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AMESP500U-277JZ



Enclosed

The AMESP500U-277JZ series is an efficient, enclosed, fan less, ultra-narrow, and semi-potted 500W AC/DC power supply module. It offers a wide commercial input voltage range of 85-305VAC, output voltage ranges from 5-55V, low power consumption, high efficiency, high reliability, and safer isolation.

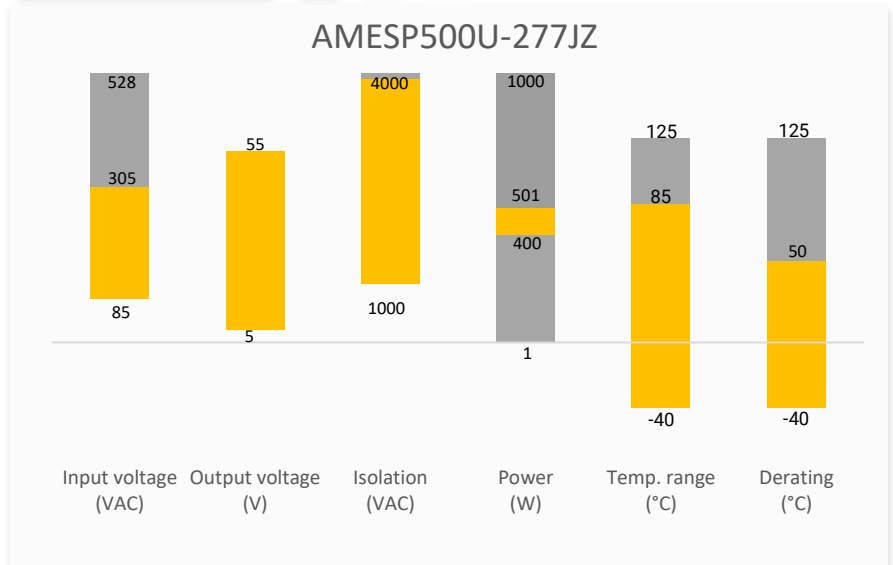
This new series offers great operating temperatures, from -40°C to +85°C with full power up to 50°C and features an isolation of 4000VAC with improved reliability and system safety. Additionally, it has operating altitude of 5000m. Furthermore, a high MTBF of 200,000h, output short circuit protection (OSCP), output over-current protection (OCP), output over-voltage protection (OVP) and an over-temperature protection (OTP) come standard with the series.

The AMESP500U-277JZ is great for street lighting controls, grid power, instrumentation, industrial controls, communication, and civil applications.

Features

- Universal Input: 85 - 305VAC/120 - 430VDC
- Operating Temp: -40°C to +85°C
- High isolation voltage: 4000VAC
- Active PFC
- Output short circuit, over-current, over-voltage, over temperature protection
- Efficiency up to 95%
- 150% peak load output for 1 second
- Operating altitude up to 5000m
- Certified : UL/EN/BS EN 62368-1
- Designed to meet : EN 60335-1, EN 61558-1, GB4943.1 standards

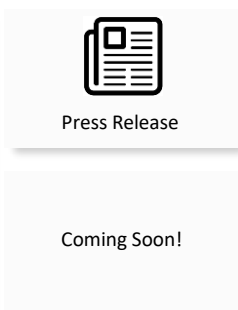
Summary



Training



Product Training Video
(Coming soon)



Application Notes

Applications



Power Grid



Industrial



Telecom

Models & Specifications

Single Output

Model	Input Voltage (VAC)	Input Voltage (VDC)	Max Output wattage (W)	Nominal Output Voltage/Current (Vo/Io)	Output Voltage Adjustable Range(V)	Max Capacitive Load at Room temp (μF)	Max Capacitive Load at Low temp (μF)	Efficiency @ 230VAC Typ. (%)
AMESP500U-5S277JZ	85-305	120-430	400	5/80	4.5-5.5	12000	6000	90
AMESP500U-12S277JZ	85-305	120-430	500.4	12/41.7	11.4-12.6	10000	4000	94
AMESP500U-24S277JZ	85-305	120-430	501.6	24/20.9	22.8-25.2	8000	3000	94.5
AMESP500U-36S277JZ	85-305	120-430	500.4	36/13.9	34.2-37.8	6000	2000	95
AMESP500U-48S277JZ	85-305	120-430	501.6	48/10.45	45.6-50.4	4000	1000	95
AMESP500U-55S277JZ	85-305	120-430	489.5	55/8.9	45.0-58.0	2000	600	95

