AC/DC Converter
FA15-220H05XXXXF2D4 Series

Typical Features

- ◆ Wide input voltage range:85-265VAC/120-380VDC
- ◆ No-load power consumption≤0.3W
- ◆ Transfer efficiency (typ. 82%)
- ◆ Switching frequency: 65KHz
- ◆ Output Short Circuit, Over Current, Over Voltage, Over Temp Protection
- ◆ Isolation voltage: 4000Vac
- ◆ Plastic case, meets flammability UL94 V-0
- ◆ PCB mounting

Application Field

FA15-220HXXXXXXF2D4 Series**----- *a compact size, high efficient power converter offered by Aipu. It features universal input voltage, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. It widely used in power, industrial, instrument, smart home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.*

Typical Product List

Part No.	Output Specification							Max. Capacitive Load	Ripple& Noise 20MHz (Max)	Efficiency @ Full Load 220Vac (Typical)
	Power	Vo1	Io1	Vo2	Io2	Vo3	Io3			
	(W)	(V)	(mA)	(V)	(mA)	(V)	(mA)	u F	mVp-p	%
FA15-220H050505F2D4	15	5	2000	5	500	-5	500	11000/2200	80/100	80
FA15-220H051212F2D4	15	5	2000	12	200	-12	200	11000/800	80/100	81
FA15-220H051515F2D4	15	5	1800	15	200	-15	200	6000/400	80/100	82
FA15-220H052424F2D4	15	12	1000	12	125	-12	125	1000/470	100/100	83

Note 1: For more items, please contact with our sales team.

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	265	VAC
	DC Input	120	310	380	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.30	A
	220VAC	-	-	0.20	

Surge Current	115VAC	-	-	20	
	220VAC	-	-	30	
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	Vo1	-	±1.0	±2.0	%
			Vo2/Vo3	-	±5.0	±10	%
Line Regulation		Nominal Load	Vo1	-	-	±0.5	%
			Vo2/Vo3	-	-	±1.5	%
Load Regulation		Nominal input Voltage 20%~100% load	Vo1	-	-	±2.0	%
			Vo2/Vo3	-	-	±5.0	%
No load power consumption		Input 115VAC		-	-	0.3	W
		Input 220VAC		-	-		
Minimum load		-		10	-	-	%
Turn-on Delay Time		Nominal input voltage, full load		-	1000	-	mS
Power-off Holding Time		Input 115VAC (full load)		-	80	-	mS
		Input 220VAC (full load)		-	100	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%					%
	Recovery time						mS
Output Overshoot		Full input voltage range		≤10%Vo			%
Short Circuit Protection				Continuous, Self-recovery			Hiccup
Drift Coefficient		-		-	±0.03%	-	%/℃
Over Current Protection		Input 220VAC		⩾130% Io, Self-recovery			Hiccup
Over Voltage Protection		Full input voltage range	Vo1 5V	⩽7.5			VDC
			Vo1 12V	≤18			
Ripple & Noise		-		-	50	100	mV
		Note: The ripple and noise test method adopts the twisted pair test method. The specific test method and matching can be seen later (Ripple & Noise Test Instructions).					

