

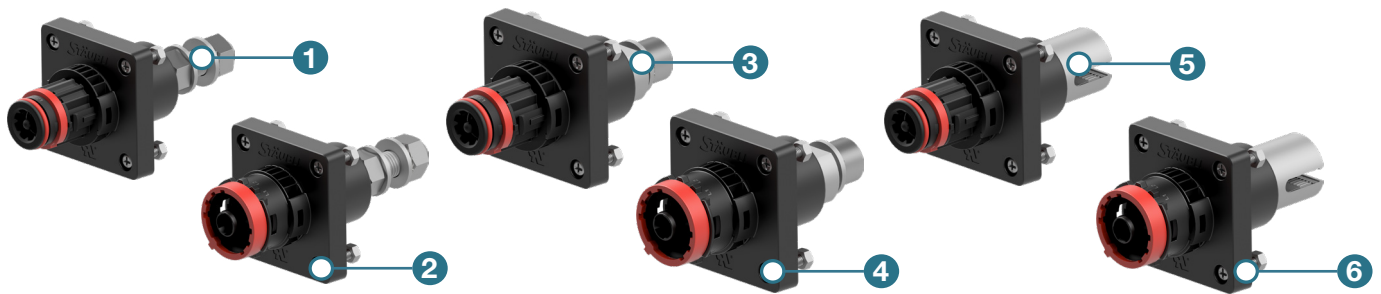
MA732 (cn) 装配说明

BosCon 面板插座
带有外螺纹触点
带有内螺纹触点
带有叉形触点

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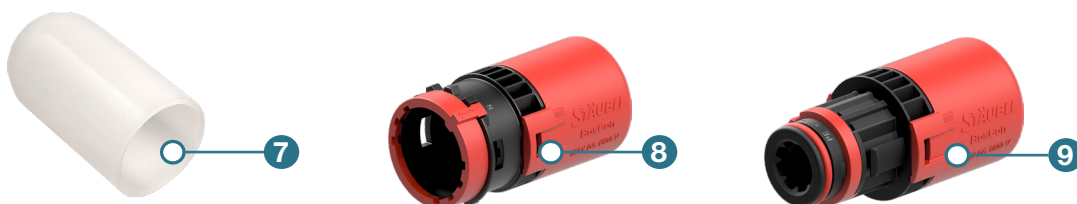
产品概览



产品 Product	类型 Type
① 带有外螺纹触点的母端面板插座 Socket panel receptacle with external thread contact	OPC16-PMS/G-M16/...
② 带有外螺纹触点的公端面板插座 Plug panel receptacle with external thread contact	OPC16-PMP/G-M16/...
③ 带有内螺纹触点的母端面板插座 Socket panel receptacle with internal thread contact	OPC16-PMS/IG-M16-...
④ 带有内螺纹触点的公端面板插座 Plug panel receptacle with internal thread contact	OPC16-PMP/IG-M16-...
⑤ 带有叉形触点的母端面板插座 Socket panel receptacle with fork contact	OPC16-PMS/GSR6.35-...
⑥ 带有叉形触点的公端面板插座插头 Plug panel receptacle with fork contact	OPC16-PMP/GSR6.35-...

可选配件

Optional accessories



产品 Product	应用范围 Intended use	防护等级 (已安装) Degree of protection, mated	类型 Type
⑦ 保护帽 Protective cap	仅用于运输和储存 only for transport and storage	IP54	I-OPC16-DC
⑧ 插头密封盖 Plug protective cap	供长期使用 for permanent use	IP68	OPC16-CP-SC
⑨ 插座密封盖 Socket protective cap	供长期使用 for permanent use	IP68	OPC16-CS-SC

安全须知与使用说明

安装说明的重要性

不遵守安装说明和安全须知可能会导致因电击、电弧、火灾或系统故障而危及生命的人身伤害。

- 请完全按照安装说明的要求进行操作。
- 只可按照本安装说明和技术参数使用和安装产品。
- 安全妥善地保管安装说明, 并将其移交给后续用户。

应用范围

面板连接器设计用于安装在外壳上, 并将部件与光伏阵列的直流电路连接到一起。

对人员的要求

仅电工或接受过电气指导的人员可以装配、安装和调试该系统。

- 电工是指接受过适当的专业培训, 并具有适当的知识和经验的人员, 能够识别和避免可能来自电力的危险。电工能够选择和使用合适的个人防护设备。
- 受过电气指导人员是指在电工的指导或监督下, 能够识别和避免可能来自电力的危险的人员。