Input Specifications

Parameters	Conditions	Typical	Minimum	Maximum	Units
Input current	115VAC			6	A
	230VAC			3	A
Inrush current	Cold Start, 115VAC	30			A
	Cold Start, 230VAC	60			A
Leakage	277VAC			0.75	mA RMS
Input Frequency			47	63	Hz
Power Factor	Full Load, 115VAC	0.98			
	Full Load, 230VAC	0.95			
Input Voltage Range	AC Input		85	305	VAC
	DC Input		120	430	VDC
Hot Plug	Unavailable				

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Full Load, 5V	±2		%
	Full Load, 12V/24V/36V/48V/55V	±1		%
Line regulation	Rated Load, 5V	±0.5		%
	Rated Load, 12V/24V/36V/48V/55V	±0.3		%
Load Regulation	0%-100% load, 5V	±1.0		%
	0%-100% load, 12V/24V/36V/48V/55V	±0.5		%
Ripple & Noise*	20MHz bandwidth (peak to peak value)		200	mV p-p
Hold up time	115VAC	12		ms
	230VAC	12		ms

Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47μF electrolytic capacitor and 0.1μF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

Isolation Specification				
Parameters	Conditions	Minimum	Maximum	Units
Tested Input-GND	60 sec, leakage ≤ 10mA	2000		VAC
Tested I/O voltage		4000		VAC
Tested Output-GND voltage		1500		VAC
Resistance	Environment temperature: 25 ± 5°C Relative humidity: <95%RH, non-condensing Testing Voltage: 500VDC	50		MΩ

General Specifications					
Parameters	Conditions	Typical	Minimum	Maximum	Units
Safety class	Class I				
Over current protection	hiccup, Auto recovery	≥ 110			% of Iout
Over voltage protection	5V output, output voltage turns off, re-power on for recover		5.75	6.75	VDC
	12V output, output voltage turns off, re-power on for recover		13.2	15.6	VDC
	24V output, output voltage turns off, re-power on for recover		26.4	31.2	VDC
	36V output, output voltage turns off, re-power on for recover		39.6	46.8	VDC
	48V output, output voltage turns off, re-power on for recover		52.8	60.0	VDC
Over temperature protection	Output voltage turn off, self-recovery after the temperature drops				
Short circuit protection	Hiccup, continuous, auto-recover, Recovery time < 5 sec after short circuit disappear				
Operating temperature	See derating graph		-40	+85	°C
Storage temperature			-40	+85	°C
Power Derating	40 °C to 85 °C, 5V output with aluminum plate		1.667		%/°C
	45 °C to 85 °C, 12V output with aluminum plate		2		%/°C
	50 °C to 85 °C, 24V/36V/48V/55V output with aluminum plate		2.5		%/°C
	40 °C to 85 °C, 110VAC, 5V output (derating from 70% load) without aluminum plate		1		%/°C
	50 °C to 85 °C, 110VAC, 12V/24V/36V/48V/55V output (derating from 70% load) without aluminum plate		1.5		%/°C
	40 °C to 50 °C, 230VAC, 5V output (derating from 80% load) without heat sink plate		1		%/°C
	50 °C to 85 °C, 230VAC, 5V output (derating from 80% load) without heat sink plate		1.5		%/°C
	40 °C to 85 °C, 230VAC, 12V output (derating from 90% load) without heat sink plate		1.33		%/°C
	45 °C to 85 °C, 230VAC, 24V/36V/48V/55V output (derating from 90% load) without heat sink plate		1.6		%/°C
	85VAC ~ 110VAC input voltage		1		%/VAC
Cooling	Free air convection				
Humidity	Non-condensing		10	95	% RH
Case material	Metal (AL6063, SGCC)				
Weight		985			g
Dimensions (L x W x H)	9.13 x 3.19 x 1.22 inches (232.00 x 81.00 x 31.00 mm)				
MTBF	> 200,000 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.					

