

# Series AMEL20-AZ

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



### FEATURES:

- I/O Isolation 3000VAC
- Operating Temp: -40 °C to +80 °C
- Over load and, Over Voltage Protection
- Input: 90-305VAC, 47-440Hz, or 130-430VDC
- Energy Star compliant
- Small package
- Up to 81% efficiency
- Short Circuit Protection

### Models Single output



Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Max Output wattage (W)	Output Voltage (V)	Output Current max (A)	Maximum capacitive load (µF)	Efficiency (%)		
							115 VAC	230 VAC	277 VAC
AMEL20-3.3SAZ	90-305/47-440	130-430	13.2	3.3	4	5600	73	73	72
AMEL20-5SAZ	90-305/47-440	130-430	20	5	4	4700	74	74	72
AMEL20-12SAZ	90-305/47-440	130-430	20	12	1.66	3300	80	80	80
AMEL20-15SAZ	90-305/47-440	130-430	20	15	1.33	2200	81	80	80
AMEL20-24SAZ	90-305/47-440	130-430	20	24	0.84	1000	79	80	79

Note: Optional mounting plate version can be order by adding "-ST" suffix to part number (ex. AMEL20-5SAZ-ST)

### Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Current (full load)	115 VAC		460	mA
	230 VAC		290	mA
	277 VAC		260	mA
Inrush current <2ms (cold start)	115 VAC		30	A
	230 VAC		50	A
	277 VAC		55	A
Leakage current			0.25	mA
External fuse	Recommended slow blow type	1.5		A
Input dissipation	(115/230/277 VAC)	≤0.5		W
Start-up time		150		ms

### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±2		%
Line regulation	(LL-HL)	±1		%
Load regulation	0-100% load	±2		%
Transient recovery time		500		µs
Transient response deviation	25% load step	±2		% of Vout
Ripple & Noise*		200		mV p-p
Hold-up time		10		ms

\*Ripple and Noise are measured at 20MHz bandwidth & 230VAC by using a 0.1µF (M/C) and 470µF (E/C) parallel capacitor.

### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		3000	VAC
Isolation resistance		>1000		MΩ

### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency		65		KHz
Over load protection	Foldback, AMEL20-5SAZ	110		%
	Others	130		
Over voltage protection	Zener Diode Clamp			

**General Specifications (continued)**

Parameters	Conditions	Typical	Maximum	Units
Short circuit protection		Auto recovery		
Operating temperature	With derating over 45°C	Refer to Chart		°C
Maximum case temperature			100	°C
Storage temperature		-45 to +95		°C
Temperature coefficient		±0.02		%/ °C
Cooling		Free air convection		
Humidity	Non condensing		20 ~ 95	% RH
Case material		Plastic (flammability to UL 94V-0)		
Weight		70		g
Dimensions (L x W x H)		56.48 x 30.86 x 25.10mm (2.22 x 1.21 x 0.99 inches)		
MTBF		> 400 000 hrs (MIL-HDBK -217F, t=+25°C)/ Full Load > 100,000 hrs (MIL-HDBK -217F, t=at highest operating temperature)/Full Load		

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage (115/230/277VAC) and at rated output load unless otherwise specified.

**Environment Approval**

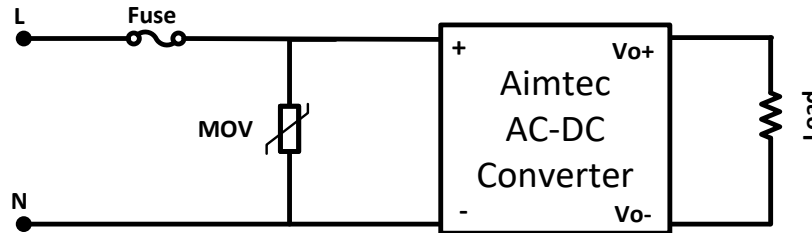
Test	Parameters	Conditions
Shock	Wave form	Half sine wave
	Acceleration amplitude	5gn
	Bump duration	30ms
	Converter operation	before and after test, body mounted (on chassis)
	Number of bumps	18 (3 in each direction for every axis)
Vibration	Test mode	Sweep sine, 10-100Hz, speed 0.05Hz/s
	Displacement	1mm
	Acceleration	3g, 3 loops 30min one cycle, 3h total, every axis tested
	Converter operation	before and after test, body mounted (on chassis)

