

Shenzhen MLS Electrical Appliance Co., Ltd

规格承认书

SPECIFICATION FOR APPROVAL

客户名称
Customer

株式会社秋月電子通商

客户物料号
Customer P/N

产品类别
Product Type

5V2A适配器AC/DC ADAPTER

设计编号
Designed No.

CH888-9083

产品型号
Model No.

M050200-A010JP

送样日期
Sample Date

2023/5/10

版本
Version

A版

供应商确认栏 SUPPLIER APPROVED		客户承认栏 CUSTOMER APPROVED	
拟制 PREPARED BY		确认 CONFIRM BY	
审核 CHEKED BY		审核 CHEKED BY	
批准 APPROVDE BY		批准 APPROVDE BY	
签章/SIGANTURES		签章/SIGANTURES	

With your signature ,you agree that all contents in this approval sheet are correct and all production units will be built according to the specification described in this sheet.

签字后, 您同意本承认书内容, 所有产品将按此要求生产。

深圳市铭领盛电器有限公司

Shenzhen MLS Electrical Appliance co., Ltd.

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2 DESCRIPTION 概述

2.1 Power Supply Description 产品概述

This is a series of general purpose AC/DC adapters which convert 90Vac ~264Vac to a stabilized DC voltage of 5V with rated output current of 2000mA. 本通用型电源是将90Vac ~264Vac 交流输入电压转换成稳定的直流电压5VDC，额定输出电流2000mA。

2.2 Power Supply Change Notification 变更事前通知

The vendor shall notify customer of any design changes, prior to implementation. 有任何设计变动时,在变更实施之前,供应商将通知到客户。

2.3 Power Supply Frame 电源结构型式

- Wall mount 插墙式 Desk-top 桌上式
 Open frame 开放式结构/裸板 Other 其它

3 ELECTRICAL CHARACTERISTICS 电气性能

3.1 AC Input Voltage and Frequency 输入电压及频率

- 2.1.1 Reliable Input Voltage 可输入电压范围：AC90-264V
2.1.2 Rated Input Voltage 额定输入电压：AC100-240V
2.1.3 Reliable Input Frequency 可输入频率范围：47-63Hz
2.1.4 Rated Input Frequency 额定输入频率：50/60Hz

3.2 Input AC Current/输入电流

0.8A max.@90V ac input & Full load
在90Vac输入和满载条件下最大0.8A

3.3 Input Inrush Current 最大浪涌(突入)电流

Input 110&230Vac 50/60Hz, Output rated load. Maximum cold start inrush Current 50Amps peak. 输入110&230Vac 50/60Hz, 输出额定负载(冷启动)条件下, 最大浪涌(突入)电流为:50Amps。

3.4 No-load Loss Power 空载功耗

Input Rated Voltage, Output no load. Maximum loss power 0.1Watts.
输入额定电压,输出额定负载,最大空载功耗为:0.1瓦。

3.5 Output Voltage 输出电压

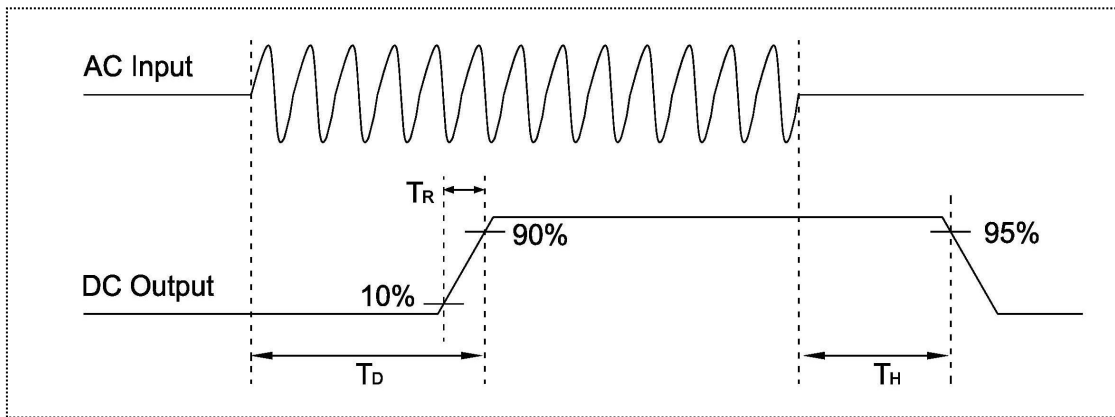
Input 输入	Output Rated Voltage 输出额定电压	Load output voltage range 负载输出电压范围	Output Rated Current 额定输出电流
Rated Voltage 额定电压	+5V	4.75V ~ 5.25V	2000mA

