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AM15CW-LPZ

1” x 1”

The AM15CW-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 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 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 AM15CW-LPZ is suitable for distributed power supply systems, industrial controls, power grid, instruments and communications applications.

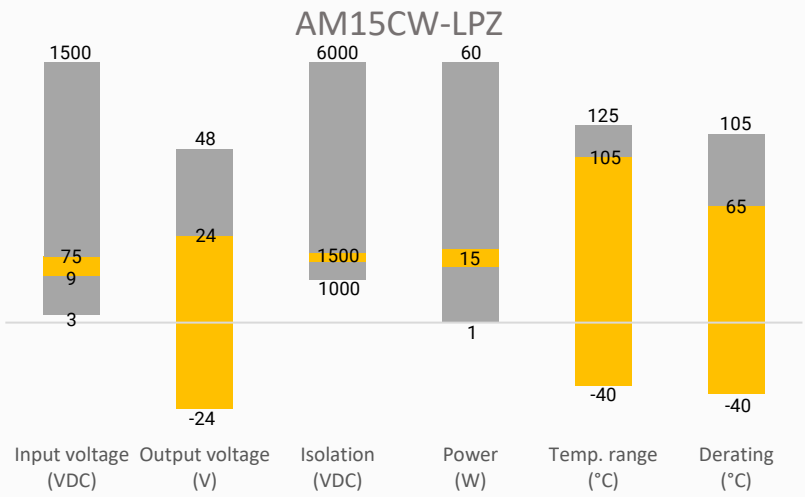
Features

- Operating Temp: -40 °C to +105 °C
- High isolation voltage: 1500VDC
- Low ripple & noise, 80mV (p-p), typ.
- Regulated Output
- 1” x 1” package
- Output short circuit, over-current, over-voltage, input under voltage protection

RoHS

3yr Warranty

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)	Input Current (mA TYP.)		Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency Full Load Typ. (%)
			No Load	Full Load			
AM15CW-2403SLPZ	24 (9-36)	3.3	5-20	632	4000	4700	87
AM15CW-2405SLPZ	24 (9-36)	5	5-20	702	3000	4700	89
AM15CW-2406SLPZ	24 (9-36)	6	5-20	702	2500	3600	89
AM15CW-2409SLPZ	24 (9-36)	9	5-20	694	1667	1600	90
AM15CW-2412SLPZ	24 (9-36)	12	5-20	694	1250	1000	90
AM15CW-2415SLPZ	24 (9-36)	15	5-20	694	1000	820	90
AM15CW-2418SLPZ	24 (9-36)	18	5-20	694	833	560	90
AM15CW-2424SLPZ	24 (9-36)	24	5-20	694	625	270	90
AM15CW-4803SLPZ	48 (18-75)	3.3	5-20	316	4000	4700	87
AM15CW-4805SLPZ	48 (18-75)	5	5-20	351	3000	4700	89
AM15CW-4806SLPZ	48 (18-75)	6	5-20	351	2500	3600	89
AM15CW-4809SLPZ	48 (18-75)	9	5-20	347	1667	1600	90
AM15CW-4812SLPZ	48 (18-75)	12	5-20	347	1250	1000	90
AM15CW-4815SLPZ	48 (18-75)	15	5-20	347	1000	820	90
AM15CW-4818SLPZ	48 (18-75)	18	5-20	347	833	560	90
AM15CW-4824SLPZ	48 (18-75)	24	5-20	347	625	270	90

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%.

Dual Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA TYP.)		Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency (%) Full Load Typ.
			No Load	Full Load			
AM15CW-2405DLPZ	24 (9-36)	± 5	5-20	702	± 1500	± 1500	87
AM15CW-2412DLPZ	24 (9-36)	± 12	5-20	694	± 625	± 470	90
AM15CW-2415DLPZ	24 (9-36)	± 15	5-20	694	± 500	± 330	90
AM15CW-2424DLPZ	24 (9-36)	± 24	5-20	694	± 312	± 200	89
AM15CW-4805DLPZ	48 (18-75)	± 5	5-20	351	± 1500	± 1500	86
AM15CW-4812DLPZ	48 (18-75)	± 12	5-20	347	± 625	± 470	89
AM15CW-4815DLPZ	48 (18-75)	± 15	5-20	347	± 500	± 330	89
AM15CW-4824DLPZ	48 (18-75)	± 24	5-20	347	± 312	± 200	90

