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Design Revision History 设计修订历史

Mark 标注	Description of Change 变更说明		Changed Date 更改日期	Reason of Change 更改原因	Revised By 修改人	Approved By 审核人
	Before 更改前	After 更改后				
A	/	/	2026/3/12	首次发行		

1. SCOPE 范围

This document details the electrical, mechanical and environmental specifications of a switching power supply.

本文档详细介绍了开关电源的电气，机械和环境规格。

1.1 Description 描述

- Wall Mount 壁挂式安装 Desk-Top 桌面式
 Open Frame 开架式 Others 其他

2. INPUT REQUIREMENTS 输入要求

2.1 Input Voltage & Frequency 输入电压和频率

The range of input voltage is from 220Vac to 240Vac

输入电压范围为 220Vac 到 240Vac

	Min.最小	Normal标准值	Max.最大
Input Voltage输入电压	220Vac	230Vac	240Vac
Input Frequency输入频率	47Hz	50/60Hz	63Hz

2.2 Current 电流

The maximum input current is 0.4A max. at 220-240Vac

在 220-240Vac 时最大输入电流为 0.4A

2.3 Inrush Current 涌入电流

The inrush current will not exceed 60A at 264Vac input and Max load for a cold start at 25°C.

在264Vac和25°C的冷启动最大负载下，涌入电流不会超过60A

The input power should be less than 0.5W with No-Load.

空载时，输入功率应小于0.5W

3. OUTPUT FEATURES 输出功能

3.1 Output Parameters 输出参数

	Output Data输出数据	Spec. Limit 规格限制			Test Condition测试条件
		Min. Value 最小值	Typical 标准值	Max. Value 最大值	
3.1.1					
3.1.2	Output Voltage输出电压	11.4Vdc	12.0 Vdc	12.6Vdc	CC: 0-1A
3.1.4	Output Load输入负载	0A	/	1A	
3.1.5	Ripple and Noise 波纹和噪音	/	/	300mVp-p	20MHz Bandwidth 10uF Ele. Cap.0.1uF Cer. Cap. 20MHz带宽.10uF Ele. Cap.0.1uF Cer. Cap.

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3.2 Turn On Delay (Input voltage=220-240Vac Full load)

开启延迟 (输入电压 = 220-240Vac满载)

During turn on and turn off, no output voltage shall exceed its nominal voltage by more than **10%** and no output shall change its polarity with respect to its return line. All outputs shall reach their steady state values within **3** seconds of turn on.

在打开和关闭期间, 任何输出电压均不得超过其标称电压超过 10%, 并且任何输出均不得相对于其返回线改变其极性。所有输出应在开启后 3 秒钟内达到其稳态值。

3.3 Hold Up Time 保持时间

10 ms minimum at **220Vac / 60Hz** input at maximum load, and **20** ms minimum at **240Vac/50Hz** input at maximum load.

在最大负载下, 输入 220Vac / 60Hz 时最小 10 ms, 在最大负载下输入 240Vac / 50Hz 时最小 20 ms

3.4 Typical Efficiency 典型效率

The efficiency (watts out / watts in) shall be higher than **72.97%** typical while measuring at nominal line and maximum load condition, test in 1 minute after power on.

在标称线路和最大负载条件下进行测量时, 效率 (瓦特输出/瓦特输入) 应高于典型值的 72.97%, 并在开机后 1 分钟进行测试。

3.5 Output Transient Response 输出瞬态响应

Output voltage within 11.4V ~12.6V for load step from 25% to 50% to 25%, 50% to 75% to 50% R/S: 0.25A/uS, Transient Response Recovery Time :200uS, Dynamic response overshoot 5%
输出电压在 11.4V ~12.6V 范围内, 负载阶跃从 25% 到 50% 到 25%, 50% 到 75% 到 50%
R / S: 0.25A / uS, 瞬态响应恢复时间: 200uS, 动态响应过冲 5%

4. PROTECTION REQUIREMENT 保护要求

4.1 Over-Current Protection (220-240VAC) 过电流保护 (220-240VAC)

Over Current Point Limited: 1.1A-1.65A 过流点限制: 1.1A-1.65A

When an overcurrent is applied to the output rail, the output should burp, and the output should recover automatically when the fault condition is eliminated

当过电流施加到输出轨时, 输出应会打嗝, 并且当故障条件消除后, 输出应自动恢复

4.2 Short-Circuit Protection 短路保护

The adaptor must withstand a continuous short circuit on the output without damage.

适配器必须承受输出端的连续短路而不会损坏。

5. ENVIRONMENTAL CONDITIONS 环境条件

5.1 Operating 操作

The power supply shall be capable of operating normally in any mode without malfunction happens in the following environmental conditions.

