Typical Features

- ◆ Wide input voltage range: 85-265VAC/120-380VDC
- ◆ No load power consumption ≤ 0.45W
- ◆ Efficiency 86%(TYP.)
- ◆ Switching Frequency: 65KHz
- ◆ Short circuit protect & Over current protection
- ◆ Isolation voltage: 4000Vac
- ◆ 4000m altitude application
- ◆ Conform to IEC/EN62368/UL62368
- ◆ PCB mounting

Application Field

DA60-220SXXG2N3 Series ----- *a compact size, high efficiency module power supply provided by Aipu. Multi-advantages of universal input voltage range, both AC and DC input 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 electricity power, industry, instrumentation and smart home fields etc. Additional circuit for EMC is recommended in this data sheet for the application with higher EMC requirement.*

Typical Product List

Certificate	Part No.	Output Specifications			Max. Capacitive Load	Ripple& Noise 20MHz (Max)	Efficiency@ Full Load, 220Vac (Typical)
		Power	Voltage	Current			
		（W）	Vo（V）	Io（mA）	u F	mVp-p	%
-	DA60-220S12G2N3	60	12	5000	6000	120	86
-	DA60-220S15G2N3	60	15	4000	4000	120	87
-	DA60-220S48G2N3	60	48	1250	600	150	88

Note 1: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: 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 3: The ripple and noise are tested by the twisted pair method according to the Ripple & Noise Test Instructions in the manual.

Note 4: Please contact with Aipu sales for other output voltages requirement in this series but no in this table.

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
Input Current	115VAC	-	-	1.2	A
	220VAC	-	-	0.66	

Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	
Leakage Current	-	0.5mA TYP/ 230VAC/ 50Hz			
Recommended External Fuse	-	3.15A/ 250VAC Time-delay fuse			
Hot Plug	-	Unavailable			
Remote Control Terminal	-	Unavailable			

Output Specifications

Item		Operating Condition		Min	Typ.	Max	Unit
Voltage Accuracy		Full input voltage range, any load	Vo	-	±2.0	±3.0	%
Line Regulation		Rated load	Vo	-	-	±0.5	%
Load Regulation		Rated input voltage, 20%~100% load	Vo	-	-	±1.0	%
No Load Power Consumption		Input 115VAC		-	-	0.45	W
		Input 220VAC		-	-		
Minimum Load		Single Output		0	-	-	%
Turn on Delay		Rated input voltage (full load)		-	1500	-	mS
Power-off Holde Up Time		Input 115VAC (full load)		-	200	-	mS
		Input 220VAC (full load)		-	100	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%		-5.0	-	+5.0	%
	Recovery time			-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		Full input voltage range		⩾130% Io, self-recovery			Hiccup

General Specifications

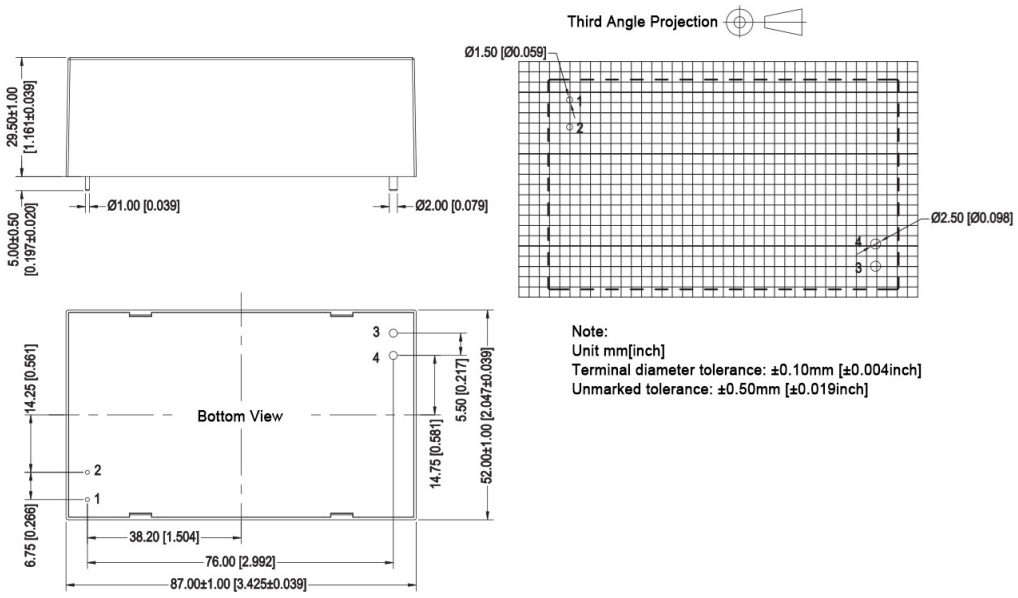
Item		Operating Condition	Min	Typ.	Max	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		-	-40	-	+105	℃
Storage Temperature		-	-40	-	+110	
Soldering Temperature		Wave soldering	260±4℃, time 5-10S			
		Manual soldering	360±8℃, time 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage current≤5mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
Safety Standard		-	EN62368/IEC62368			