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
Voltage Types	--	--	4:1	--
Filter	Pi Filter			
Startup time	--	10	--	mS
Startup input voltage	24Vin models	--	9	VDC
	48Vin models	--	18	VDC
Input under-voltage lockout	24Vin models	≥ 5.5	6.5	VDC
	48Vin models	≥ 12	15.5	VDC
Absolute maximum rating	24Vin models, 1 sec.	≥ -0.7	50	VDC
	48Vin models, 1 sec.	≥ -0.7	100	VDC
Input reflected current	--	30	--	mA
On/Off control	ON - open or pulled high (2.7- 12 VDC) OFF - pulled low to GND (0 - 1.2 VDC)			

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Full load, Positive output, Vin (nom.)	± 1	± 3	%
	Full load, Negative output, Vin (nom.)	± 3	± 5	%
Line regulation	Full load, Positive output	± 0.2	± 0.5	%
	Full load, Negative output	± 0.5	± 1	%
Load regulation	5-100% load, Positive output	± 0.5	± 1	%
	5-100% load, Negative output	± 0.5	± 1.5	%
Cross Regulation	Dual output models, 50% load on 1st output and 10~100% load on 2nd output	--	± 5	%
Transient recovery time	25% load step change	300	500	µS
Transient recovery deviation	25% load step change	± 5	± 8	% Vout
External Trim Adj. Range	--	--	± 10	%
Ripple & Noise	20MHz bandwidth, 5-100% load	80	120	mV pk-pk
	< 5% load	--	5	% Vout

* Ripple and Noise are measured at 20MHz bandwidth with a 47µF electrolytic capacitor and a 0.1µF ceramic capacitor. Please refer to the application note for specific details.

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested isolation voltage	Input / output 60 sec, leakage ≤ 1mA	≥ 1500	--	VDC
	Input or output to Case, 60 sec, leakage ≤ 1mA	≥ 1000	--	VDC
Resistance	500VDC	≥ 1000	--	MΩ
Capacitance	Input to output, 100KHz/0.1V	2000	--	pF

General Specifications

Parameters	Conditions	Minimum	Typical	Maximum	Units
Switching frequency	100% load	--	300	--	KHz
Over Current protection	Input voltage range	110	140	--	% Iout

