AC/DC Converter
FA30-220SXXG2N5 Series

Typical Features

- ◆ Wide input voltage range 85-305VAC/120-430VDC
- ◆ Efficiency 90%(typical)
- ◆ No load power consumption ≤0.2W
- ◆ Operating Temperature from -40℃ to +85℃
- ◆ Short circuit & over current protections
- ◆ Isolation Voltage 4200Vac
- ◆ Altitude during operating 5000m Max
- ◆ Conform to IEC/EN62368/UL62368
- ◆ PCB DIP Mounting

Application Field

FA30-220SXXG2N5 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. The additional circuit for EMC is recommended in this data sheet for the application with high EMC requirement.*

Typical Product List

Certificate	Part No.	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz(Max)	Efficiency @full load/220Vac (TYP)
		Power	Voltage	Current			
		(W)	Vo (V)	Io (A)	u F	mVp-p	%
-	FA30-220S05G2N5	30	5	6	6600	120	86
	FA30-220S12G2N5	30	12	2.5	4400	100	90
	FA30-220S24G2N5	30	24	1.25	1000	150	88

Note 1 - Please contact Aipu sales for other output voltages requirements in this series but not 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	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	220	305	VAC
	DC input	120	310	430	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.75	A
	220VAC	-	-	0.5	
Surge Current	115VAC	-	25	-	
	220VAC	-	50	-	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Fuse	-	2.0A/300VAC, Time-delay fuse (To be used according to the actual situation)			

Hot Plug	-	Unavailable
Remote Control	-	Unavailable

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		Nominal input voltage, 20%~100% load	Vo	-	-	±1.5	%
No Load Power Consumption		Input 115VAC		-	-	0.45	W
		Input 220VAC		-	0.2		
Minimum Load		Single Output		0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)		-	1500	-	mS
Power-off Hold up Time		Input 115VAC (full load)			8		mS
		Input 220VAC (full load)		--	65	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%		-10.0	-	+10.0	%
	Recovery time			-	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
Ripple & Noise		Full input voltage range		-	60	150	mV
		Note: The ripple and noise are tested by the twisted pair method. For details understood, please refer to the following Ripple & Noise Test Instructions.					

General Specifications

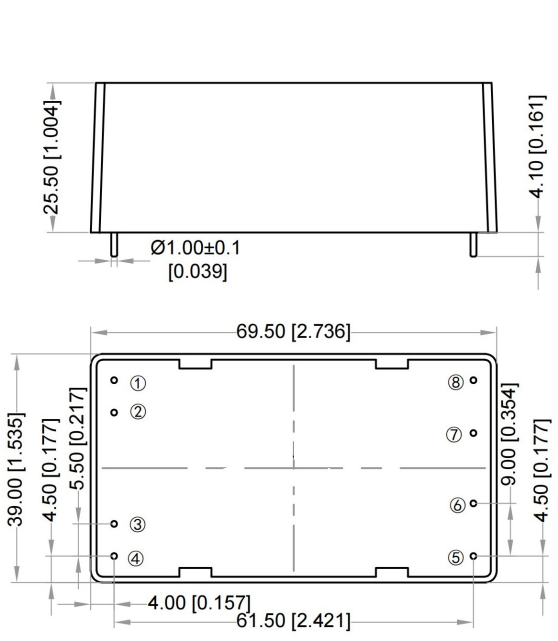
Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	75	-	KHz
Operating Temperature	Refer to the temperature derating curve	-40	-	+85	℃
Storage Temperature	-	-40	-	+105	
Soldering Temperature	Wave soldering	260±4℃, timing 5-10S			
	Manual soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, 1min, leakage current ≤5mA	4200	-	-	VAC
Insulation Resistance	Input-Output @DC500V	100	-	-	MΩ
Safety Standard	-	EN62368, IEC62368			
Vibration	-	10-55Hz,10G,30 Min, along X,Y,Z			
Safety Class	-	CLASS Ⅱ			
Case Flame Class	-	UL94V-0			

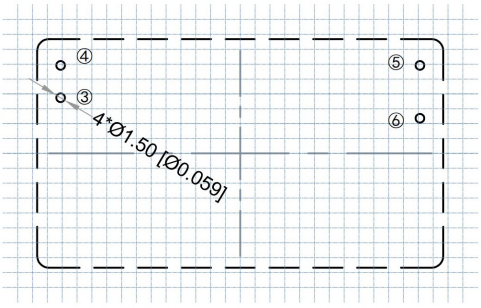
MTBF	MIL-HDBK-217F@25℃	＞2,799 KH
Unit Weight	Part No.	Weight (Typ.)
	FA30-220S05G2N5	100g
	FA30-220S12G2N5	100g
	FA30-220S24G2N5	100g

EMC Performance

Total Items		Sub Items	Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS B (with Recommended EMC Circuit)
		RE	CISPR32/EN55032	CLASS B (with Recommended EMC Circuit)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with Recommended EMC Circuit)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with Recommended EMC Circuit)
		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 EMC Circuit)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips & interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Mechanical Dimensions





