

FEATURES:



- Wide Input range 2:1
- High Efficiency up to 93%
- Remote On/Off Control
- Trim Adjustment
- Input to Output Isolation of 1500VDC
- Input Over Voltage and Under Voltage Lockout
- Output OVP, OCP & SCP
- Operating Temperature -40 to +85°C

Models Single output



Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (A)	Full load/No load Input Current (mA)	Max Capacitive Load(uF)	Efficiency (%)
AM50E-2403S-NZ	18-36	3.3	10	1545/55	27000	91
AM50E-2405S-NZ	18-36	5	10	2341/105	18900	91
AM50E-2412S-NZ	18-36	12	4.167	2290/105	3700	93
AM50E-2415S-NZ	18-36	15	3.333	2290/105	2000	93
AM50E-2424S-NZ	18-36	24	2.083	2341/65	1000	91
AM50E-4805S-NZ	36-75	5	10	1171/55	18900	91
AM50E-4812S-NZ	36-75	12	4.167	1145/55	3700	93
AM50E-4815S-NZ	36-75	15	3.333	1145/70	2000	93
AM50E-4824S-NZ	36-75	24	2.083	1158/50	1000	92

***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.**

The AM50E-NZ series will be discontinued (EOL) by December 30, 2020; for new designs, please refer to AM50E-Z series.

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.

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	24 48	18-36 36-75		VDC
Filter	π (Pi) Network			
Start up 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 TTL high (3 - 12VDC) ; OFF – connected to GND or TTL low (0 - 1.2VDC)			
Over Voltage Lockout	24 48		41 83	VDC
Under Voltage Lockout	24 48		15 31	VDC
Input reflected current	24 48	40 30		mA

*The voltage on the On/Off Control pin is relative to input Ground.

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	1 min, ≤ 1 mA	1500	1500	VDC
Resistance	Isolation 500VDC	>1000		MOhm
Capacitance	100kHz, 0.1V	2000		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±1	±3	%
Over voltage protection*	3.3V output		3.9	VDC
	5V output		6.2	
	12V output		15	
	15V output		18	
	24V output		30	
Over current protection		135		%
Short Circuit protection	Hiccup, continuous			
Short circuit restart	Auto-restart			
Line voltage regulation	LL-HL	±0.2	±0.5	% of Vin
Load voltage regulation	10-100% load	±0.5	±1	%
Temperature coefficient			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth	3.3V/5V Vout	100	mV p-p
		AM50E-4824S-NZ	200	
		Others	200	
Voltage adjustment range		±10		%
Transient recovery time	25% load step	24V Vout	500	µS
		Others	200	
Transient recovery deviation	25% load step	±3	±5	%

*Restart needed to function properly

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	300		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			
Weight	Pin mountable	35		g
	With optional -ST mounting plate	57		
	With optional -STD mounting plate	77		
	With optional -K Pin mountable	43		
	With optional -ST-K mounting plate	65		
	With optional -STD-K mounting plate	85		
Dimensions (L x W x H)	Pin mountable	2.00 x 1.00 x 0.46inches	50.80 x 25.40 x 11.80mm	
	With optional -ST mounting plate	2.99 x 1.24 x 0.84inches	76.00 x 31.50 x 21.20mm	
	With optional -STD mounting plate	2.99 x 1.24 x 1.02inches	76.00 x 31.50 x 25.80mm	
	With optional -K Pin mountable	2.02 x 1.03 x 0.65inches	51.40 x 26.20 x 16.50mm	
	With optional -ST-K mounting plate	2.99 x 1.24 x 1.00inches	76.00 x 31.50 x 25.30mm	
	With optional -STD-K mounting plate	2.99 x 1.24 x 1.18inches	76.00 x 31.50 x 29.90mm	
MTBF	>1 000 000 hrs (MIL-HDBK-217 F at +25 °C)			
Maximum soldering temperature	10sec, 1.5mm from case		300	°C

