



### Typical Features

- ◆ Wide input voltage range:85-305VAC/120-430VDC
- ◆ No-load power consumption≤0.3W
- ◆ Transfer efficiency: 86%(typ.)
- ◆ Switching frequency: 65KHz(typ.)
- ◆ Protection: Short Circuit, Over Current, Over Voltage
- ◆ Isolation voltage: 4000VAC
- ◆ Pass TUV/CE certificate
- ◆ Safety Class: CLASS II



### Application Field

*FA15-220SXXG2N4---a compact size, high efficient power converter offered by Aipu. It features universal input voltage range, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. It widely used in industrial, office power and home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.*

### Typical Product List

Certificate	Part No.	Output Specification			Max. Capacitive Load (MAX) uF	Ripple& Noise 20MHz (MAX) mVp-p	Efficiency@ Full Load 220Vac (Typical) %
		Power	Voltage	Current			
		(W)	Vo(V)	Io(m A)			
CE	FA15-220S05G2N4	15	5	3000	5000	70	85
CE	FA15-220S12G2N4	15	12	1250	2000	120	85
CE	FA15-220S12V5G2N4	15	12.5	1200	2000	120	85
CE	FA15-220S24G2N4	15	24	625	1000	120	86

Note 1: Due to the instrument deviation of the test equipment, the minimum efficiency is -2% of the typical value.

Note 2: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 3: For other items not in above list, please contact our sales team for more details.

### Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	305	VAC
	DC Input	120	300	430	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.45	A
	230VAC	-	-	0.3	
Surge Current	115VAC	-	-	30	
	230VAC	-	-	60	
No Load Consumption	Input 115VAC	-	-	0.3	W



	Input 230VAC	-			
Leakage Current	-		0.5mA TYP/230VAC/50Hz		
Hot plug	-		Unavailable		
Remote control terminal	-		Unavailable		

### Output Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit	
Voltage Accuracy	Full input voltage Range, Any load	-	-	±3.0	%	
Line Regulation	Nominal Load	-	-	±0.5	%	
Load Regulation	Nominal input Voltage 20%~100% load	-	-	±3.0	%	
Minimum load	Single Output	0	-	-	%	
Turn-on Delay Time	Input 220VAC (full load)	-	1000	-	mS	
Power-off Holding Time	Input 220VAC (full load)	-	100		mS	
Dynamic Response	Over shoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+5.0	mS
Output Overshooting	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	
Over Voltage Protection	Output 5VDC	≤7.5			VDC	
	Output 12V/12.5V DC	≤18				
	Output 15VDC	≤20				
	Output 24VDC	≤30				

### General Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	61	65	73	KHz
Operating Temperature	-	-40	-	+75	°C
	Should be used based on Temperature Derating Curve, please refer to the Product Characteristic Curve in back of DS.				
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	I/P-O/P	Test 1min, leakage current	4000	-	VAC

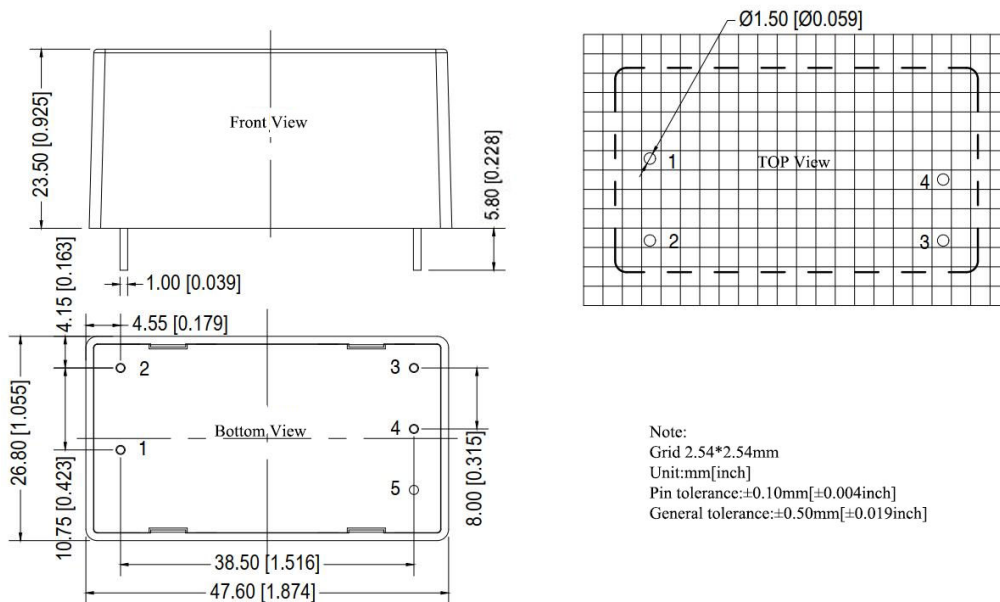


Voltage		≤5mA				
Insulation Resistance	I/P-O/P	@DC500V	100	-	-	MΩ
Vibration		-	10-55Hz,10G,30Min, along X,Y,Z			
MTBF		-	MIL-HDBK-217F@25°C >300,000H			

