

连接器安装说明书 PV-JK03M2/xy Series

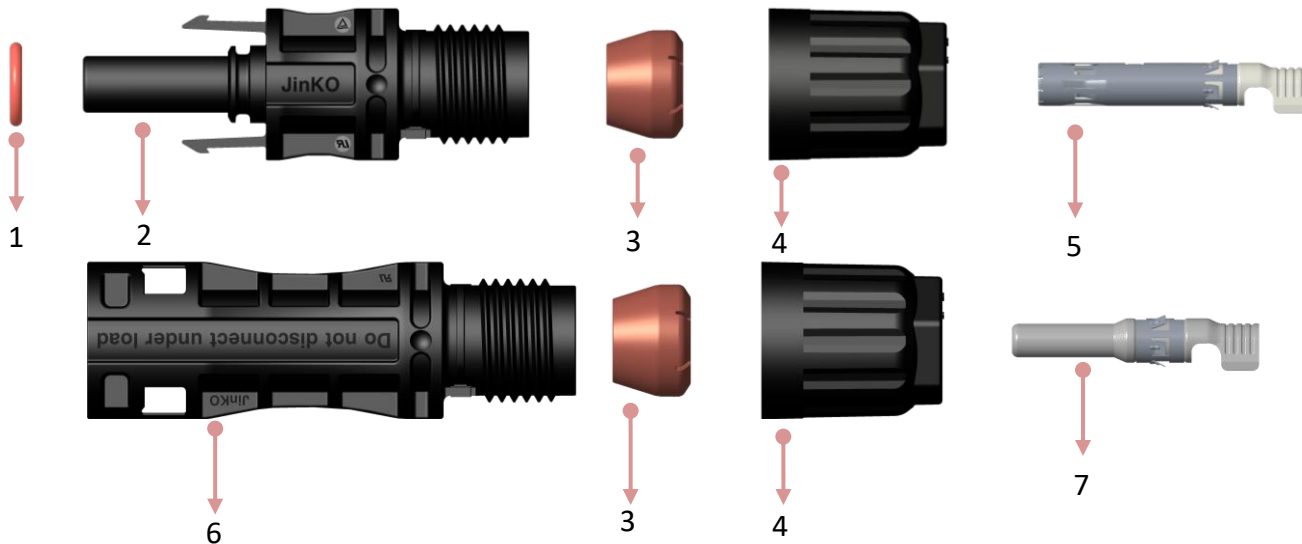
Installation Manual for PV-JK03M2/xy Series Cable Connector



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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)





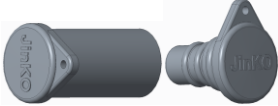

4 塑胶螺帽 (Gland Nut)

5 插套 (Female Terminal)

6 母头 (Female Housing)

7 插针 (Male 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-02	压接工具 Crimping Tool	
3	JKT-06	组装工具 Open-end-Wrench	
4	JKT-04	通用工具 Universal Tool	
5	4JB03M31005 4JB03M31007	防尘塞 Dust Plug	
6	JKT-08	扭矩扳手 Torque Wrench	

3.技术参数 Technical Data

产品型号 Type Name or Model No.	PV-JK03M2/xy Series
额定电压 Rated Voltage (V DC)	1000 V DC (UL) 1500 V DC (IEC/UL) 2000 V DC (IEC/UL)
额定绝缘测试电压 Rated Insulation Test Voltage	6000 V (1000 V DC) 8000 V (1500 V DC) 13500 V (2000 V DC)
额定电流 Rated Current (A DC)	30 A (2.5mm ² /14AWG) 45 A (4.0mm ² /12AWG) 50 A (6.0mm ² /10AWG) 60 A (10.0mm ² /8AWG)
应用等级 Application Class	Class A
防护等级 / 污染等级 Protection Class / Pollution Degree	Class II / 2
工作温度范围 Operating Temperature	- 40°C to +85°C
温度上限 Upper Limit Temperature	115°C (IEC)
过电压等级 Over Voltage Category	CAT III
防火等级 Flammability Class	UL94 V-0

防护等级, 插合状态 / 未插合状态 Degree of 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 Rewireable	No
电缆线径 Cable Diameter	4,70mm to 8,40mm (IEC) 6,20mm to 8,50mm (UL)
接触电阻 Contact Resistance	≤0.2 m Ω
金属材料 Contact material	铜, 镀锡 Copper, tin plated
绝缘材料 Insulation Material	PA
是否封闭 Existence of an enclosure	封闭式连接器 (不可徒手打开) Enclosed connector
认证标准 Certification Standard	IEC62852 UL6703

