AC/DC Converter
FA50-500SXXG2D4 Series

Typical Features

- Wide input voltage range 85-900VAC
- No-load power consumption ≤1W
- Efficiency up to 88% (Typ.)
- Switching frequency 65KHz (Typ.)
- Short circuit, over current & over voltage protections
- Isolation voltage 4000VAC
- Conform to CE regulations
- Specially designed for Coal mine electrical equipment

Application Field

FA50-500SXXG2D4 Series --- *High-voltage power supplies specially designed for the customer of Coal mine electric applications, with the performance of safety power output, convenient installation and reliability which can meet the customers technological innovation and development requirements. This series of power supplies have the advantage of global adapted input voltage range, low ripple, low temperature rise, low standby power consumption, high efficiency & reliability and safety isolated. They can be widely used for the Coal mine monitoring and Security industries, etc.*

Typical Product List

Certificate	Part No.	Output Specification			Max Capacitive Load	Ripple & Noise @20MHz	Efficiency @Full load 330VAC
		Power	Voltage	Current			
		(W)	Vo (V)	Io (mA)	uF	mVp-p	%(Typ.)
	*FA50-500S24G2D4	50	24	2080	4000	100	85
	*FA50-500S28G2D4	50	28	1785	3000	100	87
	FA50-500S28V5G2D4	50	28.5	1754	3000	100	87
	*FA50-500S35G2D4	50	35	1428	1000	100	88
	*FA50-500S37G2D4	50	37	1350	1000	100	88

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 is tested by the twisted pair method according to the following test instruction.

Note 4: The * marked part has been developed in process.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	330	900	VAC
	DC Input	-	-	-	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	Input 100VAC	-	-	1.2	A
	Input 330VAC	-	-	0.6	

Surge Current	Input 330VAC	-	-	180	A
	Input 900VAC	-	-		
No Load Consumption	Input 85VAC	-	-	1.0	W
	Input 900VAC	-	-		
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
External fuse recommended		5A/1000VAC Time-delay fuse			
Hot plug	-	Unavailable			
ON/OFF control	-	Unavailable			

Output Specifications

Item		Operating Condition	Min.	Typ.	Max.	Unit
Voltage Accuracy		Full input voltage range, any load	-	±1.0	±2.0	%
Line Regulation		Rated Load	-	-	±1.0	%
Load Regulation		Nominal input Voltage, 10%~100% load	-	-	±1.0	%
Minimum load		Single Output	0	-	-	%
Turn-on Delay Time		Nominal input voltage (full load)	-	3000	-	mS
Power-off Hold up Time		Input 300VAC (full load)	-	150	-	mS
		Input 660VAC (full load)	-	350	-	
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%	-	%/℃
Over Current Protection		Nominal input voltage	≥110% Io, Self-recovery			Hiccup
Over Voltage Protection		Output 24VDC	≤30			VDC
		Output 28V & 28.5VDC	≤35			
		Output 35VDC	≤42			
		Output 37VDC	≤45			

General Specifications

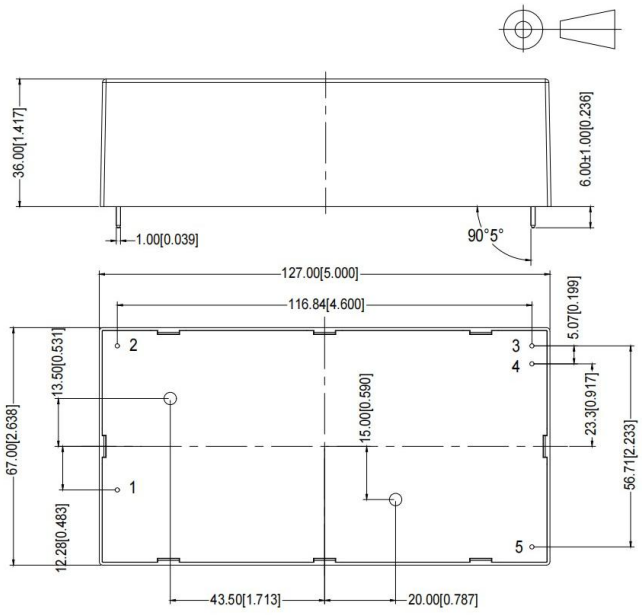
Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	Refer to the Temperature Derating Graph	-25	-	+70	℃
Storage Temperature	-	-40	-	+85	

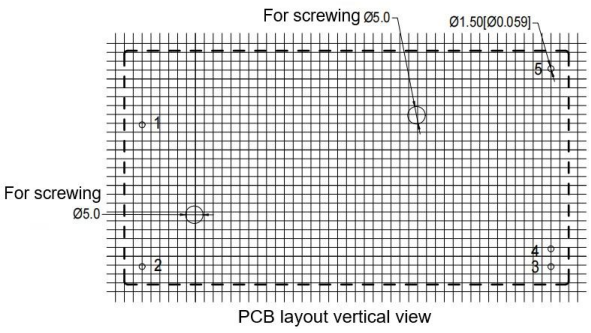
Soldering Temperature	Wave-soldering	260±4℃, timing 5-10S			
	Manual-soldering	360±8℃, timing 4-7S			
Relative Humidity	-	10	-	90	%RH
Isolation Voltage	I/P-O/P, Test 1min, leakage current ≤3mA	4000	-	-	VAC
Insulation Resistance	I/P-O/P @DC500V	50	-	-	MΩ
Vibration	-	10-55Hz,10G, 30Min, along X, Y, Z			
Safety Class	-	CLASS I			
MTBF	-	MIL-HDBK-217F@25℃＞300,000H			

