

安装说明书

Installation Instructions

AC02- 连接器

AC02- connector



目录 Contents

1	警告 Warning	01
2	技术参数 Product Specifications	02
3	产品信息 Product Information	03
	3.1 产品图片 Picture	
	3.2 产品图纸 Drawing	
4	工厂、现场组装工艺流程 Factory and field wiring assembly process	03
	4.1 工厂工具要求 Factory wiring Requirements for tools	
	4.2 现场工具要求 Field wiring Requirements for tools	
	4.3 母插装配说明 Instruction of Female receptacle assembly	
	4.4 公插装配说明 Instruction of male receptacle assembly	
5	连接器对插及解锁 Connecting and disconnecting	06
	5.1 连接器对插 Connecting	
	5.2 连接器解锁 Disconnecting	
	5.3 连接器拆卸 Removal of connector	
6	附件 Annex	08
	6.1 耐化学品附表 Chemical resistance form	
	6.2 连接器责任免除条款 The Connector liability exemption	

1.警告 Warning

1.1 在自行安装时，如果所有的零件和工具不是 QC 所规定的，或者忽略了准备和安装操作，我们将不保证产品安全性和技术参数一致性。

During yourself installation, if the used part and tool are not ruled by QC or if you ignore the preparation and operation, we won't insure the safety and compatible of the product technology yourself installation.

1.2 为防止电击，在拆装时 PV 连接器必须断开电源。

For protecting against electric shock, please cut off the power when installing PV connector.

1.3 终端产品必须提供防电击功能。

The final products must be supplied with the function electric shock proof.

1.4 不可在负载情况下拔出：在有负载的情况下，不能拔出插头连接器！关掉 DC/AC 直流 - 交流变频器使连接器处于无负载的状态。

Do Not Disconnect Under Load: PV plug connections must not be disconnected while under load. They can be placed in a no load state by switching off the DC/AC converter or breaking the AC circuit.

1.5 建议不要使用无镀锡电缆，因为电缆铜线被氧化后，压接部位的接触电阻可能会超过允许值。

H07RN cables without tinned are not recommended. Because the contact resistance of crimping place will probably exceed the permitted value since the copper wires are oxidized.

1.6 插入部件防水等级 IP68。它们不能长久置于水下使用。

Waterproof degree for inserted parts is IP68.

1.7 产品不得在含有烃、酚、酮、氨合物等与 PC 料有腐蚀的环境中使用。（如有疑问，可咨询沙比克对 PC 料使用环境的说明。）

Products can not be used in the environment includes hydrocarbon, phenol, ketone, ammoniate, etc that has corrosion of PC. (More information, please consult the PC usage environment illustration from SABIC.)

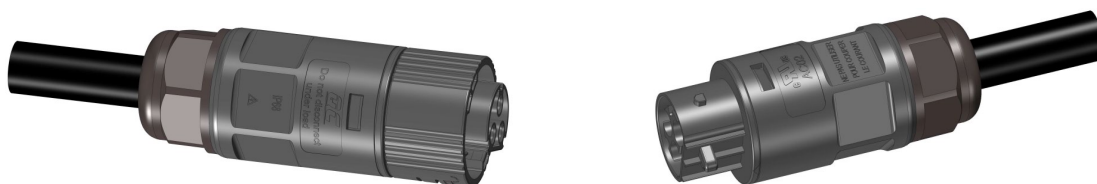
2.技术参数 Product Specifications

技术参数 Product Specifications	
电极芯数 Cable core number	(L+N+PE)
额定电压 Rated voltage	300V AC
额定电流 Rated current	27A($3 \times 2.5\text{mm}^2$); 31A($3 \times 4\text{mm}^2$)
额定冲击电压 Rated impulse voltage	4000V
外壳防火等级 Shell Flame Class	UL94-V0
污染等级 Pollution degree	II
防护等级 Degree of protection(IP Code)	IP68
接触电阻 Contact resistance	$\leq 2\text{m}\Omega$

