

连接器安装说明书 PV-JK03M4 Series

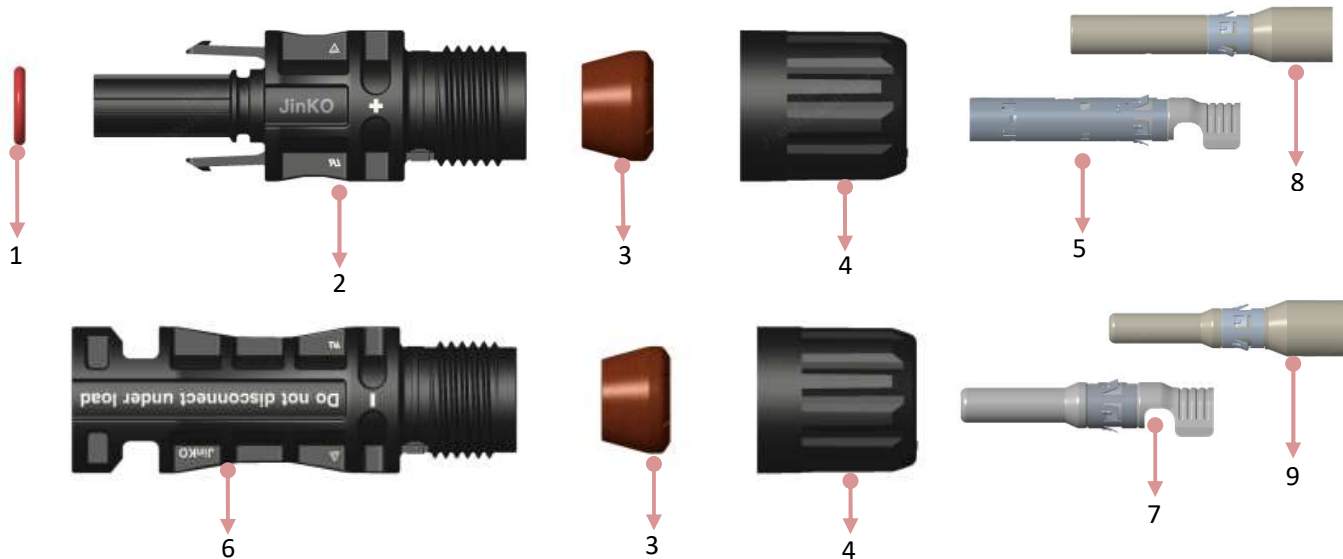
Installation Manual for PV-JK03M4 Series Cable Connector



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1.产品简介 Products Overview



1 O 型圈 (O Ring)

2 公头 (Male Housing)

3 防水内塞 (Cable Gland)

4 塑胶螺帽 (Gland Nut)

5 冲压插套 (Stamped Female Terminal)

6 母头 (Female Housing)

7 冲压插针 (Stamped Male Terminal)

8 机加插套 (Cold Formed Female Terminal)

9 机加插针 (Cold Formed Female Terminal)

2.工具及配件简介 Tools and Parts Overview

Item	Tool Type	Tool Name	Pic.
1	JKT-01	剥线工具 Stripping Tool	
2	JKT-10	剥线工具 Stripping Tool	
3	JKT-02	压接工具 Crimping Tool	
4	JKT-11	压接工具 Crimping Tool	
5	JKT-09	组装工具 Open-end-Wrench	
6	4JB03M31005 4JB03M31007	防尘塞 Dust Plug	
7	JKT-08	扭矩扳手 Torque Wrench	

3.技术参数 Technical Data

型号名称 Type Name or Model No.	PV-JK03M4 / xy (Plug+Socket) (IEC) PV-JK03M4 Series (PV-JK03M4-F/xyab and PV-JK03M4-M/xyab) (UL)
额定电压 Rated Voltage (V DC)	1500 V DC
额定绝缘测试电压 Rated Insulation Test Voltage	8000 V (1500 V DC)
额定电流(IEC 85℃) Rated Current (IEC 85℃) (A DC)	30 A (2.5mm ² /14AWG) 45 A (4.0mm ² /12AWG) 50 A (6.0mm ² /10AWG) 70 A (10.0mm ² /8AWG)
应用等级 Application Class	Class A
过电压等级/污染等级 Over Voltage Category / Pollution Degree	CAT III / 2
工作温度范围 Operating Temperature Range	- 40℃ to +85℃
温度上限 Upper Limiting Temperature	115℃
防护等级 Protection Class	Class II
防火等级 Flame Class	UL94 V-0

