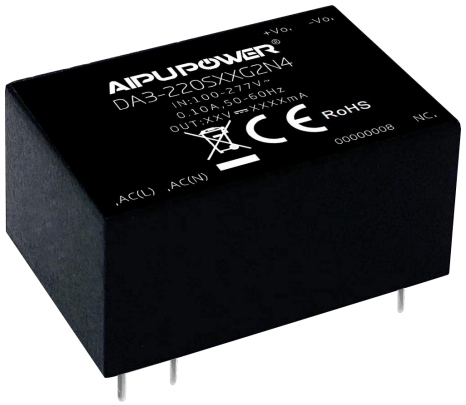
AC/DC Converter
DA3-220SXXG2N4 Series

Typical Features

- ◆ Wide input voltage range 85-305VAC/120-430VDC
- ◆ No load power consumption ≤ 0.3W@220VAC
- ◆ Efficiency 74%(TYP.)
- ◆ Operating temperature from -40°C to +85°C
- ◆ Switching Frequency 65KHz
- ◆ Protections: short circuit, over current, over temperature
- ◆ Isolation voltage 4000VAC
- ◆ Altitude during operating 4000m Max
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ Conform to CE & RoHS regulations
- ◆ Fully enclosed plastic case, flame class UL94-V0
- ◆ PCB DIP mounting



Application Field

DA3-220SXXG2N4 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 Specifications			Max Capacitive Load @220VAC	Ripple & Noise 20MHz (Max)	Efficiency @Full load /220VAC (Typical)
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)	uF	mVp-p	%
CE	DA3-220S05G2N4	3	5	600	1000	100	71
CE	DA3-220S12G2N4	3	12	250	500	100	74
CE	DA3-220S15G2N4	3	15	200	400	120	75
CE	DA3-220S24G2N4	3	24	125	200	150	81

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.

Note 4 - The ripple and noise are tested by the twisted pair method according to the Test Instructions in the datasheet.

Input Specifications

Item	Operating Condition	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	-	-	0.10	A
	220VAC	-	-	0.05	
Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	
No Load Power Consumption	Input 115VAC	-	-	0.30	W
	Input 230VAC	-	-		
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Fuse	-	2A/300VAC Time-delay fuse			
Input capacitors CE1,CE2		3.3uF/450V			
Hot Plug	-	Unavailable			
Remote Control	-	Unavailable			

Output Specifications

Item		Operating Condition	Min	Typ.	Max	Unit
Voltage Accuracy		Full input voltage range, Any load	-	±2.0	±5.0	%
Line Regulation		Nominal load	-	-	±2.0	%
Load Regulation		Nominal input voltage, 20%~100% load	-	-	±4.0	%
Minimum Load		Single Output	10	-	-	%
Turn-on Delay Time		Input 115VAC (full load)	-	600	-	mS
		Input 220VAC (full load)	-		-	
Power-off Hold-up Time		Input 115VAC (full load)	-	50	-	mS
		Input 220VAC (full load)	-	70	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-	-	5.0	mS
Output Overshoot		Full input voltage range	≤10%Vo			%
Short circuit Protection			Continuous, self-recovery			Hiccup
Temperature Drift		-	-	±0.03%	-	%/℃
Ripple & Noise		Twisted pair method	-	-	150	mV
Over Current Protection		Input 220VAC	≥120% Io, self-recovery			Hiccup

General Specifications

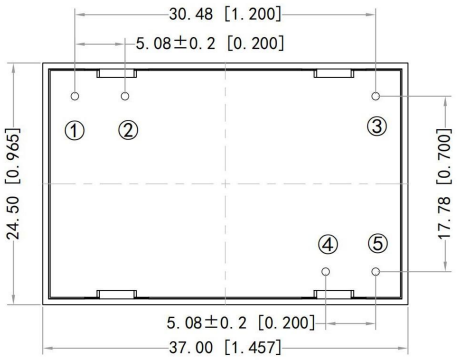
Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	Refer to the temperature derating graph	-40	-	+85	℃
Storage Temperature	-	-40	-	+105	
Soldering Temperature	Wave soldering	260±4℃, time 5-10S			
	Manual soldering	360±8℃, time 4-7S			

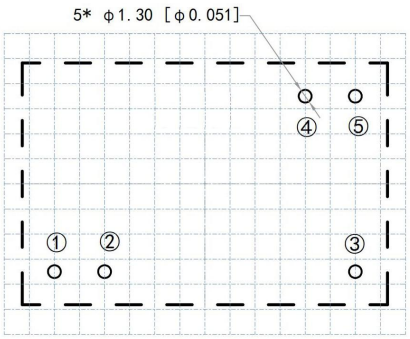
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
Safety Standard		-	IEC/EN62368			
Vibration		-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class		-	CLASS Ⅱ			
Flame Class of Case		-	UL94 V-0			
MTBF		-	MIL-HDBK-217F@25℃＞300,000H			
Unit Weight		-	25g (Typ.)			

