SSL POWER SUPPLY SPECIFICATION

固态照明电源规格书

600W Intelligent Dimming LED Driver
600 瓦 LED 智能调光驱动器

PLD600-SMT-54-Z

Version 1.1

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Prepared	Checked	Approved	Marketing/Customer Approved

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1. GENERAL/产品概述

This specification describes the performance characteristics of a 600W/11.1A, versatile power supply for LED Lighting.

The model features in:

- High efficiency: 94.5% typical @230Vac, full load
- High power factor: 0.97 typical. @ 230Vac, full load
- Isolated 0-10V/PWM/ Resistor Dimming
- Maximum current & maximum voltage can be programmed
- With Lightning Protection & all-round protections (OVP, SCP ,OTP, Open Circuit Protection)
- Comply with UL8750&EN61347-2-13 Safety Regulation

本规格书详细描述了一款 600W, 11.1A 多功能 LED 照明用驱动电源的具体规格。

该款产品的特性包括：

- 高效率：230Vac 满载时效率典型值为 94.5%
- 高功率因数：230Vac 满载时典型值为 0.97
- 隔离的 0-10V/PWM/电阻/UART 通信调光
- 最大电流&电压可通过编程设定
- 带雷击保护&带过压保护、短路保护、过温保护、开路保护
- 符合 UL8750 &EN61347-2-13 安规标准

☐ SMPS Adaptor (Wall-Mount)/插墙式适配器　☐ SMPS Adaptor (Desktop)/桌面型适配器

☐ Open Frame/开放式结构　■ SMPS Unit (With Metal Case)/带金属壳型

☐ SMPS Unit (With Plastic Case)/带塑料壳型　☐ Others/其他

2. ELECTRICAL PERFORMANCE/电气性能

2.1. Input Characteristics/输入特性

2.1.1. Input Voltage and Frequency/输入电压与频率

The range of input voltage is from 108Vac to 305Vac single phase.

输入电压范围：从 108Vac 到 305Vac，单相输入。

Input/输入	Min.	Typ.	Max.
Input Voltage/输入电压	108Vac	120/230/277Vac	305Vac
Input Frequency/输入频率	47Hz	50/60Hz	63Hz

2.1.2. Input Current /输入电流

6.55A max. @ 120Vac input & full load/满载

3.5A max. @ 230Vac input & full load/满载

2.8A max. @ 277Vac input & full load/满载

2.1.3. AC Line Inrush Current (25°C Cold Start)/浪涌电流（25°C 冷启动）

No component shall be damaged and the input fuse shall not blow when the power supply is powered on@305Vac.

在 305Vac 开机瞬间任何零件以及保险丝不得烧毁。

2.1.4. Power Factor/功率因数[1] [2]

Items	Min./最小	Typ./典型	Test Condition/测试条件
Power Factor/功率因数[1]	0.97	0.99	120Vac，25°C，≥80%Full Load//满载[2]
	0.95	0.97	230Vac，25°C，≥80%Full Load//满载[2]
	0.9	0.92	277Vac，25°C，≥80%Full Load//满载[2]

NOTE[1]： The PF value is associated with the VI curve of LED lamps, it can be guaranteed while Rd coefficient of LED Lamps is in the range of 0.05~0.5 (Rd=Coeff*Vo/Io);

备注[1]：PF 值是与 LED 的电压电流曲线(即 LED 的内阻)有关系，此份规格书的 PF 值是按 LED 灯的内阻系数为 0.05~0.5 之间来定义(Rd=Coeff*Vo/Io)；

NOTE[2]：Full load power is 600W;

备注[2]：满载功率为 600W；

2.1.5. THD/谐波含量[3] [4]

THD[3]: < 20% @ 25°C 120~277VAC 80%-100% full load (w/o Dimmer)/ 满载[4] (未调光)

NOTE[3]： The THD value is associated with the VI curve of LED lamps ,it can be guaranteed while Rd coefficient of LED lamps is in the range of 0.05~0.5(Rd=Coeff*Vo/Io);

备注[3] :THD 的测量值是与 LED 的电压电流曲线(即 LED 的内阻)有关系，此份规格书的 THD 是按 LED 灯的内阻系数为 0.05~0.5 之间来定义(Rd=Coeff*Vo/Io)；

NOTE[4]：Full load power is 600W;

备注[4]：满载为 600W；

2.1.6. Efficiency/效率

Items/项目	Min.	Typ.	Test Condition/测试条件
Low Line Efficiency/低压段效率	91.5%	92.5%	120Vac, 25°C, Full Load/满载
High Line Efficiency/高压段效率	93.5%	94.5%	230Vac, 25°C, Full Load/满载
	94.0%	95.5%	277Vac, 25°C, Full Load/满载

2.1.7. AC Line Brownout/输入欠压

The power supply shall not damage when the input falls below 108Vac.

