

Typical Features

- ◆ Wide input voltage range :85-265VAC/120-380VDC
- ◆ No-load power consumption $\leq 0.1W$
- ◆ Transfer Efficiency 87%(typ)
- ◆ Switching Frequency: 65KHz
- ◆ Protections of over current, short circuit, over temperature
- ◆ Isolation voltage: 4000Vac
- ◆ Meet to IEC60950/UL60950/EN60950 testing standard
- ◆ conform to CE、RoHS approval standards
- ◆ Fully enclosed plastic case, meet to UL94V-0
- ◆ PCB mounting



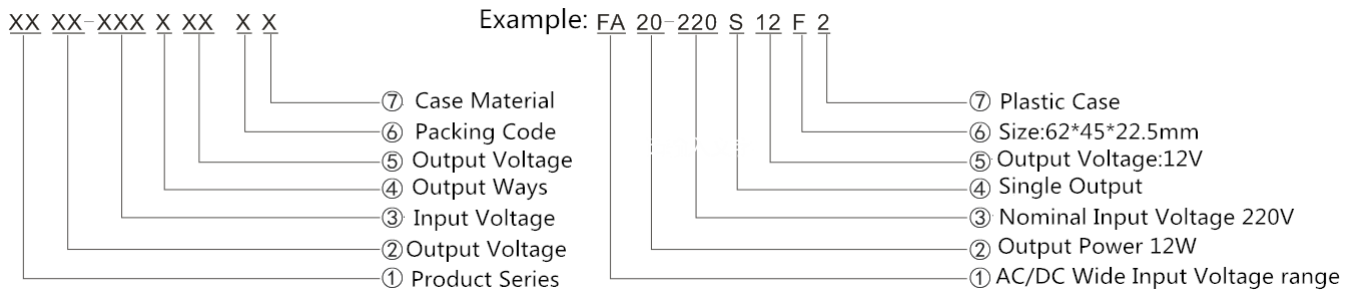
Applications

FA20-220SXXF2series----- a compact size, high efficient, triple output power converter offered by Aipu.

It features universal input voltage, taking both DC and AC input voltage, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation.It is widely used in industrial, office and civil applications.

For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

Product Nominated Method



Typical Product List

certificate	Model	Output specifications					Max. Capacitive Load	Ripple & Noise 20MHz (Max)	Efficiency @full load, 220Vac (typ)
		Power	voltage1	current1	voltage2	current2			
		(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
/	FA20-220S05F2	17.5	5	3500	-	-	8000	50	78
	FA20-220S09F2	20	9	2220	-	-	5000	80	80
	FA20-220S12F2	20	12	1666	-	-	4000	80	83
	FA20-220S15F2	20	15	1333	-	-	3000	80	84
	FA20-220S18F2	20	18	1110	-	-	2000	100	85
	FA20-220S24F2	20	24	833	-	-	1000	100	86



FA20-220S48F2	20	48	416	-	-	500	100	87
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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: ""**" is model being developing.

Note 3: The typical value of output efficiency is based on full load and burn-in after half an hour.

Note 4: The fluctuation range of full load efficiency at table(% ,TYP) is $\pm 2\%$, full load efficiency = total output power/module's input power.

Input Specification

Items	Operating conditions	Min.	Typ.	Max.	Unit
Input voltage range	AC input	85	220	265	VAC
	DC input	120	310	380	VDC
Input frequency range	-	47	50	63	Hz
Input current	115VAC	/	/	0.48	A
	220VAC	/	/	0.28	
Inrush current	115VAC	/	/	10	
	220VAC	/	/	20	
Leak current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended value	-	1A-2A/250VAC slow break fuse			
Hot plug	-	no			
Remote	-	no			

Output Specification

Items	Operating conditions	Min.	Typ	Max	Unit	
Voltage Accuracy	Any Load, full voltage range	Vo1	-	± 1.0	± 2.0	%
		Vo2	-	-	-	%
Line Regulation	Nominal load	Vo1	-	-	± 0.5	%
		Vo2	-	-	-	%
Load Regulation	Nomina input voltage 20%~100% load	Vo1	-	-	± 1.0	%
		Vo2	-	-	-	%
No-load power consumption	Input 115VAC	-	-	0.1	W	
	Input 220VAC	-	-			
Minimum load	Single output	0	-	-	%	
	Plus-minus dual common-ground output	-	-	-	%	

