AC/DC Converter

FA5-300SXXY2N3(-T)(-TS) Series

Typical Features

- Wide input voltage range 90-528VAC/100-745VDC
- No load power consumption ≤0.5W@300VAC
- Efficiency 78% (Typ.)
- Switching frequency 65KHz
- Short circuit & over current protections
- Isolation voltage 3000VAC
- Altitude during operation 4000m Max
- Safety Class II
- Compliant with IEC/EN62368/UL62368
- PCB DIP Mounting

Application Field

FA5-300SXXY2N3(-T)(-TS) Series ----- *Compact size, high efficiency modular power supplies with global adapted input voltage range (both AC & DC available), low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of Electric power, Industrial, Instrument and Smart home devices, etc. Additional circuit diagram for EMC is recommended in this data sheet for the application with high EMC requirement.*

Typical Product List

Certificate	Part No.	Output Specification			Max. Capacitive Load	Ripple & Noise (Max) 20MHz	Efficiency@ Full Load, 300Vac
		Power	Voltage	Current			
		(W)	Vo (V)	Io (mA)	uF	mVp-p	% (Typ.)
-	FA5-300S05Y2N3	5	5	1000	5000	150	74
	* FA5-300S12Y2N3	5	12	416	600	120	76
	* FA5-300S15Y2N3	5	15	333	600	120	76
	FA5-300S24Y2N3	5	24	208	200	150	78

Note 1 - The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: The full load efficiency should be in ±2% of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3: The Ripple and Noise are tested by the twisted pair method according to the following test instruction.

Note 4: The suffix -T is for a kind of chassis package with terminals, -TS is for a kind of package of DIN Rail which width is 35mm.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	90	300	528	VAC
	DC Input	100	424	745	VDC

Input Frequency	-	47	50	63	Hz
Input Current	Input 115VAC	-	-	0.15	A
	Input 300VAC	-	-	0.07	
Surge Current	Input 115VAC	-	10	-	
	Input 300VAC	-	20	-	
No Load Power Consumption	Input 115VAC	-	-	0.5	W
	Input 300VAC	-	-		
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External Fuse Recommended	-	2A/500VAC Time-delay fuse			
Hot Plug	-	Unavailable			
Remote Control	-	Unavailable			

Output Specifications

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	-	-	±2.0	%
Minimum Load		Single Output	0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)	-	1000	-	mS
Power-off Hold up Time		Input 115VAC (full load)	-	200	-	mS
		Input 300VAC (full load)	-	100	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-	-	5.0	mS
Output Over-shoot		Full input voltage range	≤10%Vo			%
Short circuit protection			Continuous, Self-recovery			Hiccup
Drift Coefficient		-	-	±0.03%	-	%/℃
Over Current Protection		Input 300VAC	≥130% Io, Self-recovery			Hiccup

General Specifications

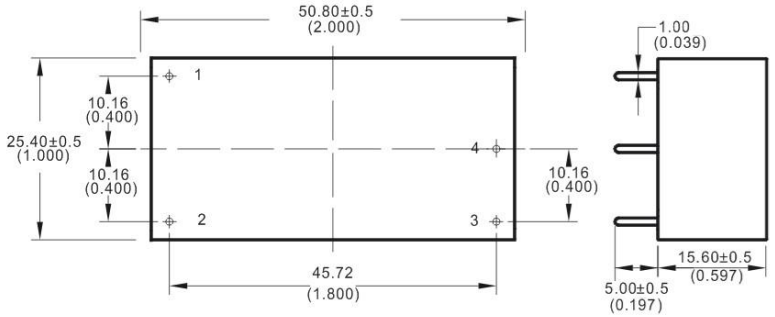
Items	Operating Conditions	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	Refer to the temperature derating graph	-40	-	+105	℃
Storage Temperature	-	-40	-	+110	
Soldering Temperature	Wave-soldering	260±4℃, timing 5-10S			
	Manual-soldering	360±8℃, timing 4-7S			

