



**FEATURES:**

- Efficiency up to 90%
- Wide 2:1 Input range
- No-load consumption  $\leq 0.15W$
- Over Current protection
- Continuous Short Circuit protection
- On/Off Remote Control
- Over Voltage Protection
- I/O Isolation 1500VDC
- Operating Temperature:  $-40^{\circ}C$  to  $+85^{\circ}C$
- Output Voltage adjustment



**Models**  
**Single output**

Model	Input Voltage (V)	Max Input Current Full/No load (mA)	Output Voltage (V)	Output Current max (A)	Isolation (VDC)	Max Capacitive Load ( $\mu F$ )	Efficiency (%)
AM20E-2403S-NZ	18-36	818/45	3.3	5	1500	10000	86
AM20E-2405S-NZ	18-36	993/45	5	4	1500	10000	90
AM20E-2409S-NZ	18-36	969/10	9	2.222	1500	4700	89
AM20E-2412S-NZ	18-36	969/10	12	1.667	1500	1600	89
AM20E-2415S-NZ	18-36	969/10	15	1.333	1500	1000	90
AM20E-2424S-NZ	18-36	969/10	24	0.834	1500	500	90
AM20E-4803S-NZ	36-75	409/25	3.3	5	1500	10000	86
AM20E-4805S-NZ	36-75	497/25	5	4	1500	10000	90
AM20E-4809S-NZ	36-75	485/9	9	2.222	1500	4700	89
AM20E-4812S-NZ	36-75	485/9	12	1.667	1500	1600	89
AM20E-4815S-NZ	36-75	485/9	15	1.333	1500	1000	90
AM20E-4824S-NZ	36-75	485/9	24	0.834	1500	500	90

**Models**  
**Dual output**

Model	Input Voltage (V)	Max Input Current Full/No load (mA)	Output Voltage (V)	Output Current max (A)	Isolation (VDC)	Max Capacitive Load ( $\mu F$ )	Efficiency (%)
AM20E-2405D-NZ	18-36	993/45	$\pm 5$	$\pm 2$	1500	$\pm 4800$	86
AM20E-2409D-NZ	18-36	969/10	$\pm 9$	$\pm 1.111$	1500	$\pm 1000$	88
AM20E-2412D-NZ	18-36	969/10	$\pm 12$	$\pm 0.834$	1500	$\pm 800$	88
AM20E-2415D-NZ	18-36	969/10	$\pm 15$	$\pm 0.667$	1500	$\pm 625$	88
AM20E-4805D-NZ	36-75	497/25	$\pm 5$	$\pm 2$	1500	$\pm 4800$	86
AM20E-4812D-NZ	36-75	485/9	$\pm 12$	$\pm 0.834$	1500	$\pm 800$	88
AM20E-4815D-NZ	36-75	485/9	$\pm 15$	$\pm 0.667$	1500	$\pm 625$	89

\*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.

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

**Input Specifications**

Parameters	Nominal	Typical	Maximum	Units
Voltage range	24 48	18-36 36-75		VDC
Filter	$\pi$ (Pi) Network			
Startup time		10		ms
Absolute Maximum Rating	24 48		-0.7-50 -0.7-100	VDC
Peak Input Voltage time			1	s
On/Off control	ON – open or 3.5-12VDC; OFF – short to -Vin or 0-1.2VDC			
Input reflected current		30		mA

## Isolation Specifications

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, 1mA	1500		VDC
Resistance	500VDC Isolation	>1000		MOhm
Capacitance	1500VDC models 100KHz/0.1V, AM20E-2424S-NZ	2050		pF
	1500VDC models 100KHz/0.1V, Others	1050		

## Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	5% to 100% load	±1	±3	%
Cross regulation	50% 1 <sup>st</sup> load, 10-100% 2 <sup>nd</sup> load		±5	%
Line voltage regulation (single)	Full load, LL-HL	±0.2	±0.5	% of Vin
Line voltage regulation (dual)	Full load, LL-HL	±0.5	±1	% of Vin
Load voltage regulation (single)	5% to 100% load	±0.5	±1	%
Load voltage regulation (dual)	5% to 100% load	±0.5	±1.5	%
Over voltage protection	Zener Diode Clamp	110	160	% of Vo
Over current protection		110	190	% of Io
Short Circuit protection	Continuous, hiccup, auto-recovery			
Temperature coefficient			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth, 5% to 100% load		100	mV p-p
Voltage adjustment range			±10	%
Transient recovery time	25% load step change	300	500	µS
Transient recovery deviation	25% load step change: 3.3, 5, ±5Vout	±5	±8	%
	25% load step change: others	±3	±5	

