

# 安装说明书

## Installation Instructions

### 3Qxy 系列接线盒（带裙边） Solar Junction Box 3Qxy Skirt

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## 1.警告 Warning

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1.1 如果所有的零件和工具都不是 QC 订购的，或者你忽略了 QC 的安装说明，我们在你安装产品时无法保证产品的安全性和兼容性。

If all the parts and tools were not the ones that QC ordered, or you ignored QC' s installation instruction, we are not able to ensure the safety and compatibility of the products when you install them.

1.2 拆包后，操作人员应检查各部件是否齐全，各部件连接牢固。应在上述情况下进行安装。

After removing the package, the operator should check whether the components are complete, and the parts are firmly connected. The installation should be undertaken in the above situation.

1.3 在正式安装接线盒之前，请确保电池组件没有处于工作状态。如果必须在阳光下安装，请使用可靠的遮阳板覆盖电池，以避免产生的电流对电池造成电击。人体不能同时接触连接系统的正极和负极，否则会触电。

Before installing the junction box, please ensure that the panels are not in working condition. In case that you have to install them under the sunshine, please use reliable sunshield to cover the cells to avoid electric shock by the generated current. Human body should not touch the positive and negative of the connecting system at the same time, or you will be electric shocked.

1.4 在任何情况下，都不能将一套连接器系统的公插头和母插头插合在一起。否则可能导致接线盒和电池板严重损坏，太阳能发电系统无法正常工作。

In no circumstances, you can connect the male and female plug of the same connecting system. Or the junction box and panels may be badly destroyed, and the solar power generation system is not able to work properly.

1.5 接线端子的正负级、电缆的正负级是明确规定的，请用户不要自行调换极性或反接，这样可能会造成严重的后果。The positive and negative poles of the terminal and cable are fixed, please do not exchange it or reverse the polarity, or this may cause serious consequences.

1.6 如果要进行系统维护，请务必使该系统处于停止工作状态后再进行。

Please ensure to work under the situation of unload the power.

1.7 产品如果处于长期户外且未安装状态，请做好连接器防护工作，将连接器端口插上“防尘帽”，防止连接器受到水、尘等的污染，影响产品使用性能。

If the product is outdoors for a long time and has not been installed, protect the connector by inserting a dust-proof cap into the connector port to prevent the connector from being polluted by water and dust, which may affect the product performance.

## 2.技术参数 Product Specifications

技术参数 Product Specifications		
认证 Certificate	UL	TUV
名称 Product Name	3Qxy(x=K1 or 1 or K2 or 2 or K3 or 3 or K4 or 4 or K5 or 5; y=1 or 2 or 3)	3Qxy
型号 Models	3Qxy-abcd	3Qxy
额定电压 Rated Voltage	UL 1000V/1500V	TUV 1000V / 1500V
额定电流 Rated Current	18A/ 20A / 22A / 25A / 28.5A / 30A / 32A/ 35A	18A/ 20A / 22A / 25A / 28.5A / 30A / 32A/ 35A
二极管型号 Diode	18A for QCM1845 20A for QCM2545 22A for QCM3045 25A for QCM4045 28.5A for QCM4045B 30A for QCM5045 30A for QCM5045B 32A for QCM5045C 35A for QCM6045	18A for QCM1845 20A for QCM2545 22A for QCM3045 25A for QCM4045 28.5A for QCM4045B 30A for QCM5045 30A for QCM5045B 32A for QCM5045C 35A for QCM6045
尺寸 Dimension	63.5mm*24.0mm*15.25mm 63.5mm*28.5mm*15.25mm 63.5mm*29.4mm*15.25mm	63.5mm*24.0mm*15.25mm 63.5mm*28.5mm*15.25mm 63.5mm*29.4mm*15.25mm
电缆规格 Suitable cable	12 AWG, PV Wire, 90OC wet or dry, 2000 V, OD: 6.4 mm, 48 or 56 Strands	4mm <sup>2</sup> / 6mm <sup>2</sup> , PV Wire, IEC 1500V, OD: 5.70±0,20mm for 4mm <sup>2</sup> ; 6.10±0,20mm for 4mm <sup>2</sup> ; 6.40±0,20mm for 4mm <sup>2</sup> ; 6.30±0,20mm for 6mm <sup>2</sup> ;
阻燃等级 Flammability Class	5VA	5VB
防火等级 Flammability Class	TUV	UL94 V-0
温度范围 Temperature Range	-40°C ~+85°C	-40°C ~+85°C
提醒 Caution	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.	N/A

## UL 命名 UL Nomenclature

NOMENCLATURE: For Models 3Qxy series is designated as follows:

3Qxy	-	a	b	c	d
I	-	II	III	IV	V

I - 3Qxy is a main model name.

