Typical Features

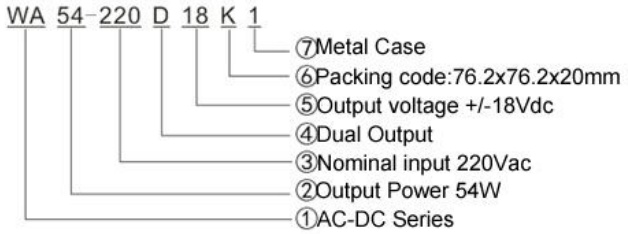
- ◆Wide Input voltage range: 85-265VAC/120-375VDC
- ◆No load power consumption≤0.5W
- ◆Transfer Efficiency (typ. 81%)
- ◆Switching frequency: 65KHz
- ◆Protection: short circuit, over current, over voltage, over temp.
- ◆Isolation voltage:2500Vac
- ◆ Full shield metal case
- ◆ PCB mounting

Application Field

WA54-220DXXK1 *Series-----a compact size, high efficient power converter offered by Aipu.*

It features universal input voltage range, taking both DC and AC input, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. It is widely used in industrial, office and civil applications. Please refer to this datasheet when module being used in a bad EMC environment.

Product Named Method



Typical Product List

Part No	Output Specifications					Max. Capacitive Load	Ripple & Noise 20MHz (MAX)	Efficiency @full load,220Vac (TYP)
	Power	Voltage1	Current1	Voltage2	Current2			
	(W)	Vo1(V)	Io1(m A)	Vo2(V)	Io2(m A)	u F	mVp-p	%
WA54-220D18K1	54	+18	1500	-18	1500	680	120	81

Note 1: Output efficiency(TYP.) is based on product is full loaded and burned in after half an hour.

Note 2: The fluctuation range for full load efficiency (%,TYP) in the table is ±2%, output efficiency of full load =output power /input power.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	265	VAC
	DC Input	120	310	375	VDC
Input Frequency Range	-	47	50	63	Hz

Input Current	100VAC		-	-	1.35	A
	220VAC		-	-	0.48	
Surge Current	100VAC		-	-	10	
	220VAC		-	/	20	
No Load Power Consumption	Input 115VAC		-	0.050	0.50	W
	Input 230VAC		-			
Leakage Current	-		0.5mA TYP/230VAC/50Hz			
External Fuse Recommended Value	-		5.0A-5A/250VAC slow fusing			
Hot-Plug	-		Unavailable			
Remote Control	-		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	Full input voltage range, any load	Vo1	-	±1.0	±2.0	%
		Vo2	-	±3.0	±5.0	%
Line Regulation	Nominal load	Vo1	-	-	±0.5	%
		Vo2	-	-	±3.0	%
Load Regulation	Nominal input voltage, 20%~100%load	Vo1	-	-	±1.0	%
		Vo2	-	-	±3.0	%
Minimum Load	Single Output		-	-	-	%
	Dual output common ground		5	-	-	
	Dual output but isolated		-	-	-	
Start-up Delay Time	Input 115Vac(full load)		-	1500	-	mS
	Input 220Vac(full load)		-		-	
Power-off Holding Time	Input 115VAC(full load)		-	60	-	mS
	Input 220VAC(full load)		-		-	
Dynamic Response	25%~50%~25% 50%~75%~50%		Overshoot Range(%):≤±5.0			%
			Recovery time(mS):≤5.0			mS

Output Overshoot	Full input voltage range	≤10%Vo			%
Short Circuit Protection		Continuous, self-recovery			Hiccup
Temperature Drift	-	-	±0.03%	-	%/℃
Over Current Protection	Input 100-240VAC	≥130% Io self-recovery			Hiccup
Over Voltage Protection	Output 5.0VDC	≤7.5			VDC
	Output 12VDC	≤18			
	Output 15VDC	≤20			
	Output 24VDC	≤30			
Ripple& Noise	-	-	80	120	mV
	Note: ripple & noise is tested by twisted pair method, for details please see at back.				