## General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	270		KHz
Operating temperature	See derating curve	-40 to +85		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			105	°C
Cooling		Free air convection		
Humidity			95	% RH
Case material		Aluminum Alloy		
Dimensions (L x W x H)	Pin mountable	2.00 x 1.00 x 0.46 inches	50.80 x 25.40 x 11.80 mm	
	With optional -ST mounting plate:	2.02 x 1.03 x 0.65 inches	51.40 x 26.20 x 16.50 mm	
	With optional -STD mounting plate:	2.99 x 1.24 x 0.84 inches	76.00 x 31.50 x 21.20 mm	
	With optional -K Pin mountable	2.99 x 1.24 x 1.00 inches	76.00 x 31.50 x 25.30 mm	
	With optional -ST-K mounting plate:	2.99 x 1.24 x 1.02 inches	76.00 x 31.50 x 25.80 mm	
	With optional -STD-K mounting plate:	2.99 x 1.24 x 1.18 inches	76.00 x 31.50 x 29.90 mm	
Weight	Pin mountable	26		g
	With optional -ST mounting plate:	48		
	With optional -STD mounting plate:	68		
	With optional -K Pin mountable	34		
	With optional -ST-K mounting plate:	56		
	With optional -STD-K mounting plate:	76		
MTBF	>1,000,000 hours (MIL-HDBK -217F, Ground Benign, t=+25°C)			
Manual soldering temperature	1.5mm from case for 10 sec		300	°C

## Environment Specification

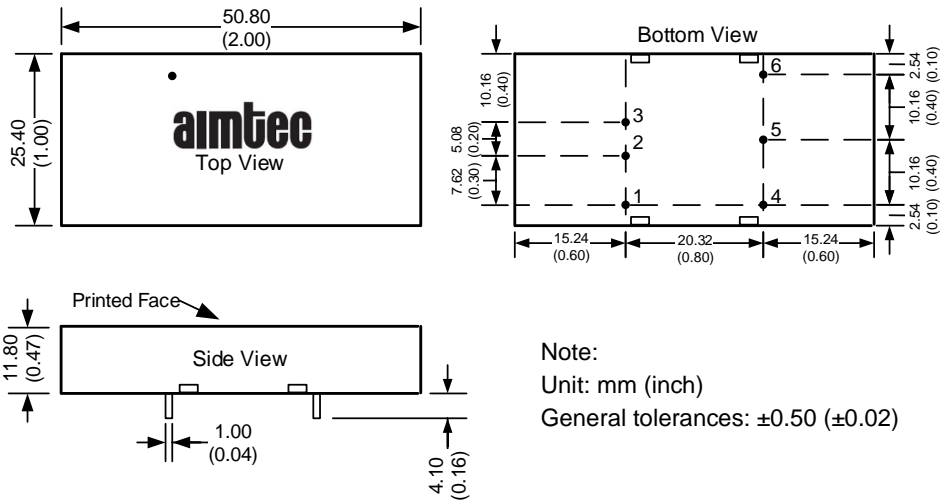
Test	Parameters	Conditions
Vibration	Test mode	10-55Hz
	Acceleration	10g, 30min, every axis tested

## Safety Specifications

### Parameters

Standards	IEC/UL 60950-1 EN 55032, Class A, Class B with external filter & EN 55024: 2010 IEC 61000-4-2, Contact $\pm 4\text{KV}$ , Criteria A IEC 61000-4-3, 10V/m, Criteria A IEC 61000-4-4, $\pm 1\text{KV}$ , $\pm 2\text{KV}$ with external filter, Criteria A IEC 61000-4-5, $\pm 1\text{KV}$ , $\pm 2\text{KV}$ with external filter, Criteria A IEC 61000-4-6, 10 Vrms, Criteria A IEC 61000-4-29, 0-70%, Criteria B
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## Dimensions metal case

