Conducted and radiated emission	CISPR32/EN55032, Class B with the recommended EMC circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2, Contact $\pm 6\text{KV}$, Criteria B
	RF, Electromagnetic Field Immunity	IEC/EN 61000-4-3, 10V/m , Criteria A
	Electrical Fast Transient/Burst Immunity	IEC/EN 61000-4-4, $\pm 2\text{KV}$, Criteria B with the recommended EMC circuit
	Surge Immunity	IEC/EN 61000-4-5, L-L $\pm 2\text{KV}$, Criteria B with the recommended EMC circuit
	RF, Electromagnetic Field Immunity	IEC/EN 61000-4-6, 10Vrms , Criteria A

Derating



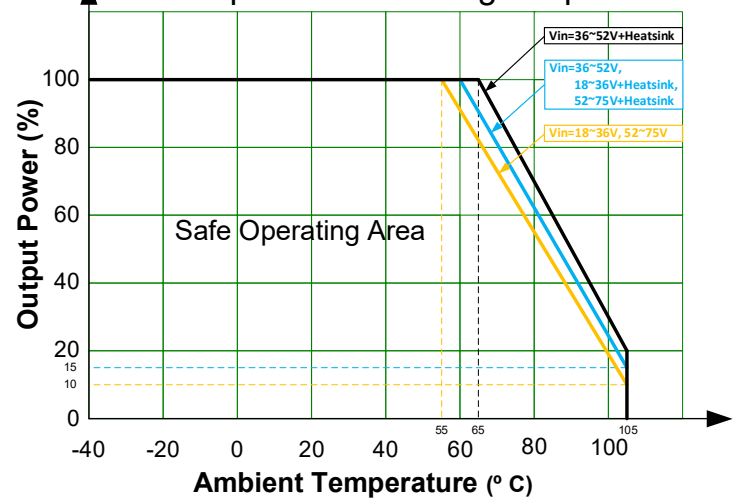
24Vin models

Temperature Derating Graph



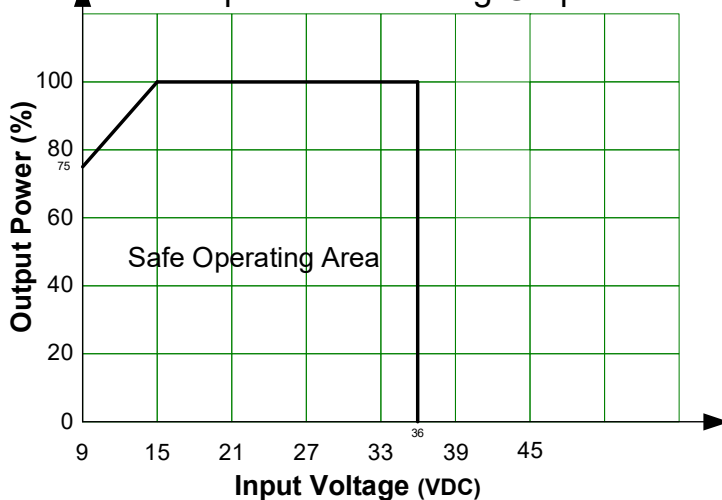
48Vin models

Temperature Derating Graph



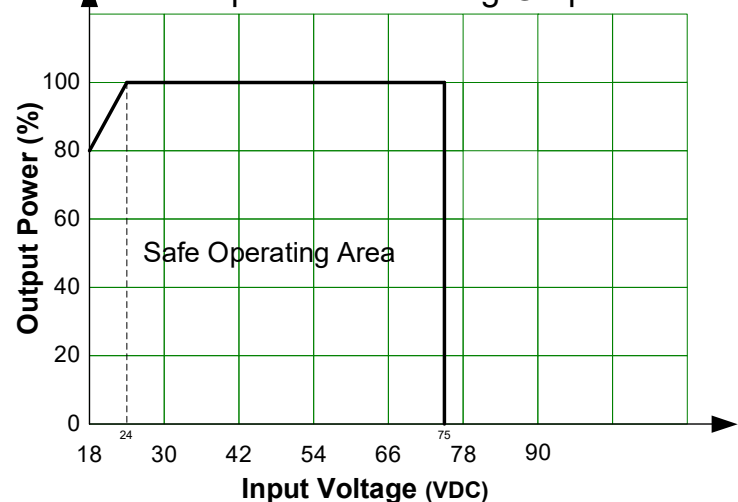
Vin=24V

Temperature Derating Graph

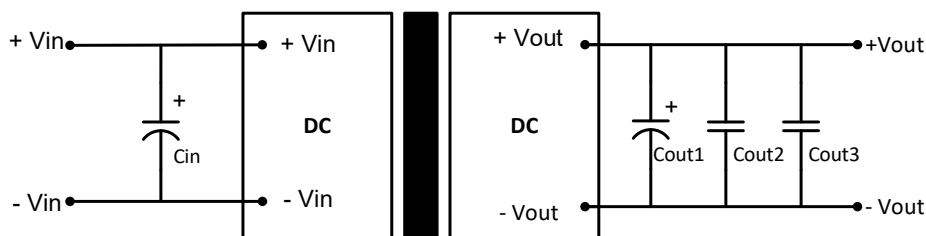


Vin=48V

Temperature Derating Graph

