



50ACPW_4 series

50W - Single Output AC-DC Converter - Enclosed Switching - Universal Input - Isolated

AC-DC Converter 50 Watt

- ⊕ Universal 85 - 305VAC or 120 - 430VDC Input voltage
- ⊕ Accepts AC or DC input (dual-use of same terminal)
- ⊕ Operating ambient temperature range: -30°C to +70°C
- ⊕ Low standby power consumption, high efficiency
- ⊕ High I/O isolation test voltage up to 4000VAC
- ⊕ Low ripple & noise
- ⊕ Output short circuit, over-current, over-voltage protection
- ⊕ Safety according to IEC/EN/UL62368, EN60335, EN61558, GB4943
- ⊕ Over-voltage class III (designed to meet EN61558)
- ⊕ Operating altitude up to 5000m

The 50ACPW_4 is one of GAPTEC's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, EN60335, EN61558, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.



Common specifications

Item	Test conditions	Min	Typ	Max	Units
Short circuit protection	recovery time <5s after the short circuit disappear	Hiccup, continuous, self-recovery			
Operating temperature		-30		+70	°C
Storage temperature		-40		+85	°C
Storage humidity	Non-condensing			95	%RH
Operating humidity	Non-condensing	20		90	%RH
Switching Frequency			65		kHz
Power derating	Operating temp derating				
	• -30°C to -25°C / 85VAC - 100VAC	5			%/°C
	• 5V output				
	◦ +40°C to +70°C / 85VAC - 165VAC	1.33			%/°C
	◦ +50°C to +70°C / 165VAC - 305VAC	2			%/°C
• Other output	◦ 85VAC-100VAC	2			%/°C
	◦ 277VAC-305VAC	0.71			%/VAC
Input voltage derating	• 85VAC - 100VAC	1.33			%/VAC
	• 277VAC-305VAC	0.71			%/VAC
Safety standard	Meet IEC/EN/UL62368/EN60335/EN61558/GB4943				
Safety certification	IEC/EN/UL62368/EN60335/EN61558/GB4943				
Safety class	CLASS I				
MTBF	MIL-HDBK-217F@25°C	>300,000 h			
Case Material	Metal (AL1100, SGCC)				
Dimensions	99.00 x 82.00 x 30.00 mm				
Weight	190g TYP.				
Cooling Method	Free air convection				

Input specifications

Item	Test conditions	Min	Typ	Max	Units
Input Voltage Range	• AC input	85		305	VAC
	• DC input	100		430	VDC
Input frequency		47		63	Hz
Input current	• 115VAC			1.2	A
	• 230VAC			0.8	A
Inrush current (Cold start)	• 115VAC		30		A
	• 230VAC		60		A
Leakage current	277VAC	<0.75mA			
Hot plug	Unavailable				

Output specifications

Item	Test conditions	Min	Typ	Max	Units	
Output voltage accuracy	Full load range					
		• 5V		±2.0	%	
	• 12V/15V/24V/36V/48V		±1.0	%		
Line regulation	Rated load		±0.5		%	
Load regulation	0% - 100% load					
		• 5V		±1	%	
	• 12V/15V/24V/36V/48V		±0.5	%		
Ripple & noise*	20MHz bandwidth; peak-to-peak value					
		• 5V			80	mV
		• 12V/15V			120	mV
		• 24V			150	mV
		• 36V/48V			240	mV
Temperature coefficient			±0.03		%/°C	
Minimum load		0			%	
Stand-by power consumption				0.5	W	
Hold-up time	• 115VAC		8		ms	
		• 230VAC		30		ms

*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.

Example: 50ACPW_24S4

50 = 50Watt; AC = AC-DC; P = series; W= wide-input (2:1);
24 = 24 Vout; S = single output; 4 = 4kVAC isolation

Note:

- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH with nominal input voltage and rated output load;
- The room temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m;
- All index testing methods in this datasheet are based on our company corporate standards
- In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
- We can provide product customization service,.
- Products are related to laws and regulations: see "Features" and "EMC";
- The out case needs to be connected to the earth of system when the terminal equipment in operating;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;

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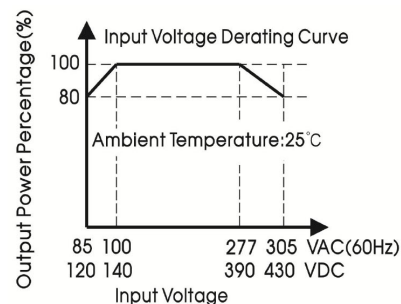
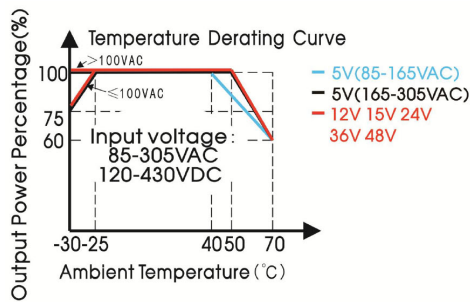
Protection specifications		
Over-current protection	230VAC, Rated load	
	• Normal temp,	
	• High temp,	110%-200% Io, self-recovery
	• Low temp.	≥110% Io, self-recovery
Over-voltage protection	• 5V	≤ 6.75VDC (Output voltage clamp)
	• 12V	≤ 16.2VDC
	• 15V	≤ 21.8VDC
	• 24V	≤ 33.6VDC
	• 36V	≤ 49VDC
	• 48V	≤ 60VDC