在以下环境条件下, 电源设备应能够在任何模式下正常运行而不会发生故障。

5.1.1 Operating Temperature: 0°C ~40°C 工作温度: 0°C ~40°C

Relative Humidity: 10% ~ 90% 相对湿度: 10% ~90%

Altitude: Sea level to 2000 m. 海拔: 海平面达 2000 m

5.1.2 Vibration: 1.0mm, 10 -55Hz, 15 minutes per cycle for each axis (X, Y, Z).

振动: 每个轴 (X, Y, Z) 每个周期 1.0mm, 10 -55Hz, 15 分钟

5.1.3 Cooling: Natural convection cooling 冷却方式: 自然对流冷却

5.2 Non - Operating 非操作

The power supply shall be capable of withstanding the following environmental conditions extended periods of time, without sustaining electrical or mechanical damage and subsequent operational deficiencies.

电源应能够承受以下环境条件延长时间, 而不会遭受电气或机械损坏, 并且随后的操作缺陷。

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- 5.2.1 Storage Temperature: -20°C ~ 70°C 储存温度: -20°C~70°C
- 5.2.2 Relative Humidity: 5% ~ 95% 相对湿度: 5%~95%
- 5.2.3 Altitude: Sea level to 2000 m. 海拔: 海平面达2000 m
- 5.2.4 Vibration and Shock: 振动和冲击:

The power supply shall be designed to withstand normal transportation vibration per MIL-STD-810D, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

电源应按照MIL-STD-810D, 方法514和规程X承受正常的运输振动, 因为它已安装在底盘组件中并包装好了运输。

6. RELIABILITY AND QUALITY CONTROL 可靠性和质量控制

6.1 MTBF 故障平均间隔时间

When the power supply is operating within the limits of this specification the MTBF shall be at least **20,000** hours at 25°C (MIL-STD-217F).

当电源在此规格范围内运行时, MTBF在25°C (MIL-STD-217F) 下至少应为20,000小时。

6.2 Burn-In 预烧

The power supply shall withstand a minimum of **2** hours Burn-In test under full load at 35°C ~40°C room temperature, after test, product shall operate normally.

电源应在35°C~40°C室温下满载至少2个小时的老化测试, 测试后产品应能正常运行。

6.3 Component Derating 组件降额

Semiconductor junction temperatures shall not exceed the manufacturer's maximum thermal rating.

半导体结温不得超过制造商的最大热额定值

7. MECHANICAL CHARACTERISTICS 机械特性

7.1 Physical Dimensions 物理尺寸

The detail dimension of the power supply is drawn on APPENDIX A.

电源的详细尺寸标注在附录A中

7.2 Nameplate 铭牌

The label of the power supply, please see APPENDIX B.

电源标签, 请参阅附录B

7.3 Drop test 跌落测试

Dropped freely from 1 m (for wall mount product) height onto the surface is consisted of hardwood 13 mm thick, mounted on two layers of plywood each 19-20 mm thick, all supported on concrete floor 1 time from 3 different surface, after test, it's no safety damage for product.

从1米(用于壁挂式产品)高度自由落下的表面由13毫米厚的硬木组成, 安装在两层胶合板上, 每层胶合板厚度为19到20毫米, 全部从3个不同的表面支撑一次, 并经过测试, 对产品没有安全损害。

8. SAFETY 安全

8.1 Safety Standard 安全标准

The power supply shall be certified under the following international regulatory standards

电源应按照以下国际法规标准进行认证

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Item商品	County 国家	Certified认证	Standard 标准
UKCA	England	MEET	61347

8.2 Insulation Resistance 绝缘电阻
Input to output: **10 MΩ** min. at **500 VDC**. 输入至输出：在500 VDC下最小为10MΩ

8.3 Dielectric Strength (Hi-Pot) 介电强度（高电位）
Primary to Secondary **3750VAC,5mA** 3 seconds for Production line test.
初级到次级**3750VAC, 5mA** 3秒用于生产线测试
Primary to Secondary **3000VAC,5mA** 1 minute for QA test
初级到次级**3000VAC, 5mA** 1分钟用于QA测试

8.4 Leakage Current 漏电流
The leakage current shall be less than **0.25mA** for **Class II** when the power supply is operated maximum input voltage and maximum frequency.
当电源在最大输入电压和最大频率下工作时，对于II类，泄漏电流应小于0.25mA

9. EMC STANDARDS EMC标准

9.1 EMI Standards EMI标准
The power supply shall meet the radiated and conducted emission requirements for **EN55015**
电源应满足EN55015的辐射和传导发射要求