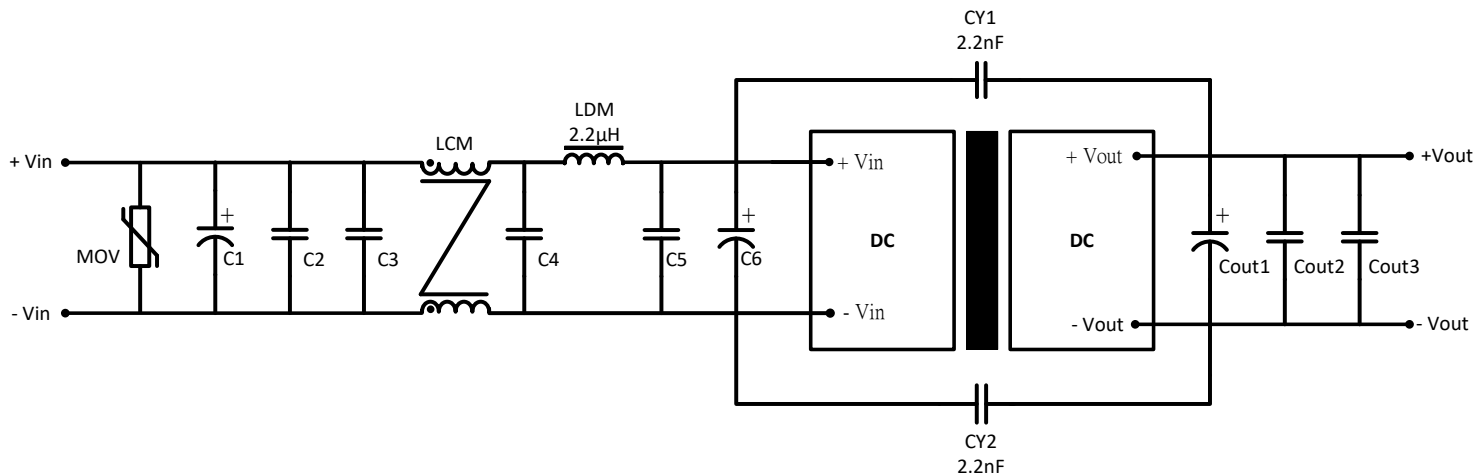


Typical Application Circuit



Vout	Cin	Cout1	Cout2	Cout3
3.3VDC	100μF, 100V	330μF, 16V	1μF, 16V	10μF, 16V
5VDC	100μF, 100V	330μF, 16V	1μF, 16V	10μF, 16V
12VDC	100μF, 100V	330μF, 16V	1μF, 25V	10μF, 25V
15VDC	100μF, 100V	100μF, 35V	1μF, 25V	10μF, 25V
24VDC	100μF, 100V	100μF, 35V	1μF, 50V	10μF, 50V

Recommended EMC Circuit



Component	24Vin	48Vin
MOV	14D470K	--
C1	680μF, 50V	1000μF, 100V
C2, C3	4.7μF, 50V	4.7μF, 100V
C4, C5	10μF, 50V	22μF, 100V
C6	330μF, 50V	470μF, 100V
LCM	2.2mH	10mH

For output component spec please refer to Typical Application Circuit.

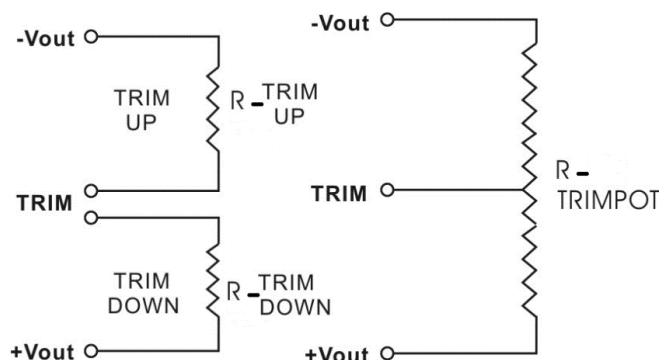
Trimming



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)	1121.642	378.474	220.234	151.369	112.834	88.207	71.111	58.549	48.928	41.324
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)	243.933	139.191	95.012	70.649	55.211	44.554	36.755	30.799	26.103	22.305