在输入交流电压低于 108Vac 情况下，电源不会损坏。

2.2. Output Characteristics/输出特性

2.2.1. Static Output Characteristics/静态输出特性[5][6] [7] [8]

Current setting /输出电流设定	Min.	Typ.	Max.
CC Mode Output Current Regulation Range/恒流输出电流调整范围	1330mA	11100mA	12000mA
CV Mode Output Current Regulation Range/恒压输出电流调整范围	0mA		12000mA
CC Mode Output Voltage During Regulation/输出电压范围	36V	54V	60V
CV Mode Output Voltage During Regulation/输出电压范围	40V	54V	60V
Output Power/输出功率[5] [6] [7] [8]	/	/	600W

NOTE[5]: Output Current Temperature coefficient is 0.08%/°C @Tcase=0°C ~Tc max;

备注[5]: 输出电流温度系数定义为 0.08%/°C @Tcase=0°C ~Tc max

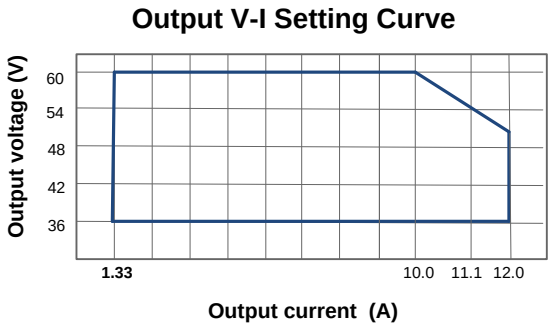
NOTE[6]: Output Current Test Condition: 120~277Vac, Ta=25°C;

备注[6]: 输出电流测试条件：120~277Vac ,Ta=25°C；

NOTE[7]: CC Mode: The output current can be programmed from 1.33A to 12A through the DIM+& DIM- wire, but total output power must be restricted within 600W. Specific reference to the following V-I curve.

备注[7]: 恒流模式：输出电流可以通过 DIM+&DIM-线材进行编程,调节范围 1.33A~12A,但是输出总功率要限制在 600W 以内.具体参考如下 V-I 曲线.

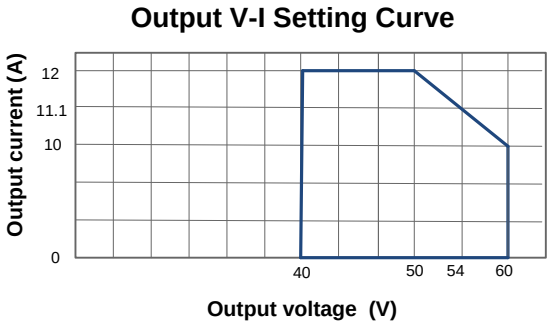
Output V-I Setting Curve/输出电压-电流设定特性曲线



NOTE[8]: CV Mode: The output voltage can be programmed from 40V to 60V through the DIM+& DIM- wire, but total output power must be restricted within 600W. Specific reference to the following V-I curve.

备注[8]: 恒压模式：输出电压可以通过 DIM+&DIM-线材进行编程,调节范围 40V~60V,但是输出总功率要限制在 600W 以内.具体参考如下 V-I 曲线

Output V-I Setting Curve/输出电压-电流设定特性曲线



2.2.2. Ripple & Noise/纹波与噪声[9]

CC Mode Current Ripple: ±5% of Io max , with full load at 25°C，120V~277V input measured at 20MHz bandwidth.

恒流模式电流纹波：25°C、120V~277Vac 输入，满载、使用 20MHz 带宽测量时，不超过±5%的最大输出电流。

NOTE[9]：The current ripple is associated with the VI curve of LED，it can be guaranteed when Rd coefficient of led Lamps is 0.1-0.5.