安全装配和安装

即使在光伏系统或连接器断开后, 金属导体部分仍可能带有电能。

- 只有在直流回路不带电的情况下才能安装本产品。

安装和装配的先决条件

- 切勿使用有明显损坏的产品。
- 仅应使用史陶比尔认可的工具、材料和辅助设备。
- 仅经过认证的光伏电缆才可装配到连接器上。

切勿调整或修理部件

- 连接器仅可安装一次。
- 切勿在连接器装配好后进行调整。
- 更换有缺陷的连接器。

Safety and usage instructions

Importance of the assembly instructions

NOT following the assembly and safety and usage instructions could result in life-threatening injuries due to electric shock, electric arcs, fire, or failure of the system.

- Follow the entire assembly instructions.
- Use and install the product ONLY according to this assembly instructions and the technical data.
- Safely store the assembly instructions and pass them on to subsequent users.

Intended use

Panel receptacles are designed for installation in enclosures and connect components to DC circuits of a photovoltaic array.

Requirements for personnel

Only an electrician or electrically instructed person may assemble, install, and commission the system.

- An electrician is a person with appropriate professional training, knowledge, and experience to identify and avoid the dangers that may originate from electricity. An electrician is able to choose and use suitable personal protective equipment.
- An electrically instructed person is a person who is instructed or supervised by an electrician and can identify and avoid the dangers that may originate from electricity.

Safe assembly and installation

Live parts may still be energized even after the PV system has been de-energized and the coupler has been disconnected.

- Install the panel receptacle ONLY when the DC circuit is de-energized.

Requirements for assembly and installation

- NEVER use damaged panel receptacles.
- ONLY tools, materials and auxiliary means approved by Stäubli shall be used.
- ONLY approved cables shall be assembled to the panel receptacle.

Do NOT modify or repair panel receptacles

- Assemble panel receptacles ONLY once.
- Do NOT modify panel receptacles after assembly.
- Replace defective panel receptacles.

安全须知与使用说明

系统要求

- 请尽量避免连接器直接暴露在阳光下。
- 切勿将连接器安装在积水中或可能积水的区域。
- 电缆布线时, 应避免连接器处于积水中或面临处于积水中的风险。
- 设计电缆管理方案时, 应确保连接器不会受到持续的机械应力, 例如:
 - 机械拉伸应力
 - 振动
 - 动态位移
 - 使用扎带固定连接器
 - 连接器处电缆出现锐角弯曲
- 切勿让连接器接触化学物质, 例如标签、胶水、热缩管中所含有的化学物质。
- 切勿让连接器长时间接触灰尘或泥浆。
- 切勿让连接器承受过度的热应力。必须确保有足够的散热。

连接或断开连接

- 切勿切断带负载的连接器。
- 切勿将史陶比尔连接器的公端或母端与其他制造商的连接器相连接。
- 连接器受污染时, 切勿插合。
- 未插合的连接器, 请务必使用史陶比尔密封盖进行保护。
- 使用规定的工具解锁连接器。

