

产品规格书

SPECIFICATION

产品型号(Product Model): T400V5.0A1

产品描述(Product Description): LED POWER SUPPLY

版本序号(Version Number): 1.1

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1.1	增加安装说明	彭宪华	2018-06-29

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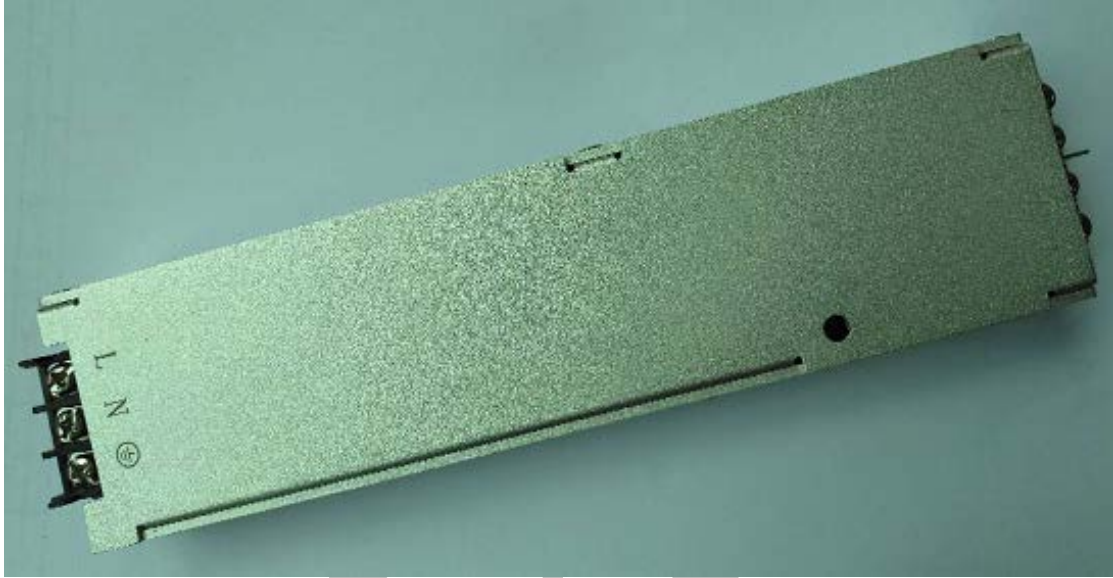
目 录 (Content)

1. 产品概述(Product Introduction)	3
2. 电气特性(Electrical Characteristics)	3
2.1 输入特性(Input Electrical Characteristics)	3
2.2 输出特性(Output Electrical Characteristics)	4
2.2.1 输出功率(Output Power)	4
2.2.2 输出电压和电流(Output Voltage and Current)	4
2.2.3 输出纹波(Output Ripple & Noise)	4
2.2.4 开机延迟时间(Turn on Delay Time)	4
2.2.5 关机维持时间(Hold up Time)	5
2.2.6 输出电压上升时间(Output Voltage Rise Time)	5
2.2.7 输出电压过冲(Output Overshoot)	5
2.2.8 动态响应(Transient Response)	5
2.2.9 容性负载 (Capacitive Load)	5
3. 保护特性(Protective Characteristics)	5
3.1 短路保护(Short Circuit Protection)	5
3.2 过电流保护(Over Current Protection)	6
3.3 输入欠压保护(Input Under Voltage Protection)	6
3.4 输入欠压恢复(Input Under Voltage Recovery)	6
4. 环境条件(Environmental Condition)	6
4.1 环境温度(Ambient Temperature)	6
4.2 相对湿度(Relative Humidity)	6
4.3 海拔(Altitude)	6
4.4 气候(Climates)	6
4.5 冷却方式(Cooling Method)	6
5. 可靠性(Reliability)	7
6. 安全(Safety)	7
7. EMI	8
8. EMC	8
9. 降额曲线(Derating Curve)	9
9.1 环境温度与输出电流降额曲线(Ambient Temperature and Output Current)	9
9.2 输入电压与输出电流降额曲线(Input voltage and Output Current)	9
10. 产品尺寸和结构(Dimensions and Structure)	9
11. 安装图(installation drawing)	10
12. 产品标签(Label)	11
13. 产品重量(Weight)	11
14. 连接器脚位定义(Pin Connection)	11
15. 包装(Packaging)	12
16. 运输(Transportation)	12
17. 贮存(Storage)	12
18. 使用说明(Instruction)	12