**Safety Specifications**

Parameters		
Agency approvals	CE, UL, FCC, CB	
Standards	Information Technology Equipment	UL 60950-1: 2 <sup>nd</sup> Edition
	Information Technology Equipment	CAN/CSA-C22.2 No.60950-1-07, 2 <sup>nd</sup> Edition
	EMI - Conducted and radiated emission	EN55022, class B EN55024: 2010
	Harmonic Current Emissions	IEC/EN 61000-3-2, Class A
	Voltage fluctuations and flicker	IEC/EN 61000-3-3, :2008
	Electrostatic Discharge Immunity	IEC 61000-4-2, Contact ±4KV/Air ±8KV, Criteria A
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, 3V/m, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4, ±1KV, Criteria A
	Surge Immunity	IEC 61000-4-5, ±1KV, Criteria A
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 3Vrms, Criteria A
	Power frequency Magnetic Field Immunity	IEC 61000-4-8, 1A/m, Criteria A
	Voltage dips, Short Interruptions Immunity	IEC 61000-4-11: 2004
FCC	47 CFR Part 15 Subpart B, ICES-003 Iss. 5-2012, ANSI C63.4-2009	

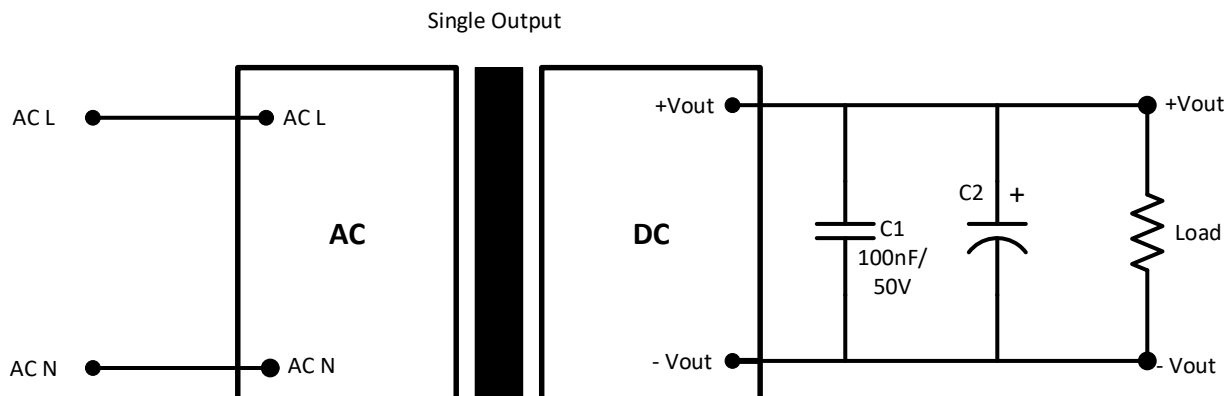
### Additional Surge Protective Circuitry

The AMEL20-AZ series design level surge protection is certified to IEC 61000-4-5 surge Line to Line of 1KV. However greater protection can be enhanced by adding protective devices to ingress circuitry. For example, by adding an MOV (Metal Oxide Varistor) device example S14K320E2 to the N / L input lines 2KV surge protection or greater, can be achieved.



