

# 产品规格书

## SPECIFICATION

产品型号(Product Model): T200V3.8-2.8A1

产品描述(Product Description): LED POWER SUPPLY

版本序号(Version Number): 1.0

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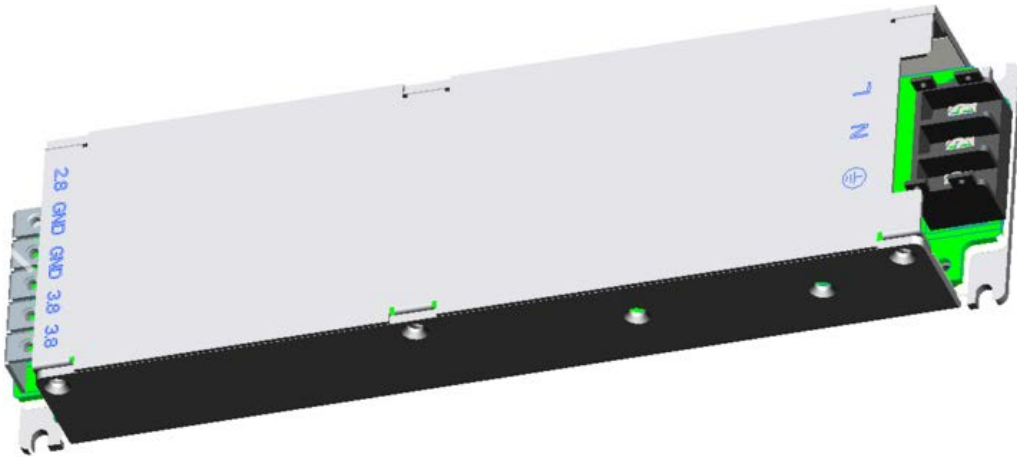
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## 1.产品概述(Product Introduction)

产品型号 T200V3.8-2.8A1 是为 LED 显示屏设计的一款专用超薄电源，带主动式 PFC 具有双路输出，输出功率为 200W 全电压输入的电源模块。

Product model T200V3.8-2.8A1 is a special ultra-thin power supply designed for LED display screen, with active PFC with dual output, output power of 200W full voltage input power module.



有以下特点

Product has the following features:

- 输入电压(input voltage)90Vac to 264Vac, 适用全球电压范围 (Applicable to global voltage range)
- 保护功能(Protection function): 短路保护, 过流保护, 过温保护(SCP, OCP, OTP)
- 工作温度范围(Operation temperature range): -30°C to +70°C(-40°C can start up)
- 高效率, 长寿命和高可靠性(High Efficiency, long life and high reliability)
- PCB 使用三防工艺(PCB using conformal coating process)

## 2.电气特性(Electrical Characteristics)

### 2.1 输入特性(Input Electrical Characteristics)

输入电压范围 Input Voltage Range	90Vac to 264Vac
额定输入电压 Rated Input Voltage	100Vac to 240Vac
输入频率范围 Input Frequency Range	47Hz to 63Hz
额定输入频率 Rated Input Frequency	50Hz to 60Hz

输入电流 Input Current	Max. 3.5A at 90Vac input at Full Load
浪涌电流 Inrush Current	60A (TYP. peak) at 240Vac
功率因数 Power Factor	$\geq 0.99$ at 100Vac, $\geq 0.96$ at 230Vac
效率 Efficiency	83% min @ 220Vac, Full Load

## 2.2 输出特性(Output Electrical Characteristics)

### 2.2.1 输出功率(Output Power)

输出功率 Output Power	200W
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### 2.2.2 输出电压和电流(Output Voltage and Current)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	稳压精度 Voltage	额定电流 Rated Current
CON5/6(+)(-)	+3.8Vdc	$\pm 5\%$	100Vac to 240Vac; 0A-30A
CON2(+)(-)	+2.8Vdc	$\pm 5\%$	100Vac to 240Vac; 0A-30A

备注：测试电源电压时，必须在电源的输出端子处测量。

Remark: Test power supply voltage, must measure the power output terminal.

