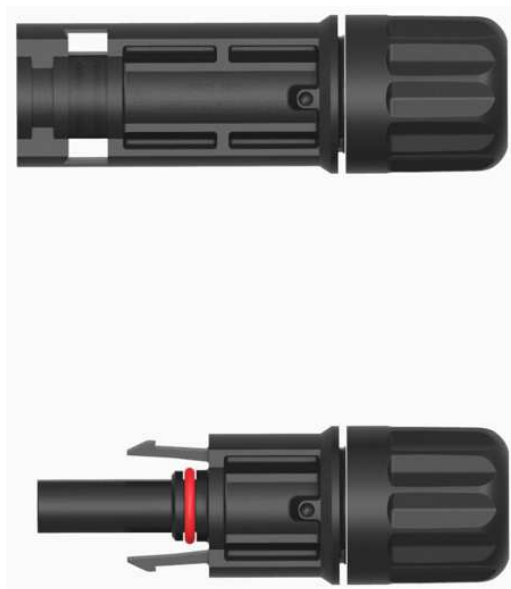


CN4U-C 线端连接器用户手册

User Manual for CN4U-C Cable Connector



Version 版本: 2023 V2

Date of issue 日期: 2023.09.30

1、警告 Warning

- 1) 为了防止电击，在安装和拆卸连接器时必须断开电源
To prevent electric shock the power must be shut down when connecting and disconnecting the PV connectors.
- 2) 终端产品必须提供防电击功能
The product must provide anti-shock function.
- 3) 不能在负载下断开连接器：在有负载情况下，不能拔出 PV 插头连接器！关掉 DC/AC 断路器，使 PV 连接器处于无负载状态下才允许插拔连接器。
Do not disconnect the connector under load. Turn off the DC/AC circuit breaker before plug and disconnect PV connectors.
- 4) 连接器仅适用于 B 类和 C 类多股铜导线（见 NFPA 70 第 9 章，表 10）建议使用光伏专用线缆，镀锡铜芯，双层 XLPE 绝缘材料，不建议使用无镀锡电缆和 PVC 电缆。
This connector is only applicable for Class B and C stranded copper conductors (See NFPA NEC 70 Chapter 9, Table 10). It is recommended to use tin-plated copper wire with double insulation and insulating material XLPE, instead of tin-plated free and PVC cable.
- 5) 断开的连接器必须使用防尘塞进行保护，防止灰尘和水进入连接器内部。被污染的连接不能耦合连接。
The disconnected connector must be protected by a sealing cap for dust-proof and water-proof. Contaminated connectors should not be coupled for connection.
- 6) 耦合部件防水等级 IP68 1M1h(水深 1 米 1 小时)
Protection class IP68 when being mated (tested in 1 meter deep water for 1 hour).
- 7) 连接器最大承受持续机械拉伸 $\geq 80N$
The maximum sustained mechanical tension to withstand $\geq 80N$
- 8) 产品不得在含有烃、酚、酮、氨合物等与塑料有腐蚀的环境中使用，安装过程中禁止在连接器中涂抹任何油脂及润滑剂。
Do not use the connector under the environment where plastic material is corroded by hydrocarbon, phenol, ammine. During installation process any grease or lubricant should in no case to be applied in/on the connector.
- 9) 该产品应由持有相应资质专业人员操作安装，安装时参照安装手册条例。如不遵守安装条例发生意外，供应商将免除任何保证。
This product should be operated and installed by qualified professionals referring to the installation manual. The supplier will be exempt from any warranties for any accidents due to non-compliance with the installation manual.

2、技术参数 Product Specifications

连接器规格 Conductor size	Ø4mm
额定电压 Rated voltage	IEC 1500V
额定电流 Rated current	42A (4.0mm ²)
	52A (6.0mm ²)
	60A (10.0mm ²)
额定脉冲电压 Rated impulse voltage	16KV
环境温度范围 Ambient temperature range	-40℃ ~+85℃
接触电阻 Contact resistance	≤0.25m Ω
应用等级 Application degree	Class A
防护类别 Protection class	Class II
污染等级 Pollution degree	2
防护等级 Degree of Protection	IP68(1m,1h) mated / IP2X unmated
阻燃等级 Flame class	UL94-V0