9.2 EMS Standards EMS标准
The power supply shall meet the following EMS standards
电源应符合以下EMS标准

- 9.2.1 IEC61000-4-2 Electrostatic Discharge (ESD) IEC61000-4-2静电放电（ESD）
Static – discharge test by contract or air should be conducted with Static – discharge teeter, energy storage capacitance of 150pF, and discharge resistance of 330Ω.
8KV air discharge, **4KV** contact discharge, Performance Criterion B.
应使用静电放电跳板，150pF的储能电容和330Ω的放电电阻，8KV空气放电，4KV接触放电，性能标准B
- 9.2.2 IEC61000-4-3 Radiated Electromagnetic Fields(RS) IEC61000-4-3辐射电磁场（RS）
Radio- frequency Electromagnetic Field Susceptibility Test, RS, 80-1000MHz,3V/m, 80%AM(1KHz), Performance Criterion A.
射频电磁场敏感性测试，RS，80-1000MHz，3V / m，80%AM（1KHz），性能标准A.
- 9.2.3 IEC61000-4-4 Electrical Fast Transient / Burst (EFT) IEC61000-4-4电气快速瞬变/突发（EFT）
Power Line to Line: **0.5KV** 电源线对线：0.5KV
Performance Criterion B. 绩效标准B.

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- 9.2.4 IEC61000-4-5 Lightning Surge Attachment IEC61000-4-5雷电浪涌附件
Lightning Surge voltage of differential and common modes shall be applied across AC input lines and across input and frame ground.
差模和共模雷击浪涌电压应施加在交流输入线之间以及输入和机架接地上。
Power Line to Line: 0.5kv 电源线对线: 0.5kv
Performance Criterion B. 绩效标准B.
- 9.2.5 IEC61000-4-6 Conducted Radio Frequency Disturbances (CS)
IEC61000-4-6传导无线电频率干扰 (CS)
Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 3V/m, 80%AM, 1KHz, Performance Criterion A.
传导射频干扰测试, CS, 0.15-80 MHz, 3V / m, 80%AM, 1KHz, 性能标准A.
- 9.2.6 IEC61000-4-11 Voltage Dips/Short Interruption/Variations
IEC 61000-4-11电压跌落/短时中断/变化
Voltage Dips, 30% reduction- 10ms, Performance Criterion B, 60%
电压骤降, 降低30%-10ms, 性能指标B, 60%
Reduction – 100ms, Performance Criterion C, Voltage Interruptions>95%
减少– 100ms, 性能标准C, 电压中断> 95%
Reduction- 5000ms, Performance Criterion C.
减少-5000ms, 性能标准C

10. OTHER REQUIREMENTS 其他需求

10.1 Hazardous Substances 有害物质

The components and used materials shall be in compliance with
组件和用过的材料应符合

- EU Directive 2002/95/EC "RoHS" 欧盟指令2002/95 / EC“ RoHS”
 EU Directive 2002/96/EC "WEEE" 欧盟指令2002/96 / EC“ WEEE”

10.2 Energy Efficiency 能源效率

10.2.1 The No-Load power consumption shall be less than 0.5W at input 220-240 Vac.
输入220-240Vac时的空载功耗应小于0.5W

10.2.2 The average active mode efficiency shall be higher than 72.97% at input 220-240 Vac.
在输入220-240 Vac时, 平均有效模式效率应高于72.97%

