茂硕电源科技股份有限公司
MOSO POWER SUPPLY TECHNOLOGY CO.,LTD

MOSO Industrial Park, Nanshan District, Shenzhen, Guangdong 518108, P. R. China
TEL: 86-755-27657000 27657555
P.C:518108
FAX: 86-755-27657908
http://www.mosopower.com

参考规格书

SPECIFICATION FOR REFERENCE

CUSTOMER: 客　　户：	
CUSTOMER P.N.: 客户料号：	
MODEL NO.: 产品型号：	**A40-V5000R240-120F0-CN**
PRODUCT NO.: 产品编号：	**SDXXX-C0**
SAMPLE DATE: 送样日期：	**2025-02-11**

Weight/重量：295g ±10%

CUSTOMER AUTHORIZED SIGNATURE 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.

ADD: MOSO Industrial Park, Nanshan District, Shenzhen, Guangdong 518108, P. R. China
地址:深圳市南山区茂硕科技园
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E-mail:moso@mosopower.com http://www.mosopower.com

MANUFACTURER AUTOGRAPH 制造商签名			
Reviser 修订	**Confirm** 确认	**Checked** 审查	**Approval** 批准

MOSO® 茂硕电源
股票代码：002660

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E. C. LIST/变更履历表

Rev. 版本	Description of Change/变更内容描述		Changed Date/日期	ECN No.
	Before/变更前	After/变更后		
A1	Original Release(初次发行)	---	2025-02-11	---

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1. SCOPE/范围

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 120W continuous output power.

资料详细描述了一款 120 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☒，NO/否☐)
1	USA/美国	DoE VI	☐
2		CEC	☐
3	Canada/加拿大	NRCan	☐
4	Australia/New Zealand/ 澳大利亚/新西兰	GEMS	☐
5	Europe/欧盟	Erp VI	☐
6		CoC V5 Tier 2	☐
7	South Korea/韩国	KMEPS	☐
8	Mexico/墨西哥	MEPS	☐
9	Byelorussia/白俄罗斯	MEPS	☐

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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^2T 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^2T，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

When Output with load 5mA ,＜0.3W.

When Output with load 10mA ,＜0.5W.

输出带载 **5mA** 时,空载功耗＜**0.3W.**

输出带载 **10mA** 时,空载功耗＜**0.5W.**

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
+24V	0.0A	5A	22.8V~ 25.2V	350mVp-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
+24V	0.0A	5A	±**2%**	±**5 %**	

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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

10mS min. @ Full load &100Vac/60Hz input turn off at worst case

输入电压 **100Vac/60Hz** 满载时，关机时间最差情况不小于 **10** 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

50 mS max. @ Rated load.

额定负载时，上升时间不超过 **50** 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 21.6V~26.4V for load step from 0-80% ,R/S: 2.5A/uS, Frequency: 100Hz.Dynamic response overshoot ±10%.

输出电压在**21.6V~26.4V**之间,负载变化：从**0-80%**,斜率**: 2.5A/uS**,频率**:100Hz**以上,动态响应过冲**±10%.**

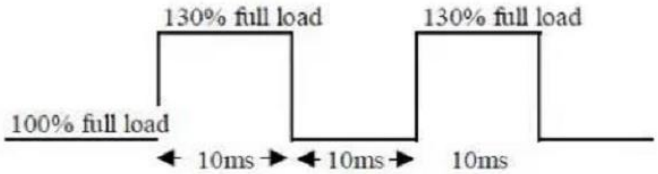
3.9. Surge Load/浪涌负载

If the adapter operate in surge load mode and burn-in more than 30min,it might be OTP trigger and shutdown.

如果适配器工作在浪涌负载模式，并且老化超过 **30** 分钟，产品则可能触发保护关闭.

The adapter shall support a surge load with 130% of maximum load 10ms, maximum load for 10ms and output voltage more than 22.8V at input voltage @ 100-240Vac.

在输入电压 **100-240Vac** 时浪涌负载 **130%**时间不超过 **10ms**，同时输出电压不低于 **22.8V**。



3.10. Capacitive Load Test/容性负载测试

The output capacitor connected to 1500uf rises monotonically when starting with different load.

输出接 **1500uf** 的电容带不同载输出启动时单调上升。

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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: 6.5A-9A(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

When over-voltage protection, the product will not be damaged. When the over-voltage condition is removed, the product will restart and return to normal. When over-voltage protection, the maximum output voltage is 33V.

当过压保护时,产品不会损伤,当过压情况解除后,产品重启恢复正常.过电压保护时，最大输出 33V.

5. Environment Requirements/环境要求

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

0℃ to +40℃

10%RH to 90%RH

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

-20℃ to +80℃

5%RH to 95%RH non-condensing

5.3. Sea level shall be low 5,000 meters/低于 5,000 米.

5.4. 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.

