

### Typical Features

- ◆ Wide input voltage range:85-305VAC/120-430VDC
- ◆ No-load power consumption≤0.35W
- ◆ Transfer efficiency (typ. 86%)
- ◆ Switching frequency: 65KHz
- ◆ Protection: Short Circuit, Over Current
- ◆ Isolation voltage: 4000Vac
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ Plastic case, conform to UL94 V-0
- ◆ PCB mounting, chassis mounting, din-rail mounting available



### Application Field

FA15-220SXXF2N4 series-----is a small size, high efficiency module power supply provided by Aipu to customers. This series of power supplies has the advantages of global input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, high safety isolation, and good EMC performance. EMC and safety standards meet international EN55032 and IEC/EN61000 standards. This series of products are widely used in many fields such as power, industry, instrumentation and smart home. When the product is used in a harsh environment with electromagnetic compatibility, please refer to the application circuit given by our company.

### Typical Product List

Model	Output Specification			Max. Capacitive Load	Ripple& Noise 20MHz (Max.)	Efficiency@ Full Load, 220Vac (TYP.)
	Power	Voltage	Current			
	(W)	Vo1(V)	Io1(m A)			
FA15-220S3V3F2N4	10	3.3	3000	3000	80	71
FA15-220S05F2N4	15	5	3000	1000	80	74
FA15-220S09F2N4	15	9	1667	1000	80	82
FA15-220S12F2N4	15	12	1250	800	80	84
FA15-220S15F2N4	15	15	1000	800	100	85
FA15-220S24F2N4	15	24	625	500	100	86

Note 1: Suffix "-T"for chassis mounting, "-TS" suffix for DIN-Rail mounting, DIN-Rail width is 35mm;

Note 2: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 3: The fluctuation range of full load efficiency(%,TYP) is ±2%, full load output efficiency= total output power/module's input power.



### Input Specification

Item	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	/	/	0.3	A
	220VAC	/	/	0.2	
Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended value	-	1A-2A/250VAC slow-fusing			
Hot plug	-	Unavailable			
Remote control terminal	-	Unavailable			

### Output Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Voltage Accuracy	Full input voltage range, Any load	-	±2.0	±4.0	%
Line Regulation	Nominal Load	-	-	±0.5	%
Load Regulation	Nominal input Voltage, 20%~100% load	-	-	±1.0	%
No load power consumption	Input 115VAC	-	-	0.35	W
	Input 220VAC	-	-		
Minimum load	Single Output	0	-	-	%
Turn-on Delay Time	Nominal input voltage, full load	-	1000	-	mS
Power-off Holding Time	Input 220VAC (full load)	-	200	-	mS
Dynamic Response	25%~50%~25%	Overshoot amplitude (%): ≤ ±10			%
	50%~75%~50%	Recovery time (mS): ≤5.0			mS
Output Overshooting	Full input voltage range	≤10%Vo			%
Short Circuit Protection		Continuous, Self-recovery			Hiccup
Drift Coefficient	-	-	±0.03%	-	%/°C
Over Current Protection	Full input voltage range	≥130% Io, Self-recovery			Hiccup
Ripple & Noise	-	-	50	100	mV
	Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.				



### General Specifications

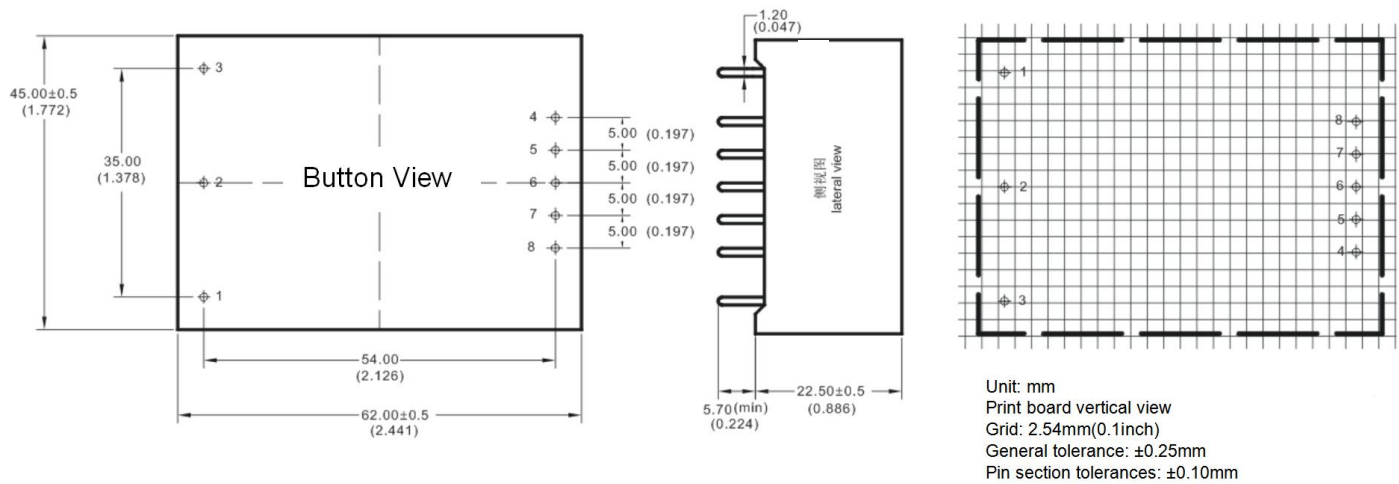
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4°C, timing 5-10S			
	Manual-soldering	360±8°C, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	Input-Output, Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	Input-Output@DC500V	100	-	-	MΩ
Safety Standard	-	EN62368、IEC62368			
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