10.2.3 International Efficiency Level / . 国际效率水平 /

10.2.4 This power supply is therefore in compliance with the requirements of
因此, 此电源符合以下要求:

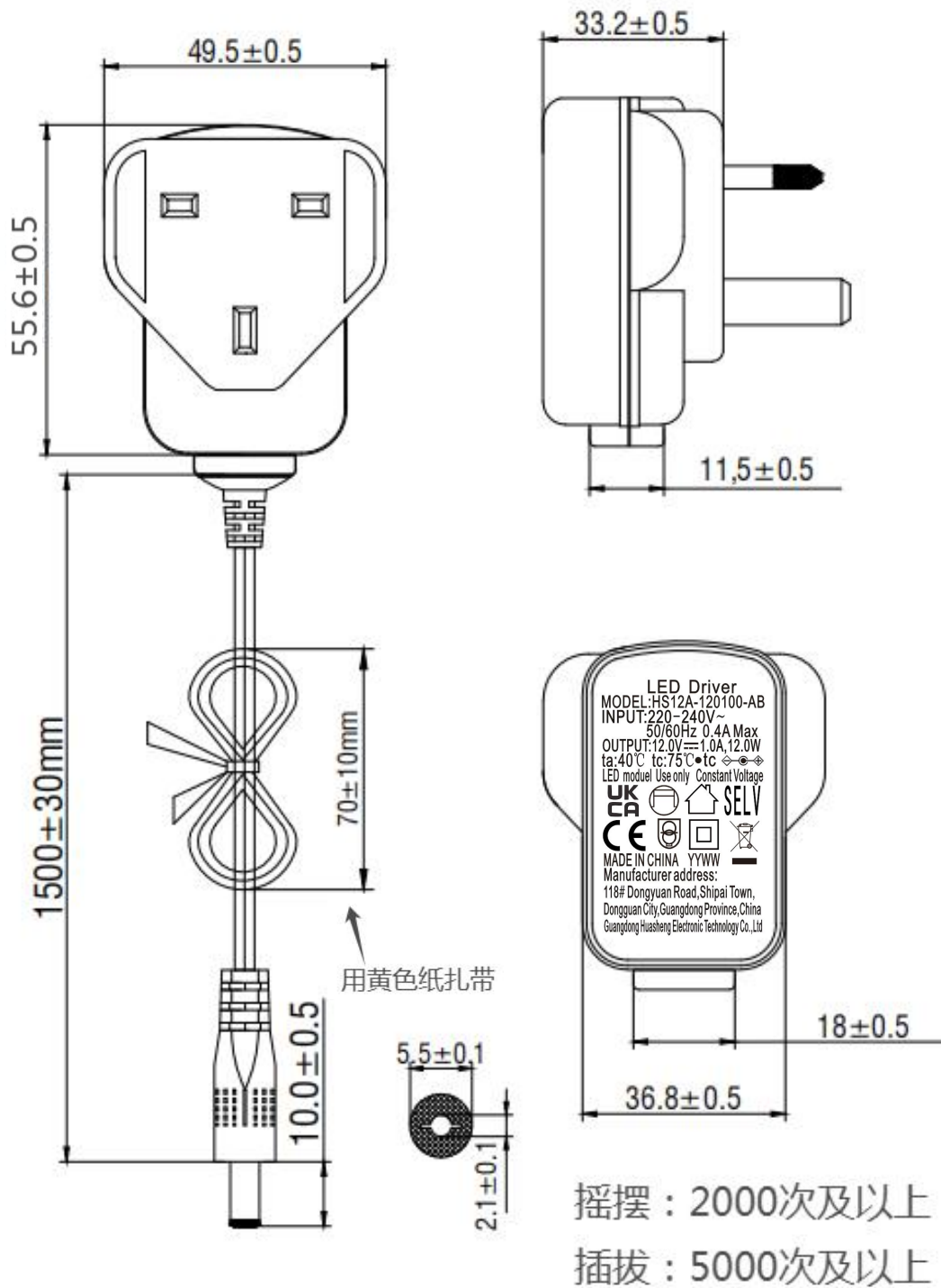
- California Energy Commission for external power supplies (CEC)
加州能源委员会外部电源 (CEC)
 Energy Star requirements for external power supplies (EPS Version 2.0)
外部电源的能源之星要求 (EPS 2.0版)
 EU Code of Conduct Energy requirements of external power supplies
欧盟行为准则外部电源的能源要求
 Australian and New Zealand Energy Performance Requirements for external power supplies (MEPS)
澳大利亚和新西兰对外部电源 (MEPS) 的能源性能要求
 China Energy Efficiency requirements for external power supplies (GB20943)
中国外部电源的能效要求 (GB20943)

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APPENDIX A 附录A

Mechanical Dimensions(Unit: mm) Tolerance Of unspecified Parts:±1.5mm

机械尺寸（单位：mm）未指定零件公差：±1.5mm



外壳材质/ shell materia: ■PC 耐温：120℃/ temperature resistance 120℃

DC线材：UL2468 24AWG 黑色 L=1500mm 5.5*2.1*10mm 音叉直头
用黄色纸扎带

备注：PC材质符合球压测试要求/ remark: PC texture

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APPENDIX B 附录B

Name Plate:

铭牌:

LED Driver
MODEL:HS12A-120100-AB
INPUT:220-240V~
50/60Hz 0.4A Max
OUTPUT:12.0V=1.0A,12.0W
ta:40°C tc:75°C•tc 
LED moduel Use only Constant Voltage
UK CA   **SELV**
CE    
MADE IN CHINA YYWW 
Manufacturer address:
118# Dongyuan Road,Shipai Town,
Dongguan City,Guangdong Province,China
Guangdong Huasheng Electronic Technology Co.,Ltd

Unit: mm

Lase

镭射

YYWW是生产周期

YY是年份

WW是周数

* Please Advise If Any Comments About The Name Plate Information.

