

## Series AME60-MJZ

### 60 Watt | AC-DC / DC-DC Converter



#### FEATURES:

- I/O Isolation 4000VAC
- Input under-voltage protection
- Input: 90-264VAC/47-63Hz, or 122-370VDC
- Over current, Over Voltage Protection
- Continuous Short circuit protection
- Low no load consumption  $\leq 0.5W$
- Efficiency up to 86%
- Output Voltage adjustment

#### Models

##### Single output



Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Output Voltage (V)	Output Current max (A)	Maximum capacitive Load ( $\mu F$ )	Efficiency 230VAC (%)
AME60-5SMJZ	90-264/47-63	122-370	5	10	80,000	82
AME60-9SMJZ	90-264/47-63	122-370	9	6.6	28,000	84
AME60-12SMJZ	90-264/47-63	122-370	12	5	14,000	86
AME60-15SMJZ	90-264/47-63	122-370	15	4	12,000	86
AME60-24SMJZ	90-264/47-63	122-370	24	2.5	4000	86
AME60-48SMJZ	90-264/47-63	122-370	48	1.25	1000	86

Note: Add suffix "-ST" for optional screw terminal bottom plate, only available for "AME60-48SMJZ" models.

#### Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Current (full load)	115 VAC		1.4	A
	230 VAC		0.7	A
Inrush current <2ms (cold start)	115 VAC	30		A
	230 VAC	50		A
Under voltage protection	Shutdown		75	VAC
			105	VDC

#### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Full load	$\pm 2$		%
Line regulation	LL-HL, Full Load	$\pm 0.5$		%
Load regulation	5-100% load	$\pm 1$		%
Ripple & Noise	20MHz bandwidth		150	mV p-p
Hold-up time	115VAC	15		ms
	230VAC	80		ms
Voltage adjustment range	Single output only		$\pm 10$	% of Vout

#### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		4000	VAC
Isolation voltage Input to Ground	60 sec		1500	VAC
Isolation voltage Output to Ground	60 sec		500	VAC

#### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	100		KHz
Protection class		Class I		
Over current protection		$\geq 110$		% of Iout
Over voltage protection		Zener diode clamp		
Short circuit protection		Continuous, Auto recovery		
Operating temperature	See derating curve	-40 to +70		$^{\circ}C$
Storage temperature		-40 to +85		$^{\circ}C$
Maximum Case temperature			100	$^{\circ}C$
Temperature coefficient		$\pm 0.02$		% / $^{\circ}C$
Cooling	Free air convection			

