

SPECIFICATION FOR APPROVAL

品名 (Description) : Power Supply

型号 (Model No.) : EAA200TS5

规格 (Specifications) : 5.0V/40A

版本 (REV) : V1.0

日期 (Date) : 2020.05.08

Shenzhen Eager LED Co., Ltd.

Tel: +86 15361038665 Email: info@eagerled.com Website: www.eagerled.com
Address: Building C, Zhongyu High-Tech Industrial Park, Heshuikou, Matian,
Guangming, Shenzhen, China

Revision History

修订日期 (Date)	型号 (Model)	版本 (REV)	修订内容 (Revised content)	备注 (Comments on a form)
2020.05.08	EAA200HS5	1.0		

Foreword

Thank you to all customers for choosing our power supply. In order to further ensure the long-term reliability and stability of the customer's entire system, please read the following precautions carefully when using our power supply. If you have any questions, please contact our technical department in time. Personnel contact.

1.0 Reservation of power margin

1.1 Definition of power supply working environment temperature: All power supplies provided by our company to customers are of sufficient power. The working environment temperature refers to the external ambient temperature around our power supply (or the temperature inside the customer's box system), not the temperature inside the customer's box system. The maximum ambient temperature outside the customer's cabinet system.

When selecting and using the power supply, customer engineers must fully consider the ambient temperature outside the customer's box and the ambient temperature inside the box; to avoid over-temperature protection or service life of the power supply due to excessive internal ambient temperature. shorten.

1.2 The structure of the system box: Our company is concerned about whether the customer's box is sealed or unsealed, and whether the bottom shell of the power supply is close to the box or not when installed; rather than the specific appearance and internal structure.

Sealed boxes mainly rely on heat transfer and radiation for heat dissipation; unsealed boxes mainly rely on air convection for heat dissipation. Air convection heat dissipation is better than heat transfer and radiation heat dissipation.

Our company recommends that customers do not use power supplies with fans in sealed cabinets. Power supplies with fans mainly rely on forced air cooling for heat dissipation; and the air in the sealed cabinet cannot communicate with the outside, which will cause the ambient temperature inside the cabinet to rise greatly. , excessively high ambient temperature will further cause the efficiency of the power supply to decrease and the temperature to increase; it will affect the long-term reliable operation of the customer's cabinet.

If the customer must use the power supply with a fan in a sealed box, it must be derated. Our company recommends derating the peak current of the system to 80% for use; and the maximum peak current of the box (the maximum peak current of the box needs to be measured with an oscilloscope, and the effective current is generally measured with a current clamp meter) does not exceed the rated output current of the power supply. 80%.

When customers choose a power supply based on the box, they should base it on the maximum peak current of the customer's box, rather than the effective current of the box. The peak current of the system box is generally about 30% higher than the effective current. If the power supply is selected based on the limited current of the box, even if the effective current is lower than the rated output current of the power supply, the peak current of the box will be too high and exceed the limit of the power supply. current protection point, causing the power supply overcurrent protection to malfunction. It is recommended that the maximum peak current of the customer's box should not exceed the rated output current of our power supply;




the peak current needs to be tested with an oscilloscope. If the customer does not have such testing equipment, our company can provide related services.

2.0 Precautions for the use environment of the cabinet:

2.1 The system box is used in areas with high humidity, seaside, rainy and other humid areas, and the ambient temperature is lower than -30° C. When placing an order, please note that the power supply needs to be treated with three precautions; the box should be sealed as much as possible.

2.2 The system box is used in high-dust environments such as roadsides. It is recommended that the customer system adopt a sealed system, choose a power supply without a fan, and require the power supply to add three-proof treatment; if the system uses a non-sealed box, a dust cover must be added to avoid Excessive dust enters the customer's system and power supply, causing quality hazards.

2.3 The system cabinet is used in rental cabinets and suburban areas, which may involve low power input voltage, causing problems such as power under-voltage protection action or low power efficiency. It is recommended that customers use the system in areas where the input voltage may be relatively low. The power supply or system box wiring that uses full voltage input must be balanced. Increase the wire diameter of the system box input line and reduce the number of power supplies on one line to ensure that the power input voltage is higher than the rated input voltage.

