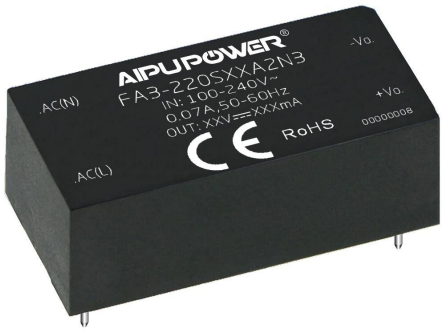
Typical Features

- Wide input voltage range 85-265VAC/120-380VDC
- No load power consumption ≤0.35W@220VAC
- Efficiency up to 77%(Typ.)
- Operating temperature from -40 to +75℃
- Switching frequency 65KHz
- Short circuit, over current & over temp. protections
- Isolation voltage 3600Vac
- Compliant with IEC/EN62368/UL62368
- With CE certificate
- Enclosed plastic case, flame class UL94-V0



Application Field

FA3-220SXXA2N3 Series ----- Compact size & high-performance AC-DC modular 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 diagram for EMC is recommended for the application with high EMC requirement.

Typical Product List

Certificate	Part No.	Input Voltage		Output Specifications			Max Capacitive Load @220VAC	Ripple & Noise 20MHz (Max)	Efficiency @Full Load, 220VAC (Typ.)
		Nom.	Range	Power	Voltage	Current			
		(VAC)	(VAC)	P(W)	Vo(V)	Io(mA)	(uF)	mVp-p	%
CE	FA3-220S3V3A2N3	220	85-265	2	3.3	600	500	100	66
	FA3-220S3V8A2N3			2.3	3.8	600	500	100	68
	FA3-220S05A2N3			3	5	600	500	100	71
	FA3-220S12A2N3			3	12	250	300	120	75
	FA3-220S15A2N3			3	15	200	200	140	75
	FA3-220S24A2N3			3	24	125	47	140	77

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 & Noise is tested by the twisted pair method, please refer to the following test instruction.
Note 4: 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	265	VAC
	DC input	120	310	380	VDC
Input frequency	-	47	50	63	Hz
Input current	115VAC input	-	-	0.07	A
	220VAC input	-	-	0.05	
Surge current	115VAC input	-	-	10	
	220VAC input	-	-	20	
No-load power consumption	115VAC input	-	0.15	0.35	W
	220VAC input	-			
Leakage current	-	0.5mA TYP/ 230VAC/ 50Hz			
Recommended external fuse	-	1-2A/250VAC Time-delay fuse			
Hot plug	-	Unavailable			
ON/OFF Control	-	Unavailable			

Output Specifications

Item		Operating Condition	Min	Typ.	Max	Unit
Voltage accuracy		Input 220VAC	-	±3.0	±5.0	%
Line regulation		Rated load	-	-	±1.0	%
Load regulation		Nominal input voltage, 20%~100% load	-	-	±4.0	%
Ripple & Noise		5%-100% load, 20MHz bandwidth	-	-	140	mVp-p
		Note: It is tested by the twisted pair method (please refer to the following test instruction).				
Minimum load		Single Output	10	-	-	%
Turn-on delay time		Input 115VAC (full load)	-	-	1000	mS
		Input 220VAC (full load)	-	-		
Power-off hold up time		Input 115VAC (full load)	10	-	-	mS
		Input 220VAC (full load)		-	-	
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+5.0	mS
Temperature drift coefficient		-	-	±0.03%	-	%/℃
Output overshoot		Full input voltage range	≤10%Vo			%
Short circuit protection			Continuous, self-recovery			Hiccup
Over current protection		Input 220VAC	≥120% Io, self-recovery			Hiccup

General Specifications

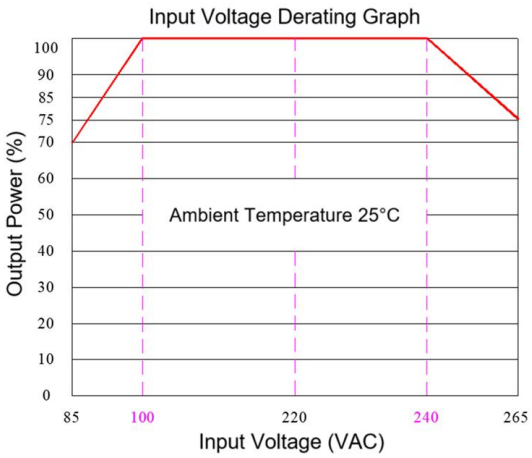
Item	Operating Condition	Min	Typ.	Max	Unit
Switching frequency	-	-	65	-	KHz
Operating temperature	Refer to the Temperature Derating Graph	-40	-	+75	℃
Storage temperature	-	-40	-	+85	

