

承認書

(SPECIFICATION)

客户名称(Customer): Converters

使用機種(Model):

安 規(Safety): UL/cUL, CE, GS, FCC, RoHS, CB

型 號(Type): 12V 5000mA Desktop Adapter C14 Type

料 號(P/N): PS1046

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Approval	Audit	Draft

Please sign back after confirmation:

Clients signature: Qualified Unqualified

Approval	Audit	Confirm

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1 GENERAL 概述

1.1 Description

This specification defines the performance and characteristics of a adapter, single-phase 60 watts. Single output level power supply. This specification also defines world wide safety requirements and manufactures process test requirements. 规格书定义了该款电源的性能及特点。单相 60 瓦。单路输出开关电源。该规范还定义了全球范围内的安全要求和制造工艺的测试要求。

- Simple design philosophy. 简单的设计理念
- Overload Latch-Off protection during either (a) specified power threshold requirements or (b) short circuit condition. 在 (a) 规定的功率限值要求或 (b) 短路状态超载时 锁断保护
- Reliability level of 50000 hours MTBF & 0.5% annual field failure rate @ 25°C. 可靠性水平 50000 小时 MTBF 及 @25°C 0.5% 的年度故障率
- DC output voltage must be Safe Extra Low Voltage (SELV) & Limited Power as defined by IEC60950-1 3rd edition. 通过 IEC 60950-1 第三版定义, DC 输出电压必须是安全特低电压 (SELV) 及限制功率

The maximum room ambient temperature, as mentioned in clause 1.4.12 of IEC60950-1 3rd edition, for the external power supply is 40°C. 最大的室内环境温度, 如在 IEC60950-1 第 3 版 1.4.12 条款中指出, 外部电源为 40°C。

1.2 DC Output Requirements DC 输出要求

The power supply shall have one regulated DC outputs of +12V. 电源应有 +12V 的稳压直流输出
The wall defines the total regulation band for the output , which includes line regulation , load regulation ,and effects due to environmental conditions and aging . Voltage shall be measured at the power supply output connector. 定义总的输出调整范围, 包括线性调整率, 负载调整率, 以及因环境条件和老化的影响。电压应在电源输出连接器来测量。

Output 输出	Output Current Range 输出电流范围		Output Voltage Range 输出电压范围		Ripple/ Noise 纹波/噪音
	Min. 最小	Max. 最大	Min. 最小	Max. 最大	Max. 最大
12V	0.01A	5A	11.4V	12.6V	120mV

Rated input,output with full load, 20MHz bandwidth. Load end connects with 0.1uF ceramic capacitor and 35V 47uF electrolytic capacitor 额定输入, 满载输出, 20 MHz 带宽。负载端并 0.1uF 的陶瓷电容和 35V 47uF 电解电容。

2 INPUT REQUIREMENTS 输入要求

2.1 Input Conditions 输入条件

The Supply shall operate over the voltage ranges as follows: 该电源应在以下电压范围内使用

Input Voltage Variation Range 输入电压调整范围: 90Vac - 264 Vac 50 & 60 Hz

Nominal Voltage 额定电压:100-240Vac

Input Variation Frequency 输入调整频率:47-63Hz

Input Nominal Frequency 输入额定频率:50/60Hz

Power Consumption (No Loading)能耗 (空载):Max 0.21W

2.2 AC Inrush Current AC 浪涌电流

Peak inrush current shall be limited to 80 A for a cold start. Under both cold & warm start conditions, there shall be no immediate damage or long term impact on the reliability of the Supply. The conformance test for this requirement shall be performed at $\pm 10\%$ of the rated input voltage. Voltage and current waveforms will be observed on an oscilloscope following closure of the external power switch. Switch closure will be repeated until the waveforms show closure coincident with a voltage peak. The current measured during this occurrence will be defined as the peak inrush current. 峰值浪涌电流在冷启动时应限制在 80A 的。在冷, 热启动条件下, 不得对电源造成立即损坏或其可靠性造成长期影响。针对这一要求的一致性测试应在额定输入电压为 $\pm 10\%$ 来执行。电压和电流波形将在示波器上追随外部电源开关的闭合被测量到。开关闭合将重复进行, 直至波形显示与电压峰值重合。这种情况的下测得的电流将被定义为峰值浪涌电流。

