

**Typical Features**

- ◆ Wide Input Voltage Range: 90-265VAC/127-375VDC
- ◆ No load power consumption ≤ 0.3W
- ◆ Transfer Efficiency: 82% (typ.)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short-circuit, Over-current, Over-temperature
- ◆ Isolation voltage: 4000Vac
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ Conform to CE, RoHS
- ◆ Plastic Case , meet UL94 V-0
- ◆ PCB Mounting



**Application Field**

**FA5-220SXXY2D4 Series**-----a compact size, high efficient, meet CE standard power converter offered by Aipu. It features universal input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance, meet EN55032, IEC/EN61000 standard. The series widely used for power, industry, instrument, smart home application, ect. The application circuit in the datasheet is strongly recommended for harsh EMC environment.

**Typical Product List**

Certificate	Part No	Output Specification			Max. Capacitive Load	Ripple& Noise 20MHz (MAX)	Efficiency@ Full Load, 220Vac (Typical)
		Power	Voltage 1	Current 1			
		(W)	Vo1 (V)	Io1 (m A)			
	FA5-220S3V3Y2D4	4.1	3.3	1250	2000	80	69
	FA5-220S05Y2D4	5	5	1000	1000	80	71
	FA5-220S09Y2D4	5	9	556	470	120	74
	FA5-220S12Y2D4	5	12	416	100	120	78
	FA5-220S15Y2D4	5	15	333	100	120	78
	FA5-220S24Y2D4	5	24	208	100	120	79

Note 1: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

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

Note 3: -T is chassis mounting, -TS is din-rail mounting, din-rail width 35mm.

**Input Specifications**

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	90	220	265	VAC
	DC Input	127	310	375	VDC

Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.10	A
	220VAC	/	/	0.06	
Surge Current	115VAC	-	-	10	
	220VAC	-	/	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External Fuse Recommend 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, 10%-100% load	-	±2.0	±5.0	%
Line Regulation		Nominal Load	-	±1.0	±3.0	%
Load Regulation		Nominal input voltage, 20%~100% load	-	±1.0	±3.0	%
No Load Power Consumption		Input 115VAC	-	-	0.3	W
		Input 220VAC	-	-		
Minimum Load		Single Output	10	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)	-	600	-	mS
Power-off Holding Time		Input 115VAC (full load)	-	100	-	mS
		Input 220VAC (full load)	-	80	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-5.0	-	+5.0	mS
Output Over-shoot		Full input voltage range	≤10%Vo			%
Short circuit protection			Continuous, Self-recovery			Hiccup
Drift Coefficient		-	-	±0.03%	-	%/°C
Over Current Protection		Input 220VAC	≥120% Io Self-recovery			Hiccup
Ripple & Noise		Output Vo≤5VDC	-	40	80	mV
		Output Vo>5VDC	-	60	120	
Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.						

**General Specifications**

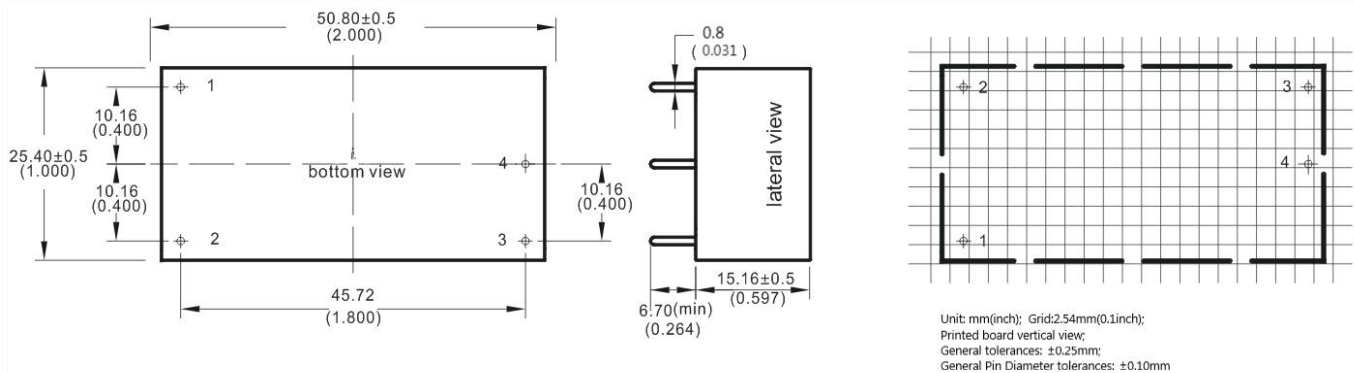
Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz

Operating Temperature		-	-40	-	+75	°C
Storage Temperature		-	-40	-	+85	
Soldering Temperature		Wave-soldering	260±4°C, timing 5-10S			
		Manual-soldering	360±8°C, timing 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	Input-Output	Test 1min, leakage current ≤5mA	4000	-		VAC
Insulation Resistance	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		-	UL94 V-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	
		RE	CISPR22/EN55032 CLASS B	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit Photo 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit 1)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	line to line ±2KV / line to ground ±4KV Perf.Criteria B (see recommend circuit 1)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

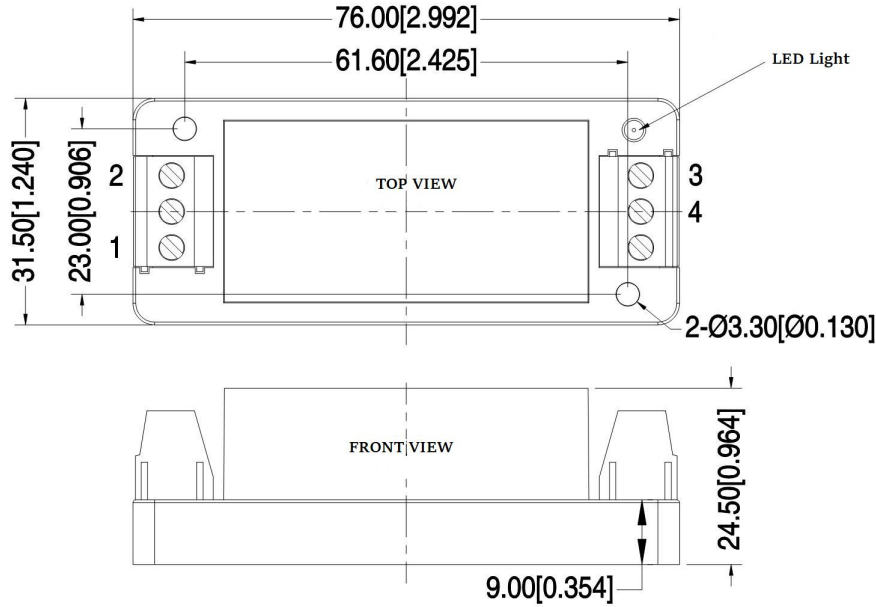
### Y2 Packing Dimension



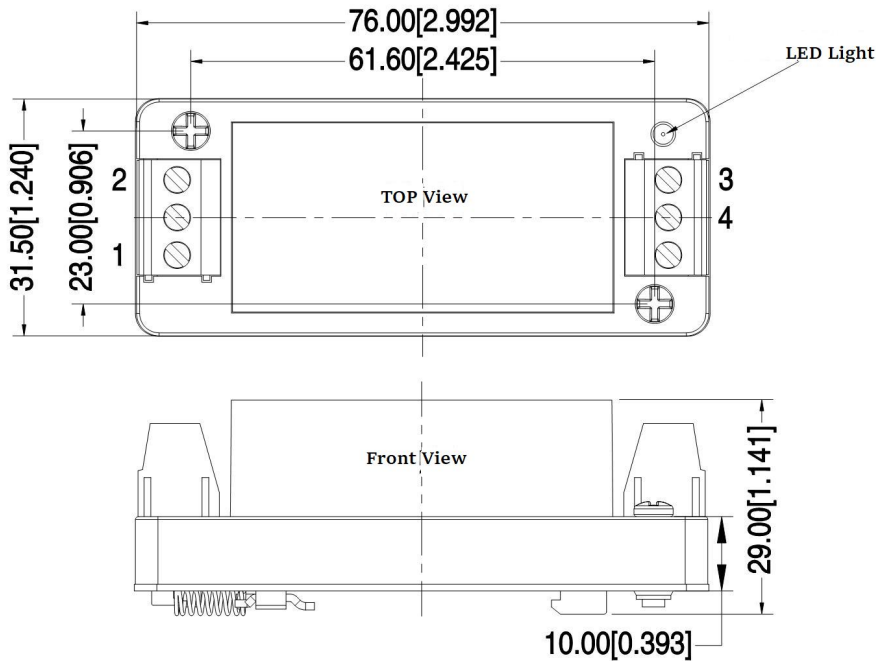
### Pin Definition

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

**Y2-T Packing Dimension**



**Y2-TS Packing Dimension**

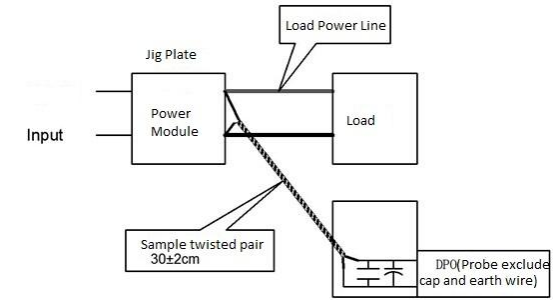


Packing Code	L x W x H	
Y2	50.8X25.4X15.16 mm	2.000X1.000X0.597inch
Y2-T	76.0X31.5X24.5mm	2.992X1.240X0.964inch
Y2-TS	76.0X31.5X29.0mm	2.992X1.240X1.141inch