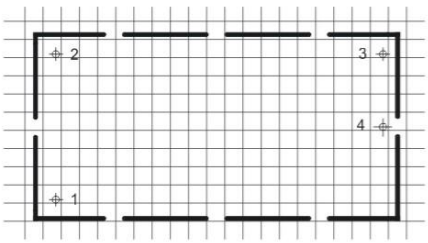
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	I/P-O/P, Test 1min, leakage current ≤5mA	3000	-	-	VAC
Insulation Resistance	I/P-O/P @DC500V	100	-	-	MΩ
Safety Standard	-	IEC/EN62368			
Vibration	-	10-55Hz, 10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS Ⅱ			
Case Flame Class	-	UL94-V0			
Cooling Method	-	Nature air			
MTBF	-	MIL-HDBK-217F@25℃＞300,000H			

EMC Performance

Total Item		Sub Item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (with the Recommended EMC Circuit)
		RE	CISPR22/EN55032	CLASS B (with the Recommended EMC Circuit)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with the Recommended EMC Circuit)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with the Recommended EMC Circuit)
		ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Y2 Package Mechanical Dimensions

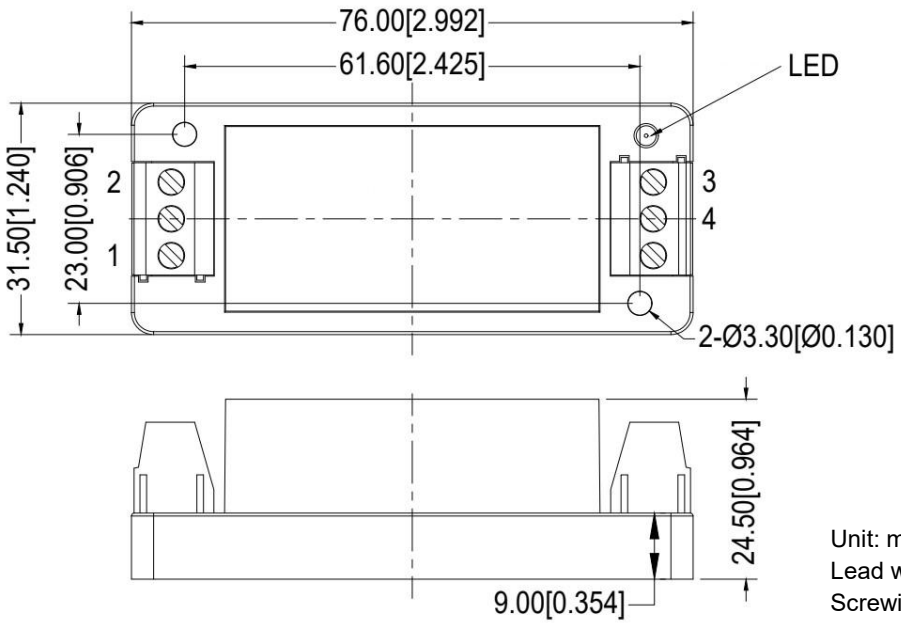




PCB layout vertical view
Grid 2.54x2.54(0.10x0.10)

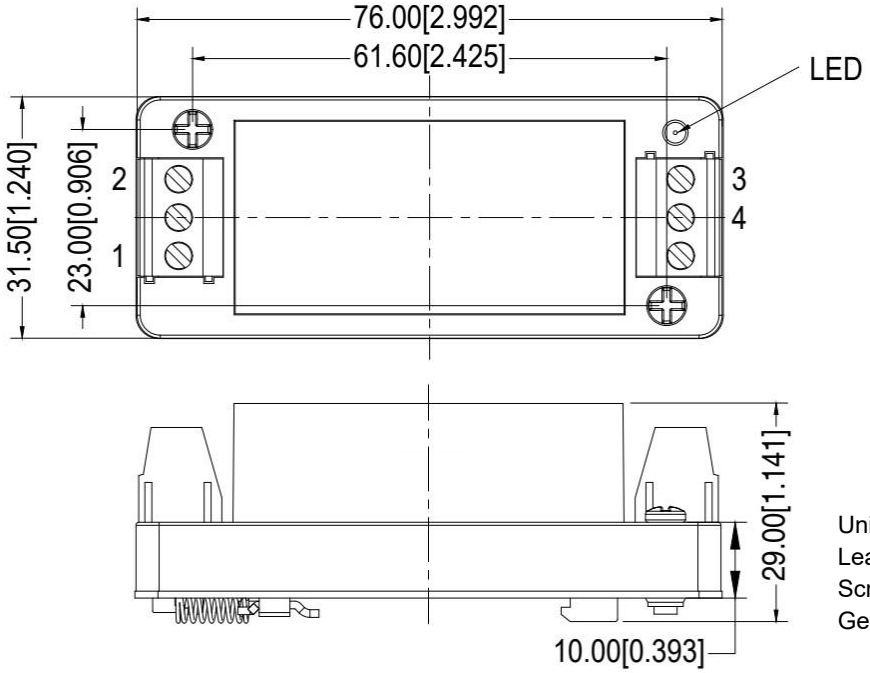
Unit: mm(inch)
General tolerance: ±0.25(±0.010)
Pin diameter tolerance: ±0.10(±0.004)