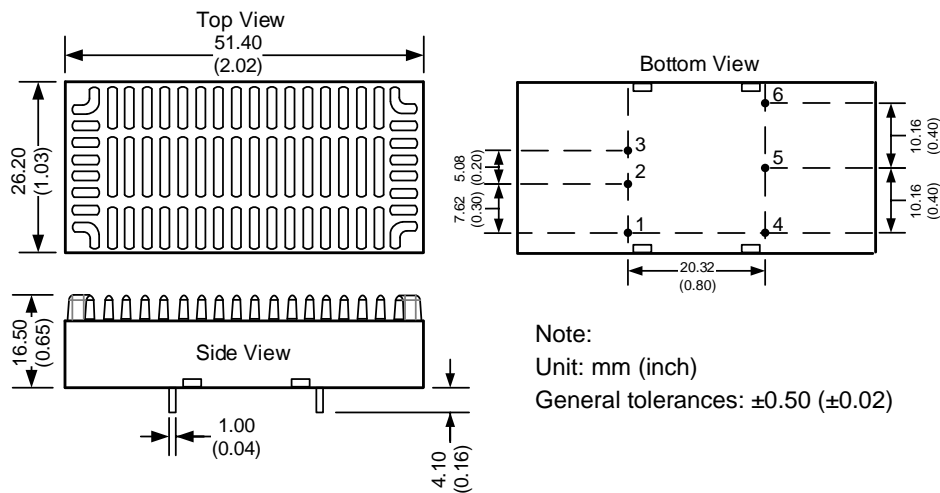


Note:  
Unit: mm (inch)  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

## Pin Out Specifications

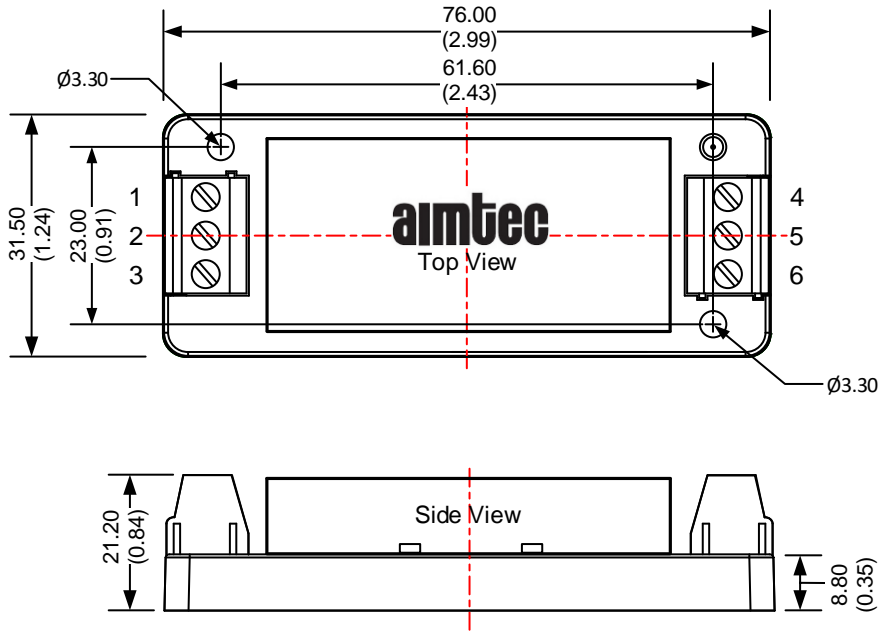
Pin	Single	Dual
1	On/Off Control	On/Off Control
2	-Vin	-Vin
3	+Vin	+Vin
4	-Vout	-Vout
5	Trim	Common
6	+Vout	+Vout