Safety and usage instructions

Requirements for installation environment

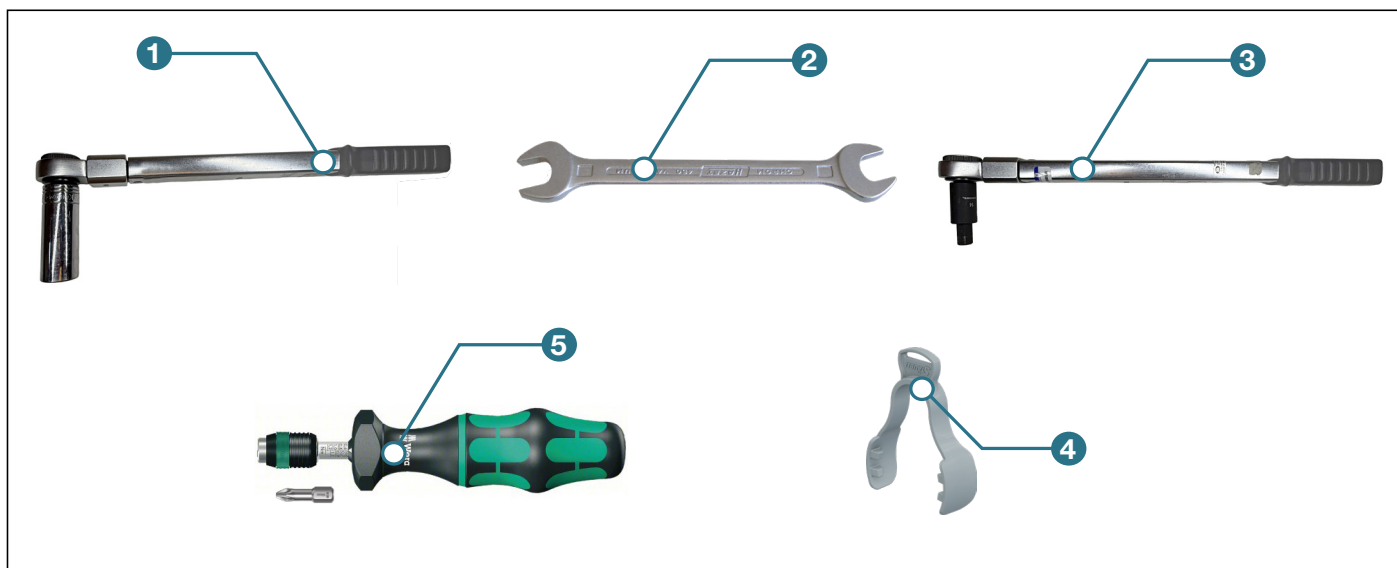
- Expose panel receptacles to as little direct sunlight as possible.
- NEVER install panel receptacles in standing water or in areas where water can accumulate.
- NEVER install panel receptacles in a way that allows water to accumulate due to the cable routing at the connector.
- Design the cable management so that the panel receptacle is never subjected to sustained mechanical stress, e.g. due to:
 - mechanical tensile stress
 - vibration
 - dynamic movement
 - sharp bend in the cable at the panel receptacle
- NEVER expose panel receptacles to chemicals, such as those found in labels, adhesives, or shrink tubing.
- NEVER expose panel receptacles to dirt or mud for extended periods of time.
- NEVER expose panel receptacles to excessive thermal stress. Adequate heat dissipation must be ensured.

Mating and disconnecting

- NEVER disconnect the coupler under load.
- NEVER connect plug and socket part of Stäubli coupler with those from other manufacturers.
- NEVER mate contaminated panel receptacles and connectors.
- ALWAYS cover unmated panel receptacles with Stäubli protective caps.
- A tool is required to disconnect the coupler.

所需工具

Tools



1	20 N·m 扭矩扳手, 24 毫米开口扳手 (六角或十二角套筒)
2	24毫米开口扳手
3	20 N·m 扭矩扳手, 14 毫米六角套头
4	解锁工具 OPC16-DT, 订货号 55000788
5	4 N·m 扭矩扳手, 3号十字头螺丝刀头 (尺寸为3)

1	Torque tool 20 N m, 24 mm A/F (6-point or 12-point socket)
2	Open-end spanner A/F 24 mm
3	Torque tool 20 N m, 14 mm hex bit
4	Unlocking tool OPC16-DT, order No. 55000788
5	Torque tool 4 N m, Phillips bit size 3

存放

- 将部件存放在温度恒定 (-30 °C 至 +60 °C) 且相对湿度低于 70% 的环境中。
- 部件不得因直接降雨、冷凝或类似情况而受潮。
- 不得让部件接触到酸、碱、气体、丙酮或其他化学腐蚀性物质。

Storage

- Store the components at a constant storage temperature in the range of -30 °C to +60 °C and at less than 70 % relative humidity.
- The components must not be exposed to moisture due to direct rainfall, condensation or similar.
- Do not allow components to come into contact with acids, alkalis, gases, acetone or other chemically aggressive substances.

兼容性

Compatibility

BosCon 面板插座 BosCon panel receptacle	兼容 Compatible with
OPC16-PMS/G-M16/...	OPC16-CP.../HS...
OPC16-PMS/IG-M16/...	OPC16-CPXL/AL...
OPC16-PMS/HS-...	OPC16-CP-SC
OPC16-PMS/GSR6.35/...	
OPC16-PMP/G-M16/...	OPC16-CS.../HS...
OPC16-PMP/IG-M16/...	OPC16-CSXL/AL...
OPC16-PMP/HS-...	OPC16-CS-SC
OPC16-PMP/GSR6.35/...	