3Qxy 是一个主型号名称。

x represents rated maximum system voltage.

X 表示额定最大系统电压

x=1, 1000 V system.

x=2, 1500 V system.

y represents rated maximum current.

y 表示额定最大电流

y=1, 30 A DC

y=2, 25 A DC

y=3, 20 A DC

y=4, 35 A DC

y=5, 22 A DC

II - a represents Enclosure Housing construction.

a 表示箱体结构类型

a=4, construction 4, Resistance Welding with Housing Width 24.0 mm.

a=5, construction 5, Resistance Welding with Housing Width 28.5 mm.

a=6, construction 6, Resistance Welding with Housing Width 29.4 mm.

III - b represents Diode Module type.

b 表示二极管模块类型

b=4, QC SOLAR (SUZHOU) CORPORATION, type QCM2545, only can be with a=9 and y=3.

b=5, QC SOLAR (SUZHOU) CORPORATION, type QCM3045, only can be with a=9 and y=5.

b=6, QC SOLAR (SUZHOU) CORPORATION, type QCM4045, only can be with a=9 and y=2.

b=7, QC SOLAR (SUZHOU) CORPORATION, type QCM5045, only can be with a=9 and y=1.

b=8, QC SOLAR (SUZHOU) CORPORATION, type QCM5045B, only can be with a=9 and y=1.

b=12, QC SOLAR (SUZHOU) CORPORATION, type QCM6045, only can be with a=9 and y=4.

IV - c represents Connector type.

c 表示连接器类型

c=1, QC SOLAR (SUZHOU) CORPORATION (E340004), type Series QC4.10, followed by -a5, followed by b1, followed by c12 or c13, followed by d1, d3 or d4, and followed by e2, e3 or e4.

c=2, QC SOLAR (SUZHOU) CORPORATION (E340004), type Series QC4.10, followed by -a5, followed by c12 or c13, followed by d1, d3 or d4, and followed by e2, e3 or e4.

c=3, STAUBLI ELECTRICAL CONNECTORS AG(E343181), type PV-KST4/6II-UR (male) and PV-KBT4/6II-UR (female).

c=4, STAUBLI ELECTRICAL CONNECTORS AG(E343181), type PV-KST4-EVO2/6II-UR (male) and PV-KBT4-EVO2/6II-UR (female).

c=5, STAUBLI ELECTRICAL CONNECTORS AG(E343181), type PV-KST4-EVO2/6I-UR (male) and PV-KBT4-EVO2/6I-UR (female).

c=6, AMPHENOL TECHNOLOGY(SHENZHEN)CO LTD(E469330), female type UTXCFA4AI, UTXCFA4AC or UTXCFA4AM and male type UTXCMA4AI, UTXCMA4AC or UTXCMA4AM.

c=8, TYCO ELECTRONICS CORP (E353372), type PV4-S1M4.0 (Male) and PV4-S1F4.0 (Female).

c=9, STAUBLI ELECTRICAL CONNECTORS AG (E343181), type PV-KST4-EVO2A/6I (male) and PV-KBT4-EVO2A/6I (female), rated 1500 Vdc, 39 Adc max with 12 AWG PV cable. Outer wire insulation diameter 5.69~6.47 mm OD with 19~65 strands.

c=10, STAUBLI ELECTRICAL CONNECTORS AG (E343181), type PV-KST4-EVO2A/6X (male), PV-KBT4-EVO2A/6X (female), rated 1500 Vdc, 39 Adc max with 12 AWG PV cable. Outer wire insulation diameter 5.89~7.3 mm OD with 19~65 strands.

