



1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 60W continuous output power.

资料详细描述了一款 **60W**(连续输出功率)开关电源的电气性,结构性及环境等要求.

The power supply shall meet the **RoHS** requirement.

此款电源符合 **RoHS** 要求.

1.1. Description

- SMPS Adaptor(Wall mount)/插墙式适配器 SMPS Adaptor(Desk-top)/桌面型适配器
 Open Frame/开放式结构 SMPS Unit (With Case)/带铁壳型
 Others/其他

2. Input Characteristics/输入特性

2.1. Input Voltage & Frequency/输入电压与频率

The range of input voltage is from 90Vac to 264Vac single phase.

输入电压范围: 从 **90Vac** 到 **264Vac**, 单相输入.

	Minimum/最小	Nominal/额定值	Maximum/最大
Input Voltage/输入电压	90Vac	100Vac~240Vac	264Vac
Input Frequency/输入频率	47Hz	60Hz/50Hz	63Hz

2.2. Input AC Current/AC 输入电流

1.5Amax. @ 100-240Vac input & Full load/满载

2.3. Inrush Current (cold start)/浪涌电流(冷启动)

40Amax. @ 264Vac input

2.4. Average Efficiency 平均效率

88%min. @ Nominal input /额定输入

2.5. Energy Consumption /空载功耗

在额定输入 100-240V 时,空载功耗 $\leq 0.21W$

3. Output Characteristics/输出特性

3.1. Static Output Characteristics <Vo & R+N>/静态输出特性

Output Rate	Rated Load/额定负载		Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
	Min. Load	Max. Load			
+24V	0.0A	2.5 A	22.8V ~25.2V	200mVp-p	



Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 47uF electrolysis capacitor. (test under the condition of rated input and rated output)

纹波与噪声: 量测时示波器选用 **20MHz** 带宽限制,输出端要并联一颗 **0.1uF** 的陶瓷电容和一颗 **47uF** 的电解电容。(在额定输入及输出的条件下检测)

3.2. Line/ Load Regulation/线性/负载调整率

Output	Load Condition/负载条件		Line Regulation	Load Regulation	Remark
Rate	Min. Load	Max. Load	线性调整率	负载调整率	备注
+24V	0.0A	2.5A	± 1%	± 5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 100Vac to 240Vac input & Full load/满载

3.4. Hold-up Time/关机维持时间

10mS min. @ Full load & 115Vac/60Hz input turn off at worst case/在最差情况关机

20mS min. @ Full load & 230Vac/50Hz input turn off at worst case/在最差情况关机

3.5. Rise Time/上升时间

20mS max. @ Rated load/额定负载

3.6. Fall Time/下降时间

20mS max. @ Full load/满载

3.7. Output Overshoot / Undershoot/输出过冲/欠冲

10% max. When the power on or off/当电源开/关机时

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

Output voltage within 22.8V ~25.2V 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 22.8-25.2V 之间,负载变化: 从 25% to 50% to 25%, 50% to 75% to 50%斜率: 0.25A/uS, 动态响应恢复时间: 200uS, 动态响应过冲±5%

4. Protection Requirements/保护要求

4.1. Over Current Protection/过流保护

Over Current Point Limited/过流点限制: $I < 5A(100-240Vac)$

The output shall hiccup when the over currents applied to the output rail, and shall be self-recovery when the fault condition is removed

当过电流时,输出将进入打嗝模式,当过流情况解除后,产品将会自动恢复正常

4.2. Short Circuit Protection/短路保护

The input power shall decrease when the output rail short, the power supply shall no damage, and shall be self-recovery when the fault condition is removed

当输出短路时,产品输入功率降低且不会损伤,当短路情况解除后,产品将会自动恢复正常



5. Environment Requirements/环境要求

5.1. Operating Temperature and Relative Humidity/操作温/湿度要求

0°C to +40°C

10%RH to 90%RH

5.2. Storage Temperature and Relative Humidity/存储温/湿度要求

-20°C to +80°C

5%RH to 95%RH non-condensing @ Sea level shall be low 2,000 meter/低于 2,000 米.