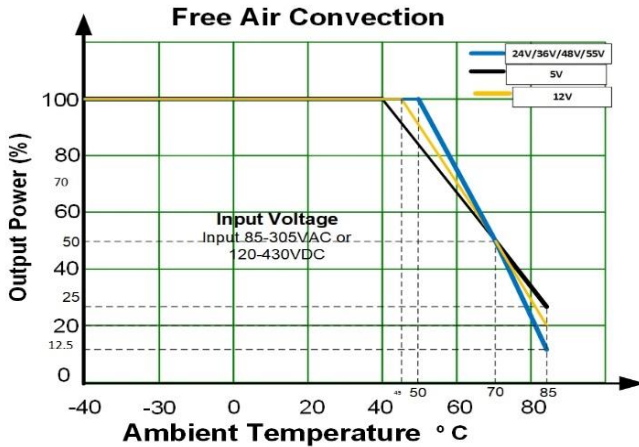
Safety Specifications

Parameters

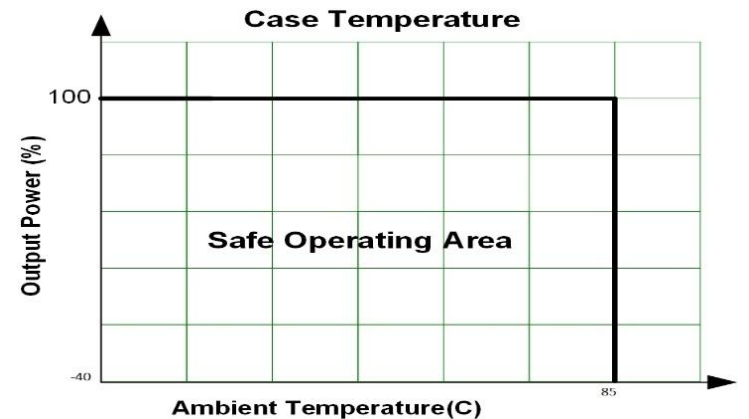
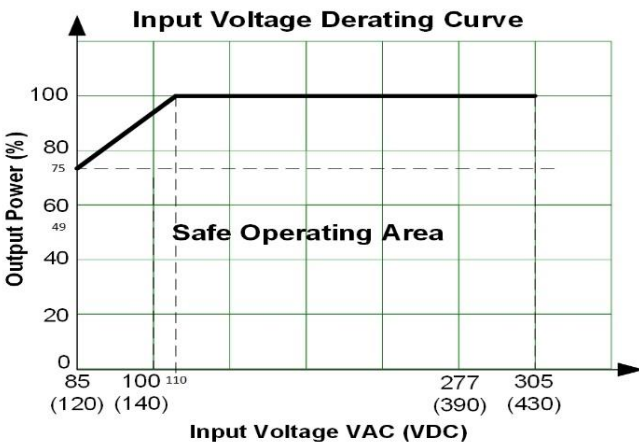
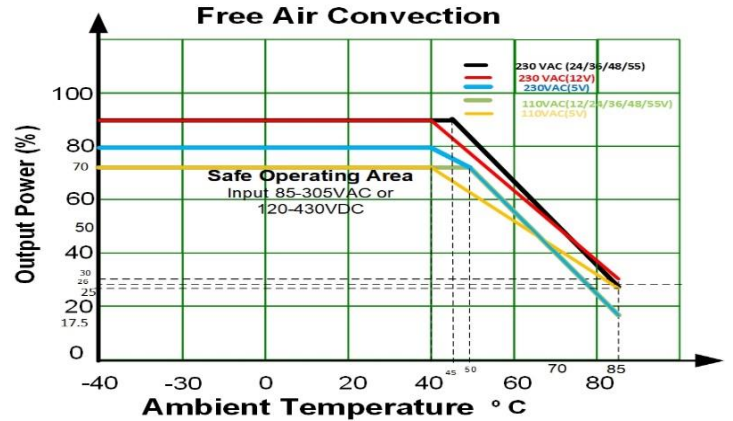
Agency approvals	UL/EN/BS EN62368-1		
Standards	Information technology Equipment	Information technology Equipment	
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B	
	Harmonic Current	IEC/EN61000-3-2 CLASS A/D	
	Voltage Flicker	IEC/EN6100-3-3	
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2 Contact $\pm 8KV$, Air $\pm 15KV$, Criteria A	
	RF, Electromagnetic Field Immunity	Input port	IEC/EN 61000-4-3 10V/m, Criteria A
		Output port	EN61000-6-2 10Vr.m.s
	Electrical Fast Transient/Burst Immunity	Input port	IEC/EN 61000-4-4 $\pm 2KV$, Criteria A
		Output port	EN61000-6-2 $\pm 2KV$
	Surge Immunity	Input port	IEC/EN 61000-4-5 L-L $\pm 2KV$, L-GND $\pm 4KV$, Criteria A
		Output port	EN61000-6-2, L-L $\pm 0.5KV$, L-GND $\pm 1KV$, Criteria A
	RF, Conducted Disturbance Immunity	Input port	IEC/EN 61000-4-6, 10 Vr.m.s, Criteria A
	Intercom Interference Test	MS-SOP-DQC-007, Criteria B	
Power Frequency Magnetic Field	IEC/EN61000-4-11, 30A/m, Criteria A		
Voltage dips, Short Interruptions Immunity	IEC/EN 61000-4-11 0%, 70%, Criteria B		