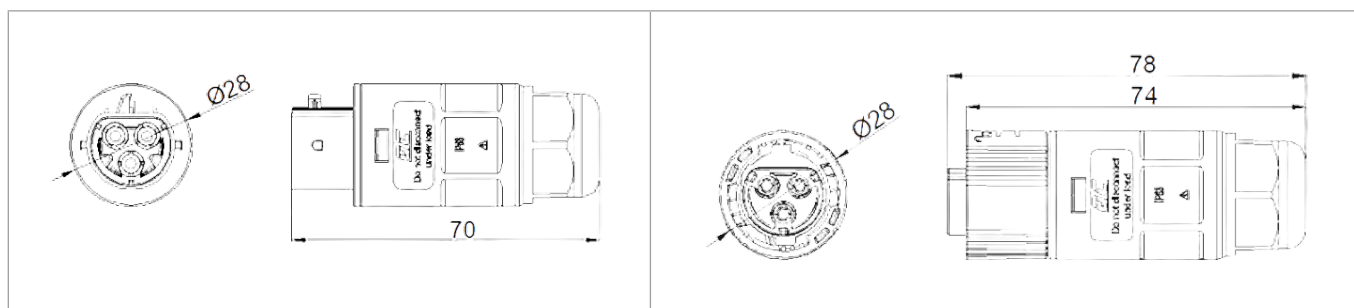
RATINGS						
Model No.	Type (M/F)	Maximum Voltage (V ac)	Maximum Current (A ac)	Conductor (AWG, Cu, Stranding)	# of Strands / Dia. of conductor, mm	Outside Wire Insulation Diameter, mm
AC02-a2	M/F	300	31	12 AWG, Cu, Str	65 / 0.254	11.1 ± 0.3
AC02-a1	M/F	300	27	14 AWG, Cu, Str	41 / 0.254	10.0 ± 0.3

3. 产品信息 Product Information

3.1 产品图片 Picture

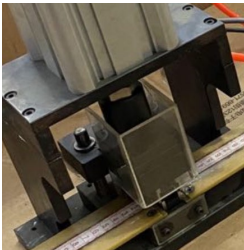
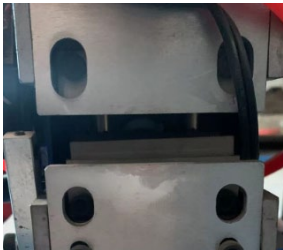
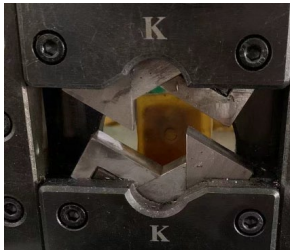




3.2 产品图片 Picture








4. 工厂、现场组装工艺流程 Factory and field wiring assembly process

4.1 工厂工具要求 Factory wiring Requirements for tools

Manufactured by QC Solar (Suzhou) Corporation		
4.1.1 电缆护套剥皮治具 Cable jacket stripper machine	4.1.2 平口剥线治具 Wire stripper machine	4.1.3 铆接治具 Rivet Machine
		
4.1.4 开口大于 25mm 的活动扳手 Monkey wrench wider than 25mm	或 24mm & 25mm 开口扳手 or 24mm & 25mm open spanner	
 Type: 04.06.066	 Type: 04.01.083 (24/27) Type: 04.01.084 (25/28)	

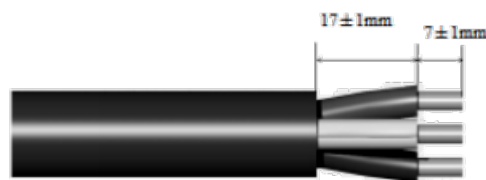
4.2 现场工具要求 Field wiring Requirements for tools

Manufactured by QC Solar (Suzhou) Corporation		
4.1.1 电缆旋转剥皮器 Cable rotary stripper	4.1.2 剥线钳 Wire stripper	4.1.3 铆接钳 Rivet Plier
		
Type: 02.04.216	Type: 02.04.008	Type: 02.04.214
4.1.4 开口大于 25mm 的活动扳手 Monkey wrench wider than 25mm	或 24mm & 25mm 开口扳手 or 24mm & 25mm open spanner	
		
Type: 04.06.066	Type: 04.01.083 (24/27) Type: 04.01.084 (25/28)	

4.3 母插装配说明 Instruction of Female receptacle assembly

4.3.1 剥线 Stripping

按要求切线、剥线，剥线长度为 6.0-8.0mm。
Please cut and strip the wire according to the requirements and the applicable stripping length is 6.0~ 8.0mm.
注意：不要切断和损坏线缆绝缘塑料下的铜丝线芯。
Note: Please pay attention and do NOT cut off and damage the copper wire core under the cable insulating plastic.