3.6 Output Ripple Voltage 输出纹波电压

- 3.6.1 Output ripple test condition: input rated voltage and output rated load.
在额定输入及输出的条件下测试输出纹波电压。
- 3.6.2 Peak to peak ripple is measured with an oscilloscope with a bandwidth of 20MHz.
纹波量测试时示波器选用20MHz带宽限制。
- 3.6.3 Measurement of ripple should include a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor at the input of the measuring oscilloscope.
测试时在输出端要并联一颗0.1uF的陶瓷电容和一颗47uF的电解电容。

Input	Output Rated Voltage	Output Current	Output Ripple Voltage
Rated Voltage	+5V	2000mA	200mVp-p Max.

3.7 Time Sequence 时序特性



- 3.7.1 Turn-On Delay Time(T_D) **开机输出延迟时间:**
The maximum cold start turn-on delay shall not exceed 3 second at input 230Vac and the rated load condition.
在输入230Vac,额定负载情况下,最大冷启动打开的延迟不会超出3秒。
- 3.7.2 Hold-Up Time(T_H) **关机输出维持时间:**
 - 2.7.2.1 The maximum turn-off hold-up time shall be least 10mS at input 115Vac and the rated load condition.
在输入115Vac及额定负载情况下,关机输出维持时间不低于10mS。
 - 2.7.2.2 The maximum turn-off hold-up time shall be least 20mS at input 230Vac and the rated load condition.
在输入230Vac及额定负载情况下,关机输出维持时间不低于20mS。
- 3.7.3 Output Rise Time(T_R) **输出上升时间:**
Input 110Vac/230Vac and rated load, The rise time shall not exceed 50mS that the output voltage rise from 10% to 90% rated voltage.
在输入110Vac/230Vac,输出额定负载条件下,输出电压由10%额定电压上升至90%额定电压的上升时间不会超过50mS。

3.8 Output Overshoot 输出过冲

- 3.8.1 5% Rated Voltage Max. when the power turn on.
当电源开机时,过冲电压值最大为额定电压值的5%。
- 3.8.2 5% Rated Voltage Max. when the power turn off.
当电源关机时,过冲电压值最大为额定电压值的5%。

Output Rated Voltage	Overshoot Voltage(V)	
	Turn on	Turn off
+5V	5%	5%

3.9 Output transient response 输出瞬态响应

Load output voltage range 负载输出电压范围	Rate Slew 斜率	Load change 负载变化
4.75V ~ 5.25V	0.2A/Us	0% to 50%Load and 50% to 100%Load.
Vout ± 5%	0.2A/Us	0% to 100%Load.

3.10 Protection Function 保护功能

3.10.1 Over Voltage Protection 过压保护

Output voltage exceed the Rated specifications 110%-160% into the protection.输出电压超过额定规格的110%-160% 时进入保护。

3.10.2 Over Current Protection 过流保护

The power supply shall protect itself from any over current condition. and shall be self-recovery when the fault condition is removed. The maximum output current shall be 110%~200% rate output current.

电源在过流情况下可自动保护,当过流情况解除后,可自动恢复正常。最大输出电流为110%~200%额定输出电流。

3.10.3 Short Circuit Protection 短路保护

Shorting of output will not cause power supply to damage, or any safety hazard.

The power supply shall resume normal operation after the short is removed.

