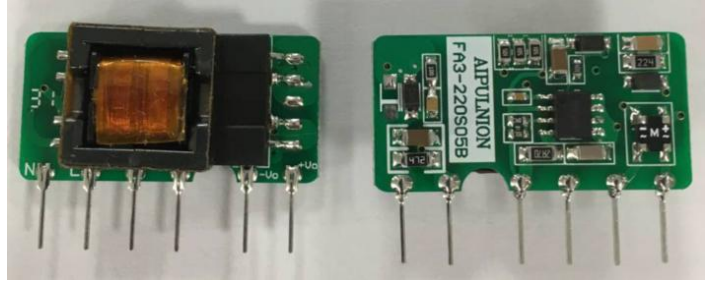


### Typical Features

- ◆ Wide input voltage range: 85-265VAC/90-380VDC
- ◆ No load power consumption ≤ 0.1W
- ◆ Transfer efficiency (typ. 80%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: short circuit, over-current, over-voltage
- ◆ Isolation voltage: 4000Vac
- ◆ Conform to IEC60950/UL60950/EN60950
- ◆ Meet CE, RoHS
- ◆ Ultra small bare board, industrial level design
- ◆ PCB mounting



### Application Field

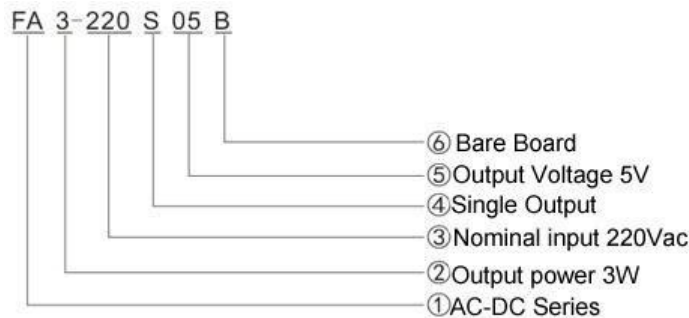
**FA3-220SXXB Series**----- a compact size, high efficient, meet CE standard power module offered by Aipu.

It features universal input voltage range, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. with good EMC performance, meet international EN55032, IEC/EN61000 standard.

This series have very important application for power, industrial, instrument, smart home field.

The application circuit in the datasheet is strongly recommended for harsh EMC environment.

### Product Named Method



### Typical Product List

Certificate	Item No.	Output Specifications					Max. Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency@ Full Load , 220Vac (Typical)
		Power	Voltage1	Current1	Voltage2	Current2			
		(W)	Vo1(V)	Io1(mA)	Vo2(V)	Io2(mA)			
CE	FA3-220S3V3B	2	3.3	600	-	-	820	50	66
	FA3-220S05B	3	5	600	-	-	680	50	72
	FA3-220S12B	3	12	250	-	-	470	80	75
	FA3-220S15B	3	15	200	-	-	330	100	76
	*FA3-220S24B	3	24	125	-	-	100	120	80

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2: “\*” is model being developing.

Note 3: The typical value of output efficiency is based on full load and burn-in after half an hour.

Note 4: The fluctuation range of full load efficiency at table(%,TYP) is  $\pm 2\%$ , full load efficiency = total output power/module's input power.

### Input Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Input Voltage Range	AC input	85	220	265	VAC
	DC input	90	310	380	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.13	A
	220VAC	/	/	0.07	
Surge Current	115VAC	/	/	11	
	220VAC	/	/	21	
Leakage Current	-	0.25mA TYP/230VAC/50Hz			
External Fuse Recommended Value	-	1A-3A/250VAC slow-fusing			
Hot-plug	-	unavailable			
Remote Control Terminal	-	unavailable			

