

## Product Specifications

**150-watt 12VDC Power Supply for XGS-6350-24X4C (-36V~-72VDC)**

**XGS-PWR150-DC**

Version 1.0

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### Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2018/12/19	Simon Yeh	Initial Release

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## 1. Introduction

### ➤ Image



### ➤ Overview

**XGS-PWR150-DC** is a small- and medium-watt AC/DC power supply with single output. It adopts the latest circuit design, obtaining compact structure and reliable performance. The power supply has the high voltage precision and high output efficiency and wide input voltage range. The output is characterized with protections for short circuit and over current and the air cooling. **XGS-PWR150-DC** is designed in accordance with Safety Certification, meeting the requirements of Information Technology Equipment.

## 2. Technical Index

### ➤ Environment Requirements

- Operating temperature: -10°C ~ +45°C
- Storage temperature: -20°C ~ +70°C
- Humidity: ≤90%
- Altitude: ≤3000m
- Atmospheric pressure: 70 ~ 106KPa
- Heat dissipation: Fan

### ➤ Input Characteristic

S/N	Item	Unit	Technical Index			Note
			Minimum	Typical	Maximum	
1	Rated input voltage	VDC		48		
	Input range	VDC	36	48	72	
2	Max input current	A			≤6	
3	Inrush starting current	A			≤80	
4	Output efficiency	%	80			Test when inputting rated voltage
5	Stand-by consumption	W			≤10	
6	PF value					
7	Switch on machine	S			≤5	
8	No-load power consumption	W			10	

### ➤ Output Electrical Characteristics

- Basic output characteristics

S/N	Item	Unit	Technical Index			Note
			Minimum	Typical	Maximum	
1	Rated output voltage	VDC	11.64	12	12.5	
	No-load output voltage	VDC	12.2		12.3	
2	Output current	A	0		12.5	

3	Voltage precision				$\leq \pm 2\%$	
4	Load regulation				$\leq \pm 3\%$	
5	Source regulation				$\leq \pm 1\%$	
6	Ripple peak				$\leq 120\text{mV}$	
7	Dynamic response	Overshoot amplitude	%Vo		$\pm 5$	25% ~ 50% ~ 25% or 50% ~ 75% ~ 50% Rate of change
		Recovery time	$\mu\text{S}$		$\leq 500$	1A/ $\mu\text{S}$
8	Power on-off overshoot amplitude	%Vo			$\leq \pm 5$	
9	Output rise time	mS			$\leq 200$	From 10% to 90%, Vin=220VAC rated loading
10	Temperature coefficient	/ $^{\circ}\text{C}$			$\pm 0.02\%$	
11	Capacitive load	UF			10000	
12	Retention time	mS	5			Input rated voltage, rated loading

**Note:** Ripple test must be conducted in rated input/output with a 0.1 $\mu\text{F}$  capacitor and a 10 $\mu\text{F}/50\text{V}$  capacitor over the output terminal. Meanwhile, the bandwidth of the oscilloscope should be 20MHz.

### ➤ Protection

Item	Unit	Yes/No	Minimum	Typical	Maximum	Recover
+12V output current limiting protection	A	Yes	13.5	-	20	Auto-recover
Short-circuit protection	A	Yes	-	-	-	Auto recover after long-term short circuit
Input overvoltage protection	V	Yes	73			
Input undervoltage protection	V	Yes			33	
Over-temperature protection	$^{\circ}\text{C}$	Yes	80			
Anti-reverse connection protection		Yes				Reverse connection without output, doing no harm to the power supply

### ➤ Safety Certification & Insulation Grade

Item	Grade	Standard (Testing condition)
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Insulation voltage (Input-Output)	2000VDC	2000VDC /min /leak current≤10mA
Insulation voltage (Input-Ground)	500VDC	500VDC /min /leak current≤10mA
Insulation voltage (Output-Ground)	500VDC	500VDC/min /leak current≤5mA
Insulation resistance	100MΩ	normal temperature/500VDC/ Input-output insulation resistance ≥ 100MΩ
Damp heat insulation resistance	≥2MΩ	+40°C ± 2°C; humidity: 93%±3 /500VDC/ insulation resistance ≥ 2MΩ