备注[9]：电流纹波的测量值是与 LED 的电压电流曲线(即 LED 的内阻)有关系，此份规格书的电流纹波是按 LED 灯的内阻系数为 0.1-0.5 来定义.

CV Mode Voltage Ripple: ±2% of Vo max, with full load at 25°C,120~277Vac input measured at 20MHz bandwidth and the output paralleled with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor.

恒压模式电压纹波：25°C、120~277Vac 输入，满载、使用 20MHz 带宽测量，且输出并联一个 0.1uF 瓷片电容和一个 10uF 电解电容时不超过±2%的最大输出电压。

2.2.3. Output Current Precision /输出电流精度

±2%@CC Mode ,120~277VAC,25°C &full load

±2%@恒流输出，120~277VAC, 25°C &满载

±2%@CV Mode ,120~277VAC,25°C &full load

±2%@恒压输出，120~277VAC, 25°C &满载

2.2.4. Load&Line Regulation/负载和源调整率

Load Regulation /负载调整率: ±3% @ 25°C

Line Regulation/源调整率：±3% @ 25°C

2.2.5. Turn-on Delay Time/开机延迟时间[10]

3.5s max. @ 120Vac, 25°C, Full Load/满载

3.5s max. @ 230Vac, 25°C, Full Load/满载

NOTE[10]：At CC Mode the output current soft start requires a rise time of 3 seconds from 0 % to 100 % of the output current;

备注[10]：在恒流模式时输出电流软启动从0 %到100 %的输出电流需要3秒钟的上升时间；

2.2.6. Output Overshoot/Undershoot/输出过冲/欠冲[11]

CC Mode Overshoot(Output peak current): 120% of Io @Typical AC input, Full load ,Ta=25°C,20MHz bandwidth, when power on-off ;

恒流输出过冲（输出峰值电流）：当电源开关机时，不超过输出电流的 1.2 倍 @额定 AC 输入、满载、25°C 环温、20MHz 带宽测量

NOTE[11]：The overshoot is associated with the VI curve of LED，it can be guaranteed when Rd coefficient of led Lamps Coeff is 0.1~0.5(Rd=Coeff*Vo/Io).

备注[11]：输出过冲的测量值是与LED 的电压电流曲线(即LED的内阻)有关系，此份规格书的电流纹波是按LED灯的内阻系数 Coeff 为 0.1~0.5来定义(Rd=Coeff*Vo/Io).

CV Mode Overshoot(Output peak voltage): 110% of Vo @Typical AC input, Full load ,Ta=25°C,20MHz bandwidth, when power on-off ;

恒压输出过冲（输出峰值电压）:当电源开关机时 ,不超过输出电压的 1.1 倍@额定 AC 输入、满载、25°C 环温、20MHz 带宽测量

2.2.7. Output Load Transient Response/输出负载瞬态响应

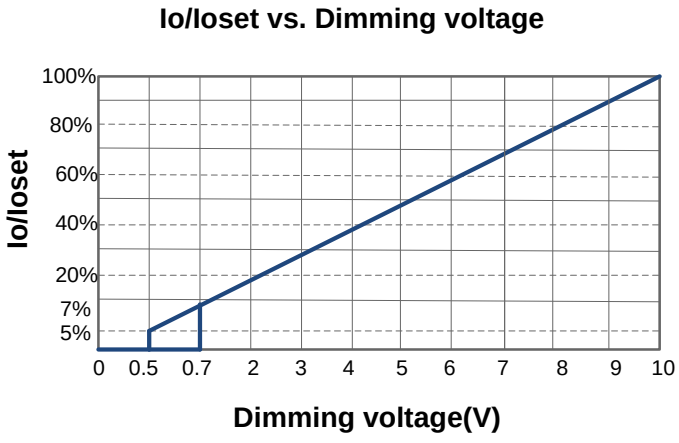
CV Mode :Output voltage stays within 95%Vo and 105%Vo for load step from 25% to 75%, R/S: 1A/us, frequency: 50Hz duration and 10ms at 75%.