Note: IEC PV-JK03M2-F/xy ; PV-JK03M2-M/xy (x=1 or 2 or 3, y=A or B or C or D or E);
UL PV-JK03M2-F/xyab ; PV-JK03M2-M/xyab (x=1 or 2 or 3, 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

◇ 压接工具-JKT-02: 适用于 2.5mm²(14AWG)、4.0mm²(12AWG)、6mm²(10AWG)线缆。

The Crimping Tool-JKT-02 is applicable to 2.5mm²(14AWG) or 4.0mm²(12AWG) or 6.0mm²(10AWG) cable.

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: The connection and crimping between the copper wire and metal terminals are all made by the crimping tool.



Crimping Tool- JKT-02

◇ 组装工具-JKT-06：一套=2 把；

Assembly Tool -JKT-06: There are two assembly tools per tool set.

作用：用于组装拆装连接器。

Function: Used for assembling and disassembling connectors.

作用：锁紧螺母

Function: Lock nut

作用：固定连接头

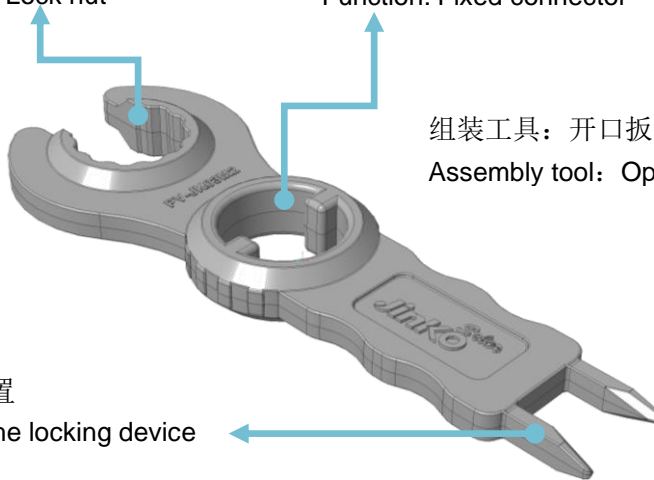
Function: Fixed connector

组装工具：开口扳手（1 套=2 把）

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

作用：打开紧锁装置

Function: To open the locking device



Assembly Tool -JKT-06

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-JK03M2/1y	PV-JK03M2/xA
4	12	PV-JK03M2/2y	PV-JK03M2/xB
6	10	PV-JK03M2/2y	PV-JK03M2/xC
10	8	PV-JK03M2/3y	PV-JK03M2/xD

- ✧ 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=7-9mm 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。

Take the cable one hand and take the stripping tool-JKT-03 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（如 JKT-02）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，并对应正确的定位器孔位压接（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), 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, see below pictures from Fig.3 to Fig.7. 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 Size	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 N (Min.400 N)

- ✧ 打开压接工具并按住夹子，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。

When the customer uses the automatic crimping machine, we suggest that the contact crimping specification should meet the requirements of table 3.

- ◇ 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）。

It is very important to do the section analysis, which contains the items as follows (Fig.9).

- ◇ 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)

	No.	截面规格 Cross section specification	技术要求 Technical requirement	
			12AWG/4mm ²	10AWG/6mm ²
 Figure 9	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	可测量压接宽度 Measurable Crimp Width CBm	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	高度/宽度比率 Crimp Height/Crimp Width CH/CB	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%

注意：上述剖面分析仅针对 12AWG/4mm²& 10AWG/6mm² 线缆。

Note: The above cross section analysis are only for 12AWG/4mm²& 10AWG/6mm² cable.