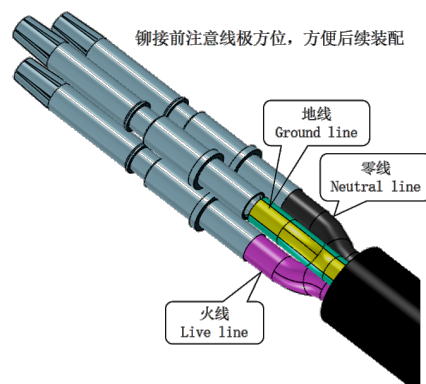


4.3.2 铆接插套 Crimping socket


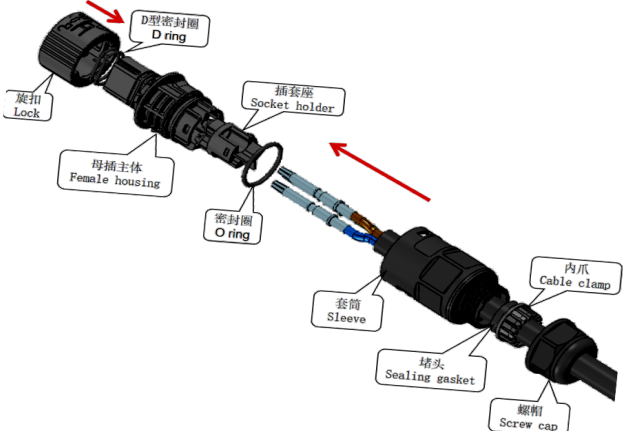
需根据不同规格线缆，选择相应钳口的档位。
Choose the jaw gear to according to different specifications of cables.