## EMC Characteristics

EMI	CE	CISPR22/EN55022	CLASS B (see recommended circuit Photo 1)			
	RE	CISPR22/EN55022	CLASS B (see recommended circuit Photo 1)			
EMC	ESD	IEC/EN61000-4-2	±6KV/8KV	Perf.Criteria B		
	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria A		
	EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B		
		IEC/EN61000-4-4	±4KV (see recommended circuit Photo 1)	Perf.Criteria A		
	Surge	IEC/EN61000-4-5	line to line ±1KV		Perf.Criteria B	
		IEC/EN61000-4-5	line to line ±2KV / line to ground ±4KV		Perf.Criteria A	
	(see recommended circuit Photo 1)					
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf.Criteria A		
PFMF	IEC/EN61000-4-8	10A/m	Perf.Criteria A			
Voltage dips and interruptions	IEC/EN61000-4-11	0%-70%	Perf.Criteria B			

## Packing Dimension



Note:  
 Grid 2.54\*2.54mm  
 Unit:mm[inch]  
 Pin tolerance:±0.10mm[±0.004inch]  
 General tolerance:±0.50mm[±0.019inch]

Packing Code	L x W x H	
G	47.60X26.8X23.50mm	1.874X1.055X0.925inch

## Pin Definition

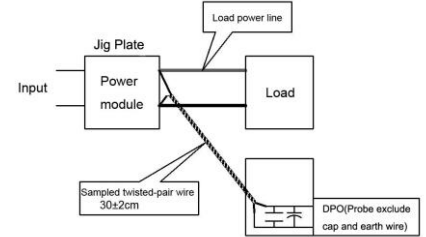
Pin-out (S)	1	2	3	4
	AC(L)	AC(N)	-Vo	+Vo

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

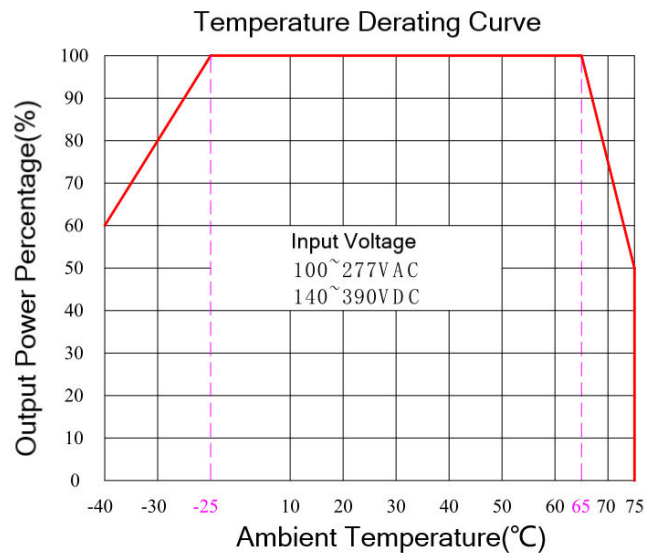
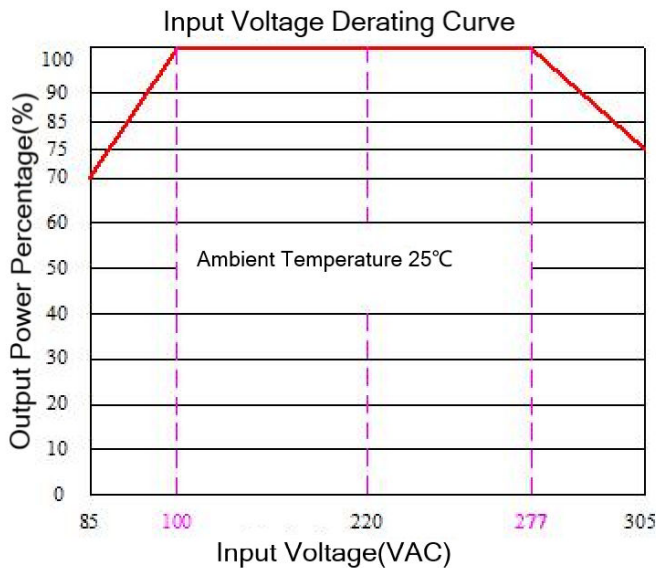
**Test Method:**

