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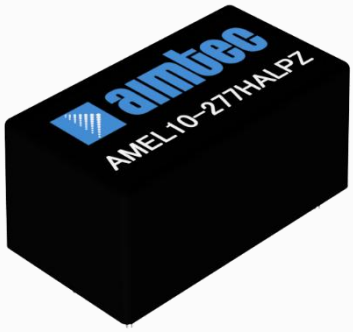
AMEL10-277HALPZ



Encapsulated

AMEL10-277HALPZ series is an efficient 10W 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.

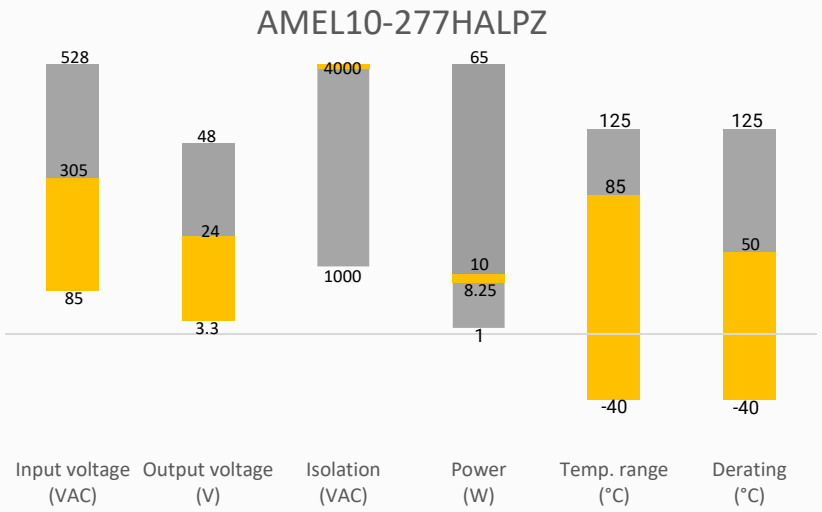
This new series offers great operating temperatures, from -40°C to 85°C with full power from -20°C to 50°C and features an isolation of 4000VAC for improved reliability and system safety. Furthermore, a high MTBF of 1,500,000h, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection (OVP) come standard with the series.

The AMEL10-277HALPZ 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 85%
- Agency approvals: UL62368-1
- Designed to meet IEC/EN 62368-1, UKCA, EN 60335-1, EN 61558-1

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

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 (µF)	Efficiency @ 230VAC Typ. (%)
AMEL10-3S277HALPZ	85-305/47-63	100-430	8.25	3.3	2.5	6600	78
AMEL10-5S277HALPZ	85-305/47-63	100-430	10	5	2	5000	82
AMEL10-9S277HALPZ	85-305/47-63	100-430	10	9	1.111	3000	84
AMEL10-12S277HALPZ	85-305/47-63	100-430	10	12	0.833	2000	85
AMEL10-15S277HALPZ	85-305/47-63	100-430	10	15	0.666	1500	85
AMEL10-24S277HALPZ	85-305/47-63	100-430	10	24	0.416	680	85

Note : Add suffix "-ST" for optional screw terminal bottom plate (ex. AMEL10-3S277HALPZ-ST) or "-STD" for optional DIN rail screw terminal bottom plate (ex. AMEL10-3S277HALPZ-STD). Models with terminal bottom plates have their efficiency decreased by 2%.

Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Input current	115VAC		180	mA
	230VAC		120	mA
Inrush current	115VAC	35		A
	230VAC	70		A
Leakage	277VAC, 50Hz		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 47µF electrolytic capacitor and a 0.1µF 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 ≤ 5mA	4000		VAC
Resistance	500VDC	>100		MΩ