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	4.650	4.600	4.550	4.500
Rt down (KΩ)	39.966	22.440	13.270	7.631	3.813	1.056	--	--	--	--
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.050	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
Rt up (KΩ)	--	135.361	52.843	29.152	17.912	11.350	7.048	4.011	1.752	0.006

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)	525.855	272.916	179.060	130.111	100.061	79.736	65.073	53.995	45.330	38.368
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)	190.983	76.518	43.233	27.375	18.096	12.007	7.703	4.500	2.023	0.050

15V Output

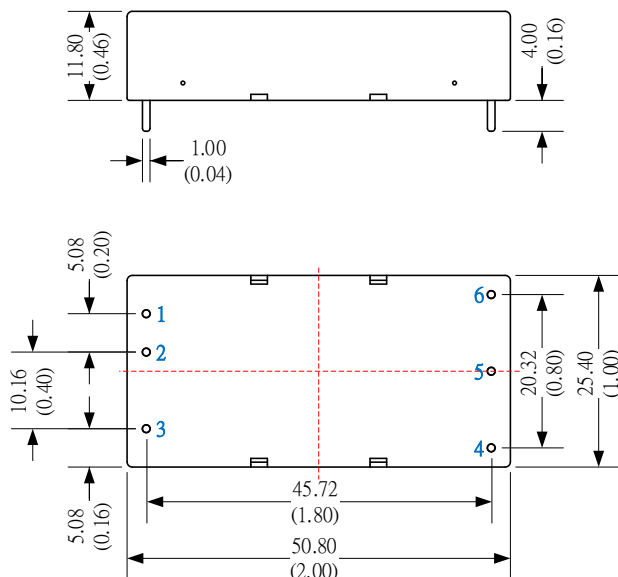
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500
Rt down (KΩ)	675.367	382.496	260.958	194.429	152.455	123.560	102.455	86.363	73.689	63.447
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.500
Rt up (KΩ)	323.076	105.467	56.466	34.831	22.640	14.818	9.373	5.365	2.291	--

24V Output

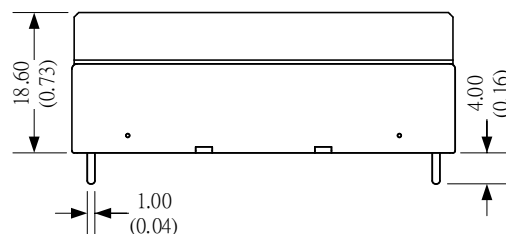
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600
Rt down (KΩ)	635.592	358.741	246.163	185.102	146.779	120.487	101.330	86.750	75.282	66.025
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.240	24.480	24.720	24.960	25.200	25.440	25.680	25.920	26.160	26.400
Rt up (KΩ)	154.790	53.216	28.902	17.987	11.787	7.790	4.999	2.939	1.357	0.104

Dimensions

No suffix



Suffix "-K" for optional heatsink



Pin Out Specifications

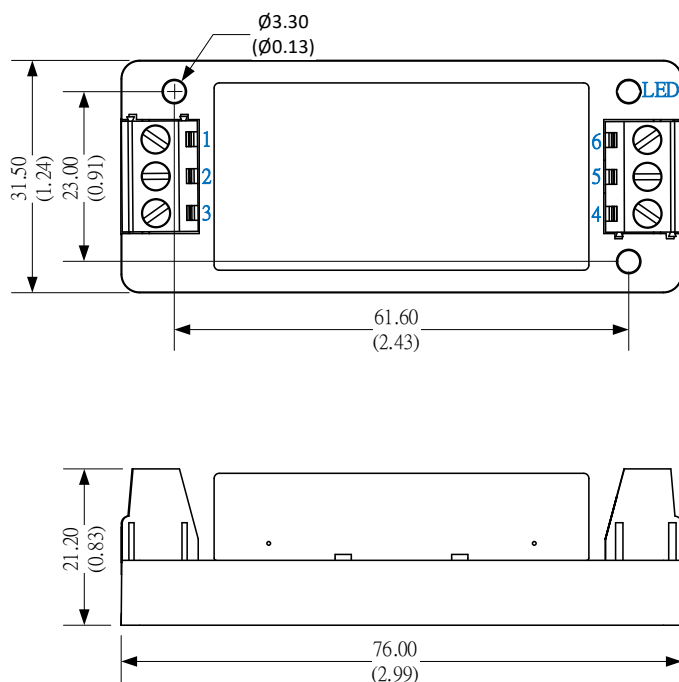
Pin	Single
1	+Vin
2	-Vin
3	On/off control
4	Trim
5	-Vout
6	+Vout

Notes:

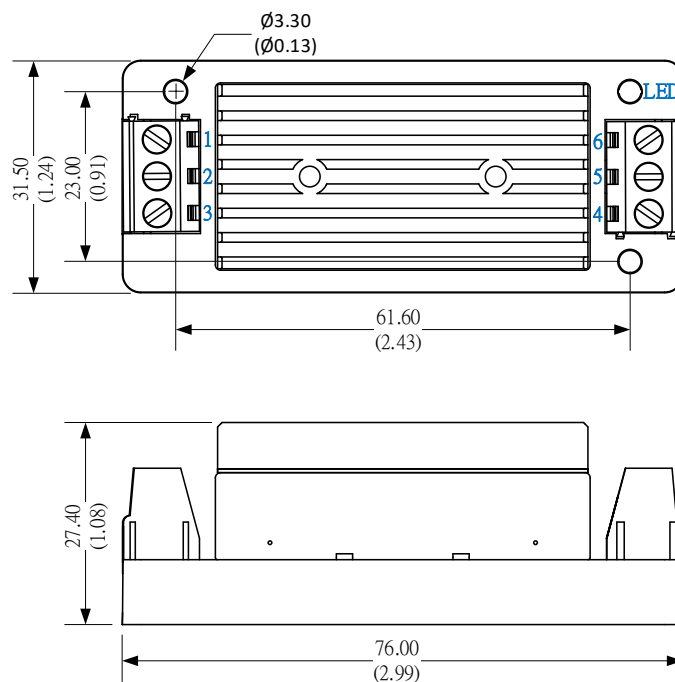
All dimensions are typical in millimeters (inches)
Pin diameter Tolerance ± 0.10 (± 0.004)
Case Tolerance ± 0.50 (± 0.02)

Dimension for models with -ST

Suffix "-ST" for optional chassis



Suffix "-K-ST" for optional heatsink and chassis

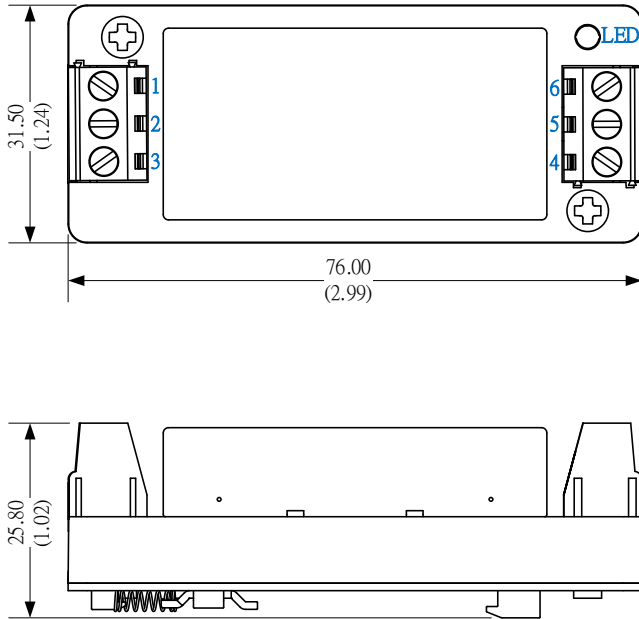


Unit: mm(inch)
General tolerance: $\pm 1.00(\pm 0.04)$
Tightening torque: 0.4 Nm Max.
Wire gauge : 12~24 AWG

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

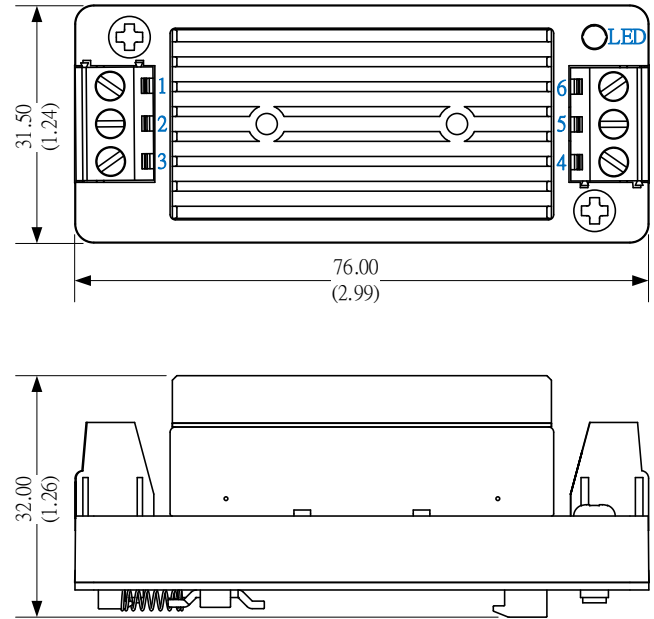
Dimension for models with -STD

Suffix "-STD" for optional DIN rail



Unit: mm(inch)
General tolerance: $\pm 1.00(\pm 0.04)$
Tightening torque: 0.4 Nm Max.
Wire gauge : 12~24 AWG

Suffix "-K-STD" for optional heatsink and DIN rail



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

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