c=11, QC SOLAR (SUZHOU) CORP (E340004), type QC4.10 series, followed by -a5, followed by c12 or c13, followed by d1 or d3, followed by e2 or e4 and followed by f1, rated 1500 Vdc, 35 Adc max with 12 AWG PV cable. Outer wire insulation diameter 5.9~7.2 mm OD with 41~84 strands.

c=12, QC SOLAR (SUZHOU) CORP (E340004), type QC4.10 series, followed by -a5, followed by c12 or c13, followed by d1 or d3, followed by e2 or e4, followed by f1 and followed by g1, rated 1500 Vdc, 35 Adc max with 12 AWG PV cable. Outer wire insulation diameter 5.9~7.2 mm OD with 41~84 strands.

V - d represents cable type.

d 表示线缆类型

d=1, Listed (ZKLA), QC SOLAR (SUZHOU) CORP (E335336), PV wire, 12 AWG stranded conductor, rated sunlight resistant, 90° C wet or dry, 2000 V, nominal outer diameter is 6.40 mm with 56 Strands.

d=2, Listed (ZKLA), SUZHOU BAOHING ELECTRIC WIRE & CABLE CO LTD (E329163), PV wire, 12 AWG stranded conductor, rated sunlight resistant, 90° C wet or dry, 2000 V, nominal outer diameter is 6.40 mm with 48 Strands.

d=3, Listed (ZKLA), WUXI XINHONGYE WIRE & CABLE CO LTD (E332548), PV wire, 12 AWG stranded conductor, rated sunlight resistant, 90° C wet or dry, 2000 V, nominal outer diameter is 6.40 mm with 56 Strands.

## TUV 命名 TUV Nomenclature

Type Designation: 3Qxy

Remark: 3Qxy ( x= K1 or 1 or K2 or 2 or K3 or 3 or K4 or 4 or K5 or 5 or K6 or 6 or K7 or 7 or K8 or 8 ; y=5 ) series of Junction Box type. The prefix letter “x” ; “y” denotes different technical meanings.

1. x=K1 or 1 or K2 or 2 or K3 or 3 or K4 or 4 or K5 or 5 ;

x=K1 Rated voltage and rated current 1000V 20A;

x=1 Rated voltage and rated current 1500V 20A;

x=K2 Rated voltage and rated current 1000V 22A;

x=2 Rated voltage and rated current 1500V 22A;

x=K3 Rated voltage and rated current 1000V 25A;

x=3 Rated voltage and rated current 1500V 25A;

x=K4 Rated voltage and rated current 1000V 30A;

x=4 Rated voltage and rated current 1500V 30A

x=K5 Rated voltage and rated current 1000V 35A;

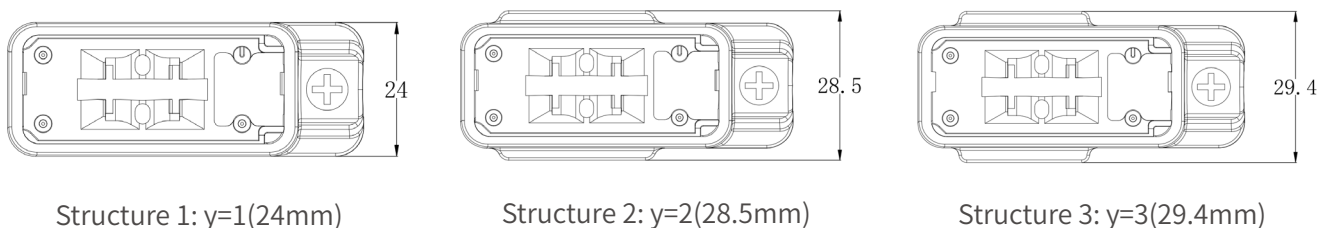
x=5 Rated voltage and rated current 1500V 35A

x=6 Rated voltage and rated current 1500V 32A;

x=7 Rated voltage and rated current 1500V 28.5A

x=8 Rated voltage and rated current 1500V 18A

2. y=1 or 2 or 3 represents different junction box structure which apply different kinds of bypass diodes. apply to QCM1845; QCM2545; QCM3045; QCM4045; QCM4045B; QCM5045; QCM5045B; QCM5045C; QCM6045