General Specifications

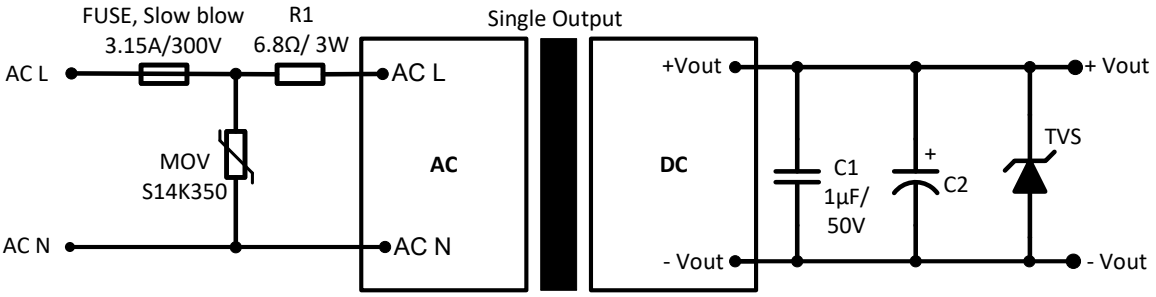
Parameters	Conditions	Typical	Maximum	Units
Protection class	Class II			
Overvoltage category	OVC II			
Over current protection	Auto recovery	≥ 110		% of Iout
Over voltage protection	3.3, 5Vout, voltage clamp, hiccup		8.5	VDC
	9, 12Vout, voltage clamp, hiccup		20	VDC
	15Vout, voltage clamp, hiccup		24	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 seconds	260		°C
Maximum case temperature			95	°C
No-load power consumption	230VAC	0.1		W
Power Derating	-40 °C to -20 °C	1.5		%/°C
	+50 °C to +85 °C	1.43		%/°C
	85VAC to 100VAC	2		%/VAC
	277VAC to 385VAC	0.71		%/VAC
	2000 - 5000m	6.7		%/km
Temperature coefficient		±0.02		%/°C
Cooling	Free air convection			
Humidity	Non-condensing	≥10	95	% RH
Vibration	10Hz to 55Hz, 5G, 30 minutes along X, Y and Z axis			
Case material	Plastic (flammability to UL 94V-0)			
Weight	PCB mountable models	33		g
	With optional -ST mounting plate	53		g
	With optional -STD mounting plate	73		g
Dimensions (L x W x H)	PCB mountable models	1.80 x 1.00 x 0.85 inches (45.70 x 25.40 x 21.50 mm)		
	With optional -ST mounting plate	2.99 x 1.24 x 1.19 inches (76.00 x 31.50 x 30.30 mm)		
	With optional -STD mounting plate	2.99 x 1.24 x 1.37 inches (76.00 x 31.50 x 34.90 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	UL 62368-1 (Except for models with suffix “-ST” or “-STD”)	
Standards	Designed to meet IEC/EN 62368-1, UKCA, EN 60335-1, EN 61558-1	
	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