Y2-T Package Mechanical Dimensions



Unit: mm[inch]
Lead wires gauge: 24-12AWG
Screwing torque: 0.4N.m Max
General tolerance: ±1.00[±0.039]

Y2-TS Package Mechanical Dimensions



Unit: mm[inch]
Lead wires gauge: 24-12AWG
Screwing torque: 0.4N.m Max
General tolerance: ±1.00[±0.039]

Package Code	Dimensions L x W x H	
Y2	50.80X25.40X15.60 mm	2.000X1.000X0.597 inch
Y2-T	76.00X31.50X24.50 mm	2.992X1.240X0.964 inch
Y2-TS	76.00X31.50X29.00 mm	2.992X1.240X1.141 inch

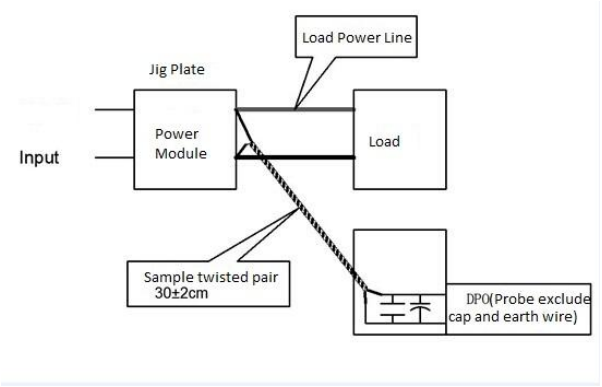
Terminal Function Description

Terminal No.	1	2	3	4
Single output	AC(N)	AC(L)	+Vout	-Vout

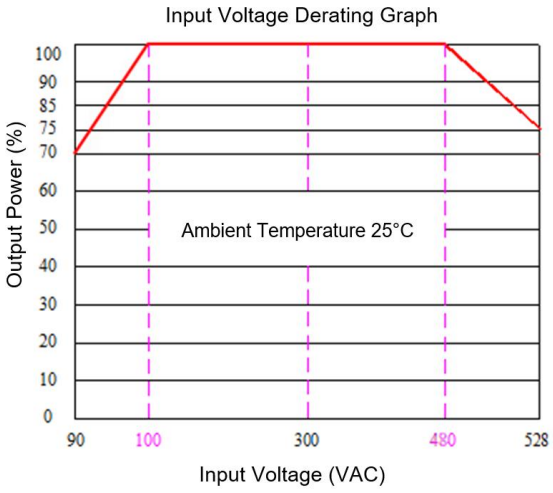
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