◇ 压接刀具图纸参考（如图 10&11）

Crimping Tool Drawing for reference (Fig. 10&11)

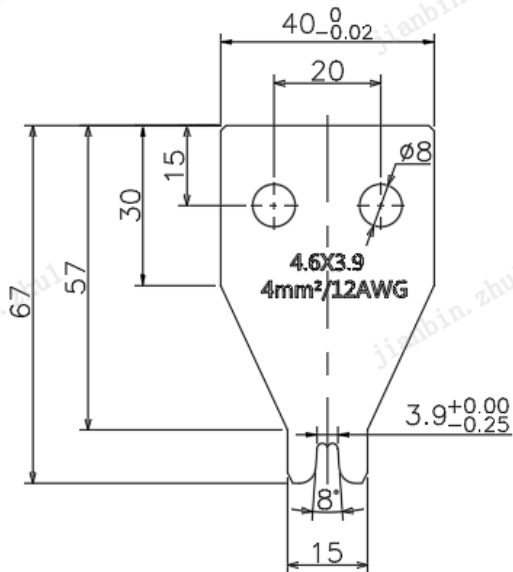


Figure 10 上刀模（Up Blade）

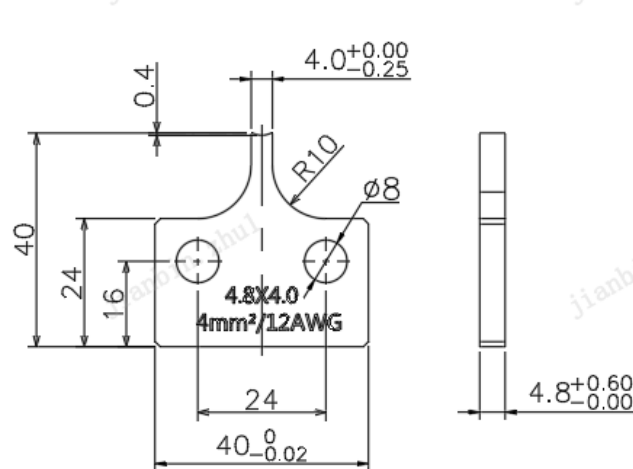


Figure 11 下刀模（Down Blade）

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.

◇ 压接刀具图纸参考（如图 12&13）

Crimping Tool Drawing for reference (Fig 12&13)

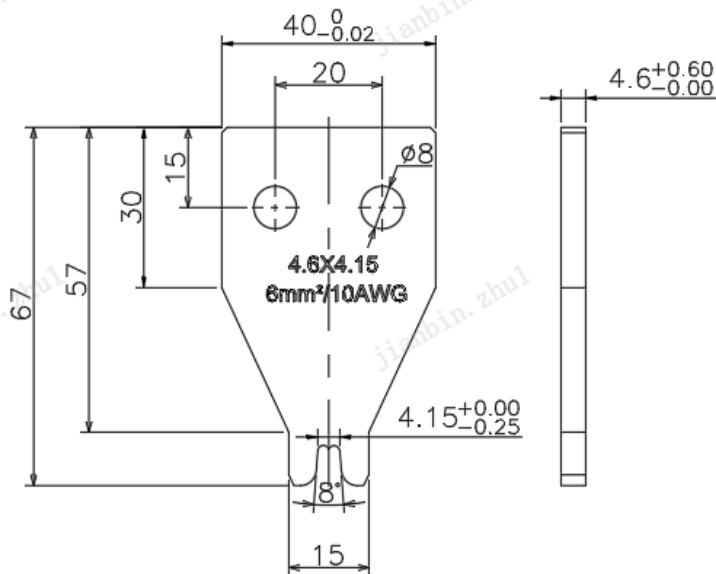


Figure 12 上刀模 (Up Blade)

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.

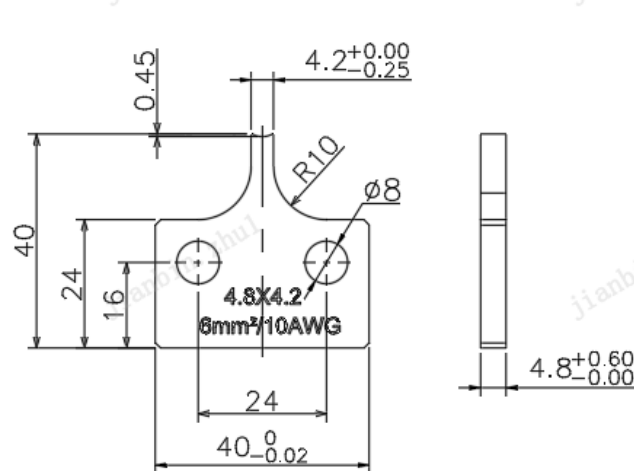


Figure 13 下刀模 (Down Blade)

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 14）。轻轻拉动导线，检查金属件是否啮合牢固（如图 15）。

Insert the crimped male or female terminal into corresponding male or female cable connector until they engage (Fig.14). Pull lightly on the lead to check that the metal part has engaged (Fig. 15).



