

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

Certification	Model	Output Specification			Max. Capacitive Load	Ripple & Noise 20MHz (Max.)	Efficiency@ Full Load, 220Vac (TYP.)
		Power	Voltage	Current			
		(W)	Vo1(V)	Io1(mA)			
CE ROHS	FA15-220S12F2 N4	15	12	1250	800	80	84
	FA15-220S15F2 N4	15	15	1000	800	100	85
	FA15-220S24F2 N4	15	24	625	500	100	86

Note 1: Ruby electrolytic capacitor is used for internal input and output. -T is a wiring package, -TS is a rail package, and the rail width is 35mm;

Note 2: -T is a wiring package, -TS is a rail package, and the rail width is 35mm;

Note 3: The typical value of output efficiency is based on the product being aged for half an hour at full load;

Note 4: The full load efficiency (% , TYP) in the table fluctuates by ±2%. The full load efficiency is the total output power divided by the input power of the module.

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	Vo	-	±2.0	±3.0	%
Line Regulation	Nominal Load	Vo	-	-	±0.5	%
Load Regulation	Nominal input Voltage, 20%~100% load	Vo	-	-	±1.0	%
No load power consumption	Input 115VAC		-	-	0.35	W
	Input 220VAC		-	-		
Minimum load	Single Output		10	-	-	%
	Positive and negative two-way common ground output		-	-	-	
	Positive and negative isolated output		-	-	-	
Turn-on Delay Time	Nominal input voltage, full load		-	1000	-	mS
Power-off Holding Time	Input 220VAC (full load)		-	200	-	mS
Dynamic Response	Overshoot amplitude	25%~50%~25%	Overshoot amplitude(%): ≤ ±10			%
	Recovery time	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.					

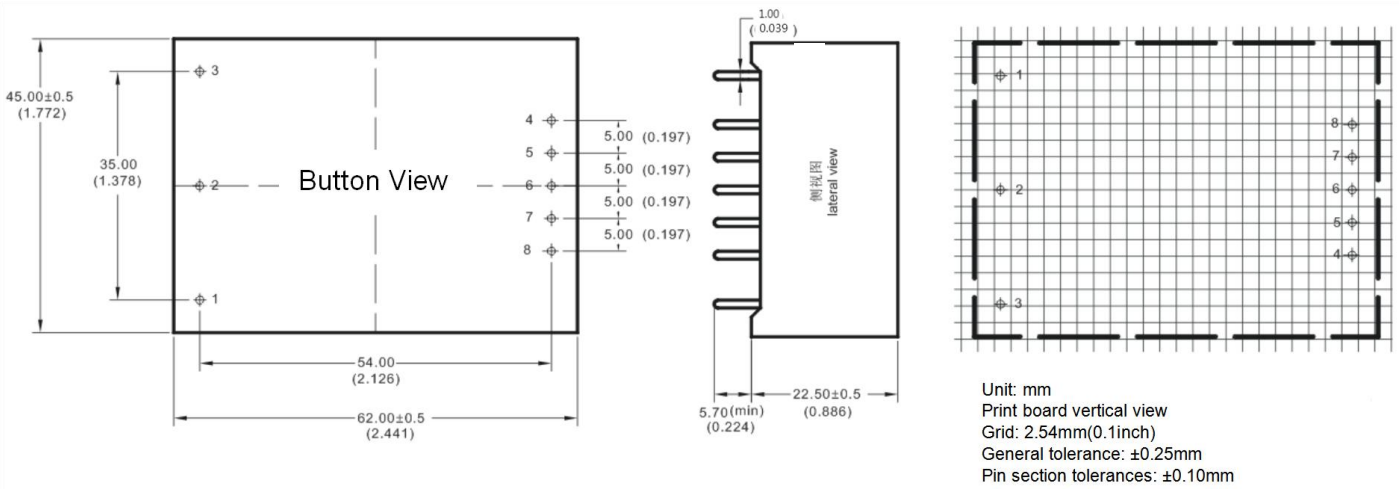
General Specifications

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			

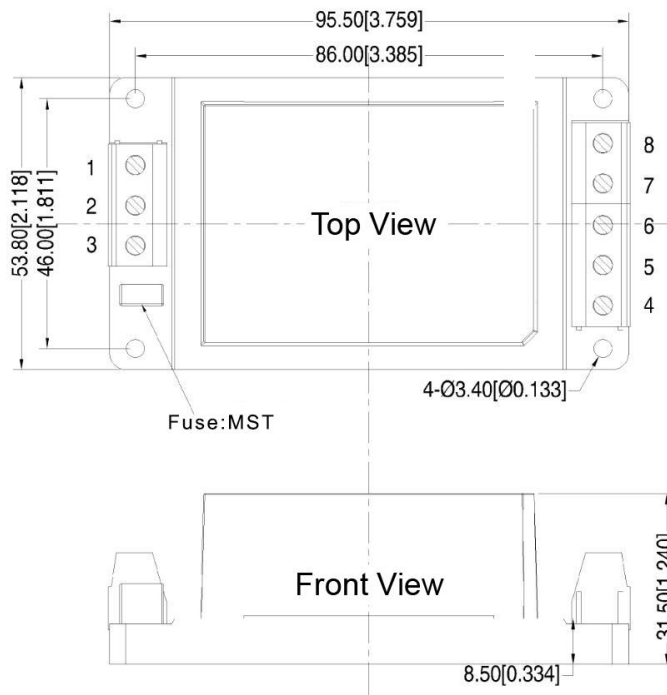
EMC Characteristics

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 (Recommended Circuit 1)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B (Recommended Circuit 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