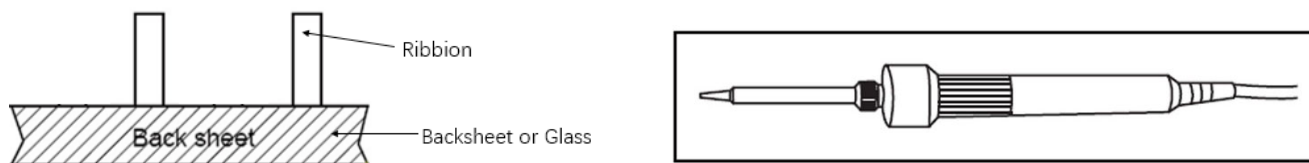
### 3. 汇流带规格尺寸及所需工具 Ribbon size and required tools

Required tools

所需工具

Electric iron, for the solder between ribbons and terminal.

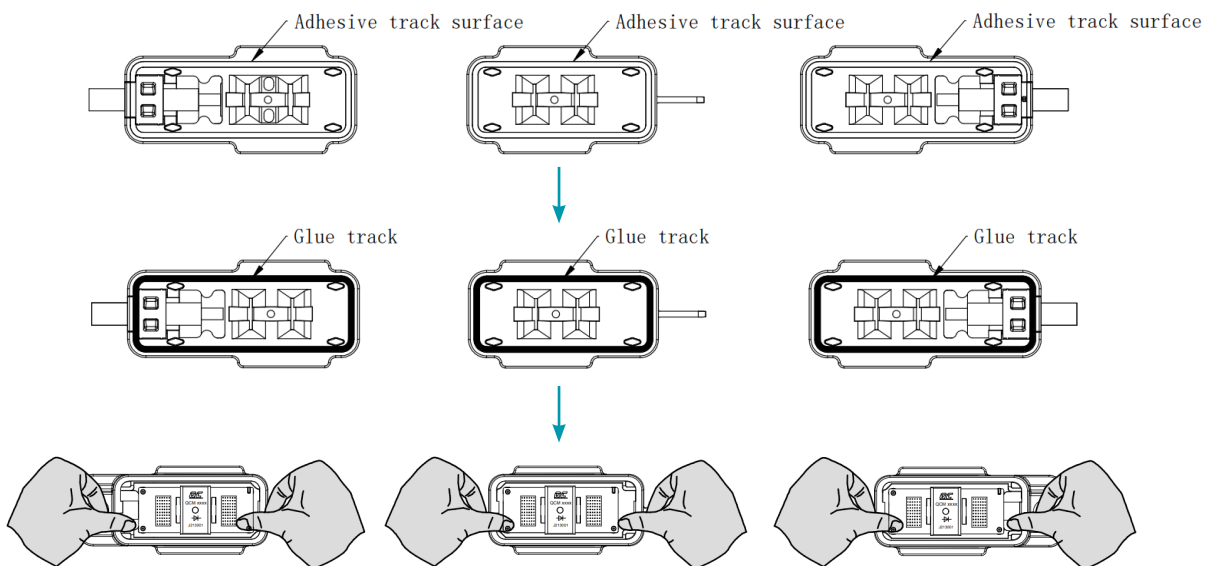
电烙铁 / 自动焊接工站, 用于汇流带与端子的焊接



### 4. 密封胶安装 Installation with seal tool

Put the Sealing tool to the backside of Box equably, like the sealing contrail marked in the picture. The minimum silicone gel thickness is 5mm. The outer silicone width is at least 2mm.