防护等级, 插合状态 / 未插合状态 Degree of Ingress Protection, mated / unmated	IP65 / IP68 (1m, 2h) in mated condition IP2X in unmated condition
电缆截面积 Wire Cross Section Area or Cross Section Range	1X2.5mm ² (14AWG) for x=1 (IEC) / y=A (UL); 1X4.0mm ² (12AWG) for x =2 (IEC) / y=B (UL); 1X6.0mm ² (10AWG) for x =2 (IEC) / y=C (UL); 1X10.0mm ² (8AWG) for x=3(IEC) / y=D (UL);
可否更换电缆 Can the cable be replaced	No
电缆线径 Cable Diameter	4,8mm to 9.0mm (IEC) 6,2mm to 8.5mm (UL)
接触电阻 Contact Resistance	≤0.25 m Ω
触点材料 Contact material	铜, 镀锡 Copper, tin plated
绝缘材料 Insulation Material	PA
是否封闭 Enclosed connector or not	封闭式连接器 (不可徒手打开) Enclosed connector (Do not open by hands)
认证标准 Certification Standard	IEC62852 UL6703

Note: IEC PV-JK03M4/xy; PV-JK03M4-F/xy; PV-JK03M4-M/xy (x=1 or 2 or 3 or4, y= A or B or C or D or E)
UL PV-JK03M4-F/xyab ; PV-JK03M4-M/xyab (x=1 or 2, y= A or B or C or D, a=1 or 2, b=1 or 2)

4.工具使用说明 Tools Instruction

✧ 剥线工具 JKT-01：适用于 2.5mm²(14AWG)、4.0mm²(12AWG)、6.0mm²(10AWG)线缆。

The Stripping tool JKT-01 is applicable to 2.5mm²(14AWG) or 4.0mm²(12AWG) or 6.0mm²(10AWG) cable.

一套=1 把

There is one stripping tool JKT-01 per tool set.

作用：裁切电缆线绝缘层（使得铜丝外露）。

Function: Cutting the wire insulation (exposing the copper wire).



Stripping Tool - JKT-01

✧ 剥线工具 JKT-10: 适用于 4.0mm²(12AWG) 、6.0mm²(10AWG) 、10.0mm²(8AWG) 线缆。

The Stripping tool JKT-10 is applicable to 4.0mm²(12AWG) or 6.0mm²(10AWG) or 10.0mm²(8AWG) cable.

一套=1 把

There is one stripping tool JKT-10 per tool set.

作用：裁切电缆线绝缘层（使得铜丝外露）。

Function: Cutting the wire insulation (exposing the copper wire).



Stripping Tool - JKT-10

✧ 压接工具 JKT-02: 适用于 2.5mm²(14AWG)、4.0mm²(12AWG)、6mm²(10AWG)线缆(冲压端子压接钳)。

The Crimping tool JKT-02 is applicable to 2.5mm²(14AWG) or 4.0mm²(12AWG) or 6.0mm²(10AWG) cable (Crimp tool for stamping forming contact) .

一套=1 把

There is one crimping tool JKT-02 per tool set.

作用: 起到铆接功能, 使得电缆线铜丝与金属端子之间的连接与固定。

Function: Crimping copper wire with metal terminals.



Crimping Tool- JKT-02

✧ 压接工具 JKT-11: 适用于 10mm²(8AWG)线缆 (机加工端子压接钳)。

The Crimping tool JKT-11 is applicable to 10.0mm²(8AWG) cable (Crimp tool for cold forming contact).

一套=1 把

There is one crimping tool JKT-11 per tool set.

作用: 起到铆接功能, 使得电缆线铜丝与金属端子之间的连接与固定。

Function: Crimping copper wire with metal terminals.