### ➤ EMC

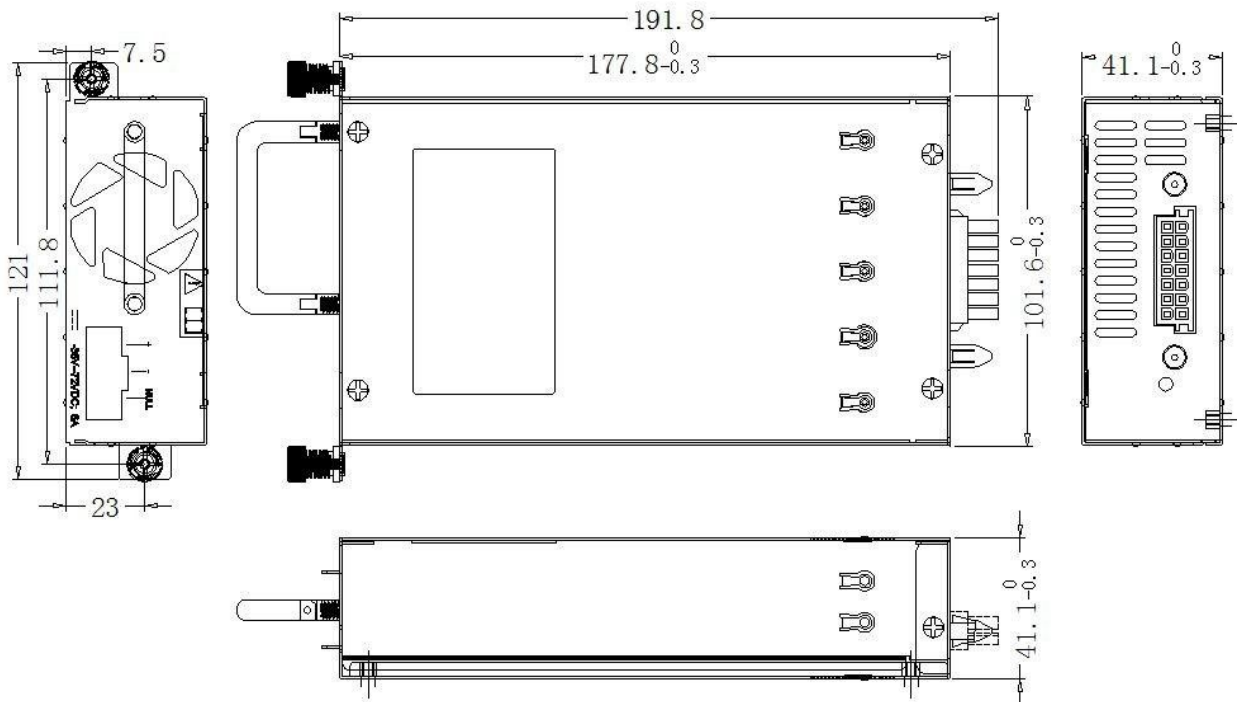
Item	Required index	Standard
Conducted Emission (CE)	CLASS A	EN55022 (Testing based on the whole system)
Radiated Emission (RE)	CLASS A	
Electrostatic Discharge (ESD)	Shell part can be touched under normal operation: IEC61000-4-2; ±6KV contact discharge; ±8KV air discharge Class A; (Power on during testing)	
	Shell part can be touched under normal operation: IEC61000-4-2; ±8KV contact discharge; ±10KV air discharge Class A; (Power on during testing)	
CE	IEC61000-4-6 LEVEL3 CLASS A	
RE	IEC61000-4-3 LEVEL3 CLASS A	
Electrical fast transient burst (EFT)	IEC61000-4-4 LEVEL4 CLASS A	
Surge	IEC61000-4-5 LEVEL4 CLASS A (difference mode 2KV, common mode 4KV)	
DIP	IEC61000-4-11 drop to 70%U, lasting time: 100ms; CLASS A drop to 0%U, lasting time: 10ms, 0°.CLASS A	