Figure 14



Figure 15

- ◇ 锁螺帽：使用一个扭矩扳手-17mm 的开口处固定螺帽，另一个开口扳手固定公/母端电缆连接器（如图 16）。
To fix the gland nut by one 17mm torque wrench, and to fix the male cable connector or female cable connector by another wrench (Fig. 16).

- 使用工具或扭矩扳手顺时针旋转拧紧螺帽，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 17）。

Using a tool or torque wrench 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. 17).



Figure 16

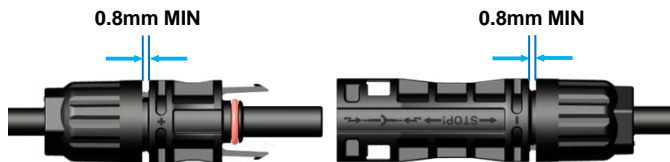


Figure 17

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 4

- 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）。

Insert the female cable connector into the male cable connector when tighten the gland nut until they engage. And pull lightly to check correct engagement (Fig. 18 &19).



Figure 18



Figure 19

5.4 连接器拆卸 Disconnecting Cable Connector

- ✧ 使用通用工具带有插销的一端插入连接器的卡扣位置（如图 20）。
Insert the forks into the buckle of the cable connector by the universal tool (Fig. 20).
- ✧ 用左右手分别拉拔连接器，即可分开公母电缆连接器（如图 21&22）。
Pull the cable connector by hand respectively. The cable connector can now be separated (Fig. 21&22).



Figure 20



Figure 21



Figure 22

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 23）。
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. 23).

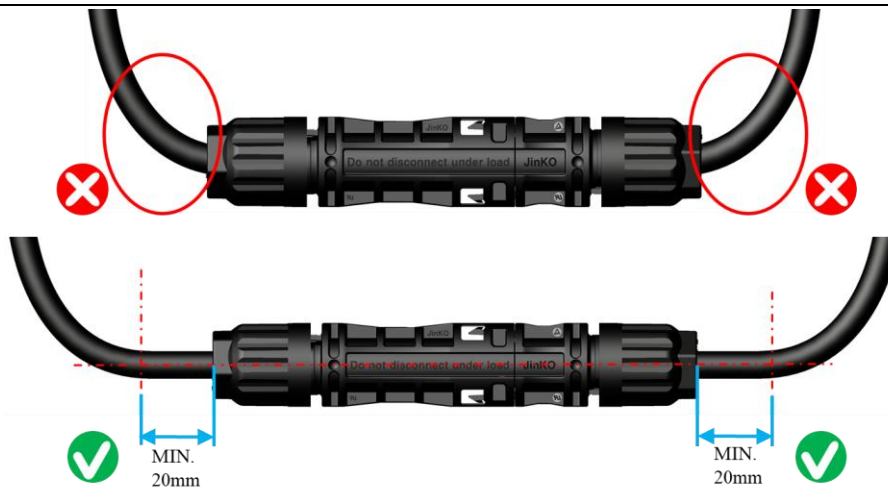


Figure 23

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.

✧ 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，应避免接触机械油、油脂、溶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。被污染的连接器的不能插合使用。

During assembly, the connector must not be touched with any machine oil, grease, solvent, with which connector would be out of action. It should be noted that the gloves of the construction personnel could not contain the above substances. The contaminated connector cannot be mated and used.

- ✧ 该说明书中的所有操作不允许在带电或者负载下进行。

Operations in the manual are not allowed to be carried out when under power or load.

- ✧ 在负载的情况下，连接器不允许断开。在带电压的情况下允许插拔。

Connectors must not be disconnected under load. Plugging is allowed in the presence of voltage.

- ✧ 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。

When disconnected for a long time, the dust plug（4JB03M31005&4JB03M31007） must be covered to prevent dust and moisture.

- ✧ 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。

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.

- ✧ 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 connector cannot withstand continuous external forces perpendicular to the product. 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 either PVC cables or 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).

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:

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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	修改压缩比 Modify compression ratio	2021.07.26
A2	增加扭矩扳手工具 Add torque wrench tools	2021.08.17
A3	更新联系方式 Update contact information	2022.04.28
A4	修改螺帽间隙 Modify nut clearance	2023.07.05
A5	修改螺帽间隙 Modify nut clearance	2023.09.15
A6	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