

SPECIFICATION FOR APPROVAL**客户承认书**客户编码 Customer ID: **143359**景荣料号 KRECO P/N No. : **KRE-1203003**日期 Date: **2023-6-3**设计流水/订单号 Design/PO No. : **230517-143359-150949-A1**

景荣企业有限公司
中山市景荣电子有限公司

KINGRONG ENTERPRISE LTD. (Since 2008)**ZHONGSHAN KINGRONG ELECTRONICS CO., LTD.****样品承认书****SPECIFICATION FOR APPROVAL****DESCRIPTION /产品名称 : AC/DC Adaptor****CUSTOMER ID /客户代码 : 143359****CP.N. /客户料号 :**

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KRECO LTD
intelligent power solutions

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Intelligent Power Solutions

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1. General Scope / 简述

1.1 Power Supply Overview / 电源概况

This product is a : **PSU** , provides: **36W** continuous output power. This document describes the electrical, mechanical and environmental specifications.

/资料详细描述了一款连续输出功率**电源**的电气性, 结构性及环境等要求。

1.2 Features / 安全标准特性

Meet: **FCC+UL+PSE+VI**

requirements. /安全符合标准。

1.3 Raw Materials / 原材料标准

Meet: **RoHS** requirements. (for other more advanced materials, please ask to the salesman in particular) /原材料 RoHS 符合标准,其它材料请咨询销售。

2. Input Characteristics / 输入特性

2.1 Input Voltage & Frequency/输入电压&频率

The range of input voltage, single phase. /输入电压范围: 单相输入。

Items/项目	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	50/60Hz	63Hz

2.2 Stand-by Power (no-load) Consumption < : **0.1W** max. /空载待机功耗小于数。

2.3 Input AC Current Limit under min AC input & full load < : **1A** max.

最小交流输入和满载的情况下, 输入电流限制。

2.4 Inrush Current (cold start) @ nominal input < : **100A** max /冷启动, 浪涌电流。

2.4 Average Efficiency / 平均效率%

Every single unit achieves at least < : **87.40 %** efficiency at 25%. 50%. 75%.

100% of load conditions (After warm up 30 minutes) . /热机 30 分钟后, 每一个产品至少达到的效率, 在 25%, 50%, 75%, 100%负载状态。

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 voltage range 输出电压范围	R+N 纹波与噪声	Remarks 备注
	Min. load	Max. load			
+12V	0A ~	3A	±5%	120 mVp-p	Industrial

Ripple & Noise(R+N): 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

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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47uF的电解电容。(在额定输入及输出的条件下检测)

3.2 Linear & Load Regulation /线性&负载调整率: $\pm 5\%$

3.3 Charger Mode and LED indication /充电模式和转灯设计

☐ Yes, it is a charger circuit design: /是充电线路才适用此项:

Charging mode /充电模式	CC/CV
Main charge current /主要充电电流②	mA
Best for battery, charging time not less than /充电时间不少于	hours
Charging LED indication /指示灯颜色①	☐ Red ☐ Green
Charging turn lamp current /转灯电流③ to ①	mA

3.4 Wiring & Protocol of PoE Power Unit /POE电源协议和接线

☐ Yes, it is a POE power unit: /是POE电源才适用此项:

Ports/type /类型	Single port data & power out, RJ-45 female
Data/LAN	☐ 10/100Mbps 百兆 ☐ 10/100/1000Mbps 千兆
Protocol 协议	☐ N/A 非标 ☐ Compliance with IEEE802.3af/at 正标
Surge protected 防雷	☐ Yes ☐ No
Data on pins	Full duplex 全双工通道
Power on pins	☐ Pins: 4, 5+; 7 8- ☐ Pins: 1,2,3,6 ; 4,5,7,8+ *Power out pins' assignment is optional; please specify it in your order

3.5 Turn-on Delay Time /开机延迟时间:

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

Rise time /上升时间: 10mS max. @ rated load /额定负载

Fall time /下降时间: 20mS max. @ full load /满载

3.6 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

4. Dielectric Strength (Hi-Pot) Test /介电耐压强度(高压)测试

4.1 Primary to Secondary & Case for Class A /A级耐压初级对次级, 初级对外壳

1500Vac /10mA max / 60 seconds

4.2 Primary to Secondary & Case for Class B /B级耐压初级对次级, 初级对外壳

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3750Vac /10mA max / 60 seconds

4.3 Leakage Current & Touch Current /漏电流, 接触电流

☒ 0.25 mA max. At 264Vac / 50Hz

☐ 10uA max. At 264Vac / 50Hz **Medical Grade /医疗电源等级**

4.4 Surge Test /雷击测试:

☒ Normal 3KV. ☐ High 6KV ☐ 2xMOPP Medical **医疗加强** ☒ N/A /不适用

Common mode, different test phase mode at 0°, 90°, 180°, 270° as per EN61000-4-5:2006.