2.3 Efficiency 效率

The efficiency of the Supply shall meet the following requirements: 电源的效率应符合下列要求

Supply 输入:	Load 负载:	Line 线性调整	AVG Efficiency 平均效率
Universal 全球通用	Rated Output 额定输出	100- 240 Vac	$\geq 88\%$ (DOE VI)

3 OUTPUT REQUIREMENTS 输出要求

3.1 Output Voltage / Current 输出电压 / 电流

Output# 输出编号	Voltage 电压	Minimum load 最小负载	Max load 最大负载	Peak load 峰值负载
1	12V	0.01A	5A	/

The unit total output power, under steady state conditions, shall not exceed 60W
该电源的总输出功率，在稳态条件下，不得超过 60W

3.1.1 Load/Line Regulation 负载/线性调整率

The output voltage shall be statically regulated for all combinations of load, line and environment including cross regulation as shown. 输出电压应是静态调整，对于所有负载组合，线路和环境，包括交叉调节的所有组合调整。如表所示

Output# 输出编号	Normal Voltage 标称电压	Min. Voltage 最小电压	Max. Voltage 最大电压	Tolerance 范围
1	12V	11.4V	12.6V	±5%

3.1.2 Light Load Output Voltage 轻负载输出电压

The output voltage shall be within the specified limits shown when subjected to the following conditions: 在下列条件时，输出电压应在标示的指定范围内:

Ambient temperature环境温度: 0° C – 40° C

Output voltage(No load)输出电压(空载): DC12V

No damage or hazardous condition will occur with the DC output connector disconnected from the load under all input line conditions. 从负载断开直流输出连接器，在所有输入电压条件下，不会出现损害或危险情况.

3.2 Short Circuit Protection 短路保护

The power supply will be auto recovered when short circuit faults remove 该电源在供电时短路解除时,能恢复正常工作

3.3 Over-voltage protection 过压保护

When the output voltage than rated voltage, the power supply will protect, can resume normal work after troubleshooting.

当输出电压超过额定电压时,电源将保护,故障排除后能恢复正常工作.

3.4 Over current protection 过流保护

The power supply will be protection when output power over 110%—150% of all rated dc output. 当输出功率在所有额定输出时超过 110%-150%，电源将被保护。

3.5 Rise Time 上升时间

The Supply shall have a start-up rise time of less than $\leq 50\text{ms}$ to rise to within regulation limits for all DC outputs. 对于所有 DC 输出，电源启动时间应小于 ≤ 50 毫秒，上升到所有的直流输出调节范围之内。

3.6 Hold Up Time 保持时间

$\geq 10\text{mS}$ Min. At 115Vac input and output Max. Load 当输入 115V 和输出最大负载时,最小保持时间为 $\geq 10\text{mS}$ 。 .

3.7 Turn On Delay Time 启动延时

115Vac: The output shall reach steady state value within $\leq 3\text{sec}$ of turn on
115V 启动 3 秒内，电源输出应达到稳定状态

230Vac: The output shall reach steady state value within $\leq 3\text{sec}$ of turn on
230V 启动 3 秒内，电源输出应达到稳定状态

3.8 Output Ripple 输出纹波

Maximum Ripple must be less than 120mVpp when subjected to the following conditions:

在如下条件下，最大纹波须小于 120mVpp :

Line voltage 输入电压: 100Vac-240Vac 50 & 60 Hz (Universal)

Output Load: 输出负载: Full Load 满负载

Remarks 备注: Rated input,output with full load, 20MHz bandwidth. Load end connects with

0.1uF ceramic capacitor and 35V 47uF electric capacitor. 额定输入，满载输出，20 MHz 带宽。负载端用 0.1uF 的陶瓷电容和 35V 47uF 的电解电容连接。

3.9 Overshoot 过冲

During Turn-On or Turn-Off of the power supply, the output voltage shall not exceed 10%. No voltage of opposite polarity shall be present on the output during turn-on or turn-off. 在电源接通或关断时，输出电压不应超过 10%，输出端不应出现反极性的电压。

3.10 Components Thermal Derating 元器件热降额

In the output nominal load conditions and any work under the condition of the rated Input Voltage, all components shall not exceed thermal derating. shall not exceed their designed safety rated temperatures for the insulation. 在输出标称负载条件及任何工作额定输入条件下，所有元件不超过其降额温度。不得超过其设计的安全绝缘等级温度。