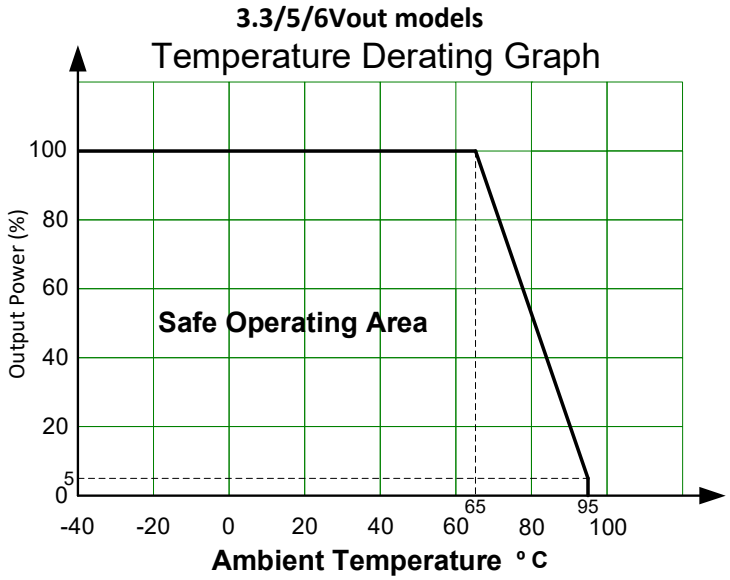
Over voltage protection	Input voltage range	110	--	160	% Vout
Short Circuit Protection	Continuous, Auto recovery				
Operating temperature	With derating, 3.3/5/6V output	-40	--	95	°C
	With derating, Others	-40	--	105	°C
Storage temperature	--	-55	--	125	°C
Temperature coefficient	100% Load	--	--	± 0.03	%/ °C
Cooling	Free air convection				
Humidity	Non-condensing	5	--	95	% RH
Soldering temperature	1.5mm from case for 10 sec	--	--	+300	°C
Case material	Aluminum alloy				
Weight	PCB mountable models	--	13	--	g
	Optional heatsink	--	19	--	g
	Optional -ST mounting plate	--	33	--	g
	Optional heatsink and -ST mounting plate	--	39	--	g
	Optional -STD mounting plate	--	53	--	g
	Optional heatsink and -STD mounting plate	--	58	--	g
Dimensions (L x W x H)	PCB mountable models	1.00 x 1.00 x 0.47 inches (25.40 × 25.40 × 12.00 mm)			
	Optional heatsink	1.00 x 1.00 x 0.73 inches (25.40 × 25.40 × 18.60 mm)			
	Optional -ST mounting plate	2.99 x 1.24 x 0.83 inches (76.00 × 31.50 × 21.20 mm)			
	Optional heatsink and -ST mounting plate	2.99 x 1.24 x 1.08 inches (76.00 × 31.50 × 27.40 mm)			
	Optional -STD mounting plate	2.99 x 1.24 x 1.02 inches (76.00 × 31.50 × 25.80 mm)			
	Optional heatsink and -STD mounting plate	2.99 x 1.24 x 1.26 inches (76.00 × 31.50 × 32.00 mm)			
MTBF	> 1 000 000 hrs (MIL-HDBK -217F, t=+25°C)				

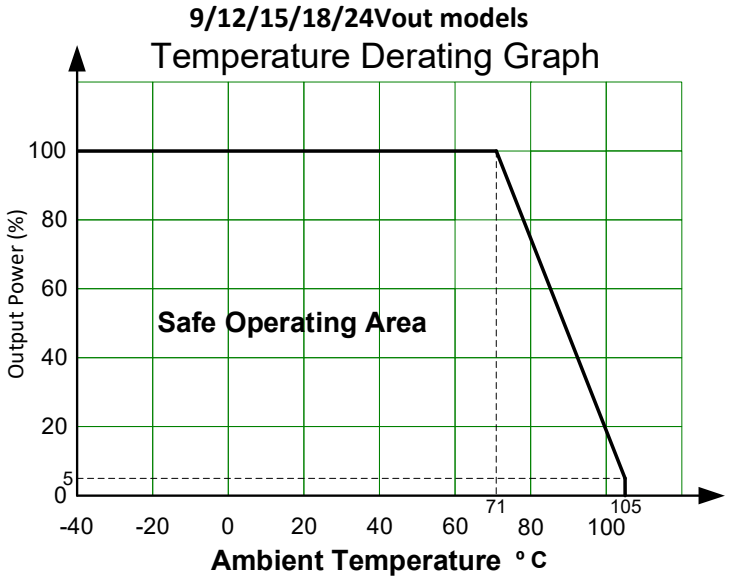
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications

Parameters		
Standards	Information technology Equipment	Designed to meet EN/IEC/UL 62368-1
	EMI - Conducted and radiated emission	CISPR32/EN55032, Class B with the recommended EMC circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2, Contact ±6kV, Air ±8kV, 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, ±2KV, Criteria B with the recommended EMC circuit
	Surge Immunity	IEC/EN 61000-4-5, L-L ±2KV, Criteria B with the recommended EMC circuit
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6, 3Vrms, Criteria A
	Vibration	IEC/EN61373, category 1/grade B