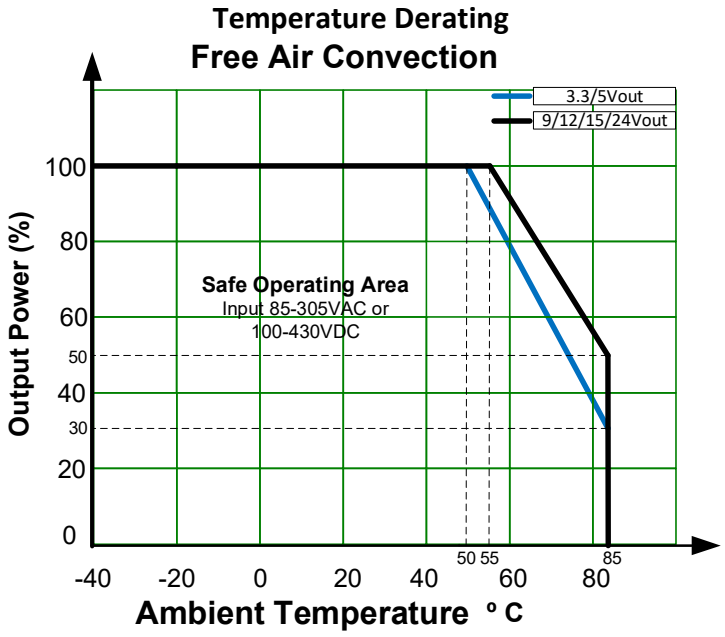
Recommended EMC Circuit

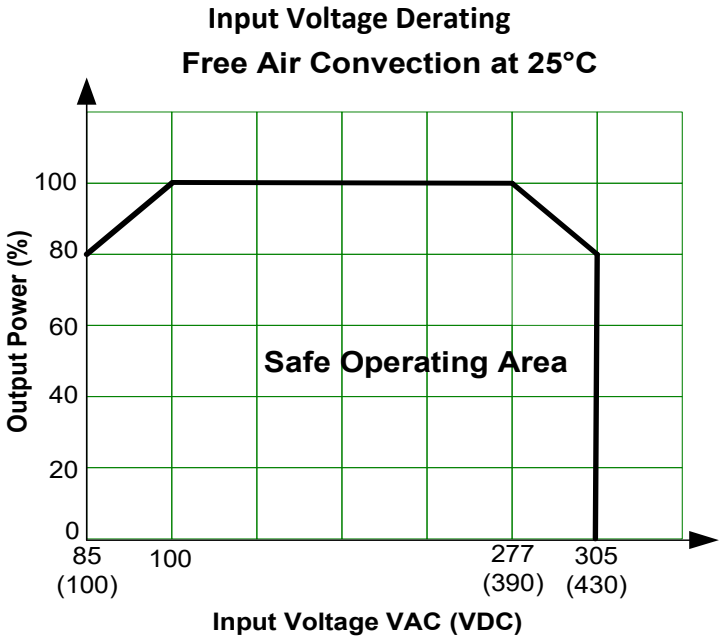


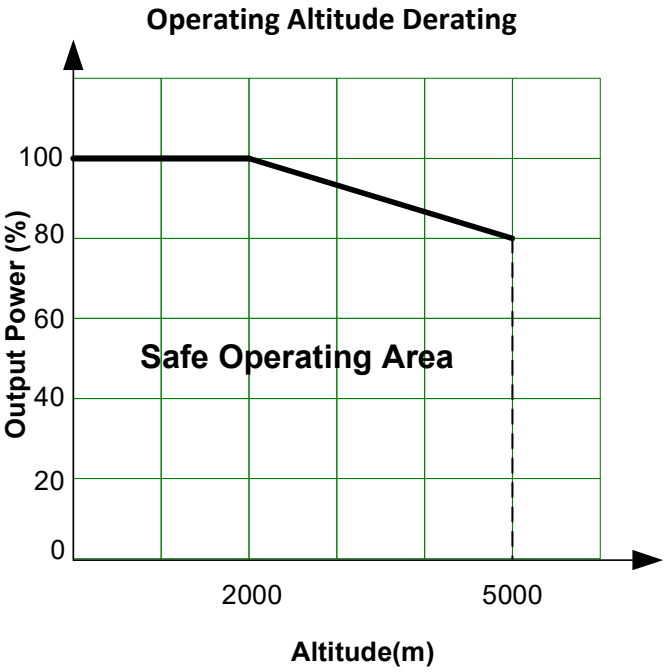
Model	C2	TVS
3.3, 5Vout	220µF/35V	SMBJ7.0A
9Vout	100µF/35V	SMBJ12A
12, 15Vout	100µF/35V	SMBJ20A
24Vout	100µF/35V	SMBJ30A

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.

