AC/DC Converter
FA15-220SXXY2N3 Series

Typical Features

- ◆ Wide input voltage range:85-305VAC/120-430VDC
- ◆ No-load power consumption≤0.2W
- ◆ Transfer efficiency: 87%(typ.)
- ◆ Switching frequency: 65KHz(typ.)
- ◆ Protection: Short Circuit, Over Current, Over Voltage
- ◆ Isolation voltage: 4000VAC
- ◆ Meet IEC62368/UL62368/EN62368 test standard
- ◆ With CE, RoHS certificate
- ◆ Safety Class: CLASS II

Application Field

FA15-220SXXY2N3 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 industrial, office power and home applications.*

Typical Product List

Certificate	Part No.	Output Specification			Max. Capacitive Load (MAX)	Ripple& Noise 20MHz (MAX)	Efficiency @ Full Load 220Vac (Typical)
		Power	Voltage	Current			
		(W)	Vo(V)	Io(m A)	uF	mVp-p	%
CE/RoHS	FA15-220S05Y2N3	15	5	3000	5000	80①	82
CE/RoHS	FA15-220S12Y2N3	15	12	1250	2000	200	86
-	FA15-220S12V5Y2N3	15	12.5	1200	2000	200	86
-	FA15-220S12V8Y2N3	15	12.8	1172	2000	200	86
CE/RoHS	FA15-220S15Y2N3	15	15	1000	1000	200	87
CE/RoHS	FA15-220S24Y2N3	15	24	625	600	240	86

Note 1: The typical value of output efficiency is based on the product being aged for half an hour at full load.

Note 2: Due to the instrument error of the test equipment, the minimum efficiency is defined as -2% of the typical value.

Note 3: The test method for ripple and noise adopts the twisted pair test method. For specific test methods and matching, please see the following (Ripple & Noise Test Instructions).

Note 4: ①FA15-220S05Y2N3 requires the use of peripheral circuits to reduce ripple. For specific peripheral parameters, see Recommended Circuit 2.

Note 5: -T is a wiring package, -TS is a guide rail package, and the guide rail width is 35mm;

Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	220	305	VAC

	DC Input	120	300	430	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	115VAC	-	-	0.3	A
	230VAC	-	-	0.2	
Surge Current	115VAC	-	-	16	
	220VAC	-	-	30	
No Load Consumption	Input 115VAC	-	-	0.2	W
	Input 230VAC	-			
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
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	±3.0	%
Line Regulation	Nominal Load	-	-	±0.5	%
Load Regulation	Nominal input Voltage 20%~100% load	-	-	±5.0	%
Minimum load	Single Output	0	-	-	%
Turn-on Delay Time	Input 220VAC (full load)	-	1000	-	mS
Power-off Holding Time	Input 220VAC (full load)	-	100	-	mS
Dynamic Response	25%~50%~25%	-5.0	-	+5.0	%
	50%~75%~50%	-	-	+5.0	mS
Output Overshooting	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	Output 5VDC	≤7.5			VDC
	Output 12VDC	≤18			
	Output 15VDC	≤20			
	Output 24VDC	≤30			

General Specifications

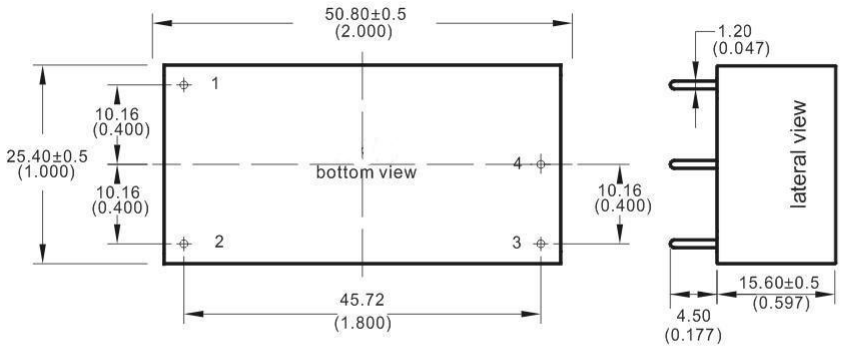
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	61	65	73	KHz
Operating Temperature	-	-40	-	+75	℃