4.5 ESD Test /防静电测试

☒ Normal /普通 8KV+4KV ☐ High /加强 15KV+8KV ☒ N/A /不适用

Air discharge: Normal ±8KV or High ±15KV,

Contact discharge: Normal ±4KV or High ±8KV .

5. Insulation Resistance Test /绝缘阻抗测试

50MΩ min. at primary to secondary add 500Vdc /在初级与次级间加 500Vdc进行测试

6. Protection Requirements /保护特性

6.1 Input Protection /输入保护

It has an inner current fuse to protection itself. /电源输入端内置电流保险管

6.2 Over Voltage Protection /过压保护

When overvoltage occurs on DC output shall cause no damage or auto-recover the power supply.

/当输出电压超过额定电压时,电源将保护,故障排除后能恢复正常工作

6.3 Over Current Protection /过流保护

Over Current Point Limit: /过流点电流限制≤: **5.3 A** (@ nominal input)

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

6.4 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

7. Environment Requirements /环境要求

7.1 Operating Temperature and Relative Humidity /操作温湿度要求

-10°C to +40°C 20% to 80%RH

7.2 Storage Temperature and Relative Humidity /存储温湿度要求

-20°C to +85°C, 5% to 95%RH non-condensing @ sea level shall below 10k feet/低于10k英尺



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8. SAFETY Standards /安规标准

The product has designed / approved by the following safety standards:

- ☒ **62368:** IEC/EN62368;UL62368; AS/NZ62368/3112;J62368; GB4943, GB8898;
- ☐ **60335:** IEC/EN60335;UL60335;AS/NZ60335;J60335;K60335;GB4706
- ☐ **61558:** IEC/EN61558;UL1310;AS/NZ61558;J61558;K61558
- ☐ **60601:** IEC/EN60601;UL60601;
- ☐ **61347:** IEC/EN61347;

*Notes: It passed the standards which mean it also could pass for same international standards as well; we reserve the right to alter without priority notice.

9. EMI/EMS Standards /电磁兼容标准

☒ **EMC General:** IEC61000-4-11;GB/T17626.11(电压跌落及中断); EMS:GB17625.1-2012/谐波电流限值; EMI:EN61000-3-2/ 谐波电流; EMI:EN61000-3-3:2013/ 电压波动和闪烁; IEC61000-4-2;GB/T17626.2/ESD 静电放电; EMS:IEC61000-4-3;GB/T17626.3(辐射干扰); EMS:IEC61000-4-4;GB/T17626.4(EFT 电快速瞬变脉冲群); EMS:IEC61000-4-5;GB/T17626.5(雷击 surge 测试);EMS:IEC61000-4-6;GB/T17626.6(CS 传导性干扰); EMS:IEC61000-4-8;GB/T17626.8(电源频率磁场耐受检测)

☒ **FCC:**Part15,Class B,subpart B & ANSI C63.4-2014;EMI:CISPR 32/33

☒ **62368 EMI-IT:**EN55032/EN55035/J55022/GB9254;GB17625;EMS:EN55024(IT&AV)
EMI-AV:EN55033/J55013;GB13837;GB17625;EMS:EN55024(IT&AV)

☐ **61558/60335 EMI-Appliance:**EN55014-1;EMS:EN55014-2(Appliance)

☐ **60601 EMC:**EN55011;IEC/EN60601-1-2

☐ **61347 EMI-LED:**EN61547;EMS-EMF:EN62493

☐ **RED:**EN62497(health);EMC:ETSI EN301 489;Radio:ETSI EN300 220

*Notes: It passed the standards which mean it also could pass for same international standards as well; we reserve the right to alter without priority notice.