MOV PN	Vrms V	Vdc V	Wmax (2ms) J	Pmax W
S14K320E2	320	420	136	0.6

### Application Circuit For Ripple Noise Consideration

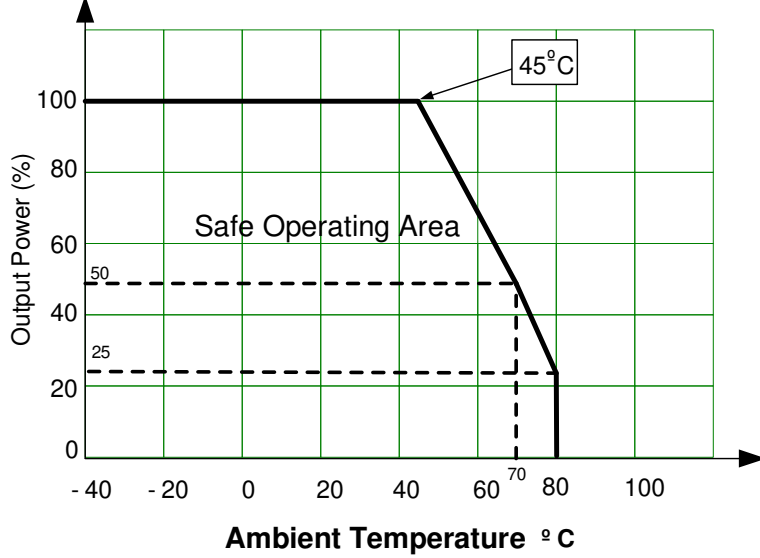


Output	C2
3.3V, 5V, 12V, 15V	470µF/25V
24V	470µF/50V

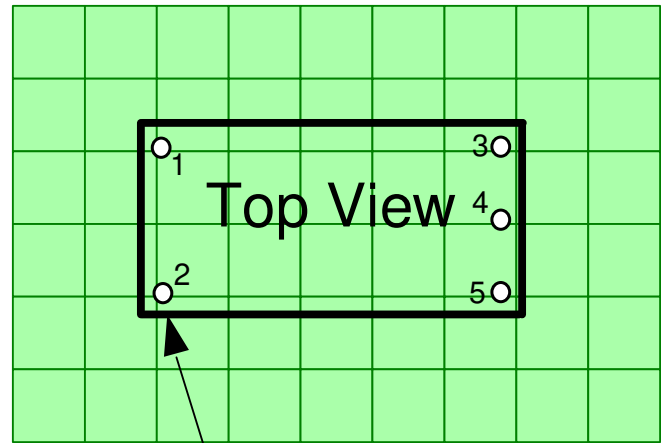
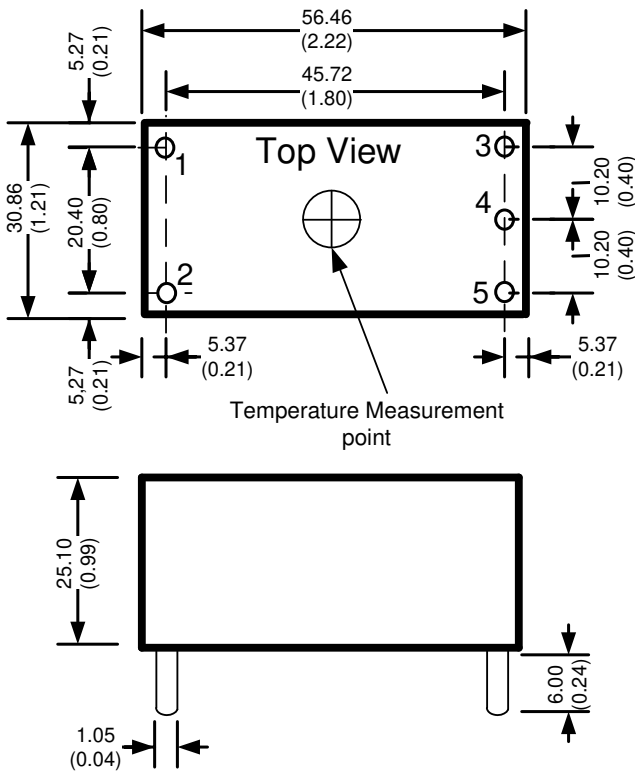
### Pin Out Specifications