安装

说明
建议在环境温度为-15 °C至+35 °C之间进行部件安装。



警告
彩色环一旦安装,便无法拆卸。

- 将彩色编码环上的箭头对准所需的编码位置。
 - 将编码环滑动套在绝缘体前端。正确安装后,箭头将指向所需的编码标记。
可选的机械编码位置包括PE、+、-、N、L1、L2和L3。有关编码环的更多信息及颜色选项,请参阅第12页。
- 仅适用于插座:将密封圈推入到位。确保密封圈完全就位且无扭曲、卷曲、折弯、割伤或磨损,并确认内部无异物。

Assembly

NOTICE
For assembly of components an ambient temperature between -15 °C and +35 °C is recommended.



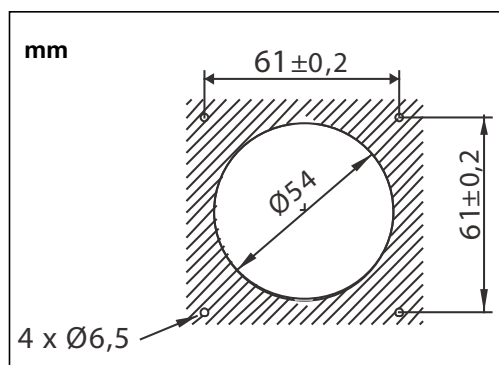
WARNING
Once the colored ring is installed it cannot be removed.

- Line the arrow on the colored coding ring up with the desired coding position.
- Slide the coding ring onto front part of the connector insulation. After correct installation the arrow will point toward the desired coding marking.
Mechanical coding positions available are: PE, +, -, N, L1, L2 and L3. For more information and color options of the ring see page 12.

For socket only: Slide the sealing ring into place. Ensure the sealing ring is fully seated into place and not twisted, rolled, kinked, cut or abraded and that no debris is present.

说明
在最终应用中,可使用聚合物或金属外壳。若安装在金属外壳上,允许的最大壁厚为 12.7 毫米 (0.5 英寸)。必须在最终使用条件下验证与应用相关的间距。

NOTICE
Polymeric or metallic enclosures may be used in the final application. When mounted on a metal enclosure, the maximum wall thickness allowed is 12.7 mm (0.5 inch). Application associated spacings must be verified in the end-use condition.

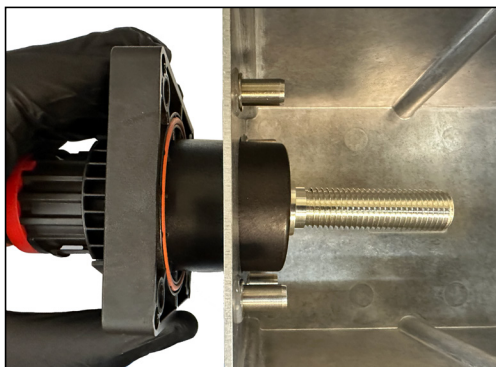


- 根据钻孔图对前板进行钻孔。

- Drill front plate according to drilling plan.

说明
在安装面板盒之前:
请清洁前面板表面,确保其干燥、坚固且无脱模剂残留。建议使用以下溶剂清除灰尘、油脂或油渍:
• 庚烷 (不含丙酮) (请勿浸泡)。清洁效果可持续长达5分钟。
• Scotch (3M) 表面清洁剂S-151 (70% 异丙醇和30%蒸馏水)。

NOTICE
Before assembly of the panel receptacle:
Clean the surface of the front plate so it is dry, firm and free from moulding parting-agent residues. For the removal of dust, grease or oil we recommend the following solvents:
• Heptane (no acetone) (do not immerse). Cleaning effective for up to 5 minutes.
• Scotch (3M) surface cleanser S-151 (70% isopropyl alcohol and 30% distilled water)



