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客户承认书

SPECIFICATION FOR APPROVAL

CUSTOMER: 客　　户：	
CUSTOMER P.N.: 客户料号：	
MODEL NO.: 产品型号：	**P40-V3250U200-065AF0-CN**
PRODUCT NO.: 产品编号：	
SAMPLE DATE: 送样日期：	**2025-10-17**

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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FAX: 86-755-27657908
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

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

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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）	---	2025-10-17	---

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1. SCOPE/简述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 65W continuous output power.

资料详细描述了一款 **65W** 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

RPD Adaptor(Wall mount)/ PD 插墙式 ☐PD Adaptor(Desk-top)/ PD 桌面型

☐Others/其他

1.2.Green Requirements/环保要求

RRoHS:2011/65/EU & (EU) 2015/863;

RREACH:1907/2006/EC;

☐Halogen-free:IEC 61249-2-21;

☐CA Prop 65;

RPOPs:(EU)2023/1608;

RPAHs: 2005/69/EC;

RPackaging Directive:94/62/EC;

RUS EPA Toxic Substances Control Act (TSCA);

RMOSO Environmental standards: WI-QM006-G;

☐Others

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 90ac 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	50Hz /60Hz	63Hz

2.2. Input AC Current/AC 输入电流

1.5A max. @ 100-240Vac input & Full load

输入电压 **100-240Vac** 满载时，输入电流不超过 **1.5A**。

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

Peak inrush current shall be limited to 170A for a cold start at 240Vac at 25°C ambient and full load. There is no immediate damage or long-term impact on the reliability of the supply.

对于在 **25°C** 环境温度和满载条件下以 **240Vac** 冷启动时，峰值浪涌电流应限制为 **170A**。不会对电源的

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可靠性造成直接损害或长期影响。

2.4.Typical efficiency/典型效率(at：20V)

The efficiency measured 5 minutes after startup under the input of 220Vac and rated load conditions is greater than88%.

在 220Vac 额定负载条件下测量时应“ 高于 88%”，通电后 5 分钟测试.

2.5.Averaged Efficiency/平均效率

5V3A: 81.39% min. 115Vac @230Vac input (@25%, 50%, 75% and 100% of max load)
9V3A:86.62% min. 115Vac @230Vac input (@25%, 50%, 75% and 100% of max load)
12V3A:87.40% min.115Vac @230Vac input (@25%, 50%, 75% and 100% of max load)
15V3A: 87.73% min. 115Vac@230Vac input (@25%, 50%, 75% and 100% of max load)
20V3.25A:88% min. 115Vac@230Vac input (@25%, 50%, 75% and 100% of max load)(Test after heating the machine for 30 minutes).

5V3A:输入电压 230V 时，25%、50%、75%和 100%载时的平均效率不低于 81.39%
9V3A:输入电压 230V 时，25%、50%、75%和 100%载时的平均效率不低于 86.62%
12V3A:输入电压 230V 时，25%、50%、75%和 100%载时的平均效率不低于 87.40%
15V3A:输入电压 230V 时，25%、50%、75%和 100%载时的平均效率不低于 87.73%
20V3.25A:输入电压 230V 时，25%、50%、75%和 100%载时的平均效率不低于 88%(热机 30 分钟测试)

2.6.Energy Consumption /空载功耗

The No load Consumption ≤0.1W(220Vac/50Hz input)(Integral measurement for 10 minutes).

在输入电压 220Vac/50Hz 时,空载功耗均小于 0.1W（积分测量十分钟）.