5.5. 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.

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5.6. Salt Spray Test /盐雾测试

Pretreatment at 35℃ for 2 hours, concentration of 5MNACL solution, continuous spray at 35℃ for 48 hours, remove for 2 hours to dry, no oxidation, no discoloration.

35℃2 小时预处理,浓度 5MNACL 溶液,35℃下连续喷雾 48 小时，移出 2 小时晾干，无氧化，无变色现象

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℃±5℃，the electric performance and Hi-Pot test must be OK

40℃±5℃，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℃ 100% load.

Test standard: SR-332.

平均间隔故障时间: 在 25℃，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 30,000H @25℃@100% load@ @90VAC.

The E-caps used in this PSU must be with lifetime of 15,000H @35℃@100% load@ @90VAC.

25℃环境下，在 100%负载和 90VAC 输入条件，电解电容寿命至少达 3 万。

35℃环境下，在 100%负载和 90VAC 输入条件，电解电容寿命至少达 1.5 万。

6.4. Salt Spray Test/盐雾测试

Pretreatment at 35℃ for 2 hours, 5%NACL solution, continuous spray at 35℃ for 48 hours, remove for 2 hours to dry, no oxidation, no discoloration.

35 度 2 小时预处理，浓度 5%NACL 溶液，35 度下连续喷雾 48 小时，移出 2 小时晾干，无氧化，无变色现象。

7. EMI/EMS Standards/EMI/EMS 标准

7.1. EMI Standards/EMI 标准

GB17625.1 GB/T 9254.1

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

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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

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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	
CCC	China	GB4943.1	APPROVAL	

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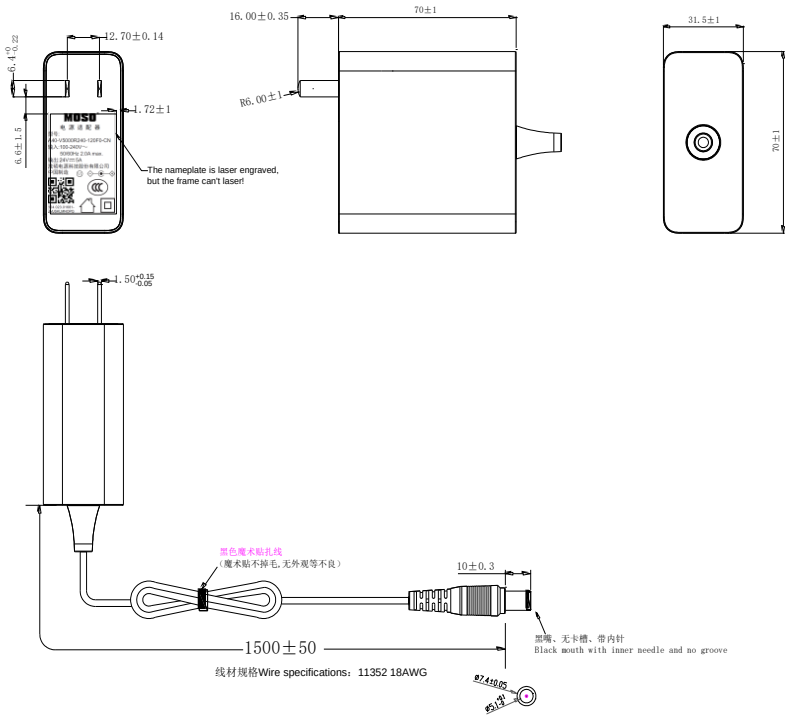
9. Mechanical Outline Drawing/外观示意图



