

Typical Features	
◆ Wide input voltage range 85-305VAC/120-430VDC	
◆ No load power consumption ≤ 0.45W	
◆ Transfer efficiency 86%(typical)	
◆ Switching frequency 65KHz	
◆ Protections: short circuit, over current	
◆ Isolation Voltage 4000Vac	
◆ Conform to IEC62368/UL62368/EN62368 test standard	
◆ Passed CE and RoHS certification	
◆ Plastic case, meet flammability UL94 V-0	
◆ PCB Mounting	

Application Field

FA30-220SXXH2D4 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, 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.	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency @full load 220Vac (TYP)
		Power	Voltage	Current			
		(W)	Vo1(V)	Io1(mA)			
-	FA30-220S05H2D4	25	5	5000	2000	120	78
CE/RoHS	FA30-220S09H2D4	30	9	3333	2000	100	80
CE/RoHS	FA30-220S12H2D4	30	12	2500	1000	100	82
CE/RoHS	FA30-220S15H2D4	30	15	2000	1000	100	83
CE/RoHS	FA30-220S18H2D4	30	18	1667	600	120	85
CE/RoHS	FA30-220S24H2D4	30	24	1250	500	150	85

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:-T is for chassis mount, -TS is for din rail mount, din rail width 35mm.
 Note 3: The typical value of output efficiency is based on product is full loaded and burned-in after half an hour.
 Note 4: Fluctuation range of full load efficiency (% ,TYP) is ±2%. Full load efficiency=Total output power / module's Input power.
 Note 5: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.

Input Specification

Items	Operating Conditions	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	-	-	0.65	A
	220VAC	-	-	0.37	
Surge Current	115VAC	-	-	10	
	220VAC	-	-	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Recommended External Input Fuse	-	1A-3A/300VAC, slow-fusing			
Hot Plug	-	Unavailable			
Remote Control Terminal	-	Unavailable			

Output Specification

Items		Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy	Full input voltage range, any load	Vo1	-	±2.0	±3.0	%
		Vo2	-	-	-	%
Line Regulation	Nominal load	Vo1	-	-	±0.5	%
		Vo2	-	-	-	%
Load Regulation	Nominal input voltage, 20%~100% load	Vo1	-	-	±2.0	%
		Vo2	-	-	-	%
No Load Power Consumption	Input 115VAC	-	-	0.45	W	
	Input 220VAC	-	-			
Minimum Load	Single Output	0 (10% is required for temperatures below 0°C)	-	-	%	
Start-up Delay Time	Nominal input voltage (full load)	-	2000	-	mS	
Power-off Holding Time	Input 115VAC(full load)	-	200	-	mS	
	Input 220VAC(full load)	-	100	-		
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+ 5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+ 5.0	mS
Output Overshoot	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	

General Specifications

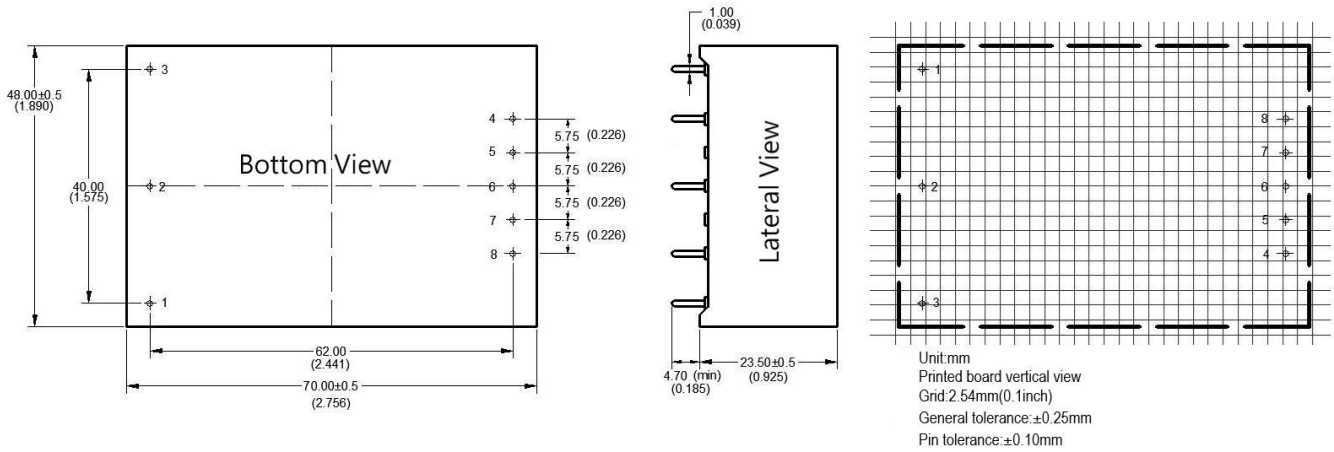
Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+105	°C