Vibration	-	10-55Hz,10G,30 Min, along X,Y,Z
Safety Class	-	CLASS Ⅱ
Case Class	-	-
MTBF	-	MIL-HDBK-217F@25℃＞300,000H
Cooling Method	-	Nature air

EMC Performance

Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (Recommended Circuit 2)
		RE	CISPR22/EN55032	CLASS B (Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (Recommended Circuit 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (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, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Mechanical Dimensions



Packing Code	L x W x H	
-	87.0X52.0X29.5mm	3.425X2.047X1.161inch

Pin definition

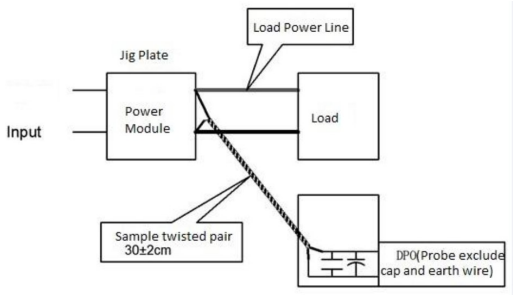
Pin	1	2	3	4
Single(S)	AC (N)	AC (L)	+Vo	-Vo

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

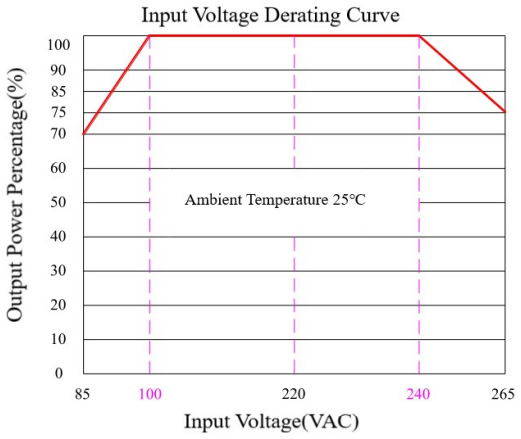
Test Method:

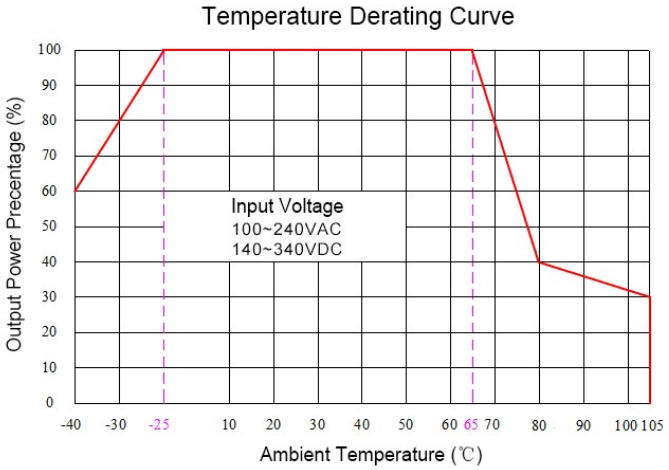
(1) Ripple noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set on the Sample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

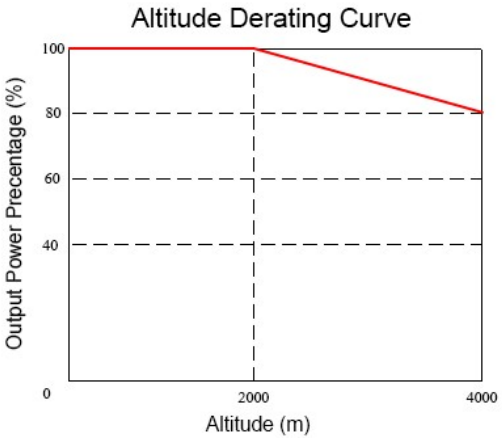
(2) The output ripple noise test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location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