Derating

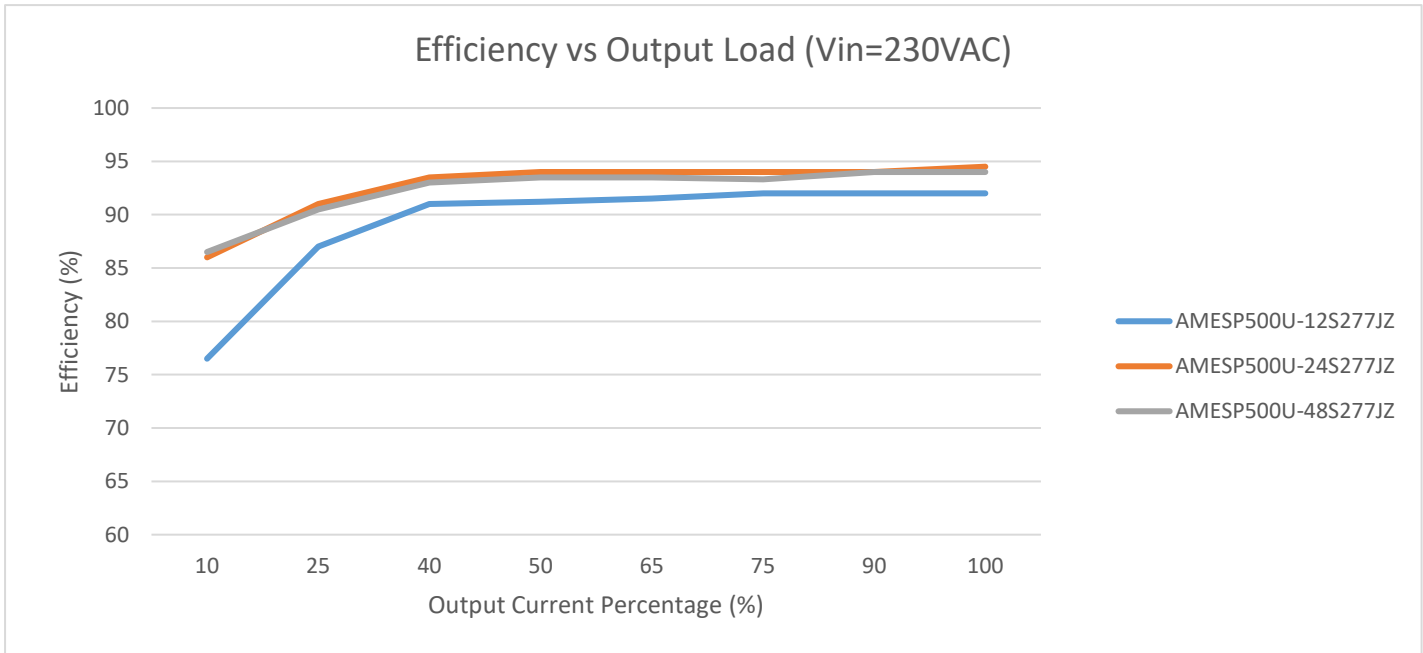
