Typical Features

- Wide input voltage range 85-265VAC/120-380VDC
- No load power consumption ≤0.2W
- Efficiency up to 78%(Typ.)
- Operating temperature from -40 to +85℃
- Switching frequency 65KHz (Typ.)
- Short circuit, over current & over temp. protections
- Isolation voltage 3000VAC
- Altitude during operation 4000m Max
- Compliant with IEC/EN62368/UL62368
- PCB DIP mounting

Application Field

FA3-220SXXG2N3 Series ----- Compact size & high-performance modular power supplies with global adapted input voltage range (both AC and DC available), low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated & good EMC performance. This series of products can be widely used in the fields of Industry, Office facilities, Instrument and household devices, etc. The additional EMC circuit diagram is recommended for the application with high EMC requirement.

Typical Product List

Certificate	Part No.	Input Voltage		Output Specifications			Capacitive Load @220VAC (Max)	Ripple & Noise 20MHz (Max)	Efficiency @Full Load 220VAC (Typ.)
		Nom.	Range	Power	Voltage	Current			
		(VAC)	(VAC)	P(W)	Vo (V)	Io (mA)	uF	mVp-p	%
-	FA3-220S05G2N3	220	85-265	3	5	600	2000	120	71
-	FA3-220S12G2N3				12	250	1000	120	76
-	FA3-220S24G2N3				24	125	680	150	78

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 ±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

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
No load power consumption	Full input voltage range	-	-	0.2	W

Input current	Input 115VAC	-	-	0.08	A
	Input 220VAC	-	-	0.06	
Surge current	Input 115VAC	-	-	15	
	Input 220VAC	-	-	20	
Leakage current	-	0.5mA TYP/230VAC/50Hz			
Recommended external fuse	-	1A/250VAC Time-delay fuse			
Hot plug	-	Unavailable			
ON/OFF Control	-	Unavailable			

Output Specifications

Item		Operating Condition	Min	Typ.	Max	Unit
Voltage accuracy		Full input voltage range, any load	-	±2.0	±3.0	%
Line regulation		Rated load	-	-	±0.2	%
Load regulation		Nominal input voltage, 20%~100% load	-	-	±0.5	%
Minimum load		Single Output	0	-	-	%
Turn-on delay time		Input 115VAC, full load	-	200	-	mS
		Input 220VAC, full load	-		-	
Power-off Hold up time		Input 115VAC, full load	-	100	-	mS
		Input 220VAC, full load	-		-	
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+5.0	mS
Output overshoot		Full input voltage range	≤10%Vo			%
Short circuit protection			Continuous, self-recovery			Hiccup
Temperature drift		-	-	±0.03%	-	%/℃
Over current protection		Input 220VAC	≥130% Io, self-recovery			Hiccup
Ripple & Noise		5%-100% load, 20MHz bandwidth	-	-	150	mVp-p
Note: The Ripple & Noise is tested by the twisted pair method, please refer to the following test instruction.						

General Specifications

Item	Operating Condition		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℃, time 5-10S			
	Manual soldering		360±8℃, time 4-7S			
Relative humidity	-		10	-	90	%RH
Isolation voltage	I/P-O/P	Test 1min, leakage current ≤5mA	3000	-	-	VAC
Insulation resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
MTBF	MIL-HDBK-217F@25℃		300	-	-	K Hours
Safety standard	-		IEC/EN62368			

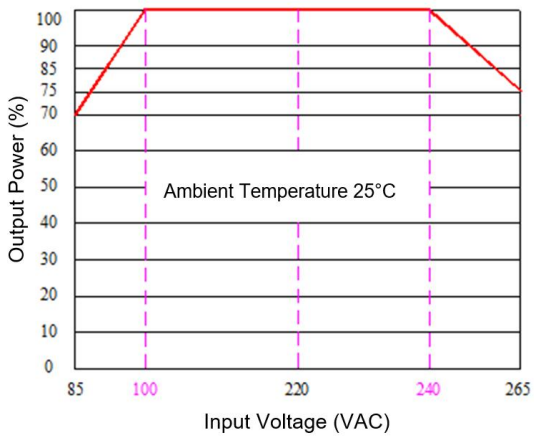
Vibration	-		10-55Hz,10G, 30 Min, along X, Y, Z	
Safety class	-		CLASS Ⅱ	
Case flame class			UL94-V0	
Weight & Dimensions	Part No.	Weight (Typ.)	Dimensions L x W x H	
	FA3-220SXXG2N3	15g	35.5 X 21.5 X 17.0 mm	1.398 X 0.846 X 0.669 inch

