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AMEL5-277HALPZ



Encapsulated

AMEL5-277HALPZ series is an efficient 5W AC-DC power supply module. Offering a commercial input voltage range of 85-305VAC, output voltage ranges from 3.3-24V, low power consumption, high efficiency and high reliability.

This new series offers great operating temperatures, from -40°C to 85°C with full power from -40°C to 50°C and features an isolation of 4000VAC for improved reliability and system safety. Furthermore, a high MTBF of 1,500,000h, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection (OVP) come standard with the series.

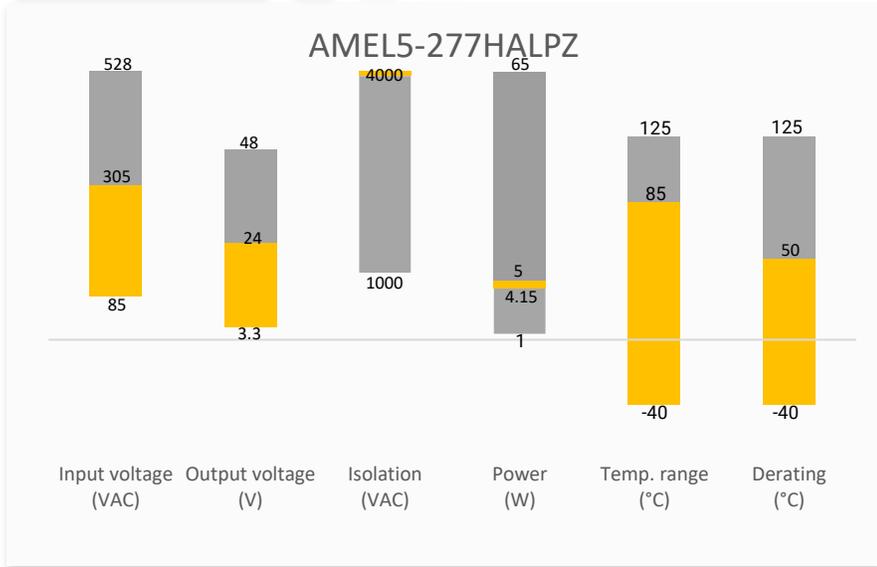
The AMEL5-277HALPZ is suitable for grid power, instrumentation, industrial controls, communication, and civil applications.

Features

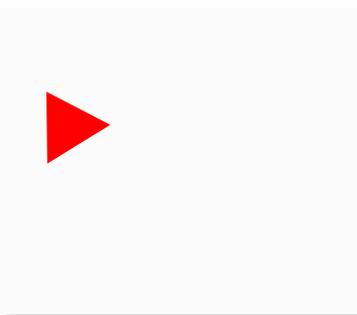


- Universal Input: 85 - 305VAC/100 - 430VDC
- Operating Temp: -40 °C to +85 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 200mV(p-p), max.
- Output short circuit, over-current, over-voltage protection
- Regulated Output
- Efficiency up to 81%
- Agency approvals: EN/UL62368-1, EN60335-1, EN61558-1
- Designed to meet IEC62368-1

Summary



Training

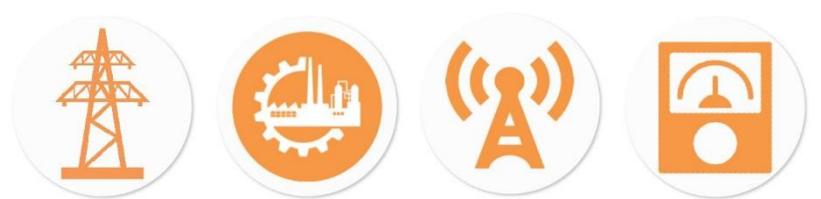


Product Training Video
(click to open)



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 (μ F)	Efficiency @ 230VAC Typ. (%)
AMEL5-3S277HALPZ	85-305/47-63	100-430	4.15	3.3	1.25	4000	74
AMEL5-5S277HALPZ	85-305/47-63	100-430	5	5	1	3000	78
AMEL5-9S277HALPZ	85-305/47-63	100-430	5	9	0.555	1200	79
AMEL5-12S277HALPZ	85-305/47-63	100-430	5	12	0.416	1200	80
AMEL5-15S277HALPZ	85-305/47-63	100-430	5	15	0.333	680	80
AMEL5-24S277HALPZ	85-305/47-63	100-430	5	24	0.208	220	81

Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Input current	115VAC		130	mA
	230VAC		70	mA
Inrush current	115VAC	35		A
	230VAC	70		A
Leakage	277VAC, 50Hz	0.25	0.6	mA RMS
Fuse	2A/300V, Slow blow, built-in			
Input filter	Built-in EMC filter			

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		± 3		%
Line regulation	Full load	± 0.5		%
Load regulation	0-100% load	± 1		%
Ripple & Noise*	20MHz bandwidth	150	200	mV p-p
Hold up time	115VAC	10		ms
	230VAC	50		ms

* Ripple and Noise are measured at 20MHz bandwidth with a 47 μ F electrolytic capacitor and a 0.1 μ F ceramic capacitor. Please refer to the application note for specific details.