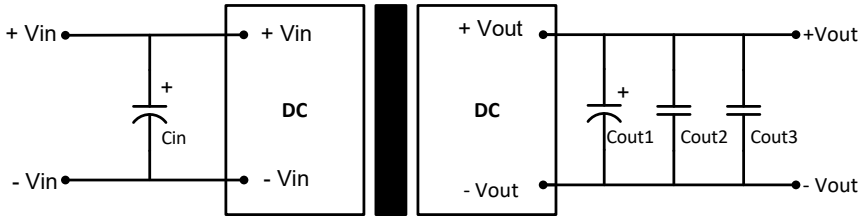
Derating



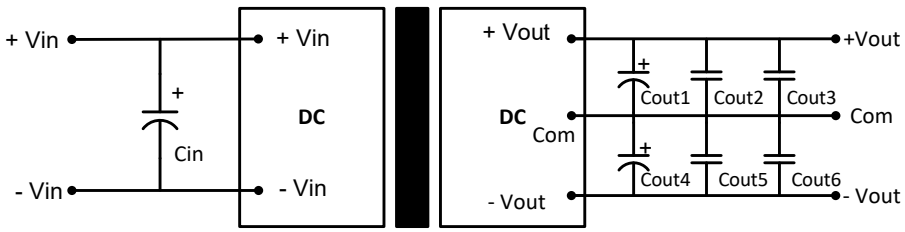


Typical Application Circuit

Single output models



Dual output models

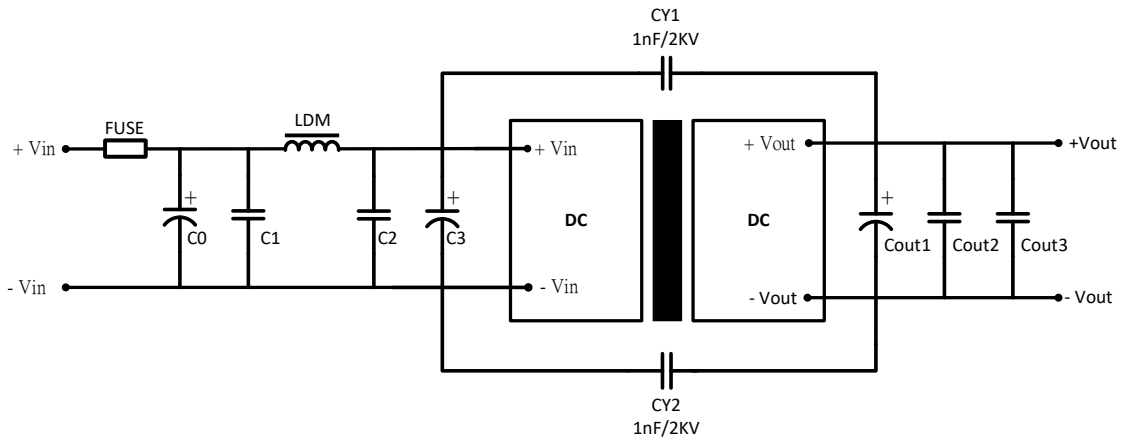


Vout	Cin	Cout1 / Cout4	Cout2 / Cout5	Cout3 / Cout6
3.3, 5, 6VDC	100µF,100V	100µF,16V	10µF,50V	0.1µF,16V
9, 12, 15VDC	100µF,100V	100µF,25V	10µF,50V	0.1µF,25V
18, 24VDC	100µF,100V	47µF,50V	10µF,50V	0.1µF,50V

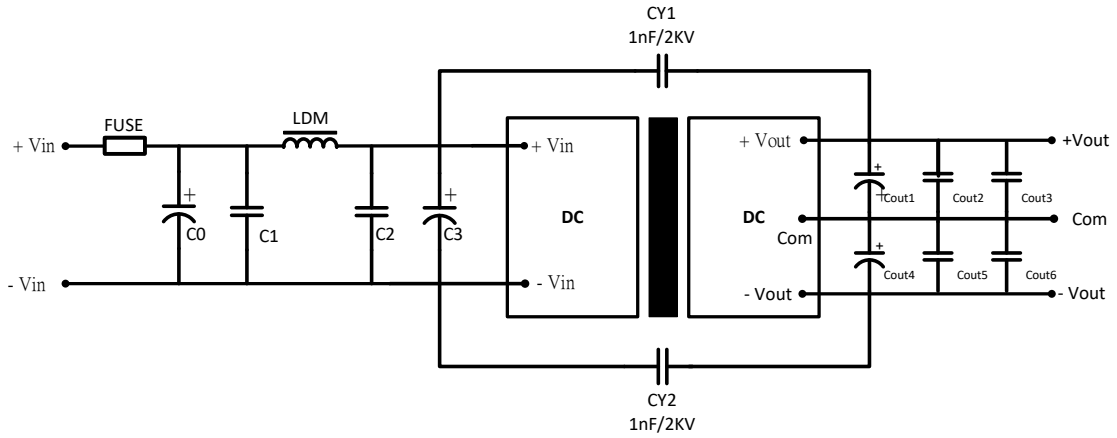
The recommended output capacitor values apply to both single-output and dual-output models.

