Typical Features

- ◆ Wide input voltage range 85-305VAC/120-430VDC
- ◆ Efficiency up to 90% (Typ.)
- ◆ Switching frequency 65KHz
- ◆ Short circuit, over current & over voltage protections
- ◆ Isolation voltage 4200VAC
- ◆ Operating temperature from -40℃ to +85℃
- ◆ Altitude during operating 5000m Max
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ With CE certificate
- ◆ PCB DIP mounting

CE
EN62368-1

Application Field

FA40-220SXXG2N5 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, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of Electric power, Industrial, Instrument & Smart home devices, etc. Additional EMC circuit is recommended for the application with high EMC requirement.

Typical Product List

Certificate	Part No.	Input Voltage Range		Output Specification			Ripple & Noise (Max)	Max. Capacitive Load	Efficiency (%) @Full load 220VAC	
		Nominal	Range	Power	Voltage	Current				
		(VAC)	(VAC)	P (W)	Vo (VDC)	Io (mA)	mVp-p	(uF)	Min	Typ.
CE	FA40-220S05G2N5	220	85-305	35	5	7000	150	6600	84	86
	FA40-220S12G2N5			40	12	3333	150	4400	87	89
	FA40-220S15G2N5			40	15	2666	150	3000	88	90
	FA40-220S24G2N5			40	24	1666	150	1500	87	89
	FA40-220S48G2N5			40	48	833	150	470	88	90

Note 1: Please contact Aipu sales for other output voltages requirements of 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 ±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.

Input Specifications

Items	Test Conditions	Min.	Typ.	Max.	Unit
Input voltage range	AC input	85	220	305	VAC
	DC input	120	310	430	VDC
No load power consumption	Full input voltage range	-	-	0.4	W

Input frequency range	-	47	50	63	Hz
Input current	Input 115VAC	-	-	1	A
	Input 220VAC	-	-	0.7	
Surge current	Input 115VAC	-	30	-	A
	Input 220VAC	-	60	-	
Leakage current	-	0.5mA TYP/230VAC/50Hz			
Recommended external fuse	-	3.15A/300VAC, Time-delay fuse			
Hot plug	-	Unavailable			
ON/OFF Control	-	Unavailable			

Output Specifications

Items	Test Conditions	Min.	Typ.	Max.	Unit
Voltage accuracy	Full input voltage range, rated load	-	-	±3.0	%
Line regulation	Full input voltage range, rated load	-	-	±1.0	%
Load regulation	Nominal input voltage, 20%~100% load	-	-	±1.5	%
Ripple & Noise	Full input voltage range	-	-	150	mVp-p
Dynamic response time	50%~75%~50%	-	-	10	mS
Dynamic response deviation	25%~50%~25%	-5.0	-	+5.0	%
Minimum load	Single Output	0	-	-	%
Temperature drift coefficient	-	-	-	±0.03	%/℃
Turn-on delay time	Nominal input voltage (full load)	-	-	2000	mS
Power-off Hold-up time	Input 115VAC (full load)	-	-	50	mS
	Input 220VAC (full load)	-	-	100	
Output overshoot	Full input voltage range	≤10			%Vo
Over voltage protection	5VDC output	≤7.3VDC (Hiccup or Clamp)			
	12VDC output	≤16VDC (Hiccup or Clamp)			
	15VDC output	≤25VDC (Hiccup or Clamp)			
	24VDC output	≤35VDC (Hiccup or Clamp)			
	48VDC output	≤60VDC (Hiccup or Clamp)			
Short circuit protection	Full input voltage range	Continuous, Self-recovery			
Over current protection	Input 220VAC	130%≤ Io ≤200%, self-recovery			%Io

Note: The Ripple & Noise is tested by the Parallel-line method (please refer to the following Test Instruction).

General Specifications

Items	Test Conditions	Min.	Typ.	Max.	Unit
Switching frequency	-	-	65	-	KHz
Operating temperature	Refer to the Temperature Derating Graph	-40	-	+85	℃
Storage temperature	-	-40	-	+105	
Soldering temperature	Wave soldering	260±4℃, timing 5-10S			
	Manual soldering	360±8℃, timing 4-7S			

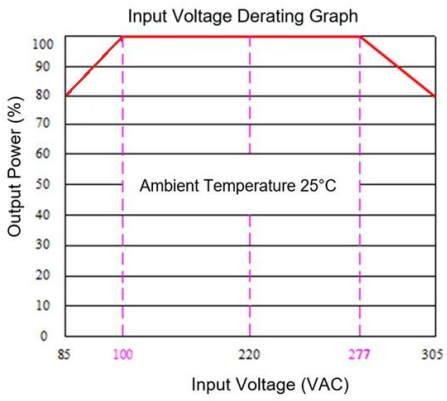
Relative humidity	-		10	-	90	%RH
Isolation voltage	I/P-O/P	Test 1min, leakage current <5mA	4200	-	-	VAC
Insulation resistance	I/P-O/P	@DC500V	100	-	-	MΩ
MTBF	MIL-HDBK-217F@25℃		500	-	-	K Hours
Cooling method	Nature air					
Vibration	10-55Hz, 10G, 30 Min, along X, Y, Z					
Safety class	CLASS Ⅱ					
Case material	PBT (Plastic case)					