说明

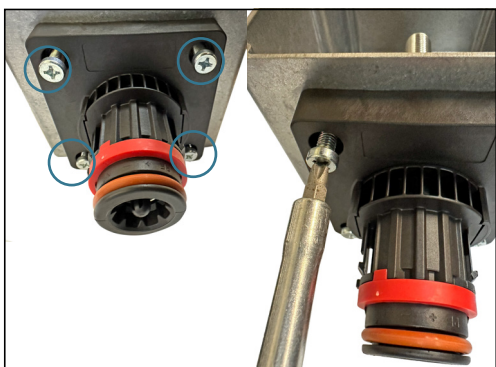
请联系史陶比尔, 根据目标密封等级以及墙体材料和厚度, 获取有关将面板插座集成到面板墙体中的进一步指导。

- 将面板插座从正面插入面板壁上的开口中。

NOTICE

Please contact Stäubli for further guidance on integration of the panel receptacle into the panel wall, based on the targeted sealing level and wall material and thickness.

- Insert panel receptacle from front into opening of the panel wall.

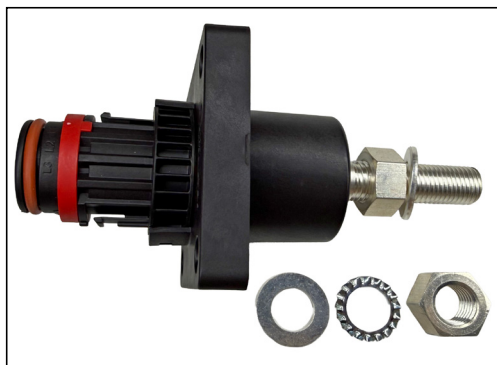


- 使用带有3号十字头刀头的扭矩螺丝刀拧紧四个螺丝。
紧固扭矩: 4 N·m。

- Tighten the four screws with a torque screwdriver with Phillips bit size 3.
Tightening torque: 4 N m.

带有外螺纹接点的面板插座连接方式

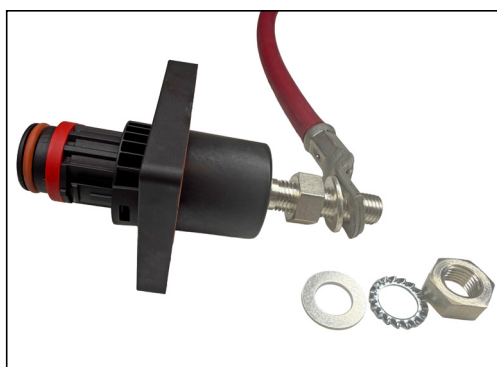
- 将螺母、锁紧垫圈和垫圈从外螺纹接头上取下。



Connecting panel receptacle with external thread contact

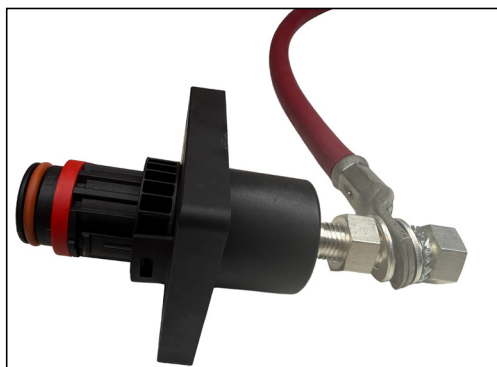
- Remove the nut, lock washer and washer from the thread contact.

- 将预先安装在导线上的电缆接头套在带外螺纹的接头上。



- Place cable lug with pre-assembled cable onto the external thread contact.

- 将螺母、垫圈和锁紧圈安装在外螺纹接头上。



- Place the nut, washer and the lock washer onto the external thread contact.

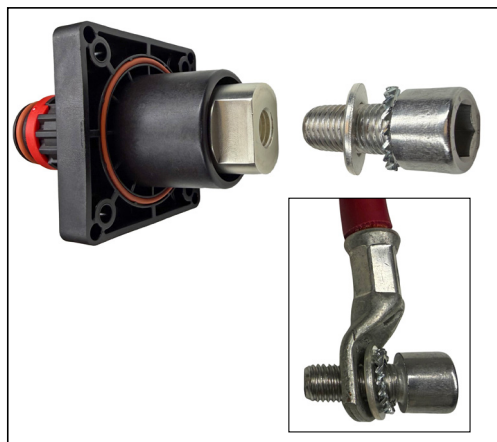
- 用24毫米扭矩扳手(开口扳手)拧紧螺母。同时,用24毫米开口扳手固定另一颗螺母。
紧固扭矩: 20 N·m。



- Tighten the nut with torque tool A/F 24 mm and counter it with nut and open-end spanner A/F 24 mm.
Tightening torque: 20 N m.