档位 Gear	线缆规格 Cable spec
2	2.5mm ² /14AWG
4	4.0mm ² /12AWG

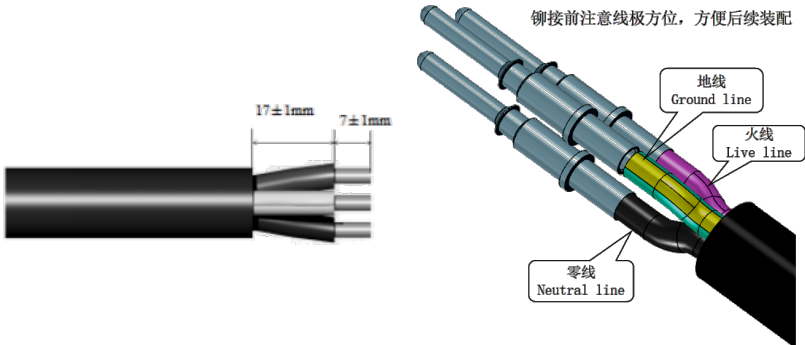


4.3.3 组装、接线、锁紧 Assembling, Wiring and locking

<p>①先将 D 型密封圈装母插本体上, 把旋扣与母插圆点大致对齐后套上, 推到底; Assemble D ring to female housing first; Align the two points before mate together;</p>	 <p>两点大致对齐 Align the two points</p> <p>旋扣套上母插 Install the lock to female housing</p>
<p>②沿箭头方向旋转卡扣“咔塔”一声后完成该装配; Rotate the lock in the direction of the arrow, finish the assembling after a “click” sound;</p>	 <p>沿着箭头方向旋转, “咔塔”一声即完成旋扣装配 Rotate the lock in the direction of the arrow, finish after a “click”</p>
<p>③将电缆依次穿过螺帽、内爪、堵头、套筒、密封圈; Pass the cable through the nut, screw cap, sealing gasket, sealing O ring and sleeve in turn;</p> <p>④将铆接好的金属端子插入插座中, 直至其啮合。轻轻拉动线缆, 检查金属件是否啮合牢固。 Insert the riveted metal terminal into the female housing until it engages. Gently pull the cable to check whether the metal terminals are firmly engaged;</p> <p>⑤将公插与套筒连接, 最后将螺帽拧紧即可。 Connect the male housing and the sleeve, and finally tighten the Cable clamp.</p>	 <p>旋扣 Lock</p> <p>D型密封圈 D ring</p> <p>插座座 Socket holder</p> <p>母插主体 Female housing</p> <p>密封圈 O ring</p> <p>套筒 Sleeve</p> <p>堵头 Sealing gasket</p> <p>内爪 Cable clamp</p> <p>螺帽 Screw cap</p>

4.4 公插装配说明 Instruction of Male receptacle assembly

4.4.1 剥线 Stripping & 铆接插针 Crimping pin

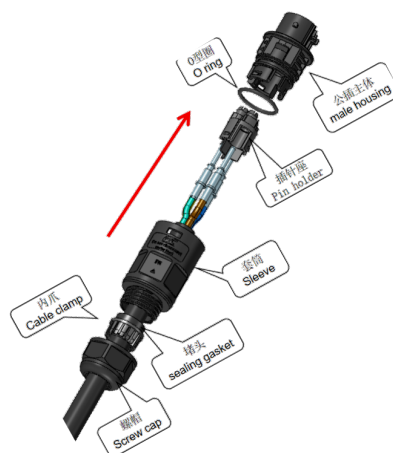
<p>按要求切线、剥线, 剥线长度为 6.0-8.0mm。 Please cut and strip the wire according to the requirements, and the applicable stripping length is 6.0 ~ 8.0mm.</p> <p>注意: 不要切断和损坏线缆绝缘塑料下的铜丝线芯。Note: Please pay attention and do NOT cut off and damage the copper wire core under the cable insulating plastic.</p>	 <p>铆接前注意线极方位, 方便后续装配</p> <p>17±1mm</p> <p>7±1mm</p> <p>地线 Ground line</p> <p>火线 Live line</p> <p>零线 Neutral line</p>
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4.4.2 接线、锁紧 Wiring and locking

①将电缆依次穿过螺帽、内爪、堵头、套筒、密封圈；Pass the cable through the nut, screw cap, sealing gasket, sealing O ring and sleeve in turn;

②将铆接好的金属端子插入插针座中，直至其啮合。轻轻拉动线缆，检查金属件是否啮合牢固。Insert the riveted metal terminal into the pin holder until it engages. Gently pull the cable to check whether the metal terminals are firmly engaged.

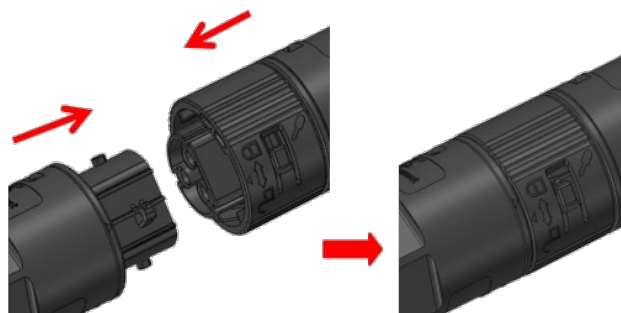
③将公插与套筒连接，最后将螺帽拧紧即可。Connect the male housing and the sleeve, and finally tighten the Cable clamp. Cap nut torque – 5.0~6.0 Nm. (For field wiring only)