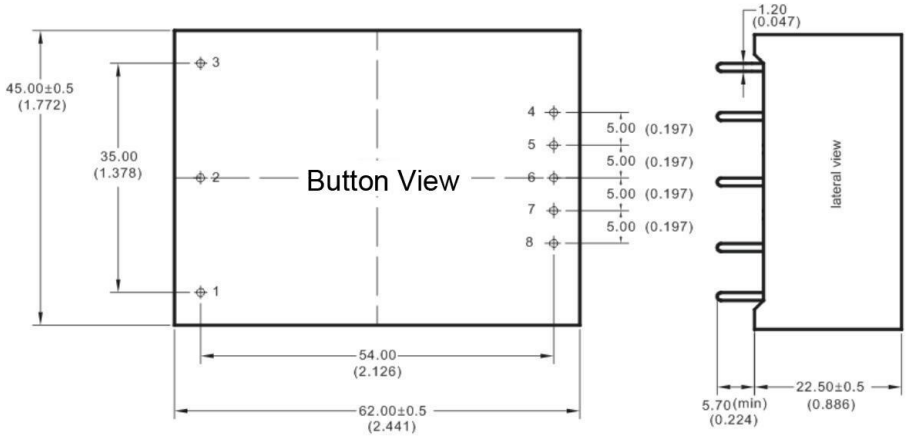
General Specifications

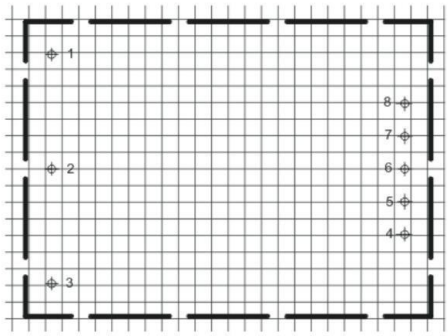
Item	Operating Condition		Min.	Typ.	Max.	Unit
Switching Frequency	-		-	65	-	KHz
Operating Temperature	-		-40	-	+70	℃
Storage Temperature	-		-40	-	+85	
Soldering Temperature	Wave-soldering		260±4℃, timing 5-10S			
	Manual-soldering		360±8℃, timing 4-7S			
Relative Humidity	-		10	-	90	%RH
Isolation Voltage	Input-Output	Test 1min, leakage current ≤5mA	4000	-	-	VAC
	Input-FG		2000			
	Vo1-Vo2/Vo3		500			
Insulation Resistance	Input-Output@DC500V		100	-	-	MΩ
Safety Standard	-		EN62368、IEC62368			
Vibration	-		10-55Hz,10G,30Min, along X,Y,Z			
Safety Class	-		CLASS Ⅰ			
Class of Case Material	-		UL94 V-0			
MTBF	-		MIL-HDBK-217F@25℃＞300,000H			

EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (Recommended Circuit 2)
		RE	CISPR22/EN55032	CLASS B (Recommended Circuit 2)
	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B (Recommended Circuit 2)
		Surge	IEC/EN61000-4-5	±1KV Perf.Criteria B (Recommended Circuit 2)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (Recommended Circuit 2)
		Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

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

Pin Definition

Pin-out	1	2	3	4	5	6	7	8
Triple(H)	FG	AC（N）	AC（L）	+Vo2	COM	-Vo3	+Vo1	-Vo1

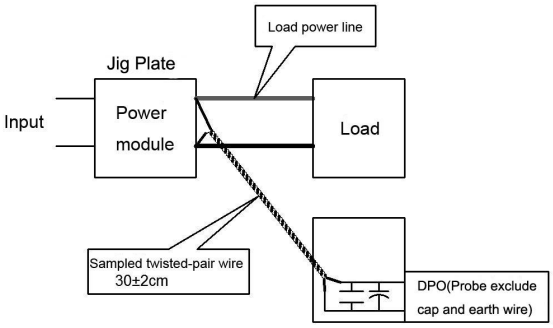
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

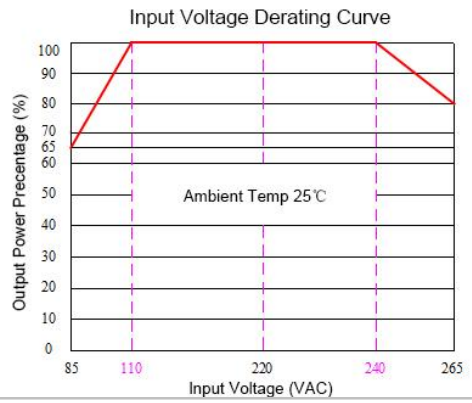
Test Method:

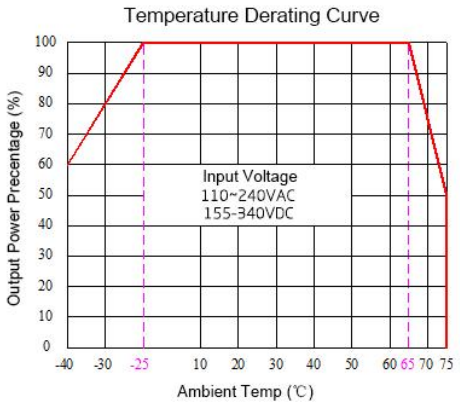
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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