### ➤ Other Characteristics

Item	Required Index	Performance
Audible noise	≤60dB	Passed
MTBF	30000H	Passed
Vibration	2-9HZ 7MM, 9-200HZ 2g, 200-500HZ 1.5g 5*10cir, X, Y, Z, each for 5 times(3*50 min)	Passed
	No harm to power supply	

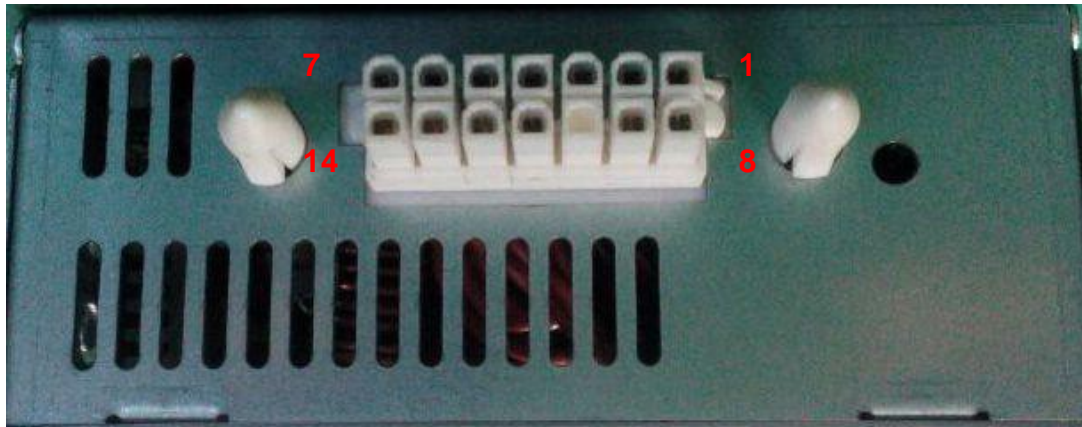
Shock	Lasting time: 11ms, Peak acceleration 300m/s <sup>2</sup> , X, Y, Z, each for 20 times	Passed
Dustproof	Some dustproof	Passed
Smell	None	Passed

### 3. Outline & Port Definition



Dimensions (W x D x H): 177.8 x 101.6 x 41.1 mm; tolerance:+0.0mm, -0.3mm

#### ➤ PIN over DC out terminal



PIN	Function	Color
1	12V	WHITE
2	12V	WHITE
3	FAN MONITOR SIGNAL	When the fan works, Pin3 outputs a TTL 3.3V; when the fan breaks down, Pin3 outputs a TTL 0V.
4	GND	BLACK
5	GND	BLACK
6	PRESENT	BROWN
7	INPUT TYPE (AC/DC)	VIOLET

8	12V	WHITE
9	12V	WHITE
10	NC	
11	GND	BLACK
12	GND	BLACK
13	PG	GREY
14	REMOTE ON/OFF	ORANGE

➤ **Monitoring, alarm & interface**

S/N	Item	Characteristics
1	PG	PG: Normal: Output high level: 3.3V (±6%). Fault: Output low resistance (<0.5V, Current<4mA);
2	Fan signal	Fan signal requirement: When the fan works, Pin3 outputs a TTL 3.3V (±6%); when the fan breaks down, Pin3 outputs a TTL 0V.
3	REMOTE ON/OFF	Remote on/off: If the external low-level power works, it'll float, not working.
4	Detection (PRESENT)	The PRESENT connects with GND; when power is on, short circuit is provided.
5	INPUT TYPE (AC OR DC)	Identify the type of the module. If it is AC, the signal will be left unused; if it is DC, one 100Ω resistance will be internally connected to GND.