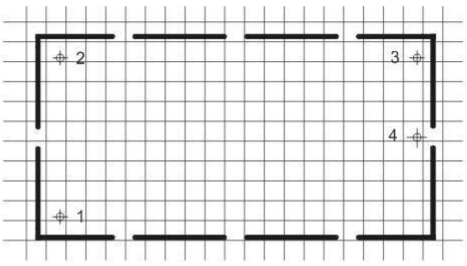
		Note: Ripple & Noise is tested by twisted pair method, for details please see (Ripple& Noise Test) at back				
Storage Temperature		-	-40	-	+85	
Soldering Temperature		Wave-soldering	260±4℃, timing 5-10S			
		Manual-soldering	360±8℃, timing 4-7S			
Relative Humidity		-	10	-	90	%RH
Isolation Voltage	I/P-O/P	Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P	Input-Output@DC500V	100	-	-	MΩ
Vibration		-	10-55Hz,10G,30Min, along X,Y,Z			
MTBF		-	MIL-HDBK-217F@25℃＞300,000H			

EMC Characteristics

EMI	CE	CISPR22/EN55022 CLASS B (Recommended Circuit 1)
	RE	CISPR22/EN55022 CLASS B (Recommended Circuit 1)
EMC	ESD	IEC/EN61000-4-2 ±6KV/8KV Perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m Perf.Criteria A
	EFT	IEC/EN61000-4-4 ±1KV Perf.Criteria B
		IEC/EN61000-4-4 ±2KV (Recommended Circuit 1) Perf.Criteria B
	Surge	IEC/EN61000-4-5 ±1KV (Bare Metal) Perf.Criteria B
		IEC/EN61000-4-5 line to line ±2KV / line to ground ±4KV (Recommended Circuit 1) Perf.Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s Perf.Criteria A
	PFMF	IEC/EN61000-4-8 10A/m Perf.Criteria A
	Voltage dips and interruptions	IEC/EN61000-4-11 0%-70% Perf.Criteria B