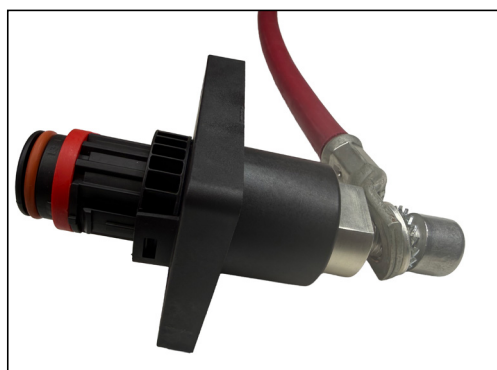
带有内螺纹触点的面板插座连接方式

- 将锁紧垫圈、垫圈以及带有电缆接线头的导线套在螺纹螺钉上。



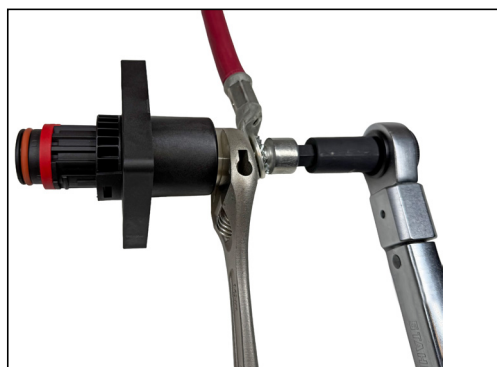
Connecting panel receptacle with internal thread contact

- Place the lock washer, washer and cable lug with pre-assembled cable onto the threaded bolt.



- 带有14毫米六角套头的扭矩扳手, 将螺纹螺钉拧入内螺纹孔中。
紧固扭矩: 20 N·m。

- Screw the threaded bolt into the internal thread contact with a torque tool with 14 mm hex bit.
Tightening torque: 20 N m.



带有叉形触点的面板插座连接方式

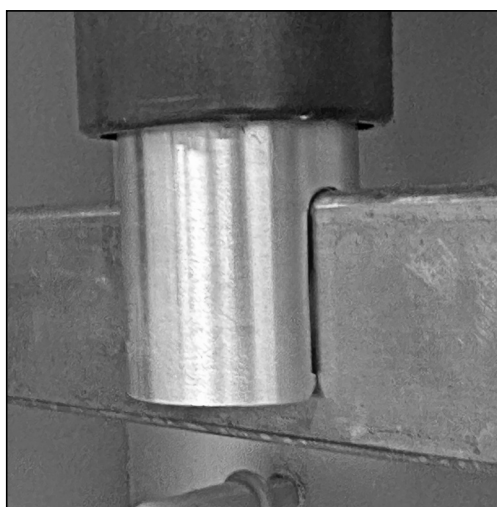
• 说明

i 带有叉形触点的面板插座需配合厚度为 6.35 ± 0.1 毫米 (0.25 ± 0.039 英寸)、最小宽度为 19.05 毫米 (0.75 英寸) 的铜母线使用。应使用带有镀银接触区域的铜母线。叉形触点适用于室内或受保护的室外环境, 不适用于腐蚀性环境。

Connecting panel receptacle with fork contact

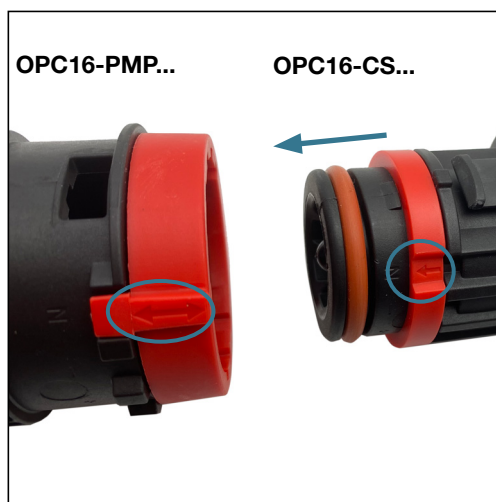
• NOTICE

i The BosCon panel receptacle with fork contact requires a 6.35 ± 0.1 mm (0.25 ± 0.039 inch) thick copper busbar with a minimum width of 19.05 mm (0.75 inches). A copper busbar with a silver plated contact area should be used. Fork contacts are intended for use in indoor or protected outdoor installations. They are not suitable for use in a corrosive atmosphere.