## Heatsink Option: AM20E-NZ-K



Note:  
Unit: mm (inch)  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

**Screw Terminal Option: AM20E-NZ-ST**

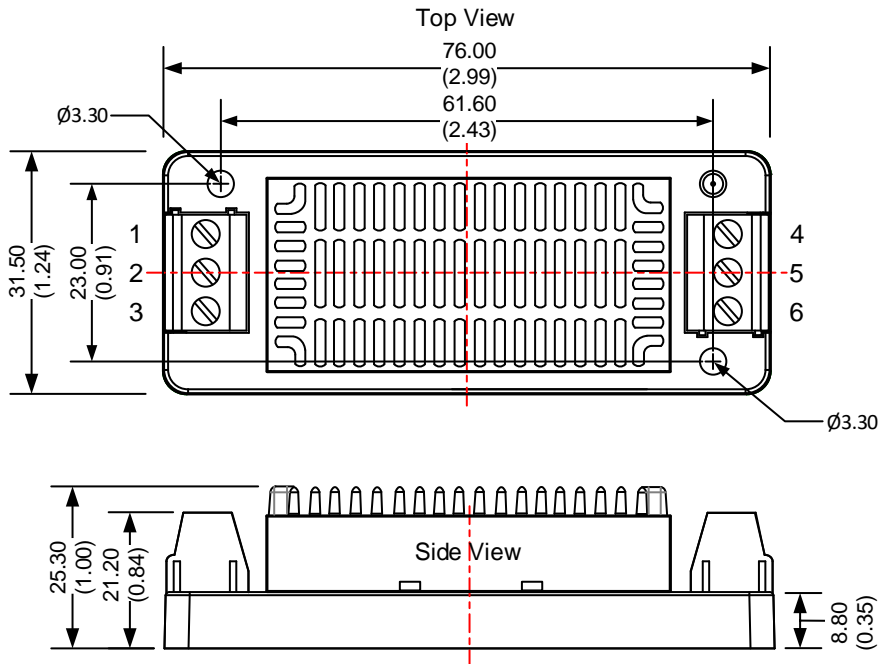


**Pin Out Specifications**

Pin	Single	Dual
1	On/Off Control	On/Off Control
2	-Vin	-Vin
3	+Vin	+Vin
4	- Vout	- Vout
5	Trim	Trim
6	+ Vout	+ Vout

Note:  
Unit: mm (inch)  
Wire range: 24-12 AWG  
Tightening torque: Max 0.4 N\*m  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

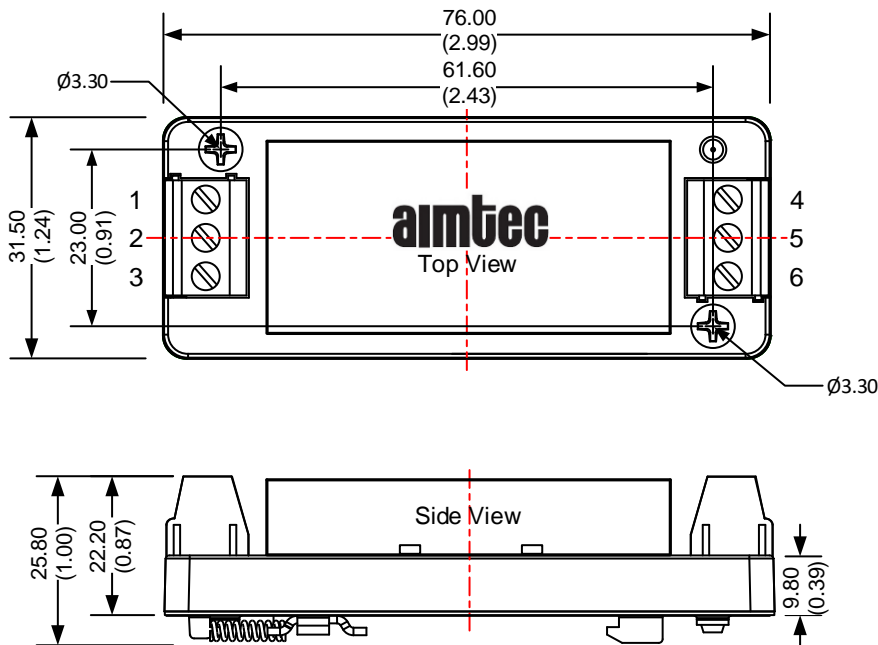
**Screw Terminal with Heatsink Option: AM20E-NZ-K-ST**



Note:  
Unit: mm (inch)  
Wire range: 24-12 AWG  
Tightening torque: Max 0.4 N\*m  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

