

Isolated, 100-450VAC wide voltage input, single output, DIP package

FEATURES

- Ultra wide voltage input 100-450VAC
- High power density, high conversion efficiency
- Output low ripple noise
- Equipped with short-circuit protection and overcurrent protection
- Isolation voltage 4000VAC
- EMI meets CISPR32/EN55032 CLASS B
- Passed IEC/EN60355/EN62368 certification standard



AH05-YSxxP series product is a small volume needle sealing module power supply, with advantages such as ultra wide voltage input range, AC/DC dual use, low power consumption, high efficiency, high reliability, and safe isolation. Application fields: smart meters, photovoltaic energy, Charging station, Internet of Things, etc.

Selection Table

Part NO	Output Power Max	Output Voltage	Output Current	peak current	Efficiency at 230VAC(%) Typ.	Capacitive Load (uF) Max.
AH05-YS05P	5W	5V	1000mA	1300mA	75%	3000uF
AH05-YS09P	5W	9V	556mA	720mA	77%	1500uF
AH05-YS12P	5W	12V	416mA	540mA	78%	1200uF
AH05-YS24P	5W	24V	208mA	270mA	80%	220uF

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	100	380	450	VAC
	DC input	140	/	630	VDC
Input Frequency		47	50/60	63	Hz
Input Current	230VAC input, fully loaded	/	/	0.62	A
	380VAC input, fully loaded	/	/	0.47	
Inrush Current	Temperature 25°C, input 380V	/	28	/	A
Hot swappable	No support				

Output characteristic parameters

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	380VAC 25°C	/	±2.3	/	%
Line Regulation	Full load, input voltage changes from (Vmin – Vmax)	/	±0.6	/	
Load Regulation	380VAC, load changes from (0% - 100%)	/	±1	/	
Output Hold-up Time	380VAC, 100% load	/	18	/	ms
Temperature Coefficient	under rated load	/	±0.02	/	%/°C
Ripple & Noise ^①	20MHz bandwidth (peak-to-peak value)	/	/	190	mVp-p
Overvoltage protectio	Output 5V	≤7.5V	Hiccup type, self-healing or output voltage clamp		
	Output 9V	≤15V			
	Output 12V	≤16V			
	Output 24V	≤30V			

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Overcurrent protection	150%-200%Io, self recovery				
Short circuit protection	Hiccup type, capable of long-term short circuit and self recovery				
Note:					
1. The output ripple voltage and noise of the power supply are measured with 0.1uF ceramic capacitor and 47uF electrolytic capacitor, and each output noise is tested in the bandwidth of 0 Hz to 20 MHz.					

General characteristic parameters

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	Input-Output , Test for 1min, leakage current < 5mA	/	/	4000	VAC
Insulation resistance	Input output test voltage: 500VDC	100	/	/	MΩ
Storage temperature	Standard packaging	-40	/	+85	°C
Working temperature	Rated state	-40	/	+80	
Storage humidity		/	/	95	%RH
Working humidity	In non condensing state	20	/	85	
Working altitude		-100	/	2000	m
Power derating	Reduced working temperature	-40°C to -20°C	1.0	/	/
		+50°C to +70°C	0.5	/	/
		+70°C to +85°C	1.4	/	/
	Input voltage derating	85VAC-100VAC	1.3	/	/
		277VAC-305VAC	1.3	/	/
	Altitude reduction	2000-5000m	6.5	/	/
Safety Standard	EN60355-1 & EN62368-1				
Safety Class	CLASSII				
MTBF	MIL-HDBK-217F at 25°C >1,500Khours				
Soldering Temperature	Manual-welding time: 3 - 5s		350±10°C		°C
	Wave-soldering time: 5 - 10s		260±10°C		

