

# 参考规格书

## SPECIFICATION FOR REFERENCE

<b>CUSTOMER:</b> 客 户:	
<b>CUSTOMER P.N.:</b> 客户料号:	
<b>MODEL NO.:</b> 产品型号:	A40-V3500R280-100J0-ZZ
<b>PRODUCT NO.:</b> 产品编号:	SDXXX-M0
<b>SAMPLE DATE:</b> 送样日期:	2024-08-23

<b>CUSTOMER AUTHORIZED SIGNATURE</b> 客户承认签核		

Please return to us one copy of "SPECIFICATION FOR APPROVAL" with you approved signature.

客户确认签字，盖章后请回传一份承认书给我司。

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## 1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 98W continuous output power.

资料详细描述了一款 **98 W (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 HSF requirement.

此款电源符合 **HSF** 要求.

### 1.1. Description /类型

- 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

### 1.2. Green Requirements/环保要求

- RoHS:2011/65/EU & (EU) 2015/863;  
 REACH:1907/2006/EC;  
 Halogen-free:IEC 61249-2-21;  
 CA Prop 65;  
 POPs:(EU)2023/1608;  
 PAHs: 2005/69/EC;  
 Packaging Directive:94/62/EC;  
 US EPA Toxic Substances Control Act (TSCA);  
 MOSO Environmental standards: WI-QM006-G;  
 Others

### 1.3. Energy Efficiency Requirements/能效要求

No.	Country/国家地区	Energy efficiency abbreviation/能效简称	Whether it meets the requirements/是否符合 (YES/是 <input checked="" type="checkbox"/> , NO/否 <input type="checkbox"/> )
1	USA/美国	DoE VI	<input type="checkbox"/>
2		CEC	<input type="checkbox"/>
3	Canada/加拿大	NRCan	<input type="checkbox"/>
4	Australia/New Zealand/ 澳大利亚/新西兰	GEMS	<input type="checkbox"/>
5	Europe/欧盟	Erp VI	<input checked="" type="checkbox"/>
6		CoC V5 Tier 2	<input type="checkbox"/>
7	South Korea/韩国	KMEPS	<input type="checkbox"/>
8	Mexico/墨西哥	MEPS	<input type="checkbox"/>
9	Byelorussia/白俄罗斯	MEPS	<input type="checkbox"/>

## 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	100 Vac~ 240 Vac	264Vac
Input Frequency/输入频率	47 Hz	60 Hz/ 50Hz	63Hz

### 2.2. Input AC Current/AC 输入电流

2.0A max. @ 100-240Vac input & Full load.

输入电压 **100-240Vac** 满载时, 输入电流不超过 **2.0A**。

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

The energy of inrush current should not be over the I<sup>2</sup>T of fuse & bridge diodes.

冷启动时, 浪涌能量不能超过整流桥和保险丝的 I<sup>2</sup>T, 且不能有损坏.

### 2.4. Averaged Efficiency/平均效率

89% min. @ 230Vac/50Hz input (@25%, 50%, 75% and 100% of max load)

输入电压 **230V/50Hz** 时, **25%、50%、75%和 100%**载时的平均效率不低于 **89%**

### 2.5. Energy Consumption /空载功耗

No load Consumption ≤0.21W(230Vac/50Hz).

在额定输入 **230Vac/50Hz** 时,空载功耗≤**0.21W**。

### 2.6. Power Factor /功率因数

The PF should not be lower than 0.9 at 115/230Vac & full load.

**115Vac/230Vac** &满载时, 功率因数不低于 **0.9**

## 3. Output Characteristics/输出特性

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

Output	Rated Load/额定负载		Output Range	R+N	Remark
Rate	Min. Load	Rate.Load	输出电压范围	纹波与噪声	备注
+28V	0.0A	3.5A	26.6V~ 29.4V	300mVp-p	115-230V

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolytic 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 **10uF** 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	Rate.Load	线性调整率	负载调整率	备注
+28V	0.0A	3.5A	± <b>2%</b>	± <b>5%</b>	

### 3.3. Turn - on Delay Time/开机延迟时间

3S max. @115Vac to 230Vac input & Full load.

输入电压 **115Vac to 230Vac** 满载时, 开机延迟时间不超过 **3S**。

### **3.4. Hold-up Time/关机维持时间**

5mS min. @ Full load & 115Vac/60Hz input turn off at worst case

输入电压 **115Vac/60Hz** 满载时, 关机时间最差情况不小于 **5 毫秒**。

10mS min. @ Full load & 230Vac/50Hz input turn off at worst case

输入电压 **230Vac/50Hz** 满载时, 关机时间最差情况不小于 **10 毫秒**。

### **3.5. Rise Time/上升时间**

100 mS max. @ Rated load.