**DIN-RAIL Option: AM20E-NZ-K-STD**

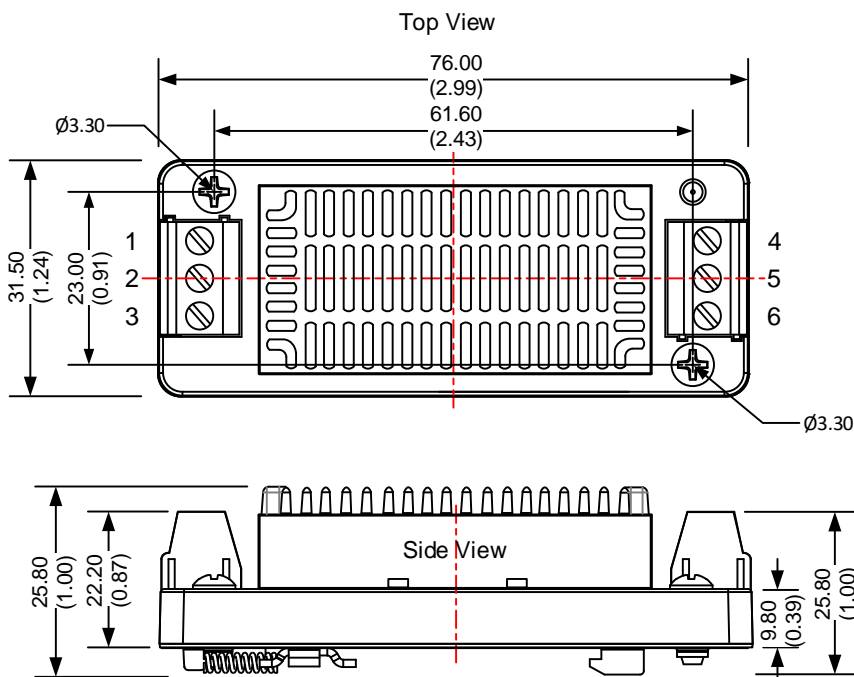
**Pin Out Specifications**



Pin	Single	Dual
1	On/Off Control	On/Off Control
2	-Vin	-Vin
3	+Vin	+Vin
4	- Vout	- Vout
5	Trim	Trim
6	+ Vout	+ Vout

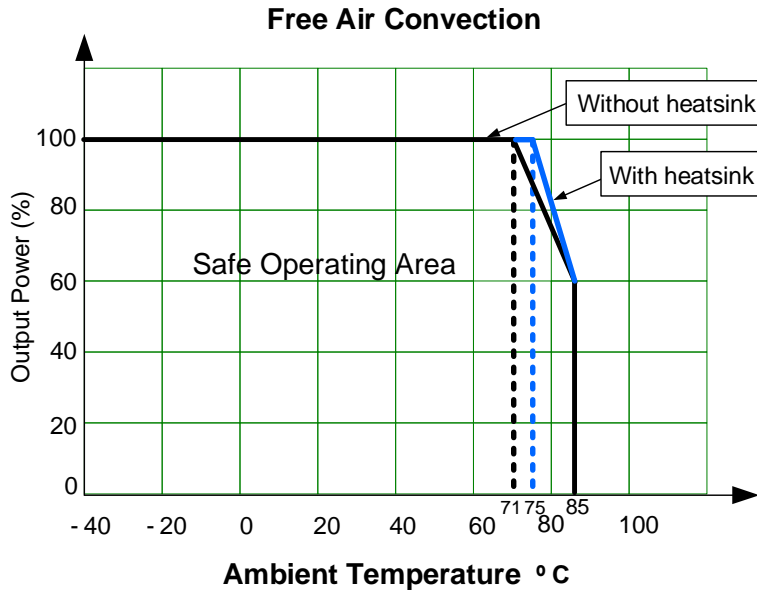
Note:  
Unit: mm (inch)  
Mounting rail: TS35  
Wire range: 24-12 AWG  
Tightening torque: Max 0.4 N\*m  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