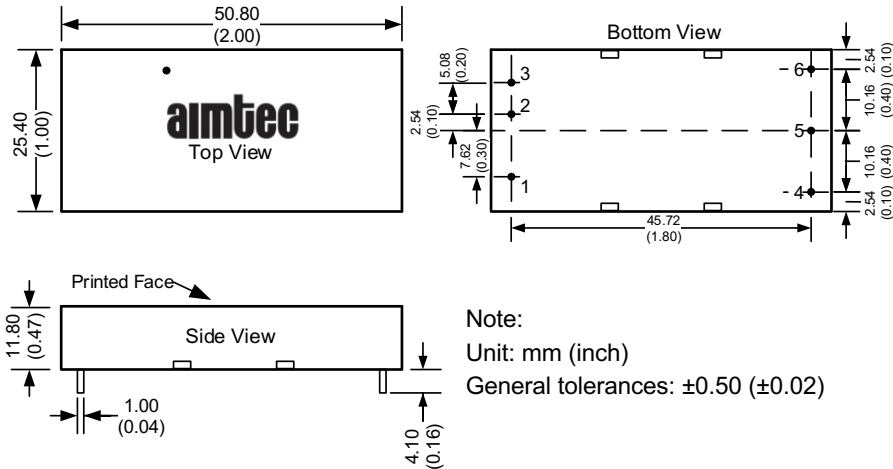
Environmental Specifications

Parameters		
Vibration	Test mode	10-55Hz
	Acceleration	10G, 30min one cycle, every axis tested
	Converter operation	Before and after test, body mounted (on chassis)

Safety Specifications

Parameters		
Approval	UL (AM50E-4812S-NZ only)	UL60950-1
Standards	Information Technology Equipment	CISPR32/EN55032 Class B, with the EMC recommended circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2, Contact $\pm 4\text{KV}$, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, 10V/m, Criteria A
	Electrical Fast Transient / Burst Immunity	IEC 61000-4-4, $\pm 2\text{KV}$, Criteria B, with the EMC recommended circuit
	Surge Immunity	IEC 61000-4-5, L-L $\pm 2\text{KV}$, Criteria B, with the EMC recommended circuit
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 3 Vrms, Criteria A