将密封胶均匀地涂抹在盒体背面, 如图所示的密封轨迹。硅胶最小厚度为 5mm。外层硅胶宽度至少为 2mm。



## 5. 焊接汇流带 Ribbon Welding

将汇流带剪切到所需长度，插入接线盒的导引孔，然后弯曲，使用电烙铁焊接牢固。

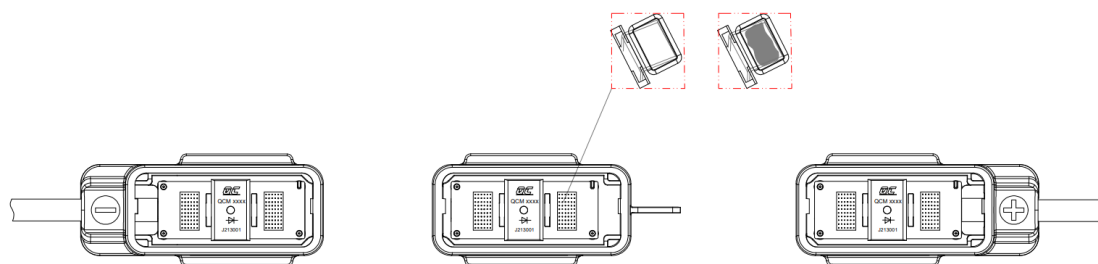
Cut ribbon to the desired length, insert it into the guide hole of junction box, then bend it and welded with electric iron. The tin shall be completed melted when welding.

建议焊接温度 :280~350°C，焊接时间 :1~4S，客户可根据产品实际应用情况进行调整，二极管是电子元器件，焊接过程中，严禁出现过压及超高温造成二极管折弯等异常。

Recommended welding temperature :280~350°C , welding time :1~4S, which can be adjusted according to the actual application of the product. The diode is an electronic component. During welding, do not bend the diode caused by excessive pressure and ultra-high temperature .

注意：接线盒出厂时，汇流带焊接位置仅是预涂锡。客户应根据产品实际应用要求进行锡量的增补。

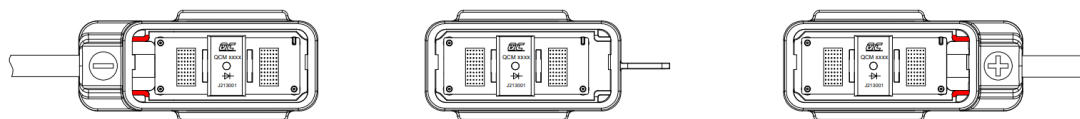
Notice: Ribbon's soldering position just pre-tin before leaving factory. Customers could add the amount of tin according to products practical required.



## 6. 接线盒的灌胶 Potting Instruction

接线盒灌胶面需与红色面齐平，如图一所示，灌胶量推荐值为 6.3mL 左右。

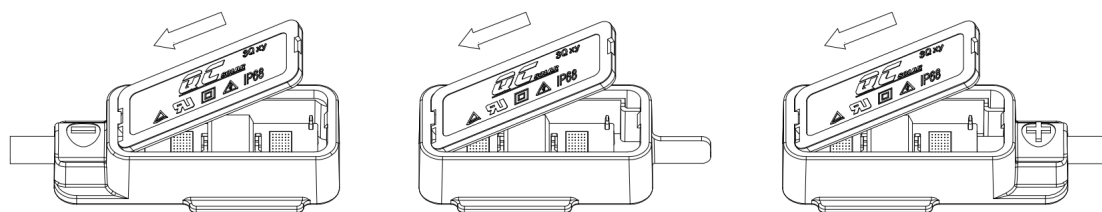
Junction box potting sealant should be flush with red face, as shown in Picture 1. Recommended potting amount around 6.3 ml.



## 7. 上盖安装 Cover Installation

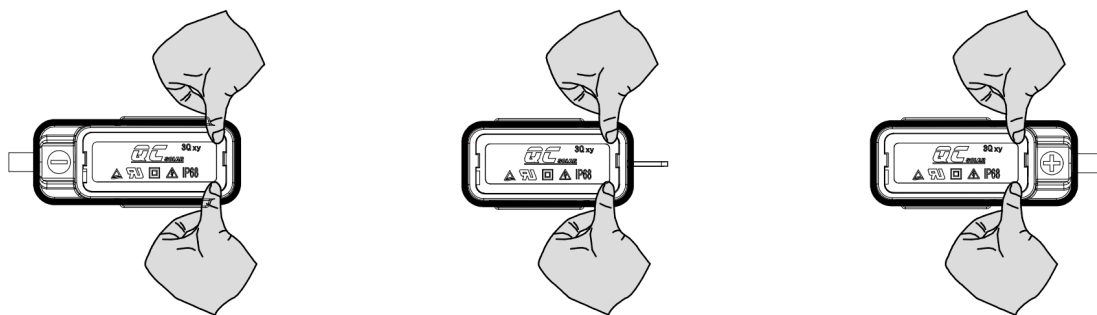
1) 将盖子倾斜插入外壳，然后向箭头所示方向用力将盖子推入外壳。

Insert the cover to the housing at an angle, then push the cover to the housing with the direction force.