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			
5.00V	0.0A		4.75-5.25V	150mVp-p	
9.00V	0.0A		8.55-9.45V	150mVp-p	
12.00V	0.0A		11.40-12.60V	150mVp-p	
15.00V	0.0A		14.25-15.75V	150mVp-p	
20.00V	0.0A		19.00-21.00V	150mVp-p	

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			
5.00V		3.0A	4.5-5.25V	150mVp-p	
9.00V		3.0A	8.55-9.45V	150mVp-p	
12.00V		3.0A	11.40-12.60V	150mVp-p	
15.00V		3.0A	14.25-15.75V	150mVp-p	
20.00V		3.25A	19.00-21.00V	150mVp-p	

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Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor. (test under the condition of rated input and rated output)

纹波与噪声: 测量时，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

3.2.1 USB-C1/ USB-C2

Output Rate	Load Condition/负载条件		Line Regulation 线性调整率	Load Regulation 负载调整率	Remark 备 注
	Min. Load	Max. Load			
5.00V	0.0A	3.0A	±5%	±10%	
9.00V	0.0A	3.0A	±5%	±5%	
12.00V	0.0A	3.0A	±5%	±5%	
15.00V	0.0A	3.0A	±5%	±5%	
20.00V	0.0A	3.25A	±5%	±5%	

3.3.Turn - on Delay Time/开机延迟时间

1.5S max. @ 230Vac output 5V input & Full load.

输入电压 230Vac 输出 5V 满载时，开机延迟时间不超过 1.5S。

3.4.Hold-up Time/关机维持时间

5mS min. @ Full load 100-240Vac/50Hz input turn off at the worst case.

输入电压 100-240Vac/50Hz 满载时，关机时间最差情况不小于 5 毫秒。

3.5.Rise Time/上升时间

100mS max. @ full load and 0.01Aload.

在满载和 0.01A 负载时，上升时间不超过 100 毫秒。

3.6.Fall Time/下降时间

200mS max. @ Full load.

满载时，下降时间不超过 200 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.Dynamic load change response/动态负载变化响应

The dynamic load is 25%（10ms）- 50%（10ms），75%（10ms）-100%（10ms）rate 0.1A/us.；

5V:4.0V-6.0V;

9V:8.1V-9.9V

12V:10.8V-13.2V

15V:13.5V-16.5V

20V:18.5V-21.5V

动态负载 25%（10ms-50%（10ms），75%（10ms）-100%（10ms），速率 0.1A/us，

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3.9.Capacity Load testing/容性负载测试（90Vac/47Hz or 264Vac/63Hz）

Connect the output to a 100uF capacitive load and then turn on the power. Or first turn on the power and connect a 100uF capacitive load at the output end. Both of these states must ensure that the output voltage does not drop, there is protection, and the adapter output is normal.

将输出连接到 **100UF** 容性负载，然后打开电源；或者先打开电源，在输出端连接 **100uF** 容性负载，这两种状态都要满足输出电压无跌落、保护、适配器输出正常。

4. Protection Requirements/保护要求

4.1.Over Current Protection/过流保护

The output shall hiccup when the over currents applied to the output rail, and shall be，The current passage point is satisfied 120%

当过电流施加到输出轨时，输出应打嗝，并应满足电流通过点的 **120%**

4.2.self-recovery when the fault condition is removedShort 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，输入功率应减小，电源应无损坏，并且当故障条件消除后，电源应可自动恢复。

4.3.Over Voltage Protection/过压保护

The adapter has to be protected against over voltage conditions. No damage allowed. The adapter must come back to nominal working without on/off powering after removal of the over Voltage condition，Protection point limit: Maximum 27V, load greater than 0.23W.

此适配器有过压保护功能，输出过压时适配器不会损坏，且输出过压状态解除后适配器可自动恢复正常输出，保护点限制：最大 **27V,**带载大于 **0.23W.**

5. Environment Requirements/环境要求

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

-10℃ to +40℃

10%RH to 90%RH

温度**-10℃ to +40℃**，湿度 **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

温度**-20℃ to +80℃**，湿度 **5%RH to 95%RH**。

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**，恒定加速度**: 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

The output shall hiccup when the over currents applied to the drop requirement: 12 times on a 1-meter muddy floor, twice on one surface ； The output shall hiccup when the over currents applied to the drop after the electrical performance test is okay.