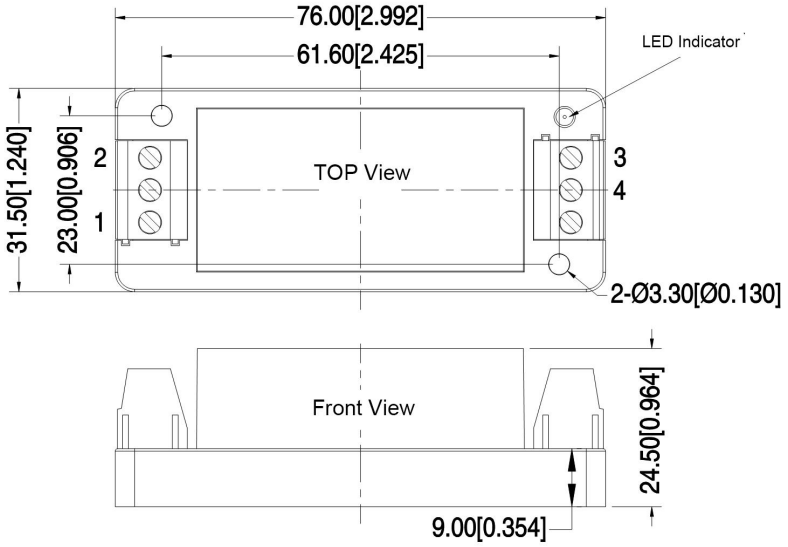
Y2 Packing Dimension



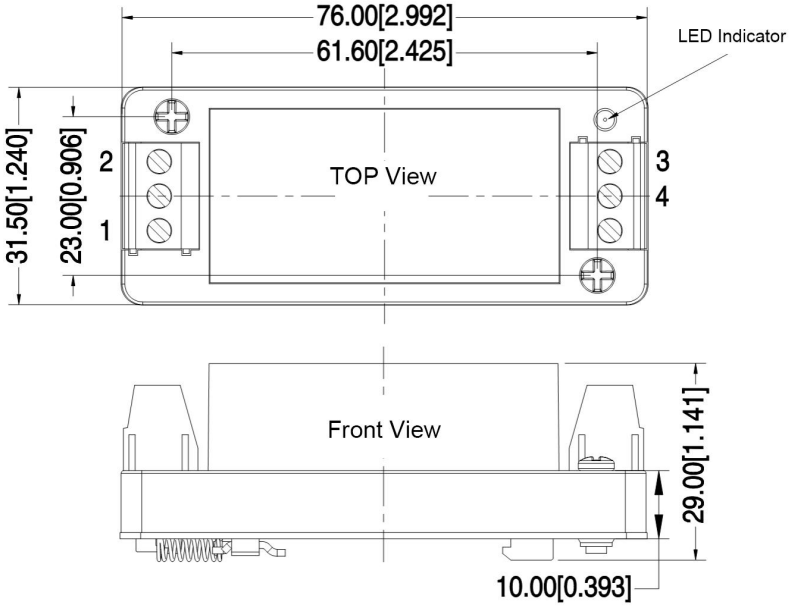


Unit:mm
Printed board vertical view
Grid:2.54mm(0.1inch)
General tolerance:±0.25mm
Pin tolerance:±0.10mm

Y2-T Packing Dimension



Y2-TS Packing Dimension



Packing Code	L x W x H	
Y2	50.8X25.4X15.16 mm	2.000X1.000X0.597inch
Y2-T	76.0X31.5X24.5mm	2.992X1.240X0.964inch
Y2-TS	76.0X31.5X29.0mm	2.992X1.240X1.141inch

Pin Definition

Pin-out	1	2	3	4
	AC(N)	AC(L)	+Vo	-Vo

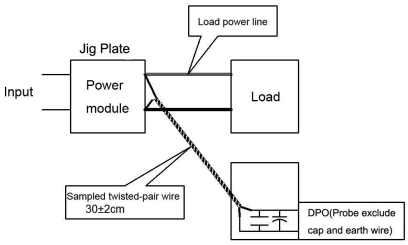
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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

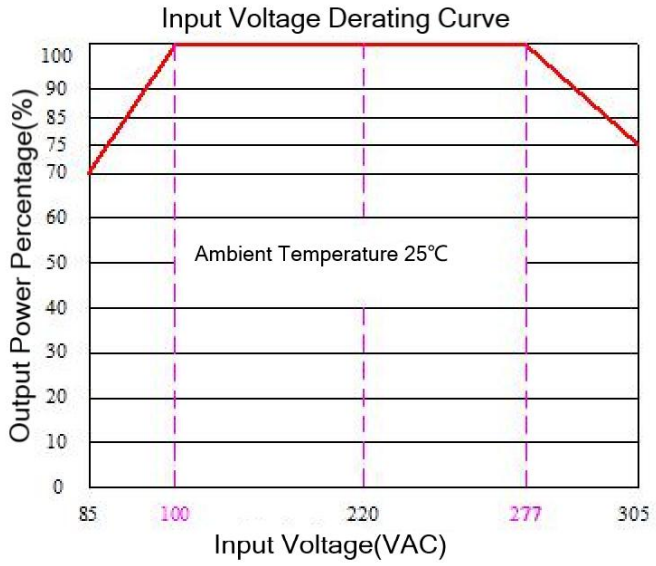
Test Method:

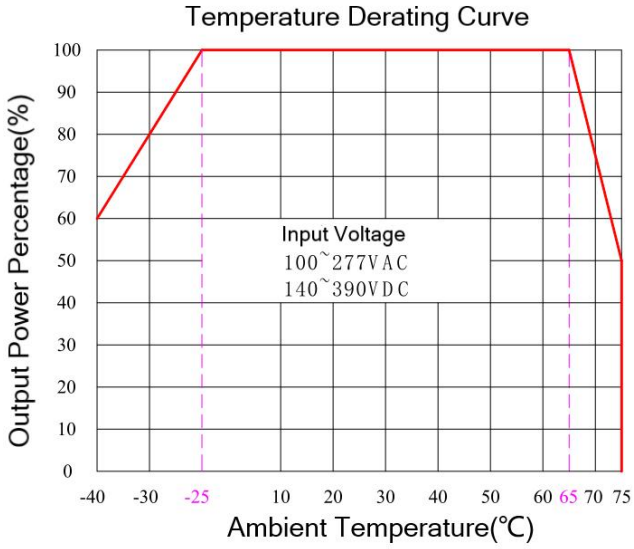
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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





