



FEATURES:

- Efficiency up to 90%
- Ultra-wide 4:1 Input range
- Continuous short circuit protection
- Operating Temperature: -40°C to +85°C
- On/Off Remote Control
- Over Voltage & Over Current Protection
- Input / Output Isolation 1500 & 2250VDC
- Input Under Voltage Lockout



Models
Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Efficiency (%)
AM15EW-2403S-NZ	9-36	3.3	4000	1500	10200	87
AM15EW-2405S-NZ	9-36	5	3000	1500	4020	90
AM15EW-2412S-NZ	9-36	12	1250	1500	1035	89
AM15EW-2415S-NZ	9-36	15	1000	1500	705	89
AM15EW-2424S-NZ	9-36	24	625	1500	470	90
AM15EW-4803S-NZ	18-75	3.3	4000	1500	10200	85
AM15EW-4805S-NZ	18-75	5	3000	1500	4020	87
AM15EW-4812S-NZ	18-75	12	1250	1500	1035	88
AM15EW-4815S-NZ	18-75	15	1000	1500	705	90
AM15EW-11003S-NZ	40-160	3.3	4000	1500	4020	87
AM15EW-11005S-NZ	40-160	5	3000	1500	4020	89
AM15EW-11012S-NZ	40-160	12	1250	1500	1600	88
AM15EW-11015S-NZ	40-160	15	1000	1500	1000	88
AM15EW-11024S-NZ	40-160	24	625	1500	470	88
AM15EW-11003SH22-NZ	40-160	3.3	4000	2250	5400	82
AM15EW-11005SH22-NZ	40-160	5	3000	2250	5400	84
AM15EW-11012SH22-NZ	40-160	12	1250	2250	1000	84
AM15EW-11015SH22-NZ	40-160	15	1000	2250	820	85
AM15EW-11024SH22-NZ	40-160	24	625	2250	270	85

Add suffix “-K” for optional heat sink

***Add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN Rail screw terminal bottom plate and reverse voltage protection.**

****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 and reverse voltage protection.**

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	9-36		VDC
	48	18-75		
	110	40-160		
Filter	π(Pi) Network			
Startup time		10		ms
Absolute Maximum Rating	24		50	VDC
	48		100	
	110		180	
Peak Input Voltage time			1	s
On/Off control	110V input	ON – open or 3.5-12VDC; OFF – short to –Vin or 0-1.2VDC, Idle current 1mA		
	Others	ON – open or 2.5-12VDC; OFF – short to –Vin or 0-1.2VDC, Idle current 1mA		
No load Input Current			60	mA
Input reflected current		30		mA

Isolation Specifications

Parameters	Conditions	Rated	Maximum	Units
Tested I/O voltage	60 sec, 1mA	1500 & 2250		VDC
Tested I/FG & O/FG voltage	2250V Isolated models, 60 sec, 1mA	1600		VDC
Resistance		>1000		MOhm
Capacitance	110Vin 1500V Isolation & 24Vin, I/O, 100KHz/0.1V	2000		pF
	110Vin 2250V Isolation, I/O, 100KHz/0.1V	2200		
	48Vin, I/O, 100KHz/0.1V	1000		

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±3		%
Over voltage protection	Zener Diode Clamp			%
Over current protection		120	210	% of Io
Short Circuit protection	Hiccup, Continuous			
Short circuit restart	Auto-Recovery			
Line voltage regulation	Full load, LL-HL	±0.5		% of Vin
Load voltage regulation	0-100% load for 2250V instead models; 5-100% load others	±1		%
Temperature coefficient			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth		100	mV p-p
Voltage adjustment range			±10	%
Transient recovery time	25% load step change, 110Vin 1500V Isolation		800	µS
	25% load step change, others		500	
Transient recovery deviation	25% load step change	±5		%