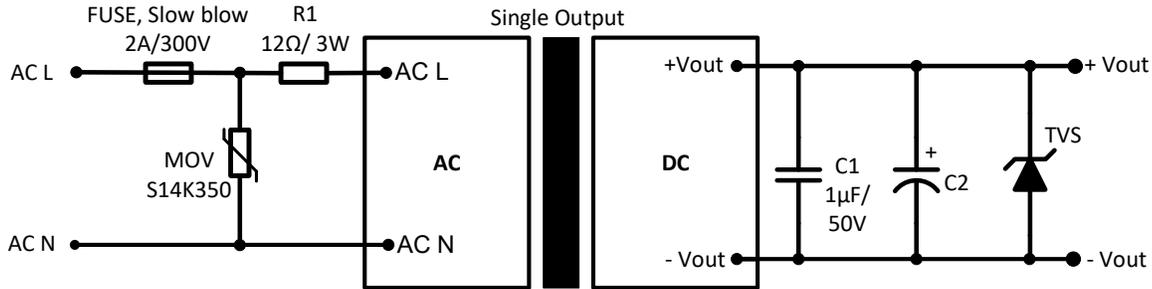
Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 5 mA	4000		VAC
Resistance	500VDC	>100		M Ω

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Protection class	Class II			
Overtoltage category	OVC II			
Over current protection	Auto recovery	≥ 110		% of Iout
Over voltage protection	3.3, 5Vout, voltage clamp, hiccup		8.5	VDC
	9, 12Vout, voltage clamp, hiccup		20	VDC
	15Vout, voltage clamp, hiccup		24	VDC
	24Vout, voltage clamp, hiccup		34	VDC
Short circuit protection	Hiccup, Continuous, Auto recovery			
Switching Frequency		65		KHz
Operating altitude			5000	m
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-40 to +105		°C
Reflow soldering temperature	Duration 5 - 10s	260		°C
Maximum case temperature			95	°C
No-load power consumption	230VAC	0.1		W
Power Derating	+50 °C to +85 °C	1.72		%/°C
	2000 - 5000m	6.7		%/km
Temperature coefficient		±0.02		%/°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Vibration	10Hz to 55Hz, 5G, 30 minutes along X, Y and Z axis			
Case material	Plastic (flammability to UL 94V-0)			
Weight		33		g
Dimensions (L x W x H)		1.80 x 1.00 x 0.85 inches (45.70 x 25.40 x 21.50 mm)		
MTBF	> 1 500 000 hrs (MIL-HDBK -217F, t=+25°C)			
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	EN/UL62368-1, UKCA, EN60335-1, EN61558-1	
Standards	Designed to meet IEC62368-1	
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B
	Electrostatic Discharge Immunity	IEC/EN61000-4-2 Contact ±6KV, Air ±8KV, Criteria B
	RF, Electromagnetic Field Immunity	IEC/EN61000-4-3 10V/m, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC/EN61000-4-4 ±2KV, Criteria B ±4KV, Criteria B (with the recommended EMC circuit)
	Surge Immunity	IEC/EN61000-4-5 L-L ±1KV, Criteria B L-L ±2KV, Criteria B (with the recommended EMC circuit)
	RF, Conducted Disturbance Immunity	IEC/EN61000-4-6 10Vr.m.s, Criteria A
	Voltage dips, Short Interruptions Immunity	IEC/EN61000-4-11 0%, 70%, Criteria B

