

Typical Features

- ◆ Wide input voltage range 80-305VAC/110-430VDC
- ◆ No load power consumption 0.3W (Typ.)
- ◆ Efficiency 90% (Typ.)
- ◆ Switching frequency 65KHz
- ◆ Short-circuit, over-current, over-voltage protections
- ◆ Isolation Voltage 4200Vac
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ PCB DIP mounting



Application Field

FA90-220SXXG2N5 series ----- Compact size, high efficiency modular power supplies with global adapted input voltage range both AC/DC available, low ripple, low temperature rise, low standby power consumption, high efficiency & reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of electricity power, industry, instrumentation and smart home devices, etc. The additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.

Typical Product List

Certificate	Part No.	Output Specification			Capacitive Load @220VAC	Ripple & Noise 20MHz (mVp-p)		Efficiency @full load, 220Vac (%)
		Power	Voltage	Current		Typ	Max	
		(W)	Vo(V)	Io(A)				
-	FA90-220S12G2N5	80.4	12	6.7	6500	-	120	90
	FA90-220S15G2N5	85.05	15	5.67	3500	-	150	90
	FA90-220S24G2N5	90	24	3.75	2000	-	200	90

Note 1 - Please contact Aipu sales for other output voltages requirement in this series but not listed in this table.

Note 2 - The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 3 - The full load efficiency should be in $\pm 2\%$ of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 4 - The ripple and noise are tested by the twisted pair method, please refer to the following Ripple & Noise Test Instructions.

Input Specifications

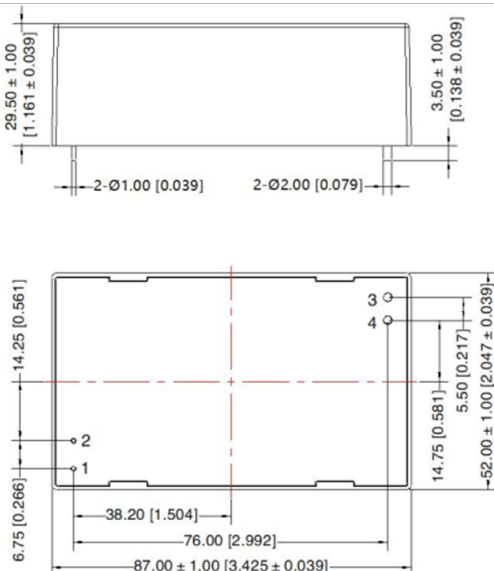

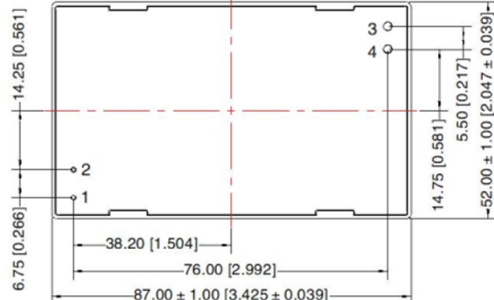
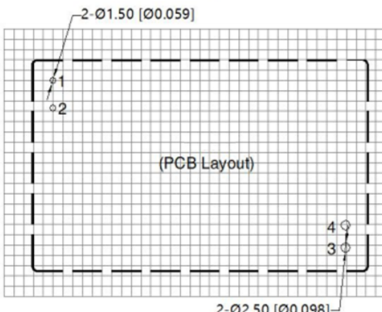
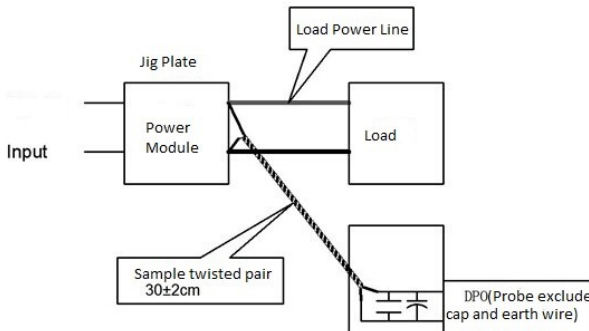
Items	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	80	220	305	VAC
	DC input	110	310	430	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	2.0	A
	220VAC	-	-	1.5	
Surge Current	115VAC	-	35	-	
	220VAC	-	65	-	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Fuse	-	5.0A/300VAC, Time-delay fuse			