## 4. Notice

### ➤ Unpack

Open the case to check if there are damages caused by transportation or not. Keep the packing materials until all modules have been registered and checked.

### ➤ Rule

- No obstacles in the air channel of the modular unit.
- Any conductive parts must be kept in distance from metal parts, corresponding the certain safety standards.

### ➤ Protection

- Once the safety protection breaks down, stop the working device and refer to the maintenance regulations;
- Removing the power from the cold to the warm may cause danger. Please carefully follow the grounding requirements and have a qualified staff connect the device to the driving power.
- Cut off the power and let the capacitor discharge for 4 minutes.

### ➤ Caution

- The power must be used in the above stated conditions;
- Don't modify the potentiometer by yourself;
- During the use, keep the power in cool air; when there is smoke and smell, shut down the power immediately.

## 5. Package, transportation & storage

### ➤ Package

The product name, model, logo, certificate of inspection, manufacturing date, etc. are stamped on the case. Product specifications and attachments are provided.

### ➤ Transportation

During transportation in vehicle, ship or aircraft, it should be covered for sunscreening. Carefully load/unload it.

### ➤ Storage

Put it in the case when stored in the warehouse at the temperature of  $-40 \sim +80^{\circ}\text{C}$  temperature and humidity of  $\leq 90\%$ . No harmful air, inflammable and explosive items or corrosive chemical products is permitted in the warehouse. Besides, strong machinery vibration, shock or strong magnetic field is prohibited. Elevate the package case at least 20cm high above the ground, keep it not less than 50cm from the walls, heat sources, and air windows. The storage period lasts 2 years, rechecking the device when it is expired.

## 6. Reference

- GB2423.1-89 basic testing for electric and electronic products, standard Ad.
- GB2423.2-89 basic testing for electric and electronic products, testing Bd.
- GB2423.9-89 basic testing for electric and electronic products, testing Cb.
- GB2423.10-95 basic testing for electric and electronic products, standard FC.
- GB/T13722.-92 requirements and testing of the mobile communication power technique
- ST2811.2-87 testing for general DC stabilized power
- GB4943.-1995 security of information technology equipment (including electric matters)
- ETS300019-1-1 storage
- ETS300019-1-2 transportation
- GB3873-83 conditions for general technique of communication product package
- Testing details of quality authentication for communicating and high-frequency switch power supplier to enter into network
- YD/T731-94 rectifier of communicating high-frequency switch
- XT— 005—95 General technical requirements for power system in Communication Bureau (Provisional)

## 7. List of Key Material

S/N	Item	Spec/model	Site	Brand
1	electrolytic capacitor	150UF/450V	E1	RUBYCOM/MXG
2	electrolytic capacitor	2200UF/16V	E2,E3, E4	NIPPON/KZE
3	electrolytic capacitor	1000UF/16V	E5	NIPPON/KY
4	electrolytic capacitor	100UF/25V	E6	NIPPON/KY
5	electrolytic capacitor	220UF/25V	E7,E8,E9, E10	NIPPON/KY
6	MOS	FCP190N60E	Q2	FAIRCHI
7	MOS	FQP13N50C	Q8, Q9	FAIRCHI
8	Schottky Diode	RHRP860	D6	FAIRCHI
9	Schottky Diode	STPS2045CT	D25, D26	ST
10	Schottky Diode	STPS3045CT	D27	ST
14	PFC Integrated IC	2PCS01	U1	INFINEON
15	Integrated IC	NCP1396A	U2	ON
16	Integrated IC	TNY266	U3	PI
17	Transformer	/	T1	/
18	PFC	/	T2	/
20	Auxiliary supply transformer	/	T3	/