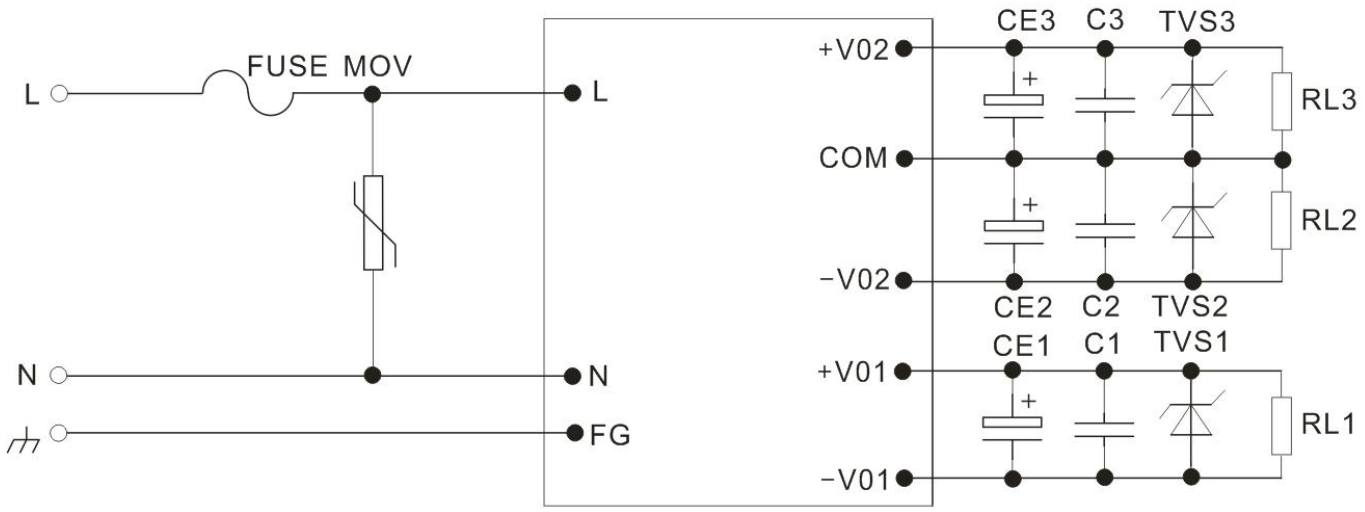


Note

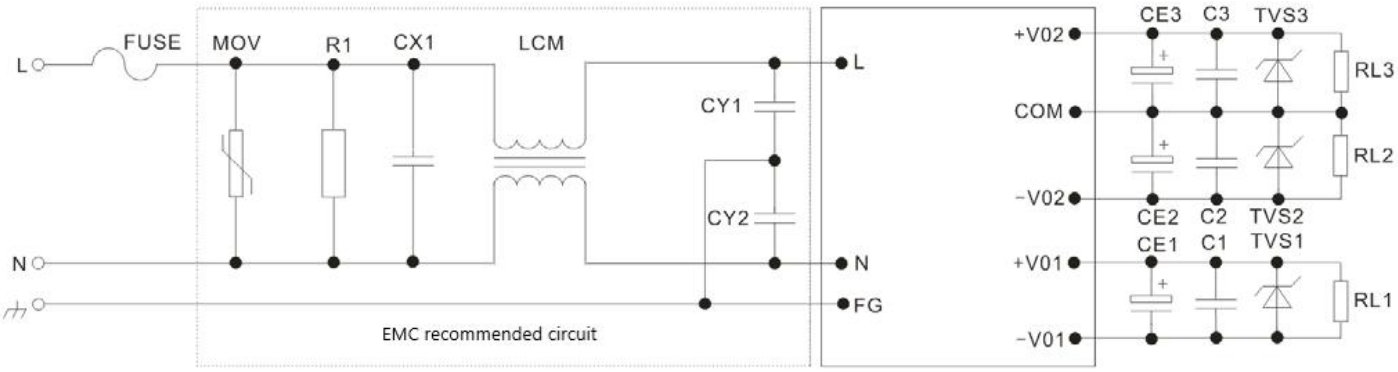
1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~110VAC /240~265VAC /120~155VDC /340~380VDC.

2: Our 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



Recommended Circuit 1



Recommended Circuit 2

Note 1:

1) FUSE, recommended 2A~250Vac slow fusing, block shape;
2) LMC is common mode inductor, recommend 30mH above;
3) CX1 is X capacitor, recommend 0.22uF/275V;
4) C1, C2 choose high-frequency and low-impedance electrolytic capacitor, capacitance smaller than capacitive load, and withstand voltage is 1.5 times above the output voltage.
5) C3, C4 choose 0.1uF ceramic chip capacitors, withstand voltage is 1.5 times above the output voltage;
6) TVS1, TVS2 is TVS tube,; 5V output recommend: SMBJ7.0A, 9V output recommend: SMBJ12.0A, 12V output recommend: SMBJ20.0A, 15V output recommend: SMBJ20.0A, 24V output recommend: SMBJ30.0A, 48V output recommend: SMBJ64.0A.

Note 2:

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℃, 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