如果对铭牌信息有任何意见，请告知。

Otherwise, This Information Is Defaulted As Customer Approval,

否则，此信息默认为客户批准，

And Will Be Applied To Production .

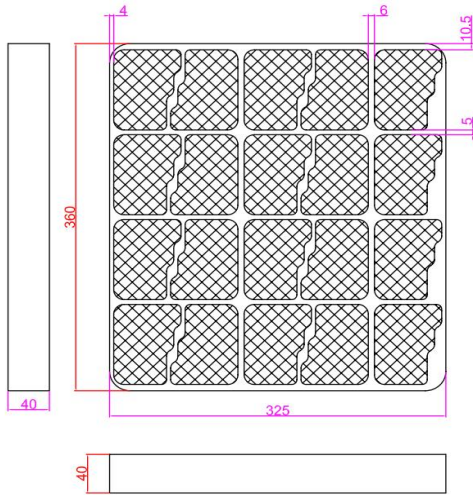
并将应用于生产。

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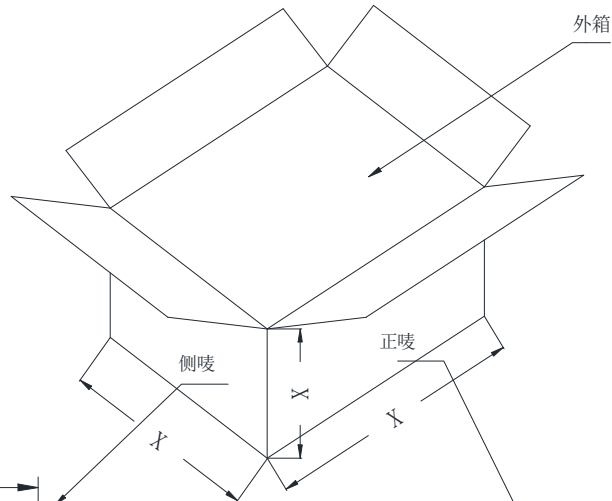
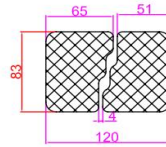
APPENDIX C 附录C

packaging: blister、The cartons

包装：吸塑、纸箱



材质: PVC 透明
 尺寸360*325*40*0.1mm (长X宽X高X厚度)
 物料编码: 14002-00084-00

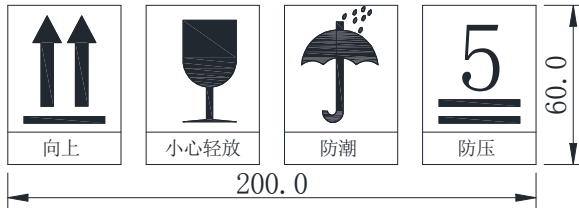


侧唛唛头

103.0

73.0

纸箱尺寸: X×X×Xmm



正唛唛头

250

广东华胜电子科技有限公司

地址: 东莞市石排镇东园大道118号

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APPENDIX D 附录D

SAMPLE TEST REPORT 样品测试报告

CUSTOMER 客户:		中山市蓝德电子有限公司							
MODEL NO 型号:		HS12A-120100-AB		PRODUCT NO 产品编号:			HS1201000BS6209		
Items No. 序号	Test parameter 测试参数	Unit 单位	input voltage 115Vac/60Hz 输入电压115Vac/60Hz					Spec. Limit 规格 限制	Pass/ Fail 合格/不 合格
			100%	75%	50%	25%	0%		
1	Input current 输入电流	mA							
2	Input power 输入功率	W						-	-
3	Output current 输出电流	A						-	-
4	Output voltage 输出电压	V						-	-
5	Power factor 功率因数	-						-	-
6	Efficiency 效率	%							Pass 合格

Items No. 序号	Test parameter 测试参数	Unit 单位	input voltage 230Vac/50Hz 输入电压230Vac/50Hz					Spec. Limit 规格 限制	Pass/ Fail 合格/不 合格
			100%	75%	50%	25%	0%		
1	Input current 输入电流	mA							
2	Input power 输入功率	W	15.35	11.56	7.76	4.01	0.100		-
3	Output current 输出电流	A	1	0.75	0.5	0.25			-
4	Output voltage 输出电压	V	12.15	12.24	12.28	12.28	12.38		-
5	Power factor 功 率因数	-	/	/	/	/			-
6	Efficiency 效率	%	79.15%	79.41%	79.12%	76.56%		78.56%	≥72.97% Pass 合格

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