EMC Application Circuit

Single output models



Dual output models



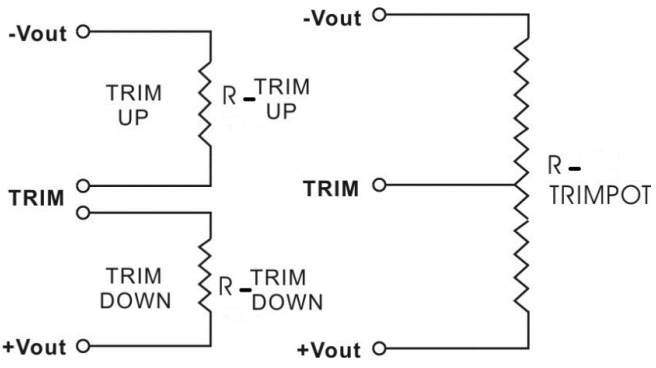
Component	24Vin	48Vin
C0, C3	330μF, 50V	330μF, 100V
C1, C2	4.7μF, 50V	4.7μF, 100V
LDM	10μH, 4A	10μH, 2A
Cout1-6	Refer to Cout in Typical Application Circuit	

The choice of fuse should be based on application requirements.
Input component specifications apply to both single-output and dual-output models.

Trimming

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

Fixed Resistor **Variable Potentiometer**



S

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

6V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.940	5.880	5.820	5.760	5.700	5.640	5.580	5.520	5.460	5.400
Rt down (KΩ)	230.981	154.842	113.759	88.051	70.448	57.639	47.900	40.245	34.071	28.985
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	6.060	6.120	6.180	6.240	6.300	6.360	6.420	6.480	6.540	6.600
Rt up (KΩ)	--	621.475	237.978	143.251	100.344	75.867	60.045	48.978	40.801	34.514

9V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	8.910	8.820	8.730	8.640	8.550	8.460	8.370	8.280	8.190	8.100
Rt down (KΩ)	688.959	363.942	241.424	177.109	137.483	110.619	91.206	76.523	65.028	55.785
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	9.090	9.180	9.270	9.360	9.450	9.540	9.630	9.720	9.810	9.900
Rt up (KΩ)	404.624	168.879	102.131	70.606	52.244	40.225	31.746	25.444	20.576	16.703

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	--

18V Output

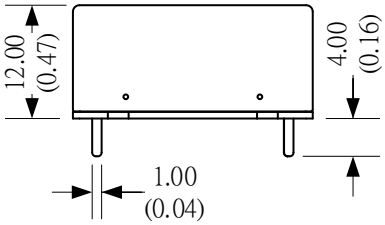
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	17.820	17.640	17.460	17.280	17.100	16.920	16.740	16.560	16.380	16.200
Rt down (KΩ)	1882.798	943.782	617.287	451.386	350.981	283.679	235.427	199.139	170.856	148.193
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	18.180	18.360	18.540	18.720	18.900	19.080	19.260	19.440	19.620	19.800
Rt up (KΩ)	323.639	139.086	80.338	51.458	34.284	22.899	14.798	8.739	4.036	0.280