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		
Dimensions (L x W x H)	PCB mountable without heatsink	2.00 x 1.00 x 0.46 inches; 50.80 x 25.40 x 11.80mm		
	Optional packages	See dimensions drawing		
Weight	Pin mountable without heatsink	28 (1500VDC Isolated models)		g
		26 (2250VDC Isolated models)		
	Pin mountable with heatsink	36 (1500VDC Isolated models)		
		34 (2250VDC Isolated models)		
	-ST option without heatsink	50 (1500VDC Isolated models)		
		48 (2250VDC Isolated models)		
-ST option with heatsink	58 (1500VDC Isolated models)			
	56 (2250VDC Isolated models)			
-STD option without heatsink	70 (1500VDC Isolated models)			
	68 (2250VDC Isolated models)			
-STD option with heatsink	78 (1500VDC Isolated models)			
	76 (2250VDC Isolated models)			
MTBF	>1,000,000 hours (MIL-HDBK -217F, Ground Benign, t=+25°C)			
Maximum soldering temperature	1.5mm from case for 10 sec		300	°C

Environmental Specifications

Parameters		
Vibration (24 & 48 Vin)	Test mode	10-55Hz
	Acceleration	10G, 30min one cycle, every axis tested
Vibration (110 Vin/1500VDC isolation)	Test mode	5-150Hz
	Acceleration	2G, 30min one cycle, every axis tested
	Displacement	7.5mm

Vibration (110 Vin/2250VDC isolation)

IEC61373 car body 1 B mold

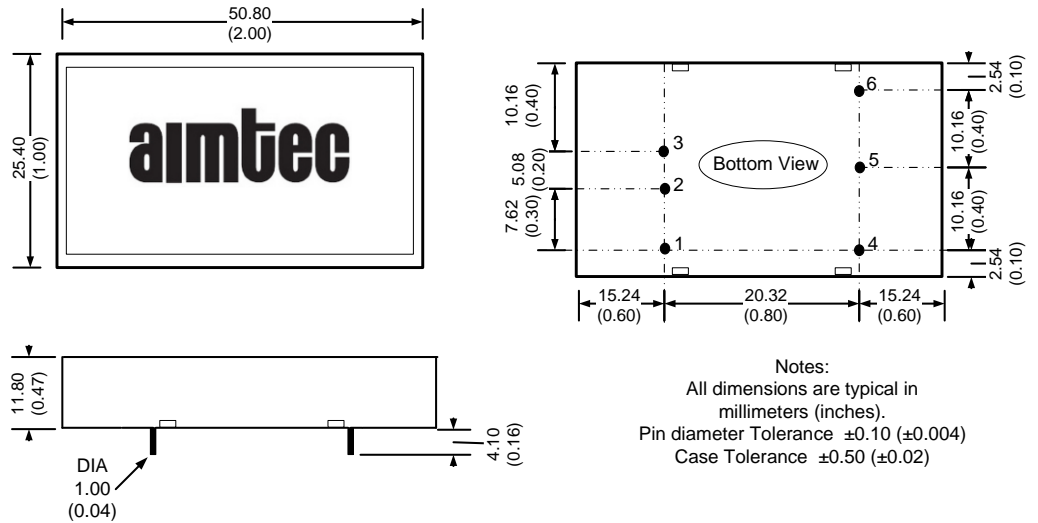
Safety Specifications

Parameters	
Approvals	CE
Standards	EN 55022, class B (with the recommended EMC circuit) IEC61000-4-2, Contact $\pm 6KV$ (110Vin 2250V Isolation), Contact $\pm 4KV$ (24 & 48 Vin), Criteria B IEC61000-4-3, 10V/m, Criteria A IEC61000-4-4, $\pm 4KV$ (110Vin 2250V Isolation), $\pm 2KV$ (24 & 48 Vin with the recommended EMC circuit), Criteria B IEC61000-4-5, $\pm 2KV$, Criteria B, (with the recommended EMC circuit) IEC61000-4-6, 3 Vrms (24 & 48 Vin), 10 Vrms (2250 VDC Isolated models) Criteria A IEC61000-4-29, 0-70% (24 & 48 Vin), Criteria B IEC/EN/UL 60950-1 Meets EN50155 (2250 VDC Isolated models)