**DIN-RAIL with heatsink Option: AM20E-NZ-K-STD**



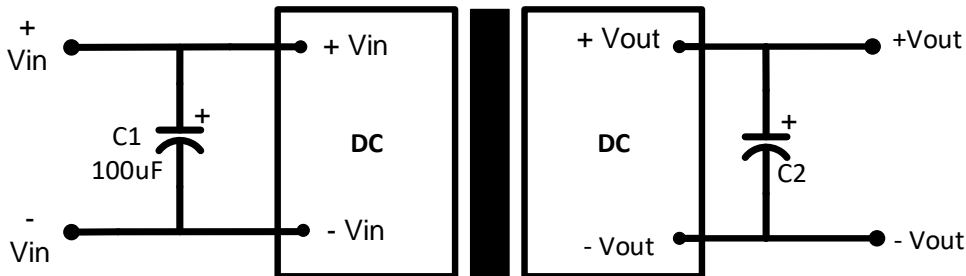
Note:  
Unit: mm (inch)  
Mounting rail: TS35  
Wire range: 24-12 AWG  
Tightening torque: Max 0.4 N\*m  
General tolerances:  $\pm 0.50$  ( $\pm 0.02$ )

## Derating

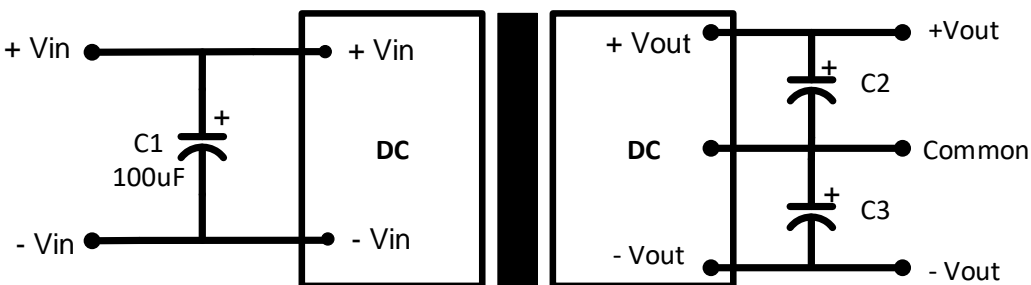


## Typical application circuit

### Single output models

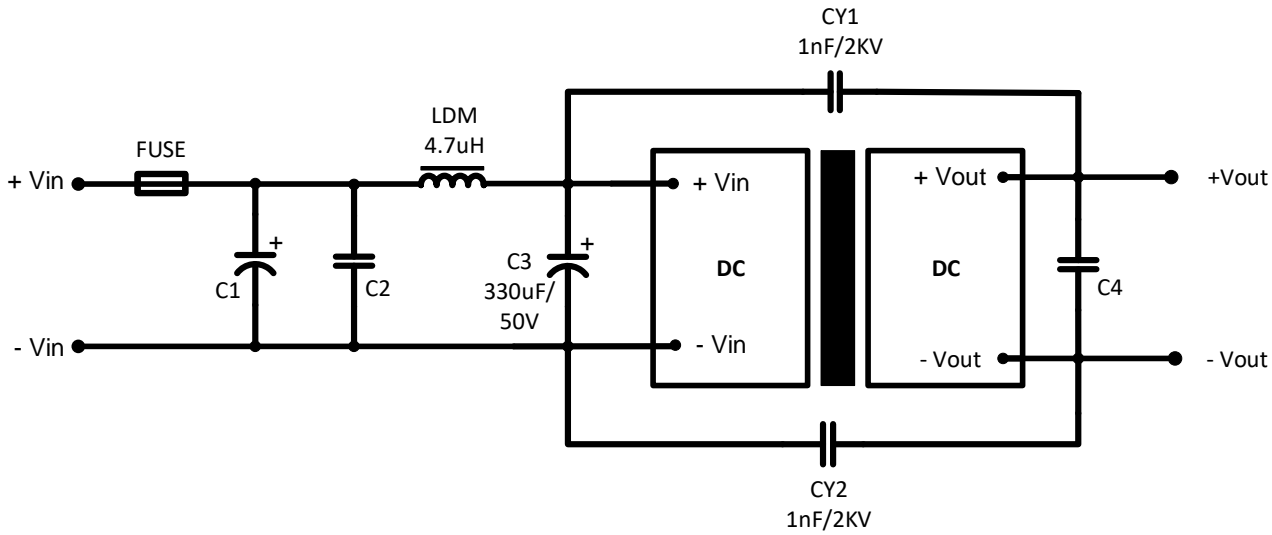


### Dual output models



Model	Single output models			Dual output models		
	3.3V/5V Vout	12V/15V Vout	24V Vout	3.3V/5V Vout	12V/15V Vout	24V Vout
C2, C3	470µF	220µF	100µF	220µF	100µF	100µF