5.3. Vibration/振动

10 to 300Hz sweep at a constant acceleration of 1.0G(Breadth: 3.5mm) for 1Hour for each of the perpendicular axes X, Y, Z

扫描频率: 10 to 300Hz, 加速度: 1.0G(位移: 3.5mm), X, Y, Z 三垂直坐标轴向各振动 1 小时

5.4. Drop in/跌落

Height: 0.75m; the product should be fell off on the hardwood with the thickness of 20mm, and the hardwood should be put on the base of the cement or on the ground without flexibility. Apply one times on all surface. Apply one times on all corner.
跌落高度:0.75 米, 并跌落到厚度为 20mm 的硬木上, 且硬木应放在水泥基座或等同的无弹性地面上, 每面各 1 次, 每角各 1 次。

6. Reliability Requirements/可靠性要求

6.1. Burn-in/老化

The power supply shall be burn-in for 4 Hours under normal input and 80% rated load at 40°C±5°C

产品至少要在 40°C±5°C 的环境及 80% 额定负载条件下煲机 4 小时

7. EMI/EMS Standards/EMI/EMS 标准

7.1. EMI Standards/EMI 标准

GB9254-2008
GB17625.1-2012
EN55022
EN61000-3-2
FCC Part15 Class B
SAA111261EA

7.2. EMS Standards/EMS 标准

7-2-1,electrostatic discharge(ESD) requirement/静电抗扰度要求

Discharge characteristic/静电规格	Test level/测试条件	Test criteria/测试标准
Air discharge/空气放电	+/-8KV	B
Contact discharge/接触放电	+/-4KV	B

7-2-2,radiated electromagnetic field susceptibility(rs)/辐射骚扰场强

Test level/测试条件	Test criteria/测试标准
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3V/m (r.m.s)	A
80-1000MHz,80%AM(1KHz) sine-wave	

7-2-3,electric fast transients(burst) immunity requirement/电快速瞬变脉冲群

Coupling/测试端口	Test level/测试条件	Test criteria/测试标准
AC-input/交流输入	0.5KV	A
AC-input/交流输入	1KV	B

7-2-4,surge capability requirement/浪涌抗扰度要求

Surge voltage/雷击电压	Test criteria/测试标准
Common mode/共模 N/A	A
Differential mode/差模 1KV	

7-2-5 EN 61000-4-6, Induced radio frequency fields conducted disturbances immunity requirement/电源端子传导骚扰实验

Test level/测试条件	Test criteria/测试标准
3V	A
0.15-80 MHz,80%AM(1KHz)	

7-2-6 Assessment criteria /评估标准

Acceptance criteria 可接受标准	Performance 性能
A	Agreed operational behavior within the specified limits 性能不允许变化；如果性能会发生变化，则变化的范围在产品规格书规定的范围内。
B	Time limited functional diminishment or malfunction during the tests is permitted. The function is self-reactivated by the unit following completion of the tests. 设备在测试过程中，性能降低允许在产品规格书要求范围内，干扰消除后，设备能恢复正常，不允许出现复位和任何方式的人工干预。
C	Malfunction is permitted .The function can be reactivated either by reconnection to the mains or by operator intervention. 在测试过程中，设备允许出现业务中断，测试完毕后允许自行恢复或者人工干预恢复（包括硬件上干预）；测试中只允许初级防护器件损坏，并且更换损坏的初级防护器件后，设备能恢复正常



