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**AME25-277PEVZ**



Encapsulated

The AME25-277PEVZ is a whole new AC/DC converter that offers much greater cost effectiveness due to material normalization and production automation also leading to improved reliability and performance. Offering a commercial input voltage range of 85-305VAC and an output voltage range from 3.3-24V, this series will offer many benefits to your new system design.

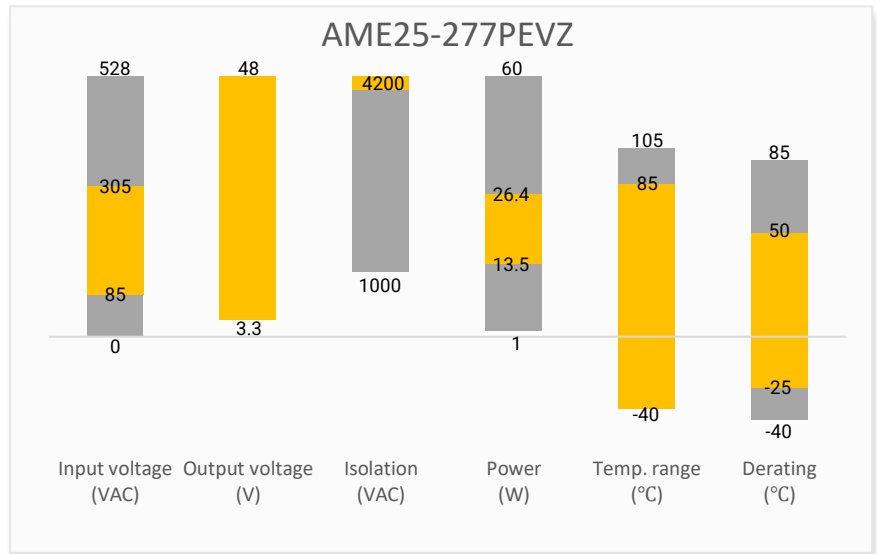
This new series offers great operating temperatures from -40°C to 85°C, also features an isolation of 4200VAC for improved reliability and system safety. Furthermore, a higher MTBF of 500,000h, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection (OVP) come standard with the series.

The AME25-277PEVZ is perfect for street lighting controls, grid power, EVSE, industrial controls, UPS, battery storage system and energy management applications.

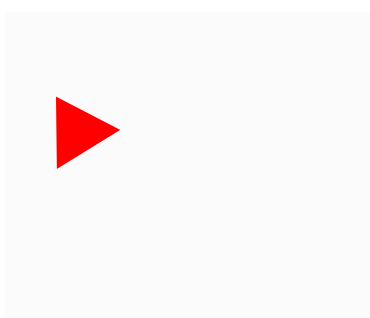
**Features**

- Universal Input: 85 - 305VAC/100 - 430VDC
- Operating Temp: -40 °C to +85 °C
- High isolation voltage: 4200VAC
- Low ripple & noise, 50mV(p-p), typ.
- Output short circuit, over-current, over-voltage protection
- Regulated Output

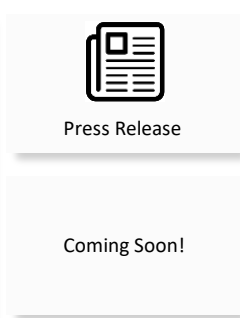
**Summary**



**Training**



Product Training Video  
(click to open)



Application Notes

**Applications**



Power Grid



Industrial



Telecom



Instrumentation

## Models & Specifications

Single Output							
Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Max Output wattage (W)	Output Voltage (V)	Output Current max (A)	Maximum capacitive load ( $\mu$ F)	Efficiency @ 230VAC (%)
AME25-3S277PEVZ	85-305/47-63	100-430	13.5	3.3	4.1	48000	78
AME25-5S277PEVZ	85-305/47-63	100-430	20.5	5	4.1	12240	82
AME25-9S277PEVZ #	85-305/47-63	100-430	22.5	9	2.5	5600	82
AME25-12S277PEVZ #	85-305/47-63	100-430	25	12	2.1	5400	84
AME25-15S277PEVZ	85-305/47-63	100-430	24	15	1.6	2400	85
AME25-24S277PEVZ	85-305/47-63	100-430	26.4	24	1.1	1440	85
AME25-48S277PEVZ	85-305/47-63	100-430	24	48	0.5	600	87

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME25-3S277PEVZ-ST is chassis mounting and AME25-3S277PEVZ-STD is DIN-Rail mounting version).