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要求：高度 1 米，水泥地板跌落 12 次，一个面二次，在跌落后电气性能测试 OK.

6. Reliability Requirements/可靠性要求

6.1.Working temperature/温度

At room temperature of 25 degrees (with 220VAC voltage input), the temperature rise of the adapter does not exceed 40 degrees.

在室温 25 度的情况下（220VAC 电压输入）适配器的温升不超过 40 度，

6.2.Noise/噪音

The noise is in accordance with national standards

噪音依国标

6.3.Burn-in/老化

The power supply shall be burn-in for 2 Hours under normal input and 80% rated load at 30℃± 5℃. the electric performance and Hi-Pot test must be OK.

30℃±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.

6.4.MTBF Qualification/平均间隔故障时间估算

The MTBF of power supply shall be over than50,000 Hours @ 25℃ 100% load with

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.

7. EMI/EMS Standards/EMI/EMS 标准

7.1.EMI Standards/EMI 标准

GB/T9254 GB17625.1

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	judgment criteria/评定标准
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	judgment criteria/评定标准
3V/m (r.m.s)	A
80-1000MHz,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	judgment criteria/评定标准
AC-input/交流输入	0.5KV	A
AC-input/交流输入	1KV	A

7.2.4 EN 61000-4-5,surge capability requirement/浪涌抗扰度要求

Surge voltage/雷击电压	judgment criteria/评定标准
Common mode/共模　+/-2KV	A
Differential mode/差模 +/-1KV	

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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	judgment criteria/评定标准
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

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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. / 60S (when safety testing).

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

Primary to Secondary: 3300Vac /5mA max. / 3S (when production).

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/1min test voltage

在初级与次级间加 500Vdc/1min 进行测试，绝缘阻抗：正常大气下 100MΩ，湿热条件下 10 MΩ.

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	GB4943.1	APPROVAL	

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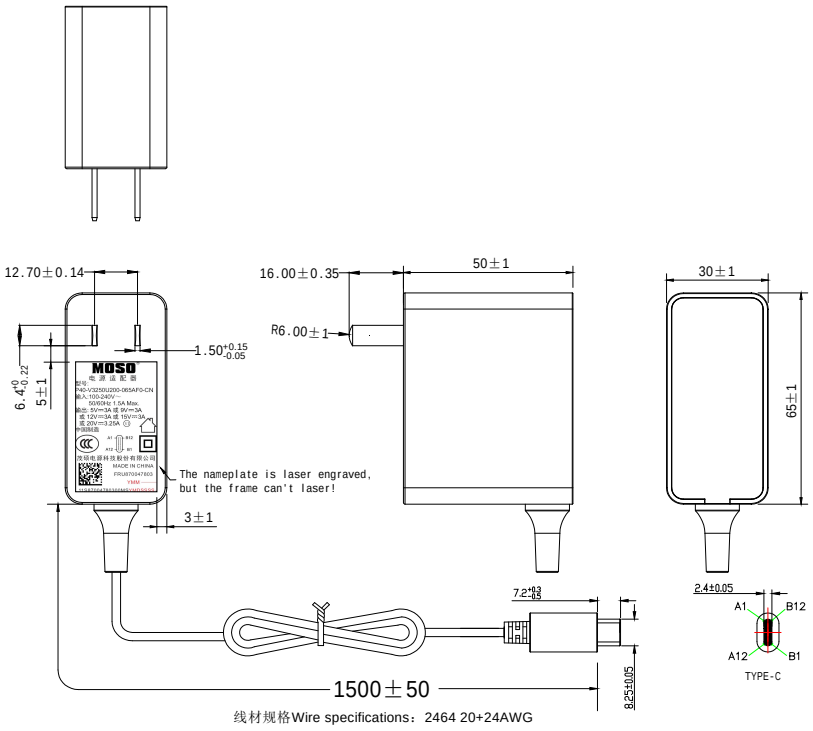
9. Mechanical Outline Drawing/外观示意图