8. Safety Standards/安规标准

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

Primary to Secondary: 3000Vac / 10mA Max / 60 second

初级对次级: **3000Vac / 10mA Max / 60 秒**

Primary to Secondary: 3300Vac / 5mA Max / 3S

初级对次级: **3300Vac / 5mA Max / 3S**

8.2. Leakage Current/漏电流

0.25mA max. at 264Vac / 50Hz

8.3. Insulation Resistance/绝缘阻抗

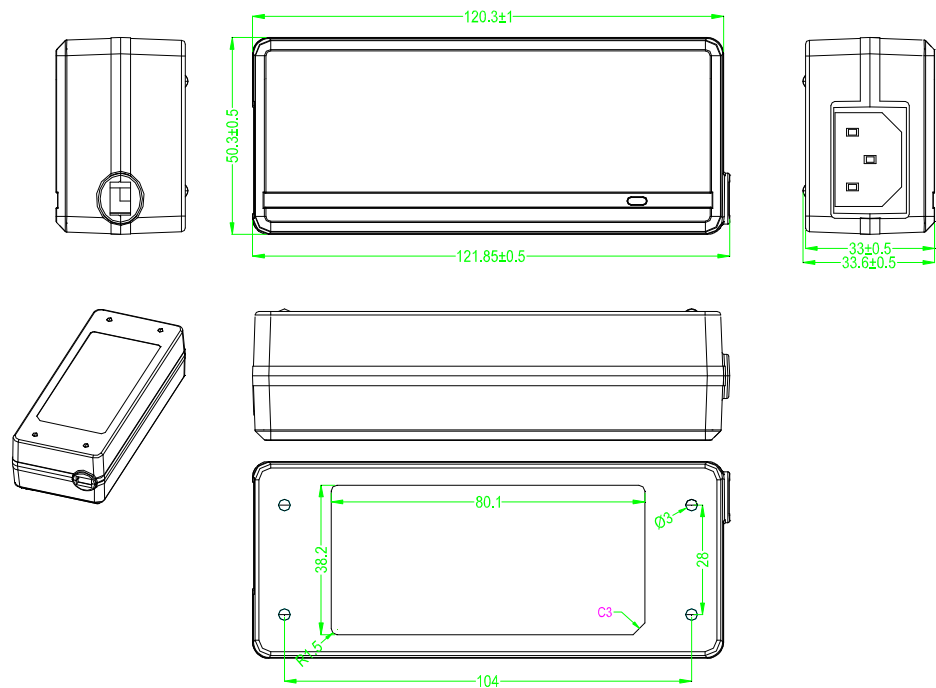
50MΩ min. at primary to secondary add 500Vdc test voltage

在初级与次级间加 **500Vdc** 进行测试

8.4. Regulatory Standards/安规标准

Type/安规	Country/国家	Standard/标准	State/状况	Note/备注
CCC	China	GB4943	已认证	
GS/CE	Europe	EN60950-1	已认证	
UL/FCC	USA	UL60950	已认证	
SAA	Australia	AS/NZS60950-1	已认证	