恒压模式：当负载变化从 25%到 75%（斜率：1A/us, 频率：50Hz, 75%负载持续时间 10ms）时，输出电压应该保持在 95%Vo 和 105%Vo 之间.

2.2.8. Dimming Function/调光功能

A) 0-10V Linear signal controller & output current curve

0-10V线性信号控制和输出电流曲线

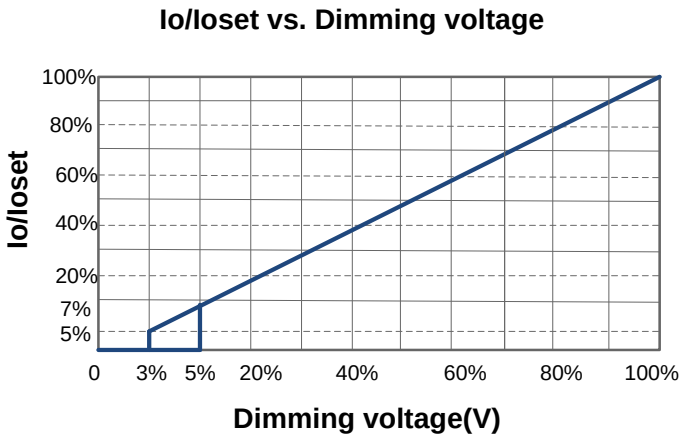


Remark/备注

1. When the dimming voltage is less than 0.5±0.1V , the output current is 0
   当调光电压小于0.5±0.1V时，输出电流为0;
2. When the dimming voltage is 9.9V±0.2V , the output current is 100%Io, the output current accuracy is ±2%
   当调光电压为9.9V±0.2V时输出电流为100% Io，输出电流精度±2%;
3. When the dimming voltage is 0.7±0.1V , the output current is 7%Io, the output current accuracy is ±70mA, Also the LED array voltage shouldn't be lower than 36Vdc when the dimming voltage is 0.7±0.1V;
   当调光电压为0.7±0.1V时输出电流为7% Io，输出电流精度±70mA，此时LED电压不低于36V;
4. When the dimming voltage is 0.7-9.9V , the output current is changing in a linear fashion.
   当调光电压为0.7-9.9V时输出电流为呈线性变化.

B) 10V PWM Dimming Linear signal controller & output current curve

10V PWM信号控制和输出电流曲线



Remark/备注

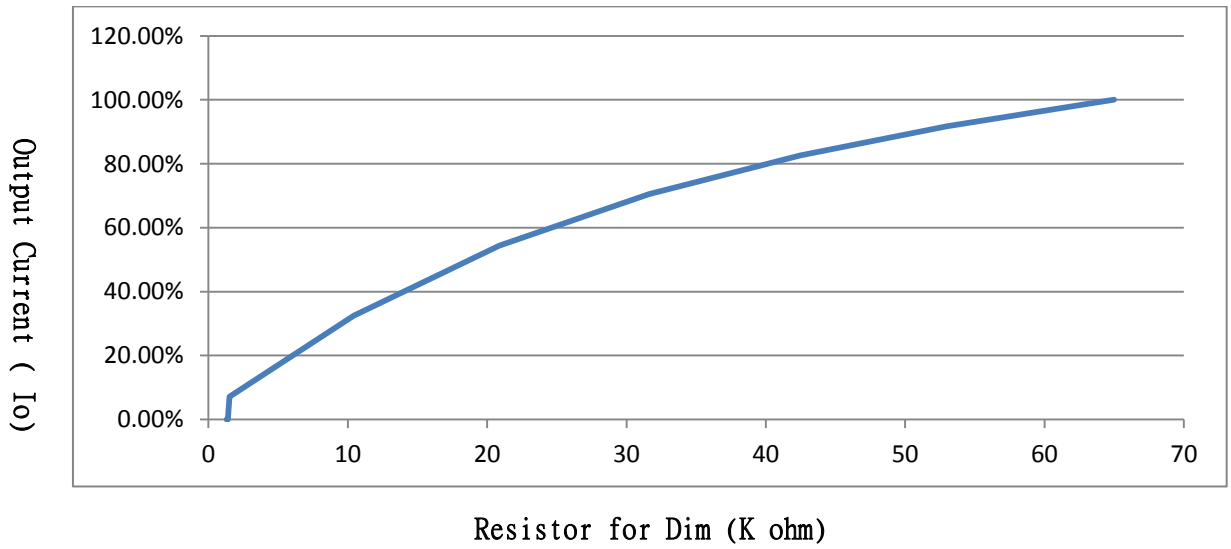
5. When the duty of 10V PWM signal is less than 3%±1% , the output current is 0
   10V PWM信号Duty小于3%±1%时，输出电流为0;
6. When the duty of 10V PWM signal is 99%±2% , the output current is 100%Io, the output current accuracy is ±2%
   10V PWM信号Duty为99%±2%时输出电流为100%Io，输出电流精度±2%;
7. When the duty of 10V PWM signal is 5%±1% , the output current is 5%Io, the output current accuracy is ±70mA, Also the LED array voltage shouldn't be lower than 36Vdc.
   当调光电压为5%±1%时输出电流为5% Io，输出电流精度±70mA，此时LED电压不低于36V;
8. When the duty of 10V PWM signal is 5%-100% , the output current is changing in a linear fashion.