Electromagnetic Compatibility

Item	
CE	CISPR32/EN55032 CLASS A (refer to recommended circuit diagram 1) CISPR32/EN55032 CLASS B (refer to recommended circuit diagram 2)
RE	CISPR32/EN55032 CLASS A (refer to recommended circuit diagram 1) CISPR32/EN55032 CLASS B (refer to recommended circuit diagram 2)
ESD	EN61000-4-2 ,Contact ±6KV/Air ±8KV
Radiated immunity	EN61000-4-3 ,80MHz – 1GHz 10V/m
EFT/burst	EN61000-4-4,± 2KV (refer to recommended circuit diagram 1) EN61000-4-4,± 4KV (refer to recommended circuit diagram 2)
Surge	EN61000-4-5, line to line ±1KV(refer to recommended circuit diagram 1) EN61000-4-5, line to line ±2KV(refer to recommended circuit diagram 2)
Conducted immunity	EN61000-4-6 ,0.15MHz-80MHz 10Vr.m.s
voltage dips and interruption	EN61000-4-11 ,0%, 70%

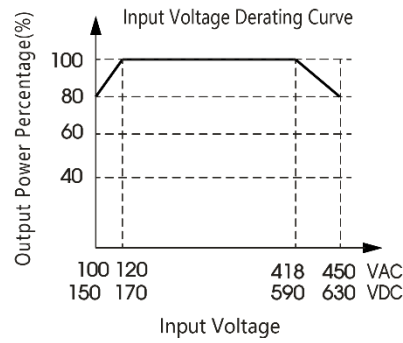
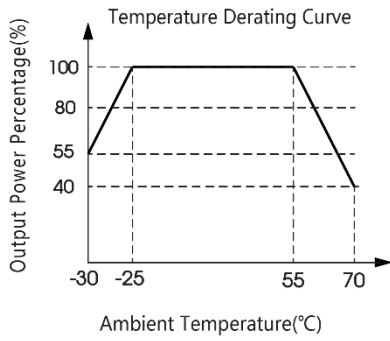
Note: ① When the output terminal of the product needs to be connected to the ground terminal through a Y capacitor or tightly attached to a metal shell, please refer to the recommended circuit(Figure 2);

② Unless otherwise specified, EMC performance indicators are tested according to typical application circuits (Figure 1).

Other parameters

Item	
External dimensions	39.7*25.7*21.3mm
Weight	37g (Typ.)
Housing material	Black flame retardant heat resistant plastic (UL94 V-0)
Cooling mode	Natural air cooling

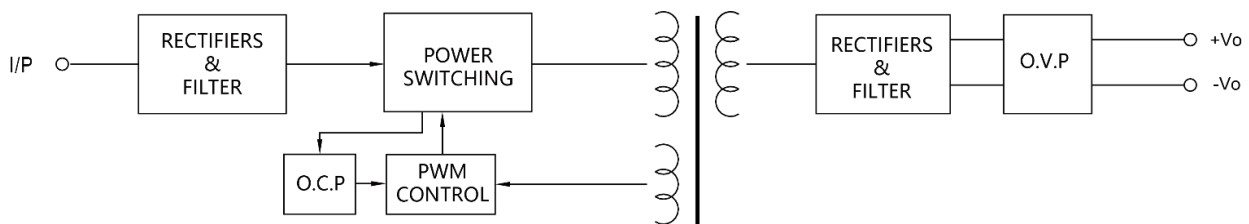
Product characteristic curve



Note:

For the input voltage
100-120VAC/150-170VDC,
418-450VAC/590-630VDC
Voltage derating should be carried
out on the basis of temperature
derating;

Electrical Block Diagram



Design Reference

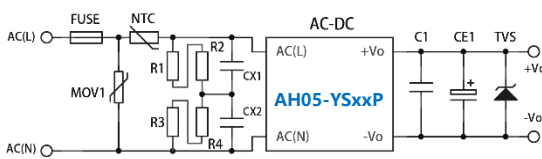


Fig.1 Typical circuit diagram

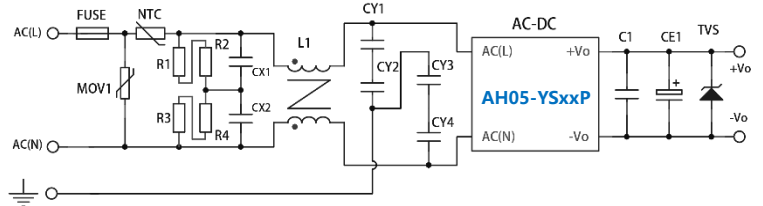


Fig.2 EMC application circuit with higher requirements

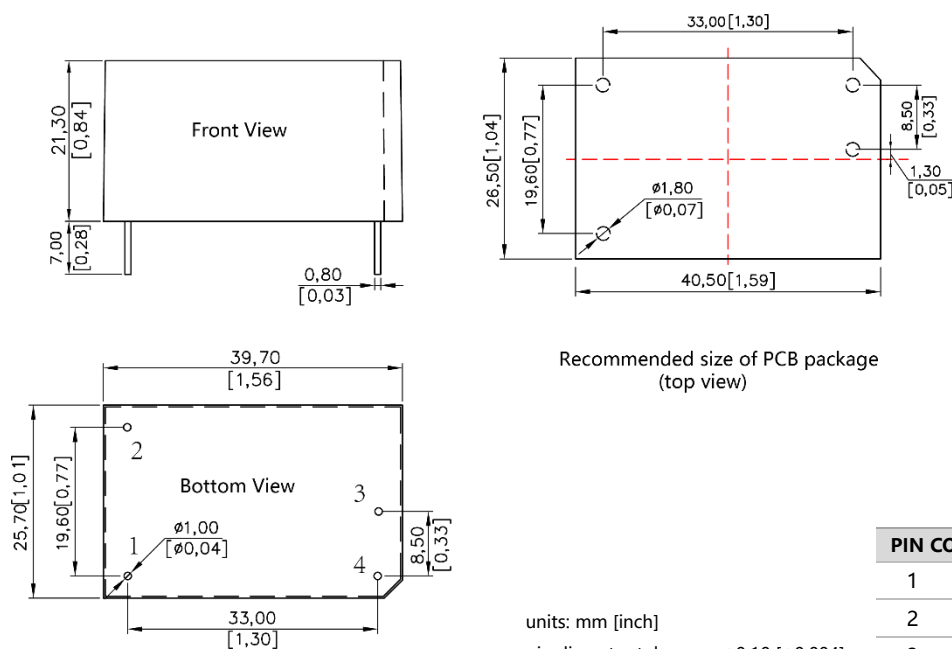
External device specification reference value

General Components Parameters				Part No. Components Parameters		
Components	Recommended Value	Components	Recommended	Part No.	CE1	TVS
FUSE	1A/500V slow-blow, required	CY1,CY2,CY3,CY4	1nF/400Vac	AH05-YS05P	150uF/25V	SMBJ7.0A
MOV1	14D102K	C1	1uF/50V	AH05-YS09P	100uF/25V	SMBJ12A
NTC	5D-9			AH05-YS12P	100uF/16V	SMBJ20A
R1,R2,R3,R4	1.5MΩ/SMD1206,1/4W			AH05-YS24P	47uF/35V	SMBJ30A
CX1,CX2	0.1uF/305V					
L1	10-20mH Common mode inductance					

Note:

1. FUSE Required , Recommend slow-blow ;
2. C1 is a ceramic capacitor used for filtering high-frequency noise
3. CE1 using an electrolytic capacitor with high frequency, and low ESR rating
4. TVS is recommended suppressor diode to protect the application in case of a converter failure.

Dimensions and Recommended Layout



PIN CONNECTIONS

1	AC(L)
2	AC(N)
3	+Vo
4	-Vo

Note:

1. Qituo technology reserves the right to change the product at any time without notice;
2. The product shall be provided with a 3-year warranty period;
3. Unless otherwise specified, the products in this manual are not authorized to be used for key components of equipment requiring high reliability, so as not to affect the safety or effectiveness of the device;
4. All parameters in this manual are measured under indoor $t_a=25$ °C, humidity <75%, nominal input voltage and output rated load;

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