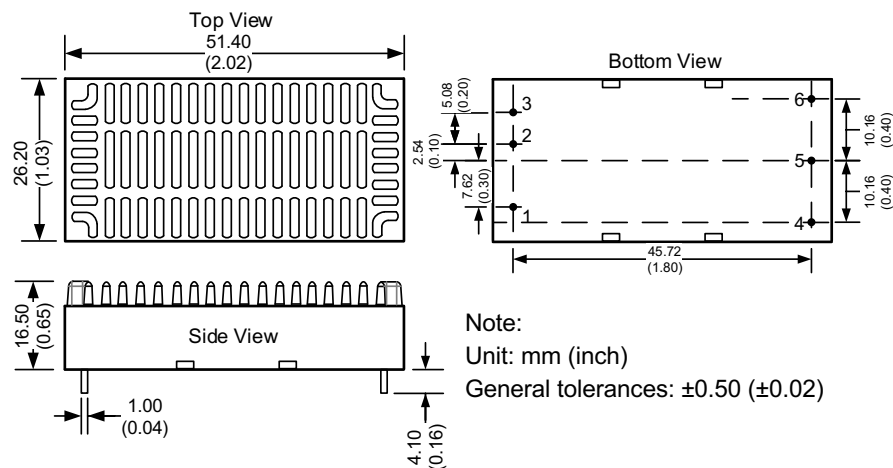
Dimensions



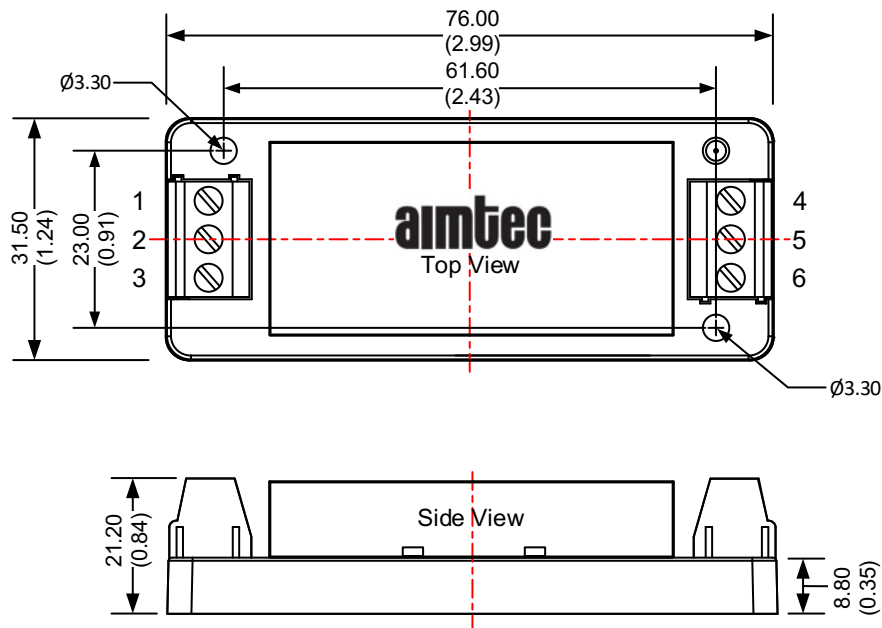
Pin Out Specifications

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

Heatsink Option: AM50E-NZ-K



Screw Terminal Option: AM50E-NZ-ST



Pin Out Specifications

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

Note:

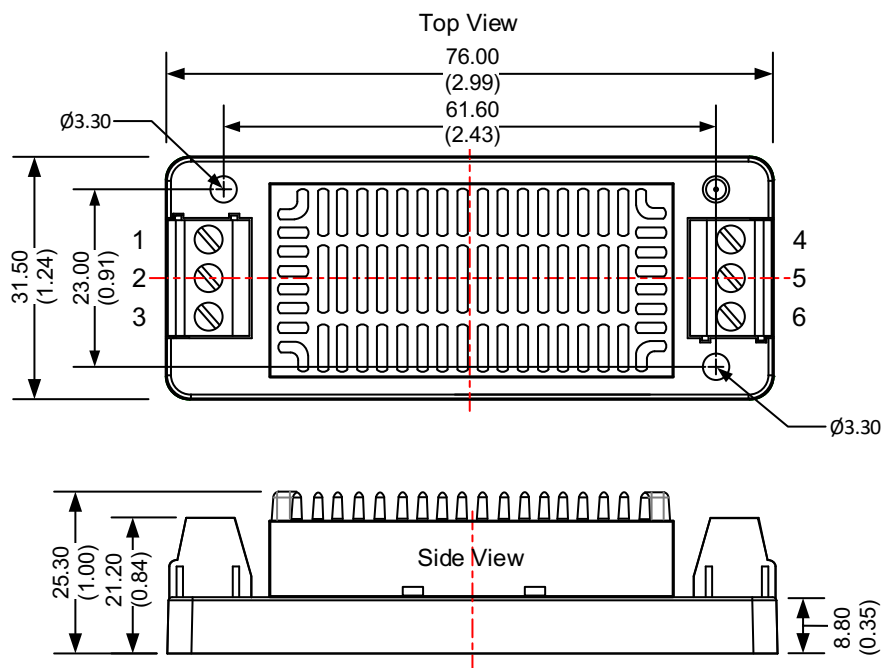
Unit: mm (inch)

Wire range: 24-12 AWG

Tightening torque: Max 0.4 N*m

General tolerances: ± 0.50 (± 0.02)

Screw Terminal with Heatsink Option: AM50E-NZ-K-ST



Note:

Unit: mm (inch)