Recommended EMC Circuit



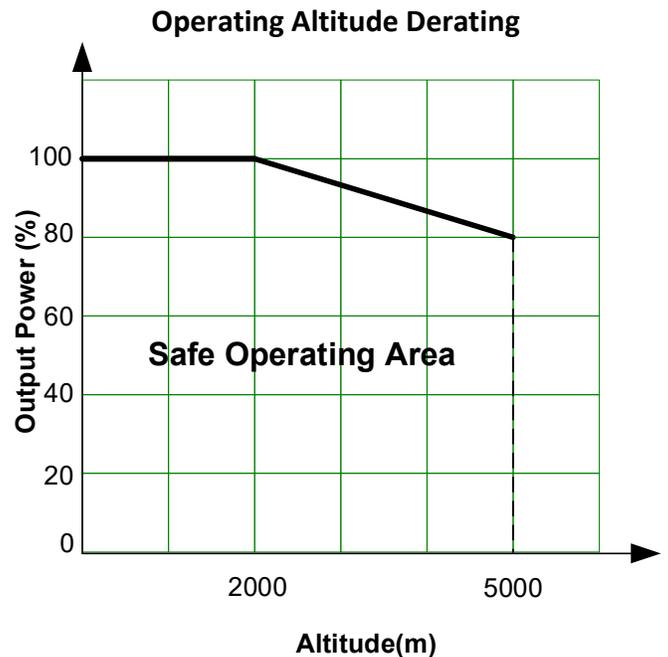
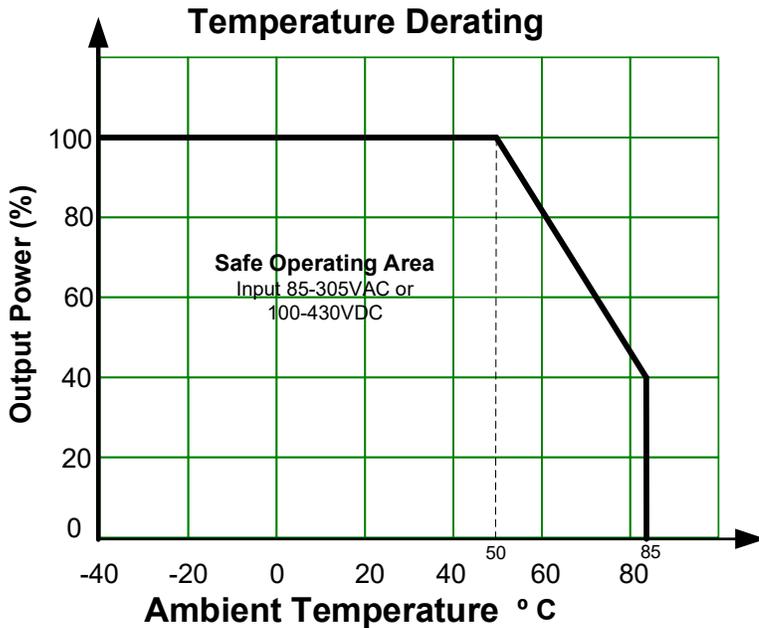
Model	C2	TVS
3.3, 5Vout	220μF/35V	7V
9Vout	100μF/35V	12V
12, 15Vout	100μF/35V	20V
24Vout	100μF/35V	30V

For filtering components:

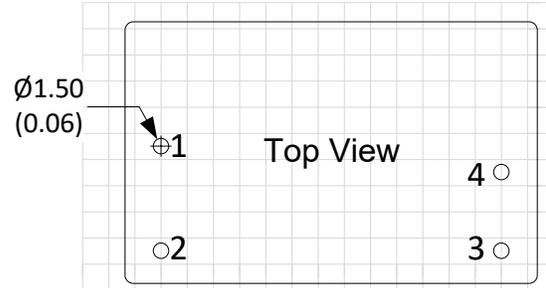
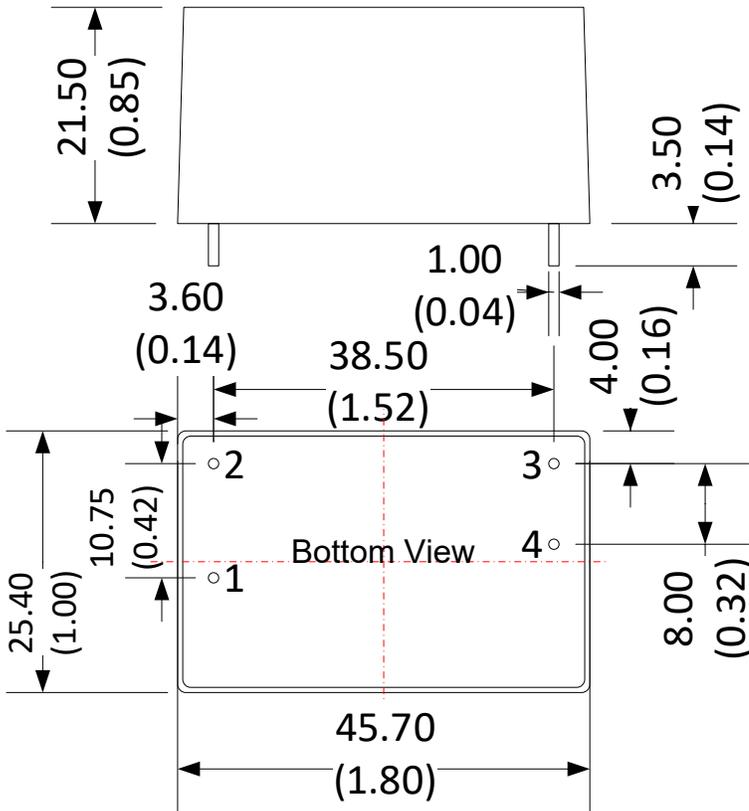
The C2 capacitor is recommended to use electrolytic type with high frequency and low ESR rating.

The C1 capacitor is recommended to use ceramic type for filtering high-frequency noise.

Derating



Dimensions



Grid size: 2.54*2.54mm

Note:

Unit: mm(inch)

General tolerance: ± 1.0 (± 0.04)

Pin diameter tolerance: ± 0.15 (± 0.006)

Pin Output Specifications	
Pin	Function
1	AC Input (N)
2	AC Input (L)
3	-V Output
4	+V Output

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.