Input Specifications					
Parameters	Conditions	Minimum	Typical	Maximum	Units
Current	115VAC			0.6	A
	230VAC			0.34	A
Inrush current	115VAC		20		A
	230VAC		40		A
Leakage current	270V/50Hz			0.25	mA (RMS)
External fuse	slow blow type,300V		3.15		A

Output Specifications				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	3.3V output	$\pm$ 3		%
	Others	$\pm$ 2		%
Line regulation	Full load	$\pm$ 0.5		%
Load regulation	0-100% load	$\pm$ 1		%
Ripple & Noise*	20MHz bandwidth	50	100	mV <sub>p-p</sub>
Hold up time	115VAC	10		ms
	230VAC	60		ms

\* Ripple and Noise are measured at 20MHz bandwidth by using the referenced Application circuit.

Isolation Specifications				
Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec, leakage current < 5mA		4200	VAC
Tested Input to PE voltage	60 sec, leakage current < 5mA		2500	VAC
Tested Output to PE voltage	60 sec, leakage current < 5mA		1250	VAC
Impulse voltage (I/O, Input/PE, Output/PE)	Apply 6kV impulse test voltage. Add 1.2/50us impact waveform, including three positive impulse and three negative impulse, whose time interval is no less than 5 seconds.		6000	V
Insulation resistance (I/O, Input/PE, Output/PE)	500VDC		≥ 100	MΩ

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Safety class	Class I			
Overvoltage category	OVC III; Per IEC 62477, 2000m			
Over Current protection	Auto recovery	≥ 150		% of I <sub>out</sub>
Over voltage protection	3.3V / 5V V <sub>out</sub>		7.5	VDC
	9V V <sub>out</sub>		15	VDC
	12V /15V V <sub>out</sub>		20	VDC
	24V V <sub>out</sub>		30	VDC
	48V V <sub>out</sub>		60	VDC
Short circuit protection	Hiccup, Continuous, Auto recovery			
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-40 to +105		°C
Lead temperature	Wave soldering	260 ± 5 °C; time : 5 - 10s		
	Hand soldering	360 ± 10 °C; time : 3 - 5s		
Power consumption	230VAC, Others		0.3	W
	230VAC, 48V V <sub>out</sub>		0.4	W
Power derating	-40 °C ~ -25 °C	3.33		% / °C
	50 °C ~ 70 °C	2.5		% / °C
	70 °C ~ 85 °C	0.67		% / °C
	85VAC ~ 100VAC	1		% / VAC
	277VAC ~ 305VAC	0.715		% / VAC
	2000m – 5000m	6.67		% / Km
Temperature coefficient		±0.02		% / °C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	Heat resistant black Plastic (flammability to UL 94V-0)			
Weight	PCB mountable models	120		g
	With optional -ST mounting plate:	170		
	With optional -STD mounting plate:	210		
Dimensions (L x W x H)	PCB mountable models	2.76 x 1.89 x 0.93 inches (70.0 x 48.0 x 23.5mm)		
	With optional -ST mounting plate	3.78 x 2.13 x 1.26 inches (96.1 x 54.0 x 32.0mm)		
	With optional -STD mounting plate	3.78 x 2.13 x 1.44 inches (96.1 x 54.0 x 36.6mm)		
MTBF	> 300 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load			
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