 高压 high voltage	电源输入端口带有高压，不可以用手触摸 Power input port with high pressure, can not be touched by hand
 注意 pay attention to	电源是大漏电流的产品，通电前请可靠接地 The power supply is a product with a large leakage current. Please be reliably grounded before power is turned on
 高压 high voltage	严禁在雷雨天气下进行高压、交流电操作 High voltage and AC operation in thunderstorm weather is strictly prohibited

1、描述 Overview:

Welcome to use the dedicated power supply for LED display screen developed and produced by our company. Product model EAA200TS5 is a single-channel (+5.0V), dual-voltage input 115/230V~, output power 200W power module.

Has the following characteristics:

- Input voltage: Dual voltage switching 115/230Vac input
- Protection function: input over-under voltage, output over-current, short-circuit protection function
- Operating temperature range: -30°C to +70°C
- Small size, high efficiency, stable operation, high reliability, high efficiency and energy saving
- Using high-quality components, PCB uses three-proof technology

参考外观图片 Refer to appearance pictures:



2、环境条件 Environmental conditions:

项目 Project	参数 Parameter	注释 Remark
工作温度 Permanent operating temperature	-30~+70° C	50°C~70°C需降额使用， 详见环境温度与输出功率曲线图 50°C~70°C requires derating. Please refer to the ambient temperature and output power curve chart for details.
储存温度 Storage temperature	-40~+85° C	
工作相对湿度 Work Relative Humidity	5~95%	无冷凝 No condensation
存贮相对湿度 Storage Relative Humidity	5~95%	

海拔高度 Altitude	3000M	
散热方式 Cooling mode		自然风冷 Natural air cooling
振动耐受 Vibration	There are $\pm 3 \times 30g$ shocks on each plane, for a total of 18 shocks. 30g = 11ms (+/-0.5msec), half sine. Complies with EN60068-2-27 and EN60068-2-47	
冲击耐受 Shock	Uniaxial 10-500 Hz, resonance endurance in all 3 planes at 2g sweep. Comply with EN60068-2-6	

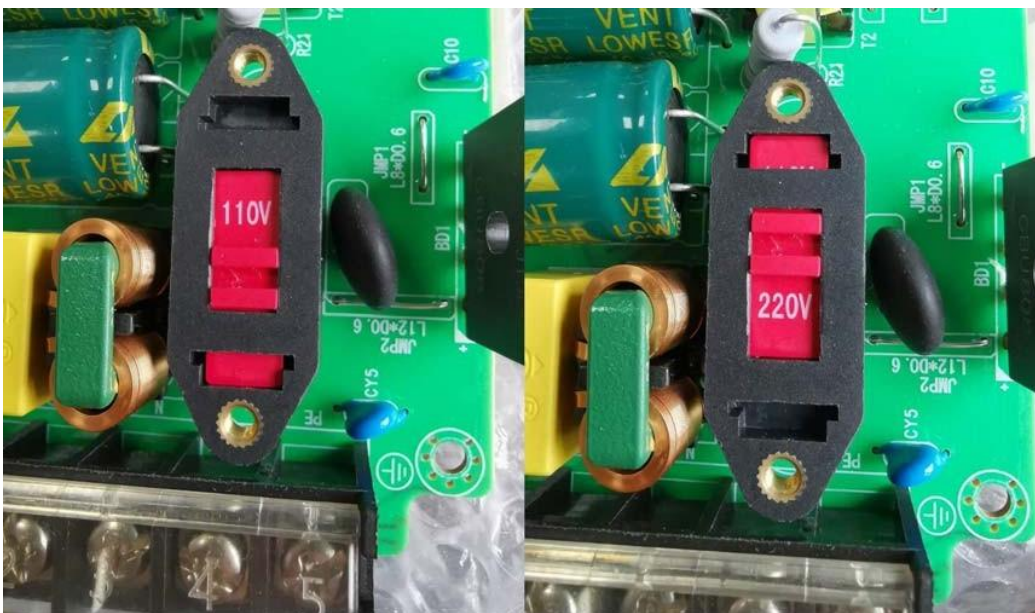
3、输入特性 Input characteristic:

Input voltage replacement switch: When the input voltage needs to be replaced, strictly follow the switch instruction label or look at the voltage mark displayed on the switch. That is, when the switch displays 115V, the input voltage should be 115V[~]; when it displays 230V, the input voltage should be 230V[~]. It is strictly forbidden that the input voltage does not match the voltage displayed by the switch. If the input voltage does not match the voltage displayed by the switch, it will cause serious damage to the product. Our company is not responsible for any losses caused by this operating error.

