



### Typical Features

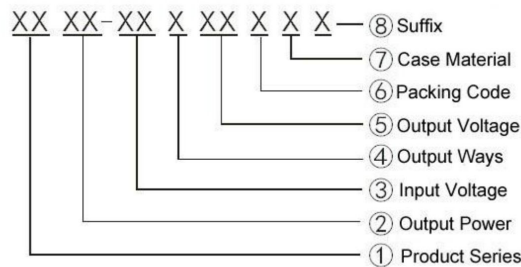
- ◆ Wide Input Voltage Range : 85-265VAC/120-380VDC
- ◆ No load power consumption  $\leq 0.10W$
- ◆ Transfer Efficiency: 88% (typ.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short-circuit, Over-current,
- ◆ Isolation voltage: 3800Vac
- ◆ Meet IEC60950/UL60950/EN60950 test standard
- ◆ Conform to CE, RoHS
- ◆ 6 Side shielding plastic case , meet UL94 V-0
- ◆ PCB Mounting



### Application Field

**FA25-220SXXH2 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.

### Product Named Method



### Typical Product List

Certificate	Part No	Output Specification					Max. Capacitive Load (MAX)	Ripple & noise 20MHz (MAX)	Efficiency @ Full Load, 220Vac (Typ)
		Power	Voltage 1	Current 1	Voltage 2	Current 2			
		(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
Apply	FA25-220S05H2	21	5.0	4200	--	--	3000	100	80
	FA25-220S12H2	25	12	2100	--	--	2000	100	86
	FA25-220S15H2	25	15	1667	--	--	1000	100	87
	FA25-220S24H2	25	24	1042	--	--	860	100	88

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2: "\*" is model under developing.

Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 4: The fluctuation range of full load efficiency(% ,TYP) is  $\pm 2\%$ , full load output efficiency= total output power/module's input power.

### 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	100VAC	-	-	0.45	A
	220VAC	-	-	0.25	
Surge Current	100VAC	-	-	10	
	220VAC	-	/	20	
No Load Power Consumption	Input 115VAC	-	0.050	0.10	W
	Input 230VAC	-			
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External Fuse Recommend Value	-	3.15A-5A/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, Any load	Vo1	-	$\pm 1.0$	$\pm 2.0$	%
		Vo2	-	-	-	%
Line Regulation	Nominal Load	Vo1	-	-	$\pm 0.5$	%
		Vo2	-	-	-	%
Load Regulation	Nominal input voltage, 20%~100% load	Vo1	-	-	$\pm 1.0$	%
		Vo2	-	-	-	%
Minimum Load	Single Output	5	-	-	%	
	Dual output common ground	-	-	-	%	

	Dual output isolated	-	-	-	
Turn-on Delay Time	Input 115Vac (full load)	-	500	-	mS
	Input 220Vac (full load)	-		-	
Power-off Holding Time	Input 115VAC (full load)	-	15	-	mS
	Input 220VAC (full load)	-		-	
Dynamic Response	25%~50%~25%	Overshoot range (%) : $\leq \pm 5.0$			%
	50%~75%~50%	Recovery time (mS) : $\leq 5.0$			mS
Output Over-shoot	Full input voltage range	$\leq 10\%V_o$			%
Short circuit protection		Continuous, Self-recovery			Hiccup
Drift Coefficient	-	-	$\pm 0.03\%$	-	%/°C
Over Current Protection	Input 100-265VAC	$\geq 130\% I_o$ Self-recovery			Hiccup
Over Voltage Protection	Output 5.0VDC	$\leq 10$			VDC
	Output 12VDC	$\leq 18$			
	Output 15VDC	$\leq 20$			
	Output 24VDC	$\leq 30$			
Ripple & Noise	-	-	80	100	mV
	Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.				