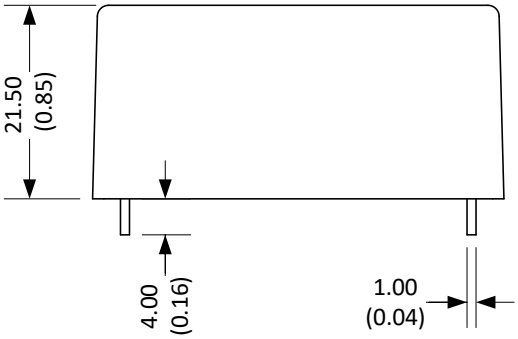
Derating

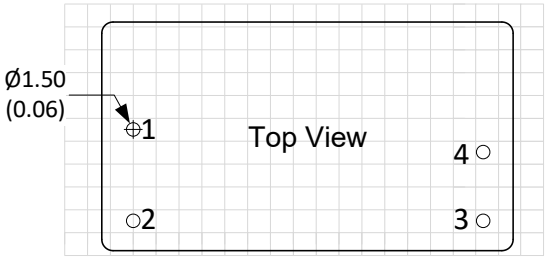




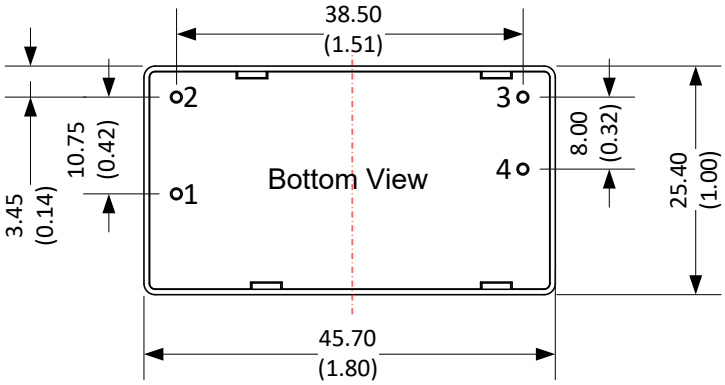

Operating Altitude Derating
100
80
60
40
20
0
Output Power (%)
Safe Operating Area
2000
5000
Altitude(m)

