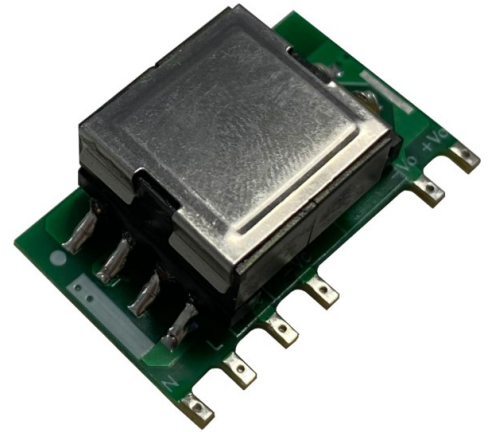


Typical Features	
◆	Wide input voltage range 85-305VAC/120-430VDC
◆	No load power consumption ≤ 0.2W @220VAC
◆	Efficiency 82%(TYP.)
◆	Operating temperature from -40 to +85°C
◆	Switching Frequency 65KHz
◆	Short circuit & over current protections
◆	Isolation voltage 3600Vac
◆	Altitude during operating 4000m Max
◆	Compliant with IEC/EN62368/UL62368
◆	Mini size open-frame, industrial grade design
◆	PCB SIP mounting



Application Field

DA10-220SXXG9D4 Series----- Mini size open-frame AC-DC 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 and good EMC performance. This series of products can be widely used in the fields of electric power, industry, instrument and 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 u F	Ripple & Noise 20MHz (Max) mVp-p	Efficiency@ Full Load, 220Vac (Typical) %
		Power	Voltage	Current			
		(W)	Vo(V)	Io(mA)			
-	DA10-220S3V3G9D4	6.6	3.3	2000	5000	100	73
-	DA10-220S05G9D4	10	5	2000	5000	100	77
-	DA10-220S09G9D4	10	9	1111	4000	100	78
-	DA10-220S12G9D4	10	12	833	1000	120	81
-	DA10-220S15G9D4	10	15	667	1000	120	82
-	DA10-220S24G9D4	10	24	416	300	150	83

Note 1 - * marked part has been developed in process.

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, please refer to the following Ripple & Noise Test Instructions.

Note 5 - Please contact Aipu sales for other output voltages requirement in this series but not listed in this table.

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 input	-	-	0.30	A
	220VAC input	-	-	0.18	
Surge Current	115VAC input	-	-	15	
	220VAC input	-	-	30	
No load power consumption	115VAC input	-	-	0.20	W
	220VAC input	-	-		
Leakage Current	-	0.25mA TYP/ 230VAC/ 50Hz			
Recommended External Fuse	-	1A-3A/ 300VAC 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	-	±2.0	±3.0	%		
Line Regulation	Rated load	-	±0.5	±1.0	%		
Load Regulation	Nominal input voltage, 20%~100% load	-	±1.0	±3.0	%		
Minimum Load	Single Output	0	-	-	%		
Turn-on Delay Time	Input 115VAC (full load)	-	1000	-	mS		
	Input 220VAC (full load)	-		-			
Power-off Hold up Time	Input 115VAC (full load)	-	50	-	mS		
	Input 220VAC (full load)	-	80	-			
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%	-	%/°C		
Over Current Protection	Input 220VAC	≥120% Io, self-recovery			Hiccup		
Ripple & Noise	-	-	50	150	mV		

General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz

Operating Temperature	Refer to the Temperature Derating Curve	-40	-	+85	°C
Storage Temperature	-	-40	-	+90	
Soldering Temperature	Wave soldering	260±4°C, time 5-10S			
	Manual soldering	360±8°C, time 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	I/P-O/P, Test 1min, leakage current≤5mA	3600	-	-	VAC
Insulation Resistance	I/P-O/P, @ DC500V	100	-	-	MΩ
Safety Standard	-	IEC/EN62368			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Standard	-	CLASS II			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			
Unit Weight	-	10g (Typ.)			

EMC Performance

Total Item	Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032 CLASS B (with Recommended Circuit 2)
		RE	CISPR32/EN55032 CLASS B (with Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B (with Recommended Circuit 1)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B (with 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 & Interruptions	IEC/EN61000-4-11 0%~70% Perf.Criteria B

Mechanical Dimensions

Unit: mm[inch]
General tolerance ±1.0[±0.039]
The components layout is only for reference, any deviation from the actual unit should be accepted.