1. 产品概述(Product Introduction)

产品型号 T400V5.0A1 为单路 (+5.0V) , 输出功率 400W 的全电压输入电源模块。

Product model T400V5.0A1 for single output (+5.0V) , Output power 400W full range input voltage Power supply



产品有以下特点:

Product has the following features:

- 输入电压(input voltage)90Vac to 264Vac
- 保护功能(Protection function): 短路保护, 过流保护, (SCP, OCP)
- 工作温度范围(Operation temperature range): -10°C to +70°C (-30°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. 5A at 100Vac input and full load Max. 2.8A at 240Vac input and full load
浪涌电流 Inrush Current	20A (TYP. peak) at 100Vac 50A (TYP. peak) at 240Vac
功率因数 Power Factor	>0.98at 100Vac, >0.95 at 230Vac
效率 Efficiency	Efficiency should at 100% load >88.0% at 100Vac Efficiency should at 100% load >90.0% at 240Vac

2.2 输出特性 (Output Electrical Characteristics)

2.2.1 输出功率 (Output Power)

输出功率 Output Power	400W
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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 accuracy	额定电流 Rated Current
CON2 (+) (-)	+5.0Vdc	2%	100Vac to 240Vac; 0-80A

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
		100Vac to 240Vac; 0-80A
CON2 (+) (-)	+5.0Vdc	≤250mV

Remark: 纹波和噪声测试 (Ripple & Noise test)

- 示波器带宽设置在20 兆赫兹。

the Bandwidth of oscilloscope is set to 20MHz.

- 在输出端锁上 10cm 连接线，并联一个 0.1uF 的陶瓷电容和一个 10uF 的电解电容来测试纹波和噪声。

On the output side lock 10 cm cable to a 0.1uF ceramic capacitors in parallel and a 10uF electrolytic capacitor to test the ripple and noise.

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
		100Vac to 240Vac; 0-80A
CON2 (+) (-)	+5.0Vdc	≤3S

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
		240Vac/50Hz; 0-80A
CON2(+)(-)	+5.0Vdc	≥5mS

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; 0-80A
CON2(+)(-)	+5.0Vdc	≅30mS

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; 0-80A
CON2(+)(-)	+5.0Vdc	≅5%

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; 0-80A
CON2(+)(-)	+5.0Vdc	Output: 0-50%, 50~100% Slew Rate: 1A/uS, The output overshoot and undershoot should be ≤ ±10% of Transient Response Recovery Time: 200us

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
短路保护	打嗝, 排除故障条件时, 电源输出正常恢复.

Short Circuit Protection	Hiccup, troubleshooting conditions, the power output is restored.
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3.2 过电流保护(Over Current Protection)

项目 Item	过流值 Over Current	备注 Remark
过电流保护 Over Current Protection	120% ~ 160%	OCP 的触发点必须在 120%和 160%之间的额定负载电流。排除故障条件时, 电源输出正常恢复。 OCP trigger point must be between 120% and 160% of rated load current. Power supply output must recover automatically with normal load when the fault condition is removed

3.3 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)

3.4 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	-10°C to +70°C (-30° 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 Humidity	5%RH to 90%RH
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	≦2000m
存储海拔 Storage Altitude	≦2000m

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 40° C to 50° C is 1.0%/° C which is 360W at 50° C.

The maximum percentage of output load derating from 50° C to 70° C is 1.67%/° C which is 240W at 70° C.

从 40° C 至 50° C 输出负载降额最大的百分比是 1% /° C 是 360W 50° C.