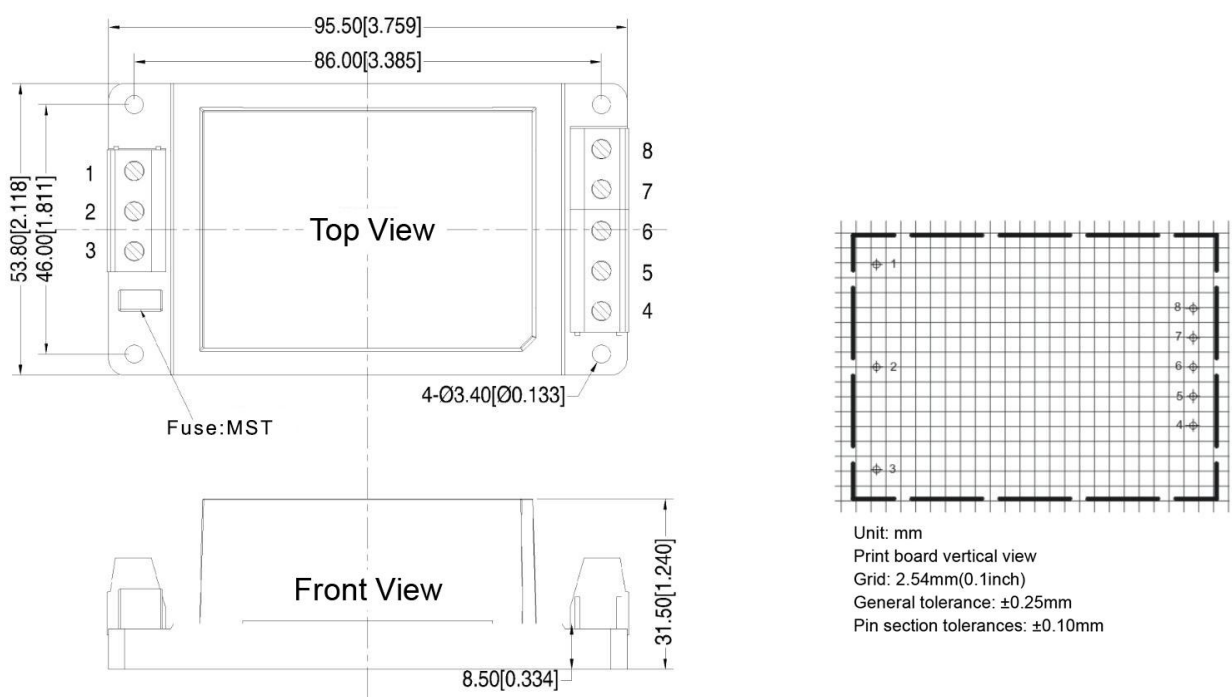
Total Item	Sub Item	Test Standard	Class	
EMC	EMI	CE	CISPR22/EN55032 CLASS B	
		RE	CISPR22/EN55032 CLASS B	
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit Photo 1)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit Photo 1)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B