### 2.2.3 输出纹波(Output Ripple & Noise)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Output Ripple & Noise	
		常温 25°C 下额定输入，额定负载，示波器带宽限制 20MHz 输出端并 10uf+0.1uf 电容	
CON5/6(+)(-)	+3.8Vdc	$\leq 200\text{mV}$	
		$\leq 260\text{mV} @ -25^\circ\text{C}$ (满载工作半小时后测试)	
CON2(+)(-)	+2.8Vdc	$\leq 110\text{mV}$	
		$\leq 150\text{mV} @ -25^\circ\text{C}$ (满载工作半小时后测试)	

### 2.2.4 开机延迟时间(Turn on Delay Time)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Turn on Delay Time	
		100Vact to 240Vac @ 25°C	100Vact to 240Vac @ -10°C
CON5/6(+)(-)	+3.8Vdc	$\leq 3\text{S}$	$\leq 5\text{S}$
CON2(+)(-)	+2.8Vdc	$\leq 3\text{S}$	$\leq 5\text{S}$

备注：AC 上电到输出电压 90%的时间。

Remark: AC voltage to the output voltage on 90% of the time.

### 2.2.5 关机维持时间(Hold up Time)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Hold up Time
		100Vac to 240Vac
CON5/6(+)(-)	+3.8Vdc	$\geq 10\text{mS}$ @Full Load
CON2(+)(-)	+2.8Vdc	$\geq 10\text{mS}$ @Full Load

备注：关闭 AC 输入电到输出电压 90%的时间。

Remark: Shut down the AC input voltage to the output voltage of 90% of the time.

### 2.2.6 输出电压上升时间(Output Voltage Rise Time)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Output Voltage Rise Time
		100Vac to 240Vac
CON5/6(+)(-)	+3.8Vdc	$\leq 50\text{ms}$ @Full Load
CON2(+)(-)	+2.8Vdc	$\leq 100\text{mS}$ @Full Load

备注：输出电压从 10%上升到 90%的时间。

Remark: Output voltage increased from 10% to 90% of the time.

### 2.2.7 输出电压过冲(Output Overshoot)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Output Overshoot
		100Vac to 240Vac
CON5/6(+)(-)	+3.8Vdc	$\leq 10\%$ @Full Load
CON2(+)(-)	+2.8Vdc	$\leq 5\%$ @Full Load

### 2.2.8 动态响应(Transient Response)

输出通道 Output Channel	额定输出电压 Rated Output Voltage	Transient Response
		100Vac to 240Vac
CON5/6(+)(-)	+3.8Vdc	Output: 25%–50%, 50%–75% Slew Rate: 1A/uS, The output overshoot and undershoot should be $\leq \pm 5\%$ of Transient Response Recovery Time: 200us
CON2(+)(-)	+2.8Vdc	

Note: Load change repetition rate: 50Hz to 100Hz .负载跳变频率 □□□□□□

### 2.2.9 容性负载 (Capacitive Load)

The power supply powers up and operates with the 8000uF capacitive loads.

电源输出加 8000uf 容性负载正常启动和运行;

## 3.保护特性(Protective Characteristics)

### 3.1 短路保护(Short Circuit Protection)

项目 Item	备注 Remark
+3.8Vdc	打嗝,排除故障时, 电源输出正常恢复(Turn off)
+2.8Vdc	2.8V 锁机 (Latch off) ,3.8V 正常输出 (Normal output)

### 3.2 过电流保护(Over Current Protection)

项目 Item	过流值 Over Current	备注 Remark
+3.8Vdc	>65A (+2.8V 输出为空载)	打嗝, 排除故障可恢复 (Hiccup, troubleshooting can be resumed)
+2.8Vdc	>52A (+3.8V 输出为半载)	+2.8V 锁机(Latch off) , +3.8V 正常输出 (Normal output)

### 3.3 过温保护 (Overtemperature protection)

项目 Item	备注 Remark
过温保护 Overtemperature protection	检测壳内温度, 温度开关为常开型, 过温保护点为 $105\pm 5^{\circ}\text{C}$ The temperature inside the shell is detected. The temperature switch is normally open, and the over temperature protection point is $105 \pm 5$ degrees.