	Plus-minus dual isolation output	-	-	-	
Turn on delay time	Nominal input voltage, full load	-	100	-	mS
Power-off protection time	Input 115VAC (full load)	-	16	-	mS
	Input 220VAC (full load)	-	85	-	
Dynamic response	25%~50%~25% 50%~75%~50%	Overshoot amplitude (%) : $\leq \pm 10$			%
		Recovery time (mS) : ≤ 5.0			mS
Output overshoot	Full input voltage range	$\leq 10\%V_o$			%
Short-circuit protection		Long-term short circuit, self-recovery			Hiccup
Drift coefficient	-	-	$\pm 0.03\%$	-	%/°C
Overcurrent protection	Full input voltage range	$\geq 120\% I_o$ self-recovery			Hiccup
Overvoltage protection	Output 5.0VDC	≤ 7.5			VDC
	Output 12VDC	≤ 18			
	Output 15VDC	≤ 20			
	Output 24VDC	≤ 30			
Ripple & Noise	-	-	50	100	mV
	note: the test method of ripple and noise is double-stranded line test method. See the specific test method and matching method in the back (ripple & noise test instructions).				

General Specification

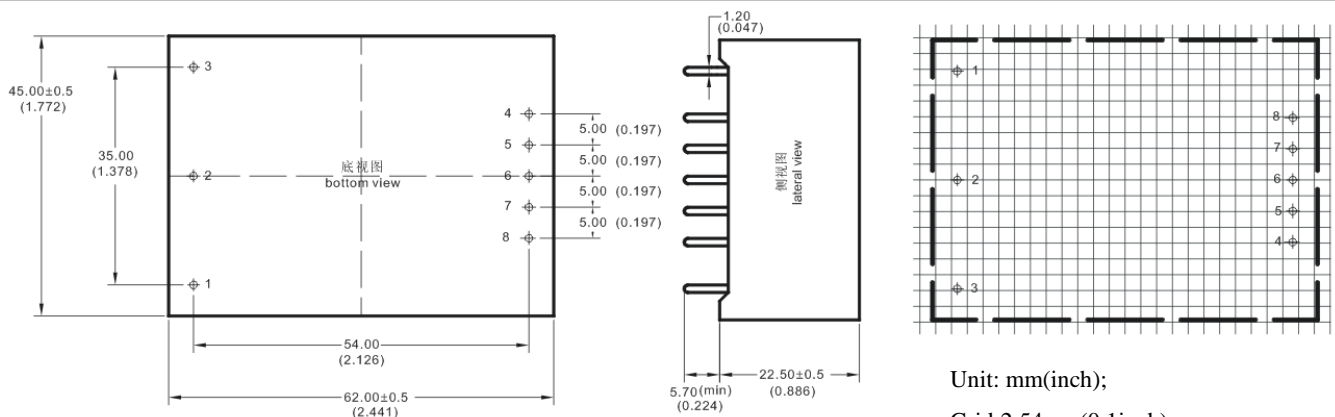
Items	Operating conditions	Min	Typ	Max	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-40	-	+75	°C
Storage Temperature	-	-40	-	+85	
Welding temperature	Wave soldering	$260 \pm 4^\circ\text{C}$, time 5-10S			
	Manual welding	$360 \pm 8^\circ\text{C}$, time 4-7S			
Relative humidity	-	10	-	90	%RH
Isolation voltage	Input to output, test 1min, leakage current $\leq 5\text{mA}$	4000	-	-	VAC

Insulation resistance	input to output, test voltage as DC500V	100	-	-	MΩ
Standard of security	-	EN60950、IEC60950			
Vibration	-	10-55Hz,10G,30Min,alongX,Y,Z			
Security level	-	CLASS II			
Class of Case Material	-	UL94V-0			
MTBF	-	MIL-HDBK-217F@25℃>300,000H			