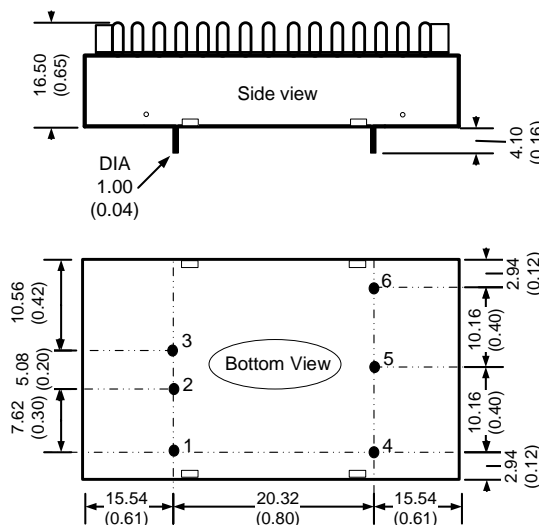
Pin Out Specifications

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

Dimensions



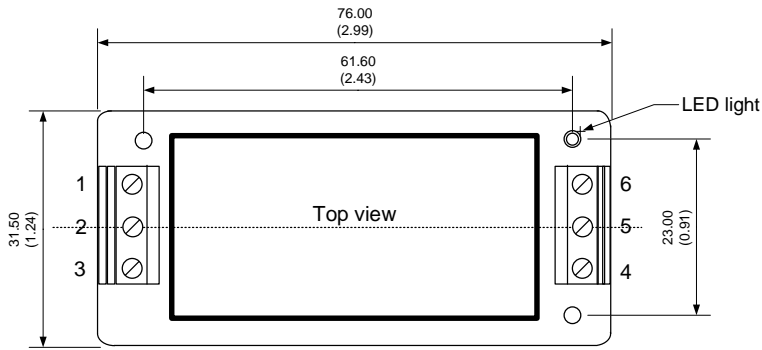
Optional -K heatsink



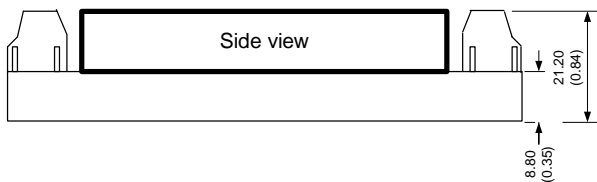
Pin Out Specifications

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

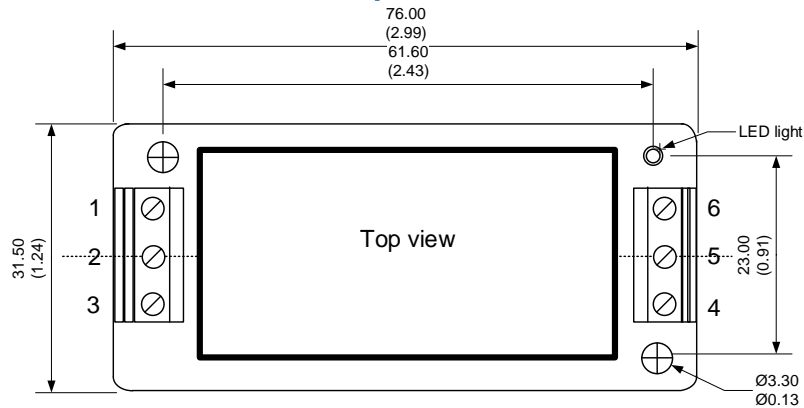
Dimensions with -ST options



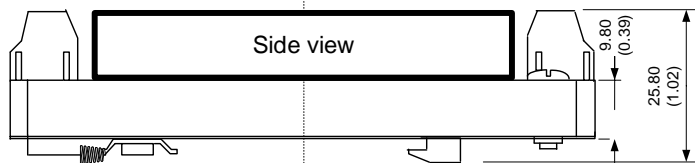
Dimensions: mm (inch)
Case Tolerance: ± 0.50 (0.02)
Wire gauge: 24-12AWG