输出短路时电源不会损坏,不会有任何的安全危险,短路解除后电源恢复正常工作。

3.10.4 Input Protection 输入保护

The power supply has a current fuse to protect itself.

该电源由一颗电流保险丝来达到输入保护。

3.11 Average Efficiency 平均效率

Input 115Vac / 230Vac. and 100%,75%,50%,25% Rated Load condition. Average efficiency (η):78.704%Min.

在输入115Vac/230Vac,输出100%,75%,50%,25%额定负载,平均效率 (η): 78.704 % Min.

4 ENVIRONMENTAL REQUIREMENTS 环境要求

4.1 Temperature 温度

4.1.1 Storage temperature (Non-operating) 存储温度(非操作状态):
-10 to +60 degrees C [-10] 至 [+60]摄氏度

4.1.2 Operating temperature Limits 操作温度:
0 to +40 degrees C [0] 至 [+40]摄氏度

4.2 Relative Humidity 相对湿度

4.2.1 Storage Humidity (Non-operating) 存储湿度(非操作状态):
10% to 80% RH (Non-condensing) [10%] 至 [80%],无凝水状态

4.2.2 Operating Humidity Limits 操作湿度:
0% to 85% RH (Non-condensing) [0%] 至 [85%],无凝水状态

4.3 The Sea Level Altitude 海拔高度

4.3.1 Storage Altitude 可存储海拔度(非操作状态):
0 to +20,000 feet above the sea level [0] 至 [20,000]英尺

4.3.2 Operating Altitude 可工作海拔度:
0 to +10,000 feet above the sea level [0] 至 [10,000]英尺

4.4 Cooling Method 冷却方法

Natural convection or Forced air 自然冷却或通风冷却

Note: The power storage time during which the power has never been used should be less than 6 months, otherwise, the rush current tends to malfunction with power started.

说明: 电源存贮时间不得超过半年(在此期间,电源从未使用过),否则开机时的冲击电流可能损坏电源。

5 Reliability 可靠性

5.1 MTBF: Mean Time Between Failure 平均故障间隔时间

The power supply shall be designed and manufactured to have more than 30,000 operating hours (about 3.5 years for 24-hour-operation a day) of mean time between failure (MTBF) at 90% of confidence level while operating under the prevailing conditions below.

在如下条件,该电源设计和制造平均故障间隔时间(MTBF)将超过30,000个操作时间(大约操作24小时/每天/3.5年),信心指数为90%。

AC Input Voltage: 110/230Vac
输入电压: 110/230Vac

Output Load: 80% of maximum load
输出负载: 80%最大负载条件

Ambient Temperature: at 25 degrees C Room Temperature
环境温度: 室温25摄氏度

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5.2 Insulation Resistance 绝缘阻抗

Test Points	检测部位	Condition & Specification 条件及规格
Input to Output	输入-输出	DC500V 10MΩ min. (at ambient temperature 25 degree C, humidity 70%) DC500V 10MΩ 最小。 (在室温25摄氏度,湿度70%条件下)。
Input to Case	输入- 外壳	DC500V 10MΩ min. (at ambient temperature 25 degree C, humidity 70%) DC500V 10MΩ 最小。 (在室温25摄氏度,湿度70%条件下)。
Output To Case	输出 - 外壳	Non Isolated

5.3 Hi-Pot 绝缘耐压

Test Points	检测部位	Condition & Specification 条件及规格
Input to Output	输入-输出	1800Vac 50Hz, 1Minute, ≤10mA.
Input to Case	输入- 外壳	1800Vac 50Hz, 1Minute, ≤10mA.
Output To Case	输出 - 外壳	Non Isolated

When AC voltage of 3.0KV is applied, and the voltage applied to the insulation under test is gradually raised from zero to the prescribed voltage in 1s, and held at that value for 60s between the input and output and between the input and housing, the current sensitivity shall be less than 10mA. After this test, the adapter shall exhibit no electrical and mechanical abnormalities. (AC voltage of 3.3KV, 3s and sensitivity current 10mA shall be applied to the product line).

