

### Typical Features

- ◆ Wide input voltage range 85-1300VAC
- ◆ No-load power consumption  $\leq 1.5W$
- ◆ Efficiency 88%(Typ.)
- ◆ Switching frequency 65KHz
- ◆ Short Circuit, Over Current & Over Voltage protections
- ◆ Isolation voltage 4000VAC
- ◆ Conform to RoHS regulation
- ◆ Special Design for high-voltage electric equipment



### Application Field

**DA150-1000SXXG1N4 Series**----- is a high-voltage power supply designed by Aipu specially for the customer of coal mine electric applications, with the performances 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 advantages of quite wide input voltage range, low ripple, low temperature rise, low standby power consumption, high efficiency & reliability, and safety isolated. They can be widely used for solar electric power system, coal mine monitoring and security industries, etc.

### Typical Product List

Certificate	Part No.	Output Specification			Max. Capacitive Load @450Vac	Ripple & Noise @ 20MHz	Efficiency@ 450Vac (Typ.)
		Power	Voltage	Current			
		(W)	Vo1(V)	Io (mA)	u F	mVp-p	%
/	DA150-1000S24G1N4	150	24	6250	5000	100	88
	DA150-1000S28G1N4	150	28	5360	5000	120	88
	DA150-1000S32G1N4	150	32	4688	4500	150	89
	DA150-1000S35G1N4	150	35	4286	4000	150	89

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 (please refer to the following Ripple & Noise test instructions).

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

### Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	85	450	1300	VAC
	DC Input	120	636	1840	VDC
Input Frequency Range	-	47	50	63	Hz
Input Current	176VAC	/	/	1.8	A
	450VAC	/	/	0.8	
Surge Current	450VAC	/	/	130	

	760VAC	/	/	270	
	1300VAC	/	/	390	
Leakage Current	-	0.5mA TYP/230VAC/50Hz			
Remote Control	-	Unavailable			
Hot plug	-	Unavailable			
External Fuse Recommend	-	Necessary, TBD according to the actual current			

**Output Specifications**

Item	Operating Condition		Min.	Typ.	Max.	Unit
Voltage Accuracy	Full input voltage Range, Any load	Vo	-	±1.0	±2.0	%
Line Regulation	Rated Load	Vo	-	-	±1.0	%
Load Regulation	Rated Voltage, 20%~100% load	Vo	-	-	±2.0	%
No load power consumption	Input 450VAC		-	-	1.5	W
	Input 1300VAC		-	-		
Minimum load	Single Output		0	-	-	%
Turn-on Delay Time	Rated input voltage, full load		-	2000	-	mS
Power-off Hold up Time	Input 450VAC (full load)		-	150	-	mS
	Input 760VAC (full load)		-	350	-	
Ripple & Noise	20Mhz bandwidth (peak to peak)		-	50	150	mV
Drift coefficient	-		-	±0.03%	-	%/°C
Dynamic Response	Overshoot range	25%~50%~25%	-5.0	-	+5.0	%
	Recovery time	50%~75%~50%	-5.0	-	+5.0	mS
Output Overshooting	Full input voltage range		≤10%Vo			%
Short Circuit Protection	Full input voltage range		Self-recovery			Hiccup
Over Current Protection	Input rated voltage		≥110% Io, Self-recovery			Hiccup
Over Voltage Protection	Output 24VDC		≤35			VDC
	Output 28VDC		≤45			
	Output 32VDC		≤50			
	Output 35VDC		≤50			

**General Specifications**

Item	Operating Condition	Min.	Typ.	Max.	Unit
Switching Frequency	-	-	65	-	KHz
Operating Temperature	-	-25	-	+70	°C
Storage Temperature	-	-40	-	+85	
Soldering Temperature	Wave-soldering	260±4°C / 5-10S			
	Manual-soldering	360±8°C / 4-7S			
Relative Humidity	-	10	-	90	%RH

Isolation Voltage	I/P to O/P	Leakage current $\leq 3.0\text{mA} / 1\text{Min}$	4000	-	-	VAC
	O/P to PE	Leakage current $\leq 2.0\text{mA} / 1\text{Min}$	1500	-	-	
Insulation Resistance		Input-Output@500Vdc	50	-	-	MΩ
Vibration		-	10-55Hz, 10G, 30 Min, along X,Y,Z			
Safety Class		-	CLASS I			
MTBF		-	MIL-HDBK-217F@25°C > 300,000H			