Unit:mm
Other Tolerance：±0.5

外壳材质：■PC 耐温：120℃
□PC+ABS 耐温：95℃

备注：1）PC 材料符合球压试验要求。
2）外壳的颜色是黑色的。

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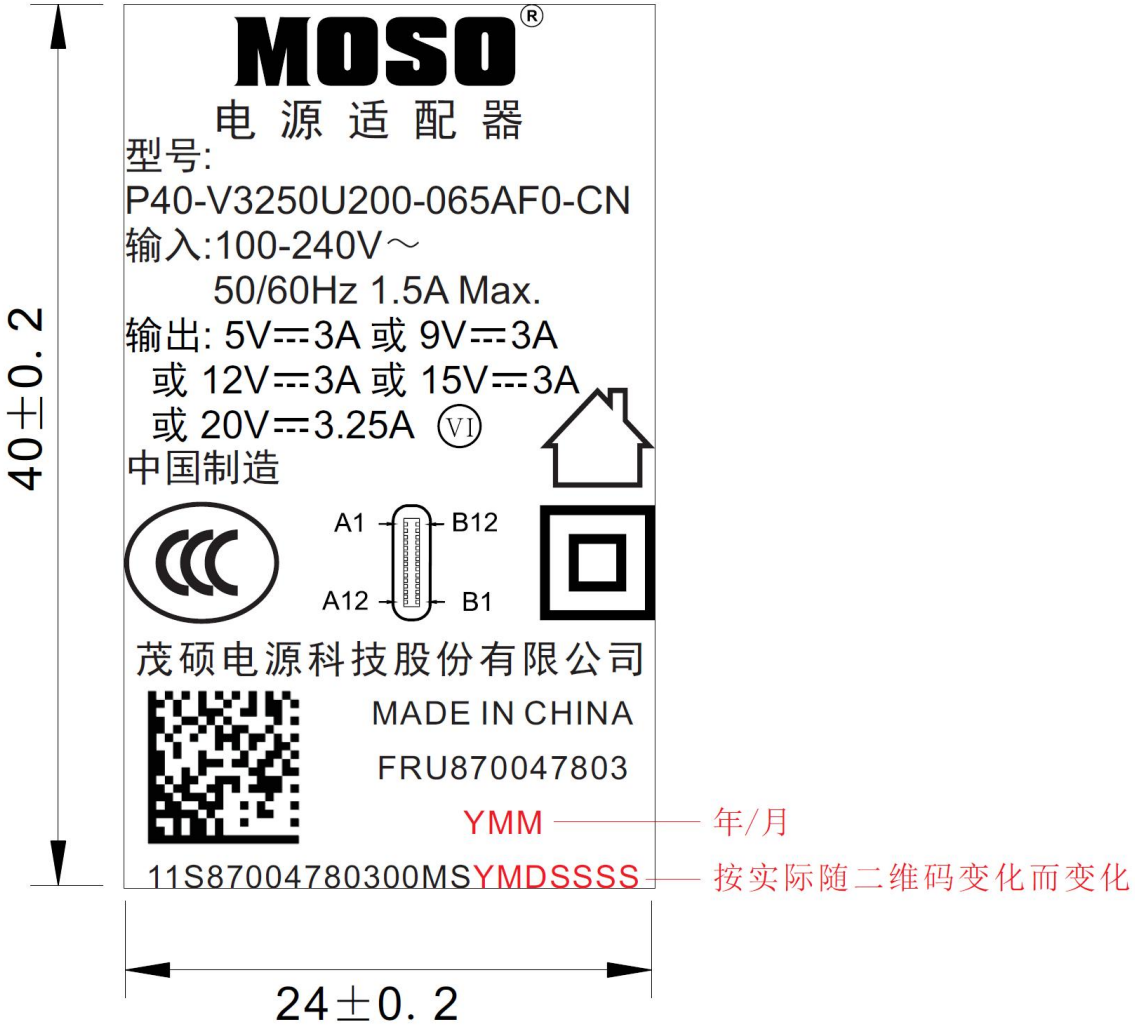
10. I/O Marking Drawing/铭牌示意图



