

Typical characteristics

15W, wide voltage input, isolated and regulated single output AC-DC module power supply

- Wide range input: 85-305VAC/100-432VDC
- No-load power consumption: 0.1W (Typ.)
- Conversion efficiency: 90% (Typ.)
- Switching frequency: 65KHz
- Protection: short circuit, overcurrent, overload.
- Isolation voltage: 4000Vac
- Housing: plastic, UL94V-0 compliant
- Through-hole mounting on a PCB
- CE and RoHS compliant



RoHS

HAW15_S-D2 series ----- is a small-size, high-efficiency module power supply that Huizhi Electronics provides to customers.

This series of power supplies has the advantages of global input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, high safety isolation, and good EMC performance. EMC and safety specifications meet international EN55032 and IEC/EN61000 standards. This series of products has a wide range of applications in many fields such as electric power, industry, instrumentation and smart home. When the product is used in a harsh environment with electromagnetic compatibility, please refer to the EMC application circuit given by our company.

Model Number Description



Product selection table

Certification	Model number	Output specifications					Maximum capacity sexual load	ripple and noise 20MHz (Max)	Efficiency @ full load, 220Vac (Typical)
		Power	Voltage 1	Current 1	Voltage 2	Current 2			
		(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
	HAW15-220S05D2	15	5	3000	-	-	4000	80	86
	HAW15-220S09D2	15	9	1666	-	-	3000	80	87
	HAW15-220S12D2	15	12	1250	-	-	2000	80	89
	HAW15-220S15D2	15	15	1000	-	-	2000	80	90
	HAW15-220S24D2	15	24	625	-	-	1000	80	89

Note 1: Due to limited space, the above is only a partial product list, if you need products other than the list, please contact our sales department.

Note 2: "*" represents the model under development.

Note 3: The typical value of output efficiency is based on half an hour after the product is fully loaded and aged.

Note 4: The full load efficiency (% TYP) fluctuates by $\pm 2\%$ in the table, and the full load efficiency is the total power of the output divided by the input power of the module.

Input characteristics

Items	Working conditions	Minimum	Typical	Maximum	Unit
Input voltage range	AC input	85	220	305	VAC
	DC input	100	310	432	VDC
Input frequency range	-	47	50	63	Hz
Input current	115VAC	/	/	0.32	A
	220VAC	/	/	0.16	
Surge current	115VAC	/	/	10	
	220VAC	/	/	20	
Leakage current	-	0.5mA TYPE/230VAC/50Hz			
External insurance management recommendation value	-	2A-4A/250VAC slow-break fuse			
Hot-swappable	-	Not supported			
Remote control	-	There is no remote control			

Output characteristics

Items	Working conditions	Minimum	Typical	Maximum	Unit	
Voltage accuracy	Input full voltage range Any load	Vo1	-	± 1.0	± 2.0	%
		Vo2	-	± 3.0	± 5.0	%
Linear regulation rate	Nominal load	Vo1	-	-	± 0.5	%
		Vo2	-	-	± 1.5	%
Load regulation rate	Input nominal voltage 20%~100% load	Vo1	-	-	± 1.0	%
		Vo2	-	-	± 3.0	%
No-load power consumption	Input 115VAC	-	-	0.1	W	
	Input 220VAC	-	-			
Minimum load	Single output	0	-	-	%	
	Positive and negative dual co-ground output	-	-	10	%	
	Positive and negative dual isolated outputs	-	-	10		

Startup delay time	Input Nominal Voltage (Full Load)	-	1000	-	mS
Power down hold time	Input 115VAC		10		mS
	Input 220VAC	--	30	-	
Dynamic response	25%~50%~25%	Overshoot amplitude (%): $\leq \pm 5.0$			%
	50%~75%~50%	Recovery time (mS): ≤ 5.0			mS
Output overshoot		$\leq 10\%V_o$			%
Short-circuit protection	Input full voltage range	It can be short-circuited for a long time and self-recovering			Barrier type
Drift coefficient	-	-	$\pm 0.03\%$	-	%/°C
Overcurrent protection	Input full voltage range	$\geq 130\% I_o$ is self-recoverable			Barrier type
Ripple Noise	-	-	50	100	mV
	Note: The test method for ripple and noise adopts the twisted pair test method, and the specific test method and combination are shown below (Ripple & Noise Test Instructions) is sufficient.				