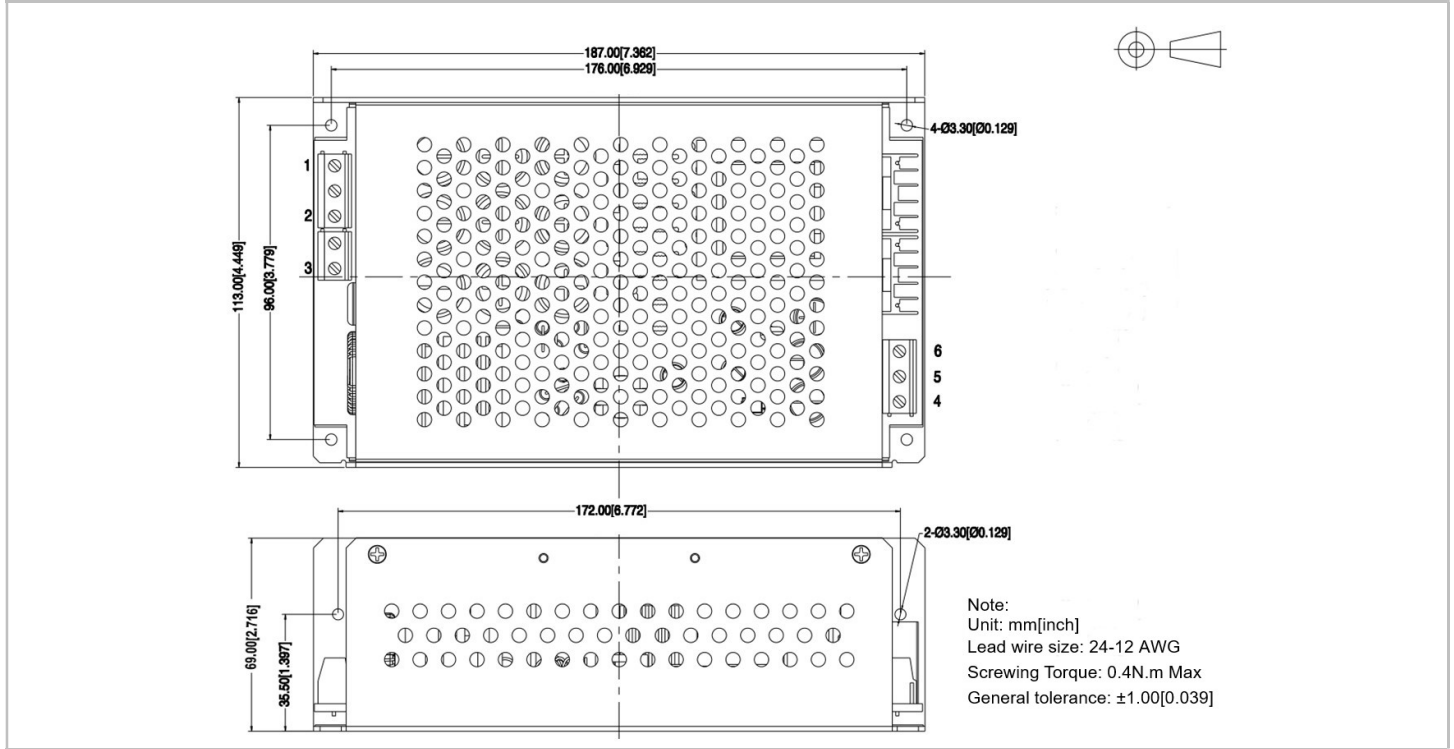
### Physical Characteristics

Case Material	Metal
Unit Dimension	187.0X113.0X69.0 mm
Product Weight	1500g (TYP)
Cooling Method	Natural air

### EMC Performance

Total Item	Sub Item	Test Standard	Performance/Class	
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$	Perf.Criteria B
	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria A
	Surge	IEC/EN61000-4-5	Line to line $\pm 2\text{KV}$ , line to ground $\pm 4\text{KV}$	Perf.Criteria B
	EFT	IEC/EN61000-4-4	$\pm 4\text{KV}$	Perf.Criteria B
	CS	IEC/EN61000-4-6	10V r.m.s	Perf.Criteria A

