

Typical Features

- ◆ Wide input voltage range: 85-305VAC/100-430VDC
- ◆ No load power consumption ≤ 0.3W
- ◆ Transfer efficiency (typ. 82%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short Circuit, over current, over voltage, over temperature
- ◆ Isolation Voltage 4000Vac
- ◆ Meet IEC62368/UL62368/EN62368 Standard
- ◆ 6 side shield plastic case, meet UL94 V-0
- ◆ With CE/RoHS certificate
- ◆ PCB mounting



Application Field

FA10-220SXXE2D4 Series----- a compact size, high efficient, pass 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			
		(W)	Vo1(V)	Io1(m A)			
CE RoHS	FA10-220S3V3E2D4	5	3.3	2000	4000	120	73
	FA10-220S05E2D4	7.5	5	1500	4000	100	73
	FA10-220S09E2D4	10	9	1111	4000	100	79
	FA10-220S12E2D4	10	12	833	2000	120	82
	FA10-220S15E2D4	10	15	667	2000	120	82
	FA10-220S24E2D4	10	24	416	500	150	82
	FA10-220S28E2D4	10	28	360	400	150	82

- Note 1: Suffix "-T" for chassis mounting, "-TS" for DIN-Rail mounting, DIN-Rail width is 35mm;
- Note 2: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.
- 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.
- Note 5: Ripple and Noise is tested by Twisted Pair method, please check details at back.
- Note 6: FA10-220S05E2D4 the lowest input voltage is 88Vdc, and could work at -40℃ ambient temperature, when input 60VAC(85VDC), it could start normally with 70% load.



Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	305	VAC
	DC Input	100	310	430	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	/	/	0.22	A
	220VAC	/	/	0.12	
Surge Current	115VAC	/	/	10	
	220VAC	/	/	20	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended value	-	3.15A/250VAC slow-fusing			
Input Terminal Capacitor CE1,CE2	-	10uF/450V			
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	-	-	±1.0	%
Load Regulation	Nominal input voltage 20%~100% load	-	-	±1.0	%
No load power consumption	Input 115VAC	-	-	0.3	W
	Input 220VAC	-	-		
Minimum load	Single Output	3.3v O/P 10	-	-	%
		Other O/P 0	-	-	
Turn-on Delay Time	Nominal input voltage (full load)	-	600	-	mS
Power-off Holding Time	Input 115VAC(full load)		20		mS
	Input 220VAC(full load)	--	60	-	
Output Dynamic Characteristics	25%~50%~25%	-10.0	-	+10.0	%
	50%~75%~50%	-5.0	-	+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	Input 220VAC	≥120% Io, Self-recovery			Hiccup



Over voltage protection	Output 3.3VDC	≤5.0	VDC
	Output 5.0VDC	≤7.5	
	Output 9.0VDC	≤13.5	
	Output 12VDC	≤18	
	Output 15VDC	≤20	
	Output 24VDC	≤30	

General Specifications

Item		Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency		-	-	65	-	KHz
Operating Temperature		-	-40	-	+75	℃
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
Insulation Resistance	Input-Output	DC500V	100	-	-	MΩ
Safety Standard		-	EN62368、IEC62368			
Vibration		-	10-55Hz,10G,30Min, along X,Y,Z			
Safety Class		-	CLASS II			
MTBF		-	MIL-HDBK-217F@25℃ > 300,000H			

Material Characteristics

Case Material		Black flame-retardant heat-resistant plastic (UL94 V-0)			
Packing Dimension	Horizontal package	55.0X45.0X21mm			
Product Weight		70g (TYP)			
Cooling Method		Natural air cooling			