When the input voltage needs to be changed for replacement, non-professionals should not do it.

Switch label display at 115V

Switch label display at 220V



Dual voltage switch DIP switch actual picture

项目 Project	参数 Parameter	注释 Remark
输入电压范围 Input voltage range	100-120/200-240V~	Input voltage full load range, please refer to the input voltage derating curve for details
额定输入电压 Rated input voltage	115/230V~	
交流输入电压频率 Input voltage frequency	47-63Hz	
功率因数 PF	≥0.5	115/230V~rated load
输入电流 Input current	≤3.5A ≤2.5A	115V~rated load 230V~rated load
输入冲击电流 Input shock current	60A	60A at 230Vac (Typical Peak)

4、输出特性 Output characteristic:

4.1 基本输出特性 Basic output characteristics:

项目 Project	参数 Parameter	注释 Remark
输出电压范围 Output voltage	4.9~5.1V	5V±2%
输出电流范围 Output current	0~40A	Input voltage 100-120/200-240V~
负载调整率 Load regulation accuracy	±1% VO	额定电压输入, 全负载变化 Rated voltage input, full load change
电压调整率 Voltage regulation accuracy	±1% VO	额定负载输入, 全电压变化 Rated load input, full voltage change
稳压精度 Regulation accuracy	±2% VO	115/230V~; 0-40A
电源调整率 Power regulation	±1% VO	Rated current output, full voltage range variation

噪声+纹波(峰峰值) Ripple and noise	≤ 200 mVp-p	在满负载时,且测试时在输出端加并 0.1uF 瓷片电容或金膜电容和 10uF 电解电容各一个,示波器带宽为 20MHz. When the oscilloscope is under full load, and one 0.1uF ceramic chip capacitor or gold film capacitor and one 10uF electrolytic capacitor are added to the output terminal during the test, the oscilloscope bandwidth is 20MHz
--------------------------------	------------------	--

4.2 其他输出特性 Other output characteristics:

项目 Project	参数 Parameter	注释 Remark	
输出功率 Output Power (W)	180/200W	180/200W	
输出效率 Efficiency	$> 88.0\%$	115V~ rated load	See the load and efficiency curve chart for details.
	$> 88.0\%$	230V~ rated load	
输出动态响应 Output dynamic	$\pm 5\%$ VO	25%-50%或 50%-75%负载变化, 25%-50% or 50%-75% load change	
输出过冲 Off overshoot	$\pm 5\%$ VO		
开机输出延迟 Power output delay	≤ 3000 ms	220Vac 下满载, 常温测试 Full load test at 220Vac	
开关机过冲 Off overshoot	$\pm 5\%$ VO	全电压输入范围、全负载输出 Full voltage input range, full load output	
输出电压上升时间 Output voltage rise time	≤ 50 ms	The measured rise time is when the output voltage rises from 10% to 90% of the specified output voltage as observed on the channel waveform.	

5、保护特性 Protection Features:

项目 Project	参数 Parameter	注释 Remark
输入欠压保护点 Input undervoltage protection	65-90V~/135-185V~	Power protection no output (50% load)
输入欠压恢复点 Input voltage recovery point	75-95V~/170-190V~	Power output returns to normal (50% load)
输出过流保护点 Output current limit protection point	44~60A	Input full voltage range, OCP trip point must be between 110% and 150% of rated full load current of 40A. After troubleshooting, the power output must automatically recover under normal load.
输出短路保护 Output short circuit protection	45A	打嗝, 自恢复 Hiccup Model, Auto-recovery

6、其他特性 Other features:

参数 Parameter	标准要求 Standard/SPEC
输入泄漏电流 Leakage current	<1.0mA (Vin=220Vac) GB8898-2001 9.1.1
平均无故障时间 Mean time between failures	≥50,000h
气味要求 Odour requirements	不会产生异味和有害健康的气味 Can not produce odors and unhealthy odors.

7、安全特性 Safety features:


EMI
Power supply complies with EN 55022 CISPR 22 Class A
EMC
The power supply complies with the following standards:
EN61000-3-2: Harmonic current emission level A. EN61000-3-3: Voltage fluctuations and flicker.