在输入端对输出端及输入端对外壳施加了3.0KV电压,并且测试中施加在绝缘上的电压是在1S内由0V逐渐上升到规定值,然后保持60S,电流灵敏度设置在10mA。经过以上测试,电源应不发生电气及机械上的异常。(注:在生产线上批量生产时以3.3KV,3S 10mA进行测试)。

5.4 Leakage Current 漏电流

The leakage current shall not exceed 0.25mA for Class II when power supply is operated maximum input voltage and maximum load.

当电源供应器操作在最大输入及最大负载情况下,其漏电流应小于0.25mA,满足Class II等级。

SAFETY STANDARD 安全标准

6.1 SAFETY STANDARD 安全标准

* J62368-1

6.2 ELECTROMAGNETIC COMPATIBILITY (EMC) 电磁兼容性

6.2.1 EMI 电磁干扰

This power supply shall compliance with the following Criterion 本电源将遵照以下标准:

6.2.1.1 Conduction Emission 传导干扰度

* J55032, Class B

6.2.1.2 Radiated Emission 辐射干扰度

* J55032, Class B

7.1 Drop Test 跌落测试

The adapter shall exhibit no abnormality in mechanical or electrical performance when it is dropped three times to hardwood(20mm thickness) from a height of 70cm, with each of the three different sides of the adapter one time. Small nicks or slight deformations in the corners of the housing, or cracks not penetrating the inside may be accepted. (at:25°C±5°C).
适配器经过落地测试后应无机械或电气性能异常,从70cm垂直高度自由跌落到20mm厚度的硬木质板上(硬木质板应放置于水泥基座或同等无弹性的地面上),共跌落3次,3个不同面各1次. 外观或角落有轻微的变形或出现不穿透裂纹是可以接受的(在25°C±5°C时).

7.2 Input and Output Connections 输入输出连接

7.2.1 Input Connection 输入连接:

7.4.1.1 Wall plug or Cord to Cord Type 插墙式或导线式

- | | | |
|---|--------------------------------------|------------------------------------|
| <input type="checkbox"/> For EU | <input type="checkbox"/> For UL 2PIN | <input type="checkbox"/> For CCC |
| <input checked="" type="checkbox"/> For PSE | <input type="checkbox"/> For KC 3PIN | <input type="checkbox"/> For Korea |
| <input type="checkbox"/> For IRAM | <input type="checkbox"/> For SAA | <input type="checkbox"/> For Gost |
| <input type="checkbox"/> For Brazil | <input type="checkbox"/> For PSB | Others |

7.4.1.2 Socket and Terminal Type 母座或端子式

- | | | |
|---|--------------------------------------|--|
| <input checked="" type="checkbox"/> 2PIN Socket | <input type="checkbox"/> 3PIN Socket | <input type="checkbox"/> Terminal type |
|---|--------------------------------------|--|

7.2.2 Output Connector 输出连接:

7.4.2.1 Output Plug 输出插头

OD*ID*L: 详见外观图

7.4.2.2 Polarity 极性

See appearance figure 详见外观图.

7.2.3 Input & Output Cord 输入线材:

7.4.3.1 Length and Cord 长度及颜色

DC OUTPUT CABLE:2464 22# 1.5M 黑 5.5*2.1*10 S 音叉沟槽

7.4.3.2 Specifition 规格

See appearance figure 详见外观图.

7.3 Unit Weight 产品单重

The weight of the unit power supply shall be about 300 g(Ref).

产品单重大约: 80 克 (供参考).

7.4 Dimension 物理尺寸

47mm *34.2mm X24 mm (L* W * H).