(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**

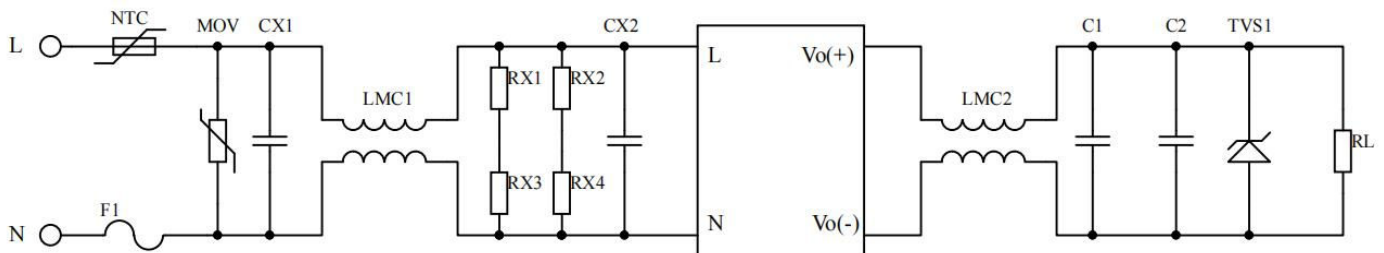


**Note**

- 1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC/ 277~305VAC/ 120~140VDC/ 390~430VDC.
- 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

**Application Design Referenced**

**EMC Solution and Recommend Circuit**

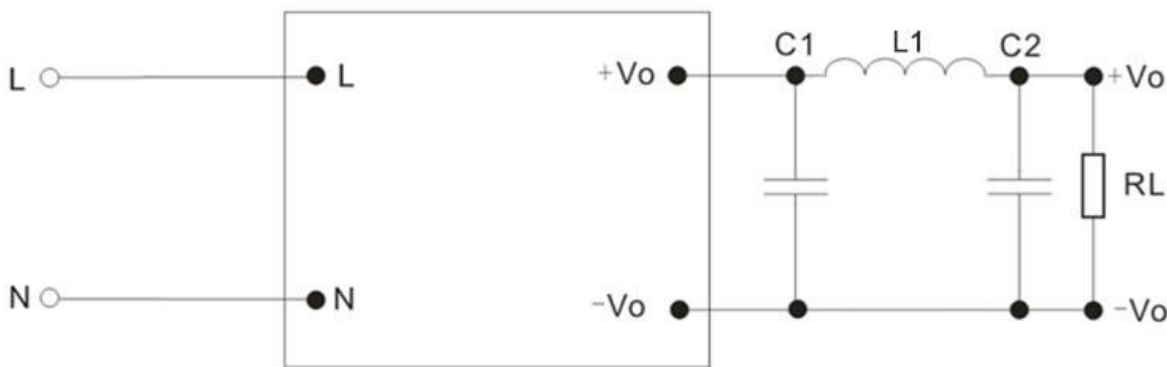


**Photo 1**

Note:

1. FUSE: recommend 2A~250Vac, slow fusing, block form;
2. MOV is voltage dependent resistor, recommend model: 14D561K;
3. NTC is thermistors, recommend model:10D-11, to prevent the module from damage when lightning surge.
4. LCM1,LCM2 is CM inductor, LCM1 recommend 30mH; LCM2 recommend 40Uh.
5. CX1 is X capacitor, recommend model: 0.22uF/275Vac; CX2 is X capacitor, recommend model:0.1uF/275VAC;
6. RX1,RX2,RX3,RX4 are chip resistors, recommend model 1206, 1MΩ;
7. C1 choose high-frequency and low-impedance electrolytic capacitor, capacitance smaller than capacitive load, and withstand voltage is 1.5 times above the output voltage.
8. C2 choose 0.1uF ceramic chip capacitors, withstand voltage is 1.5 times above the output voltage;
9. TVS1 is TVS tube, 5V output recommend: SMBJ7.0A, 9V output recommend:SMBJ12.0A, 12V output recommend: SMBJ20A,15V output recommend :SMBJ20.0A, 24V output recommend:SMBJ30.0A, 48V output recommend: SMBJ64A.

FA15-220S05G2N4, external circuit to lower ripple



**Photo 2**

Note:

- 1) C1, C2 are electrolytic capacitors, C1 is 330uF/10V, C2 is 220uF/10V;
- 2) L1 is rod type inductor, inductance 2.2uH, wire diameter is 0.7mm above.

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 is not worked under the load range(below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 4.Unless otherwise specified, data in this datasheet are tested under conditions of **Ta=25°C**, **humidity<75%** when inputting nominal voltage and outputting rated load(pure resistance load);
- 5.All index testing methods in this datasheet are based on our Company's corporate standards
- 6.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;
- 7.We can provide customized product service.