外壳材质：☑PC 耐温：120℃

☐PC+ABS 耐温：95℃

备注：1)PC 材质符合球压测试要求

2)外壳与线材为黑色（1101M）

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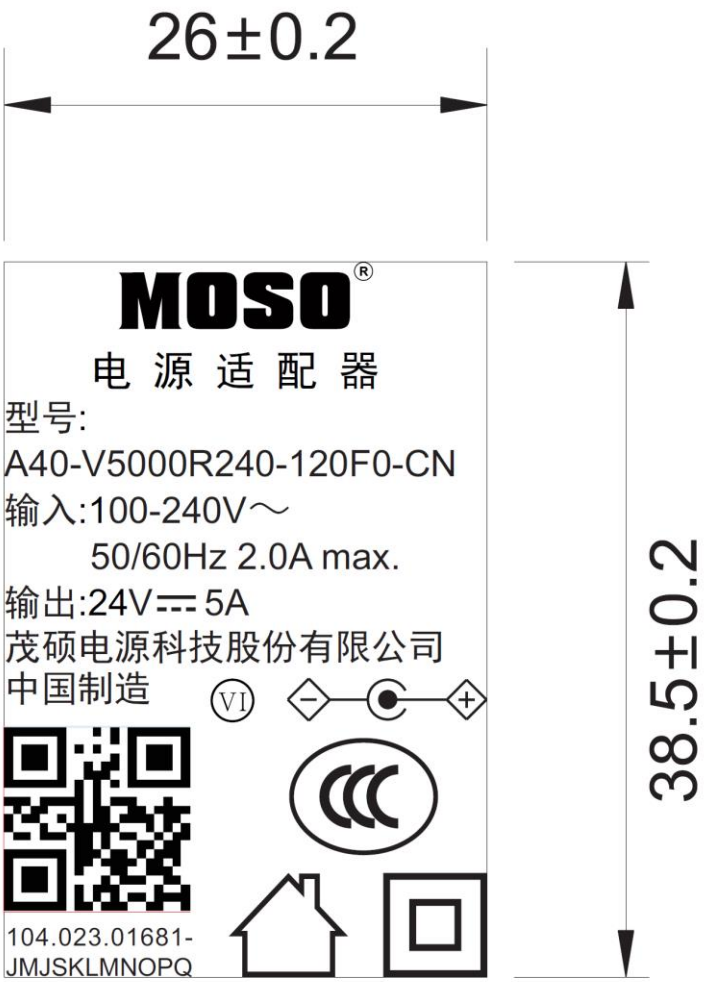
10. I/O Marking Drawing/铭牌示意图



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

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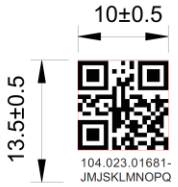
KLMN　材料批次信息（生产日期） Naming Rule					
代码	定义	备注			
K	年	公元年最后一码：1－9;10:A;11:B;12:C…			
L	月	1－9;10:A;11:B;12:C			
MN	日	日期编码如下：			
Date	Code	Date	Code	Date	Code
1	01	11	11	21	21
2	02	12	12	22	22
3	03	13	13	23	23
4	04	14	14	24	24
5	05	15	15	25	25
6	06	16	16	26	26
7	07	17	17	27	27
8	08	18	18	28	28
9	09	19	19	29	29
10	10	20	20	30/31	30/31



下方内容与二维码居中
字体Arial

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:104.023.01681-JMJSKLMNOPQ
总共25位/25digits in total
二维码解析如下/Code analysis:
104.023.01681:料号，固定不变
JMJS:茂硕代码，固定不变
KLMN:产品实际生产日期，定义如上表
OPQ:流水码，数字0-9+26个英文字母(除去I、O、S、Z四个字母)32进制;
如001、002....009、00A、00B....00H、00J、00K....

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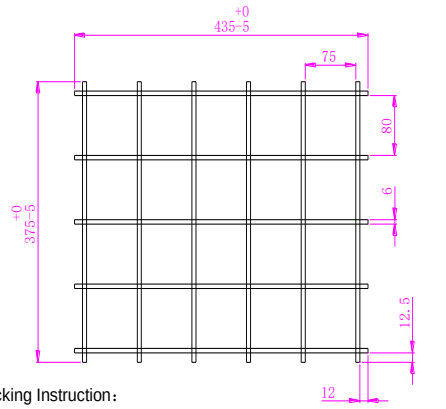
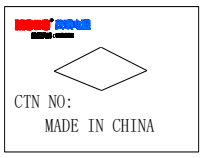
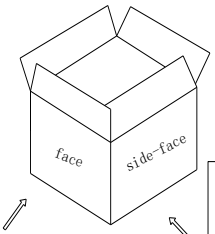
11. Package Drawing/包装示意图

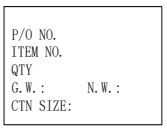


Packing Instruction：
1、the product put in the bag ,
then the packing product put in the
pattitioning card groove，20PCS/floor，
2 floors in all，40PCS/box
such as： 20pcs/floor*2floor=40PCS/box
2、the usage of the packing materials：
1）the usage of the partitioning card 435*375：2PCS
2）the usage of the bag 250*140：40PCS
3）the usage of the flat 435*375:3PCS
4）carton box 450*390*300：1PCS

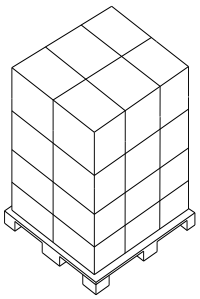
3、Pallet stacke instruction:
1）Pallet size is:L1200*W950*H135mm
2）per floor set 6pcs
3）stacke per 4floor*6pcs carton
total 24 pcs carton



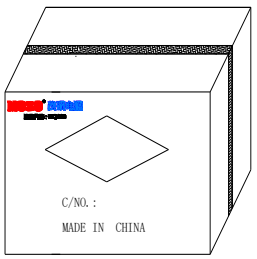




450*390*300MM
the bag of outside size：450L*390W*300H



The pallet stact drawing



The product will be packed in the carton box
and the box will be seled 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.