从 50° C 至 70° C 输出负载降额最大的百分比是 1.67% /° C 是 240W 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 and output, switch the 3 s 1000 times the frequency of the cycle.
5.2	老化测试 Burn-In Test	产品在 40°C 环境下, 输入 220Vac, 输出额定负载持续工作 72 小时。 Products in 40°C environment, input 220Vac, output rated load operation 72 hours continuously.
5.3	振动 Vibration	IEC60068-2-6, Sine wave excited, acceleration 10Hz~150Hz at 25M/S ² 2.5g peak; 90min per axis for all 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
5.4	冲击(Shock)	49m/s ² (5G), 11ms, once each X, Y and Z axis
5.5	平均故障间隔时间 MTBF	The Calculated MTBF should be more than 20,000 hours as per Telcordia SR-332 when AC 220V/50Hz and full load output at
5.6	电解电容受命 Electrolytic Capacitor Life	The Calculated capacitor life shall be more 10 years when AC 220V/50Hz input, 50% load at 35° 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	无飞弧, 无击穿
		初级对大地 Primary to Ground	

		次级与大地 Secondary to Ground	500Vac, 5mA, 60S	
6.2	绝缘阻抗 Insulation Resistance	初级对次级 Primary to Secondary	500Vdc, $\geq 10M\Omega$	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	初级对次级 Primary to Secondary	$\leq 5mA$	
6.4	接地阻抗 Ground Impedance		$< 0.1\ ohms.$	32A / 2 分钟 (过 UL 认证机型为 40A / 2
6.5	安规认证 Safety Certification			

7. EMI

The power supply meets the EN 55022 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: $\geq 8KV$ contact, $\geq 15KV$ 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.

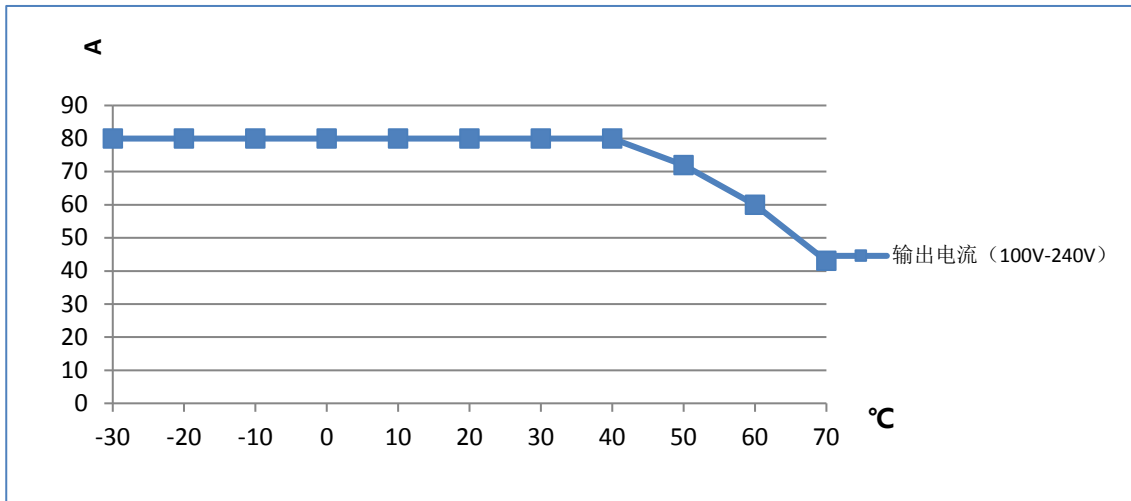
IEC 61000-4-6: Conducted Immunity, Level 3 Criteria A.

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

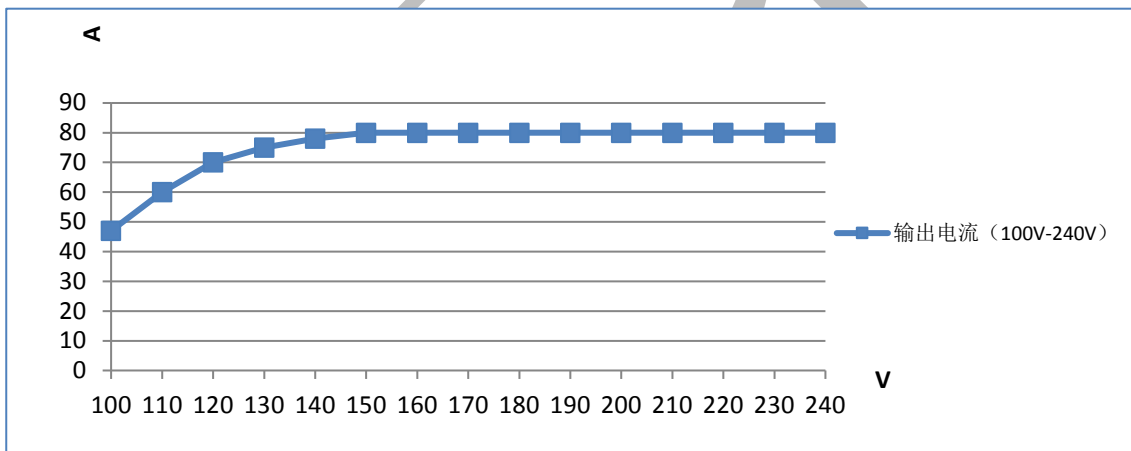
IEC 61000-4-11: Voltage dips and interruption.100% dip,1 cycle (20ms), self-recoverable
IEC 61000-4-12: Level 3, Criteria A