EMC Performance

Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR22/EN55032	CLASS A
			CISPR22/EN55032	CLASS B (with the Recommended Circuit 1)
		RE	CISPR22/EN55032	CLASS A
			CISPR22/EN55032	CLASS B (with the Recommended Circuit 1)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with the Recommended Circuit 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with the Recommended Circuit 1)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

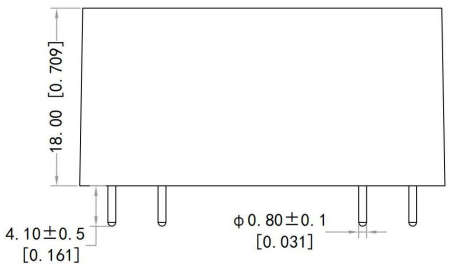
Mechanical Dimensions





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

Pin No.	Function
1	AC(L)
2	AC(N)
3	No Connection
4	+Vout
5	-Vout



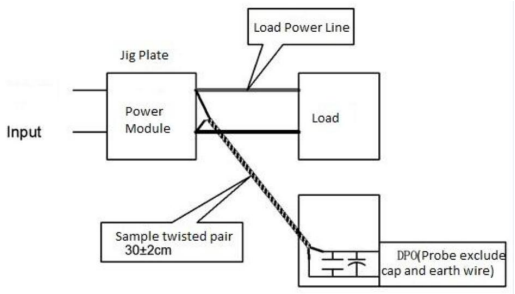
Unit: mm[inch]
Pin diameter tolerance ±0.10[±0.004]
General tolerance ±0.50[±0.020]

Package Code	Dimensions L x W x H	
-	37.00X24.50X18.00 mm	1.457 × 0.965× 0.709 inch

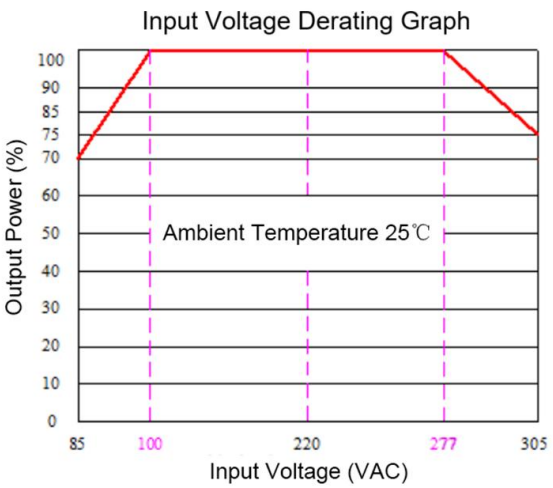
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

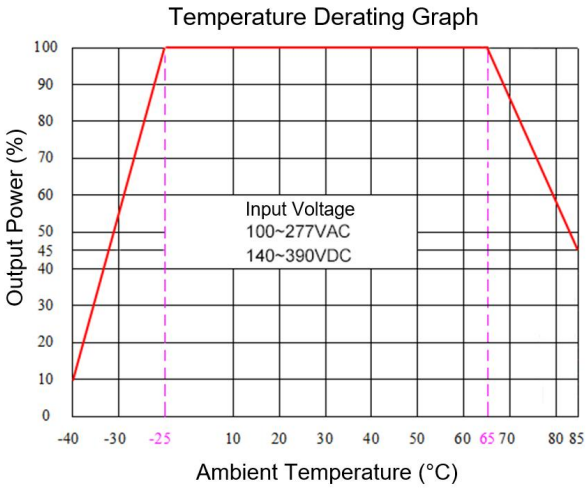
1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.

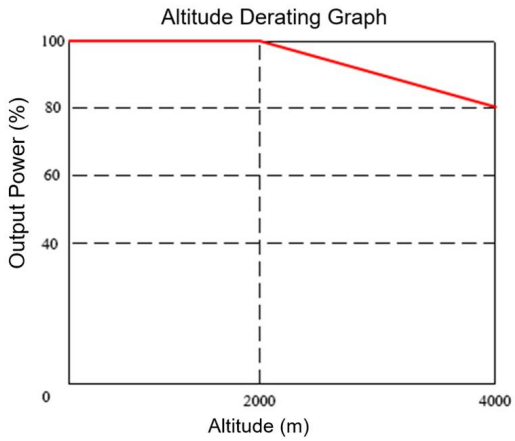
2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be started after input power on.



Product Characteristics Graphs







Note 1 - The output power should be derated based on the input voltage derating graph at 85~100VAC/277~305VAC/120~140VDC/390~430VDC.

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

Typical Application Circuit Diagram for EMC

Typical Application Circuit Diagram

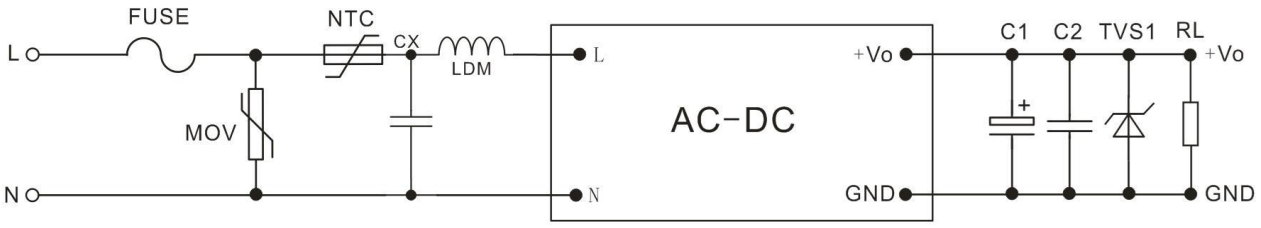


Figure - Circuit 1

Note:

1) 2A/300Vac Time-delay fuse is recommended.
2) 10D561K/4500A varistor is recommended for MOV.
3) 5D-11 NTC is recommended to protect the converter against the lightning surges.
4) X2/104K/310VAC capacitor is recommended for CX.
5) LDM is a differential mode choke which inductance should be more than 2mH@0.2A.
6) A high-frequency low-impedance electrolytic capacitor is recommended for C1 which capacitance should be less than the Max capacitive load, and the withstand voltage should be more than 1.5X of the output voltage.
7) A 0.1uF ceramic SMD capacitor is recommended for C2 which withstand voltage should be more than 1.5X of the output voltage.
8) TVS recommendation as following: SMBJ7.0A for 5V output; SMBJ12.0A for 9V output; SMBJ20A for 12V & 15V outputs; SMBJ30.0A for 24V output and SMBJ64A for 48V output.

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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