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8. APPENDIX DRAWING 附图

8.1 NAMEPLATE DRAWING(铭牌图)

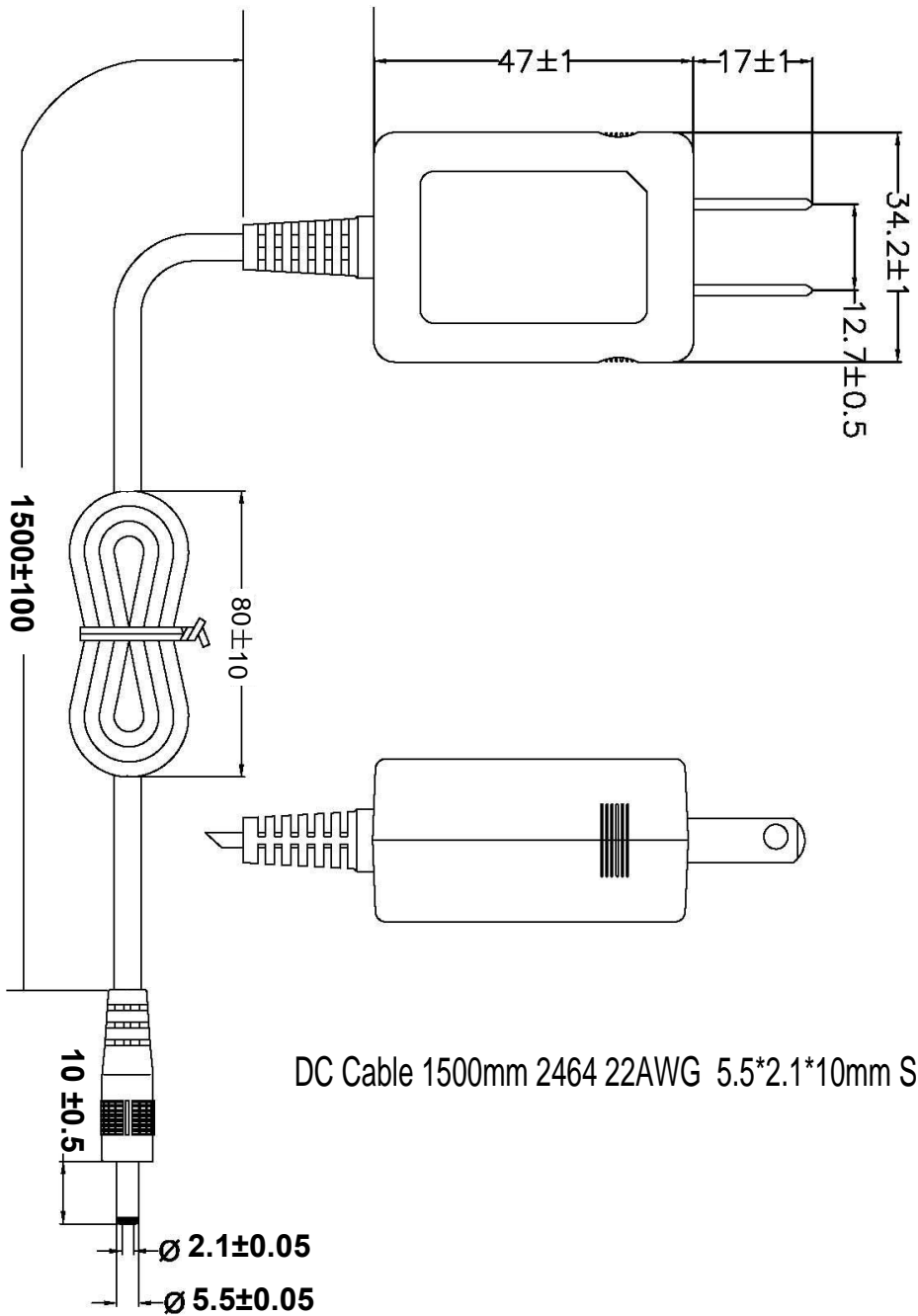


YY表示年份 (Year)

MM表示月份 (month)