### 3.4 输入欠压保护(Input Under Voltage Protection)

项目 Item	欠压值 Under Voltage	备注 Remark
输入欠压保护 Input Under Voltage Protection	55Vac to 80Vac	电源保护无输出。(50%负载) No output power protection. (50% Load)

### 3.5 输入欠压恢复(Input Under Voltage Recovery)

项目 Item	恢复值 Recovery	备注 Remark
输入欠压恢复 Input Under Voltage Recovery	60Vac to 85Vac	输出恢复正常。(50%负载) Output recovery. (50% Load)

## 4.环境条件(Environmental Condition)

#### 4.1 环境温度(Ambient Temperature)

工作温度 Operation Temperature	-30°C to +70°C (-40° C can start up)
存储温度 Storage Temperature	-40°C to +85°C

#### 4.2 相对湿度(Relative Humidity)

工作相对湿度 Operating Relative	10%RH to 90%RH (无冷凝)
存储相对湿度 Storage Relative Humidity	5%RH to 95%RH

#### 4.3 海拔(Altitude)

工作海拔 Operating Altitude	≅ 5000m
存储海拔 Storage Altitude	≅ 5000m

#### 4.4 气候(Climates)

气候 Climates	适用于热带气候 Apply to the tropical climate
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#### 4.5 冷却方式(Cooling Method)

冷却方式(Cooling Method)	自然冷却 Ventilation cooling
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#### 4.6 功率降额(Power Derating)

The maximum percentage of output load derating from 50°C to 60°C is 2.0%/°C which is 160W at 60°C.

The maximum percentage of output load derating from 60°C to 70°C is 2.5%/°C which is 120W at 70°C.

从 50°C 至 60°C 输出负载降额最大的百分比是 2.0% /°C 是 160W at 60°C.

从 60°C 至 70°C 输出负载降额最大的百分比是 2.5% /°C 是 120W at 70°C.

#### 5. 可靠性(Reliability)

序号 NO.	项目 Item	备注 Remark
5.1	电源开关机循环 Power On/off Cycle	产品在室温环境下, 输入 220Vac, 满载输出, 开关各 3S 的频率循环 1000 次。 Products at room temperature environment, Rated input 220Vac and Full output, switch the 3 s 1000 times the frequency of the cycle.
5.2	老化测试 Burn-In Test	产品在 50°C 环境下, 输入 220Vac, 输出额定负载持续工作 72 小时。 Products in 50°C environment, input 220Vac, output rated Full load operation 72 hours continuously.
5.3	Humidity (环境湿度)	Operating 工作: From 10% to 90% relative humidity 无凝固(non-condensing). Storage 储存: From 5 to 95% relative humidity (non-condensing).
5.4	振动	IEC60068-2-6, Sinewave excited, acceleration 10Hz~150Hz at 25M/S <sup>2</sup> 2.5g peak; 90min per axis for all

	Vibration	X, Y, Z direction. IEC60068-2-6, Random: 5Hz–500Hz at 2.09G RMS peak. 20 min per axis for all X,Y,Z direction
5.5	冲击(Shock)	49m/s <sup>2</sup> (5G),11ms, once each X, Y and Z axis
5.6	平均故障间隔时间 MTBF	The Calculated MTBF should be more than 100,000 hours as per Telcordia SR-332 when AC 220V/50Hz and full load output at 25°C ambient.
5.7	电解电容寿命 Electrolytic Capacitor Life	The Calculated capacitor life shall be more 10 years when AC 220V/50Hz input, 50% load at 25°C ambient.