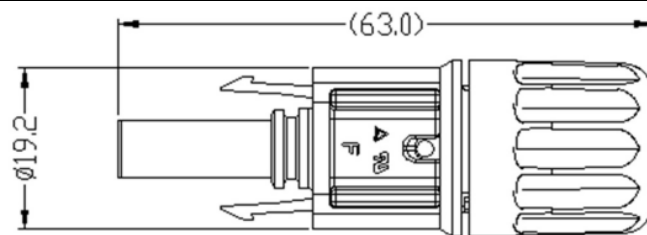
3、线缆选型表 Cable table

型号	电缆截面积 (mm ²)	电缆固定头范围 (Ø mm)
CN4U-CM02/CF02	4.0	4.7-6.0
CN4U-CM02/CF02	6.0	5.6-7.0
CN4U-CM02/CF02	10.0	8.0-10.0

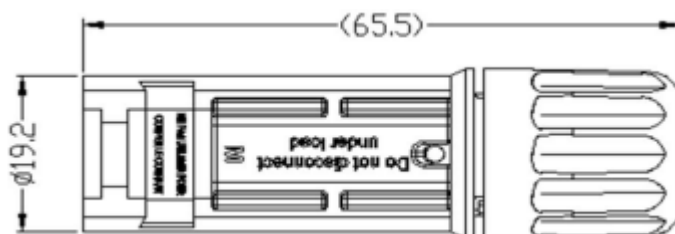
4、外观尺寸图 Overall Dimensions

4.1 母头连接器 Female Connector Housing

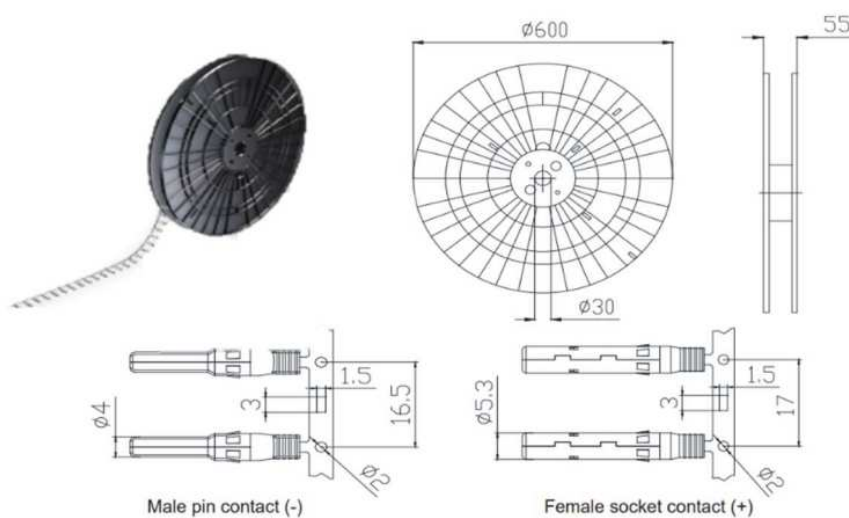




4.2 公头连接器 Male Connector Housing



4.3 连接器 U 型端子尺寸: Dimensions of U-shape Terminal



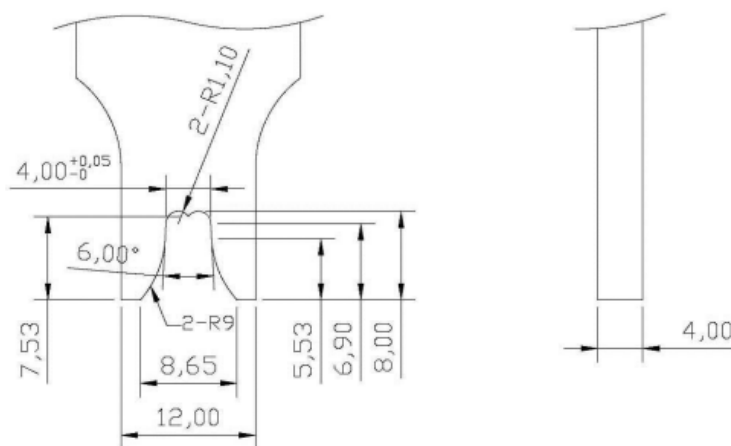
5、 组装 Assembly

5.1 剥线 Stripping

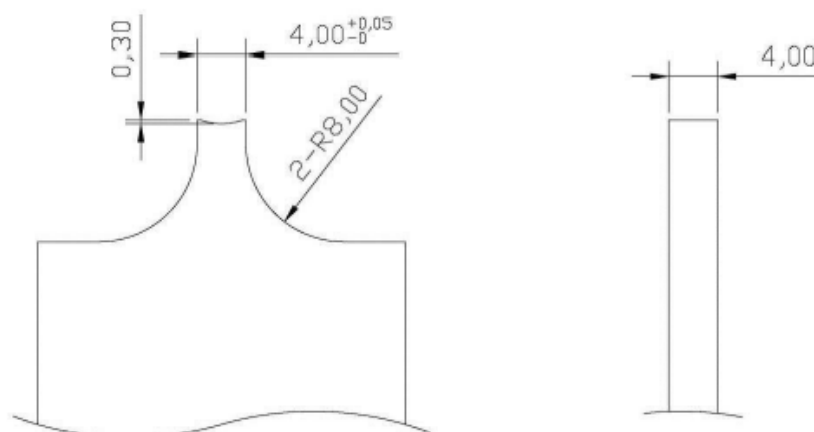


剥线尺寸 Stripping length: $6 \pm 0.5\text{mm}$

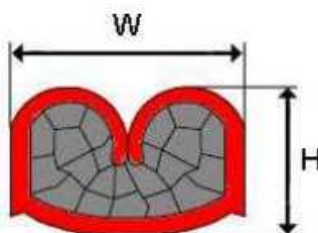
5.2 铆接 Crimping