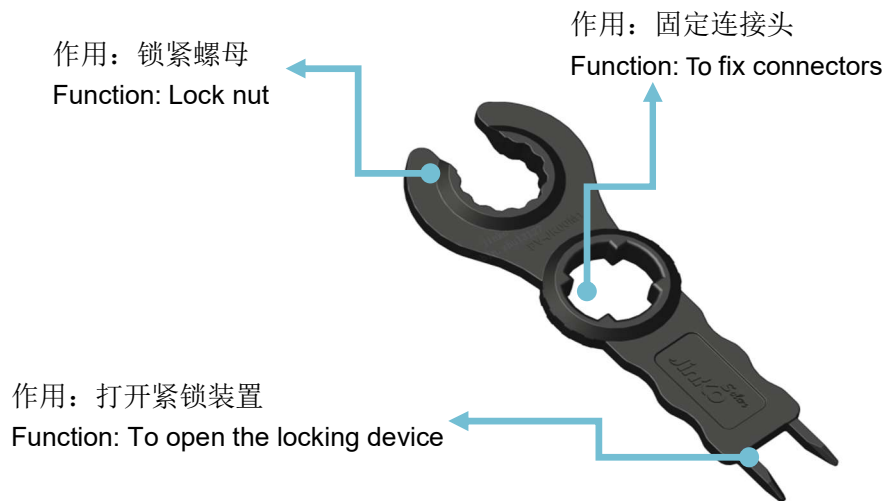
Crimping Tool- JKT-11

◇ 组装工具 JKT-09：一套=2 把；

Assembly tool JKT-09: There are two assembly tools per tool set.

作用：用于组装拆装连接器。

Function: Assembling and disassembling connectors.



组装工具：开口扳手（1 套=2 把）

Assembly tool: Open-end Wrench（1 set=2 pieces）

Assembly Tool -JKT-09

5.安装说明 Installation Instruction

5.1 电缆准备 Cable Preparation

✧ 根据不同规格的电缆，请从表 1 中选择适合的配置：

According to different specifications of cables, please select the appropriate configuration from table 1:

表1 (Table 1)

导体横截面 Conductor cross section		连接器配置 Connector configuration	
mm ²	AWG	For TÜV	For UL
2.5	14	PV-JK03M4/1y	PV-JK03M4/xAab
4	12	PV-JK03M4/2y	PV-JK03M4/xBab
6	10	PV-JK03M4/2y	PV-JK03M4/xCab
10	8	PV-JK03M4/3y	PV-JK03M4/xDab

- ✧ 请勿使用无镀锡的或氧化的导线，推荐使用镀锡的导线。

Do not use untreated or oxidized wire. Tinned wires are recommended.

- ✧ 剥去电缆线端部 $L=7-9\text{mm}$ 的绝缘层。

When stripping the cable insulation "L", 7mm to 9mm in length should be removed on the end of cable.

- ✧ 剥线时请勿切断内部的铜丝。

Do not cut the copper wire inside.



- ✧ 把剥线工具的固定块调至 7-9mm 处（控制 “L” 的长度）。

The fixed block of the stripper is adjusted to 7-9mm (control the length of "L").

- ✧ 调节完毕后，一手拿取电缆，一手手持剥线工具-JKT-01。

Take the cable one hand and take the stripping tool-JKT-01 the other hand.

- ✧ 将电缆线的端部放至对应的刀口处，并使电缆的端部触碰到固定块（如图 1）。

Insert cables until the end touches fixed block (Fig. 1).

- ✧ 手用力压紧剥线工具的手柄，最后切除绝缘层（如图 2）。

Squeeze the handle of the stripping tool by hand, then cut and remove the cable insulation (Fig. 2).



Figure 1



Figure 2

5.2 压接 Crimping

5.2.1 压接工具压接 Tools Crimping

- ✧ 使用专用压接工具（类似 JKT-02 或 JKT-11）压接时，先将已剥好的线缆线芯放入端子槽内，并确保所有芯线都在端子槽内，然后将要压接的端子放入压线钳钳口，并使用相应的压接模具压接端子（见图 3 至图 7），压接完成后检查压接是否牢固（如图 8），压接后电缆拉力要求需满足表 2 要求。

When crimping with specified crimping tools (e.g. JKT-02 or JKT-11), insert striped cable into contact barrel and insure all conductor strands are captured in the contact barrel. Crimp contact barrel by using the corresponding crimping die, refer to Figures 3 to 7 for details. Check whether the crimping is firm after the crimping was completed (Fig. 8). The cable force after crimping must meet the requirements in table 2.