**General Specifications (continued)**

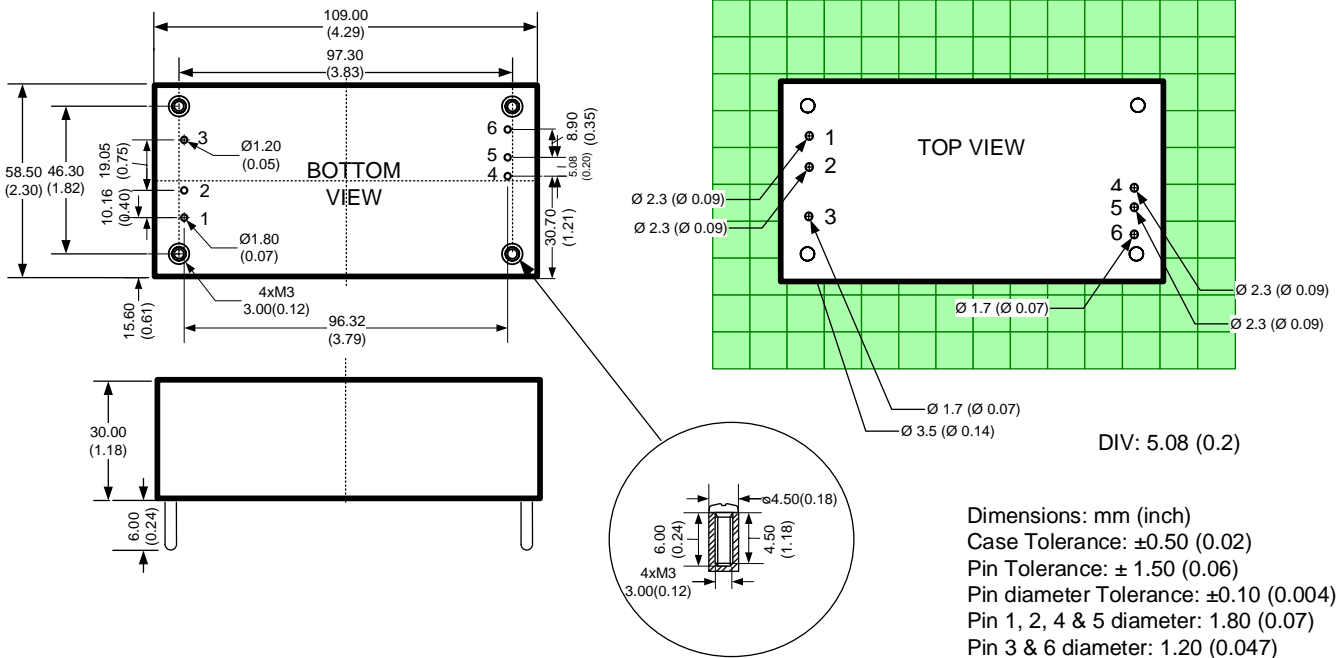
Parameters	Conditions	Typical	Maximum	Units
Humidity	Non condensing		95	% RH
Case material	Plastic (flammability to UL 94V-0)			
Weight	PCB mountable models	310		g
	With optional -ST mounting plate:	400		
Dimensions (L x W x H)	PCB mountable models	4.291 x 2.303 x 1.181 inches (109.00 x 58.50 x 30.00mm)		
	With optional -ST mounting plate:	5.315 x 2.756 x 1.516 inches (135.00 x 70.00 x 38.50 mm)		
MTBF	> 300,000 hrs (MIL-HDBK -217F, t <sub>a</sub> =+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	cULus, CE	
Standards	Information technology Equipment	IEC/EN/UL 60950-1
	EMI - Conducted and radiated emission	EN55022, class B
	Electrostatic Discharge Immunity	IEC 61000-4-2 Level 3
	RF, Electromagnetic Field Immunity	IEC 61000-4-3 Level 3
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4 Level 4
	Surge Immunity	IEC 61000-4-5 Level 3
	RF, Conducted Disturbance Immunity	IEC 61000-4-6 Level 3
	Power frequency Magnetic Field Immunity	IEC 61000-4-8 Level 3
	Voltage dips, Short Interruptions Immunity	IEC 61000-4-11 Class 2