Dimensions with -STD options



Dimensions: mm (inch)
Case Tolerance: ± 1.00 (0.04)
Wire gauge: 24-12AWG



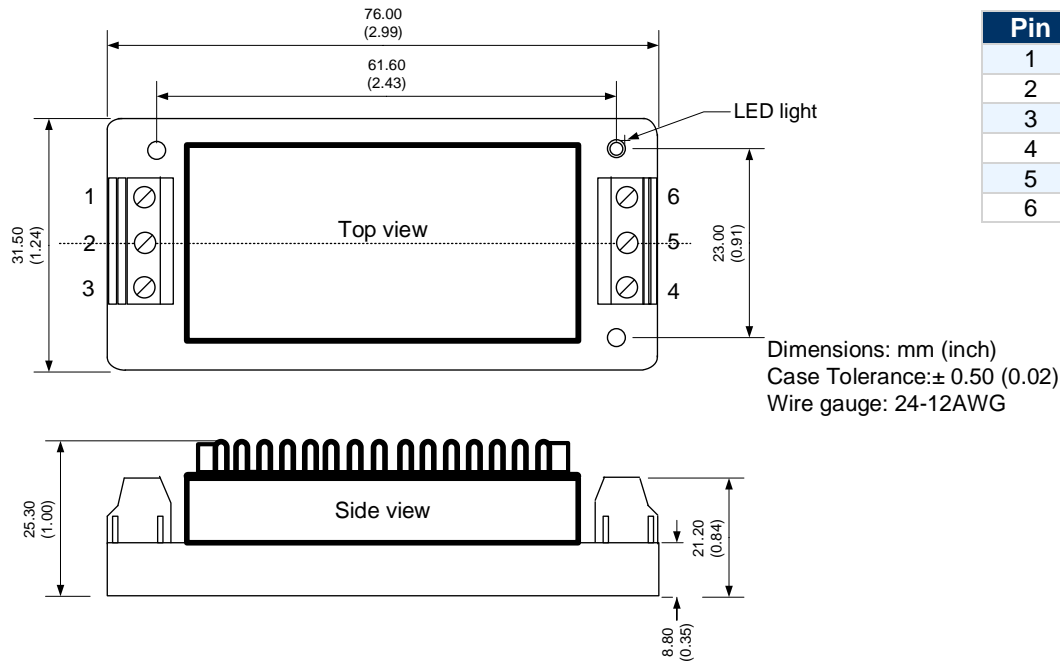
Pin Out Specifications

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

Pin Out Specifications

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

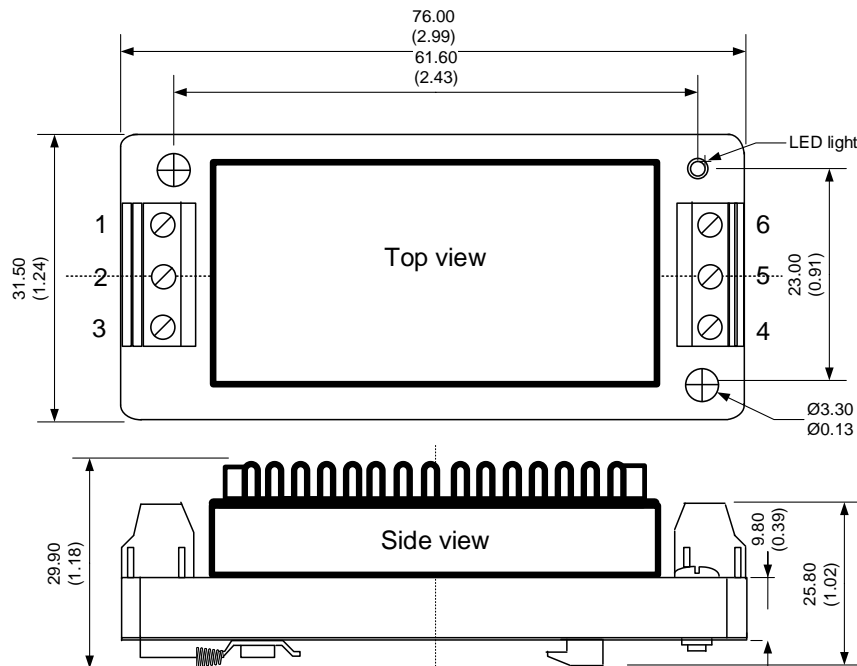
Dimensions with heatsink and -ST options