Output Specifications

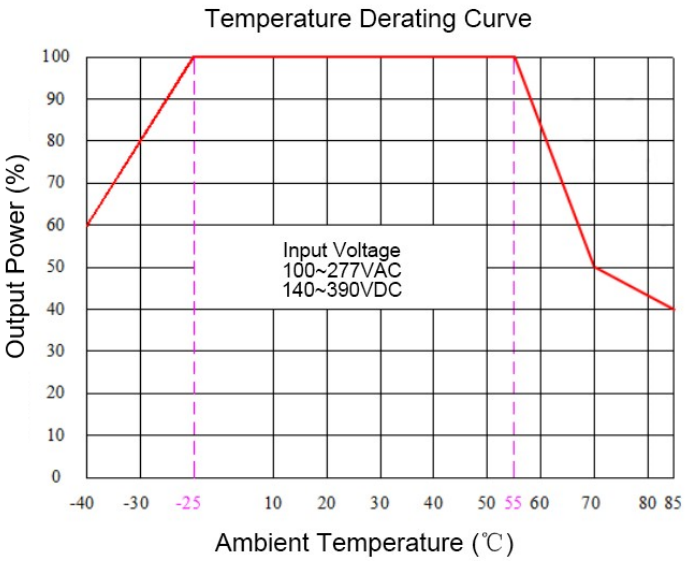
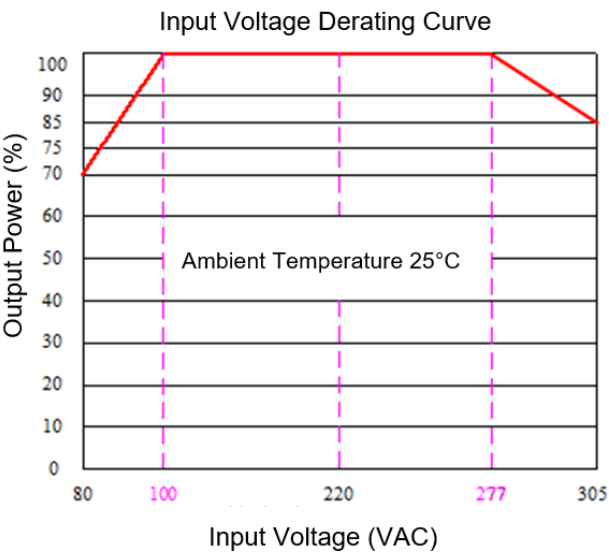
Items		Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, any load	Vo	-	±2.0	±3.0	%
Line Regulation		Rated load	Vo	-	-	±1.0	%
Load Regulation		Rated input voltage, 20%~100% load	Vo	-	-	±1.5	%
No Load Power Consumption		Input 115VAC	-	-	0.45	W	
		Input 220VAC	-	0.3			
Minimum Load		Single Output	0	-	-	%	
Turn-on Delay Time		Rated input voltage (full load)	-	50	-	mS	
Power-off Hold up Time		Input 115VAC (full load)	-	50	-	mS	
		Input 220VAC (full load)	-	100	-		
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%	
	Recovery time	50%~75%~50%	-	5.0	-	mS	
Output Overshoot		Full input voltage range	≤10%Vo			%	
Short-Circuit Protection			Continuous, Self-recovery			Hiccup	
Drift Coefficient		-	-	±0.03%	-	%/℃	
Over-current Protection		Input 220VAC	≥110% Io, self-recovery			Hiccup	
Over-voltage Protection		Output 12VDC	≤16VDC (hiccup or clamp)				
		Output 15VDC	≤25VDC (hiccup or clamp)				
		Output 24VDC	≤35VDC (hiccup or clamp)				

General Specifications

Items		Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		Refer to the temperature derating curve	-40	-	+85	°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	I/P-O/P	Test 1min, leakage current≤5mA	4200	-	-	VAC
Insulation Resistance		Input-Output @DC500V	100	-	-	MΩ
Safety Standard		-	IEC/EN62368			
Vibration		-	10-55Hz, 10G, 30Min, along X,Y,Z			
Safety Class		-	CLASS II			
Flame Class of Case		-	UL94V-0			
MTBF		-	MIL-HDBK-217F@25°C > 300,000H			
Product Weight		Part No.	Weight (Typ.)			
		FA90-220S12G2N5	200g			
		FA90-220S15G2N5	200g			