EMC Performance

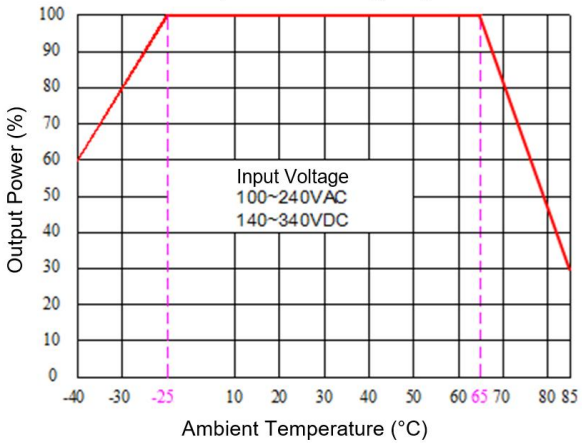
Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
		RE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with the Recommended Circuit 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with the Recommended Circuit 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B (with the Recommended Circuit 2)
		Surge	IEC/EN61000-4-5	Line to line ±2KV Perf.Criteria B (with the Recommended Circuit 2)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (with the Recommended Circuit 2)
		Voltage Dips & Interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Product Characteristics Graphs

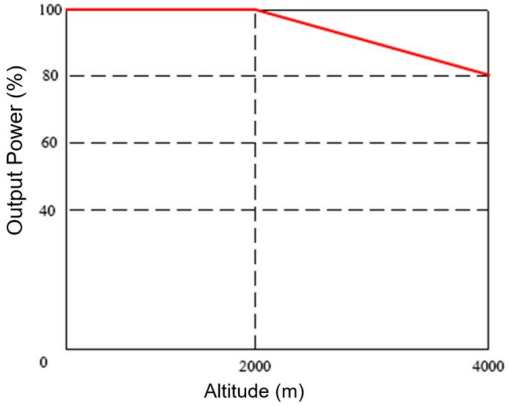
Input Voltage Derating Graph



Temperature Derating Graph



Altitude Derating Graph



Note 1: The output power should be derated based on the input voltage derating graph at 85~100VAC/120~140VDC & 240~265VAC/ 340~380VDC.

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

Recommended Circuit Diagram for Application

1. Typical application circuit diagram

Figure – Circuit 1

Part No.	C1	C2	FUSE (*)	MOV	R1	TVS1
FA3-220S05G2N3	330uF/10V	1uF/50V	1A/250V Time-delay fuse	10D511K	2W/10Ω Wire-wound resistor	SMBJ7.0A
FA3-220S12G2N3	220uF/16V					SMBJ20A
FA3-220S24G2N3	100uF/35V					SMBJ30A

Note: The * marked FUSE is necessary for the application, not optional. High frequency low resistance electrolytic capacitor is recommended for C1 which capacitance and current should be referred to its manufacturer's specification. Ceramic capacitor is recommended for C2 to suppress the high frequency noise. TVS is used to protect the output circuit at the abnormal condition.