Dimensions





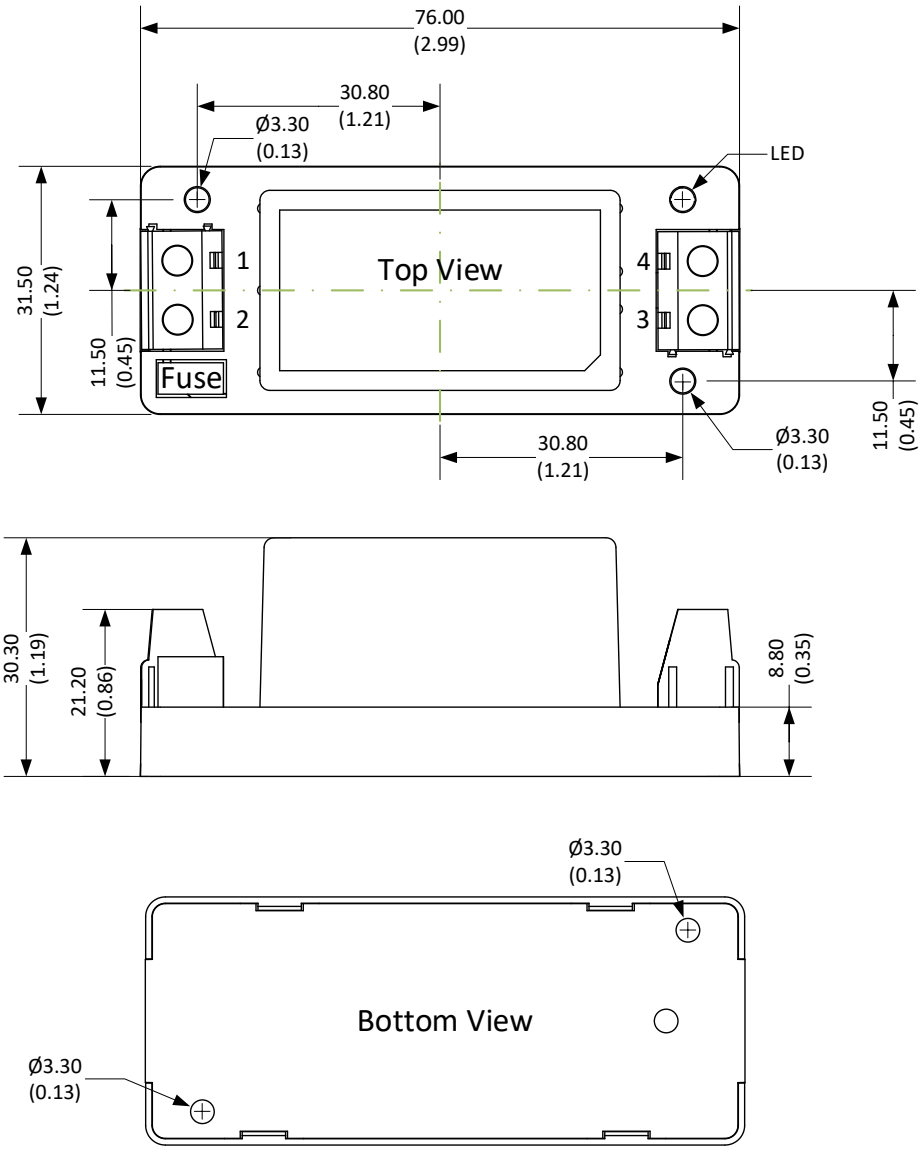
Grid size: 2.54*2.54mm



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

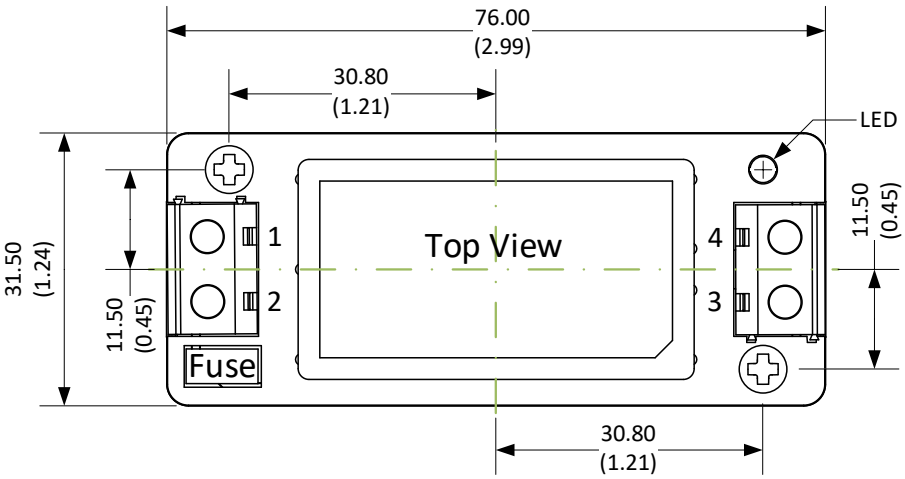
Dimensions with ST Optional

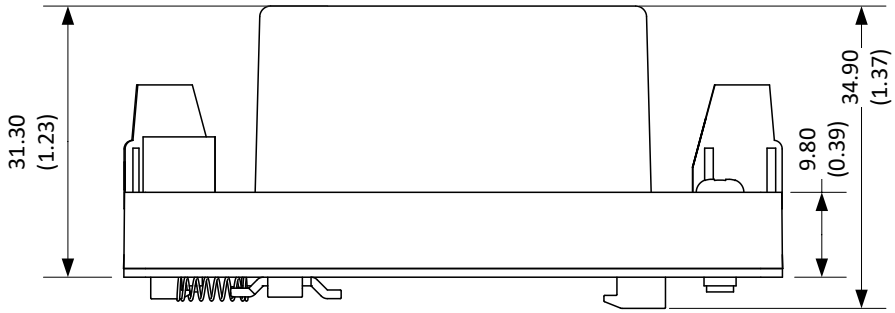


Pin Output Specifications	
Pin	Function
1	AC Input (N)
2	AC Input (L)
3	-V Output
4	+V Output

Note:
Unit: mm(inch)
Wire range : 24-12 AWG
Tightening torque : Max 0.4 N.m
General tolerance ±1.00 (±0.04)

Dimensions with STD Optional





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

Note:
Unit: mm(inch)
Wire range : 24-12 AWG
Tightening torque : Max 0.4 N.m
General tolerance ±1.00 (±0.04)
Mounting rail must be grounded.

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