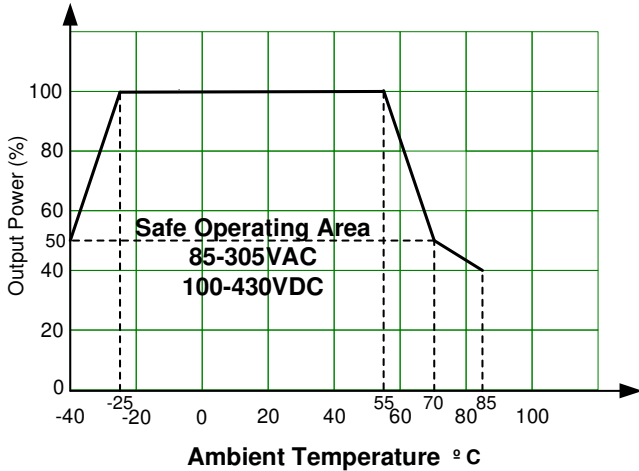
### Parameters

Agency approvals	CE EN62368-1; UL 62368-1 (With models marked with # only)	
Standards	Information technology Equipment	Designed to meet IEC/UL 62368-1, IEC 62477-1
	EMC - Conducted and radiated emission	CISPR32 / EN55032, CLASS B
	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 $\pm 4\text{KV}$ , Criteria A
	Surge Immunity	IEC 61000-4-5 L-L $\pm 2\text{KV}$ /L-G $\pm 4\text{KV}$ , Criteria A
		IEC 61000-4-5 L-L $\pm 4\text{KV}$ /L-G $\pm 6\text{KV}$ , with EMC recommended circuit, Criteria A
	CS, Conducted Disturbance Immunity	IEC 61000-4-6 10Vr.m.s, Criteria A
Voltage dips, Short Interruptions Immunity	IEC 61000-4-11 0%, 70%, Criteria B	

