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AM10TWM-YZ



Aimtec launched the AM10TWM-YZ, a 10W medical grade DC/DC converter in a DIP24 case to satisfy the rigorous power demands of medical equipment. This series meets EN60601-1-2:2015 medical safety standard and has a high I/O isolation of 5000VAC with reinforced insulation rated for a 250VAC working voltage and 2xMOPP.

This 10W converter has 4:1 input (9-36V & 18-75V), single & dual outputs (3.3...15V, +/-5...+/-15V). In terms of safety, this series has output short circuit, overvoltage & overcurrent protections.

Our medical can be used in applications such as medical assisting devices, computed tomography, ultrasound machinery and other medical ancillary equipment.

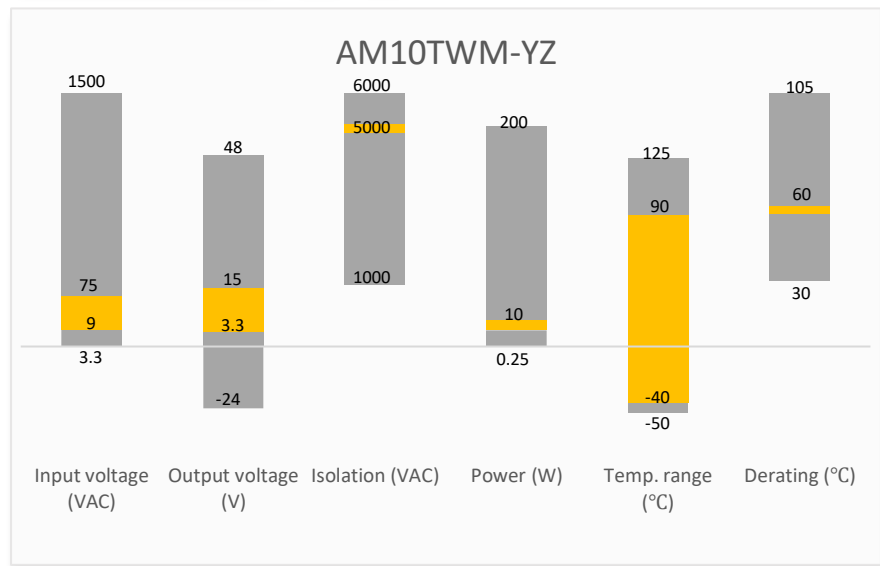
Features



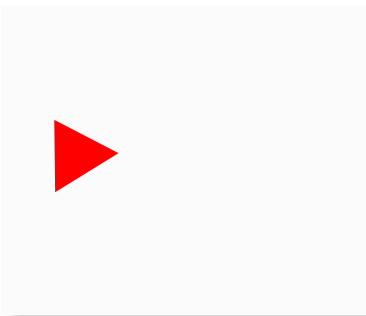
- 4:1 Wide input voltage
- High efficiency to 85%
- Operating temperature: -40°C to +90°C
- Meet medical EMC standard of EMI EN 55011, Class A
- Meet medical EMC standard of EMS EN 60601-1-2:2015
- I/O Isolation of 5000VAC with reinforced insulation rated for 250VAC and 2xMOPP



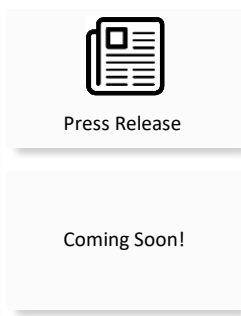
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



Medical



Industrial

Models & Specifications

Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current max (mA)	Output Current max (A)	Isolation (VAC)	Maximum capacitive Load (μ F)	Efficiency (%)
AM10TWM-2403SH50YZ	24 (9 - 36)	3.3	414	2.5	5000	4700	83
AM10TWM-2405SH50YZ	24 (9 - 36)	5	496	2	5000	2500	84
AM10TWM-2412SH50YZ	24 (9 - 36)	12	496	0.833	5000	430	84
AM10TWM-2415SH50YZ	24 (9 - 36)	15	499	0.67	5000	270	84
AM10TWM-4803SH50YZ	48 (18 - 75)	3.3	207	2.5	5000	4700	83
AM10TWM-4805SH50YZ	48 (18 - 75)	5	248	2	5000	2500	84
AM10TWM-4812SH50YZ	48 (18 - 75)	12	248	0.833	5000	430	84
AM10TWM-4815SH50YZ	48 (18 - 75)	15	249	0.67	5000	270	84