Wire range: 24-12 AWG

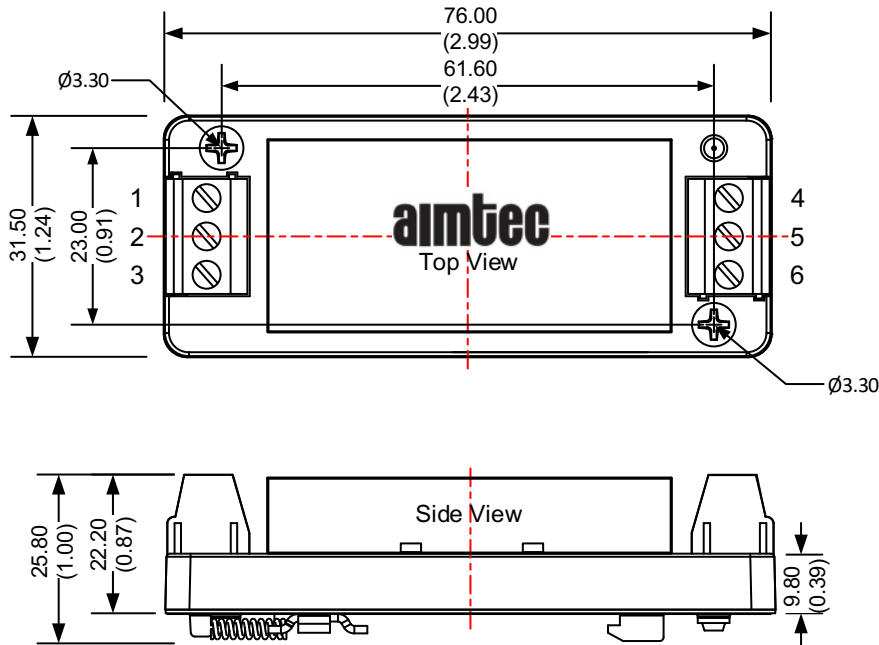
Tightening torque: Max 0.4 N*m

General tolerances: ± 0.50 (± 0.02)