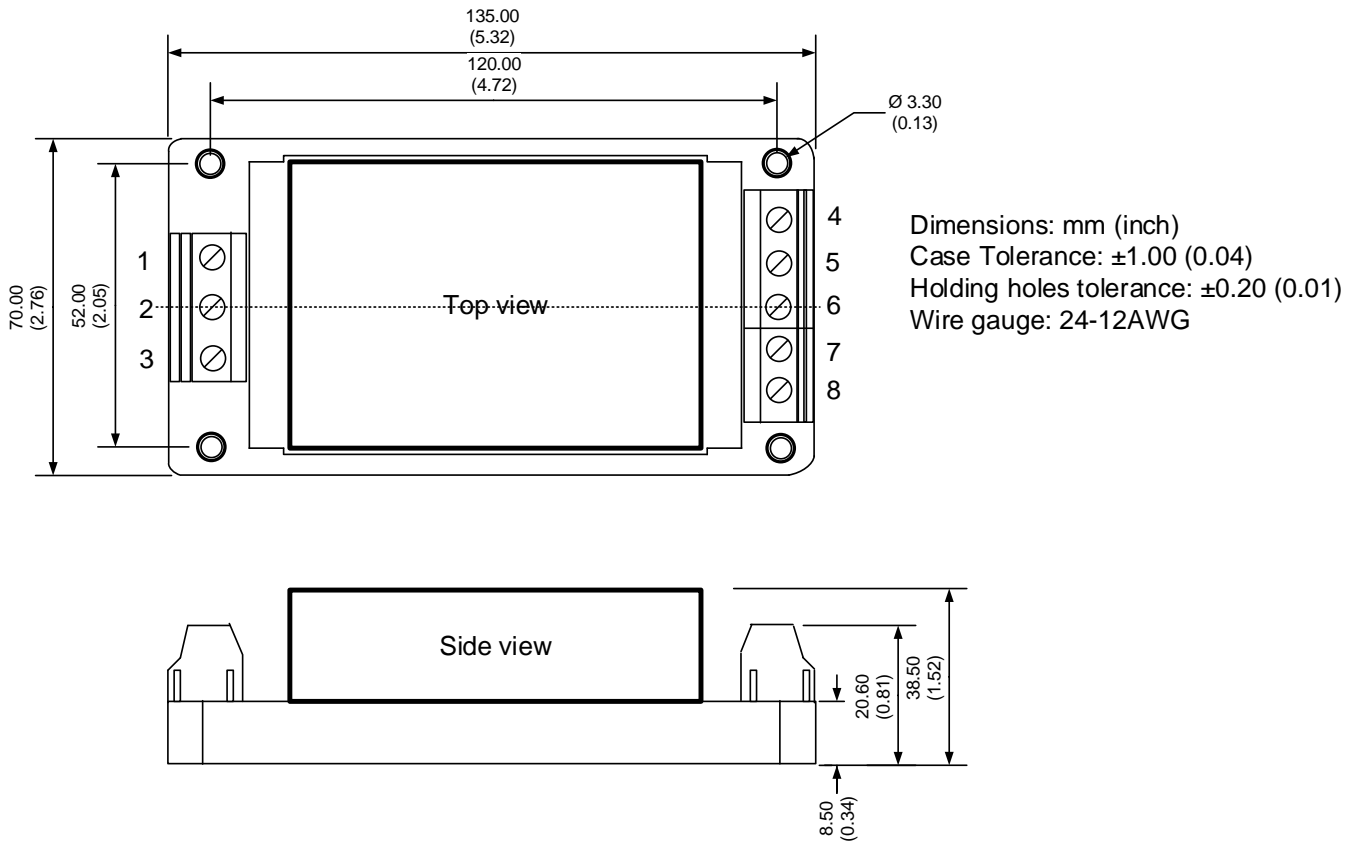
**Dimensions**



**Pin Out Specifications**

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

**With optional -ST bottom plate**

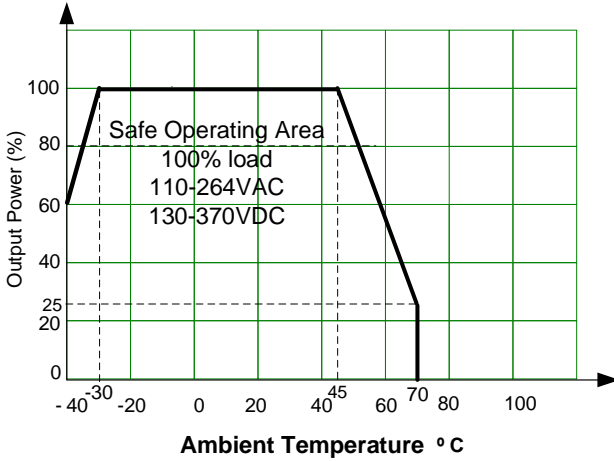


**Pin Out Specifications for -ST models**

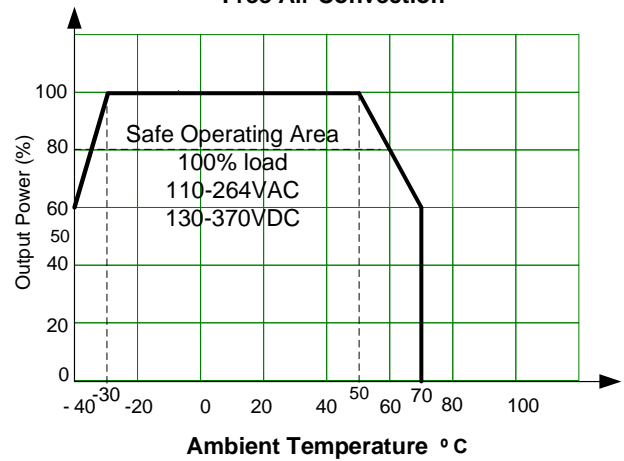