## 6.安全(Safety)

序号 NO.	项目 Item	条件 Condition	备注 Remark
6.1	绝缘强度 Dielectric Strength	初级对次级 Primary to Secondary	3000Vac, 5mA, 60S  无飞弧, 无击穿
		初级对大地 Primary to Ground	
		次级与大地 Secondary to Ground	
6.2	绝缘阻抗 Insulation Resistance	初级对次级 Primary to Secondary	500Vdc, ≥10MΩ  在正常大气压下, 相对湿度为 90%, 试验直流电压为 500V 时
		初级对大地 Primary to Ground	
		次级与大地 Secondary to Ground	
6.3	泄漏电流 Leakage Current	<1mA	@ 240Vac input
6.4	接地阻抗 Ground Impedance	<0.1 ohms.	32A / 2 分钟(过 UL 认证机型为 40A / 2 分钟)



6.5	安规认证 Safety Certification	设计符合 GB4943.1-2011 标准要求	
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## 7. EMI

The power supply meets the EN 55032 CISPR 22 Class A.

## 8. EMC

The power supply meets the following standards:

EN61000-3-2: Harmonic Current Emission Class A.

EN61000-3-3: Voltage fluctuations and Flicker.

IEC 61000-4-2: Electrostatic Discharge, Level 4:  $\geq 8\text{KV}$  contact,  $\geq 15\text{KV}$  air discharge, Criteria A.

IEC 61000-4-3: Radiated Electromagnetic field, Level 3. Criteria A

IEC 61000-4-4: Electrical Fast Transient, Level 3. Criterion A

IEC 61000-4-5: Surge; Level 3, Criterion A.

IEC 61000-4-6: Conducted Immunity, Level 3 Criteria A.

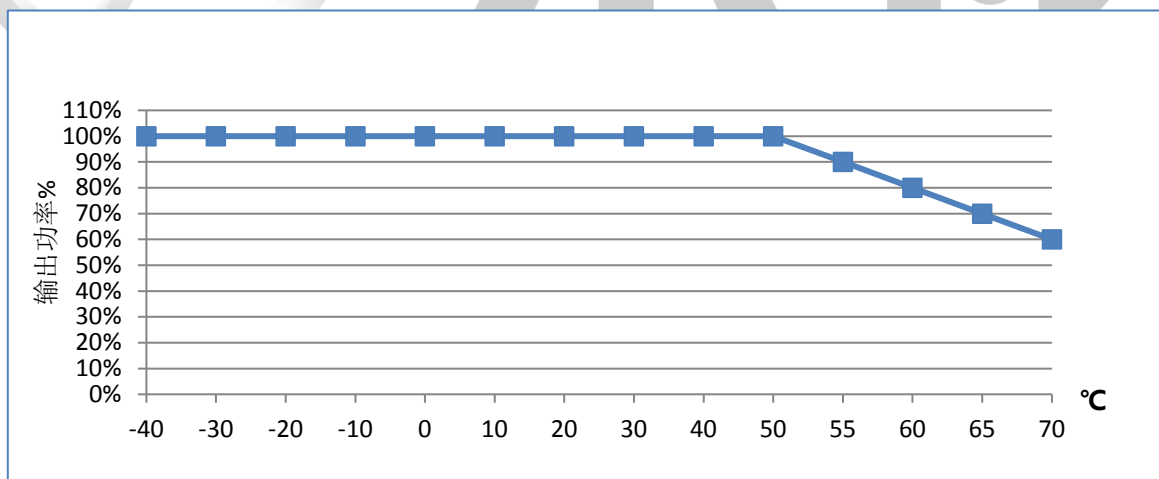
IEC 61000-4-8: 10A/Meter, Criteria.