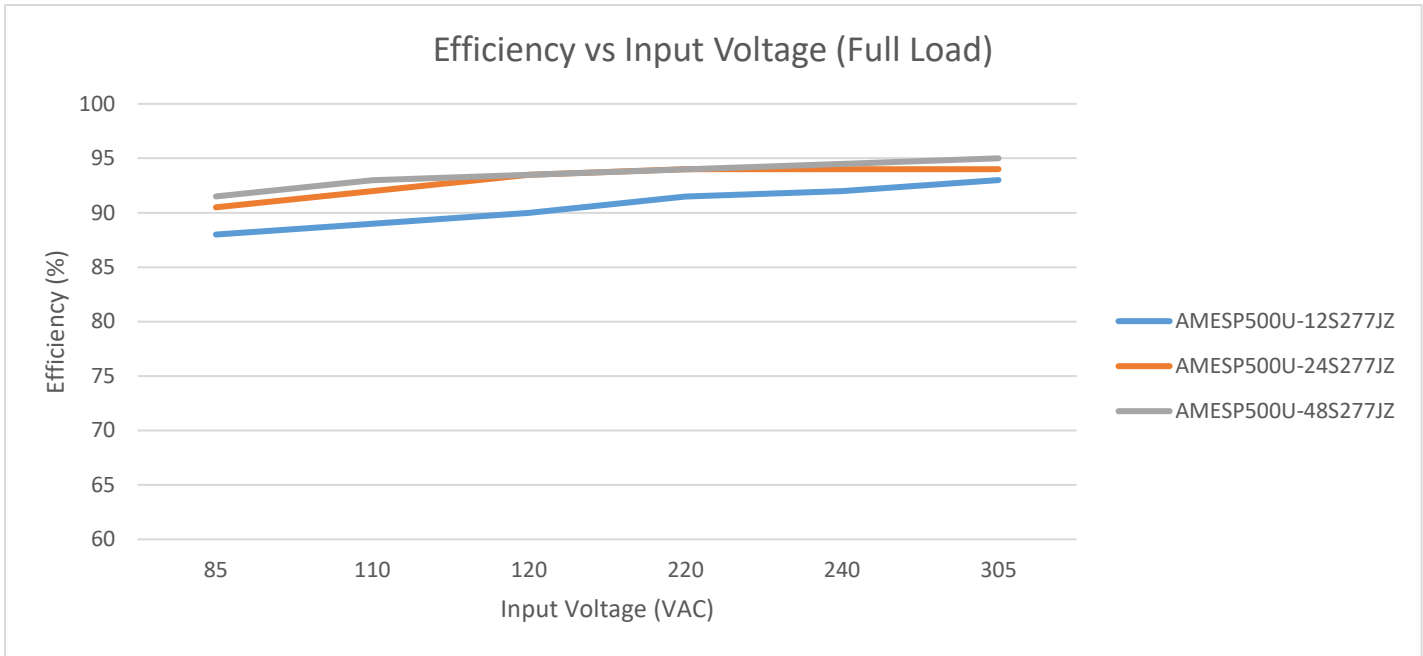
Thermal Derating with Aluminum Plate