**F2 Packing Dimension**

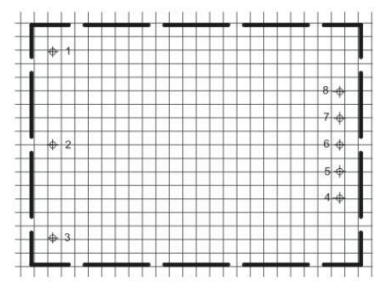
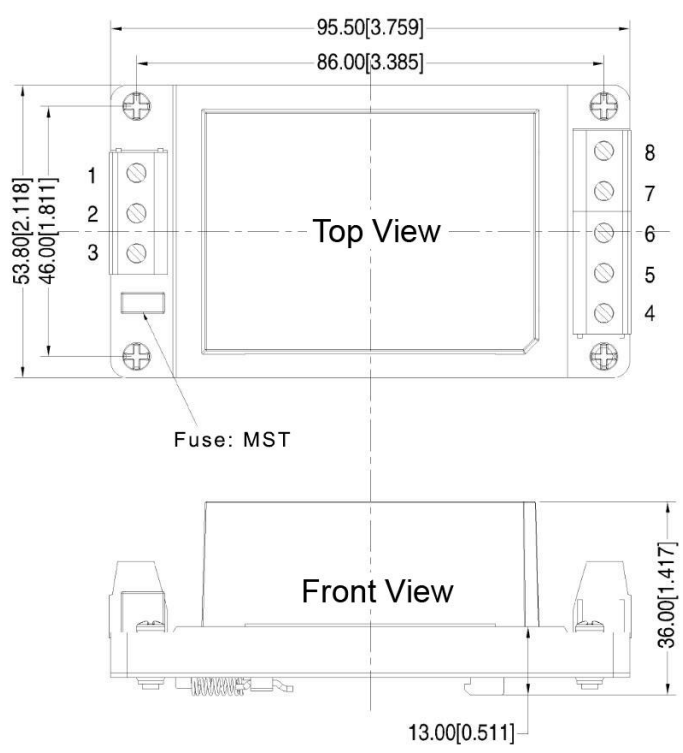


**F2-T Packing Dimension**





**F2-TS Packing Dimension**



Unit: mm  
 Print board vertical view  
 Grid: 2.54mm(0.1inch)  
 General tolerance: ±0.25mm  
 Pin section tolerances: ±0.10mm

Packing Code	L x W x H	
F2	62.0 x 45.0 x 22.5 mm	2.441 × 1.772 × 0.885inch
F2-T	96.0 x 53.8 x 31.5 mm	3.780 x 2.118 x 1.240 inch
F2-TS	96.0 x 53.8 x 36.0 mm	3.780 x 2.118 x 1.417 inch

**Pin Definition**

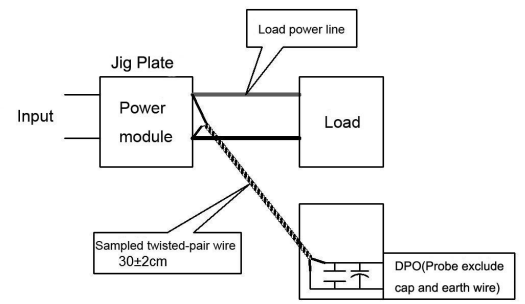
Pin-out	1	2	3	4	8
<b>Single(S)</b>	FG	AC(N)	AC(L)	+Vo	-Vo
<b>Function</b>	No PIN	Neutral input	Firewire input	output positive	output negative

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:**

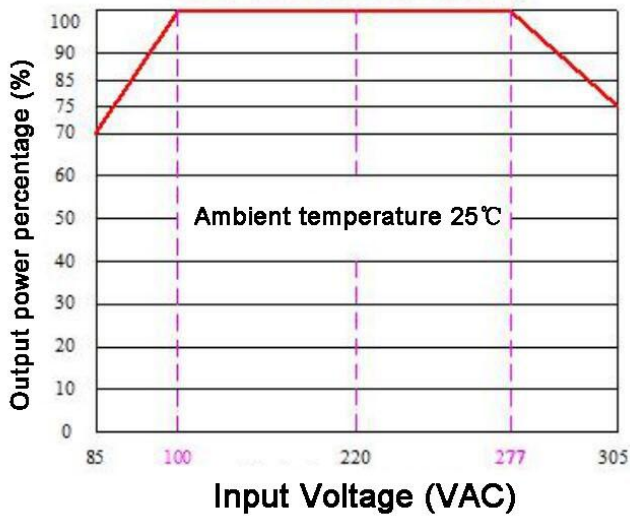
- (1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHZ, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.
- (2) Input terminal connect to power supply, output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



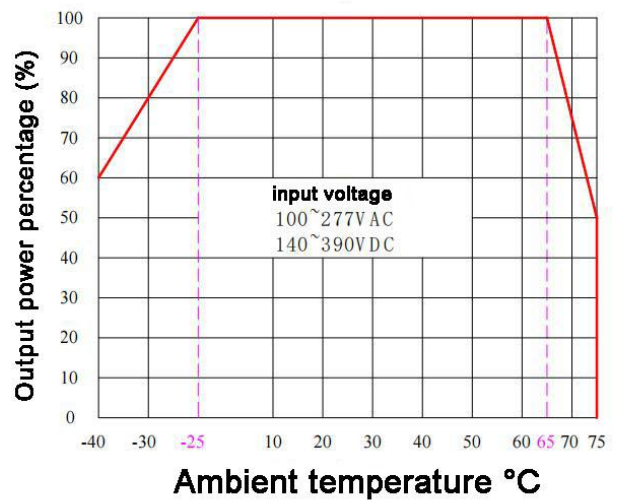


**Product Characteristic Curve**

**Input Voltage Derating Curve**



**Temperature Derating Curve**



**Note**

1. The input voltage is 85~100VAC/277~305VAC/120~140VDC/390~430VDC, which needs to be derated based on the input voltage derating curve.
- 2: This product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