General characteristics

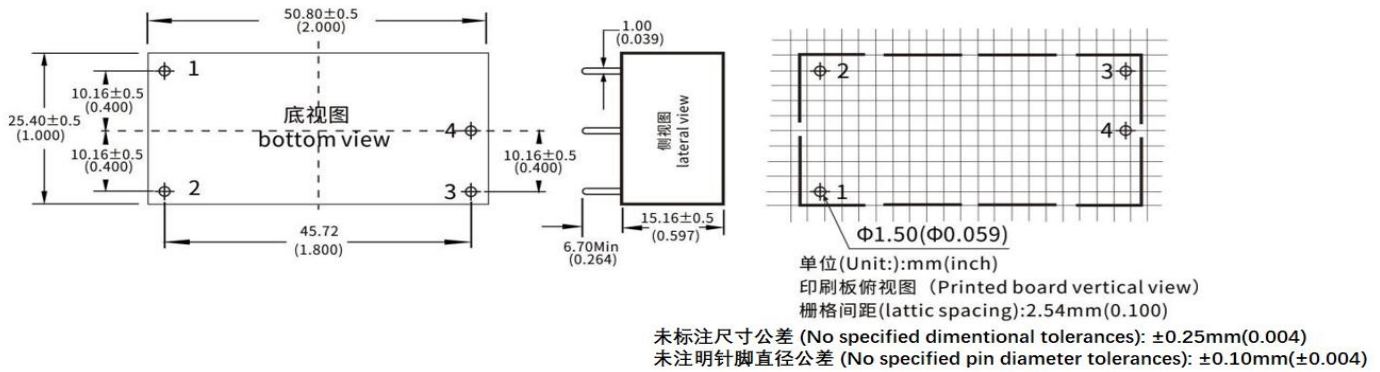
Items	Working conditions	Minimum	Typical	Maximum	Unit
Switching frequency	-	-	65	-	KHz
Operating temperature	-	-25	-	+75	°C
Storage temperature	-	-40	-	+85	
Soldering temperature	Wave soldering	$260 \pm 4^\circ \text{C}$, time: 5-10S			
	Hand soldering	$360 \pm 8^\circ \text{C}$, interval 4-7S			
Relative humidity	-	10	-	90	%RH
Isolation voltage	Input-output, test for 1 minute, leakage current $\leq 5\text{mA}$	4000	-		VAC
Insulation resistance	Input-output @ apply DC500V	100	-		MΩ
Safety standards	-	EN60950、IEC60950			
Vibration	-	10-55Hz, 10G, 30Min, alongX, Y, Z			
Safety level	-	CLASS II			
Enclosure grade	-	UL94V-0 rated			
Mean time between failures MTBF	-	MIL-HDBK-217F@25°C>300,000H			

EMC Electromagnetic Compatibility Characteristics

Total Project		Sub-projects	Testing standards	Judgment grade (see Figure 3 for recommended circuits)
EMC	EMI	Conducted Emission	CISPR22/EN55032	CLASS B (see Figure 3 for recommended circuits)

	EMS	Radiated Emission	CISPR22/EN55032	CLASS B (see Figure 3 for recommended circuits)
		Radiation Immunity	IEC/EN61000-4-3	10V/m Perf.Criteria B
		Conducted Susceptibility	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B
		Electrostatic Discharge	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge Immunity	IEC/EN61000-4-5	± 1KV Perf.Criteria B ± 2KV/ ± 4KV Perf.Criteria B (see Figure 3 for recommended circuits)
		Electrical Fast Transient (EFT) Immunity	IEC/EN61000-4-4	±2KV Perf.Criteria B ±4KV Perf.Criteria B (see Figure 3 for recommended circuits)
		Immunity to Voltage Sag and Transient, Short Interruption	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Package Dimensions



Package code	L x W x H	
D2	50.8.0 x25.4 x 15.16 mm	2.000 × 1.000 × 0.597inch

Pin definition

Pin	1	2	3	4
Single (S)	AC (N)	AC (L)	+Vo	-Vo
	Neutral Input	Firewire	Output	Export

Note: If the definition of each pin of the power module is inconsistent with the selection manual, the marking on the physical label shall prevail.

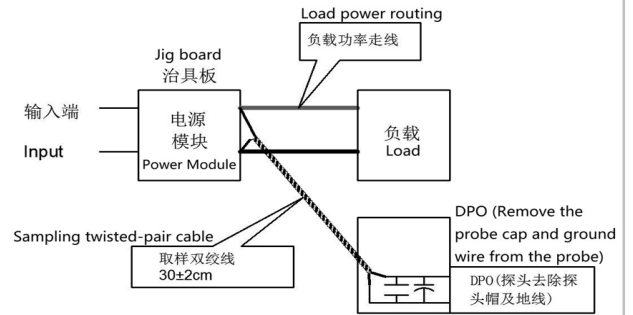
Ripple & Noise Test Instructions (Twisted Pair Method 20MHz Bandwidth)

Test Method:

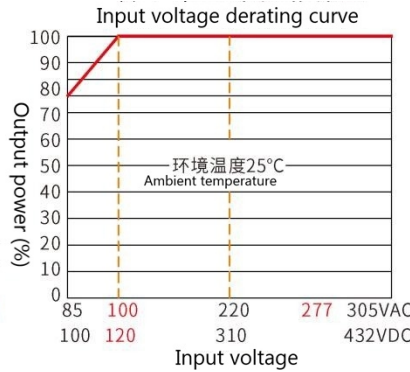
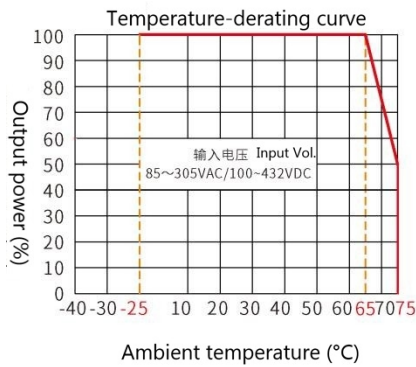
1. Ripple noise is connected by 12# twisted pair wire, the oscilloscope bandwidth is set to 20MHz, the 100M bandwidth probe is set, and the 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel on the probe end, and the oscilloscope sampling uses the Sample sampling mode.