Pin Out Specifications

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

Dimensions with heatsink and -STD options



Pin Out Specifications

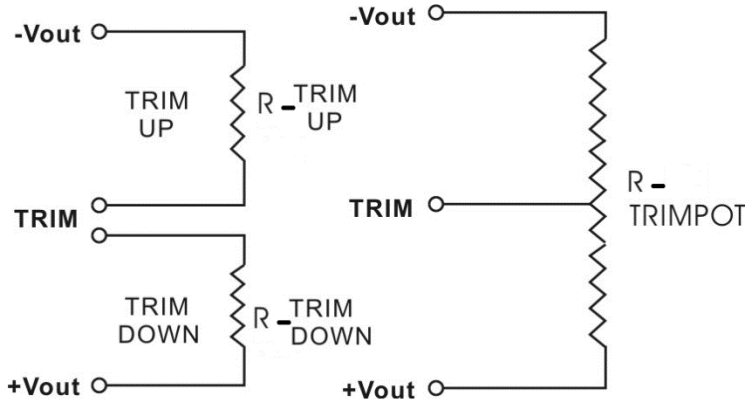
Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	+ Vout
5	Trim
6	- Vout

Trimming

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

Fixed Resistor

Variable Potentiometer



Leave open if not used.

AM15EW-11003S-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	2.970
Rt down (KΩ)	173.432	98.098	65.027	46.445	34.541	26.263	20.174	15.507	11.815	8.823
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)	399.723	110.716	59.087	37.519	25.677	18.193	13.034	9.264	6.387	4.12

AM15EW-11003SH22-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	2.970
Rt down (KΩ)	210.002	103.334	72.327	54.213	42.335	31.667	25.963	21.505	16.884	14.124
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)	369.179	96.88	59.466	41.454	28.235	22.058	17.6	14.23	10.837	8.857

AM15EW-2403S-NZ

AM15EW-4803S-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	2.970
Rt down (KΩ)	182.403	91.902	63.829	47.033	35.855	25.707	20.232	15.933	11.457	8.773
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)	545.109	102.586	58.835	38.813	24.523	17.958	13.264	9.74	6.214	4.165

AM15EW-11005S-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)	96.08	49.349	30.67	20.616	14.333	10.034	6.909	4.533	2.667	1.162
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)	205.698	76.406	44.023	29.296	20.879	15.431	11.617	8.798	6.63	4.91

AM15EW-11005SH22-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)	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 (K Ω)	176.356	71.279	41.974	28.2	20.198	14.967	11.281	8.544	6.430	4.749

AM15EW-2405S-NZ

AM15EW-4805S-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)	96.08	49.349	30.67	20.616	14.333	10.034	6.909	4.533	2.667	1.162
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)	205.698	76.406	44.023	29.296	20.879	15.431	11.617	8.798	6.63	4.91

AM15EW-11012S-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 (K Ω)	505.529	303.041	211.851	159.978	126.504	103.114	85.849	72.581	62.066	53.527
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 (K Ω)	614.769	150.097	78.994	50.198	34.607	24.832	18.13	13.249	9.536	6.616