IEC 61000-4-11: Voltage dips and interruption. 100% dip, 1 cycle (20ms), self-recoverable

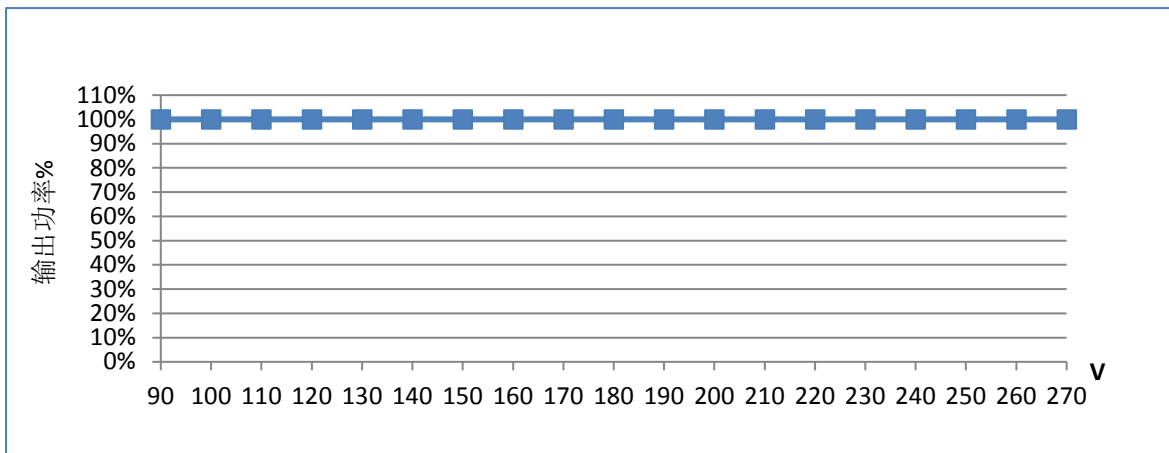
IEC 61000-4-12: Level 3, Criteria A

## 9. 降额曲线(Derating Curve)

### 9.1 环境温度与输出功率降额曲线(Ambient Temperature and Output Power)



## 9.2 输入电压与输出功率降额曲线(Input