- 将叉形触头插入母线。

- Plug the fork contact onto the busbar.



插入

- 将插座和插头上的编码环箭头对齐。
- 将插头插入插座, 直至卡扣完全锁定。

说明

i 插头只能插入带有相同编码的插座中。

Mating

- Align the coding ring arrows on the socket and plug.
- Mate the plug with the socket until the latches are fully engaged.

NOTICE

i Plugs can only be inserted into sockets with the same coding.



拔出

- 将断开工具对准连接器绝缘层的开槽开口处。

Disconnecting

- Position the unlocking tool on the slotted openings of the connector insulation.



- 轻轻向内按压解锁工具的卡扣, 然后将连接器的插头和插座分开。

- Gently press the tabs of the unlocking tool inward and pull the plug and socket apart.

编码环

机械编码

机械编码最多有7种可能：

Coding ring

Mechanical coding

There is a maximum of 7 mechanical coding possibilities:

名称 Designation	符号 Symbol
相线/Phase 1	L1
相线/Phase 2	L2
相线/Phase 3	L3
中性线/Neutral	N
地线/Ground	PE
直流/Direct current	-
直流/Direct current	+

说明

插头只能插入与之代码编号相同的插座中。

NOTICE

Plugs can only be inserted into sockets with the same code no.

颜色编码

除了机械编码系统外，编码环还提供颜色编码版本。这使得电气安装可以采用多种颜色进行规划，从而更直观地标识配对组件，并符合地区标准和电气安装规范的要求。

Colored coding

In addition to the mechanical coding system, the coding rings are available in color-coded format. This allows electrical installations to be planned in a variety of colors to more easily help signify mating sets and to comply with the requirements of regional standards and electrical installation codes.

提供以下颜色：



The following colors are available:



技术参数

Technical data

连接系统	Connector system	BosCon (Ø 16 mm)
额定电压	Rated voltage	AC/DC 1500 V ¹⁾
额定电流	Rated current	带外螺纹或内螺纹触点的面板插座/Panel receptacle with external or internal thread contact: 如果电缆接线端子与铝制电缆配合使用: If cable lug is assembled with aluminum cable: 286 A (4/0 AWG) ^{1) 2)} 323 A (250 MCM) ^{1) 2)} 359 A (300 MCM) ^{1) 2)} 436 A (400 MCM) ^{1) 2)} 495 A (500 MCM) ^{1) 2)} 559 A (600 MCM) ^{1) 2)} 如果电缆接线端子与铜缆组装在一起: If cable lug is assembled with copper cable: 310 A (3/0 AWG) ^{1) 3)} 360 A (4/0 AWG) ^{1) 3)} 405 A (250 MCM) ^{1) 3)} 445 A (300 MCM) ^{1) 3)} 505 A (350 MCM) ^{1) 3)} 545 A (400 MCM) ^{1) 3)} 620 A (500 MCM) ^{1) 3)} 带叉形触点的面板插座:/Panel receptacle with fork contact: 620 A ^{1) 4)}
额定脉冲电压	Rated impulse withstand voltage	16 kV
运输/存储温度范围	Transportation/storage temperature range	-30 °C...+60 °C
运输/存储相对湿度	Transportation/storage relative humidity	< 70 %
最大工作温度	Max. operating temperature (MOT)	+90 °C ¹⁾

技术参数

Technical data

防护等级, 已插合	Degree of protection, mated	IP65/IP68 (1 m, 1 h) ⁹⁾
防护等级, 未插合	Degree of protection, unmated	IP2X
过压类别/污染等级	Overvoltage category/Pollution degree	CAT III/3
连接器的接触电阻	Contact resistance of connectors	< 0.25 mΩ
锁紧系统	Locking system	Locking type (需要工具才能打开/requires tool to open)
连接系统	Contact system	MULTILAM
连接类型	Type of termination	外螺纹接触/External thread contact 内螺纹接触/Internal thread contact 前叉连接/Fork connection
触头材质	Contact material	铜, 镀银 Copper, silver plated
绝缘材料	Insulation material	PA
阻燃等级	Flammability class	UL94-V0
UL 认证符合 UL 6703 CSA C22.2 No. 182.5 (cURus Recognized) ⁶⁾	UL certified according to UL 6703 and CSA C22.2 No. 182.5 (cURus Recognized) ⁶⁾	E500690
最高工作海拔高度	Max. operating altitude above sea level	2000 m