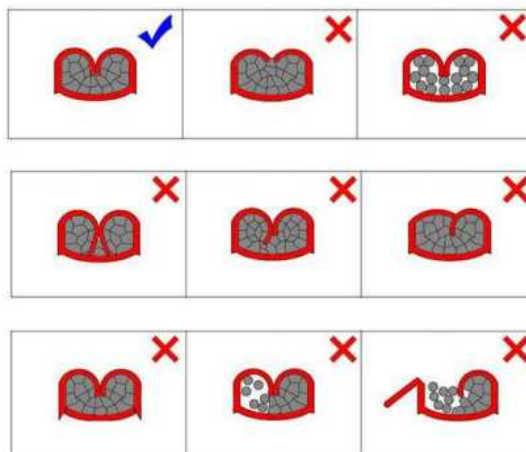
上刀模尺寸 Punching die (upper) 4mm^2



下刀模尺寸 Punching die (lower) 4mm^2



典型电缆 Cable Spec.	铆接高度 Crimping (H) Ref.	铆接宽度 Crimping (W) Ref.
4mm ²	2.1 ± 0.1mm	4.1 ± 0.1mm



5.3 连接器组装 Connector Assembly



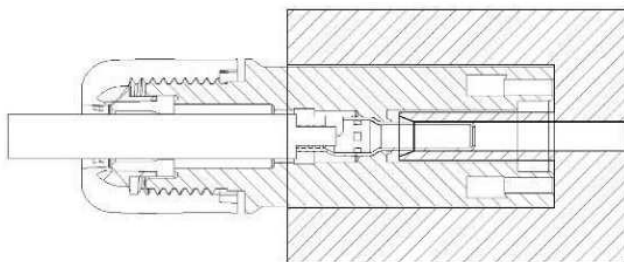
把已经铆接好端子的电缆插入正极或者负极绝缘本体，直至金属件与本体耦合，轻轻拉动导线检查金属是否耦合牢固。

Insert the cable lead with crimped terminal into the connector housing. Pull gently to check the security.

5.4 螺母组装 Nut Assembly

锁紧连接器螺母时，注意定位治具有导正结构（治具如下图）

When locking the nut of connector, the positioning fixture shall be provided with a guide structure (fixture as shown in the figure below).