额定负载时, 上升时间不超过 **100 毫秒**。

### **3.6. Fall Time/下降时间**

30 mS max. @ Full load.

满载时, 下降时间不超过 **30 毫秒**。

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

10 % max. When the power on or off, when it is the full input voltage and full load.

开关机时, 输出过冲/欠冲均不大于 **10%**。

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

Output voltage within 25.2V~30.8V 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 10%.

输出电压在 **25.2V~30.8V** 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 **±10%**。

## **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: 3.85A-7A(100-240Vac)

The output shall hiccup when the over current applied to the output rail, and shall be auto-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 auto-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。

### **4.3. Over Voltage Protection/过压保护**

The power supply has to be protected against over voltage conditions. No damage allowed. The power supply must come back to nominal working without on/off powering after removal of the over voltage condition. 当过压保护时, 产品输出功率不会损伤, 当过压情况解除后, 产品恢复正常。

## 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 5,000 meters/低于 5,000 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 Test/跌落

Height: 1m; 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 surfaces, total 6 times. The electric performance and Hi-Pot test must be OK after the drop tests.

跌落高度:1 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,6 个面, 每面各 1 次, 在跌落后电气性能及高压测试 **OK**.

## 6. Reliability Requirements/可靠性要求

### 6.1. Burn-in/老化

The power supply shall be burn-in for 2 Hours under normal input and 80% rated load at 40°C ± 5°C, the electric performance and Hi-Pot test must be OK

40°C ± 5°C, 电源在正常输入电压和 **80%**额定负载条件下老化 2 小时后, 电气性能及高压测试 **OK**.

### 6.2. MTBF Qualification/平均间隔故障时间估算

The MTBF of power supply shall be over than 50,000H @ 25°C 100% load.

Test standard: SR-332.

平均间隔故障时间: 在 **25°C**, 额定输入与满载条件下, 至少工作 **50,000** 小时。测试标准: **SR-332**.

### 6.3. E-caps lifetime/电容寿命

The E-caps used in this PSU must be with lifetime of 3 years @25°C @100% load @ @115VAC.

**25°C**环境下, 在 **100%**负载和 **115VAC** 输入条件, 电解电容寿命至少达 **3** 年。

## 7. EMI/EMS Standards/EMI/EMS 标准

### 7.1.EMI Standards/EMI 标准

EN55032 EN55035

### 7.2.EMS Standards/EMS 标准

7-2-1 EN 61000-4-2,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 EN 61000-4-3,radiated electromagnetic field susceptibility(rs)/辐射骚扰场强

Test level/测试条件	Test criteria/测试标准
3V/m (r.m.s)	A
30-1000MHz,80%AM(1KHz) sine-wave	

7-2-3 EN 61000-4-4,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	B
AC-input/交流输入	1KV	B

7-2-4 EN 61000-4-5,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 +/- 4KV	B
Differential mode/差模 +/-2KV	

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
0.15-30 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.(For safety test)

初级对次级: **3000Vac / 10mA max. / 60 秒** (安规试验) .

Primary to Secondary: 3300Vac /5mA max. / 3S.(For MP)

初级对次级: **3300Vac / 5mA max. /3S**(生产作业).

**8.2. Leakage Current/漏电流**

0.25mA max. at 264Vac / 60Hz.