10V PWM信号Duty为5%-100%时输出电流为呈线性变化.

C) External resistor dimming curve :

An external resistor connected between Dim+ and Dim- for output current adjustment.

当外接电阻在 Dim+和 Dim-之间，电流输出曲线如下图所示.



Remark/备注

9. When the external resistor value is 1.95K±500ohm, the output current is 7%Io, the output current accuracy is±70mA, Also the LED array voltage shouldn't be lower than 36Vdc when the external resistor value is 1.95K±500ohm;

   外接电阻为 1.95K±500ohm 时,输出电流为 7%Io，输出电流精度±70mA；此时 LED 电压不低于 36V;

10. When the external resistor value is 65K±6.5Kohm, the output current is 100%Io, the output current accuracy is ±5%

    外接电阻为 65K±6.5Kohm 时,输出电流为 100% ,Io 输出电流精度±5%;

11. When the external resistor value is less than 1.25K±500 ohm, the output current is 0

    外接电阻小于 1.25K±500 ohm 时,输出电流为 0

D) Protection Circuits/保护电路

2.2.9. Over Voltage Protection/过压保护

The output voltage that triggers over voltage protection should be no higher than 68Vdc. The power supply shall enter auto-recovery mode during OVP, and return to normal operation after the fault condition is removed.

OVP 保护时输出电压不应高于 68Vdc。故障时电源应进入自动恢复保护模式。当故障排除后电源应能恢复工作。

2.2.10. Power Supply Over Temperature Protection/电源过温保护

When the power supply enters overheating protection condition, no components should be damaged. the PSU shall enter auto-recovery mode or latch mode. After the fault condition is removed, the power supply should operate normally.

当电源进入过热保护状态时，无零件损坏；当温度恢复正常，可以恢复操作。

2.2.11. Short Circuit Protection/短路保护

When its output is being shorted, the power supply will enter hiccup mode, and shall self-recover when the fault condition is removed.