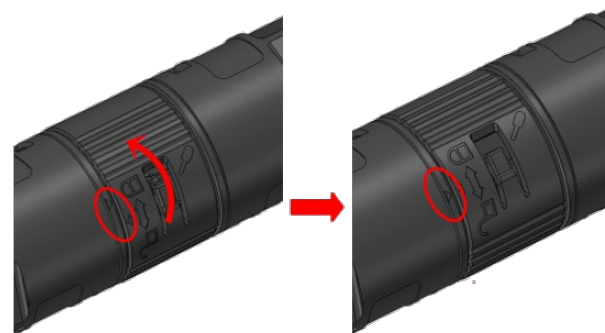
5.连接器对插及解锁 Connecting and disconnecting

5.1 连接器对插 Connecting

①先将 D 型密封圈装母插本体上，把旋扣与母插圆点大致对齐后套上，推到底；Assemble D ring to female housing first; Align the two points before mate together;



②沿箭头方向旋转卡扣“咔塔”一声后完成该装配；Rotate the lock in the direction of the arrow, finish the assembling after a “click” sound;



* 安装防尘塞也是同样的操作 The same is true for installing dust plugs

5.2 连接器解锁 Disconnecting

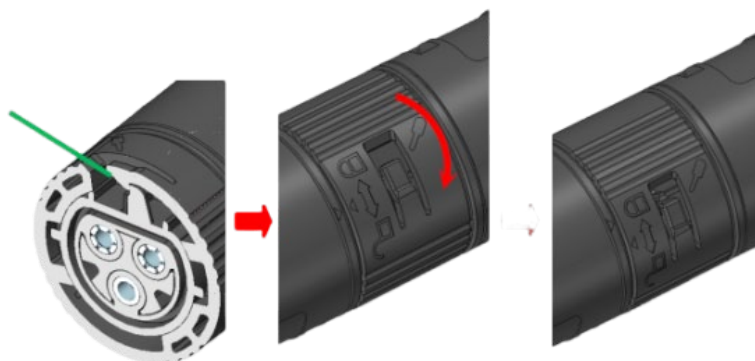
使用一字螺丝刀，先将卡合弹性臂微微翘起，再用螺丝刀推旋扣或手动旋转旋扣，旋扣转动即可完成解锁，公母插拉开即可分离。

Using straight screwdriver, lever the flexible arm a little then push the arm or rotate the lock housing by hand, loosen the connecting lock completely, and then pull the male plug slightly to complete the separation of female plug

Unlocking tool:

Type 3.2X75, manufactured by QC Solar (Suzhou) Corporation

Use of tool is required to open the locking-type connector.



* 解锁防尘塞也是同样的操作 The same is true for installing dust plugs

5.3 若连接器需更换，按下列步骤进行

If the connectors need to be disassembled for replace, please comply with the following steps

①依次松开螺帽、内爪、堵头、套筒；

Loosen the screw cap, cable clamp, sealing gasket and sleeve in turn.

②将旧的公插或母插主体连线剪掉，重新剥线铆接并安装在新的主体上；

Cut off the cable assembled old plug housing, strip it again and install it on the new plug housing.

④依次再将零部件重新拧紧即可。

Then tighten the parts in turn.

Caution 警告：

1.For Copper Stranded Wire Only.

仅适用于铜绞线。

2.The product installation and use meet the requirements of PV modules.

产品安装使用符合光伏组件要求。

3.The connector is considered to be in compliance with UL 6703, Connectors for Use in Photovoltaic Systems, Edition 1, Revision Date 06/10/2021 only when assembled in the manner specified by these assembly instructions.

该连接器只有在按照这些组装说明规定的方式组装时才被认为符合 UL 6703，光伏系统用连接器，第 1 版，修订日期 2021 年 6 月 10 日。

4.This connector is suitable for use only with Class B and C stranded copper conductors (See NFPA 70, National Electrical Code, Edition 2020, AMD 1 - 17, Revision Date 04/12/2022, Chapter 9, Table 10).

本连接器仅适用于 B 级和 C 级绞合铜导体 (参见 NFPA 70，国家电气规范，2020 版，AMD 1 - 17，修订日期 04/12/2022，第九章，表 10)。

5. “Do Not Disconnect Under Load: PV plug connections must not be disconnected while under load.

AC02-connector | 07

They can be placed in a no load state by switching off the DC/AC converter or breaking the AC circuit” .

