



Typical Features

- ◆ Wide Input Voltage Range: 85-265VAC/120-380VDC
- ◆ No load power consumption ≤ 0.2W (Typ.)
- ◆ Transfer Efficiency: 79% (Typ.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short-circuit, Over-current, Over-temperature
- ◆ Isolation voltage: 3000Vac
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ Conform to CE, RoHS
- ◆ Plastic Case, meet UL94 V-0



Application Field

FA5-220SXXG2N3 Series-----a compact size, high efficient, meet CE standard power converter offered by Aipu. It features universal input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance, meet EN55032, IEC/EN61000 standard. The series widely used for power, industry, instrument, smart home application, ect. The application circuit in the datasheet is strongly recommended for harsh EMC environment.

Typical Product List

Certificate	Part No	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz (MAX)	Efficiency@ Full Load, 220Vac (Typical)
		Power	Voltage	Current			
		(W)	Vo (V)	Io (mA)			
-	*FA5-220S05G2N3	5	5	1000	2000	120	73
-	FA5-220S12G2N3	5	12	416	1000	120	79
-	*FA5-220S24G2N3	5	24	208	800	150	80

Note 1: The typical value of output efficiency is based on the product aging for half an hour at full load.

Note 2: The test method for ripple and noise adopts the twisted pair test method. Please see the following (ripple & noise test instructions) for specific test methods and combinations.

Note 3: The fluctuation range of the full-load efficiency (% , TYP) in the table is ±2%. The full-load efficiency is the total output power divided by the input power of the module.

Note 4: “*” represents a model under development.

Note 5: 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.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	265	VAC
	DC Input	120	310	380	VDC
Input Frequency Range	-	47	50	63	Hz



Input Current	115VAC	/	/	0.10	A
	220VAC	/	/	0.06	
Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External Fuse Recommend Value	-	1A/250VAC slow-fusing			
Hot Plug	-	Unavailable			
Remote Control Terminal	-	Unavailable			

Output Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit	
Voltage Accuracy	Full input voltage range, 10%-100% load	-	±2.0	±3.0	%	
Line Regulation	Nominal Load	-	-	±0.5	%	
Load Regulation	Nominal input voltage, 20%~100% load	-	-	±1.0	%	
No Load Power Consumption	Input 115VAC	-	0.15	0.20	W	
	Input 220VAC	-				
Minimum Load	Single Output	0	-	-	%	
Turn-on Delay Time	Nominal input voltage (full load)	-	200	-	mS	
Power-off Holding Time	Input 220VAC (full load)	-	100	-	mS	
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time		50%~75%~50%	-5.0	-	+5.0
Output Over-shoot	Full input voltage range	≤10%Vo			%	
Short circuit protection		Continuous, Self-recovery			Hiccup	
Drift Coefficient	-	-	±0.03%	-	%/°C	
Over Current Protection	Input 220VAC	≥120% Io Self-recovery			Hiccup	

General Specifications

Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4°C, timing 5-10S			
	Manual-soldering	360±8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH

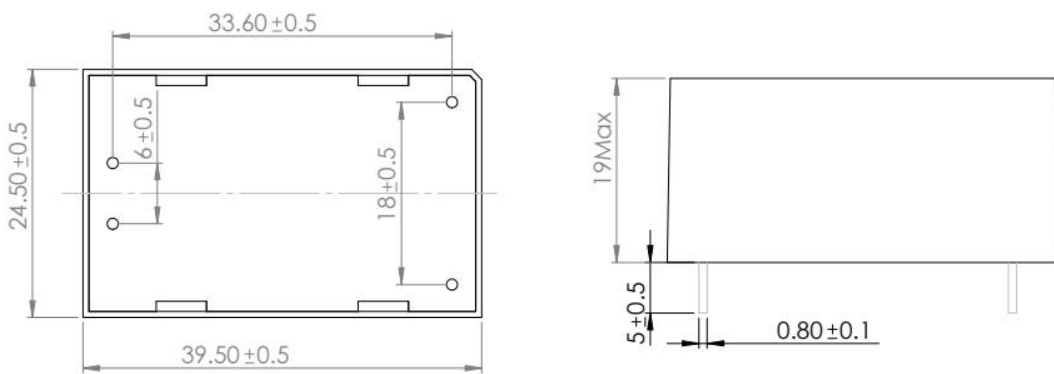


Isolation Voltage	Input-Output	Test 1min, leakage current ≤5mA	3000	-	VAC
Insulation Resistance	Input-Output	@DC500V	100	-	MΩ
Safety Standard	-	-	EN62368、IEC62368		
Vibration	-	-	10-55Hz,10G,30Min,alongX,Y,Z		
Safety Class	-	-	CLASS II		
Class of Case Material	-	-	UL94V-0		
MTBF	-	-	MIL-HDBK-217F 25°C > 300,000H		

EMC Characteristics

Total Item	Sub Item	Test Standard	Class	
EMC	EMI	CE	CISPR22/EN55032 CLASS B (see recommended circuit Photo 2)	
		RE	CISPR22/EN55032 CLASS B (see recommended circuit Photo 2)	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Y2 Packing Dimension



Note:

Unit:mm

Pin tolerance: ±1.0mm

The device layout is for reference only, Detailed information is in accordance with the final product.

Packing Code	L x W x H	
-	39.5 X 24.5 X 19.0mm	1.555 X 0.965 X 0.748inch

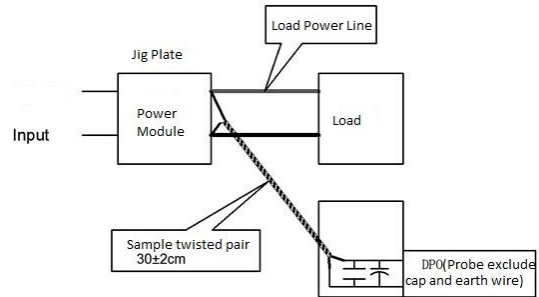
Pin Definition

Pin-out	1	2	3	4
Single(S)	AC(N)	AC(L)	+Vo	-Vo

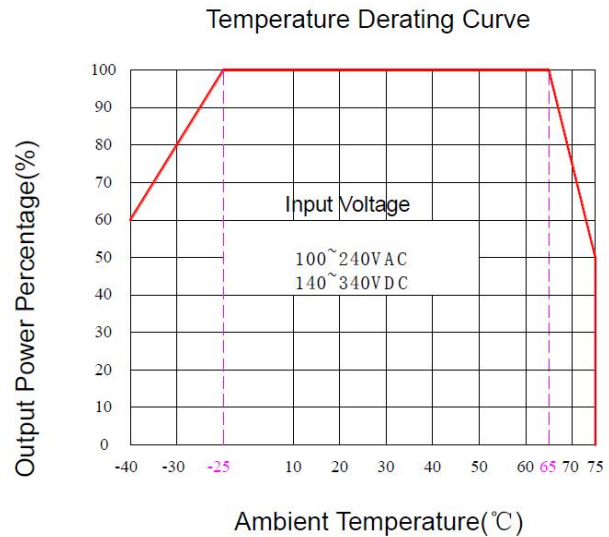
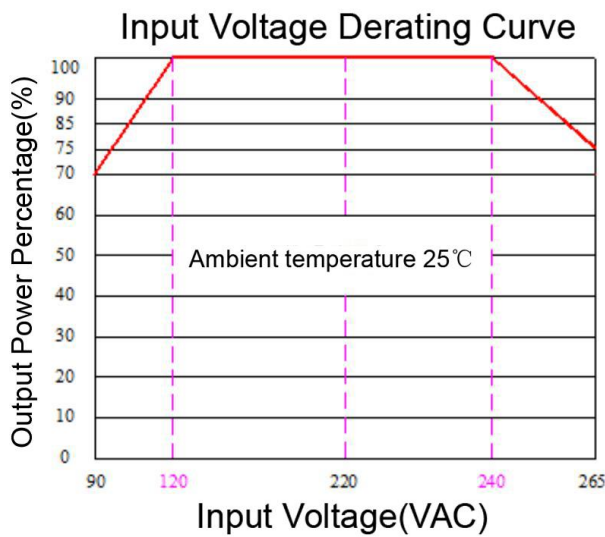
Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