voltage and Output Power)

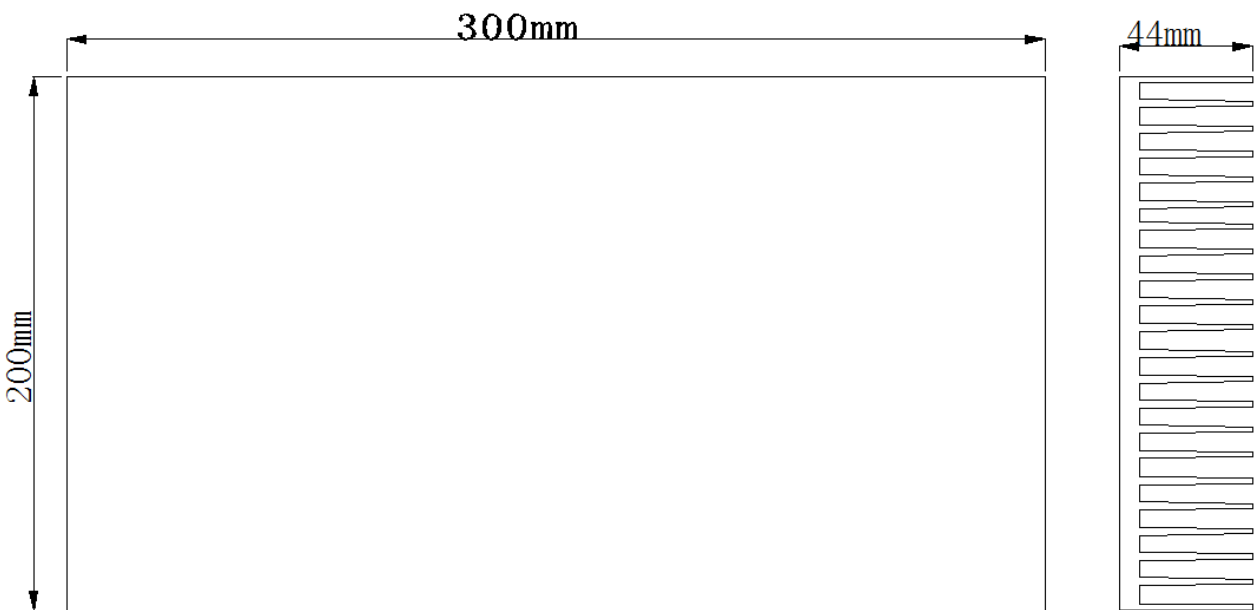


Remark:

- 建议电源在老化过程中在机壳底面紧贴散热板。(散热板尺寸: 300\*200\*44mm)

Recommend that the Power Supply should be mounted tightly with the heat sink described.

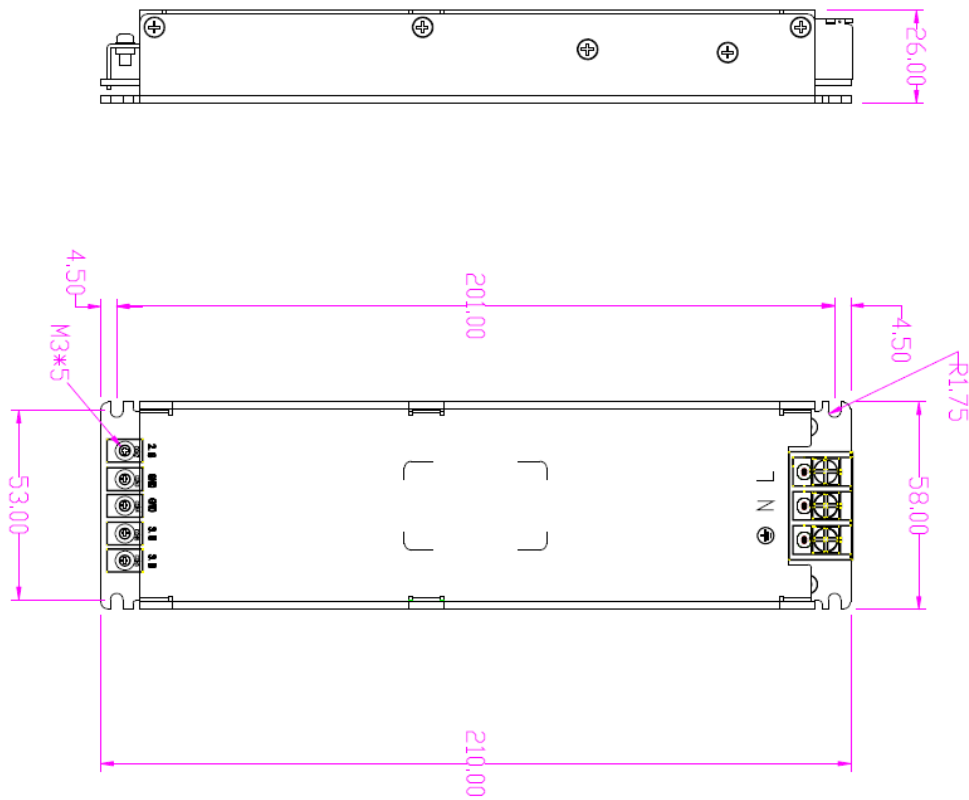
(Heat sink size: 300\*200\*44mm)