Storage Temperature		-	-40	-	+110	°C
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	I/P-O/P	test 1min, leakage current ≤ 5mA	4000	-	-	VAC
	I/P LN-FG		2500	-	-	VAC
Insulation Resistance	I/P-O/P	@DC500V	100	-	-	MΩ
Safety Standard		-	EN60950, IEC60950			
Vibration		-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class		-	CLASS II			
MTBF		-	MIL-HDBK-217F@25°C > 300,000H			

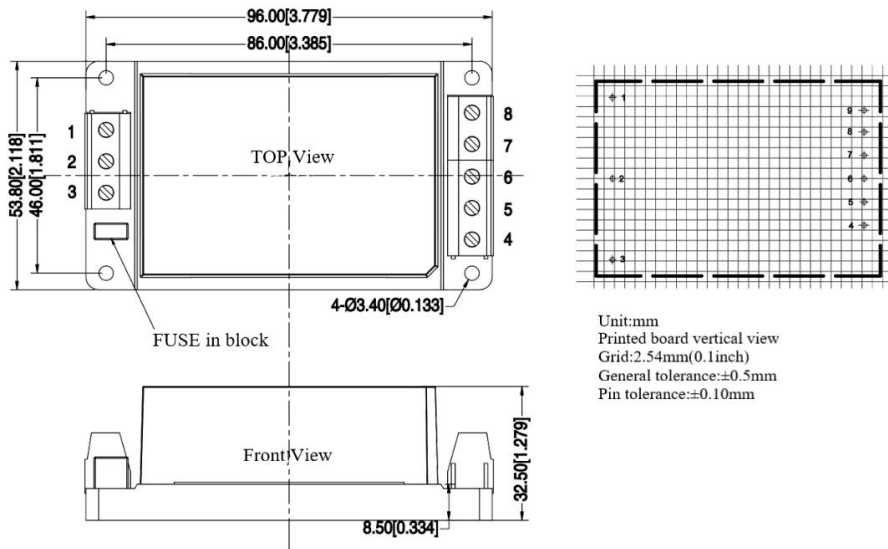
Physical Characteristic	
Case Material	Black flame-retardant heat-resistant plastic (UL94 V-0)
Packing Dimension	70.0X48.0X23.5 mm
Product Weight	130g (TYP)
Horizontal package	
Cooling Method	Free air convection

Electromagnetic Compatibility(EMC) Characteristic					
Total Items	Sub Items	Standard	Class		
EMC	EMI	CE	CISPR32/EN55032	CLASS B (Recommended Circuit 2)	
		RE	CISPR32/EN55032	CLASS B (Recommended Circuit 2)	
	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (Recommended Circuit 1)
		CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (Recommended Circuit 1)
		ESD	IEC/EN61000-4-2	±6KV / Air ± 8KV Perf.Criteria B	
		Surge	IEC/EN61000-4-5	line to line ± 2KV / line to ground ±4KV	Perf.Criteria B (Recommended Circuit 2)
		EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70%	Perf.Criteria B