Product Performance Curves



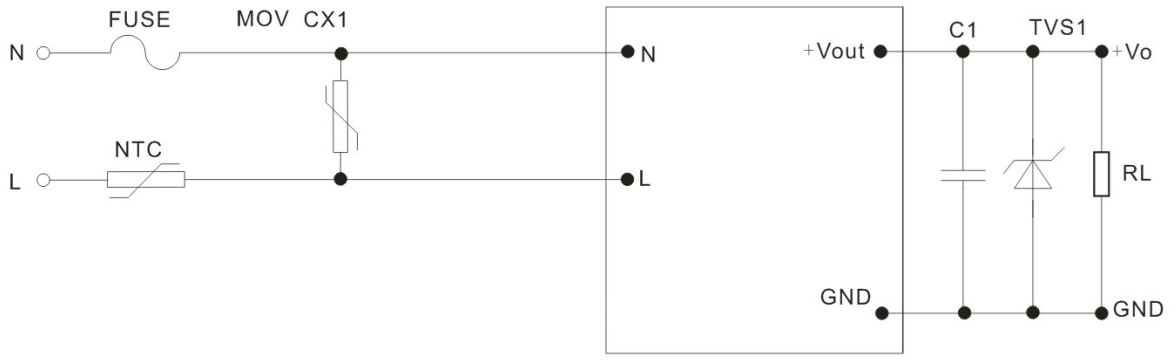




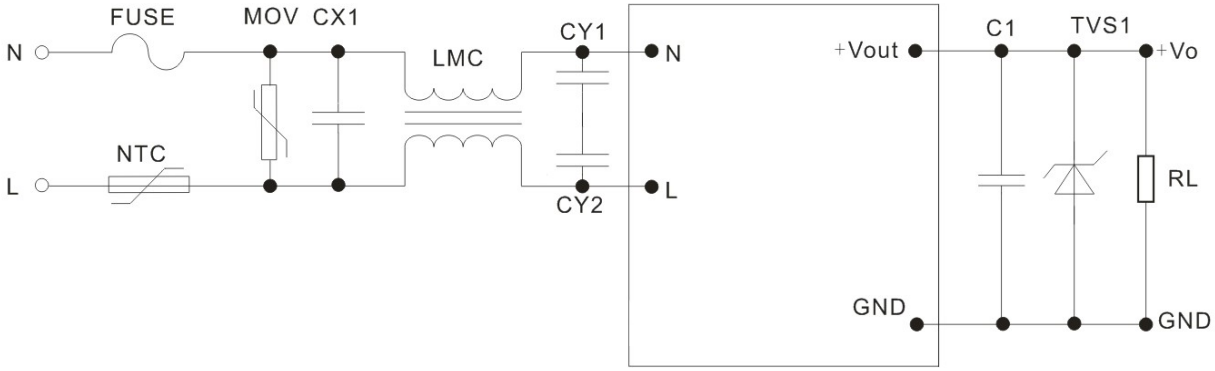
Note 1: The output power should be derated based on the input voltage derating curve at 85~100VAC/240~265VAC/120~140VDC/ 340~380VDC.

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

Recommended Circuits for Application



Recommended Circuit 1



Recommended Circuit 2

Note 1:

1. 1μF ceramic capacitor is recommended for output filter capacitor C1 to suppress the high-frequency noise. Its withstand voltage can be derated to >80%.
2. TVS is recommended to protect the output circuit when the module operates at abnormal condition. 600W series TVS is recommended, SMBJ7.0A for 5V output, SMBJ12.0A for 9V output, SMBJ20A for 12V&15V output, SMBJ30.0A for 24V output and SMBJ64A for 48V output.
3. MOV is a varistor, recommended model 10D561K/3500A, which is used to protect the module against lightning surges.
4. The recommended circuit #1 is for the general application. Circuit #2 is recommended for higher EMC requirements, following the components specifications:

- MOV - 10D-561K
- NTC - 10D-9
- CY1, CY2 - Y1/102M/400VAC
- CX1 - X2/104K/275VAC
- Common mode choke LMC - 15mH-30mH/1.5A
- FUSE - 3.15A/250V time-delay fuse (Not optional)

Note 2:

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

2. A fuse should be used at input.

3. The product performances in this manual cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performances in this manual cannot be guaranteed if it works at over-load condition.

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

6. All values or indicators in this manual had been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed in this manual, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirement.

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