### Output Specifications

Item	Operating Condition	Min	Typ.	Max	Unit	
Voltage Accuracy	Full input voltage range, any load	Vo1	-	$\pm 3.0$	$\pm 5.0$	%
		Vo2	-	-	-	%
Line Regulation	Nominal load	Vo1	-	-	$\pm 3.0$	%
		Vo2	-	-	-	%
Load Regulation	Nominal input voltage 20%~100% load	Vo1	-	-	$\pm 5.0$	%
		Vo2	-	-	-	%
No Load Power Consumption	Input 115VAC	-	-	0.1	W	
	Input 220VAC	-	-			
Minimum Load	Single Output	0	-	-	%	
	Dual output Common Ground	-	-	-	%	
	Dual output Isolated	-	-	-		
Start-up Delay Time	Nominal input voltage (full load)	-	320	-	mS	



Power-off Holding Time	Input 115VAC (full load)		10		mS
	Input 220VAC (full load)	-	30	-	
Dynamic Response	25%~50%~25%	Overshoot range(%): $\leq \pm 5.0$			%
	50%~75%~50%	Recovery time(mS): $\leq 5.0$			mS
Output Overshoot	Full input voltage range	$\leq 10\%V_o$			%
Short Circuit Protection		Continuous, Self-recovery			Hiccup
Temperature Coefficient	-	-	$\pm 0.03\%$	-	%/°C
Over Current Protection	Full input voltage range	$\geq 150\% I_o$ self-recovery			Hiccup
Over Voltage Protection	Output 5.0VDC	$\leq 7.5$			VDC
	Output 12VDC	$\leq 18$			
	Output 15VDC	$\leq 20$			
	Output 24VDC	$\leq 30$			
Ripple & Noise	-	-	50	120	mV
	Note: Ripple & Noise is tested by twisted pair method, for details please see(Ripple& Noise Test) at back.				

### General Specifications

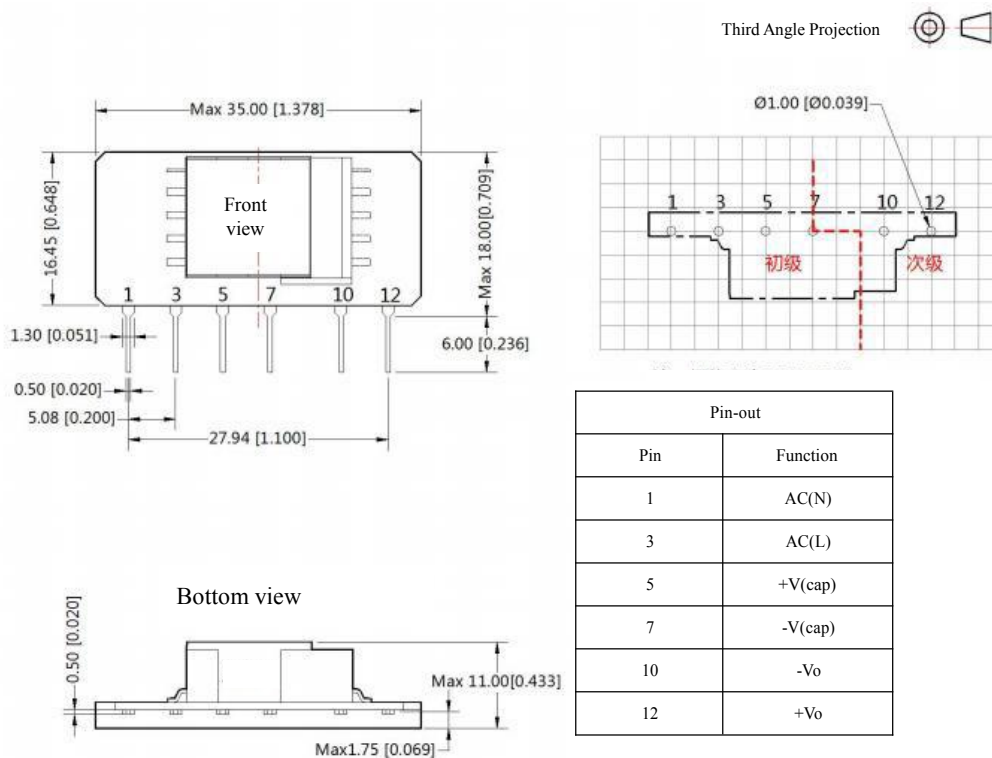
Item	Operating Condition	Min	Typ.	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+85	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	$260 \pm 4^\circ\text{C}$ , timing 5-10S			
	Manual-soldering	$360 \pm 8^\circ\text{C}$ , timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output Test 1min, leakage current $\leq 5\text{mA}$	4000	-		VAC
Insulation Resistor	Input-Output@ DC500V	100	-		MΩ
Safety Standard	-	EN60950, IEC60950			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS II			
Class of Case Material	-	UL94V-0			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			



