



### Typical Features

- ◆ Wide input voltage range: 85-305VAC/120-430VDC
- ◆ No load power consumption ≤ 0.3W
- ◆ Transfer efficiency (typ. 82%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short Circuit, over current
- ◆ Isolation: 4000Vac
- ◆ Meet IEC60950/UL60950/EN60950 Standard
- ◆ 6 side shield plastic case, meet UL94 V-0
- ◆ PCB mounting



### Application Field

**FA10-220DXXE2D4** Series----- a compact size, high efficient, meet CE standard 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, good EMC performance, meet EN55032, IEC/EN61000 standard. It widely used in power, industrial, instrument and smart home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

### Typical Product List

Certificate	Model	Output Specification					Max. Capacitive Load	Ripple & Noise 20MHz (TYP.)	Efficiency@ Full Load, 220Vac (TYP.)
		Power	Voltage 1	Current 1	Voltage 2	Current 2			
		(W)	Vo1 (V)	Io1 (mA)	Vo2 (V)	Io2 (mA)			
/	*FA10-220D05E2D4	10	5	1000	5	1000	1000/1000	80/80	78
	*FA10-220D09E2D4	10	9	555	9	555	470/470	80/80	80
	FA10-220D12E2D4	10	12	416	12	416	470/470	100/100	82
	*FA10-220D15E2D4	10	15	333	15	333	330/330	120/120	82
	*FA10-220D24E2D4	10	24	208	24	208	220/220	150/150	82

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 under developing.

Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 4: 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	/	/	0.2	A
	220VAC	/	/	0.15	



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	Vo1	-	±2.0	±3.0	%
		Vo2	-	±2.0	±4.0	%
Line Regulation	Nominal Load	Vo1	-	-	±0.5	%
		Vo2	-	-	±1.5	%
Load Regulation	Nominal input voltage 20%~100% load	Vo1	-	-	±2.0	%
		Vo2	-	-	±3.0	%
No load power consumption	Input 115VAC		-	-	0.3	W
	Input 220VAC		-	-		
Minimum load	Single Output		0	-	-	%
	Dual output common grounded		-	-	10	%
	Dual output isolated		-	-	10	
Turn-on Delay Time	Nominal input voltage (full load)		-	1000	-	mS
Power-off Holding Time	Input 115VAC(full load)		-	150	-	mS
	Input 220VAC(full load)		-	200	-	
Output Dynamic Characteristics	25%~50%~25%		Overshoot range (%) : ≤±5.0			%
	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		≥120% 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@DC500 V	100	-	-	MΩ
Safety Standard	-	EN60950、IEC60950			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS II			
Class of Case Material	-	UL94V-0 Class			
MTBF	-	MIL-HDBK-217F@25°C > 300,000H			

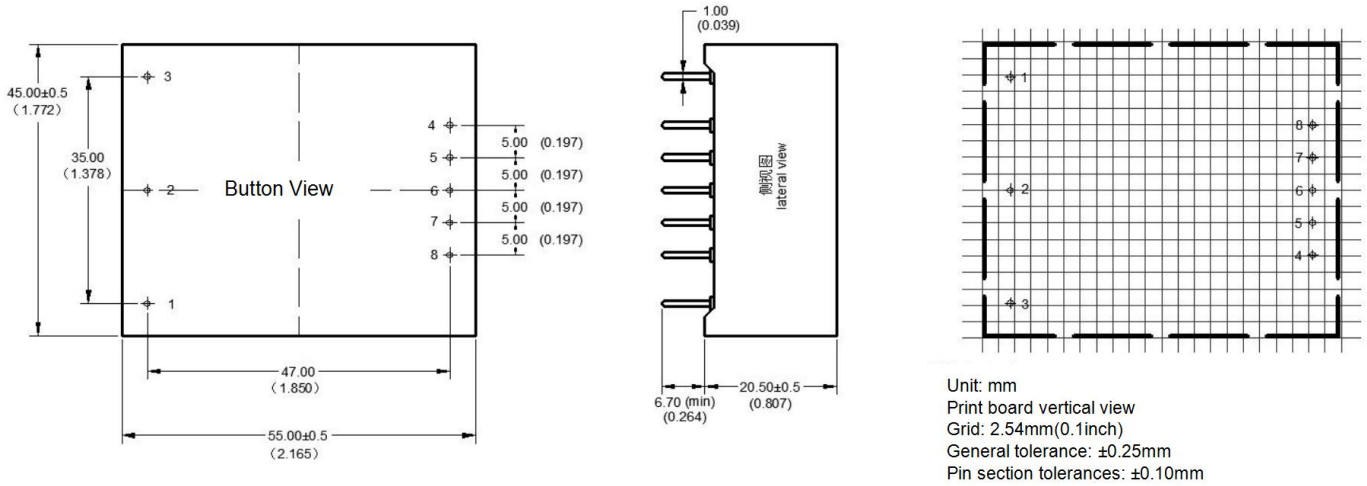
### EMC Characteristics

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, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%~70% Perf.Criteria B