**8.3. Insulation Resistance/绝缘阻抗**

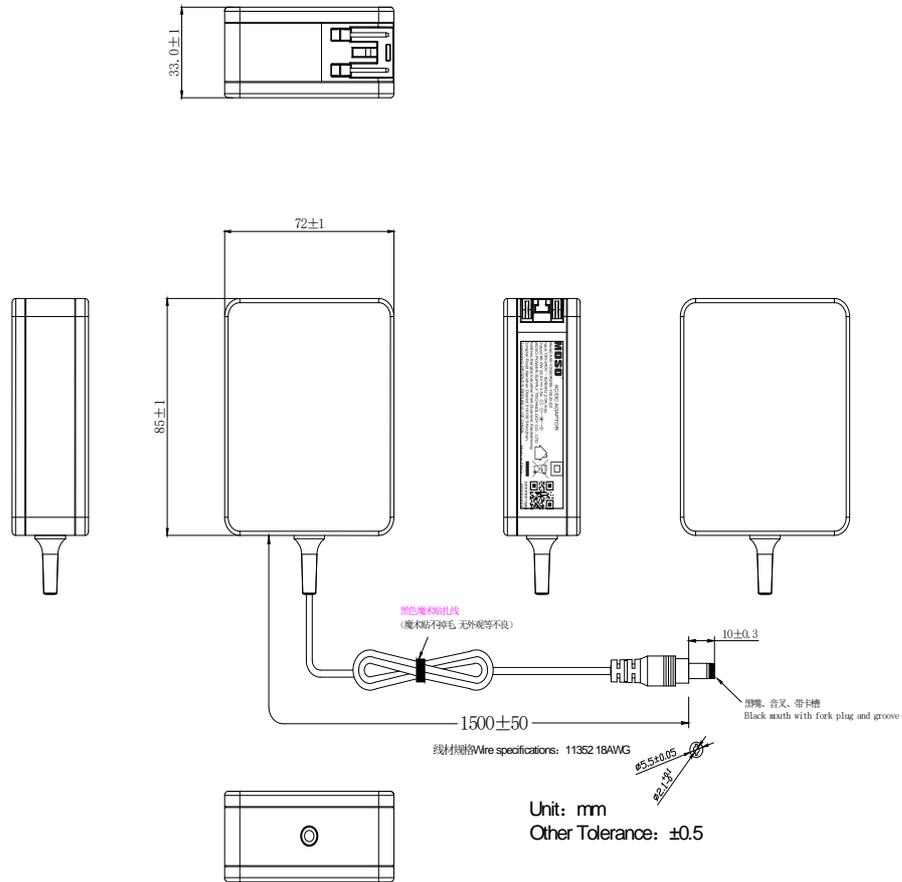
100MΩ min. at primary to secondary add 500Vdc test voltage.

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	
CE	Europe	EN62368-1	MEET	

## 9. Mechanical Outline Drawing/外观示意图



外壳材质:  PC 耐温: 120°C

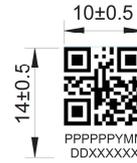
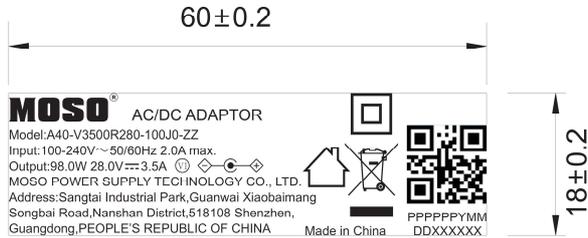
PC+ABS 耐温: 95°C

备注: 1) PC 材质符合球压测试要求

2) 外壳与线材为黑色 (1101M)



## 10. I/O Marking Drawing/铭牌示意图



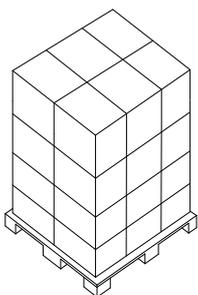
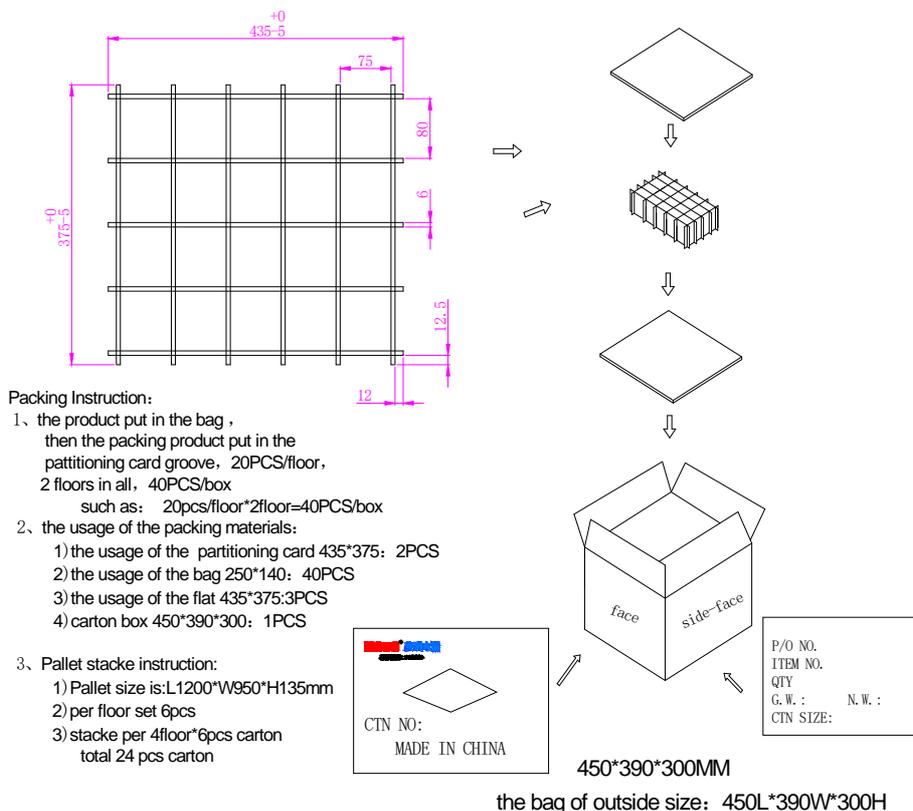
下方内容与二维码居中  
字体Arial