表 2 (Table 2)

No.	线缆规格 Cable Specification	电缆压接拉力要求 Cable Crimping Pull-Out Force
1	2.5mm ² /14AWG	≥223 N (Min.223 N)
2	4.0mm ² /12AWG	≥310 N (Min.310 N)
3	6.0mm ² /10AWG	≥360 N (Min.360 N)
4	10.0mm ² /8AWG	≥400.5 N (Min.400.5 N)

- ✧ 打开压接工具并夹住夹子，把插针/插套放在合适的界面区域，转动插针/插套使开口朝上，松开夹子，插针/插套即被固定（如图 3&4）。

Open the crimping tool and press the clip. Insert the male/female terminal into appropriate groove until fully seated. To make the opening of the male/female terminal face up (Fig. 3 & 4).

- ✧ 逐渐压压接工具直到插针/插套开口完全接触到压接模（如图 5）。

Squeeze the crimping tool gradually until the male/female terminal totally touches the crimping mold (Fig. 5).



Figure 3



Figure 4



Figure 5

- ✧ 将电缆线的剥线端插入插针/插套的开口内直到电缆线的绝缘层接触到插针/插套开口处，最后完全压紧压接工具（如图 6&7）。

Insert the stripped wire into the male/female terminal until the cable insulation touches the opening of the male/female terminal. Press the crimping tool completely (Fig. 6&7).

- ✧ 检查压接完整且牢固（如图 8）。

Be sure the crimping is complete and fixed (Fig. 8).



Figure 6



Figure 7

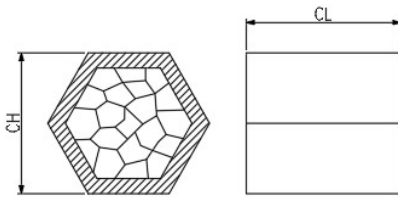


Figure 8

5.2.2 自动压接设备压接 Automatic Machine Crimping

- ✧ 客户用自动铆接设备对线缆进行压接时，建议压接规范如表格 3 和表格 4。
- ✧ When the customer uses the automatic crimping machine, we suggest that the contact crimping specification should meet the requirements of table 3 or table 4.
- ✧ 需要定期对压接结构做剖面分析，分析内容应涵盖如下（参考 Fig. 9&10）。
It is very important to do the section analysis, which contains the items as follows (Fig.9&Fig.10) .
- ✧ 如压缩比率无法达到推荐的技术要求，建议在电缆与导体连接处采用二次加锡工艺固定，确保其可靠连接。
If the compression ratio cannot meet the recommended technical requirements, using a secondary tinning process to fix the connection between the cable and the conductor to ensure a reliable connection.

表 3 线缆截面分析 (Table 3 - Cable cross section analysis)

 Figure 9	No.	截面规格 Cross section specification		技术要求 Technical requirement
				8AWG/10mm ²
	1	CH	压接高度 Crimp Height	5.3±0.1mm
	2	CL	压接长度 Crimp Length	8.00±0.5mm

注意：上述剖面分析仅针对 8AWG/10mm² 线缆。

Note: The above cross section analysis are only for 8AWG/10mm² cable.

表 4 线缆截面分析 (Table 4 - Cable cross section analysis)

No.	截面规格 Cross section specification		技术要求 Technical requirement	
			12AWG / 4mm ²	10AWG / 6mm ²
1	CH	压接高度 Crimp Height	2.30±0.20mm	2.60±0.20mm
2	CB	压接宽度 Crimp Width	4.00±0.10mm	4.25±0.10mm
3	CBm	可测量压接宽度 Measurable Crimp Width	1.0*CB≤CBm≤1.1*CB	1.0*CB≤CBm≤1.1*CB
4	D	羽翼尖端间距 Crimp face Ends	D ≤ 0.35mm	D ≤ 0.35mm
5	GH	毛刺高度 Burr Height	GH ≤ 0.7mm	GH ≤ 0.7mm
6	GB	毛刺宽度 Burr Width	GB ≤ 0.5mm	GB ≤ 0.5mm
7	CH / CB	高度/宽度比率 Crimp Height/Crimp Width	50%≤(CH / CW)≤70%	50%≤(CH / CW)≤70%
8	C/ R	压缩比率 Compression Ratio	75%≤C / R≤85%	75%≤C / R≤85%
9	P	孔隙率 Void Ratio	≤1.00%	≤1.00%
10	W	压接(支撑)角度 Crimp (Support) Angle	0°≤W≤30°	0°≤W≤30°
11	L	羽翼支撑长度 Support Length	L≥¼*S but minimum L≥0.1mm	L≥¼*S but minimum L≥0.1mm
12	R	压接翼与底部距离 Flank End Distance	R≥0.5*S	R≥0.5*S
13	SB	底部厚度 Bottom Thickness	SB≥¾*S	SB≥¾*S