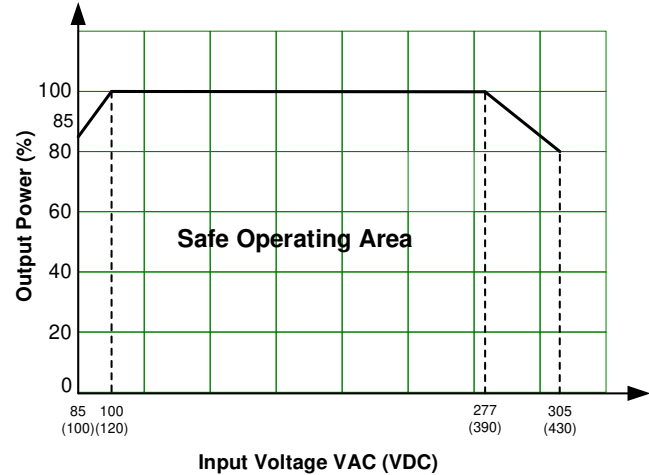
## Derating



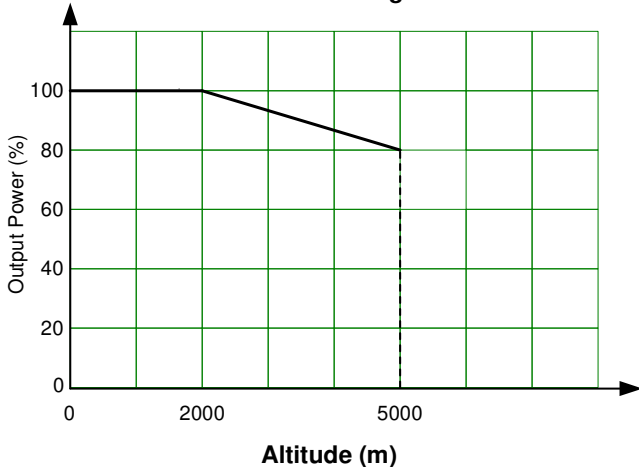
Free Air Convection



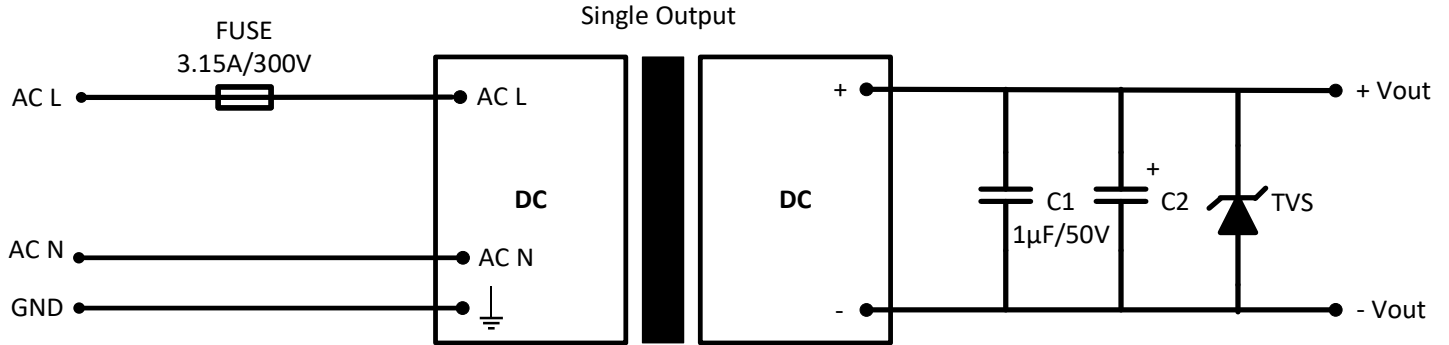
Free Air Convection at 25°C



Altitude Derating curve



## Typical Application Circuit

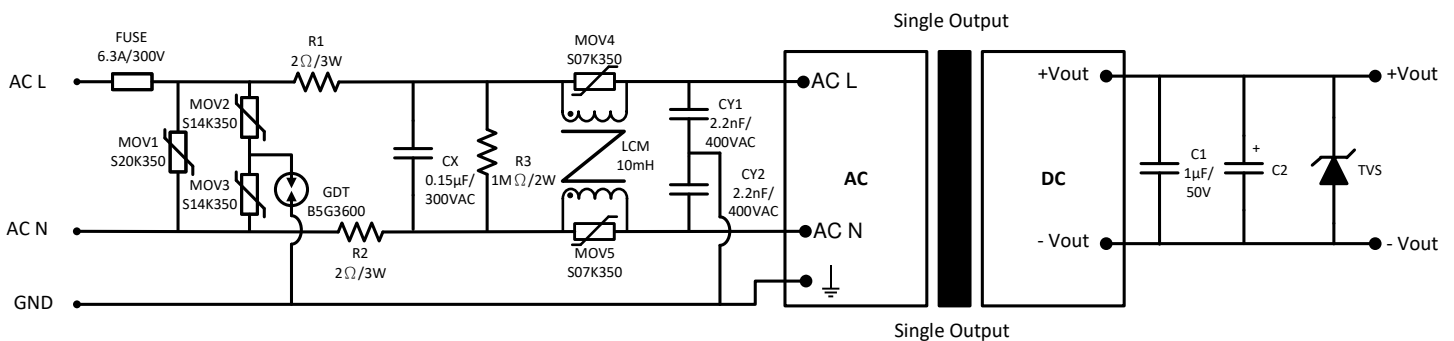


Model	C2	TVS
3.3 / 5V Vout	330 µF / 16V	SMBJ7.0A
9 Vout	330 µF / 16V	SMBJ12A
12 / 15 Vout	330 µF / 25V	SMBJ20A
24 Vout	120 µF / 35V	SMBJ30A
48 Vout	68 µF / 63V	SMBJ64A