DIN-RAIL Option: AM50E-NZ-K-STD

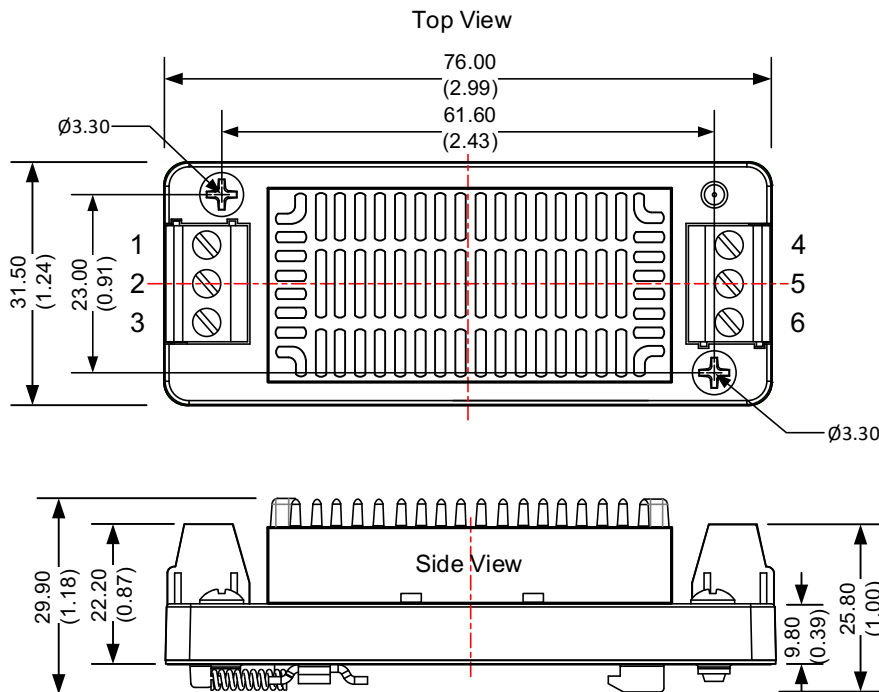
Pin Out Specifications

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



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

DIN-RAIL with heatsink Option: AM50E-NZ-K-STD

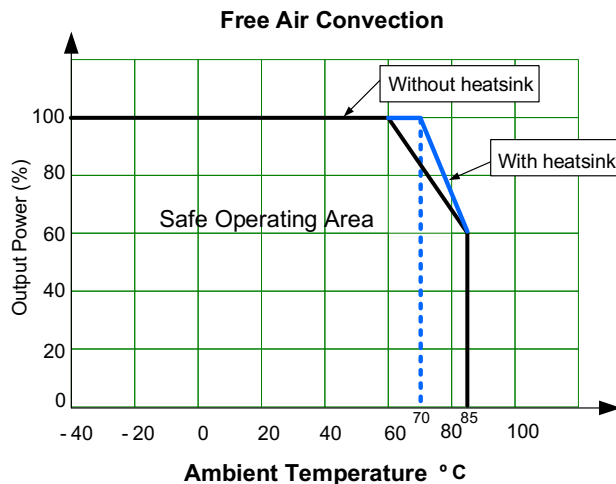
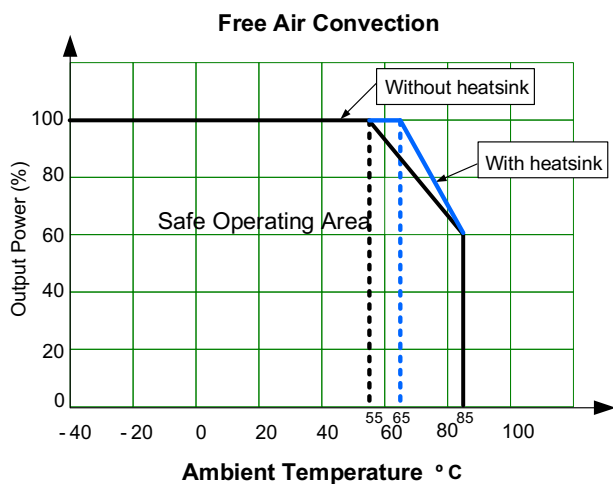


Note:
Unit: mm (inch)
Mounting rail: TS35
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N*m
General tolerances: ± 0.50 (± 0.02)