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

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二维码格式/Code format: Data Matrix
二维码尺寸/Code size :7*7mm(±0.2)
二维码扫描内容/Code content:11S87004780300MSYMDSSSS 总共23位/23digits in total
11S87004780300MSYMDSSSS
二维码解析如下/Code analysis:
11S:DI（固定不变）
870047803:Lenovo定义的部件物料号(固定不变)
00:补位
MS:生产公司名称缩写（固定不变）
Y:年,取年份最后一位数,如2025年取5
M:月, 1-9月取数字1-9,10月=A, 11=B, 12=C
D:日, 1-9月取数字1-9,10月=A, 11=B, 12=C,以此类推，跳过I和O
SSSS:采用数字（0~9）与字母（A~Z,跳过字母I和O）总共34位表示，
从0001开始计数到0009后变000A、000B~000Z、0010~001Z以此类推直到ZZZZ

二维码格式/Code format: QR code
二维码尺寸/Code size :7*7mm(±0.3) or 5*5mm(±0.3),Laser according to the actual situation
(7*7mm(±0.3) 或 5*5mm(±0.3),按照实际情况镭射)
二维码扫描内容/Code content:PPPPPPYMDXXXXXX 总共15位/15digits in total
二维码解析如下/Code analysis:
PPPPPP:product code(产品编码:实际S编码后六位,如SA775-V1,取A775V1)
Y:producing year(产品实际生产年份,年份最后一位,如2024年,取4)
M:producing month(产品实际生产月份，如1-9月,取1-9;10月,取X;11月,取Y;12月,取Z)
D:producing date(产品实际生产日期，对应关系如下图))
XXXXXX:product listing number(产品序列号, 000001-999999)

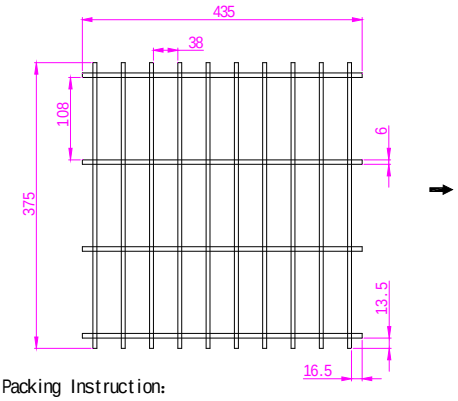
生产日期编码对应关系/Production date coding correspondence											
日期/Date	1	2	3	4	5	6	7	8	9	10	11
代码/Code	1	2	3	4	5	6	7	8	9	A	B
日期/Date	12	13	14	15	16	17	18	19	20	21	22
代码/Code	C	D	E	F	G	H	I	J	K	L	M
日期/Date	23	24	25	26	27	28	29	30	31		
代码/Code	N	O	P	Q	R	S	T	U	V		

符合茂硕环保要求

业务部门确认	安规确认	项目工程师确认

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

11. Package Drawing/包装示意图

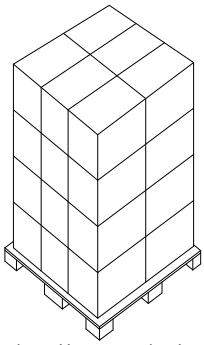


Packing Instruction:

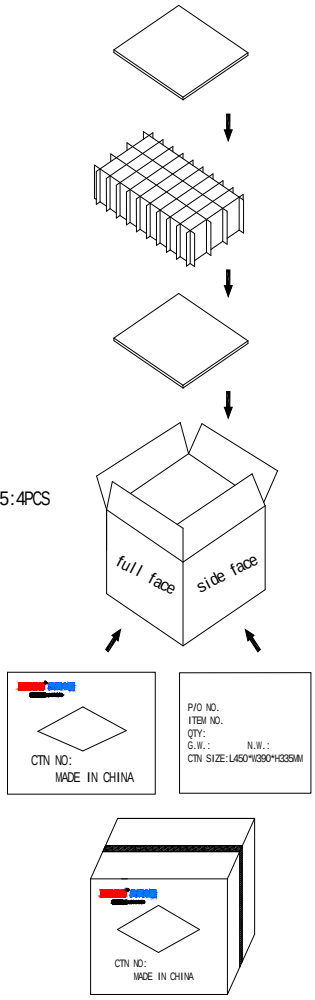
I. the packing product
put in the pattitioning card groove, 27PCS/floor,
4 floors in all, 108PCS/box
such as: 27pcs/floor*4floor=108 PCS/box

II. the usage of the packing materials:
1. the usage of the ten partitioning card 435*375*75:4PCS
2. the usage of the flat 435*375:5PCS
3. The usage of the bag : 108PCS
4. carton box 450*390*335: 1PCS

III. Pallet stacke instruction:
1. Pallet size is:L1200*W950*H135mm
2. per floor set 6pcs
3. stack per 3floor*6pcs carton
total 18 pcs carton



The pallet stact drawing



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

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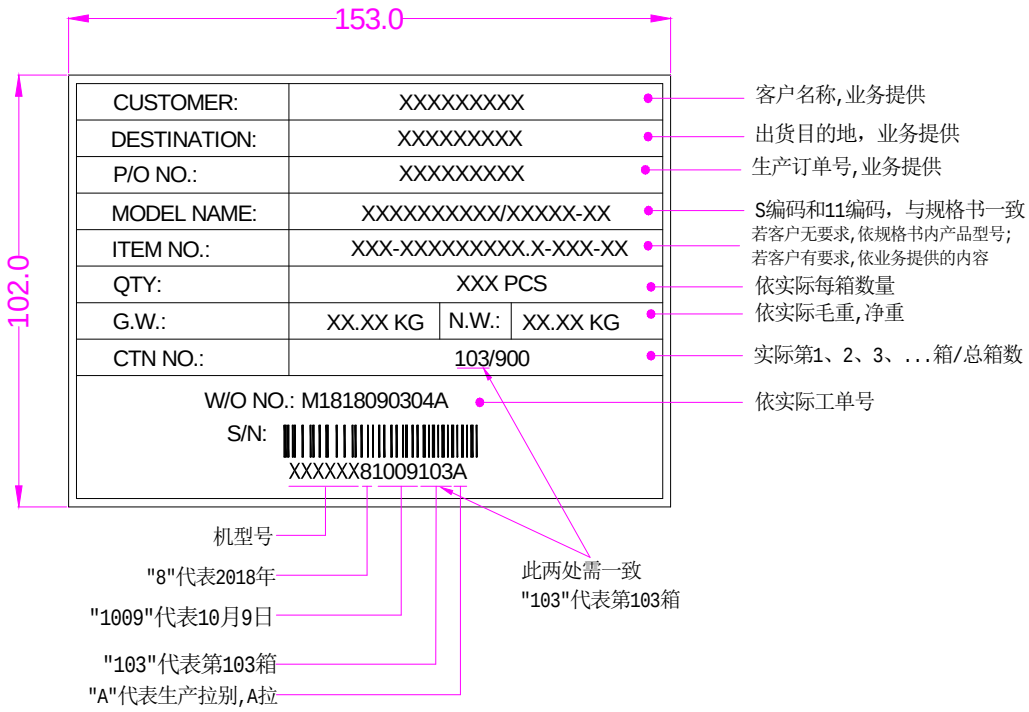
Carton label



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