10. Reliability Requirements /可靠性要求

10.1 Burn-in /煲机

The power supply shall be burn-in for 4 Hours under normal input and 100% rated load at 40℃±5℃ /产品至少要在40℃±5℃的环境及100%额定负载条件下煲机4小时。

10.2 MTBF Qualification /平均间隔故障时间估算

The MTBF is designed to bear 50k hours at 25℃, full load and nominal input condition as per

Telcordia SR-332 methodology. /平均间隔故障时间设计在25℃及额定输入与满载条件下工作时间

11. Mechanical Characteristics /机械特性

11.1 Dimension (LxWxH) cm /尺寸(不带插脚): 8.5 x 4.9 x 3.8 cm.

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- 11.2 Unit Net Weight (ref. kgs) /净重: **0.151** kgs/公斤.
- 11.3 AC Inlet /输入插头: ☐ 2Pins EU, ☒ 2Pins US/JP, ☐ 3Pins UK, ☐ IEC320-C8
- 11.4 Input Power Cord /输入电源线: **N/A**无
- 11.5 Case Material /外壳材质: **PC+ABS or PC ; 94V0**
- 11.6 Outline Color /颜色: **Black**黑色
- 11.7 LED Color /指示灯颜色: **N/A**无
- 11.8 O/p Cable & Length /输出线及长度: **2468-20AWG*2VW-1 1.2M**
- 11.9 O/p Connector/输出头尺寸(mm): **2.1x5.5x11mm**

Shape /外形: ☒ Straight, ☐ L-type, ☐ F coaxial, ☐ 6 DIN

- 11.10 Output Connector Polarity /极性:
- ☐
- Center +中正,
- ☒
- Center -中负

- 11.11 Output connector angle to plastic case surface of mold is 15° max.

- 11.12 Drop Test /跌落测试

Height: 1.0m; 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 by apply two times on all surfaces. /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, 每面各2次

- 11.13 Vibration Test /振动测试:

10 to 300Hz sweep at a constant acceleration of 1.0G (Breadth: 3.5mm) for 1 hour 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

- 11.14 Cord Bending Test /摇摆测试:

The cord shall withstand a weight of 200 g, it swings from left to right at an angle of 90 degree(total), 40 cycle/min, 300 times minimum. The cord shall be conductible. /输出线悬挂 200 克重量, 以 90 度、40周/分钟 左右摇摆最小 300 次, 输出线无异常。

- 11.15 Strain Relief Test /拉力测试:

Plug and cord, at their normal position applied a weight of 20lbs to input plug, 5lbs to output cord, for 60 seconds each, there shall be no broken of lead or other damage result. /输入插头能承受 20lbs 的拉力, 输出线能承受 5lbs 的拉力, 无任何损坏。



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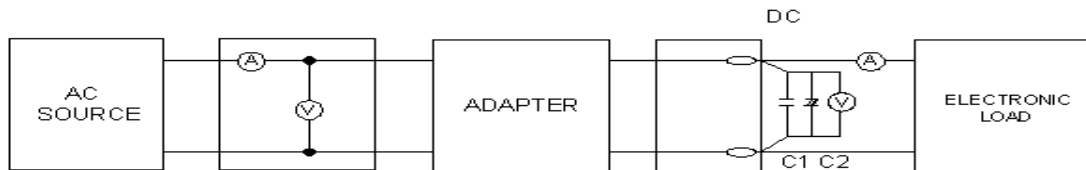
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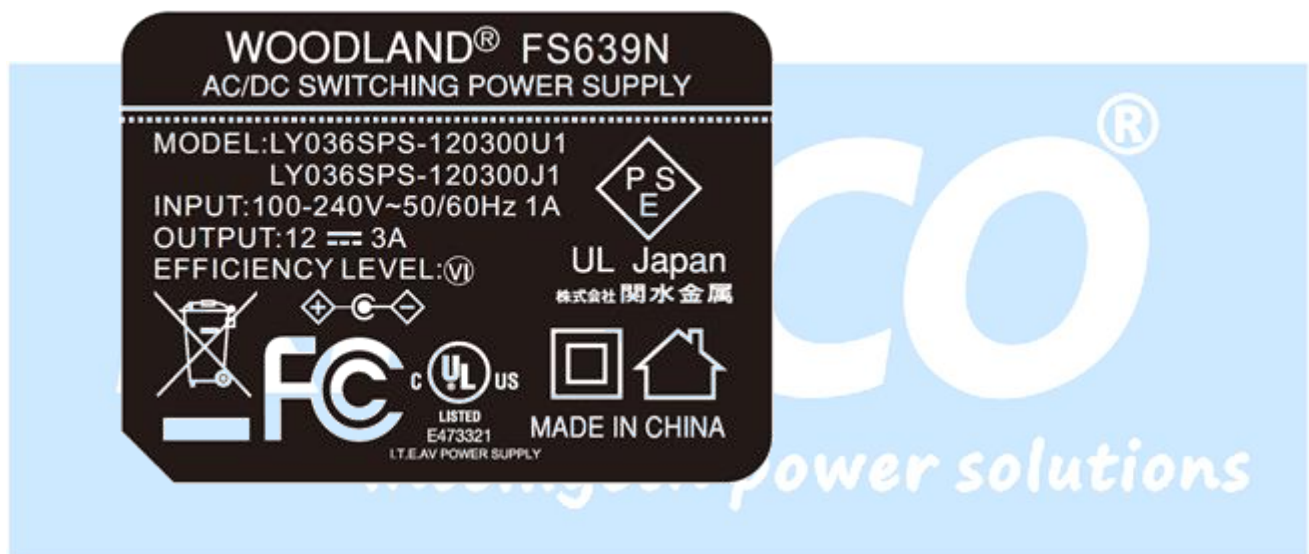
12. Test Schematic /测试示意图