Pin	Single
1	AC Input (N)
2	AC Input (L)
3	Ground
4	N.C.
5	N.C.
6	+V Output
7	-V Output
8	Trim

## Deratings

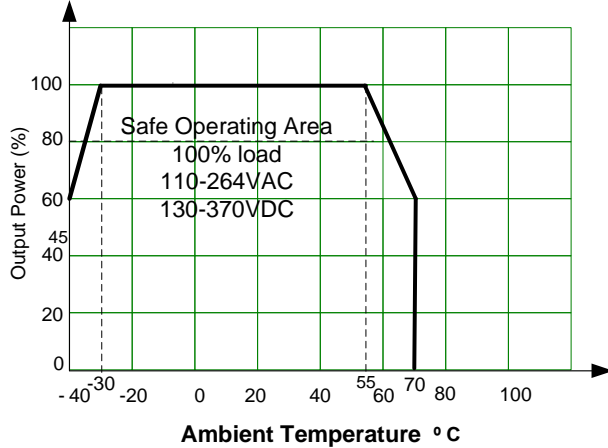
AME60-5SMJZ & AME60-5SMJZ  
Free Air Convection



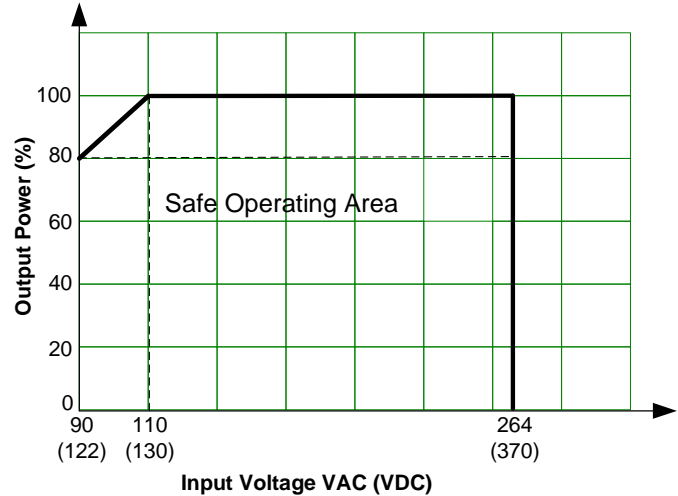
AME60-12SMJZ & AME60-15SMJZ  
Free Air Convection



