AC/DC Converter
DA10-220SXXP2D4 Series

Typical Features

- ◆ Wide input voltage range(90-310VAC) 127-438VDC
- ◆ Transfer efficiency 83%(Typ.)
- ◆ Switching Frequency: 65KHz (Typ.)
- ◆Over current, short circuit Protection
- ◆ Isolation:3100VAC
- ◆ PCB mounting
- ◆ Plastic case shielded, meet flammability UL94 V-0
- ◆ Conform to IEC62368/UL62368/EN62368 test standard
- ◆ With CE, RoHS certificate

Application Field

DA10-220SXXP2D4 *Series-----a compact size, high efficient, with CE certificate power converter offered by Aipu. It features universal input voltage range, taking both DC and AC input, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance. EMC and Safety specification meet international EN55032, IEC/EN61000 standard. It is widely used in power, industrial, instrument, smart home applications. Please refer to this datasheet when module being used in a bad EMC environment.*

Typical Product List

Certificate	Part No.	Input voltage range	Output voltage/current		Max. Capacitive Load	Ripple & Noise 20MHz	Efficiency @full load, nominal input voltage(TYP)
			Vo1(V)	Io1(m A)	u F	mVp-p	%
CE/RoHS	DA10-220S05P2D4	90-310VAC 127-438VDC	5	1500	6000	100	74
-	*DA10-220S09P2D4		9	1111	5000	150	81
CE/RoHS	DA10-220S12P2D4		12	833	5000	150	82
-	*DA10-220S15P2D4		15	667	4000	150	82
CE/RoHS	DA10-220S24P2D4		24	417	500	150	83

Note 1: "*" are models under developing.

Note 3: The lowest efficiency is -2% of typical value due to instrument tolerance of test equipment.

Note 4: Output Efficiency(Typ.) is based on that product is full loaded and burned-in after half an hour.

Input Specifications	Min	Typ.	Max
Input voltage(Vac)	90Vac(127Vdc)	220Vac	310Vac (438Vdc)
Input Frequency range(Hz)	47	50	63
Standby power consumption	0.2 W(MAX)		
Input current	0.18A (MAX) @Vin=100Vac	0.12A(MAX) @Vin=220Vac	
Surge current	10A (MAX) @Vin=100Vac	20A (MAX) @Vin=220Vac	
Input Capacitor CE1, CE2	10uF/450V		

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Output Specifications			
Voltage Accuracy	Vo1±2.0%		
Line Regulation	Nominal load, full input voltage range	Vo1	±0.5%
Load Regulation	20% ~ 100% Nominal load	Vo1	±1.0%
Minimum Load	Single Output		10% Load
Ripple & Noise	20MHz BM (full load)		
	Vo≤5.0V, ≤100mVp-p	Vo≥48V, ≤180mVp-p	Other≤150 mVp-p
Turn-on Delay Time	Nominal input voltage, full load	≤1000mS	
Power-off Holding Time	Nominal input voltage, full load	80ms(typ.)	
Output Dynamic Characteristics	25%~50%~25% 50%~75%~50%	Overshoot range(%):≤±5%; Recovery time(mS) ≤5.0mS;	
Output Short Circuit Protection	Continuous, Self-recovery	Output Switched off	Hiccup
Output Over load/current Protection	≥110%Po/Io	Output Switched off	Hiccup

General Specifications			
Switching Frequency	-	jitter	65KHz(typ.)
Operating Temperature	The operating temperature range please refer to the temperature derating curve		-25℃ ~ +65℃
Temperature Drift	-	-	0.03%/℃
Storage Temperature	-	-	-40℃ ~ +105℃
Max Case Temperature	-	-	+95℃
Relative Humidity	-	-	10%~90%
Isolation Voltage	Input to Output 3100Vac ≤ 5.0mA/1min;		
MTBF	>300,000H @25℃		