9. 降额曲线(Derating Curve)

9.1 环境温度与输出电流降额曲线(Ambient Temperature and Output Current)



9.2 输入电压与输出电流降额曲线(Input voltage and Output Current)



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: 250*250*3mm)
Recommend that the Power Supply should be mounted tightly with the heat sink described.

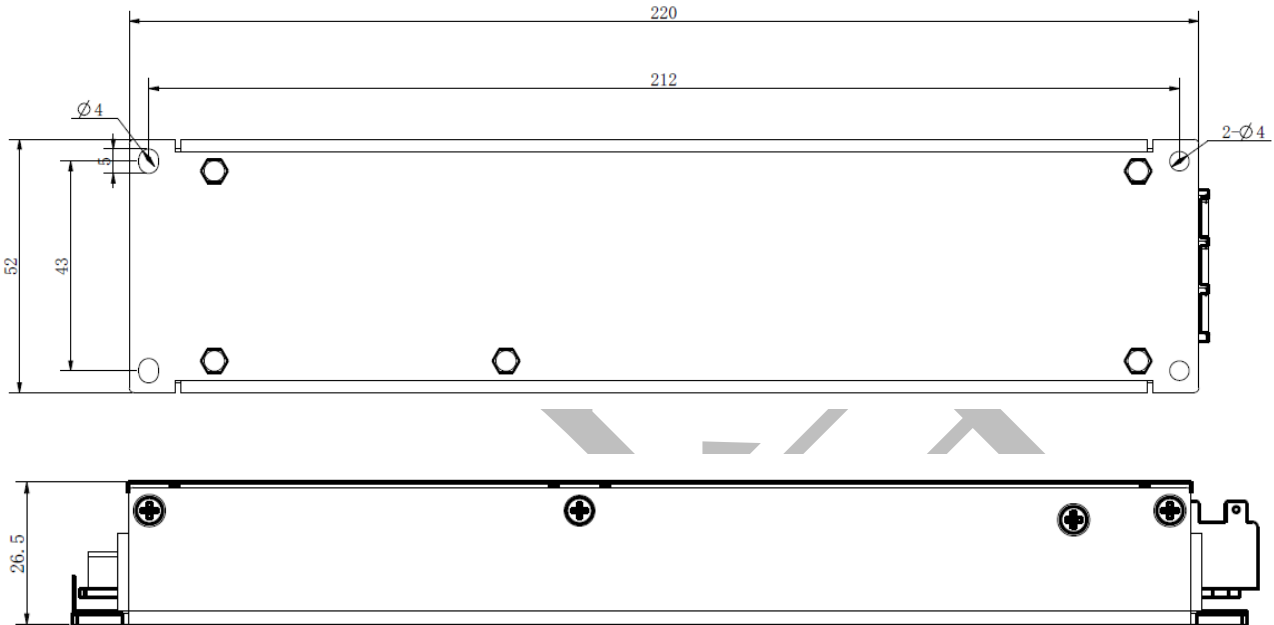
(Heat sink size: 250*250*3mm)

- 电源不能在超过 264V 的环境下使用。

The power supply cannot be used under the environment of more than 264Vac.