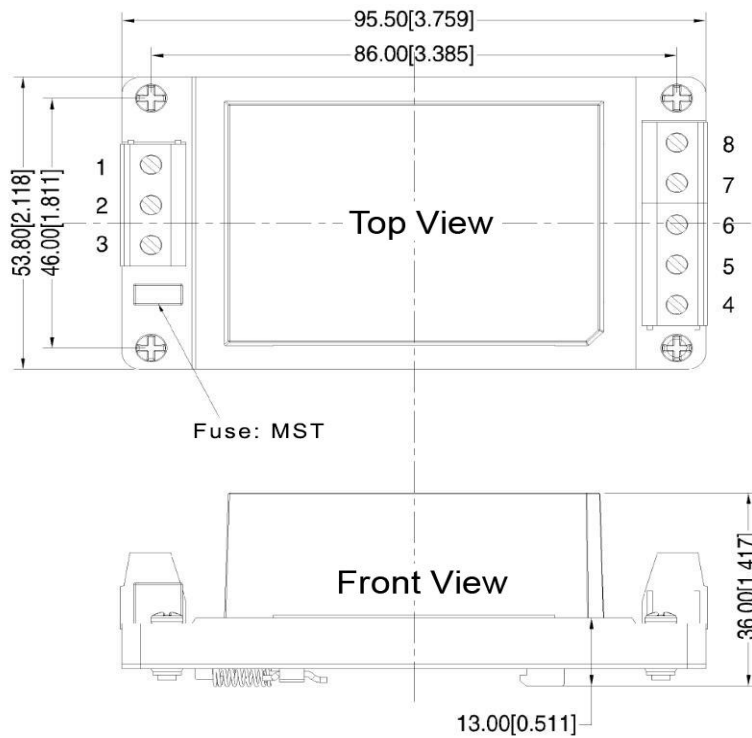
F2 Packing Dimension



F2-T Packing Dimension



F2-TS Packing Dimension



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

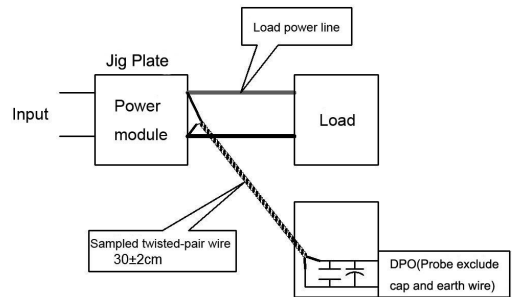
Pin-out	1	2	3	4	8
Single(S)	FG	AC(N)	AC(L)	+Vo	-Vo
Function	No PIN	Neutral input	Firewire input	output positive	output negative

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

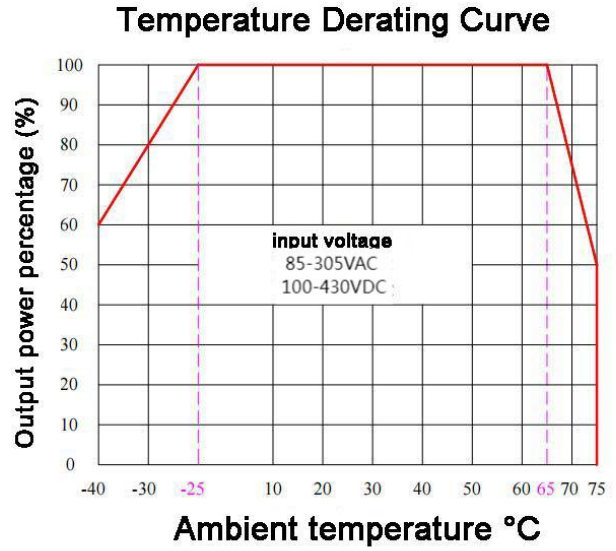
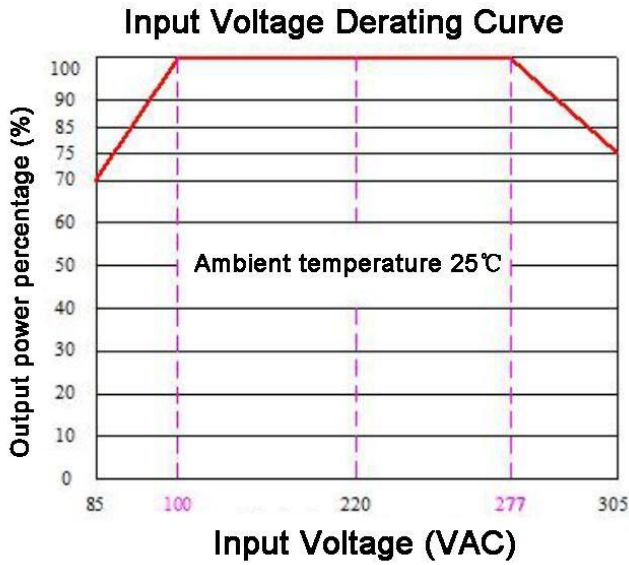
Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test Method:

- 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.
- 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.