当输出发生短路时电源不会损坏，当故障排除之后，可以恢复操作。

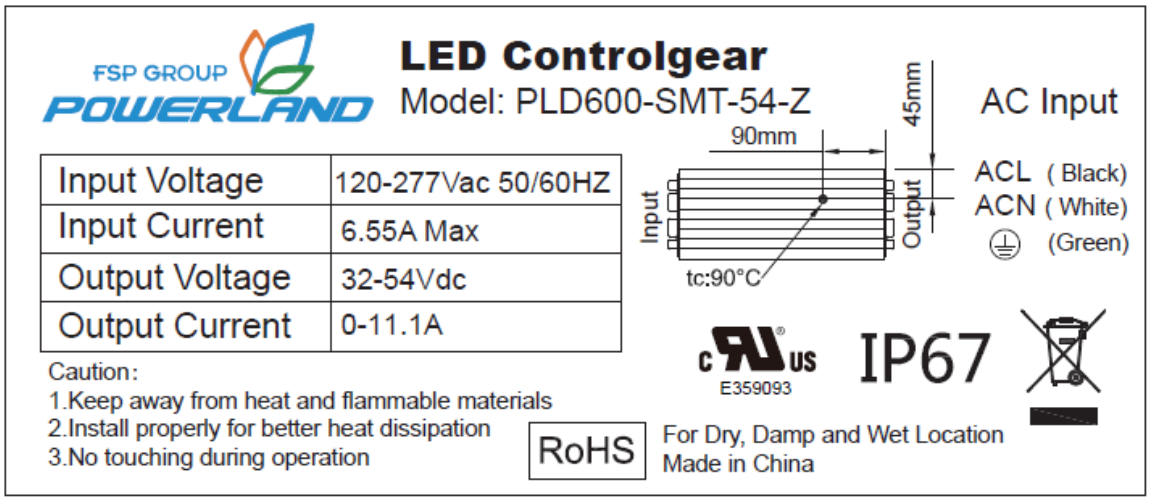
2.2.12. Open Circuit Protection/开路保护

When output is being opened, no components should be damaged. The power supply shall enter auto-recovery mode during open circuit protection, and return to normal operation after the fault condition is removed.

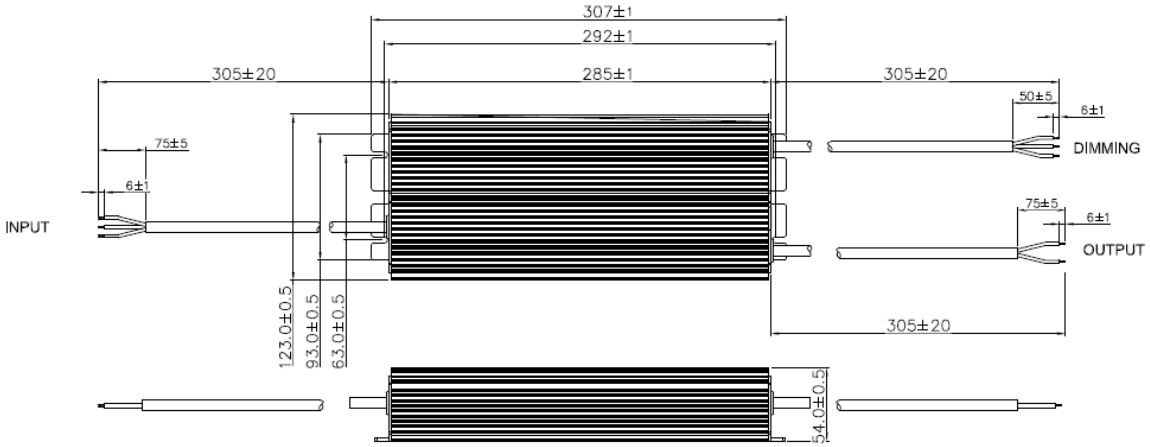
当电源输出发生开路时，无零件损坏。故障时电源应进入自动恢复保护模式。当故障排除后，电源应能恢复工作。

3. MECHANICAL/机构特性

3.1. Label Drawing /贴纸图档



3.2. Dimension and Outline Drawing/尺寸与外观示意图



INPUT WIRE 1	3	UL SJTW 18AWG*3C	GREEN	GND
	2		WHITE	N
	1		BLACK	L
	WIRE NUM	WIRE SPEC	COLOR	RATING

DIMMING WIRE	3	UL 21996 22AWG*3C	RED	12V+
	2		GRAY	DIM-
	1		PURPLE	DIM+
	WIRE NUM	WIRE SPEC	COLOR	RATING

OUTPUT WIRE	2	UL SJTW 14AWG*2C	BLACK	LED-
	1		RED	LED+
	WIRE NUM	WIRE SPEC	COLOR	RATING

Tab. Wire Specifications / 线材规格

4. ENVIRONMENTAL/环境适应性要求

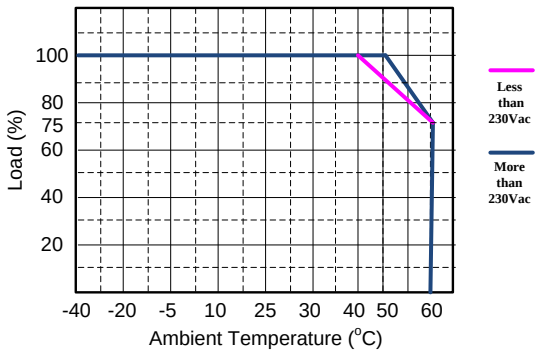
The power supply shall operate normally, and sustain no damage as a result of the environmental conditions listed in this section.