Dual Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current max (mA)	Output Current max (A)	Isolation (VAC)	Maximum capacitive Load (μ F)	Efficiency (%)
AM10TWM-2405DH50YZ	24 (9 - 36)	\pm 5	496	\pm 1.0	5000	\pm 1250	84
AM10TWM-2412DH50YZ	24 (9 - 36)	\pm 12	494	\pm 0.42	5000	\pm 220	85
AM10TWM-2415DH50YZ	24 (9 - 36)	\pm 15	500	\pm 0.34	5000	\pm 135	85
AM10TWM-4805DH50YZ	48 (18 - 75)	\pm 5	248	\pm 1.0	5000	\pm 1250	84
AM10TWM-4812DH50YZ	48 (18 - 75)	\pm 12	247	\pm 0.42	5000	\pm 220	85
AM10TWM-4815DH50YZ	48 (18 - 75)	\pm 15	250	\pm 0.34	5000	\pm 135	85

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage range	Nominal 24V Nominal 48V	9 – 36 18 - 75		VDC
Filter	Pi network			
Startup time	Nominal input and resistive load	0.015		S
Absolute maximum rating	24V models, 100mS 48V models, 100mS		50 100	VDC
Input reflected ripple current	5 to 20MHz, 12 μ H source impedance		35	mA pk-pk
On/Off Control	ON – 0 to 1.2Vdc or open; OFF – 2.2 to 12Vdc, idle current 4mA typ.			

Isolation Specification				
Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	1 sec	5000		VAC
Resistance	500Vdc	>1000		MOhm
Capacitance		20		pF

Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			±2	%
Cross regulation (Dual)	25% to 100% load on one output, 100% load on second output		±5	%
Line regulation	Full load, main input range		±0.5	%
Load regulation	0-100% load		±0.5	%
Voltage adjustment			±10	%Vout
Short circuit protection	Continuous, Auto recovery			
Over current protection		150		% of Iout
Over voltage protection	Zener clamped			
Temperature coefficient		±0.02		%/°C
Ripple & Noise*	20MHz bandwidth		100	mV pk-pk
Transient recovery time	25% load step change		350	µS
Transient response deviation	25% load step change	±3	±5	%

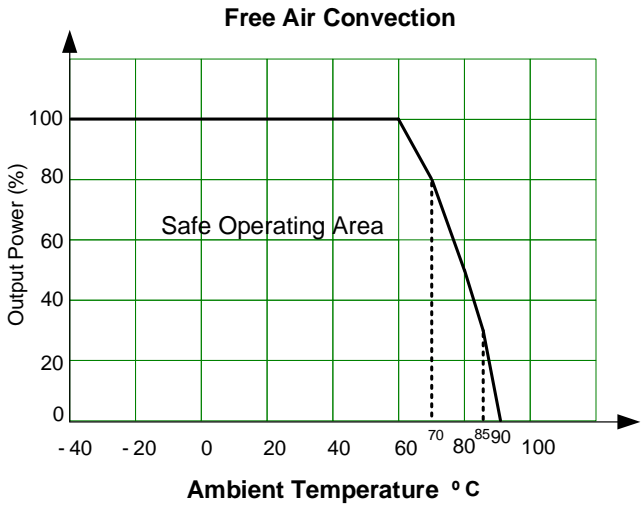
* 20MHz bandwidth

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	300		KHz
Operating temperature	See derating graph	-40 to +90		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			95	°C
Lead temperature	1.5mm from case 10 sec.		260	°C
Cooling	Free air convection			
Humidity	Non-condensing	95		% RH
Case material	Heat resistant black Plastic (flammability to UL 94V-0)			
Weight		15.5		g
Dimensions (L x W x H)	1.24 x 0.79 x 0.39 inches, 31.60 x 20.10 x 10.00mm			
MTBF	> 900 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load			