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

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

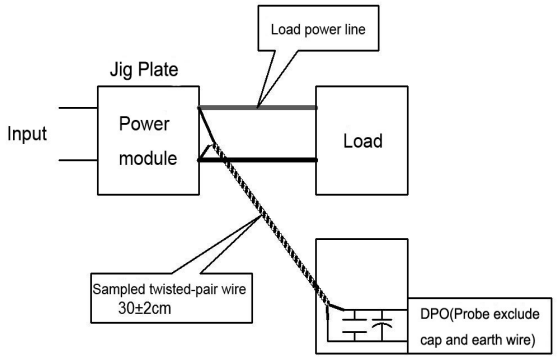
Unit: mm[inch]
Pin diameter tolerance ±0.10[±0.004]
General tolerance ±0.50[±0.020]

Packaging Code	Dimensions L x W x H	
-	69.50 X 39.00 X 25.50 mm	2.736 X 1.535 X 1.004 inch

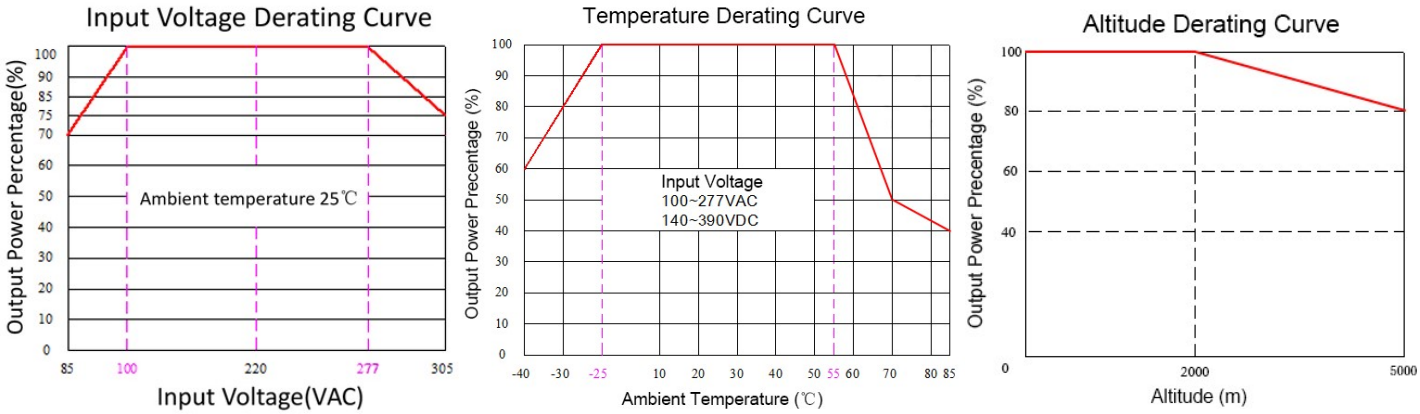
Ripple& Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

1) The Ripple & noise test needs 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.

2) The 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.



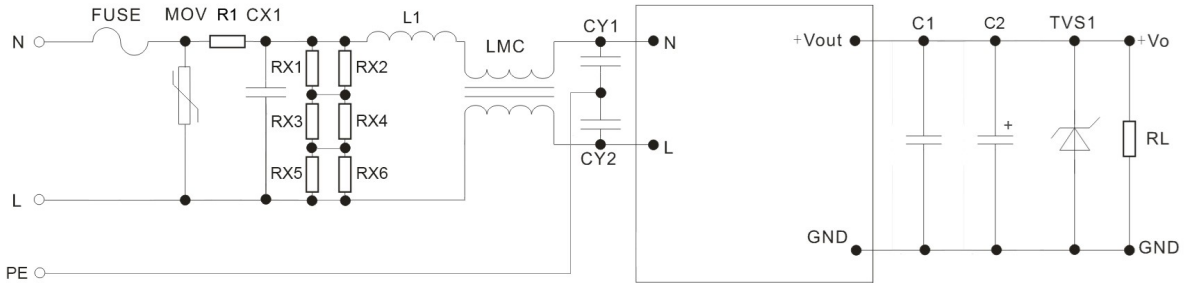
Product Performance Curves



Note 1 - The output power should be derated based on the input voltage derating curve at 85~100VAC/277~305VAC/120~170VDC/ 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 EMC circuit for typical application



Part No.	FUSE (*)	MOV	R1 (*)	CX1	RX1,RX2,RX3, RX4,RX5,RX6	L1	LMC	CY1 CY2	C1	C2	TVS1
FA30-220S05G2N5	2A/300V (Time-delay Fuse)	14D561K/ 4500A	33Ω/3W (Wire-wound Resistor	X2/ 334K/ 305VAC	1206/1.5M	1.2mH/ 0.75A	20mH 0.75A	Y1/ 1nF/ 400VAC	1uF/50V	100uF /50V	SMBJ7.0A
FA30-220S12G2N5										100uF /50V	SMBJ20A
FA30-220S24G2N5										68uF /50V	SMBJ30A

Note - both * marked Fuse & R1 are necessary, not optional.

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℃, humidity<75%RH, nominal input voltage and rated load (pure resistance 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.

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