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AMEM5-277HAGY

Encapsulated

The AMEM5-277HAGY 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, high reliability, and safer isolation.

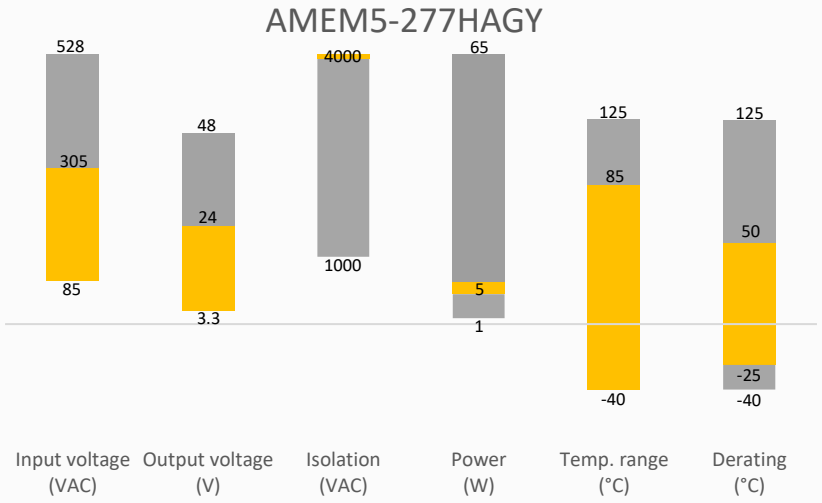
This new series offers great operating temperatures, from -40°C to 85°C with full power up to 50°C and features an isolation of 4000VAC for improved reliability and system safety. Furthermore, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection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

The AMEM5-277HAGY is suitable for grid power, LED, 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, 100mV(p-p), max.
- Output short circuit, over-current, over-voltage protection
- Low no-load power consumption of 0.1W
- Efficiency up to 81%
- Designed to meet: UL62368-1, BS EN62368-1, EN61558-1, EN60335-1, BS EN/EN55035

Summary



RoHS

3yr Warranty

CE

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. (%)
AMEM5-3S277HAGY	85-305/47-63	100-430	5	3.3	1.515	4000	69
AMEM5-5S277HAGY	85-305/47-63	100-430	5	5	1	3000	76
AMEM5-9S277HAGY	85-305/47-63	100-430	5	9	0.555	1200	79
AMEM5-12S277HAGY	85-305/47-63	100-430	5	12	0.416	1200	79
AMEM5-15S277HAGY	85-305/47-63	100-430	5	15	0.333	680	78
AMEM5-24S277HAGY	85-305/47-63	100-430	5	24	0.208	220	81

Note: Use suffix "ST" for chassis (ex. AMEM5-12S277HAGY-ST is chassis mounting version).

Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Input current	115VAC		150	mA
	230VAC		70	mA
Inrush current	115VAC	30		A
	230VAC	60		A
Leakage	264VAC		0.25	mA RMS
Recommended External Fuse	1A/300V, Slow blow, *required*			

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	3.3Vout		±3	%
	Others		±2	%
Line regulation	Full load		±0.5	%
Load regulation	0-100% load		±1	%
Ripple & Noise*	20MHz bandwidth		100	mV p-p
Hold up time	115VAC	5		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	4000		VAC
Resistance I/O	500VDC, 25°C, 70%RH	100		MΩ