EMC Performance

Total item	Sub item	Test Standard	Performance/Class
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV Perf.Criteria B
	RS	IEC/EN61000-4-3	10V/m Perf.Criteria A
	EFT	IEC/EN61000-4-4	±4KV Perf.Criteria B
	Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s Perf.Criteria A

Mechanical Dimensions





PCB layout vertical view

Unit: mm[inch]
Pin diameter tolerance ±0.10[±0.004]
General tolerance ±1.00[±0.039]
2x M3 screwing is needed for hard vibration requirement, the screwing location shown on the drawing.

Package Code	Dimensions L x W x H	
-	127.00X67.00X36.00 mm	5.000X2.638X1.417 inch

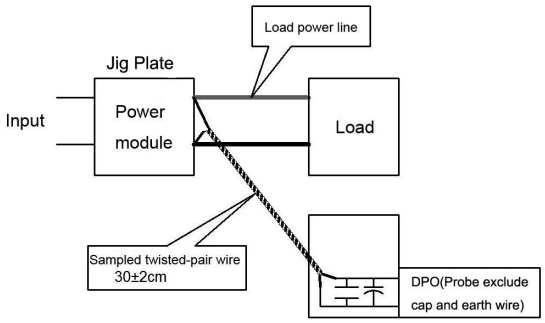
Pin-out Function Description

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

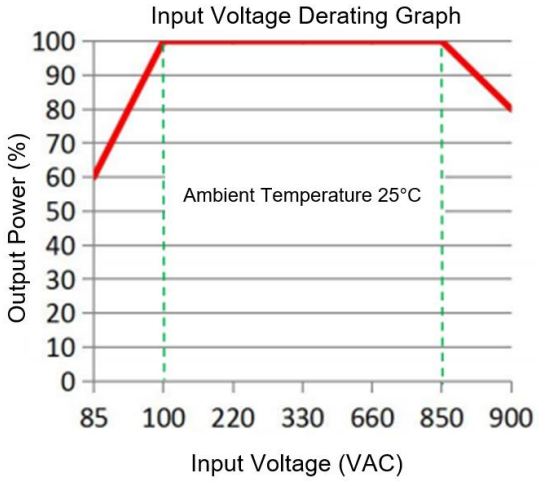
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz Bandwidth)

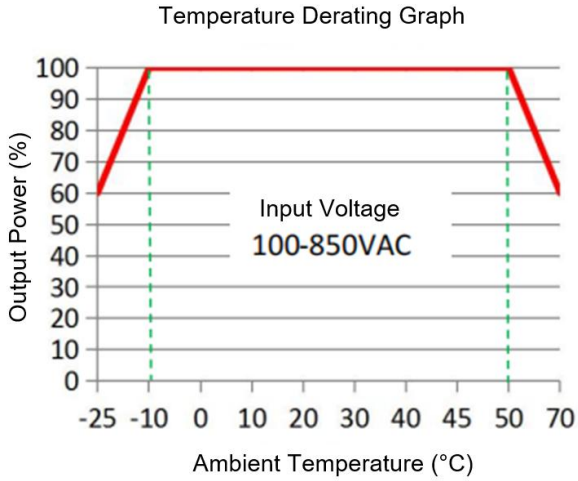
1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the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

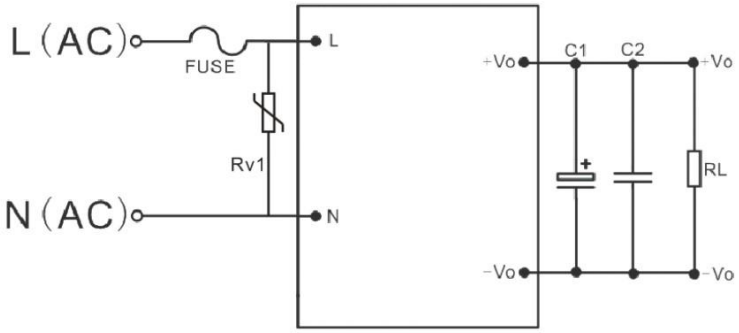




Note 1: The output power should be derated based on the input voltage derating graph at 85~100VAC/850~900VAC.

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

Typical Circuit Diagram for Application



Component No.	Descriptions & Recommended Values	
FUSE	Time-delay Fuse	5A/1000VAC (Necessary)
RV1	Varistor	14D182K
C1	Electrolytic capacitor	10uF/50V
C2	Ceramic SMD capacitor	1uF/50V

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

