

Typical Features

- ◆ Wide input voltage range 176-418VAC/248-591VDC
- ◆ No-load power consumption $\leq 0.25\text{W}@220\text{VAC}$
- ◆ Efficiency 84% (Typ.)
- ◆ Switching frequency 65KHz (Typ.)
- ◆ Short Circuit & Over Current protections
- ◆ Isolation voltage 4000VAC
- ◆ Compliant with IEC/EN62368/UL62368
- ◆ Conform to CE
- ◆ PCB DIP Mounting



Application Field

FA15-300SXXG2N4 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, industry, instrumentation and smart household appliances, etc. The additional circuit for EMC is recommended in this data sheet for the application with high EMC requirement.

Typical Product List

Certificate	Part No.	Output Specification			Capacitive Load @220Vac uF (Max)	Ripple & Noise @20MHz (Max) mVp-p	Efficiency @full Load /220Vac % (Typ.)
		Power	Voltage	Current			
		(W)	Vo (V)	Io (mA)			
-	FA15-300S05G2N4	15	5	3000	6000	120	78
-	FA15-300S12G2N4	15	12	1250	4000	120	84
-	FA15-300S24G2N4	15	24	625	1000	150	85

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 $\pm 2\%$ 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 Test Instructions in the datasheet.

Note 4 - Please contact Aipu sales for other output voltages requirement in this series but not listed in this table.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	176	220	418	VAC
	DC Input	248	310	591	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	176VAC	-	-	0.20	A
	220VAC	-	-	0.18	
Surge Current	176VAC	-	-	18	A
	220VAC	-	-	21	

No Load Power Consumption	Input 176VAC	-	-	0.25	W
	Input 220VAC	-	-		
Leakage Current	-	0.25mA TYP/230VAC/50Hz			
External fuse recommended		2A/500VAC Time-delay fuse			
Hot plug	-	Unavailable			
Remote control terminal	-	Unavailable			

Output Specifications

Item		Operating Condition	Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range	-	±2.0	±3.0	%
Line Regulation		Rated Load	-	±0.5	±1.0	%
Load Regulation		Nominal input voltage, 20%~100% load	-	±0.5	±1.0	%
Minimum load		Single Output	0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)	-	600	-	mS
Power-off Hold up Time		Input 176VAC (full load)	-	50	-	mS
		Input 220VAC (full load)	-	80	-	
Dynamic Response	Overshoot range	25%~50%~25% 50%~75%~50%	-5.0	-	+5.0	%
	Recovery time		-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	≥130% Io, Self-recovery			Hiccup

General Specifications

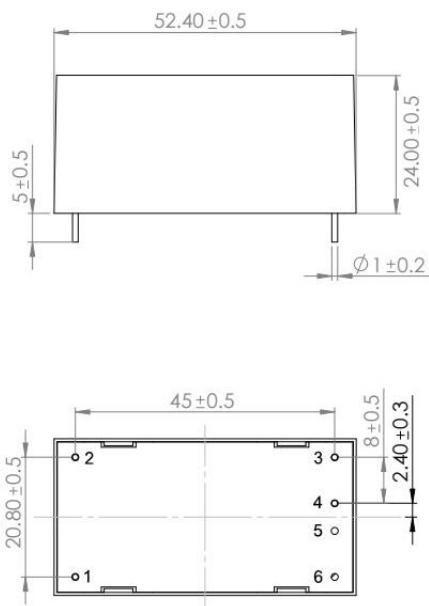
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	Refer to the Temperature Derating Graph	-40	-	+75	℃
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4℃, timing 5-10S			
	Manual-soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	I/P-O/P, Test 1min, leakage current ≤5mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P @500VDC	100	-	-	MΩ
Safety Standard	-	IEC62368/EN62368			

Vibration	-	10-55Hz,10G, 30Min, along X, Y, Z
Safety Class	-	CLASS II
MTBF	-	MIL-HDBK-217F@25℃>300,000H

EMC Performance

Total item		Sub item	Test Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
		RE	CISPR32/EN55032	CLASS B (with the Recommended Circuit 2)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (with the Recommended Circuit 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (with the Recommended Circuit 2)
		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 and interruptions	IEC/EN61000-4-11	0%-70% Perf.Criteria B

Mechanical Dimensions



Note
Unit: mm
General tolerance ±1.0

Package Code	Dimensions L x W x H	
G2	52.4 x 27.2 x 24.0 mm	2.063 × 1.071 × 0.945 inch