### General Specifications

Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C
	Derating base on Temperature Derating Curve(see product characteristic curve at back)				
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260 $\pm$ 4°C, timing 5-10S			
	Manual-soldering	360 $\pm$ 8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output Test 1min, leakage current $\leq$ 5mA	3800	-	-	VAC



Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN60950、IEC60950			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Safety Class	-	CLASS II			
Class of Case Material	-	UL94V-0 Class			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			

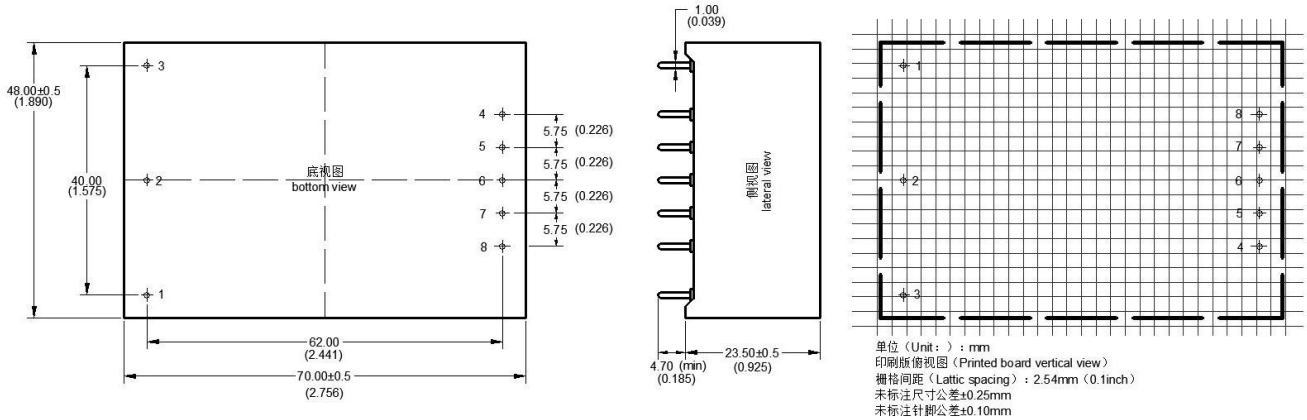
### Material Characteristics

Case Material		Black flame-retardant heat-resistant plastic (UL94V-0)			
Packing Dimension	Horizontal package	70.0X48.0X23.5 mm			
Product Weight		128g (TYP)			
Cooling Method		Natural air cooling			

### EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (Bare board)
		RE	CISPR22/EN55032	CLASS B (Bare board)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit Photo 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit Photo 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B (Bare board)
				±2KV Perf.Criteria B (see recommended circuit Photo 2)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (Bare board)
	±4KV Perf.Criteria B (see recommended circuit Photo 2)			
	Voltage dips, short interruptions and voltage variations immunity		IEC/EN61000-4-11	0%~70% Perf.Criteria B

### Packing Dimension



Packing Code

L x W x H

H2

70.0X 48.0X23.5 mm

2.756X1.890X0.925inch

### Pin Definition

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

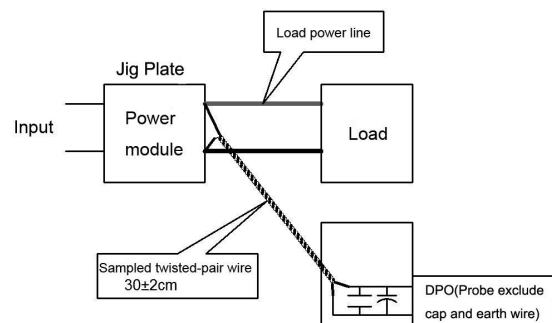
### Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test Method:

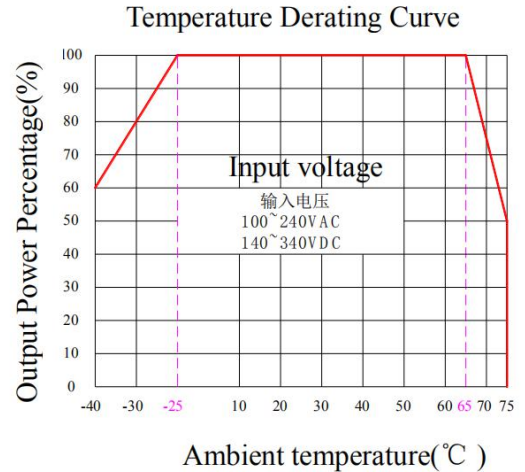
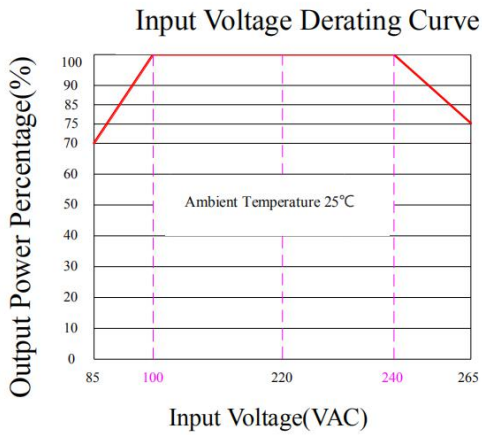
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Output Ripple & Noise Test Method:

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


**Note**

- 1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC/240~265VAC/120~140VDC/340~380VDC.
- 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

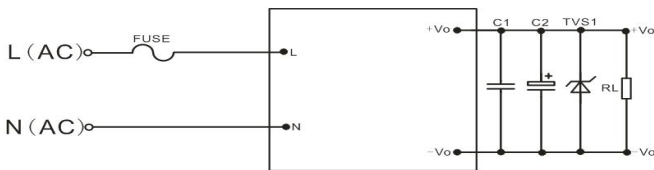
**Design Reference Application**
**1. Typical Application Circuit**


Photo 1: Typical Application Circuit

Item No	C2 (uF)	TVS1
FA25-220S05H2	470	SMBJ7.0A
FA25-220S12H2	330	SMBJ15A
FA25-220S15H2	220	SMBJ20A
FA25-220S24H2	100	SMBJ30A

**Note:**

Output filter capacitor C2 is electrolytic capacitor, recommend to use high frequency low resistance ones, capacitance and current please refer to the technical specification from each supplier. Capacitance withstand voltage derating of C2 is at least 80%. C1 is ceramic capacitor, to filter high frequency noise, recommend 0.1uF/50V/1206. TVS1 tube is a recommend component to protect post-circuit if converter fails, Recommend to connect external FUSE, model:3.15A/250V slow-fusing.

## 2. EMC solution recommended circuit

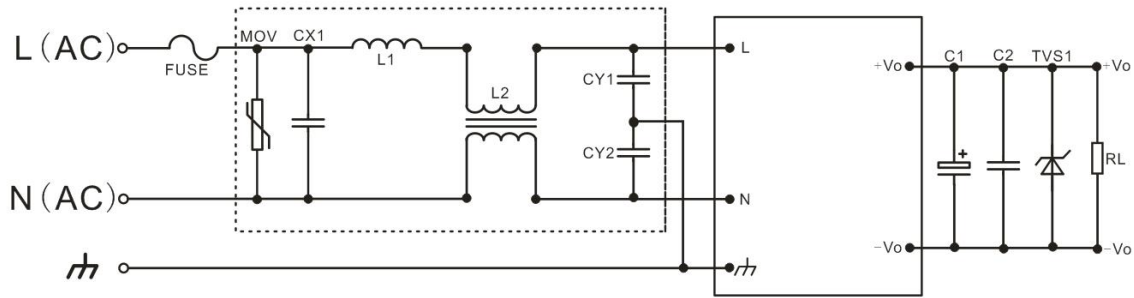


Photo 2: For higher EMC recommended circuit

Model	Name	Model	Recommended Value
FUSE	FUSE	3.15A/250Vac	3.15A/250Vac,slow fusing,required
MOV	Voltage Dependent Resistor	14D511K	14D511K
CX1	X Capacitor	0.22uF/275Vac	0.22uF/275Vac
L1	Differential mode inductor	2.0uH/2.5A	2.0uH/2.5A 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 under the specification range, otherwise it will cause permanent damage to it.
- 2.Product's input terminal should connect to fuse;
- 3.If the product operated below the minimum load request, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 4.If the product worked beyond the load range, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 5.Unless otherwise specified, data in this datasheet are tested under conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75% when inputting nominal voltage and outputting rated 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 customized product service;
- 9.The product specification may be changed at any time without prior notice.