C1: 0.1uF/ 50V(or high voltage) ceramics capacitor /瓷片电容

C2: 47uF/ 50V(or high voltage) aluminum electrolytic capacitor /铝电解电容

13. Label Diagram /铭牌图



- ☒ Laser engraving **or** ☒ PVC sticker +
☒ Serial code 128(SN) (YYXXXXXX00000001)

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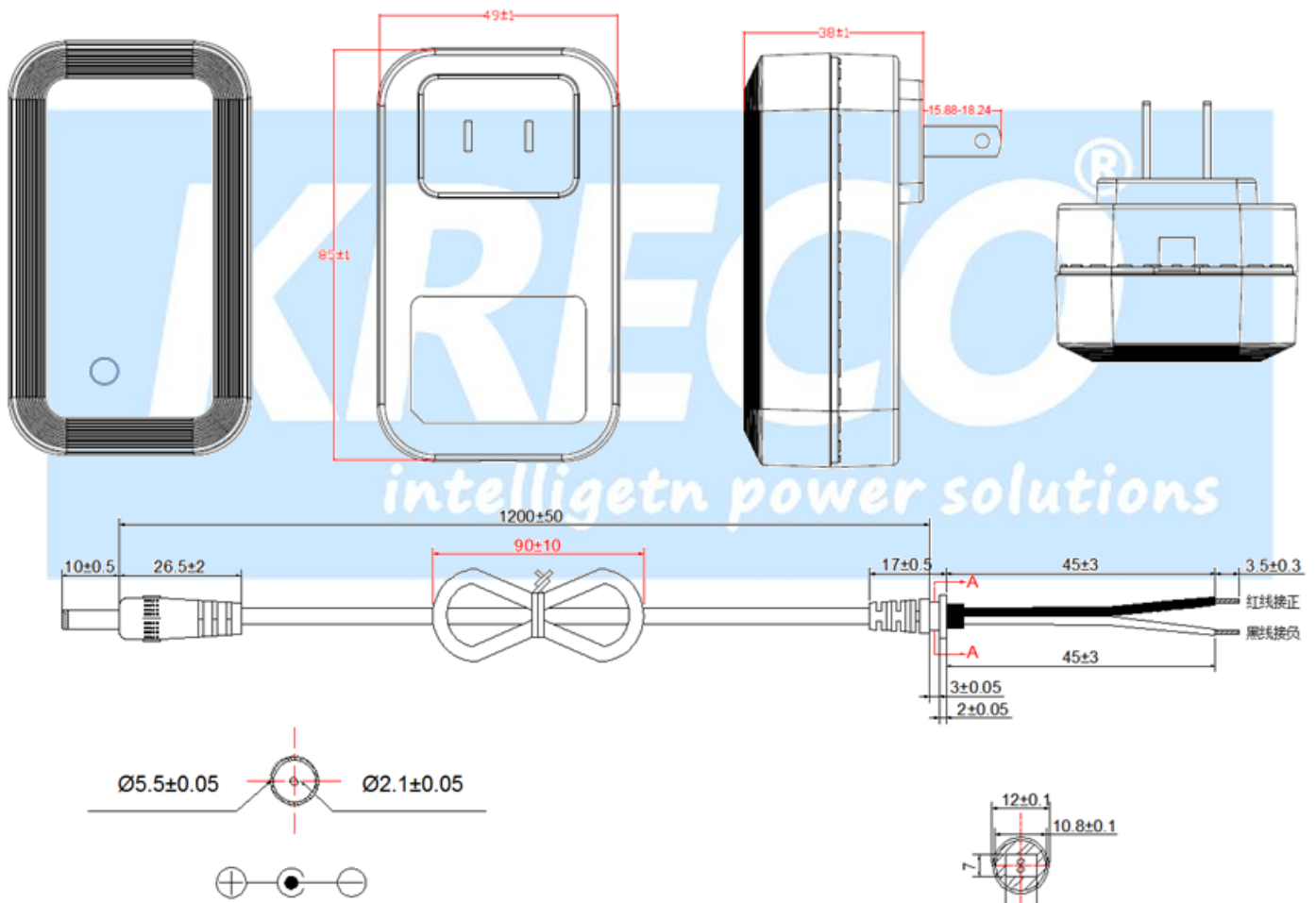
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14. Outline Photograph /相片+机械图纸