		FA90-220S24G2N5		200g											
EMC Performance															
Total Items		Sub Items	Standard	Performance/Class											
EMC	EMI	CE	CISPR22/EN55032	CLASS B (with Recommended Circuit 1)											
		RE	CISPR22/EN55032	CLASS B (with Recommended Circuit 1)											
	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B	(with Recommended Circuit 1)									
		CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B	(with Recommended Circuit 1)									
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B											
		Surge	IEC/EN61000-4-5	Line to line ±2KV / line to ground ±4KV Perf.Criteria B (with Recommended Circuit 1)											
		EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B										
		Voltage dips & interruptions	IEC/EN61000-4-11	0%~70%	Perf.Criteria B										
Mechanical Dimensions															
		<div><div></div><div>Unit: mm[inch] Pin diameter tolerance ±0.10[±0.004] General tolerance ±0.50[±0.020]</div></div>													
				<table><tr><th>Pin No.</th><th>Function</th></tr><tr><td>1</td><td>AC(N)</td></tr><tr><td>2</td><td>AC(L)</td></tr><tr><td>3</td><td>+Vout</td></tr><tr><td>4</td><td>-Vout</td></tr></table>		Pin No.	Function	1	AC(N)	2	AC(L)	3	+Vout	4	-Vout
Pin No.	Function														
1	AC(N)														
2	AC(L)														
3	+Vout														
4	-Vout														
Packing Code		L x W x H													
G2		87.00 X 52.00 X 29.50mm		3.425 X 2.047 X 1.161inch											
Ripple & Noise Test Instructions (Twisted Pair Method, 20MHz Bandwidth)															
<div><div><p>1) Ripple noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.</p><p>2) The output ripple noise test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be started after input power on.</p></div><div></div></div>															

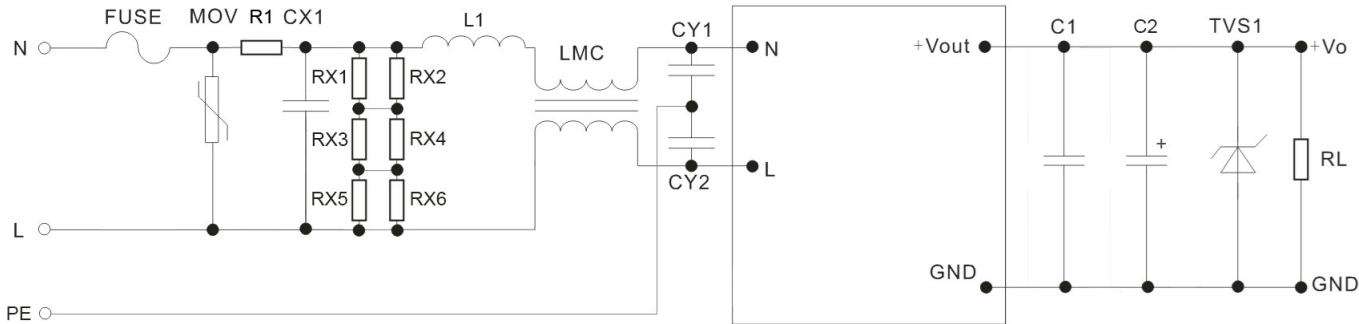
Product Performance Curves



Note 1 - The output power should be derated based on the input voltage derating curve at 80~100VAC/277~305VAC & 110~140VDC/390~430VDC.

Note 2 - This product should operate at a natural air condition, please contact us if it need be used at a closed space.

Recommended typical EMC Circuit & components Parameters



Circuit 1

Part No.	FA90-220S12G2N5	FA90-220S15G2N5	FA90-220S24G2N5
FUSE (Necessary)	5.0A/300V (Time-delay fuse)		
MOV	14D561K/4500A		
R1	Jumper wire (Shorted)		
CX1	X2/334K/305VAC		
RX1, RX2, RX3, RX4, RX5, RX6	1206/1.5MΩ		
L1	1.2mH/2A		
LMC	20mH /2A		
CY1, CY2	Y1/ 1nF/ 400VAC		
C1	1uF/50V		
C2	470uF/16V	220uF/25V	100uF/35V
TVS1	SMBJ7.0A	SMBJ7.0A	SMBJ20A

Application Notice

1. The products should be used according to the specifications in this datasheet, otherwise it could be permanently damaged.
2. A fuse should be connected at input.
3. The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance in this datasheet cannot be guaranteed if it works at over-load condition.
5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25°C, humidity<75%RH, rated input voltage and rated load
6. All values or indicators in this datasheet had been tested based on Aipupower test specifications.
7. The specifications are specially for the parts listed in this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
8. Aipupower can provide customization service.
9. The product specifications may be modified without prior notice. Please refer to the published data sheet at Aipupower website.

Guangzhou Aipu Electron Technology Co., Ltd

Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.

Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821

E-mail: sales@aipu-elec.com Website: <https://www.aipupower.com>