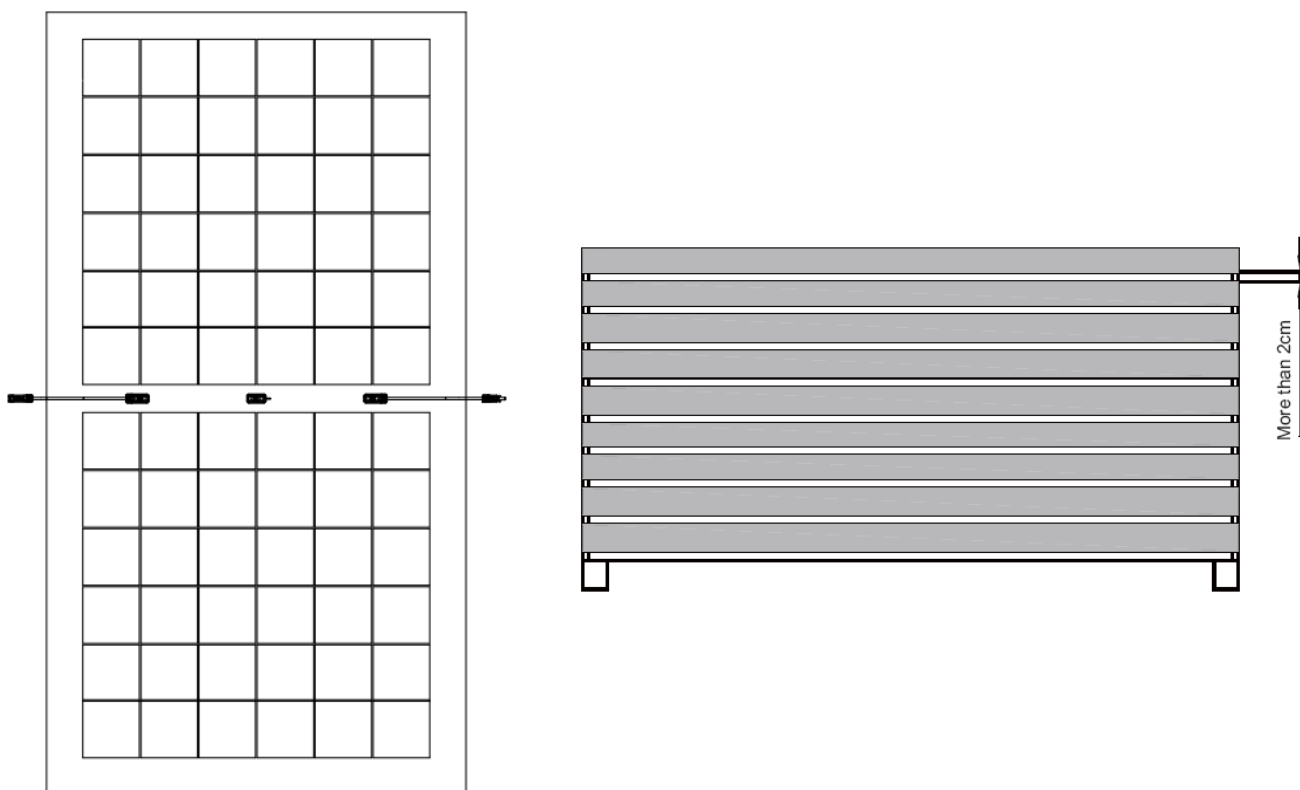
2) 按压上盖，使上盖完全卡入底座。  
Press the cover to the bottom completely.