**Remark:**

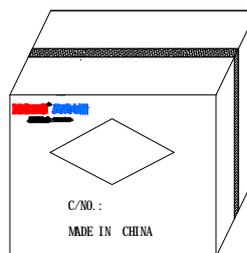
1. Above label is laser engraved.
2. The height dimension of double insulation mark can NOT less than 5mm.

二维码格式/Code format: QR code  
 二维码尺寸/Code size: 10\*10mm(±0.2)  
 二维码扫描内容/Code content: P P P P P Y M M D D X X X X X X 总共17位/17digits in total  
 二维码解析如下/Code analysis:  
 P P P P P P: product code(产品编码;实际S编码后六位,如SD095-M0,取D095M0)  
 Y: producing year(产品实际生产年份,年份最后一位,如2025年,取5)  
 M M: producing month(产品实际生产月份,如02月,取02)  
 D D: producing date(产品实际生产日期,如15日,取15)  
 X X X X X X: product listing number(产品序列号,000001-999999)

## 11. Package Drawing/包装示意图



The pallet stack drawing

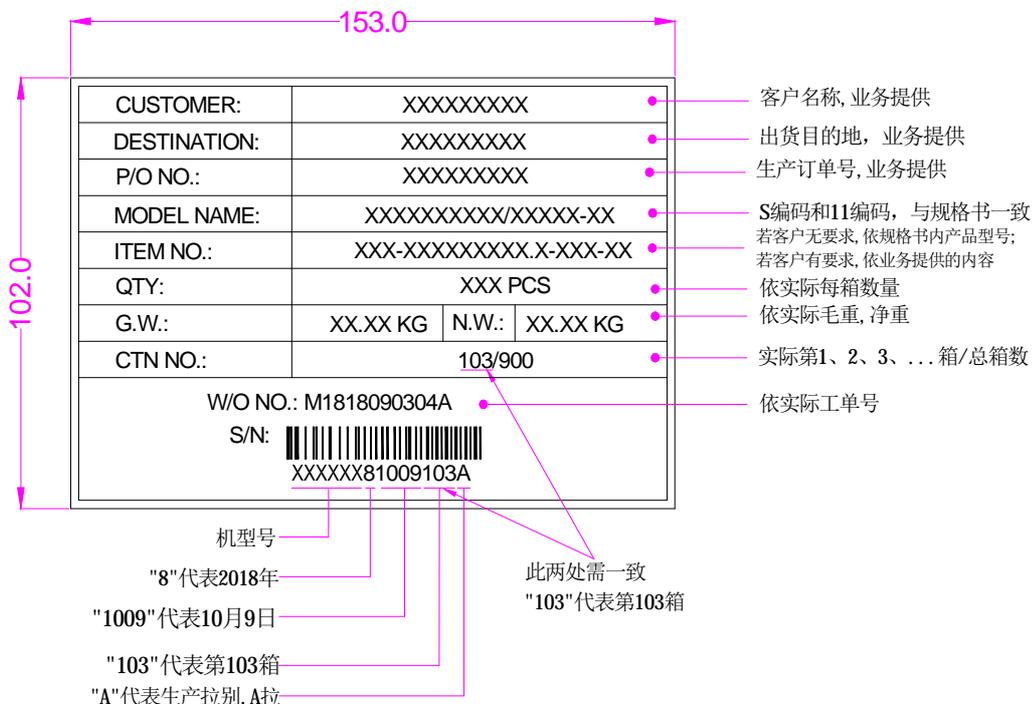


The product will be packed in the carton box and the box will be sealed by the sticker

- PE 袋包装要求:  PE 袋不用胶带封口;  
 PE 袋用胶带封口;  
 其它要求;

备注:若客户未进行选择 PE 袋包装要求或备注时,  
 我司默认采用 PE 袋不用胶带封口包装方式.

Carton label



技术要求:

1. 材质: 80P铜版纸(来料为空白标签)
2. 颜色: 白底黑字, 公司内部打印
3. 背附胶, 粘贴在纸箱上后, 无翘边等不良;
4. 符合ROHS标准及茂硕环保要求
5. 使用空白料号3230200011