### Output Filter Components:

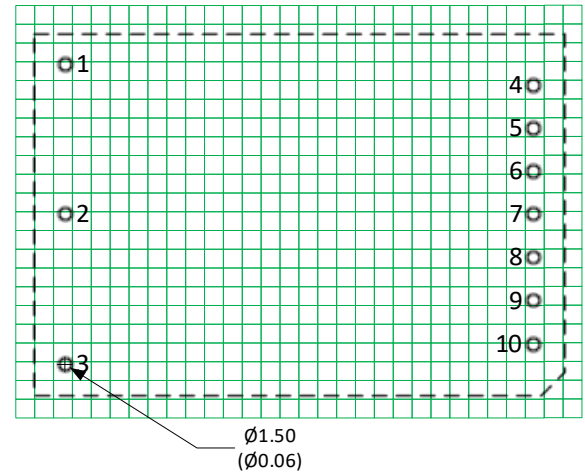
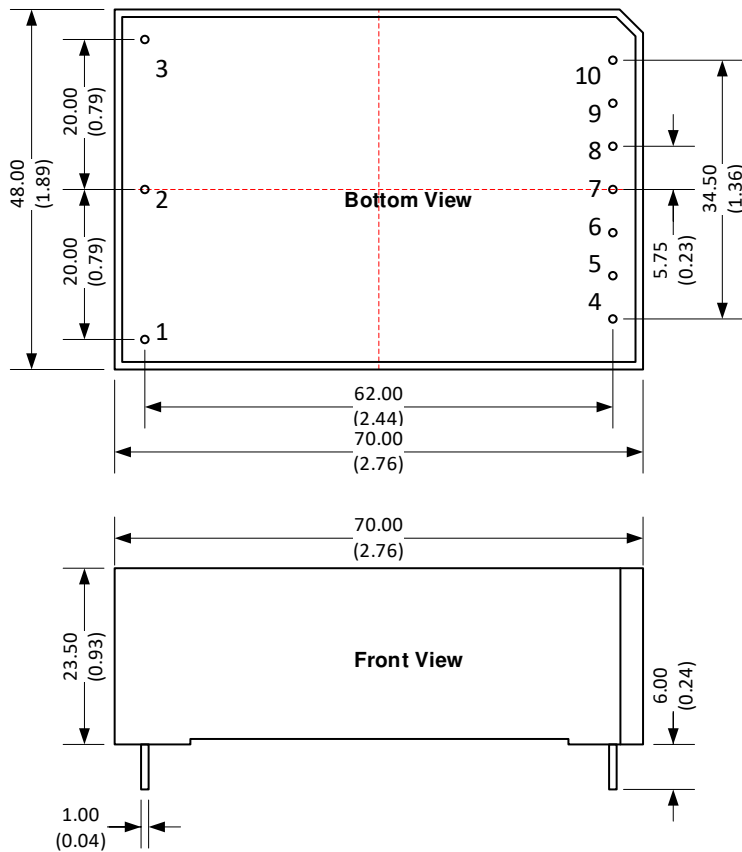
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode.

## EMC Recommended Circuit



NOTE: R1 & R2 should be wire-wound resistors

## Dimensions



Note : Grid 2.54\*2.54 mm

### Notes:

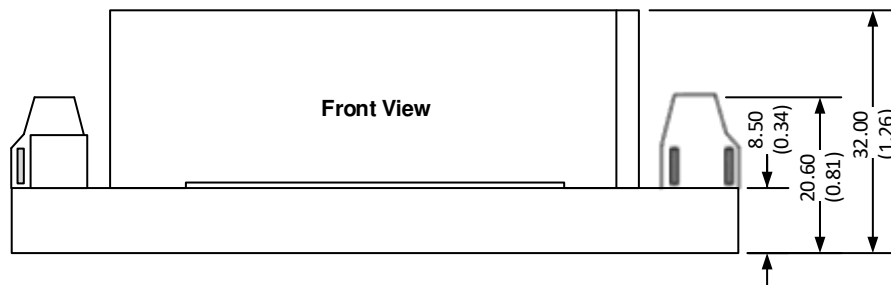
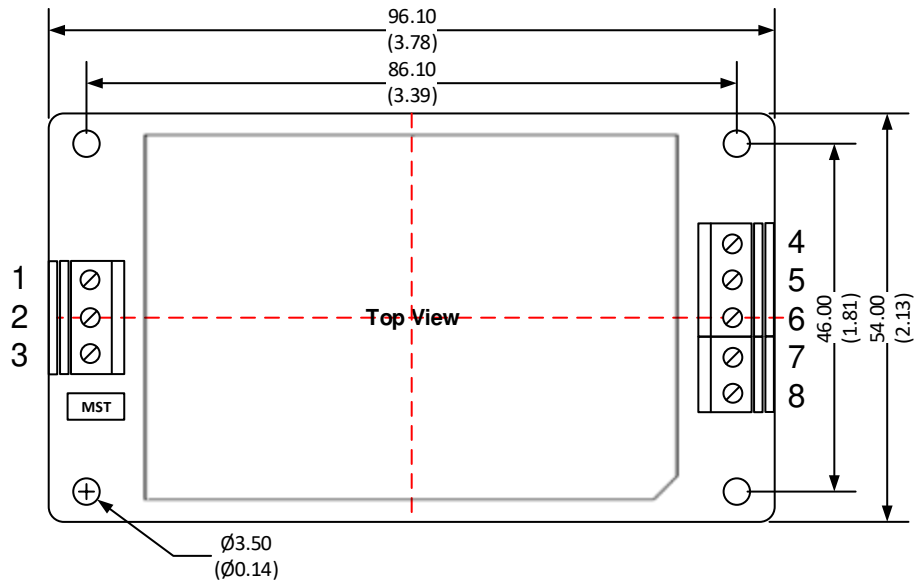
All dimensions are typical in millimeters (inches).