Pin	Single
1	AC Input (L)
2	AC Input (N)
3	+V Output
4	-V Output
5	No pin

**Derating**



**Dimensions**



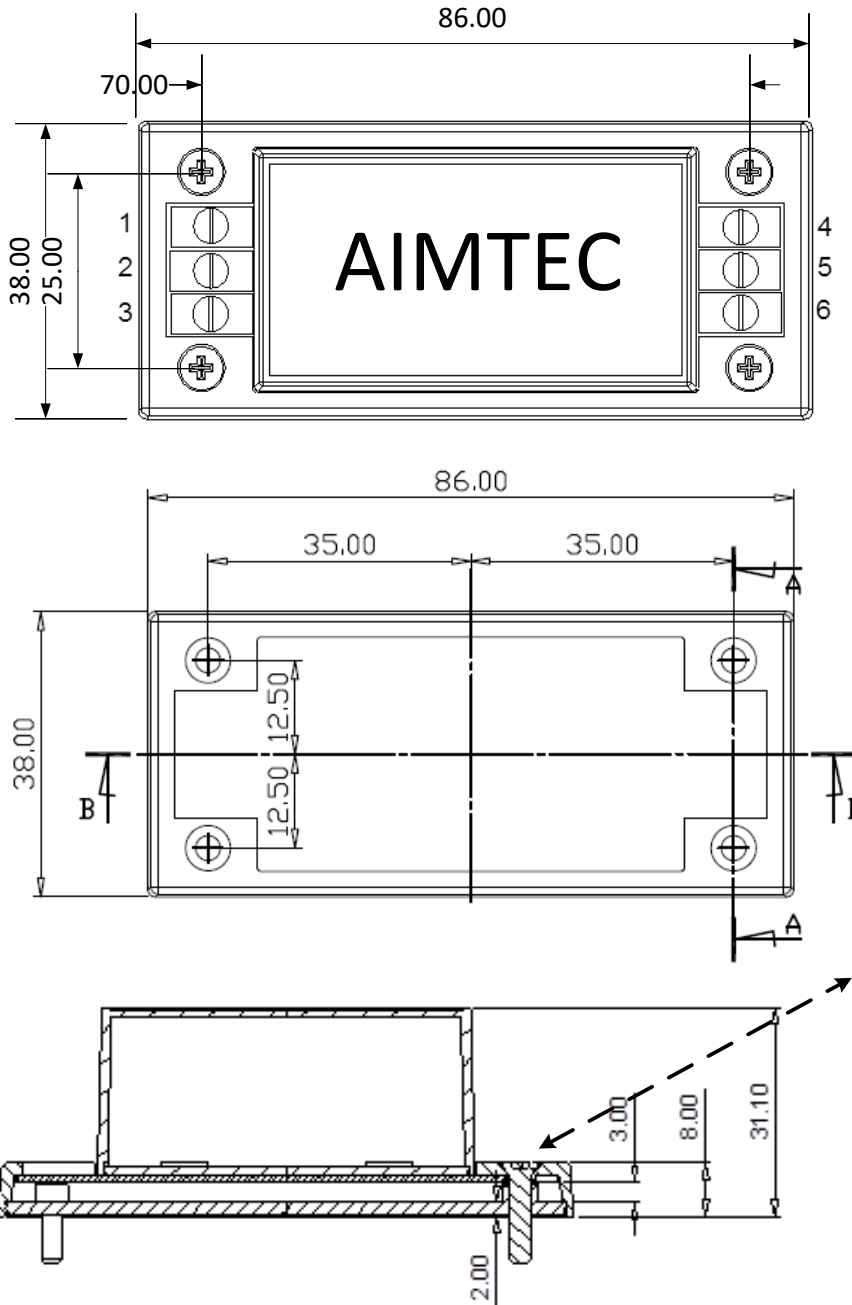
DIV: 10.00 (0.40)

5Ø 1.0 (Ø 0.04)

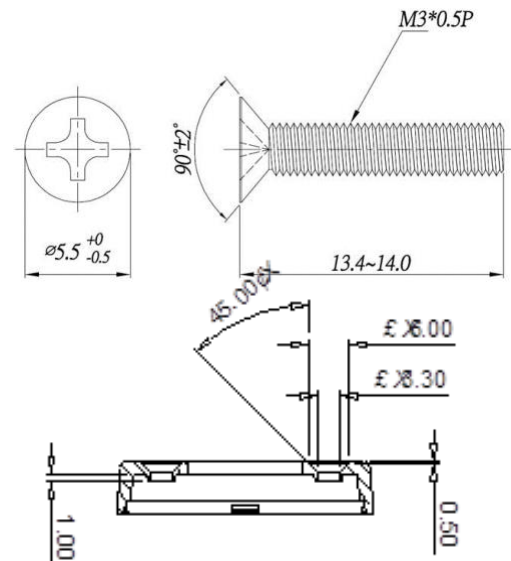
Dimensions mm (inch)  
Case Tolerance  $\pm 0.50$  ( $\pm 0.02$ )  
Pin Diameter  $1.0 \pm 0.05$  ( $0.04 \pm 0.002$ )  
Pin Pitch Tolerance  $\pm 0.5$  ( $\pm 0.02$ )

**Dimensions of Optional ST Mounting Plate Version**

**Pin Out Specification ST Version**



Pin	Single
1	AC Input (N)
2	No pin
3	AC Input (L)
4	+V Output
5	Common
6	No pin



**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).