“负载下不得断开：在负载下不得断开 PV 插头连接。通过关闭 DC/AC 转换器或断开交流电路，它们可以处于空载状态”。

6. Installation shall be in accordance with CSA C22.1, Canadian Electrical Code, Part I, Edition 25, Issue Date 01/2021, Safety Standard for Electrical Installations.

手册应该符合 CSA C22.1 加拿大电气规范的要求。

6.附件Annex

6.1 耐化学品附表 Chemical resistance form

Chemical 化学制品	LEXAN(PC) 聚碳酸酯 (简称 PC)
Hydrocarbons 碳氢化合物	
Aliphatic 脂肪	Incompatible 不兼容
Aromatic 芳香剂	Incompatible 不兼容
Halogenated fully 完全卤化物	Compatible 兼容
Halogenated partly 半卤化物	Incompatible 不兼容
Alcohols 酒精	Compatible 兼容
Phenols 类	Incompatible 不兼容
Ketones 酮类	Incompatible 不兼容
Esters 酯类	Incompatible 不兼容
Ethers 醚	Incompatible 不兼容
Acids 酸	
Inorganic 无机物	Incompatible 不兼容
Organic 有机物	Compatible 兼容
Oxidizing 氧化物	Incompatible 不兼容
Alkalis 碱	Incompatible 不兼容
Automotive Fluids 车用液体	
Petrol 汽油	Incompatible 不兼容
Water 水	
Hot(< 80°C) 热水	Incompatible 不兼容
Environmental 环境	
UV 紫外线	Compatible 兼容

6.2 连接器责任免除条款 The Connector liability exemption clause

有违反下列情况之一者，并导致产品出问题，造成任何损失，我公司将不承担任何责任。

There exist following case, and lead to product goes wrong, any loss caused, product manufacturers will not take any responsibility.

1. 产品运输、仓储 Product transportation and storage

1.1 产品在运输、仓储过程中，不可与“附件 2”表中有关化学品存放在一起，使产品经受这些化学品污染；
Products in the process of transportation, warehouse, can not stored with "attachment 2" in the table of chemicals together that lead the product pollution with these chemicals;

1.2 产品在运输、仓储过程中，不可对产品过分承压，撞击等破坏产品行为； Products in the process of transportation, warehouse, can not pressure too much on products and such as impact damage behavior;

1.3 产品在运输、仓储过程中，常温存储，应注意避光、防水、防尘等方面防护，以免降低产品相关性能，电站现场应特别注意； Products in the process of transportation, warehouse, should room temperature storage, avoid light, should waterproof, dustproof, and should be paid attention to protection, so as not to reduce product performance, pay special attention to product when in power station;

1.4 产品正常存储时间 2 年； Product health storage for 2 years;

2. 产品安装、使用环境 Product installing and operating environment

2.1 产品正常工作环境温度 -40~+85℃； The product health working environment temperature - 40 ~ + 85 °C ;

2.2 产品现场安装，需按照“快可”产品“安装使用说明书”操作。 The Product installing should be in accordance with the QC Solar product installation instructions.

3. 产品与化学品兼容性见“附件 - 耐化学品附表” Products and chemical compatibility See Chemical resistance form

4. 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 under the condition of disconnect, the product will not be able to meet any IP protection grade, also can't normal use

4.1 产品插合后满足 IP68 防护等级要求，不能长期置于水下工作； Products meet IP68 degree of protection requirement after connects, while it can't work under water for a long time;

4.2 连接器在未对插的情况下，不可长时间放置于户外，这样可能会造成金属件腐蚀，并使连接器性能降低； Connector in the case of disconnect, should not placed in the outdoor for long time, so may be the cause of the corrosion of the metal, and lower the connector performance;

4.3 连接器在户外安装、使用过程中，如果不能及时对插，请做好连接器防护工作，防止连接器受到水、尘等的污染，影响产品使用性能。 Connector in the process of outdoor installation and use, if not to connect in time, please do a good job in the connector protection, protect the connector from water, dust and other pollution, affect the product performance.

5. 连接器在安装、使用过程中，不可将连接器过分碰撞，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 Connector in the process of installation and use should not be collision, drag in the water, grass, and the ground to prevent the pollution of inside the connector before use, reduce the product performance.

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