EMC Characteristics			
EMI	CE	CISPR22/EN55032 CLASS B (see recommended circuit)	
	RE	CISPR22/EN55032 CLASS B (see recommended circuit)	
EMC	ESD	IEC/EN61000-4-2 ±6KV/8KV (bare board)	Perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m	Perf.Criteria B
	EFT	IEC/EN61000-4-4 ±2KV (recommended circuit)	Perf.Criteria B
		IEC/EN61000-4-4 ±2KV (recommended circuit Photo 1)	Perf.Criteria B
	Surge	IEC/EN61000-4-5 ±1KV(recommended circuit)	Perf.Criteria B
		IEC/EN61000-4-5 ±2KV(recommended circuit Photo 1)	Perf.Criteria B
	CS	IEC/EN61000-4-6 3Vr.m.s	Perf.Criteria B

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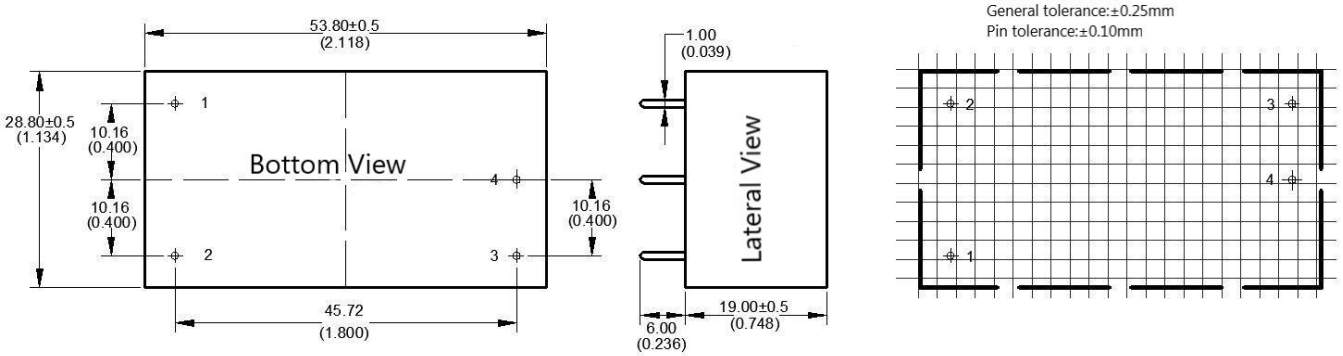
	PFMF	IEC/EN61000-4-8 10A/m	Perf.Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%-70%	Perf.Criteria B

P2 Packing Dimension



Packing Code	L x W x H	
P2	53.8X28.8X19.0mm	2.118X1.134X0.748inch

Pin Definition

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

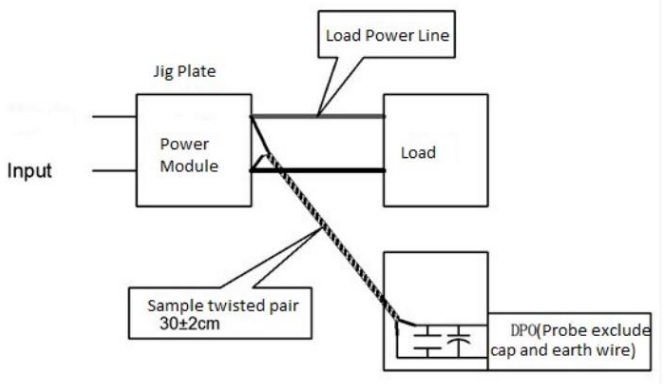
Note: If the definition of pin not is in accordance with the model selection manual, please refer to the label on actual item.