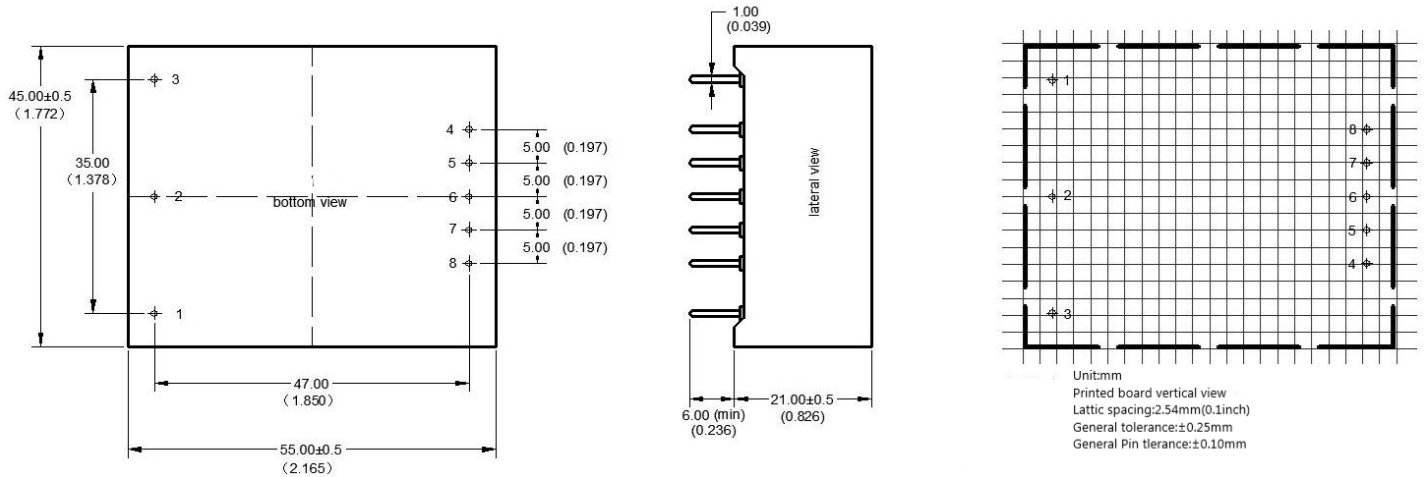
EMC Characteristics

Total Item		Sub Item	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (see recommended circuit Photo 1)
		RE	CISPR22/EN55032	CLASS B (see recommended circuit Photo 1)
	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)

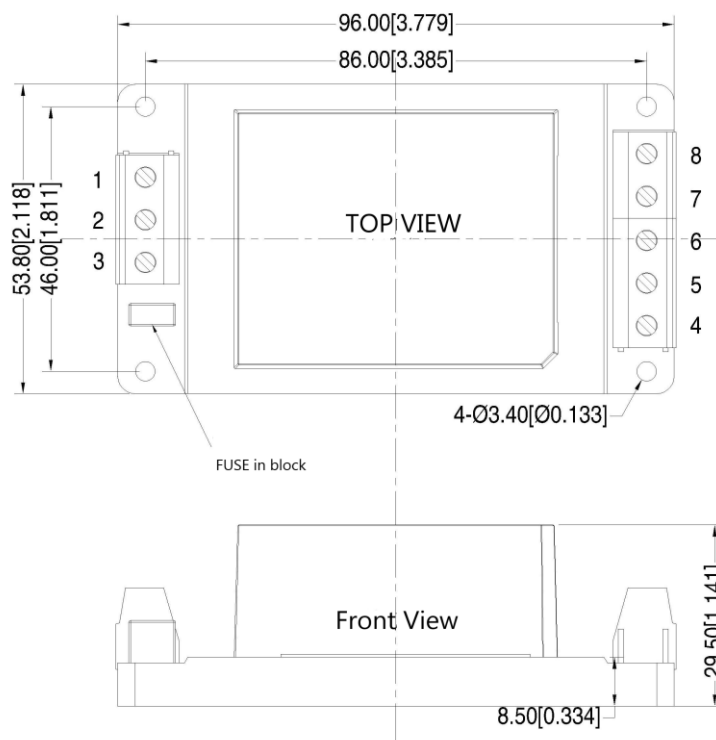


	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV / line to ground ±4KV Perf.Criteria B (see recommended circuit Photo 1)
	EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
	Voltage dips, and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

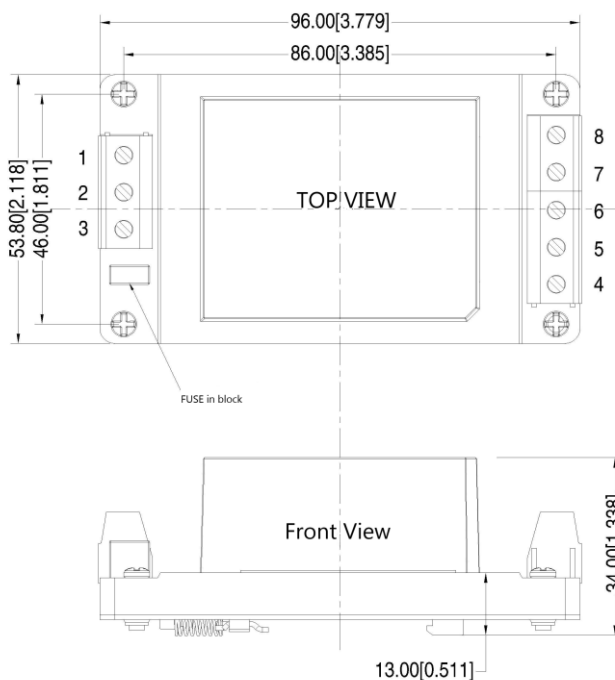
E2 Packing Dimension



E2-T Packing Dimension



E2-TS Packing Dimension



Packing Code	L x W x H	
E2	55.0 x 45.0 x 21 mm	2.165 x 1.772 x 0.827inch
E2-T	96.0 x 53.8 x 29.5 mm	3.779 x 2.118 x 1.161inch
E2-TS	96.0 x 53.8 x 34.0 mm	3.779 x 2.118 x 1.338inch