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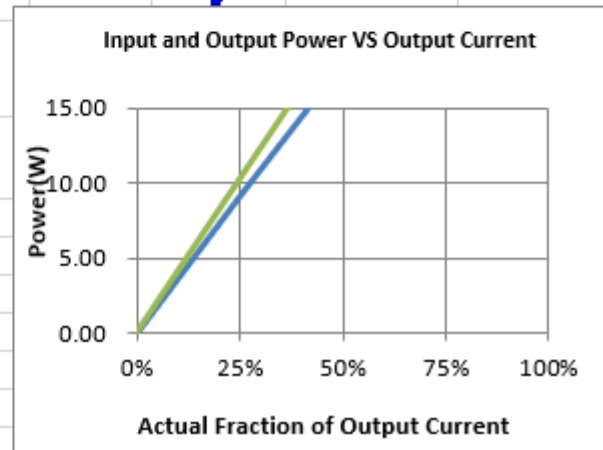
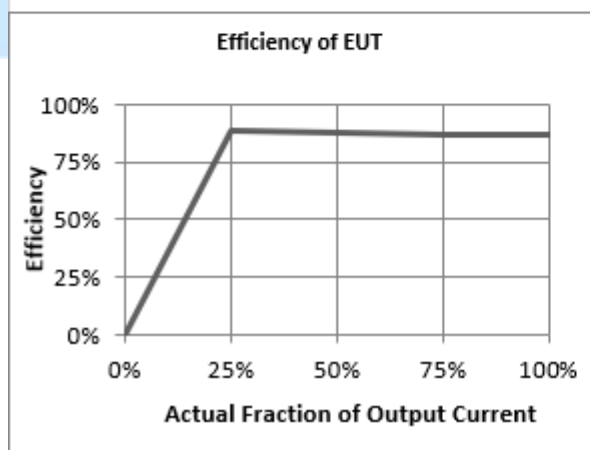
15. Energy Saving Test Report /节能测试报告

* Standard / 节能标准	* Level / 节能等级
☐ GEMS/澳; ☐ ErP/欧; ☒ DoE/NRCan/美; ☐ N/A /不适用	☐ IV4级; ☐ V5级; ☒ VI6级

Item项目	Standard No-load Power 标准空载损耗(W)	Standard Average Efficiency 标准平均效率%
Standard 标准	0.10	87.40%

Testing Data:

	No Load	Active power values					
Percent of nameplate current	0%	25%	50%	75%	100%	No load Power 空载功率W	Average Efficiency 平均效率%
Output Current 输出电流	0	0.75	1.5	2.25	3	0.08	87.54%
Output voltage 输出电压V	12.25	12.17	12.04	11.91	11.78		
Output power 输出功率W 次	0	9.13	18.06	26.80	35.34		
AC input power 输入功率W 初	0.08	10.32	20.62	30.70	40.68		
Efficiency% 效率%	0	88.41%	87.57%	87.28%	86.88%		