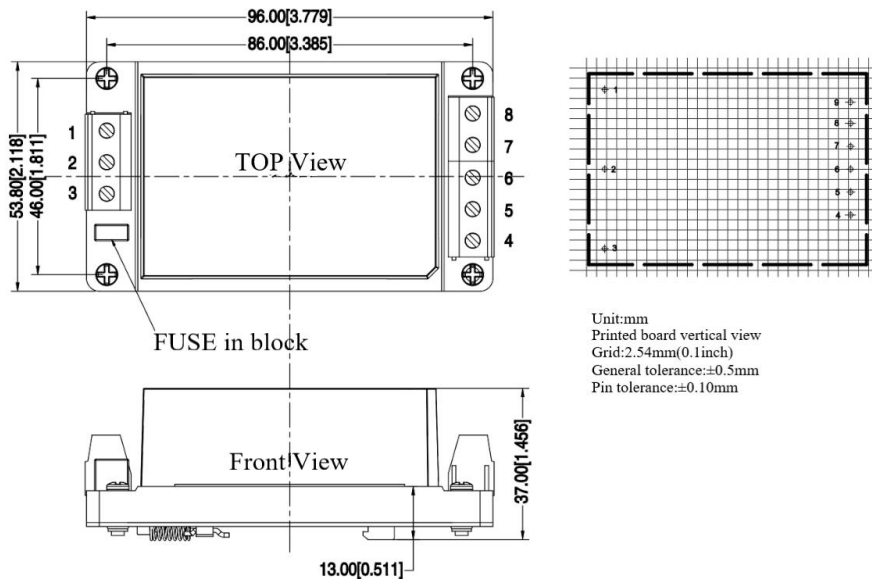
H2 Dimension



H2-T Dimension



H2-TS Dimension



Packing Code	L x W x H	
H2	70.0 x 48.0 x 23.5 mm	2.756 x 1.890 x 0.925inch
H2-T	96.0X53.8X32.5 mm	3.779X2.118X1.279inch
H2-TS	96.0X53.8X37.0 mm	3.779X2.118X1.456inch

Pin Definition

Pin	1	2	3	4	8
Single (S)	FG	AC(N)	AC(L)	+Vo	-Vo

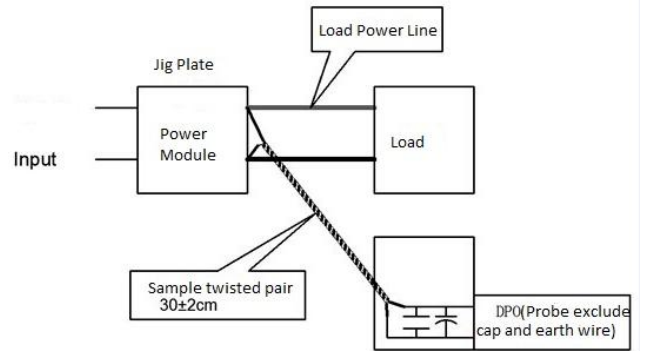
Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test method:

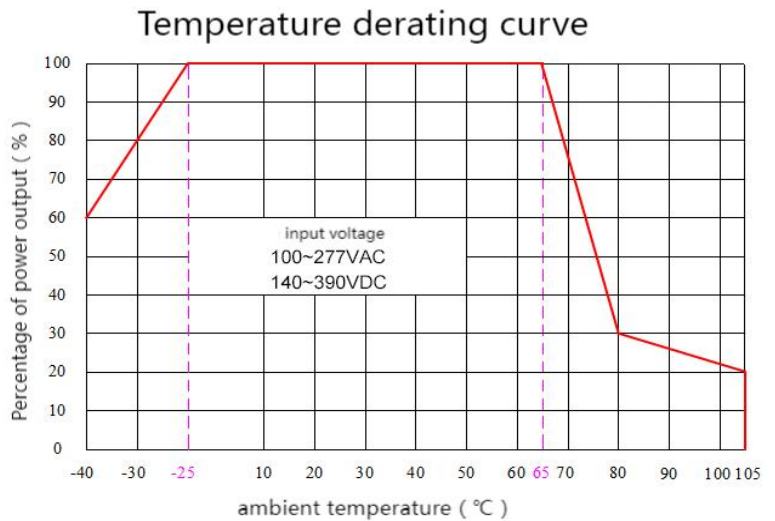
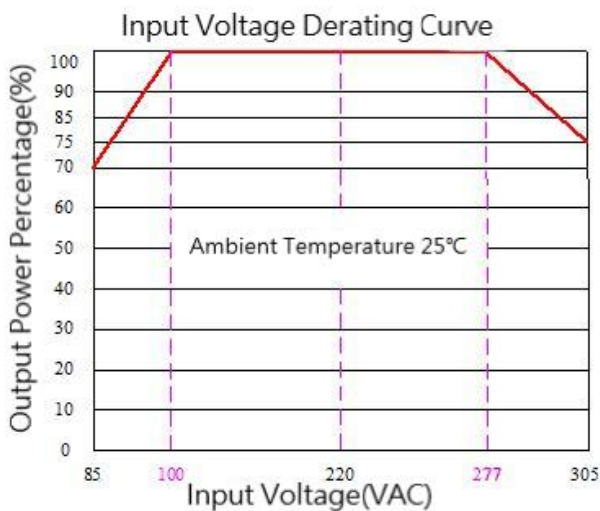
1. Ripple noise is connected using 12# twisted pair cable, the oscilloscope bandwidth is set to 20MHz, 100M bandwidth probe, and 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor are connected in parallel on the probe end, and the oscilloscope sampling uses Sample sampling mode.

2. Output ripple noise test diagram:

Connect the power input end to the input power supply, and the power output is connected to the electronic load through the fixture board. The test is performed using a 30cm ± 2 cm sampling line to directly sample from the power output port. The power line selects the corresponding wire diameter with insulated wire according to the output current.