Pin Definition

Pin-out	1	2	3	4	5.6.7	8
Single(S)	FG	AC(N)	AC(L)	+Vo	NP	-Vo

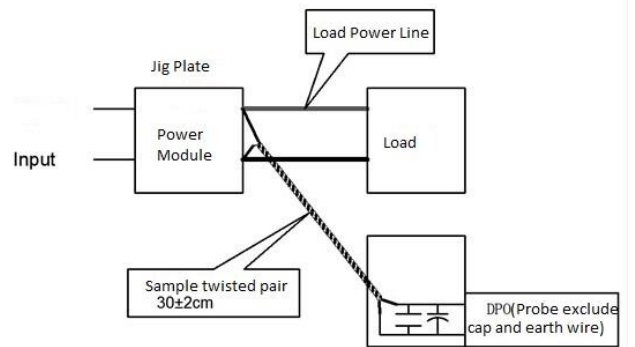
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

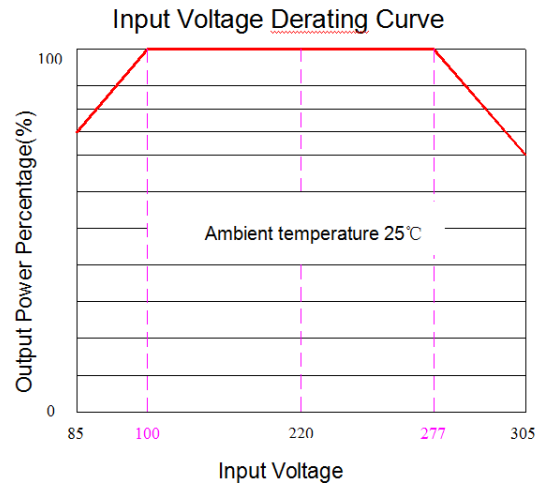
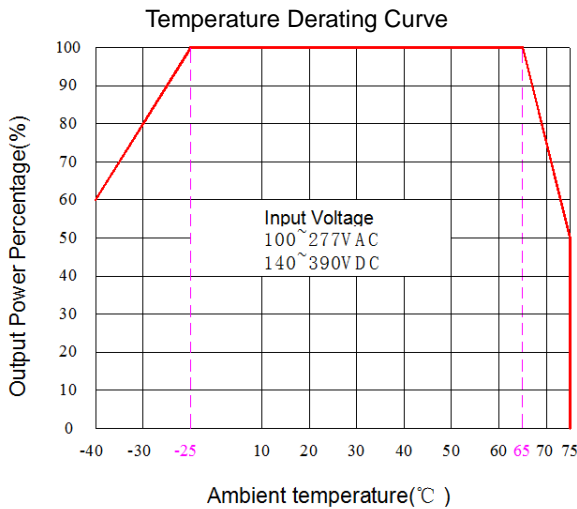
Test Method:

(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 85~100VAC/ 277~305VAC/ 100~140VDC/ 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

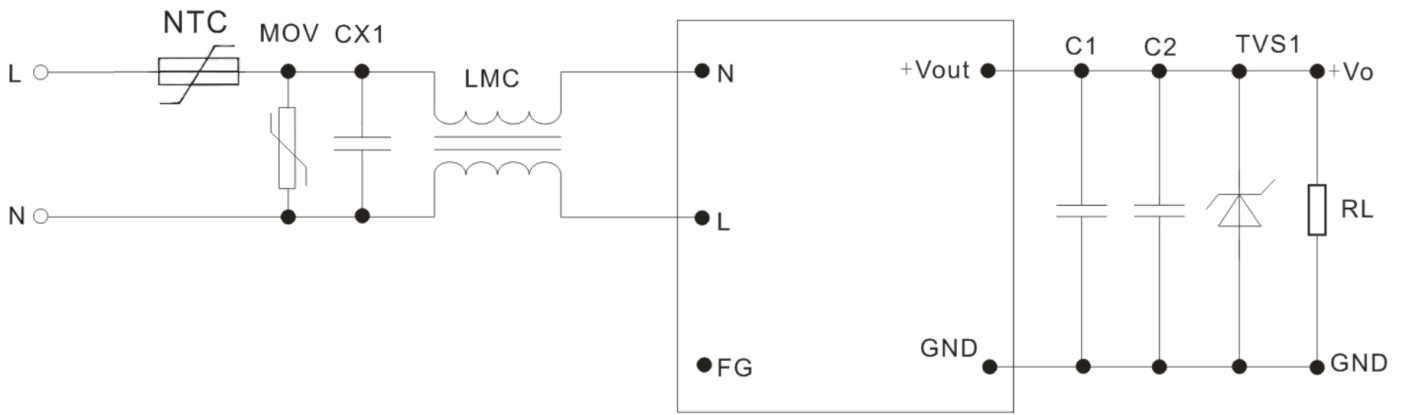


Photo 1

Note 1:

- 1) NTC is thermistor, recommend to use 5D-11;
 - 2) MOV is voltage dependent resistor, recommended to model 10D561K;
 - 3) CX1 is X capacitor, recommend to use 0.22uF/275Vac;
 - 4) LCM is Common mode inductor, recommended to 30mH;
 - 5) C1 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;
 - 6) C2 choose 0.1uF ceramic chip capacitor, withstand voltage value is above 1.5 times more than output voltage;
- TVS1 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 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.