**EMC recommended external filter**



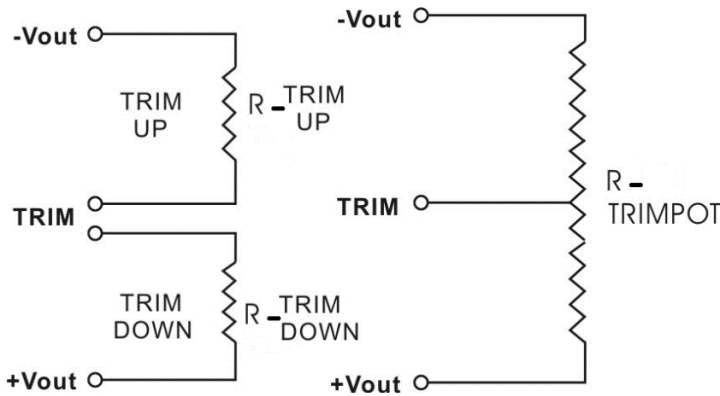
Model	12V/24V Vin	48V Vin
FUSE	Choose based on actual input current	
C1	680μF/50V	680μF/100V
C2	1μF/50V	1μF/100V
C4	Refer to the C2, C3 in typical application circuit	

**Trimming**

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

**Fixed Resistor**

**Variable Potentiometer**



Leave open if not used.

AM20E-xx03S-NZ

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	2.97
Rt down (KΩ)	193.344	106.818	70.696	50.870	38.341	29.708	23.397	18.583	14.790	11.724
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	3.63
Rt up (KΩ)	305.949	102.749	57.886	38.180	27.104	20.007	15.072	11.442	8.658	6.457

AM20E-xx05S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.95	4.9	4.85	4.8	4.75	4.7	4.65	4.6	4.55	4.5
Rt down (KΩ)	105.181	52.154	31.997	21.378	14.823	10.373	7.155	4.719	2.811	1.277
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.05	5.1	5.15	5.2	5.25	5.3	5.35	5.4	5.45	5.5
Rt up (KΩ)	176.356	71.279	41.974	28.200	20.198	14.967	11.281	8.544	6.430	4.749

AM20E-xx09S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	8.91	8.82	8.73	8.64	8.55	8.46	8.37	8.28	8.19	8.1
Rt down (KΩ)	375.533	207.430	139.157	102.145	78.924	62.997	51.393	42.562	35.617	30.011
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	9.09	9.18	9.27	9.36	9.45	9.54	9.63	9.72	9.81	9.9
Rt up (KΩ)	314.532	112.639	64.148	42.357	29.975	21.990	16.412	12.297	9.134	6.629

AM20E-xx12S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.88	11.76	11.64	11.52	11.4	11.28	11.16	11.04	10.92	10.8
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)	12.12	12.24	12.36	12.48	12.6	12.72	12.84	12.96	13.08	13.2
Rt up (KΩ)	706.435	158.920	83.879	54.075	38.077	28.095	21.274	16.317	12.552	9.595

AM20E-xx15S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.85	14.7	14.55	14.4	14.25	14.1	13.95	13.8	13.65	13.5
Rt down (KΩ)	634.883	400.637	288.514	222.759	179.537	148.960	126.187	108.569	94.532	83.087
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	1460.099	192.574	96.642	61.354	43.016	31.781	24.191	18.721	14.590	11.361



AM20E-xx24S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1286.200	792.123	565.867	436.104	351.954	292.963	249.315	215.714	189.047	167.370
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	816.889	179.914	94.338	60.464	42.307	30.988	23.257	17.640	13.376	10.027

**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](http://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](http://www.aimtec.com).