4 MECHANICAL 机械尺寸

4.1 Input connector 输入插头

The AC input connection shall be an IEC320 power connector
交流输入连接器应符合 IEC320 标准电源连接器

4.2 Output connector 输出连接器

UL authentication 2464 18# line Black,L=1.5M

Copper head: 2.1x5.5x12mm C+, Right Angle Connector

5 REGULATORY COMPLIANCE 法规符合

5.1.1 EMC Specifications 电磁兼容性要求

The external power supply must meet all specification in this section. It is required that the external power supply work closely with the Product in order to get the best EMC solution. 外部电源必须符合此部分的所有规范。它要求外部电源与配套产品匹配，以获得最佳的 EMC 解决方案。

5.1.2 Radiated and Conducted Emission 辐射和传导发射

The power supply shall complied to:

FCC part 15 : Subpart B for radiated and conducted emissions.

EN 55032, Class B for radiated and conducted emissions.

对于辐射和传导发射要求，该电源应该符合 FCC 第 15 部分 B 类。
及 EN 55032 类的辐射和传导发射要求。

5.1.3 Immunity 抗扰度

5.1.3.1 Electrostatic Discharge Immunity 静电放电抗扰度

EN 55024:2010, EN 61000-4-2

Air Discharge 空气放电: $\pm 8\text{kV}$

Contact Discharge 接触放电: $\pm 4\text{kV}$

Performance Criteria B 执行标准 B

Electrostatic-discharge test by contact or air should be conducted with Static-discharge tester,
接触或空气静电放电测试，应通过静电放电测试仪进行，

energy storage capacitance of 150pF, and discharge resistance of $330\ \Omega$, 8KV air discharge, 4KV contact discharge. 150pF 的储能电容，放电电阻 $330\ \Omega$ ，8KV 空气放电，4KV 接触放电。

5.1.3.2 Radiated Field Immunity 辐射场抗扰度

EN 55032:2015, EN 61000-3-2: 2014

- Frequency Range 频率范围: 80-1000MHz
- Field Strength 场强: 3 V/m with 80% amplitude modulation of 1kHz
- Performance Criteria A 执行标准 A

Radio-frequency electromagnetic field susceptibility test, RS 80-1000MHz, 3V/m, 80%AM(1KHz).
射频电磁场易受性测试, RS 80-1000MHz, 3V/m, 80%AM(1KHz).

5.1.3.3 Fast Transient Immunity 快速瞬变脉冲抗扰度

EN 55024, EN 61000-4-4

- Power line: 1kV AC 到 AC 线: 1kV
- Signal line: 0.5kV DC 到 DC 线: 0.5kV
- Performance Criteria B 执行标准 B

5.1.3.4 Surge Immunity 浪涌抗扰度

EN 55024:2010, EN 61000-4-5

- 1.2/50 usec Open Circuit voltage 1.2/50 微秒 开路电压
- 8/20 usec Short Circuit current 8/20 微秒短路电流
- Power line: 1kV 线对线: 1kV
- Line to Earth: 2kV 线对地: 2kV

Lighting Surge Voltage of differential and common modes shall be applies across AC input lines and cross input and frame ground.

差模和共模雷击浪涌电压应当在交流输入线之间及输入和对地之间进行。

5.2 Safety Requirements and Certification 安规要求及认证

5.2.1 Regulatory Standard 法定标准

The power supply shall complied the following international regulatory standards

该电源应满足如下国际法定标准

	Country 国家	Certified Status 认证情况	Standard 标准
UL	USA 美国	MEET	UL 62368-1
CUL	Canada 加拿大	MEET	CAN/CSAC22.2 No. 62368-1
CE	Europe 欧洲	MEET	EN62368-1
FCC	USA 美国	MEET	EN62368-1
RoHS		MEET	

5.2.2 Additional Safety Requirements 其他安全要求

- ◎ Dielectric Withstand Voltage, Primary(input AC short)-to-Secondary(output DC short) 耐电压, 初级 (输入交流短路) 到次级 (输出直流短路): **4000Vac, 10mA, 1 minute**
- ◎ Insulation Resistance, Input to output 绝缘电阻, 输入到输出: **20M Ω (MIN.) at 500 VDC.**
- ◎ Reinforced insulation system, Primary-to-Ground and Primary-to-Secondary. 增强绝缘系统, 初级对地和初级对次级, .
- ◎ The leakage current shall not exceed 漏电流不应超过 **0.75mA.**