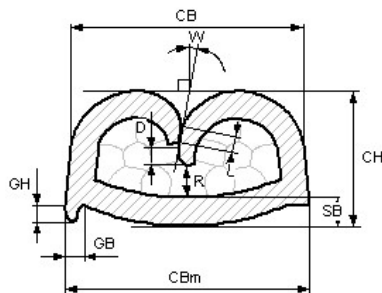


Figure 10

注意:上述剖面分析仅针对 12AWG / 4mm² & 10AWG / 6mm² 线缆;端子材料厚度表中简称“S”。

Note: The above cross section analysis are only for 12AWG / 4mm² & 10AWG / 6mm² cable; terminal material thickness referred as "S".

✧ 压接刀具图纸参考（如图 11&12）

Crimping Tool Drawing for reference (Fig. 11&12)

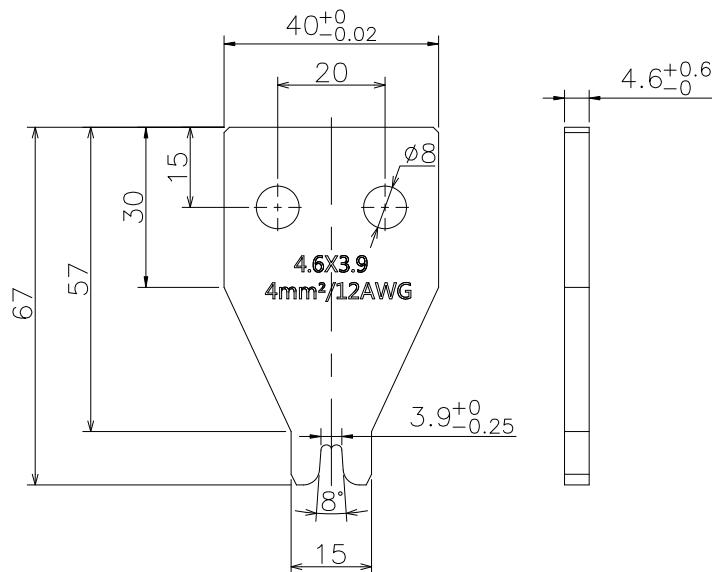


Figure 11 上刀模 (Up Blade)

注意：上述压接刀具图纸仅针对 12AWG/4mm² 线缆。

Note: The above crimping tool drawing are only for 12AWG/4mm² cable.

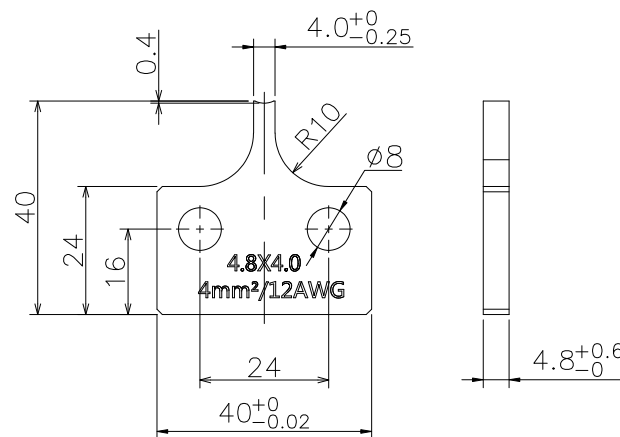


Figure 12 下刀模 (Down Blade)

✧ 压接刀具图纸参考（如图 13&14）

Crimping Tool Drawing for reference (Fig 13&14)

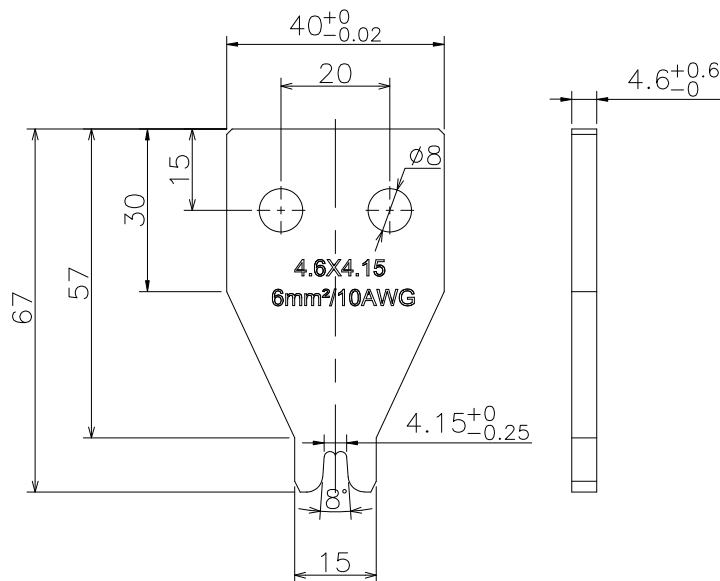


Figure 13 上刀模 (Up Blade)

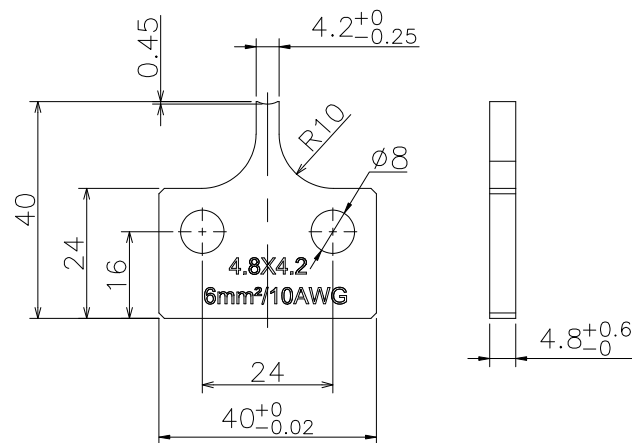


Figure 14 下刀模 (Down Blade)

注意：上述压接刀具图纸仅针对 10AWG/6mm² 线缆。

Note: The above crimping tool drawing are only for 10AWG/6mm² cable.

5.3 插针/插套安装 Male/Female Terminals Installation

- ✧ 压接好的插针/插套插入到公端电缆连接器/母端电缆连接器内，直至其啮合（如图 15）。轻轻拉动导线，检查金属件是否啮合牢固（如图 16）。

Insert the crimped male or female terminal into corresponding male or female cable connector until they engaged (Fig.15). Pull lightly on the lead to check that the metal part has engaged (Fig. 16).



Figure 15



Figure 16

- ✧ 锁螺帽：使用一个 18mm 扭矩扳手(类似 JKT-08)固定螺帽，另一个开口扳手固定公/母端电缆连接器（如图 17）。

Use a 18mm torque wrench, such as tool JKT-08, to secure the nuts, and to fix the male cable connector or female cable connector by another wrench (Fig. 17).

- ✧ 使用工具 (类似 JKT-06) 或扭矩扳手 (类似 JKT-08) 顺时针旋转扭紧螺帽, 拧紧力矩必须适合于每种具体情况下使用的光伏电缆 (拧紧力矩建议参考表 4)。不可将螺帽强拧至本体底部, 要求最小保留 0.8mm 以上的间隙, 避免螺帽损坏及变形 (如图 18)。

Using a tool such as tool JKT-06 or torque wrench such as tool JKT-08 to tighten the nut clockwise, while the tightening torque must be adapted to the solar cable used in each specific case (Tightening torque refer to Table 4). Do not turn the nut to the bottom of the body, and a minimum clearance of 0.8mm or more is required to avoid damaging and deformation of the nut (Fig. 18).



Figure 17

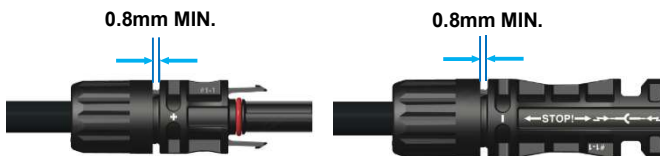


Figure 18

电缆直径 Cable diameters		拧紧扭矩 Tightening torque
mm ²	AWG	Nm
2.5	14	3.0
4	12	3.5
6	10	4.0
10	8	4.0

Table 5

- ✧ 公母电缆连接器插合: 在螺帽锁紧后将公母电缆连接器对插, 直至其啮合。轻轻拉动, 以检查是否啮合牢固 (如图 18&19)。同时检查公母连接器有无对配不到位现象 (如图 20)。

Insert the female cable connector into the male cable connector when tighten the gland nut until they engaged. And pull lightly to check correct engagement (Fig. 18 & 19). At the same time, check whether the male and female connectors are in place or not (Figure 20).