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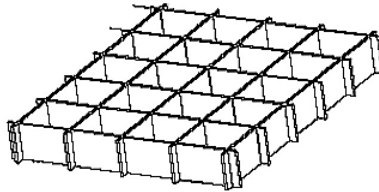
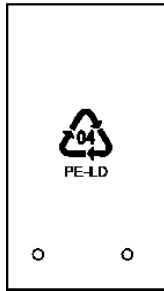
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16. Package Information /包装示意图



☒: (1) PE Bag + ☒: (2) Blade Cardboard **or** ☐: (3) Individual box



☒: (4) Outer Carton

No.	Item 名称	Spec规格	Size (cm)尺寸			Qty	G.W	CBM
			L	W	H	数量	公斤Kgs	(m3)
			长cm	宽cm	高cm	个/箱	毛重/箱	立方米
*	Unit Net Weight 产品净重						0.151	
1	PE Bag 透明袋	PE	18	15		1		
2	Blade Cardboard 刀卡	A=B						
3	Individual Box 白盒	380g/cm3				1	0.015	
4	Outer Carton 外箱	K=K	37	38	22.5	60	11.0	0.0316
5	Pallet 托盘	Plastic	100	110	16		8	0.176
*	Marking 唛头		KRECO					
*	Part No 条形码	Code 128	As per KRECO P/N Number					
*	Serial No 序列号	Code 128	YYxxxxxx0000001					

The above packing info just for your reference only, the final is **subject to actual production**.

If you need to specify, please ask the salesman in particular.

	KRECO LTD <i>intelligent power solutions</i>	Approved by:	Checked by:	Prepared by:
		罗颖澎	李淑仪	陈梓健

SPECIFICATION FOR APPROVAL

客户承认书

客户编码 Customer ID: 143359

景荣料号 KRECO P/N No. :KRE-1203003

日期 Date: 2023-6-3

设计流水/订单号 Design/PO No. :230517-143359-150949-A1

17. Operation Caution 操作注意事项

17.1 禁止在室外使用

Prohibited in the outdoor use

17.2 严禁在电源线的损坏的情况下使用产品，否则会导致触电，起火和产品损坏。

It is prohibited to use the product in case of power line damage, otherwise it will result in electric shock, fire damage and product.

17.3 避免在高温和强辐射场使用，置于-10~+40℃的通风处保管。

Avoid the use of high temperature and strong radiation place, keep ventilation in - 10 °C ~ + 40 °C.

18. Statement 声明

18.1 本承认书解释权归中山市景荣电子有限公司。

KRECO reserves the right to interpret this acknowledgement.

18.2 本承认书一式两份，客户一份，供应商一份，自双方确认签字之日起生效。

Two sets of specification for mutual approval. It comes into effect after the content is acknowledge.

18.3 如有更新，需由双方协商解决，另行补充。

Any revision change shall be mutually agreed by customer and provider.

19. Customer Confirmation 客户确认

Thank you for your recognition of KRECO product. Your time and every data tested have great significance and contribution. The name you signed will become a permanent witness of KRECO's future development. We KRECO people thank you!

	KRECO LTD <i>intelligent power solutions</i>	Approved by:	Checked by:	Prepared by:
		罗颖澎	李淑仪	陈梓健

SPECIFICATION FOR APPROVAL 客户承认书	
客户编码 Customer ID: 143359	景荣料号 KRECO P/N No. : KRE-1203003
日期 Date: 2023-6-3	设计流水/订单号 Design/PO No. : 230517-143359-150949-A1

客户确认

CUSTOMER CONFIRMATION

Modification is to update a new with new design number 修改生成新版设计号

CUSTOMER AUTHORIZED SIGNATURE/客户承认签核	
Special Notes 特殊要求:	APPROVAL BY: (Signature & seal & Date)
1) 2) 3)	

*Sign it means acknowledge our sample(s) performance and we production to samples. In the event of discrepancies between the sample(s) and specification, the sample(s) shall prevail. /客户确认签字, 盖章即视为确认样品性能, 以样品为准生产.



中山市景荣电子有限公司

KINGRONG ENTERPRISE LTD. (Since 2008)

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intelligent power solutions



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		罗颖澎	李淑仪	陈梓健