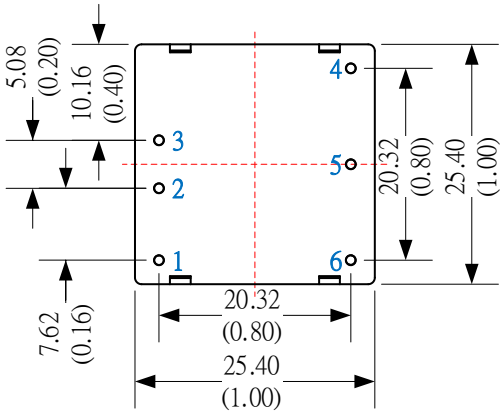
24V Output

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

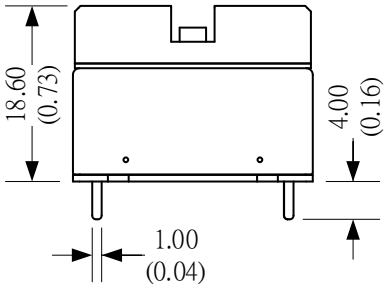
Dimensions

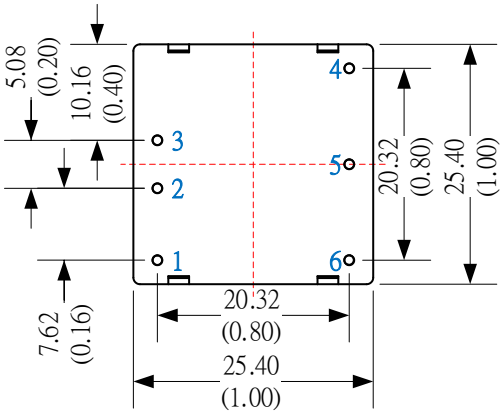
No suffix

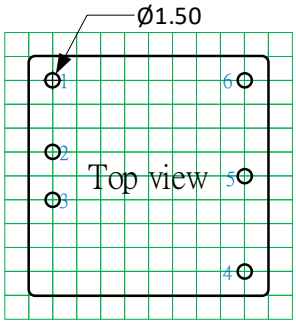




Suffix "-K" for optional heatsink







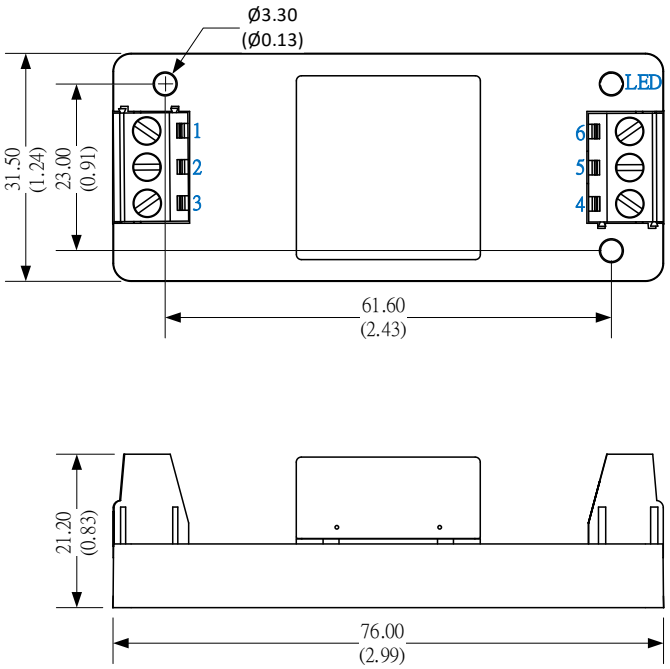
Grid size: 2.54 x 2.54 mm

Notes:
All dimensions unit : millimeters (inches)
Pin diameter Tolerance ±0.10 (±0.004)
General Tolerance ±0.50 (±0.02)

Pin Out Specifications		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-V Input	-V Input
3	+V Input	+V Input
4	+V Output	+V Output
5	Trim	Com
6	-V Output	-V Output