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation test	• Input	2000			VAC
	• Input-output	4000			VAC
	• Output	1250			VAC
Insulation resistance	At 500VDC				
	• Input	100			MΩ
	• Input-output	100			MΩ
	• Output	100			MΩ

EMC specifications					
Emissions	CE	CISPR32/EN55032	CLASS B		
Emissions	RE	CISPR32/EN55032	CLASS B		
Emissions	Harmonic current	IEC/EN61000-3-2	CLASS A		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV		perf. Criteria A
Immunity	RS	EC/EN61000-4-3	10V/m		perf. Criteria A
Immunity	EFT	IEC/EN61000-4-4	±2KV		perf. Criteria A
Immunity	Surge	IEC/EN61000-4-5	line to line ±1KV/line to ground ±4KV		perf. Criteria A
Immunity	CS	IEC/EN61000-4-6	10Vr.m.s		perf. Criteria A
Immunity	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%,70%		perf. Criteria B

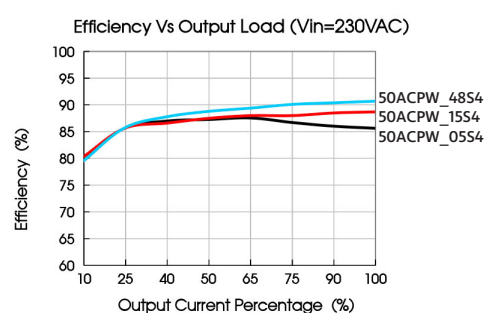
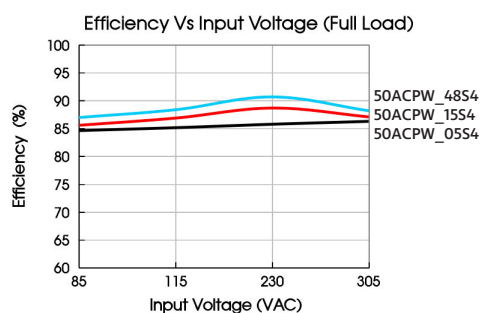
Selection Guide						
Approval	Model	Output Power [W]	Nominal Output Voltage and Current [Vo/Io]	Output Voltage Adjustable Range (V)	Efficiency at 230VAC [% , typ]	Max. Capacitive Load (μF)
UL	50ACPW_05S4	50	5V/10A	4.5-5.5	83	8500
UL	50ACPW_12S4	50.4	12V/4.2A	10.2-13.8	86	2000
UL	50ACPW_15S4	51	15V/3.4A	13.5-18	87	1500
UL	50ACPW_24S4	52.8	24V/2.2A	21.6-28.8	88	1000
UL	50ACPW_36S4	52.2	36V/1.45A	32.4 - 39.6	89	470
UL	50ACPW_48S4	52.8	48V/1.1A	43.2-52.8	90	220

Product Characteristic Curve



1. With an AC input voltage between 85 -100VAC and a DC input between 120 -140VDC the output power must be derated as per the temperature derating curves;
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult FAE.

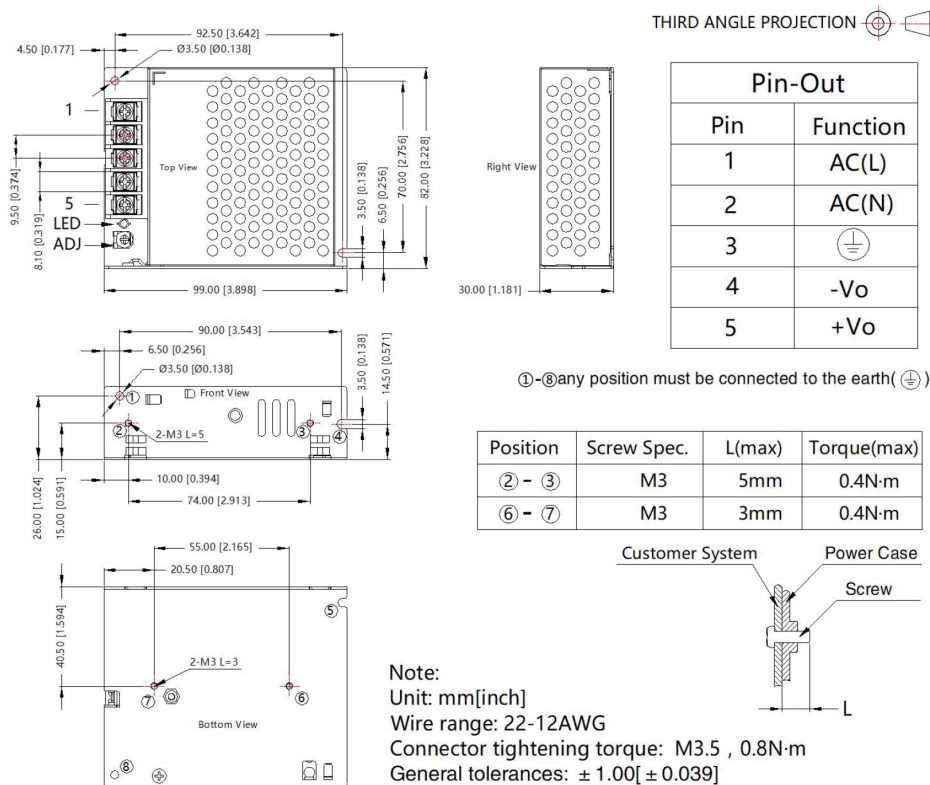
Efficiency



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Dimensions and recommended layout - Conformal coating



Dimensions and recommended layout - Terminal With Protective Cover