Figure 19



Figure 20



Figure 21

5.4 连接器拆卸 Disconnecting Cable Connector

- ✧ 用手按压卡扣位置（如图 22）

Press the buckle position by hand (Fig. 22)

- ✧ 用左右手分别拉拔连接器，即可分开公母电缆连接器（如图 23&24）。

Pull the cable connector by hand respectively. The cable connector can now be separated (Fig. 23&24)



Figure 22



Figure 23



Figure 24

5.5 电缆布线 Cable Routing

- ✧ 必须保证从电缆密封或固定处引出的 20mm 电缆不弯曲或受压（如图 25）。

Cable management must allow a minimum of 20 mm of cable that leading directly from the cable seal or fixing without bending or compression (Fig. 25).

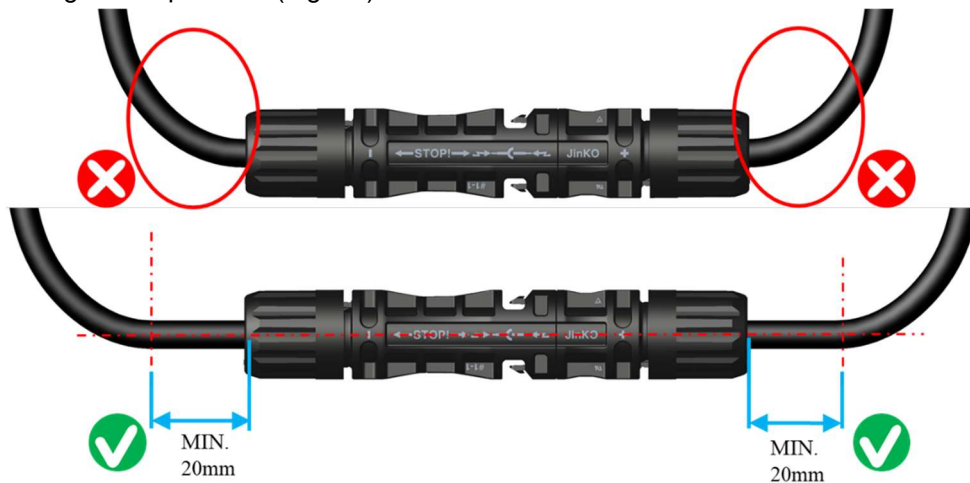


Figure 25

注意：请参考电缆生产商的最小弯曲半径的详细说明。

Note: Please refer to detailed description of cable manufacturers for minimum bending radius.

5.6 安装提示 Installation Warning

- ✧ 在自行安装时，如果所用的部件和工具不是 JinKO 官方指定的，或者没有按照官方要求进行准备和安装操作，我们将不保证产品的安全性和技术参数的一致性。

If parts and tools used are not specified by JinKO or not prepared and assembled as JinKO described during installation, the safety and technical data on products are not guaranteed.

- ✧ 产品在运输、储存过程中，不可有过分承压，撞击等破坏产品的行为。

During the transportation and storage, there should be no excessive pressure, impact and other acts of damaging the product;

- ✧ 产品在运输、储存时应注意避光、防水、防尘等。

The product should be protected from light, water and dust during transportation and storage

- ✧ 连接器只有按照安装说明指定的方式组装时，才被认定符合 UL 6703。

The connector is considered to be in compliance with UL 6703 only when assembled in the manner specified by these assembly instructions.

- ✧ 在安装过程中，应避免接触汽油、机油、丙酮、酒精、脱膜剂、灌密封胶、TBP、清洗剂、除草剂、防锈剂、除垢剂等可能会造成连接器功能失效的物质，同时需注意施工人员的手套不能带有以上物质。被污染的连接头不能插入使用。

During the installation process, it should be avoided to contact with gasoline, oil, acetone, alcohol, mold release agent, potting glue, TBP, cleaning agent, herbicide, rust inhibitor, scale remover and other substances that may cause connector function failure. At the same time, the construction personnel's gloves must not contain the above substances. The contaminated connector cannot be inserted and used.