散热板尺寸 Heat sink size

## 10.产品尺寸和结构(Dimensions and Structure)

产品尺寸 Dimensions	外形尺寸: 长×宽×高 Dimensions: 210.0mm x 58.0mm x 26.0mm±0.5mm
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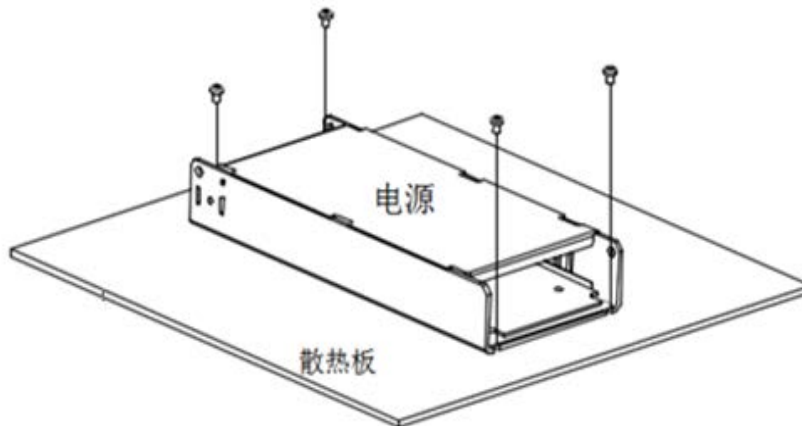


## 11. 安装图(installation drawing)

- 外加铝板操作(Plus aluminum plate operation)

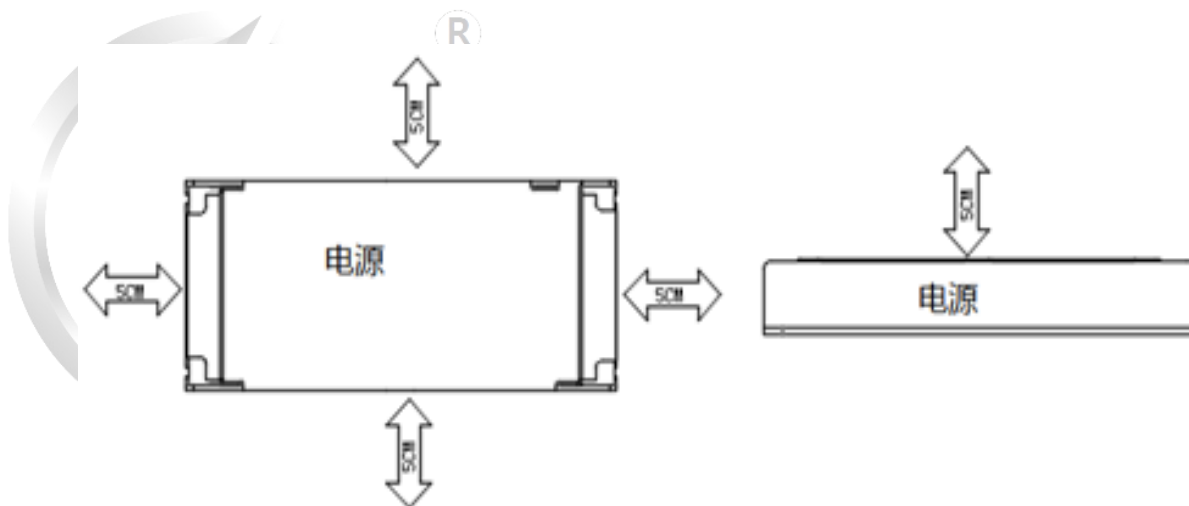
为了符合“环境温度与输出电流降额曲线”和“输入电压与输出电流降额曲线”电源必须安装在一个铝板上，建议铝板安装如下图所示。为了优化散热性能，铝板表面必须光滑。

In order to comply with the environmental temperature and output current derating curve and the input voltage and output current derating curve, the power supply must be installed on an aluminum plate. It is recommended that the aluminum plate be installed as shown in the figure below. In order to optimize the heat dissipation performance, the surface of the aluminum plate must be smooth

