AC/DC Converter
FA6-220SXXD2N4 Series

Typical Features

- ◆ Wide input voltage range 85-305Vac/120-430Vdc
- ◆ Transfer Efficiency (Typical 84%)
- ◆ Switching Frequency: 50-60KHz
- ◆ Protections: over current, short circuit, over voltage, under voltage, over temperature, Self-furbish
- ◆ Input and Output highly isolated 3750Vac
- ◆ No-load power consumption≤0.3W
- ◆ Plastic Case, conform to UL94 V-0
- ◆ Conform to IEC62368/UL62368/EN62368 test standard
- ◆ PCB mounting

Application Field

FA6-220SXXD2N4 *Series-----a compact size, high efficient, 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. It offers good EMC performance, EMdC and Safety specifications meet international EN55032,IEC61000 standards. It widely used in industrial, office and civil applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.*

Typical Product List

Part no.	Power	Input Voltage Range	Output		Max. Capacitive Load	Ripple& Noise 20MHz	Efficiency@ Full Load, Nominal Input Voltage (Typical)
			Voltage	Current			
			Vo1(V)	Io1(m A)	u F	mVp-p	%
*FA6-220S3V3D2N4	6W	85-305Vac/ 120-430Vdc	3.3	1818	2000	80	71
*FA6-220S05D2N4			5.0	1200	1500	80	75
*FA6-220S09D2N4			9.0	667	1000	120	78
*FA6-220S12D2N4			12.0	500	680	120	80
FA6-220S15D2N4			15.0	400	600	120	82
*FA6-220S16V5D2N4			16.5	360	470	120	82
FA6-220S24D2N4			24.0	250	300	120	84

Note 1: The typical value of output efficiency is based on full load and burn-in after half an hour.

Note 2: The fluctuation range of full load efficiency at table(%,TYP) is ±2%, full load efficiency = total output power/module's input power.

Note 3: Ripple & Noise is tested by twisted pair method, for details please see (Ripple& Noise Test) at back.

Input Specification

Items	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	-	-	0.23	A
	220VACz	-	-	0.1	
Input Inrush Current	115VAC	-	-	10	
	220VACz	-	-	20	
leakage current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Input Fuse	-	2A~250Vac slow fusing, block form			
hot plug	-	Not support			
Remote control terminal	-	No remote control			

Output Specification

Items	Operating Condition		Typ.	Max.	Unit
Voltage Accuracy	Any Load, full voltage range	Vo1	±2.0	±3.0	%
		Vo2	-	-	%
Line Regulation	Nominal Load, full voltage range	Vo1	-	±1.0	%
		Vo2	-	-	%
Load Regulation	20% ~ 100% nominal load	Vo1	-	±1.5	%
		Vo2	-	-	%
No-load power consumption	Input 115VAC		-	0.3	w
	Input 220VAC		-		
Minimum load	Single output			-	%
	Positive and negative dual common ground output		-	-	
	Positive and negative dual isolated output		-	-	
Turn-on Delay Time	Nominal input voltage		800	-	mS
Power down hold time	Input 115VAC (full load)		30		mS
	Input 220VAC (full load)		60	-	
Output Power-off Holding Time					30mS
Dynamic Response	25%~50%~25%		Overshoot amplitude (%): ≤±5.0		%
			Recovery time (mS): ≤5.0		mS
output overshoot	Input full voltage range		≤10%Vo		%
Short circuit protection			Long-term short-circuit, self-recovery		compartmentalized
Drift coefficient	-		±0.03%		%/℃
Overcurrent Protection	Input full voltage range		≥130% Io can be self-recovery		compartmentalized