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



Note1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 90~120VAC/240~265VAC/127~170VDC/340~380VDC

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

Typical EMC Recommended Application Circuit

1. Typical Application Circuit:

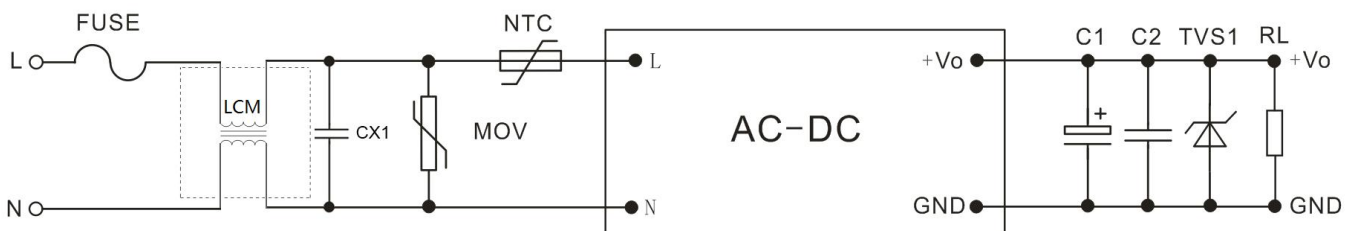


Photo 1

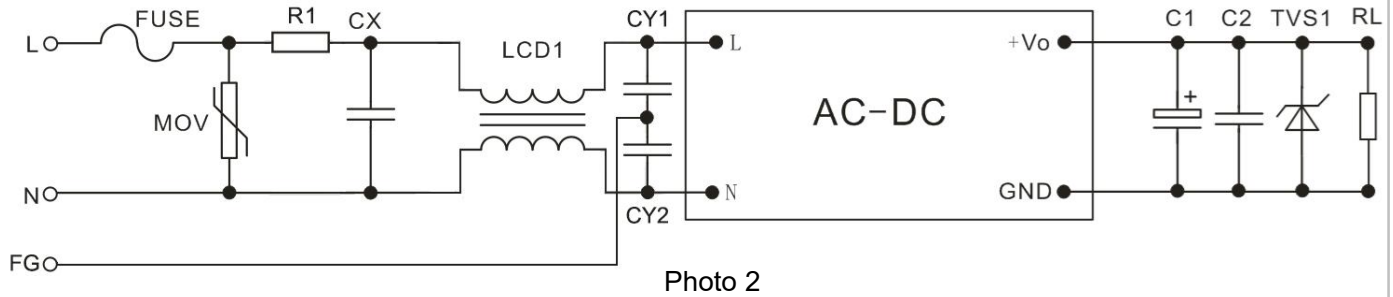
Item	C1	C2	FUSE(necessary)	MOV	R1	TVS
FA5-220S05G2N3	330uF/10V	1uF/50V	1A/250V Slow Fusing	10D511K	2W/10Ω Wirewound resistor	SMBJ7.0A
FA5-220S12G2N3	220uF/16V					SMBJ20A
FA5-220S24G2N3	100uF/35V					SMBJ30A

Note:

The output filter capacitor C1 is an electrolytic capacitor. It is recommended to use high-frequency, low-resistance electrolytic capacitors. For capacity and flowing current, please refer to the technical specifications provided by each manufacturer.

C2 is a ceramic capacitor to remove high-frequency noise. The TVS tube protects the downstream circuit when the module is abnormal and is recommended to be used.

2. EMC Application Circuit:



Component	Recommended Parameter	Component	Recommended Parameter
MOV	10D511K	R1	2W, 10Ω wirewound resistor
CX	0.1uF/275VAC	LCD1	UU9.8, 25mH
FUSE	1A/250V, Slow Fusing, must be connected externally	CY1,CY2	102M,400V

Note:

- The product should be used within the specification range, or it will cause permanent damage to it;
- The input terminal should connect to fuse;
- If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 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;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of **Ta=25°C**, **humidity<75%** with nominal input voltage and rated output load(pure resistance load);
- All index testing methods in this datasheet are based on our Company's corporate standards;
- 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;
- We can provide product customization service,
- Specifications are subject to change without prior notice, please follow up with our website for newest manual.