连接器型号 Connector Type	线缆外径 Cable OD	扭力设定 Torque setting	螺帽参考间隙 Reference Nut Gap	备注 Remark
CN4U-C	4.7-6.0	$3.5 \pm 0.5 \text{ N} \cdot \text{m}$	$0 < X \leq 1.0 \text{ mm (REF)}$	
CN4U-C	5.6-7.0		$0 < X \leq 1.5 \text{ mm (REF)}$	
CN4U-C	8.0-10.0			

螺线锁紧后需要检查负极 Pin 针与本体的同轴度，要求圆偏心距 $\leq 1\text{mm}$ 。

After tightening the nut, check the coaxiality between the negative pin and the body, requiring a circular eccentricity of $\leq 1\text{mm}$.



6、人工组装 Manual Operations

6.1 工具配置 Tool Requirement

6.1.1 剥线钳 Strip Tool



型号 Type	钳口 Jaw	剥线范围 Stripping Range
	上边 Top	2.5mm
	中间 Middle	4.0mm
	下边 Bottom	6.0mm

6.1.2 铆压钳 Crimping Tool



型号 Type	钳口 Jaw	铆压范围 Crimping Range
	上边 Top	2.5mm
	中间 Middle	4.0mm
	下边 Bottom	6.0mm

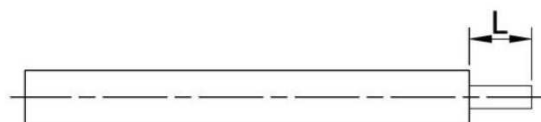
6.1.3 塑料扳手 Plastic Spanner / Disconnecting Tool



6.2 组装步骤 Assembly Steps

Add: Room 1028, No.1 Langweiyi Rd, Changan, Dongguan, Guangdong
website: www.treasol.com

6.2.1 剥线 Stripping



剥离绝缘层长度 $L=6\pm0.5\text{mm}$ ，注意不要切断电缆导体

Stripped insulation layer length $L=6\pm0.5\text{mm}$. Be careful not to cut off the cable conductor.

6.2.2 铆压插针/插套 Crimping plug and socket pins



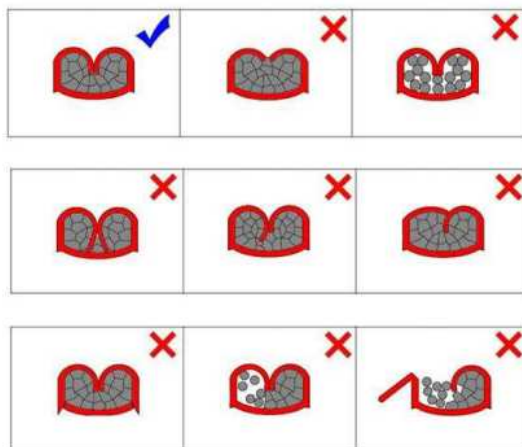
首先将金属端子放在铆压工具孔内，铆压孔朝外。调节背面的限位机构使金属端子的最外侧边缘与铆压工具对齐。然后把剥好的电缆导体插入金属端子铆压孔内，需要确保所有导体都在孔内。需保证金属件和电缆线的同轴度。最后提拉铆压工具手柄，直接到底完成铆压。铆压完后电缆拉力参照表如下。导体都被包扎在端子内。

Firstly place the pin in the crimping tool jaw which faces outward. Adjust the limiting mechanism on the back to align the outermost edge of the pin with the crimping tool. Insert the wire conductor into the hole of the pin, and make sure all the strands of conductors are in the hole. Ensure the coaxiality of metal prats and cables. Finally, press the crimping tool to the end to complete the crimping. The cable tension after crimping is referenced to the following table. All copper wires should be enwrapped.

电缆规格 Cable specifications	拉出力 Cable pull-out force
4.0mm ²	≥312N
6.0mm ²	≥356N

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6.2.3 连接器组装 Connector Assembly

把铆接好的插针插入连接器本体公头或者母头直至端子和本体啮合，轻轻拉动导线检查金属是否啮合牢固，确证正负极 pin 针和本体处于同轴状态。

Insert the crimped pin into the male or female body housing until the pin engages with the body. Gently pull the wire to check the security and coaxiality with the body.