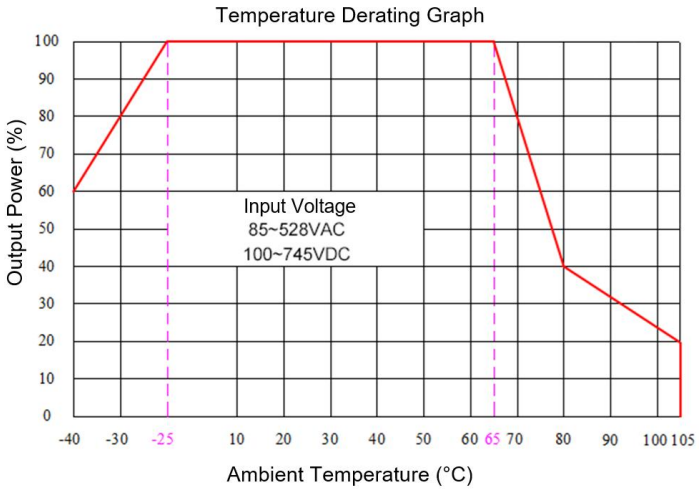
1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.

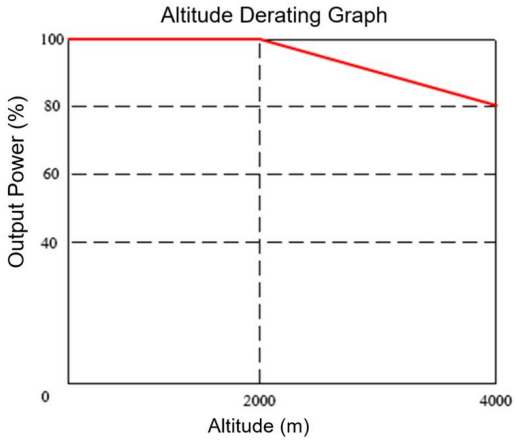
2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be start after input power on.



Product Characteristic Graphs



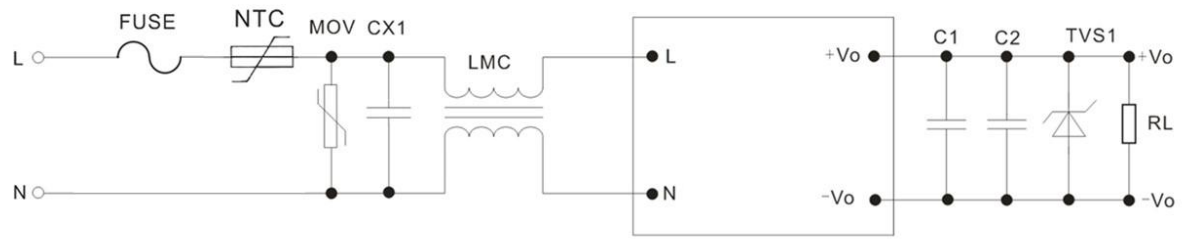




Note 1: The output power should be derated based on the input voltage derating graph at 90~100VAC/480~528VAC & 100~140VDC/678~745VDC.

Note 2: This product should operate at natural air condition, please contact us if it need be used at a closed space.

Recommended EMC Circuit Diagram for Application



Note:

1) 2A/500Vac Time-delay fuse is recommended for FUSE.
2) 10D951K/3500A varistor is recommended for MOV.
3) 10D-11 NTC is recommended to protect the converter against the lighting surge.
4) Common mode choke 30mH/0.3A is recommended for LMC
5) X2/0.22uF/275VAC capacitor is recommended for CX1.
6) A high frequency low impedance electrolytic capacitor is recommended for C1 which capacitance should be less than the Max capacitive load and withstand voltage more than 1.5x of the output voltage.
7) 0.1uF ceramic SMD capacitor is recommended for C2 which withstand voltage should be more than 1.5x of the output voltage.
8) TVS1: SMBJ7.0A for 5V output; SMBJ12.0A for 9V output; SMBJ20A for 12V & 15V outputs; SMBJ30.0A for 24V output; SMBJ64A for 48V output.

Application Notice

1.The products should be used according to the specifications in this datasheet, otherwise it could be permanently damaged.
2. A fuse should be connected at input.
3. The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance in this datasheet cannot be guaranteed if it works at over-load condition.
5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25℃, humidity<75%RH, nominal input voltage and rated load (pure resistance load).
6. All values or indicators in this datasheet had been tested based on Aipupower test specifications.
7.The specifications are specially for the parts listed in this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
8. Aipupower can provide customization service.

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