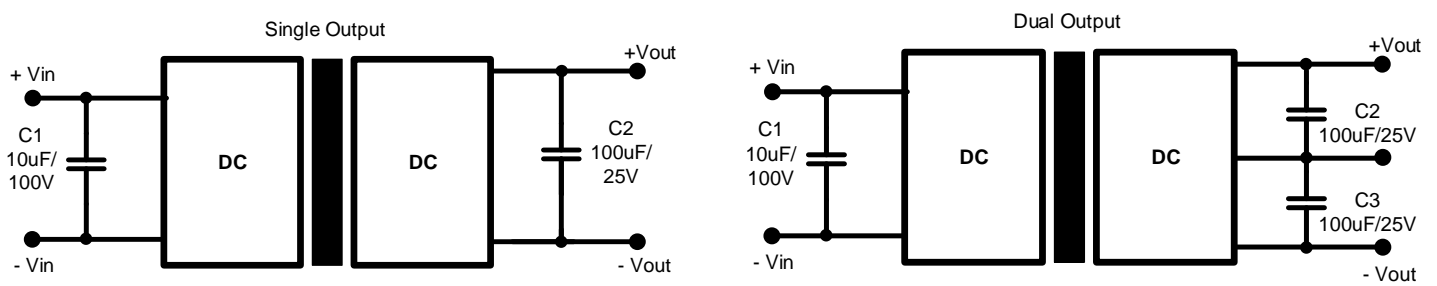
All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications		
Parameters		
Standards	EMC - Conducted and radiated emission	Design to meet EN55011, class A Design to meet EN60601-1-2:2015
	Electrostatic Discharge Immunity*	IEC 61000-4-2 Contact $\pm 8\text{KV}$ / Air $\pm 15\text{KV}$, Criteria A
	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 A
	Surge Immunity*	IEC 61000-4-5 L-L $\pm 2\text{KV}$, Criteria A
	RF, Conducted Disturbance Immunity*	IEC 61000-4-6 10Vr.m.s, Criteria A
	Voltage dips, Short Interruptions Immunity*	IEC 61000-4-8 30A/m, Criteria A
* With added EMC recommended circuit, which can meet EN60601 standard		