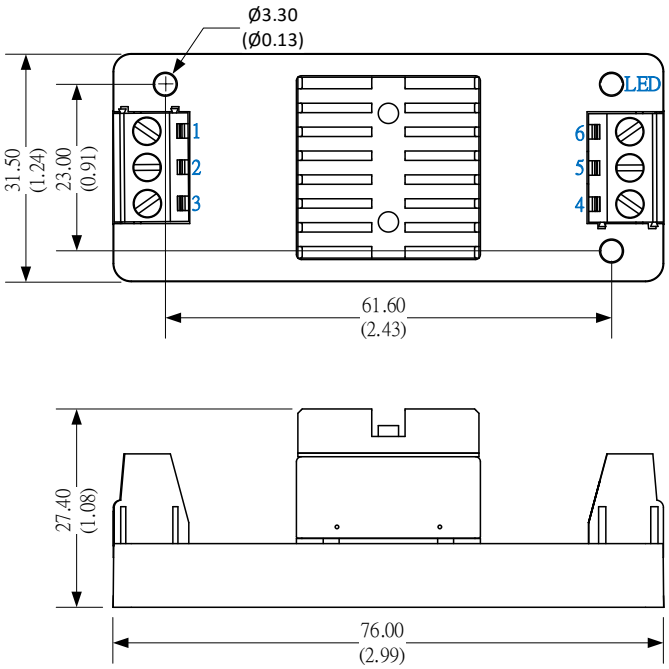
Dimension for models with -ST

Suffix "-ST" for optional chassis



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

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

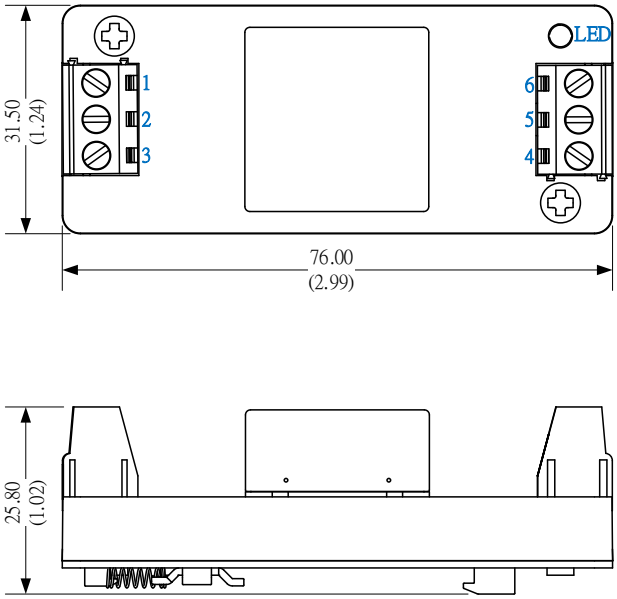


Unit: mm(inch)
General tolerance: ±1.00(±0.04)
Tightening torque: 0.4 Nm Max.
Wire gauge : 12~24 AWG

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

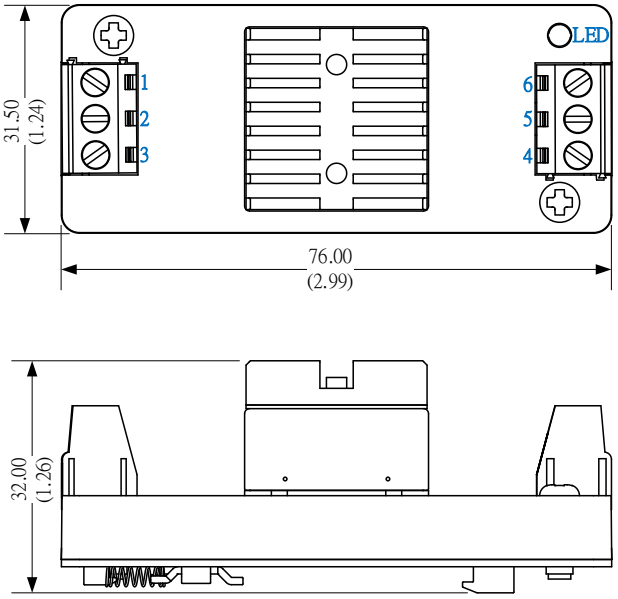
Dimension for models with -STD

Suffix "-STD" for optional DIN rail



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

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



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

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

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.