锁紧螺帽 Locking nut



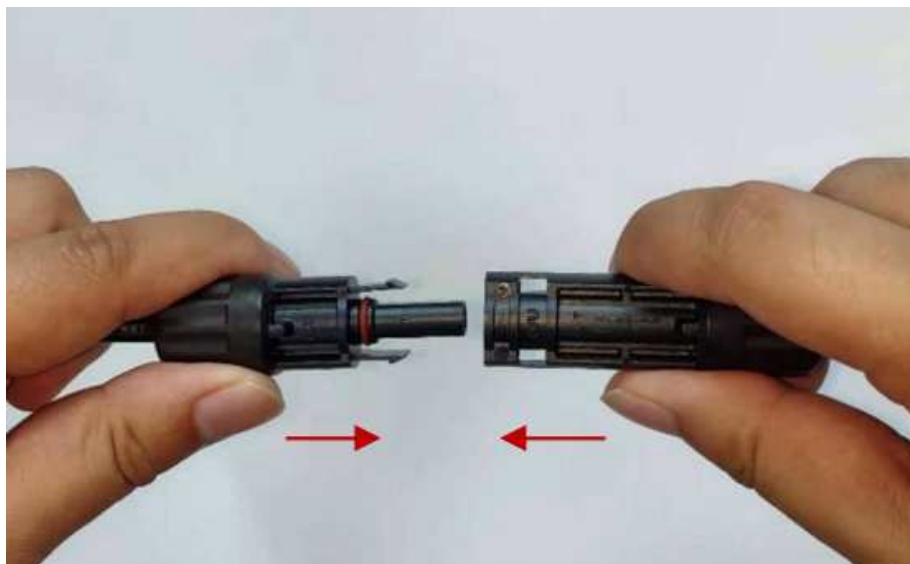
将一个扳手套进连接器本体另外一个套入螺母齿状本体中，扭动扳手旋紧螺帽，扳手扭力参考下图

Insert the connector body into the middle hold of one spanner, place another spanner onto the nut or cable gland with either of the toothed holes, twist the spanner to fasten the nut. Refer to the figure below for the torque.

连接器型号 Connector Type	线缆外径 Cable OD	扭力设定 Torque setting	螺帽参考间隙 Reference Nut Gap	备注 Remark
CN4U-C04	4.7-6.0	$3.5 \pm 0.5\text{N}\cdot\text{m}$	$0 < X \leq 1.0\text{mm(REF)}$	
CN4U-C06	5.6-7.0		$0 < X \leq 1.5\text{mm(REF)}$	
CN4U-C10	8.0-10.0			

7、连接器对插&解锁 Connecting & Disconnecting

7.1 连接器对插 Connecting



将连接器正负极对插直到本体卡扣耦合，轻轻拉动以检查公母连接器是否耦合牢固，插入力 $\leq 80\text{N}$ 。

Plug the coupling together until fully engaged. Pull lightly to check the security. Insertion force $\leq 80\text{N}$.

7.2 连接器解锁 Disconnecting



连接对插后只能通过开锁工具解锁连接器

Only the spanner is allowed to disconnect or unlock the coupling connectors.

把工具对准连接器开锁位置，把工具插入连接器扣锁中解除连接器耦合。

Make the spanner aim at the hole of the unlocking position of the connector and open the latch to disconnect the male and female connectors.

8、连接器电缆安装状态 Connector cable installation status

8.1 线缆弯曲状态 Cable bending status

电缆根部建议保留 20mm 未折弯长度，以免因电缆折弯产生的外力引起连接器密封件变形导致连接器 IP 功能失效。

Keep at least 20mm long straight at the two ends from the bending position to prevent the sealing components from deforming and IP malfunction due to the bending force.



Wrong way for the cable

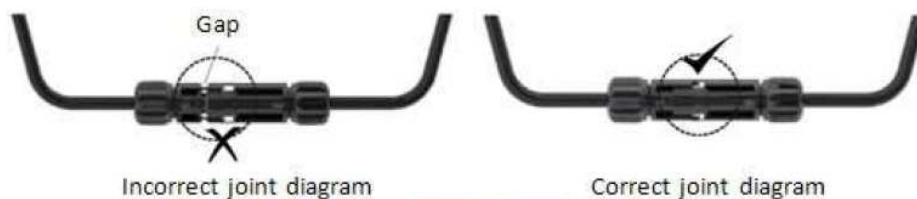


Right way for the cable

注：电缆最小弯曲半径参考电缆使用说明要求。

The minimum bending radius of the cable refers to the requirements of the cable usage manual.