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### Packing Dimension



Packing Code	L x W x H	
E2	55 x 45.0 x 20.5 mm	2.165 × 1.772 × 0.807inch

### Pin Definition

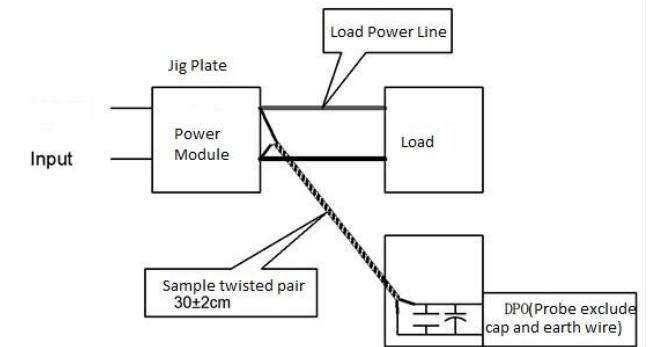
Pin-out	1	2	3	4	6	8
Dual (D)	FG	AC (N)	AC (L)	+Vo2	COM	-Vo1

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)

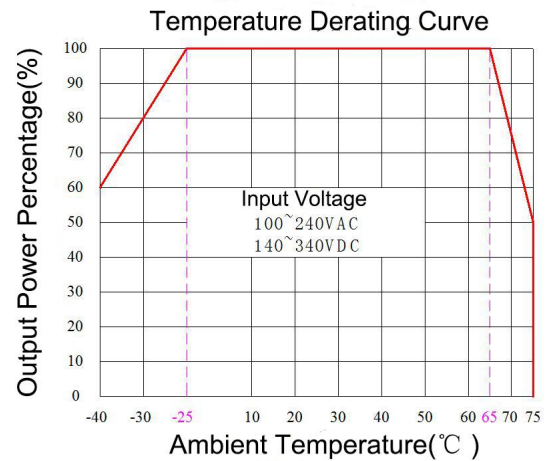
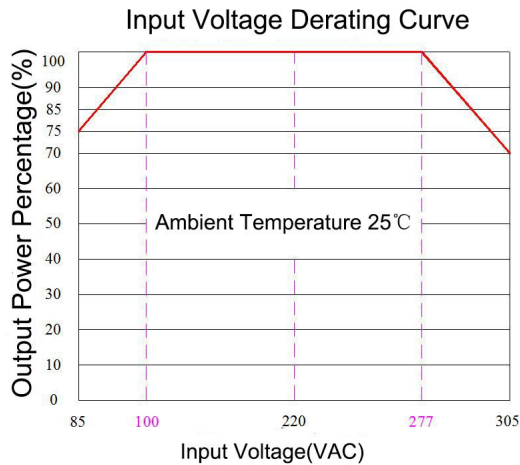
Test Method:

(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 $\pm$ 2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



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### 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 Circuit and Recommended Specification

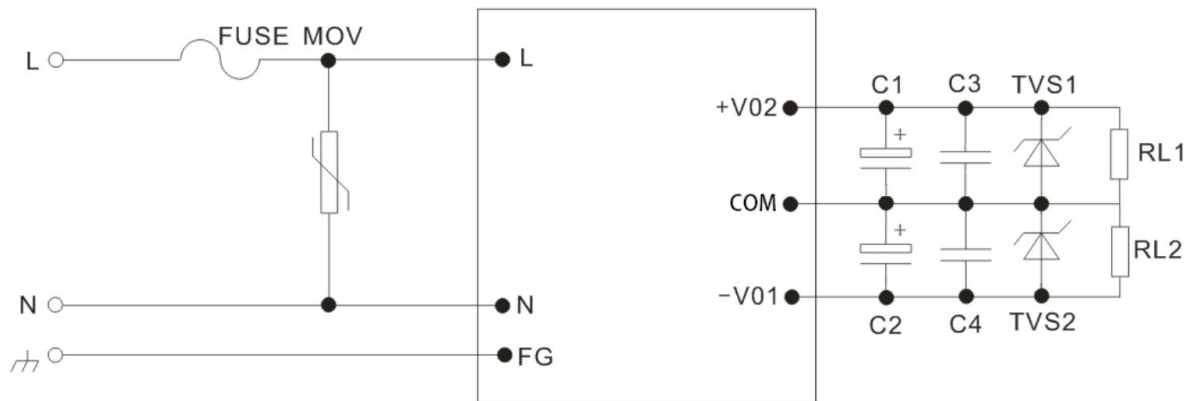


Photo 1

#### Note 1:

- 1) FUSE, recommend to use 2A~250Vac, slow fusing, block form;
- 2) MOV is voltage dependent resistor, recommended to model 10D511K;
- 3) C1, C2 choose high frequency low impedance electrolytic capacitor, the capacitance lower than capacitive load, withstand voltage value is above 1.5 times more than output voltage;
- 4) C3, C4 choose 0.1uF ceramic chip capacitor, withstand voltage value is above 1.5 times more than output voltage;
- 5) TVS1, TVS2 is TVS tube: 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.



## 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  $T_a=25^{\circ}\text{C}$ , 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.