6 PRODUCT ENVIRONMENTAL REQUIREMENTS 产品环境要求

6.1 Temperature 温度

- ◎ Operating 工作: 0 °C- +40 °C
- ◎ Non-Operating 非工作 -20 °C- +70 °C

6.2 Humidity 湿度

- ◎ Operating 工作 20% - 80% (Non Condensing) (不凝结)
- ◎ Non-Operating 非工作 10% - 90% (Non Condensing) 不凝结)

6.3 Vibration 震动

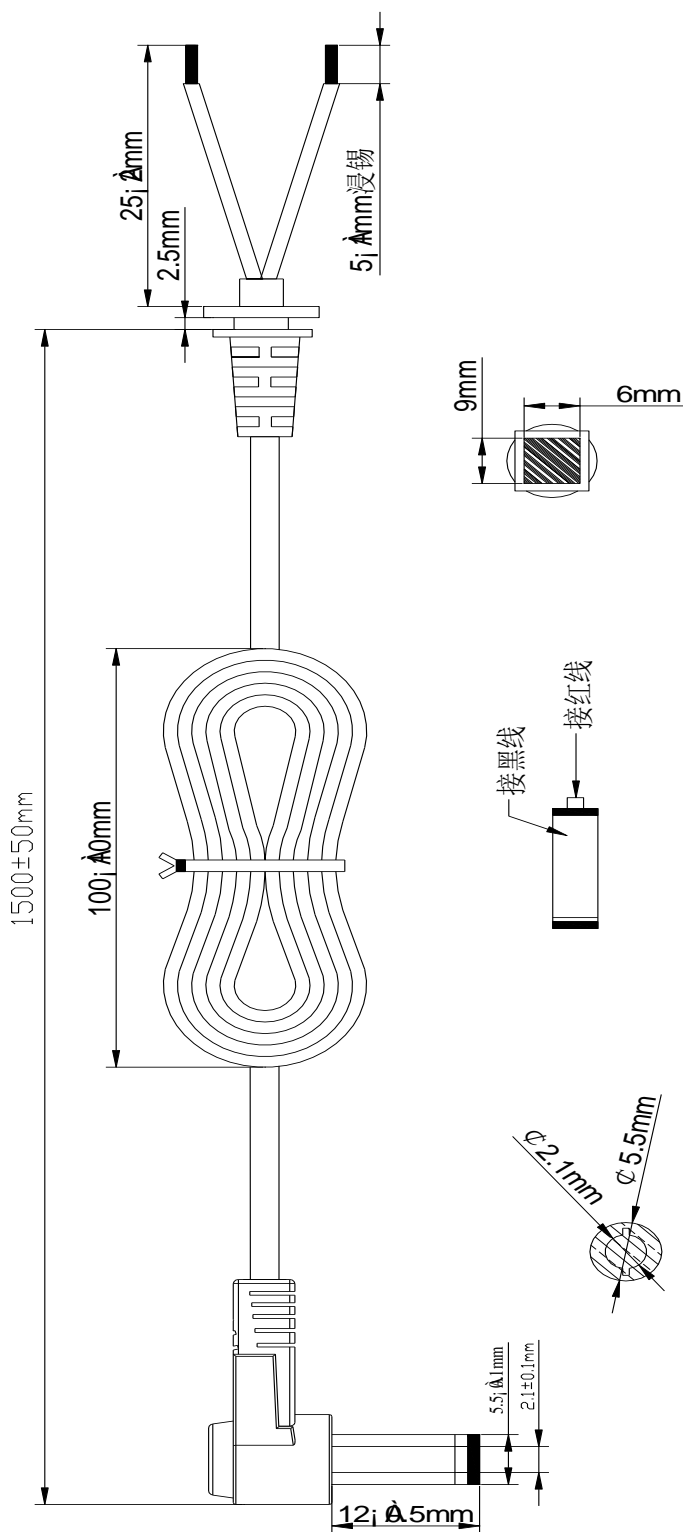
Operating: 10-250Hz, 0.25G peak to peak, 3axes, 15min sweep.

使用: 10-250Hz, 0.25G 峰值到峰值, 3 轴向, 15 分钟, 摆动.