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

Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



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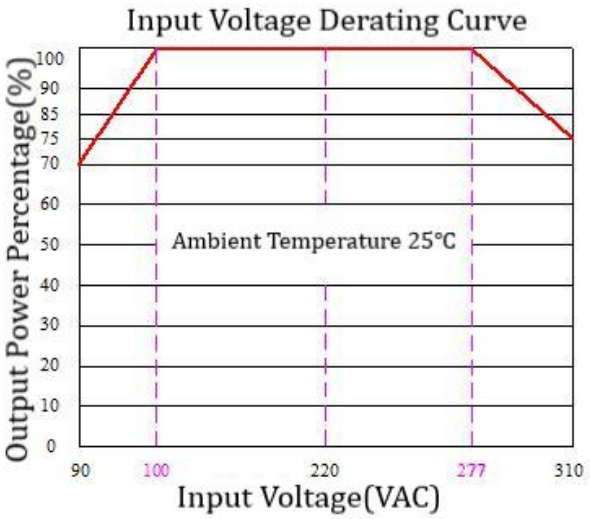
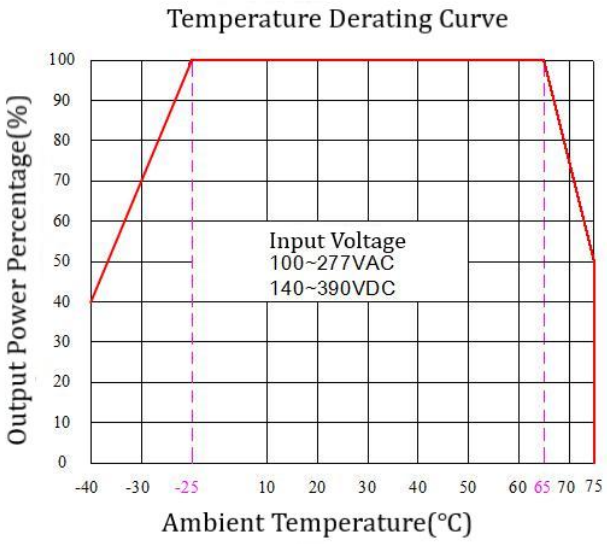
Product Characteristic Curve



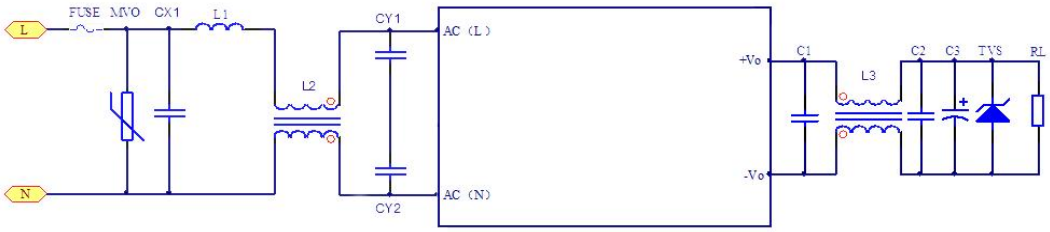


Note 1: Input voltage should be derated based on input voltage derating curve when it is 90~100VAC/277~310VAC/127~140VDC/390~438VDC;

Note 2: This product is suitable to use in natural air cooling environments, if in a closed environment, please contact with us.

Typical Application Circuit

1、EMC Recommended Parameters and Application Circuit



（Photo 1: EMC Recommended Value）

Part No	C3(u F)	TVS
DA10-220S05P2D4	220	SMBJ7A
DA10-220S12P2D4		SMBJ20A
DA10-220S24P2D4	47	SMBJ30A

Note 1:

Output filter capacitor C3 is electrolytic capacitor, recommended to use high frequency low resistance one, capacitance and output current please refer to the technical specifications provided by the manufacturers; withstand capacitor C3 voltage derating be 80% or above; capacitor C1,C2 are ceramic capacitors, to remove the high frequency noise, recommend 0.1uF/50V/1206; TVS is a recommended component to protect post-circuits (if converter fails);

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Component	Name	Component Recommended Value
FUSE	Fuse	3.15A/250Vac, slow fusing, necessary
MOV	Voltage dependent resistor	14D471K
CX1	X Capacitor	0.22uF/275Vac
L1	Differential mode inductor	2.5uH/2.5A I inductor
L2	Common mode inductor	Green Ring 15mH/2.5A T12X7X6mm
CY1	Y capacitor	102M-400Vac
CY2		
L3	Common mode inductor	Green Ring, T13X8,145uH
RL	Customer terminal load (end product)	

Note 2:

1. The product should be used within the specification range, or it will cause permanent damage to it;
2. The input terminal should connect to fuse;
3. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
4.If the product worked beyond the load range, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of **Ta=25℃**, **humidity<75%** with nominal input voltage and rated output load(pure resistance load);
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7.The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
8. We can provide product customization service;
9. The datasheet is subject to change without prior notice.

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