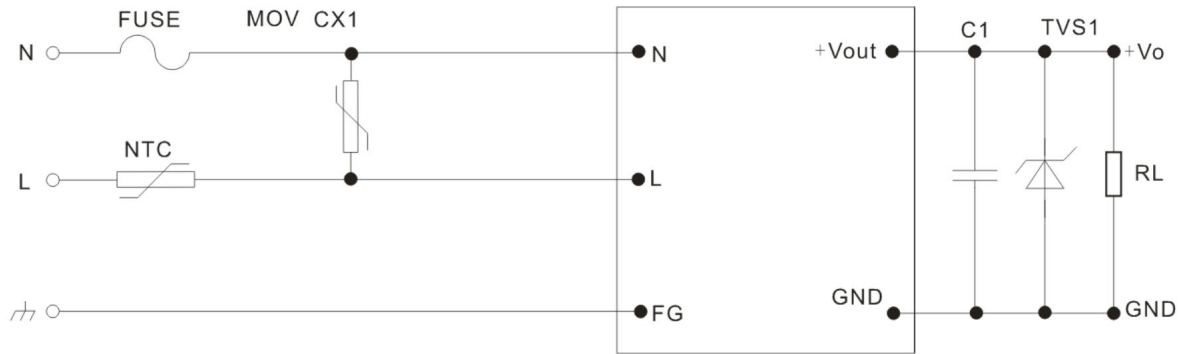


Product Characteristic Curve

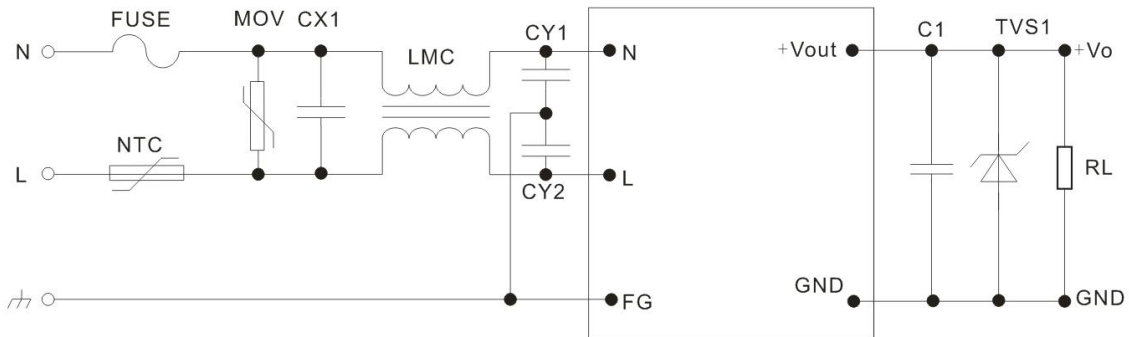


- Note
- 1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC/277~305VAC/120~140VDC/ 390~430VDC.
 - 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Typical EMC Application and Recommend Circuit



Recommended Circuit 1



Recommended Circuit 2

Note 1:

1. Output filter capacitor C1 removes high-frequency noise. It is recommended to use a 1 μ F ceramic capacitor with a voltage rating greater than 80%.
2. TVS tube is recommended to protect the subsequent circuit (when the module is abnormal). 600W model is recommended. 5V output recommended: SMBJ7.0A, 9V output recommended: SMBJ12.0A, 12V output recommended: SMBJ20A, 15V output recommended: SMBJ20.0A, 24V output recommended: SMBJ30.0A, 48V output recommended: SMBJ64A
3. MOV is a varistor, recommended model: 10D561K, which is used to protect the module from damage during lightning surges.
4. The general application requirements of customers use the recommended circuit in Figure 1. If there are higher EMC requirements, please use the recommended circuit in Figure 2. The specific recommended values of Figure 2 are as follows:
 - 1) MOV varistor: recommended model: 10D-561K, which is used to protect the module from damage during lightning surge.
 - 2) NTC thermistor: 10D-9;
 - 3) Safety capacitors CY1, CY2: 1000pF/400VAC;
 - 4) Safety capacitor CX: 0.1 μ F/275VAC;
 - 5) Common mode inductor LCM: 15mH-30mH;
 - 6). FUSE (fuse): must be connected, recommended specification is 3.15A/300V, slow break.

Note 2:

- 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 operated below the minimum load request, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- 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, data in this datasheet are tested under conditions of **Ta=25℃**, **humidity<75%** when inputting nominal voltage and outputting rated 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 customized product service;
- 9.The product specification may be changed at any time without prior notice.

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