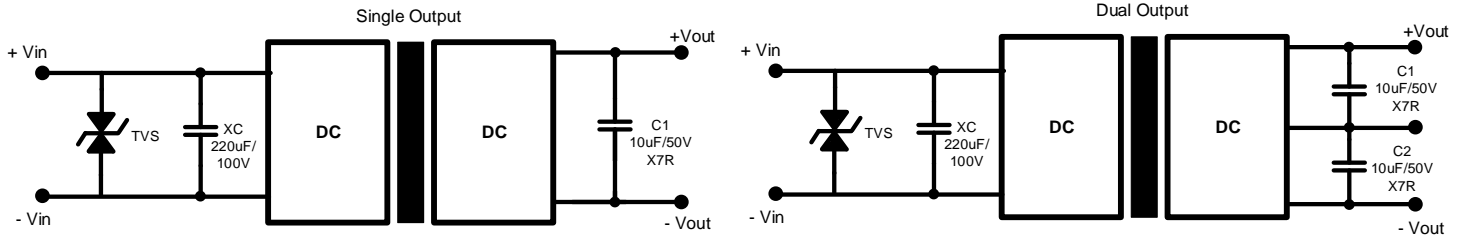
Derating



Typical Application Circuit

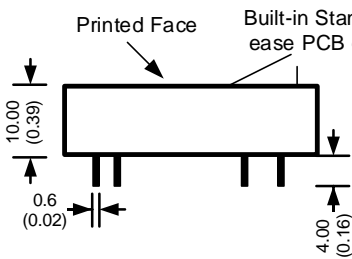
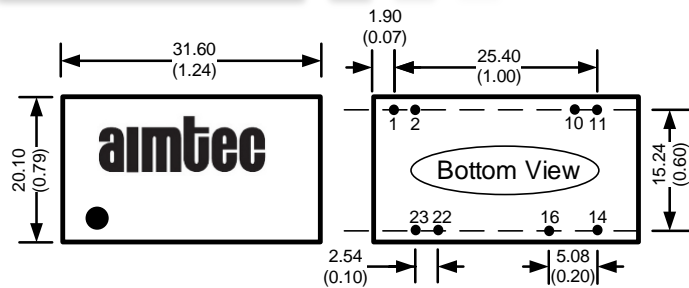


EMC Recommended Circuit



Model	TVS
24V Input models	3.0SMCJ58AG
48V Input models	3.0SMCJ120AG

Dimensions

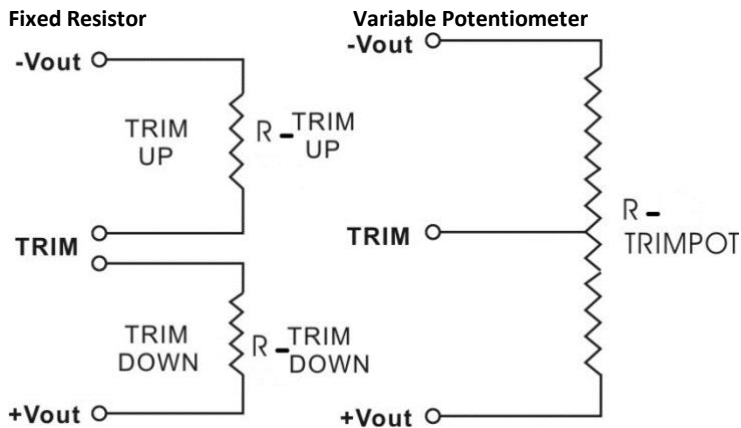


All dimensions are typical: millimeters (inches)
 Pin Diameter: 0.50 ± 0.10 (0.02 ± 0.004)
 Pin Pitch Tolerance: ± 0.35 (± 0.014)
 Case Tolerance: ± 0.5 (± 0.02)

Pin Output Specifications

Pin	Single	Dual
1	ON/OFF	ON/OFF
2	-V Input	-V Input
10	Trim	Trim
11	NC	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

Trim



For 3.3V single output model

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.308	3.275	3.241	3.208	3.174	3.141	3.108	3.074	3.041	3.007
Rt down (KΩ)	152.44	70.36	43.01	29.33	21.12	15.65	11.74	8.808	6.53	4.7
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.375	3.408	3.442	3.475	3.509	3.542	3.575	3.609	3.642	3.676
Rt up (KΩ)	87.75	39.33	23.18	15.11	10.27	7.04	4.74	3.007	1.66	0.59

For 5V single output model

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)	229.9	102.4	59.9	38.65	25.9	17.4	11.33	6.775	3.23	0.4
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)	235	107.5	65	43.75	31	22.5	16.43	11.875	8.33	5.5

For 12V single output model

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.947	11.827	11.706	11.585	11.465	11.344	11.223	11.102	10.982	10.861
Rt down (KΩ)	946.72	455.16	291.31	209.38	160.22	127.45	104.05	86.49	72.84	61.91
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.189	12.309	12.43	12.551	12.671	12.792	12.913	13.033	13.154	13.275
Rt up (KΩ)	232.88	104.44	61.63	40.22	27.38	18.81	12.7	8.11	4.54	1.69

For 15V single output model

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)	1,332.40	644.9	415.73	301.15	232.4	186.57	153.83	129.275	110.18	94.9
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)	248.9	111.4	65.57	42.65	28.9	19.73	13.19	8.275	4.46	1.4

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.