Pin diameter tolerances :  $\pm 0.10$  ( $\pm 0.004$ )

General tolerance :  $\pm 0.50$  ( $\pm 0.02$ )

Pin Output Specifications			
Pin	Single	Pin	Single
1	Ground	6	No pin
2	AC Input (N)	7	No pin
3	AC Input (L)	8	No pin
4	Trim	9	+V Output
5	-V Output	10	No pin

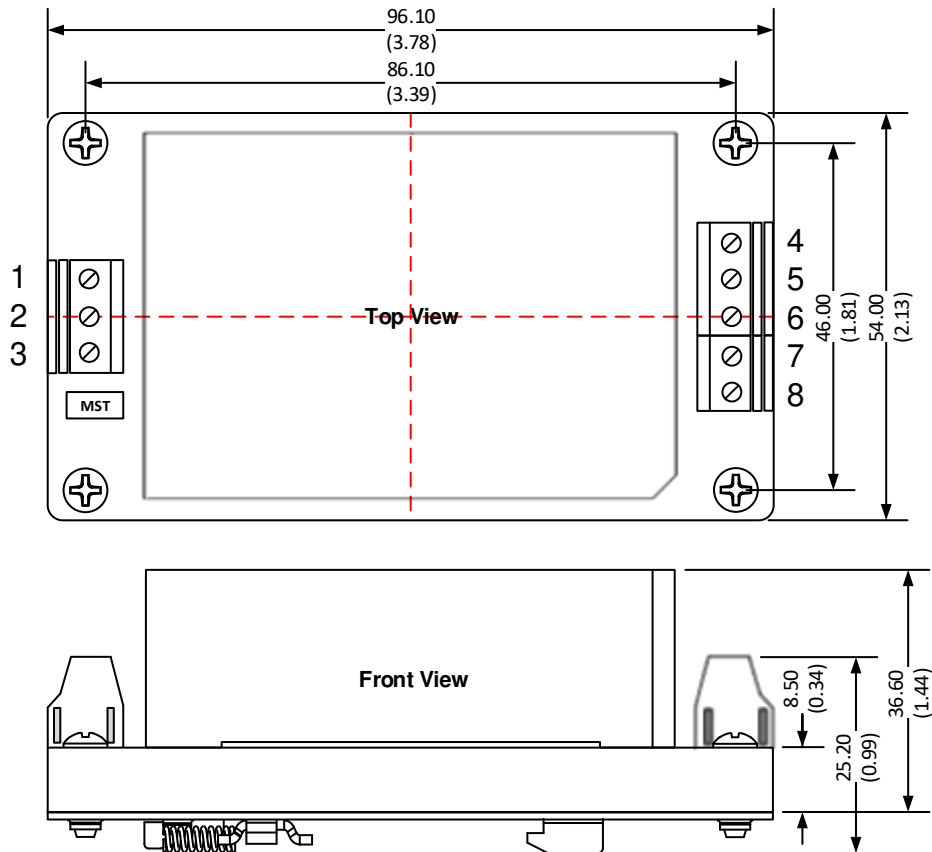
## Dimensions with ST Optional



**Notes:**  
 All dimensions are typical in millimeters (inches).  
 Wire range : 24-12 AWG  
 Tightening torque : Max 0.4 N.m  
 General tolerance  $\pm 1.00$  : ( $\pm 0.04$ )