EMC Characteristics

Items		Sub-items	Test standard	Judgement standard		
EMC	EMI	CE	CISPR22/EN5503	CLASS B		
		RE	CISPR22/EN5503	CLASS B		
	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (photo1)	
		CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (photo1)	
		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, short interruptions and voltage variations immunity	IEC/EN61000-4-1 1	0%~70%	Perf.Criteria B	

Dimension



Unit: mm(inch);
 Grid:2.54mm(0.1inch);
 General tolerances: ±0.25mm
 General Pin tolerances: ±0.10mm

Packing Code	L x W x H	
F2	62.0 x 45.0 x 22.5 mm	2.441 x 1.772 x 0.885inch

Pin Definition

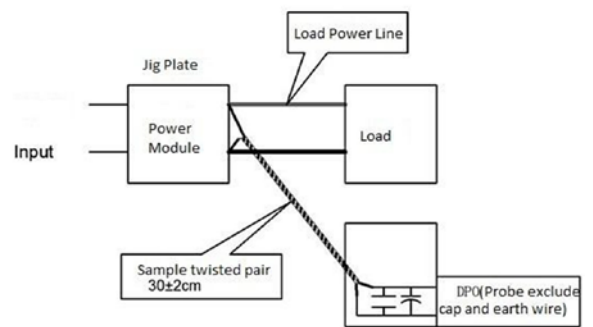
Pin	1	2	3	4	8
single (S)	FG	AC(N)	AC(L)	+Vo	-Vo

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

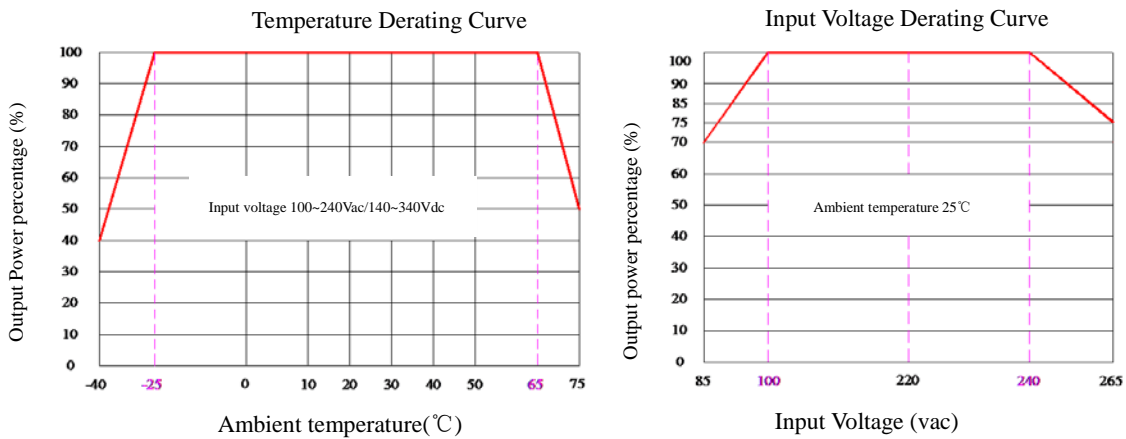
Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF 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 is 85~100VAC/240~265VAC/120~140VDC/340~380VDC, should be used on the basis of the input voltage drop cure.

note2:the product is suitable to use in natural air cooling environment.if used in enclosed environment, please contact us.