**Typical EMC Circuit and Recommended Spec**

**1. Typical Application Circuit**

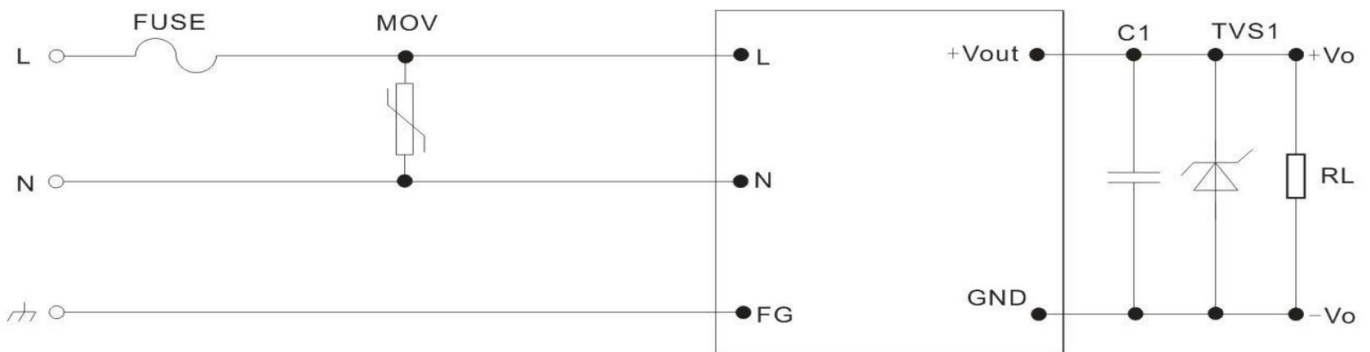


Photo 1

Output voltage	5V	9V	12V	15V	24V	48V
TVS tube recommended value	SMBJ7.0A	SMBJ12A	SMBJ20A	SMBJ20A	SMBJ30A	SMBJ64A

**Note:**

Output capacitor C1 is ceramic capacitor, to filter high frequency noise. TVS tube is a recommend component to protect post-circuit if converter fails. Recommend to external FUSE, Model:2A/250V, slow fusing. Recommend to connect with external MOV voltage dependent resistor, model:14D511K.



**2.EMC solution recommended circuit**

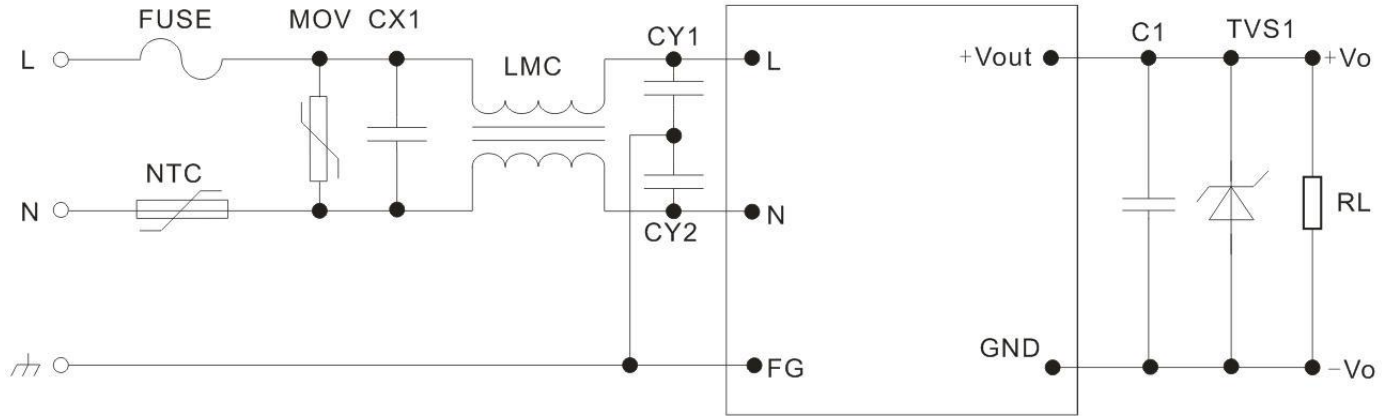


Photo 2

Component	Recommended Value	Component	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC 1	15mH, recommended to use our common mode inductor
FUSE	2A/250V, slow-fusing, necessary		
CY1、CY2	1000pF/400VAC		

**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.