¹⁾ 工程备注: 必须根据具体应用情况, 在实际使用条件下核查适用的额定电流, 且该电流不得超过额定功率最低的组件或模块的最大操作温度 (运行温度)。**/Engineering considerations: Application associated current ratings must be verified in the end-use condition and shall not exceed the maximum operating temperature of the lowest-rated component or assembly.**

²⁾ 这些面板插座/设备专用于与多股铝导线进行接线, 其额定电流基于导线温度为 75 °C 或更高时的计算结果。该面板插座适用于 UL 认证的双金属电缆接线头 (AlCu), 该电缆接线头专为 16 毫米 (0.625 英寸) 的螺纹连接设计, 适用于铜或铜合金制成的螺纹接头。**/Devices are intended to be wired with stranded aluminum conductors where the ampacity is based on a conductor temperature of 75 °C or higher. This connector is suitable for use with UL Listed bimetallic (AlCu) cable lugs designed for 16 mm (0.625 inches) bolted connections to copper or copper alloy threaded terminations.**

³⁾ 这些面板插座/设备专用于使用多股铜导线进行布线而设计, 其额定电流基于导线温度为 75 °C 或更高时的计算结果。该面板插座适用于与 UL 认证的电缆接线头配合使用, 这些电缆接线头专为 16 mm 螺纹连接设计, 带有铜或铜合金制成的螺纹接头。**/The panel receptacles/devices are intended to be wired with stranded copper conductors where the ampacity is based on a conductor temperature of 75 °C or higher. This panel receptacle is suitable for use with UL Listed cable lugs designed for 16mm bolted connections to copper/ copper alloy threaded terminations.**

⁴⁾ 额定电流取决于汇流排的总横截面积。**/The rated current depends on the total cross-section of the busbar.**

⁵⁾ 为了达到相应的防护等级或承受终端应用中的特定天气条件, 终端产品制造商必须注意: 用于将面板插座固定在机壳上的 M6 螺钉未带有密封圈。鉴于外壳结构和材料种类繁多, 面板插座与外壳之间的密封工作应由最终产品制造商负责。**/To achieve ingress protection ratings or withstand specific weather conditions in the final application, the manufacturer of the end product must consider that the M6 bolts fixing the panel receptacle to the enclosure are not fitted with seals. Due to the variety of potential enclosure designs and materials, the sealing between the panel receptacle and the enclosure is responsibility of the manufacturer of the end product.**

⁶⁾ 只有当该连接器/插头连接器符合 UL6703、《光伏系统用连接器》(第1版, 修订日期2024年6月25日) 以及 CSA C22.2 No. 182.5《光伏连接器》(第1版, 修订日期2019年1月, 2023 年确认) 的要求, 根据安装说明进行安装。安装必须符合 CSA C22 1-2021《加拿大电气规范》第一部分, 第25版, 修订日期2021年3月, 即电气安装安全标准。**/The connector is in compliance with UL 6703, Connectors for Use in Photovoltaic Systems, Edition 1, Revision Date 06/25/2024 and CSA C22.2 No. 182.5, Photovoltaic Connectors, Edition 1, Revision Date 01/2019 (reaffirmed 2023) only when assembled in the manner specified by these assembly instructions. Installation shall be in accordance with CSA C22 1-2021, Canadian Electric Code, Part I, Edition 25, Revision Date 03/2021, Safety Standard for Electrical Installations.**

**Manufacturer and support location:
Stäubli Electrical Connectors, Inc.**

100 Market Street
Windsor, CA 95492/United States
Phone +1 707 838 0530
Fax +1 707 838 2474
mail ec.us@staubli.com
www.staubli.com/electrical
16/16

**Global Headquarters:
Stäubli Electrical Connectors AG**

Stockbrunnenrain 8
4123 Allschwil/Switzerland
Tel. +41 61 306 55 55
Fax +41 61 306 55 56
mail ec.ch@staubli.com
www.staubli.com/electrical