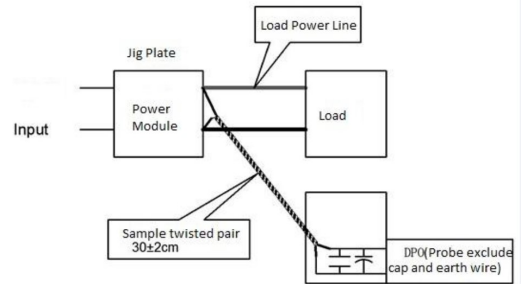
Pin No.	Function
1	AC(N)
2	AC(L)
3	+Vcap
4	-Vcap
5	-Vout
6	+Vout

Packaging Code	Dimensions L x W x H	
-	32.0 × 20.0 × 14.5 mm	1.260 × 0.787 × 0.570 inch

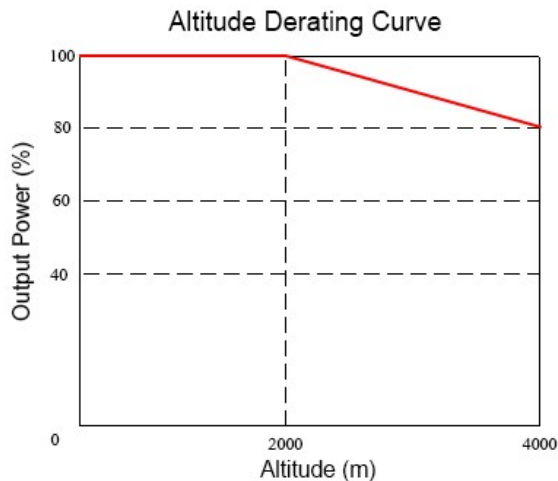
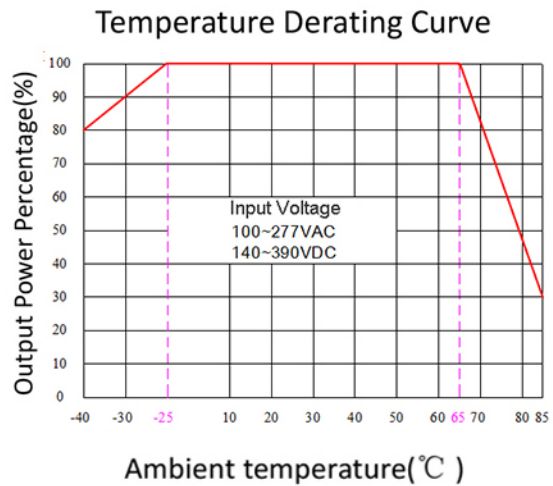
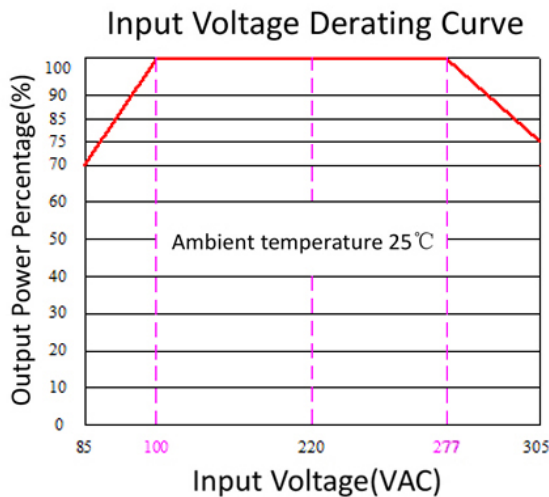
Ripple & Noise Test Instructions (Twisted Pair Method, 20MHz Bandwidth)

1, The 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 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

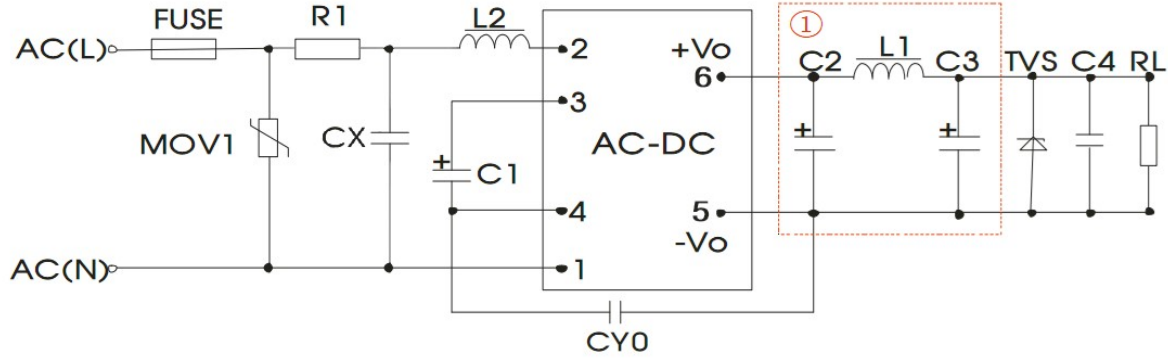


Note 1 - The output power should be derated based on the input voltage derating curve at 85~100VAC/277~305VAC/120~140VDC/ 390~430VDC.

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

Recommended Circuits for Application

1. Typical Application Circuit



① is a Pi type filtering circuit

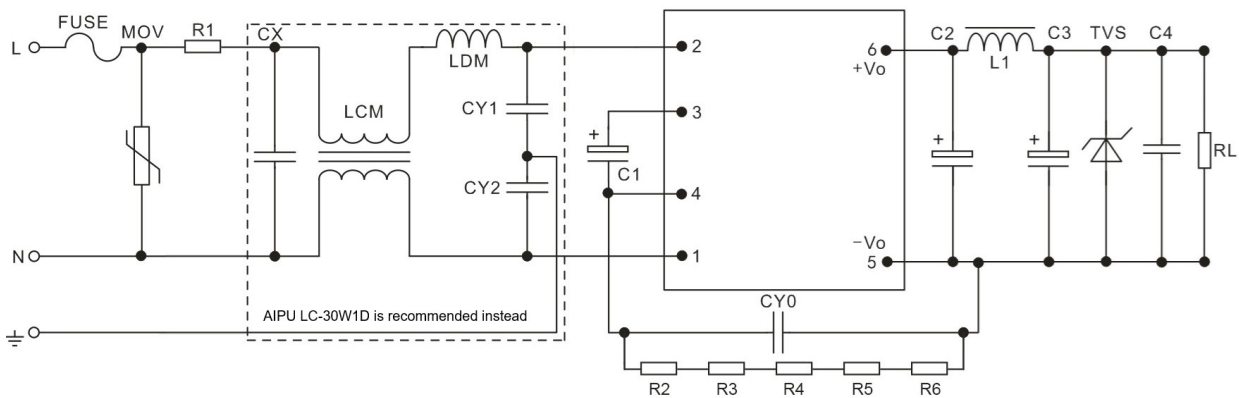
Circuit 1

Part No.	C1 (*)	C2(*) Solid-state capacitor	L1 (*)	C3(*) Solid-state capacitor	C4	L2	CX	CY0	FUSE (*)	TVS
DA10-220S3V3G9D4	22uF /450V	820uF/16V	2.0uH	150uF/35V	0.1uF/50V	2.2 mH	X2 /104K /310VAC	Y1/ 102M/ 400V	2.0A/ 300V, Time delay fuse	SMBJ7.0A
DA10-220S05G9D4		820uF/16V		150uF/35V						SMBJ7.0A
DA10-220S09G9D4		470uF/16V		220uF/16V						SMBJ20A
DA10-220S12G9D4		220uF/16V		220uF/16V						SMBJ20A
DA10-220S15G9D4		220uF/16V		220uF/16V						SMBJ20A
DA10-220S24G9D4		100uF/35V		68uF/35V						SMBJ30A

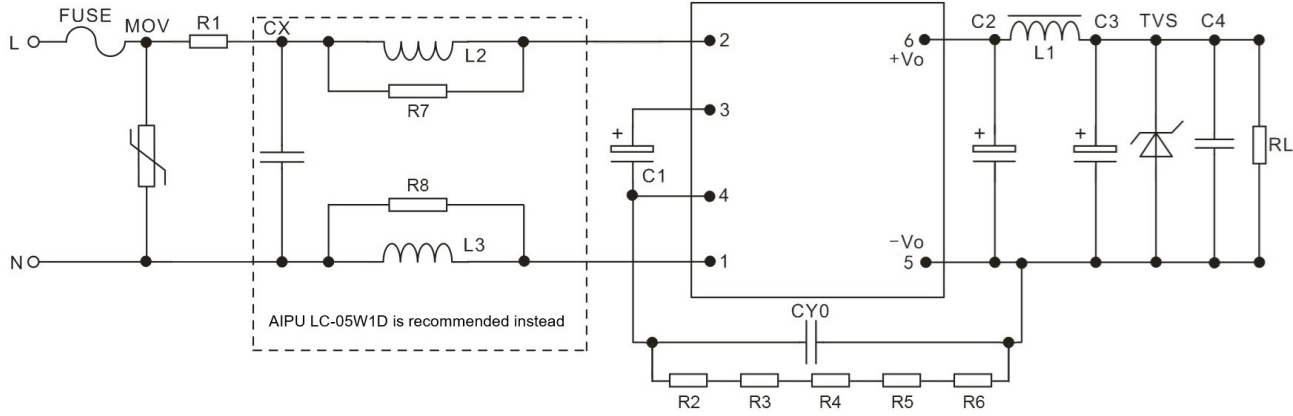
Note:

- * marked component is necessary, not optional.
- 6.8Ω/3W wire-wound resistor is recommended for R1, Carbon film or other resistors are not available.
- 14D561K/4500A is recommended for MOV1.

2. Recommended EMC Circuit (for higher EMC requirement)



Circuit 2-1



Circuit 2-2

FUSE	2.0A/300V Time-delay fuse (Necessary)	R1	Wire-wound resistor 6.8 Ω/3W	R7, R8	2.2KΩ/ >1/8W
MOV	14D561K/4500A	CY1, CY2	Y1/102M/400VAC	-	-
CX	X2/104K/310VAC	LDM	330uH/0.4A	-	-
LCM	40mH/0.4A	L2, L3	Color ring inductor 1mH/1W	-	-

Note - For ESD protection, discharge needles are recommended together with R2, R3, R4, R5, R6 bleeder resistors (50MΩ/1206) connected in parallel with CY0.

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 under over-load condition.
5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25°C, humidity<75%RH, rated input voltage and rated 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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