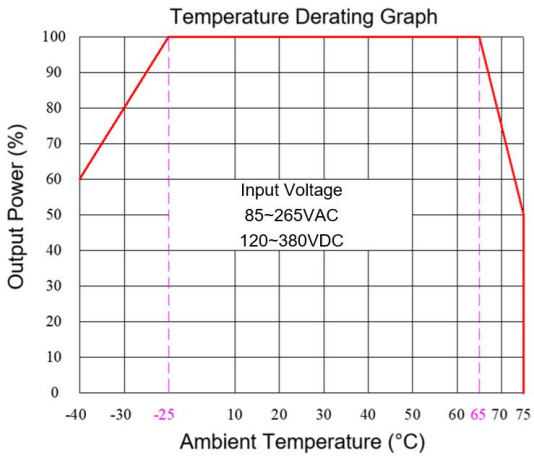
Soldering temperature	Wave soldering		260±4℃, time 5-10S			
	Manual soldering		360±8℃, time 4-7S			
Relative humidity	-		10	-	90	%RH
Isolation voltage	I/P-O/P	Test 1min, leakage current ≤5mA	3600	-	-	VAC
Insulation resistance	I/P-O/P	@ DC500V	100	-	-	MΩ
MTBF	MIL-HDBK-217F@25℃		300	-	-	K hours
Safety standard	-		IEC/EN62368			
Vibration	-		10-55Hz,10G,30Min, along X, Y, Z			
Safety standard	-		CLASS Ⅱ			
Case flame class	-		UL94-V0			
Weight & Dimensions	Part No.	Weight (Typ.)	Dimensions L x W x H			
	FA3-220SXXA2N3	12g	37.7 x 18.7x 13.6 mm	1.484 × 0.736 × 0.535 inch		

EMC Performance

Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
		RE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B (with the Recommended Circuit 2)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips & Interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Product Characteristics Graphs





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

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

Recommended Circuit for Application

1. Typical application circuit diagram

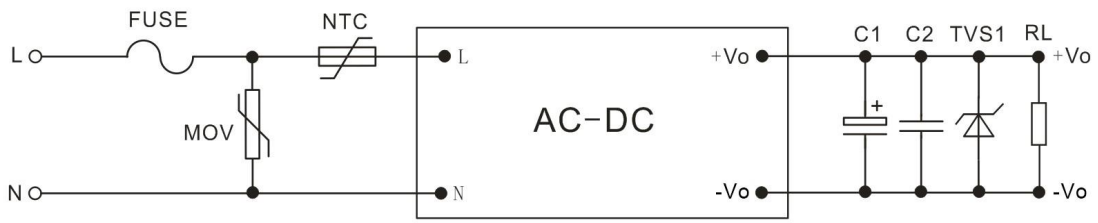


Figure - Circuit 1

Part No.	C1	C2	FUSE	MOV	NTC	TVS1
FA3-220S3V3A2N3	330uF/10V	1uF/50V	1A/250VAC Time-delay fuse (Necessary)	10D471K /3500A	10D-7	SMBJ7.0A
FA3-220S3V8A2N3						
FA3-220S05A2N3						
FA3-220S12A2N3	220uF/16V					SMBJ20A
FA3-220S15A2N3	100uF/25V					
FA3-220S24A2N3	47uF/35V					SMBJ30A

Note:

High-frequency low resistance electrolytic capacitors are recommended for C1 which capacitance and current should be referred to its manufacturer's specification. C2 should be a ceramic SMD capacitor to suppress the high frequency noise. TVS1 is to protect the output circuit. FUSE is necessary for the application, not optional.