10. 产品尺寸和结构(Dimensions and Structure)

产品尺寸 Dimensions	外形尺寸：长×宽×高 Dimensions: 220.0mm x 52.0mm x 26.5mm±0.5mm
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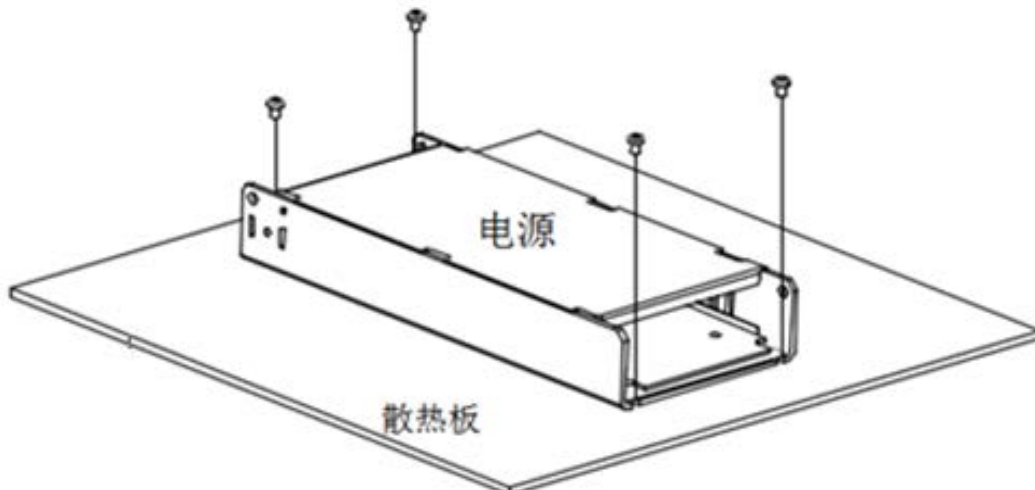


11. 安装图 (installation drawing)

- 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，建议铝板尺寸如下图所示。为了优化散热性能，铝板表面必须光滑。

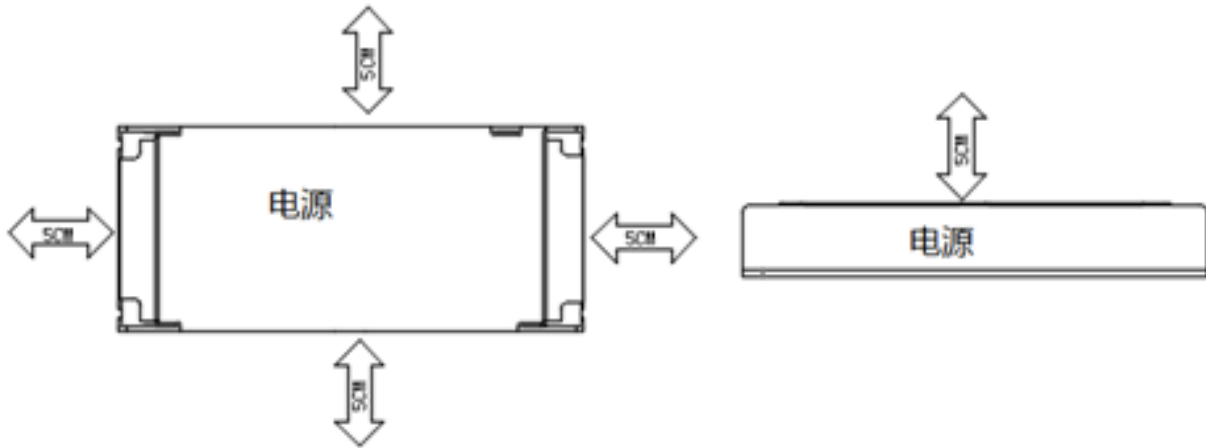
In order to conform to the ambient temperature and output current drop curve and input voltage and output current drop curve power supply must be installed on an aluminum plate,



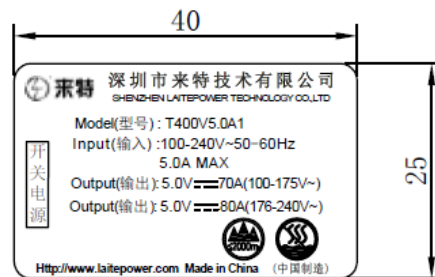
it is suggested that the size of the aluminum plate is shown in the following figure. To optimize heat dissipation, aluminum surface must be smooth.

- 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: 470 g
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14. 连接器脚位定义(Pin Connection)

CN01 (Type: 9.5mm, 5Pin)

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

3	G	Ground
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CON2 Output Pin(Type:9.5mm, 6Pin)

PIN 号 (Pin number)	符号 (Symbol)	功能 (Function)
1、2	V+	DC Output -
3、4	V-	DC Output +

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.