General Specifications

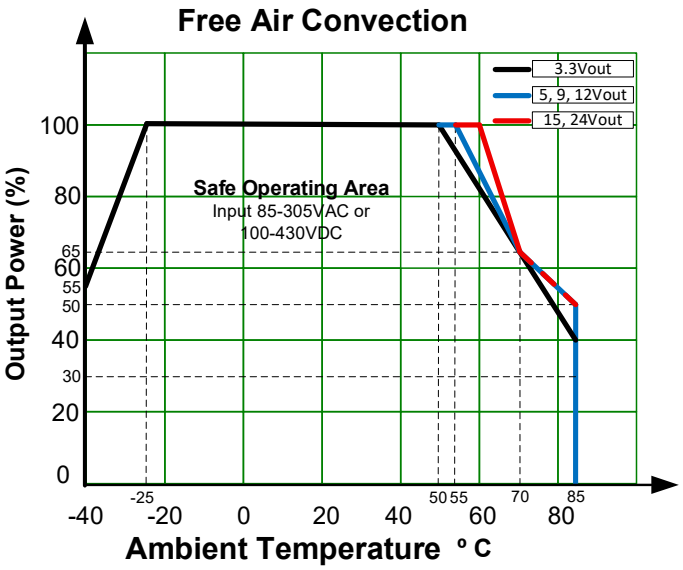
Parameters	Conditions	Typical	Maximum	Units
Protection class	Class II			
Overvoltage category	OVC II; According to EN61558-1; altitude up to 4000 meters			
Over current protection	Auto recovery	≥ 110	135	% of Iout
Over voltage protection	3.3Vout, Shut down o/p voltage, re-power on	3.8	9	VDC
	5Vout, Shut down o/p voltage, re-power on	5.5	9	VDC
	9Vout, Shut down o/p voltage, re-power on	10	16	VDC
	12Vout, Shut down o/p voltage, re-power on	13	15	VDC
	15Vout, Shut down o/p voltage, re-power on	17	24	VDC
	24Vout, Shut down o/p voltage, re-power on	26	34	VDC
Short circuit protection	Hiccup, Continuous, Auto recovery			
Operating altitude			5000	m
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-40 to +105		°C
No-load power consumption	230VAC	0.1		W
Power Derating	-40 °C to -25 °C	3		%/°C
	+50 °C to +70 °C, 3.3Vout	1.75		%/°C
	+55 °C to +70 °C, 5 / 9 / 12Vout	2.33		%/°C
	+60 °C to +70 °C, 15 / 24Vout	3.5		%/°C
	+70 °C to +85 °C, 3.3Vout	1.67		%/°C
	+70 °C to +85 °C, others	1		%/°C
	85VAC to 100VAC	1		%/VAC
	277VAC to 305VAC	0.54		%/VAC
	2000m - 5000m	0.66		%/km
Temperature coefficient	(0~40℃)	±0.02		%/°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	Plastic / UL94-V0			
Weight	PCB mountable models	17.5		g
	With optional -ST mounting plate	38.0		g
Dimensions (L x W x H)	PCB mountable models	1.00 x 1.00 x 0.69 inches (25.40 x 25.40 x 17.60 mm)		
	With optional -ST mounting plate	2.98 x 1.23 x 1.03 inches (75.80 x 31.30 x 26.20 mm)		
MTBF	> 300 000 hrs (MIL-HDBK -217F, t=+25°C)			

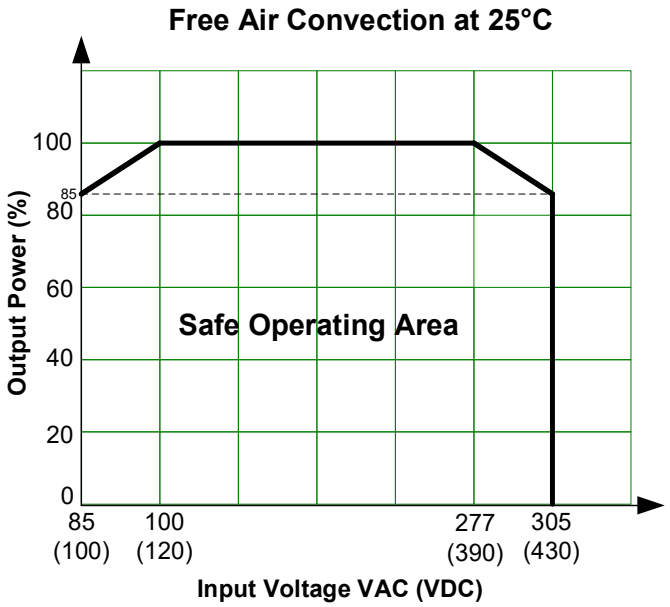
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

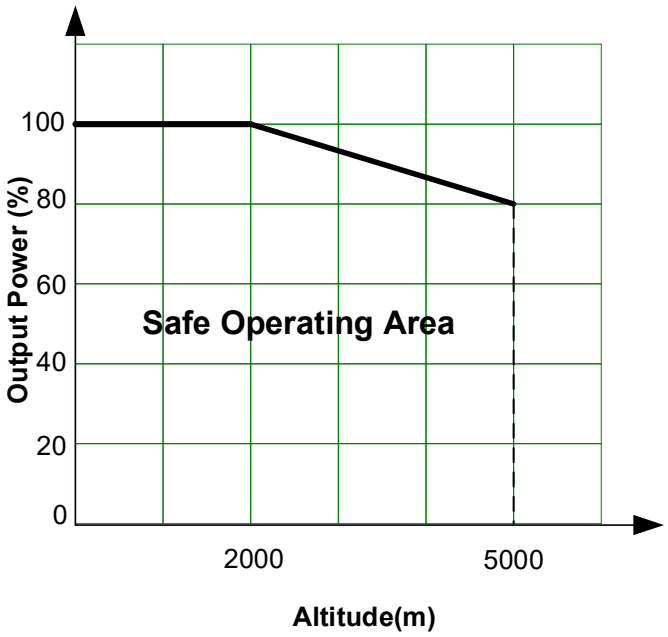
Safety Specifications

Parameters		
Standards	Design to meet: UL62368-1, BS EN62368-1, EN61558-1, EN60335-1, BS EN/EN55035, BS EN/EN61000-6-2	
	EMC - Conducted and radiated emission	EN55014-1, Class B with EMC Recommended Circuit 1 without PE. EN55014-1, Class B with EMC Recommended Circuit 2 with PE.
	Harmonic Current	EN61000-3-2, Class A
	Voltage flicker	EN61000-3-3
	Electrostatic Discharge Immunity	IEC 61000-4-2 Level 3, 8KV air, Level 2, 4KV contact, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3 10V/m, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4 ±2KV, Criteria B
	Surge Immunity	IEC 61000-4-5 line- line ±1KV, Criteria B
	RF, Conducted Disturbance Immunity	IEC 61000-4-6 10Vr.m.s, Criteria A
	Voltage dips, Shorts Interruptions Immunity	IEC 61000-4-11 ＞ 95% dip 0.5 periods, 30% dip 25 periods, ＞95% interruptions 250 periods

Derating


Free Air Convection
3.3Vout
5, 9, 12Vout
15, 24Vout
Safe Operating Area
Input 85-305VAC or
100-430VDC
Output Power (%)
100
80
65
60
55
50
40
30
20
0
-40
-25
-20
0
20
40
50
55
60
70
80
85
Ambient Temperature ° C


Free Air Convection at 25°C
Safe Operating Area
Output Power (%)
100
85
80
60
40
20
0
85
(100)
100
(120)
277
(390)
305
(430)
Input Voltage VAC (VDC)


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

Typical Application Circuit

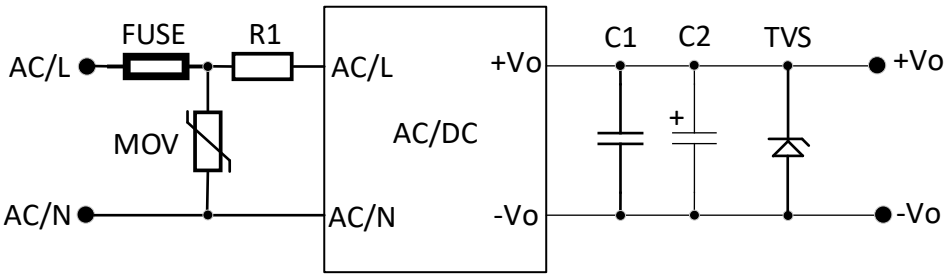


Table 1

Model	FUSE (must be connected)	MOV	R1 (must be connected)	C1	C2	TVS
3.3, 5Vout	1A, 300V, Slow	10D561K	12 Ohm, 3W, Winding	1μF	150μF	SMBJ7.0A
9Vout	1A, 300V, Slow	10D561K	12 Ohm, 3W, Winding	1μF	120μF	SMBJ12A
12, 15Vout	1A, 300V, Slow	10D561K	12 Ohm, 3W, Winding	1μF	120μF	SMBJ20A
24Vout	1A, 300V, Slow	10D561K	12 Ohm, 3W, Winding	1μF	68μF	SMBJ30A

Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a Capacitor voltage rating with at least 20% margin. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

EMC Recommended Circuit 1

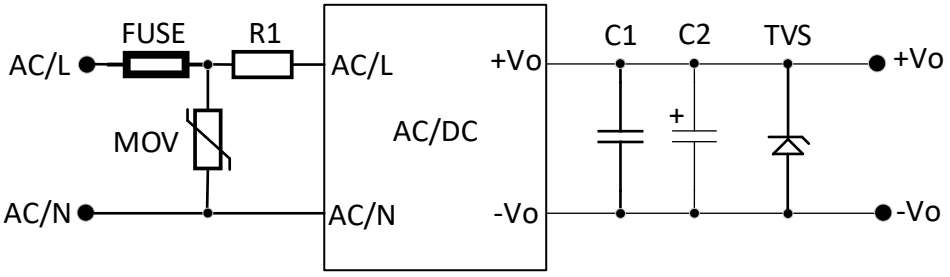
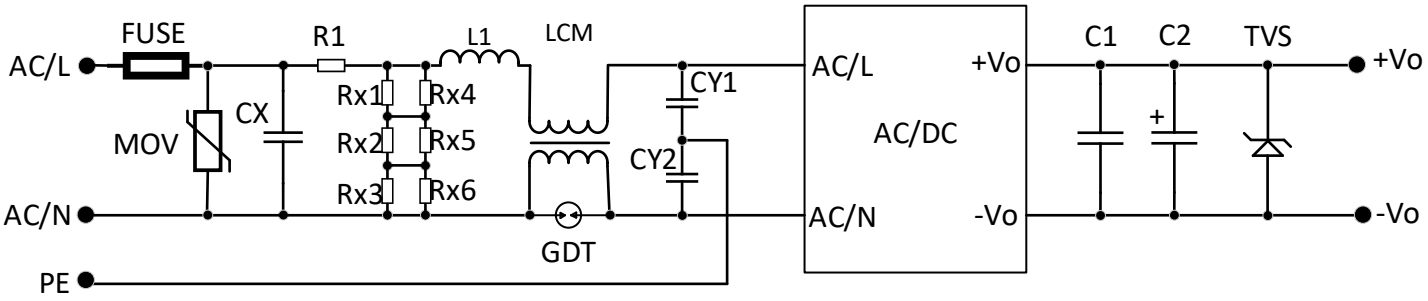


Table 2

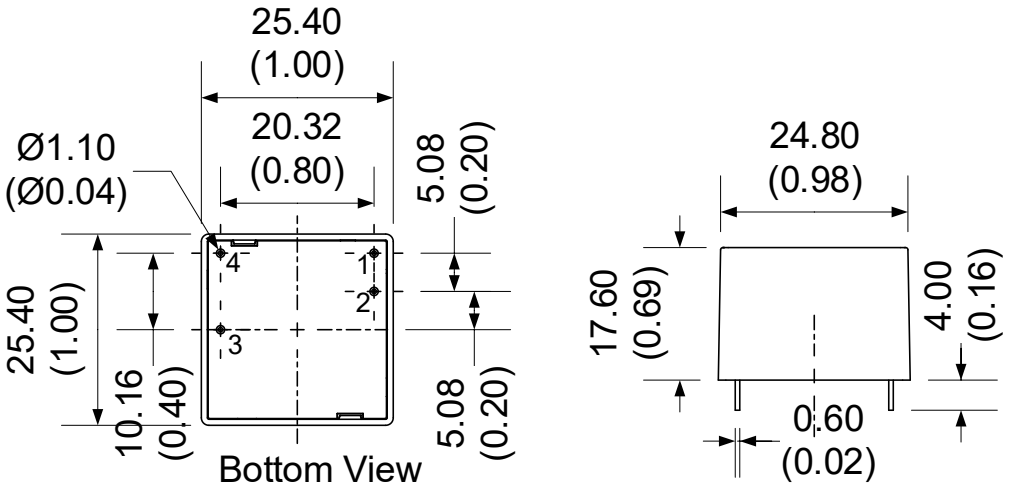
Component Type	Recommended Value
FUSE	2A/300V Slow fuse, must be connected
MOV	14D561K
R1	33Ω/3W Winding resistor, must be connected
Others	Refer to Table 1