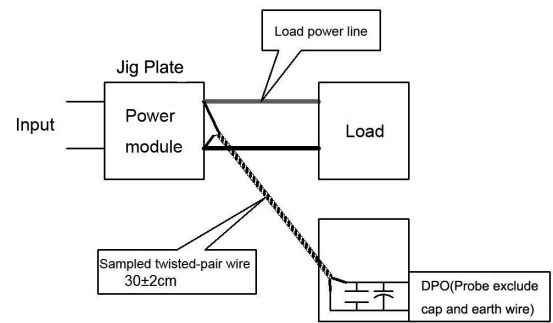
Pin-out Function Definition

Pin No.	1	2	3	4	5	6
Single output	AC(L)	AC(N)	-Vo	+Vo	No Pin	No Pin

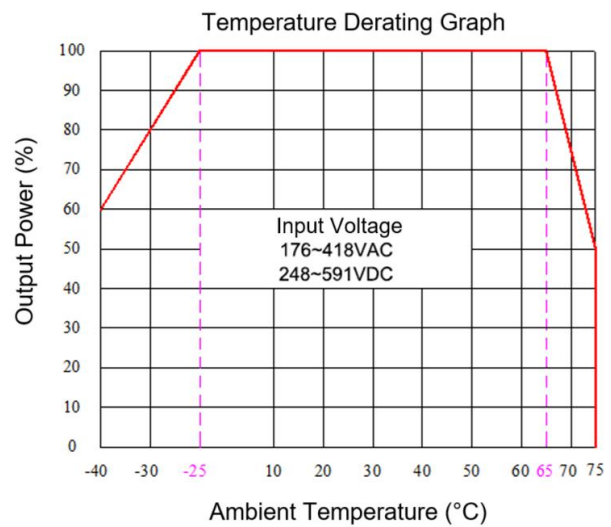
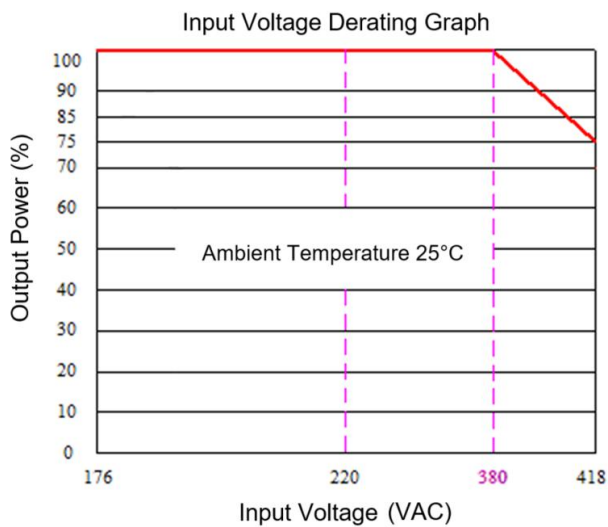
Ripple & Noise Test Instructions (Twisted Pair Method, 20MHz Bandwidth)

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 $30\text{cm} \pm 2\text{cm}$) 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 started after input power on.



Product Characteristics Graphs

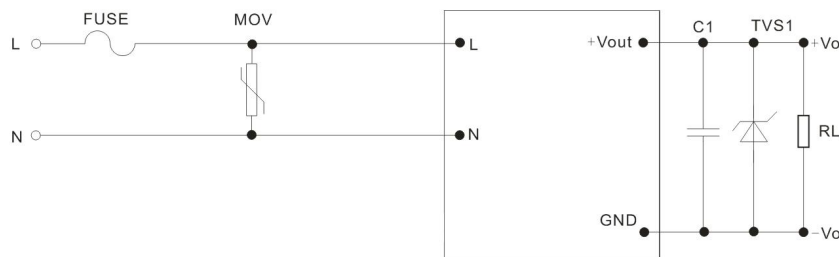


Note 1 - The output power should be derated based on the input voltage derating graph at 380~418VAC/537~591VDC.

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

Recommended Circuit for Application

1, Typical Circuit for Application



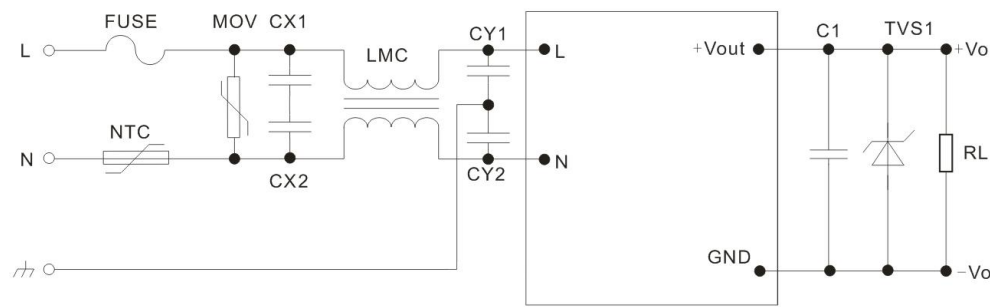
Circuit 1

Output Voltage	5V	12V	24V
TVS1	SMBJ7.0A	SMBJ20A	SMBJ30A

Note:

A ceramic SMD capacitor is recommended for C1 to suppress the high frequency noise. TVS is recommended to protect the output circuit. 2A/500V time-delay fuse is recommended. 14D751K MOV is recommended.

2, Recommended EMC Circuit



Circuit 2

Component	Recommended Value	Component	Recommended Value
MOV	14D751K	NTC	5D-9
CX1, CX2	0.1uF/275VAC	LMC	UU9.8/25mH/0.5A
FUSE	2A/500V Time-delay fuse (Necessary)	CY1, CY2	1nF/400VAC

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.
9. The product specifications may be modified without prior notice. Please refer to the published data sheet at Aipupower website.

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