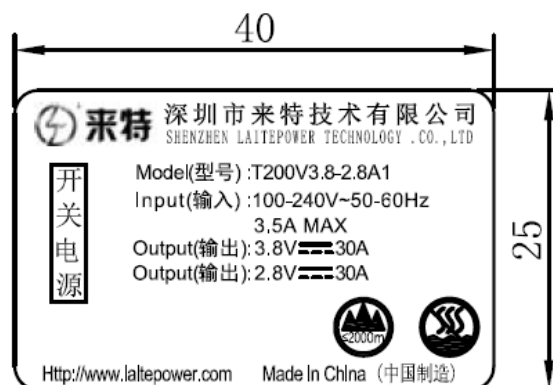


- 为保证散热良好，安装时电源周围必须预留至少 **5cm** 的空间，如下图所示。

To ensure good heat dissipation, at least 5cm of space around the power supply must be reserved during installation, as shown in the figure below



## 12. 产品标签(Label)




## 13. 产品重量(Weight)

产品重量 Weight	Wight: ≈436g
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#### 14.连接器脚位定义(Pin Connection)

CN01(Type: 9.5mm,3Pin)

PIN 号 (Pin number)	符号 (Symbol)	功能 (Function)
1		Earth
2	N	AC Input N
3	L	AC Input L

Output Pin(Type: 6.4\*10 M3 端子,5Pin)

PIN 号 (Pin number)	符号 (Symbol)	功能 (Function)
CON2	2.8	<b>+2.8V</b>
CON3,CON4	GND	<b>GND</b>
CON5,CON6	3.8	<b>+3.8V</b>

#### 15.包装(Packaging)

包装箱上有产品名称、型号、制造商，制造日期，检验合格章等信息。

On the packing product name, model, manufacturer, date of manufacture, inspection information such as chapter.

#### 16.运输(Transportation)

本包装内的产品适用海运、空运、陆运等运输方式，运输中须注意防雨、雪、雾，搬运时须轻拿轻放。

This packaging products for shipping, airfreight, land transportation, such as the mode of transportation, transportation must pay attention to in the rain, snow, fog, must be in the light with light.

#### 17.贮存(Storage)

产品未使用时应存放在包装箱内，贮存环境温度和相对湿度须在产品的规格范围内，贮存地不能有易燃、易爆的产品及有腐蚀性的化学物品，并且无强烈的机械振动，冲击和强磁场作用，包装箱应垫离地至少 20cm 高，距离墙壁、热源、窗口或空气入口至少 50cm，在本规定条件下的贮存期 1 年以上，超过贮存期的产品须经专业人员得新检验后方可使用。

Product should be stored in the packing box when not used, the storage environment temperature and relative humidity should be within the scope of the specifications of the products, storage, there can be no flammable, explosive and corrosive chemicals, and there is no strong mechanical vibration, impact and strong magnetic field effect, packing should be at least 20 cm high from the ground, walls, heat sources, air inlet window or distance at least 50 cm, in the present provisions under the condition of storage period more than 1 year, more than storage period of the product must be approved by a professional new inspection rear can use.

## 18.使用说明(Instruction)

- 产品安装时须按照上图连接方式安装。

When the product installation shall be in accordance with the above connection installation.

- 在安装运行前，须检查输入，输出连接处极性是否正确，避免反接损坏电源或用户设备。  
Before installation operation, must check the input and output connection polarity is correct, to avoid the reverse damage to the power supply or user equipment.

- 产品的使用条件须在标称范围内。

The conditions on the use of the products shall be in the range of nominal.

- 为确保产品使用的安全性和减小干扰，须确保接地端可靠接地。

In order to ensure the safety and reduce the interference of products use, shall ensure that the grounding reliable grounding.

- 产品不能直接置于雨雾环境下使用。

Products cannot be used directly in the environment for fog.

- 若电源出现故障，非专业人员不能擅自进行维修。

If power failure, non-professional personnel cannot do STH without authorization for repair.