8.2 连接器耦合状态 Connector coupling status



9、连接器包装方式 Connector packaging method

一般每纸箱（590x390x200mm）自封袋装 500 个正极连接器，自封袋装 500 个负极连接器，500 个插针和 500 个插套各一小袋。如下图所示。

500 pcs male pins in a small self-sealed PE bag in a bigger bag for 500 pcs male connector housing. Likewise, 500 pcs female pins in a small self-sealed PE bag in a bigger bag for 500 pcs female connector housing. Then 500 pairs in one box / master carton (size: 590X390X200mm). See the photograph below.



10、警告 Warning

10.1 对产品有影响的常见化学品清单 Chemical Intolerance List

化学品名 Chemical Name	测试结果 Test Result
润滑油 Lubricating oil	不兼容 Incompatible
防锈油 Rust-proof oil	
黄油 Grease	
机油 Engine oil	
食用油 Cooking oil	
WD40	
香蕉水 Banana oil	
油性封孔 Oil sealing agent	



乙酸乙酯 Ethyl acetate	
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注：对于上表未列明化学品，需经过确认无影响后再使用。

Note: Chemicals not contained in the above-mentioned table should only be used after confirming no impact on the product.

10.2 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，我司将不承担任何责任。

In breach of the following operations that cause any damage, defective, failure, the supplier will be free of liability for any losses .

10.2.1 产品运输和仓储 Product Transport and Storage

10.2.1.1 产品在运输、仓储过程中不可与 10.1 表中有关化学品存放在一起，致使产品经受化学品污染。

The product should not be placed together with the chemicals on the table 10.1 during transport and storage to avoid pollution.

10.2.1.2 产品在运输和仓储中，不可对产品进行过分承压、撞击等破坏产品行为。

Over-press or knocking is not allowed during transport and storage.

10.2.1.3 产品在运输和仓储中，应常温存储、避光、防水、防尘等防护，以免降低产品性能。

The product must be kept at normal temperature and away from sunlight, water and dust to avoid performance degrading.

10.2.1.4 产品正常存储时间为 1 年

Normal storage period 1 year.

10.2.2 产品安装和使用 Installation and Operation.

10.2.2.1 产品正常工作环境温度：-40℃~+90℃

Operation ambient temperature: -40℃~+90℃

10.2.2.2 产品安装需按照本手册操作

Installation must be done as per the manual.

10.2.2.3 产品在沿海、沙漠粉尘、灰尘区域使用，产品出厂前必须带防尘塞。

The product must be sealed with cap prior to delivery from factory when being used in coastal areas, deserts or places pervaded by powder or dust.

10.2.2.4 连接器在屋顶电站使用时，连接器不可直接放在屋顶表面上使用。

The product is not allowed to place on the roof surface when used for roof system.

10.2.2.5 产品与化学品兼容性参考化学附件表

Refer to the chemical intolerance list in use.

10.2.2.6 连接器在未耦合情况下，产品不能满足任何 IP 要求，也不能正常使用。

The product will not achieve IP protection degree for normal use without mating.

10.2.2.7 产品耦合后满足 IP68 使用要求，但是不能长期置于水中或屋顶上工作。

The product meets IP68 degree after mating but cannot be used in water or on roof surface for long time.

10.2.2.8 连接器在未耦合或未防尘保护情况下，不可长时间放置于户外。长时间放置会导致连接器金属部件腐蚀，或受到粉尘、水等污染导致连接器性能会降低。

The connector should not be placed outdoor without mating or sealing to avoid corrosion , contamination, water penetration and then degrading in performance.

10.2.2.9 CN4U 连接器必须与 CN4U 连接器对插耦合。除官方指定产品外，与其它品牌耦合产生产品质量问题视为放弃质保条款。

The CN4U connectors are only allowed to couple with CN4U series connector. Coupling with other brands that cause product quality issues will be considered as a waiver of the warranty clauses.

10.2.2.10 以上免责条款最终解释权归 CN4U 持有方。

The final interpretation of the above disclaimer belongs to the CN4U holder.