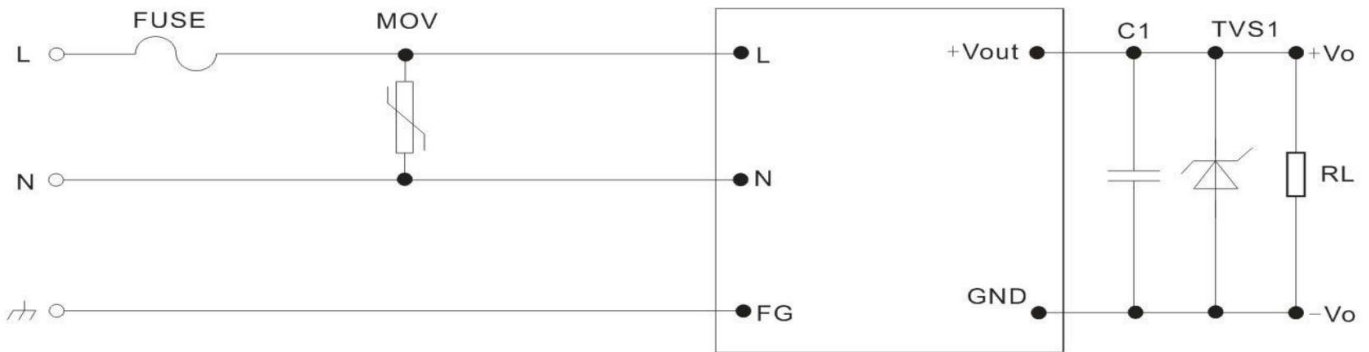
Product Characteristic Curve



- Note**
- The input voltage is 85~100VAC/277~305VAC/120~140VDC/390~430VDC, which needs to be derated based on the input voltage derating curve.
 - 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

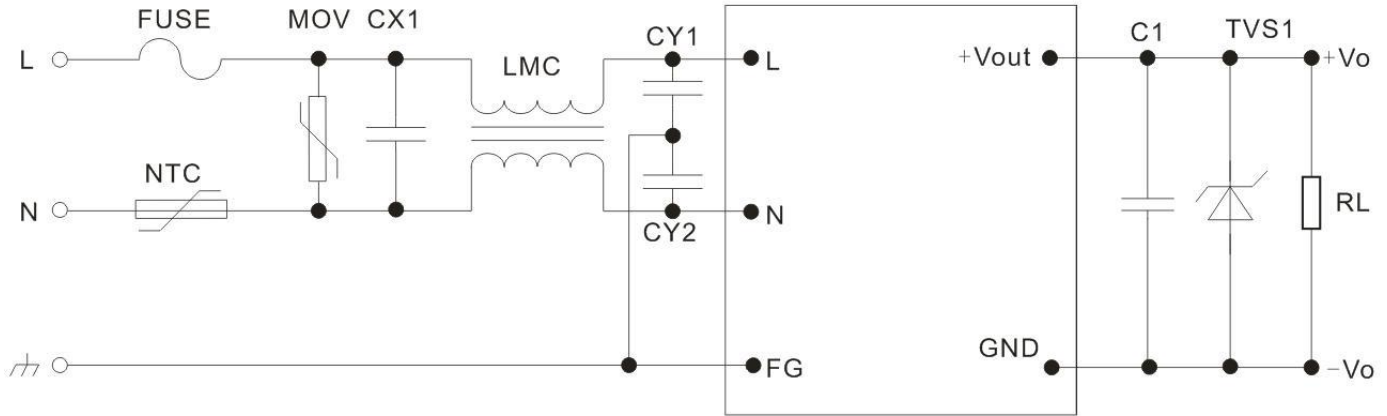


Recommended Circuit 1

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:14D561K.

2.EMC Recommended Circuit



Recommended Circuit 2

Component	Recommended Value	Component	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC1	15mH, recommended to use our common mode inductor
FUSE	2A/250V, slow-fusing, necessary	LMC2	T10*6*4C,30-150uH,12.5*12.5*7mm Magnetic core:T1064nickel-zinc
CY1、CY2	1000pF/400VAC		

Note 1:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. The product input terminal must be connected to a fuse;
3. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
5. Unless otherwise specified, the above data are measured at Ta=25°C, humidity<75%, input nominal voltage and output rated load (pure resistance load);
6. All the above index test methods are based on our company's standards;
7. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard model products will exceed the above requirements. For specific circumstances, please contact our technical personnel directly;
8. Our company can provide product customization;
9. Product specifications are subject to change without prior notice. Please pay attention to the latest manual published on our official website.

Guangzhou Aipu Electron Technology Co., Ltd

Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.

Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821

E-mail: sales@aipu-elec.com Website: <https://www.aipupower.com>