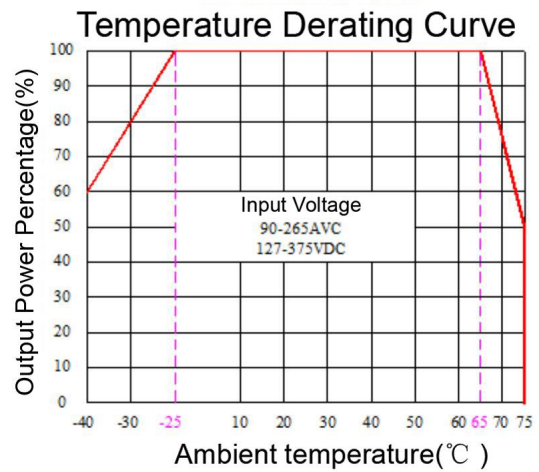
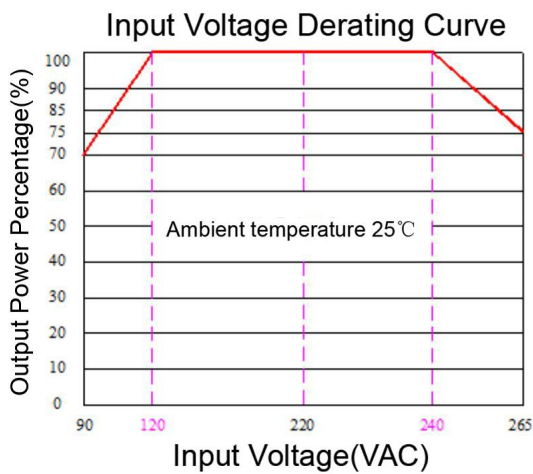
**Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)**

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**

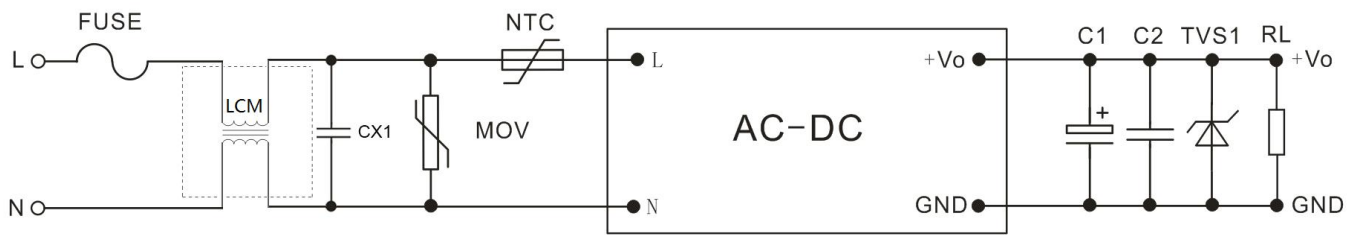


Note1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 90~120VAC/240~265VAC/ 127~170VDC/340~380VDC

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

**Typical EMC Recommended Application Circuit**

1. Recommended Circuit:



Circuit 1

Note:

1. FUSE: necessary, suggest 2A~250Vac, slow fusing, block form;
2. MOV is voltage dependent resistor, suggest model: 10D561K;
3. LCM is common mode inductance, recommended value above 30mH; CX1 is X Capacitor, recommended value: 0.22uF/275V;
4. NTC1 is thermistors, suggest model:5D-11, to prevent the module from damage when lighting surge.
5. C1 is high frequency low impedance electrolytic capacitor whose capacitance value less than capacitive load, withstand voltage is above 1.5 times or more of output voltage.
6. C2 is 0.1uF ceramic chip capacitors, withstand voltage is 1.5 times more than output voltage.

7. TVS1 is TVS tube:

5V output recommend: SMBJ7.0A , 9V output recommend:SMBJ12.0A, 12V output recommend:SMBJ20A, 15V output recommend :SMBJ20.0A, 24V output recommend:SMBJ30.0A, 48V output recommend:SMBJ64A.

Note :

- 1.The product should be used under the specification range, otherwise it will cause permanent damage to it.
- 2.Product's input terminal should connect to fuse;
- 3.If the product is not worked under the load range(below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 4.Unless otherwise specified, data in this datasheet are tested under conditions of **Ta=25°C** , **humidity<75%** when inputting nominal voltage and outputting rated load(pure resistance load);
- 5.All index testing methods in this datasheet are based on our Company's corporate standards
- 6.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;
- 7.We can provide customized product service;
- 8.The product specification may be changed at any time without prior notice.

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