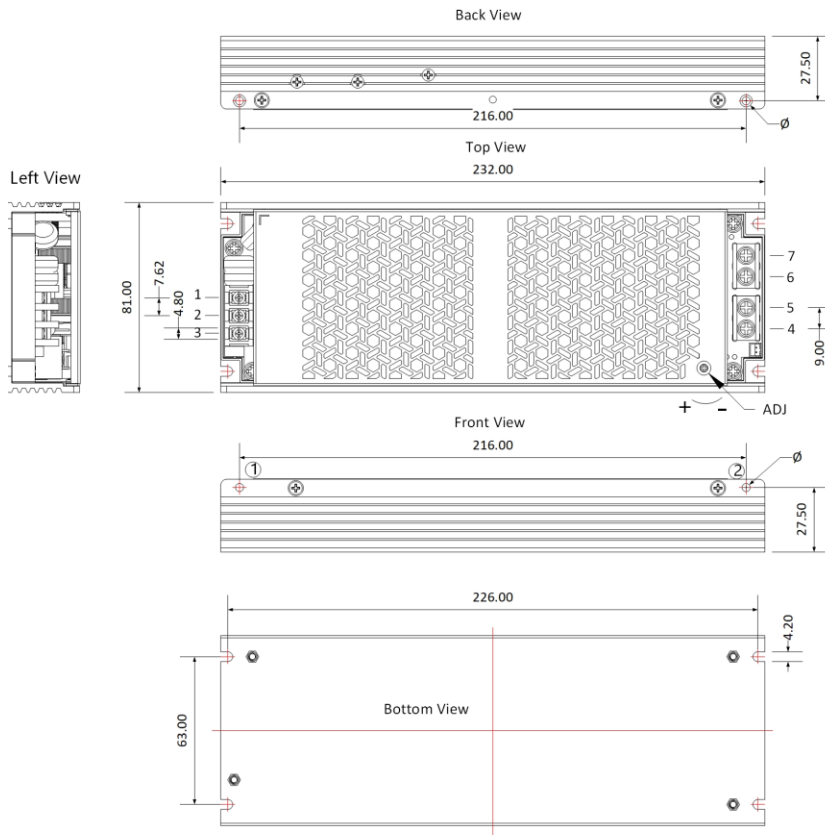
Without Aluminum Plate



Efficiency vs input voltage



Dimensions

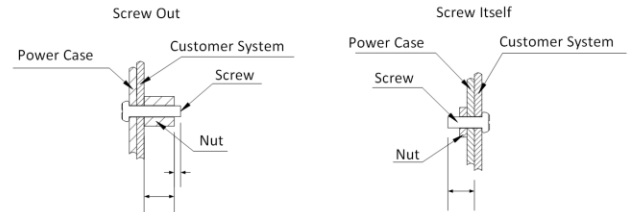


THIRD ANGLE PROJECTION



Pin-Out	
Pin	Mark
1	\oplus
2	AC(N)
3	AC(L)
4	+Vo
5	+Vo
6	-Vo
7	-Vo

Position	Installation Method	Screw Spec.	L	Torque(max)
① - ②	Screw Out	M3	Min 10mm	0.4N-m
	Screw Itself	M3	Max 8mm	0.4N-m



Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 22-14AWG
Tightening torque: M3, Max 0.5N-m
General tolerances: $\pm 1.00[\pm 0.039]$

Note:

- That is a schematic diagram of side installation, install with M3x6 combination screws, derating refer to without aluminum plate curve.
- That is the schematic diagram of the bottom installation, install with M3x4 round head screws, it is necessary to apply thermal grease on the bottom of the product, derating refer to with aluminum plate curve.

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