Pin Output Specifications			
Pin	Single	Pin	Single
1	Ground	5	NC
2	AC Input (N)	6	Trim
3	AC Input (L)	7	NC
4	-V Output	8	+V Output

**Dimensions with STD Optional**



**Notes:**

All dimensions are typical in millimeters (inches).  
 Mounting rail : TS35, rail need to connect safety ground  
 Wire range : 24-12 AWG  
 Tightening torque : Max 0.4 N.m  
 General tolerance  $\pm 1.00$  : ( $\pm 0.04$ )

Pin Output Specifications			
Pin	Single	Pin	Single
1	Ground	5	NC
2	AC Input (N)	6	Trim
3	AC Input (L)	7	NC
4	-V Output	8	+V Output



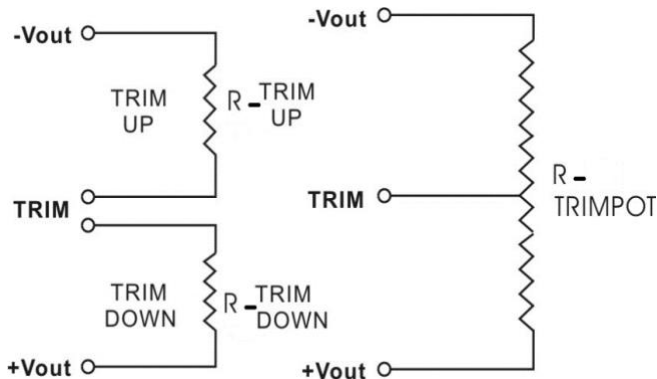
## Trimming



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

### Fixed Resistor

### Variable Potentiometer



Leave open if not used.

## AME25-3S277PEVZ

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)	240.741	154.964	113.111	88.321	71.927	60.280	51.580	44.834	39.450	35.053
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)	2987.087	256.530	133.563	90.076	67.832	54.320	45.243	38.725	33.817	29.988

## AME25-5S277PEVZ

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)	174.844	115.508	85.188	66.781	54.419	45.545	38.864	33.654	29.476	26.052
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.060	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
Rt up (KΩ)	3405.559	411.051	195.327	127.862	94.906	75.373	62.451	53.269	46.408	41.087

## AME25-9S277PEVZ

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)	682.347	378.845	259.708	196.082	156.501	129.500	109.904	95.034	83.365	73.964
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)	485.777	200.712	126.214	91.902	72.168	59.348	50.351	43.689	38.557	34.482

### AME25-12S277PEVZ

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)	1187.734	717.345	509.879	393.046	318.102	265.944	227.552	198.111	174.817	155.927
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)	1184.255	350.655	205.454	145.120	112.075	91.219	76.859	66.369	58.369	52.068

### AME25-15S277PEVZ

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)	893.077	571.417	417.212	326.705	267.184	225.063	193.684	169.404	150.057	134.280
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)	2105.383	286.791	153.446	104.544	79.162	63.621	53.128	45.566	39.858	35.397

### AME25-24S277PEVZ

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)	1063.929	700.514	518.971	410.098	337.538	285.720	246.862	216.643	192.470	172.694
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)	68999.000	248.097	123.774	82.233	61.443	48.964	40.642	34.696	30.236	26.767

### AME25-48S277PEVZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	47.520	47.040	46.560	46.080	45.600	45.120	44.640	44.160	43.680	43.200
Rt down (KΩ)	1352.055	871.467	639.143	502.197	411.899	347.882	300.130	263.143	233.650	209.583
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	48.480	48.960	49.440	49.920	50.400	50.880	51.360	51.840	52.320	52.800
Rt up (KΩ)	1094.199	123.623	65.071	43.951	33.063	26.421	21.946	18.727	16.300	14.405

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