安规及绝缘等级			
参数 Parameter		测试条件 Test conditions	标准、技术要求 Standard/SPEC
绝缘耐压 Isolation voltage	输入-输出 Input-Output	3000Vac/10mA/1min	No flashover, no breakdown
	输入-大地 Input-PE	1500Vac/10mA/1min	No flashover, no breakdown
	输出-大地 Output-PE	500Vdc/10mA/1min	No flashover, no breakdown
绝缘阻抗 Insulation Resistan	输入-输出 Input-Output	DC500V	$\geq 10M\Omega$ Min
	输入-大地 Input-PE	DC500V	$\geq 10M\Omega$ Min
	输出-大地 Output-PE	DC500V	$\geq 10M\Omega$ Min


8、机械特性 Mechanical characteristics :

机械特性 Mechanical characteristics	
长(L)*宽(W)*高(H)	190*82*30 (mm) \pm 0.5mm
重量 weight (g)	380g

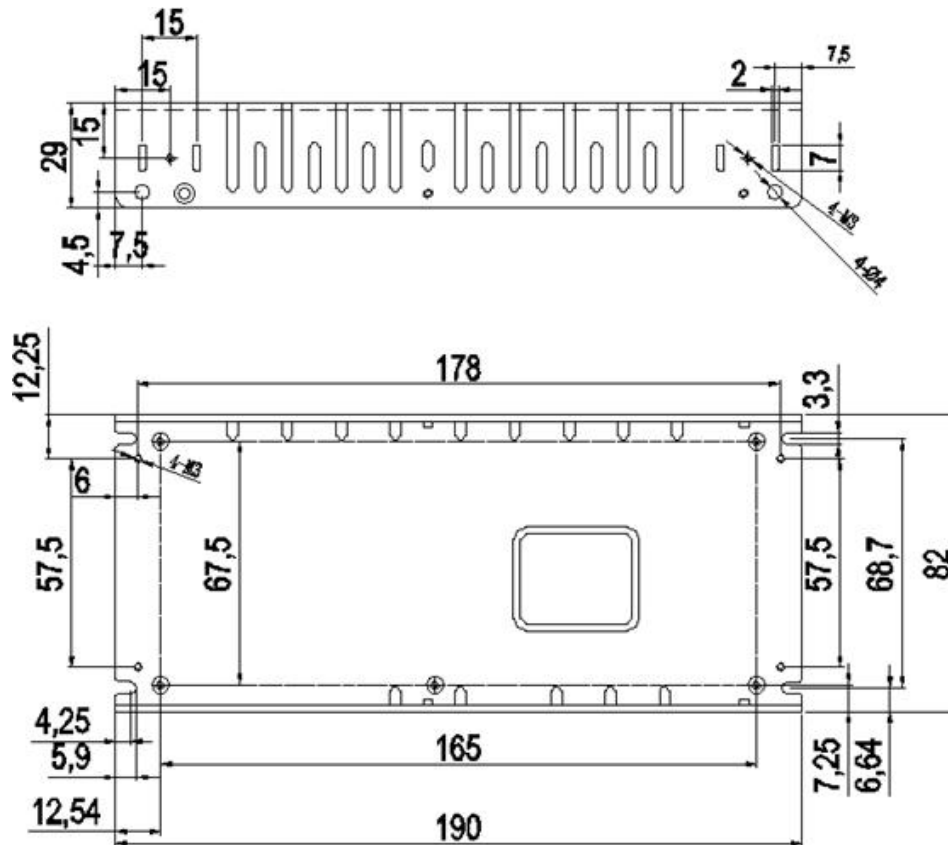
9、输入连接器 Input connector:

	NO. 序号	NO. 序号	Define. 定义
	1	PIN1	NEUTRAL
	2	PIN2	NEUTRAL
	3	PIN3	LINE
	4	PIN4	LINE
	5	PIN5	EARTH
<p>Remark: 5PIN backrest 9.5mm pitch Torque value: 12kgf.cm</p>			

10、输出连接器 Output connector:

	NO. 序号	NO. 序号	Define. 定义
	1	J5-Pin1	5V+
	2	J5-Pin2	5V+
	3	J5-Pin3	5V+
	4	J5-Pin4	5V-
	5	J5-Pin5	5V-
<p>Remark: 5PIN backrest 9.5mm pitch Torque value: 12kgf.cm</p>			

11、安装孔位尺寸 Installation hole size:

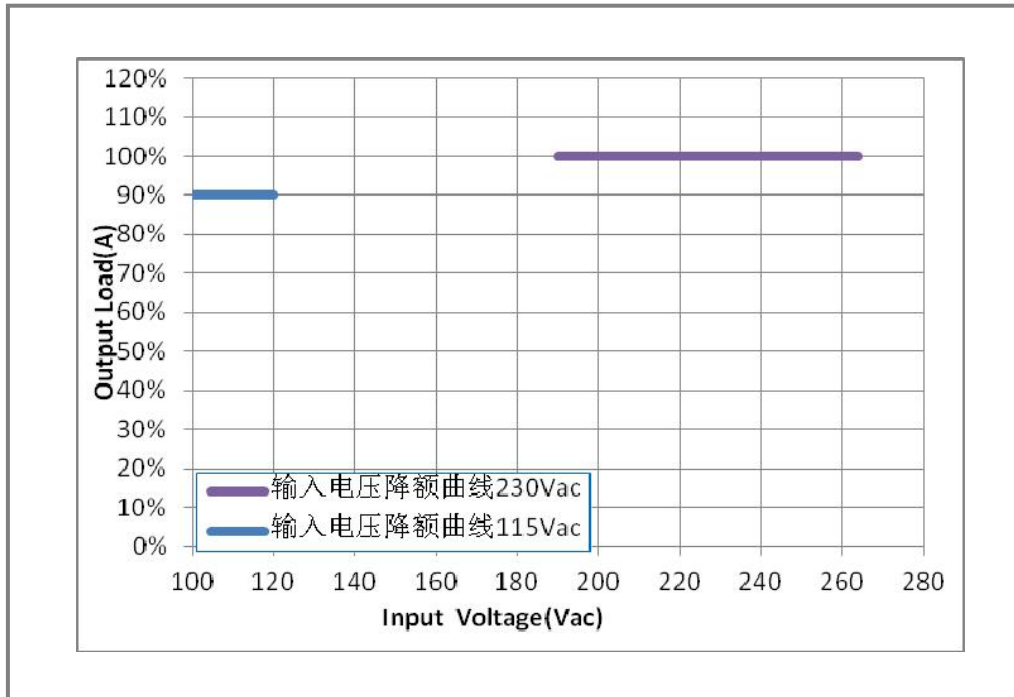


注意：对于电源底部的螺纹安装孔，除非特别说明，应当使用长度合适的螺钉；否则会因为螺钉深入过多，造成电源内部元器件短路损坏！

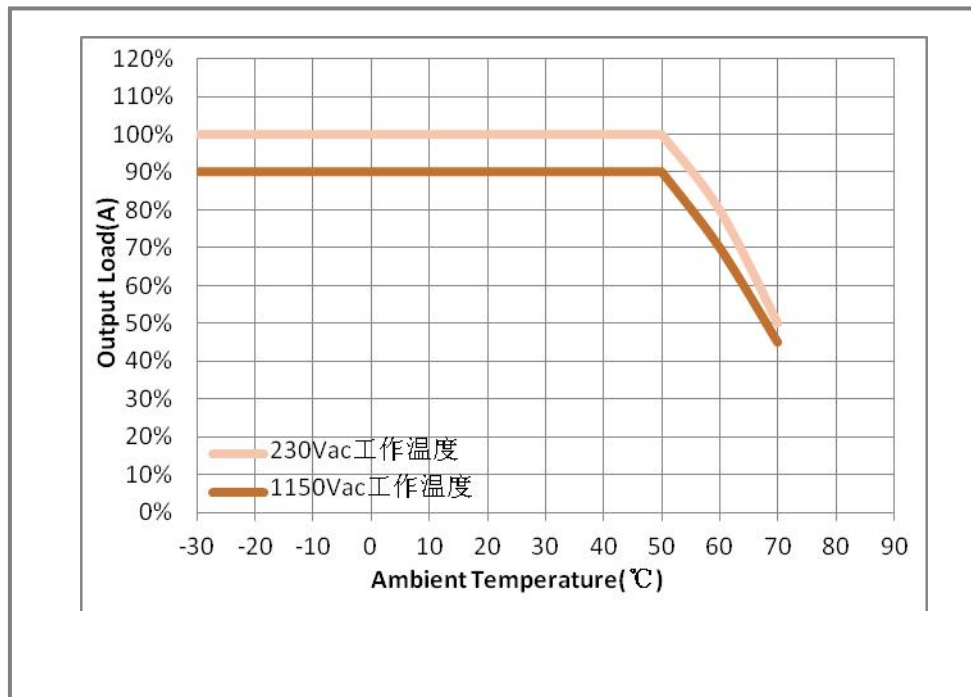
Note: For the threaded mounting holes at the bottom of the power supply, unless otherwise specified, screws of appropriate length should be used; otherwise, the internal components of the power supply may be damaged by short circuit due to excessive screw penetration!