### Mechanical Dimensions



Package Code	L x W x H	
G	187.0X113.0X69.0mm	7.362X4.449X2.716inch

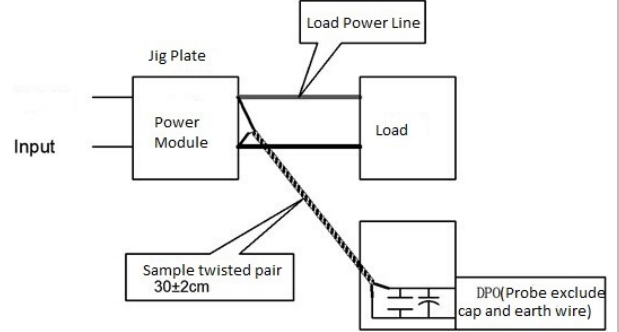
### Terminals function Description

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

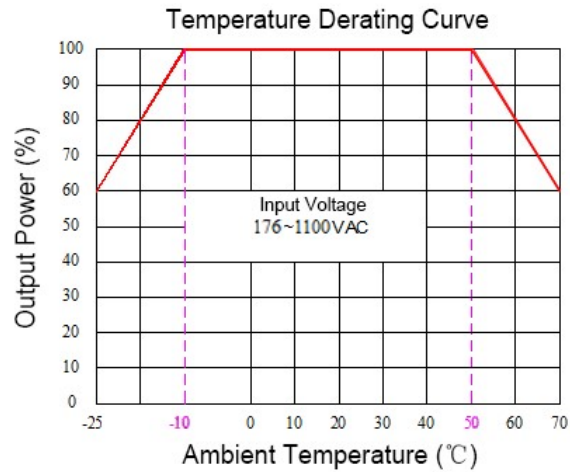
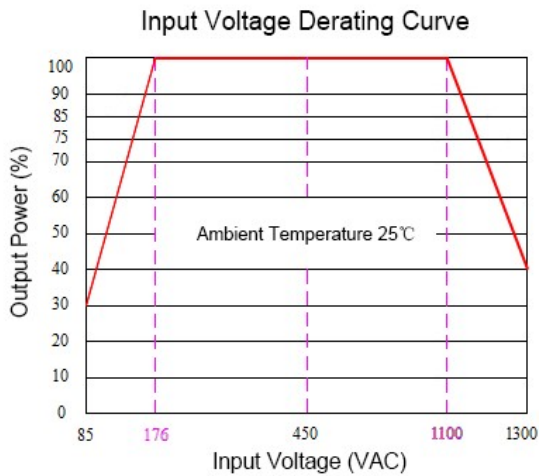
### Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

1) Ripple noise test need 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 output ripple noise 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 started after input power on.



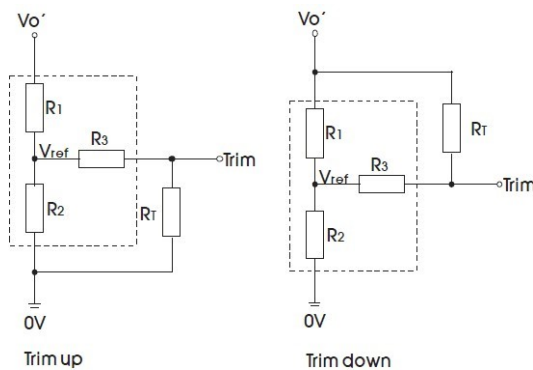
### Product Performance Curve



#### Note

- The output power should be derated based on the input voltage derating curve at 85~176VAC/1100~1300VAC.
- This product should operate at a natural air condition, please contact us if it need be used at a closed space.

### Trim & Calculation of Trim Resistance



#### Rim Resistance calculating fomula

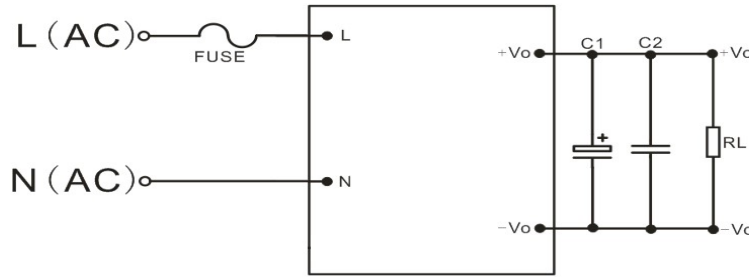
$$\text{up: } R_T = \frac{\alpha R_2}{R_2 - \alpha} - R_3 \quad \alpha = \frac{V_{ref}}{V_{o'} - V_{ref}} \cdot R_1$$

$$\text{down: } R_T = \frac{\alpha R_1}{R_1 - \alpha} - R_3 \quad \alpha = \frac{V_{o'} - V_{ref}}{V_{ref}} \cdot R_2$$

$R_T$  is the Trim resistance  
 $\alpha$  is a self-defined parameter  
 $V_{o'}$  is the required Up-voltage or Down-voltage

Vout(VDC)	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref(V)
24	10.55	1.2	1	2.5
28	12.33	1.2	1	2.5
32	17.86	1.5	1	2.5
35	19.86	1.5	1	2.5

**Typical application circuit**



Component	Description	Recommended Value
FUSE	Time delay Fuse	TBD according to the actual current value, Necessary
C1	Electrolytic capacitor	10uF/50V
C2	Chip capacitor	1206/1uF/50V

**Application Notice**

1. The products should be used according to the specifications in this manual, otherwise it could be permanently damaged.
2. A fuse should be connected at input.
3. The product performance in this manual cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance in this manual cannot be guaranteed if it works at over-load condition.
5. Unless otherwise specified, all values or indicators in this manual are tested at Ta=25℃, humidity<75%RH, rated input voltage and rated load (pure resistance load).
6. All values or indicators in this manual had been tested based on Aipupower test specifications.
7. The specifications are specially for the parts listed in this manual, 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.

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