AM15EW-11012SH22-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 (K Ω)	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 (K Ω)	706.435	158.92	83.879	54.075	38.077	28.095	21.274	16.317	12.552	9.595

AM15EW-2412S-NZ
AM15EW-4812S-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)	505.529	303.041	211.851	159.978	126.504	103.114	85.849	72.581	62.066	53.527
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)	614.769	150.097	78.994	50.198	34.607	24.832	18.13	13.249	9.536	6.616

AM15EW-11015S-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)	570.165	371.335	271.179	210.84	170.52	141.67	120.008	103.142	89.638	78.584
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)	3208.668	231.297	104.85	63.553	43.061	30.815	22.672	16.865	12.516	9.136

AM15EW-11015SH22-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)	974.008	517.391	346.387	256.863	201.789	164.487	137.551	117.187	101.251	88.44
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)	283.713	117.996	70.541	48.045	34.918	26.315	20.242	15.725	12.235	9.456

AM15EW-2415S-NZ
AM15EW-4815S-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)	570.165	371.335	271.179	210.84	170.52	141.67	120.008	103.142	89.638	78.584
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)	-8064.2	231.297	104.85	63.553	43.061	30.815	22.672	16.865	12.516	9.136

AM15EW-11024S-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)	1135.537	730.699	532.922	415.701	338.146	283.038	241.862	209.929	184.441	163.624
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)	2871.219	219.961	106.182	66.054	45.551	33.104	24.745	18.744	14.226	10.703

AM15EW-11024SH22-NZ

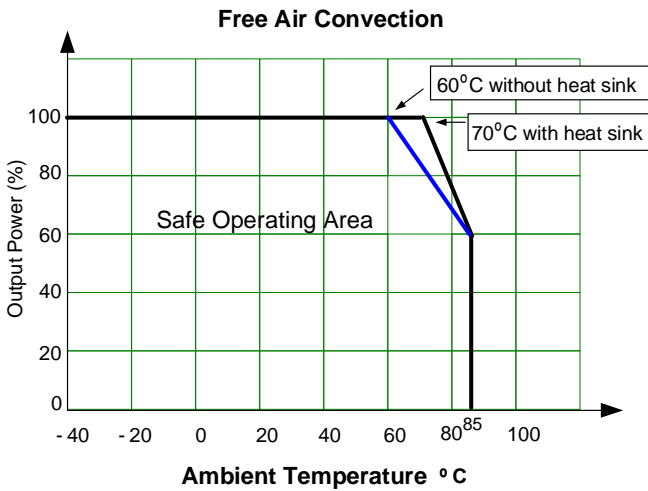
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1286.2	792.123	565.867	436.104	351.954	292.963	249.316	215.714	189.047	167.37
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	816.889	179.914	94.338	60.464	42.307	30.988	23.257	17.64	13.376	10.027

AM15EW-2424S-NZ

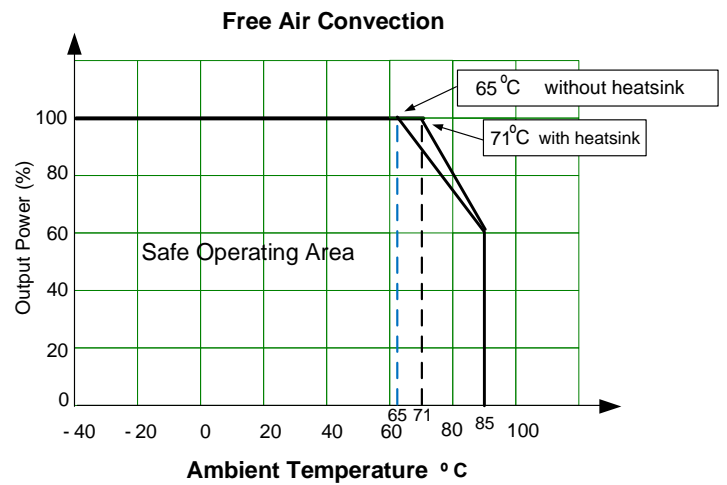
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1133.337	728.499	530.722	413.501	335.946	280.838	239.662	207.729	182.241	161.424
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	2869.019	217.761	103.982	63.854	43.351	30.904	22.545	16.544	12.026	8.503