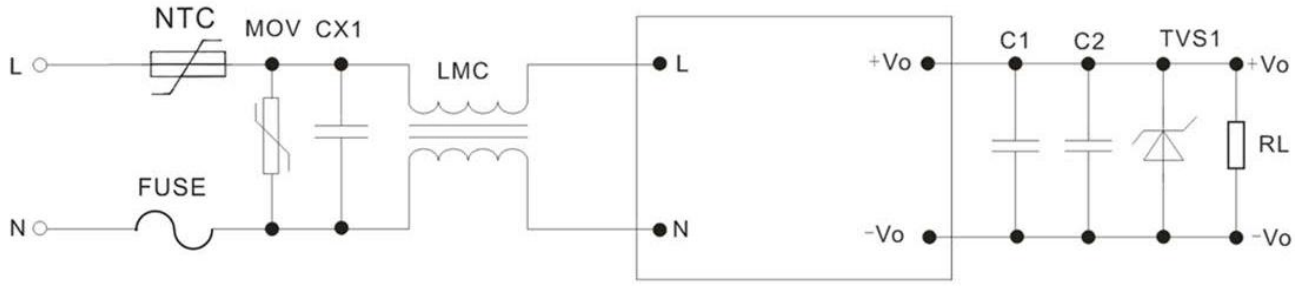
Note

1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC/ 277~305VAC/ 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.

Application Design Referenced

EMC Solution and Recommend Circuit



Recommended Circuit 1

Note:

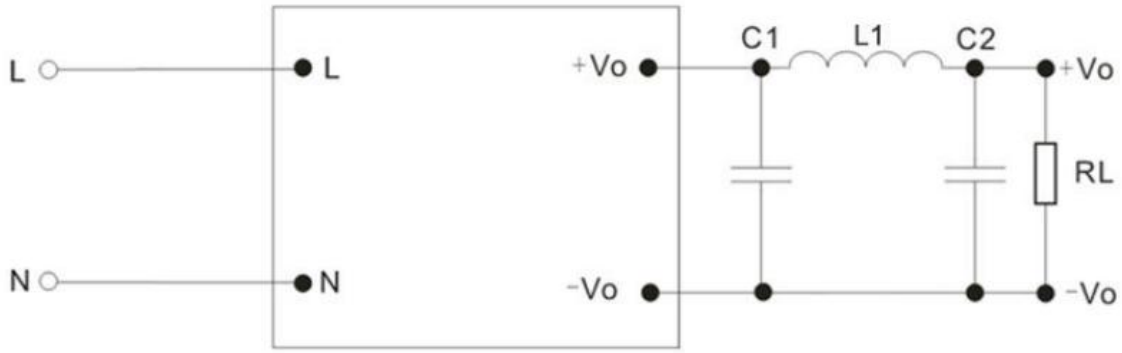
1) FUSE is a fuse, and it is recommended to use a 2A~250Vac slow-break, square type;

2) MOV is a varistor, and the recommended model is 10D561K;

3) NTC is a thermistor, and the recommended model is: 10D-11, which is used to protect the module from damage during lightning surges;

4) LMC is a common-mode inductor, and the recommended inductance is 30mH;
5) CX1 is an X capacitor, and the recommended model is 0.22uF/275Vac;
6) C1 selects a high-frequency low-impedance electrolytic capacitor with a capacitance value smaller than the capacitive load, and the withstand voltage value is more than 1.5 times the output voltage;
7) C2 selects a 0.1uF ceramic chip capacitor, and the withstand voltage value is more than 1.5 times the output voltage;
8) TVS1 is a TVS tube; 5V output is recommended to use: SMBJ7.0A, 9V output is recommended to use: SMBJ12.0A,
Recommended for 12V/12.5V/12.8V output: SMBJ20A,
Recommended for 15V output: SMBJ20.0A, Recommended for 24V output: SMBJ30.0A, Recommended for 48V output: SMBJ64A.

FA15-220S05Y2N3 External Circuit to Lower Ripple



Recommended Circuit 2

Note:
C1, C2 is electrolytic capacitor, C1 is 330uF/10V, C2 is 220uF/10V;L1 is rod type inductor, inductance 2.2uH, wire diameter of 0.7mm above.

Note :
1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. 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;
3. 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;
4. Unless otherwise specified, the above data are measured at Ta=25℃, humidity<75%, input nominal voltage and output rated load (pure resistance load);
5. All the above index test methods are based on our company's standards;
6. 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
7. Our company can provide product customization;
8. 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