- ✧ 连接器在安装、使用过程中，不可将连接器拖在水中、草丛中、地上等，防止连接器使用前内部受到污染，降低产品性能。

During installation and using, the connector must not be dragged in the water, grass, ground, etc., to prevent the connector from internal pollution and reduction of product performance before using.

- ✧ 在负载的情况下，禁止断开光伏连接器。可通过关闭直流/交流转换器或切断交流电信号，使其处于无载状态，则可在允许范围带电插拔。

PV connectors must not be disconnected while under load. They can be placed in a not load state by switching off the DC/AC converter or breaking the AC circuit, then insertion and removal is permitted within the allowable range.

- ✧ 长期不对插连接或断开连接时必须盖上防尘塞（4JB03M31005&4JB03M31007）以防止灰尘和湿气。同时产品在沿海、沙漠等粉尘、粉尘、灰尘多的地域使用，产品出厂前必须带防尘帽。

When disconnected for a long time, the dust plug（4JB03M31005&4JB03M31007） must be covered to prevent dust and moisture. On the other hand, if the product is going to be used in dust areas such as coastal and desert, it should come from factory directly with the dust plugs.

- ✧ 插合状态后的连接器符合 IP68 水密性的标准。但是它们不适合长期在水下使用。请勿将连接器直接放置在屋顶表面。连接器在未耦合情况下，产品将不能满足任何 IP 防护等级，也不能正常使用。

The connector in the plugged state meets the IP68 watertight standard. They are not suitable for long-term underwater use. Also, do not place the connector directly on the roof surface. If the connector are not coupled, the product will not meet any IP protection class and will not be used normally.

- ✧ 连接器电缆不能承受持续的机械拉伸。电缆应该由扎带固定。

The cable cannot withstand continuous mechanical stretching. The cable should be fixed with cable ties.

- ✧ 出于安全原因，强烈建议不要使用 PVC 导线或无镀锡电缆。

For safety reason, the use of PVC cables and untinned cables are prohibited.

- ✧ 此连接器只适用于 B 类和 C 类铜导线(参见 NFPA NEC 70 第 9 章，表 10)。

This connector is only suitable for copper wires of Class B and Class C (Refer to Table 10, Chapter 9, NFPA NEC 70).

✧ 电气安装说明应包含根据美国国家电气规范 ANSI/NFPA 70 所使用的布线方法的详细描述。

The electrical installation instructions shall include a detailed description of the wiring method to be used in accordance with the National Electrical Code, ANSI/NFPA 70.

备注：连接器安装过程中操作困难或无法操作，请参照如下联络方式询问、查询：

Notes: If you have any questions during installation, please feel free to contact us as follows:

江西晶科光伏材料有限公司

Jiangxi Jinko PV Material Co., Ltd.

地址：江西省上饶市经济技术开发区兴业大道 10 号

Add: No.10, Xingye Road, Economic Development Zone, Shangrao, Jiangxi Province, P.R. China

电话 Tel.: (+86) 0793-8876086

邮编 Postcode: 334100

网址 Website: www.jinkopvm.com

销售联系方式

Sales Contact Information

电话 Tel.: (+86) 0793-8876028

邮箱 E-mail: sale.pvm@jinkosolar.com

技术联系方式

Technician Contact Information

电话 Tel.: (+86) 0793-8876018

邮箱 E-mail: rd.pvm@jinkosolar.com

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6. 变更清单 Change List

版本号 Ver.	修订内容 Rev. content	修订日期 Rev. date
A0	初版发行 First edition	2020.06.04
A1	调整压接高度和压接刀具图纸尺寸公差范围，并增加电缆布线说明 Adjust the tolerance range of crimp height and crimping tool drawing dimension, and add cable routing instructions	2024.11.20
A2	1、修正英文描述和剥线工具编号，增加四项线缆截面分析内容和公母连接器未对插到位图示，增加安装提示说明； 2、修改部分英文描述； 1、Modified the English description and the number of the cable stripper, added four items of cable cross section analysis and the figure indicating that the male and female connectors are not inserted properly, and added installation tips. 2、Revise some English descriptions.	2025.05.27