Derating

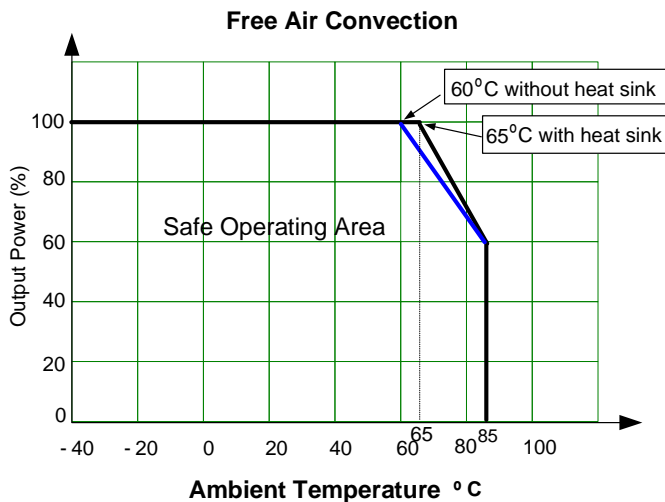
110Vin 1500V Isolation



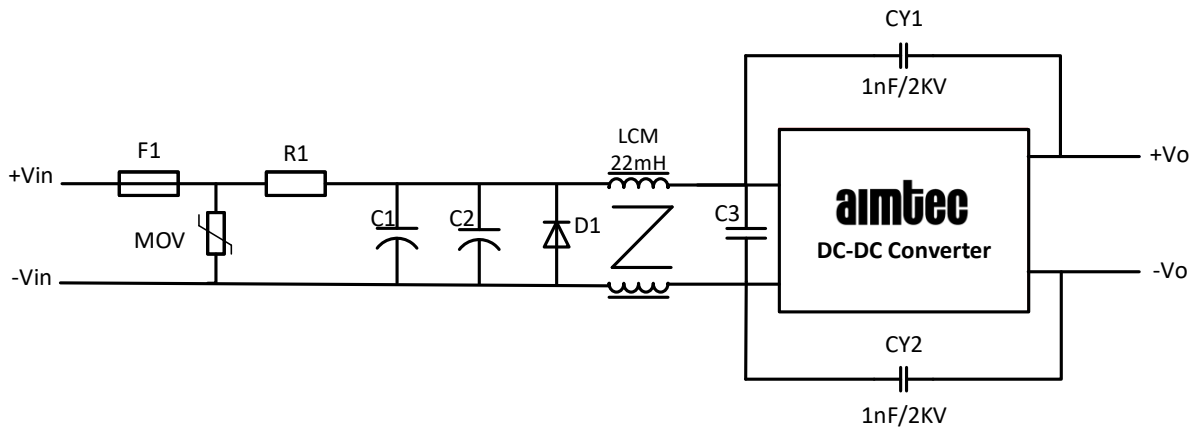
110Vin 2250V Isolation



24 and 48Vin

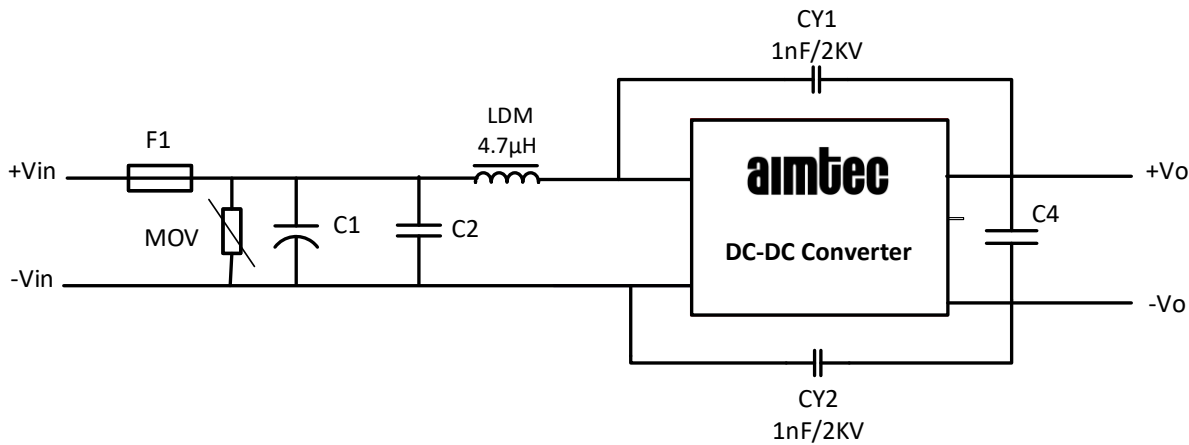


EMC recommended filter 110Vin 1500V Isolation



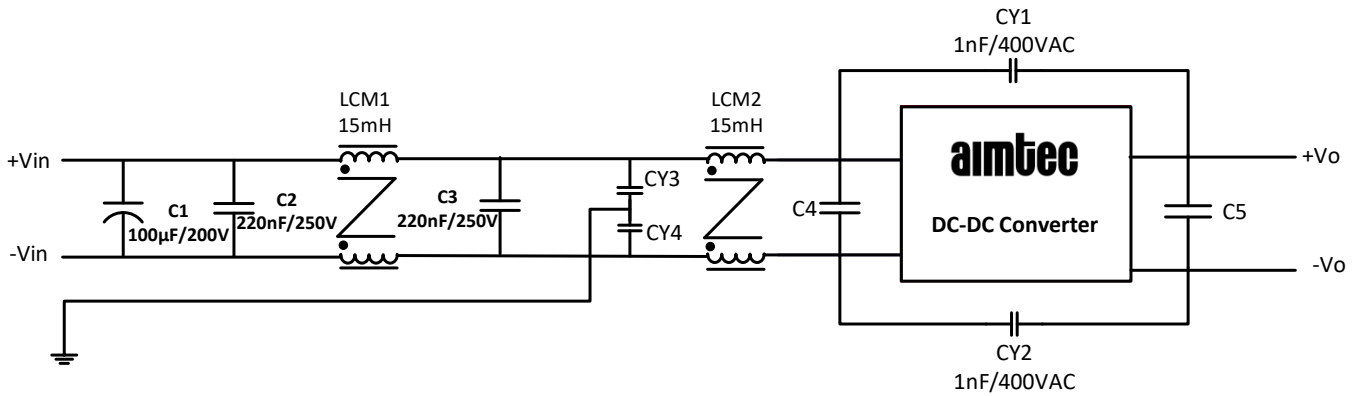
MOV	C1 & C2	R1	C3	D1
S20K130	1 μ F / 200V	1 Ω	100 μ F / 200V	ER304

EMC recommended filter 24Vin & 48Vin models



Vin	MOV	C1	C2	Vout	C4
24V	S14K35	330 μ F / 50V	1 μ F / 50V	3.3V & 5V	470 μ F
48V	S14K60	330 μ F / 100V	1 μ F / 100V	12V & 15V	220 μ F
				24V	100 μ F

EMC recommended filter 110Vin 2250V Isolation



CY3 & CY4	C4	Vout	C5
1nF / 400V	10-47 µF / 250V	3.3V & 5V	470 µF
		12V & 15V	220 µF
		24V	100 µF

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