12、降额曲线 Derating curve:

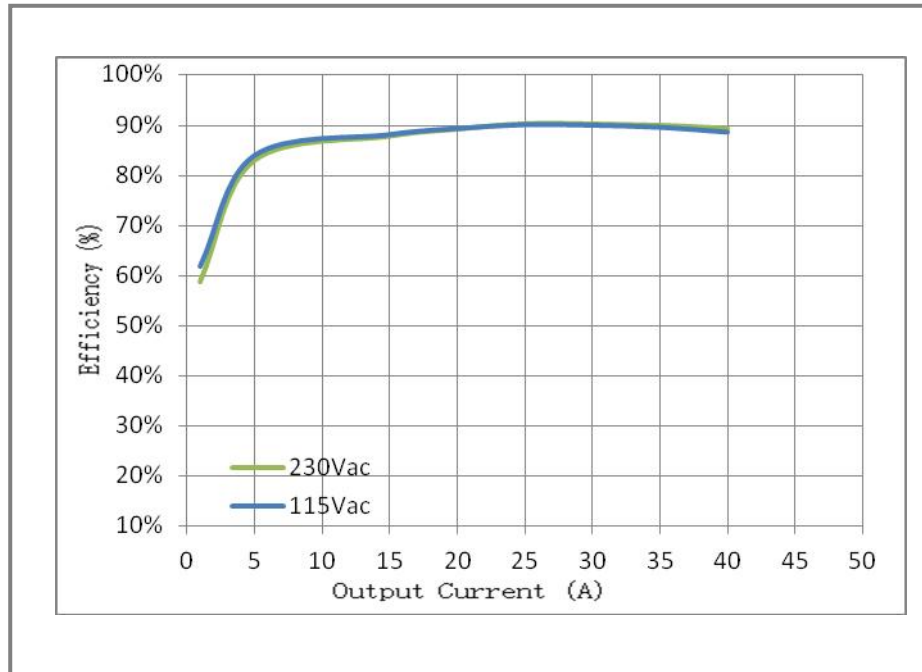
12.1 输入电压降额曲线 Input voltage derating curve:



12.2 工作温度降额曲线 Operate temperature derating curve:



12.3 负载与效率曲线 Effi & load curve: 220VAC



13、安全使用说明 Safe use instructions:

(1) Unpacking: Check whether the equipment is damaged during transportation. Retain packaging materials until all modular units of the power supply have been registered and inspected.

(2) General rules

- Air passages to modular units should not be blocked.
- The distance between any conductive part of the power supply equipment and metal parts must comply with relevant safety standards.

(3) Safety protection matters

- Once the safety protection of the equipment is damaged, the equipment must stop working and refer to the relevant maintenance regulations.
- When the power supply equipment is transferred from a cold environment to a warm environment, condensation may cause dangerous problems, so grounding requirements must be strictly implemented. Only qualified personnel may connect the equipment to the power supply.
- After cutting off the power supply, the machine must be stopped for four minutes to allow the capacitors to have sufficient discharge time before maintenance can be performed on the power supply equipment.

(4) Precautions

- The power supply should be used under the environmental conditions specified in the specifications.
- Do not adjust the potentiometer in the power supply at will.
- During use, the power supply should maintain good ventilation and heat dissipation; if you find smoke or an unpleasant smell during startup or use, you should turn off the power supply immediately.
- A fuse must be connected in series between the input power supply and the power supply equipment.