2. Recommended EMC circuit diagram for high EMC requirements

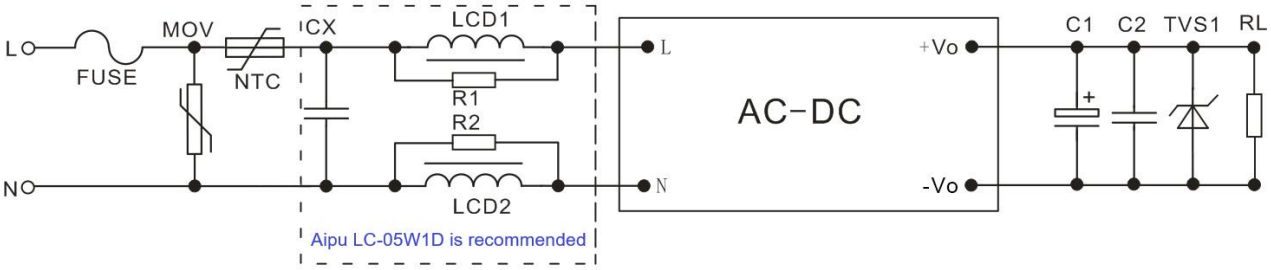
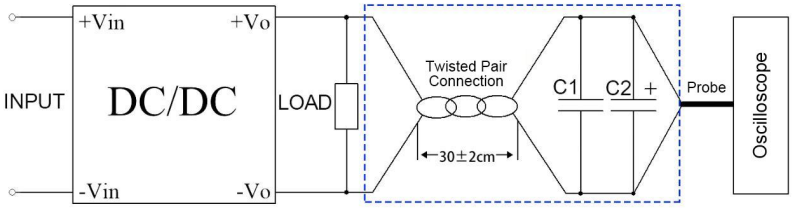


Figure - Circuit 2

Component	Recommended value	Component	Recommended value
MOV	10D471K/3500A	NTC	10D-7
CX	X2/104K/275VAC	LCD1, LCD2	1mH/1W Color-ring choke
FUSE	1A/250VAC, time-delay fuse, necessary	R1, R2	2KΩ/>1/8W

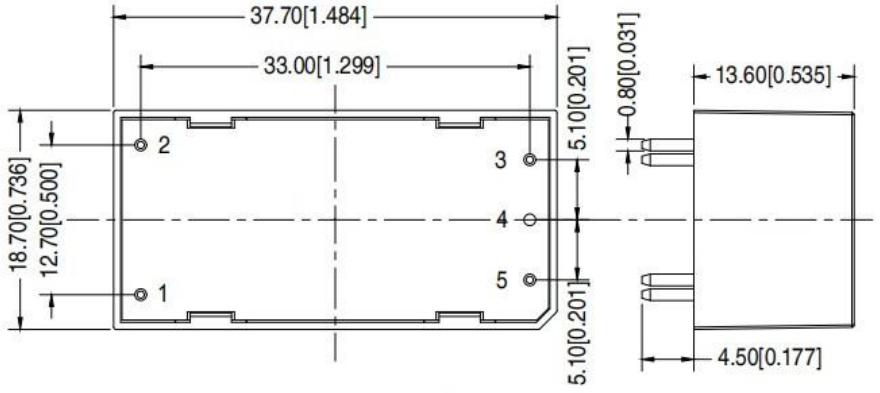
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz Bandwidth)

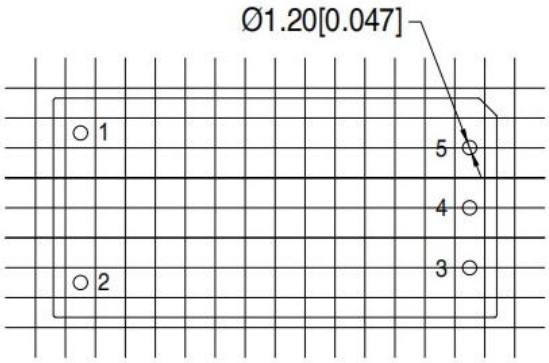


1, The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. C1(0.1uF) polypropylene capacitor and C2(10uF) high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes and one side of the twisted pair.

2, The power supply output connects to the load by the cables. The other side of the twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the polarity of the output and the oscilloscope probe should not be reversed. The test can be start after input power on.

Mechanical Dimensions





PCB layout vertical view
Grid 2.54x2.54[0.10x0.10]

Unit: mm[inch]
General tolerance: ±0.50[±0.020]
Pin diameter tolerance: ±0.10[±0.004]

Pin-out Function Description

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

Application Notice

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

2. A fuse should be connected at input.

3. The product performance on this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performance on this datasheet cannot be guaranteed if it works at over-load condition.

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

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

7.The specifications are specially for the parts listed on 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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