AME60-24SMJZ & AME60-48SMJZ  
Free Air Convection

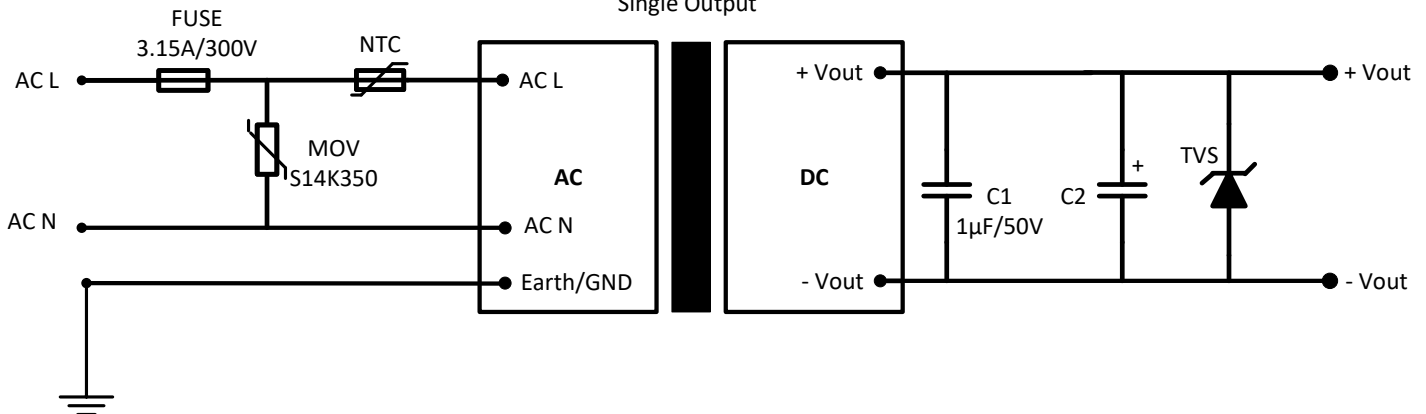


Free Air Convection at 25°C



## Typical application circuits

Single Output



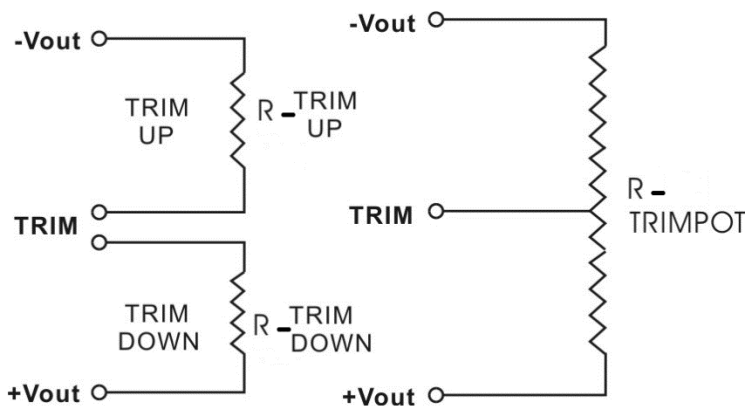
Model	C2	TVS
Single 5 Vout	680 $\mu$ F	7V
Single 9 Vout	470 $\mu$ F	12V
Single 12 & 15 Vout	330 $\mu$ F	20V
Single 24 Vout	200 $\mu$ F	30V
Single 48 Vout	100 $\mu$ F	64V

## Trimming

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

### Fixed Resistor

### Variable Potentiometer



Leave open if not used.

#### AME60-5SMJZ

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 $\Omega$ )	160.7	78.2	50.7	36.95	28.7	23.2	19.271	16.325	14.033	12.2
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 $\Omega$ )	164	81.5	54	40.25	32	26.5	22.571	19.625	17.333	15.5

#### AME60-9SMJZ

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 (K $\Omega$ )	254.795	141.96	97.332	73.419	58.515	48.336	40.943	35.329	30.921	27.369
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 (K $\Omega$ )	187.839	76.19	47.509	34.368	26.829	21.939	18.511	15.974	14.021	12.471

AME60-12SMJZ

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)	183.233	111.59	79.474	61.246	49.499	41.299	35.249	30.602	26.921	23.933
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)	211.778	57.03	32.596	22.642	17.238	13.845	11.516	9.819	8.527	7.511

AME60-15SMJZ

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)	616.5	304	199.833	147.75	116.5	95.667	80.786	69.625	60.944	54
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)	124	61.5	40.667	30.25	24	19.833	16.857	14.625	12.889	11.5

AME60-24SMJZ

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)	471.081	287.942	205.845	159.249	129.221	108.258	92.793	80.914	71.504	63.865
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)	239.556	64.606	36.982	25.728	19.619	15.783	13.15	11.232	9.771	8.622

AME60-48SMJZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	47.52	47.04	46.56	46.08	45.6	45.12	44.64	44.16	43.68	43.2
Rt down (KΩ)	1825.631	1135.459	818.914	637.228	519.354	436.695	375.522	328.42	291.036	260.643
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	48.48	48.96	49.44	49.92	50.4	50.88	51.36	51.84	52.32	52.8
Rt up (KΩ)	561.5	130.649	73.548	50.996	38.919	31.395	26.258	22.527	19.694	17.47

**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).