### EMC Characteristics

Total Item	Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032 CLASS B(recommend circuit see photo2)
		RE	CISPR22/EN55032 CLASS B(recommend circuit see photo2)
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B(recommend circuit see photo1)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B(recommend circuit see photo1)
		ESD	IEC/EN61000-4-2 Contact $\pm 6KV$ / Air $\pm 8KV$ Perf.Criteria B
		Surge	IEC/EN61000-4-5 $\pm 1KV$ Perf.Criteria B
		EFT	IEC/EN61000-4-4 $\pm 2KV$ Perf.Criteria B
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%~70% Perf.Criteria B

### Dimension



Note:  
 Unit: mm[inch]  
 Pin section tolerance:  $\pm 0.10[\pm 0.004]$   
 General tolerance:  $\pm 0.50[\pm 0.0020]$   
 This layout is for reference, please refer to actual products.

1. It is necessary to add C1 between Pin5 and Pin7;
2. It is necessary to add Pi filter circuit to the output, like the typical application circuit Photo 1;
3. It is needed to have distance  $\geq 6.4\text{mm}$  for safety between external components in primary circuit and secondary circuit.

Packing Code	L x W x H	
B	35 x 18 x 11 mm	1.378 × 0.709 × 0.433inch

### Pin Definition

<b>Pin-Out</b>	1	3	5	7	10	12
<b>Single(S)</b>	AC(L)	AC(N)	+Cap	-Cap	-Vo	+Vo

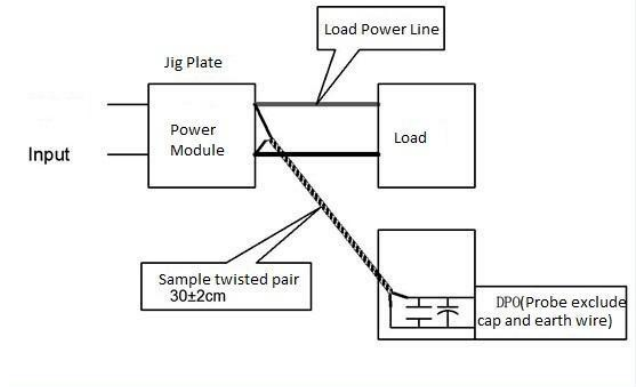
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

Test Method:

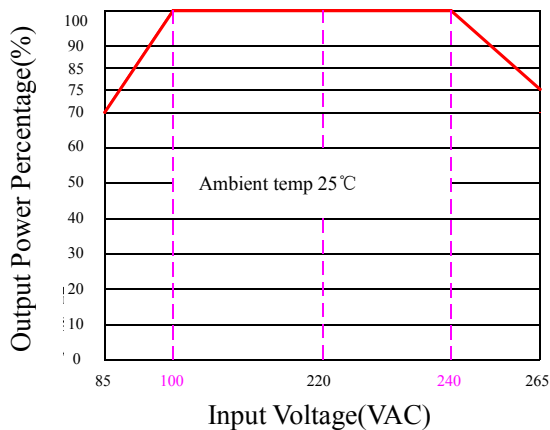
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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.