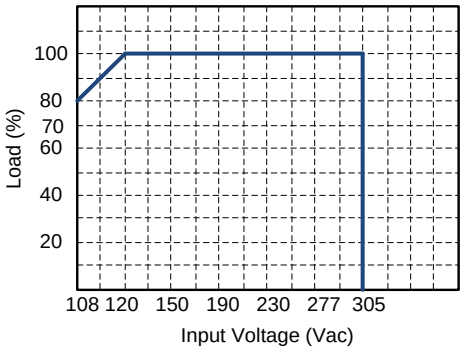
电源在本节所描述的环境下可以正常工作并不会损坏。

4.1. Operating Temperature and Relative Humidity/操作温度与湿度要求

-40℃ to +60℃ (40～50 ℃ derating to 75% load @120Vac; 50~60℃ derating to 75% load@230Vac)

-40℃ to +60℃（120Vac 条件下，40～50 ℃降额至 75%满载；230Vac 条件下，50~60 ℃降额至 75%满载）





10% RH to 85% RH

4.2. Storage Temperature and Relative Humidity/存储温度与湿度要求

-40 °C to +85 °C

5% RH to 90% RH

4.3. Waterproof Grade/防水等级

IP67

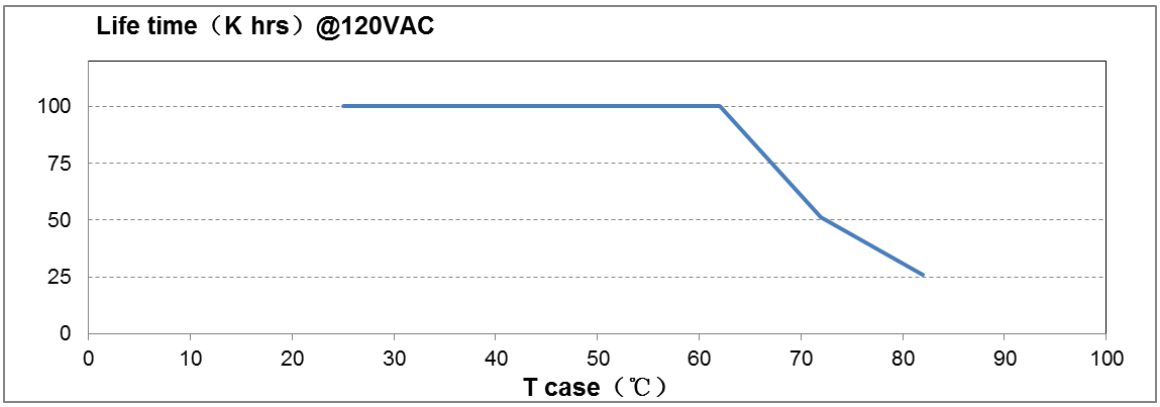
4.4. MTBF/Life Time/平均无故障运行时间/产品寿命

The MTBF shall be at least 500,000 hours at 25 °C, Full load and nominal input condition:

平均无故障运行时间：至少500,000小时, 25 °C 环境及额定输入与满载条件下

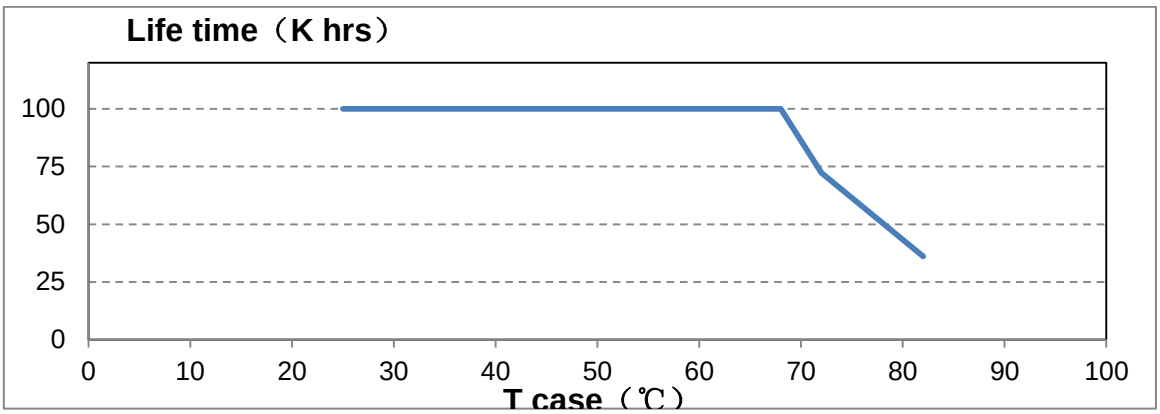
The life time shall be at least,44,000 hours at 72 °C Tc, Full load and 120Vac input condition:

产品寿命：至少44,000小时, 72 °C Tc及120Vac输入与满载条件下



The life time shall be at least72,200 hours at 72 °C Tc, Full load and 240/277Vac input condition:

产品寿命：至少72,200小时, 72 °C Tc 及240/277Vac输入与满载条件下



4.5. Tc/外壳最高温度点

Tc <90 °C

4.6. Burn-in/煲机

The power supply samples shall go a minimum of 4 Hours burn-in test at 40 °C ± 5 °C under full load condition.

电源样品至少要在40 °C ± 5 °C的环境及满载条件下煲机4小时。

4.7. Vibration/振动

Vibration Operation, 0.01g²/Hz at 5 Hz sloping to 0.02g²/Hz at 20 Hz, and maintaining 0.02g²/Hz from 20 Hz to 500 Hz.

The area under the PSD curve is 3.13gRMS. The duration shall be 20 minutes per axis for all three axes on all samples。

扫描频率:5Hz,加速度0.01g²/Hz,以及20Hz至500Hz,加速度0.02g²/Hz

PSD曲线下面积为3.13gRMS,三坐标轴向各振动20分钟

5. REGULATORY/符合标准

5.1. Agency Requirements/安规认证

A) Meet UL8750 &EN61347-2-13

B) Dielectric Strength(Hi-pot)/介电耐压强度(高压)

Primary to Secondary: 3750Vac / 10mAMax / 60seconds (3second for production)

初级对次级: 3750Vac / 10mA max / 60秒(生产时高压测试时间: 3秒)

Primary to Earth: 1875Vac 10mA max./60 seconds (3 seconds for production)

初级对地：1875Vac 10mA max./60秒(生产时高压测试时间：3秒)

Secondary to Earth: 1150Vac 10mA max./60 seconds (3 seconds for production)

次级对地： 1150Vac 10mA max./60秒(生产时高压测试时间：3秒)

C) Leakage Current/漏电流

0.75mA max. @277Vac / 60Hz

D) Insulation Resistance/绝缘阻抗

50Mohm min.@ primary to secondary add 500Vdc test voltage/在初级与次级间加500Vdc进行测试

E) Grounded Resistance/接地电阻

0.1Ω max. @ 25A, 1 minute/在通过25A电流1分钟后，一次侧地对外壳的最大电阻值为0.1欧姆

5.2. Electromagnetic Compatibility/电磁兼容

A) EMI:

Comply with FCC Part15 Class A & EN55015

B) IMMUNITY:

EN61000-3-2: Harmonic current emission

EN61000-3-3: Voltage fluctuations and flicker

EN61000-4-2: ESD 8kV air discharge, 4kV contact discharge, Criteria A

EN61000-4-3: Radio-frequency Electromagnetic Field Susceptibility Test-Rs Level 3, Criteria A

EN61000-4-4: Electrical Fast Transient/ Burst-EFT 1KV

EN61000-4-5: Surge Immunity Test, AC Power line: Line to Line 2kV; Line to Earth 4kV Criteria B

EN61000-4-6: Conducted Radio Frequency Disturbance Test-Cs Level 3, Criteria A

EN61000-4-8: Power Frequency Magnetic Field Test 3A/m, Criteria A

EN61000-4-11: Voltage Dips Criteria B

EN61547: Electromagnetic Immunity Requirements Applies to Lighting Equipments

6. REVISION LOG/修改记录

This section contains the release history of this document:

本部分包含本文档的修改历史记录：

Date	Revision	Remarks		
		Content	From	To
20201127	V1.0	First Released		
20210407	V1.1	Update OAD		