9. Match. Outline Drawing/外观示意图



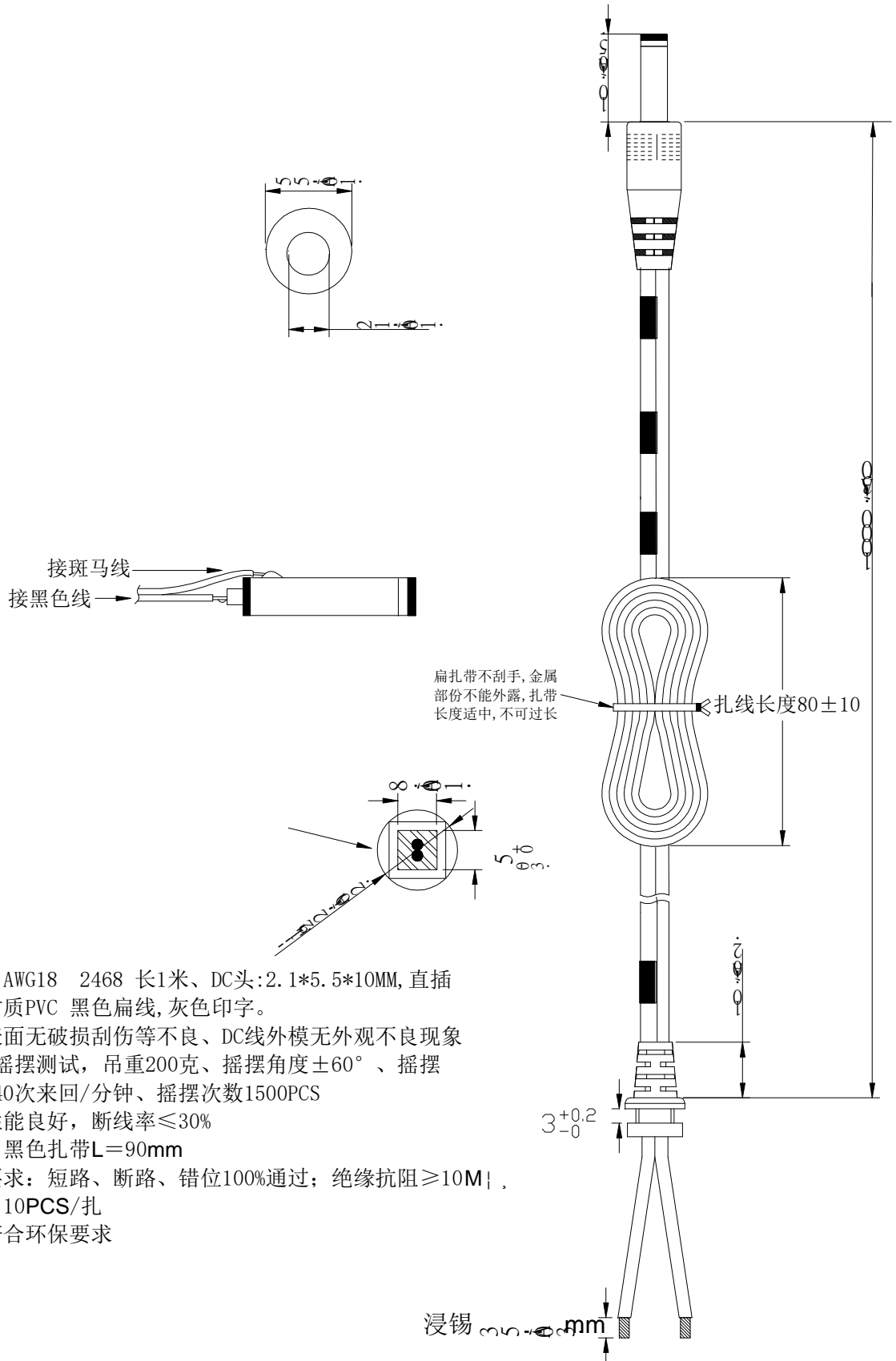
注:黑色外壳

外壳材质: ■PC 耐温: 120℃

□PC+ABS 耐温: 95℃

备注: PC 材质符合球压测试要求

10. DC Cord Drawing/DC 线示意图



技术要求:

- 1、DC线: AWG18 2468 长1米、DC头: $2.1 \times 5.5 \times 10$ MM, 直插包胶材质PVC 黑色扁线, 灰色印字。
- 2、线材表面无破损刮伤等不良、DC线外模无外观不良现象
- 3、DC 线摇摆测试, 吊重200克、摇摆角度 $\pm 60^\circ$ 、摇摆频率40次来回/分钟、摇摆次数1500PCS
导通性能良好, 断线率 $\leq 30\%$
- 4、扎带: 黑色扎带 $L=90$ mm
- 5、测试要求: 短路、断路、错位100%通过; 绝缘抗阻 $\geq 10M\Omega$;
- 6、包装: 10PCS/扎
- 7、必须符合环保要求



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11. I/O Marking Drawing/铭牌示意图

注:黑底银字 消银龙



备注: Import:xxx表示进口商 Address:xxx表示地址
YYM为日期码, 根据订单日期做相应变动