2. Recommended EMC circuit diagram

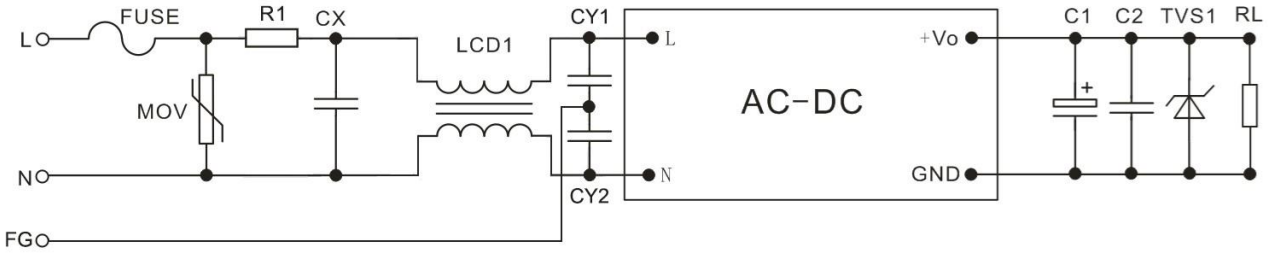
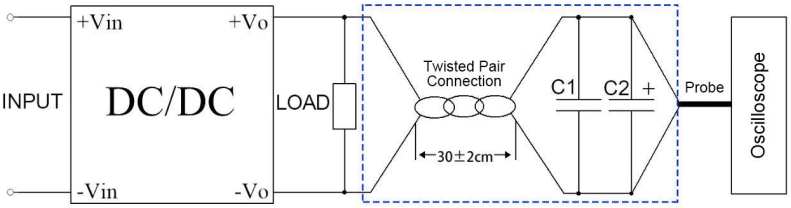


Figure – Circuit 2

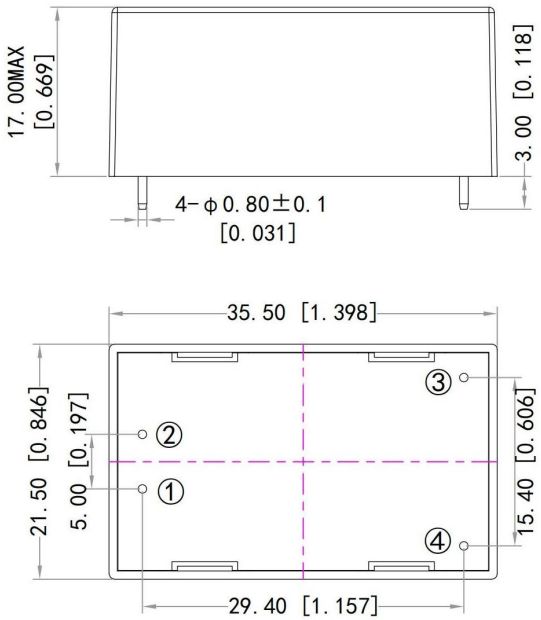
Component	Recommended values	Component	Recommended values
MOV	10D511K	R1	2W/10Ω wire-wound resistor
CX	X2/104K/275VAC	LCD1	UU9.8/25mH
FUSE	1A/250V, time-delay fuse, necessary	CY1, CY2	Y1/102M/400V

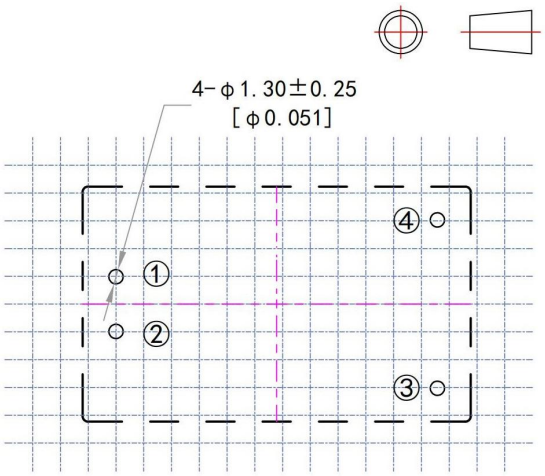
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz Bandwidth)



1. The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. C1(0.1uF) polypropylene capacitor and C2(10uF) high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes and one side of the twisted pair.
2. The power supply output connects to the load by the cables. The other side of the twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the polarity of the output and the oscilloscope probe should not be reversed. The test can be start after input power on.

Mechanical Dimensions





PCB layout veritcal 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
Function	AC(N)	AC(L)	+Vo	-Vo

Application Notice

1.The products should be used according to the specifications on this datasheet, otherwise it could be permanently damaged.

2. A fuse should be used at input.

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

4. The product performance on this datasheet 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 had 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