单位;mm

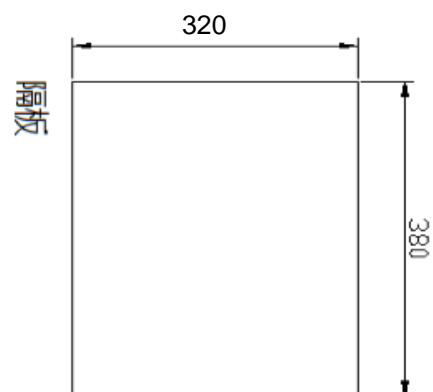
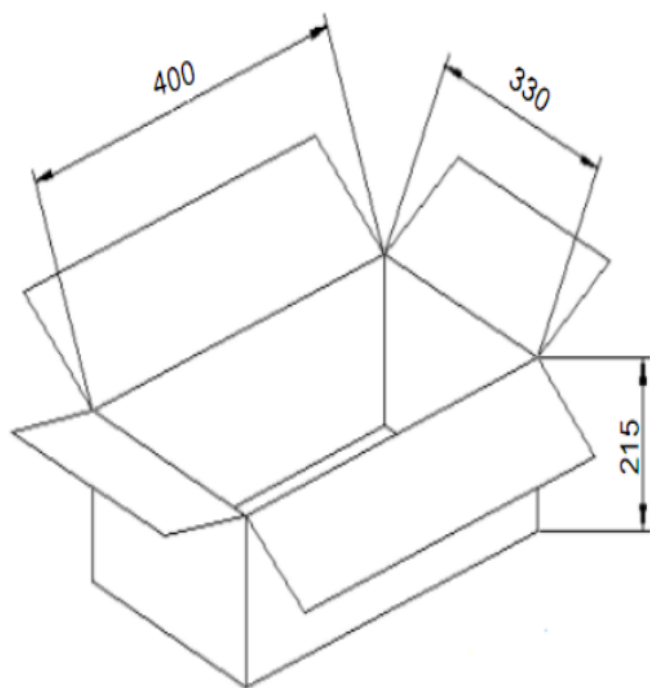
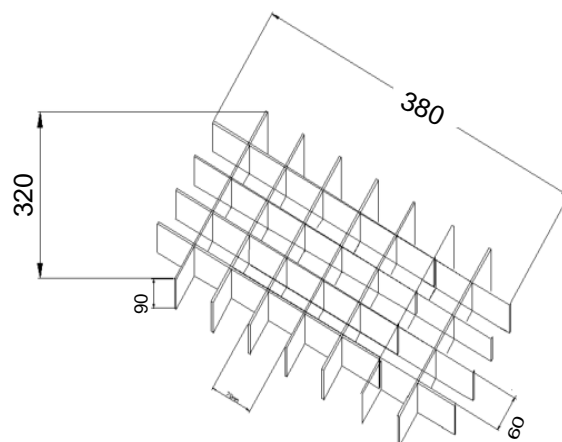
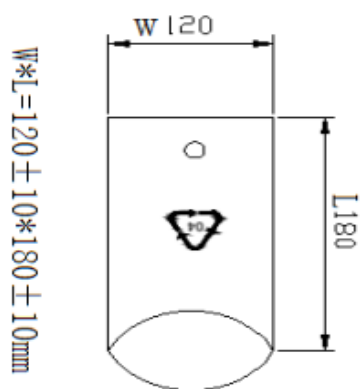


DC Cable 1500mm 2464 22AWG 5.5*2.1*10mm S

TOLERANCE		FINISH		XXXXXX		NAME	
L<4	±0.05	±0.08	±0.1	±0.2	XXXXXX	REV.	DIMENSION
4<L<20	±0.05	±0.1	±0.2	±0.3	XXXX	A1	
20<L<50	±0.1	±0.15	±0.25	±0.4	UNIT	mm	
50<L<200	±0.15	±0.25	±0.4	±0.8	REF.	XXXX	
200<L	±0.2	±0.4	±0.5	±0.8	UNIT	XXXX	
DRG.	CHND.	APPL.	SCALE	DWG NO.	PART NO.		

8.4 PACKING DRAWING 包装图:

Unit 单位: mm



备注:

- 1.外销箱材质为K=K
- 2.外箱尺寸为外部尺寸,公差为+5, -0
- 3.装箱子方式: 100PSC/每箱
- 4.单位MM