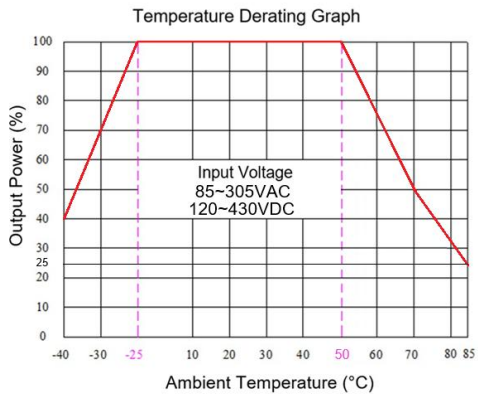
Weight & Dimensions	Part No.	Weight (Typ)	Dimensions L x W x H	
	FA30-220SXXG2N5	120g	69.50 X 39.00 X 25.50 mm	2.736 X 1.535 X 1.004 inch

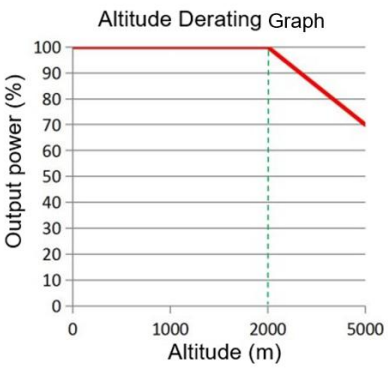
EMC Performance

Items			Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS B
		RE	CISPR32/EN55032	CLASS B
	EMS	RS	IEC/EN61000-4-3	10V/m Perf. Criteria A
		CS	IEC/EN61000-4-6	10V r.m.s Perf. Criteria A
		ESD	IEC/EN61000-4-2	Contact ±6KV, air ±8KV Perf. Criteria A
		Surge	IEC/EN61000-4-5	Line to line ±2KV
				Line to line ±2KV, line to ground ±4KV Perf. Criteria A (with the Recommended Circuit)
		EFT	IEC/EN61000-4-4	±2KV Perf. Criteria A
				±4KV Perf. Criteria A (with the Recommended Circuit)
		Voltage dips & interruptions	IEC/EN61000-4-11	0%~70% Perf. Criteria A

Product Characteristics Graphs





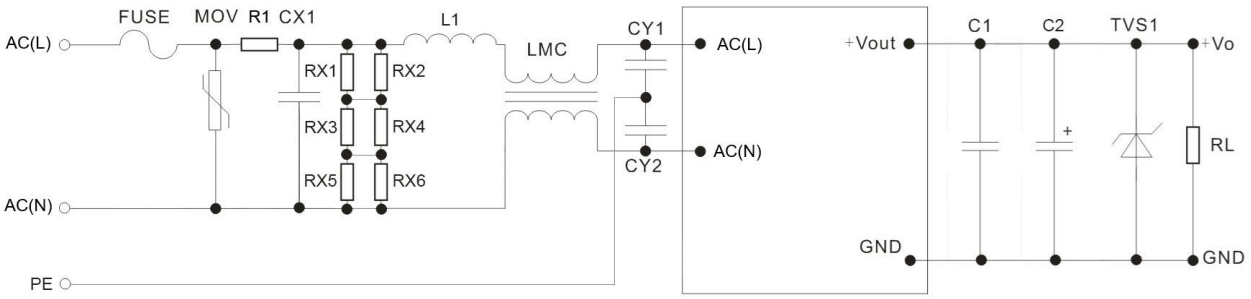


Note 1: The output power should be derated based on the input voltage derating graph at 85~100VAC & 277~305VAC.

Note 2: The actual output power (%)=Input voltage derating*Temperature derating*Altitude derating, for example, input voltage 305VAC, Ambient temperature 70°C, Altitude 5000m, the output power (%)=0.8*0.5*0.7*100%=28%

Note 3: The product should operate under the condition of nature air, please contact us if it could be used at a closed space.

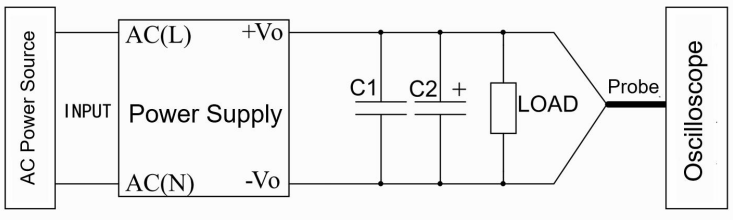
Recommended EMC Circuit for Application



Part No.	FUSE (*)	MOV	R1 (*)	CX1	RX1,RX2 RX3,RX4 RX5,RX6	L1	LMC	CY1 CY2	C1	C2	TVS1
FA40-220S05G2N5	3.15A/ 300V (Time-delay Fuse)	14D561K/ 4500A	4.7Ω /3W (Wire-wound resistor	X2/ 334K/ 305VAC	1206/ 1.0M	1.2mH/ 1A	20mH 1A	Y1/ 1nF/ 400VAC	1uF /50V	330uF/16V	SMBJ7.0A
FA40-220S12G2N5										330uF/16V	SMBJ20A
FA40-220S15G2N5										220uF/25V	SMBJ20A
FA40-220S24G2N5										100uF/35V	SMBJ30A
FA40-220S48G2N5										47uF/63V	SMBJ64A

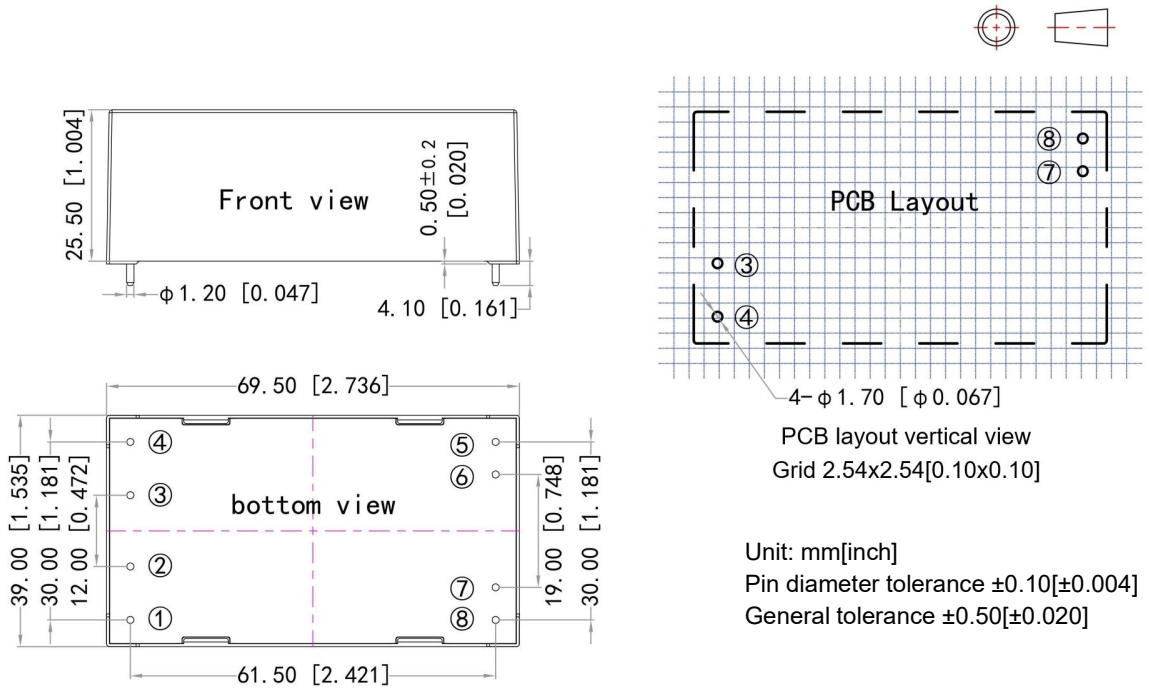
Note: Both * marked Fuse & R1 are required for the application, not optional.

Ripple & Noise Test Instruction (Parallel-line Method, 20MHZ bandwidth)



1. The Ripple & Noise test needs the cables in parallel, an oscilloscope that should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. One polypropylene capacitor C1(0.1uF) and one high frequency low impedance electrolytic capacitor C2(10uF) are connected in parallel with the probe.
2. Refer to the test diagram, 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 test can start at the converter output terminals after input power on.

Mechanical Dimensions



PCB layout vertical view
Grid 2.54x2.54[0.10x0.10]

Unit: mm[inch]
Pin diameter tolerance ±0.10[±0.004]
General tolerance ±0.50[±0.020]

Pin-out Function Description

Pin No.	1, 2	3	4	5, 6	7	8
Function	No Pin	AC(L)	AC(N)	No Pin	-Vo	+Vo

Application Notice

1.The product should be used according to the specification, otherwise it could be permanently damaged.

2. A fuse should be used at the input.

3. The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performance cannot be guaranteed if it works under over-load condition.

5. Unless otherwise specified, all values or indicators on this datasheet are tested at Ta=25℃, humidity<75%RH, nominal input voltage and rated load (pure resistance load).

6. All values or indicators on this datasheet have been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed on 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.

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