Storage: 10-300Hz, 2.0G peak to peak, 3axes, 15min sweep

储存: 10-300Hz, 2.0G 峰值到峰值, 3 轴向, 15 分钟, 摆动

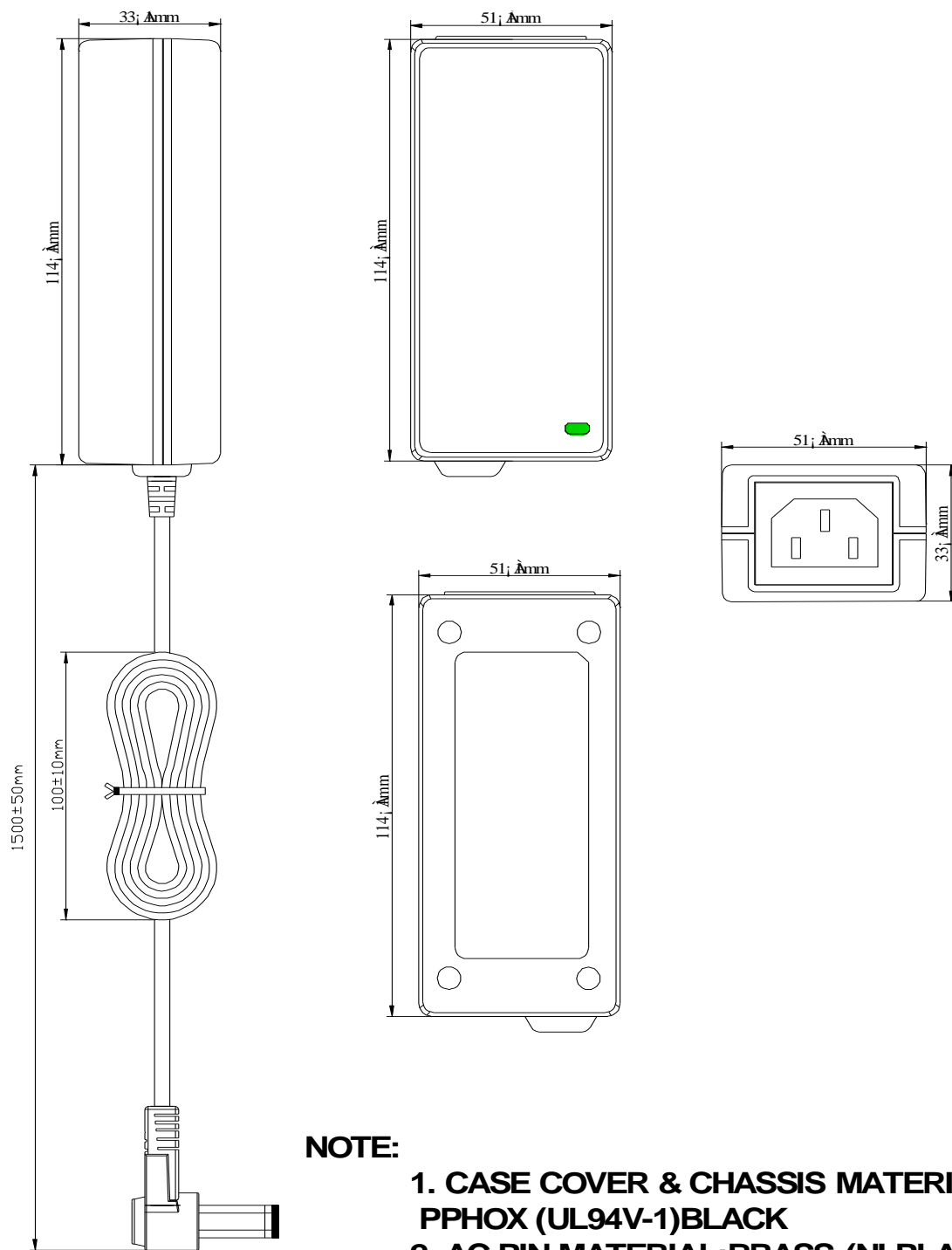
7、DIMENSION OF OUTPUT PLUG & DC CORD (Unit:mm) 输出插头及电线尺寸(单位:mm)



NOTE:

- 1.线材为黑色2464#18AWG+PVC绝缘*2芯, DC头为5.5*2.1*12音叉弯头。
- 2.线身材质为45P, 插头与SR9*6*2.5mm材质为45P, PVC黑色, 耐温为80jã
- 3.所有材料符合ROHS要求。
- 4.弯折无开裂,电气性能要求无异常。