2. Schematic diagram of output ripple noise test:

Connect the power input to the input power supply, connect the power output to the electronic load through the jig board, and use a 30 cm ± 2 cm sampling line to sample directly from the power output port for testing. The power line selects the wire with insulating skin of the corresponding wire diameter according to the size of the output current.



Product characteristic curve



Note 1: The input voltage is 85~100VAC, and the voltage derating is used on the basis of the input voltage derating curve.

Note 2: This product is suitable for use in natural wind cooling environment, if used in a closed environment, please contact us.

Typical application circuit diagram and recommended parameters

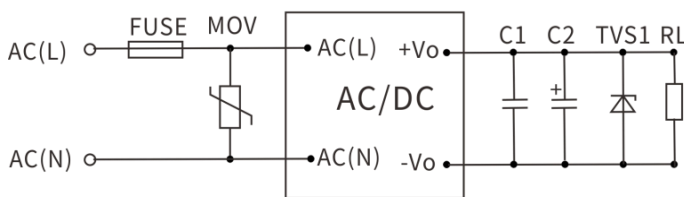


图1 Figure 1

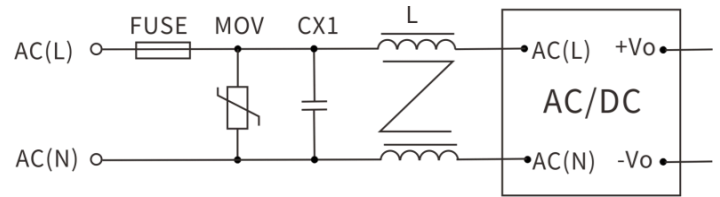


图2 Figure 2

The customer's general application requirements use Figure 1 to recommend the circuit;

If EMC is required, use the recommended circuit in Figure 2. Figure 2 The specific recommended values are as follows:

- 1) Varistor MOV: Recommended model: 14D-561K, which protects the module from damage in case of lightning surge.
- 2) Safety capacitors CY1 and CY2: 1000pF/400VAC;
- 3) Safety capacitor CX: 0.1 μF/275VAC;
- 4) Common mode inductor LCM: 20mH-30mH;
- 5). FUSE: Must be connected, the recommended specification is 2A/250V, slow break.

Note 1:

1. To remove high-frequency noise from the output filter capacitor C1, it is recommended to use a 1 μ F ceramic capacitor, and the capacitor withstand voltage derating is greater than 80%.
2. The output filter capacitor C2 is an electrolytic capacitor, and it is recommended to use a high-frequency and low-resistance electrolytic capacitor with a capacity of 100 μ F/1A output current. The withstand voltage drop of the capacitor is greater than 80%.
3. TVS tube is recommended to protect the post-stage circuit (when the module is abnormal). 600W model is recommended. 5V output recommended: SMBJ7.0A, 9V output recommended: SMBJ12.0A, 12V output recommended: SMBJ20A, 15V output recommended: SMBJ20.0A, 24V output recommended: SMBJ30.0A, 48V output recommended: SMBJ64A
4. MOV is a varistor, recommended model: 10D561K (1000V surge) or 14D561K (2000V surge), which acts to protect the module from damage in the event of lightning surge.

Notes

1. The product should be used within the specifications, otherwise it will cause permanent damage to the product;
2. The product input end must be connected to insurance;
3. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
5. Unless otherwise specified, the above data are measured at Ta=25° C, humidity <75%, input nominal voltage and output rated load (pure resistance load);
6. All the above indicator test methods are based on the company's standards;
7. The above are the performance indicators of the product models listed in this manual, and some indicators of non-standard models will exceed the above requirements, and the specific situation can be directly contacted by our technicians
8. Our company can provide product customization;
9. Product specifications are changed without prior notice, please pay attention to the latest manual published on our official website.

Contact

GDHUIZHI®

广东汇智电子技术有限公司

[Guangdong Huizhi Electronic Technology Co., Ltd.](http://www.huizhi-elec.com/www.chinaebizal.com)

地址：广东省肇庆市端州区 11 区肇庆大道北侧厂房、办公楼(二期)3 楼

Add.: 3rd floor, factory and office building (phase II) on the north side of Zhaoqing Avenue,
District 11, Duanzhou District, Zhaoqing City, Guangdong Province, ChinaHomepage: www.huizhi-elec.com/www.chinaebizal.com

Tel: +86 - 758 - 2566 585

E-mail: sales@huizhi-elec.com