General Specifications

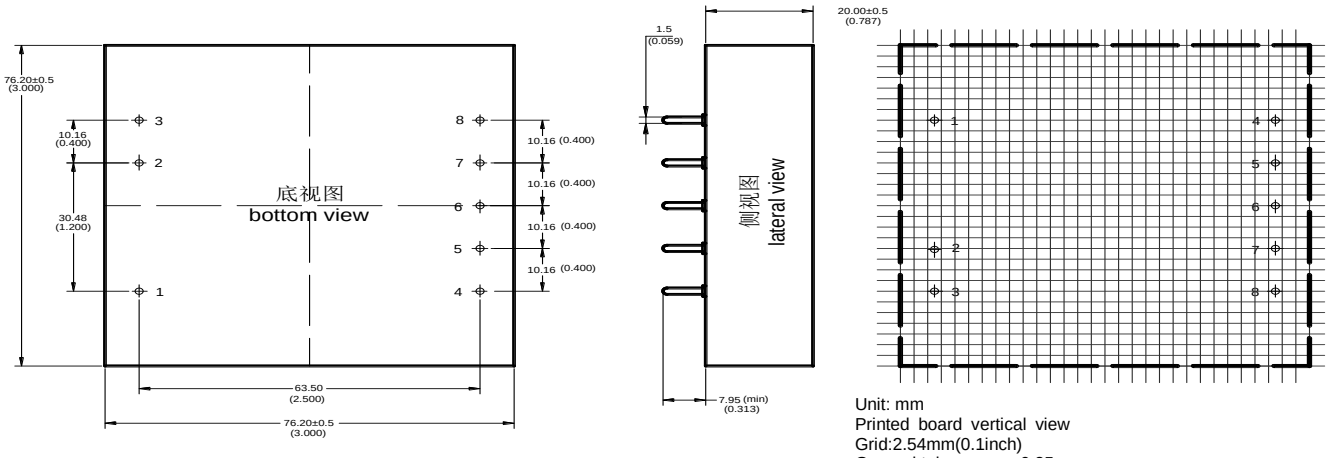
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-25	-	+75	℃
	Necessary to be derated based on temperature derating curve, please see curve at back				
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave soldering	260±4℃, timing 5-10S			
	Manual soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output Test 1min, leakage current≤5mA	2500	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
MTBF	-	MIL-HDBK-217F@25℃＞300,000H			

EMC

Total Item		Sum Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (see recommended circuit photo 1)
		RE	CISPR22/EN55032	CLASS B (see recommended circuit photo 1)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit photo 1)

		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit photo 1)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B (see recommended circuit photo 1)
				±2KV Perf.Criteria B (see recommended circuit photo 1)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (see recommended circuit photo 1)
				±4KV Perf.Criteria B (see recommended circuit photo 1)
		Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Packing Dimension



Unit: mm
Printed board vertical view
Grid:2.54mm(0.1inch)
General tolerances: ±0.25mm;
General Pin tolerances: ±0.10mm

Packing Code	L x W x H	
K1	76.2X76.2X20.0mm	3.0X3.0X0.787inch

Pin Definition

Pin	1	2	3	4	5	6	7	8
Single(S)	FG	AC(N)	AC(L)	-Vo	NP	COM	NP	+Vo

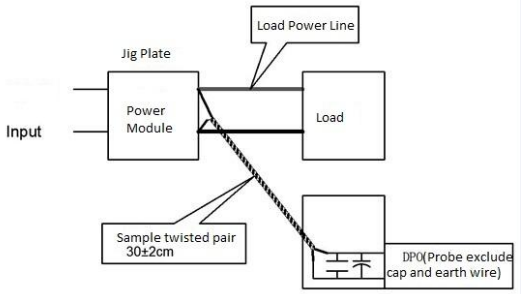
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test Method:

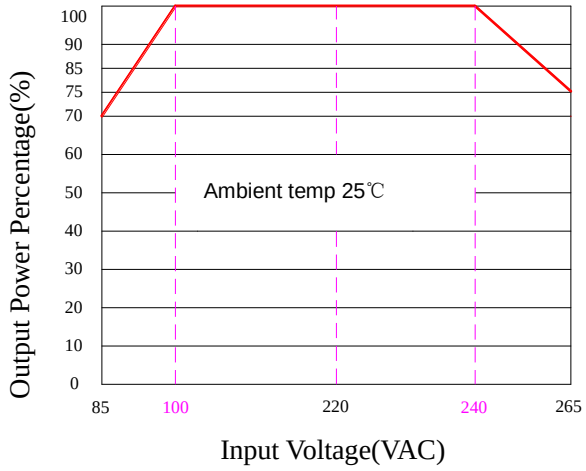
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

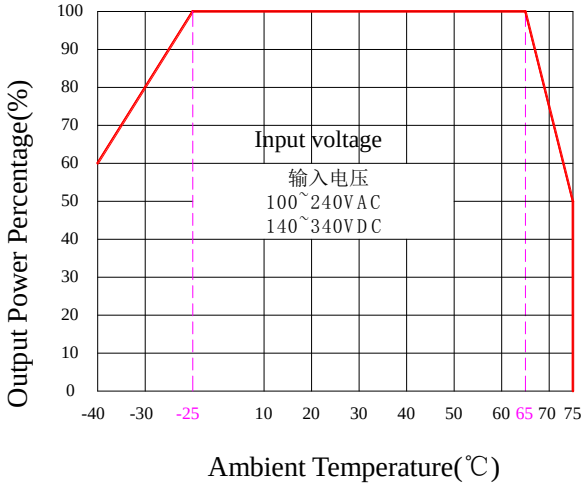


Product Characteristic Curve

Input Voltage Derating Curve



Temperature Derating Curve



Note 1: Input Voltage should be derated based on input voltage derating curve when it is 85~100VAC/240~265VAC/ 120~140VDC/340~375VDC.

Note 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Design Application Reference

2、EMC solution and recommend circuit

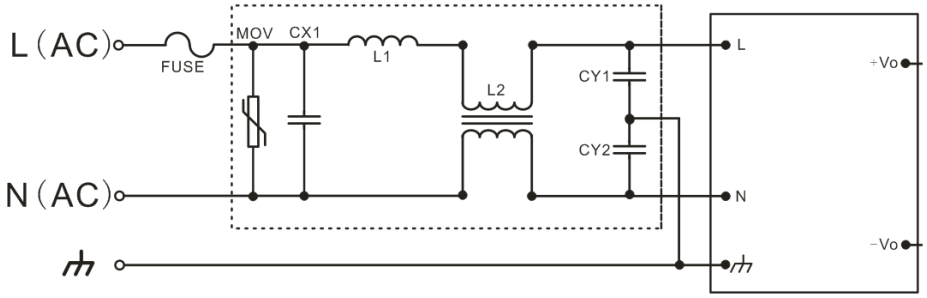


Photo 1: for higher EMC request recommend circuit

Component	Name	Model	Recommend value
FUSE	Fuse	5.0A/250Vac	5.0A/250Vac,slow fusing, necessary
MOV	Voltage dependant resistor	14D511K	14D511K
CX1	X capacitor	0.22uF/275Vac	0.22uF/275Vac
L1	Differential mode inductor	2.0uH/2.5A	2.0uH/2.5A I inductor
L2	Common mode inductor	Green ring 15mH/2.5A T12X7X6mm	15mH/2.5A
CY1	Y capacitor	102M-400Vac	102M-400Vac
CY2			

Note:

1. The product should be used within the specification range, or it will cause permanent damage to it;
2. The input terminal should connect to fuse;
3. If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
4. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load(pure resistance load);
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
8. We can provide product customization service,
9. Specifications are subject to change without prior notice, please follow up with our website for newest manual.