(5) Packaging: The packaging box contains the product name, model, manufacturer's logo, inspection certificate from the manufacturer's quality department, manufacturing date, etc.; the packaging box contains product specifications and a list of accessories.

(6) Transportation: Suitable for transportation by vehicle, ship, and airplane. During transportation, it should be covered with shelter, protected from the sun, and handled in a civilized manner.

(7) Storage: The product should be placed in the packaging box when not in use. The warehouse ambient temperature is $-45\sim+85^{\circ}\text{C}$ and the relative humidity is $\leq 90\%$. Harmful gases, flammable, explosive products and corrosive products are not allowed in the warehouse. It is a non-toxic chemical product and is free from strong mechanical vibration, impact and strong magnetic field. The packaging box should be placed at least 20cm above the ground and at least 50cm away from walls, heat sources, and window air inlets. The storage period under these specified conditions is generally 2 years. After two years, it should be re-inspected.

(8) Warranty period: Within one year of the warranty period, our company will be responsible for repairing any natural damage caused by normal use of this product free of charge. However, if any of the following conditions occur, it will not be covered by the warranty:

- Damage caused by unauthorized repairs without the company's permission.
- Add or modify at will.
- Incorrect operation or use.
- The environmental conditions are abnormal and exceed the specifications, resulting in damage.
- Deliberate vandalism.
- Damage caused by irresistible natural disasters.

(9) Maintenance scope: If the power supply malfunctions due to errors in material and manufacturing technology during the warranty period, our company will repair or replace it free of charge. Repair services will include various labor services and any necessary adjustments or replacement parts, etc.

(10) Operation safety instructions: Under any circumstances, such as operation, cleaning or maintenance, please be sure to abide by the safety rules stipulated below. If any violation causes safety concerns beyond the original design and manufacturing, the company will not be responsible.

- Do not operate in volatile gas or flammable environment.
- Do not under any circumstances remove the cover or touch internal parts.
- For safety reasons, never perform internal maintenance and parts replacement alone.

14、引用标准及规范 Reference standards and norms:

- 14.1 GB / T 2423.1-2011 electric and electronic products, environmental testing, Part 2: Test methods / test A: low-temperature GB/T 2423.1-2011 电工电子产品环境试验,第2部分: 试验方法/试验 A: 低温
- 14.2 GB / T 2423.2-2011 electric and electronic products, environmental testing, Part 2: Test Methods / Test B: high-temperature GB/T 2423.2-2011 电工电子产品环境试验,第2部分: 试验方法/试验 B: 高温
- 14.3 GB / T 2423.3-1993 electric and electronic products environmental testing procedures - Test Ca: Damp heat test method; GB/T 2423.3-1993 电工电子产品基本环境试验规程—试验 Ca:恒定湿热试验方法;
- 14.4 GB / T 2423.4.1993 electric and electronic products environmental testing procedures - Test Db: Damp heat test method; GB/T 2423.4.1993 电工电子产品基本环境试验规程—试验 Db:交变湿热试验方法
- 14.5 GB / T 2423.5-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Shock; GB/T 2423.5-1995 电工电子产品环境试验,第2部分: 试验方法/试验 Ea 和导则: 冲击
- 14.6 GB / T 2423.6-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Bump; GB/T 2423.6-1995 电工电子产品环境试验,第2部分: 试验方法/试验 Ea 和导则: 碰撞
- 14.7 GB / T 2423.8-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ed: Free fall; GB/T 2423.8-1995 电工电子产品环境试验,第2部分: 试验方法/试验 Ed: 自由跌落
- 14.8 GB / T 2423.10-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fc and guidance: Vibration (sinusoidal) ; GB/T 2423.10-1995 电工电子产品环境试验,第2部分: 试验方法/试验 Fc 和导则: 振动(正弦)
- 14.9 GB / T 2423.11-1997 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fd: Random vibration wide band - General requirements; GB/T 2423.11-1997 电工电子产品环境试验,第2部分: 试验方法/试验 Fd: 宽频带随机振动—一般要求
- 14.10 GB / T 2423.22-2002 electric and electronic products, environmental testing, Part 2: Test N: temperature change; GB/T 2423.22-2002 电工电子产品环境试验,第2部分: 试验 N: 温度变化