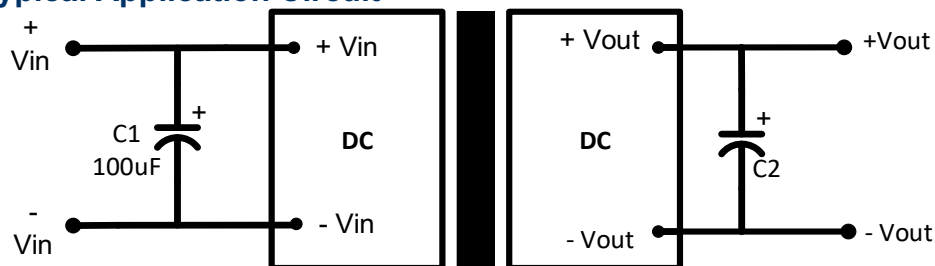
Derating

For 3.3 & 5V output models

For 12, 15 & 24V output models

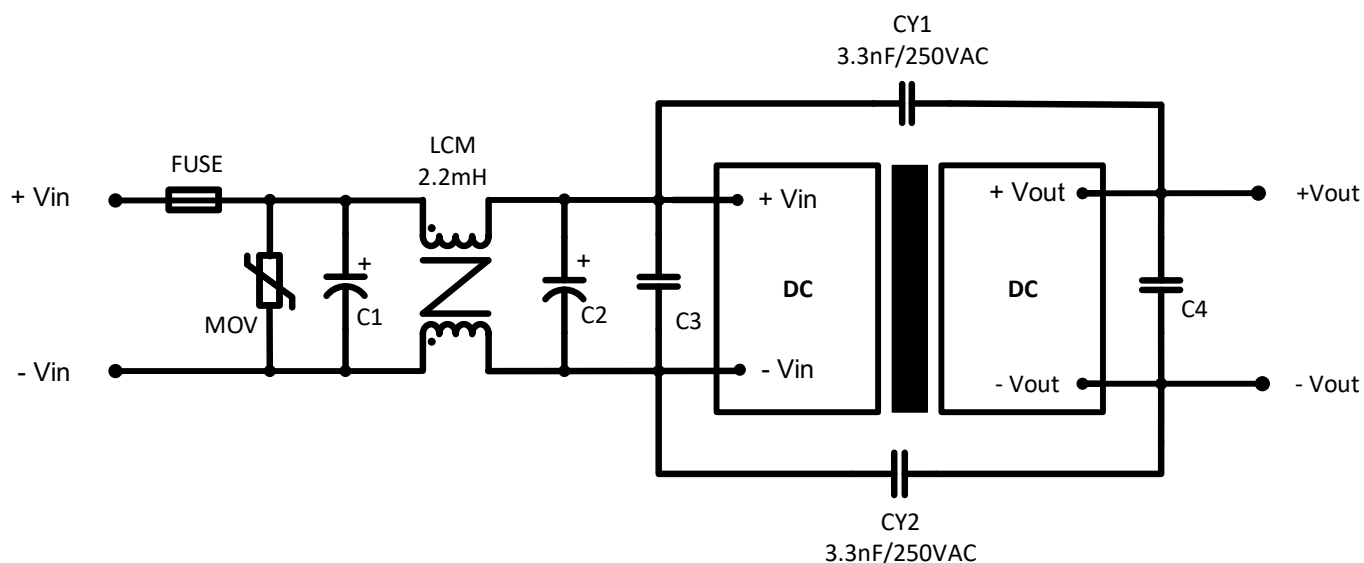


Typical Application Circuit



Model	Single output models		
	3.3V/5V Vout	12V/15V Vout	24V Vout
C2	470μF	100μF	47μF

EMC Recommended Circuit

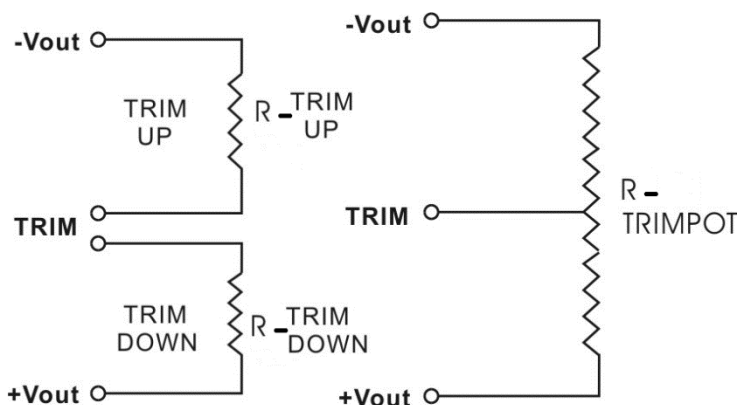


Model	24V Vin	48V Vin
FUSE	Choose based on actual input current	
MOV	S20K30	S14K60
C1	680 μ F/50V	330 μ F/100V
C2	330 μ F/50V	330 μ F /100V
C3	4.7 μ F/50V	2.2 μ F/100V
C4	Refer to the C2 in typical application circuit	

Trimming

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

Fixed Resistor Variable Potentiometer



Leave open if not used.

AM50E-xx03S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.27	3.23	3.20	3.17	3.14	3.10	3.07	3.04	3.00	2.97
Rt down (K Ω)	236.27	106.095	71.347	51.633	38.931	27.676	21.71	17.076	12.299	9.457
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.33	3.37	3.40	3.43	3.47	3.50	3.53	3.56	3.60	3.63
Rt up (K Ω)	263.512	81.826	50.017	33.939	21.804	16.033	11.826	8.624	5.38	3.447

AM50E-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 (K Ω)	128.53	56.78	32.863	20.905	13.73	8.947	5.53	2.968	0.974	-0.62
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 (K Ω)	131.399	59.65	35.733	23.775	16.6	11.817	8.4	5.838	3.844	2.25

AM50E-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)	489.091	294.452	205.527	154.585	121.573	98.442	81.332	68.164	57.716	49.223
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)	699.444	151.922	76.879	47.075	31.077	21.095	14.274	9.317	5.552	2.595

AM50E-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)	1213	588	379.667	275.5	213	171.333	141.571	119.25	101.889	88
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)	228	103.001	61.333	40.5	28	19.667	13.714	9.25	5.778	3

AM50E-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)	1038.04 8	638.01 5	455.25 6	350.55 3	282.70 2	235.15 9	199.99 3	172.92 8	151.45 3	133.99 9
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)	640.98	143.11 6	74.892	47.797	33.252	24.178	17.977	13.47	10.047	7.359

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.