EMC Recommended Circuit 2



Component Type	Recommended Value
FUSE	2A/300V Slow fuse, must be connected
MOV	14D561K
R1	33Ω/3W Winding resistor, must be connected
CX	334K/305VAC
L1	1.2mH/0.3A
CY1/CY2	1nF/400VAC
GDT	300V/1KA
LCM	20mH
Others	Refer to Table 1
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleed resistance of CX, the recommended resistance value is 1.5MΩ/150VDC	

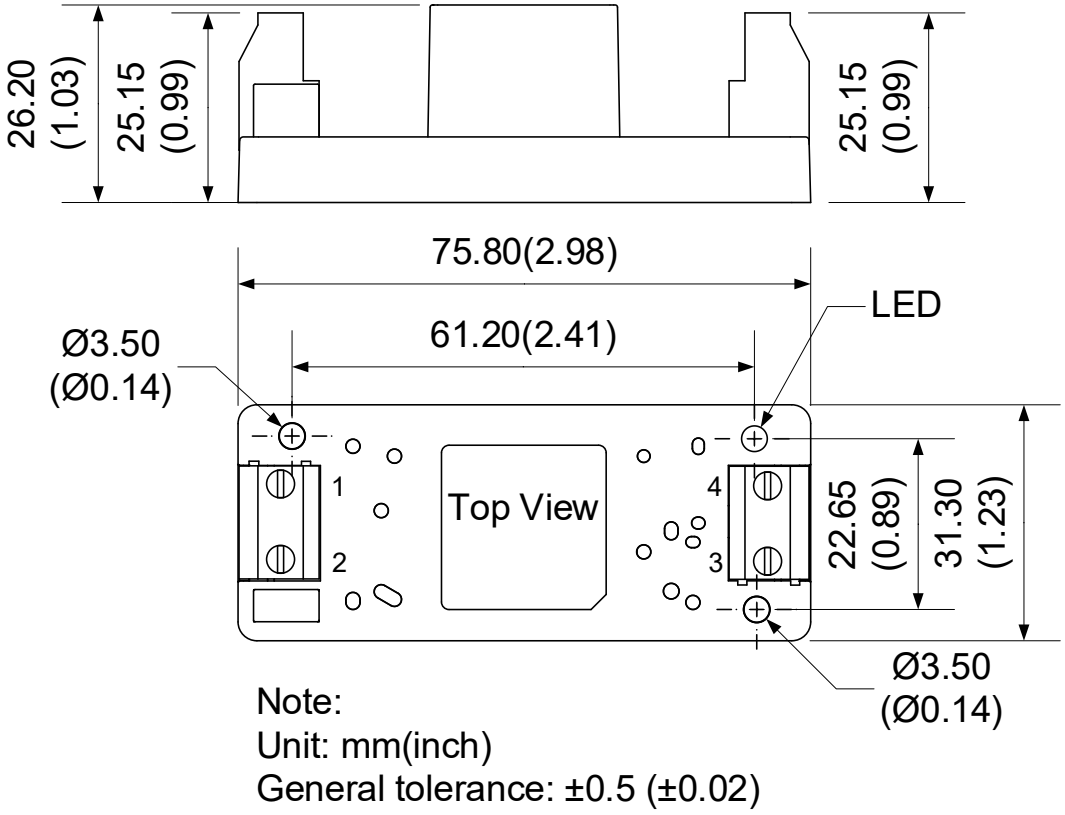
Dimensions



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

Note:
Unit: mm(inch)
General tolerance: ±0.5 (±0.02)

Dimensions with ST Optional



Note:
Unit: mm(inch)
General tolerance: ±0.5 (±0.02)

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

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