## 8. 注意事项 NOTE

太阳能组件粘接完接线盒后，组件与组件间需留有大于 2cm 的间隙；组件需在通风处静置 12 小时以上或至硅胶完全凝固后方可装箱，因为组件边框粘胶和接线盒粘胶在凝固时可能会释放一些腐蚀气体，该气体可能会对塑料或人体产生不良影响，严重时可能会导致接线盒或连接器产生开裂现象（如有疑问请咨询快可光伏或硅胶厂家）。

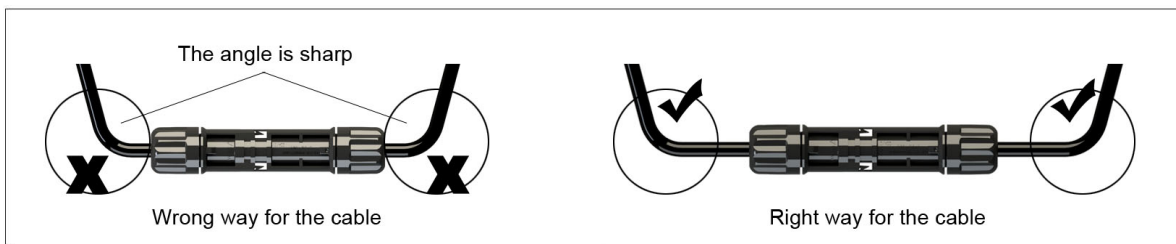
After installation of the J-Box to PV Module with silicon, we should keep more than 2 cm to each module; We should wait 12 hours to the solidification of the silicon, and after this, module could be packaged, because silicon of the J-box and Module installation may release some harmful corrosive air and that could be harmful to plastics and human beings. When the band begins to play, it may lead broken of the Nut of the QC connector and J-box.



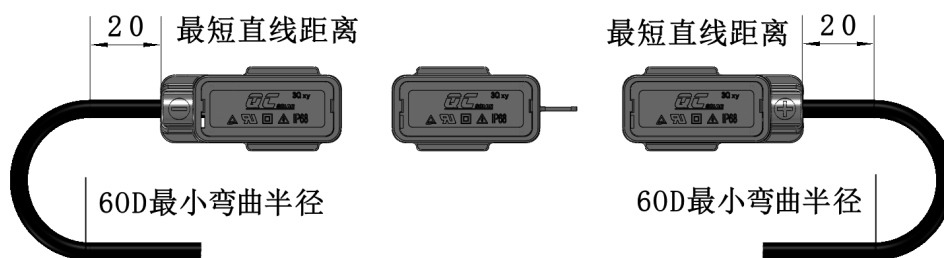
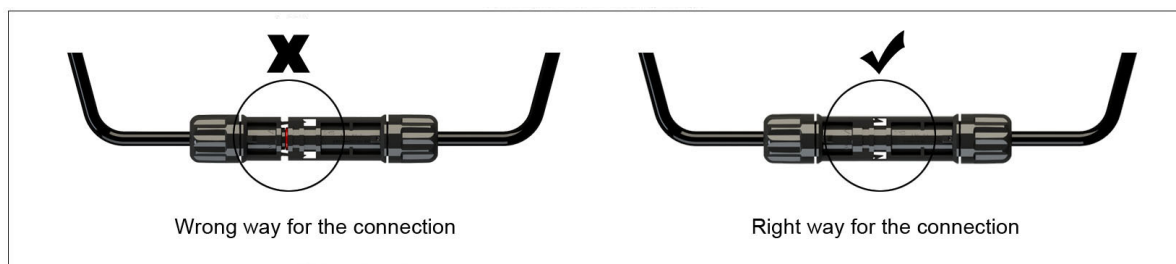
## 9. 电缆连接 Cable's connection

请参阅制造商提供的关于最小弯曲半径的详细说明

Please refer to the detailed instruction ones of the min bend radius given by manufacturer



接合状态 The state after connection



最短直线距离为 20mm，最小弯曲半径为 6\*OD  
The minimum linear distance is 20mm and the minimum bending radius is 6\*OD

## 10. 联系方式 Contact us

If the product is not match with what described in the manual, please regard what you received as the right one. This manual can be dispensed according to customers' requirements, the company's Web site can provide conditional download service, if you need more brochures, please contact us. All technical data is only as a reference when using the product, it can not be used for other business activities.

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QC Solar is willing to make the contribution for global environment protection and energy by offering the products of solar connecting system

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