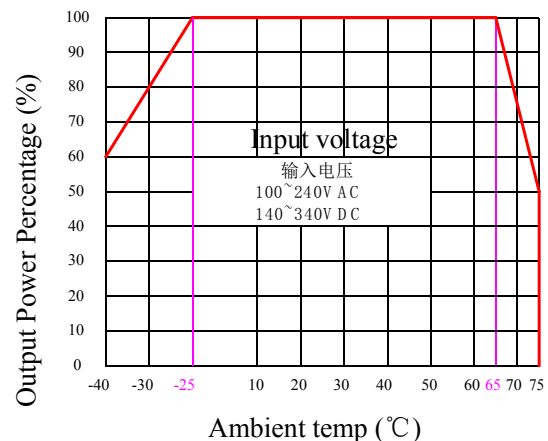


### Product Characteristic Curve

Input Voltage Derating Curve



Temperature Derating Curve



### Typical Application Circuit and EMC Recommended Circuit

### 1. Typical Application Circuit

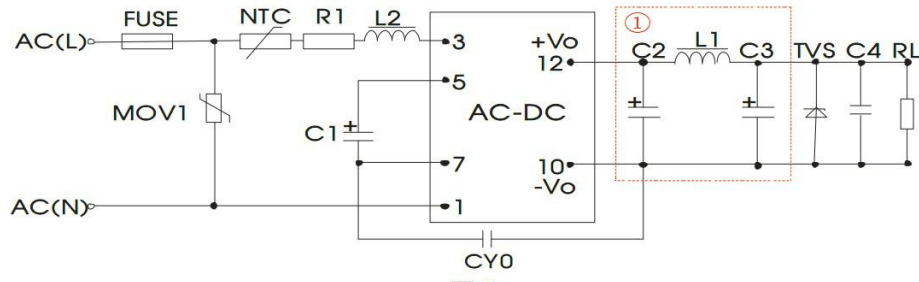


Photo 1

Note: ① as Pi filter circuit

Model	C1 (Required)	C2 (Required)	L1	C3 (Required)	C4	L2	NTC	CY0	FUSE (Required)	TVS tube
FA3-220S3V3B	10uF/400V	470uF/16V	4.7uH	100uF/16V	0.1uF/5 0V	4.7mH	13D-5	1nF/ 400VAC	1A/300V	SMBJ7.0A
FA3-220S05B										SMBJ12A
FA3-220S12B										SMBJ20A
FA3-220S15B		SMBJ20A								
FA3-220S24B		220uF/35V		47uF/35V						SMBJ30A

Note:

- C1 : AC input, C1 is input filter electrolytic capacitor(which is required), recommend value 10uF/400V.  
DC input, C1 is a big filtering capacitor in EMC filter(which is required), recommend value 10uF/400V.
- R1 : current-limit resistor, recommended 12Ω, 2W.
- MOV1 is voltage dependent resistor, recommended 14D511K.