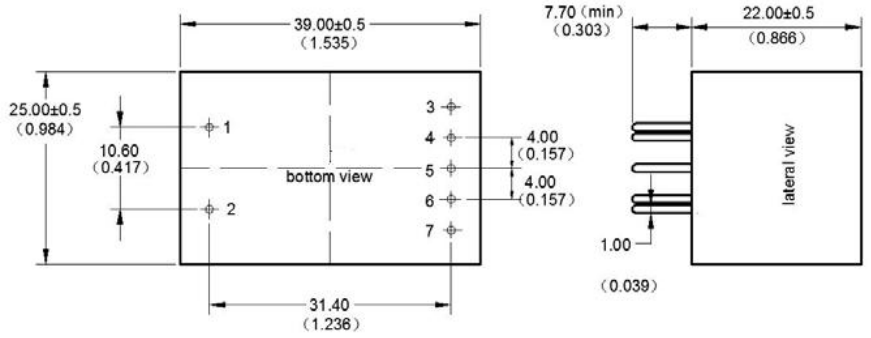
General Specification

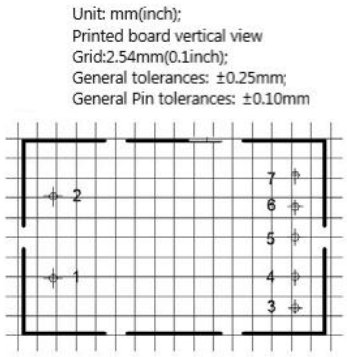
Items	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	℃
	The temperature derating needs to be performed on the basis of the temperature derating curve. The derating curve diagram is shown below (product characteristic curve)				
Storage Temperature	-	-40	-	+105	
Soldering temperature	wave soldering	260±4℃， Time 5-10S			
	manual welding	360±8℃， Time 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	input Output test for 1minute, Leakage current≤3mA	3750	-	-	VAC
Insulation resistance	input-output@apply DC500V	100	-		MΩ
Safety Standard	-	EN55032, EN61000			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Security Level	CLASS Ⅱ				
MTBF	2X10 5 Hrs				
Class of Case Material	UL94 V-0				
Mean Time Between Failure (MTBF)	MIL-HDBK-217F@25℃＞300,000H				

EMC Electromagnetic Compatibility

Total Item		Sub Item	Test standard	Judgment level
EMC	EMI	CE	CISPR22/EN55032/EN55024	CLASS B (See Photo 1 for recommended circuit)
		RE	CISPR22/EN55032/EN55024	CLASS B (See Photo 1 for recommended circuit)
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B (See Photo 1 for recommended circuit)	
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B(See Photo 1 for recommended circuit)	
		ESD	IEC/EN61000-4-2 Contact ±4KV Air ±8KV (See Photo 1 for recommended circuit)	
		Surge	IEC/EN61000-4-5 ±1KV Perf.Criteria B(See Photo 1 for recommended circuit)	
		EFT	IEC/EN61000-4-4 ±2KV Perf.Criteria B(See Photo 1 for recommended circuit)	
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%~70% Perf.Criteria B	

Dimension





Packing Code	L x W x H	
D2	39.0X25.0 X22.0 mm	1.535 X0.984X0.866inch

Pin Definition

Pin	1	2	3	4	5	6	7
Single(S)	AC(L)	AC(N)	NC	+Vo	NC	-Vo	NC
Function	Enter FireWire	Input zero line	No pin	output positive	No pin	output negative	No pin

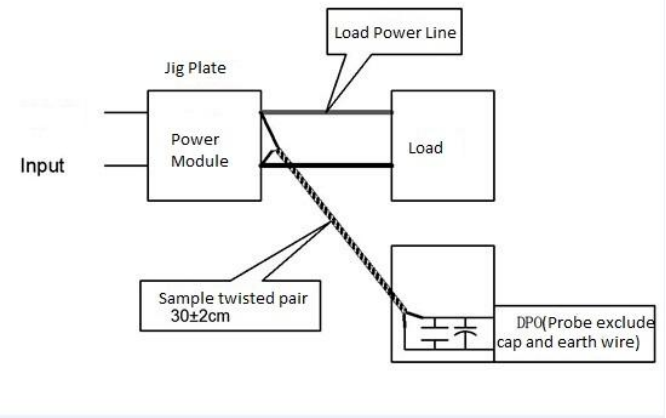
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

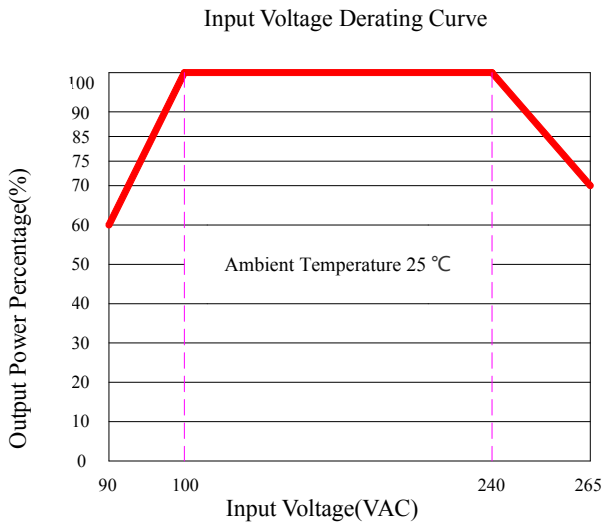
Test Method:

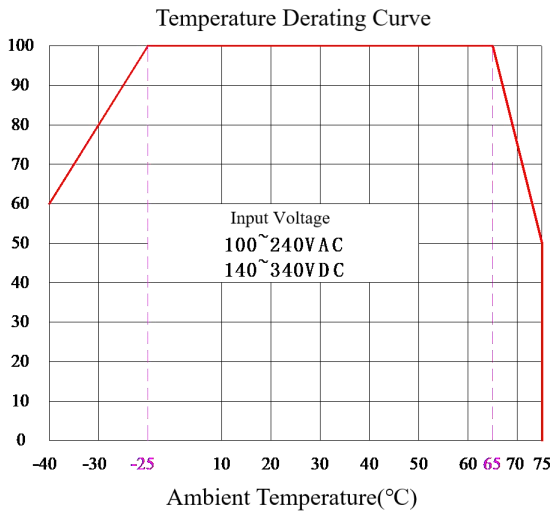
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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.



Product Characteristic Curve





Note:

1: Input voltage should be derated based on input voltage derating curve when it is 85~100VAC/277~305VAC/120~140VDC/ 390~430VDC.

2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Typical EMC Application Circuit（recommended parameters）

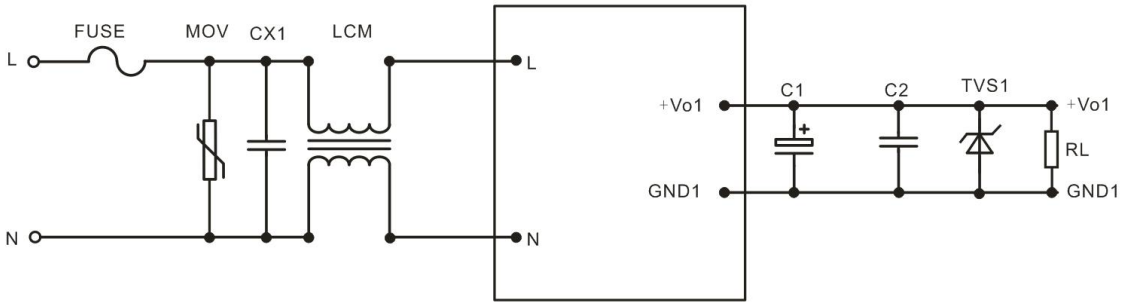


Photo 1

Device Tag	Device name	Part number	Device Recommendations
FUSE	Fuse	3.15A/250Vac	3.15A/250Vac, slow break, must be connected
MOV	Varistor	14D471K	14D471K
CX1	X capacitor	0.22uF/275Vac	0.22uF/275Vac
L1	Differential Mode Inductance	2.0uH/2.5A	2.0uH/2.5A I-shaped inductor
L2	Common Mode Inductance	15mH/2.5A T12X7X6mm 15mH/2.5A	15mH/2.5A
CY1/CY2	Y capacitor	102M-400Vac	102M-400Vac

Note 1:

1) 1) C1 selects a high-frequency low-impedance electrolytic capacitor smaller than the capacitance value of the capacitive load, and the withstand voltage value is more than 1.5 times the output voltage;
2) 2) C2 selects a 0.1uF ceramic chip capacitor, and the withstand voltage value is more than 1.5 times the output voltage;
3) 3) TVS1 is TVS tube; 5V output recommended use: SMBJ7.0A, 9V output recommended use: SMBJ12.0A, 12V output recommended use: SMBJ20A,
4) 15V output recommended: SMBJ20.0A, 24V output recommended: SMBJ30.0A, 48V output recommended: SMBJ64A.

Note 2:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;

2. The input end of the product must be connected to insurance; 3. If the product works below the minimum required load, the product performance cannot be guaranteed to meet all the performance indicators in this manual;

4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;

5. Unless otherwise specified, the above data are all measured at Ta=25℃, humidity <75%, input nominal voltage and output rated load (pure resistive load);

6. All the above index test methods are based on the company's standards;

7. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff directly.

8. Our company can provide product customization;

9. Product specifications are subject to change without notice. Please pay attention to the latest manual published on our official website.