Typical application circuit diagram and EMC Recommended parameter

1. Typical application circuit diagram

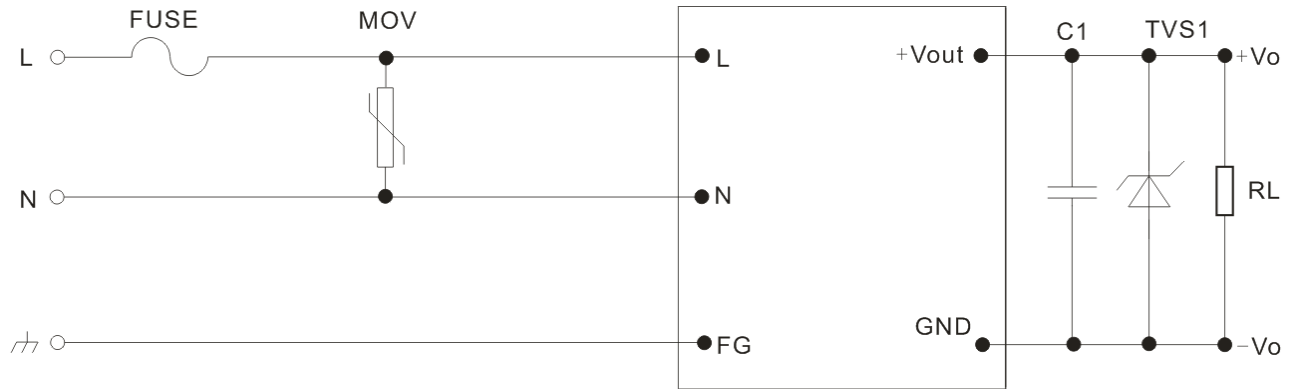


Photo 1

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

Note:

Output capacitance C1 is ceramic capacitance, removing high frequency noise. TVS tube protects the back circuit when the module is abnormal.it is recommended to use. External FUSE is recommended. Model: 2A/250V slow fusing. Recommended to connect external MOV varistor , model: 14D511K.

2. EMC recommended circuit diagram

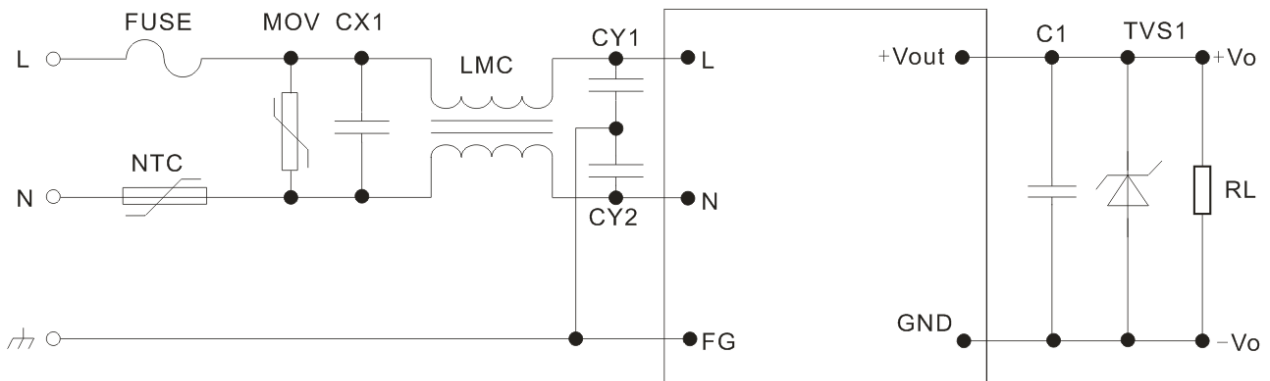


Photo 2



Type	Recommendation	Type	Recommendation
MOV	14D511K	NTC	5D-9
CX1	0.1 μ F/275VAC	LMC	15mH, it is recommended to use the common-mode inductor provided by AIPU.
FUSE	2A/250V, slow fuse, external connection is needed.		
CY1、CY2	1000pF/400VAC		

Note:

- 1、 The product should be used within the scope of specifications, otherwise it will cause permanent damage to the product.
- 2、 The product input terminal must be insured.
- 3、 If the product works below the minimum required load, it cannot be guaranteed to meet all the performance indicators in this manual.
- 4、 If the product works beyond the product load, it cannot be guaranteed to meet all the performance indicators in this manual.
- 5、 All data expect where noted about, are measured in the environment of Ta=25℃, humidity<75%, with the nominal input voltage and output rated load(pure resistive load).
- 6、 All the test methods above are accordance with the company standards.