### 2. EMC recommended circuit(under high EMC request)

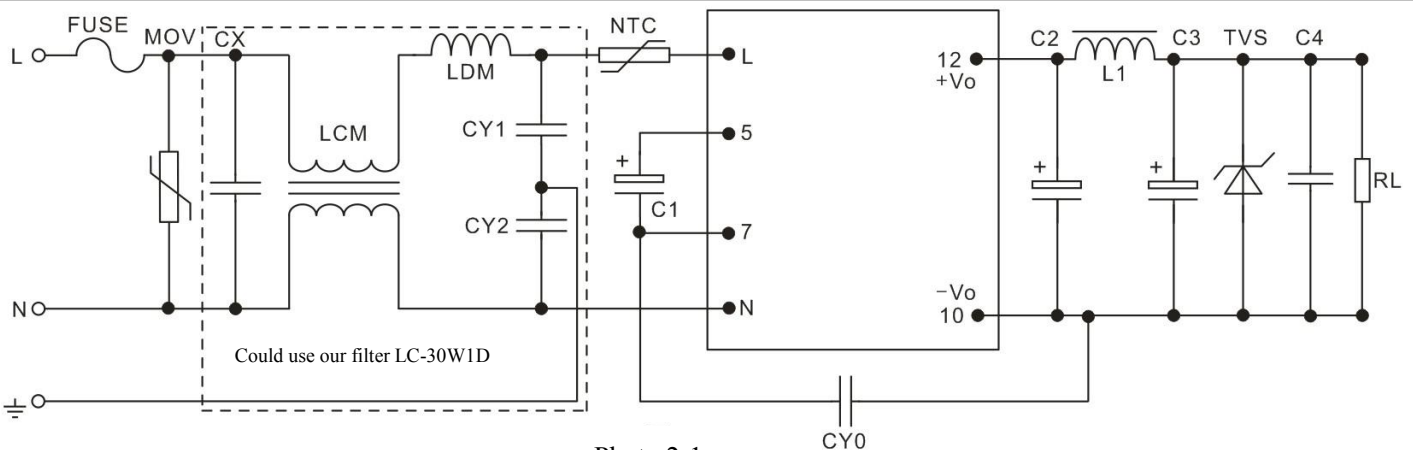
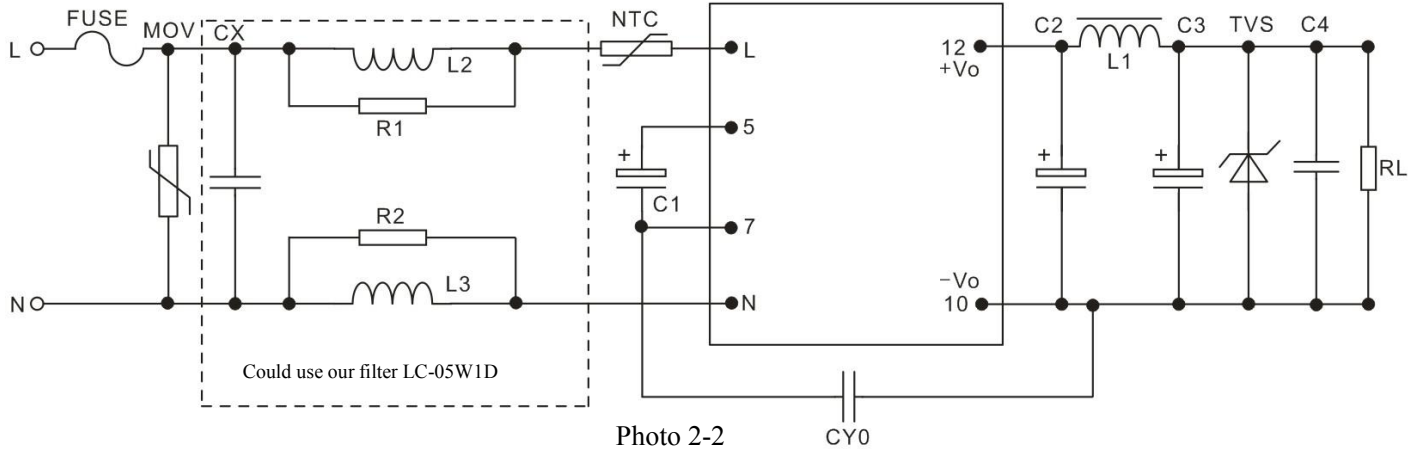


Photo 2-1



FUSE	Recommend 1A,300Vac (required)	NTC	13D-5	R1,R2	Resistance 2.2K, above 1/8W
MOV	14D511K	CY1, CY2	1nF/400VAC		
CX	0.1uF/275Vac	LDM	330uH		
LCM	10mH	L2, L3	Color ring 1mH, 1W		

**Note:**

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 operated under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
4. 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;
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , 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. Specifications are subject to change without prior notice, please follow our website for newest manual.