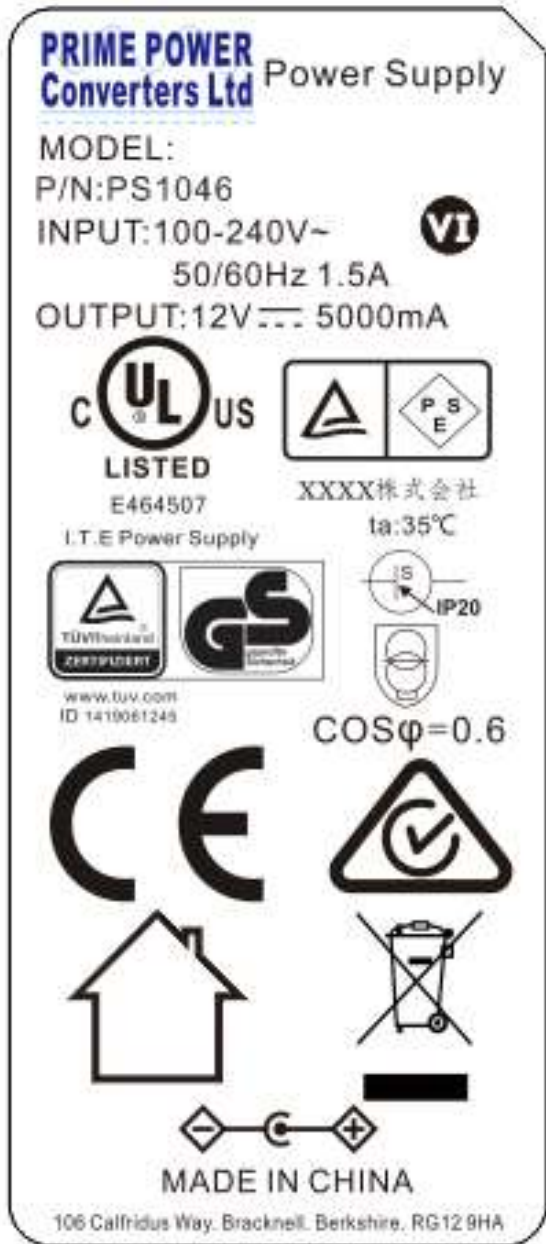
8、 APPEARANCE DRAWING:(Unit:mm) 产品外观图:(单位:mm)



NOTE:

1. CASE COVER & CHASSIS MATERIAL
PPHOX (UL94V-1)BLACK
2. AC PIN MATERIAL:BRASS (NI PLATED)
3. 5P+NP+PAHS+REACH+ROHS

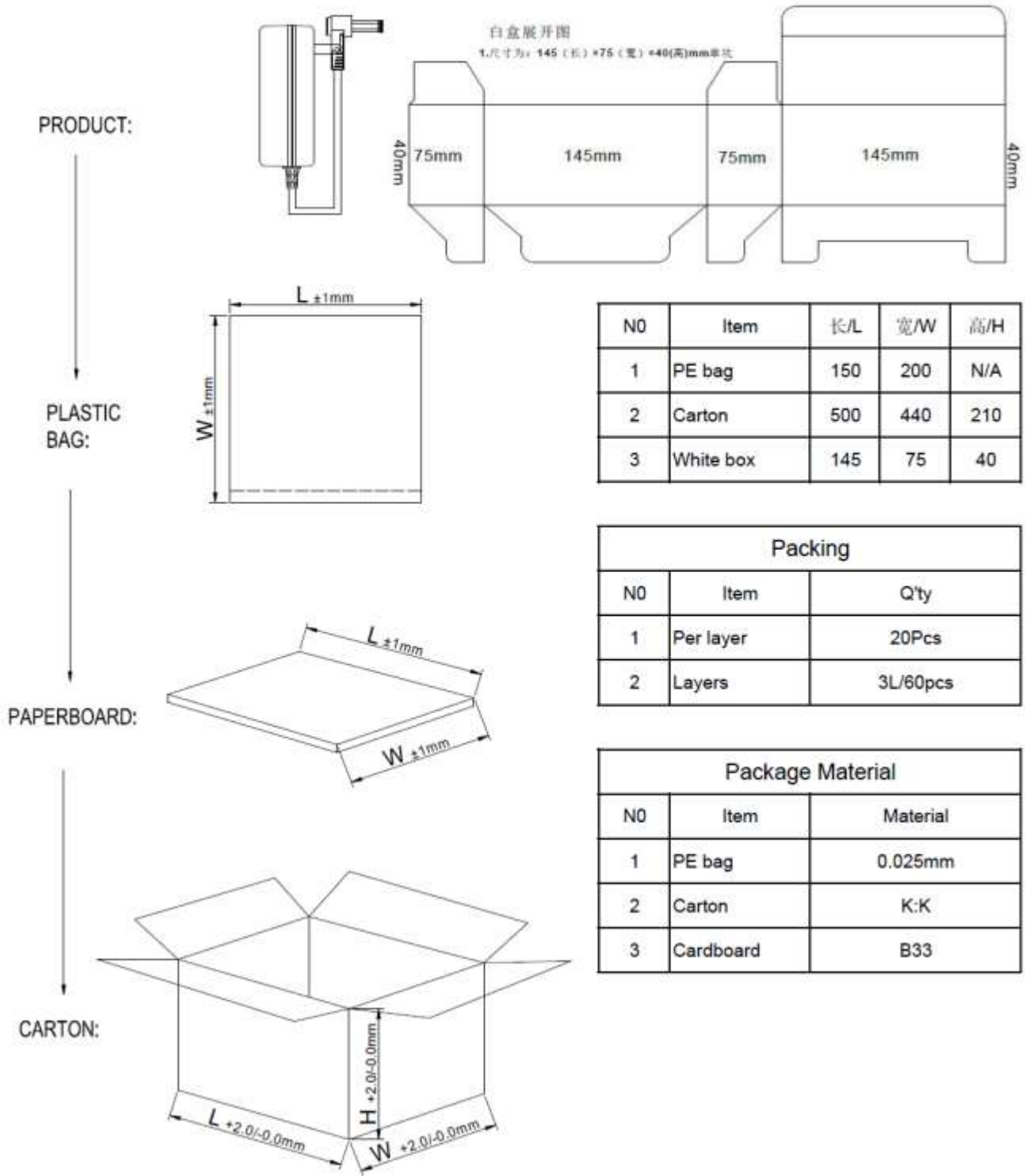
9、 LABEL DIAGRAM (Unit: mm) 标签图 (单位: mm)



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Notes: Laser carving

10. PACKING(unit:mm) 包装 (单位: mm)



11.INSTRUCTION MANUAL/说明书

MODEL NO.:型号 PS1046

Please keep reading the following safety notes before use or examination.

使用或检验前需细读下列安全说明:

1.) Primary technical specification of the marking on the product.

产品铭牌上标识的主要技术参数:

Model 型号: **PS1046**

Input 输入: 100V-240V~50/60Hz 1.5A

Output 输出: 12V  5000mA 60W

2.) The product is used only within doors or at the dry location.

本产品仅适用于户内或干燥处使用。

3.) . Don't store or use this product in the erodent condition.

不要在有腐蚀性的环境中存放或使用此产品。

4.) .The ambient temperature around the prod uct must be kept for room temperature because overcool can effect on the feature and working life of product.

本产品周围环温应保持在室温状态, 应避免过热过冷, 以免影响产品性能与寿命。

5.) .The power supply applies only to the highest temperature 40 °C, and without any covering

该电源仅适用于最高环境温度 40°C, 且没有任何覆盖物。

6.) .According to the technical specification of product, it must be connected with correct power input and specified out put load or terminal appliance so that it can't be broken. Pay attention to the input voltage & frequency.

请依据产品的技术指标要求,正确接通电源,指定负载或终端产品,以免损坏产品。尤其要注意输入电压与频率的匹配。

7.) .The disconnection from line voltage is taken by pulling the mains plug.

若需断电, 请从插座处拔出产品电源插头。

8.) .The product is not intended to be repaired by service personnel in in case of failure including component defect of crack of the enclosure and external flexible cord damaged etc, it must be discarded.

如果产品出现故障如元件损坏, 外壳裂开, 引出线身损伤等, 则不可维修再用, 必须报废。

9.) .Fuses replaceable only by service personnel.

保险管的更换必须由专业维修人员完成。

The output polarity: 输出极性:

